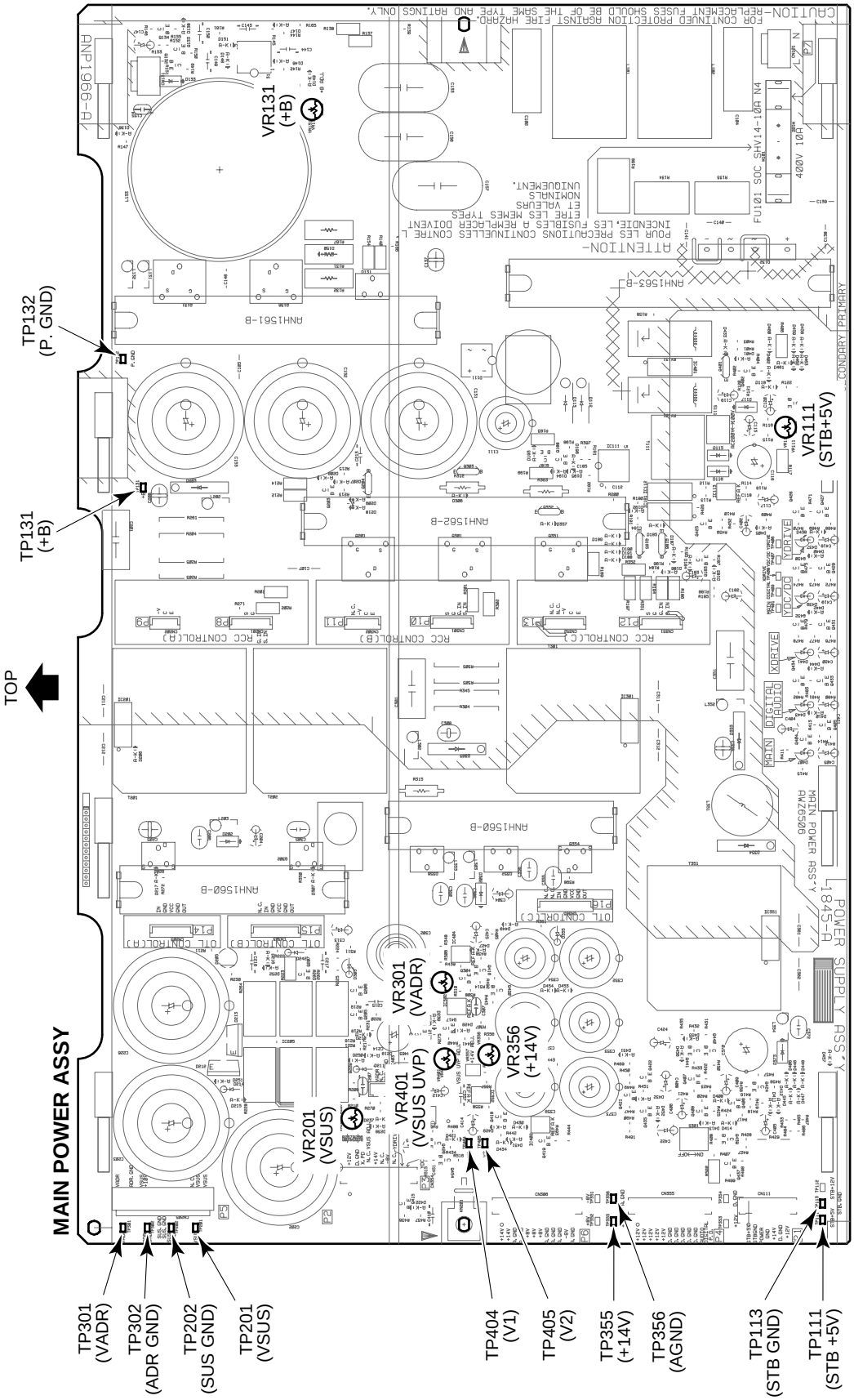


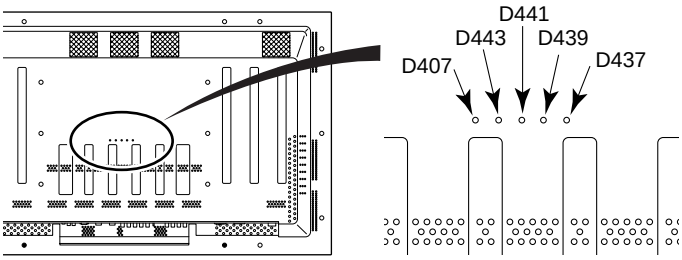
Adjusting points and Measuring points

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DIAGNOSIS METHOD

This PDP has several protection circuits, and the operation of the circuits activate power down circuit and set the unit automatically to standby mode in order to protect the circuit.
Power shut down operation of the unit can roughly be diagnosed by LED indicators at Main Power Assy.
Lighting of LEDs can be confirmed through five holes on Rear Panel.



■ Diagnosis of malfunctions when power down occurs (in lighting LEDs at Main Power Assy)

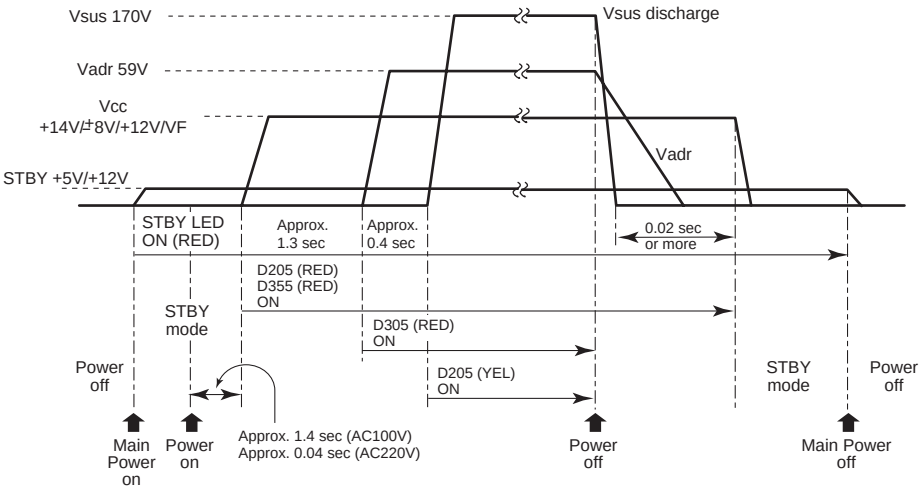
Lighting LED	The state of circuit	P.D. circuit in operation	Diagnosis	Failure points	Estimated failure parts
D407	High between base & emitter of Q415	VSUS OVP	When RCC Control (A) Assy is replaced, P.D. does not occur.	RCC Control (A) Assy	IC203 • Q208 • R232 • D224 • 226
			When OTL Control(A) Assy is replaced, P.D. does not occur.	OTL Control (A) Assy	IC204 • Q209 • 210 • R260
			Even when RCC Control(A) Assy and OTL Control(A) Assy are replaced, P.D occurs.	MAIN POWER Assy	IC201 • 202
	High between base & emitter of Q417	VADR OVP	When RCC Control (B) Assy is replaced, P.D. does not occur.	RCC Control (B) Assy	IC303 • Q305 • R316 • 314
			When OTL Control (B) Assy is replaced, P.D. does not occur.	OTL Control (B) Assy	IC304 • Q306 • 307 • R346
			Even when RCC Control(B) Assy and OTL Control (B) Assy are replaced, P.D occurs.	MAIN POWER Assy	IC301 • 302
	High between base & emitter of Q419	14V OVP	When RCC Control (C) Assy is replaced, P.D. does not occur.	RCC Control (C) Assy	IC353 • Q353 • R364 • D362 • 364
			When OTL Control(C) Assy is replaced, P.D. does not occur.	OTL Control (C) Assy	IC354 • Q356 • 357 • R396
			Even when RCC Control (C) Assy and OTL Control (C) Assy are replaced, P.D occurs.	MAIN POWER Assy	IC351 • 352
	D408 Anode is High / High between base & emitter of Q426	VSUS UVP	When CN205 is disconnected, P.D. occurs, and when RCC Control (A) Assy is replaced, P.D. does not occur.	RCC Control (A) Assy	IC203 • Q208 • R232 • 254 • C221
			When CN205 is disconnected, P.D. occurs, and when OTL Control (A) Assy is replaced, P.D. does not occur.	OTL Control (A) Assy	IC204 • Q209 • 210 • R260
			When CN205 is disconnected, P.D. occurs, and even when RCC Control (A) Assy and OTL Control (A) Assy are replaced, P.D occurs.	MAIN POWER Assy	IC201 • 202 • D212 • 214
			When CN3401 is disconnected, P.D. does not occur.	X DRIVE Assy	Pulse module IC3402 • 3405
			When CN3601 is disconnected, P.D. does not occur.	Y DRIVE Assy	Pulse module IC3604 • 3609 • 3610
	D408 Anode is High / High between base & emitter of Q416	VADR UVP	When CN205 is disconnected, P.D. occurs, and when RCC Control (B) Assy is replaced, P.D. does not occur.	RCC Control (B) Assy	IC303 • Q305 • R316 • 338 • D320 • C317
			When CN205 is disconnected, P.D. occurs, and when OTL Control (B) Assy is replaced, P.D. does not occur.	OTL Control (B) Assy	IC304 • Q306 • 307 • R346

Lighting LED	The state of circuit	P.D. circuit in operation	Diagnosis	Failure points	Estimated failure parts
D407	D408 Anode is High/ High between base & emitter of Q416	VADR UVP	When CN205 is disconnected, P.D. occurs, and even when RCC Control (B) Assy and OTL Control (B) Assy are replaced, P.D occurs.	MAIN POWER Assy	IC301 • 302 • Q302
			When CN205 is disconnected, P.D. does not occur.	CABLE Assy	
	D408 Anode is High/ High between base & emitter of Q418	14V UVP	When CN306 & 354 are disconnected, P.D. occurs.	MAIN POWER Assy 14V D/D CONV. BLOCK	RCC Control (C) Assy • OTL Control (C) Assy • IC351 • 352
			When CN306 is disconnected, P.D. does not occur.	ANALOG VIDEO Assy	
			When CN354 is disconnected, P.D. does not occur.	Y DRIVE Assy IC5V D/D CONV. BLOCK	IC852
	D408 Anode is High/ High between base & emitter of Q421	12V UVP	When CN355 is disconnected, P.D. occurs.	MAIN POWER Assy 12V D/D CONV. BLOCK	RCC Control (C) Assy • OTL Control (C) Assy • IC351 • 352 IC551 • 601 • Q554 • 555 • 604 • 605
			When CN356 is disconnected, P.D. does not occur.	DIGITAL VIDEO Assy D/D CONV. BLOCK	
	D408 Anode is High/ High between base & emitter of Q420	8V UVP	When CN306 is disconnected, P.D. occurs.	MAIN POWER Assy 8V D/D CONV. BLOCK	RCC Control (C) Assy • OTL Control (C) Assy • IC351 • 352
			When CN306 is disconnected, P.D. does not occur.	ANALOG VIDEO Assy	
	D408 Anode is High/ High between base & emitter of Q435	–8V UVP	When CN306 is disconnected, P.D. occurs.	MAIN POWER Assy –8V D/D CONV. BLOCK	RCC Control (C) Assy • OTL Control (C) Assy • IC351 • 352 • D373
			When CN306 is disconnected, P.D. does not occur.	ANALOG VIDEO Assy	
	D405 Anode is High	B OVP		MAIN POWER Assy PFC BLOCK	IC131
	High between base & emitter of Q111	AC200V P.D.	AC power input is appropriate.	MAIN POWER Assy STB BLOCK	IC111 • 112 • 113 • T111
	D852 Anode is High.	VF OVP		Y DRIVE Assy	IC852 • 853 • 854
D407 • D443	TP555 Hi	5V OVP		DIGITAL VIDEO Assy 5V D/D CONV.BLOCK	IC551
	TP556 Hi	5V UVP			
	TP604 Hi	3.3V OVP		DIGITAL VIDEO Assy 3.3V D/D CONV. BLOCK	IC601
	TP603 Hi	3.3V UVP			
	TP555 Lo	ICP OPEN	When the power supply is turned on, a part of the screen shines in white momentarily and P.D. occurs.	CABLE Assy RESONATOR BLOCK	IC1008 • Q1001–Q1006
	TP556 Lo				
	TP603 Lo			Address Module	UPD16340 (IC??????)
	TP604 Lo			DIGITAL VIDEO Assy DIGITAL BLOCK	IC2201
	D4501 Anode is High.	AUDIO P.D.		AUDIO Assy	IC4502 • C4520 • 4522
D407 • D441	D3457 Anode is High.	12V OCP		X DRIVE Assy Pulse Module	Pulse module IC3402 • 3405
				X DRIVE Assy RESET DRIVE BLOCK	Q3401 • 3402 • 3403
D407 • D439	K706Hi	VOFS OVP		Y DRIVE Assy VOFS D/D CONV. BLOCK	IC702 • 704
	K705Hi	VOFS UVP	Drive section (drive control signals & drive signal output elements) in normal operation.	Y DRIVE Assy VOFS D/D CONV. BLOCK	IC701 • 702 • 704
			VOFS D/D Conv. Block in normal operation	Y DRIVE Assy SUS_MSK BLOCK	R3717 • 3730
	K754Hi	VH OVP		Y DRIVE Assy VH D/D CONV. BLOCK	IC751 • 752

Lighting LED	The state of circuit	P.D. circuit in operation	Diagnosis	Failure points	Estimated failure parts
D407 • D439	K751Hi	VH UVP	Drive section (drive control signals & drive signal output elements) in normal operation.	Y DRIVE Assy VH D/D CONV. BLOCK	IC751 • 752 • 755
			VH D/D Conv.Block in normal operation	SCAN MODULE	SCAN IC
			Scan Module in normal operation.	Y DRIVE Assy IC5V D/D CONV. BLOCK	IC851 • 852 • 853
	K804Hi	VRN OVP	Drive section (drive control signals & drive signal output elements) in normal operation.	Y DRIVE Assy VRN D/D CONV. BLOCK	IC801 • 803
	K801Hi	VRN UVP	VRN D/D Conv. Block in normal operation.	Y DRIVE Assy VRN D/D CONV. BLOCK	IC801 • 802 • 803
				YDRIVE Assy SUS_MSK BLOCK	R3717 • 3730
	K854Hi	IC5V OVP		Y DRIVE Assy IC5V D/D CONV. BLOCK	IC851 • 853
D407 • D437	K3607Hi	12V OCP	Output voltage of IC3606, 3607, 3608 are normal		Pulse module IC3604 • 3605 • 3609 • 3610
			Output voltage of IC3606, 3607, 3608 are abnormal.		IC3611 • 3612 • 3613 • 3615 • 3601 • 3602 • 3603 • 3614
	K3704Hi	RESET OCP		Y DRIVE Assy RESET BLOCK	Q3708
	D3751 Anode is High.	DRIVE STOP P.D.		DIGITAL VIDEO Assy	IC2201 (IC23)

OVP: Over Voltage Protection, OCP: Over Current Protection, UVP: Under Voltage Protection

■ Diagnosis of malfunctions by power coming up sequence



The power coming up sequence of power supply

■ Simple diagnosis using LEDs at Main Power Assy

The state of LEDs at Main Power Assy	Estimated P.D. circuit in operation
After D205 lights up in red, D407 lights up. (D205 lights up in yellow in normal operation.)	VSUS UVP
After D305 is put out the light, D407 lights up. (D305 lights up in red in normal operation.)	VADR UVP
After D355 is put out the light, D407 lights up. (D355 lights up in red in normal operation.)	14V • 12V • ±8V UVP, B OVP, VF OVP
D407 lights up at the stand-by mode.	AC200V P.D.
After D205, D305 and D355 lights up normally, D407 lights up.	VSUS OVP
After D305 and D355 lights up normally, D407 lights up.	VADR OVP
After D355 lights up normally, D407 lights up.	14V OVP

Diagnosis when under voltage is detected at V SUS / V ADR voltage lines.

- Disconnect connector CN205 P5 at Main Power Assy and turn on the power.
  If the power is turned on and D205 at Main Power Assy lights up in yellow, cause of the under voltage is not inside Main Power Assy.
  If P.D. occurs, V SUS / V ADR DC-DC Converter block at Main Power Assy may be defective.

Diagnosis when under voltage is detected at 14V, 12V, +-8V voltage lines

- Be sure to turn off High Power CUT SW, S301 at Power Supply Assy. (important)
- Disconnect CN306 P6,CN355 P4, CN354 P3, CN353 P2 at Main Power Assy one by one, and turn on the power of the unit.
  (Do not disconnect all four connectors at the same time and turn on the power. Because this leads to no load of power supply and that is very dangerous.)
- When the power is turned on with a connector disconnected, and if Low power supply DC-DC Converter operates normally with lighting D355 and D205 in red, cause of under voltage is not inside Main Power Assy.
- If P.D. still occurs after disconnecting each connector, 14V DC-DC Converter block at Main Power Assy may be defective.

The function of High Power CUT SW, S301 at Main Power Assy

- When S301 is turned off, V SUS / V ADR DC-DC Converter does not operate. However, 14V DC-DC Converter operates normally.
- Therefore, diagnosis from Signal Input circuit to before Drive circuit is possible without danger of breaking Drive section by mistake.

AC100V/AC200V Change-over SW, S111 at Main Power Assy

- Only PDP-502MXE is set to AC200V.
- When the SW is set to AC100V, AC200V P.D. detecting circuit will operate. (Even when the unit is in Stand-by mode, the detecting circuit is in operation.)

Diagnoses of the malfunctions by LEDs at Digital Video Assy, D2302/D2306

LED	Title (Color of Light)	The timing of lighting	Estimated failure parts
D2302	STOP (GREEN)	Lights on in normal operation It lights up at every V rate, when Drive pulse output from IC2201 is normal.	Around IC2101/IC2151/IC2801 /X3202 (Xtal)
D2302	PBusy (RED)	Light is put off in normal operation. It lights up when System Control CPU (IC3604) and Panel CPU are communicating.	Around Connector and Panel CPU and X3202/X3201 (Xtal)
D2306	IP Busy (RED)	It lights up at every V rate during IP processing.(Video input) Light is put off when IP processing is not done. (PC input)	Around IC1801/IC1901/IC2001

Diagnosis of malfunctions other than the operation of protection circuits

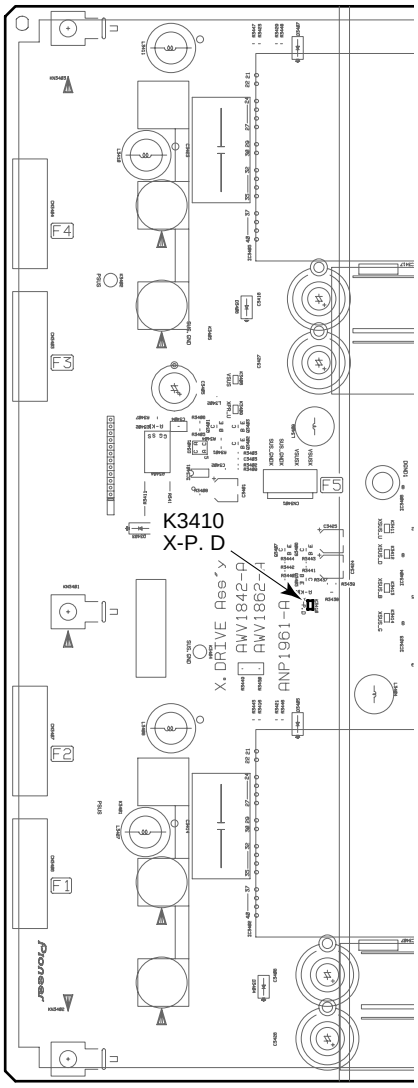
The state of the unit	Estimated failure mode
STBY indicator does not light at all	● AC power input is not appropriate. ● Stand-by power supply block is defective. ● U-com Assy is defective. ● Connectors disconnected.
Power does not go on Power shuts down immediately after power on. (back to Stand-by)	● U-com Assy is defective.
Dots like luminance spots appear on the screen.	● Drive section voltage is abnormal. (VSUS, VADR, VOFS, VH, VRN) ● X Drive Assy and Y Drive Assy are defective. ● Scan Module is defective.
Screen does not emit lights at all.	DIGITAL VIDEO Assy is defective.
Fuse is blown.	● Q131–Q136, D131, IC131 Defective ● R133, R134, R168 Defective ● Q201, Q202, RCC Control (A) Assy, OTL Control (A) Assy Defective ● Q301, Q302, RCC Control (B) Assy, OTL Control (B) Assy Defective ● Q351, Q354, RCC Control (C) Assy, OTL Control (C) Assy Defective

■ Note for repairing in case of blown fuses

- Never turn on the power of the unit again just by replacing the fuse, when the fuse is blown.
  Because, it is rare case that the fuse itself is defective. If the power is turned on again without resolving the cause of over current, the unit is damaged more.
- Be sure to check parts such as In-Rush current protective resistors where excessive current may flow.
  Because, they may be damaged secondarily.
- Be sure to find out all defective parts caused by a blown fuse.
  Because, if the power is turned on with even one defective part left in the circuit, this may lead the other parts to become defective again.

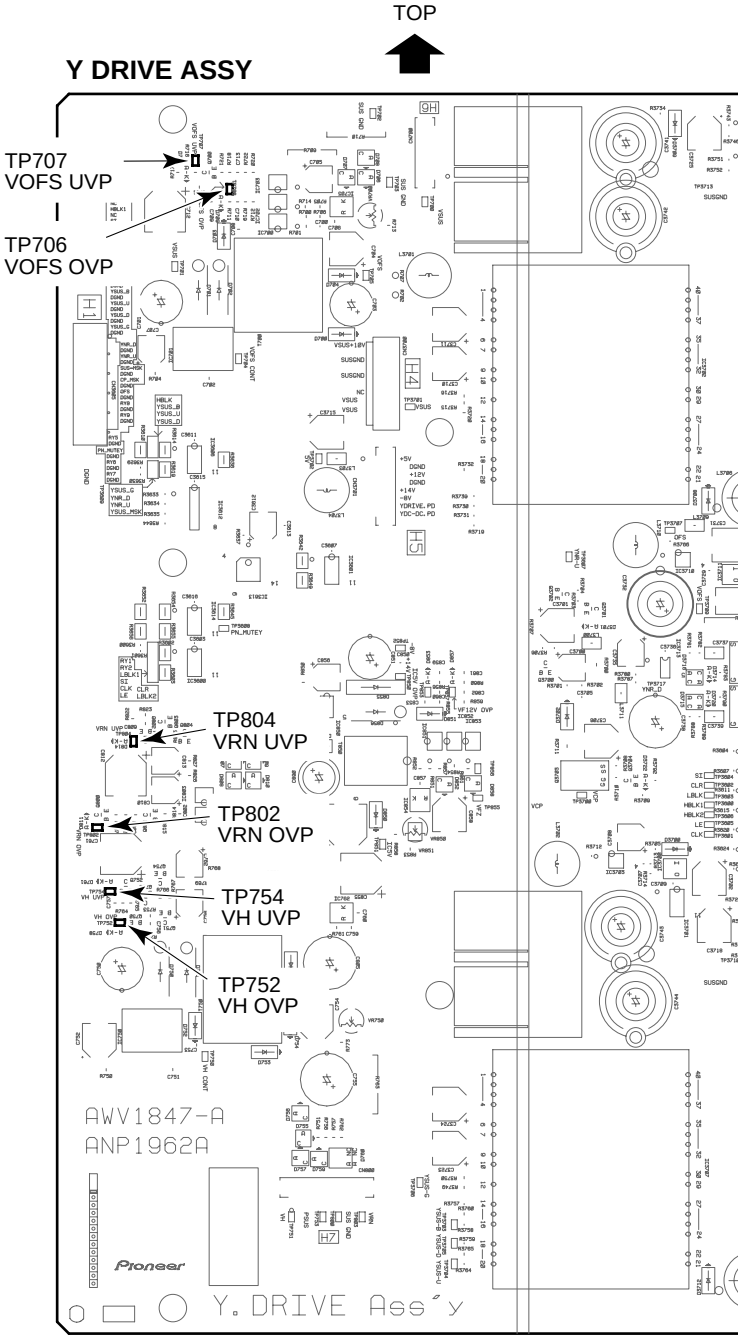
X DRIVE ASSY

TOP

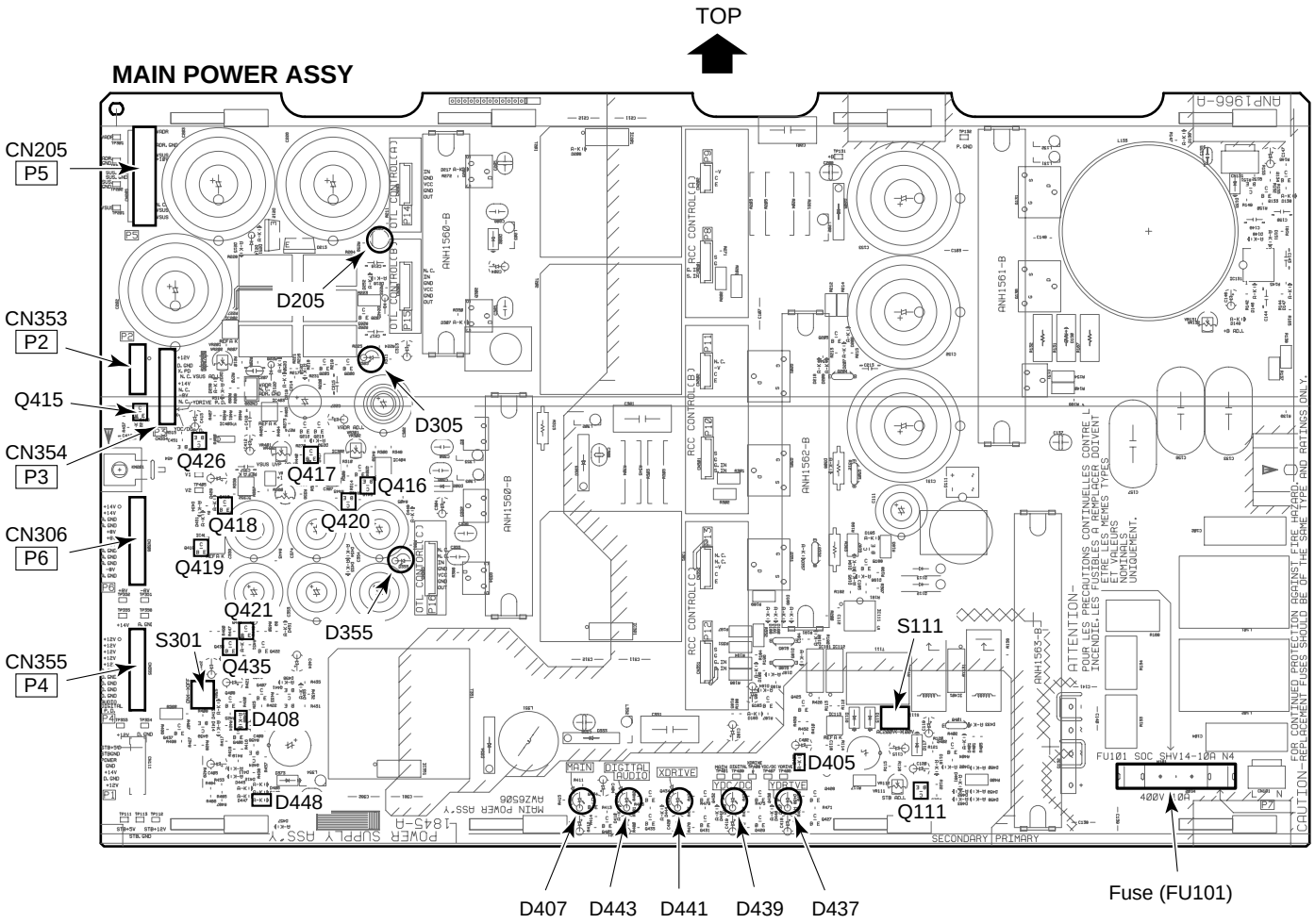


Y DRIVE ASSY

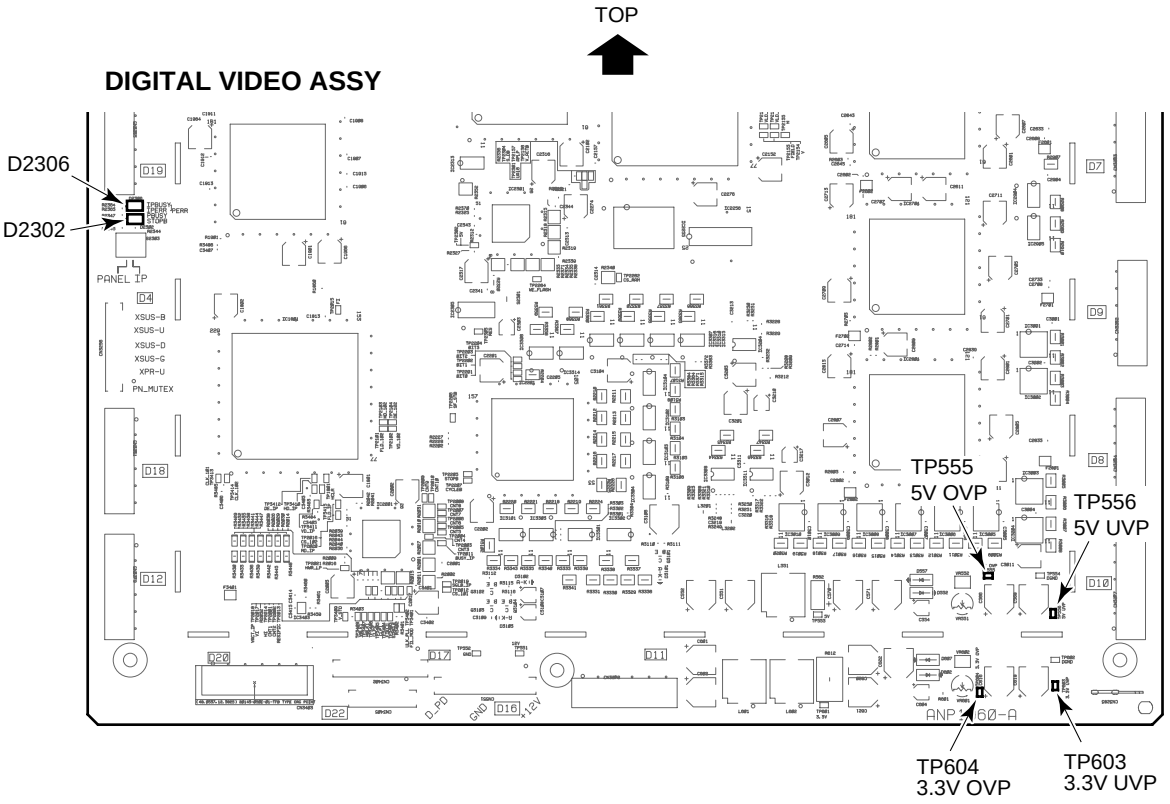
TOP



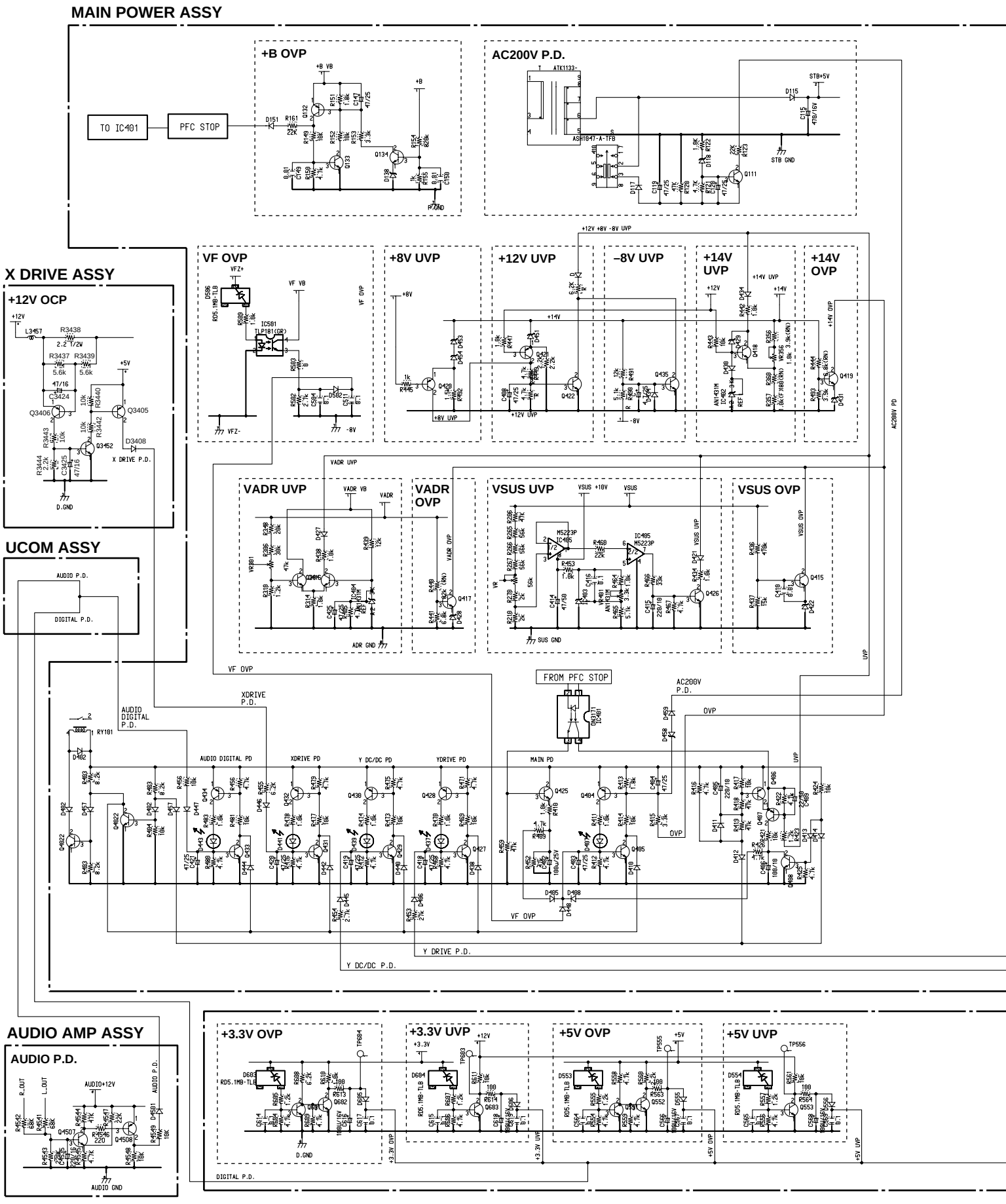
MAIN POWER ASSY

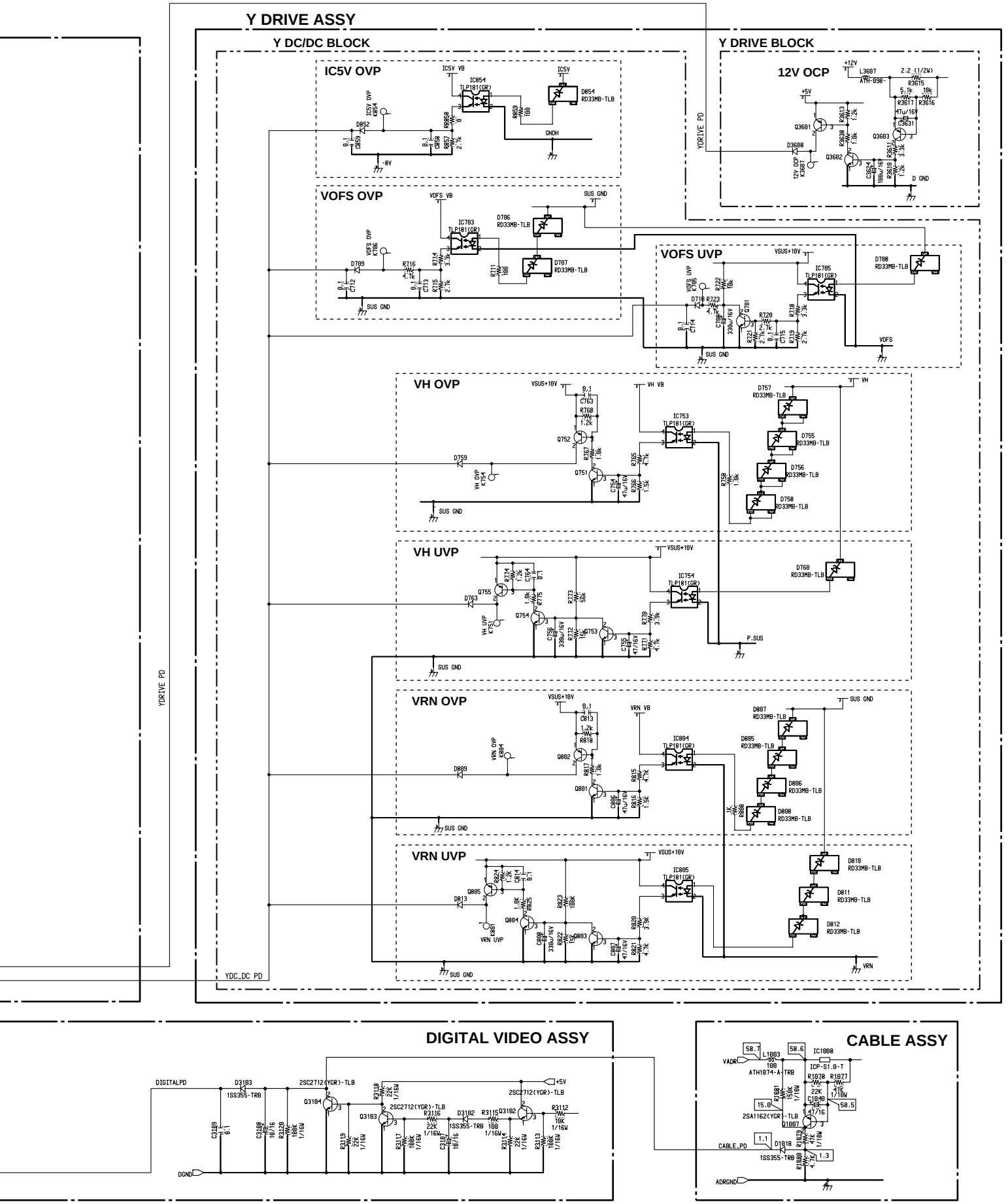


DIGITAL VIDEO ASSY



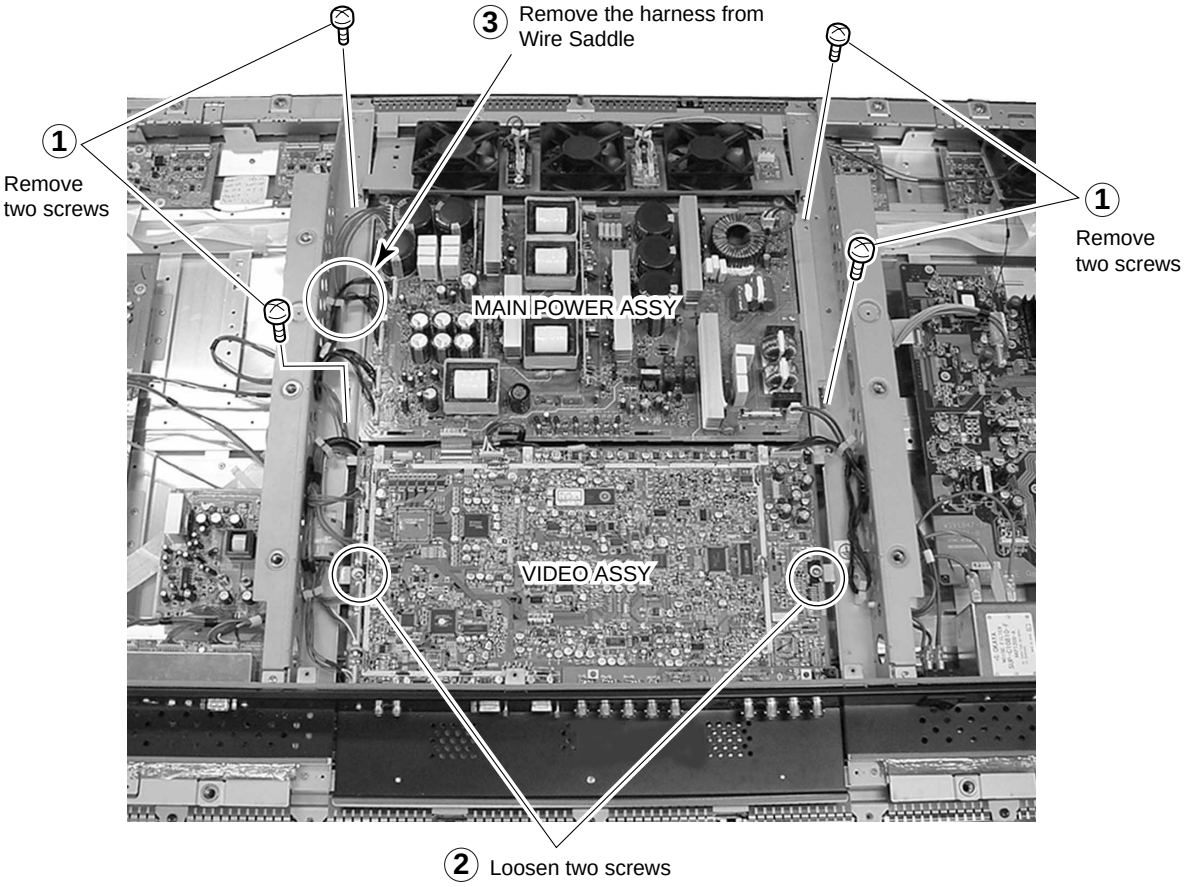
Protection Circuits

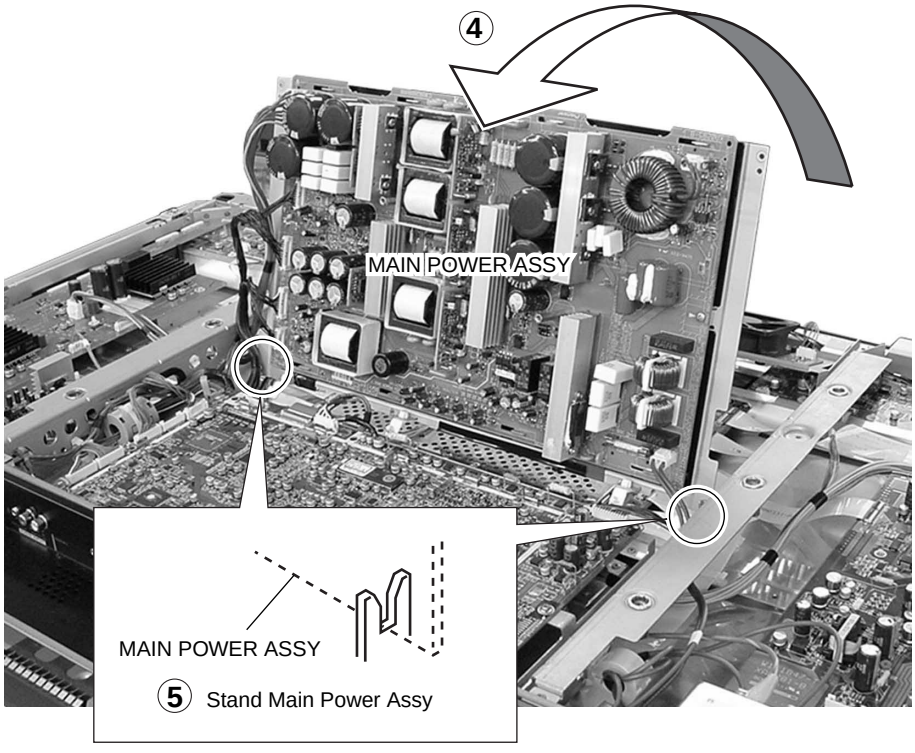



Y DRIVE ASSY
Y DC/DC BLOCK
Y DRIVE BLOCK
IC5V OVP
12V OCP
VOFS OVP
VOFS UVP
VH OVP
VH UVP
VRN OVP
VRN UVP
YDRIVE PD
YDC_DC PD
SUS GND
GNDH
D GND
VOFS
VH
P.SUS
VRN
DIGITAL VIDEO ASSY
CABLE ASSY
DIGITALPD
DGND
CABLE_PD
ADRGND

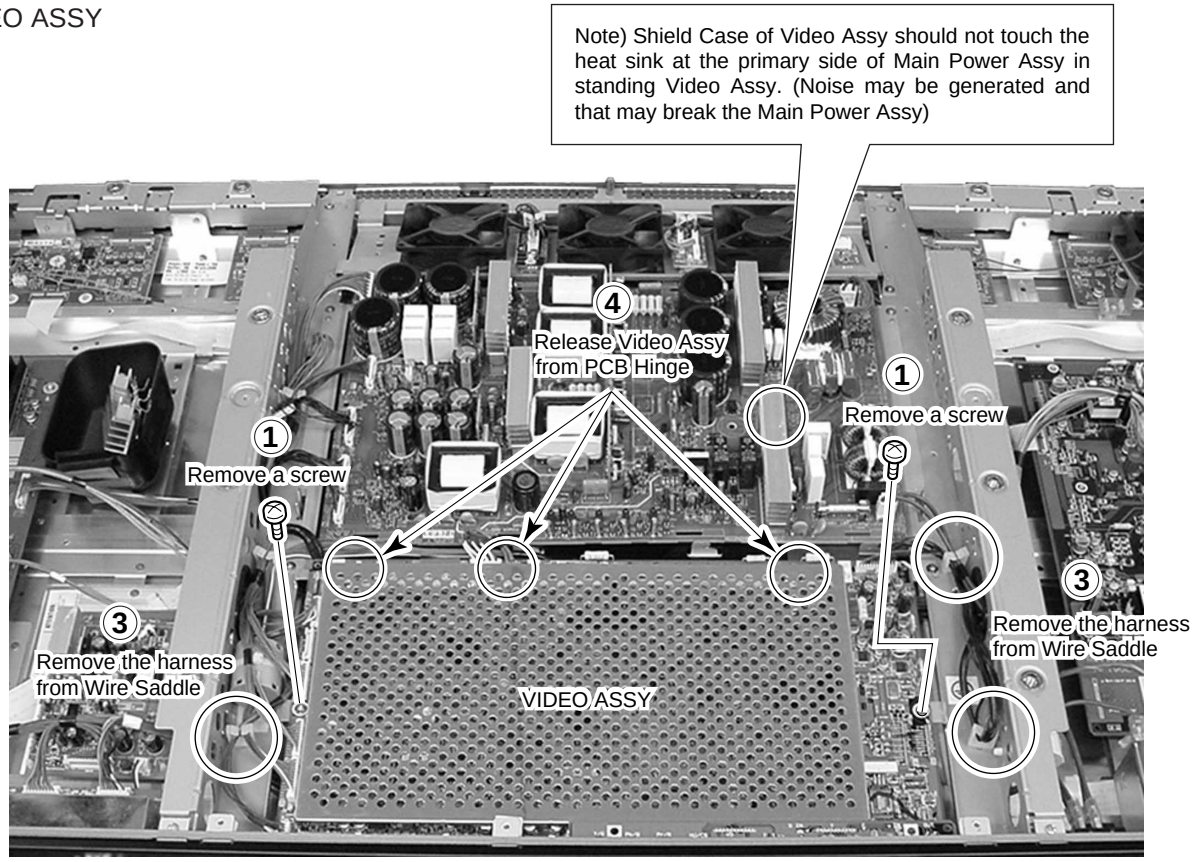
■ Service Position

1. MAIN POWER ASSY

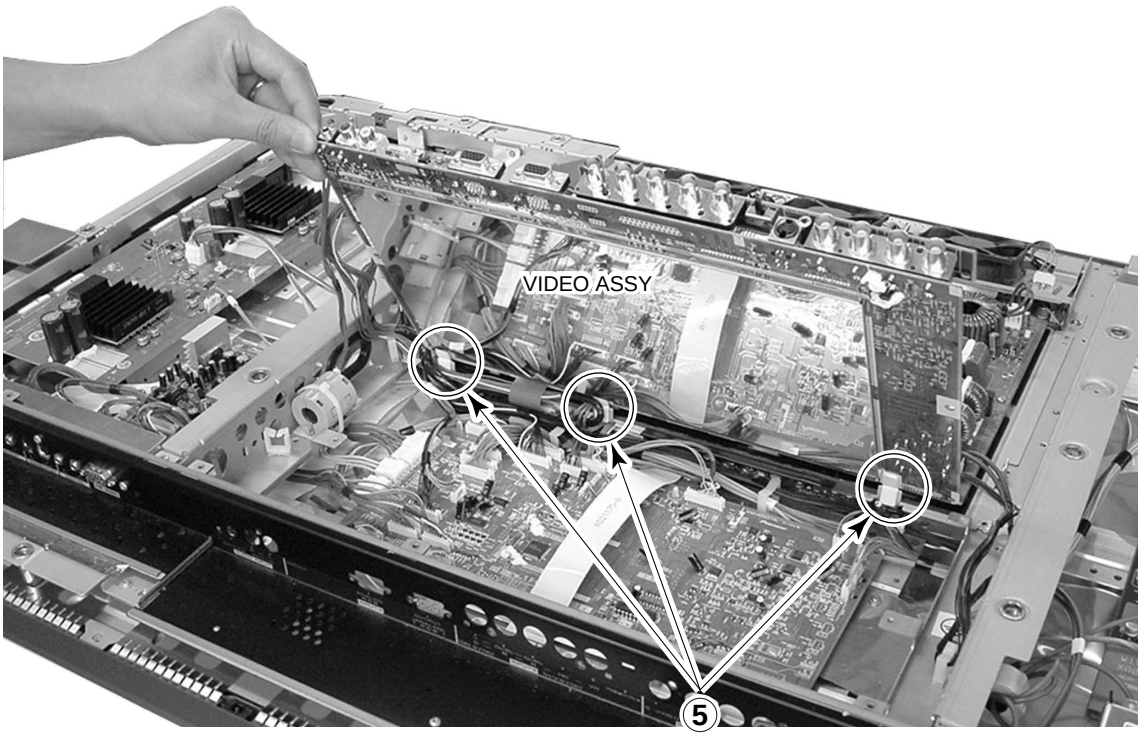




2. VIDEO ASSY



2 Remove all screws and nuts from Terminal Panel



After pulling VIDEO Assy backward to release it from Terminal Panel, insert it to the PCB Hinge again.