NEC

MODELS JC-2001VME/EE/R

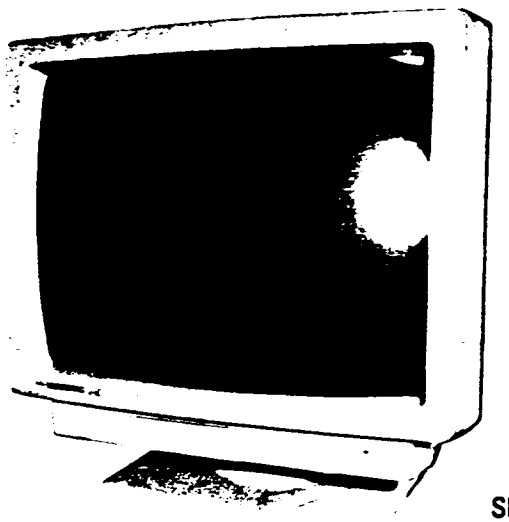
COLOR MONITOR MULTISYNC *xl*

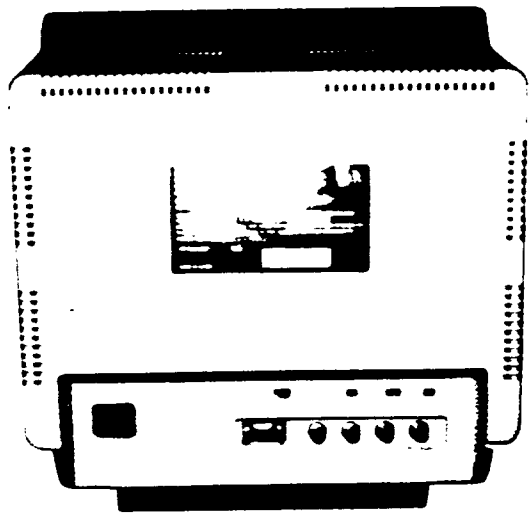
SERVICE MANUAL

PARTS NO. 599910273

10633

Better Service
Better Reputation
Better Profit





SPECIFICATIONS

A. Electrical Description

Picture Tube	19 Visual inches diagonal 90 degree deflection, 0.31 mm Trio dot pitch Dot type black matrix Non-long persistence phosphor, Dark bulb, Direct etch	
Input Signal	Video : TTL Level Positive : ANALOG 0.7 or 1.0 Vp-p/75Ω Positive Sync. : Separate sync. TTL Level Horizontal sync. Positive/Negative Vertical sync. Positive/Negative : Composite sync. TTL Level Positive/Negative : Composite sync. on Green Video sync. 0.3 Vp-p Negative (Video 0.7 Vp-p Positive) or sync. 0.43 Vp-p Negative (Video 1.0 Vp-p Positive)	
Display Colors	TTL Input : 8/16/64 colors Analog Input : Unlimited colors	
Synchronization	Horizontal Vertical	: 21.8 KH to 50 kHz (Automatically) : 56 Hz to 80 Hz (Automatically), Non-interlace
Resolution	Horizontal Vertical	: 1024 dots : 768 lines
Video Band Width	65 MHz on BNC, 30 MHz on D-Sub	
Maximum Display Area	Horizontal Vertical	: 350 mm (Actve display area is changed : 260 mm by signal timing)
Misconvergence	Less than 0.7 mm	
Power Supply	AC 220-240V 50/60Hz	
Power Consumption	130 W	
Dimensions	480 (W) × 476.5 (H) × 545 (D) mm	
Weight	27 kg	
Environmental Consideration	Operating Temperature Humidity Storage Temperature Humidity	0°C to +40°C 30% to 80% −20°C to +60°C 10% to 90%

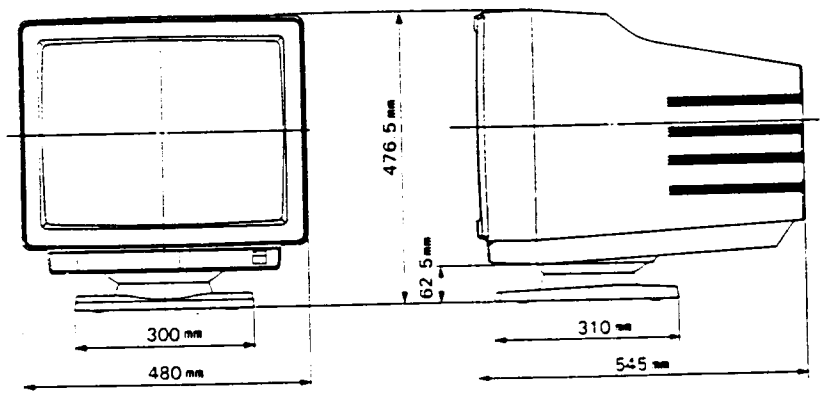
NOTE: The above specifications are subject to change without notice for further improvement.

NEC Corporation
TOKYO, JAPAN

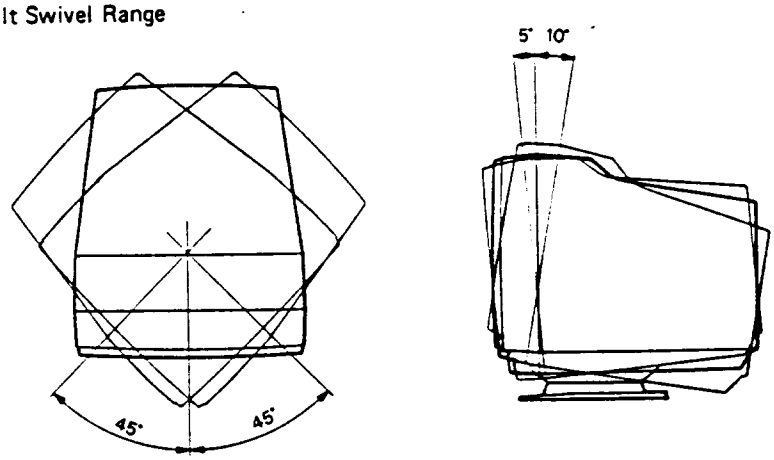
B. Mechanical Description (See below diagrams)

1.	Cabinet	Molded plastic cabinet with attachable tilt swivel base.
2.	Dimensions	480(W) x 476.5(H) x 545(D) mm
3.	Weight	27 kg

Dimensions



Tilt Swivel Range

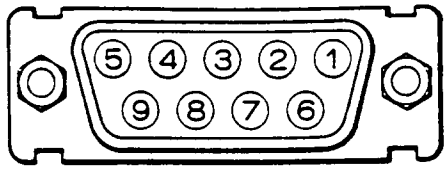


4.	Controls	BRIGHTNESS CONTROL	INPUT SWITCH
		CONTRAST CONTROL	TEXT SWITCH
		HORIZONTAL POSITION CONTROL	TEXT COLOR SWITCH
		HORIZONTAL SIZE CONTROL	TTL/ANALOG SWITCH
		VERTICAL POSITION CONTROL	BNC INPUT VOLTAGE SWITCH
		VERTICAL SIZE CONTROL	COLOR SWITCH
		POWER SWITCH	MANUAL SWITCH
		DEGAUSSING SWITCH	

5. Input Signal Terminal: 9 PIN D-SUB CONNECTOR (FEMALE)
(SEE PAGE 2 FOR PIN ASSIGNMENTS)
BNC CONNECTOR (FEMALE)
(SEE PAGE 3 FOR CONNECTION ASSIGNMENTS)

PIN ASSIGNMENTS AND SIGNAL LEVELS

D-SUB Type 9-P



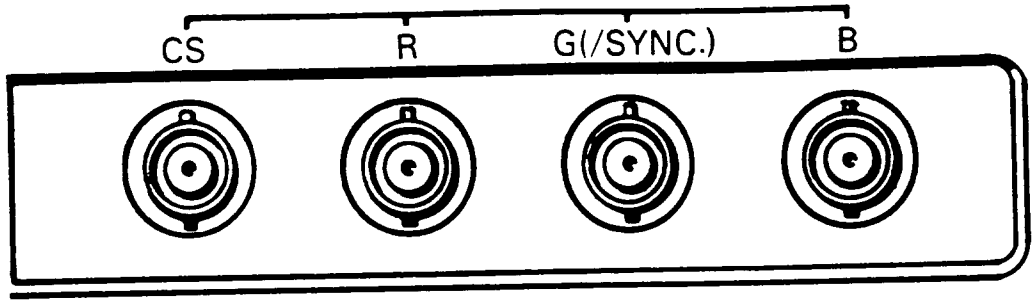
MANUAL SWITCH OFF

SIGNAL / PIN No.	TTL		ANALOG	
	EGA COMPATIBLE		PGC COMPATIBLE	VGA/MCGA COMPATIBLE
	16 COLORS	64 COLORS		
1	GROUND	GROUND	●RED	●RED
2	GROUND	SECONDARY RED	●GREEN	●GREEN
3	RED	PRIMARY RED	●BLUE	●BLUE
4	GREEN	PRIMARY GREEN	COMPOSITE SYNC.	H. SYNC.
5	BLUE	PRIMARY BLUE	MODE CONTROL	V. SYNC.
6	INTENSITY	SECONDARY GREEN	RED GROUND	RED GROUND
7	NO-CONNECTION	SECONDARY BLUE	GREEN GROUND	GREEN GROUND
8	H. SYNC.	H. SYNC.	BLUE GROUND	BLUE GROUND
9	V. SYNC.	V. SYNC.	GROUND	GROUND

MANUAL SWITCH ON

SIGNAL / PIN No.	TTL			ANALOG		
	8 COLORS	16 COLORS	64 COLORS	SEPARATE SYNC.	COMPOSITE SYNC.	SYNC. ON GREEN
1	GROUND			●RED		
2	—		SECONDARY RED	●GREEN		◎H/V SYNC. ON GREEN
3	RED		PRIMARY RED	●BLUE		
4	GREEN		PRIMARY GREEN	H. SYNC.	H/V SYNC.	—
5	BLUE		PRIMARY BLUE	V. SYNC.	—	
6	—	INTENSITY	SECONDARY GREEN	GROUND		
7	—		SECONDARY BLUE			
8	H. SYNC.					
9	V. SYNC.					

BNC



CONNECTOR	SYNC. ON GREEN	COMPOSITE SYNC.
R	* RED	* RED
G	♠ H/V SYNC. ON GREEN	* GREEN
B	* BLUE	* BLUE
CS	—	H/V SYNC.

"—" means GROUND or NON-CONNECTION
"H" means HORIZONTAL
"V" means VERTICAL
"H/V" means COMPOSITE SYNC.

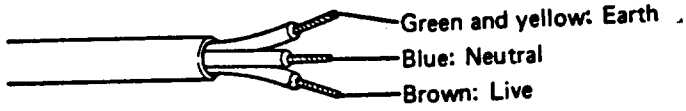
SIGNAL LEVEL

All signal leveles, except for those listed below, are TTL.

"•" means 0.7Vp-p (VIDEO)
"◎" means 0.7Vp-p (VIDEO), 0.3Vp-p (SYNC.)
"*" means 0.7Vp-p or 1.0Vp-p (VIDEO)
"♠" means 0.7Vp-p (VIDEO), 0.3Vp-p (SYNC.) or 1.0Vp-p (VIDEO), 0.43Vp-p (SYNC.)

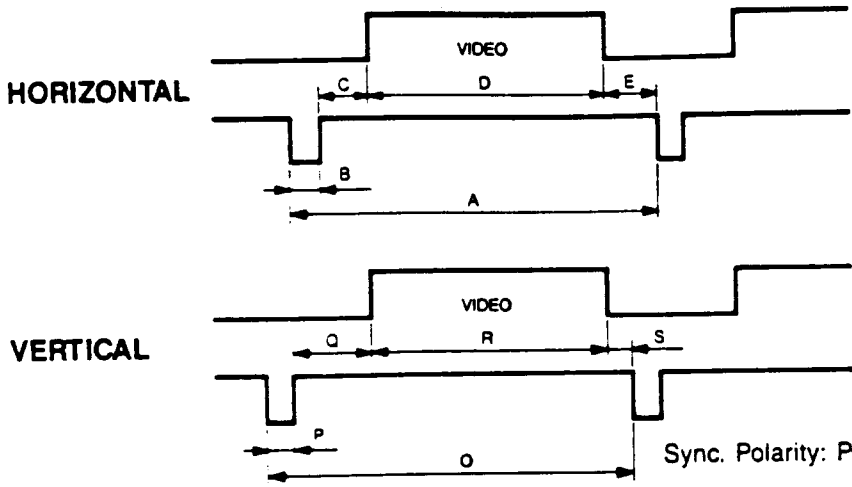
Power Supply Cord

The plug and the cord you will use depend upon the power supply voltage (AC 110-120V or AC 200-240V). If you operate the monitor with AC110-120V, use a power supply cord with the Safety Standard Approval of your country.
Plug form different by model.
JC-2001VMEE
Warning: This apparatus must be earthed.
Important
The wires in this mains lead are colored in accordance with following code:



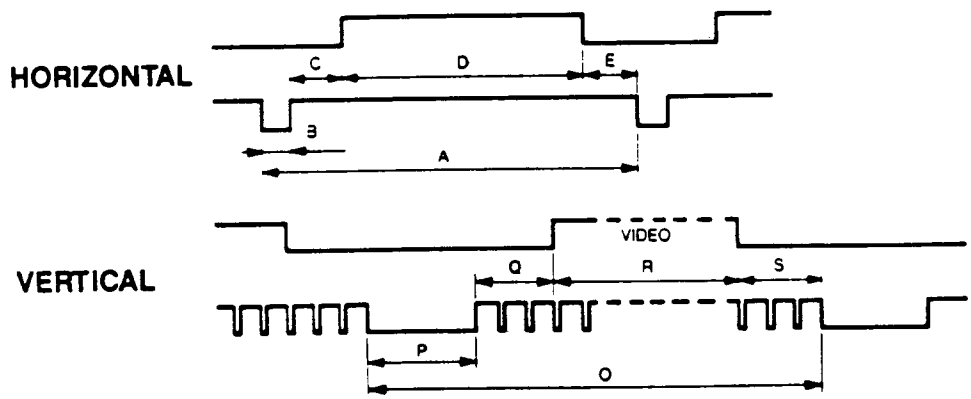
TIMING CHARTS

SEPARATE SYNC.



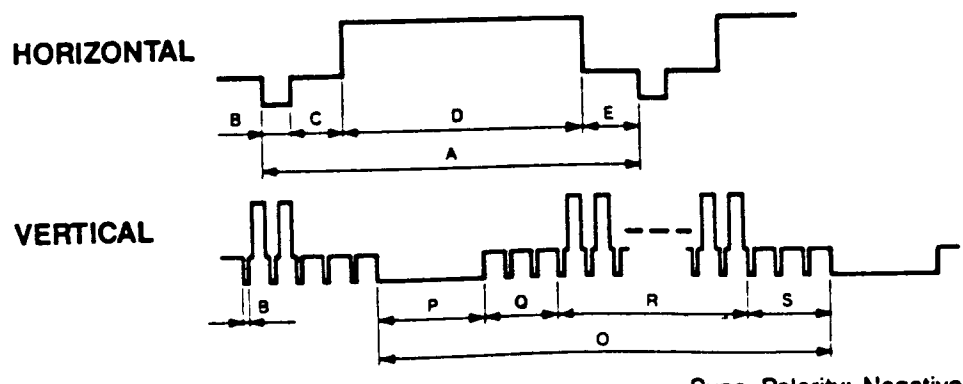
Sync. Polarity: Positive/Negative

COMPOSITE SYNC.



Sync. Polarity: Positive/Negative

COMPOSITE SYNC. & VIDEO (SYNC. ON GREEN)



Sync. Polarity: Negative

PRESET TIMING

	EGA COMPATIBLE	VGA/MCGA COMPATIBLE			768 LINES
f_H	22 kHz	31.5 kHz			48.5 kHz
A μs	45.5	31.77			20.625
B μs	4.9	3.77			1.0
C μs	1.6	1.89			2.875
D μs	39	25.17			16.0
E μs	0	0.94			0.75
fv	60 Hz	70 Hz		60 Hz	60 Hz
O ms	16.68	14.27	14.27	16.68	16.665
P ms	0.6	0.064	0.064	0.064	0.083
Q ms	0.08	1.88	1.08	1.02	0.66
R ms	16	11.126	12.716	15.246	15.84
S ms	0	1.2	0.41	0.35	0.082
REMARKS	SEPARATE SYNC.	SEPARATE SYNC. H. SYNC. Positive V. SYNC. Negative	SEPARATE SYNC. H. SYNC. Negative V. SYNC. Positive	SEPARATE SYNC. H. SYNC. Negative V. SYNC. Negative	COMPOSITE SYNC. or COMPOSITE SYNC & VIDEO (Sync. on Green)

GENERAL

MultiSync XL, the Intelligent Monitor, from NEC, is a high resolution color monitor that automatically adjusts to graphics board scanning frequencies from 21.8 kHz to 50 kHz. MultiSync XL gives IBM PC, PC/XT, PC/AT, Personal System/2 and PC compatibles users crisp text and vivid color graphics displays when used with any of the IBM graphics adapters (the MCGA, VGA, EGA or PGC). MultiSync XL can also be used with other IBM compatible graphics adapters to provide IBM users with the widest range of color monitor compatibility and capability available in the market place.

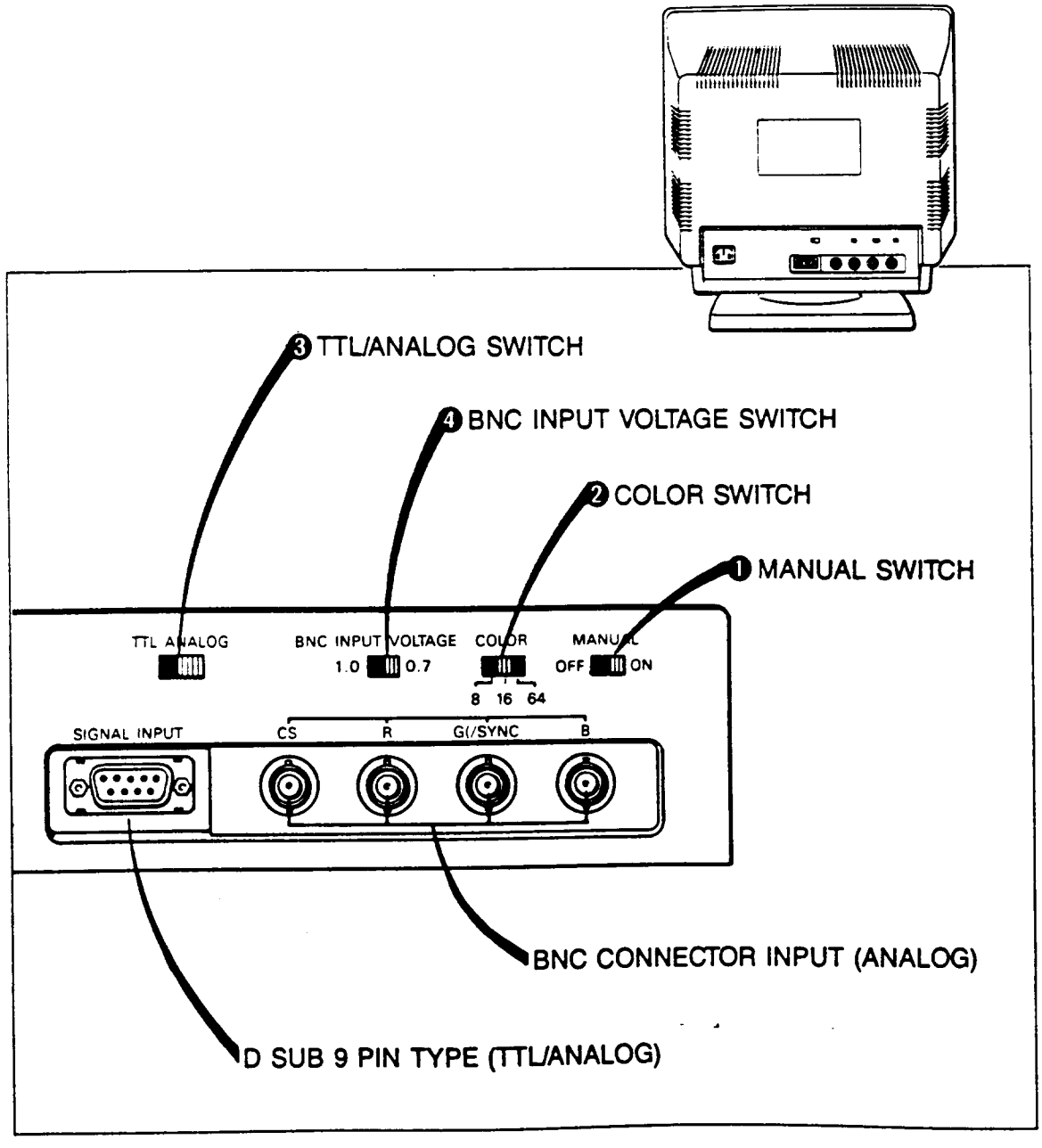
FEATURES

- MultiSync XL automatically scans all frequencies between 21.8 kHz and 50kHz.
- MultiSync XL is compatible with the IBM PC, PC/XT, PC/AT and look-alikes.
- MultiSync XL is compatible with the IBM Professional Graphics Controller, the IBM Enhanced Graphics Adapter, the IBM Video Graphics Array, the IBM Multi Color Graphics Array, and other IBM compatible graphics adapters.
- MultiSync XL's wide compatibility makes it possible to upgrade boards or software without purchasing a new monitor.
- MultiSync XL has a maximum horizontal resolution of 1024 dots and a maximum vertical resolution of 768 lines for superior clarity of display.
- MultiSync XL offers both TTL and ANALOG signal inputs, and in the ANALOG mode can display an unlimited palette of colors depending on the graphics board and software being used.
- MultiSync XL features a TEXT SWITCH (TTL mode only) with a choice of three colors (green, amber and paper white) displaying word processing, spread sheets, databases or other software in crisp alphanumeric text on a dark-bulb black background.
- MultiSync XL has a 20 inch diagonal display and a large 19 inch viewing area.

ADJUSTING THE MULTISYNC XL CONTROLS

Before connecting the MultiSync XL with IBM personal computers or compatibles and IBM graphics adapters, take time to familiarize yourself with the switches and controls that give the MultiSync XL all its capabilities. Chapters 1 and 2 outline the control and switches of the MultiSync XL. Chapter Page 11 shows you how to connect the MultiSync XL with your IBM personal computer and graphics adapter.

1. ADJUSTING THE REAR CONTROLS



❶ MANUAL SWITCH

This switch selects either the IBM mode when OFF or the manual mode when ON. When this switch is OFF, MultiSync XL automatically works in the IBM mode and adjusts itself to the scanning frequency, resolution and color requirements of the IBM compatible graphics adapter being used.
When this switch is ON, the user must manually select the number of colors (8/16/64) needed by the graphics adapter being used with the COLOR SWITCH (see No. ❷ below). Refer to instructions accompanying the graphics adapter being used for information on how many colors the adapter can display.

❷ COLOR SWITCH

One of the three color configurations (8/16/64 colors) must be selected when using non-IBM compatible graphics adapters. The proper configuration can be selected by using the COLOR SWITCH as shown below. Refer to user manual accompanying the graphics adapter being used for information on how many colors the adapter can display.

COLOR MODE	COLOR SWITCH
8 colors	8
16 colors	16
64 colors	64

NOTE

This switch should be set correctly in relation to the input signal of the graphics adapter being used. Refer to user manual accompanying the graphics adapter for information on the input signal and refer to No. 3 below.

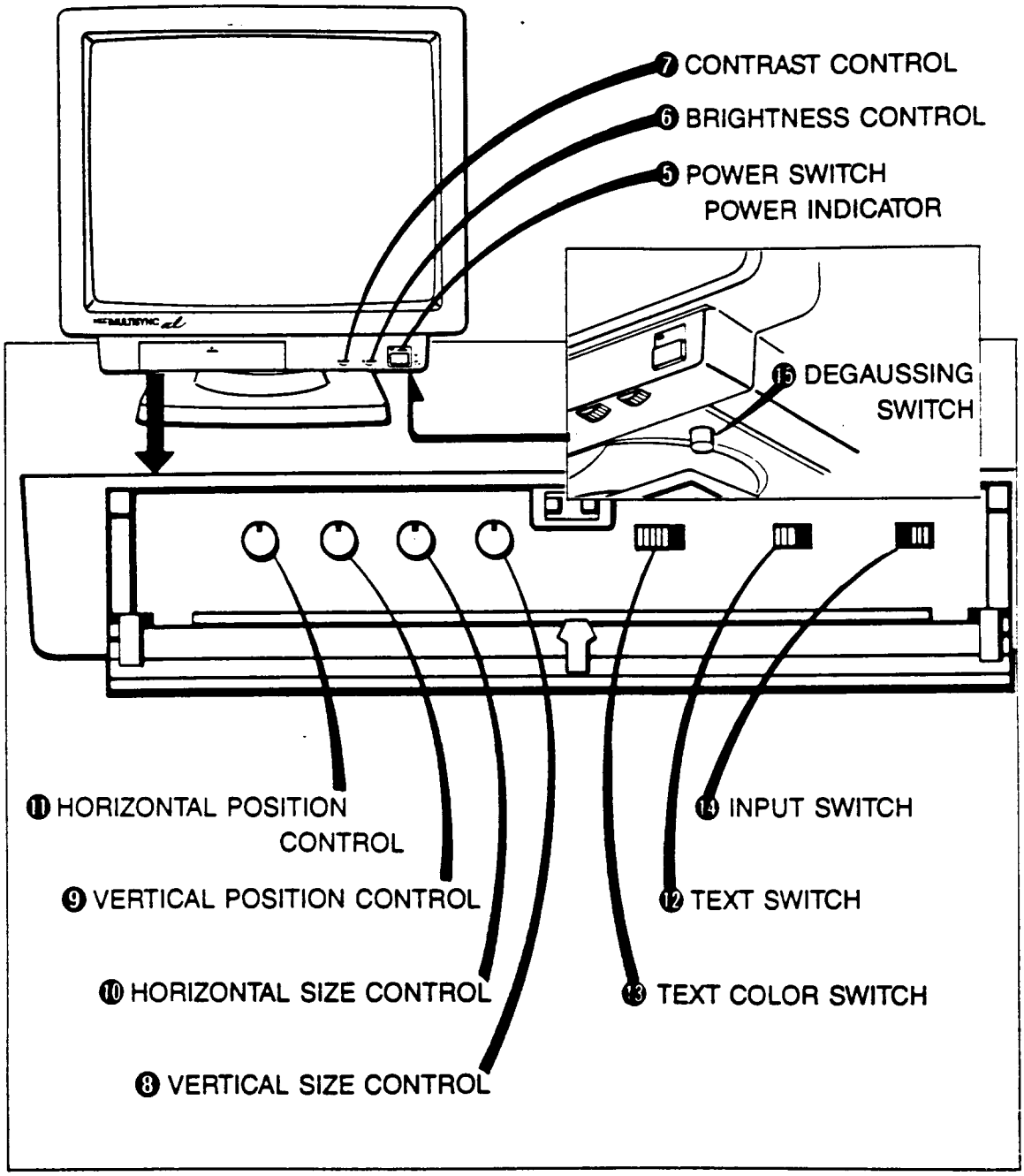
❸ TTL/ANALOG SWITCH

Used to select an input video signal—either TTL or ANALOG—of the graphics adapter. It is important to determine whether the input signal of the graphics adapter being used is ANALOG or TTL prior to connecting the adapter with the MultiSync XL. Refer to instructions accompanying the graphics adapter for information on the input signal.

❹ BNC INPUT VOLTAGE SWITCH

Used to select an input video voltage—either 1.0Vp-p or 0.7Vp-p—of the graphics adapter. Refer to user manual accompanying the graphics adapter for information on the input video voltage.

2. ADJUSTING THE FRONT CONTROLS



❺ POWER SWITCH

Used to turn power ON or OFF. When the power is ON the power indicator LED is lit.

❻ BRIGHTNESS CONTROL

Used to adjust the picture brightness of the screen.

❼ CONTRAST CONTROL

Adjusts the display to the contrast preferred by the user.

❽ V. SIZE CONTROL

Adjust this knob for the proper vertical size of the display. Turn the knob clockwise for a larger display; turn it counterclockwise for a smaller display.

❾ V. POSITION CONTROL

Adjust this knob for the proper vertical position of the display. Turn the knob clockwise for a higher display position; turn it counterclockwise for a lower display position.

❿ H. SIZE CONTROL

Adjust this knob for the proper horizontal size of the display.

⓫ H. POSITION CONTROL

Adjust this knob for the proper horizontal position of the display. Turn the knob clockwise to reposition display to the right; turn it counterclockwise to reposition to the left.

⓬ TEXT SWITCH

This switch controls the text mode of the MultiSync XL.
When it is ON, the text will appear in the color displayed by the TEXT COLOR SWITCH (See No.⓭below), regardless of the colors of the software program being used.
When it is OFF, the color of the software program being used will again be displayed.

NOTE
The text switch works only in the TTL mode.

⓭ TEXT COLOR SWITCH

Use this switch to select text color—green, amber, or paperwhite—when the text switch is on.

⓮ INPUT SWITCH

Use this switch to select input connector—either D-Sub or BNC.

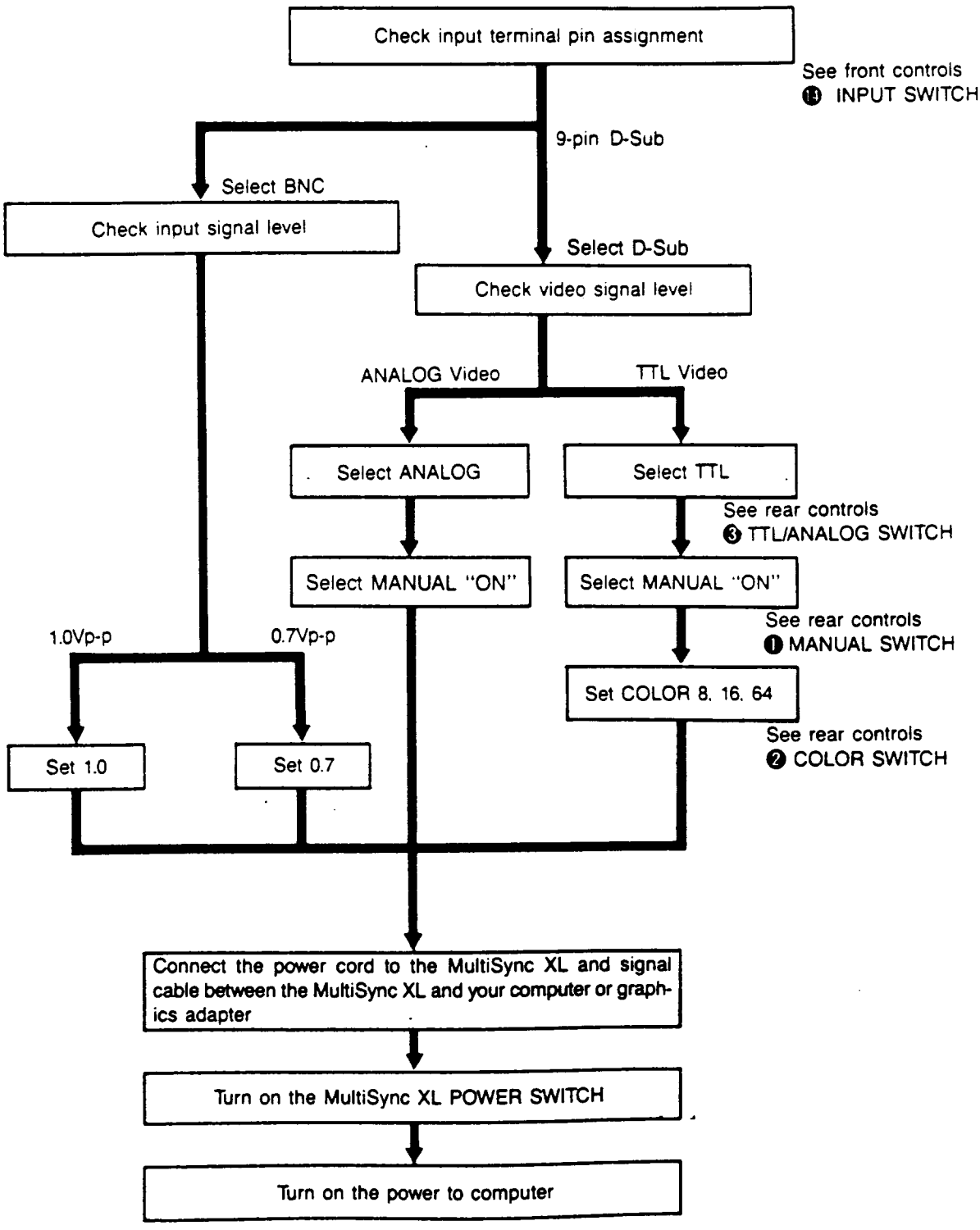
⓯ DEGAUSSING SWITCH

In order to eliminate the color impurity, push in and hold the degaussing switch for a few seconds.

CONNECTING THE MULTISYNC XL

1. WITH YOUR COMPUTER OR GRAPHICS ADAPTER

To connect the MultiSync XL with your computer or graphics adapter, refer to the diagram below.



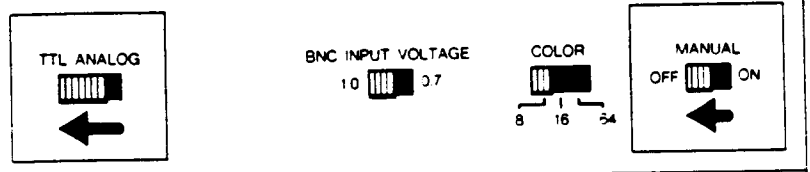
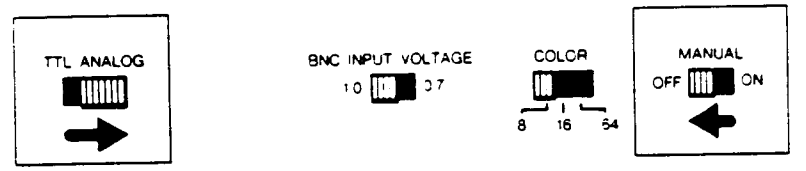
2. WITH EGA, PGC OR COMPATIBLE ADAPTER

Using IBM PC, PC/XT, PC/AT or compatible computer equipped with the IBM Enhanced Graphics Adapter (EGA) or the IBM Professional Graphics Controller (PGC) or compatible adapter.

1 Make sure the power to the MultiSync XL and the computer is off.

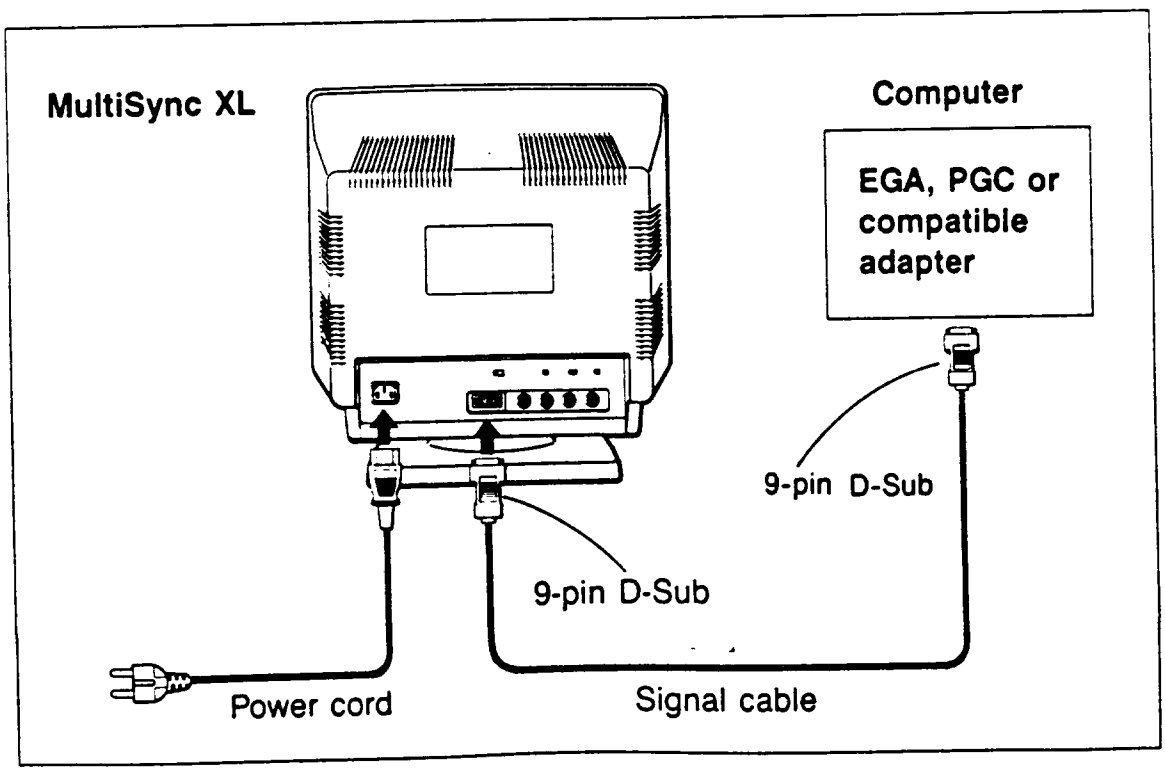
2 Make sure the INPUT switch on the front of the MultiSync XL is at "D-Sub".

3 Make sure the TTL/ANALOG switch and the MANUAL switch on the rear are at appropriate position.

EGA or EGA compatible [TTL INPUT]	
PGC or PGC compatible [ANALOG INPUT]	

4 Connect the power cord and the signal cable to the MultiSync XL

Use the signal cable with the "9-pin D-Sub to 9-pin D-Sub."



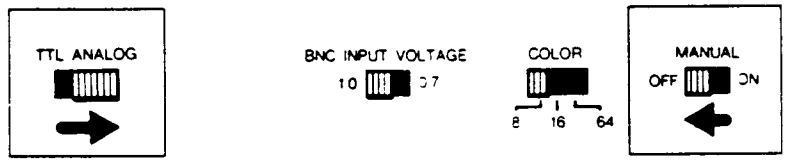
3. WITH PERSONAL SYSTEM/2 OR COMPATIBLE SYSTEM

Using IBM Personal System/2 (PS/2) with Multi Color Graphics Array (MCGA) or Video Graphics Array (VGA) or compatible system.

1 Make sure the power tc the MultiSync XL and the computer is off.

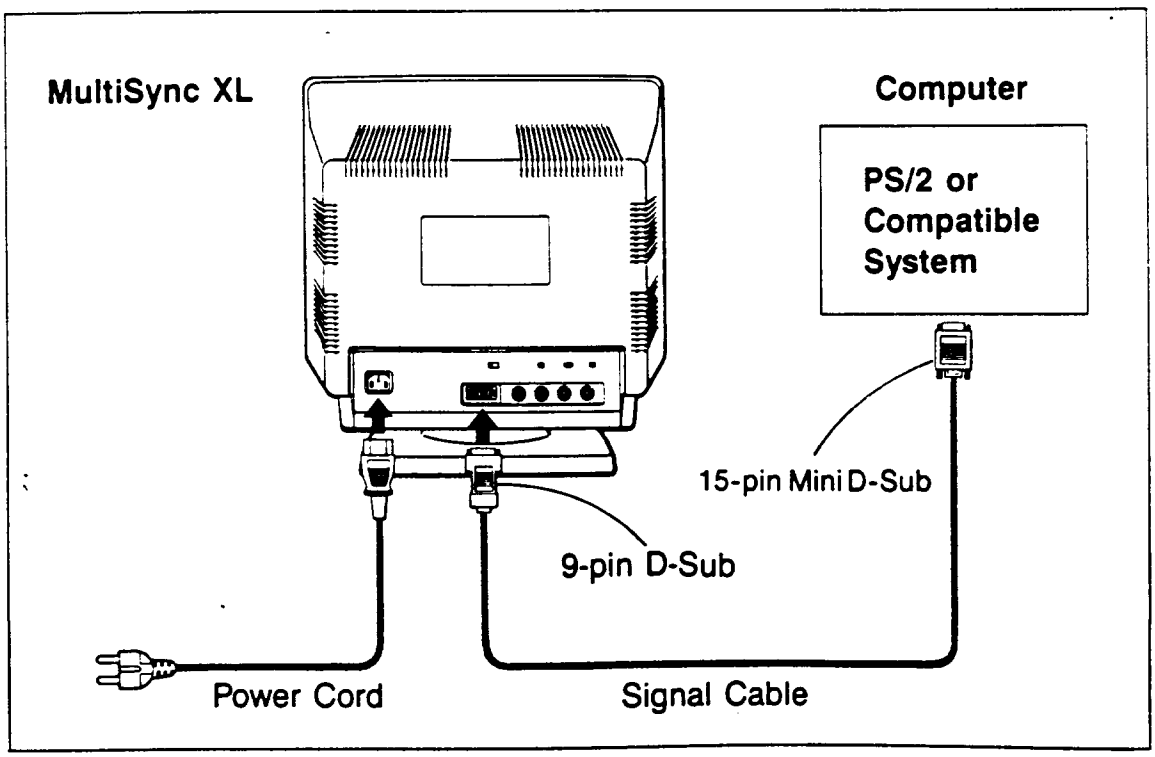
2 Make sure the INPUT switch on the front of the MultiSync XL is at "D-Sub".

3 Make sure the TTL/ANALOG switch and the MANUAL switch on the rear are at appropriate position.

MCGA or VGA or compatible [ANALOG INPUT]	

4 Connect the power cord and the signal cable to the MultiSync XL.

Use the SIGNAL CABLE with the "9-pin D-Sub to 15-pin Mini D-Sub"

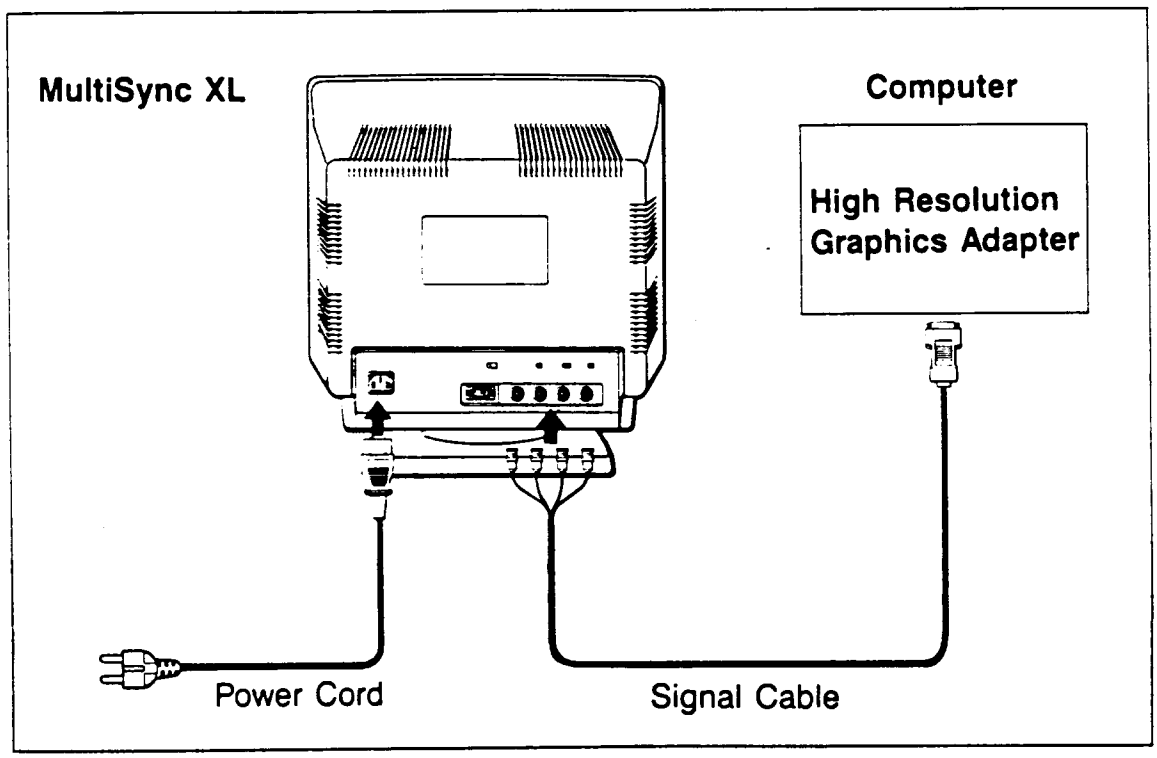


4.WITH A HIGH RESOLUTION GRAPHICS ADAPTER

Using a high resolution graphics adapter or a high resolution graphics system (ex. 960 × 720 resolution)

1 Make sure the power to the MultiSync XL and the computer is off.
2 Make sure the INPUT switch on the front of the MultiSync XL is at "BNC".
3 Make sure the BNC INPUT VOLTAGE switch on the rear is at appropriate position for the maximum video output voltage from your adapter. (1.0:1V peak to peak, 0.7:0.7V peak to peak)
4 Connect the power cord and the signal cable to the MultiSync XL.

Use the optional signal cable or the signal cable supplied with your adapter.



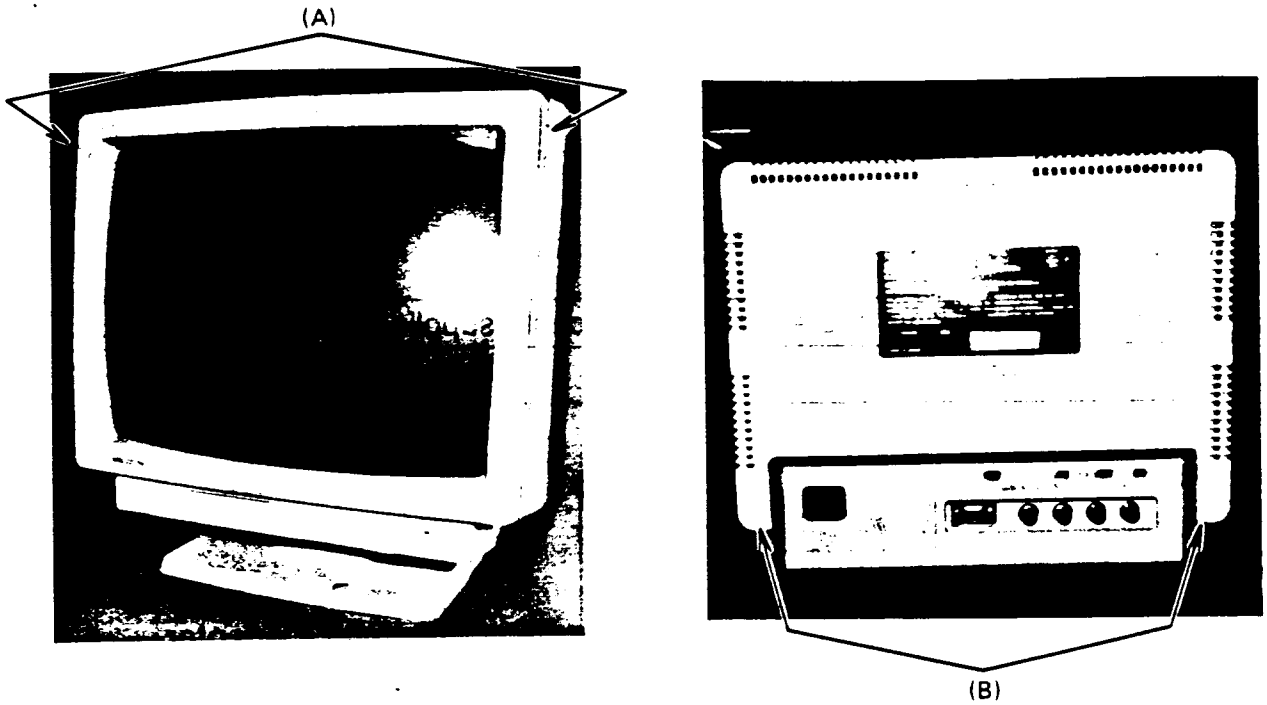
5 The red BNC cable should be connected to the BNC connector "R".
The green BNC cable should be connected to the BNC connector "G (/SYNC.)".
The blue BNC cable should be connected to the BNC connector "B".
The black BNC cable should be connected to the BNC connector "CS".

For the optional signal cable, please contact your authorized NEC Home Electronics dealer.

DISASSEMBLY

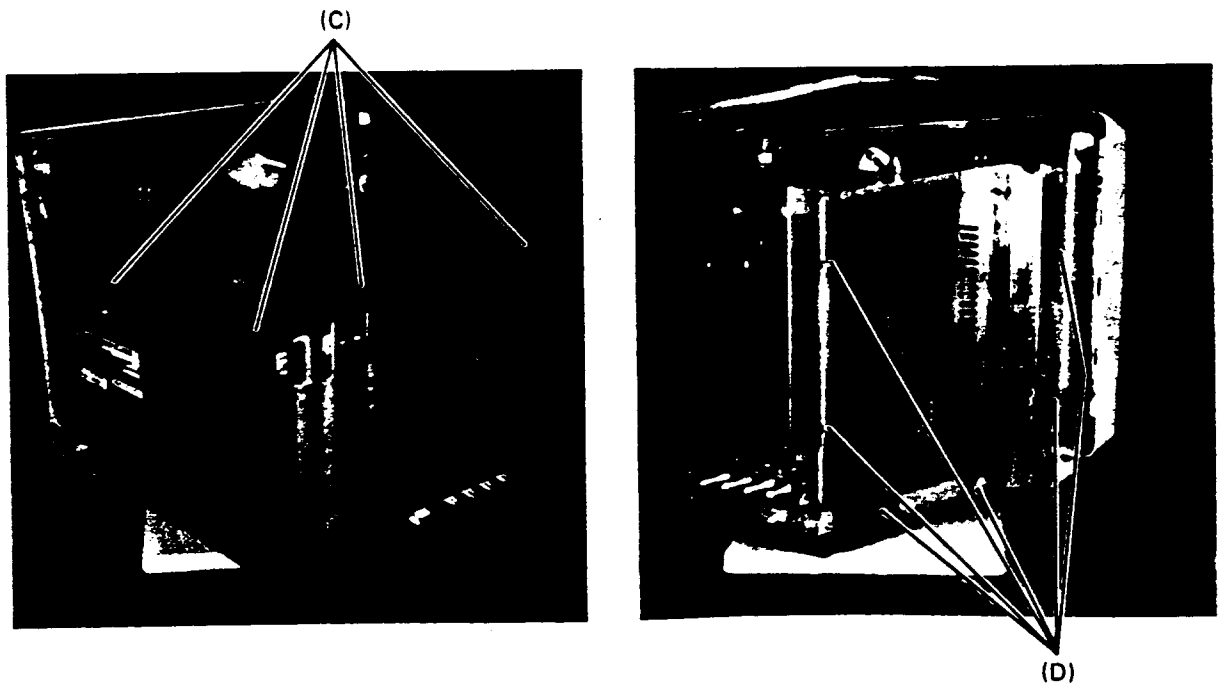
BACK COVER REMOVAL

Remove two back cover mounting screws (A) and (B) then take off back cover.



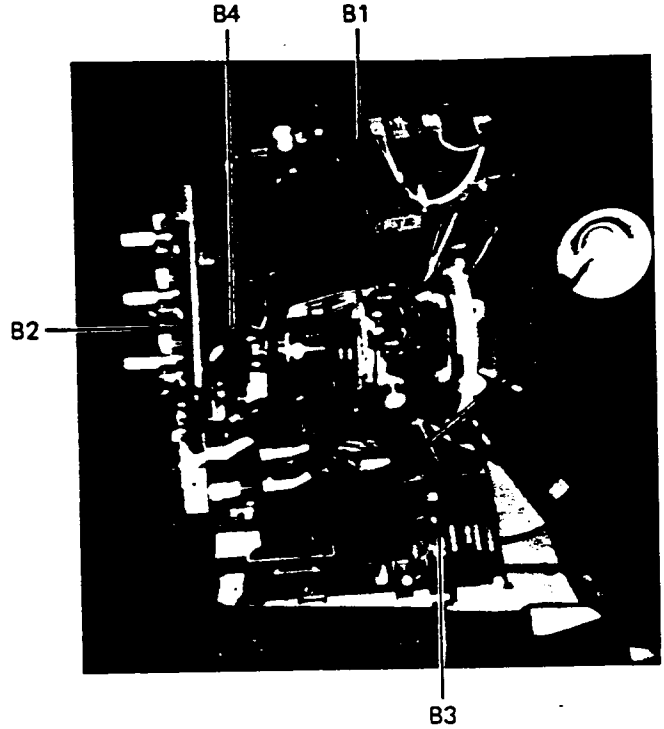
CASE SHIELDING (TOP) REMOVAL

Remove two case, shielding (TOP) mounting screws (C) and (D) then take off case shielding (TOP).



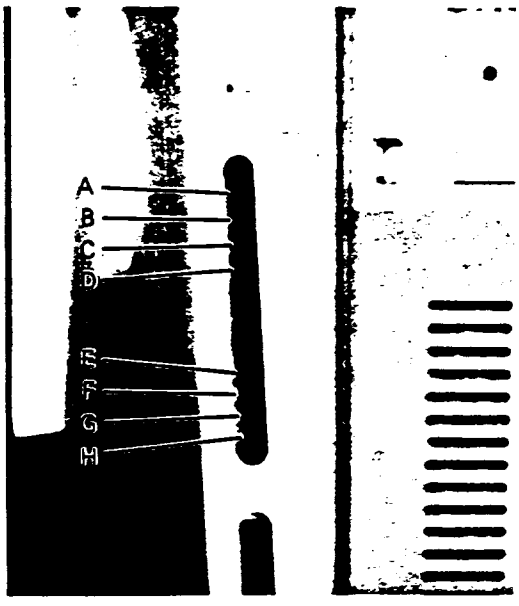
PART LOCATIONS

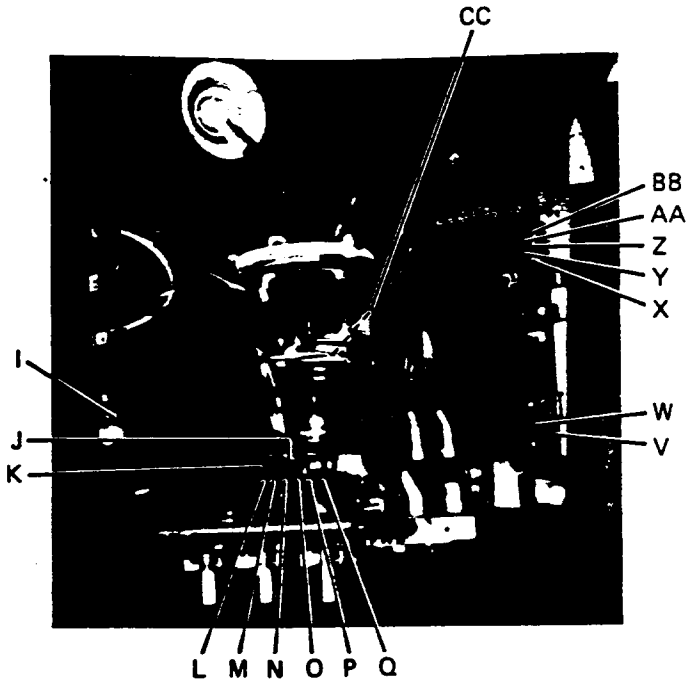
BOARD LAYOUT

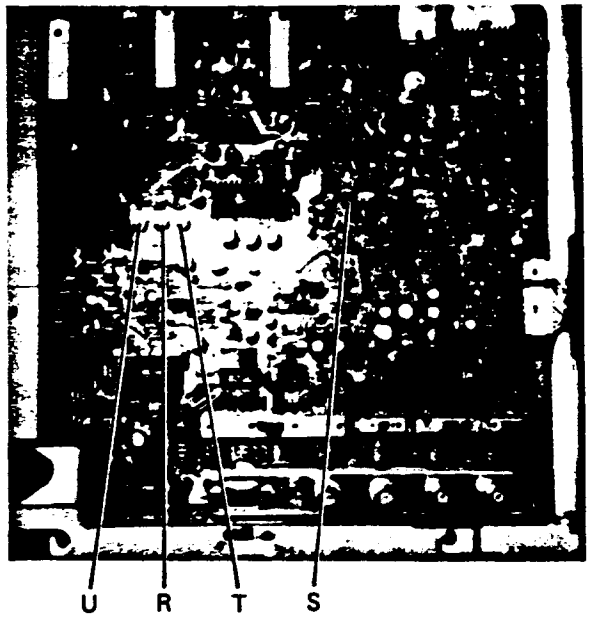


BOARDS

B1	SW. REG. PWB ASSY	PWE-199
B2	VIDEO PWB ASSY	PWE-174
B3	DEF PWB ASSY	PWE-173
B4	CRT PWB ASSY	PWE-177



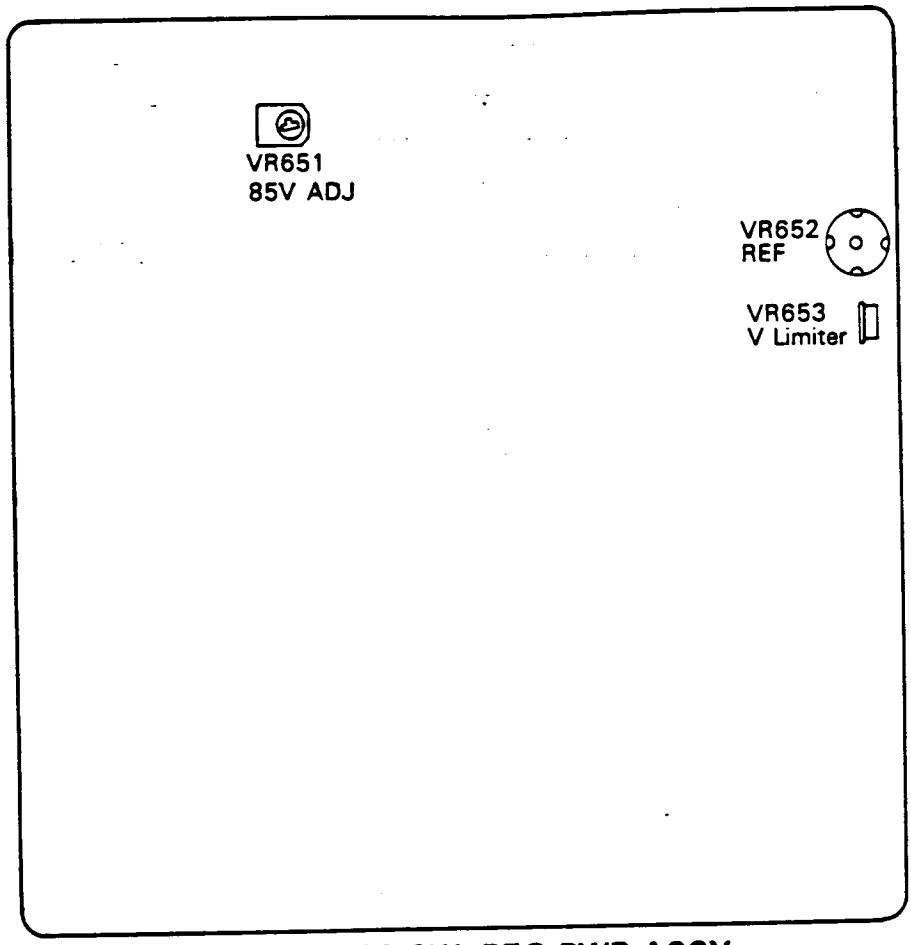




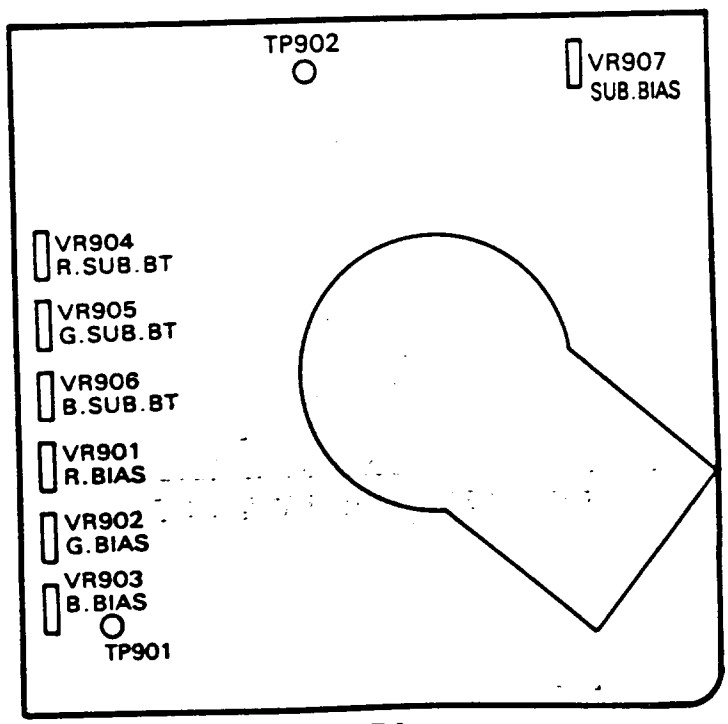
ADJUSTMENT CONTROLS

A	V. HOLD (VR401)	P	G. BIAS (VR902)
B	V. SUB HEIGHT (1) (VR440)	Q	B. BIAS (VR903)
C	V. SUB HEIGHT (2) (VR441)	R	G. GAIN (VR702)
D	V. SIZE LIMITER (VR443)	S	SUB. CONT (VR704)
E	SIDE-PIN (VR470)	T	B. GAIN (VR703)
F	V. BIAS (VR402)	U	R. GAIN (VR701)
G	V. LIN (S) (VR404)	V	SCREEN
H	V. LIN (C) (VR403)	W	FOCUS
I	CI VOLTAGE LIMITER (VR653)	X	SUB H. CENTER 2(27~35KHz)(VR504)
J	+6V ADJ (VR509)	Y	SUB H. CENTER 3(20~27KHz)(VR505)
K	SUB BIAS (VR907)	Z	SUB H. CENTER 1(42KHz~)(VR503)
L	R. SUB BRIGHT (VR904)	AA	H. HOLD 2 (27KHz) (VR502)
M	G. SUB BRIGHT (VR905)	BB	H. HOLD 1 (42KHz) (VR501)
N	B. SUB BRIGHT (VR906)	CC	H. SIZE CONTROL (VR510)
O	R. BIAS (VR901)		

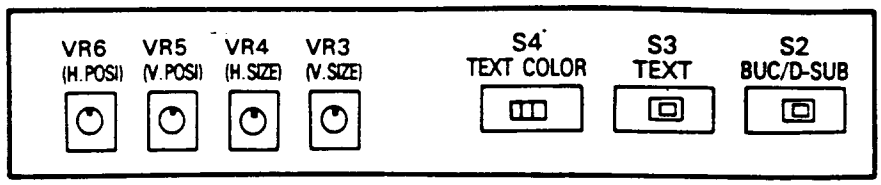
ADJUSTMENT CONTROLS LAYOUT



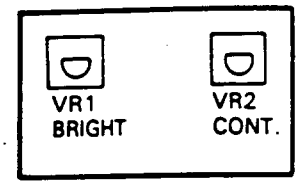
PWE-199 SW. PEG PWB ASSY



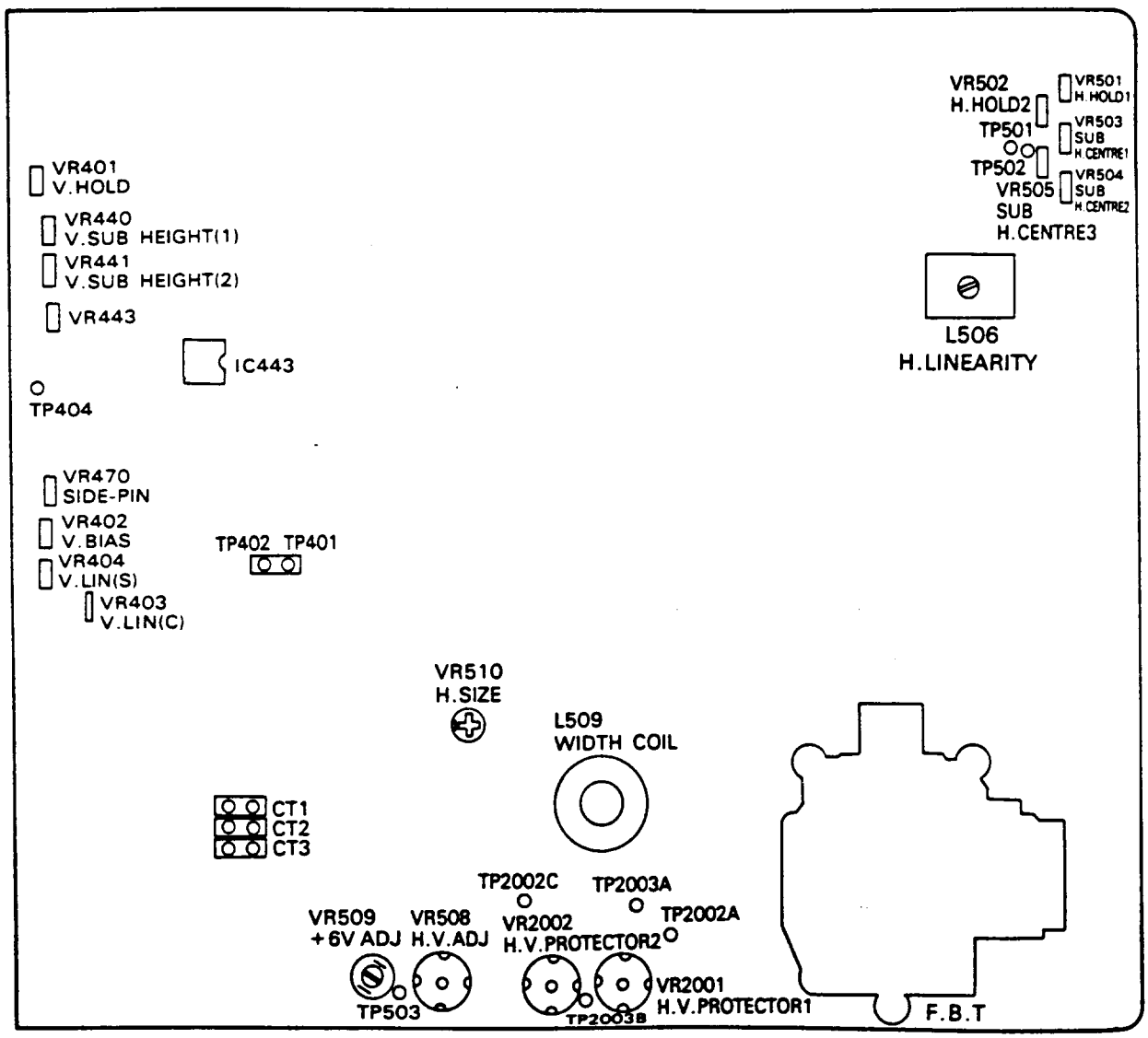
PWE-177A
CRT PWB ASSY



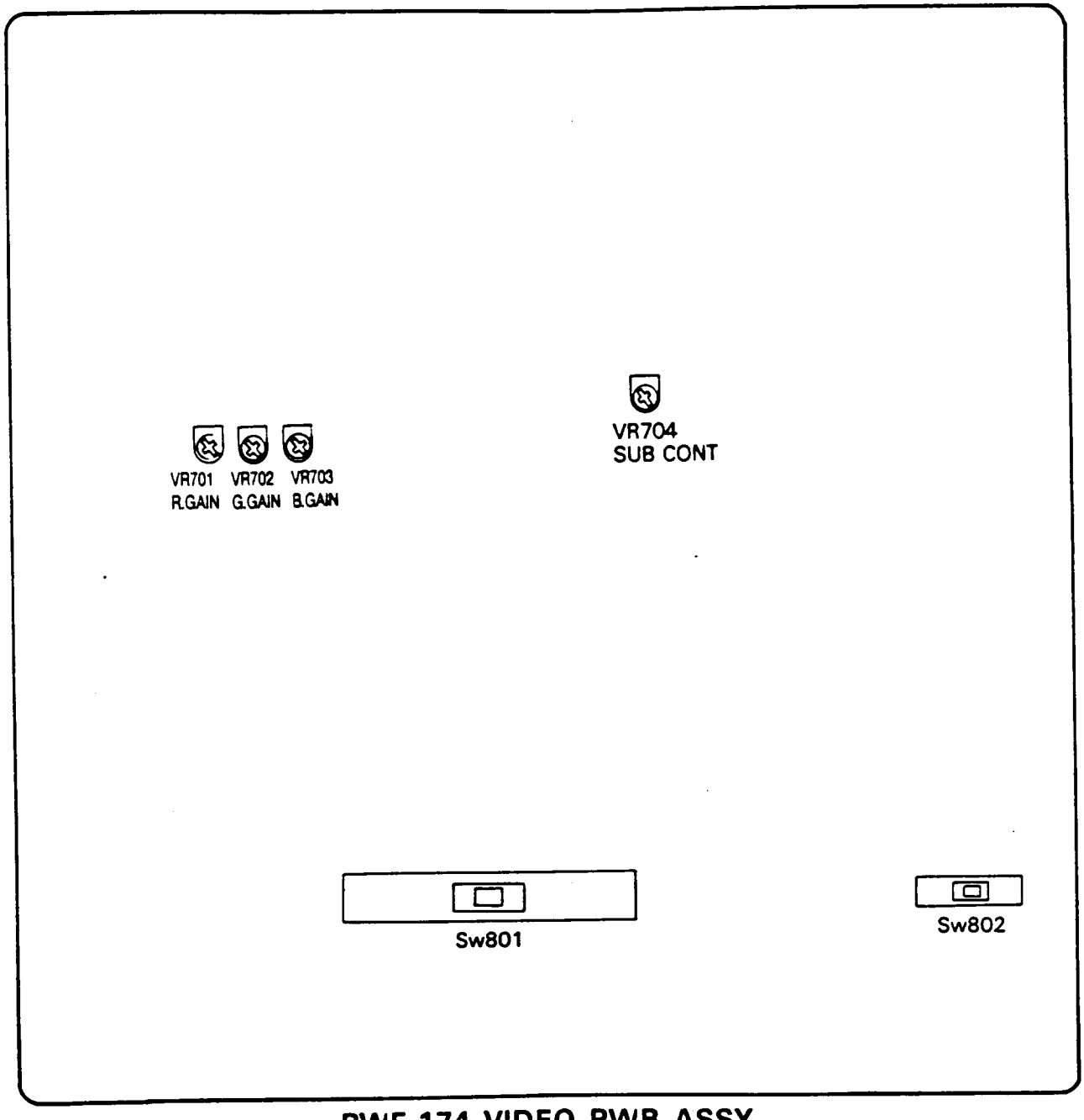
PWE-173C
CONTROL PWB ASSY



PWE-173B
CONTROL PWB ASSY



PWE-173A DEF PWB ASSY



PWE-174 VIDEO PWB ASSY

ALIGNMENT PROCEDURE

Adjustment conditions and Precautions

1. Power supply voltage: AC220–240V, 50/60Hz
2. Warm up time
   The display must be on for at least 20 minutes before starting alignments.
   This is especially critical in color temperature and white balance adjustments.
3. Signals
   Video: Analog 0.7 Vp-p, 75Ω, positive
   analog sync. on green
   video: 0.7 Vp-p
   synchronizing: 0.3 Vp-p
   Synchronizing: TTL level negative/positive
   separate/composite
   Scanning Frequency: H 21.8 kHz ~ 50 kHz
   V 56 Hz ~ 80 Hz
   Unless otherwise specified, adjust at signal (48.5 kHz).
   Unless otherwise specified, input at D-sub 9 Pin.
   Unless otherwise specified, adjust at separate sync.

1. SW. REG. UNIT

1-1. $+B_1$ (VR651) +85V LINE (K1 – Gnd Voltage)
Adjust VR651 to be 85 VDC

1-2. $+B_H$ (VR652) High Voltage control
This control is permanently sealed at factory.
Do not attempt to readjust.

1-3. $+B_{LIM}$ (VR653) V. limit (C1 – Gnd Voltage)
Remove C-connector.
Adjust VR653 to be 122 VDC.

Note: Do not operate the SW. Reg. unit itself without any load.

2. Main Adjustments

2-1) Settings of the Controls

VR2 Contrast: Max.
VR1 Brightness: Position where the back rasters are latent.
VR3 V. size: Center click position
VR4 H. size: Center click position
VR5 V. posi.: Center
VR6 H. posi.: Center click position

VR508 H.V. ADJ: Position where the high-voltage protector does not operate.
SW3 TEXT: OFF
SW2 BNC ⟷ D-sub: D-sub
SW802 MANUAL: OFF
SW801 ANALOG/TTL: ANALOG

2-2) Adjustment of Raster Centering

Adjust the Screen VR and Brightness VR so that the back rasters are faintly illuminated, then connect the "CT" connector to the position that enables the back rasters to be centered on the CRT screen.

CT1: No correction
CT2: Little correction
CT3: Much correction

* By changing the orientation in which the connector is inserted, the displacement direction of the screen can be changed from side to side.

2-3) Adjustment of Horizontal Oscillation, Hozitontal Width, Horizontal Linearity, and Side Pincushion
(H. HOLD, H. WIDTH, H. LINEARITY, and SIDE PINCUSHION)

(1) H. HOLD
   a) Create a short-circuit between TP501 and TP502.
   b) During reception of Signal 2 (42 kHz), use H. HOLD 1 VR501 to adjust the image into a single screen.
   c) During reception of Signal 3 (27 kHz), use H. HOLD 2 VR502 to adjust the image into a single screen.

(2) H. WIDTH [Receive Signal 1 (48.5 kHz)]
Perform centering of H. SIZE (VR4), then use SUB H. SIZE (VR510) to adjust H. WIDTH to 350mm.

(3) H. LINEARITY (Signal 1 crosshatch pattern)
Visually check H. LINEARITY, the use L506 to adjust it if necessary. Avoid rotating L506 unless absolutely necessary.

(4) SIDE PINCUSHION [Receive Signal 1 (48.5 kHz) All white pattern]
Use VR470 so that the optimum SIDE PINCUSHION is obtained. When SIDE PINCUSHION is set to its optimum value, the right and left edges of the screen each form a straight line. Because each of the four settings above will affect the other three settings, repeated confirmation is required.

(5) H. POSITION (Centering adjustment of rasters)
   a) During input of Signal 1 (48.5 kHz), use SUB. H. CENTER 1 VR503 to adjust the screen to center.
   b) During input of Signal 4 (31.5 kHz), use SUB. H. CENTER 2 VR504 to adjust the screen to center.
   c) During input of Signal 5 (21.85 kHz), use SUB. H. CENTER 3 VR505 to adjust the screen to center.

During the signal input of steps a), b), and c) above, make sure that the screen is centered.

2-4) Adjustment of Vertical Linearity, Vertical Height, and Vertical Bias (V. LINEARITY, V. SIZE, and V. BIAS)

(1) V. LINEARITY

During reception of the crosshatch pattern of Signal 1 (48.5 kHz, 60 Hz), use VR404 (V. LIN (S)) fully to the right.

(A) Top/Bottom Adjustment

Adjust VR403 (V. LIN (C)) so that the top and bottom linearity is equal.

(B) Top/Center/Bottom Adjustment

a) If the center is elongated, rotate VR404 slightly to the left until the elongation is corrected (but do not rotate it fully to the point where top elongation occurs).

b) Adjust VR403 so that the top and bottom linearity is equal.

(C) Confirmation

a) Repeat steps a) and b) of (B) until the linearity is approximately 6%.

b) Receive Signal 7 (31.5 kHz, 70 Hz, 350 lines), and check that the linearity is within 8%.

(D) Compensation

If the linearity is not within 8%, receive Signal 1.

For top elongation: Rotate VR403 slightly to the right until top elongation is eliminated, then perform (B) and (C).

For bottom elongation: Rotate VR403 slightly to the left until top elongation is eliminated, then perform (B) and (C).

For center elongation: Rotate VR404 slightly to the left until center elongation is corrected, then perform b) and c) of (B).

(E) Confirmation

Based on the reception of Signals 1 and 7, check that the linearity is within 8%.

(2) V. SIZE

Set the MANUAL switch (SW802) to ON, and perform centering of VR3 (V. SIZE).

a) Receive Signal 1 (60 Hz), then use VR440 to adjust Signal 1 to 260mm.

b) Receive Signals 2, 4, and 9, then check that the back rasters are practically filling the screen.

c) Set the MANUAL switch to OFF.
Receive Signal 6 (60 Hz, 480 lines), then use VR441 to adjust Signal 6 to 240mm.

d) Receive Signal 4, and check that it is 220mm ± 7mm.
Receive Signal 7, and check that it is 230mm ± 7mm.
Receive Signal 8, and check that it is 250mm ± 7mm.

*When receiving Signal 8, be sure to set V. MODE to LOW.

(3) V. BIAS

Receive Signal 1, then use VR402 (V. BIAS) to adjust Signal 1 to 13.5V ± 0.2V.
The measurement point is the VDY 3 terminal of the deflection yoke (the terminal connected to the yellow lead wire of the deflection yoke).
Set V. POSITION (VR5) to the position where the screen is centered.
Set V. SIZE (VR3) to the center position.

2-5) Adjustment of Video Amplitude and White Balance

NOTE: Before performing this adjustment, make sure that the VIDEO signal is as follows:
VIDEO signal: Analog 0.7 Vp-p

(1) Default Settings of the Adjustment VRs

VR701 ~ VR703	GAIN VR	Fully left
VR704	SUB CONT VR	Fully right
VR901 ~ VR903	BIAS VR	Fully left
VR904 ~ VR906	SUB BRIGHT VR	Fully right
VR907	SUB BIAS VR	Fully right
Screen VR		Fully left

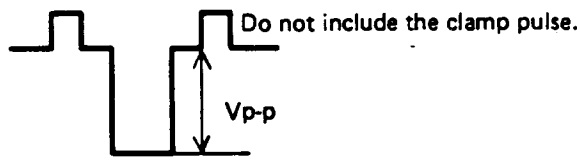
(2) Video Contrast Adjustment

2-1) GAIN VR Adjustment: Signal 10 (Window white signal)

a) Receive the window pattern of Signal 10. (A video range of 1/3 ~ 1/2 H x 1/2V within the range where the ABL circuit is not applied despite maximum Contrast is desirable.)

b) Rotate the Contrast VR fully to the right.
Rotate the Brightness VR fully to the left.

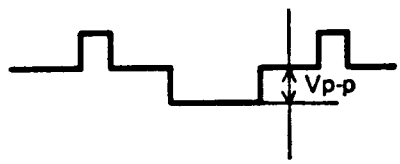
c) Adjust VR701, VR702, and VR703 so that the R OUT, G OUT, and B OUT terminals on the VIDEO PWB are each set to 45 Vp-p. After adjustment, confirm the Vp-p value of each terminal and perform readjustment if necessary.



2-2) SUB CONT VR Adjustment

a) Rotate the Contrast VR fully to the left.
Rotate the Brightness VR fully to the left.

b) Adjust VR704 so that G OUT on the VIDEO PWB becomes 10 Vp-p. After adjustment, confirm that both R OUT and B OUT are within the range of 10 Vp-p ± 0.5 Vp-p.



If the R, B OUT is not within the limits mentioned above, adjust finely VR704 so the R, G, B OUT is within 10 Vp-p ±0.5 Vp-p.

(3) Cutoff Adjustment (All-black signal)

Rotate the Contrast VR fully to the left.

a) Perform the two steps below in the (1) → (2) sequence.
(1) Create a short-circuit between TP901 and TP902.
(2) Create a short-circuit between TP401 and TP402.

b) Turn the Screen Control clockwise gradually and set to the position at which a single horizontal color appears faintly.
Use this color as the reference color for the cutoff adjustment.

c) Turn the Bias Controls for a color other than the reference color clockwise until it is as bright as the reference color.

d) Sequentially cancel the short-circuit created between TP401 and TP402 and between TP901 and TP902.

NOTE: The darker the environment where cutoff adjustment is performed, the better white tracking can be achieved later. Be sure to perform cutoff adjustment in as dark a place as possible.

(4) Adjustment of SUB. BRIGHT VR

a) Receive Signal 1 (48.5 kHz) H gray scale (16 gradations).

b) Rotate the Contrast VR fully to the right.
Rotate the Brightness VR fully to the left.

c) Use the SUB. BRIGHT VR (VR905) to adjust the 4/16th grade so that it is faintly illuminated.
After this step, do not change the setting of VR905.

d) Rotate the Contrast VR fully to the left.
Rotate the Brightness VR fully to the right.

e) Receive all-black signals.

f) Rotate VR904 and VR906 to adjust the back rasters until they are all white.

(5) Fine Adjustment of White Balance

Color temperature: Center X = 0.260
Y = 0.275

Hue: A slightly bluish white.

a) Receive Signal 1 (48.5 kHz) H gray scale (16 gradations). (the window pattern should be in the range where the ABL circuit is not applied.)

b) Rotate the Contrast VR fully to the left.
Rotate the Brightness VR fully to the right.
Check that the white balance is satisfactory at each gradation. If the white balance is not satisfactory, perform fine adjustment of the SUB. BRIGHT VRs (VR904 and VR906).
NOTE: Do not change the setting of VR905 (GSUB. BRIGHT).

c) Rotate the Contrast VR fully to the right.
Rotate the Brightness VR to the position where no back rasters appear.
Check that the white balance is satisfactory at each gradation. If the white balance is not satisfactory, perform fine adjustment of the GAIN VRs (VR701 and VR703).
NOTE: Do not change the setting of VR702 (G GAIN).
If the back rasters and the white balance at each gradation are not satisfactory, perform fine adjustment of the SUB. BRIGHT VRs (VR904 and VR906).
NOTE: Do not change the setting of VR905 (G SUB. BRIGHT).

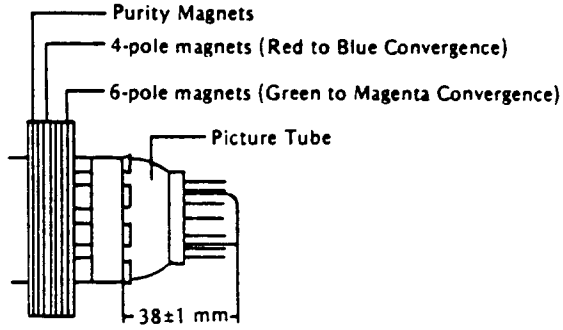
(6) Focus Adjustment: Use Signal 1
[All-white signals or those with four dots missing]

a) Rotate the Contrast VR fully to the right.
Rotate the Brightness VR to an appropriate position.

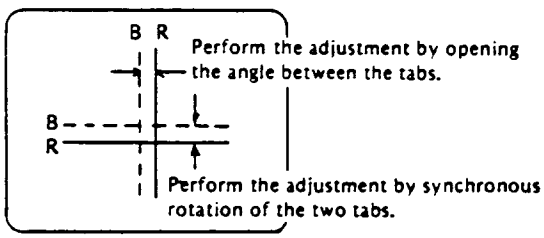
b) If the focus is markedly weak and if the moire effect appears, rotate the SUB BIAS VR (VR907) fully to the left and perform readjustment of (3), (4), and (5).
NOTE: After turning VR907 fully to the left and performing readjustment, confirm the following:
All-white signals of Signal 1 (48.5 kHz) are being received.
Brightness VR: Rotated fully to the left (MIN)
Contrast VR: Rotated fully to the right (MAX)
Confirm that the entire screen is free from any distortion.

(7) Purity Adjustment

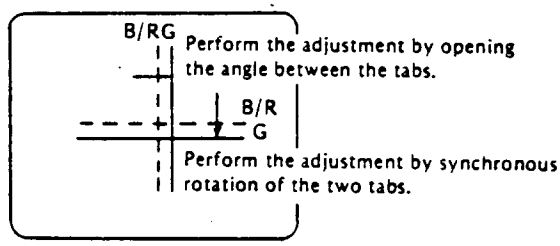
1) Be sure that the display is not being exposed to any external magnetic fields.
2) Ensure that the spacing between the Purity, Convergence Magnet, (PCM), assembly and the CRT stem is 38 mm±1 mm. (See below diagram)
3) Produce a complete, red pattern on the display. Adjust the Purity magnet rings on the PCM assembly to obtain a complete field of the color red. This is done by moving the two tabs in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180°
4) Check the complete blue and complete green patterns to observe their respective color purity. Make minor adjustments if needed.



Purity, Convergence Magnet Assembly (PCM)



Red to Blue Convergence
(Magenta)



Green to Magenta Convergence
(White)

(8) Convergence Adjustment

1) Produce a magenta crosshatch on the display.
2) Adjust the focus for the best overall focus on the display.
   Also adjust the brightness to the desired condition.
3) Vertical red and blue lines are converged by varying the angle between the two tabs of the 4-pole magnets on the PCM assembly. (See above diagrams)
4) Horizontal red and blue lines are converged by varying the two tabs together, keeping the angle between them constant.
5) Produce a white crosshatch pattern on the display.
6) Vertical green and magenta lines are converged by varying the angle between the two tabs of the 6-pole magnets.
7) Horizontal green and magenta lines are converged by varying the two tabs together, keeping the angle between them constant.

TIMING OF REFERENCE SIGNALS

①	LVG-1600 ②	LVG-1600 ③	④	⑤	DATA Signal 1 48.5 kHz						DATA Signal 2 42 kHz					
0	CLOCK	DOT CLOCK FREQUENCY	0	MHz	4	0.	0	0	0	F	3	4.	4	4	0	F
1	H FREQ	HORIZONTAL FREQUENCY	1	KHz	4	8.	4	8	5	F	4	2.	0	0	0	F
2	V FREQ	VERTICAL FREQUENCY	2	Hz	6	0.	0	0	6	F	8	0.	0	0	0	F
3	CH	CHARACTOR CELL SIZE	3	DOT	/	/	H 0	5	V 0	8	/	/	H 1	0	V 0	9
4	Nht	4	4	CHR	/	/	F	1	6	5	/	/	F	0	8	2
5	Nht	5	5	CHR	/	/	F	1	2	8	/	/	F	0	6	4
6	Nhsp	6	6	CHR	/	/	F	1	3	4	/	/	F	0	7	3
7	Vpw-Hpw	7	7	V (LASTER) H (CHR)	/	/	V 0	4	H 0	4	/	/	V 0	2	H 0	3
8	Nadj	8	8	H (LASTER)	/	/	/	/	0	0	/	/	/	/	0	3
9	Nvt	9	9	LINE	/	/	F	1	0	1	/	/	F	0	5	8
10	Nvd	10	10	LINE	/	/	F	0	9	6	/	/	F	0	5	5
11	Nvsp	11	11	LINE	/	/	F	0	9	6	/	/	F	0	5	5
12	Nvsadj	12	12	H (LASTER)	/	/	/	/	0	4	/	/	/	/	0	0
13	INT	13	13		/	/	/	/	0	0	/	/	/	/	0	0
14	OUT	14	0 Sync NEGA / 1 POS; Hsync / H/Vsync; Sync OFF / Sync ON; TTL / ANA; RZ / NRZ		F	0	1	0	1	1	F	0	1	1	1	1

TIMING OF REFERENCE SIGNALS

①	LVG-1600 ②	LVG-1600 ③	④	⑤	DATA Signal 3 27 kHz	DATA Signal 4 PS-II MODE 2
0	CLOCK	DOT CLOCK FREQUENCY	0	MHz	2 2. 1 4 0 F	2 8. 6 1 0 F
1	H FREQ	HORIZONTAL FREQUENCY	1	KHz	2 7. 0 0 0 F	3 1. 4 7 4 F
2	V FREQ	VERTICAL FREQUENCY	2	Hz	7 5. 0 0 0 F	7 0. 0 9 5 F
3	CH	CHARACTOR CELL SIZE	3	DOT	/ / H 1 0 V 0 9	/ / H 0 9 V 1 0
4	Nht	4	4	CHR	/ / F 0 8 2	/ / F 1 0 1
5	Nht	5	5	CHR	/ / F 0 6 4	/ / F 0 8 0
6	Nhsp	6	6	CHR	/ / F 0 6 7	/ / F 0 8 3
7	Vpw-Hpw	7	7	V (LASTER) H (CHR)	/ / V 0 5 H 1 1	/ / V 0 2 H 1 2
8	Nadj	8	8	H (LASTER)	/ / / / 0 0	/ / / / 0 9
9	Nvt	9	9	LINE	/ / F 0 4 0	/ / F 0 4 4
10	Nvd	10	10	LINE	/ / F 0 3 2	/ / F 0 4 0
11	Nvsp	11	11	LINE	/ / F 0 3 7	0 0 F 0 4 1
12	Nvsadj	12	12	H (LASTER)	/ / / / 0 8	/ / / / 0 3
13	INT	13	13		/ / / / 0 0	/ / / / 0 0
14	OUT	14	0 Sync NEGA Hsync Sync OFF TTL RZ 1 POS H/Vsync Sync ON ANA NRZ		F 0 1 1 1 1	F 1 0 0 1 1

TIMING OF REFERENCE SIGNALS

①	LVG-1600 ②	LVG-1600 ③	④	⑤	DATA Signal 5 EGA						DATA Signal 6 PS-II MODE 17					
0	CLOCK	DOT CLOCK FREQUENCY	0	MHz	1	6.	3	7	0	F	2	5.	4	3	0	F
1	H FREQ	HORIZONTAL FREQUENCY	1	KHz	2	2.	0	0	3	F	3	1.	4	7	3	F
2	V FREQ	VERTICAL FREQUENCY	2	Hz	5	9.	9	5	3	F	5	9.	9	4	8	F
3	CH	CHARACTOR CELL SIZE	3	DOT	/	/	H 0	8	V 1	0	/	/	H 0	8	V 1	0
4	Nht	4	4	CHR	/	/	F	0	9	3	/	/	F	1	0	1
5	Nht	5	5	CHR	/	/	F	0	8	0	/	/	F	0	8	0
6	Nhsp	6	6	CHR	/	/	F	0	8	0	/	/	F	0	8	3
7	Vpw-Hpw	7	7	V (LASTER) H (CHR)	/	/	V 1	3	H 1	0	/	/	V 0	2	H 1	2
8	Nadj	8	8	H (LASTER)	/	/	/	/	0	6	/	/	/	/	0	5
9	Nvt	9	9	LINE	/	/	F	0	3	6	/	/	F	0	5	2
10	Nvd	10	10	LINE	/	/	F	0	3	5	/	/	F	0	4	8
11	Nvsp	11	11	LINE	/	/	F	0	3	5	/	/	F	0	4	9
12	Nvsadj	12	12	H (LASTER)	/	/	/	/	0	1	/	/	/	/	0	1
13	INT	13	13		/	/	/	/	0	0	/	/	/	/	0	0
14	OUT	14	0 Sync NEGA / 1 POS; Hsync / H/Vsync; Sync OFF / Sync ON; TTL / ANA; RZ / NRZ		F	1	0	0	0	1	F	0	0	0	1	0

TIMING OF REFERENCE SIGNALS

①	LVG-1600 ②	LVG-1600 ③	④	⑤	DATA Signal 7 PS-II MODE 15						DATA Signal 8 PGA 400					
0	CLOCK	DOT CLOCK FREQUENCY	0	MHz	2	5.	4	3	0	F	2	5.	1	1	0	F
1	H FREQ	HORIZONTAL FREQUENCY	1	KHz	3	1.	4	7	3	F	3	0.	4	7	3	F
2	V FREQ	VERTICAL FREQUENCY	2	Hz	7	0.	0	9	5	F	5	9.	9	8	7	F
3	CH	CHARACTOR CELL SIZE	3	DOT	/	/	H 0	8	V 1	0	/	/	H 0	8	V 1	0
4	Nht	4	4	CHR	/	/	F	1	0	1	/	/	F	1	0	3
5	Nht	5	5	CHR	/	/	F	0	8	0	/	/	F	0	8	0
6	Nhsp	6	6	CHR	/	/	F	0	8	3	/	/	F	0	8	0
7	Vpw-Hpw	7	7	V (LASTER) H (CHR)	/	/	V 0	2	H 1	2	/	/	V 0	2	H 1	4
8	Nadj	8	8	H (LASTER)	/	/	/	/	0	9	/	/	/	/	0	8
9	Nvt	9	9	LINE	/	/	F	0	4	4	/	/	F	0	5	0
10	Nvd	10	10	LINE	/	/	F	0	3	5	/	/	F	0	4	0
11	Nvsp	11	11	LINE	/	/	F	0	4	3	/	/	F	0	4	4
12	Nvsadj	12	12	H (LASTER)	/	/	/	/	0	1	/	/	/	/	0	1
13	INT	13	13		/	/	/	/	0	0	/	/	/	/	0	0
14	OUT	14	0: Sync NEGA / Hsync / Sync OFF / TTL / RZ 1: POS / H/Vsync / Sync ON / ANA / NRZ		F	0	0	0	1	1	F	1	1	0	1	1

TIMING OF REFERENCE SIGNALS

①	LVG-1600 ②	LVG-1600 ③	④	⑤	DATA Signal 9 350 Lines 50 Hz						DATA Signal 10 48.5 kHz WINDOW					
0	CLOCK	DOT CLOCK FREQUENCY	0	MHz	2	5.	4	3	0	F	4	0.	0	0	0	F
1	H FREQ	HORIZONTAL FREQUENCY	1	KHz	3	1.	4	7	3	F	4	8.	4	8	5	F
2	V FREQ	VERTICAL FREQUENCY	2	Hz	5	0.	0	3	7	F	6	0.	0	0	6	F
3	CH	CHARACTOR CELL SIZE	3	DOT	/	/	H 0	8	V 1	0	/	/	H 0	5	V 0	8
4	Nht	4	4	CHR	/	/	F	1	0	1	/	/	F	1	6	5
5	Nht	5	5	CHR	/	/	F	0	8	0	/	/	F	0	4	7
6	Nhsp	6	6	CHR	/	/	F	0	8	3	/	/	F	1	0	2
7	Vpw-Hpw	7	7	V (LASTER) H (CHR)	/	/	V 0	2	H 1	2	/	/	V 0	4	H 0	4
8	Nadj	8	8	H (LASTER)	/	/	/	/	0	9	/	/	/	/	0	0
9	Nvt	9	9	LINE	/	/	F	0	6	2	/	/	F	1	0	1
10	Nvd	10	10	LINE	/	/	F	0	3	6	/	/	F	0	3	0
11	Nvsp	11	11	LINE	/	/	F	0	4	8	/	/	F	0	6	0
12	Nvsadj	12	12	H (LASTER)	/	/	/	/	0	3	/	/	/	/	0	1
13	INT	13	13		/	/	/	/	0	0	/	/	/	/	0	0
14	OUT	14	0 Sync NEGA / 1 POS; Hsync / H/Vsync; Sync OFF / Sync ON; TTL / ANA; RZ / NRZ		F	1	0	0	1	1	F	0	1	0	1	1

TIMING OF REFERENCE SIGNALS

①	LVG-1600 ②	LVG-1600 ③	④	⑤	DATA Signal 11 PGA 480						DATA Signal 12 60 Hz, 40 kHz					
0	CLOCK	DOT CLOCK FREQUENCY	0	MHz	2	5.	1	1	0	F	1	6.	3	7	0	F
1	H FREQ	HORIZONTAL FREQUENCY	1	KHz	3	0.	4	7	3	F	2	2.	0	0	3	F
2	V FREQ	VERTICAL FREQUENCY	2	Hz	5	9.	9	8	7	F	5	9.	9	5	3	F
3	CH	CHARACTOR CELL SIZE	3	DOT	/	/	H 0	8	V 1	0	/	/	H 0	8	V 1	0
4	Nht	4	4	CHR	/	/	F	1	0	3	/	/	F	0	9	3
5	Nht	5	5	CHR	/	/	F	0	8	0	/	/	F	0	8	0
6	Nhsp	6	6	CHR	/	/	F	0	8	0	/	/	F	0	8	0
7	Vpw-Hpw	7	7	V (LASTER) H (CHR)	/	/	V 0	2	H 1	4	/	/	V 1	1	H 1	0
8	Nadj	8	8	H (LASTER)	/	/	/	/	0	8	/	/	/	/	0	6
9	Nvt	9	9	LINE	/	/	F	0	5	0	/	/	F	0	3	6
10	Nvd	10	10	LINE	/	/	F	0	4	8	/	/	F	0	3	5
11	Nvsp	11	11	LINE	/	/	F	0	4	8	/	/	F	0	3	5
12	Nvsadj	12	12	H (LASTER)	/	/	/	/	0	1	/	/	/	/	0	3
13	INT	13	13		/	/	/	/	0	0	/	/	/	/	0	0
14	OUT	14	0 Sync NEGA / 1 POS; Hsync / H/Vsync; Sync OFF / Sync ON; TTL / ANA; RZ / NRZ		F	1	1	0	1	1	F	0	0	0	1	0

① Indication address ② Abbreviation ③ Description ④ Contents ⑤ Unit

Description of each address

add.	Description	Condition
0	Total dots	05.000 ~ 40.000 MHz, 5- or 6-digit
1	Horizontal Frequency	Reference data, 5-digit
2	Vertical Frequency	Reference data, 5-digit
3	Character cell SIZE	(H direction) x (V direction), 02 to 16 01 to 32 each 2-digit
4	Total number of characters, horizontal	255 characters or less, 3-digit
5	Number of indication characters, horizontal	N_{ht} or less, 3-digit
6	Horizontal synchronization position	N_{ht} or less, 3-digit
7	Vertical/horizontal pulse width	V: 1 to 16 H/H:1 to 15 chr.
8	Total raster adjustment	31 H or less
9	Total number of characters, vertical	127 rows or less, 3-digit
10	Number of indication characters, vertical	N_{vt} or less
11	Vertical synchronization position	N_{vt} or less
12	Vertical indication position correction	0 ~ 16 H (Synchronization position moves in the form of $N_{vsp} + N_{vsadj}$)
13	Interlace select	00: non-interlace 02: interlace + video 01: interlace
14	Output condition setting	

Likewise, when significant data is a single digit, do not forget to enter 0.

DATA FORMAT FOR USING Quantum 801C

TIMING PARAMETERS:

Real Time Parameters		Signal No.	Description
Dot Rate	MHz	1.	H: 48.48 kHz
Horizontal Rate	kHz	2.	H: 42.00 kHz
Vertical Rate	Hz	3.	H: 27.00 kHz
		4.	H: 31.47 kHz V: 70 Hz (400 Lines)
Non-Real Time Parameters		5.	H: 22.00 kHz
Horizontal	Vertical	6.	H: 31.47 kHz V: 60 Hz (480 Lines)
Dots/Character	Lines/Character	7.	H: 31.47 kHz V: 70 Hz (350 Lines)
Total Characters	Total Lines	8.	H: 30.48 kHz (400 Lines)
Displayed Characters	Displayed Rows Lines	9.	H: 31.47 kHz V: 50 Hz (350 Lines)
Drive Delay	Drive Delay (Rows)	10.	H: 48.48 kHz WINDOW PATTERN
Drive Width	Drive Width (Lines)		
	Step Width		

OPTION PARAMETERS

Signal Gating		
Composit Sync.	OP 1.–0=off 1=on	
Vertical Step	OP 2.–0=off 1=on	
Horizontal Drive	OP 3.–0=off 1=on	
Vertical Drive	OP 4.–0=off 1=on	
Signal Polarity		
Composite Sync.	OP 5.–0=non-inverted 1=inverted	
Vertical Step	OP 6.–0=non-inverted 1=inverted	
Horizontal Drive	OP 7.–0=non-inverted 1=inverted	
Vertical Drive	OP 8.–0=non-inverted 1=inverted	
Video	OP 13.–0=non-inverted/positive 1=inverted/positive 2=non-inverted/negative 3=inverted/negative	
Interlace Mode	OP 9.–0=non-interlace 1=interlaced sync only 3=interlaced sync & video	
Video Mode	OP 10.–0=monochrome 1=color	
Duty Cycle	OP 11.–0=50% 1=100% (OP 12.0) 0 or 1=100% (OP 12.2)	
Character Clocking Mode	OP 12.-0=single-phase 2=dual-phase	
Horizontal Skew	OP 14.–skew right 0-3 dots	1=fast blink
Vertical Skew	OP 15.–skew down 0-9 lines	2=slow blink
Cursor	OP 16.–0:off	3=on coutinuous

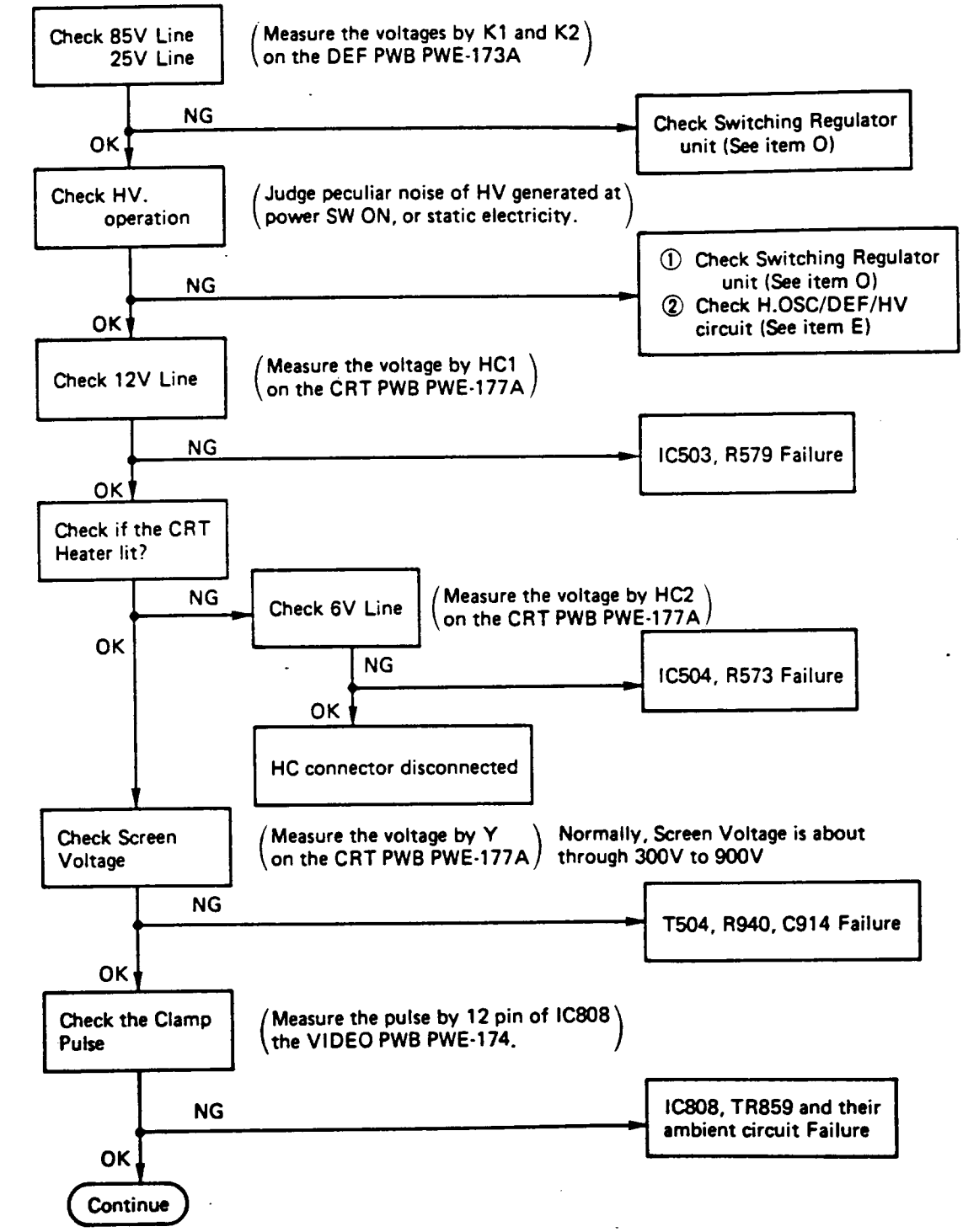
TEST SIGNALS FOR USING Quantum 801C

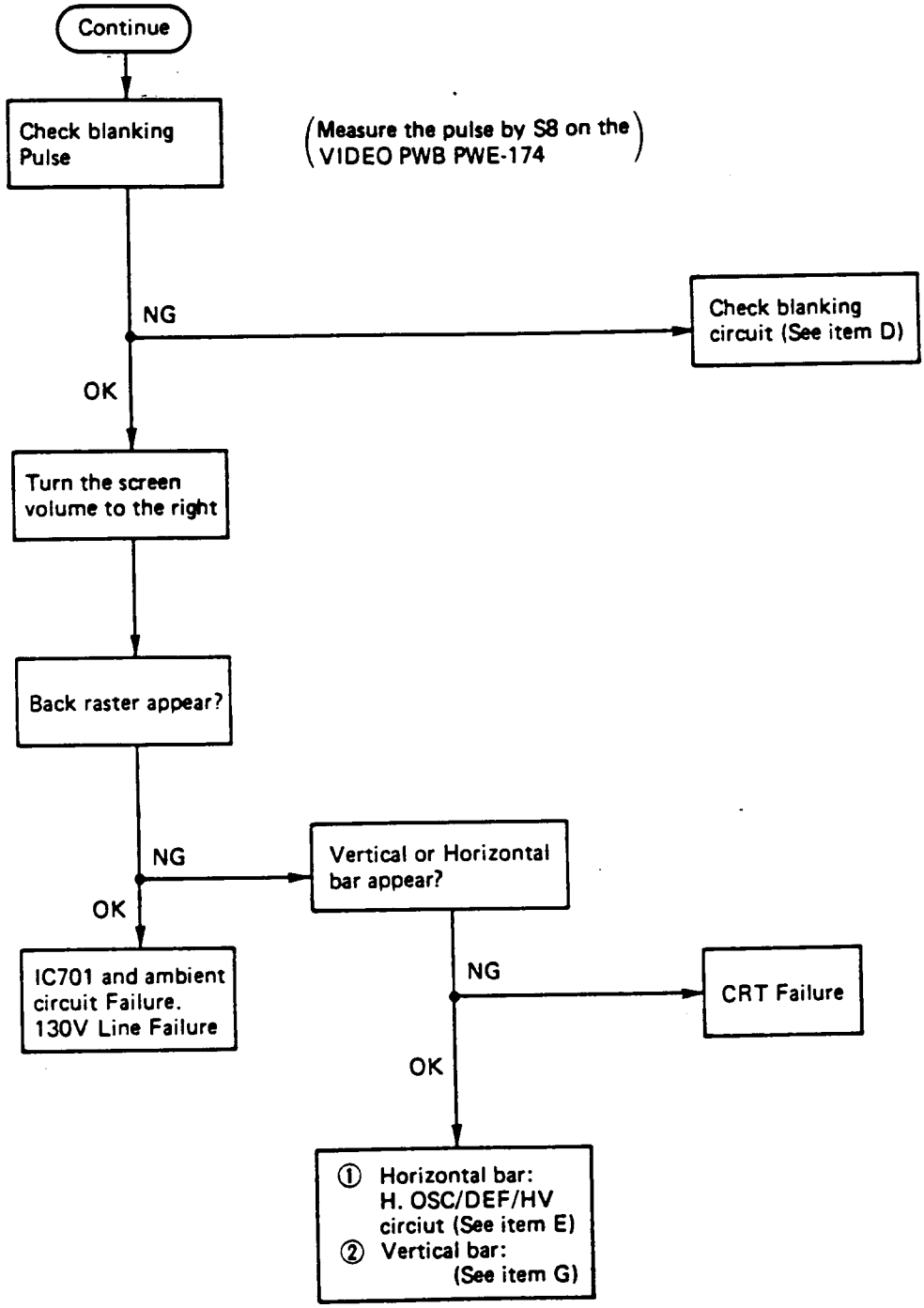
SIGNAL No.		1	2	3	4	5
Real Time Parameters						
Dot Rate (MHz)		25.888	29.400	22.136	25.432	16.368
Horizontal Rate (kHz)		48.479	42.000	26.995	31.475	22.000
Vertical Rate (Hz)		60.00	80.00	74.99	70.10	60.11
Non-Real Time Parameters						
H: Dots/Character		6	10	10	8	8
Total Characters		89	70	82	101	93
Displayed Characters		69	55	64	80	80
Drive Delay		72	62	67	83	80
Drive Width		3	3	11	12	10
V: Lines/Character		12	9	9	10	10
Total Lines		808	525	360	449	366
Displayed Rows		64	55	32	40	35
Drive Delay (Rows)		64	55	37	41	35
Drive Width (Lines)		4	2	8	2	13
Step Width		–	–	–	–	–
Signal Gating						
Composite Sync.	OP 1.-	1	1	1	1	1
Vertical Step	OP 2.-	0	0	0	0	0
Horizontal Drive	OP 3.-	1	1	1	1	1
Vertical Drive	OP 4.-	1	1	1	1	1
Signal Polarity						
Composite Sync.	OP 5.-	1	1	1	1	1
Vertical Step	OP 6.-	–	–	–	–	–
Horizontal Drive	OP 7.-	1	1	1	1	0
Vertical Drive	OP 8.-	1	1	1	0	1
Video	OP 13.-	0	0	0	0	0
Interlace Mode	OP 9.-	0	0	0	0	0
Video Mode	OP 10.-	1	1	1	1	1
Duty Cycle	OP 11.-	0	0	0	0	0
Character Clocking Mode	OP 12.-	0	0	0	0	0
Horizontal Skew	OP 14.-	–	–	–	–	–
Vertical Skew	OP 15.-	–	–	–	–	–
Cursor	OP 16.-	–	–	–	–	–

SIGNAL No.		6	7	8	9	10	
Real Time Parameters							
Dot Rate (MHz)		25.432	25.432	25.112	25.432	25.888	
Horizontal Rate (kHz)		31.475	31.475	30.475	31.475	48.479	
Vertical Rate (Hz)		59.95	70.10	59.99	50.04	60.00	
Non-Real Time Parameters							
H: Dots/Character		8	8	8	8	6	
Total Characters		101	101	103	101	89	
Displayed Characters		80	80	80	80	25	
Drive Delay		83	83	80	83	50	
Drive Width		12	12	14	12	3	
V: Lines/Character		10	10	10	10	8	
Total Lines		525	449	508	629	808	
Displayed Rows		48	35	40	36	30	
Drive Delay (Rows)		49	39	44	48	60	
Drive Width (Lines)		2	2	2	2	4	
Step Width		–	–	–	–	–	
Signal Gating							
Composite Sync.	OP 1.-	1	1	1	1	1	
Vertical Step	OP 2.-	0	0	0	0	0	
Horizontal Drive	OP 3.-	1	1	1	1	1	
Vertical Drive	OP 4.-	1	1	1	1	1	
Signal Polarity							
Composite Sync.	OP 5.-	1	1	1	1	1	
Vertical Step	OP 6.-	–	–	–	–	–	
Horizontal Drive	OP 7.-	1	0	0	0	1	
Vertical Drive	OP 8.-	1	1	0	1	1	
Video	OP 13.-	0	0	0	0	0	
Interlace Mode	OP 9.-	0	0	0	0	0	
Video Mode	OP 10.-	1	1	1	1	1	
Duty Cycle	OP 11.-	0	0	0	0	0	
Character Clocking Mode	OP 12.-	0	0	0	0	0	
Horizontal Skew	OP 14.-	–	–	–	–	–	
Vertical Skew	OP 15.-	–	–	–	–	–	
Cursor	OP 16.-	–	–	–	–	–	

TROUBLE SHOOTING

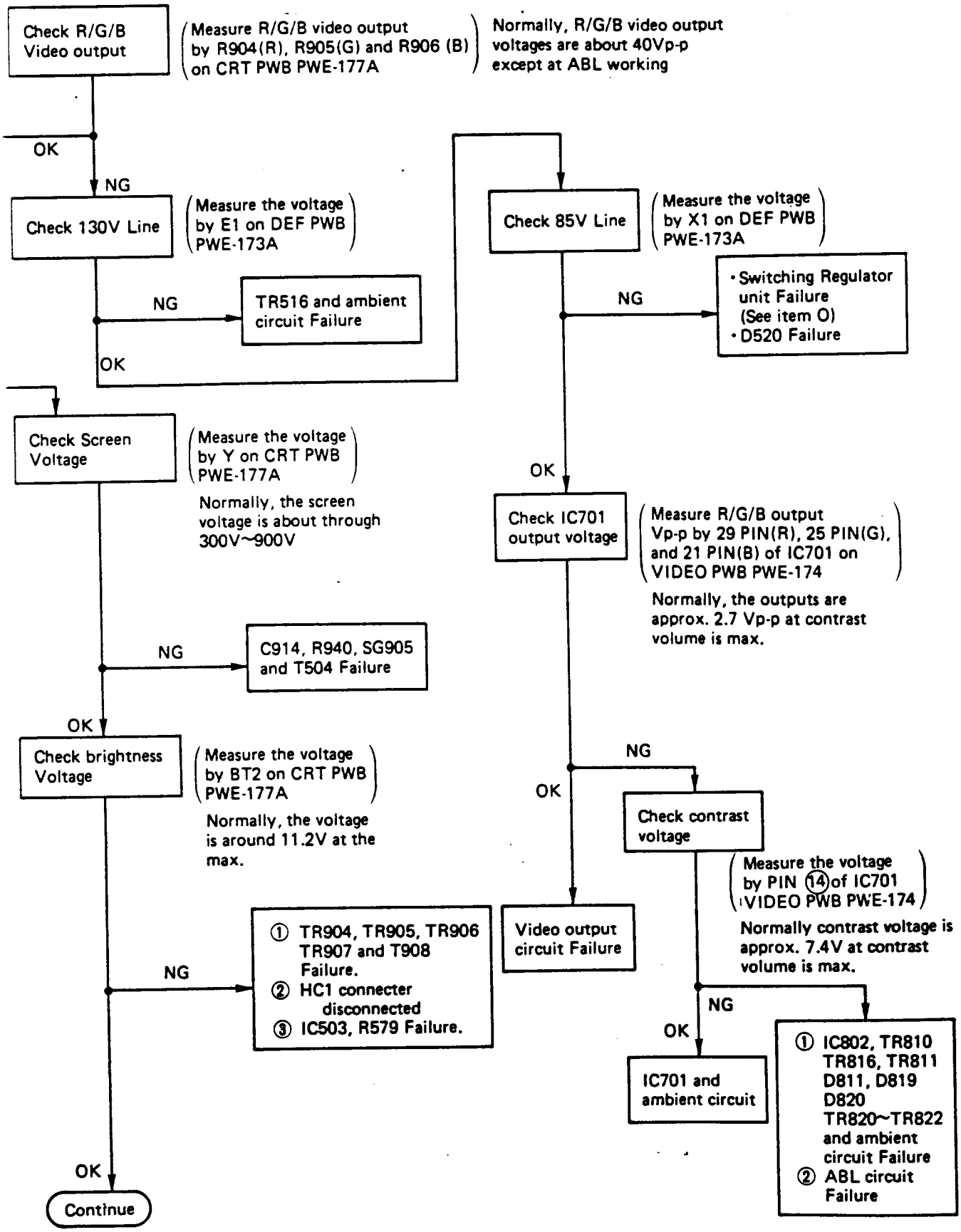
A. No Raster

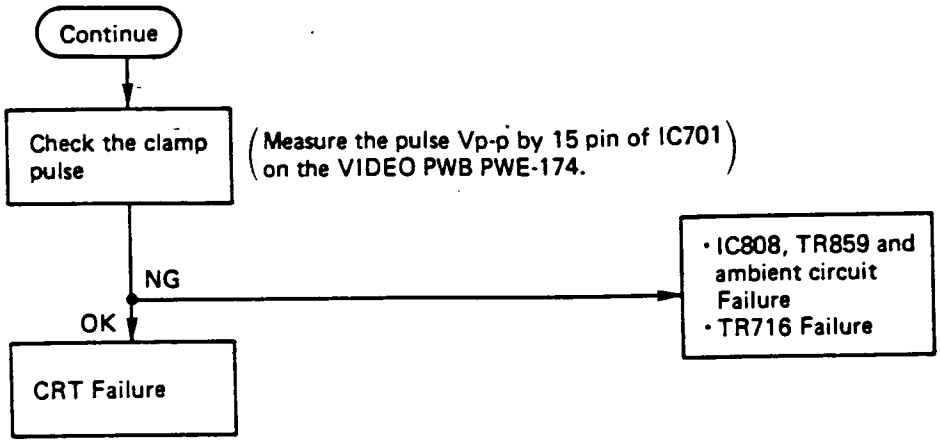



Continue
Check blanking Pulse
(Measure the pulse by S8 on the VIDEO PWB PWE-174)
NG
Check blanking circuit (See item D)
OK
Turn the screen volume to the right
Back raster appear?
NG
Vertical or Horizontal bar appear?
OK
IC701 and ambient circuit Failure. 130V Line Failure
NG
CRT Failure
OK
① Horizontal bar: H. OSC/DEF/HV circiut (See item E)
② Vertical bar: (See item G)

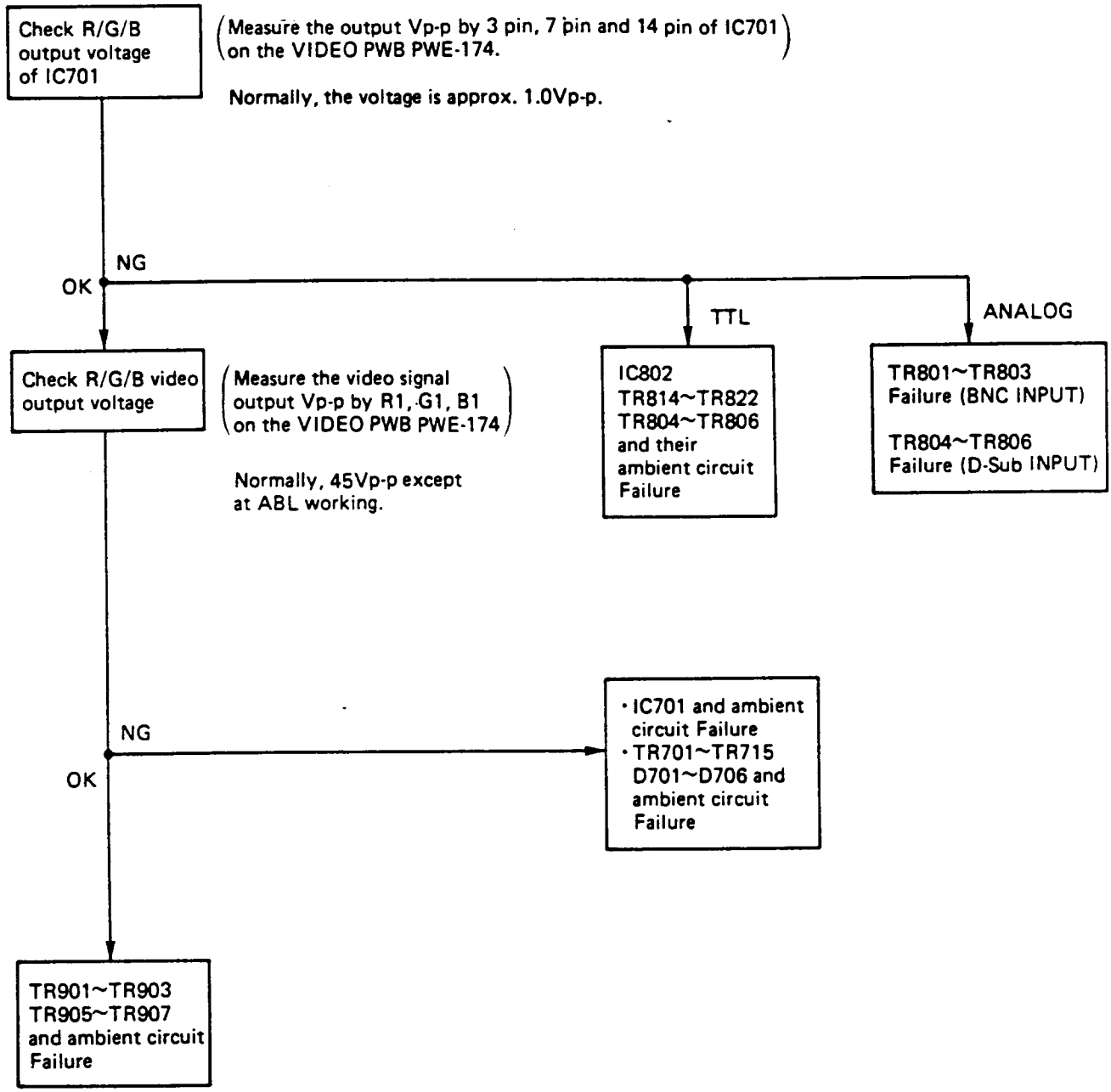
B. Abnormal Video on CRT Screen

Too dark or Too bright

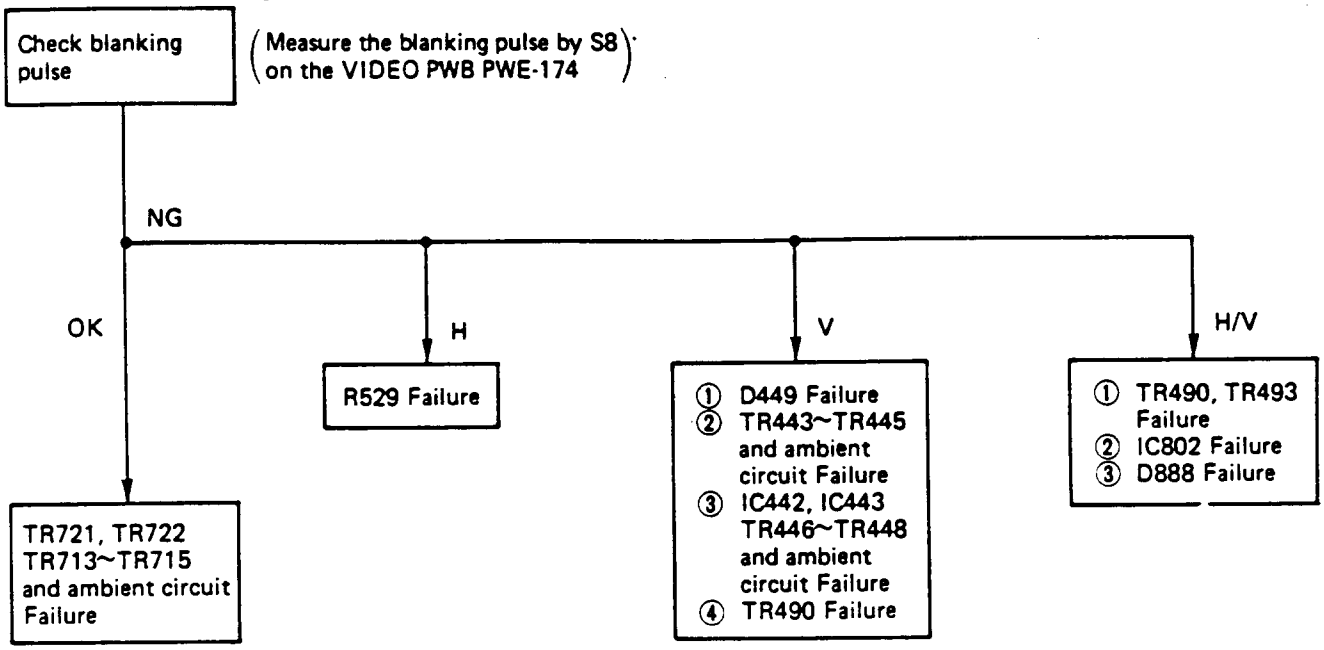



Continue
Check the clamp pulse
(Measure the pulse Vp-p by 15 pin of IC701 on the VIDEO PWB PWE-174.)
NG
OK
• IC808, TR859 and ambient circuit Failure
• TR716 Failure
CRT Failure

C. Abnormal White Balance

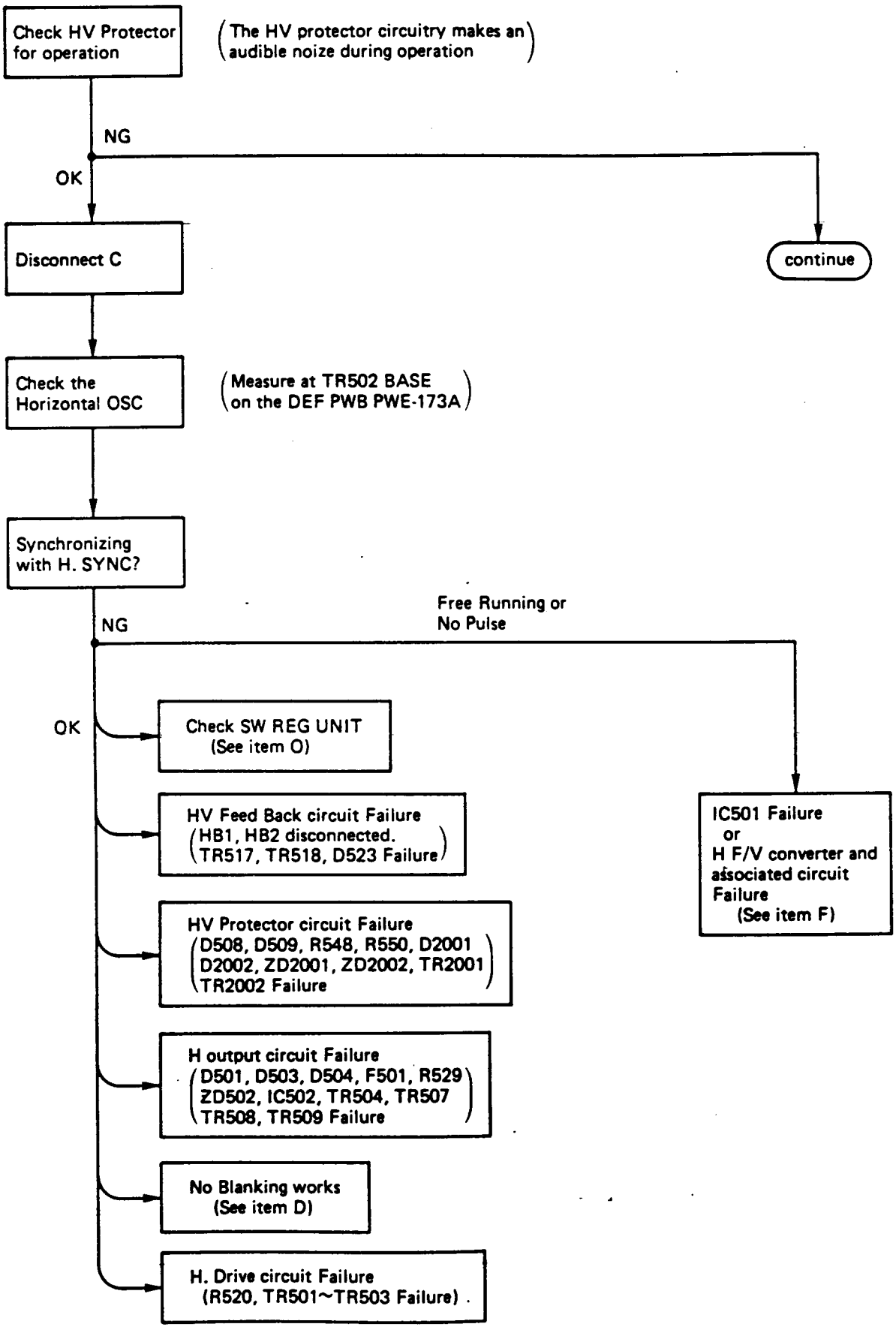


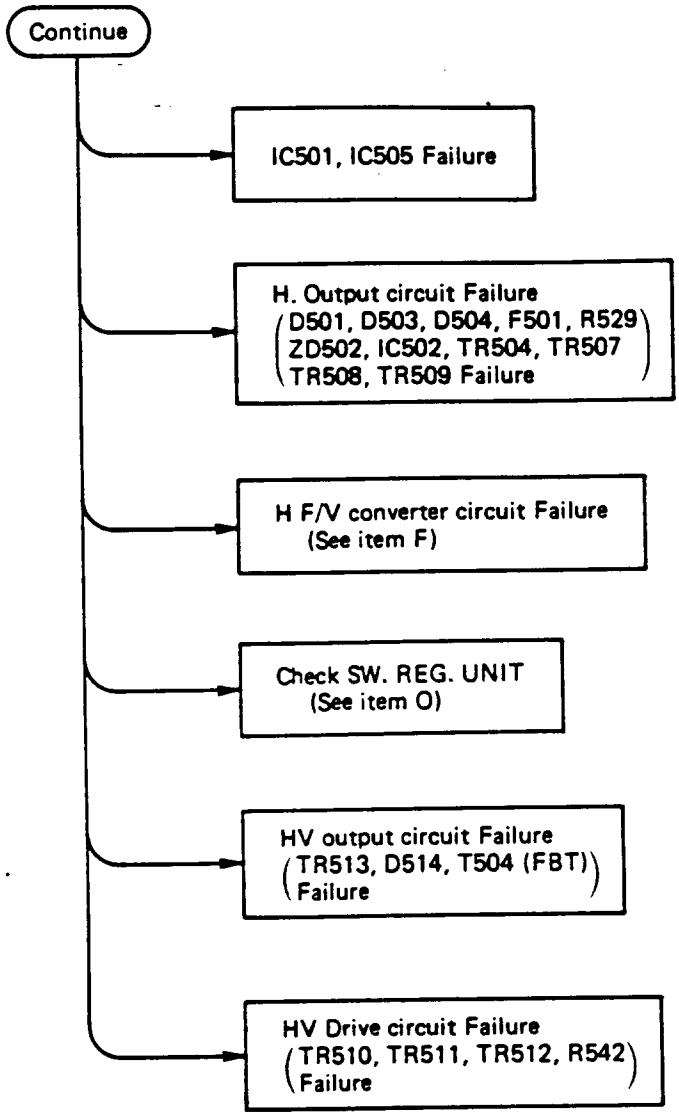
D. No Blanking works



E. H.OSC/DEF/HV Circuit Fault

No Raster
Abnormal Picture Size
Abnormal Picture




Continue
IC501, IC505 Failure
H. Output circuit Failure
(D501, D503, D504, F501, R529
ZD502, IC502, TR504, TR507
TR508, TR509 Failure)
H F/V converter circuit Failure
(See item F)
Check SW. REG. UNIT
(See item O)
HV output circuit Failure
(TR513, D514, T504 (FBT)
Failure)
HV Drive circuit Failure
(TR510, TR511, TR512, R542
Failure)

F. H/V F-V converter and associated circuit

Ⓗ

Check H. SYNC on the DEF PWB PWE-173A Point S4

(Unstable picture
Lack of linearity improvement
HV. protector)

NG → Check sync circuit on the VIDEO PWB PWE-174

OK

Check 2 pin of IC505 voltage

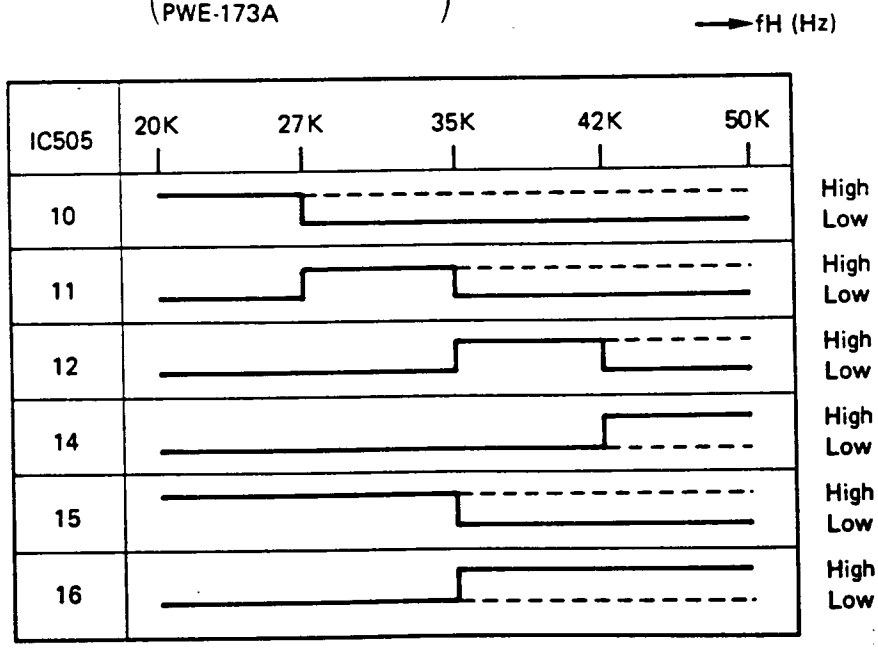
Normally, the 2 pin is approx. 24V

NG → R593 Failure

OK

Check the IC505 output

(Measure on the DEF PWB PWE-173A)



NG → IC505 Failure

OK

Check 17, 18 pin of IC505 voltage

(When 17 pin = 7.7V at 27K
18 pin = 7.9V at 42K)

NG → IC505 Failure

OK

H F/V is OK

Ⓥ

Check V. sync on the DEF PWB PWE-173A Point S3

(Unstable picture
Lack of linearity improvement
Lack of East-West pincushion
Abnormal V Size
No picture)

NG → Check sync circuit on the VIDEO PWB PWE-174

OK

Check 2 pin of IC401 voltage

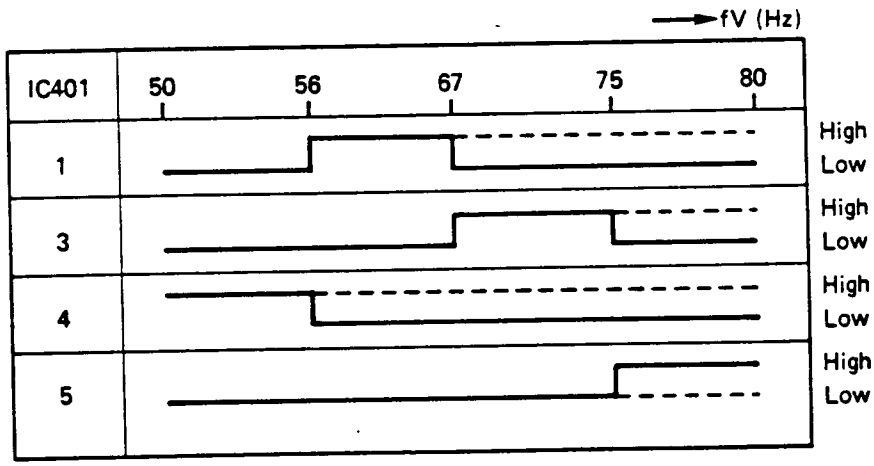
Normally, the 2 pin is approx. 24V

NG → R423 Failure

OK

Check the IC401 output

(Measure on the DEF PWB PWE-173A)



NG → IC401 Failure

OK

Check 8 pin of IC401

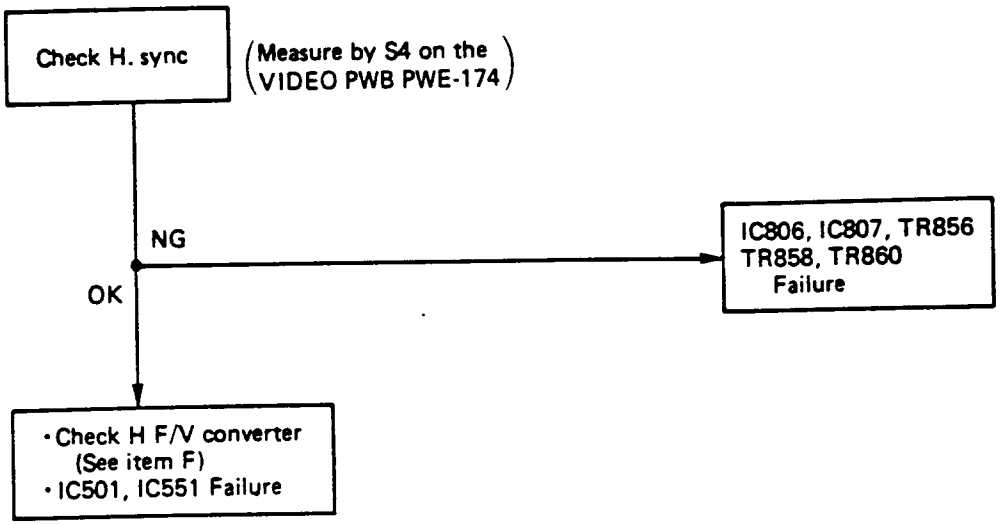
NG → IC401 Failure

OK

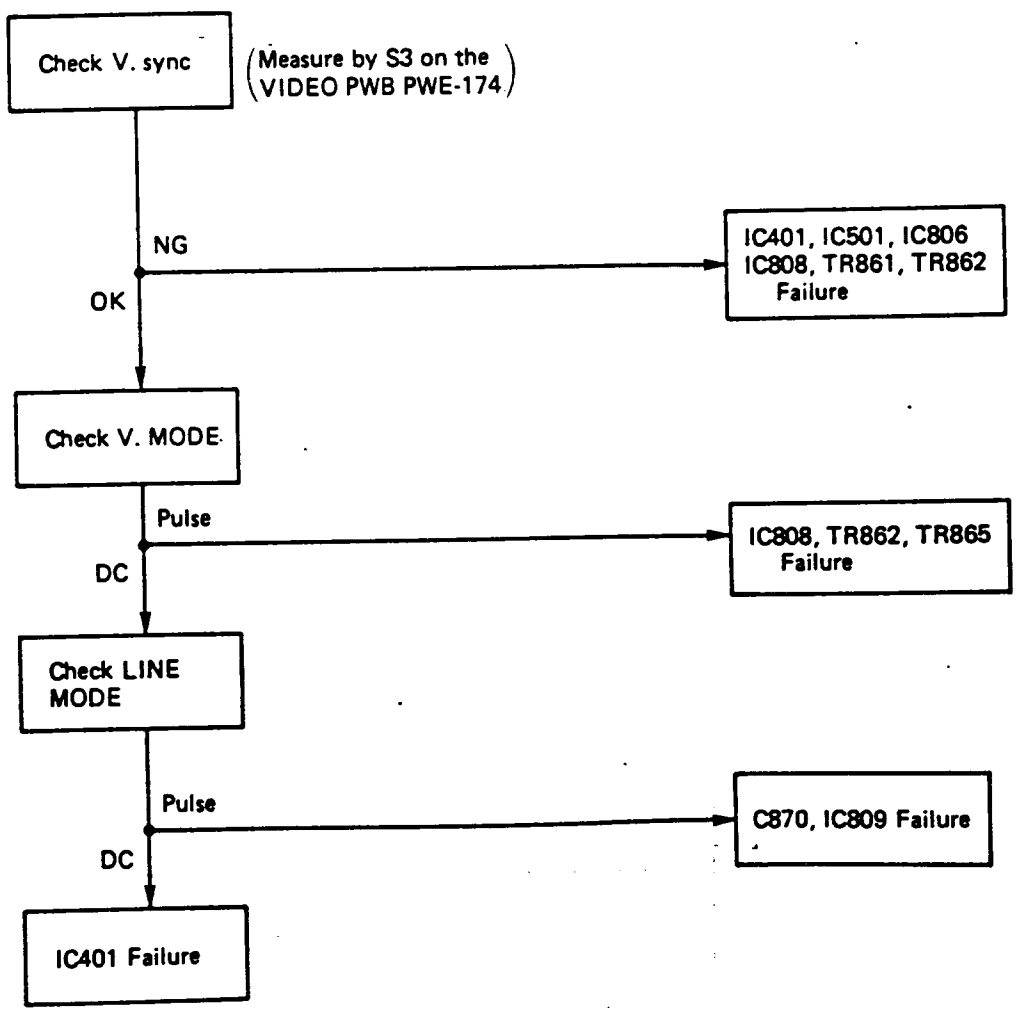
V F/V is OK

G. Unstable Picture

Horizontal

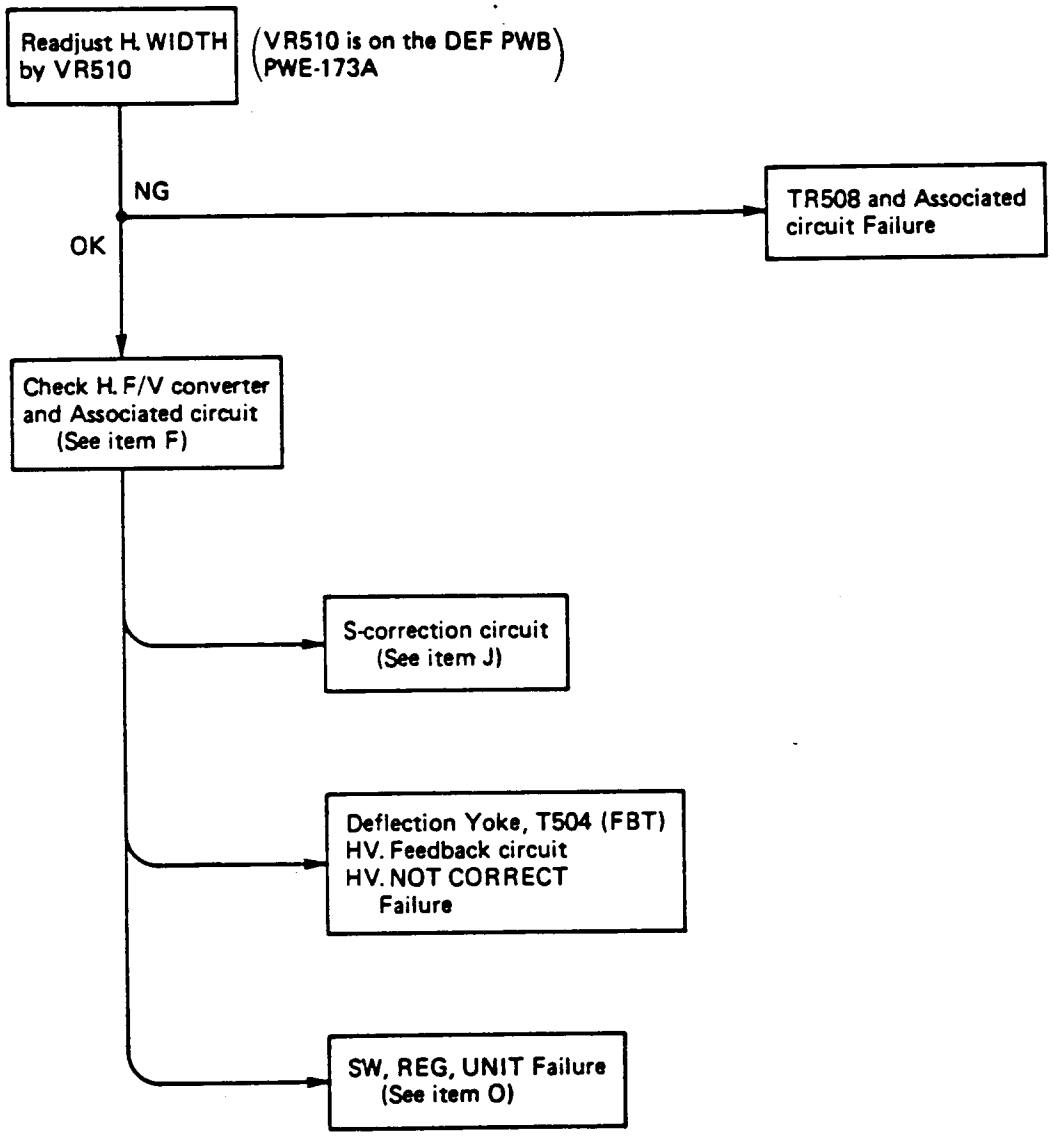


Vertical

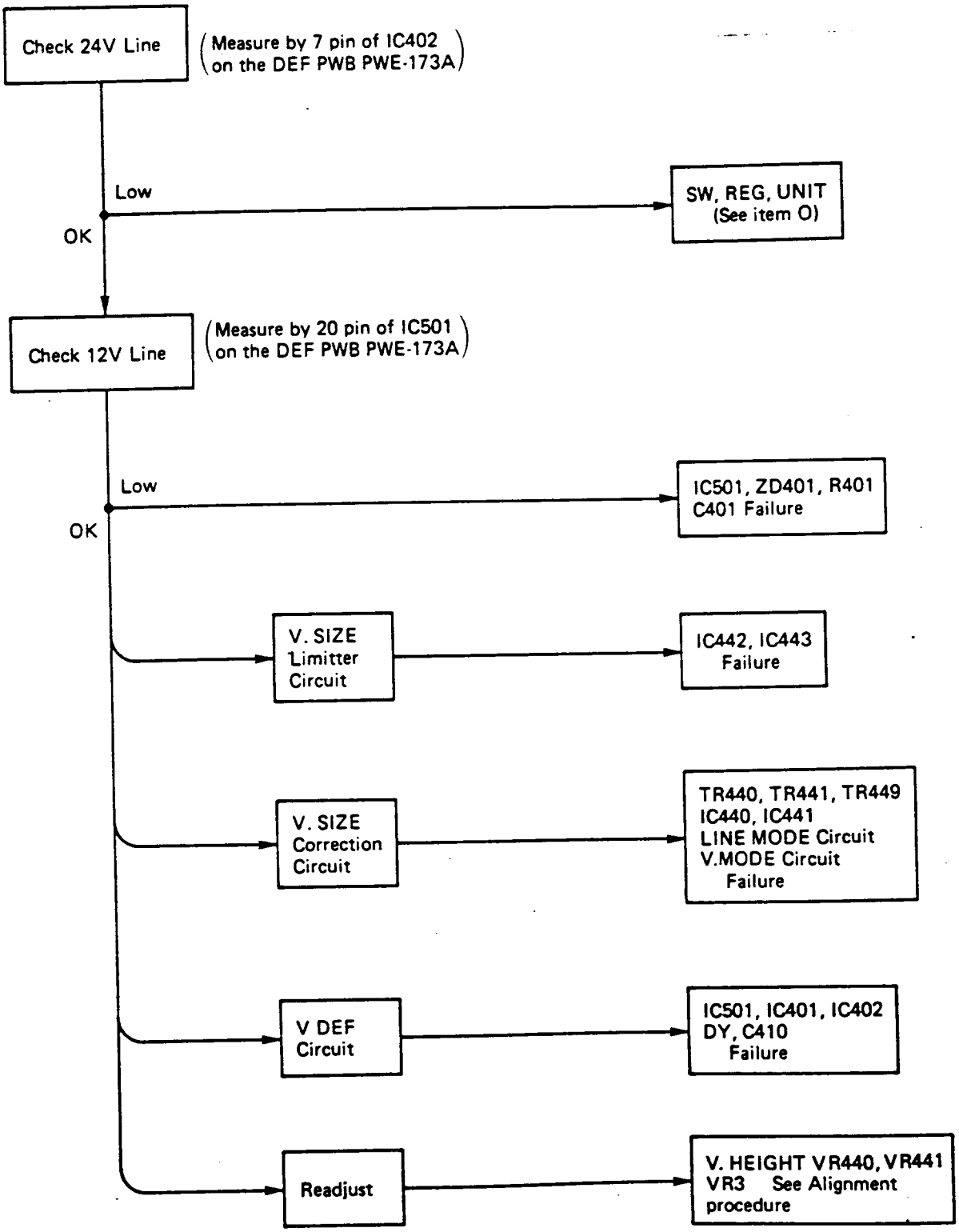


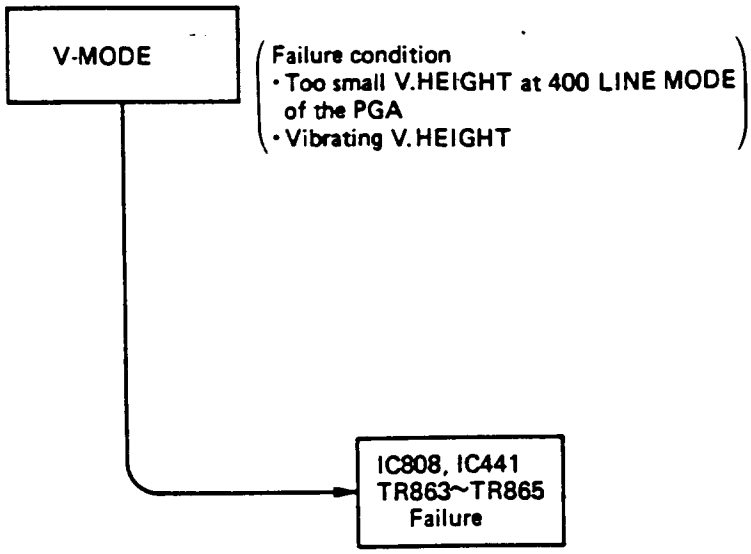
H. Abnormal Picture Size

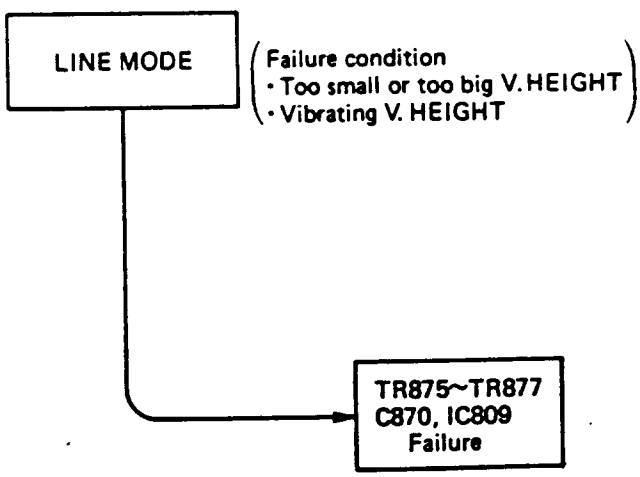
1. Horizontal WIDTH



2. Vertical HEIGHT



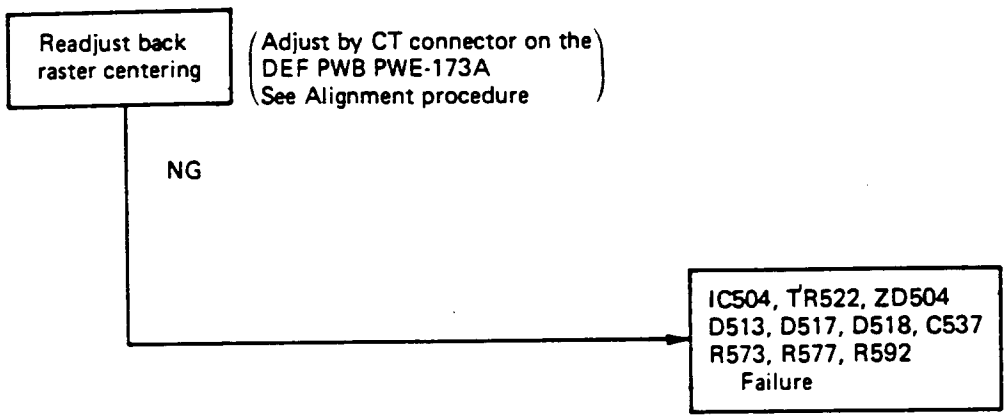

V-MODE
Failure condition
• Too small V.HEIGHT at 400 LINE MODE of the PGA
• Vibrating V.HEIGHT
IC808, IC441
TR863~TR865
Failure


LINE MODE
Failure condition
• Too small or too big V.HEIGHT
• Vibrating V. HEIGHT
TR875~TR877
C870, IC809
Failure

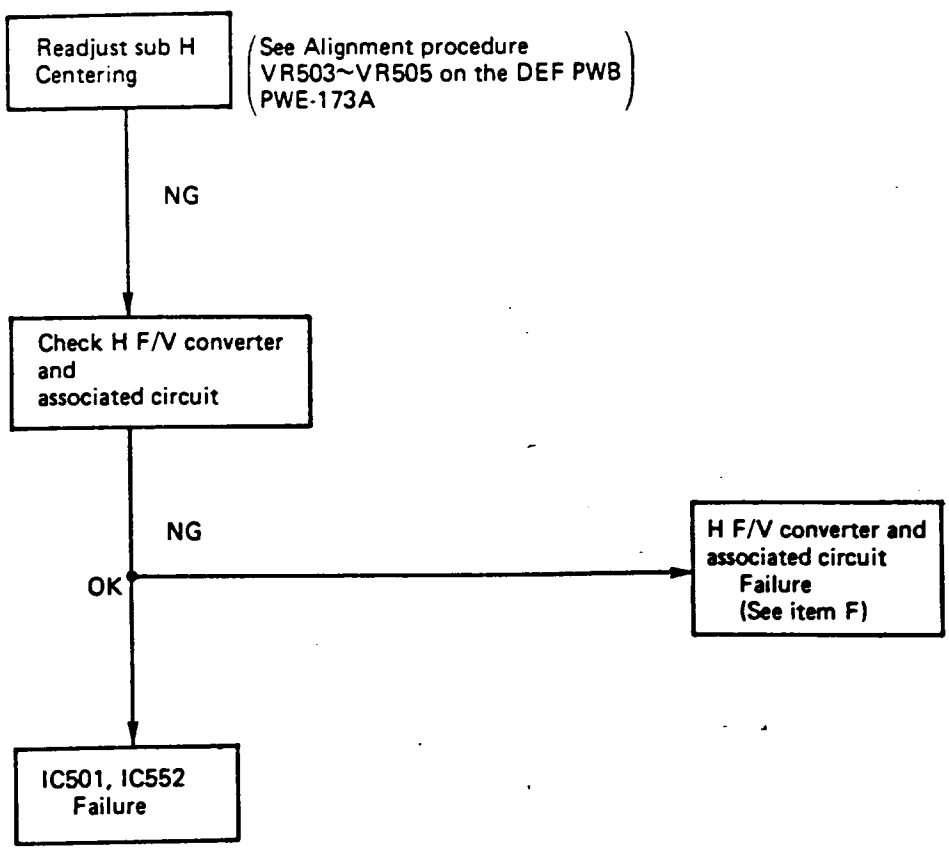
I. Centering

Horizontal

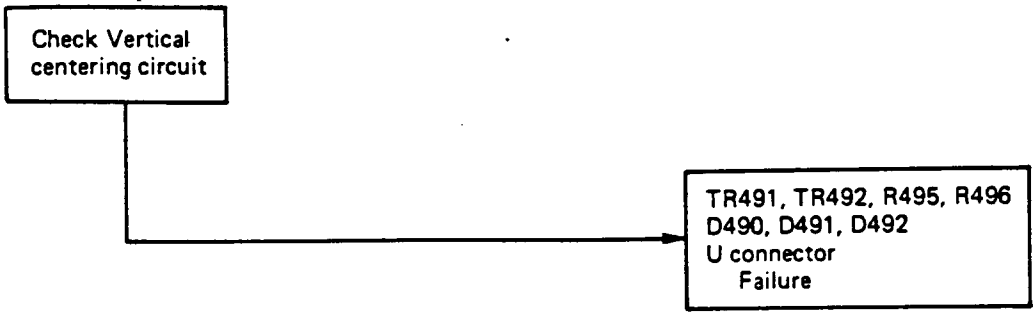
a) BACK RASTER CENTERING



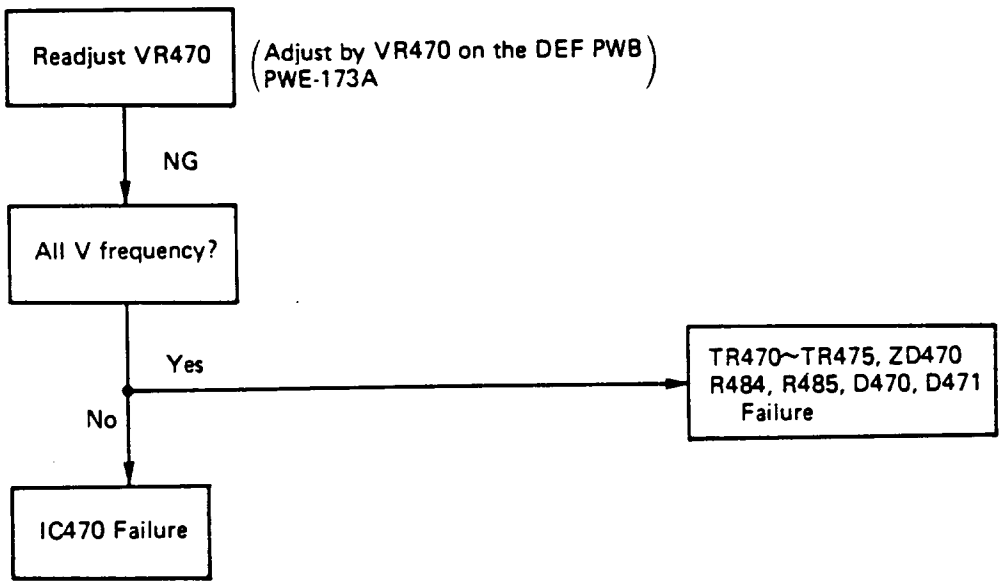
b) PICTURE CENTERING



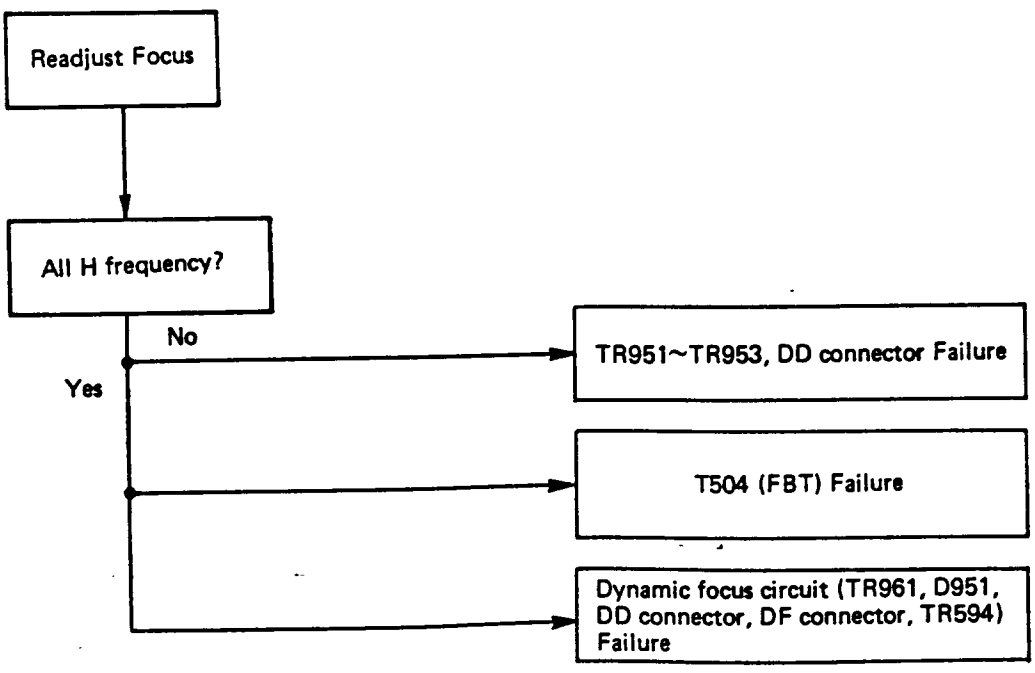
VERTICAL



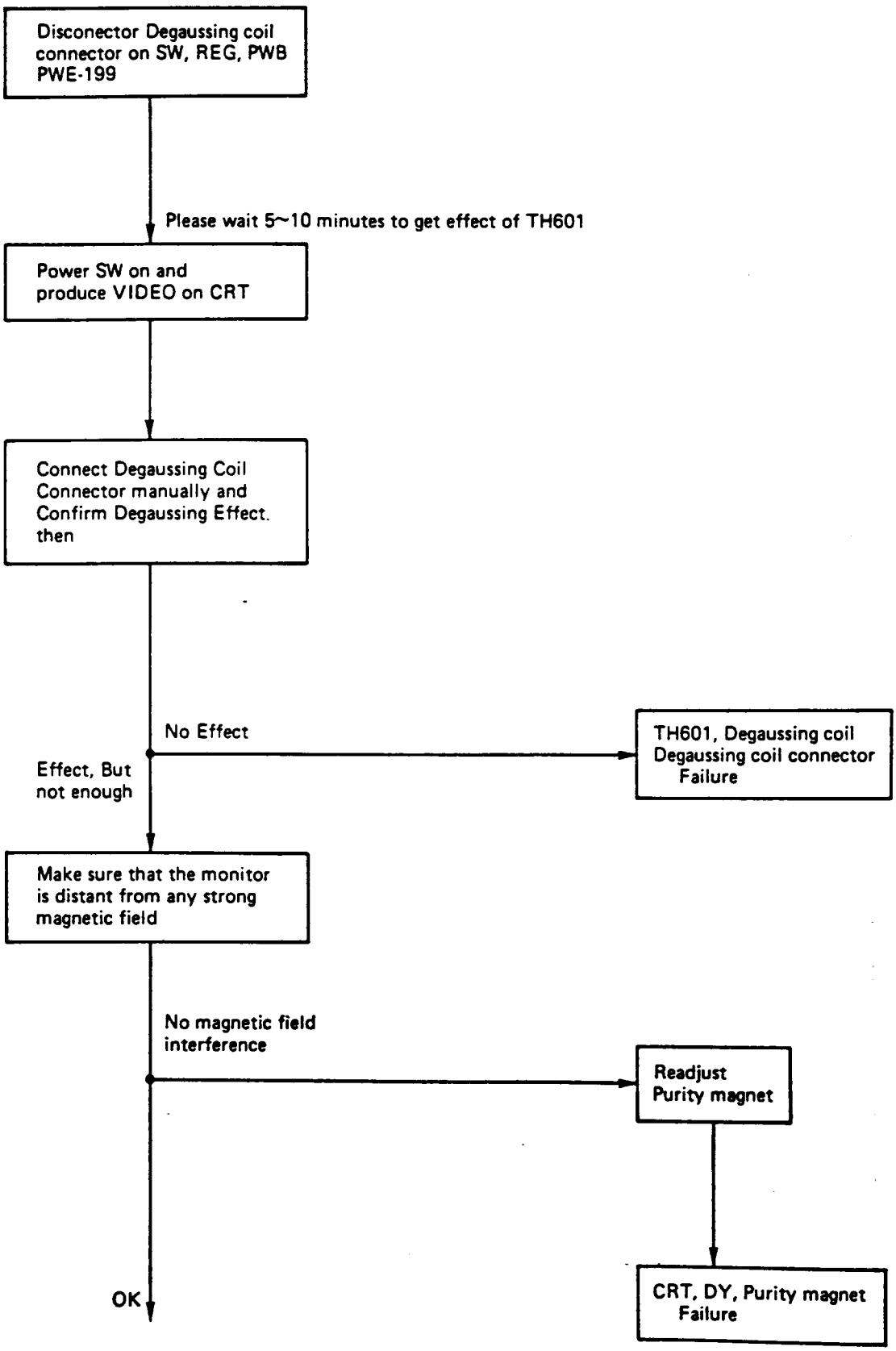
J. Side pincushion distortion correction Failure



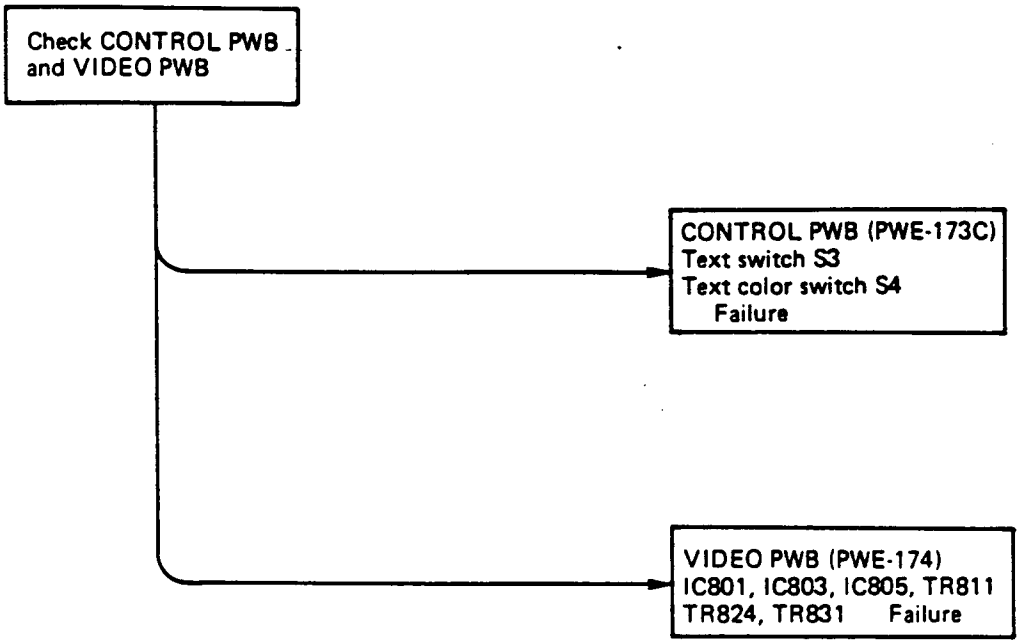
K. Poor focus



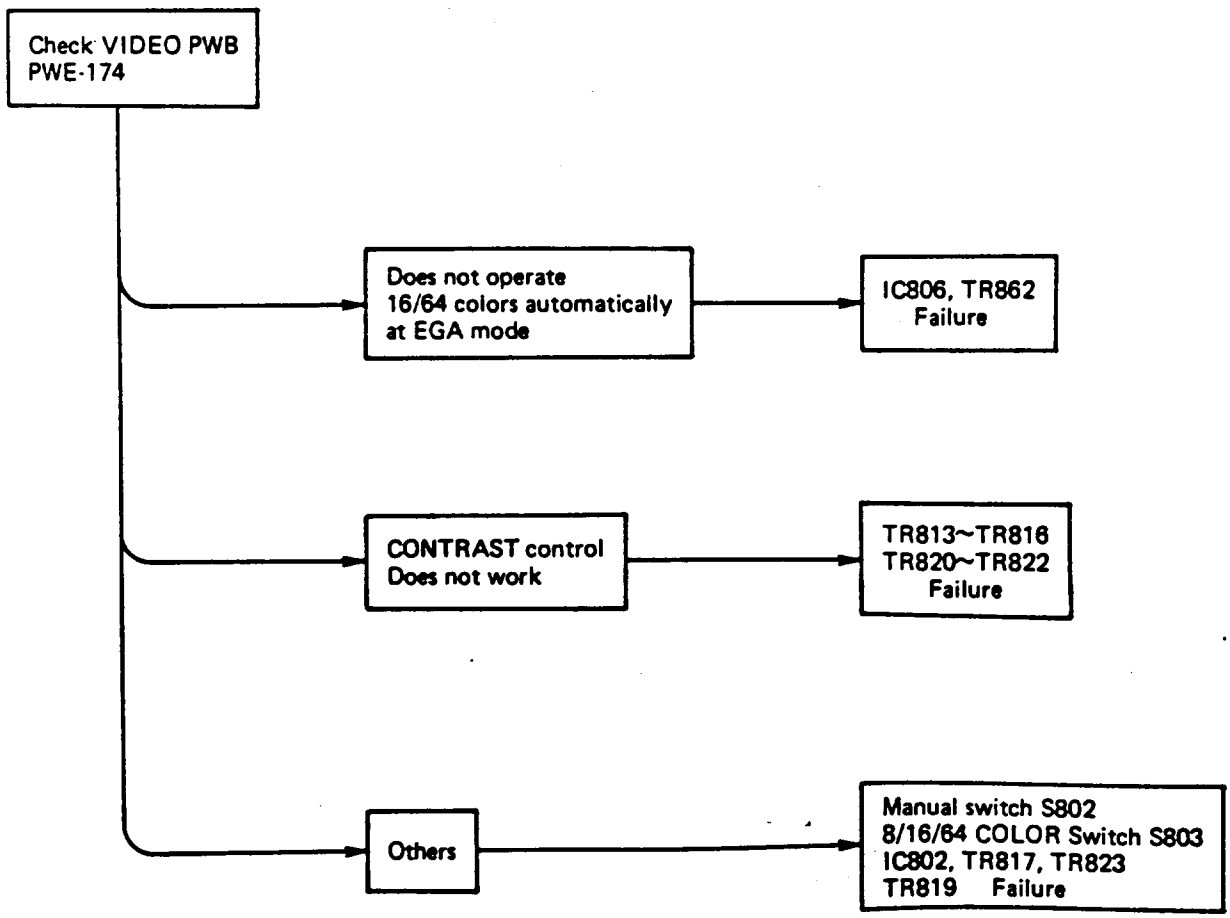
L. Impurity on CRT screen



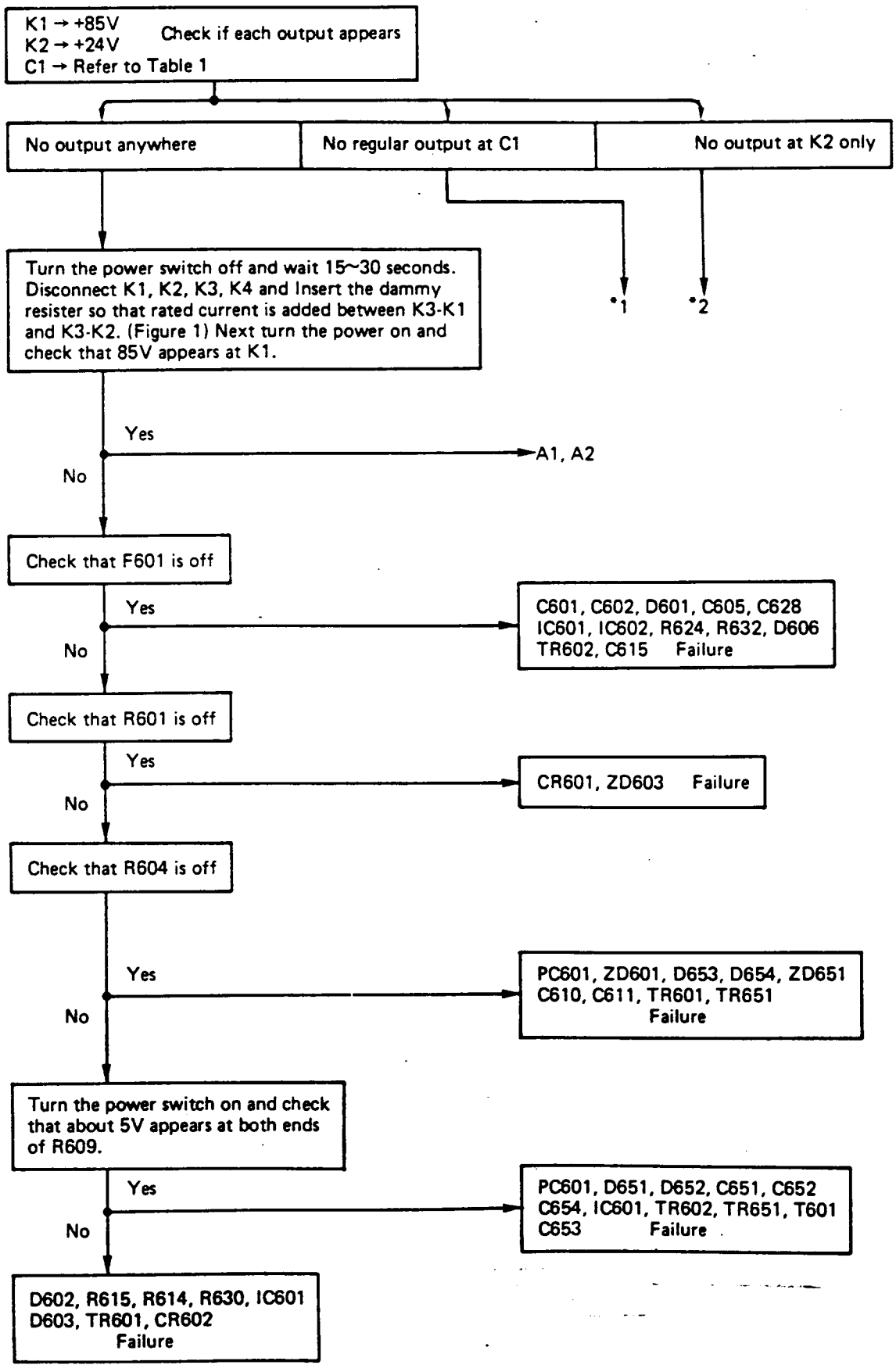
M. Abnormal Text mode operation

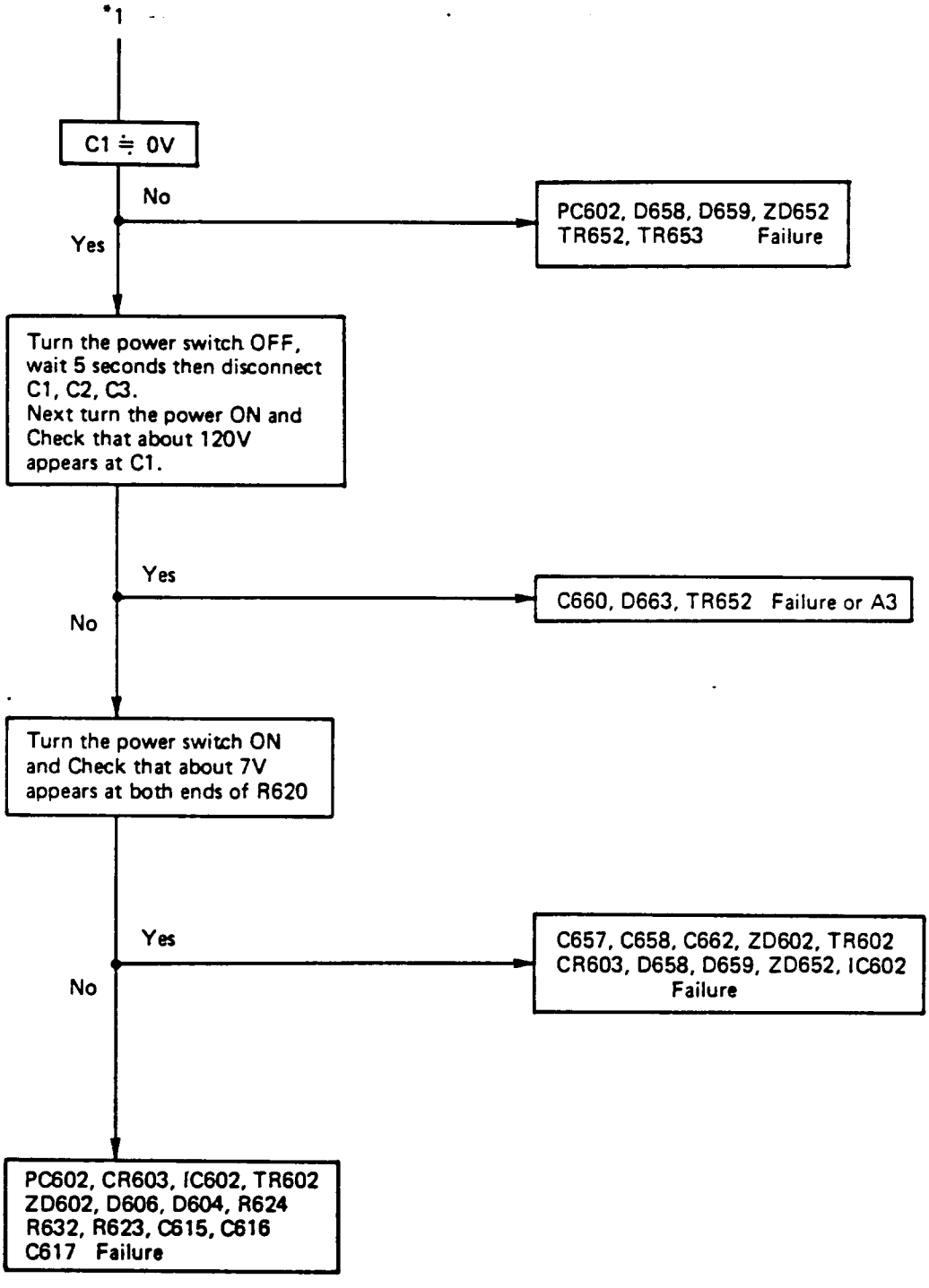


N. Abnormal Color at TTL MODE



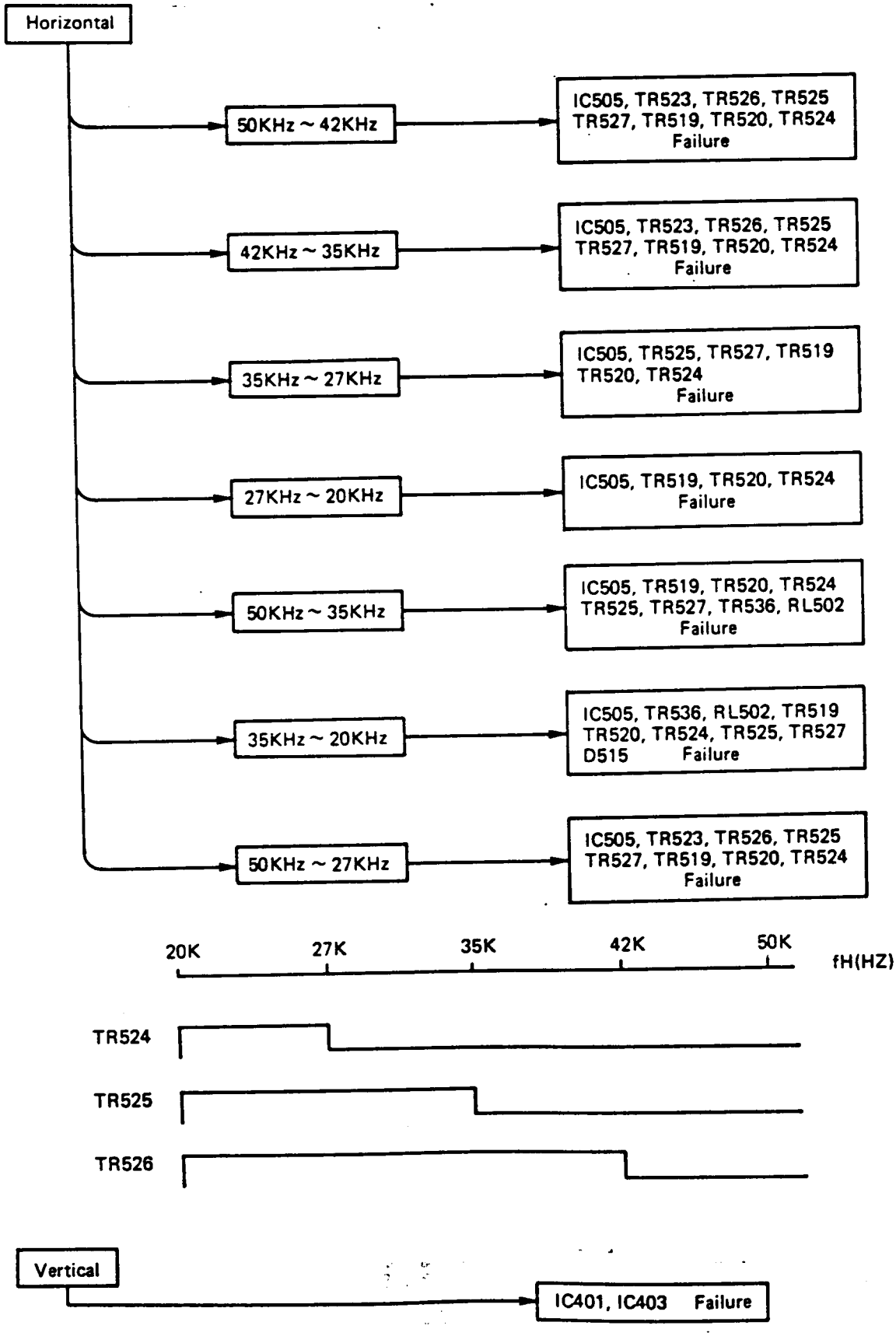
O. Switching Regulator Unit




*1
C1 ≒ 0V
No
Yes
PC602, D658, D659, ZD652
TR652, TR653 Failure
Turn the power switch OFF,
wait 5 seconds then disconnect
C1, C2, C3.
Next turn the power ON and
Check that about 120V
appears at C1.
Yes
No
C660, D663, TR652 Failure or A3
Turn the power switch ON
and Check that about 7V
appears at both ends of R620
Yes
No
C657, C658, C662, ZD602, TR602
CR603, D658, D659, ZD652, IC602
Failure
PC602, CR603, IC602, TR602
ZD602, D606, D604, R624
R632, R623, C615, C616
C617 Failure

[redacted]

P. H/V Linearity not improved



REPLACEMENT PARTS LIST

All components are common for models. JC-2001VME/EE/R except for the parts [illegible]

Note: The components identified by △ make are critical for safety. Replace only with Parts Number Specified.

SYMBOL	PARTS NO	DESCRIPTION	QTY
		*** CRT & TUNER ***	
CRT (2001VME/VMEE)	33020131	CRT AT20A9SPB22-A-TC88	1
CRT (2001VMR)	33020134	CRT AT20A9SPB22-A-TC88(R)H	1
		*** ICS ***	
IC809	37011054	IC UPC339C (COMP)	1
IC403 IC440 IC441	37051036	MOS UPD4066BC (ESD)	6
IC470 IC551 IC552			
IC803	37051081	IC SN74LS32N (OR)	1
IC801	37051096	IC SN74LS367AN (BUFF)	1
IC808	37051179	IC SN74LS123N (MONO FLT)	1
IC806	37052011	IC SN74LS136N (EX-OR)	1
IC804 IC805	37052179	IC SN74LS07N	2
IC443 IC502	37056207	IC UPC358	2
IC504	37056219	IC STR2005	1
IC503	37056220	IC STR2012	1
△IC802	37056233	IC PCD-016MI	1
△IC701	37056245	IC M51387P	1
△IC501	37056295	IC LA7851	1
△IC601 △IC602	37056353	IC STK7406M	2
IC505	37056405	IC 56405	1
IC401	37056406	IC 56406	1
IC402	37056415	IC LA7835	1
IC442 IC807	37101127	IC UPC-393C	2
		*** TRANSISTORS ***	
△TR2002 TR440 TR441	350D7217	TR,2SC945-T Q	5C
TR442 TR444 TR445			
TR447 TR449 TR470			
TR471 TR473 TR474			
TR501 TR510 TR514			
TR515 TR519 TR523			
TR527 TR531 TR536			
TR718 TR720 TR721			
TR801 TR802 TR803			
TR804 TR805 TR806			
TR810 TR820 TR821			
TR822 TR824 TR825			
TR831 TR832 TR851			

SYMBOL	PARTS NO	DESCRIPTION	QTY
		*** TRANSISTORS ***	
TR852 TR856 TR857			
TR858 TR859 TR862			
TR870 TR871 TR872			
TR904 TR908			
TR493 TR713 TR714	350H5017	TR,2SC3811-TA Q	13
TR715 TR716 TR814			
TR815 TR816 TR817			
TR818 TR819 TR853	350H5017	TR,2SC3811-TA Q	13
TR860			
△TR2001 TR443 TR446	350K3517	TR 2SA733/2SA733A-T Q	13
TR448 TR472 TR490			
TR502 TR511 TR520			
TR717 TR722 TR811			
TR813			
TR492	350K4412	TR,2SA952 L,AT	1
TR901 TR902 TR903	35005217	TR,2SA1C18 Q	3
TR710 TR711 TR712	35006804	TR,2SA1538-RA D	3
TR509	35025212	TR,2SB546/546A L	1
△TR601 △TR602	35047216	TR,2SC945 P	2
△TR651 △TR652 △TR653	35053011	TR,2SC1941 K	3
TR507 △TR517 △TR518	35053012	TR,2SC1941 L	6
△TR951 TR952 TR953			
TR491	35055312	TR 2SC2001 L	1
TR508	35063412	TR,2SD401A L	1
TR475	35065416	TR,2SD882 P	1
TR522	35065417	TR,2SD882 Q	1
TR809	35065912	TR,2SD471 L	1
TR701 TR702 TR703	35083400	TR,2SC2408/2SC2408A	3
TR905 TR906 TR907	35084417	TR,2SC1473 Q	3
TR954	35084600	TR,2SC3675	1
△TR504	35084700	TR,2SC3688	1
TR704 TR705 TR706	35086004	TR,2SC3953-RA D	6
TR707 TR708 TR709			
△TR513	35087700	TR 2SC3685	1
TR823 TR854 TR874	351G0500	TR,AN1A4M-T	3
TR833 TR834 TR861	351G0501	TR,AA1A4M-T	11
TR863 TR864 TR865			
TR866 TR875 TR877			
TR878 TR879			
TR808 TR876	351G0613	TR,DTC123YS-T	2
TR503 TR512 TR516	35121000	TR,2SK430	3
TR524 TR525 TR526	35121800	TR,2SK754	3
CR602 CR603	35595010	THYRISTOR 03P4M-L	2
CR601	35595015	TRIAC AC10FGM	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
*** DIODES ***			
⚠D603 ⚠D606 ⚠D653 ⚠D654 ⚠D658 ⚠D659 ⚠D661 ⚠D662 ⚠D663 D701 D702 D703 D704 D705 D706 D707	360K1009	DIODE,SI.1S2473	16
D440 D441 D442 D443 D444 D445 D446 D447 D448 D449 D451 D470 D471 D490 D491 D492 D499A D499B D499C D499D D499E D499F D504 D506 D515 D519 D520 D521 D522 D801 D802 D803 D804 D805 D806 D807 D808 D809 D810 D811 D812 D813 D814 D815 D816 D817 D818 D819 D820 D821 D822 D823 D824 D825 D826 D827 D828 D829 D830 D831 D832 D851 D852 D853 D854 D855 D856 D860 D861 D871 D872 D873 D874 D875 D876 D880 D881 D882 D883 D884 D885 D886 D887 D888 D889 D951	360K1027	DIODE 1SS132	86
⚠D605 D901 D902 D903	360K1027	DIODE 1SS132	86
⚠D605 D901 D902	360K1032	DIODE 1SS82-TA	4
⚠ZD602	360K3098	DIODE RD12EB(3)-T4	1
ZD403	360K3123	DIODE RD20EB(3)	1
⚠ZD653	360K3132	DIODE,ZENER RE3.0EB(2)-T4	1
⚠ZD2001 ⚠ZD2002	360K3143	DIODE,RD8.2JSB(1)-T4	2
ZD470 ⚠ZD601	360K3149	DIODE RD10EB(2)-T4	2
⚠ZD651 ⚠ZD652 ZD701	360K3151	DIODE RD6.8EB(2)-T4	3
ZD401	360K3160	DIODE RD8.2EB(2)-T4	1
ZD501	360K3161	DIODE RD12EB(2)-T4	1
⚠ZD603	360K3162	DIODE,RD2.7EB(1)-T4	1
ZD402	360K3188	DIODE RD3.9EB(2)-T4	1
ZD502	360K3403	DIODE RD5.1JSB(1)-T4	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
*** DIODES ***			
ZD851	360K3635	DIODE RD5.1ESB(2)-T4	1
ZD504	360K3647	DIODE RD6.8ESB(2)-T4	1
ZD803	360K3660	DIODE RD9.1ESB(3)-T4	1
D401 D502 D503 ⚠D508 ⚠D509 ⚠D510 D513 D516 D517 D518 ⚠D523 D505 D511 D512	361K7160	RECTIFIER,SI.TVR-06G G23	11
⚠D602 ⚠D604	361K7505	RECTIFIER,SI.ERB44-06V1	3
⚠D514	36107174	RECTIFIER,SI. RU1P	2
⚠D607	36107300	DIODE ERD07-15	1
⚠D657	36107303	DIODE EU02	1
⚠D651	36107304	DIODE CTG-G3CR	1
⚠D501	36107305	DIODE RU2B	1
⚠D652	36107515	RECTIFIER,SI. CTU-G3DR	1
⚠D601	36108072	D,NETWORK D5LCA20	1
D599	36108201	DIODE,NETWORK D5SBA60S	1
⚠D2001 ⚠D2002	36801023	DIODE,LIGHT-E SEL1320G	1
⚠TH602	38005011	VARISTER,VD1220	2
⚠TH601	38112025	THERMISTOR 451A12BD180	1
⚠PC601 ⚠PC602	38112031	THERMISTOR,POSITIVE	1
	38200233	IC TLP634(NHE-LF2)	2
*** TRANSFORMERS ***			
T503	45804002	TRANS,H.DRIVE	1
T501	45804004	TRANS,H.DRIVE	1
T505	46305101	TRANS,CONVERTER	1
⚠T601	46308409	TRANS,SWITCHING W098B	1
⚠T602	46308410	TRANS,SWITCHING W099B	1
⚠T504	47105636	F.B.T	1
⚠T506	47502053	TRANS,SIDE PINCUSHION	1
⚠T502	47710003	TRANS,H.OUTPUT	1
*** VARIAELE RESISTORS ***			
⚠C955	39510019	H.V CR BLOCK	1
VR5	41011273	R,VARIABLE B20K-V(M)	1
VR3 VR4 VR6	41011275	R,VARIABLE B20K-V(M)	3
VR1 VR2	41023603	R,VARIABLE B10K-V	2
VR5C9	41061511	R,VARIABLE B4.7K	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
*** VARIABLE RESISTORS ***			
VR440 VR441 VR443	41071161	R,VARIABLE B4.7K	4
VR501			
VR402	41071165	R,VARIABLE B22K	1
VR404 VR470	41071167	R,VARIABLE B47K	2
VR401	41071169	R,VARIABLE B100K	1
VR503 VR504 VR505	41071171	R,VARIABLE B220K	3
VR502	41071173	R,VARIABLE B470K	1
VR704	41071210	R,VARIABLE B3.3K	1
VR701 VR702 VR703	41071211	R,VARIABLE B4.7K	3
VR403	41085008	R,VARIABLE B5K	1
VR901 VR902 VR903	41085013	R,VARIABLE B100K	6
VR904 VR905 VR906			
VR907	41085014	R,VARIABLE B200K	1
⚠VR651	41087058	R,VARIABLE B5K	1
⚠VR652	41505005	R,VARIABLE B2K	1
⚠VR2001 ⚠VR2002	41505006	R,VARIABLE B3K	2
⚠VR653	41505007	R,VARIABLE B5K	1
⚠VR508	41505009	R,VARIABLE B20K	1
VR510	41505208	R,VARIABLE B50K	1
*** RELAYS & SWITCHES ***			
⚠SW4	65161021	SWITCH,SLIDE	1
⚠SW802 ⚠SW804	65161022	SWITCH,SLIDE	2
⚠SW803	65161023	SWITCH,SLIDE	1
⚠SW801	65161024	SWITCH,SLIDE	1
⚠SW2 ⚠SW3	651630C2	SWITCH,SLIDE	2
⚠SW1	65360006	SWITCH,PUSH BUTTON	1
	65360009	SWITCH,PUSH BUTTON	1
RL501	65602551	RELAY	1
RL502	65660004	RELAY	1
*** COILS & FILTERS ***			
LC802B LC802G LC802R	39099014	EILTER	3
LC702 LC703B LC703G	39099015	FILTER ZJSC-2R2-101	5
LC703R LC801			
⚠L509	60908056	COIL,WIDTH	1
⚠L506	60918105	COIL,H.LIN	1
⚠L502	60919608	COIL,H.LIN	1
L511	60999004	COIL,CHOKE	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
*** COILS & FILTERS ***			
L802	610E1714	COIL,FILTER 5.6UH	1
L501 L801	610F6014	COIL,FILTER 5.6UH	2
L503	610F7019	COIL,FILTER 15UH	1
L901 L902 L903	610F7504	COIL,FILTER PR68MAT(S)	3
L704 L705 L706	610F7507	COIL,FILTER P1R5MAT(S)	3
L701 L702 L703	610F7551	COIL,FILTER 0.82UH	3
L508	61022081	COIL,CHOKE	1
⚠L601	61062044	LINE FILTER	1
⚠	61062054	LINE FILTER	1
⚠L504 L515	61064006	COIL,FILTER 50UH	2
L707	61067045	COIL,FILTER	1
⚠L651	61099011	COIL,CHOKE 33UH	1
⚠L652 ⚠L653	61099014	COIL 330K1.8	2
L507 L510 L512	61099019	COIL,CHOKE	3
⚠L602	61099027	FILTER CHOKE 101KR66	1
⚠DEG	61320205	COIL,DEGAUSSING	1
L514	61605008	FERRITE BEADS 3.5*5*1.3	1
L904	61605032	FERRITE BEADS	1
LC701	61606021	NOISE FILTER DSS-271M	1
LC705 LC706 LC707	61606027	NOISE FILTER 2A222M	3
LC901 LC902 LC903	61606028	NOISE FILTER 1H223X	3
*** PWB ASSYS ***			
⚠ 84K21A01		SW.REG.PWB ASSY	1
84K21C02		VIDEO PWB ASSY	1
84K21D01		DEF PWB ASSY	1
84K21J01		CRT PWB ASSY	1
*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***			
HS402B	31709202	SHEET,INSULATOR	1
	31709203	INSULATOR (150*37,TR85)	1
	31709503	SHEET,INSULATOR	3
SG901 SG902 SG903	32990047	ARRESTER	4
SG904			
⚠L505	49801006	INDUCTOR,DUMMY(610UH)	1
⚠F501	66699011	FUSE SSFR-630MA-F005	1
⚠F601	66699013	FUSE ET T4A,250V-S,B SOC	1
SG905	66706001	SPARK GAP 1.2KV	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***			
	70032026	SG/CRT SOCKET	1
IS802	70102147	IC SOCKET 24P	1
	71205037	HOLDER, FUSE	2
IS701	70102152	IC SOCKET 30P	1
⚠(2001VME)	70800031	LINE CORD (E)	1
⚠(2001VMEE)	70800322	LINE CORD (BS)	1
⚠(2001VMR)	75513006	LINE CORD SAA L2.0	1
*** APPEARANCE PARTS ***			
	24514792	COIL SPRING	1
	25308471	CABINET FRONT ASSY	1
	25308481	CABINET FRONT	1
	25308491	CABINET BACK	1
	25406551	REVOLVING STAND(T)	1
	25406561	REVOLVING STAND(B) ASSY	1
	25406581	SPINDLE	1
	25408081	LID,CONTROL	1
(2001VME)	25766061	NAME PLATE,INSTRUCTION	1
(2001VMEE)	25766451	NAME PLATE, INSTRUCTION	1
(2001VMER)	25766461	NAME PLATE, INSTRUCTION	1
*** KNOBS & PUSH BUTTONS ***			
	25451871	PUSH BUTTON	1
	25451881	KNOB,CONTROL	2
*** PRINTED & PACKING MATERIALS ***			
	24806961	BAG,POLYETHYLENE(270*370)	1
	24813191	BAG,POLYETHYLENE(150*370)	1
	24826313	BAG,PROTECTION	1
	25280111	HOLDER,PWB	2
	25280711	CLAMPER,WIRE	1
	25280811	HOLDER,PWB	2
	25281421	PWB HOLDER	1
	25281521	GROMMET	1
	25600711	CUSHION,SHEET	1
	25605431	HOLDER,PWB	1
	78120822	INSTRUCTION BOOK	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
*** PRINTED & PACKING MATERIALS ***			
	25813001	FILLER(T),CARTON	1
	25813013	FILLER(B),CARTON	1
	25814151	FILLER T,CARTON	1
(2001VME)	25814531	CARTON BOX	1
(2001VMEE)	25814891	CARTON BOX	1
(2001VMR)	25814901	CARTON BOX	1
*** RESISTORS ***			
R594	401C6601	R,CARBON 1.0M 5% 1/4W	1
⚠R5FF	401C6617	R,CARBON 4.7M 5% 1/4W	1
R544	401C6631	R,CARBON 18M 5% 1/4W	1
R722	401C6637	R,CARBON 33M 5% 1/4W	1
R723 R724	401C6639	R,CARBON 39M 5% 1/4W	2
⚠R5B6	401C6641	R,CARBON 47M 5% 1/4W	1
R499B R671	401C6657	R,CARBON 220M 5% 1/4W	2
⚠R568	401C6669	R,CARBON 680M 5% 1/4W	1
⚠R602 ⚠R608 ⚠R619	401C6673	R,CARBON 1.0K 5% 1/4W	4
⚠R663			
⚠R609 ⚠R620 ⚠R658	401C6675	R,CARBON 1.2K 5% 1/4W	3
R495C ⚠R611 ⚠R627	401C6677	R,CARBON 1.5K 5% 1/4W	3
⚠R662	401C6679	R,CARBON 1.8K 5% 1/4W	1
⚠R633 ⚠R666	401C6683	R,CARBON 2.7K 5% 1/4W	2
⚠R656 ⚠R661	401C6685	R,CARBON 3.3K 5% 1/4W	2
R940	401C6689	R,CARBON 4.7K 5% 1/4W	1
⚠R655 R963	401C6691	R,CARBON 5.6K 5% 1/4W	2
R461	401C6693	R,CARBON 6.8K 5% 1/4W	1
R962	401C6695	R,CARBON 8.2K 5% 1/4W	1
⚠R636 ⚠R664	401C6697	R,CARBON 10K 5% 1/4W	2
⚠R672	401C6705	R,CARBON 22K 5% 1/4W	1
⚠R631	401C6707	R,CARBON 27K 5% 1/4W	1
R584	401C6721	R,CARBON 100K 5% 1/4W	1
⚠R657	401C6723	R,CARBON 120K 5% 1/4W	1
R469J ⚠R564	401C6757	R,CARBON 3.3M 5% 1/4W	2
R458	401C6761	R,CARBON 4.7M 5% 1/4W	1
R524	401H5619	R,CARBON 5.6M 5% 1/2W	1
R719 R720 R721	401H5643	R,CARBON 56M 5% 1/2W	3
R904 R905 R906	401H5649	R,CARBON 100M 5% 1/2W	3
R523	401H5655	R,CARBON 180M 5% 1/2W	1
R499A	401H5657	R,CARBON 220M 5% 1/2W	1
R757	401H5661	R,CARBON 330M 5% 1/2W	1

SYMBOL			PARTS NO	DESCRIPTION	QTY
*** RESISTORS ***					
R583			401H5667	R.CARBON 560H 5% 1/2W	1
R586			401H5669	R.CARBON 680H 5% 1/2W	1
R543			401H5671	R.CARBON 820H 5% 1/2W	1
R538			401H5679	R.CARBON 1.8K 5% 1/2W	1
R599			401H5681	R.CARBON 2.2K 5% 1/2W	1
R942			401H5697	R.CARBON 10K 5% 1/2W	1
R539			401H5707	R.CARBON 27K 5% 1/2W	1
⚠R605	⚠R606		401H5735	R.CARBON 390K 5% 1/2W	2
⚠R603	⚠R618		401H5747	R.CARBON 1.2M 5% 1/2W	2
R770			401K5637	R.CARBON 33H 5% 1/6W	1
R575	R764	R765	401K5641	R.CARBON 47H 5% 1/6W	4
R766					
R716	R717	R718	401K5643	R.CARBON 56H 5% 1/6W	3
R486	R574		401K5649	R.CARBON 100H 5% 1/6W	2
R569	R570	R571	401K5657	R.CARBON 220H 5% 1/6W	10
R8A3B	R8A3G	R8A3R			
R8C7B	R8C7G	R8C7R			
R854					
R713	R714	R715	401K5659	R.CARBON 270H 5% 1/6W	4
R838					
R866	R931		401K5661	R.CARBON 330H 5% 1/6W	2
R864			401K5663	R.CARBON 390H 5% 1/6W	1
R738	R739	R740	401K5665	R.CARBON 470H 5% 1/6W	6
R901	R902	R903			
R588			401K5667	R.CARBON 560H 5% 1/6W	1
R849			401K5669	R.CARBON 680H 5% 1/6W	1
R725	R837		401K5671	R.CARBON 820H 5% 1/6W	2
⚠R2004A	⚠R2007A	R419	401K5673	R.CARBON 1.0K 5% 1/6W	19
R441	R5A1	R503			
R508	R535	R576			
R748	R749	R754			
R819	R823B	R823G			
R823R	R853	R861			
R930					
R416	R519	R541	401K5675	R.CARBON 1.2K 5% 1/6W	8
⚠R566	R726	R741			
R742	R743				
R480	R827B	R827G	401K5677	R.CARBON 1.5K 5% 1/6W	11
R827R	R829B	R829G			
R829R	R834	R841			
R863	R865				
R421	R452	R493	401K5679	R.CARBON 1.8K 5% 1/6W	5
R727	R881				
R408	R462	R747	401K5681	R.CARBON 2.2K 5% 1/6W	13
R771	R817	R818			

SYMBOL			PARTS NO	DESCRIPTION	QTY
*** RESISTORS ***					
R855	R859	R862			
R873	R879	R880			
R932			401K5681	R.CARBON 2.2K 5% 1/6W	13
R444	R479	R744	401K5683	R.CARBON 2.7K 5% 1/6W	8
R750	R755	R867			
R869	R928				
R487	R710	R711	401K5685	R.CARBON 3.3K 5% 1/6W	8
R712	R856	R857			
R876	R921				
R456	R457	⚠R567	401K5687	R.CARBON 3.9K 5% 1/6W	6
R820	R821	R897			
R4FF	R448	R469E	401K5689	R.CARBON 4.7K 5% 1/6W	13
R469F	R516	R580			
R830B	R830G	R830R			
R877	R878	R887			
R929					
R477	R492	R540	401K5691	R.CARBON 5.6K 5% 1/6W	24
R591	R737	R745			
R810	R811	R812			
R813	R814	R815			
R835	R836	R839			
R840	R843	R844			
R871	R872	R888			
R893	R895	R898			
R478	R517	R919	401K5693	R.CARBON 6.8K 5% 1/6W	3
R509	R578	R583	401K5695	R.CARBON 8.2K 5% 1/6W	15
R756	R803B	R803G			
R803R	R808B	R808G			
R808R	R868	R874			
R875	R882	R896			
⚠R2002	⚠R2004	R409	401K5697	R.CARBON 10K 5% 1/6W	32
R411	R420	R460			
R463	R469D	R470			
R481	R5B5	R532			
R746	R8A4	R8A5			
R8A6	R8C1	R8C2			
R8C5	R8C6	R8048			
R804G	R804R	R809B			
R809G	R809R	R852			
R891	R892	R951			
R952	R953				
⚠R2001	⚠R2007	R445	401K5699	R.CARBON 12K 5% 1/6W	9
R501	R802	R805			
R870	R884	R920			
R443	R446	R447	401K5701	R.CARBON 15K 5% 1/6W	12
R454	R476	R491			
R561	R590	R8C4			

SYMBOL	PARTS NO	DESCRIPTION	QTY
*** RESISTORS ***			
R831B R831G R831R			
R41C R469A	401K5703	R-CARBON 18K 5% 1/6W	2
R4FE R453 R459	401K5705	R-CARBON 22K 5% 1/6W	14
R475 R502 R504			
R531 ⚠R563 R885			
R894 R941 R954			
R955 R956			
R505 R858	401K5707	R-CARBON 27K 5% 1/6W	2
R439 R440 R472	401K5709	R-CARBON 33K 5% 1/6W	19
R494 R581 R507			
R552 R553 R587			
R588 R596 R842			
R916 R917 R918			
R922 R923 R924			
R960			
R474	401K5711	R-CARBON 39K 5% 1/6W	1
R404 R886	401K5713	R-CARBON 47K 5% 1/6W	2
R402 R418 ⚠R5B9	401K5715	R-CARBON 56K 5% 1/6W	4
R851			
R455 R473 R483	401K5717	R-CARBON 68K 5% 1/6W	9
R5A7 R5A8 R514			
R925 R926 R927			
R442 R533	401K5719	R-CARBON 82K 5% 1/6W	2
R405 R449 R450	401K5721	R-CARBON 100K 5% 1/6W	26
R451 R469B R469C			
R471 R5B2 R5B7			
⚠R521 ⚠R522 ⚠R526			
R530 R536 R547			
R589 R8A7 R8A9			
R8B1 R8B2 R8B3			
R8B4 R8B6 R8B7			
R8B9 R860			
R513	401K5723	R-CARBON 120K 5% 1/6W	1
R913 R914 R915	401K5727	R-CARBON 180K 5% 1/6W	3
R8B5 R8B8 R8B3	401K5729	R-CARBON 220K 5% 1/6W	7
R899 R907 R908			
R909			
R910 R911 R912	401K5731	R-CARBON 270K 5% 1/6W	3
R958 R959	401K5735	R-CARBON 390K 5% 1/6W	2
R482 R554 R8A8	401K5737	R-CARBON 470K 5% 1/6W	3
R537	401K5739	R-CARBON 560K 5% 1/6W	1
R556	401K5745	R-CARBON 1.0M 5% 1/6W	1
⚠R2003 ⚠R2006	40107185	R-CARBON 3.3K 5% 1/6W	2
R506	40107195	R-CARBON 8.2K 5% 1/6W	1
⚠R2005	40107197	R-CARBON 10K 5% 1/6W	1
R510	40107209	R-CARBON 33K 5% 1/6W	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
*** RESISTORS ***			
R495	40175133	R-CARBON 22H 5% 1/4W	1
⚠R630 ⚠R632	40175143	R-CARBON 56H 5% 1/4W	2
⚠R626	40175157	R-CARBON 220H 5% 1/4W	1
⚠R612	40175181	R-CARBON 2.2K 5% 1/4W	1
⚠R614 ⚠R623	40175183	R-CARBON 2.7K 5% 1/4W	2
⚠R731 ⚠R732 ⚠R733	40177137	R-CARBON 33H 5% 1/4W	6
⚠R734 ⚠R735 ⚠R736			
⚠R579	40178117	R-CARBON 4.7H 5% 1/2W	1
⚠R637	40216013	R-WIRE 150H 10% 5W	1
⚠R546	40216026	R-WIRE 68H 5% 5W	1
⚠R534	40299108	R-WIRE 240H 5% 7W	1
⚠R601	40299109	R-WIRE 15H 5% 7W	1
R728 R729 R730	40318273	R-METAL 1.0K 5% 7W	3
⚠R573	40371115	R-METAL 3.9H 5% 1W	1
⚠R545	40371119	R-METAL 5.6H 5% 1W	1
⚠R5A3	40371125	R-METAL 10H 5% 1W	1
⚠R5A2	40371133	R-METAL 22H 5% 1W	1
R592	40371147	R-METAL 82H 5% 1W	1
R484	40371151	R-METAL 120H 5% 1W	1
R406 R816	40371161	R-METAL 330H 5% 1W	2
R401	40371165	R-METAL 470H 5% 1W	1
R957	40371197	R-METAL 10K 5% 1W	1
R585	40371337	R-METAL 47H 5% 1W	1
R525 ⚠R615 ⚠R624	40372101	R-METAL 1.0H 5% 2W	3
R407	40372105	R-METAL 1.5H 5% 2W	1
⚠R667	40372137	R-METAL 33H 5% 2W	1
⚠R613 ⚠R616 ⚠R622	40372141	R-METAL 47H 5% 2W	3
⚠R6C7	40372147	R-METAL 82H 5% 2W	1
⚠R625	40372149	R-METAL 100H 5% 2W	1
R581	40372151	R-METAL 120H 5% 2W	1
⚠R496	40372157	R-METAL 220H 5% 2W	1
⚠R423 R518	40372159	R-METAL 270H 5% 2W	2
⚠R634	40372161	R-METAL 330H 5% 2W	1
⚠R652	40372203	R-METAL 18K 5% 2W	1
⚠R654	40372205	R-METAL 22K 5% 2W	1
⚠R665	40372209	R-METAL 33K 5% 2W	1
R961	40372217	R-METAL 68K 5% 2W	1
⚠R617 ⚠R629	40372221	R-METAL 100K 5% 2W	2
R485	40373157	R-METAL 220H 5% 3W	1
⚠R610	40373181	R-METAL 2.2K 5% 3W	1
⚠R653	40373195	R-METAL 8.2K 5% 3W	1
⚠R660	40373197	R-METAL 10K 5% 3W	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
*** RESISTORS ***			
⚠R659 ⚠R670	40373203	R,METAL 18K 5% 3W	2
⚠R604	40399034	R,METAL 2.2K 5% 2W	1
R807B R807G R807R	404C1646	R,METAL 75H 1% 1/6W	3
R8A1B R8A1G R8A1R	404C1647	R,METAL 82H 1% 1/6W	3
R824B R824G R824R	404C1653	R,METAL 150H 1% 1/6W	3
R801B R801G R801R	404C1659	R,METAL 270H 1% 1/6W	3
R707 R826B R826G	404C1669	R,METAL 680H 1% 1/6W	7
R826R R828B R828G			
R828R			
R8A2B R8A2G R8A2R	404C1670	R,METAL 75CH 1% 1/6W	6
R825B R825G R825R			
R469N R833B R833G	404C1673	R,METAL 1.0K 1% 1/6W	4
R833R			
R832B R832G R832R	404C1675	R,METAL 1.2K 1% 1/6W	3
R709	404C1691	R,METAL 5.6K 1% 1/6W	1
R708	404C1694	R,METAL 7.5K 1% 1/6W	1
R4696 R701 R702	404C1697	R,METAL 1CK 1% 1/6W	7
R703 R704 R7C5	404C1697	R,METAL 10K 1% 1/6W	7
R706			
R432 R515 R582	404C1703	R,METAL 18K 1% 1/6W	3
R433 R435	404C1705	R,METAL 22K 1% 1/6W	2
R437 R511	404C1707	R,METAL 27K 1% 1/6W	2
R431	404C1709	R,METAL 33K 1% 1/6W	1
R430 R464	404C1711	R,METAL 39K 1% 1/6W	2
R512	404C1714	R,METAL 51K 1% 1/6W	1
R403	404C1719	R,METAL 82K 1% 1/6W	1
R468	404C1721	R,METAL 100K 1% 1/6W	1
R434 R555	404C1723	R,METAL 120K 1% 1/6W	2
R580	404C1725	R,METAL 150K 1% 1/6W	1
R467 R469 R598	404C1731	R,METAL 270K 1% 1/6W	3
R436 R465 R466	404C1733	R,METAL 33CK 1% 1/6W	3
R438	404C1741	R,METAL 680K 1% 1/6W	1
⚠R529 ⚠R577	40405109	R,METAL 2.2H 5% 1/4W	2
⚠R527 ⚠R548 ⚠R549	40405117	R,METAL 4.7H 5% 1/4W	5
⚠R550 ⚠R551			
⚠R520 ⚠R542	40405137	R,METAL 33H 5% 1/4W	2
⚠R593	40801051	R,FUSE 1C0H 5% 1/4W	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
*** CAPACITORS ***			
C956	420C9560	C,CERAMIC 500V 560PF	1
C840	420C9562	C,CERAMIC 500V 820PF	1
C909 C910 C911	420C9563	C,CERAMIC 500V 0.001UF	3
C520	420C9565	C,CERAMIC 500V 1500PF	1
C906 C907 C908	420C9567	C,CERAMIC 500V 2200PF	4
C917			
C545 C546 C547	420G5C01	C,CERAMIC 50V 0.22UF	4
C563			
C4FF	420J9069	C,CERAMIC 50V 0.1UF	1
C721 C722 C723	4201J575	C,CERAMIC 50GV 0.01UF	3
C914 C915	42019175	C,CERAMIC 2KV 0.01UF	2
⚠C565	4203J553	C,CERAMIC 500V 150PF	1
⚠C626	4203J554	C,CERAMIC 500V 180PF	1
⚠C528	4203J555	C,CERAMIC 500V 220PF	1
C513	4203J571	C,CERAMIC 500V 4700PF	1
⚠C603 ⚠C604	42053013	C,CERAMIC 400V 1000PF	2
⚠C606	42053067	C,CERAMIC 400V 2200PF	1
⚠C663	42099082	C,CERAMIC 2KV 1500PF	1
⚠C622 ⚠C623 ⚠C625	42099085	C,CERAMIC 2KV 560PF	3
⚠C612 ⚠C618	42099088	C,CERAMIC 2KV 220PF	2
C519 ⚠C535 C727	421C0213	C,CERAMIC 5CV 1000PF	5
C728 C729			
C440	421C0217	C,CERAMIC 50V 0.0022UF	1
C499A C951 C952	421C0221	C,CERAMIC 50V 4700PF	4
C953	421C0221	C,CERAMIC 50V 4700PF	4
C854	421C0225	C,CERAMIC 5CV 0.01UF	1
C571	421C0701	C,CERAMIC 50V 100PF	1
C544	421D5201	C,CERAMIC 50V 0.01UF	1
C443 C444 C471	421J9001	C,CERAMIC 50V 0.1UF	5
C912 C954			
C913	421J9006	C,CERAMIC 16V 0.1UF	1
C5FE C551 C559	421J9036	C,CERAMIC 25V 0.1UF	32
C569 C704 C705			
C706 C710 C711			
C715 C716 C717			
C8C8 C810 C812			
C816B C816G C816R			
C818 C832 C834			
C836 C837 C842			
C843 C844 C845			
C846 C847 C849			
C855 C871			
C501 C543	423A1053	C,CERAMIC 50V 220PF	2
C502	423A1055	C,CERAMIC 50V 270PF	1

SYMBOL			PARTS NO	DESCRIPTION	QTY
			*** CAPACITORS ***		
C508			423A1101	C,CERAMIC 50V 470PF	1
C858			423A2027	C,CERAMIC 50V 18PF	1
C891	C892	C893	423A2041	C,CERAMIC 50V 68PF	3
C719	C720		423A2043	C,CERAMIC 50V 82PF	2
C718			423A2045	C,CERAMIC 50V 100PF	1
C409			423A2104	C,CERAMIC 50V 220PF	1
C509			423J8102	C,CERAMIC 50V 560PF	1
C507			427A7005	C,FILM 100V 0.0022UF	1
C506			427A7006	C,FILM 100V 0.0027UF	1
C564			427F4001	C,FILM 50V 1000PF	1
C510			427F4002	C,FILM 50V 1200PF	1
C503			427F4006	C,FILM 50V 2700PF	1
C402	C416		427F4015	C,FILM 50V 0.015UF	2
C404	C418		427F4025	C,FILM 50V 0.1UF	2
C862			427F4051	C,FILM 50V 1000PF	1
C859			427F4054	C,FILM 50V 1800PF	1
C860			427F4055	C,FILM 50V 2200PF	1
C905			427F4075	C,FILM 50V 0.1UF	1
⚠C552			42704567	C,FILM 200V 0.022UF	1
C541			42760011	C,FILM 50V 6800PF	1
⚠C630			42760017	C,FILM 50V 0.022UF	1
⚠C608	⚠C614		42760069	C,FILM 50V 0.033UF	2
⚠C656			42760073	C,FILM 50V 0.068UF	1
⚠C607			42760075	C,FILM 50V 0.1UF	1
⚠C613	⚠C619	⚠C659	42799099	C,MYLAR 400V 0.033UF	3
C445	C446		4282C013	C,ELEC 50V 0.1UF	2
C442			4282C017	C,METAL FILM 50V 0.2U	1
C406	C441	C572	4282C025	C,METAL FILM 50V 1UF	3
⚠C602			42824325	C,FILM 250V 0.1UF	1
⚠C601			42824329	C,FILM 250V 0.22UF	1
⚠C655			42839021	C,METAL FILM 250V 0.068UF	1
⚠C666			42839022	C,METAL FILM 250V 0.1UF	1
C901	C902	C903	42840097	C,FILM 250V 0.22UF	3
⚠C661			42840133	C,METAL FILM 250V 0.1UF	1
C516			42840173	C,FILM 400V 0.1UF	1
⚠C515	⚠C515A		42842502	C FILM 1600V 3000PF	2
⚠C522			42842504	C,FILM 1600V 1900PF	1
⚠C529			42843502	C,FILM 200V 12UF	1
C518			42899010	C,METAL FILM 250V 0.22UF	1
⚠C530			42899014	C,METAL FILM 400V 0.39UF	1
C532			42899027	C,METAL FILM 400V 0.36UF	1
C531			42899080	C,FILM 400V 0.24UF	1

SYMBOL			PARTS NO	DESCRIPTION	QTY
			*** CAPACITORS ***		
C414			430A4101	C,ELEC 50V 0.22UF	1
⚠C2001			430B3047	C,ELEC 16V 22UF	1
C405			430B3050	C,ELEC 16V 100UF	1
C408			430B3090	C,ELEC 35V 100UF	1
C407			430B3091	C ELEC 35V 220UF	1
C707	C708	C709	430B3103	C,ELEC 50V 2.2UF	3
C558	C724	C725	430B3182	C,ELEC 160V 1UF	4
C726					
C807	C809	C815	430B6016	C,ELEC 10V 100UF	5
C850	C872				
C538	C841	C848	430B6017	C,ELEC 10V 220UF	3
C825	C826	C852	430B6025	C,ELEC 16V 10UF	3
⚠C2002			430B6026	C,ELEC 16V 22UF	1
C713	C714	C732	430B6027	C,ELEC 16V 33UF	5
C822	C839				
C420	C819	C820	430B6028	C,ELEC 16V 47UF	5
C821	C851				
C401	C811	C813	430B6029	C,ELEC 16V 100UF	5
C835	C838				
C512	C833		430B6030	C,ELEC 16V 220UF	2
C712			430B6032	C,ELEC 16V 470UF	1
C817			430B6037	C,ELEC 25V 4.7UF	1
C472	C473	C474	430B6039	C,ELEC 25V 22UF	4
C475					
C548			430B6041	C,ELEC 25V 47UF	1
C540			430B6044	C,ELEC 25V 330UF	1
C419	C549		430B6053	C,ELEC 35V 47UF	2
C490	C539		430B6054	C,ELEC 35V 100UF	2
C403	C856		430B6061	C,ELEC 50V 1UF	2
C415	C857		430B6062	C,ELEC 50V 2.2UF	2
C505			430B6063	C,ELEC 50V 3.3UF	1
C470	C517	⚠C524	430B6065	C,ELEC 50V 10UF	4
C870					
C526			430B6066	C,ELEC 50V 22UF	1
⚠C525			430B6068	C,ELEC 50V 47UF	1
C562			430B6516	C,ELEC 160V 10UF	1
C916			430B6552	C,ELEC 250V 1UF	1
C537			4302C034	C,ELEC 10V 1000UF	1
⚠C652			4302C094	C,ELEC 35V 1000UF	1
⚠C660			4302C101	C*ELEC 50V 0.47UF	1
⚠C665			4302C102	C,ELEC 50V 1UF	1
⚠C653			4302C170	C,ELEC 100V 100UF	1
⚠C651			4302C172	C,ELEC 100V 330UF	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
*** CAPACITORS ***			
⚠C664	4302C182	C,ELEC 160V 1UF	1
⚠C550 ⚠C657 ⚠C658 ⚠C662	4302C190	C,ELEC 16CV 100UF	4
⚠C611 ⚠C617	4302E051	C,ELEC 16V 220UF	2
⚠C610 ⚠C616	4302E053	C,ELEC 50V 470UF	2
⚠C668	4302E069	C,ELEC 25V 47UF	1
⚠C654	4302E090	C,ELEC 35V 100UF	1
⚠C609 ⚠C615	4302E105	C,ELEC 5CV 4.7UF	2
⚠C620	4302E107	C,ELEC 50V 22UF	1
C536	4302F056	C,ELEC 35V 33CUF	1
C527	4302F536	C,ELEC 200V 10UF	1
⚠C629	4302J032	C,ELEC 16V 470UF	1
C410	43026073	C,ELEC 50V 1000UF	1
⚠C523	43041001	C,ELEC 160V 47UF	1
⚠C605 ⚠C628	43108312	C,ELEC 400V 220UF	2
C556 C557	43201013	C,ELEC 25V 22UF	2
C730	433A3022	C,ELEC 16V 10UF	1
C701 C702 C703 C801 C802 C803 C804 C805 C806	433A3025	C,ELEC 16V 47UF	9
C514 C521	43315001	C,ELEC 25V 10UF	2
C504	435A5071	C,TANTALUM 35V 1UF	1
C861	435A7051	C,TANTLUM 16V 2.2UF	1
C412	435J9007	C,TANTALUM 35V 10UF	1
C511	4351H313	C,TANTLM 35V 10UF	1

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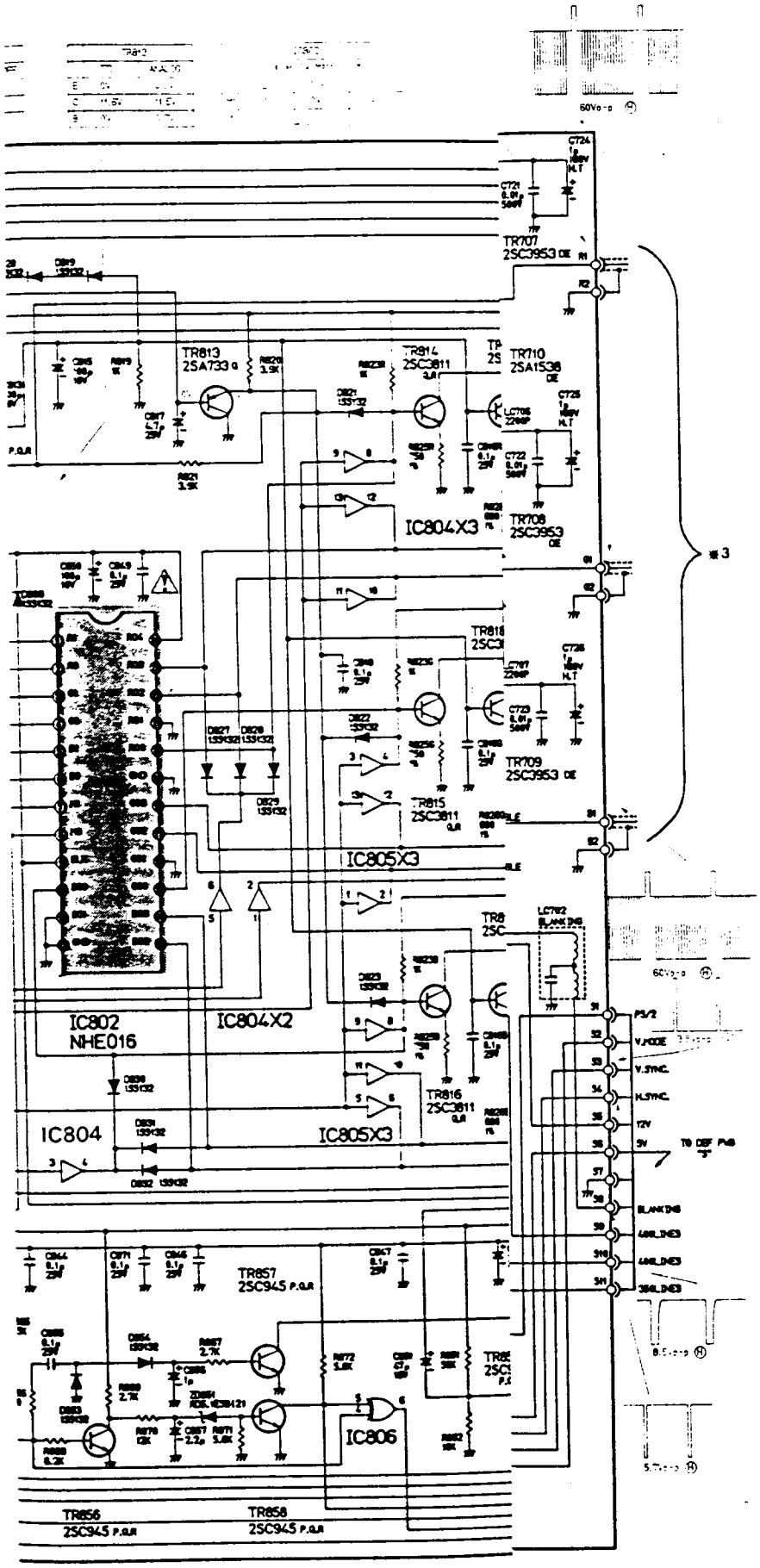
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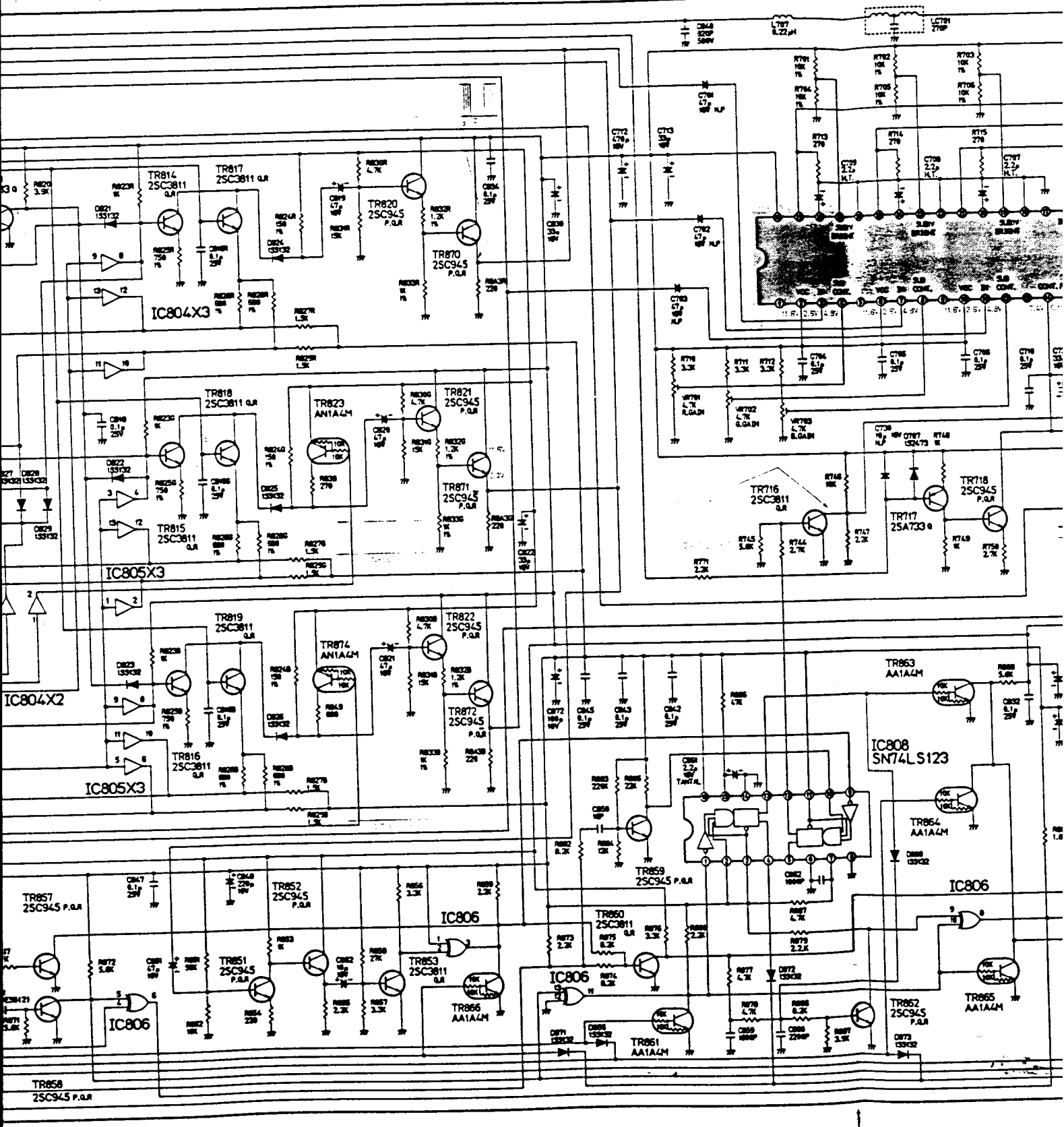
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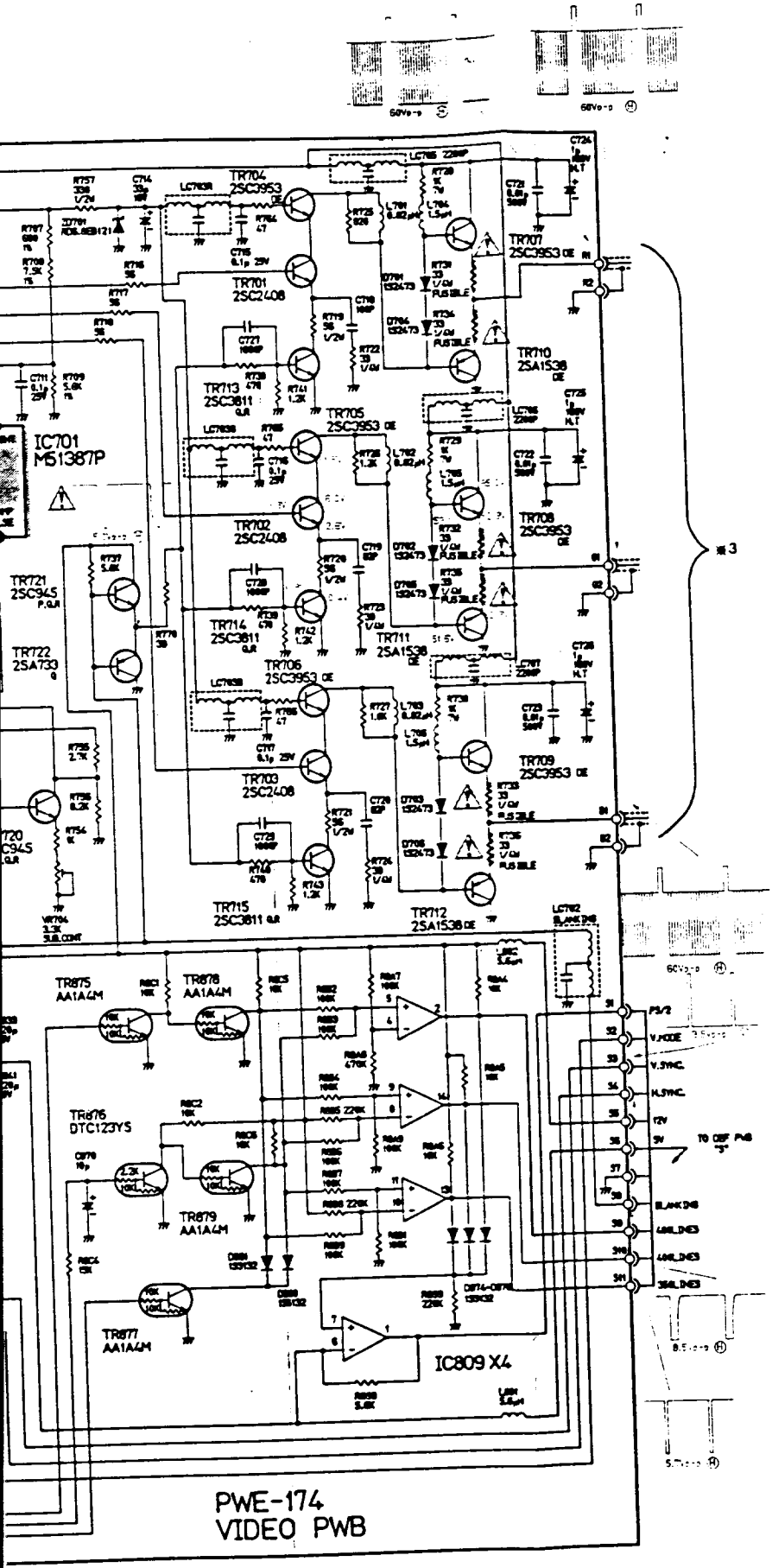
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5	5.2V	5.3V	11.0V	12		0V	
6	5.1V	5.1V	5.1V	13	[illegible]	[illegible]	[illegible]
7	10.7V	10.7V	10.7V	[illegible]	[illegible]	[illegible]	[illegible]

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3	2.4V	5.0V	[illegible]	2.4V	5.0V
4	2.7V	[illegible]	[illegible]	[illegible]	2.7V
5	2.4V	5.0V	13	[illegible]	5.0V
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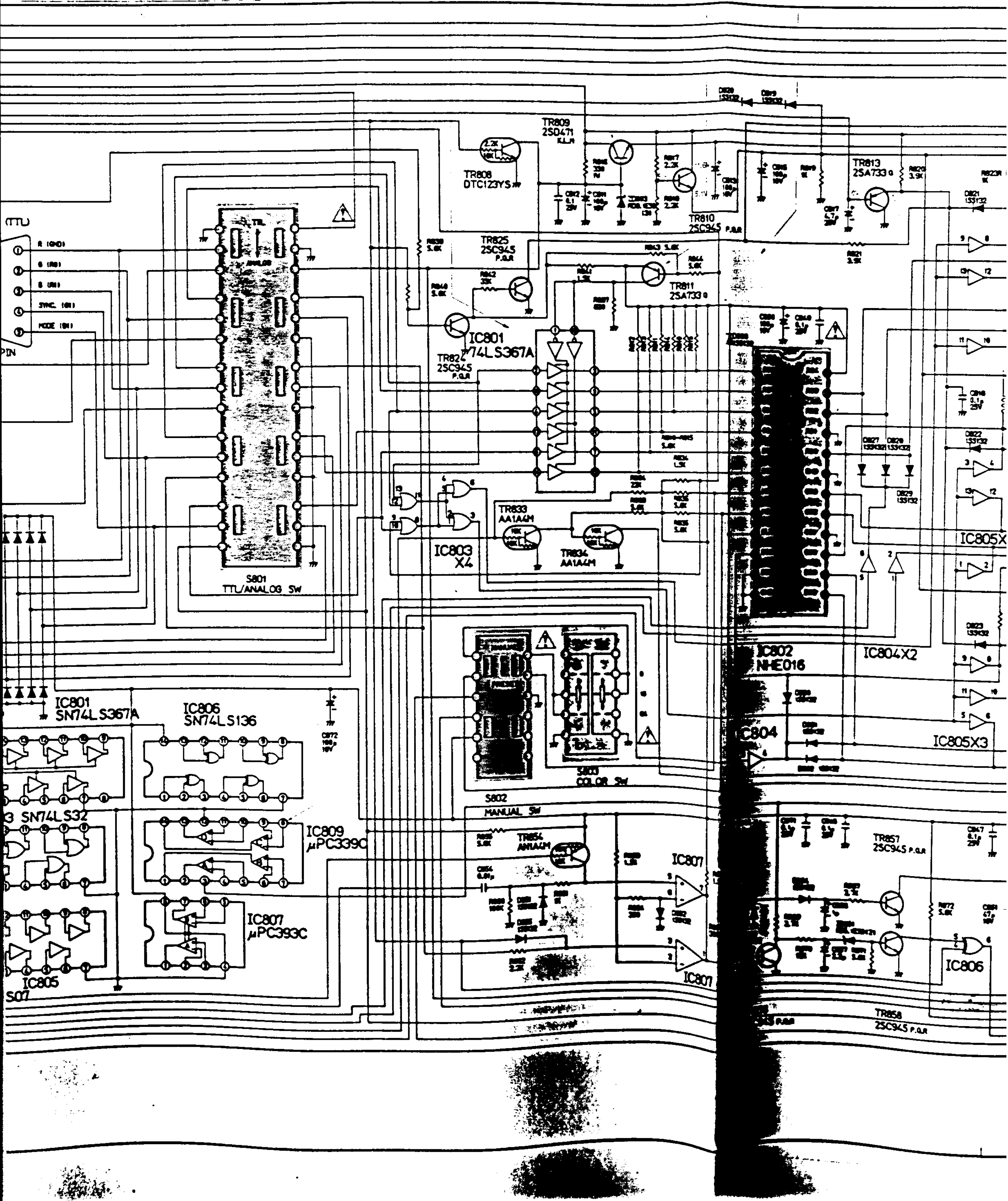

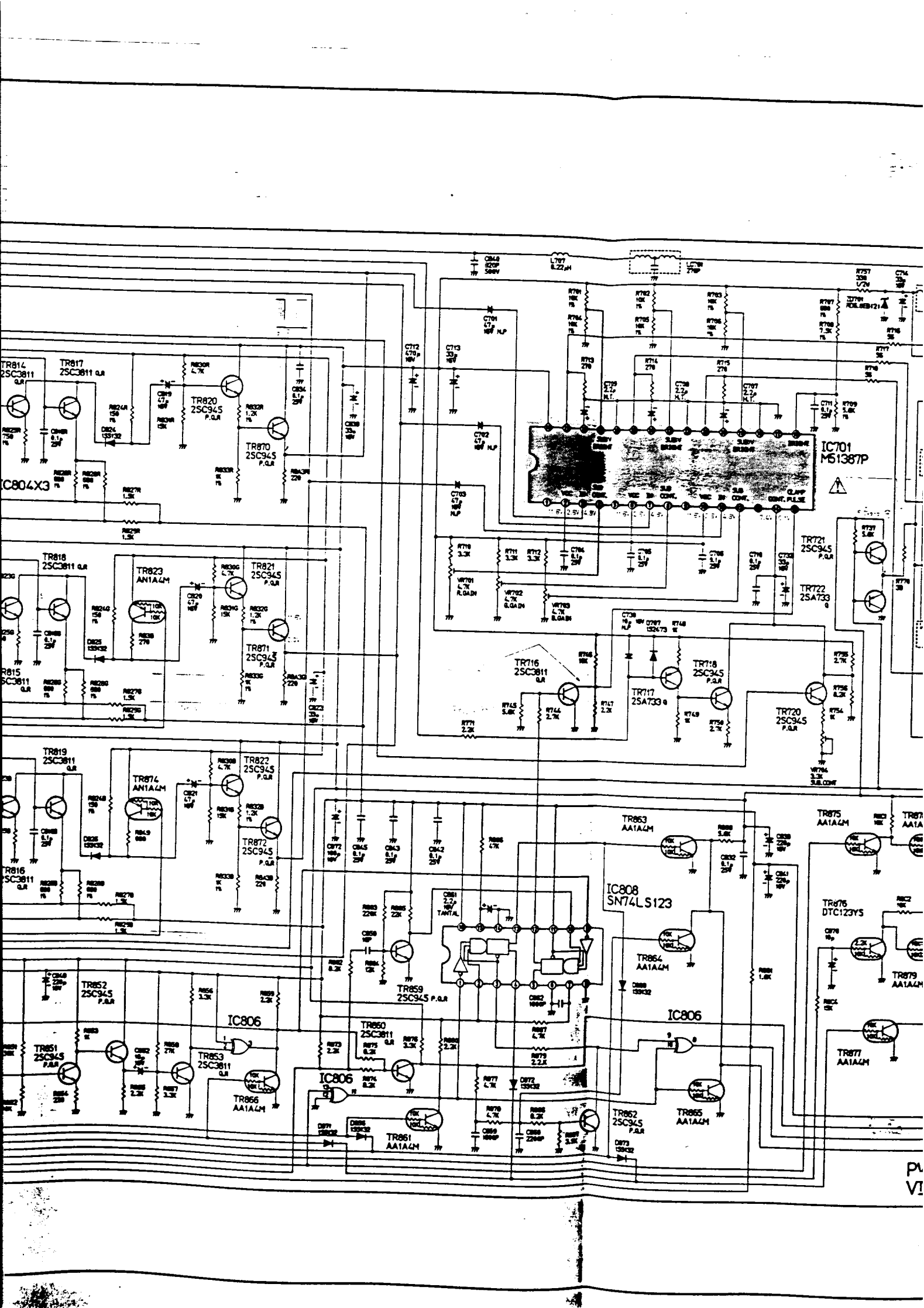
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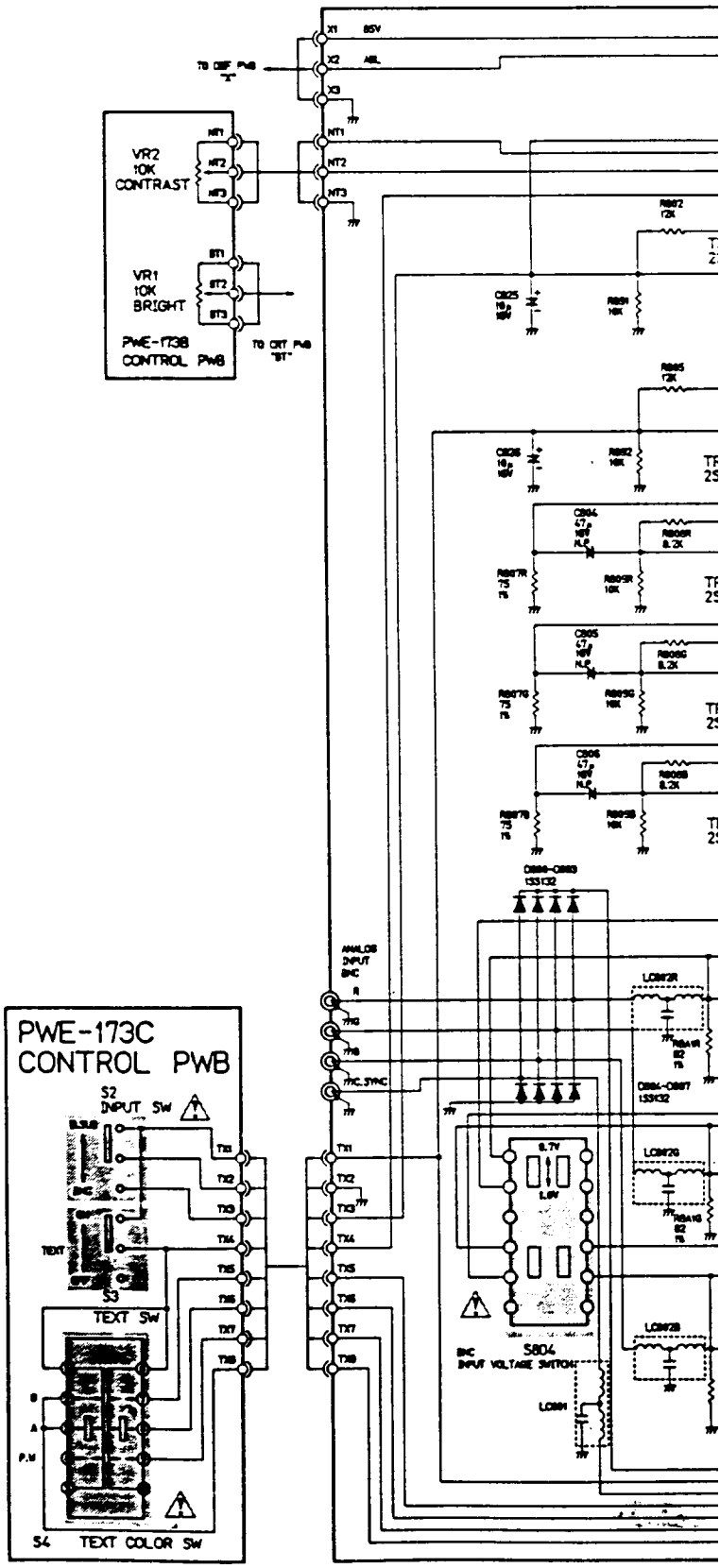
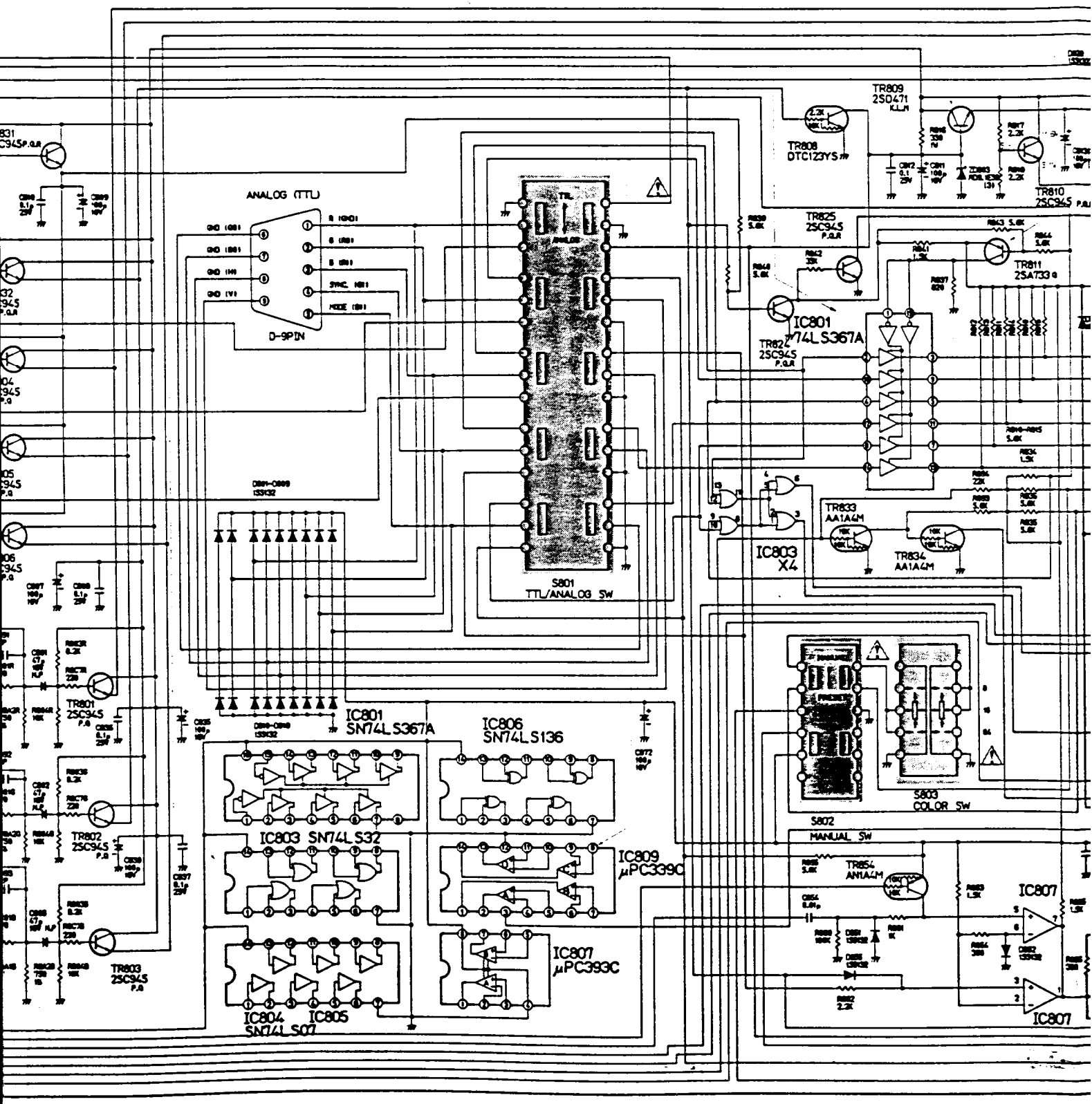
2SC945
TR721
2SC945
TR722
2SA733
TR716
2SC3811
TR717
2SA733
TR718
2SC945
TR720
2SC945
TR863
AA1A4M
TR875
AA1A4M
TR876
DTC123YS
TR879
AA1A4M
TR864
AA1A4M
TR877
AA1A4M
TR859
2SC945
TR852
2SC945
TR851
2SC945
TR853
2SC3811
TR866
AA1A4M
TR860
2SC3811
TR861
AA1A4M
TR862
2SC945
TR865
AA1A4M

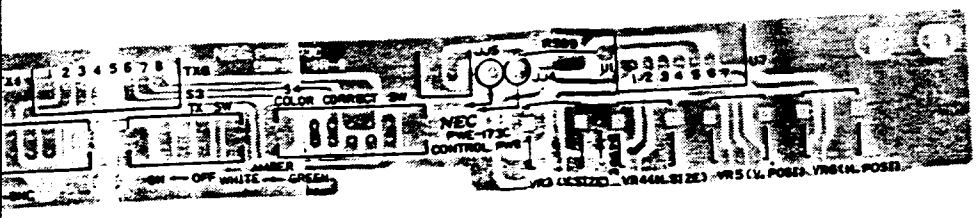
NEC JC-2001VME/EE/R

SCHEMATIC DIAGRAM



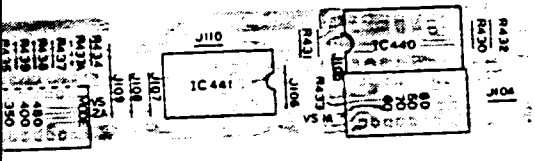
THIS SCHEMATIC DIAGRAM IS FUNDAMENTAL AND SUBJECT TO CHANGE.


ANALOG (TTL)
D-9PIN
S801
TTL/ANALOG SW
IC801
SN74LS367A
IC803
SN74LS32
IC804
SN74LS07
IC805
IC806
SN74LS136
IC807
μPC393C
IC809
μPC339C
TR801
2SC945
TR802
2SC945
TR803
2SC945
TR808
DTC123YS
TR809
2SD471
TR810
2SC945
TR811
2SA733
TR822
2SC945
TR825
2SC945
IC801
SN74LS367A
IC803
X4
TR833
AA1A4M
TR834
AA1A4M
S802
MANUAL SW
S803
COLOR SW
TR854
AN1A4M
IC807



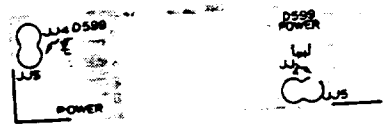
CONTROL PWB ASSY (PWE-173C)

– Solder Side –



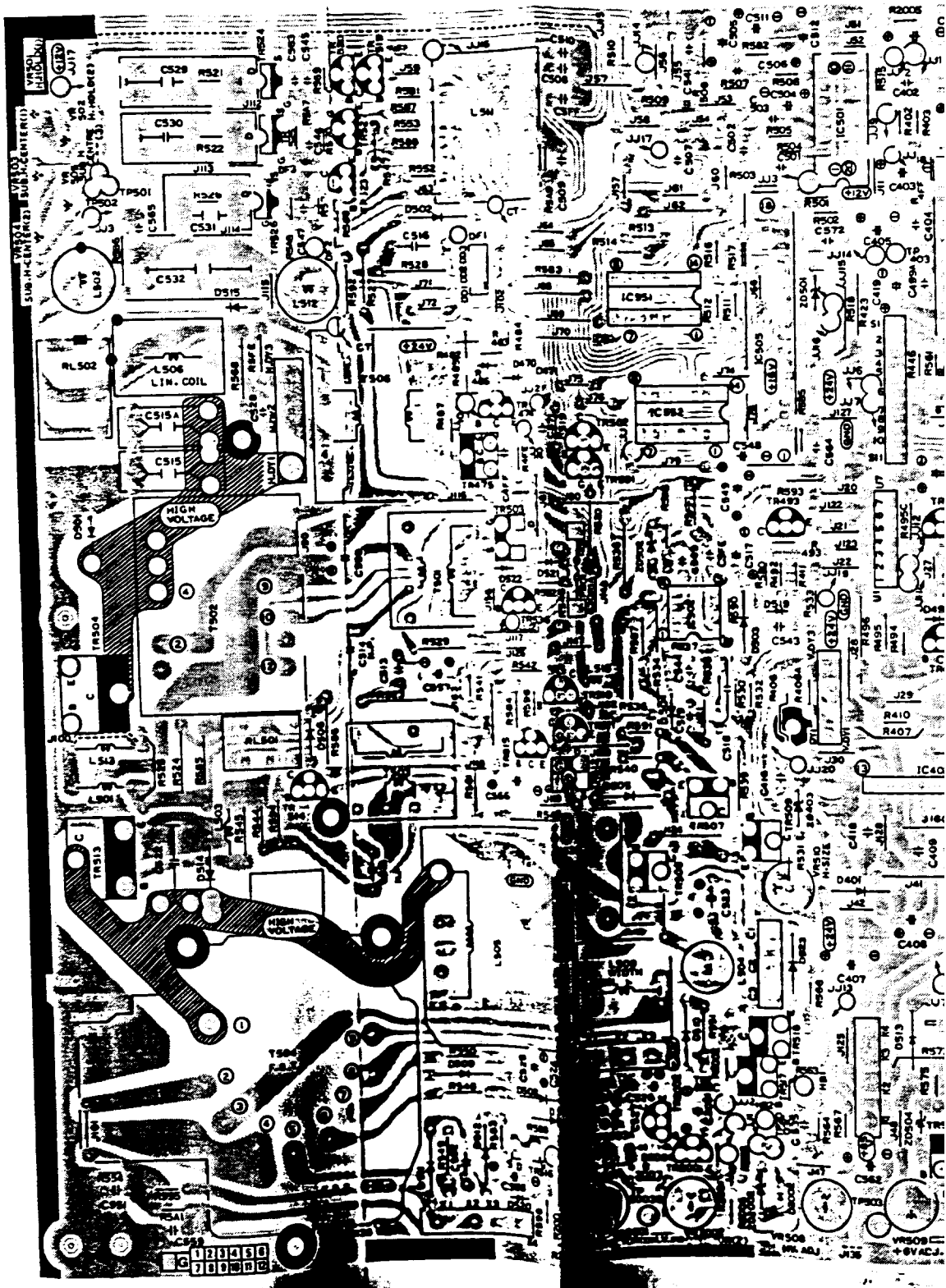
V-SIZE PWB ASSY (PWE-173D)

– Solder Side –



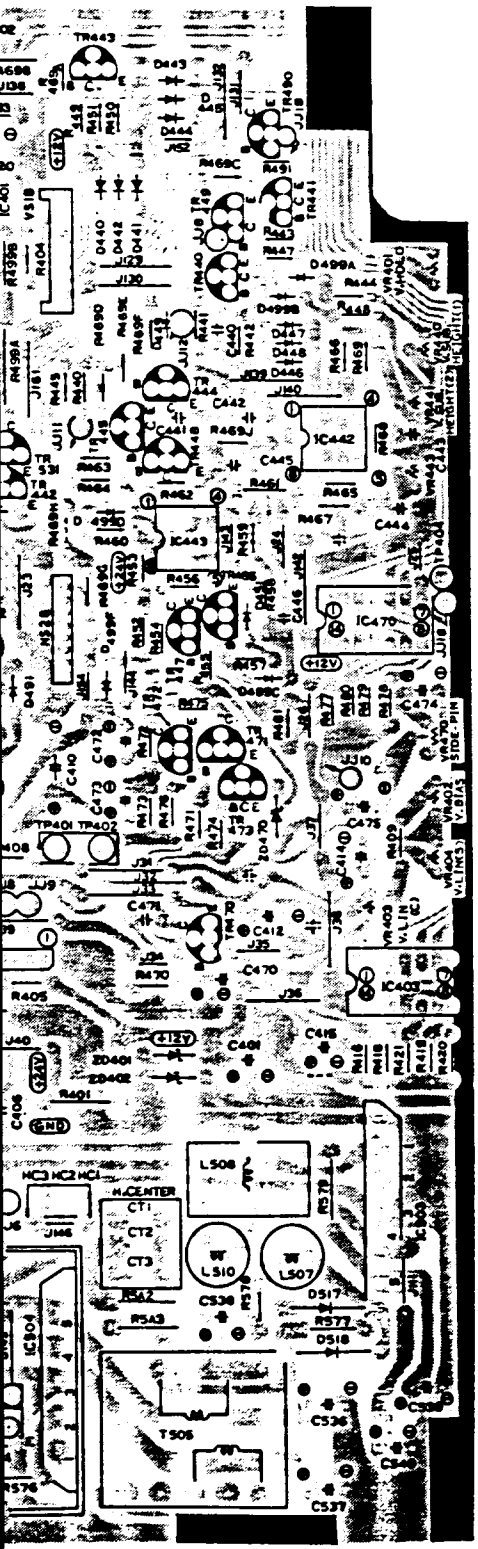
LED PWB ASSY (PWE-173E/F)

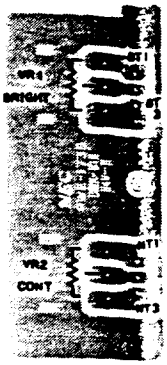
– Solder Side –



DEF ASSY (PWB-173A)

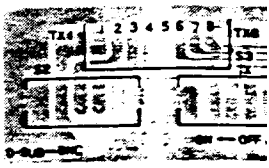
Solder Side –

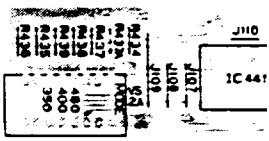




CONTROL PWB ASSY (PWE-173B)

– Solder Side –

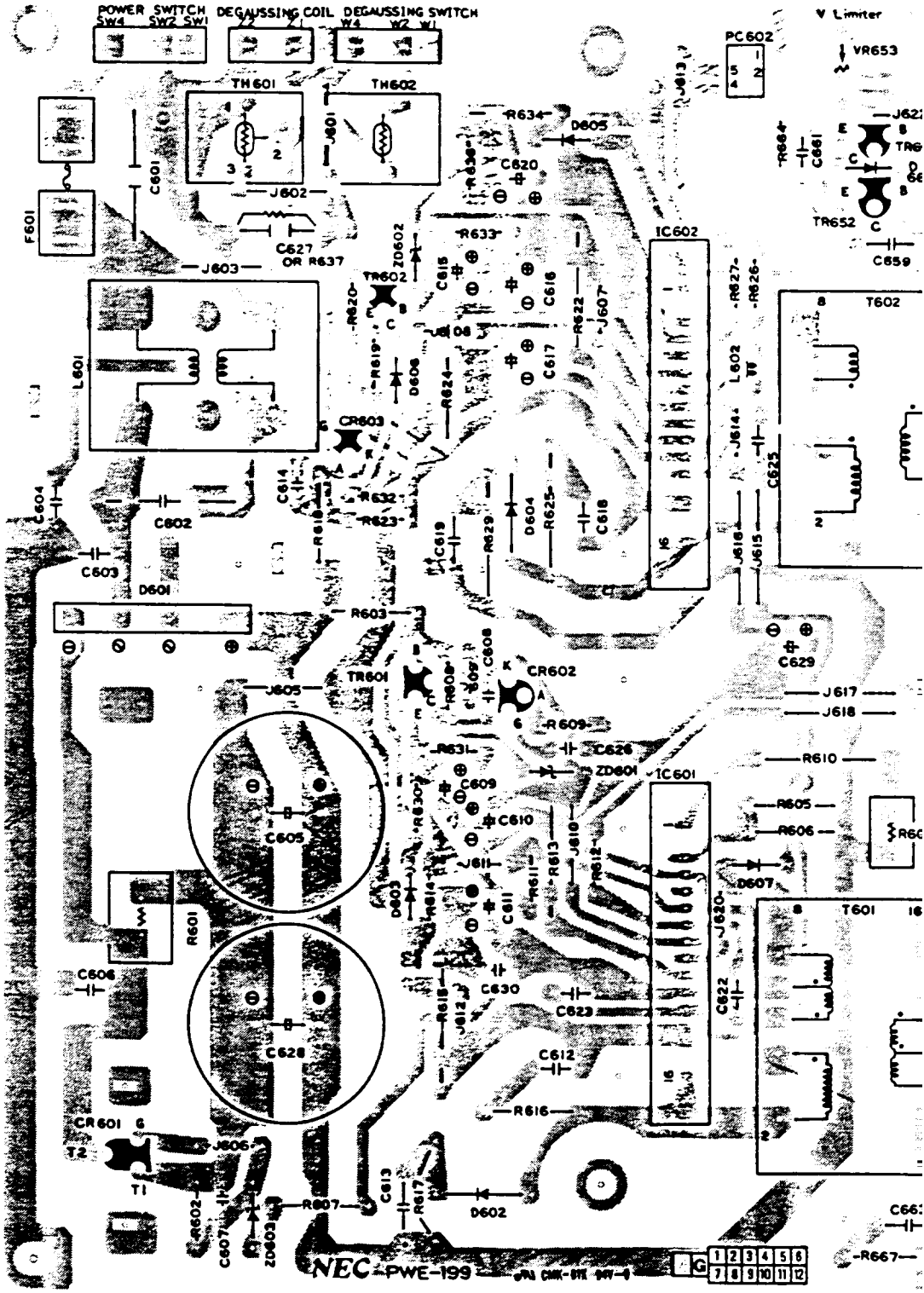




V-SIZE PWB A

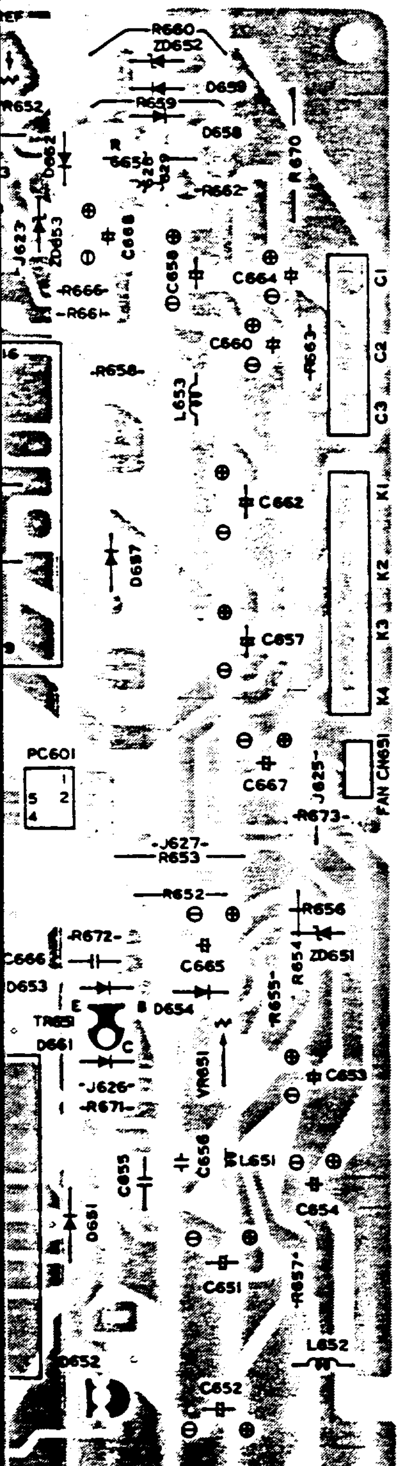
– Sold

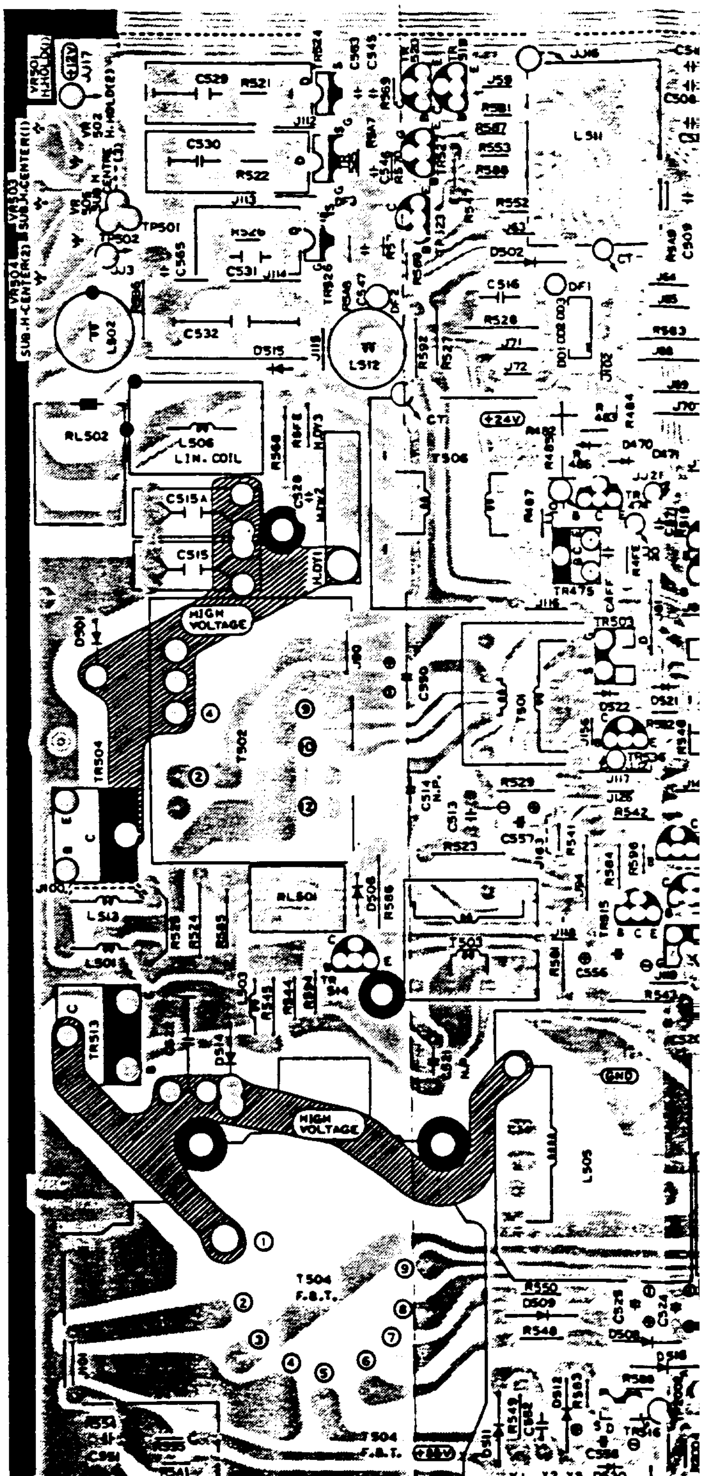
PRINTED WIRING BOARDS



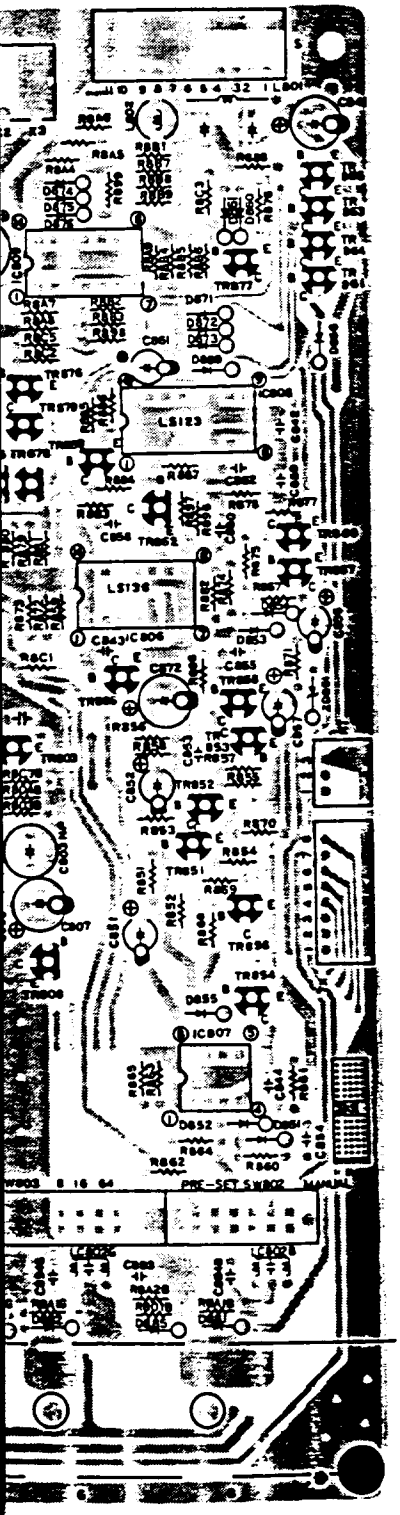
SW. REG PWB ASSY (PWE-199)

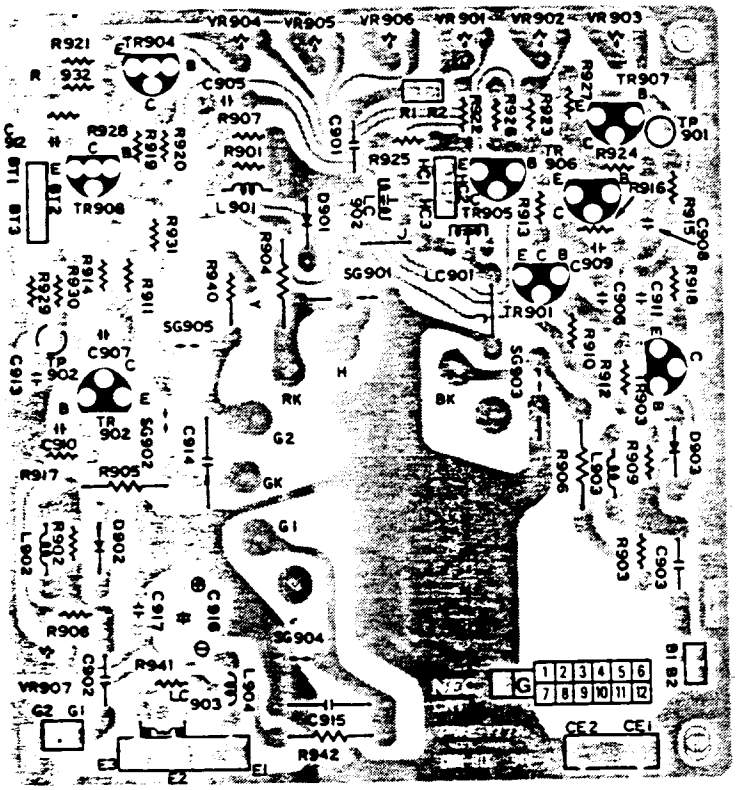
– Solder Side –


R660
ZD652
D659
R659
D658
R670
R662
C668
C658
C664
C660
R658
L653
R663
C1
C2
C3
K1
K2
K3
K4
C662
D657
C657
PC601
C667
J625
FAN CN651
R673
J627
R653
R652
R656
ZD651
R654
R672
C666
C665
D653
D654
TR651
D661
J626
R671
VR651
R655
C653
C655
C656
L651
C654
D651
C651
R657
L652
D652
C652
R661
R666
ZD653
J623
D662


VR501
H.HOLD(1)
+12V
JJ17
VR503
SUB.H.CENTER(1)
VR504
SUB.H.CENTER(2)
TP501
TP502
C529
R521
C530
R522
C531
C532
D515
L502
L512
L511
D502
C516
R528
RL502
L506
LIN. COIL
C515A
C515
HIGH
VOLTAGE
+24V
T506
TR475
TR503
T501
T502
TR504
D501
RL501
D506
R586
L513
L501
T503
TR513
D514
L505
GND
T504
F.B.T.
+88V
R550
D509
R548
D508
X1
X2
X3
J136
1 2 3 4 5 6
7 8 9 10 11 12
G

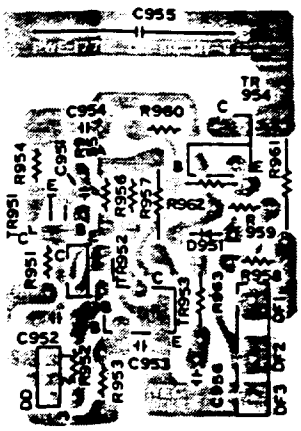
DEF P





CRT PWB ASSY (PWE-177A)

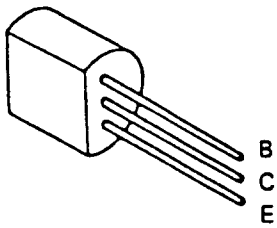
– Solder Side –



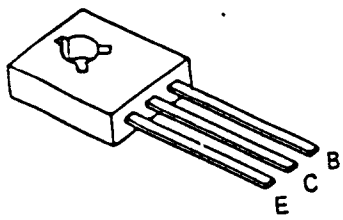
FOCUS PWB ASSY (PWE-177B)

– Solder Side –

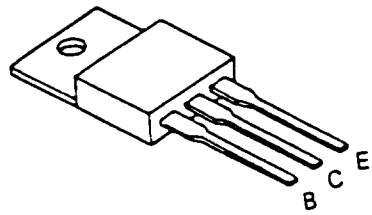
ts



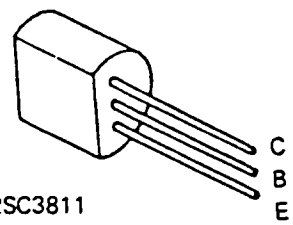
2SA733
2SA952
2SA1018
2SC945
2SC1473
2SC2001
AA1A4M
AN1A4M



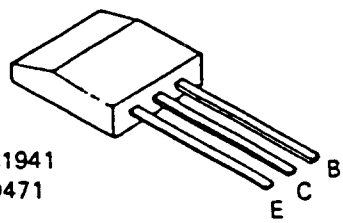
2SA1538
2SC3953
2SD882



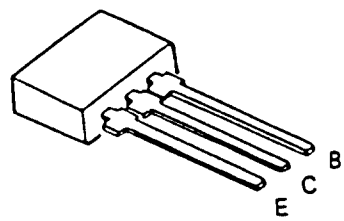
2SB546
2SD401
2SC3675



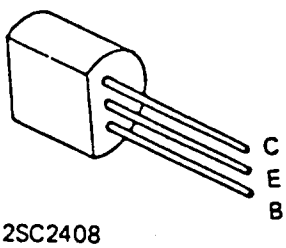
2SC3811



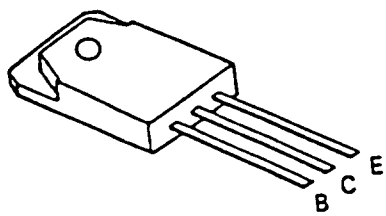
2SC1941
2SD471



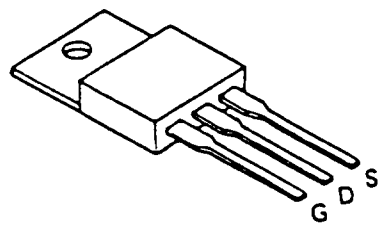
DTC123YS



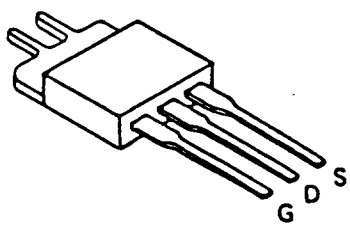
2SC2408



2SC3685
2SC3688



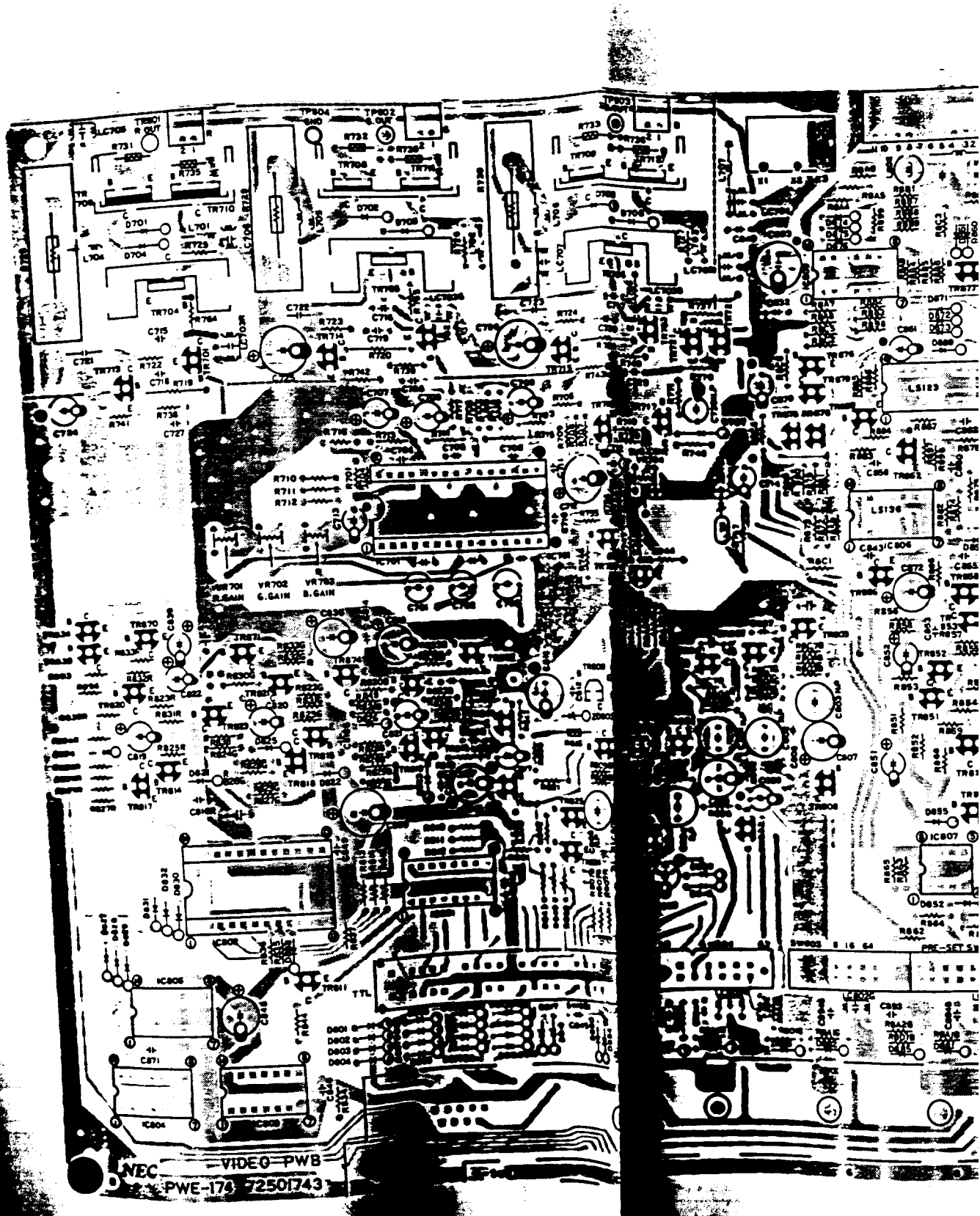
2SK754



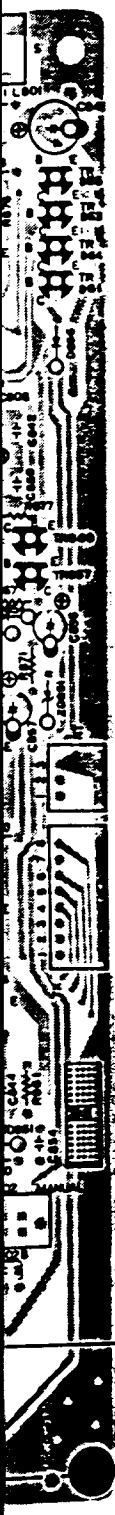
2SK430

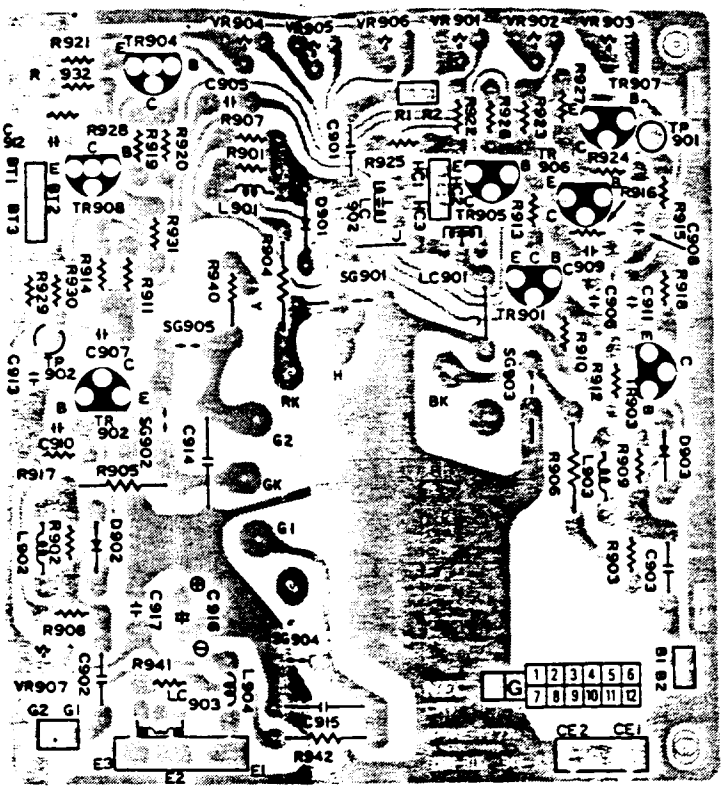
NOTE:

E: EMITTER
B: BASE
C: COLLECTOR
G: GATE
D: DRAIN
S: SOURCE



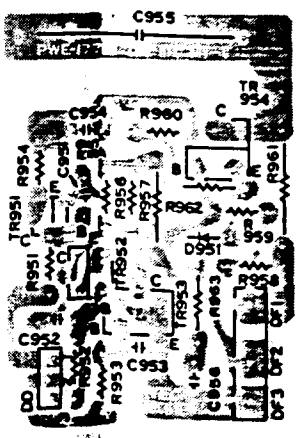
See-through view of r de components





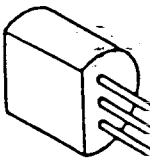
CRT PWB ASSY (PWE-177A)

— Solder Side —



FOCUS PWB ASSY (PWE-177B)

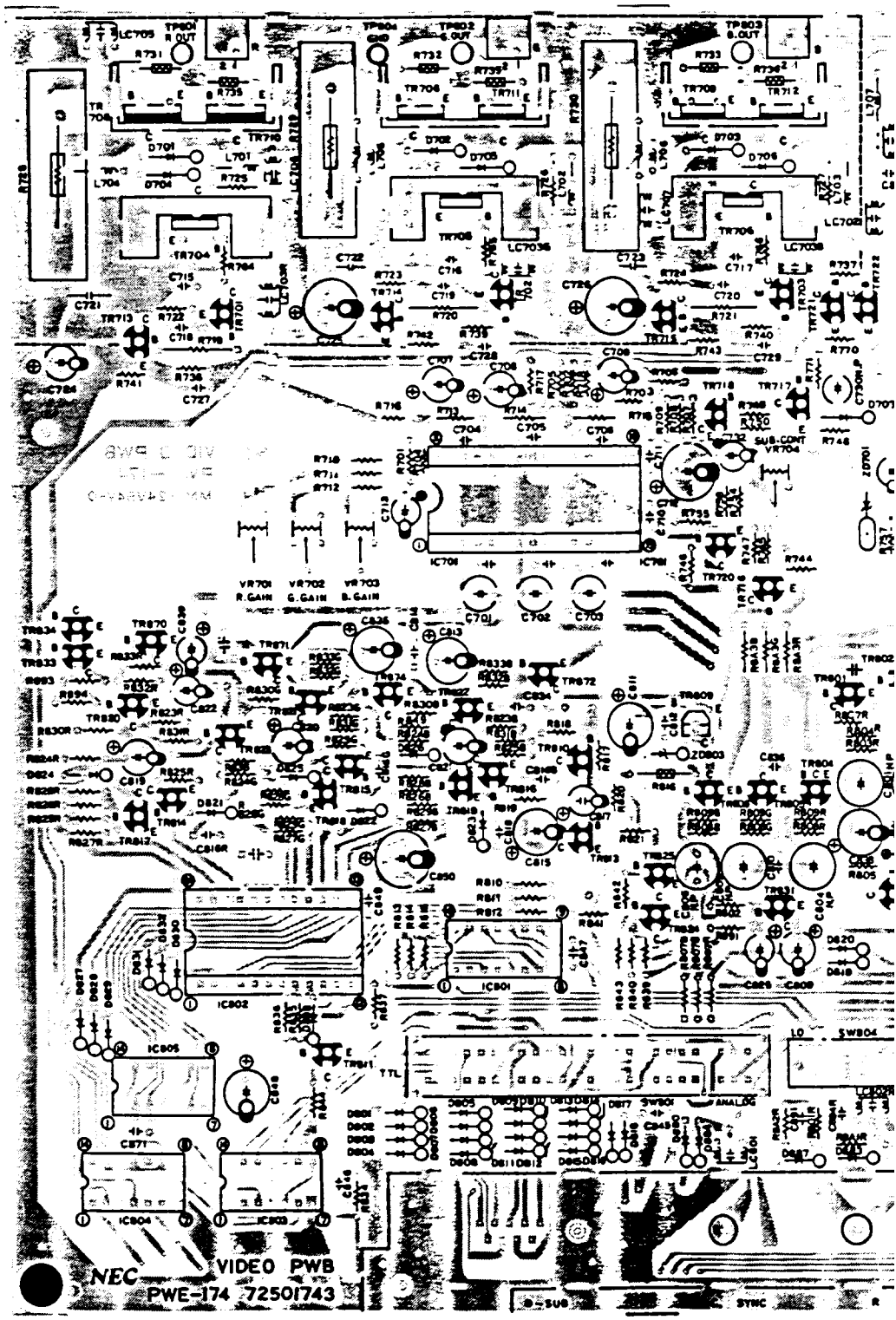
— Solder Side —



2SA733
2SA952
2SA1018
2SC945
2SC1473
2SC2001
AA1A4M
AN1A4M

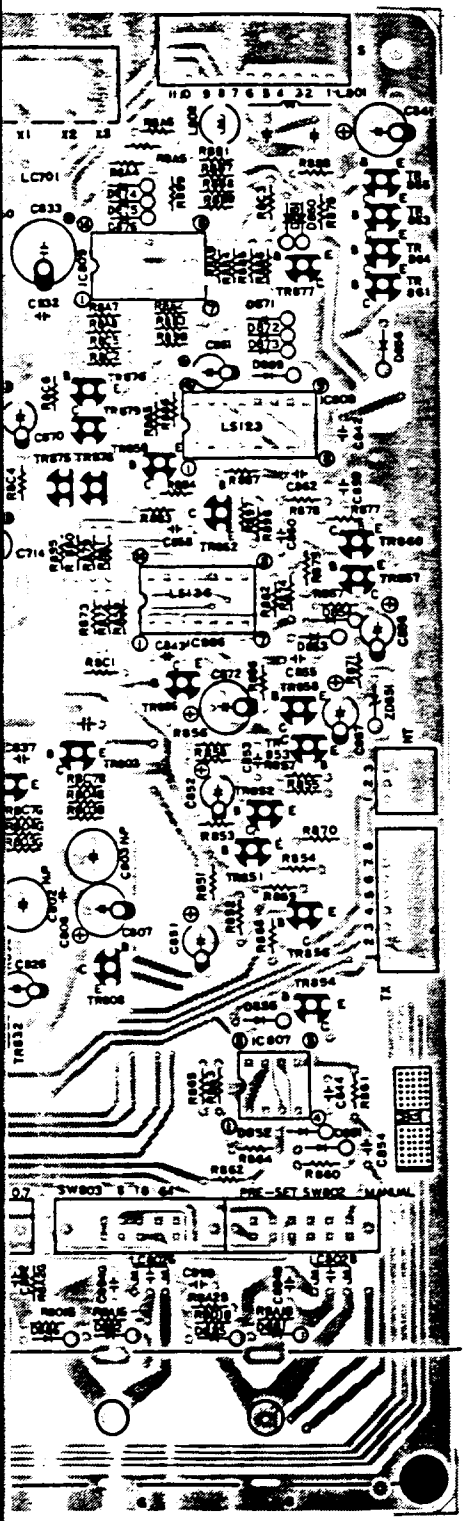
2SC3811

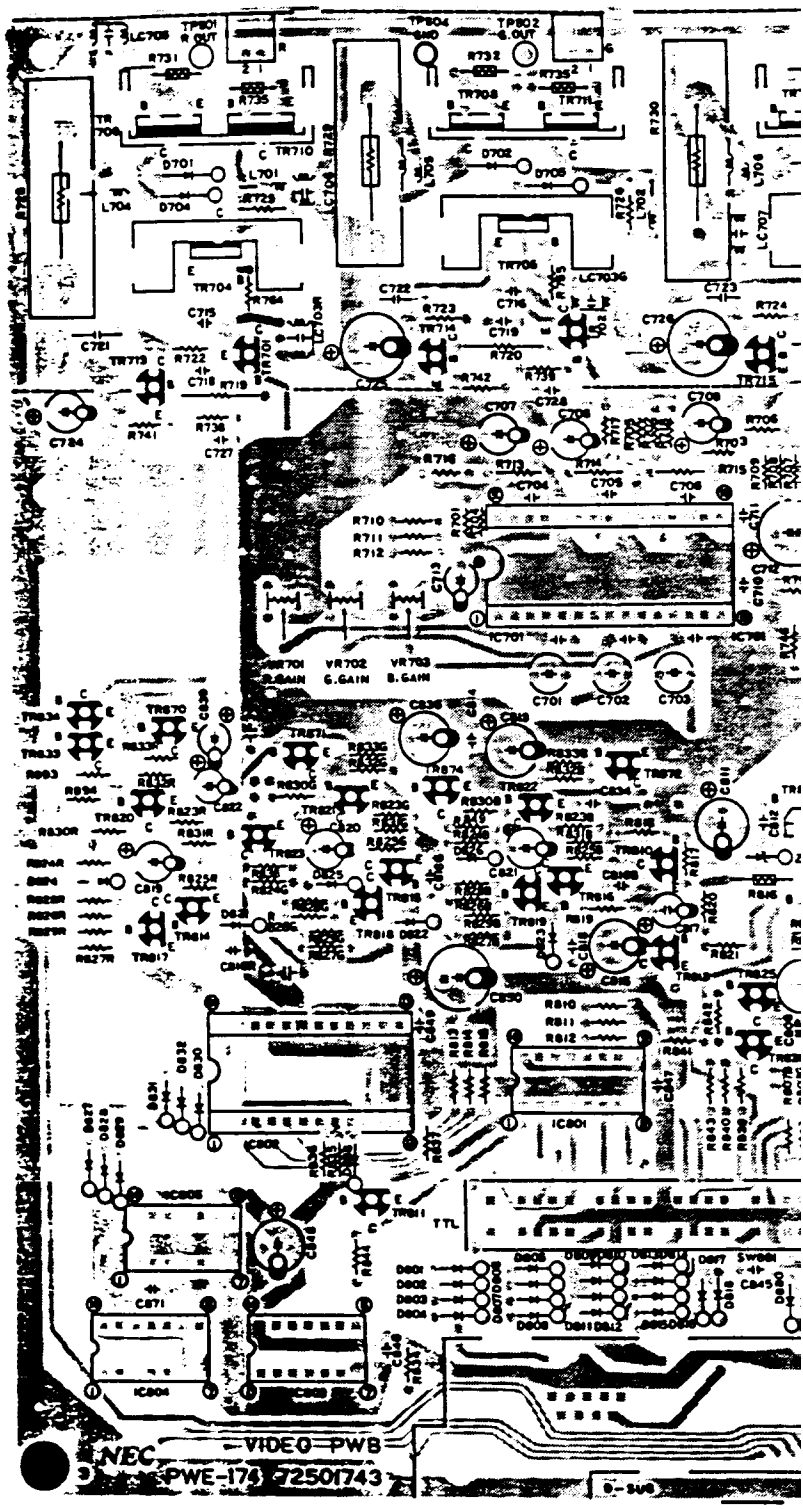
2SC24



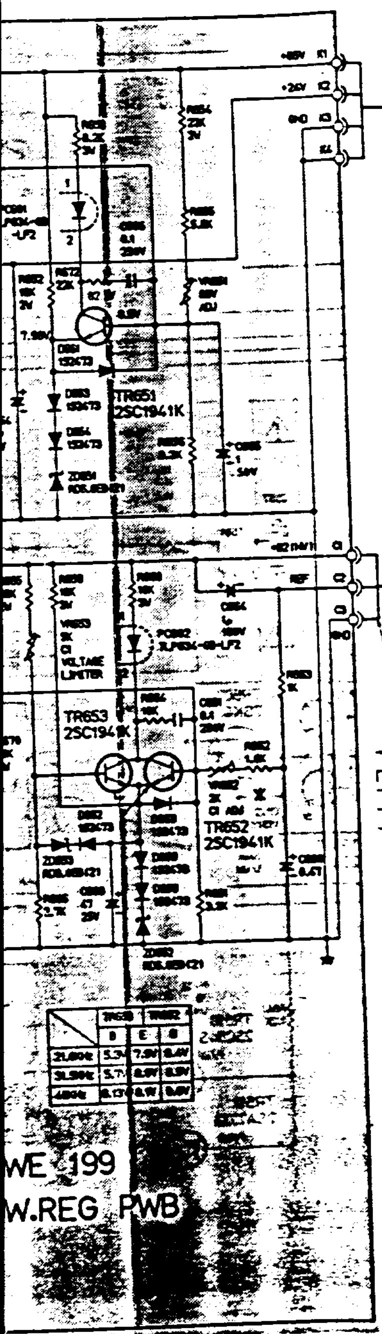
VIDEO PWB ASSY (PWE-174)

– Component Side –

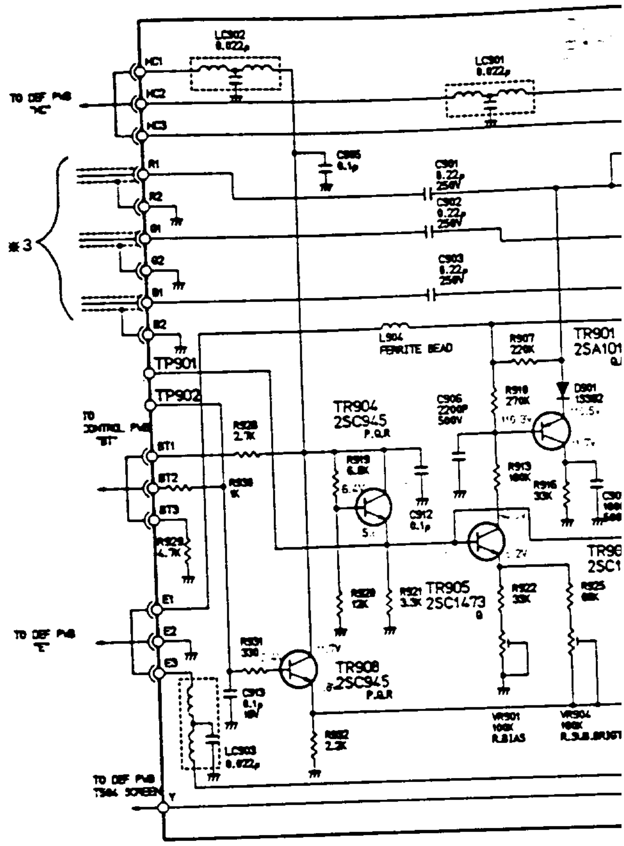


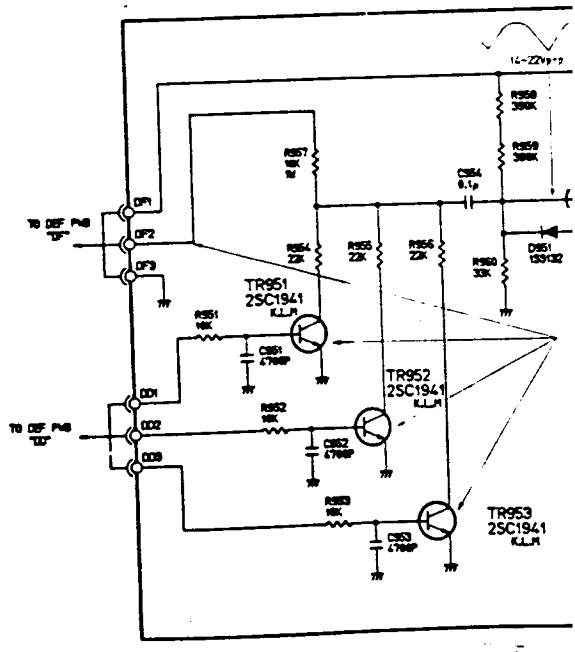


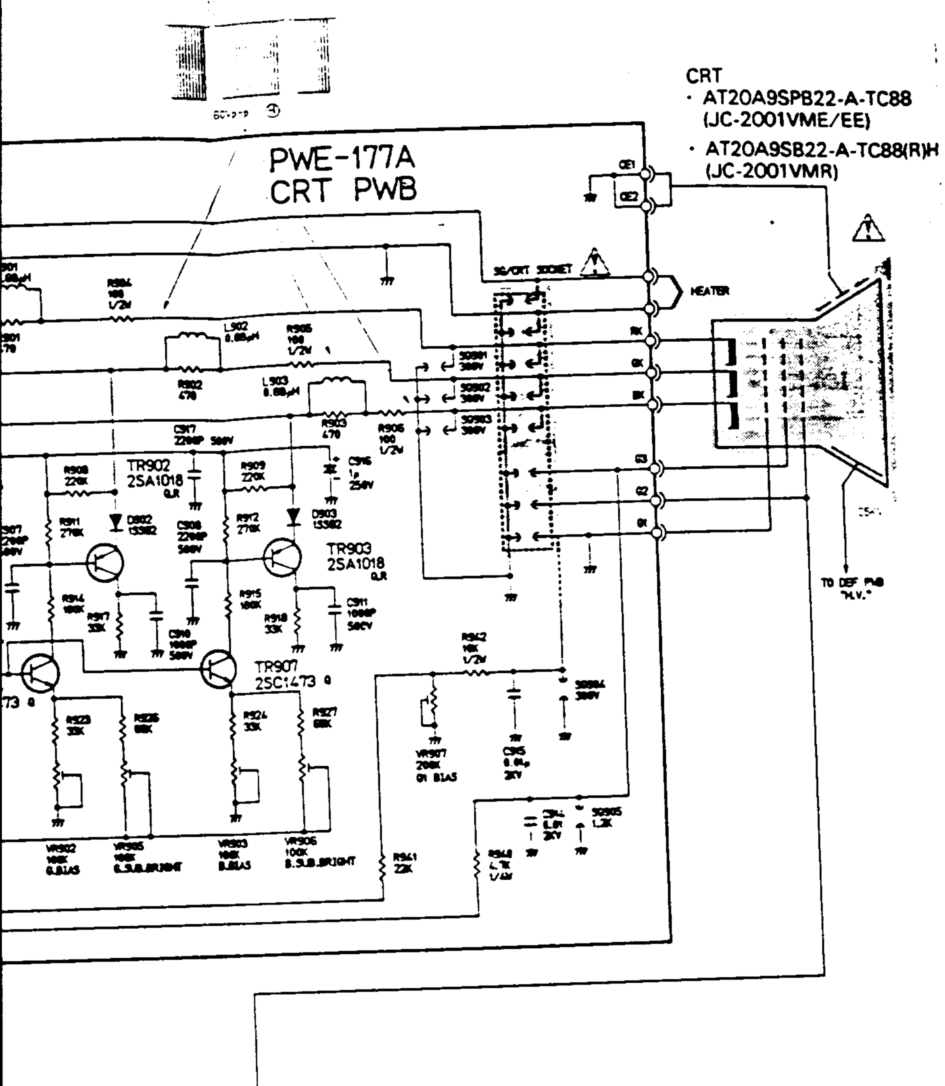
See-through view o

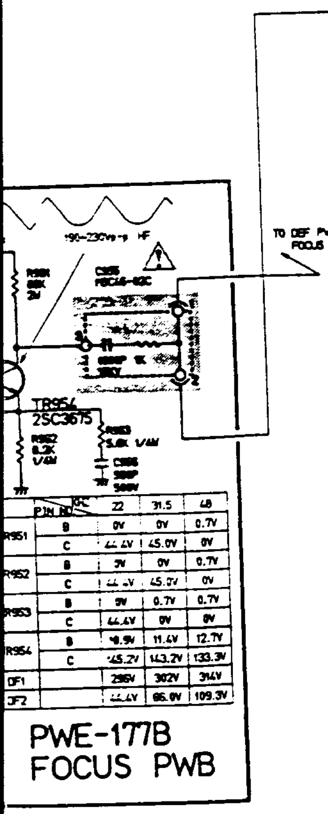


	C1	C2
21.8KHz	50V	17.9V
31.5KHz	76V	18.1V
48KHz	116V	18.2V









PIN NO	KHz	22	31.5	48
R951	B	0V	0V	0.7V
	C	44.4V	45.0V	0V
R952	B	5V	0V	0.7V
	C	44.4V	45.0V	0V
R953	B	5V	0.7V	0.7V
	C	44.4V	0V	0V
R954	B	10.5V	11.4V	12.7V
	C	145.2V	143.2V	133.3V
DF1		296V	302V	314V
DF2		44.4V	86.0V	109.3V

NOTES
1. RESISTOR VALUES ARE IN Ω (OHM) K = 1,000Ω M = 1,000,000Ω
2. ALL RESISTORS ARE 1/6WATT EXCEPT WHERE OTHERWISE INDICATED.
3. CAPACITOR VALUES ARE IN μF UNLESS OTHERWISE INDICATED. P = PF
4. ALL CAPACITORS ARE 50VOLTS EXCEPT WHERE OTHERWISE INDICATED.
5. VOLTAGES AND WAVEFORMS ARE MEASURED UNDER THE INVERTED "H" CHARACTER SIGNALS. THE CONTRAST CONTROL IS MAXIMUM. THE BRIGHTNESS CONTROL IS MINIMUM AND ALL OTHER CONTROLS ARE NORMAL OPERATION.
6. VOLTAGES AND WAVEFORMS ARE MEASURED UNDER THE FOLLOWING SYNC. AND VIDEO EXCEPT WHERE OTHERWISE INDICATED.

INTERFACE PWB VIDEO PWB CRT PWB	SYNC: HORIZONTAL RATE=21.8KHz SEPARATE SYNC. TTL LEVEL POSITIVE VIDEO: TTL LEVEL POSITIVE MANUAL 8 COLOR MODE
SW.REG.PWB DEF PWB	SYNC: HORIZONTAL RATE=48KHz SEPARATE SYNC. TTL LEVEL NEGATIVE VIDEO: ANALOG 0.7Vp-p POSITIVE MANUAL MODE

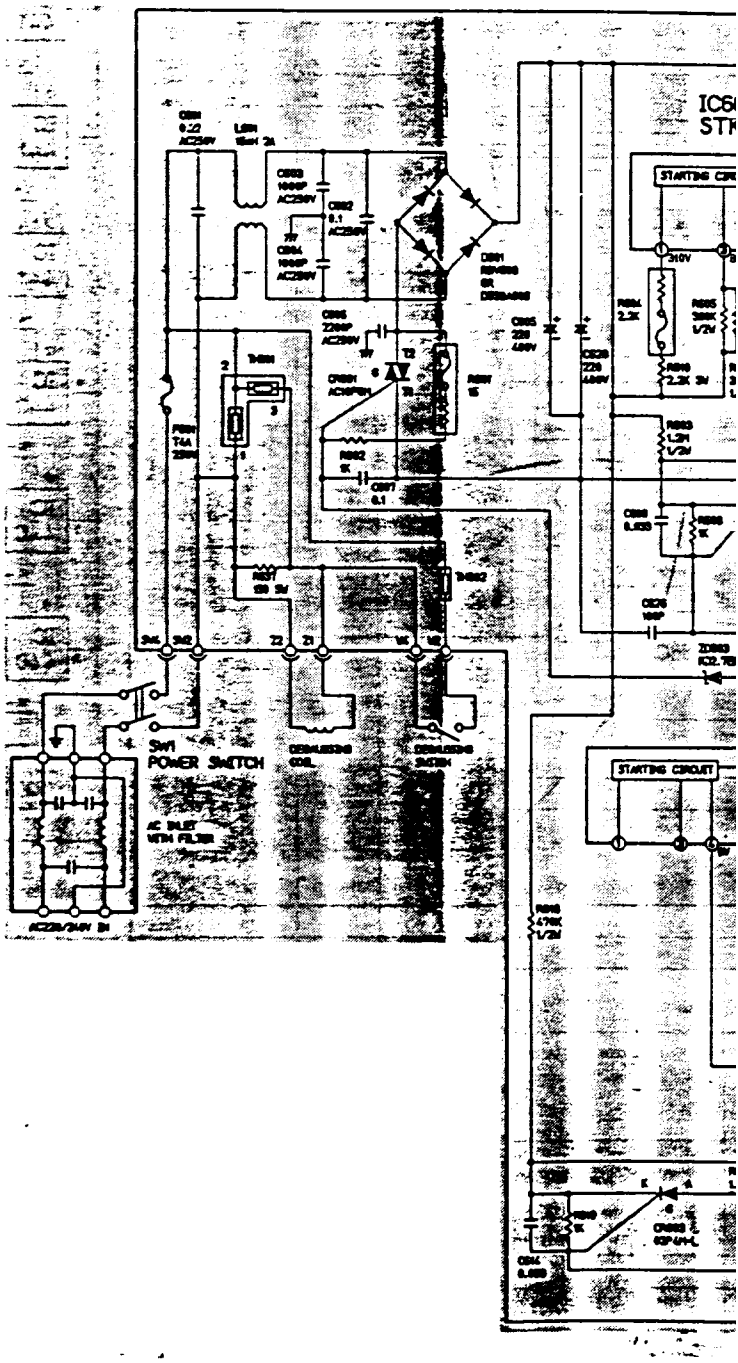
Hf means value of Vp-p is varied with Horizontal Freq
Hs means value of Vp-p is varied with Horizontal Size
Vf means value of Vp-p is varied with Vertical Freq
Vs means value of Vp-p is varied with Vertical Size

7. Ⓗ----- HORIZONTAL RATE. Ⓥ----- VERTICAL RATE.

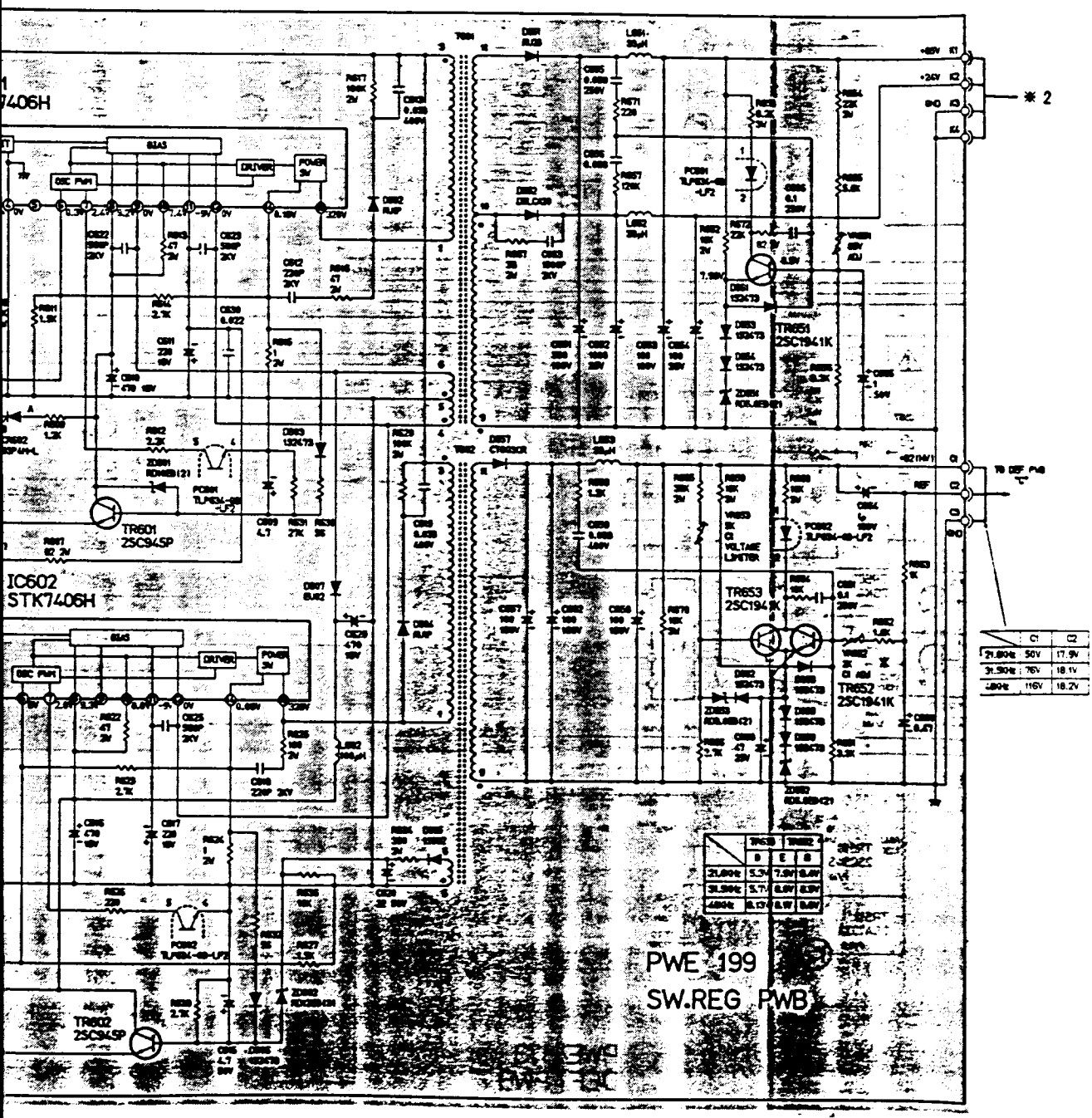
WARNING
REPLACEMENT PARTS WHICH HAVE SPECIAL SAFETY CHARACTERISTICS ARE IDENTIFIED BY ⚠ SHADING ON THE SCHEMATICS. REPLACE THESE CRITICAL COMPONENTS WITH RECOMMENDED REPLACEMENT PARTS. DON'T DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.
CONTROL [illegible] MARKED ✱ IS PERMANENTLY FROZEN. DO NOT ATTEMPT TO REPEAT OR IMPROPERLY REPLACE.

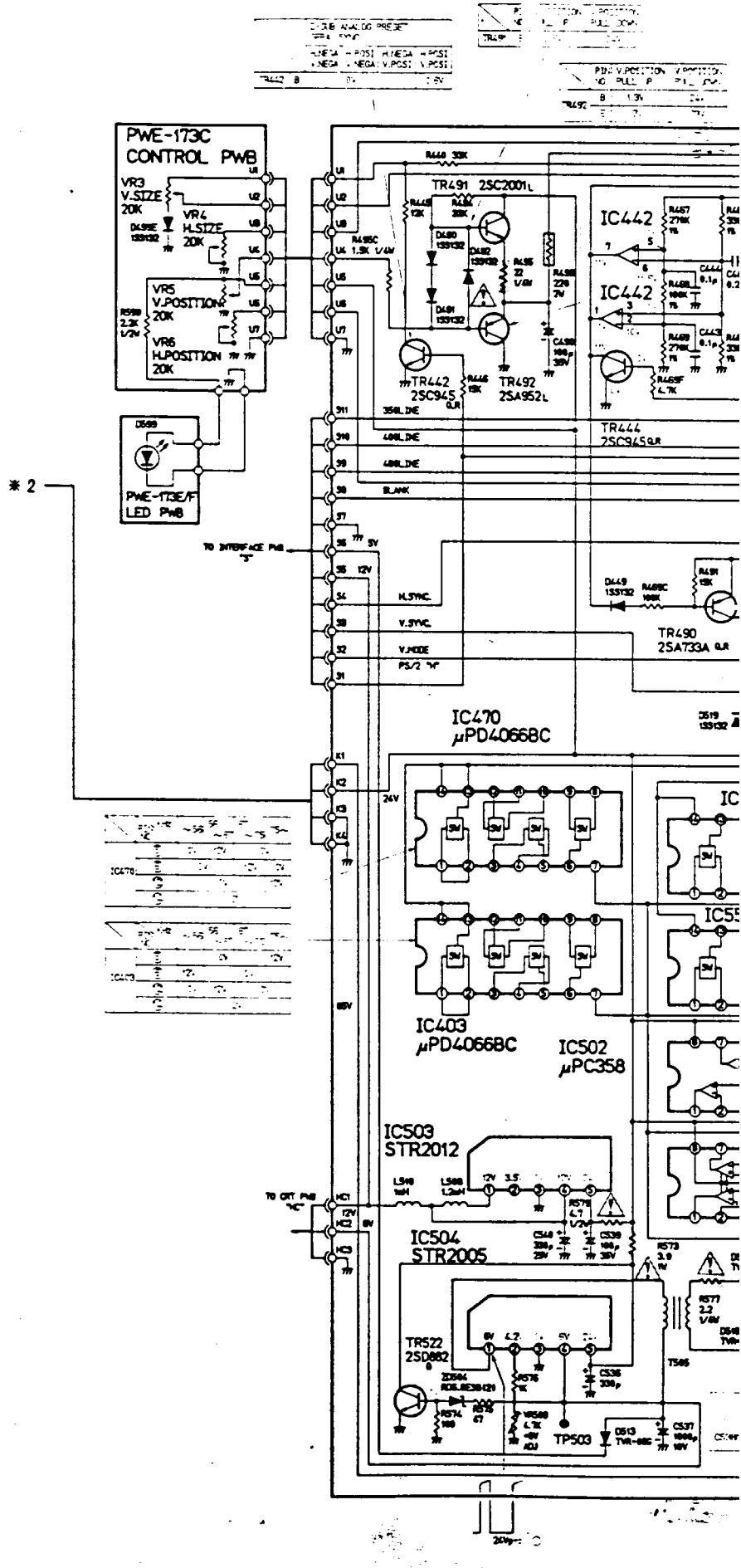
NEC JC-2001VME/EE/R

SCHEMATIC DIAGRAM

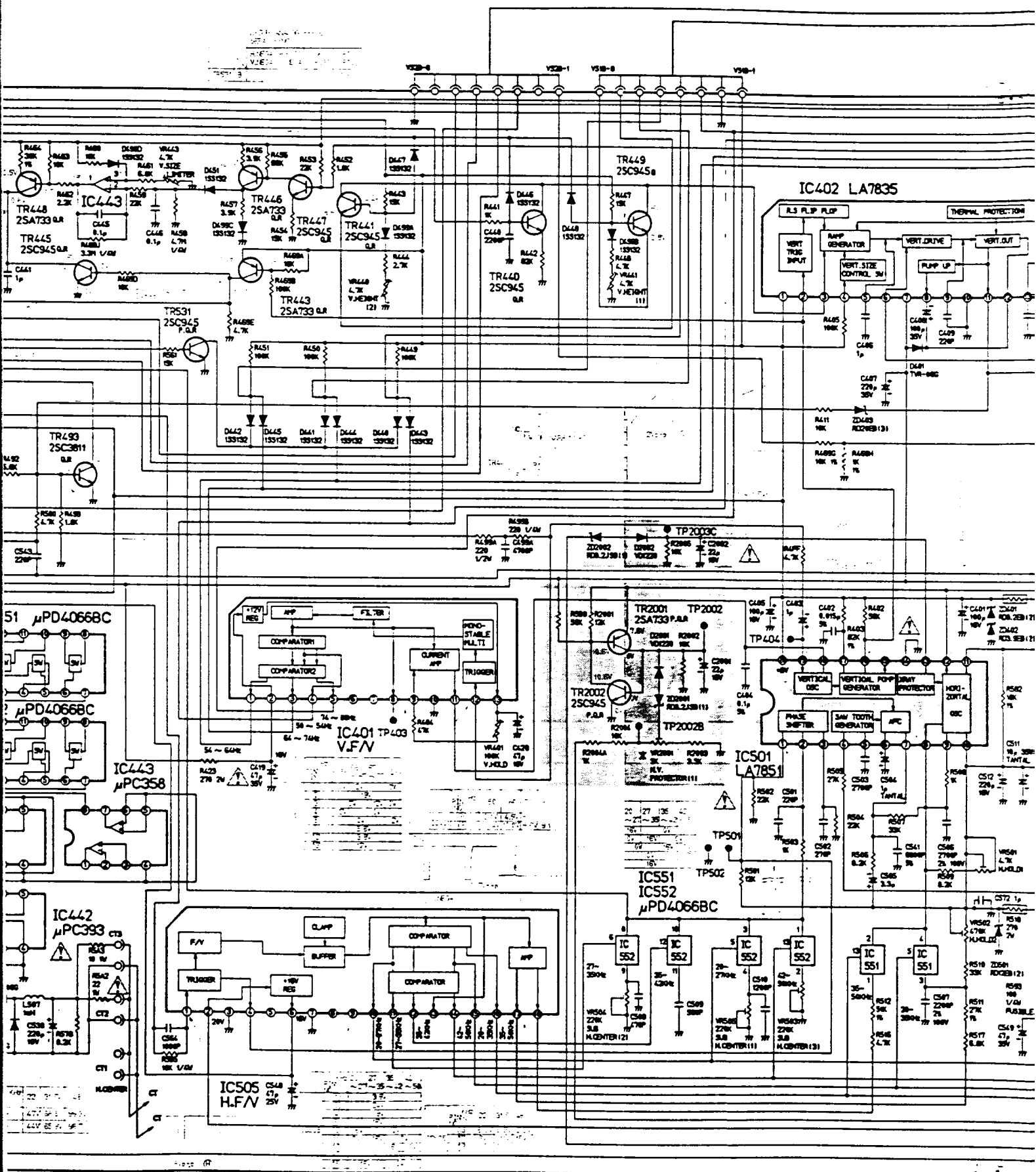


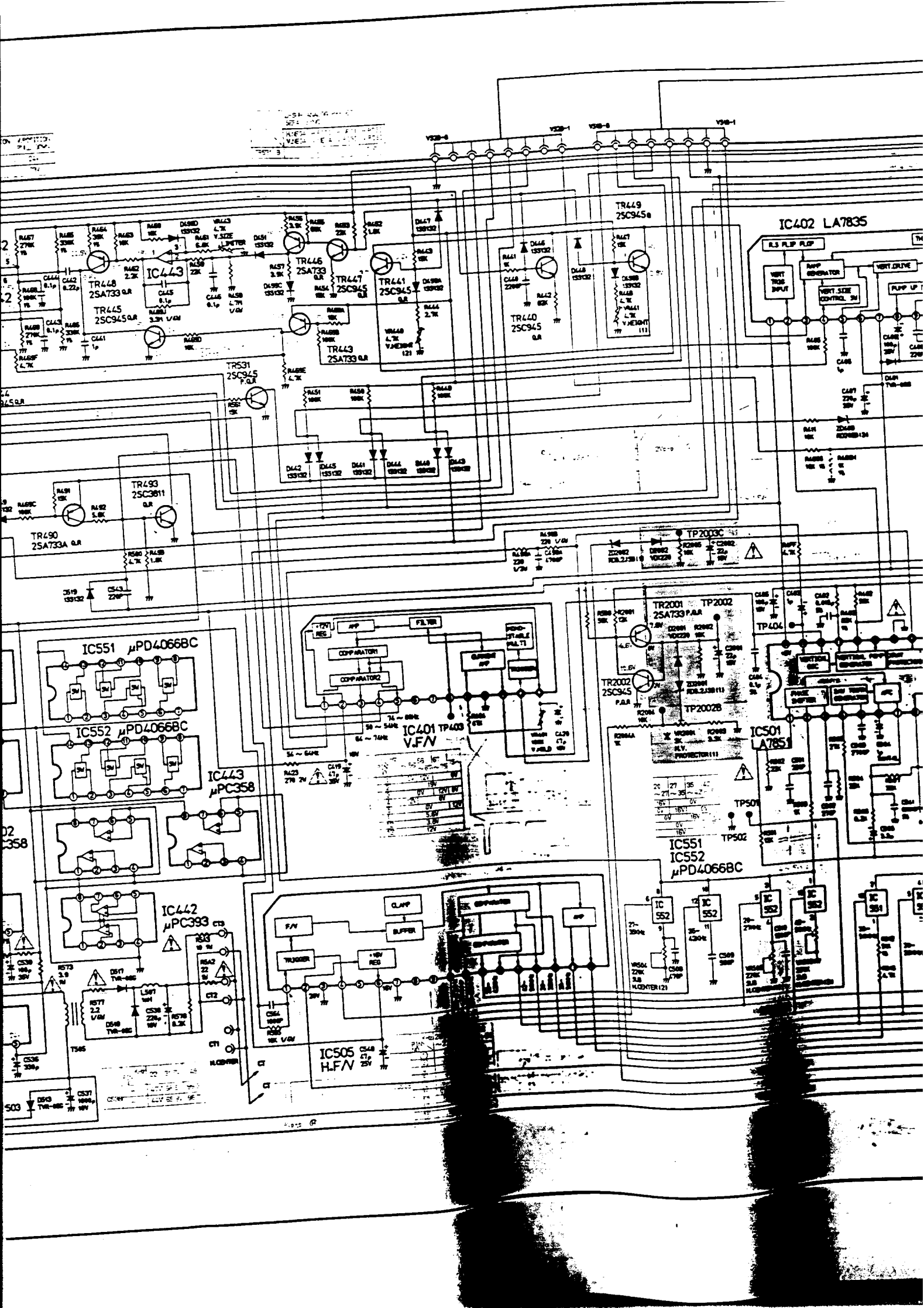
IAGRAM IS FUNDAMENTAL AND SUBJECT TO CHANGE.


IC602
STK7406H
TR601
2SC945P
TR602
2SC945P
TR651
2SC1941K
TR652
2SC1941K
TR653
2SC1941K
PWE 199
SW.REG PWB
* 2



THIS SCHEMATIC DIAGRAM IS FUNDAMENTAL AND SUBJECT TO CHANGE.


IC402 LA7835
IC443
IC401 V.F/V
IC501 LA7851
IC551
IC552
μPD40668C
IC442
μPC393
IC505 H.F/V
TR448 2SA733
TR445 2SC945
TR446 2SA733
TR447 2SC945
TR441 2SC945
TR443 2SA733
TR440 2SC945
TR449 2SC945
TR531 2SC945
TR493 2SC3811
TR2001 2SA733
TR2002 2SC945
TP2003C
TP2002B
TP404
TP501
TP502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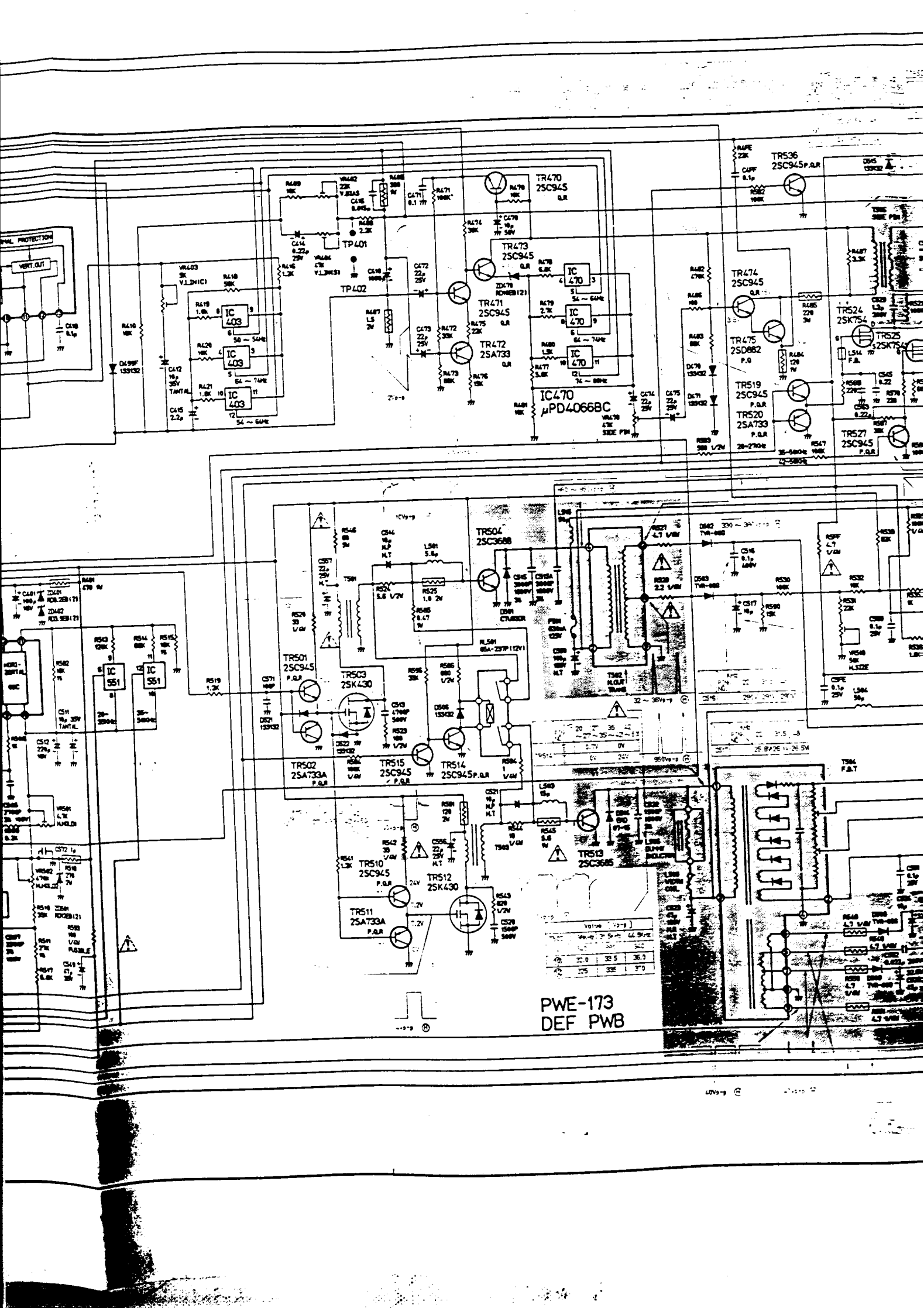
IC551 μPD40668C
IC552 μPD40668C
IC443 μPC358
IC442 μPC393
IC401 V.F/V
IC505 H.F/V
IC501 LA7851
TR448 2SA733
TR445 2SC945
IC443
TR446 2SA733
TR447 2SC945
TR441 2SC945
TR449 2SC945
TR440 2SC945
TR443 2SA733
TR531 2SC945
TR493 2SC3611
TR490 2SA733A
TR2001 2SA733
TR2002 2SC945
TP2003C
TP2002
TP404
TP403
TP501
TP502
IC551
IC552
μPD40668C


TR470 2SC945
TR471 2SC945
TR472 2SA733
TR473 2SC945
TR474 2SC945
TR475 2SD882
TR519 2SC945
TR520 2SA733
TR524 2SK754
TR525 2SK754
TR527 2SC945
TR536 2SC945
IC470 μPD4066BC
TR501 2SC945
TR502 2SA733A
TR503 2SK430
TR504 2SC3688
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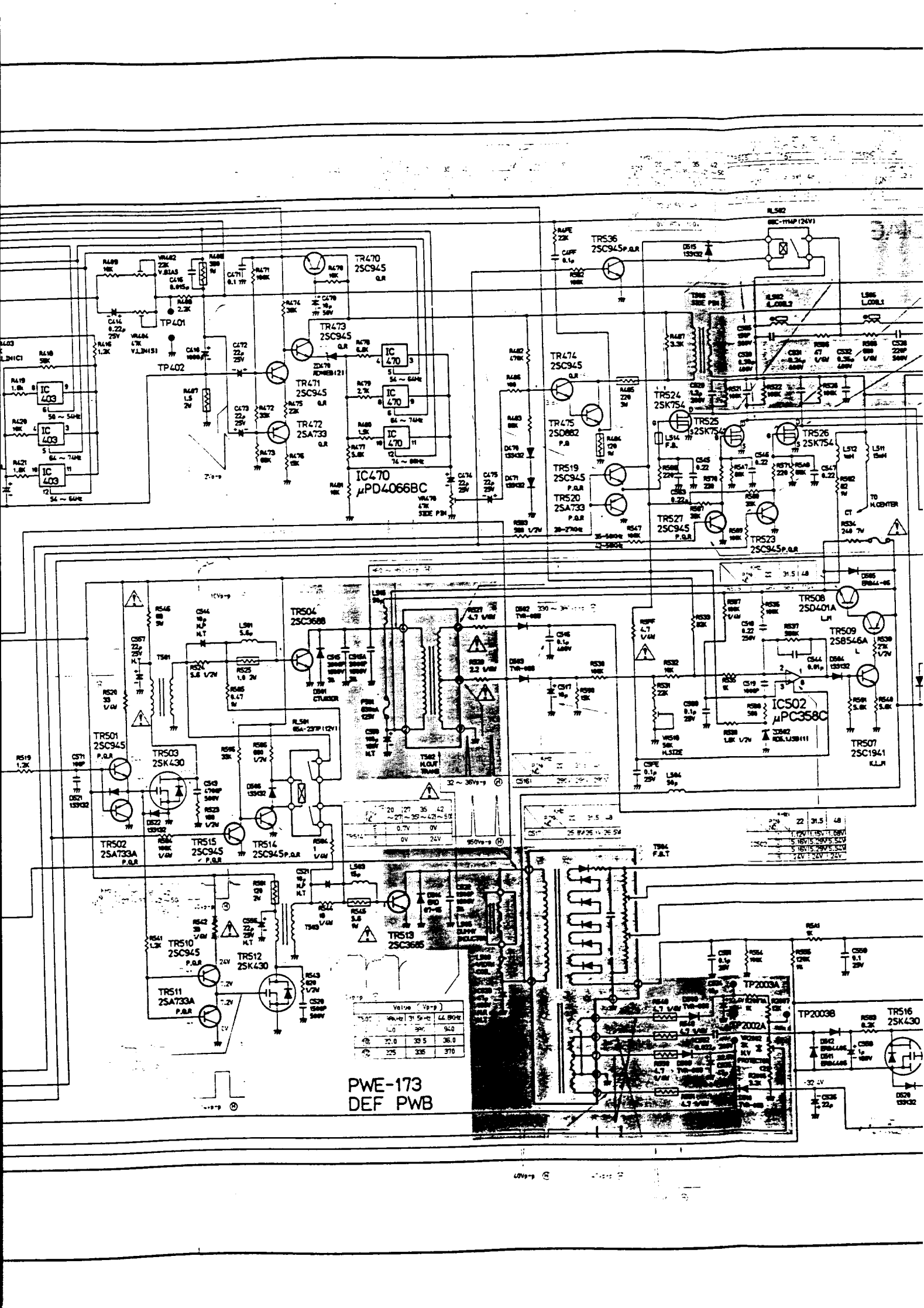
PWE-173
DEF PWB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IC502
μPC358C
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TR471
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TR502
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TR503
2SK430
TR504
2SC3688
TR508
2SD401A
TR509
2SB546A
TR510
2SC945
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2SA733A
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2SK430
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2SC945
TR515
2SC945
TR516
2SK430
TR519
2SC945
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2SA733
TR523
2SC945
TR524
2SK754
TR525
2SK754
TR526
2SK754
TR527
2SC945
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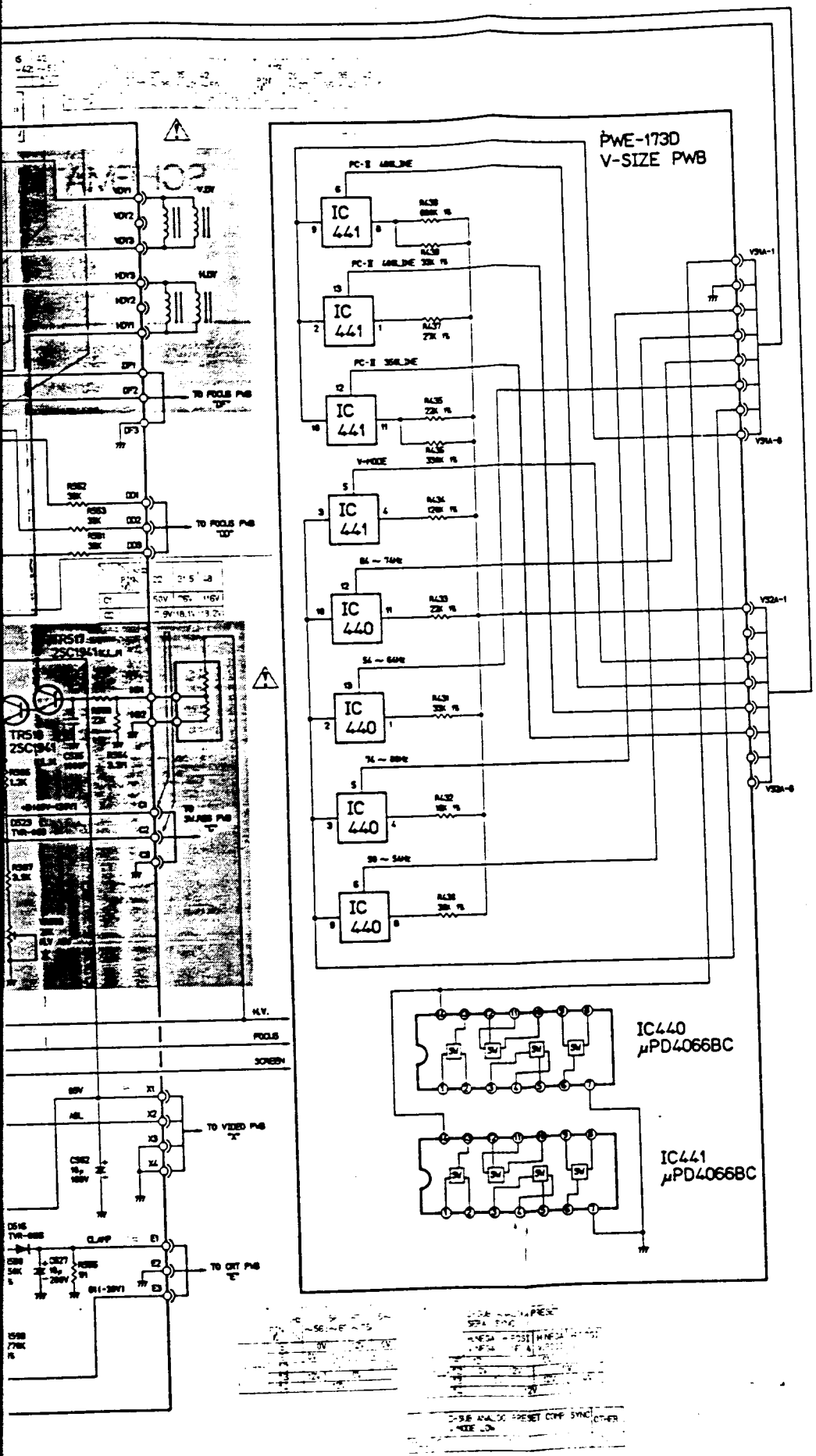
TP402
TP2003A
TP2003B
TP2002A
PWE-173
DEF PWB

RUN NO.1


PWE-173D
V-SIZE PWB
IC 441
IC 440
IC440
μPD4066BC
IC441
μPD4066BC
TO FOCUS PWB
TO VIDEO PWB
TO CRT PWB
H.V.
FOCUS
SCREEN