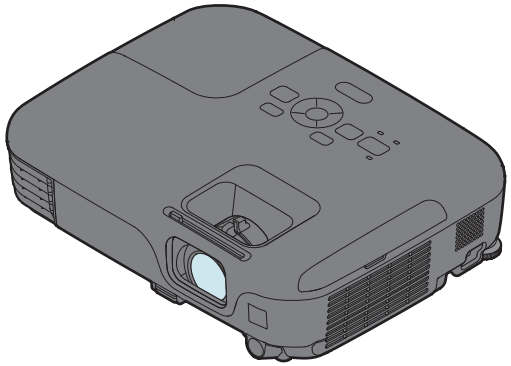
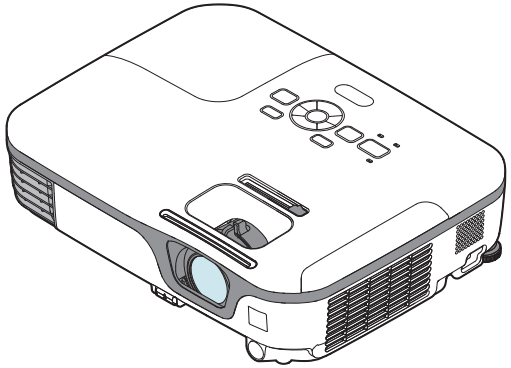
SERVICE MANUAL





Business Projector

EB-S01/W01/X14G/S11/X11/S02/S02H
EB-X02/W02/S12/S12H/X12/W12/X14

Home Projector

EH-TW480

EPSON
EXCEED YOUR VISION

CONFIDENTIAL

NOTICE

About This Manual

This manual describes basic functions, theory of electrical and mechanical operations, maintenance and repair procedures of the product. The instructions and procedures included herein are intended for the experienced repair technicians, and attention should be given to the precautions on the preceding pages.

Manual Configuration

CHAPTER 1. PRODUCT DESCRIPTIONS
Provides a general overview and specifications of the product.

CHAPTER 2. TROUBLESHOOTING
Describes the step-by-step procedures for the troubleshooting.

CHAPTER 3. DISASSEMBLY / ASSEMBLY
Describes the step-by-step procedures for disassembling and assembling the product.

CHAPTER 4. MAINTENANCE
Describes the points to be checked and the step-by-step procedures to inspect the troubling location from errors or abnormal phenomena of the projected image.

CHAPTER 5. APPENDIX
Provides preventive maintenance procedures for servicing the product.

IMPORTANT PRECAUTIONS IN SAFETY AND MAINTENANCE PERFORMANCE

Here describes the important points to keep in mind in repair and maintenance performance.

SYMBOLS

To prevent injury to the repair technicians and to protect the devices, the categorized safety instructions are provided in this manual with the symbols below. Be sure to read and understand their meanings before proceeding to the next section.

Category	Symbol	Meaning
Danger		Indicates an extremely hazardous operation which, if ignored or operated incorrectly, could result in serious or fatal personal injury.
Warning		Indicates a potentially hazardous operation which, if ignored or operated incorrectly, could result in serious or fatal personal injury.
Caution		Indicates a potentially hazardous operation which, if ignored or operated incorrectly, could result in minor injury or damage to equipment.
Prohibited Matter		Indicates a prohibited action or operation in repair and maintenance performance.
Instruction		Indicates a compulsory action or operation that must be carried out in repair and maintenance performance.

SAFETY INSTRUCTIONS

The precautionary measures itemized below should be fully understood when performing repair and maintenance procedures.

WARNING	
	When disassembling/assembling, be sure to turn off the power switch and pull out the power cable from the projector beforehand.
	Never touch the current-carrying part or high temperature section during a test operation, signal measurement or any other situations that is necessary to perform the repair/maintenance work with the power turned on and the cover removed. Do not wear the metal products such as wrist watch, cuff buttons, rings, tiepin etc. to avoid getting a electric shock.
	Do not touch the lamp assy. or the parts around it. They are extremely hot even after completed the cooling down operation, and may cause a burn injury. Therefore, leave the unit until it becomes cool enough before performing maintenance work.
	Never let the safety devices mounted in this product inactivated for any reason whatsoever.
	Never modify the safety devices or replace them with the ones that are not designated for any reason whatsoever. (Such actions may cause a fire or serious injury.)
	Never modify the product for any reason whatsoever. (Except for a case that is under the instructions to do so.)
	Never peer through the projection lens during repair/maintenance work when the power is on. (Such an action may cause a visual disability because of a very strong light emission.)
	Never use a deformed plug or a damaged power cable to this product. If any deformations or damages are found on the power cable or plug section, replace it with a new specified power cable.
	Never use the air blowers that contain flammable gas in repair/ maintenance work.

CAUTION	
	Never use or replace with any service parts that is not specified by EPSON.
	Be sure to perform the repair/maintenance work on the even and stable work bench to prevent the product from dropping down or mal-operation due to the improper setting of the product.
	Be sure to wear the gloves during the repair/maintenance work to avoid injuries by the parts with sharp edges such as metal plate or the like.
	To protect sensitive circuitry, follow the instructions below. ■ When disassembling or reassembling, be sure to wear static discharge equipment such as an anti-static wrist strap and a mat. ■ When replacing the circuit component such as a board or the optical engine, be sure to get in contact with the anti-static case containing the new one to the metal part of this product before taking it out.
	When performing the repair/maintenance work, be sure to use the specified tools and follow the instructions that are specified in the documents (service manual etc.) concerning to this product.
	When carrying out the test operation, do not block the intake and exhaust ducts. (Such an action raises the internal temperature and may cause a fire or a damages to the internal parts of this product.)

	Be careful not to drop a metal part such as a screw, a washer, or a clip into the inside of the product. If such cases should occur accidentally, never turn on the power supply until all the dropped parts are found and removed.
	After reassembling the product, check the followings before turning the power on. ■ All the parts and screws are installed and secured to the proper positions. ■ No cables are caught in the metal frames.

OTHER CAUTION

Since the lamp of this product contains mercury, be sure to dispose the used lamp pursuant to the government's law and regulations.

REVISION HISTORY

After first release of this manual, the parts and mechanism may be subject to change for improvement of their performance and the manual may be revised. Be sure to always keep this manual up to date.

Revision	Date	Page of change	Detail of change
A	2011.6.15	all	First Release
B	2011.8.5	P.75 P.78 P.131	Change of caution. Addition of caution. Addition of caution.
C	2012.5.28	all	Addition of models. Full-fledged revision

Contents

Chapter 1 Product Description

Chapter 2 Troubleshooting

Chapter 3 Disassembly and Assembly

Chapter 4 Maintenance

Chapter 5 Appendix

CHAPTER

1

PRODUCT DESCRIPTION

1.1 Model Name

EB-S01/W01/X14G/S11/X11/S02/S02H/X02/W02/S12/S12H/X12/W12/X14 EH-TW480 are divided into three groups by their mechanical differences. The classified model names are provided below.

Type	Model Name	Optical Zoom (Manual)	Native resolution	Horizontal Keystone Correction	External View
Business Type A	EB-S01	N/A	SVGA	N/A	
	EB-W01	✓	WXGA		
	EB-X14G		XGA		
	EB-S02	N/A	SVGA		
	EB-S02H				
	EB-X02	✓	XGA		
	EB-W02		WXGA		
Business Type B	EB-S11	N/A	SVGA	N/A	
	EB-X11	✓	XGA	✓	
	EB-S12	N/A	SVGA		
	EB-S12H				
	EB-X12	✓	XGA		
	EB-W12		WXGA		
	EB-X14		XGA		
Home Type	EH-TW480	✓	WXGA	✓	

1.2 Features

The EB-S01/W01/X14G/S11/X11/S02/S02H/X02/W02/S12/S12H/X12/W12/X14 EH-TW480 are portable compact business/home projectors with the following features:

- Auto Vertical-Keystone (EB-X14G/X11/S02/S02H/X02/W02/S12/S12H/X12/W12/X14 EH-TW480 only)

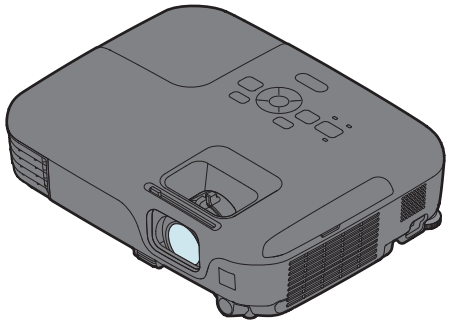
  When the sensor of the projector detects the change in setting, the projector automatically corrects the keystone in the vertical direction.

- Horizontal Keystone Adjuster (EB-X11/S12/S12H/X12/W12/X14 EH-TW480 only)

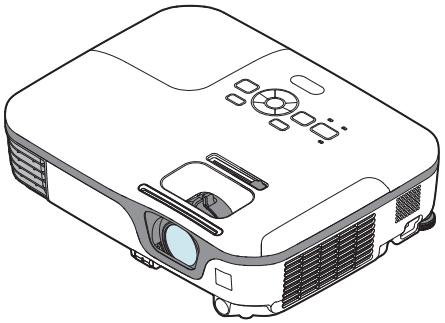
  This allows you to quickly correct horizontal distortion of the projected image.

- Direct Power On/Off
- No cool-down period is needed.
- Project screen for WXGA (16:10) (EB-W01/W02/W12 EH-TW480 only)
- Auto Iris
- With an optional document camera (ELPDC06/ELPDC11), you can magnify and project the images of your documents.
- USB connection for projection (USB Display) is available.
  - USB terminal (Type B) for USB Display
- Slide show is available (EB-S11/X11/S12/S12H/X12/W12/X14 EH-TW480 only)
  - The images in a USB flash drive can be projected without using a computer
  - USB terminal (Type A) for USB Display
- HDMI terminals (EB-S02H/S12H/X12/W12/X14 EH-TW480 only)
- Enhanced security functions
  - Password protection
  - Operation Lock
  - Anti-theft Lock

Business Type A: EB-S01/W01/X14G/S02/S02H/X02/W02



Business Type B: EB-S11/X11/S12/S12H/X12/W12/X14



Home Type: EH-TW480

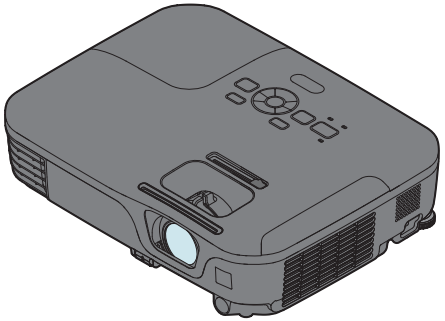


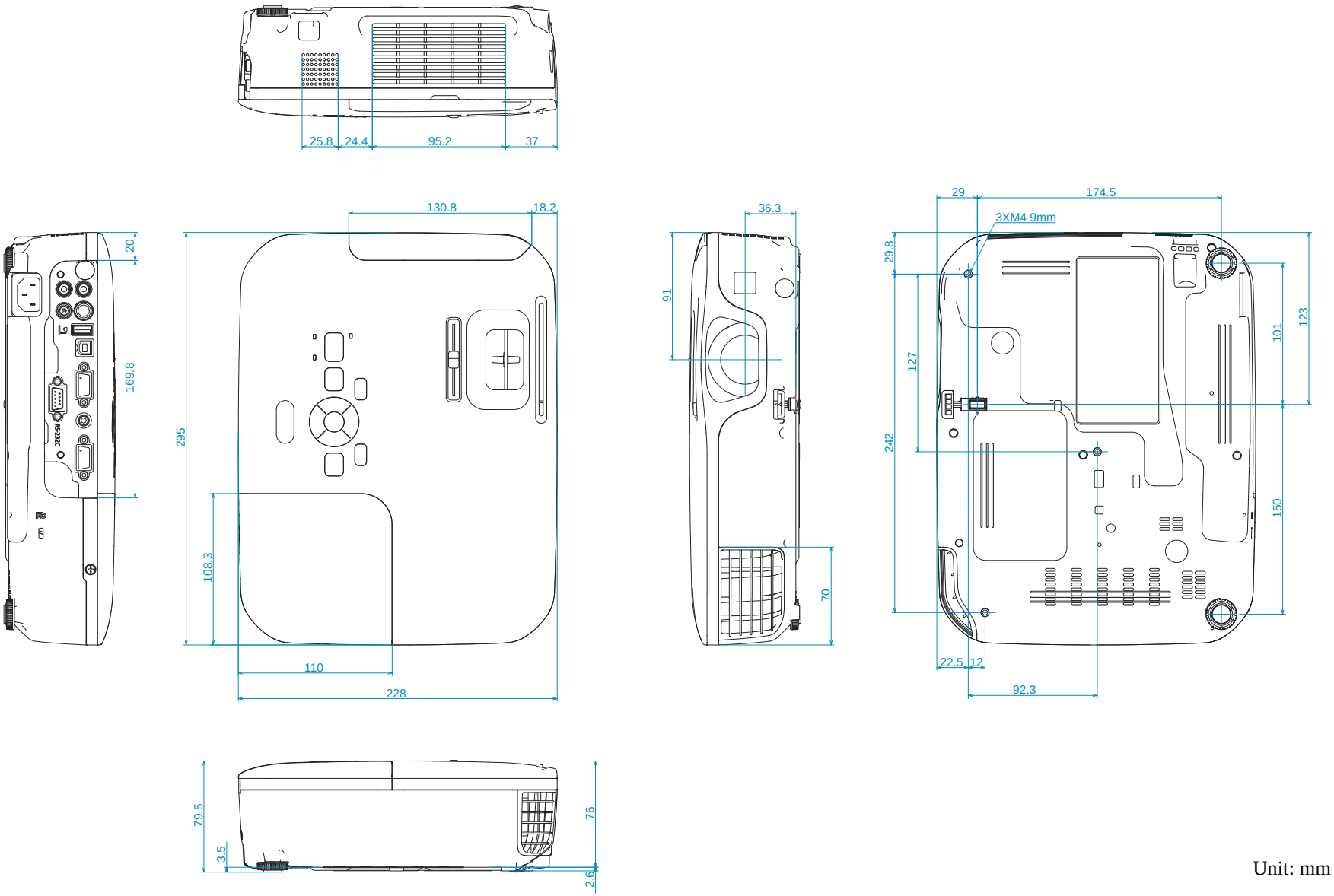
Figure 1-1. External View

1.3 Specifications

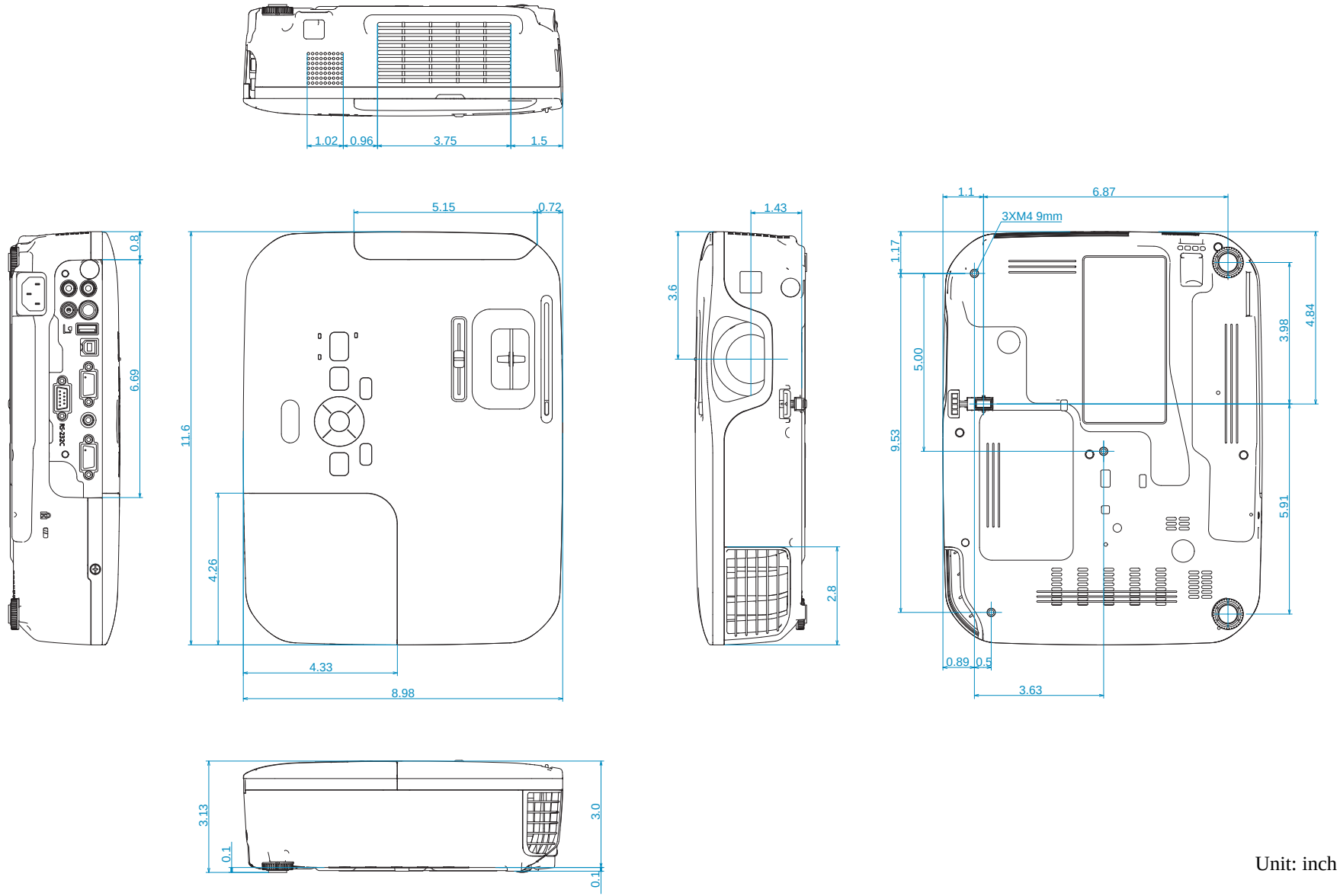
Model / Item				EB-S01	EB-W01	EB-X14G	EB-S11	EB-X11	EB-S02	EB-S02H	EB-X02	EB-W02	EB-S12	EB-S12H	EB-X12	EB-W12	EB-X14	EH-TW480
Specification of main part	LCD	Size		0.55 inch (without MLA)	0.59 inch (with MLA)	0.55 inch (with MLA)	0.55 inch (without MLA)					0.59 inch (with MLA)	0.55 inch (without MLA)			0.59 inch (with MLA)	0.55 inch (with MLA)	0.59 inch (with MLA)
		Pixel number		480,000 dots (800 x 600) x 3	1,024,000 dots (1280 x 800) x 3	786,432 dots (1024 x 768) x 3	480,000 dots (800 x 600) x 3	786,432 dots (1024 x 768) x 3	480,000 dots (800 x 600) x 3		786,432 dots (1024 x 768) x 3	1,024,000 dots (1280 x 800) x 3	480,000 dots (800 x 600) x 3	786,432 dots (1024 x 768) x 3		1,024,000 dots (1280 x 800) x 3	786,432 dots (1024 x 768) x 3	1,024,000 dots (1280 x 800) x 3
		Native resolution		SVGA	WXGA	XGA	SVGA	XGA	SVGA		XGA	WXGA	SVGA		XGA	WXGA	XGA	WXGA
		Aspect ratio		4:3	16:10	4:3					4:3	16:10	4:3		4:3	16:10	4:3	16:10
	Projection Lens	Focus	Type	Manual focus														
		Zoom	Type	Digital Zoom	Manual optical zoom		Digital Zoom	Manual optical zoom	Digital Zoom		Manual optical zoom		Digital Zoom		Manual optical zoom			
			Ratio	1.0 - 1.35	1.0 - 1.2		1.0 - 1.35	1.0 - 1.2	1.0 - 1.35		1.0 - 1.2		1.0 - 1.35		1.0 - 1.2			
	Lamp	Type		UHE (E-TORL)														
		Power consumption		200 W														
		Life	Normal	4000 H														
			Eco	5000 H														
Brightness	Normal mode	Color mode: Dynamic, Zoom: Wide		2600 lm		3000 lm	2600 lm				2600 lm		2800 lm		2800 lm		3000 lm	2800 lm
	Eco mode			2080 lm		2400 lm	2080 lm				2080 lm		2240 lm		2240 lm		2400 lm	2240 lm
Sound output				2 W x 1 Monaural		1 W x 1 Monaural	2 W x 1 Monaural		1 W x 1 Monaural				2 W x 1 Monaural					
HDMI terminal				N/A						x 1	N/A			x 1				
Network Function	Wired LAN			N/A														
	Wireless LAN Unit			N/A														
USB terminal	USB I/O	Type A		x 1 (S02 is excluded)														
		Type B		x 1														
Operating Temperature	Temperature			5°C to 35°C														
	Humidity			20% to 80%														

Model / Item				EB-S01	EB-W01	EB-X14G	EB-S11	EB-X11	EB-S02	EB-S02H	EB-X02	EB-W02	EB-S12	EB-S12H	EB-X12	EB-W12	EB-X14	EH-TW480
Operating Altitude		Normal		0 m to 2286 m <0 ft to 7500 ft>														
		High altitude mode		Over 1500 m / 4,921 ft														
Start-up period				5 seconds														
Warm-up period				30 seconds														
Cool-down period				Instant off														
Power supply voltage				100 - 240 V AC ± 10%, 50/60 Hz														
Power Consumption	100-120V Area (JAPAN, USA,etc.)	Lamp	ON (Normal)	283 W														
			ON (Eco)	234 W														
		Standby (Network)	ON	2.9 W														
			OFF	0.36 W														
	220-240V Area (Europe, etc.)	Lamp	ON (Normal)	270 W														
			ON (Eco)	223 W														
		Standby (Network)	ON	3.3 W														
			OFF	0.47 W														
	Rated Voltage & Current			100 - 240 V AC 50/60 Hz 2.9 - 1.3 A														
Size	Excluding feet		Unit: mm	228 (D) x 295 (W) x 77 (H)														
	Maximum Dimension			228 (D) x 295 (W) x 79 (H)														
Weight				Approx. 2.3 kg/5.1 lbs														
Fan noise	Normal mode			37 dB														
	Eco mode			29 dB														

1.4 Dimensions

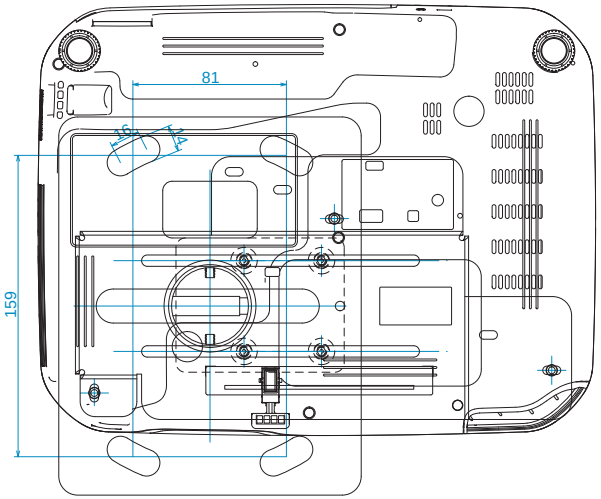


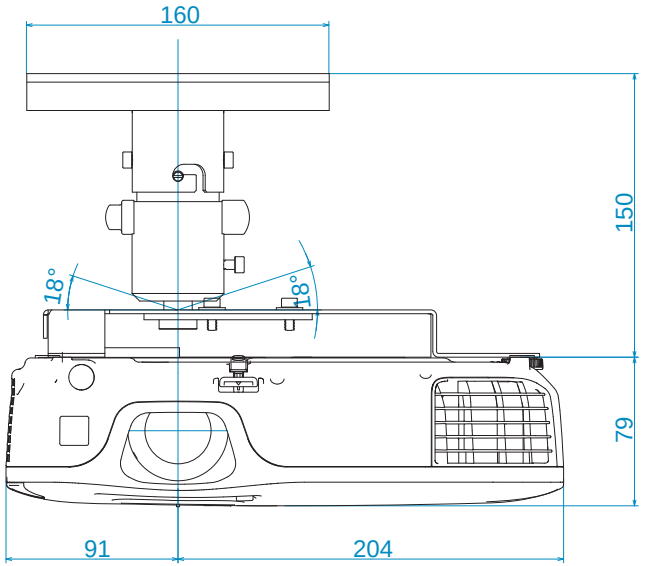
Unit: mm

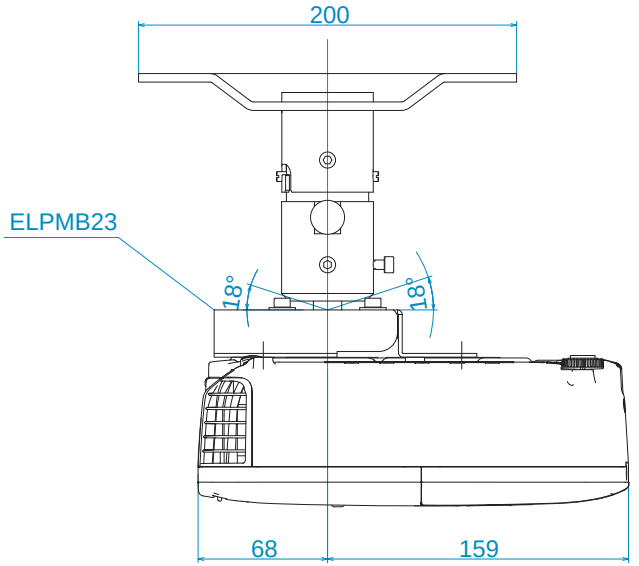

1.02
0.96
3.75
1.5
0.8
6.69
RS-232C
5.15
0.72
11.6
4.26
4.33
8.98
1.43
3.6
2.8
1.1
6.87
3XM4 9mm
1.17
5.00
9.53
3.98
4.84
5.91
0.89
0.5
3.63
3.13
0.1
3.0
0.1

Unit: inch

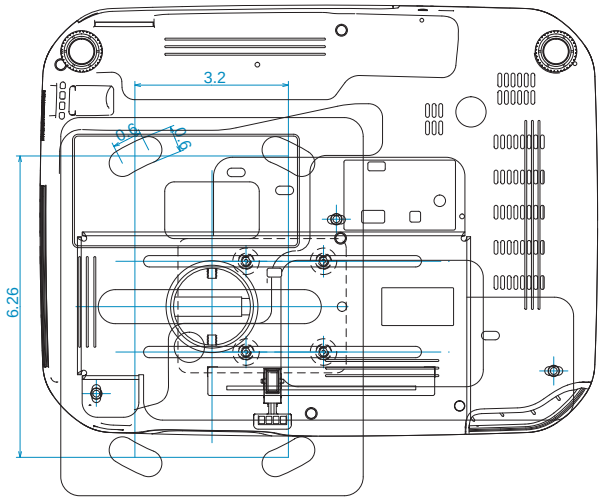
1.5 Ceiling Mount

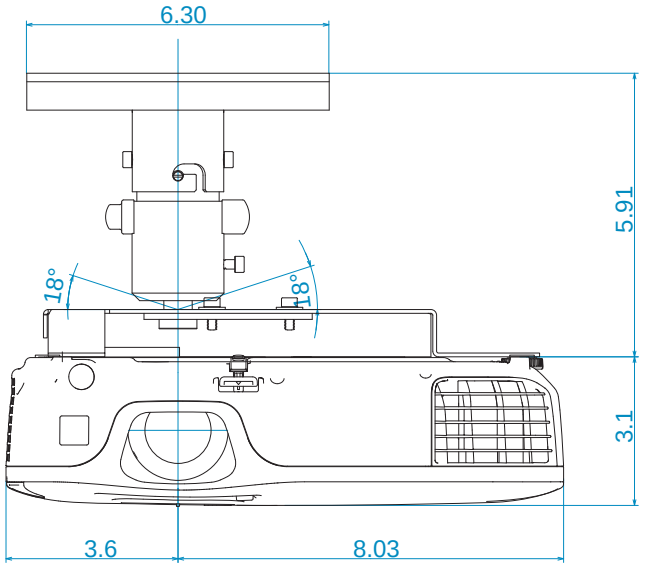


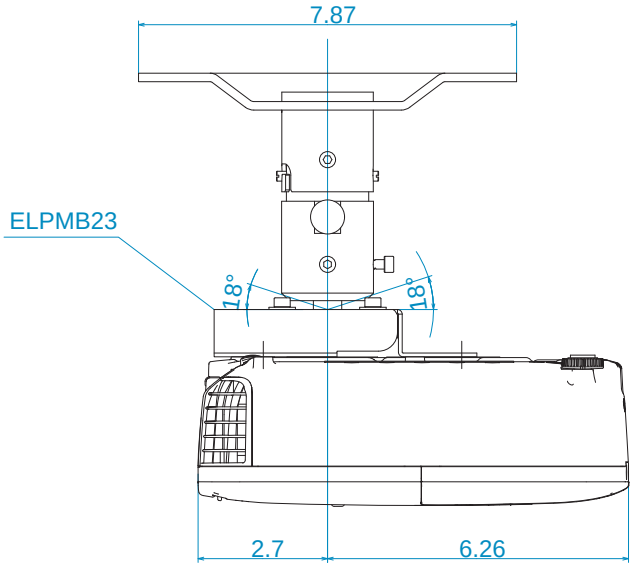




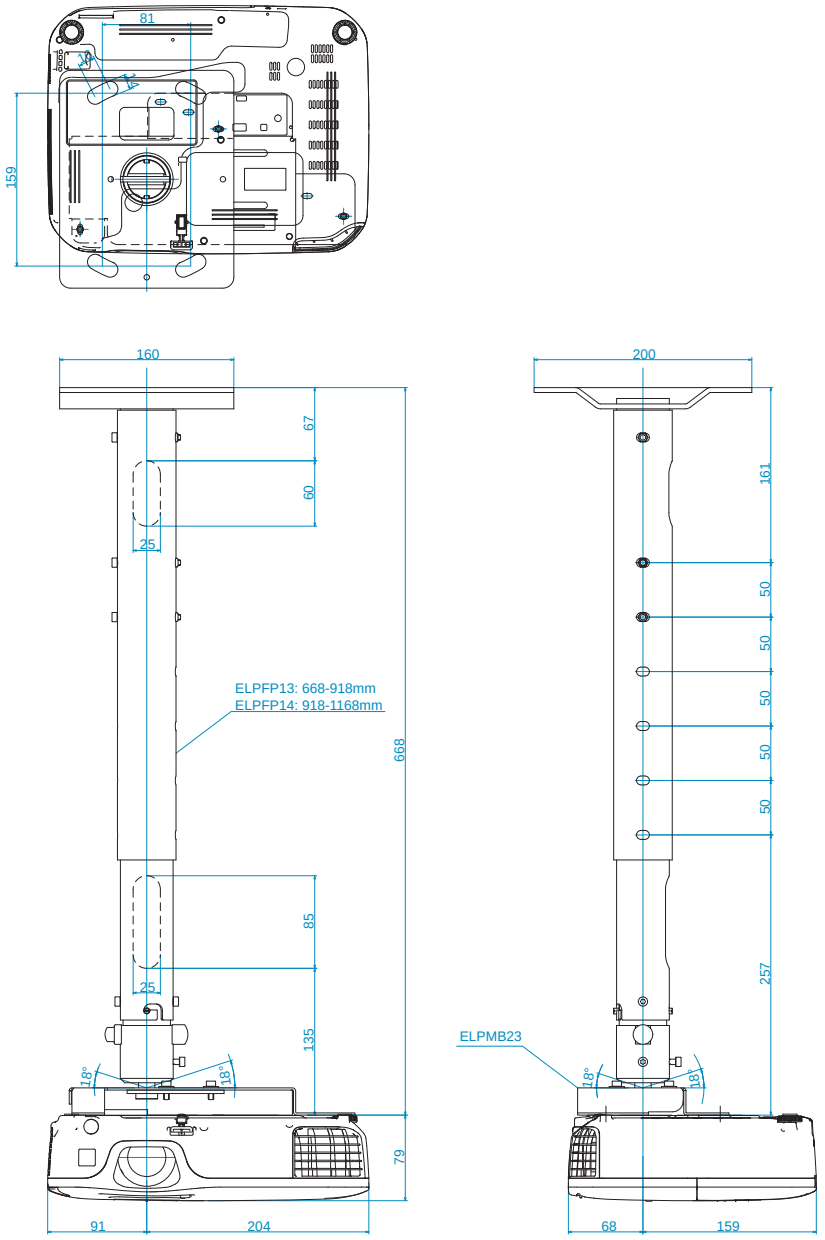
Unit: mm



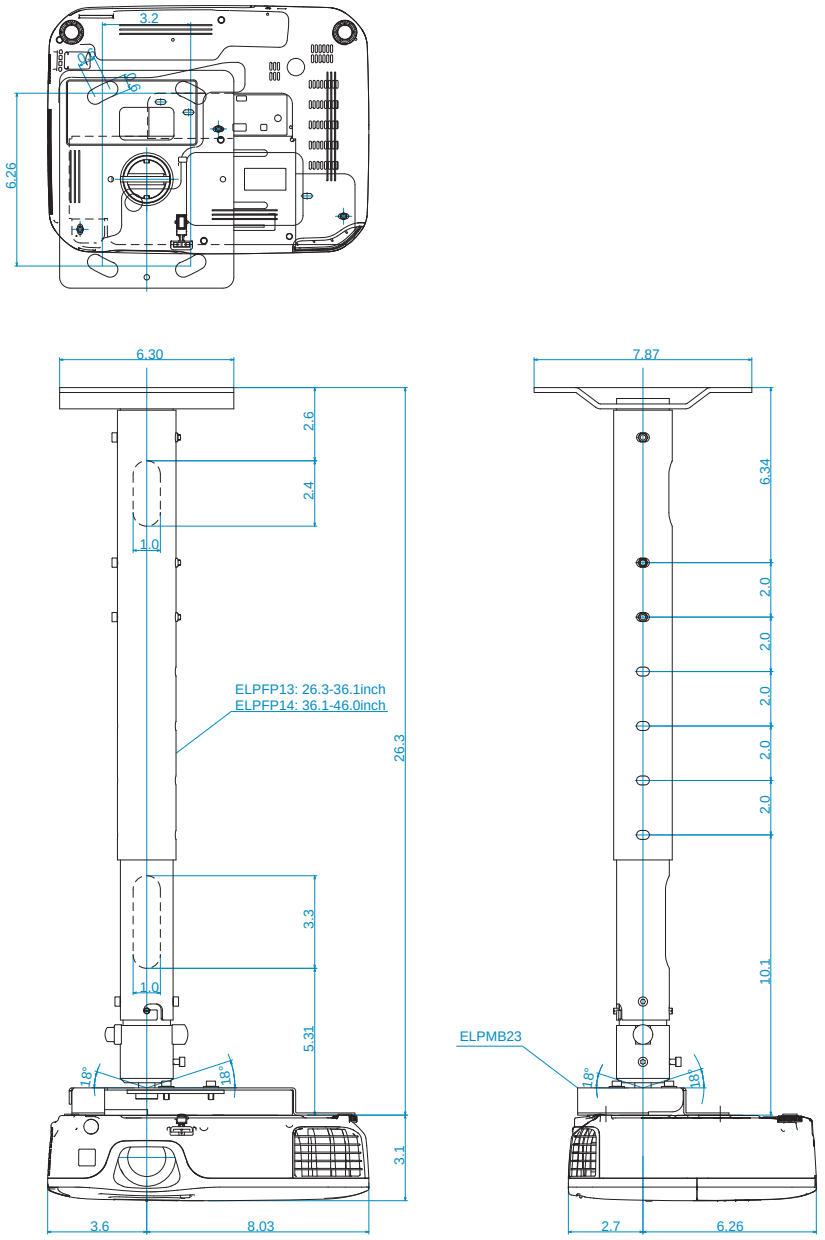




Unit: inch


81
159
160
67
60
25
ELPFP13: 668-918mm
ELPFP14: 918-1168mm
668
85
25
135
18°
18°
79
91
204
200
161
50
50
50
50
50
257
ELPMB23
18°
18°
68
159

Unit: mm


3.2
6.26
6.30
2.6
2.4
1.0
ELPFP13: 26.3-36.1inch
ELPFP14: 36.1-46.0inch
26.3
3.3
1.0
5.31
1.8°
1.8°
3.1
3.6
8.03
7.87
6.34
2.0
2.0
2.0
2.0
2.0
10.1
ELPMB23
1.8°
1.8°
2.7
6.26

Unit: inch

CHAPTER

2

TROUBLESHOOTING

2.1 Required Tools

The following tools and equipment will be required in order to carry out troubleshooting, and so you should check that they are on hand.

Name	Qt.	Application/Other
Projection screen	1	To project image on
Host computer	1	To output audio and video data to the projector (To check the component video input)
PC cable	1	
Video equipment	1	To transfer audio and video data to the projector (To check the HDMI, S-Video, composite video, USB input)
Audio and Video cables (HDMI/S-video/ Composite/USB, and audio for those listed above)	1 each	
Multi meter	1	To measure resistance values and voltages (AC/DC)
Double-sided tape	q.s.	To secure parts
General tools	1set	Tools given in “ 3.1.5 Tools (p55)”

Note 1: q.s.: Sufficient quantity

2: When repairing an EB-W01/W02/W12/EH-TW480 (16:10 wide panel model), prepare your video source and device considering the full screen display of 16:10 aspect.

2.2 Troubleshooting Procedure

This chapter describes troubleshooting procedure starting from error messages/status to diagnose problems. Refer to the descriptions and remedies below to specify the troubled part, and carry out the necessary repair or replacement.

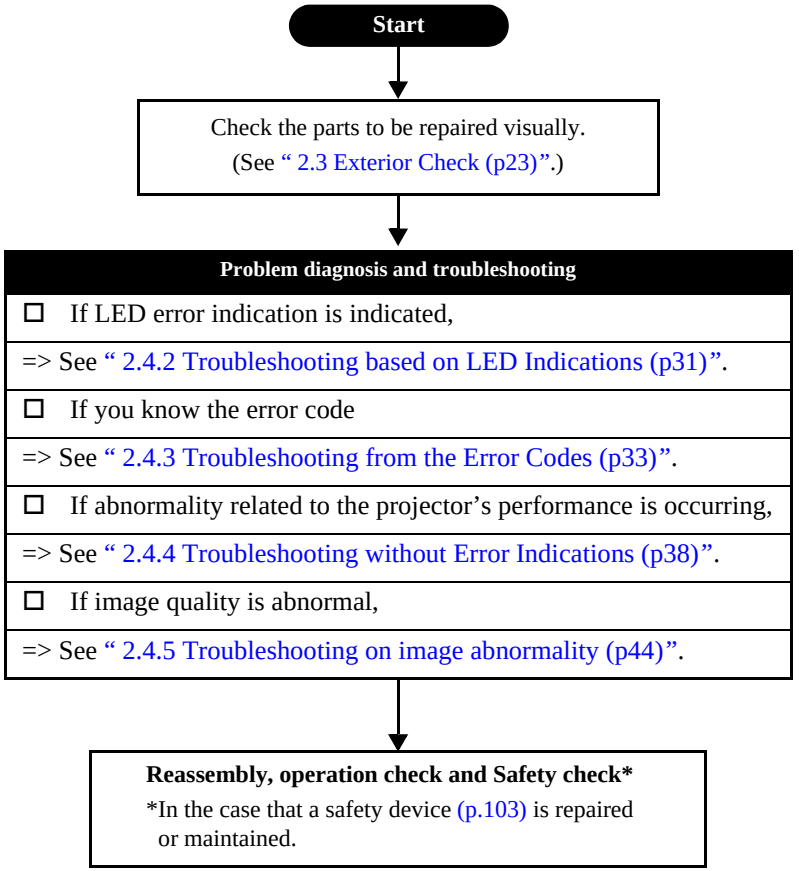


Figure 2-1. Troubleshooting Workflow

2.3 Exterior Check

When repairing this product, carry out exterior check of the target parts/units as necessary.

☐ Check Items

Target part	Check item
Upper Case	Any damage/deformation/cracking due to external forces?
	Is it fixed to the Lower Case correctly?
	Any foreign object/dirt on the IR receivers (Front and Rear)?
IF Case	Any damage/deformation/cracking due to external forces?
	Is it fixed with screws correctly?
	Is it fixed to the Lower Case and Upper Case correctly?
SW Board	Is it fixed to Upper Case correctly?
	Any stuck buttons?
	Does Buttons work smoothly?
Lamp Cover	Is it fixed to Upper Case correctly?
	Any damage on the latch to operate the Interlock Switch? (Check for it with the cover removed.)
Air Filter Cover	Any damage/deformation/cracking due to external forces?
	Is it fixed to the Upper Case correctly?
Projection Lens	Does Focus Ring work smoothly?
	Does Zoom Ring work smoothly?
	Any dirt/scratches on the projection lens?
Lower Case	Any damage/deformation/cracking due to external forces?
	Any foreign object/dirt on the filter cover or the vents?
Foot	Does Front Foot work smoothly to adjust height?
	Any Foot Rubber detached?
AC Inlet	Any deformation/discoloration on the connector/ terminals?
	Any damage on the socket?
Interfaces	Any deformation/discoloration on the connector/ terminals?
	Any foreign objects on the connectors/terminals?
Air Filter	Is it fixed correctly?
	Any dirt on the filter? (check for it with the filter removed.)
	Any dirt/foreign materials on the fan inside the filter?
HK Assy	Any damage/deformation/cracking due to external forces?
	Is it fixed to Upper Case correctly?
	Does it work smoothly?
Lens Shutter	Any deformation/discoloration on it?
	Is it fixed to Upper Case correctly?
	Does it work smoothly?
Lamp	Any deformation/discoloration on the frame?
	Any deformation/discoloration on the connector?
	Are the screws that secure the Lamp tightened securely?
	Any dirt on the glass surface?

2.3.1 Parts Layout Diagrams

The following are the diagrams to confirm and locate the parts and/or components to be repaired. The parts names used here indicate the references linked to the page titles for their disassembling procedures.

OPTICAL PARTS

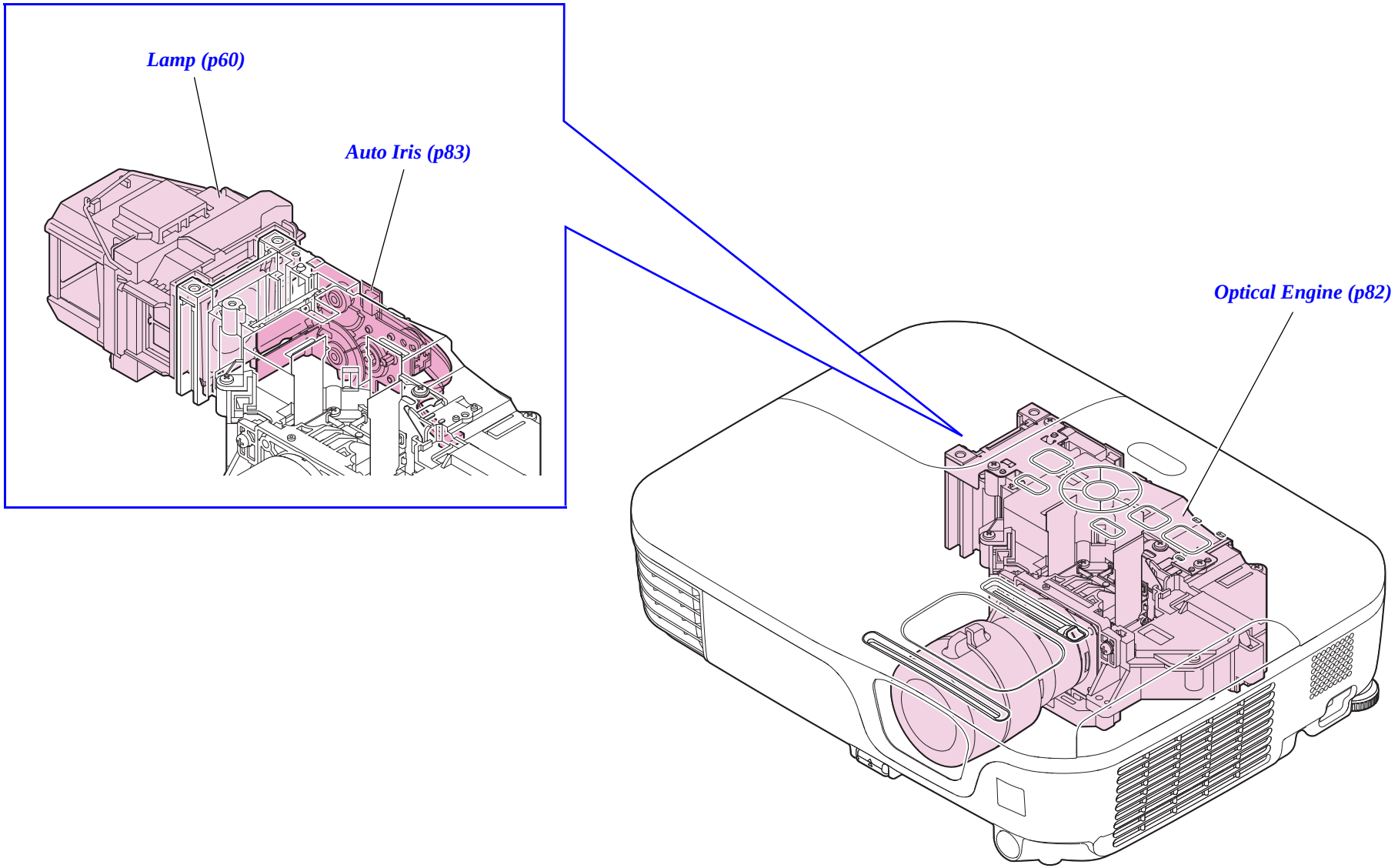


Figure 2-2.

POWER SUPPLY

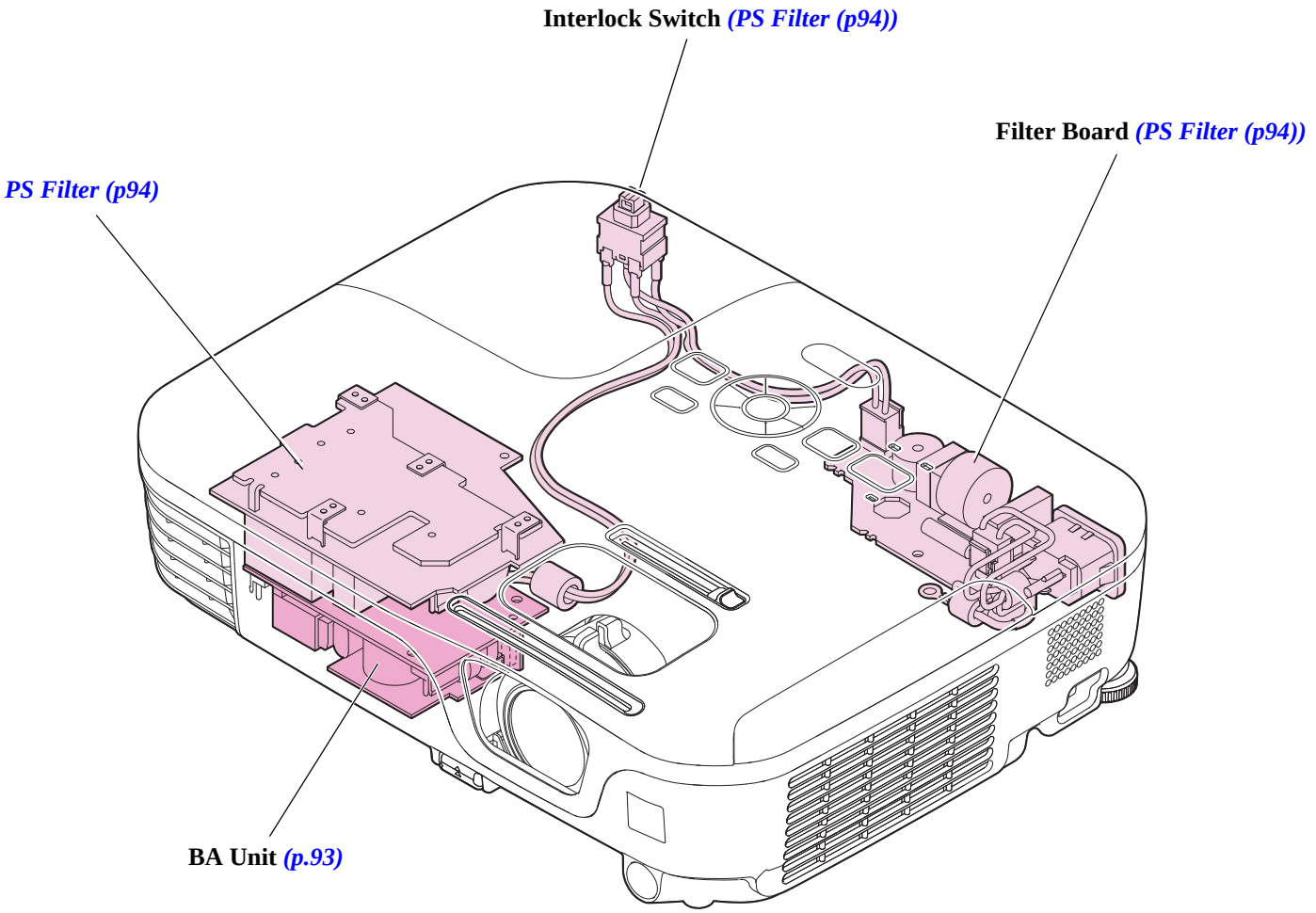


Figure 2-3.

COOLING SYSTEM COMPONENTS

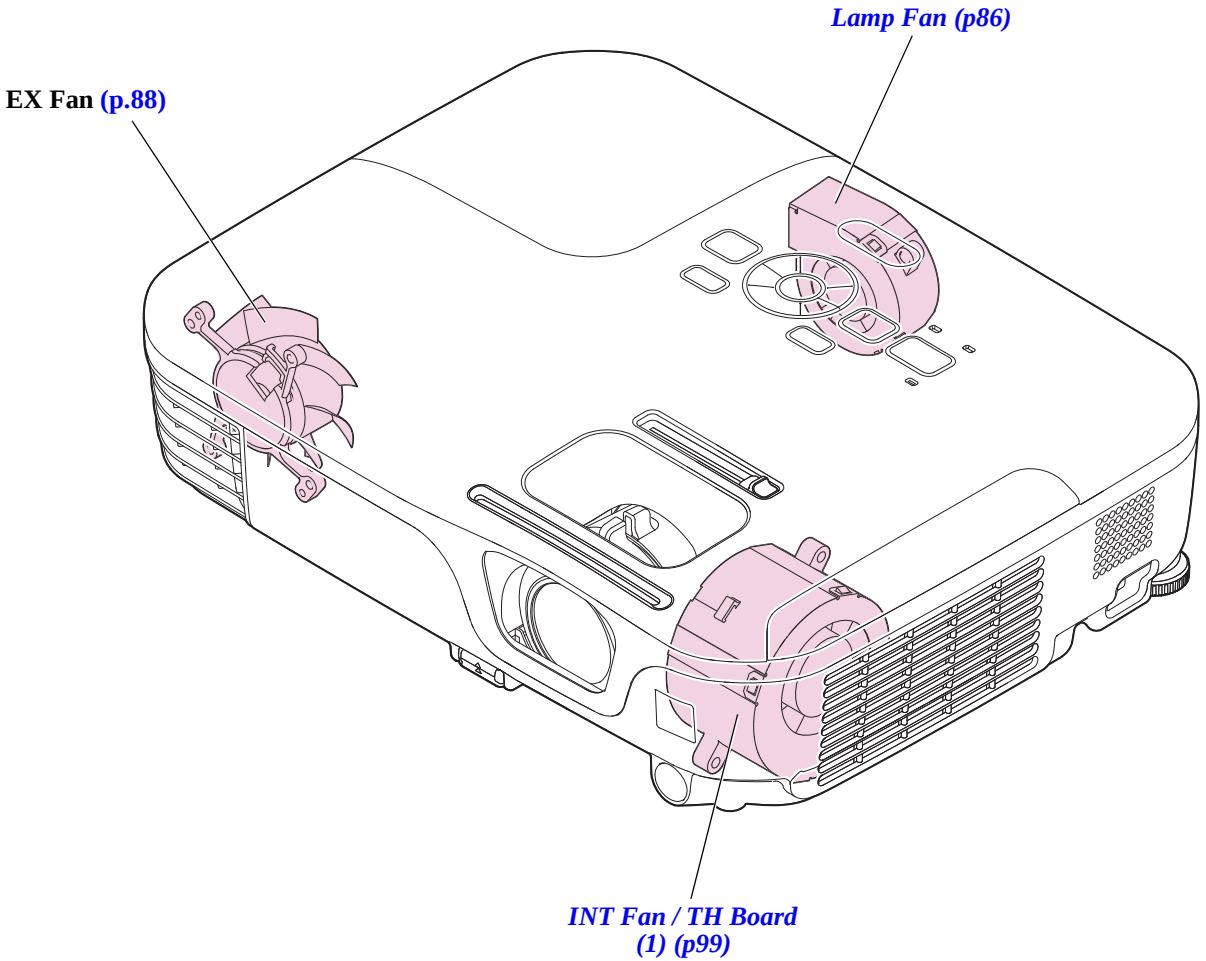


Figure 2-4.

SENSORS/SPEAKER

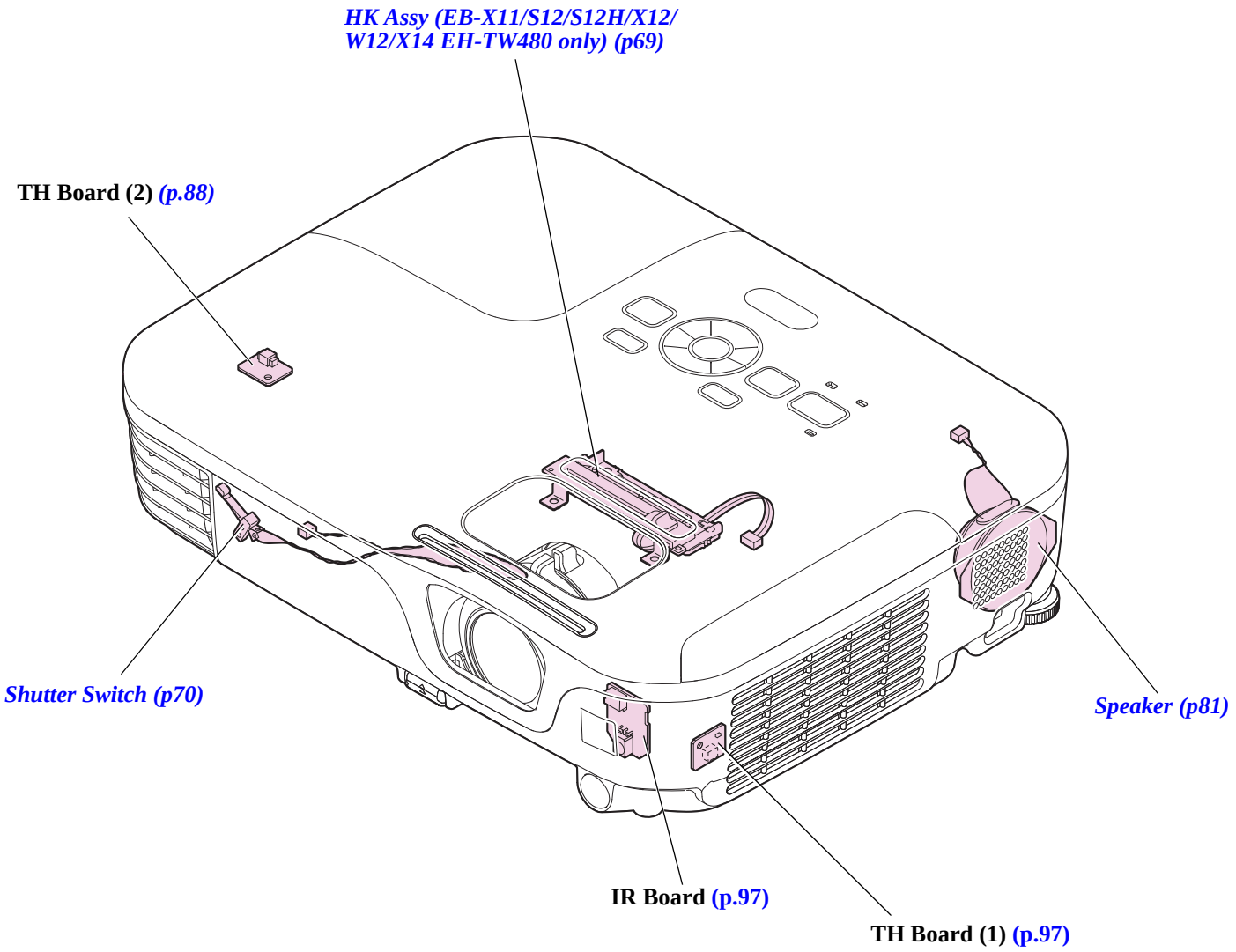


Figure 2-5.

CIRCUIT BOARDS

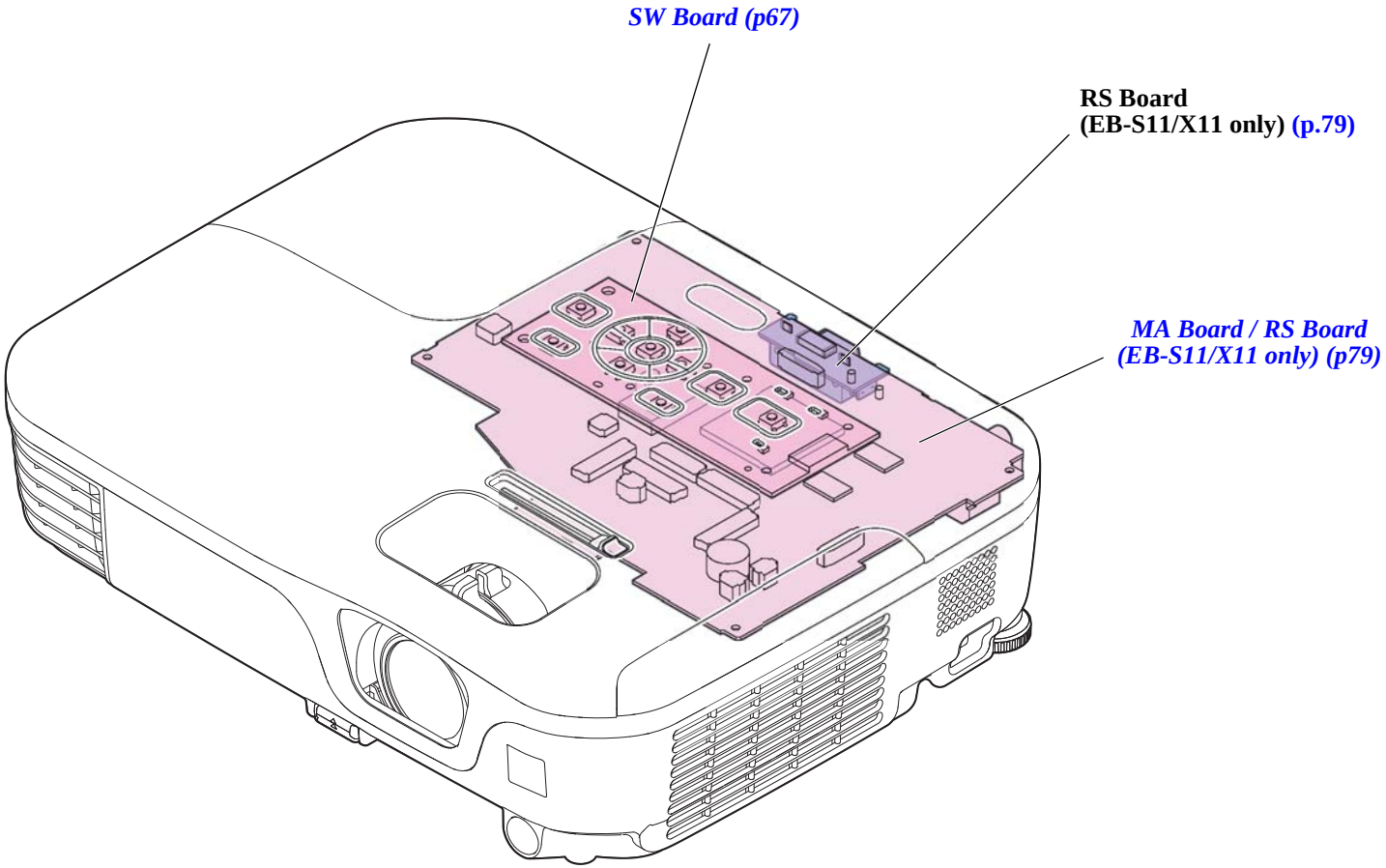


Figure 2-6.

2.4 Error Indication and Problem diagnosis

2.4.1 LED Indication

The control panel on the projector has three LEDs to indicate the projector's operation status. When errors occur, you can identify error status with those LED indications.

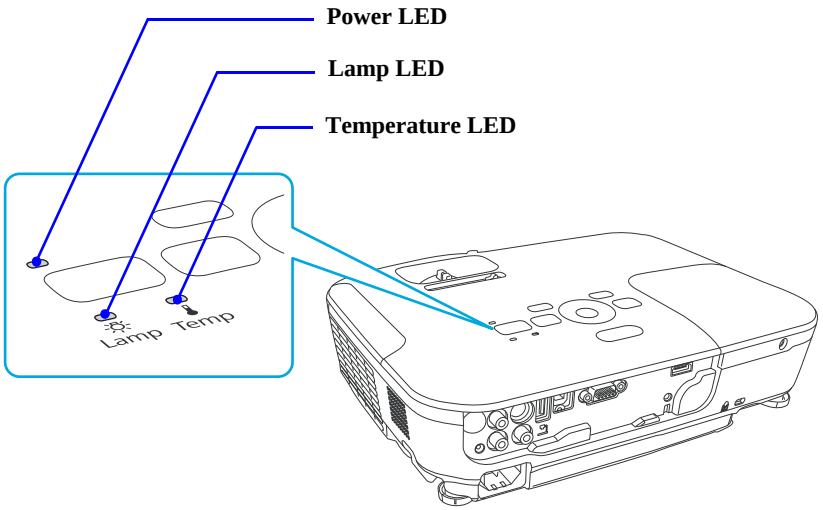


Figure 2-7. LED Indicators

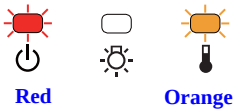
☐ Abnormal Status

ON Blink OFF

LED Status	Error	Problem/Error Status
Red	Internal error Video sub-processor error	Abnormality is detected from the elements on MA Board.
Red * Fast Blink	Internal error (RAM)	
Red Red	Fan error Sensor error	■ Abnormality is detected from a fan. ■ Abnormality is detected from a sensor.
Red Red	High Temp error (overheating)	[Phenomenon] The lamp turns off automatically, and the projection stops. If the projector has been left untouched for 5 minutes, it enters the standby mode. [Status] The internal temperature rises over the specified level.
Red	Lamp problem Lamp failure	■ Abnormality has occurred to the lamp and the ignition/illumination processes failed. ■ Lamp Cover is not securely closed.
Red	Power Supply (Ballast) error Auto Iris error	■ Abnormality is detected from Ballast. ■ Abnormality is detected from Auto Iris.

☐ Warning Status

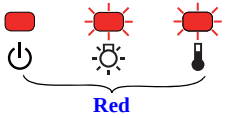
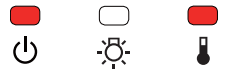
ON Blink OFF Varies according to the projector status

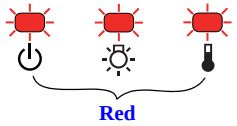
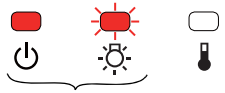
LED Status	Cause	Status/Check point
	High Temp Warning	This is not an abnormality. However, if the temperature continues to rise higher afterwards, projection stops automatically. [Remedy] ■ Check that the air filter and the exhaust vent are clear, and that the projector is not placed against a wall. ■ If the air filter is clogged, clean or replace it.
	Warning to replace Lamp	Replace the lamp with a new one.

2.4.2 Troubleshooting based on LED Indications

This section describes the LED error indications and corresponding error codes and their remedies.

ON Blink OFF

LED Status	Corresponding error code and error name		Remedy	Reference
Internal error (1)  	RO	ROM error	1. Disconnect the AC cable once, and reconnect it, then turn the power back on. 2. If the same error occurs, connect the PC to the projector and check the error code on the AS Menu, then carry out the remedy referring to the reference on the right column.	*" Troubleshooting from the Error Code on Electric Circuit Errors (p37)"*
	II	I2C error		
	ID	DR error		
	IV	Video sub-processor error		
Internal error (2)  	RA	RAM error		
Fan error Sensor error  	FN	Fan error	1. Check the connection between each fan/sensor and MA Board. If there is a connection failure, connect it correctly. 2. If the same error occurs after turning the power on, connect the PC to the projector and check the error code on the AS Menu, then carry out the remedy referring to the reference on the right column.	1. *"3.3.6 MA Board (assembly) (p74)"* 2. *" Troubleshooting from the Error Code on Cooling System Errors (p35)"*
	SE	Sensor error		
High Temp error (overheating)  	TH	High Temp error	1. Check the Air Filter's condition (dirt accumulation, clogging etc.). When clogging or similar is found, clean/replace the filter. 2. If the same error occurs after turning the power on, connect the PC to the projector and check the error code on the AS Menu, then carry out the remedy referring to the reference on the right column.	1. *"3.3.1 Air Filter (p59)"* 2. *" Troubleshooting from the Error Code on Cooling System Errors (p35)"*

LED Status	Corresponding error code and error name		Remedy	Reference
Power Supply error 	AI	Auto Iris error	Check the connection of the cables. If there is a connection failure, connect it correctly.	1. *"3.3.6 MA Board (assembly) (p74)"* 2. *" Troubleshooting from the Error Code on Electric Circuit Errors (p37)"*
	PB	Power Supply (Ballast) error		
Lamp error 	LE	Lamp burnt out	1. Check the following one by one. After checking and improving, turn on the power again and check if the same error occurs again. ■ Lamp Cover status Secure it if it is loose/open. ■ Lamp attachment Check the lamp and secure it if it is loose. ■ Lamp status (whether the lamp is broken/damaged.) Take out and check the lamp for damage. • If the lamp is not cracked: Re-fit the lamp and turn on the power. If the error continues, replace the lamp with a new one. • If the lamp is broken/damaged, replace it with a new one. ■ Air Filter's condition (dirt accumulation, clogging, etc.) When clogging or similar is found, clean or replace the filter. ■ When using the projector at an altitude of 1500 m or more, set “High Altitude Mode” to “On”. 2. If the same error occurs after turning the power on, connect the PC to the projector and check the error code on the AS Menu, then carry out the remedy referring to the reference on the right column.	1. *"3.3.2 Lamp (p60)"* *"3.3.1 Air Filter (p59)"* 2. *" Troubleshooting from the Error Code on Lamp Errors (p34)"*
	LF	Lamp failure		

2.4.3 Troubleshooting from the Error Codes

If the projection does not start for some reasons, connect your PC to the service terminal so as to display the AS menu and check the error code. To display the AS Menu, see the following: *"5.1 AS (After Service) Menu (p139)"*

This section explains the troubleshooting from the error codes displayed on the AS (after service) Menu to carry out their necessary repair.

Display the AS Menu and switch it to the Error Log window to check the error code, and locate its remedy from the table below and carry it out.

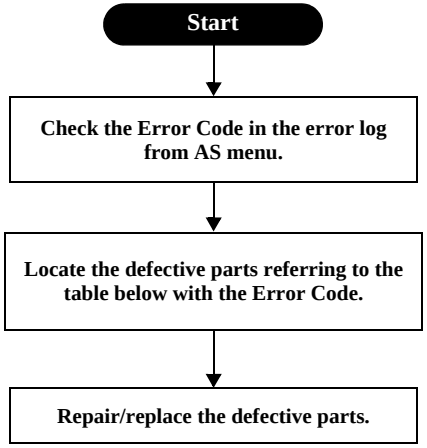


Figure 2-8. Flowchart of Troubleshooting

TROUBLESHOOTING FROM THE ERROR CODE ON LAMP ERRORS

Error code/error name		Faulty part/part name	Cause	Remedy	Reference
LE	Lamp Burnt Out error	Lamp	Lamp is broken.	Replace Lamp.	*"3.3.2 Lamp (p60)"*
		BA Unit	BA Unit is broken.	Replace BA Unit.	*"3.3.11.1 BA Unit / SCI Cable (p93)"*
		Air Filter	Air Filter is clogging.	Clean Air Filter. Replace it if not improved.	*"3.3.1 Air Filter (p59)"*
		PS Filter	PS Filter is broken.	Replace PS Filter.	*"3.3.11.2 PS Filter (p94)"*
		Safety Switch (AC Cable)	Safety Switch (AC Cable) is broken.		
LF	Lamp Failure	Lamp	Abnormality of the bulb (arc tube) has occurred.	Replace Lamp.	*"3.3.2 Lamp (p60)"*
			Lamp is broken.		
		BA Unit	BA Unit is broken.	Replace BA Unit.	*"3.3.11.1 BA Unit / SCI Cable (p93)"*
			Instability of the BA Unit's drive waveform has occurred.		
		PS Filter	PS Filter is broken.	Replace PS Filter.	*"3.3.11.2 PS Filter (p94)"*

TROUBLESHOOTING FROM THE ERROR CODE ON COOLING SYSTEM ERRORS

Error code/error name		Faulty part/part name	Cause	Remedy	Reference
TH	Overheat error	Air Filter	Air Filter is clogging.	Clean Air Filter. Replace it if not improved.	*"3.3.1 Air Filter (p59)"*
		■ TH Board (1)/(2) ■ TH Cable	TH Board is broken.	Replace the broken TH Board.	• *"2.4.6 Cable Connection and Projector's Status (p46)"* • *"3.3.6 MA Board (assembly) (p74)"* • *"3.3.10.1 TH Board (2) / EX Fan (p88)"* • *"3.3.12.1 IR Board (p97)"*
			TH Cable is not connected properly.	Connect the cable to MA Board correctly.	
			TH Cable is broken.	Replace the broken cable.	
		Exterior Parts	Vent's status became worse. (dirt accumulation/clogging/deformation)	Clean the vent to remove the foreign material.	• *"3.3.5 Upper Case (assembly) (p62)"* • *"3.3.13 Lower Case (p101)"*
				Replace the parts with deformed vent.	
		MA Board	Elements for temperature control on MA Board are broken.	If the error continues after carrying out the remedies above, the related circuit on MA Board is broken, so replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*
FN	Fan error	■ EX Fan ■ Lamp Fan ■ INT Fan	The fan cable is not connected properly.	Connect the fan cable correctly.	• *"3.3.10.1 TH Board (2) / EX Fan (p88)"* • *"3.3.9 Lamp Fan (p86)"* • *"3.3.12.2 INT Fan / TH Board (1) (p99)"*
			The fan cable is broken.	Replace the Fan with the broken cable with a new one.	
			Blades are broken.	Replace the fan with the broken blades with a new one.	
			Revolutions of the fan has become abnormal.	Replace the abnormal fan.	
			Accumulation of dust has occurred on the fan.	Clean the fan with foreign material to remove it.	
		MA Board	Elements for temperature control on MA Board are broken.	If the error continues after carrying out the remedies above, the related circuit on MA Board is broken, so replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*

Error code/error name		Faulty part/part name	Cause	Remedy	Reference
SE	Sensor error	■ TH Board (1)/(2) ■ TH Cable	TH Board is broken.	Replace the broken TH Board.	• *"2.4.6 Cable Connection and Projector's Status (p46)"* • *"3.3.6 MA Board (assembly) (p74)"* • *"3.3.10.1 TH Board (2) / EX Fan (p88)"* • *"3.3.12.1 IR Board (p97)"*
			TH Cable is not connected properly.	Connect the cable to MA Board correctly.	
			TH Cable is broken.	Replace the broken cable.	
		MA Board	Elements for temperature control on MA Board are broken.	If the error continues after carrying out the remedies above, the related circuit on MA Board is broken, so replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*

TROUBLESHOOTING FROM THE ERROR CODE ON ELECTRIC CIRCUIT ERRORS

Error code/error name		Faulty part/part name	Cause	Remedy	Reference
RA	Internal error RAM	MA Board	RAM has become abnormal.	Replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*
RO	Internal error ROM		MA Board is broken.		
			Flash ROM has become deteriorated.		
II	Internal error I2C	Input AC power supply	Instability of the input AC Power Supply. (an external factor)	If not appropriate, request the customer to improve such instability.	
		Environment (Temperature of the customer's operating environment)	Access timing error (occurs in a low temperature environment (Y43series))	If not appropriate, request the customer to improve the usage environment.	
ID	Internal error DR	MA Board	MA Board is broken.	Replace MA Board.	
IV	Video sub-processor error				
AI	Auto Iris error	Auto Iris	The cable is not connected properly.	Connect the cable correctly to MA Board.	• *"2.4.6 Cable Connection and Projector's Status (p46)"* • *"3.3.6 MA Board (assembly) (p74)"*
			Auto Iris is broken.	Replace Auto Iris.	*"3.3.8.1 Auto Iris (p83)"*
		MA Board	MA Board is broken.	Replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*
PB	Power Supply (Ballast) error	BA Unit	BA Unit is broken.	Replace BA Unit.	• *"2.4.6 Cable Connection and Projector's Status (p46)"* • *"3.3.6 MA Board (assembly) (p74)"* • *"3.3.11.1 BA Unit / SCI Cable (p93)"*
		SCI Cable	The cable is not connected properly.	Connect the SCI cable to BA Unit and MA Board correctly.	
			SCI Cable is broken.	Replace the broken cable.	

2.4.4 Troubleshooting without Error Indications

This section provides troubleshooting procedures based on observed faults.

TROUBLESHOOTING AT POWER-ON

Error Status	Faulty part/part name	Cause	Remedy	Reference
The projector does not operate at all. (Power indicator does not light up orange.)	SW Board	SW Cable is not connected properly.	Connect the cable to MA Board correctly.	*"3.3.5.1 SW Board (p67)"*
		SW Board is broken.	Replace SW Board.	
	PS Filter	Cable is not connected properly.	Connect the cable to MA Board correctly.	• *"2.4.6 Cable Connection and Projector's Status (p46)"* • *"3.3.6 MA Board (assembly) (p74)"* • *"3.3.11.2 PS Filter (p94)"*
		PS Filter is broken.	Replace PS Filter.	
	Interlock Switch (AC Cable)	The Interlock Switch cable is broken.		
	MA Board	MA Board is broken.	Replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*

TROUBLESHOOTING ON IMAGE DISPLAY & QUALITY

Error Status	Faulty part/part name	Cause	Remedy	Reference
No image is projected. (Lamp is lighting.)	Input video signal	The selected input video cable is not connected correctly.	Connect the selected input video cable correctly.	---
	MA Board	Video Input terminal is broken.	Replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*
Focus cannot be adjusted.	Focus Ring	Focus Ring is broken.	Replace Focus Ring.	*"3.3.8.2 Focus Ring / Zoom Ring (p85)"*
	Projection Lens (Optical Engine)	Projection Lens is broken.	Replace Optical Engine.	*"3.3.8 Optical Engine (p82)"*
Zoom cannot be adjusted.	Zoom Ring	Zoom Ring is broken.	Replace Zoom Ring.	*"3.3.8.2 Focus Ring / Zoom Ring (p85)"*
	Projection Lens (Optical Engine)	Projection Lens is broken.	Replace Optical Engine.	*"3.3.8 Optical Engine (p82)"*

Error Status	Faulty part/part name	Cause	Remedy	Reference
Horizontal Keystone cannot be adjusted.	HK Assy (EB-X11/S12/S12H/X12/ W12/X14/ EH-TW480 only)	HK Assy cable is not connected properly.	Connect the cable to MA Board correctly.	*"3.3.5.2 HK Assy (EB-X11/S12/S12H/X12/ W12/X14 EH-TW480 only) (p69)"*
		HK Assy cable is broken.	Replace HK Assy.	
		HK Assy is broken.		
	MA Board	MA Board is broken.	Replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*
Black part of image is reddish.	Optical Engine	FPC for L/V (R) is not connected properly.	Connect FPC for L/V (R) to MA Board correctly.	• *"2.4.6 Cable Connection and Projector's Status (p46)"* • *"3.3.6 MA Board (assembly) (p74)"* • *"3.3.8 Optical Engine (p82)"*
		FPC for L/V (R) is broken.	Replace Optical Engine.	
	MA Board	MA Board is broken.	Replace MA Board.	
Black part of image is greenish.	Optical Engine	FPC for L/V (G) is not connected properly.	Connect FPC for L/V (G) to MA Board correctly.	
		FPC for L/V (G) is broken.	Replace Optical Engine.	
	MA Board	MA Board is broken.	Replace MA Board.	
Black part of image is blueish.	Optical Engine	FPC for L/V (B) is not connected properly.	Connect FPC for L/V (B) to MA Board correctly.	
		FPC for L/V (B) is broken.	Replace Optical Engine.	
	MA Board	MA Board is broken.	Replace MA Board.	
Abnormality can be seen on the projected image.	Optical parts	Deterioration, mal-alignment, or contamination of the optical part(s).	Clean or replace the optical part(s).	*"2.4.5 Troubleshooting on image abnormality (p44)"*
			Replace Optical Engine.	*"3.3.8 Optical Engine (p82)"*

TROUBLESHOOTING ON AUDIO INPUT/OUTPUT

Error Status	Faulty part/part name	Cause	Remedy	Reference
Sound does not come out.	Input Audio cables	Cable is not connected properly.	Connect the input audio cable correctly.	---
		Cable is broken.	Replace the broken input audio cable.	---
	Speaker	Speaker cable is not connected properly.	Connect Speaker cable to MA Board correctly.	• *"2.4.6 Cable Connection and Projector's Status (p46)"* • *"3.3.6 MA Board (assembly) (p74)"* • *"3.3.7 Speaker (p81)"*
		Cable is broken.	Replace Speaker.	
		Speaker is broken.		
	MA Board	Input terminal is broken.	If the error continues after carrying out the remedies above, the related circuit on MA Board is broken, so replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*
		Elements for audio control on MA Board are broken.		

TROUBLESHOOTING ON OPERATION ABNORMALITY

Error Status	Faulty part/part name	Cause	Remedy	Reference
Operation using Remote Controller cannot be made.	Remote Controller	Batteries have run out.	Replace the batteries with new ones.	---
		Remote Controller is broken.	Replace Remote Controller.	---
	RC Filter	RC Filter is dirty.	Clean RC Filter. If not improved, replace RC Filter.	*"3.3.6 MA Board (assembly) (p74)"*
	IR Board	IR Board is broken.	Replace IR Board.	• *"2.4.6 Cable Connection and Projector's Status (p46)"* • *"3.3.6 MA Board (assembly) (p74)"* • *"3.3.12.1 IR Board (p97)"*
	RC Cable	Cable is not connected properly.	Connect the cable between IR Board and MA Board correctly.	
		Cable is broken.	Replace the cable.	
	MA Board	Elements for remote control on MA Board are broken.	If the error continues after carrying out the remedies above, the related circuit on MA Board is broken, so replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*
Operation using Control Panel cannot be made.	SW Board	SW Board is broken.	Replace SW Board.	• *"2.4.6 Cable Connection and Projector's Status (p46)"* • *"3.3.6 MA Board (assembly) (p74)"* • *"3.3.5.1 SW Board (p67)"*
	■ SW Button ■ SW Selection Button	SW Button or SW Selection Button is not fixed properly or broken.	Re-assemble the SW Button or SW Selection Button. Replace it if it is broken.	
	SW Cable	Cable is not connected properly.	Connect the cable correctly.	
		Cable is broken.	Replace the cable.	
	MA Board	Elements for operation control on MA Board are broken.	If the error continues after carrying out the remedies above, the related circuit on MA Board is broken, so replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*
LED does not light. (Power can turn on.)	SW Board	SW Board is broken.	Replace SW Board.	• *"2.4.6 Cable Connection and Projector's Status (p46)"* • *"3.3.6 MA Board (assembly) (p74)"* • *"3.3.5.1 SW Board (p67)"*
	SW Cable	Cable is not connected properly.	Connect the cable correctly.	
		Cable is broken	Replace the cable.	
	MA Board	Elements for LED display on MA Board are broken.	If the error continues after carrying out the remedies above, the related circuit on MA Board is broken, so replace MA Board.	*"3.3.6 MA Board (assembly) (p74)"*

Error Status	Faulty part/part name	Cause	Remedy	Reference
RS-232 cannot be used. (EB-S11/X11 only)	RS Board	RS Board is broken.	Replace RS Board.	"3.3.6.2 MA Board / RS Board (EB-S11/X11 only) (p79)"
	RC Cable (for RS Board)	Cable is not connected properly.	Connect the cable between RS Board and MA Board correctly.	
		Cable is broken.	Replace the cable.	

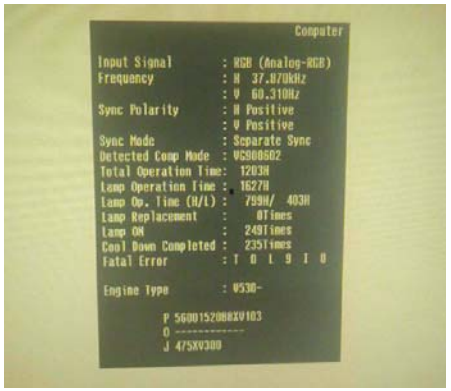
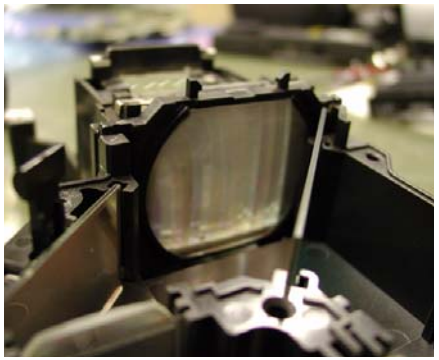
TROUBLESHOOTING ON OTHER ABNORMALITY

Error Status	Faulty part/part name	Cause	Remedy	Reference
Smoke/Abnormal odor	Lamp	Burn on dust from heat.	Clean the area around Lamp to remove dust or the like.	*"3.3.2 Lamp (p60)"*
	Cable	Burn on cables from heat.	If burn on cables has occurred, replace them with new ones.	
	■ PS Filter ■ BA Unit	Burn on a circuit board from heat.	Replace PS Filter or BA Unit.	• *"3.3.11.2 PS Filter (p94)"* • *"3.3.11.1 BA Unit / SCI Cable (p93)"*
Abnormal noises	PS Filter	Pulse transformer is vibrating abnormally.	Replace PS Filter.	• *"3.3.11.2 PS Filter (p94)"* • *"3.3.11.1 BA Unit / SCI Cable (p93)"*
	BA Unit	BA Unit is vibrating abnormally.	Replace BA Unit.	
	■ EX Fan ■ Lamp Fan ■ INT Fan	Foreign material has stuck on a fan.	Clean the fan to remove foreign material.	• *"3.3.10.1 TH Board (2) / EX Fan (p88)"* • *"3.3.9 Lamp Fan (p86)"* • *"3.3.12.2 INT Fan / TH Board (1) (p99)"*
		Fan is touching other parts.	Check if a fan touches other parts. In such a case, correct its installation.	
		Fan's impeller is broken.	Replace the broken fan with a new one.	
	Operating parts	Screws are loose or has been fallen off.	Tighten the screws or reassemble the parts.	---

2.4.5 Troubleshooting on image abnormality

This section describes this projector's possible troubles in image quality, and provides identification and troubleshooting procedures based on the observed phenomena.

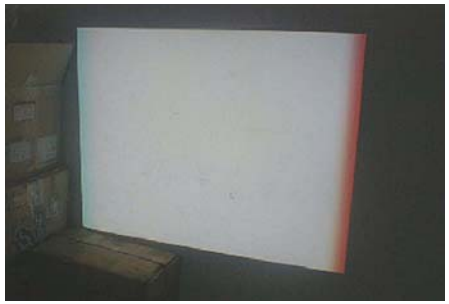
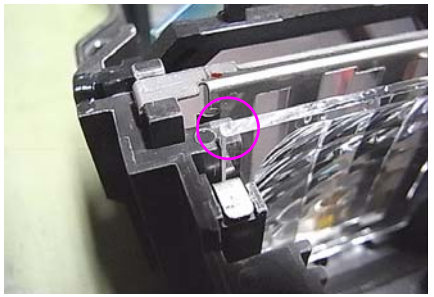
Illumination reduction

Phenomenon	Defective part/part name	Cause	Remedy	Reference
The projected image became darker. 	■ CONDENSER LENS; D/FB/FG2/R ■ BDM/GDM ■ Mirror;R ■ MULTI LENS;A	Some optical parts might mist for some reasons. 	Clean the lenses, mirrors with a nonwoven fabric wiper or cotton bud moistened with ethanol.	• *"4.2.2 CONDENSER LENS;D/FB/FG2/R (p125)"* • *"4.2.3 BDM/GDM (p129)"* • *"4.2.4 MIRROR;R (p131)"* • *"4.2.6 MULTI LENS;A (p135)"*

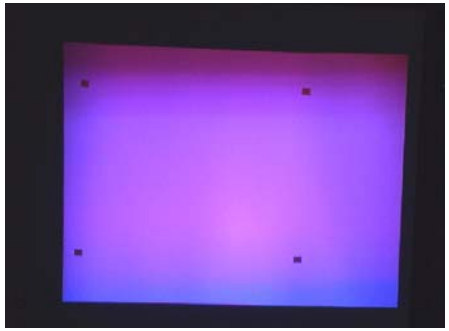
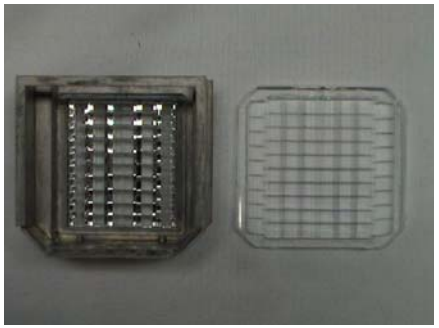
COLOR NON-UNIFORMITY

Phenomenon	Defective part/part name	Cause	Remedy	Reference
Color non-uniformity can be seen partially in the projected image. 	■ N POLARIZER UNIT;B/R ■ PBS MASK ASSY.2	■ Some optical parts may become deteriorated due to the prolonged usage. ■ Some optical parts may be broken. 	Replace the defective parts with new ones.	• *"4.2.1 N POLARIZER UNIT;B/R (p122)"* • *"4.2.5 PBS MASK ASSY.2 (p133)"*

COLOR BANDING (SHADOW)

Phenomenon	Defective part/part name	Cause	Remedy	Reference
There occur “shadows”* on the right and left side.  * “Shadow” is a vertical color banding appearing on the left or right side.	MULTI LENS;A	Some optical parts may be displaced due to some shock or the like. 	Re-assemble the defective parts. If the phenomenon not improved, replace the part with a new one. If the phenomenon not improved, replace the Optical Engine.	• *"4.2.6 MULTI LENS;A (p135)"* • *"3.3.8 Optical Engine (p82)"*

ABNORMAL IMAGE

Phenomenon	Defective part/part name	Cause	Remedy	Reference
Some abnormality can be seen in the projected image. 	■ MULTI LENS;A ■ PBS MASK ASSY.2	Some optical parts may be detached. 	Re-assemble the defective parts. If the phenomenon not improved, replace the part with a new one.	• *"4.2.6 MULTI LENS;A (p135)"* • *"4.2.5 PBS MASK ASSY.2 (p133)"*

2.4.6 Cable Connection and Projector's Status

This section describes the projector's status when a disconnection has occurred somewhere between the parts/units and the MA Board. Refer to the following table and check the doubted connectors are securely connected. If there is a disconnection or a loose connection, connect it correctly.

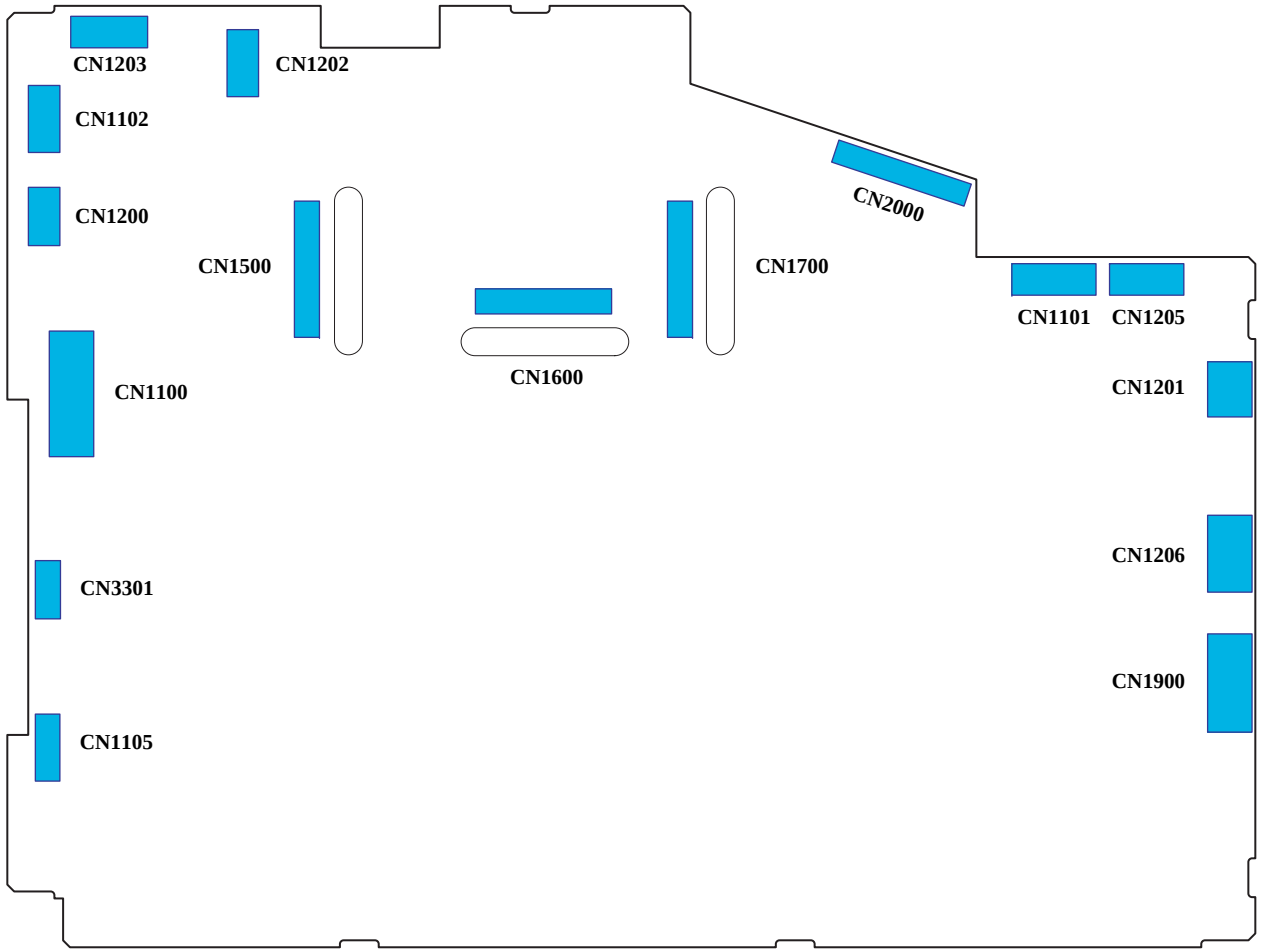


Figure 2-9. Connector layout of the MA Board

MAL-CONNECTION ON EACH CONNECTOR (MA Board)

Connector No.	Destination	Error Information		Status	Reference
		Code	Name		
CN1500	Optical Engine (L/V(R))	---	---	When pressing the power button, initialization starts normally, then the projection starts. But the black part of the projected image is reddish.	*"Troubleshooting on image Display & Quality (p.38)"*
CN1600	Optical Engine (L/V(G))			When pressing the power button, initialization starts normally, then the projection starts. But the black part of the projected image is greenish.	
CN1700	Optical Engine (L/V(B))			When pressing the power button, initialization starts normally, then the projection starts. But the black part of the projected image is bluish. (This phenomenon cannot be easily recognized on Logo screen or No Signal screen; therefore try displaying the menu or the like to check for it.)	
CN1900	Auto Iris	AI	Auto Iris error	The power can turn on and Power LED lights orange. When pressing the power button, the error message about Auto Iris is displayed on the screen, and advises the user to turn off the power and to contact the Epson Service. When pressing the power button, the LEDs indicate the warning and after a certain period of cooling the power turns off automatically with two beeps into error stand-by status. The LED Indicator's warning display continues until unplugging the AC cable.	*"Troubleshooting from the Error Code on Electric Circuit Errors (p.37)"*
CN1101	BA Unit (SCI Cable)	PB	Power Supply (Ballast) error	The power can turn on and Power LED lights orange. When pressing the power button, initialization starts but instantly the projector changes into the Power Supply (Ballast) Error status. After a certain period of cooling, the power turns off automatically with two beeps into error standby status. The LED Indicator's warning display continues until unplugging the AC cable.	*"Troubleshooting from the Error Code on Electric Circuit Errors (p.37)"*
CN2000	PS Filter	---	---	When the AC cable is connected, the power LED does not light orange. The power button does not work or power cannot turn on.	*"Troubleshooting at Power-ON (p.38)"*
CN1102	IR Board	---	---	When pressing the power button, initialization starts normally, then the projection starts. But the control from the front cannot be made. The control from the rear is still effective.	*"Troubleshooting on Operation Abnormality (p.41)"*
CN1202	HK Assy (EB-X11/S12/ S12H/X12/W12/ X14/EH-TW480 only)	---	---	When pressing the power button, initialization starts normally, then the projection starts. But the horizontal keystone is automatically corrected to a certain point and a distorted image is projected. Horizontal Keystone adjustment cannot be made.	*"Troubleshooting on image Display & Quality (p.38)"*
CN1100	SW Board	---	---	When the AC cable is connected, the power LED does not light orange. The power button does not work or power cannot turn on.	• *"Troubleshooting at Power-ON (p.38)"* • *"Troubleshooting on Operation Abnormality (p.41)"*

Connector No.	Destination	Error Information		Status	Reference
		Code	Name		
CN1105	RS Board (EB-S11/X11 only)	---	---	When pressing the power button, initialization starts normally, then the projection starts. But the RS-232 cannot be used.	*"Troubleshooting on Operation Abnormality (p.41)"*
CN1200	TH Board (1)	SE	Sensor error	Sensor error occurs while initializing, and LEDs indicate the error, then the projector turns into the abnormal stand-by status.	*"Troubleshooting from the Error Code on Cooling System Errors (p.35)"*
CN1201	TH Board (2)				
CN1203	INT Fan	FN	Fan error	Fan error occurs while initializing and LEDs indicate the error, then the projector turns into the abnormal stand-by status.	
CN1205	EX Fan				
CN1206	Lamp Fan				
CN3301	Speaker	---	---	When pressing the power button, initialization starts normally, then the projection starts. Audio controller on screen display appears, but no sound is output from the speaker even if the audio input is applied.	*"TroubleShooting on Audio Input/Output (p.40)"*

2.5 Operation and Safety Check after repair

INITIALIZATION CHECK

After repairing this product, carry out the following initialization check. When repairing a Safety Device, refer to “ 3.4 Safety Check after Servicing (p103)” and carry out the necessary procedure for safety.

Procedure	Check item
1. Connect the power cable.	Does the [Power] LED light orange?
2. Press the [Power] button on the projector.	Does the [Power] LED flash green, then light green?
	Does the lamp light?

2.5.1 Each Operation Check

When repairing this product, carry out the check for each operation if necessary.

OPERATION CHECK FOR SW BOARD/HK ASSY

After repairing SW Board/HK Assy, carry out the check below following the instructions. (See *" Troubleshooting on Operation Abnormality (p41)"*.)

Procedure	Check item
1. Press the [Power] button on the projector to turn it on. 2. Check all the buttons on SW Board if they work properly. 3. Check HK assy whether it works properly.	Does the [Power] button switch on/off the projector?
	Does the [Source Search] button switch the sources?
	Does the [Menu] button display/close the menu?
	Does the [Keystone] button correct vertical keystone?
	Does the [Esc] button stop the current function?
	Does the [Enter] button determine the setting you made?
	Does the [Help] button display/close the help menu?
	Does HK Assy correct horizontal keystone?

OPERATION CHECK FOR REMOTE CONTROLLER

After repairing the remote controller, carry out the check below following the instructions. (See *" Troubleshooting on Operation Abnormality (p41)"*.)

Procedure	Check item
1. Press the [Power] button on the remote controller to turn the projector on.	Does the [Power] button on the controller switch on/off the projector?
2. Check all the buttons on the remote controller if they work properly.	Do all the buttons function correctly?
3. Check if the front and rear receivers work properly.	Can the remote controller work from the front/rear of the projector?

OPERATION CHECK FOR VIDEO INPUT/OUTPUT

After repairing the parts related with video input/output, carry out the check below following the instructions. (See *" Troubleshooting on image Display & Quality (p38)"*.)

Procedure	Check item
1. Set the projector on an even workbench. 2. Press the [Power] button to turn the power ON. 3. Adjust the projection angle with Foot. 4. Adjust the focus with Focus Ring. 5. Adjust the image size with Zoom Ring. 6. Adjust keystone with the [Keystone] buttons and HK Assy. 7. From the menu, select [Position] and adjust the image position.	■ Does the lamp light? ■ Is the image projected after the lamp lit? ■ Is “No Signal” message displayed on the screen? ■ Are focusing and zooming available? ■ Do the rings smoothly work?
8. Connect all the IF cables and display an image. 9. Press the [Source Search] button, and select the corresponding source.	■ Is the image of the selected input source projected? ■ Is image vivid enough?
10. Check the [A/V Mute] function by pressing the [A/V Mute] button on Remote Controller.	Is the image turned on/off?

OPERATION CHECK FOR AUDIO INPUT/OUTPUT

After repairing the parts related with audio input/output, carry out the check below following the instructions. (See *" TroubleShooting on Audio Input/Output (p40)"*.)

Procedure	Check item
1. Connect your PC to Video and Audio inputs of MA Board. 2. Press the [Source Search] button and switch to the corresponding source. 3. Input audio signal to the projector from your PC, and output sound from the built-in speaker.	■ Does sound come out from Speaker? ■ Can you control the volume with the volume buttons on Remote Controller?
4. Check the [A/V Mute] function by closing/opening Lens Shutter. 5. Check the [A/V Mute] function by pressing the [A/V Mute] button on the remote controller.	Is sound turned on/off?

INTERNAL CABLE CONNECTION CHECK

WARNING

Be sure to turn off the power switch and pull out the power cable from the projector before checking.

When replacing/removing MA Board, make sure to check all the cables are connected correctly referring to “ 2.4.6 Cable Connection and Projector’s Status (p46)”.

CHAPTER

3

DISASSEMBLY AND ASSEMBLY

3.1 Precautions

This section describes cautions before starting disassembling and assembling this product. Make sure to read the precautions below before starting.

3.1.1 General Cautions in operation

General cautions for disassembling and assembling this product are provided below. Cautions for each procedure are provided in its corresponding section. Make sure to refer to them before starting.

⚠WARNING

- **Do not touch the lamp or the parts around it. They are extremely hot even after the cooling down operation completed. If any maintenance work inside the projector is necessary soon after the projector is in operation, leave the unit until it becomes cool enough before performing maintenance work.**
- **Never use the air blowers such as a lens cleaner, etc. that contain flammable gas in repair/maintenance work.**

⚠CAUTION

- **Do not disassemble any components not as specified in this Service Manual.**
- **The Optical Engine, the circuit boards are very sensitive to static electricity; therefore, be sure to take appropriate measures to prevent static destruction such as to place them inside static-proof bags once they have been removed from the projector.**
- **The Optical Engine is very sensitive to vibration and shocks; therefore, make sure to handle it with care.**
- **The speaker unit contains a permanent magnet; therefore, make sure to keep it away from any storage media such as floppy disks or magnetic cards.**
- **Be careful not to drop a metal part such as a screw, a washer, or a clip into the inside of the product. If such cases should occur accidentally, never turn on the power supply until all the dropped parts are found and removed.**

⚠CAUTION

- **When carrying out any of the following operations, check that there is no dust or dirt on any component or on any glass surface before installation. If any contamination is found, clean it off using isopropyl alcohol.**
  - **Optical Engine removal**
  - **Lamp removal**
- **When the projector is disassembled, the dust in and around parts (such as those on the fans or air filter) may get transferred to other parts such as the R, G and B light valves which are the central part of the display mechanism. This may have an adverse effect on the quality of projected images. Accordingly, be sure to check whether any of the parts are dusty or dirty, and use a vacuum cleaner to clean them first before carrying out disassembly/reassembly work.**
- **After reassembling the product, check the followings before turning the power on.**
  - **All the parts and screws are installed and secured to the proper positions.**
  - **No cables are caught in the metal frames.**

3.1.2 Precautions

The precautions given below must be always observed whenever disassembling/ reassembling the projector to ensure the safety of service personnel and maintain the quality.

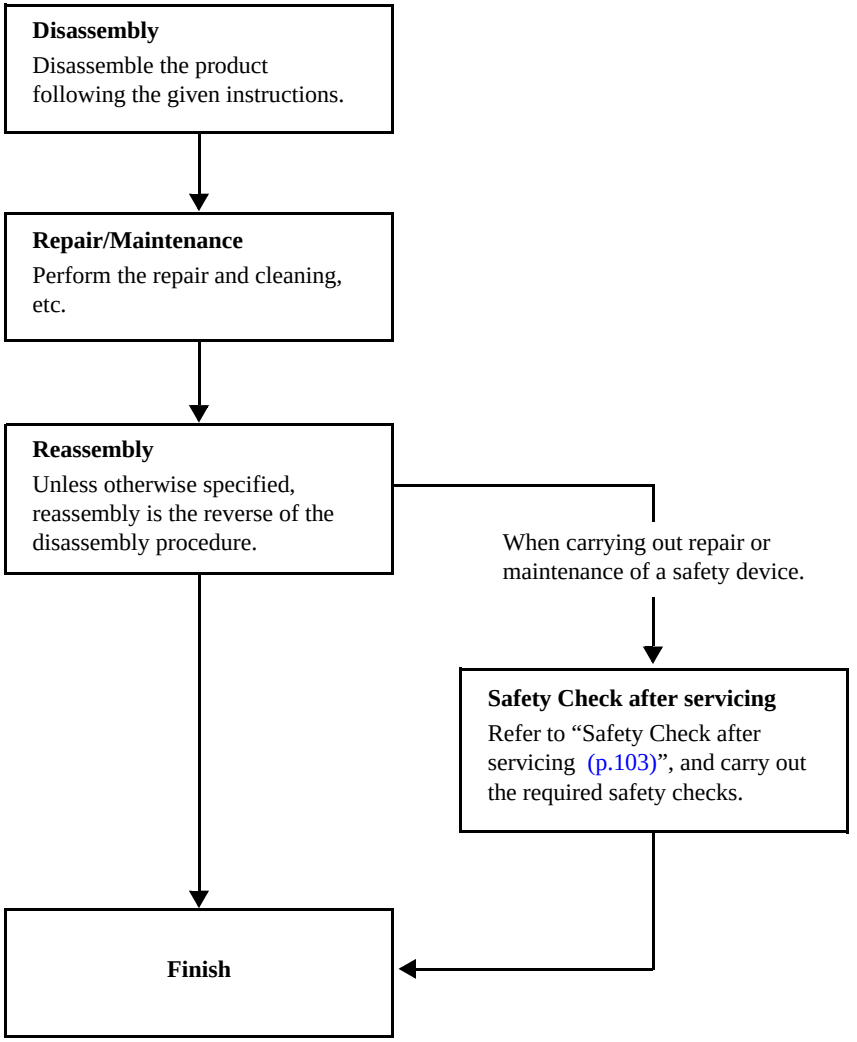
⚠WARNING

- **Do not wear the metal products such as a wrist watch, cuff buttons, rings, tie-pin etc. to avoid getting into an unsafe state due to touching the projector.**
- **When disassembling/assembling the projector, be sure to turn off the power switch and pull out the power cable from the projector beforehand.**

⚠CAUTION

- **When disassembling/assembling the projector, be sure to wear the gloves and static discharge equipment such as an anti-static wrist strap and a mat. When replacing the circuit component such as a board or the optical engine, be sure to contact the anti-static case containing the new one to the metal part of this product before taking it out.**
- **Disconnect all the interface cables from the projector.**
- **Before disassembling the projector, make sure to clean dust or dirt on the air filter, the interface section and outer cases using a vacuum cleaner or the like.**
- **When treating the non-after-service-parts as an assembly in this section, they are indicated as "Upper Case (assembly)".**

3.1.3 Workflow



3.1.4 Standard Operation Time

The standard operation time for each operation is provided at the beginning of each part. Use the time as a guideline for actual operation.

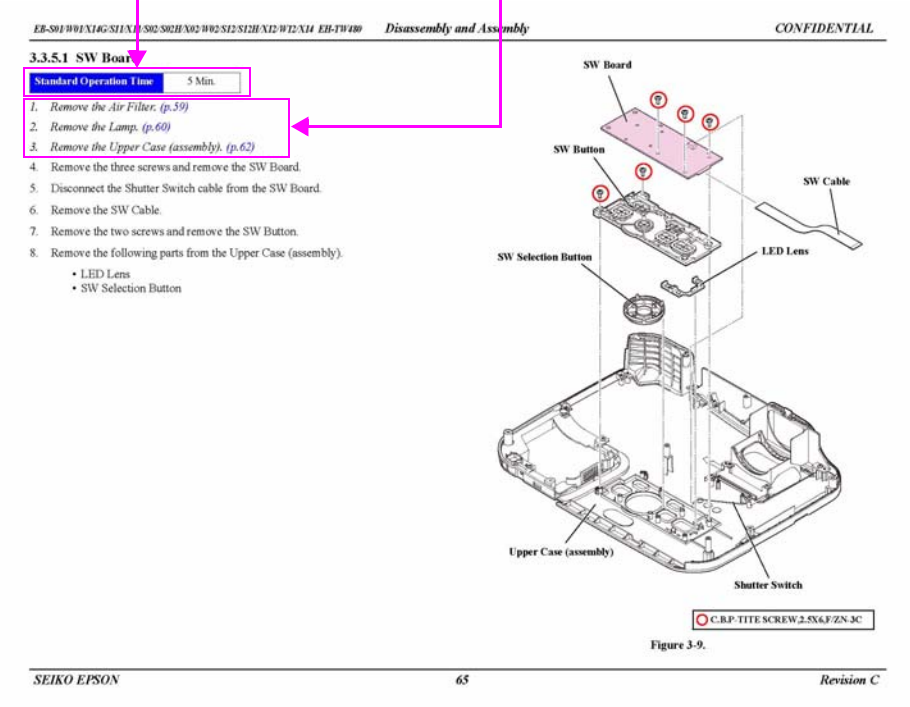
☐ Basis for the standard operation time

- ■ A service employee would have sufficient knowledge for the target product's structure, and be able to disassemble/reassemble the product without any reference to guide books.
- ■ Each operation time is the total time of disassembling/removing the target part following the given shortest procedure, and reassembling it.

☐ Guide to the standard operation time

Standard Operation Time:
The total time to disassemble/ reassemble the target part following the shortest procedure.

Shortest Procedure:
The shortest way to remove the target part.



3.1.5 Tools

The following table indicates the tools recommended for the use of disassembly, reassembly and adjustment.

Tool Name	Qt.	Application
Phillips screwdriver No. 00 (8 cm)	1	Disassembling the focus ring and the zoom ring
Phillips screwdriver No. 0 (8 cm)	1	Disassembling the outer cases and inner components
Phillips screwdriver No. 1 (10 cm)	1	
Phillips screwdriver No. 2 (10 cm)	1	
Hexagonal box screwdriver (5 mm)	1	Removing the computer interface
Tweezers	1	Removing the Air Filter Cover Band and disassembling the Front Foot
Heat-resistant tape	q.s.*1	Securing cables. Use commercially available Polyimide tape generally called "KAPTON® TAPE".
Brush	1	Cleaning away dust
Vacuum cleaner	1	Cleaning away dust
Lens cleaner	q.s.*1	Cleaning the projection lens
Gloves	1 pair	---
Anti-static wrist band	1	---
Lubricant *2	q.s.*1	Lubricating the shutter and its frame. (See Shutter Switch (p.70))

Note : *1 q.s.: Sufficient quantity

*2 Specified Lubricant: G-78 (AQUADRY W-0082)

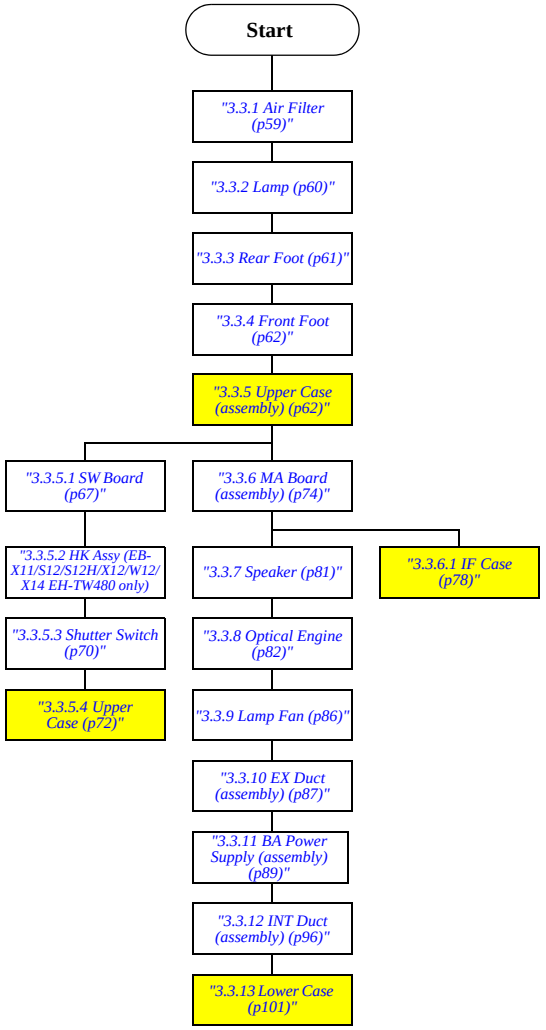
3.2 Flowchart

The general disassembly procedure for the EB-S01/W01/X14G/S11/X11/S02/S02H/X02/W02/S12/S12H/X12/W12/X14 EH-TW480 projectors is illustrated in flowchart below. Unless otherwise specified, all reassembly should be carried out by following the disassembly procedures in reverse, therefore reassembling procedures are omitted.

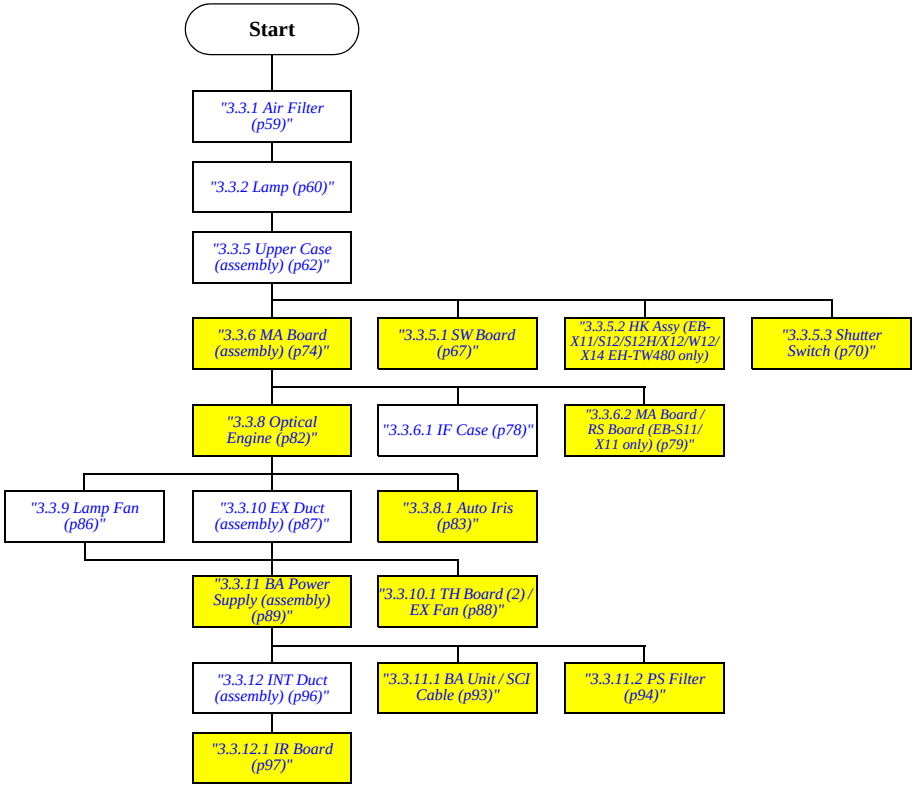
- **The part names in this chapter are simplified. See the "Reference (Part Names given in the SPI) (p.116)" for the corresponding official names.**
- **The parts in yellow are target parts in their category. They are explained in details in the corresponding sections so as to reach the parts in the shortest way.**
- **The parts in white are those which are required to be removed to reach the parts in yellow.**

CONSUMABLES/OPTIONS

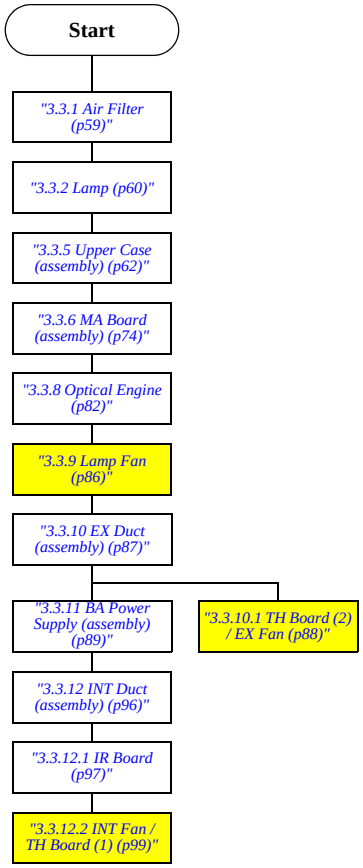
HOUSINGS



ELECTRIC CIRCUIT PARTS/OPTICAL PART



COOLING MECHANISM DEVICES



3.3 Disassembly

This section explains one of the shortest ways to reach the target part to repair. The parts to be removed in advance are indicated in italic with their reference pages, so remove those parts referring to their pages before starting.

3.3.1 Air Filter

Standard Operation Time	1 Min.

1. Open the Air Filter Cover.
2. Remove the Air Filter.
3. Release the hooks of the Air Filter Cover Band using tweezers or a similar tool, and then remove the Air Filter Cover.

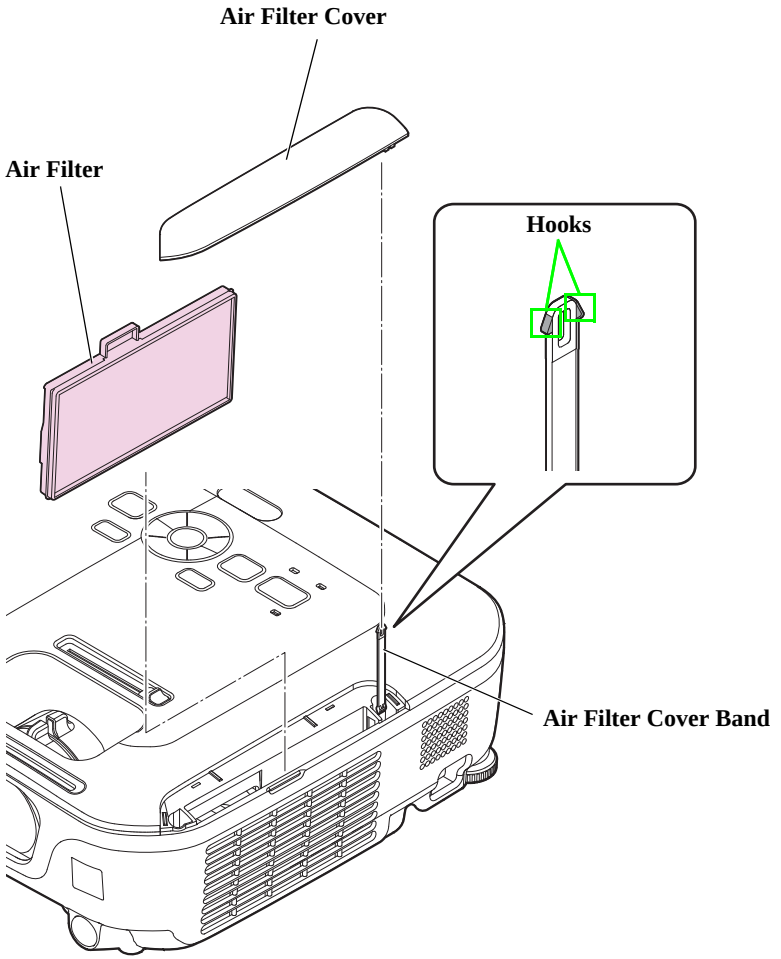


Figure 3-1.

3.3.2 Lamp

Standard Operation Time	- Min.

Safety device	**This part is designated as the Safety Device.When removing/ replacing the part for repair, be sure to refer to "3.4 Safety Check after Servicing (p.103)". According to the instructions in it, handle the part and perform the procedure after servicing.**

1. Loosen the screw and remove the Lamp Cover.

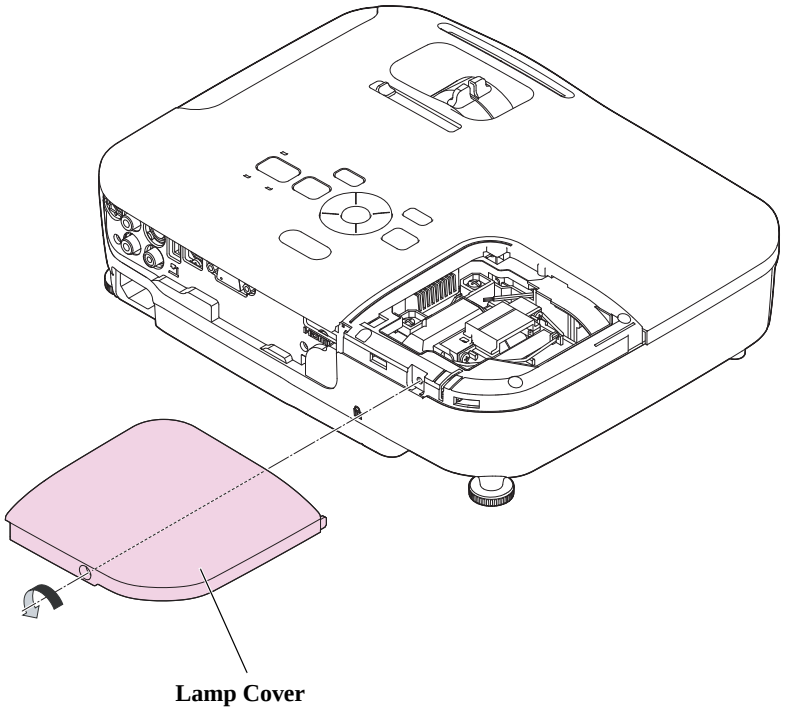


Figure 3-2.

2. Loosen the two screws and remove the Lamp.

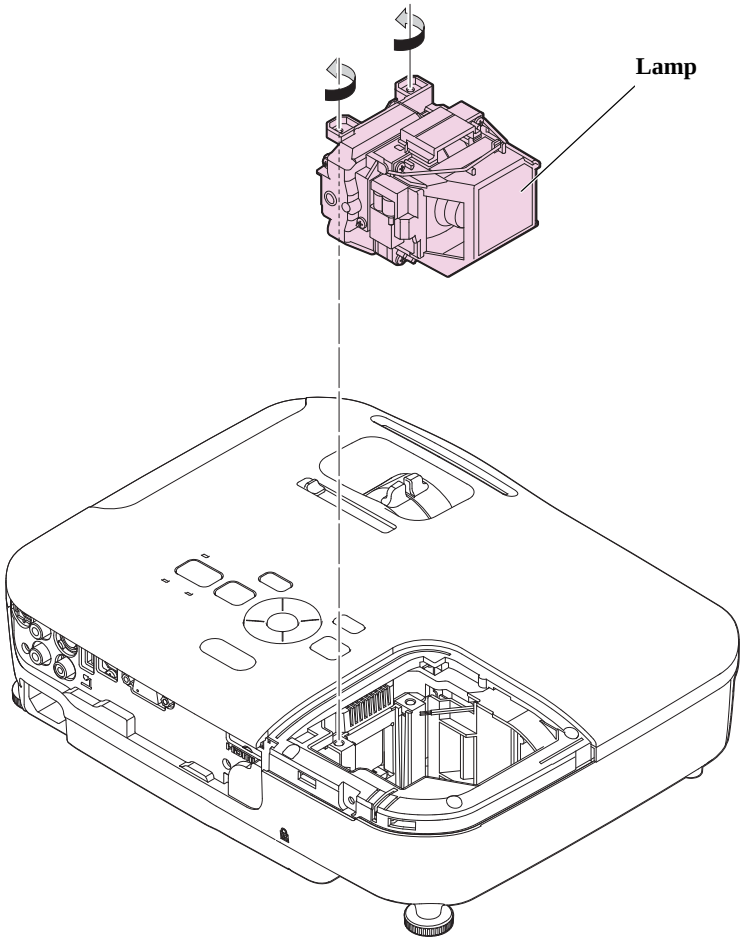


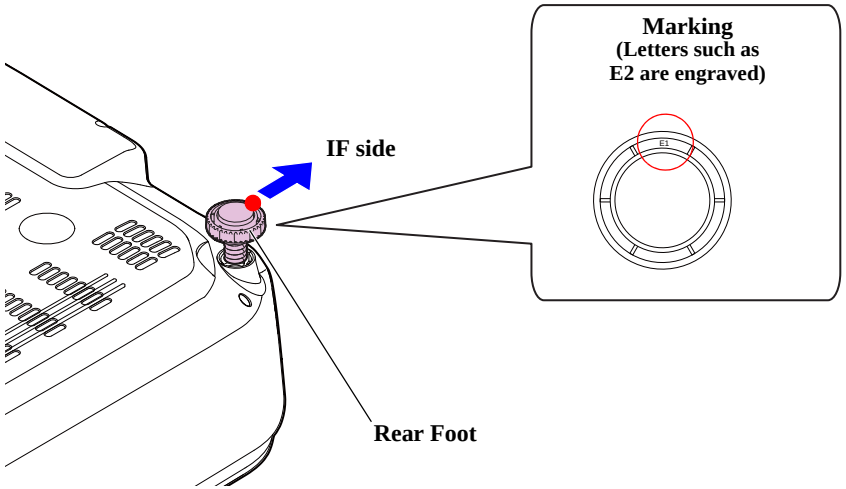
Figure 3-3.

3.3.3 Rear Foot

Standard Operation Time	1 Min.

CAUTION

When removing the Rear Foot, make sure to align the marking on the bottom to the IF side first, and then pull the foot out. Since there are two hooks on the screw part of the foot, aligning them to the grooves on the screw hole of the Lower Case before removal will prevent damage to the Rear Foot.



1. Turn the Rear Foot counterclockwise and pull the foot out to remove it.

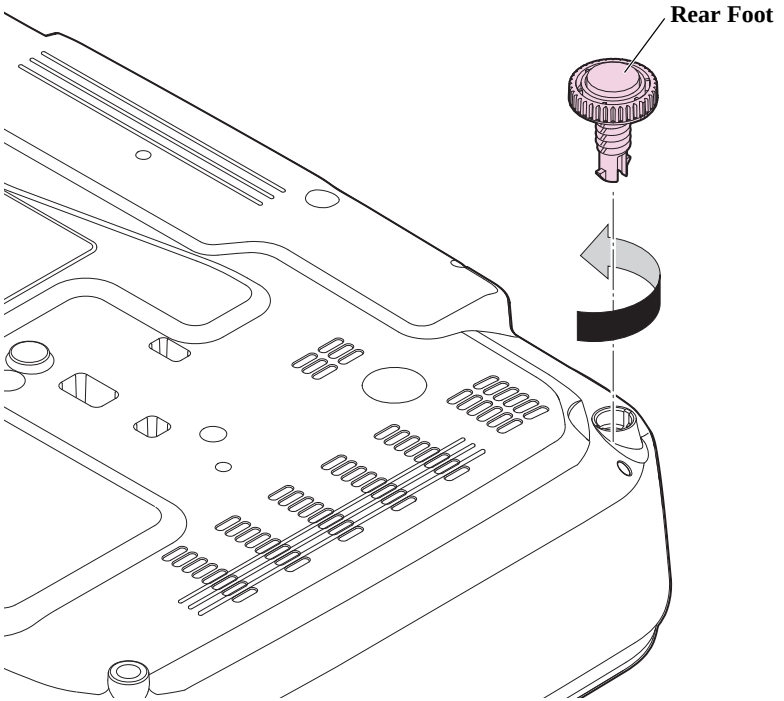


Figure 3-4.

2. Remove the Foot Rubber from the Rear Foot.

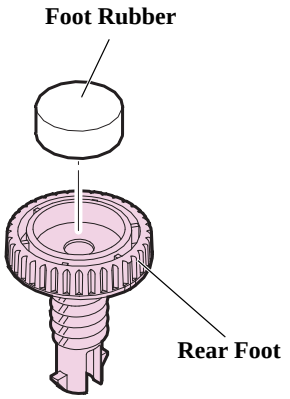


Figure 3-5.

3.3.4 Front Foot

Standard Operation Time	1 Min.

1. Insert the tips of tweezers or a similar tool into the holes on both sides of the Front Foot to release the hooks, and remove the Front Foot.

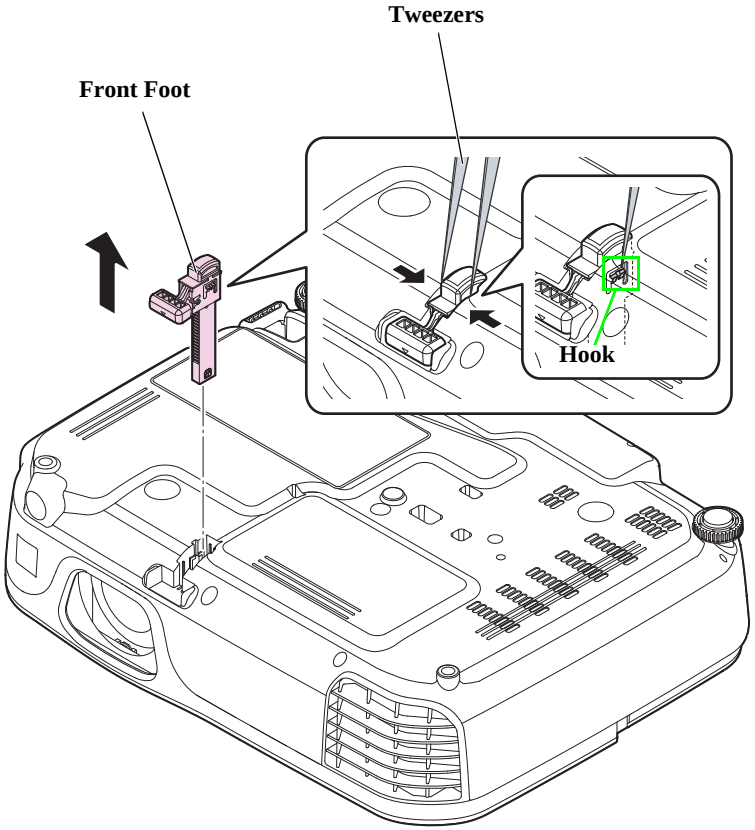
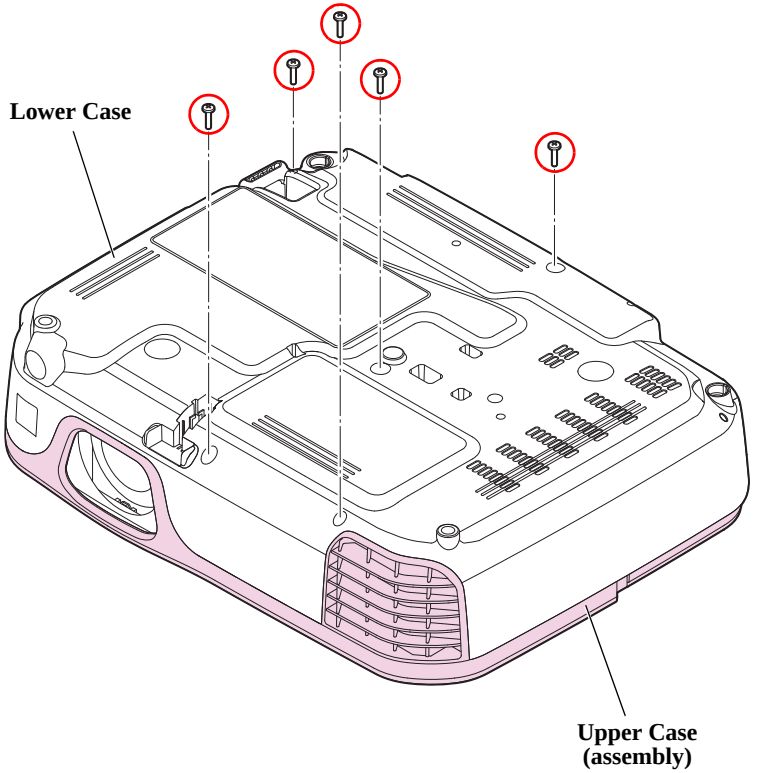


Figure 3-6.

3.3.5 Upper Case (assembly)

Standard Operation Time	4 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. Remove the five screws on the bottom of the projector.

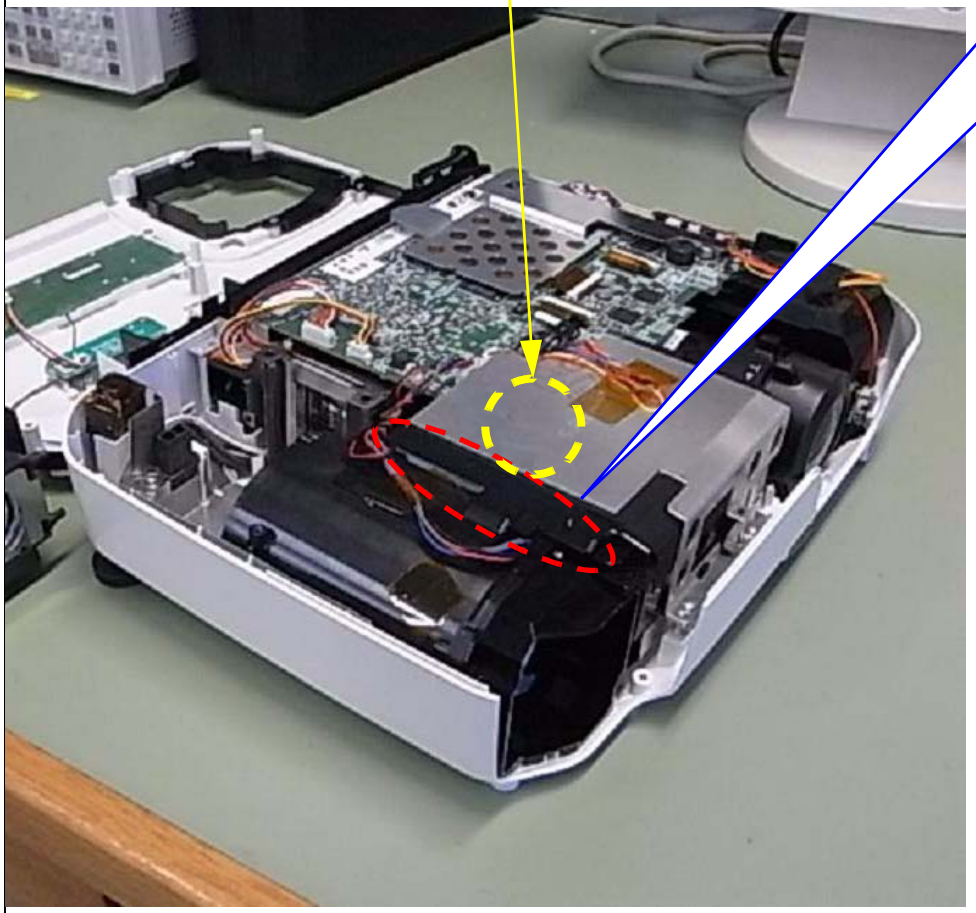


◯ C.B.P-TITE SCREW,2.5X10,F/ZN-3C

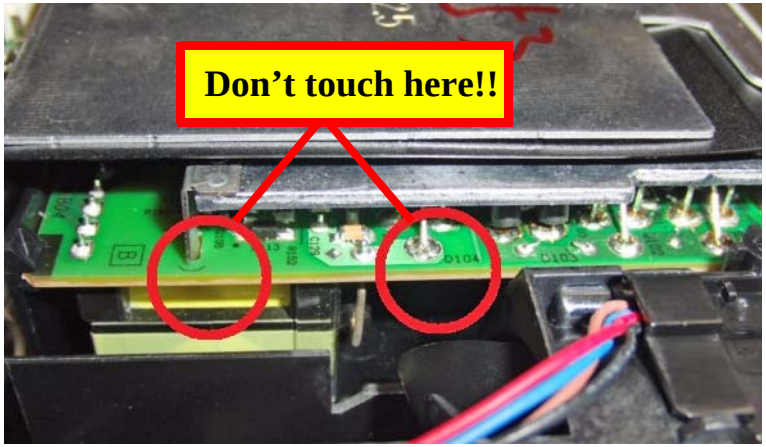
Figure 3-7.

⚠WARNING

■ **After removing the Upper Case, DO NOT TOUCH the red-circled points shown in the figure because a high voltage is applied there.**



[Nichicon Board’s Case]

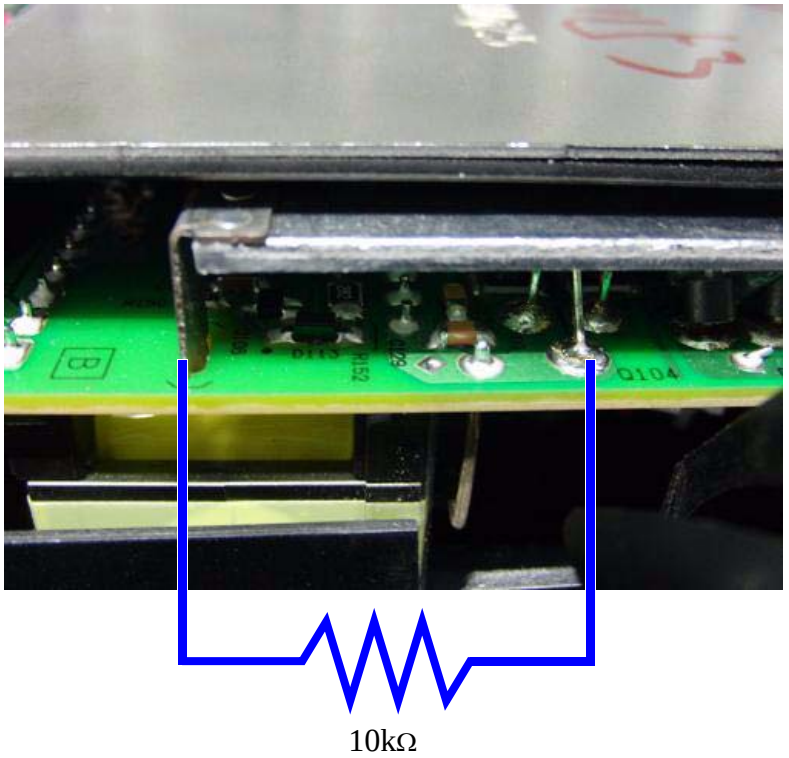


[Panasonic Board’s Case]

⚠WARNING

■ **Example of removing electricity**

1. **Unplug the AC cable and remove the Upper Case and PS Duct.**
2. **Connect the two terminals shown below through a 10 kOhm resistance. (Electric discharging will take about 10 seconds.)**
3. **After the resistance connected in Step 2 is removed, measure the voltage between the two terminals. Restart the work after making sure the voltage drops below 60V.**



- **When working, make sure to wear insulated gloves such as rubber gloves and pay attention not to get electric shock.**
- **When connecting the terminals, use crocodile clips and make sure to securely connect them.**

⚠ CAUTION

In the next step, make sure not to pull away the Upper Case (assembly) too far because the cables are connected to the case.

4. Remove the five screws on top (Upper Case side).
5. Disconnect the SW Cable and the cable of HK Assy from the MA Board, and remove the Upper Case (assembly).
6. Remove the Model Plate from the Upper Case (assembly).

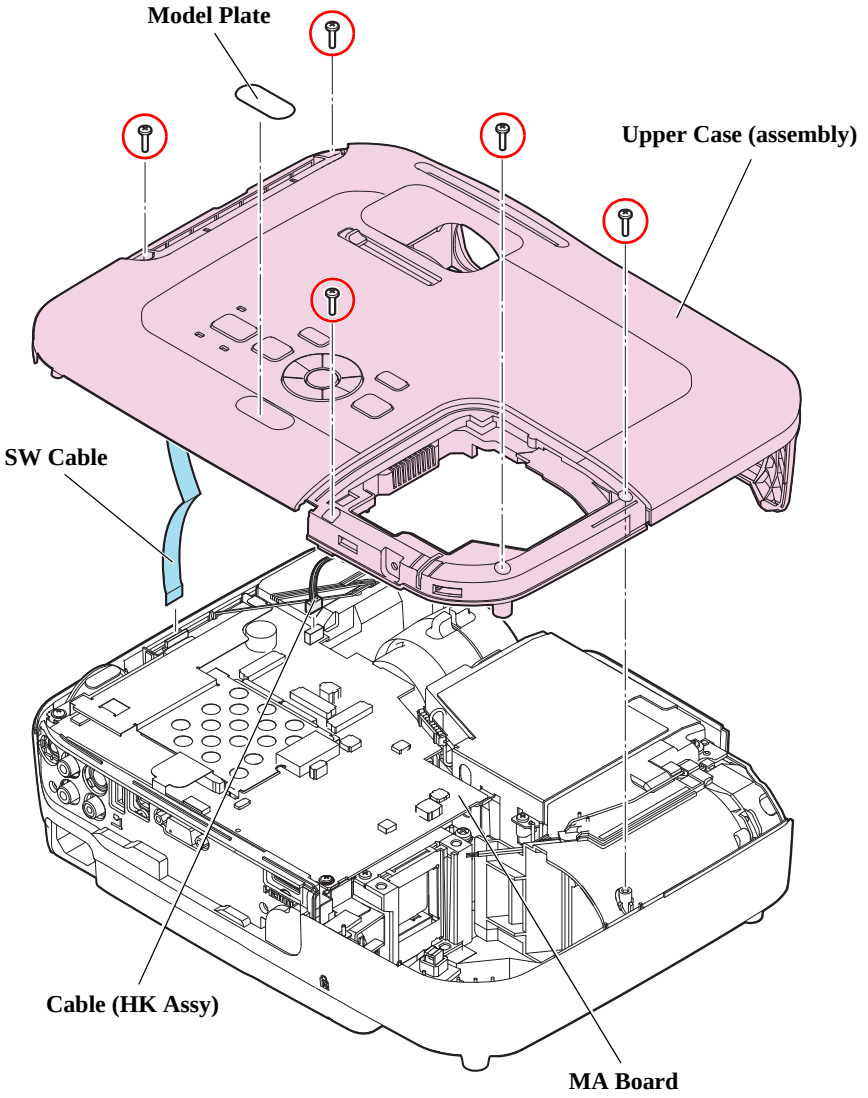


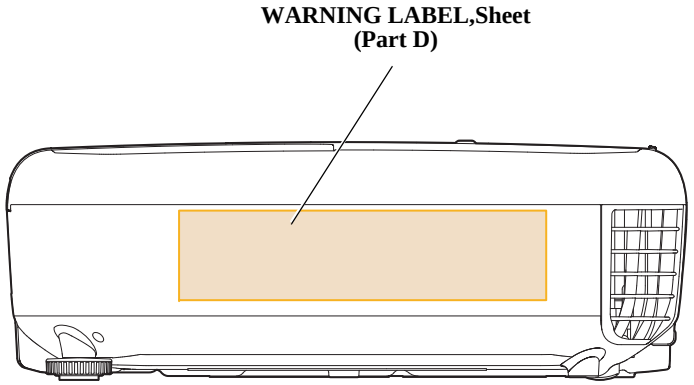
Figure 3-8.

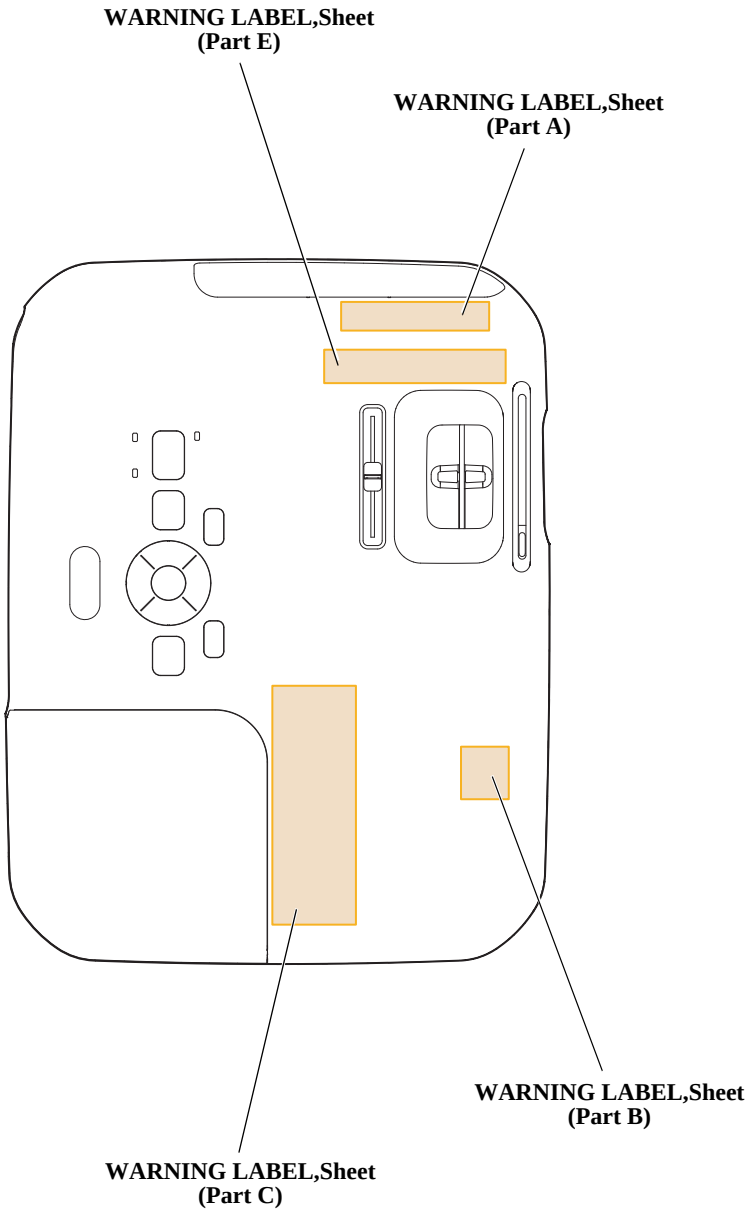
☐ Checking Caution Labels

Safety device	**These parts (Caution Labels) are designated as Safety Devices. When removing/replacing the part for repair, be sure to refer to "3.4 Safety Check after Servicing (p.103)". According to the instructions in it, handle the part and perform the procedure after servicing.**

CAUTION
When replacing the Upper Case (with caution labels attached), make sure to transfer the labels to the new one.

Check if all the caution label is attached on the location shown below.





3.3.5.1 SW Board

Standard Operation Time	5 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. Remove the three screws and remove the SW Board.
5. Disconnect the Shutter Switch cable from the SW Board.
6. Remove the SW Cable.
7. Remove the two screws and remove the SW Button.
8. Remove the following parts from the Upper Case (assembly).
   - LED Lens
   - SW Selection Button

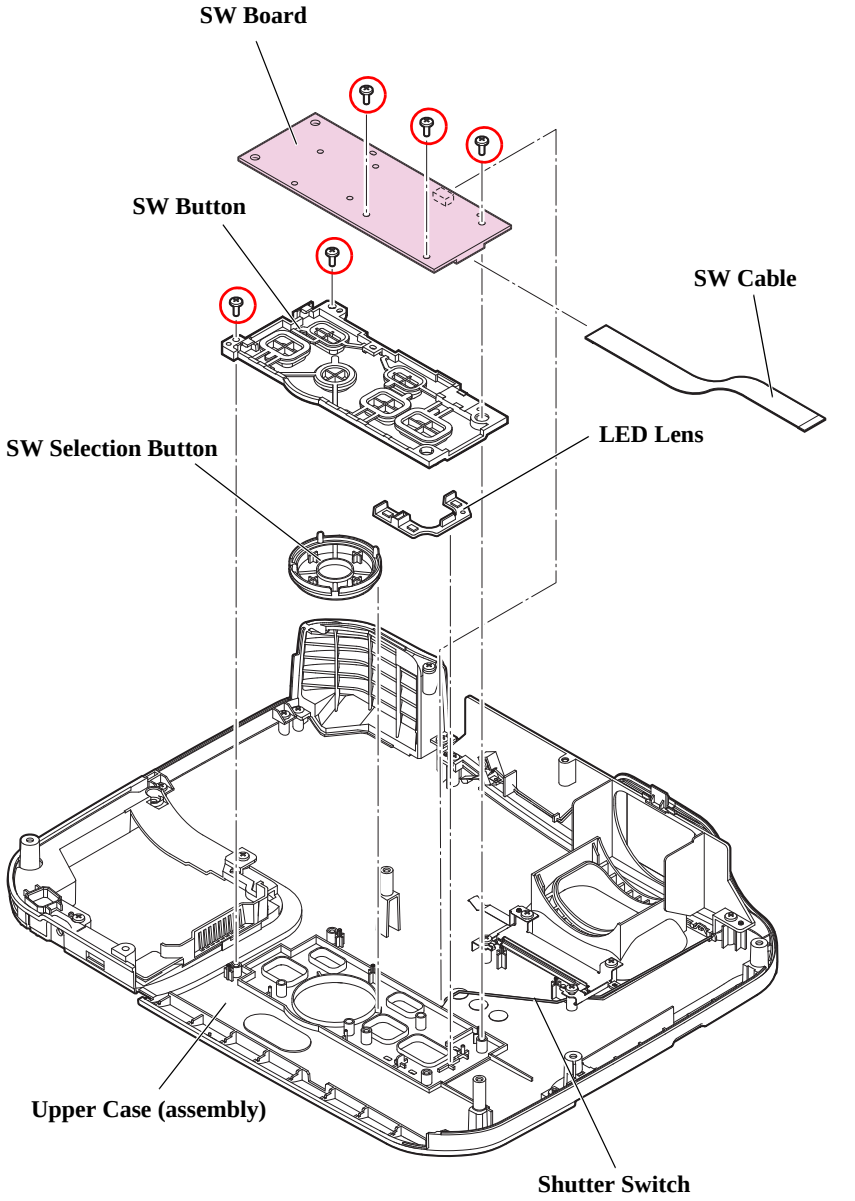
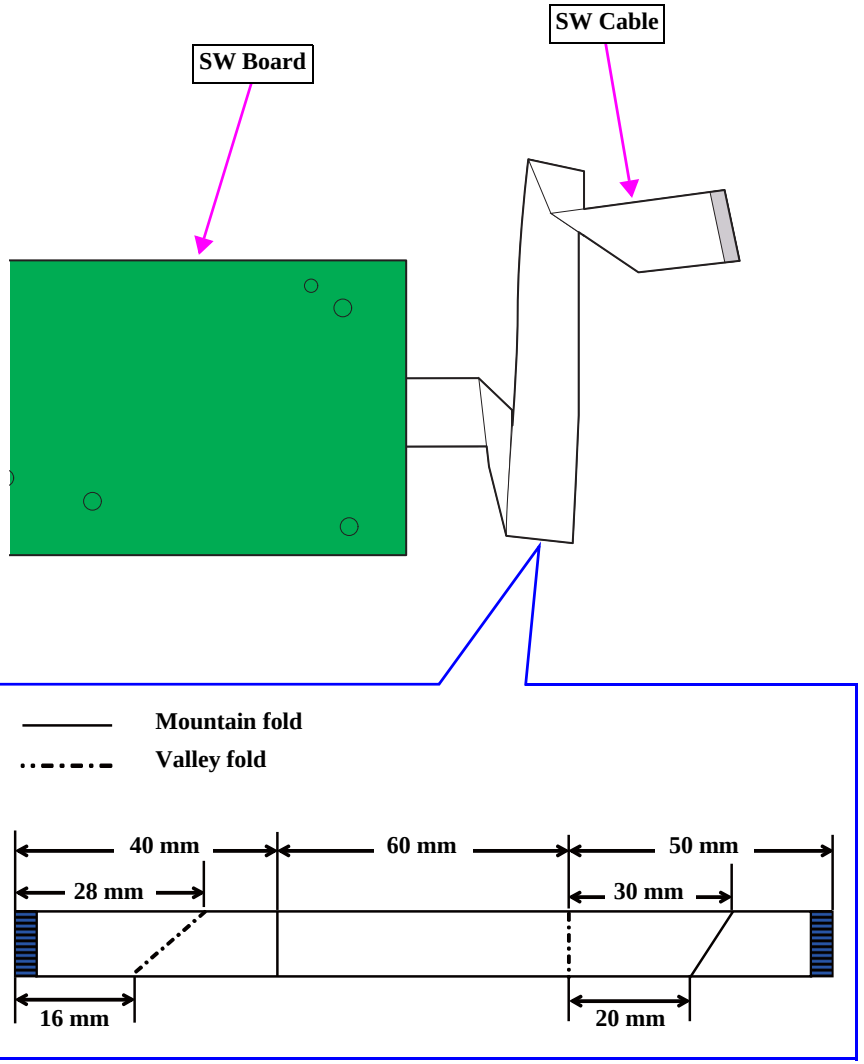


Figure 3-9.

⚠ CAUTION

Fold the SW Cable at the points shown below.



3.3.5.2 HK Assy (EB-X11/S12/S12H/X12/W12/X14 EH-TW480 only)

Standard Operation Time	5 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. Remove the four screws and remove the HK Insulation Plate and HK Assy.

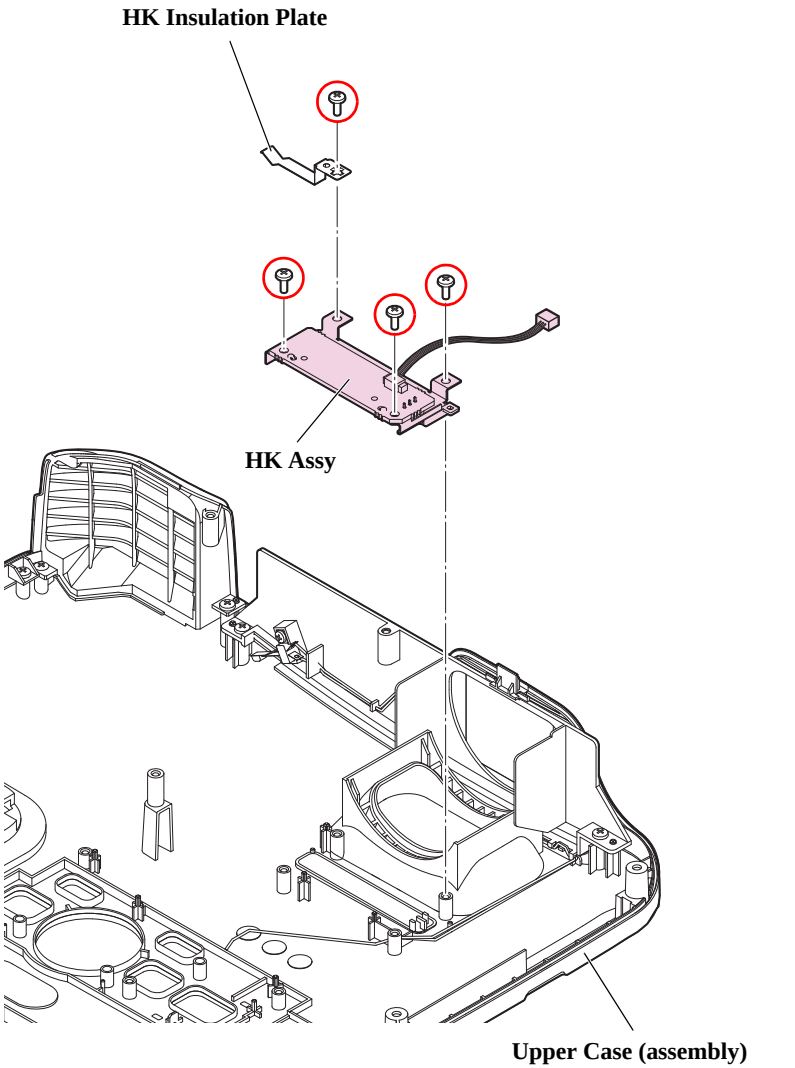


Figure 3-10.

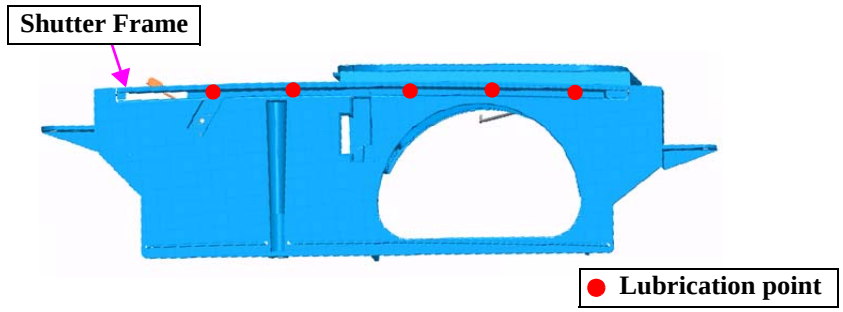
3.3.5.3 Shutter Switch

Standard Operation Time	10 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the SW Board.* *(p.67)*
5. *Remove the HK Assy.* *(p.69)*
6. Remove the two screws (◯).
7. Release the two hooks of the Shutter Frame and remove the Shutter Frame.
8. Remove the screw (◯) and remove the Shutter Switch from the Shutter Frame.
9. Remove the following parts from the Shutter Frame.
   - Shutter Ball
   - Shutter Spring
   - Lens Shutter
10. Remove the Shutter Sheet from the Lens Shutter.

⚠ CAUTION

When the sliding action of the shutter becomes awkward, apply grease in the size of a grain of rice to the points indicated in the figure below.



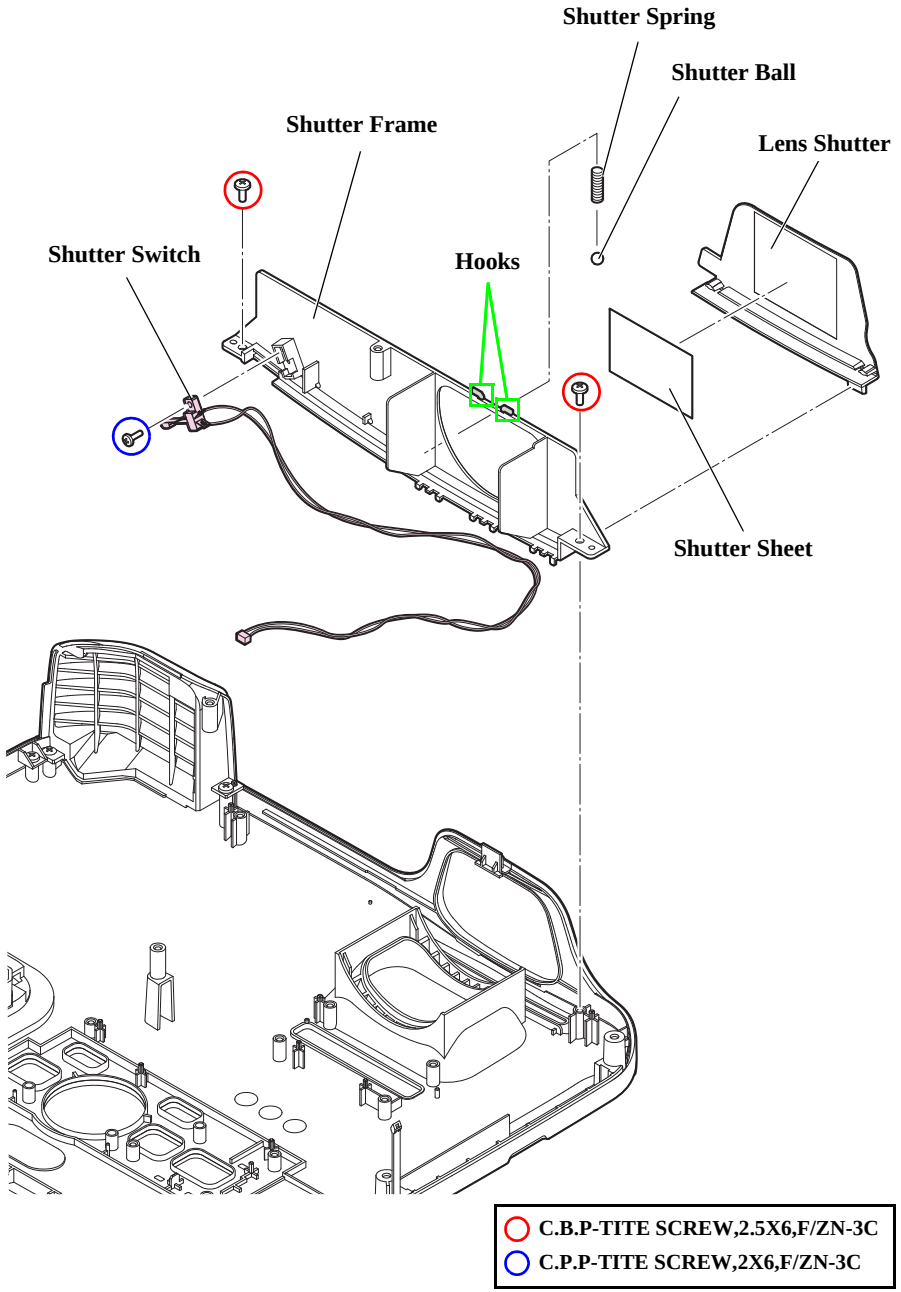


Figure 3-11.

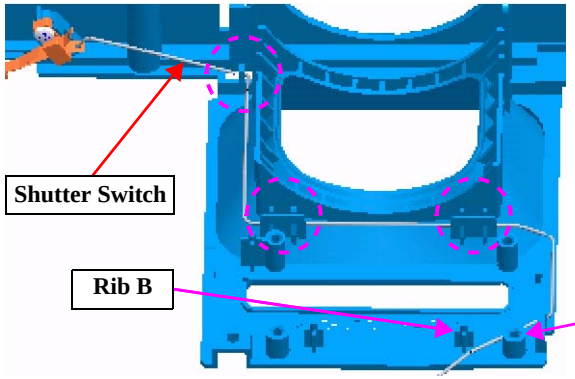
⚠ CAUTION

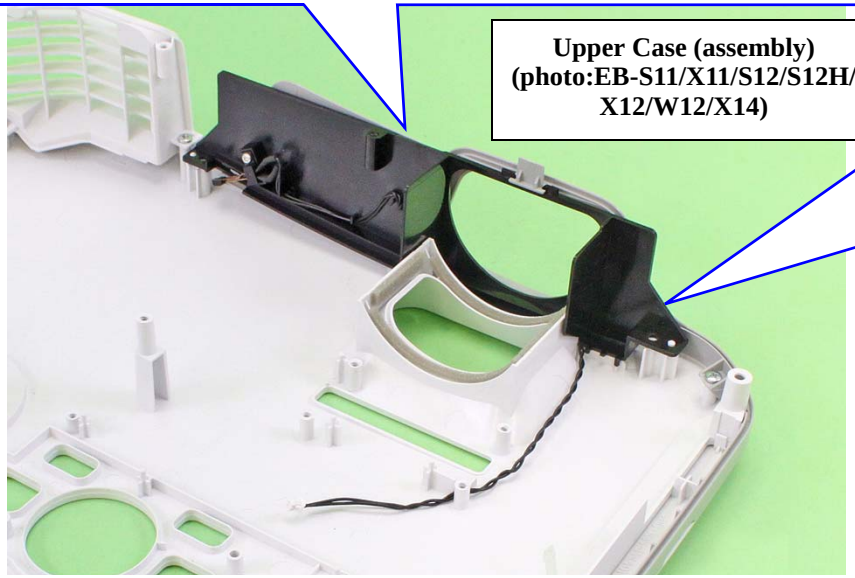
Route the Shutter Switch cable according to the instructions by model below.

■ **EB-S01/W01/X14G/S02/S02H/X02/W02**

(1) Route the Shutter Switch through three rib As of Upper Case (assembly).

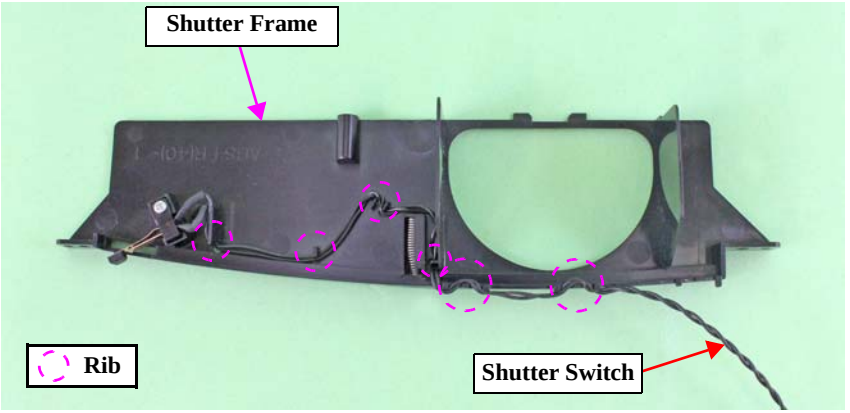
(2) Then route the Shutter Switch between the boss and rib B of Upper Case (assembly).



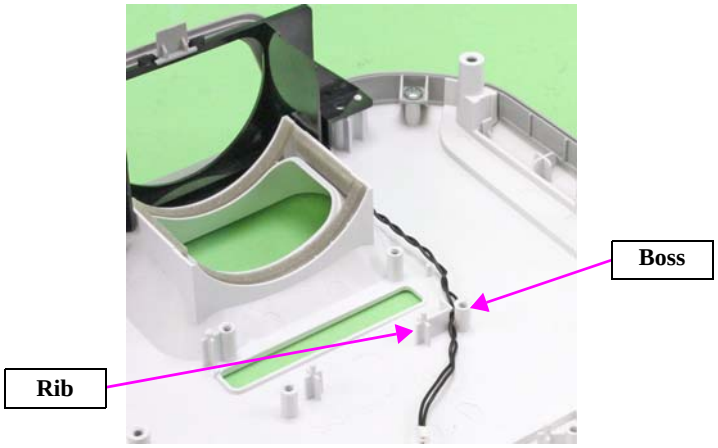


■ **EB-S11/X11/S12/S12H/X12/W12/X14**

(1) Route the Shutter Switch through the five ribs of Shutter Frame as shown below.



(2) Then route the Shutter Switch between the boss and the rib of Upper Case (assembly) as shown below.



3.3.5.4 Upper Case

Standard Operation Time	13 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the SW Board.* *(p.67)*
5. *Remove the HK Assy.* *(p.69)*
6. *Remove the Shutter Switch.* *(p.70)*
7. Remove the two screws (◯) and remove the EX Louver.
8. Remove the six screws (◯) and release the two hooks on the Upper Case to remove the Front Slit.
9. Remove the two screws (◯) and remove the Upper Case Cover.
10. Remove the following parts from the Upper Case.
    - PLATE NUT M3
    - Air Filter Cover Band

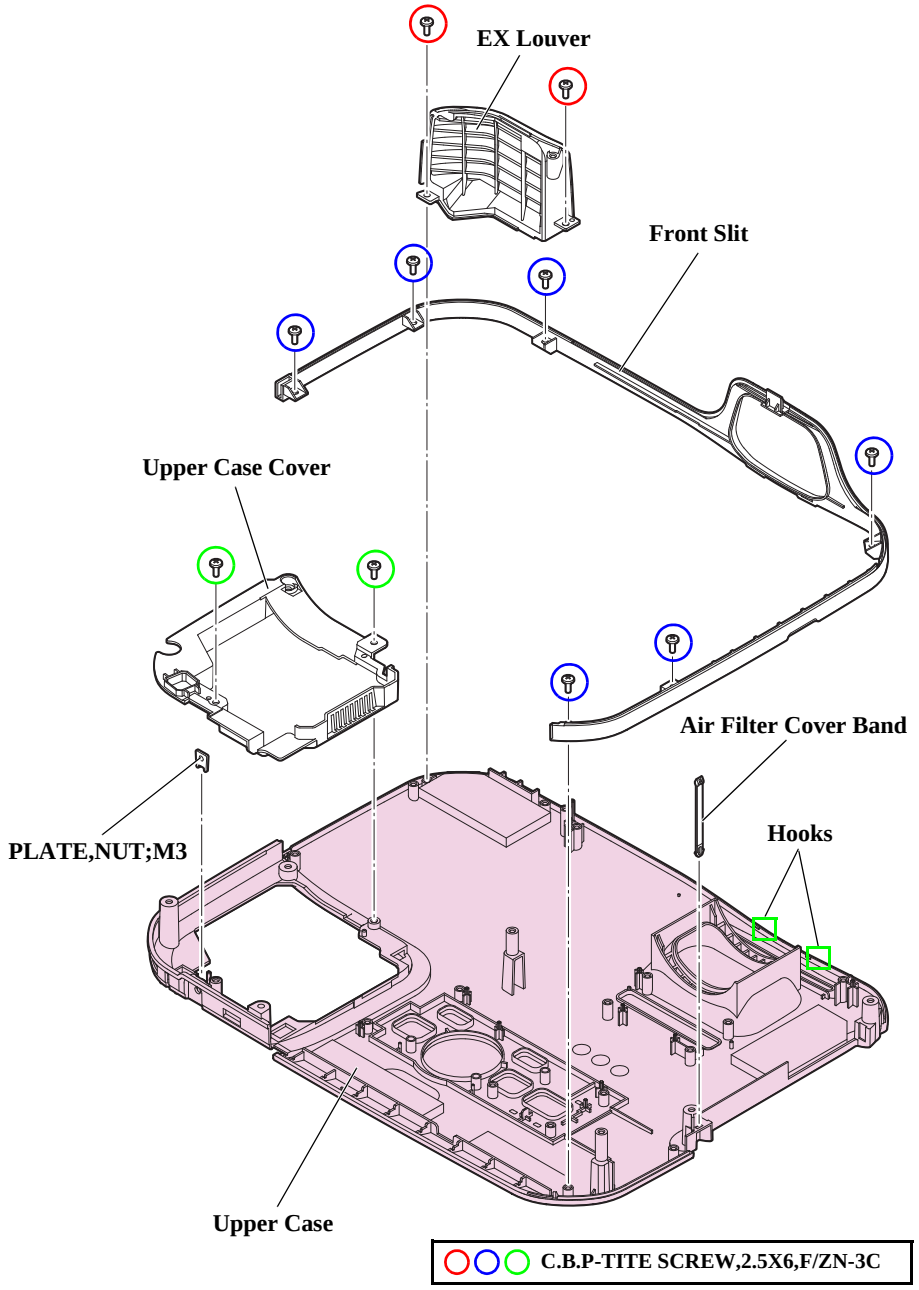


Figure 3-12.

11. Remove the following parts from the Upper Case.

- Upper Cushion A x 2
- Upper Cushion B
- Upper Cushion C
- Shutter Cushion A x 2
- Shutter Cushion B x 2

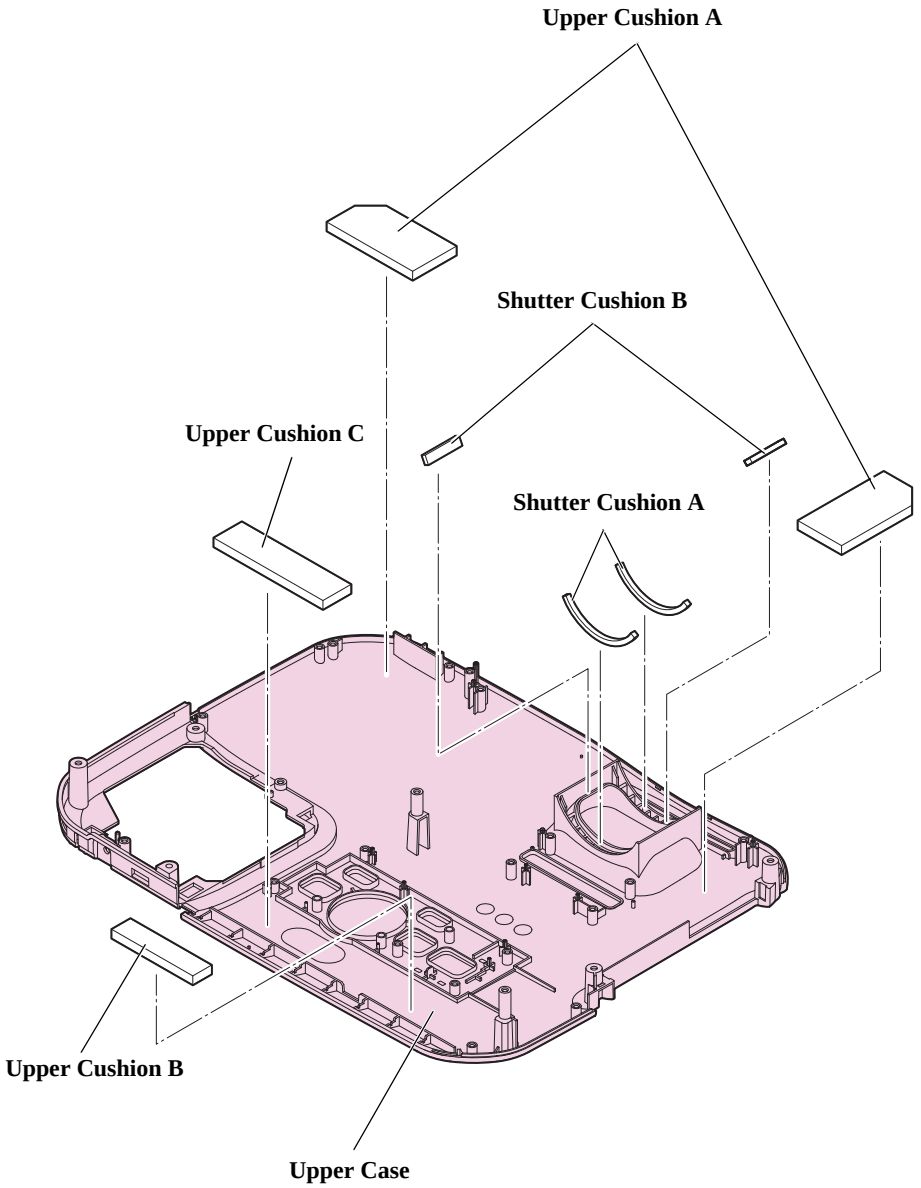


Figure 3-13.

3.3.6 MA Board (assembly)

Standard Operation Time	6 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. Disconnect all the cables from the connectors on the MA Board.

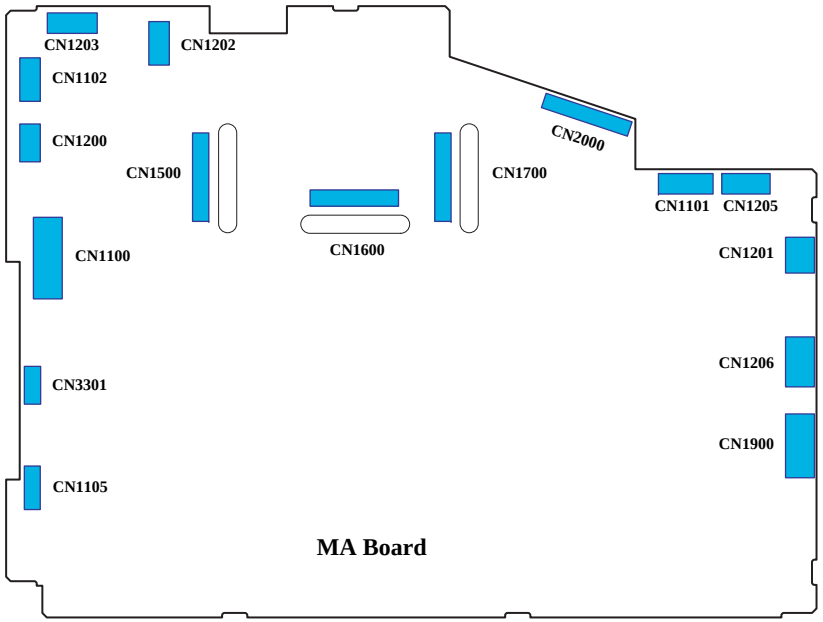


Figure 3-14.

CAUTION

Reference

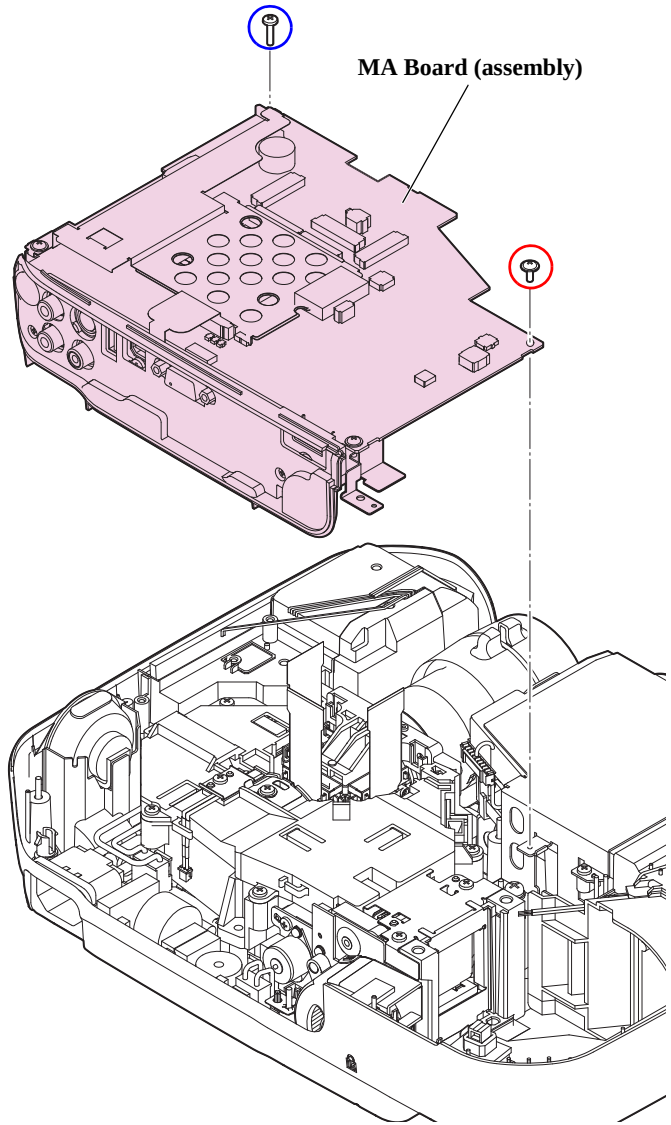
Table 3-1. Connector Numbers and Destinations

CN No.	Destination	CN No.	Destination
CN1100	SW Board	CN1205	EX Fan
CN1101	BA Unit (SCI)	CN1206	Lamp Fan
CN1102	IR Board	CN1500	Optical Engine (L/V (R))
CN1105	RS Board *1	CN1600	Optical Engine (L/V (G))
CN1200	TH Board (1)	CN1700	Optical Engine (L/V (B))
CN1201	TH Board (2)	CN1900	Auto Iris
CN1202	HK Assy *2	CN2000	PS Filter
CN1203	INT Fan	CN3301	Speaker

Note *1: EB-S11/X11 only

*2: EB-X11/S12/S12H/X12/W12/X14 EH-TW480 only

5. Remove the two screws and remove the MA Board (assembly).



C.C.SCREW,2.5X6,F/ZN-3C
C.B.P-TITE SCREW,2.5X10,F/ZN-3C

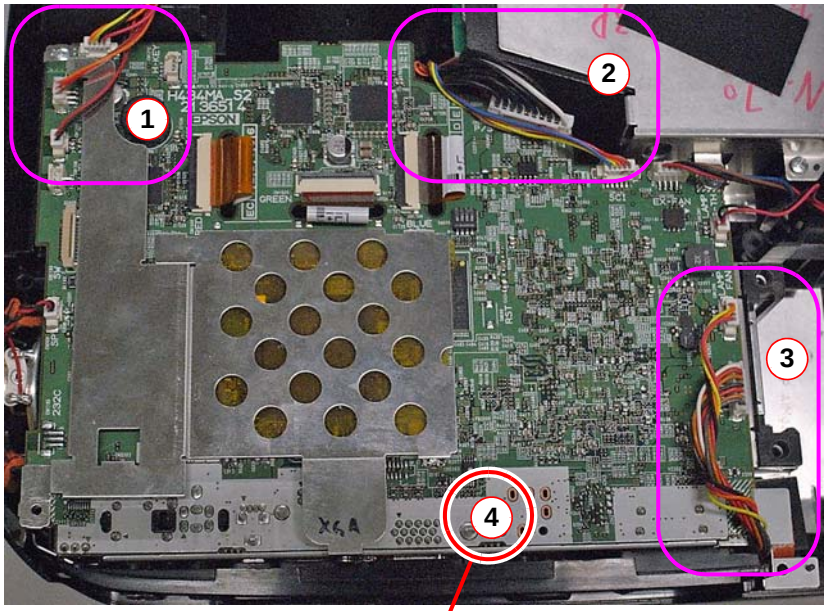
Figure 3-15.

⚠ CAUTION

■ **Routing around the MA Board (assembly) (Routing 1 to 4)**

According to the cautions below, route the following cables around the MA Board (assembly).

1. **Routing of INT Fan cable, RC cable, TH cable**
2. **Routing of PS Filter cable, SCI Cable**
3. **Routing of Auto Iris cable, Lamp Fan cable**
4. **Routing of Auto Iris cable (* Before installing the MA Board (assembly))**



* Make sure to perform #4 routing before installing the MA Board (assembly).

Figure 3-16.

⚠ CAUTION

1. Routing the INT Fan cable, RC cable, and TH cable

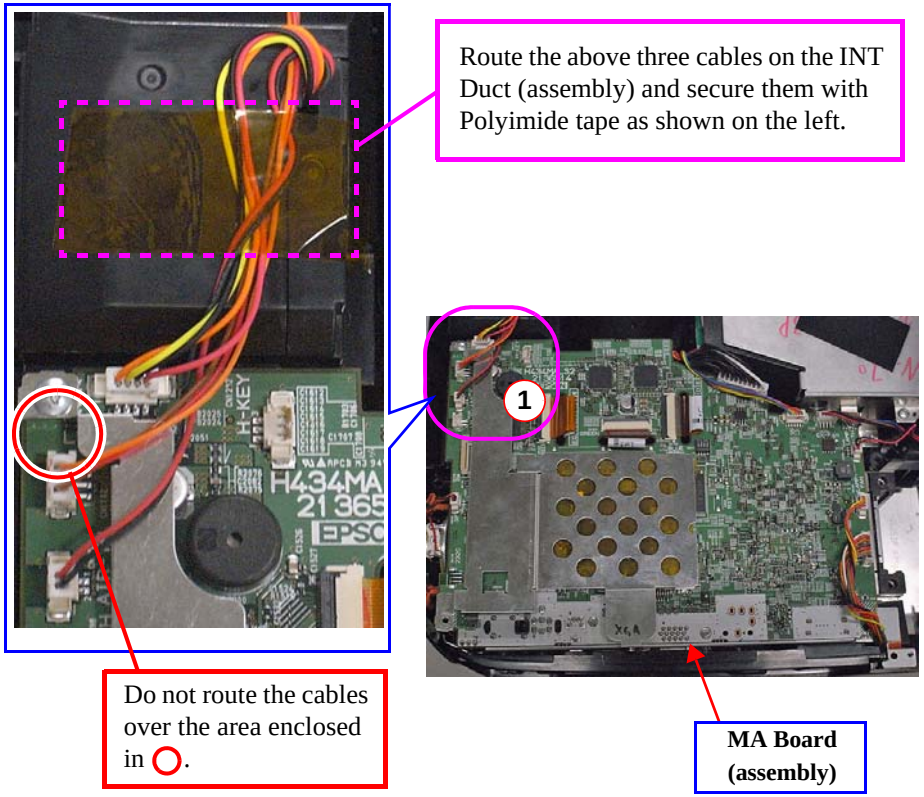


Figure 3-17.

⚠ CAUTION

2. Routing the PS Filter cable and SCI Cable

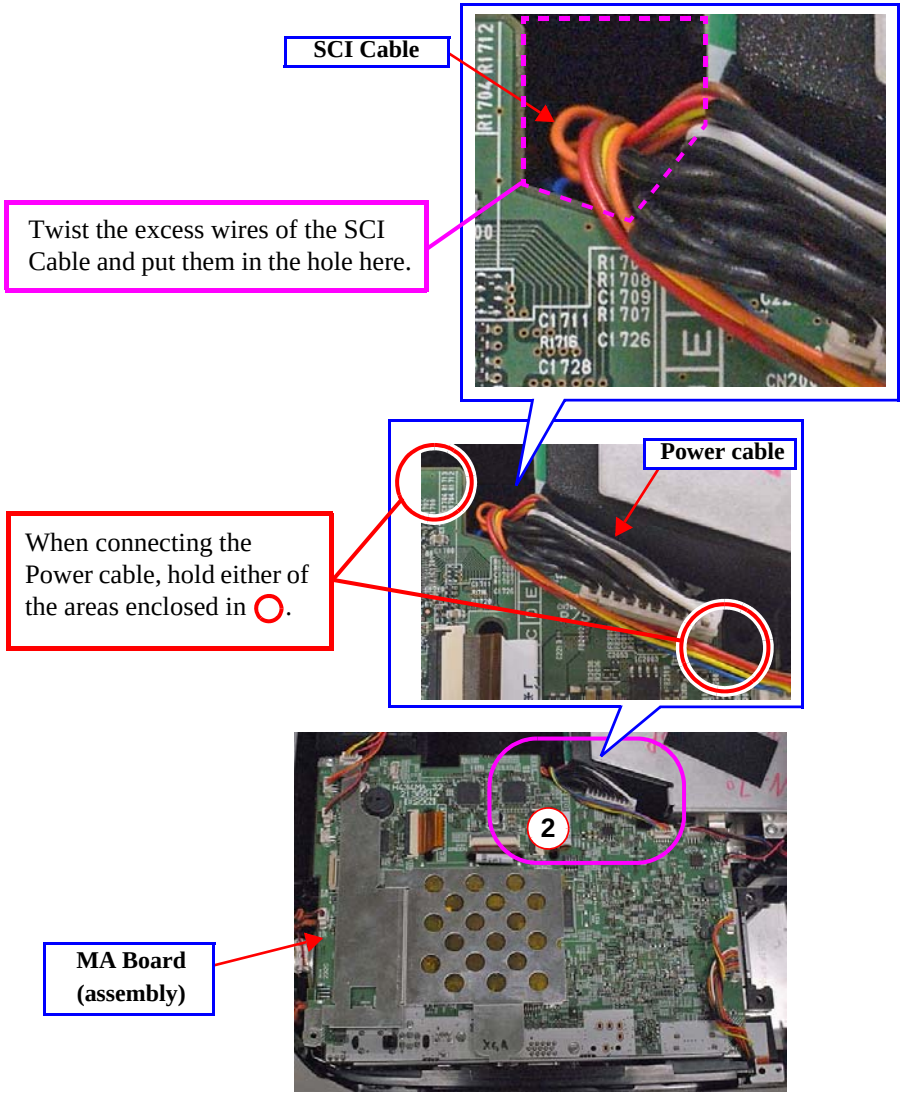
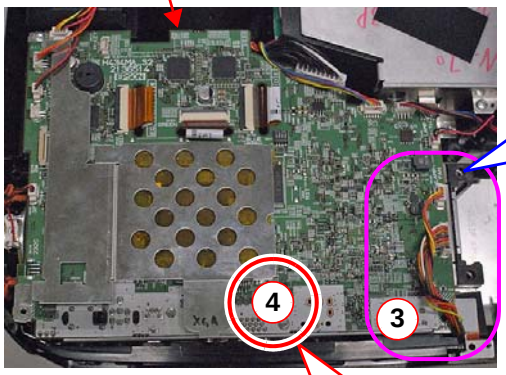


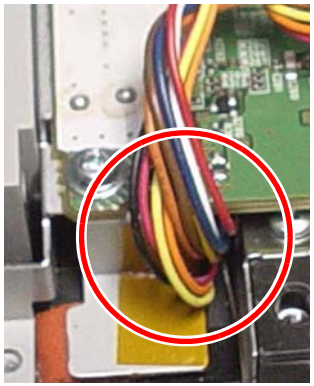
Figure 3-18.

⚠ CAUTION

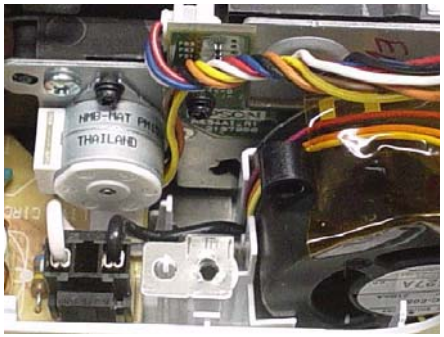
3. **Routing the Auto Iris cable and Lamp Fan cable**
4. **Routing the Auto Iris cable**



Wrap the Lamp Fan cable around the Auto Iris cable, and connect the cable to the MA Board (assembly).



Pull out the Auto Iris cable and the Lamp Fan cable from the hole enclosed in ○.



Before installing the MA Board (assembly), twist the wires of the Auto Iris cable to prevent falling the wires apart.

Figure 3-19.

3.3.6.1 IF Case

Standard Operation Time	8 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the MA Board (assembly).* *(p.74)*
5. Remove the two screws and remove the IF Case.
6. Remove the RC Filter from the IF Case.
7. Remove the two screws and remove the MA Shield Plate.
8. Remove the MA Insulation Sheet from the MA Board (assembly).

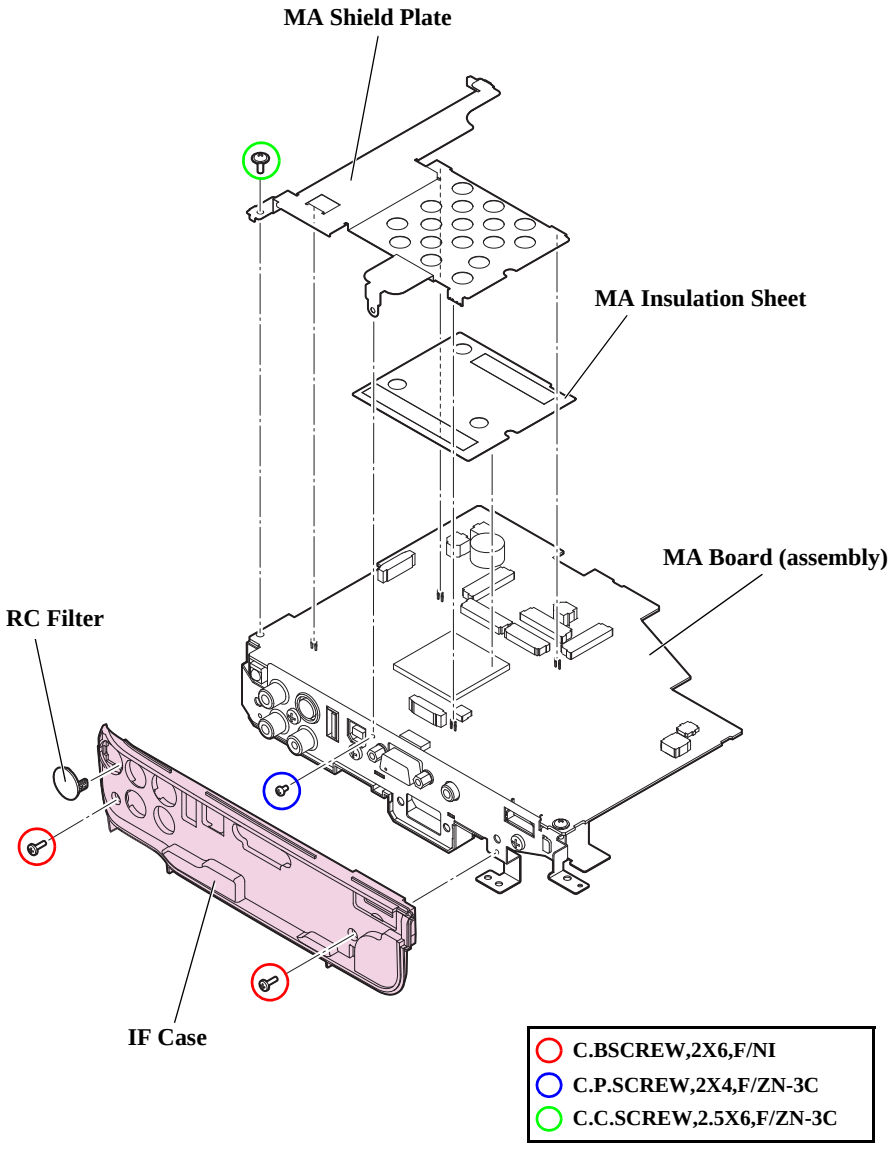


Figure 3-20.

3.3.6.2 MA Board / RS Board (EB-S11/X11 only)

Standard Operation Time	12 Min.

MA Board is designated as the Safety Device.When removing/ replacing the MA Board for repair, be sure to refer to "3.4 Safety Check after Servicing (p.103)". According to the instructions in it, handle the part and perform the procedure after servicing.

1. *Remove the Air Filter. (p.59)*
2. *Remove the Lamp. (p.60)*
3. *Remove the Upper Case (assembly). (p.62)*
4. *Remove the MA Board (assembly). (p.74)*
5. *Remove the IF Case. (p.78)*
6. Remove the seven screws.
7. Release the hook of the IF Shade Case from MA Plate and remove the IF Shade Case and the MA Plate.
8. Remove the INT Fan Cushion from the MA Board.
9. Remove the RS Board from the IF Shade Case. (EB-S11/X11 only)

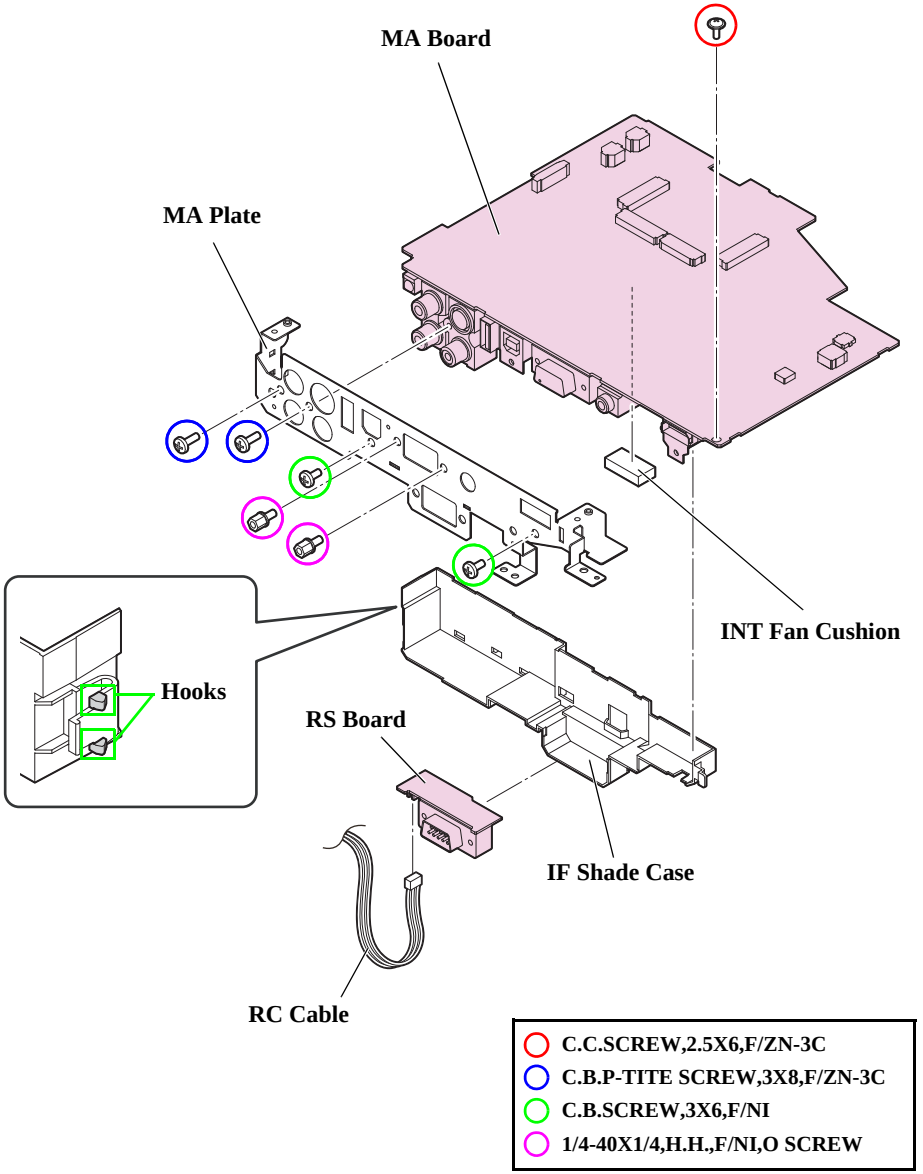


Figure 3-21.

⚠ CAUTION

- **Polyimide tape=20x10mm (2 sheet putting)**
- **Encompass the edge (Blue line part) and put tape.**

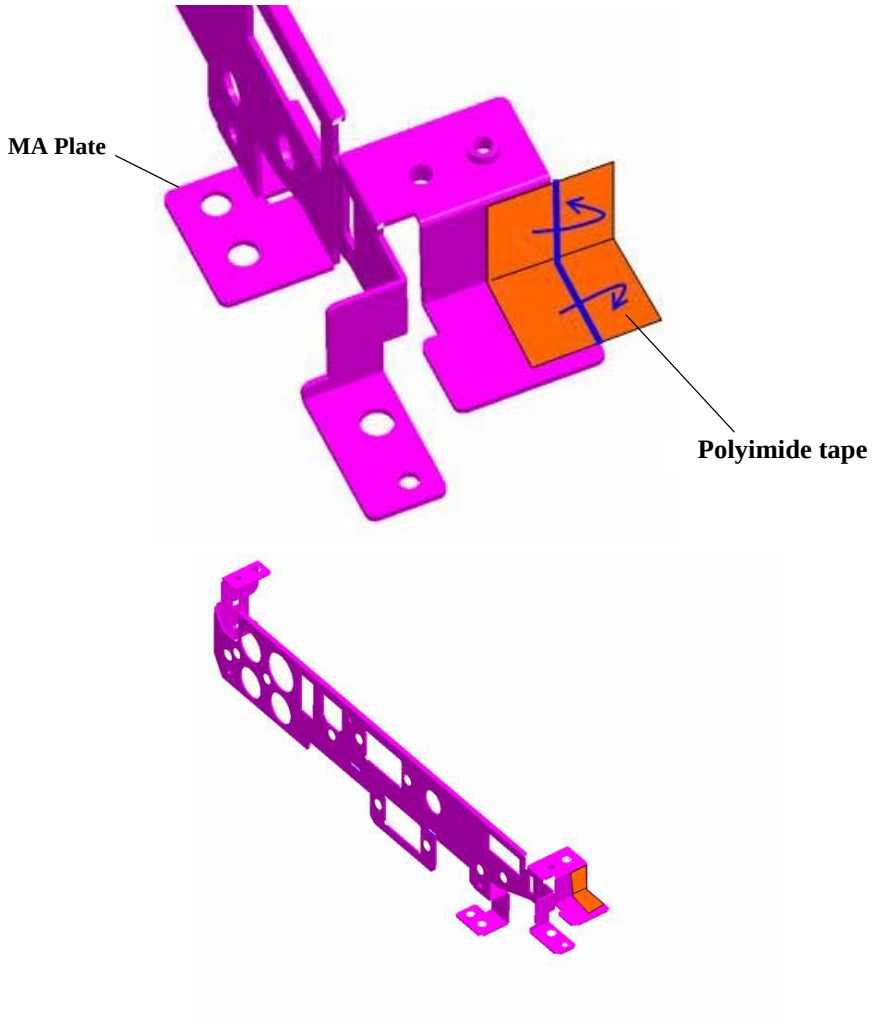


Figure 3-22.

3.3.7 Speaker

Standard Operation Time	6 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the MA Board (assembly).* *(p.74)*
5. Remove the Speaker from the Lower Case.
6. Remove the INT Fan Cushion (x 2) from the Speaker.

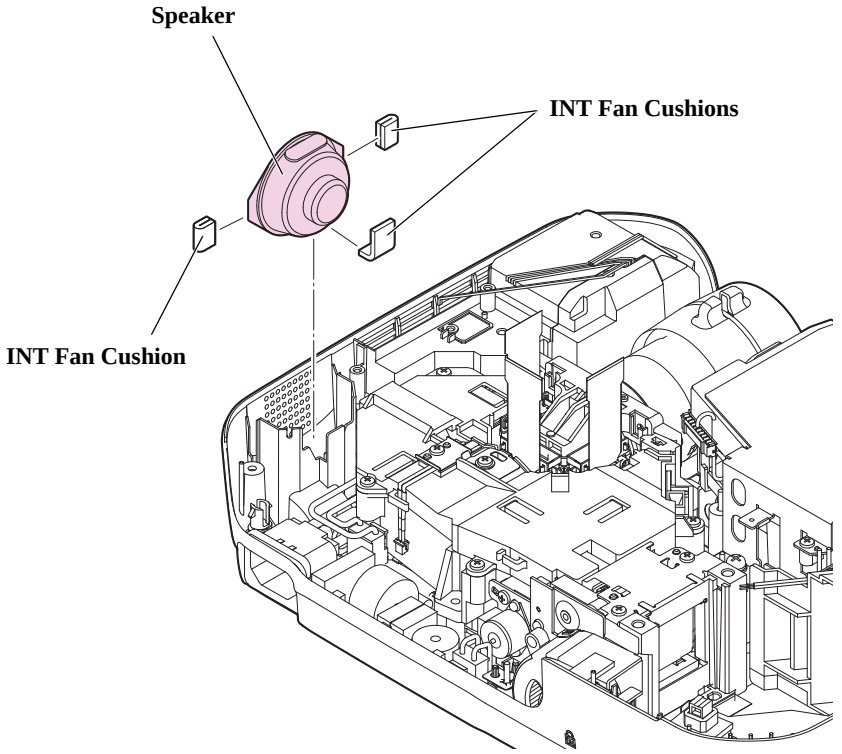


Figure 3-23.

3.3.8 Optical Engine

Standard Operation Time	7 Min.

Safety device	**Optical Engine is designated as the Safety Device.When removing/ replacing the Optical Engine for repair, be sure to refer to "3.4 Safety Check after Servicing (p.103)". According to the instructions in it, handle the part and perform the procedure after servicing.**

1. *Remove the Air Filter. (p.59)*
2. *Remove the Lamp. (p.60)*
3. *Remove the Upper Case (assembly). (p.62)*
4. *Remove the MA Board (assembly). (p.74)*
5. Remove the four screws and remove the Optical Engine.

CAUTION

When replacing the Optical Engine alone, refer to *"3.5 Writing the DR Data (p106)"* and make sure to perform the necessary procedure.

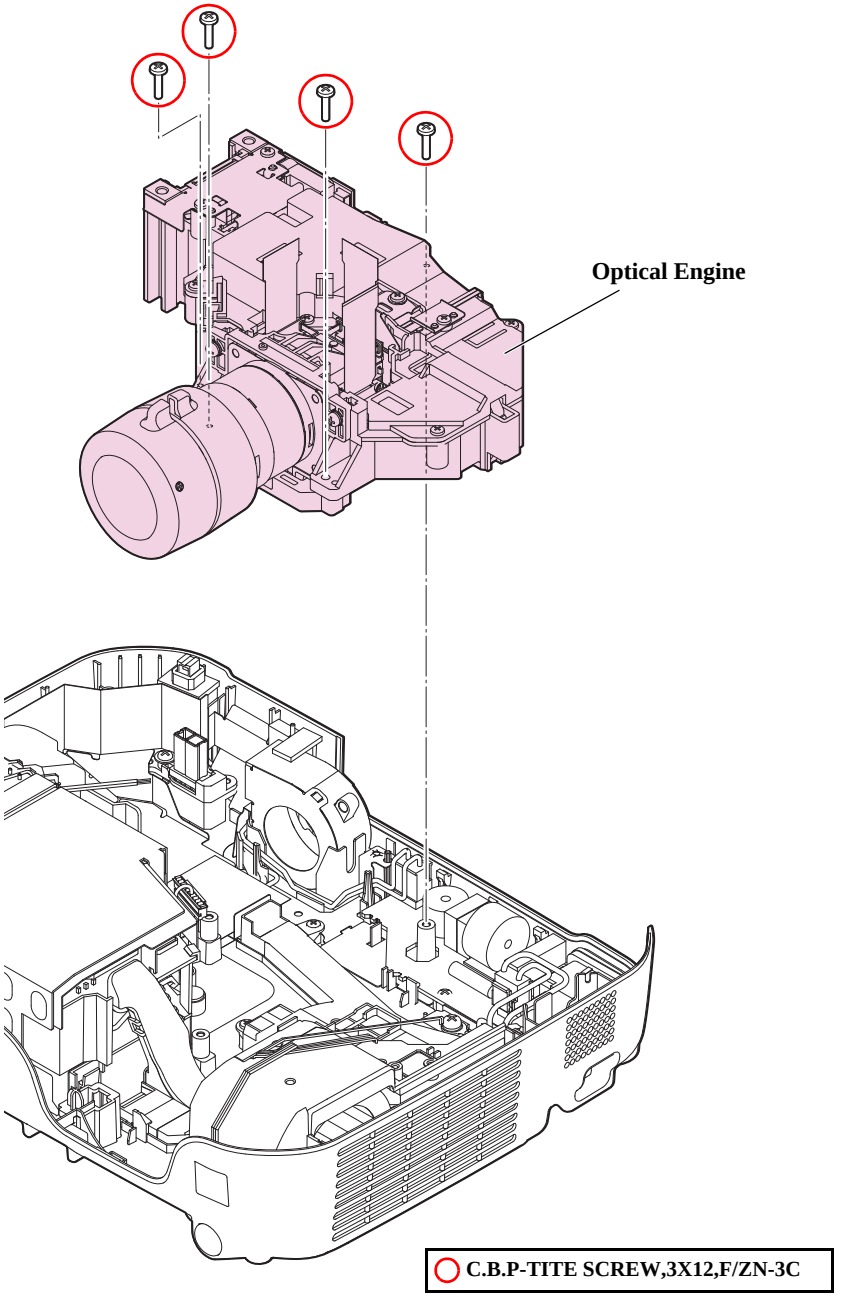


Figure 3-24.

3.3.8.1 Auto Iris

Standard Operation Time	8 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the MA Board (assembly).* *(p.74)*
5. *Remove the Optical Engine.* *(p.82)*
6. Remove the two screws and remove the Auto Iris.

CAUTION

- **Take special care not to deform the wings of Auto Iris.**
- **Be sure to remove the Auto Iris in the lever position as below.**

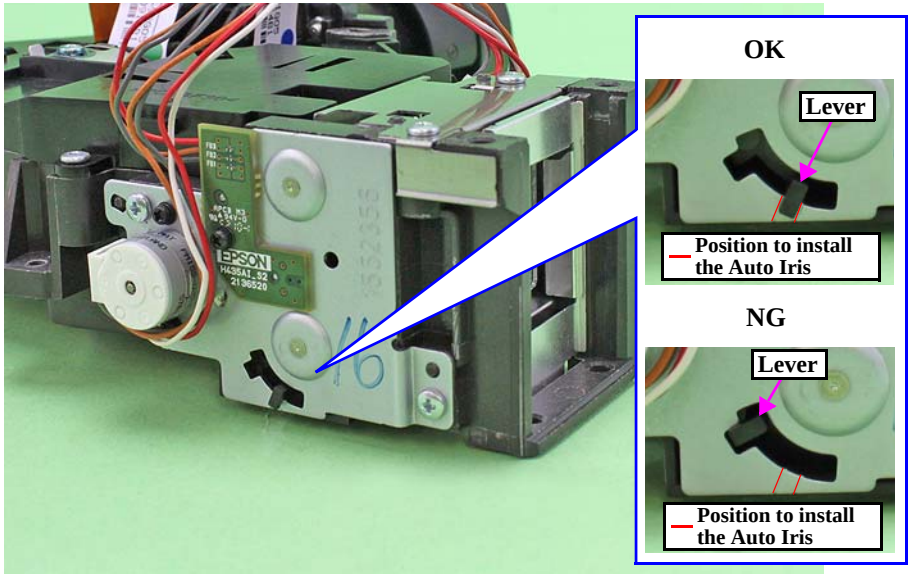


Figure 3-25.

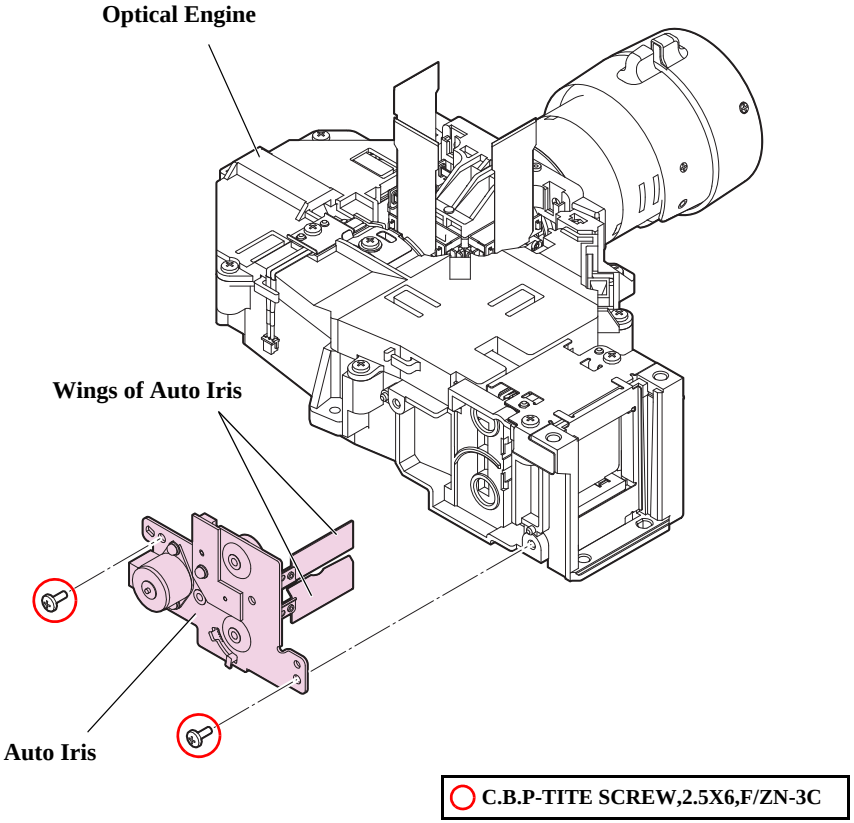
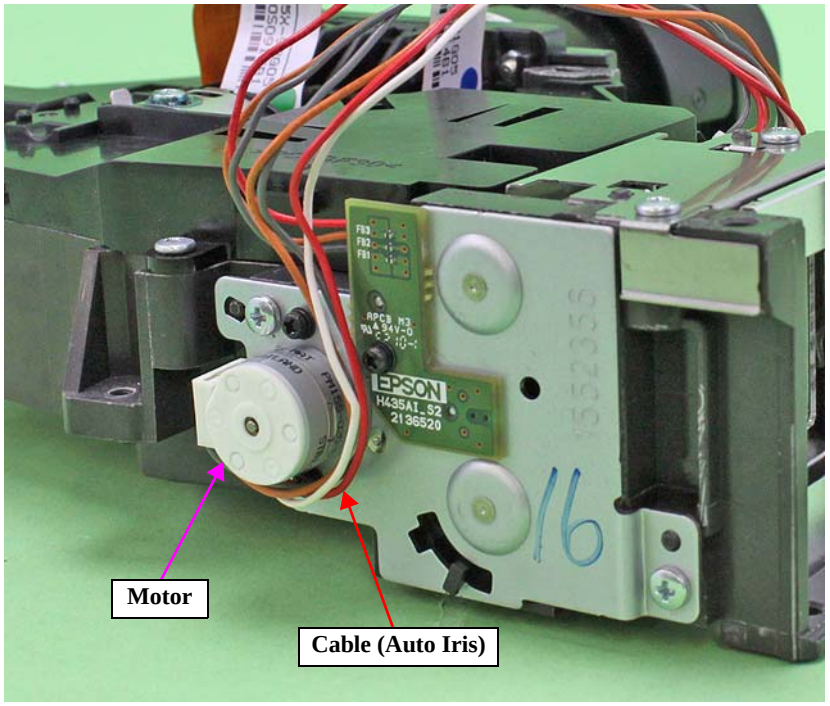


Figure 3-26.

⚠ CAUTION

When installing the Auto Iris, check that the lever is in the proper position (refer to Figure 3-25) after the following work.

- **Remove dust on the Optical Engine with an air blower.**
- **Carry out optical axis adjustment/contrast adjustment of the Optical Engine.**
- **Routing the cable (Auto Iris) under the motor as shown below.**



3.3.8.2 Focus Ring / Zoom Ring

Standard Operation Time	8 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the MA Board (assembly).* *(p.74)*
5. *Remove the Optical Engine.* *(p.82)*
6. Remove the three screws and remove the Focus Ring.
7. Remove the two screws and remove the Zoom Ring.
   (EB-W01/X14G/X11/X02/W02/X12/W12/X14 EH-TW480 only)

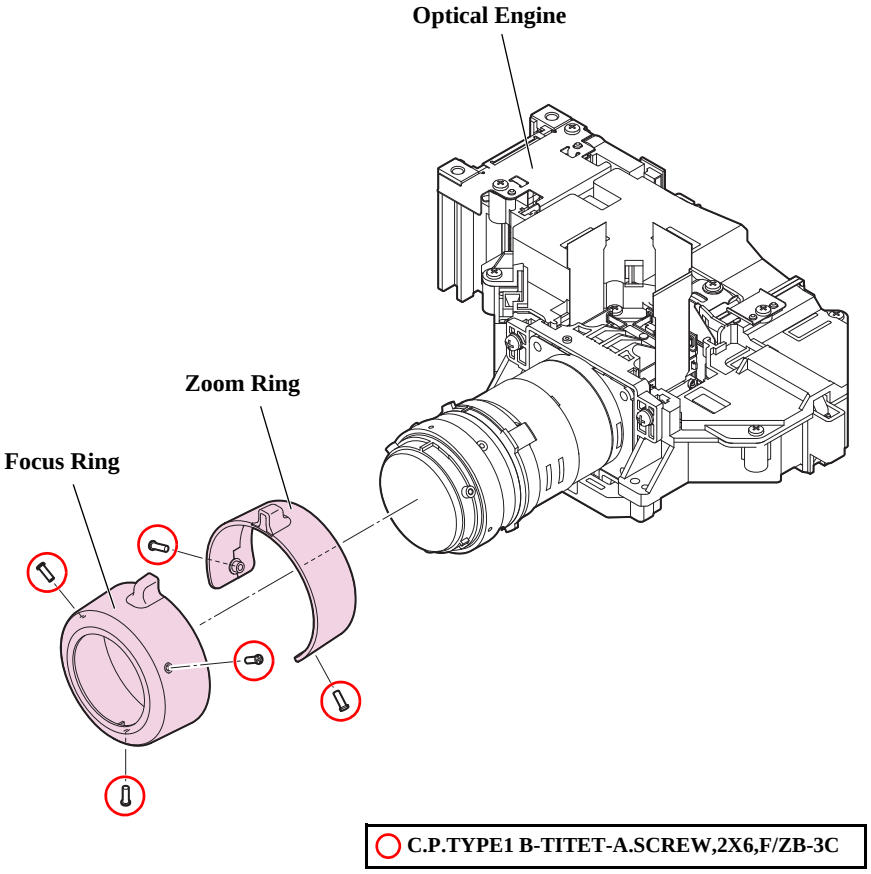


Figure 3-27.

3.3.9 Lamp Fan

Standard Operation Time	7 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the MA Board (assembly).* *(p.74)*
5. *Remove the Optical Engine.* *(p.82)*
6. Remove the Lamp Fan from the Lower Case.
7. Remove the INT Fan Cushion (x 2) from the Lamp Fan.

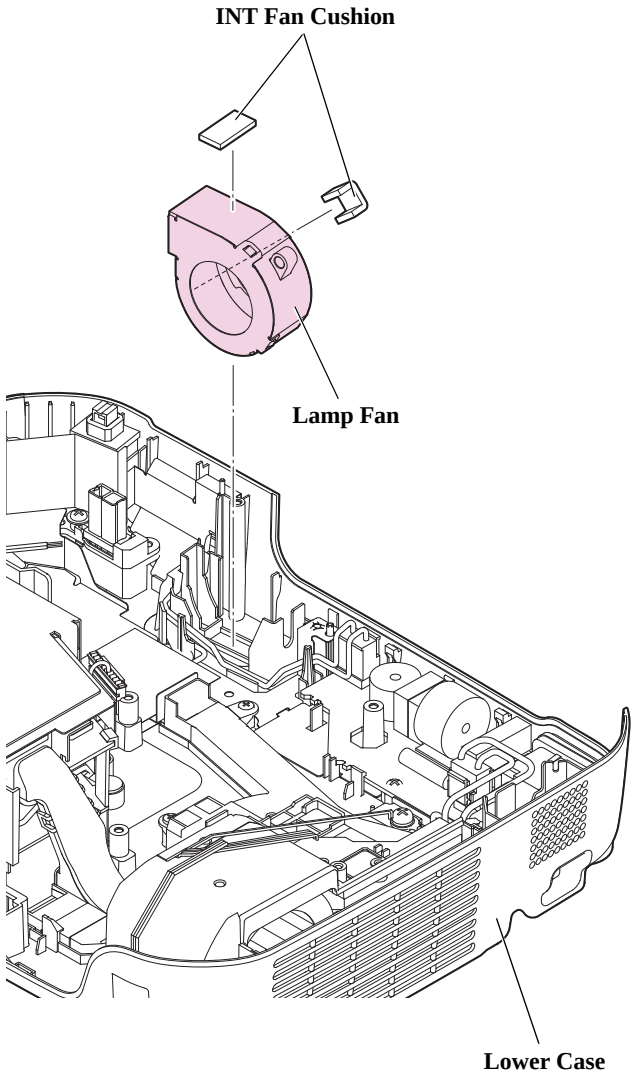


Figure 3-28.

3.3.10 EX Duct (assembly)

Standard Operation Time	7 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the MA Board (assembly).* *(p.74)*
5. *Remove the Optical Engine.* *(p.82)*
6. Remove the two screws.
7. Release the safety switch and remove the EX Duct (assembly).

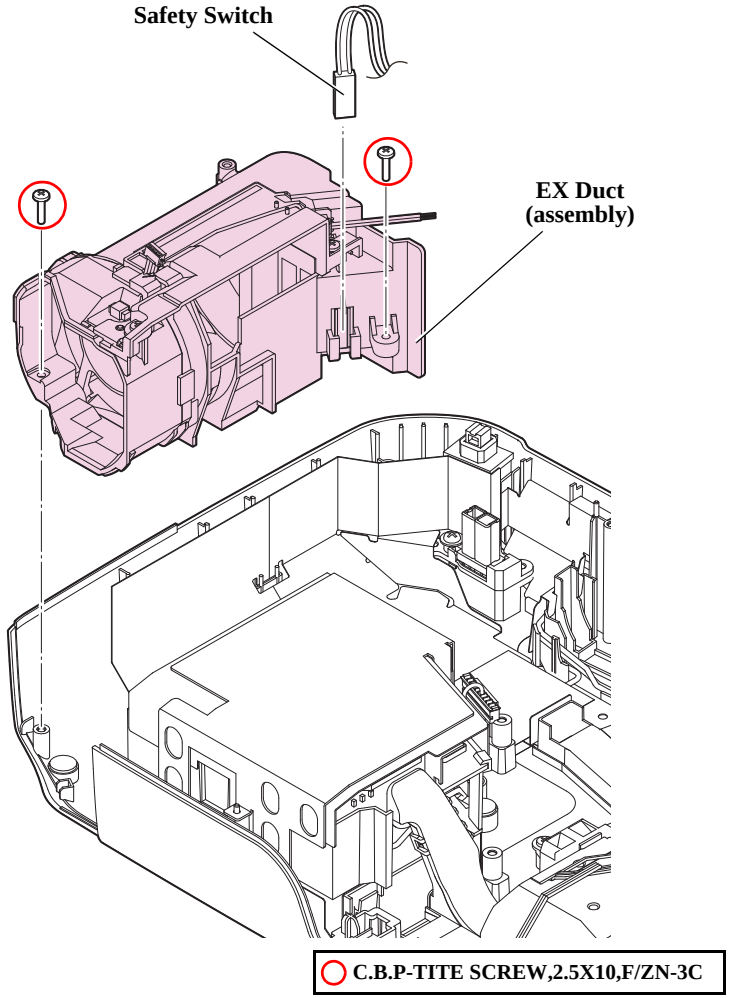


Figure 3-29.

CAUTION

Set the safety switch with the cable up and also with the print facing the EX Duct (assembly).

3.3.10.1 TH Board (2) / EX Fan

Standard Operation Time	11 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the MA Board (assembly).* *(p.74)*
5. *Remove the Optical Engine.* *(p.82)*
6. *Remove the EX Duct (assembly).* *(p.87)*
7. Remove the two screws (◯) and remove the PS Duct.
8. Remove the TH Board (2) from the Inner EX Duct.
9. Remove the TH Cable from the TH Board (2).
10. Remove the two screws (◯) and remove the Inner EX Duct.
11. Remove the Shutter Cushion A (x 2) from the Inner EX Duct.
12. Remove the EX Fan from the EX Fan Holder.

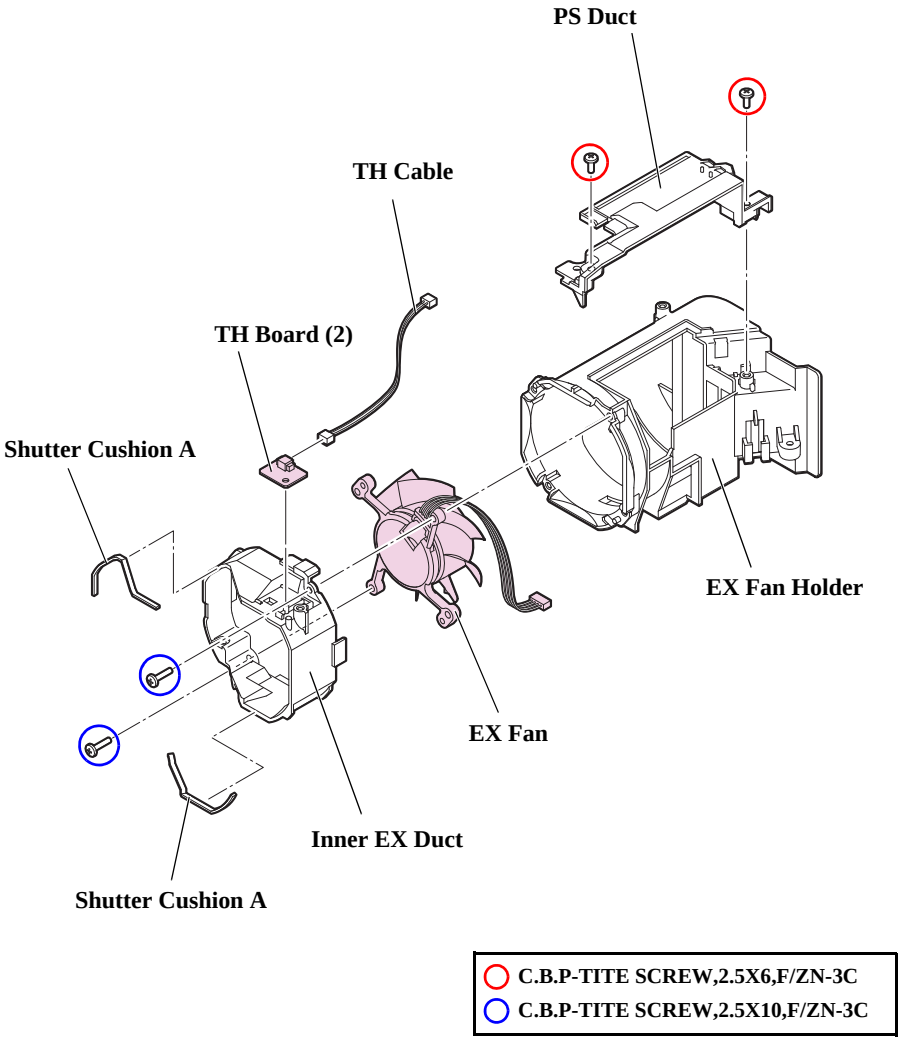


Figure 3-30.

3.3.11 BA Power Supply (assembly)

Standard Operation Time	12 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the MA Board (assembly).* *(p.74)*
5. *Remove the Optical Engine.* *(p.82)*
6. *Remove the* Lamp Fan. (p.86)
7. *Remove the EX Duct (assembly).* *(p.87)*
8. Remove the Kensington Shade Sheet from Lower Case.
9. Remove the EMC Sheet.
10. Remove the screw (◯) and release the lamp connector.
11. Remove the six screws (◯) (◯) (◯) and remove the BA Power Supply (assembly).

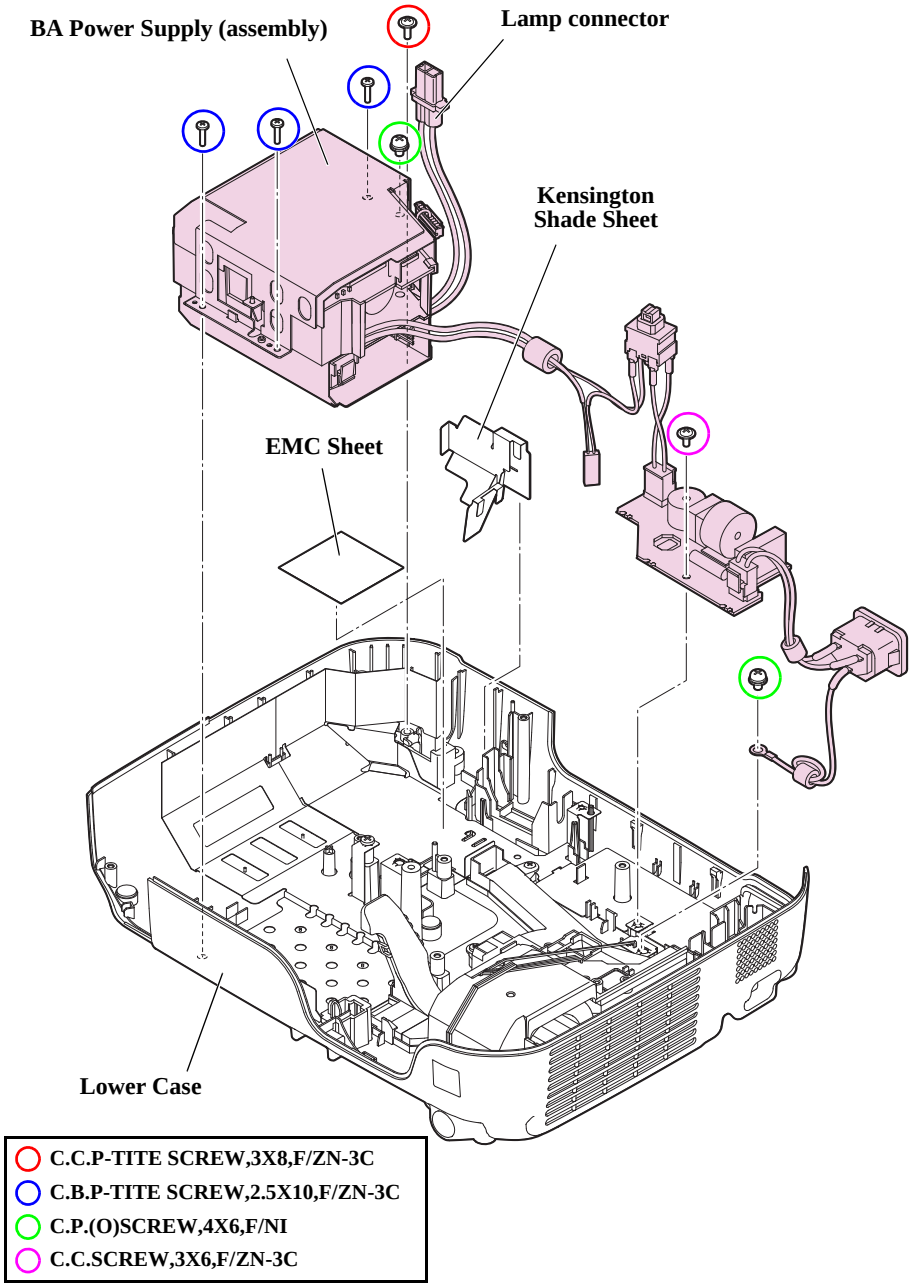


Figure 3-31.

⚠ CAUTION

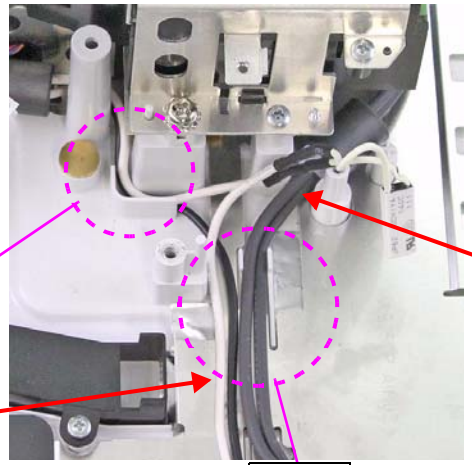
■ **Route the BA Lamp Cable and the cable (PS Filter) according to the instructions below. (BA Power Supply (assembly) side)**

Routing the cable (PS Filter)

Route the cable through the rib (1).

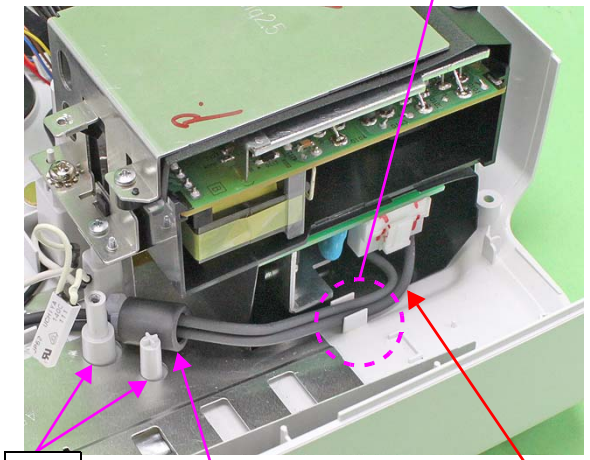
Routing the BA Lamp Cable

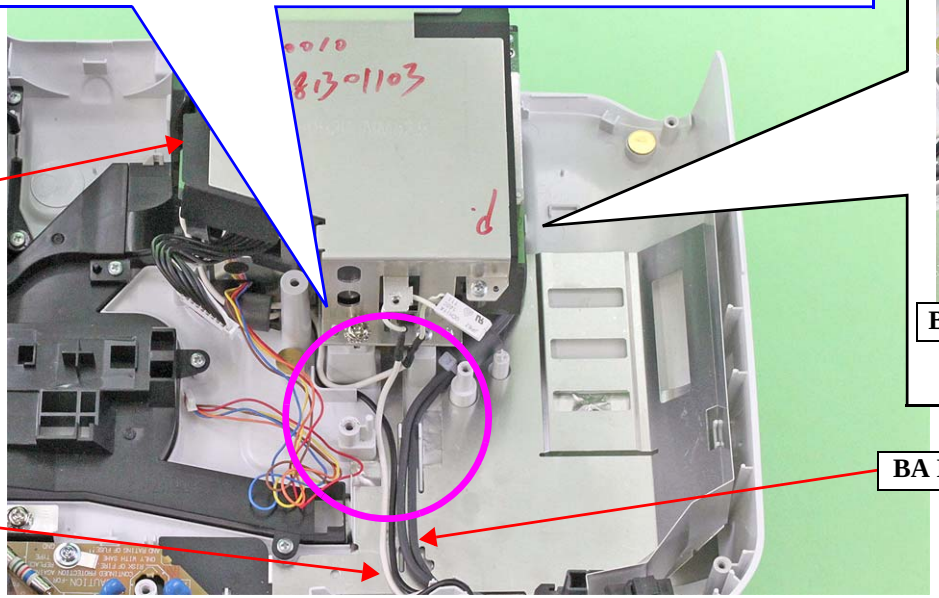
Route the cable through the rib (2).



Routing the BA Lamp Cable

- **Route the cable between the ribs.**
- **Place the ferrite core in the position as shown below.**



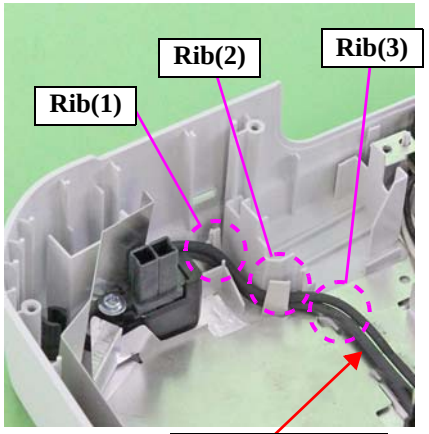


⚠ CAUTION

■ **Route the BA Lamp Cable and the PS Filter cable according to the instructions below. (Interlock Switch side)**

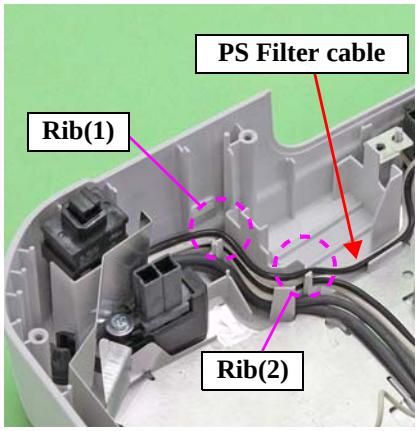
Routing the BA Lamp Cable

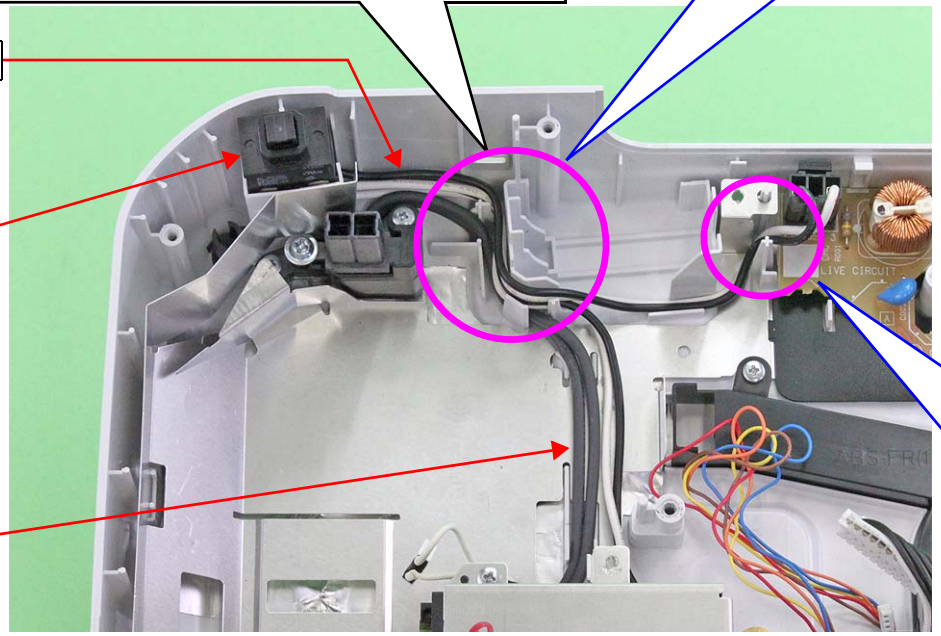
Route the cable through the rib(1), rib(2) and rib(3).



(1) Routing the PS Filter cable

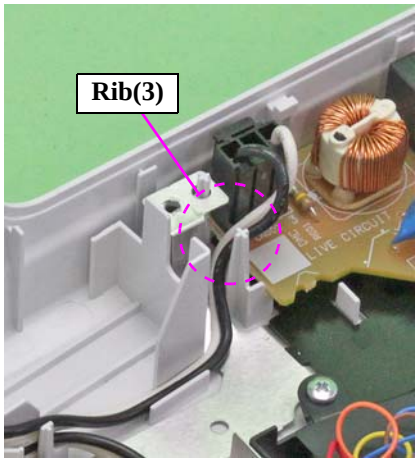
- **Route the PS Filter cable on the BA Lamp Cable as shown.**
- **Route the cable through the rib(1) and rib(2).**





(2) Routing the PS Filter cable

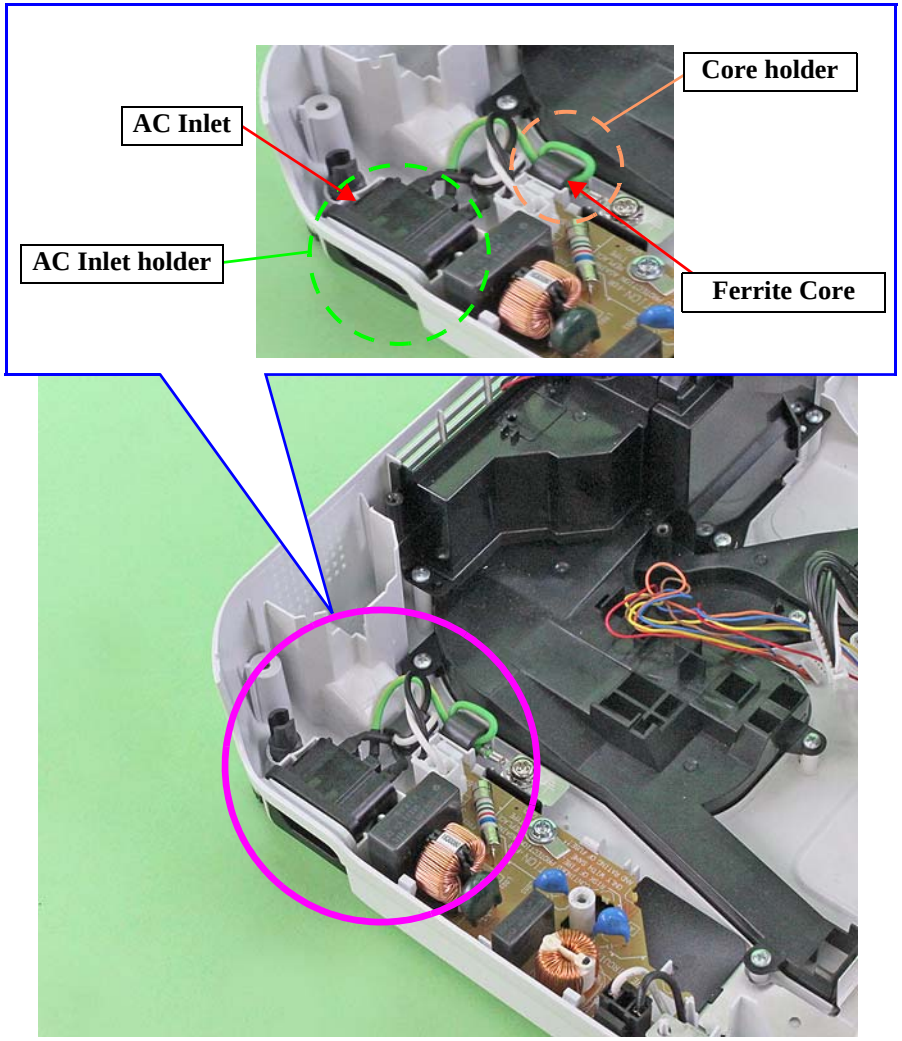
Route the PS Filter cable through the rib(3).



⚠ CAUTION

■ **Secure the AC Inlet and the ferrite core of PS Filter as follows.**

- **Fit the ferrite core in the core holder.**
- **Fit the AC Inlet in the AC Inlet holder.**



3.3.11.1 BA Unit / SCI Cable

Standard Operation Time	15 Min.

BA Unit is designated as the Safety Device. When removing/ replacing the BA Unit for repair, be sure to refer to "3.4 Safety Check after Servicing (p.103)". According to the instructions in it, handle the part and perform the procedure after servicing.

1. *Remove the Air Filter. (p.59)*
2. *Remove the Lamp. (p.60)*
3. *Remove the Upper Case (assembly). (p.62)*
4. *Remove the MA Board (assembly). (p.74)*
5. *Remove the Optical Engine. (p.82)*
6. *Remove the Lamp Fan. (p.86)*
7. *Remove the EX Duct (assembly). (p.87)*
8. *Remove the BA Power Supply (assembly). (p.89)*
9. Open the BA Insulation Sheet.
10. Release the three hooks of the BA Power Supply (assembly) and remove the BA Unit.
11. Disconnect the connector of the BA Cable from the BA Unit.
12. Release the SCI Cable from the groove (1) of BA Insulation Sheet.
13. Remove the BA Unit from the BA Insulation Sheet.
14. Remove the BA Lamp Cable from the BA Unit.
15. Remove the SCI Cable from the BA Unit.
16. Release the BA Cable from the groove (2), and remove the BA Insulation Sheet.

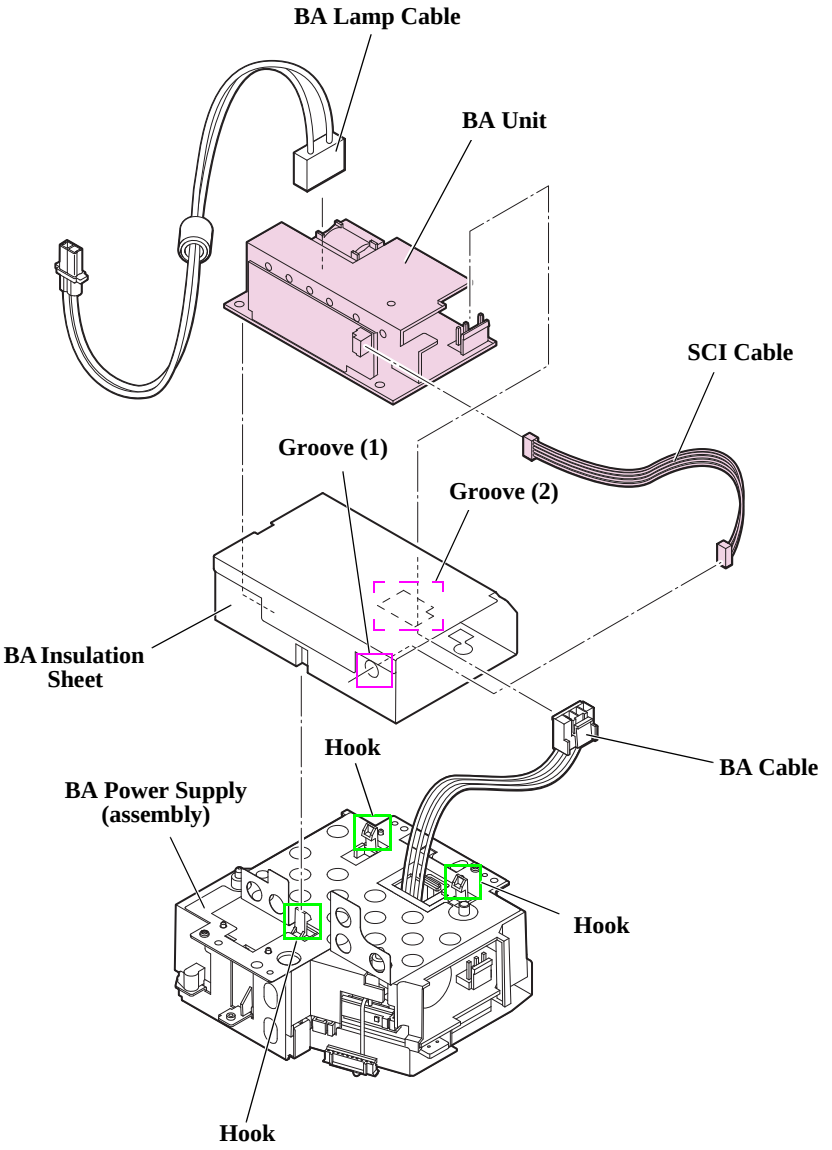


Figure 3-32.

3.3.11.2 PS Filter

Standard Operation Time	18 Min.

This part is designated as the Safety Device.When removing/ replacing the part for repair, be sure to refer to "3.4 Safety Check after Servicing (p.103)". According to the instructions in it, handle the part and perform the procedure after servicing.

1. *Remove the Air Filter. (p.59)*
2. *Remove the Lamp. (p.60)*
3. *Remove the Upper Case (assembly). (p.62)*
4. *Remove the MA Board (assembly). (p.74)*
5. *Remove the Optical Engine. (p.82)*
6. *Remove the Lamp Fan. (p.86)*
7. *Remove the EX Duct (assembly). (p.87)*
8. *Remove the BA Power Supply (assembly). (p.89)*
9. *Remove the BA Unit / SCI Cable. (p.93)*
10. Remove the two screws (◯) and remove the BA Shield Plate.
11. Remove the two screws (◯) (◯) and remove the PS Shield Plate and the PS Insulation Sheet.
12. Remove the PS Radiation Sheet from the PS Filter.

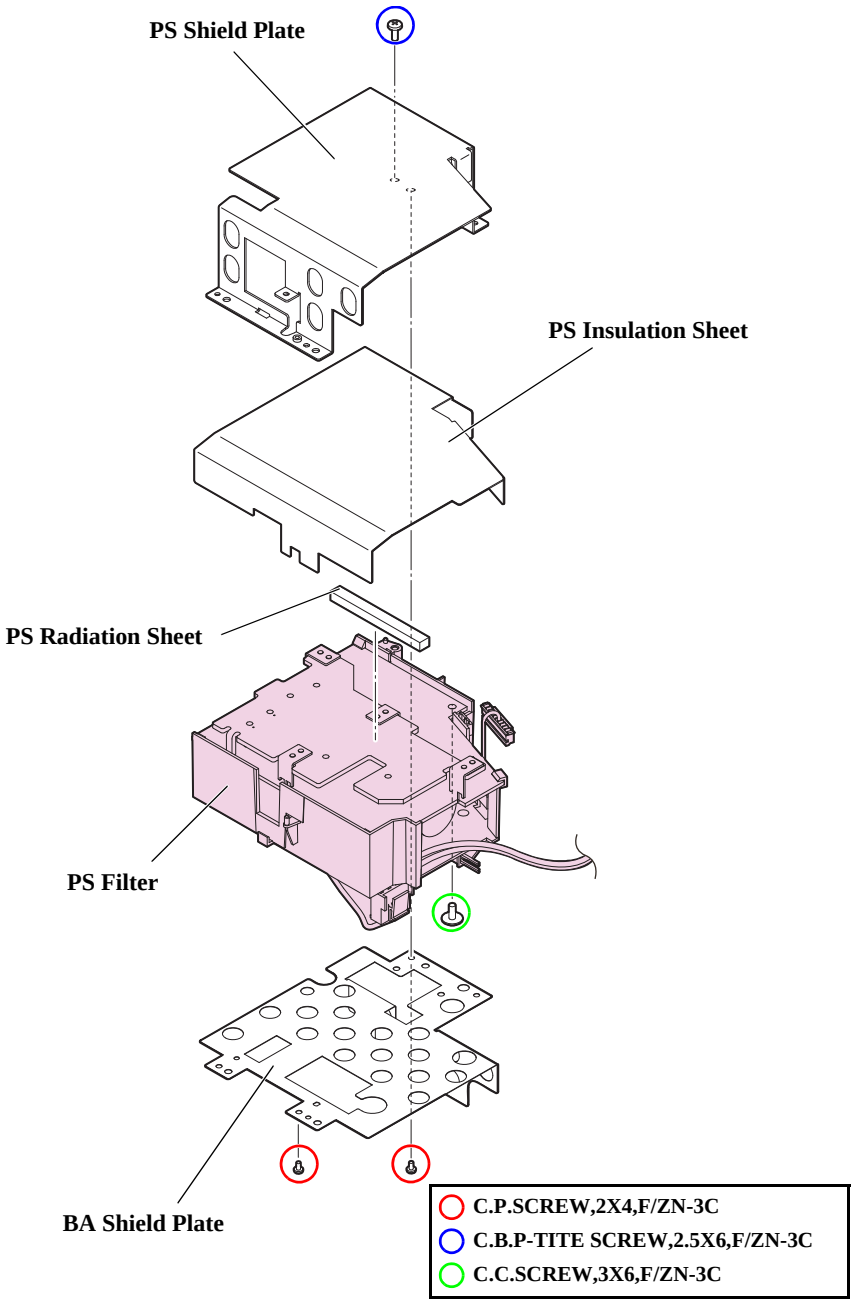


Figure 3-33.

13. Release the four hooks of the PS Case.
14. Remove the BA Cable from the PS Case and remove the PS Filter.
15. Remove the following parts from the PS Filter.
    - BA Cable
    - PS-MA Cable

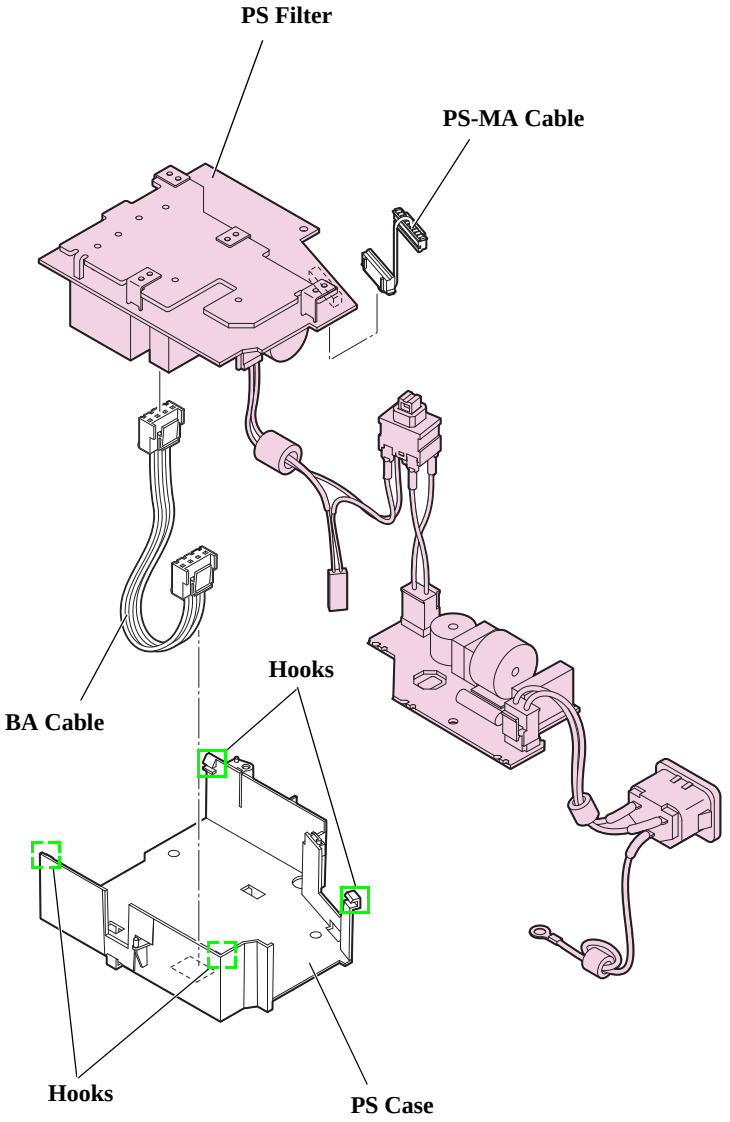


Figure 3-34.

3.3.12 INT Duct (assembly)

Standard Operation Time	15 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the MA Board (assembly).* *(p.74)*
5. *Remove the Optical Engine.* *(p.82)*
6. *Remove the Lamp Fan.* *(p.86)*
7. *Remove the EX Duct (assembly).* *(p.87)*
8. *Remove the BA Power Supply (assembly).* *(p.89)*
9. Remove the screw (◯).
10. Release the hook (□) and remove the LV Duct 2.
11. Release the three hooks (□) of the LV Duct Cover and remove the LV Duct Cover.
12. Remove the six screws (◯)(◯) and remove the INT Duct (assembly).

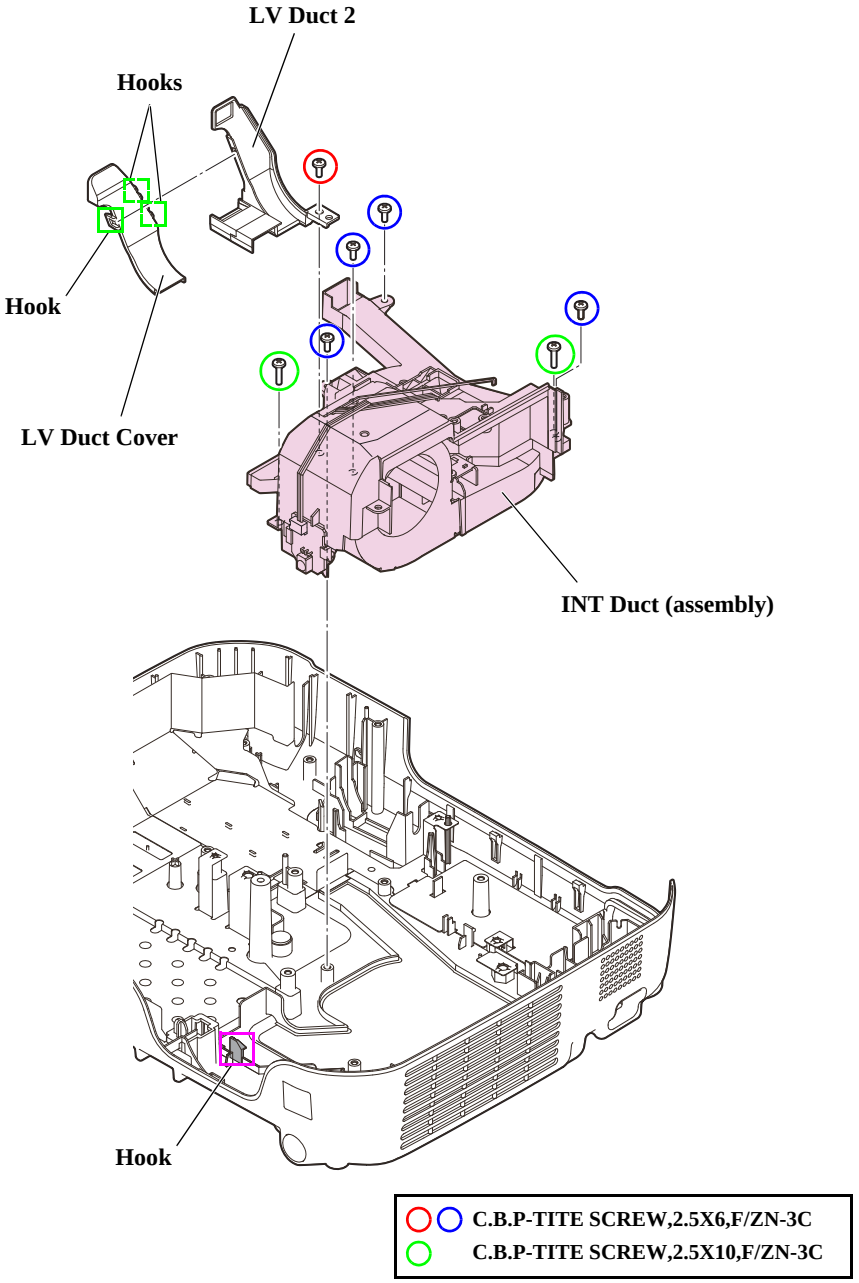


Figure 3-35.

3.3.12.1 IR Board

Standard Operation Time	16 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the MA Board (assembly).* *(p.74)*
5. *Remove the Optical Engine.* *(p.82)*
6. *Remove the Lamp Fan.* (p.86)
7. *Remove the EX Duct (assembly).* *(p.87)*
8. *Remove the BA Power Supply (assembly).* *(p.89)*
9. *Remove the INT Duct (assembly).* *(p.96)*
10. Remove the INT Duct from the LV Duct.
11. Remove the IR Board from the LV Duct.
12. Remove the RC Cable from the IR Board.

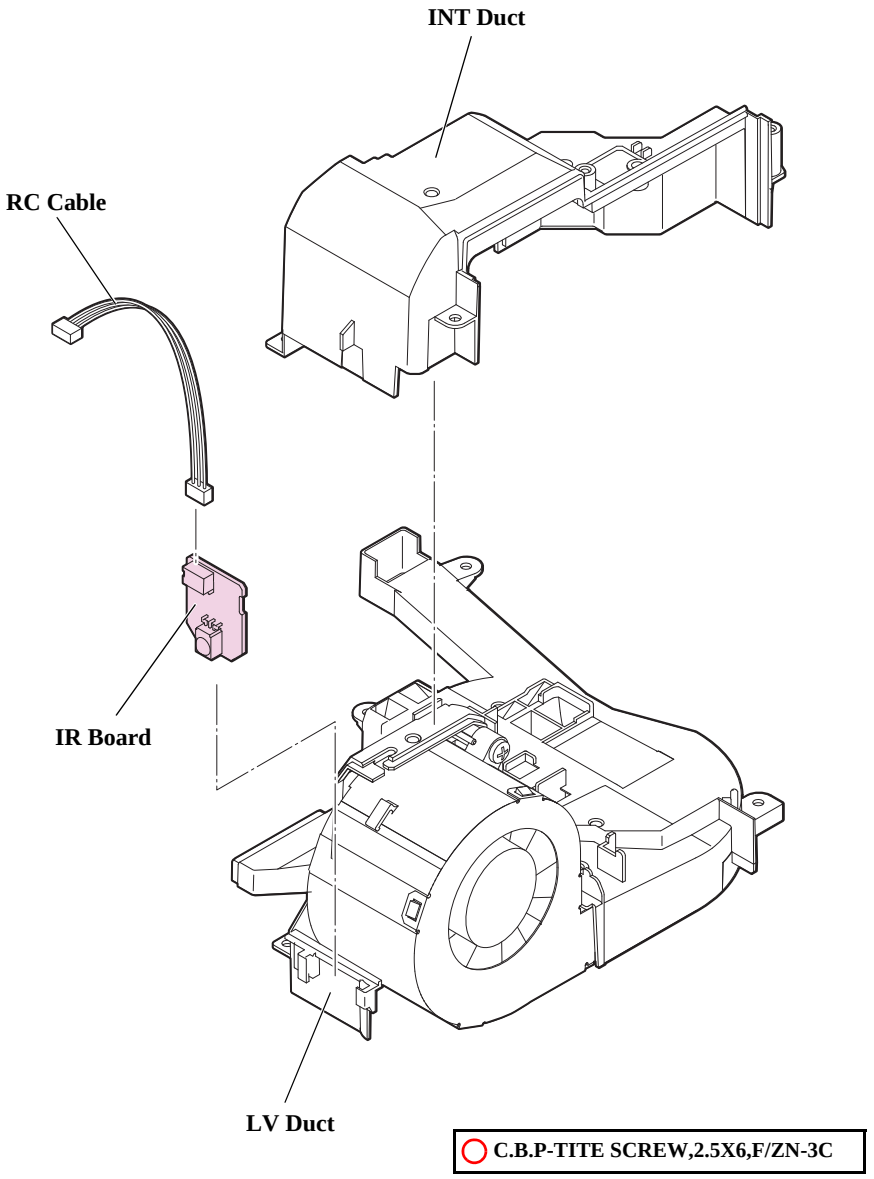
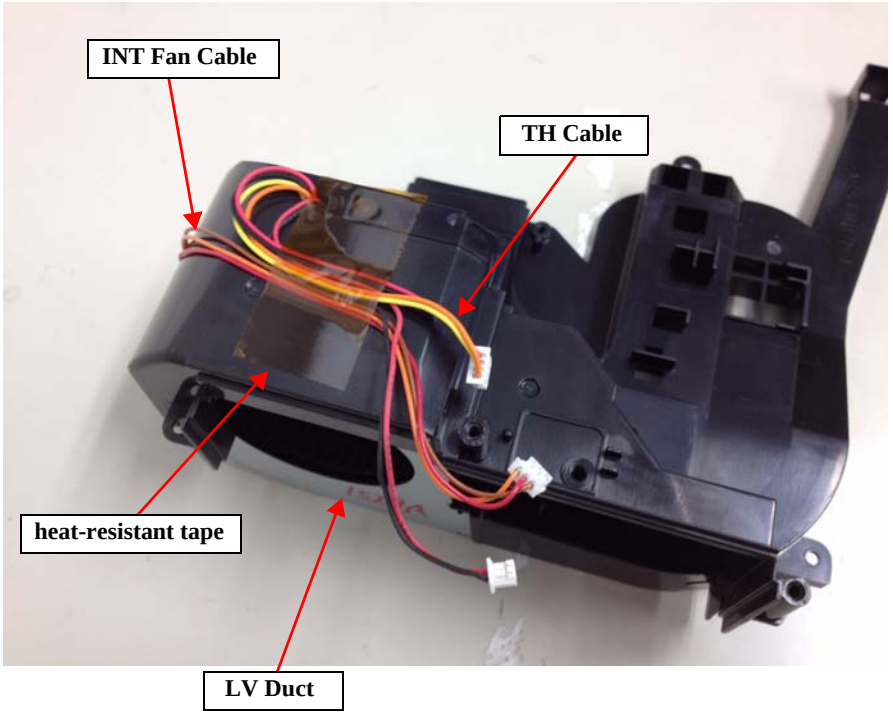


Figure 3-36.

⚠ CAUTION

Route the TH Cable and INT Fan Cable as shown below and secure them with a heat-resistant tape.



3.3.12.2 INT Fan / TH Board (1)

Standard Operation Time	17 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Upper Case (assembly).* *(p.62)*
4. *Remove the MA Board (assembly).* *(p.74)*
5. *Remove the Optical Engine.* *(p.82)*
6. *Remove the Lamp Fan.* (p.86)
7. *Remove the EX Duct (assembly).* *(p.87)*
8. *Remove the BA Power Supply (assembly).* *(p.89)*
9. *Remove the INT Duct (assembly).* *(p.96)*
10. *Remove the TH Board (1) / IR Board.* *(p.97)*
11. Remove the two screws (◯) and remove the INT Fan.
12. Remove the TH Board (1).
13. Remove the TH Cable from the TH Board (1).

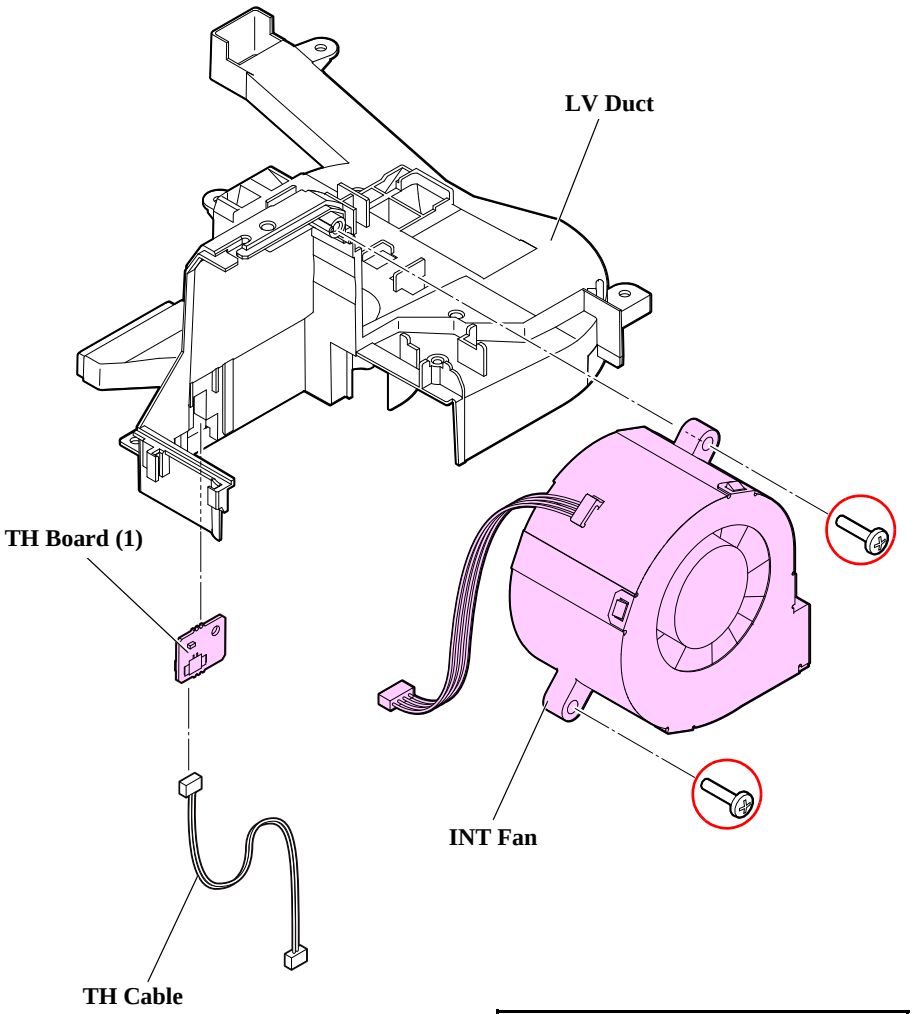
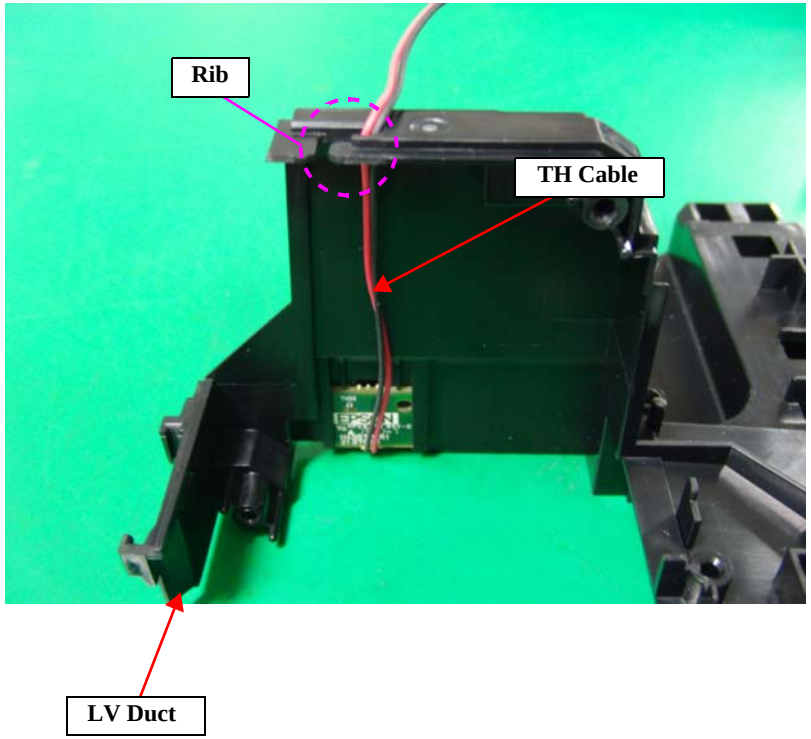


Figure 3-37.

⚠ CAUTION

Route the TH Cable through the rib on the LV Duct.



3.3.13 Lower Case

Standard Operation Time	17 Min.

1. *Remove the Air Filter.* *(p.59)*
2. *Remove the Lamp.* *(p.60)*
3. *Remove the Rear Foot.* *(p.61)*
4. *Remove the Front Foot.* *(p.62)*
5. *Remove the Upper Case (assembly).* *(p.62)*
6. *Remove the MA Board (assembly).* *(p.74)*
7. *Remove the Speaker.* *(p.81)*
8. *Remove the Optical Engine.* *(p.82)*
9. *Remove the Lamp Fan.* *(p.86)*
10. *Remove the EX Duct (assembly).* *(p.87)*
11. *Remove the BA Power Supply (assembly).* *(p.89)*
12. *Remove the INT Duct (assembly).* *(p.96)*
13. Remove the FB Insulation Sheet from the Lower Shield Plate.
14. Remove the Lower Shield Plate from the Lower Case.
15. Remove the two screws (◯) and remove the Lamp Connector Holder.

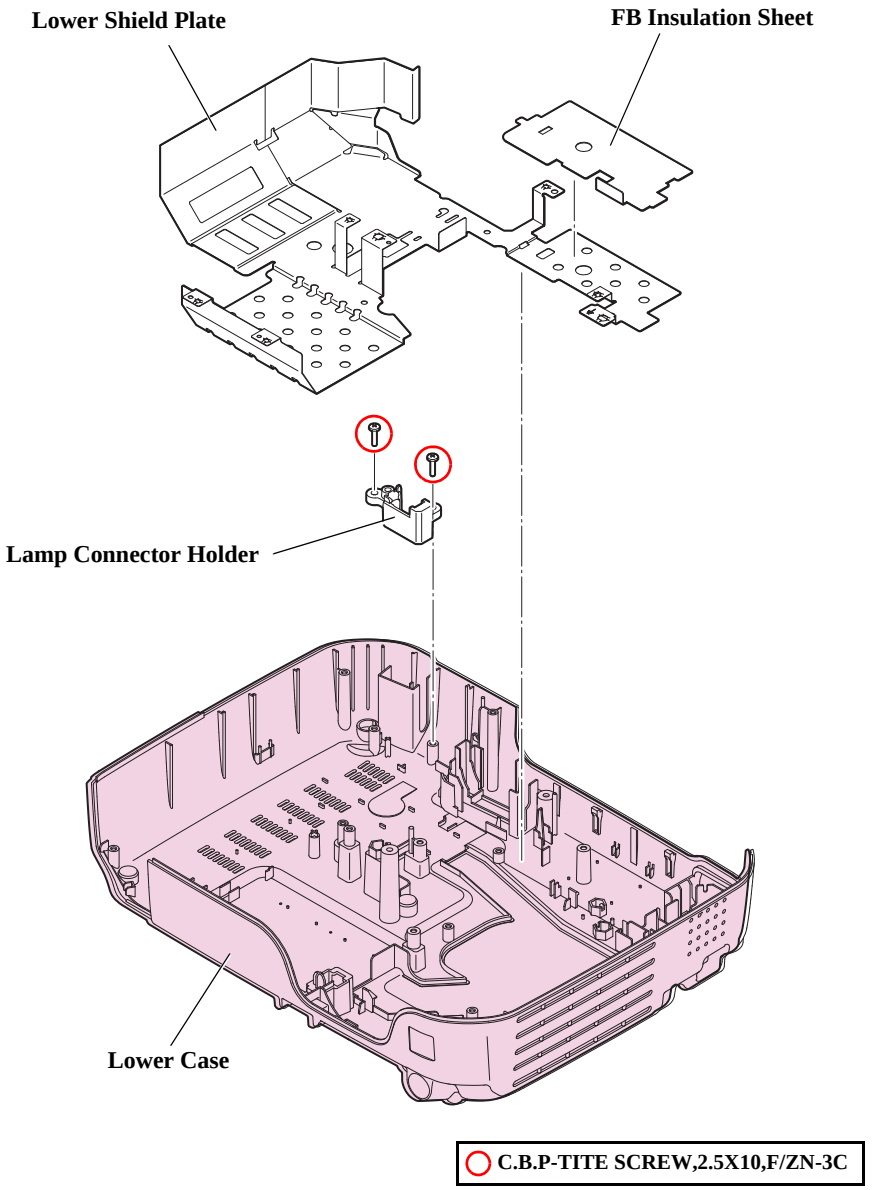


Figure 3-38.

16. Remove the following parts from the Lower Case.

- Hexagonal nut x 3
- Lower Sheet
- Ring Plate (Boss)
- Ring Plate (Boss 2)
- RC Filter
- 3LCD Logo Plate

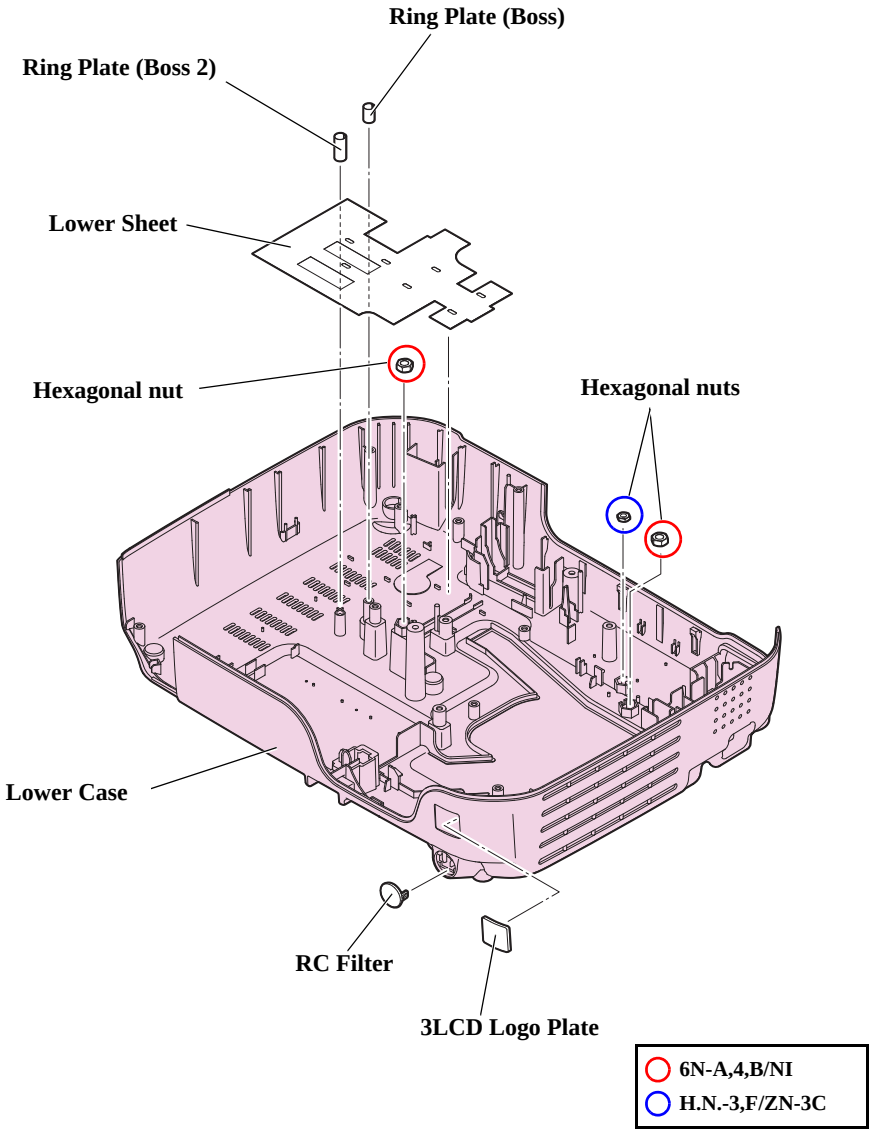


Figure 3-39.

3.4 Safety Check after Servicing

To Maintain the safeness of the product, make sure to carry out the safety check following the instruction in this section after repairing the safety device specified below.

☐ Definition of Safety Device/Functions

- ■ The parts that fall into an unsafe state* if their specifications or functions are nonconforming.
- ■ The parts that require attention to the safety precautions of the customer.
- ■ The parts that are designated by the public safety regulations or the like.

* "Unsafe state" is the state of a part that may cause or contain the risk of the following:
- Personal injuries
- Damages to the property
- Abnormal heat generation
- Smoking
- Fire
- Explosion
- Damage to the part to be installed
- Disturbance to/from the peripheral device (EMC disturbance)
- Chemical substances regulated by the law

☐ The Safety Control Points are:

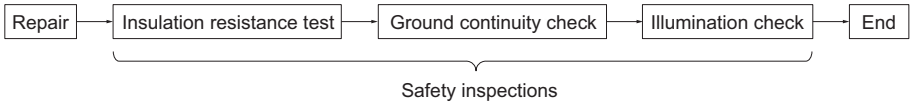
- ■ The processes that Safety Devices/Functions are manufactured, or checked.
- ■ The processes that require the management to maintain the workers' safety.

☐ Safety Devices/Functions of this product

- ■ Lamp (p.60)
- ■ WARNING LABEL,Sheet (Part A/B/C/D/E) (p.66)
- ■ MA Board (p.79)
- ■ Optical Engine (p.82)
- ■ BA Unit (p.93)
- ■ PS Filter (p.94)

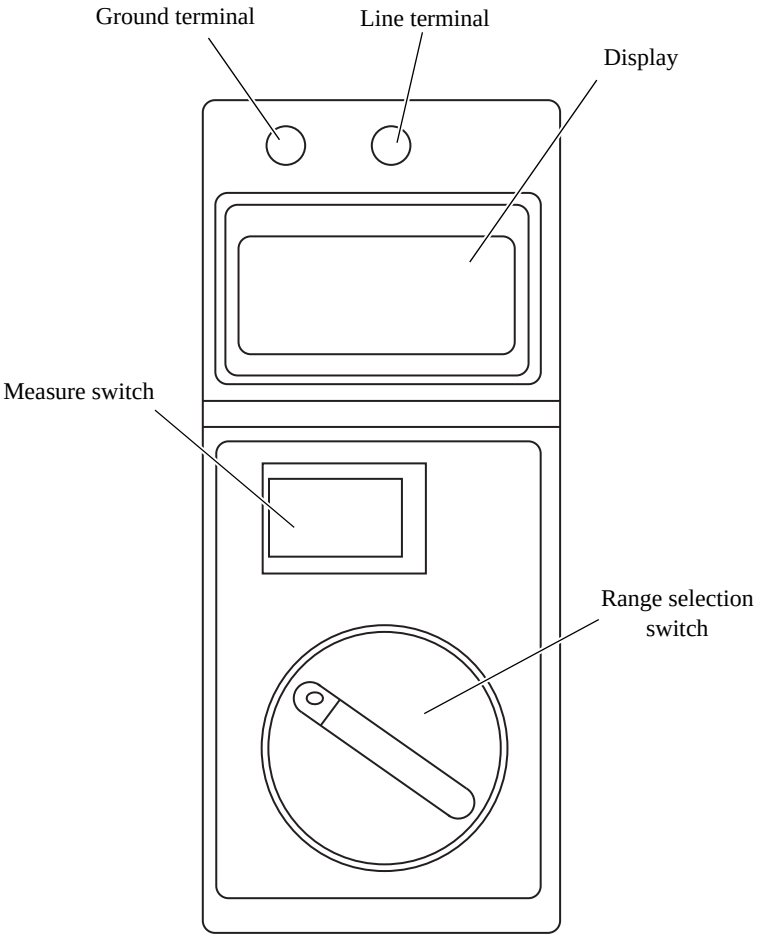
☐ Method to check the Safety Control Points

Carry out the Check in the order given below.



- ■ Testing apparatus

Insulation ohmmeter (Rating: 500 V/100 MΩ)



■ Standard

Insulation resistance should be 10 MΩ or more.

■ Testing procedure

1. Insulation resistance test

1. Set the range selection switch to 500 V.
2. Connect the black lead wire to the ground terminal.
3. Connect the red lead wire to the line terminal.

⚠WARNING

Because high voltage (500 V) is present, do not touch the probe during testing.

4. Connect the crocodile clip of the black lead wire to “c” of the PC connector. (Refer to Fig. 3-40)
5. Insert the probe of the red lead wire into “a”.
6. Set the measure switch to LOCK, and wait for one minute.
7. Measure the insulation resistance between “a” and “c” (1) after one minute.
8. Check that the insulation resistance after one minute is 10 MΩ or more between “a” and “c” (1).
9. Measure the insulation resistance between “b” and “c” (2) in the same way as for (1).
10. Check that the insulation resistance after one minute is 10 MΩ or more between “b” and “c” (2).

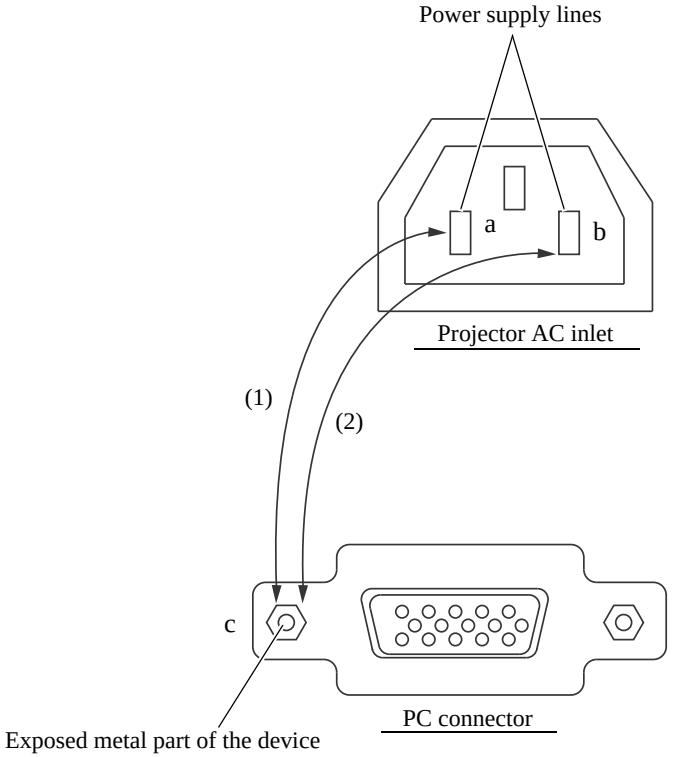
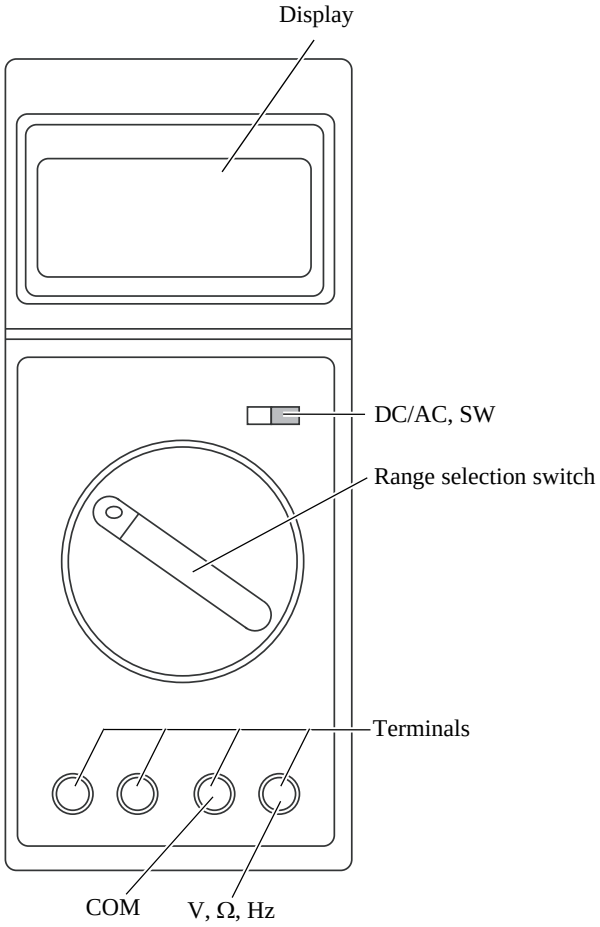


Figure 3-40.

2. Ground continuity check

■ Testing apparatus

Multimeter (with sensitivity down to 0.1 Ω)



■ Standard/Judgment level

Should be no resistance (0.5 Ω or less)

■ Testing procedure

1. Turn on the power switch.
2. Set the range selection switch to Ω.
3. Connect the black lead wire to the COM terminal.
4. Connect the red lead wire to the V/Ω/Hz terminal.
5. Check that the resistance at (1) in the diagram below is 0.5 Ω or less.

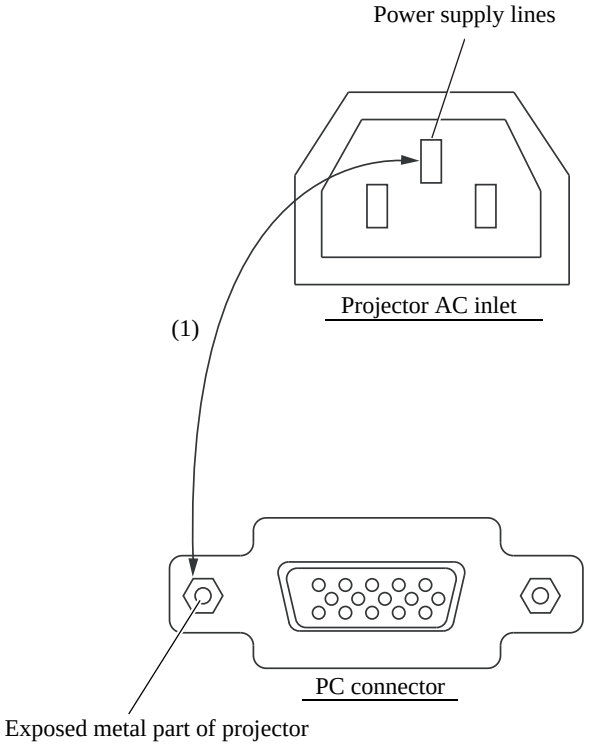


Figure 3-41.

3. Illumination check

- Test conditions: Input a PC or video signal to the LCP and check the illumination for about 5 minutes.
- Judgment : The projector should operate normally without smoke or fire.

3.5 Writing the DR Data

3.5.1 Overview

In this projector's case, when either of the Optical Engine or the MA Board is broken, you can replace the broken Optical Engine or MA Board solely if you carry out the following procedure. In this case (a new combination of them), you will write the DR data adjusted for the characteristics of the Optical Engine (the current one or the replaced one) into the newly-combined MA Board according to the specified procedure. This section describes the specific repair process including how to write the DR data.

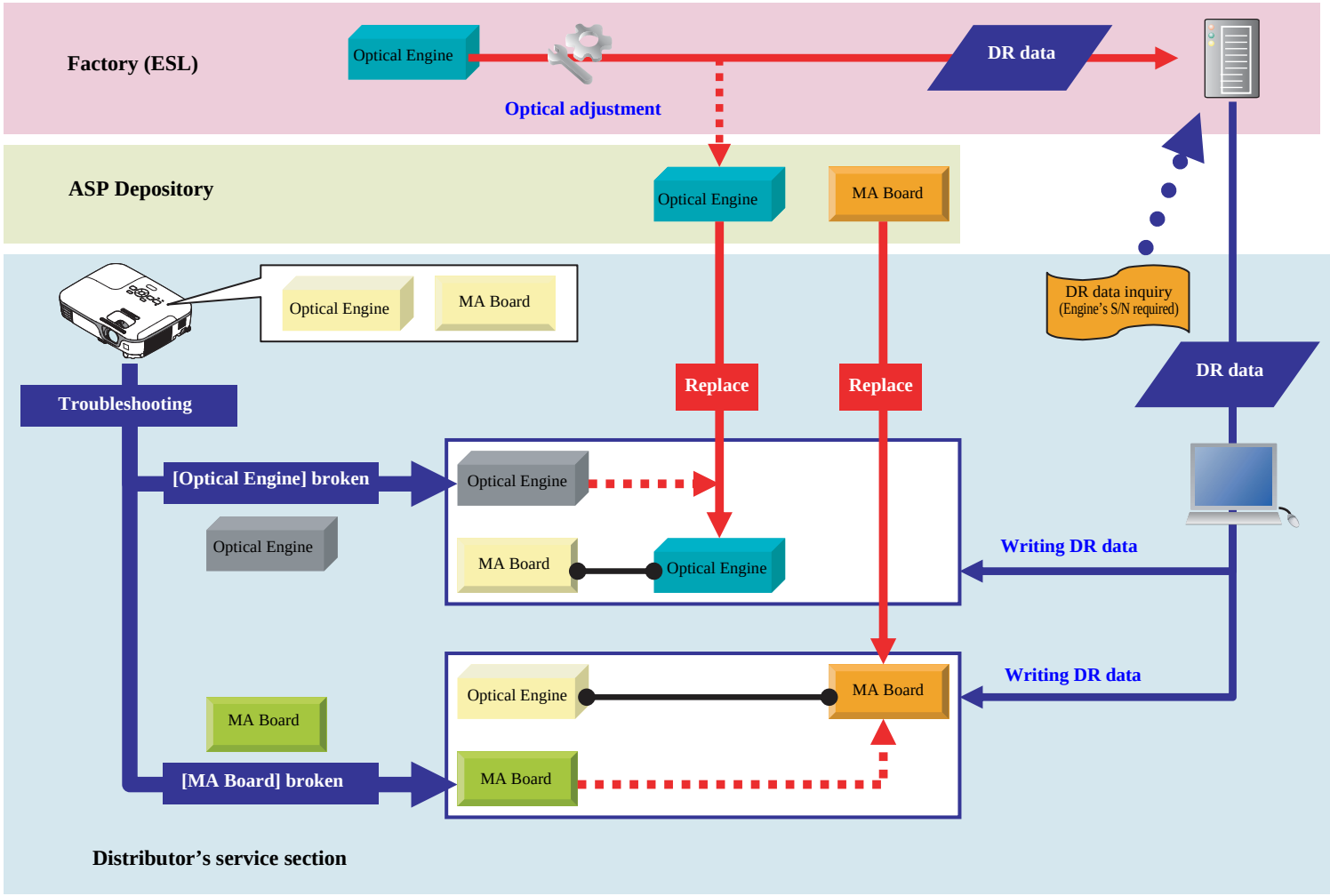


Figure 3-42. Conceptual diagram of the replacement using DR data

3.5.2 Preparation

Obtain the following tools from the Tech Exchange in advance.

Tool Name	Remark
CAT (IRIS/CAT)*1	Install it in your PC.
“IRIS_MENT.zip” file*2	Save this file to the specified folder.
Model Group List*2	Necessary for selecting the current model on the CAT, and also for preparing the correct ASP for the projector to be repaired.

Note *1: (Definition file)

*2: Use the latest ones referring to “TI08-30e”.

3.5.3 Operating Procedure

3.5.3.1 Workflow

The whole replacing operation work flow is shown below.

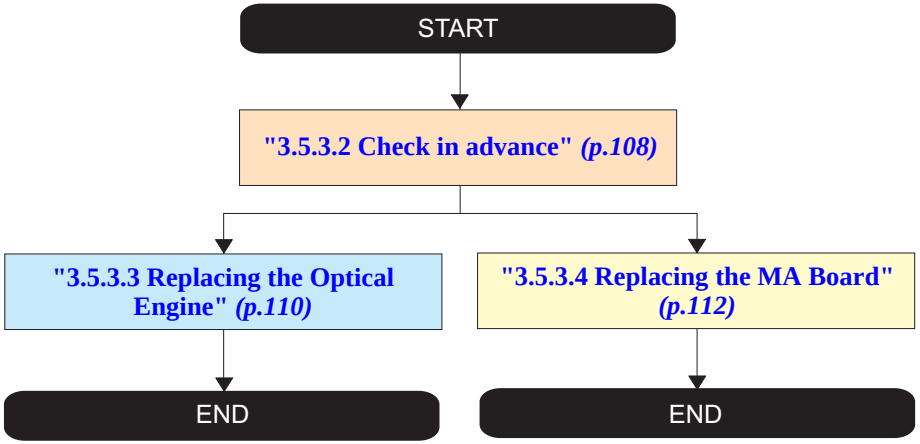


Figure 3-43. Workflow for the replacement using DR data

In the following procedure, refer to the “CAT Operation Manual” published as the technical information TI08-30e for more detailed operation procedures of CAT.

3.5.3.2 Check in advance

This check inspects the Optical Engine and the MA Board to specify the current trouble is occurring either in the Optical Engine or in the MA Board.

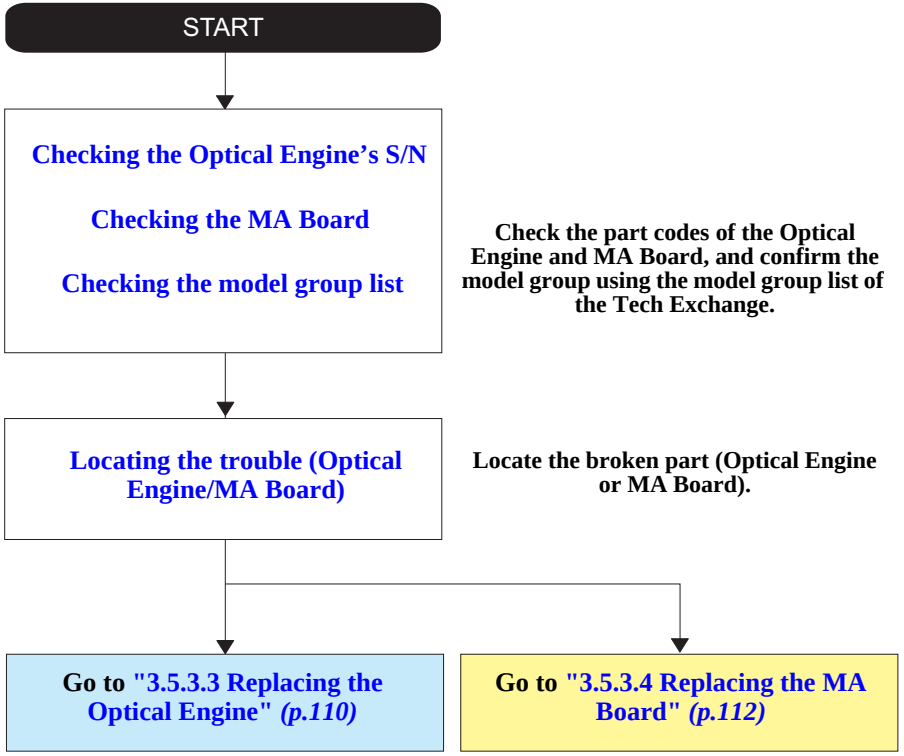


Figure 3-44. Flow for the check in advance

PROCEDURE FOR CHECK IN ADVANCE

☐ Checking the Optical Engine's S/N

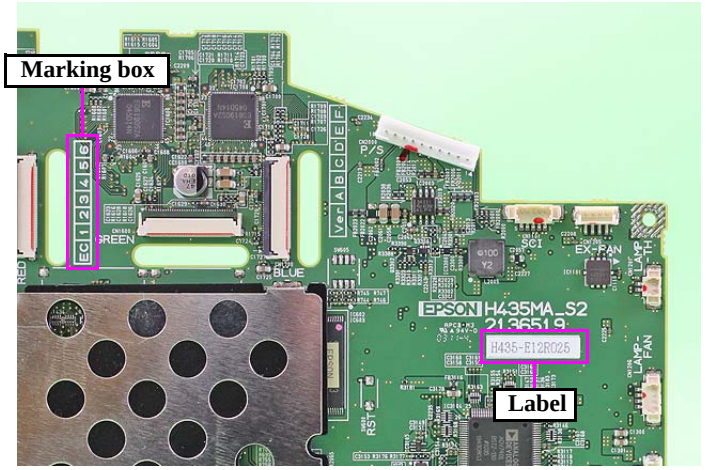
1. Write down the serial number (11digits) on the label attached on the Optical Engine.

Take care not to mistake the numbers such as "6" for "5" because of the font used for the serial number of the Optical Engine. Some numbers are easily mistaken.

☐ Checking the MA Board

2. Check the label attached on the MA Board for the current model.
3. Confirm the check marks in the marking box.

"Hxxxx-xxxxxxxx" is printed on the label. The three or four digits after "H" indicate the current model.



(Continued to the next page)

☐ Checking the model group list

4. Referring to the Technical Information (No. TI08-30) and obtain the latest model group list, then check which group the current MA Board belongs to.

- **Make sure the group is correct since even among the same model projectors, various MA Boards may be used.**
- **Even if 3-digit number; "HHH" of serial number indicated on a label attached to the Optical Engine; "FYMHHHNNNN", is different, this engine can be used as the same type of optical engine as long as the parts compatibility is maintained.**

☐ Locating the trouble (Optical Engine/MA Board)

5. Prepare both a good engine and an MA Board, and check either of the engine or the MA Board has trouble by changing it with the good one.

3.5.3.3 Replacing the Optical Engine

This section describes how to repair when the optical engine is broken.

"3.5.3.2 Check in advance" *(p.108)*

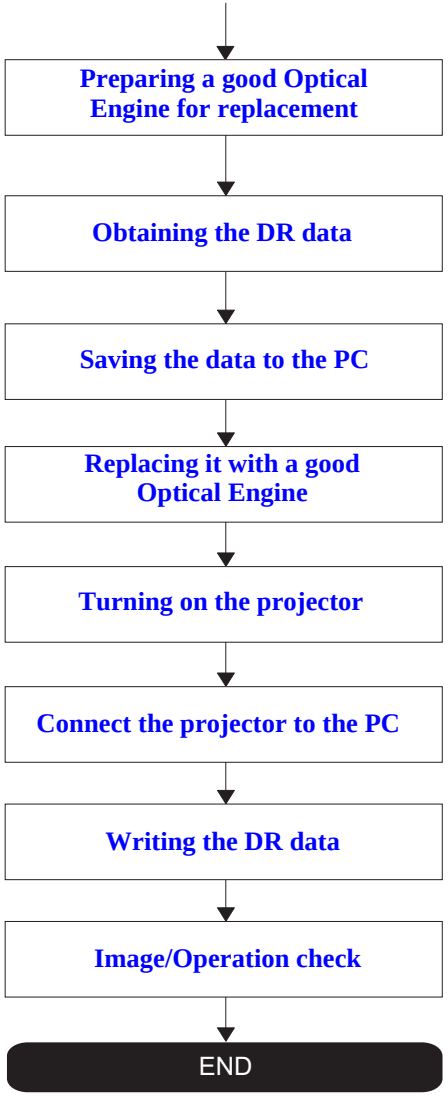


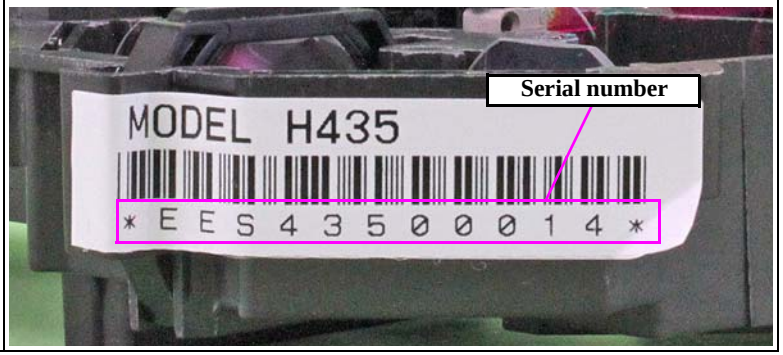
Figure 3-45. Optical Engine replacement workflow

OBTAINING THE DR DATA

☐ Preparing a good Optical Engine for replacement

1. Prepare a good Optical Engine belonging to the same model group as the current MA Board for replacement.
2. Note down the 11-digit serial number of the good Optical Engine for replacement.

Take care not to mistake the numbers such as "6" for "5" because of the font used for the serial number of the Optical Engine. Some numbers are easily mistaken.



☐ Obtaining the DR data

3. Obtain the corresponding DR data referring to the Technical Information TI08-30e.

☐ Saving the data to the PC

4. Save the DR data file to the following folder in the PC.
   C:\IRIS\DRDATA\

- **RESTORE cannot operate correctly if the DR data is not saved in the specified folder.**
- **Serial number (11digits) of the optical engine that was put into the " Engine Serial " column might be different from file name displayed as a result of the retrieval. No problem with the difference.**

Entered OE serial number	Result of retrieval (Goose File name)
E9X309000**04**	H309_12_E9X_000**02**__050000_06FFFF.bin

(Continued to the next page)

☐ Replacing it with a good Optical Engine

5. Replace the Optical Engine and reassemble it until the projector can be powered on correctly.

☐ Turning on the projector

6. Turn the projector ON.

☐ Connect the projector to the PC

7. Connect the projector to the PC using an RS-232C cable.

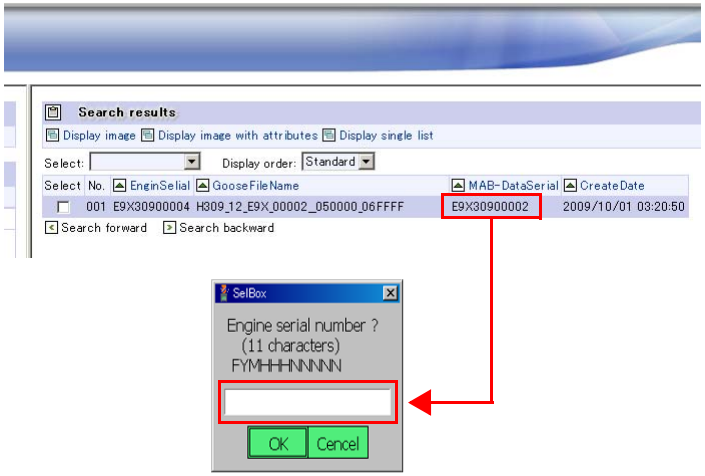
Refer to the user's manual for communication configuration.

☐ Writing the DR data

8. Start up the CAT.

9. Select the group from [SETUP] - [SELECT MODEL] menu, by referring to the number; *** and sax, that can be found in a file name; "H***_xx_yyy_zzzzz_zzzzzz_zzzzzz.bin" of supplied DR data.

10. Enter serial number (11digits) that has been displayed in "MAB-DataSerial" column as a result of retrieval. Execute RESTORE.



☐ Image/Operation check

11. Restart the projector (Power OFF - Power ON) once, and confirm there is no problem in the projected image and operation.

3.5.3.4 Replacing the MA Board

This section describes how to repair when the MA Board is broken but the projector can be powered on.

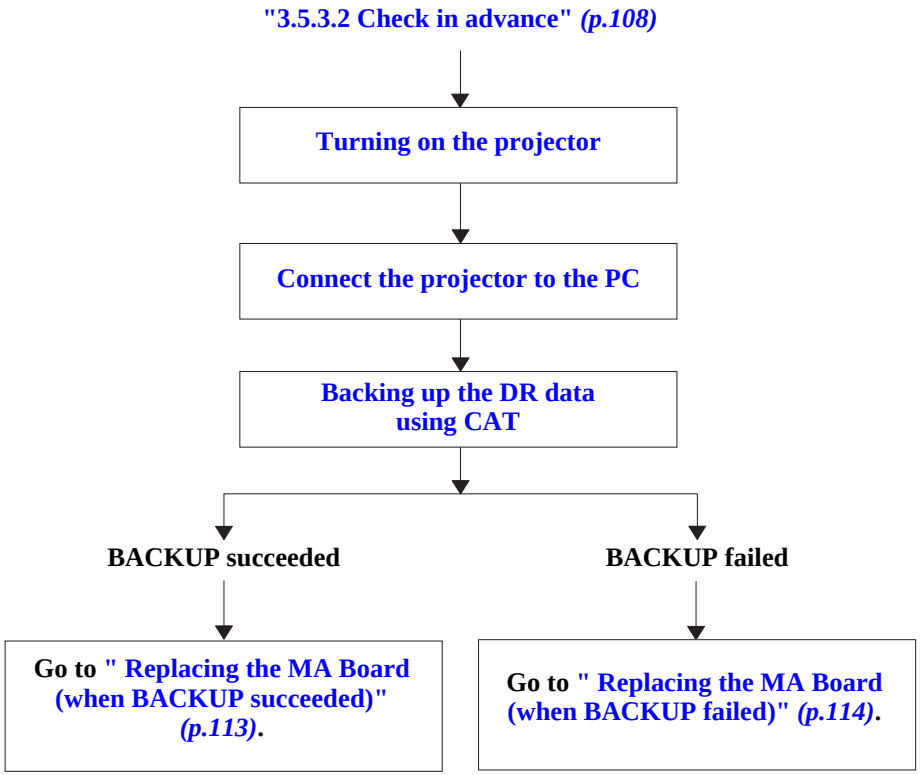


Figure 3-46. MA Board replacement workflow

BACKING UP THE DR DATA

☐ Turning on the projector

1. Turn the projector ON.

☐ Connect the projector to the PC

2. Connect the projector to the PC using an RS-232C cable.

	Refer to the user's manual for communication configuration.

☐ Backing up the DR data using CAT

3. Start up the CAT.

4. Select [SETUP] – [SELECT MODEL], and choose the group matched with the model group list.

5. Run "BACKUP".

	Even if the model number; excused that indicated on a label attached to the MA Board, is not matching to the model number indicated on the serial number label of the Optical Engine, you can still execute BACKUP operation by selecting the group in the Model Group List for [SELECT MODEL] menu.

(Continued to the next page)

REPLACING THE MA BOARD (WHEN BACKUP SUCCEEDED)

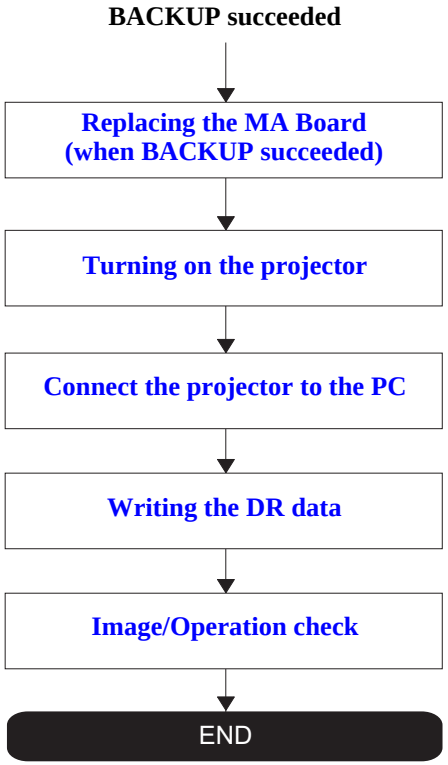


Figure 3-47. MA Board replacement workflow (when BACKUP succeeded)

☐ Replacing it with a good MA Board

1. Prepare a good MA Board belonging to the same model group, and replace the boards.

☐ Turning on the projector

2. Turn the projector ON.

☐ Connect the projector to the PC

3. Connect the projector to the PC using an RS-232C cable.

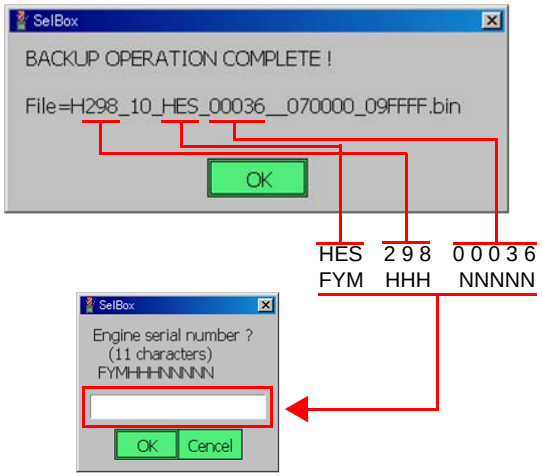
	Refer to the user's manual for communication configuration.

☐ Writing the DR data

4. Start up the CAT.

5. Select the group from [SETUP] - [SELECT MODEL] menu, by referring to the number; *** and sax, that can be found in a file name; "H***_xx_yyy_zzzzz_zzzzzz_zzzzzz.bin" of the DR data that stored in C:\IRIS\DRDATA folder.

6. When BACKUP is complete, the completion message including file name is displayed. Recompose the file name as follows and enter the 11digits. And then, execute RESTORE.



(Continued to the next page)

The DR data is not stored on a brand-new MA Board, and due to this, "$$$$$$$$" appear on the menu screen when trying to restore the DR data, but a restore operation itself can be completed normally.

☐ Image/Operation check

7. Restart the projector (Power OFF - Power ON) once, and confirm there is no problem in the projected image and operation.

REPLACING THE MA BOARD (WHEN BACKUP FAILED)

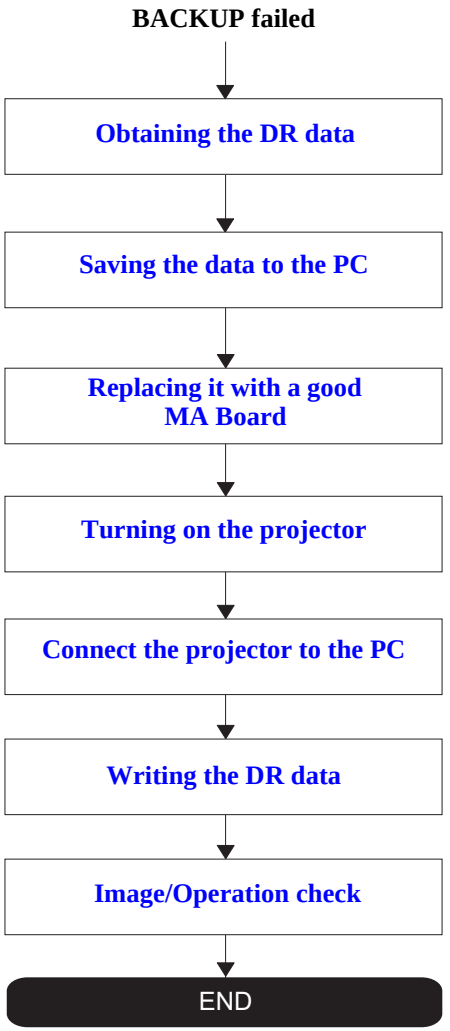


Figure 3-48. MA Board replacement workflow (when BACKUP failed)

☐ Obtaining the DR data

1. Obtain the corresponding DR data referring to the Technical Information TI08-30e.

☐ Saving the data to the PC

2. Save the DR data file to the following folder in the PC.
C:\IRIS\DRDATA\

	■ **RESTORE cannot operate correctly if the DR data is not saved in the specified folder.** ■ **Do not change the name of the DR data file.**

☐ Replacing it with a good MA Board

3. Prepare a good MA Board belonging to the same model group, and replace the boards.

☐ Turning on the projector

4. Turn the projector ON.

☐ Connect the projector to the PC

5. Connect the projector to the PC using an RS-232C cable.

	Refer to the user's manual for communication configuration.

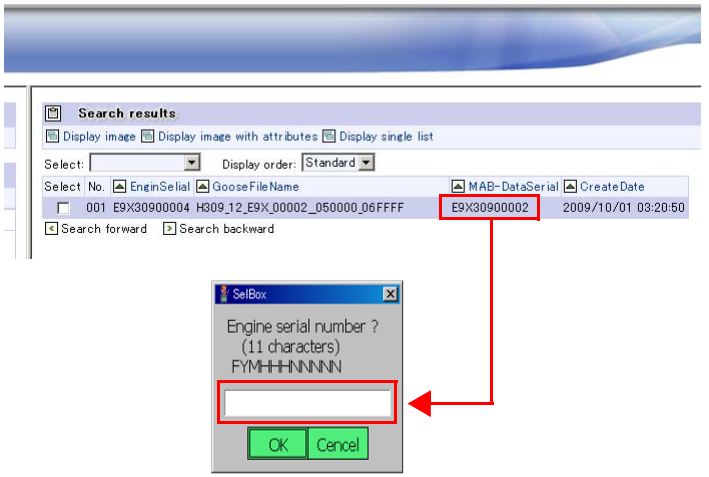
(Continued to the next page)

☐ Writing the DR data

6. Start up the CAT.

7. Select the group from [SETUP] - [SELECT MODEL] menu, by referring to the number; *** and sax, that can be found in a file name; "H***_xx_yyy_zzzzz_zzzzzz_zzzzzz.bin" of supplied DR data.

8. Enter serial number (11digits) that has been displayed in MAB-DataSerial column as a result of retrieval. And then, execute RESTORE.



	The DR data is not stored on a brand-new MA Board, and due to this, "$$$$$$$$" appear on the menu screen when trying to restore the DR data, but a restore operation itself can be completed normally.

☐ Image/Operation check

9. Restart the projector (Power OFF - Power ON) once, and confirm there is no problem in the projected image and operation.

3.6 Reference (Part Names given in the SPI)

Part names used in this chapter are rewritten so as to be read easily in sentences. The part names used in this manual and the corresponding official names given in SPI are listed below.

PART NAMES GIVEN IN THE SPI

Names used in this Chapter	Official Name given in SPI
3LCD Logo Plate	LOGO PLATE, 3LCD;W
Air Filter	AIR FILTER ASSY
Air Filter Cover	COVER,AIR FILTER;BW
Air Filter Cover Band	BAND,COVER,AIRFILTER
Auto Iris	AUTO IRIS ASSY;AS
BA Cable	CABLE,PS_BALLAST
BA Insulation Sheet	SHEET,INSULATION,BALLAST
BA Lamp Cable	CABLE,BALLAST LAMP;2
BA Shield Plate	SHIELD PLATE,BALLAST
BA Unit	BALLAST UNIT
EMC Sheet	SHEET,EMC
EX Fan	FAN,EXHAUST
EX Fan Holder	HOLDER,FAN,EXHAUST
EX Louver	louver,ex;W
FB Insulation Sheet	SHEET,INSULATION,FB
Focus Ring	FOCUS RING
Foot Rubber	FOOT RUBBER
Front Foot	FOOT UNIT,FRONT;B
Front Slit	SLIT,FRONT;BB
HK Assy	HK ASSY
HK GND Plate	PLATE,GND,HK
IF Case	CASE,IF;1B
IF Shade Case	CASE,SHADE,IF
Inner EX Duct	DUCT,EXHAUST INNER
INT Duct	DUCT,INTAKE
INT Fan	FAN,INTAKE
INT Fan Cushion	CUSHION,INTAKE FAN;A
IR Board	PWB ASSEMBLY;IR_S2
Kensington Shade Sheet	SHEET,SHADE,KENSINGTON
Lamp	LAMP ASSY;AS
Lamp Connector Holder	HOLDER,CONNECTOR,LAMP
Lamp Cover	LID ASSY,LAMP;BWB
Lamp Fan	FAN,LAMP
LED Lens	LENS,LED
Lens Shutter	SHUTTER,LENS;BB
Lower Case	CASE,LOWER;WW
Lower Sheet	SHEET,LOWER
Lower Shield Plate	SHIELD PLATE,LOWER
LV Duct	DUCT,LV
LV Duct 2	DUCT,LV;2
LV Duct Cover	COVER,DUCT,LV
MA Board	BOARD MA ASSY;1W;AS
MA Insulation Sheet	SHEET,INSULATION,MA
MA Plate	PLATE,MA;1
MA Shield Plate	SHIELD PLATE,MA
Model Plate	MODEL NAME PLATE;EB-W12
Optical Engine	Optical Engine;AS
PS Case	CASE,PS
PS Duct	DUCT,PS
PS Filter	PS FILTER ASSY;AS
PS Insulation Sheet	SHEET,INSULATION,PS

Names used in this Chapter	Official Name given in SPI
PS-MA Cable	CABLE,PS_MA
PS Radiation Sheet	SHEET,RAD,PS
PS Shield Plate	SHIELD PLATE,PS
RC Cable	CABLE,RC
RC Filter	FILTER,RC;A
Rear Foot	FOOT,REAR
Ring Plate (Boss)	PLATE,RING,BOSS
Ring Plate (Boss 2)	PLATE,RING,BOSS2
RS Board	PWB ASSEMBLY;RS_R1
SCI Cable	CABLE,SCI
Shutter Ball	BALL,SHUTTER
Shutter Cushion A	CUSHION,FRAME,SHUTTER;A
Shutter Cushion B	CUSHION,FRAME,SHUTTER;B
Shutter Frame	FRAME,SHUTTER;BB
Shutter Sheet	SHEET,SHUTTER
Shutter Spring	SPRING,SHUTTER
Shutter Switch	SWITCH,SHUTTER
Speaker	speker
SW Board	PWB ASSEMBLY;SW_S2
SW Button	BUTTON,SW;WJ
SW Cable	CABLE,SW; Au
SW Selection Button	BUTTON,SELECTION,SW;SW
TH Cable	CABLE,TH
TH Board (1)	PWB ASSEMBLY;TH1_S2
TH Board (2)	PWB ASSEMBLY;TH1_S2
Upper Case	CASE,UPPER;BW1J
Upper Case Cover	COVER,CASE UPPER
Upper Cushion A	CUSHION,UPPER;A
Upper Cushion B	CUSHION,UPPER;B
Upper Cushion C	CUSHION,UPPER;C
Zoom Ring	ZOOM RING

CHAPTER

4

MAINTENANCE

4.1 Precautions

4.1.1 General Cautions in operation

General cautions for disassembling and assembling this product are provided below. Cautions for each procedure are provided in its corresponding section. Make sure to refer to them before starting.

⚠ WARNING

Do not touch the lamp or the parts around it. They are extremely hot even after completed the cooling down operation, and may cause a burn injury. Therefore, leave the unit until it becomes cool enough before performing maintenance work.

⚠ CAUTION

- **When operating the inside of the Optical Engine, make sure to follow the instructions given in this chapter.**
- **When disassembling the Optical Engine, make sure to choose a location with less influence from dirt and dust.**
- **If there is dirt or dust intruding inside the Optical Engine, you can clean it by air-blowing or the like. However; make sure to avoid such cleaning in the same location for disassembling/repairing the Optical Engine.**
- **Do not remove any parts except the exchangeable parts shown in this chapter.**
- **The optical parts secured by adhesive-bonding cannot be replaced; therefore, if replacing such parts is necessary, replace the Optical Engine.**
- **When disassembling the Optical Engine, take care not to damage the parts attached on the LIGHT GUIDE,UPPER.**
- **If you should touch and contaminate an optical parts, clean the part using ethanol.**

⚠ CAUTION

- **If the image quality is not improved even if the troubled optical parts are replaced, replace the Optical Engine with a new one.**
- **When reassembling, make sure to install the removed optical parts in the original locations.**
- **Do not remove the four screws around the Projection Lens shown in the figure below. After these screws are installed, the engine is optically adjusted. Removing them may misalign the adjustment.**

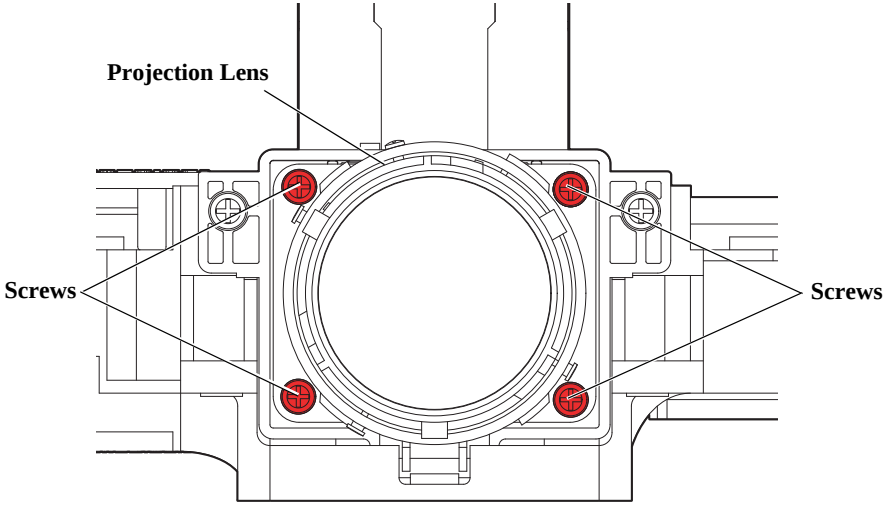


Figure 4-1.

4.1.2 Tools

The following table indicates the tools recommended for use in disassembly, reassembly and adjustment.

Table 4-1. List of Tools

Tool Name	Qt.	Availability	Application
Phillips screwdriver No. 0 (10 cm)	1	4	Disassembling the outer case and inner components
Ethanol	1	4	Cleaning the optical parts/ components
Nonwoven fabric wiper	1	4	Cleaning the optical parts/ components
Cotton bud	1	4	Cleaning the optical parts/ components
Precision flat-head screwdriver	1	4	Removing springs

4.2 Replacing the Internal Parts/Components of Optical Engine

- **Before starting this operation, remove the Optical Engine from the projector, and also remove the Auto Iris from the engine in advance. (See "3.3.8 Optical Engine" *(p.82)*.)**
- **The description in this section is based on EB-X11. For other models, the name of lenses and such may differ, so read such part names replacing them with those names for your model following the instructions in each disassembling procedure.**

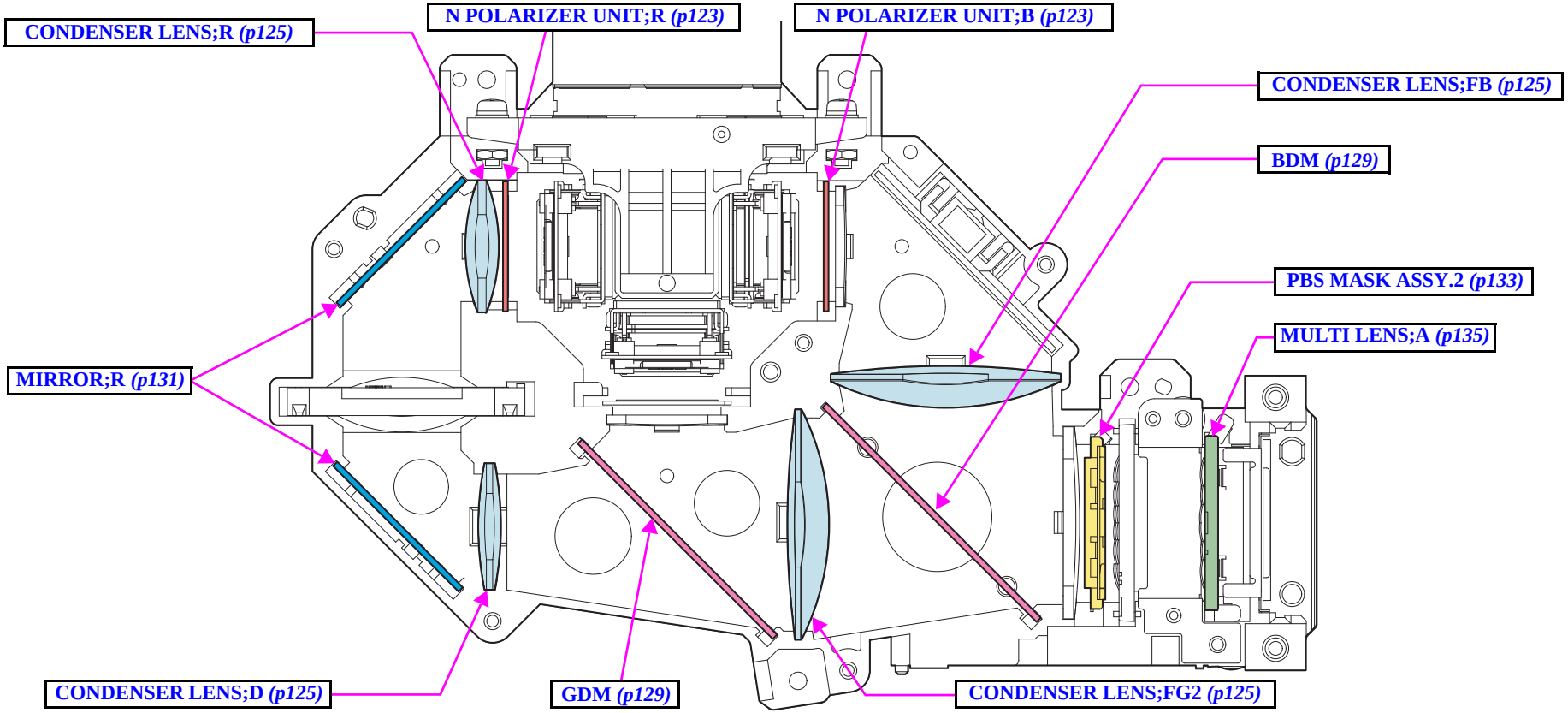


Figure 4-2. Inside of the Optical Engine

4.2.1 N POLARIZER UNIT;B/R

CAUTION

Take care not to damage the optical parts (N POLARIZER ADJUST ASSY;G;AS) when disassembling/reassembling. After removal, so as not to deform the part, make sure to take a protection measure when keeping it such as to place it upside down as shown below.

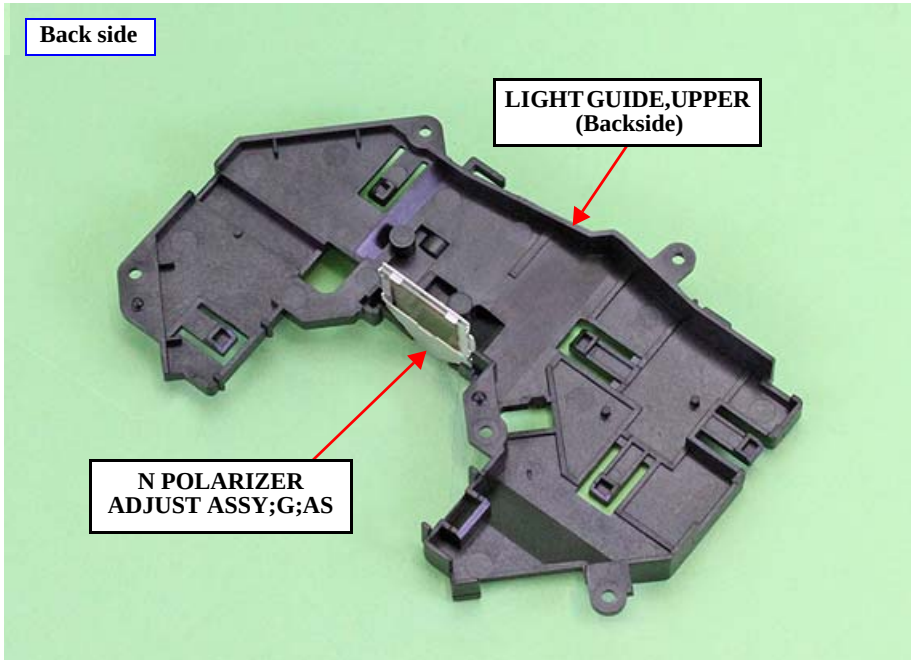


Figure 4-3.

1. Remove the five screws and remove the LIGHT GUIDE,UPPER.

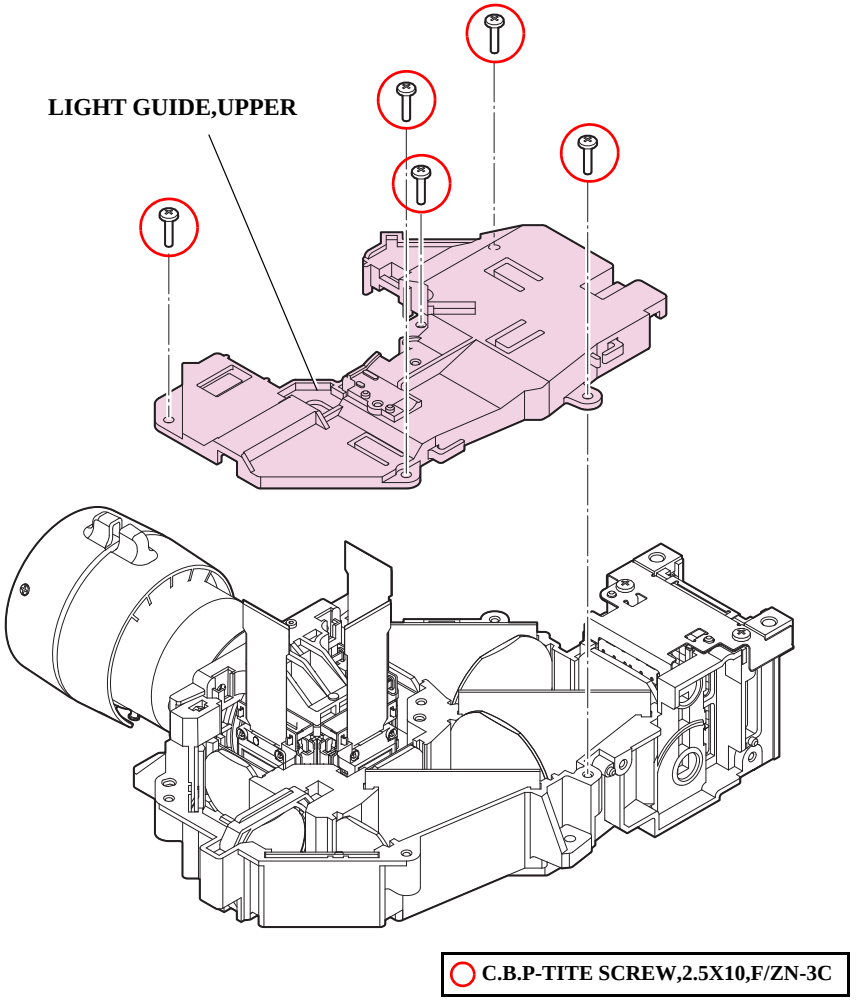


Figure 4-4.

⚠ CAUTION

When reassembling the LIGHT GUIDE,UPPER, make sure to re-install the N POLARIZER ADJUST ASSY;G;AS into the correct location taking care not to damage it or mis-align the adjusted parts.

2. Remove the N POLARIZER UNIT;B.
3. Remove the N POLARIZER UNIT;R.

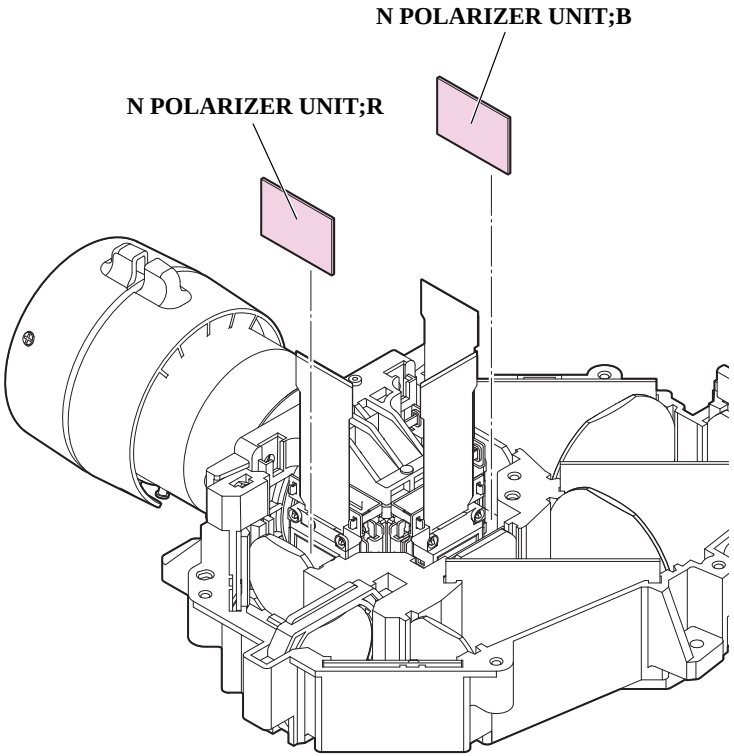


Figure 4-5.

⚠ CAUTION

■ **Insert the N POLARIZER UNIT;B and N POLARIZER UNIT;R without any gap between the bottom of them and the Lower Light Guide Assy.**

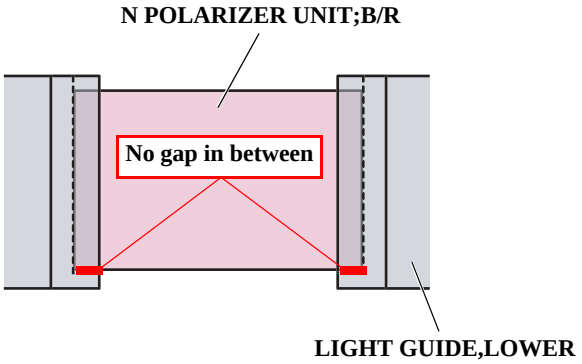


Figure 4-6.

■ **Install the N POLARIZER UNIT;B taking care in the following instructions.**

- **Black marking on the top right as seen from the incidence side.**
- **Hold the edges of the N POLARIZER UNIT;B, and make sure not to touch the polarizer surface.**

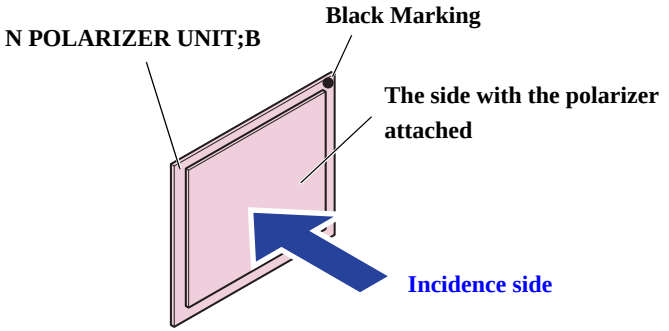


Figure 4-7.

⚠ CAUTION

■ **The specifications of the N POLARIZER UNIT;R differ according to the models. Confirm your model referring below to install it.**

- **EB-S01/W01/S11/X11/S02/S02H/X02/W02's case:**
  A red marking on the top left as seen from the polarizer attached.

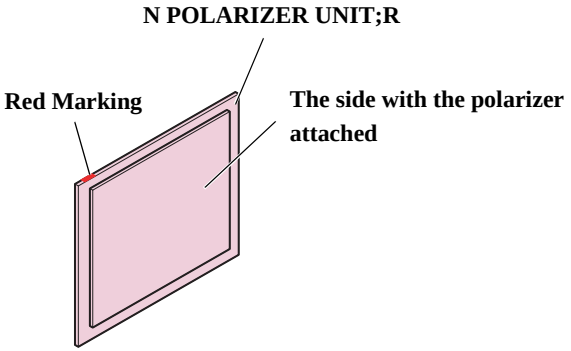


Figure 4-8.

- **EB-X14G/S12/S12H/X12/W12/X14 and EH-TW480's case:**
  Two red markings on the top left as seen from the polarizer attached.

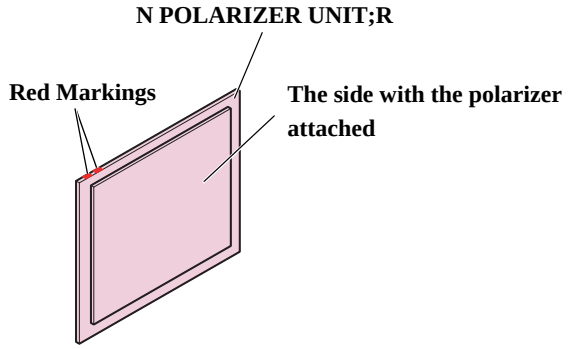


Figure 4-9.

4.2.2 CONDENSER LENS;D/FB/FG2/R

1. *Remove the LIGHT GUIDE,UPPER.* *(p.122)*

CAUTION

Some of the condenser lenses used for this projector are different according to the models. Check the correct lenses for your model referring to the table below.

■ *Condenser Lenses according to the Models* ***(p126)***

2. Remove the CONDENSER LENS;D.
3. Remove the CONDENSER LENS;FB.
4. Remove the CONDENSER LENS;FG2.
5. Remove the CONDENSER LENS;R.

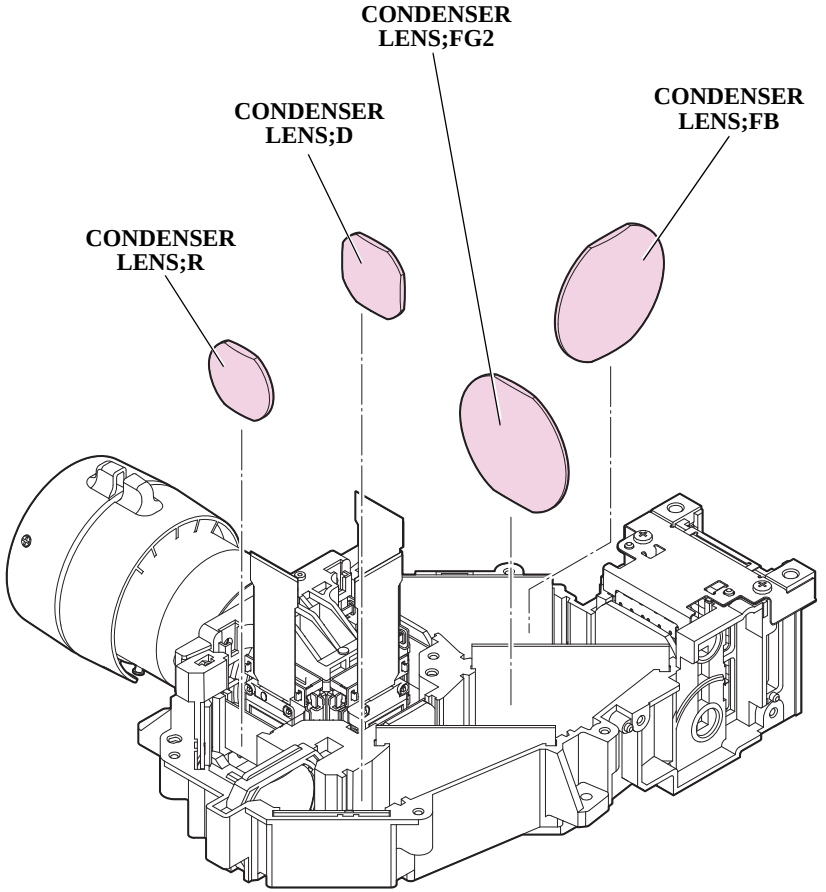
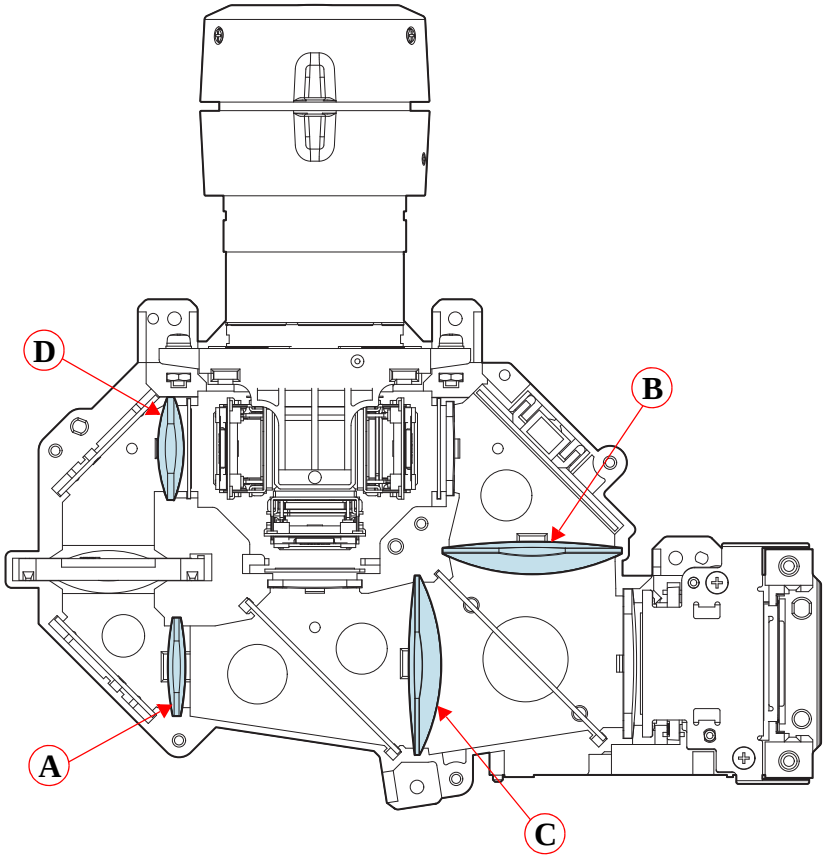


Figure 4-10.

⚠ CAUTION

Reference: The name of CONDENSER LENS differs between the models. Confirm the appropriate lenses for your model on the following table.



Model	A	B	C	D
EB-S01	CONDENSER LENS;D	CONDENSER LENS;FB	CONDENSER LENS;FG2	CONDENSER LENS;R
EB-W01				
EB-X14G			CONDENSER LENS;FG3	
EB-S11			CONDENSER LENS;FG2	
EB-X11				
EB-S02				
EB-S02H				
EB-X02				
EB-W02				
EB-S12			CONDENSER LENS;FG3	
EB-S12H				
EB-X12				
EB-W12				
EB-X14				
EH-TW480				

Table 4-2. Condenser Lenses according to the Models

CAUTION

- When installing the CONDENSER LENS;D/FB/FG2/R, attach the condenser lenses with their convex side facing the incidence side as shown below.

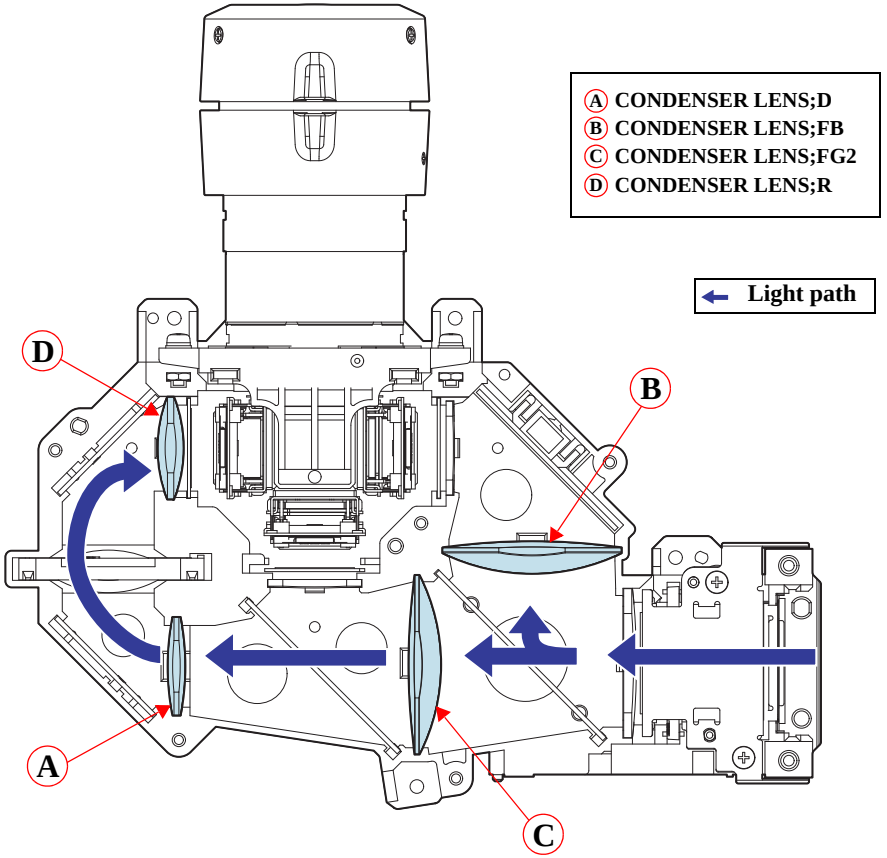


Figure 4-11.

- Insert the CONDENSER LENS;D/FB/FG2/R without any gap between the bottom of them and the LIGHT GUIDE,LOWER.

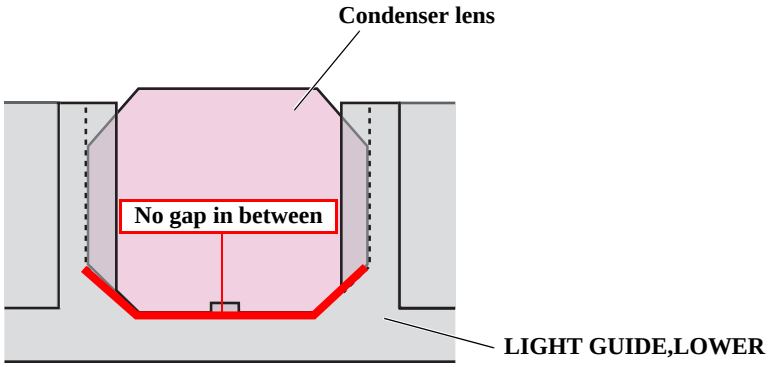


Figure 4-12.

- Install the CONDENSER LENS;FB with its black marking on the top left as seen from the incidence side.

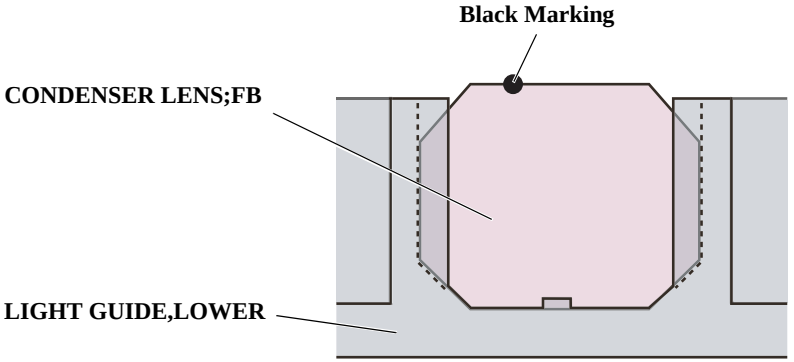


Figure 4-13.

CAUTION

- **Install the CONDENSER LENS;FG2 with its red marking on the top left as seen from the incidence side. (EB-S01/W01/S11/X11/S02/S02H/X02/W02's case)**

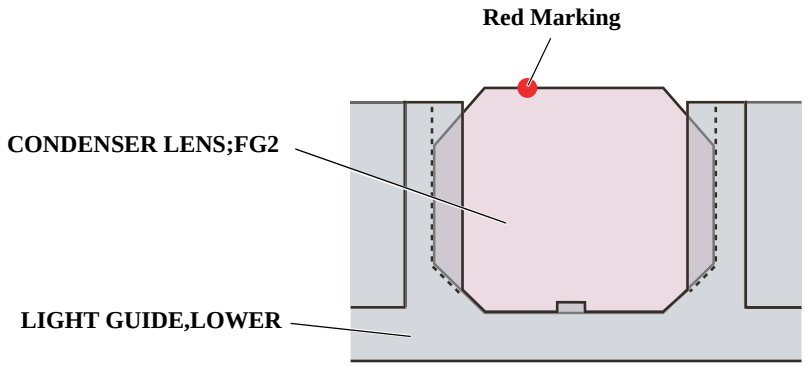


Figure 4-14.

- **Install the CONDENSER LENS;FG3 with the three black markings on the top left as seen from the incidence side. (EB-X14G/S12/S12H/X12/W12/X14 and EH-TW480's case)**

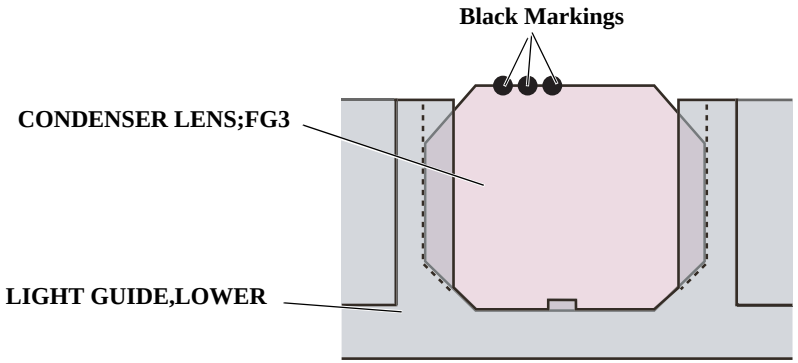


Figure 4-15.

4.2.3 BDM/GDM

1. *Remove the LIGHT GUIDE,UPPER.* *(p.122)*
2. Remove the BDM.
3. Remove the Spring,Mirror Fixing,FIF (○).
4. Remove the GDM.
5. Remove the two Spring,Mirror Fixing,FIF (○).

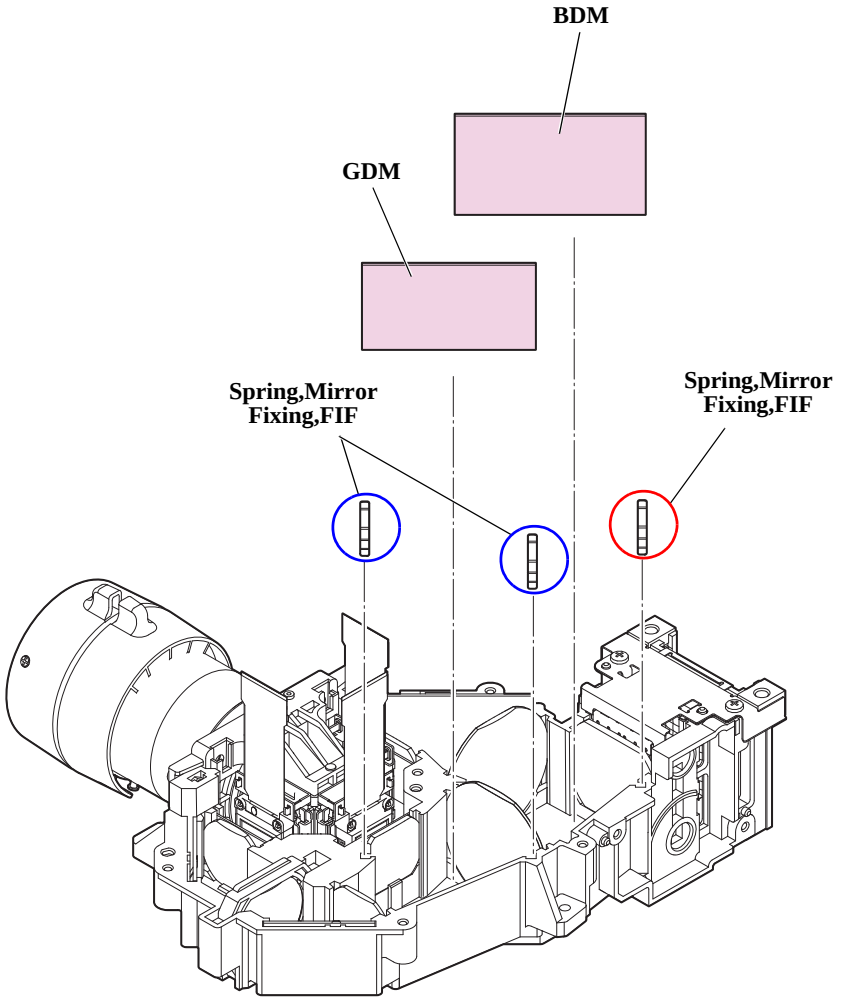


Figure 4-16.

⚠ CAUTION

When reassembling the BDM/GDM, take care in the following instructions.

1. **Install the BDM/GDM into the engine with their markings coming on the top right as seen from the incidence side.**

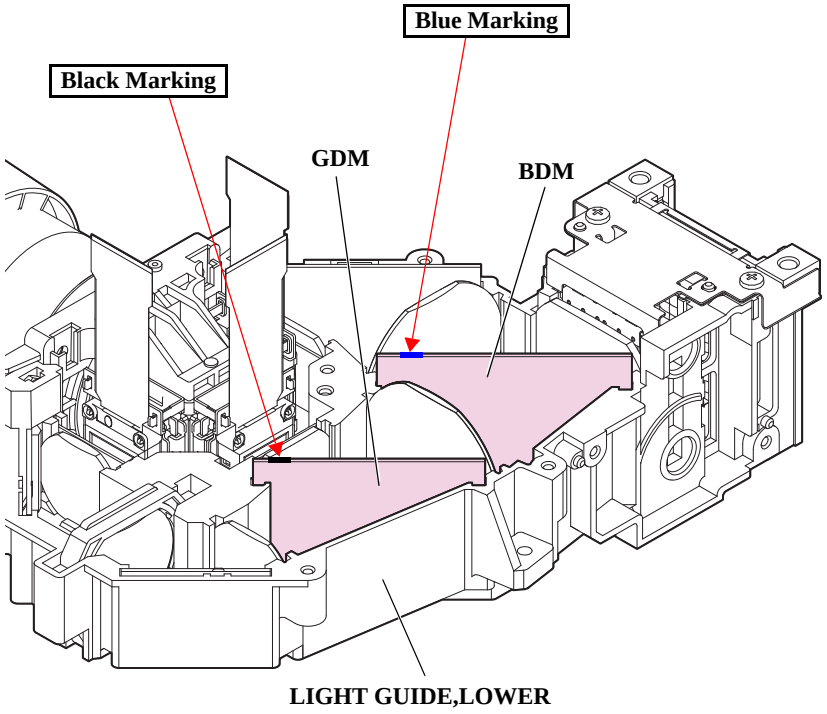


Figure 4-17.

2. **Insert the BDM/GDM without any gap between the bottom of them and the LIGHT GUIDE,LOWER.**

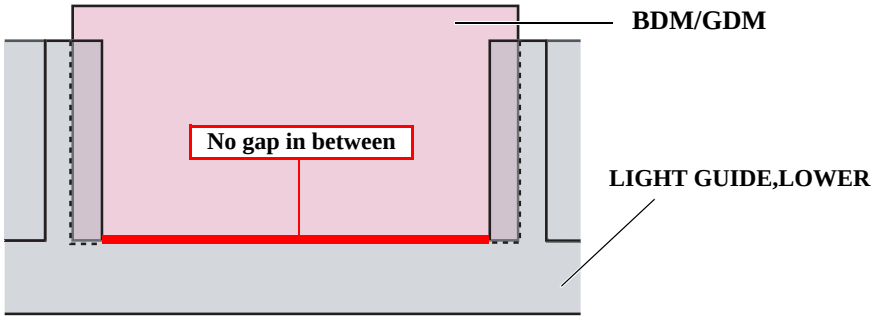


Figure 4-18.

3. **Insert the springs without any gap between the bottom and the LIGHT GUIDE,LOWER to secure the BDM/GDM**

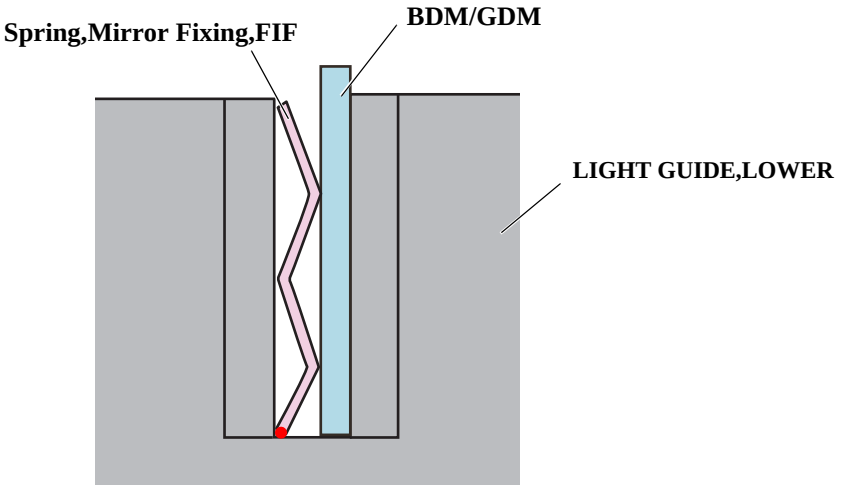


Figure 4-19.

4.2.4 MIRROR;R

1. *Remove the LIGHT GUIDE,UPPER.* *(p.122)*
2. Remove the two MIRROR;R.
3. Remove the two Spring,Mirror Fixing,FIF.

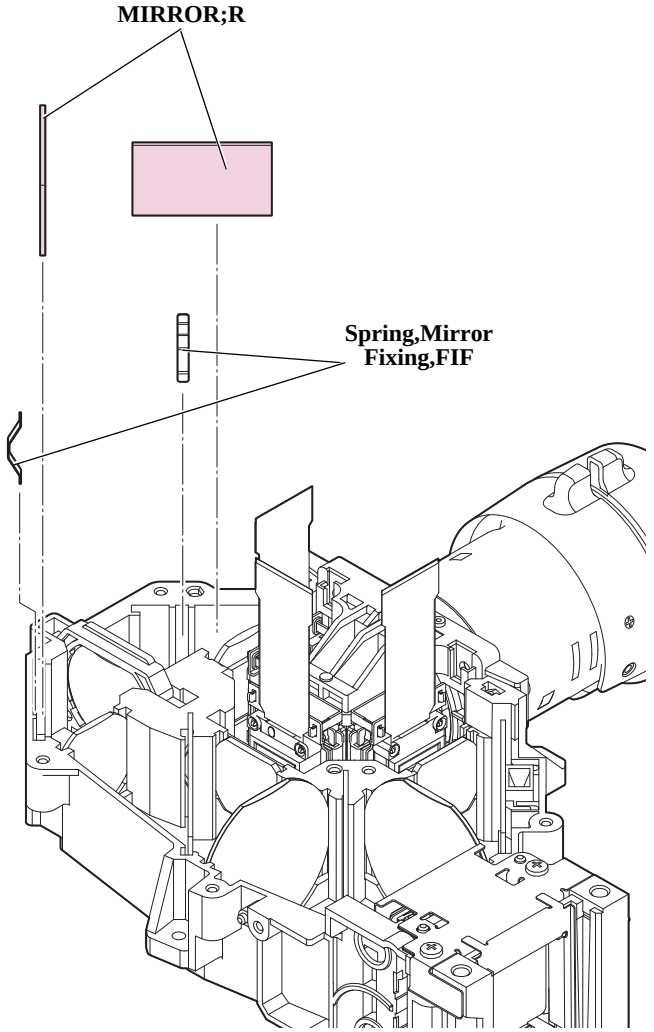


Figure 4-20.

CAUTION

Install the MIRROR;R according to the following instructions.

1. **Install the MIRROR;R to the engine with the reflection surface to the incidence side (inwards).**

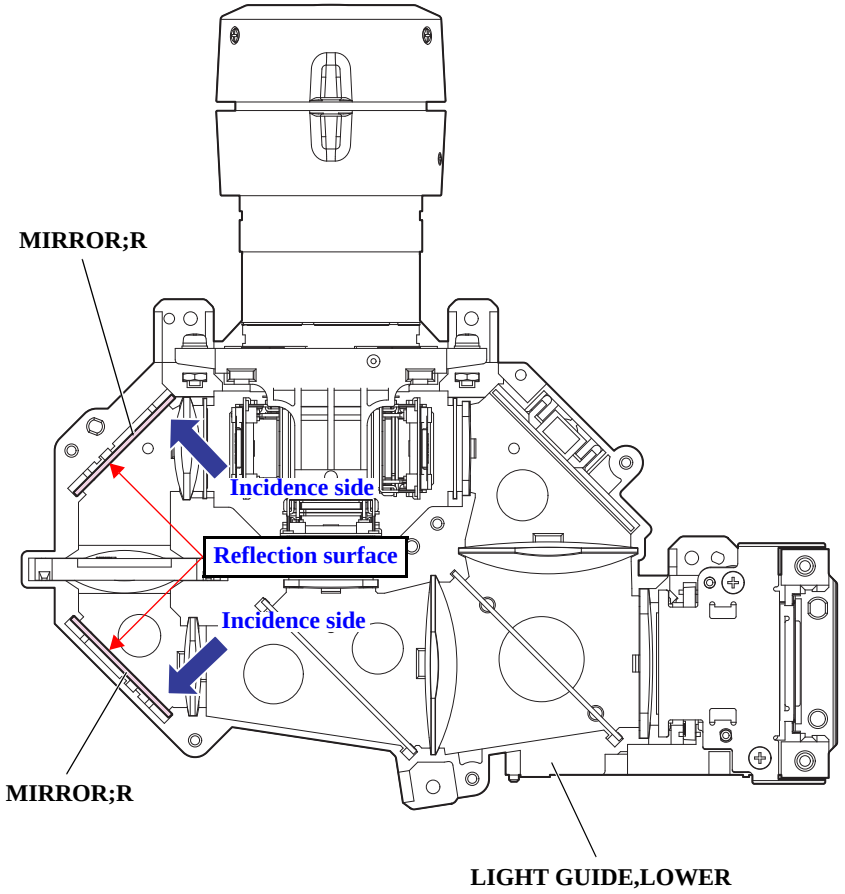


Figure 4-21.

2. **Insert the MIRROR;R without any gap between the bottom of them and the LIGHT GUIDE,LOWER.**

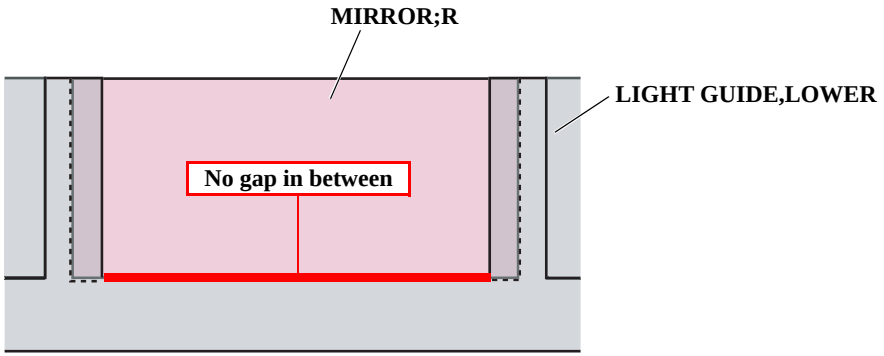


Figure 4-22.

3. **Insert the springs without any gap between the bottom and the LIGHT GUIDE,LOWER to secure the MIRROR;R.**

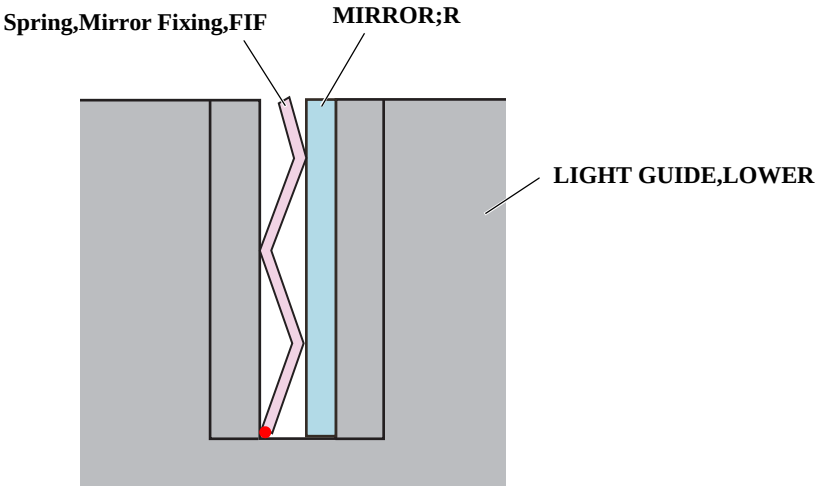


Figure 4-23.

4.2.5 PBS MASK ASSY.2

1. *Remove the LIGHT GUIDE,UPPER.* *(p.122)*
2. Remove the two screws and remove the COVER,ML.
3. Remove the PBS MASK ASSY.2.
4. Remove the Spring,Mirror Fixing,FIF.

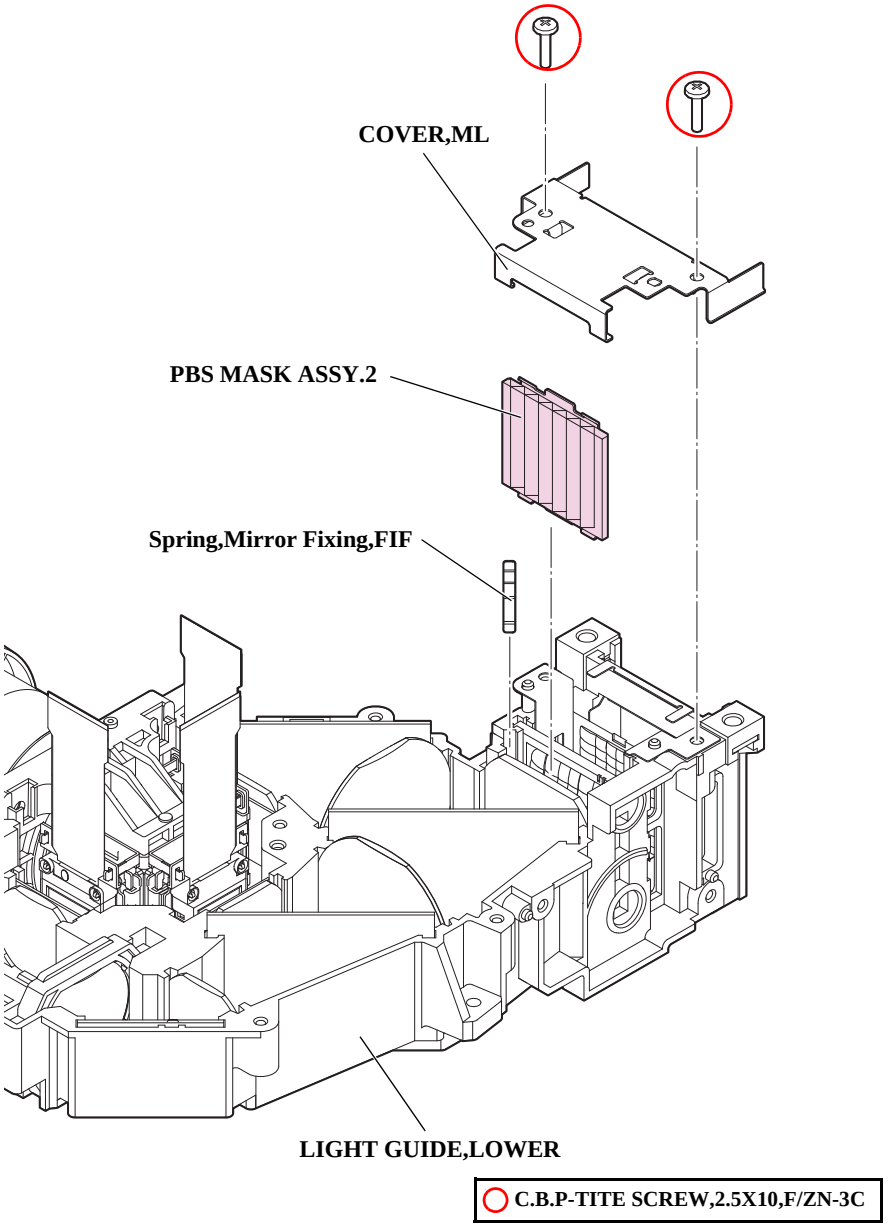


Figure 4-24.

⚠ CAUTION

Install the PBS MASK ASSY.2 according to the following instructions.

1. **Install the PBS MASK ASSY.2 with the metal plate side facing the incidence side.**
2. **Please note marking.**

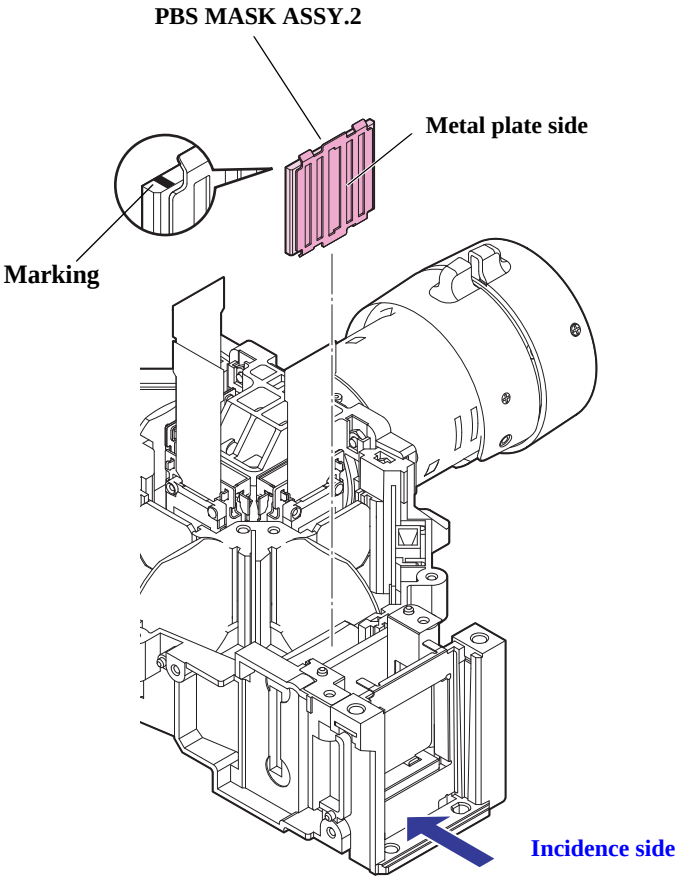


Figure 4-25.

3. **Insert the PBS MASK ASSY.2 without any gap between the bottom of it and the LIGHT GUIDE,LOWER.**

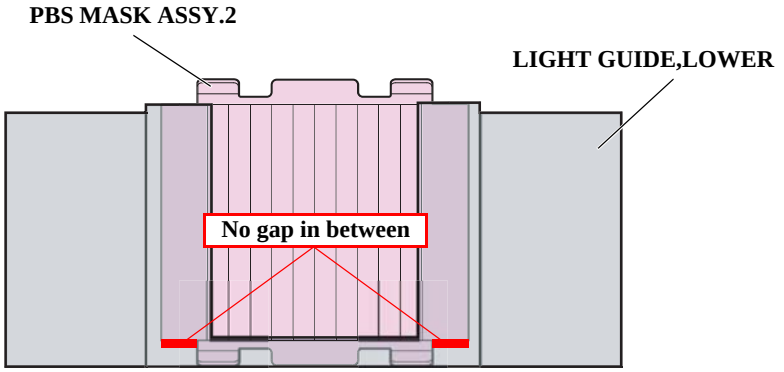


Figure 4-26.

4. **Insert the spring without any gap between the bottom and the LIGHT GUIDE,LOWER to secure the PBS MASK ASSY.2.**

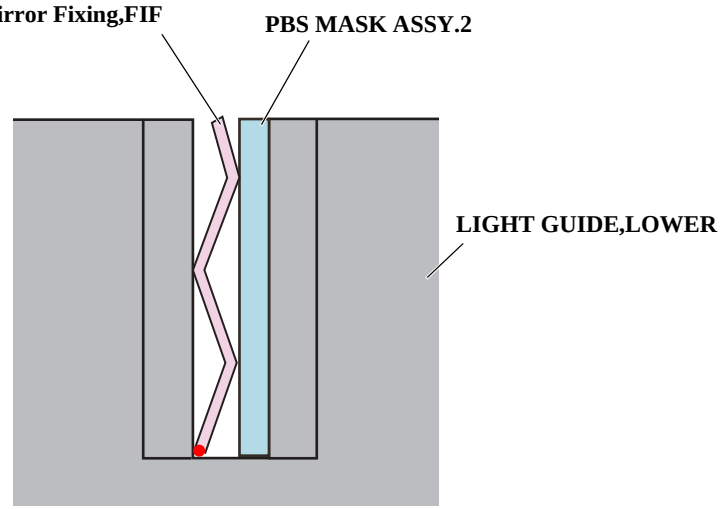


Figure 4-27.

4.2.6 MULTI LENS;A

1. *Remove the LIGHT GUIDE,UPPER.* *(p.122)*
2. *Remove the COVER,ML.* *(p.133)*
3. Remove the MULTI LENS;A.
4. Remove the two SPRING,ML FASTEN.

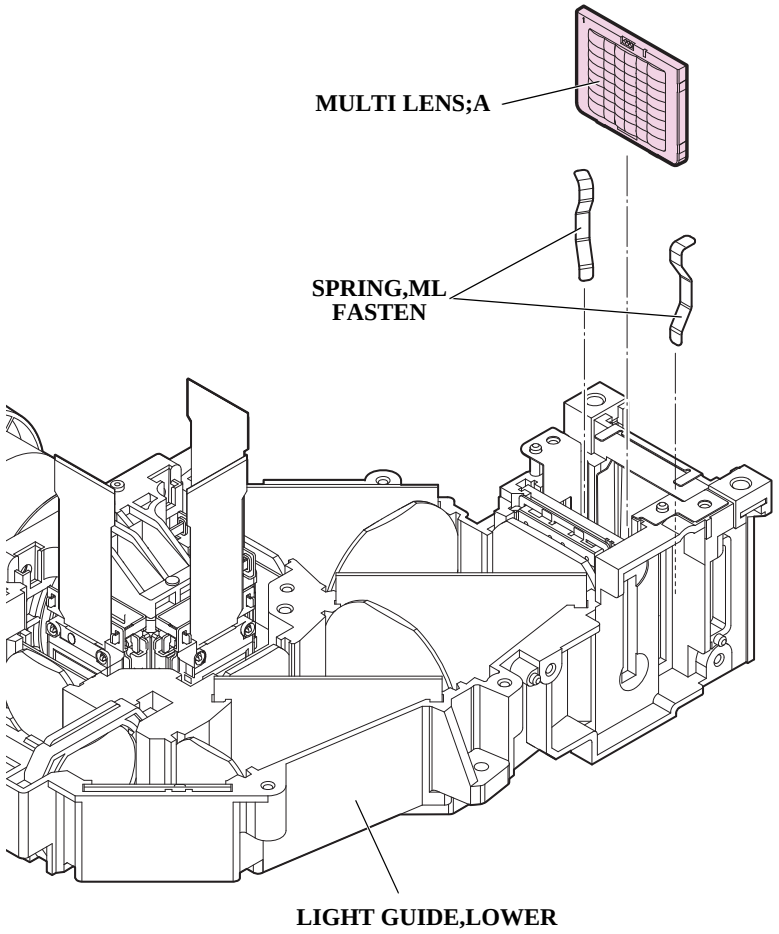


Figure 4-28.

⚠ CAUTION

When installing the MULTI LENS;A, take care in the following.

- **Install the MULTI LENS;A with the convex side facing the outgoing side.**

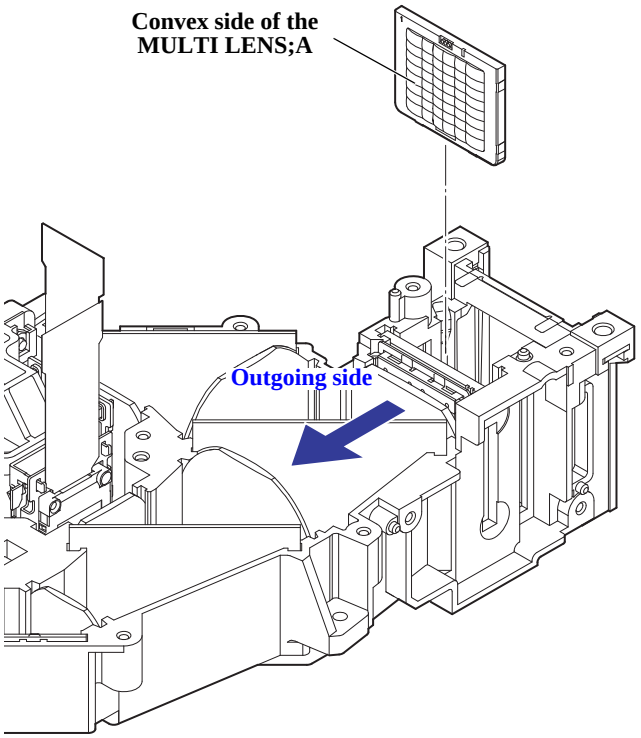


Figure 4-29.

- **When installing the MULTI LENS;A, set it with the inscription on the top as seen from the outgoing side, and without any gap to the LIGHT GUIDE,LOWER.**

EB-S01/X14G/S11/X11/S02/X02/S12/S12H/X12/X14's case

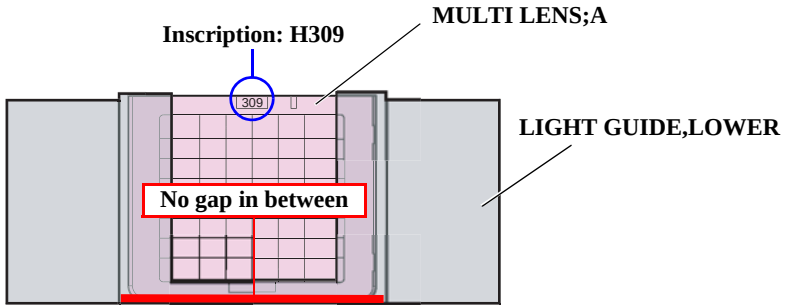


Figure 4-30.

EB-W01/W02/W12 and EH-TW480's case

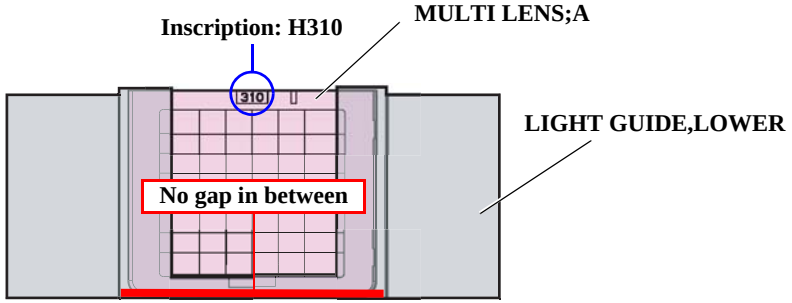


Figure 4-31.

⚠ CAUTION

- **When installing the SPRING,ML FASTEN, take care in the following.**
  1. **Slide the MULTI LENS;A in the direction of arrow (1), and attach the SPRING,ML FASTEN (◯).**
  2. **While pressing the MULTI LENS;A in the direction of arrow (2), attach the SPRING,ML FASTEN (◯).**

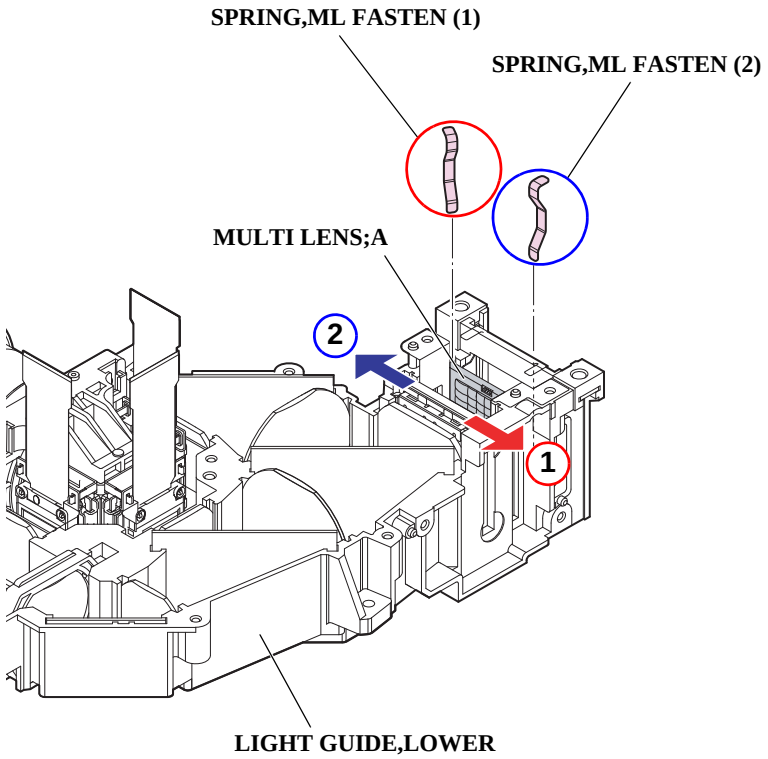


Figure 4-32.

- **When installing the SPRING,ML FASTEN, make sure to set the springs with the top of them touching the top surface of the LIGHT GUIDE,LOWER.**
- **After installing the SPRING,ML FASTEN, confirm there is no gap between the bottom of MULTI LENS;A and the LIGHT GUIDE,LOWER.**
  (See Figure 4-30, Figure 4-31.)

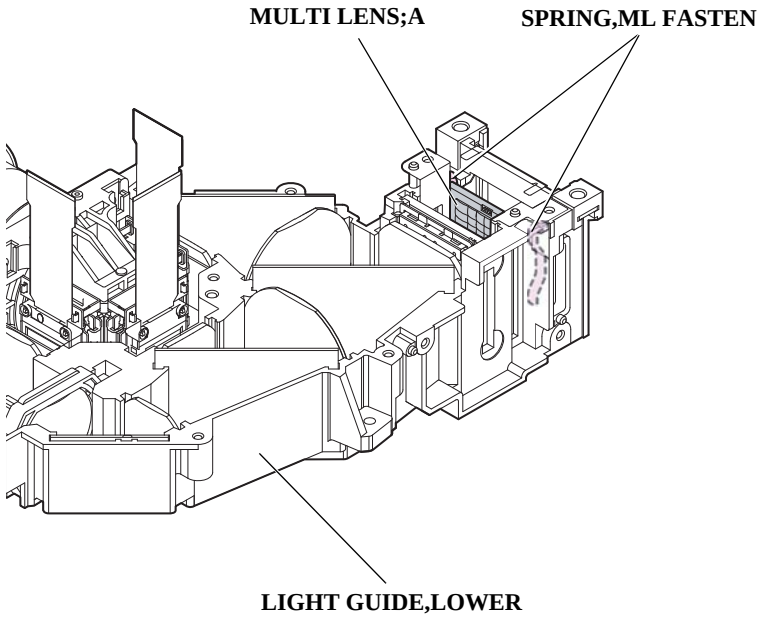


Figure 4-33.

CHAPTER

5

APPENDIX

5.1 AS (After Service) Menu

CAUTION

The contents of this chapter are only for use of Epson Authorized Services. Do not disclose them to the end-users.

This menu provides information and settings that are not displayed on the standard menu.You can check detailed information on the projector with it.

5.1.1 How To Display the AS (After Service) Menu

1. Press the [Menu] button either on the remote controller or on the projector's control panel for more than 5 seconds.
2. Within 4 seconds after pressing the [Menu] button, press the buttons in order shown below to display the AS Menu.

   [Esc] => [Esc]

   (After the AS menu was displayed, all the key operations become invalid for 2 seconds.)

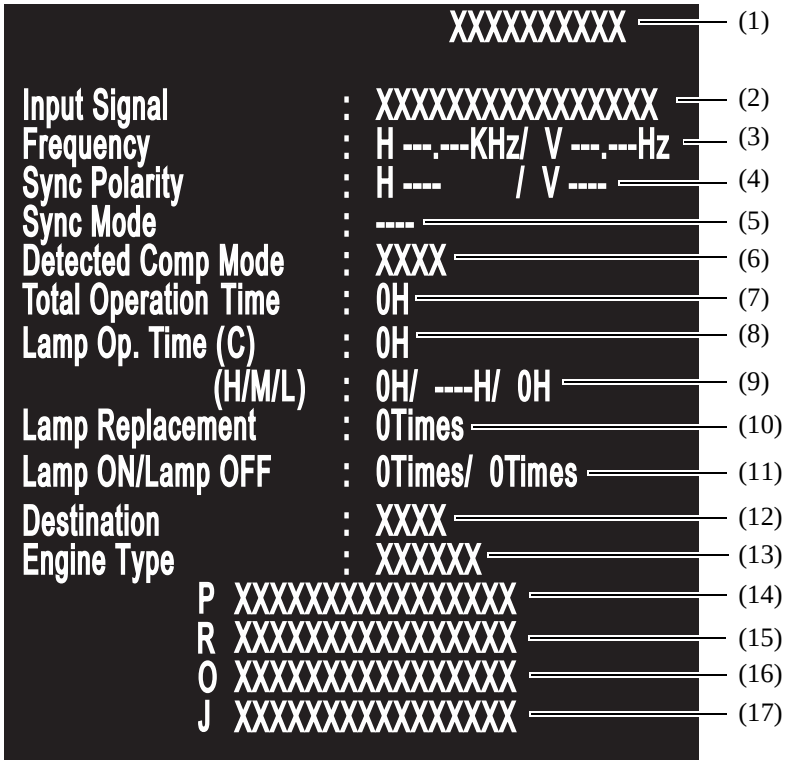
5.1.2 Displaying the Pages

The AS Menu consists of 3 or more pages. You can switch the pages with the [◀] or [▶] button either on the projector or the remote controller. The contents of each page are described on the following pages.

☐ 1st Page

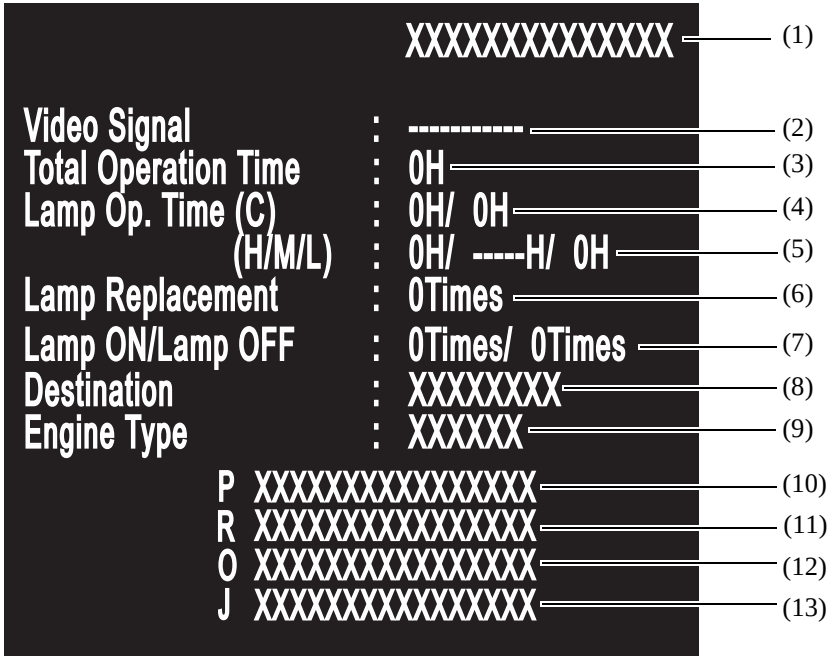
The general operational history of the projector is displayed. The contents displayed on the screen vary according to the input video sources.

PC/HDMI/USB input's case



No.	Item	No.	Item
1	Video source	10	Lamp replacement times
2	Current input signal	11	Lamp ON/OFF times
3	Current horizontal/vertical frequency	12	Destination
4	Horizontal/Vertical synchronization polarity	13	Type of Optical Engine
5	Synchronization mode	14	PW firmware version
6	Current detected computer mode	15	Sub-processor version
7	Total operation time	16	IM firmware version
8	Total lamp operation time (converted into low brightness operation)	17	Subsystem firmware version
9	High/Middle/Low brightness lamp operation time		

Video's case



No.	Item	No.	Item
1	Video source	8	Destination
2	Current input Video signal	9	Type of Optical Engine
3	Total operation time	10	PW firmware version
4	Total lamp operation time (converted into low brightness operation)	11	Sub-processor version
5	High/Middle/Low brightness lamp operation time	12	IM firmware version
6	Lamp replacement times	13	Subsystem firmware version
7	Lamp ON/OFF times		

☐ 2nd page

The error log of the projector is displayed.

No.	Description
1	Error log items. (See Table 5-1 "Error log items *(p141)*".)
2	Last 5 error logs are displayed. #2 (top) is the latest.
3	Error count
4	Control Data 1
5	Control Data 2

Table 5-1. Error log items

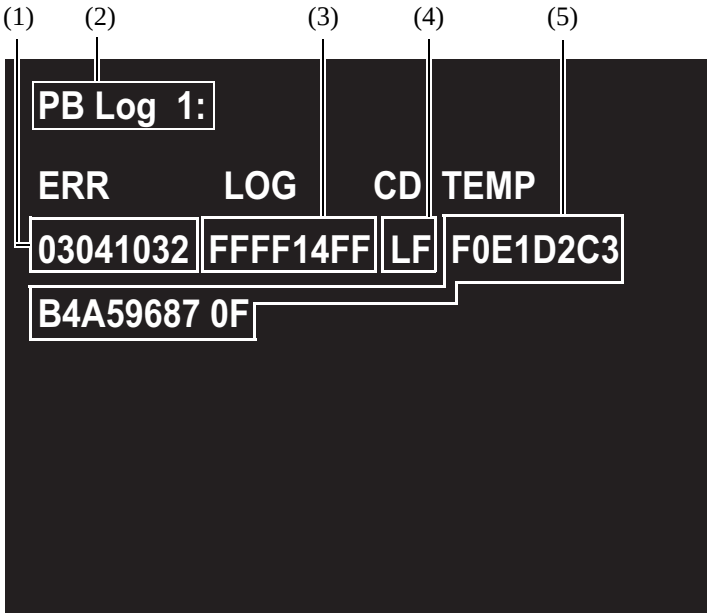
Item	Contents		Representation
Error Log	CD	Error Code	Two alphabets
	TOT	Total Operation Time	h: 5-digit number (00000-65535) Over 65535: “65535” (Not cleared to “0.”) m: 2-digit number (00-59) s: 2-digit number (00-59)
	LOT	Lamp Operation Time	
	POT	Time after Lamp is ON	
	ST	PJ (Projector)’s status	Acquired data of PWR? of the ESC/VP21 command

- The last 5 error logs are displayed (the latest on top). None is displayed if there’s no error.
- In the case of the display in the previous page, the latest error is “Internal Overheat”. When error occurred, Total Operation Time was 9 hours 46 minutes 57 seconds, Lamp Operation Time was 5 hours 36 minutes 27 seconds, the time after the lamp turned ON was 0 hours 2 minutes 23 seconds, the projector’s status was “Lamp ON”.
- The 2nd latest error is “Fan Error”. When error occurred, Total Operation Time was 8 hours 35 minutes 34 seconds, Lamp Operation Time was 5 hours 34 minutes 4 seconds, the time after the lamp turned ON was 0 hours 0 minutes 1 second, the projector’s status was “Warming up”.

Item	Contents		Representation
Error Count	TH	Internal overheat	2-digit number (00-99) Over 99: “99” (Not cleared to “0.”)
	FN	Fan error	
	SE	Thermistor error	
	LE	Lamp burnt out	
	LF	Lighting failure	
	RA	Internal error (RAM)	
	RO	Internal error (ROM)	
	II	Internal error (I2C)	
	ID	Internal error (DR)	
	LC	Lamp cover open	
	EC	Electric capacitor error	
	CF	Cinema filter error	
	AI	Auto Iris error	
	RS	Sub system ROM error	
	RP	Sub system PW error	
	DU	DVD unit error	
	WL	Air filter wind lowered	
	WS	Wind sensor error	
	PB	Power error (Ballast)	
	IV	Internal error (SO)	
	SH	Shutter error	
	FE	Cooling system error (peltier device)	
	FP	Cooling system error (pump)	
	VE	Exhaust shutter error	
Control	Control data 1	Thermal data of each thermistor	Acquired data of TEMP? of the ESC/VP21 command
	Control data 2	Voltage of each fan	

☐ 3rd page or later

The error log of the ballast is displayed.



No.	Item	No.	Item
1	Status of ballast error	4	Type of error
2	Page number of ballast error log	5	Acquired data of TEMP? command
3	Log on ballast error		

The last 7 error logs are displayed (the latest on top). None is displayed if there's no error.

5.1.3 Initializing (Resetting) the AS Menu Values

The operational procedures and the values of initialization of the AS Menu are shown below.

Type / Operation / Item	Clearing the Lamp Information	Clearing the AS Information	Clearing the Log Information
Operation / Item	Press [▽] and [Source Search] on the projector for 10 sec. during displaying the menu.	Press [△] and [Source Search] on the projector for 10 sec. during displaying the menu.	Press [Right] either on the projector or the controller for more than 5 sec., then within 3 sec. press [Enter] for 2 sec. during displaying the menu.
Total Operation Time	Maintained	Reset to 0	N/A
Lamp Operation Time (C/H/M/L)	Reset to 0	Reset to 0	N/A
Lamp ON	Reset to 1	Reset to 1	N/A
Lamp OFF	Reset to 0	Reset to 0	N/A
Lamp Replacement	Add 1 to the current value	Reset to 0	N/A
Error Log	N/A	N/A	Spacing (Initialized to the status of acquiring none)
Error Count	N/A	N/A	Reset to 0
Control	N/A	N/A	N/A
PB Error Log	N/A	N/A	Spacing (Initialized to the status of acquiring none)