

# NEC

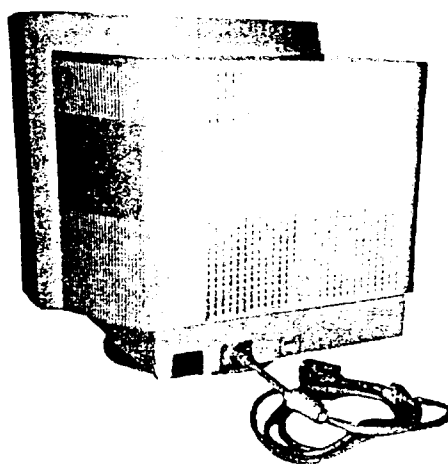
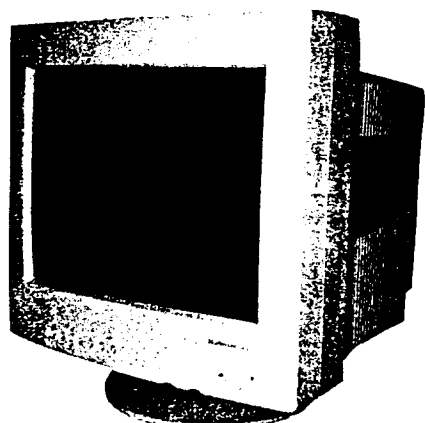
MODELS JC-1734VMA/B/R

## COLOR MONITOR **MultiSync® XV17** **SERVICE MANUAL**

PART NO. 599910380



Better Service  
Better Reputation  
Better Profit

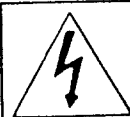


NEC Corporation  
TOKYO, JAPAN

## WARNING

TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. ALSO DO NOT USE THIS UNIT'S POLARIZED PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLETS, UNLESS THE PRONGS CAN BE FULLY INSERTED.

REFRAIN FROM OPENING THE CABINET AS THERE ARE HIGH-VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



### CAUTION

RISK OF ELECTRIC SHOCK  
DO NOT OPEN



**CAUTION:** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol warns the user that un-insulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any part inside of this unit.



This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included.

Therefore, it should be read carefully in order to avoid any problems.

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# SPECIFICATIONS

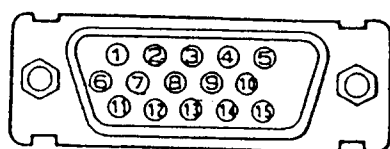
## Electrical Description

Picture Tube	41 cm (17 inch) flat square CRT, 39.6cm usable square 0.28 mm Trio dot pitch Dot type black matrix Medium- short persistence phosphor, dark bulb, glass with anti- static coating		
Input Signal	Video	Analog 0.7 Vp-p 75 $\Omega$ Positive	
	Sync	Separate sync.	TTL Level
		Horizontal sync.	Positive/Negative
		Vertical sync.	Positive/Negative
		Composite sync.	TTL Level
		Positive/Negative	
	Sync. on green	(0.3 Vp-p) Negative	
Display Colors	Analog Input: Unlimited color (Depends on the graphics Board)		
Synchronization Range	Horizontal	31 kHz to 65 kHz (Automatically)	
	Vertical	55 Hz to 100 Hz (Automatically)	
Resolution	Horizontal	1024 dots (non interlaced)	
	Vertical	768 lines (non interlaced)	
Video Band width		85 MHz	
Active Display Area (Factory Setting)	Horizontal	306 mm (Active display area is dependent upon the signal timing)	
	Vertical	230 mm (Active display area is dependent upon the signal timing)	
Active Display Area (Full Scan)	Horizontal	316 mm (Active display area is dependent upon the signal timing)	
	Vertical	237 mm (Active display area is dependent upon the signal timing)	
Rated Voltage	AC 100-120 V , 50/60 Hz (JC-1734VMA) AC 220-240 V , 50/60 Hz (JC-1734VMB/R)		
Rated Current	2.0 A (JC-1734VMA) , 1.3 A (JC-1734VMB/R)		
Dimensions	407.0(W) X 424.0(H) X 450.0(D) mm		
Weight	20.8 kg		
Environmental Considerations	Operating	Temperature 0 $^{\circ}$ C to +35 $^{\circ}$ C Humidity 30 % to 80 %	
	Storage	Temperature -20 $^{\circ}$ C to +60 $^{\circ}$ C Humidity 10 % to 90 %	

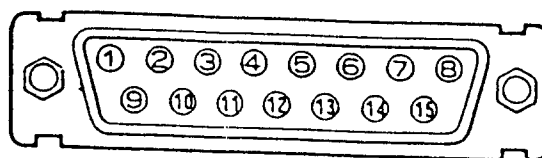
Note: Technical specifications are subject to change without notice.

# Pin Assignment Table (JC-1734VMA)

MINI D-SUB 15P



Macintosh with optional Adapter D-SUB 15P



## Monitor Side

Multisync Monitor's Input Connector 15 pin mini D-Sub Male Connector	VGA, 8514/A, & XGA mapped to the MultiSync Color Monitor	Mac mapped to the MultiSync Color monitor
1	1 Red Video	1 Red Video
2	2 Green Video	2 Green Video
3	3 Blue Video	3 Blue Video
4	4 Ground	4 Ground
5	5 DDC Return*	5 Ground
6	6 Red Ground	6 Red Ground
7	7 Green Ground	7 Green Ground
8	8 Blue Ground	8 Blue Ground
9	9 No Connection	9 No Connection
10	10 Digital Ground	10 Sync Ground
11	11 Ground	11 Ground
12	12 Bi-directional Data (SDA)*	12 No Connection
13	13 Horizontal Sync	13 Composite Sync
14	14 Vertical Sync	14 Ground
15	15 Data Clock (SCL)*	15 No Connection

\* "VESA"s Display Data Channel (DDC) Standard

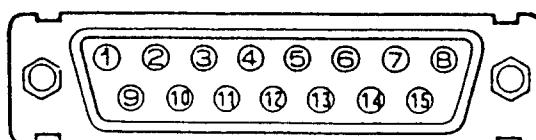
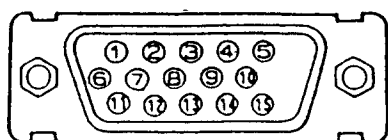
## Graphics Board Side

IBM VGA 15 pin mini D-Sub female	IBM 8514/A 15 pin mini D-Sub female	IBM XGA 15 pin mini D-Sub female	Apple Mac 15 pin D-Sub female
1 Red Video	1 Red Video	1 Red Video	1 Red Ground
2 Green Video	2 Green Video	2 Green Video	2 Red Video
3 Blue Video	3 Blue Video	3 Blue Video	3 Composite Sync
4 Reserved	4 Display ID 2	4 Display ID 2	4 Sense 0
5 Self Test	5 Self Test	5 Self Test	5 Green Video
6 Red Ground	6 Red Ground	6 Red Ground	6 Green Ground
7 Green Ground	7 Green Ground	7 Green Ground	7 Sense 1
8 Blue Ground	8 Blue Ground	8 Blue Ground	8 Reserved(+12 Volts)
9 Key(ni pin)	9 Key(ni pin)	9 +12 Volts Fused	9 Blue Video
10 Digital Ground	10 Digital Ground	10 Digital Ground	10 Sense 2
11 Display ID 0	11 Display ID 0	11 Display ID 0	11 Ground
12 Display ID 1	12 Display ID 1	12 Display ID 1	12 Vertical Sync
13 Horizontal Sync	13 Horizontal Sync	13 Horizontal Sync	13 Blue Ground
14 Vertical Sync	14 Vertical Sync	14 Vertical Sync	14 Ground
15 Reserved	15 Reserved	15 Reserved	15 Horizontal Sync

# Pin Assignment Table (JC-1734VMB/R)

MINI D-SUB 15P

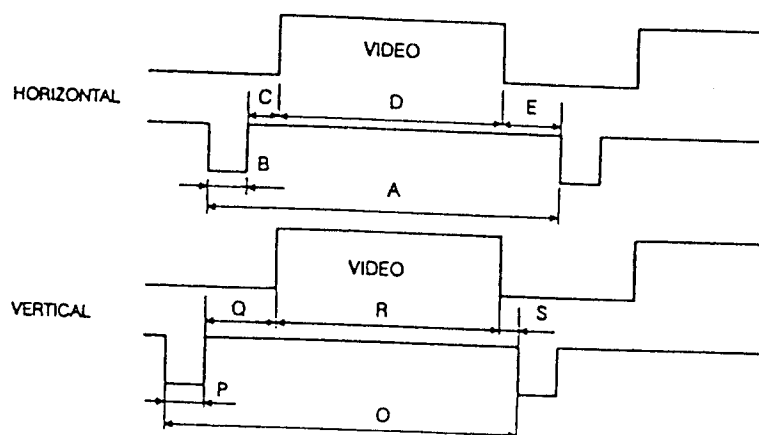
Macintosh with optional Adapter D-SUB 15P



Pin No.	Mini D-SUB 15P	D-SUB 15P
1	RED	GROUND
2	GREEN	RED
3	BLUE	H/V COMP SYNC
4	GROUND	SENSE 0
5	GROUND	GREEN
6	GROUND	GROUND
7	GROUND	SENSE 1
8	GROUND	NO-CONNECTION
9	NO-CONNECTION	BLUE
10	GROUND	SENSE 2
11	GROUND	GROUND
12	SDA	NO-CONNECTION
13	H SYNC, H/V SYNC	GROUND
14	V SYNC	GROUND
15	SCL	NO-CONNECTION

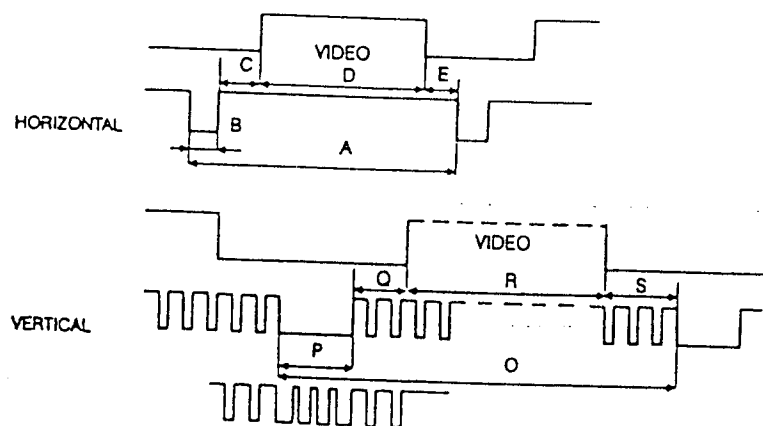
# Signal Timing Charts

## SEPARATE SYNC



Sync Polarity: Positive/Negative

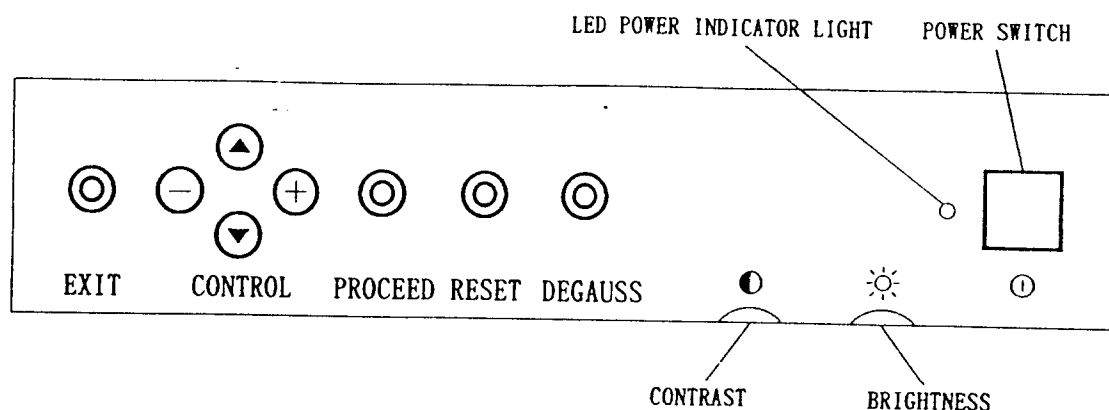
## COMPOSITE SYNC



Sync Polarity: Positive/Negative

	VGA/MCGA compatible (without border area)			XGA/ 8514/A	EVGA350	EVGA400	VESA 640X480 at 75Hz	Macintosh -11 640	Macintosh -11 832	800X600 at 60Hz	800X600 at 72Hz	VESA 800X600 at 75Hz	1024X768 at 70Hz	1024X768 at 76Hz
f <sub>w</sub> [kHz]	31.47			35.52	37.86		37.50	35.00	49.72	37.88	48.08	46.88	56.48	60.98
A [μs]	31.78			28.15	26.41		26.67	28.57	20.11	26.40	20.80	21.33	17.71	16.40
B [μs]	3.813			3.92	1.27		2.03	2.12	1.12	3.2	2.40	1.62	1.81	1.20
C [μs]	1.91			1.25	4.060		3.81	3.17	3.91	2.2	1.28	3.23	1.92	2.10
D [μs]	25.42			22.81	20.32		20.32	21.16	14.52	20.0	16.00	16.16	13.65	12.80
E [μs]	0.64			0.18	0.76		0.51	2.12	0.56	1.0	1.12	0.32	0.32	0.30
f <sub>v</sub> [Hz]	70.09		59.94	86.96	84.13		75.00	66.667	74.55	60.32	72.19	75.00	70.07	76.03
O [ms]	14.268		16.683	11.50	11.886		13.333	15.00	13.414	16.579	13.853	13.333	14.272	13.153
P [ms]	0.064			0.113	0.079		0.080	0.086	0.060	0.106	0.125	0.064	0.106	0.033
Q [ms]	1.907	1.112	1.049	0.577/ 0.563	1.638	1.004	0.427	1.114	0.784	0.607	0.478	0.448	0.513	0.525
R [ms]	11.122	12.711	15.253	10.810	9.244	10.565	12.800	13.714	12.549	15.84	12.48	12.800	13.599	12.595
S [ms]	1.176	0.381	0.318	0/0.014	0.924	0.238	0.027	0.086	0.020	0.026	0.770	0.021	0.053	0.00
Remarks	Analog Video	Analog Video	Analog Video	Analog Video Interlaced	Analog Video	Analog Video	Analog Video	Analog Video	Analog Video	Analog Video	Analog Video	Analog Video	Analog Video	Analog Video

# MONITOR ADJUSTMENT CONTROLS



## EXIT :

- in the main menu : exits the OSM controls
- in a submenu : exits to the main menu

## CONTROL UP/DOWN :

- moves the highlighted area up/down to select one of the controls.

## CONTROL +/- :

- in the main menu : no function
- in a submenu : moves the bar in the + or - direction to increase or decrease the adjustment.

## PROCEED :

- in the main menu : proceeds to the selected menu choice (indicated by the highlighted area)
- in a submenu : proceeds to the control in that sub-menu.

## RESET :

- reset the currently highlighted control to the factory settings ;
- in the main menu : reset all the controls within the highlighted submenu.
- in a submenu : reset the highlighted control.

Note: When pressed, a warning window will appear allowing you to cancel using the reset function.

## DEGAUSS :

- eliminates the build-up of stray magnetic fields which alter the correct scan of the electron beams and affect the purity of the screen colors, focus and convergence.
- When pressed, your screen image will jump and waiver a bit as the screen is demagnetized.

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**Caution :** Please allow a minimum of 20 minutes to elapse between uses of the DEGAUSS button.  
Do not hold the button down continuously to avoid decreasing the life of the Degauss circuitry.

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**CONTRAST :**

- adjusts the image brightness in relation to the background.

**BRIGHTNESS :**

- adjust the overall image and background screen brightness.

**POWER SWITCH :**

- turns the monitor power on or off.

When the power is on, the

**LED Power Indicator Light :**

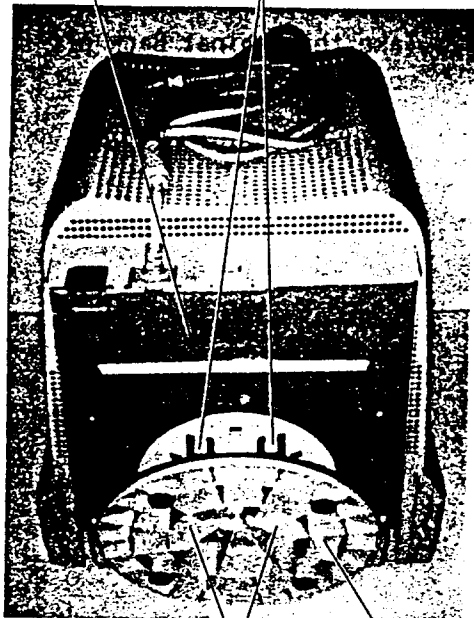
located left of the power switch and indicates the monitor's power mode. Each mode reduces the amount of power used by the monitor.

Mode	Light
On	green
Stand by	yellow
Suspend	orange
Off	orange
Switched Off	no light

# DISASSEMBLY

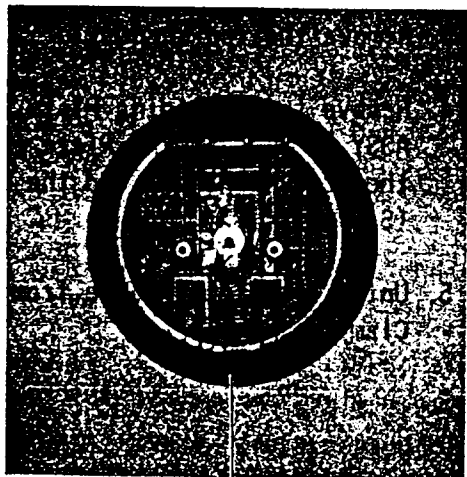
## Tilt/Swivel ASSY

Chassis Base ASSY Hook



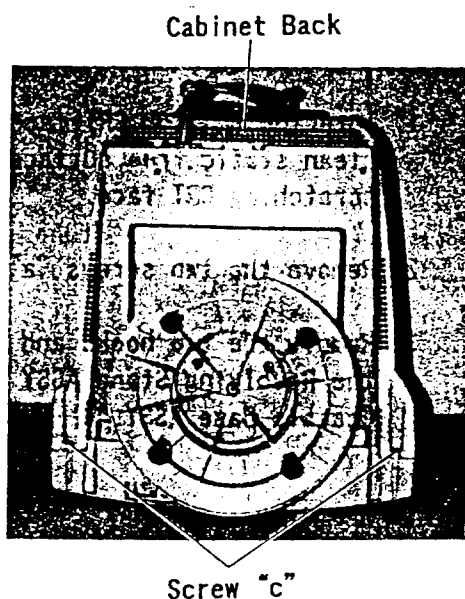
Screw "a" Revolving Stand ASSY

1. Turn the monitor CRT face down on a clean static free surface to prevent scratching CRT face.
2. Remove the two screws "a".
3. Remove the two hooks and take off the Revolving Stand ASSY from the Chassis Base ASSY.

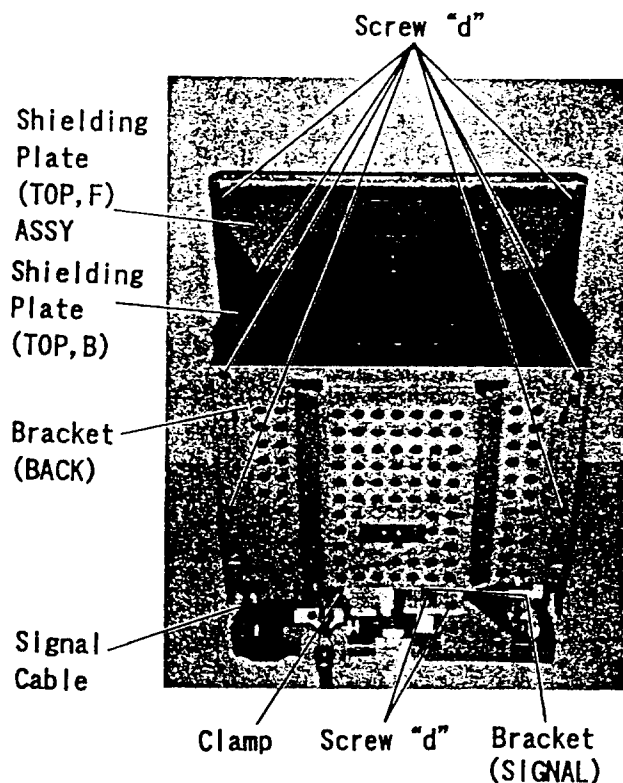


Revolving Stand ASSY

# Cabinet Back, Shielding Plate and Bracket

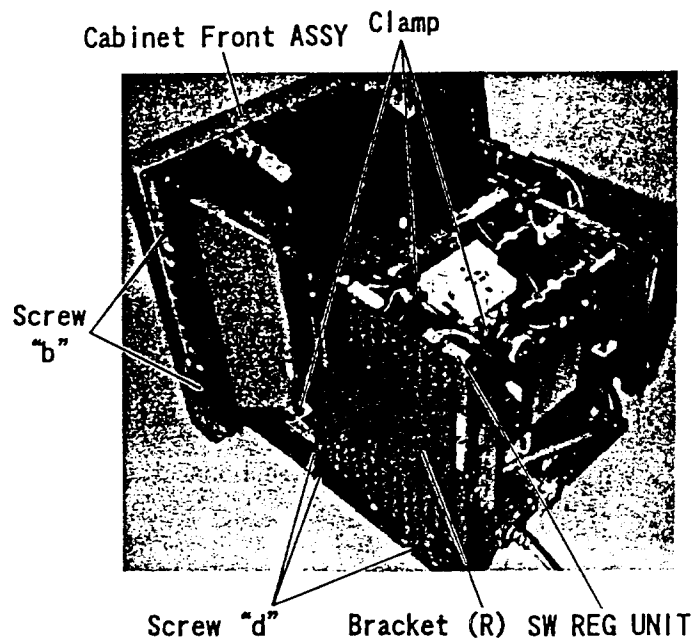


1. Remove the two screws "c".
2. Take the Cabinet Back off from the monitor.

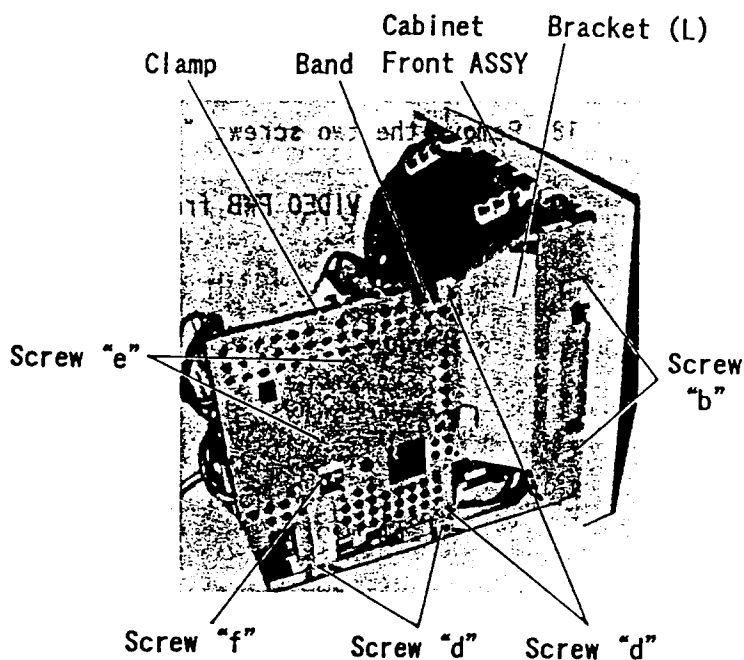


3. Remove the ten screws "d".
4. Remove the Shielding Plate (TOP,F) ASSY, the Shielding Plate (TOP,B), the Bracket (BACK), and the Bracket (SIGNAL).
5. Untie the Signal Cable from the Clamp.

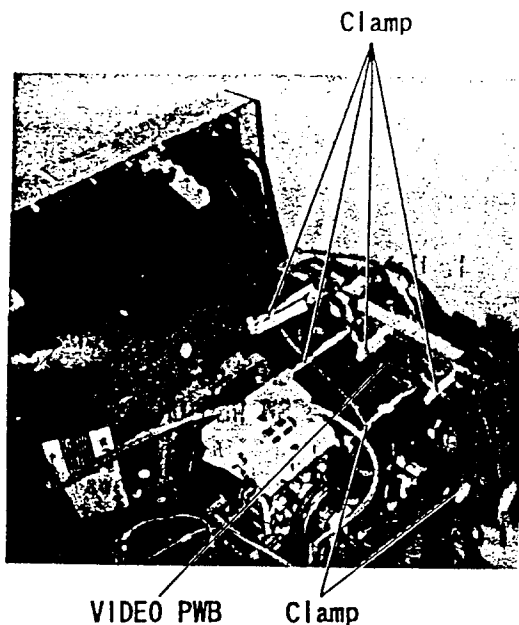
# VIDEO PWB, CRT PWB and MAIN PWB



1. Untie the Clamps.
2. Disconnect the connectors "CN-K", "CN-CT", "CN-D" "CN-Z" and "CN-SW" from the SW REG UNIT.
3. Remove the three screws "d".
4. Remove the two screws "b".
5. Remove the Bracket (R) from the Cabinet Front ASSY.

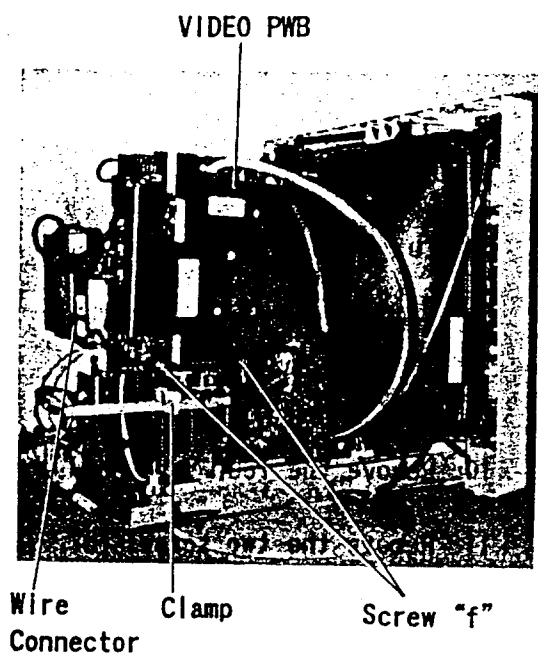


6. Untie the Clamp.
7. Cut the Band.
8. Remove the two screws "e".
9. Remove the screw "f".
10. Remove the four screws "d".
11. Remove the two screws "b".
12. Remove the Bracket (L) from the Cabinet Front ASSY.



13. Untie the Clamps.

14. Disconnect the connectors "CN-DF", "CN-FF", "CN-R", "CN-G" and "CN-B" from the VIDEO PWB.



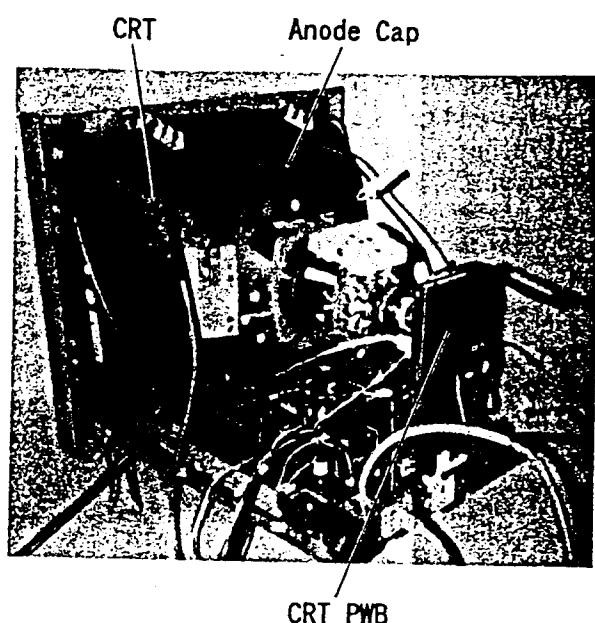
15. Disconnect the wire connector.

16. Untie the Clamp.

17. Disconnect the connector "CN-IN" from the VIDEO PWB.

18. Remove the two screws "f".

19. Remove the VIDEO PWB from the MAIN PWB.



20. Remove the Anode Cap from the CRT.

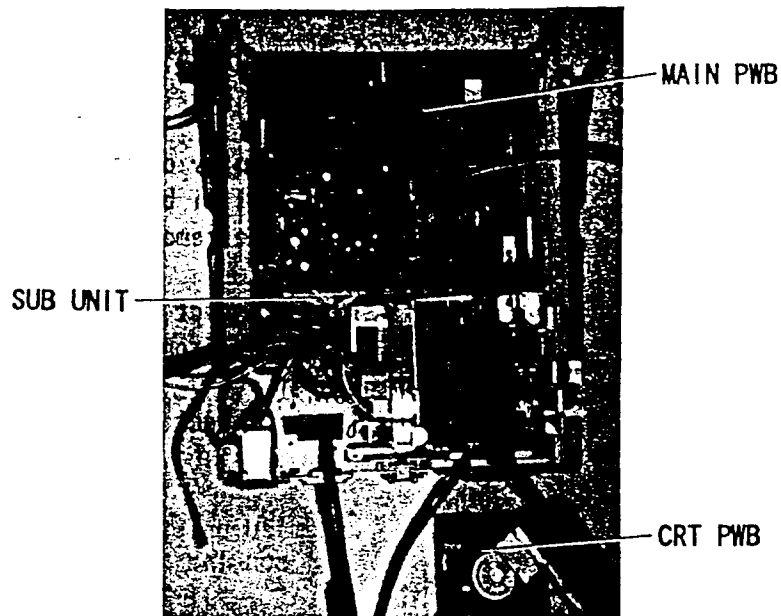
**NOTE:**

Carefully discharge the CRT anode potential by grounding to coating dag before removing Anode Cap.

21. Disconnect the connectors "CN-CE" and "CN-E" from the CRT PWB.
22. Disconnect the CRT PWB from the CRT.

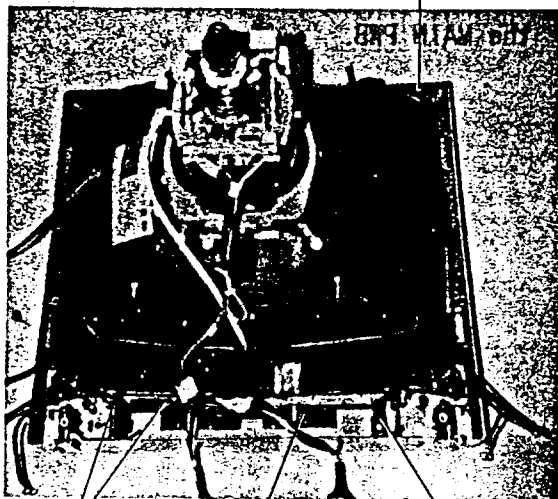


23. Remove the four screws "b".
24. Remove the MAIN PWB from the chassis Base ASSY.
25. Disconnect the connectors "CN-CB", "CN-CA", "CN-HDY" and "CN-VDY" from the MAIN PWB.



## CONTROL PWB

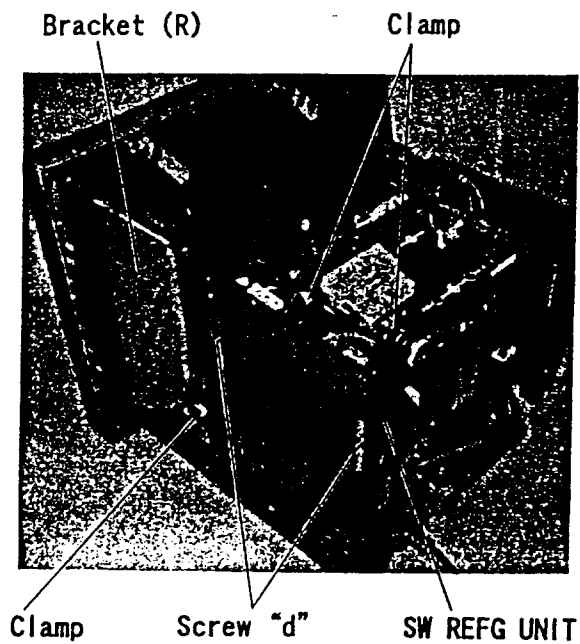
Cabinet Front ASSY



Screw "g" CONTROL PWB Screw "g"

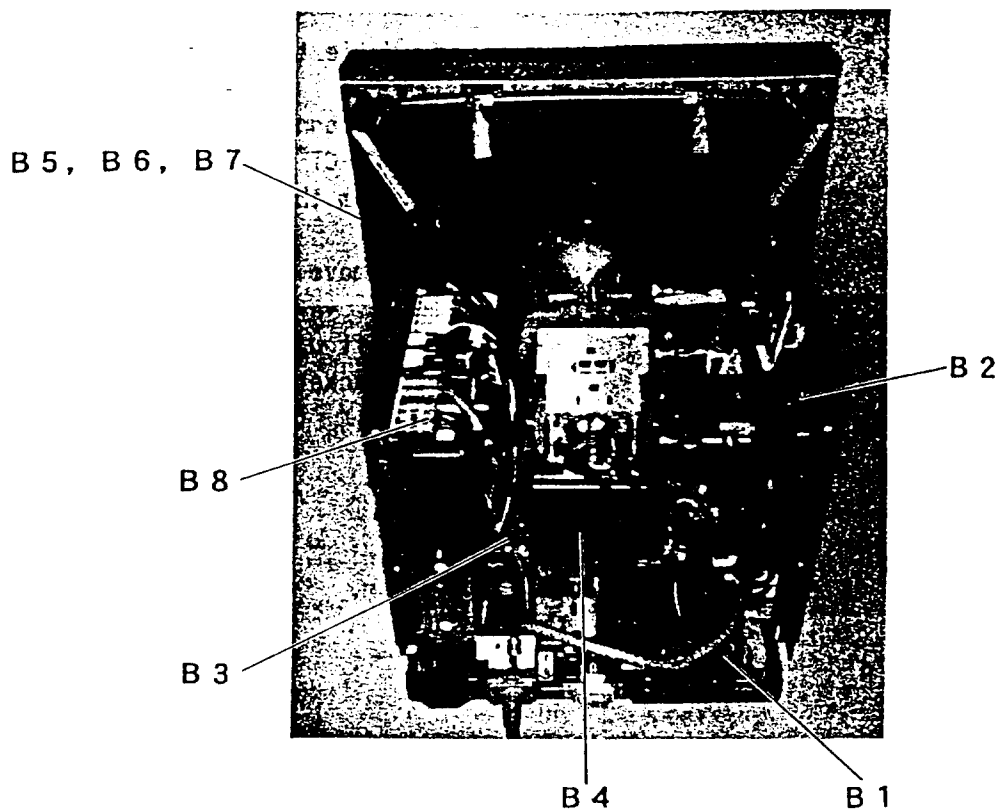
1. Remove the screws "g".
2. Remove the CONTROL PWB from the Cabinet Front ASSY.

## SW REG UNIT



1. Untie the Clamps.
2. Disconnect the connectors "CN-K", "CN-CT", "CN-D", "CN-Z" and "CN-SW" from the SW REG UNIT.
3. Remove the two screws "d".
4. Lift up the SW REG UNIT from the Bracket (R).

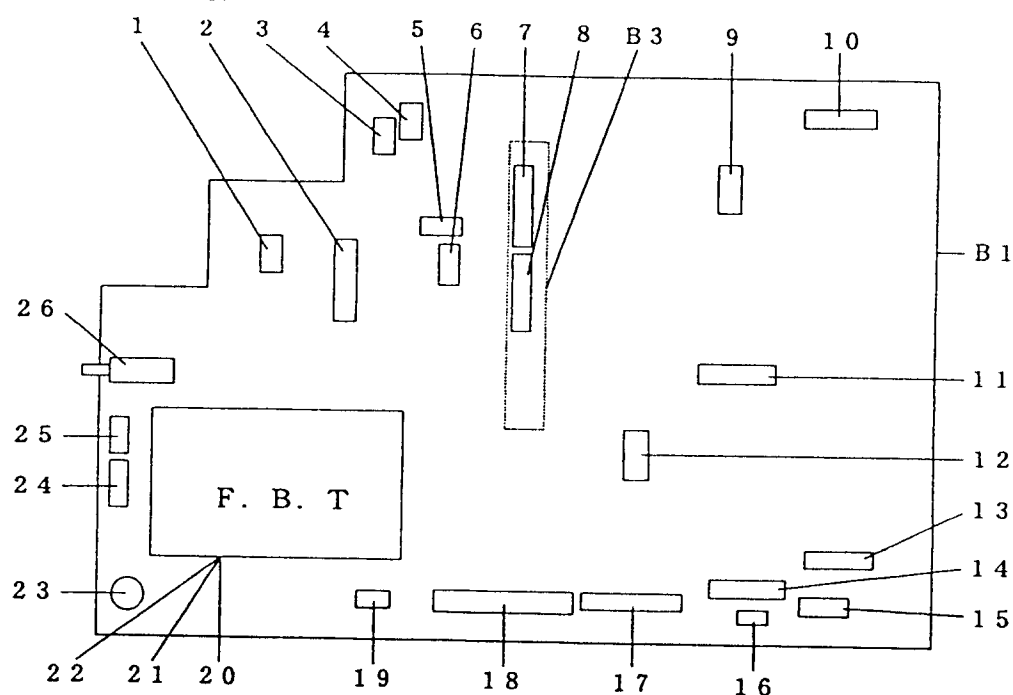
# PWB LOCATION DIAGRAM



B 1	MAIN PWB	PWE-433, 435
B 2	VIDEO PWB	PWE-434A, 436A
B 3	EW UNIT	PWE-437
B 4	CRT PWB	PWE-434B, 436B
B 5	CONTROL PWB	PWE-426A
B 6	VR PWB	PWE-426B
B 7	LED PWB	PWE-426C
B 8	SW REG PWB	DPS-142AB (JC-1734VMA) DPS-142AB-1 (JC-1734VMB/R)
B 9	PNP PWB	PWE-438

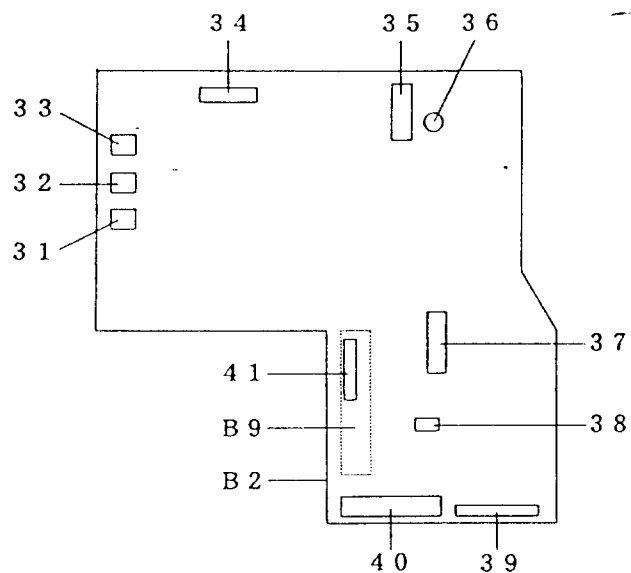
# CONNECTOR, CONTROL AND TEST POINT LOCATION DIAGRAM

## MAIN PWB



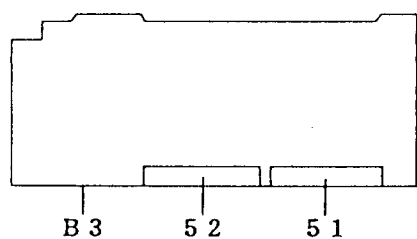
1	CONNECTOR CN-CT	16	TEST POINT TP-501
2	CONNECTOR CN-K	17	CONNECTOR CN-S
3	CONNECTOR CN-E	18	CONNECTOR CN-M
4	CONNECTOR CN-D	19	TEST POINT TP-2001
5	CONNECTOR CN-SC	20	FOCUS F1 CONTROL (UPPER POSITION)
6	CONNECTOR CN-SP	21	FOCUS F1 CONTROL (MIDDLE POSITION)
7	CONNECTOR CN-W	22	SCREEN CONTROL (LOWER POSITION)
8	CONNECTOR CN-U	23	VOLUME VR501
9	CONNECTOR CN-VDY	24	CONNECTOR CN-FF
10	CONNECTOR CN-CB	25	CONNECTOR CN-HV
11	CONNECTOR CN-DF	26	SWITCH SW109
12	CONNECTOR CN-HDY	B1	MAIN PWB (PWE-433, 435)
13	CONNECTOR CN-CA	B3	EW UNIT (PWE-437)
14	CONNECTOR CN-BX		
15	CONNECTOR CN-CX		

# VIDEO PWB



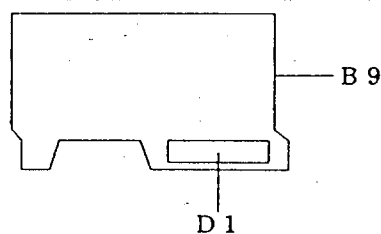
31	CONNECTOR CN-G	38	CONNECTOR CN-TP
32	CONNECTOR CN-R	39	CONNECTOR CN-S
33	CONNECTOR CN-B	40	CONNECTOR CN-M
34	CONNECTOR CN-DF	41	CONNECTOR CN-PNP
35	CONNECTOR CN-FF	B2	VIDEO PWB (PWE-434A, 436A)
36	TEST POINT TP-DF	B9	PNP PWB (PWE-438)
37	CONNECTOR CN-IN		

## EW UNIT



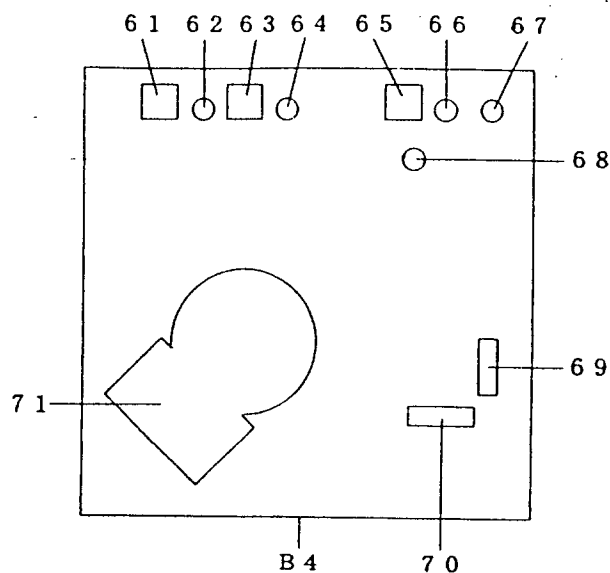
51	CONNECTOR CN-W
52	CONNECTOR CN-U
B3	SUB UNIT PWB (PWE-437)

## PNP PWB



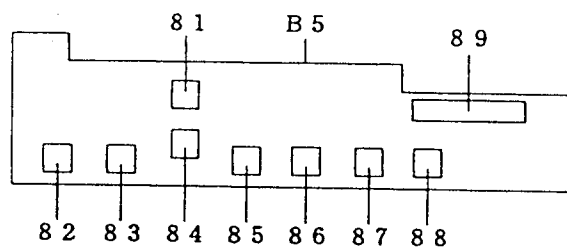
D1	CONNECTOR CN-PNP
B9	PNP PWB (PWE-438)

# CRT PWB



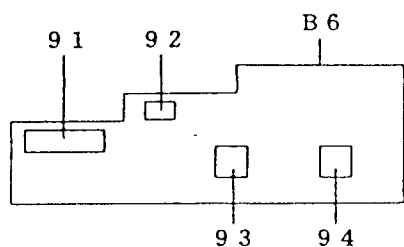
61	CONNECTOR CN-B	68	TEST POINT TP-SG
62	TEST POINT TP-B	69	CONNECTOR CN-CE
63	CONNECTOR CN-R	70	CONNECTOR CN-E
64	TEST POINT TP-R	71	CONNECTOR CN-CRT
65	CONNECTOR CN-G	B4	CRT PWB (PWE-434B, 436B)
66	TEST POINT TP-G		
67	TEST POINT TP-GND1		

## CONTROL PWB



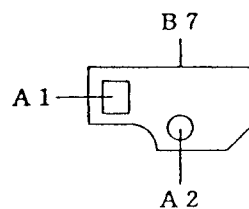
81	SWITCH SW102	86	SWITCH SW106
82	SWITCH SW101	87	SWITCH SW107
83	SWITCH SW104	88	SWITCH SW108
84	SWITCH SW103	89	CONNECTOR CN-CA
85	SWITCH SW105	B5	CONTROL PWB (PWE-426A)

# VR PWB



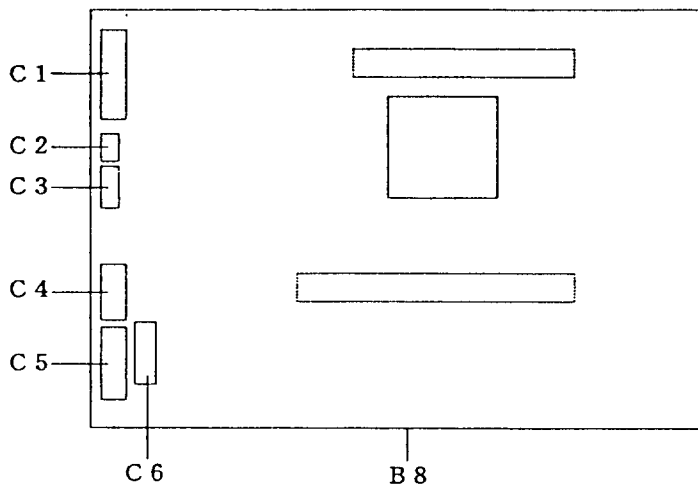
91	CONNECTOR CN-CB
92	CONNECTOR CN-CL1
93	CONTROL VR121
94	CONTROL VR122
B6	VR PWB (PWE-426B)

# LED PWB



A1	CONNECTOR CN-CL2
A2	POWER LED LED141
B7	LED PWB (PWE-426C)

# SW REG PWB



C1	CONNECTOR CN-K	C6	FUSE
C2	CONNECTOR CN-CT	B8	SW REG PWB (DPS-142AB) (JC-1734VMA) SW REG PWB (DPS-142AB-1) (JC-1734VMB/R)
C3	CONNECTOR CN-D		
C4	CONNECTOR CN-Z		
C5	CONNECTOR CN-SW		

# ADJUSTMENT PROCEDURES

## Application

These specifications outline the adjustment procedures for Model JC-1734VMA/VMB/VMR 17 inch color monitor.

### Product Name

(Trade Name) : MultiSync XV17  
"JC-1734VMA" (or "A ver ") : U.S.A. and Canada in northern hemisphere.  
"JC-1734VMB" (or "B ver ") : European countries in northern hemisphere.  
"JC-1734VMR" (or "R ver ") : Australia in southern hemisphere.

## Standard Adjustment Conditions

### 1. Power Supply Voltage

"A Ver " : AC 120 V 60 Hz  
"B Ver "/"R Ver " : AC 220 V 50 Hz

### 2. Warm Up

Receive the all white pattern external signal and set BRIGHTNESS VR fully clockwise. Adjust this monitor after a minimum of 30 minutes to allow unit to reach ambient operating temperature.

### 3. Signals

Video : Analog  $0.7 \pm 0.01$  Vp-p (terminated at 75  $\Omega$ ) positive  
or

Analog sync on green (terminated at 75  $\Omega$ )

Video  $0.7 \pm 0.01$  Vp-p positive

Sync  $0.3 \pm 0.01$  Vp-p negative

Sync : TTL level

H/V separate positive/negative

or

H/V composite positive/negative

or

Sync on green 0.3 Vp-p negative

### 4. Adjustment Magnetic Fields

The Adjustment is made under the natural magnetic field on the northern hemisphere or the southern hemisphere.

"A ver "/"B ver " (for the northern hemisphere.)

Vertical magnetic fields : 35  $\mu$ T

Horizontal magnetic fields : 30  $\mu$ T

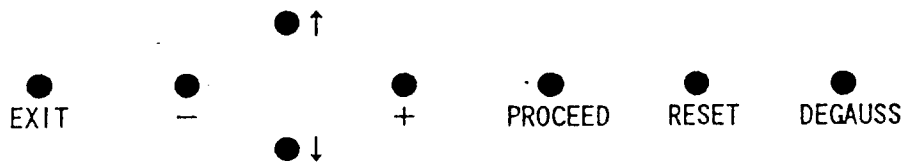
"R ver " (for the southern hemisphere.)

Vertical magnetic fields : -40  $\mu$ T

Horizontal magnetic fields : 30  $\mu$ T

## 5. Adjustment through the OSM Menu

### 5-1. Front Panel



### 5-2. OSM Menu

This model is adjusted through on-screen display, by operating the front panel keys. The on-screen menu is divided into the following 2 types:

Menu (user) : Menu containing items that can be operated by the general user.

Menu (service) : Menu hidden from the general user.

Hereafter, they will be called menu (U) and menu (S).

The menu can be displayed when the signal input to this unit.

When the signal cable disconnect from the signal generator (no sync input), operate IPM function. At that time, if Self Test (described below) used, OSM menu does not operate.

### 5-3. Displaying the OSM (Opening the Menu)

Main Menu (U) : Press "PROCEED" once.

Main Menu (S) : While displaying the "Display Mode" submenu of Main Menu (U), press "RESET", "+" and "-" at the same time. A WARNING will be displayed, and Main Menu (S) can be entered by pressing "PROCEED" once.

### 5-4. Leaving the OSM

- To Close the Menu

Press "EXIT" while Main Menu (U)/(S) is being displayed.

- To Stop Temporarily for Screen Measurement

Press "DEGAUSS" once, while the submenu is being displayed.

Pressing it once more makes it return to the display mode.

\* Valid only inside the submenu of Main Menu (S).

### 5-5. Switching the Menu

Main Menu → Sub Menu : Press "PROCEED" once.

Sub Menu → Main Menu : Press "EXIT" once.

(The adjustment data is then saved in the EEPROM)

### 5-6. Selecting Items

The selection is made by pressing the "UP ARROW" (↑) or "DOWN ARROW" (↓) SWs, and moving the highlighted item.

# 5-7. Changing Data Values

The data values are changed by pressing the "-" or "+" SWs.  
(Except, the "↑" key and "↓" key were used on Sub Menu "Position"  
"Size" and "OSM Location" of Main Menu(U).)

# 5-8. Saving Data Values

The data values are saved automatically in the EEPROM, on the return from the Submenu to Main Menu.

# 5-9. Menu Structure

[Main Menu (U)]	[Sub Menu]	[Items]
Position	Position :	Up/Down/Right/Left
Size	Size :	Tall/Short/Wide/Narrow
AccuColor/Color Control(*1)		
	Preset 1 (9300°K)	Red/Green/Blue
	Preset 2 (7500°K)	Red/Green/Blue
	Preset 3 (6500°K)	Red/Green/Blue
	Preset 4 (5000°K)	Red/Green/Blue
	Preset 5 (3900°K)	Red/Green/Blue
Basic Geometry	Sides :	In/Out Left/Right Tilt Align
Advanced Geometry	Top :	In/Out Left/Right
	Bottom :	In/Out Left/Right
OSM Location	Up/Down/Left/Right	
OSM Turn Off Time	Seconds :	10/20/30/60/120
Display Mode	to Menu[S] at "RESET" , "+", "-" keys pushed.	
Language Select	English/Deutsch/Francais/Espanol/Italiano/Svenska	
Vertical Linearity	Center Bottom/Top	
Factory Preset		

[Main Menu (S)]	[Sub Menu]	[Items]
H. Hold	H. Hold (1) H. Hold (2) Sub H. Dynamic Focus H. Dynamic Focus V. Dynamic Focus	
Size Max./Center	H. Size Max V. Size Max H. Pos Centering H. Raster Center	
Vertical Linearity	Center Top/Bottom	
Position/Size	Horizontal : Vertical :	Position Size Position Size
Basic Geometry	Sides :	In/Out Left/Right Tilt Align
Advanced Geometry	Top : Bottom :	In/Out Left/Right In/Out Left/Right
Gain	Gain : OSM Color Gain	Red/Green/Blue
Bias	Sub Bias Red/Green/Blue	
Sub Bright	Red/Green/Blue	
AccuColor/Color Control(*1)	Red/Green/Blue	
Brightness	Brightness :	Red/Green/Blue
Service Infomation		
R TM	R TM :	No/Yes

(\*1) The title word is changed by select of "R TM" on Main Menu(S).

R TM → "Yes" ..... "AccuColor"  
→ "No" ..... "Color Control"

5-10. Self Test

Display Self Test is performed by using Front Key.

Display :

- 1) Disconnect the signal cable and make sure that IPM is in OFF mode.
- 2) Press "EXIT" and "PROCEED" buttons at the same time.

Display State → No Display State :

- 1) Press "EXIT" button.

\* After displaying, the monitor turns Self Test pattern off after about 20 seconds.

6. Signal Generators

Use model LVG-1603 signal generator or equivalent.

When using a LVG-1600, be sure to obtain correlation with LVG-1603 before making inspections.

The LVG-1603 is to have priority in the event of any uncertainty or discrepancy.

Use the model VG-819 or VG-807 for picture quality inspections.

7. Color Analyzer

Use the MINOLTA model CA-100 or equivalent.

## Adjustment Items

### A. Pre-Adjustment

1. VR Setting
2. Reference Voltage Adjustment
3. Rough Horizontal Synchronization Adjustment
4. High-Voltage Adjustment

### B. MAIN Adjustment

0. Preliminary Setting
1. Horizontal Synchronozation
2. Rough FOCUS Adjustment
3. Horizontal Raster Position
4. Maximum Horizontal Image Size
5. Vertical Linearity
6. Maximum Vertical Image Size
7. Distortion
- 7-0. Rough Image Size Adjustment
- 7-1. Side Pincushion Balance
- 7-2. Side Pincushion
- 7-3. Trapezoldal Distortion
- 7-4. Lower Corner Balance
- 7-5. Upper Corner Balance
- 7-6. Lower Corner Distortion
- 7-7. Upper Corner Distortion
- 7-8. Parallelogram Distortion
8. Image Size/Position Adjustment
9. Video Amplitude
- 9-1. Standard Color Value/DAC Initial Value Adjustment
- 9-2. GAIN Adjustment
- 9-3. Cut-Off Adjustment
- 9-4. Contrast Tracking
- 9-5. Brightness Tracking
10. Color Mode Chromaticity
11. Focus Adjustment

### C. Appended Chart

1. List of the Adjustment Signals
2. Adjustment Signal Timing Chart
3. Adjustment Connectors/Test Pin Position Diagram

## A. Pre-Adjustment

### 1. VR Setting

- SCREEN Turn fully counterclockwise
- FOCUS Turn fully counterclockwise
- VR561 (high-voltage adjustment) Turn fully counterclockwise
- VR851 (Vref) Mechanical center
- VR501 (H HOLD) Mechanical center

### 2. Reference Voltage Adjustment

- Adjust VR851 so that  
4.10  $\pm$  0.02 (V).  
appears between connector CN-BX pins 10 and 11.

### 3. Rough Horizontal Synchronization Adjustment

- Signal : No.11 (fH=65 kHz/fv=100 Hz), all-white
- VR : SCREEN and FOCUS are appropriately adjusted, so that the all-white screen can be recognized.
- VR561 (high-voltage) : roughly adjusted to approximately 25 kV.
- 1) Receive signal 11.
- 2) Set the value 170 in Menu (S) - "Size Max/Center" - "H Pos Centering".
- 2-1) Verify that the horizontal position value in Menu (S) - "Position/Size" - "horizontal" - "Position" is 128.
- 3) Verify that the data values in Menu (S) - "H HOLD" are:  
HOLD(1) = 123  
HOLD(2) = 127
- 4) Close the Menu.
- 5) Short-circuit pins 8-9 of connector CN-BX.
- 6) Adjust VR501 so that the screen appears as a single image.
- 7) Open the short-circuit and check if the synchronization is working.

### 4. High-Voltage Adjustment

- Signal : No.11 (fH=65 kHz/fV=100 Hz), all-black
- VR : Contrast Fully counterclockwise
- Brightness Fully counterclockwise
- VR561 Fully counterclockwise
- 1) Verify that the CRT is cut off. If not, put it into cut-off state by turning SCREEN.
- 2) Set the CRT anode voltage to 25.0 kV  $\pm$  0.1 kV, by adjusting VR561.
- 3) Seal VR561 using silicon glue and caps.

## B. Main Adjustment

- 1) Except when otherwise specified, the position of the user's switch shall be as follows. This position will be called "standard condition" in the rest of the text.  
Contrast VR : Fully clockwise  
Brightness VR : At the position where the back raster just disappears  
SYNC SW (rear side) : Left-hand side (OFF)
- 2) When switching the signal, turn the power off only after closing the OSM menu.
- 3) The adjustment values of image size/color temperature (chromaticity)/distortion are the ones measured with the OSM menu off.
- 4) Before adjusting, degauss the monitor using an external degaussing coil.

## 0. Preliminary Setting

Signal: No. 04 (800\*600@72), all-black

- 1) Adjusting SCREEN-VR  
Adjust SCREEN-VR so that the back raster shows when the following adjustments are made:  
Contrast : Fully clockwise  
Brightness : Fully clockwise  
Then, adjust SCREEN-VR in such a way that the back raster becomes invisible when the Brightness is turned fully counterclockwise.
- 2) Adjusting OSM Data  
(for "A" ver )
  - (1) Put the VR in the standard state.
  - (2) Make sure that the setting "English" appears in Menu (U) - "Language Select".  
If any other language appears, select "English".
  - (3) Put to "Yes" in Menu (S) - "R TM".
  - (4) Make sure that the third item of Main Menu (U) is "AccuColor".
  - (5) Make sure that "Color Preset" in Menu (S) - "AccuColor" is set to "No.1".  
If other number selected, select "No.1".  
(for "B" ver and "R" ver )
  - (1) Put the VR in the standard state.
  - (2) Make sure that the setting "English" appears in Menu (U) - "Language Select".  
If any other language appears, select "English".
  - (3) Put to "No" in Menu (S) - "R TM".
  - (4) Make sure that the third item of Main Menu (U) is "Color Control".
  - (5) Make sure that "Color Preset" in Menu (S) - "Color Control" is set to "No.1".  
If other number selected, select "No.1".

## 1. Horizontal Synchronization

Signal : No.11 (fH=65 kHz/fV=100 Hz), all-white

No.12 (fH=31 kHz/fV=50 Hz), all-white

VR : Contrast : Fully clockwise

Brightness : Fully clockwise

- 1) Receive signal 11.
- 2) In the Menu (S) - "Size Max/Center" - "H Raster Center", adjust the Horizontal position of the raster to center, and adjust the Horizontal size of the raster to approximately 310mm in the "H size Max" of Menu (S) - "Size Max/Center", where the two extremities of the raster are visible.

\* Note: Since the value of the amplitudes change very rapidly when "+" and "-" are kept pressed, some care is needed not to increase the amplitudes too rapidly.

- 3) Adjust Menu (S) - "Size Max/Center" - "H Posi Centering" so that the image comes at the horizontal center of the raster.  
Here, the distances between the ends of the raster and the borders of the image (at the right and left sides) must be within  $\pm 2$  mm.
- 4) Short pins 8-9 of connector CN-BX.
- 5) Verify if there is only single image. If not:  
Open Menu (S) - "H.Hold" - "H.Hold(1)".  
Adjust SWs "+" and "-" so that only single image appears.
- 6) Receive signal 12.
- 7) Open Menu (S) - "H.Hold" - "H.Hold (2)", and adjust SWs "-" and "+" so that only single image appears.
- 8) Close the menu.
- 9) Open the short-circuit.
- 10) Receive signals 11 and 12 again, and verify synchronization.

## 2. Focus Rough Adjustment (If needed)

Signal : No. 06 (1024\*768[70]), crosshatch pattern

- 1) Receive signal 6.
- 2) Open Menu (S) and "Position/Size".
- 3) Open "Horizontal-Size" and "Vertical-Size", and adjust SWs "+" to maximize picture size.
- 4) Adjust FOCUS VR V on the FBT for the thinnest vertical lines.
- 5) Adjust FOCUS VR H on the FBT for the thinnest horizontal lines.
- 6) Repeat steps 3) and 4), and the focus is uniform on the whole screen.  
Adjust focus controls so that lines do not display halos.
- 7) If halos persist in step 6), open Menu (S), H HOLD/Dynamic Focus, D Focus.  
After adjusting H Dynamic Focus, repeat steps 4) and 5).
- 8) Close the menu.

## 3. Horizontal Raster Position

Signal : No. 22 (1024\*768), all-white

VR : Brightness Fully clockwise  
Contrast Fully counterclockwise

- 1) Change the data inside Menu (S) - "Size Max/Center" - "H Size Max" so that the horizontal amplitude of the raster is approximately 310mm.  
\* Note: Since the value of the amplitude changes very rapidly when "+" and "-" are kept pressed, some care is needed not to increase it too quickly.
- 2) Within Menu (S) - "Position/Size" - "Horizontal" - "Position", move the horizontal position of the video to the left, until the point where the video disappears to the left edge. This is defined as the left end of the raster.
- 3) Within Menu (S) - "Size Max/Center" - "H Raster Center", change the data so that the difference between the horizontal ends of the raster and the bezel at the right-hand and left-hand sides is within the following value  
(in the figure below,  $X_{right} - X_{left} \leq \pm 3.0$  mm).
- 4) Close the menu.

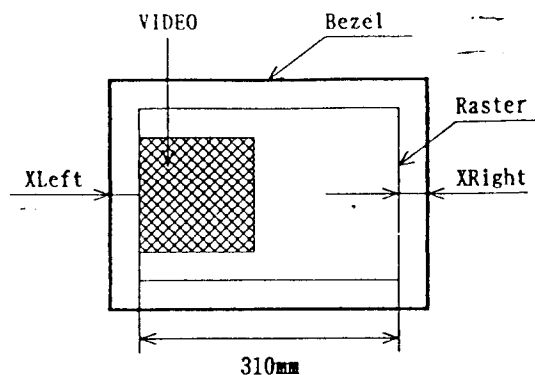


Fig.4-1 H raster centering

#### 4. Maximum Horizontal Image Size

Signal : No.04 (800\*600@72)

No.08 (SIZE\_1)

No.24 (SIZE\_4)

No.10 (SIZE\_3)

All-white

VR : standard condition

- 1) Receive signal 4.
- 2) Open Menu (S) - "Position/Size" - "Horizontal" - "Position", and place the image approximately at the center of the screen.
- 3) Open Menu (S) - "Basic Geometry" - "Sides" - "In/Out", and adjust side pin cushion for straight vertical sides.
- 4) Receive signal 8.
- 5) In Menu (S) - "Position/Size" - "Horizontal", set the "Size" value to 255 (maximum horizontal amplitude), and the "Position" value so that the image is centered.
- 6) Open Menu (S) - "Size Max/Center" - "H.Size Max".
- 7) Adjust the horizontal image size of the screen to  $306 \text{ mm} \pm 6 \text{ mm}$ .
- 8) Close the menu.
- 9) Repeat steps 5 to 8 for signals No.24 and 10.

#### 5. Vertical Linearity

Signal : No. 07 (800\*600@56), green crosshatch

VR : standard condition

- 1) Open Menu (S) - "Position/Size" - "Vertical" - "Position", and place the image approximately at the center of the screen.
- 2) Open Menu (S) - "Position/Size" - "Vertical" - "Size", and adjust the size to approximately 230 mm. If the size cannot be expanded to approximately 230 mm, increase the amplitude in Menu (S) - "Size Max/Center" - "V.Size Max".
- 3) Open Menu (S) - "Vertical Linearity" - "Center", and make the vertical height of the uppermost square equal to the vertical height of the central square of the screen.
- 4) Return to Menu (S) - "Position/Size" - "Vertical" - "Size". Set vertical size to approximately 230 mm. If the size cannot be expanded to approximately 230 mm, increase the amplitude in Menu (S) - "Size Max/Center" - "V Size Max", and place the image approximately at the center through Menu (S) - "Position/Size" - "Vertical" - "Position".
- 5) Open Menu (S) - "Vertical Linearity" - "Top/Bottom", and adjust it to make the vertical height of the uppermost square equal to the vertical height of lowermost square.

- 6) Open Menu (S) - "Vertical Linearity" - "Center", and adjust it to make the vertical height of the upper most part equal to the vertical height of the center square.

#### 6. Maximum Vertical Image Size

Signal : No.10 (SIZE-3), all-white  
VR : standard condition

- 1) Receive signal 8.
- 2) Open Menu (S) - "Position/Size" - "Vertical-Position" and place the image approximately at the center of the screen.
- 3) Open Menu (S) - "Position/Size" - "Vertical-Size" and adjust the data value to 255 (maximum vertical size).
- 4) Open Menu (S) - "Size Max/Center" - "V Size Max", and adjust the vertical amplitude of the image to  $230 \pm 3 \text{ mm}$
- 5) Close the menu.

#### 7. Distortion

Signal: No. 04 (800\*600@72)

VR : standard condition

Environment : CRT face pointing to the East.

Perform manual degauss before the adjustment.

#### 7-0. Rough Image Size Adjustment

Adjust the size of the screen to the following values, through Menu (S) - "Position/Size" - "Horizontal" - "Position/Size" and "Vertical" - "Position/Size":

Horizontal Image size : approximately 306 mm

Vertical Image size : approximately 230 mm

\* Before starting adjustments 7-1 through 7-8, verify that all data values are set to 128.

\* Menu OSM must be turned off during verification of the distortion levels.

#### 7-1. Side Pincushion Balance

- 1) Open Menu (S) - "Basic Geometry" - "Sides - Left/Right".
- 2) In the figure below, make Xsl become equal to Xsr.

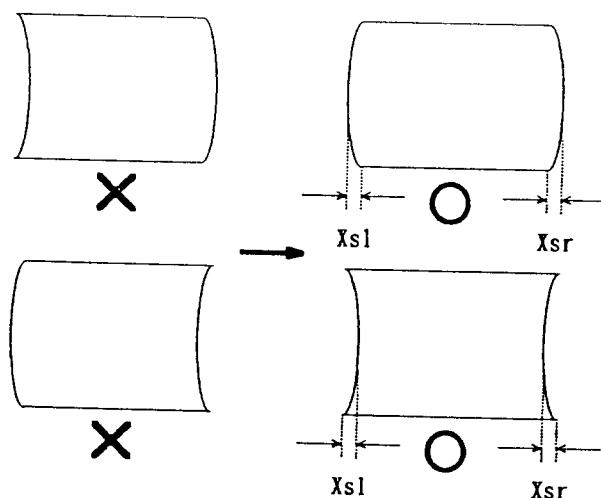


Fig.7-1 Side pincushion balance

### 7-2. Side Pincushion

- 1) Open Menu (S) - "Basic Geometry" - "Sides-IN/OUT".
- 2) Make the lines passing through points A, B and C straight.

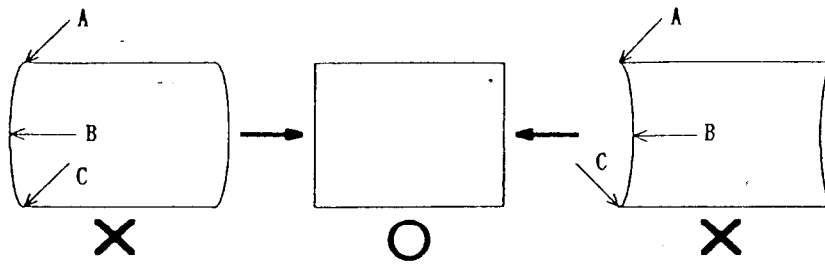


Fig.7-2. Side Pincushion

### 7-3. Trapezoidal Distortion

- 1) Open Menu (S) - "Basic Geometry" - "Sides-Align".
- 2) In the figure below, make  $X_{top}$  equal to  $X_{btm}$ .

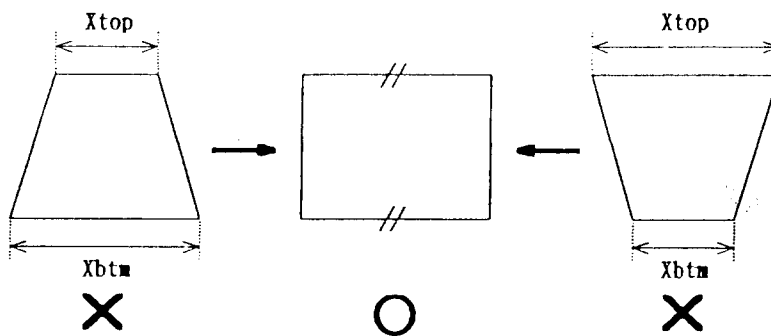


Fig.7-3 Trapezoidal distortion

### 7-4. Lower Corner Balance

- 1) Open Menu (S) - "Advanced Geometry" - "Bottom - Left/Right".
- 2) In the figure below, make  $X_{cl}$  equal to  $X_{cr}$ .

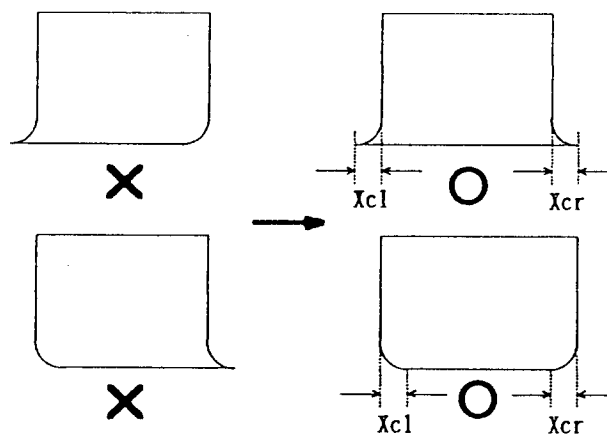


Fig.7-4 Lower corner balance

#### 7-5. Upper Corner Balance

- 1) Open Menu (S) - "Advanced Geometry" - "Top-Left/Right".
- 2) In the figure below, make  $X_{cl}$  equal to  $X_{cr}$ .

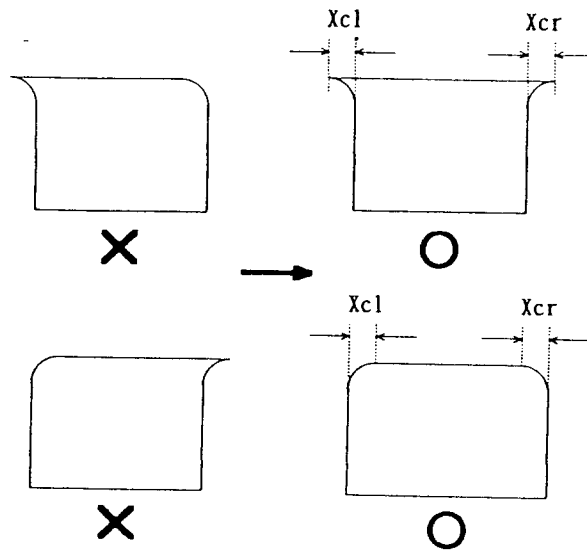


Fig.7-5 Upper corner balance

#### 7-6. Lower Corner Distortion

- 1) Open Menu (S) - "Advanced Geometry" - "Bottom-In/Out".
- 2) Adjust both lower corners so that they become right angles.

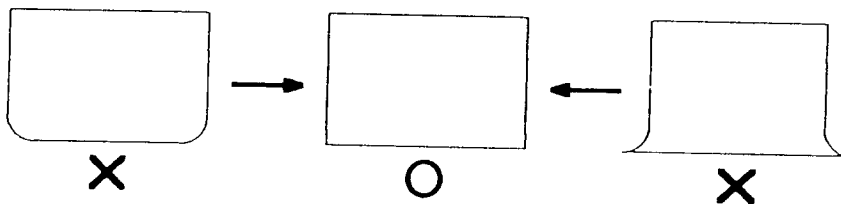


Fig.7-6 Lower corner distortions

#### 7-7. Upper Corner Distortion

- 1) Open Menu (S) - "Advanced Geometry" - "Top - In/Out".
- 2) Adjust both upper corners so that they become right angles.

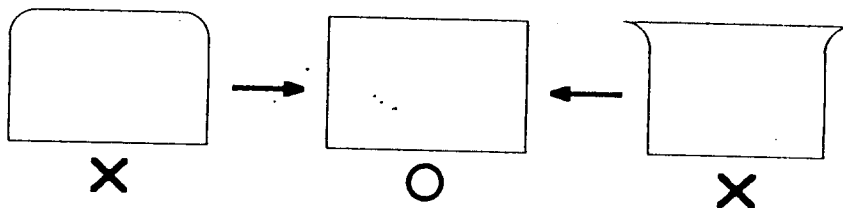


Fig.7-7 Upper corner distortion

## 7-8. Parallelogram Distortion

- 1) Open Menu (S) - "Basic Geometry" - "Sides-Tilt".
- 2) Make the vertical center line of the crosshatch perpendicular to the horizontal center line

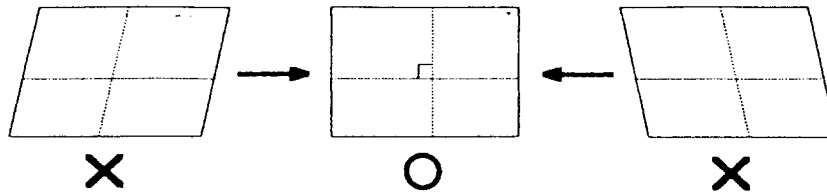


Fig.7-8 Parallelogram distortion

Repeat steps 7-1 to 7-8 until all items are optimized.

## 8. Image Size/Position Adjustment

Adjustment signal:

In the case of automatic adjustment -

Make the adjustments by means of No. 1 to No. 6.

The data of signals No.14 to 23 are calculated from the data of the adjustment signals, and written in the EEPROM.

In the case of manual adjustment -

Make the adjustments by means of No. 1 to No. 6 and No. 14 to No. 23.

No. 1 (VGA480)	2 (MACII 640*480)
3 (640*480@75)	4 (800*600@72)
5 (MACII 832x624)	6 (1024*768*70)

No.14 (VGA350)	15 (VGA400)
16 (800*600@60)	17 (EVGA350)
18 (EVGA480)	19 (XGA(8514/A))
20 (800*600@75)	21 (1024@768@72)
22 (1024*768@76)	23 (1280*1024@60)

All white

VR : standard condition

- 1) Receive the adjustment signal.
- 2) In Menu (S) - "Position/Size" - "Horizontal - Position/Size" and "Vertical - Position/Size", do the following adjustments:

Image Size

Horizontal	306 mm $\pm$ 2 mm
Vertical	230 mm $\pm$ 2 mm

Image position : Distance between bezel and image

Up/down difference : ( $|X_{Left}-X_{Right}|$ )  $\leq$  2 mm

right/left difference : ( $|X_{Top}-X_{Bottom}|$ )  $\leq$  2 mm

- 3) Close the menu.
  - 4) Change to the next signal, and repeat steps 1) to 3).
- \* Note: Be sure to close the menu before changing the signal.

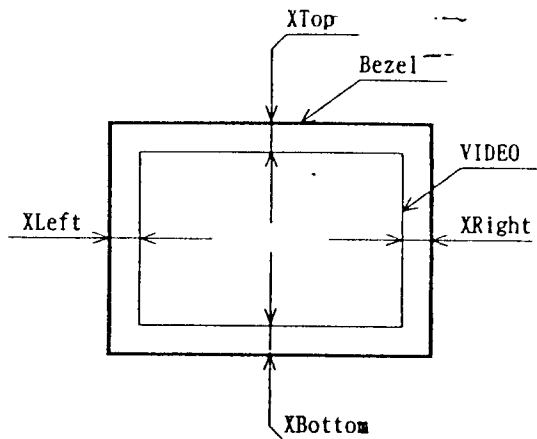


Fig.8-1 Screen position

## 9. Video Amplitude

Before making the adjustment, make sure that the video input signal has the following level:

Video : analog  $0.7 \pm 0.02$  Vp-p (standard 75  $\Omega \pm 1\%$  at the end)

### 9-1. Standard Color Value/DAC Initial Value Adjustment

Signal : No.13 (WINDOW MAC-2)

VR : standard condition

- 1) Verify the following settings in Menu (S) - "AccuColor" (or "Color Control").

"Color Preset": No.1

"Red", "Green", "Blue": 1000

If the values are different, readjust them.

- 2) Verify if all the data values in Menu (S) - "Brightness" - "Red", "Green" and "Blue" are set to 256.

- 3) Set all data values in

Menu (S) - "Gain" - "Red", "Green", "Blue"

Menu (S) - "Bias" - "Red", "Green", "Blue"

Menu (S) - "Sub-Bright" - "Red", "Green", "Blue" to 00.

\* If the OSM Menu becomes too dark due to this adjustment, it is possible to change temporarily the value in Menu (S) - "Gain" - "OSM\_Gain."

### 9-2. GAIN Adjustment

Signal : No.13 (WINDOW MAC-2), all-black

VR : Contrast Fully clockwise

Brightness Fully counterclockwise

- 1) Receive the window pattern.
- 2) Adjust Menu (S) - "Gain" - "Red", "Green", "Blue" so that the amplitudes (not including clamp pulse) of waveforms TP-R, TP-G, TP-B, on CRT PWB are 48 Vp-p ( $\pm 1$  V or less).

\* Do not forget to hide OSM temporarily by means of "DEGAUSS" SW.

- 3) After the adjustment, verify the amplitudes of TP-R, TP-G and TP-B. Readjust them if they are not in accordance with the adjustments.
- 4) Receive the all-black signal.
- 5) Display Menu (S) - "Gain" - "OSM Gain".

- 6) Adjust Menu (S) - "Gain" - "OSM Gain", so that the amplitude (not including clamp pulse) of the TP-R waveform be 43 Vp-p ( $\pm 1$  V or less).  
\* The adjustments are done while OSM is being displayed.
- 7) Close the menu.

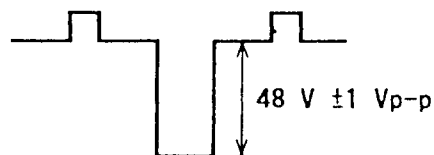


Fig.9-1 TP-R/G/B waveform

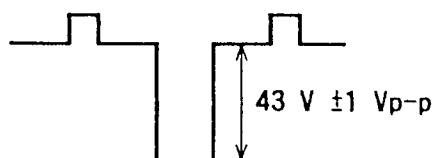


Fig.9-2 TP-R waveform at "OSM Gain" adjustment

### 9-3. Cut-Off Adjustment

Signal : No.27 (49k/87Hz)

VR	: Contrast	fully counterclockwise
	Brightness	fully counterclockwise
	SCREEN	Turned fully counterclockwise

- 0) Receive signal 27(49k/87Hz).

The data values in Menu (S) "Position/Size" - "H.Size" and "V.Size" should be set to "00" (minimum).

- 1) Short the following pins of connector CN-BX:  
Pins 1 and 9 (\* short-circuit these pins by using a 39 k $\Omega$  1/6W)
- 2) Connect a high voltage meter at TP-904, and adjust SCREEN VR to 650 Vdc  $\pm 5$  Vdc  
(The maximum input voltage of the high-voltage meter is 1.5 kV or more. Use an input resistance over 1,000 M $\Omega$ .)

\* The following refers to the use of color analyzer CA100.

- 3) Set CA100 into analyzer mode

Channel 00  
(NEC CRT)  
x=0.276,  
y=0.274,  
Y=0.2 cd/m<sup>2</sup>.

- 4) The data values in Menu (S) - "Bias" - "Sub-Bias" should be reset to "00", and then increased. The first color that appears is the reference color. Make the adjustments to the analyzer to indicate the value for this color is 100.

\*1: If the indication of the reference color does not reach 100 even when the "Sub-Bias" data value is set to the maximum value (255), the data value in "Sub-Bias" is kept in the maximum value (255), and the bias data value of the reference color is increased until the indication reaches 100.

- \*2: If the reference color does not appear even when the "Sub-Bias" data value is maximum (255), the color that has largest value according to the analyzer the maximum value and the data value of reference color is increased, until the indication reaches  $100 \pm 20$ .
- 5) The bias data of the 2 other colors are increased until the indication is  $100 \pm 20$ .
    - \* Since the color analyzer suffers the influence of the OSM screen, the OSM menu must be temporarily closed during the verification of the indication value.
  - 6) Open the short.
    - \* If the OSM menu gets difficult to read during the reduction of each bias data, press "RESET" while paying attention not to close the sub menu.
    - \* After "RESET" is pressed, accidentally or on purpose, the cut-off adjustment must be done again.

#### 9-4. Contrast Tracking

Signal: No.13 (WINDOW MAC-2)

VR : Contrast                      Turned fully clockwise  
       Brightness                    Not specified

- 1) Short the following pins of CN-BX:  
     Pins 1 and 9 (\* short-circuit with 39 k $\Omega$ )
- 2) Receive the signal. (window)
- 3) Put the color analyzer into mode x,y,Y, and measure the chromaticity of the window.  
     Let the measured values be  
      $x=x_1$ ,  $y=y_1$ .
- 4) Turn the contrast VR turned fully counterclockwise.
- 5) Measure the chromaticity of the window.  
     The values are  
      $x=x_2$  and  $y=y_2$ .
- 6) Open Menu (S) - "Bias", and verify that the chromaticity values are as follow  
     If not, change the bias data values of the colors except for the reference color. Adjust the chromaticity values as follows.  
      $x_2=x_1 \pm 0.005$   
      $y_2=y_1 \pm 0.005$
- 7) Turn the contrast VR fully clockwise.
- 8) Measure the chromaticity of the window. At this point, make sure that the following values are met:  
      $x_1=x_2 \pm 0.005$   
      $y_1=y_2 \pm 0.005$   
     If the values are out of the required range, repeat steps 3) through 8).
- 9) Open the short.

#### 9-5. Brightness Tracking

Signal : No.13 (WINDOW MAC-2), all-black

VR : Contrast                      Not specified  
       Brightness                    Turned fully clockwise

- 1) Receive the signal. (all black)
- 2) Set the analyzer into mode x,y,Y. Within Menu (S) - "Sub-Bright" - "Green", set brightness to  
      $6 \text{ cd/m}^2 \pm 0.5$ .
- 3) In order to achieve the chromaticity measured in section 9-4 adjust it within Menu (S) - "Sub-Bright" - "Red", "Blue".  
      $x=x_1 \pm 0.005$   
      $y=y_1 \pm 0.005$

- 4) Close the menu.

## 10. Color Mode chromaticity

Signal : No.13 (WINDOW MAC-2), window pattern/all-black

VR : Contrast Fully clockwise  
Brightness Fully counterclockwise

- 1) Short the following pins of CN-BX connector:  
Pins 1 and 9 (\* short-circuit via 39 k $\Omega$ ).
- 2) Receive the signal.
- 3) Adjust chromaticity NO.1 within Menu (S) - "AccuColor" (or "Color Control") - "Color\_Preset" to the following values:

Preset_NO.	x	y
1	$0.281 \pm 0.003$	$0.311 \pm 0.003$

- 4) When using an automatic adjustment equipment, enter the data to adjust the chromaticity of the other Preset NOs. to the following values:

NO.	x	y
2	0.300	0.315
3	0.315	0.325
4	0.345	0.350
5	0.385	0.380

In the case of manual adjustment, do the adjustment above by using an allowable error of  $\pm 0.01$ .

- 5) Receive an all-black signal.
- 6) Open the short. And turn the Contrast VR fully counterclockwise.  
And the Brightness VR fully clockwise.
- 7) Set "Color\_Preset" to NO.1.
- 8) Within Menu (S) - "BRIGHTNESS" - "Red", "Green" and "Blue", adjust chromaticity to the following values:  
x =  $0.281 \pm 0.003$   
y =  $0.311 \pm 0.003$ .
- 9) Close the menu.

## 11. Focus Adjustment

Signal : No.01 (VGA480) Cross Hatch Pattern

No.06 (1024X768(70)) White "\$" Character Pattern

- 1) Receive Signal 1 (cross hatch pattern)
- 2) Make sure that the screen size is as follows.  
H :  $306 \pm 2.5$  mm  
V :  $230 \pm 2.5$  mm
- 3) Open Menu (S), H Hold/Dynamic Focus.
- 4) Adjust the voltage at TP-DF on the DEF PWB to obtain the following values.  
The horizontal cycle voltage adjustment use Sub H Dynamic Focus.  
If not, adjust H Dynamic Focus.  
The vertical cycle voltage adjustment use V Dynamic Focus.  
Horizontal cycle :  $300 \pm 10V_{p-p}$   
Vertical cycle :  $90 \pm 5V_{p-p}$
- Note: When measuring  $V_{p-p}$ , use a probe whose attenuation is 100:1 and its capacitance is approx 2pF.
- 5) Close menu.
- 6) Adjust BRIGHTNESS VR so that the back raster just disappears and set CONTRAST VR fully clockwise (MAX).
- 7) Adjust FOCUS VR V on the FBT for the thinnest vertical lines.
- 8) Adjust FOCUS VR H on the FBT for the thinnest horizontal lines. At both the screen center and corner, adjust focus so the horizontal lines do not form

- halos.
- 9) Repeat steps 7) and 8) and adjust for uniform focus across the whole screen.
  - 10) Receive Signal 6 (white "\$" character pattern).
  - 11) Make sure that the white "\$" character hole is missing.
  - 12) When the focus is not obtained in step 11), fine adjust FOCUS VR H so that the whole screen is uniform.
  - 13) When the focus is not obtained in step 12), fine adjust FOCUS VR H and V so that the whole screen is uniform.
  - 14) In above adjustment, when the focus is not uniform across the whole screen, each parabolic wave should be corrected within to  $\pm 50V$  at the horizontal cycle and to  $\pm 20V$  at the vertical cycle. After correcting, perform steps 6) to 13) once again. Horizontal cycle make corrected H Dynamic.
  - 15) Receive the cross hatch pattern and make sure that R,G,B lines do not form halos.

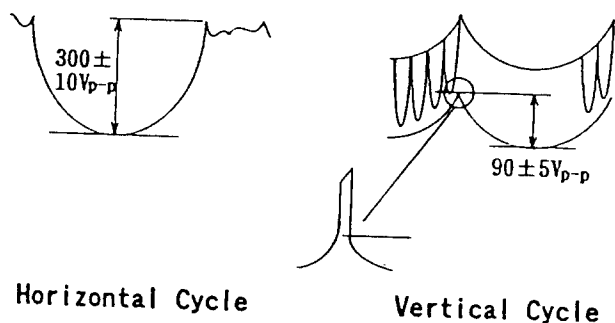


Fig 11-1 Dynamic Focus Wave

C. Appended chart

1. List of the Adjustment Signals

No.	Signal Name	SYNC State	SYNC pole (H/V)
1	VGA480	SEPARATE	NEG/NEG
2	MAC-II(640*480)	SYNC ON GREEN	*1
3	VESA 640*480@75	SEPARATE	NEG/NEG
4	800*600@72	SEPARATE	POS/POS
5	MAC-II(832*624)	SYNC ON GREEN	*1
6	1024*768@70	SEPARATE	NEG/NEG
7	800*600@56	SEPARATE	POS/POS
8	SIZE-1(VGA350)	SEPARATE	POS/NEG *2
9	SIZE-2(MAC-II 640*480)	SYNC ON GREEN	*1 *2
10	SIZE-3(MAC-II 832*624)	SYNC ON GREEN	*1 *2
11	HOLD 1	SEPARATE	POS/POS *3
12	HOLD 2	SEPARATE	NEG/NEG *3
13	WINDOW MAC(832*624)	SYNC ON GREEN	*1
14	VGA350	SEPARATE	POS/NEG
15	VGA400	SEPARATE	NEG/POS
16	800*600@60	SEPARATE	POS/POS
17	EVGA350@84	SEPARATE	POS/NEG
18	EVGA400@84	SEPARATE	NEG/POS
19	XGA(8514/A)	SEPARATE	POS/POS
20	VESA 800*600@75	SEPARATE	POS/POS
21	1024*768@72	SEPARATE	POS/POS
22	1024*768@76	SEPARATE	POS/POS
23	1280*1024@60	SEPARATE	POS/POS
24	Size-4(VESA 800*600@75)	SEPARATE	POS/POS
25	49kHz(87)	SEPARATE	NEG/NEG

- \*1 When SYNC ON GREEN is output, COMPOSITE SYNC is output on H SYNC line.  
V SYNC line is grounded.
- \*2 A signal where the horizontal active video is 92.86 % of the total period.
- \*3 When the exact value of  $f_H$  cannot be obtained because of some limitation of the signal generator and an approximate value is used, use the highest frequency value such that  $f_H \leq 31.0$  kHz for the 31 kHz side, and the lowest value such that  $f_H \geq 65$  kHz for the 65 kHz side. (The difference is equal to or smaller than 50 Hz).
- \*4 The signal generator must supply a synchronization signal that are in conformity with the following specifications:
  - H/V composed : to the set that is being adjusted
  - Only V SYNC : to color analyzer CA100
- \*5 Cross hatch
  - Vertical lines : 17
  - Horizontal lines : 13

Timing of Reference Signal  
Signal for Using LVG-1603

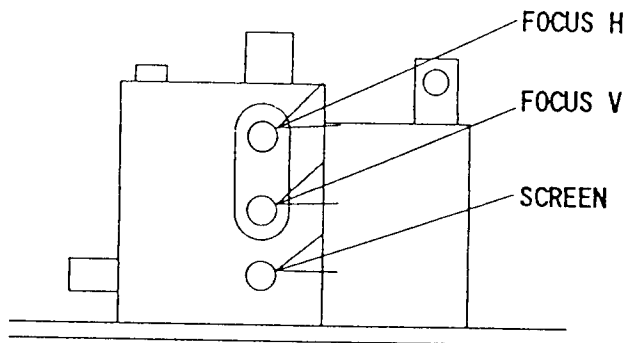
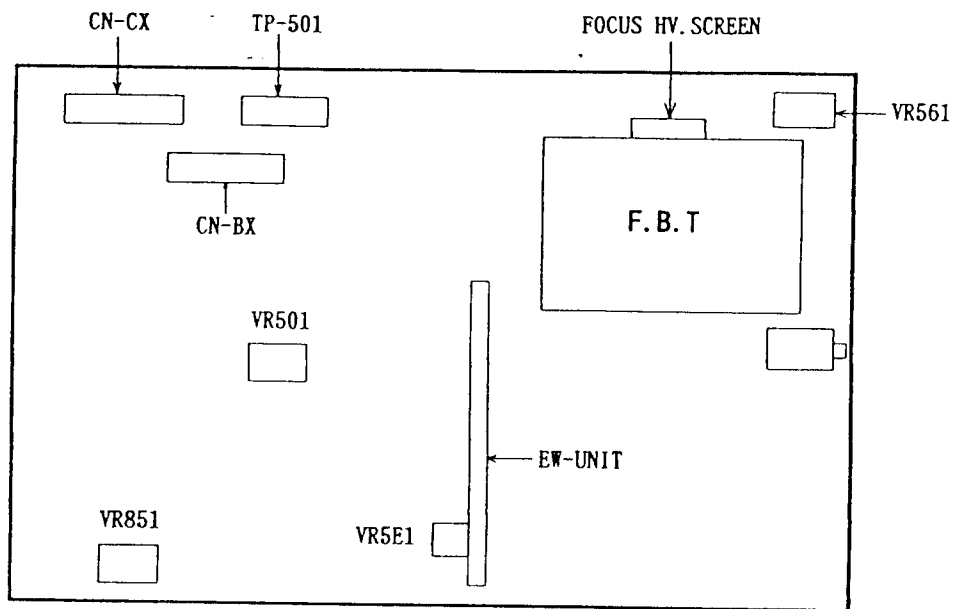
PROGRAM NO.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
SIGNAL NAME		VGA480	MAC-I 640* 480	VESA 640* 480 (75)	800* 600 (72)	MAC-I 832* 624	1024* 768 (70)	800* 600 (56)	SIZE-1	SIZE-2	SIZE-3	H. HOLD 1	H. HOLD 2	WINDOW (MAC)	VGA350	VGA400	800* 600 (60)	EVGA 350 (84)	EVGA 400 (84)	XGA 8514/A	VESA 800* 600 (75)	1024* 768 (72)	1024* 768 (76)	1080* 1024 (60)	SIZE-4	49kHz (87)	
HORIZONTAL ZONAL NTSC AL	Total	DOT	0900	0864	0840	1040	1152	0996	1024	0900	0864	1152	0848	0900	1152	0900	0900	1056	0832	0832	1264	1056	0860	0820	0840	1056	1152
	Rate	KHz	031469	035000	037500	048090	049725	056476	035156	031469	035000	049725	065000	031000	049725	031469	031469	037879	037860	037860	035522	046875	058140	060975	064094	046875	049730
	Dots/Character	DOT	08	08	08	08	08	08	08	09	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	07	08
	Characters	CHR	F090	F080	F080	F100	F104	F096	F100	F074	F074	F096	F074	F090	F026	F090	F090	F100	F080	F080	F128	F100	F080	F080	F080	F106	F026
	Drive Delay	DOT	0738	0704	0656	0856	0864	0786	0824	0711	0680	0832	0592	0738	0550	0738	0738	0840	0664	0664	1032	0816	0665	0655	0680	0787	0550
	Drive Width	DOT	0108	0064	0064	0120	0064	0102	0072	0108	0064	0064	0060	0108	0064	0108	0108	0128	0040	0040	0176	0080	0075	0060	0054	0080	0064
VERTICAL TI CA L	Total	RASTER	0525	0525	0500	0666	0667	0806	0625	0449	0525	0667	0650	0620	0667	0449	0449	0628	0450	0450	0409	0625	0808	0802	1067	0625	0570
	Rate	Hz	059940	066667	075000	072010	074550	070069	056250	070086	066666	074550	100000	050000	074550	070086	070086	060316	084135	084140	086958	075000	071955	076029	060069	075000	087246
	Lins/Character	RASTER	10	10	10	10	02	12	10	10	10	12	10	10	10	10	10	10	10	10	10	12	12	10	12	10	
	Row	RASTER	0480	0480	0480	0600	0624	0768	0600	0325	0480	0482	0538	0566	0208	0350	0400	0600	0350	0400	0384	0600	0768	0768	1024	0600	0180
	Drive Delay	RASTER	0490	0483	0481	0637	0625	0771	0601	0374	0483	0556	0671	0579	0417	0387	0412	0601	0385	0409	0384	0601	0770	0768	1025	0601	0387
	Drive Width	RASTER	0002	0002	0003	0006	0003	0006	0002	0002	0003	0003	0004	0002	0003	0002	0002	0004	0003	0003	0004	0003	0002	0002	0005	0003	0003
DOT RATE		MHz	028322	030240	031500	050000	057283	056250	036000	028322	030240	057283	055120	027900	057283	028322	028322	040000	031500	031500	044900	049500	050000	050000	053839	049500	057289
Scan Mode		F0	F0	F0	F0	F0	F0	F0	F0	F0	F0	F0	F0	F0	F0	F0	F0	F0	F0	F2	F0	F0	F0	F0	F0	F0	F0
Character Font		F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1
Character Code		31	32	33	34	35	36	37	38	39	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	20	
Pattern Key Code		F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2
Video Output		1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110
Add Sync/Inverse		0001	0101	0001	0001	0101	0001	0001	0001	0101	0101	0001	0001	0101	0001	0001	0001	0001	0001	0001	0001	0001	0001	0001	0001	0001	0001
Dot Duty		00	01	00	00	01	00	00	00	01	01	00	00	01	00	00	00	00	00	00	00	00	00	00	00	00	00
Polarity		00	00	00	11	00	00	11	10	00	00	11	00	00	10	01	11	10	01	11	11	11	11	11	11	00	00

# Signal for Using Quantum 801C

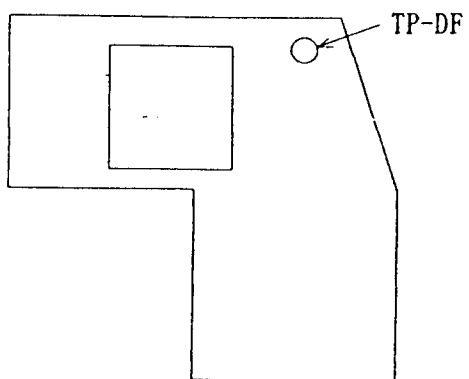
PROGRAM NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
SIGNAL NAME	VGA480	MAC-II 640* 480	VESA 640* 480 75Hz	800*600 72Hz	MAC-II 832* 624	1024* 768 70Hz	800*600 (56)	SIZE-1 (VGA350)	SIZE-2 (MAC II 640* 480)	SIZE-3 (MAC II 832* 624)	II. HOLD 1	II. HOLD 2	WINDOW (MAC) (832* 624)	VGA350	VGA400	800*600 60Hz	EVGA 350	EVGA 400	XGA	800*600 75Hz	1024* 768 72Hz	1024* 768 76Hz	1280* 1024 60Hz	SIZE-4 (VESA 800*600 (75))	49%Hz (87)
Real Time Parameters																									
Dot Rate (MHz)	28.320	30.240	31.500	31.932	28.639	31.629	31.957	28.322	30.240	31.824	31.720	27.900	31.821	28.320	28.320	30.001	31.500	31.500	31.968	31.875	29.826	29.758	31.791	31.878	31.827
Horizontal Rate (kHz)	31.467	35.000	37.500	48.090	49.720	56.480	35.156	31.469	35.000	49.725	65.000	31.000	49.720	31.467	31.467	37.880	37.860	37.860	35.520	46.875	58.140	60.980	64.094	46.880	49.730
Vertical Rate (Hz)	60.06	66.67	75.000	72.207	74.543	70.074	56.250	70.087	66.667	74.550	100.000	50.000	74.543	70.08	70.08	60.318	84.133	84.133	86.96	75.000	71.955	76.035	60.069	75.008	87.246
Non-Real Time Parameters																									
II: Dots/Character	9	8	8	8	8	8	9	9	8	8	9	8	8	9	9	8	8	8	9	8	9	8	8	8	8
Total Characters	100	108	105	83	72	70	101	100	108	80	61	100	80	100	100	99	104	104	100	85	57	61	62	85	80
Displayed Characters	80	80	80	64	52	55	79	74	74	54	43	80	17	80	80	4	80	80	81	65	43	48	47	60	15
Drive Delay	82	88	82	68	54	56	81	79	85	58	43	82	60	82	82	16	83	83	82	66	44	49	50	64	38
Drive Width	12	8	8	10	4	7	7	12	8	5	4	12	5	12	12	8	5	5	14	7	5	5	4	7	5
V:Lines/Character	10	10	10	12	12	12	10	12	10	10	10	12	10	10	10	10	10	10	12	10	12	12	10	10	10
Total Lines	524	525	500	666	667	806	625	449	525	667	650	620	667	449	449	628	450	450	817	625	808	802	1067	625	570
Displayed Rows	48	48	48	50	52	64	60	27	48	48	54	47	22	35	40	60	35	40	64	60	64	64	102	60	18
Drive Delay (Rows)	49	48	48	53	52	64	60	31	48	56	60	48	42	39	41	60	39	41	64	60	64	64	103	60	39
Drive Width (Lines)	2	3	3	6	3	6	2	2	3	3	4	2	3	2	2	4	3	3	4	3	2	2	5	3	3
Step Width	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Signal Gating																									
Composite Sync OP 1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	1	1	1	1	1	1
Vertical Step OP 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Horizontal Drive OP 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Vertical Drive OP 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Signal Polarity																									
Composite Sync OP 5	1	0	1	0	1	1	1	1	1	1	1	1	1	0	1	0	0	1	0	0	1	1	0	1	1
Vertical Step OP 6	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	1	1	1	1	1
Horizontal Drive OP 7	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	0	0	1	0	0	1	1	0	1	1
Vertical Drive OP 8	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Video OP 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interface Mode OP 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Video Mode OP 10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Duty Cycle OP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Character Clocking																									
Mode OP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Horizontal Skew OP 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vertical Skew OP 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cursor OP 16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

### 3. Adjustment Connectors/Test Pin Position Diagram

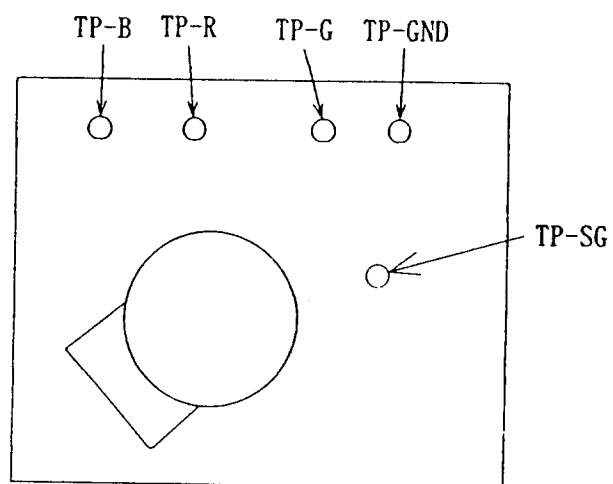
#### 3-1. MAIN PWB



### 3-2. VIDEO PWB



### 3-3. CRT PWB



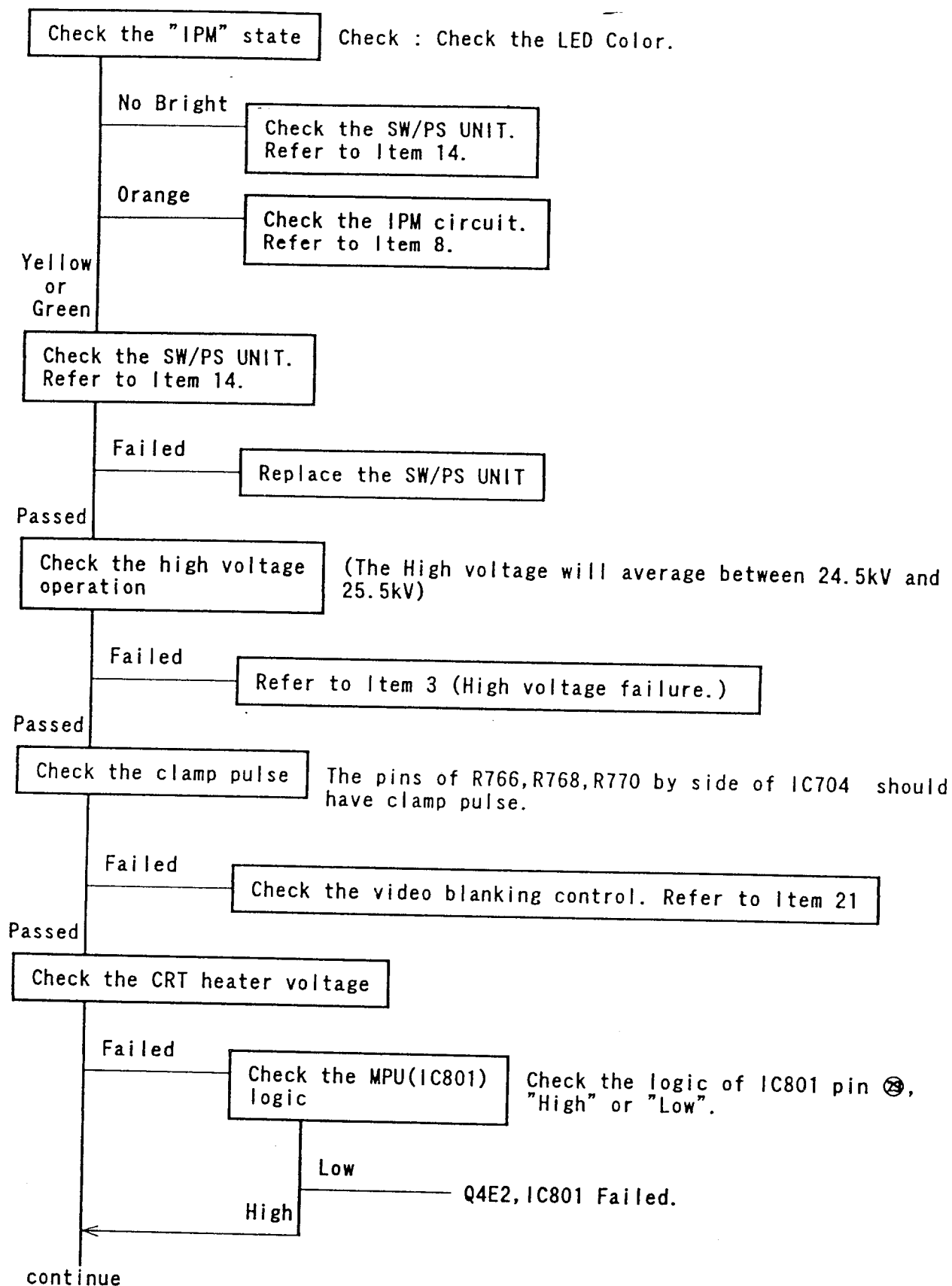
# TROUBLE SHOOTING

Refer to the User Manual's trouble shooting section before using this chart.

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1 NO RASTER



continue

Passed

Turn the screen  
VR of FBT  
slowly clockwise

Measure the screen voltage on CRT PWB(TP-SCREEN).  
The voltage should be approximately  $650V \pm 5V$ .

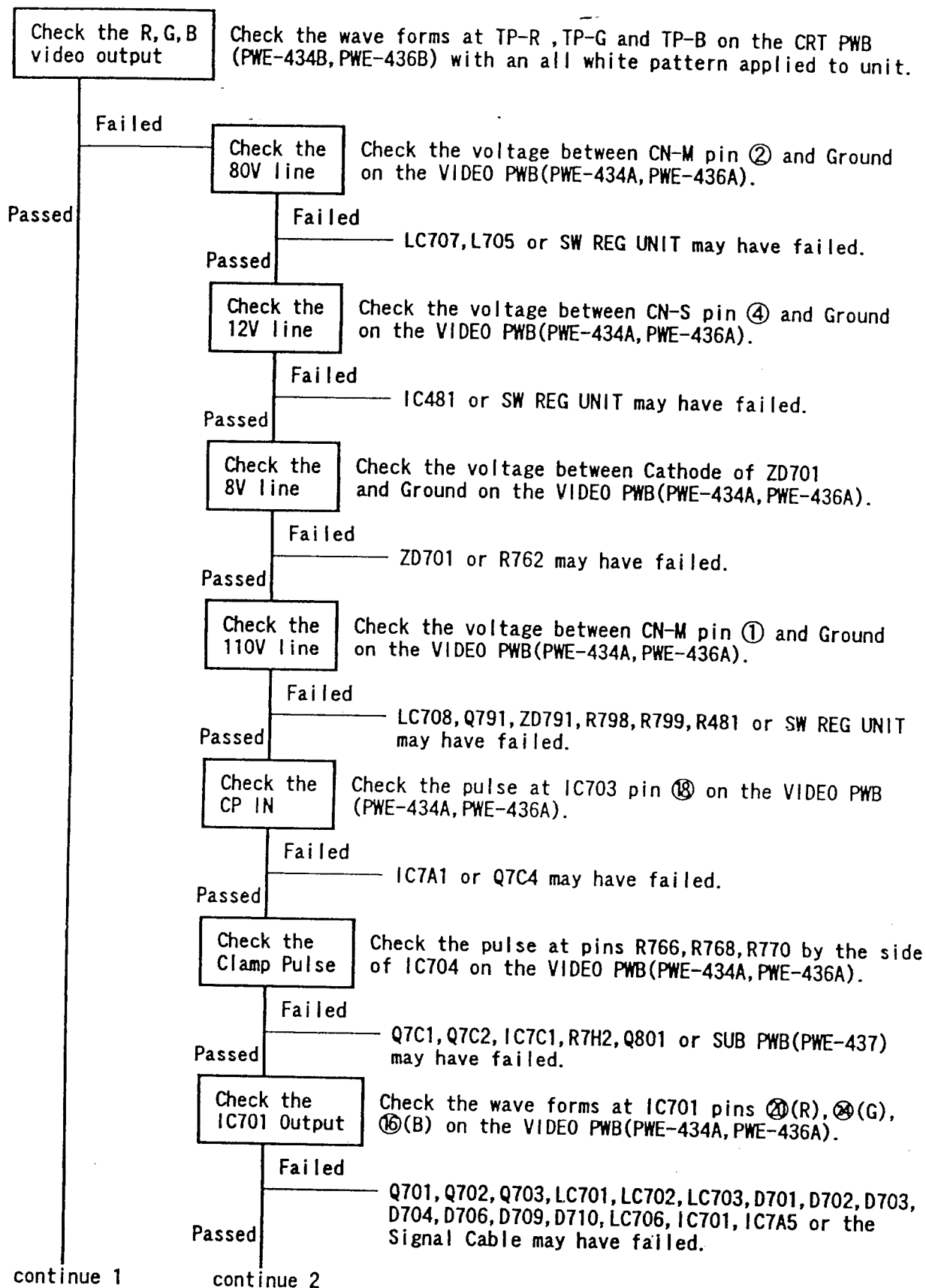
Failed

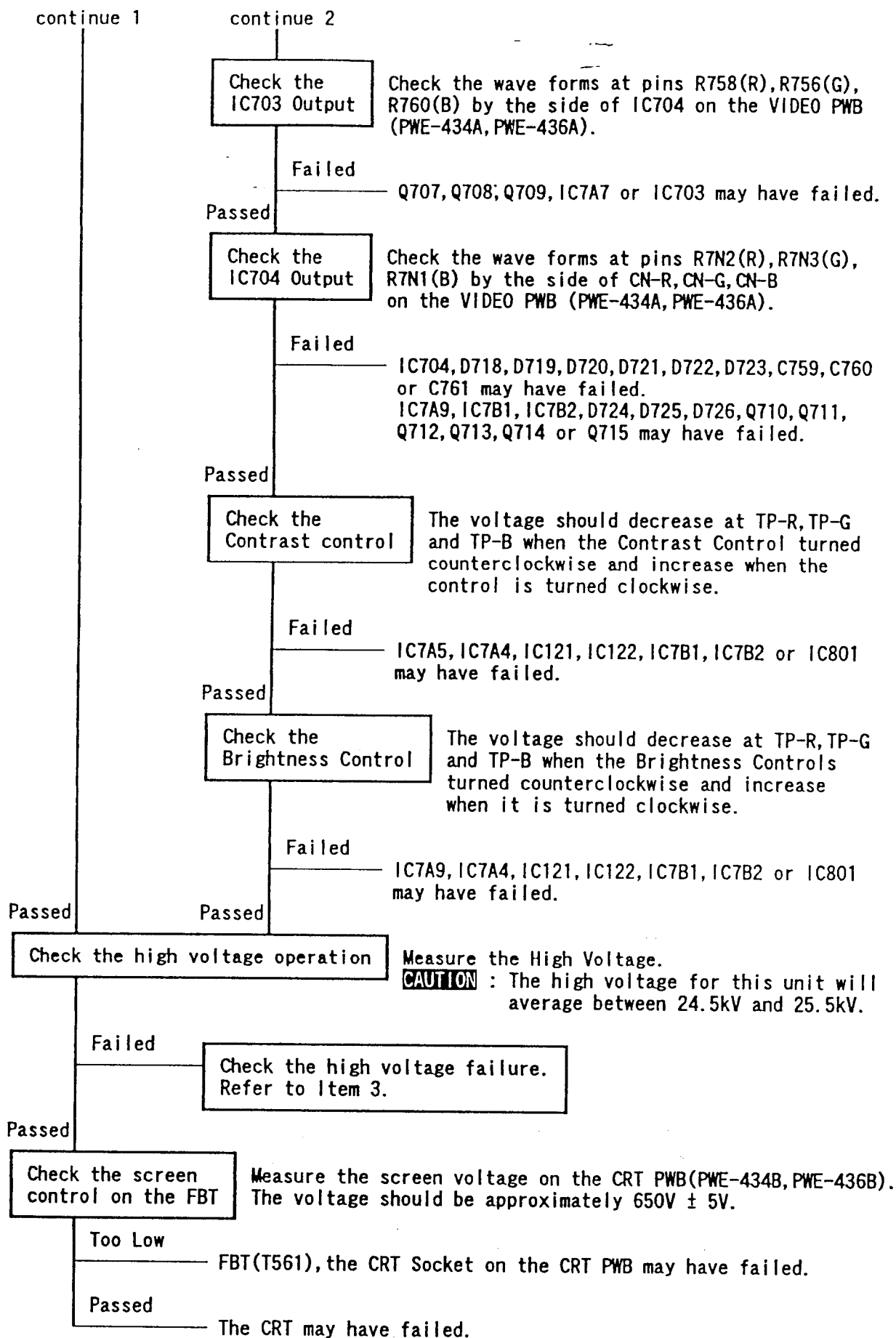
Voltage is too low.  
FBT(T561), the CRT socket on the CRT PWB may have failed.

Passed

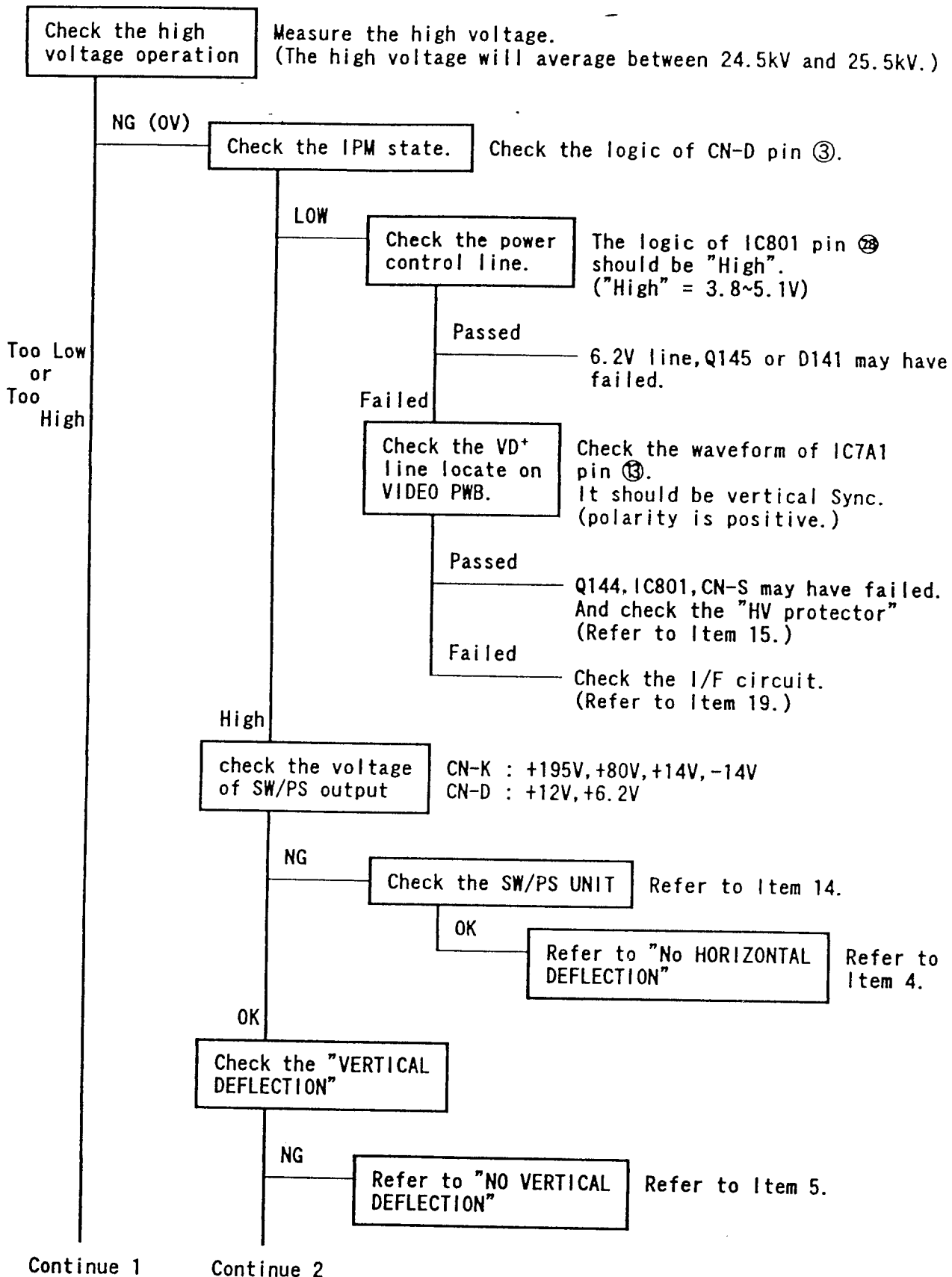
The CRT may have failed.

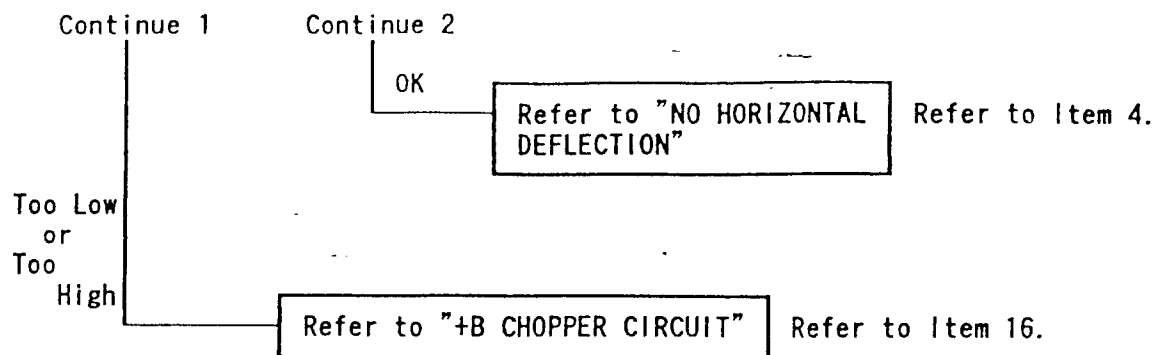
## 2 ABNORMAL IMAGE OR RASTER BRIGHTNESS (Too Dark or Too Bright)





### 3 HIGH VOLTAGE FAILURE





#### 4 NO HORIZONTAL DEFLECTION

Check the high wave form of HD OUT

Check the wave form of IC501 pin ⑰.  
This wave is the rectangular wave, the frequency is the HORIZONTAL input frequency.  
The wave have about 7Vp-p and about 50% duty cycle.

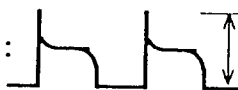
NG

IC501, Q522, Q523, Q524 may have failed.

OK

Check the wave form of Q524

Check the wave form of Q524 Drain.

wave form :  Vp-p: about 30~50Vp-p  
That is the same frequency as input horizontal frequency.

NG

Q524, R531, T521, IC5E2 and Q541 may have failed.

OK

Check the wave form of Q541

Check the wave form of Q541 Collector.  
It should be collector pulse, which is about 1200Vp-p.

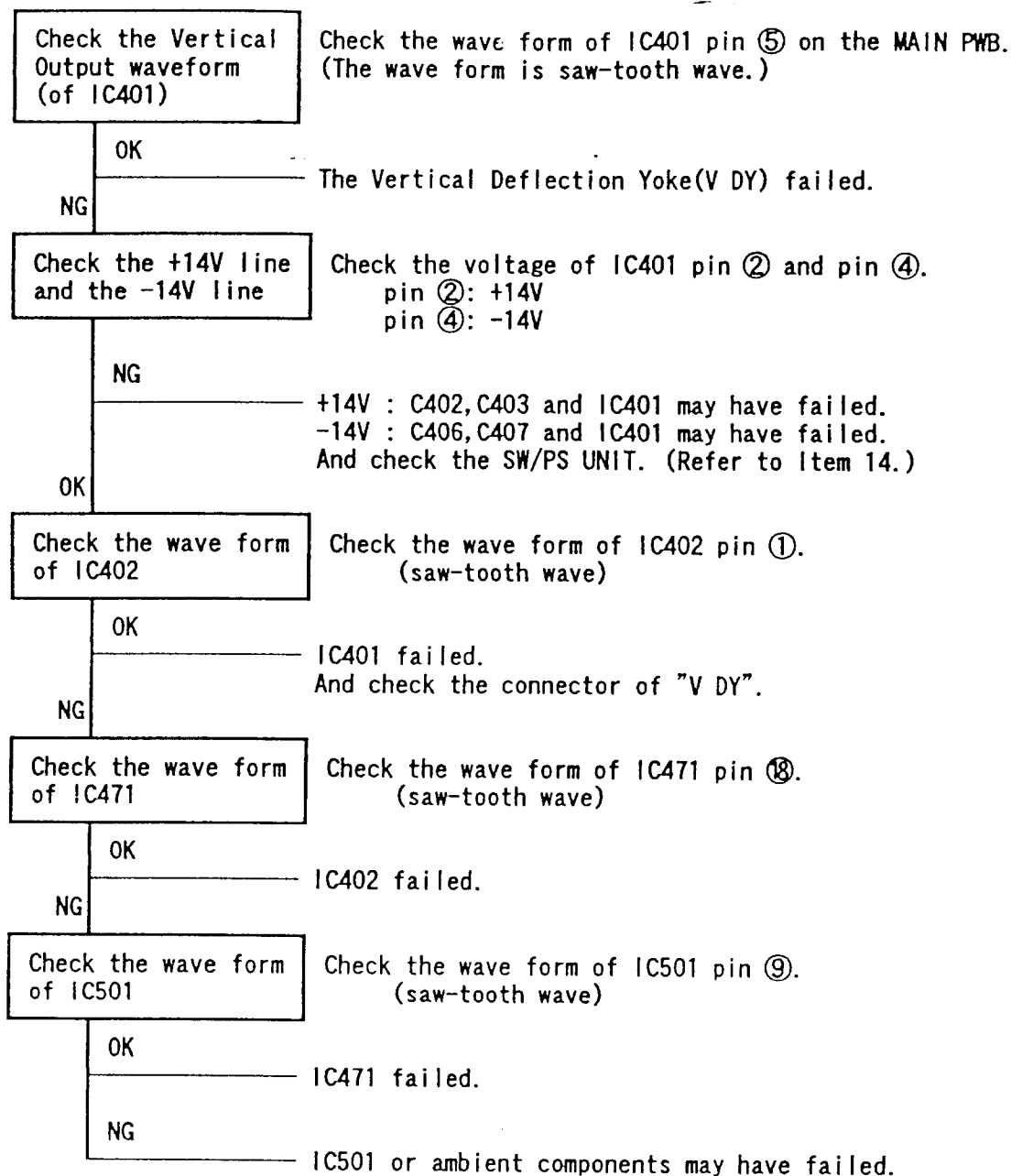
No pulse

Q541 and FBT(T561) may have failed.  
And check the connector of "H DY", and check the +B chopper circuit. (Refer to Item 16.)

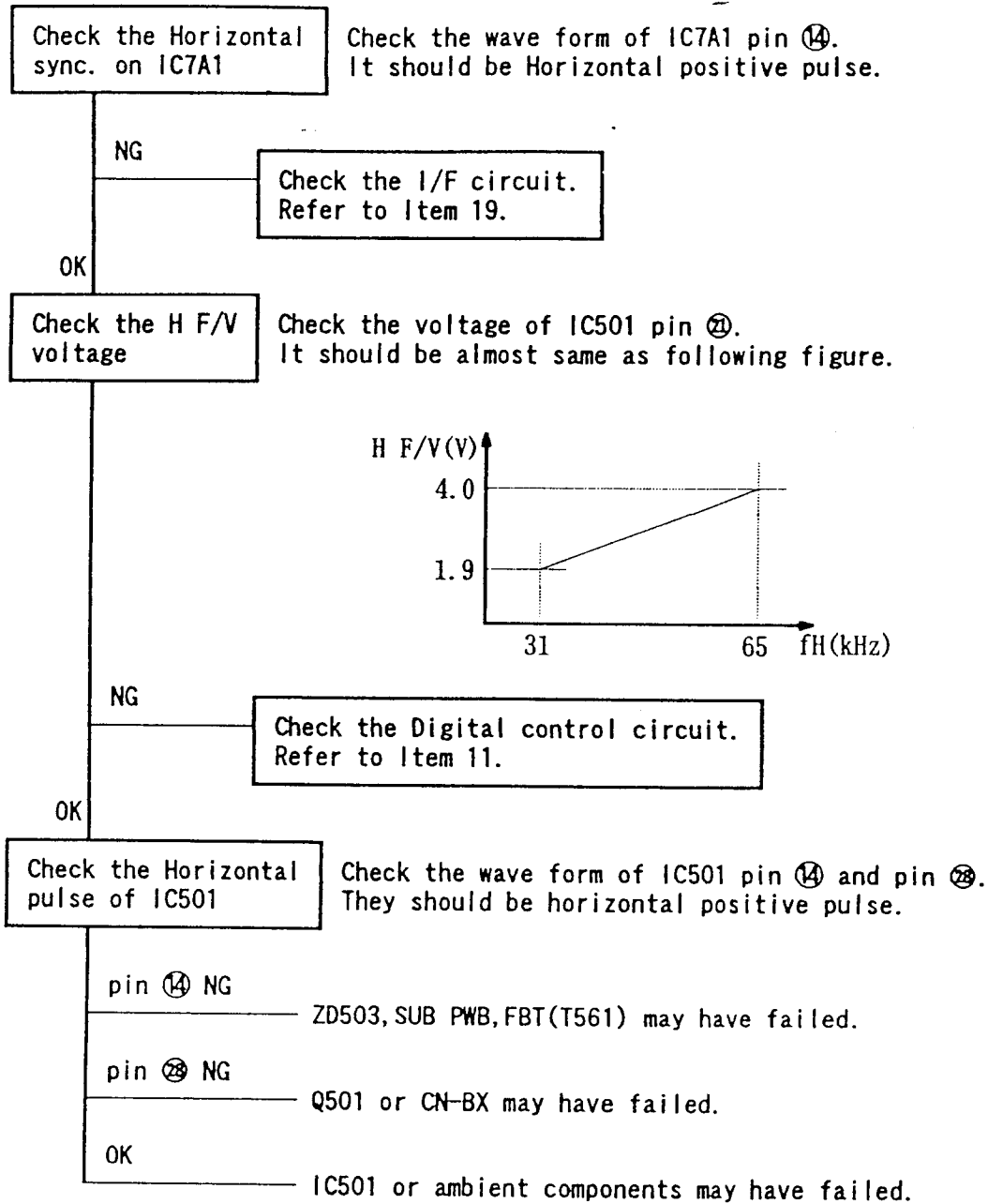
Abnormal pulse

D541, D542 and D543 may have failed.  
Check the +B chopper circuit. (Refer to Item 16.)

5 NO VERTICAL DEFLECTION

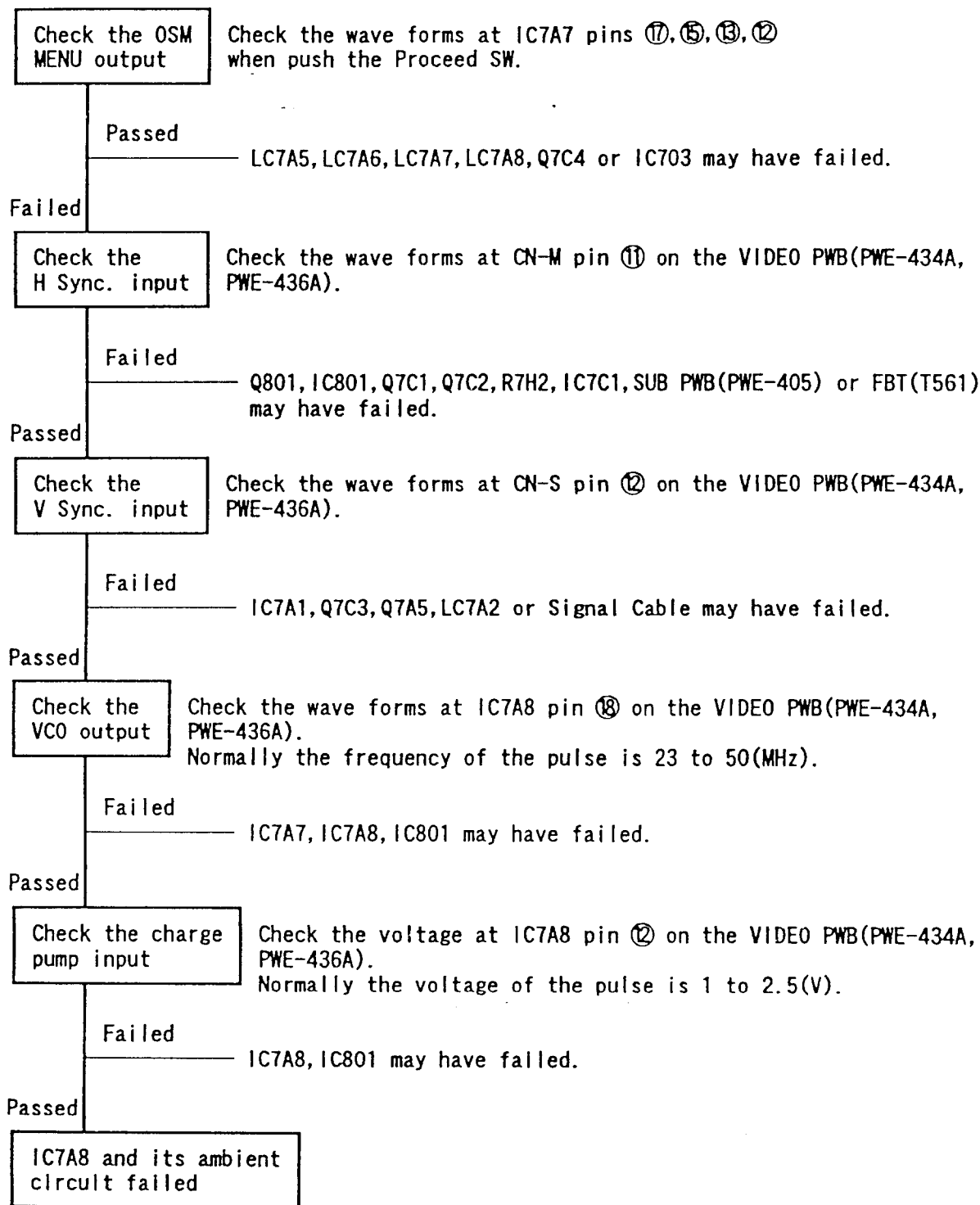


## 6 UNSTABLE HORIZONTAL SYNCHRONIZATION



## 7 THE OSM FAILURE

### 7.1 Abnormal image of OSM



## 7.2 OSM MENU OPERATION ABNORMALITY

**CAUTION** : If the image control cannot be operated by the OSM MENU, refer to item 11.

Check the user control line located on MAIN PWB

When one of the user control keys is pushed, each logic of IC801 pins ⑱~㉔ are as follows.

Passed

IC801 may have failed.

Failed

SW101, 102, 103, 104, 105, 106, 107, 108 or IC801 may have failed.

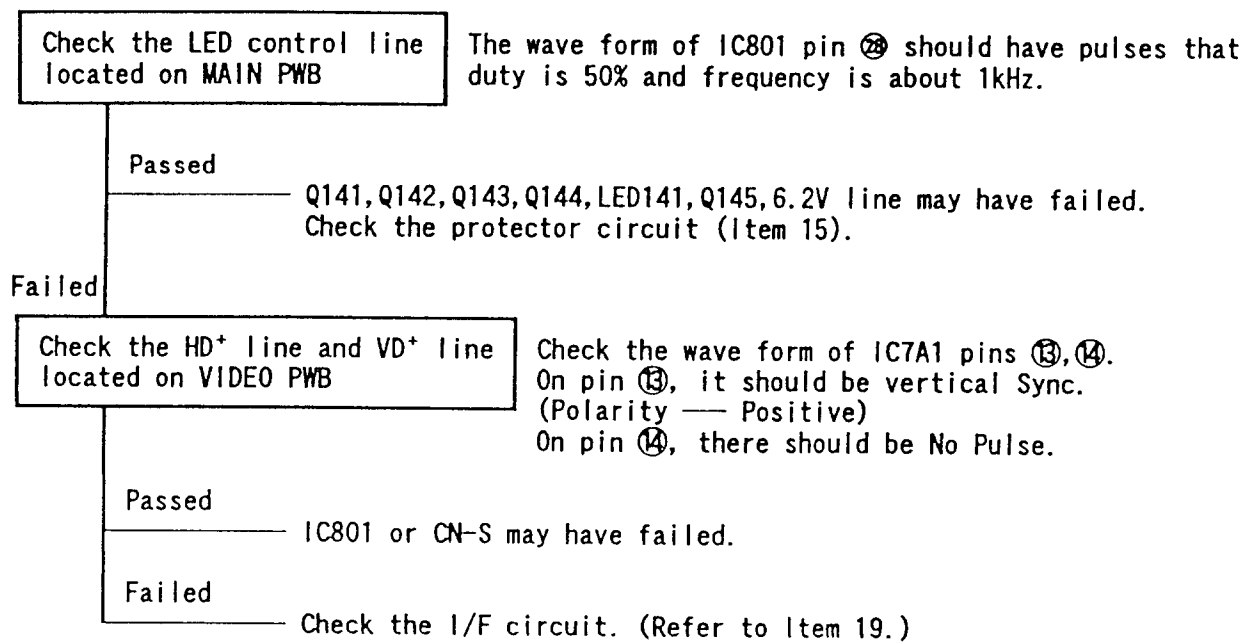
	18	19	20	21	22	23	24	25
EXIT	H	L	L	L	L	L	L	L
—	L	H	L	L	L	L	L	L
↑	L	L	H	L	L	L	L	L
↓	L	L	L	H	L	L	L	L
+	L	L	L	L	H	L	L	L
PROCEED	L	L	L	L	L	H	L	L
RESET	L	L	L	L	L	L	H	L
M. DEGAUSS	L	L	L	L	L	L	L	H

\* "H" = "High" level 4.5V ~ 5V  
 "L" = "Low" level approximately 0V

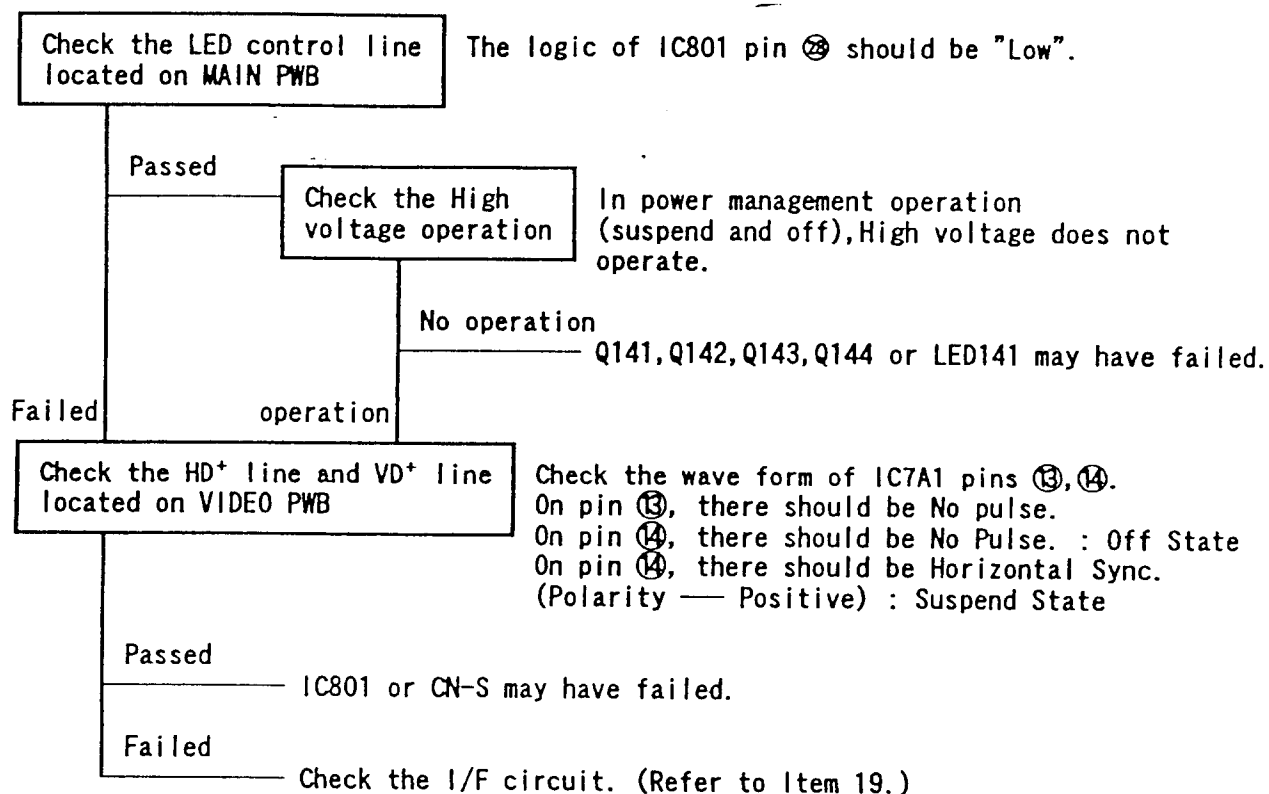
State	Signals			LED
	Horizontal	Vertical	Video	
On	Pulses	Pulses	Active	Green
Stand-by	No Pulses	Pulses	Blanked	Yellow
Suspend	Pulses	No Pulses	Blanked	Orange
Off	No Pulses	No Pulses	Blanked	Orange

Display Power Management Summary

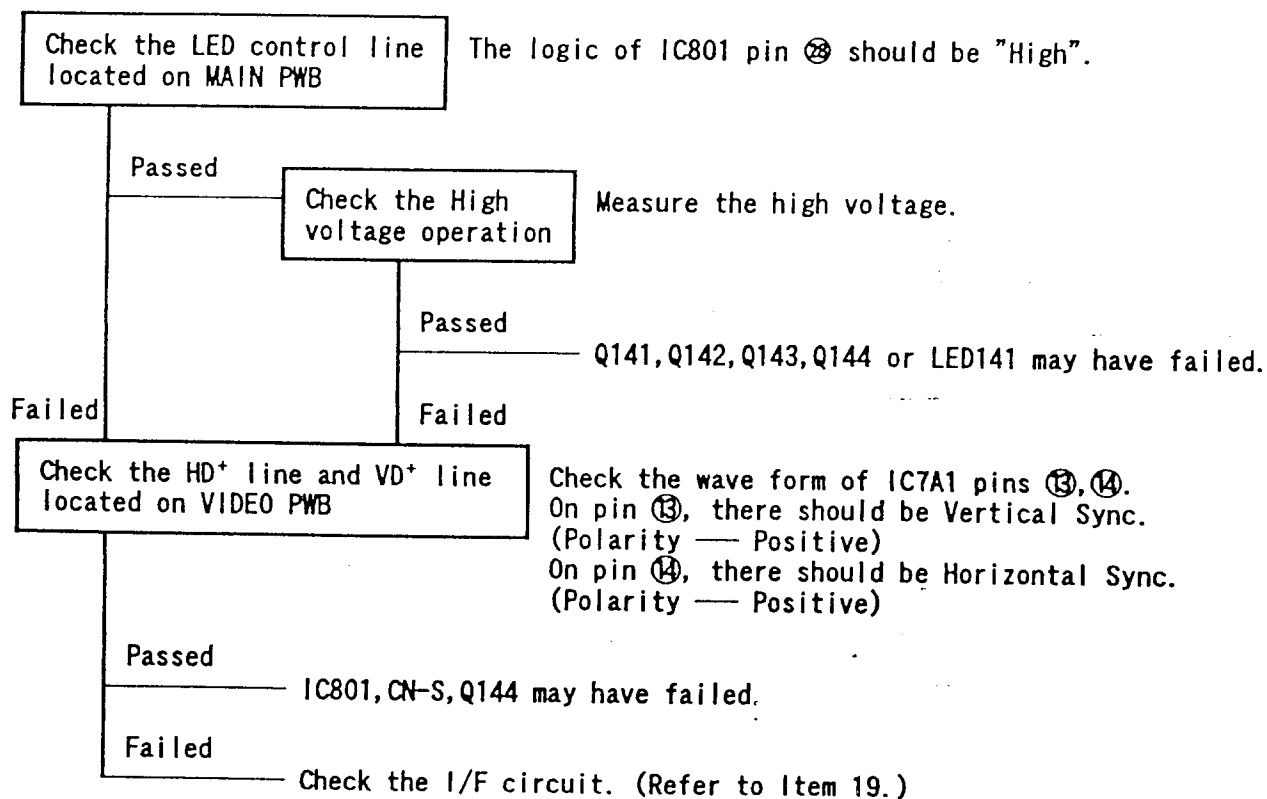
## 8.1 No LED change to yellow (No transition to "stand-by")



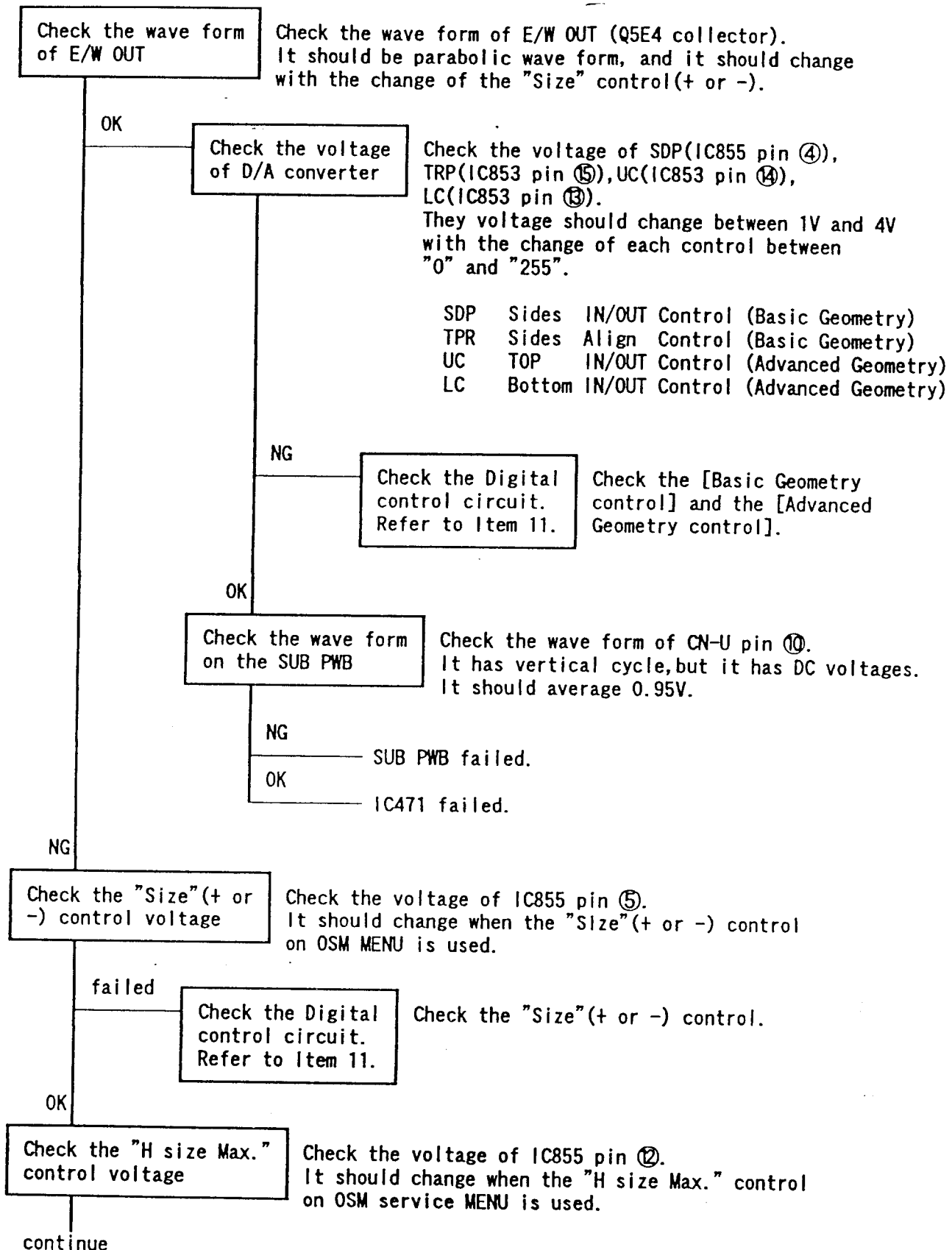
## 8.2 No LED change to orange (No transition to "suspend" or "off")



## 8.3 No LED change to green (No return to "on")



9 HORIZONTAL IMAGE SIZE OR SIDE PIN CUSHION FAILURE



continue

Failed

Check the Digital  
control circuit.  
Refer to Item 11.

Check the "H size Max." control.

OK

Check the wave form  
on the SUB PWB

Check the wave form of W5, W1, W3.

They should change when the "Size" (+ or -) control is used.

W5 NG

IC471 may have failed.

(W5)

W1

OK

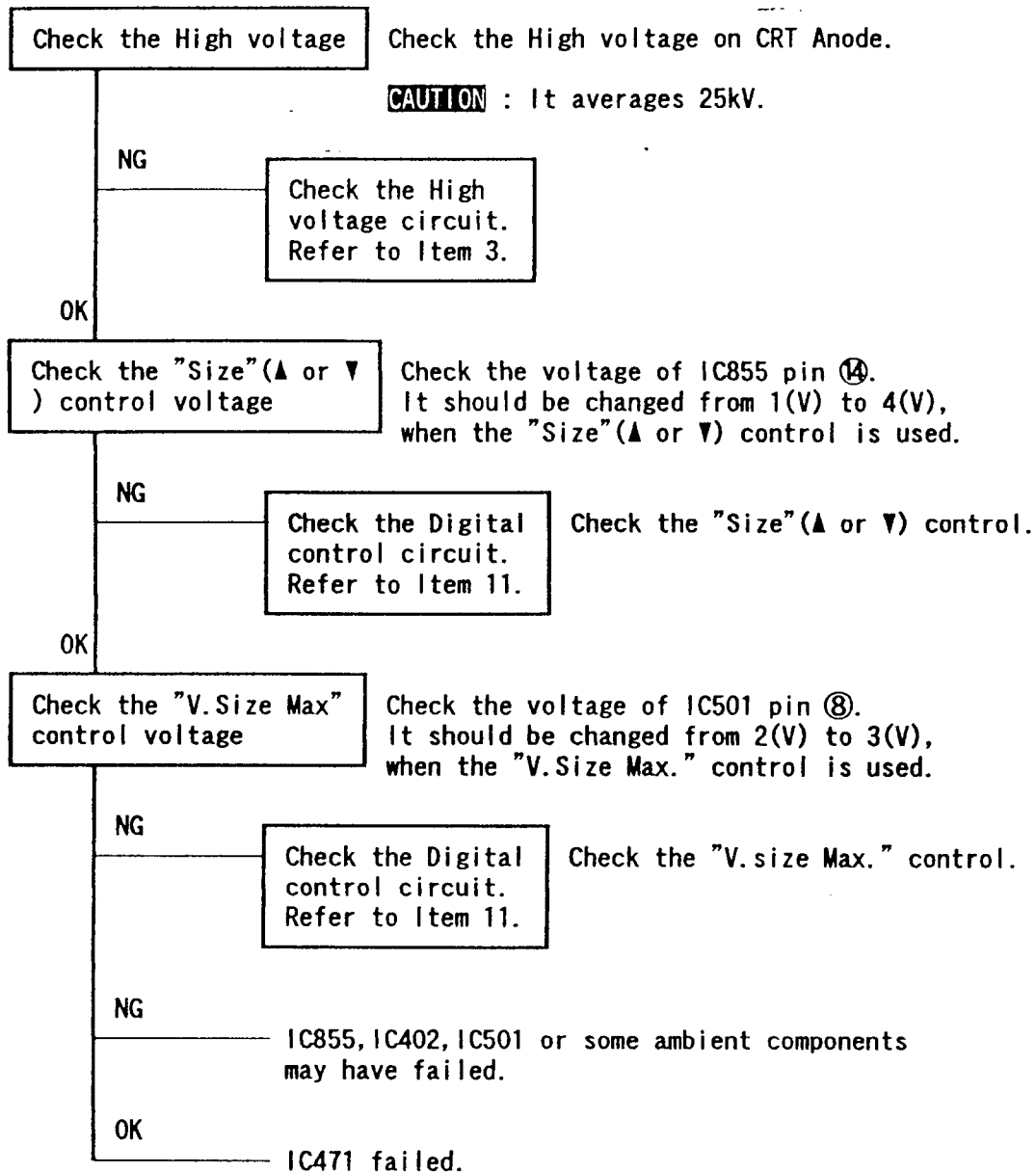
W3 NG

SUB PWB may have failed.

OK

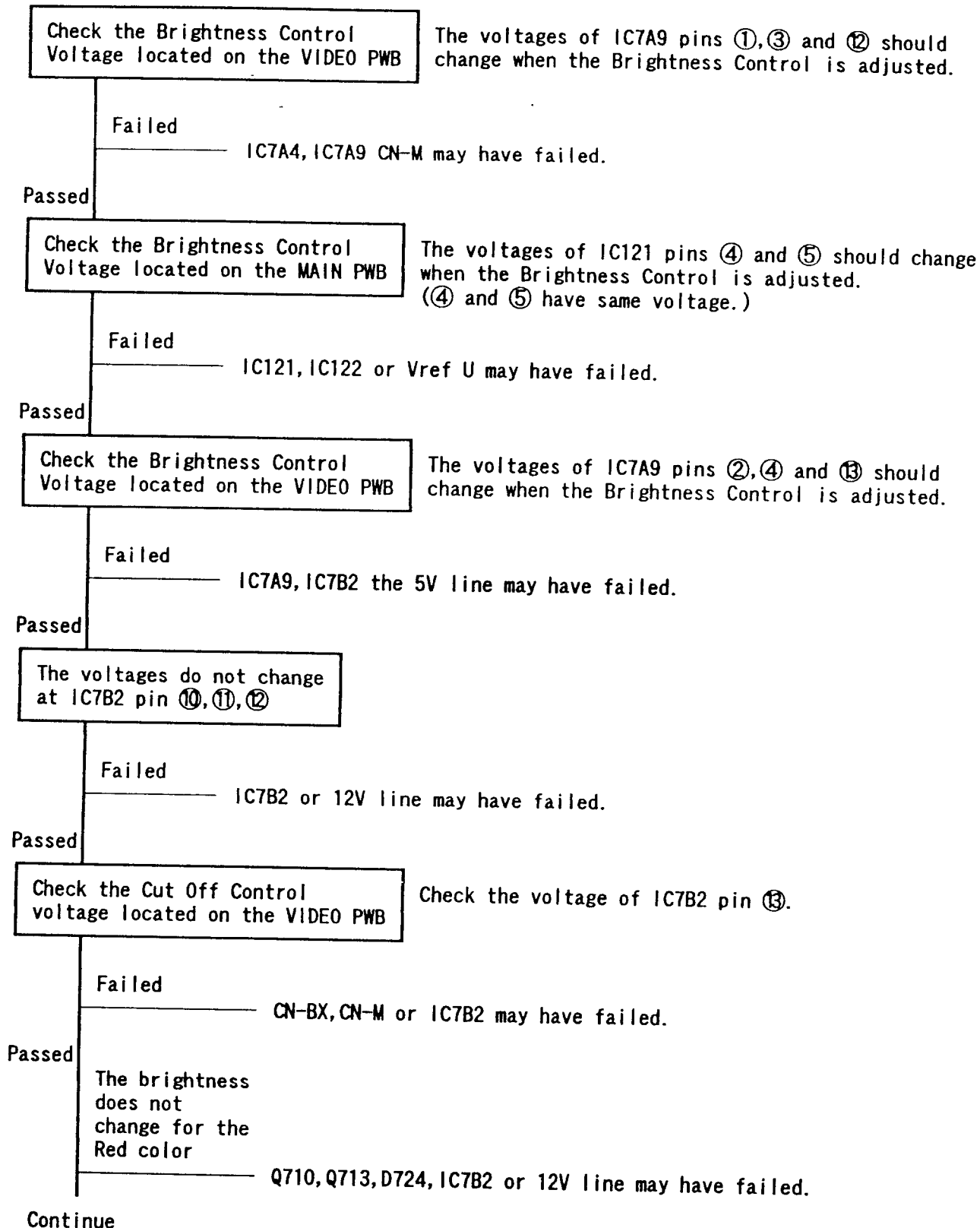
IC5E2, Q5E3, Q5E4, D541, D542, D546, L541, D5E1, R595, C547, IC801  
may have failed.

## 10 VERTICAL IMAGE SIZE FAILURE



## 11 USER CONTROL FAILURE/DIGITAL CONTROL FAILURE

### 11.1 Brightness user control failure



Continue

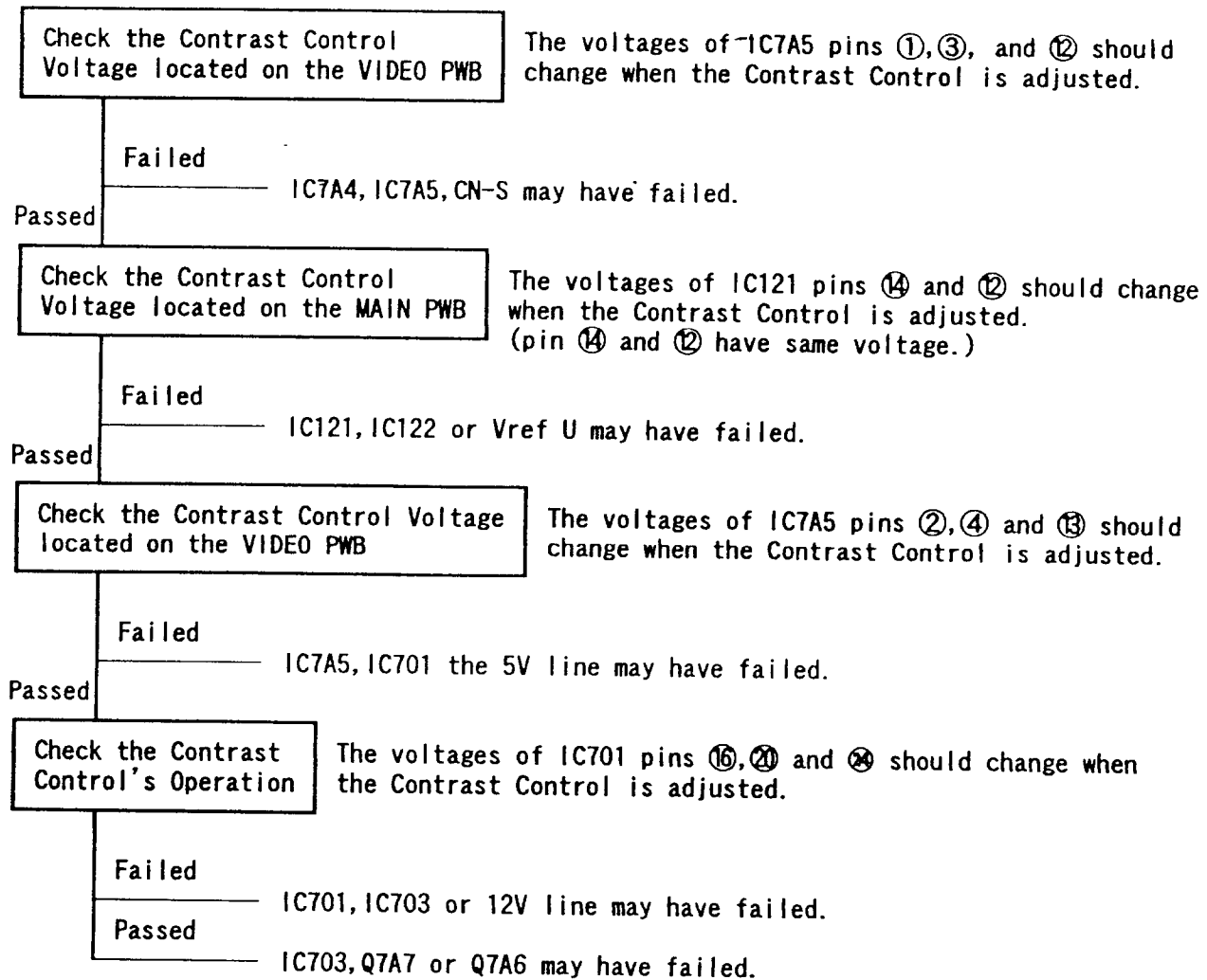
The brightness  
does not  
change for the  
Green color

Q711, Q714, D725, IC7B2 or 12V line may have failed.

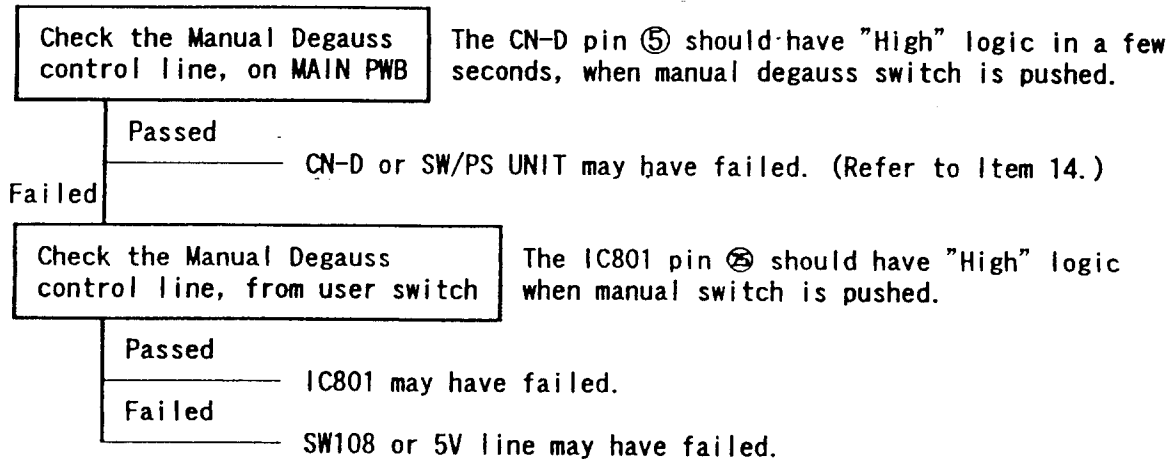
The brightness  
does not  
change for the  
Blue color

Q712, Q715, D726, IC7B2 or 12V line may have failed.

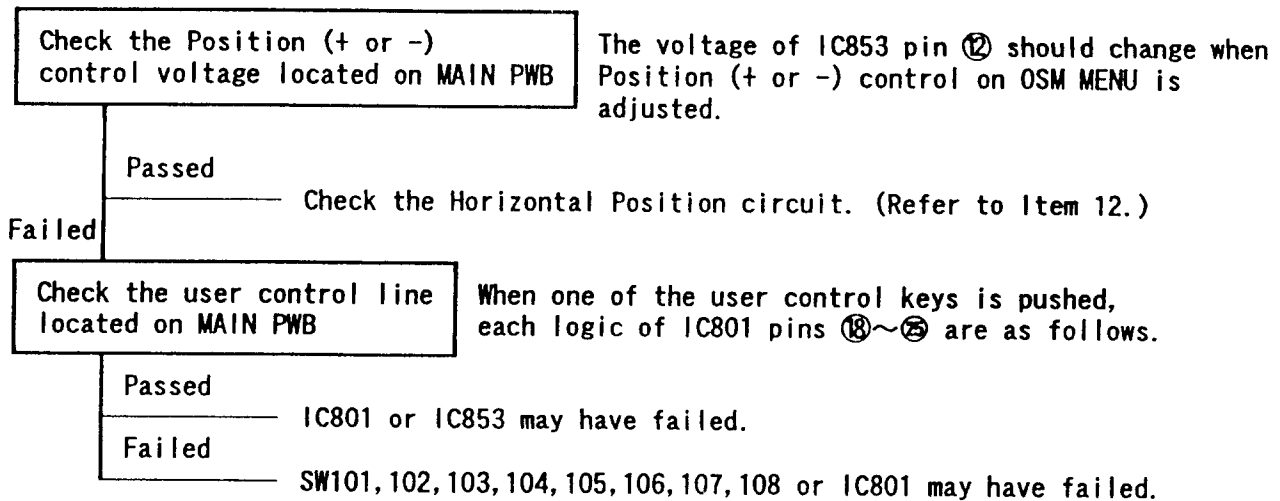
## 11.2 Contrast user control failure



### 11.3 Manual Degauss switch not operative



### 11.4 Position (+ or -) control failure or abnormal operation



	18	19	20	21	22	23	24	25
EXIT	H	L	L	L	L	L	L	L
—	L	H	L	L	L	L	L	L
↑	L	L	H	L	L	L	L	L
↓	L	L	L	H	L	L	L	L
+	L	L	L	L	H	L	L	L
PROCEED	L	L	L	L	L	H	L	L
RESET	L	L	L	L	L	L	H	L
M. DEGAUSS	L	L	L	L	L	L	L	H

\* "H" = "High" level      4.5V ~ 5V  
 "L" = "Low" level      approximately 0V

# 11.5 Position ( ▲ or ▼ ) control failure or abnormal operation

Check the Position ( ▲ or ▼ ) control voltage located on MAIN PWB

The voltage of IC855 pin ⑤ should change when Position ( ▲ or ▼ ) control on OSM MENU is adjusted.

Passed

Check the Vertical Position circuit. (Refer to Item 18.)

Failed

Check the user control line located on MAIN PWB

When one of the user control keys is pushed, each logic of IC801 pins ⑮~⑳ are as follows.

Passed

IC801 or IC855 may have failed.

Failed

SW101, 102, 103, 104, 105, 106, 107, 108 or IC801 may have failed.

	18	19	20	21	22	23	24	25
EXIT	H	L	L	L	L	L	L	L
—	L	H	L	L	L	L	L	L
↑	L	L	H	L	L	L	L	L
↓	L	L	L	H	L	L	L	L
+	L	L	L	L	H	L	L	L
PROCEED	L	L	L	L	L	H	L	L
RESET	L	L	L	L	L	L	H	L
M. DEGAUSS	L	L	L	L	L	L	L	H

\* "H" = "High" level 4.5V ~ 5V  
 "L" = "Low" level approximately 0V

# 11.6 Size ( + or - ) control failure or abnormal operation

Check the Size ( + or - ) control voltage located on MAIN PWB

The voltage of IC855 pin ⑤ should change when Size ( + or - ) control on OSM MENU is adjusted.

Passed

Check the Horizontal Size circuit. (Refer to Item 9.)

Failed

Check the user control line located on MAIN PWB

When one of the user control keys is pushed, each logic of IC801 pins ⑮~⑳ are as follows.

Passed

IC801 or IC855 may have failed.

Failed

SW101, 102, 103, 104, 105, 106, 107, 108 or IC801 may have failed.

	18	19	20	21	22	23	24	25
EXIT	H	L	L	L	L	L	L	L
-	L	H	L	L	L	L	L	L
↑	L	L	H	L	L	L	L	L
↓	L	L	L	H	L	L	L	L
+	L	L	L	L	H	L	L	L
PROCEED	L	L	L	L	L	H	L	L
RESET	L	L	L	L	L	L	H	L
M. DEGAUSS	L	L	L	L	L	L	L	H

\* "H" = "High" level      4.5V ~ 5V  
 "L" = "Low" level      approximately 0V

# 11.7 Size ( ▲ or ▼ ) control failure or abnormal operation

Check the Size (▲ or ▼) control voltage located on MAIN PWB

The voltage of IC855 pin ⑭ should change when Size (▲ or ▼) control on OSM MENU is adjusted.

Passed

Check the Vertical Size circuit. (Refer to Item 10.)

Failed

Check the user control line located on MAIN PWB

When one of the user control keys is pushed, each logic of IC801 pins ⑮~⑳ are as follows.

Passed

IC801 or IC855 may have failed.

Failed

SW101, 102, 103, 104, 105, 106, 107, 108 or IC801 may have failed.

	18	19	20	21	22	23	24	25
EXIT	H	L	L	L	L	L	L	L
—	L	H	L	L	L	L	L	L
↑	L	L	H	L	L	L	L	L
↓	L	L	L	H	L	L	L	L
+	L	L	L	L	H	L	L	L
PROCEED	L	L	L	L	L	H	L	L
RESET	L	L	L	L	L	L	H	L
M. DEGAUSS	L	L	L	L	L	L	L	H

\* "H" = "High" level 4.5V ~ 5V  
 "L" = "Low" level approximately 0V

# 11.8 [Basic Geometry],[Advanced Geometry] control failure or abnormal operation

Check the control voltage of each items located on MAIN PWB

The circuit control voltage from D/A converter should change when each control on OSM MENU is adjusted.

ITEM	IC No.	Pin No.
Sides : IN/OUT	IC855	4
Left/Right	IC853	7
Tilt	IC853	6
Align	IC853	15
Top : IN/OUT	IC853	14
Left/Right	IC853	5
Bottom : IN/OUT	IC853	13
Left/Right	IC853	4

Passed

Check the each distortion circuit. (Refer to Item 9 or 12.)

Failed

Check the user control line located on MAIN PWB

When one of the user control keys is pushed, each logic of IC801 pins ⑱~㉓ are as follows.

Passed

IC801, IC853, IC855 may have failed.

Failed

SW101, 102, 103, 104, 105, 106, 107, 108 or IC801 may have failed.

Pin No.	18	19	20	21	22	23	24	25
EXIT	H	L	L	L	L	L	L	L
—	L	H	L	L	L	L	L	L
↑	L	L	H	L	L	L	L	L
↓	L	L	L	H	L	L	L	L
+	L	L	L	L	H	L	L	L
PROCEED	L	L	L	L	L	H	L	L
RESET	L	L	L	L	L	L	H	L
M. DEGAUSS	L	L	L	L	L	L	L	H

\* "H" = "High" level 4.5V ~ 5V  
 "L" = "Low" level approximately 0V

# 11.9 AccuColor control failure or abnormal operation

Check the AccuColor control voltage located on VIDEO PWB

The voltage of IC7A5 pins ②, ④, ⑬ should change when Accucolor control on OSM MENU is adjusted.

Red — Pin ⑬  
Green — Pin ②  
Blue — Pin ④

Passed

Check the video circuit. (Refer to Item 11.2)

Failed

Check the user control line located on MAIN PWB

When one of the user control keys is pushed, each logic of IC801 pins ⑮~⑳ are as follows.

Passed

IC801 or IC7A5 may have failed.

Failed

SW101, 102, 103, 104, 105, 106, 107, 108 or IC801 may have failed.

	18	19	20	21	22	23	24	25
EXIT	H	L	L	L	L	L	L	L
—	L	H	L	L	L	L	L	L
↑	L	L	H	L	L	L	L	L
↓	L	L	L	H	L	L	L	L
+	L	L	L	L	H	L	L	L
PROCEED	L	L	L	L	L	H	L	L
RESET	L	L	L	L	L	L	H	L
M. DEGAUSS	L	L	L	L	L	L	L	H

\* "H" = "High" level 4.5V ~ 5V  
"L" = "Low" level approximately 0V

# 11.10 H.Size Max.control failure or abnormal operation

Check the H.Size Max.control voltage located on MAIN PWB

The voltage on IC855 pin ⑫ should change when H.Size Max.control on OSM SERVICE MENU is adjusted.

Passed

Check the Horizontal Size circuit. (Refer to Item 9.)

Failed

Check the user control line located on MAIN PWB

When one of the user control keys is pushed, each logic of IC801 pins ⑮~⑳ are as follows.

Passed

IC801 or IC855 may have failed.

Failed

SW101, 102, 103, 104, 105, 106, 107, 108 or IC801 may have failed.

	18	19	20	21	22	23	24	25
EXIT	H	L	L	L	L	L	L	L
—	L	H	L	L	L	L	L	L
↑	L	L	H	L	L	L	L	L
↓	L	L	L	H	L	L	L	L
+	L	L	L	L	H	L	L	L
PROCEED	L	L	L	L	L	H	L	L
RESET	L	L	L	L	L	L	H	L
M. DEGAUSS	L	L	L	L	L	L	L	H

\* "H" = "High" level 4.5V ~ 5V  
 "L" = "Low" level approximately 0V

# 11.11 V.Size Max.control failure or abnormal operation

Check the V.Size Max.control voltage located on MAIN PWB

The voltage of IC855 pin ⑬ should change when V.Size Max.control on OSM SERVICE MENU is adjusted.

Passed

Check the Vertical Size circuit. (Refer to Item 10.)

Failed

Check the user control line located on MAIN PWB

When one of the user control keys is pushed, each logic of IC801 pins ⑱~㉓ are as follows.

Passed

IC801 or IC855 may have failed.

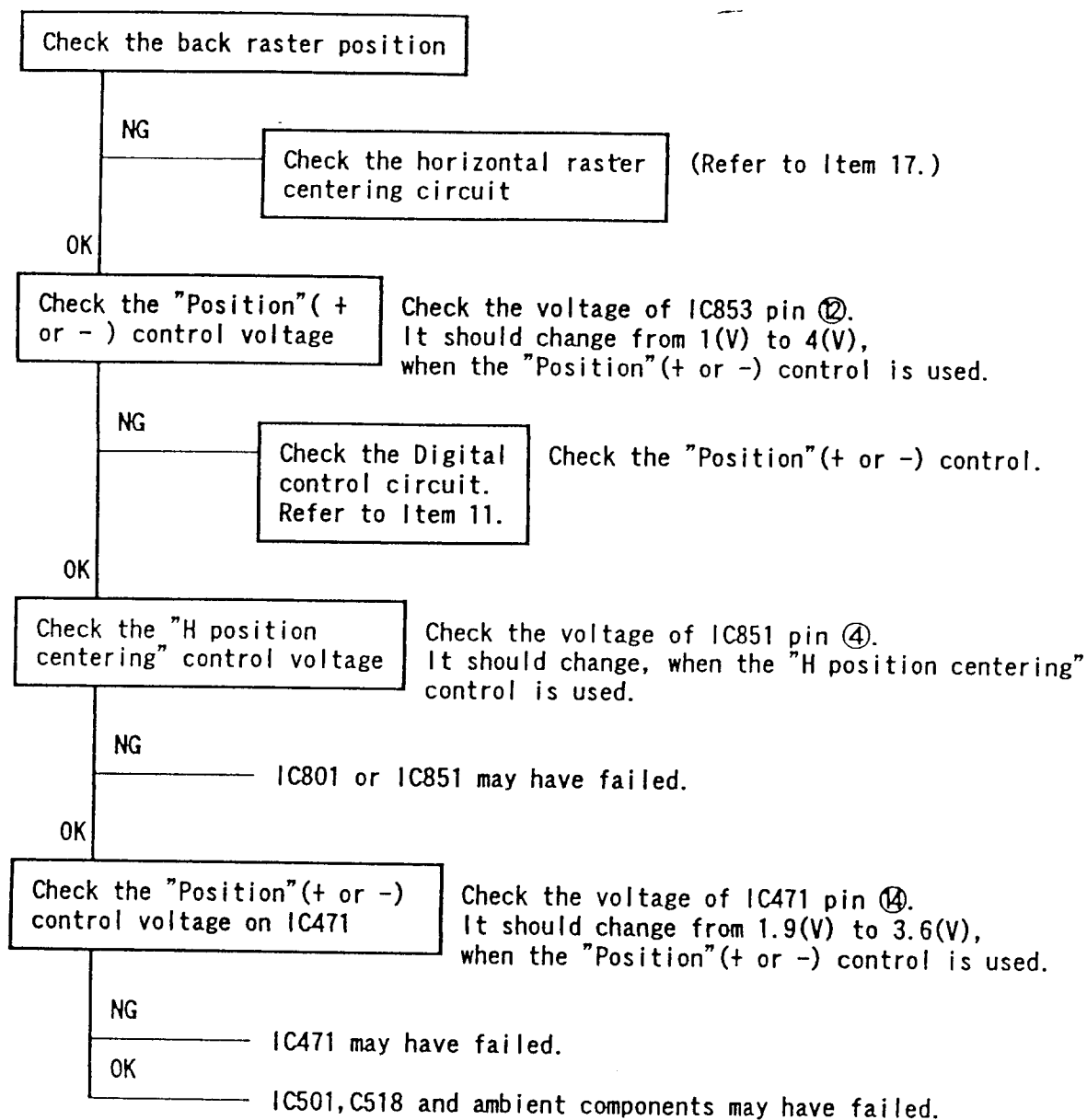
Failed

SW101, 102, 103, 104, 105, 106, 107, 108 or IC801 may have failed.

	18	19	20	21	22	23	24	25
EXIT	H	L	L	L	L	L	L	L
—	L	H	L	L	L	L	L	L
↑	L	L	H	L	L	L	L	L
↓	L	L	L	H	L	L	L	L
+	L	L	L	L	H	L	L	L
PROCEED	L	L	L	L	L	H	L	L
RESET	L	L	L	L	L	L	H	L
M. DEGAUSS	L	L	L	L	L	L	L	H

\* "H" = "High" level 4.5V ~ 5V  
 "L" = "Low" level approximately 0V

## 12 ABNORMAL HORIZONTAL IMAGE POSITION FAILURE



# 13 HORIZONTAL LINEARITY FAILURE

Check the Horizontal image size

Check the Horizontal image size.  
It should change, when Size (+ or -) is changed.  
And it is possible to adjust to 306 mm wide.

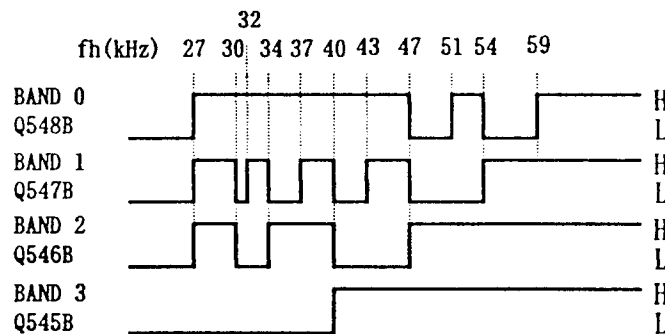
NG

Check the Horizontal image size circuit.  
Refer to Item 9.

OK

Check the voltage of fh BAND

Check the voltage of fh BAND(0~3) on BASE of Q548, Q547, Q546 and Q545. ("High" : 4.5V~5V, "Low" : approximately 0V)  
The relation ship between fh and fh BAND(0~3) is shown by follows.



BAND 0(1/2/3)

NG

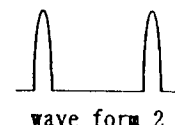
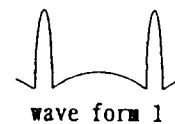
IC801, ZD549, (ZD548, ZD547, ZD546), Q548, (Q547, Q546, Q545) may have failed.

OK

Check the wave form of "S" correction circuit

Check the wave form of Q542(Q543/Q544) Drain and RL541's break terminal(connected with C549).

{BAND(0/1/2)} = {"H" → wave form 1  
{"L" → wave form 2  
{BAND 3} = {"H" → wave form 2  
{"L" → wave form 1  
{(RL541)}



Q542(Q543/Q544)  
Drain NG

IC541, Q546, (Q547, Q548), Q542, (Q543, Q544), R547, (R552, R556), C551, (C552, C553) may have failed.

OK

RL541' break  
terminal  
NG

RL541, C549 or Q545 may have failed.

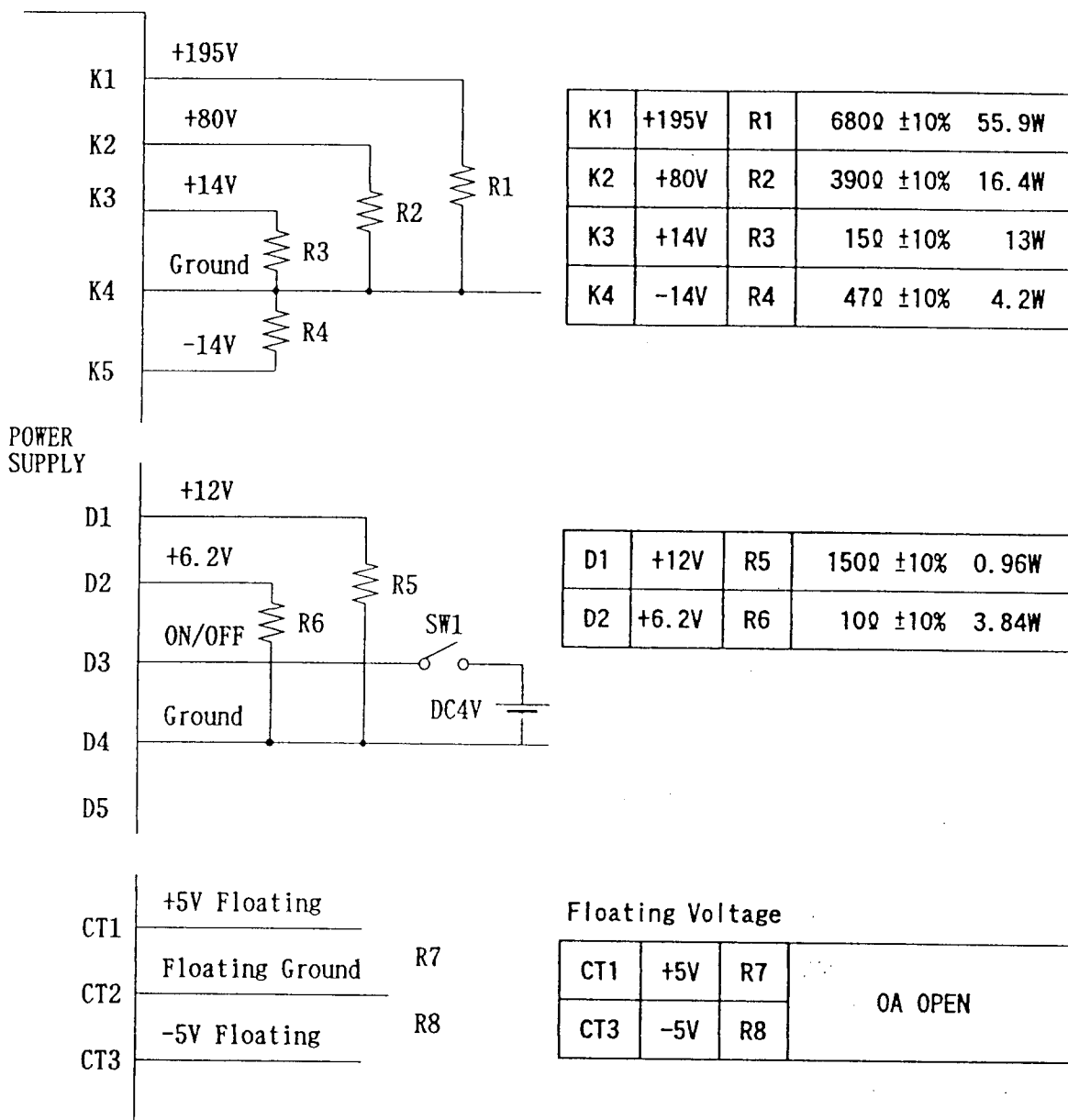
OK

C548, C549, C551, C552, C553, L542, L543 or H DY may have failed.

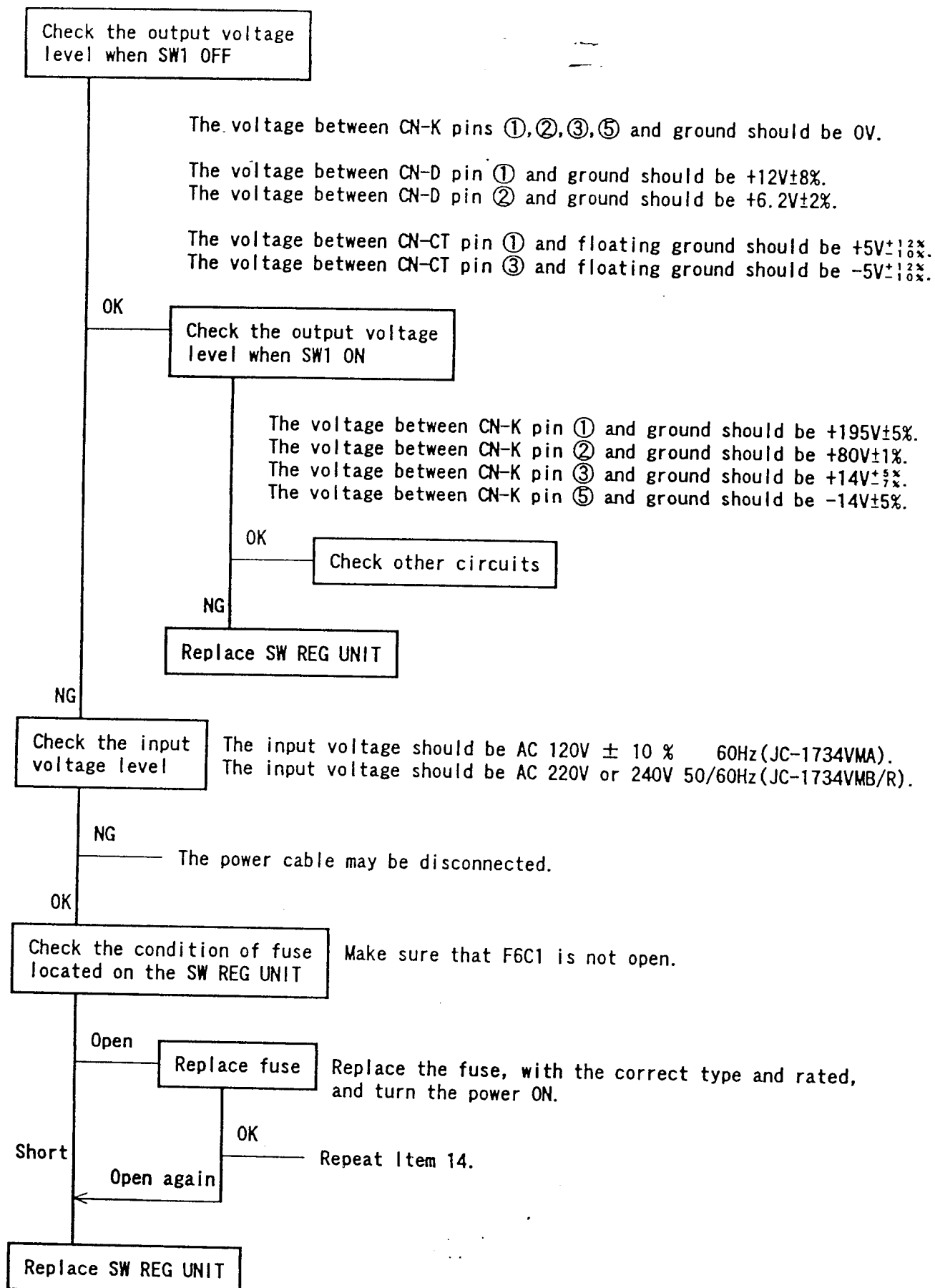
# 14 SWITCHING REGULATOR UNIT (SW/PS UNIT) FAILURE

The following can be used either for unstable power output or no output at all:

Before this Troubleshooting section is used, the power supply should be turned OFF and after disconnecting the CN-K connector, CN-D connector, CN-CT connector and connecting the Dummy Resistors Load, with the correct power rating value (see below); wait for a minimum of 60 seconds before the unit is turned ON again.

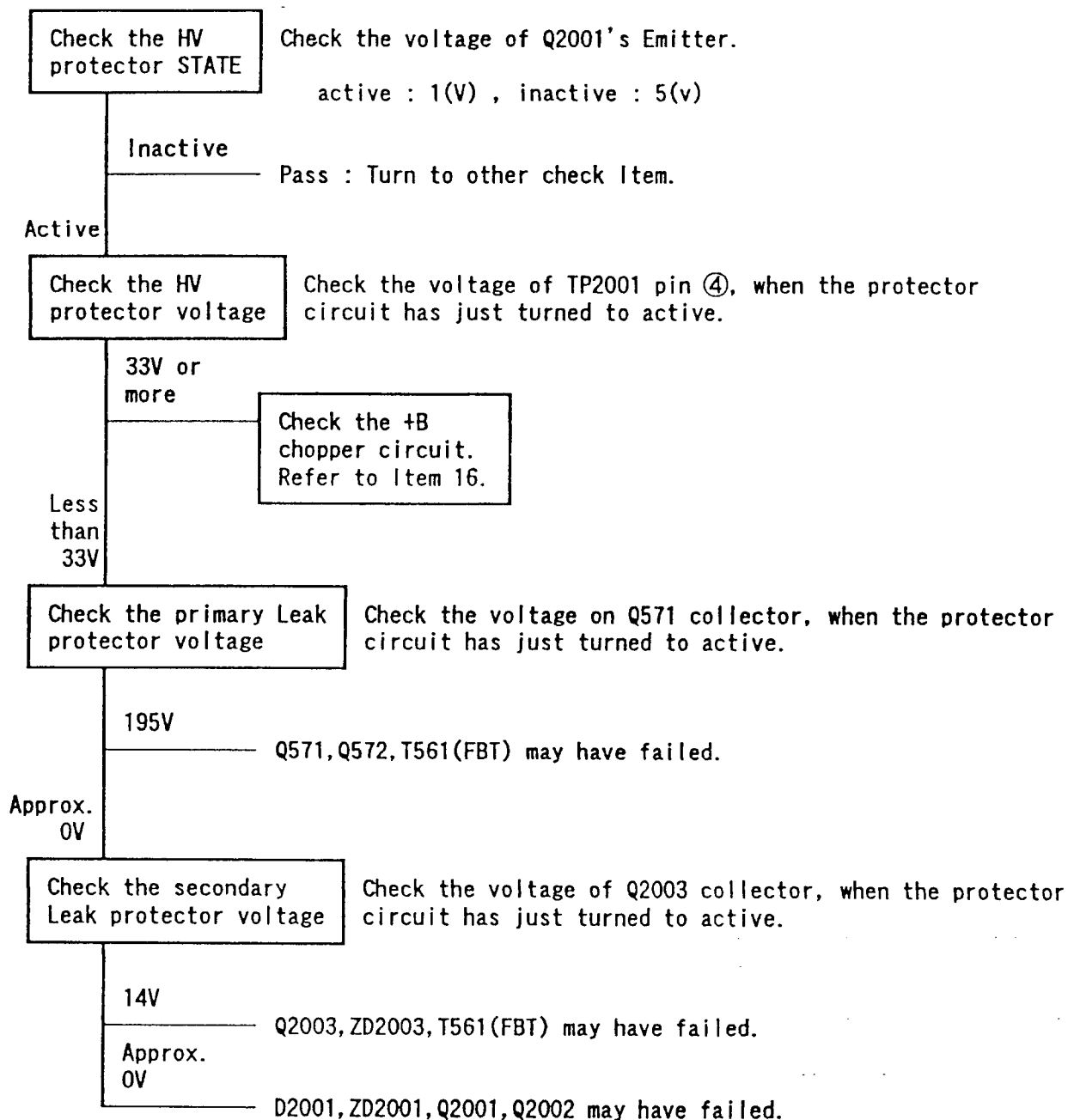


Rated Load Current and Resister Value

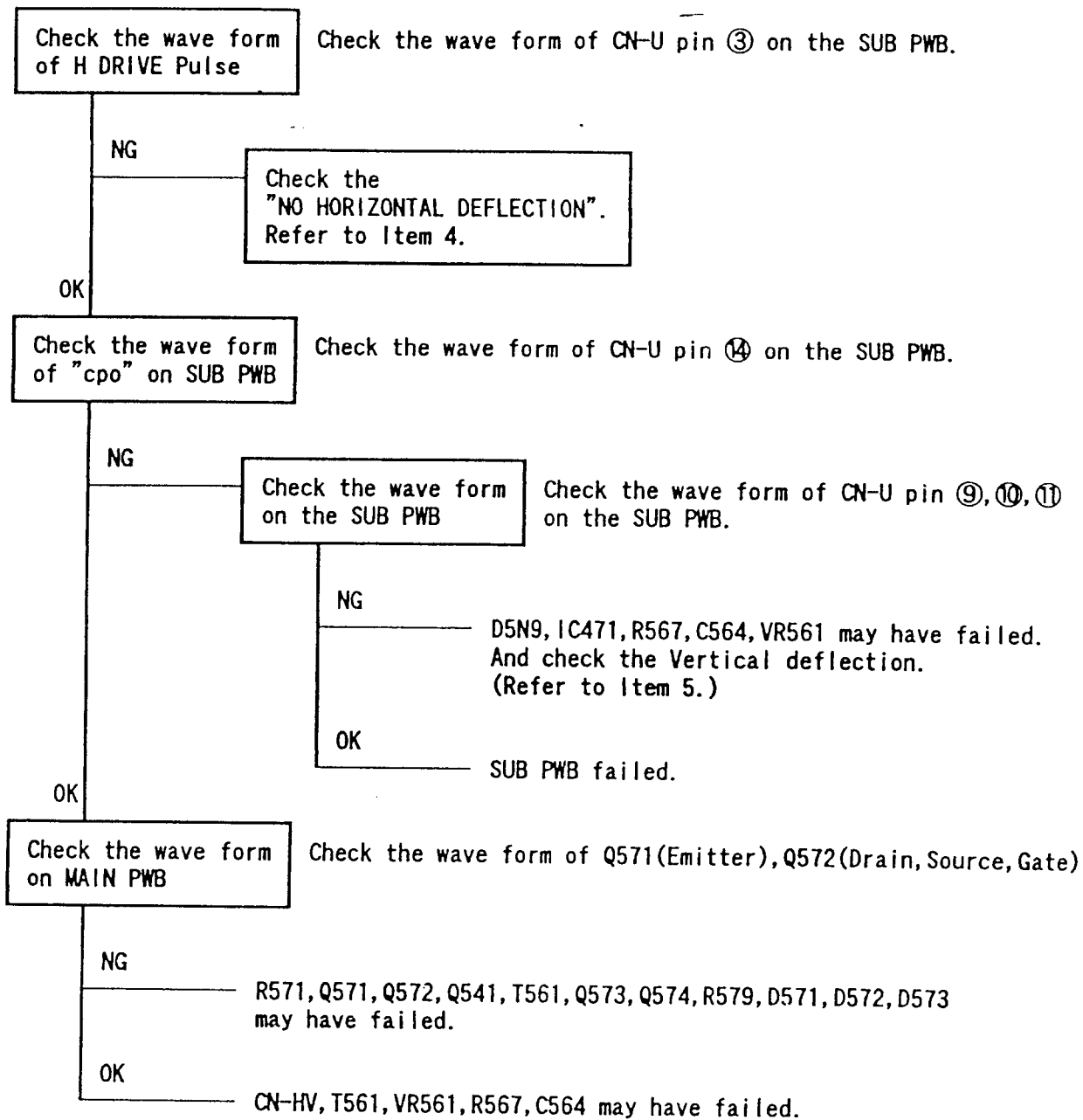


## 15 HIGH VOLTAGE PROTECTOR FAILURE

**CAUTION** : Before you check the voltage of TP2001 pin ④, Q571 collector, and Q2003 collector, the MAIN SW should be turned OFF and ON again, (wait few seconds before the SW is turned ON again.)



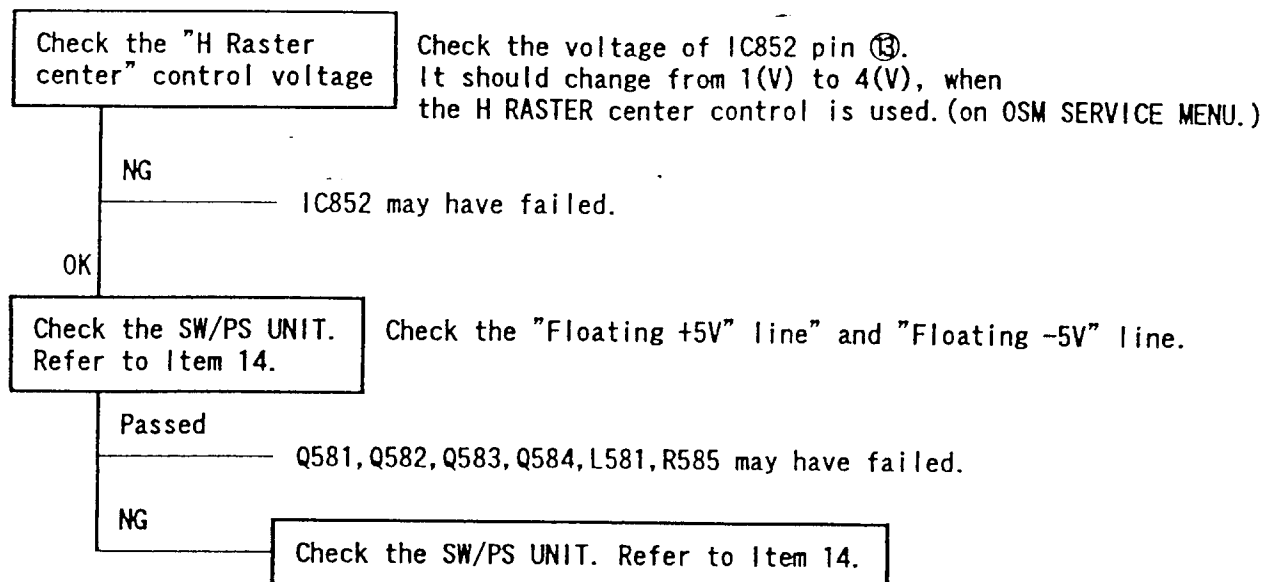
# 16 CHECK THE +B CHOPPER CIRCUIT



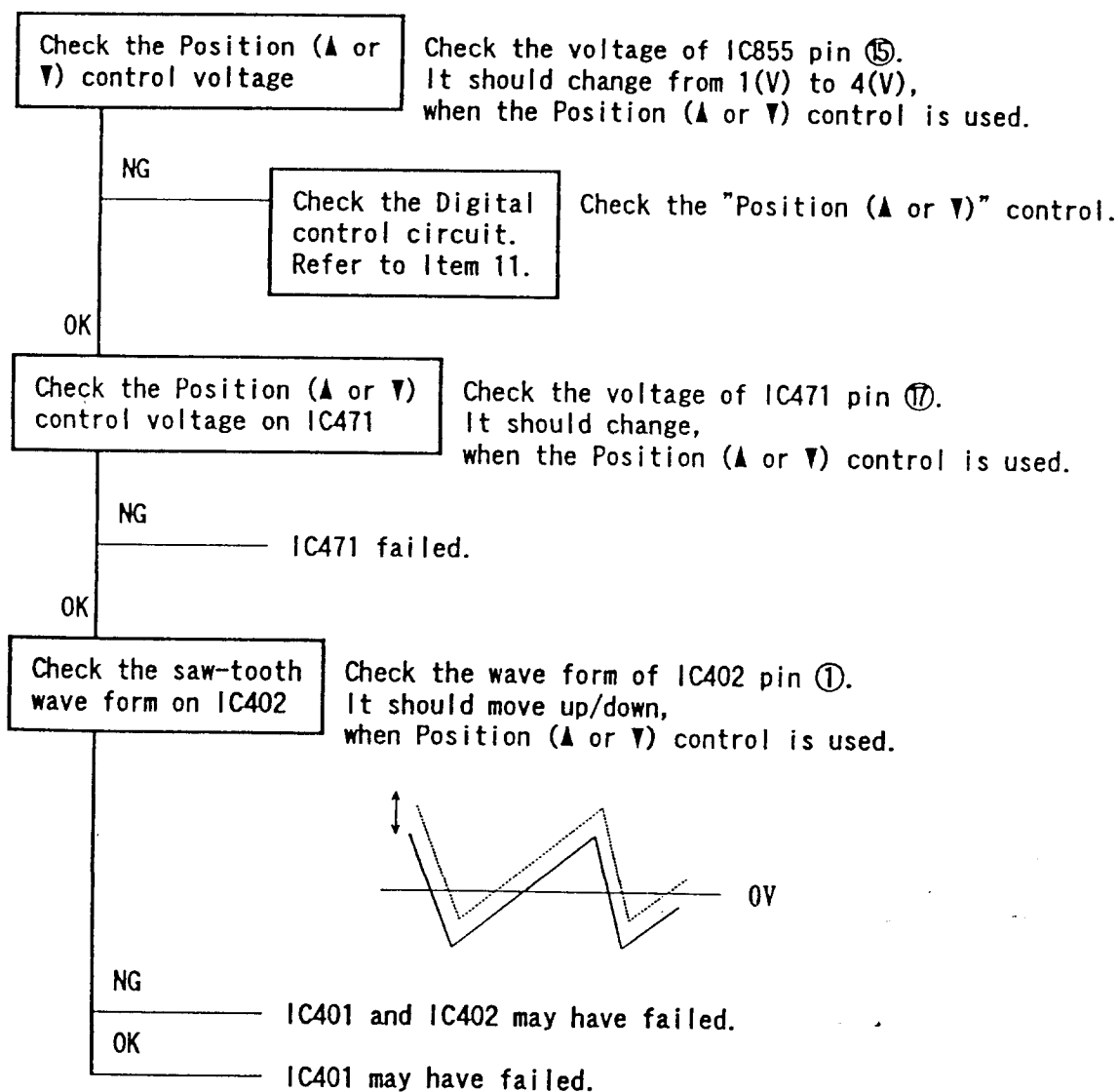
**CAUTION** : The wave form of CN-U pin ③, ⑭, ⑨, ⑩, ⑪, Q571(Emitter) and Q572(Drain, Source, Gate) are as follows.

- CN-U ③ : Horizontal pulse ; duty cycle 50% ; 14Vp-p.
- CN-U ⑭ : Horizontal pulse ; the duty cycle should change, when the +B voltage is changed.
- CN-U ⑨ : It has Vertical cycle, but it is approximately DC 5V.
- CN-U ⑩ : It has Vertical cycle, but it is approximately DC 0.95V.
- CN-U ⑪ : It has Vertical cycle, but it is approximately DC 5V.
- Q571(E) : DC 195V.
- Q572(D) : Horizontal pulse ; 195Vp-p.
- Q572(S) : DC 195V.
- Q572(G) : Horizontal pulse ; 12Vp-p , It should average 190V DC.

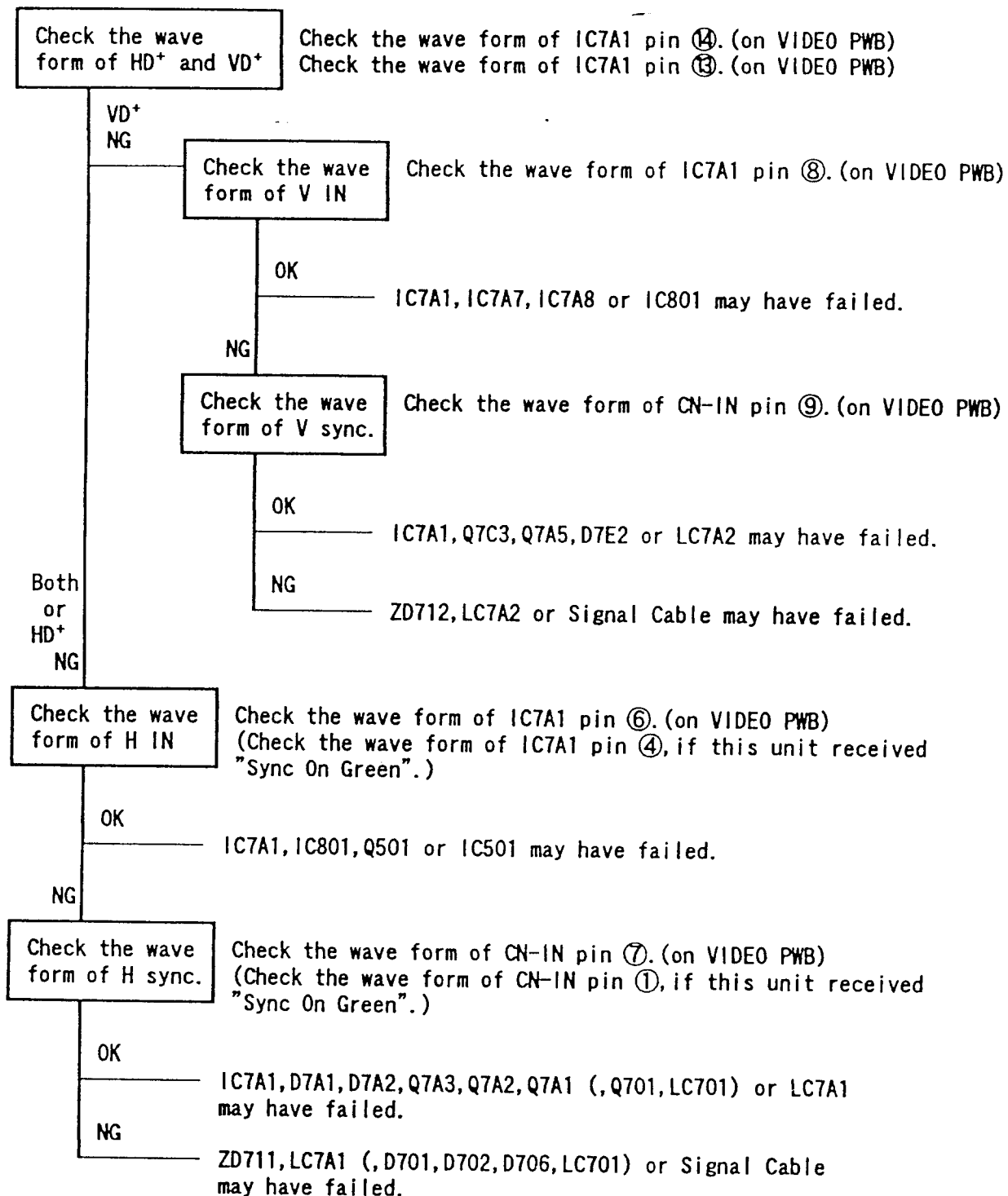
## 17 H RASTER CENTERING CIRCUIT FAILURE



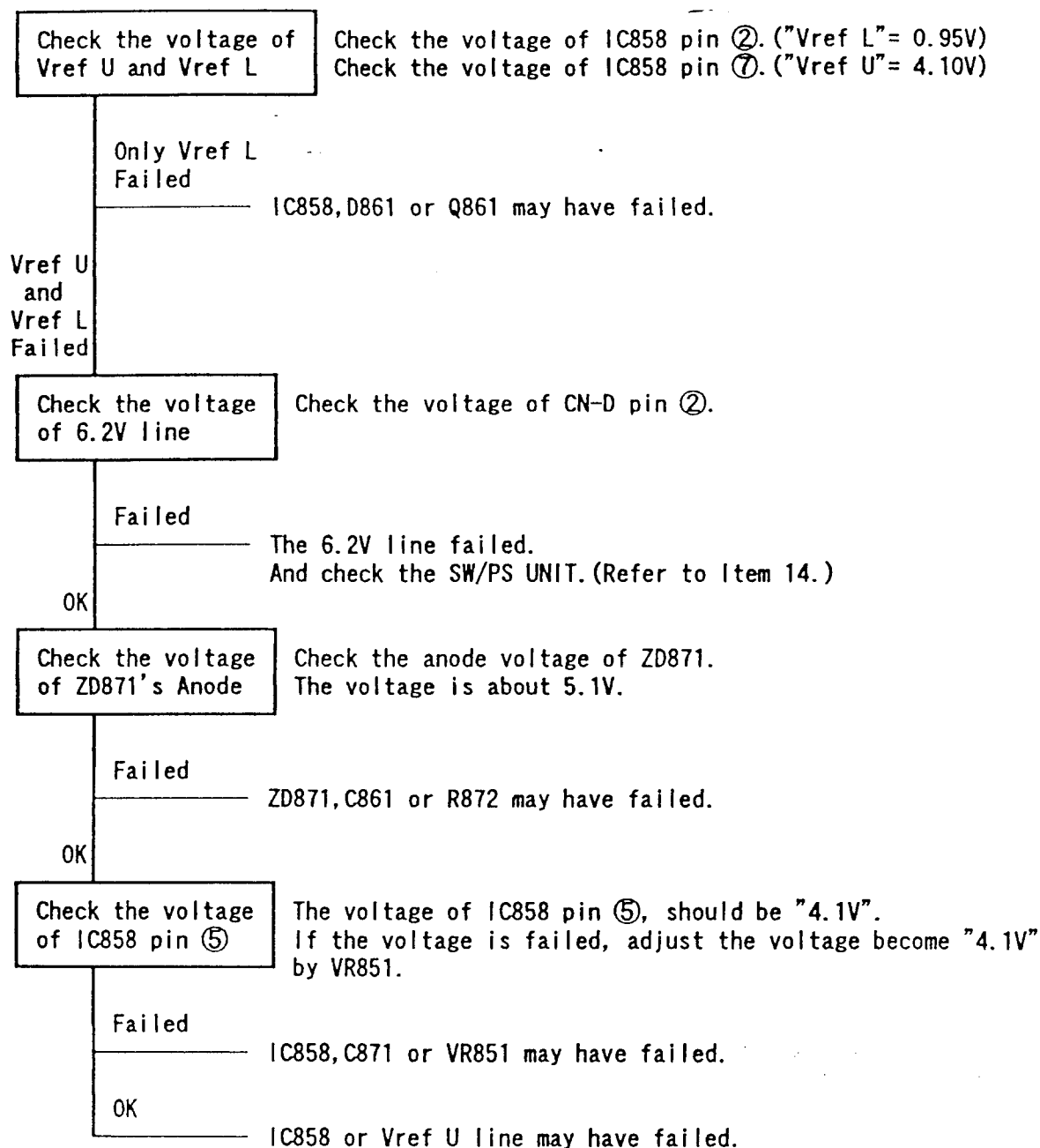
## 18 ABNORMAL VERTICAL IMAGE POSITION FAILURE



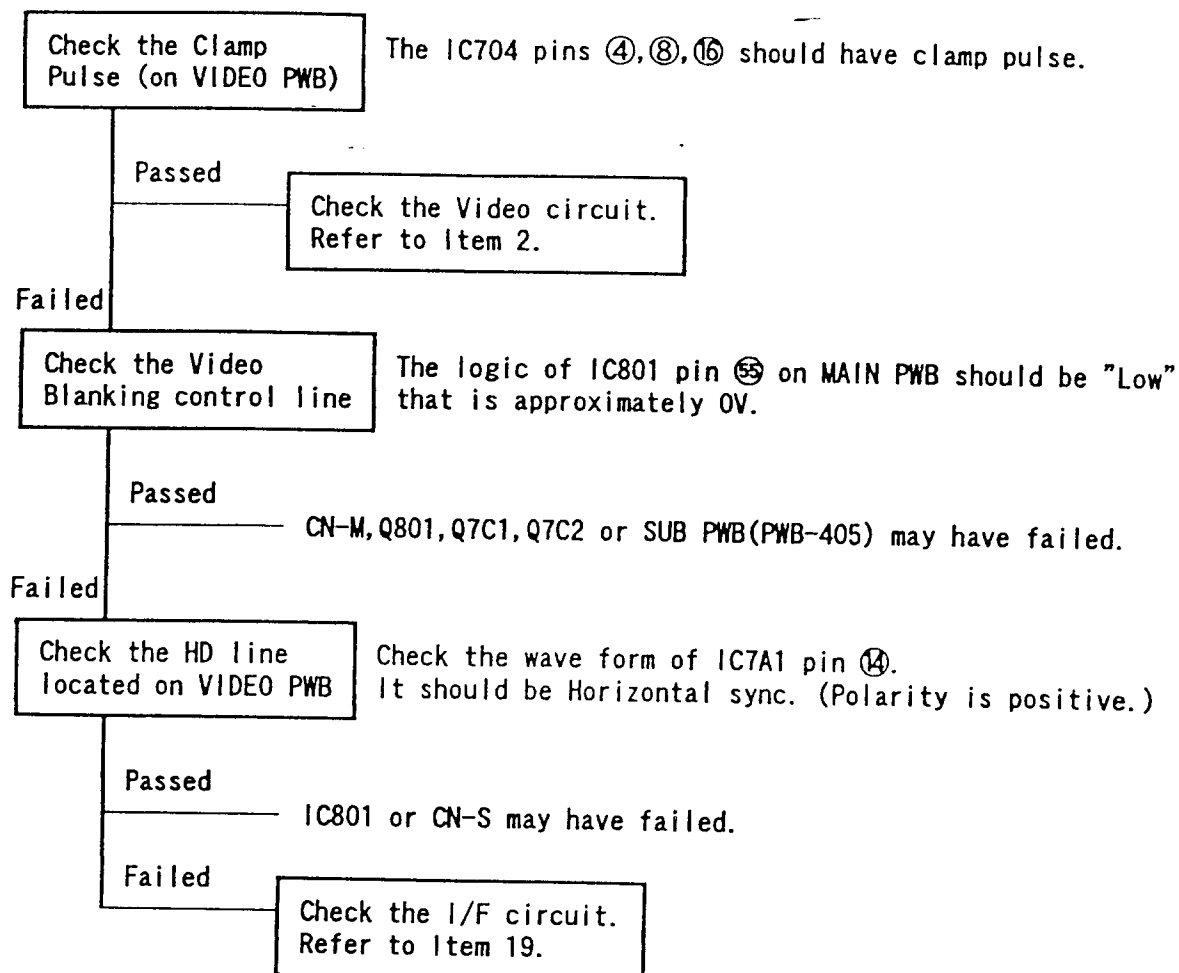
# 19 I/F CIRCUIT CHECK



## 20 THE Vref CIRCUIT CHECK

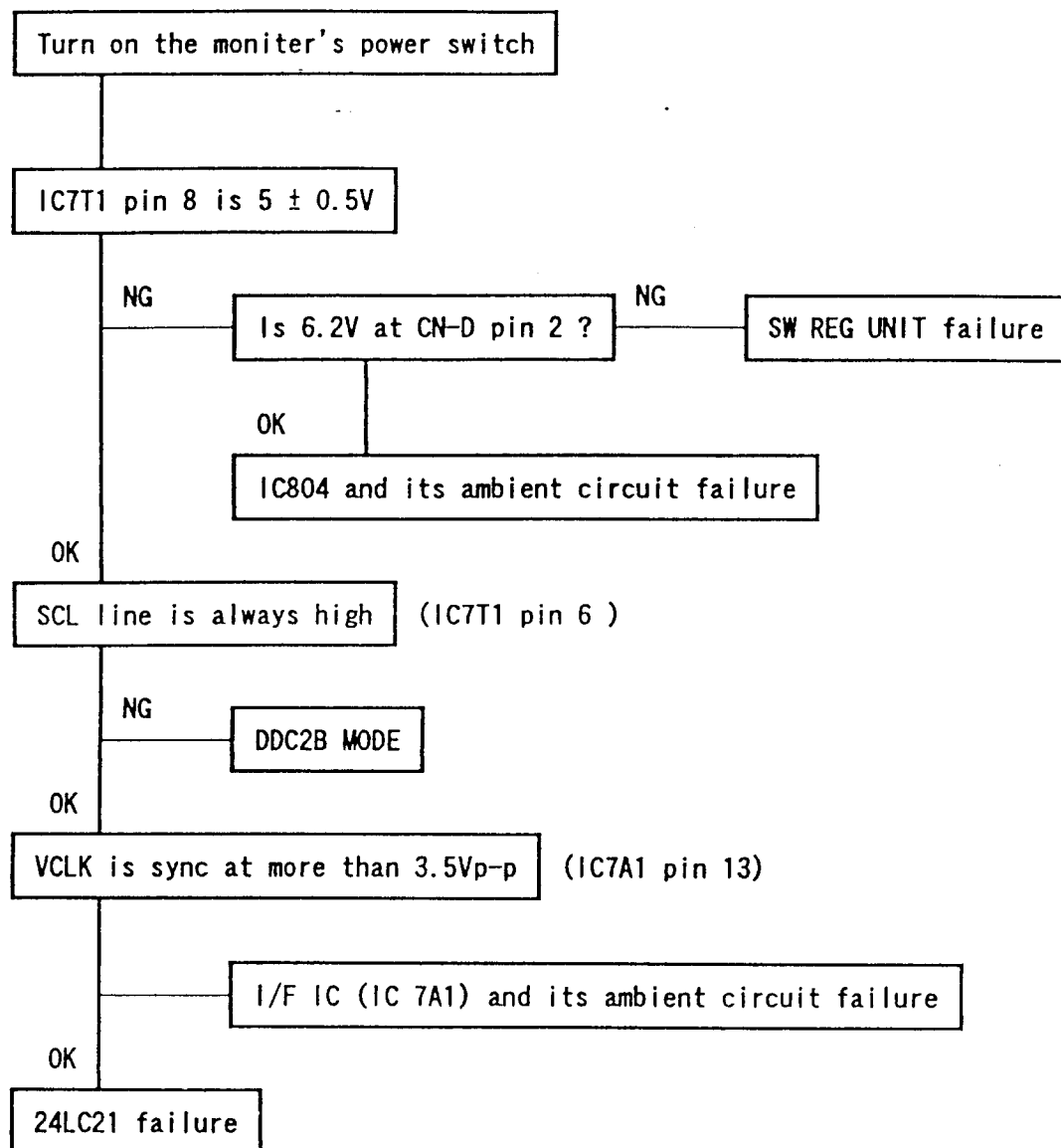


## 21 VIDEO BLANKING ABNORMAL

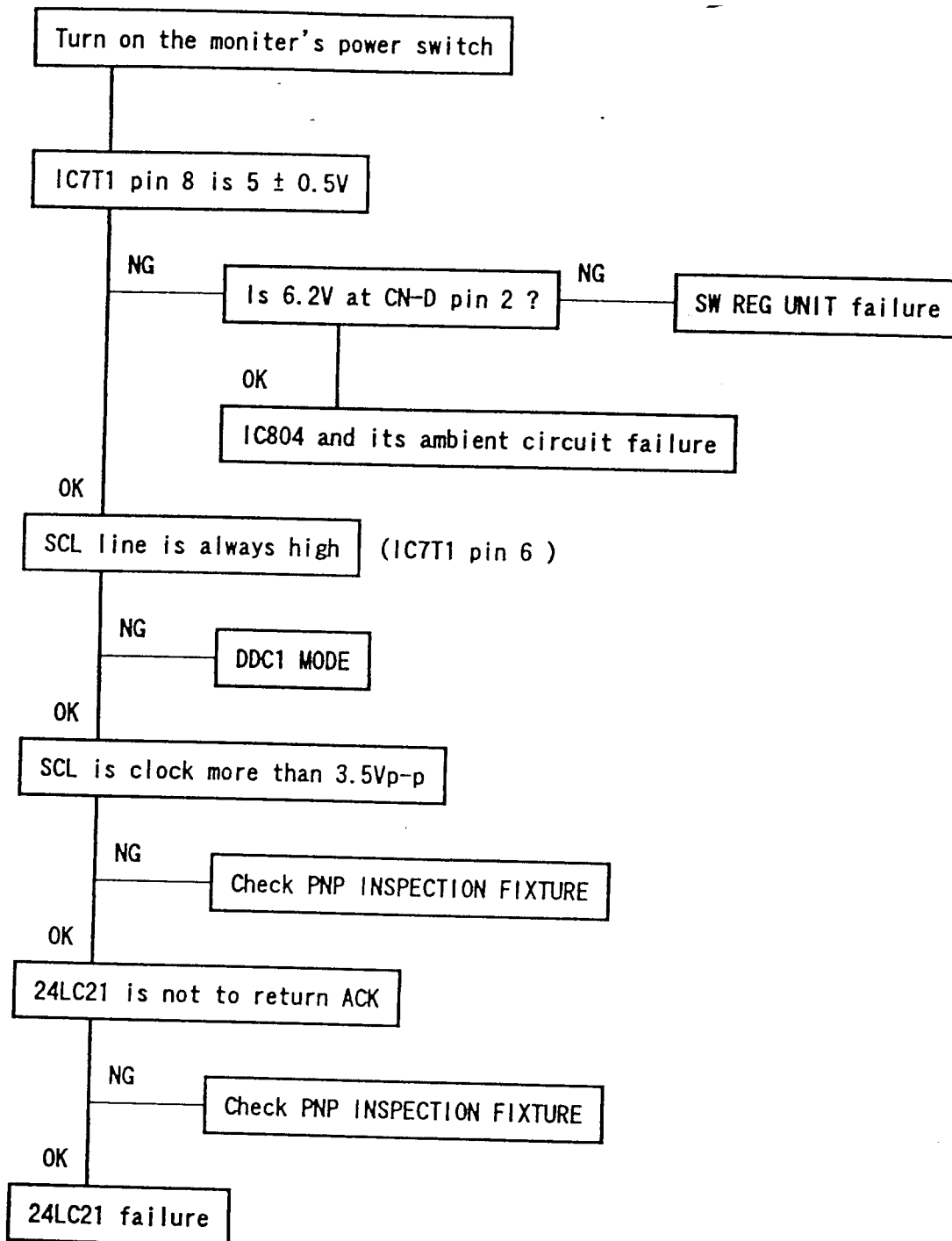


## 22 PLUG AND PLAY FUNCTION FAILURE

### 22.1 No DDC1 data output



## 22.2 No DDC2B data output



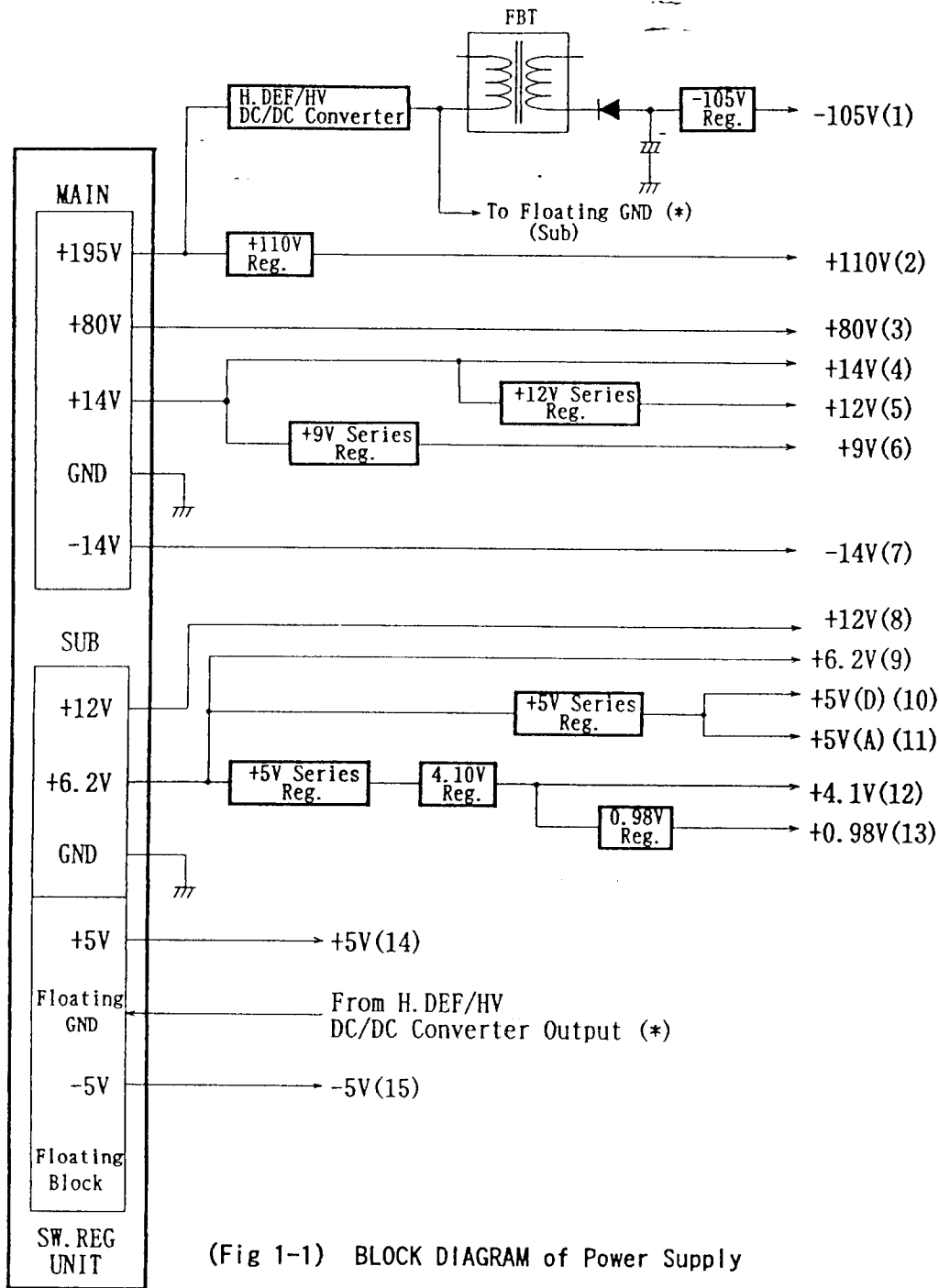
# CIRCUIT DESCRIPTION

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# 1. POWER SUPPLY CIRCUIT



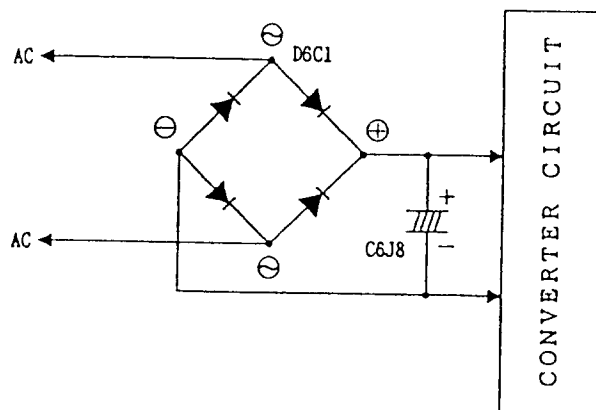
(Fig 1-1) BLOCK DIAGRAM of Power Supply

- |   |                                      |
|---|--------------------------------------|
| (1) -105V→G1                            | (9) +6.2V→CRT HEATER                 |
| (2) +110V→VIDEO BIAS                    | DISTORTION CORRECTION                |
| (3) +80V→VIDEO OUTPUT, ABL              | HORIZONTAL/VERTICAL OSCILLATION      |
| (4) +14V→HORIZONTAL DEFLECTION          | (10) +5V(D)→MPU, D/A, LED, OSD, PLL  |
| VERTICAL DEFLECTION                     | (11) +5V(A)→D/A                      |
| SUB PWB, EW DRIVE                       | (12) +4.1V→D/A, SUB PWB              |
| (5) +12V→VIDEO PRE-AMPLIFIER, G1        | BRIGHTNESS/CONTRAST CONTROL          |
| (6) +9V→HORIZONTAL/VERTICAL OSCILLATION | +0.98V→D/A                           |
| DISTORTION CORRECTION, EW DRIVE         | (13) +5V→HORIZONTAL RASTER CENTERING |
| (7) -14V→VERTICAL DEFLECTION            | (14) -5V→HORIZONTAL RASTER CENTERING |
| (8) +12V→INTERFACE                      |                                      |

## 1-1 Switching Regulator Unit

### (1) Rectifying and Smoothing Circuit

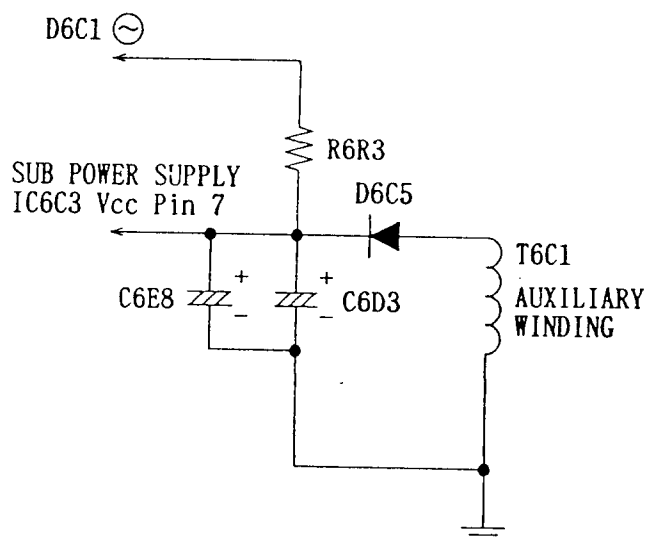
The AC input is rectified and smoothed by D6C1 and C6J8, becomes direct current (DC) and is supplied to the converter circuit.



(Fig 1-1-1) Rectifying and Smoothing Circuit

### (2) Sub Power Supply Auxiliary Power Supply Circuit

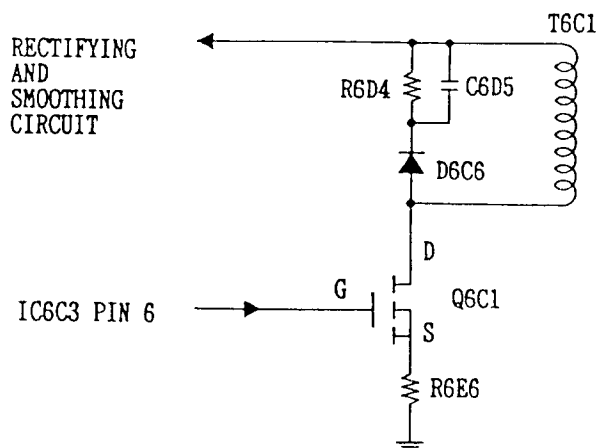
When the POWER switch is switched on, the current passes through R6R3 and rapidly charges C6E8 and C6D3. When IC6C3 pin 7 reaches 16 V, the IC starts oscillating. This results in the flyback voltage generated in the auxiliary winding of sub power supply transformer T6C1. The flyback voltage is rectified and smoothed by D6C5, C6D3 and C6E8, and is supplied to IC6C3. IC6C3 maintains the oscillation.



(Fig 1-1-2) Sub Power Supply Auxiliary Power Supply Circuit

### (3) Sub Power Supply Converter Circuit

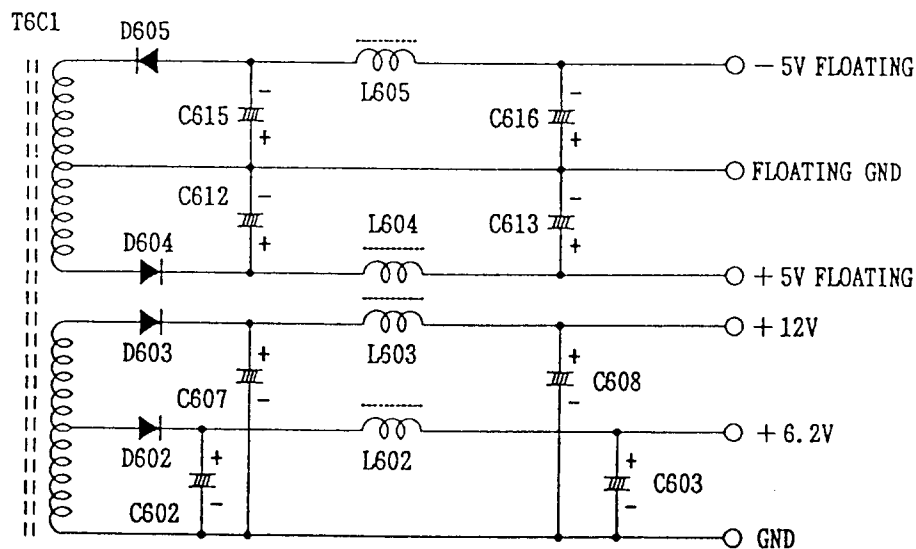
The sub power supply converter circuit consists of the primary winding of switching transformer T6C1, switching FET(Q6C1) and the surge-absorbing circuit (R6D4, C6D5 and D6C6). The oscillation signal is applied from IC6C3 pin 6 to the gate of Q6C1 and causes Q6C1(drain-source) to switch on and off repeatedly, and the oscillation voltage is applied to the primary winding of T6C1.



(Fig 1-1-3) Sub Power Supply Converter Circuit

### (4) Sub Power Supply Output and Smoothing Circuit

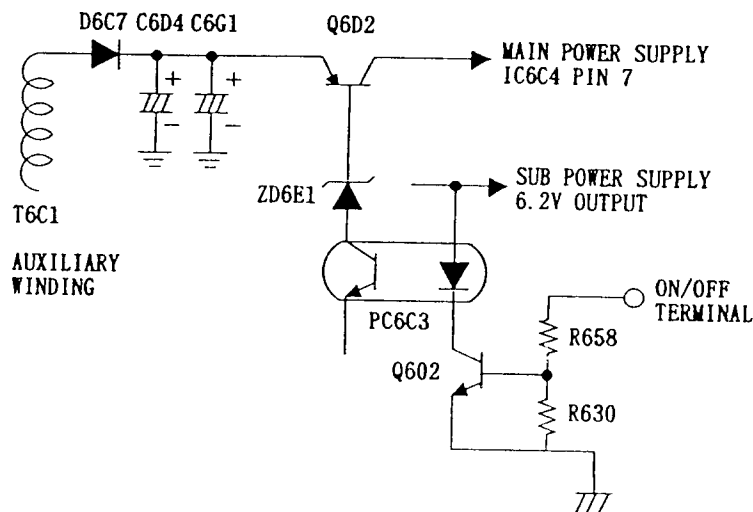
The flyback voltage generated at the secondary winding of sub power supply switching transformer T6C1, is rectified by D603 and D602, and smoothed by C602, C603, C607 and C608 to produce DC voltage of + 12 V and 6.2 V. At the same time, the DC voltage rectified by D604 and D605, and smoothed by C612, C613, C615 and C616 becomes the  $\pm 5$  V floating output with the floating ground as the center point. The flyback voltage is maintained by controlling the duty of the oscillation frequency of Q6C1 in the sub power supply converter circuit.



(Fig 1-1-4) Sub Power Supply Outputs and Smoothing Circuit

#### (5) ON/OFF Terminal Circuit

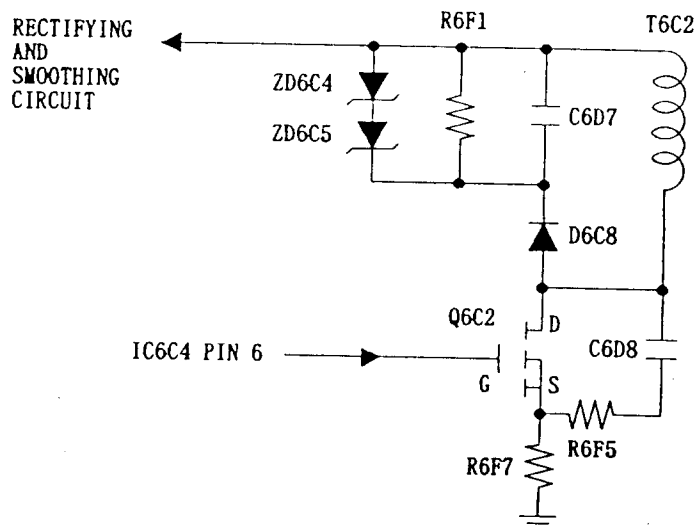
When the ON/OFF terminal becomes high while the sub power supply is operating, R658, R630 and Q602 causes photocoupler PC6C3 to emit the light. When this happens, the primary side of PC6C3, which is the light receiving side, causes Q6D2 to switch on and connects the auxiliary power supply of the sub power supply to VCC pin 7 of main power supply IC6C4. As a result, the main power supply starts operating. When the ON/OFF terminal becomes low, Q6D2 is switched off and the operation of the main power supply is stopped.



(Fig 1-1-5) ON/OFF Terminal Circuit

#### (6) Main Power Supply Converter Circuit

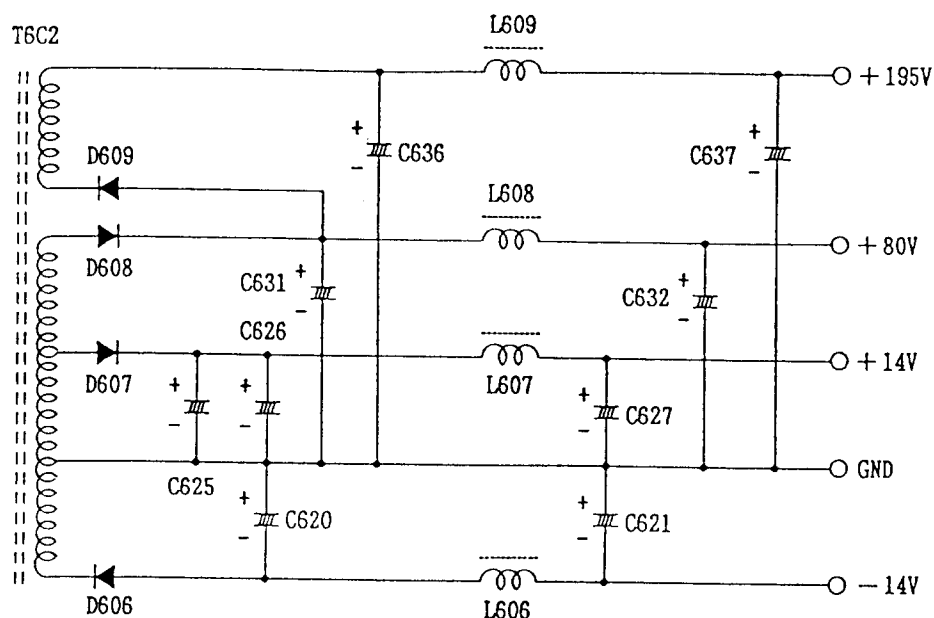
The converter circuit of the main power supply consists of the primary winding of main power supply switching transformer T6C2, switching FET (Q6C2) and snubber circuit (ZD6C4, ZD6C5, R6F1, C6D7, D6C8, C6D8 and R6F5). The oscillation signal is applied from main power supply IC6C4 pin 6 to the gate of Q6C2 and causes Q6C2 (drain-source) to switch on and off, and the oscillation voltage is applied to the primary coil of T6C2.



(Fig 1-1-6) Main Power Supply Converter Circuit

## (7) Main Power Supply Outputs and Smoothing Circuit

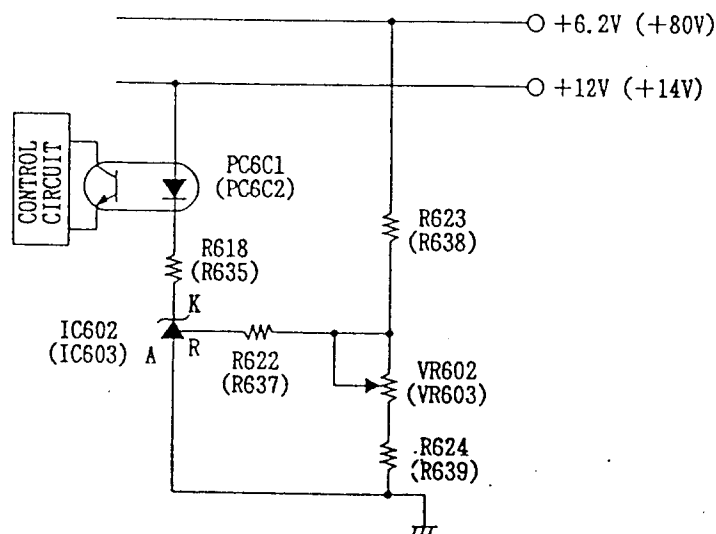
The flyback voltage generated at the secondary winding of main power supply switching transformer T6C2, is rectified by D606, D607, D608 and D609, and smoothed by C620, C621, C625, C626, C627, C631, C632, C636 and C637 to produce the various output DC voltages. The flyback voltage is maintained by controlling the duty of the oscillation frequency of Q6C2 in the main power supply converter circuit.



(Fig 1-1-7) Main Power Supply Outputs and Smoothing Circuit

## (8) Error Detection Amplifier Circuit -- Sub Power Supply/(Main Power Supply)

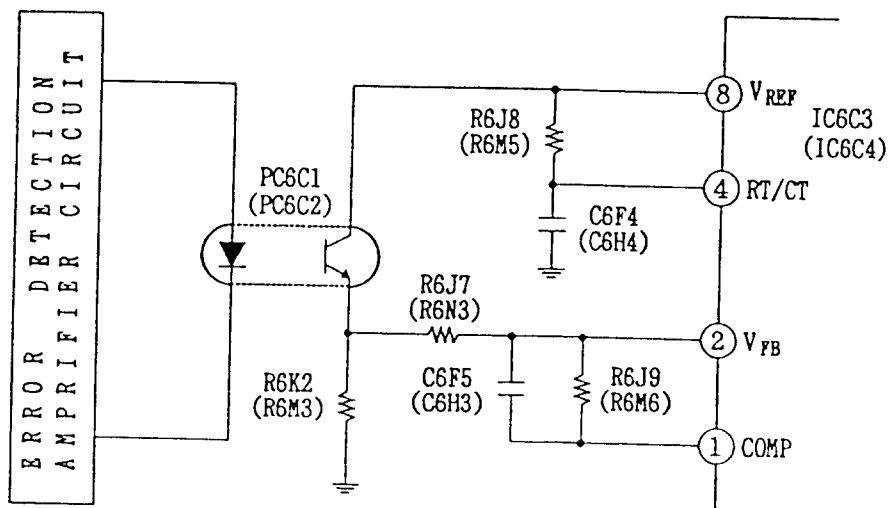
The output voltage + 6.2 V (+ 80 V) is divided by R623, VR602 and R624 (R638, VR603 and R639), and applied to IC602. This voltage is compared to the reference voltage with the IC602 (IC603) error amplifier. The error signal passes through photocoupler PC6C1 (PC6C2) and is applied to the control circuit.



(Fig 1-1-8) Error Detection Amplifier Circuit -- Sub Power Supply/(Main Power Supply)

(9) Oscillating and Control Circuit -- Sub Power Supply/(Main Power Supply)

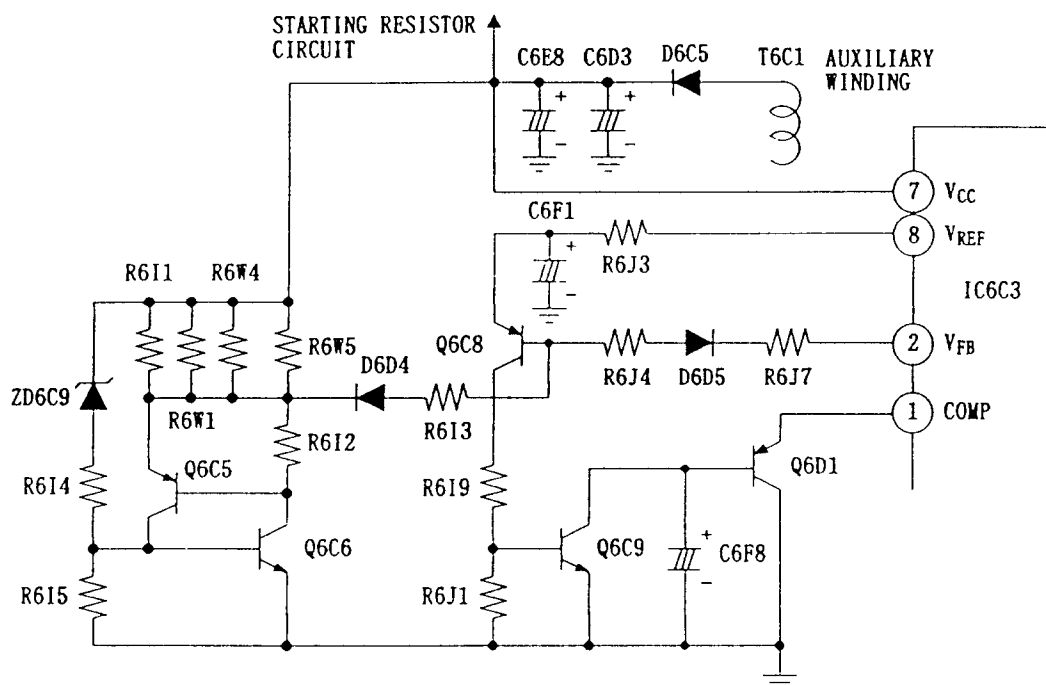
The oscillation frequency is determined by R6J8 and C6F4 (R6M5 and C6H4) which are connected to pin 8 and pin 4 of IC6C3 (IC6C4). The output of the error detection amplifier circuit comes from pin 8 of IC6C3 (IC6C4) and passes through PC6C1 (PC6C2), and is fed back to pin 2 of the IC6C3 (IC6C4). Since the VFB voltage changes depending on the amount of light emission of PC6C1 (PC6C2) and the duty of Q6C1 (Q6C2) is controlled, the output voltage is kept constant.



(Fig 1-1-9) Oscillating and Control Circuit -- Sub Power Supply/(Main Power Supply)

# (X) Sub Power Supply Over Voltage Protection Circuit

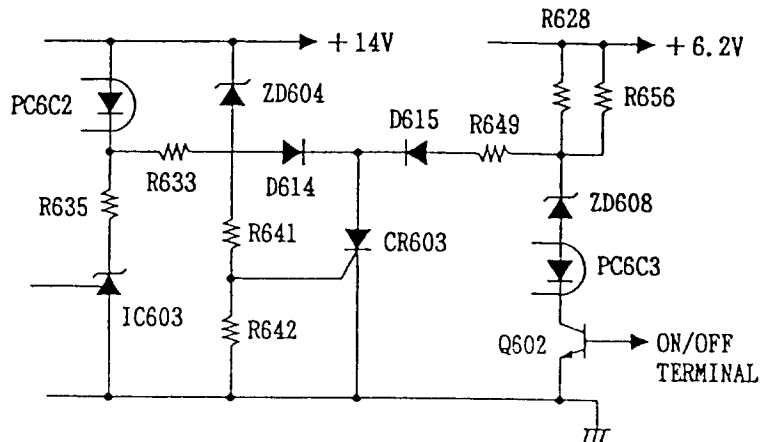
When the output voltage of the sub power supply rises due to the occurrence of some kind of fault, the voltage of the auxiliary winding also rises proportionately. When the voltage of the auxiliary winding exceeds the Zener voltage of ZD6C9, the thyristor structure of Q6C5 and Q6C6 is switched on, and the cathode side of D6D4 continues to drop to ground. As a result, a potential difference is produced between the emitter and base of Q6C8, and Q6C8 is switched on. Then Q6C9 and Q6D1 are switched on and pin 1 of IC6C3 is drops to ground. When pin 1 of IC6C3 becomes ground, IC6C3 stops oscillating and the sub power supply is switched off. The switching off of the sub power supply causes the on/off circuit to become low and the main power supply also stops. Q6C5 and Q6C6 continue to be switched on due to the holding current from the starting resistor circuit and as a result, the power supply continues to be stopped as long as the main switch is not switched off.



(Fig 1-1-10) Sub Power Supply Over Voltage Protection Circuit

### (1) Main Power Supply Over Voltage Protection Circuit

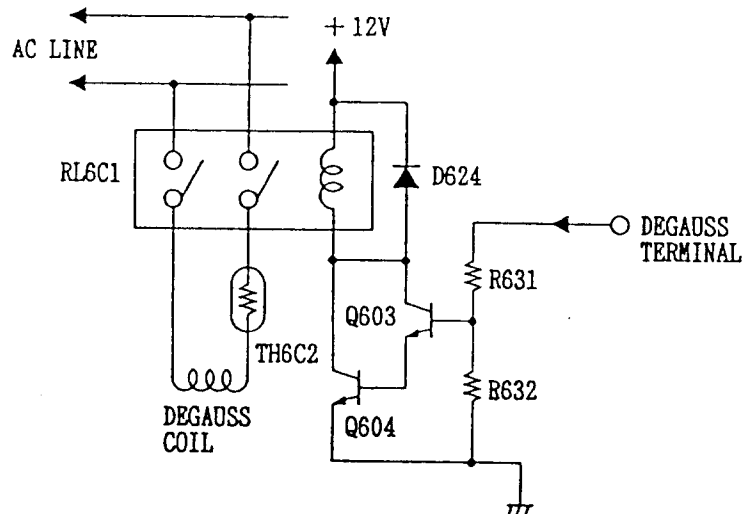
When the main power supply + 14 V output rises due to some kind of fault and reaches the Zener voltage of ZD604, CR603 is switched on. As a result, the cathode side of D614 becomes ground level and the amount of light emission of PC6C2 increases. When the voltage of pin 2 of IC6C4 rises, IC6C4 has a duty nearing 0, the voltage at the secondary side of T6C2 doesn't generated. At the same time, since the + 6.2 V passes through D615 and the holding current starts to flow to CR603 and the current supply to PC6C3 stops, and PC6C3 stops light emitting. As a result, the on/off circuit becomes the same as the low level condition and the main power supply stops.



(Fig 1-1-11) Main Power Supply Over Voltage Protection Circuit

### (2) Degassing Circuit

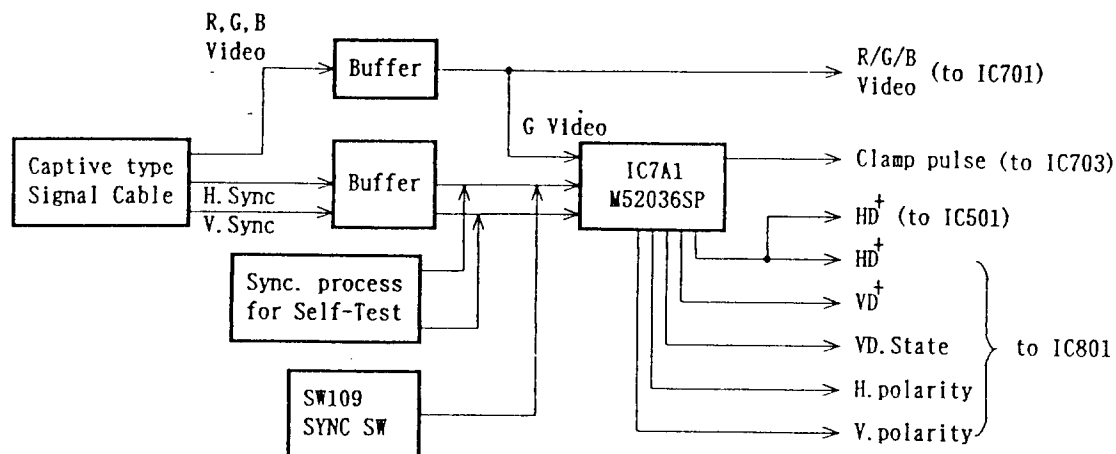
When the degauss terminal is high, RL6C1 is switched on and the current flows through the degaussing coil. When the degauss terminal is low, RL6C1 is switched off and the degaussing coil becomes open. The degauss terminal signal becomes high for only about 3 seconds when the main switch is switched on and the manual degauss switch is switched on.



(Fig 1-1-12) Degaussing Circuit

## 2. INTERFACE CIRCUIT

### 2-1 Composition



### 2-2 Input and Output for Sync Processor IC7A1

#### •Input

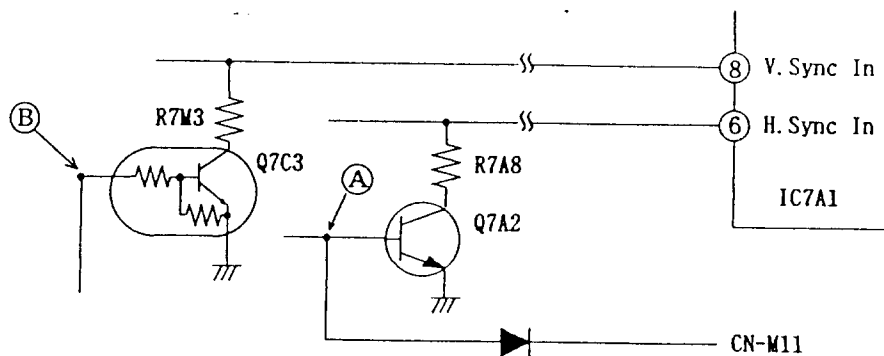
Pin No.	Signal	Sync. Polarity
6	Horizontal Sync or composite Sync	Positive/Negative
8	Vertical Sync	Positive/Negative
4	Green video (Sync. on Green)	Negative

#### •Output

Pin No.	Signal	Signal Polarity, logic
14	HD <sup>+</sup> (Horizontal Sync.)	Positive
13	VD <sup>+</sup> (Vertical Sync)	Positive
2	V.State	"High" — V.Sync exist "Low" — V.Sync no-exist
18	H.Polarity	"High" — H.Sync Negative "Low" — H.Sync Positive
19	V.Polarity	"High" — V.Sync Negative "Low" — V.Sync Positive
17	Clamp pulse	Positive

### 2-3 Sync Process for Self-Test

At the "Self Test" screen display, no sync signal is fed from an external source. Therefore, the CPU generates the sync signals and feeds them to IC7A1.

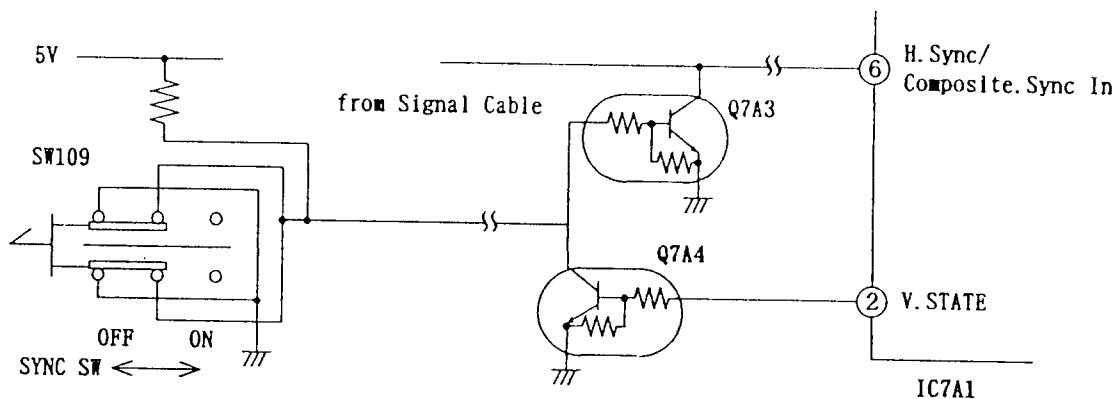


In the figure above, (A) and (B) become as below in the Self-Test mode.

	In Normal Operation	In Self-Test Mode
Formation of (A)	"Low"	Horizontal sync pulse
Formation of (B)	"Low"	Vertical sync pulse

### 2-4 Sync SW

When both the composite sync and sync on green are fed at the same time (Example: connected with some versions of Macintosh), an image with a green background is displayed. To avoid this, it is necessary to prevent the composite sync from being fed to IC7A1 at the time of the sync on green. The sync SW (SW109) is adopted for this purpose.



The input signal fed to pin 6 of IC7A1 by input type and sync switch is as below:

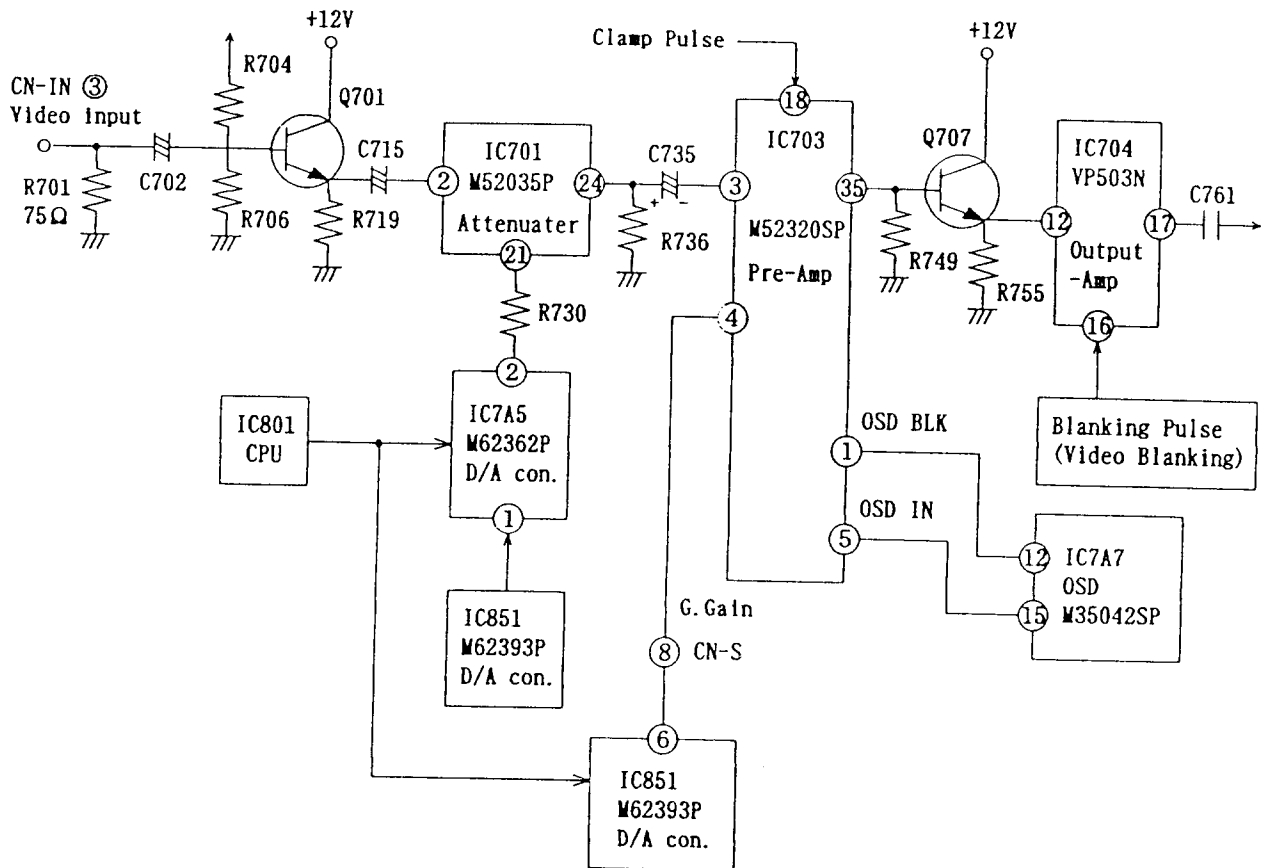
Input Signal			Setting on Sync SW	Input Signal to Pin ⑥
Separate	Composite	Sync on Green		
○	×	×	ON	H. Sync (Separate)
○	×	×	OFF	H. Sync (Separate)
○	×	○	ON	H. Sync (Separate)
○	×	○	OFF	H. Sync (Separate)
×	○	×	ON	Composite
×	○	×	OFF	no-Signal
×	○	○	ON	Composite
×	○	○	OFF	no-Signal
×	×	○	ON	no-Signal
×	×	○	OFF	no-Signal

### 3 VIDEO CIRCUIT

#### 3-1. VIDEO PWB

##### 3-1-1. Video Signal Amplifier Circuit

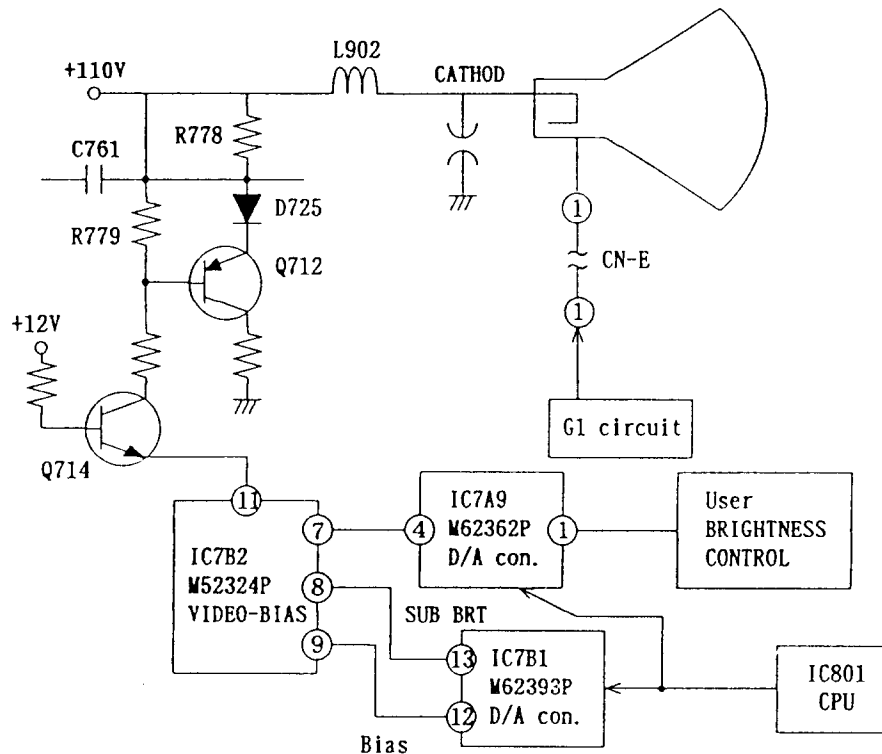
The red, green, and blue analog signals received by signal cable are fed to red, green, and blue circuits of the same configuration. Therefore only the Green circuits will be explained here. The Green video signal is fed to pin 2 of IC701 through the Q701. The video signal is attenuated by IC701, and the attenuation level is controlled by the user contrast control. The output signal of IC701 is supplied to IC703. When the OSM is displayed, the signal fed from IC7A7 pin 15 to IC703 pin 5 at the TTL level and the signal supplied from IC701 are mixed in IC703 and used as an output signal. The output signal of IC703 is supplied to pin 12 of IC704. The output signal of IC704 is brightness and cut-off circuit.



(Fig 3-1-1)

### 3-1-2. Brightness and CUT-OFF Circuit

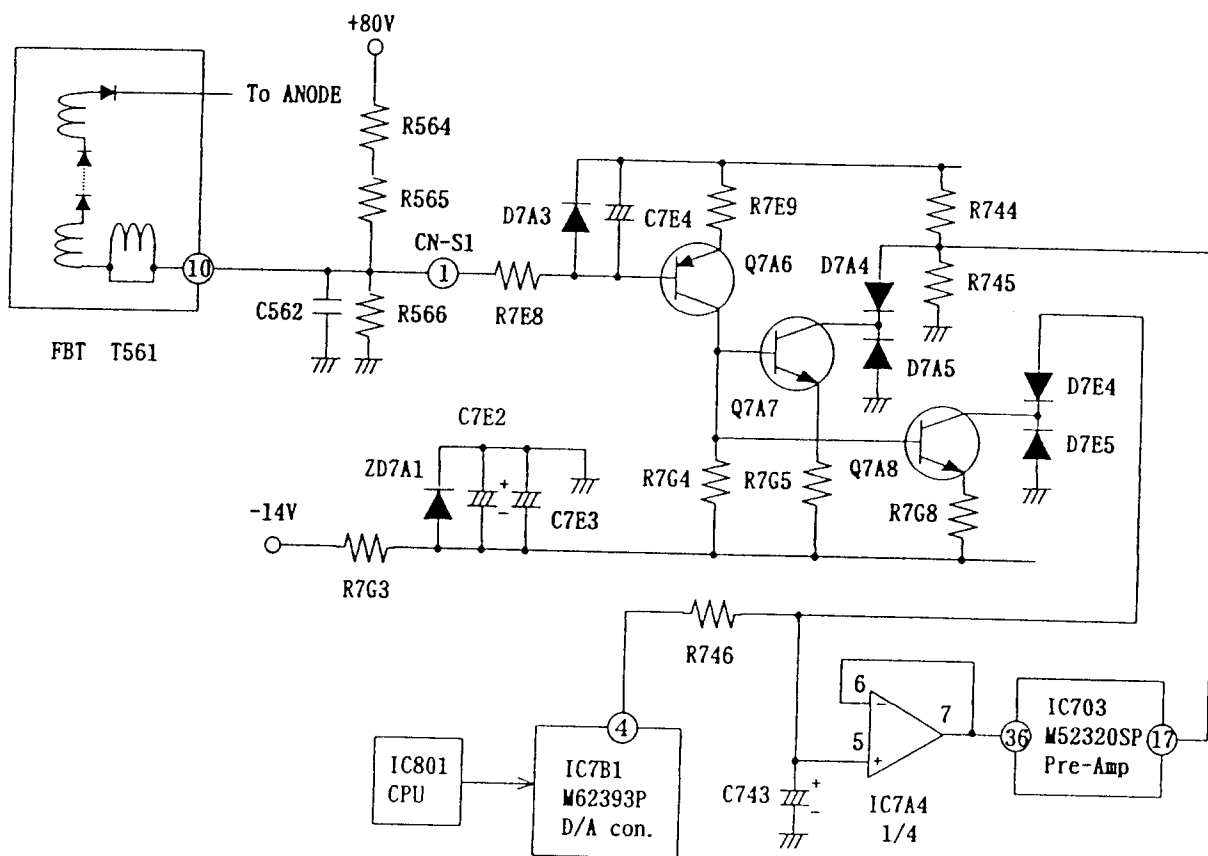
Only the Green video circuit will be explained here. The raster brightness level is determined by clamping the video output blanking level from IC704. The DC clamp level is determined by using the voltage drop of R779(which is basecally determined by the current of Q714). The raster brightness level is determined by voltage at the output of IC7B2 Pin 11, the DC clamping level is at cut-off level.



(Fig 3-1-2)

### 3-1-3. ABL Circuit

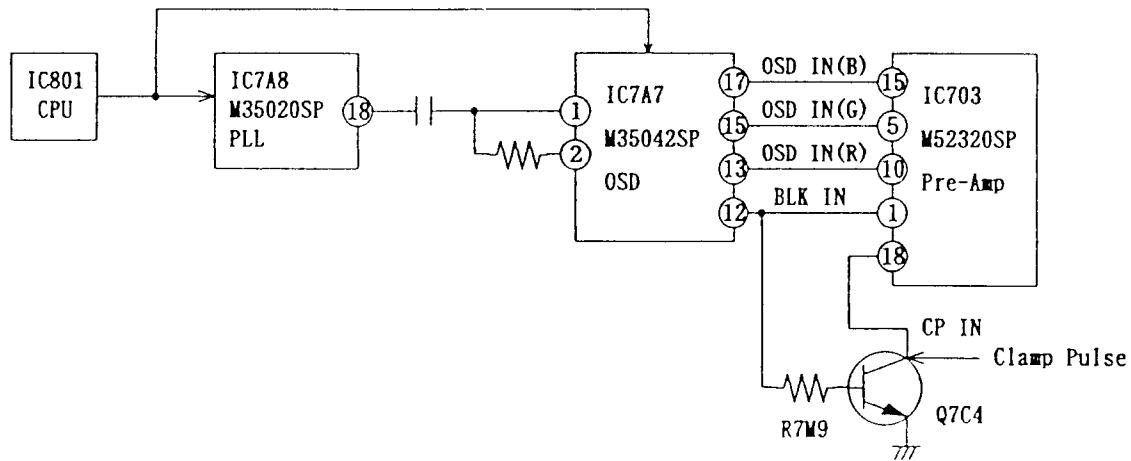
The maximum average current flowing through the CRT is controlled to under  $480\mu\text{A}$  by limiting the video Vp-p swing. The voltage of CN-S1 is clamped 11V by D7A3 when the anode current is  $480\mu\text{A}$  or less. If the anode current exceeds  $480\mu\text{A}$ , the voltage of CN-S1 drops to less 11V due to the voltage drop of R564, R565. This drives Q7A6, Q7A7 and Q7A8 to decrease the collector potential of Q7A7 and Q7A8, and the gain of IC701 and OSD adjust level of IC703 Pin 36 is decrease.



(Fig 3-1-3)

### 3-1-4. OSM

The OSM circuit is organized by IC7A7 and IC7A8. The IC7A8 oscillates from 20 to 50 MHz at the frequency ratio matched with the signal and supplied to IC7A7 pins, 1 and 2. The IC7A7 takes the color fed from IC7A8 and outputs the TTL level signal IC703 to pins 5, 10, and 15.

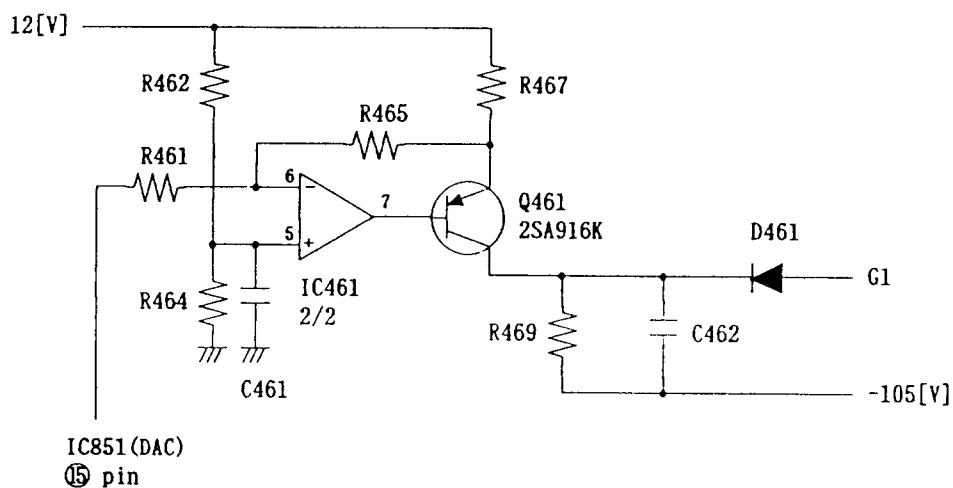


(Fig 3-1-4)

### 3-2. G1 Circuit

#### 3-2-1. G1 Bias Circuit

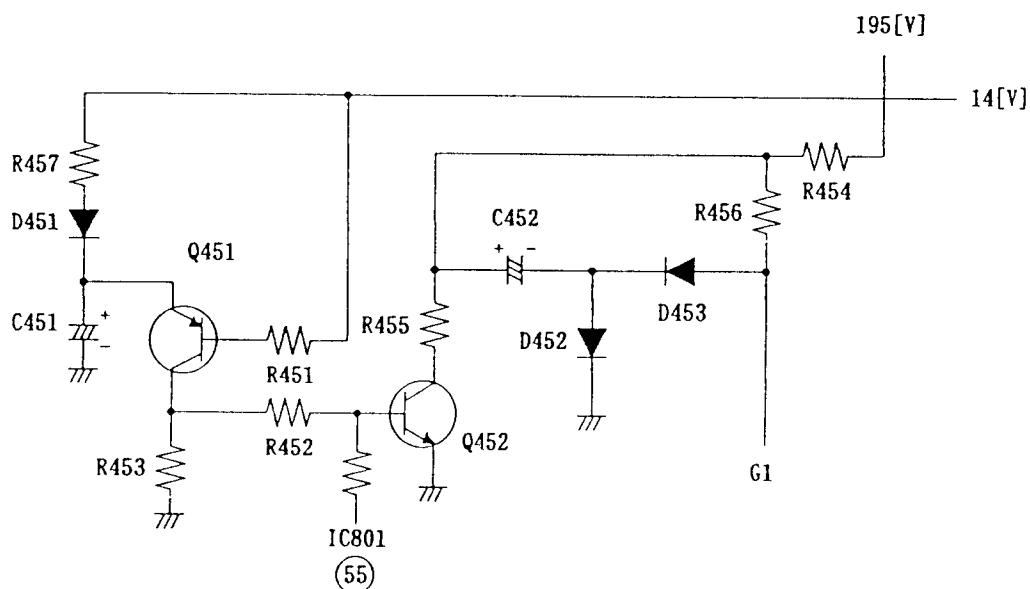
By varying DAC output (IC851 pin 15) controlling G1 bias, the voltage of Q461 emitter changes. This voltage controls the current of R467 (that is, the current flowing across R469) to change the voltage drop by R469. As a result, the G1 voltage is adjusted to a constant optimum cut off level. (After adjustment, IC851 pin 15 is held constant.)



(Fig 3-2-1)

### 3-2-2. Spot Killer Circuit

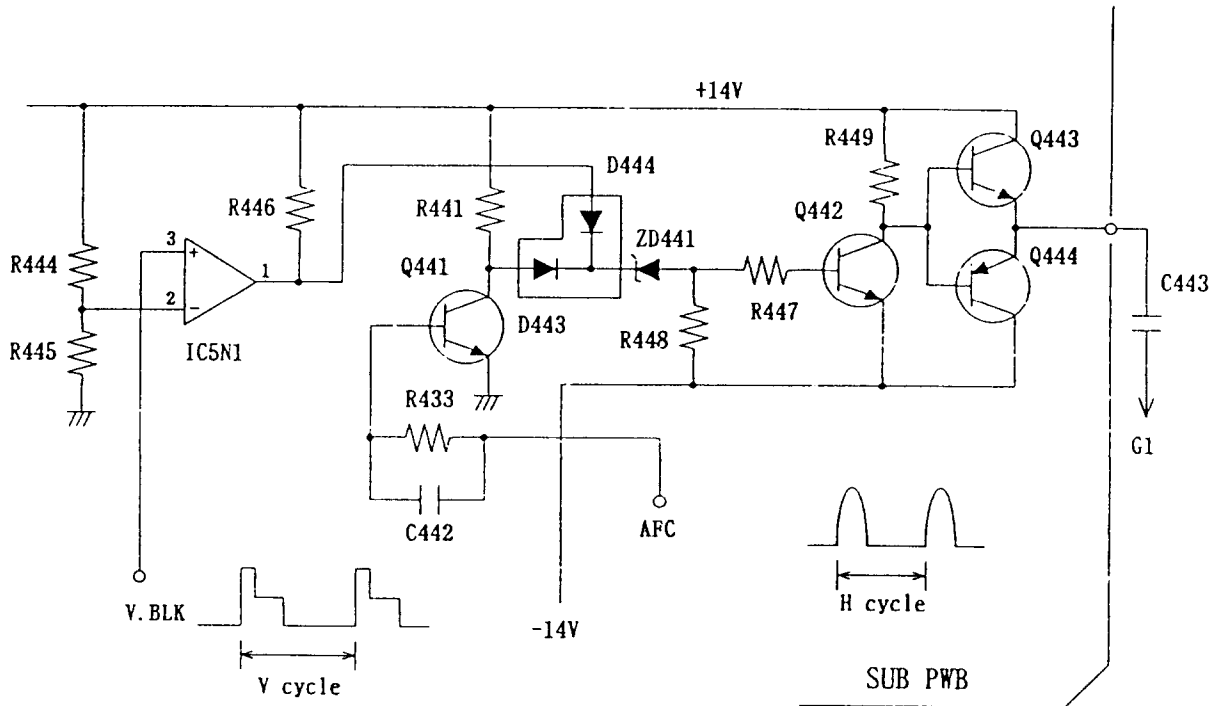
This circuit is used to prevent a spot from being left on the screen image. After turning the set power off, the 14V line transiently goes down, Q451 and Q452 are turned on by the electric charge stored in C451. As a result, the + side of C452 is falling to ground. Now, -195V is output to the - side of terminal, and G1 voltage becomes -195V. So, the screen image is placed in the cut off condition, and no spot appears.



(Fig 3-2-2)

### 3-2-3. Blanking Circuit

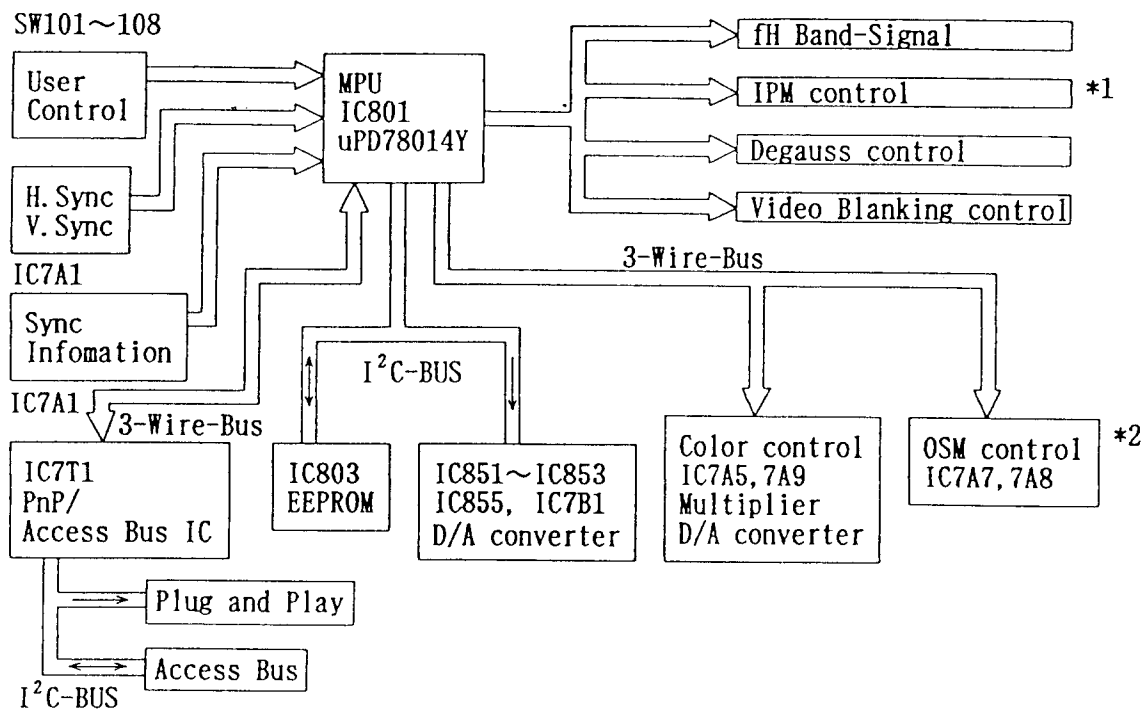
The horizontal blanking pulse is created by the AFC pulse. The AFC is added to the emitter of Q441 which has been base grounded. When the AFC is during a high period, Q441 is turned off, and the potential of the collector is forced high. Now, it is inverted by Q442, and the outputs signal of the push-pull circuit consisting of Q443 and Q444 is a negative pulse as about 28 Vp-p.



When this pulse, synchronized with the AFC pulse, is applied to G1 via C443, the voltage of G1 goes down to about 28V at the moment of blanking, and the CRT is cut off. The vertical blanking compares the V.BLK signal with the reference voltage by IC5N1, inverts it by Q442 and applies it to G1, just in the case of the horizontal blanking. This V.BLK created by IC501 outputs at IC501 pin 10.

## 4. DIGITAL CONTROL

### 4-1. Composition



(Fig 4-1)

The digital control section is designed around the MPU. It consists of a user control section, EEPROM, D/A converter, multiplier D/A converter, and OSM section.

MPU \_\_\_\_ 8 bit 1 chip microcomputer ..... 10 MHz operation

EEPROM \_\_\_\_ 4k bit memory ..... stores screen position, size data, color data etc.

D/A converter \_\_\_\_ 8 bit 8ch ..... controls various circuits

Multiplier D/A \_\_\_\_ 3ch ..... Control color ratio of red, green, and blue

OSM \_\_\_\_ { OSD ..... OSM display information is built in  
              { PLL ..... Oscillator

\*1 IPM = Intelligent Power Manager

\*2 OSM = On Screen Manager

## 4-2. Function

Major functions are as follows:

### Signal automatic discrimination

- Frequency metering
- Automatic signal discrimination
- Video Blanking control
- fH-Band-Signal
- Management of picture size and position data

### User control by OSM

- OSM display and user operation
- D/A converter control

### IPM

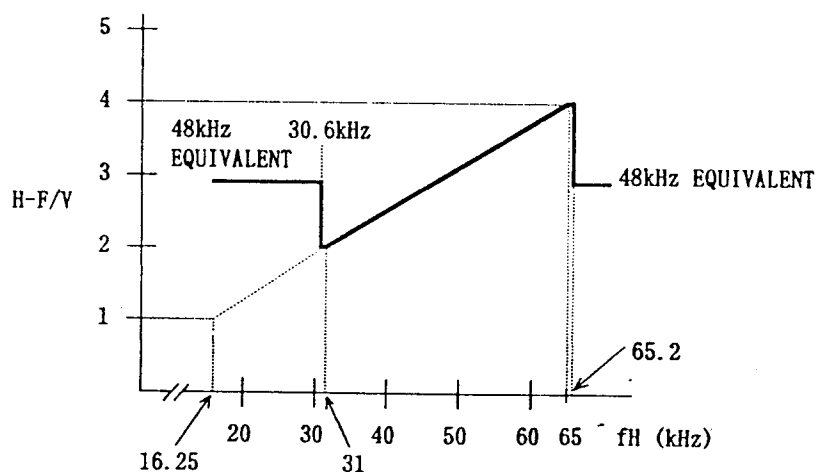
## 4-3. Automatic Signal Discrimination

### (1) Frequency Measuring

The sync pulse is applied to IC801 pins 12 and 44.

Pin No.	Signal Type	Input Signal Polarity
12	H.Sync	Positive
44	V.Sync	Positive

The result of the frequency measuring of this input sync signal is used for signal discrimination (described below). And the control voltage decided by the result of the frequency measurement is output from IC852 pin 4 to horizontal oscillation circuit. Relations between the frequency and output voltage are shown in Fig. 4-3-1.



(Fig 4-3-1)

## (2) Automatic Signal Discrimination

The signal currently received is discriminated by the result of sync signal frequency measurement. And, with regard to the signal which cannot be discriminated merely with the frequency, it is discriminated by the next input signal information at pins of IC801.

Pin No.	Line name	Logic and means
56	H.Sync Polarity	"H" Negative "L" Positive
57	V.Sync Polarity	"H" Negative "L" Positive
58	V.Sync State	"H" Existence "L" No-existence

## (3) Video Blanking

This function puts the image off for certain period of time so that the flowing image cannot be seen when the receiving signal has changed. This function operates in the following cases:

- 1) When the signal frequency (horizontal or vertical) has changed
- 2) When the type of signal discriminated in (2) above has changed
- 3) When IPM (mentioned below) has operated

Circuit control is made by the logic of pin 55.

Logic of Pin 55	Video Image
"Low"	Normal screen image
"High"	Blanking is applied.

Incidentally, this is the blanking time when the signal has changed. ( 1) or 2)) It also changes depending upon the graphic board and the type of the switched before or after. Therefore, it is not necessarily the constant time.

# Signal Identification Flowchart

Input Signal

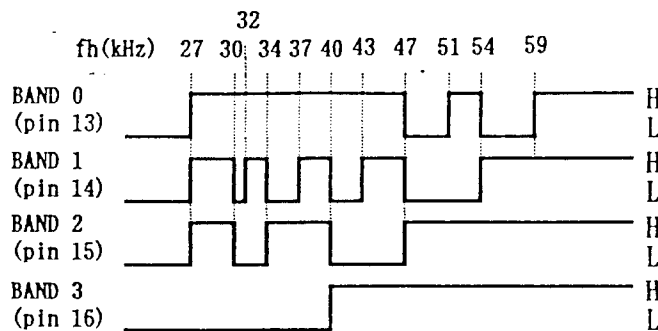
		SYNC POLARITY			
		HOR	VER		
$31\text{kHz} \leq f_H < 33\text{kHz}$	SEP SYNC	POS1	NEGA	VGA350	
		NEGA	POS1	VGA400	
		NEGA	NEGA	* VGA480	
		POS1	POS1	USER 1	640*480
	OTHERS				
$33\text{kHz} \leq f_H < 43\text{kHz}$	$f_V < 58\text{Hz}$			USER 2	800*600 (56)
	$58\text{Hz} \leq f_V < 63\text{Hz}$			800*600 (60)	
	$63\text{Hz} \leq f_V < 70\text{Hz}$			* MAC- II	
	$70\text{Hz} \leq f_V < 85\text{Hz}$	SYNC POLARITY			
		HOR	VER		
		POS1	NEGA	EVGA350 (84)	
		NEGA	POS1	EVGA400 (84)	
		NEGA	NEGA	* VESA 640*480 (75)	
		POS1	POS1	USER 3	640*480 (75)
	OTHERS			USER 4	640*480 (75)
				XGA	
	$85\text{Hz} \leq f_V$				
$43\text{kHz} \leq f_H < 47.2\text{kHz}$	$f_V < 63\text{Hz}$			USER 5	1024*768 (56)
	$63\text{Hz} \leq f_V$			VESA 800*600 (75)	
$47.2\text{kHz} \leq f_H < 51\text{kHz}$	$f_V < 63\text{Hz}$			USER 6	1024*768 (60)
	$63\text{Hz} \leq f_V < 73\text{Hz}$			* 800*600 (72)	
	$73\text{Hz} \leq f_V < 85\text{Hz}$			* MAC- II 832*624	
	$85\text{Hz} \leq f_V$			USER 7	1280*1024 (I)
$51\text{kHz} \leq f_H < 54\text{kHz}$	$f_V < 85\text{Hz}$			USER 8	800*600 (80)
	$85\text{Hz} \leq f_V$			USER 9	640*480 (100)
$54\text{kHz} \leq f_H < 57.5\text{kHz}$				* 1024*768 (70)	
$57.5\text{kHz} \leq f_H < 62\text{kHz}$	$f_V < 73\text{Hz}$			1024*768 (72)	
	$73\text{Hz} \leq f_V$			1024*768 (76)	
$62\text{kHz} \leq f_H < 65\text{kHz}$	$f_V < 63\text{Hz}$			1280*1024 (60)	
	$63\text{Hz} \leq f_V < 85\text{Hz}$			USER 10	1024*768 (80)
	$85\text{Hz} \leq f_V < 110\text{Hz}$			USER 11	800*600 (100)
	$110\text{Hz} \leq f_V$			USER 12	640*480 (120)

Note: ".\*" MARKED MEMORY DATA ARE ADJUSTED TO THE EXACT TIMINGS AT FACTORY  
 "USER \*\*" SIGNALS DO NOT HAVE BACK-UP MEMORIES  
 OTHER SIGNALS HAVE BACK-UP MEMORIES AND THEIR DATA ARE CALCULATED  
 AND STORED AT FACTORY

(Fig 4-3-2)

#### (4) fH Band Signal

To keep the horizontal linearity consistent, a fh-band signal is output for control of the horizontal output circuit. See Fig. 4-3-4.



(Fig 4-3-4)

#### (5) Picture Size and Data Position Management

It is possible to set the size and position of the screen in this model for each signal shown in Fig. 4-3-2.

When each signal is received, the last set size and position are automatically displayed.

### 4-4. OSM User Control

#### (1) OSM Display and User Operation

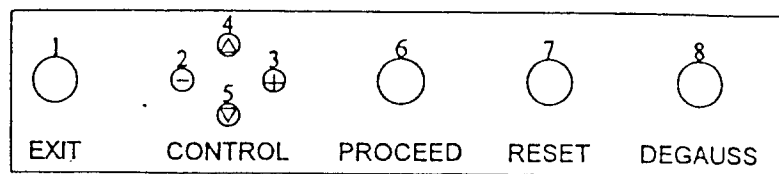
The logic of MPU port when the user pressed each control key.

Key Pressed by User	Logic of Each port							
	18	19	20	21	22	23	24	25
EXIT	H	L	L	L	L	L	L	L
—	L	H	L	L	L	L	L	L
↑	L	L	H	L	L	L	L	L
↓	L	L	L	H	L	L	L	L
+	L	L	L	L	H	L	L	L
PROCEED	L	L	L	L	L	H	L	L
RESET	L	L	L	L	L	L	H	L
M. DEGAUSS	L	L	L	L	L	L	L	H

The OSM menu is available in the user menu and the serviceman menu. For details, see Fig. 4-4-1.

# User Control Flowchart

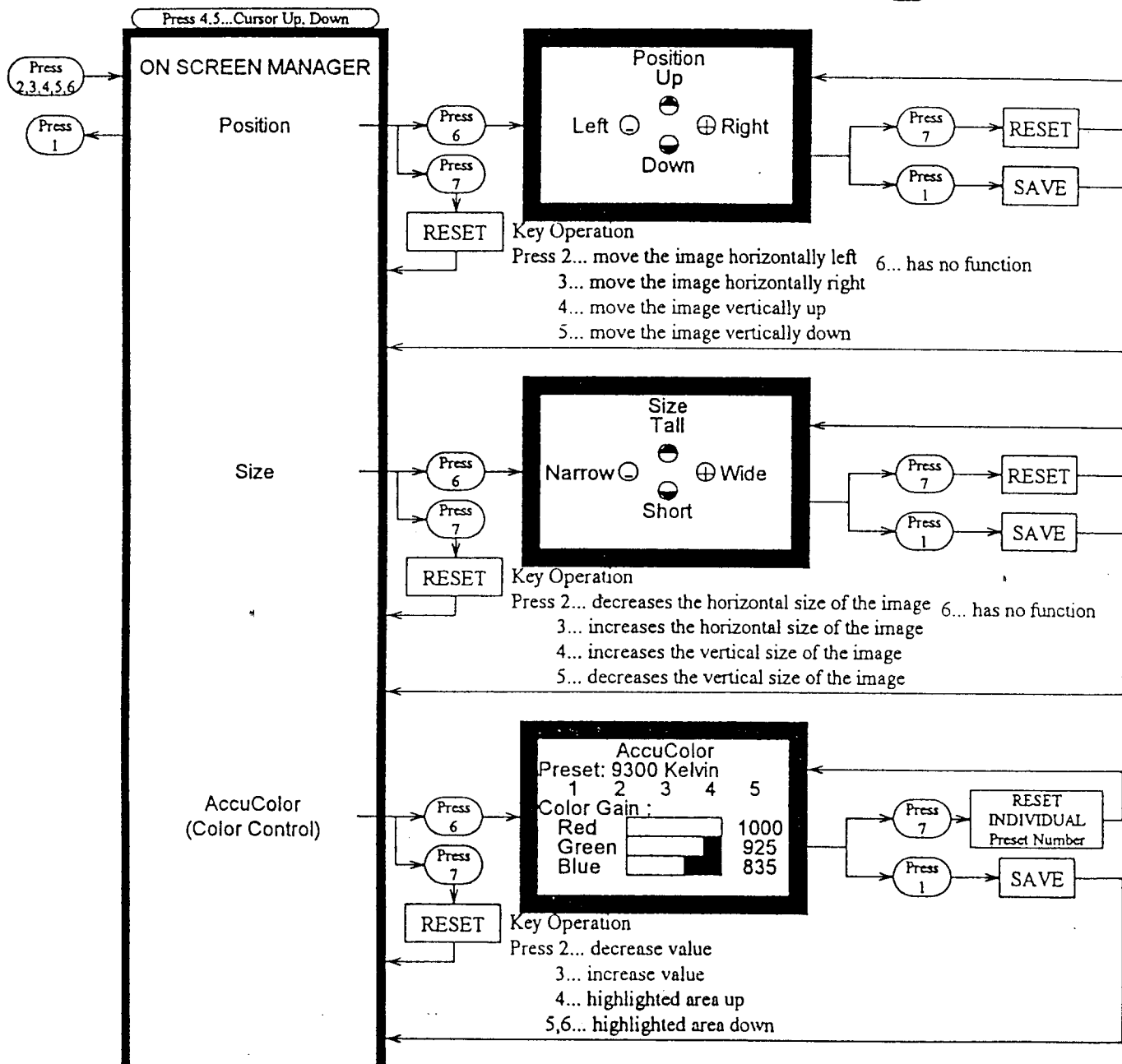
## Control Panel



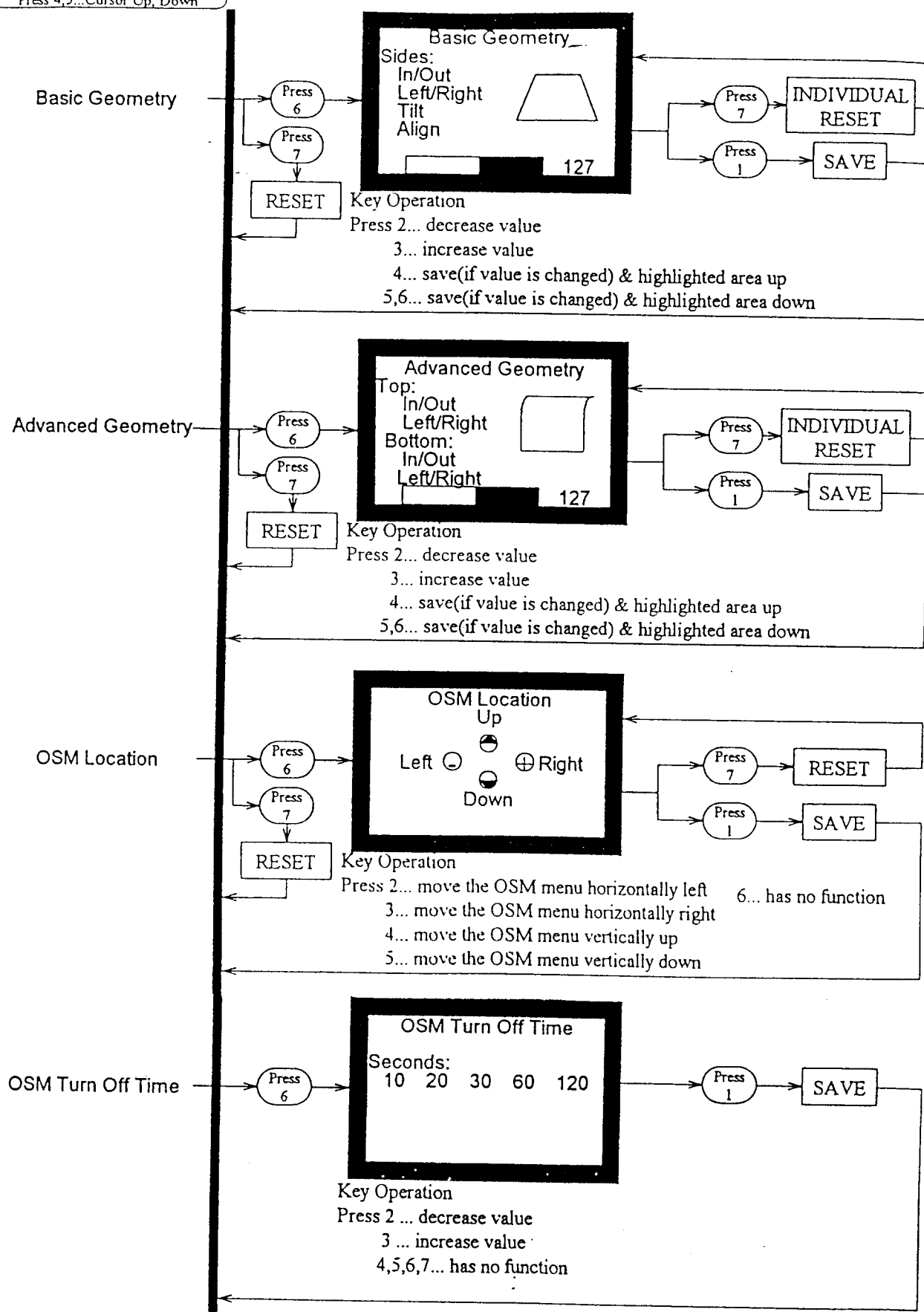
## Main Menu

## Sub Menu

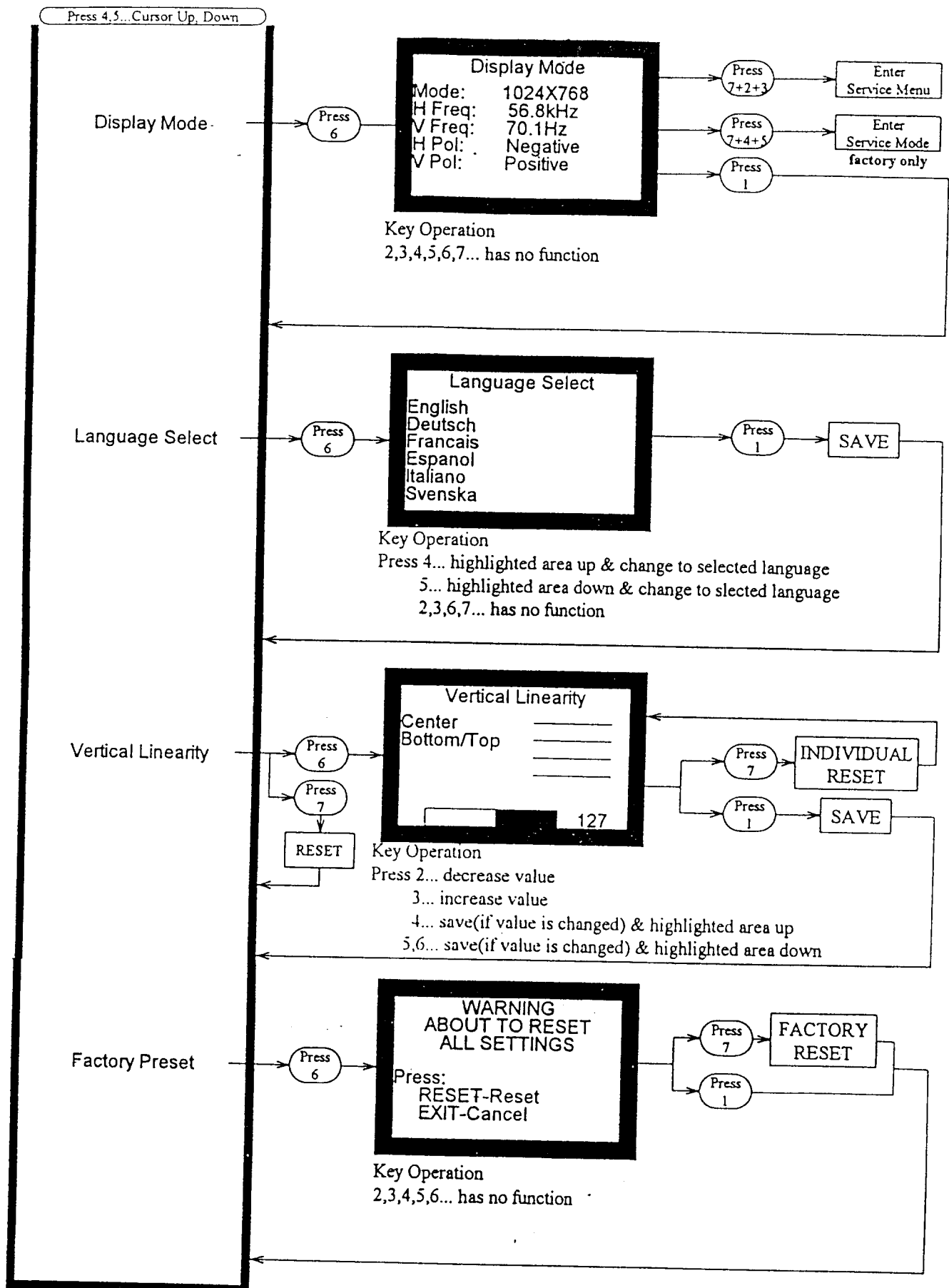
(Press 8) ... always degauss



(Fig 4-4-1)



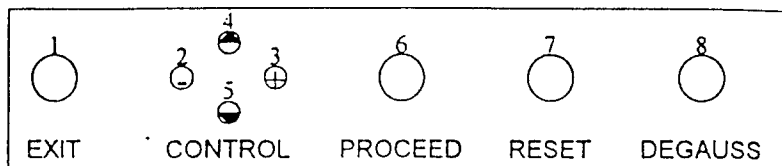
(Fig 4-4-1)



(Fig 4-4-1)

# Service Menu Control Flowchart

## Control Panel



## Main Menu

## Sub Menu

Press 8 ... in the main menu -Degauss  
in a submenu-OSM On/Off

"Display Mode"

Press 4,5...Cursor Up, Down

SERVICE MENU

H.Hold/Dynamic Focus

Press 6

H.Hold/Dynamic Focus

H.Hold (1)  
H.Hold (2)  
Sub H.Dynamic Focus  
H.Dynamic Focus  
V.Dynamic Focus

Press 1

SAVE

Key Operation

Press 2... decrease value

3... increase value

4... save(if value is changed) & highlighted area up

5,6... save(if value is changed) & highlighted area down

7... has no function

8... OSM menu On/Off

Size Max./Center

Press 6

Size Max./Center

H.Size Max.  
V.Size Max.  
H.Pos Centering  
H.Raster Center

Press 1

SAVE

Key Operation

Press 2... decrease value

3... increase value

4... save(if value is changed) & highlighted area up

5,6... save(if value is changed) & highlighted area down

7... has no function

8... OSM menu On/Off

Vertical Linearity

Press 6

Vertical Linearity

Center  
Bottom/Top

Press 1

SAVE

Key Operation

Press 2... decrease value

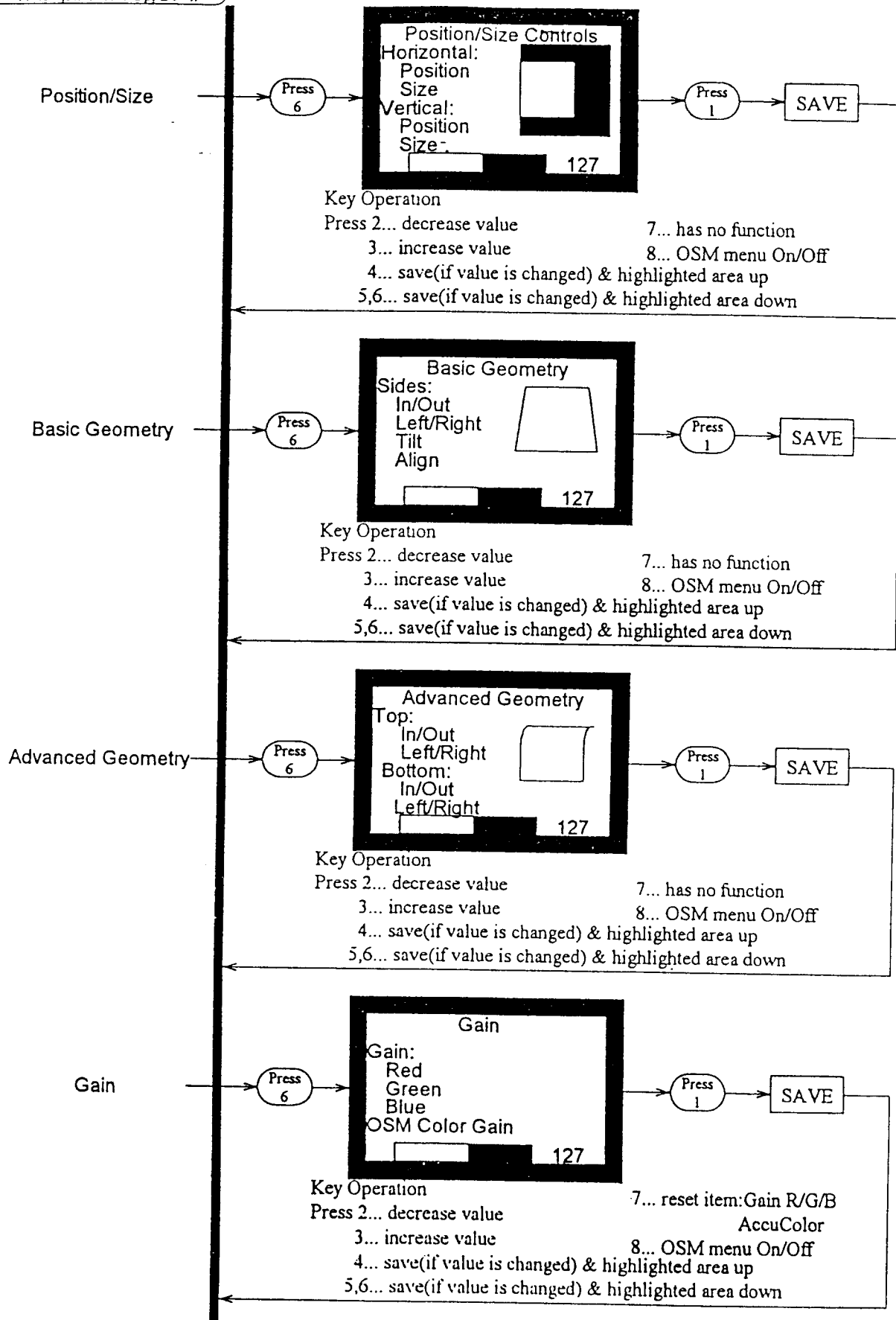
3... increase value

4... save(if value is changed) & highlighted area up

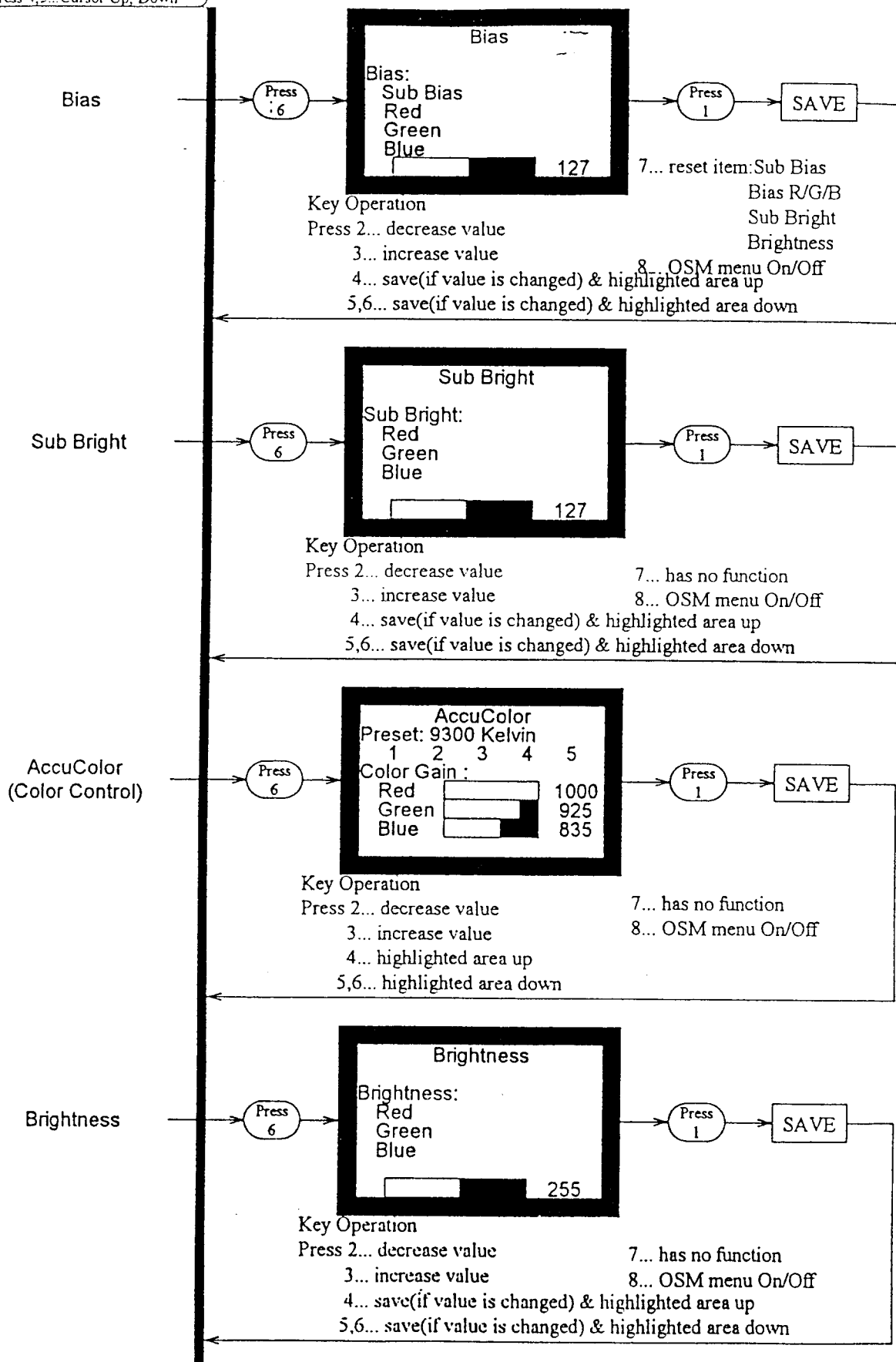
5,6... save(if value is changed) & highlighted area down

7... has no function

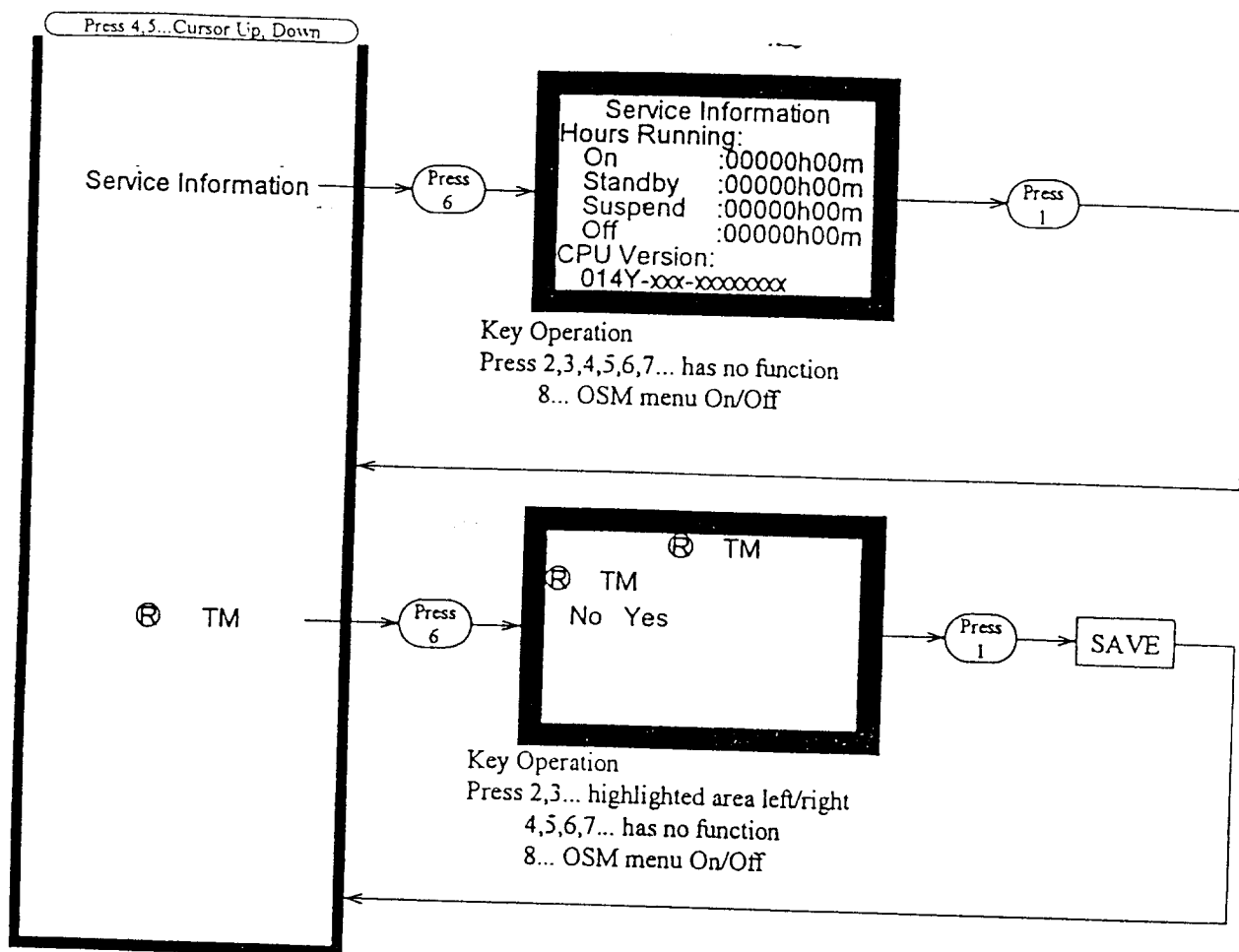
8... OSM menu On/Off



(Fig 4-4-1)



(Fig 4-4-1)



(Fig 4-4-1)


## (2) D/A Converter Control

The output of the D/A converter can be varied by stabilizing the numeric value on the OSM menu. For details, see Fig.4-4-2.

Each adjusted value data is written in IC803 automatically at the time of cursor movement or menu movement in the OSM.

## 4-5. IPM

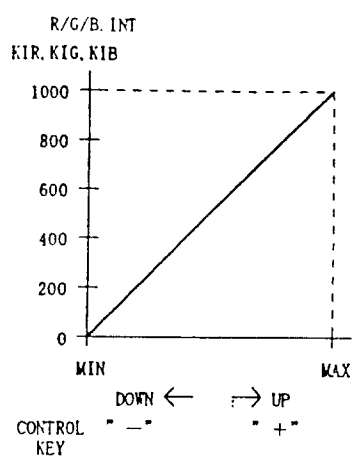
The sync signal to be fed to IC801, is detected and each mode of power management is discriminated for control of the power of the circuit.

INPUT		Output(logic)	
Pin 12 H. Sync	Pin 44 V. Sync	Pin 28 LED	Pin 29 Heater
Existence	Existence	High	High
No-existence	Existence	 fH=1kHz duty=50%	High
Existence	No-existence	Low	High
No-existence	No-existence	Low	Low

# OSD Function List

Function Name	Function name in the OSD	DAC name	Output Pin	Description	DAC'S VARIABLE RANGE
POSITION	Position Left (Control "-")	HP	IC853 Pin 12	Horizontal position adjustment	
	Position Up (Control "Δ")				
SIZE	Size Narrow (Control "-")	HS	IC855 Pin 5	Horizontal width adjustment	
	Size Tall (Control "Δ")				

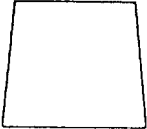
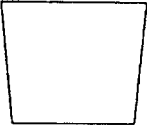
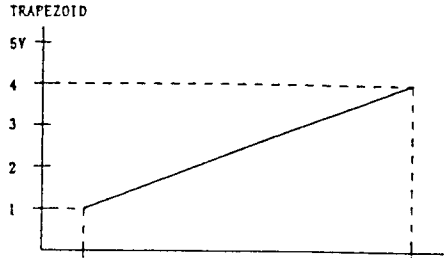

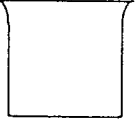
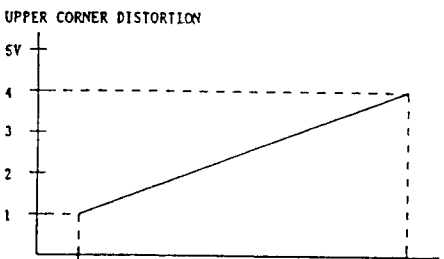
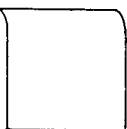
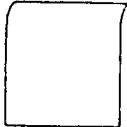
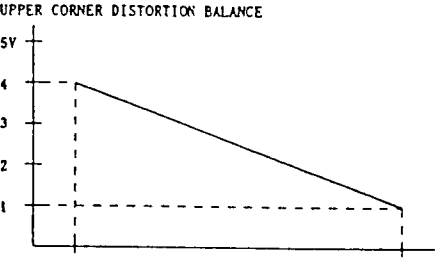
(Fig 4-4-2)

COLOR TEMP	Color Gain : Red	RI	IC7A5 Pin 13	Color temperature adjustment	 <p>KI: Initial value is KIR=KIG=KIB=1000. : Any one of KIR, KIG, and KIB always maintain to 1000. Output value is KI to WDAC</p>
	Color Gain : Green	GI	IC7A5 Pin 2	1	1
	Color Gain : Blue	BI	IC7A5 Pin 4	1	1

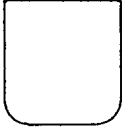
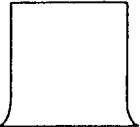
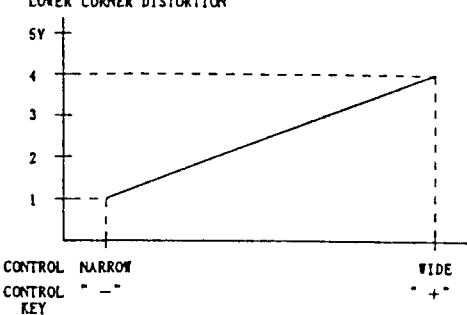
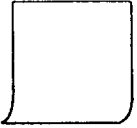
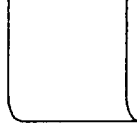
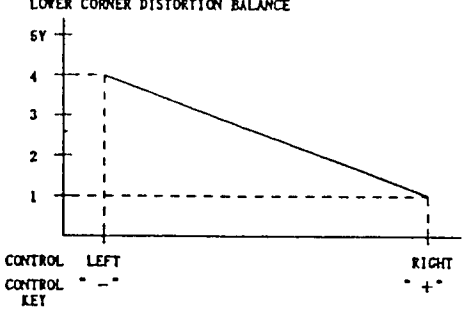
(Fig 4-4-2)

Basic Geometry	Sides : In/Out	SDP	IC855 Pin 4	Side pincushion distortion adjustment	<p>SIDE-PIN</p> <p>CONTROL KEY      PIN      BARREL</p> <p>CONTROL KEY      " - "      " + "</p>
Basic Geometry	Sides : Left/Right	SDPB	IC853 Pin 7	Side pincushion balance adjustment	<p>SIDE-PIN BALANCE</p> <p>CONTROL KEY      LEFT BARREL      RIGHT BARREL</p> <p>CONTROL KEY      " - "      " + "</p>
Basic Geometry	Sides : Tilt	PAR	IC853 Pin 6	Parallelogram distortion adjustment	<p>PARALLELOGRAM</p> <p>CONTROL KEY      UP LEFT      UP RIGHT</p> <p>CONTROL KEY      " - "      " + "</p>


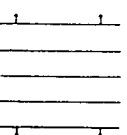
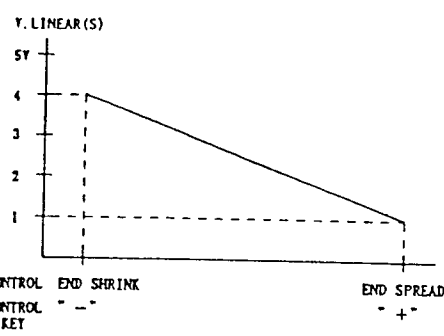
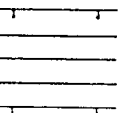
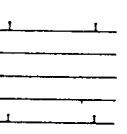
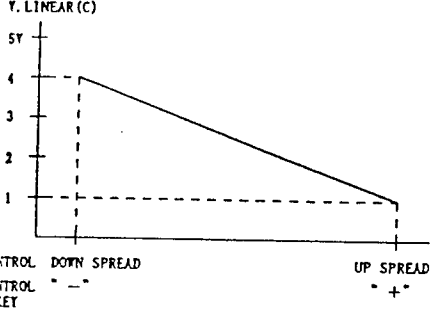
(Fig 4-4-2)

<p>Basic Geometry</p>	<p>Sides : Align</p>  <p>(Control "-")</p>  <p>(Control "+")</p>	<p>TRP</p>	<p>IC853 Pin 15</p>	<p>Trapezoid distortion adjustment</p>	<p>TRAPEZOID</p>  <p>CONTROL DOWN WIDE CONTROL KEY      " - "      UP WIDE " + "</p>
<p>Advanced Geometry</p>	<p>Top : In/Out</p>  <p>(Control "-")</p>  <p>(Control "+")</p>	<p>UC</p>	<p>IC853 Pin 14</p>	<p>Upper corner distortion adjustment</p>	<p>UPPER CORNER DISTORTION</p>  <p>CONTROL NARROW CONTROL KEY      " - "      WIDE " + "</p>
<p>Advanced Geometry</p>	<p>Top : Left/Right</p>  <p>(Control "-")</p>  <p>(Control "+")</p>	<p>UCB</p>	<p>IC853 Pin 5</p>	<p>Upper corner balance adjustment</p>	<p>UPPER CORNER DISTORTION BALANCE</p>  <p>CONTROL LEFT CONTROL KEY      " - "      RIGHT " + "</p>

(Fig 4-4-2)

Advanced Geometry	Bottom : In/Out   (Control "-")   (Control "+")	LC	IC853 Pin 13	Lower corner distortion adjustment	<p>LOWER CORNER DISTORTION</p>  <p>5V 4 3 2 1</p> <p>CONTROL NARROW WIDE CONTROL "- -" "+"</p>
Advanced Geometry	Bottom : Left/Right   (Control "-")   (Control "+")	LCB	IC853 Pin 4	Lower corner balance adjustment	<p>LOWER CORNER DISTORTION BALANCE</p>  <p>5V 4 3 2 1</p> <p>CONTROL LEFT RIGHT CONTROL "- -" "+"</p>

(Fig 4-4-2)

<p>Vertical Linearity</p>	<p>Vertical Linearity Center</p>  <p>(Control "--")</p>  <p>(Control "+")</p>	<p>VLS</p>	<p>IC855 Pin 7</p>	<p>Vertical linearity adjustment (S)</p>	 <p>Y. LINEAR (S)</p> <p>5V 4 3 2 1</p> <p>CONTROL END SHRINK CONTROL "--" KEY</p> <p>END SPREAD "-- +"</p>
<p>Vertical Linearity</p>	<p>Vertical Linearity Bottom/Top</p>  <p>(Control "--")</p>  <p>(Control "+")</p>	<p>VLC</p>	<p>IC855 Pin 6</p>	<p>Vertical linearity adjustment (C)</p>	 <p>Y. LINEAR (C)</p> <p>5V 4 3 2 1</p> <p>CONTROL DOWN SPREAD CONTROL "--" KEY</p> <p>UP SPREAD "-- +"</p>

(Fig 4-4-2)

Function Name	Function name In the OSM	DAC name	Output Pin	Description	DAC'S VARIABLE RANGE
H. HOLD/ Dynamic Focus	H. Hold (1)	HOLD1	IC851 Pin 12	Horizontal Free Run adjustment	<p>H. HOLD1, H. HOLD2 COMMON</p> <p>CONTROL LOW FREQUENCY      HIGH FREQUENCY</p> <p>CONTROL " - "      " + "</p>
	H. Hold (2)	HOLD2	IC851 Pin 13	↑	↑
H. HOLD/ Dynamic Focus	Sub H Dynamic Focus	SHDF	IC852 Pin 5	Sub Horizontal dynamic focus adjustment	<p>SUB H DYNAMIC FOCUS</p> <p>CONTROL      CONTROL " + "</p>
H. HOLD/ Dynamic Focus	H Dynamic Focus	HDF	IC852 Pin 6	Horizontal dynamic focus adjustment	Output value is varied by H sync signal and H size value.
H. HOLD/ Dynamic Focus	V Dynamic Focus	VDF	IC852 Pin 7	Vertical dynamic focus adjustment	<p>V DYNAMIC FOCUS</p> <p>CONTROL SIZE SMALL      SIZE LARGE</p> <p>CONTROL " - "      " + "</p>

(Fig 4-4-2)

Size Max/ Center	H. Size Max	HS MAX	IC855 Pin 12	Max. horizontal width adjustment	
Size Max/ Center	V. Size Max	VS MAX	IC855 Pin 13	Max. vertical height adjustment	
Size Max/ Center	H Pos Centering	SHP	IC851 Pin 4	Horizontal position center adjustment	
Size Max/ Center	H. Raster Center	H. CENTER	IC852 Pin 13	Horizontal raster centering adjustment	

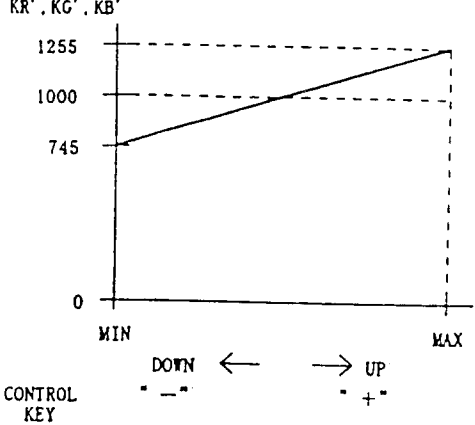
(Fig 4-4-2)

Gain	Gain : Red	SUB GAIN (R)	IC851 Pin 5	Video output swing adjustment (R)	<p>R/G/B GAIN COMMON</p>
	Gain : Green	SUB GAIN (G)	IC851 Pin 6	Video output swing adjustment (G)	↑
	Gain : Blue	SUB GAIN (B)	IC851 Pin 7	Video output swing adjustment (B)	↑
Gain	OSM Color Gain	OSD ADJ	IC781 Pin 4	OSD gain control (R/G/B)	<p>OSD GAIN</p>
Bias	Bias : Sub Bias	G1 BIAS	IC851 Pin 15	Reference color and contrast tracking	<p>G1 BIAS</p>

(Fig 4-4-2)

Bias	Bias : Red	R BIAS	IC7B1 Pin 7	Cut off adjustment	<p>R/G/B. BIAS COMMON</p> <p>CONTROL DOWN (DARK) CONTROL " - " KEY</p> <p>UP (BRIGHT) " + "</p>
	Bias : Green	G BIAS	IC7B1 Pin 14	↑	↑
	Bias : Blue	B BIAS	IC7B1 Pin 12	↑	↑
Sub Bright	Sub Bright : Red	R SUB BRT	IC7B1 Pin 6	Auxiliary cut off adjustment	<p>R/G/B. SUB. BRT COMMON</p> <p>CONTROL DOWN (DARK) CONTROL " - " KEY</p> <p>UP (BRIGHT) " + "</p>
	Sub Bright : Green	G SUB BRT	IC7B1 Pin 15	↑	↑
	Sub Bright : Blue	B SUB BRT	IC7B1 Pin 13	↑	↑

(Fig 4-4-2)

Brightness	Brightness : Red	R BRIGHT	IC7A9 Pin 13	Brightness tracking adjustment	<p>R/G/B. BRIGHT KR', KG', KB'</p>  <p>MIN      DOWN ←      → UP      MAX " - "      " + "</p> <p>CONTROL KEY</p> <p>K': Initial value is KR'=KG'=KB'=0. :KR', KG', and KB' are move independently each. Output value (KSB) is the following formula. <math>KSB = K1 * K' / 1000</math> EX) <math>KSBR = K1R * KR' / 1000</math></p>
	Brightness : Green	G BRIGHT	IC7A9 Pin 2	↑	↑
	Brightness : Blue	B BRIGHT	IC7A9 Pin 4	↑	↑

(Fig 4-4-2)

## 5. DEFLECTION CIRCUIT

### 5-1. Horizontal Deflection Circuit

#### 5-1-1. Horizontal Oscillator/Horizontal Image Phase Shifter Circuit

The control of the horizontal oscillation and horizontal image position is performed by IC501 (uPC1881CT).

The horizontal circuit inside IC501 has the following functions:

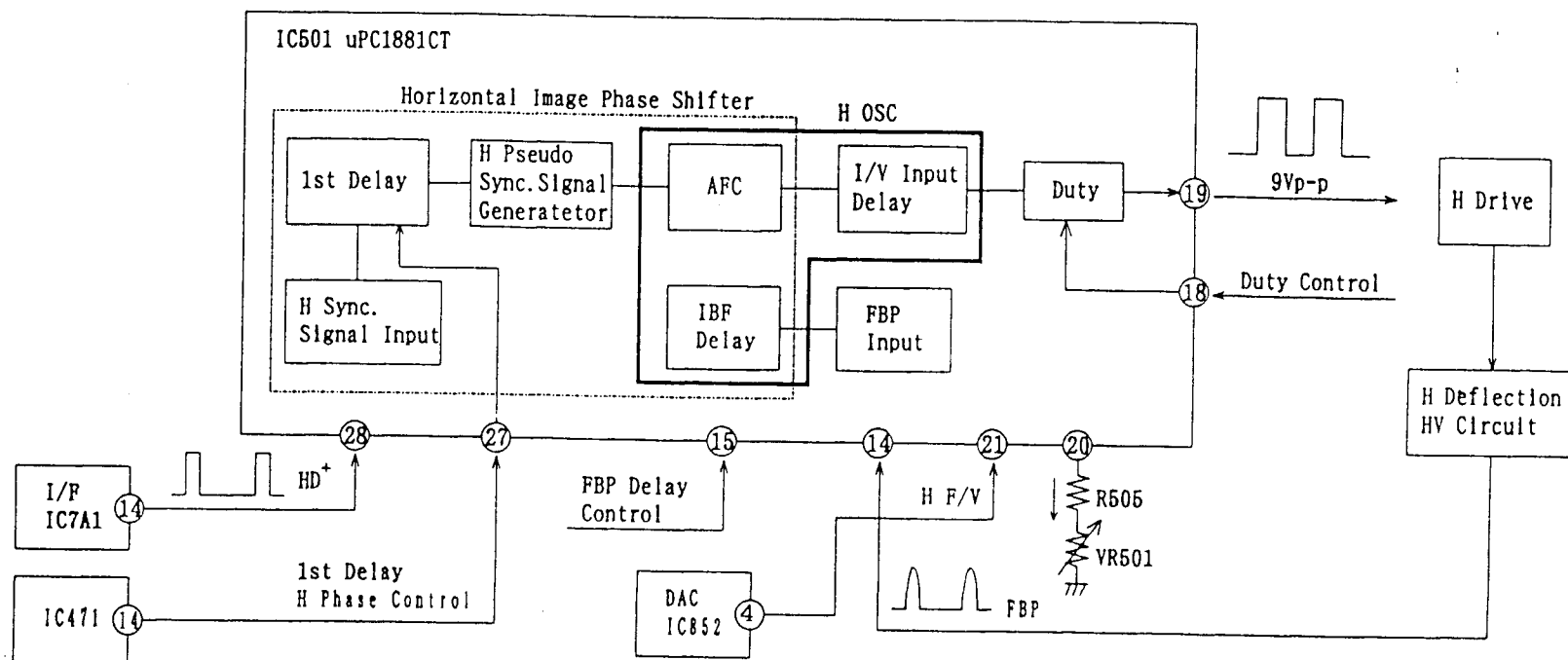
- Sync signal input section
- FBP input section
- 1st delay section
- FBP delay section
- Horizontal dummy sync signal generator
- AFC circuit
- F/V voltage delay circuit
- Duty variable circuit
- Horizontal oscillator circuit

#### (1) Horizontal Oscillator

The horizontal sync signal output from IC7A1 pin 14 of the I/F circuit is fed to IC501 pin 28. A horizontal dummy sync signal having a fixed width of  $t_2$  is generated at  $t_1$  later from the rising edge of the input signal.  $t_1$  is determined by the voltage at pin 27 and  $t_2$  is determined by the voltage at pin 26. The horizontal oscillation frequency is determined by F/V voltage input to pin 21 and the current flowing to pin 20. The oscillation frequency is kept constant by the phase error detection between the horizontal dummy sync signal and FBP fed to pin 14 and by controlling the oscillator circuit. A pulse (9 Vp-p) of almost the same frequency as the input frequency is output from pin 17 and then supplied to the horizontal drive circuit. The duty of the output pulse is controlled by the voltage at pin 18 so it becomes approximately 50% without dependence on the oscillation frequency.

#### (2) Horizontal Image Phase Shifter Circuit

From the rising edge of the horizontal sync signal fed to IC501 pin 26, a horizontal dummy sync signal with a constant width  $t_2$  delayed to the extent of  $t_1$  is generated.  $t_1$  is determined by the voltage (user control) at pin 27, and  $t_2$  by the voltage at pin 26. The FBP fed to pin 14 after being fed back from the horizontal deflection output circuit is  $t_3$  delayed by the voltage at pin 13. The position of the screen is determined by a combination of  $t_1$  and  $t_3$ .



(Fig 5-1-1)

## 5-1-2. Image Distortion Correction Circuit

The image distortion correction is made by IC471 (uPC1882CT).  
The distortion correction circuit consists of two blocks.

### (1) Image size distortion Correction

The waveform for distortion correction is supplied to the horizontal size control voltage.

- Side pin distortion correction
- Corner distortion correction (upper and lower)
- Trapezoidal correction

The distortion correction waveform output from pin 16 is impressed on the horizontal size control voltage output from pin 15 of IC471 and then supplied to the EW driver circuit.

### (2) Image position distortion Correction

The waveform for distortion correction is supplied to the horizontal position control voltage.

- Parallel square distortion correction
- Side pin distortion left and right balance correction
- Corner distortion left and right balance correction (upper and lower)

The distortion correction waveform output from pin 13 is impressed on the horizontal image position output from IC471 pin 14 and supplied to IC501 pin 27.

The distortion correction waveform is generated by IC501, and then fed to IC471 pin 24. The sawtooth wave of the vertical sync is operated.

Trapezoidal correction/parallel square correction : Sawtooth wave  
Side pin distortion correction/side pin distortion left and right balance correction : 2D (square) wave of sawtooth  
Corner distortion correction/corner distortion left and right balance correction : 4D wave of sawtooth

By varying the amplitude and polarity, the amount of correction is controlled. The corner correction can be controlled vertically.

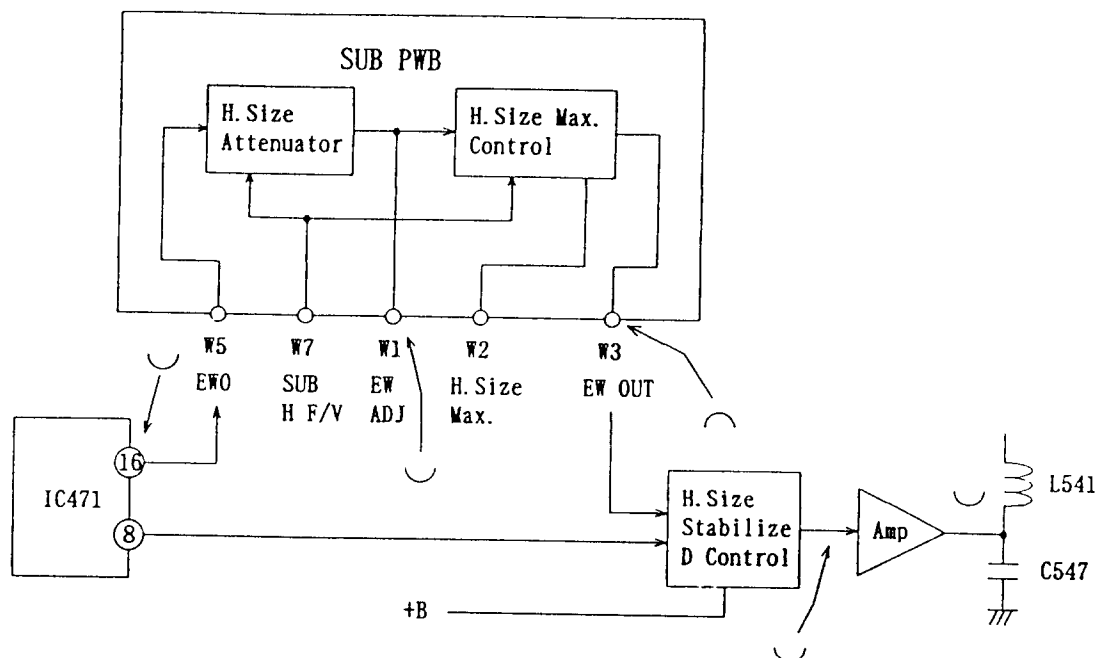
These correction waveforms are controlled to the optimum value by following up to a change of horizontal size and vertical position.

The distortion offset is controlled by the voltage from DACs IC853 and IC855.

5-1-3. E/W Driver

E/W Driver consists of the following:

- (1) H. Size Attenuator
- (2) H. Size Max Control
- (3) H. Size Stabilized Control
- (4) H. Size Amplifier



### (1) H. Size Attenuator

The voltage created by mixing the H.size component and distortion correction component from the distortion correction IC(IC471) pin 16 is fed to CN-W of the sub PWB pin 5. This voltage is attenuated by H.F/V voltage and pin W5 output to the H.size Max. Control section. When fH: 65 kHz, the voltage fed to pin W5 is output directly to W1. Also, when fH: 31.5 kHz, the voltage fed to W5 pin is attenuated by about 0.35 times.

(2) H. Size Max Control

This section is where the maximum horizontal size is specified. The voltage fed from the H.size attenuator is amplified and inverted and output from the SUB PWB pin w3 to fully scan each signal by the DC voltage output from IC855 pin 12.

### (3) H. Size Stabilized Control

Even when the beam current has changed, +B changes by operation of the high B+ chopper controller. So, the H.size changes. To compensate for this, the H.size voltage output from the SUB PWB is corrected by +B voltage. Also, even when the beam current partially has changed, the H.size correction voltage corresponding to H.F/V is fed from IC471 pin 8 to correct the H.size voltage.

#### (4) H. Size Amplifier

The output voltage from the H. size stabilized control is amplified. The voltage of C547 is changes by varying the voltage fed to IC5E2 pin 12, thereby causing the horizontal size to change.

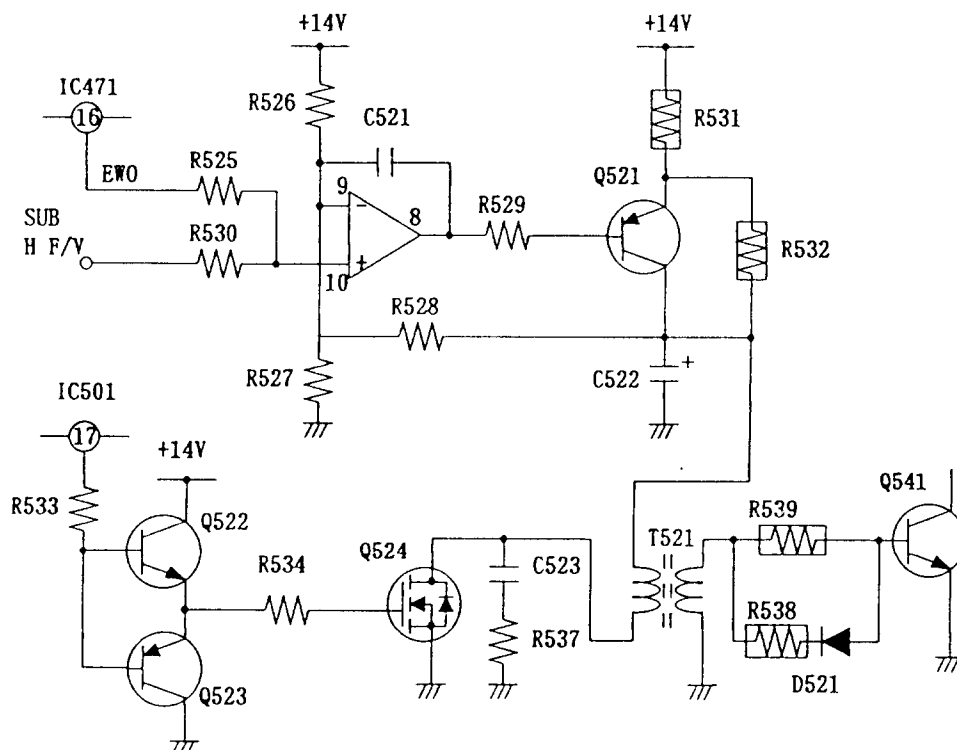
## 5-1-4. H Drive Circuit

### (1) H Drive Pulse Buffer

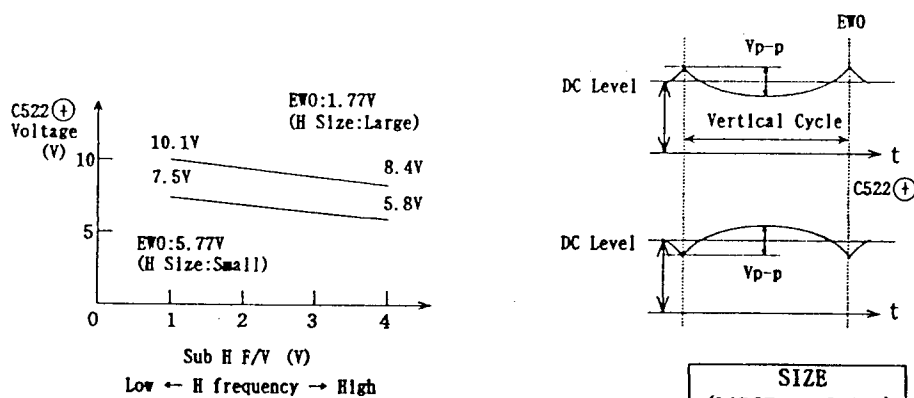
The H drive pulse supplied from IC501 pin ⑰ is buffered by Q522 and Q523. Then it is supplied to the drive circuit of the H deflection circuit, and the sawtooth pulse generator of the chopper circuit in the SUB PWB.

### (2) H Drive Circuit

The H drive pulse turns Q524 on and off. The synchronized drive pulse is generated on the second side of T521. The energy supplied to the drive circuit is controlled by EW0 (IC471 pin ⑯) and SUB H F/V. The relation of EW0, SUB H F/V and the voltage of C522(+) is shown Fig. 5-1-4. This energy is regulated to compensate for Q541 power loss.



(Fig 5-1-3) H Drive Circuit



(Fig 5-1-4)

## 5-1-5 Deflection Circuit

The drive pulse is applied to the base of Q541 turning it on and off.

The sawtooth waveform deflection current is generated in the deflection yoke and high voltage is generated in the second winding of the FBT. The AFC pulse, the HV protector detection voltage and inputs of -105 Volt regulator is generated in the third winding.

This deflection current sweeps the beam in the horizontal direction.

This horizontal deflection circuit consists of the combination of a main and auxiliary generator. (This circuit is called Diode Modulation circuit.)

The main generation consists of deflection coil, C541, C542, C548, D541, D542, D546 and Q541, the auxiliary generator, modulator coil L541, C543, C547, D541 and Q5E4.

By varying the voltage of C547 at the auxiliary generator, the circuit can vary horizontal size and correct pincushion distortion. L542 and L543 are the horizontal linearity coils. They correct the unbalance of the horizontal linearity between right and left. L543 used in all signals. L542 is used when the horizontal frequency is less than 40 kHz. C548, C549, C551, C552 and C553 correct for the "S" characteristic and change the parabolic waveform generated at both ends of the capacitor by the inflow current. C548 is used in all signals. The capacitors used by horizontal frequency bands is as follows (fig. 5-1-5).

fh(kHz)	fh BAND(*1)				(*2)	(*3)	(*3)	(*3)	(*4)	(*4)	(*4)	(*4)	(*4)	(*5)	
	0	1	2	3	RL541	Q542	Q543	Q544	C548	C549	C551	C552	C553	L542	L543
~ 32	H	L	L	L	Common-Break	ON	ON	OFF	ON	ON	ON	ON	OFF	ON	ON
32 ~ 34	H	H	L	L	Common-Break	ON	OFF	OFF	ON	ON	ON	OFF	OFF	ON	ON
34 ~ 37	H	L	H	L	Common-Break	OFF	ON	OFF	ON	ON	OFF	ON	OFF	ON	ON
37 ~ 40	H	H	H	L	Common-Break	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	ON	ON
40 ~ 43	H	L	L	H	Common-Make	ON	ON	OFF	ON	OFF	ON	ON	OFF	OFF	ON
43 ~ 47	H	H	L	H	Common-Make	ON	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF	ON
47 ~ 51	L	L	H	H	Common-Make	OFF	ON	ON	ON	OFF	OFF	ON	ON	OFF	ON
51 ~ 54	H	L	H	H	Common-Make	OFF	ON	OFF	ON	OFF	OFF	ON	OFF	OFF	ON
54 ~ 59	L	H	H	H	Common-Make	OFF	OFF	ON	ON	OFF	OFF	OFF	ON	OFF	ON
59 ~ 65	H	H	H	H	Common-Make	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON

\*1) H ----- High, L ----- Low

\*2) Common="terminal ⑤ (of RL541)", Break="terminal ①", Make="terminal ④"

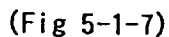
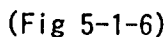
\*3) ON ----- D-S short, OFF ----- D-S open

\*4) ON ----- "active", OFF ----- "between C\*\*\* and circuit is open."

\*5) ON ----- "active", OFF ----- "short between both terminal of L542".

(Fig 5-1-5)

The duration of the pulse generated at the natural point of D541 is approximately 3.0  $\mu$ s. This pulse level changes by varying C547's voltage by manipulating EW Output voltage at SUB PWB (w3 pin). As C547's voltage decreases the horizontal width increases. The horizontal size is determined as the difference between the FBT pin 2 (B+) and C547's voltage when the high voltage is constant. C547 follows the high B+ voltage to maintain constant horizontal size despite beam fluctuations. Q5E3 and Q5E4 act as buffers to control C547's voltage. Q5E4's collector voltage is feed back to IC5E2 pin 6 to stabilize the horizontal size despite beam current fluctuations.



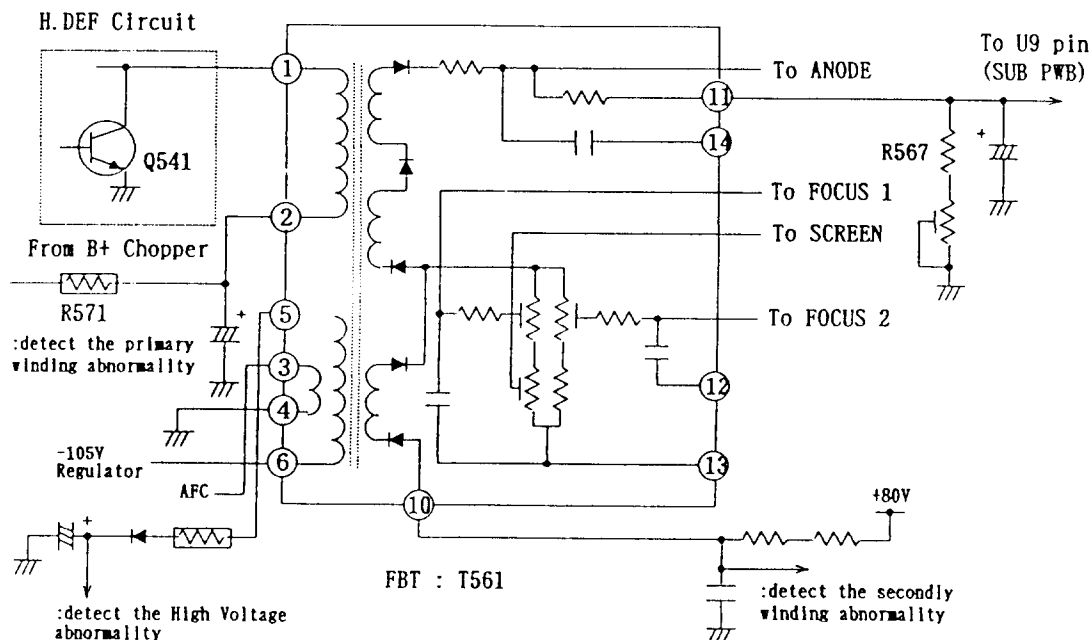
#### H. CENTERING CIRCUIT

CN-CT generates the  $\pm 5$  volts which is compared to the deflection circuits power supply voltage (+B). The voltage of the base of Q581 and Q582 is varied by DC voltage of IC852 pin ⑬. The voltage differences of Q581's and Q582's base and emitters is supplied to L581. Horizontal centering is manipulated by the current supplied by L581 to the horizontal deflection circuit.

## 5-1-6. High voltage Circuit

### •High Voltage Circuit

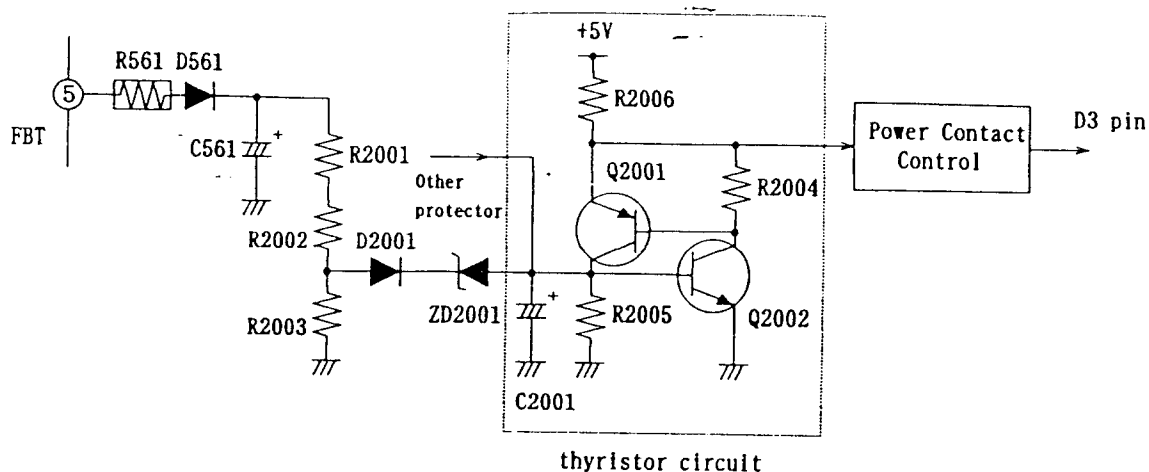
Q541 turns on and off triggering the flyback pulse FBT's primary winding. The FBT boosts this pulse to about 25kV (high voltage) and supplies it to the CRT's anode. The high voltage fluctuations occur because the FBT, driven by Q541, changes by the horizontal input frequency and by the beam current. The high B+ chopper negative feedback circuit compensates for high voltage decreases. The FBT's internal resistors, R567 and VR561 divide the high voltage to detect voltage changes. The detection voltage is supplied to the high B+ chopper control circuit (on the SUB PWB pin u9). This circuit forms a feedback loop to maintain constant high voltage.



(Fig 5-1-8)

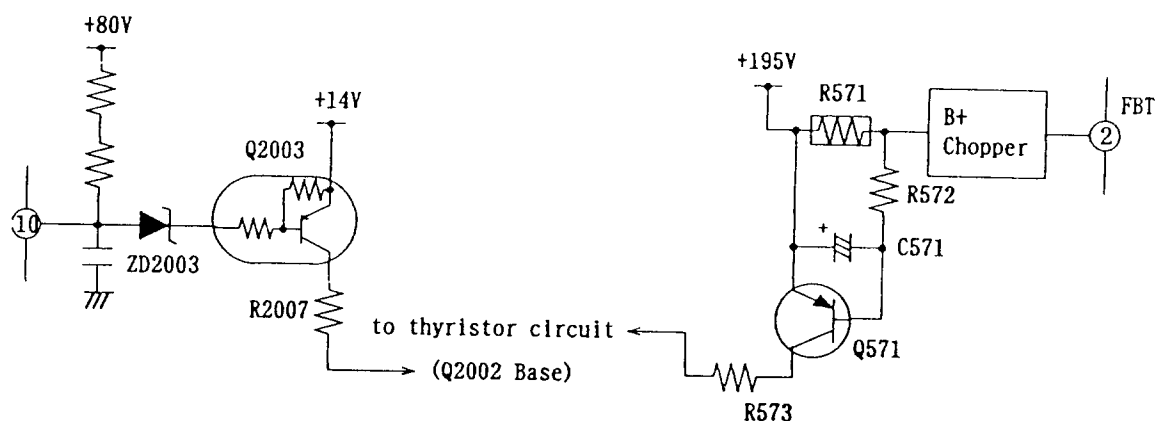
### •High Voltage Protector

This model employs three separate protection circuits. The first protect circuit becomes active when the FBT high voltage increases abnormally. The second circuit protect circuit monitors the second side of the FBT and becomes active in the event an FBT layer short. The third circuit becomes active when the power supply input current to the FBT's primary side increases abnormally by the primary winding layer short of FBT. The HV protector consists of R2001, R2002, R2003, D2001, ZD2001 and thyristor circuit. HV is detected by the FBT pin ⑤ the third winding, whose pulse increases as the HV increases. The output pulse at the FBT pin ⑤ is rectified by D561 and C561 and is divided by R2001, R2002 and R2003. ZD2001 is reversed biased and conducts, thereby turning on thyristor circuit when this divided voltage exceeds the voltage at ZD2001. Q2001 and Q2002 become active when base voltage of Q2002 exceeds 0.7 volt and power contact (d3 pin) is about 0 voltage and main power supply block does not supply to this unit. This protect circuit is active and will remain active until the power supply voltage decreases.



(Fig 5-1-9)

Leak protector of FBT's second side consists of Q2003, ZD2003, R2007 and thyristor circuit. When the current in the second winding of FBT increases abnormally, the voltage of FBT pin 10 decreases. And when the voltage becomes about 0 volts, ZD2003 conducts and Q2003 turns on. Therefore thyristor circuit turns on. Leak protector of FBT primary side consists of R571, C571, Q571, R573, R2005, C2001 and thyristor circuit. If the input power supply current increases abnormally, the voltage across R571 increases. When the voltage across R571 increases and Q571's base emitter voltage exceeds 0.7 volts, Q571 is turned on and protector circuit of thyristor circuit is turned on.



(Fig 5-1-10)

#### 5-1-7 B+ Chopper (For H DEF Circuit)

High B+ chopper circuit consists of the sawtooth generator, error amplifier, comparator and step down chopper circuit. This circuit forms a negative feedback loop to maintain constant high voltage.

##### •Sawtooth Generator

Q5N1 works as a fixed current source and adds charging current to C5N3 when the differentiated H drive pulse is applied to the base of Q5N4, C5N3 discharges. Then the sawtooth waveform is generated on C5N3.

##### •High B+ Chopper Controller

This circuit adjusts the rectangular wave output duty cycle by comparing the sawtooth wave with the feed back control voltage from high voltage detection circuit. The high side of the rectangular of CPO in SUB PWB (pin U14) increase when the control voltage of EHT FB in SUB PWB (pin U9) increases.

##### •High B+ Chopper Output

The chopper control wave is added to the base of Q573 and Q574 to turn it on and off. Therefore, Q572 is also turned off and on as well. A 195 Vp-p rectangular wave is generated on Q572's drain. This rectangular wave is rectified by D573, L571 and C575. And the rectified voltage is added to the horizontal deflection circuit.

## 5-2. Vertical Deflection Circuit

The vertical deflection circuit consists of the following blocks:

- (1) Sawtooth wave generating section
- (2) Waveform corrective section
- (3) Vertical raster position varying section
- (4) Vertical output amplifying section

### (1) Sawtooth Wave Generating Section

The vertical sync signal from the I/F circuit is fed to IC501 pin 4 (uPC1881CT), so that the sawtooth wave synchronized with the input signal is output from IC501 pin 9.

The amplitude of the sawtooth wave is varied by the voltage at IC501 pin 8 and then used for a adjustment of vertical maximum size.

The control is made inside IC501 to prevent the amplitude of sawtooth wave from being changed.

$$V_{SAW} (V_{p-p}) = 2 * ( V_{SAW REF} + V_L )$$

### (2) Waveform Correction Section

The sawtooth wave is fed to IC471 pin 24 (uPC1882CU) for control of vertical linearity and vertical size in IC. So, the corrected sawtooth wave is output at IC471 pin 18.

In IC471, 2D wave and 3D (cubic) wave created by the fed sawtooth waves are added to the input sawtooth wave to correct the waveform for varying linearity. The amount of addition (linearity correction amount) changes with the voltage (D/A converter output) applied to pins 27, 28, 29, and 30 (vertical size (27), vertical position (28), S correction (29), and C correction (30)). As a result, the optimum linearity can be obtained even when the vertical size and vertical position are changed.

### (3) Vertical Raster Position Varying Section

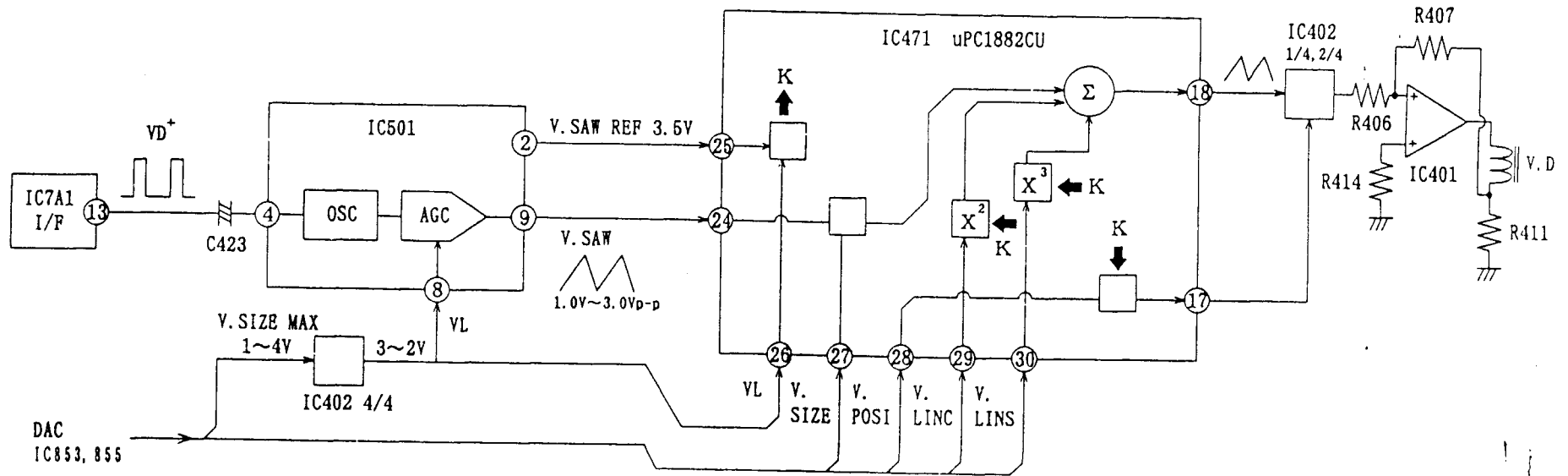
The vertical raster position is varied by changing the amount of DC bias of the input signal to IC401 (TDA8172).

By subtracting the voltage at IC471 pin 18 (sawtooth wave output) and that at IC471 pin 17 (vertical position voltage) in IC402, the amount of DC bias of the input signal to IC401 varies.

### (4) Vertical Output Amplifying Section (TDA8172 or STV9379)

The current proportional to the input voltage to IC401 is supplied to the vertical deflection coil (V.DY). The vertical deflection current is taken as voltage waveform by R411 and fed back to IC402.

The IC401 operates in such a way that this signal becomes the same ratio as that of the input voltage to IC401.



(Fig 5-2)

## 6. DYNAMIC FOCUS CIRCUIT

The dynamic focus section is made up the following three blocks:

The dynamic focus (D-FOCUS) IC (IC951 : UPC5022CT-096(100MV)) WHICH has the function of generating the horizontal/vertical parabolic wave as well as that of controlling the gain, the output amplifier and the coupling circuit.

### 6-1. Horizontal Parabolic Wave Generation and Gain Control Circuit

The FBP of the secondary of the horizontal output transformer which has been waveform shaped to the horizontal drive pulse (H D) is input to IC951 pin 24. This pulse is used as a trigger and a sawtooth wave is generated at the sawtooth oscillator section and pin 17's externally connected capacitor, and at pin 16 constant current producing circuit. The sawtooth wave is converted to a parabolic wave at the  $X^2$  circuit and the parabolic wave gain is adjusted with the pin 27 input voltage, i.e., the sub horizontal dynamic focus voltage (using the Service Menu). To set the peak voltage of this parabolic wave to an optimum amplitude with respect to the horizontal frequency and horizontal size, tracking is taken at the pin 9 input voltage, i.e., the horizontal dynamic focus voltage. The final horizontal parabolic wave is output from pin 10.

### 6-2. Vertical Parabolic Wave Creation and Gain Control Circuit.

The vertical sawtooth wave produced by the oscillator IC (IC501 : UPC1881CT) is input to IC951 pin 2 and is converted to a parabolic wave in the  $X^2$  circuit. The gain of this parabolic wave is VCA controlled by the pin 7 input voltage, i.e., the vertical dynamic focus voltage. The result is output to pin 6.

### 6-3. Output Amplifier Circuit

① is the input. ② is the output. R982 through R984 are used for feedback.  $(R982 + R983 + R984) / (R975 + R976)$  determines the output DC bias.  $(R982 + R983 + R984) / R972$  determines the horizontal parabolic amplifier gain. ③ is the sawtooth wave input for correction against the delay time.

### 6-4. Coupling Circuit

This block consists of an extremely high impedance resister and coupling capacitor. These components are located in the FBT and the output wave is supplied to dynamic focus terminal.



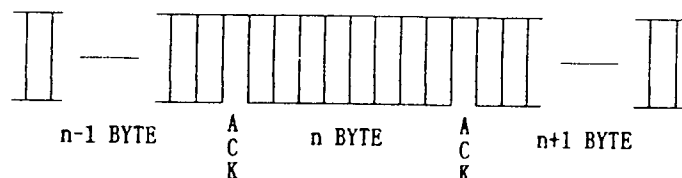
## 7. PLUG AND PLAY

VESA Display Data Channel (DDC)

24LC21 (IC7T1) — (located on the PNP PWB)

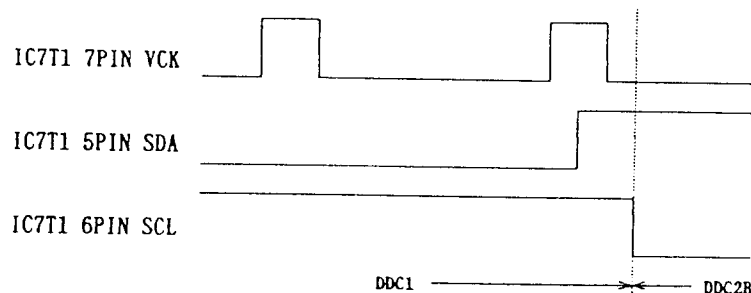
### 7-1. DDC1

Input VCLK (V SYNC) to IC7T1 pin 7. Serial data (SDA) output from pin 5 to synchronize VCLK rising. The contents of SDA is called EDID data and the information of monitor's specifications and signal's supports are stored. They are composed of 8 bit, 128 byte. The data of SDA is composed of 9 bit. The high bit is ignored. The output of pin 5 is always high. In DDC1, this data is outputted continuously.



### 7-2. DDC2B

When inputting SCL to IC7T1 pin 6 changes from high to low, changing the DDC2B mode. SDA outputs same the EDID data at DDC1. But output protocol is different. In DDC2B, no VCLK, base to sync outputs I2C protocol at SCL.



The components specified for Model JC-1734VMA

**Note:** The components identified by  make are critical for safety.

Replace only with parts Number specified.

*** TRANSISTORS ***		
ΔQ2002 Q421 Q7A7 Q7A8 Q145 ΔQ2004 ΔQ2005 Q4K1 Q402 G522 Q573 Q7C1 Q951	350D7218 350E3217 350E3218	TR 25C945-T R TR 25C1740S-T Q TR 25C1740S-T R

D573		36107620	DIODE RG4 LF-J3
ΔD541		36107718	DIODE FMP-3FU(LF027-103)
LED141		36801382	LED SML19416W
D401	D5N8 D5N9	369K2136	DIODE RGP10G.AT

Q7A3		35160652	TR DTC113ZS-T
Q401		35160655	TR DTC143ES-TP
Q524		35122600	TR 2SK701
Q572		35127470	TR 2SJ306
Q542	Q543 Q544	35127630	TR 2SK1904

SW109		65315005	PUSH SWITCH
SW101	SW102	65360027	SWTCH,PUSH BUTTON
SW104	SW105	65360051	TACT SWITCH SKHHQV
SW107	SW108		
RL541		65660033	RELAY VE-12H5-K

L7A1	L7A2	610E1711	COIL, FILTER 3.3UH
L701		610E1725	COIL, FILTER 47UH
L702	L703	610E1726	COIL, FILTER 56UH
L705		610E1727	COIL, FILTER 68UH
L801	L704	610FE828	COIL, FILTER 47UH

SYMBOL	PART NO	DESCRIPTION
L421 L101	610F5829 610F7017	COIL.FILTER 56UH COIL.FILTER 10UH
L7A3 L901 L902 L903 ΔFL5C0 L5B1 INLET	610F8009 610F8036 610G0111 610J9127 610G2076	COIL.FILTER 2.2UH COIL.FILTER 0.39UH INDUCTOR.BEADS(FBR07HA121 COIL SPT0405A-220K1R3 POWER LINE FILTER
DG LC707 LC901 LC7A1 LC7A2 LC701 LC702 LC703	61317106 616K6027 616K6028 616K6801 616K6827	COIL DEGAUSSING NOISE FILTER 2A222-TA NOISE FILTER 1H223X-TA NOISE FILTER 2R2-101-T NOISE FILTER
LC706 LC708	616K6946 616K6966 61605130 61605135	NOISE FILTER TH28123MA NOISE FILTER FERRITE CORE (XA-901) FERRITE CORE
ΔFL5C1 FL573		

\*\*\* PWB ASSYS \*\*\*

	8404TC01 8404TF01 8404TL01 8404TP01	VIDEO PWB ASSY MAIN PWB ASSY CONTROL PWB ASSY PNP PWB ASSY
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\*\*\* ELECTRICAL PARTS & MISCELLANEOUS PARTS \*\*\*

ΔSW-PS HS541 Q5E4 SG901 SG902 SG903 SG904 X801	31102105 31709507 31709508 329J0047 64098039	SW.REG.DPS-142AB REV.A SHEET,INSULATOR HEAT SINK SHEET,INSULATOR ARRESTER (300V).AT52 X'TAL(10.000MHZ)
SG905 SG910 CORD CABLE VR561 UNIT	667K6007 667K7001 70032054 70810757 73893206 74004891 79100541	SPARK GAP 1.5KV SPARK GAP 1.2KV SG/CRT SOCKET(DBF) LINE CORD 3P L=1.8 SIGNAL CABLE MD15P-XH12P CAP EW UNIT (CN314)

SYMBOL	PART NO	DESCRIPTION
R456 ΔR561 ΔR508 ΔR575 R491	ΔR562	401C6749 401G6109 401G6117 401G6133 401G6185
R904 R908 ΔR542 ΔR543 R985	R905 R906	401H5637 401H5649 401H5659 401H5661 401H5673
R458 R5M6 ΔR573 ΔR590 ΔR2008 ΔR574 R7M7 R796	R5M2 R7B2 R7G7 R795	401H5687 401H5697 401H5725 401H5733 401J9820
R579 R417 R457 R705 R533 R551 R7L8 R733 R765 R819 R842 R845 R848	R586 R907	401K5609 401K5633 401K5639 401K5641 401K5649
R534 R555 R729 R731 R763 R808 R829 R841 R844 R847	R546 R7L7 R731 R764 R809 R841 R844 R847	R.CARBON 1.5M 5X 1/4W R.CARBON 2.2H 5X 1/4W R.CARBON 4.7H 5X 1/4W R.CARBON 22H 5X 1/4W R.CARBON 3.3K 5X 1/4W R.CARBON 33H 5X 1/2W R.CARBON 100H 5X 1/2W R.CARBON 270H 5X 1/2W R.CARBON 330H 5X 1/2W R.CARBON 1.0K 5X 1/2W R.CARBON 3.9K 5X 1/2W R.CARBON 10K 5X 1/2W R.CARBON 150K 5X 1/2W R.CARBON 330K 5X 1/2W R.CARBON 0.0H
R872 R7A3 R7N3 R712 R739 R752 R760 R141 R757 R727	R7N1 R710 R711 R737 R749 R758	401K5651 401K5653
R4K3 R759 R879	R755	401K5655 401K5657
		R.CARBON 2.2H 5X 1/6W R.CARBON 22H 5X 1/6W R.CARBON 39H 5X 1/6W R.CARBON 47H 5X 1/6W R.CARBON 100H 5X 1/6W R.CARBON 120H 5X 1/6W R.CARBON 150H 5X 1/6W R.CARBON 180H 5X 1/6W R.CARBON 220H 5X 1/6W

SYMBOL	PART NO	DESCRIPTION
	25318712 25318731 25427611 25427952 25534631	CABINET FRONT ASSY CABINET BACK CAP(SWITCH) REVOLVING STAND ASSY COIL SPRING
	25545461 25757643 25781831 25781841 25781851 25782011	SHASSIS BASE ASSY LABEL(REV.) NAME PLATE,INSTRUCTION NAME PLATE,INSTRUCTION NAME PLATE,INSTRUCTION NAME PLATE,INSTRUCTION

\*\*\* KNOBS & PUSH BUTTONS \*\*\*

	25456351 25456591 25456601	PUSH BUTTON(SYNC) PUSH BUTTON(POW) KNOB CONTROL
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\*\*\* PRINTED & PACKING MATERIALS \*\*\*

	24813191 25822831 25831271 25831301 25831312 78129801	BAG,POLYETHYLENE(150*370) SHEET PROTECTION CARTON BOX(CN314A) FILLER(T),CARTON FILLER(B),CARTON INSTRUCTION BOOK(CN314A)
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\*\*\* RESISTORS \*\*\*

R537 R456 R980 R537 R576	401CF649 401CF749 401C6633 401C6649 401C6657	R.CARBON 100H 5X 1/4W R.CARBON 1.5M 5X 1/4W R.CARBON 22H 5X 1/4W R.CARBON 100H 5X 1/4W R.CARBON 220H 5X 1/4W
R762 R459 R512 R909 R460	401C6663 401C6681 401C6685 401C6689 401C6697	R.CARBON 390H 5X 1/4W R.CARBON 2.2K 5X 1/4W R.CARBON 3.3K 5X 1/4W R.CARBON 4.7K 5X 1/4W R.CARBON 10K 5X 1/4W

SYMBOL	PART NO	DESCRIPTION
R7A1		401K5659
R529 R772 R723 R7M5 R768 R748 R7A7 R4E1 R740	R7A9 R719 R721 R7M6 R770 R750 R7A8 R736 R738	401K5661 401K5663 401K5665 401K5667 401K5669
R142 R4L5 R4M4 R5M7 R519 R7E9 R7H8 R7M3 R7Q3 R787 R852 R7C6 R5M5 ΔR572 R4K4 R713	R144 R4M2 R4M5 R516 R581 R7G4 R7H9 R7M4 R777 R8E1 R853 R7C8 R8E3 R7A6 R426 R7M8	401K5673 401K5675 401K5677 401K5679 401K5681 401K5683 401K5685 401K5687 401K5689 401K5691
R804 R415 R545 R77A R769 R403 R7E7 R455 R548 R7E2 R807 R813 R816 R821 R824 R827	R805 R425 R7C9 R779 R771 R517 R858 R5M4 R553 R7E3 R811 R814 R817 R822 R825 R839	R.CARBON 2.7K 5X 1/6W R.CARBON 3.3K 5X 1/6W R.CARBON 3.9K 5X 1/6W R.CARBON 4.7K 5X 1/6W R.CARBON 5.6K 5X 1/6W R.CARBON 1.2K 5X 1/6W R.CARBON 1.5K 5X 1/6W R.CARBON 1.8K 5X 1/6W R.CARBON 2.2K 5X 1/6W R.CARBON 2.7K 5X 1/6W R.CARBON 3.3K 5X 1/6W R.CARBON 3.9K 5X 1/6W R.CARBON 4.7K 5X 1/6W R.CARBON 5.6K 5X 1/6W

SYMBOL	PART NO	DESCRIPTION
R414 R510 R7E4 R873 R876 R964 R971 R975	401K5693	R.CARBON 6.8K 5X 1/6W
R976 R101 R127 R129 R130 R131 R132 R133 R134 R135 R136 R137 R138	401K5695 401K5697	R.CARBON 8.2K 5X 1/6W R.CARBON 10K 5X 1/6W
ΔR2006 ΔR2009 R4K1 R428 R451 R452 R453 R5L6 R5L7 R5L9 R5M1 R514 R520 R578 R7B1 R7E8 R7G1 R7H3 R7K1 R7K2 R7K3 R7K4 R7K5 R7K6 R7K7 R7K8 R7K9 R7L1 R7L2 R7L3 R7L5 R7M1 R7TC R7O5 R7O7 R7O9 R730 R732 R734 R741 R742 R743 R746 R8O2 R810 R820 R830 R831 R832 R833 R834 R835 R836 R837 R838 R860 R878 R95G R951		
ΔR2004 R424 R5U8 R7E6 R7M9 R952	401K5699 401K5701	R.CARBON 12K 5X 1/6W R.CARBON 15K 5X 1/6W
R5L2 R147 R7A2 R7C1 R704 R706 R708 R954 R7A5 R7C4 R7P4 R775 R780 R785 R953 R416 R461 R464 R5M3 R5M9 R7O1 R776 R781 R786	401K5703 401K5705  401K5707  401K5709	R.CARBON 18K 5X 1/6W R.CARBON 22K 5X 1/6W  R.CARBON 27K 5X 1/6W  R.CARBON 33K 5X 1/6W

SYMBOL	PART NO	DESCRIPTION
R143 R145 R506 R867 R871 R121 R961 R962 R862 R505 ΔR2002 ΔR2005 R753	404C1670 404C1673 404C1680 404C1681 404C1683 404C1684	R.METAL 750H 1X 1/6W R.METAL 1.0K 1X 1/6W R.METAL 2.0K 1X 1/6W R.METAL 2.2K 1X 1/6W R.METAL 2.7K 1X 1/6W R.METAL 3.0K 1X 1/6W
R855 R861 R869 R966 R2003 R8E2 R493 R5L1 R504 R967 R974 R501 R7H7	404C1685 404C1688 404C1691 404C1693 404C1694	R.METAL 3.3K 1X 1/6W R.METAL 4.3K 1X 1/6W R.METAL 5.6K 1X 1/6W R.METAL 6.8K 1X 1/6W R.METAL 7.5K 1X 1/6W
R467 R126 ΔR2001 R401 R402 R404 R405 R422 R507 R527 R799 R857 R955 R745 R124 R407 R502 R866 R973 R744	404C1696 404C1697  404C1698 404C1699  404C1700 404C1701	R.METAL 9.1K 1X 1/6W R.METAL 10K 1X 1/6W  R.METAL 11K 1X 1/6W R.METAL 12K 1X 1/6W  R.METAL 13K 1X 1/6W R.METAL 15K 1X 1/6W
R406 R5L3 R7T4 R972 R526 R864 R123 R7T5	404C1702 404C1703 404C1704 404C1705	R.METAL 16K 1X 1/6W R.METAL 18K 1X 1/6W R.METAL 20K 1X 1/6W R.METAL 22K 1X 1/6W
R125 R777 R856 R122 R956 R7T6 R5L5 R865 R7T3 R854 R859 R863	404C1707 404C1708 404C1709 404C1710 404C1711	R.METAL 27K 1X 1/6W R.METAL 30K 1X 1/6W R.METAL 33K 1X 1/6W R.METAL 36K 1X 1/6W R.METAL 39K 1X 1/6W
R513 ΔR567 R969 R525 ΔR565 R528	404C1712 404C1715 404C1721 404C1722 404C1723	R.METAL 43K 1X 1/6W R.METAL 56K 1X 1/6W R.METAL 100K 1X 1/6W R.METAL 110K 1X 1/6W R.METAL 120K 1X 1/6W
R530	404C1726	R.METAL 160K 1X 1/6W

SYMBOL	PART NO	DESCRIPTION
R7A4 R7C3 R874 R7P3 R806 R959 R960 R462 ΔR2007 R7H6 R454 R5U7 R793 R778 R792 R465 R794 R784 R774 R779 R545 R549 R554	401K5711 401K5713 401K5719 401K5721 401K5723 401K5725	R.CARBON 39K 5X 1/6W R.CARBON 47K 5X 1/6W R.CARBON 82K 5X 1/6W R.CARBON 100K 5X 1/6W R.CARBON 120K 5X 1/6W R.CARBON 150K 5X 1/6W
R773 R778 R783 R582 R5L8 R547 R552 R556 ΔR149 R564	401K5729 401K5731 401K5733 401K5737 401K5739	R.CARBON 220K 5X 1/6W R.CARBON 270K 5X 1/6W R.CARBON 330K 5X 1/6W R.CARBON 470K 5X 1/6W R.CARBON 560K 5X 1/6W
R7E5 R539 R408 R409 R595 ΔR571	401K5743 40216250 403F1101 403F1165 403F2101	R.CARBON 820K 5X 1/6W R.WIRE 2.0H 5X 7W R.METAL OXIDE 1H 5X 1W R.METAL 470H 5X 1W R.METAL 1.0H 5X 2W
R411 R538 R7G3 R7H2 R532	403F2105 403F2109 403F2149 403F2151 403F3141	R.METAL OXIDE 1.5H 5X 2W R.METAL 2.2H 5X 2W R.METAL OXIDE 100H 5X 2W R.METAL OXIDE 120H 5X 2W R.METAL OXIDE 47H 5X 3W
R481 R585 R581 ΔR977 ΔR978 ΔR979 R789	403G1703 403G2623 403T2141 403T6217 404CA657	R.METAL 18K 5X 1W R.METAL 8.2H 5X 2W R.METAL 47H 5X 2W R.METAL 68K 5X 3W R.METAL 220H 1X 1/6W
R143 R145 R121 R745 R513 R530	404CA67Q 404CA680 404CA698 404CA712 404CA726	R.METAL 750H 1X 1/6W R.METAL 2.0K 1X 1/6W R.METAL 11K 1X 1/6W R.METAL 43K 1X 1/6W R.METAL 160K 1X 1/6W
R701 R702 R703 R789 R791 R868	404C1646 404C1657 404C1663 404C1669	R.METAL 75H 1X 1/6W R.METAL 220H 1X 1/6W R.METAL 390H 1X 1/6W R.METAL 680H 1X 1/6W

SYMBOL	PART NO	DESCRIPTION
R5L4 R7L4 R7L4 R469 R492 R798 R469 R492 R798 R982 R983 R984 R941 ΔR531 ΔR981	404C1742 404JJ443 404J9443 404KB719 404KB725 404K2719 404K2725 404K2731 404K5109 40801004 409A6177	R.METAL 750K 1X 1/6W R.METAL 1.3K 0.5X 1/8W R.METAL 1.3K 0.5X 1/8W R.METAL 82K 1X 1/4W R.METAL 150K 1X 1/4W R.METAL 82K 1X 1/4W R.METAL 150K 1X 1/4W R.METAL 270K 1X 1/4W R.METAL 2.2H 5X 1/4W R.FUSE 1.0H 500MA R.FUSE 1.5K 5X 1/4W
*** CAPACITORS ***		
C901 ΔC545 C764 C902 ΔC546 C5U2 C5B1 C903 C5H5 C427 C518 C555 C781 C7H1 C7K2 C707 C708 C709 C752 C772 C773 C7A7 C7A8 C7A9 C7C1 C429 C5K3 C505 C533 C734 C737 C740 C953 C703 C7C2 C955 C121 C4L5 C4M2 C4M3 C4M4 C4M5 C4M6 C402 C421 C428 C461 C463	420C9551 420C9562 420C9563 420C9565 420C9569 420C9571 420K108 4203J556 421A0425 421C0207 421C0209 421C0210 421C0213 421C0217 421C0219 421C0221 421C0225 421C2862	C.CERAMIC 500V 100PF C.CERAMIC 500V 820PF C.CERAMIC 500V 1000PF C.CERAMIC 500V 1500PF C.CERAMIC 50V 3300PF C.CERAMIC 500V 4700PF C.CERAMIC 2KV 10000PF C.CERAMIC 500V 270PF C.CERAMIC 50V 0.01UF C.CERAMIC 50V 330PF C.CERAMIC 50V 470PF C.CERAMIC 50V 560PF C.CERAMIC 50V 1000PF C.CERAMIC 50V 2200PF C.CERAMIC 50V 3300PF C.CERAMIC 50V 4700PF C.CERAMIC 50V 0.01UF C.CERAMIC 25V 0.01UF

SYMBOL	PART NO	DESCRIPTION
C472 C473 C475 C476 C5H1 C5H3 C508 C511 C513 C516 C517 C519 C801 C802 C804 C807 C808 C811 C831 C832 C833 C834 C835 C836 C837 C838 C851 C852 C853 C854 C855 C856 C857 C858 C859 C862 C863 C866 C867 C868 C869 C872 C123 C521 C7K9 C7M3 C748	421C2862	C.CERAMIC 25V 0.01UF
	421C3479	C.CERAMIC 50V 0.1UF
ΔC2002 ΔC2003 C501 C506 C583 C7A5 C7E3 C7E8 C7G1 C7G6 C7H4 C7H5 C7H6 C7H7 C7H9 C7K3 C7K5 C7K6 C7K7 C7K8 C7S1 C7T2 C7T3 C7T5 C7T10 C723 C726 C729 C769 C770 C771 C951 C956 C782 C783 C784 C757 C510 C7M4 C7M5	421D6009	C.CERAMIC 25V 0.1UF
C514 C7M1 C954 C7G9 C704 C805 C806 C7N2	421D6013 421J9044 423A1029 423A1037  423A1045 423A1051 423A1053 423A2015 423A2035	C.CERAMIC 50V 0.1UF C.CERAMIC 250V 0.01UF C.CERAMIC 50V 22PF C.CERAMIC 50V 47PF  C.CERAMIC 50V 100PF C.CERAMIC 50V 180PF C.CERAMIC 50V 220PF C.CERAMIC 50V 10PF C.CERAMIC 50V 39PF
C7N1 C7N3 C754 C755 C756 C701 C702 C7A3	423A2037 423A2039 423A2043 423A2045 423A2104	C.CERAMIC 50V 47PF C.CERAMIC 50V 56PF C.CERAMIC 50V 82PF C.CERAMIC 50V 100PF C.CERAMIC 50V 220PF
C503	423J9022	C.CERAMIC 50V 470PF

SYMBOL	PART NO	DESCRIPTION
ΔC571 C581 C582 C753 C426 C7T1 C701 C422 C502 C7G5 C7H3 C7K1 C724 C727 C730 C733 C487 C711 C747	430B9015 430B9017 430B9027 430B9028 430B9029	C.ELEC 10V 47UF C.ELEC 10V 220UF C.ELEC 16V 33UF C.ELEC 16V 47UF C.ELEC 16V 100UF
C486 C515 C992 ΔC141 C7A6 C7C6 C7G7 C7H2 C743 C401 C425 C735 C738 C741	430B9030 430B9042 430B9043 430B9061 430B9062 430B9063	C.ELEC 16V 220UF C.ELEC 25V 100UF C.ELEC 25V 220UF C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF C.ELEC 50V 3.3UF
C7C3 C7C5 C7C9 C7E5 ΔC561 C7C8 C7E6 C714 C716 C717 C719 C720 C722 C725 C728 C731 C7E2 C404 C991	430B9064 430B9065 430B9068 430B9070 430B9085	C.ELEC 50V 4.7UF C.ELEC 50V 10UF C.ELEC 50V 47UF C.ELEC 50V 220UF C.ELEC 63V 47UF
C75A C762 C763 C765 C767 C491 C501 C744 C745 C746 C572	430B9512 430B9516 430B9552 430B9553 430CH358	C.ELEC 160V 1.0UF C.ELEC 160V 10UF C.ELEC 250V 1.0UF C.ELEC 250V 2.2UF C.ELEC 250V 47UF
C736 C739 C742 C522 C403 C758 C575	430C0262 430C6344 430C6346 430C8917 4309J171	C.ELEC 35V 10UF C.ELEC 35V 100UF C.ELEC 35V 330UF C.ELEC 100V 47UF C.ELEC 200V 33UF
C702 C703 C704 C7A1 C7A2 C476 C479 C423 C7C4	433A4013 433A4023 433A4033 433A4055 433A4056	C.ELEC 10V 47UF C.ELEC 16V 22UF C.ELEC 25V 10UF C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF
C7C7 C7E4	433A4058	C.ELEC 50V 4.7UF

SYMBOL	PART NO	DESCRIPTION
C774 C7L1 C732 C5K4	427F4601 427F4615 427F4621 427F4622	C.FILM 50V 1000PF C.FILM 50V 0.015UF C.FILM 50V 0.047UF C.FILM 50V 0.056UF
C412 C749 C750 C751 C952 C972 C405 C7G8 C424	427F4663 427F4669 427F4675 428B3013 428B3020	C.FILM 50V 0.01UF C.FILM 50V 0.033UF C.FILM 50V 0.1UF C.METAL FILM 50V 0.1UF C.METAL FILM 50V 0.39UF
C407 C512 C462 ΔC562 C573 C443 C941 ΔC547	428B3021 428CJ022 428D0417 428JJ115 42816045	C.METAL FILM 50V 0.47UF C.METAL FILM 250V 0.1UF C.METAL FILM 250V 0.22UF C.METAL 1000V 0.047UF C.METAL 200V 1.8UF
ΔC553 ΔC552 ΔC551 ΔC548 ΔC549	42816061 42816063 42816068 42816211 42816216	C.METAL 400V 0.1UF C.METAL 400V 0.15UF C.METAL 400V 0.39UF C.METAL 400V 0.47UF C.METAL 400V 0.82UF
C759 C760 C761 ΔC541 ΔC542 ΔC543 C477	42899010 42899158 42899159 42899160 430B6015	C.METAL FILM 250V 0.22UF C.METAL 2.0KV 3300PF C.METAL 2.0KV 3600PF C.METAL 2.0KV 8800PF C.ELEC 10V 47UF
C812 C814 C815 C803 C409 C509 C861 ΔC2001	430B6016 430B6017 430B6019 430B6029 430B6030	C.ELEC 10V 100UF C.ELEC 10V 220UF C.ELEC 10V 470UF C.ELEC 16V 100UF C.ELEC 16V 220UF
C413 C414 C471 C474 C451 C406 C531 C532 C504	430B6041 430B6043 430B6044 430B6061 430B6062	C.ELEC 25V 47UF C.ELEC 25V 220UF C.ELEC 25V 330UF C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF
C430 C507 C813 C871 C563 C452	430B6065 430B6222 430B6516 430B6553	C.ELEC 50V 10UF C.ELEC 50V 0.22UF C.ELEC 160V 10UF C.ELEC 250V 2.2UF

SYMBOL	PART NO	DESCRIPTION
C715 C718 C721 C4K1 C5E8 C974 C973 ΔC564	433A7003 433A7004 433A7021 433A7031 433A7043 435A8156	C.ELEC 10V 100UF C.ELEC 10V 220UF C.ELEC 25V 10UF C.ELEC 35V 4.7UF C.ELEC 50V 2.2UF C.TANTALUM 16V 15UF

# REPLACEMENT PARTS LIST

The components specified for Model JC-1734VMB

**Note:** The components identified by  $\Delta$  make are critical for safety.

Replace only with parts Number specified.

SYMBOL	PART NO	DESCRIPTION
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\*\*\* CRT \*\*\*

$\Delta$ CRT	33017527	CRT M41LD0101XX35(U3)(H)
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\*\*\* ICS \*\*\*

IC804 IC481 IC502 IC401 IC471	IC991	37005023 37005104 37005221 37006019 37009009	IC P005RR11 IC LM2940CT-12 (REG) IC UPC78M09AHF IC TEA8172 IC UPC1882CU
IC501 IC703 IC782 IC402 IC461	IC992	37009032 37010006 37010007 37011068 37011206	IC UPC1881CT IC W52320SP IC W52324P IC UPC4558C (OP AMP) IC XRA10358 (OP-AMP)
IC772 IC581 $\Delta$ IC951 IC7C1 IC121		37011262 37011320 37011333 37051034 37051378	IC XRA10393 (COMP) IC LA6500 IC UPC5022CT-096 (100MW) MOS UPD4040BC (COUNT) MOS UPD4053BC (MPX)
IC803 IC7A5 IC701 IC7A1 IC122 IC857	IC7A9 IC5E2 IC858	37055537 37056812 37056814 37056867 37056917	MOS NM24C04EN IC W62362P IC W52035P IC W52036P IC XRA10324A (O OP-AMP)
IC771 IC704 IC781 IC853 IC7A8 IC7A7	IC851 IC852 IC855	37074324 37076172 37076176	MOS 24LC21-1/P (E-EPROM) IC VP503H MOS M62393P
$\Delta$ IC801		37076177 37076182 37076238	MOS M35020SP MOS M35042-0645P MOS UPD78014YCW-Y22

\*\*\* TRANSISTORS \*\*\*

$\Delta$ Q2002 Q421 Q145 Q4K1 Q573	Q7A7 $\Delta$ Q2004 Q402 Q7C1	Q7A8 $\Delta$ Q2005 Q522 Q951	35007218 350E3217 350E3218	TR 2SC945-T R TR 2SC1740S-T Q TR 2SC1740S-T R
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SYMBOL	PART NO	DESCRIPTION
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Q952 Q452 Q714	Q954 Q583 Q715	Q713	350E3218 350H4417	TR 2SC1740S-T R TR 2SC1473-TA Q
Q791 Q7C4 Q7A2 Q703 Q707 Q461	Q701 Q708 Q709	Q702	350H4418 350H5017 350J3016	TR 2SC1473-TA R TR 2SC3811-TA Q TR 2SC2926S-T P
$\Delta$ Q571 Q712 Q491	Q710 Q711	Q711	350J4604 350K4111	TR 2SC3776-AA D TR 2SA916-T K
Q141 Q451 Q574 Q7A5 Q861 Q974 $\Delta$ Q521	Q142 Q5E3 Q584 Q7A6 Q953	$\Delta$ Q2001 Q523 Q7A1 Q7C2 Q971	350K5217 350K5718 35011600 35031112	TR 2SA1018-TA Q TR 2SA1018-TA R TR 2SA933S-T R
Q4E5 Q972 Q541 Q5E4 Q7A4	Q973		35072612 35094940 35095120 35095153 351A0690	TR 2SD2396 J TR 2SC4632LS TR 2SC5047 TR 2SC3158 K TR DTC115ES-TP
Q4E1 $\Delta$ Q2003 Q545 Q801 Q501 Q546 Q7A9 Q143	Q7B1 Q502 Q547	Q7C3 Q503 Q548	351G0500 351G0561 351G0601 351G0602	TR AN1A4W TR DTA144ES-T TR DTC114ES-T
Q7A3 Q401 Q524 Q572 Q542	Q144 Q543	Q4E2 Q544	351G0641 351G0652 351G0655 35122600 35127470 35127630	TR DTC114YS-T TR DTC113ZS-T TR DTC143ES-TP TR 2SK701 TR 2SJ308 TR 2SK1904

SYMBOL	PART NO	DESCRIPTION
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\*\*\* DIODES \*\*\*

ZD541 D141 D402 D5E1 D572 D7A3 D7E1 D7E4 D7E7 D701 D704 D710 D452 D718 D721 D724 ZD7A1 ZD491	ZD542 $\Delta$ D2001 D404 D451 D581 D7A4 D7E2 D7E5 D7T1 D702 D708 D861 D453 D719 D722 D725 ZD791	ZD543 $\Delta$ D2003 D451 D7A1 D7A5 D7E3 D7E6 D7T2 D703 D709 D461 D453 D720 D723 D726 ZD791	360K671 360K1027	DIODE RD12ESB(2)/ESAB(2) DIODE 1SS132
ZD545 ZD546 ZD549 ZD713 ZD802 ZD971 ZD503	ZD871 ZD547 ZD711 ZD712 ZD714 ZD801	ZD548 ZD712 ZD801	360K1032 360K3098 360K3170	DIODE 1SS82-TA DIODE RD12EB(3)-T4 DIODE RD6.2JSB(2)/JSAB(2)
ZD545 ZD546 ZD549 ZD713 ZD802 ZD971 ZD503	ZD871 ZD547 ZD711 ZD712 ZD714 ZD801	ZD548 ZD712 ZD801	360K3602 360K3635 360K3639	DIODE RD2.0ESB(1)-T4 DIODE RD5.1ESB(2)-T4 DIODE RD5.6ESB(2)-T4
ZD701 $\Delta$ ZD2001 ZD541 $\Delta$ ZD2003 ZD401	ZD542 ZD543	ZD543	360K3647 360K3648 360K3654 360K3656 360K3671 360K3675 360K3692	DIODE RD6.8ESB(2)-T4 DIODE RD6.8ESB(3)/ESAB(3) DIODE RD8.2ES AB1-T4 DIODE RD8.2ES AB3-T4 DIODE RD12ESB(2)/ESAB(2) DIODE RD13ESB(2)-T4 DIODE RD20ESB(3)-T4
D941 $\Delta$ D561 D521 $\Delta$ D5C7 $\Delta$ D542	D562 D546		361K7312 361K7562 36107293 36107530 36107560	DIODE EPD1C-V DIODE EGP10G G23 DIODE RK14 DIODE RS4FS DIODE RG2A2
D573 $\Delta$ D541 LED141 D401	D5N8 D5N9		36107620 36107718 36801382 369K2136	DIODE RG4 LF-J3 DIODE FMP-3FU(LF027-103) LED SML19416W DIODE RGP10G.AT

SYMBOL	PART NO	DESCRIPTION
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D502 $\Delta$ D544	D503 $\Delta$ D545	D504	369K2136	DIODE RGP10G.AT
D7A2 IC541	D728		380K5054 38200350	VARISTOR MA29W-A (TP) PHOTO COUPLER PS2501-4

\*\*\* TRANSFORMERS \*\*\*

T521 L581 L571 $\Delta$ T561	45804012 46204004 46206005 47105698	TRANS.H.DRIVE COIL,CHOKE 4MH TRANS.CHOKE 4MH F.B.T.
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\*\*\* VARIABLE RESISTORS \*\*\*

VR651 VR121 $\Delta$ VR561 VR501	VR122	410G2057 41011106 415K5162 41505105	R.VARIABLE 81.0M R.VARIABLE 810K-V R.VARIABLE 100K R.VARIABLE B2.0K
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\*\*\* RELAYS & SWITCHES \*\*\*

SW109 SW101 SW104 SW107 RL541	SW102 SW103 SW105 SW106	65315005 65360027 65360051 65660033	PUSH SWITCH SWTCH,PUSH BUTTON TACT SWITCH SKHHOV RELAY VE-12H5-K
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\*\*\* COILS & FILTERS \*\*\*

MR802 LC7A5 LC7A8 MC802 $\Delta$ L541 $\Delta$ L542	LC7A6 LC7A7 MC803 $\Delta$ L543	390C0445 390J9027 39013047 60906057 60919155	R.NETWORK 4*10K 5X 1/8W FILTER ZJSC-R12-100TA C.NETWORK 50V 10000PF COIL,WIDTH (104UH) COIL,H.LIN 19T
L7A1 L701 L702 L705 L801	L7A2 L703 L704	610E1711 610E1725 610E1726 610E1727 610FE828	COIL,FILTER 3.3UH COIL,FILTER 47UH COIL,FILTER 56UH COIL,FILTER 68UH COIL,FILTER 47UH
L421 L572 L801		610FE829 610F3025 610F5828	COIL,FILTER 56UH COIL,FILTER 47UH COIL,FILTER 47UH





SYMBOL	PART NO	DESCRIPTION
C516 C517 C519 C801 C802 C804 C807 C808 C811 C831 C832 C833 C834 C835 C836 C837 C838 C851 C852 C853 C854 C855 C856 C857 C858 C859 C862 C863 C866 C867 C868 C869 C872 C123 C521 C7K9 C7M3 C748	421C2852	C.CERAMIC 25V 0.01UF
ΔC2002 ΔC2003 C501 C506 C583 C7A5 C7E3 C7E8 C7G1 C7G6 C7H4 C7H5 C7H6 C7H7 C7H9 C7K3 C7K5 C7K6 C7K7 C7K8 C7S1 C7T2 C7T3 C7T5 C7T10 C7T3 C7T6 C729 C769 C770 C771 C951 C956 C782 C783 C784 C757 C510 C7M4 C7M5	421C3479 421D6009	C.CERAMIC 50V 0.1UF C.CERAMIC 25V 0.1UF
C514 C7M1 C954 C7G9 C7Q4 C805 C806 C7N2  C7N1 C7N3 C754 C755 C756 C701 C702 C7A3  C503 C7T4 C7L1	421D6013 421J9044 423A1029 423A1037  423A1045 423A1051 423A1053 423A2015 423A2035  423A2037 423A2039 423A2043 423A2045 423A2104  423J9022 427F4601 427F4615	C.CERAMIC 50V 0.1UF C.CERAMIC 250V 0.01UF C.CERAMIC 50V 22PF C.CERAMIC 50V 47PF  C.CERAMIC 50V 100PF C.CERAMIC 50V 180PF C.CERAMIC 50V 220PF C.CERAMIC 50V 10PF C.CERAMIC 50V 39PF  C.CERAMIC 50V 47PF C.CERAMIC 50V 56PF C.CERAMIC 50V 82PF C.CERAMIC 50V 100PF C.CERAMIC 50V 220PF  C.CERAMIC 50V 470PF C.FILM 50V 1000PF C.FILM 50V 0.015UF

SYMBOL	PART NO	DESCRIPTION
C426 C7T1 C701 C422 C502 C7G5 C7H3 C7K1 C724 C727 C730 C733 C487 C711 C747	430B9027 430B9028 430B9029	C.ELEC 16V 33UF C.ELEC 16V 47UF C.ELEC 16V 100UF
C486 C515 C992 ΔC141 C7A6 C7C6 C7G7 C7H2 C743 C401 C425 C735 C738 C741	430B9030 430B9042 430B9043 430B9061 430B9062 430B9063	C.ELEC 16V 220UF C.ELEC 25V 100UF C.ELEC 25V 220UF C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF C.ELEC 50V 3.3UF
C7C3 C7C5 C7C9 C7E5 ΔC561 C7C8 C7E6 C714 C716 C717 C719 C720 C722 C725 C728 C731 C7E2 C404 C991	430B9064 430B9065  430B9068 430B9070 430B9085	C.ELEC 50V 4.7UF C.ELEC 50V 10UF  C.ELEC 50V 47UF C.ELEC 50V 220UF C.ELEC 63V 47UF
C75A C762 C763 C765 C767 C491 C5U1 C744 C745 C746 C572	430B9512  430B9516 430B9552 430B9553 430CH358	C.ELEC 160V 1.0UF  C.ELEC 160V 10UF C.ELEC 250V 1.0UF C.ELEC 250V 2.2UF C.ELEC 250V 47UF
C736 C739 C742 C522 C403 C758 C575	430C0262 430C6344 430C6346 430C8917 430J1171	C.ELEC 35V 10UF C.ELEC 35V 100UF C.ELEC 35V 330UF C.ELEC 100V 47UF C.ELEC 200V 33UF
C702 C703 C704 C7A1 C7A2 C478 C479 C423 C7C4	433A4013 433A4023 433A4033 433A4055 433A4056	C.ELEC 10V 47UF C.ELEC 16V 22UF C.ELEC 25V 10UF C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF
C7C7 C7E4 C715 C718 C721 C4K1	433A4058 433A7003 433A7004	C.ELEC 50V 4.7UF C.ELEC 10V 100UF C.ELEC 10V 220UF

SYMBOL	PART NO	DESCRIPTION
C732 C5K4	427F4621 427F4622	C.FILM 50V 0.047UF C.FILM 50V 0.056UF
C412 C749 C750 C751 C952 C972 C405 C7G8 C424	427F4663  427F4669 427F4675 428B3013 428B3020	C.FILM 50V 0.01UF  C.FILM 50V 0.033UF C.FILM 50V 0.1UF C.METAL FILM 50V 0.1UF C.METAL FILM 50V 0.39UF
C407 C512 C462 ΔC562 C573 C443 C941 ΔC547	428B3021 428CJ022 428DD417 428JJ115 42816045	C.METAL FILM 50V 0.47UF C.METAL FILM 250V 0.1UF C.METAL FILM 250V 0.22UF C.METAL 1000V 0.047UF C.METAL 200V 1.8UF
ΔC553 ΔC552 ΔC551 ΔC548 ΔC549	42816061 42816063 42816068 42816211 42816216	C.METAL 400V 0.1UF C.METAL 400V 0.15UF C.METAL 400V 0.39UF C.METAL 400V 0.47UF C.METAL 400V 0.82UF
C759 C760 C761 ΔC541 ΔC542 ΔC543 C477	42899010 42899158 42899159 42899160 430B6015	C.METAL FILM 250V 0.22UF C.METAL 2.0KV 3300PF C.METAL 2.0KV 3600PF C.METAL 2.0KV 8800PF C.ELEC 10V 47UF
C812 C814 C815 C803 C409 C509 C861 ΔC2001	430B6016 430B6017 430B6019 430B6029 430B6030	C.ELEC 10V 100UF C.ELEC 10V 220UF C.ELEC 10V 470UF C.ELEC 16V 100UF C.ELEC 16V 220UF
C413 C414 C471 C474 C451 C406 C531 C532 C504	430B6041 430B6043 430B6044 430B6061 430B6062	C.ELEC 25V 47UF C.ELEC 25V 220UF C.ELEC 25V 330UF C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF
C430 C507 C813 C871 C563 C452 ΔC571	430B6065 430B6222 430B6516 430B6553 430B9015	C.ELEC 50V 10UF C.ELEC 50V 0.22UF C.ELEC 160V 10UF C.ELEC 250V 2.2UF C.ELEC 10V 47UF
C581 C582 C753	430B9017	C.ELEC 10V 220UF

SYMBOL	PART NO	DESCRIPTION
C5E8 C974	433A7021 433A7031	C.ELEC 25V 10UF C.ELEC 35V 4.7UF
C973 ΔC564	433A7043 435A8156	C.ELEC 50V 2.2UF C.TANTALUM 16V 15UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1734VMM

Note: The components identified by Δ make are critical for safety.

Replace only with parts Number specified.

SYMBOL	PART NO	DESCRIPTION
*** CRT ***		
Δ CRT	33017528	CRT M41LD0101XX35(U3) (H) R
*** ICS ***		
IC804 IC481 IC502 IC401 IC471	IC991	37005023 37005104 37005221 37006019 37009009 IC P005RR11 IC LM2940CT-12 (REG) IC UPC78M09AHF IC TEA8172 IC UPC1882CU
IC501 IC703 IC782 IC402 IC461	IC992	37009032 37010006 37010007 37011068 37011206 IC UPC1881CT IC M52320SP IC M52324P IC UPC4558C (OP-AMP) IC XRA10358 (OP-AMP)
IC772 IC581 Δ IC951 IC7C1 IC121		37011262 37011320 37011333 37051034 37051378 IC XRA10393 (COMP) IC LA6500 IC UPC5022CT-096 (100MV) MOS UPD40408C (COUNT) MOS UPD40538C (MPX)
IC803 IC7A5 IC701 IC7A1 IC122 IC857	IC7A9 IC5E2 IC7A4 IC858	37055537 37056812 37056814 37056867 37056917 MOS NM24C04EN IC M62362P IC M52035P IC M52036SP IC XRA10324A (Q OP-AMP)
IC771 IC704 IC781 IC853 IC7A8 IC7A7	IC851 IC852 IC855	37074324 37076172 37076176 37076177 37076182 MOS 24LC21-1/P (E-EPROM) IC VPS03N MOS M62393P MOS M35020SP MOS M35042-064SP
Δ IC801		37076238 MOS UPD78014YCW-Y22
*** TRANSISTORS ***		
Δ Q2002 Q421 Q145 Q4K1 Q573	Q7A7 Q7A8 Δ Q2004 Q402 Q7C1 Q951	35007218 350E3217 350E3218 TR 2SC945-T R TR 2SC1740S-T Q TR 2SC1740S-T R

SYMBOL	PART NO	DESCRIPTION
Q952 Q452 Q714	Q954 Q583 Q715	350E3218 350H4417 TR 2SC1740S-T R TR 2SC1473-TA Q
Q791 Q7C4 Q7A2 Q703 Q707 Q461	Q701 Q702 Q708 Q709	350H4418 350H5017 350J3016 TR 2SC1473-TA R TR 2SC3811-TA Q TR 2SC2926S-T P
Δ Q571 Q712 Q491 Q141 Q451 Q574 Q7A5 Q861 Q974 Δ Q521	Q710 Q711 Q142 Q5E3 Q5E4 Q5E8 Q7A6 Q953 Q971	350K5217 350K5218 350K5718 TR 2SC3776-AA D TR 2SA916-T K TR 2SA1018-TA Q TR 2SA1018-TA R TR 2SA933S-T R
Q4E5 Q972 Q541 Q5E4 Q7A4	Q973	35072612 35094940 35095120 35095153 351A0690 TR 2SD2396 J TR 2SC4632LS TR 2SC5047 TR 2SC3158 K TR DTC115ES-TP
Q4E1 Δ Q2003 Q545 Q801 Q501 Q546 Q7A9 Q143	Q7B1 Q7C3 Q502 Q547 Q548 Q144 Q4E2	351G0500 351G0561 351G0601 351G0602 351G0641 TR AN1A4M TR DTA144ES-T TR DTC114ES-T TR DTC144ES-T
Q7A3 Q401 Q524 Q572 Q542	Q543 Q544	351G0652 351G0655 35122600 35127470 35127630 TR DTC1132S-T TR DTC143ES-TP TR 2SK701 TR 2SJ306 TR 2SK1904

SYMBOL	PART NO	DESCRIPTION
*** DIODES ***		
ZD541 D141 D402 D5E1 D572 D7A3 D7E1 D7E4 D7E7 D701 D704 D710 D452 D718 D721 D724 ZD7A1 ZD491	ZD542 Δ D2001 D404 D543 D571 D7A1 D7A5 D7E3 D7E6 D7T2 D703 D709 D861 D461 D720 D723 D726 ZD791	360K671 360K1027 DIODE RD12ESB(2)/ESAB(2) DIODE 1SS132
ZD545 ZD402 ZD546 ZD549 ZD713 ZD802 ZD971 ZD503	ZD871 ZD547 ZD548 ZD711 ZD712 ZD714 ZD801	360K1032 DIODE 1SS82-TA
ZD701 Δ ZD2001 ZD541 Δ ZD2003 ZD401	ZD542 ZD543	360K3098 360K3170 DIODE RD12EB(3)-T4 DIODE RD6.2JSB(2)/JSAB(2)
D941 Δ D561 D521 Δ D5C7 Δ D542	D562 D546	360K3602 360K3635 360K3639 DIODE RD2.0ESB(1)-T4 DIODE RD5.1ESB(2)-T4 DIODE RD5.6ESB(2)-T4
D573 Δ D541 LED141 D401	D5N8 D5N9	360K3647 360K3648 360K3654 360K3656 360K3671 360K3675 360K3692 DIODE RD6.8ESB(2)-T4 DIODE RD6.8ESB(3)/ESAB(3)
		361K7312 361K7562 36107293 36107530 36107560 DIODE EPO1C-V DIODE EGP10G G23 DIODE RK14 DIODE RS4FS DIODE RG2A2
		36107620 36107718 36801382 369K2136 DIODE RG4 LF-J3 DIODE FMP-3FU(LF027-103) LED SML19416W DIODE RGP10G.AT

SYMBOL	PART NO	DESCRIPTION
D502 Δ D544	D503 D504 Δ D545	369K2136 DIODE RGP10G.AT
D7A2 IC541	D728	380K5054 38200350 VARISTOR MA29W-A (TP) PHOTO COUPLER PS2501-4
*** TRANSFORMERS ***		
T521 L581 L571 Δ T561		45804012 46204004 46206005 47105698 TRANS. H. DRIVE COIL, CHOKE 4MH TRANS. CHOKE 4MH F.B.T.
*** VARIABLE RESISTORS ***		
VR851 VR121 Δ VR561 VR501	VR122	410G2067 41011106 415K5162 41505105 R.VARIABLE B1.0M R.VARIABLE B10K-V R.VARIABLE 100K R.VARIABLE B2.0K
*** RELAYS & SWITCHES ***		
SW109		65315005 65360027 65360051 PUSH SWITCH SWTCH. PUSH BUTTON TACT SWITCH SKHHOV
SW101 SW104 SW107 RL541	SW102 SW105 SW106 SW108	65660033 RELAY VE-12H5-K
*** COILS & FILTERS ***		
MR802 LC7A5 LC7A8 MC802 Δ L541 Δ L542	LC7A6 LC7A7 MC803 Δ L543	390C0445 390J9027 39013047 60906057 60919155 R.NETWORK 4*10K 5X 1/8W FILTER ZJSC-R12-100TA C.NETWORK 50V 10000PF COIL, W10TH (104UH) COIL, H. LIN 19T
L7A1 L701 L702 L705 L801	L7A2 L703 L704	610E1711 610E1725 610E1726 610E1727 610FE828 COIL, FILTER 3.3UH COIL, FILTER 47UH COIL, FILTER 56UH COIL, FILTER 68UH COIL, FILTER 47UH
L421 L572 L801		610FE829 610F3025 610F5828 COIL, FILTER 56UH COIL, FILTER 47UH COIL, FILTER 47UH

SYMBOL	PART NO	DESCRIPTION
L421 L101	610F5829 610F7017	COIL.FILTER 56UH COIL.FILTER 10UH
L7A3 L901 L902 L903 ΔFL5C0 LSB1 INLET	610F8009 610F8036 610G0111 610J9127 610G2076	COIL.FILTER 2.2UH COIL.FILTER 0.39UH INDUCTOR,BEADS(FBR07HA121 COIL SPT0406A-220K1R3 POWER LINE FILTER
DG LC707 LC901 LC7A1 LC701 LC702 LC703	61317205 616K6027 616K6028 616K6801 616K6827	COIL DEGAUSSING NOISE FILTER 2A222-TA NOISE FILTER 1H223X-TA NOISE FILTER 2R2-101-T NOISE FILTER
LC706 LC708	616K6946 616K6966	NOISE FILTER TH28123MA NOISE FILTER
ΔFL5C1 FL573	61605130 61605135	FERRITE CORE (XA-901) FERRITE CORE

\*\*\* PWB ASSYS \*\*\*

	84047C01 84047F01 84047L01 84047P01	VIDEO PWB ASSY MAIN PWB ASSY CONTROL PWB ASSY PNP PWB ASSY
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\*\*\* ELECTRICAL PARTS & MISCELLANEOUS PARTS \*\*\*

ΔSW-PS HS541 Q5E4 SG901 SG902 SG903 SG904 X801	31104084 31709507 31709508 329J0047  64098039	SW.REG.DPS-142AB-1 SHEET,INSULATOR HEAT SINK SHEET,INSULATOR ARRESTER (300V),AT52  X'TAL (10.000MHZ)
SG905 SG910	667K6007 667K7001 70032054 73893206 74004891	SPARK GAP 1.5KV SPARK GAP 1.2KV SG/CRT SOCKET (DBF) SIGNAL CABLE MD15P-XH12P CAP
CABLE VR561		
CORD UNIT	75513033 79100541	POWER CORD EW UNIT (CN314)

SYMBOL	PART NO	DESCRIPTION
ΔR575 R491	401G6133 401G6185	R.CARBON 22H 5X 1/4W R.CARBON 3.3K 5X 1/4W
R904 R908 R905 R906	401H5637 401H5649 401H5659 401H5661 401H5673	R.CARBON 33H 5X 1/2W R.CARBON 100H 5X 1/2W R.CARBON 270H 5X 1/2W R.CARBON 330H 5X 1/2W R.CARBON 1.0K 5X 1/2W
ΔR542 ΔR543 R985	401H5687 401H5697 401H5725 401H5733 401J9820	R.CARBON 3.9K 5X 1/2W R.CARBON 10K 5X 1/2W R.CARBON 150K 5X 1/2W R.CARBON 330K 5X 1/2W R.CARBON 0.0H
R458 R5M6 ΔR573 ΔR590 ΔR2008 ΔR574 R7M7 R796	R5W2 R7B2 R7Q4 R7G7 R795  R586 R907	401K5609 401K5633 401K5639 401K5641 401K5649
R579 R417 R457 R705 R533 R551 R7L8 R733 R765 R819 R842 R845 R848	R534 R555 R729 R731 R764 R809 R841 R844 R847	401K5651 401K5653
R872 R7A3 R7N3 R712 R739 R752 R760 R141 R757 R727 R7A1	R7N1 R7N2 R710 R711 R737 R749 R758  R4K3 R755 R759 R879	401K5655 401K5657 401K5659
R529 R7T2	R7A9 R719 R7T1 R721	401K5661

SYMBOL	PART NO	DESCRIPTION
*** APPEARANCE PARTS ***		
	25318712 25318731 25427611 25427952 25534631	CABINET FRONT ASSY CABINET BACK CAP(SWITCH) REVOLVING STAND ASSY COIL SPRING
	25545461 25757643 25781871	SHASSIS BASE ASSY LABEL (REV.) NAME PLATE, INSTRUCTION

\*\*\* KNOBS & PUSH BUTTONS \*\*\*

	25456351 25456591 25456601	PUSH BUTTON(SYNC) PUSH BUTTON(POW) KNOB CONTROL
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\*\*\* PRINTED & PACKING MATERIALS \*\*\*

	24813191 25822831 25831291 25831301 25831312  78129811	BAG,POLYETHYLENE (150*370) SHEET PROTECTION CARTON BOX (CN314R) FILLER (T), CARTON FILLER (B), CARTON  INSTRUCTION BOOK (CN314B/R)
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\*\*\* RESISTORS \*\*\*

R537 R456 R980 R537 R576	401CF649 401CF749 401C6633 401C6649 401C6657	R.CARBON 100H 5X 1/4W R.CARBON 1.5M 5X 1/4W R.CARBON 22H 5X 1/4W R.CARBON 100H 5X 1/4W R.CARBON 220H 5X 1/4W
R762 R459 R512 R909 R460	401C6663 401C6681 401C6685 401C6689 401C6697	R.CARBON 390H 5X 1/4W R.CARBON 2.2K 5X 1/4W R.CARBON 3.3K 5X 1/4W R.CARBON 4.7K 5X 1/4W R.CARBON 10K 5X 1/4W
R456 ΔR561 ΔR562 ΔR508	401C6749 401G6109 401G6117	R.CARBON 1.5M 5X 1/4W R.CARBON 2.2H 5X 1/4W R.CARBON 4.7H 5X 1/4W

SYMBOL	PART NO	DESCRIPTION
R723 R7M5 R768 R748 R7A7	R7M6 R770 R750 R7C2	401K5661 401K5663 401K5665 401K5667
R4E1 R740 R142 R4L5 R4M4 R5M7 R519 R7E9 R7H8 R7M3 R7Q3 R787 R852 R7C6 R5M5 ΔR572	R736 R738  R144 R4K2 R4M3 R4M6 R518 R583 R7G6 R7M2 R7Q2 R782 R8E1 R851 R853 R875 R7C8 R963 R8E3 R8E4 R7C5	401K5669 401K5673
R4K4 R713 R804 R415 R545 R7TA R769 R771 R403 R7E7	R426 R7M8  R805 R95E R425 R503 R7C9 R7G5 R767 R771 R517 R564 R558 R958	401K5675 401K5677 401K5679 401K5681 401K5683 401K5685 401K5687 401K5689 401K5691
R455 R548 R7E2 R807 R813 R816 R821 R824 R827 R414 R873 R971	R5M4 R544 R553 R7E1 R803 R812 R815 R818 R823 R826 R839 R7E4 R964 R975	401K5693

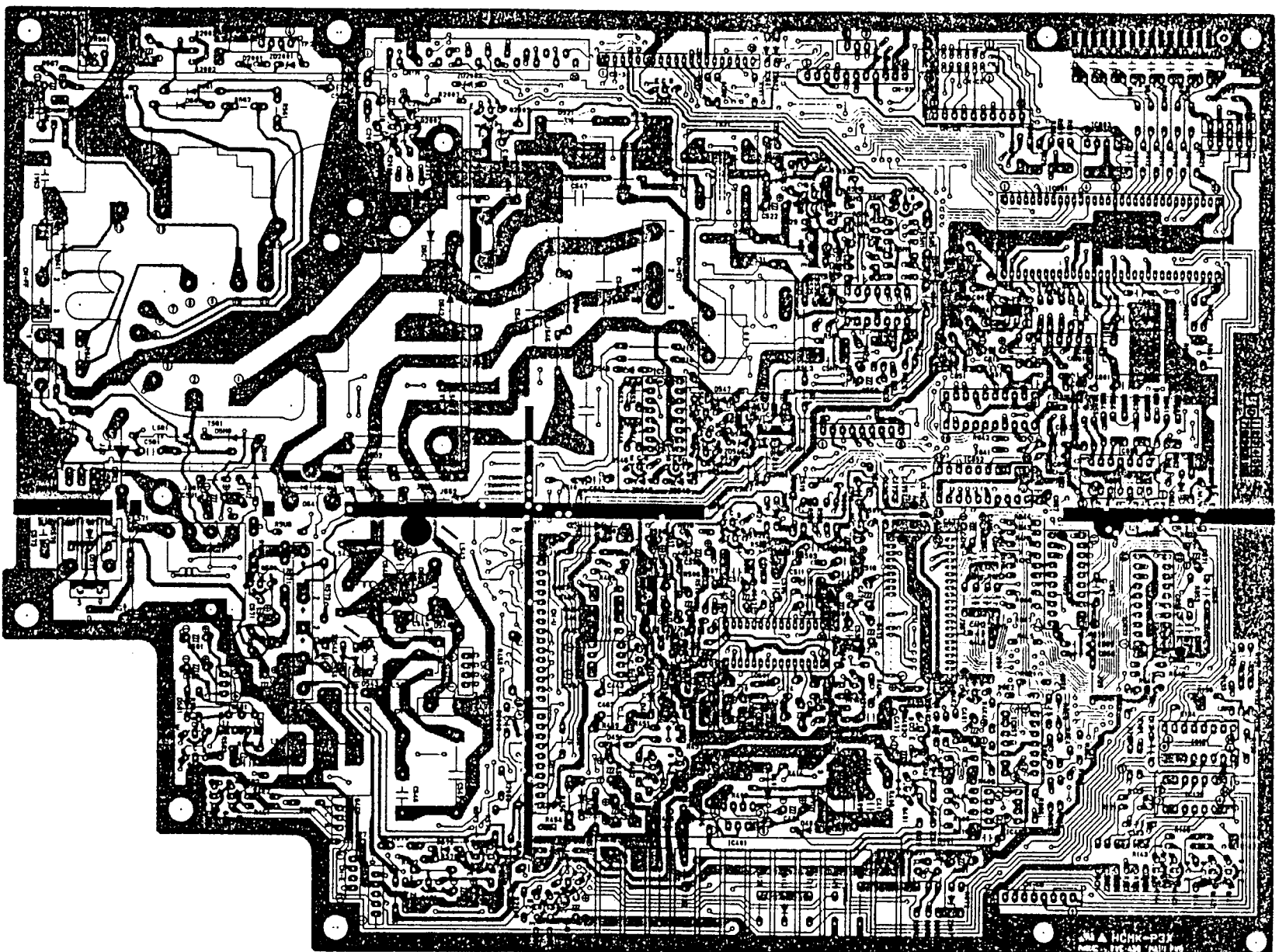


SYMBOL	PART NO	DESCRIPTION
C516 C517 C519 C801 C802 C804 C807 C808 C811 C831 C832 C833 C834 C835 C836 C837 C838 C851 C852 C853 C854 C855 C856 C857 C858 C859 C862 C863 C866 C867 C868 C869 C872 C123 C521 C7K9 C7M3 C748	421C2862	C.CERAMIC 25V 0.01UF
ΔC2002 ΔC2003 C501 C506 C583 C7A5 C7E3 C7E8 C7G1 C7G6 C7H4 C7H5 C7H6 C7H7 C7H9 C7K3 C7K5 C7K6 C7K7 C7K8 C7S1 C7T2 C7T3 C7T5 C710 C723 C726 C729 C769 C770 C771 C951 C956 C782 C783 C784	421C3479	C.CERAMIC 50V 0.1UF
ΔC2002 ΔC2003 C501 C506 C583 C7A5 C7E3 C7E8 C7G1 C7G6 C7H4 C7H5 C7H6 C7H7 C7H9 C7K3 C7K5 C7K6 C7K7 C7K8 C7S1 C7T2 C7T3 C7T5 C710 C723 C726 C729 C769 C770 C771 C951 C956 C782 C783 C784	421D6009	C.CERAMIC 25V 0.1UF
C514 C7M1 C954 C7G9 C805 C806 C7M2	421D6013 421J9D44 423A1029 423A1037 423A1045 423A1051 423A1053 423A2015 423A2035	C.CERAMIC 50V 0.1UF C.CERAMIC 250V 0.01UF C.CERAMIC 50V 22PF C.CERAMIC 50V 47PF C.CERAMIC 50V 100PF C.CERAMIC 50V 180PF C.CERAMIC 50V 220PF C.CERAMIC 50V 10PF C.CERAMIC 50V 39PF
C7N1 C7N3 C754 C755 C756 C7Q1 C7Q2 C7A3	423A2037 423A2039 423A2043 423A2045 423A2104	C.CERAMIC 50V 47PF C.CERAMIC 50V 56PF C.CERAMIC 50V 82PF C.CERAMIC 50V 100PF C.CERAMIC 50V 220PF
C503 C774 C7L1	423J9D22 427F4601 427F4615	C.CERAMIC 50V 470PF C.FILM 50V 1000PF C.FILM 50V 0.015UF

SYMBOL	PART NO	DESCRIPTION
C426 C701 C7T1 C502 C7G5 C422 C7K1 C724 C7H3 C730 C733 C727 C730 C733 C487 C711 C747	430B9027 430B9028 430B9029	C.ELEC 16V 33UF C.ELEC 16V 47UF C.ELEC 16V 100UF
C486 C515 C992 C7A6 C7C6 ΔC141 C7H2 C743 C7G7 C401 C425 C735 C738 C741	430B9030 430B9042 430B9043 430B9061 430B9062 430B9063	C.ELEC 16V 220UF C.ELEC 25V 100UF C.ELEC 25V 220UF C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF C.ELEC 50V 3.3UF
C7C3 C7C5 C7C9 C7E5 C7C8 C7E6 ΔC561 C714 C716 C717 C719 C720 C722 C725 C728 C731 C7E2 C404 C991	430B9064 430B9065 430B9068 430B9070 430B9085 430B9512	C.ELEC 50V 4.7UF C.ELEC 50V 10UF C.ELEC 50V 47UF C.ELEC 50V 220UF C.ELEC 63V 47UF C.ELEC 160V 1.0UF
C75A C762 C763 C765 C767 C491 C501 C744 C745 C746 C572	430B9516 430B9552 430B9553 430CH358	C.ELEC 160V 10UF C.ELEC 250V 1.0UF C.ELEC 250V 2.2UF C.ELEC 250V 47UF
C736 C739 C742 C522 C403 C758 C575	430C0262 430C6344 430C6346 430C8917 4309J171	C.ELEC 35V 10UF C.ELEC 35V 100UF C.ELEC 35V 330UF C.ELEC 100V 47UF C.ELEC 200V 33UF
C702 C703 C704 C7A1 C7A2 C478 C479 C423 C7C4	433A4013 433A4023 433A4033 433A4055 433A4056	C.ELEC 10V 47UF C.ELEC 16V 22UF C.ELEC 25V 10UF C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF
C7C7 C7E4 C715 C718 C721 C4K1	433A4058 433A7003 433A7004	C.ELEC 50V 4.7UF C.ELEC 10V 100UF C.ELEC 10V 220UF

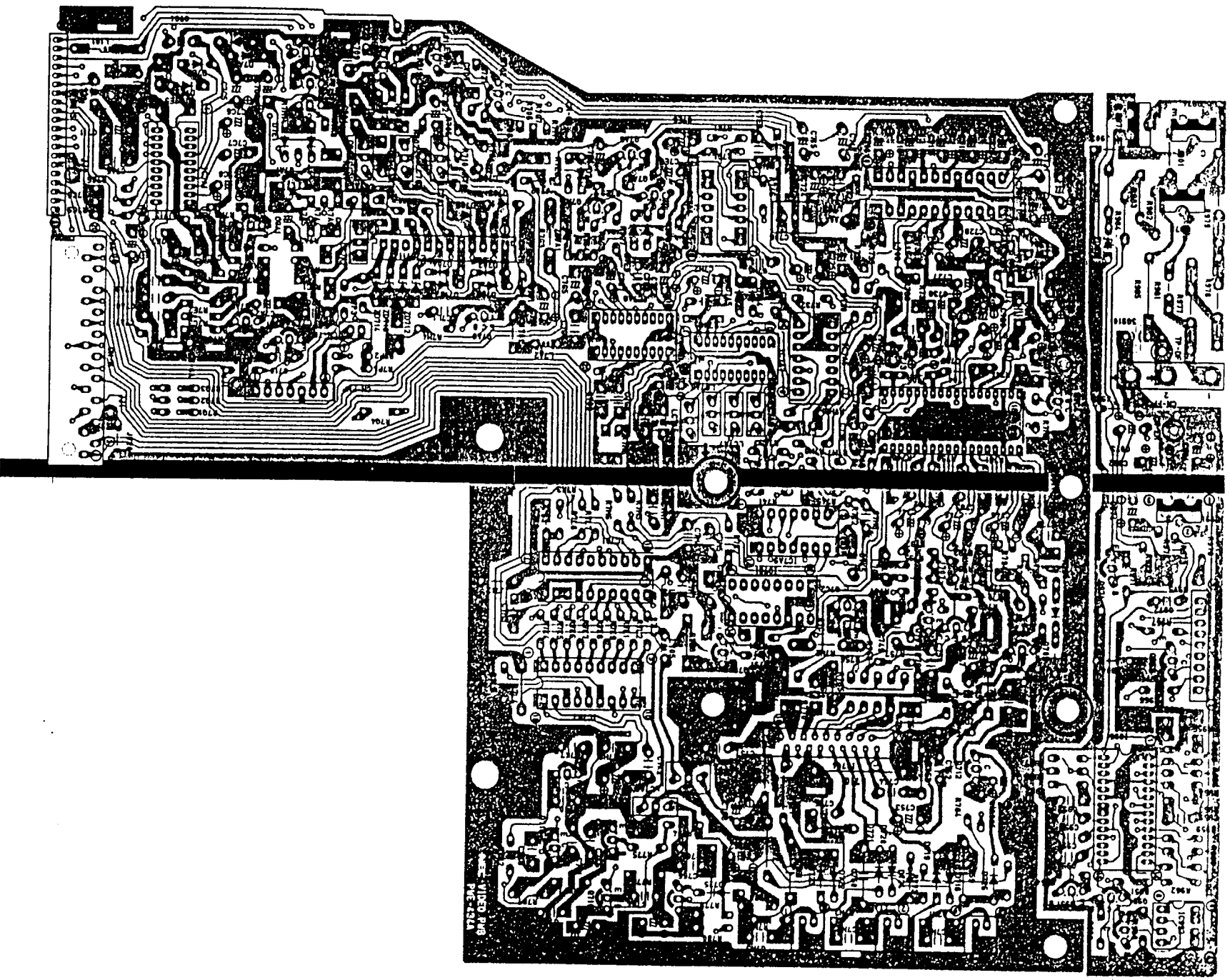
SYMBOL	PART NO	DESCRIPTION
C732 C5K4 C412 C749 C750 C751 C952 C972 C405 C768 C424	427F4621 427F4622 427F4663 427F4669 427F4675 428B3013 428B3020	C.FILM 50V 0.047UF C.FILM 50V 0.056UF C.FILM 50V 0.01UF C.FILM 50V 0.033UF C.FILM 50V 0.1UF C.METAL FILM 50V 0.1UF C.METAL FILM 50V 0.39UF
C407 C512 C462 ΔC562 C573 C443 C941 ΔC547	428B3021 428CJ022 428DD417 428JJ115 42816045	C.METAL FILM 50V 0.47UF C.METAL FILM 250V 0.1UF C.METAL FILM 250V 0.22UF C.METAL 1000V 0.047UF C.METAL 200V 1.8UF
ΔC553 ΔC552 ΔC551 ΔC548 ΔC549	42816061 42816063 42816068 42816211 42816216	C.METAL 400V 0.1UF C.METAL 400V 0.15UF C.METAL 400V 0.39UF C.METAL 400V 0.47UF C.METAL 400V 0.82UF
C759 C760 C761 ΔC541 ΔC542 ΔC543 C477	42899010 42899158 42899159 42899160 430B6015	C.METAL FILM 250V 0.22UF C.METAL 2.0KV 3300PF C.METAL 2.0KV 3600PF C.METAL 2.0KV 8800PF C.ELEC 10V 47UF
C812 C814 C815 C803 C409 C509 C861 ΔC2001	430B6016 430B6017 430B6019 430B6029 430B6030	C.ELEC 10V 100UF C.ELEC 10V 220UF C.ELEC 10V 470UF C.ELEC 16V 100UF C.ELEC 16V 220UF
C413 C414 C471 C474 C451 C406 C531 C532 C504	430B6041 430B6043 430B6044 430B6061 430B6062	C.ELEC 25V 47UF C.ELEC 25V 220UF C.ELEC 25V 330UF C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF
C430 C507 C813 C871 C563 C452 ΔC571	430B6065 430B6222 430B5516 430B6553 430B9015	C.ELEC 50V 10UF C.ELEC 50V 0.22UF C.ELEC 160V 10UF C.ELEC 250V 2.2UF C.ELEC 10V 47UF
C581 C582 C753	430B9017	C.ELEC 10V 220UF

SYMBOL	PART NO	DESCRIPTION
C5E8 C974	433A7021 433A7031	C.ELEC 25V 10UF C.ELEC 35V 4.7UF
C973 ΔC564	433A7043 435A8156	C.ELEC 50V 2.2UF C.TANTALUM 16V 15UF



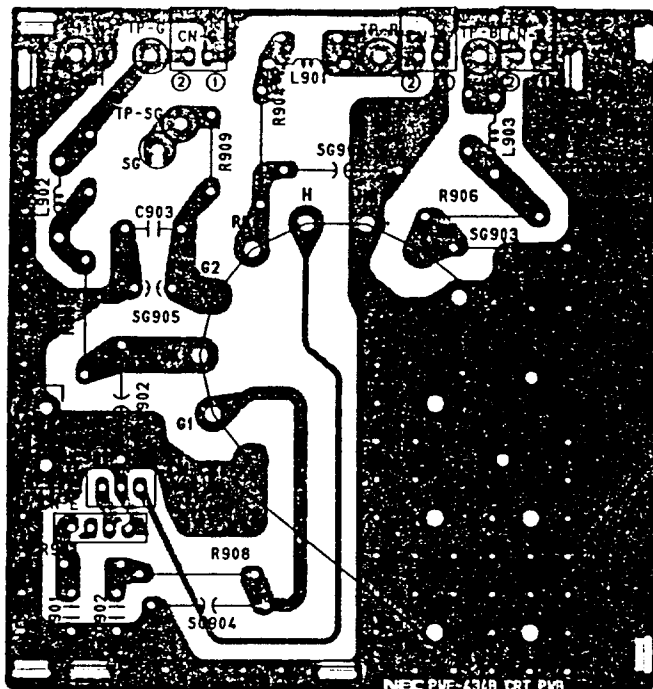
MAIN PWB (PWE-433, 435)

— Solder Side —



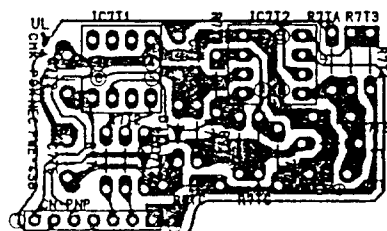
VIDEO PWB (PWE-434A, 436A)

— Solder Side —



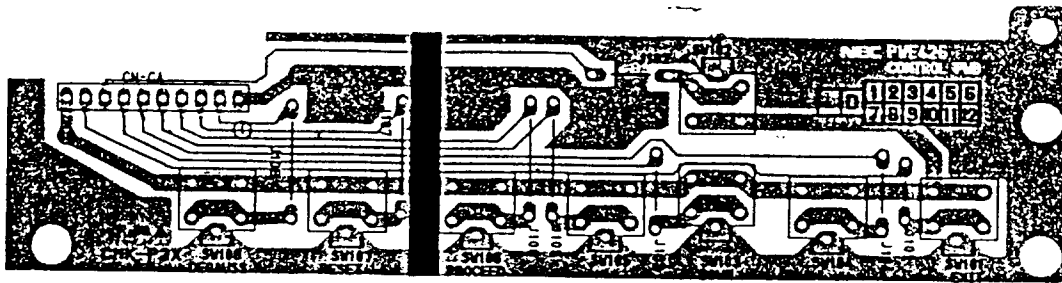
CRT PWB (PWE-434B, 436B)

— Solder Side —

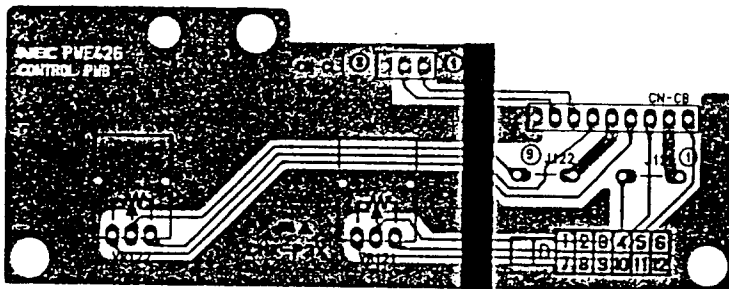


PNP PWB (PWE-438)

— Solder Side —



CONTROL PWB (PWE-426A)  
— Solder Side —

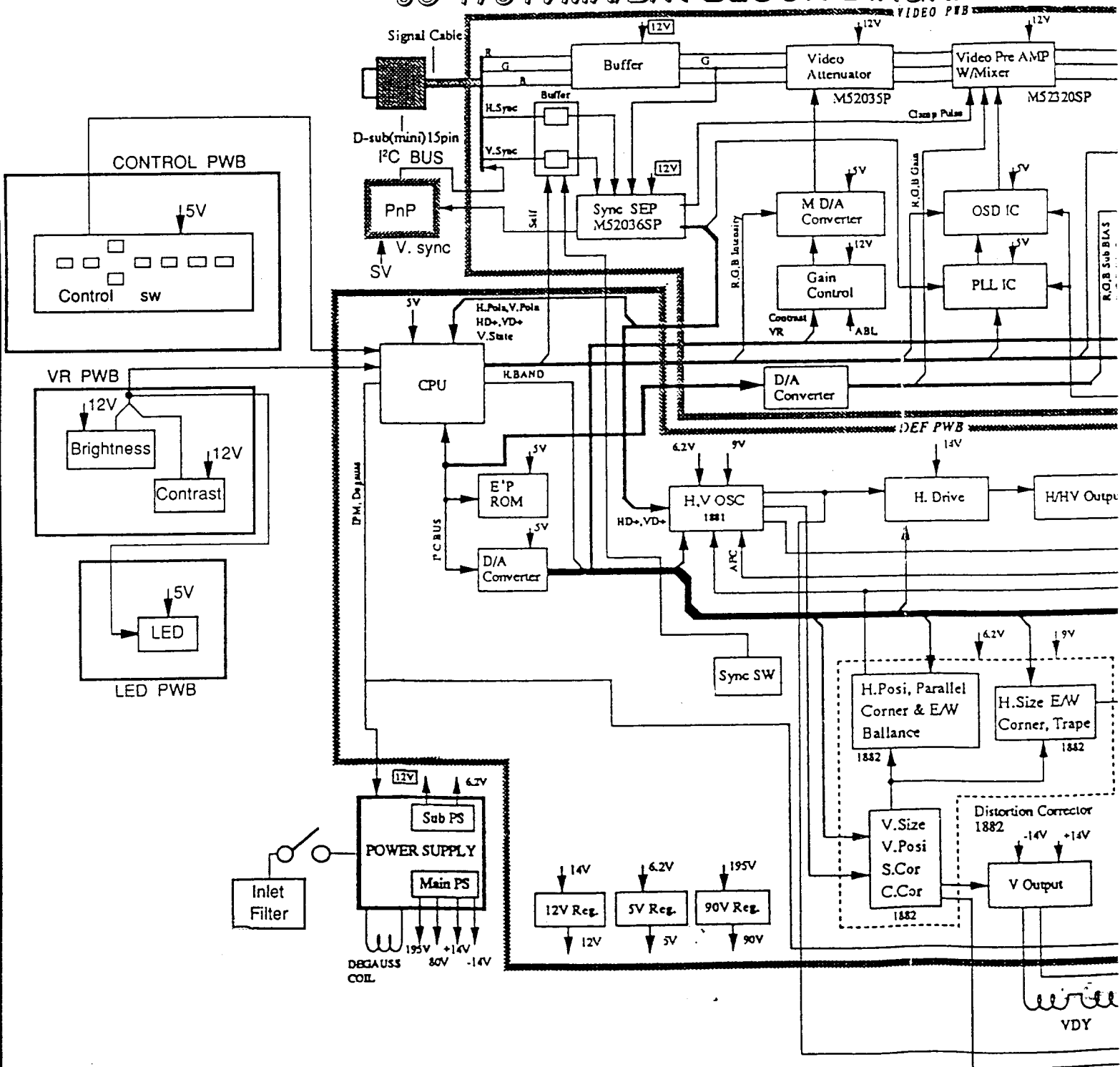


VR PWB (PWE-426B)  
— Solder Side —



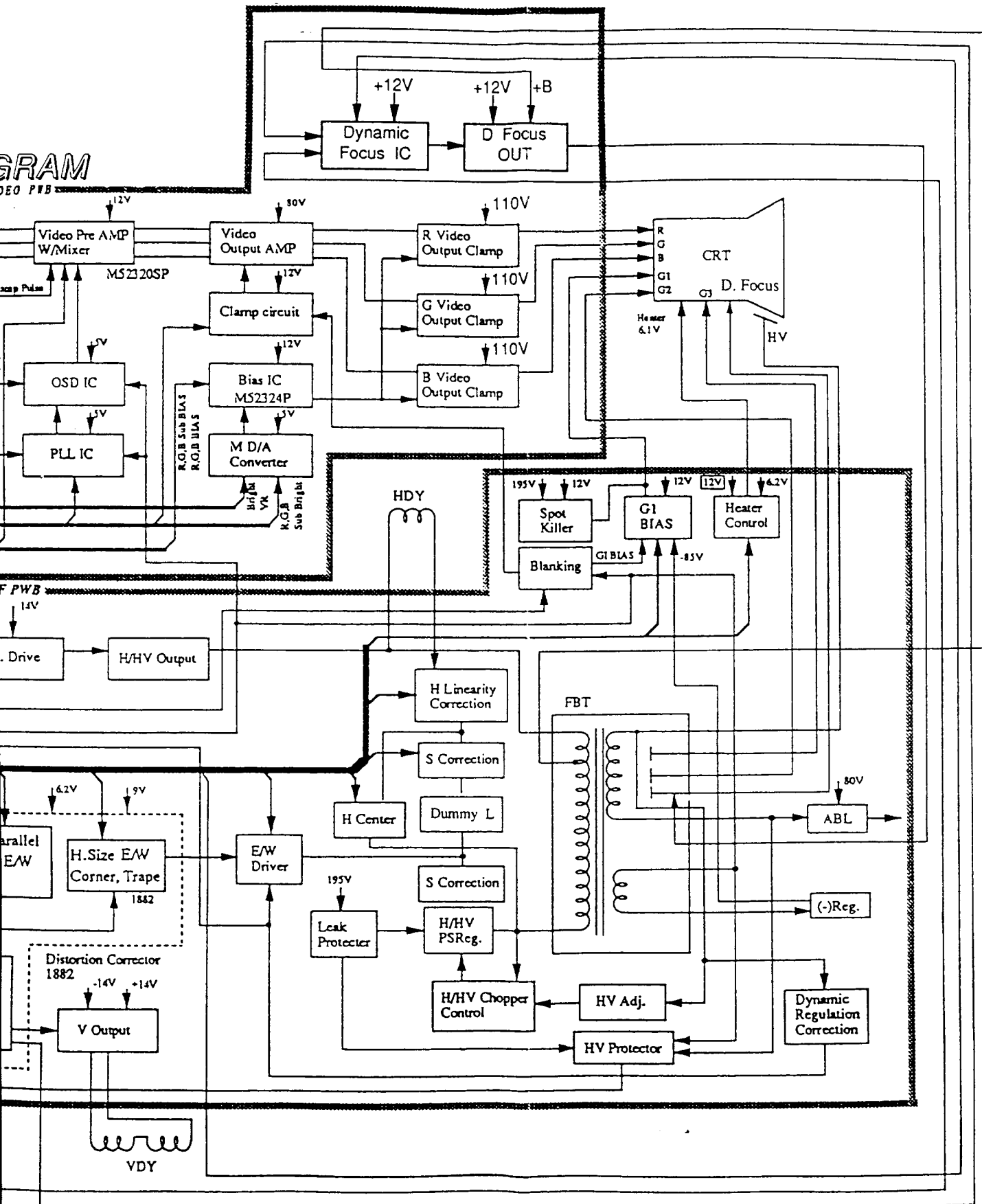
LED PWB (PWE-426C)  
— Solder Spde —

# JC-1734VMA/B/R BLOCK DIAGRAM

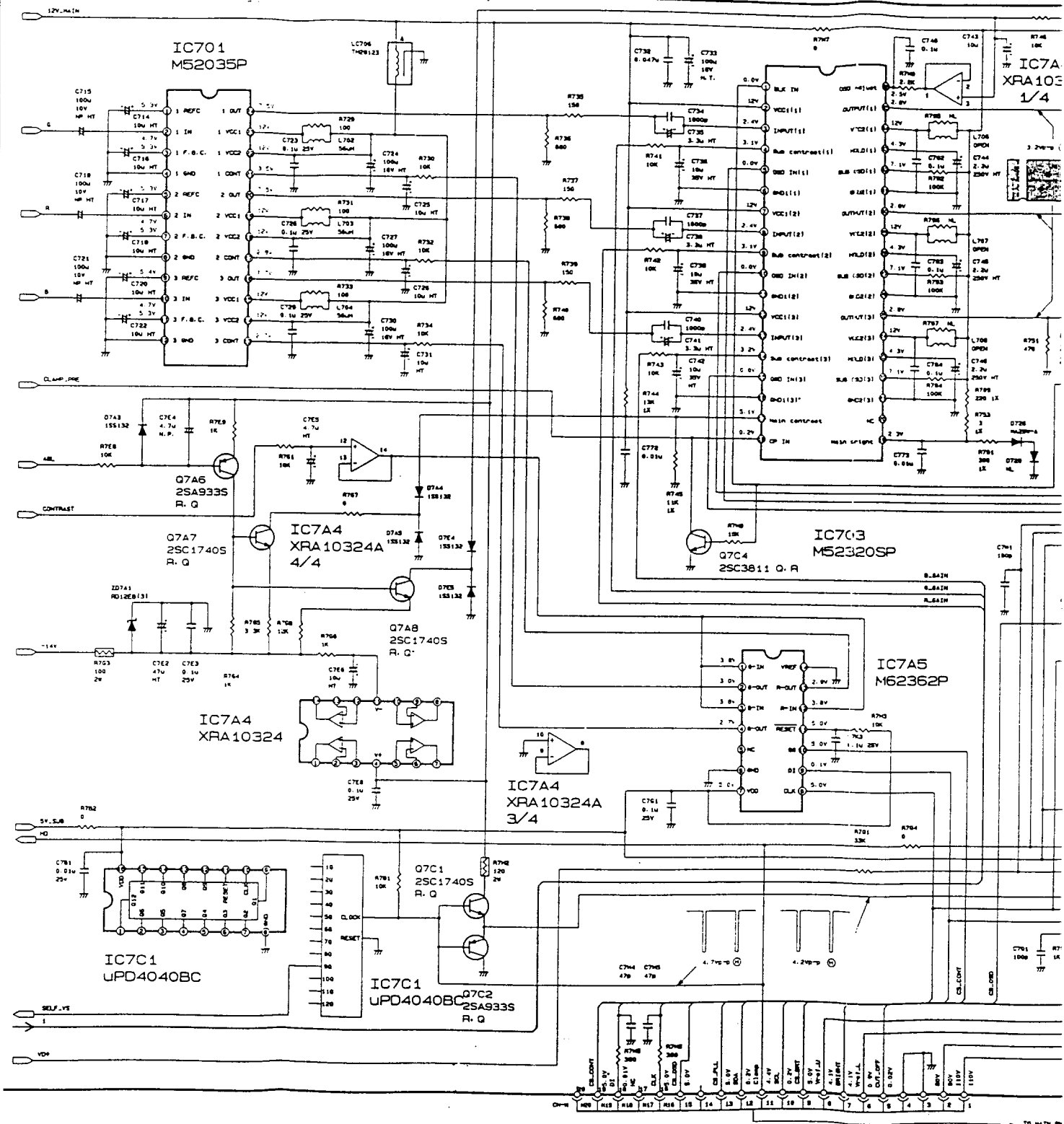


GRAM

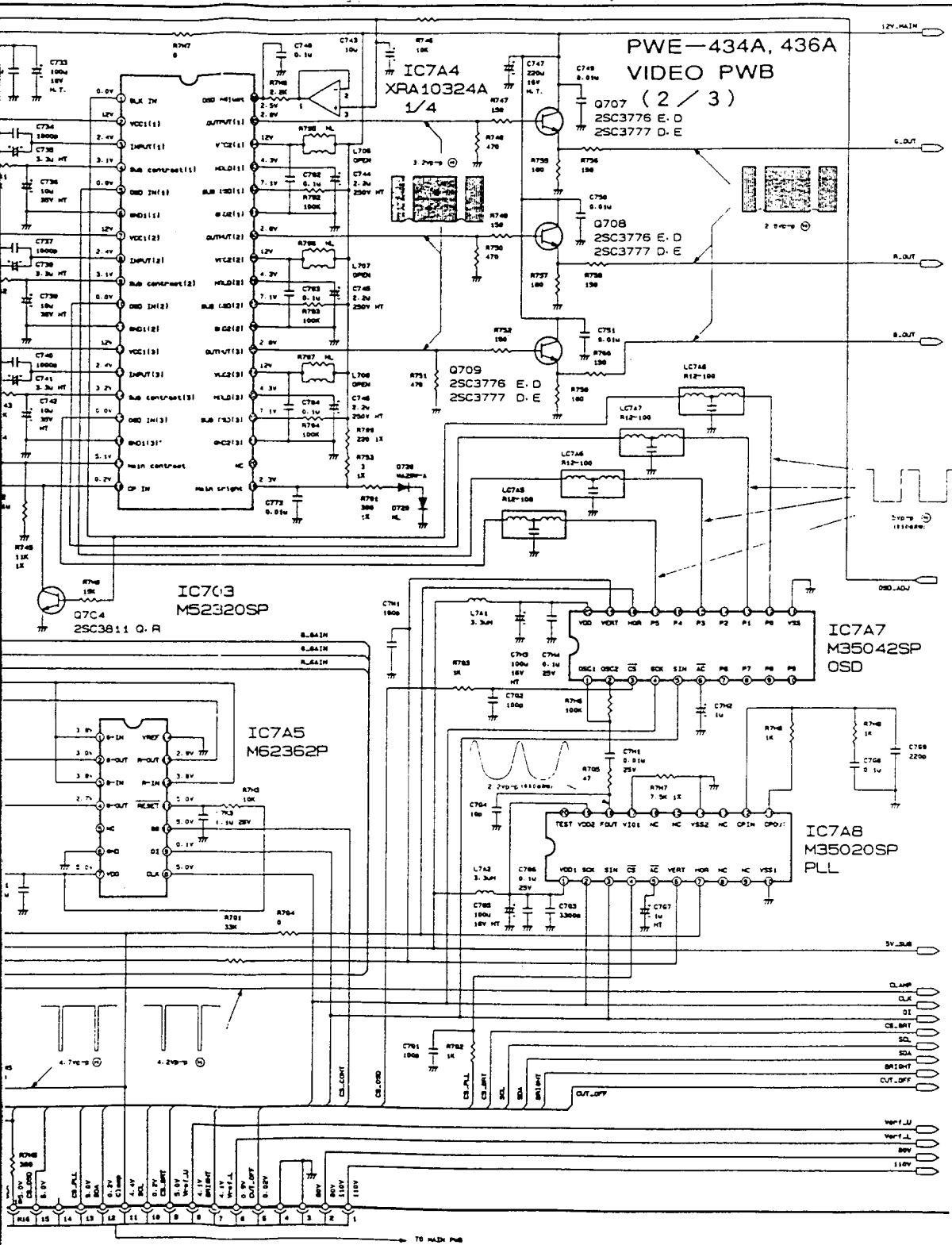
VIDEO PWB



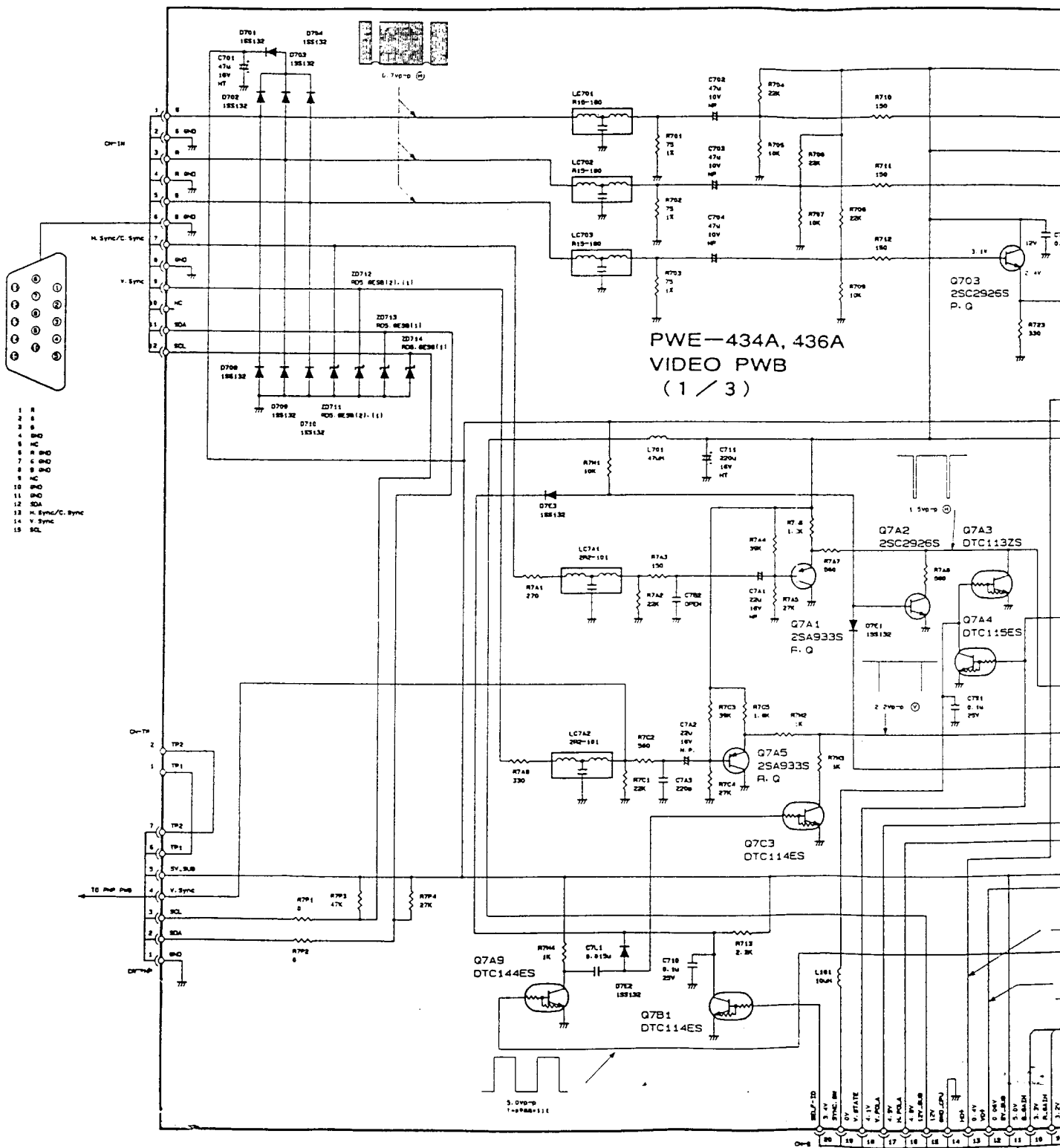
# MODEL JC-1734VMA/B/R SCHEMATIC DIAGRAM VIDEO



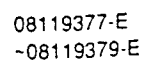
SCHEMATIC DIAGRAM VIDEO PWB



MODEL JC-1734VMA/B/R SCHEMATIC DIAGRAM VIDEO



WE-434A, 436A  
VIDEO PWB  
(1 / 3)



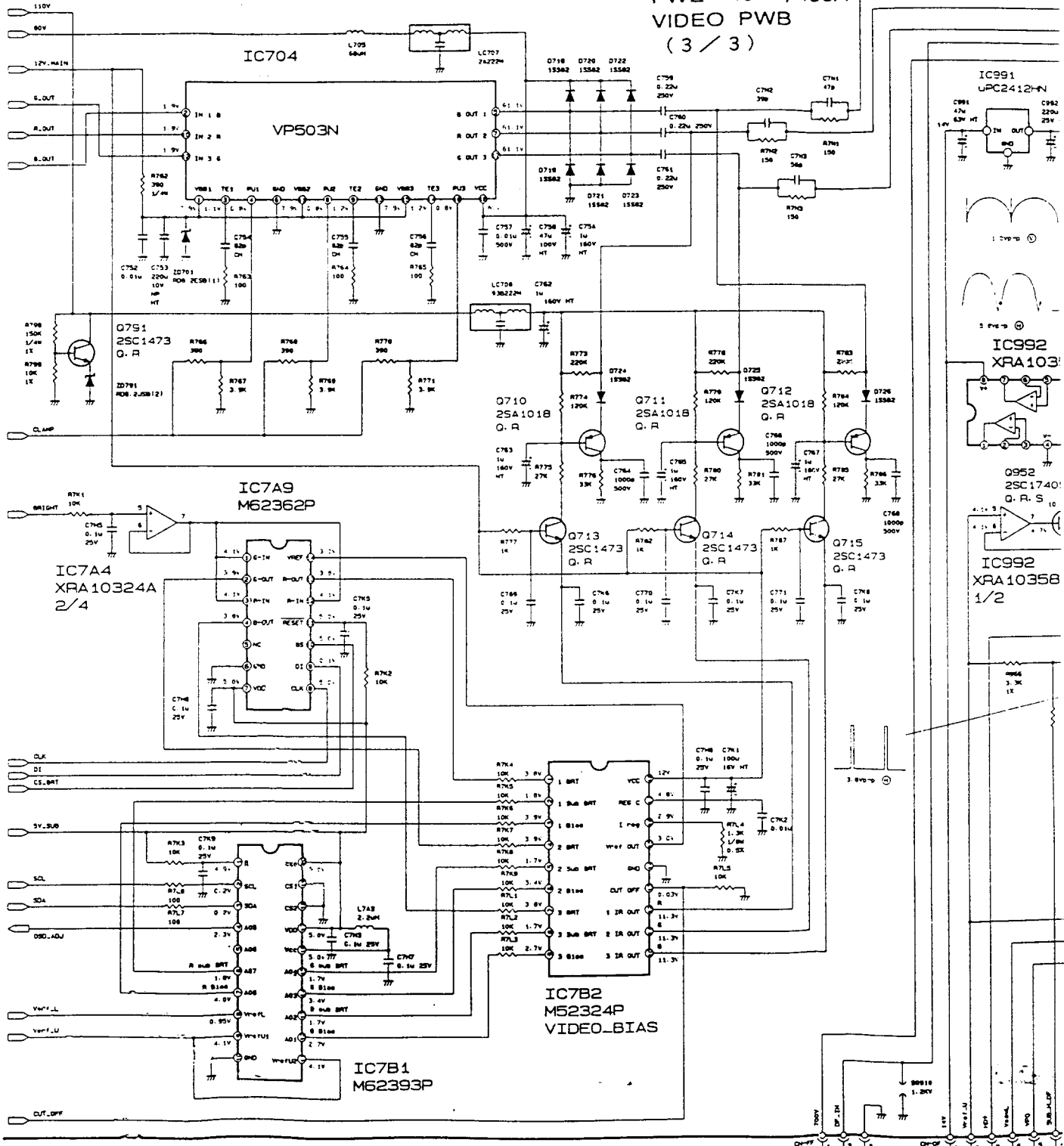
REPLACEMENT PARTS WHICH HAVE SPECIAL SAFETY CHARACTERISTICS ARE IDENTIFIED BY A SHADING ON THE REPLACE THESE CRITICAL COMPONENTS WITH RECOMMENDED REPLACEMENT PARTS.

DON'T DEGRADE THE SAFETY OF THE SET-THROUGH IMPROPER SERVICING

1 2 3 4 5

# MODEL JC-1734VMA/B/R SCHEMATIC DIAGRAM VII

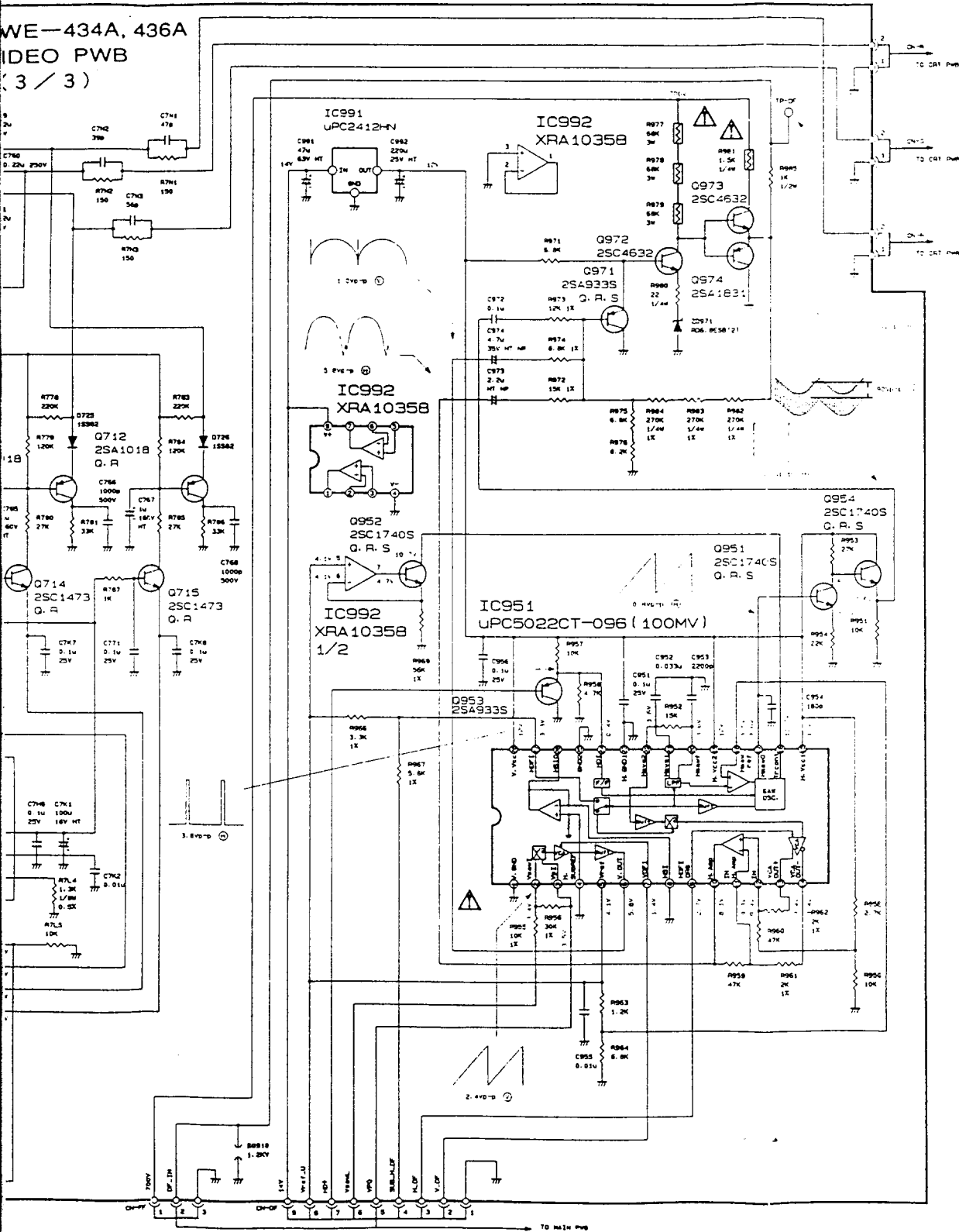
PWE-434A, 436A  
VIDEO PWB  
(3 / 3)



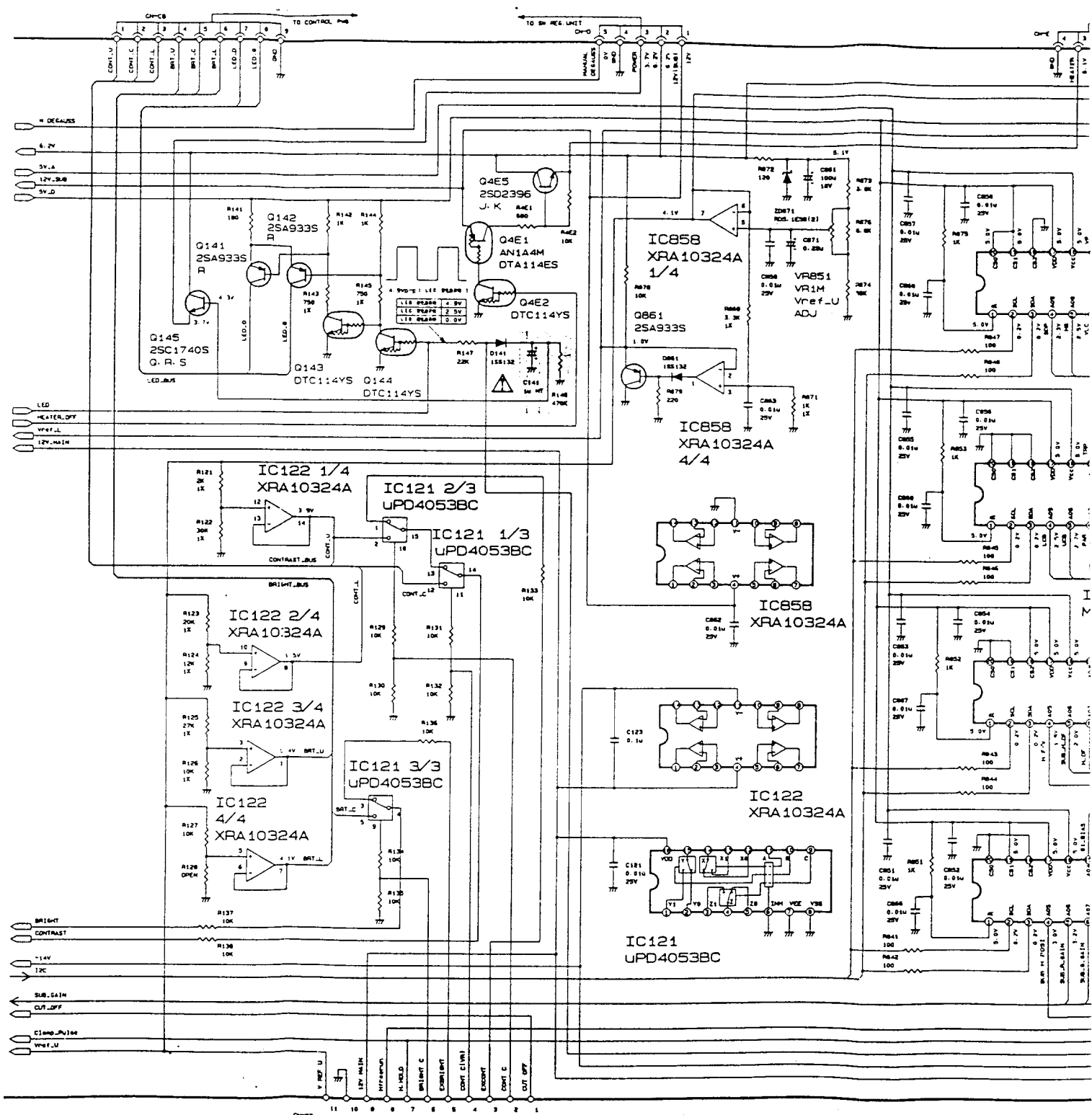
4 | 5 | 6 | 7 | 8

SCHEMATIC DIAGRAM VIDEO PWB

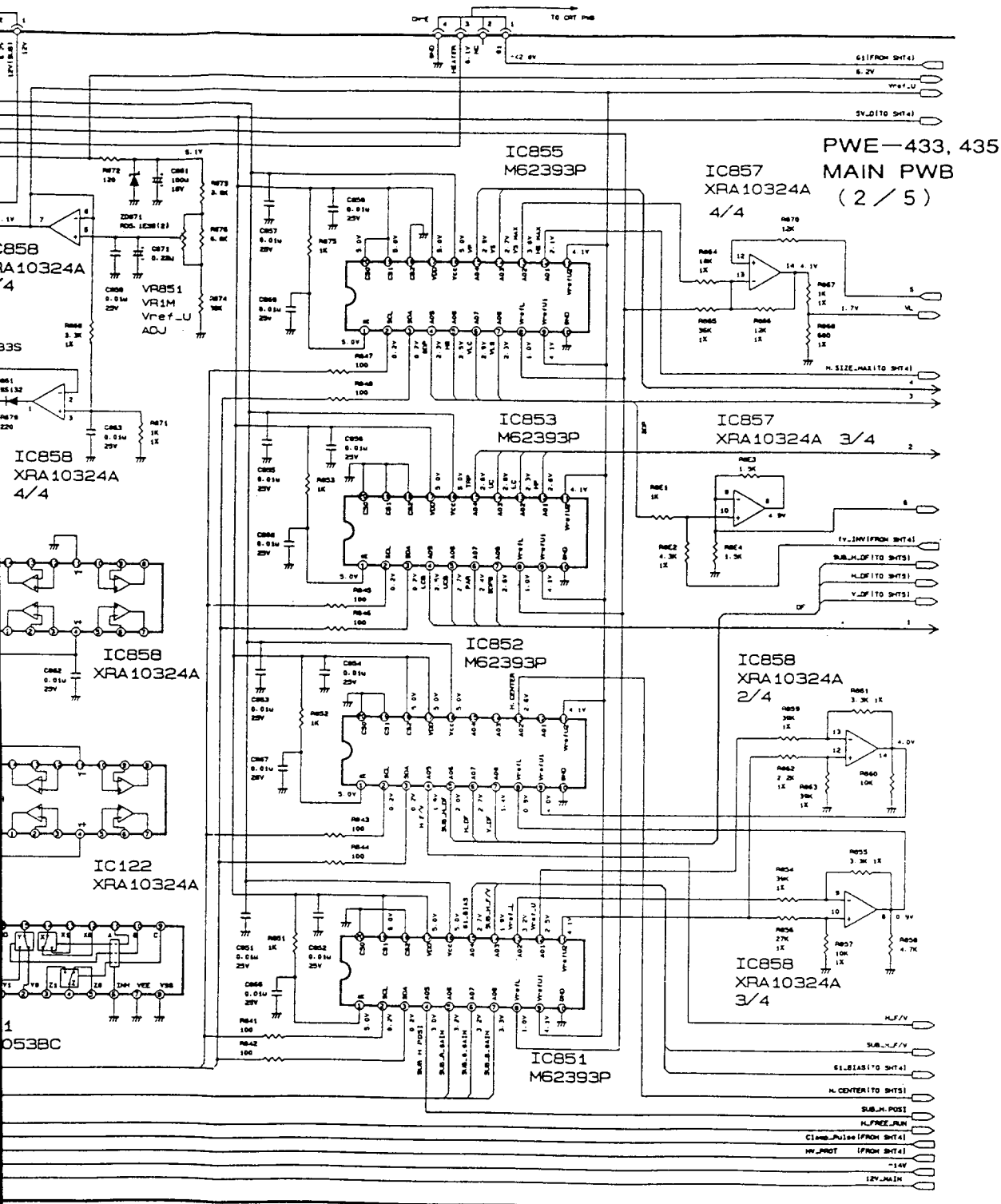
WE-434A, 436A  
VIDEO PWB  
(3/3)



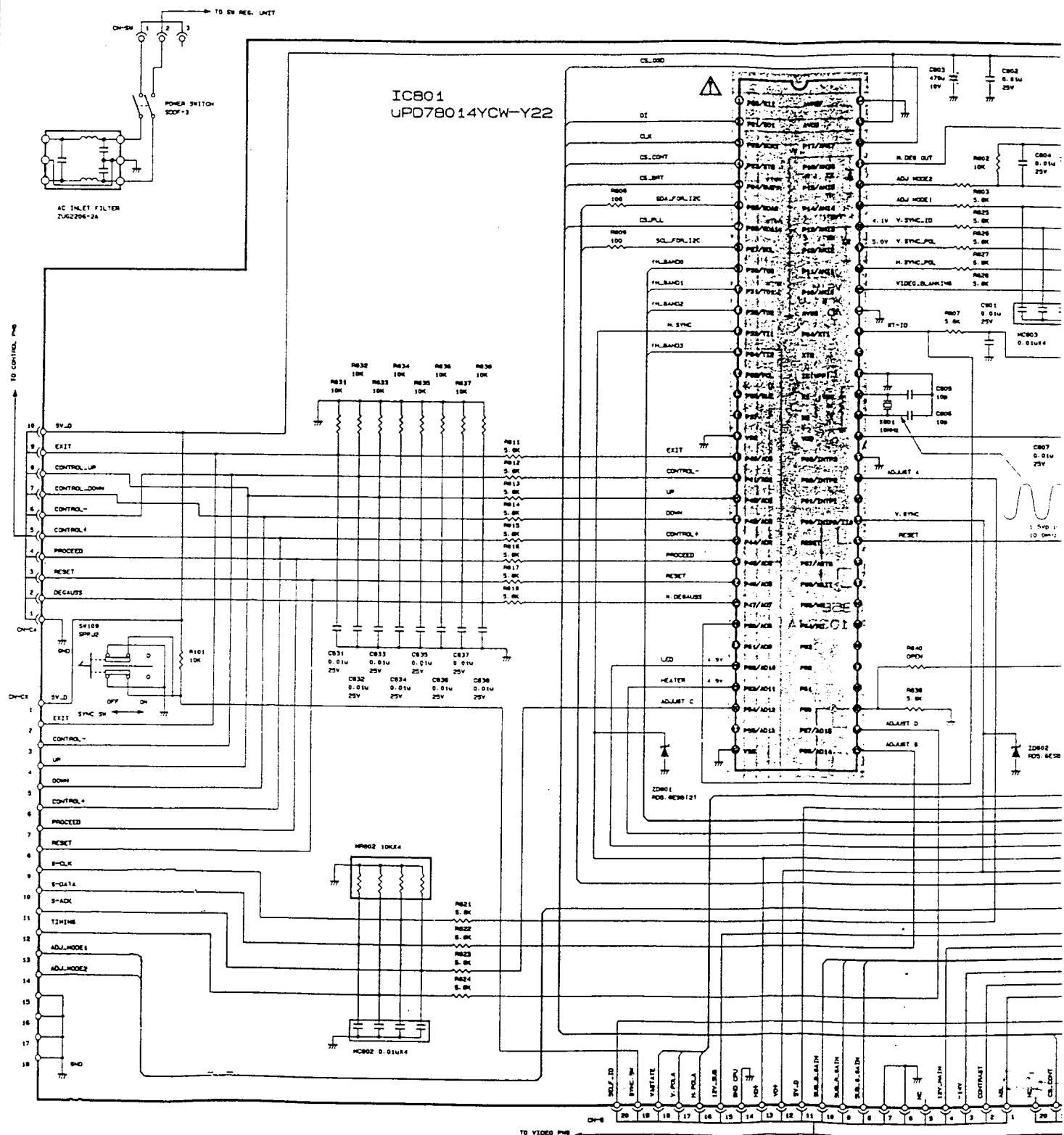
# MODEL JC-1734VMA/B/R SCHEMATIC DIAGRAM MAIN F



SCHEMATIC DIAGRAM MAIN PWB



## 5



4

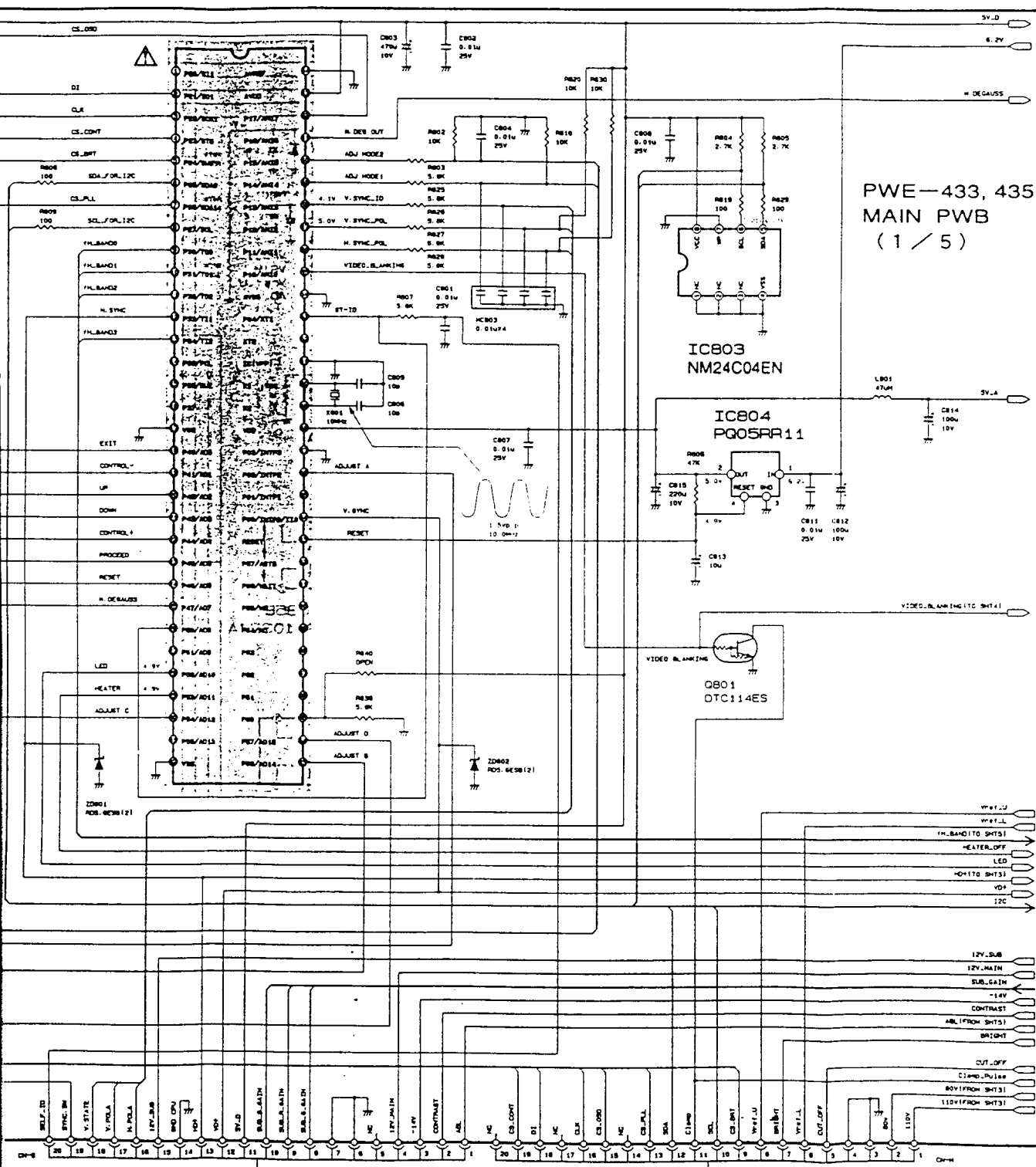
5

6

7

8

# SCHEMATIC DIAGRAM MAIN PWB



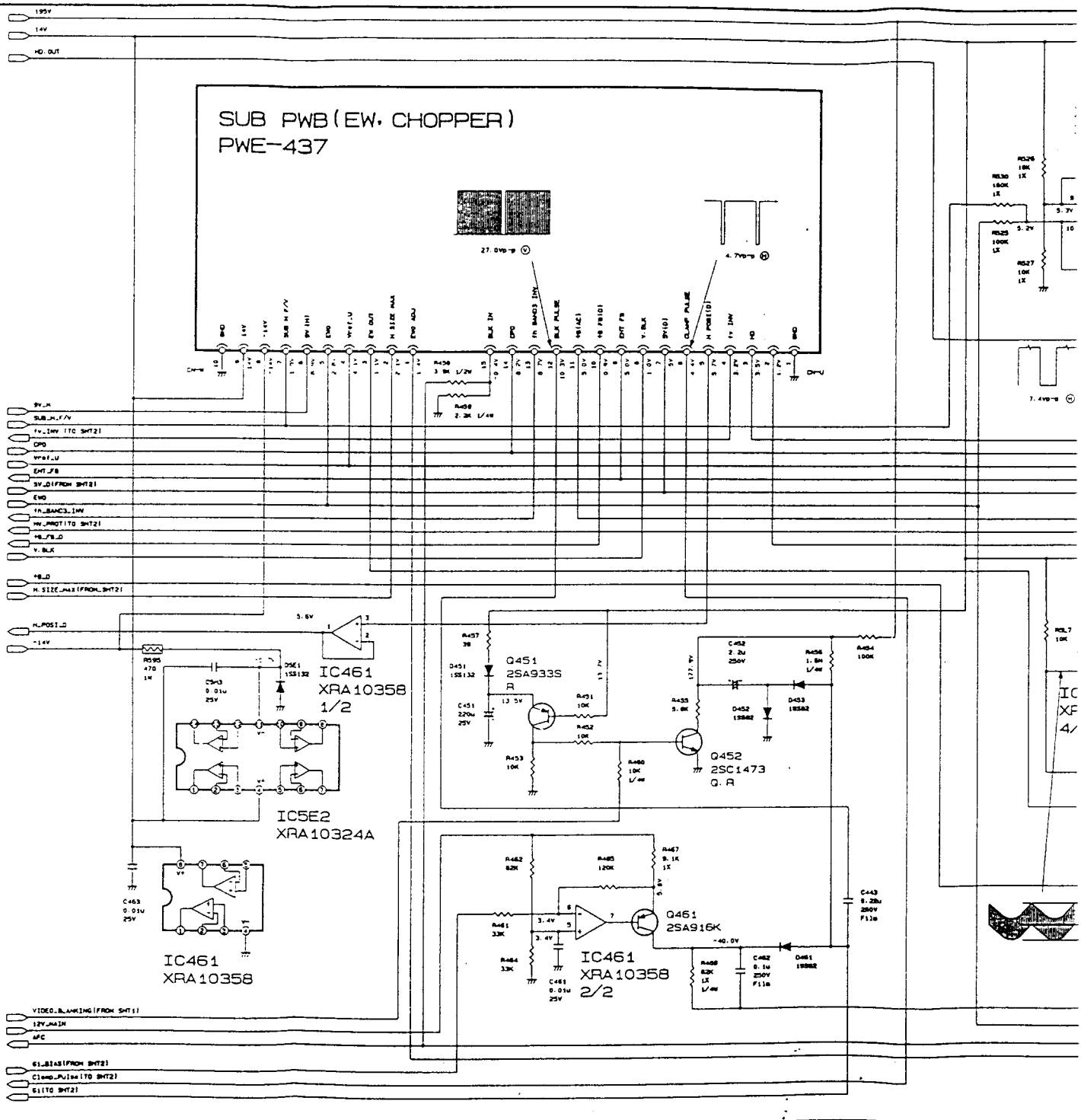
PWE-433, 435  
MAIN PWB  
(1 / 5)

IC803  
NM24C04EN

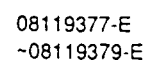
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Q801  
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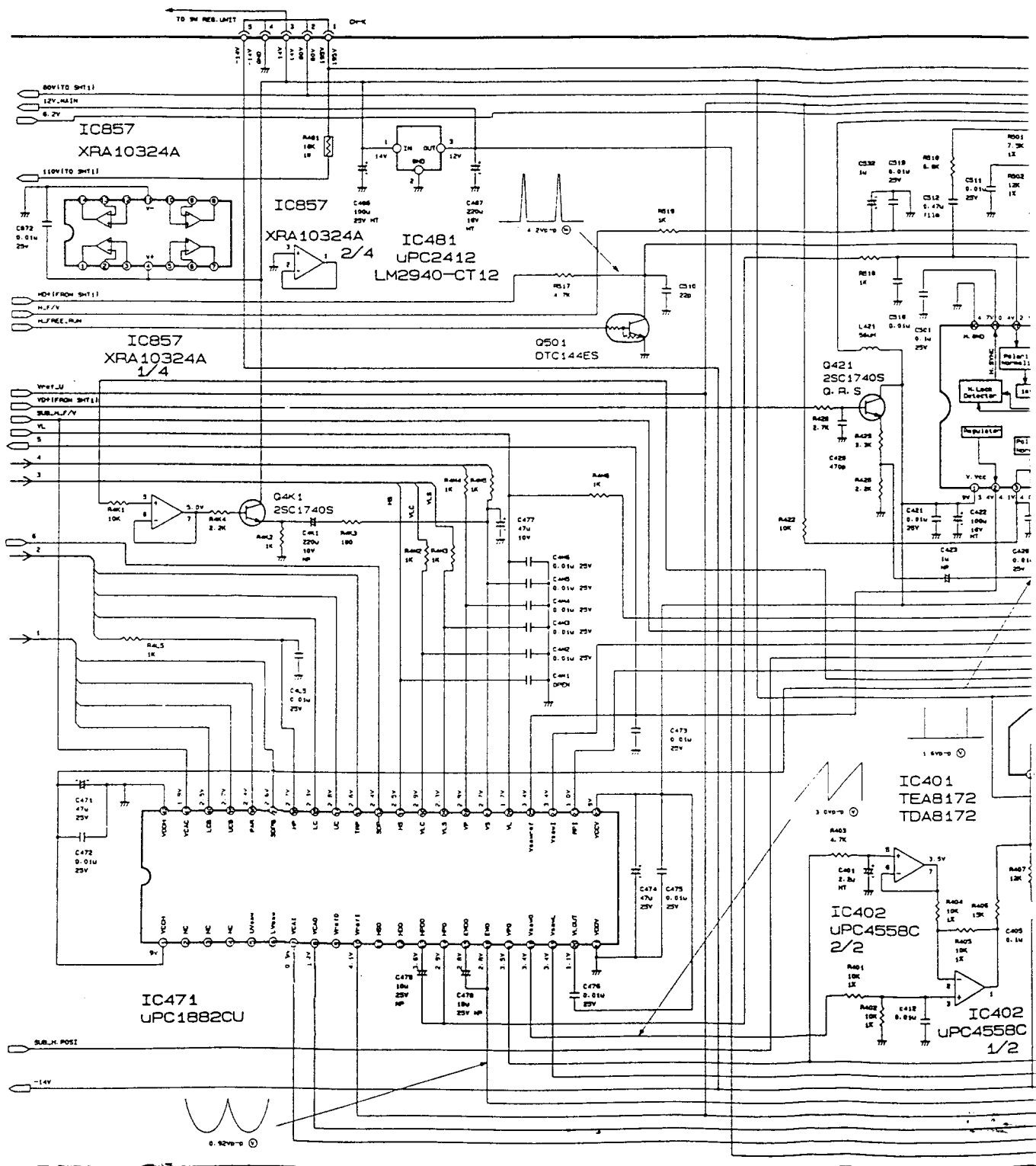
# MODEL JC-1734VMA/B/R SCHEMATIC DIAGRAM MAIN



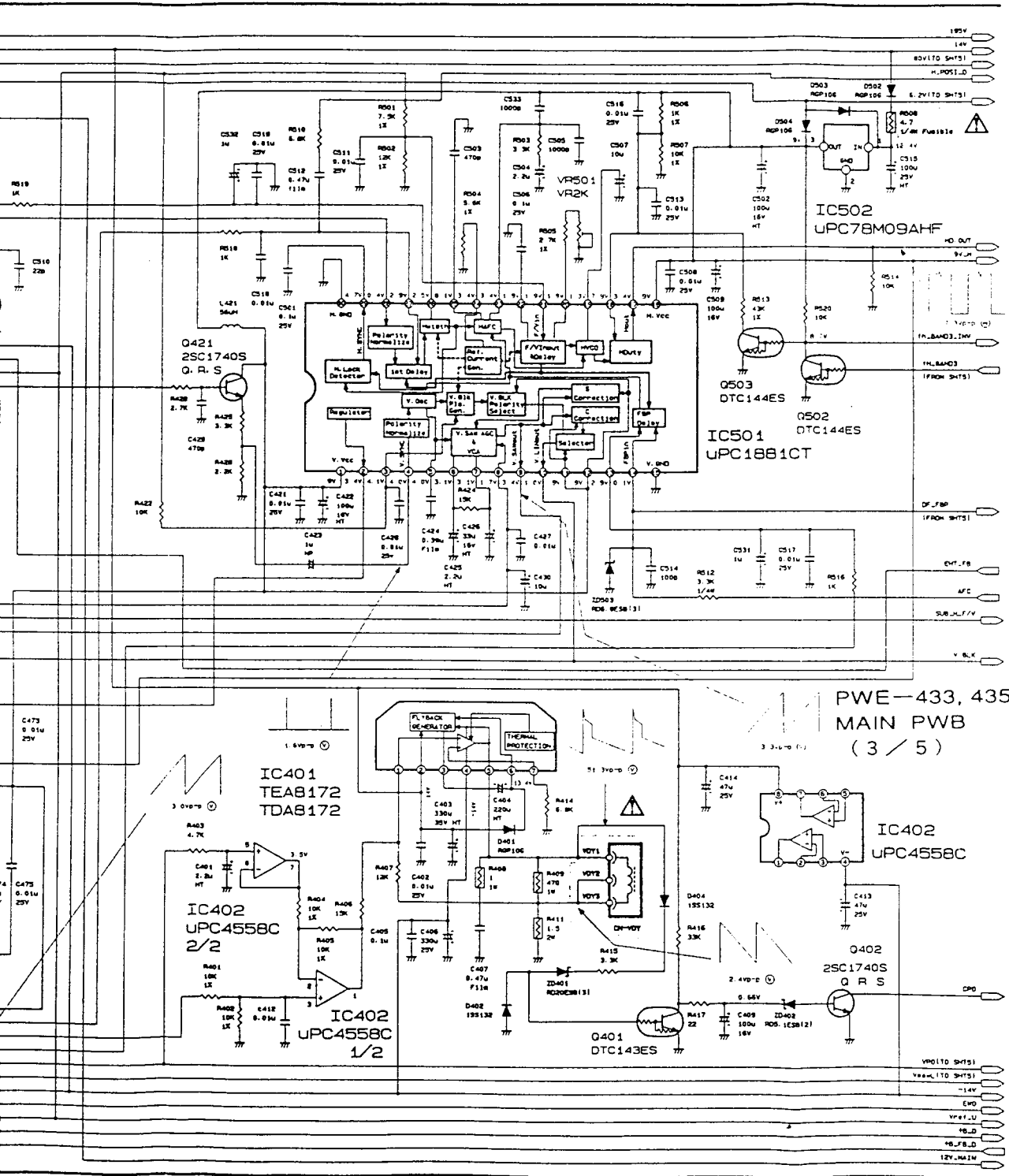
PWE-433, 435  
MAIN PWB  
( 4 / 5 )



# MODEL JC-1734VMA/B/R SCHEMATIC DIAGRAM



CHEMATIC DIAGRAM MAIN PWB



PWE-433, 435  
MAIN PWB  
(3/5)

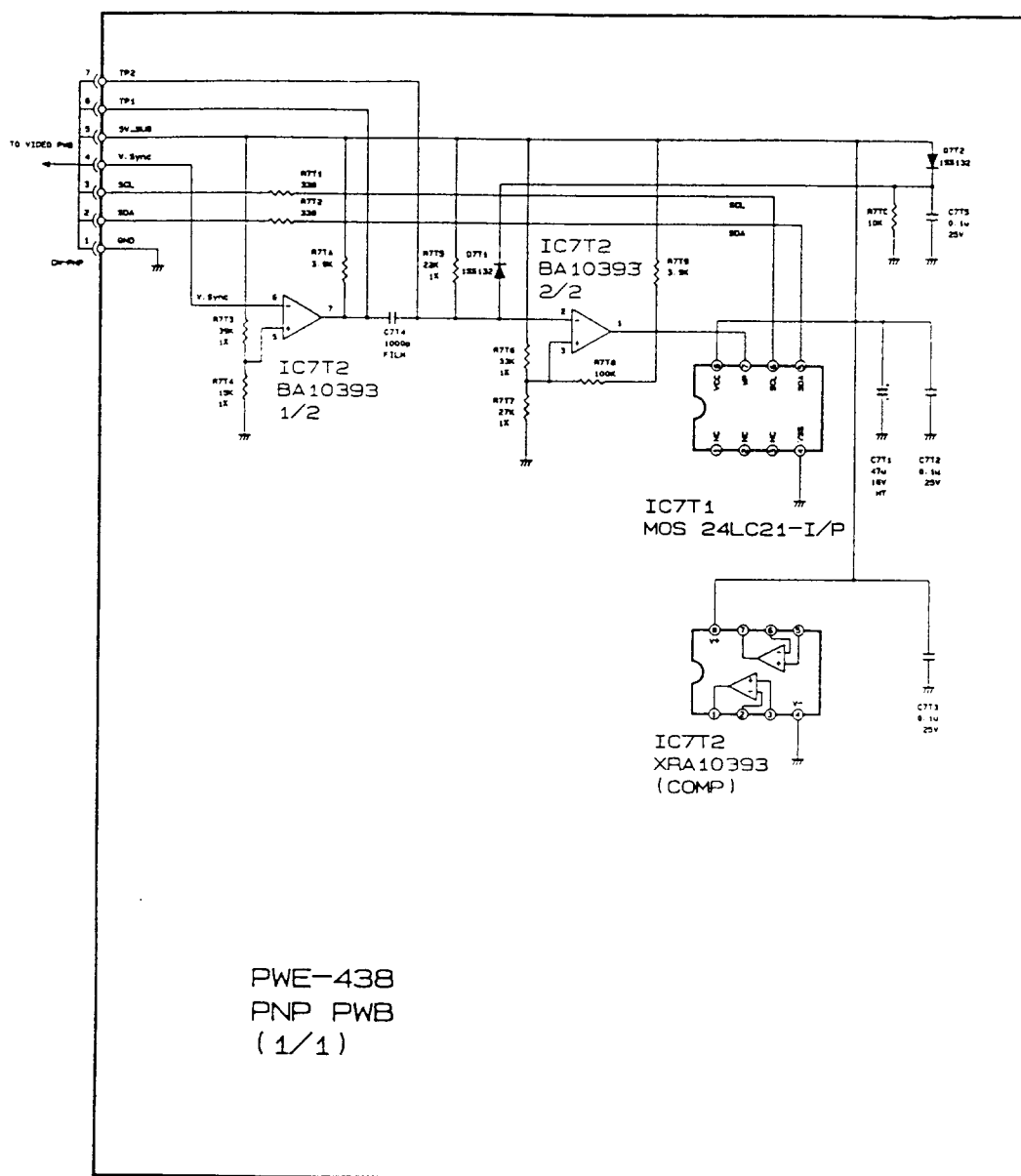
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6

7

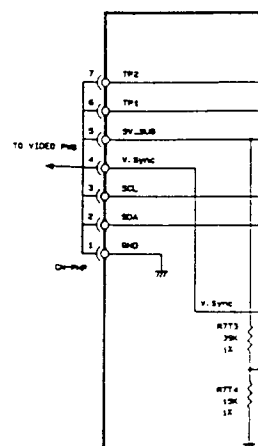
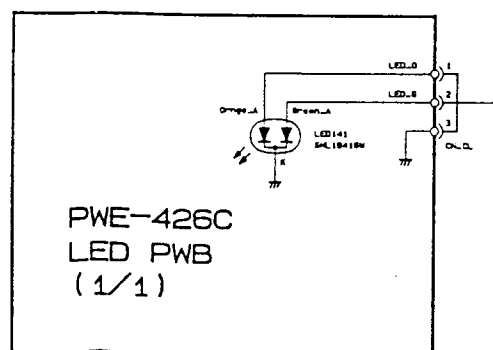
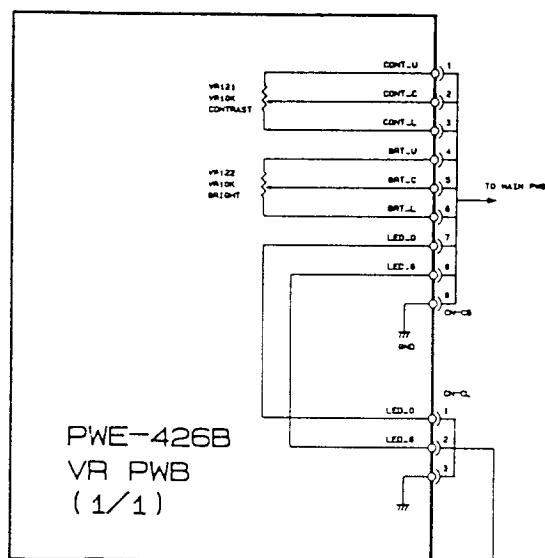
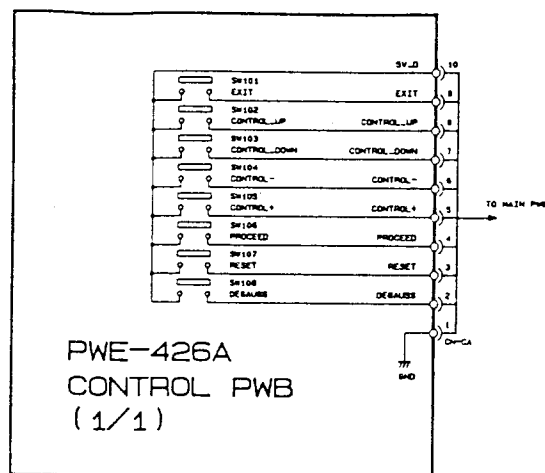
8

# MODEL JC-1734VMA/B/R SCHEMATIC DIAGRAM PNP PWB



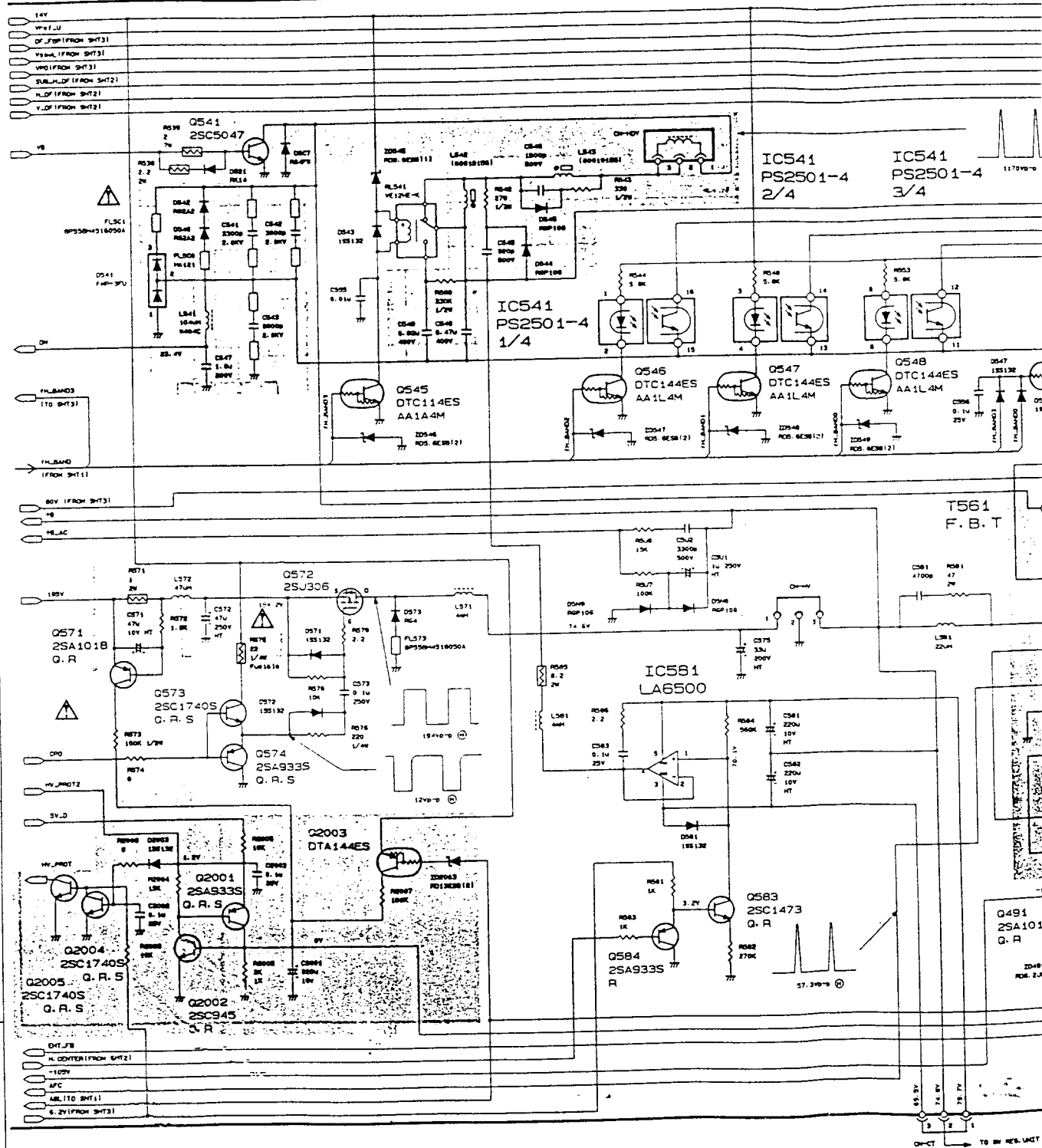
# MODEL JC-1734VMA/B/R SCHEMATIC DIAGRAM CONTROL PWB

# MODEL JC- SCHEMATIC





# MODEL JC-1734VMA/B/R SCHEMATIC DIAGRAM M



1

2

3

4

5

## MODEL JC-1734VMA/B/R SCHEMATIC DIAGRAM SUB

A

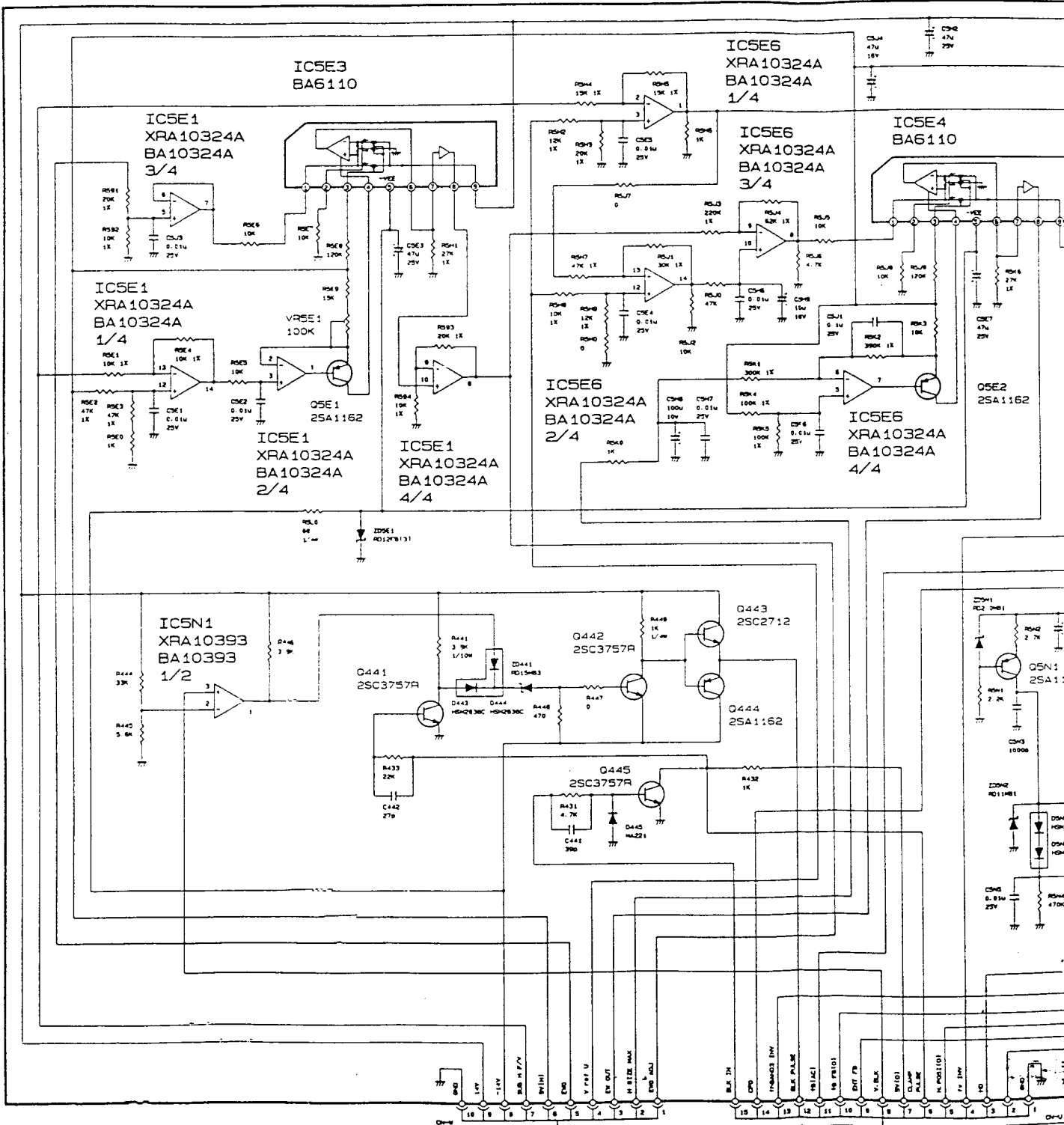
B

C

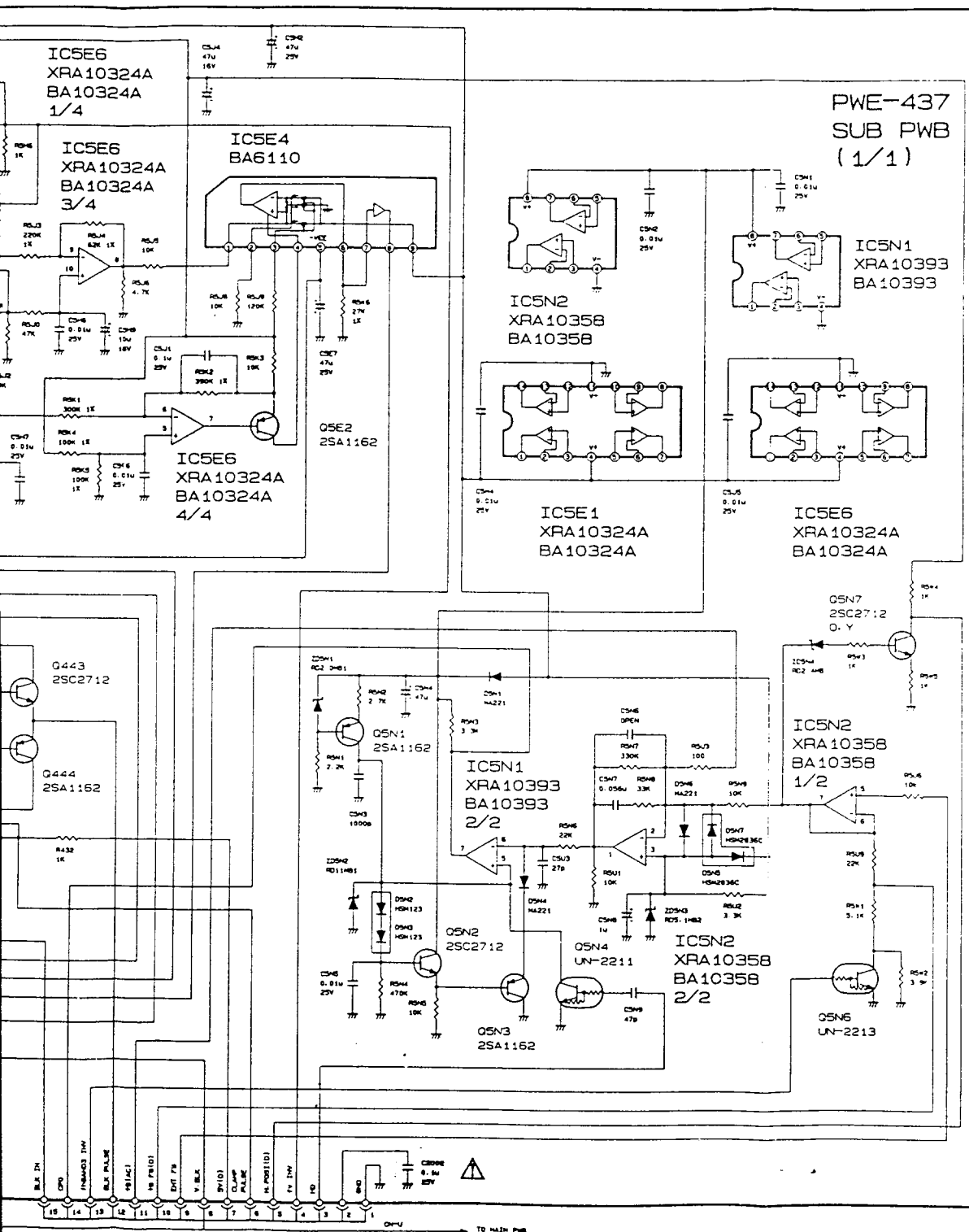
D

E

F



EMATIC DIAGRAM SUB PWB



1 2 3 4 5 7

MODEL JC-1734VMA/B/R SCHEMATIC DIAGRAM S-Correction PWB

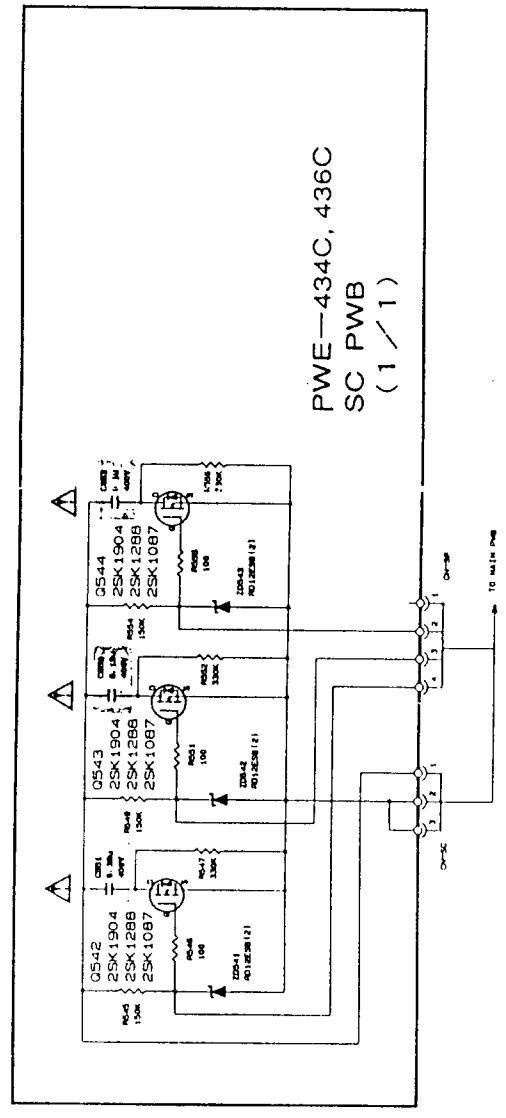
A

B

C

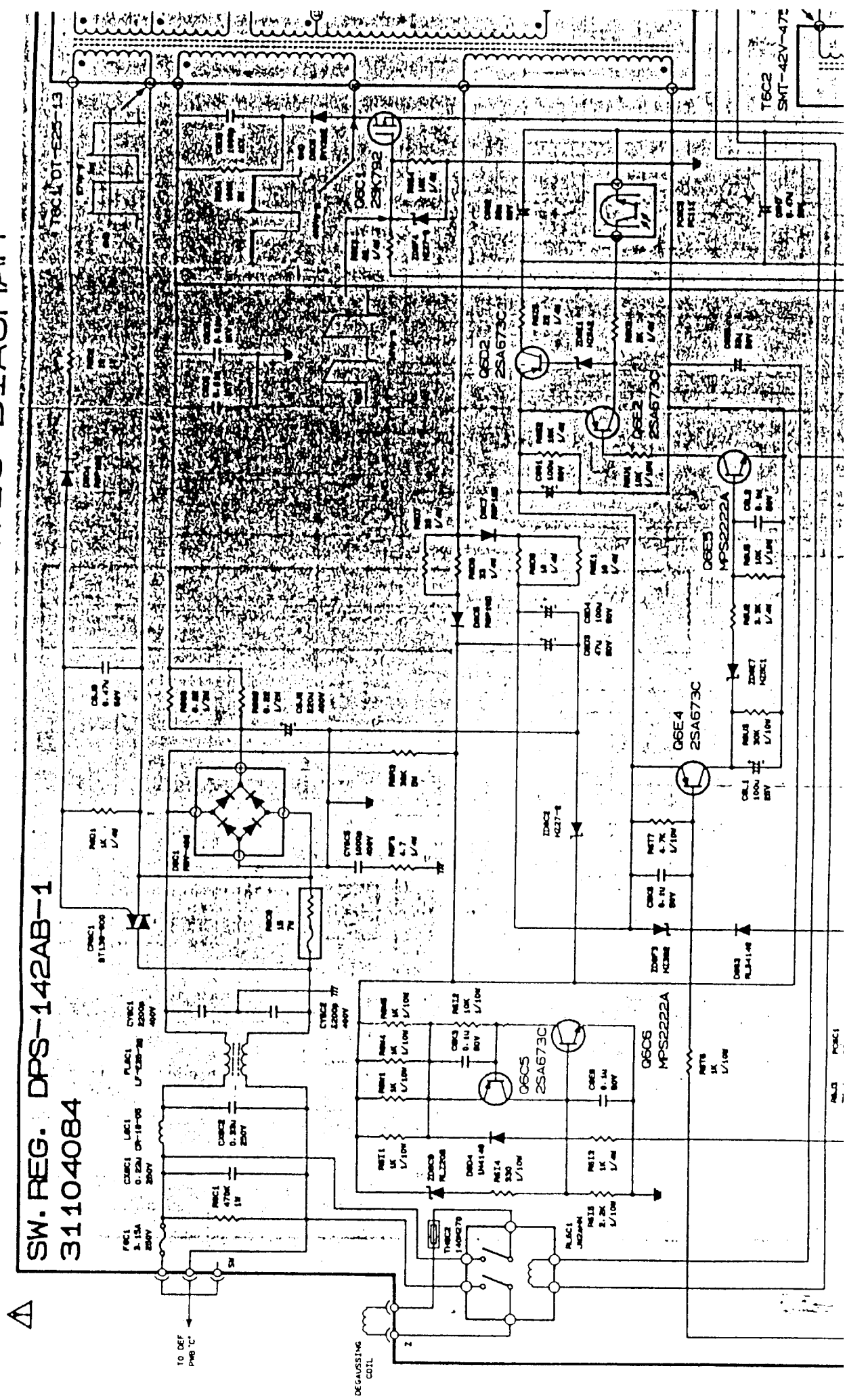
D

E



# SW. REG. DPS-142AB-1 SCHEMATIC DIAGRAM

SW. REG. DPS-142AB-1  
31104084



A

B

C

T6C2  
SMT-42V-47E

TO DEF P-1

400W

Q601 Q602 Q603 Q604

Q605 Q606

Q607 Q608

R601 R602 R603 R604 R605 R606 R607 R608 R609 R610

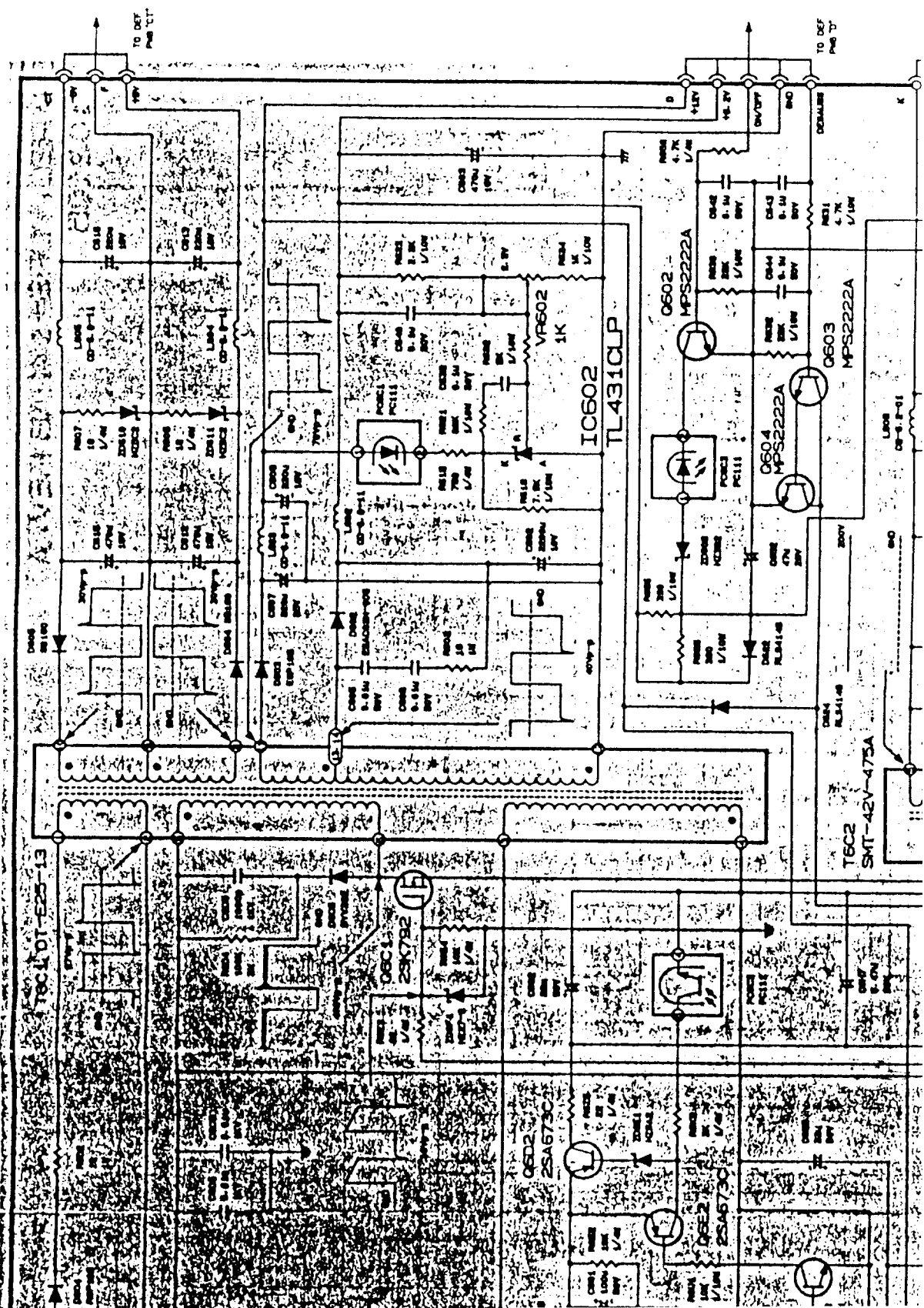
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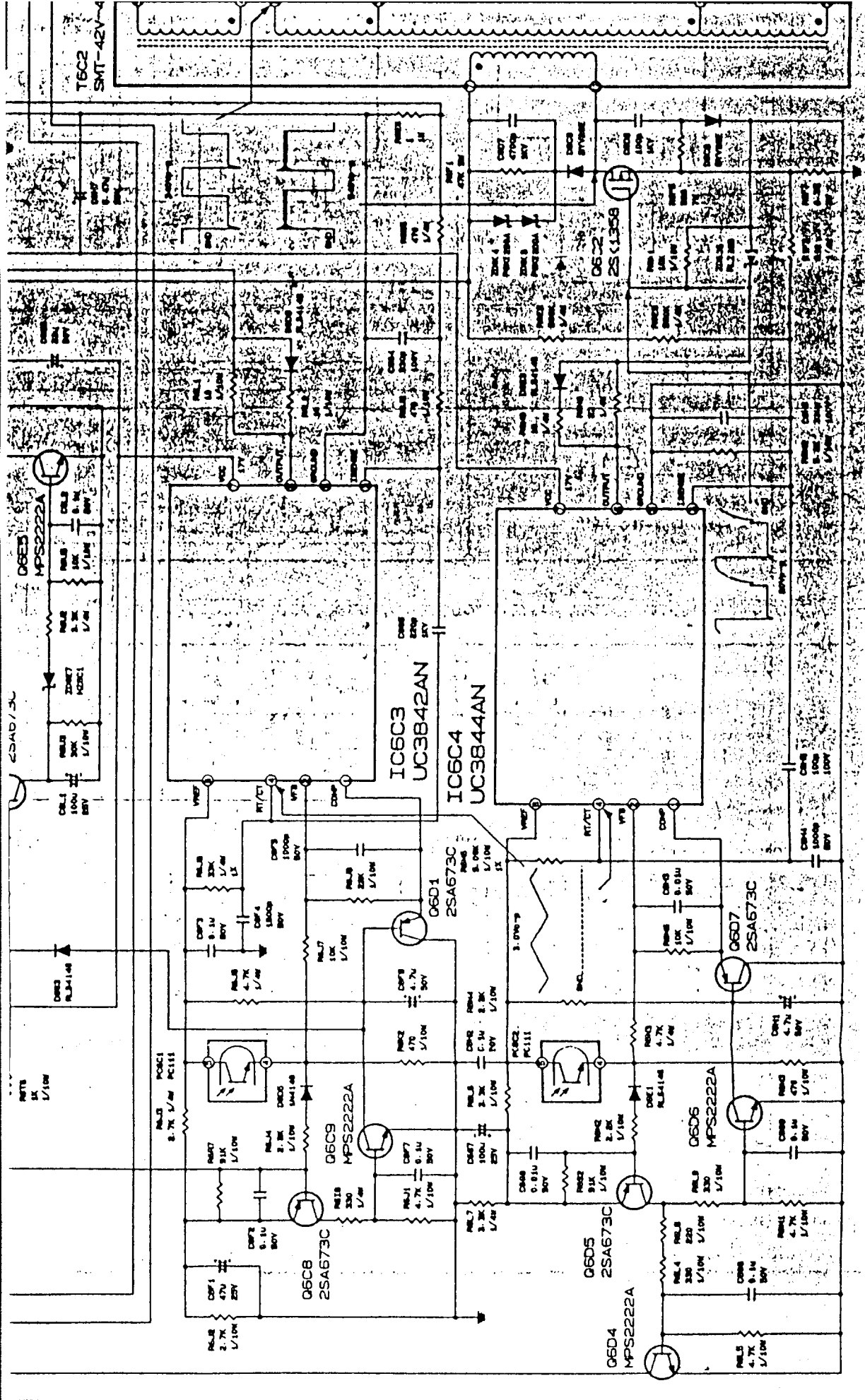
D601 D602 D603 D604

T6C2 SMT-42V-475A

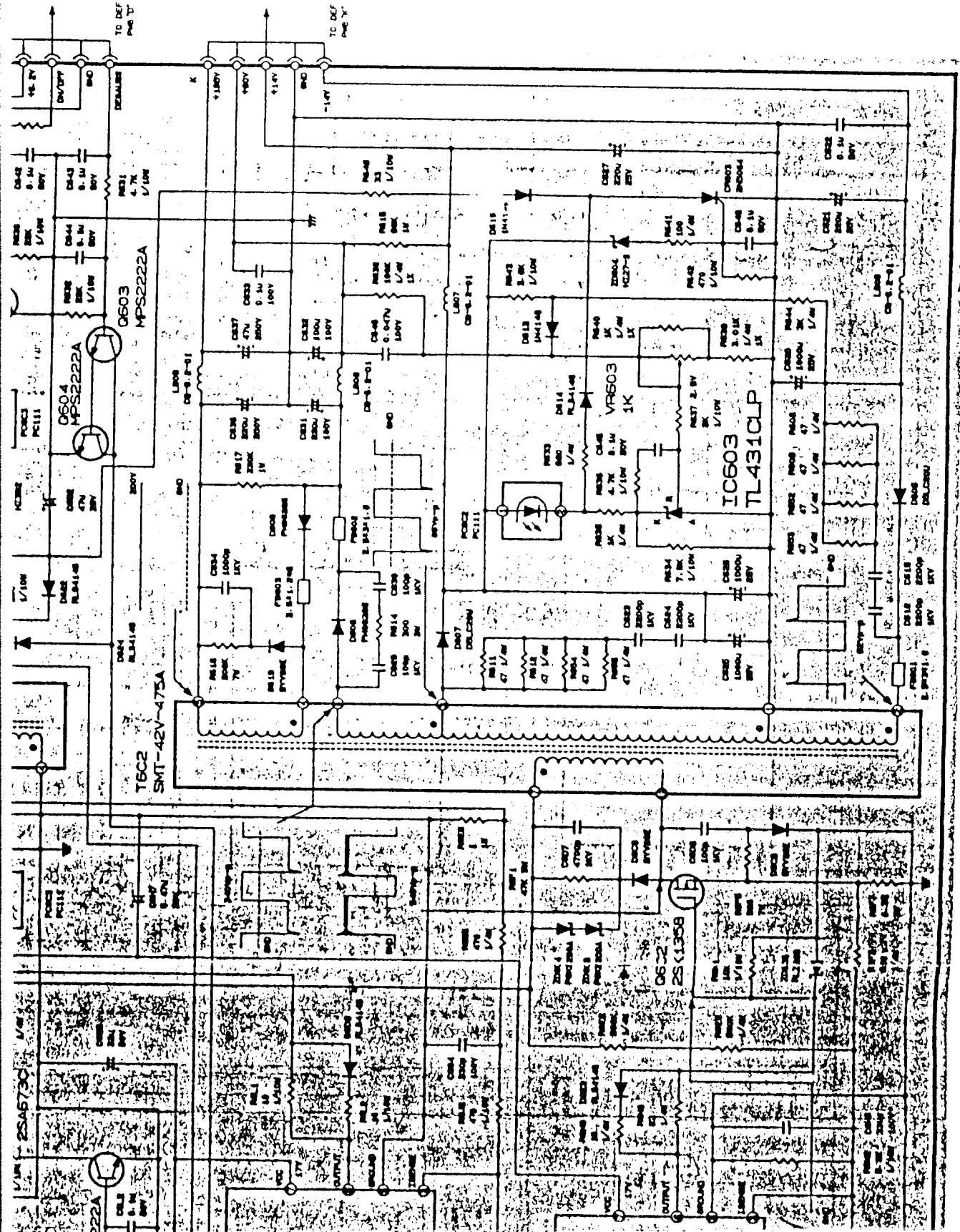
400W

TO DEF P-1





THE QUALITY OF  
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THE BEST THAT  
IS AVAILABLE



## SW. REG. DPS-142AB REV. A SCHEMATIC DIAGRAM

