

Projection TV Training Guide

SD-533HD5 & SD-643HD5



Multimedia & Web Training Department

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Pioneer

S E R V I C E

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Preface

This technical training guide will address the disassembly and adjustments of the Pioneer SD-533HD5 Projection Television.

This guide was designed as a servicing aid and is not intended to replace the service manual. The student should have the appropriate service manual on hand when using this guide. Data in the service manual for this unit contains specific information on safety, parts and adjustments.

Safety information

Important safety data for this Pioneer model is contained in the service manual. Before returning the unit to the customer, complete all product safety obligations and tests. Technicians who bypass safety features or fail to carry out safety checks may expose themselves and others to possible injury, and may be liable for any resulting damages.

For more information on electronic circuits and block diagrams refer to Service manual ARP3094

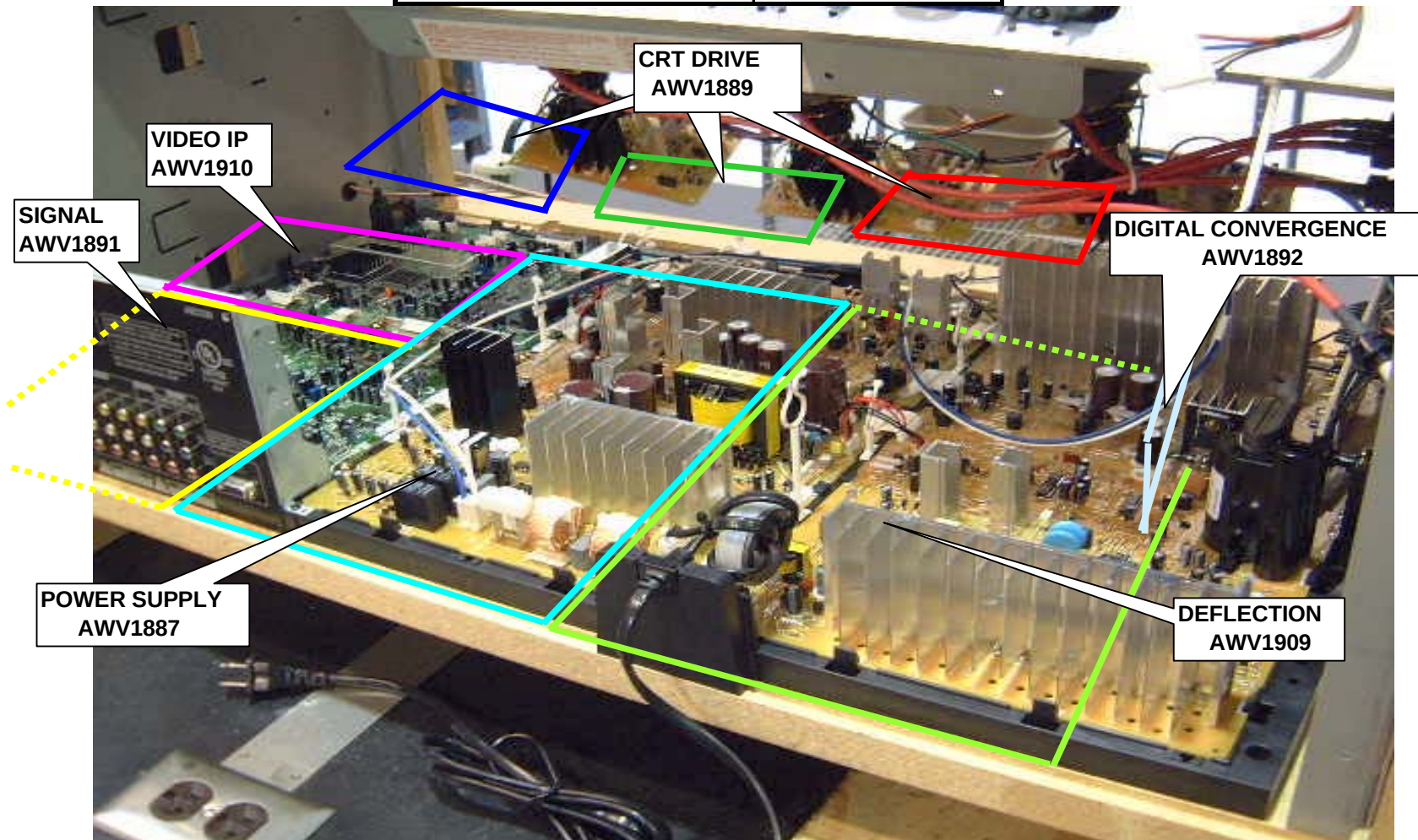


Lead in the solder used in this product is a known reproductive toxicant which may cause birth defects or other reproductive harm. (California Health and Safety Code Section 25249.5).

When servicing this or handling circuit boards and other components which contain solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

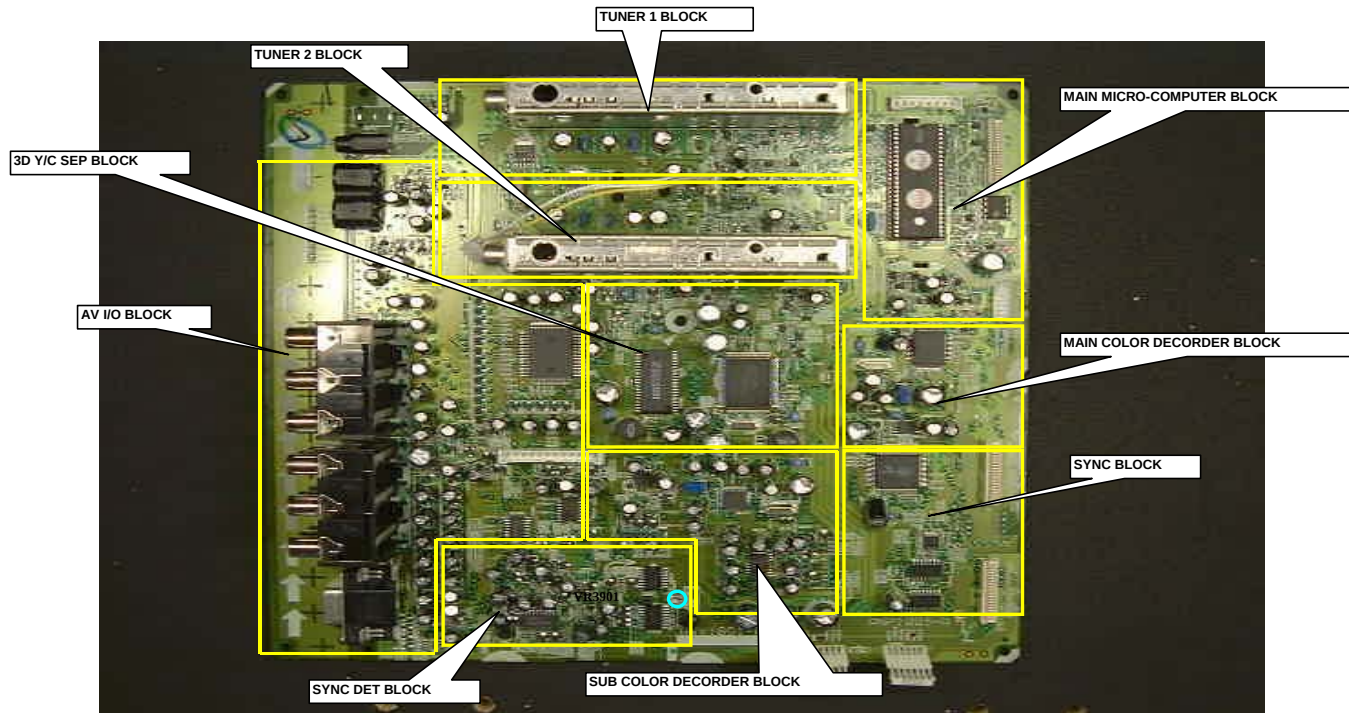
PCB Layout (Back View)

SD-533HD5	
POWER SUPPLY	AWV1887
DEFLECTION	AWV1909
CRT DRIVE	AWV1889
DIGITAL CONVERGENCE	AWV1892
VIDEO IP	AWV1910
SIGNAL	AWV1891



Signal Assembly AWV1891

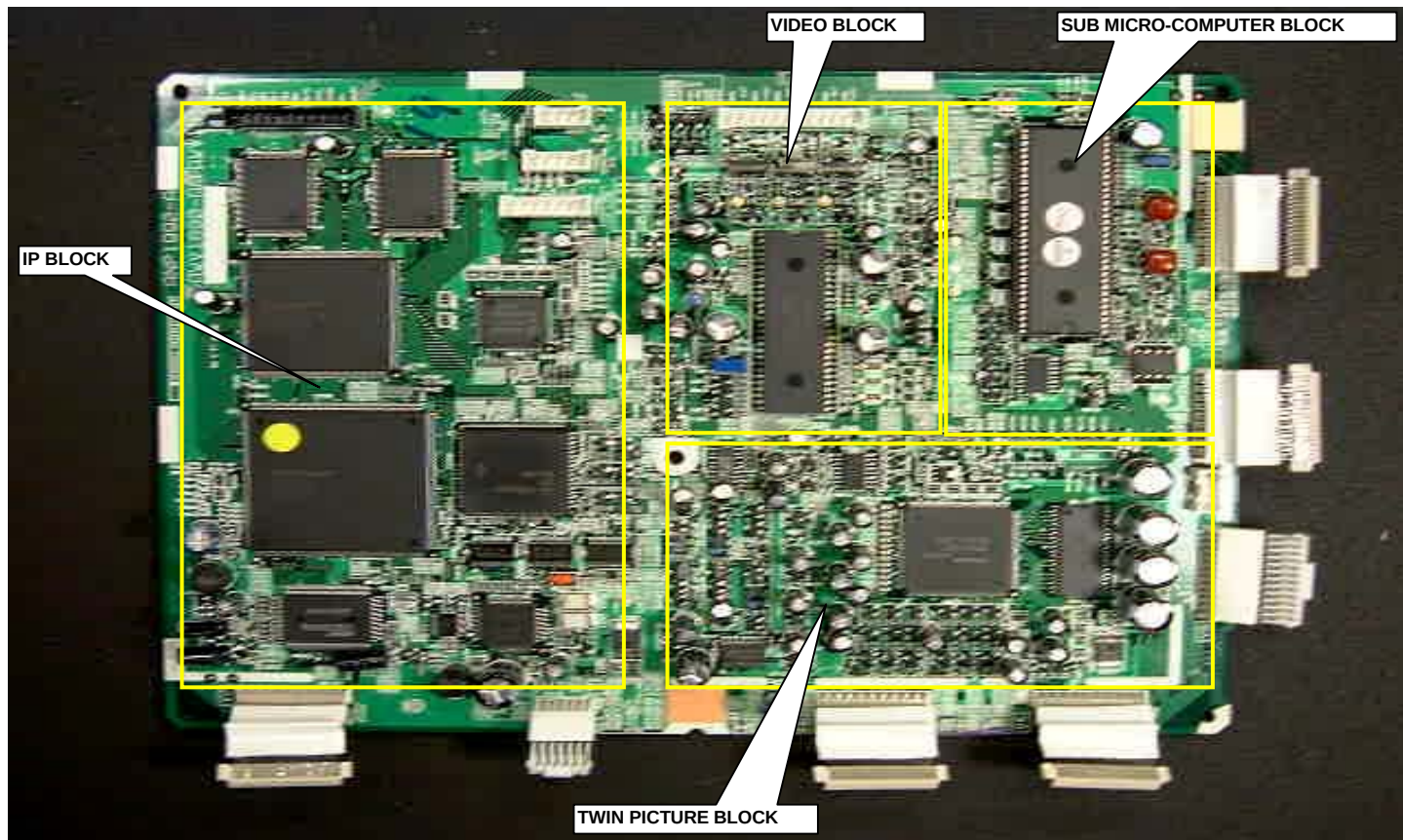
SIGNAL Assembly	AWV1891	Component Location Numbers
TUNER1 BLOCK	"	2101-2200
TUNER2 BLOCK	"	2201-2300
MAIN MICRO-COMPUTER BLOCK	"	2301-2400 4001-4100
3D Y/C SEP BLOCK	"	2501-2600
MAIN COLOR DECORDER BLOCK	"	2601-2700
SUB COLOR DECORDER BLOCK	"	2701-2800
AV I/O BLOCK	"	2801-3000
SYNC BLOCK	"	2401-2500
SYNC DET BLOCK	"	3901-4000



Adjustment

Elite PRO-510HD	SD-533HD5	Adjustment
MAIN Y adjustment	MAIN Y adjustment	Signal Adj Mode FACTORY
MAIN COLOR adjustment	MAIN COLOR adjustment	Signal Adj Mode FACTORY
MAIN TINT adjustment	MAIN TINT adjustment	Signal Adj Mode FACTORY
SUB Y adjustment	SUB Y adjustment	Signal Adj Mode FACTORY
SUB COLOR adjustment	SUB COLOR adjustment	Signal Adj Mode FACTORY
SUB TINT adjustment	SUB TINT adjustment	Signal Adj Mode FACTORY
OSD POSITION adjustment	none	---
TUNER SOUND adjustment	none	---
---	V BLK0 PHASE adjustment	VR3901

Video IP Assembly	AWV1910	Component Location Numbers
SUB MICRO-COMPUTER BLOCK	"	1401-1600
IP BLOCK	"	3201-3900
TWIN PICTURE BLOCK	"	3001-3200
VIDEO BLOCK	"	1901-2100

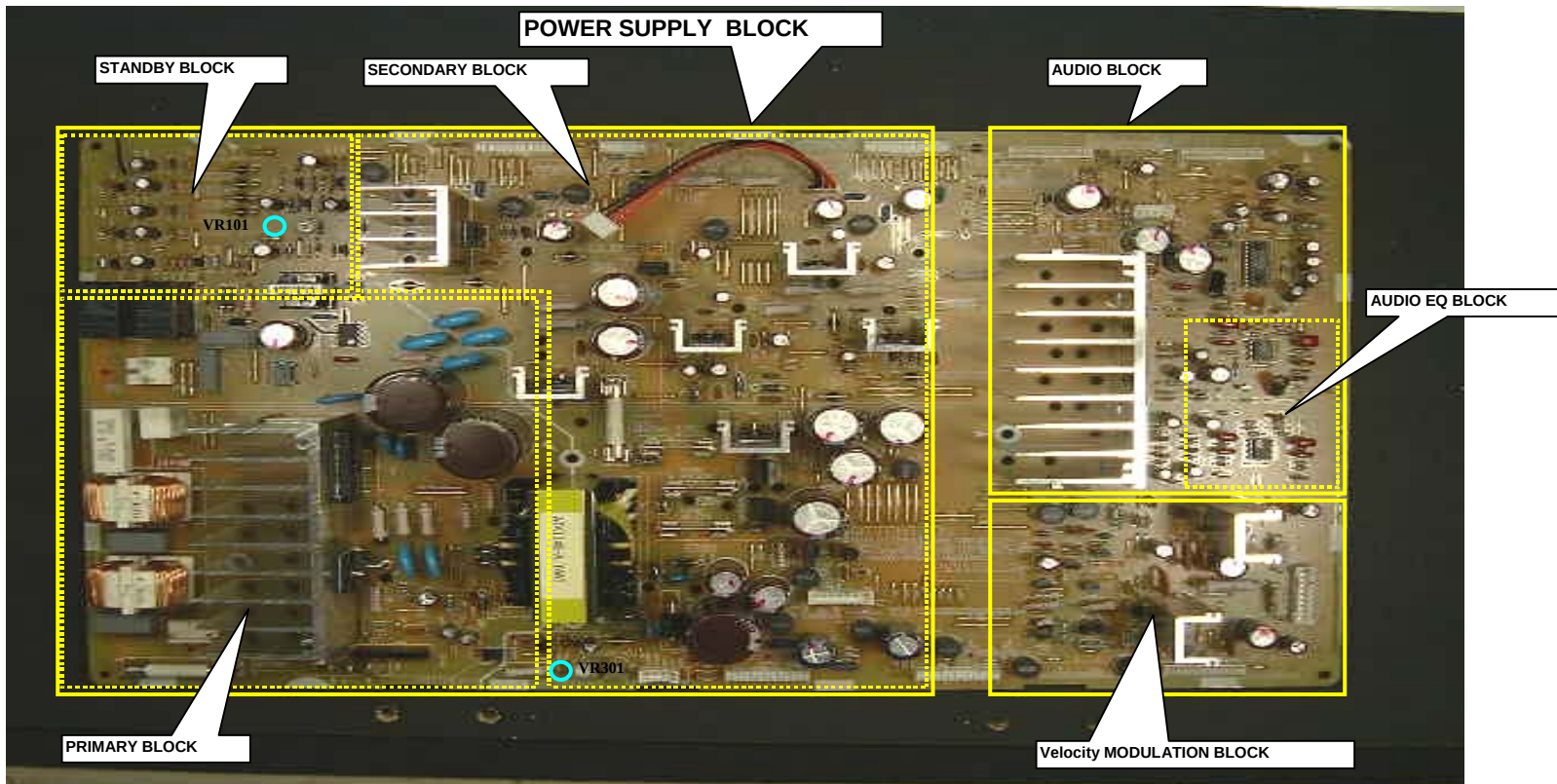


Adjustment

Elite PRO-510HD	SD-533HD5	Adjustment
PANEL RIGHT adjustment	none	---
PANEL LEFT adjustment	none	---
FLESH TONE adjustment	none	---

Power Supply Assembly AWW1887

POWER SUPPLY Assembly	AWV1887	Component Location Numbers
POWER SUPPLY BLOCK		
STANDBY BLOCK	"	101-200
PRIMARY BLOCK	"	201-300
SECONDARY BLOCK	"	301-400
VELOCITY MODULATION BLOCK	"	751-800
AUDIO BLOCK	"	901-1000
AUDIO EQ BLOCK	"	1601-1650

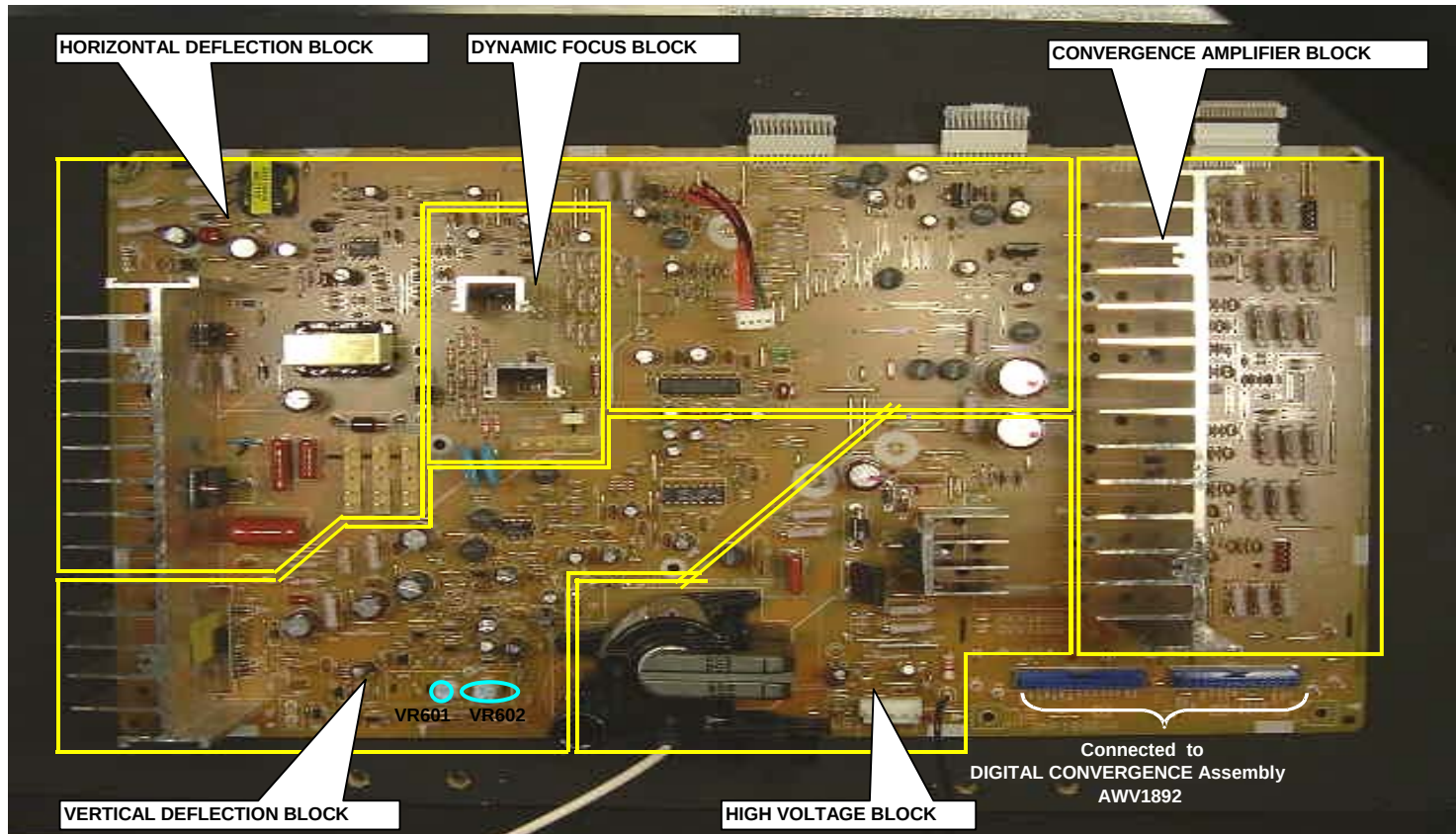


Adjustment

Elite PRO-510HD	SD-533HD5	Adjustment
130v adjustment	120v adjustment	VR101
5V adjustment	5V adjustment	VR301

Deflection Assembly

DEFLECTION Assembly	AWV1909	Component Location Numbers
HORIZONTAL DEFLECTION BLOCK	"	501-600
HIGH VOLTAGE BLOCK	"	601-700
DYNAMIC FOCUS BLOCK	"	701-750
CONVERGENCE AMPLIFIER BLOCK	"	401-500
VERTICAL DEFLECTION BLOCK	"	801-900



Adjustment

Elite PRO-510HD	SD-533HD5	Adjustment
HV adjustment	HV adjustment	VR601
X-RAY adjustment	X-RAY adjustment	VR602

Digital Convergence Assembly AWW1892

DIGITAL CONVERGENCE ASSEMBLY	AWV1892	Component Location Numbers
DIGITAL CONVERGENCE ASSEMBLY	"	1201-1400

DIGITAL CONVERGENCE ASSEMBLY



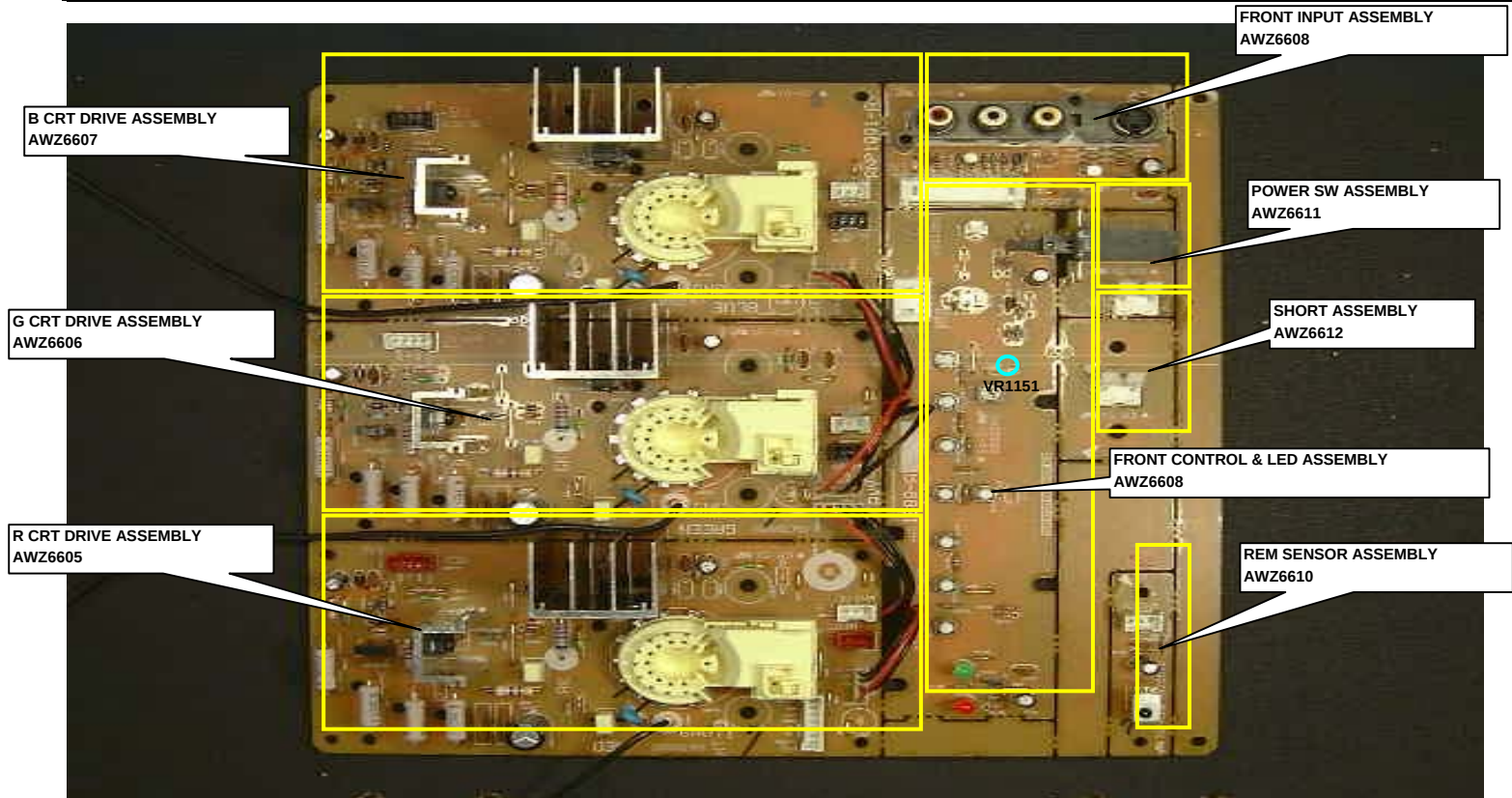
connected to
DEFLECTION Assembly
AWV1888-A/AWV1909-A(for service)

Adjustment

Elite PRO-510HD	SD-533HD5	Adjustment
OSD POSITION adjustment	none	---

CRT Drive And Small Assembly's

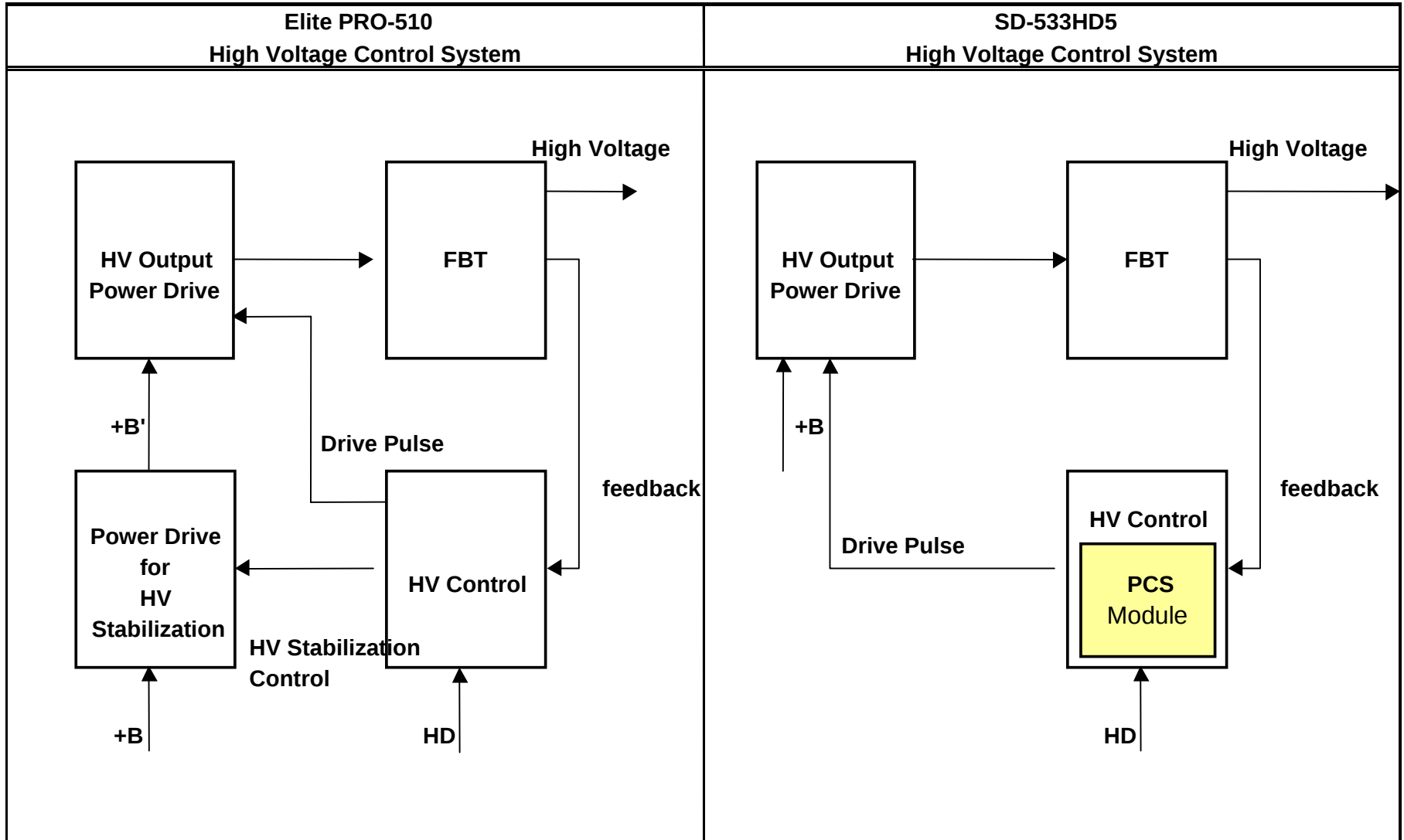
		Component Location Numbers
R CRT DRIVE ASSEMBLY	AWZ6605	1001-1050
G CRT DRIVE ASSEMBLY	AWZ6606	1051-1100
B CRT DRIVE ASSEMBLY	AWZ6607	1101-1150
FRONT CONTROL & LED ASSEMBLY	AWZ6608	1151-1200
FRONT INPUT ASSEMBLY	AWZ6609	
REM SENCER ASSEMBLY	AWZ6610	
POWER SW ASSEMBLY	AWZ6611	
SHORT ASSEMBLY	AWZ6612	



Adjustment

Elite PRO-510HD	SD-533HD5	Adjustment
PRE BRIGHT adjustment	none	---
DPO adjustment	RLS adjustment	VR1151

High Voltage Control Section

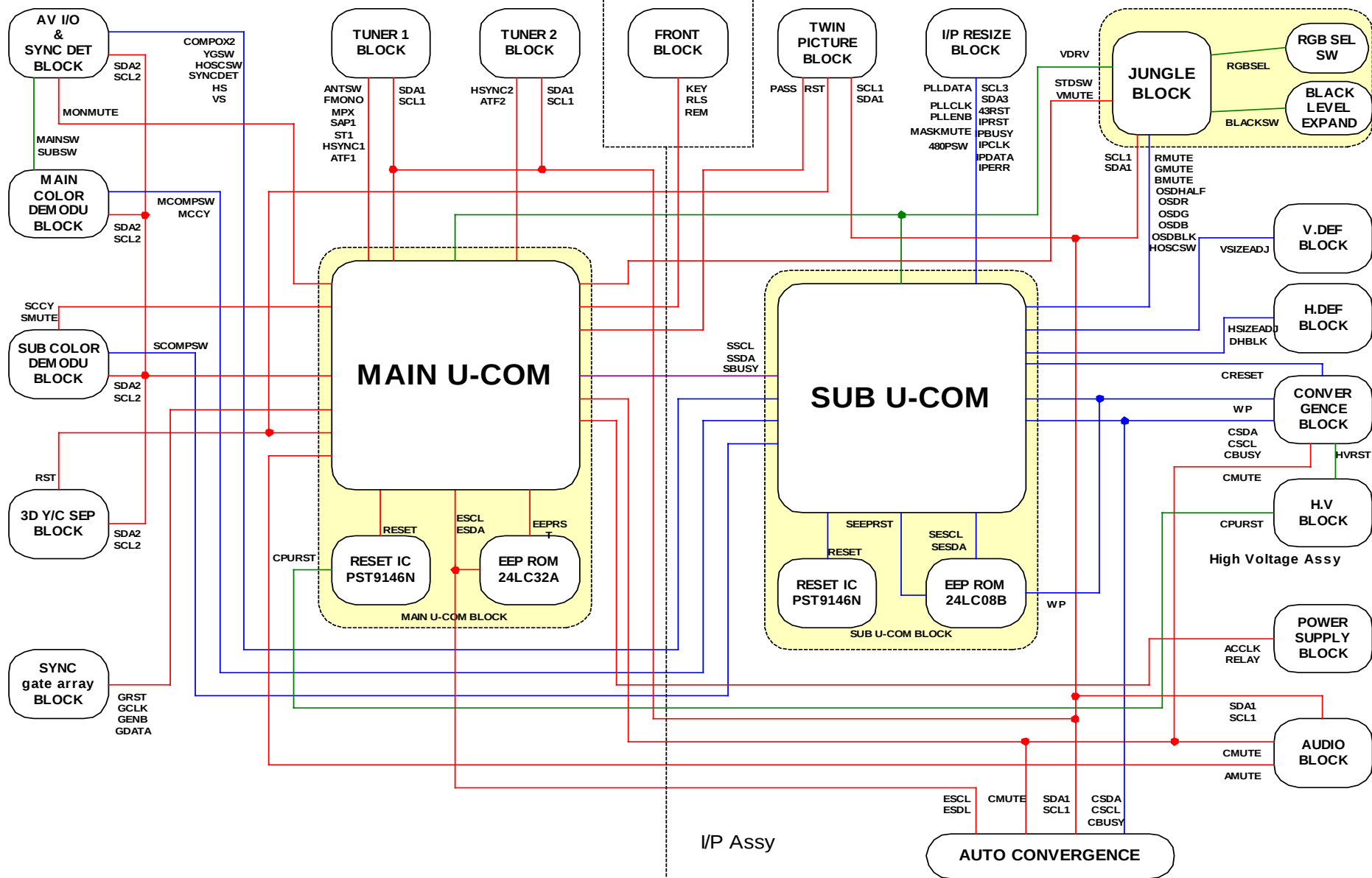


	Elite PRO-510HD	SD-533HD5
3-2 Pull Down 480i INPUT Only	O	O
480i INPUT 4:3Aspect ratio conversion	X	O
480p INPUT 4:3Aspect ratio conversion	X	O
System clk fclk	56 MHz	56 MHz 4:3 normal 54 MHz

Vertical Blanking

Vertical Blanking Control	Elite PRO-510	SD-533HD5
SYSTEM	From main-color demodulation block To digital convergence block	From H. def block To digital convergence block
NATURAL WIDE @15 KHZ	O	O
CINEMA WIDE @15 KHZ	O	O
ZOOM @15 KHZ	O	O
4:3 NORMAL @15 KHZ	MODE FULL@15 KHZ	I/P MODE FULL@15 KHZ
FULL @15 KHZ	O	O
NATURAL WIDE @31 KHZ	X	O
CINEMA WIDE @31 KHZ	X	O
ZOOM @31 KHZ	X	O
4:3 NORMAL @31 KHZ	X	I/P MODE FULL @ 31 KHZ
FULL @31 KHZ	O	O
FULL @33 KHZ	X	O

System Control



TUNER BLOCK

SIGNAL ASSY

TWIN PICTURE BLOCK

MAIN COLOR DECODER BLOCK

3D Y/C SEP. BLOCK

SUB COLOR DECODER BLOCK

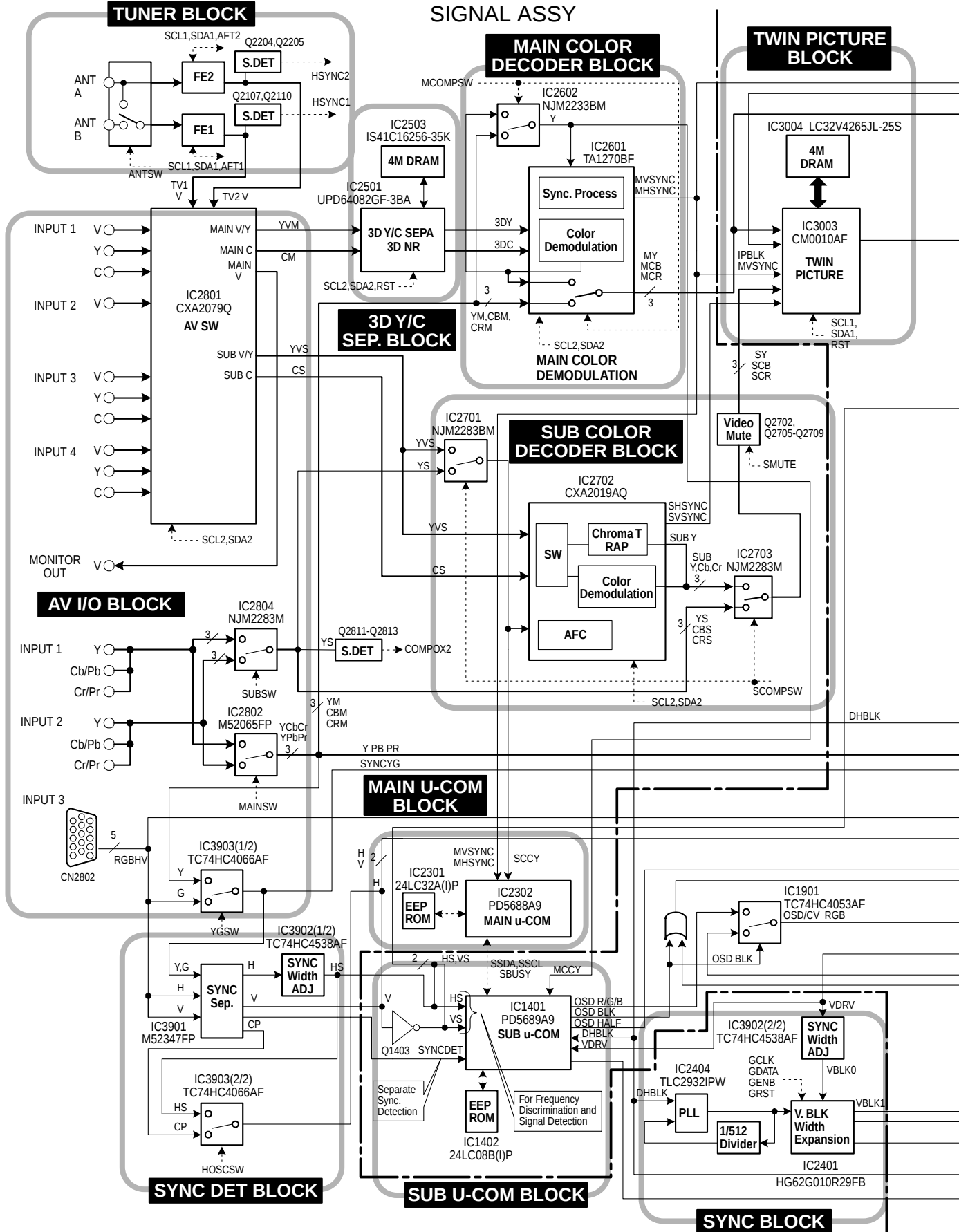
AV I/O BLOCK

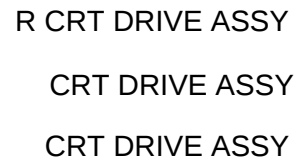
MAIN U-COM BLOCK

SUB U-COM BLOCK

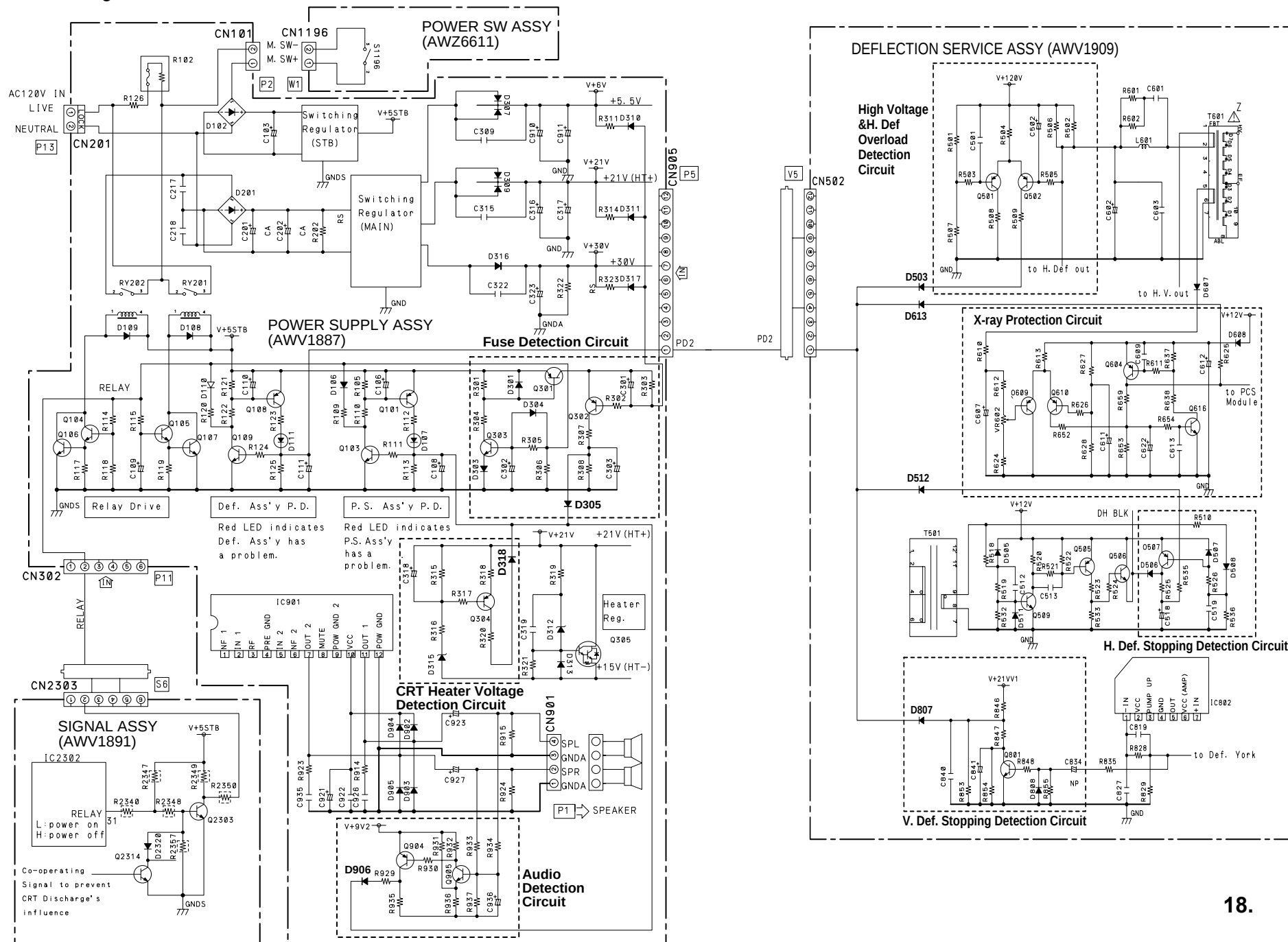
SYNC DET BLOCK

SYNC BLOCK

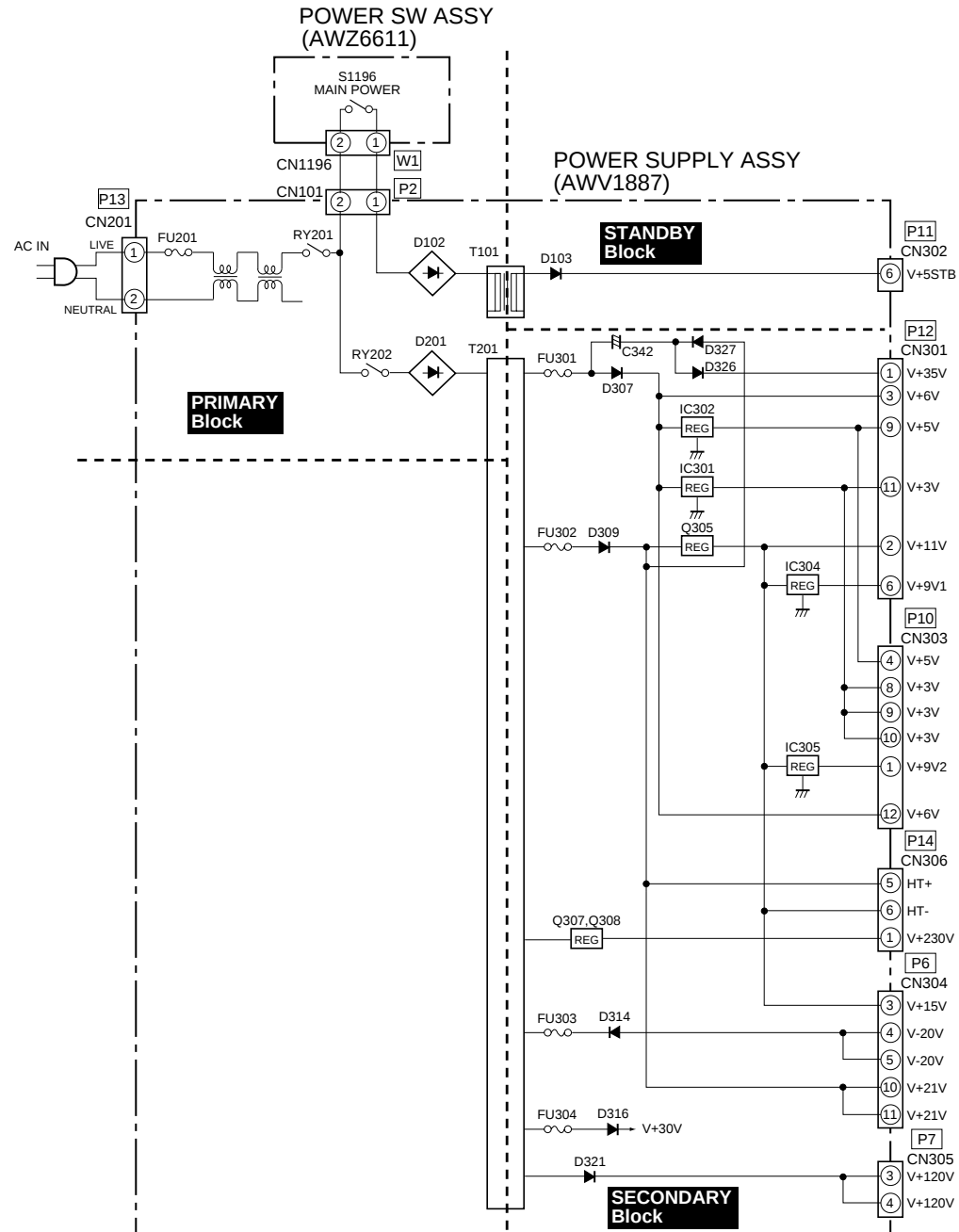




4. Block Diagram of the Protection Circuit



POWER SUPPLY Block



Adjustment 2

	Elite PRO-510HD	SD-533HD5
NATURAL WIDE @ 15KHZ	O	O
CINEMA WIDE @ 15KHZ	O	O
ZOOM @ 15KHZ	O	O
4:3NORMAL @ 15KHZ	O	O
FULL @ 15KHZ	O	O
NATURAL WIDE @ 31KHZ	x	O
CINEMA WIDE @ 31KHZ	x	O
ZOOM @ 31KHZ	x	O
4:3NORMAL @ 31KHZ	x	O
FULL @ 31KHZ	O	O
FULL @ 33KHZ	O	O

	Elite PRO-510HD	SD-533HD5
1	NATURAL WIDE @ 15KHZ	NATURAL WIDE @ 15KHZ NATURAL WIDE @ 31KHZ
2	CINEMA WIDE @ 15KHZ	CINEMA WIDE @ 15KHZ CINEMA WIDE @ 31KHZ
3	ZOOM @ 15KHZ	ZOOM @ 15KHZ ZOOM @ 31KHZ
4	FULL @ 15KHZ 4:3 NORMAL @ 15KHZ FULL @ 31KHZ	FULL @ 15KHZ 4:3 NORMAL @ 15KHZ FULL @ 31KHZ 4:3 NORMAL @ 31KHZ
5	FULL @ 33KHZ	FULL @ 33KHZ

Adjustment 3

W/B adjustment

	Elite PRO-510HD	SD-533HD5
STD (COMPOSITE & "S")	O	O
COMPONENT	O	none
HD	O	O
FILM	O	none
B&W	O	not function
RGB	O	O

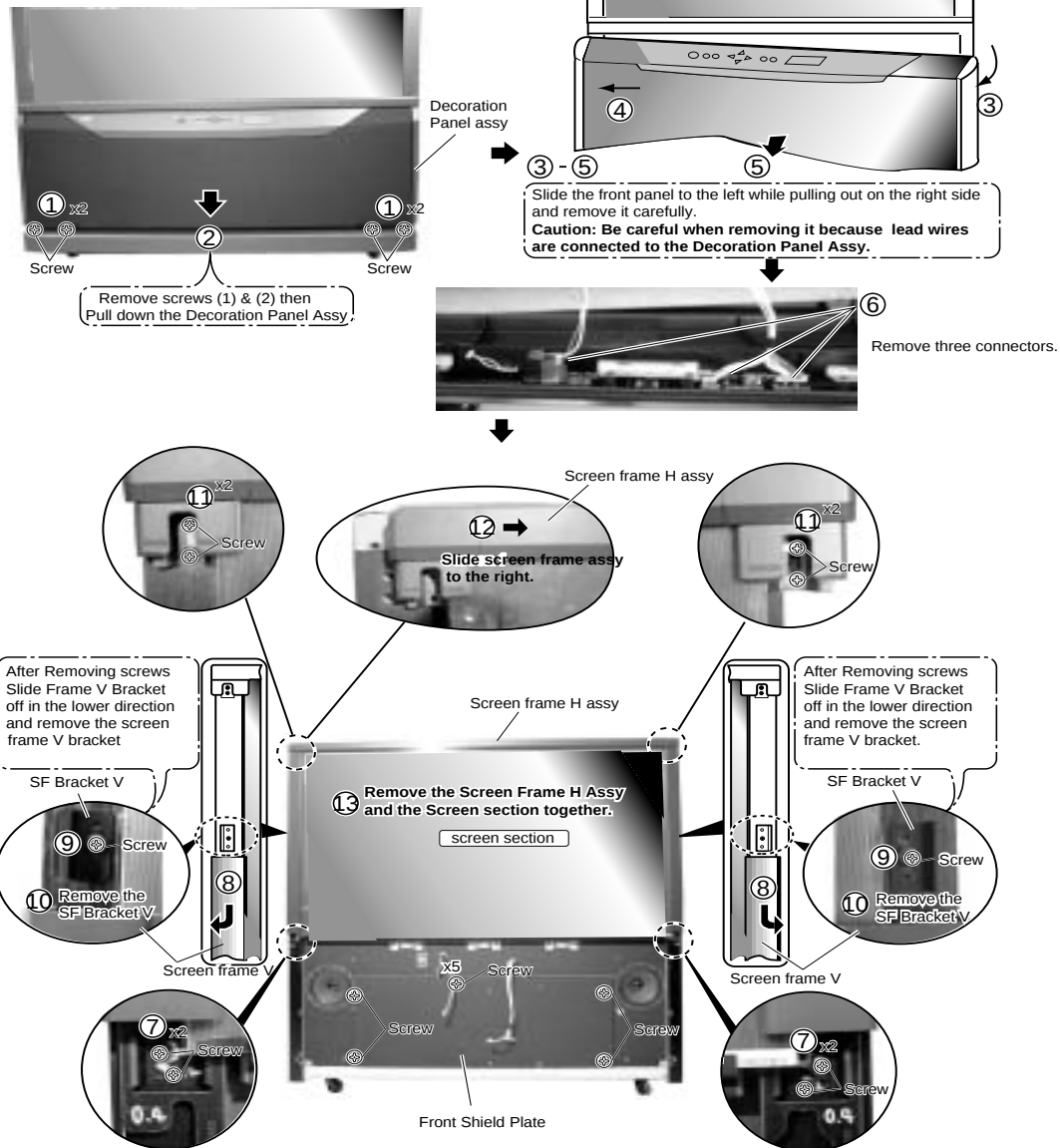
PANEL adjustment

	Elite PRO-510HD	SD-533HD5
PANEL RIGHT	O	none
PANEL LEFT	O	none
PANEL BRIGHT @ 15K	O	O
PANEL CONTRAST @ 15K	O	O
PANEL BRIGHT @ 31K	none	O
PANEL CONTRAST @ 31K	none	O

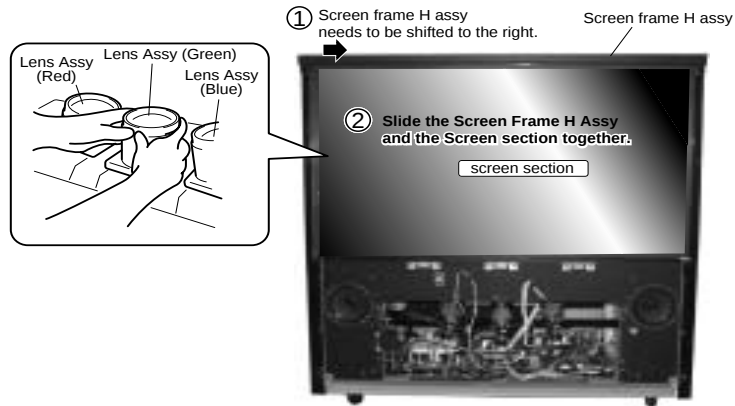
Disassembly And Adjustment Section

DISASSEMBLY

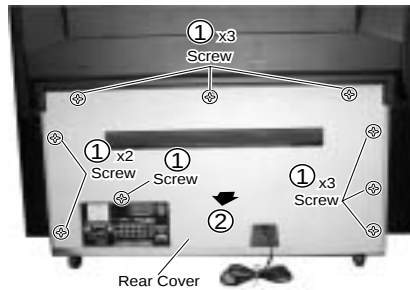
How to remove a front part



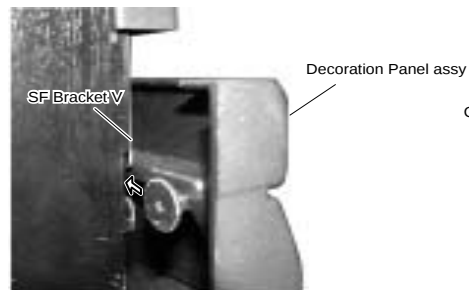
How to remove the screen (for adjusting Lens assemblies)



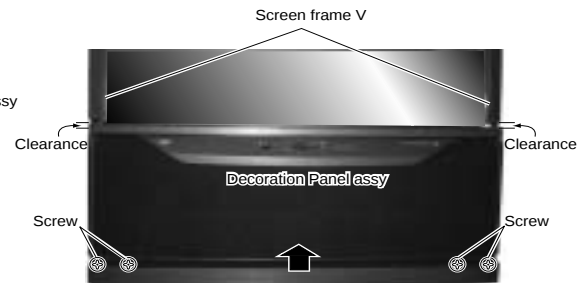
How to remove the rear cover



The notes on an assembly



A Decoration Panel Assy is set so that the joint of SF Bracket V may be seated in place.



When installing the decoration panel, screw stops will prevent the panel from sliding too far right and will lock it in place.

SD-533HD5, SD-643HD5

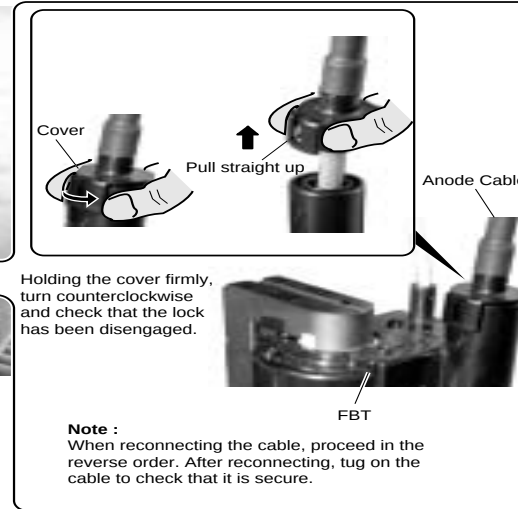
Disconnect the Anode Cable

WARNING :

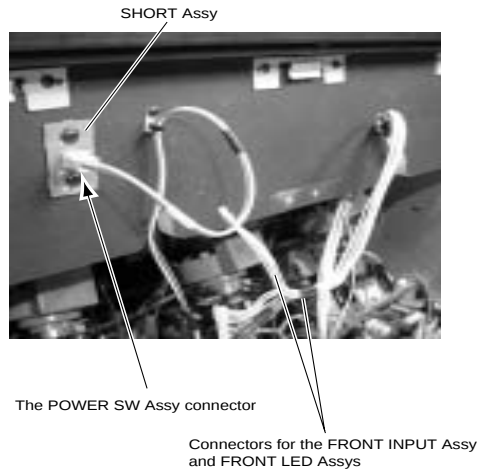
Before you disconnect the Anode Cable, turn off the power, unplug the AC plug and let the unit discharge for more than 1 minute.



DEFLECTION SERVICE ASSY

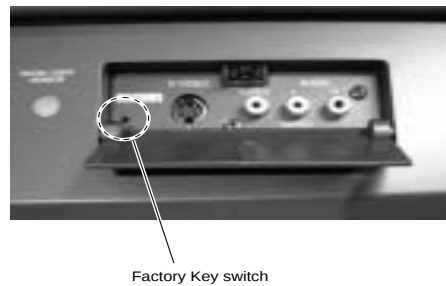


The method of power-on (for service)



- After removing the Front Grille assy, remove the connectors from the POWER SW Assy, FRONT INPUT Assy and FRONT LED Assy and remove the Grille.

Next move the power connector to the short assy. The short assy is a bypass connector for the main power switch. You will not need to connect the LED or front input connectors for servicing. The remote control functions will work normaly in this state. Factory adjust mode can be entered by connecting the front input board and pressing the factory key switch.



ADJUSTMENT

INTRODUCTION

• IMPORTANT

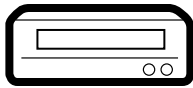
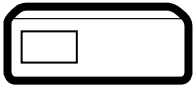
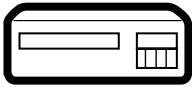
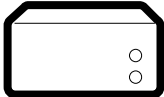
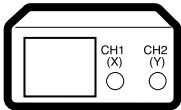
When replacement of the following assemblies are required during repairs, be sure to replace the EEPROMs with the mounted ones in order to retain the adjustment data of the unit and to facilitate adjustment after the replacement of the assemblies.

Name of Assy	EEPROM	Main Contents of Memory
SIGNAL Assy	IC2301 [24LC32(I)P]	Adjustment data, such as W/B and color data, in FACTORY mode User data set on the MENU
DIGITAL CONV. Assy	IC1203 [24LC128P]	Convergence adjustment data
VIDEO IP SERVICE Assy	IC1402 [24LC08B(I)P]	Convergence offset data

Notes:

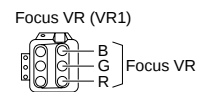
- Even if the EEPROMs are replaced, adjustment may be necessary, depending on the part or assembly to be replaced.
For details, see page 120.
- Even if the EEPROMs are replaced, if the EEPROMs are damaged or if their data have been changed from the adjustment data, the status before the failure will not be restored. Check the status of the unit after replacement of the EEPROMs, and readjust if necessary.

JIGS AND MEASURING INSTRUMENTS

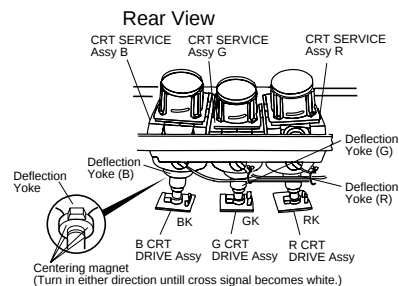
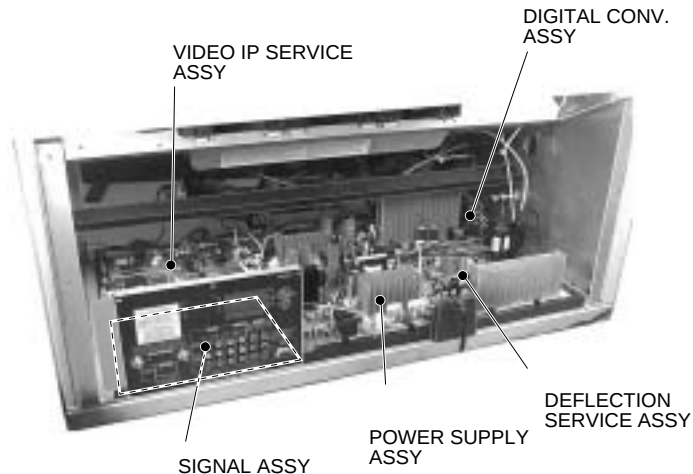
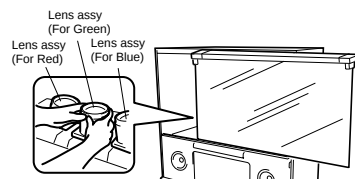
 Remote control unit AXD1457	 ⊖ Screwdriver	 ⊖ Adjustment screwdriver	 Color bar generator
 D. DC Voltmeter	 LD Player	 Monoscope	 Dual-trace oscilloscope
 Frequency counter	 For HD Signal generator		

ADJUSTMENT LOCATION AND ITEMS

Assembly Adjustment Location



Front View



■ Adjustment Items

- ① Brightness Adjustment
- ② Deflection Yoke Adjustment
- ③ Focus Adjustment
- ④ Screen Size Adjustment
- ⑤ Convergence Adjustment
- ⑥ White Balance Adjustment
- ⑦ Panel Adjustment
- ⑧ Panel Adjustment for 480P

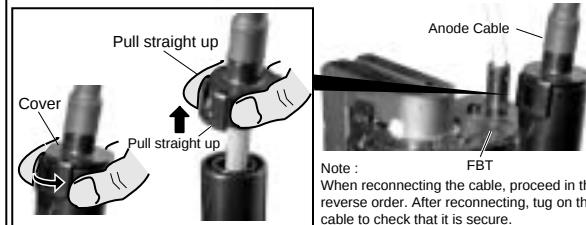
MEASURING METHOD

Disconnect the FBT anode cable as shown below.
Measure at the point where the cable enters the FBT.

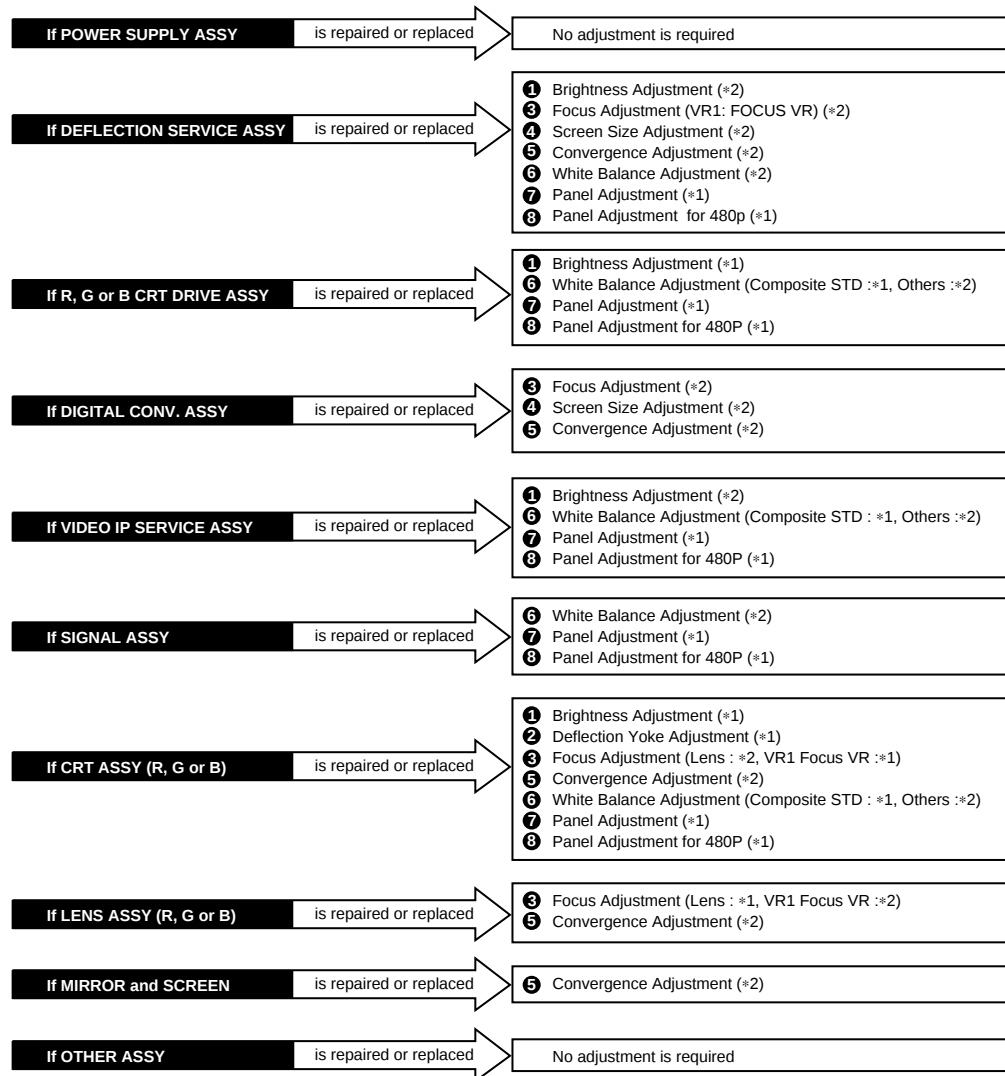
Caution : Take extra precaution when measuring the voltage. High voltage are also present in surrounding circuit boards. (CRT assy, POWER SUPPLY assy)

SERVICEMAN WARNING

Before removing the anode cable, turn off the power, unplugging the AC plug and let the unit discharge for more than 1 minut.



Assembly Adjustment Location Guide



Note :

*1: Readjustment necessary

*2: Turn on the power and confirm the screen. When adjustment deviates, it is readjusted if necessary.

- When the EEPROMs are replaced, check the status of the unit.
- If any IC of the EEPROM is damaged, readjustment of all the items is necessary.

• The necessary adjustment items differ, depending on the assembly or optical part replaced. Check and readjust the adjustment items corresponding to the replaced assembly or part, following adjustment procedures 1 to 8.

Example: When the DIGITAL CONV. Assy is replaced, perform the following:

3. Focus check/adjustment → 4. Screen size check/adjustment → 5. Convergence check/adjustment

FACTORY ADJ MODE

Factory Adjustment Mode

Start

1st FAC

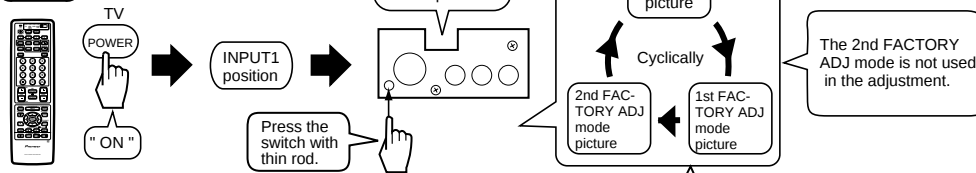
..... Start adjusting

..... Select 1st FACTORY ADJ mode, then adjust.

Select 1st FACTORY ADJ Mode

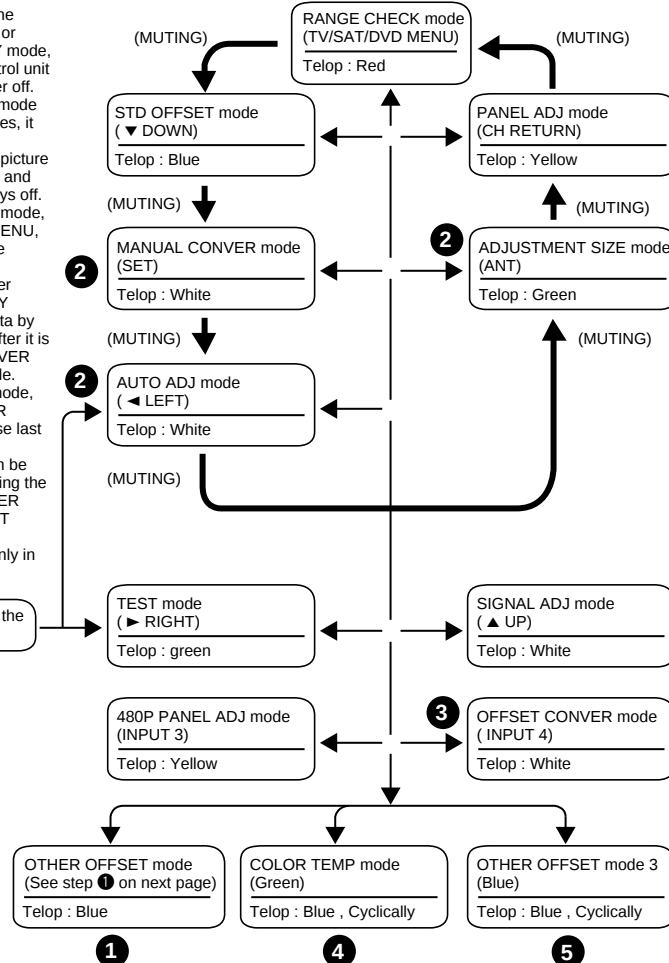
Selecting the mode for adjustment operations.

Start



- To enter FACTORY mode, use the key(s) on the remote control unit or main unit. To release FACTORY mode, use the key(s) of the remote control unit or the main unit, or turn the power off. If the unit remains in FACTORY mode without any operation for 8 minutes, it will be automatically released.
- In FACTORY mode, data for the picture and audio qualities are standard, and the FLESH TONE setting is always off.
- When the unit enters FACTORY mode, settings such as audio muting, MENU, and SPLIT (two split-screens) are released.
- The Convergence data which user adjusted are within the FACTORY mode. Clear the convergence data by releasing the FACTORY mode after it is further within the MANUAL CONVER mode or OFFSET CONVER mode.
- When the unit exits FACTORY mode, the TV/CATV mode becomes AIR (settings of ANT and CH are those last stored in memory).
- CONVER. OSD (cross hatch) can be turned on and off cyclically by using the YELLOW key only during CONVER mode (MANUAL, AUTO, OFFSET adjustments). (Default: The cross hatch is on only in CONVER. mode.)

Not used in the adjustment.

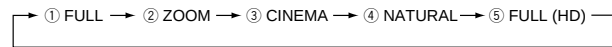


1 OTHER OFFSET mode

To enter the OFFSET mode of each picture quality, use the following keys and codes of the remote control unit:

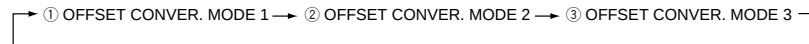
		Key(s) on the Remote Control Unit
A	STD OFFSET MODE	DOWN
C	COMP (15 kHz) OFFSET MODE	P in P CH-, SUB CH-
D	COMP (31 kHz, 33 kHz) OFFSET MODE	P in P CH+, SUB CH+
B	TV OFFSET MODE	RED
M	COLOR TEMP FILM for THEATER	SLEEP
L	COLOR TEMP FILM for STD & GAME	SWAP
T	RGB OFFSET MODE	CH ENTER

2 The screen size modes change cyclically with each press of the SCREEN key as follows:



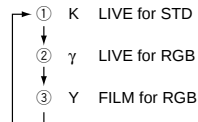
Note :The initial mode is always FULL.

3 The OFFSET CONVER. modes change cyclically with each press of the INPUT 4 key as follows:



Note :The initial mode is always OFFSET CONVER. MODE 1.

4 The offset data of the picture quality in COLOR TEMP mode change cyclically with each press of the GREEN key as follows:



Note :The initial mode is always LIVE for STD when the GREEN key is pressed.

5 The offset data of picture quality change cyclically with each press of the BLUE key as follows:



Note :The initial mode is always 1 THEATER OFFSET MODE when the BLUE key is pressed.

1 Brightness Adjustment

Start

1st FAC

Input signal : Black Burst (INPUT 1)

DOWN

STD

OFFSET

Color

b

Telop: Blue

Data value

0

+

CH

-

b

0

4

Black burst

STD

OFFSET

BRIGHT

CUT-R

CUT-G

CUT-B

+

CH

-

+

VOL

-

Cut off level
(180V DC)

GND

G CRT DRIVE ASSY

R1058 -GK

Oscilloscope

When the DEFLECTION SERVICE Assy or VIDEO IP SERVICE Assy is replaced, check the following to confirm if the above adjustment is necessary:

- (1) Make a note of the data of CUT R, CUT G, CUT B, and BRIGHT. (1st FAC) (▼ DOWN)
- (2) Input "0" as parameters for (1) and check R1058-GK of the G CRT DRIVE Assy.

If the levels are within $180\text{ V} \pm 5\text{ V}$, the adjustment is not necessary.

Input the noted data.

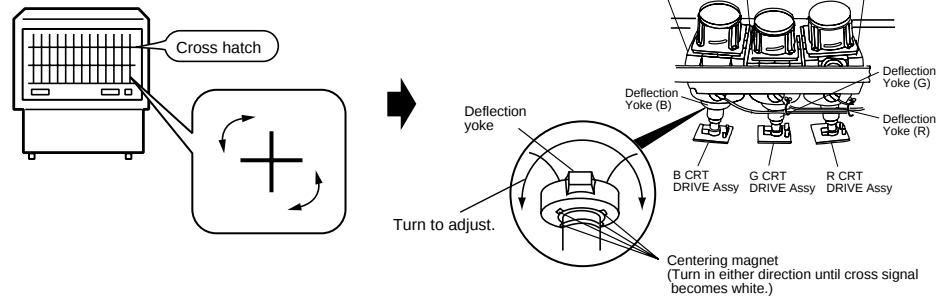
If the levels are not within the above level, proceed with the above adjustment.

2 Deflection Yoke Adjustment

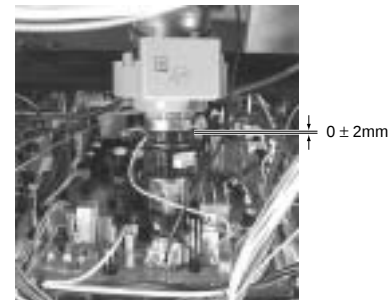
2 -1 Deflection Yoke Lean Adjustment

Start

- Input a stable signal (e.g. from the DVD/LD player or SG) to the INPUT 1 connector.
- MENU → SETUP → CONVERGENCE → FULL AND 4:3 NORMAL → ADJ MULTI-POINT
Enter the MULTI-POINT (FULL) in the CONVERGENCE.
- The cross hatch disappears if there is no operation with the remote control unit for about 8 minutes. If the cross hatch disappears, repeat the above operation with the remote control unit.

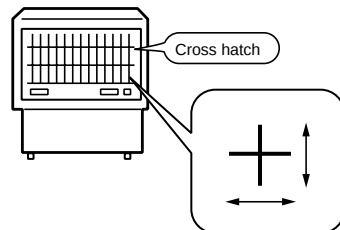


- Turn the deflection yoke of the replaced CRT so that the cross hatch of the color corresponding to the replaced CRT converges with that of the CRTs not replaced.
- When a CRT is replaced, check the position of the VM (Velocity Modulation) yoke.

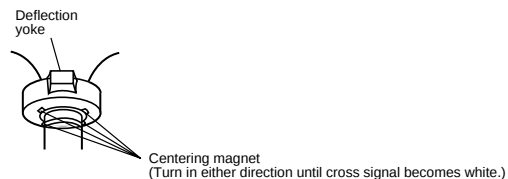


2 -2 Screen Center Adjustment

Start



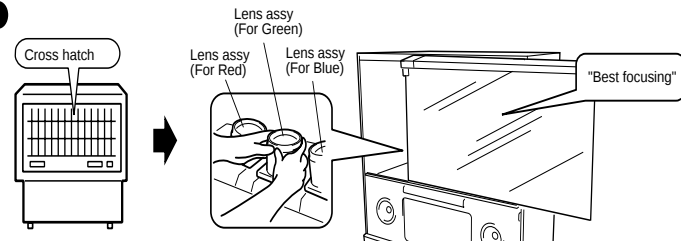
- Move the centering magnet of the deflection yoke for the replaced color so that the horizontal and vertical lines at the center of the screen align with the lines for a color not replaced.
- Secure the centering magnet from moving after adjustment is finished.



3 Focus Adjustment

3 -1 Focus Adjustment of Lens Assy

Start



3 -2 Focus VR Adjustment



Focus VR (VR1)

Turn the Focus VR for best focusing.

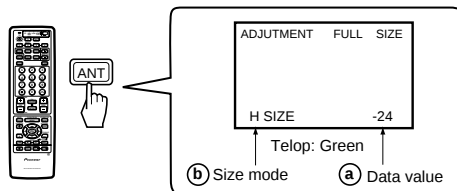
4 Screen Size Adjustment

Check if both vertical and horizontal sizes are within $91\% \pm 2\%$. If they are not, perform the size adjustment as follows:

4 -1 Size Mode

Start

1st FAC



Note :
Screen mode : FULL

(a) Data value



-128 to 126
(even data only)

- Mode for roughly adjusting the horizontal and vertical sizes of the main deflection.
- In this mode, the color is green only, screen size is FULL and the contrast is +10.
- The above settings are cleared when this mode is exited.

(b) Size mode

① ②

① : H Size (15 kHz)

② : V Size

③

③ : H PHA (15K)

⑥

⑥ : H SIZE (33K)
(fixed value D can be varied)

⑨

⑨ : H PHA (31K RGB)

⑩

⑩ : H PHA (33K RGB)

CH +

CH + : H PHA (31kHz)

CH -

CH - : H PHA (33kHz)

Note :

- The adjustment is unnecessary for D so that is set in factory shipment by the most suitable value. However, please adjust it when a screen is missed when displayed the HD source on the screen.
- For H PHA, refer to the section "• Reference."

Table on H SIZE and V SIZE data

Picture Quality Mode	H SIZE	V SIZE
NATURAL WIDE	A	B
CINEMA WIDE	A	B
ZOOM	A	B
FULL	A	B
FULL for HD	A+D	B

A, B : Adjustment values
D : Fixed values
A+D : Addition of A and D

- Perform the H SIZE and V SIZE adjustments only in FULL mode (NTSC MONOSCOPE signal input).
- Release the FACTORY mode, then change the screen mode and confirm that the picture is not missing.

The factory-preset values are as follows:

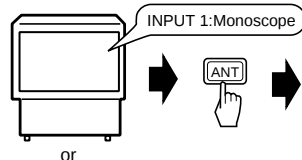
Key No.	SD-533HD5 SD-643HD5
1 : H SIZE (15K)	Approx. -32 $\pm$ 30
2 : V SIZE	Approx. -24 $\pm$ 30
6 : H SIZE (33K)	Approx. 60 $\pm$ 30

Note: Varies depending on the factory-preset value.

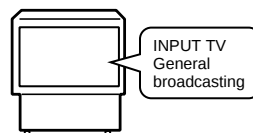
4 -2 Vertical Size Adjustment

Start

1st FAC



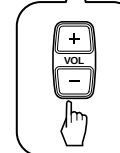
OR



Adjust the size so that the picture is completely displayed on the screen.

Note :
Screen mode : FULL

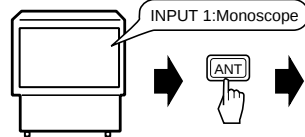
91% $\pm$ 2%



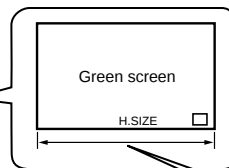
4 -3 Horizontal Size Adjustment

Start

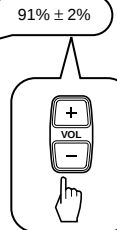
1st FAC



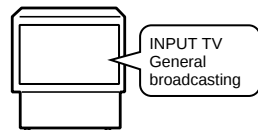
Note :
Screen mode : FULL



Note :
• After the V. SIZE adjustment, enter the H. SIZE adjustment by pressing "1" key.
• After the H. SIZE adjustment, check that V. SIZE is 91± 2%. If not, readjust the V. SIZE.



or

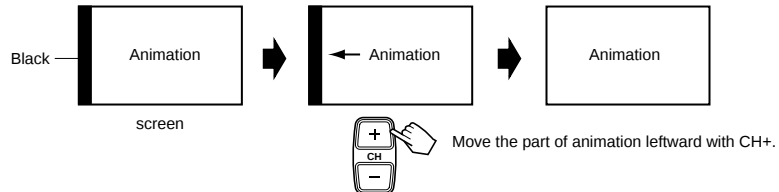


Adjust the size so that the picture is completely displayed on the screen.

• Reference

The H PHASE adjustment is required if the left or right part of the screen becomes black, as illustrated below, depending on the format of the input signal (Ex. component 31.5 kHz, RGB 33K etc.).

Ex. Component 31K



• About H. PHASE

In principle, adjustment of the data for the H. PHASE is not required.
Check whether the H. PHASE data are the factory-preset values, as indicated below:

Key No.	SD-533HD5 SD-643HD5
3 : H PHA (15K)	- 3
CH+ : H PHA (31K)	- 4
CH- : H PHA (33K)	13
9 : H PHA (31K RGB)	- 1
0 : H PHA (33K RGB)	16

15K : COMPOSITE, S COMPONENT (480i)
31K : COMPONENT (480P)
33K : COMPONENT (1080i)

The screen moves to the right or the left if the above data are in variance. (See the above figures.)

Note :
H PHASE is set in factory shipment by the most suitable value. But, there is the case that screen is missed as an upper figure occurs by the signal format of other apparatus to be connected to.

A screen can be improved as the following by the readjustment. However, attention is necessary because in convenience may occur when connected to another apparatus.

5 CONVERGENCE ADJUSTMENT

1. Procedures

- When replacing the DIGITAL CONV. Assy, replace the EEPROM of new DIGITAL CONV. Assy with the EEPROM of old DIGITAL CONV. Assy.
- Check the initial data for the convergence adjustment.
- Perform the coarse adjustment for the green to roughly correct distortion of the green.
- Fine-adjust the green to eliminate any distortion. The green becomes the standard for the red and the blue.
If necessary, repeat steps 3 and 4. Green adjustment is completed.
- Perform the coarse adjustment for the red by roughly converging the red with the green.
- Fine-adjust the red until the red is completely converging with the green.
If necessary, repeat steps 5 and 6. Red adjustment is completed.
- Perform the coarse adjustment for the blue by roughly converging the blue with the green.
- Fine-adjust the blue until the blue is completely converging with the green.
If necessary, repeat steps 7 and 8. Blue adjustment is completed.
- Display the green, red, and blue colors at the same time to check the convergence. Readjust the convergence if necessary.

2. Prior to Adjustment

There are five screen modes, and convergence adjustment is required for each mode. For adjustment, input the following video signal:

Table 1 Input signal

Screen Mode	Input Signal
1. FULL (FULL, 4:3 NORMAL)	NTSC (480i) signal
2. ZOOM (ZOOM)	
3. CINEMA (CINEMA WIDE)	
4. NATURAL (NATURAL WIDE)	
5. FULL for HD (HD/DTV)	HD/DTV (1080i) signal

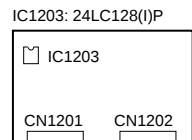
NTSC : Stable signal source, such as an SG or an LD/DVD player.

HD : Stable signal source, such as an HD SG or a DTV tuner (SH-D09, etc.)

When CRTs are replaced or when the deflection yoke is moved, perform the deflection yoke adjustment, horizontal and vertical size adjustments, and centering magnet adjustments before the convergence adjustment. (See Pages 116, 118 and 119.)

3. Convergence Adjustment

3.1 Replacement of the EEPROMs Inside the DIGITAL CONV. Assy



DIGITAL CONV. ASSY

The data stored in the EEPROMs are as follows:

IC1203

OFFSET CONVER. MODE 1 (DFH, DFV)

OFFSET CONVER. MODE 3

Factory-preset values for convergence

User-adjusted values for convergence (CENTER, MULTI-POINT)

IC1402

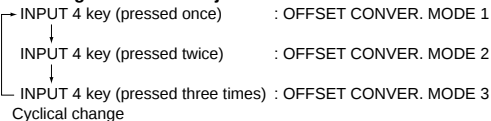
OFFSET CONVER. MODE 1 (except DFH and DFV)

OFFSET CONVER. MODE 2

3.2 Confirmation of Convergence Data

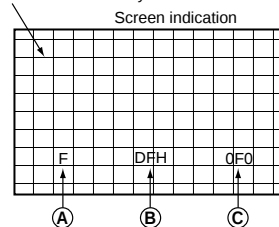
The convergence coarse adjustment modes change cyclically, as shown below, with each press of the INPUT4 key in FACTORY mode:

Convergence coarse adjustment



Check whether the data of MODE 1 and MODE 2 are as shown in Table 2.

The cross-hatch signal is generated inside the unit, and is automatically displayed in OFFSET CONVER. mode and MANUAL CONVERGENCE mode. You can turn on and off the cross-hatch signal with the YELLOW key.



(A)

Screen mode:

F : FULL Z : ZOOM C : CINEMA

N : NATURAL H : FULL for HD

The Screen modes change cyclically with each press of the SCREEN mode key.

(B)

Adjustment items can be selected with the numeric keys.
See Table 2.

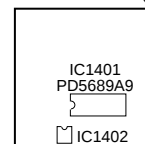
(C)

Adjustment data:

MAX ↑ 1FF
100
001
CNT • 000
3FF
2FF
MIN ↓ 200

Data can be adjusted with the VOL+ and VOL- keys.

IC1402: 24LC08B(I)P



VIDEO IP
SERVICE ASSY

Table 2 OFFSET CONVER DATA

OFFSET CONVER MODE 1						
Numeric Key	Adjustment Item	Screen Mode				
		FULL	ZOOM	CINEMA	NATURAL	HD FULL
1	DFH	1D0	1D0	1D0	1D0	1D0
2	DFV	0A0	0A0	0A0	0A0	0A0
3	DF1	00F	00F	00F	00F	00F
4	DF2	000	000	000	000	000
5	HPP	14C	14C	14C	14C	14A
6	HPW	00B	00B	00B	00B	00C
7	HTP	02C	02C	02C	02C	02F
8	VTP	033	029	033	02A	00F

OFFSET CONVER MODE 2						
Numeric Key	Adjustment Item	Screen Mode				
		FULL	ZOOM	CINEMA	NATURAL	HD FULL
1	V1D	029	082	060	03E	026
2	V1C	020	020	020	020	01E
3	V10	000	000	000	000	000
4	VFP	003	01D	003	01A	036
5	HFP	122	122	122	122	122
6	H1R	001	001	001	001	001
7	HCP	00F	00F	00F	00F	00F
8	H10	015	015	015	015	015

The above offset convergence values are common to the SD-533HD5 and SD-643HD5.

If the offset convergence values are as indicated in Table 2, proceed to 3.3. If the values are not the same, adjust the values with the numeric keys and VOL +/- keys.

Example:

To check DFI in ZOOM mode of OFFSET CONVER. MODE 1

- Enter the FACTORY mode.
- Enter the OFFSET CONVER. MODE 1 by pressing the INPUT 4 key once.
- Enter the ZOOM screen mode by pressing the SCREEN mode key once. (When the unit enters FACTORY mode, the screen mode automatically becomes FULL.)
- Check the indication on the screen by pressing the numeric key 3.

Indication at the bottom of the screen : Z DFI 00F

If the adjustment value is 00F, adjustment is not required.

If the adjustment value is other than 00F, adjust with the VOL + or VOL- key so that the value becomes 00F.

3.3 Coarse Adjustment of the Green

(Proceed with 3.3 and afterwards when the DIGITAL CONV.

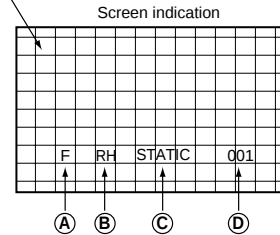
Assy is not replaced.)

Select adjustment items (STATIC and SIZE of vertical and horizontal lines, etc.) for each GH and GV, and adjust to roughly eliminate distortion. (For GV, peripheral pin distortion adjustment is necessary.)

Press the INPUT 4 key three times to enter OFFSET CONVER. MODE 3.

Press the SCREEN mode key and proceed with the adjustment for each screen mode.

The cross-hatch signal is generated inside the unit, and is automatically displayed in OFFSET CONVER. mode and MANUAL CONVERGENCE mode. You can turn on and off the cross-hatch signal with the YELLOW key.



①

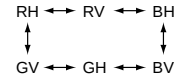
Screen mode:

F : FULL
Z : ZOOM
C : CINEMA
N : NATURAL
H : FULL for HD

The Screen modes change cyclically with each press of the SCREEN mode key.

②

Cyclically changes with the CH+ or CH- key as follows:



③

Adjustment items can be selected with the numeric keys. See Table below.

• Waveforms adjustable in the coarse adjustment of the green

Numeric Key	GH	GV
0	STATIC	STATIC
1	SKEW	SKEW
4	KEY	KEY
6	PIN	PIN
7	LIN	LIN
8	SIZE	SIZE

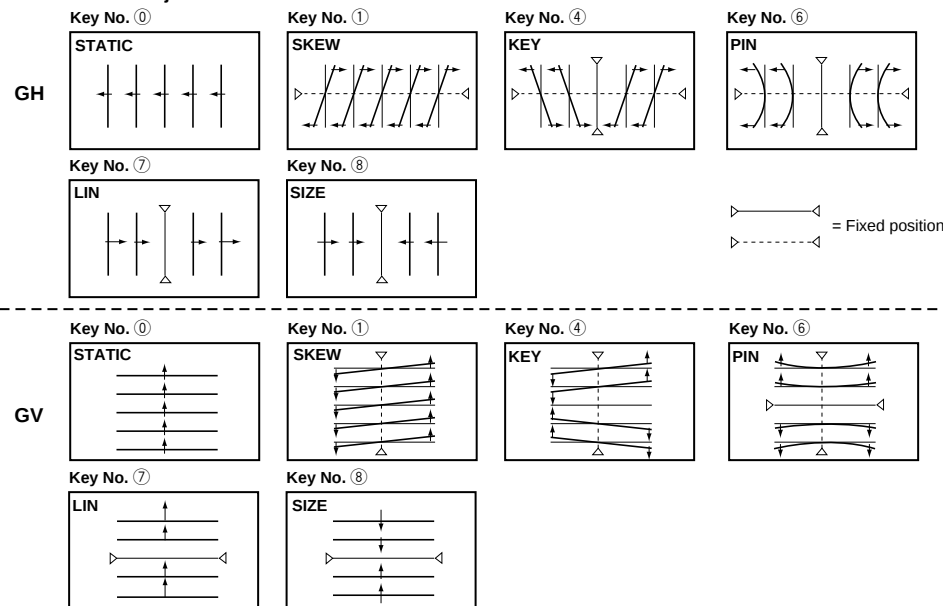
④

Adjustment data:

MAX 1FF
100
001
CNT • 000
3FF
MIN 2FF
200

Data can be adjusted with the VOL+ and VOL- keys.

• Pattern for each adjustment item



Note 1: When the Green CRT is replaced, or when the deflection yoke for the green is replaced, prior to the convergence adjustment, tune the center of the image to the center of the screen by turning the centering magnet.

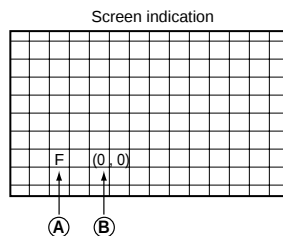
Note 2: When the DEFLECTION SERVICE Assy or DIGITAL CONV. Assy is replaced, make coarse adjustment as shown in 3.3 above.

3.4 Fine-adjustment of the Green

Enter MANUAL CONVERGENCE mode by pressing the SET/ENTER key, and make adjustments. Repeatedly make the coarse adjustment as shown in 3.3 if necessary. Proceed with the adjustment for each screen mode. Adjusted values for the green become the standard for the red and the blue.

3.4.1

In MANUAL CONVERGENCE mode entered by pressing the SET/ENTER key, the display becomes as shown below:



①

Screen mode:

F : FULL
Z : ZOOM
C : CINEMA
N : NATURAL
H : FULL for HD

The Screen modes change cyclically with each press of the SCREEN mode key.

②

Coordinates where the cursor (adjustment point) is located

There are 72 adjustment points (8,9) on the coordinates for FULL, ZOOM, CINEMA, NATURAL and FULL for HD modes, but the coordinates actually used for adjustment are as follows (the coordinates outside the ranges indicated below are outside the screen, and adjustment will not have any effect on the screen):

FULL : (0, 1) to (7, 9)
ZOOM : (0, 2) to (7, 8)
CINEMA : (0, 2) to (7, 9)
NATURAL : (0, 1) to (7, 8)
HD for FULL : (0, 1) to (7, 9)

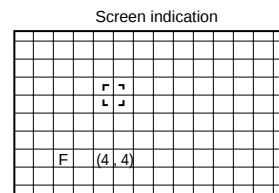
(X, Y): X=abscissa, Y=ordinate

Some coordinates may be outside the screen and invisible.

The point at coordinates (0, 0) is at the upper left of the screen.

3.4.2

Move the cursor to a point to be adjusted with the cursor move keys.

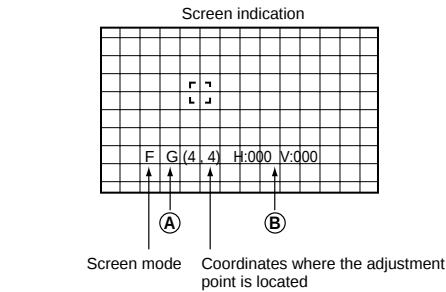


Note: The actual shape of the cursor is " []".

The position of the cursor in this figure is different from the actual position on the screen.

3.4.3

Press the SET/ENTER key when the point to be adjusted is determined.



(A)

Color to be adjusted:

G: GREEN, R: RED, B: BLUE

To change colors, use the CH+ or CH- key.

The colors change cyclically as follows:

With CH+ : R → B → G → R

With CH- : R → G → B → R

(B)

H : *** Adjustment data in the horizontal direction

V : *** Adjustment data in the vertical direction

(***= hexadecimal number)

Data	MAX	1FF
		100
		001
CNT	•	000
		3FF
		2FF
	MIN	200

For adjustment, move the Line to the desired direction with the cursor keys.

To move the Horizontal Line upward, press the "▲" key.

(The value decreases.)

To move the Horizontal Line downward, press the "▼" key.

(The value increases.)

To move the Vertical Line to the left, press the "◀" key.

(The value decreases.)

To move the Vertical Line to the right, press the "▶" key.

(The value increases.)

- To select one color, use the SEARCH key for the red, SELECT key for the green, FREEZE key for the blue. Pressing this key toggles color muting on or off.
- To mute all the colors, press the DISPLAY key. To release muting, press the SEARCH, SELECT, or FREEZE key.
- To erase the cross hatch, press the YELLOW key. Pressing this key toggles between display of the cross hatch screen and the input screen.
- To change the brightness of the input screen, use the VOL+ or VOL- key. The brightness increases with the VOL+ key (CONTRAST +10) and decreases with the VOL- key (CONTRAST -40). (The brightness can be changed only in Fine-adjustment mode. The brightness of the cross hatch screen cannot be changed.)

3.4.4

When adjustment of the selected point is finished, press the SET/ENTER key, then adjust the other adjustment points by repeating 3.4.1 to 3.4.4.

3.4.5

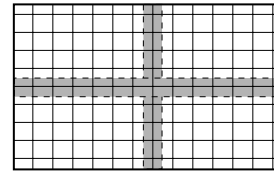
Make the adjustment for the green in each screen mode, and use the green as the standard screen for the red and the blue. To change screen modes, use the SCREEN mode key.

Note: Some coordinates for adjustment points are located outside the screen. Be sure not to make adjustments on those points, because adjustment of those coordinates will have little effect on the screen.

● Adjustment Technique

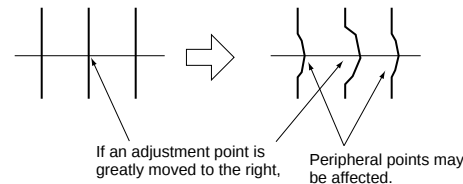
1st step

Adjust so that the vertical and horizontal lines forming a cross at the center of the screen become straight. Check also the screen size and the linearity of the horizontal and vertical lines.

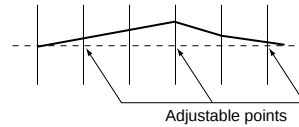


- See "3.3 Coarse adjustment of the green." Adjust GH STATIC, SKEW and SIZE, and GV STATIC, SKEW, PIN and SIZE to correct the screen location, tilt, screen information volume, and peripheral pin distortion.
- See "3.4 Fine-adjustment of the green." Fine-adjust the linearity of the vertical and horizontal lines forming a cross at the center of the screen.

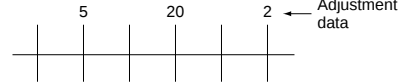
Note: In principle, only the selected point is changed in MANUAL CONVER. mode. However, as the adjusted data (amount of adjustment) increase, peripheral points may be affected. So be sure not to greatly change the adjustment data of one point, but change peripheral points at the same time. See the examples below.



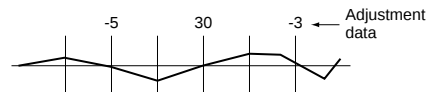
In a case of an error in convergence:



Good adjustment:

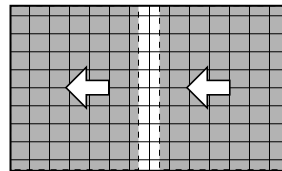


Bad adjustment:



2nd step

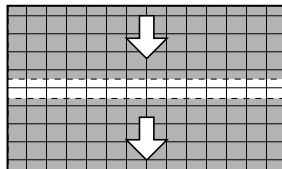
Adjust so that the vertical lines become straight, taking care to preserve proper screen information volume and the linearity. Adjust the right half of the screen first, then the left half. (See 3.4.)



Right half : Adjust from the edge toward the center.
Left half : Adjust from the center toward the edge.

3rd step

Adjust so that the horizontal lines become straight. Adjust the upper half of the screen first, then the lower half. (See 3.4.)



Upper half : Adjust from the edge toward the center.
Lower half : Adjust from the center toward the edge.

4th step

Repeat 2nd and 3rd steps to take total balance. Then the adjustment for the green is completed.

To return from the fine adjustment mode to the coarse adjustment mode, press the MENU key once, then the INPUT 4 key.

Note: When the MENU key is pressed to quit MANUAL CONVERGENCE mode, the display will be unstable for several seconds. This is because the adjustment data are being written to the EEPROMs, and is not a malfunction. Do not perform any operation (power on/off, or pressing keys on the remote control unit or on the main unit, etc.) during this period, because doing so may affect your adjustment data.

3.5 Coarse Adjustment of the Red

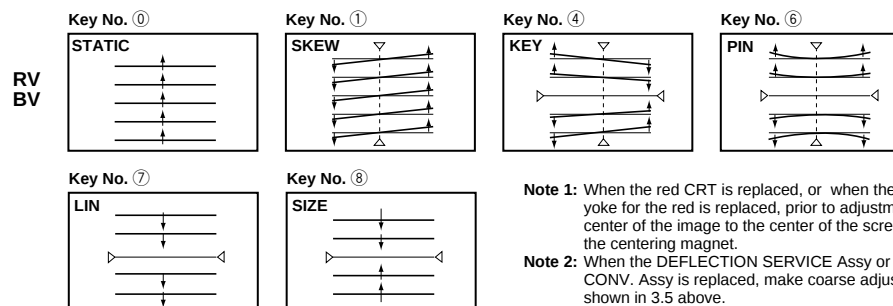
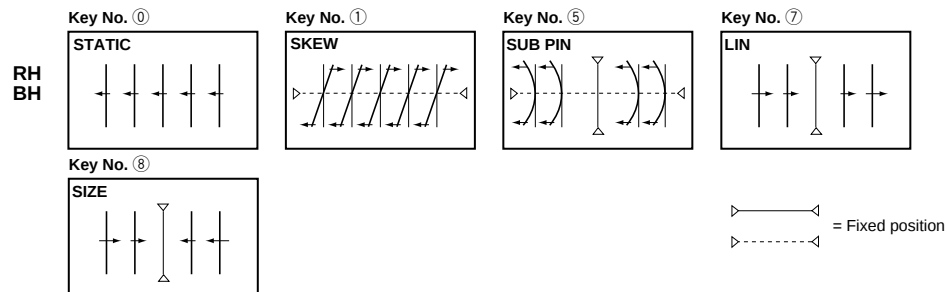
After the green adjustment is completed, quit MANUAL CONVERGENCE mode by pressing the MENU or MUTING key, then press the INPUT 4 key three times to enter OFFSET CONVER. MODE 3.

Select adjustment items for RH and RV, and roughly correct distortion to converge with the green. Adjustment is required for each screen mode

For adjustable items of the red and the blue, see the following table.

Numeric Key	RH	RV	BH	BV
0	STATIC	STATIC	STATIC	STATIC
1	SKEW	SKEW	SKEW	SKEW
4		KEY		KEY
5	SUBPIN		SUBPIN	
6		PIN		PIN
7	LIN	LIN	LIN	LIN
8	SIZE	SIZE	SIZE	SIZE

• Pattern for each adjustment item



Note 1: When the red CRT is replaced, or when the deflection yoke for the red is replaced, prior to adjustment, tune the center of the image to the center of the screen by turning the centering magnet.

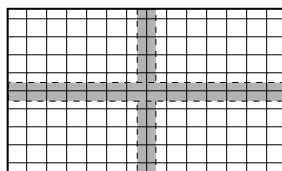
Note 2: When the DEFLECTION SERVICE Assy or DIGITAL CONV. Assy is replaced, make coarse adjustment as shown in 3.5 above.

3.6 Fine-adjustment of the Red

To fine-adjust the red, press the SET/ENTER key to enter MANUAL CONVERGENCE mode. Repeat the coarse adjustment described in "3.5 Coarse Adjustment of the Red" if necessary. Make adjustment for each SCREEN mode, and eliminate distortion to converge with the green.

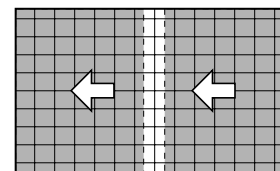
3.6.1

Press the SET/ENTER key to enter MANUAL CONVERGENCE mode, and make adjustment in the same manner as with the green. First, adjust the vertical and horizontal the red lines at the center of the screen so that they converge with the green center lines.



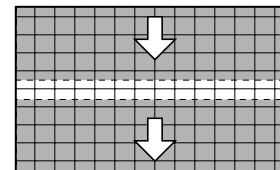
3.6.2

Adjust the red vertical lines so that they converge with the green vertical lines. Proceed to adjustment of the right half of the screen, then the left half. Adjustment should be done from the part where convergence is greatly dislocated.



3.6.3

Adjust the red horizontal lines so that they converge with the green horizontal lines. Proceed to adjustment of the upper half of the screen, then the lower half. Adjustment should be done from the part where convergence is greatly dislocated.



3.6.4

Repeat the adjustments described in 3.6.2 and 3.6.3 so that all the red vertical and horizontal lines converge with the green lines. (Completion of one screen mode)

3.6.5

Repeat procedures 3.6.2 through 3.6.4 for the other screen modes.
(Completion of the red adjustment)

3.7 Coarse Adjustment and Fine Adjustment of the Blue

Make coarse and fine-adjustments of the blue in the same manner as with the red, described in 3.5 and 3.6.

3.8 Confirmation of Adjustment

After the green, red, and blue adjustments are finished, check convergence errors with the patterns for all three colors on the monitor.

Check the patterns in all SCREEN modes, and if any error in convergence is recognized, readjust convergence in MANUAL CONVER. mode.

Note: Be sure NOT to change the green pattern during readjustment.

IMPORTANT!

- (1) When all the adjustments are completed, or when adjustment should be temporarily interrupted, adjustment data must be written to the EEPROM, in the following manner:

When all the adjustments are completed, or to interrupt adjustment, press the MENU key to quit Convergence Adjustment mode. The display will be unstable for several seconds, but this is because the data are being written to the EEPROM. Wait without doing anything until the display becomes stable, which means writing of data to the EEPROM is finished.
If the power of the TV is turned off (standby) during Convergence Adjustment mode (coarse and fine-adjustments), turn on the TV, enter FACTORY mode, and enter Convergence Adjustment mode by pressing the SET/ENTER key. Then press the MENU key. The data will be written to the EEPROM as described above.

- (2) Do NOT turn off the main power during or after convergence adjustment.

If you do so, the adjusted data may be lost. If the data are lost, you must make all the adjustments again.

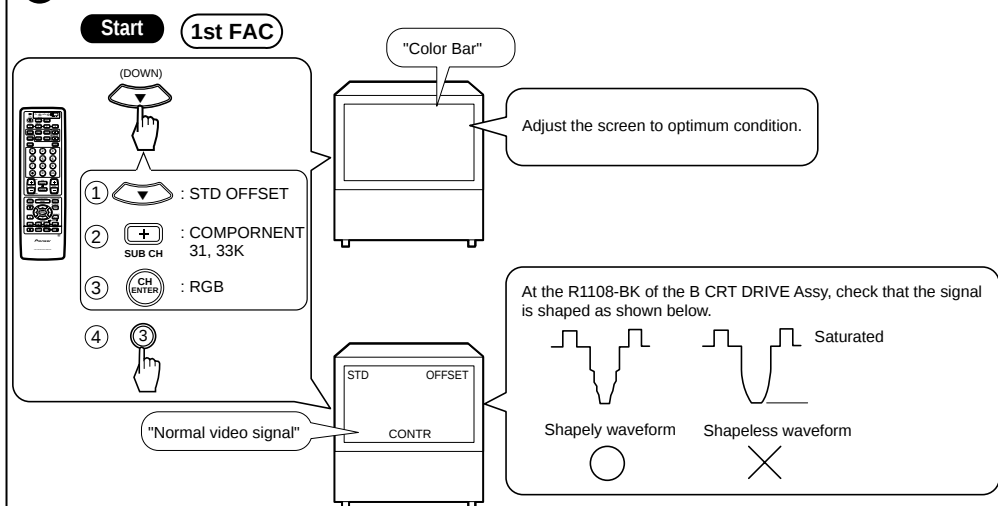
- (3) When the CENTER POINT (test cross) or MULTI-POINT (user convergence) adjustments have been made by a user, and if the unit enters FACTORY Convergence Adjustment mode (with the INPUT4 and SET/ENTER keys), the user's adjustment data will be all cleared and returned to the factory-preset values.

Be sure NOT to enter this Convergence Adjustment mode except when a repair related to convergence or a repair that requires convergence adjustment later, is needed.

If you inadvertently enter Convergence Adjustment mode, readjust the convergence.

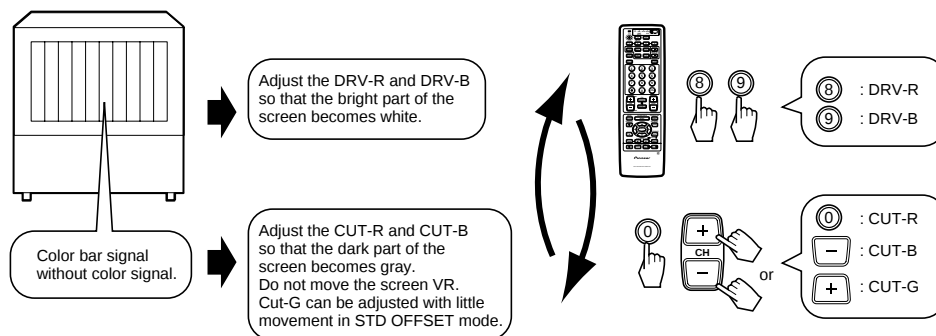
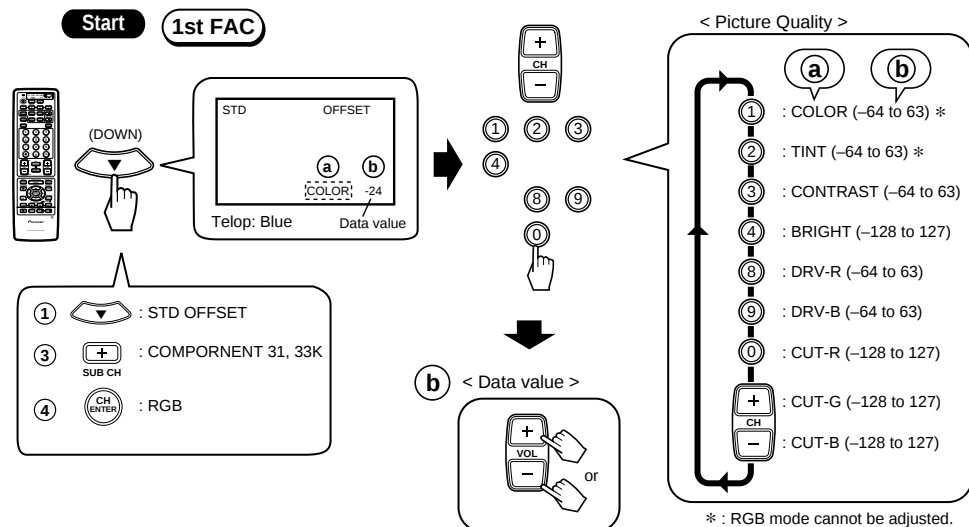
6 White Balance Adjustment

6 -1 Contrast Adjustment



After the STD adjustment is complete, adjust the COMP 31K and 33K RGB.

6 -2 White Balance Adjustment This mode is to set the standard picture quality for a normal picture.



Note :
Refer to the following adjustment procedure.

● Adjustment Procedure of White Balance

OFFSET Data Table

COLOR TEMP Setting	Without RGB Input			RGB Input		
	LIVE	FILM STD	FILM THEATER		LIVE	FILM
	K	L	M		Y	Y
User Mode	THEATER E	GAME F		THEATER V	GAME (RGB) J	
Input Signal	TV	COMPONENT 15K	COMPONENT 31K 33K	RGB		
	B	C	D	T		
	STD OFFSET A					

Adjustments are required for **A**, **D** and **T** in the table above. Data in other parts are fixed. (I="0")
Proceed with the adjustments in the following order:

Adjustment	Direct key	Picture quality data on the screen
(1) STD OFFSET	DOWN A	Adjustment of all standard picture qualities
(2) COMPONENT 31, 33K	SUB CH+ A+D	Adjustment of D
(3) RGB	CH ENTER A+T	Adjustment of T

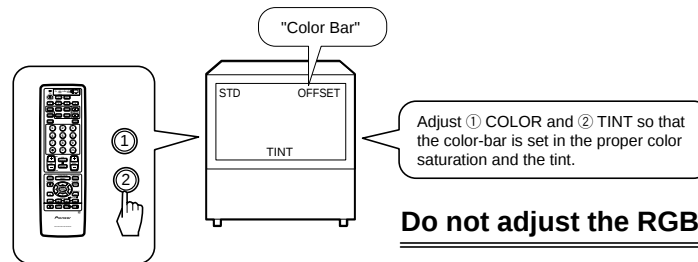
Make adjustment only for items described as ADJ in the following table.
Do NOT change other data.
Other data are adjusted in factory shipment by 3 data of the following table . (refer to page 129.)

- First, perform "(1) STD OFFSET", then perform adjustments (2) and (3) so that the same picture quality (color temperature) as achieved in (1) is obtained.
- When readjusting, once "(1) STD OFFSET" is adjusted, the data for other input signals (component, etc.) revert to the factory-preset values, in principle.
- After the adjustment of STD OFFSET is completed, check other picture quality modes by switching color temperatures and signals. It is OK if picture quality does not deviate greatly when input signal is changed (composite, component 15K, etc.). Furthermore, it is OK if color temperature changes when color temperature is changed.

6 -3 Color/Tint Adjustment

Start

1st FAC



OFFSET DATA (VIDEO)

ADJ :Adjustment item

The numerical value is shipping a set value in the factory.

A set value is data of 2001.6 present provinces.

DIRECT KEY		
OFFSET MODE		MODEL
KEY	ADJ NAME	SD-533HD5 SD-643HD5
DOWN		
STD OFFSET A		
1	COLOR	ADJ
2	TINT	ADJ
3	CONTRAST	ADJ
4	BRIGHT	ADJ
5	SHARPNESS	6
6	DETAIL	0
7	S. V. M	0
8	R DRV	ADJ
9	B DRV	ADJ
0	R CUT	ADJ
CH+	G CUT	ADJ
CH-	B CUT	ADJ
SUB CH -		
COMPONENT 15K C		
1	COLOR	0
2	TINT	0
3	CONTRAST	0
4	BRIGHT	0
5	SHARPNESS	0
6	DETAIL	0
7	S. V. M	0
8	R DRV	0
9	B DRV	0
0	R CUT	0
CH+	G CUT	0
CH-	B CUT	0
SUB CH+		
COMPONENT 31, 33K D		
1	COLOR	ADJ
2	TINT	ADJ
3	CONTRAST	ADJ
4	BRIGHT	+15
5	SHARPNESS	-9
6	DETAIL	0
7	S. V. M	-6
8	R DRV	ADJ
9	B DRV	ADJ
0	R CUT	ADJ
CH+	G CUT	ADJ
CH-	B CUT	ADJ
RED		
TV OFFSET B		
1	COLOR	-15
2	TINT	0
3	CONTRAST	0
4	BRIGHT	0
5	SHARPNESS	0

DIRECT KEY		
OFFSET MODE		MODEL
KEY	ADJ NAME	SD-533HD5 SD-643HD5
BLUE (cyclically)		
THEATER OFFSET E		
1	COLOR	-33
2	TINT	-5
3	CONTRAST	-17
4	BRIGHT	0
5	SHARPNESS	0
6	DETAIL	0
8	R DRV	-2
9	B DRV	-1
0	R CUT	5
CH+	G CUT	4
CH-	B CUT	6
GAME OFFSET F		
1	COLOR	0
2	TINT	0
3	CONTRAST	-40
4	BRIGHT	0
5	SHARPNESS	0
6	DETAIL	0
8	R DRV	-6
9	B DRV	-9
0	R CUT	11
CH+	G CUT	9
CH-	B CUT	16
THEATER OFFSET for RGB V		
3	CONTRAST	-16
4	BRIGHT	0
8	R DRV	-5
9	B DRV	1
0	R CUT	-11
CH+	G CUT	-7
CH-	B CUT	-14
GAME OFFSET for RGB J		
3	CONTRAST	-36
4	BRIGHT	0
8	R DRV	-8
9	B DRV	-4
0	R CUT	-8
CH+	G CUT	-5
CH-	B CUT	-9

DIRECT KEY		
OFFSET MODE		MODEL
KEY	ADJ NAME	SD-533HD5 SD-643HD5
CH ENTER		
RGB OFFSET T		
3	CONTRAST	ADJ
4	BRIGHT	ADJ
8	R DRV	ADJ
9	B DRV	ADJ
0	R CUT	ADJ
CH+	G CUT	ADJ
CH-	B CUT	ADJ
SWAP		
COLOR TEMP FILM for STD L		
3	CONTRAST	-1
8	R DRV	9
9	B DRV	-16
0	R CUT	-2
CH+	G CUT	1
CH-	B CUT	6
SLEEP		
COLOR TEMP Film for THEATER M		
3	CONTRAST	-2
8	R DRV	7
9	B DRV	-20
0	R CUT	-1
CH+	G CUT	1
CH-	B CUT	7

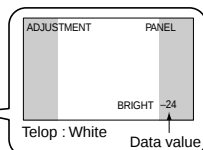
DIRECT KEY		
OFFSET MODE		MODEL
KEY	ADJ NAME	SD-533HD5 SD-643HD5
GREEN (cyclically)		
COLOR TEMP LIVE for STD K		
3	CONTRAST	0
8	R DRV	-4
9	B DRV	7
0	R CUT	2
CH+	G CUT	0
CH-	B CUT	-2
COLOR TEMP LIVE for RGB γ		
3	CONTRAST	0
4	BRIGHT	0
8	R DRV	-3
9	B DRV	6
0	R CUT	-2
CH+	G CUT	-2
CH-	B CUT	-3
COLOR TEMP FILM for RGB Y		
3	CONTRAST	0
4	BRIGHT	0
8	R DRV	4
9	B DRV	-18
0	R CUT	1
CH+	G CUT	0
CH-	B CUT	3

7 Panel Adjustment

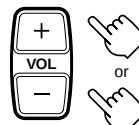
Start

1st FAC

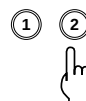
- Mode for adjusting the brightness, contrast of the gray part (panel) of the 4:3 normal screen.



<Data value section>



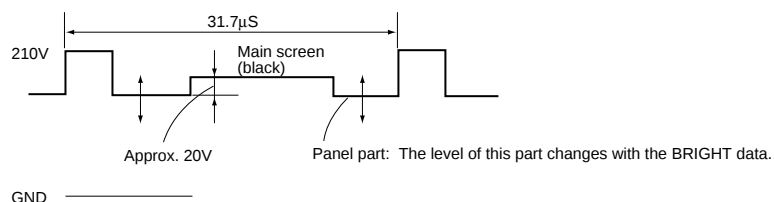
<Adjustment item section>



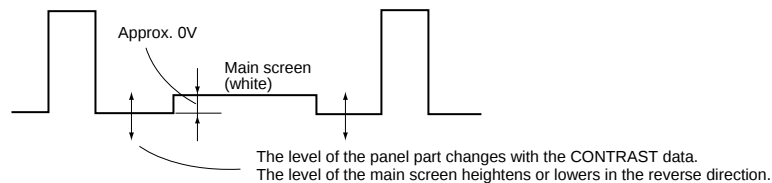
- ① : BRIGHT (-64 to 63)
- ② : CONTRAST (-64 to 63)

Procedures

- ① Send the black-burst signal to the INPUT 1 connector.
Enter Adjustment mode by following the procedures described above.
- ② With BRIGHT, adjust the gray part (panel) of the screen.
By observing R1058-GK of the G CRT DRIVE Assy with the oscilloscope, , adjust the brightness level which is low by 20V from Black level of the main screen.



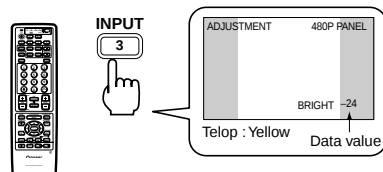
- ③ Switch the input signal to a 100%-white signal.
Adjust the panel part and the main screen with CONTRAST.
Observe the same site as described in Step ② above, and adjust the amplitude of the luminosity.
Adjust so that the level of the luminosity of the panel and that of the main screen become the same.



8 Panel Adjustment for 480P

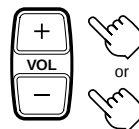
Start

1st FAC



- Mode for adjusting the brightness, contrast of the gray part (panel) of the 4:3 normal screen of 480P signal.

<Data value section>



<Adjustment item section>



- ① : BRIGHT (-64 to 63)
- ② : CONTRAST (-64 to 63)

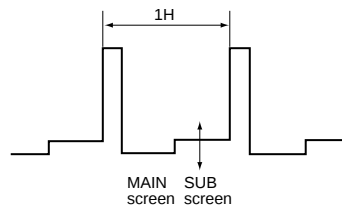
Note :

- The adjustment procedures are the same as those described in " 7 Panel Adjustment," except for the following:
- Send the black burst of the 480P signal to the INPUT 1 connector.
- Send a 100%-white 480P signal to the INPUT 1 connector.
- When 480P signal is not obtained and adjustment does not complete, input a value the same as BRIGHT and the CONTRAST data value that adjusted with step 7.

After the adjustment was completed, perform the following operations.

(Purposes: To match the picture quality of SUB screen with MAIN screen by two screen display)

- ① Observe R1058-GK of the G CRT DRIVE Assy with the oscilloscope (20V/div.).
- ② Input the white 100% NTSC signal to the Composite input of INPUT 1.
- ③ Enter the 1ST Factory and press the ▲ key of the remote control unit.
(The main unit receives the composite signal of INPUT 1 then.)
- ④ The screen changes to two screen display (split screen) by pressing the 7 key, and enter the SUB CONTRAST Adjustment mode by pressing the 4 key.
- ⑤ Adjust VOL + or - keys so that the level of SUB screen becomes closest to the level of MAIN screen.



7. GENERAL INFORMATION

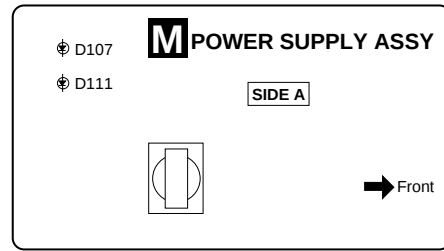
7.1 DIAGNOSIS

7.1.1 DIAGNOSIS METHOD

Various protection circuits are provided for this unit. When these protection circuits are activated, the power of the unit is shut down (P.D.: Power Down).

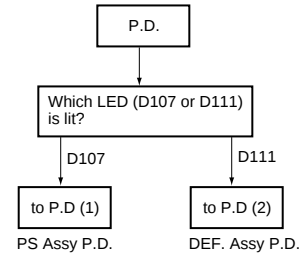
The defective parts can be easily diagnosed by observing the LEDs inside the POWER SUPPLY Assy.

1. D107 in the AWV1887 (For POWER SUPPLY Assy)
2. D111 in the AWV1887 (For DEFLECTION SERVICE Assy)



LED points

How to Diagnose a Failure



Note: There is a case that DEF. Assy P.D. works when there is a damage with the POWER SUPPLY Assy.

Example)

If there is not 9V, V. BLK does not come out. And P.D. hangs with the DEFLECTION SERVICE Assy more first than the POWER SUPPLY Assy.

1. P.D. (1)

Failure in the POWER SUPPLY Assy.

There are four main possibilities:

1. Abnormality in the regulator of the heater
2. Blown fuse(s) in secondary
3. Abnormality in AUDIO OUTPUT

Status	Causes	Check Items	Probable Defective Parts
D318 ANODE Hi	Abnormality in the regulator for the heater	The voltage of HT- at "+15V (HT-)" JP is NOT approx. 15 V, and that of the HT+ at "+21V (HT+)" JP is NOT approx. 22 V.	Q305, R319, D313, D312 (POWER SUPPLY Assy)
D305 ANODE Hi	Blown fuse(s)	The voltage HT+ (approx. 22 V) at "+21V (HT+)" JP is NOT supplied.	DEFLECTION SERVICE Assy
		The voltage (approx. 32 V) at R322 is NOT supplied.	IC901, IC902 (POWER SUPPLY Assy)
		The voltage (approx. 6 V) at R336 is NOT supplied.	VIDEO IP SERVICE Assy and SIGNAL Assy
D906 ANODE Hi	Abnormality in AUDIO OUTPUT	The SP line (CN901) is disconnected.	Connect the SP line.
		The voltage at the negative electrode of the C923 and C927 is 5.2 V or more.	C923, C927 (POWER SUPPLY Assy)

Note: The anode of the diode is high only for a short time after the power is turned on until the protection circuits are activated (P.D.)
The LEDs are lit by the HOLD circuit.

In a case when the power cannot be on with no LED lit, check the following:

1. Check if the FU201 fuse in the POWER SUPPLY Assy is blown.
2. Disconnect and check connector P11 (CN302) to see whether STB 5 V is supplied.
If STB 5 V is supplied, replace the SIGNAL Assy. If STB 5 V is NOT supplied, replace the POWER SUPPLY Assy.
3. Disconnect and check connector P11 (CN302) to see whether AC CLK is supplied.
If AC CLK is supplied, replace the SIGNAL Assy. If AC CLK is NOT supplied, replace the POWER SUPPLY Assy.

2. P.D. (2)

Failure in the DEFLECTION SERVICE Assy.

There are four main possibilities:

1. Overload detection
2. H. deflection stopping detection
3. X-ray protection

Status	Causes	Check Items	Probable Defective Parts
D503 ANODE Hi	Overload detection	It checks whether the parts of the account of the right have broken.	Q603 (short-circuited between D and S) Q511 (short-circuited between C and E) Q1001, Q1002, Q1051, Q1052, Q1101, Q1102 (CRT DRIVE Assy) Short D605 (short-circuited)
D512 ANODE Hi	Stopping H. deflection	Is the connector of the deflection yoke plugged in?	Plug in the connector.
		No HDRV signal at R548	IC1902 (VIDEO IP SERVICE Assy)
		No DH. BLK signal at D506 (Cathode)	Q508, Q511
D613 ANODE Hi	X-ray protection	No change in the ABL voltage (no DC change) at Pin 6 of the CN1401 when a 100%-white signal is repeatedly connected and disconnected	D1914 (short-circuited) of the VIDEO IP SERVICE Assy
			T601 (FBT) rare short
D807 ANODE Hi	V. deflection stopping	Check that the connector (D3) from the POWER SUPPLY Assy is plugged in to the DEFLECTION SERVICE Assy.	Plug in the connectors.
		Check that the connector (S6) from the SIGNAL Assy is plugged in to the DEFLECTION SERVICE Assy.	Plug in the connectors.
		Abnormality in V. BLK 2 waveform that is output from Pin 4 of the CN2303 in the SIGNAL Assy (too long a high period with the DC voltage on)	IC2401 (SIGNAL Assy)
		Abnormality in V. DRV waveform that is output from Pin 8 of the CN2806 in the SIGNAL Assy (too long a high period with the DC voltage on)	IC1902 (VIDEO IP SERVICE Assy)
		No waveform is output from Pin 4 of the CN505.	IC802

Note: The anode of the diode is high only for a short time after the power is turned on until the protection circuits are activated (P.D.)
The LEDs are lit by the HOLD circuit.

Note that the power may be shut down when the voltages 120V, 21V, 15V, -20V, 5V and STB5V from the POWER SUPPLY Assy are not supplied because the DEFLECTION SERVICE Assy is powered by the POWER SUPPLY Assy.

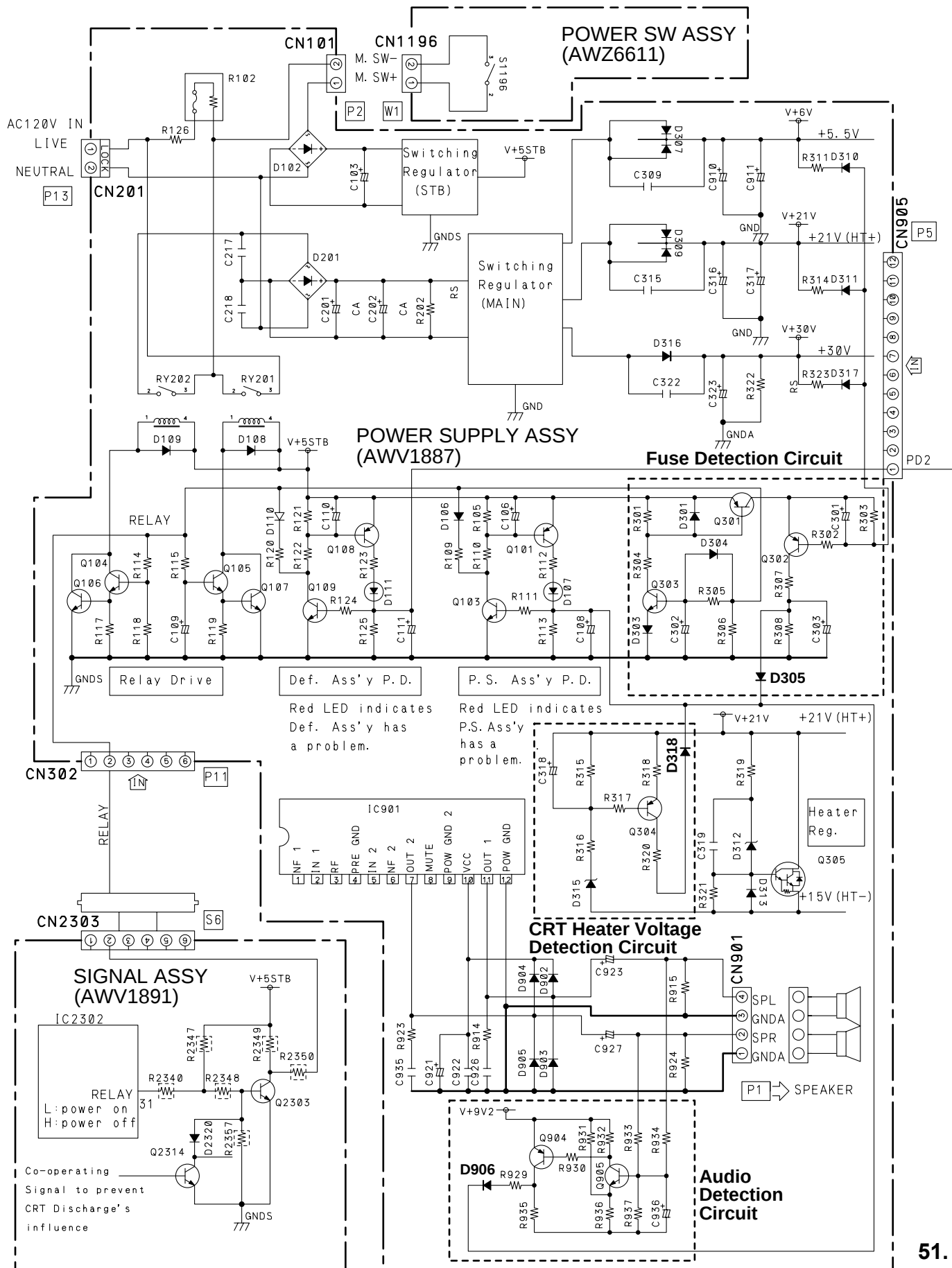
When overload detection mechanism is activated, the 120 V line is short-circuited. If the power switch is set to ON again in this condition, there may be a case where the power cannot be turned on, with just a whining sound, and where only the D107 LED in the POWER SUPPLY Assy is lit. If this happens, first replace only the DEFLECTION SERVICE Assy, disconnect the AC cord from the AC outlet or turn the main power switch OFF, and wait for five minutes. Then, turn on the power again. If the condition is ameliorated, only the DEFLECTION SERVICE Assy is defective. If the same symptom occurs, replace the POWER SUPPLY Assy. In the latter case, the DEFLECTION SERVICE Assy may not be defective.

Be sure to check the fuses in the POWER SUPPLY Assy because one or more may be blown as a result of short-circuiting of the load circuit of the DEFLECTION SERVICE Assy.

If the FU302 and FU303 fuses are blown, see the following table:

Causes	Check Items	Probable Defective Parts
Too high loading on the CONVER. AMP	Check that waveform signals are output from Pin 3 and Pin 1 of the CN401, CN402 and CN403, and that the DC element is not added to the signals.	IC401, IC402
CONVER. MUTING not activated	Check that the electric potential of Pin 3 and Pin 4 of IC401 and IC402 are at the same level when the power is turned on.	Q404, Q402

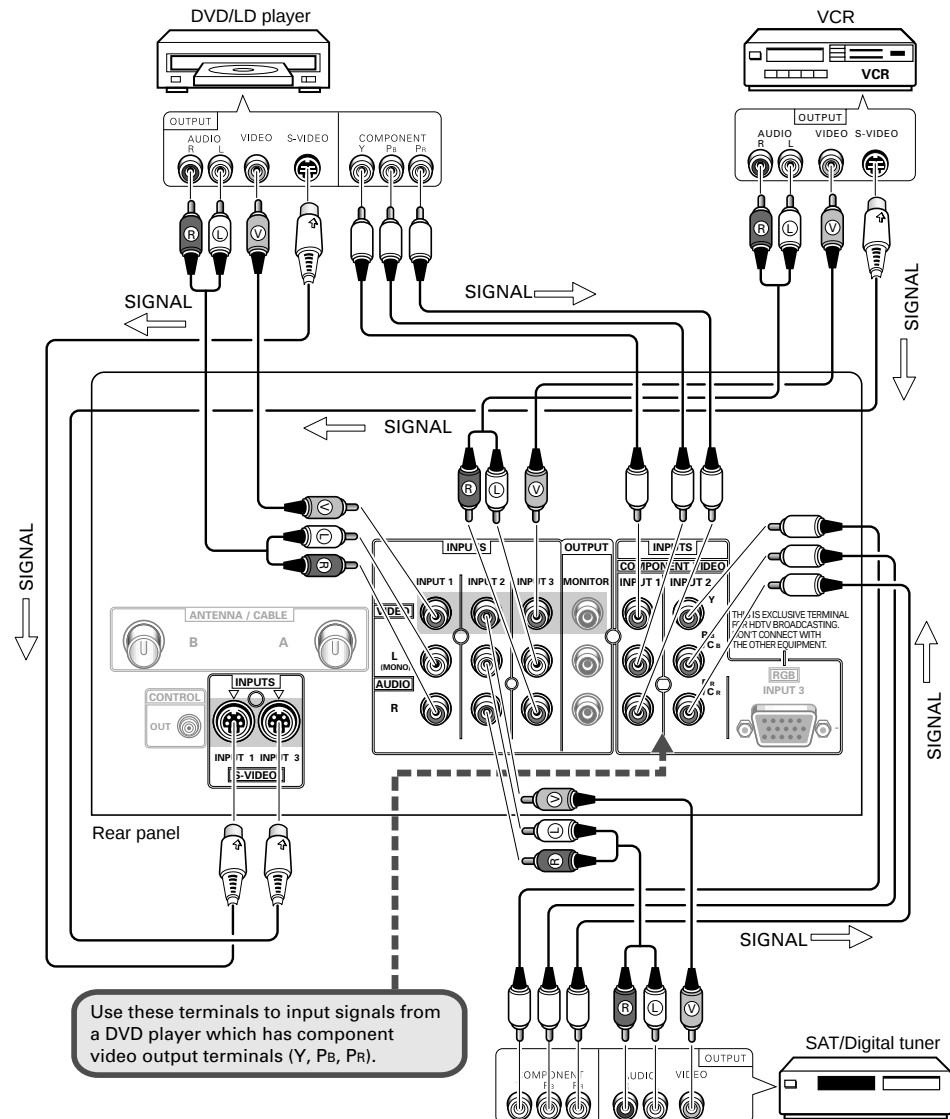
4. Block Diagram of the Protection Circuit

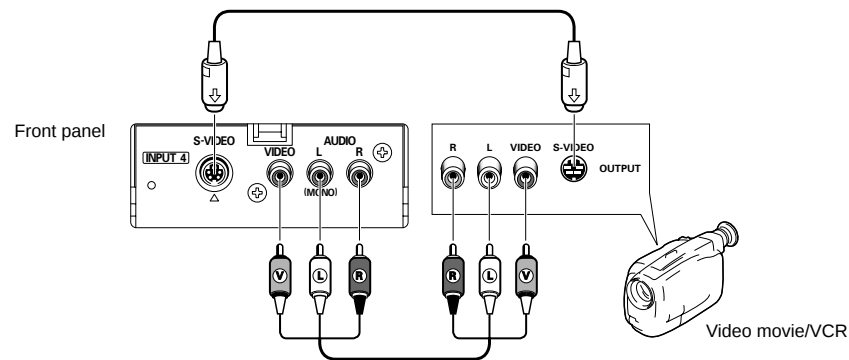


High Voltage &H. Def Overload Detection Circuit



CONNECTING VIDEO/AUDIO EQUIPMENT





INPUT jacks

There are 4 sets of inputs for VCR and DVD/LD players. Use RCA-type pin plug cords (the same as those used in Hi-Fi systems) for connections. When the audio source to be connected is mono, connect the source to the L-(MONO) jack.

MONITOR OUTPUT jacks

These are used for connecting the monitor to a VCR for recording, or for linking it to another monitor. These jacks output the video and audio signals of the source currently selected by the INPUT selector. Connect these output jacks to your VCR's inputs. Connect the VCR's outputs to the monitor's VIDEO inputs.

S-VIDEO INPUT jacks

- Inputs signals from a DVD/LD player that has an S-VIDEO output jack.
- When the signal input from the S-VIDEO INPUT jack is output from the MONITOR OUTPUT jack, the output signal will be a composite of Y and C.

COMPONENT VIDEO INPUT jack

Inputs three signals – Y, P_B (C_B) and P_R (C_R) – output from DVD players and the like.

Input formats in which images can be received.

	Format	Horizontal frequency	Vertical frequency
DVD player, etc.	480 i	15.734 kHz	60 Hz
Digital tuner, etc.	1080 i	33.75 kHz	60 Hz
	480 p	31.468 kHz	60 Hz

RGB INPUT jack

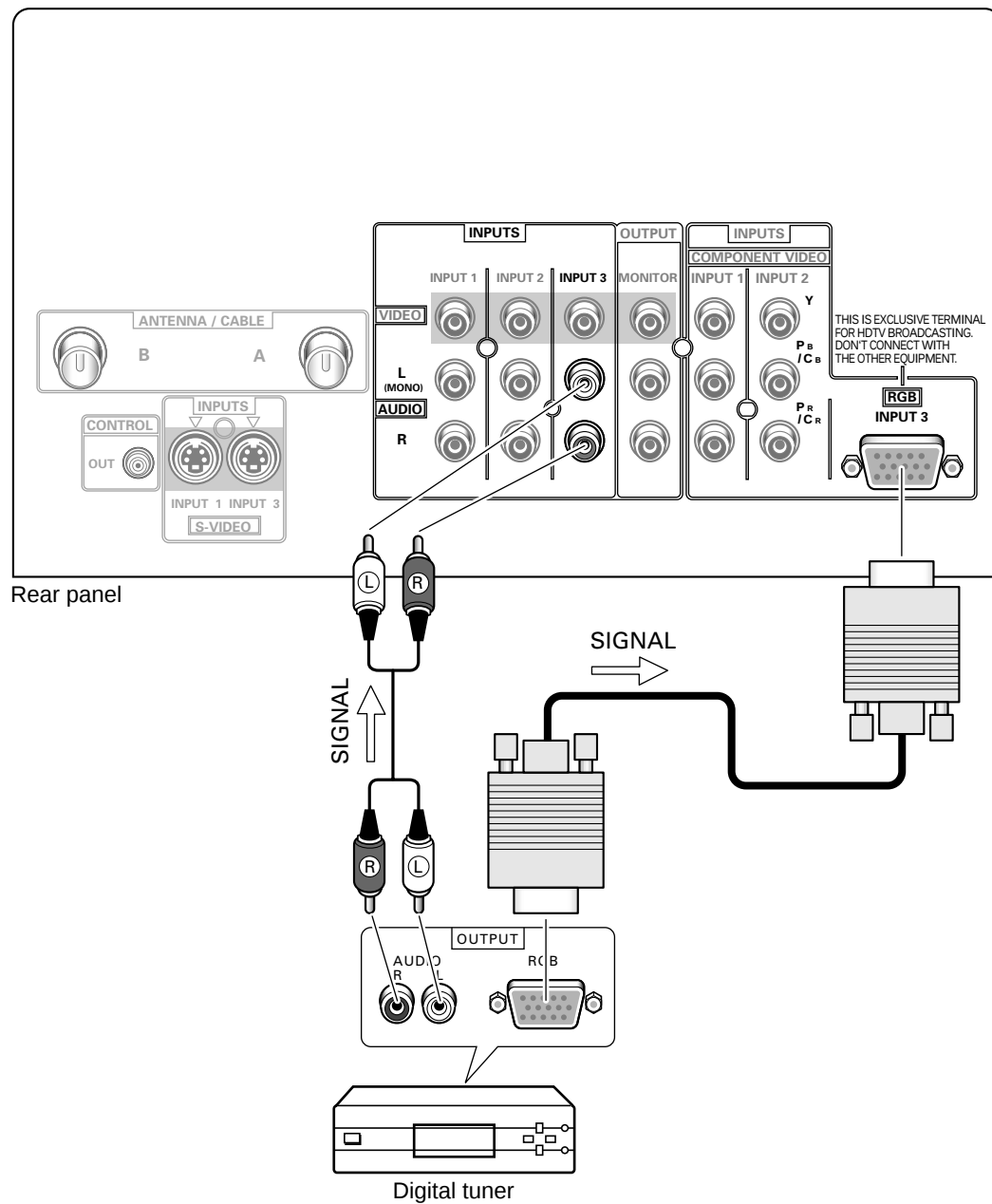
Inputs five signals – R, G, B, H and V – output from digital tuners and the like.

Input format in which images can be received.

	Format	Horizontal frequency	Vertical frequency
Digital tuner	1080 i	33.75 kHz	60 Hz

NOTES:

- SPLIT screen, FREEZE screen and SEARCH screen functions cannot be used when 1080i or 480p component signals are input.
- Signals from MONITOR OUTPUT jacks will not be output when component signals or RGB signals are input.
- The RGB input jack is designed for use in connecting a digital tuner with RGB signal output, and it should accordingly never be used for connecting to a personal computer or other device.



NOTE:

When the 3 signals, RGB signal, composite signal, and S signal, are simultaneously input to INPUT 3, the RGB signal will be displayed on screen.

PROGRAM BLOCK (V.CHIP) FUNCTION

Since laws have been passed in the United States requiring a way of blocking undesirable programming, the V-chip has become a required component in television sets. The V-chip is a computer chip which decodes signals added to broadcast signals transmitted by television broadcasters. These signals are classified by programming content (e.g., amount of violence or sexual content) and age, and viewers may specify settings which block certain types of programming.

Program blocking may be set to a specific level judged by parents to be undesirable for children depending on their age and the content of the programming in question. The V-chip makes it impossible for such children to view programs with ratings exceeding the specified level.

The V-chip uses the following rating system.

<U.S.A. RATING SYSTEM>

MPAA RATING

RATING		
Age-Base	G	GENERAL AUDIENCES. All ages admitted.
	PG	PARENTAL GUIDANCE SUGGESTED. Some material may not be suitable for children.
	PG-13	PARENTAL STRONGLY CAUTIONED. Some material may be inappropriate for children under 13.
	R	RESTRICTED. Under 17 requires accompanying parent or adult guardian.
	NC-17	NO ONE 17 AND UNDER ADMITTED.
	X	X Rating is an older rating that is the same as NC-17 and may be encoded on the data of older movies.
	NR	NOT RATED

TV PARENTAL GUIDELINES

RATING		Description and Content Themes				
		FV	D	L	S	V
Age-Base	TV-Y	—	—	—	—	—
	TV-Y7	○	—	—	—	—
	TV-G	—	—	—	—	—
	TV-PG	—	○	○	○	○
	TV-14	—	○	○	○	○
	TV-MA	—	—	○	○	○

FV: Fantasy Violence
D: Sexually Suggestive Dialog
L: Adult Language
S: Sexual Situations
V: Violence

TV-Y All Children. This program is designed to be appropriate for all children.

TV-Y7 Directed to Older Children. This program is designed for children age 7 and above.
Note: For those programs where fantasy violence may be more intense or more combative than other programs in this category, such programs will be designated TV-Y7-FV.

TV-G General Audience. Most parents would find this program suitable for all ages.

TV-PG Parental Guidance Suggested. This program contains material that parents may find unsuitable for younger children.
The program contains one or more of the following:
(D) Some suggestive dialogue
(L) Infrequent coarse language
(V) Moderate violence
(S) Some sexual situations

TV-14 Parents Strongly Cautioned. This program contains some material that many parents would find unsuitable for children under 14 years of age.

This program contains one or more of the following:
(D) Intensely suggestive dialogue
(L) Strong coarse language
(S) Intense sexual situations
(V) Intense violence

TV-MA Mature Audience Only. This program is specifically designed to be viewed by adults and therefore may be unsuitable for children under 17.

This program contains one or more of the following:
(L) Crude indecent language
(S) Explicit sexual activity
(V) Graphic violence

Display and amplifier section

Reception system American TV standard NTSC system

Screen size 64" (SD-643HD5)
53" (SD-533HD5)

CRT 7" High focus CRT x 3

Brightness (White peak) 400 Foot-Lambert (SD-643HD5)
580 Foot-Lambert (SD-533HD5)
[White window signal input contrast Max.]
without protective screen

Horizontal resolution More than 1000 lines (SD-643HD5)
More than 1000 lines (SD-533HD5)
[Input digital test pattern (1000 lines resolution)]

Input terminals 4 video inputs
3 S-VIDEO input jacks (Y/C separate INPUT)
2 COMPONENT VIDEO INPUT jacks (Y, Pb, Pr)
4 audio inputs
Mini D-sub 15 pin INPUT jack (RGB)

Output terminals MONITOR

Input terminal signal ratings

Input signal

Video signal:

Composite and S-VIDEO (Y): 1.0 Vp-p (75 ohms load)

COMPONENT (Y): 1.0 Vp-p (75 ohms load)
(Pb, Pr): 0.7 Vp-p (75 ohms load)
(RGB): 0.7 Vp-p (75 ohms load)

Mini D-sub 15 pin (RGB): 0.7 Vp-p (75 ohms load)

Audio signal (including CENTER): 400mV rms

Input impedance Video input: 75 ohms
Audio input (including CENTER): 22 kilo-ohms
or more

Input signal polarity (Video) Synchronized negative

Output terminal signal ratings

Output signal Video signal: 1 Vp-p (75 ohms load)
Audio signal: 500 mV rms (100 % modulation)

Output impedance Video output: 75 ohms
Audio output: Less than 1 kilo-ohms

Effective output

Front both channels driven 10 W + 10 W
(THD. 10 % 1 kHz, 8 ohms)

Built-in speaker system 16 cm (6-5/16 in) full range x 2

Circuit type Video signal detection:
PLL full synchronous detection
PLL digital synthesizer system
Audio multiplex: BTSC system
Reception channels VHF; CH2-CH13, UHF; CH14-CH69
CATV (STANDARD, IRC or HRC)
CATV 1-125 CH

Power requirements	120 V AC, 60 Hz
Power consumption	230 W, 430 VA (CSA)
External dimensions	
SD-643HD5	1517 (W) x 702 (D) x 1400 (H) mm
	59-3/4 (W) x 27-5/8 (D) x 55-1/8 (H) inch
SD-533HD5	1275 (W) x 627 (D) x 1264 (H) mm
	50-3/16 (W) x 24-11/16 (D) x 49-3/4 (H) inch

SD-643HD5	117 kg (258 lb)
SD-533HD5	95 kg (209 lb 8 oz)

Operation system	Infrared remote control system
Power source	Two DURACELL® "AA" MN1500 1.5 V ALKALINE dry cell batteries
Dimensions	66 (W) x 24.6 (H) x 226.5 (D) mm 2-19/32 (W) x 31/32 (H) x 8-29/32 (D) inches
Weight	170 g (4 oz) (without batteries)

Operating instructions	1
Warranty card	1
Remote control unit	1
DURACELL® "AA" MN1500 1.5V	
Alkaline dry cell batteries	2

Specifications and design are subject to possible modifications without notice due to improvements.

- Remote control unit (x1)
(AXD1457)
- Alkaline dry cell batteries (LR6, AA) (x2)
(AEX1018)
- Warranty card (x1)
(SD-533HD5/KUXC/CA, SD-643HD5/KUXC/CA only)
(ARY1050)
- Operating instructions (English) (x1)
(ARB1535)

