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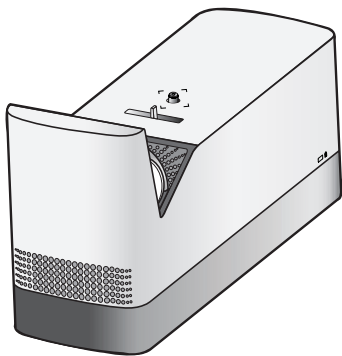
DLP PROJECTOR SERVICE MANUAL

CHASSIS : FZ91A

MODEL : HF85LA HF85LA-NA

CAUTION

BEFORE SERVICING THE CHASSIS, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



P/NO : MFL71103202 (1811-REV00)

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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by \triangle in the Exploded View.

It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.

Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and its components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this PROJECTOR receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1 W), keep the resistor 10 mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)

With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.

If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1 M Ω and 5.2 M Ω .

When the exposed metal has no return path to the chassis the reading must be infinite.

An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)

Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.

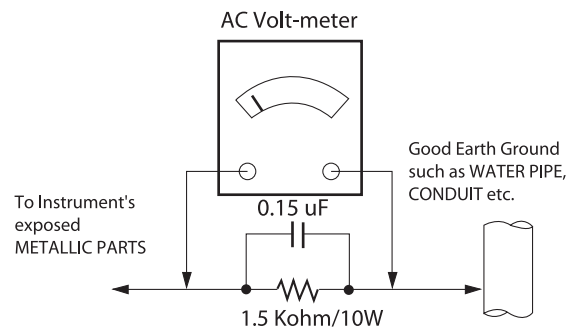
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.

Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which corresponds to 0.5 mA.

In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



When 25A is impressed between Earth and 2nd Ground for 1 second, Resistance must be less than 0.1 Ω

*Base on Adjustment standard

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application range

This spec sheet is applied all of the DLP Projector with FZ91A chassis.

2. Requirement for Test

Each part is tested as below without special appointment.

- (1) Temperature: 25 °C ± 5 °C, CST: 40 °C ± 2 °C
- (2) Relative Humidity: 65 % ± 10 %
- (3) Power Voltage
: Standard input voltage (100~240V @ 50/60Hz)
* Standard Voltage of each products is marked by models.
- (4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
- (5) The receiver must be operated for about 30 minutes prior to the adjustment

3. Test method

- (1) Performance: LGE PROJECTOR test method followed
- (2) Required other specification
 - Safety : KCC, IEC, CE specification (EN55022 Class B), CCC.
 - EMC : KCC, IEC, CE specification (EN60950-1), CCC.
 - Wireless: WIFI module, Bluetooth module – Korea,NA

4. Model General Specification

No	Item	Specification				Remark
		Min	Typ	Max	Unit	
1	Video input applicable system	ATSC / NTSC				HF85LA-KR only
		ATSC /NTSC-M/64&256QAM				HF85LA-NA only
2	Available channel	1) VHF : 02~13 2) UHF : 14~69 3) DTV : 02-69 4) CATV : 01~158(HF85LA-KR) 01~135(HF85LA-NA) 5) CADTV: 01~158(HF85LA-KR) 01~135(HF85LA -NA)				HF85LA-KR / HF85LA-NA only
3	Power	DC 19V @ 7.37A (140W)				Set only
4	Input Voltage	AC 100 ~ 240(±10%)V, 50/ 60Hz				
5	Market	Korea				HF85LA-KR
		Europe				HF85LS-EU, HF85LSR-EU
		Japan				HF85LS-JP
		Global				HF85LG-GL
		North America				HF85LA-NA
6	Picture size	FULLHD (1920 x 1080)				
7	Aspect ratio	16:9				Panel Resolution
8	Operating Temperature	0		40	Deg	
9	Operating Humidity			80	%	
10	Storage Temperature	-20		60	Deg	
11	Storage Humidity			85	%	

5. Supported video resolutions

5.1. HDMI Input (PC/DTV)

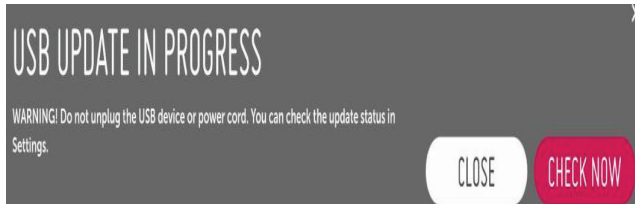
No.	Resolution	H-freq (kHz)	V-freq (Hz)	Pixel clock (MHz)	Proposed
HDMI-PC					
1	640*350	31.46	70.09	25.17	EGA
2	720*400	31.46	70.08	28.32	DOS
3	640*480	31.46	59.94	25.17	VESA(VGA)
4	800*600	37.87	60.31	40	VESA(SVGA)
5	1024*768	48.36	60.00	65	VESA(XGA)
6	1360*768	47.71	60.01	84.75	VESA(WXGA)
7	1152*864	54.34	60.05	80	VESA
8	1280*1024	63.98	60.02	109.00	SXGA
9	1920*1080	67.5	60	158.40	WUXGA(Reduced Blanking)
HDMI-DTV					
1	640*480	31.46	59.94	25.12	SDTV 480P
2	640*480	31.5	60.00	25.12	SDTV 480P
3	720*480	31.47	59.94	27	SDTV 480P
4	720*480	31.5	60.00	27.02	SDTV 480P
5	720*576	31.25	50.00	27	SDTV 576P
6	1280*720	44.96	59.94	74.17	HDTV 720P
7	1280*720	45	60.00	74.25	HDTV 720P
8	1280*720	37.5	50.00	74.25	HDTV 720P
9	1920*1080i	28.12	50.00	74.25	HDTV 1080I
10	1920*1080i	33.72	59.94	74.17	HDTV 1080I
11	1920*1080i	33.75	60.00	74.25	HDTV 1080I
12	1920*1080p	26.97	23.97	63.29	HDTV 1080P
13	1920*1080p	27.00	24.00	63.36	HDTV 1080P
14	1920*1080p	33.71	29.97	79.120	HDTV 1080P
15	1920*1080p	33.75	30.00	79.20	HDTV 1080P
16	1920*1080p	56.25	50.00	148.5	HDTV 1080P
17	1920*1080p	67.43	59.94	148.35	HDTV 1080P
18	1920*1080p	67.5	60.00	148.50	HDTV 1080P

SOFTWARE UPDATE

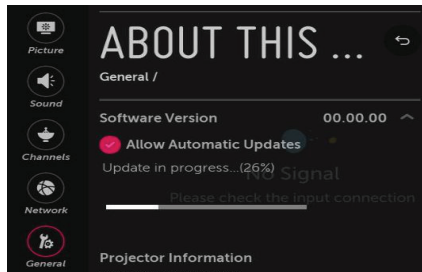
- (1) Turn on Projector.
- (2) Insert the USB including firmware.(The firmware must be copied to "LG_DTV" folder in USB)
- (3) When insert USB to Projector, USB UPDATE window is displayed automatically.



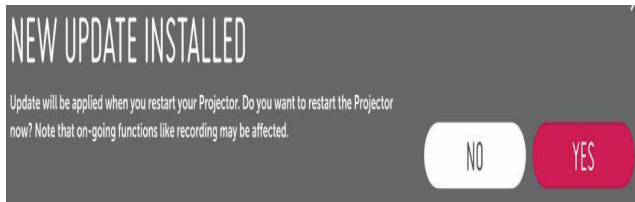
- (4) Select the [INSTALL] button, [USB UPDATE IN PROGRESS] window is displayed, and then update is started.



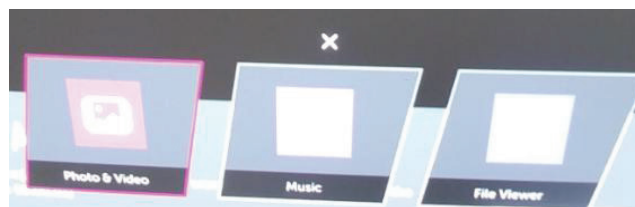
- (5) Select the [Check Now] button, you can check the update progress.



- (6) When update progress is completed, [NEW UPDATE INSTALLED] is displayed, and select the [YES] button, then Projector will be restarted

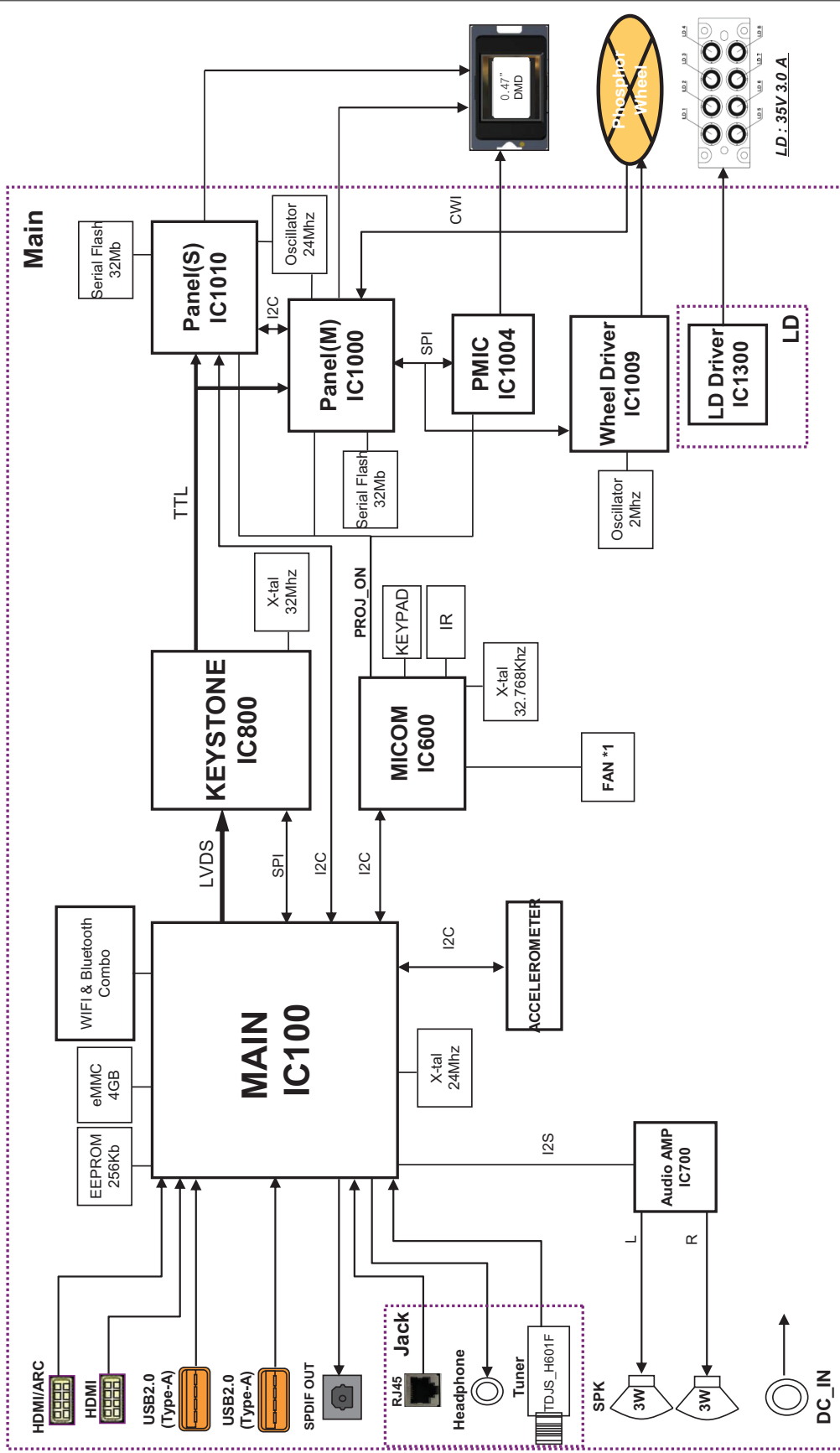


- (7) If Content list like a Picture 5 is displayed, select the [x] button, and keep going on update.



※ If Projector have been connected on Internet by Wired or Wireless AP, The Projector will Update by itself.

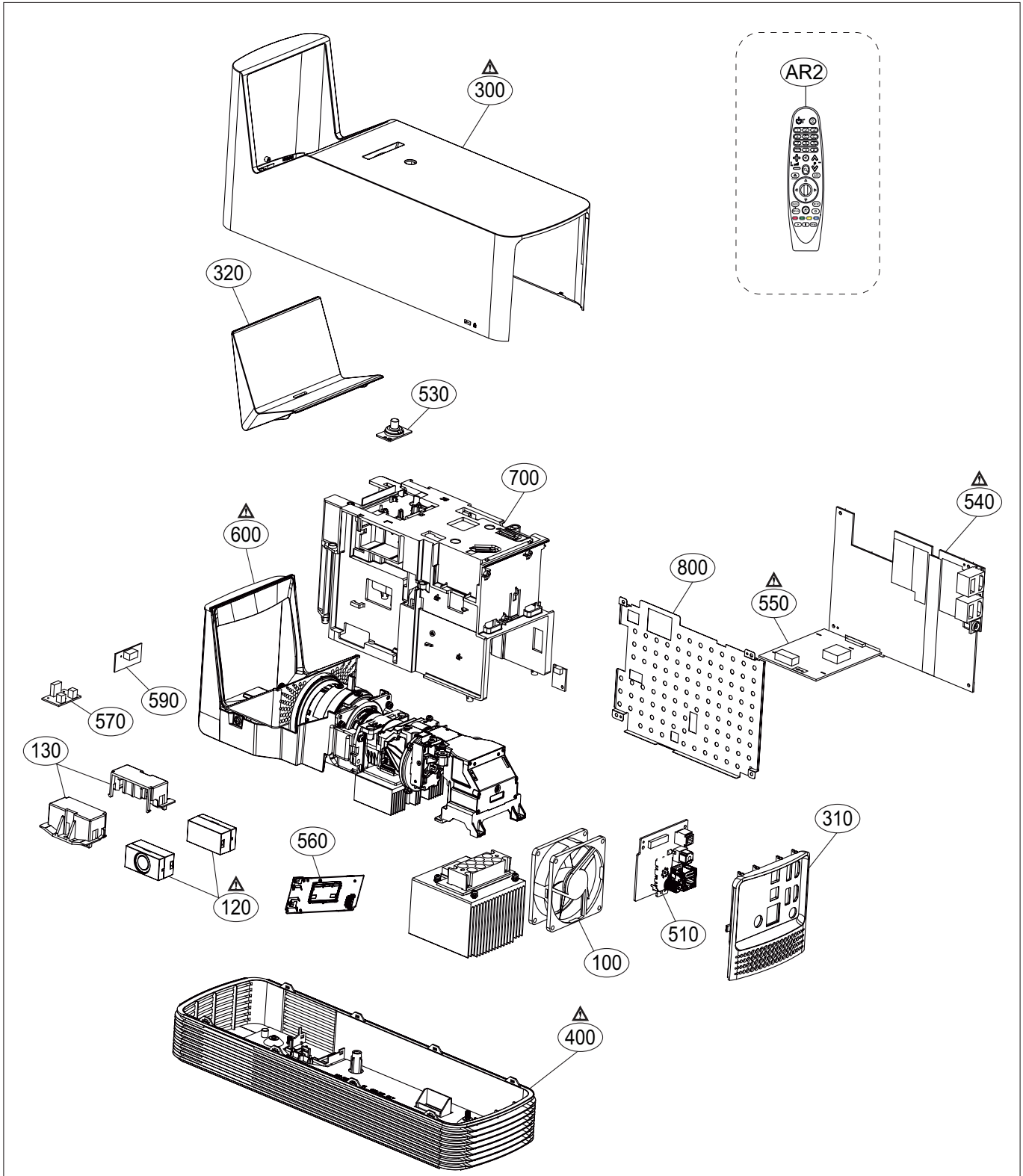
BLOCK DIAGRAM



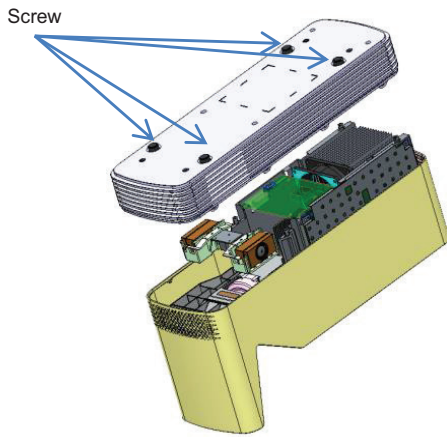
EXPLODED VIEW

IMPORTANT SAFETY NOTICE

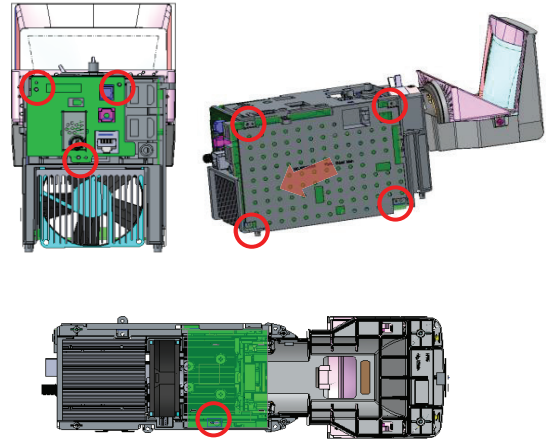
Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by \triangle in the EXPLODED VIEW. It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards. Do not modify the original design without permission of manufacturer.



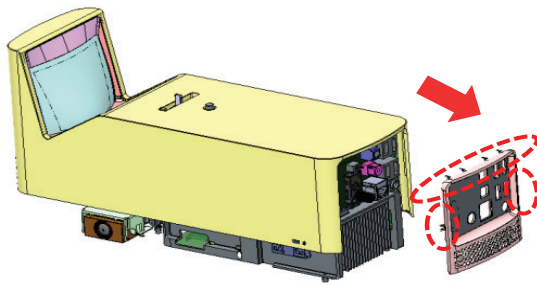
DISASSEMBLY GUIDE



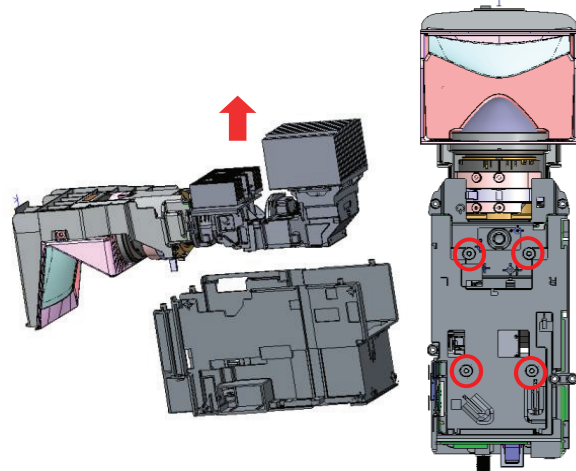
1. Remove the 4 pcs screws.
2. Separate out the bottom case by using the jig (Because of Hook structure)



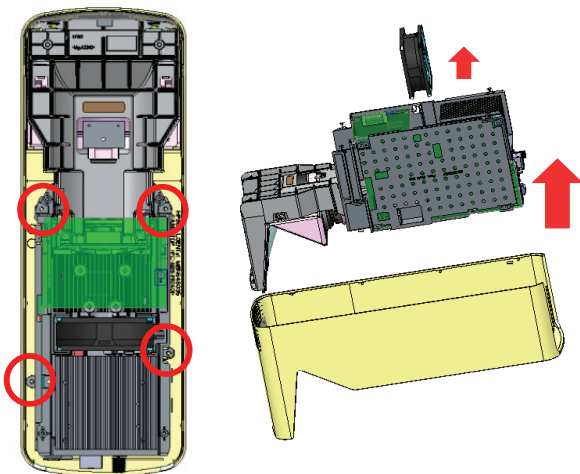
6. Remove the screws, separate out the PCB



3. Separate out the rear case from top case. Need to spread both sides to prevent the damage of top case's hook.

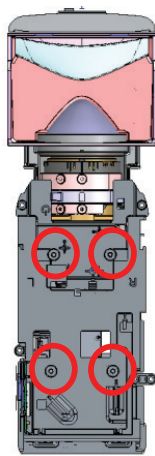
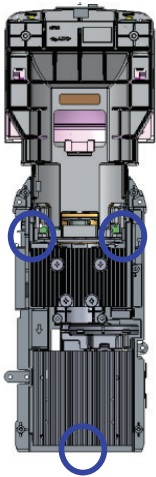


7. Remove the top case's 4 pcs screws
8. Separate out the engine from middle case, and then disassembly complete.

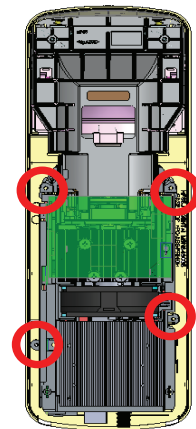
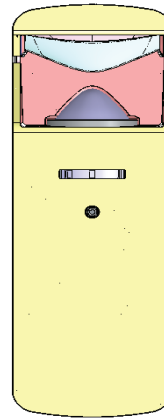


4. Remove the 4 screws from mid-case
5. Separate out the engine from top case

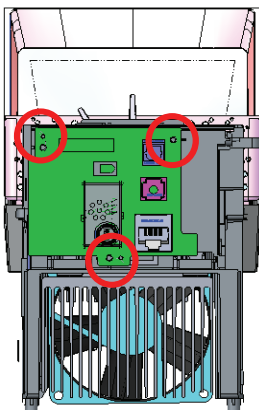
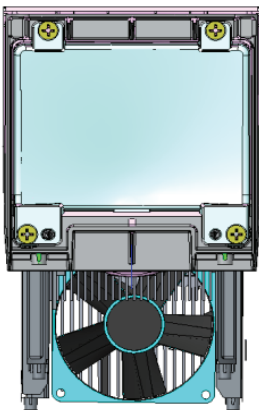
ASSEMBLY GUIDE



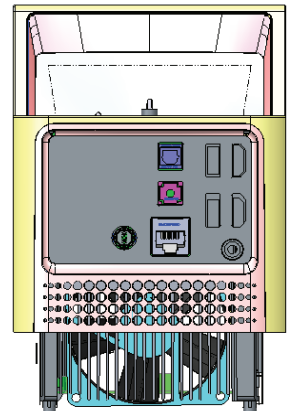
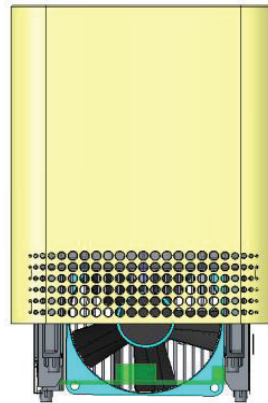
- 1. Middle case + Engine : $\Phi 3$ screw 4ea
- 2. Joystick + Middle case : $\Phi 2$ screw 2ea



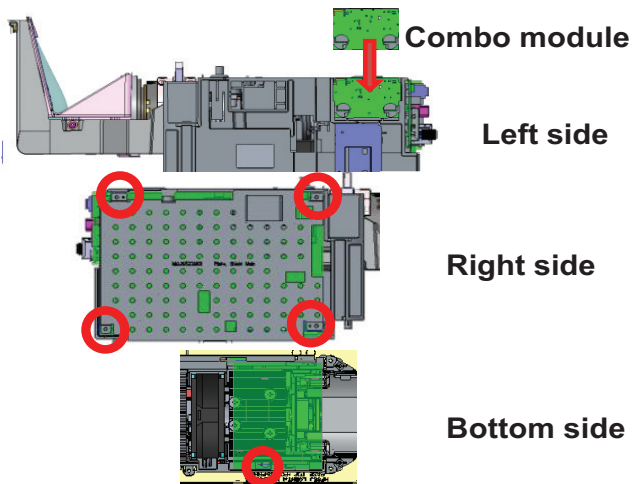
- 7. Middle case + Top Case : $\Phi 2.6$ screw 4ea



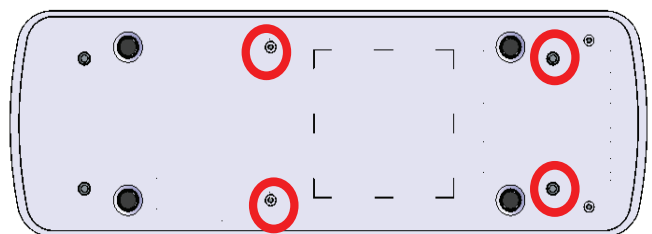
- 3. Jack B/D+ Middle case : $\Phi 2.6$ Screw 3ea
- 4. Middle case + Fan + Speaker



- 8. Rear Bracket + Top Case



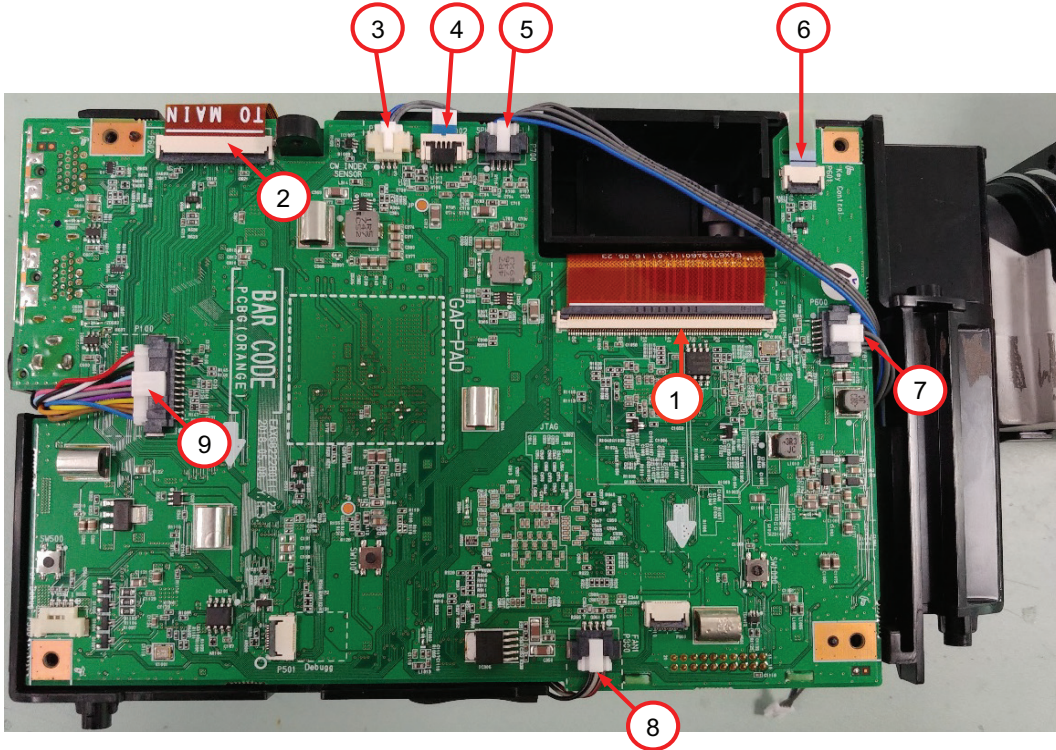
- 5. Middle Case + Combo Assemble
- 6. Main B/D+ Middle case : $\Phi 2.6$ Screw 5ea




- 9. Bottom Assy : $\Phi 2.6$ Screw 4ea

TROUBLE SHOOTING GUIDE

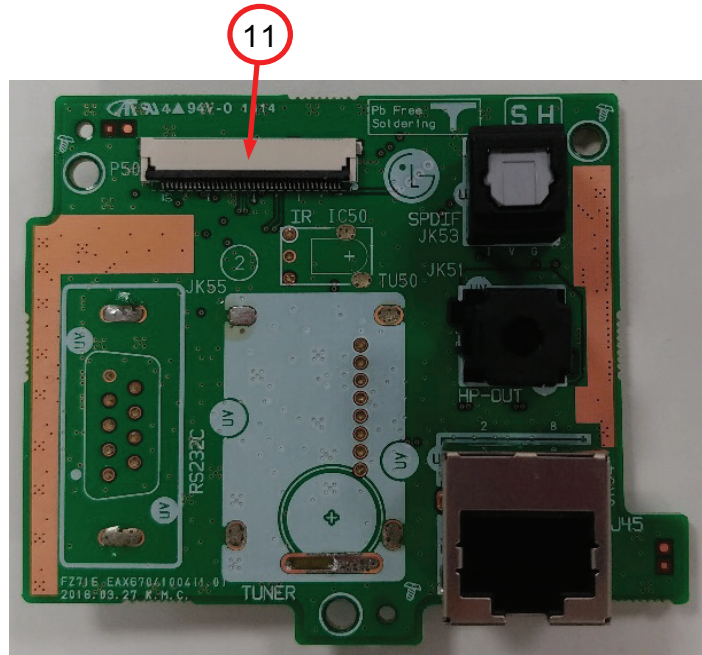
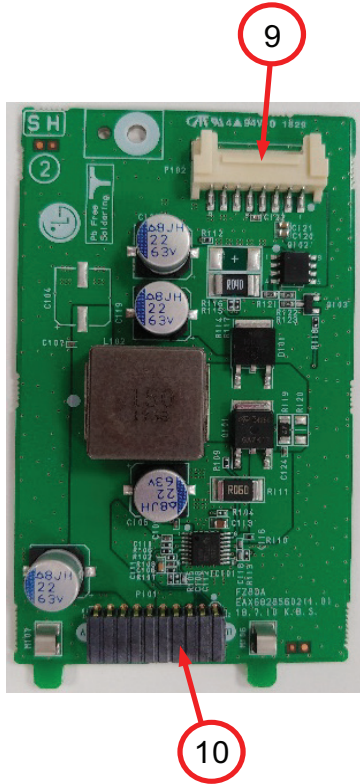
1. Poor Connection - Main, LED Board Ass'y



Board connection point 

No.	Circuit Number	Pin count	Connections	Symptoms of a bad connection
1	P1000	80	DMD Board	No image (none functional of DPP ASIC)
2	P602	40	Jack Board	Cannot Working Remote Controller, Sound out(AV, SPDIF), Wired Lan and DTV Tuner
3	P1003	3	P/W Index	No Image (DMD Lock by Detecting Phosphor wheel trouble)
4	P1002	4	P/W Motor	No Image (DMD Lock by Detecting Phosphor wheel trouble)
5	P700	4	Speaker	No sound (Internal Speakers)
6	P601	10	Local Key	Local Key doesn't work or may be worked abnormally
7	P600	6	IR Board	Cannot Work Remote Controller
8	P300	4	FAN	Fan doesn't work, and set turns off automatically
9	P100	8	WIFI, Bluetooth	Wi-Fi, Bluetooth Function is not working

1. Poor Connection - LD Driver, Jack Board Ass'y



Board connection point 

No.	Circuit Number	Pin count	Connections	Symptoms of a bad connection
9	P102	8	LD Bank	Laser Lamp doesn't Work
10	P101	20	Main Board	Laser Lamp doesn't Work, Set turns off automatically
11	P50	40	Main Board	Cannot Working Remote Controller, Sound out(AV, SPDIF), Wired Lan and DTV Tuner

2. Flow Chart for major symptom

