

NEC

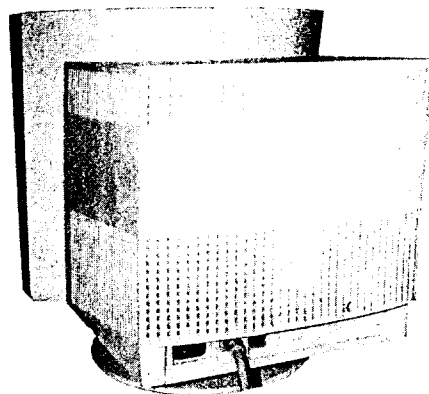
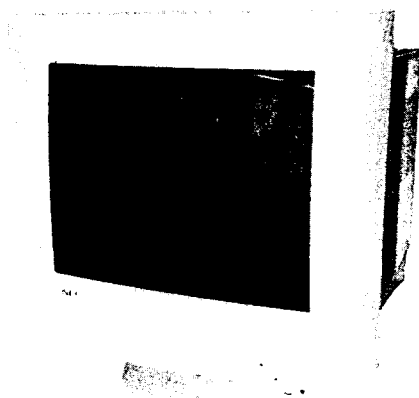
MODELS JC-1537VMA/B/R
MODELS JC-1539VMA/B/R

COLOR MONITOR **MultiSync XP15/XE15** **SERVICE MANUAL**

PART NO. 599910377



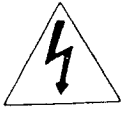
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NEC Corporation
TOKYO, JAPAN

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.	

PRODUCT SAFETY CAUTION

1. When parts replacement is required for servicing, always use the manufacturer's specified replacement component.
2. Comply with all caution and safety-related notes on the product display chassis and picture tube.
3. When replacing the component, always be certain that all the components are put back in place.
4. When servicing display monitor unit, it is required that the provided lead dress is used in the high voltage circuit area.
5. It is also recommended that shatter proof goggles are worn, when removing, installing and handling the picture tube. People not equipped with the proper precautionary measures mentioned should keep the picture tube away from body while handling.

6. X-radiation precaution

This product contains critical electrical and mechanical parts essential for X-ray protection.

Normal anode voltage is 24.0 kV at zero beam picture tube current under AC 100-120 V (A ver)/AC 220-240 V (B ver /R ver) input, and anode voltage must not exceed the voltages shown below. To measure anode voltage set brightness for very dim picture, and use a high impedance volt meter between chassis and anode lead and measure high voltage.

If high voltage exceeds the specifications on the chassis schematic diagram, take the necessary corrective action.

Table MAXIMUM ANODE VOLTAGE

beam current	at 0 mA	at 0.5 mA	at 1.0 mA
A ver /R ver	29.9 kV	28.95 kV	28.05 kV
B ver	31.2 kV	30.4 kV	30.0 kV

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SPECIFICATION

Electrical Description

model XP15 (JC-1537VMA/B/R)

Picture Tube	36 cm (15 inch). flat square CRT, 36 cm 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 Ω Positive	
	Sync	Separate sync	TTL Level
		Horizontal sync	Positive/Negative
		Vertical sync	Positive/Negative
		Composite sync	TTL Level
	Sync on green	Positive/Negative (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 160 Hz (Automatically)	
Resolution	Horizontal	1024 dots	
	Vertical	768 lines (non interlaced)	
Video Band width	85 MHz		
Active Display Area (Factory Setting)	Horizontal	260 mm (Active display area is dependent upon the signal timing)	
	Vertical	195 mm (Active display area is dependent upon the signal timing)	
Active Display Area (Full Scan)	Horizontal	280 mm (Active display area is dependent upon the signal timing)	
	Vertical	210 mm (Active display area is dependent upon the signal timing)	
Rated Voltage	AC 100-120 V , 50/60 Hz (JC-1537VMA)		
	AC 220-240 V , 50/60 Hz (JC-1537VMB/R)		
Rated Current	1.8 A (JC-1537VMA)		
	1.0 A (JC-1537VMB/R)		
Dimensions	370.6(W) x 393.2(H) x 409.4(D) mm		
Weight	17.3 Kg		
Environmental Considerations	Operating	Temperature 0 $^{\circ}$ to +35 $^{\circ}$ Humidity 30 % to 80 %	
	Storage	Temperature -20 $^{\circ}$ to +60 $^{\circ}$ Humidity 10 % to 90 %	

Note: Technical specifications are subject to change without notice.

model XE15 (JC-1539VMA/B/R)

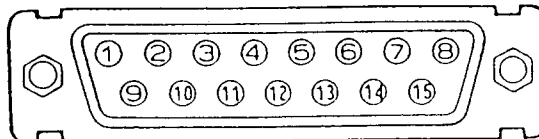
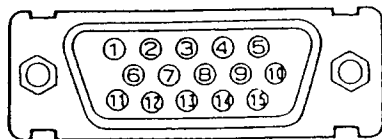
Picture Tube	36 cm (15 inch) flat square CRT, 36 cm usable square 0.28 mm Trio dot pitch Dot type black matrix Medium- short persistence phosphor, dark bulb, glass with anti-static coating		
Input Signal	Video	Analog 0.7 Vp-p 75 Ω Positive	
	Sync	Separate sync	TTL Level
		Horizontal sync	Positive/Negative
		Vertical sync	Positive/Negative
		Composite sync	TTL Level
	Sync on green	Positive/Negative (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 120 Hz (Automatically)	
Resolution	Horizontal	1024 dots	
	Vertical	768 lines (non interlaced)	
Video Band width	85 MHz		
Active Display Area (Factory Setting)	Horizontal	260 mm (Active display area is dependent upon the signal timing)	
	Vertical	195 mm (Active display area is dependent upon the signal timing)	
Active Display Area (Full Scan)	Horizontal	280 mm (Active display area is dependent upon the signal timing)	
	Vertical	210 mm (Active display area is dependent upon the signal timing)	
Rated Voltage	AC 100-120 V , 50/60 Hz (JC-1539VMA) AC 220-240 V , 50/60 Hz (JC-1539VMB/R)		
Rated Current	1.8 A (JC-1539VMA) 1.0 A (JC-1539VMB/R)		
Dimensions	370.6(W) x 393.2(H) x 409.4(D) mm		
Weight	17.3 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

MINI D-SUB 15P

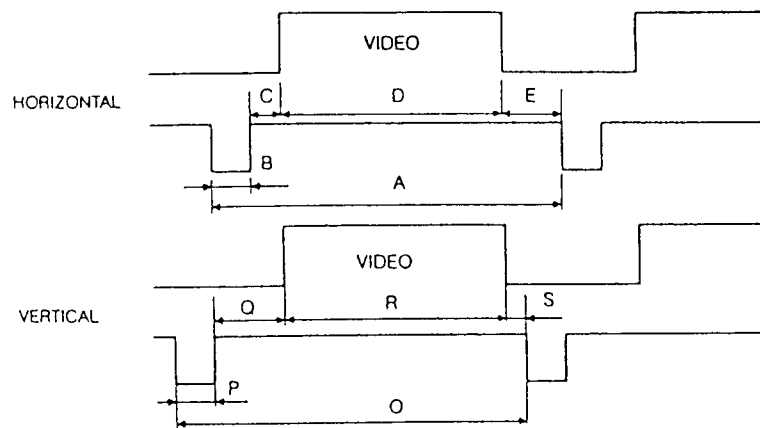
Macintosh with optional Adapter D-SUB 15P



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

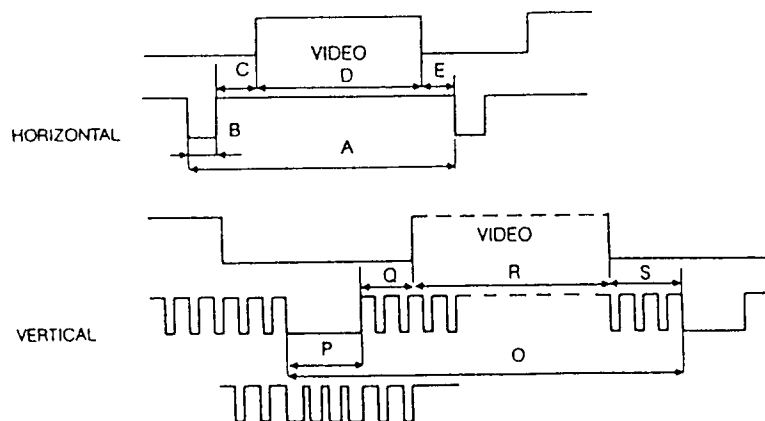
Signal Timing Charts

SEPARATE SYNC



Sync Polarity: Positive/Negative

COMPOSITE SYNC



Sync Polarity: Positive/Negative

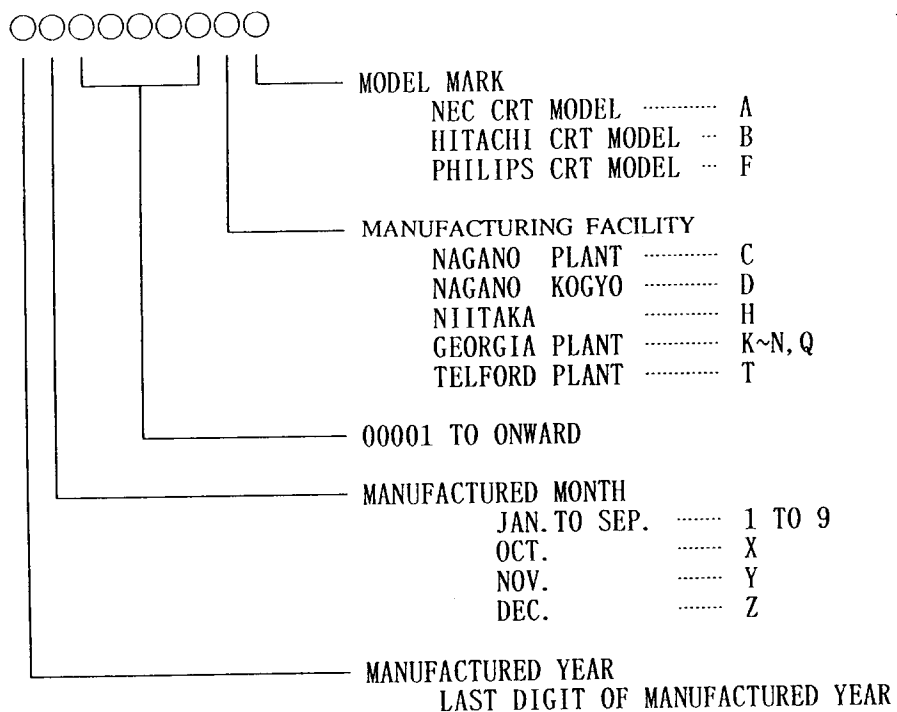
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SERIAL NUMBER INFORMATION

Refer to the serial number information shown below.

1. MODEL : JC-1537VMA/B/R OR JC-1539VMA/B/R

2. SERIAL No.



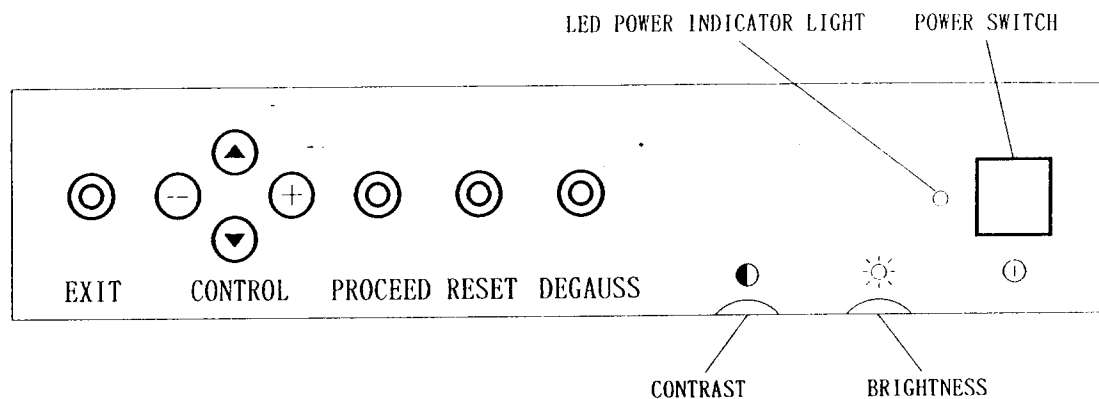
MODEL :	
SERIAL No. :	
MODEL :	
SERIAL No. :	
MODEL :	
SERIAL No. :	

OR

MODEL NUMBER:	
SERIAL NUMBER:	
MUNUFACTURE DATE:	

MFG. MODEL NUMBER:	
SERIAL NUMBER:	
CHASSIS I.D. : Z56A	

MONITOR ADJUSTMENT CONTROLS



EXIT :

- in the main menu : exits the OSM (On Screen Manager) controls
- in a submenu : exits to the previous menu

CONTROL UP/DOWN :

- moves the arrow up/down to select one of the choices.

CONTROL +/- :

- in the main menu : no function
- in a submenu : increases or decreases the adjustment.

PROCEED :

- in the main menu : proceeds to the selected menu choice
(indicated by the arrow)
- in a submenu : moves the arrow down to select one of the choices.

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.

DEGAUSS :

- eliminates the build-up of stay 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.

Caution : Allow a minimum of 20 minutes to elapse between uses of the DEGAUSS button, when not switching from mode to mode.
Do not hold the button down continuously to avoid decreasing the life of the Degauss circuitry.

CONTRAST :

- adjust 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 :

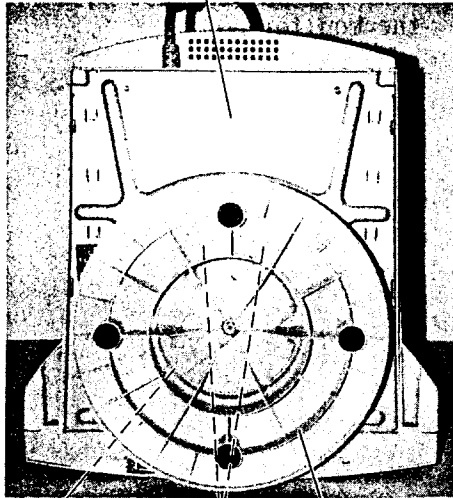
located above the power switch is on and indicates the monitor's power mode. Each mode reduces the amount of power used by the monitor.

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

DISASSEMBLY

Tilt/Swivel ASSY

Chassis Base ASSY

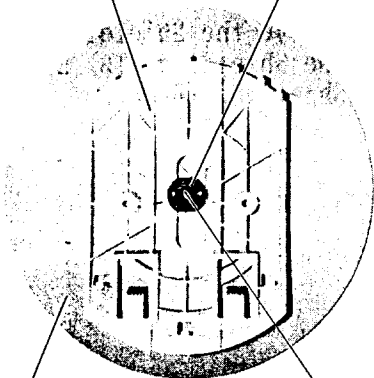


Hook
Revolving Stand(T) Revolving Stand(B) ASSY

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

Revolving Stand (T)

Spindle

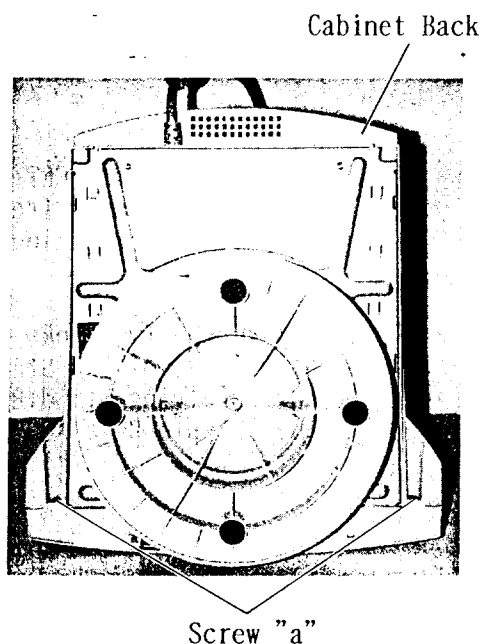


Revolving Stand (B) ASSY

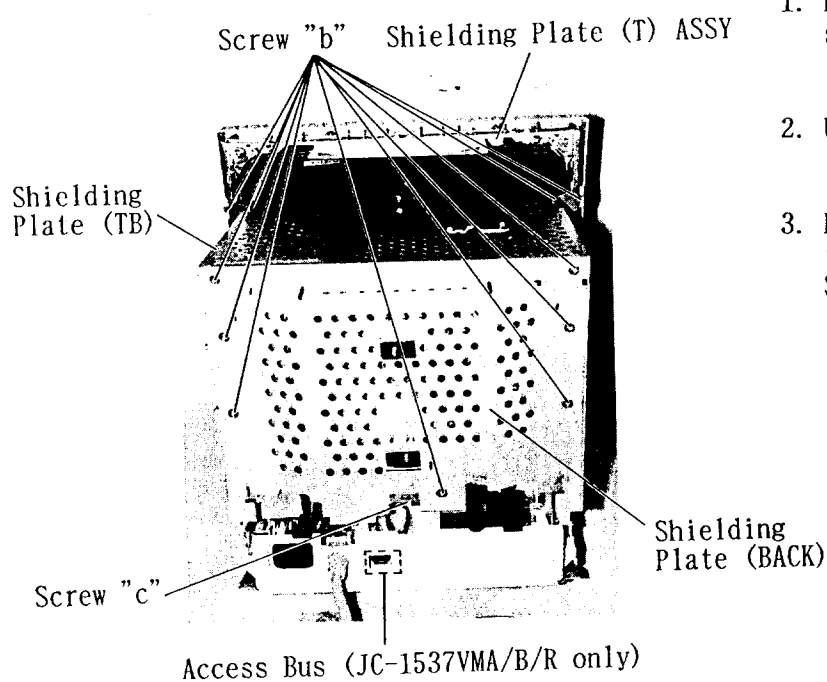
Screw "a"

3. Remove the Screw "a".
4. Remove the Revolving Stand(T) from the Revolving Stand(B) ASSY.

Cabinet Back and Shielding Plate

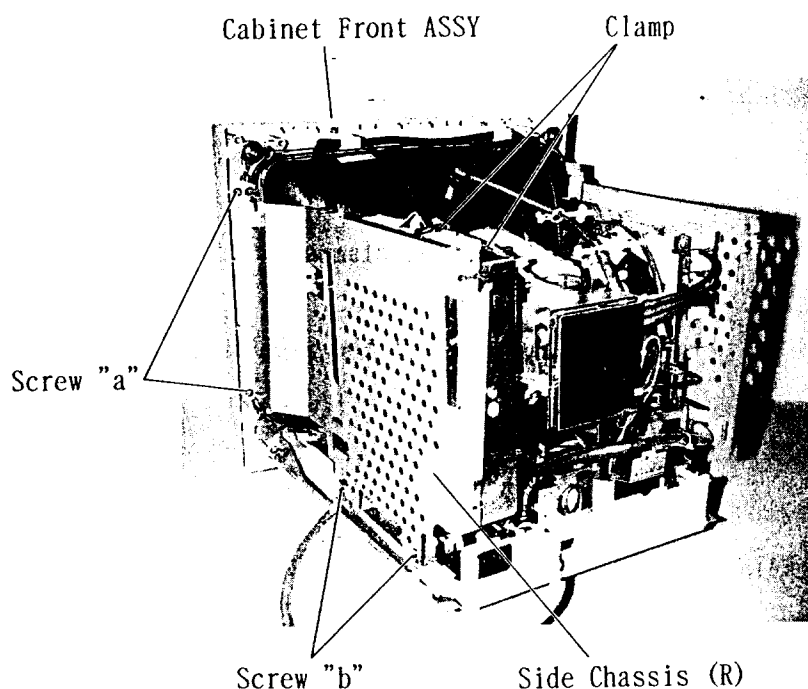


1. Remove the two screws "a".
2. Take off the Cabinet Back from the monitor.

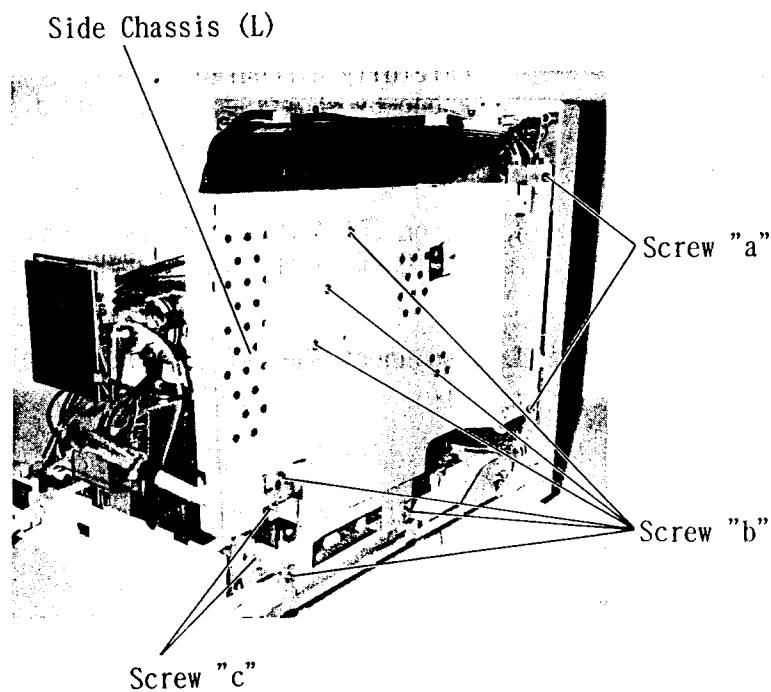


1. Remove the eleven screws "b" and screw "c".
2. Untie the clamp.
3. Remove the Shielding (T) ASSY, the Shielding (TB) and the Shielding (BACK).

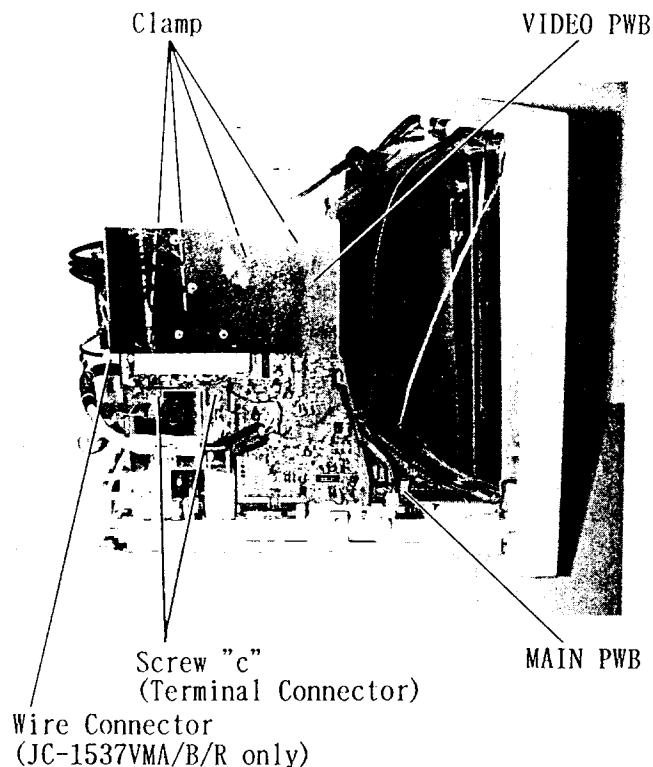
CRT PWB, VIDEO PWB and MAIN PWB



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 two screws "b" and two screws "a".
4. Remove the Side Chassis (R) from the Cabinet Front ASSY.



5. Remove the six screws "b" and two screws "c".
6. Remove the two screws "a".
7. Remove the Side Chassis (L) from the Cabinet Front ASSY.

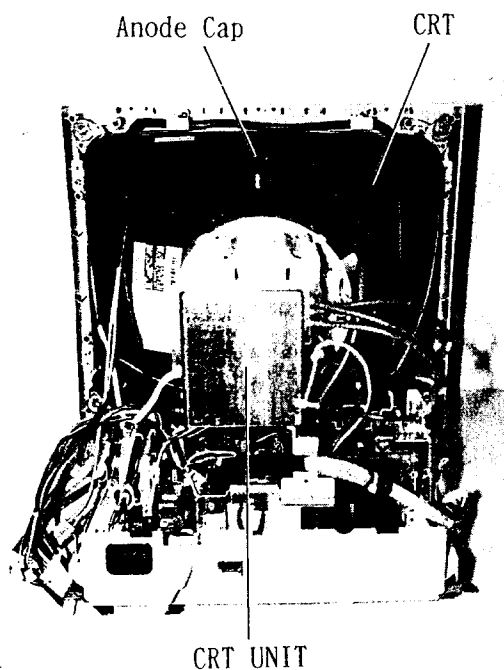


8. Disconnect the connectors "CN-IN", "CN-BV", "CN-RV", "CN-GV" and "Wire Connector" from the VIDEO PWB.

9. Remove the two screws "c".

10. Untie the clamps.

11. Disconnect the VIDEO PWB from the MAIN PWB.



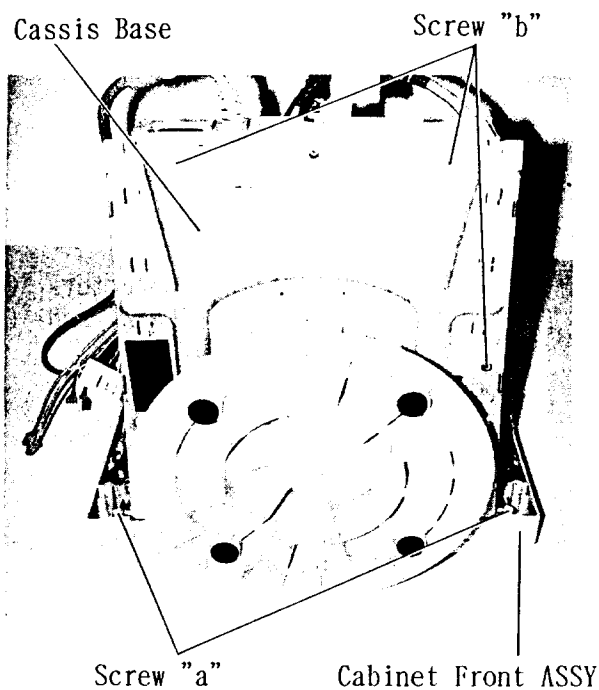
12. Remove the Anode Cap from the CRT

NOTE:

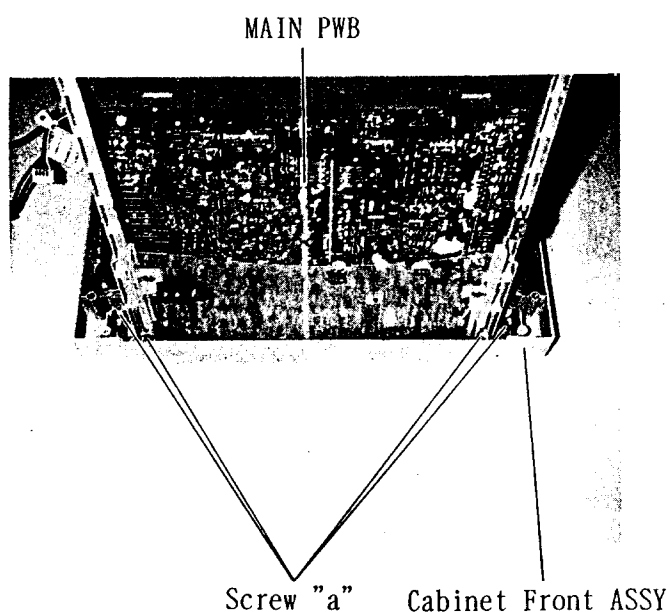
Carefully discharge the CRT anode by shorting it to ground before removing Anode Cap.

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

14. Disconnect the CRT UNIT from the CRT.

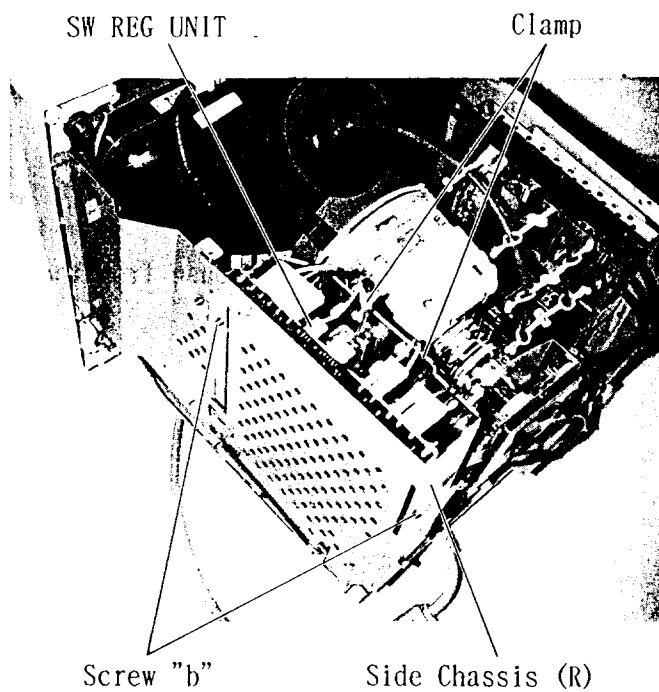


15. Turn the CRT face down on a clean static free surface to prevent scratching CRT face.
16. Remove the two screws "a" and three screws "b".
17. Remove the Chassis Base from the Cabinet Front ASSY.



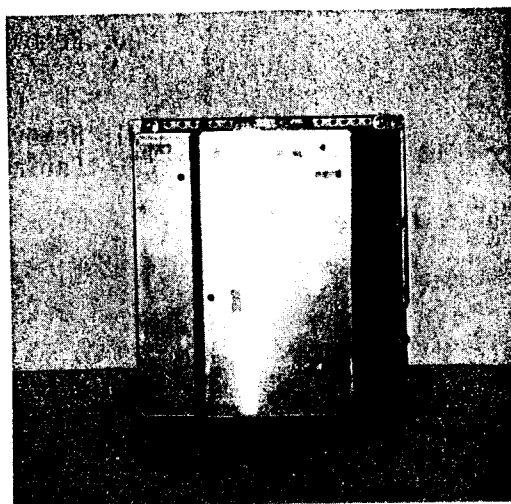
18. Disconnect the connectors "CN-HDY" and "CN-VDY" from the MAIN PWB.
19. Disconnect the connector "CN-ZDY" from the MAIN PWB. (JC-1537VMA/B/R only)
20. Remove the four screws "a".
21. Remove the MAIN PWB from the Cabinet Front ASSY.

SW REG UNIT

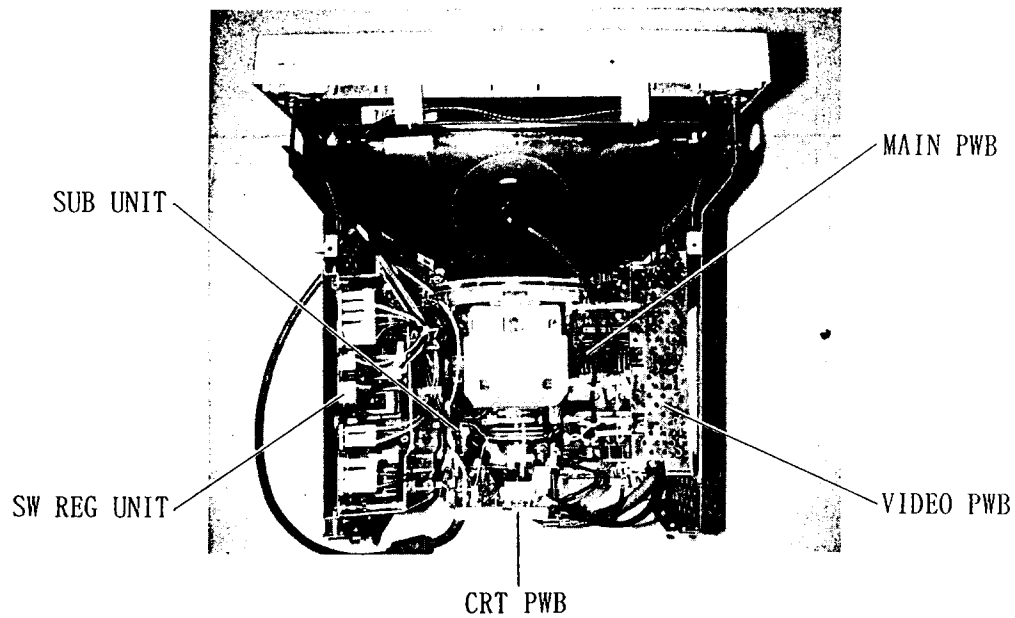


1. Untie the clamps.
2. Disconnect the connectors "CN-K", "CN-CT", "CN-D", "CN-Z" and "CN-SW" from the SW REG UNIT.
3. Remove the two screws "b".
4. Lift up the SW REG UNIT from the Side Chassis (R).

SW REG UNIT



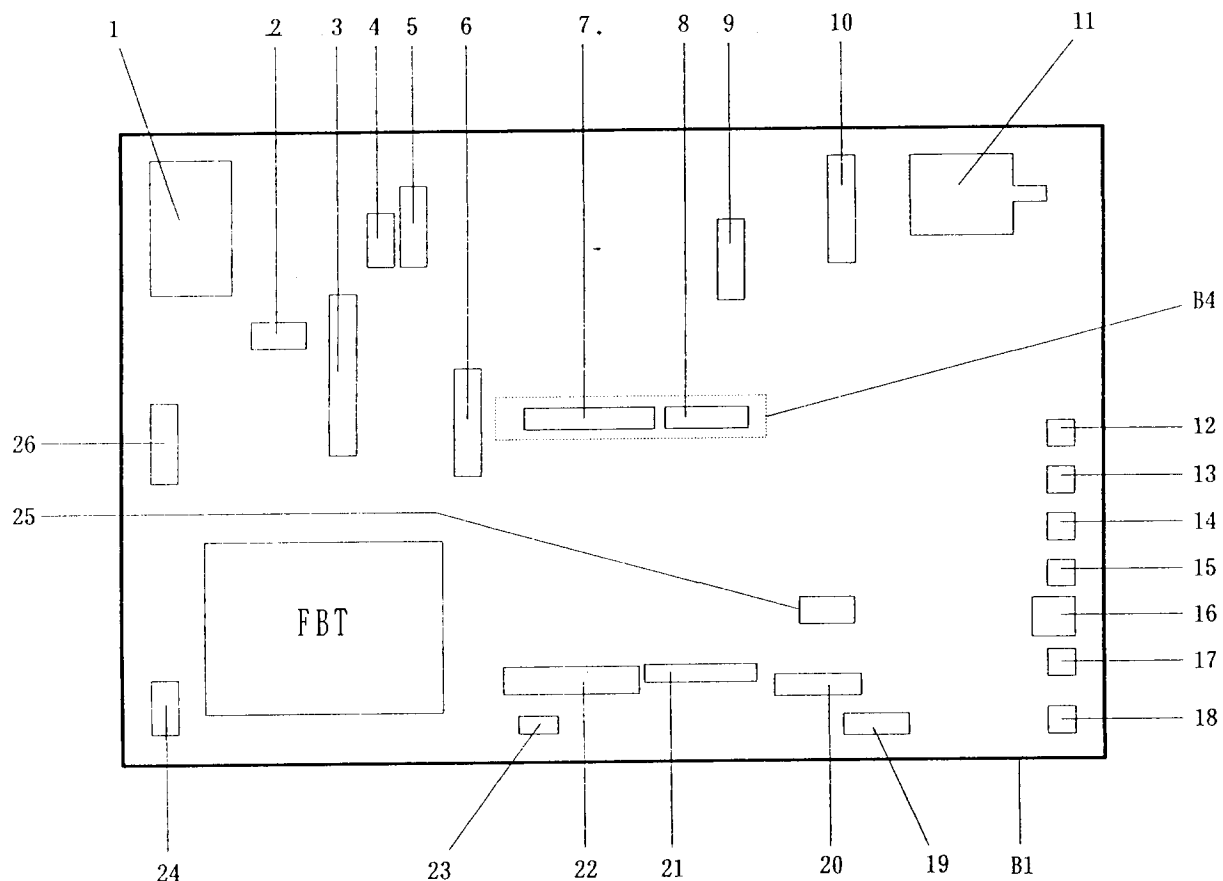
PWB LOCATION DIAGRAM



MAIN PWB	PWE - 4 2 2
VIDEO PWB	PWE - 4 1 9 A
CRT PWB	PWE - 4 1 9 B
SUB UNIT	PWE - 4 0 5
SW REG UNIT	DPS-112AB (JC-1537VMA) (JC-1539VMA) DPS-112AB-1 (JC-1537VMB/R) (JC-1539VMB/R)

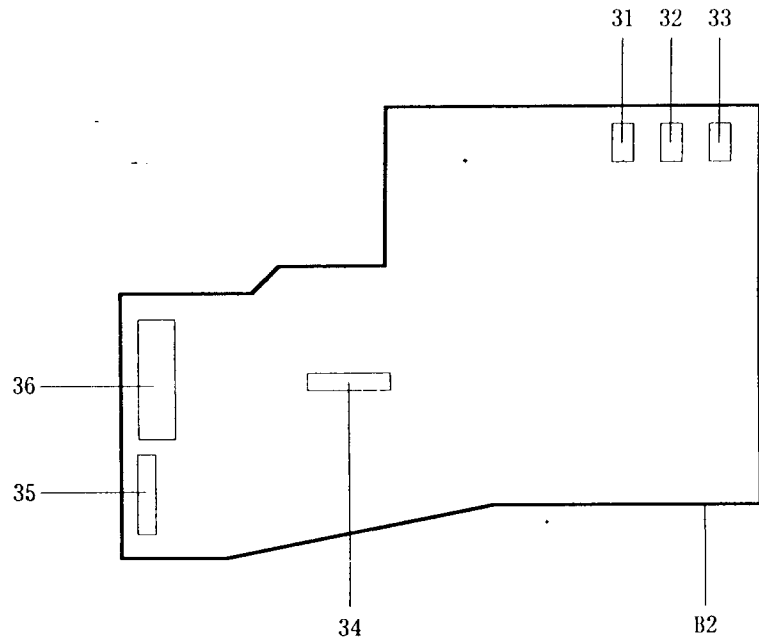
CONNECTOR, CONTROL AND TEST POINT LOCATION DIAGRAM

MAIN PWB



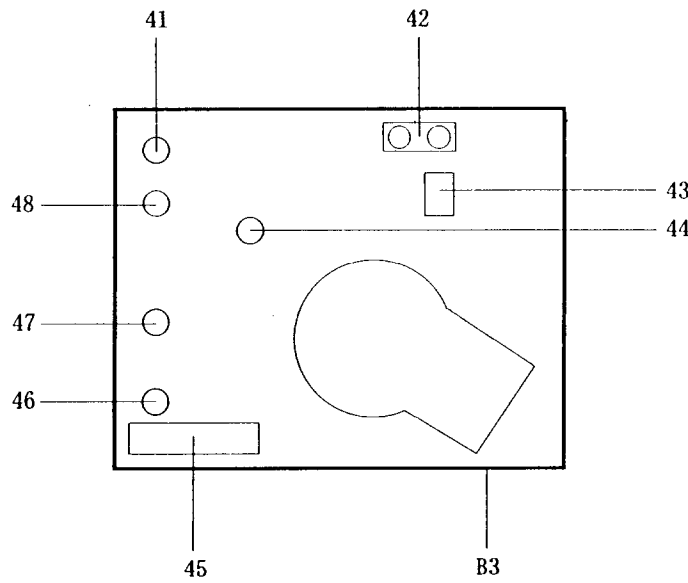
1	CONNECTOR CN-AC	15	CONTROL+ SWITCH SW104
2	CONNECTOR CN-CT	16	UP DOWN SWITCH SW103
3	CONNECTOR CN-K	17	CONTROL- SWITCH SW102
4	CONNECTOR CN-E	18	EXIT SW101 SW101
5	CONNECTOR CN-D	19	CONNECTOR CN-CX
6	CONNECTOR CN-HDY	20	CONNECTOR CN-BX
7	CONNECTOR CN-U	21	CONNECTOR CN-S
8	CONNECTOR CN-W	22	CONNECTOR CN-M
9	CONNECTOR CN-VDY	23	TEST POINT TP2001
10	CONNECTOR CN-C	24	SYNC SWITCH SW109
11	SWITCH SW601	25	CONNECTOR CN-ZDY (XP15 only)
12	DEGAUSS SWITCH SW107	26	CONNECTOR CN-HV
13	RESET SWITCH SW106	B1	MAIN PWB (PWE-422)
14	PROCEED SWITCH SW105	B4	SUB UNIT (PWE-405)

VIDEO PWB



31	CONNECTOR CN-GV	35	CONNECTOR CN-SV
32	CONNECTOR CN-RV	36	CONNECTOR CN-MV
33	CONNECTOR CN-BV	B2	VIDEO PWB (PWE-419A)
34	CONNECTOR CN-IN		

CRT PWB



41	TEST POINT TP905 GND	46	TEST POINT TP903 (B)
42	CONNECTOR CN-CE	47	TEST POINT TP901 (R)
43	CONNECTOR CN-E	48	TEST POINT TP902 (G)
44	TEST POINT TP904	B3	CRT PWB (PWE-419B)
45	CONNECTOR CN-RGB		

ADJUSTMENT PROCEDURES

Application

These specifications outline the adjustment procedures for Model JC-1537VMA/VMB/VMR and JC-1539VMA/VMB/VMR 15 inch color monitor.

Product Name

(Trade Name) : MultiSync XP15
"JC-1537VMA" (or "A ver ") : U.S.A. and Canada in northern hemisphere.
"JC-1537VMB" (or "B ver ") : European countries in northern hemisphere.
"JC-1537VMR" (or "R ver ") : Australia in southern hemisphere.
(Trade Name) : MultiSync XE15
"JC-1539VMA" (or "A ver ") : U.S.A. and Canada in northern hemisphere.
"JC-1539VMB" (or "B ver ") : for European countries in northern hemisphere.
"JC-1539VMR" (or "R ver ") : for 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 ± 0.01 Vp-p (terminated at 75 Ω) positive
or

Analog sync on green (terminated at 75 Ω)

Video 0.7 ± 0.01 Vp-p positive

Sync 0.3 ± 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 μ T

Horizontal magnetic fields : 30 μ T

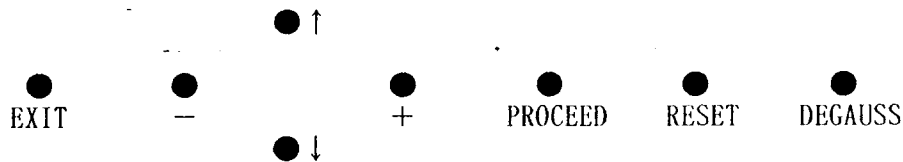
"R ver " (for the southern hemisphere.)

Vertical magnetic fields : -40 μ T

Horizontal magnetic fields : 30 μ 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 (below mention) 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 are 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]
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 Rotate (*2)
Advanced Geometry	Top : In/Out Left/Right Bottom : In/Out Left/Right
OSM Location	Up/Down/Right/Left
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]	
H Hold	H Hold (1)	
	H Hold (2)	
Size Max/Center	H Size Max	
	V Size Max	
	H Pos Centering	
	H Raster Center	
Vertical Linearity	Center	
	Top/Bottom	
Position/Size	Horizontal :	Position
		Size
	Vertical :	Position
		Size
Basic Geometry	Sides :	In/Out
		Left/Right
		Tilt
		Align
	Rotate (*2)	
Advanced Geometry	Top :	In/Out
		Left/Right
	Bottom :	In/Out
		Left/Right
Gain	Gain :	Red/Green/Blue
	OSM Color Gain	
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"

(*2) This function is supplied by Model JC-1537VM* only

5-10. Self Test

Self Test of display and no display perform 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. Trapezoidal 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
12. CRT Grade
- 12-1. Preliminary Setting
- 12-2. Purity
- 12-3. Convergence

C. Appended Chart

1. List of the Adjustment Signals
2. 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=90 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 24 kV.

- 1) Receive signal 11.
- 2) Set the value 170 in Menu (S) - "Size Max/Center" - "H Pos Centering".
- 3) Verify that the horizontal position value in Menu (S) - "Position/Size" - "horizontal" - "Position" is 128.
- 4) Verify that the data values in Menu (S) - "H HOLD" are:
HOLD(1) = 123
HOLD(2) = 127
- 5) Close the Menu.
- 6) Short-circuit pins 8-9 of connector CN-BX.
- 7) Adjust VR501 so that the screen appears as a single image.
- 8) Open the short-circuit and check if the synchronization is working.

4. High-Voltage Adjustment

Signal : No.11 (fH=65 kHz/fv=90 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 24.0 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.

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.2".
If other number selected, select "No.2".
(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.2".
If other number selected, select "No.2".

1. Horizontal Synchronization

Signal : No.11 (fH=65 kHz/fV=90 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 270mm 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 much.

- 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 ± 2 mm.
- 4) Put the pins 8-9 of connector CN-BX short-circuit.
- 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. Rough FOCUS Adjustment

Signal : No. 04 (800*600@72), all-"H" character

VR : standard condition

Adjust FOCUS VR so that the character can be identified throughout the screen.

3. Horizontal Raster Position

Signal : No. 04 (800*600@72), 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 be approximately 270mm.
* Note: Since the value of the amplitude changes very rapidly when "+" and "-" are kept pressed, some care is needed not to increase it too much.
- 2) Within Menu (S) - "Position/Size" - "Horizontal" - "Position", move the horizontal position of the video to the left, until the turning point. 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 2 mm (in the figure below, $|X_{left} - X_{right}| \leq 2.0$ mm).
- 4) Close the menu.

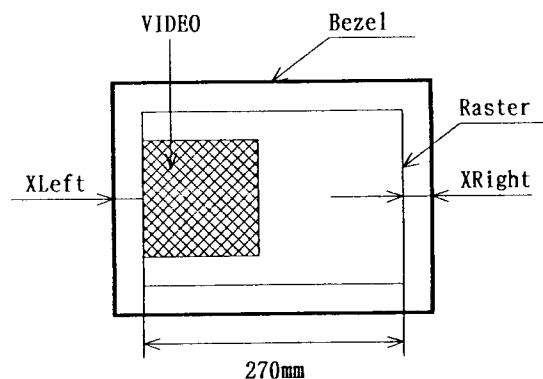


Fig.4-1 H raster centering

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" - "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 $260 \text{ mm} \pm 6 \text{ mm}$.
- 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), white 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 195 mm. If the size cannot be expanded to approximately 195 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 195 mm. If the size cannot be expanded to approximately 195 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.8 (SIZE-1), 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 $195 \pm 3 \text{ mm}$.
- 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":

Horizontal Image size : approximately 260 mm

Vertical Image size : approximately 195 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 X_{sl} become equal to X_{sr} .

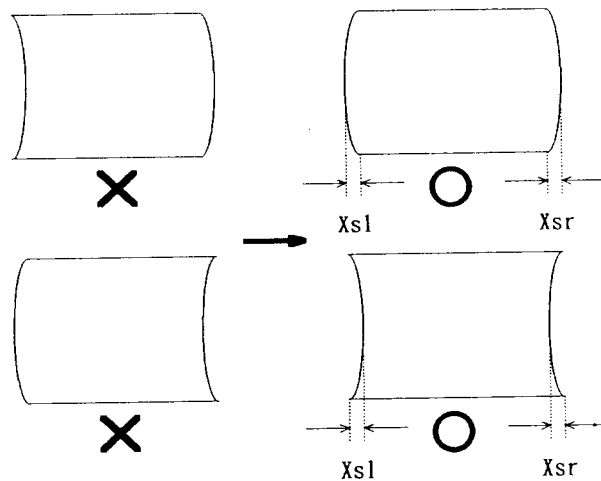


Fig.7-1 Side pincushion balance

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.

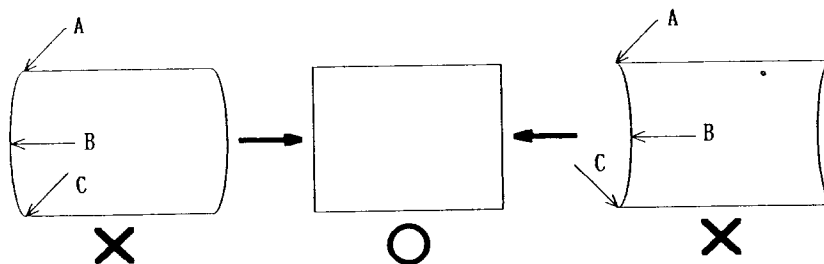


Fig.7-2. Side Pincushion

7-3. Trapezoidal Distortion

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

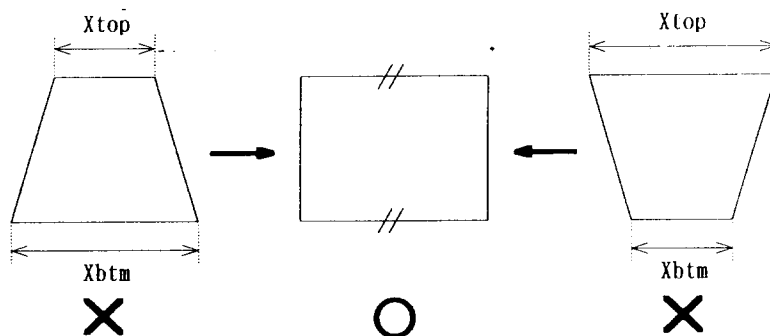


Fig.7-3 Trapezoidal distortion

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} .

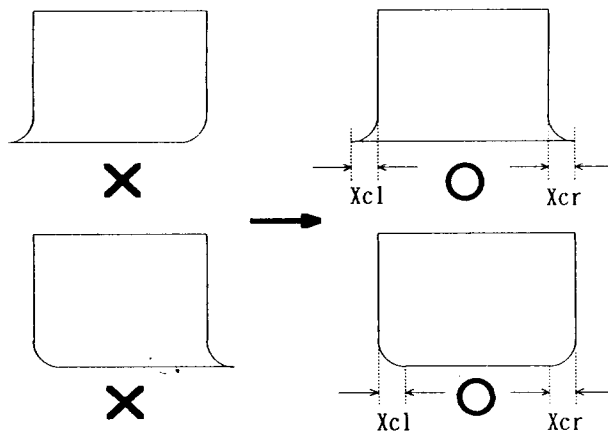


Fig.7-4 Lower corner balance

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} .

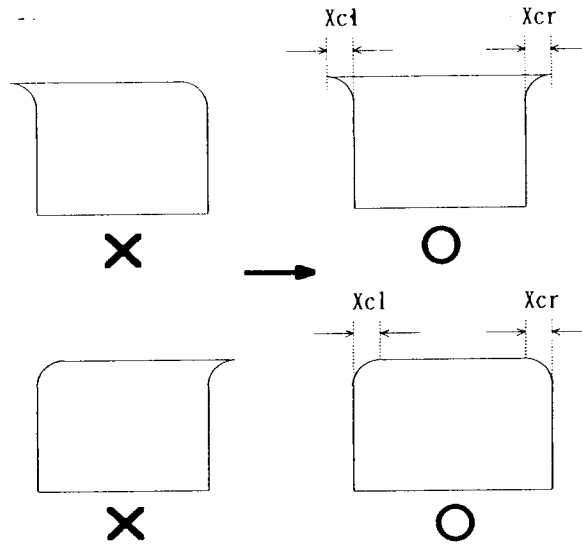


Fig.7-5 Upper corner balance

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.

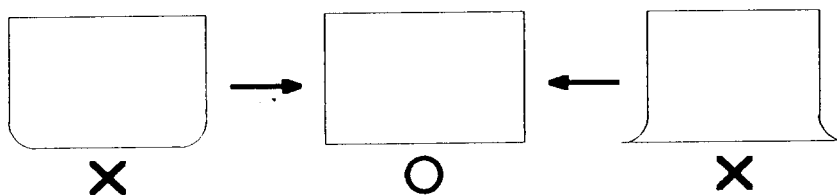


Fig.7-6 Lower corner distortions

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.

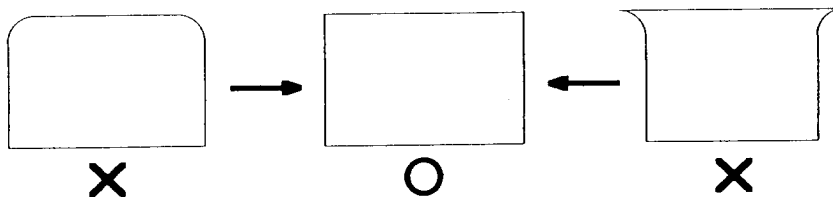


Fig.7-7 Upper corner distortion

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

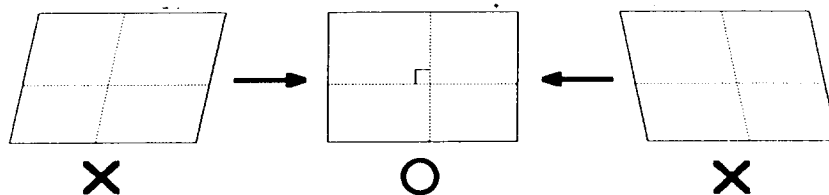


Fig.7-8 Parallelogram distortion

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*60@60)	17 (EVGA350)
18 (EVGA400@84)	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	260 mm $\pm$ 2 mm
Vertical	195 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 2) and 3).

* Note: Be sure to close the menu before changing the signal.

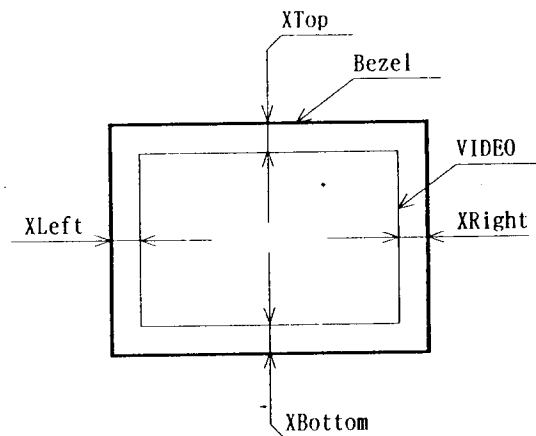


Fig.8-1 Screen position

9. Video Amplitude

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

Video : analog 0.7 ± 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.2

"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

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

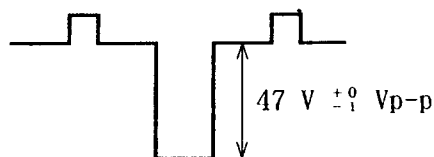


Fig. 9-1 TP-R/G/B waveform

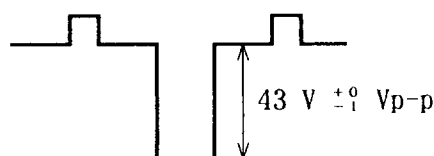


Fig. 9-2 TP-R waveform at "OSM Gain" adjustment

9-3. Cut-Off Adjustment

Signal : No.13 (WINDOW MAC-2), all-black
 VR : Contrast fully counterclockwise
 Brightness fully counterclockwise
 SCREEN Turned fully counterclockwise

- 1) Short-circuit the following pins of connector CN-BX:
 Pins 1 and 9 (* short-circuit these pins by using a $39 \text{ k}\Omega \text{ } 1/6\text{W}$)
- 2) Connect a high voltage meter at TP-904, and adjust SCREEN VR to
 (NEC CRT) $500 \text{ Vdc} \pm 5 \text{ Vdc}$
 (others) $470 \text{ Vdc} \pm 5 \text{ Vdc}$
 (The maximum input voltage of the high-voltage meter is 1.5 kV or more.
 Use an input resistance over $1,000 \text{ M}\Omega$.)

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

- 3) Set CA100 into analyzer mode

Channel 00

(A/R version)	(B version)
(NEC/Philips CRT)	(HITACHI CRT)
x=0.276,	0.285
y=0.274,	0.300
Y=0.2 cd/m^2 .	

- 4) The data values in Menu (S) - "Bias" - "Sub-Bias" shall 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 ± 20 .
- 5) The bias data of the 2 other colors are increased until the indication is 100 ± 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-circuit.
- * 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-circuit the following pins of CN-BX:
Pins 1 and 9 (* short-circuit with 39 k Ω)
- 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 if the chromaticity values are as follows.
If not, change the bias data values of the colors except for the standard 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 prevailing:
 $x_1=x_2 \pm 0.005$
 $y_1=y_2 \pm 0.005$
If the values are out of the required range, repeat steps 3) through 8).
- 9) Open the short-circuit.

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 of this manual, 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-circuit the following pins of CN-BX connector:

Pins 1 and 9 (* short-circuit via 39 k Ω).

2) Receive the signal.

3) Adjust chromaticity NO.2 within Menu (S) - "AccuColor" (or "Color Control")

- "Color_Preset" to the following values:

Preset_NO.	x	y
2	0.300 ± 0.003	0.315 ± 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
1	0.281	0.311
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 ± 0.01 .

5) Receive an all-black signal.

6) Open the short-circuit. And turn the Contrast VR fully counterclockwise.

And the Brightness VR fully clockwise.

7) Set "Color_Preset" to NO.2.

8) Within Menu (S) - "BRIGHTNESS" - "Red", "Green" and "Blue", adjust chromaticity to the following values:

$x = 0.300 \pm 0.003$

$y = 0.315 \pm 0.003$.

9) Close the menu.

11. Focus Adjustment

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

VR : standard condition

1) Receive the character "\$" with 4 dots missing.

2) Adjust focus VR of FBT so that the best focus occurs in the picture.

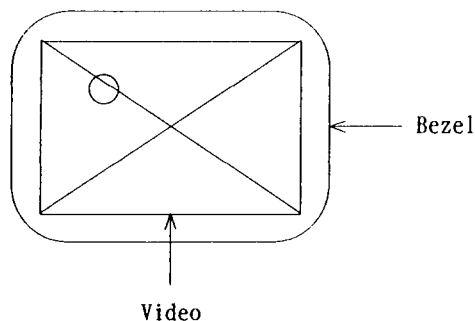


Fig.11-1 Position of focus adjustment

12. CRT Grade

Signal : No.4 (800*600@72), all-white/white crosshatch
Direction
of Screen : pointing to the East

12-1. Preliminary Setting

- 1) Receive the all-white signal.
- 2) Within Menu (U) - "Size", expand horizontal size and overscan the screen by "+" key (Wide).
- 3) Within Menu (U) - "Size", expand vertical size and overscan the screen by "↑" key (Tall).
- 4) Operating the user control VR, set the following state:
Brightness Position where the back raster just disappears
Contrast Position where the brightness of the tube surface is 100 cd/m².

12-2. Purity

- 1) Receive the all-white signal.
- 2) Apply external degaussing, and check the purity for a screen of size 260x195 mm.
- 3) If purity deviations can be seen by naked eyes, readjust the CPC magnet and if needed make a supplementary adjustment through the addition of a supplementary magnet.

12-3. Convergence

Definitions:

C_H : Convergence error in the horizontal direction

C_V : Convergence error in the vertical direction

C_S : Overall difference of the convergence error

(Calculated by $C_S = \text{sq-root}(C_H^2 + C_V^2)$)

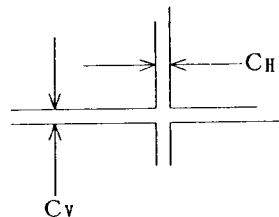


Fig.12-1 Misconvergence

- 1) Receive crosshatch pattern
- 2) Measure the convergence error, and if the values below are not satisfied, adjust the static convergence by using 4-pole or 6-pole magnets.

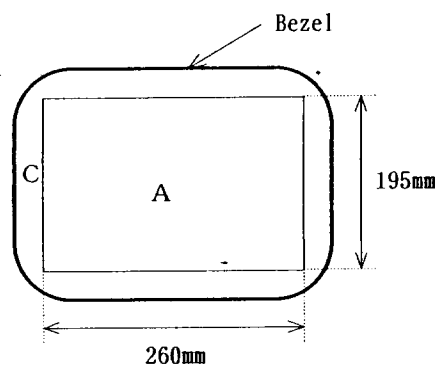


Fig.12-2 Convergence measurement zone

- A-zone: Inside rectangle 260 mm × 195 mm
 C_H, C_V Less than or equal to 0.35 mm
 C_S Not specified
- C-zone: Inside the bezel and parts besides the A-zone
 (* Make the adjustment only after overscanning the displayed screen)
 C_H, C_V Both less than or equal to 0.40 mm
 C_S Less than or equal to 0.5 mm
 (* Further details shown in the table below).

	$C_H \leq 0.35 \text{ mm}$	$0.35 \text{ mm} \leq C_H \leq 0.40 \text{ mm}$
$C_V \leq 0.35 \text{ mm}$	OK	C_S is calculated If 0.5 mm or less → OK
$0.35 \text{ mm} \leq C_V \leq 0.40 \text{ mm}$	Make the adjustment by calculating C_S When 0.5 mm or less → OK	Supplementary adjustment is required

Fig.12-1 Judgement criteria

C. Appended chart

1. List of the Adjustment Signals

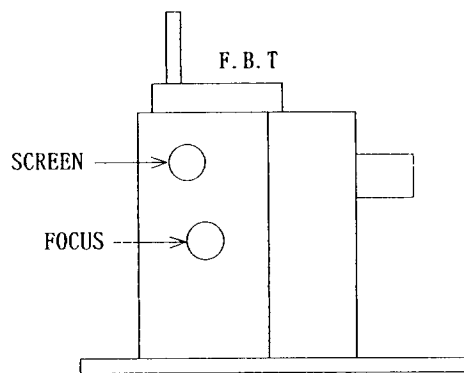
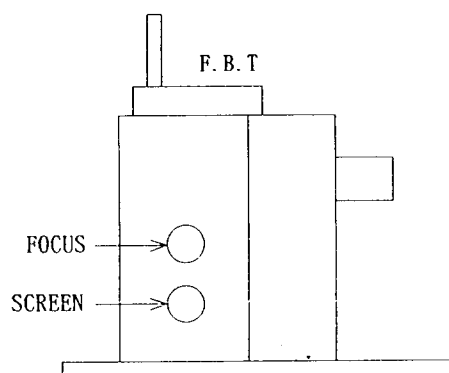
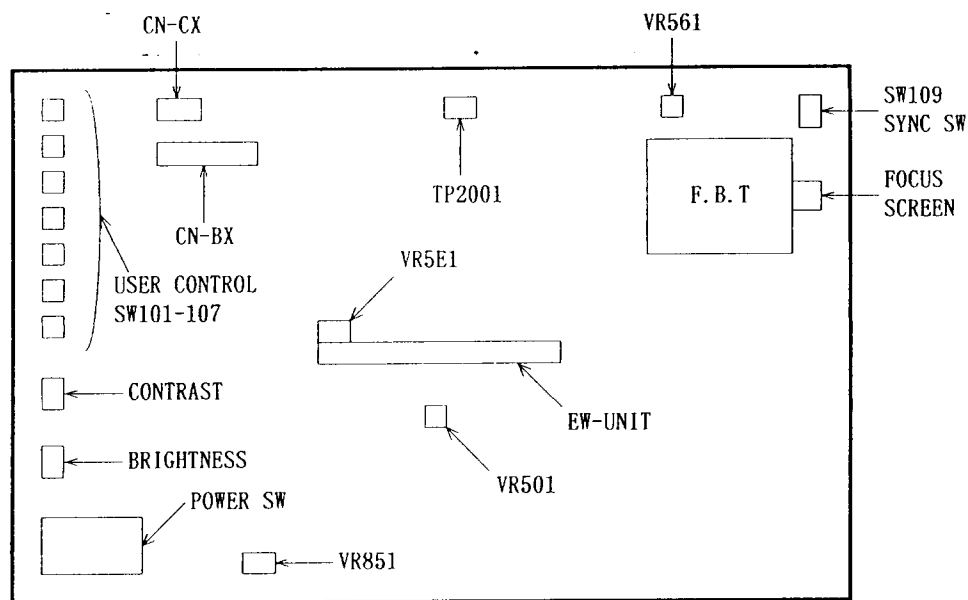
No.	Signal Name	SYNC State	SYNC pole (H/V)
1	VGA480	SEPARATE	NEG/NEG
2	MAC-II(640*480)	SYNC ON GREEN	*1
3	VESA 640*480@75	SEPARATE	NEG/NEG
4	800*600@72	SEPARATE	POS/POS
5	MAC-II(832*624)	SYNC ON GREEN	*1
6	1024*768@70	SEPARATE	NEG/NEG
7	800*600@56	SEPARATE	POS/POS
8	SIZE-1(VGA350)	SEPARATE	POS/NEG *2
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 *2

*1 When SYNC ON GREEN is being output, COMPOSITE SYNC should be output in H SYNC line. V SYNC line is grounded.

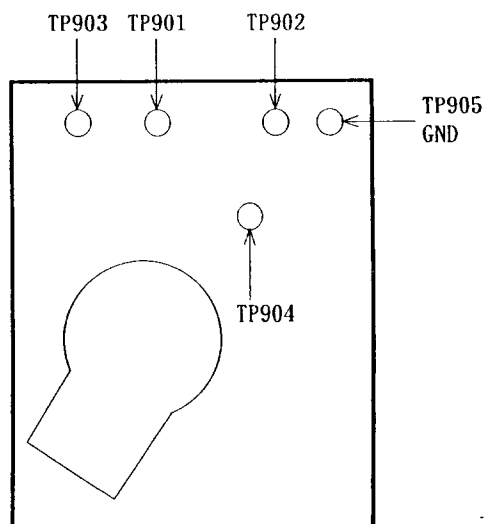
- *2 A signal where the horizontal video active is 92.86 % of the regular timing.
- *3 When the exact value of f_H cannot be obtained because of some limitation of the signal generator and an approximate value is used, use the highest frequency value such that $f_H \leq 31.0$ kHz for the 31 kHz side ; 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

2. Adjustment Connectors/Test Pin Position Diagram

2-1. MAIN PWB



2-2. CRT PWB



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
SIGNAL NAME			VGA480	MAC-II 640* 480	VESA 640* 480 (75)	800* 600 (72)	MAC-II 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)	1024* 768 (76)	SIZE-4
HORIZONTAL	Total	DOT	0900	0864	0840	1040	1152	0996	1024	0900	0864	1152	0848	0900	1152	0900	0900	1056	0832	0832	1264	1056	0860	0820	0843	1056
	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
	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	10
	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	F074
	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	0681	0785
	Drive Width	DOT	0108	0064	0064	0120	0064	0102	0072	0108	0064	0064	0060	0108	0064	0108	0108	0108	0128	0040	0040	0176	0080	0075	0060	0054
VERTICAL	Total	RASTER	0525	0525	0500	0666	0667	0806	0625	0449	0525	0667	0722	0620	0667	0449	0449	0628	0450	0450	0409	0625	0808	0802	1067	0625
	Rate	Hz	059940	066667	075000	072010	074550	070069	056250	070086	066666	074550	090028	050000	074550	070086	070086	060316	084135	084140	086958	075000	071955	076029	060070	075000
	Lins/Character	RASTER	10	10	10	10	02	12	10	10	10	12	10	10	10	10	10	10	10	10	10	10	12	12	10	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
	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
	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
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	054000	049500
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
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
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
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
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
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
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
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

SIGNAL TIMING CHART
(General Timing for this Model)

NO.	SIGNAL NAME	HORIZONTAL							VERTICAL						
		DOT RATE (MHz)	fH (kHz)	PERIOD (μ S) (DOT)	SYNC WIDTH (μ S) (DOT)	BACK PORCH (μ S) (DOT)	ACTIVE (μ S) (DOT)	POL.	fV (Hz)	PERIOD (mS) (line)	SYNC WIDTH (mS) (line)	BACK PORCH (mS) (line)	ACTIVE (mS) (line)	POL.	
1	VGA480	28.322	31.469	31.7774 900	3.8113 108	1.9066 54	25.4219 720	NEG.	59.9404	16.6832 525	0.0638 2	1.0487 33	15.2532 480	NEG.	SEPARATE
2	MAC-2 (640*480)	30.24	35	28.5714 864	2.1164 64	3.1746 96	21.164 640	NEG.	66.6667	15 525	0.0857 3	1.1143 39	13.7143 480	NEG.	SYNC. ON. GREEN
3	640*480 (75)	31.5	37.5	26.667 840	2.032 64	3.81 120	20.317 640	NEG.	75	13.333 500	0.08 3	0.427 16	12.8 480	NEG.	SEPARATE
4	800*600 (72)	50	48.09	20.79 1040	2.399 120	1.279 64	15.995 800	POS.	72.01	13.887 666	0.124 6	0.479 23	12.51 600	POS.	SEPARATE
5	MAC-2 (832*624)	57.2832	49.725	20.111 1152	1.1173 64	3.9104 224	14.524 832	NEG.	74.55	13.414 667	0.06033 3	0.78431 39	12.549 624	NEG.	SYNC. ON. GREEN
6	1024*768 (70)	75	56.476	17.707 1328	1.813 136	1.92 144	13.653 1024	NEG.	70.069	14.272 806	0.106 6	0.513 29	13.599 768	NEG.	SEPARATE
7	800*600 (56)	36	35.156	28.444 1024	2 72	3.556 128	22.222 800	POS.	56.25	17.778 625	0.057 2	0.626 22	17.067 600	POS.	SEPARATE
8	SIZE-1	28.322	31.469	31.7774 900	3.8113 108	2.86 81	23.515 666	POS.	70.086	14.2681 449	0.0636 2	2.304 73	10.328 325	NEG.	SEPARATE
9	SIZE-2	30.24	35	28.5714 864	2.1164 64	3.96 120	19.577 592	NEG.	66.6667	15 525	0.0857 3	1.1143 39	13.7143 480	NEG.	SYNC. ON. GREEN
10	SIZE-3	57.2832	49.725	20.111 1152	1.1173 64	4.469 256	13.407 768	NEG.	74.55	13.414 667	0.0603 3	2.172 108	9.6935 482	NEG.	SYNC. ON. GREEN
11	H. HOLD (1)	55.116	65	15.3846 848	1.088 60	3.556 196	10.741 592	POS.	90	11.11 722	0.0616 4	0.723 47	8.279 538	POS.	SEPARATE
12	H. HOLD (2)	31.388	31	32.258 900	3.87096 108	1.93548 54	22.939 720	NEG.	50	20 620	0.07619 2	1.25714 39	18.2857 566	NEG.	SEPARATE
13	WINDOW (MAC)	57.2832	49.725	20.111 1152	1.1173 64	9.3572 538	3.63115 208	NEG.	74.55	13.414 667	0.06033 3	4.9674 247	4.1831 208	NEG.	SYNC. ON. GREEN

NO.	SIGNAL NAME	HORIZONTAL							VERTICAL						
		DOT RATE (MHz)	fH (kHz)	PERIOD (μ S) (DOT)	SYNC WIDTH (μ S) (DOT)	BACK PORCH (μ S) (DOT)	ACTIVE (μ S) (DOT)	POL.	fV (Hz)	PERIOD (mS) (line)	SYNC WIDTH (mS) (line)	BACK PORCH (mS) (line)	ACTIVE (mS) (line)	POL.	
14	VGA350	28.322	31.469	31.7774 900	3.8113 108	1.9066 54	25.4219 720	POS.	70.086	14.2681 449	0.0636 2	1.9066 60	11.1221 350	NEG.	SEPARATE
15	VGA400	28.322	31.469	31.7774 900	3.8113 108	1.9066 54	25.4219 720	NEG.	70.086	14.2681 449	0.0638 2	1.1122 35	12.711 400	POS.	SEPARATE
16	800*600 (60)	40	37.879	26.4 1056	3.2 128	2.2 88	20 800	POS.	60.3163	16.579 628	0.106 4	0.607 23	15.84 600	POS.	SEPARATE
17	EVGA350	31.5	37.86	26.413 832	1.27 40	4.063 128	20.317 640	POS.	84.135	11.886 450	0.079 3	1.638 62	9.244 350	NEG.	SEPARATE
18	EVGA400	31.5	37.86	26.413 832	1.27 40	4.063 128	20.317 640	NEG.	84.14	11.886 450	0.079 3	1.004 38	10.565 400	POS.	SEPARATE
19	XGA (8514/A)	44.9	35.522	28.1514 1264	3.9198 176	1.2472 56	22.8062 1024	POS.	86.958	11.4999 408.5	0.1126 4	0.5771 0.563 20.5	10.8102 384	POS.	SEPARATE INTERLACED
20	800*600 (75)	49.5	46.875	21.333 1056	1.616 80	3.232 160	16.162 800	POS.	75	13.333 625	0.064 3	0.448 21	12.8 600	POS.	SEPARATE
21	1024*768 (72)	80	58.14	17.2 1376	1.5 120	2.4 192	12.8 1024	POS.	71.955	13.8976 808	0.0344 2	0.6192 36	13.2096 768	POS.	SEPARATE
22	1024*768 (76)	80	60.975	16.4 1312	1.2 96	2.1 168	12.8 1024	POS.	76.029	13.1528 802	0.0328 2	0.5248 32	12.595 768	POS.	SEPARATE
23	1280*1024 (60)	108	64.094	15.602 1685	1 108	2 216	11.852 1280	POS.	60.0702	16.647 1067	0.07801 5	0.57727 37	15.976 1024	POS.	SEPARATE
24	SIZE-4	49.5	46.875	21.333 1056	1.616 80	3.818 189	14.99 742	POS.	75	13.333 625	0.064 3	0.448 21	12.8 600	POS.	SEPARATE

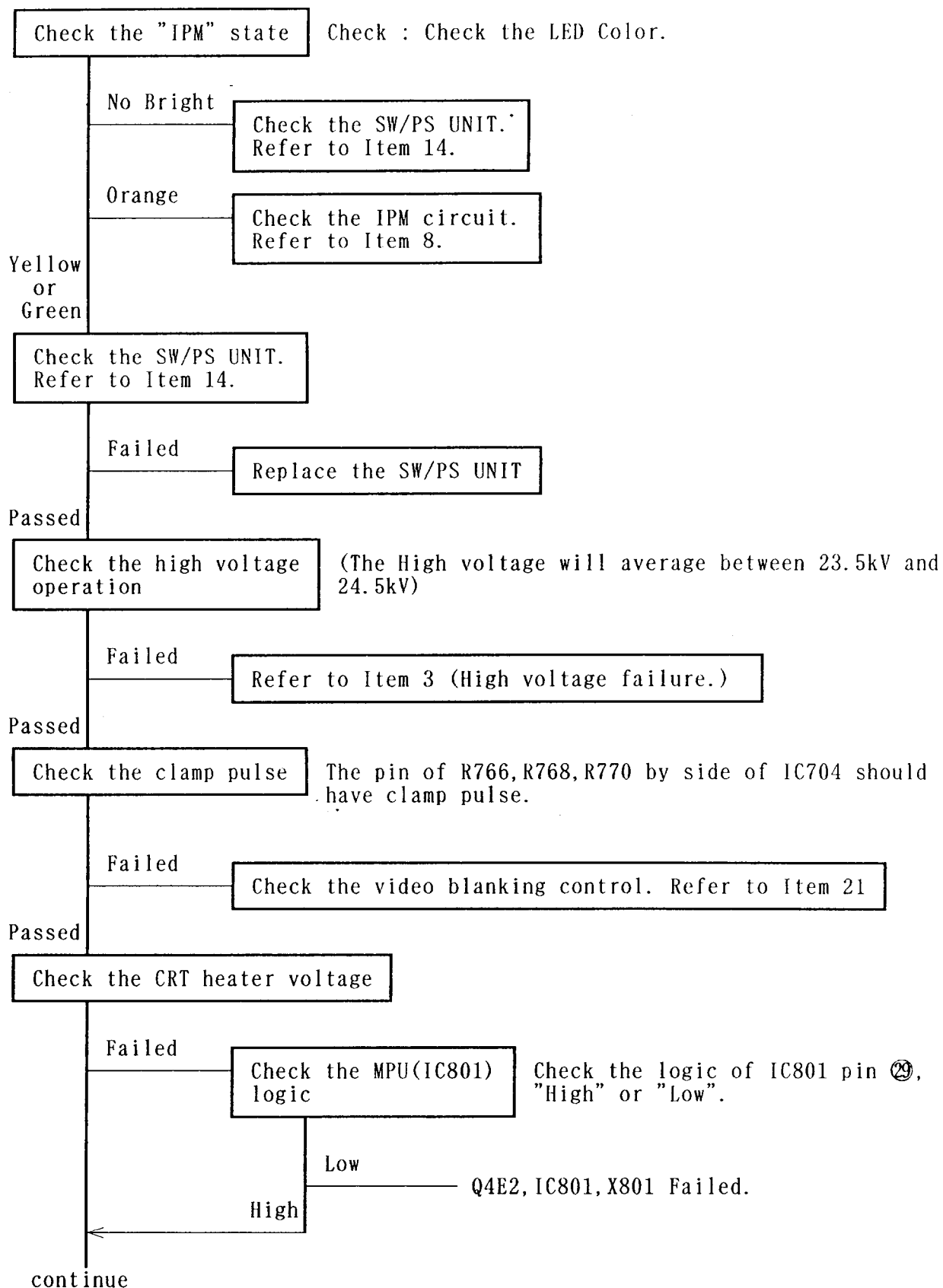
TROUBLE SHOOTING

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-904).
The voltage should be approximately 450V to 500V.

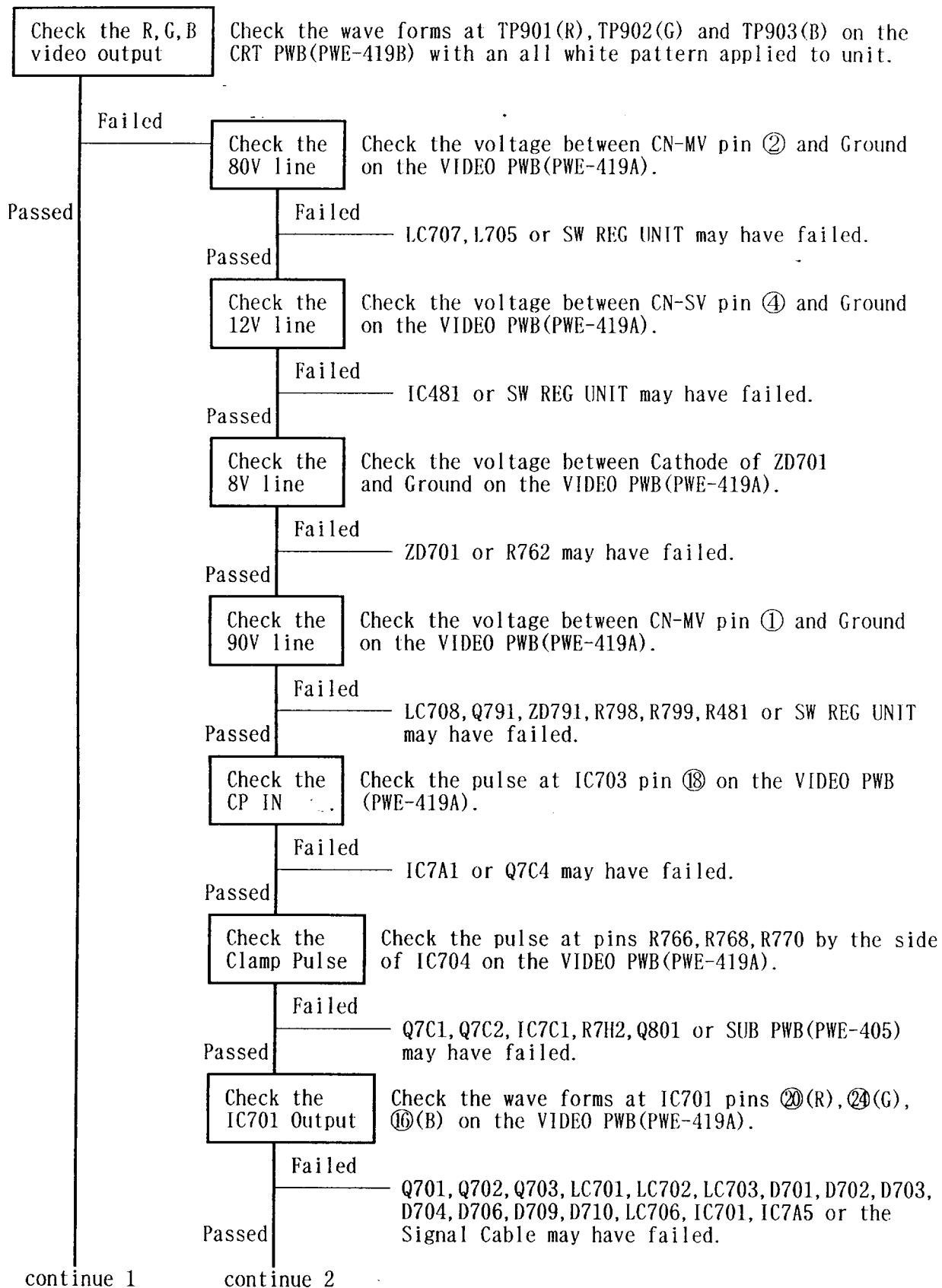
Failed

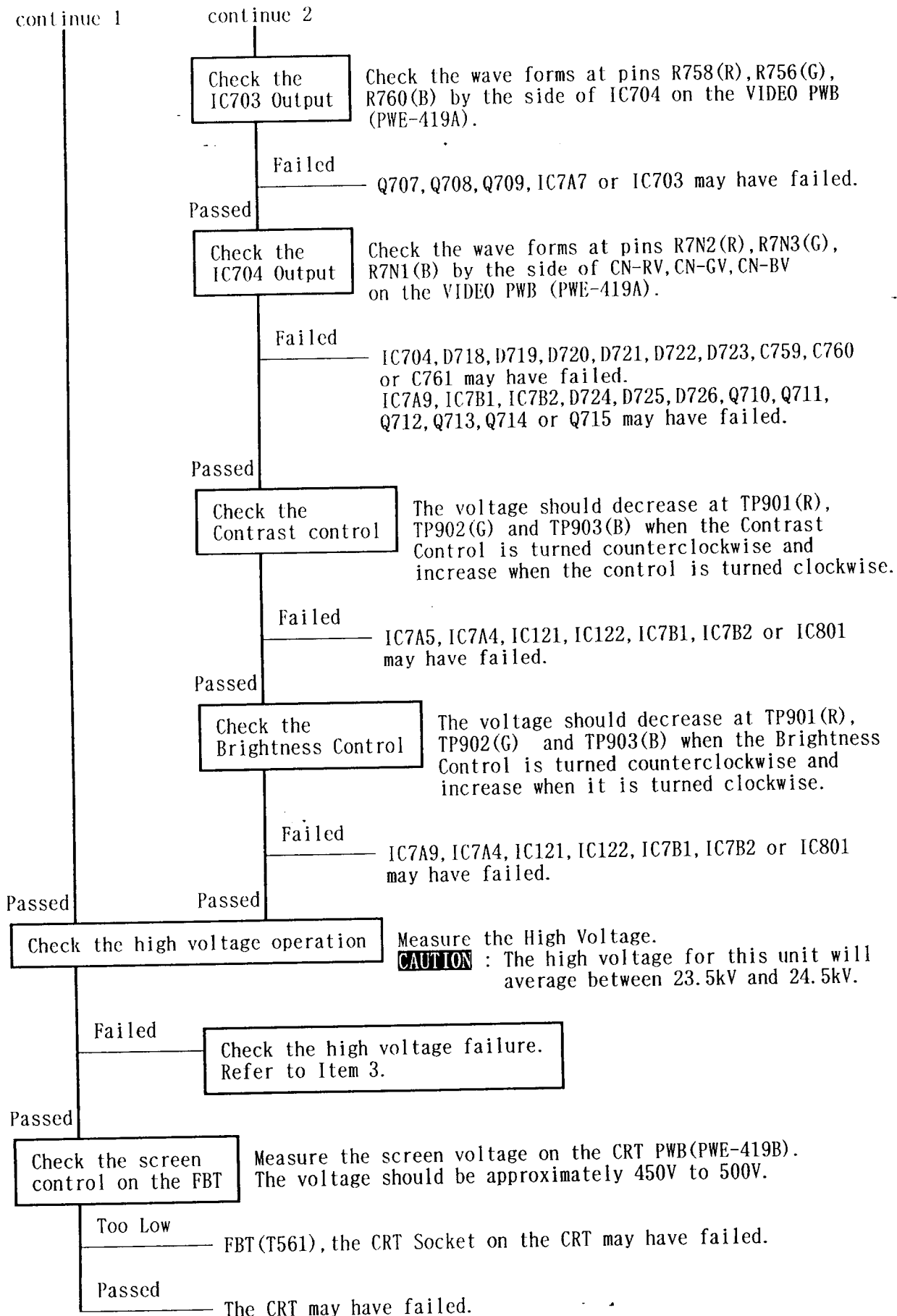
Voltage is too low.
FBT(T561), the CRT socket on the CRT may have failed.

Passed

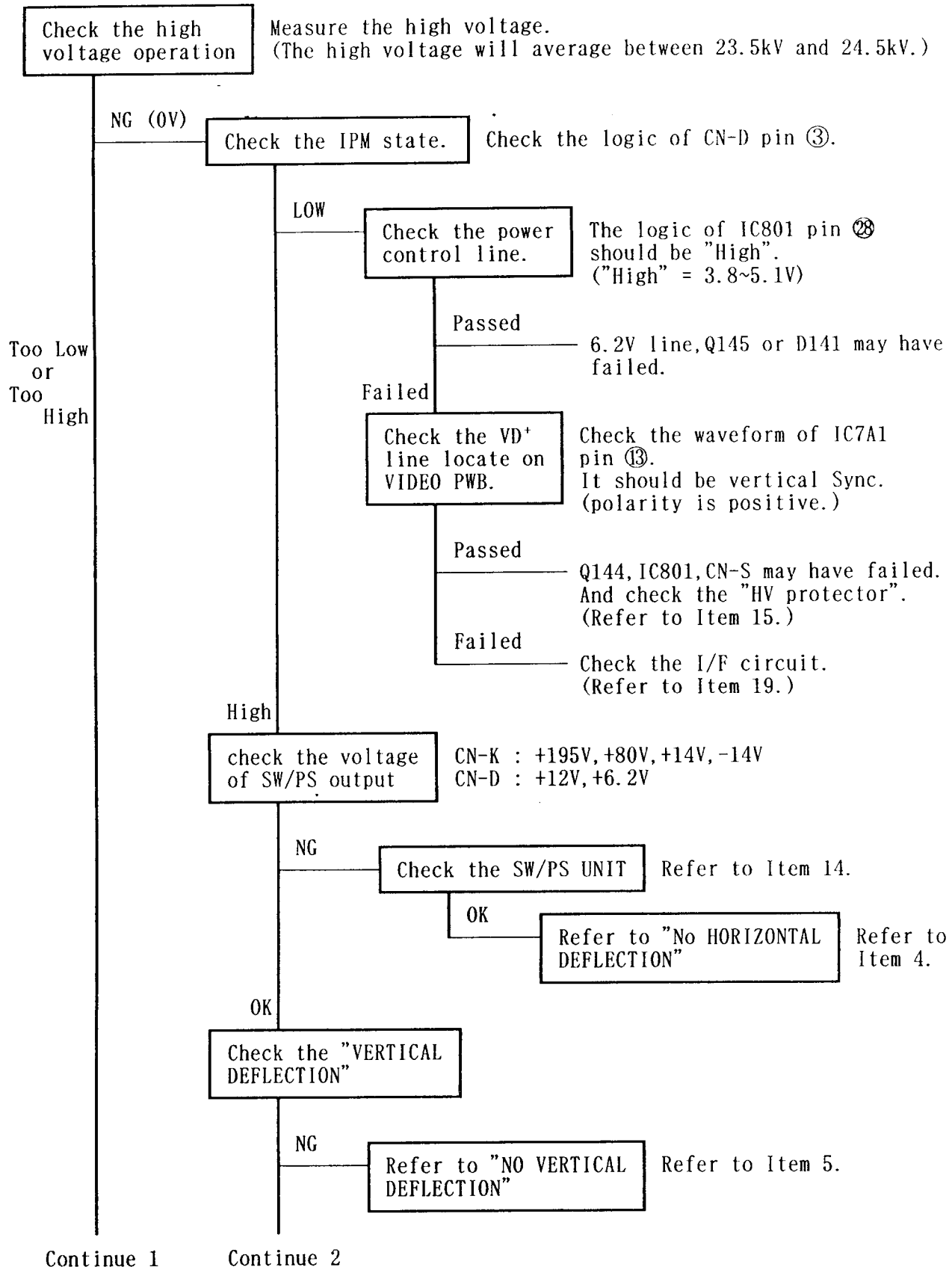
The CRT may have failed.

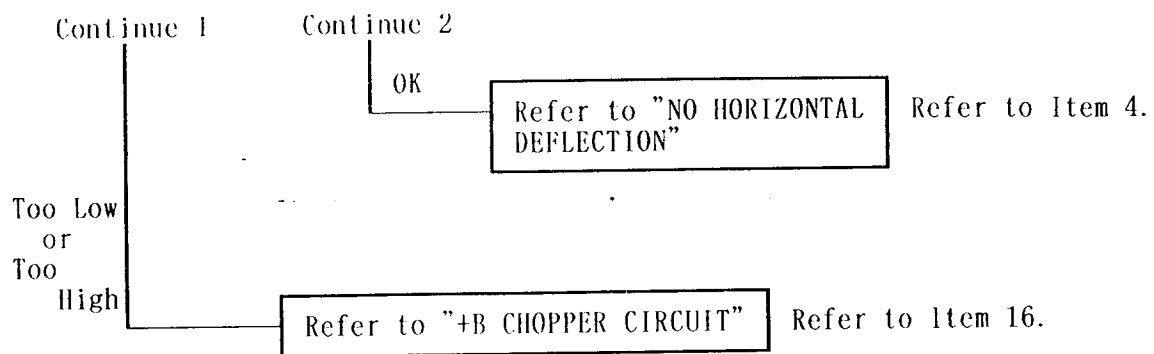
2 ABNORMAL IMAGE OR RASTER BRIGHTNESS (Too Dark or Too Bright)





3 HIGH VOLTAGE FAILURE





4 NO HORIZONTAL DEFLECTION

Check the 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 has about 9Vp-p and about 50% duty cycle.

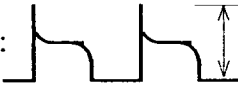
NG

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, that has about 1200Vp-p.

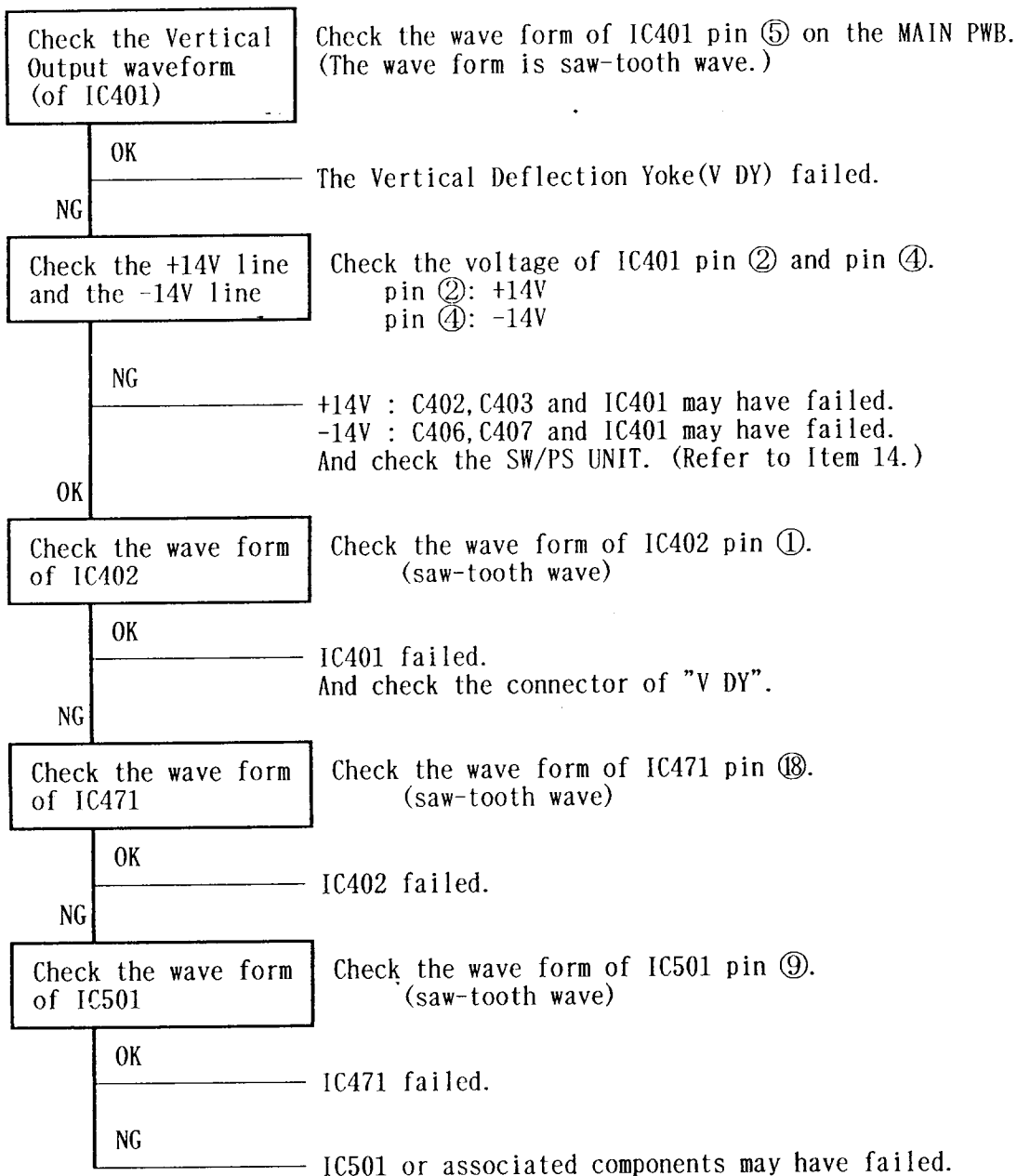
No pulse

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

Check the Horizontal sync on IC7A1

Check the wave form of IC7A1 pin ⑭.
It should be Horizontal positive pulse.

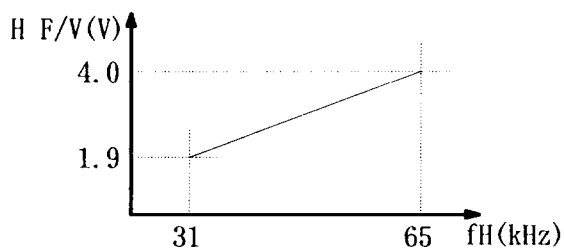
NG

Check the I/F circuit.
Refer to Item 19.

OK

Check the H F/V voltage

Check the voltage of IC501 pin ②.
It should be almost same as following figure.



NG

Check the Digital control circuit.
Refer to Item 11.

OK

Check the Horizontal pulse of IC501

Check the wave form of IC501 pin ⑭ and pin ⑳.
They should be horizontal positive pulse.

pin ⑭ NG

ZD503, SUB PWB, FBT(T561) may have failed.

pin ⑳ NG

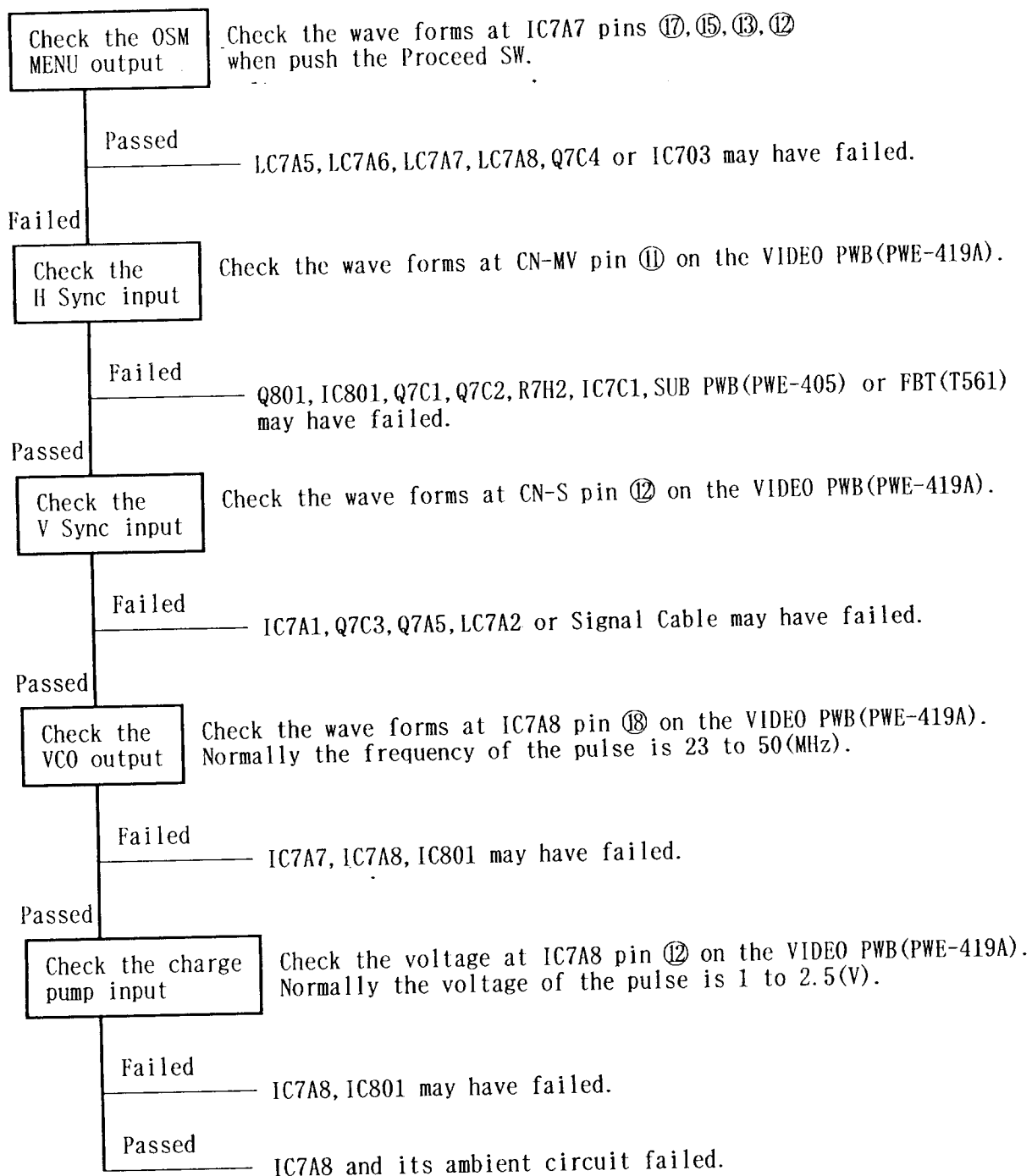
Q501 or CN-BX may have failed.

OK

IC501 or associated components may have failed.

7 THE OSM FAILURE

7.1 Abnormal OSM image



7.2 OSM MENU OPERATION ABNORMALITY

CAUTION : If the OSM MENU can not operate image control,
refer to Item 11.

Check the user control line
located on MAIN PWB

User control key logic table for IC801
pins ⑱~㉔ is as follows.

Passed

IC801 may have failed.

Failed

SW101, 102, 103, 104, 105, 106, 107 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

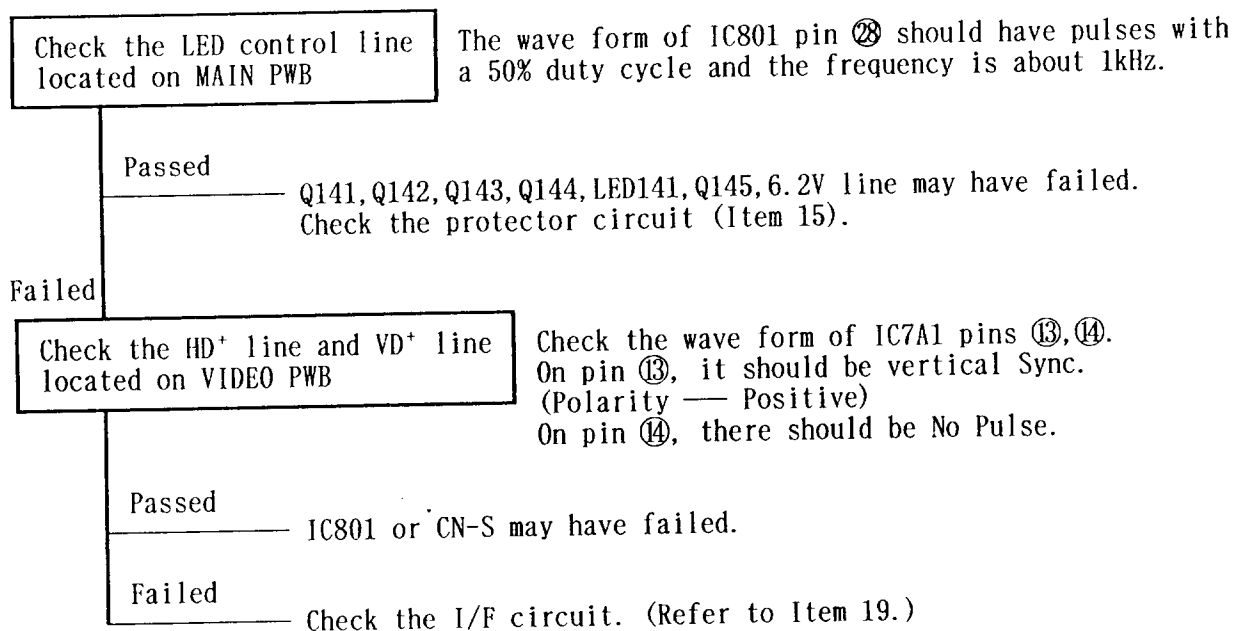
* "H" = "High" level 4.5V ~ 5V
"L" = "Low" level approximately 0V

8 ABNORMAL IPM OPERATION

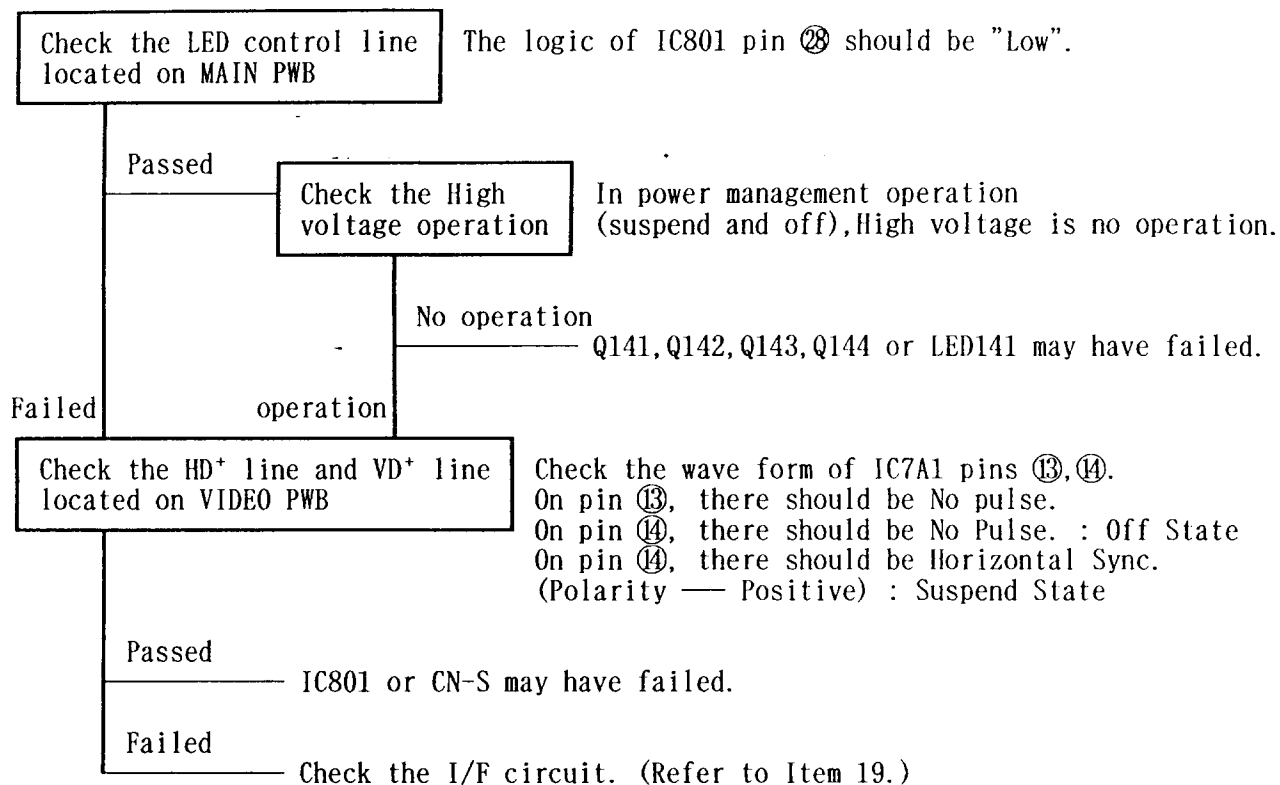
State	Signals			LED
	Horizontal	Vertical	Video	
On	Pulses	Pulses	Active	Green
Stand-by	No Pulses	Pulses	Blanked	Yellow
Suspend	Pulses	No Pulses	Blanked	Orange
Off	No Pulses	No Pulses	Blanked	Orange

Display Power Management Summary

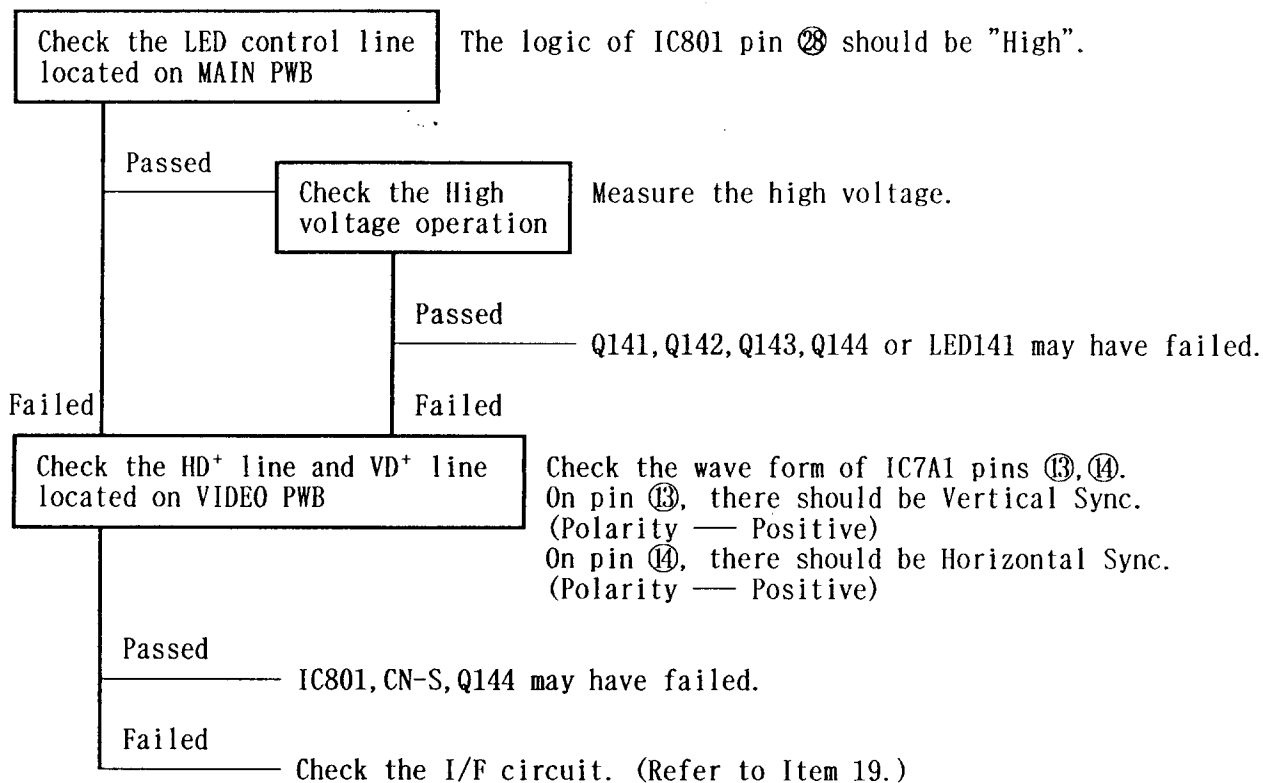
8.1 No change to yellow LED (No transition to "stand-by")



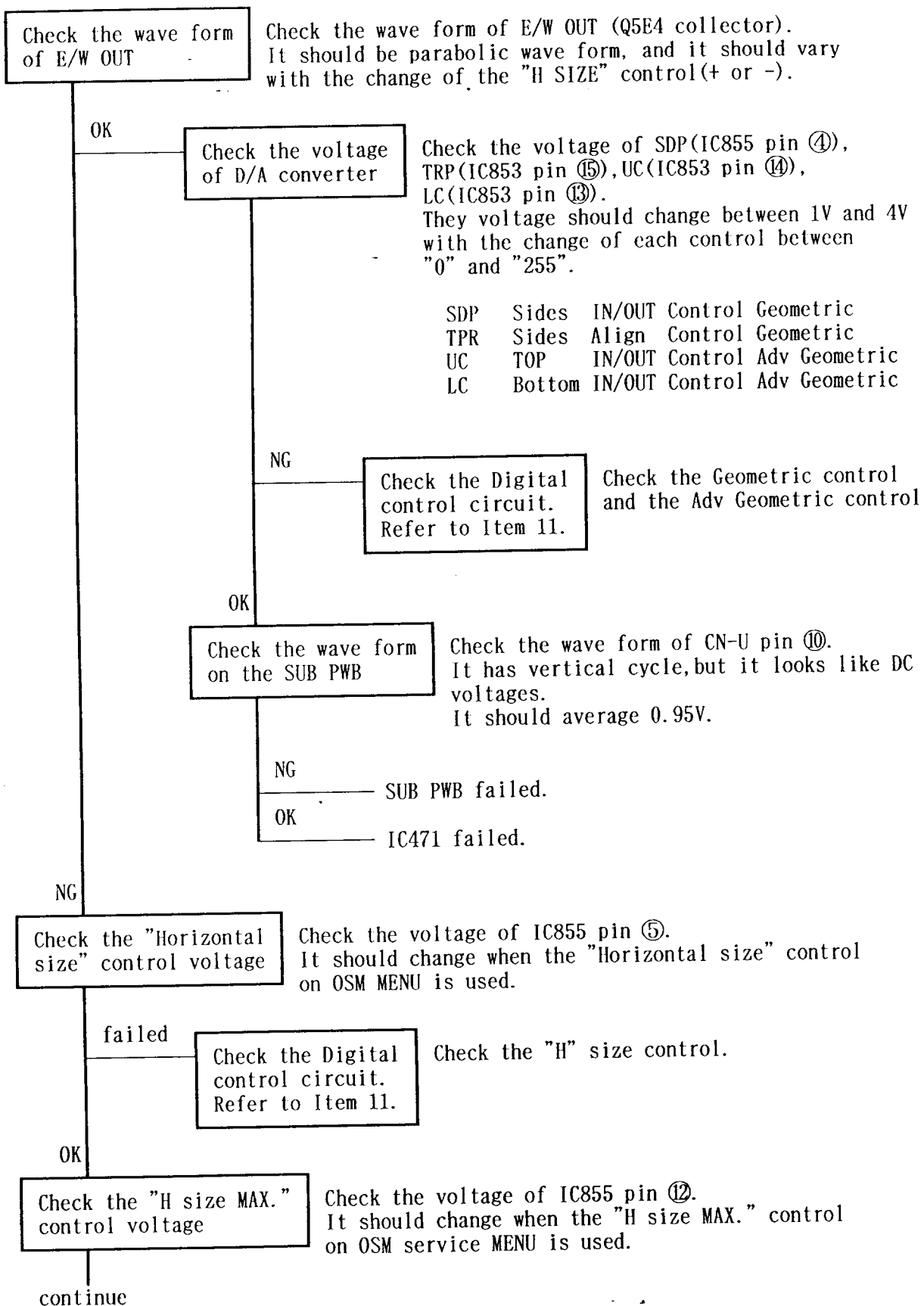
8.2 No change to orange LED (No transition to "suspend" or "off")



8.3 No change to green LED (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 "H size control" is used.

W5 NG

IC471 may have failed.

(W5)

W1

OK

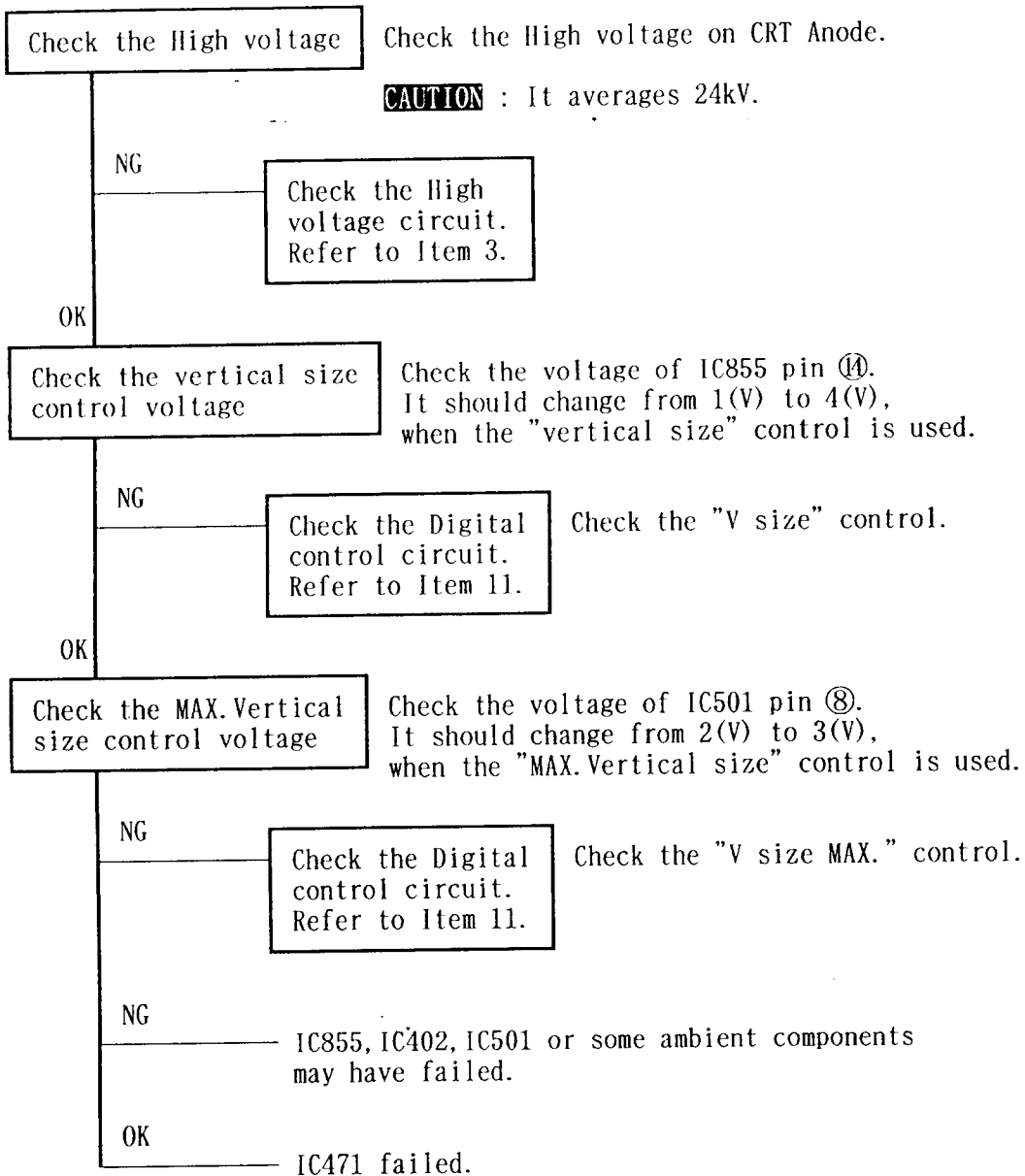
W3 NG

SUB PWB may have failed.

OK

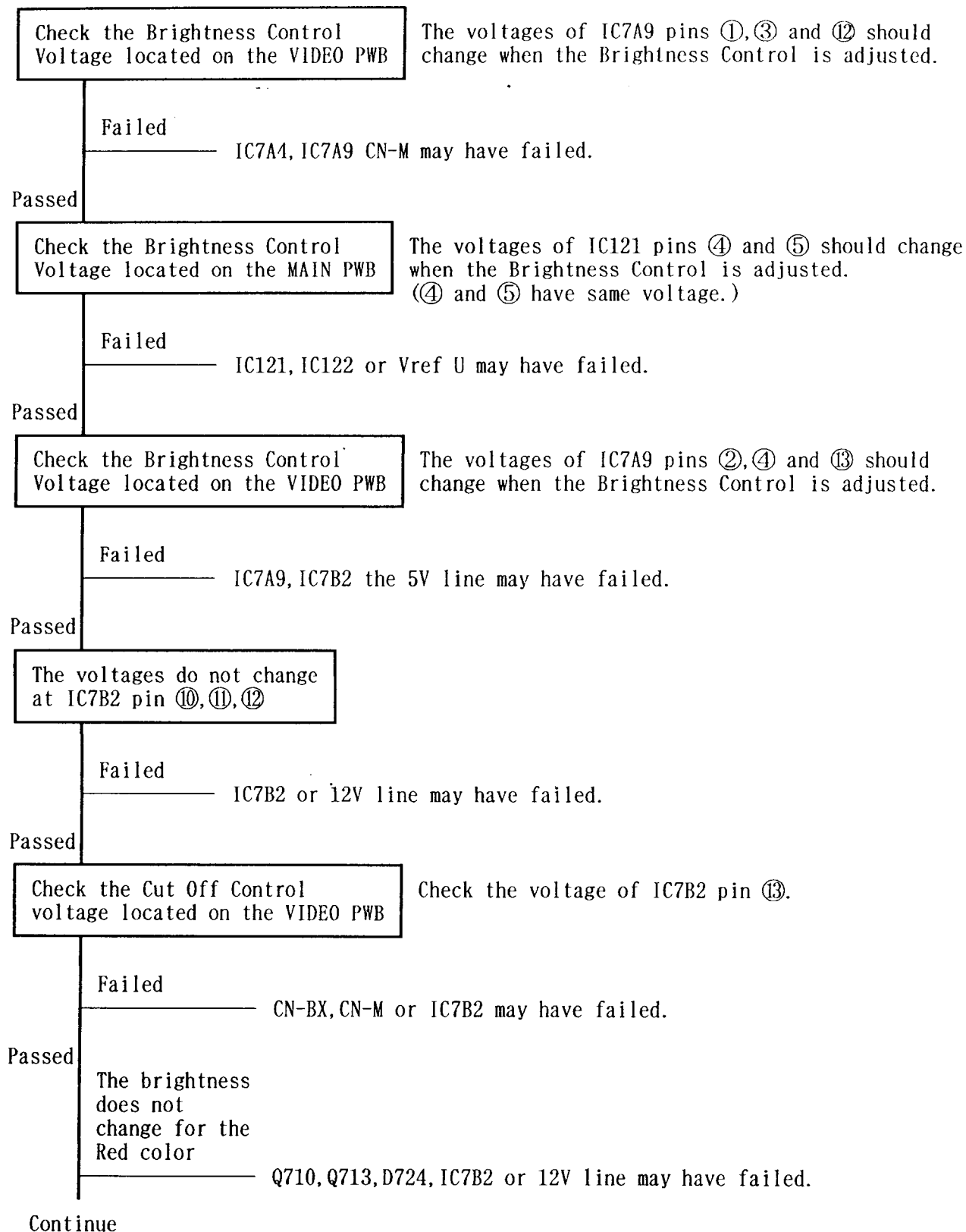
IC5E2, Q5E3, Q5E4, D541, D542, D546, L541, D5E1, R595, C547, IC801
may have failed.

10 VERTICAL IMAGE SIZE FAILURE



11 USER CONTROL FAILURE/DIGITAL CONTROL FAILURE

11.1 Brightness user control failure



Continue

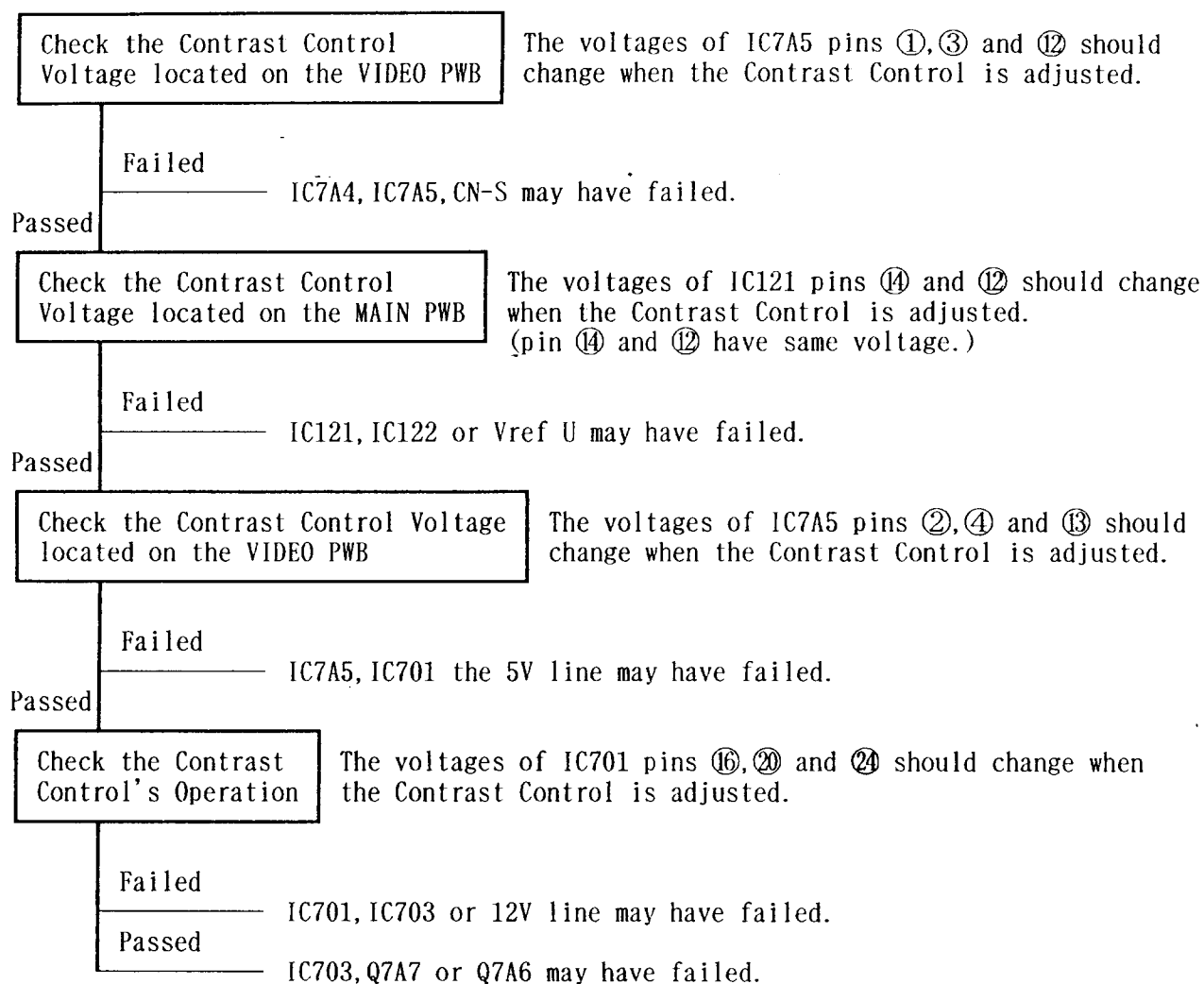
The brightness
does not
change for the
Green color

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

Check the Manual Degauss control line, on MAIN PWB	The CN-D pin ⑤ should have "High" logic in a few seconds, when manual degauss switch is pushed.
Passed	CN-D or SW/PS UNIT may have failed. (Refer to Item 14.)
Failed	
Check the Manual Degauss control line, from user switch	The IC801 pin ⑤ should have "High" logic when manual switch is pushed.
Passed	IC801 may have failed.
Failed	SW107 or 5V line may have failed.

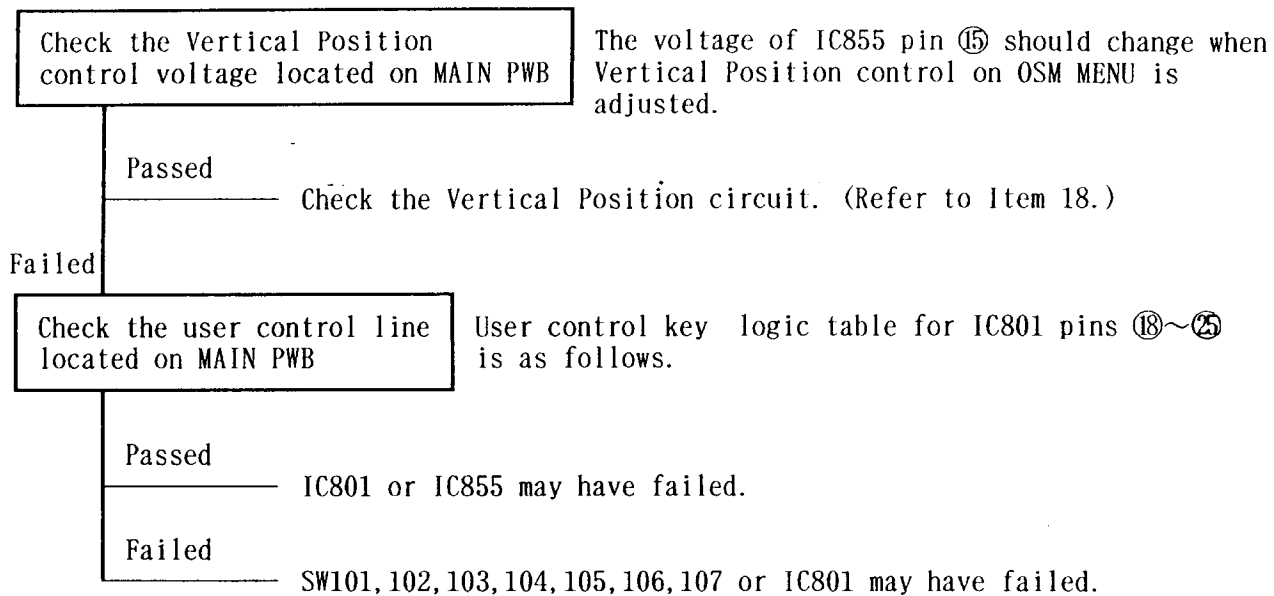
11.4 Horizontal Position control failure or abnormal operation

Check the Horizontal Position control voltage located on MAIN PWB	The voltage of IC853 pin ⑫ should change when Horizontal Position control on OSM MENU is adjusted.
Passed	Check the Horizontal Position circuit. (Refer to Item 12.)
Failed	
Check the user control line located on MAIN PWB	User control key logic table for IC801 pins ⑱~⑤ is as follows.
Passed	IC801 or IC853 may have failed.
Failed	SW101, 102, 103, 104, 105, 106, 107 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

11.5 Vertical Position control failure or abnormal operation



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

11.6 Horizontal Size control failure or abnormal operation

Check the Horizontal Size control voltage located on MAIN PWB

The voltage of IC855 pin ⑤ should change when Horizontal Size 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

User control key logic table for IC801 pins ⑱~㉔ is as follows.

Passed

IC801 or IC855 may have failed.

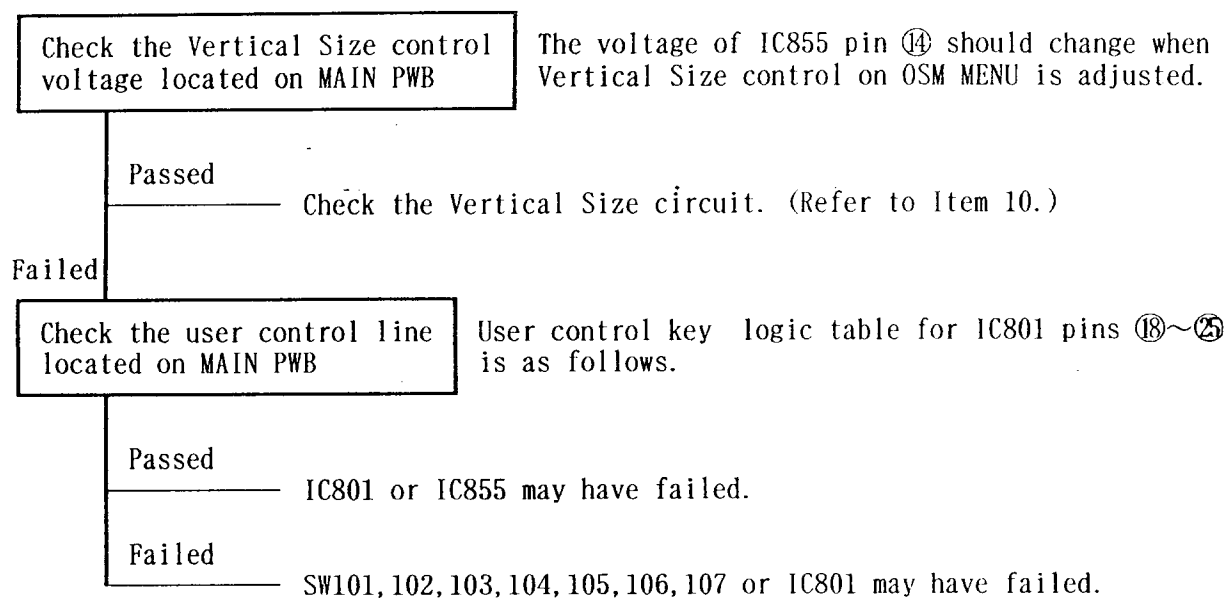
Failed

SW101, 102, 103, 104, 105, 106, 107 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

11.7 Vertical Size control failure or abnormal operation



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

11.8 [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

User control key logic table for IC801 pins ⑱~㉓ is as follows.

Passed

IC801, IC853, IC855 may have failed.

Failed

SW101, 102, 103, 104, 105, 106, 107 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

User control key logic table for IC801 pins ⑱~㉔ is as follows.

Passed

IC801 or IC7A5 may have failed.

Failed

SW101, 102, 103, 104, 105, 106, 107 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

11.10 Horizontal Size MAX.control failure or abnormal operation

Check the Horizontal Size MAX.
control voltage located on MAIN PWB

The voltage on IC855 pin ⑫ should change
when Horizontal 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

User control key logic table for IC801 pins ⑮~㉔
is as follows.

Passed

IC801 or IC855 may have failed.

Failed

SW101, 102, 103, 104, 105, 106, 107 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

11.11 Vertical Size MAX. control failure or abnormal operation

Check the Vertical Size MAX. control voltage located on MAIN PWB

The voltage of IC855 pin ⑬ should change when Vertical 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

User control key logic table for IC801 pins ⑱~㉔ is as follows.

Passed

IC801 or IC855 may have failed.

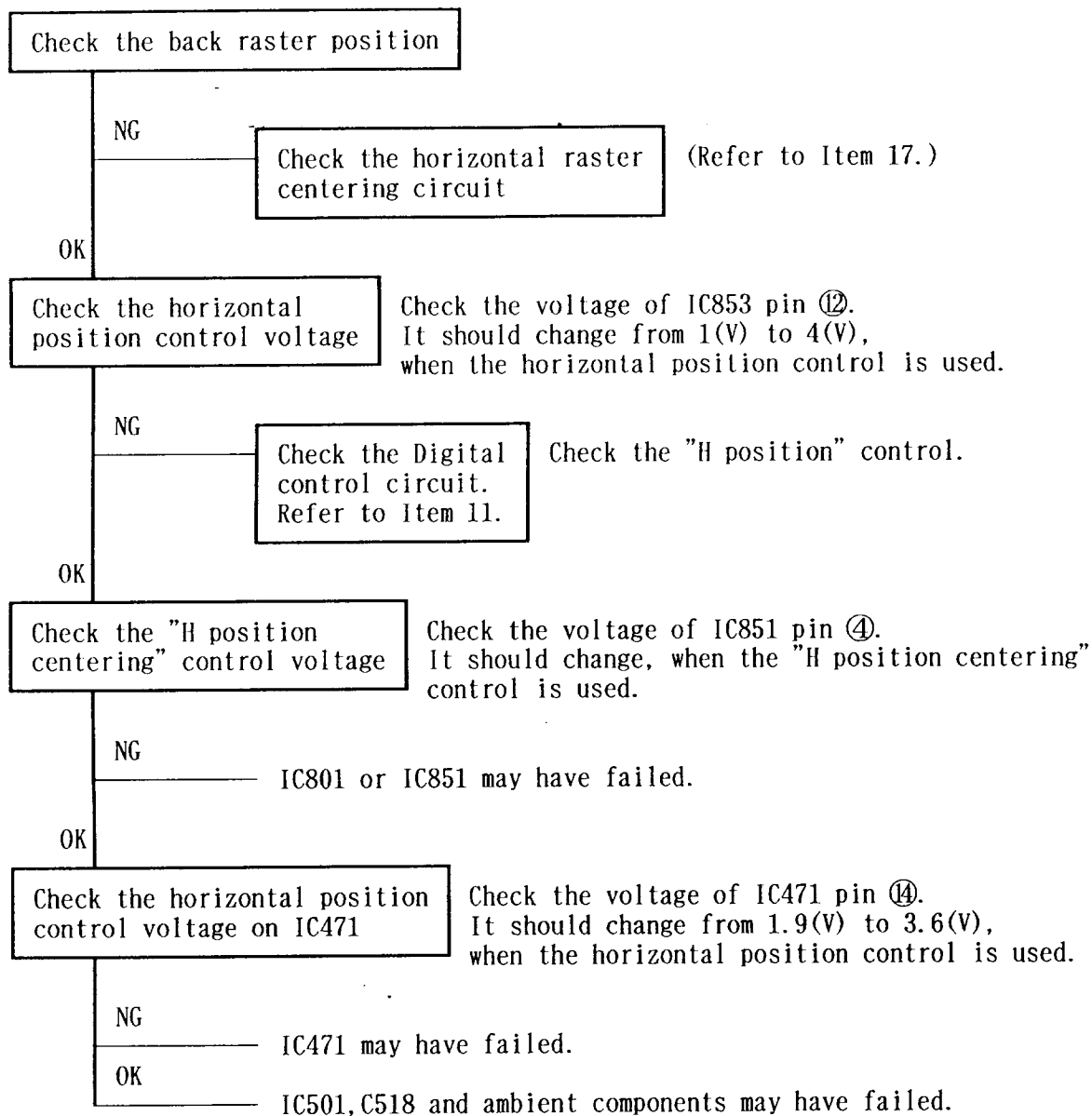
Failed

SW101, 102, 103, 104, 105, 106, 107 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

12 ABNORMAL HORIZONTAL IMAGE POSITION FAILURE



13 HORIZONTAL LINEARITY FAILURE

Check the Horizontal image size

Check the Horizontal image size.
It should change, when H size control is used.
And it is possible to adjust to 260 mm wide.

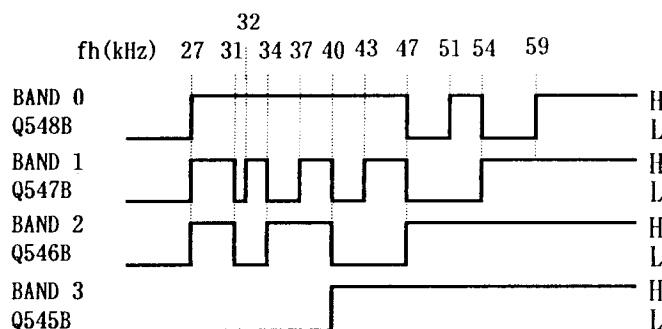
NG

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 relationship between fh and fh BAND(0~3) is shown by follows.



BAND 0(1/2/3)

NG

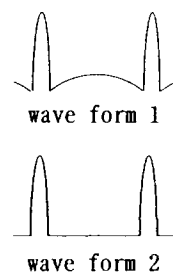
IC801, ZD549, (ZD548, ZD547, ZD546), Q548, (Q547, Q546, Q545) may have failed.

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
{ (Q542/Q543/Q544) = "L" → wave form 2
{ BAND 3 = "H" → wave form 2
{ (RL541) = "L" → wave form 1



Q542(Q543/Q544)
Drain NG

OK

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

RL541' break
terminal
NG

RL541, C549 or Q545 may have failed.

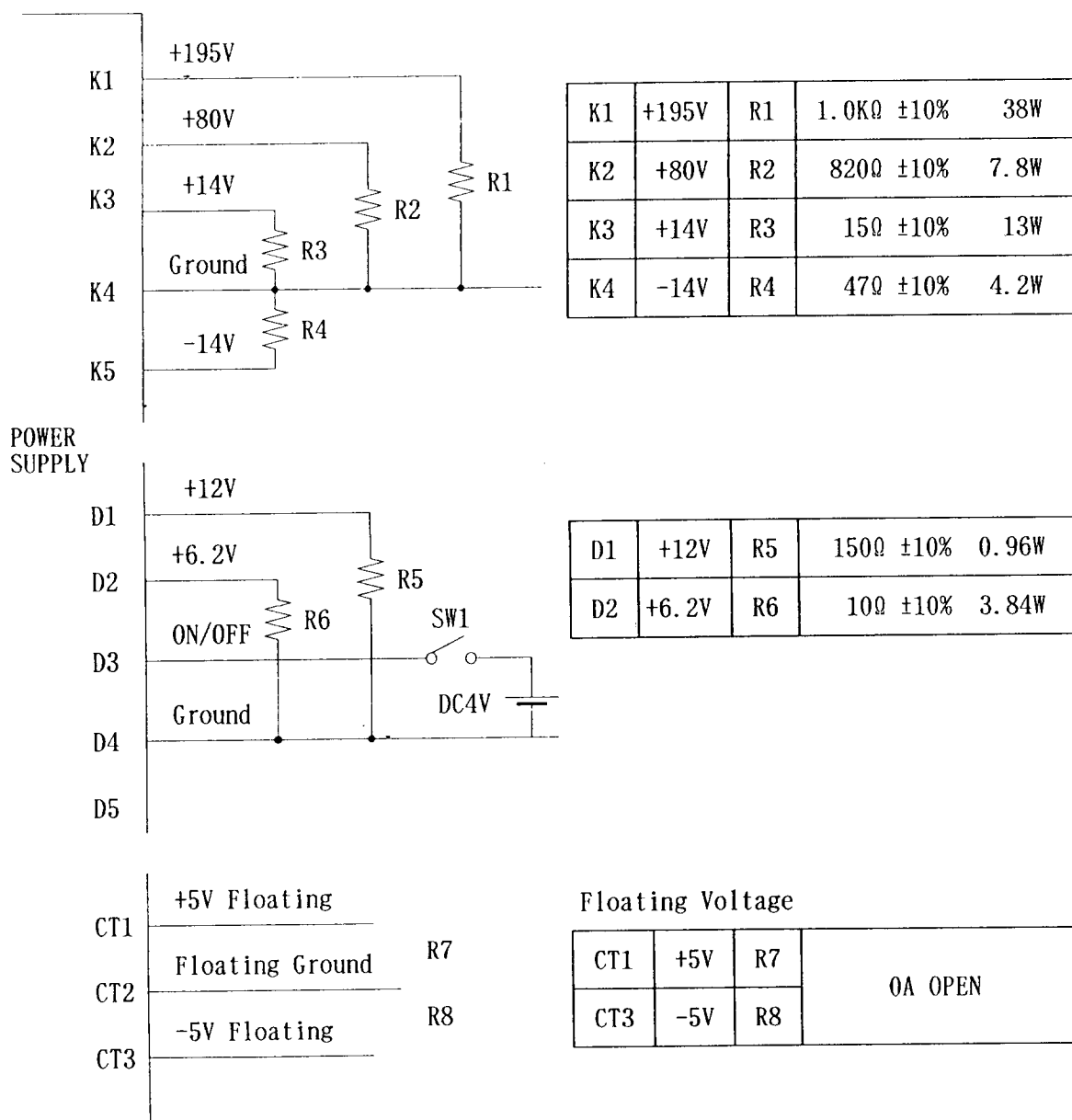
OK

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

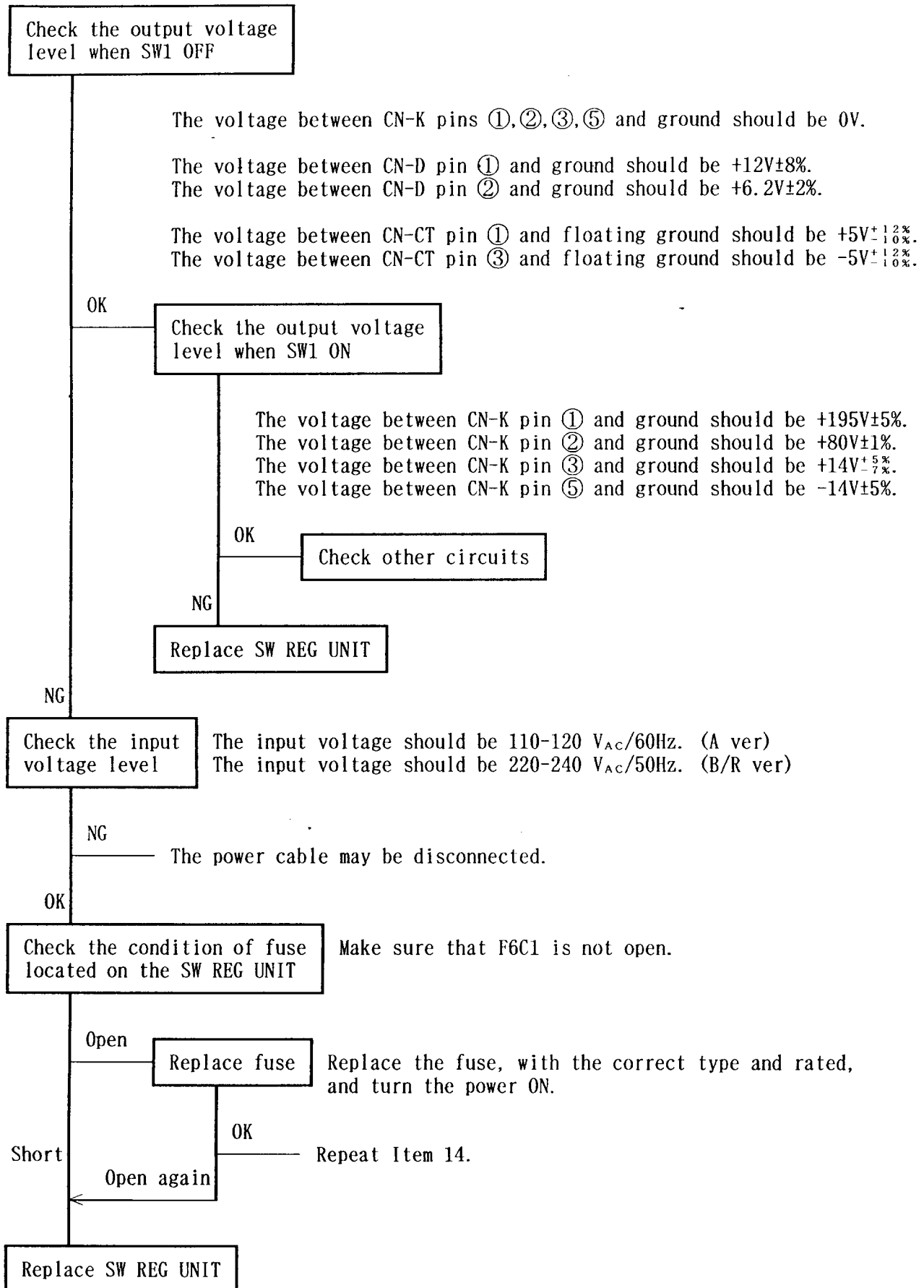
14 SWITCHING REGULATOR UNIT (SW/PS UNIT) FAILURE

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.

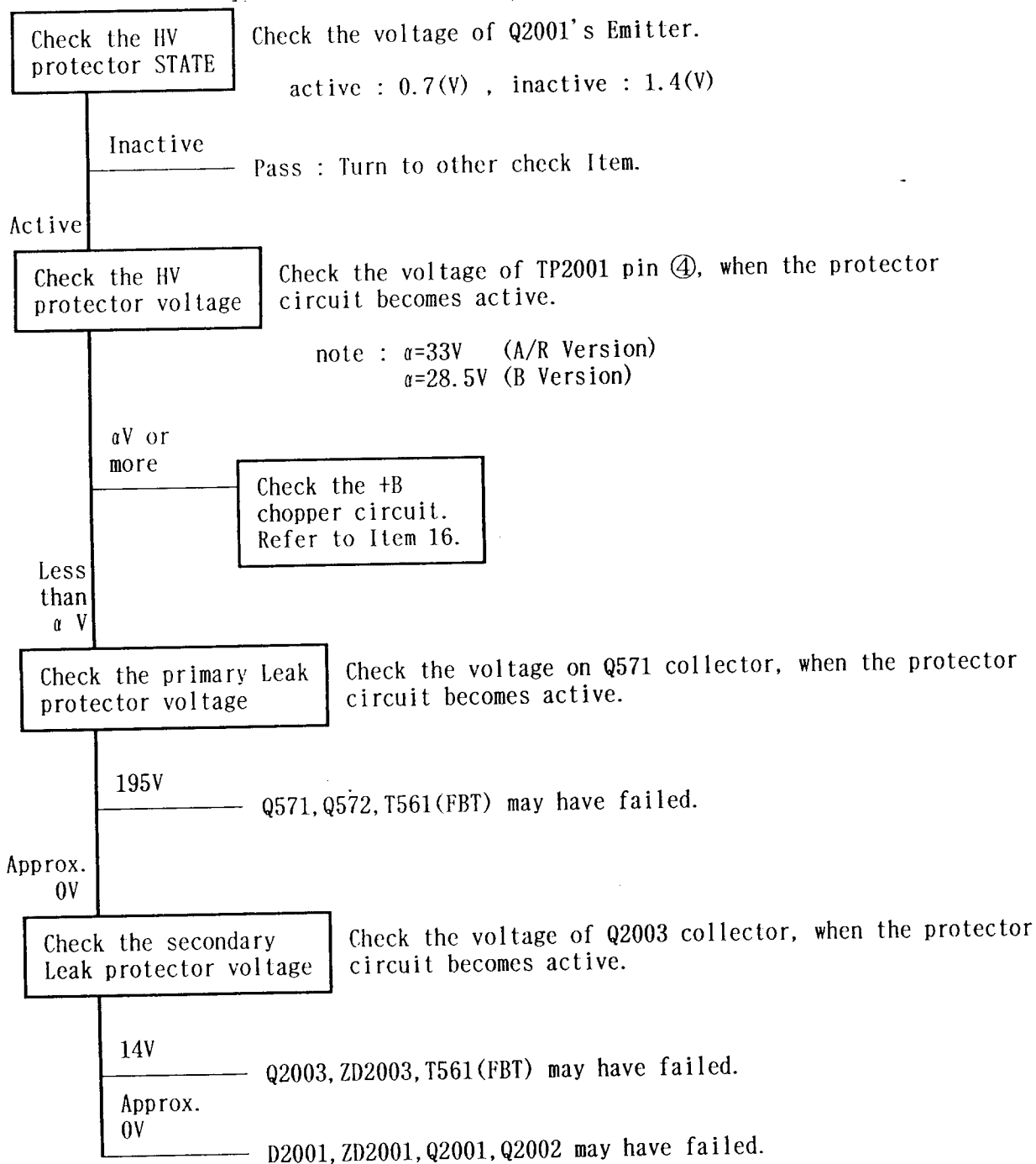


Rated Load Current and Resister Value

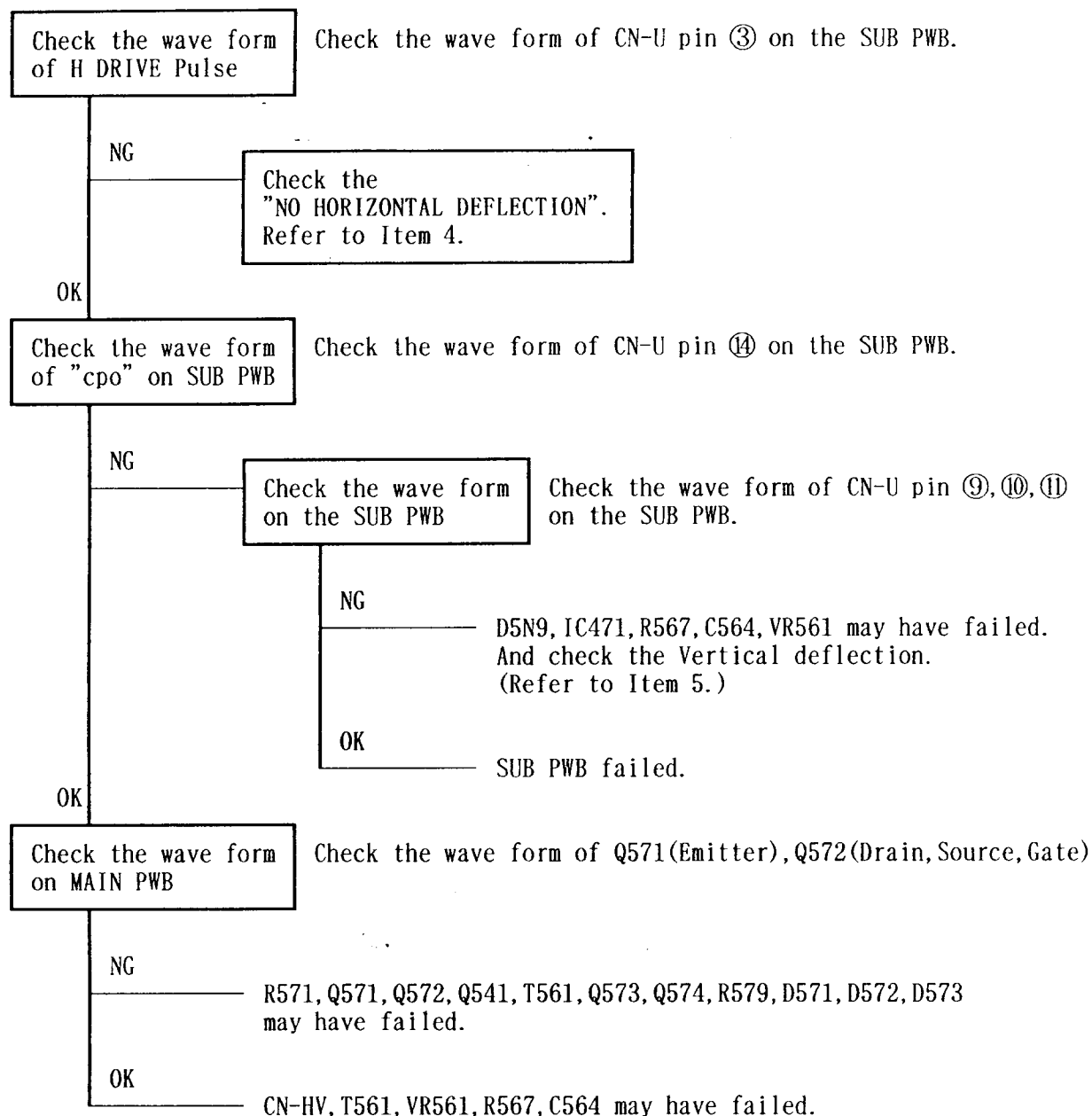


15 HIGH VOLTAGE PROTECTOR FAILURE

CAUTION : Before you check the voltage of TP2001 pin ④, Q571 collector, and Q2003 collector, the MAIN SW(SW601) should be turned OFF and ON again, (wait few seconds before the SW is turned ON again.)



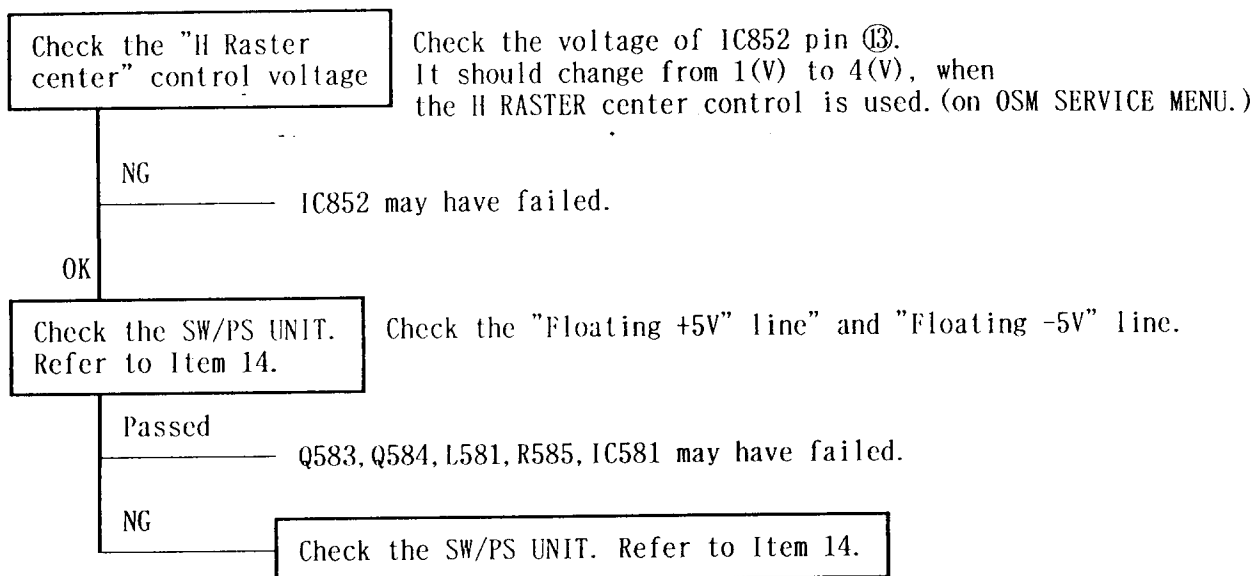
16 +B CHOPPER CIRCUIT FAILURE



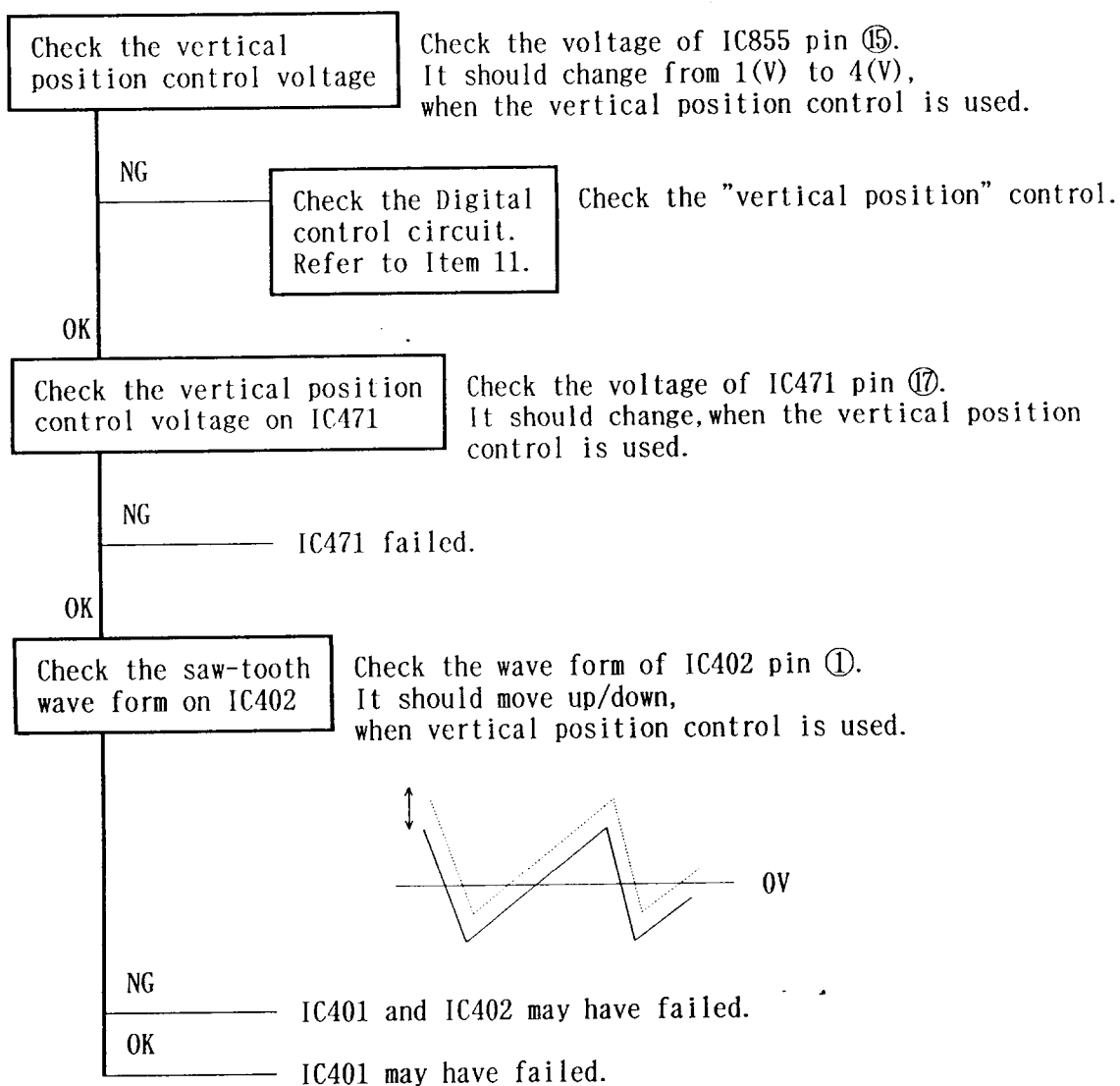
CAUTION : The wave form of CN-U pin ③, ⑭, ⑨, ⑩, ⑪, Q571(Emitter) and Q572(Drain, Source, Gate) are as follows.

- CN-U ③ : Horizontal pulse ; duty cycle 50% ; 14Vp-p.
- CN-U ⑭ : Horizontal pulse ; the duty cycle should vary, when the +B voltage is changed.
- CN-U ⑨ : It has Vertical cycle, but is approximately DC 5V.
- CN-U ⑩ : It has Vertical cycle, but is approximately DC 0.95V.
- CN-U ⑪ : It has Vertical cycle, but 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.

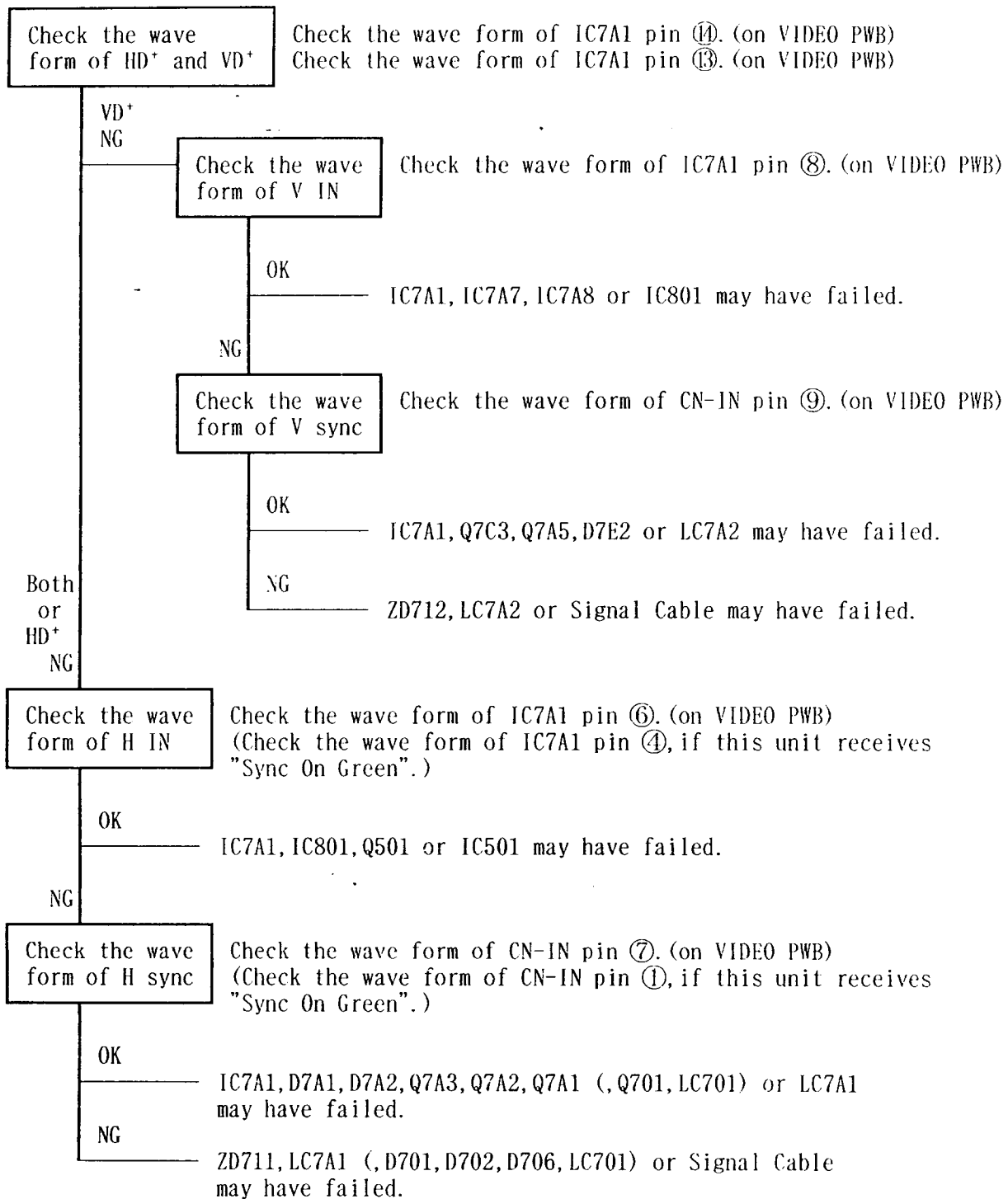
17 H RASTER CENTERING CIRCUIT FAILURE



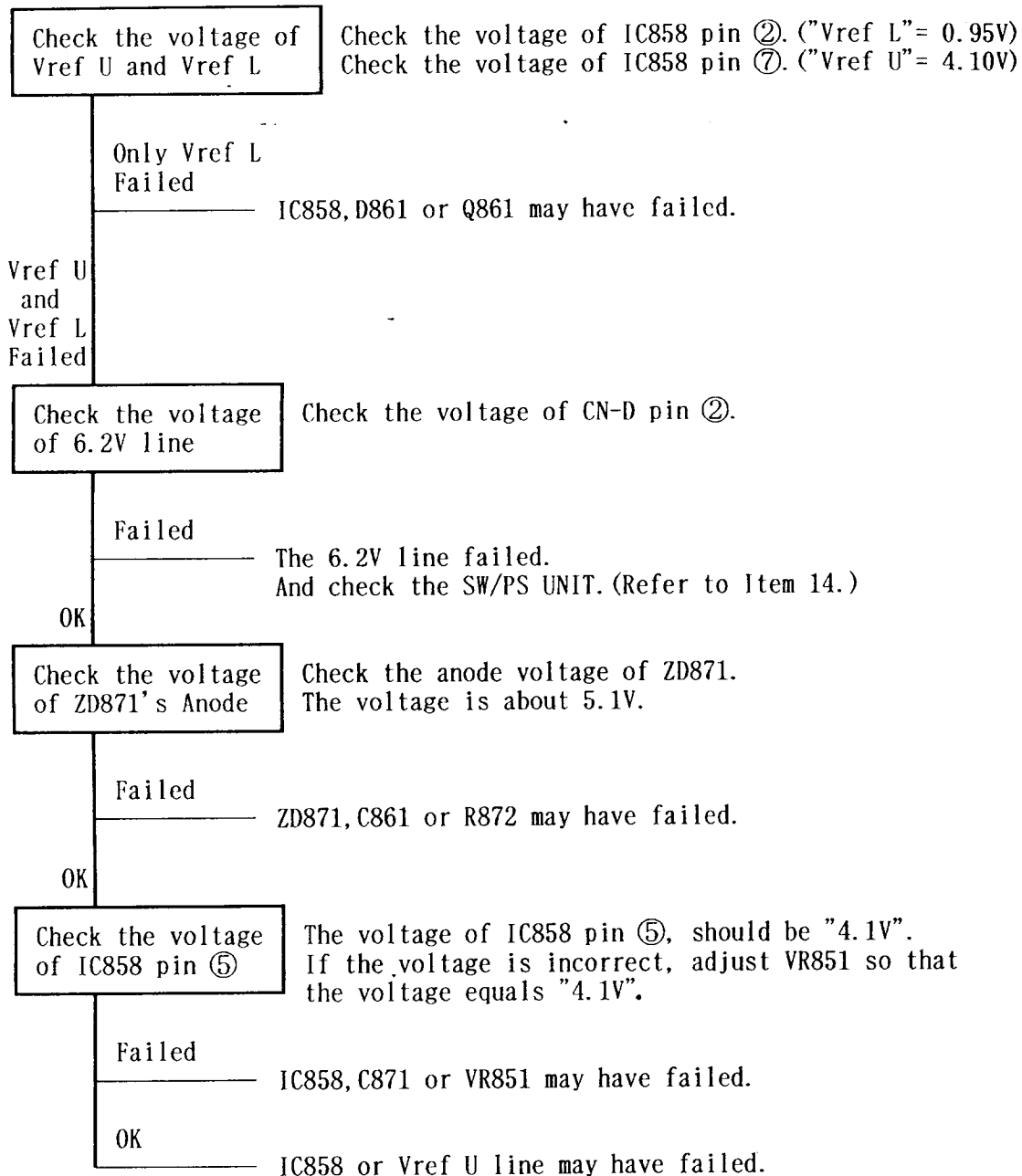
18 ABNORMAL VERTICAL IMAGE POSITION FAILURE



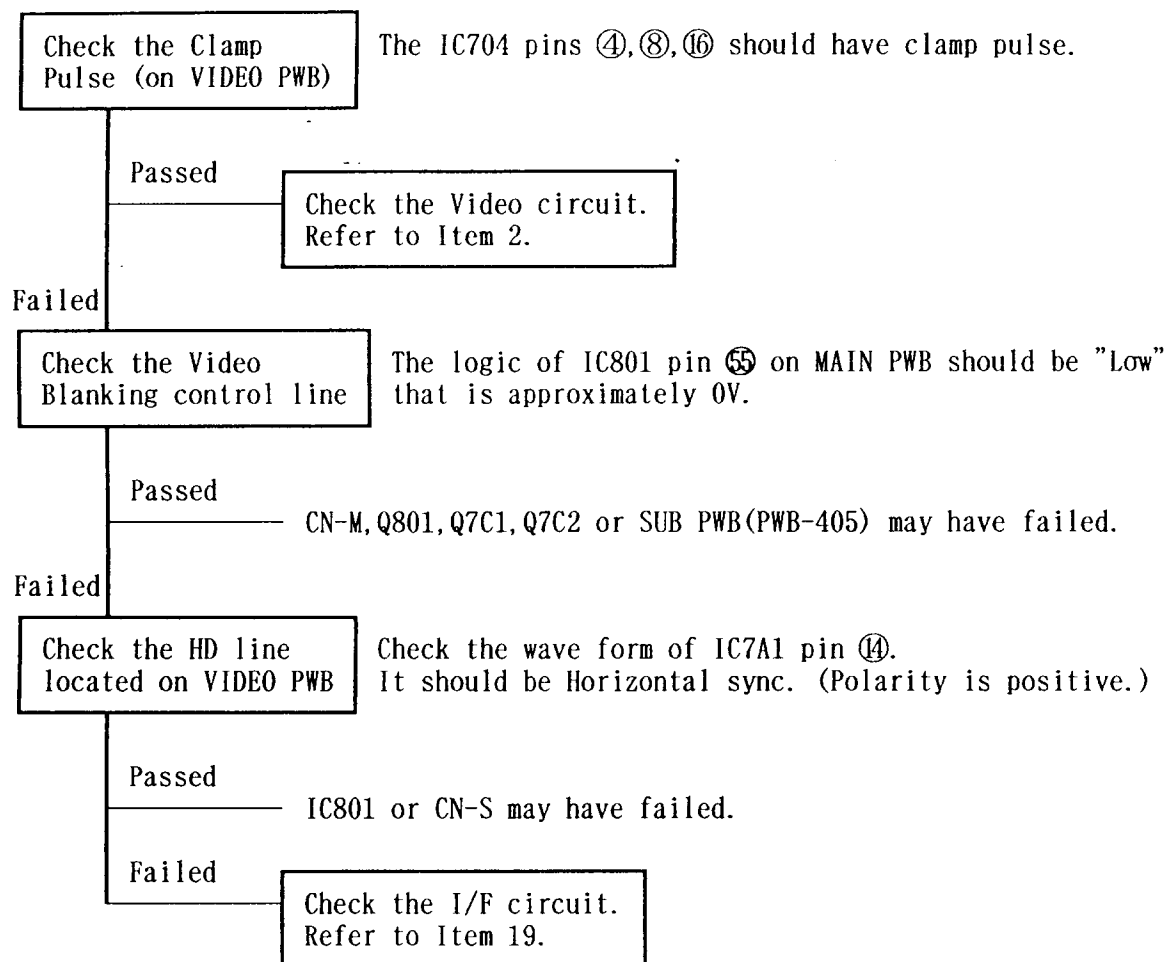
19 I/F CIRCUIT CHECK



20 THE Vref CIRCUIT CHECK

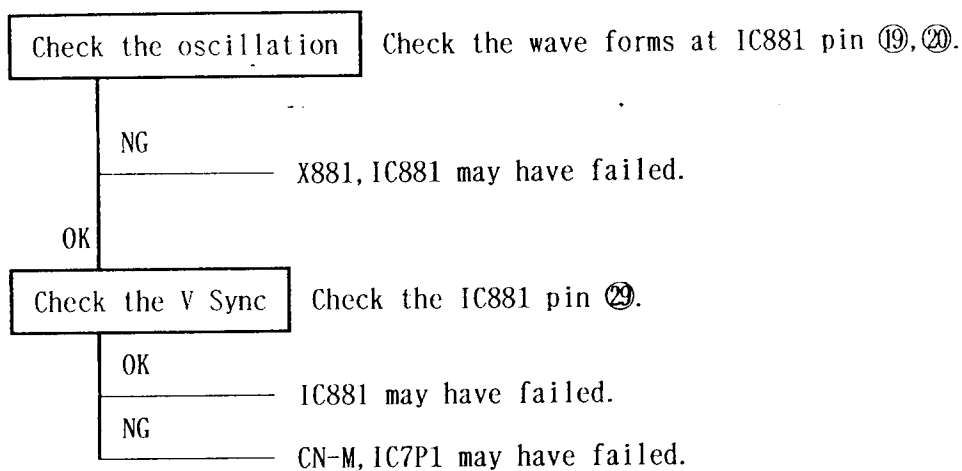


21 VIDEO BLANKING ABNORMAL

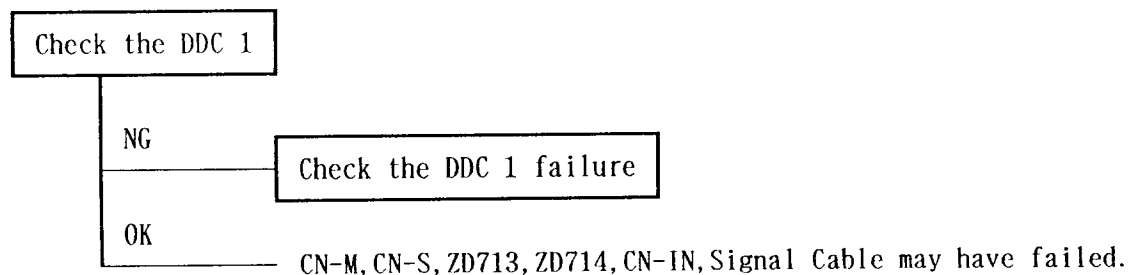


22 PLUG & PLAY FAILURE

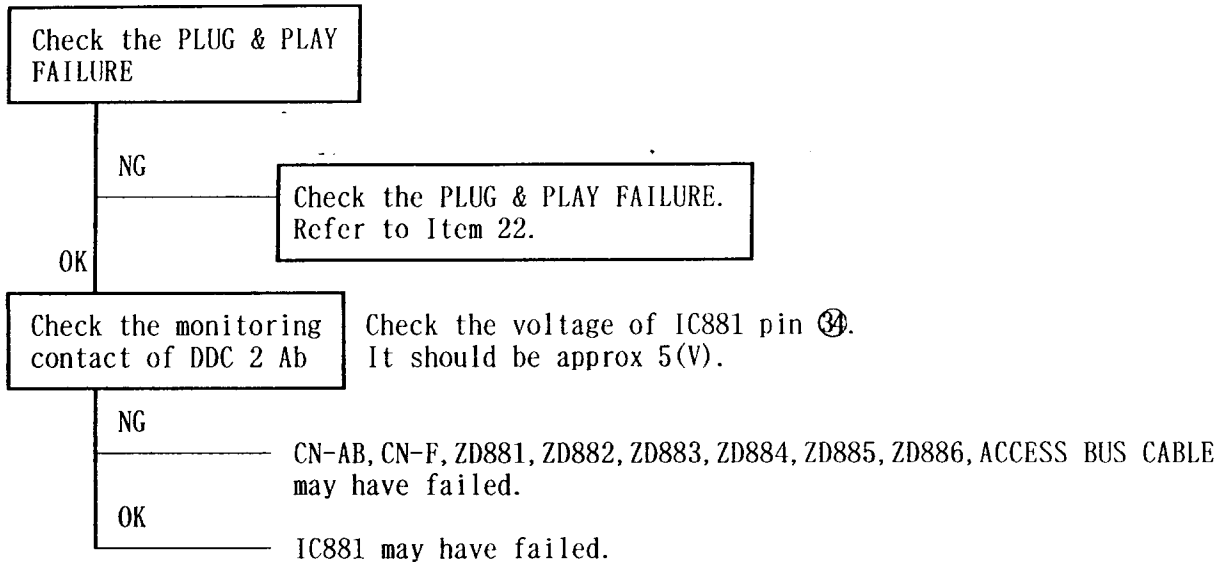
22.1 DDC 1 failure



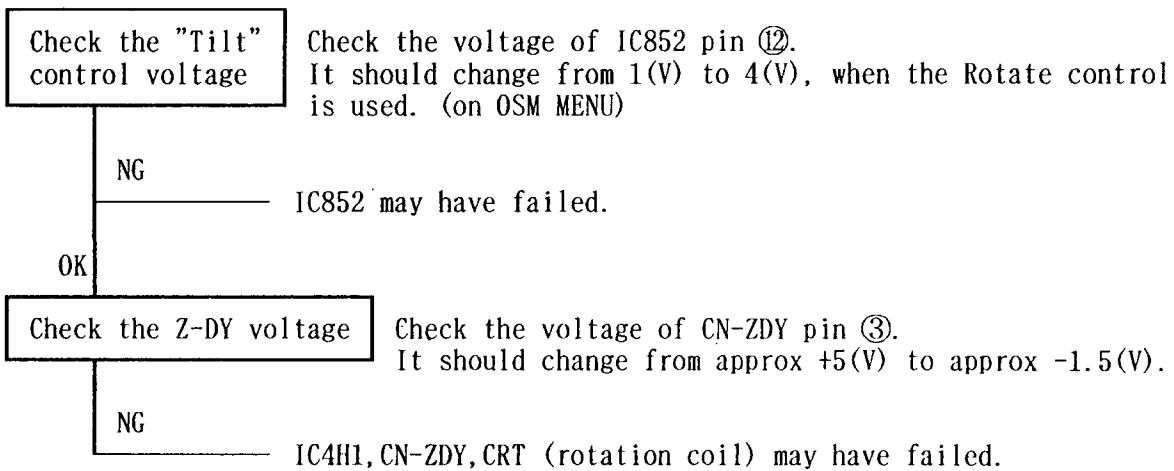
22.2 DDC 2B failure



23 ACCESS BUS FAILURE (JC-1537VMA/B/R only)



24 ROTATION CORRECTION CIRCUIT FAILURE (JC-1537VMA/B/R only)



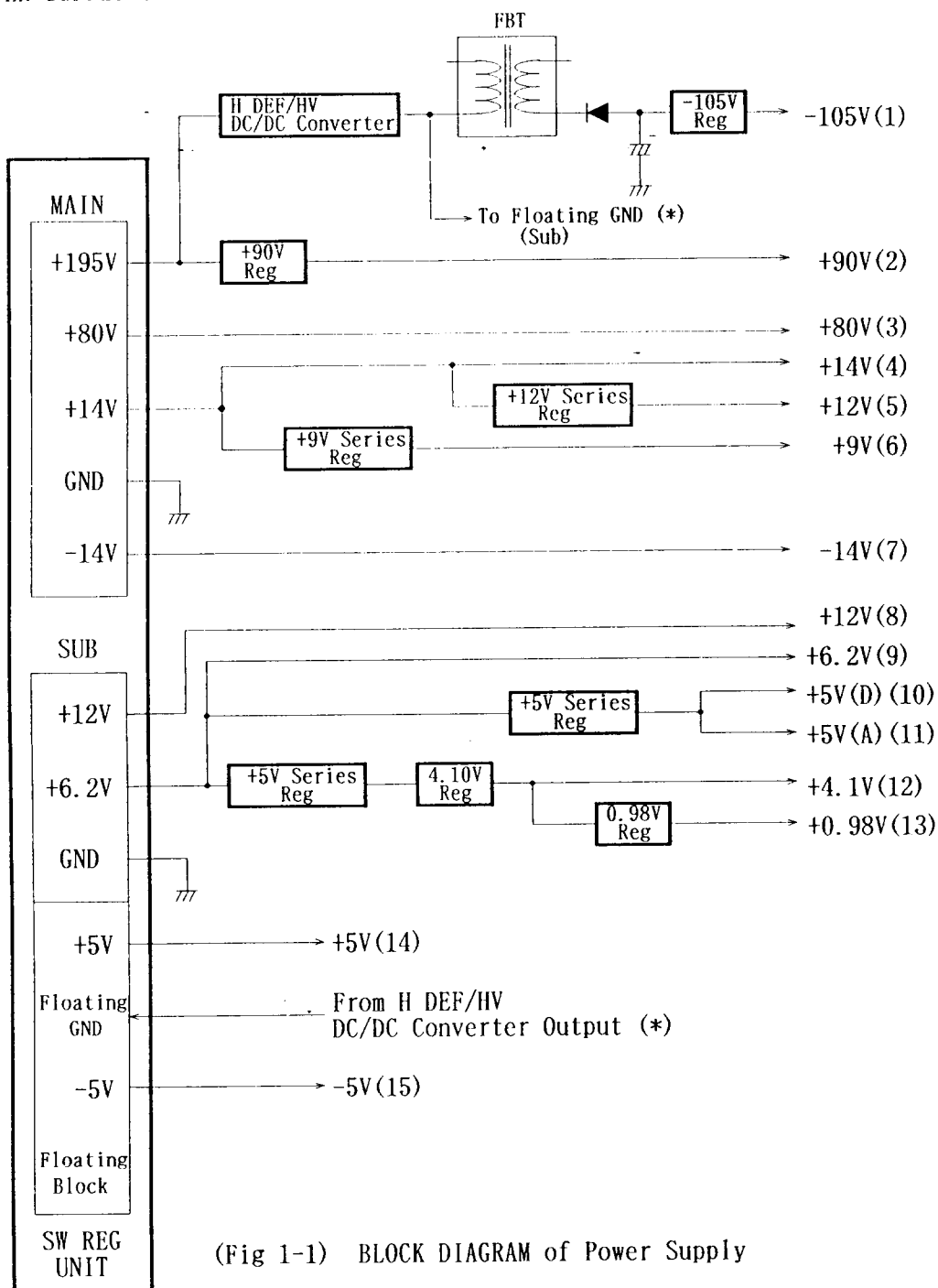
CIRCUIT DESCRIPTION

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1. POWER SUPPLY CIRCUIT



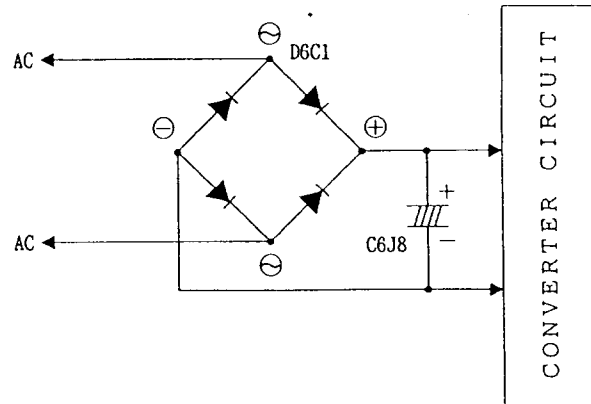
(Fig 1-1) BLOCK DIAGRAM of Power Supply

- | | |
|---|--------------------------------------|
| (1) -105V→G1 | (9) +6.2V→CRT HEATER |
| (2) +90V→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 | (13) +0.98V→D/A |
| DISTORTION CORRECTION, EW DRIVE | (14) +5V→HORIZONTAL RASTER CENTERING |
| (7) -14V→VERTICAL DEFLECTION | (15) -5V→HORIZONTAL RASTER CENTERING |
| (8) +12V→INTERFACE | |

1-1. Switching Regulator Unit

(1) Rectifying and Smoothing Circuit

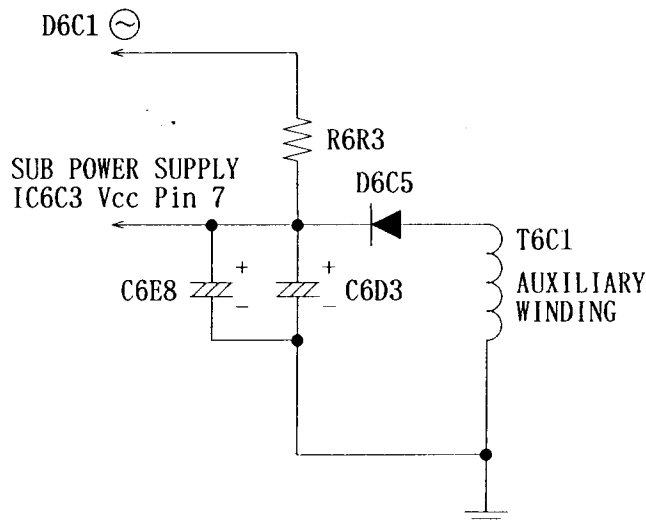
The AC input is rectified and smoothed by D6C1 and C6J8, becomes direct current (DC) and is supplied to the converter circuit.



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

(2) Sub Power Supply Auxiliary Power Supply Circuit

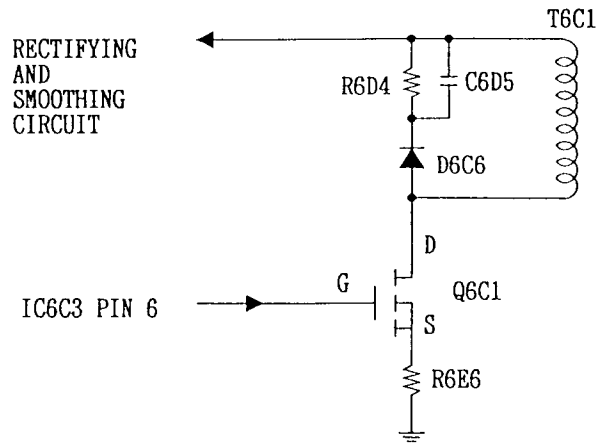
When the POWER switch is switched on, the current passes through R6R3 and rapidly charges C6E8 and C6D3. When IC6C3 pin 7 reaches 16 V, the IC starts oscillating. This results in the flyback voltage generated in the auxiliary winding of sub power supply transformer T6C1. The flyback voltage is rectified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

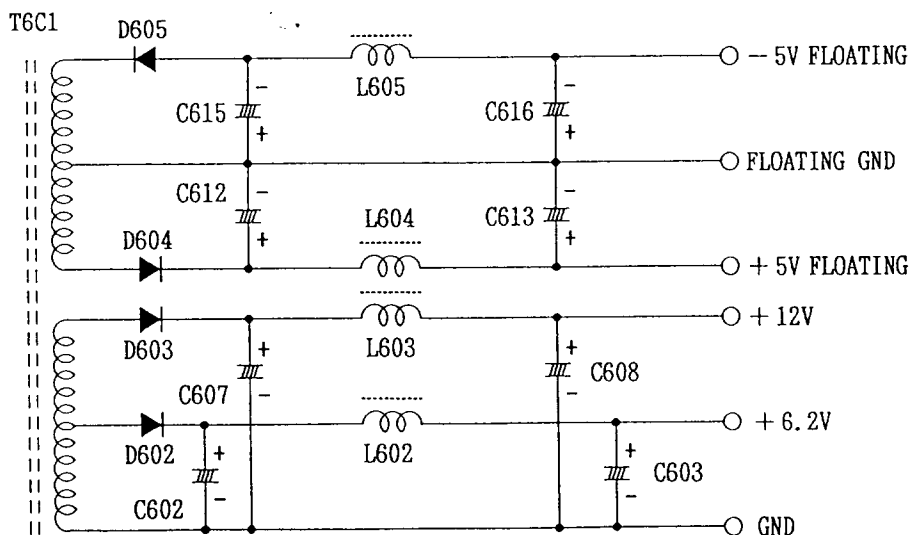
The sub power supply converter circuit consists of the primary winding of switching transformer T6C1, switching FET(Q6C1) and the surge-absorbing circuit (R6D4,C6D5 and D6C6). The oscillation signal is applied from IC6C3 pin 6 to the gate of Q6C1 and causes Q6C1(drain-source) to switch on and off, and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



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

(4) Sub Power Supply Outputs and Smoothing Circuit

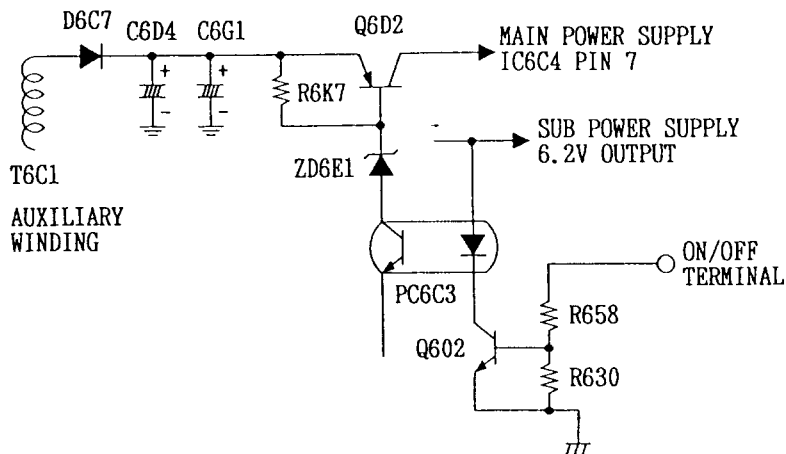
The flyback voltage generated at the secondary winding of sub power supply switching transformer T6C1, is rectified by D603 and D602 and smoothed by C602, C603,C607 and C608 to produce DC voltage of + 12 V and 6.2 V. At the same time, the DC voltage rectified by D604 and D605, and smoothed by C612,C613,C615 and C616 becomes the ± 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

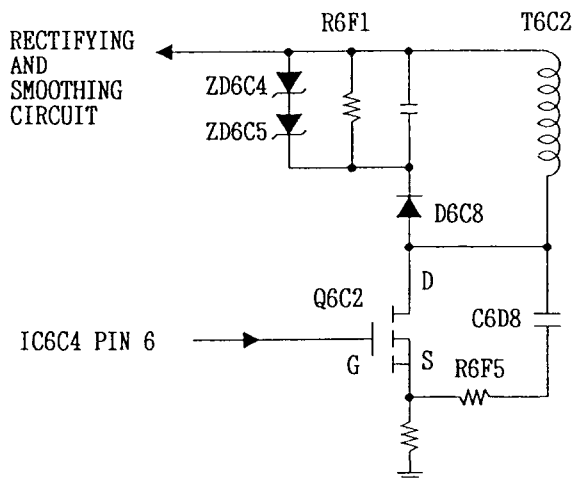
When the ON/OFF terminal becomes high level while the sub power supply is operating, R658, R630 and Q602 cause photocoupler PC6C3 to emit the light. When this happens, the primary side of PC6C3, which is the light receiving side, causes Q6D2 to switch on and connects the auxiliary power supply of the 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 level, 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

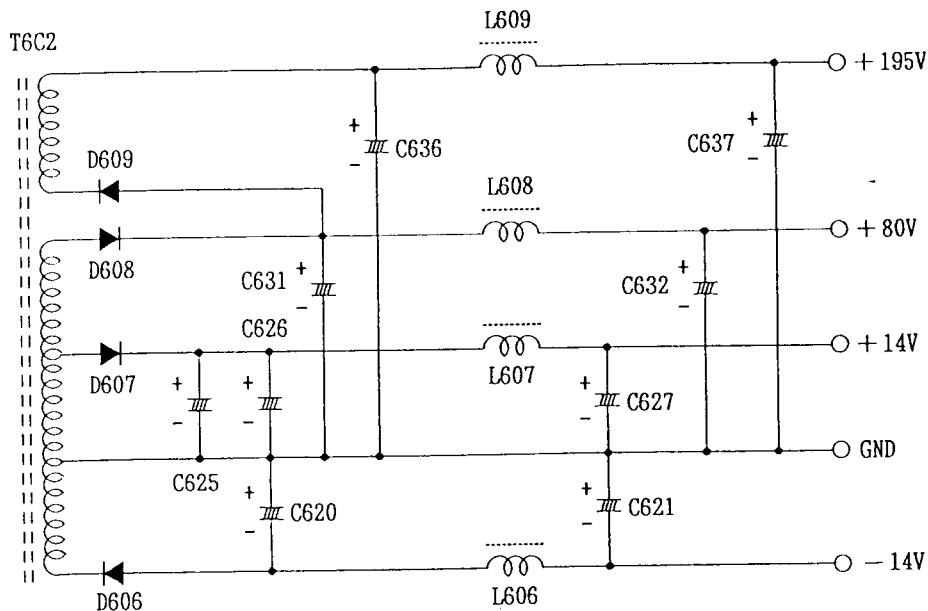
The converter circuit of the main power supply consists of the primary winding of main power supply switching transformer T6C2, switching FET(Q6C2) and snubber circuit (ZD6C4, ZD6C5, R6F1, C6D7, D6C8, C6D8 and R6F5). The oscillation signal is applied from main power supply IC6C4 pin 6 to the gate of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

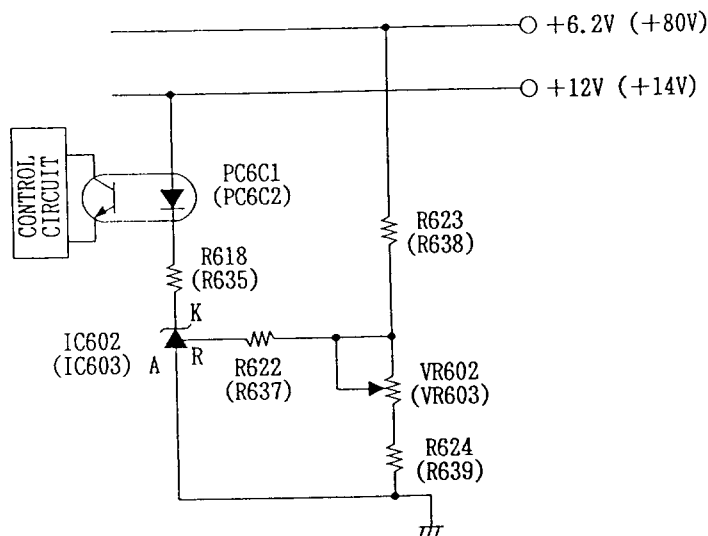
The flyback voltage generated at the secondary winding of main power supply switching transformer T6C2, is rectified by D606, D607, D608 and D609, and smoothed by C620, C621, C625, C626, C627, C631, C632, C636 and C637 to produce the various output DC voltages. The flyback voltage is maintained by controlling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

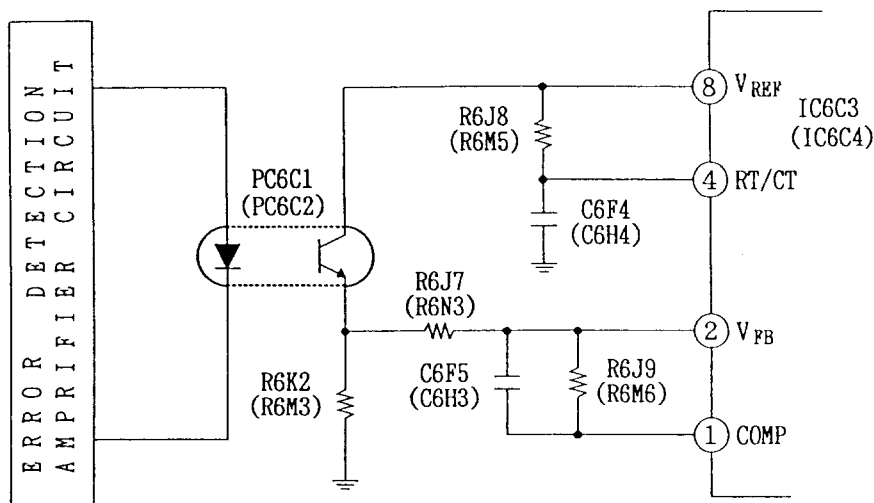
The output voltage + 6.2 V (+ 80 V) is divided by R623, VR602 and R624 (R638, VR603 and R639), and applied to IC602. This voltage is compared to the reference voltage with the IC602 (IC603) error amplifier. The error signal passes through photocoupler PC6C1 (PC6C2) and is applied to the control circuit.



(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)

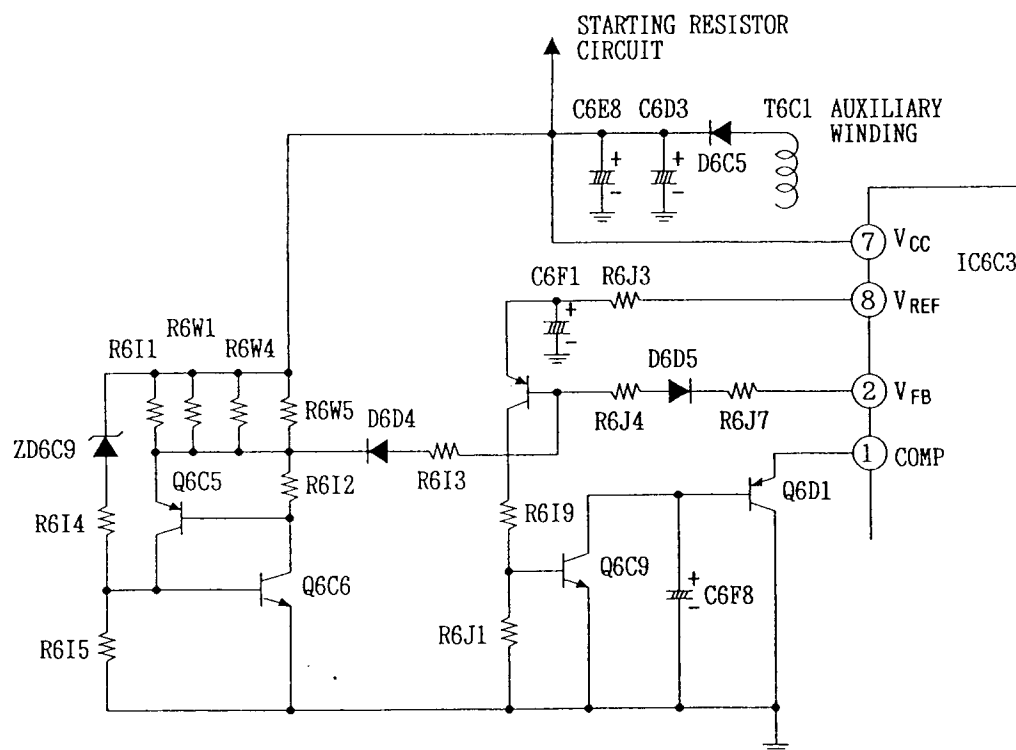
The oscillation frequency is determined by R6J8 and C6F4 (R6M5 and C6H4) which are connected to pin 8 and pin 4 of IC6C3 (IC6C4). The output of the error detection amplifier circuit comes from pin 8 of IC6C3 (IC6C4) and passes through PC6C1 (PC6C2), and is fed back to pin 2 of the IC6C3 (IC6C4). Since 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)

(10) 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 be dropped as far as ground level. 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 dropped to ground level. When pin 1 of IC6C3 is dropped to ground level, 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 level 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.

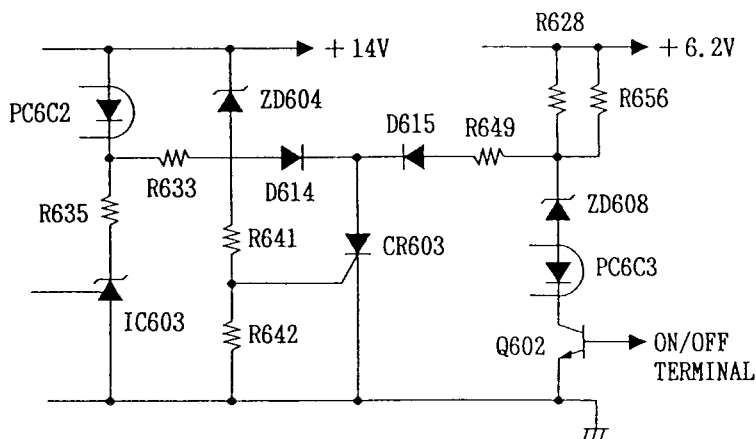


(Fig 1-1-10) Sub Power Supply Over Voltage Protection Circuit

(11) 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.

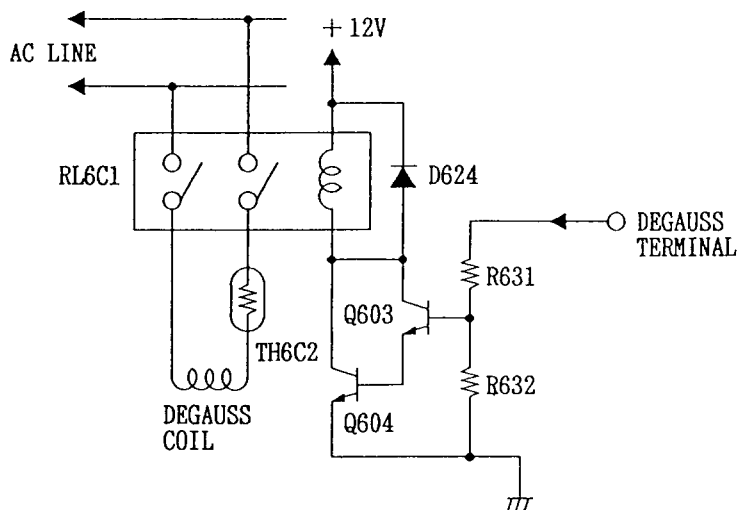
At the same time, since the + 6.2 V passes through D615 and the holding current starts to flow to CR603 and the current supply to PC6C3 stops, and PC6C3 stops light emitting. As a result, the on/off circuit becomes the same as the low level condition and the main power supply stops.



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

(12) Degaussing Circuit

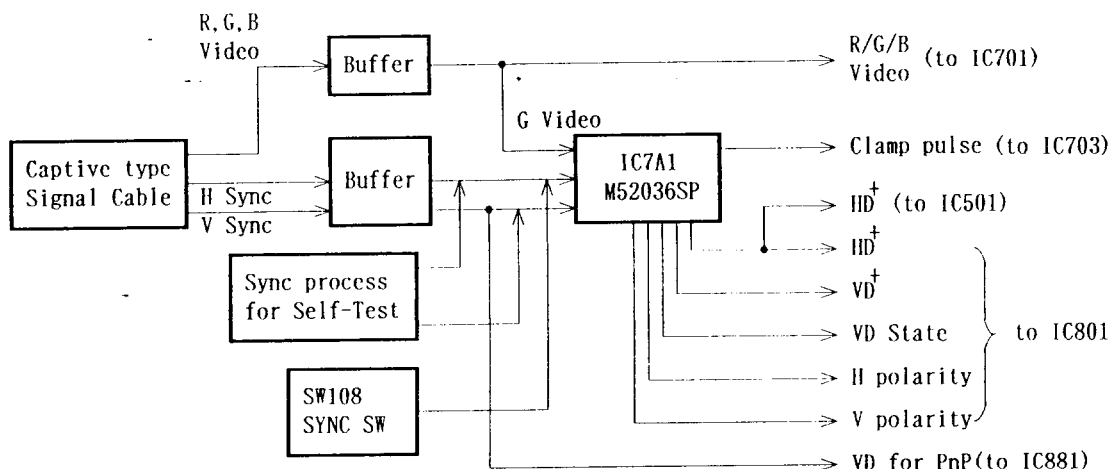
When the degauss terminal is high level, RL6C1 is switched on and the current flows through the degaussing coil. When the degauss terminal is low level, RL6C1 is switched off and the degaussing coil becomes open. The degauss terminal signal becomes high level for only about 3 seconds when the main switch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

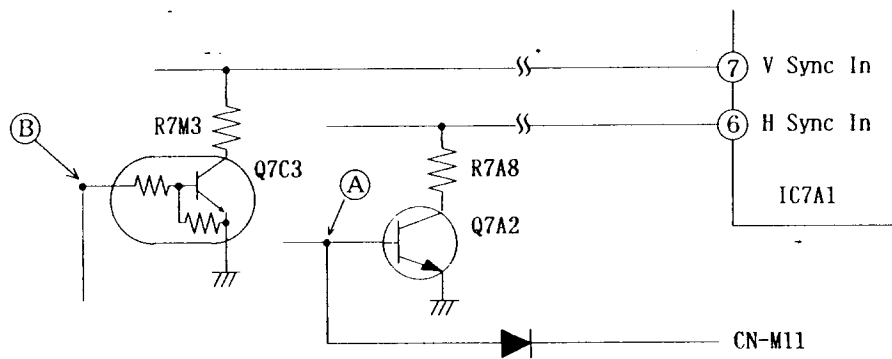
Pin No	Signal	Sync Polarity
6	Horizontal Sync or composite Sync	Positive/Negative
8	Vertical Sync	Positive/Negative
4	Green video (Sync on Green)	Negative

•Output

Pin No.	Signal	Signal Polarity , logic
14	HD ⁺ (Horizontal Sync)	Positive
13	VD ⁺ (Vertical Sync)	Positive
2	V State	"High" — V Sync Present "Low" — V Sync Not-present
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, there is no external sync signal this circuit operates by the internal free-run frequency, and the sync signal is created and then fed to IC7A1.

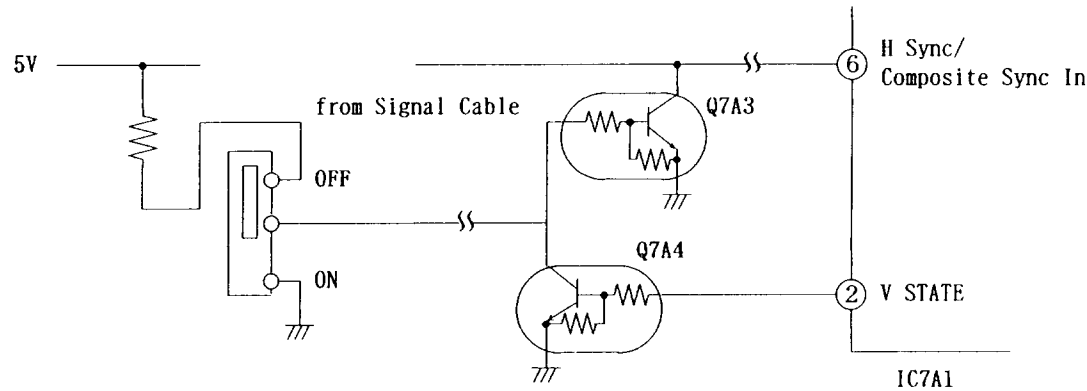


In the figure above, (A) and (B) become as below in the Self-Test mode.

	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 green emphasized 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. Sync SW (SW108) is adopted for this purpose.

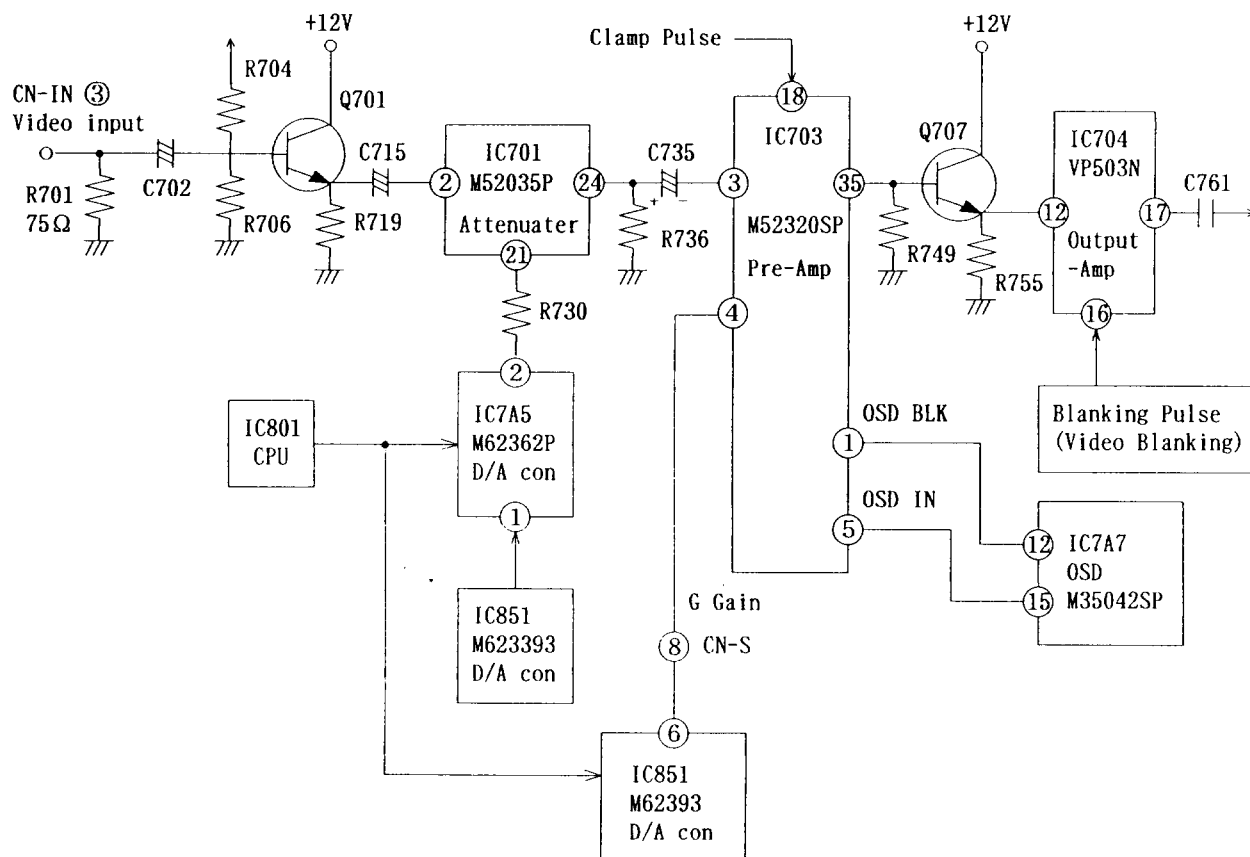


The input signal fed to pin 6 of IC7A1 by input type and sync switch is as below:

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

3-1-1. Video Signal Amplifier Circuit

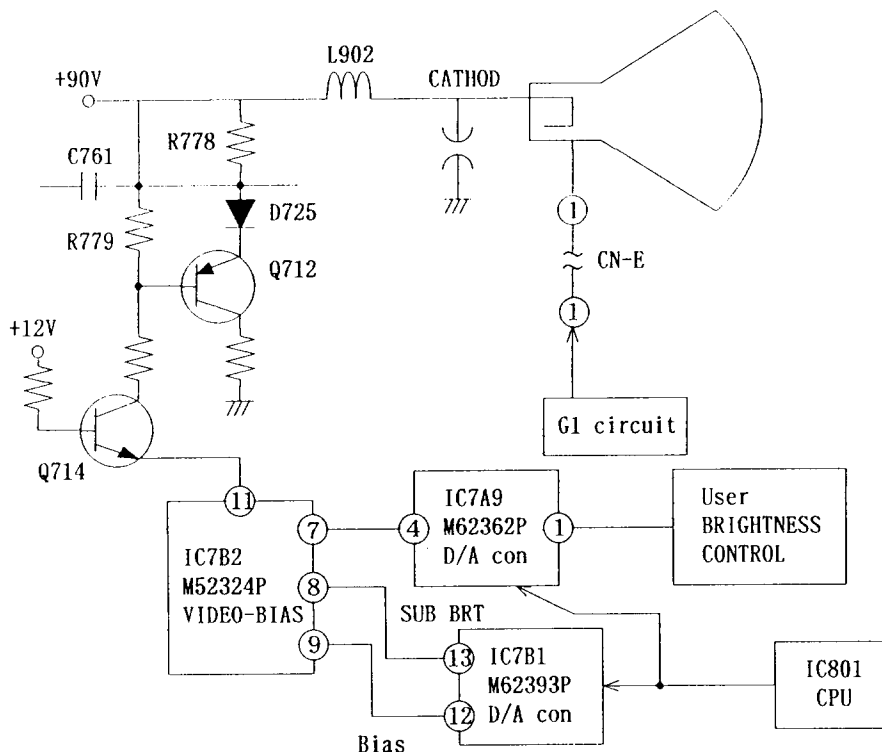
The output signal of IC703 is supplied to pin 12 of IC704. The output signal of IC704 is supplied to brightness and cut-off circuit.



(Fig 3-1-1)

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

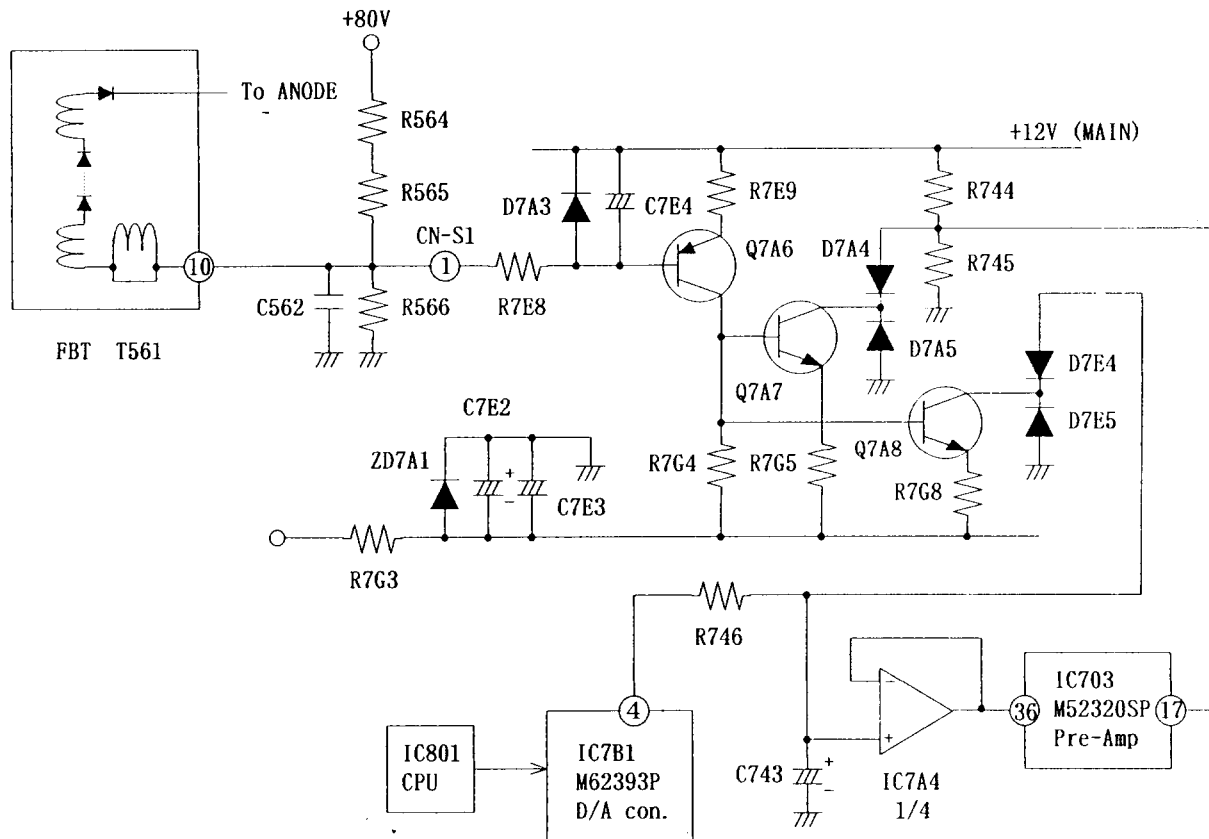
Only the Green video circuit is explained here. The raster brightness level is determined by clamping the video output blanking level from IC704. The DC clamp level is determined by using the voltage drop of R779(which is basically determined by the current of Q714). The raster brightness level is determined 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

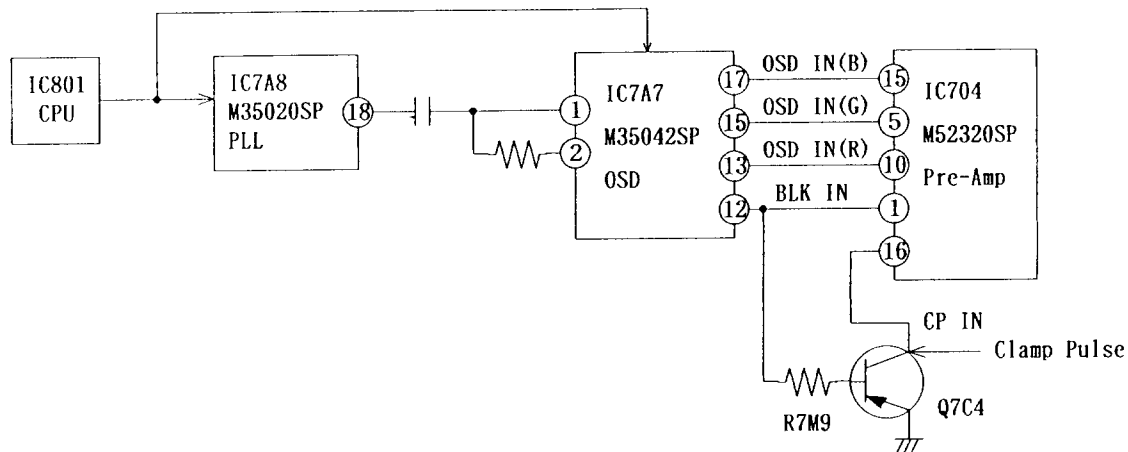
The maximum average current flowing through the CRT is limited to under $480\mu\text{A}$ by controlling the video Vp-p swing. The voltage of CN-S1 is clamped to 11V by D7A3 when the anode current is $480\mu\text{A}$ or less. If the anode current exceeds $480\mu\text{A}$, the voltage of CN-S1 drops to 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 IC703 and OSD adjust level of IC703 Pin 36 decreases.



(Fig 3-1-3)

3-1-4. OSM

The OSM circuit is composed of IC7A7 and IC7A8. IC7A8 oscillates from 20 to 50 MHz at the frequency ratio matched with the signal according to the instructions from the microcomputer and supplied to pins 1 and 2 of IC7A7. The IC7A7 takes the color from the microcomputer fed from IC7A8 and instructions such as font and output the signal of TTL level to pins 5, 10 and 15 of IC703. such as font and output the signal of TTL level to pins 5, 10 and 15 of IC703.

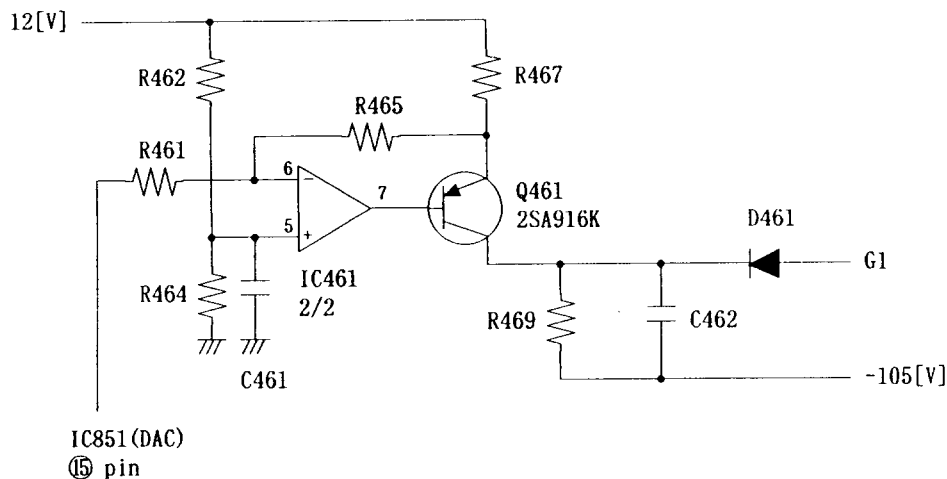


(Fig 3-1-4)

3-2. G1 Circuit

3-2-1. G1 Bias Circuit

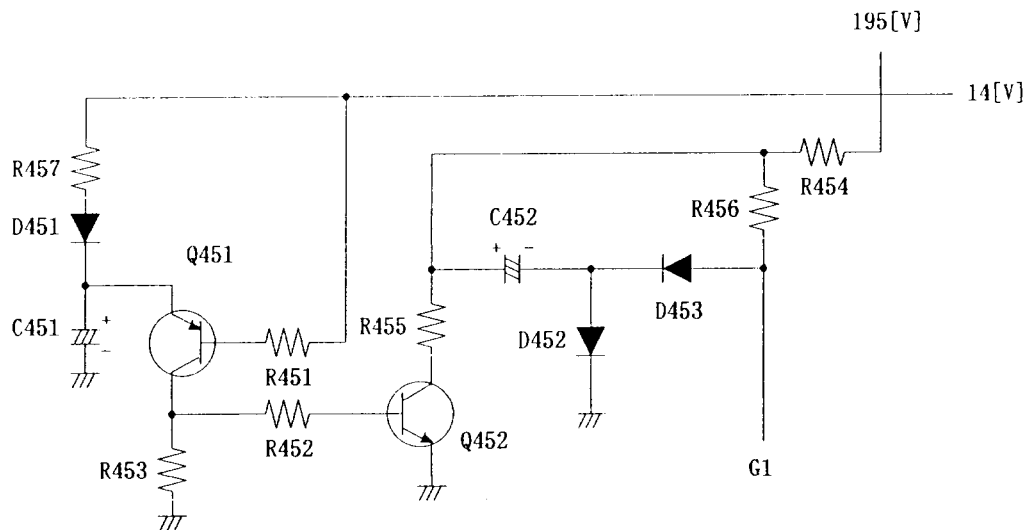
By varying DAC output (pin 15 of IC851) controlling G1 bias, the voltage of Q461 emitter changes. This voltage controls the current of R467 (that is, the current flowing through R469) to change the voltage drop by R469. As a result, the G1 voltage is adjusted to a constant optimum cut off level. (After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



(Fig 3-2-1)

3-2-2. Spot Killer Circuit

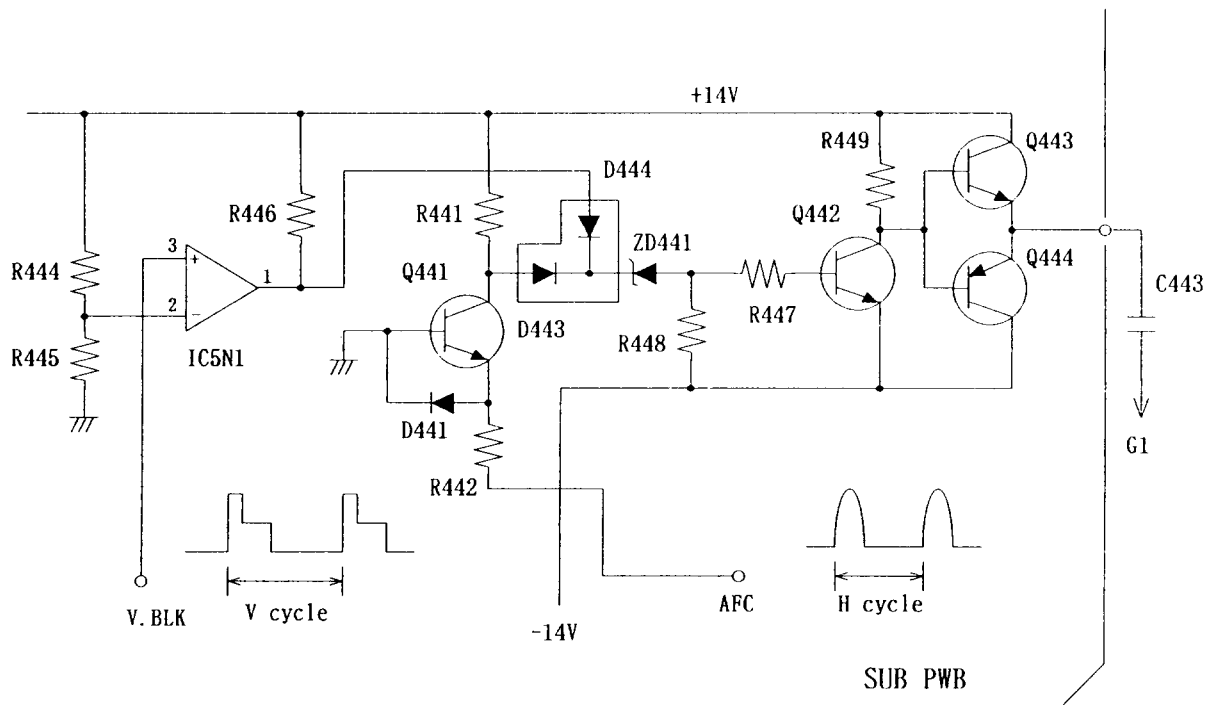
This circuit is used to prevent a spot from being made caused on the screen image. After turning the set power off, the 14V line drops to zero, Q451 and Q452 are turned on by the charge stored in C451. As a result, the + side of C452 is fall in to the ground. Now, -195V is output to the - side of terminal, 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

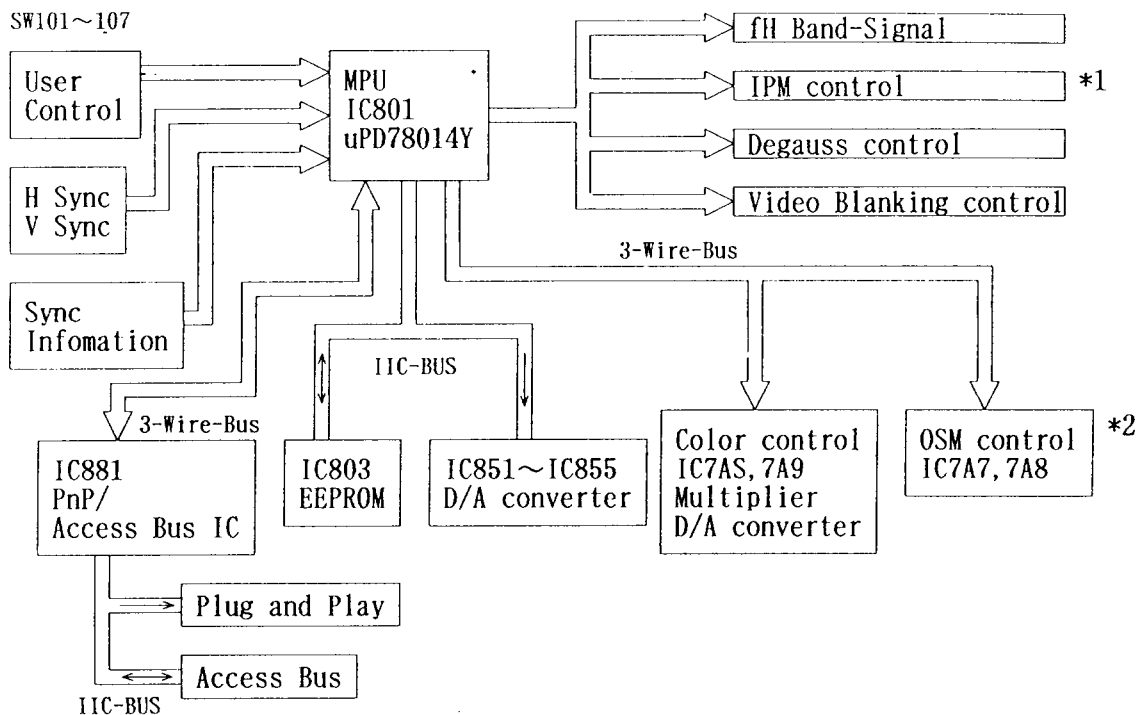
The horizontal blanking pulse is generated by the AFC pulse. The AFC is added to the emitter of Q441 which has its base grounded. When the AFC is during a high period, Q441 is turned off, and the potential of the collector is forced high. It is inverted by Q442 and the output signal of the push-pull circuit consisting of Q443 and Q444 is a negative pulse about 28 V_{p-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 as in the case of the horizontal blanking. This V BLK created by IC501 is output 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 the user control section, EEPROM, D/A converter, multiplier D/A converter, PnP/Access bus IC and OSM section.

MPU ____ 8 bit 1 chip microcomputer 8 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 OSD display information is built in
 {PLL Oscillator

PnP/Access bus IC ____ PnP The EDID output independently of MPU.
 Access bus Read or write control data as
 a reward for Access bus request.

*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
- Managenent of picture size and position data

User control by OSM

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

IPM

PnP/Access bus function

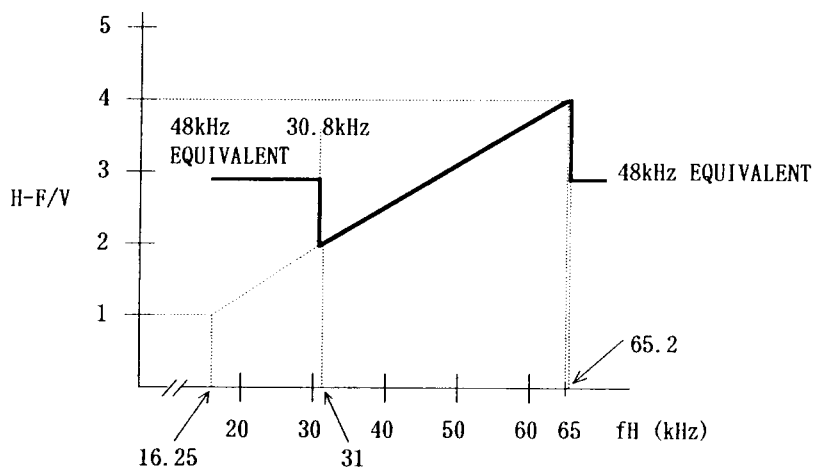
4-3. Automatic Signal Discrimination

(1) Frequency Measuring

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

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

The input sync signal frequency measurement result is used for signal discrimination (described below). And the control voltage decided by the result of the frequency measurement is output from pin 4 of IC852 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" Present "L" Not-present

(3) Video Blanking

This function shuts the image off for certain period of time so that the moving image cannot be seen when the input 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 (below motioned) has operated

The control of the circuit is made by the logic of pin 55.

Pin 55 Logic	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.
Therefore, it is not necessarily the constant time.

Signal Identification Flowchart

Input Signal

SYNC POLARITY

HOR	VER
POS1	NEGA
NEGA	POS1
NEGA	NEGA
POS1	POS1

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

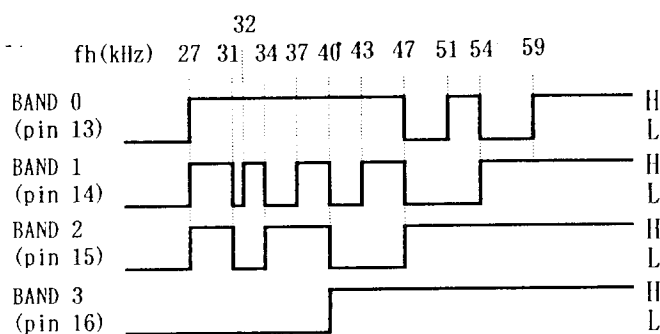
Note: "*" MARKED MEMORY DATA ARE ADJUSTED TO THE EXACT TIMINGS AT FACTORY

"USER **" SIGNALS DO NOT HAVE BACK-UP MEMORIES

OTHER SIGNALS HAVE BACK-UP MEMORIES AND THEIR DATA ARE CALCULATED AND STORED AT FACTORY

(4) fh Band Signal

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



(Fig 4-3-4)

(5) Management of Picture Size and Position Data

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 shown.

4-4. User Control by OSM

(1) OSM Display and User Operation

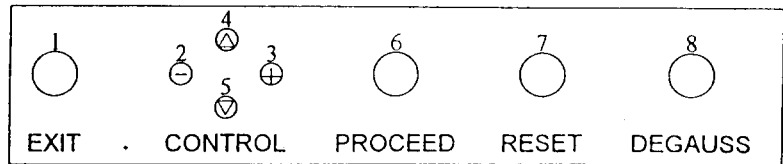
The logic of MPU pins when the user pressed each control key.

Key Pressed by User.	Logic of Each pin							
	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 Menu Controls Flowchart

Control Panel



Main Menu

Press 4,5... Cursor Up, Down

ON SCREEN MANAGER

Position

Press 2,3,4,5,6

Press 1

Press 6

Press 7

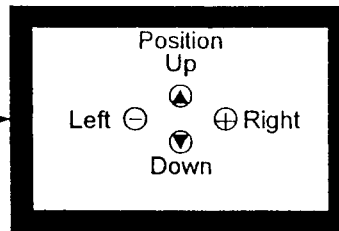
RESET

Key Operation

Press 2... move the image horizontally left
 3... move the image horizontally right
 4... move the image vertically up
 5... move the image vertically down
 6... has no function

Sub Menu

Press 8 ... always degauss



Press 7

RESET

Press 1

SAVE

Size

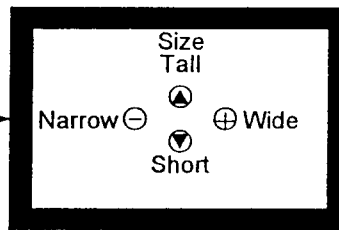
Press 6

Press 7

RESET

Key Operation

Press 2... decreases the horizontal size of the image
 3... increases the horizontal size of the image
 4... increases the vertical size of the image
 5... decreases the vertical size of the image
 6... has no function



Press 7

RESET

Press 1

SAVE

AccuColor
 (Color Control)

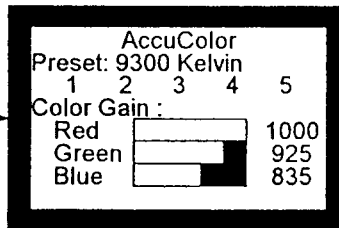
Press 6

Press 7

RESET

Key Operation

Press 2... decrease value
 3... increase value
 4... highlighted area up
 5,6... highlighted area down



Press 7

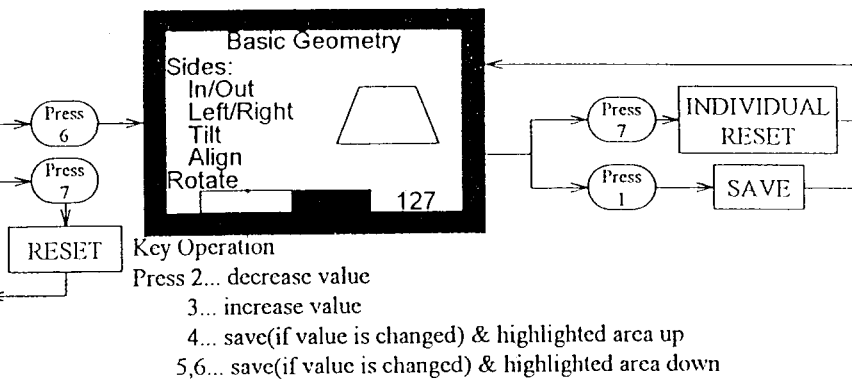
RESET
 INDIVIDUAL
 Preset Number

Press 1

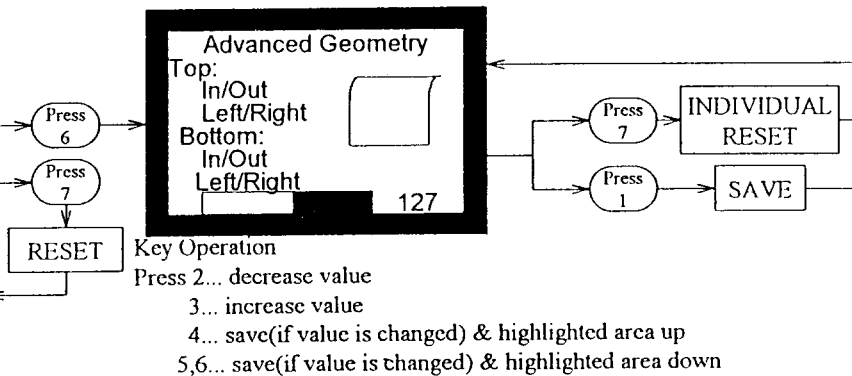
SAVE

(Fig 4-4-1)

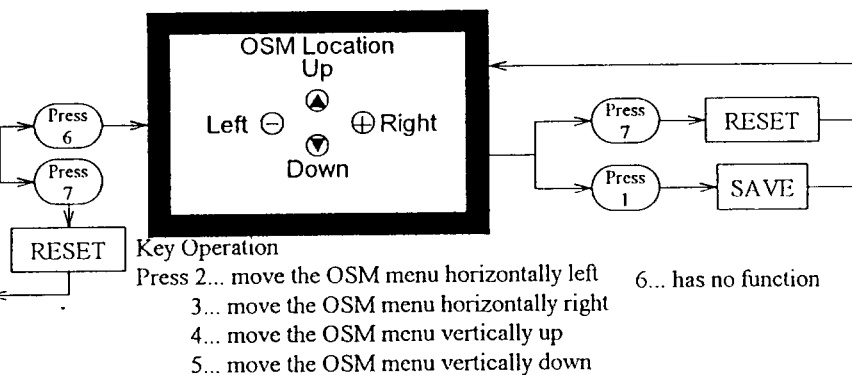
Basic Geometry
*refer to "Note".



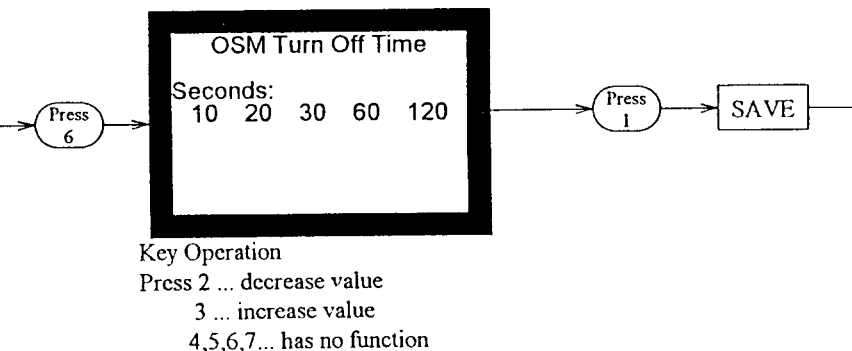
Advanced Geometry



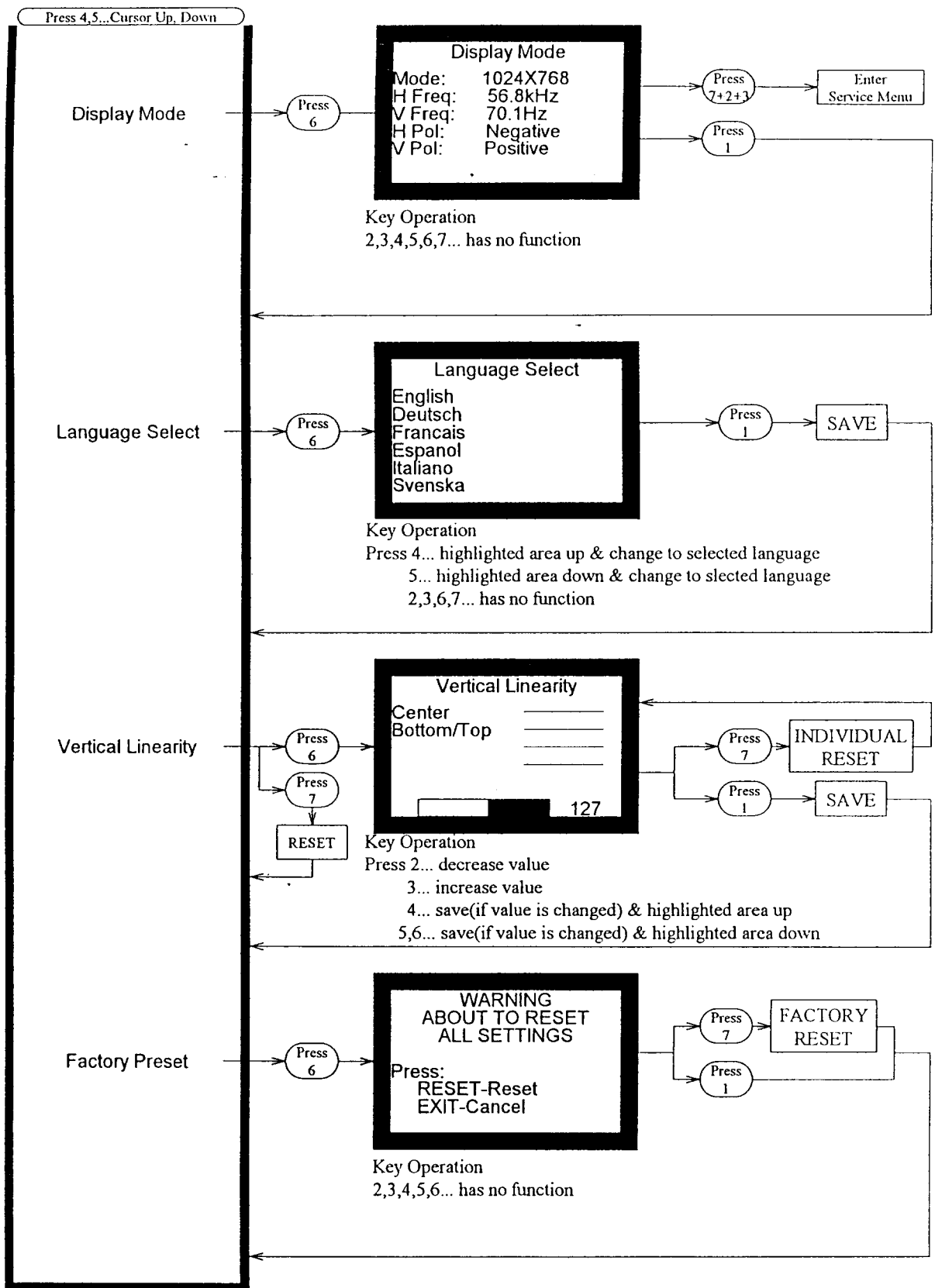
OSM Location



OSM Turn Off Time



(Fig 4-4-1)

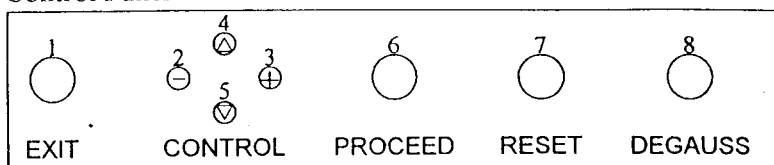


Note: XE-15... Following item is not supported.
"Rotate"

(Fig 4-4-1)

Service Menu Controls Flowchart

Control Panel



Main Menu

Sub Menu

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

"Display Mode"

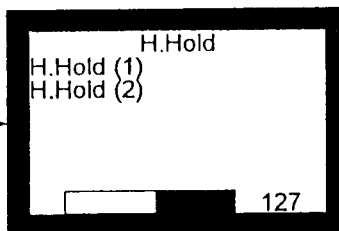
Press 4,5...Cursor Up, Down

Press 7+2+3
Press 1

SERVICE MENU

H.Hold

Press 6



Press 1

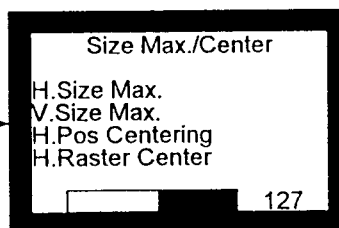
SAVE

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



Press 1

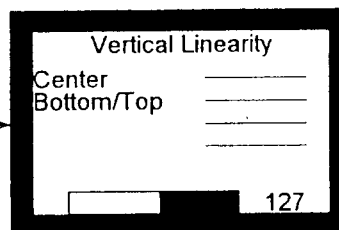
SAVE

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



Press 1

SAVE

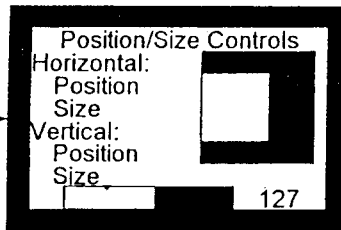
Key Operation

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)

Position/Size

Press 6



Press 1

SAVE

Key Operation

Press 2... decrease value

7... has no function

3... increase value

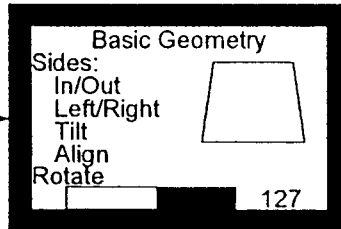
8... OSM menu On/Off

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

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

Basic Geometry
*refer to "Note".

Press 6



Press 1

SAVE

Key Operation

Press 2... decrease value

7... has no function

3... increase value

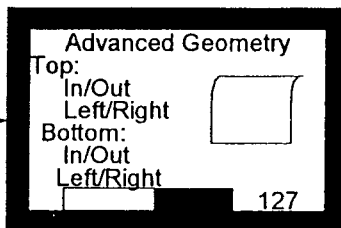
8... OSM menu On/Off

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

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

Advanced Geometry

Press 6



Press 1

SAVE

Key Operation

Press 2... decrease value

7... has no function

3... increase value

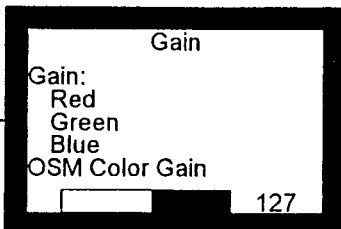
8... OSM menu On/Off

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

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

Gain

Press 6



Press 1

SAVE

Key Operation

Press 2... decrease value

7... reset item: Gain R/G/B
AccuColor

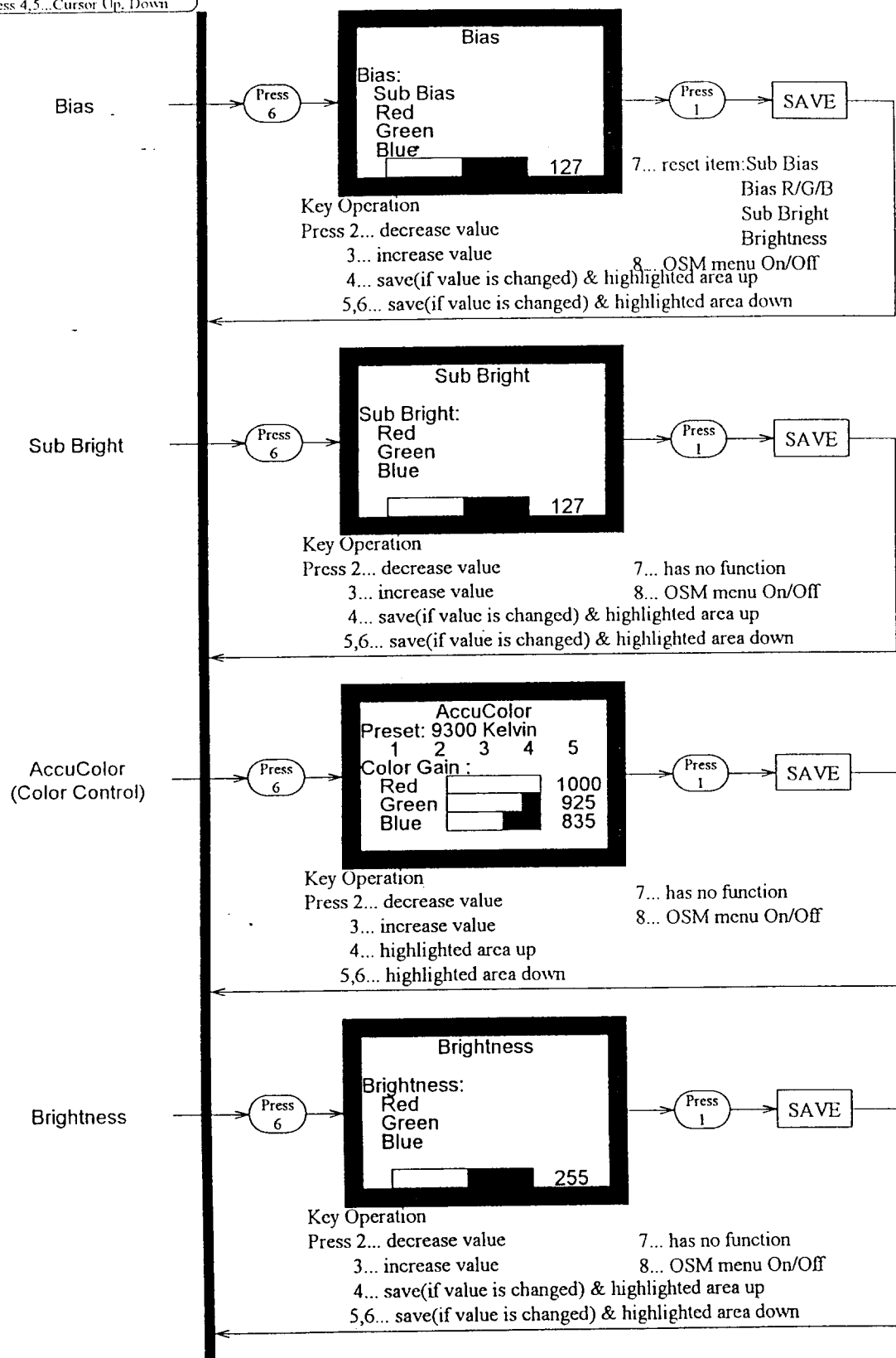
3... increase value

8... OSM menu On/Off

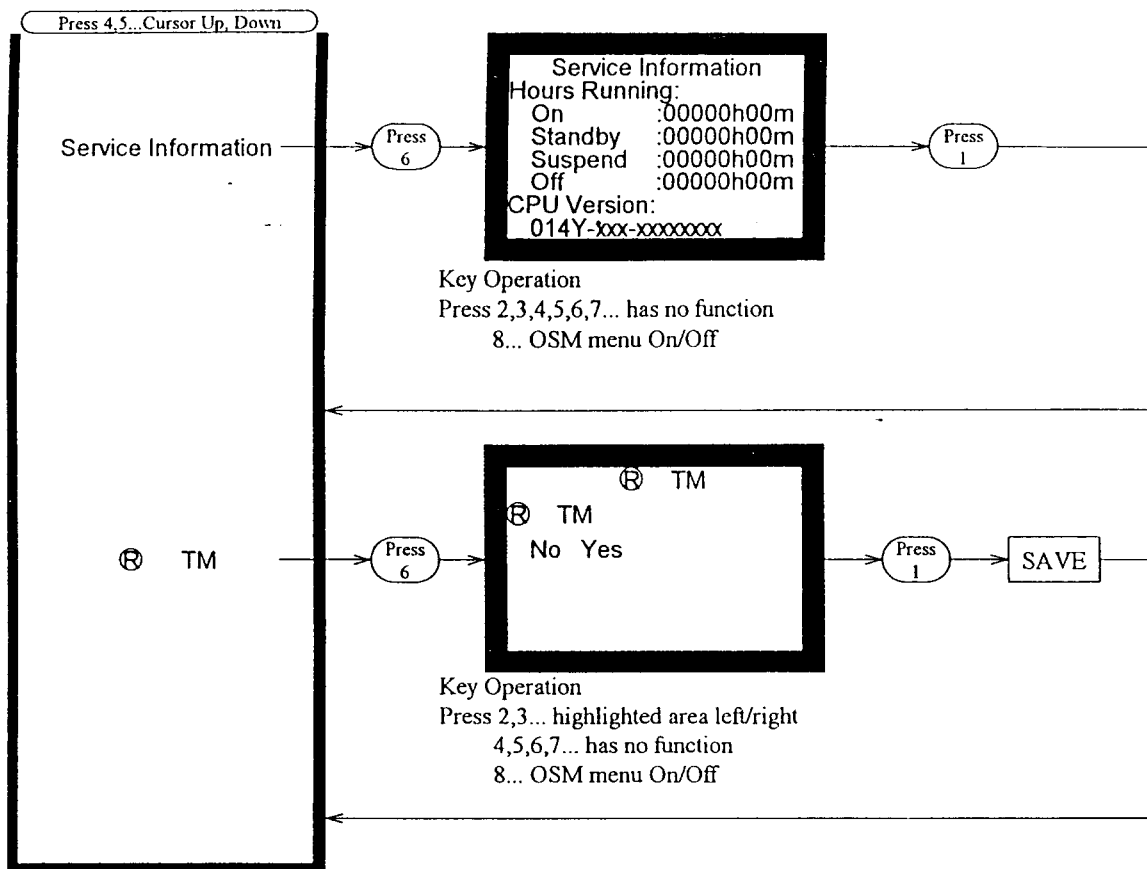
4... save(if value is changed) & highlighted area up

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

(Fig 4-4-1)



(Fig 4-4-1)



Note: XE-15... Following item is not supported.
 "Rotate"

(Fig 4-4-1)

CAUTION

The OSM menu has incorrect explanation in Service Information.
 That is as follows.

incorrect	correct
CPU Version : 014Y-Y15-37076194	CPU Version : 014Y-Y15-37076195

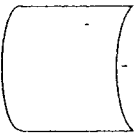
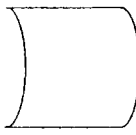
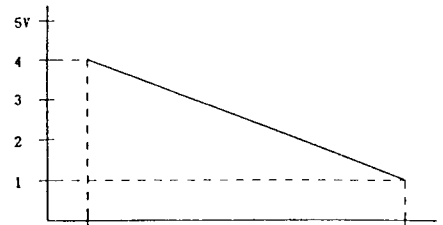
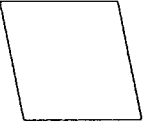
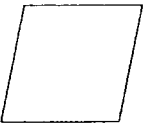
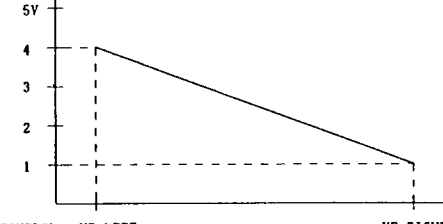
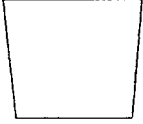
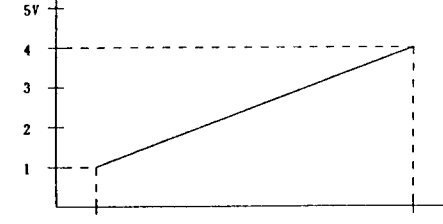
OSM Function List

Function Name	Function name in the OSM	DAC name	Output Pin	Description	DAC'S VARIABLE RANGE
POSITION	Position Left (Control "~")	HP	IC853 Pin 12	Horizontal position adjustment	H. POSITION 5V 4 3 2 1 CONTROL LEFT RIGHT CONTROL KEY "~" "+"
	Position Up (Control "~Δ")	VP	IC855 Pin 15	Vertical position adjustment	V. POSITION 5V 4 3 2 1 CONTROL DOWN UP CONTROL KEY "~ ∇" " Δ"
SIZE	Size Narrow (Control "~")	HS	IC855 Pin 5	Horizontal width adjustment	H. SIZE 5V 4 3 2 1 CONTROL NARROW WIDE CONTROL KEY "~" "+"
	Size Tall (Control "~Δ")	VS	IC855 Pin 14	Vertical height adjustment	V. SIZE 5V 4 3 2 1 CONTROL SHORT TALL CONTROL KEY "~ ∇" " Δ"

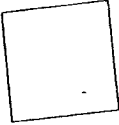
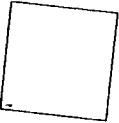
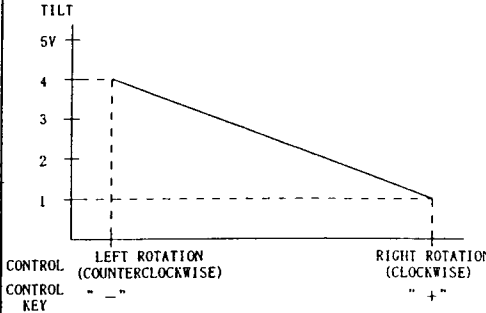
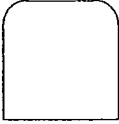
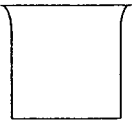
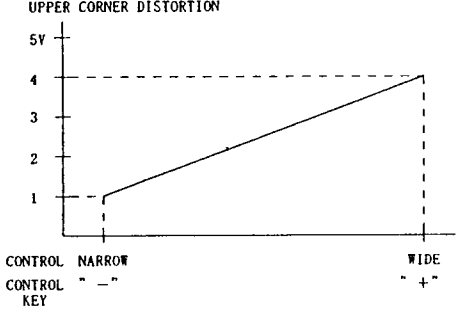
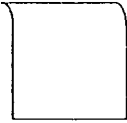
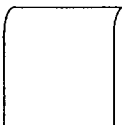
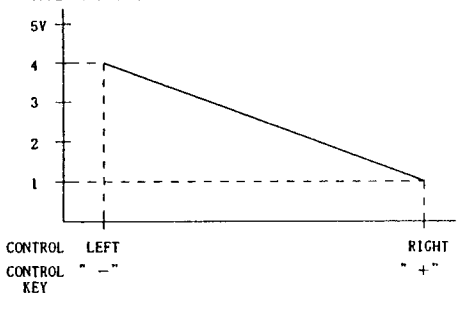
(Fig 4-4-2)

COLOR TEMP	AccuColor : Red	RI	IC7A5 Pin 13	Color temperature adjustment	R/G/B. INT KIR, KIG, KIB MIN MAX DOWN ← → UP CONTROL " - " " + " KEY KI: Initial value is KIR=KIG=KIB=1000. : Any one of KIR, KIG, and KIB always maintain to 1000. Output value is KI to MDAC
	AccuColor : Green	GI	IC7A5 Pin 2	1	1
	AccuColor : Blue	BI	IC7A5 Pin 4	1	1
SIDE PIN	Sides : In/Out (Control "-") (Control "+")	SDP	IC855 Pin 4	Side pincushion distortion adjustment	SIDE-PIN 5V 4 3 2 1 CONTROL PIN BARREL CONTROL " - " " + " KEY

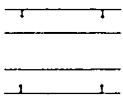
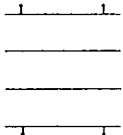
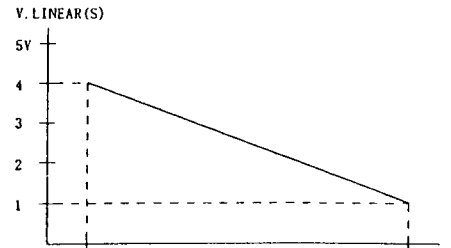
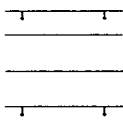
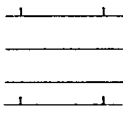
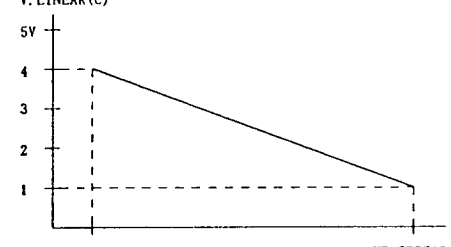
(Fig 4-4-2)

SIDE PIN BALANCE	Sides : Left/Right  (Control "--")  (Control "+")	SDPB	IC853 Pin 7 Side pincushion balance adjustment	SIDE-PIN BALANCE  CONTROL LEFT BARREL CONTROL "--" KEY RIGHT BARREL " + "
PARALLEL	Sides : Tilt  (Control "--")  (Control "+")	PAR	IC853 Pin 6 Parallelogram distortion adjustment	PARALLELOGRAM  CONTROL UP LEFT CONTROL "--" KEY UP RIGHT " + "
TRAPEZOID	Sides : Align  (Control "--")  (Control "+")	TRP	IC853 Pin 15 Trapezoid distortion adjustment	TRAPEZOID  CONTROL DOWN WIDE CONTROL "--" KEY UP WIDE " + "

(Fig 4-4-2)

TILT (JC-1537VM* ONLY)	Rotate  (Control "-")  (Control "+")	TILT	IC852 Pin 12	Tilt adjustment	
UPPER CORNER	Top : In/Out  (Control "-")  (Control "+")	UC	IC853 Pin 14	Upper corner distortion adjustment	
UPPER CORNER BALANCE	Top : Left/Right  (Control "-")  (Control "+")	UCB	IC853 Pin 5	Upper corner balance adjustment	

(Fig 4-4-2)

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

(Fig 4-4-2)

Function Name	Function name in the OSM	DAC name	Output Pin	Description	DAC'S VARIABLE RANGE
H. HOLD	H. Hold (1)	HOLD1	IC851 Pin 12	Horizontal Free Run adjustment	H. HOLD1, H. HOLD2 COMMON CONTROL LOW FREQUENCY " - " CONTROL KEY HIGH FREQUENCY " + "
	H. Hold (2)	HOLD2	IC851 Pin 13	↑	↑
H. SIZE MAX	H. Size Max	HS MAX	IC855 Pin 12	Max. horizontal width adjustment	H. SIZE MAX CONTROL NARROW " - " CONTROL KEY WIDE " + "
V. SIZE MAX	V. Size Max	VS MAX	IC855 Pin 13	Max. vertical height adjustment	V. SIZE MAX CONTROL NARROW " - " CONTROL KEY WIDE " + "
SUB H. POSI	H Pos Centering	SHP	IC851 Pin 4	Horizontal position center adjustment	SUB H. POSI CONTROL LEFT " - " CONTROL KEY RIGHT " + "

(Fig 4-4-2)

H. CENTER	H. Raster Center	H. CENTER	IC852 Pin 13	Horizontal raster centering adjustment	
GAIN	Gain : Red	SUB GAIN (R)	IC851 Pin 5	Video output swing adjustment (R)	
	Gain : Green	SUB GAIN (G)	IC851 Pin 6	Video output swing adjustment (G)	1
	Gain : Blue	SUB GAIN (B)	IC851 Pin 7	Video output swing adjustment (B)	1
OSD ADJUST	OSM Color Gain	OSD ADJ	IC7B1 Pin 4	OSD gain control (R/G/B)	
SUB BIAS	Bias : Sub Bias	G1 BIAS	IC851 Pin 15	Reference color and contrast tracking	

(Fig 4-4-2)

CUT OFF	Bias : Red	R BIAS	IC7B1 Pin 7	Cut off adjustment	R/G/B. BIAS COMMON 5V 4 3 2 1 CONTROL DOWN (DARK) UP (BRIGHT) CONTROL " - " " + " KEY
	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	R/G/B. SUB. BRT COMMON 5V 4 3 2 1 CONTROL DOWN (DARK) UP (BRIGHT) CONTROL " - " " + " KEY
	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	R/G/B. BRIGHT KR', KG', KB' MIN DOWN ← → UP MAX " - " " + " CONTROL KEY K' : Initial value is KR' = KG' = KB' = 0. : KR', KG', and KB' move independently of each other. Output value (KSB) is the following formula. $KSB = K_I * K' / 1000$ EX) $KSBR = K_{IR} * KR' / 1000$
	Brightness : Green	G BRIGHT	IC7A9 Pin 2	↑	↑
	Brightness : Blue	B BRIGHT	IC7A9 Pin 4	↑	↑

(Fig 4-4-2)

(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
Present	Present	High	High
Not-present	Present	 fH=1kHz duty=50%	High
Present	Not-present	Low	High
Not-present	Not-present	Low	Low

4-6. Plug and Play/Access Bus function

(1) DDC 1 (Display Data Channel 1)

The EDID (Extended Display Identification Data) output at signal cable pin 12.
The output data are specified in Table 4-6-1 or Table 4-6-2.
One data byte consists of 8 bits. 9th bit has no relation to the data.
The output of 1 bit synchronized with V sync Low to High transition.

Table 4-6-1. Data list (Management number : EDID-005)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	FF	FF	FF	FF	FF	FF	00	38	A3	00	3C	01	00	00	00
10	28	04	01	00	0E	1C	15	B4	E8	66	EF	9C	57	4C	96	26
20	10	4C	50	FF	FE	00	00	00	00	00	00	00	00	00	00	00
30	00	00	00	00	00	00	10	0B	D0	B4	20	90	31	10	12	6C
40	C2	00	04	C3	10	09	07	1C	40	1F	00	20	41	00	22	30
50	18	60	02	00	04	C3	10	00	00	18	00	00	00	00	00	00
60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	9F

(JC-1539VMA/B/R)

Table 4-6-2. Data list (Management number : EDID-008)

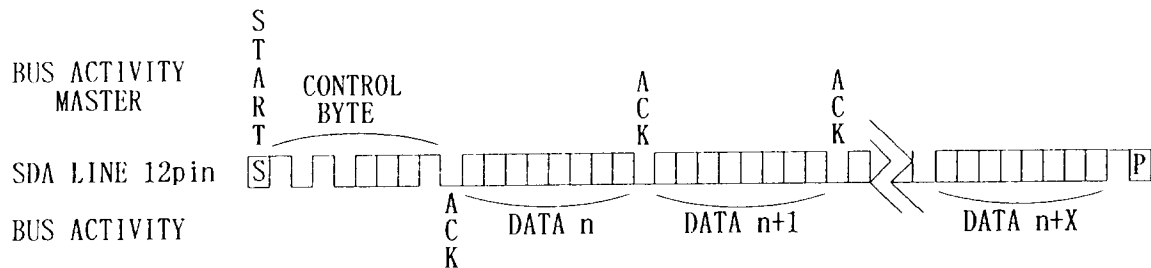
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	FF	FF	FF	FF	FF	FF	00	38	A3	0A	3C	01	00	00	00
10	28	04	01	00	0E	1C	15	B4	E8	66	EF	9C	57	4C	96	26
20	10	4C	50	FF	FE	00	00	00	00	00	00	00	00	00	00	00
30	00	00	00	00	00	00	10	0B	D0	B4	20	90	31	10	12	6C
40	C2	00	04	C3	10	09	07	1C	40	1F	00	20	41	00	22	30
50	18	60	02	00	04	C3	10	00	00	18	00	00	00	00	00	00
60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	95

(JC-1537VMA/B/R)

(2) DDC 2B

If pin 15 of signal cable has DDC 2 clock and A.b command is not detected, the communication mode will change to DDC 2B mode. In DDC 2B mode, IC881 waits for command input from Master (=PC and Video board) at Signal Cable pin 12.

If the command data of DDC 2B input from Master, the EDID will output into pin 12. EDID as same as output data in DDC 1 are specified in Table 4-6-1 or Table 4-6-2. And the output timing is shown by Fig 4-6-3.



(Fig 4-6-3) Timing chart of DDC2B

(3) DDC 2Ab

DDC 2Ab mode is Access bus Communication mode. This mode is able to control the data of display using CN-AB.

If pin 4 of CN-AB has DDC 2 clock, the communication mode will change to DDC 2 mode. In this mode, IC881 waits for command input from Master at CN-AB pin 2. At this time, if A.b command appears at CN-AB pin 2, IC881 responds to this command. In the Access bus mode, the external command is able to change the control data.

5. DEFLECTION CIRCUIT

5-1. Horizontal Deflection Circuit

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

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

IC501 has the following internal horizontal circuits:

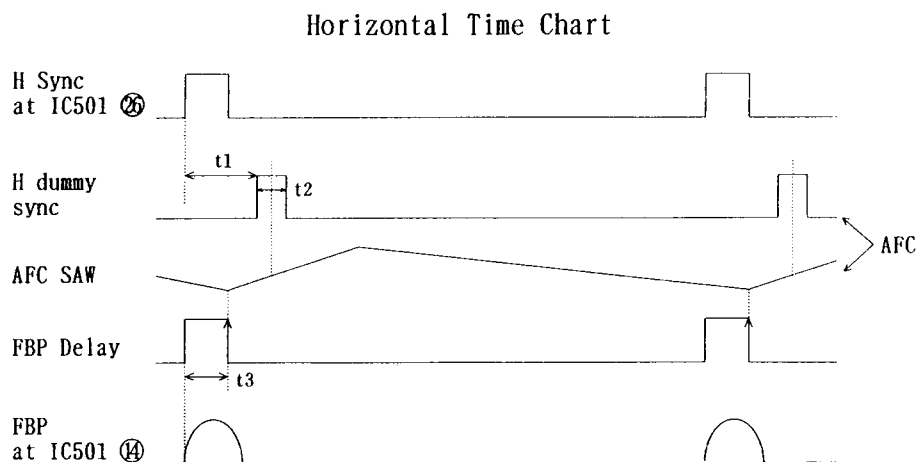
- Sync signal input section
- FBP input section
- 1st delay section
- FBP delay section
- Horizontal dummy sync signal generator
- AFC circuit
- F/V voltage delay circuit
- Duty variable circuit
- Horizontal oscillator circuit

(1) Horizontal Oscillator

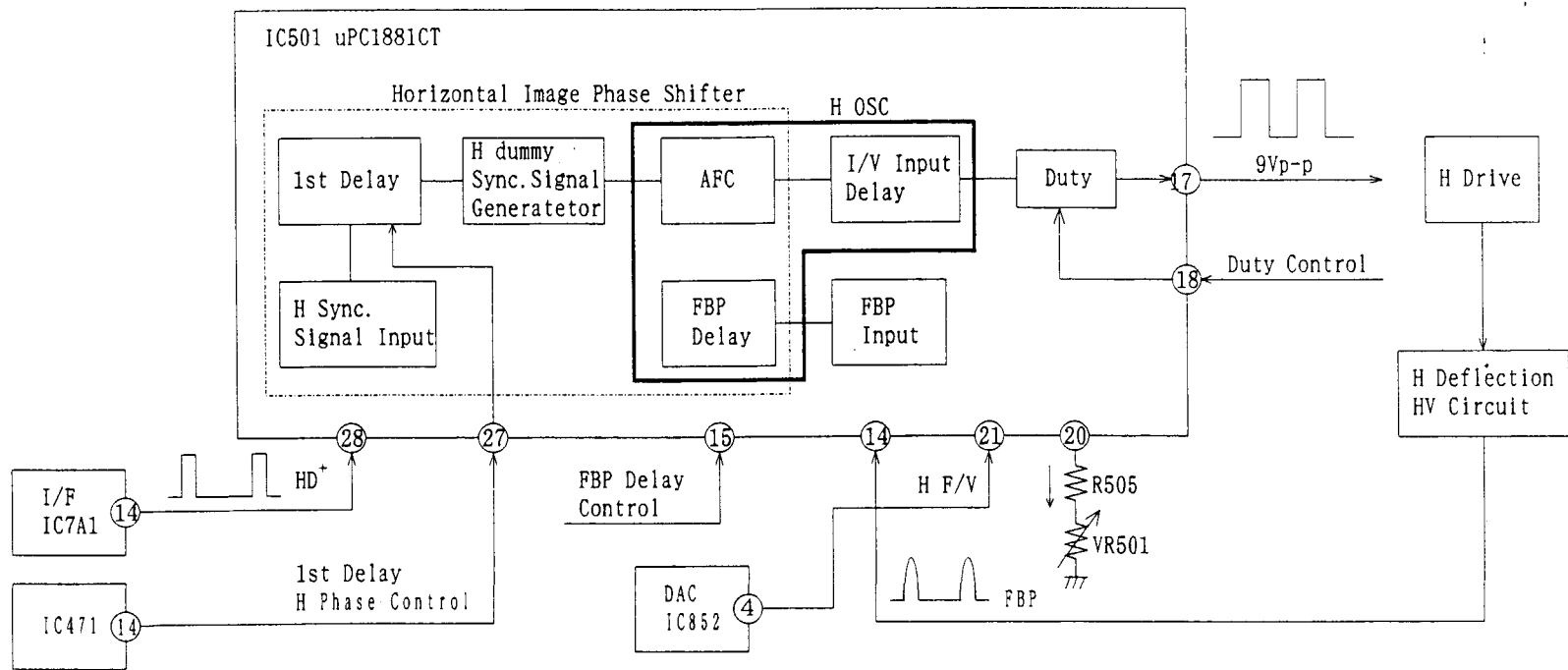
The horizontal sync signal output from IC7A1 pin 14 of the I/F circuit is fed to IC501 pin 28. A horizontal dummy sync signal having a fixed width of t_2 is generated at t_1 later from the rising edge of the input signal. t_1 is determined by the voltage at pin 27 and t_2 is determined by the voltage at pin 26. The horizontal oscillation frequency is determined by F/V voltage input to pin 21 and the current flowing in 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 the combination of t_1 and t_3 .



(Fig 5-1-1)



(Fig 5-1-2)

5-1-2. Image Distortion Correction Circuit

The image distortion correction is performed by IC471 (uPC1882CU).
The distortion correction circuit consists of two blocks.

(1) Correction for image size distortion

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 suppressed on the horizontal size control voltage output from pin 15 of IC471 and then supplied to the EW driver circuit.

(2) Correction for image position distortion

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

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

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

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

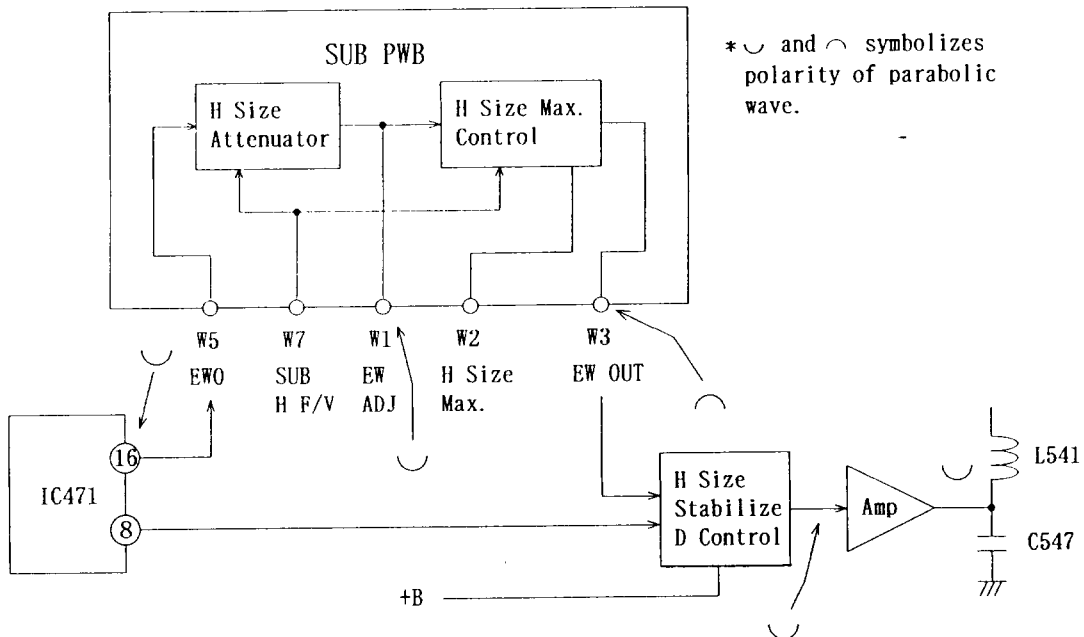
These correction waveforms are controlled to the optimum value by following up to a change of horizontal size and vertical position.

The distortion offset is controlled by the voltage from DAC 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 distortion correction IC(IC471) pin 16 is fed to SUB PWB CN-W pins. 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 pin W3 of the SUB PWB to fully scan each signal by the DC voltage output from pin 12 of IC855.

(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 pin 8 of IC471 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 pin 12 of IC5E2, thereby causing the horizontal size to change.

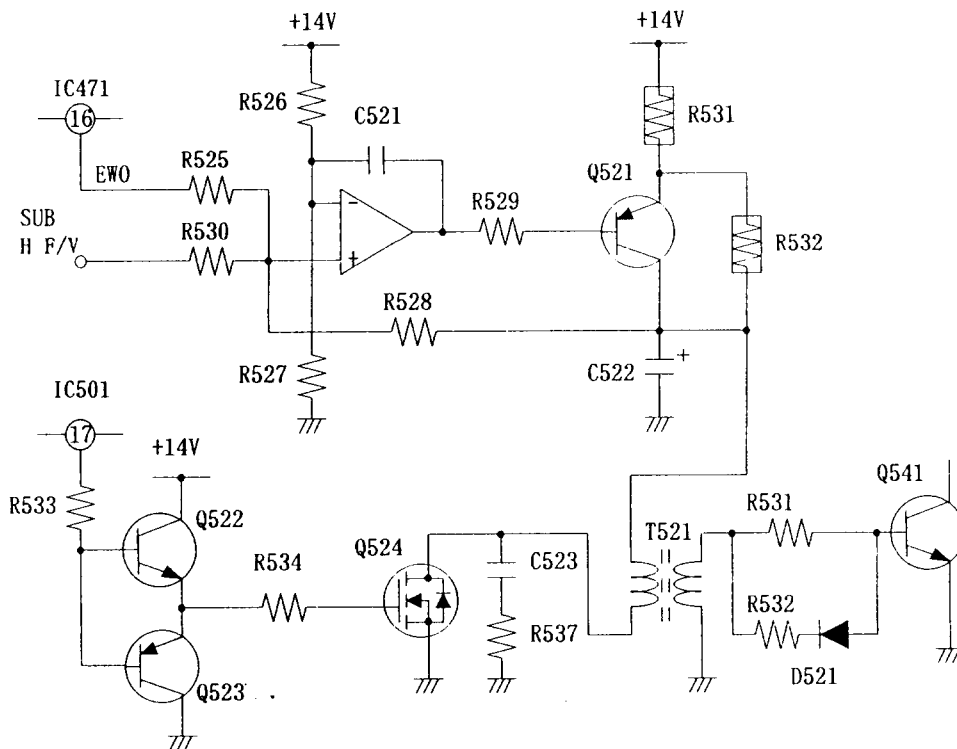
5-1-4. H Drive Circuit

(1) H Drive Pulse Buffer

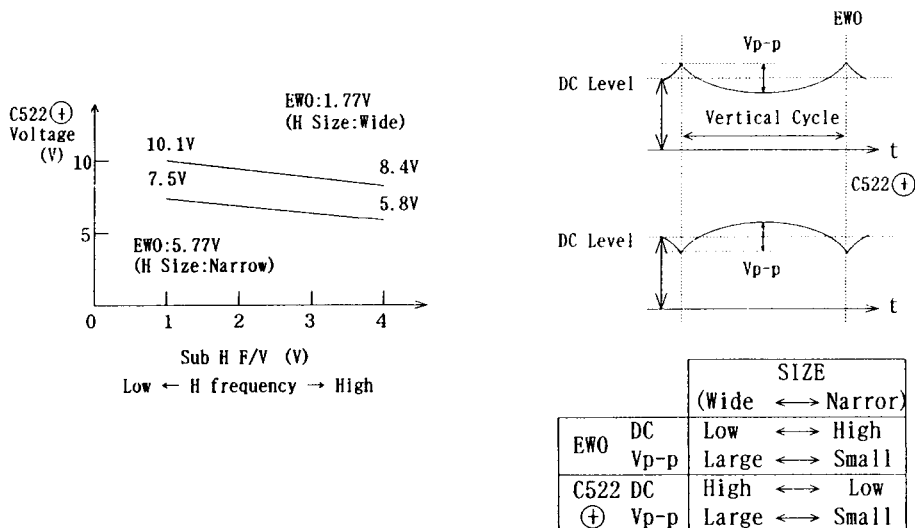
The H drive pulse supplied from IC501 pin ⑰ is buffered by Q522 and Q523. Then it is supplied to the drive circuit of the H deflection circuit, and the sawtooth pulse-generator of the chopper circuit in the SUB PWB.

(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 -105 Volt regulator input 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 generator consists of deflection coil, C541, C542, C548, D541, D542, D546 and Q541, the auxiliary generator consists of modulator coil L541, C543, C547, D541 and Q541. 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 horizontal linearity balance 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. Any capacitor 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"

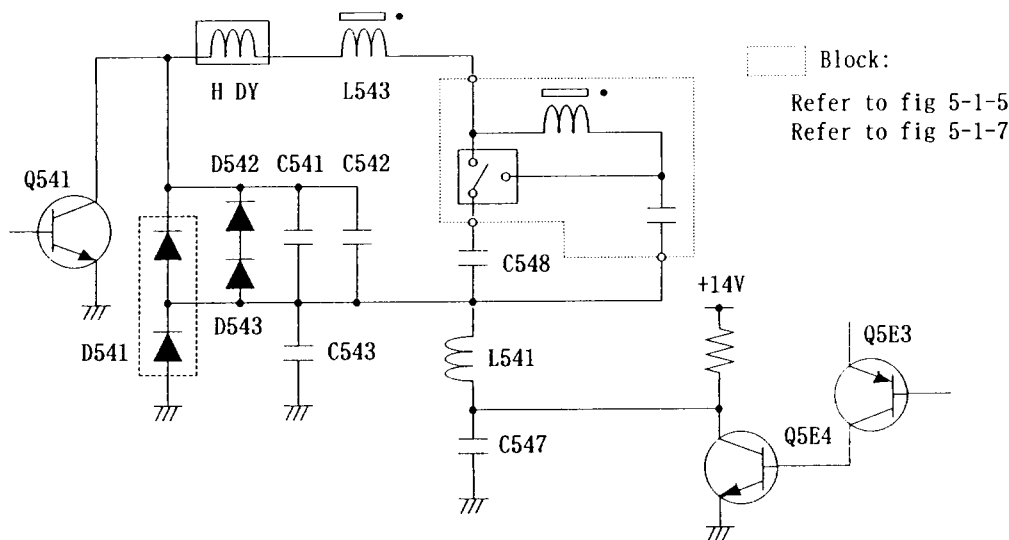
*3) ON ----- D-S short, OFF ----- D-S open

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

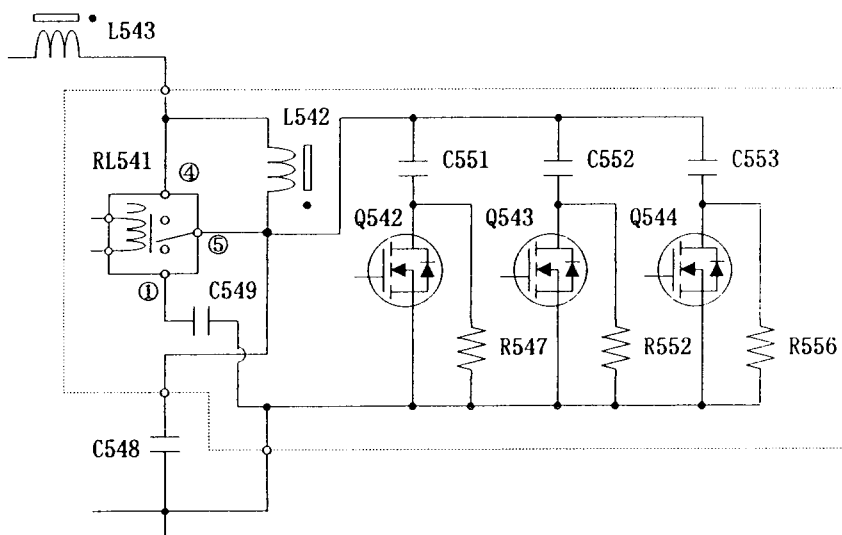
*5) ON ----- "active", OFF ----- "shorted between both terminal of L542".

(Fig 5-1-5)

The collector pulse width of Q541 is determined by the DY's induction, other inductor and the capacity of resonance capacitor C541, C542. This pulse width is about 3.0 μ s. Also input supply voltage of FBT 4 pin varies depending upon frequency. The pulse level is approximately constant in the all horizontal frequencies by negative feedback of high B+ chopper circuit. Therefore the high voltage is regulated in all frequencies. The duration of the pulse generated at the neutral point of D541 is approximately 3.0 μ s. This pulse-level changes by varying C547's voltage by manipulating EW Output (w3 pin) voltage at SUB PWB. As C547's voltage decreases the horizontal width increases. The horizontal size is maintained as the difference between the FBT pin 4 (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.



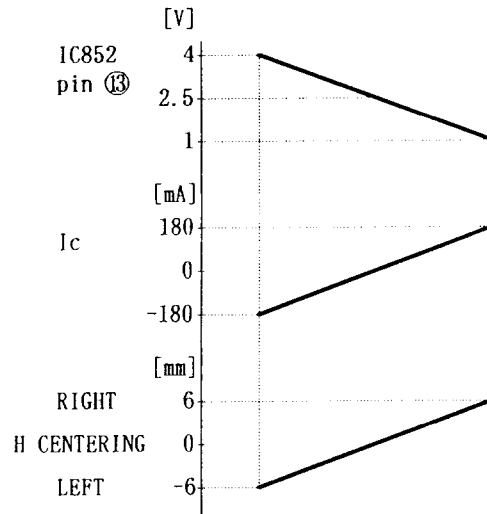
(Fig 5-1-6)



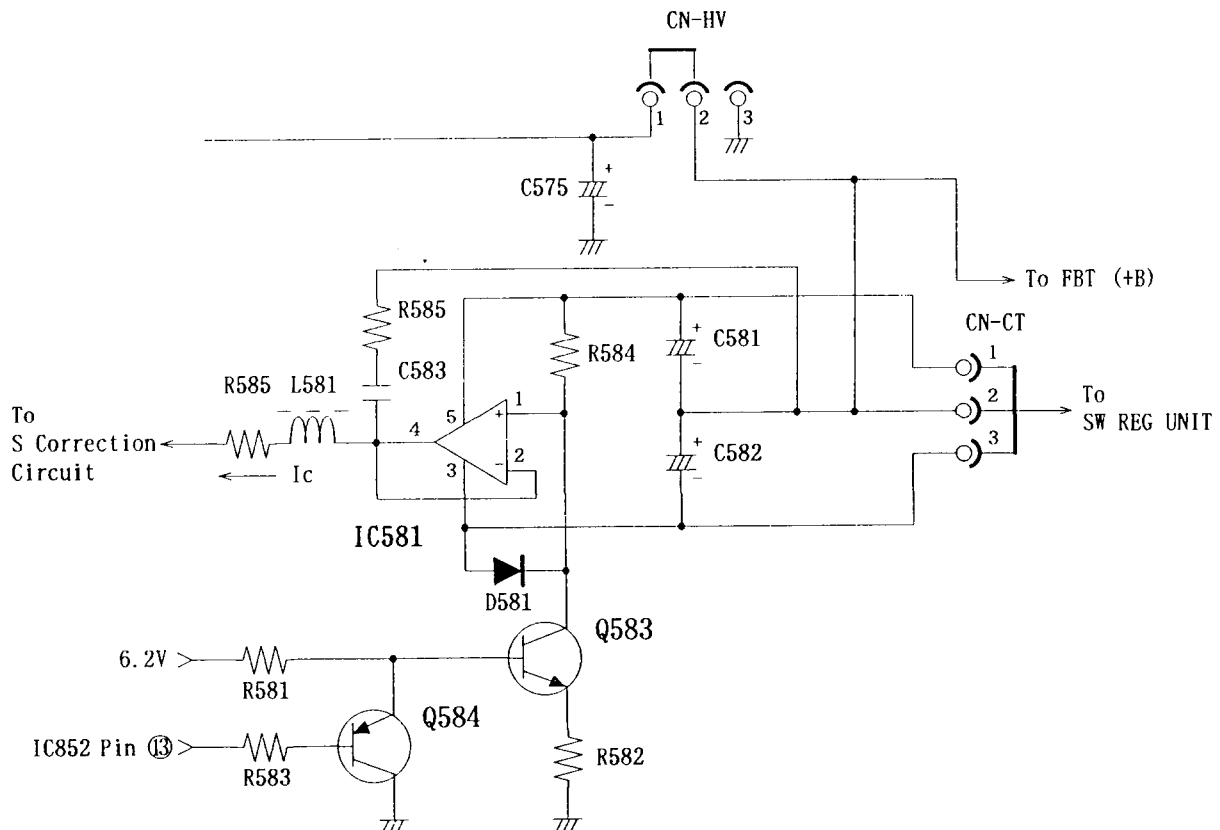
(Fig 5-1-7)

5-1-6. H Centering Circuit

CN-CT generates the ± 5 volts which based on the deflection circuit's power supply voltage (+B). The voltage at IC581 pin ① is varied by DC voltage of IC852 pin ⑬. Horizontal centering is manipulated by the current supplied by IC581 pin ④ to the horizontal deflection circuit. The relation between input and output is described below.



(Fig 5-1-8)

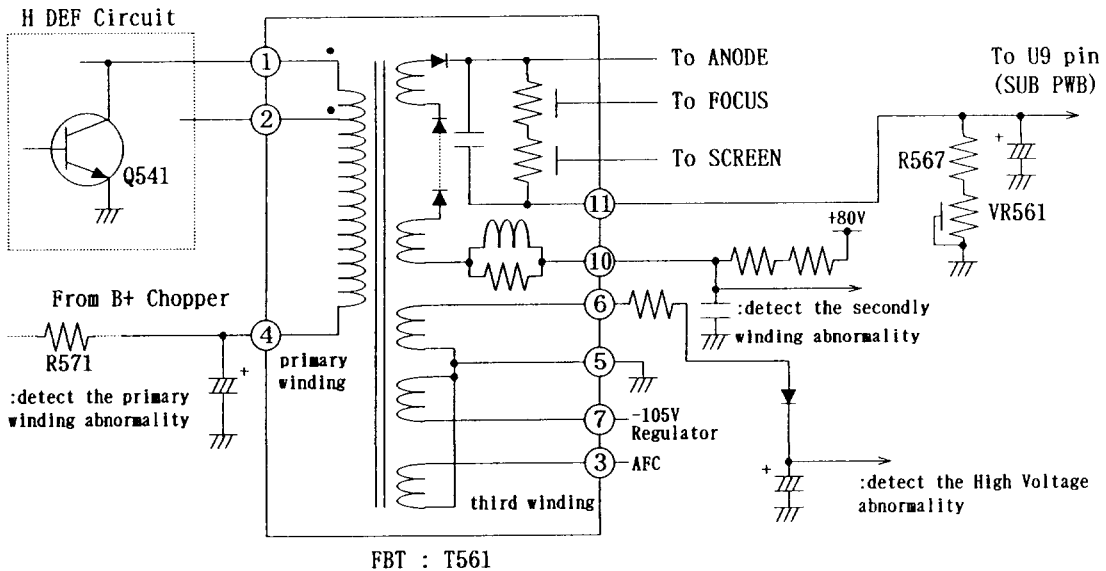


(Fig 5-1-9)

5-1-7. High Voltage Circuit

•High Voltage Circuit

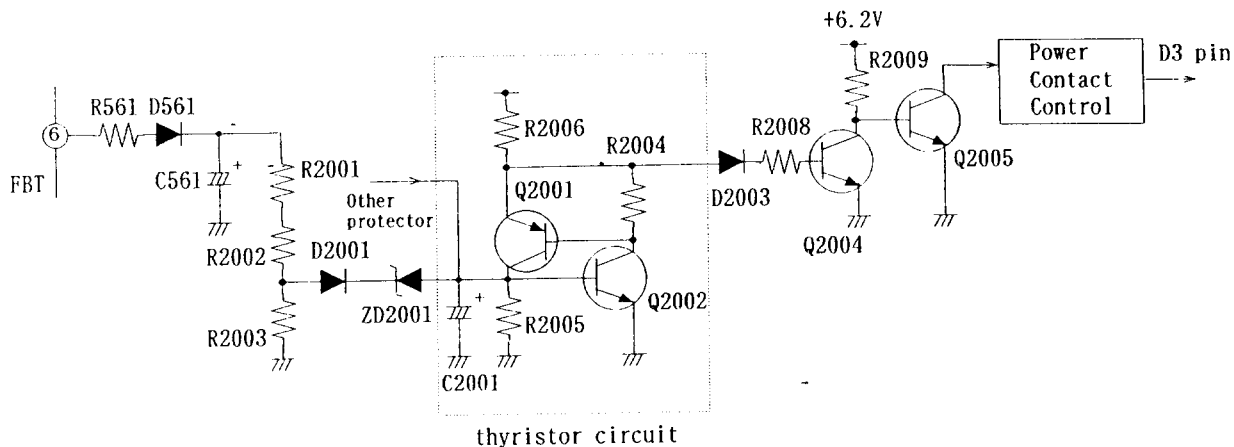
Q541 turns on and off generating the flyback pulse FBT's primary winding. The FBT boosts this pulse to about 24kV (high voltage) and supplies it to the CRT's anode. The high voltage fluctuations occur because the FBT, driven by Q541, changes by the horizontal input frequency and by the beam current. 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 (U9 pin on the SUB PWB). This circuit forms a feedback loop to maintain constant high voltage.



(Fig 5-1-10)

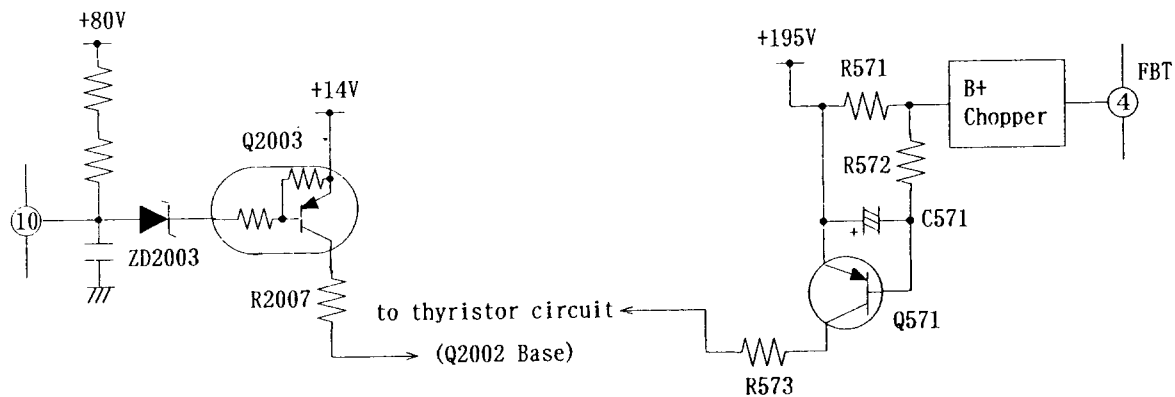
•High Voltage Protector

This model employs three separate protection circuits. The first protect circuit becomes active when the FBT high voltage increases abnormally. The second 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 ⑥ the third winding, whose pulse increases as the HV increases. The output pulse at the FBT pin ⑥ 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 dose not supply to this unit. This protect circuit is active and will remain active until the power supply voltage decreases.



(Fig 5-1-11)

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 5-1-12)

5-1-8. 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 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 CP0 (U14 pin) in SUB PWB increase when the control voltage of EHT FB (U9 pin) in SUB PWB 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 (uPC1881CT) pin 4, 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 vertical maximum size adjustment.

The control is made inside IC501 to prevent the sawtooth wave amplitude from changing.

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

(2) Waveform Corrective Section

The sawtooth wave is fed to IC471 (uPC1882CU) pin 24 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

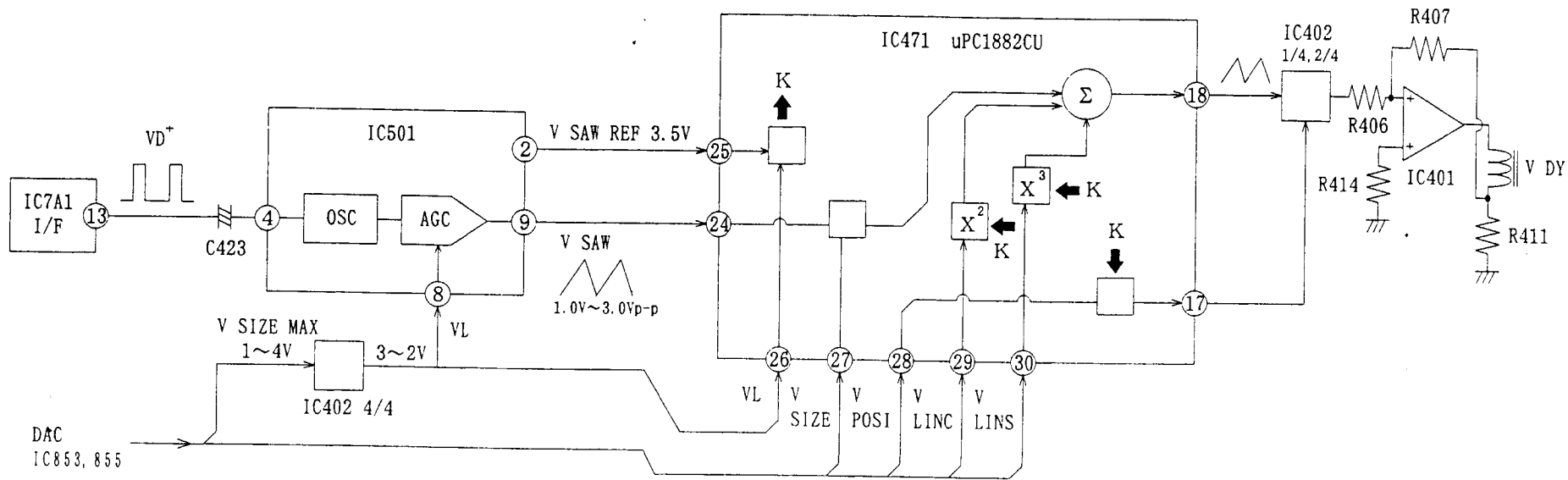
The vertical raster position is varied by changing the amount of DC bias of the input signal to IC401.

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

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

The current proportional to IC401's input voltage 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.

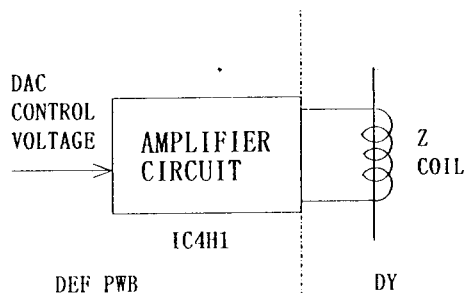
The IC401 operates so that this signal becomes the same ratio as that of the input voltage to IC401.



(Fig 5-2)

5-3. Rotation Correction Circuit

The items which comprise (screen) rotation correction are described below.



(Fig 5-3-1)

(1) Screen Rotation

Raster Rotation with respect to the front bezel occurs due to the following factors.

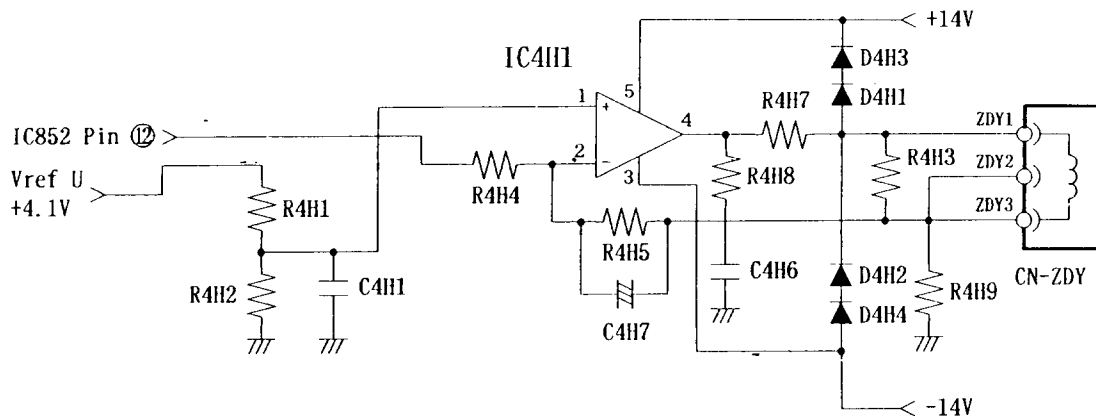
- 1) Rotation with respect to the CRT when the deflection yoke (DY) is mounted.
- 2) Rotation occurring when the CRT is mounted to the front bezel.
- 3) Rotation due to terrestrial magnetism (i.e., the horizontal magnetic field)

The structure used to correct the rotation of the raster consists of the following items.

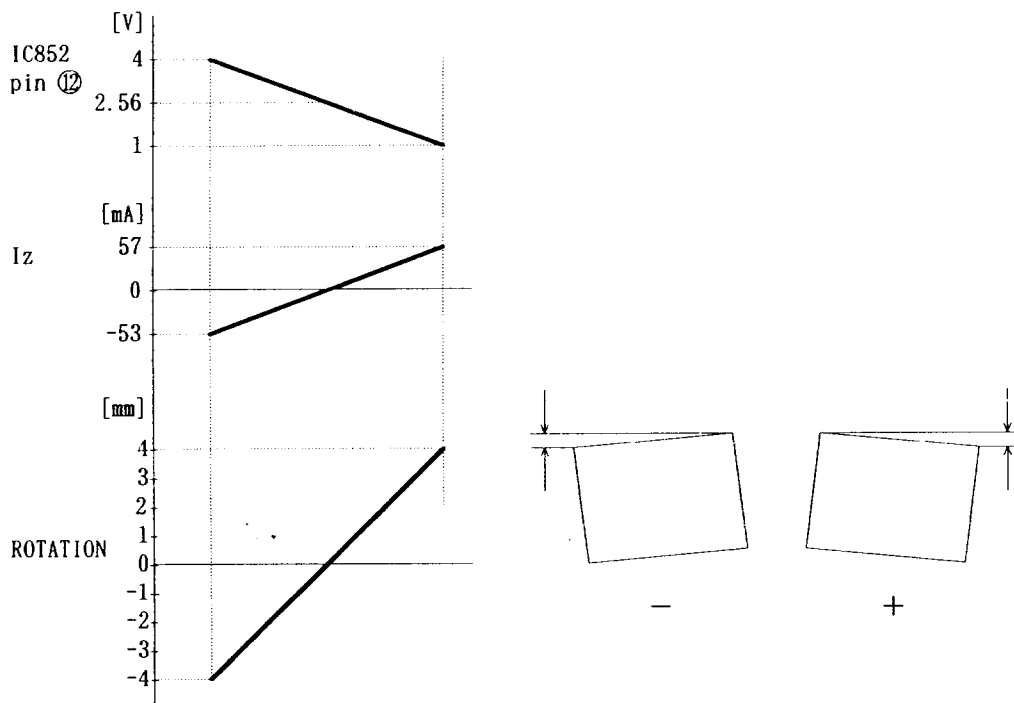
- 1) Circular coil (hereafter termed the Z coil)
mounted to the front side of the deflection yoke
- 2) Amplification circuit which applies a current to the Z coil

The raster rotation is corrected by moving the electron beam in the magnetic field produced by current applied to the Z coil. The amount of correction is proportional to the current applied to the coil and so the correction can be adjusted with the control voltage (DC) of the DAC.

(2) Circuit Operation



(Fig 5-3-2)



(Fig 5-3-3)

The DC voltage output from IC852 pin 12 causes I_z which flows in the Z coil to change, and the amount of rotation is determined.

At the time of factory adjustment, the set is placed facing the east and the amount of rotation is adjusted within ± 1 mm. The effects of terrestrial magnetism are not received when the set faces east and so only the rotation of the deflection yoke and mounting rotation of the CRT are corrected.

The terrestrial magnetism effect component will present differing conditions for each user and so this can be adjusted if required by the user. Note that when the amount of rotation becomes ± 3 mm or greater, this will have a detrimental effect on convergence and so caution is necessary in this regard.

PART DIFFERENCE LIST

PART DIFFERENCE LIST BETWEEN JC-1537VMA (N)
AND JC-1537VMA (P)

SYMBOL	JC-1537VMA(N)		JC-1537VMA(P)	
	PART NO	DESCRIPTION	PART NO	DESCRIPTION
△CRT	33015583	CRT M36LDN100XX45(U3)	33015589	CRT M36EDR323X163/2F03NR
	84Q09C01	VIDEO PWB ASSY	84Q33C01	VIDEO PWB ASSY
	84Q09F02	MAIN PWB ASSY	84Q33F01	MAIN PWB ASSY
C7L1	427F4615	C, FILM 50V 0.015UF	427F4616	C, FILM 50V 0.018UF
△C541	42899146	C, METAL 2KV 2500PF 3%	42899145	C, METAL 2KV 2400PF 3%
△C542	42899146	C, METAL 2KV 2500PF 3%	42899145	C, METAL 2KV 2400PF 3%
△C543	42899148	C, METAL 2KV 8600PF 3%	42899147	C, METAL 2KV 8300PF 3%
R409	403F1165	R, METAL 470H 5% 1W	401K5673	R, CARBON 1.0K 5% 1/6W

PART DIFFERENCE LIST BETWEEN JC-1539VMA (N)
AND JC-1539VMA (P)

SYMBOL	JC-1539VMA(N)		JC-1539VMA(P)	
	PART NO	DESCRIPTION	PART NO	DESCRIPTION
△CRT	33015577	CRT M36LDN100XX43(U3)	33015588	CRT M36EDR323X163/2F03N
	84P77C02	VIDEO PWB ASSY	84Q18C01	VIDEO PWB ASSY
	84P77F03	MAIN PWB ASSY	84Q18F01	MAIN PWB ASSY
C7L1	427F4615	C, FILM 50V 0.015UF	427F4616	C, FILM 50V 0.018UF
△C541	42899146	C, METAL 2KV 2500PF 3%	42899145	C, METAL 2KV 2400PF 3%
△C542	42899146	C, METAL 2KV 2500PF 3%	42899145	C, METAL 2KV 2400PF 3%
△C543	42899148	C, METAL 2KV 8600PF 3%	42899147	C, METAL 2KV 8300PF 3%
R409	403F1165	R, METAL 470H 5% 1W	401K5673	R, CARBON 1.0K 5% 1/6W

REPLACEMENT PARTS LIST

The components specified for Model JC-1537VMA (N)

Note: The components identified by Δ make are critical for safety.
Replace only with parts Number specified.

SYMBOL	PART NO	DESCRIPTION
*** CRT & TUNER ***		
Δ CRT	33015583	CRT M36LDN100XX45 (U3)
*** ICS ***		
IC804	37005023	IC P005RR11
IC481	37005104	IC LM2940CT-12 (REG)
IC502	37005221	IC UPT78M09AHF
IC401	37006017	IC TDA8172
IC471	37009009	IC UPCI882CU
IC501	37009032	IC UPCI881CT
IC703	37010006	IC M52320SP
IC782	37010007	IC M52324P
IC402	37011068	IC UPC4558C (OP-AMP)
IC461	37011206	IC XRA10358 (OP-AMP)
IC4H1 IC581	37011307	IC LA6501MA (OP-AMP)
IC7C1	37051034	MOS UPD4040BC (COUNT)
IC121	37051378	MOS UPD4053BC (MPX)
IC803	37055537	MOS NM24C04EN
IC7A5 IC7A9	37056812	IC M62362P
IC701	37056814	IC M52035P
IC7A1	37056867	IC M52036SP
IC122 IC5E2 IC7A4	37056917	IC XRA10324A (Q OP-AMP)
IC857	37076172	IC VP503N
IC704	37076176	MOS M62393P
IC7B1 IC851 IC852		
IC853		
IC7A8	37076177	MOS M35020SP
IC7A7	37076182	MOS M35042-064SP
IC801	37076195	MOS UPD78014YCW-Y15
IC881	37076204	MOS TMP87CK42N-4176
*** TRANSISTORS ***		
Δ Q2002	35007216	TR 2SC945-T P
Q421	350E3217	TR 2SC1740S-T Q
Q145 Δ Q2004 Δ Q2005	350E3218	TR 2SC1740S-T R
Q4K1		
Q573		
Q452 Q583 Q713	350H4417	TR 2SC1473-TA Q
Q714 Q715		
Q791	350H4418	TR 2SC1473-TA R

SYMBOL	PART NO	DESCRIPTION
Q7C4		
Q7A2 Q701 Q702	350H5017	TR 2SC3811-TA Q
Q703	350J3016	TR 2SC2926S-T P
Q707 Q708 Q709		
Q461	350J4604	TR 2SC3776-AA D
Δ Q571 Q710 Q711	350K4111	TR 2SA916-T K
Q712	350K5217	TR 2SA1018-TA Q
Q491	350K5218	TR 2SA1018-TA R
Q141 Q142 Δ Q2001	350K5718	TR 2SA933S-T R
Q451 Q5E3 Q523		
Q574 Q584 Q7A1		
Q7A5 Q7A6 Q7C2		
Q861		
Q521	35031112	TR 2SB1096 L
Q5E4	35069806	TR 2SD1763 F
Q4E5	35072612	TR 2SD2396 J
Δ Q541	35095100	TR 2SC4924 (NHE)
Q7A4	351A0690	TR DTC115ES-TP
Q4E1	351G0500	TR AN1A4M
Δ Q2003	351G0561	TR DTA144ES-T
Q545 Q7B1 Q7C3	351G0601	TR DTC114ES-T
Q7C5 Q7C6 Q801		
Q501 Q502 Q503	351G0602	TR DTC144ES-T
Q546 Q547 Q548		
Q7A9		
Q143 Q144 Q4E2	351G0641	TR DTC114YS-T
Q7A3	351G0652	TR DTC113ZS-T
Q401	351G0655	TR DTC143ES-TP
Q524	35122600	TR 2SK701
Q572	35127470	TR 2SJ306
Q542 Q543 Q544	35127620	TR 2SK1288
*** DIODES ***		
ZD541	360KC671	DIODE RD12ESB(2)/ESAB(2)
Q141 Δ D2001 Δ D2003	360K1027	DIODE 1SS132
D4H1 D4H2 D4H3		
D4H4 D402 D404		
D451 D5E1 D543		
D571 D572 D581		
D7A1 D7A3 D7A4		

SYMBOL	PART NO	DESCRIPTION
D7A5 D7E1 D7E2	360K1027	DIODE 1SS132
D7E3 D7E4 D7E5		
D7E6 D7E7 D701		
D702 D703 D704		
D706 D709 D710		
D861		
D452 D453 D461	360K1032	DIODE 1SS82-TA
D718 D719 D720		
D721 D722 D723		
D724 D725 D726		
ZD7A1	360K3098	DIODE RD12EB(3)-T4
ZD491 ZD791	360K3170	DIODE RD6 2JSB(2)/JSAB(2)
ZD545	360K3602	DIODE RD2 0ESB(1)-T4
ZD402 ZD871	360K3635	DIODE RD5 1ESB(2)-T4
ZD546 ZD547 ZD548	360K3639	DIODE RD5 6ESB(2)-T4
ZD549 ZD711 ZD712		
ZD713 ZD714 ZD801		
ZD802 ZD881 ZD882		
ZD883		
ZD503	360K3648	DIODE RD6 8ESB(3)/ESAB(3)
Δ ZD2001	360K3652	DIODE RD7 5ESB(3)-T4
ZD701	360K3654	DIODE RD8 2ES AB1-T4
ZD541 ZD542 ZD543	360K3671	DIODE RD12ESB(2)/ESAB(2)
Δ ZD2003	360K3675	DIODE RD13ESB(2)-T4
ZD401	360K3692	DIODE RD20ESB(3)-T4
Δ D561 D562	361K7562	DIODE EGP10G G23
D521	36107293	DIODE RK14
Δ D542 Δ D546	36107560	DIODE RG2A2
D573	36107620	DIODE RG4 LF-J3
Δ D541	36107718	DIODE FMP-3FU(LF027-103)
LED141	36801372	LED SML19416W-LF38(D1,D3)
D401 D5N8 D5N9	369K2136	DIODE RGP10G.AT
D502 D503 D504		
Δ D544 Δ D545	380K5054	VARISTOR MA29W-A (TP)
D7A2 D728	38200209	PHOTO COUPLER PS2501-3
IC541		

SYMBOL	PART NO	DESCRIPTION
*** TRANSFORMERS ***		
T521	45804012	TRANS.H.DRIVE
L581	46204004	COIL CHOKE 4MH
L571	46206005	TRANS CHOKE 4MH
Δ T561	47105690	F.B.T
*** VARIABLE RESISTORS ***		
VR851	410G2067	R.VARIABLE B1.0M
VR121 VR122	410I1116	R.VARIABLE B10K
Δ VR561	415K5152	R.VARIABLE 100K
VR501	41505105	R.VARIABLE B2.0K
*** RELAYS & SWITCHES ***		
SW109	65161074	SWITCH SLID AUA00120457
Δ SW601	65360043	SWITCH PUSH BUTTON
SW101 SW102 SW104	65360046	TACT SWITCH KSM0632A
SW105 SW106 SW107		
SW103	65360047	TACT SWITCH KSM0642A
RL541	65660033	RELAY VE-12H5-K
*** COILS & FILTERS ***		
MR802	390C0445	R.NETWORK 4*10K 5% 1/8W
LC7A5 LC7A6 LC7A7	390J9027	FILTER ZJSC-R12-100TA
LC7A8 LC701 LC702		
LC703		
MC802	39013047	C.NETWORK 50V 10000PF
Δ L541	60906057	COIL WIDTH (104UH)
Δ L542 Δ L543	60919129	COIL H.LIN
L7A1 L7A2	610E1711	COIL FILTER 3.3UH
L701	610E1725	COIL FILTER 47UH
L702 L703 L704	610E1726	COIL FILTER 56UH
L705	610E1727	COIL FILTER 68UH
L706	610E4001	COIL FILTER 10UH
L801	610FE828	COIL FILTER 47UH
L421	610FE829	COIL FILTER 56UH
L572	610F5828	COIL FILTER 47UH
L801	610F5829	COIL FILTER 56UH
L421		
L707	610F7518	COIL FILTER 12UH
L7A3	610F8009	COIL FILTER 2.2UH

SYMBOL	PART NO	DESCRIPTION
L901 L902 L903 ΔFL6A1 X881	610F8036 61062205 611A1822	COIL FILTER 0.39UH LINE FILTER (LF-4D-E102) CERAMIC OSC
DG LC707 LC901 LC7A1 LC7A2 LC706	61315104 616K6027 616K6028 616K6801 616K6946	COIL DEGAUSSING NOISE FILTER 2A222-TA NOISE FILTER 1H223X-TA NOISE FILTER 2R2-101-T NOISE FILTER TH28123MA
LC708 ΔL544 L573	616K6966 61605122 61605135	NOISE FILTER FERRITE BEADS FERRITE CORE

*** PWB ASSYS ***

	84009C01 84009F02	VIDEO PWB ASSY MAIN PWB ASSY
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*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

ΔSW-PS SG901 SG902 SG903 SG904 X801 SG905	31102101 329J0047 64098039 667K6007 70032056	SW. REG. UNIT (DPS-112AB) ARRESTER (300V).AT52 X-TAL (10.000MHZ) SPARK GAP 1.5KV CRT SOCKET
CN-AB CN-AC	70051778 70521064 70599103	SDL CONNECTOR 4P AC RECEPTACLE ADAPTER D15P-MD15P D17
CORD VR561	70810757 73893211 74004891	LINE CORD 3P L=1.8 SIGNAL CABLE MD15P-XH12P CAP
UNIT	79100512 79695081 79695091 79695101 79695111	EW UNIT (CN401) MAC DISK1 (XE) MAC DISK2 (XP) PC DISK1 (XE) PC DISK2 (XP)

*** APPEARANCE PARTS ***

	25317951 25426362 25426372 25426391 25534631	CABINET BACK REVOLVING STAND(T) REVOLVING STAND(B) ASSY SPINDLE COIL SPRING
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SYMBOL	PART NO	DESCRIPTION
	25545031 25616311 25757643	CHASSIS BASE CUSSION SHEET LABEL (REV.)

*** KNOBS & PUSH BUTTONS ***

	25456171 25456441	KNOB CONTROL KNOB SLIDE
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*** PRINTED & PACKING MATERIALS ***

	24807081 24813191 25825501 25829821 25829831 25829842 78034409 78129221	BAG. POLYETHYLENE BAG. POLYETHYLENE (150*370) SHEET, PROTECTION FILLER (T) CARTON FILLER (B) CARTON CARTON BOX (CN301A) MONITOR SALES OFFICE LIST USER MANUAL XP (15/17/21)A
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*** RESISTORS ***

R537 R456 R537 R576 R762	401CF649 401CF749 401C6649 401C6657 401C6663	R. CARBON 100H 5% 1/4W R. CARBON 1.5M 5% 1/4W R. CARBON 100H 5% 1/4W R. CARBON 220H 5% 1/4W R. CARBON 390H 5% 1/4W
R512 R909 R456 ΔR561 ΔR562 ΔR508	401C6685 401C6689 401C6749 401G6109 401G6117	R. CARBON 3.3K 5% 1/4W R. CARBON 4.7K 5% 1/4W R. CARBON 1.5M 5% 1/4W R. CARBON 2.2H 5% 1/4W R. CARBON 4.7H 5% 1/4W
R904 R905 R906 R4H7 ΔR542 R908 ΔR543 R458 R5M6	401H5637 401H5649 401H5655 401H5663 401H5695	R. CARBON 33H 5% 1/2W R. CARBON 100H 5% 1/2W R. CARBON 180H 5% 1/2W R. CARBON 390H 5% 1/2W R. CARBON 8.2K 5% 1/2W
ΔR573 R6A1 J10 R1 R10 R11 R12 R13 R14 R18 R19 R2 R20 ΔR2008	401H5725 401H5745 401J9820	R. CARBON 150K 5% 1/2W R. CARBON 1.0M 5% 1/2W R. CARBON 0.0H

SYMBOL	PART NO	DESCRIPTION
R21 R22 R23 R25 R27 R28 R29 R3 R30 R31 R32 R34 R35 R4 R5 R5V2 R5M8 R6 R7 R7B2 R7G7 R7V7 R7N5 R7P1 R7P2 R7P3 R7P5 R801 R895 R9 R579 R586	401J9820	R. CARBON 0.0H
R4H8 R417 R765 R459 R882	R763 R764 R907 R883	401K5609 R. CARBON 2.2H 5% 1/6W 401K5625 R. CARBON 10H 5% 1/6W 401K5633 R. CARBON 22H 5% 1/6W 401K5635 R. CARBON 27H 5% 1/6W 401K5639 R. CARBON 39H 5% 1/6W 401K5641 R. CARBON 47H 5% 1/6W 401K5649 R. CARBON 100H 5% 1/6W
R533 R534 R546 R551 R555 R7L7 R7L8 R7N7 R7N8 R7N9 R729 R731 R733 R808 R809 R819 R829 R841 R842 R843 R844 R845 R846 R847 R882 R889 R891 R872	R7N1 R7N3 R710 R711 R712 R735 R737 R739 R747 R749 R752 R756 R758 R760 R141 R4K3 R7N2 R755 R757 R759 R727 R879	401K5651 R. CARBON 120H 5% 1/6W 401K5653 R. CARBON 150H 5% 1/6W 401K5655 R. CARBON 180H 5% 1/6W 401K5657 R. CARBON 220H 5% 1/6W 401K5659 R. CARBON 270H 5% 1/6W 401K5661 R. CARBON 330H 5% 1/6W 401K5663 R. CARBON 390H 5% 1/6W 401K5665 R. CARBON 470H 5% 1/6W
R7A1 R529 R721 R7M5 R768 R748	R7A9 R719 R723 R7M6 R766 R770 R750 R751	

SYMBOL	PART NO	DESCRIPTION
R7A7 R7A8 R7C2 R4E1 R736 R738 R740 R4K2 R444 R4H3 R4M2 R4M3 R4M4 R4M5 R4M6 R518 R519 R581 R583 R7E9 R7G4 R7G6 R7H8 R7H9 R7M2 R7M3 R7M4 R7N4 R777 R782 R787 R8E1 R851 R852 R853 R875 R7C6 R7C8 R7P7 R7P8 R8E3 R5M5 ΔR572 R7A6 R7C5	401K5667 401K5669 401K5673 401K5675 401K5677 401K5679 401K5681 401K5683 401K5685 401K5687 401K5689 401K5691 401K5693 401K5697	R. CARBON 560H 5% 1/6W R. CARBON 680H 5% 1/6W R. CARBON 1.0K 5% 1/6W R. CARBON 1.2K 5% 1/6W R. CARBON 1.5K 5% 1/6W R. CARBON 1.8K 5% 1/6W R. CARBON 2.2K 5% 1/6W R. CARBON 2.7K 5% 1/6W R. CARBON 3.3K 5% 1/6W R. CARBON 3.9K 5% 1/6W R. CARBON 4.7K 5% 1/6W R. CARBON 5.6K 5% 1/6W R. CARBON 6.8K 5% 1/6W R. CARBON 10K 5% 1/6W
R4K4 R426 R5M7 R7M8 R713 R880 R804 R805 R884 R415 R425 R503 ΔR564 R7C9 R7G5 R767 R769 R771 R403 R517 R7E7 R858 R455 R5M4 R544 R548 R553 R7E1 R7E2 R7E3 R803 R807 R811 R812 R813 R814 R815 R816 R817 R818 R821 R822 R823 R824 R825 R826 R827 R828 R840 R414 R510 R7E4 R873 R876 R101 R127 R129 R130 R131 R132 R133 R134 R135 R136 R137 R138		

SYMBOL	PART NO	DESCRIPTION
ΔR2006 ΔR2009 R4E2 R4H4 R4H5 R4K1 R4Z8 R4S1 R4S2 R4S3 R5L6 R5L7 R5L9 R5M1 R5L4 R520 R578 R7B1 R7E8 R7G1 R7H3 R7K1 R7K2 R7K3 R7K4 R7K5 R7K6 R7K7 R7K8 R7K9 R7L1 R7L2 R7L3 R7L5 R7M1 R7O5 R7O7 R7O9 R730 R732 R734 R741 R742 R743 R746 R802 R810 R820 R830 R831 R832 R833 R834 R835 R836 R837 R838 R860 R878 R885 R886 R887 R888 R890 R7G8 R870	401K5697	R.CARBON 10K 5% 1/6W
ΔR2004 R424 R5U8 R7E6 R7M9 R147 R7A2 R7C1 R704 R706 R708 R5L2 R7A5 R7C4 R775 R780 R785 R894 R416 R461 R464 R5M3 R516 R776 R781 R786 R7A4 R7C3 R874 R806 R881 R5M9 ΔR2007 R462 R7H6 R454 R5U7 R794 R792 R793 R794 R465 R774 R779 R784 R545 R549 R554	401K5699 401K5701 401K5705 401K5707 401K5709 401K5711 401K5713 401K5715 401K5719 401K5721 401K5723 401K5725	R.CARBON 12K 5% 1/6W R.CARBON 15K 5% 1/6W R.CARBON 22K 5% 1/6W R.CARBON 27K 5% 1/6W R.CARBON 33K 5% 1/6W R.CARBON 39K 5% 1/6W R.CARBON 47K 5% 1/6W R.CARBON 56K 5% 1/6W R.CARBON 82K 5% 1/6W R.CARBON 100K 5% 1/6W R.CARBON 120K 5% 1/6W R.CARBON 150K 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
R493 R5L1 R504 R501 R7H7 R467 ΔR2001 R4H2 R401 R402 R404 R405 R507 R527 R857 R745 R124 R407 R502 R866 R422 R744 R406 R423 R5L3 R526 R864 R123 R4H1 R125 R856 R122 R5L5 R865 R854 R859 R863 R513 ΔR567 R528 R525 ΔR565 R530 R5L4 R7L4 R7L4 R798 R469 R492 R798 R469 R492 ΔR575 ΔR531	404C1691 404C1694 404C1696 404C1697 404C1698 404C1699 404C1700 404C1701 404C1702 404C1703 404C1704 404C1705 404C1707 404C1708 404C1710 404C1711 404C1712 404C1715 404C1719 404C1724 404C1725 404C1742 404JJ443 404J9443 404KB716 404KB719 404K2716 404K2719 404K5133 40801004	R.METAL 5.6K 1% 1/6W R.METAL 7.5K 1% 1/6W R.METAL 9.1K 1% 1/6W R.METAL 10K 1% 1/6W R.METAL 11K 1% 1/6W R.METAL 12K 1% 1/6W R.METAL 13K 1% 1/6W R.METAL 15K 1% 1/6W R.METAL 16K 1% 1/6W R.METAL 18K 1% 1/6W R.METAL 20K 1% 1/6W R.METAL 22K 1% 1/6W R.METAL 27K 1% 1/6W R.METAL 30K 1% 1/6W R.METAL 36K 1% 1/6W R.METAL 39K 1% 1/6W R.METAL 43K 1% 1/6W R.METAL 56K 1% 1/6W R.METAL 82K 1% 1/6W R.METAL 130K 1% 1/6W R.METAL 150K 1% 1/6W R.METAL 750K 1% 1/6W R.METAL 1.3K 0.5% 1/8W R.METAL 1.3K 0.5% 1/8W R.METAL 62K 1% 1/4W R.METAL 82K 1% 1/4W R.METAL 82K 1% 1/4W R.FUSE 1.0H 500MA
*** CAPACITORS ***		
C901 C5K5 C764 C766 C768 C902 ΔC545 ΔC546	420C9551 420C9555 420C9563 420C9565	C.CERAMIC 500V 100PF C.CERAMIC 500V 220PF C.CERAMIC 500V 1000PF C.CERAMIC 500V 1500PF

SYMBOL	PART NO	DESCRIPTION
R773 R778 R783 R582 R5L8 R547 R552 R556 ΔR149 R584 R7E5 R491 R539 R408 R409 R595 R411 ΔR571 R538 R585 R7G3 R7H2 R532 R481 R789 R143 R145 R121 R799 R745 R513 R701 R702 R703 R789 R791 R868 R143 R145 R506 R867 R871 R121 R862 R505 R753 R126 R855 R861 R869 ΔR2005 ΔR2002 R8E2 ΔR2003 R799	401K5729 401K5731 401K5733 401K5737 401K5739 401K5743 401K5745 40175185 40216250 403F1101 403F1165 403F2105 403F2109 403F2125 403F2149 403F2151 403F3141 403G1703 404CA657 404CA670 404CA680 404CA690 404CA698 404CA712 404C1646 404C1657 404C1663 404C1669 404C1670 404C1673 404C1680 404C1681 404C1683 404C1684 404C1685 404C1687 404C1688 404C1689 404C1690	R.CARBON 220K 5% 1/6W R.CARBON 270K 5% 1/6W R.CARBON 330K 5% 1/6W R.CARBON 470K 5% 1/6W R.CARBON 560K 5% 1/6W R.CARBON 820K 5% 1/6W R.CARBON 3.3K 5% 1/4W R.WIRE 2.0H 5% 7W R.METAL OXIDE 1H 5% 1W R.METAL 470H 5% 1W R.METAL OXIDE 1.5H 5% 2W R.METAL 2.2H 5% 2W R.METAL 10H 5% 2W R.METAL OXIDE 100H 5% 2W R.METAL OXIDE 120H 5% 2W R.METAL OXIDE 47H 5% 3W R.METAL 18K 5% 1W R.METAL 220H 1% 1/6W R.METAL 750H 1% 1/6W R.METAL 2.0K 1% 1/6W R.METAL 5.1K 1% 1/6W R.METAL 11K 1% 1/6W R.METAL 43K 1% 1/6W R.METAL 75H 1% 1/6W R.METAL 220H 1% 1/6W R.METAL 390H 1% 1/6W R.METAL 680H 1% 1/6W R.METAL 750H 1% 1/6W R.METAL 1.0K 1% 1/6W R.METAL 2.0K 1% 1/6W R.METAL 2.2K 1% 1/6W R.METAL 2.7K 1% 1/6W R.METAL 3.0K 1% 1/6W R.METAL 3.3K 1% 1/6W R.METAL 3.9K 1% 1/6W R.METAL 4.3K 1% 1/6W R.METAL 4.7K 1% 1/6W R.METAL 5.1K 1% 1/6W

SYMBOL	PART NO	DESCRIPTION
C5U2 C523 C903 ΔC6A2 C6A3 C4H1 C427 C518 C555 C7B1 C7K2 C707 C708 C709 C732 C772 C773 C7P5 C7P6 C886 C887 C888 C7A7 C7A8 C7A9 C7C1 C429 C5K3 C505 C533 C734 C737 C740 C7C2 C782 C783 C784 C121 C4H3 C4H4 C4L5 C4M6 C402 C405 C421 C428 C461 C463 C472 C473 C475 C476 C5H1 C5H3 C508 C511 C513 C516 C517 C519 C7H1 C752 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 C881 C123 C408 C521 C7G6 C7H9 C7M3 C748 C4H6 C501 C506 C583 C7A5 C7E3 C7E8 C7G1 C7H4	420C9569 420DK108 420EC013 421A0425 421C0201 421C0207 421C0209 421C0210 421C0213 421C0221 421C0225 421C2862 421C3479 421D6009	C.CERAMIC 50V 3300PF C.CERAMIC 2KV 10000PF C.CERAMIC 400V 1000PF C.CERAMIC 50V 0.01UF C.CERAMIC 50V 100PF C.CERAMIC 50V 330PF C.CERAMIC 50V 470PF C.CERAMIC 50V 560PF C.CERAMIC 50V 1000PF C.CERAMIC 50V 4700PF C.CERAMIC 50V 0.01UF C.CERAMIC 25V 0.01UF C.CERAMIC 50V 0.1UF C.CERAMIC 25V 0.1UF

SYMBOL	PART NO.	DESCRIPTION
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C7H5 C7K3	C7H6 C7K5	C7H7 C7K6	421D6009	C.CERAMIC 25V 0.1UF
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SYMBOL	PART NO.	DESCRIPTION
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C762 C767 C769	C763 C765	43089512 43089516	C.ELEC 160V 1.0UF C.ELEC 160V 10UF
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REPLACEMENT PARTS LIST

The components specified for Model JC-1537VMB (H)

Note: The components identified by Δ make are critical for safety.
Replace only with parts Number specified.

SYMBOL	PART NO	DESCRIPTION
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*** CRT & TUNER ***

Δ CRT	33015586	CRT M36KML270X09
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*** ICS ***

IC804	37005023	IC P005RR11
IC481	37005104	IC LM2940CT-12 (REG)
IC502	37005221	IC UPC78M09AHF
IC401	37006017	IC TDA8172
IC471	37009009	IC UPCI882CU
IC501	37009032	IC UPCI881CT
IC703	37010006	IC M52320SP
IC782	37010007	IC M52324P
IC402	37011068	IC UPC4558C (OP-AMP)
IC461	37011206	IC XRA10358 (OP-AMP)
IC4H1 IC581	37011307	IC LA6501MA (OP-AMP)
IC7C1	37051034	MOS UPD4040BC (COUNT)
IC121	37051378	MOS UPD4053BC (MPX)
IC803	37055537	MOS NM24C04EN
IC7A5 IC7A9	37056812	IC M62362P
IC701	37056814	IC M52035P
IC7A1	37056867	IC M52036SP
IC122 IC5E2 IC7A4	37056917	IC XRA10324A (Q OP-AMP)
IC857 IC858		
IC704	37076172	IC VP503N
IC7B1 IC851 IC852	37076176	MOS M62393P
IC853 IC855		
IC7A8	37076177	MOS M35020SP
IC7A7	37076182	MOS M35042-064SP
IC801	37076195	MOS UPD78014YCW-Y15
IC881	37076222	MOS TMP87CK42N-4201

*** TRANSISTORS ***

Δ Q2002	35007216	TR 2SC945-T P
Q421	35003217	TR 2SC1740S-T Q
Q145 Δ Q2004 Δ Q2005	350E3218	TR 2SC1740S-T R
Q4K1 Q402 Q522		
Q573 Q7C1	350H4417	TR 2SC1473-TA Q
Q452 Q583 Q713		
Q714 Q715	350H4418	TR 2SC1473-TA R
Q791		

SYMBOL	PART NO	DESCRIPTION
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Q7C4	350H5017	TR 2SC3811-TA Q
Q7A2 Q701 Q702	350J3016	TR 2SC2926S-T P
Q703		
Q707 Q708 Q709	350J4604	TR 2SC3776-AA D
Q461	350K4111	TR 2SA916-T K
Δ Q571 Q710 Q711	350K5217	TR 2SA1018-TA Q
Q491	350K5218	TR 2SA1018-TA R
Q141 Q142 Δ Q2001	350K5718	TR 2SA933S-T R
Q451 Q5E3 Q523		
Q574 Q584 Q7A1		
Q7A5 Q7A6 Q7C2		
Q861		
Q521	35031112	TR 2SB1096 L
Q5E4	35069806	TR 2SD1763 F
Q4E5	35072612	TR 2SD2396 J
Δ Q541	35095100	TR 2SC4924 (NHE)
Q7A4	351A0690	TR DTC115ES-TP
Q4E1	351G0500	TR AN1A4M
Δ Q2003	351G0561	TR DTA144ES-T
Q545 Q7B1 Q7C3	351G0601	TR DTC114ES-T
Q7C5 Q7C6 Q801		
Q501 Q502 Q503	351G0602	TR DTC144ES-T
Q546 Q547 Q548		
Q7A9		
Q143 Q144 Q4E2	351G0641	TR DTC114YS-T
Q7A3	351G0652	TR DTC1132S-T
Q401	351G0655	TR DTC143ES-TP
Q524	35122600	TR 2SK701
Q572	35127470	TR 2SJ306
Q542 Q543 Q544	35127630	TR 2SK1904

*** DIODES ***

ZD541	360K671	DIODE RD12ESB(2)/ESAB(2)
D141 Δ D2001 Δ D2003	360K1027	DIODE 1SS132
D4H1 D4H2 D4H3		
D4H4 D402 D404		
D451 D5E1 D543		
D571 D572 D581		
D7A1 D7A3 D7A4		

SYMBOL	PART NO	DESCRIPTION
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D7A5 D7E1 D7E2	360K1027	DIODE 1SS132
D7E3 D7E4 D7E5		
D7E6 D7E7 D701		
D702 D703 D704		
D706 D709 D710		
D861		
D452 D453 D461	360K1032	DIODE 1SS82-TA
D718 D719 D720		
D721 D722 D723		
D724 D725 D726		
ZD7A1	360K3098	DIODE RD12EB(3)-T4
ZD491 ZD791	360K3170	DIODE RD6.2JSB(2)/JSAB(2)
ZD545	360K3602	DIODE RD2.0ESB(1)-T4
ZD402	360K3635	DIODE RD5.1ESB(2)-T4
ZD546 ZD547 ZD548	360K3639	DIODE RD5.6ESB(2)-T4
ZD549 ZD711 ZD712		
ZD713 ZD714 ZD801		
ZD802 ZD881 ZD882		
ZD883	360K3648	DIODE RD6.8ESB(3)/ESAB(3)
ZD503		
Δ ZD2001	360K3652	DIODE RD7.5ESB(3)-T4
ZD701	360K3654	DIODE RD8.2ES AB1-T4
ZD541 ZD542 ZD543	360K3671	DIODE RD12ESB(2)/ESAB(2)
Δ ZD2003	360K3675	DIODE RD13ESB(2)-T4
ZD401	360K3692	DIODE RD20ESB(3)-T4
Δ D561 D562	361K7562	DIODE EGP10G G23
D521	36107293	DIODE RK14
Δ D542 Δ D546	36107560	DIODE RG2A2
D573	36107620	DIODE RG4 LF-J3
Δ D541	36107718	DIODE FMP-3FU(LF027-103)
LED141	36801372	LED SML19416W-LF38(D1.D3)
D401 D5N8 D5N9	369K2136	DIODE RGP10G-AT
D502 D503 D504		
Δ D544 Δ D545		
D7A2 D728	380K5054	VARIATOR MA29W-A (TP)
IC541	38200209	PHOTO COUPLER PS2501-3

SYMBOL	PART NO	DESCRIPTION
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*** TRANSFORMERS ***

T521	45804012	TRANS.H.DRIVE
L581	46204004	COIL,CHOKE 4MH
L571	46208005	TRANS,CHOKE 4MH
Δ T561	47105689	F B T

*** VARIABLE RESISTORS ***

VR851	410G2067	R.VARIABLE B1.0M
VR121 VR122	41011116	R.VARIABLE B10K
Δ VR561	415K5162	R.VARIABLE 100K
VR501	41505105	R.VARIABLE B2.0K

*** RELAYS & SWITCHES ***

SW109	65161074	SWITCH SL1LD AUA00120457
Δ SW601	65360043	SWITCH,PUSH BUTTON
SW101 SW102 SW104	65360046	TACT SWITCH KSM0632A
SW105 SW106 SW107		
SW103	65360047	TACT SWITCH KSM0642A
RL541	65660033	RELAY VE-12H5-K

*** COILS & FILTERS ***

MR805	390C0445	R.NETWORK 4*10K 5% 1/8W
LC7A5 LC7A6 LC7A7	390J9027	FILTER ZJSC-R12-100TA
LC7A8 LC701 LC702		
LC703		
MC802 MC803	39013047	C.NETWORK 50V 10000PF
Δ L541	60906057	COIL,WIDTH (104UH)
Δ L542 Δ L543	60919129	COIL,H.LIN
L7A1 L7A2	610E1711	COIL,FILTER 3.3UH
L701	610E1725	COIL,FILTER 47UH
L702 L703 L704	610E1726	COIL,FILTER 47UH
L705	610E1727	COIL,FILTER 68UH
L706	610E4001	COIL,FILTER 10UH
L801	610FE828	COIL,FILTER 47UH
L421	610FE829	COIL,FILTER 56UH
L572	610F3025	COIL,FILTER 47UH
L801	610F5828	COIL,FILTER 47UH
L421	610F5829	COIL,FILTER 56UH
L707	610F7518	COIL,FILTER 12UH
L7A3	610F8009	COIL,FILTER 2.2UH

REPLACEMENT PARTS LIST

The components specified for Model JC-1537VMB (H)

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

Replace only with parts Number specified.

SYMBOL	PART NO	DESCRIPTION
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*** CRT & TUNER ***

Δ CRT	33015586	CRT M36KML270X09
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*** ICS ***

IC804	37005023	IC P005RR11
IC481	37005104	IC LM2940CT-12 (REG)
IC502	37005221	IC UPC78M09AHF
IC401	37006017	IC TDA8172
IC471	37009009	IC UPC1862CU
IC501	37009032	IC UPC1881CT
IC703	37010006	IC M52320SP
IC782	37010007	IC M52324P
IC402	37011068	IC UPC4558C (OP AMP)
IC461	37011206	IC XRA10358 (OP-AMP)
IC4H1 IC581	37011307	IC LA6501MA (OP AMP)
IC7C1	37051034	MOS UPD4040BC (COUNT)
IC121	37051378	MOS UPD4053BC (MPX)
IC803	37055537	MOS NM24C04EN
IC7A5 IC7A9	37056812	IC M62362P
IC701	37056814	IC M52035P
IC7A1	37058867	IC M52036SP
IC122 IC5E2 IC7A4	37056917	IC XRA10324A (Q OP-AMP)
IC857		
IC704	37076172	IC VP503N
IC7B1 IC851 IC852	37076176	MOS M62393P
IC853 IC855		
IC7A8	37076177	MOS M35020SP
IC7A7	37076182	MOS M35042-064SP
IC801	37076195	MOS UPD78014YCW-Y15
IC881	37076222	MOS TMP87CK42N-4201

*** TRANSISTORS ***

Δ Q2002	350D7216	TR 2SC945-T P
Q421	350E3217	TR 2SC1740S-T Q
Q145 Δ Q2004 Δ Q2005	350E3218	TR 2SC1740S-T R
Q4K1 Q402 Q522		
Q573 Q7C1		
Q452 Q583 Q713	350H4417	TR 2SC1473-TA Q
Q714 Q715		
Q791	350H4418	TR 2SC1473-TA R

SYMBOL	PART NO	DESCRIPTION
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Q7C4	350H5017	TR 2SC3811-TA Q
Q7A2 Q701 Q702	350J3016	TR 2SC2926S-T P
Q703		
Q707 Q708 Q709	350J4604	TR 2SC3776-AA D
Q461	350K4111	TR 2SA916-T K
Δ Q571 Q710 Q711	350K5217	TR 2SA1018-TA Q
Q712		
Q491	350K5218	TR 2SA1018-TA R
Q141 Q142 Δ Q2001	350K5718	TR 2SA933S-T R
Q451 Q5E3 Q523		
Q574 Q584 Q7A1		
Q7A5 Q7A6 Q7C2		
Q861		
Q521	35031112	TR 2SB1096 L
Q5E4	35069806	TR 2SD1763 F
Q4E5	35072612	TR 2SD2396 J
Δ Q541	35095100	TR 2SC4924 (NHE)
Q7A4	351A0690	TR DTC115ES-TP
Q4E1	351G0500	TR AN1A4M
Δ Q2003	351G0561	TR DTA144ES-T
Q545 Q7B1 Q7C3	351G0601	TR DTC114ES-T
Q7C5 Q7C6 Q801		
Q501 Q502 Q503	351G0602	TR DTC144ES-T
Q546 Q547 Q548		
Q7A9		
Q143 Q144 Q4E2	351G0641	TR DTC114YS-T
Q7A3	351G0652	TR DTC1132S-T
Q401	351G0655	TR DTC143ES-TP
Q524	35122600	TR 2SK701
Q572	35127470	TR 2SJ306
Q542 Q543 Q544	35127630	TR 2SK1904

*** DIODES ***

Z0541	360KC671	DIODE RD12ESB(2)/ESAB(2)
Δ D4H1 Δ D2001 Δ D2003	360K1027	DIODE 1SS132
D4H1 D402 D403		
D4H4 D402 D404		
D451 D5E1 D543		
D571 D572 D581		
D7A1 D7A3 D7A4		

SYMBOL	PART NO	DESCRIPTION
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D7A5 D7E1 D7E2	360K1027	DIODE 1SS132
D7E3 D7E4 D7E5		
D7E6 D7E7 D701		
D702 D703 D704		
D706 D709 D710		
D861		
D452 D453 D461	360K1032	DIODE 1SS82-TA
D718 D719 D720		
D721 D722 D723		
D724 D725 D726		
ZD7A1		
ZD491 ZD791	360K3098	DIODE RD12EB(3)-T4
ZD545		
ZD402 ZD871	360K3170	DIODE RD6 2JSB(2)/JSAB(2)
ZD546 ZD547 ZD548	360K3602	DIODE RD2 0ESB(1)-T4
ZD549 ZD711 ZD712	360K3635	DIODE RD5 1ESB(2)-T4
ZD713 ZD714 ZD801	360K3639	DIODE RD5 6ESB(2)-T4
ZD802 ZD881 ZD882		
ZD503		
Δ ZD2001	360K3648	DIODE RD6 8ESB(3)/ESAB(3)
ZD701		
ZD541 ZD542 ZD543	360K3652	DIODE RD7 5ESB(3)-T4
Δ ZD2003	360K3654	DIODE RD8 2ES AB1-T4
ZD401	360K3671	DIODE RD12ESB(2)/ESAB(2)
	360K3675	DIODE RD13ESB(2)-T4
	360K3692	DIODE RD20ESB(3)-T4
Δ D561 D562	361K7562	DIODE EGP10G G23
D521	36107293	DIODE RK14
Δ D542 Δ D546	36107560	DIODE RG2A2
D573	36107620	DIODE RG4 LF-J3
Δ D541	36107718	DIODE FMP-3FU(LF027-103)
LED141	36801372	LED SML19416W-LF38(D1.D3)
D401 D5N8 D5N9	369K2136	DIODE RGP10G.AT
D502 D503 D504		
Δ D544 Δ D545		
D7A2 D728	380K5054	VARIATOR MA29W-A (TP)
IC541	38200209	PHOTO COUPLER PS2501-3

SYMBOL	PART NO	DESCRIPTION
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*** TRANSFORMERS ***

T521	45804012	TRANS.H.DRIVE
L581	46204004	COIL CHOKE 4MH
L571	46206005	TRANS. CHOKE 4MH
Δ T561	47105689	F.B.T

*** VARIABLE RESISTORS ***

VR851	410G2067	R.VARIABLE B1.0M
VR121 VR122	41011116	R.VARIABLE B10K
Δ VR561	415K5162	R.VARIABLE 100K
VR501	41505105	R.VARIABLE B2.0K

*** RELAYS & SWITCHES ***

SW109	65161074	SWITCH SLID AUA00120457
Δ SW601	65360043	SWITCH PUSH BUTTON
SW101 SW102 SW104	65360046	TACT SWITCH KSM0632A
SW105 SW106 SW107		
SW103	65360047	TACT SWITCH KSM0642A
RL541	65660033	RELAY VE-12H5-K

*** COILS & FILTERS ***

MR802	390C0445	R.NETWORK 4X10K 5% 1/8W
LCTA5 LCTA6 LCTA7	390J9027	FILTER ZJSC-R12-100TA
LCTA8 LCT01 LCT02		
LCT3		
MC802	39013047	C.NETWORK 50V 10000PF
Δ L541	60906057	COIL WIDTH (104UH)
Δ L542 Δ L543	60919129	COIL H.LIN
L7A1 L7A2	610E1711	COIL FILTER 3.3UH
L701	610E1725	COIL FILTER 47UH
L702 L703 L704	610E1726	COIL FILTER 56UH
L705	610E1727	COIL FILTER 68UH
L706	610E4001	COIL FILTER 10UH
L801	610FE828	COIL FILTER 47UH
L421	610FE829	COIL FILTER 56UH
L572	610F3025	COIL FILTER 47UH
L801	610F5828	COIL FILTER 47UH
L421	610F5829	COIL FILTER 56UH
L707	610F7518	COIL FILTER 12UH
L7A3	610F8009	COIL FILTER 2.2UH

SYMBOL	PART NO	DESCRIPTION
L901 L902 L903 FL6A1 X881	610F8036 61062204 611A1822	COIL FILTER 0.39UH LINE FILTER (HR-24-E392) CERAMIC OSC
DG LC707 LC901 LC7A1 LC7A2 LC706	61315206 616K6027 616K6028 616K6801 616K5945	COIL DEGAUSSING NOISE FILTER 2A222-TA NOISE FILTER 1H223X-TA NOISE FILTER 2R2-101-T NOISE FILTER TH28123MA
LC708 LS44 LS73	616K6966 61605122 61605135	NOISE FILTER FERRITE BEADS FERRITE CORE

*** PWB ASSYS ***

	84Q09C01 84Q10F01	VIDEO PWB ASSY MAIN PWB ASSY
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*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

SW-PS SG901 SG904 X801 SG905	31104081 329J0047	SW REG UNIT (DPS-112AB-1) ARRESTER (300V), AT52
CN-AB CN-AC CORD VR561 UNIT	64098039 667K6007 70032056 70051778 70521064 70800066 73893211 74004891 79100512 79695101 79695111	X-TAL (10.000MHZ) SPARK GAP 1.5KV CRT SOCKET SDL CONNECTOR 4P AC RECEPTACLE LINE CORD E-3 #8011 SIGNAL CABLE MD15P-XH12P CAP EW UNIT (CN401) PC DISK1(XE) PC DISK2(XP)

*** APPEARANCE PARTS ***

	25317951 25426362 25426372 25426391 25534631 25545031 25616311	CABINET BACK REVOLVING STAND(T) REVOLVING STAND(B) ASSY SPINDLE COIL SPRING CHASSIS BASE CUSSION SHEET
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SYMBOL	PART NO	DESCRIPTION
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	25757643 25775932	LABEL (REV.) LABEL WARNING (PTB)
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*** KNOBS & PUSH BUTTONS ***

	25456171 25456441	KNOB CONTROL KNOB SLIDE
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*** PRINTED & PACKING MATERIALS ***

	24807081 24813191 25825501 25829821 25829831 25830721 78034409 78129231	BAG POLYETHYLENE BAG POLYETHYLENE (150*370) SHEET PROTECTION FILLER(T) CARTON FILLER(B) CARTON CARTON BOX (CN301B) MONITOR SALES OFFICE LIST XP USER MANUAL (15/17/21)B
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*** RESISTORS ***

R537 R456 R537 R576 R762	401CF649 401CF749 401C6649 401C6657 401C6663	R.CARBON 100H 5% 1/4W R.CARBON 1.5M 5% 1/4W R.CARBON 100H 5% 1/4W R.CARBON 220H 5% 1/4W R.CARBON 390H 5% 1/4W
R512 R909 R456 R561 R562 R508	401C6685 401C6689 401C6749 401G6109 401G6117	R.CARBON 3.3K 5% 1/4W R.CARBON 4.7K 5% 1/4W R.CARBON 1.5M 5% 1/4W R.CARBON 2.2H 5% 1/4W R.CARBON 4.7H 5% 1/4W
R904 R905 R906 R4H7 R542 R908 R543 R458 R5M6	401H5637 401H5649 401H5655 401H5663 401H5695	R.CARBON 33H 5% 1/2W R.CARBON 100H 5% 1/2W R.CARBON 180H 5% 1/2W R.CARBON 390H 5% 1/2W R.CARBON 8.2K 5% 1/2W
R573 R6A1 J10 R11 R12 R13 R14 R18 R19 R2 R20 R2008 R21 R22 R23 R25 R27 R28	401H5725 401H5745 401J9820	R.CARBON 150K 5% 1/2W R.CARBON 1.0M 5% 1/2W R.CARBON 0.0H

SYMBOL	PART NO	DESCRIPTION
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R29 R3 R30 R31 R32 R34 R35 R36 R4 R5 R5M2 R5M8 R6 R7 R7B2 R7G7 R7M7 R7N5 R7P1 R7P2 R7P3 R7P5 R801 R895 R9 R579 R586	401J9820	R.CARBON 0.0H
R4H8 R417 R763 R764 R765 R907 R4H9 R457 R882 R883	401K5609 401K5625 401K5633 401K5635 401K5639 401K5641	R.CARBON 2.2H 5% 1/6W R.CARBON 10H 5% 1/6W R.CARBON 22H 5% 1/6W R.CARBON 27H 5% 1/6W R.CARBON 39H 5% 1/6W R.CARBON 47H 5% 1/6W
R533 R534 R546 R551 R555 R7L7 R7L8 R7N7 R7N8 R7N9 R729 R731 R733 R808 R809 R819 R829 R841 R842 R843 R844 R845 R846 R847 R848 R889 R891 R892 R893	401K5649	R.CARBON 100H 5% 1/6W
R872 R7A3 R7N1 R7N3 R710 R711 R712 R735 R737 R739 R747 R749 R752 R756 R758 R760 R741 R4K3 R7N2 R755 R757 R759 R727 R879	401K5651 401K5653	R.CARBON 120H 5% 1/6W R.CARBON 150H 5% 1/6W
R7A1 R529 R7A9 R719 R721 R723 R7M5 R7M6 R766 R768 R770 R748 R750 R751 R7A7 R7A8 R7C2	401K5655 401K5657 401K5659 401K5661 401K5663 401K5665 401K5667	R.CARBON 180H 5% 1/6W R.CARBON 220H 5% 1/6W R.CARBON 270H 5% 1/6W R.CARBON 330H 5% 1/6W R.CARBON 390H 5% 1/6W R.CARBON 470H 5% 1/6W R.CARBON 560H 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
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R4E1 R736 R738 R740 R142 R144 R4H3 R4K2 R4L5 R4M2 R4M3 R4M4 R4M5 R4M6 R518 R519 R581 R583 R7E9 R7G4 R7G6 R7H8 R7H9 R7M2 R7M3 R7M4 R7N4 R777 R782 R787 R8E1 R851 R852 R853 R875 R7C6 R7C8 R7P7 R7P8 R8E3 R8E4 R5M5 R572 R7A6 R7C5	401K5669 401K5673 401K5675 401K5677 401K5679	R.CARBON 680H 5% 1/6W R.CARBON 1.0K 5% 1/6W R.CARBON 1.2K 5% 1/6W R.CARBON 1.5K 5% 1/6W R.CARBON 1.8K 5% 1/6W
R4K4 R426 R5M7 R7M8 R713 R880 R804 R805 R884 R415 R425 R503 R564 R7C9 R7G5 R767 R769 R771 R403 R517 R7E7 R858	401K5681 401K5683 401K5685 401K5687 401K5689	R.CARBON 2.2K 5% 1/6W R.CARBON 2.7K 5% 1/6W R.CARBON 3.3K 5% 1/6W R.CARBON 3.9K 5% 1/6W R.CARBON 4.7K 5% 1/6W
R455 R5M4 R544 R548 R553 R7E1 R7E2 R7E3 R803 R807 R811 R812 R813 R814 R815 R816 R817 R818 R821 R822 R823 R824 R825 R826 R827 R828 R840 R414 R510 R7E4 R873 R876 R101 R127 R129 R130 R131 R132 R133 R134 R135 R136 R137 R138 R2006 R2009 R4E2	401K5691 401K5693 401K5697	R.CARBON 5.6K 5% 1/6W R.CARBON 6.8K 5% 1/6W R.CARBON 10K 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
R4H4 R428 R453 R5L9 R520 R7E8 R7K1 R7K4 R7K7 R7L1 R7L5 R707 R732 R742 R802 R830 R833 R836 R860 R886 R890 R7G8	R4H5 R451 R5L6 R5M1 R578 R7G1 R7K2 R7K5 R7K8 R7L2 R7M1 R709 R734 R743 R810 R831 R834 R837 R878 R887 R870	401K5697 R.CARBON 10K 5% 1/6W 401K5699 R.CARBON 12K 5% 1/6W 401K5701 R.CARBON 15K 5% 1/6W 401K5705 R.CARBON 22K 5% 1/6W 401K5707 R.CARBON 27K 5% 1/6W 401K5709 R.CARBON 33K 5% 1/6W 401K5711 R.CARBON 39K 5% 1/6W 401K5713 R.CARBON 47K 5% 1/6W 401K5715 R.CARBON 56K 5% 1/6W 401K5719 R.CARBON 82K 5% 1/6W 401K5721 R.CARBON 100K 5% 1/6W 401K5723 R.CARBON 120K 5% 1/6W 401K5725 R.CARBON 150K 5% 1/6W 401K5729 R.CARBON 220K 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
R501 R467 R2001 R402 R507 R745 R124 R866	R7H7 R4H2 R401 R404 R405 R527 R857 R407 R502	404C1694 R.METAL 7.5K 1% 1/6W 404C1696 R.METAL 9.1K 1% 1/6W 404C1697 R.METAL 10K 1% 1/6W 404C1698 R.METAL 11K 1% 1/6W 404C1699 R.METAL 12K 1% 1/6W 404C1700 R.METAL 13K 1% 1/6W 404C1701 R.METAL 15K 1% 1/6W 404C1702 R.METAL 16K 1% 1/6W 404C1703 R.METAL 18K 1% 1/6W 404C1704 R.METAL 20K 1% 1/6W 404C1705 R.METAL 22K 1% 1/6W 404C1707 R.METAL 27K 1% 1/6W 404C1708 R.METAL 30K 1% 1/6W 404C1710 R.METAL 36K 1% 1/6W 404C1711 R.METAL 39K 1% 1/6W 404C1712 R.METAL 43K 1% 1/6W 404C1715 R.METAL 56K 1% 1/6W 404C1719 R.METAL 82K 1% 1/6W 404C1724 R.METAL 130K 1% 1/6W 404C1725 R.METAL 150K 1% 1/6W 404C1742 R.METAL 750K 1% 1/6W 404JJ443 R.METAL 1.3K 0.5% 1/8W 404J9443 R.METAL 1.3K 0.5% 1/8W 404KB716 R.METAL 62K 1% 1/4W 404KB719 R.METAL 82K 1% 1/4W 404K2716 R.METAL 62K 5% 1/4W 404K2719 R.METAL 82K 1% 1/4W 404K5133 R.METAL 22H 5% 1/4W 40801004 R.FUSE 1.0H 500MA

*** CAPACITORS ***

C901 C5K5 C764 C902 AC545 CSU2	C766 C768	420C9551 C.CERAMIC 500V 100PF 420C9555 C.CERAMIC 500V 220PF 420C9563 C.CERAMIC 500V 1000PF 420C9565 C.CERAMIC 500V 1500PF 420C9569 C.CERAMIC 50V 3300PF
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SYMBOL	PART NO	DESCRIPTION
R582 R5L8 R556 AR149	R547 R552	401K5731 R.CARBON 270K 5% 1/6W 401K5733 R.CARBON 330K 5% 1/6W 401K5737 R.CARBON 470K 5% 1/6W 401K5739 R.CARBON 560K 5% 1/6W 401K5743 R.CARBON 820K 5% 1/6W 40175185 R.CARBON 3.3K 5% 1/4W 40216250 R.WIRE 2.0H 5% 7W 403F1101 R.METAL OXIDE 1H 5% 1W 403F1165 R.METAL 470H 5% 1W 403F2105 R.METAL OXIDE 1.5H 5% 2W 403F2109 R.METAL 2.2H 5% 2W 403F2125 R.METAL 10H 5% 2W 403F2149 R.METAL OXIDE 100H 5% 2W 403F2151 R.METAL OXIDE 120H 5% 2W 403F3141 R.METAL OXIDE 47H 5% 3W 403G1703 R.METAL 18K 5% 1W 404CA657 R.METAL 220H 1% 1/6W 404CA670 R.METAL 750H 1% 1/6W 404CA680 R.METAL 2.0K 1% 1/6W 404CA690 R.METAL 5.1K 1% 1/6W 404CA698 R.METAL 11K 1% 1/6W 404CA712 R.METAL 43K 1% 1/6W 404C1646 R.METAL 75H 1% 1/6W 404C1657 R.METAL 220H 1% 1/6W 404C1663 R.METAL 390H 1% 1/6W 404C1669 R.METAL 680H 1% 1/6W 404C1670 R.METAL 750H 1% 1/6W 404C1673 R.METAL 1.0K 1% 1/6W 404C1680 R.METAL 2.0K 1% 1/6W 404C1681 R.METAL 2.2K 1% 1/6W 404C1683 R.METAL 2.7K 1% 1/6W 404C1684 R.METAL 3.0K 1% 1/6W 404C1685 R.METAL 3.3K 1% 1/6W 404C1687 R.METAL 3.9K 1% 1/6W 404C1688 R.METAL 4.3K 1% 1/6W 404C1689 R.METAL 4.7K 1% 1/6W 404C1690 R.METAL 5.1K 1% 1/6W 404C1691 R.METAL 5.6K 1% 1/6W

SYMBOL	PART NO	DESCRIPTION
C903 AC6A2 C4H1 C555 C707 C732 C775 C887 C7A7 C7C1	C6A3 C427 C518 C7B1 C7K2 C708 C709 C772 C773 C7P6 C886 C888 C7A8 C7A9	420K108 C.CERAMIC 2KV 10000PF 420EC067 C.CERAMIC 400V 2200PF 421A0425 C.CERAMIC 50V 0.01UF 421C0201 C.CERAMIC 50V 100PF 421C0207 C.CERAMIC 50V 330PF 421C0209 C.CERAMIC 50V 470PF 421C0210 C.CERAMIC 50V 560PF 421C0213 C.CERAMIC 50V 1000PF 421C0221 C.CERAMIC 50V 4700PF 421C0225 C.CERAMIC 50V 0.01UF 421C2862 C.CERAMIC 25V 0.01UF C121 C4H3 C4H4 C4L5 C4M6 C402 C405 C421 C428 C461 C463 C472 C473 C475 C476 C5H1 C5H3 C508 C511 C513 C516 C517 C519 C7H1 C752 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 C881 C123 C408 C521 C766 C7H9 C7M3 C748 C4H6 C501 C506 C583 C7A5 C7E3 C7E8 C7G1 C7H4 C7H5 C7H6 C7H7

SYMBOL	PART NO	DESCRIPTION
C7K3 C7K5 C7K6 C7K7 C7K8 C7K9 C7I0 C723 C726 C729 C769 C770 C771 C757	421D6009	C.CERAMIC 25V 0.1UF
C510 C7M4 C7M5 C514 C7G9 C7M1	421J9044	C.CERAMIC 250V 0.01UF
C805 C806 C754 C755 C756 C7N4 C7A3 C503	423A1029 423A1037 423A1045 423A1053 423A1101	C.CERAMIC 50V 22PF C.CERAMIC 50V 47PF C.CERAMIC 50V 100PF C.CERAMIC 50V 220PF C.CERAMIC 50V 470PF
C7N1 C7N2 C7N3 C411 C7L1 C5K4	423A2015 423A2043 423A2045 423A2104 423J9022	C.CERAMIC 50V 10PF C.CERAMIC 50V 82PF C.CERAMIC 50V 100PF C.CERAMIC 50V 220PF C.CERAMIC 50V 470PF
C412 C749 C750 C751 C7G8 C424 C407 C512 C452 ΔC562 C573	4231B035 4231B037 427E4163 427F4615 427F4622	C.CERAMIC 50V 39PF C.CERAMIC 50V 47PF C.FILM 100V 0.01UF C.FILM 50V 0.015UF C.FILM 50V 0.056UF
C443 ΔC5A1 ΔC553 ΔC552 ΔC551	427F4663	C.FILM 50V 0.01UF
ΔC549 ΔC547 ΔC548 C759 C760 C761 ΔC541 ΔC542	428B3013 428B3020 428B3021 428CJ022	C.METAL FILM 50V 0.1UF C.METAL FILM 50V 0.39UF C.METAL FILM 50V 0.47UF C.METAL FILM 250V 0.1UF
ΔC543 C477 C812 C814	428DD417 42824854 42839601 42839603 42839608	C.METAL FILM 250V 0.22UF C.FILM 250V 0.033UF C.METAL 400V 0.1UF C.METAL FILM 400V 0.15UF C.METAL 400V 0.33UF
	42839613 42839692 42839708 42844417 42899139	C.METAL 400V 0.56UF C.METAL FILM 200V 2.4UF C.METAL 400V 0.33UF 5X C.METAL FILM 250V 0.22UF C.METAL 1.8KV 2500PF
	42899141 430B6015 430B6016	C.METAL 1.2KV 9000PF C.ELEC 10V 47UF C.ELEC 10V 100UF

SYMBOL	PART NO	DESCRIPTION
C762 C763 C765 C767 C491 C501 C572	430B9512	C.ELEC 160V 1.0UF
C522 C403 C758 C575 C4K1 C702 C703 C704	430B9516 430B9552 430CH358 430C6344 430C6346 430C8917 4309J171 433A4013	C.ELEC 160V 10UF C.ELEC 250V 1.0UF C.ELEC 250V 47UF C.ELEC 35V 100UF C.ELEC 35V 330UF C.ELEC 100V 47UF C.ELEC 200V 33UF C.ELEC 10V 47UF
C7A1 C7A2 C478 C479 C4H7 C423 C7C4 C7C7	433A4023 433A4033 433A4055 433A4056 433A4058	C.ELEC 16V 22UF C.ELEC 25V 10UF C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF C.ELEC 50V 4.7UF
C715 C718 C721 C7E4 C5E8 ΔC564	433A7003 433A7031 433J9031 435A8155	C.ELEC 10V 100UF C.ELEC 35V 4.7UF C.ELEC 35V 4.7UF C.TANTALUM 16V 10UF

SYMBOL	PART NO	DESCRIPTION
C815 C803 C882	430B6017 430B6019	C.ELEC 10V 220UF C.ELEC 10V 470UF
C409 C509 C861 ΔC2001 C4H2 C4H5 C471 C474 C451 C406	430B6029 430B6030 430B6041 430B6043 430B6044	C.ELEC 16V 100UF C.ELEC 16V 220UF C.ELEC 25V 47UF C.ELEC 25V 220UF C.ELEC 25V 330UF
C531 C504 C4M2 C4M3 C4M4 C430 C813 C871	430B6061 430B6062 430B6064 430B6065 430B6222	C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF C.ELEC 50V 4.7UF C.ELEC 50V 10UF C.ELEC 50V 0.22UF
C563 C452 ΔC571 C581 C582 C753 C426	430B6516 430B6553 430B9015 430B9017 430B9027	C.ELEC 160V 10UF C.ELEC 250V 2.2UF C.ELEC 10V 47UF C.ELEC 10V 220UF C.ELEC 16V 33UF
C7N5 C7N6 C701 C422 C502 C7G5 C7H3 C7K1 C724 C727 C730 C733 C487 C711 C747 C486 C515 C404	430B9028 430B9029 430B9030 430B9042 430B9043	C.ELEC 16V 47UF C.ELEC 16V 100UF C.ELEC 16V 220UF C.ELEC 25V 100UF C.ELEC 25V 220UF
ΔC141 C532 C7A6 C7C6 C7G7 C7H2 C743 C401 C425 C744 C745 C745 C735 C738 C741 C7C3 C7C5 C7C9 C7E5 C507 ΔC561 C7C8 C7E6 C714 C716 C717 C719 C720 C722 C725 C728 C731 C736 C739 C742	430B9061 430B9062 430B9063 430B9064 430B9065	C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF C.ELEC 50V 3.3UF C.ELEC 50V 4.7UF C.ELEC 50V 10UF
C7E2	430B9068	C.ELEC 50V 47UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1537VMR (N)

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

Replace only with parts Number specified.

SYMBOL	PART NO	DESCRIPTION
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*** CRT & TUNER ***

Δ CRT	33015584	CRT M36LDN100XX45 (U3) (R)
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*** ICS ***

IC804	37005023	IC PQ05RR11
IC481	37005104	IC LM2940CT-12 (REG)
IC502	37005221	IC UPC78M09AHF
IC401	37006017	IC TDA8172
IC471	37009009	IC UPC1882CU
IC501	37009032	IC UPC1881CT
IC703	37010006	IC M52320SP
IC782	37010007	IC M52324P
IC402	37011068	IC UPC4558C (OP AMP)
IC461	37011206	IC XRA10358 (OP-AMP)
IC4H1 IC581	37011307	IC LA6501MA (OP AMP)
IC7C1	37051034	MOS UPD4040BC (COUNT)
IC121	37051378	MOS UPD4053BC (MPX)
IC803	37055537	MOS NM24C04EN
IC7A5 IC7A9	37056812	IC M62362P
IC701	37056814	IC M52035P
IC7A1	37056867	IC M52036SP
IC122 IC5E2 IC7A4	37056917	IC XRA10324A (G OP-AMP)
IC857 IC858		
IC704	37076172	IC VP503N
IC7B1 IC851 IC852	37076176	MOS M62393P
IC853 IC855		
IC7A8	37076177	MOS M35020SP
IC7A7	37076182	MOS M35042-0645P
IC801	37076195	MOS UPD78014YCW-Y15
IC881	37076222	MOS TMP67CK42N-4201

*** TRANSISTORS ***

Δ Q2002		TR 2SC945-T P
Q421	Q7A7 Q7A8	350E3217
Q145 Δ Q2004 Δ Q2005		TR 2SC1740S-T Q
Q4K1 Q402 Q522		TR 2SC1740S-T R
Q573 Q7C1		
Q452 Q583 Q713	350H4417	TR 2SC1473-TA Q
Q714 Q715		
Q791	350H4418	TR 2SC1473-TA R

SYMBOL	PART NO	DESCRIPTION
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Q7C4	Q701 Q702	350H5017	TR 2SC3811-TA Q
Q7A2		350J3016	TR 2SC2926S-T P
Q703			
Q707	Q708 Q709	350J4604	TR 2SC3776-AA D
Q461		350K4111	TR 2SA916-T K
Δ Q571 Q710 Q711		350K5217	TR 2SA1018-TA Q
Q712			
Q491		350K5218	TR 2SA1018-TA R
Q141	Q142 Δ Q2001	350K5718	TR 2SA933S-T R
Q451	Q5E3 Q523		
Q574	Q584 Q7A1		
Q7A5	Q7A6 Q7C2		
Q861			
Q521		35031112	TR 2SB1096 L
Q5E4		35069806	TR 2SD1763 F
Q4E5		35072612	TR 2SD2396 J
Δ Q541		35095100	TR 2SC4924 (NHE)
Q7A4		351A0690	TR DTC115ES-TP
Q4E1		351G0500	TR AN1A4M
Δ Q2003		351G0561	TR DTA144ES-T
Q545	Q7B1 Q7C3	351G0601	TR DTC114ES-T
Q7C5	Q7C6 Q801		
Q501	Q502 Q503	351G0602	TR DTC144ES-T
Q546	Q547 Q548		
Q7A9			
Q143	Q144 Q4E2	351G0641	TR DTC114YS-T
Q7A3		351G0652	TR DTC113ZS-T
Q401		351G0655	TR DTC143ES-TP
Q524		35122600	TR 2SK701
Q572		35127470	TR 2SJ306
Q542	Q543 Q544	35127610	TR 2SK1087-M

*** DIODES ***

ZD541	ZD542 ZD543	360KC671	DIODE RD12ESB(2)/ESAB(2)
D141	Δ Q2001 Δ D2003	360K1027	DIODE 1SS132
D4H1	D4H2 D4H3		
D4H4	D402 D404		
D451	D5E1 D543		
D571	D572 D581		
D7A1	D7A3 D7A4		

SYMBOL	PART NO	DESCRIPTION
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D7A5 D7E1 D7E2	360K1027	DIODE 1SS132
D7E3 D7E4 D7E5		
D7E6 D7E7 D701		
D702 D703 D704		
D706 D709 D710		
D861		
D452 D453 D461	360K1032	DIODE 1SS82-TA
D718 D719 D720		
D721 D722 D723		
D724 D725 D726		
ZD7A1		
ZD491 ZD791	360K3098	DIODE RD12EB(3)-T4
ZD545		
ZD402 ZD871	360K3170	DIODE RD6.2JSB(2)/JSAB(2)
ZD546 ZD547 ZD548	360K3602	DIODE RD2.0ESB(1)-T4
ZD549 ZD711 ZD712	360K3635	DIODE RD5.1ESB(2)-T4
ZD713 ZD714 ZD801	360K3639	DIODE RD5.6ESB(2)-T4
ZD802 ZD881 ZD882		
ZD883		
ZD503	360K3648	DIODE RD6.8ESB(3)/ESAB(3)
Δ ZD2001	360K3652	DIODE RD7.5ESB(3)-T4
ZD701	360K3654	DIODE RD8.2ES AB1-T4
ZD541 ZD542 ZD543	360K3671	DIODE RD12ESB(2)/ESAB(2)
Δ ZD2003	360K3675	DIODE RD13ESB(2)-T4
ZD401	360K3692	DIODE RD20ESB(3)-T4
Δ D561 D562	361K7562	DIODE EGP10G G23
D521	36107293	DIODE RK14
Δ D542 Δ D546	36107560	DIODE RG2A2
D573	36107620	DIODE RG4 LF-J3
Δ D541	36107718	DIODE FMP-3FU(LF027-103)
LED141	36801372	LED SML19416W-LF38(D1.D3)
D401 D5N8 D5N9	369K2136	DIODE RGP10G.AT
D502 D503 D504		
Δ D544 Δ D545		
D7A2 D728	380K5054	VARISTOR MA29W-A (TP)
IC541	38200209	PHOTO COUPLER PS2501-3

SYMBOL	PART NO	DESCRIPTION
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*** TRANSFORMERS ***

T521	45804012	TRANS.H.DRIVE
L581	46204004	COIL,CHOKE 4MH
L571	46206005	TRANS.CHOKE 4MH
Δ T561	47105690	F.B.T

*** VARIABLE RESISTORS ***

VR851	410G2067	R.VARIABLE B1.0M
VR121	41011116	R.VARIABLE B10K
Δ VR561	415K5162	R.VARIABLE 100K
VR501	41505105	R.VARIABLE B2.0K

*** RELAYS & SWITCHES ***

SW109	65161074	SWITCH SL1LD AUA00120457
Δ SW601	65360043	SWITCH,PUSH BUTTON
SW101	65360046	TACT SWITCH KSM0632A
SW105		
SW103	65360047	TACT SWITCH KSM0642A
RL541	65660033	RELAY VE-12H5-K

*** COILS & FILTERS ***

MR802	390C0445	R.NETWORK 4*10K 5% 1/8W
LC7A5 LC7A6 LC7A7	390J9027	FILTER ZJSC-R12-100TA
LC7A8 LC701 LC702		
LC703		
MC802 MC803	39013047	C.NETWORK 50V 10000PF
Δ L541	60906057	COIL.WIDTH (104UH)
Δ L542 Δ L543	60919129	COIL.H.LIN
L7A1 L7A2	610E1711	COIL.FILTER 3.3UH
L701	610E1725	COIL.FILTER 47UH
L702	610E1726	COIL.FILTER 56UH
L705	610E1727	COIL.FILTER 68UH
L706	610E4001	COIL.FILTER 10UH
L801	610FE828	COIL.FILTER 47UH
L421	610FE829	COIL.FILTER 56UH
L572	610F3025	COIL.FILTER 47UH
L801	610F5828	COIL.FILTER 47UH
L421	610F5829	COIL.FILTER 56UH
L707	610F7518	COIL.FILTER 12UH
L7A3	610F8009	COIL.FILTER 2.2UH

SYMBOL	PART NO	DESCRIPTION
L901 L902 L903 X881	610F8036 61062204 611A1822	COIL FILTER 0.39UH LINE FILTER (HR-24-E392) CERAMIC OSC
DG LC707 LC901 LC7A1 LC706	61315206 616K6027 616K6028 616K6801 616K6946	COIL DEGAUSSING NOISE FILTER 2A222-TA NOISE FILTER 1H223X-TA NOISE FILTER 2R2-101-T NOISE FILTER TH28123MA
LC708 LJ544 LS73	616K6966 61605122 61605135	NOISE FILTER FERRITE BEADS FERRITE CORE

*** PWB ASSYS ***

	84009C01 84011F01	VIDEO PWB ASSY MAIN PWB ASSY
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*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

ΔSW-PS SG901 SG904 X801 SG905	SG902 SG903	31104081 329J0047	SW REG UNIT (DPS-112AB-1) ARRESTER (300V) AT52
CN-AB CN-AC VR561 CORD UNIT		64098039 667K6007 70032056	X TAL (10.000MHZ) SPARK GAP 1.5KV CRT SOCKET
		70051778 70521064 73893211 74004891 75513033 79100512 79695101 79695111	SDL CONNECTOR 4P AC RECEPTACLE SIGNAL CABLE MD15P-XH12P CAP POWER CORD EW UNIT (CN401) PC DISK1 (XE) PC DISK2 (XP)

*** APPEARANCE PARTS ***

		25317951 25426362 25426372 25426391 25534631	CABINET BACK REVOLVING STAND(T) REVOLVING STAND(B) ASSY SPINDLE COIL SPRING
		25545031 25616311	CHASSIS BASE CUSSION SHEET

SYMBOL	PART NO	DESCRIPTION
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	25757643	LABEL (REV.)
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*** KNOBS & PUSH BUTTONS ***

	25456171 25456441	KNOB CONTROL KNOB SLIDE
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*** PRINTED & PACKING MATERIALS ***

		24807081 24813191 25825501 25829821 25829831 25831101 78034409 78129231	BAG POLYETHYLENE BAG POLYETHYLENE (150*370) SHEET PROTECTION FILLER (T) CARTON FILLER (B) CARTON CARTON BOX (CN301R) MONITOR SALES OFFICE LIST XP USER MANUAL (15/17/21) B
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*** RESISTORS ***

R537 R456 R537 R576 R762		401CF649 401CF749 401C6649 401C6657 401C6663	R CARBON 100H 5% 1/4W R CARBON 1.5M 5% 1/4W R CARBON 100H 5% 1/4W R CARBON 220H 5% 1/4W R CARBON 390H 5% 1/4W
R512 R909 R456 ΔR561 ΔR508		401C6685 401C6689 401C6749 401G6109 401G6117	R CARBON 3.3K 5% 1/4W R CARBON 4.7K 5% 1/4W R CARBON 1.5M 5% 1/4W R CARBON 2.2H 5% 1/4W R CARBON 4.7H 5% 1/4W
R904 R4H7 ΔR543 R458 R5M6	R905 R906 ΔR542 R908	401H5637 401H5649 401H5655 401H5663 401H5695	R CARBON 33H 5% 1/2W R CARBON 100H 5% 1/2W R CARBON 180H 5% 1/2W R CARBON 390H 5% 1/2W R CARBON 8.2K 5% 1/2W
ΔR573 R6A1 J10 R11 R14 R2 R21 R25 R29	R1 R10 R12 R13 R18 R19 R20 ΔR2008 R22 R23 R27 R28 R3 R30	401H5725 401H5745 401J9820	R CARBON 150K 5% 1/2W R CARBON 1.0M 5% 1/2W R CARBON 0.0H

SYMBOL	PART NO	DESCRIPTION
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R31 R35 R5 R6 R7G7 R7P1 R7P5 R9 R579	R32 R34 R36 R4 R5M2 R5M8 R7 R7B2 R7M7 R7N5 R7P2 R7P3 R801 R895	401J9820	R CARBON 0.0H
	R586	401K5609	R CARBON 2.2H 5% 1/6W
R4H8 R417 R765 R4H9 R457 R882	R763 R764 R907	401K5625 401K5633	R CARBON 10H 5% 1/6W R CARBON 22H 5% 1/6W
		401K5635 401K5639 401K5641	R CARBON 27H 5% 1/6W R CARBON 39H 5% 1/6W R CARBON 47H 5% 1/6W
R533 R551 R7L8 R7N9 R733 R819 R842 R845 R848 R892 R872	R534 R546 R555 R7L7 R7N7 R7N8 R729 R731 R808 R809 R829 R841 R843 R844 R846 R847 R889 R891	401K5649	R CARBON 100H 5% 1/6W
		401K5651 401K5653	R CARBON 120H 5% 1/6W R CARBON 150H 5% 1/6W
R7A1 R529 R721 R7M5 R768 R748 R7A7	R7N1 R7N3 R711 R712 R737 R739 R749 R752 R758 R760 R4K3 R7N2 R757 R759	401K5655 401K5657	R CARBON 180H 5% 1/6W R CARBON 220H 5% 1/6W
		401K5659 401K5661	R CARBON 270H 5% 1/6W R CARBON 330H 5% 1/6W
		401K5663	R CARBON 390H 5% 1/6W
		401K5665 401K5667	R CARBON 470H 5% 1/6W R CARBON 560H 5% 1/6W
R4E1	R736 R738	401K5669	R CARBON 680H 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
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R740 R142 R4K2 R4M3 R4M6 R581 R7G4 R7H9 R7M4 R782 R851 R875 R7C6 R7P8 R8E3	R144 R4H3 R4L5 R4M2 R4M4 R4M5 R518 R519 R583 R7E9 R7G6 R7H8 R7M2 R7M3 R7N4 R777 R787 R8E1 R852 R853	401K5669 401K5673	R CARBON 680H 5% 1/6W R CARBON 1.0K 5% 1/6W
		401K5675	R CARBON 1.2K 5% 1/6W
		401K5677	R CARBON 1.5K 5% 1/6W
		401K5679	R CARBON 1.8K 5% 1/6W
R5M5 R7C5 R4K4 R7M8 R804 R415 ΔR564 R767	ΔR572 R7A6 R426 R5M7 R713 R880 R805 R884 R425 R503 R7C9 R7G5 R769 R771	401K5681 401K5683 401K5685	R CARBON 2.2K 5% 1/6W R CARBON 2.7K 5% 1/6W R CARBON 3.3K 5% 1/6W
		401K5687	R CARBON 3.9K 5% 1/6W
		401K5689	R CARBON 4.7K 5% 1/6W
		401K5691	R CARBON 5.6K 5% 1/6W
R403 R858 R455 R548 R7E2 R807 R813 R816 R821 R824 R827 R414 R873 R101 R130 R133 R136 ΔR2006	R517 R7E7 R5M4 R544 R553 R7E1 R7E3 R803 R811 R812 R814 R815 R817 R818 R822 R823 R825 R826 R828 R840 R510 R7E4 R127 R129 R131 R132 R134 R135 R137 R138 ΔR2009 R4E2 R4H5 R4K1	401K5693 401K5697	R CARBON 6.8K 5% 1/6W R CARBON 10K 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
R428 R451 R452 R453 R5L6 R5L7 R5L9 R5M1 R5L4 R520 R578 R7B1 R7E8 R7G1 R7H3 R7K1 R7K2 R7K3 R7K4 R7K5 R7K6 R7K7 R7K8 R7K9 R7L1 R7L2 R7L3 R7L5 R7M1 R7O5 R707 R709 R730 R732 R734 R741 R742 R743 R746 R802 R810 R820 R830 R831 R832 R833 R834 R835 R836 R837 R838 R860 R878 R885 R886 R887 R888 R890	401K5697	R.CARBON 10K 5% 1/6W
R7G8 R870 ΔR2004 R424 R5U8 R7E6 R7M9 R147 R7A2 R7C1 R704 R705 R708 R5L2 R7A5 R7C4 R775 R780 R785 R894 R416 R461 R464 R5M3 R516 R776 R781 R786	401K5699 401K5701 401K5705 401K5707 401K5709	R.CARBON 12K 5% 1/6W R.CARBON 15K 5% 1/6W R.CARBON 22K 5% 1/6W R.CARBON 27K 5% 1/6W R.CARBON 33K 5% 1/6W
R7A4 R7C3 R874 R806 R881 R5M9 ΔR2007 R462 R454 R5U7 R7H6 R792 R793 R794	401K5711 401K5713 401K5715 401K5719 401K5721	R.CARBON 39K 5% 1/6W R.CARBON 47K 5% 1/6W R.CARBON 56K 5% 1/6W R.CARBON 82K 5% 1/6W R.CARBON 100K 5% 1/6W
R465 R774 R779 R784 R545 R549 R554 R773 R778 R783 R582	401K5723 401K5725 401K5729 401K5731	R.CARBON 120K 5% 1/6W R.CARBON 150K 5% 1/6W R.CARBON 220K 5% 1/6W R.CARBON 270K 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
R501 R7H7 R467 ΔR2001 R4H2 R401 R402 R404 R405 R507 R527 R857 R745	404C1694 404C1696 404C1697 404C1698 404C1699 404C1700 404C1701 404C1702 404C1703	R.METAL 7.5K 1% 1/6W R.METAL 9.1K 1% 1/6W R.METAL 10K 1% 1/6W R.METAL 11K 1% 1/6W R.METAL 12K 1% 1/6W R.METAL 13K 1% 1/6W R.METAL 15K 1% 1/6W R.METAL 16K 1% 1/6W R.METAL 18K 1% 1/6W
R124 R407 R502 R866 R422 R744 R406 R423 R5L3 R526 R864	404C1704 404C1705 404C1707 404C1708 404C1710	R.METAL 20K 1% 1/6W R.METAL 22K 1% 1/6W R.METAL 27K 1% 1/6W R.METAL 30K 1% 1/6W R.METAL 36K 1% 1/6W
R123 R4H1 R125 R856 R122 R5L5 R865	404C1711 404C1712 404C1715 404C1719 404C1724	R.METAL 39K 1% 1/6W R.METAL 43K 1% 1/6W R.METAL 56K 1% 1/6W R.METAL 82K 1% 1/6W R.METAL 130K 1% 1/6W
R530 R5L4 R7L4 R7L4 R798	404C1725 404C1742 404J443 404J443 404K8716	R.METAL 150K 1% 1/6W R.METAL 750K 1% 1/6W R.METAL 1.3K 0.5% 1/8W R.METAL 1.3K 0.5% 1/8W R.METAL 62K 1% 1/4W
R469 R492 R798 R469 R492 ΔR575 ΔR531	404K8719 404K2716 404K2719 404K5133 40801004	R.METAL 82K 1% 1/4W R.METAL 62K 5% 1/4W R.METAL 82K 1% 1/4W R.METAL 22H 5% 1/4W R.FUSE 1.0H 500MA

*** CAPACITORS ***

C901 C5K5 C764 C902 ΔC545 C5U2	C766 C768 C766 C768 C766 C768 C766 C768 C523	420C9551 420C9555 420C9563 420C9565 420C9569	C.CERAMIC 500V 100PF C.CERAMIC 500V 220PF C.CERAMIC 500V 1000PF C.CERAMIC 500V 1500PF C.CERAMIC 50V 3300PF
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SYMBOL	PART NO	DESCRIPTION
R5L8 R547 R552 R556	401K5733	R.CARBON 330K 5% 1/6W
ΔR149 R584 R7E5 R491 R539	401K5737 401K5739 401K5743 401K5745 40216250	R.CARBON 470K 5% 1/6W R.CARBON 560K 5% 1/6W R.CARBON 820K 5% 1/6W R.CARBON 3.3K 5% 1/4W R.WIRE 2.0H 5% 7W
R408 R409 R411 ΔR571 R538 R585	403F1101 403F1165 403F2105 403F2109 403F2125	R.METAL OXIDE 1H 5% 1W R.METAL 470H 5% 1W R.METAL OXIDE 1.5H 5% 2W R.METAL 2.2H 5% 2W R.METAL 10H 5% 2W
R7G3 R7H2 R532 R481 R789	403F2149 403F2151 403F3141 403G1703 404CA657	R.METAL OXIDE 100H 5% 2W R.METAL OXIDE 120H 5% 2W R.METAL OXIDE 47H 5% 3W R.METAL 18K 5% 1W R.METAL 220H 1% 1/6W
R143 R145 R121 R799 R745 R513	404CA670 404CA680 404CA690 404CA698 404CA712	R.METAL 750H 1% 1/6W R.METAL 2.0K 1% 1/6W R.METAL 5.1K 1% 1/6W R.METAL 11K 1% 1/6W R.METAL 43K 1% 1/6W
R701 R702 R703 R789 R791 R868 R143 R145	404C1646 404C1657 404C1663 404C1669 404C1670	R.METAL 75H 1% 1/6W R.METAL 220H 1% 1/6W R.METAL 390H 1% 1/6W R.METAL 680H 1% 1/6W R.METAL 750H 1% 1/6W
R506 R867 R871 R121 R862 R505 R753	404C1673 404C1680 404C1681 404C1683 404C1684	R.METAL 1.0K 1% 1/6W R.METAL 2.0K 1% 1/6W R.METAL 2.2K 1% 1/6W R.METAL 2.7K 1% 1/6W R.METAL 3.0K 1% 1/6W
R126 R855 R861 R869 ΔR2005 ΔR2002 ΔR2003 R799	404C1685 404C1687 404C1688 404C1689 404C1690	R.METAL 3.3K 1% 1/6W R.METAL 3.9K 1% 1/6W R.METAL 4.3K 1% 1/6W R.METAL 4.7K 1% 1/6W R.METAL 5.1K 1% 1/6W
R493 R5L1 R504	404C1691	R.METAL 5.6K 1% 1/6W

SYMBOL		PART NO	DESCRIPTION
C903		420DK108	C.CERAMIC 2KV 10000PF
ΔC6A2	C6A3	420EC067	C.CERAMIC 400V 2200PF
C4H1	C427	421A0425	C.CERAMIC 50V 0.01UF
C555	C7B1		
C707	C708		
C732	C772		
C7P5	C7P6	421C0201	C.CERAMIC 50V 100PF
C887	C888		
C7A7	C7A8	421C0207	C.CERAMIC 50V 330PF
C7C1	C7A9		
C429		421C0209	C.CERAMIC 50V 470PF
C5K3		421C0210	C.CERAMIC 50V 560PF
C505	C533	421C0213	C.CERAMIC 50V 1000PF
C737	C740		
C7C2		421C0221	C.CERAMIC 50V 4700PF
C782	C783	421C0225	C.CERAMIC 50V 0.01UF
	C784		
C121	C4H3	421C2862	C.CERAMIC 25V 0.01UF
C4L5	C4M6		
C405	C421		
C461	C463		
C473	C475		
C5H1	C5H3		
C511	C513		
C517	C519		
C752	C801		
C804	C807		
C811	C831		
C833	C834		
C836	C837		
C851	C852		
C854	C855		
C857	C858		
C862	C863		
C867	C868		
C872	C881		
C123	C408	421C3479	C.CERAMIC 50V 0.1UF
C7G6	C7H9		
C748			
C4H6	C501	421D6009	C.CERAMIC 25V 0.1UF
C583	C7A5		
C7E8	C7G1		
C7H5	C7H6		
	C7H7		

SYMBOL	PART NO	DESCRIPTION
C7K3 C7K5 C7K6 C7K7 C7K8 C7K9 C710 C723 C726 C729 C769 C770 C771 C757	421D6009	C.CERAMIC 25V 0.1UF
C510 C7M4 C7M5 C514 C7G9 C7M1	421J9044	C.CERAMIC 250V 0.01UF
C805 C806 C754 C755 C756 C7N4 C7A3 C503	423A1029 423A1037 423A1045 423A1053 423A1101	C.CERAMIC 50V 22PF C.CERAMIC 50V 47PF C.CERAMIC 50V 100PF C.CERAMIC 50V 220PF C.CERAMIC 50V 470PF
C7N1 C7N2 C7N3 C411 C7L1 C5K4	423A2015 423A2043 423A2045 423A2104 423J9022	C.CERAMIC 50V 10PF C.CERAMIC 50V 82PF C.CERAMIC 50V 100PF C.CERAMIC 50V 220PF C.CERAMIC 50V 470PF
C412 C749 C750 C751 C7G8 C424 C407 C512 C462 AC562 C573	4231B035 4231B037 427E4163 427F4615 427F4622	C.CERAMIC 50V 39PF C.CERAMIC 50V 47PF C.FILM 100V 0.01UF C.FILM 50V 0.015UF C.FILM 50V 0.056UF
C443 AC547 AC553 AC552 AC551	427F4663	C.FILM 50V 0.01UF
AC549 AC548 AC6A1 C759 C760 C761 AC541 AC542	428B3013 428B3020 428B3021 428CJ022	C.METAL FILM 50V 0.1UF C.METAL FILM 50V 0.39UF C.METAL FILM 50V 0.47UF C.METAL FILM 250V 0.1UF
AC543 C477 C812 C814	428DD417 42816015 42816061 42816063 42816067	C.METAL FILM 250V 0.22UF C.FILM 100V 2.4UF C.METAL 400V 0.1UF C.METAL 400V 0.15UF C.METAL 400V 0.33UF
	42816070 42816208 42824854 42844417 42899146	C.METAL 400V 0.56UF C.METAL 400V 0.33UF C.FILM 250V 0.033UF C.METAL FILM 250V 0.22UF C.METAL 2KV 2500PF 3%
	42899148 430B6015 430B6016	C.METAL 2KV 8600PF 3% C.ELEC 10V 47UF C.ELEC 10V 100UF

SYMBOL	PART NO	DESCRIPTION
C762 C763 C765 C767 C491 C5U1 C572	430B9512	C.ELEC 150V 1.0UF
C522 C403 C758 C575 C4K1 C702 C703 C704	430B9516 430B9552 430CH358 430C6344 430C6346 430C8917 4309J171 433A4013	C.ELEC 160V 10UF C.ELEC 250V 1.0UF C.ELEC 250V 47UF C.ELEC 35V 100UF C.ELEC 35V 330UF C.ELEC 100V 47UF C.ELEC 200V 33UF C.ELEC 10V 47UF
C7A1 C7A2 C478 C479 C4H7 C423 C7C4 C7C7	433A4023 433A4033 433A4055 433A4056 433A4058	C.ELEC 16V 22UF C.ELEC 25V 10UF C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF C.ELEC 50V 4.7UF
C715 C718 C721 C7E4 C5E8 AC564	433A7003 433A7031 433J9031 435A8155	C.ELEC 10V 100UF C.ELEC 35V 4.7UF C.ELEC 35V 4.7UF C.TANTALUM 16V 10UF

SYMBOL	PART NO	DESCRIPTION
C815 C803 C882 C409 C509 C861 AC2001 C4H2 C4H5 C471 C474 C451 C406	430B6017 430B6019	C.ELEC 10V 220UF C.ELEC 10V 470UF
C531 C504 C4M2 C4M3 C4M4 C430 C813 C871	430B6029 430B6030 430B6041 430B6043 430B6044	C.ELEC 15V 100UF C.ELEC 16V 220UF C.ELEC 25V 47UF C.ELEC 25V 220UF C.ELEC 25V 330UF
C563 C452 AC571 C581 C582 C753 C426	430B6061 430B6062 430B6064 430B6065 430B6222	C.ELEC 50V 1.0UF C.ELEC 50V 2.2UF C.ELEC 50V 4.7UF C.ELEC 50V 10UF C.ELEC 50V 0.22UF
C7N5 C7N6 C701 C422 C502 C765 C7H3 C7K1 C724 C727 C730 C733 C487 C711 C747 C486 C515 C404	430B6516 430B6553 430B9015 430B9017 430B9027	C.ELEC 160V 10UF C.ELEC 250V 2.2UF C.ELEC 10V 47UF C.ELEC 10V 220UF C.ELEC 16V 33UF
AC141 C532 C7A6 C7C6 C7G7 C7H2 C743 C401 C425 C744 C745 C746 C735 C738 C741 C7C3 C7C5 C7C9 C7E5 C507 AC551 C7C8 C7E6 C714 C716 C717 C719 C720 C722 C725 C728 C731 C736 C739 C742	430B9028 430B9029 430B9030 430B9042 430B9043 430B9061 430B9062 430B9063 430B9064 430B9065	C.ELEC 16V 47UF C.ELEC 16V 100UF 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 C.ELEC 50V 4.7UF C.ELEC 50V 10UF
C7E2	430B9068	C.ELEC 50V 47UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1539VMA (N)

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

Replace only with parts Number specified.

SYMBOL	PART NO	DESCRIPTION
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*** CRT ***

Δ CRT	33015577	CRT M36LDN100XX43 (U3)
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*** ICS ***

IC804	37005023	IC PQ05RR11
IC481	37005104	IC LM2940CT-12 (REG)
IC502	37005221	IC UPC78M09AHF
IC401	37006017	IC TDA8172
IC471	37009009	IC UPC1882CU
IC501	37009032	IC UPC1881CT
IC703	37010006	IC M52320SP
IC782	37010007	IC M52324P
IC402	37011068	IC UPC4558C (OP-AMP)
IC461	37011206	IC XRA10358 (OP-AMP)
IC581	37011307	IC LA6501MA (OP-AMP)
IC7C1	37051034	MOS UPD4040BC (COUNT)
IC121	37051378	MOS UPD4053BC (MPX)
IC803	37055537	MOS NM24C04EN
IC7A5	37055812	IC M62362P
IC701	37056814	IC M52035P
IC7A1	37056867	IC M52036SP
IC122	37056917	IC XRA10324A (Q OP-AMP)
IC857	37076172	IC VP503N
IC704	37076176	MOS M62393P
IC7B1	37076177	MOS M35020SP
IC853	37076182	MOS M35042-064SP
IC7A8	37076191	MOS TMP87CK42N-4147
IC7A7	37076195	MOS UPD78014YCW-Y15
IC881		
IC801		

*** TRANSISTORS ***

Δ Q2002	35007216	TR 2SC945-T P
Q421	350E3217	TR 2SC1740S-T Q
Q145	350E3218	TR 2SC1740S-T R
Q4K1		
Q573	350H4417	TR 2SC1473-TA Q
Q452	350H4418	TR 2SC1473-TA R
Q714		
Q791		

SYMBOL	PART NO	DESCRIPTION
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Q7C4	350H5017	TR 2SC3811-TA Q
Q7A2	350J3016	TR 2SC2926S-T P
Q703		
Q707	350J4604	TR 2SC3776-AA D
Q461	350K4111	TR 2SA916-T K
Δ Q571	350K5217	TR 2SA1018-TA Q
Q712		
Q491	350K5218	TR 2SA1018-TA R
Q141	350K5718	TR 2SA933S-T R
Q451		
Q574		
Q57A		
Q7A5		
Q861		
Q521	35031112	TR 2SB1096 L
Q5E4	35069806	TR 2SD1763 F
Q4E5	35072612	TR 2SD2396 J
Δ Q541	35095100	TR 2SC4924 (NHE)
Q7A4	351A0690	TR DTC115ES-TP
Q4E1	351G0500	TR AN1A4M
Δ Q2003	351G0561	TR DTA144ES-T
Q545	351G0601	TR DTC114ES-T
Q7C5		
Q501	351G0602	TR DTC144ES-T
Q546		
Q7A9		
Q143	351G0641	TR DTC114YS-T
Q7A3	351G0652	TR DTC1132S-T
Q401	351G0655	TR DTC143ES-TP
Q524	35122600	TR 2SK701
Q572	35127470	TR 2SJ306
Q542	35127620	TR 2SK1288

*** DIODES ***

ZD541	360KC671	DIODE RD12ESB(2)/ESAB(2)
D402	360K1027	DIODE 1SS132
D5E1		
D572		
DTA3		
D7E1		

SYMBOL	PART NO	DESCRIPTION
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D7E4	360K1027	DIODE 1SS132
D7E7		
D703		
D709		
D452	360K1032	DIODE 1SS82-TA
D718		
D721		
D724		
ZD7A1		
ZD491	360K3098	DIODE RD12EB(3)-T4
ZD545		
ZD402	360K3170	DIODE RD6.2JSB(2)/JSAB(2)
ZD546	360K3602	DIODE RD2.0ESB(1)-T4
ZD549	360K3635	DIODE RD5.1ESB(2)-T4
ZD713	360K3639	DIODE RD5.6ESB(2)-T4
ZD802		
ZD503	360K3648	DIODE RD6.8ESB(3)/ESAB(3)
Δ ZD2001	360K3652	DIODE RD7.5ESB(3)-T4
ZD701	360K3654	DIODE RD8.2ES AB1-T4
ZD541	360K3671	DIODE RD12ESB(2)/ESAB(2)
Δ ZD2003	360K3675	DIODE RD13ESB(2)-T4
ZD401	360K3692	DIODE RD20ESB(3)-T4
Δ D561	361K7562	DIODE EGP10G G23
D521	36107293	DIODE RK14
Δ D542	36107560	DIODE RG2A2
D573	36107620	DIODE RG4 LF-J3
Δ D541	36107718	DIODE FMP-3FJ(LF027-103)
LED141	36801372	LED SML19416W-LF38(D1.D3)
D401	369K2136	DIODE RGP10G.AT
D502		
Δ D544	380K5054	VARISTOR MA29W-A (TP)
D7A2	38200209	PHOTO COUPLER PS2501-3
IC541		

*** TRANSFORMERS ***

T521	45804012	TRANS.H.DRIVE
L581	46204004	COIL,CHOKE 4MH
L571	46206005	TRANS.CHOKE 4MH
Δ T561	47105690	F.B.T

SYMBOL	PART NO	DESCRIPTION
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*** VARIABLE RESISTORS ***

VR851	410G2067	R.VARIABLE 81.0M
VR121	410I1116	R.VARIABLE 610K
Δ VR561	415K5162	R.VARIABLE 100K
VR501	41505105	R.VARIABLE B2.0K

*** RELAYS & SWITCHES ***

SW109	65161074	SWITCH SLID AUA00120457
Δ SW601	65360043	SWITCH.PUSH BUTTON
SW101	65360046	TACT SWITCH KSM0632A
SW105		
SW103	65360047	TACT SWITCH KSM0642A
RL541	65660033	RELAY VE-12H5-K

*** COILS & FILTERS ***

MR802	390C0445	R.NETWORK 4*10K 5% 1/8W
LC7A5	390J9027	FILTER ZJSC-R12-100TA
LC7A8		
LC703		
MC802	39013047	C.NETWORK 50V 10000PF
Δ LS41	60906057	COIL.WIDTH (104UH)
Δ LS42	60919129	COIL.H.LIN
L7A1	610E1711	COIL.FILTER 3.3UH
L701	610E1725	COIL.FILTER 47UH
L702	610E1726	COIL.FILTER 56UH
L705	610E1727	COIL.FILTER 68UH
L706	610E4001	COIL.FILTER 10UH
L801	610FE828	COIL.FILTER 47UH
L421	610FE829	COIL.FILTER 56UH
L572	610F3025	COIL.FILTER 47UH
L801	610F5828	COIL.FILTER 47UH
L421	610F5829	COIL.FILTER 56UH
L707	610F7518	COIL.FILTER 12UH
L7A3	610F8009	COIL.FILTER 2.2UH
L901	610F8036	COIL.FILTER 0.39UH
Δ FL6A1	61062205	LINE FILTER (LF-4D-E102)
X881	611A1822	CERAMIC OSC
DG	61315104	COIL,DEGAUSSING
LC707	616K6027	NOISE FILTER 2A222-TA
LC901	616K6028	NOISE FILTER 1H223X-TA

SYMBOL			PART NO	DESCRIPTION
R7B1	R7E8	R7G1	401K5697	R.CARBON 10K 5% 1/6W
R7H3	R7K1	R7K2		
R7K3	R7K4	R7K5		
R7K6	R7K7	R7K8		
R7K9	R7L1	R7L2		
R7L3	R7L5	R7M1		
R7O5	R7O7	R7O9		
R730	R732	R734		
R741	R742	R743		
R746	R802	R810		
R820	R830	R831		
R832	R833	R834		
R835	R836	R837		
R838	R860	R878		
R7G8	R870		401K5699	R.CARBON 12K 5% 1/6W
ΔR2004	R424	R5U8	401K5701	R.CARBON 15K 5% 1/6W
R7E5	R7M9			
R147	R7A2	R7C1	401K5705	R.CARBON 22K 5% 1/6W
R704	R706	R708		
R5L2	R7A5	R7C4	401K5707	R.CARBON 27K 5% 1/6W
R775	R780	R785		
R894				
R416	R461	R464	401K5709	R.CARBON 33K 5% 1/6W
R5M3	R516	R776		
R781	R786			
R7A4	R7C3	R874	401K5711	R.CARBON 39K 5% 1/6W
R806	R881		401K5713	R.CARBON 47K 5% 1/6W
R5M9			401K5715	R.CARBON 56K 5% 1/6W
ΔR2007	R462		401K5719	R.CARBON 82K 5% 1/6W
R454	R5U7	R7H6	401K5721	R.CARBON 100K 5% 1/6W
R792	R793	R794		
R465	R774	R779	401K5723	R.CARBON 120K 5% 1/6W
R784				
R545	R549	R554	401K5725	R.CARBON 150K 5% 1/6W
R773	R778	R783	401K5729	R.CARBON 220K 5% 1/6W
R582			401K5731	R.CARBON 270K 5% 1/6W
R5L8	R547	R552	401K5733	R.CARBON 330K 5% 1/6W
R556				
ΔR149			401K5737	R.CARBON 470K 5% 1/6W
R584			401K5739	R.CARBON 560K 5% 1/6W

SYMBOL		PART NO	DESCRIPTION
R866		404C1699	R.METAL 12K 1% 1/6W
R422	R744	404C1700	R.METAL 13K 1% 1/6W
R406	R423	404C1701	R.METAL 15K 1% 1/6W
R528		404C1702	R.METAL 16K 1% 1/6W
R864		404C1703	R.METAL 18K 1% 1/6W
R123		404C1704	R.METAL 20K 1% 1/6W
R125	R856	404C1707	R.METAL 27K 1% 1/6W
R122		404C1708	R.METAL 30K 1% 1/6W
R5L5	R865	404C1710	R.METAL 35K 1% 1/6W
R854	R859	404C1711	R.METAL 39K 1% 1/6W
R513		404C1712	R.METAL 43K 1% 1/6W
ΔR567		404C1715	R.METAL 56K 1% 1/6W
R528		404C1719	R.METAL 82K 1% 1/6W
R525	ΔR565	404C1724	R.METAL 130K 1% 1/6W
R530		404C1725	R.METAL 150K 1% 1/6W
R5L4		404C1742	R.METAL 750K 1% 1/6W
RTL4		404JJ443	R.METAL 1.3K 0.5% 1/8W
RTL4		404J9443	R.METAL 1.3K 0.5% 1/8W
R798		404KB716	R.METAL 62K 1% 1/4W
R469	R492	404KB719	R.METAL 82K 1% 1/4W
R798		404K2716	R.METAL 62K 5% 1/4W
R469	R492	404K2719	R.METAL 82K 1% 1/4W
ΔR575		404K5133	R.METAL 22H 5% 1/4W
ΔR531		40801004	R.FUSE 1.0H 500MA

*** CAPACITORS ***

C901			420C9551	C.CERAMIC	500V	100PF
C5K5			420C9555	C.CERAMIC	500V	220PF
C764	C766	C768	420C9563	C.CERAMIC	500V	1000PF
C902						
ΔC545	ΔC546		420C9565	C.CERAMIC	500V	1500PF
C5U2	C523		420C9569	C.CERAMIC	50V	3300PF
C903			420DK108	C.CERAMIC	2KV	10000PF
ΔC6A2	C6A3		420EC013	C.CERAMIC	400V	100PF
C427	C518	C555	421A0425	C.CERAMIC	50V	0.01UF
	C18	C303				

SYMBOL	PART NO	DESCRIPTION
C754 C755 C756	423A2043	C.CERAMIC 50V 82PF
C7N4	423A2045	C.CERAMIC 50V 100PF
C7A3	423A2104	C.CERAMIC 50V 220PF
C503	423J9022	C.CERAMIC 50V 470PF
C7N1 C7N2	4231B035	C.CERAMIC 50V 39PF
C7N3	4231B037	C.CERAMIC 50V 47PF
C411	427E4163	C.FILM 100V 0.01UF
C7L1	427F4615	C.FILM 50V 0.015UF
C5K4	427F4622	C.FILM 50V 0.055UF
C412 C749 C750	427F4663	C.FILM 50V 0.01UF
C751	428B3013	C.METAL FILM 50V 0.1UF
C768	428B3020	C.METAL FILM 50V 0.39UF
C424	428B3021	C.METAL FILM 50V 0.47UF
C407 C512	428CJ022	C.METAL FILM 250V 0.1UF
C462 AC562 C573	428DD417	C.METAL FILM 250V 0.22UF
C443	42816015	C.FILM 100V 2.4UF
AC547	42816061	C.METAL 400V 0.1UF
AC553	42816063	C.METAL 400V 0.15UF
AC552	42816067	C.METAL 400V 0.33UF
AC551	42816070	C.METAL 400V 0.56UF
AC549	42816208	C.METAL 400V 0.33UF
AC548	42824854	C.FILM 250V 0.033UF
AC6A1	42844417	C.METAL FILM 250V 0.22UF
C759 C760 C761	42899146	C.METAL 2KV 2500PF 3%
AC541 AC542	42899148	C.METAL 2KV 8600PF 3%
AC543	430B6015	C.ELEC 10V 47UF
C477	430B6016	C.ELEC 10V 100UF
C812 C814	430B6017	C.ELEC 10V 220UF
C815	430B6019	C.ELEC 10V 470UF
C803 C882	430B6029	C.ELEC 16V 100UF
C409 C509 C861	430B6030	C.ELEC 16V 220UF
AC2001	430B6041	C.ELEC 25V 47UF
C471 C474	430B6043	C.ELEC 25V 220UF
C451	430B6044	C.ELEC 25V 330UF
C406	430B6051	C.ELEC 50V 1.0UF
C531	430B6062	C.ELEC 50V 2.2UF
C504	430B6064	C.ELEC 50V 4.7UF
C4M2 C4M3 C4M4	430B6065	C.ELEC 50V 10UF
C430 C813		

SYMBOL	PART NO	DESCRIPTION
C423	433A4055	C.ELEC 50V 1.0UF
C7C4	433A4056	C.ELEC 50V 2.2UF
C7C7	433A4058	C.ELEC 50V 4.7UF
C715 C718 C721	433A7003	C.ELEC 10V 100UF
C7E4	433A7031	C.ELEC 35V 4.7UF
C5E8	433J9031	C.ELEC 35V 4.7UF
AC564	435A8155	C.TANTALUM 16V 10UF

SYMBOL	PART NO	DESCRIPTION
C871	430B6222	C.ELEC 50V 0.22UF
C563	430B6516	C.ELEC 160V 10UF
C452	430B6553	C.ELEC 250V 2.2UF
AC571	430B9015	C.ELEC 10V 47UF
C581 C582 C753	430B9017	C.ELEC 10V 220UF
C426	430B9027	C.ELEC 16V 33UF
C7N5 C7N6 C701	430B9028	C.ELEC 16V 47UF
C422 C502 C765	430B9029	C.ELEC 16V 100UF
C7H3 C7K1 C724		
C727 C730 C733		
C487 C711 C747	430B9030	C.ELEC 16V 220UF
C486 C515	430B9042	C.ELEC 25V 100UF
C404	430B9043	C.ELEC 25V 220UF
AC141 C532 C7A6	430B9061	C.ELEC 50V 1.0UF
C7C6 C767 C7H2		
C743		
C401 C425 C744	430B9062	C.ELEC 50V 2.2UF
C745 C746		
C735 C738 C741	430B9063	C.ELEC 50V 3.3UF
C7C3 C7C5 C7C9	430B9064	C.ELEC 50V 4.7UF
C7E5		
C507 AC561 C7C8	430B9065	C.ELEC 50V 10UF
C7E6 C714 C716		
C717 C719 C720		
C722 C725 C728		
C731 C736 C739		
C742		
C7E2	430B9068	C.ELEC 50V 47UF
C762 C763 C765	430B9512	C.ELEC 160V 1.0UF
C767		
C491	430B9516	C.ELEC 160V 10UF
C5U1	430B9552	C.ELEC 250V 1.0UF
C572	430C4358	C.ELEC 250V 47UF
C522	430C6344	C.ELEC 35V 100UF
C403	430C6346	C.ELEC 35V 330UF
C758	430C8917	C.ELEC 100V 47UF
C575	4309J171	C.ELEC 200V 33UF
C4K1 C702 C703	433A4013	C.ELEC 10V 47UF
C704		
C7A1 C7A2	433A4023	C.ELEC 16V 22UF
C478 C479	433A4033	C.ELEC 25V 10UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1539VMB (H)

Note: The components identified by Δ make are critical for safety.
Replace only with parts Number specified.

SYMBOL	PART NO	DESCRIPTION
*** CRT & TUNER ***		
Δ CRT	33015580	CRT M36KML270X05
*** ICS ***		
IC804 IC481 IC502 IC401 IC471	37005023 37005104 37005221 37006017 37009009	IC PQ05RR11 IC LM2940CT-12 (REG) IC UPC78M09AHF IC TDA8172 IC UPC1882CU
IC501 IC703 IC782 IC402 IC461	37009032 37010006 37010007 37011068 37011206	IC UPC1881CT IC M52320SP IC M52324P IC UPC4558C (OP AMP) IC XRA10358 (OP-AMP)
IC581 IC7C1 IC121 IC803 IC7A5 IC7A9	37011307 37051034 37051378 37055537 37056812	IC LA6501MA (OP AMP) MOS UPD4040BC (COUNT) MOS UPD4053BC (MPX) MOS NM24C04EN IC M62362P
IC701 IC7A1 IC122 IC5E2 IC7A4 IC857 IC858 IC704 IC7B1 IC851 IC852 IC853 IC855	37056814 37056867 37056917 37076172 37076176	IC M52035P IC M52036SP IC XRA10324A (Q OP-AMP) IC VP503N MOS M62393P
IC7A8 IC7A7 IC881 IC801	37076177 37076182 37076191 37076195	MOS M35020SP MOS M35042-064SP MOS TMP87CK42N-4147 MOS UPD78014YCW-Y15
*** TRANSISTORS ***		
Δ Q2002 Q421 Q7A7 Q7A8 Q145 Δ Q2004 Δ Q2005 Q4K1 Q402 Q522 Q573 Q7C1 Q452 Q583 Q713 Q714 Q715 Q791	35007216 350E3217 350E3218 350H4417 350H4418	TR 2SC945-T P TR 2SC1740S-T Q TR 2SC1740S-T R TR 2SC1473-TA Q TR 2SC1473-TA R

SYMBOL	PART NO	DESCRIPTION
Q7C4 Q7A2 Q701 Q702 Q703 Q707 Q708 Q709 Q461 Δ Q571 Q710 Q711 Q712 Q491 Q141 Q142 Δ Q2001 Q451 Q5E3 Q523 Q574 Q584 Q7A1 Q7A5 Q7A6 Q7C2 Q861 Q5E4 Q4E5 Δ Q541 Q7A4 Q4E1 Δ Q2003 Q545 Q7B1 Q7C3 Q7C5 Q7C6 Q801 Q501 Q502 Q503 Q546 Q547 Q548 Q7A9 Q143 Q144 Q4E2 Q7A3 Q401 Q524 Q572 Q542 Q543 Q544	350H5017 350J3016 350J4604 350K4111 350K5217 350K5218 350K5718 35031112 35069806 35072612 35095100 351A0690 351G0500 351G0561 351G0602 351G0641 351G0652 351G0655 35122600 35127470 35127630	TR 2SC3811-TA Q TR 2SC2926S-T P TR 2SC3776-AA D TR 2SA916-T K TR 2SA1018-TA Q TR 2SA1018-TA R TR 2SA933S-T R TR 2SB1096 L TR 2SD1763 F TR 2SD2396 J TR 2SC4924 (NHE) TR DTC115ES-TP TR AN1A4M TR DTA144ES-T TR DTC114ES-T TR DTC114ES-T TR DTC114YS-T TR DTC1132S-T TR DTC143ES-TP TR 2SK701 TR 2SJ306 TR 2SK1904
*** DIODES ***		
ZD541 Δ D2001 Δ D2003 D402 D404 D451 D5E1 D543 D571 D572 D581 D7A1 D7A3 D7A4 D7A5 D7E1 D7E2 D7E3	360KC671 360K1027	DIODE RD12ESB(2)/ESAB(2) DIODE 1SS132

SYMBOL	PART NO	DESCRIPTION
D7E4 D7E5 D7E6 D7E7 D701 D702 D703 D704 D706 D709 D710 D861 D452 D453 D461 D718 D719 D720 D721 D722 D723 D724 D725 D726 ZD7A1	360K1027 360K1032 360K3098 360K3170 360K3602 360K3635 360K3639 360K3648 360K3652 360K3654 360K3671 360K3675 360K3692 361K7562 36107293 36107560 36107620 36107718 36801372 369K2136 380K5054 38200209	DIODE 1SS132 DIODE 1SS82-TA DIODE RD12EB(3)-T4 DIODE RD6.2JSB(2)/JSAB(2) DIODE RD2.0ESB(1)-T4 DIODE RD5.1ESB(2)-T4 DIODE RD5.6ESB(2)-T4 DIODE RD6.8ESB(3)/ESAB(3) DIODE RD7.5ESB(3)-T4 DIODE RD8.2ES AB1-T4 DIODE RD12ESB(2)/ESAB(2) DIODE RD13ESB(2)-T4 DIODE RD20ESB(3)-T4 DIODE EGP10G G23 DIODE RK14 DIODE RG2A2 DIODE RG4 LF-J3 DIODE FMP-3FU(LF027-103) LED SML19416W-LF38(D1,D3) DIODE RGP10G,AT VARISTOR MA29W-A (TP) PHOTO COUPLER PS2501-3
*** TRANSFORMERS ***		
T521 L581 L571 Δ T561	45804012 46204004 46206005 47105689	TRANS.H.DRIVE COIL,CHOKE 4MH TRANS,CHOKE 4MH F.B.T

SYMBOL	PART NO	DESCRIPTION
*** VARIABLE RESISTORS ***		
VR851 VR121 VR122 Δ VR561 VR501	410G2067 41011116 415K5162 41505105	R.VARIABLE B1.0M R.VARIABLE B10K R.VARIABLE 100K R.VARIABLE B2.0K
*** RELAYS & SWITCHES ***		
SW109 Δ SW601 SW101 SW102 SW104 SW105 SW106 SW107 SW103 RL541	65161074 65360043 65360046 65360047 65360033 65660033	SWITCH SL1LD AUA00120457 SWITCH,PUSH BUTTON TACT SWITCH KSM0632A TACT SWITCH KSM0642A RELAY VE-12H5-K
*** COILS & FILTERS ***		
MR802 LC7A5 LC7A6 LC7A7 LC7A8 LC701 LC702 LC703 MC802 MC803 Δ L541 Δ L542 Δ L543 L7A1 L7A2 L701 L702 L703 L704 L705 L706 L801 L421 L572 L801 L421 L707 L7A3 L901 Δ L16A1 X881 DG LC707 LC901	390C0445 390J9027 39013047 60906057 60919129 610E1711 610E1725 610E1726 610E1727 610E4001 610F828 610F829 610F3025 610F5828 610F5829 610F7518 610F8009 610F8036 610E2204 611A1822 61315206 616K6027 616K6028	R.NETWORK 4*10K 5X 1/8W FILTER ZJSC-R12-100TA C.NETWORK 50V 10000PF COIL.WIDTH (104UH) COIL.H.LIN COIL.FILTER 3.3UH COIL.FILTER 47UH COIL.FILTER 56UH COIL.FILTER 68UH COIL.FILTER 10UH COIL.FILTER 47UH COIL.FILTER 56UH COIL.FILTER 47UH COIL.FILTER 47UH COIL.FILTER 56UH COIL.FILTER 12UH COIL.FILTER 2.2UH COIL.FILTER 0.39UH LINE FILTER (HR-24-E392) CERAMIC OSC COIL,DEGAUSSING NOISE FILTER 2A222-TA NOISE FILTER 1H223X-TA

SYMBOL	PART NO	DESCRIPTION
LC7A1 LC7A2 LC706	616K6801 616K6946	NOISE FILTER 2R2-101-T NOISE FILTER TH28123MA
LC708 L544 L573	616K6966 61605122 61605135	NOISE FILTER FERRITE BEADS FERRITE CORE

*** PWB ASSYS ***

	84P77C02 84Q08FC3	VIDEO PWB ASSY MAIN PWB ASSY
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*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

SW-PS SG901 SG902 SG903 SG904 X801 SG905	31104081 329J0047 54098039 657K6007 70032056	SW. REG. UNIT (OPS-112AB-1) ARRESTER (300V).AT52 X-TAL (10.000MHZ) SPARK GAP 1.5KV CRT SOCKET
CN-AC CORD CABLE VR561 UNIT	70521064 70800056 73893205 74004891 79100512 79695101	AC RECEPTACLE LINE CORD E-3 #8011 SIGNAL CABLE MD15P-XH12P CAP EW UNIT (CN401) PC DISK1(XE)

*** APPEARANCE PARTS ***

	25317951 25318621 25426362 25426372 25426391	CABINET BACK CABINET FRONT ASSY REVOLVING STAND(T) REVOLVING STAND(B) ASSY SPINDLE
	25427162 25534631 25545031 25616311 25757643	ESCUTCHEON(V) COIL SPRING CHASSIS BASE CUSSION SHEET LABEL(REV.)
	25775932	LABEL,WARNING (PTB)

SYMBOL	PART NO	DESCRIPTION
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*** KNOBS & PUSH BUTTONS ***

	25456171 25456441	KNOB CONTROL KNOB,SLIDE
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*** PRINTED & PACKING MATERIALS ***

	24807081 24813191 25825501 25829821 25829831 25831112 78034409 78129191	BAG,POLYETHYLENE BAG,POLYETHYLENE (150*370) SHEET,PROTECTION FILLER(T) CARTON FILLER(B) CARTON CARTON BOX(CN401B) MONITOR SALES OFFICE LIST USER'S MANUAL (XE-SERIES)B
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*** RESISTORS ***

R537 R456 R537 R576 R762	401CF649 401CF749 401C6649 401C6657 401C6663	R. CARBON 100H 5% 1/4W R. CARBON 1.5M 5% 1/4W R. CARBON 100H 5% 1/4W R. CARBON 220H 5% 1/4W R. CARBON 390H 5% 1/4W
R512 R909 R456 ΔR561 ΔR562 ΔR508	401C6685 401C6689 401C6749 401G6109 401G6117	R. CARBON 3.3K 5% 1/4W R. CARBON 4.7K 5% 1/4W R. CARBON 1.5M 5% 1/4W R. CARBON 2.2H 5% 1/4W R. CARBON 4.7H 5% 1/4W
R904 R905 R906 ΔR542 R908 ΔR543 R458 R5M6	401H5637 401H5649 401H5655 401H5663 401H5695	R. CARBON 33H 5% 1/2W R. CARBON 100H 5% 1/2W R. CARBON 180H 5% 1/2W R. CARBON 390H 5% 1/2W R. CARBON 8.2K 5% 1/2W
ΔR573 R6A1 J10 R1 R10 R11 R12 R13 R14 R18 R19 R2 R20 ΔR2008 R21 R22 R23 R25 R27 R28 R29 R3 R30 R31 R32 R34 R35 R36 R4	401H5725 401H5745 401J9820	R. CARBON 150K 5% 1/2W R. CARBON 1.0M 5% 1/2W R. CARBON 0.0H

SYMBOL	PART NO	DESCRIPTION
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R5 R6 R7G7 R7P1 R7P5 R886 R889 R895 R579	R5M2 R7 R7M7 R7P2 R801 R887 R890 R9 R586	R5M8 R7B2 R7N5 R7P3 R885 R888 R892	401J9820	R. CARBON 0.0H
R417 R765 R457 R533 R551 R7L8 R7N9 R733 R819 R842 R845 R848 R872	R763 R907 R534 R555 R7L7 R7N7 R729 R808 R829 R843 R846 R847	R764	401K5609 401K5633 401K5639 401K5649	R. CARBON 2.2H 5% 1/6W R. CARBON 22H 5% 1/6W R. CARBON 39H 5% 1/6W R. CARBON 100H 5% 1/6W
R743 R710 R735 R747 R756	R7N1 R711 R737 R749 R758	R7N3 R712 R739 R752 R760	401K5651 401K5653	R. CARBON 120H 5% 1/6W R. CARBON 150H 5% 1/6W
R141 R755 R727 R7A1 R529 R721 R7M5 R768	R4K3 R757 R879 R7A9 R723 R7M6 R770	R7N2 R759 R719 R766	401K5655 401K5657 401K5659 401K5661 401K5663	R. CARBON 180H 5% 1/6W R. CARBON 220H 5% 1/6W R. CARBON 270H 5% 1/6W R. CARBON 330H 5% 1/6W R. CARBON 390H 5% 1/6W
R748 R7A7 R4E1 R740 R882 R142 R4L5	R750 R7A8 R736 R738 R883 R144 R4M2 R4M3	R751 R7C2 R738	401K5665 401K5667 401K5669 401K5671 401K5673	R. CARBON 470H 5% 1/6W R. CARBON 560H 5% 1/6W R. CARBON 680H 5% 1/6W R. CARBON 820H 5% 1/6W R. CARBON 1.0K 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
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R4M4 R518 R583 R7G6 R7M2 R7N4 R787 R852	R4M5 R519 R581 R7G9 R7H8 R7M3 R777 R8E1 R853	R4M6 R7G4 R7H9 R7M4 R782 R851 R875	401K5673	R. CARBON 1.0K 5% 1/6W
R7C6 R7P8 R8E3 R5M5 R7C5 R4K4 R7M8 R804	R7C8 R8E4 ΔR572 R7A6 R426 R713 R805	R7P7 R767 R769 R771 R7E7	401K5675 401K5677 401K5679 401K5681 401K5683	R. CARBON 1.2K 5% 1/6W R. CARBON 1.5K 5% 1/6W R. CARBON 1.8K 5% 1/6W R. CARBON 2.2K 5% 1/6W R. CARBON 2.7K 5% 1/6W
R415 ΔR564 R767 R403 R858 R455 R548 R7E2 R807 R813 R816 R821 R824 R827 R414 R873	R425 R7C9 R769 R517 R425 R503 R7G5 R771 R7E7	R503 R7G5 R771 R7E7	401K5685 401K5687 401K5689	R. CARBON 3.3K 5% 1/6W R. CARBON 3.9K 5% 1/6W R. CARBON 4.7K 5% 1/6W
R455 R548 R7E2 R807 R813 R816 R821 R824 R827 R414 R873	R5M4 R553 R7E3 R811 R814 R815 R818 R822 R825 R828 R510 R876	R544 R7E1 R803 R812 R815 R818 R823 R826 R839 R7E4	401K5691 401K5693	R. CARBON 5.6K 5% 1/6W R. CARBON 6.8K 5% 1/6W
R101 R130 R133 R136 ΔR2006 R4K1 R452 R5L7 R514 R7B1	R127 R131 R132 R133 R137 R4E2 R428 R453 R5L9 R520 R7E8	R129 R132 R135 R138 R4E2 R451 R5L6 R5M1 R578 R7G1	401K5697	R. CARBON 10K 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
R7H3 R7K1 R7K2 R7K3 R7K4 R7K5 R7K6 R7K7 R7K8 R7K9 R7L1 R7L2 R7L3 R7L5 R7M1 R7O5 R7O7 R7O9 R730 R732 R734 R741 R742 R743 R746 R802 R810 R820 R830 R831 R832 R833 R834 R835 R836 R837 R838 R860 R878 R7G8 R870 ΔR2004 R424 R5U8 R7E6 R7M9 R147 R7A2 R7C1 R704 R706 R708	401K5697	R.CARBON 10K 5% 1/6W
R5L2 R7A5 R7C4 R775 R780 R785 R894 R416 R461 R464 R5M3 R516 R776 R781 R786 R7A4 R7C3 R874 R806 R881 R5M9	401K5699 401K5701 401K5705 401K5707 401K5709 401K5711 401K5713 401K5715	R.CARBON 12K 5% 1/6W R.CARBON 15K 5% 1/6W R.CARBON 22K 5% 1/6W R.CARBON 27K 5% 1/6W R.CARBON 33K 5% 1/6W R.CARBON 39K 5% 1/6W R.CARBON 47K 5% 1/6W R.CARBON 56K 5% 1/6W
ΔR2007 R462 R454 R5U7 R7H6 R792 R793 R794 R465 R774 R779 R545 R549 R554 R773 R778 R783 R582 R547 R552 R5L8 R556 ΔR149 R584 R7E5 R491	401K5719 401K5721 401K5723 401K5725 401K5729 401K5731 401K5733 401K5737 401K5739 401K5743 40175185	R.CARBON 82K 5% 1/6W R.CARBON 100K 5% 1/6W R.CARBON 120K 5% 1/6W R.CARBON 150K 5% 1/6W R.CARBON 220K 5% 1/6W R.CARBON 270K 5% 1/6W R.CARBON 330K 5% 1/6W R.CARBON 470K 5% 1/6W R.CARBON 560K 5% 1/6W R.CARBON 820K 5% 1/6W R.CARBON 3.3K 5% 1/4W

SYMBOL	PART NO	DESCRIPTION
R866 R422 R744	404C1699 404C1700	R.METAL 12K 1% 1/6W R.METAL 13K 1% 1/6W
R405 R423 R5L3 R526 R864 R123 R125 R856	404C1701 404C1702 404C1703 404C1704 404C1707	R.METAL 15K 1% 1/6W R.METAL 16K 1% 1/6W R.METAL 18K 1% 1/6W R.METAL 20K 1% 1/6W R.METAL 27K 1% 1/6W
R122 R5L5 R865 R854 R859 R863 R513 ΔR567	404C1708 404C1710 404C1711 404C1712 404C1715	R.METAL 30K 1% 1/6W R.METAL 36K 1% 1/6W R.METAL 39K 1% 1/6W R.METAL 43K 1% 1/6W R.METAL 56K 1% 1/6W
R528 R525 ΔR565 R530 R5L4 R7L4	404C1719 404C1724 404C1725 404C1742 404JJ443	R.METAL 82K 1% 1/6W R.METAL 130K 1% 1/6W R.METAL 150K 1% 1/6W R.METAL 750K 1% 1/6W R.METAL 1.3K 0.5% 1/8W
R7L4 R798 R469 R492 R798 R492	404J9443 404KB716 404KB719 404K2716 404K2719	R.METAL 1.3K 0.5% 1/8W R.METAL 62K 1% 1/4W R.METAL 82K 1% 1/4W R.METAL 62K 5% 1/4W R.METAL 82K 1% 1/4W
ΔR575 ΔR531	404K5133 40801004	R.METAL 22H 5% 1/4W R.FUSE 1.0H 500MA
*** CAPACITORS ***		
C901 C5K5 C764 C766 C768 C902 ΔC545 ΔC546 C5U2 C523	420C9551 420C9555 420C9563 420C9565 420C9569	C.CERAMIC 500V 100PF C.CERAMIC 500V 220PF C.CERAMIC 500V 1000PF C.CERAMIC 500V 1500PF C.CERAMIC 50V 3300PF
C903 ΔC6A2 C427 C518 C555 C7B1 C7K2 C707 C708 C709 C732 C772 C773 C7A7 C7A8 C7A9	420DK108 420EC067 421A0425 421C0207	C.CERAMIC 2KV 10000PF C.CERAMIC 400V 2200PF C.CERAMIC 50V 0.01UF C.CERAMIC 50V 330PF

SYMBOL	PART NO	DESCRIPTION
R539 R408 R409 R595 R411 ΔR571	40216250 403F1101 403F1165 403F2105	R.WIRE 2.0H 5% 7W R.METAL OXIDE 1H 5% 1W R.METAL 470H 5% 1W R.METAL OXIDE 1.5H 5% 2W
R538 R585 R7G3 R7H2 R532	403F2109 403F2125 403F2149 403F2151 403F3141	R.METAL 2.2H 5% 2W R.METAL 10H 5% 2W R.METAL OXIDE 100H 5% 2W R.METAL OXIDE 120H 5% 2W R.METAL OXIDE 47H 5% 3W
R481 R789 R143 R145 R121 R799	403G1703 404CA657 404CA670 404CA680 404CA690	R.METAL 18K 5% 1W R.METAL 220H 1% 1/6W R.METAL 750H 1% 1/6W R.METAL 2.0K 1% 1/6W R.METAL 5.1K 1% 1/6W
R745 R513 R701 R702 R703 R789 R791	404CA698 404CA712 404C1646 404C1657 404C1663	R.METAL 11K 1% 1/6W R.METAL 43K 1% 1/6W R.METAL 75H 1% 1/6W R.METAL 220H 1% 1/6W R.METAL 390H 1% 1/6W
R868 R143 R145 R506 R867 R871 R121 R862	404C1669 404C1670 404C1673 404C1680 404C1681	R.METAL 680H 1% 1/6W R.METAL 750H 1% 1/6W R.METAL 1.0K 1% 1/6W R.METAL 2.0K 1% 1/6W R.METAL 2.2K 1% 1/6W
ΔR2002 R505 R753 R126 R855 R861 R869 ΔR2005 R8E2	404C1683 404C1684 404C1685 404C1687 404C1688	R.METAL 2.7K 1% 1/6W R.METAL 3.0K 1% 1/6W R.METAL 3.3K 1% 1/6W R.METAL 3.9K 1% 1/6W R.METAL 4.3K 1% 1/6W
ΔR2003 R799 R493 R5L1 R504 R501 R7H7 R467	404C1689 404C1690 404C1691 404C1694 404C1696	R.METAL 4.7K 1% 1/6W R.METAL 5.1K 1% 1/6W R.METAL 5.6K 1% 1/6W R.METAL 7.5K 1% 1/6W R.METAL 9.1K 1% 1/6W
ΔR2001 R401 R402 R404 R405 R507 R527 R857 R745 R124 R407 R502	404C1697 404C1698 404C1699	R.METAL 10K 1% 1/6W R.METAL 11K 1% 1/6W R.METAL 12K 1% 1/6W

SYMBOL			PART NO	DESCRIPTION
C429			421C0209	C.CERAMIC 50V 470PF
C5K3			421C0210	C.CERAMIC 50V 560PF
C505	C533	C734	421C0213	C.CERAMIC 50V 1000PF
C737	C740			
C7C2			421C0221	C.CERAMIC 50V 4700PF
C782	C783	C784	421C0225	C.CERAMIC 50V 0.01UF
C121	C4L5	C4M6	421C2862	C.CERAMIC 25V 0.01UF
C402	C405	C421		
C428	C461	C463		
C472	C473	C475		
C476	C5H1	C5H3		
C508	C511	C513		
C516	C517	C519		
C7H1	C752	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	C881		
C123	C408	C521	421C3479	C.CERAMIC 50V 0.1UF
C7G6	C7H9	C7M3		
C748				
C501	C506	C583	421D6009	C.CERAMIC 25V 0.1UF
C7A5	C7E3	C7E8		
C7G1	C7H4	C7H5		
C7H6	C7H7	C7K3		
C7K5	C7K6	C7K7		
C7K8	C7K9	C710		
C723	C726	C729		
C769	C770	C771		
C757			421J9044	C.CERAMIC 250V 0.01UF
C510			423A1029	C.CERAMIC 50V 22PF
C7M4	C7M5		423A1037	C.CERAMIC 50V 47PF
C514			423A1045	C.CERAMIC 50V 100PF
C7G9			423A1053	C.CERAMIC 50V 220PF
C7M1			423A1101	C.CERAMIC 50V 470PF
C805	C806		423A2015	C.CERAMIC 50V 10PF

SYMBOL	PART NO	DESCRIPTION
C754 C755 C756	423A2043	C.CERAMIC 50V 82PF
C7N4	423A2045	C.CERAMIC 50V 100PF
C7A3	423A2104	C.CERAMIC 50V 220PF
C503	423J9022	C.CERAMIC 50V 470PF
C7N1 C7N2	42318035	C.CERAMIC 50V 39PF
C7N3	42318037	C.CERAMIC 50V 47PF
C411	427E4163	C.FILM 100V 0.01UF
C7L1	427F4615	C.FILM 50V 0.015UF
C5K4	427F4622	C.FILM 50V 0.056UF
C412 C749 C750	427F4663	C.FILM 50V 0.01UF
C751	428B3013	C.METAL FILM 50V 0.1UF
C768	428B3020	C.METAL FILM 50V 0.39UF
C424	428B3021	C.METAL FILM 50V 0.47UF
C407 C512	428CJ022	C.METAL FILM 250V 0.1UF
C462 AC562 C573	428D0417	C.METAL FILM 250V 0.22UF
C443	42824854	C.FILM 250V 0.033UF
AC6A1	42839601	C.METAL 400V 0.1UF
AC553	42839603	C.METAL FILM 400V 0.15UF
AC552	42839608	C.METAL 400V 0.33UF
AC551	42839613	C.METAL 400V 0.56UF
AC549	42839692	C.METAL FILM 200V 2.4UF
AC547	42839708	C.METAL 400V 0.33UF 5%
AC548	42844417	C.METAL FILM 250V 0.22UF
C759 C760 C761	42899139	C.METAL 1.8KV 2600PF
AC541 AC542	42899141	C.METAL 1.2KV 9000PF
AC543	430B6015	C.ELEC 10V 47UF
C477	430B6016	C.ELEC 10V 100UF
C812 C814	430B6017	C.ELEC 10V 220UF
C815	430B6019	C.ELEC 10V 470UF
C803 C882	430B6029	C.ELEC 16V 100UF
C409 C509 C861	430B6030	C.ELEC 16V 220UF
AC2001	430B6041	C.ELEC 25V 47UF
C471 C474	430B6043	C.ELEC 25V 220UF
C451	430B6044	C.ELEC 25V 330UF
C406	430B6061	C.ELEC 50V 1.0UF
C531	430B6062	C.ELEC 50V 2.2UF
C504	430B6064	C.ELEC 50V 4.7UF
C4M2 C4M3 C4M4	430B6065	C.ELEC 50V 10UF
C430 C813		

SYMBOL	PART NO	DESCRIPTION
C423	433A4055	C.ELEC 50V 1.0UF
C7C4	433A4056	C.ELEC 50V 2.2UF
C7C7	433A4058	C.ELEC 50V 4.7UF
C715 C718 C721	433A7003	C.ELEC 10V 100UF
C7E4	433A7031	C.ELEC 35V 4.7UF
C5E8	433J9031	C.ELEC 35V 4.7UF
AC564	435A8155	C.TANTALUM 16V 10UF

SYMBOL	PART NO	DESCRIPTION
C871	430B6222	C.ELEC 50V 0.22UF
C563	430B6516	C.ELEC 160V 10UF
C452	430B6553	C.ELEC 250V 2.2UF
AC571	430B9015	C.ELEC 10V 47UF
C581 C582 C753	430B9017	C.ELEC 10V 220UF
C426	430B9027	C.ELEC 16V 33UF
C7N5 C7N6 C701	430B9028	C.ELEC 16V 47UF
C422 C502 C765	430B9029	C.ELEC 16V 100UF
C7H3 C7K1 C724		
C727 C730 C733		
C487 C711 C747	430B9030	C.ELEC 16V 220UF
C486 C515	430B9042	C.ELEC 25V 100UF
C404	430B9043	C.ELEC 25V 220UF
AC141 C532 C7A6	430B9061	C.ELEC 50V 1.0UF
C7C6 C7G7 C7H2		
C743		
C401 C425 C744	430B9062	C.ELEC 50V 2.2UF
C745 C746		
C735 C738 C741	430B9063	C.ELEC 50V 3.3UF
C7C3 C7C5 C7C9	430B9064	C.ELEC 50V 4.7UF
C7E5		
C507 AC561 C7C8	430B9065	C.ELEC 50V 10UF
C7F6 C714 C716		
C717 C719 C720		
C722 C725 C728		
C731 C736 C739		
C742		
C7E2		
C762 C763 C765	430B9068	C.ELEC 50V 47UF
C767	430B9512	C.ELEC 160V 1.0UF
C491	430B9516	C.ELEC 160V 10UF
C5U1	430B9552	C.ELEC 250V 1.0UF
C572	430CH358	C.ELEC 250V 47UF
C522	430C6344	C.ELEC 35V 100UF
C403	430C6346	C.ELEC 35V 330UF
C758	430C8917	C.ELEC 100V 47UF
C575	4309J171	C.ELEC 200V 33UF
C4K1 C702 C703	433A4013	C.ELEC 10V 47UF
C704		
C7A1 C7A2	433A4023	C.ELEC 16V 22UF
C478 C479	433A4033	C.ELEC 25V 10UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1539VMR (N)

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

Replace only with parts Number specified.

SYMBOL	PART NO	DESCRIPTION
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*** CRT & TUNER ***

Δ CRT	33015578	CRT M36LDN100XX43 (U3) (R)
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*** ICS ***

IC804	37005023	IC PQ05RR11
IC481	37005104	IC LM2940CT-12 (REG)
IC502	37005221	IC UPC78M09AHF
IC401	37006017	IC TDA8172
IC471	37009009	IC UPC1882CU
IC501	37009032	IC UPC1881CT
IC703	37010006	IC M52320SP
IC7B2	37010007	IC M52324P
IC402	37011068	IC UPC4558C (OP AMP)
IC461	37011206	IC XRA10358 (OP-AMP)
IC581	37011307	IC LA6501MA (OP AMP)
IC7C1	37051034	MOS UPD40408C (COUNT)
IC121	37051378	MOS UPD4053BC (MPX)
IC803	37055537	MOS NM24C04EN
IC7A5	37056812	IC M62362P
IC701	37056814	IC M52035P
IC7A1	37056867	IC M52036SP
IC122	37056917	IC XRA10324A (Q OP-AMP)
IC857	37076172	IC VP503N
IC704	37076176	MOS M62393P
IC7B1	37076177	MOS M35020SP
IC853	37076182	MOS M35042-064SP
IC7A8	37076191	MOS TMP81CK42N-4147
IC7A7	37076195	MOS UPD78014YCW-Y15
IC881		
IC801		

*** TRANSISTORS ***

Δ Q2002	3500D716	TR 2SC945-T P
Q421	350E3217	TR 2SC1740S-T Q
Q145	350E3218	TR 2SC1740S-T R
Q4K1		
Q573		
Q452		
Q714		
Q791		
Q7A7		
Δ Q2004		
Q402		
Q522		
Q7C1		
Q583		
Q713		
Q715		
Q7A8		
Q5E2		
Q858		
Q851		
Q855		
Q7A9		
Q852		
Q7A4		
Q7C2		
Q7B1		
Q7C3		
Q7C6		
Q801		
Q501		
Q502		
Q503		
Q546		
Q547		
Q548		
Q7A9		
Q143		
Q144		
Q4E2		
Q7A3		
Q401		
Q524		
Q572		
Q542		
Q543		
Q544		

*** DIODES ***

ZD541	360K0671	DIODE RD12ESB(2)/ESAB(2)
D141	360K1027	DIODE 1SS132
Δ D402		
D404		
D451		
D5E1		
D543		
D571		
D581		
D7A1		
D7A3		
D7A4		
D7E1		
D7E2		
D7E3		

SYMBOL	PART NO	DESCRIPTION
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D7E4	D7E5	D7E6	360K1027	DIODE 1SS132
D7E7	D701	D702		
D703	D704	D705		
D709	D710	D861	360K1032	DIODE 1SS82-TA
D452	D453	D461		
D718	D719	D720		
D721	D722	D723		
D724	D725	D726	360K3098	DIODE RD12EB(3)-T4
ZD7A1				
ZD491	ZD791		360K3170	DIODE RD6.2JSB(2)/JSAB(2)
ZD545			360K3602	DIODE RD2.0ESB(1)-T4
ZD402	ZD871		360K3635	DIODE RD5.1ESB(2)-T4
ZD546	ZD547	ZD548	360K3639	DIODE RD5.6ESB(2)-T4
ZD549	ZD711	ZD712		
ZD713	ZD714	ZD801		
ZD802				
ZD503			360K3648	DIODE RD6.8ESB(3)/ESAB(3)
Δ ZD2001			360K3652	DIODE RD7.5ESB(3)-T4
ZD701			360K3654	DIODE RD8.2ES AB1-T4
ZD541	ZD542	ZD543	360K3671	DIODE RD12ESB(2)/ESAB(2)
Δ ZD2003			360K3675	DIODE RD13ESB(2)-T4
ZD401			360K3692	DIODE RD20ESB(3)-T4
Δ D561	D562		361K7562	DIODE EGP10G G23
D521			36107293	DIODE RK14
Δ D542	Δ D546		36107560	DIODE RG2A2
D573			36107620	DIODE RG4 LF-J3
Δ D541			36107718	DIODE FMP-3FU(LF027-103)
LED141			36801372	LED SML19416W-LF38(D1,D3)
D401	D5N8	D5N9	369K2136	DIODE RGP10G,AT
D502	D503	D504		
Δ D544	Δ D545			
D7A2	D728		380K5054	VARIATOR MA29W-A (TP)
IC541			38200209	PHOTO COUPLER PS2501-3

*** TRANSFORMERS ***

T521	45804012	TRANS.H.DRIVE
L581	46204004	COIL,CHOKE 4MH
L571	46206005	TRANS,CHOKE 4MH
Δ T561	47105690	F.B.T

SYMBOL	PART NO	DESCRIPTION
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Q7C4	350H5017	TR 2SC3811-TA Q
Q7A2	350J3016	TR 2SC2926S-T P
Q703		
Q707	350J4604	TR 2SC3776-AA D
Q461	350K4111	TR 2SA916-T K
Δ Q571	350K5217	TR 2SA1018-TA Q
Q712		
Q491	350K5218	TR 2SA1018-TA R
Q141	350K5718	TR 2SA933S-T R
Q451		
Q5E3		
Q574		
Q584		
Q7A1		
Q7A5		
Q7A6		
Q7C2		
Q861		
Q521		
Q5E4		
Q4E5		
Δ Q541	35095100	TR 2SC4924 (NHE)
Q7A4	351A0690	TR DTC115ES-TP
Q4E1	351G0500	TR AN1A4M
Δ Q2003	351G0561	TR DTA144ES-T
Q545	351G0601	TR DTC114ES-T
Q7C5		
Q7C6		
Q801		
Q501	351G0602	TR DTC144ES-T
Q546		
Q547		
Q548		
Q7A9		
Q143	351G0641	TR DTC114YS-T
Q7A3	351G0652	TR DTC113ZS-T
Q401	351G0655	TR DTC143ES-TP
Q524	35122600	TR 2SK701
Q572	35127470	TR 2SJ306
Q542	35127610	TR 2SK1087-M

SYMBOL	PART NO	DESCRIPTION
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R4M4	R4M5	R4M6	401K5673	R.CARBON 1.0K 5% 1/6W
R518	R519	R581		
R583	R7E9	R7G4		
R7G6	R7H8	R7H9		
R7M2	R7M3	R7M4		
R7N4	R777	R782		
R787	R8E1	R851		
R852	R853	R875		
R7C6	R7C8	R7P7	401K5675	R.CARBON 1.2K 5% 1/6W
R7P8				
R8E3	R8E4		401K5677	R.CARBON 1.5K 5% 1/6W
R5M5	Δ R572	R7A6	401K5679	R.CARBON 1.8K 5% 1/6W
R7C5				
R4K4	R426	R5M7	401K5681	R.CARBON 2.2K 5% 1/6W
R7M8	R713			
R804	R805	R884	401K5683	R.CARBON 2.7K 5% 1/6W
R415	R425	R503	401K5685	R.CARBON 3.3K 5% 1/6W
Δ R564	R7C9	R7G5		
R767	R769	R771	401K5687	R.CARBON 3.9K 5% 1/6W
R403	R517	R7E7	401K5689	R.CARBON 4.7K 5% 1/6W
R858				
R455	R5M4	R544	401K5691	R.CARBON 5.6K 5% 1/6W
R548	R553	R7E1		
R7E2	R7E3	R803		
R807	R811	R812		
R813	R814	R815		
R816	R817	R818		
R821	R822	R823		
R824	R825	R826		
R827	R828	R839		
R414	R510	R7E4	401K5693	R.CARBON 6.8K 5% 1/6W
R873	R876			
R101	R127	R129		
R130	R131	R132	401K5697	R.CARBON 10K 5% 1/6W
R133	R134	R135		
R136	R137	R138		
Δ R2006	Δ R2009	R4E2		
R4K1	R428	R451		
R452	R453	R5L6		
R5L7	R5L9	R5M1		
R514	R520	R578		
R7B1	R7E8	R7G1		

SYMBOL	PART NO	DESCRIPTION
R5 R6 R7G7 R7P1 R7P5 R886 R889 R895 R579	R5M2 R7 R7M7 R7P2 R801 R887 R890 R9 R586	R5M8 R7B2 R7N5 R7P3 R885 R888 R892 R888 R887
401J9820		R.CARBON 0.0H
R417 R765 R457 R533 R551 R7L8 R7N9 R733 R819 R842 R845 R848 R872 R7A3 R710 R735 R747 R756	R763 R907 R534 R555 R7N7 R729 R808 R829 R843 R846 R7N1 R711 R737 R749 R758	R764 R546 R7L7 R7N8 R731 R809 R841 R844 R847 R7N3 R712 R739 R752 R760
401K5609		R.CARBON 2.2H 5% 1/6W
401K5633		R.CARBON 22H 5% 1/6W
401K5639		R.CARBON 39H 5% 1/6W
401K5649		R.CARBON 100H 5% 1/6W
401K5651		R.CARBON 120H 5% 1/6W
401K5653		R.CARBON 150H 5% 1/6W
401K5655		R.CARBON 180H 5% 1/6W
401K5657		R.CARBON 220H 5% 1/6W
401K5659		R.CARBON 270H 5% 1/6W
401K5661		R.CARBON 330H 5% 1/6W
401K5663		R.CARBON 390H 5% 1/6W
401K5665		R.CARBON 470H 5% 1/6W
401K5667		R.CARBON 560H 5% 1/6W
401K5669		R.CARBON 680H 5% 1/6W
401K5671		R.CARBON 820H 5% 1/6W
401K5673		R.CARBON 1.0K 5% 1/6W
R141 R755 R727 R7A1 R529 R721 R7M5 R768	R4K3 R757 R879 R7A9 R723 R7M6 R770	R7N2 R759 R719 R766
R748 R7A7 R4E1 R740 R882 R142 R4L5	R751 R7A8 R736 R738 R883 R4K2 R4M2	R7C2 R738 R766

SYMBOL	PART NO	DESCRIPTION
R866 R422 R406 R526 R864 R123 R125	R744 R423 R5L3 R856	404C1699 404C1700 404C1701 404C1702 404C1703 404C1704 404C1707
R122 R5L5 R854 R513 R567	R865 R859 R863	404C1708 404C1710 404C1711 404C1712 404C1715
R528 R525 R530 R5L4 R7L4	R565	404C1719 404C1724 404C1725 404C1742 404J443
R7L4 R798 R469 R798 R469	R492 R492	404J9443 404K8716 404K8719 404K2716 404K2719
R575 R531		404K5133 40801004
		R.METAL 12K 1% 1/6W R.METAL 13K 1% 1/6W R.METAL 15K 1% 1/6W R.METAL 16K 1% 1/6W R.METAL 18K 1% 1/6W R.METAL 20K 1% 1/6W R.METAL 27K 1% 1/6W R.METAL 30K 1% 1/6W R.METAL 36K 1% 1/6W R.METAL 39K 1% 1/6W R.METAL 43K 1% 1/6W R.METAL 56K 1% 1/6W R.METAL 82K 1% 1/6W R.METAL 130K 1% 1/6W R.METAL 150K 1% 1/6W R.METAL 750K 1% 1/6W R.METAL 1.3K 0.5% 1/8W R.METAL 1.3K 0.5% 1/8W R.METAL 62K 1% 1/4W R.METAL 82K 1% 1/4W R.METAL 62K 5% 1/4W R.METAL 82K 1% 1/4W R.METAL 22H 5% 1/4W R.FUSE 1.0H 500MA

*** CAPACITORS ***

C901 C5K5 C764 C902 C545 C5U2	C766 C768	420C9551 420C9555 420C9563 420C9565 420C9569	C.CERAMIC 500V 100PF C.CERAMIC 500V 220PF C.CERAMIC 500V 1000PF C.CERAMIC 500V 1500PF C.CERAMIC 50V 3300PF
C903 C6A2 C427 C7B1 C708 C772 C7A7 C7C1	C6A3 C518 C555 C707 C732 C773 C7A8 C7A9	420D108 420E067 421A0425 421C0207	C.CERAMIC 2KV 10000PF C.CERAMIC 400V 2200PF C.CERAMIC 50V 0.01UF C.CERAMIC 50V 330PF

SYMBOL	PART NO	DESCRIPTION
R539 R408 R409 R411	R595 R571	40216250 403F1101 403F1165 403F2105
R538 R585 R7G3 R7H2 R532		403F2109 403F2125 403F2149 403F2151 403F3141
R481 R789 R143 R121 R799	R145	403G1703 404CA657 404CA670 404CA680 404CA690
R745 R513 R701 R789 R791	R702 R703	404CA698 404CA712 404C1646 404C1657 404C1663
R868 R143 R506 R121 R862	R145 R867 R871	404C1659 404C1670 404C1673 404C1680 404C1681
R505 R753 R126 R869 R2005 R2002	R855 R861 R8E2	404C1683 404C1684 404C1685 404C1687 404C1688
R2003 R799 R493 R501 R467	R5L1 R504 R7H7	404C1689 404C1690 404C1691 404C1694 404C1696
R2001 R404 R527 R745 R124	R401 R405 R507 R857 R502	404C1697 404C1698 404C1699
		R.WIRE 2.0H 5% 7W R.METAL OXIDE 1H 5% 1W R.METAL OXIDE 1.5H 5% 2W R.METAL 2.2H 5% 2W R.METAL 10H 5% 2W R.METAL OXIDE 100H 5% 2W R.METAL OXIDE 120H 5% 2W R.METAL OXIDE 47H 5% 3W R.METAL 18K 5% 1W R.METAL 220H 1% 1/6W R.METAL 750H 1% 1/6W R.METAL 2.0K 1% 1/6W R.METAL 5.1K 1% 1/6W R.METAL 11K 1% 1/6W R.METAL 43K 1% 1/6W R.METAL 75H 1% 1/6W R.METAL 220H 1% 1/6W R.METAL 390H 1% 1/6W R.METAL 680H 1% 1/6W R.METAL 750H 1% 1/6W R.METAL 1.0K 1% 1/6W R.METAL 2.0K 1% 1/6W R.METAL 2.2K 1% 1/6W R.METAL 2.7K 1% 1/6W R.METAL 3.0K 1% 1/6W R.METAL 3.3K 1% 1/6W R.METAL 3.9K 1% 1/6W R.METAL 4.3K 1% 1/6W R.METAL 4.7K 1% 1/6W R.METAL 5.1K 1% 1/6W R.METAL 5.6K 1% 1/6W R.METAL 7.5K 1% 1/6W R.METAL 9.1K 1% 1/6W R.METAL 10K 1% 1/6W R.METAL 11K 1% 1/6W R.METAL 12K 1% 1/6W

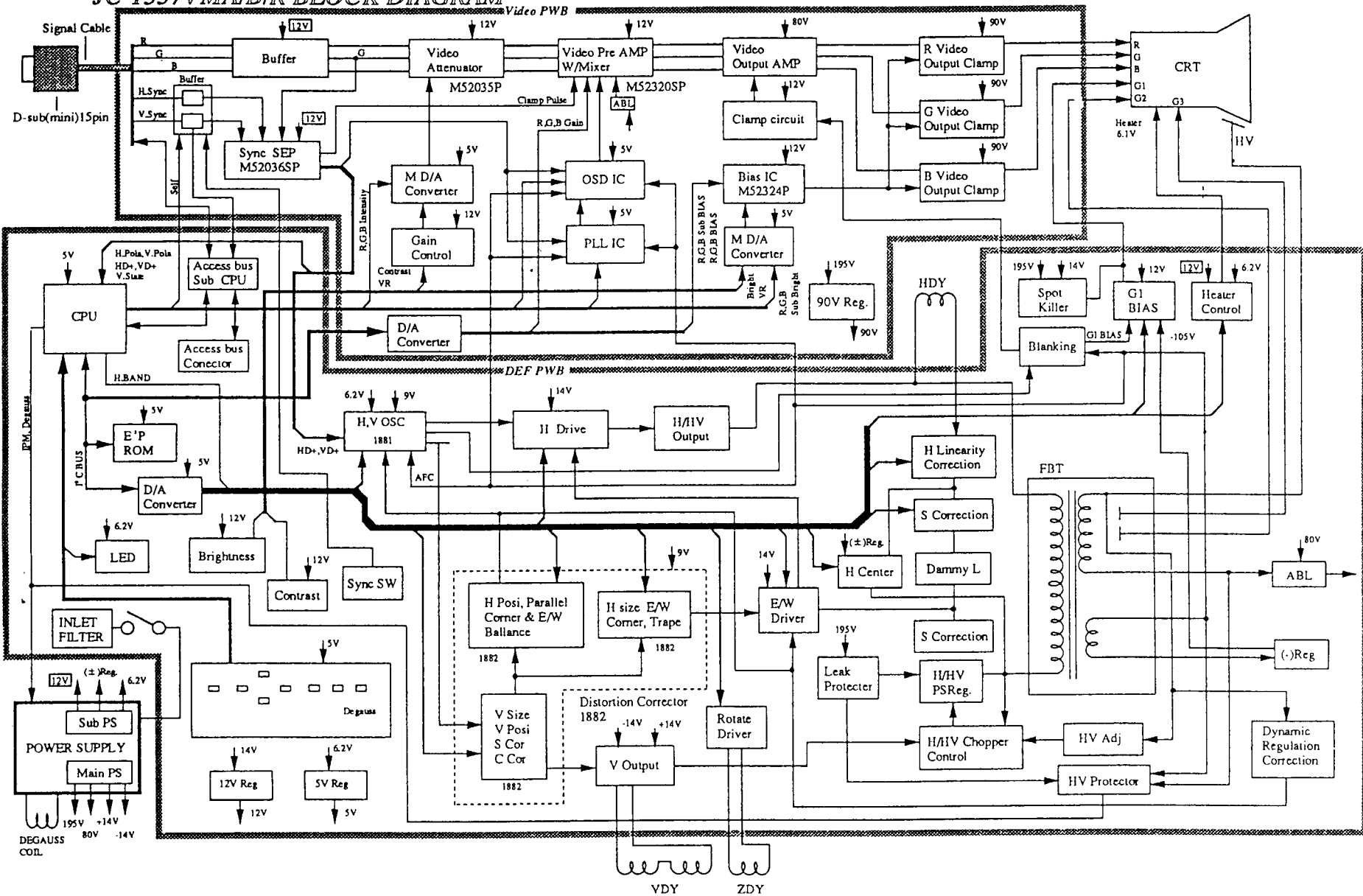
SYMBOL	PART NO	DESCRIPTION
C429 C5K3 C505 C737 C7C2 C782 C121 C402 C428 C472 C476 C508 C516 C7H1 C802 C808 C832 C835 C838 C853 C856 C859 C866 C869	C533 C740 C734 C784 C415 C405 C421 C463 C475 C5H3 C513 C519 C801 C807 C831 C834 C837 C852 C855 C858 C863 C868 C881	421C0209 421C0210 421C0213 421C0221 421C0225 421C2862 421C3479 421D6009
C123 C7G6 C748 C501 C7A5 C7G1 C7H6 C7K5 C7K8 C723 C769 C757 C510 C7M4	C408 C7H9 C7M3 C506 C7E3 C7H5 C7H7 C7K3 C7K7 C710 C729 C771 C514 C7G9 C7M1 C805	421J9044 423A1029 423A1037 423A1045 423A1053 423A1101 423A2015
		C.CERAMIC 50V 470PF C.CERAMIC 50V 560PF C.CERAMIC 50V 1000PF C.CERAMIC 50V 4700PF C.CERAMIC 50V 0.01UF C.CERAMIC 25V 0.01UF C.CERAMIC 50V 0.01UF C.CERAMIC 25V 0.01UF C.CERAMIC 50V 100PF C.CERAMIC 50V 22PF C.CERAMIC 50V 47PF C.CERAMIC 50V 100PF C.CERAMIC 50V 220PF C.CERAMIC 50V 470PF C.CERAMIC 50V 10PF

SYMBOL	PART NO	DESCRIPTION
C754 C755 C756	423A2043	C.CERAMIC 50V 82PF
C7N4	423A2045	C.CERAMIC 50V 100PF
C7A3	423A2104	C.CERAMIC 50V 220PF
C503	423J9022	C.CERAMIC 50V 470PF
C7N1 C7N2	4231B035	C.CERAMIC 50V 39PF
C7N3	4231B037	C.CERAMIC 50V 47PF
C411	427E4163	C.FILM 100V 0.01UF
C7L1	427F4615	C.FILM 50V 0.015UF
C5K4	427F4622	C.FILM 50V 0.056UF
C412 C749 C750	427F4663	C.FILM 50V 0.01UF
C751		
C7G8	428B3013	C.METAL FILM 50V 0.1UF
C424	428B3020	C.METAL FILM 50V 0.39UF
C407	428B3021	C.METAL FILM 50V 0.47UF
C462 C562 C573	428CJ022	C.METAL FILM 250V 0.1UF
C443	428DD417	C.METAL FILM 250V 0.22UF
C547	42816015	C.FILM 100V 2.4UF
C553	42816061	C.METAL 400V 0.1UF
C552	42816063	C.METAL 400V 0.15UF
C551	42816067	C.METAL 400V 0.33UF
C549	42816070	C.METAL 400V 0.56UF
C548	42816208	C.METAL 400V 0.33UF
C6A1	42824854	C.FILM 250V 0.033UF
C759 C760 C761	42844417	C.METAL FILM 250V 0.22UF
C541 C542	42899146	C.METAL 2KV 2500PF 3%
C543	42899148	C.METAL 2KV 8600PF 3%
C477	430B6015	C.ELEC 10V 47UF
C812 C814	430B6016	C.ELEC 10V 100UF
C815	430B6017	C.ELEC 10V 220UF
C803 C882	430B6019	C.ELEC 10V 470UF
C409 C509 C861	430B6029	C.ELEC 16V 100UF
C2001	430B6030	C.ELEC 16V 220UF
C471 C474	430B6041	C.ELEC 25V 47UF
C451	430B6043	C.ELEC 25V 220UF
C406	430B6044	C.ELEC 25V 330UF
C531	430B6061	C.ELEC 50V 1.0UF
C504	430B6062	C.ELEC 50V 2.2UF
C4M2 C4M3 C4M4	430B6064	C.ELEC 50V 4.7UF
C430 C813	430B6065	C.ELEC 50V 10UF

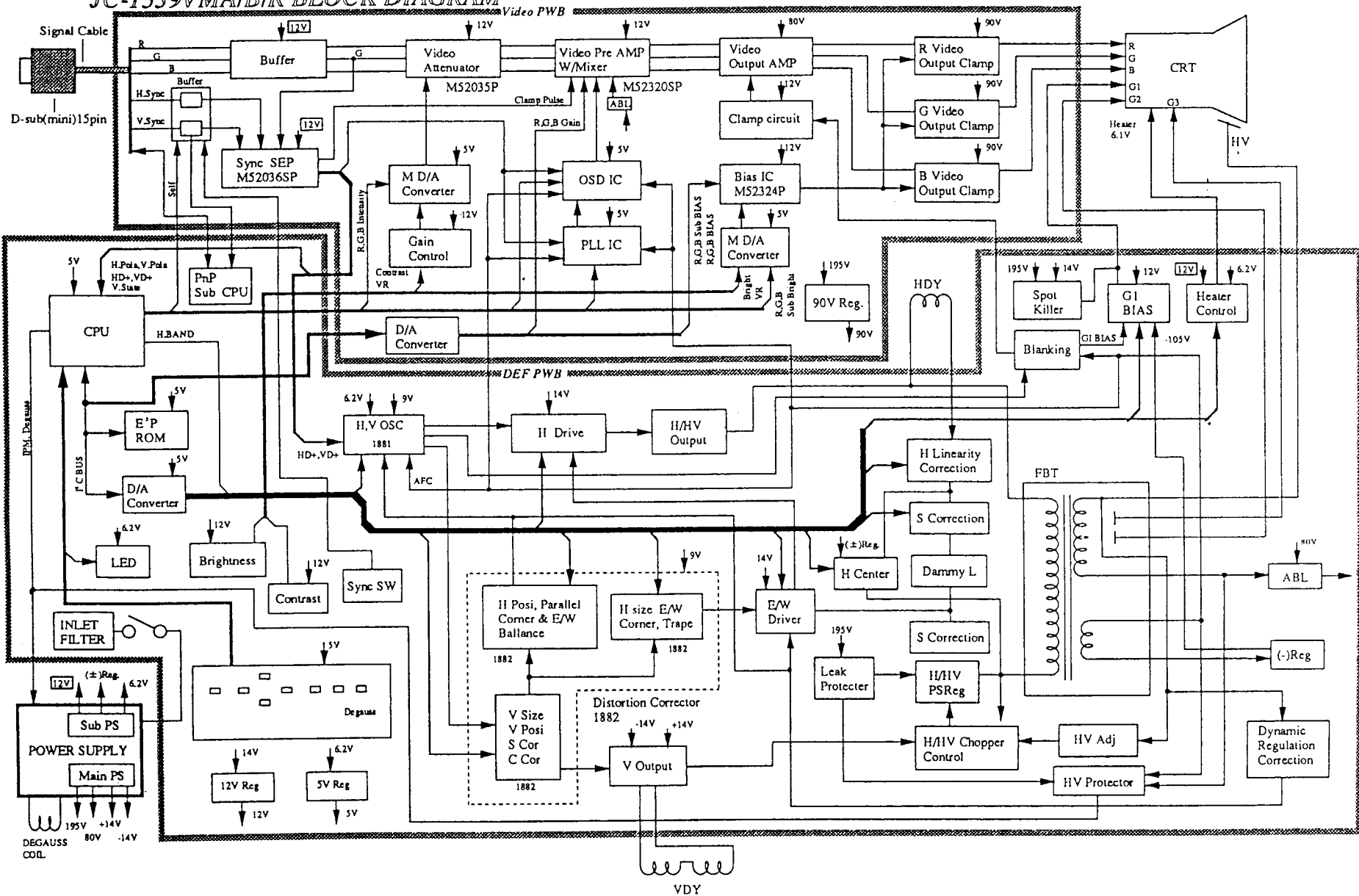
SYMBOL	PART NO	DESCRIPTION
C423	433A4055	C.ELEC 50V 1.0UF
C7C4	433A4056	C.ELEC 50V 2.2UF
C7C7	433A4058	C.ELEC 50V 4.7UF
C715 C718 C721	433A7003	C.ELEC 10V 100UF
C7E4	433A7031	C.ELEC 35V 4.7UF
C5E8	433J9031	C.ELEC 35V 4.7UF
C564	435A8155	C.TANTALUM 16V 10UF

SYMBOL	PART NO	DESCRIPTION
C871	430B6222	C.ELEC 50V 0.22UF
C563	430B6516	C.ELEC 160V 10UF
C452	430B6553	C.ELEC 250V 2.2UF
C571	430B9015	C.ELEC 10V 47UF
C581 C582 C753	430B9017	C.ELEC 10V 220UF
C426	430B9027	C.ELEC 16V 33UF
C7N5 C7N6 C701	430B9028	C.ELEC 16V 47UF
C422 C502 C765	430B9029	C.ELEC 16V 100UF
C7H3 C7K1 C724		
C727 C730 C733		
C487 C711 C747	430B9030	C.ELEC 16V 220UF
C486 C515	430B9042	C.ELEC 25V 100UF
C404	430B9043	C.ELEC 25V 220UF
C141 C532 C7A6	430B9061	C.ELEC 50V 1.0UF
C7C6 C7G7 C7H2		
C743		
C401 C425 C744	430B9062	C.ELEC 50V 2.2UF
C745 C746		
C735 C738 C741	430B9063	C.ELEC 50V 3.3UF
C7C3 C7C5 C7C9	430B9064	C.ELEC 50V 4.7UF
C7E5		
C507 C561 C7C8	430B9065	C.ELEC 50V 10UF
C7E6 C714 C716		
C717 C719 C720		
C722 C725 C728		
C731 C736 C739		
C742		
C7E2	430B9068	C.ELEC 50V 47UF
C762 C763 C765	430B9512	C.ELEC 160V 1.0UF
C767		
C491	430B9516	C.ELEC 160V 10UF
C501	430B9552	C.ELEC 250V 1.0UF
C572	430CH358	C.ELEC 250V 47UF
C522	430C6344	C.ELEC 35V 100UF
C403	430C6346	C.ELEC 35V 330UF
C758	430C8917	C.ELEC 100V 47UF
C575	4309J171	C.ELEC 200V 33UF
C4K1 C702 C703	433A4013	C.ELEC 10V 47UF
C704		
C7A1 C7A2	433A4023	C.ELEC 16V 22UF
C478 C479	433A4033	C.ELEC 25V 10UF

JC-1537VMA/B/R BLOCK DIAGRAM

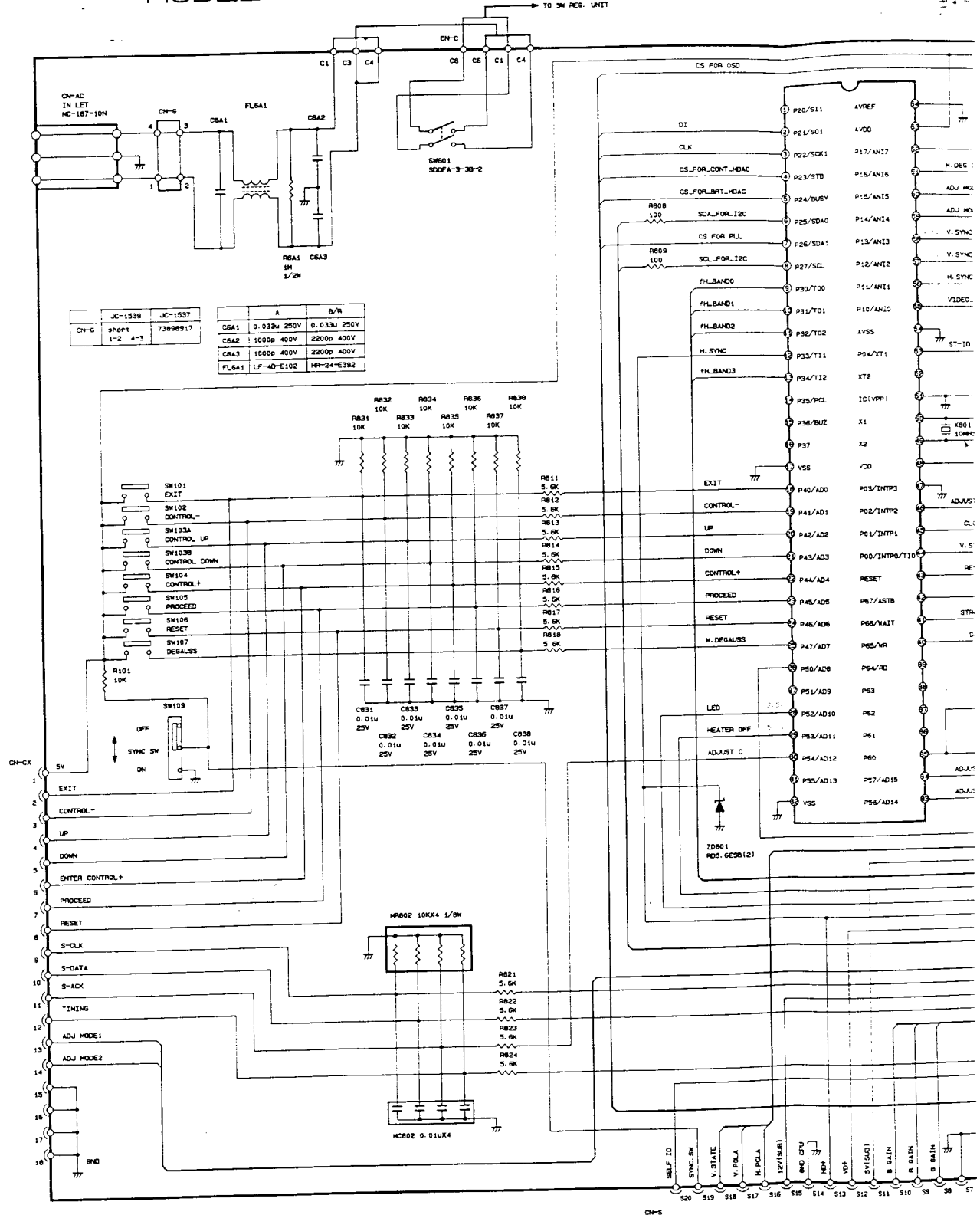


JC-1539VMA/IR BLOCK DIAGRAM

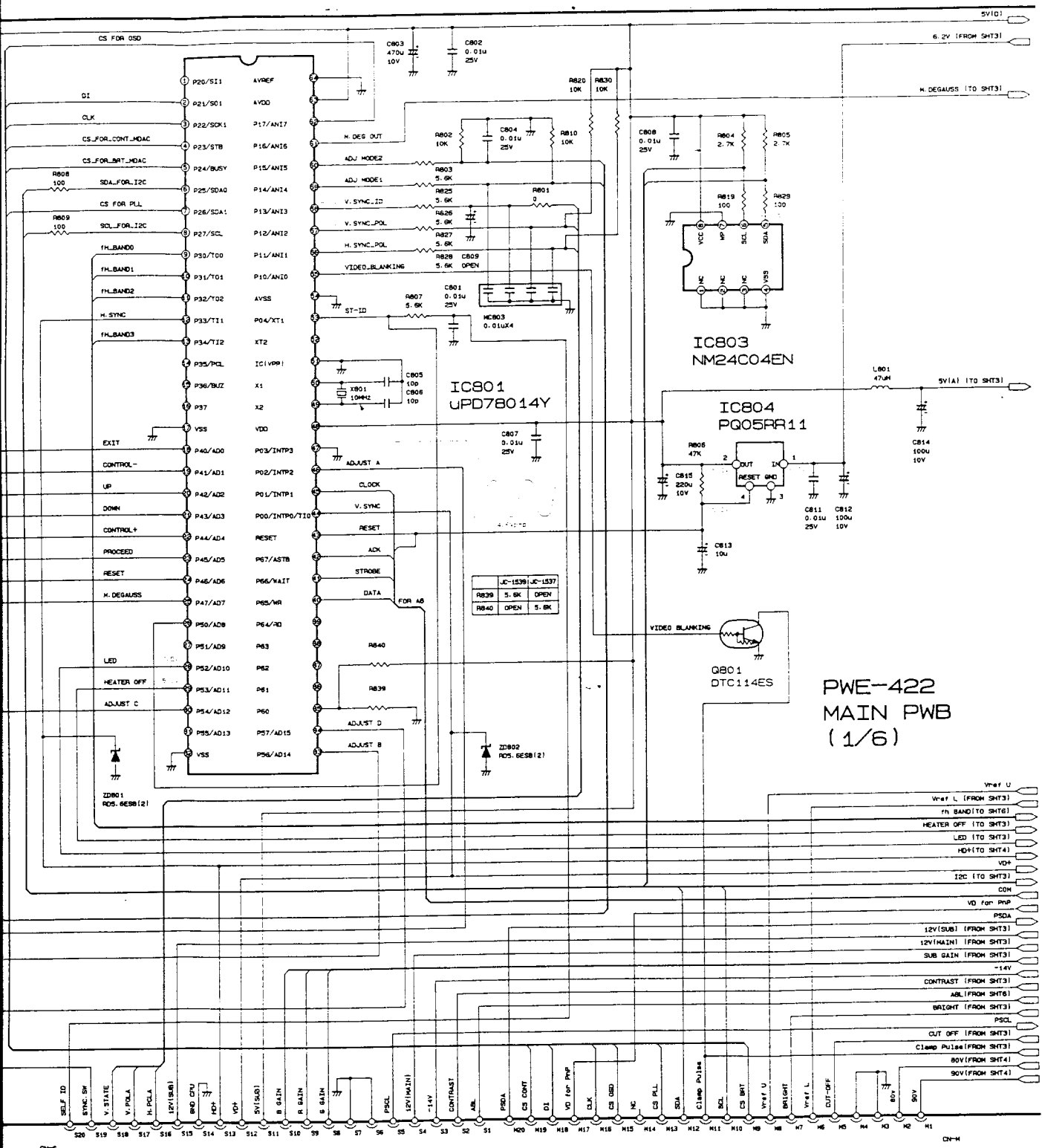


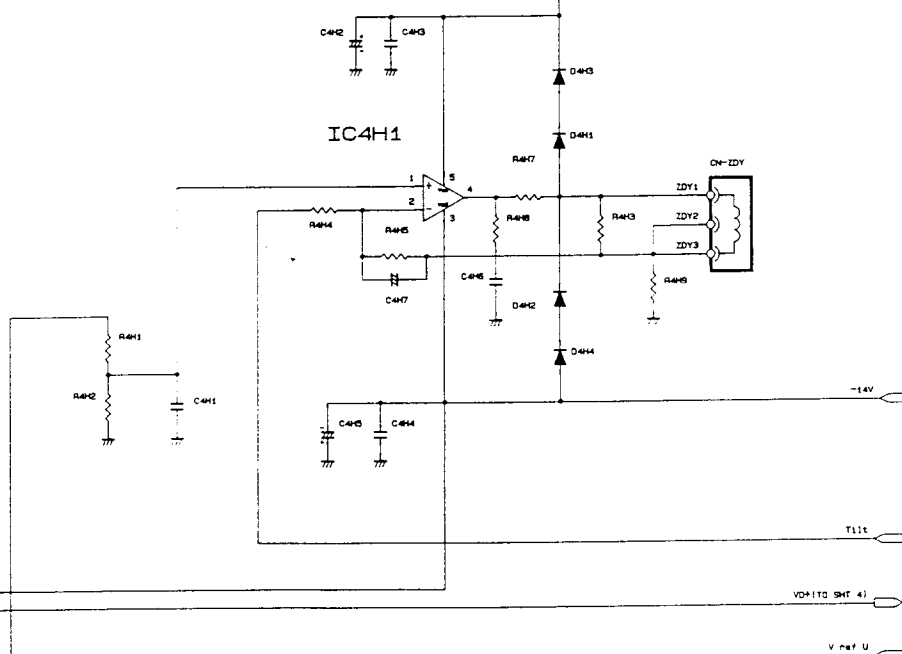
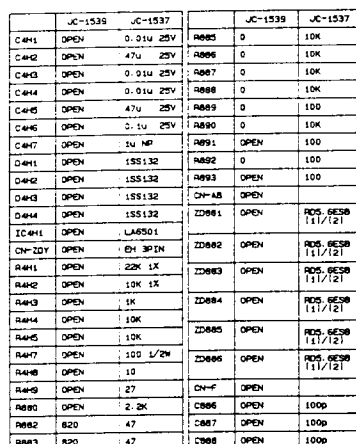
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MODEL JC-1537VMA/B/R, JC-1539VMA/B/R

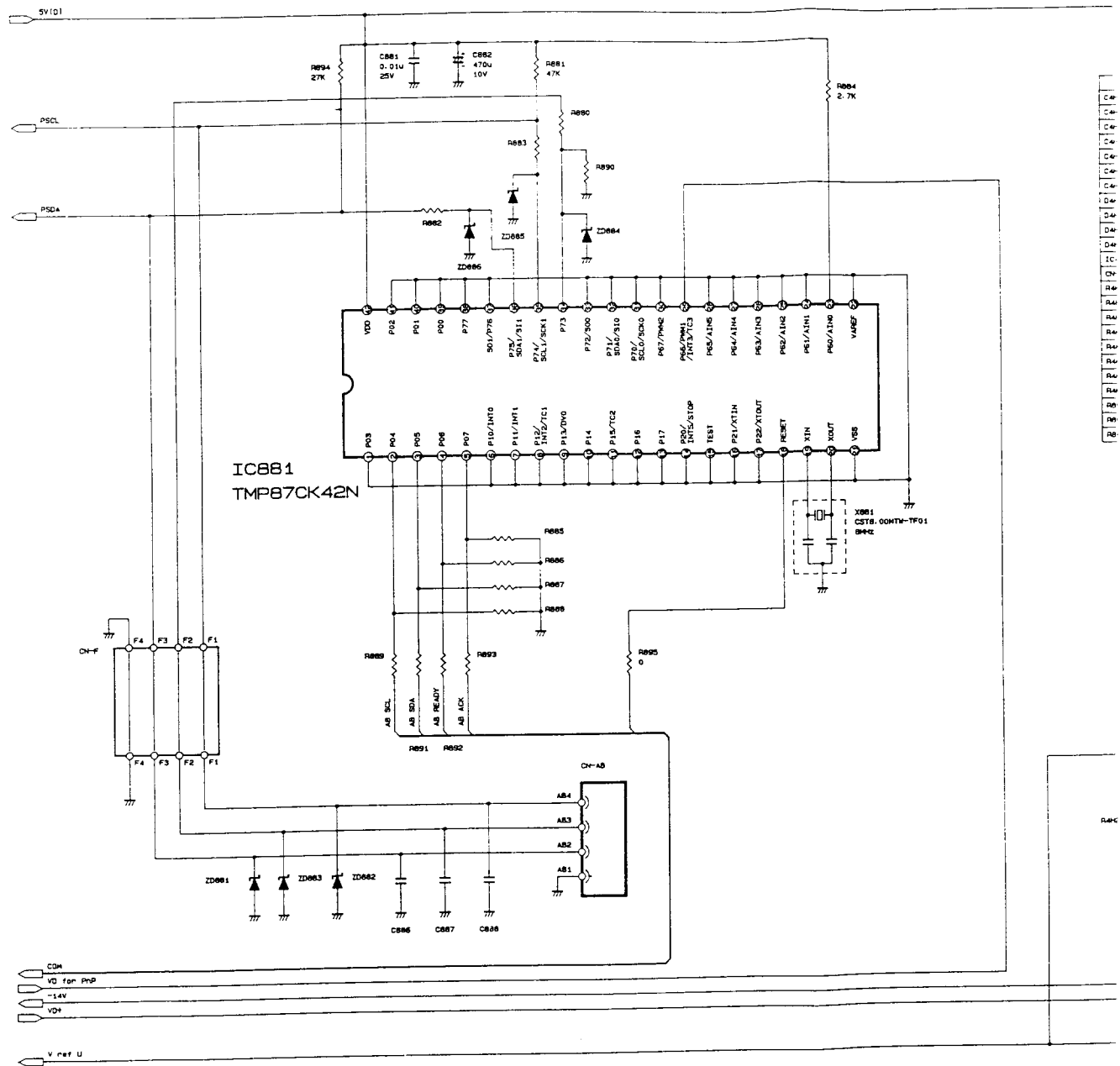


JC-1539VMA/B/R SCHEMATIC DIAGRAM MAIN PWB

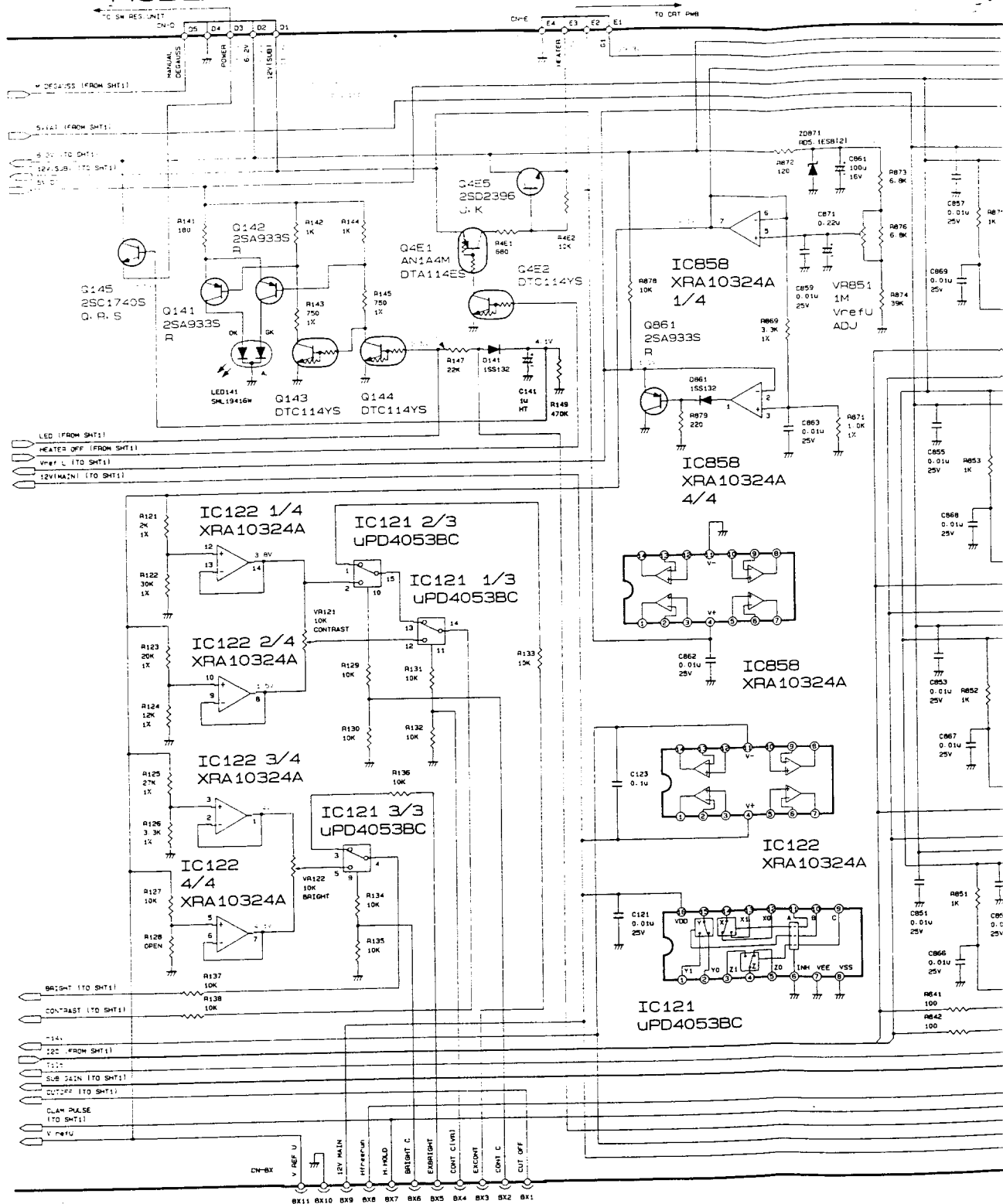




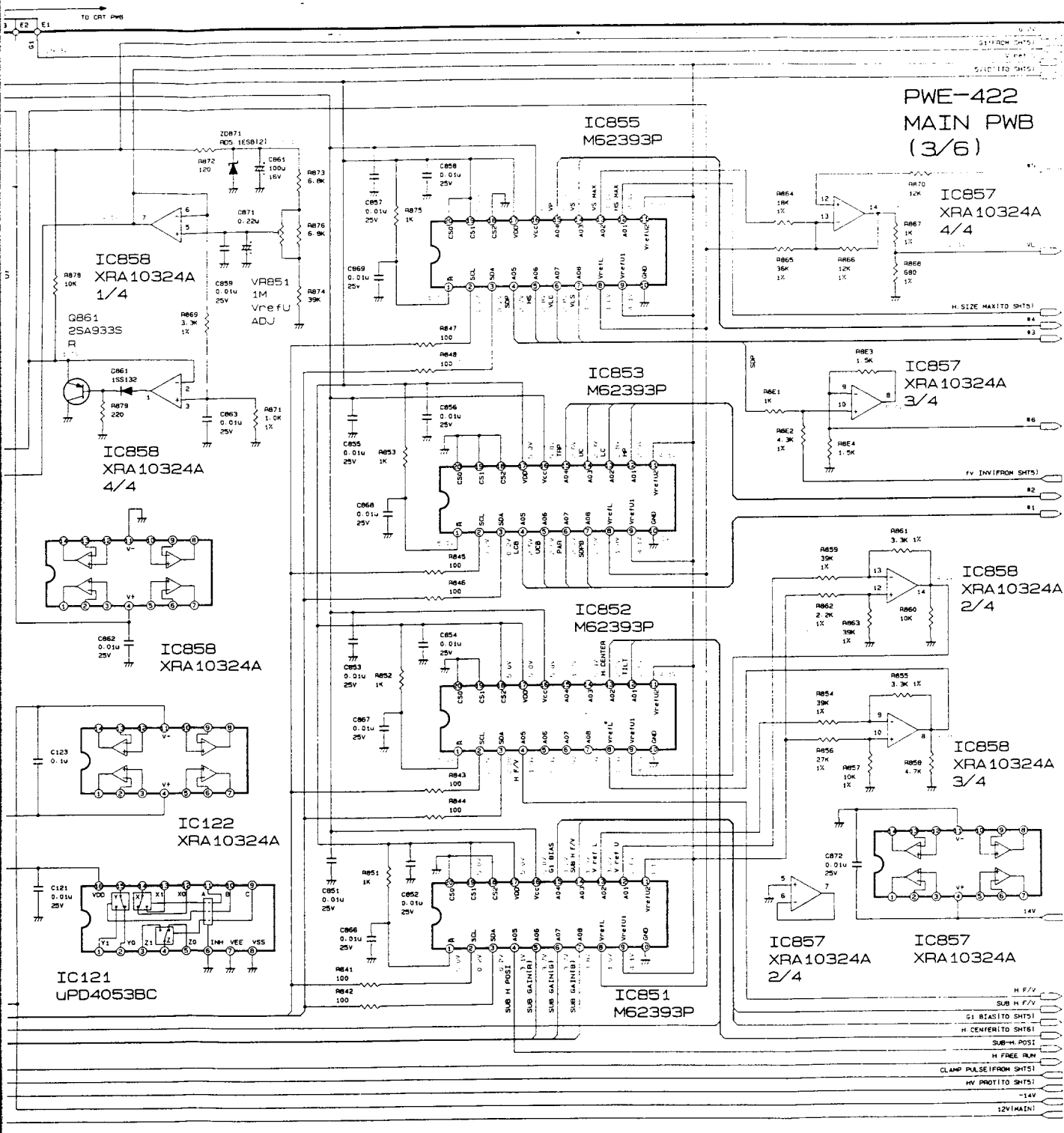
MODEL JC-1537VMA/B/R, JC-1539VMA/B/R SCHE

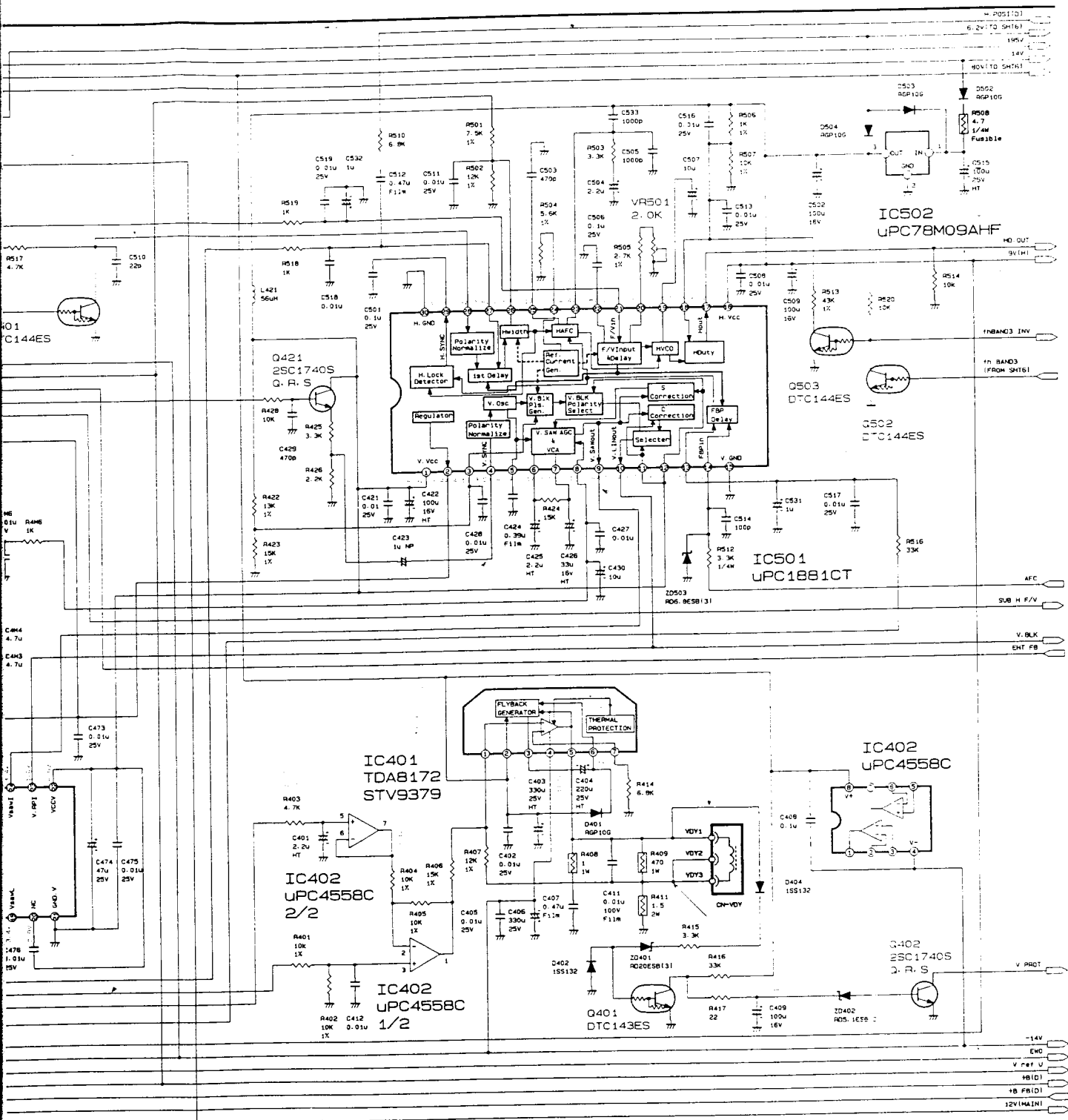


MODEL JC-1537VMA/B/R, JC-1539VMA/B/R S

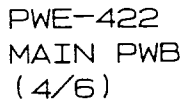


JC-1539VMA/B/R SCHEMATIC DIAGRAM MAIN PWB





MODEL JC-1537VMA/B/R,



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LM2940-CT12

Q501
DTC144ES

IC857
XRA10324A
1/4

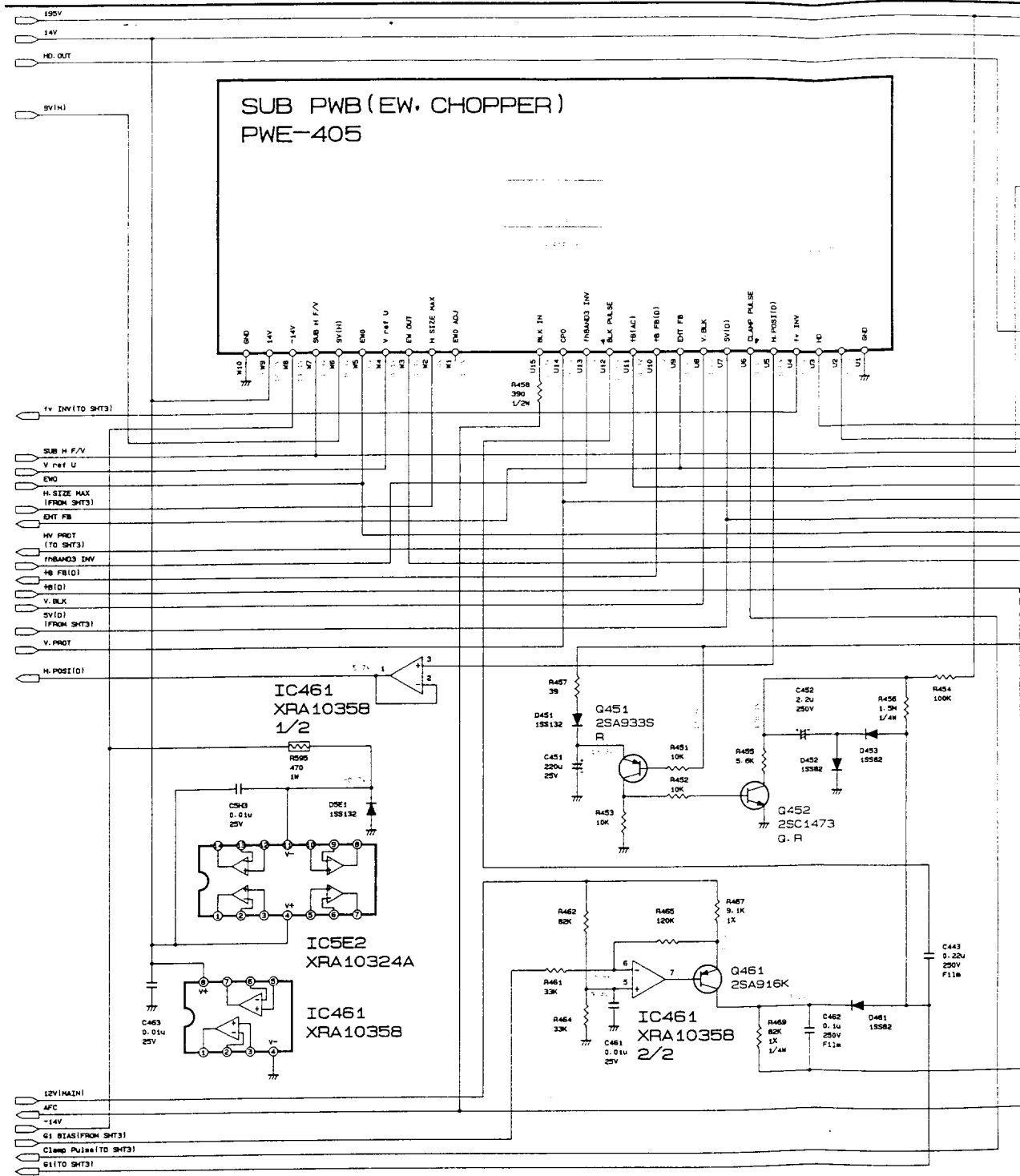
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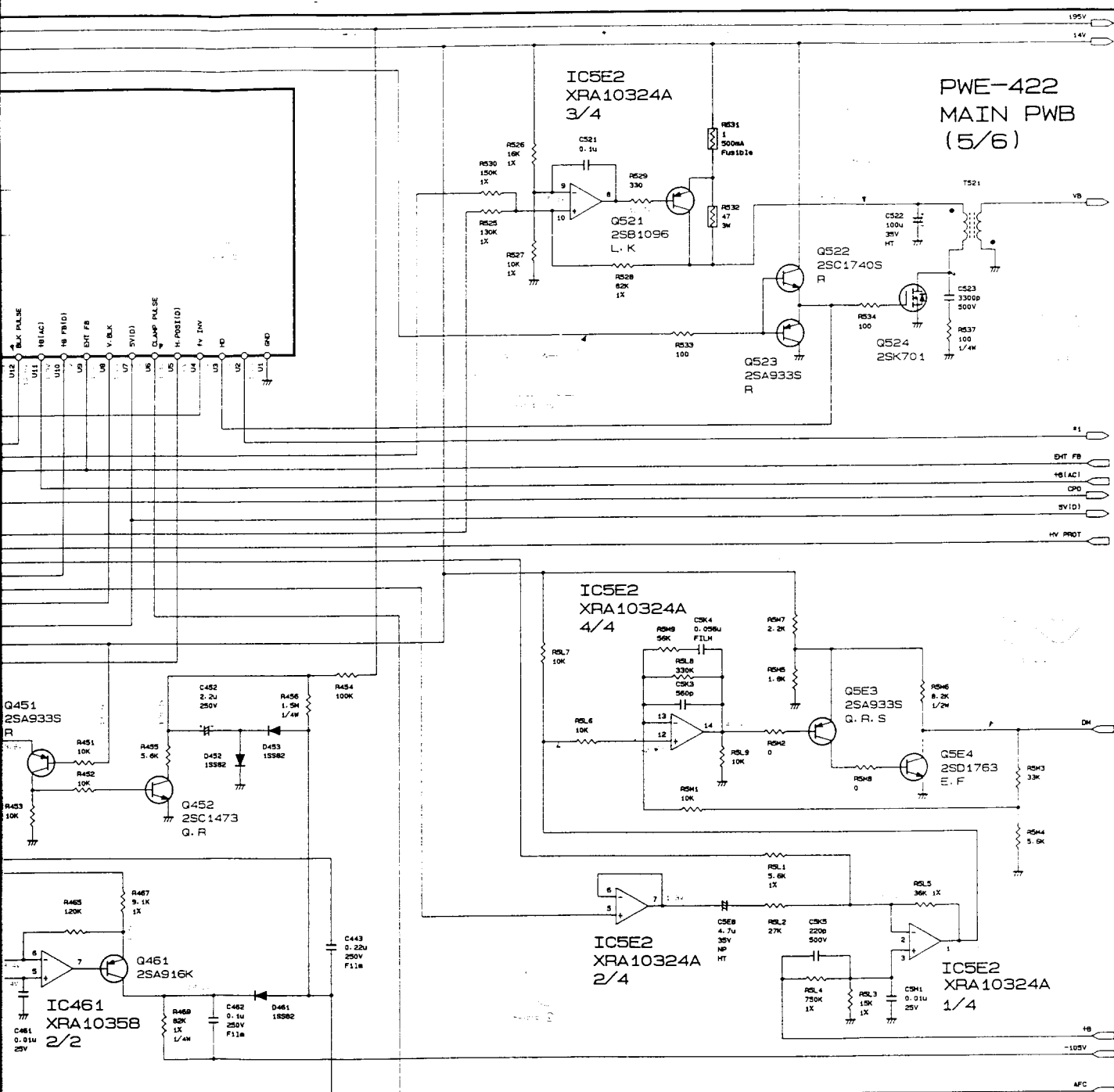
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TDAE
STVS

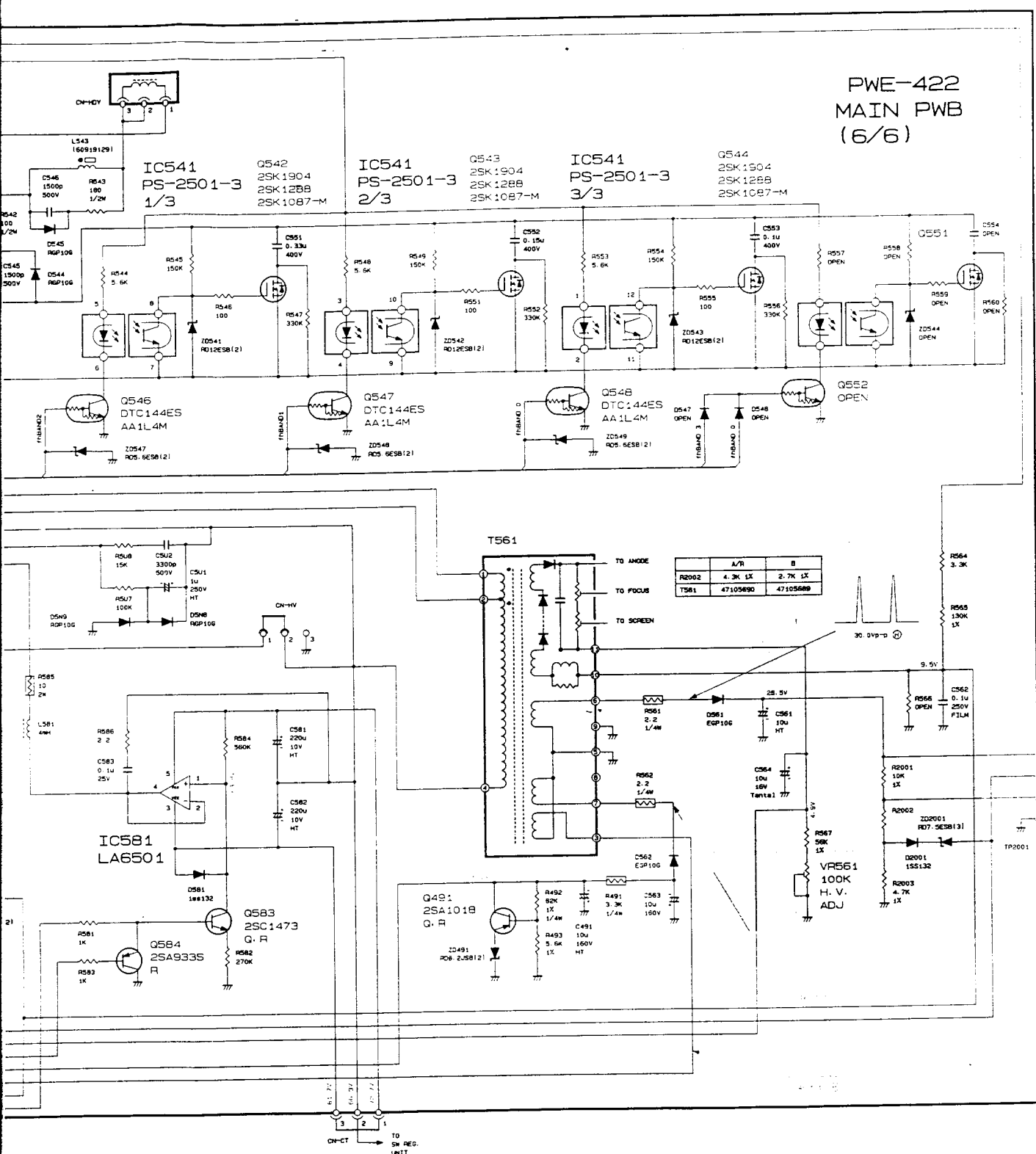
IC402
uPC4558C
2/2

IC4
UPC
1/2

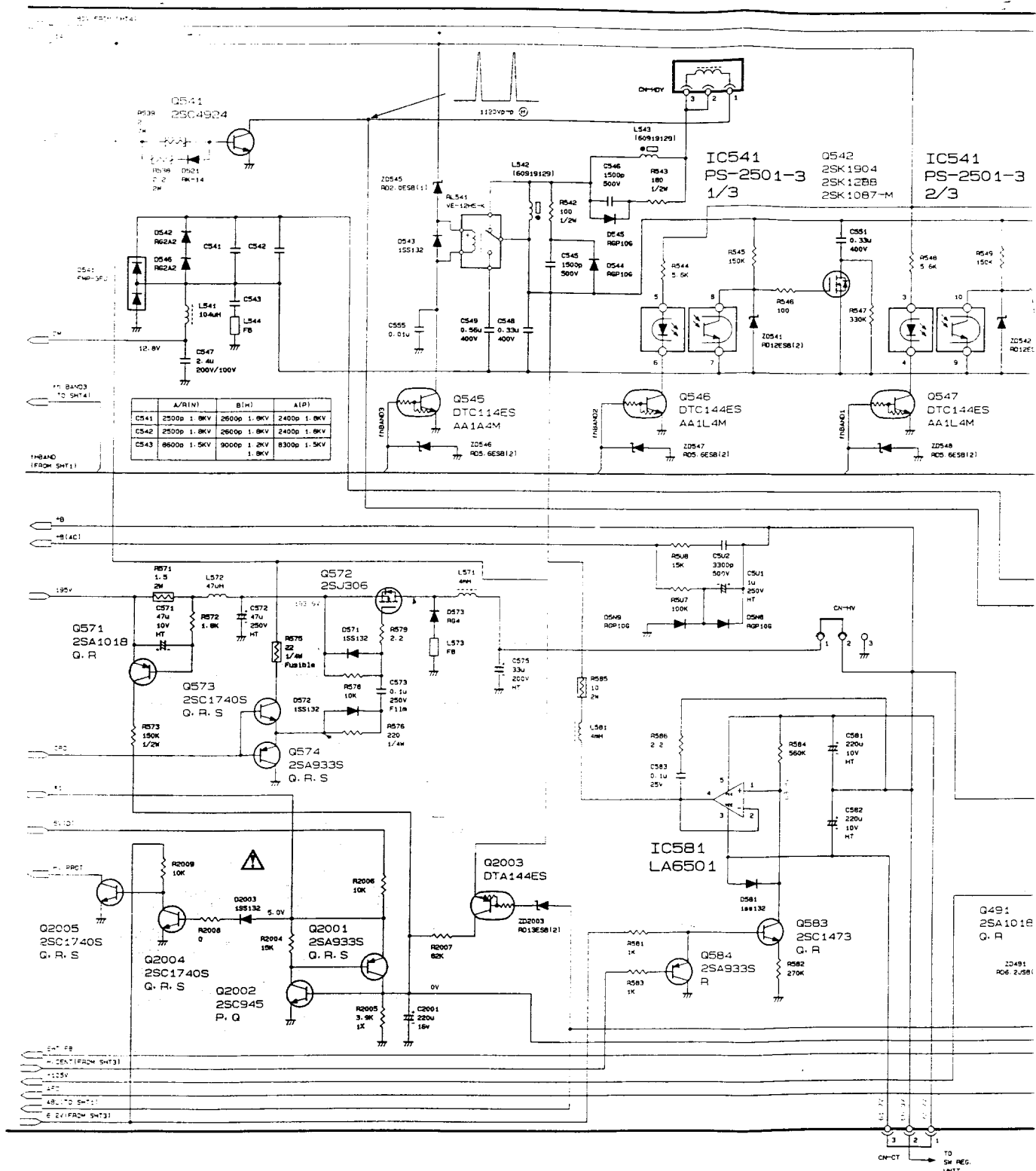
MODEL JC-1537VMA/B/R, JC-1539VMA/B/R



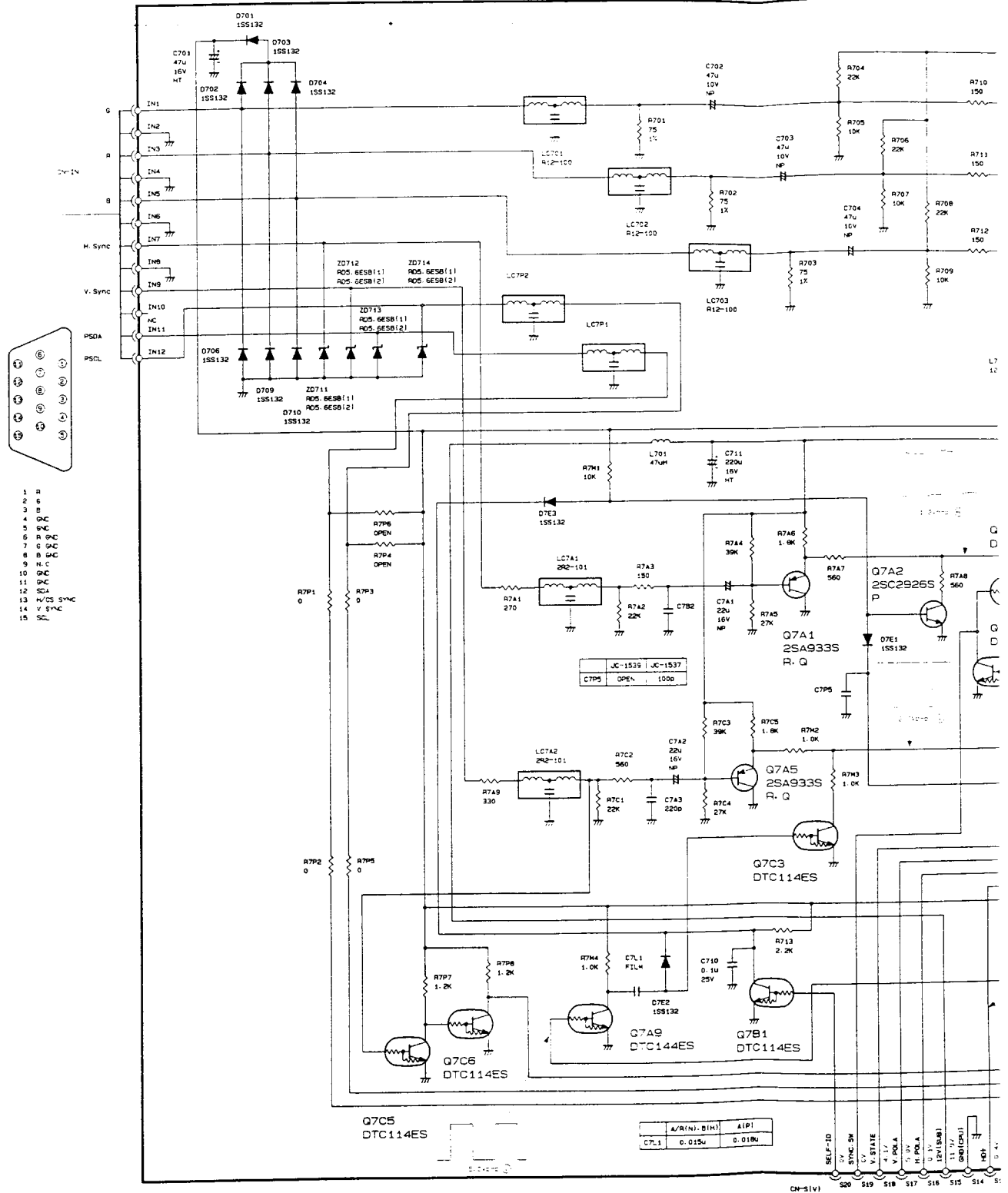




11

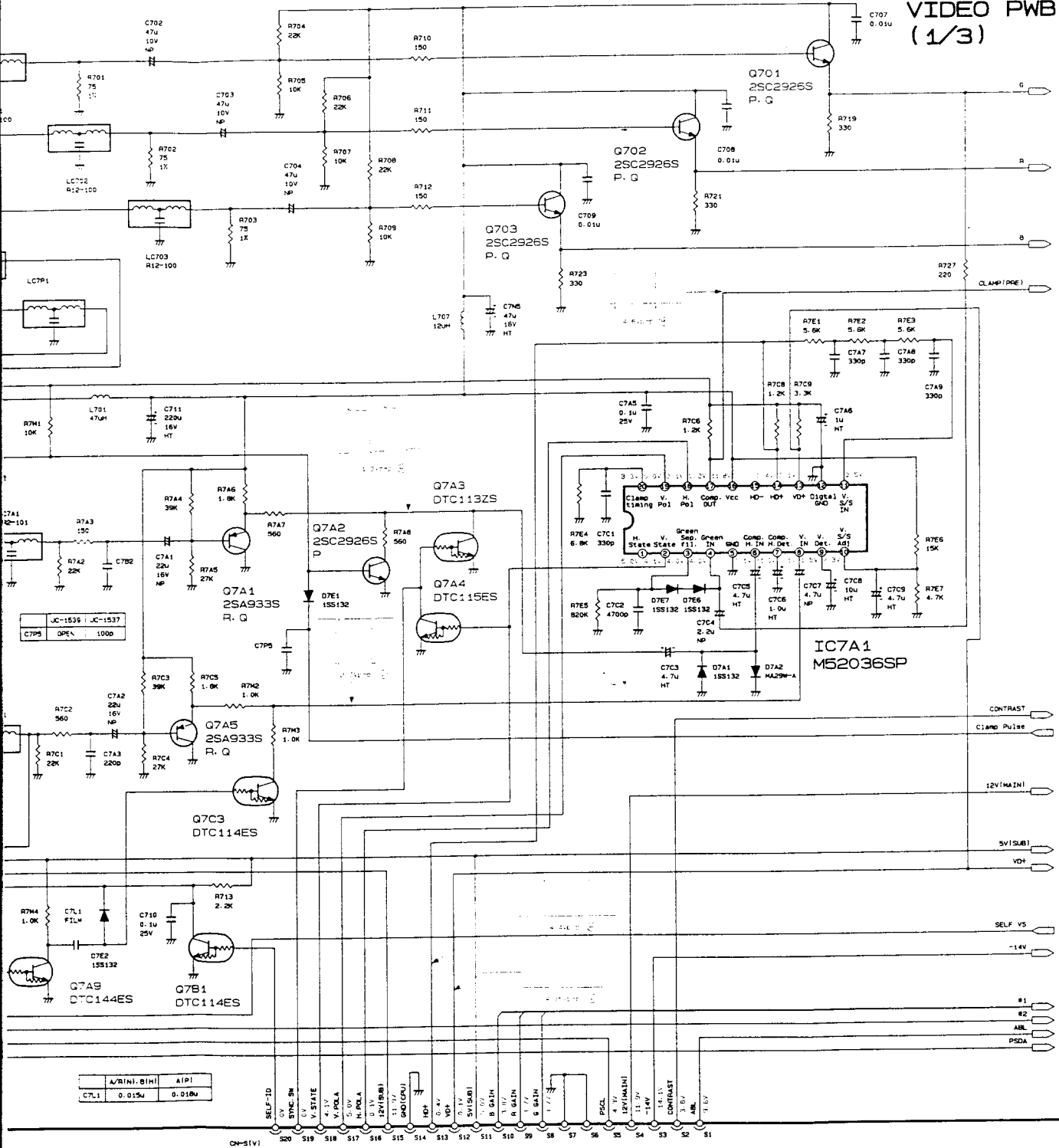


MODEL JC-1537VMA/B/R, JC-1539VMA/B/R-S



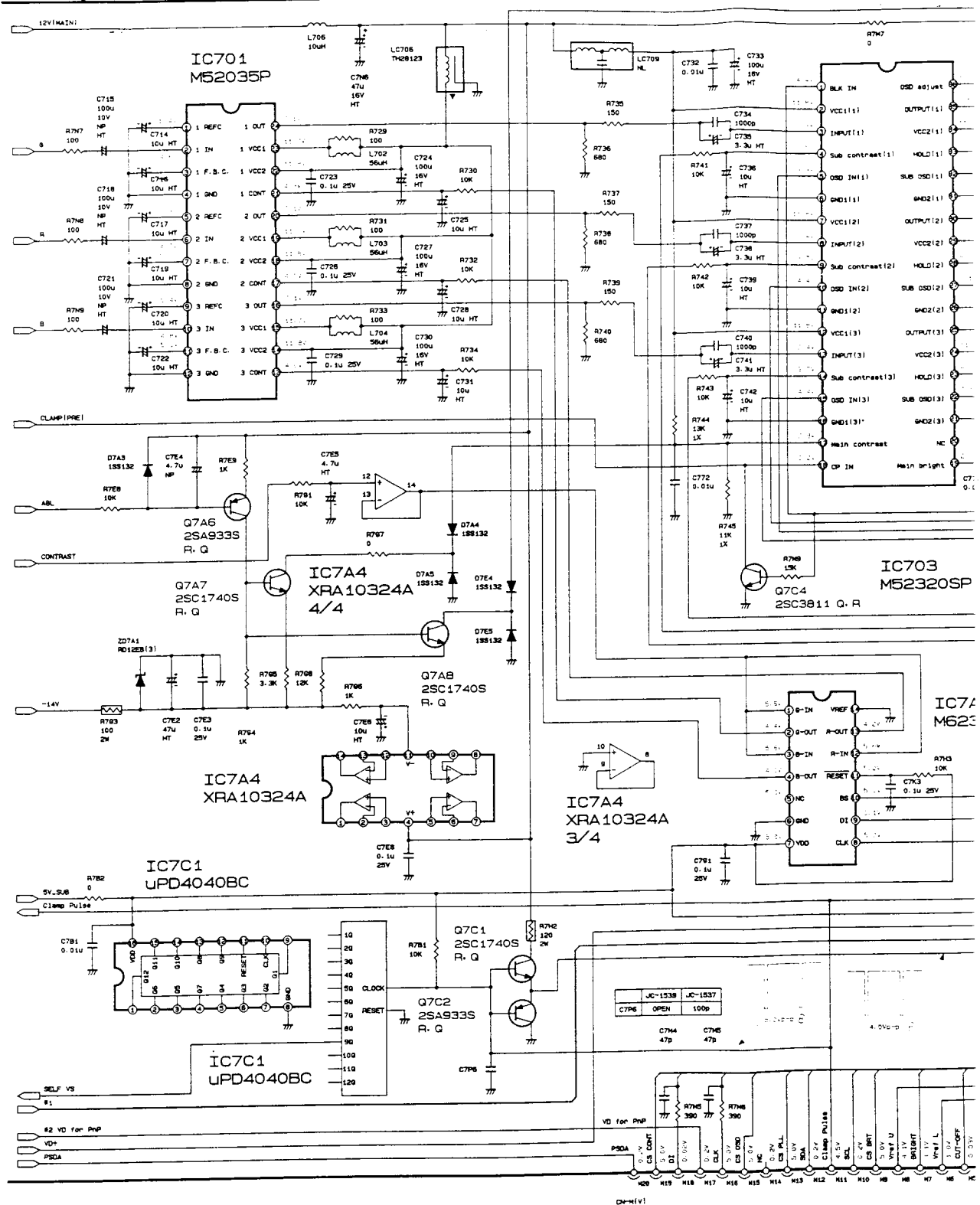
R, JC-1539VMA/B/R SCHEMATIC DIAGRAM VIDEO PWB

PWE-419A
VIDEO PWB
(1/3)

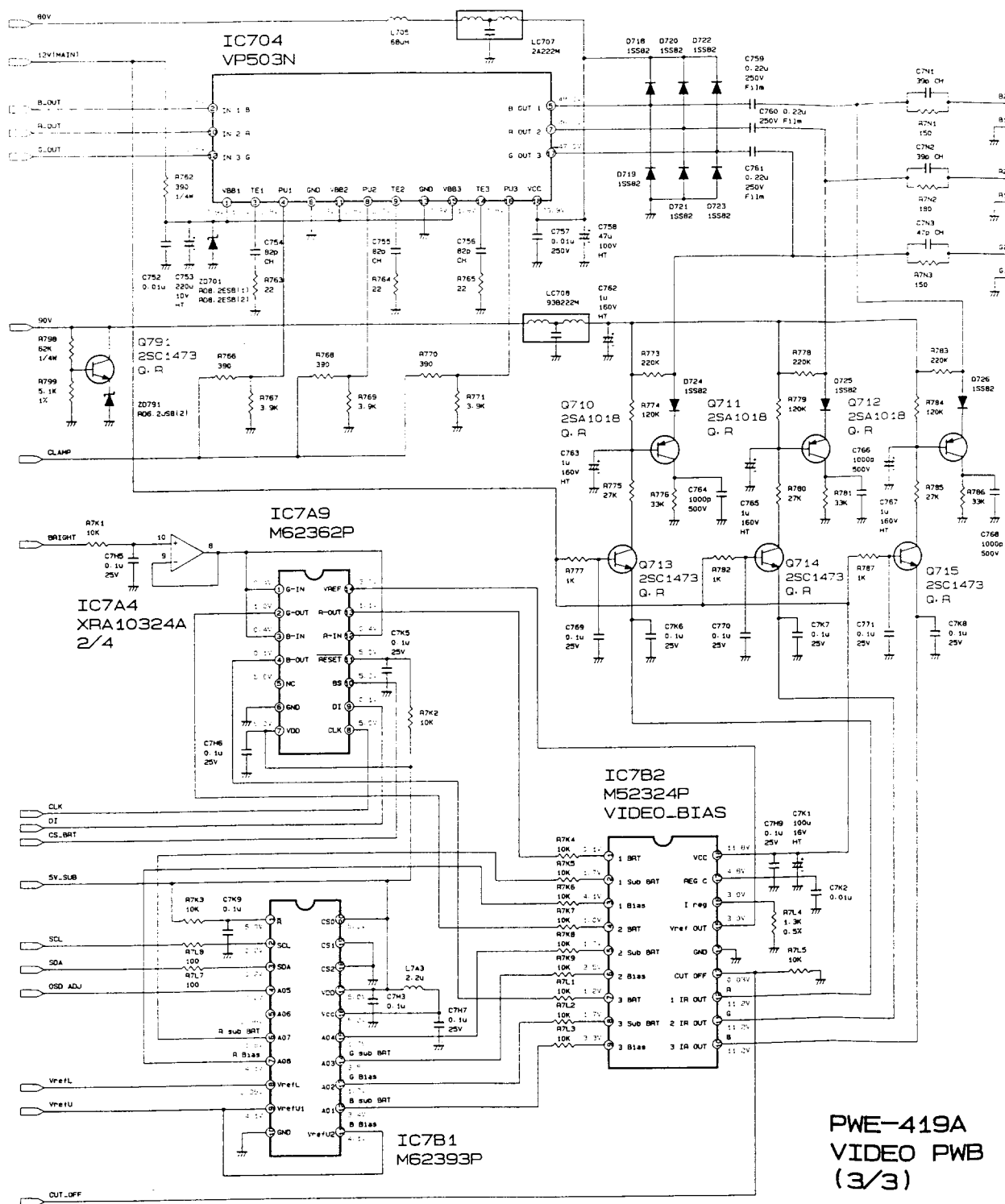




MODEL JC-1537VMA/B/R, JC-1539VMA/B/R

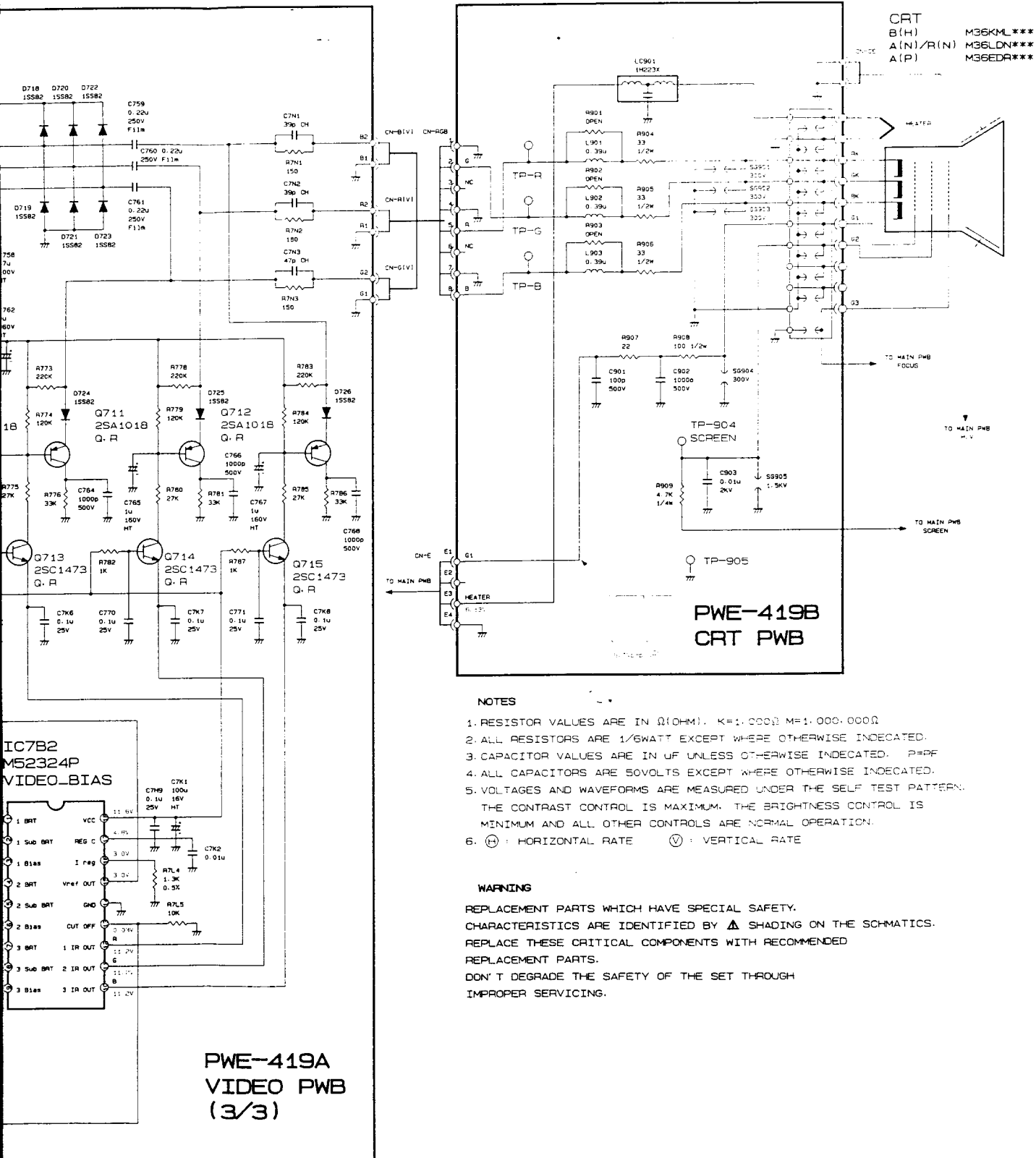


MODEL JC-1537VMA/B/R, JC-1539VMA/B/R

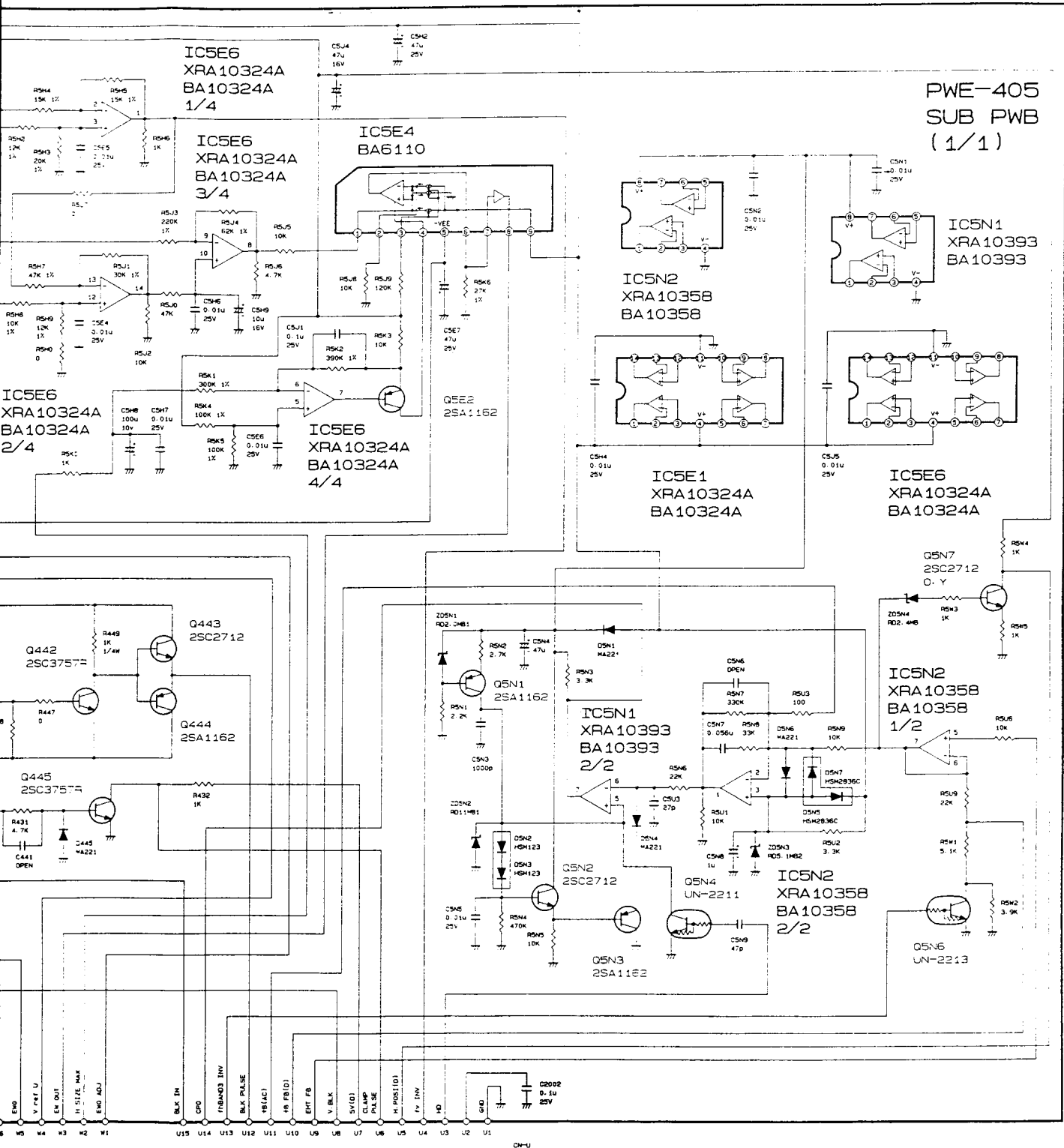


PWE-419A
VIDEO PWB
(3/3)

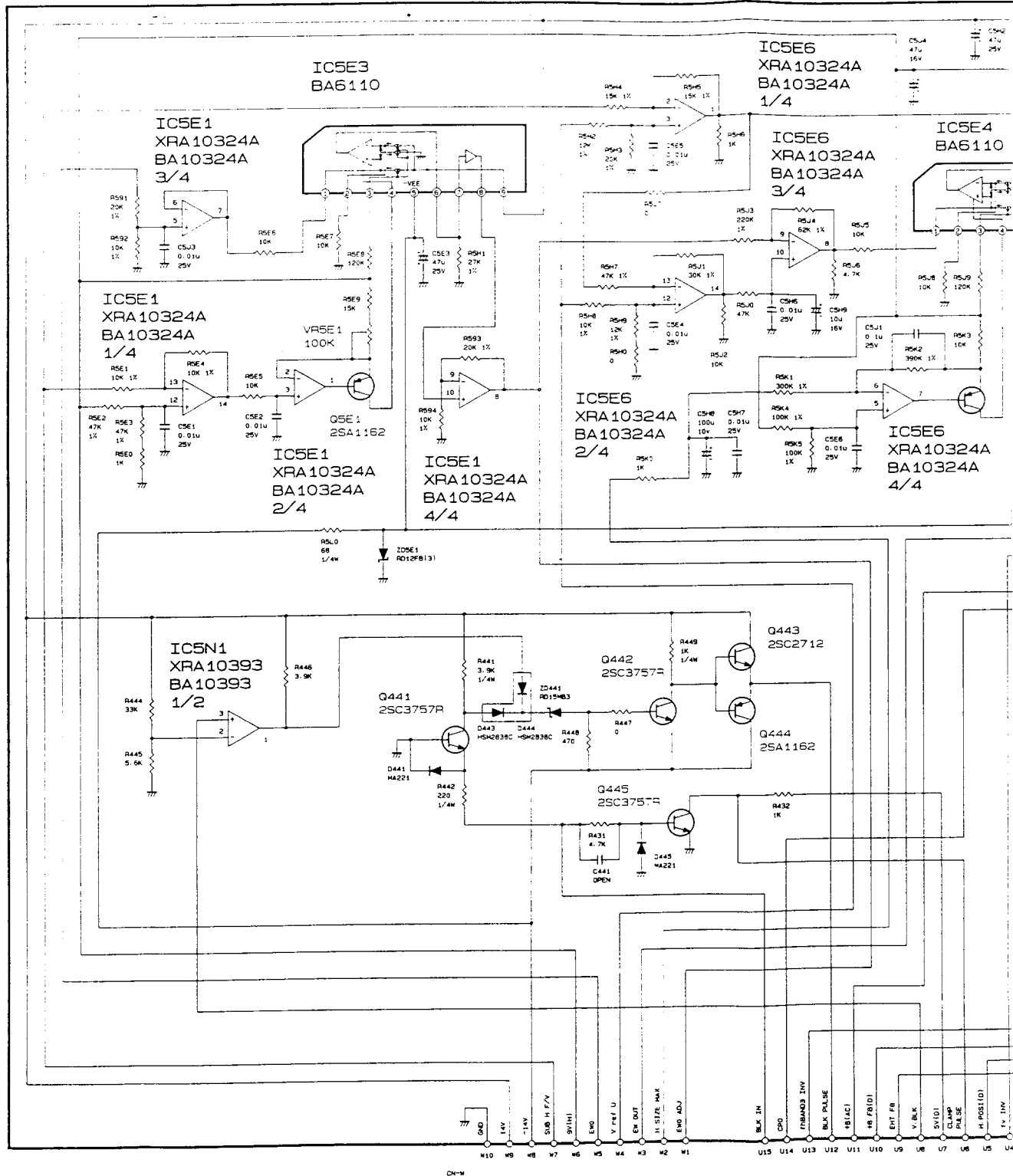
JC-1539VMA/B/R SCHEMATIC DIAGRAM VIDEO PWB



JC-1539VMA/B/R SCHEMATIC DIAGRAM SUB PWB



MODEL JC-1537VMA/B/R, JC-1539VMA/B/R SC



SW. REG. UNIT (DPS-112AB)
31102101

SW. REG. UNI. (DPS IIZAB)

31102101

DEGAUSSING COIL

0 DEF PWB "C"

20VP-P

320VP-P

170V-P

400VP-P

280VP-P

170V-P

IC6C3 UC3844N

IC6C4 UC3844N

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Q6C2 2SA673C

Q6C3 TLP733

Q6C4 MPS2222A

Q6C5 2SA673C

Q6C6 MPS2222A

Q6C7 2SA673C

Q6C8 2SA673C

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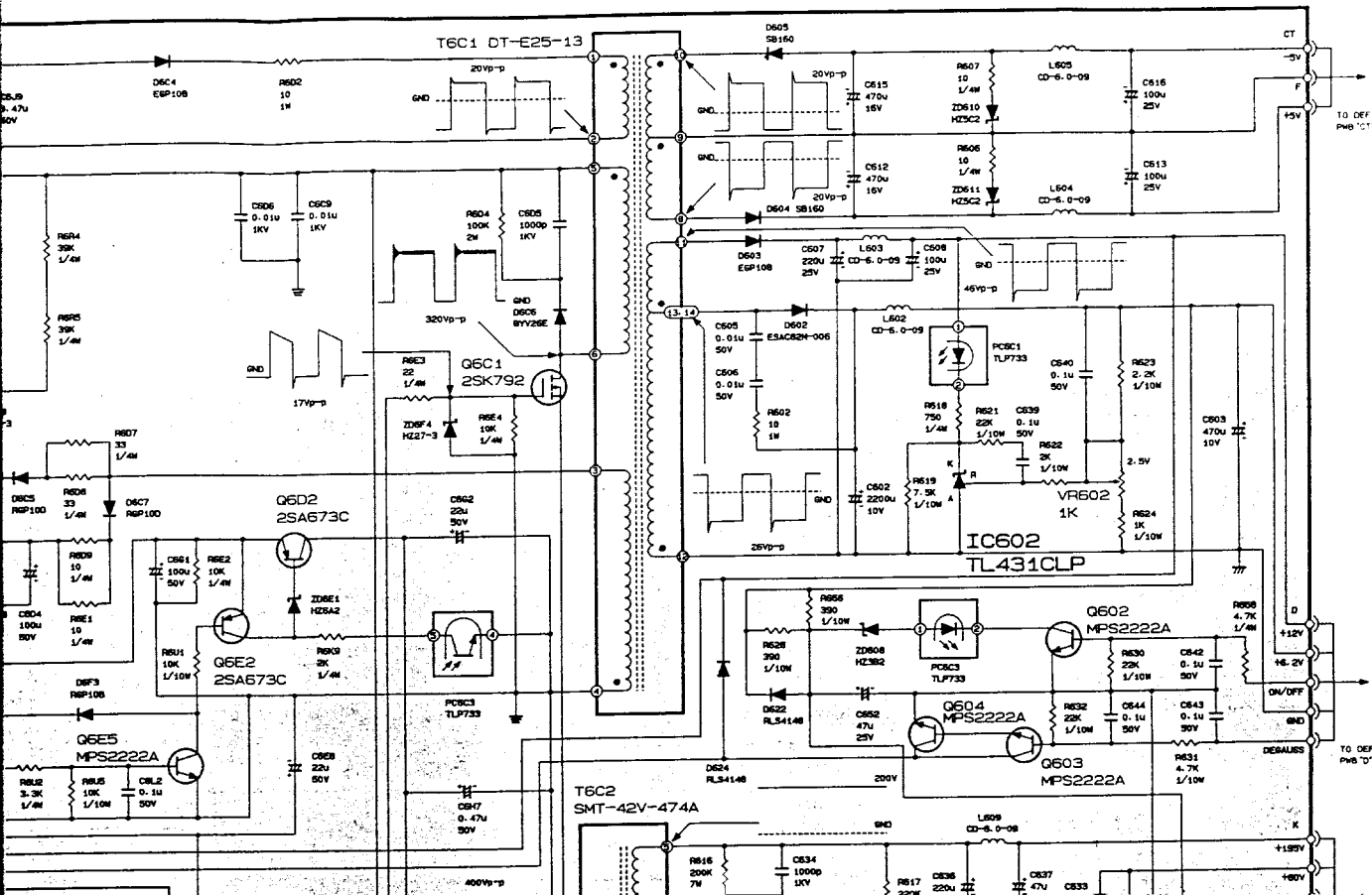
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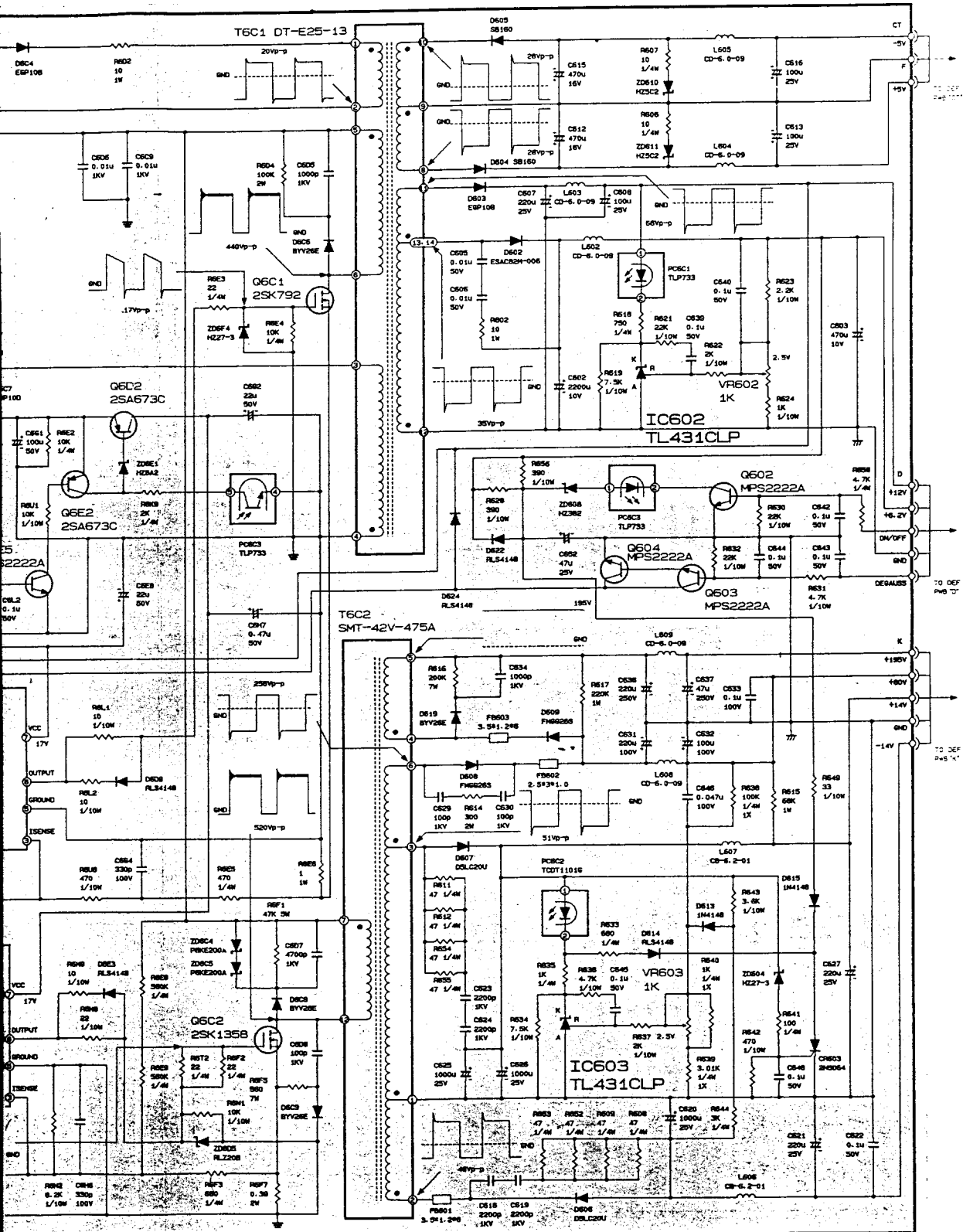
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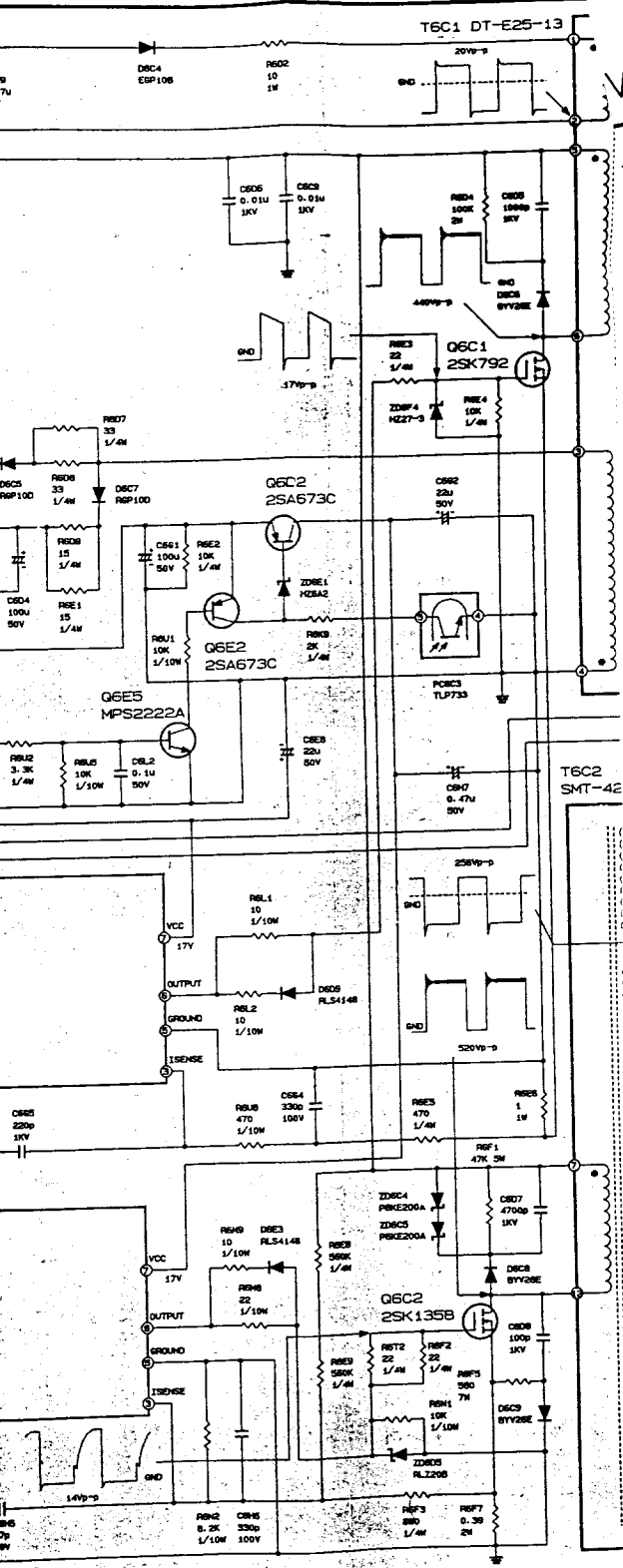
539VMA SW. REG. UNIT (DPS-112AB) SCHEMATIC DIAGRAM



VMB/R SW. REG. UNIT (DPS-112AB-1) SCHEMATIC DIAGRAM



1539VMB/R SW. REG. UNI



VMB/R SW. REG. UNIT (DPS-112AB-1) S

