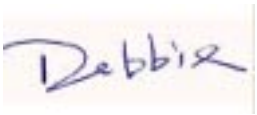
SERVICE MANUAL

Model Name : EP780

Prepared by SI : 

Prepared by TSE : 

Checked by : 

Approved by : 

Date	Version	Description
2006/9/29	V1.0	Initial Issue
2006/12/6	V2.0	modify “Chapter 5 Fireware Upgrade”

P/N#36.85Y03G001

Preface

This manual is applied to EP780 professional video scaler and color management system. The manual gives you a brief description of basic technical information to help in service and maintain the product.

Your customers will appreciate the quick response time when you immediately identify problems that occur with our products. We expect your customers will appreciate the service that you offer them.

This manual is for technicians and people who have an electronic background. Please send the product back to the distributor for repairing and do not attempt to do anything that is complex or is not mentioned in the troubleshooting.

Notice:

The information found in this manual is subject to change without prior notice. Any subsequent changes made to the data herein will be incorporated in future edition.

EP780Service Manual

Manual Version 1.0
P/N#36.85Y03G001

Table of Contents

Introduction

1-1 Product Highlight

No	Item	Description
1	Weight	Approx. 8 lbs
2	Dimension (W x D x H)	335mm X 250mm X 100mm
3	Cooling system	Fans with low system acoustic noise level
		Temperature control circuits with adaptive voltage control fan speed
4	Connect I/O port	- DVI D (HDCP Compliant) - D-sub 15 VGA 1 (PC RGB input) blue connector - D-sub 15 VGA 2 (PC RGB input) also supports Y, Pb, Pr and SCART/RGB (blue connector) - S-Video (4 pin mini DIN) - Composite Video (RCA) - USB - VGA out D-sub 15 pin output (loop out active VGA input) - 3 Audio in - Audio out - RS232 (3 pin mini DIN) - RJ45 - IR sensors x 2 - Speakers 2W x 2
5	Lamp housing	- Lamp could be changed by customer, but should follow the user manual insturction. - Replacable Lamp should be provided by Coretronic or its authouized agencies.
6	Tilt angle:	- 7 degree with elevator mechanism
7	Lamp Door Protection	- Lamp power supply shut off actomatically when door open
8	Power supply	- Inpu 100-240V, 50/60Hz
9	Power Consumption	- Normal operation: 385W+/-10%@110V AC - Standby mode: < 12W
10	Input signal spec.	PC Signal - Hsync Frequency 31 ~ 91.1kHz - Vsync Frequency 43 ~ 85 Hz

NO	Name	Description
10	Input signal spec.	Video Signal RGB (PC) - Analog RGB 0.7 Vp-p, 75 ohms, Separate TTL H&V Sync - Analog RGB 1.0 Vp-p, 75 ohms, Sync on Green - Analog RGB 0.7 Vp-p, 75 ohms, Composite TTL Sync Video - Composite video 1Vp-p, 75 ohm - S-video Luminance 0.714Vp-p, 75 ohm - Chrominance 0.286Vp-p, 75 ohm
11	System Controller	- TI DDP3020
12	Video compatibility	- NTSC : M(3.58MHz),4.43 MHz, 480i - PAL : B, D, G, H, I, M, N; 60Hz - SECAM : B, D, G, K, K1, L - HDTV : 480p, 576i/p, 720p 50 & 60 Hz, 1080i/p 50 & 60Hz
13	UXGA/SXGA Compression	- UXGA/SXGA images will be compressed into XGA display by DDP3020
14	Projector control keypad	- Menu - Up / keystone - Down / keystone - Left / source - Right / re-sync - Enter - Power
15	Keystone correction	+- 16% vertical and horizontal keystone compensation
16	Brightness	- 3350 ANSI Lumens(Typical) - 2850 ANSI Lumens (Minimum)
17	Contrast ratio	- 2500 : 1 full on/full off (Typical) - 1700 : 1 full on/full off (minimum)
18	Uniformity	- 65% minimum
19	Projection lens	- 1.2 x zoom lens, 2.0 to 2.4 throw ratio with thread to attach long throw and short throw lens
20	Throw distance	- 1.2~10m (Optical Performance) - 1.0~12.2m (Mechanical travel)
21	Aspect ratio	- 4:3 with support for 5:4, 16:9 and 2.35:1. (Vertical po sition adjustment for all letterbox - can’t support the 5:4 & 2.35:1 ratio)
22	LED indicator	Power LED - Red : Standby (Projector off) - Green : Normal (Projector on) - Flash Green : Warm up (Go to Normal mode) - Flash Red : Cooling down (Go to Standby mode)

No	Item	Description
22	LED indicator	Temp. LED - Red : Overheat Lamp LED - Red : Lamp bad or ignite lamp failed - Flash Red : Fan locked
23	Lamp life	- 2000 hours typical, 50% survival rate Full Power - 3000 hours ECO mode
24	Lamp type	- Osram 300W E21.8 G2 lamp
25	QSC	- With 18 languages : English, German, French, Italian, Spanish,Portuguese,Polish, Dutch, Russian, Finnish, Swedish, Norweigian/Dannish, Traditional Chinese, Simplified Chinese, Japanese, Korea, Greek
26	Quick shut down	- 2 minutes
27	Input connectors	- DVI-D - D-Sub 15 VGAx2 - S-Video - Composite

1-2 Computer Compatibility

Analog

Compatibility	Resolution	V-Sync [Hz]	H-Sync [KHz]
VGA	640x350	70	31.5
	640x350	85	37.9
	640x400	85	37.9
	640x480	60	31.5
	640x480	72	37.9
	640x480	75	37.5
	640x480	85	43.3
	720x400	70	31.5
	720x400	85	37.9
SVGA	800*600	56	35.2
	800x600	60	37.9
	800x600	72	48.1
	800x600	75	46.9
	800x600	85	53.7
XGA	1024x768	60	48.4
	1024x768	70	56.5
	1024x768	75	60.0
	1024x768	85	68.7
SXGA	1152x864	70	63.8
	1152x864	75	67.5
	1152x864	85	77.1
	1280x1024	60	63.98
	1280x1024	75	79.98
	1280x1024	85	91.1

Compatibility	Resolution	V-Sync [Hz]	H-Sync [KHz]
SXGA+	1400x1050	60	63.98
UXGA	1600x1200	60	75
MAC LC 13”	640x480	66.66	34.98
MAC II 13”	640x480	66.68	35
MAC 16”	832x624	74.55	49.725
MAC 19”	1024x768	75	60.24
MAC	1152x870	75.06	68.68
MAC G4	640x480	60	31.35
i Mac DV	1024x768	75	60
i Mac DV	1152x870	75	68.49
i Mac DV	1280x960	60	60

Digital

Compatibility	Resolution	V-Sync [Hz]	H-Sync [KHz]
VGA	640x350	70	31.5
	640x350	85	37.9
	640x400	85	37.9
	640x480	60	31.5
	640x480	72	37.9
	640x480	75	37.5
	640x480	85	43.3
	720x400	70	31.5
	720x400	85	37.9
	800x600	72	48.1

Compatibility	Resolution	V-Sync [Hz]	H-Sync [KHz]
SVGA	800x600	56	35.2
	800x600	60	37.9
	800x600	72	48.1
	800x600	75	46.9
	800x600	85	53.7
XGA	1024x768	60	48.4
	1024x768	70	56.5
	1024x768	75	60.0
	1024x768	85	68.7
SXGA	1152x864	70	63.8
	1152x864	75	67.5
	1152x864	85	77.1
	1280x1024	60	63.98
	1280x1024	75	79.98
	1280x1024	85	91.1
SXGA+	1400x1050	60	63.98
UXGA	1600x1200	60	75

Chapter 2

Disassembly Procedure

2-1 Equipment Needed

Item	Photo	Item	Photo
Screw Bit (+) :107		Hex Sleeves 5mm	
Screw Bit (+) :101		Screw Bit: 6.0 x 100	

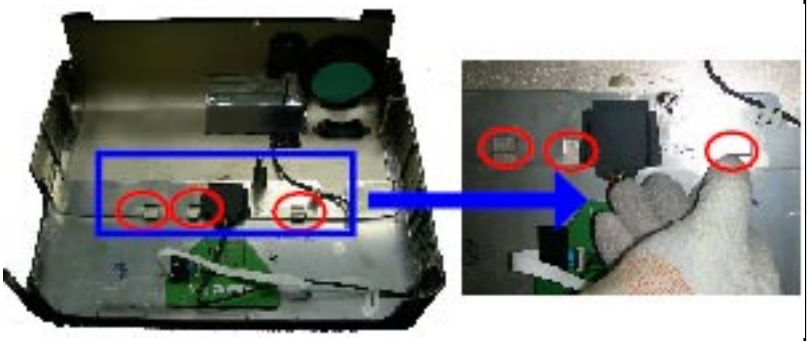
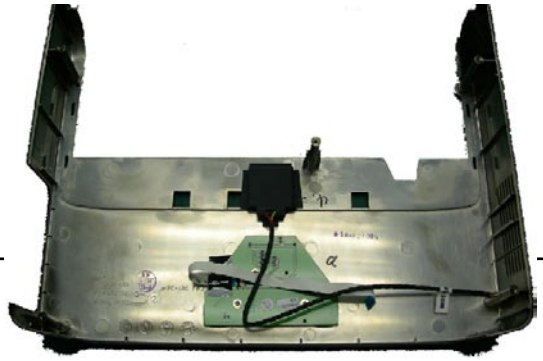
2-2 Disassemble Lamp Module and Elevator Foot

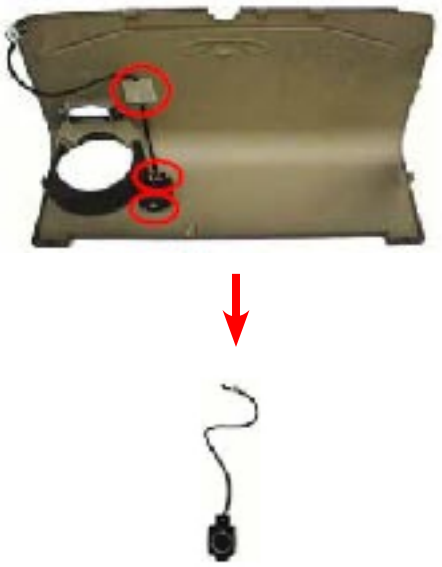
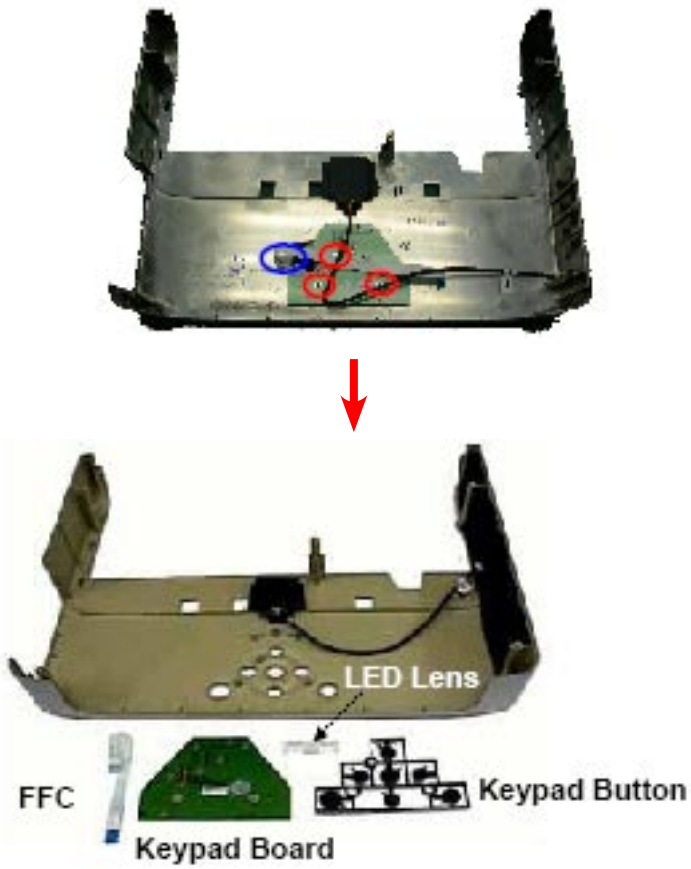
No	Procedure	Photo
1	Unscrew two screws to remove Lamp Cover.	  Lamp Cover
2	Unscrew three screws to remove Lamp Module.	  **Lamp Module**

No	Procedure	Photo
3	(1) Unscrew two screws to detach Elevator Foot from Bottom Housing. (2) Lift it and then unscrew the screw.	     **Elevator Foot**

2-3 Disassemble Top Cover, Front Cover, IR Sensor Module, and Keypad Board

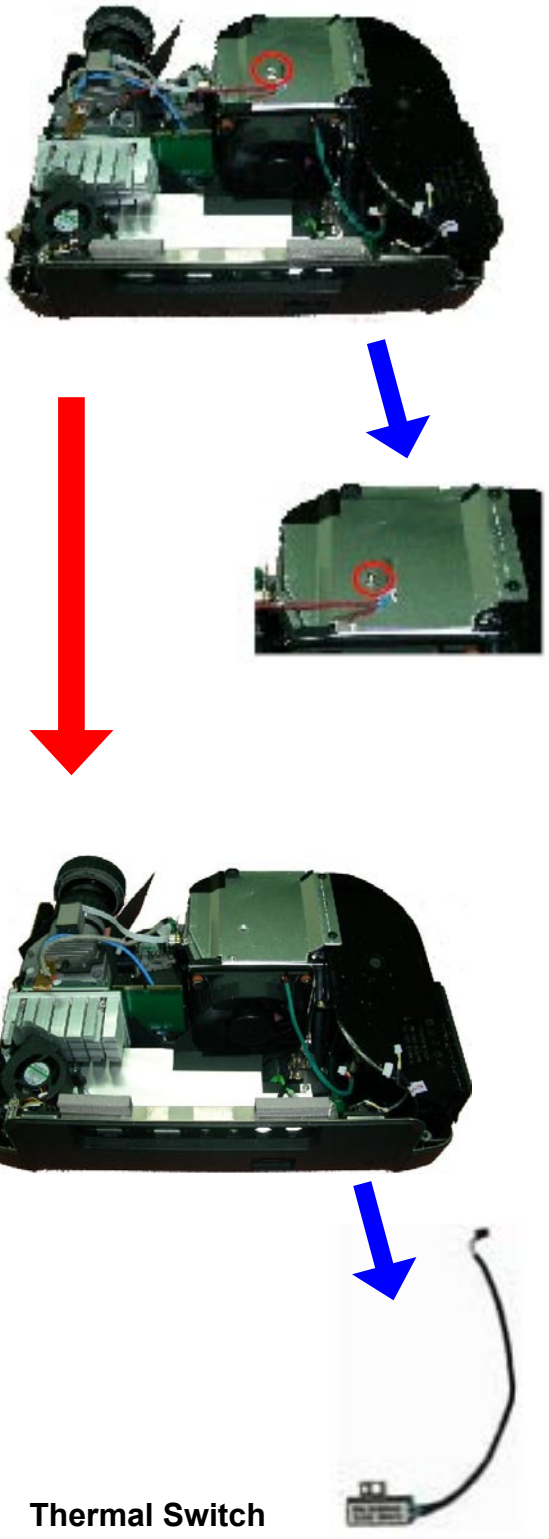
No	Procedure	Photo
1	Unscrew eight screws and then turn unit to the top side.	
2	Loose Front Cover from Top Cover.	 

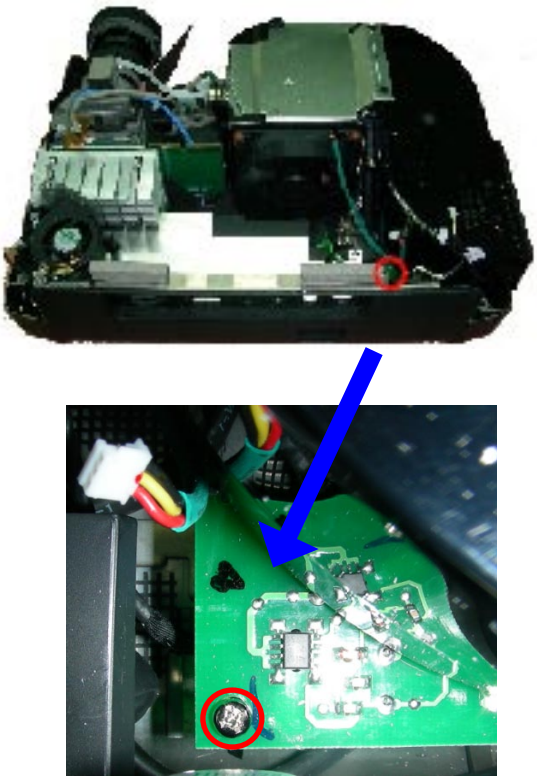
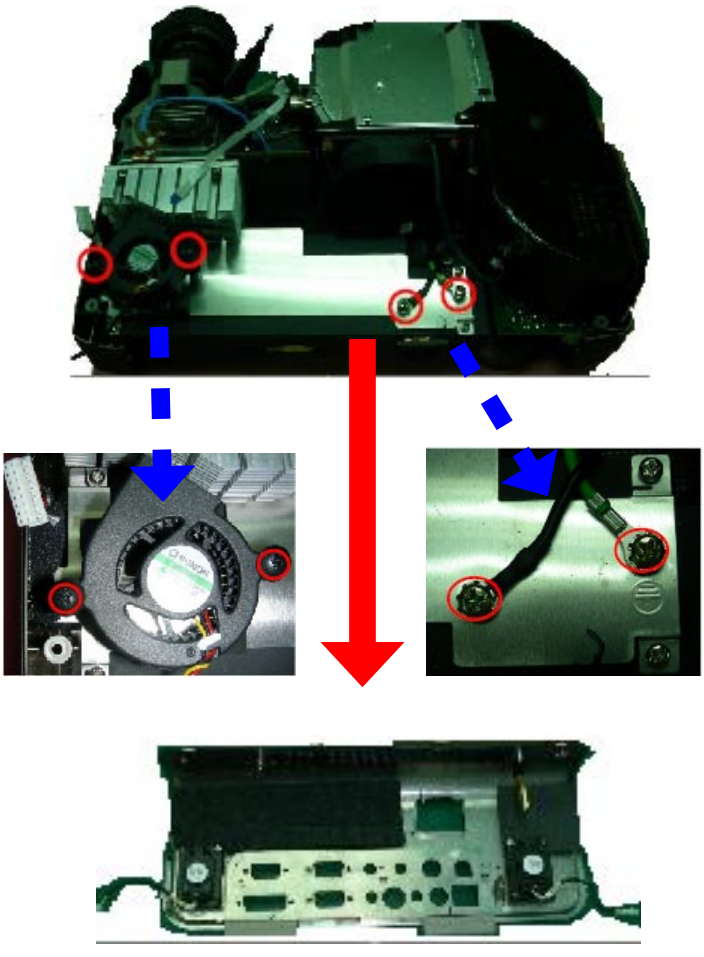
No	Procedure	Photo
3	Disconnect three connectors to remove Top Cover.	   

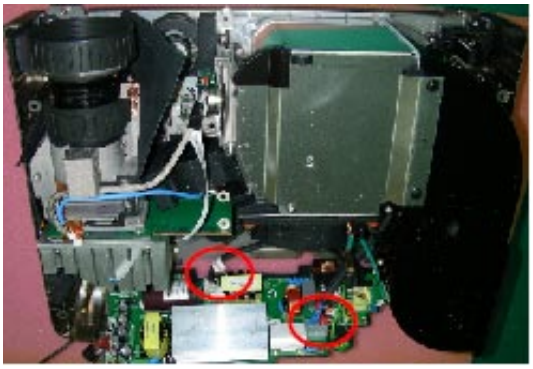
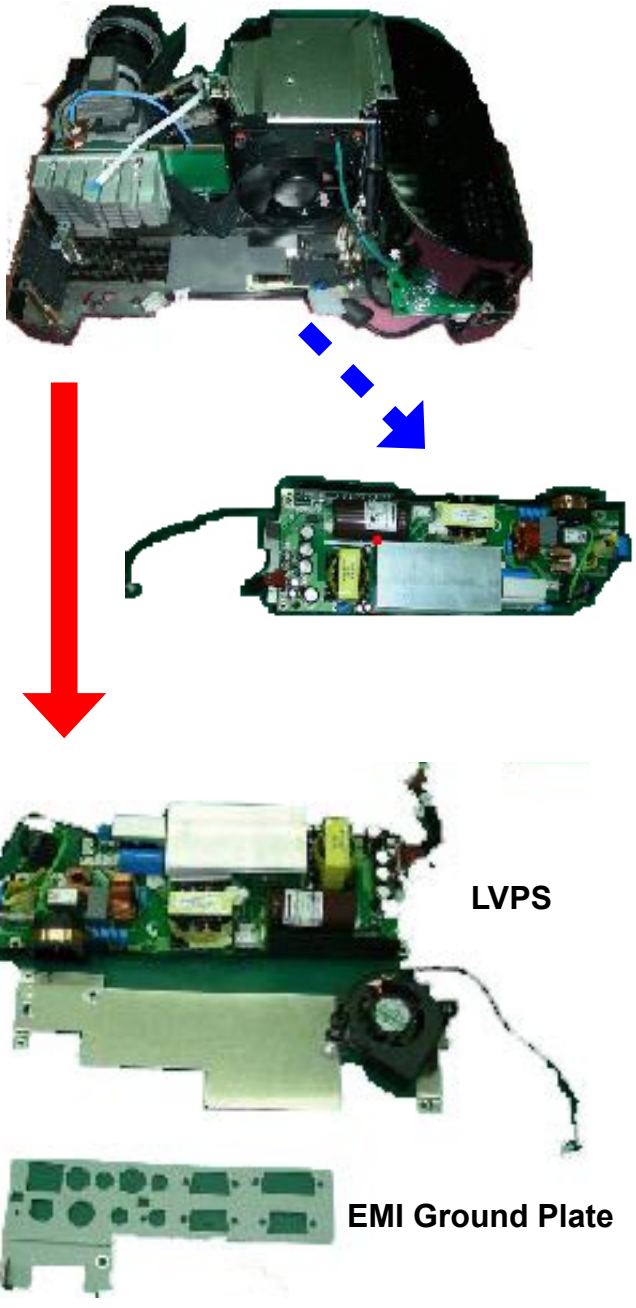
No	Procedure	Photo
4	Unscrew two screws and tear off the tape from Front Cover to remove the IR Sensor Module.	 IR Sensor Module
5	Unscrew three screws and disconnect the wire to remove the Keypad Board, Keypad Button and FFC.	

2-4 Disassemble Main Board Module, Thermal Switch, and LVPS Module

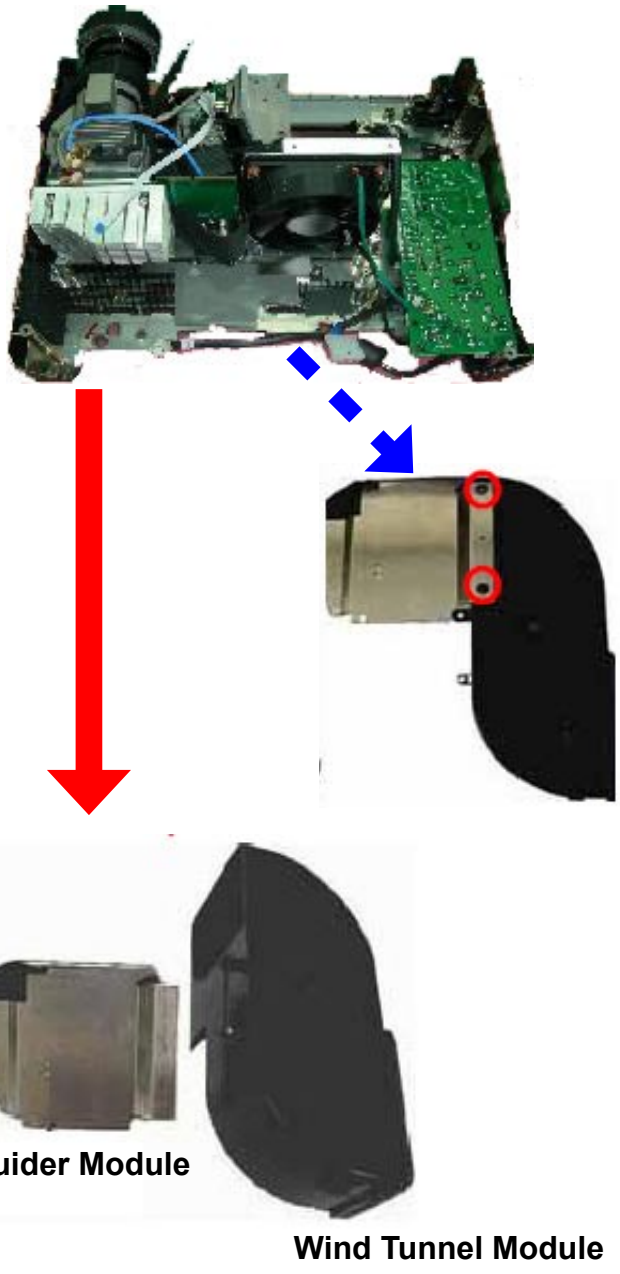
No	Procedure	Photo
1	Disconnect eleven connectors and unscrew seven screws from Main Board Module.	
		
2	Unscrew eight hex screws from Bottom Cover.	
3	Remove Main Board Module.	

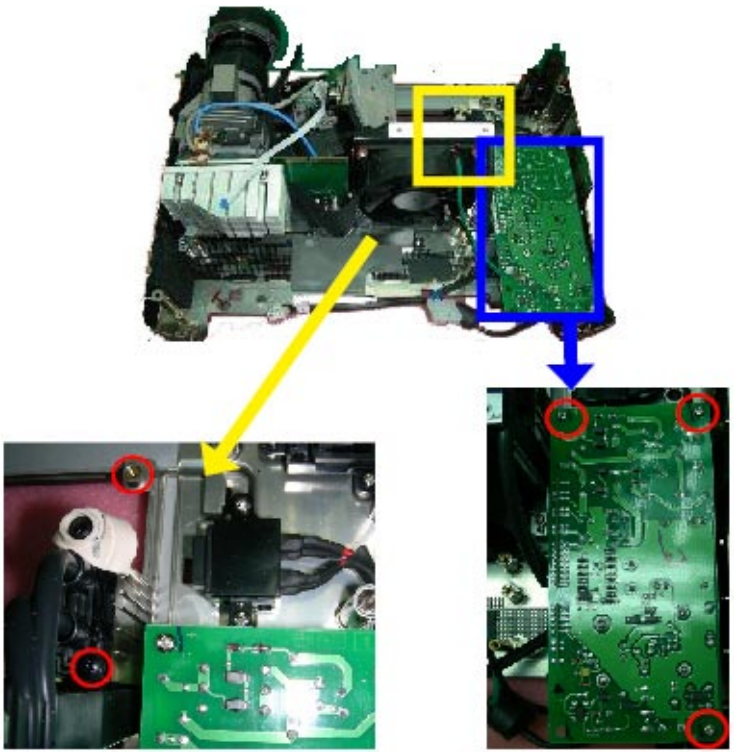
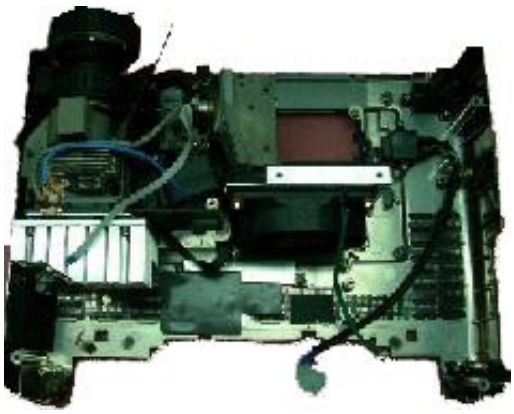
No	Procedure	Photo
4	Unscrew one screw to remove Thermal Switch.	 Thermal Switch

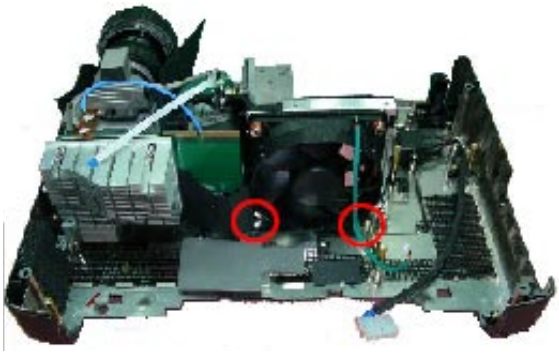
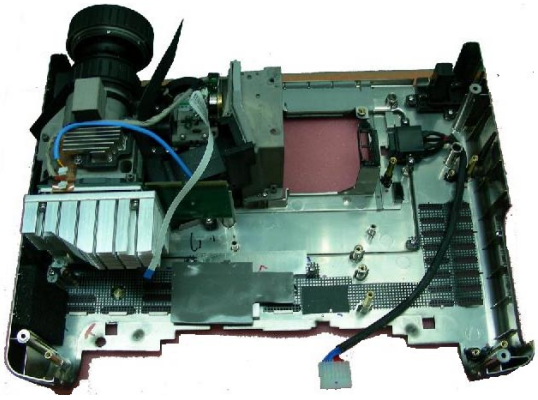
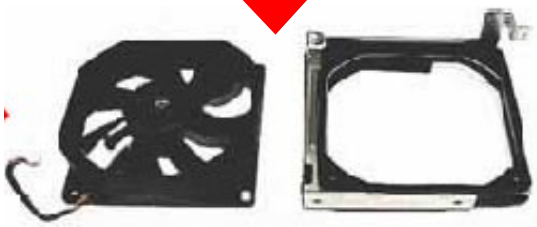
No	Procedure	Photo
5	Pull up the LVPS Module and disconnect the connector. (1)Unscrew one screw.	
	(2)Unscrew four screws to remove the Rear Cover.	

No	Procedure	Photo
5	(3)Disconnect two connectors.	
6	Unscrew the screw to remove EMI Ground Plate and separate the wire.	

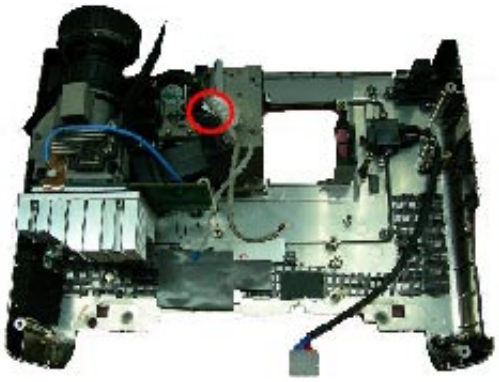
2-5 Disassemble Fan Guider Module, Wind Tunnel Module, Lamp Driver Module, and Axial Fan Module

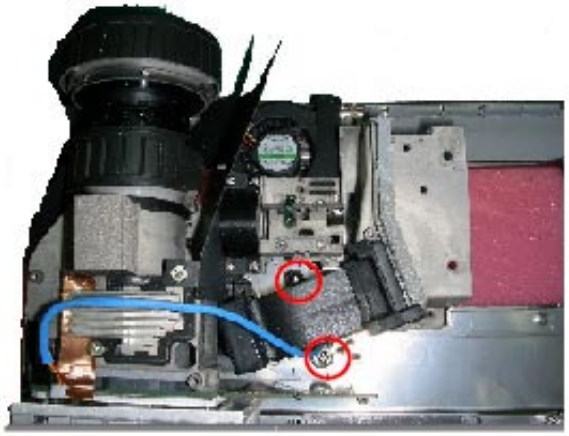
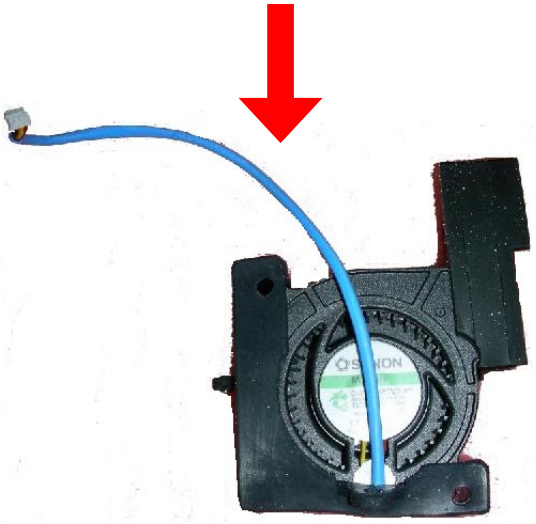
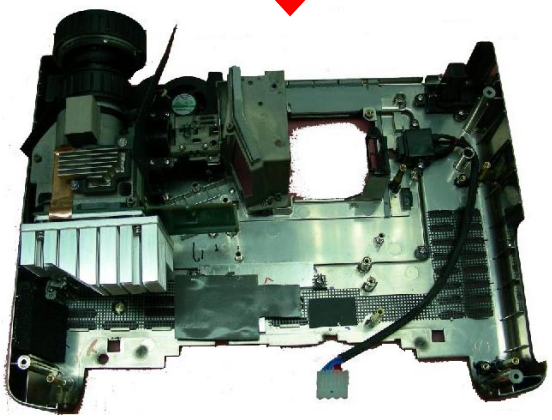
No	Procedure	Photo
1	Unscrew three screws to separate Fan Guider Module and Wind Tunnel Module from Bottom Housing.	
2	Unscrew two screws from Wind Tunnel Module to remove Fan Guider Module.	

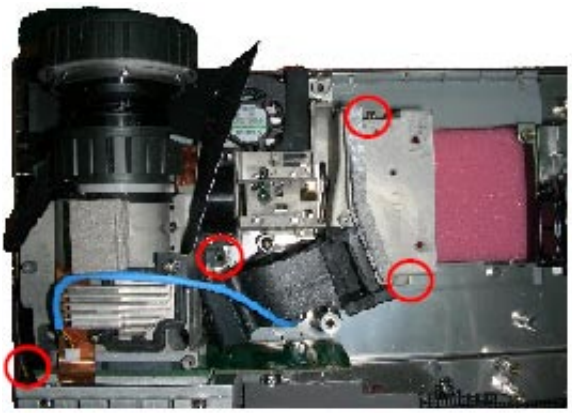
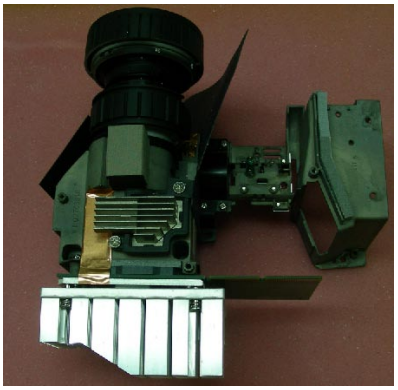
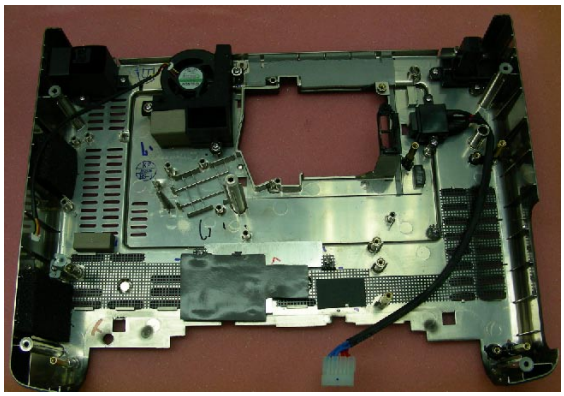
No	Procedure	Photo
3	Unscrew five screws to remove Lamp Driver Module.	
4	Separate three connectors from Lamp Driver Module.	 

No	Procedure	Photo
5	Unscrew two screws to remove Axial Fan Module.	   **Axial Fan Module**
6	Unscrew four screws to separate Fan Hoder Bracket and Axial Fan.	  **Axial Fan Module** **Fan Hoder Bracket**

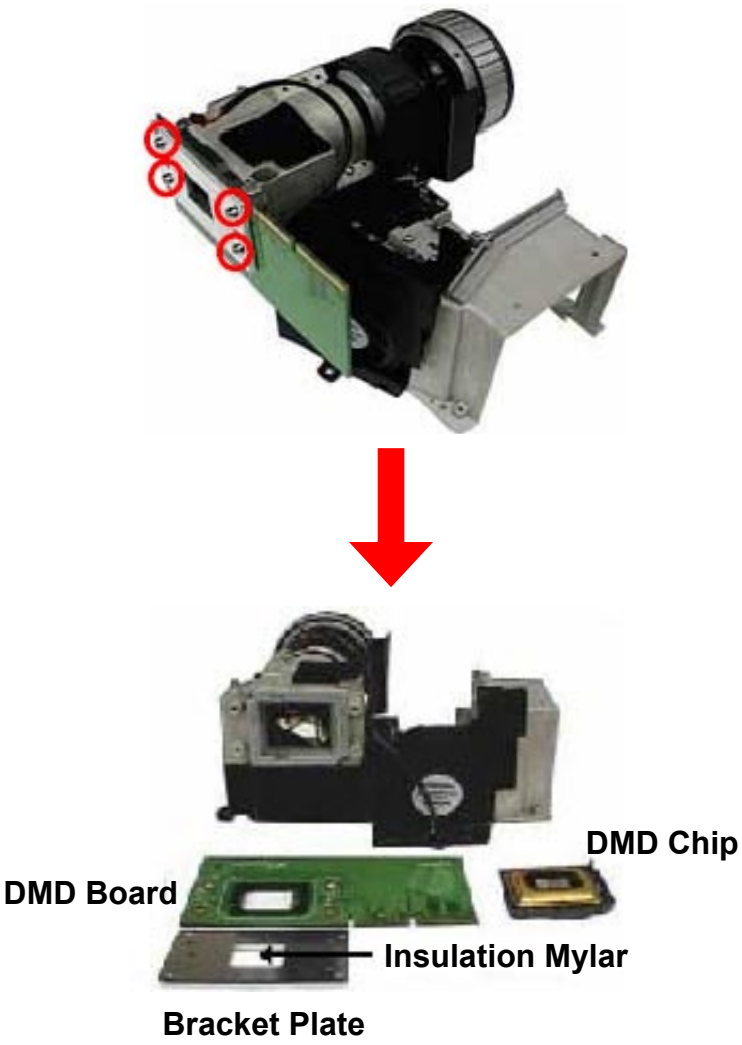
2-6 Disassemble Color Wheel Module, Optical Engine Module, and Blower Fan

No	Procedure	Photo
1	Unscrew one screw to remove Color Wheel Module.	  **Color Wheel Module**
2	Unscrew one screw to separate Color Wheel and Photo Sensor Module.	 Photo Sensor Module  Color Wheel

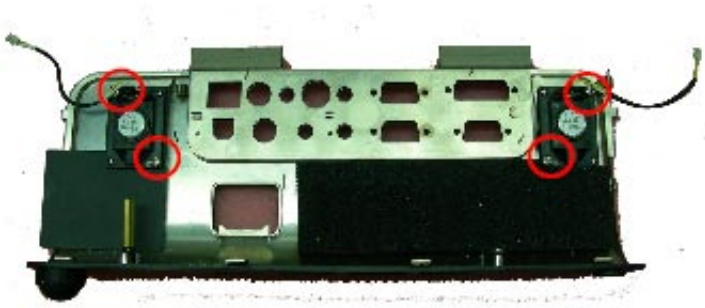
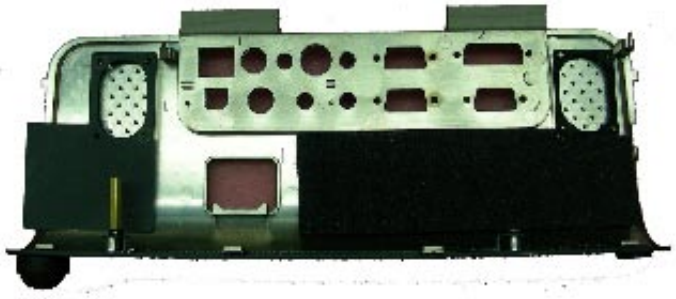
No	Procedure	Photo
3	Unscrew two screws to remove Blower Fan.	  

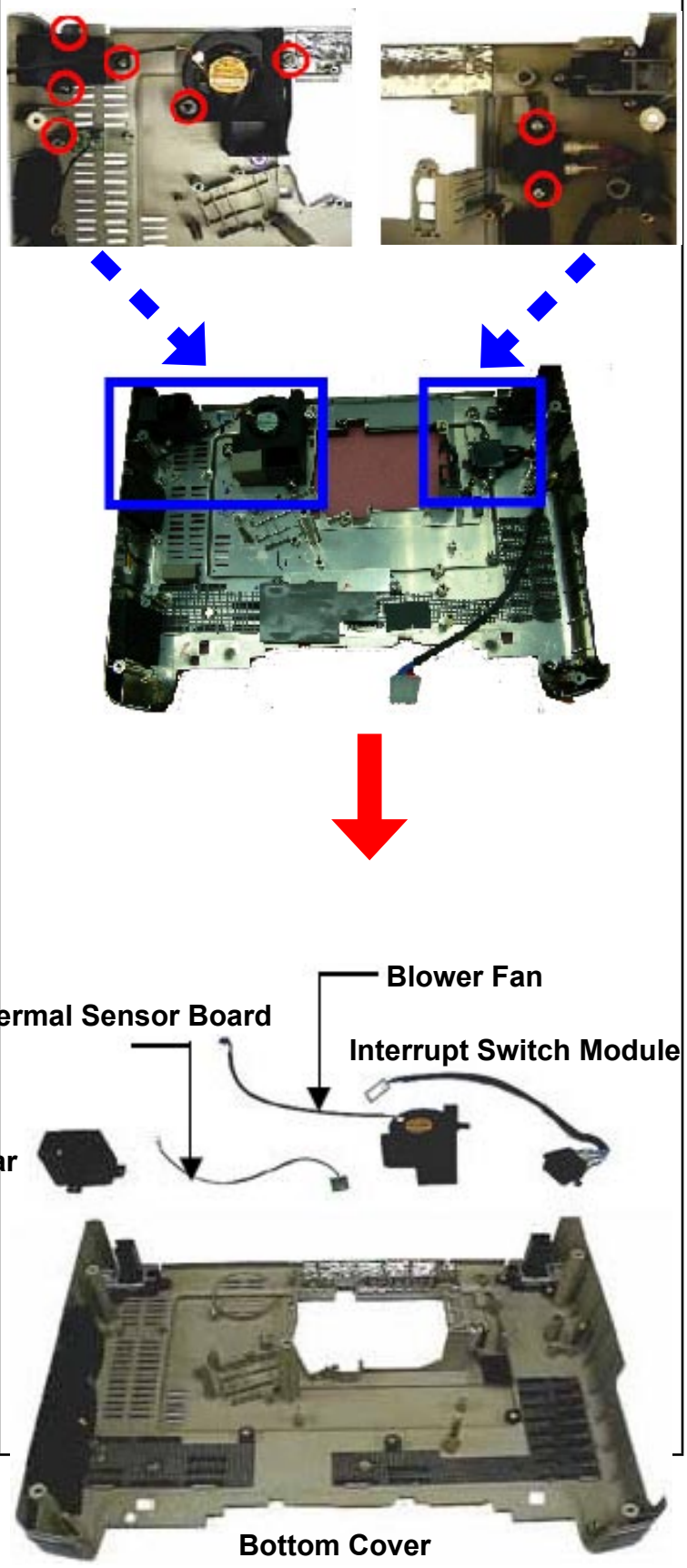
No	Procedure	Photo
4	Unscrew four screws to remove Engine Module from Bottom Housing.	   

No	Procedure	Photo
5	Unscrew four screws to remove DMD Heat sink.	    **DMD Heat sink**

No	Procedure	Photo
6	Unscrew four screws to remove Bracket Plate, Insulation Mylar, DMD Board and DMD Chip.	

2-7 Disassemble Speaker, Blower Fan, Thermal Sensor Board, Interrupt Switch Module, Bottom Cover, and Rear Cover

No	Procedure	Photo
1	Unscrew four screws to remove Speaker.	    **Rear Cover**

No	Procedure	Photo
2	Unscrew six screws to remove Blower Fan, Elevator Shading Mylar, and Thermal Sensor Board.	

Troubleshooting

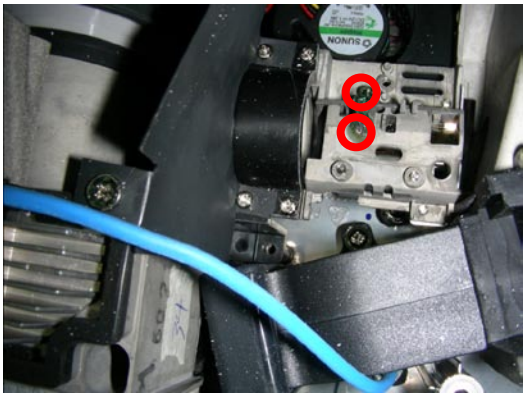
3-1 LED Lighting Message

Message	Power-LED (Green)	Power-LED (Red)	Temp-LED	Lamp-LED
Standby State (Input power cord)	○	☼	○	○
Warming	Flashing	○	○	○
Normal Mode	☼	○	○	○
Cooling	○	Flashing	○	○
Error (Lamp failed)	○	○	○	☼
Error (Fan failed)	○	○	○	Flashing
Error (Over Temp.)	○	○	☼	○

NOTE Steady light ⇨ ☼ No light ⇨ ○

3-2 Main Procedure

No	Symptom	Procedure
1	No Power	- Ensure the Power Cord and AC Power Outlet are securely connected - Check Lamp Cover and Interrupt Switch - Ensure all connectors are securely connected and aren't broken - Check DC-DC - Check Ballast - Check Main Board
2	Auto Shut Down	- Check LED Status a. Lamp LED Light - Check Lamp - Check Lamp Driver - Check Main Board b. Temp LED Light - Check Thermal Sensor - Check Thermal Switch - Check Fan c. Tem LED Blinking - Check Fan - Check Main Board d. No Power - Refer to "No Power" troubleshooting
3	No Image	- Ensure the Signal Cable and Source work as well (If you connect multiple sources at the same time, use the "Source" button on the control panel to swtich) - Ensure all connectors are securely connected and aren't broken - Check Main Board - Check DMD Board - Check DMD Chip
4	No Light On	- Ensure all connectors are securely connected and aren't broken - Check Lamp Module - Check DC-DC - Check Ballast - Check Main Board
5	Mechanical Noise	- Check Color Wheel - Check Fan Module
6	Line Bar / Line Defect	- Sometimes it's because of the DMD Chip and the DMD Board did not assemble properly - Check DMD Board - Check DMD Chip - Check Main Board

No	Symptom	Procedure
7	Image Flicker	- Do “Reset” of the OSD Menu - Ensure the Signal Cable and Source work as well - Check Lamp Module - Check Color Wheel - Check DMD Board - Check Main Board
8	Color Abnormal	- Do “Reset” of the OSD Menu - Adjust Color Wheel Index - Check Main Board - Check Color Wheel
9	Poor Uniformity / Shadow	- Ensure the Projection Screen without dirt - Ensure the Projection Lens is clean - Ensure the Brightness is within spec. (Replace the Lamp if the Brightness is less than spec.) - Ensure DMD Chip is clean - Check Engine Module
10	Dead Pixel / Dust (Out of spec.)	- Ensure the Projection Screen without dirt - Ensure the Projection Lens is clean - Clean DMD Chip and Engine Module - Check DMD Chip - Check Engine Module
11	Garbage Image	- Ensure the Signal Cable and Source work as well - Check Main Board - Check DMD Board
12	ROD adjustment	- If there are shadows at “Left” & “Right” side of the screen, adjust “Screw 1” to adjust ROD position. - If there are shadows at “TOP” & “Bottom” side of the screen, adjust “Screw 2” to adjust ROD position. - “Screw 1” should be adjusted first, and then “Screw 2”. 

No	Symptom	Procedure
13	Remote Controll or Control Panel Failed	- Remote Control a. Check Battery b. Check Remote Control c. IR Receiver - Control Panel a. Check FPC b. Check Keypad c. Check Main Board
14	Function Abnormal	- Do “Reset” of the OSD Menu - Check Main Board - Check DMD Board
15	Forgetting Password (administrator Password)	- Press “Enter” and “→“ arrow at the same time to enter Service Mode. You can find the Security Code is password. 

Function Test & Alignment Procedure

4-1 Test Equipment Needed

- IBM PC with XGA resolution (Color Video Signal & Pattern Generator)
- DVD player with Multi-system (NTSC/PAL/SECAM), equipped “Component”, “S-Video” and “Composite”
- HDTV Tuner or Source (480P, 720P, 1080i)
- Minolta CL-100
- Quantum Data 802B or CHROMA2327
- After changing parts, check the information below.

Charge Parts/Update	Version Update	Color Wheel Index	ADC Calibration	Video Calibration	Reset Lamp Use Time	Factory Reset	**EDID**
M/B	v	v	v	v		v	v
FW	v	v				v	
Color Wheel		v					

4-2 Service Mode

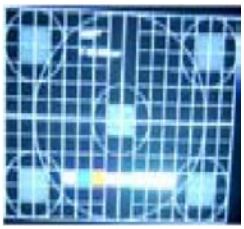
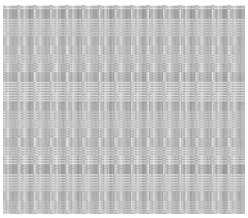
No	Item	Step
1	**Service Mode**	1. Turn on the projector. 2. Press and hold “Enter” and “→“ arrow at the same time.
2	**Factory Reset**	After final QC step, we have to erase all saved change again and restore the factory defaults. The following actions will allow you to erase all end-users’ settings and restore the original setting: 1. Please enter the servcie mode, 2. Choose “ Information and Reset “ item. 3. Choose “Factory Reset” then choose “Yes” and press “Enter” to see if it works.

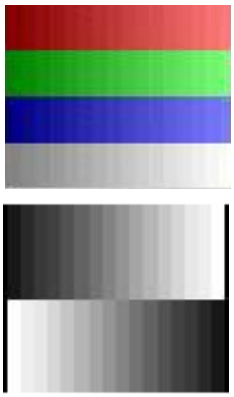
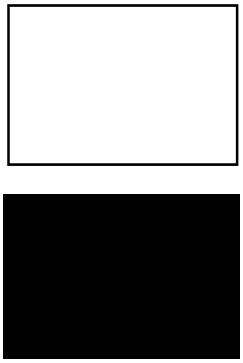
4-3 Test Condition

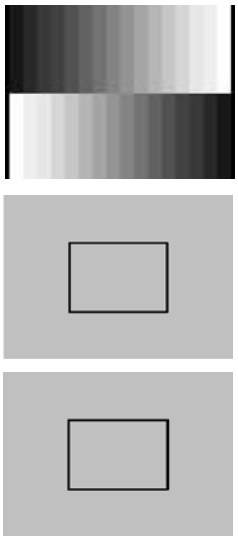
- Circumstance Brightness : Dark room less than 2.5 lux.
- Inspection Distance : 1.5m~3m for functional inspection
- Screen Size : 60 inches diagonal (wide)
- After repairing each HD72, the unit should be run-in (Refer to the table below).

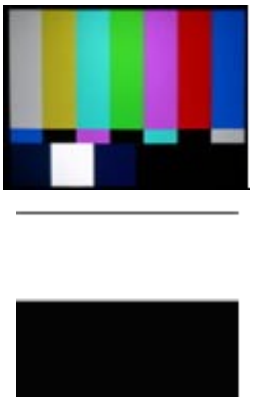
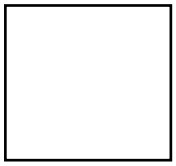
Symptom	Run-in Time
Normal Repair	2 Hours
NFF	4 Hours
Auto Shutdown	6 Hours

4-4 Inspection Procedure

No	Step	Specification	Procedure	Photo
1	Frequency and Tracking	Eliminate visual wavy noise by Rsync, Frequency or Tracking selection.	- Test Signal : 1024x768@60Hz - Test Pattern :PANA-ICON - check and see if image sharpness and focus are well-performed. - No video noise is allowed.	
2	Boundary	Horz. And Vert. position of video should be adjustable to be the screen frame.	- Test Signal : 1024x768@60Hz - Test Pattern : General 1 - Adjust Resync or Frequency / Tracking / H. Position / V. Position to the inner of the screen.	
3	Focus	The text in the corner should be clear after adjust the focus ring.	- Test Signal : 1024x768@60Hz - Test Pattern : Full Screen - Adjust the center clearly; meanwhile, one slightly vague corner in the image is allowed.	

No	Step	Specification	Procedure	Photo
4	HDTV	No discolor	- Test Signal : 480P, 720P, 1080i - Test Pattern : Master - Equipment: Quantum Data 802B or CHROMA2327 *Please refer to page 4-1 to enter Service Mode. Use 480P signal, smtpebar pattern to do video calibration; then, 4:3 screen and 1080i signal. If the test result was in discoloration or flickering, please return the unit back to the repair center.	
5	Color Performance	No image (discolor)	- Test Signal : 1024x768@60Hz - Test Pattern : 64 RGBW Scale Pattern & 32 Grays Pattern - Please check and ensure if each color is normal and distinguishable. - If not, please adjust color index of the Engineering Mode.	
6	**Screen Uniformity**	Should be compliant with 60%.(Minimum)	- Test Signal : 1024x768@60Hz - Test Pattern : Full White Pattern & Full Black Pattern - Please check and ensure the unit is under the spec. - Please check and see if it's in normal conidtion.	

No	Step	Specification	Procedure	Photo
6	**Screen Uniformity**	Should be compliant with 60%.(Minimum)	- If not, please return the unit to repair area. *Please check and see if there are dead pixels on DMD Chip. - The total number and distance of dead pixels should be compliant with the spec.	
7	**Light Leak**	The unit can't accept the leakage is brighter then Gary 10 pattern	- Test Signal : 1024x768@60Hz - Test Pattern : Gray 10 Pattern - Please check and see if the light leaks ***Note*** - The unit cannot accept the leakage is brighter than Gray 10 Pattern Note: Light leak on reflective edge, eyecatcher, bond wires and exposed metal.	
8	**Calibration**	Calibration Pattern should be in full screen mode	- Once Main Board is changed, Video Calibration & PC Calibration should be done as well. - Video Calibration - Test Signal : 480P@60Hz - Test Pattern : SMPTE bar - ADC Calibration (PC Calibration) - Test Signal:1024x768@60Hz - Test Pattern : White (Top) Black (Bottom) Note: 1. Calibration Pattern should be in Full Screen Mode.	

No	Step	Specification	Procedure	Photo
			2. Please refer to 4-2. Guide to Entering Service Mode and Facotry Reset for entering Service Mode. 3. Choose and access Video Calibration & PC Calibration for correction in Service Mode. Choose “Exit” to leave the Service Mode after all.	
9	Dead Pixel (Bright pixel)	Cannot accept any bright pixel	- Test Pattern : Full Black	
	Dead Pixel (Dark pixel)	The numbers of dead pixel should be smaller or amount to 6 pixel.	- Test Pattern : Full White	
10	Blemish (Bright)	The bright blemish cannot be accepted if the problem appear with Gary 30 pattern	- Test Pattern : Full Black / Gray 30	
11	Blemish (Dark)	The dark blemish cannot be accepted if the problem appear with Blue 60 pattern.	- Test Pattern : Full white / Blue 60	
12	Network hardware	When network link correctly, the LED in network card will change to green from flash yellow .	- Plug in the network , check the LED.	

Chapter 5

Firmware Upgrade Procedure

5-1 Equipment Needed

Software : (DDP 3020-USB)

- DLP Composer (Version 6.0)
- Firmware (EP780*.img)
- Library files

Hardware :

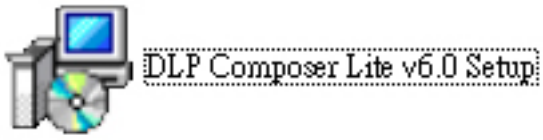
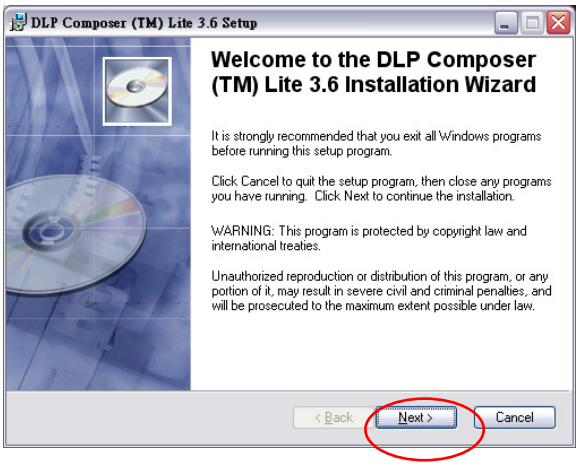
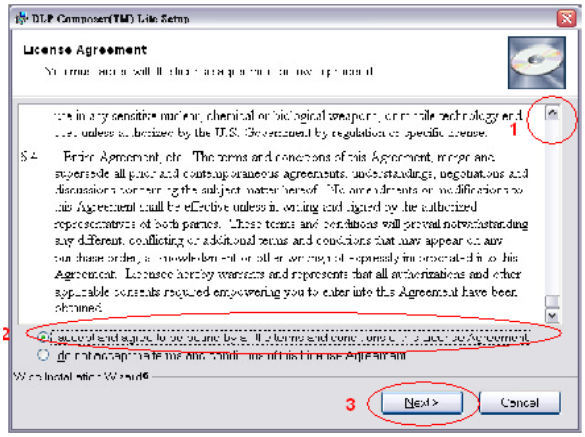
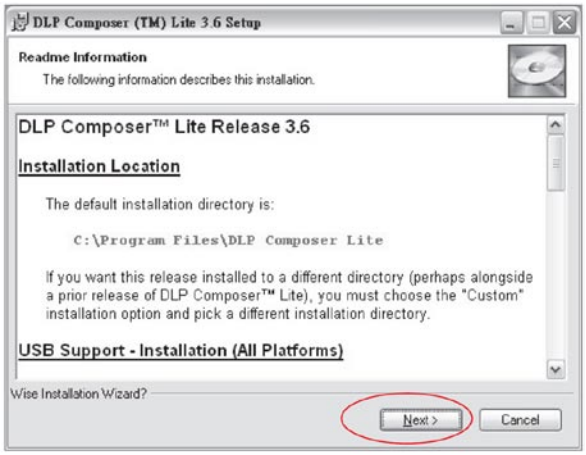
Item	Photo	Item	Photo
Projector (EP780)		USB Cable	
Power Cord		PC or Laptop	

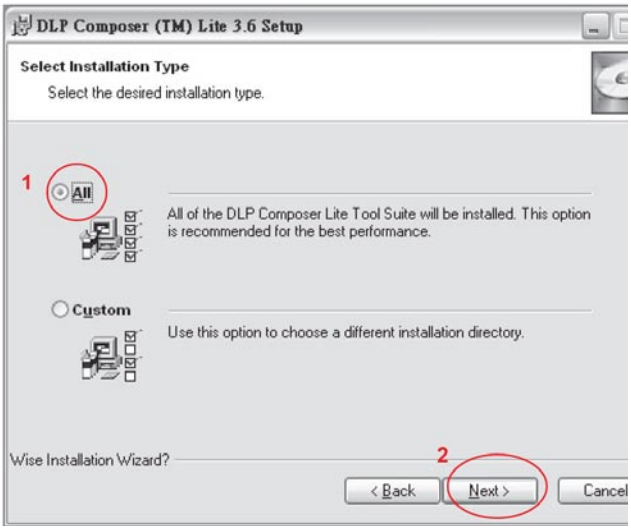
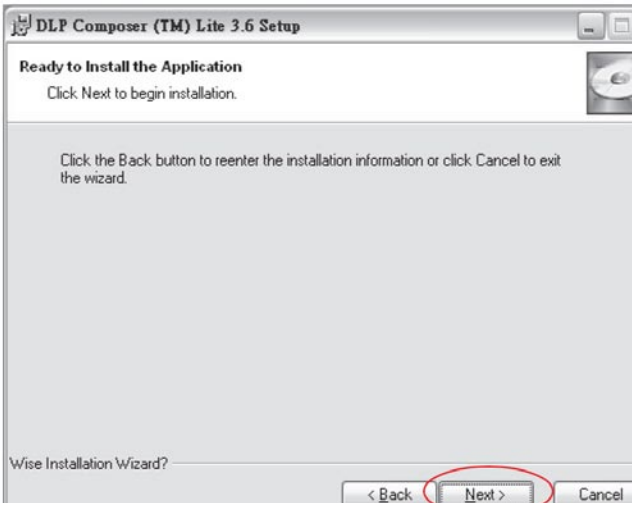
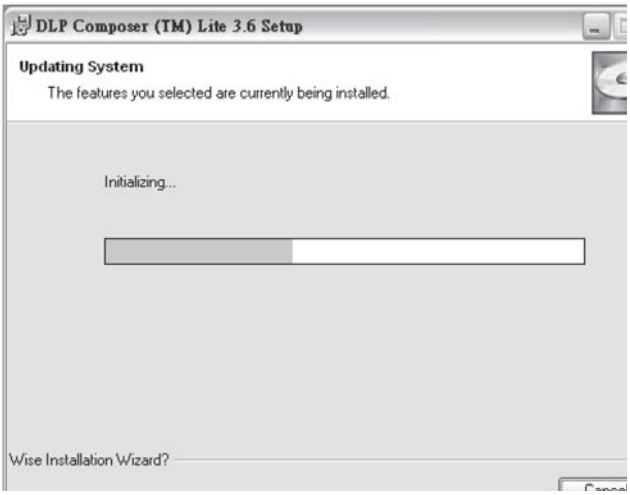
Firmware Upgrade Mode:

Before doing firmware upgrade, please get into firmware mode first. How to get in firmware mode: Press and hold Menu button then turn on the Power switch. Menu button must be held until Temp and Lamp LED light up.

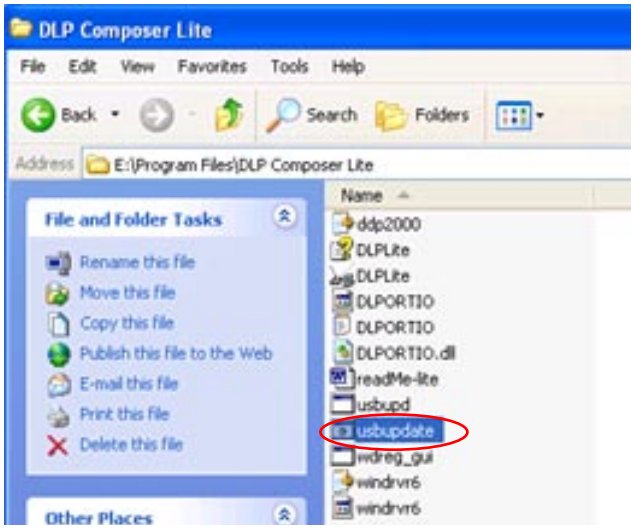
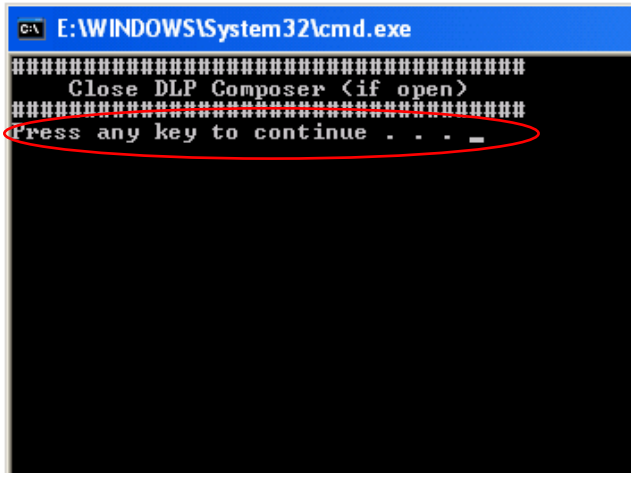
5-2 Installation Procedure

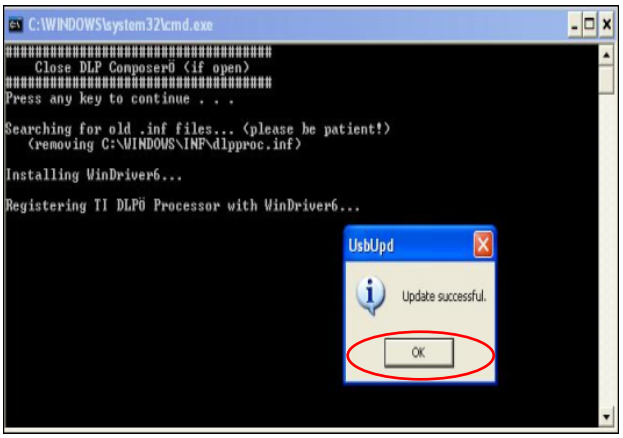
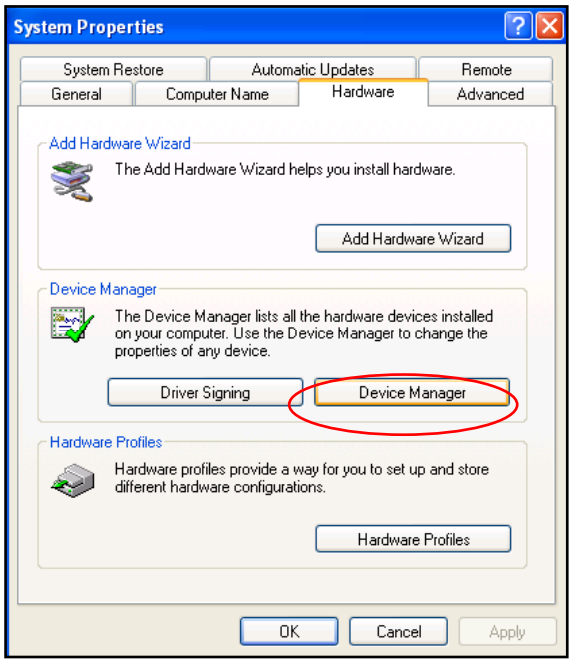
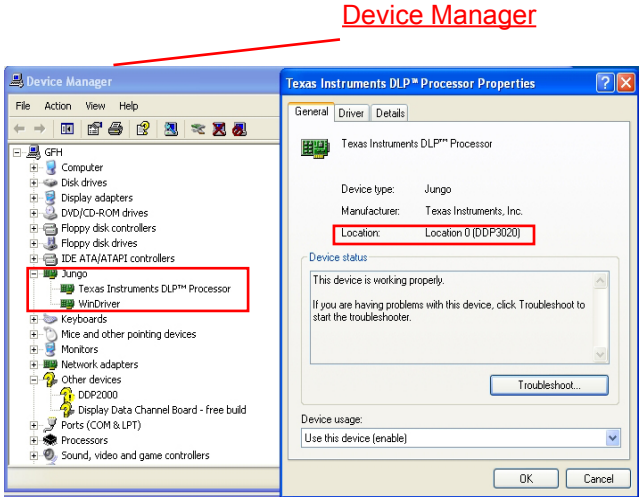
DLP Composer Lite Setup Procedure

No	Step	Procedure	Photo
1	Execute FW program	Choose “DLP Composer Lite v6.0 Setup” program.	
2	Next	Click “Next” button.	
3	Next	1. Reading the “License Agreement” rules. 2. Choose “I accept and agree to be bound by all the terms and conditions of this License Agreement” icon. 3. Click “Next” button.	
4	Next	Click “Next” button.	

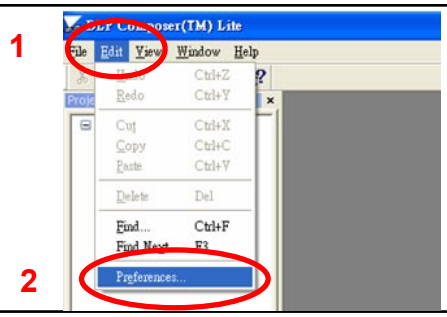
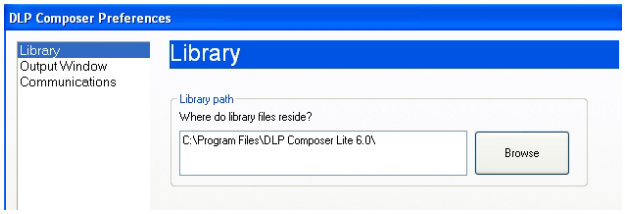
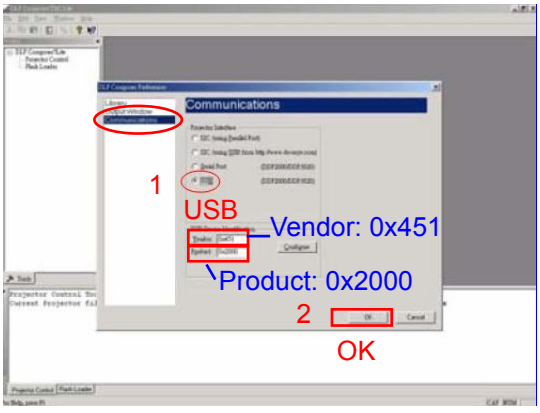
No	Step	Procedure	Photo
5	Next	1. Choose “All” icon. 2. Click “Next” button.	
6	Next	Click “Next” button.	
7	Process-ing	The program is execut-ing “Initializing” status.	

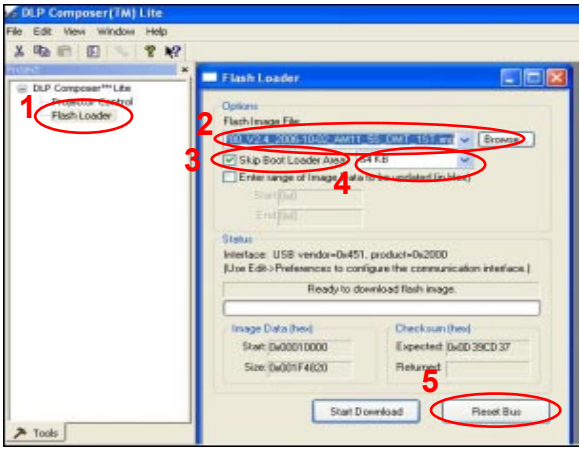
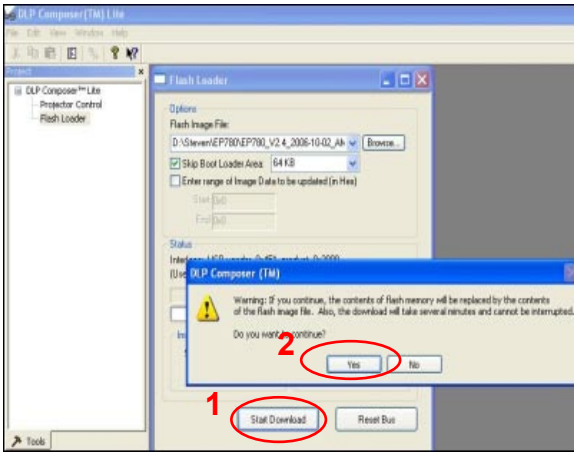
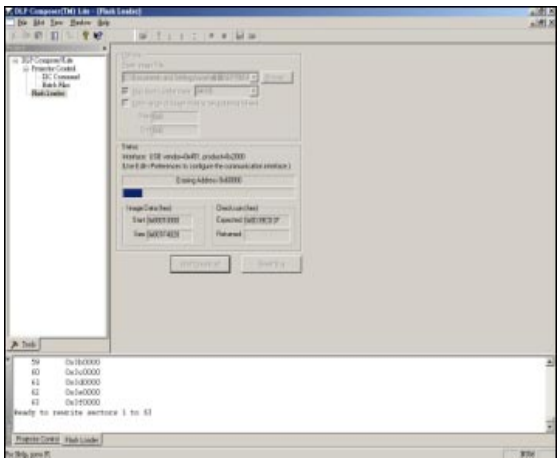
USB Driver Upgrade Procedure

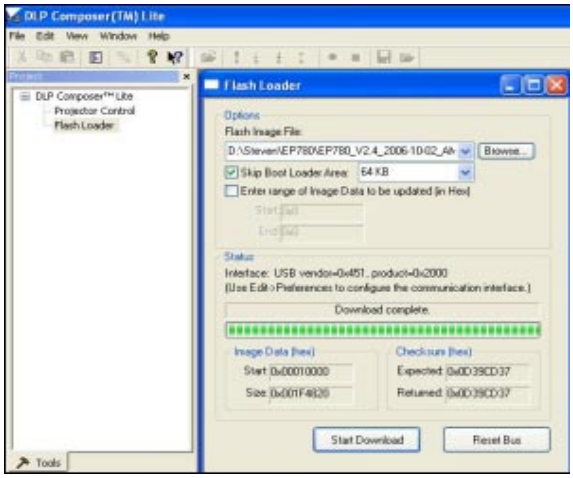
No	Step	Procedure	Photo
1	Set-up	1. Plug in USB cable 2. Press "Enter" key don't release 3. Plug in Power cord 4. Release "Enter" key when Power LED is green, Lamp LED is red, Temp Led is red.	 
2	Execute Program	Execute the C:\Program files\DLP Composer\ usbupdate.cmd (Note: The “DLP Composer” program must be closed first.)	
3	Type any key to continue	Press any key to continue. Then, wait for about 1 minute.	

No	Step	Procedure	Photo
4	Update Success-fully	Click “OK”. The USB driver is updated suc-cessfully.	
5	Device Manager	1. Right click “My computer” on the desktop. 2. Select “Properties” on the popup menu to launch the “System Properties” window. 3. Choose “Hardware” and then click “Device Manager”.	
6	Ensure “DDP3020” & “Win-Driver” are properly installed	Click “Jungo” to ensure “DDP3020” and “Win-driver” are properly installed. If not, repeart Step 1~5.	

5-3 Firmware Upgrade Procedure

No	Step	Procedure	Photo
1	Set-up	1. Plug in USB cable. 2. Press "Enter" key don't release. 3. Plug in Power cord. 4. Release "Enter" key when Power LED is green, Lamp LED is red, Temp Led is red.	
2	Set-up	Link PC USB and projector	
3		Execute the “DLP Compose(TM)Lite 6.0”.	
4		Click “Edit” and “Preferences”.	
5		1. Click “Library”. 2. The library path located in the default installation directory is C:\Program Files\ DLP Composer Lite 6.0 If not, press “Browse” to select the right path.	
6		1. Select “Edit\Preferences\Communications” and choose “USB”. 2. Click “OK”.	

No	Step	Procedure	Photo
7		1. Choose “Flash Loader” 2. Click “Browse” to search the firmware file. (EP780) 3. Select the item “Skip Boot Loader Area”. 4. Select 64KB. 5. Click “Reset Bus” to erase the flash memory. Note: If the error message “cannot open USB driver - No projectors found” appears, please ueplug the USB Cable and replug.	
8		1. If the firmware is ready, click “Start Download” to process the firmware upgrade. 2. Click “Yes” to erase the flash memory.	
9	Proceeding	Proceeding Picture	

No	Step	Procedure	Photo
10		1. When Firmware Upgrade Process is finished, the LED power light on. 2. Unplug USB Cable and Power Cord. Re-plug in Power Cable.	
11	Check Firmware	Restart the unit and enter the Service Mode to check the Firmware Version. (For entering Service Mode, please refer to Chapter 4 Function Test and Alignment Procedure.)	

Chapter 6

EDID Key-in Procedure

Extended Display Identification Data is a VESA standard data format that contains basic information about a display device and its capabilities, including vendor information, maximum image size, color characteristics, factory pre-set timings, frequency range limits, and character strings for the EP780 and serial number.

The information is stored in the display and is used to communicate with the system through a Display Data Channel (DDC), which sites between the display device and the PC graphics adapter. The system uses this information for configuration purposes, so the EP780 and system can work together.

Note: If a display device has digital input ports, like DVI or HDMI, but without EDID in its main board, the display device will show no image while the input source is digital signal.

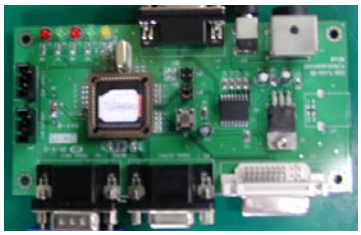
6-1 Equipment Needed

Software

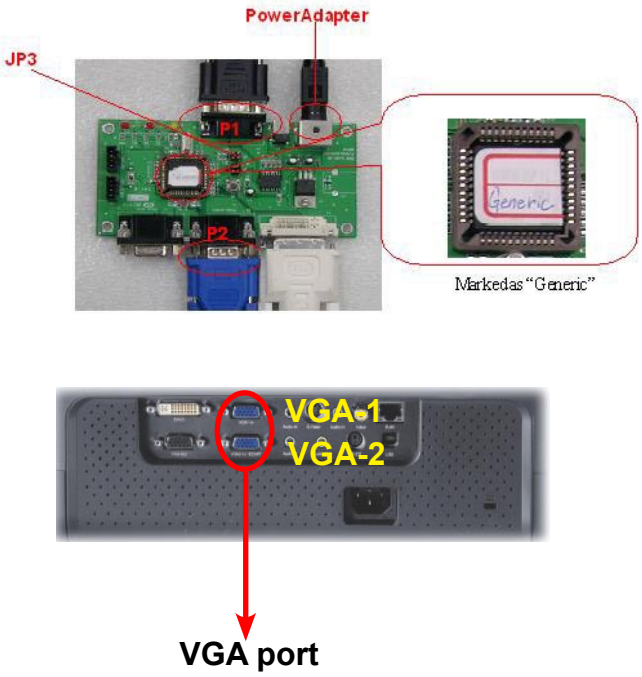
- EDID.exe
- EP780X_EDID_Y.ini

Hardware

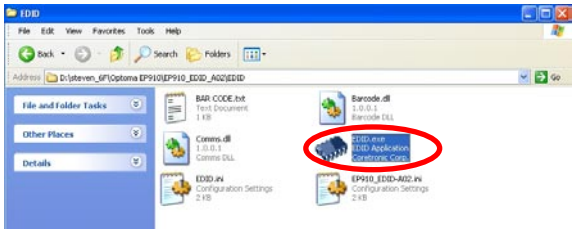
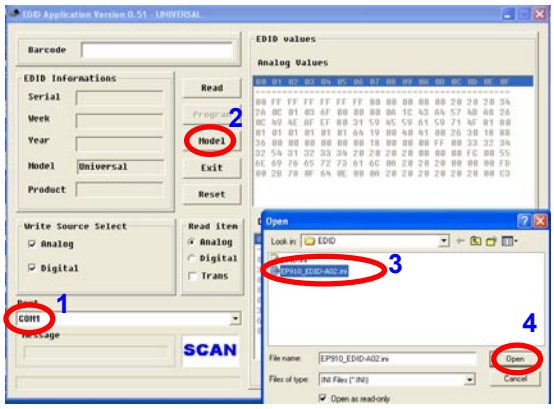
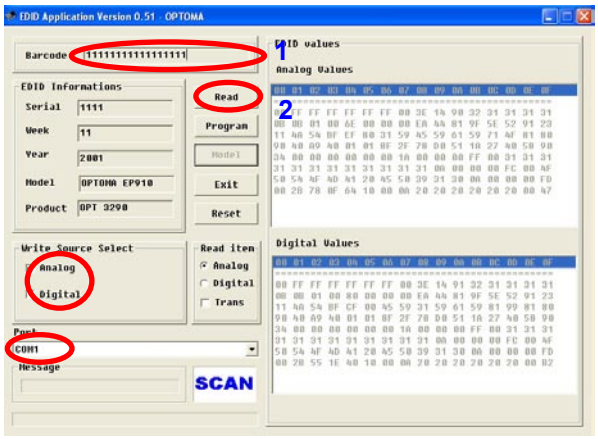
- EP780
- PC
- RS 232 9 pin cable (Male to Female, pin to pin)
- Power Cord for EP780
- VGA Cable
- DVI Cable
- EDID Fixture (JP3 must be closed)
- Power Adapter for Fixture and Power Cord

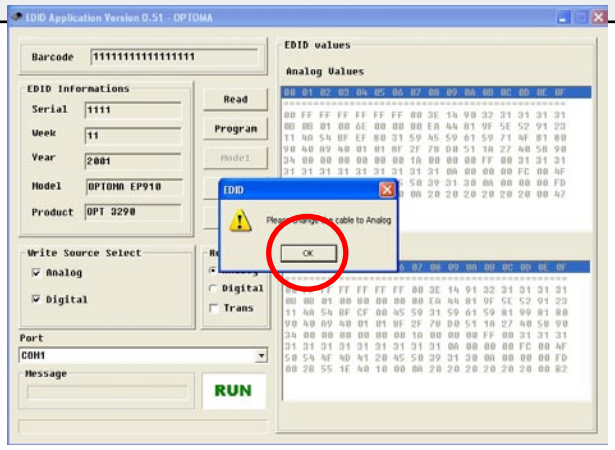
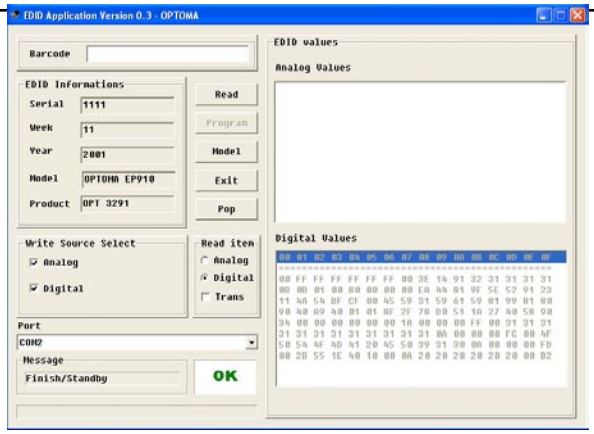
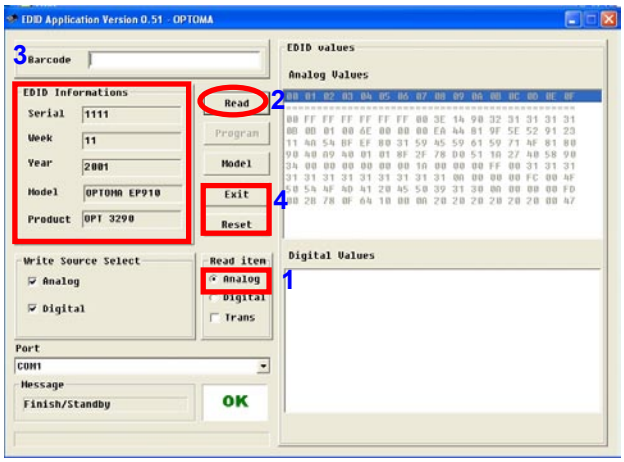
Item	Photo	Item	Photo
EP780 Projector		RS-232 Cable (F to M)	
PC		VGA Cable	
EDID Fixture		DVI Cable	
Power Adapter		Power Cord	

6-2 Setup Procedure (VGA-1 port)

No	Step	Procedure	Photo
1	Connect all ports	1. Connect P1 of Fixture with Com Port of PC/Laptop by RS232 Cable. 2. Connect P2 of Fixture with VGA -1 port of EP780 by VGA Cable. 3. Plug Power Adapter to Fixture and Power Cord. 4. Plug Power Cord to EP780 unit. Note: Confirm JP3 is “Close” status.	

6-3 EDID Key-In Procedure (VGA-1 Interface)

No	Step	Procedure	Photo
1	Execute EDID Program.	Click on “EDID.exe” to execute EDID Program.	
2	Process	1. Check the Com port is “Com 1”. 2. Click the “Model” item. 3. Choose the source file “EP780X_EDID_Y.ini and then open it. Note: X: A means American version E means Europe version Y: version	
3	Process	1. Key in the Serial Number into the Barcode blank space. 2. In “Write Source Select” item, select “Analog”. 2. Click “Program” button.	

No	Step	Procedure	Photo
4	Process	1. “Please change the cable to Analog” will be shown on the screen. 2. Please press “Ok” button.	
5	Finish	When EP780 Analog program is finish, the “Ok” message will appear on the screen.	
6	Check	1. Make sure to check “Analog” in Read item. 2. Press “Read” button. 3. Analog Informations will show the result. 4. If EDID’s information is correct, then to close the EDID program. 5. Click “Reset” to do the next unit or “Exit” to close the EDID program.	

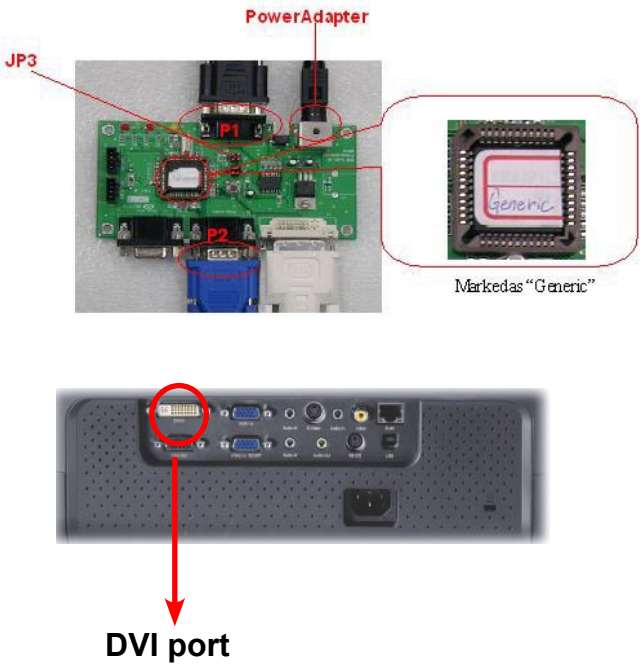
6-4 Setup Procedure (VGA-2 port)

*Please refer to 6-2 Setup Procedure (VGA-1 port).

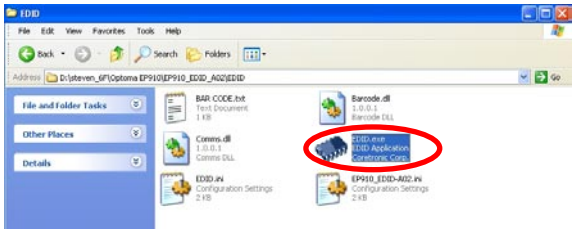
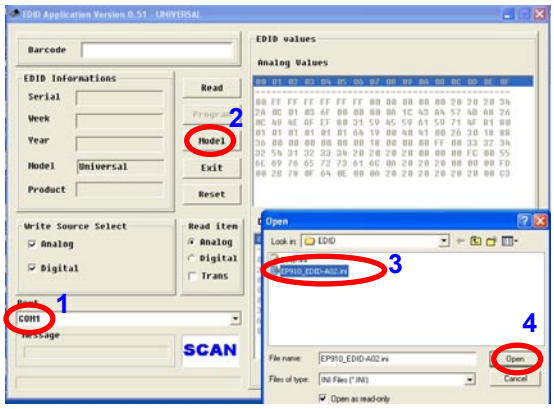
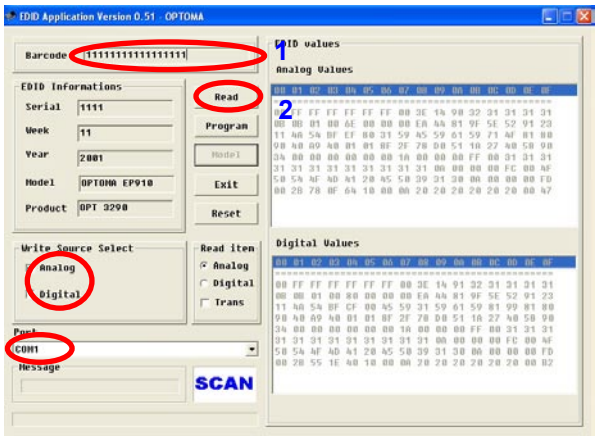
6-5 EDID Key-In Procedure (VGA-2 Interface)

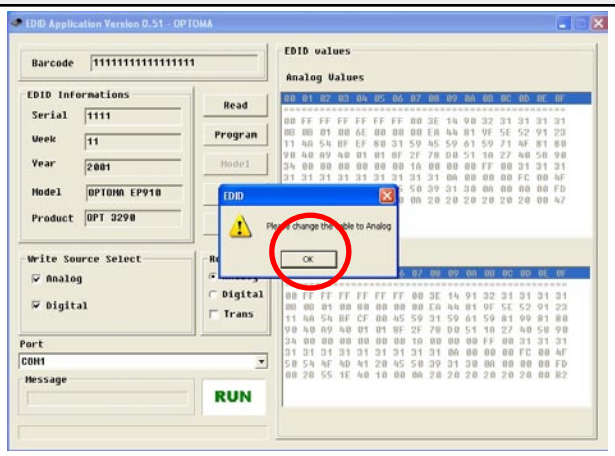
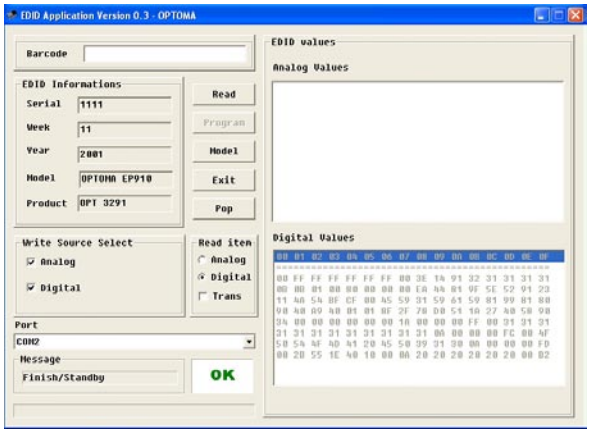
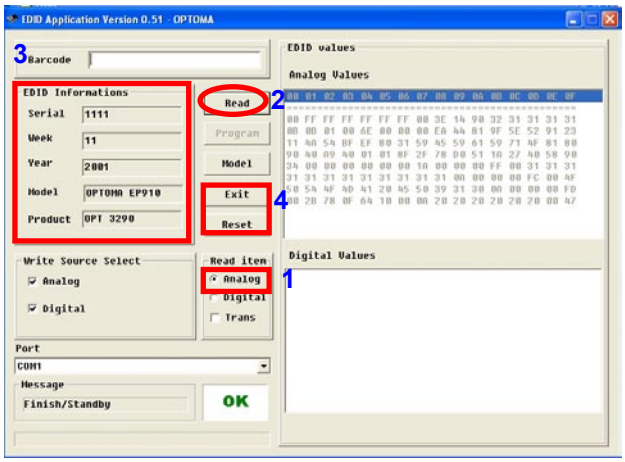
*Please refer to 6-3 EDID Key-In Procedure (VGA-1 port).

6-6 Setup Procedure (DVI port)

No	Step	Procedure	Photo
1	Connect all ports	1. Unplug VGA cable from fixture and EP780. 2. Connect P1 of Fixture with Com Port of PC/Laptop by RS232 Cable. 3. Connect P3 of Fixture by DVI cable for standby. 4. Plug Power Adapter to Fixture and Power Cord. 5. Plug Power Cord to EP780 unit. Note: Confirm JP3 is “Close” status.	

6-7 EDID Key-In Procedure (DVI Interface)

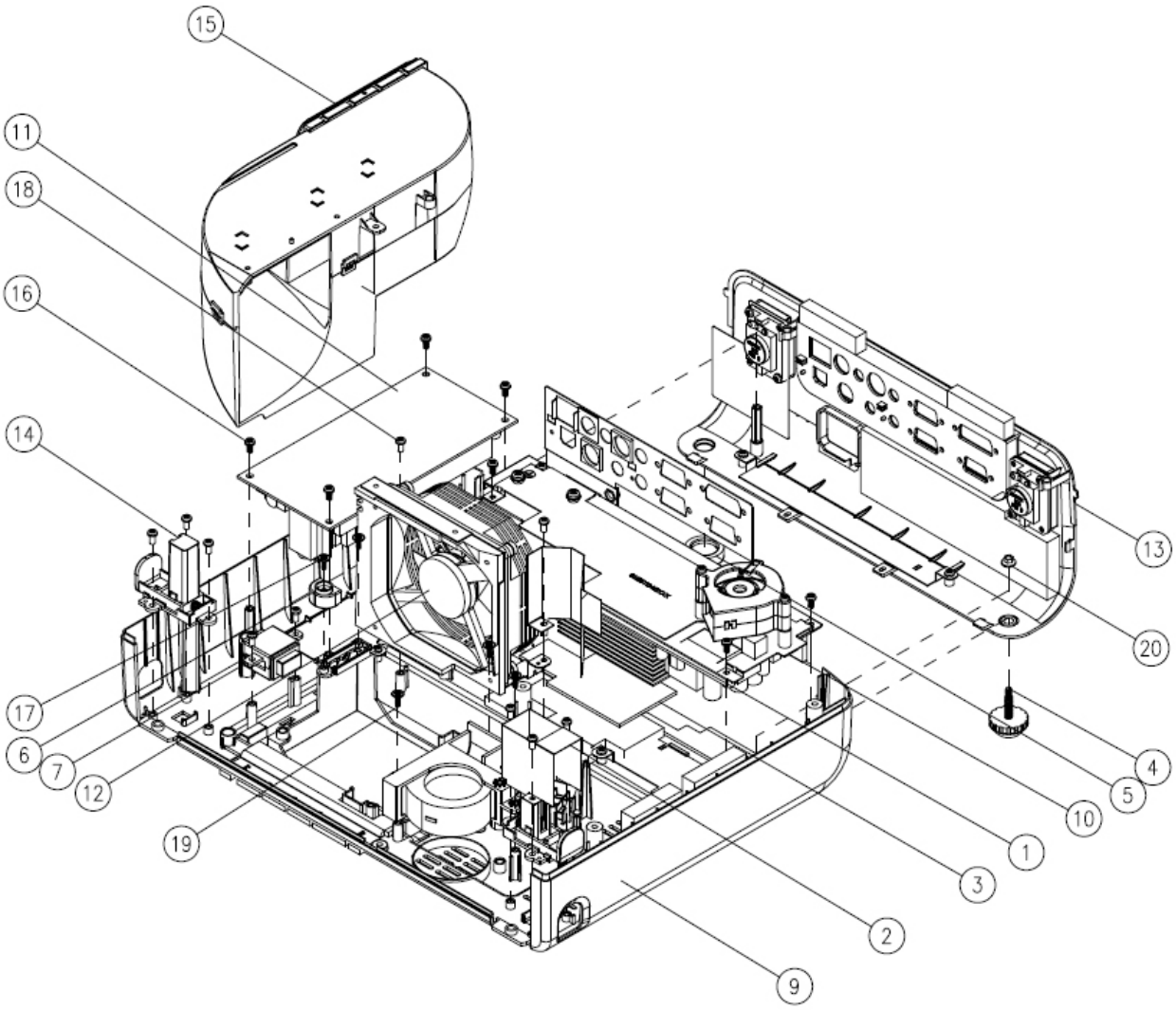
No	Step	Procedure	Photo
1	Execute EDID Program.	Click on “EDID.exe” to execute EDID Program.	
2	Process	1. Check the Com port is “Com 1”. 2. Click the “Model” item. 3. Choose the source file “EP780X_EDID_Y.ini and then open it. Note: X: A means American version E means Europe version Y: version	
3	Process	1. Key in the Serial Number into the Barcode blank space. 2. In “Write Source Select” item, select “Digital”. 2. Click “Program” button.	

No	Step	Procedure	Photo
4	Process	1. “Please change the cable to Digital” will be shown on the screen. 2. Please press “Ok” button.	
5	Finish	When EP780 Digital program is finish, the “Ok” message will appear on the screen.	
6	Check	1. Make sure to check “Digital” in Read item. 2. Press “Read” button. 3. Digital Informations will show the result. 4. If EDID’s information is correct, then to close the EDID program. 5. Click “Reset” to do the next unit or “Exit” to close the EDID program.	

7-1 Appendix A

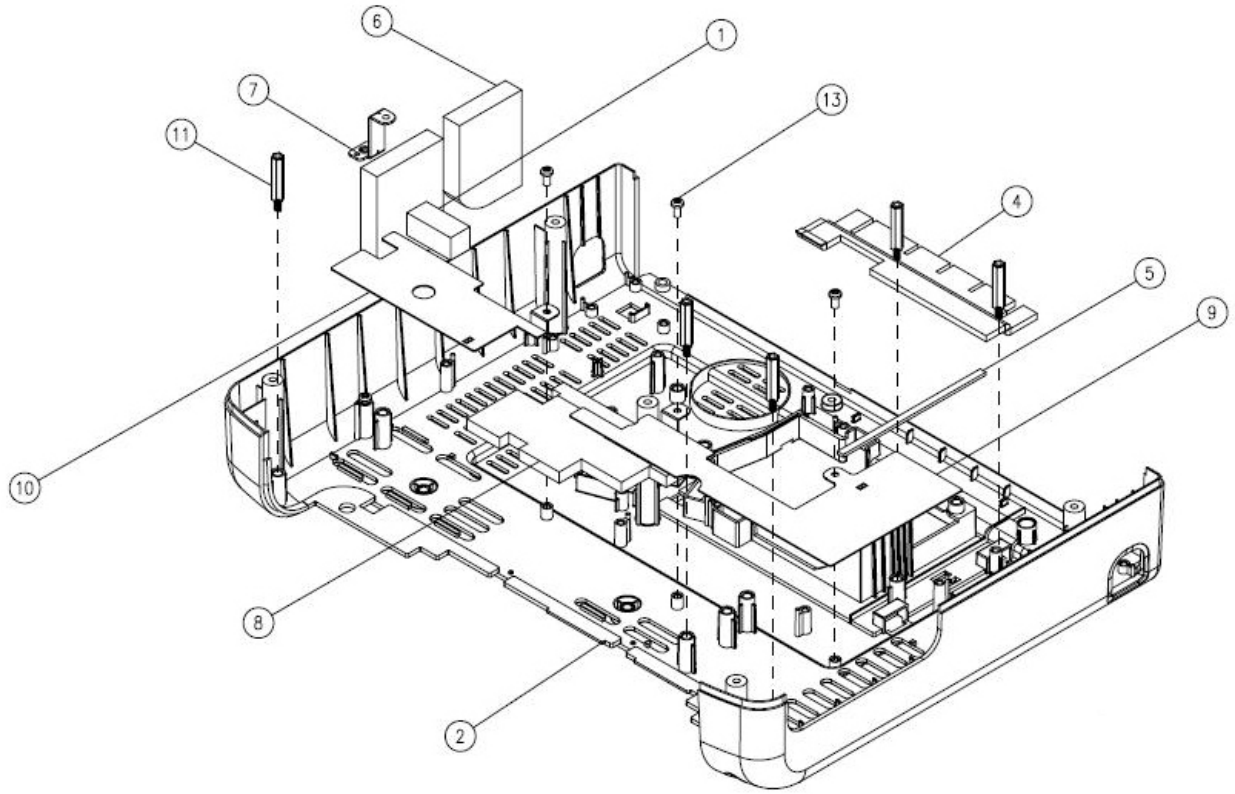
Exploded Overview

ASSY BOTTOM HOUSING MODULE EP780



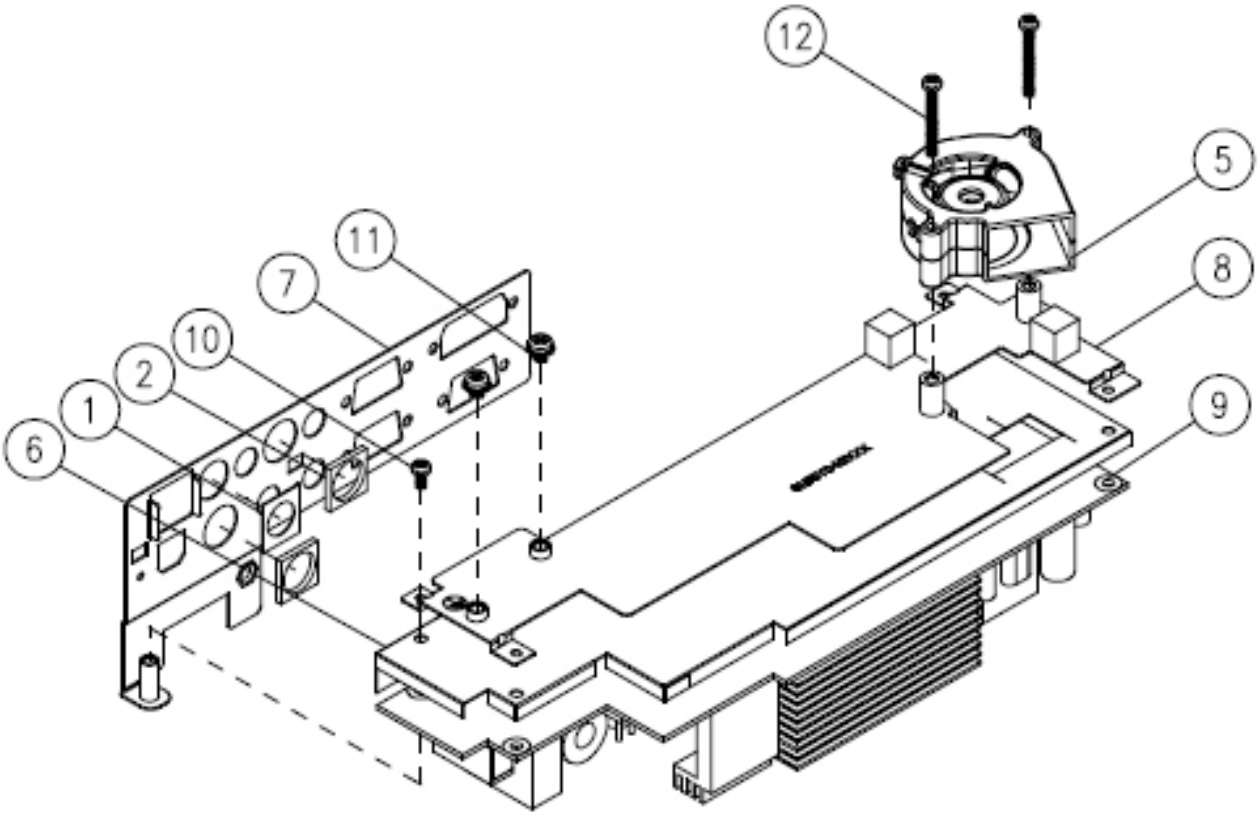
Item	Part NO	Description
1	51.85Y02G002	LVPS FAN GUIDE FORMAX EP780
2	51.89633G002	ELEVATOR SHADING MYLAR EP771
3	52.85Y11G001	THERMAL PAD
4	52.89601G001	ADJUST FOOT RUBBER EP771
5	52.89605G001	REAR FOOT RUBBER EP759/PD726
6	52.89631G002	LAMP TO BTM INSULATOR RUBBER EP771
7	70.83N16G001	ASSY INTERRUPT SWITCH MODULE PD726
8	70.83N17G001	ASSY BLOWER FAN 50*20 MODULE PD726
9	70.85Y02G001	ASSY BOTTOM COVER MODULE EP771
10	70.85Y03G001	ASSY LVPS MODULE EP771
11	70.85Y04G001	ASSY LAMP DRIVER MODULE
12	70.85Y05G001	ASSY AXIAL FAN 92x25 MODULE EP771
13	70.85Y07G001	ASSY BACK COVER MODULE EP771
14	75.89607G061	ASSY PRE ELEVATOR MODULE EP771
15	75.89608G062	ASSY WIND TUNNEL MODULE EP780
16	85.1A123G060	SCREW PAN MECH M3*6 NI
17	85.TA326G070	SCREW CAP TAP M2.6*7 WASHER
18	85.WA123G060	SCREW PAN TAP M3*6 NI
19	85.WD123G080	SCREW PAN TAP 3*8 W/WASHER NI
20	86.03123G035	HEX CAP HEAD NUT M3*0.5P L3.5

ASSY BOTTOM COVER MODULE EP780



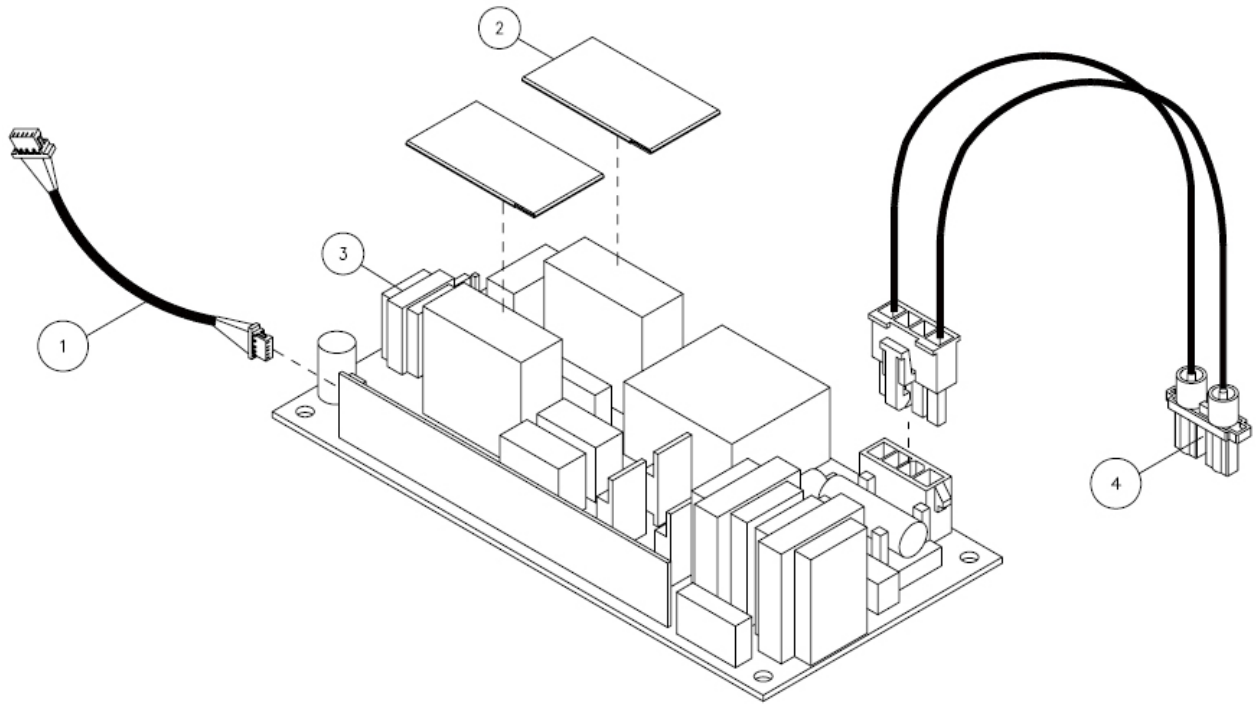
Item	Part NO	Description
1	41.89602G001	EMI GASKET FOR DMD HEATSINK EP771
2	51.89602G062	BOTTOM COVER PC+ABS C6200 EP771
3	52.85Y01G001	BOTTOM COVER SPONGE CVSBXXB EP771
4	52.85Y02G001	STEAMTIGHT NEAR FAN GUIDE F12 EP771
5	52.89610G001	STEAMTIGHT NEAR WIND TUNNEL F12
6	52.89620G001	TOP COVER SMALL SPONGE FOR NOISE EP771
7	61.85Y02G001	LVPS HOLDER SECC EP771
8	61.85Y03G001	LVPS TOUCH SINK AL EP771
9	61.89628G002	MESH-1 FOR BOTTOM COVER EP771
10	61.89632G002	MESH-2 FOR BOTTOM COVER IRON EP771
11	61.89634G001	HEX SPACER M3 H=23 L=6 BRASS PD726
12	85.1A123G060	SCREW PAN MECH M3*6 NI
13	85.WA123G060	SCREW PAN TAP M3*6 NI

ASSY LVPS MODULE EP780



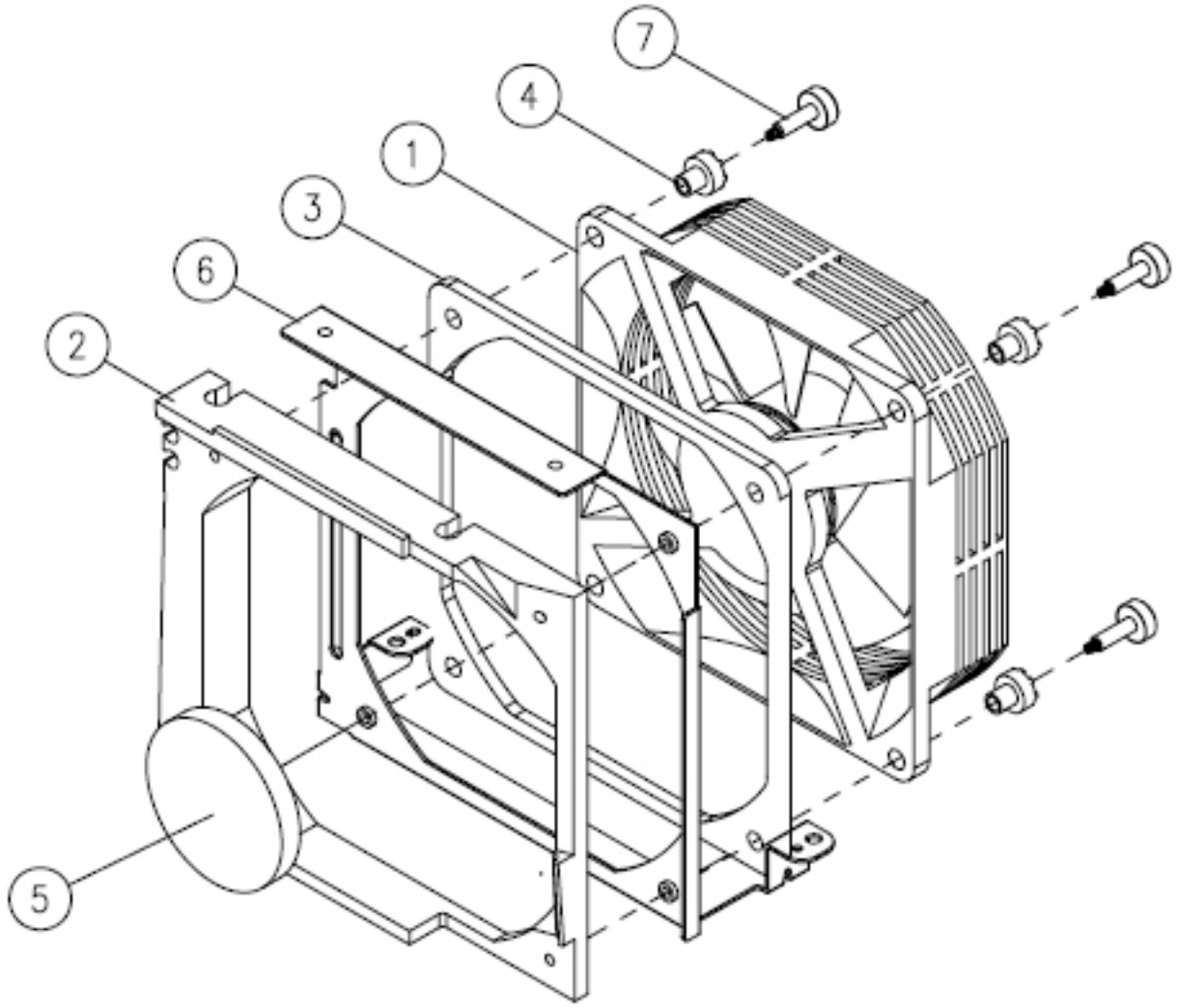
Item	Part NO	Description
1	41.82L07G001	EMI GASKET IO RCA ARES
2	41.85Y04G001	EMI I/O GASKET
3	42.89601G001	W.A. 16P 80mm MAIN BD TO LVPS EP759/PD726
4	42.89611G001	W.A. 3P 250mm LAMP DRIVER TO LVPS EP759/PD726
5	49.82G01G001	MISC BLOWER 45*20; DELTA
6	51.85Y03G001	LVPS INSULATOR FORMAX 0.4t EP771
7	61.85Y01G001	EMI GROUND PLATE SECC 0.6t EP771
8	75.85Y02G001	BUY ASSY LVPS EMI/BLOWER HOLDER MODULE
9	75.85Y03G001	ASSY LVPS QUASAR EP780
10	85.1A123G060	SCREW PAN MECH M3*6 NI
11	85.1C224G050	SCREW PAN MECH M4*5 COLOR W/TOOTH WASHER
12	85.1F123G260	SCREW PAN MECH E/SF M3*26 Ni

ASSY LAMP DRIVER MODULE EP780



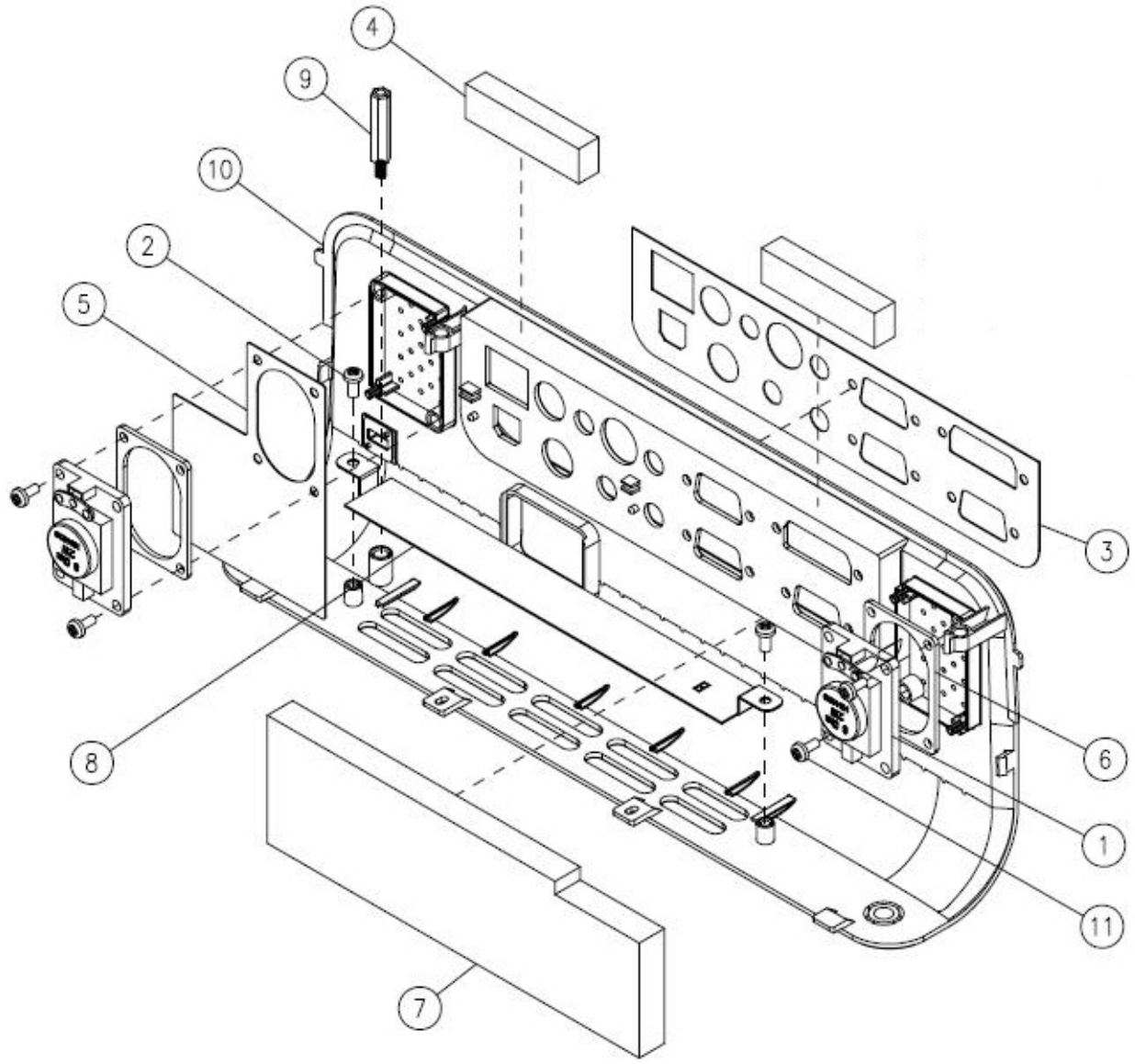
Item	Part NO	Description
1	42.89608G001	W.A. 5P #28 200mm LAMP DRIVER
2	51.89639G001	LAMP DRIVER EMI MYLAR EP771
3	75.80L01G004	ASSY OSRAM LAMP DRIVER 300W
4	76.89601G001	ASSY LAMP DRIVER(OSRAM) TO LAMP

ASSY AXIAL FAN 92*25 MODULE EP780



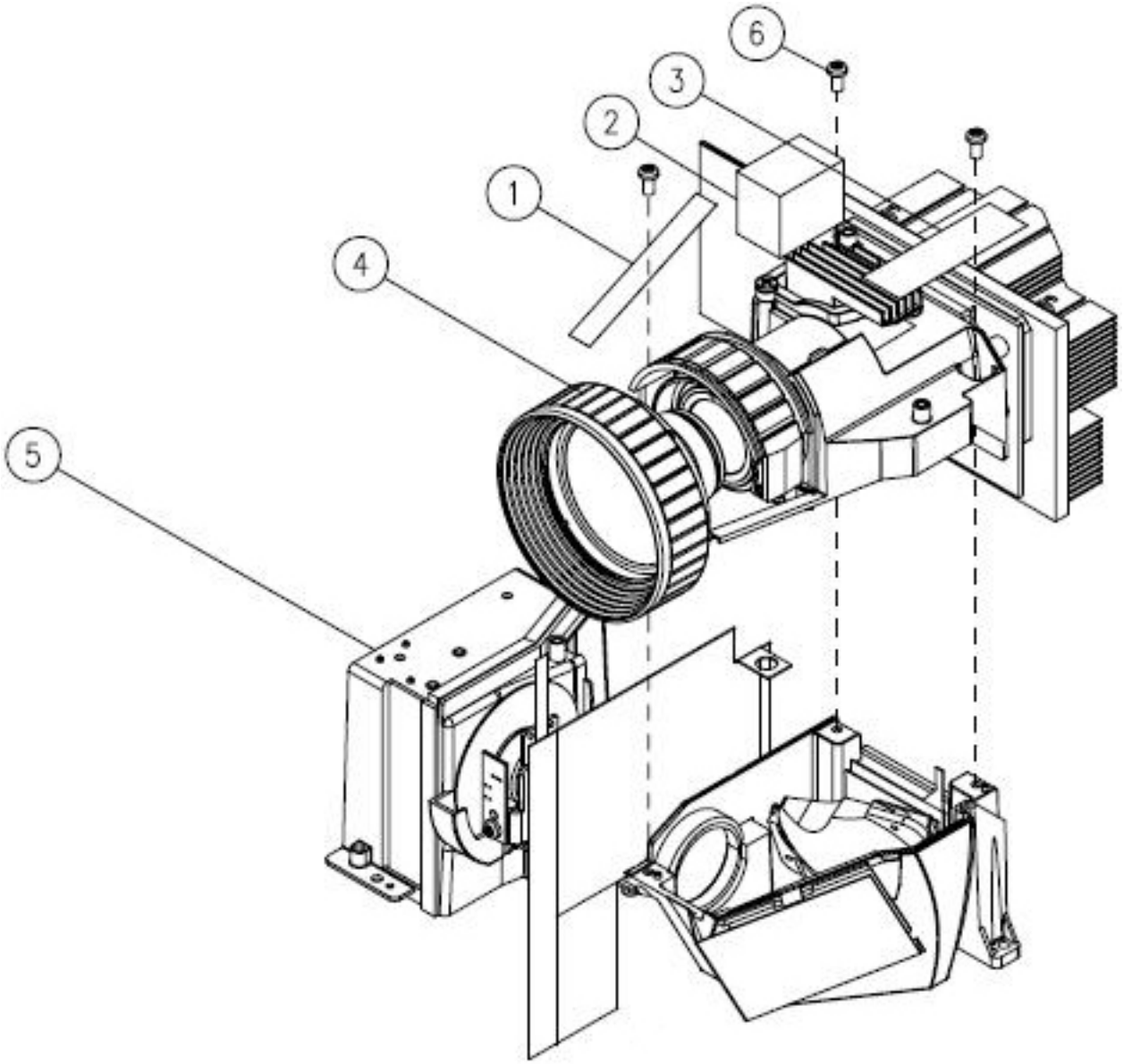
Item	Part NO	Description
1	49.83C04G001	SUNON 9225 AXIAL FAN/KDE1209PTBX
2	52.89602G001	FAN 92*25 STEAMTIGHT RUBBER EP771
3	52.L1308G002	FAN 9225 RUBBER BOTTOM H76/PD726
4	52.L1309G001	FAN 9225 RUBBER TOP H76/PD726
5	61.86633G001	PANAFLO 92*25 AL FOIL H76/PD726
6	61.89607G001	FAN 9225 HOLDER BRACKET AL 0.8t EP759
7	61.L1322G001	SCREW FOR 9225 FAN H76

ASSY BACK COVER MODULE EP780



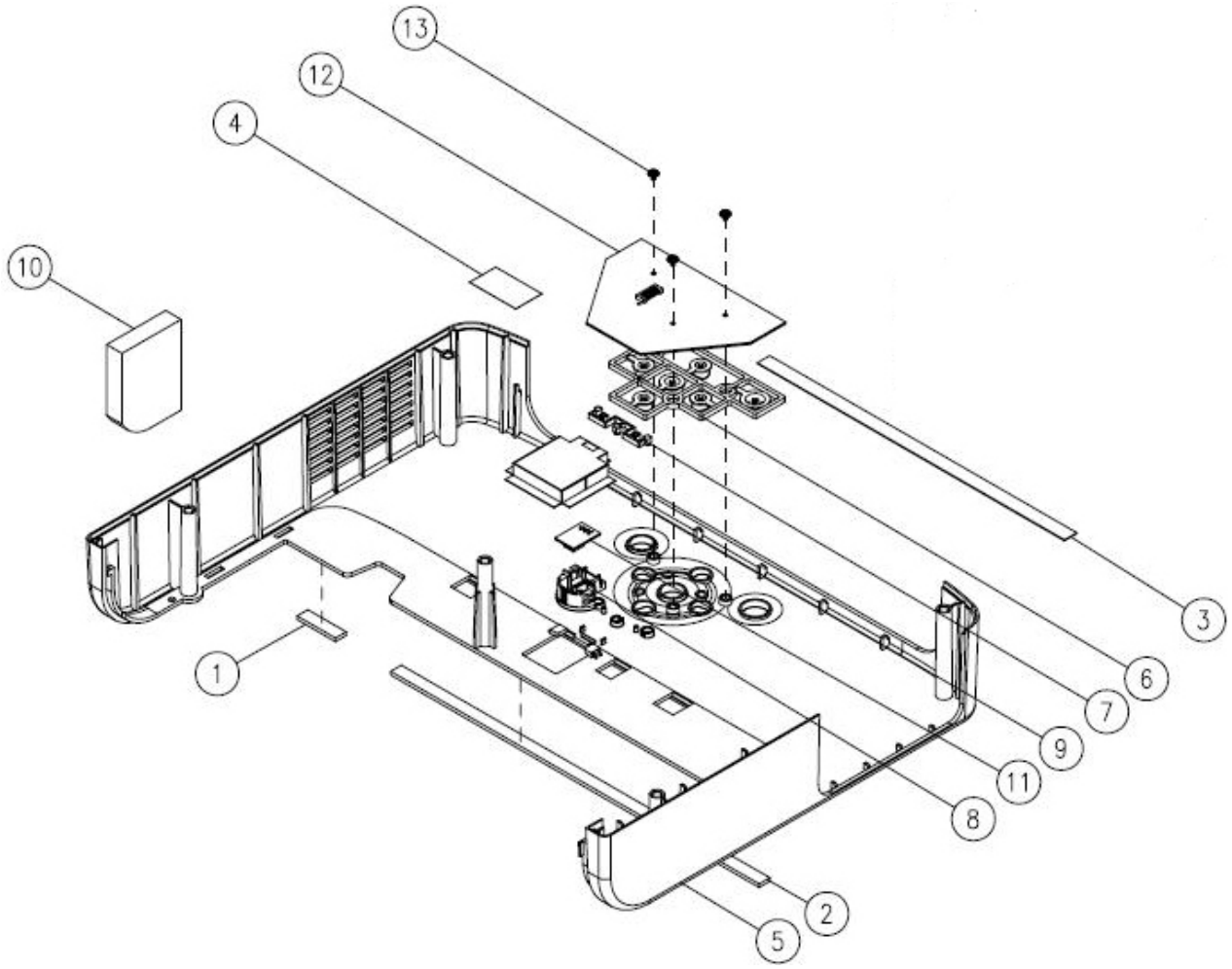
Item	Part NO	Description
1	49.88604G002	SPEAKER 2W 40*28.2*11mm
2	85.WA123G060	SCREW PAN TAP M3*6 NI
3	35.85Y01G001	IO LABEL PC EP771
4	41.81R06G001	EMI GASKET CONDUCTIVE SPONGE
5	51.89641G001	SPEAKER LIGHTCUT FORMAX EP771
6	52.89608G001	SPEAKER SPONGE
7	52.89617G001	IO COVER SPONGE EP771
8	61.89629G001	MESH FOR BACK COVER EP771
9	61.89634G001	HEX SPACER M3 H=23 L=6
10	75.85Y01G001	BUY ASSY BACK COVER EP771
11	85.1A123G060	SCREW PAN MECH M3*6 NI

ASSY ENGINE MODULE EP780



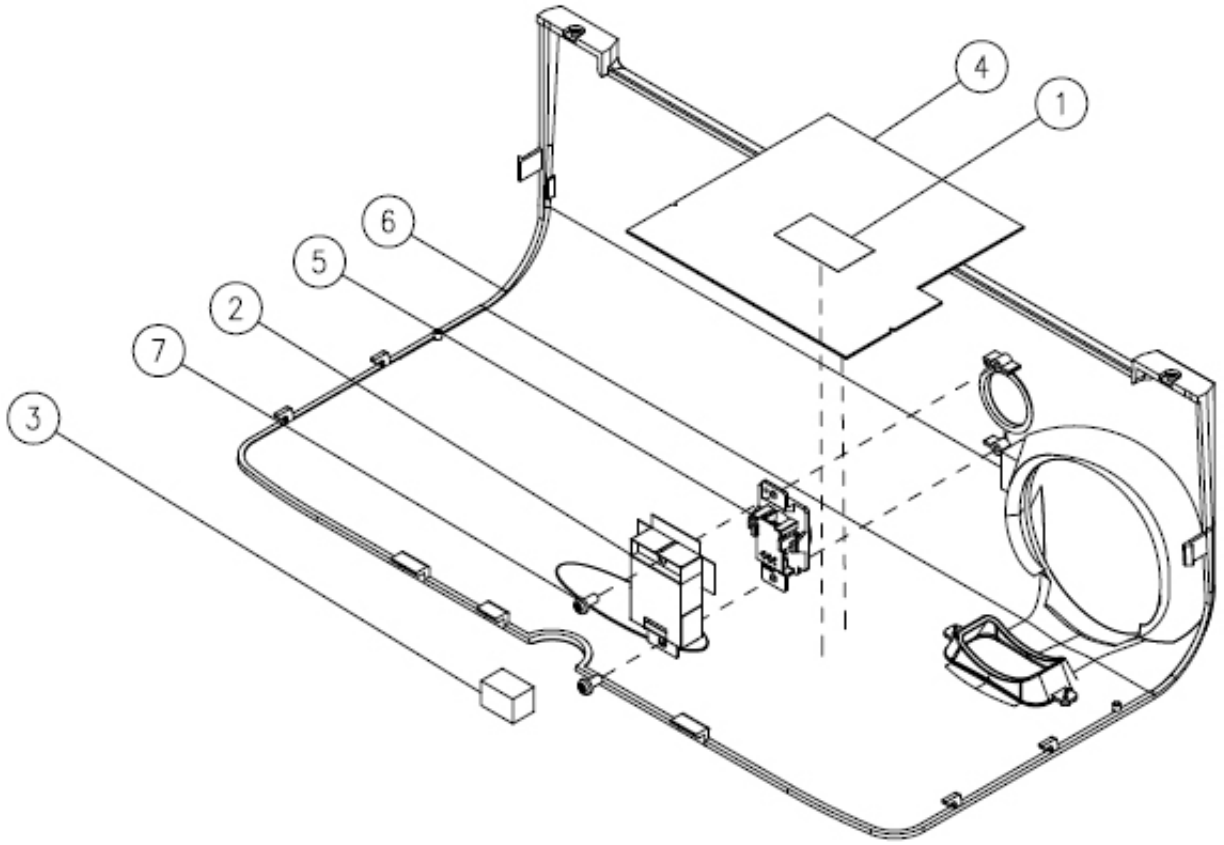
Item	Part NO	Description
1	41.85A15G001	EMI 8*55
2	41.89601G001	EMI GASKET FRONT TO ENGINE EP771
3	61.89646G001	EMI BRASS-SHEET FOR ENGINE EP771
4	70.85Y15G001	ASSY OPTICAL ENGINE MODULE EP771
5	70.85Y16G001	ASSY ENGINE BASE MODULE EP771
6	85.1A126G080	SCREW PAN MECH M2.6*8 NI

ASSY TOP COVER MODULE EP780



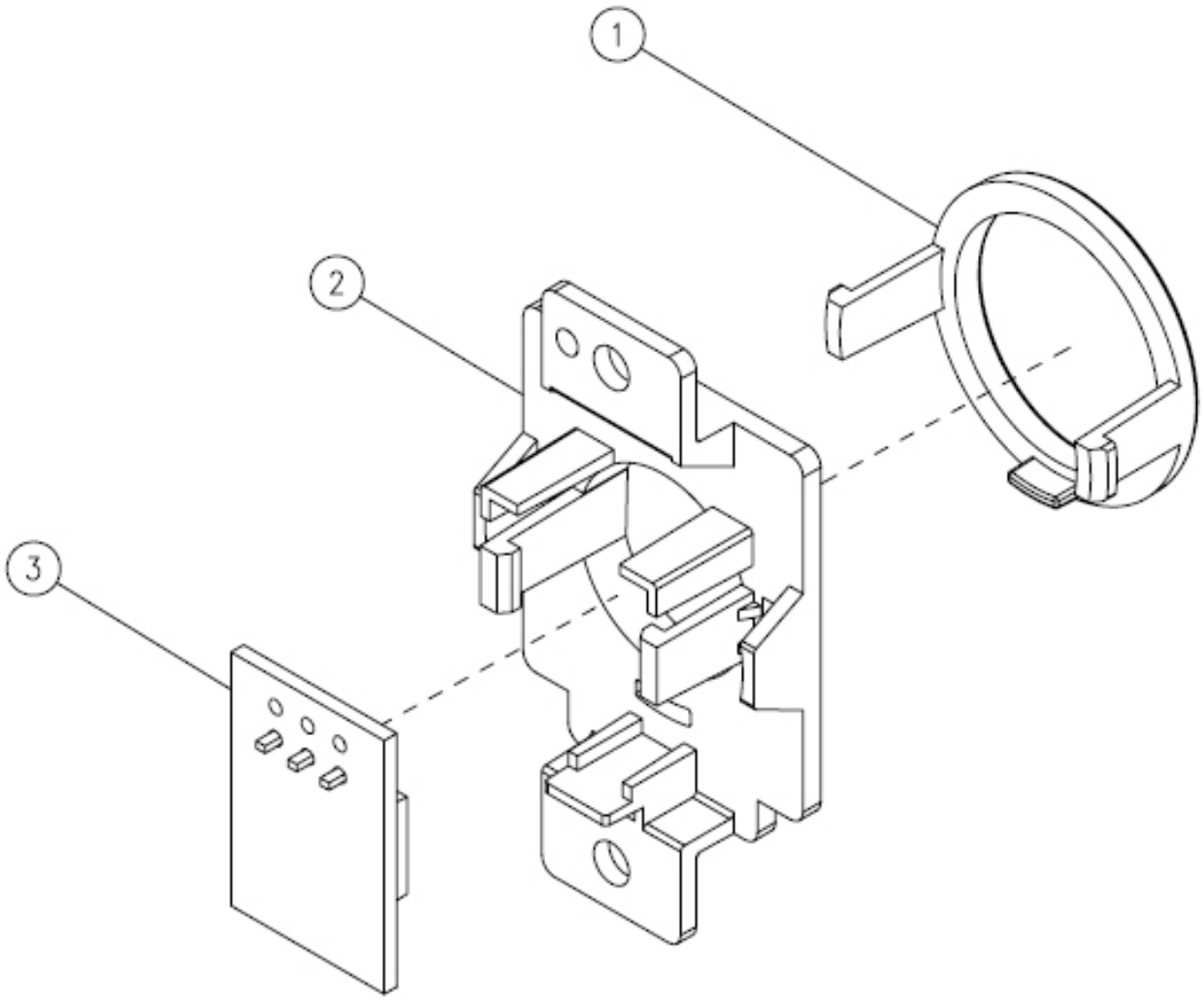
Item	Part NO	Description
1	41.85Y02G001	EMI GASKET W7*H2*L35 mm
2	41.85Y03G001	EMI GASKET W7*H2*L240
3	42.83609G002	CABLE FFC 16P L=200mm EP771
4	51.81541G001	TAPE 3M J350 17*30mm
5	51.89601G062	TOP COVER EP780
6	51.89605G061	KEYPAD EP771
7	51.89606G001	LED LENS EP771
8	51.89619G001	IR LENS TOP EP771
9	51.89635G001	TOP COVER ANTI LIGHT MYLAR EP771
10	52.89620G001	TOP COVER SMALL SPONGE EP771
11	80.85Y06G001	PCBA TOP IR BD FOR EP780
12	80.89606G001	PCBA KEYPAD BOARD EP759
13	85.1D122G030	SCREW PAN MECH M2*3 NI(W/WSHER)

ASSY FRONT COVER MODULE EP780



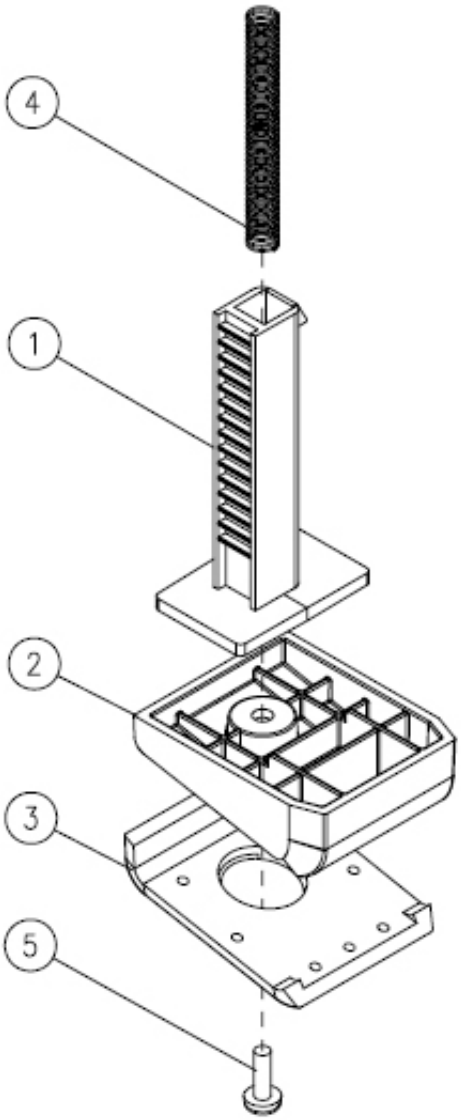
Item	Part NO	Description
1	51.81541G001	TAPE 3M J350 17*30mm
2	51.89636G002	FRONT COVER ANTI LIGHT MYLAR EP771
3	52.81Y04G001	FRONT IR LIGHTCUT CVSBXXB EP771
4	52.85Y07G002	FRONT COVER INSULATOR RUBBER HT800 AL FOIL FOR EP780
5	70.85Y11G001	ASSY IR SENSOR MODULE EP771
6	75.89603G061	ASSY FRONT COVER MODULE EP771
7	85.WA126G060	SCREW PAN HEAD TAP M2.6*6 NI

ASSY IR SENSOR MODULE EP780



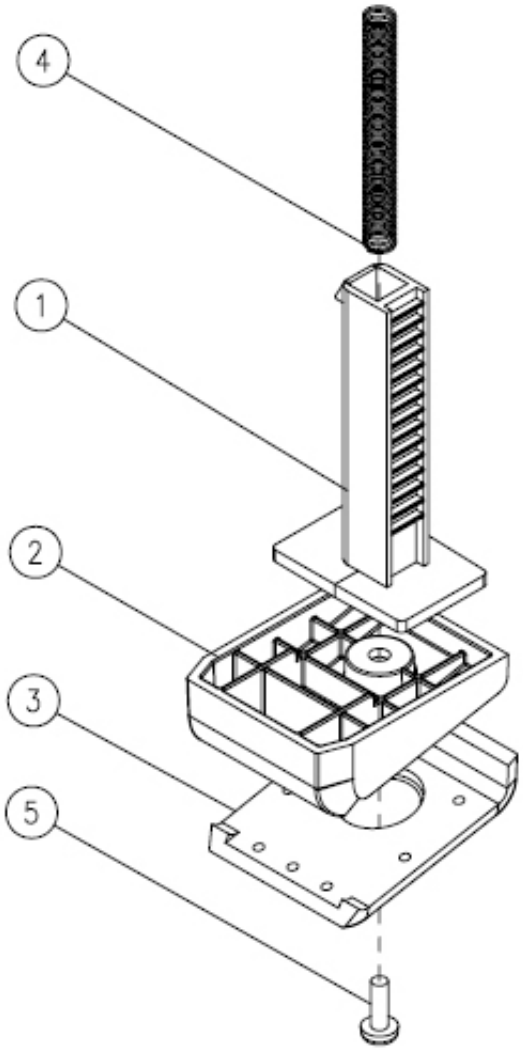
Item	Part NO	Description
1	51.89617G001	IR LENS FRONT RING EP771
2	51.89618G001	IR SENSOR HOLDER EP771
3	80.85Y05G001	PCBA FRONT IR BD FOR EP780

ASSY ELEVATOR FOOT RIGHT MODULE EP780



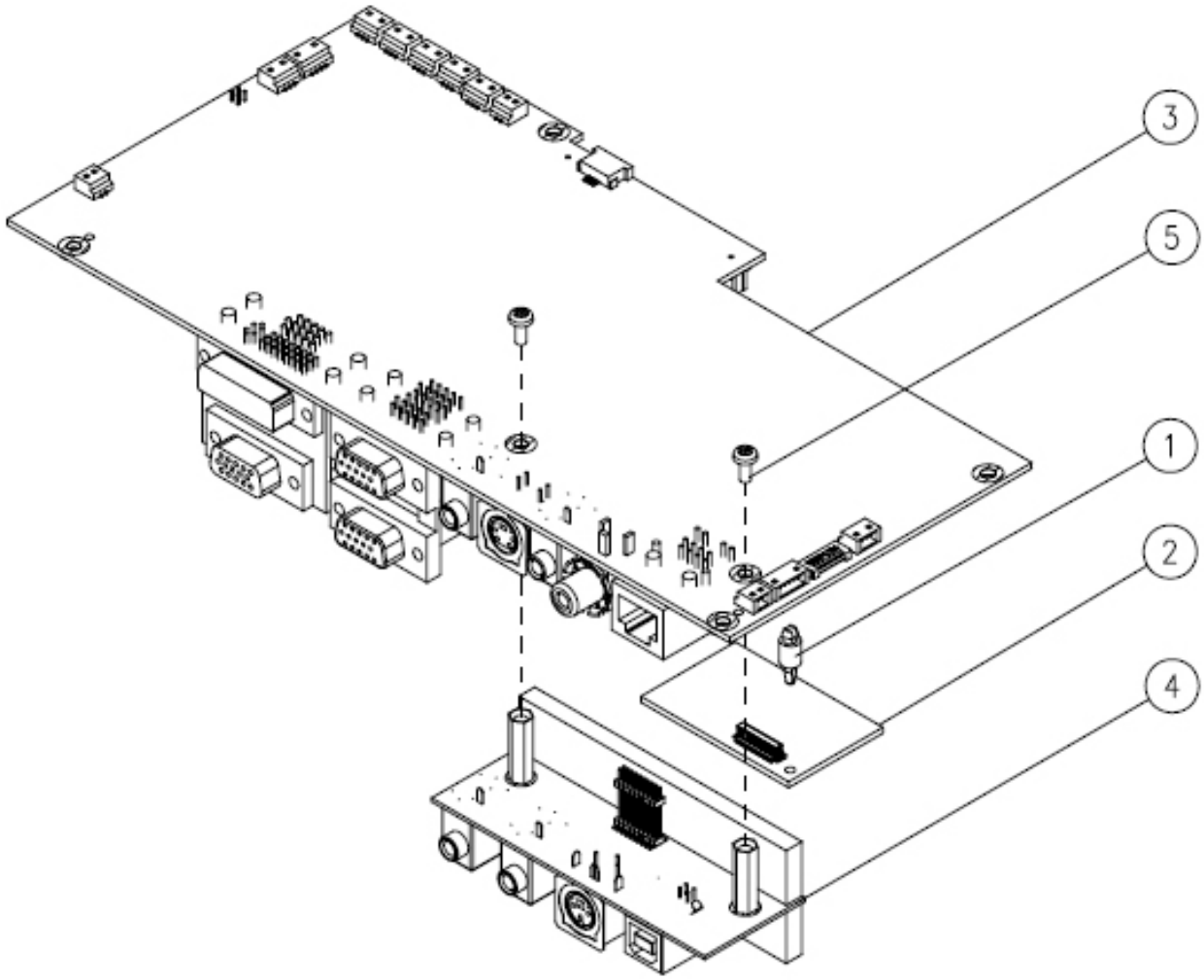
Item	Part NO	Description
1	51.89611G001	ELEVATOR BODY NORYL EP771
2	51.89613G061	ELEVATOR FOOT EP771
3	52.89604G001	FRONT FOOT RUBBER EP771
4	61.87220G001	ELEVATOR SPRING 0.D:φ4.5 W.D:φ0.3 L:65mm
5	85.1A123G080	SCREW PAN MECH M3*8 NI

ASSY ELEVATOR FOOT LEFT MODULE EP780



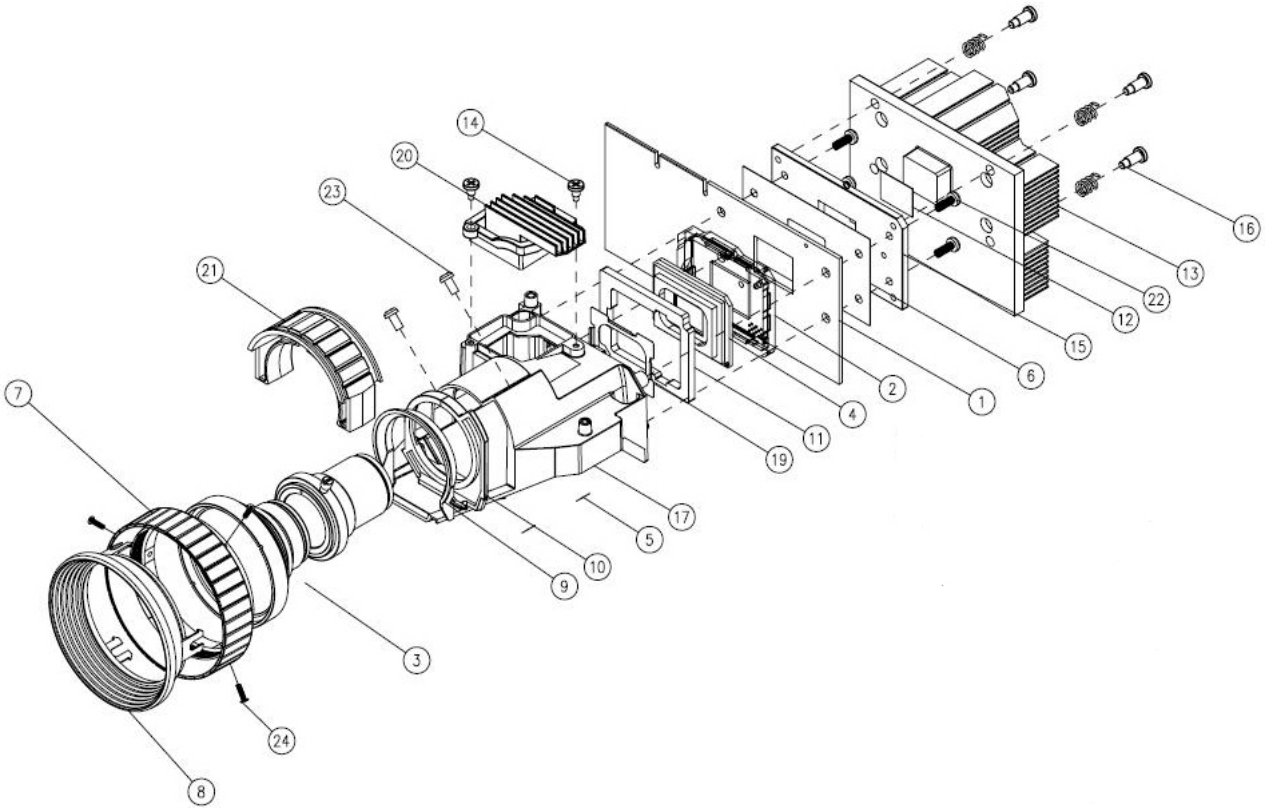
Item	Part NO	Description
1	51.89611G001	ELEVATOR BODY NORYL EP771
2	51.89613G061	ELEVATOR FOOT EP771
3	52.89604G001	FRONT FOOT RUBBER EP771
4	61.87220G001	ELEVATOR SPRING 0.D:φ4.5 W.D:φ0.3 L:65mm
5	85.1A123G080	SCREW PAN MECH M3*8 NI

ASSY MAIN BOARD MODULE EP780



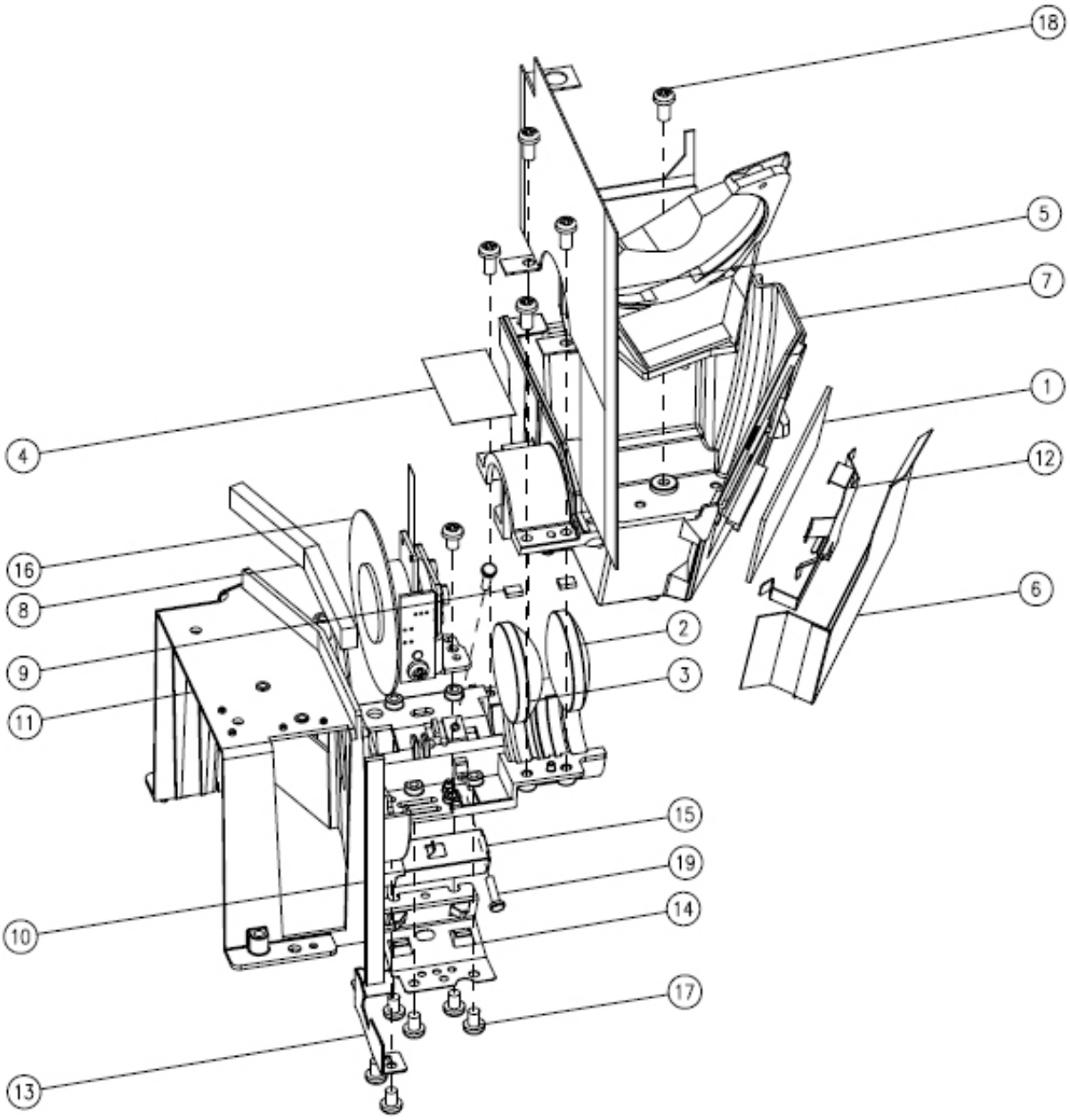
Item	Part NO	Description
1	51.00165G001	SPACER SUPPORT MCA-06 "GREEN" ; PINGOOD
2	75.83C11G002	NETWORK MODULE
3	80.85Y01G001	PCBA MAIN BOARD EP780
4	80.85Y03G001	PCBA IO BOARD EP780
5	85.1A123G060	SCREW PAN MECH M3*6 NI

ASSY OPTICAL ENGINE MODULE EP780



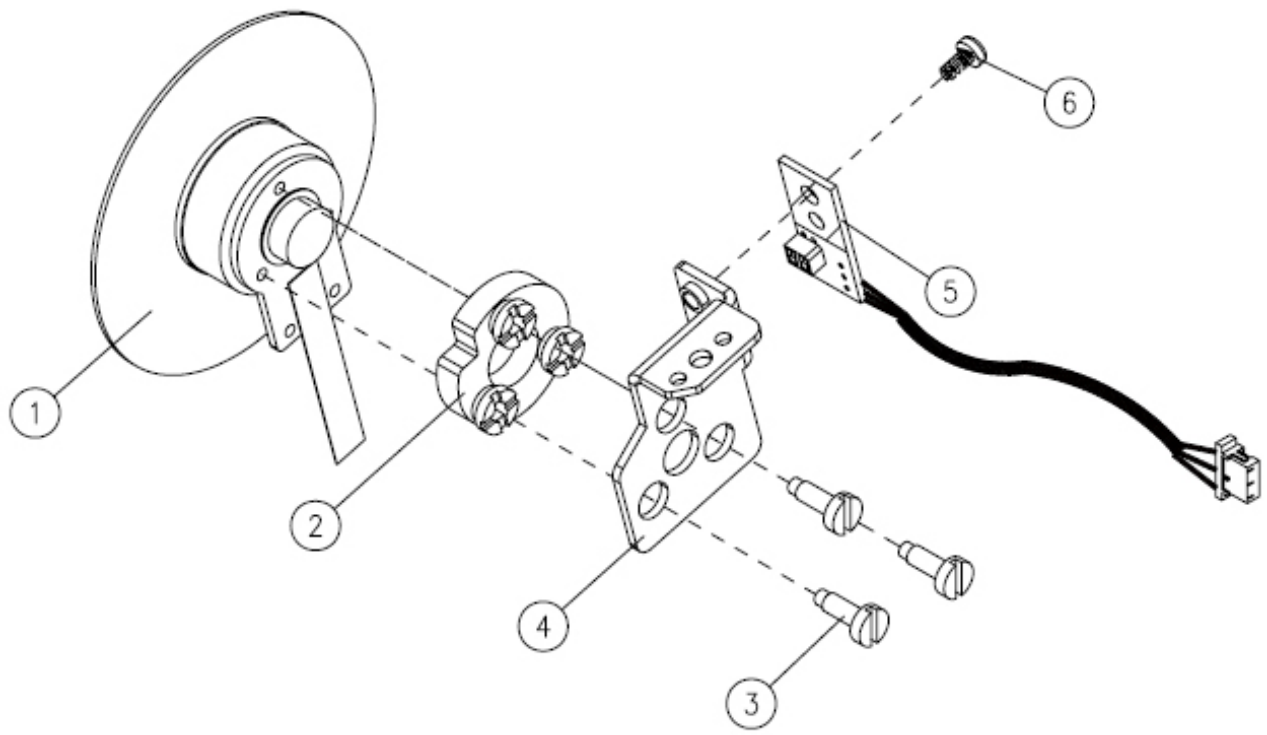
Item	Part NO	Description
1	00.85Y02G001	BARE PCB L:8 1.6mm DMD BOARD EP780
2	11.009F0G007	CNNT F 203P FOR 720P LGA DMD SOCKET
3	23.80J01G001	DLP 0.7"XGA ZOOM PROJECTION LENS
4	48.83N01G001	DMD 0.7 XGA 12° LVDS TYPE A
5	51.80W46G001	TAPE 3M J350 4*4mm
6	51.83N35G001	DMD HEATSINK MYLAR ON DMD BOARD
7	51.89608G061	FOCUS RING PC+ABS C6200 EP771
8	51.89626G061	REPLACE RING PC+ABS C6200 EP771
9	51.89628G001	ZOOM STOP RING
10	52.89613G001	ENGINE SEAL RUBBER
11	52.89627G001	DMD SEAL RUBBER F12 3.2t EP759
12	52.89633G001	THERMAL PAD 17*13*0.3mm
13	61.83N22G011	DMD HEATSINK AL 1070 EP771
14	61.85926G001	COLOR WHEEL SHOULDER SCREW SB21
15	61.89605G001	DMD BACKER PLATE
16	61.89626G001	HEATSINK SCREW EP759
17	61.89627G011	ENGINE COVER AZ91D EP759/PD726
18	61.89630G001	HEATSINK SPRING EP771
19	61.89638G001	DMD MASK SUS301 0.15t BLACK EP759
20	70.81N35G001	ASSY OFFRAY HEATSINK AL PD726
21	75.89605G061	ASSY ZOOM RING MODULE EP771
22	85.1A123G080	PAN SCREW M3*8 FOR YM-64 FRONT CELL & SP
23	85.1A126G080	SCREW PAN MECH M2.6*8 NI
24	85.4A121G065	SCREW FLAT HEAD TAP M1.7*6.5 Ni PD726

ASSY ENGINE BASE MODULE EP780

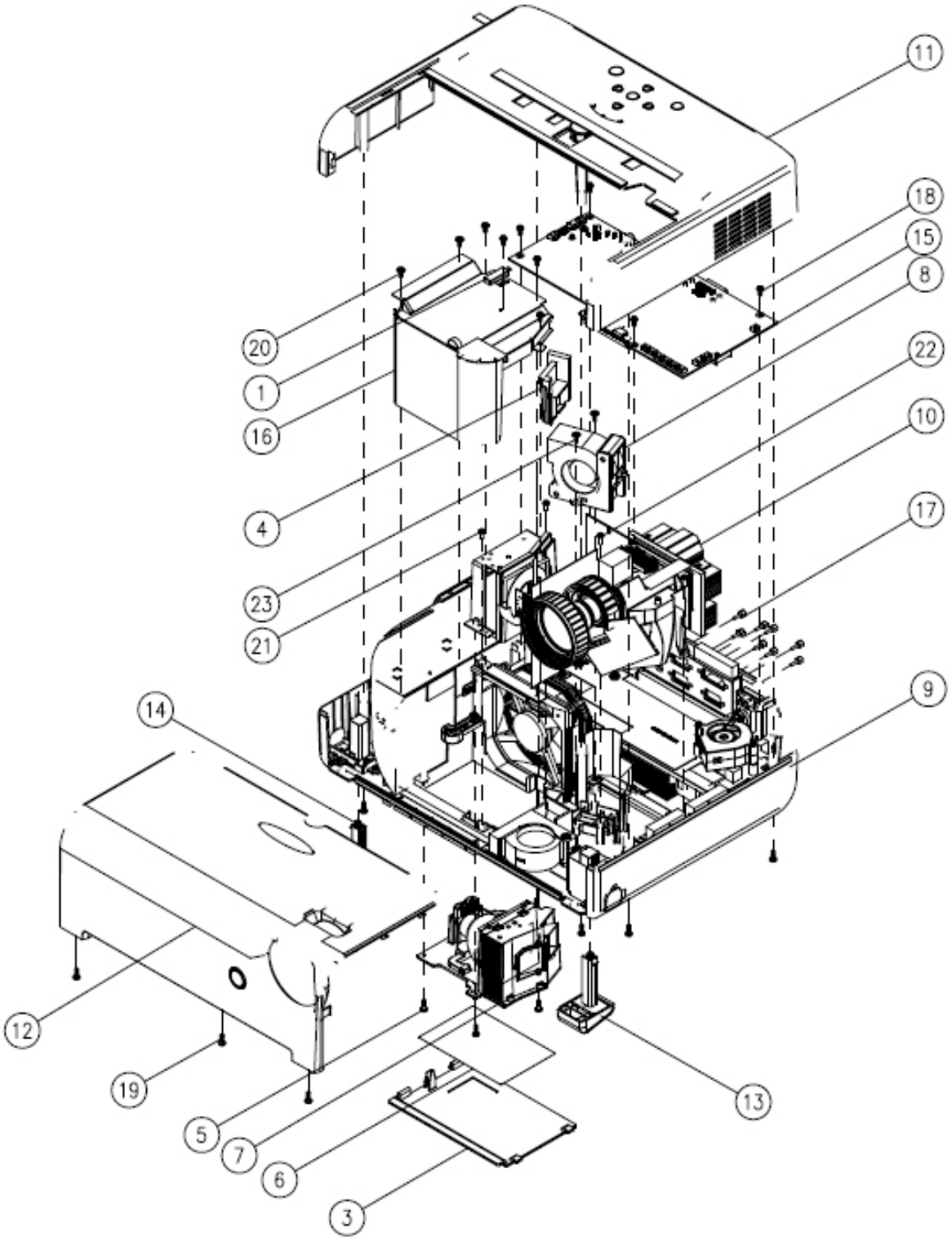


Item	Part NO	Description
1	23.89602G001	POLYGON MIRROR
2	23.89620G001	CONDENSER 1 Φ26mm BK7
3	23.89620G002	CONDENSER 2 Φ26mm BK7
4	51.81541G001	TAPE 3M J350 17*30mm
5	51.83N29G002	ENGINE ANTI-LIGHT MYLAR EVOLUTION PD726
6	51.85Y06G001	ENGINE MIRROR ANTI LIGHT MYLAR
7	51.89614G001	ENGINE BASE BMC
8	52.83N12G001	LAMP HOUSING STEAMTIGHT TOP F12
9	52.85808G001	PORON-LENS BLACK XB31
10	52.89626G001	LAMP HOUSING STEAMTIGHT SIDE F12
11	61.89602G011	LAMP HOUSING AZ91D EP759/PD726
12	61.89611G001	MIRROR SPRING PLATE
13	61.89617G001	ROD BRACKET AL 0.6t EP759
14	61.89621G001	ROD SPRING SUS301 0.25t EP759
15	70.83N20G001	ASSY ROD MODULE PD726
16	70.85Y17G001	ASSY COLOR WHEEL 5 SEGMENT MODULE EP771
17	85.1A126G040	SCREW PAN MECH M2.6*4 NI
18	85.1A126G080	SCREW PAN MECH M2.6*8 NI
19	85.1A522G080	SCREW PAN MECH NYLOK M2*8 NI

ASSY COLOR WHEEL MODULE EP780



Item	Part NO	Description
1	23.85Y19G001	COLOR WHEEL Φ48mm R90/Y30/G80/W86/B74 SLEEVE BEARING CW; YO
2	52.89606G001	COLOR WHEEL RUBBER EP759/PD726
3	61.89511G001	COLOR WHEEL SCREW 4100MP " GREEN"
4	61.89608G001	COLOR WHEEL BRACKET SECC 1.2t EP759/PD726
5	80.82G06G001	PCBA PHOTO SENSOR BOARD EP719
6	85.1A126G040	SCREW PAN MECH M2.6*4 NI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Item	Part NO	Description
1	43.87301G001	90c, TI THERMAL SWITCH
2	51.00001G001	CABLE TIE PG-YJ-80
3	51.89607G062	LAMP COVER PC MN3600 EP780
4	52.89611G001	DUCT RUBBER EP759/PD726
5	61.00018G002	LOCK SCREW PAN MECH M3*8.5-3.5
6	61.89641G001	LAMP COVER AL FOIL 0.1t EP759/PD726
7	70.83N07G001	ASSY LAMP CHANGER MODULE PD726
8	70.83N15G001	ASSY BLOWER FAN 60*25 MODULE PD726
9	70.85Y01G001	ASSY BOTTOM HOUSING MODULE EP771
10	70.85Y08G001	ASSY ENGINE MODULE EP780
11	70.85Y09G001	ASSY TOP COVER MODULE EP771
12	70.85Y10G001	ASSY FRONT COVER MODULE EP771
13	70.85Y12G001	ASSY ELEVATOR FOOT RIGHT MODULE EP771
14	70.85Y13G001	ASSY ELEVATOR FOOT LEFT MODULE EP771
15	70.85Y14G001	ASSY MAIN BOARD MODULE EP771
16	75.89604G001	ASSY FAN GUIDER COVER MODULE EP771
17	85.005AGG408	SCREW HEX I/O #4-40 H4*L8 NI NYLOK
18	85.1A123G060	SCREW PAN MECH M3*6 NI
19	85.1A123G080	PAN SCREW M3*8 FOR YM-64 FRONT CELL & SP
20	85.TA326G070	SCREW CAP TAP M2.6*7 WASHER
21	85.WA123G060	SCREW PAN TAP M3*6 NI
22	85.WA123G080	SCREW PAN TAP M3*8 NI
23	85.WD123G080	SCREW PAN TAP 3*8 W/WASHER NI

7-2 Appendix B

Serial Number System Definition

Serial Number Format for Projector

A	BBB	A	Y	WW	AAAAA	EEEE
①	②	③	④	⑤	⑥	⑦

① : O = Optoma, B~Z = OEM

② : Product code (ex: 85Y = EP780)

③ : A = American, E = Europe

④ : Y = Last number of the year (ex: 200<u>6</u> - 6)

⑤ : Week of year

⑥ : Model Code (ex: AAAAA = EP780)

⑦ : Serial code (from 0001~)

EX : O85YA639AAAAA1001
This label “O85YA639AAAAA1001” represents the whole serial number for EP780 It’s produced on 39s-week of 2006 for universal area and its serial code is 1001.

Reader's Response

Dear Readers:

Thank you for your backing our service manual up. In order to refine our content of the service manual and satisfy your requirement. We expect you can offer us some precious opinions for reference.

Assessment:

A. What do you think about the content after reading EP780 Service Manual?

Unit	Excellent	Good	Fair	Bad
1. Introduction				
2. Disasaembly Procedure				
3. Troubleshooting				
4. Function Test & Alignment Procedure				
5. Firmware Upgrade Procedure				
6. DDC key-in Procedure				
7. Appendix				

B. Are you satisfied with the EP780 service manual?

Item	Excellent	Good	Fair	Bad
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				

C. Do you have any other opinion or suggestion about this service manual?

Reader's basic data:

Name:			Tile:	
Company:				
Add:				
Tel:			Fax:	
E-mail:				

After your finishing this form, please send it back to Coretronic Customer Service Dept. by fax: 886-3-563-5333.