SERVICE MANUAL

Multimedia Projector

EH-TW2900/3500/4400/4500/5500

EPSON

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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 page.

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.

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	⚠ **DANGER**	Indicates an extremely hazardous operation which, if ignored or operated incorrectly, could result in serious or fatal personal injury.
Warning	⚠ **WARNING**	Indicates a potentially hazardous operation which, if ignored or operated incorrectly, could result in serious or fatal personal injury.
Caution	⚠ **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	2009.8.27	all	First Release

Contents

PRODUCT DESCRIPTION

1.1 About Model Names

In this chapter, the models are categorized into two group according to the mechanical differences, and named generally as shown below.

Notation \ Destination	EAI	EMD	ASIA
EH-TW4500/5500	PowerLite Pro Cinema 9500UB	EH-TW5500	EH-TW5500
	PowerLite Home Cinema 8500UB		EH-TW4500
		EH-TW4400	
EH-TW3500	PowerLite Pro Cinema 9100		
	PowerLite Home Cinema 8100	EH-TW3500	EH-TW3500
		EH-TW2900	

1.2 Features

This projector is a full Hi-vision multimedia projector featuring exclusive color reality with the following features:

☐ Short distance projection

■ Short throw zoom lens

• Minimum projection distance: 87 cm (34 in.)

☐ Projection screen for WXGA (16:9)

☐ Flexible Setup Configuration

■ Vertical and horizontal lens shift

☐ Selectable color mode optimized for the users' viewing environment and various advanced image quality adjustment functions

■ Cinema Filter

■ Auto Iris

☐ Enhanced security functions

■ Operation Lock

■ Equipped with anti-theft devices

• Security slot

☐ HDMI terminals

☐ Direct Power On

☐ Size

■ Dimensions
360 mm (D) x 450 mm (W) x 136 mm (H) (With feet retracted)

■ Weight: 7.3 Kg/ 16.1lbs (EH-TW3500)
                     7.5 kg/   16.5lbs (EH-TW4500/5500)
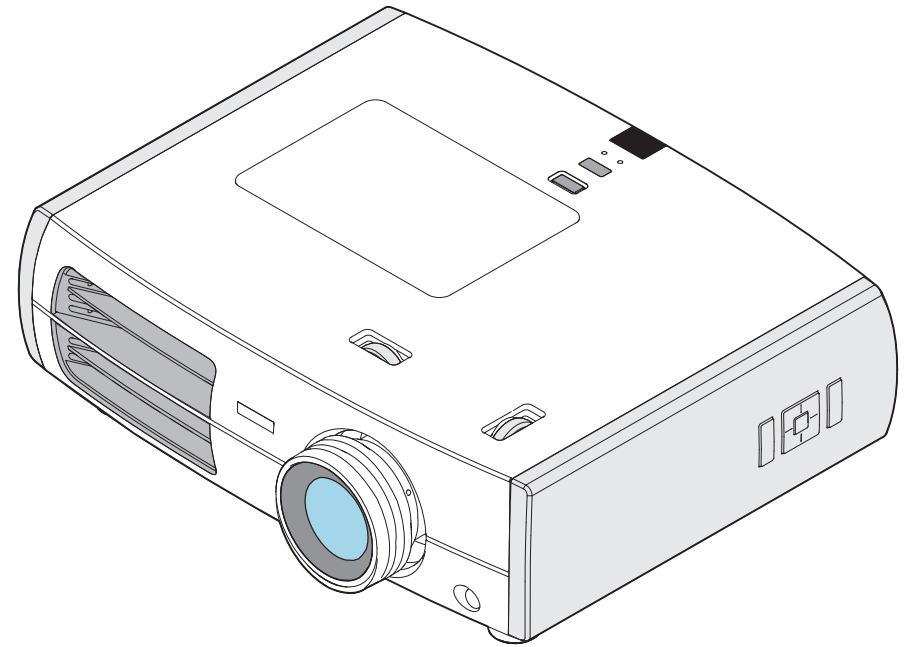
Figure 1-1. External View

1.3 Specifications

Model Item				EH-TW3500	EH-TW4500	EH-TW5500
Specification of main parts	LCD	Size		0.74-inch wide panel with MLA (D7, 10 bit)	0.74-inch wide panel with MLA (D7, C2 Fine, 12 bit, OD)	
		Pixel number		2,073,600 dots (1,920 x 1,080) x 3		
		Native resolution		1,080p		
		Aspect ratio		16:9		
	Projection Lens	Focus	Type	Manual focus		
		Zoom	Type	Manual zoom		
			Ratio	1.0 - 2.1		
	Lamp	Type		UHE (E-TORL)		
		Power consumption		200 W		
		Life	Normal	4000 H		
			Eco	4000 H		
Brightness (Normal mode)		Color mode: Dynamic, Zoom: Wide		1800 lm	1600 lm	
Sound output				N/A		
HDMI terminal				Ver.1.3a x 2		
Operating Temperature		Temperature		5°C to 35°C [41°F to 95°F]		
		Humidity		20% to 80%		
		Thermal shut down		45°C and over		
Operating Altitude		Normal		0 m to 2286 m <0 ft to 7500 ft>		
Start-up period				Approx. 17 seconds	Approx. 19 seconds	
Cool-down period				Approx. 16 seconds		
Power supply voltage				100 - 240 V AC ± 10%, 50/60 Hz		

Model Item				EH-TW3500	EH-TW4500	EH-TW5500
Power Consumption	100-120V Area (JAPAN, USA, etc.)	Lamp (ON)	Normal	282 W	297 W	
			Eco	231 W	246 W	
		Standby		0.2 W		
	220-240V Area (Europe, etc.)	Lamp (ON)	Normal	269 W	284 W	
			Eco	222 W	236 W	
		Standby		0.4 W		
	Rated Voltage & Current			100 - 240 V AC 50/60 Hz 3.2 - 1.4 A	100 - 240 V AC 50/60 Hz 3.3 - 1.5 A	
Size	Excluding feet and Projection Lens	Unit: mm		360 (D) x 450 (W) x 136 (H)		
	Maximum Dimension			360 (D) x 450 (W) x 145 (H)		
Weight				Approx. 16.1 lbs/ 7.3 kg	Approx. 16.5 lbs/ 7.5 kg	
Fan noise	High Brightness mode			30 dB	30 dB (TBD)	
	Low Brightness mode			22 dB	22 dB (TBD)	

1.4 External Dimensions
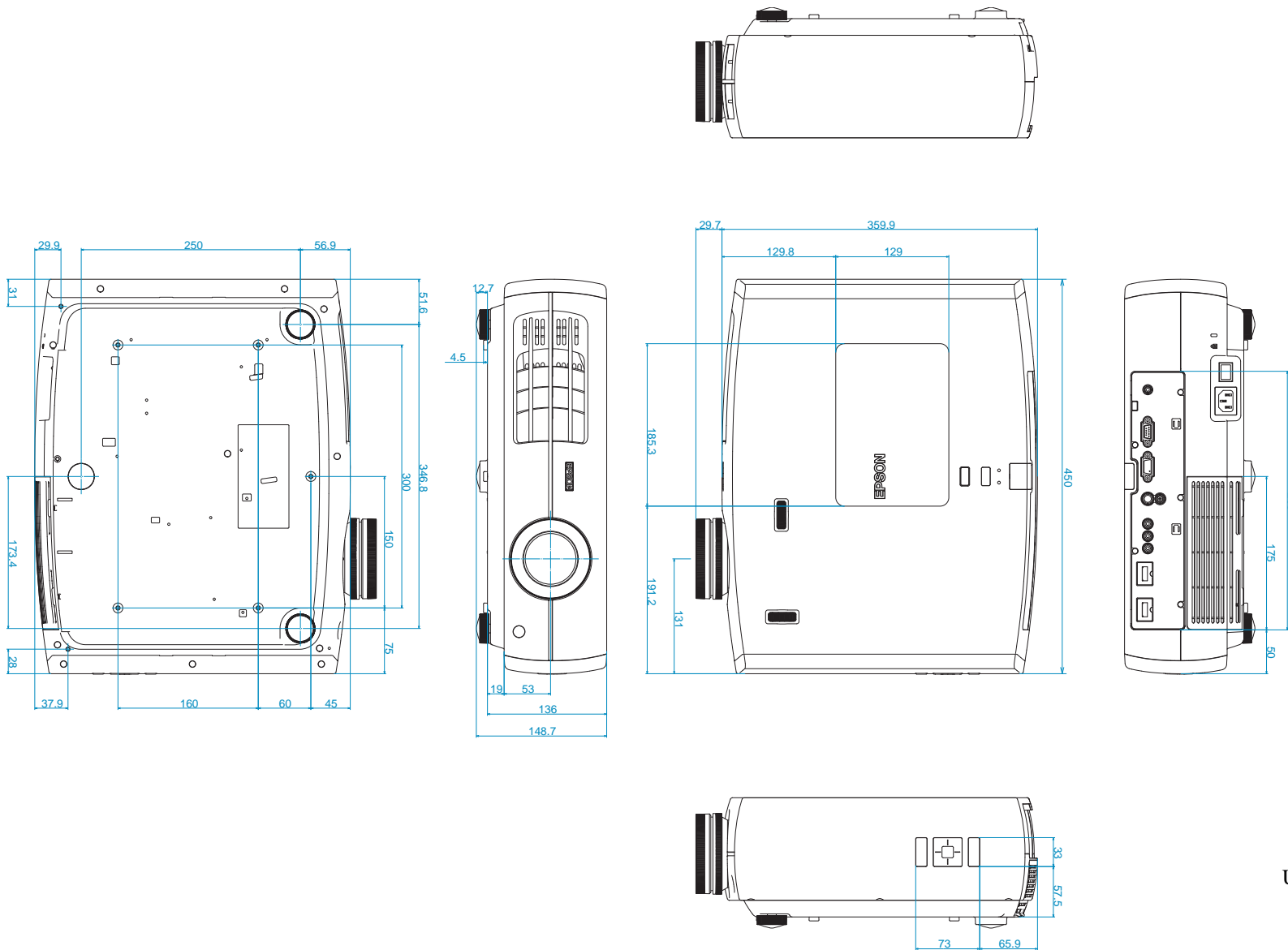
Unit: mm
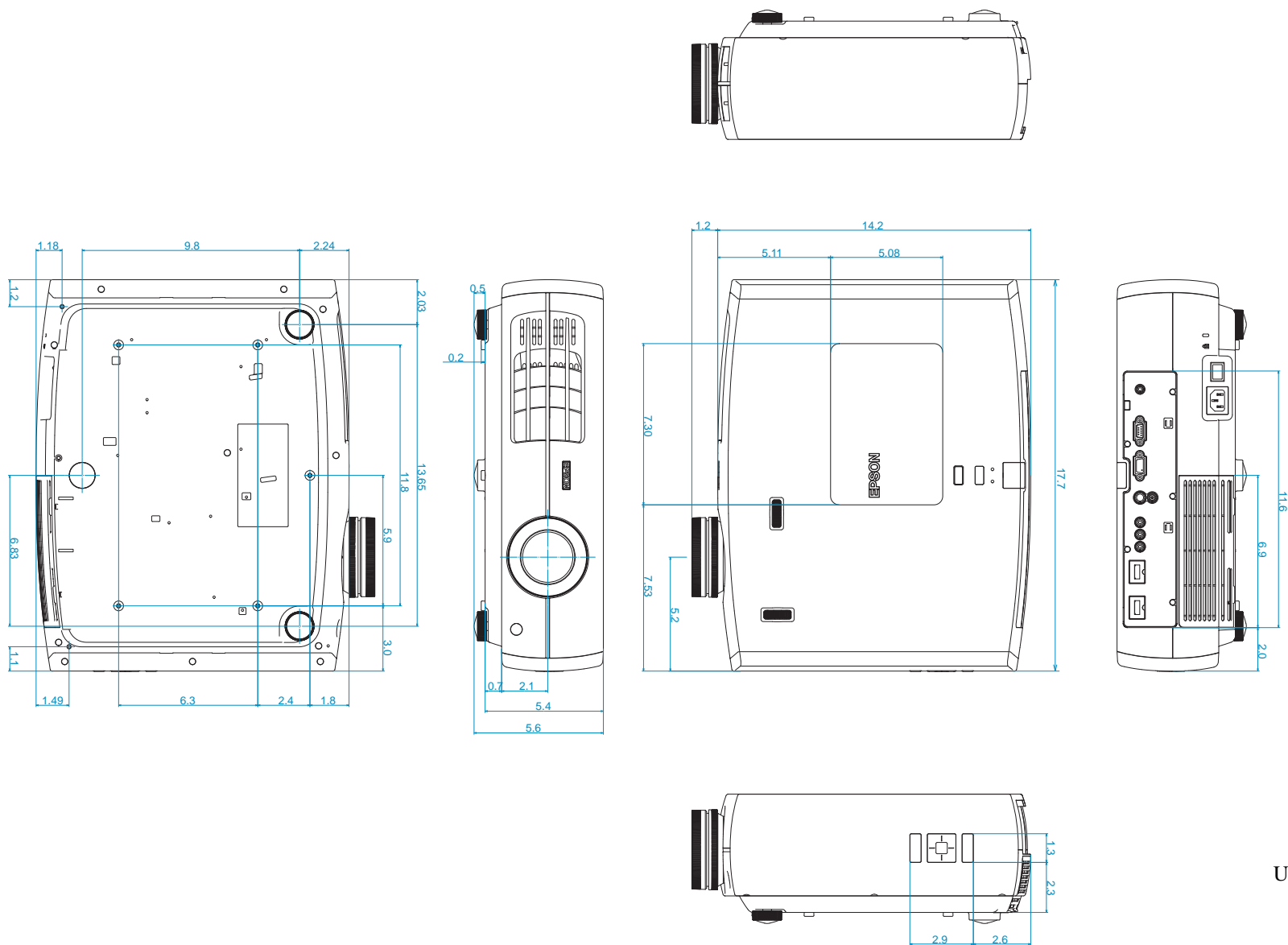
Unit: inch

TROUBLESHOOTING

> **In this chapter, the models are categorized into two group according to the mechanical differences, and named generally as shown in " 1.1 About Model Names *(p10)"*.**

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 output audio and video data to the projector (To check the HDMI, composite video, S-Video input)
Audio and Video cables (HDMI/Composite/S-Video, and each audio)	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 (p49)"*

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.
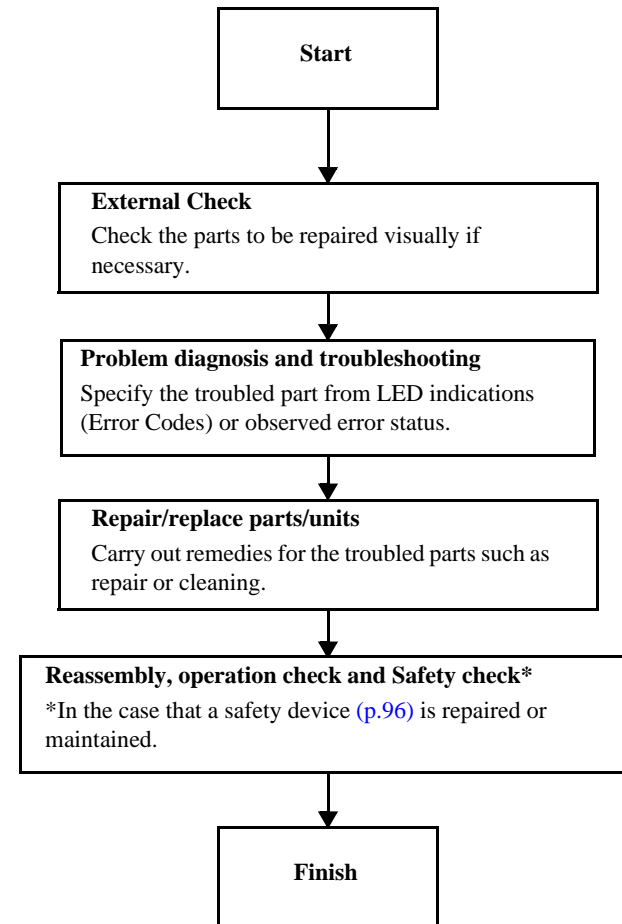
Figure 2-1. Troubleshooting Workflow

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 IF Case and Lower Case correctly?
IF Case	Any damage/deformation/cracking due to external forces?
	Is it fixed to Upper Case and MA Board correctly?
SW1 Board	Is it fixed to Upper Case correctly?
	Any stuck buttons?
	Does Buttons work smoothly?
SW2 Board	Is it fixed to Side Case R 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 Lamp Cover Switch? (Check for it with the cover removed.)
Projection Lens	Does Focus Ring work smoothly?
	Does Zoom Ring work smoothly?
	Any dirt/scratches on the projection lens?
Horizontal Lens Adjustment Dial	Does each lens adjustment dial work smoothly?
Vertical Lens Adjustment Dial	
Lower Case	Any damage/deformation/cracking due to external forces?
	Any foreign object/dirt on the filter cover or the vents?
	Any foreign object/dirt on IR receivers?
Foot	Does Front Foot work smoothly to adjust height?
	Any Foot Rubber detached?

Target part	Check item
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?
Lamp	Any burn/deformation on the frame?
	Any deformation/discoloration on the connector?
	Any dirt on the glass surface?

2.4 Problem diagnosis and Troubleshooting

2.4.1 LED Indication

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

Power LED 2
(Around Power Button)

Power LED 1
(Sign on the button)

Source LED

Lamp LED   Lamp   Temp   Temperature LED
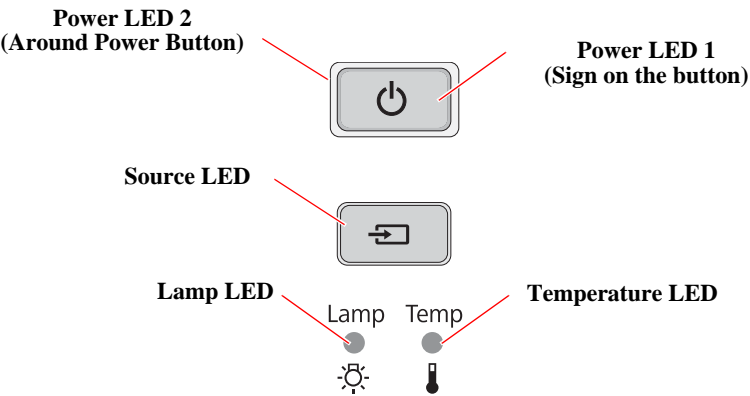
Figure 2-2. LED Indicators

□ Abnormal Status

● ON   ☀ Blink   ○ OFF

LED Status	Error	Problem/Error Status
Red Red	Internal Error	Abnormality is detected from the elements on MA Board.
Red Red	Internal Error (RAM)	
Red	Fan Error Sensor Error	• Abnormality is detected from a fan. • Abnormality is detected from a sensor.
Red Red	Auto Iris Error	Abnormality is detected from Auto Iris.
Red Red	Cinema Filter Error	• Abnormality is detected from CF Motor. • Abnormality is detected from CF Frame. • Abnormality is detected from CF Switch.
Red	High Temp Error (overheating)	The lamp turns off automatically, and the projection stops. Left the projector for 5 minutes untouched, it switches to the standby mode. [Status] The internal temperature rises over the specified level.

LED Status	Error	Problem/Error Status
Red	Lamp problem Lamp failure	Abnormality occurs to the lamp and the ignition/illumination processes fail.
Orange	Sub system ROM Error	Abnormality is detected from the elements on a circuit board.
Red Red	Sub System Communication Error	

☐   Warning Status

🔴 ON   🔴 Blink   ⚪ OFF   🔵 Varies according to the projector status

LED Status	Cause	Status/Check point
Orange	High Temp Warning	(This is not an abnormality. However, if the temperature rises too high again, projection stops automatically. • Check that the air filter and air exhaust vent are clear, and that the projector is not positioned against a wall. • If the air filter is clogged, clean or replace it.
Orange	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   ⚫ Varies according to the projector status

TROUBLESHOOTING OF INTERNAL ERROR

LED Status	Corresponding error code and error name	Remedy	Reference
Internal Error (1) **Red** **Red**	RO: ROM Error		
	II: I2C Error		
	ID: DR Error		
Internal Error (2) **Red** **Red**	RA: RAM Error		
Internal Error (3) ⏻ ⊡ ☀ ☀ **Orange**	RS: Sub system ROM Error	1. Disconnect 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 (p31)"*
Internal Error (4) **Red** **Red**	RP: Sub System Communication Error		

TROUBLESHOOTING OF FAN ERROR/SENSOR ERROR

LED Status	Corresponding error code and error name	Remedy	Reference
Fan Error Sensor Error **Red**	FN: Fan Error	1. Check the connections between each fans/sensor and the 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 #2 on the right column.	1. *"2.4.5 Cable Connection and Projector's Status (p41)"* 2. *" Troubleshooting from the Error Code on Cooling System Errors (p27)"*
	SE: Sensor Error		

TROUBLESHOOTING ON HIGH TEMP ERROR

LED Status	Corresponding error code and error name	Remedy	Reference
High Temp Error (overheating) **Red**	TH: High Temp Error	1. Check the Air Filter's condition (dirt accumulation, clogging). When clogging or the like 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 #2 on the right column.	1. *"3.3.1 Air Filter Assembly (p54)"* 2. *" Troubleshooting from the Error Code on Cooling System Errors (p27)"*

TROUBLESHOOTING ON AUTO IRIS ERROR / CINEMA FILTER ERROR

LED Status	Corresponding error code and error name	Remedy	Reference
Auto Iris Error Cinema Filter Error **Red** **Red**	AI: Auto Iris Error	1. Check the connections between each Motors/sensor and the 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. *"2.4.5 Cable Connection and Projector's Status (p41)"* 2. *" Troubleshooting from the Error Code on Electric Circuit Errors (p31)"*
	CF: Cinema Filter Error		

TROUBLE SHOOTING ON LAMP ERRORS

LED Status	Corresponding error code and error name	Remedy	Reference

Lamp Error
 	
Red
 	
☀ ○
🔆 🌡
	LE: Lamp problem	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 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)
		  When clogging or the like 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"
			1. *"3.3.2 Lamp (p55)"*
			2. *"3.3.1 Air Filter Assembly (p54)"*
			3. *" Troubleshooting from the Error Code on Lamp Errors (p25)"*

	LF: Lamp failure		

2.4.3 Troubleshooting from the Error Code

	■ **If the projection does not start for some reasons, connect PC to the service terminal so as to display the AS menu and check the code.** ■ **To display the AS Menu, see the following:** *"4.1 AS (After Service) Menu (p102)"*

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

START

Check the Error Code from AS menu.

Locate the defective parts referring to the table below with the Error Code.

Repair/replace the defective parts.
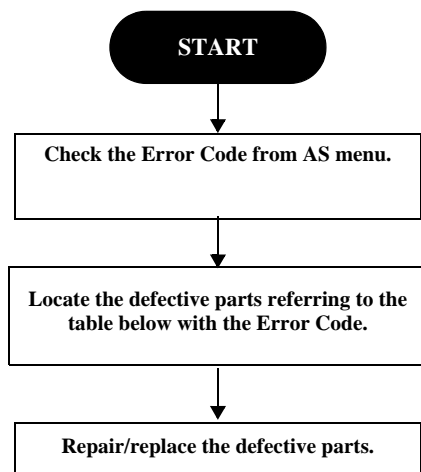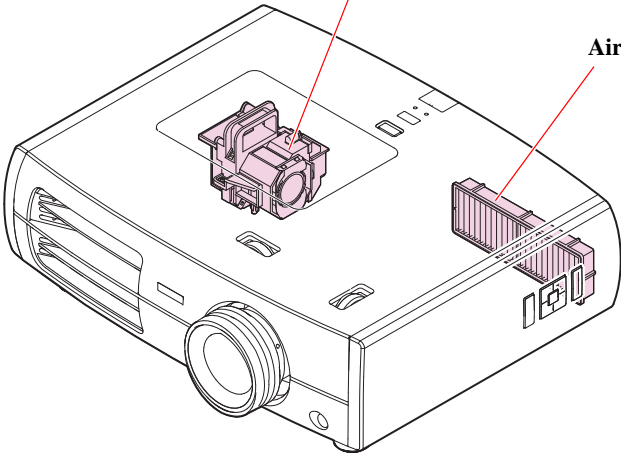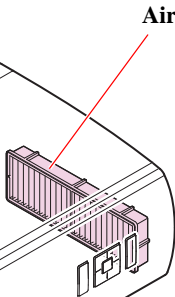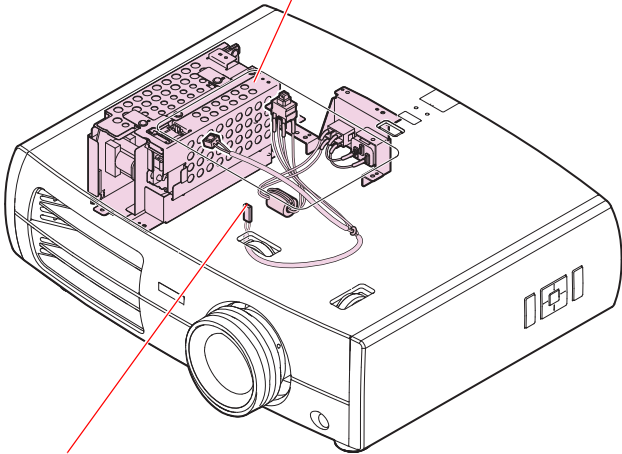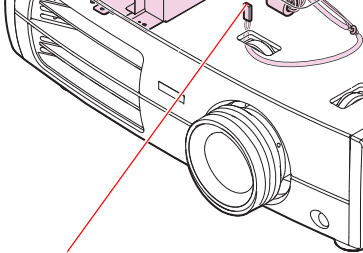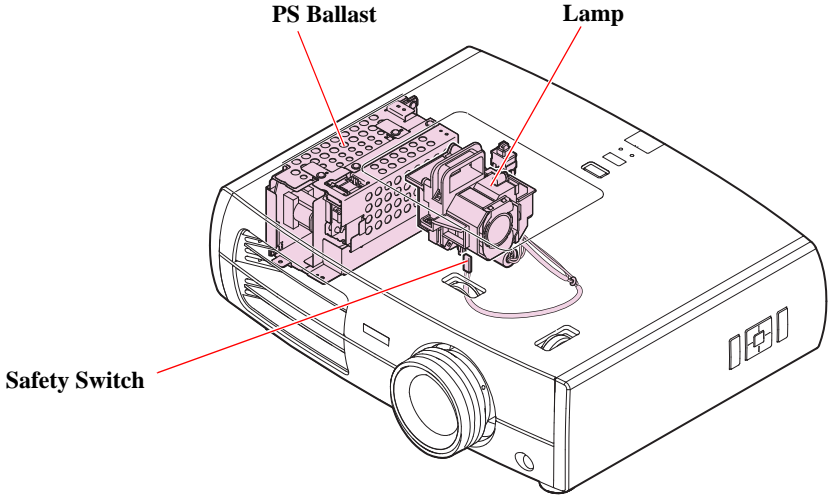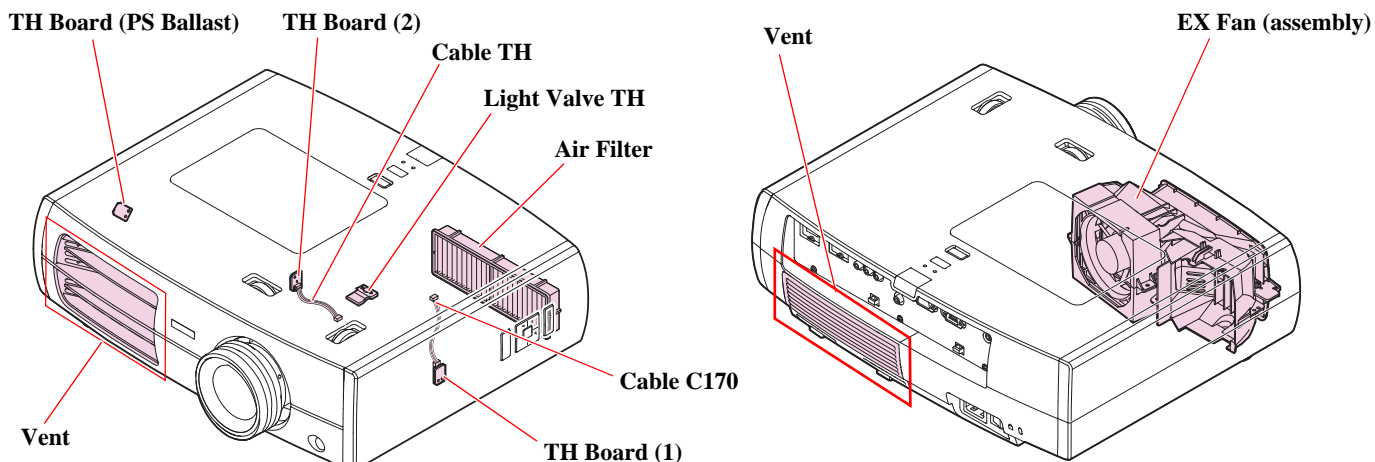
Figure 2-3. Flowchart of Troubleshooting
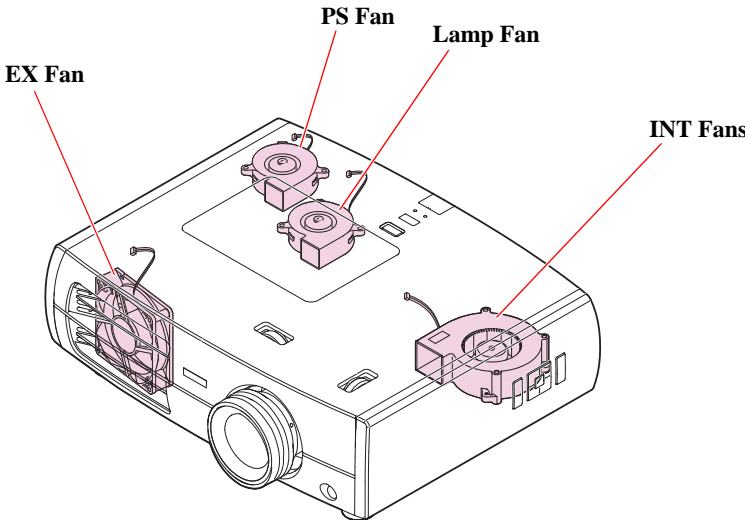
TROUBLESHOOTING FROM THE ERROR CODE ON LAMP ERRORS
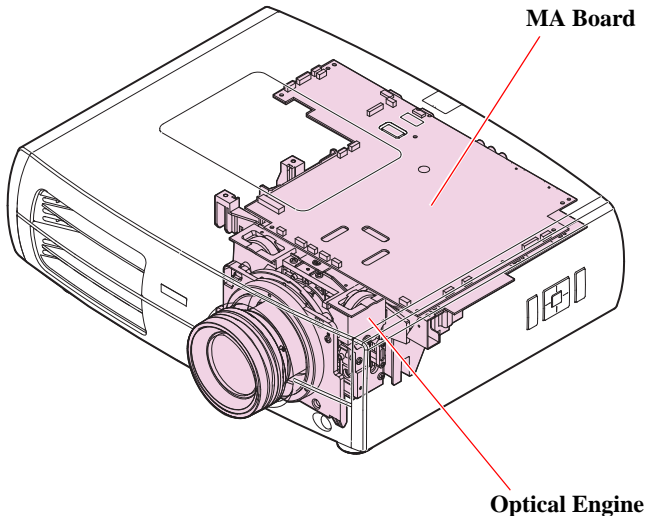
Error code/error name		Faulty part/part name	Cause	Remedy	Reference
LE	Lamp Burnt Out Error	Lamp	Lamp is broken.	Replace the Lamp.	*"3.3.2 Lamp (p55)"*
		Air Filter	Air Filter is clogging.	Clean the Air Filter. Replace it if not improved.	*"3.3.1 Air Filter Assembly (p54)"*
		PS Ballast	PS Ballast is broken.	Replace the PS Ballast.	*"3.3.15 PS Ballast (p92)"*
		Safety Switch (AC Cable)	Safety Switch on the AC Cable is broken.	Replace the AC Cable.	*"3.3.17 AC Cable (p94)"*

Error code/error name		Faulty part/part name	Cause	Remedy	Reference
LF	Lamp Failure	Lamp	Abnormality of the bulb (arc tube) occurs.	Replace the Lamp.	*"3.3.2 Lamp (p55)"*
			Lamp is broken.		
		PS Ballast	PS Ballast is broken.	Replace the PS Ballast.	*"3.3.15 PS Ballast (p92)"*
		Safety Switch (AC Cable)	Safety Switch on the AC Cable is broken.	Replace the AC Cable.	*"3.3.17 AC Cable (p94)"*

PS Ballast   **Lamp**

Safety Switch

TROUBLESHOOTING FROM THE ERROR CODE ON COOLING SYSTEM ERRORS

Error code/error name		Faulty part/part name	Cause	Remedy	Reference
TH	Internal Overheat error	Air Filter	Air Filter is clogging.	Clean the Air Filter. Replace it if not improved.	*"3.3.1 Air Filter Assembly (p54)"*
		Light Valve TH	Light Valve TH is broken.	Replace the Optical Engine and MAB set.	*"3.3.9 Removing the Optical Engine (assembly) (p75)"*
		TH Board (PS Ballast)	TH Board is broken.	Replace the PS Ballast.	*"3.3.15 PS Ballast (p92)"*
		TH Board (1) TH Board (2)	TH Board is broken.	Replace the broken TH Board.	• *"3.3.12 TH Board (1) (p89)"* • *"3.3.14 TH Board (2) (p91)"*
		Cable C170 Cable TH	Cable is not connected properly.	Connect the cable correctly.	
			Cable is broken.	Replace the broken cable.	
		EX Fan (assembly) Lower Case	Vent's status becomes worse. (dirt accumulation/clogging/deformation)	Clean the vent to remove the foreign material.	• *"3.3.7 Removing the EX Fan (assembly) (p65)"* • *"3.3.16 Removing the Lower Case (p93)"*
				Replace the parts with deformed vent.	

Error code/error name		Faulty part/part name	Cause	Remedy	Reference
FN	Fan error	INT Fan EX Fan Lamp Fan PS Fan	Cable is not connected properly.	Connect the fan cable correctly.	• *"3.3.7 Removing the EX Fan (assembly) (p65)"* • *"3.3.11 INT Fan (assembly) (p85)"* • *"3.3.7.2 PS Fan (p67)"* • *"3.3.10 Lamp Fan (p83)"*
			Cable is broken.	Replace the fan with a broken cable.	
			Blade is broken.	Replace the fan with a broken blade.	
			Revolutions of the fan becomes abnormal.	Replace the abnormal fan.	
			Accumulation of dust occurs on a fan.	Clean the fan of accumulated dust.	

PS Fan

Lamp Fan

EX Fan

INT Fans
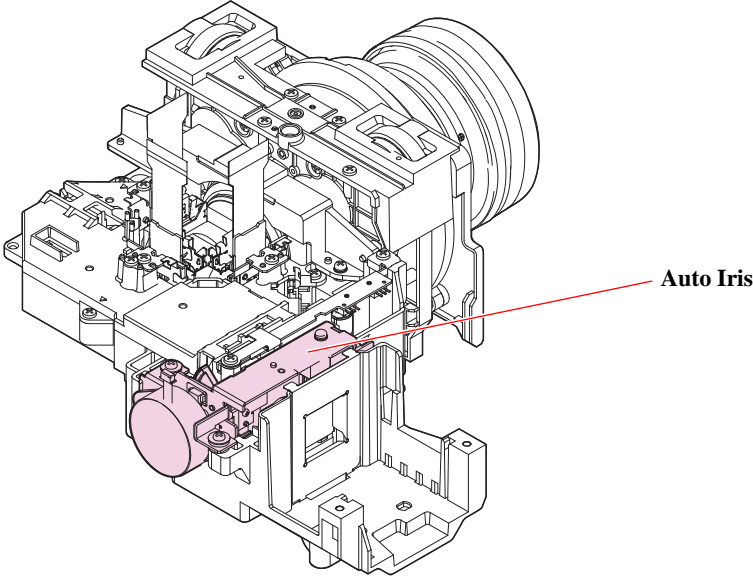
Error code/error name		Faulty part/part name	Cause	Remedy	Reference
FN	Fan error	MA Board	Elements for temperature control on MA Board are broken.	If the error continues after carrying out the remedies above, replace the Optical Engine and MAB set because they are broken.	• *"3.3.8 Removing the MA Board (assembly) (p68)"* • *"3.3.9 Removing the Optical Engine (assembly) (p75)"*

MA Board
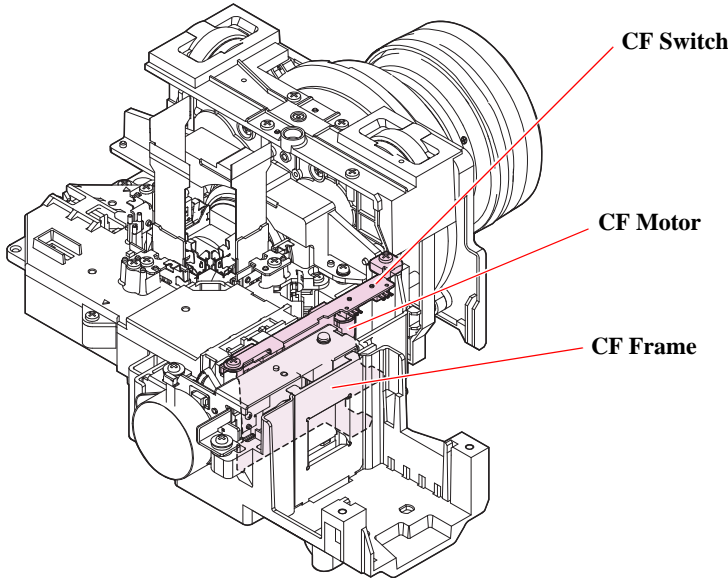
Optical Engine

Error code/error name		Faulty part/part name	Cause	Remedy	Reference
SN	Thermistor error	Light Valve TH	Light Valve TH is broken.	Replace the Optical Engine and MAB set.	*"3.3.9 Removing the Optical Engine (assembly) (p75)"*
		TH Board (PS Ballast)	TH Board is broken.	Replace the PS Ballast.	*"3.3.15 PS Ballast (p92)"*
		TH Board (1) TH Board (2)	TH Board is broken.	Replace the broken TH Board.	• *"3.3.12 TH Board (1) (p89)"* • *"3.3.14 TH Board (2) (p91)"*
		Cable C170 Cable TH	Cable is not connected properly.	Connect the cable correctly.	
		MA Board	Elements for temperature control on MA Board are broken.	If the error continues after carrying out the remedies above, replace the Optical Engine and MAB set because they are broken.	• *"3.3.8 Removing the MA Board (assembly) (p68)"* • *"3.3.9 Removing the Optical Engine (assembly) (p75)"*

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 becomes abnormal.	Replace the Optical Engine and MAB set.	• *"3.3.8 Removing the MA Board (assembly) (p68)"* • *"3.3.9 Removing the Optical Engine (assembly) (p75)"*
RO	Internal error ROM		MA Board is broken.		
			Flash ROM becomes abnormal.		
II	Internal error I2C	Input AC power supply.	Instability of the input AC Power Supply. (an external factor)	If not appropriate, request the improvement.	
		Environment (Temperature of the customer's operating environment)	Access timing error (occurs in a low temperature environment (Y43series))	If not appropriate, request the improvement.	
ID	Internal error DR Status	MA Board	MA Board is broken.	Replace the Optical Engine and MAB set.	
RA	Sub system PW Error	Sub System (Electric Circuit other than MA Board)	Sub System becomes abnormal.		
RS	Sub system ROM Error Replace MA Board.				

MA Board

Optical Engine
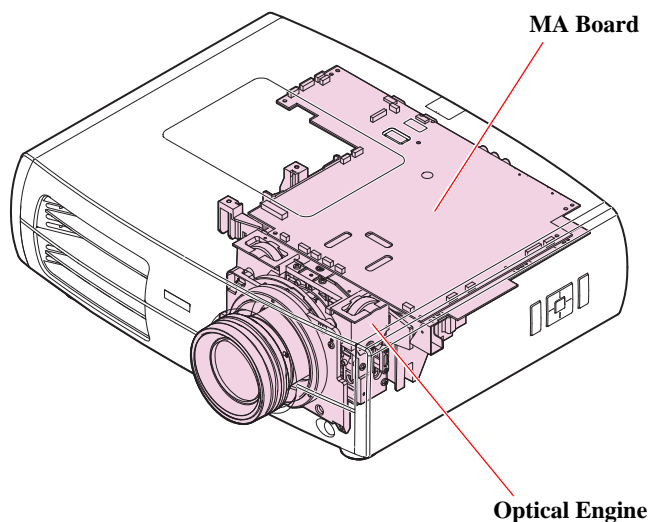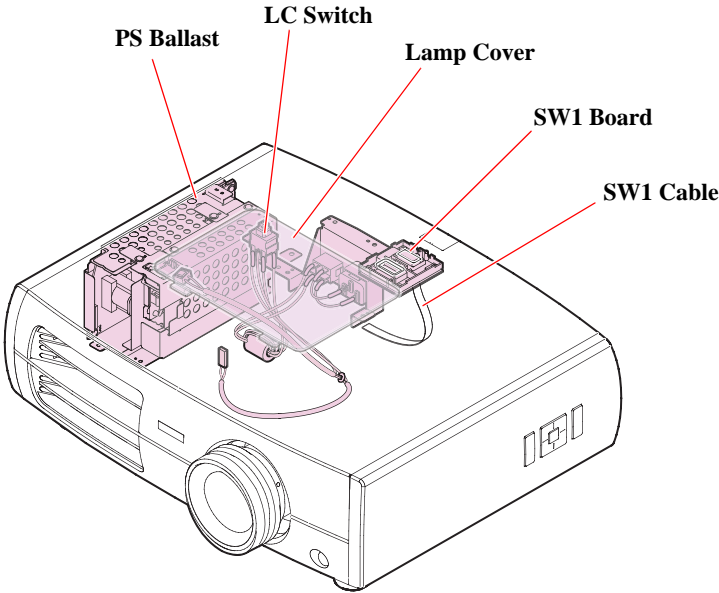
Error code/error name		Faulty part/part name	Cause	Remedy	Reference
		Auto Iris	Auto Iris is broken.	Replace the Auto Iris.	*"3.3.9.2 Auto Iris (p79)"*
AI	Auto Iris Error				

Auto Iris

Error code/error name		Faulty part/part name	Cause	Remedy	Reference
CF	Cinema Filter Error	CF Frame	The gears of CF Motor and the CF Frame are not engaged correctly.	Install the CF Frame correctly.	*"3.3.9.3 CF Frame (p80)"*
			CF Frame is broken.	Replace the CF Frame.	
		CF Switch	CF Switch is broken.	Replace the CF Switch.	
		CF Motor	CF Motor is broken.	Replace the CF Motor.	*"3.3.9.4 CF Motor (p82)"*

CF Switch

CF Motor

CF Frame

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.	SW1 Cable (FPC)	Cable is not connected correctly.	Connect the cable to the MA Board and the SW Board correctly.	• *"3.3.8 Removing the MA Board (assembly) (p68)"* • *"3.3.5.1 SW1 Board (p62)"*
	SW1 Board	SW1 Board is broken.	Replace the SW1 Board.	
	PS Ballast	PS Ballast is broken.	Replace the PS Ballast.	*"3.3.15 PS Ballast (p92)"*
	Lamp Cover	Lamp Cover is not installed correctly.	Install the Lamp Cover correctly.	*"3.3.2 Lamp (p55)"*
	LC Switch (AC Cable)	LC switch is broken.	Replace the LC Switch with a new one.	*"3.3.17 AC Cable (p94)"*

TROUBLE SHOOTING ON IMAGE DISPLAY & QUALITY

Error Status	Faulty part/part name	Cause	Remedy	Reference
No image is projected.	Input video cable	The selected input video cable is not connected correctly.	Connect the selected input video cable correctly.	---
	MA Board	Video Input terminal is broken.	Replace the Optical Engine and MAB set.	• *"3.3.8 Removing the MA Board (assembly) (p68)"* • *"3.3.9 Removing the Optical Engine (assembly) (p75)"*
Focus cannot be adjusted.	Focus Ring	Focus Ring is broken.	Replace the Focus Ring.	*"3.3.9.1 Focus Ring/Zoom Ring (p78)"*
	Optical Engine	Projection Lens is broken.	Replace the Optical Engine and MAB set.	*"3.3.9 Removing the Optical Engine (assembly) (p75)"*
Zooming cannot be made.	Zoom Ring	Zoom Ring is broken.	Replace the Zoom Ring.	*"3.3.9.1 Focus Ring/Zoom Ring (p78)"*

Zoom Ring

Optical Engine

Focus Ring

MA Board

Optical Engine

Projection Lens

Error Status	Faulty part/part name	Cause	Remedy	Reference
Black part of image is reddish. (EH-TW3500)	Optical Engine	FPC for L/V (R) is not connected properly.	Connect the FPC of L/V (R) to the MA Board correctly.	• *"3.3.8 Removing the MA Board (assembly) (p68)"* • *"3.3.9 Removing the Optical Engine (assembly) (p75)"*
Black part of image is greenish. (EH-TW3500)		FPC for L/V (G) is not connected properly.	Connect the FPC of L/V (G) to the MA Board correctly.	
Black part of image is bluish. (EH-TW3500)		FPC for L/V (B) is not connected properly.	Connect the FPC of L/V (B) to the MA Board correctly.	
Black part of image is bluish (cyan-like color). (EH-TW4500/5500)	Optical Engine	FPC for L/V (R) is not connected properly.	Connect the FPC of L/V (R) to the DR Board correctly.	• *"3.3.8.3 DR Board (EH-TW4500/5500 series only) (p73)"* • *"3.3.9 Removing the Optical Engine (assembly) (p75)"*
Black part of image is pinkish. (magenta-like color) (EH-TW4500/5500)		FPC for L/V (G) is not connected properly.	Connect the FPC of L/V (G) to the DR Board correctly.	
Black part of image is yellowish. (EH-TW4500/5500)		FPC for L/V (B) is not connected properly.	Connect the FPC of L/V (B) to the DR Board correctly.	

MA Board

DR Board
(EH-TW4500/5500 only)

Optical Engine

Optical Engine

TROUBLE SHOOTING ON OPERATION ABNORMALITY

Error Status	Faulty part/part name	Cause	Remedy	Reference
Operation using Remote Controller cannot be made.	Remote Controller	Batteries ran out.	Replace batteries with new ones.	---
		Remote Controller is broken.	Replace the Remote Controller.	---
	RC Filter	RC Filter at the front or the rear is dirty.	Clean the filter. Replace it if not improved.	• *"3.3.5 Removing the Upper Case (assembly) (p59)"* • *"3.3.16 Removing the Lower Case (p93)"*
	RCF Board RCR Board	RC Board is broken.	Replace the RC Board.	*"3.3.6 RCF Board/RCR Board (p63)"*
	RC Cable	Cable is not connected properly	Connect the RC cables to the MA Board and the RC Boards 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, replace the Optical Engine and MAB set because they are broken.	• *"3.3.8 Removing the MA Board (assembly) (p68)"* • *"3.3.9 Removing the Optical Engine (assembly) (p75)"*

MA Board

Optical Engine

RC Cable　　**RCR Board**

RC Cable

RCF Board

Error Status	Faulty part/part name	Cause	Remedy	Reference
Operation using SW Board cannot be made.	SW1 Board SW2 Board	SW Board is broken.	Replace SW Board.	• *"3.3.5.1 SW1 Board (p62)"* • *"3.3.4.1 SW2 Board (p58)"*
	MA Board	Elements for operation control on MA Board are broken.	If the error continues after carrying out the remedies above, replace the Optical Engine and MAB set because they are broken.	• *"3.3.8 Removing the MA Board (assembly) (p68)"* • *"3.3.9 Removing the Optical Engine (assembly) (p75)"*

SW1 Board   **MA Board**

SW2 Board

Optical Engine
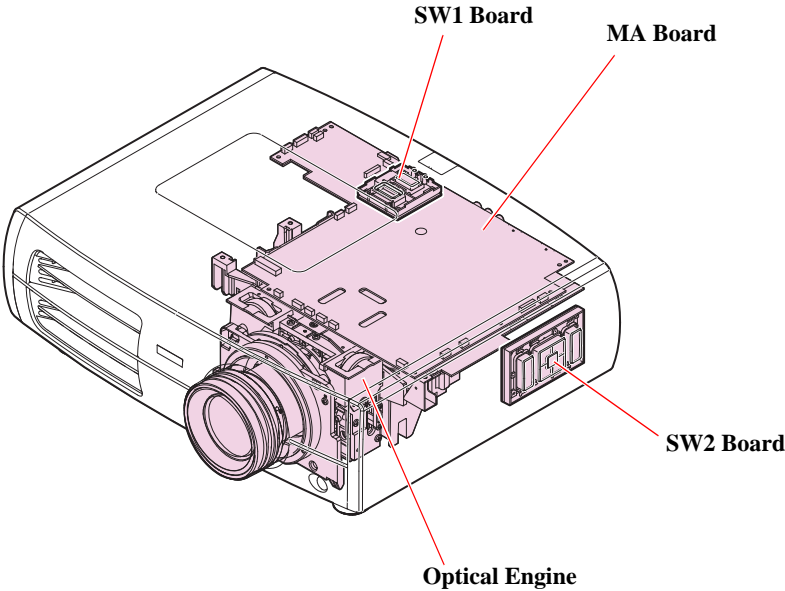
TROUBLE SHOOTING ON OTHER ABNORMALITY

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 (p55)"*
	Cables	Burn on cables from heat.	If burn on cables occurs, replace them with new ones.	
	PS Ballast	Burn on a circuit board from heat.	Replace the PS Ballast.	*"3.3.15 PS Ballast (p92)"*

PS Ballast   **Lamp**

Error Status	Faulty part/part name	Cause	Remedy	Reference
Abnormal noises	PS Ballast	Pulse transformer vibrates abnormally.	Replace the PS Ballast.	*"3.3.15 PS Ballast (p92)"*
		Ballast vibrates abnormally.		
	INT Fan EX Fan Lamp Fan PS Fan	Foreign material sticks on a fan.	Clean the fan to remove foreign material.	• *"3.3.7 Removing the EX Fan (assembly) (p65)"* • *"3.3.11 INT Fan (assembly) (p85)"* • *"3.3.7.2 PS Fan (p67)"* • *"3.3.10 Lamp Fan (p83)"*
		Fan is contacting other parts.	Check if a fan contacts other parts. In such a case, correct its installation.	
		Fan's impeller is broken.	Replace the broken fan with a new one.	

PS Ballast

PS Fan **Lamp Fan**

EX Fan

INT Fans
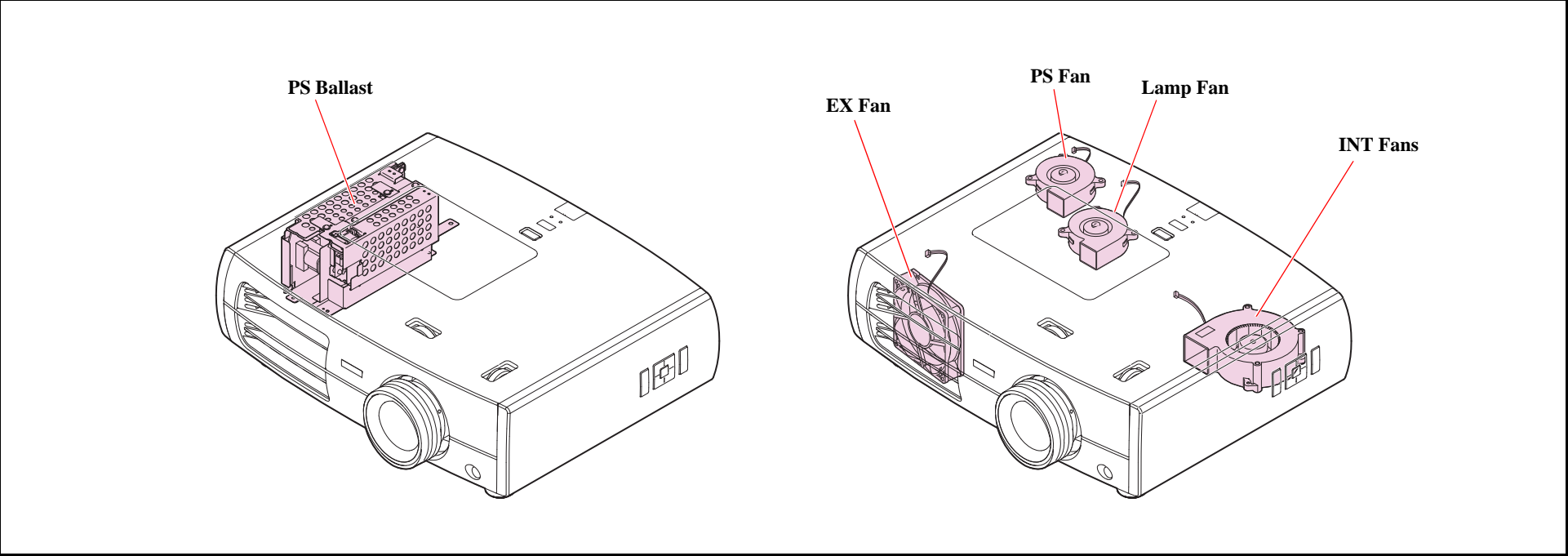
2.4.5 Cable Connection and Projector's Status

This section describes the projector's status when disconnection occurs somewhere between the parts/units and the MA Board/ DR Board (EH-TW4500/5500 only). 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.
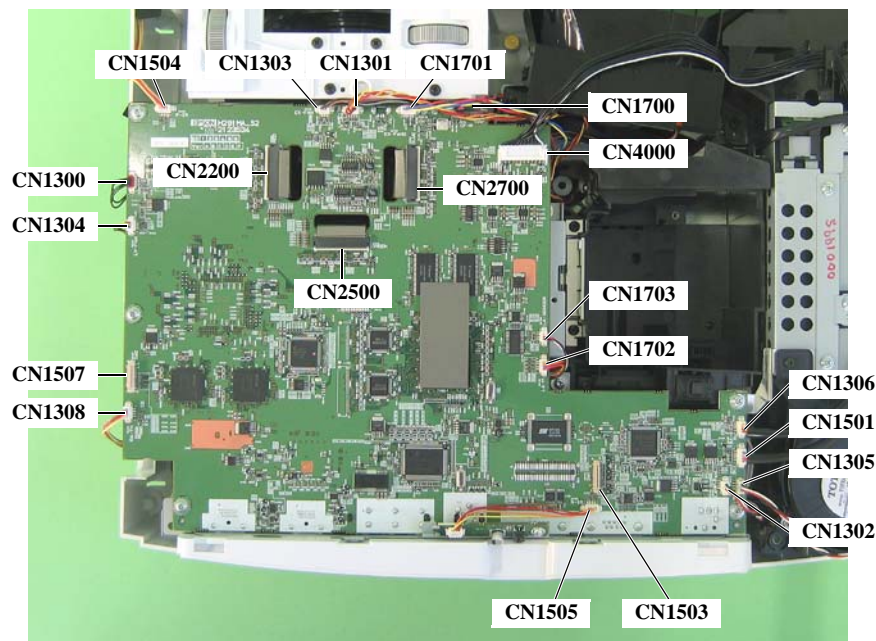
Figure 2-4. Connector layout of the MA Board (EH-TW3500)
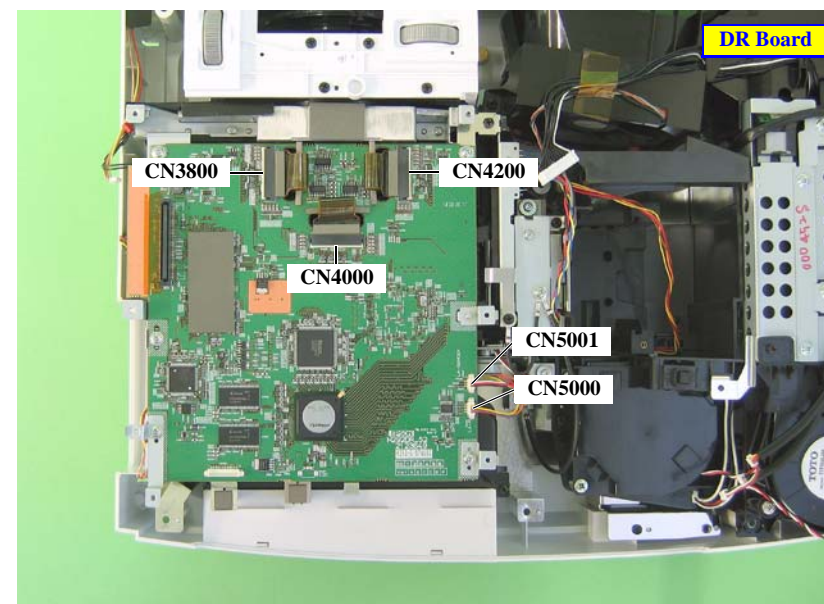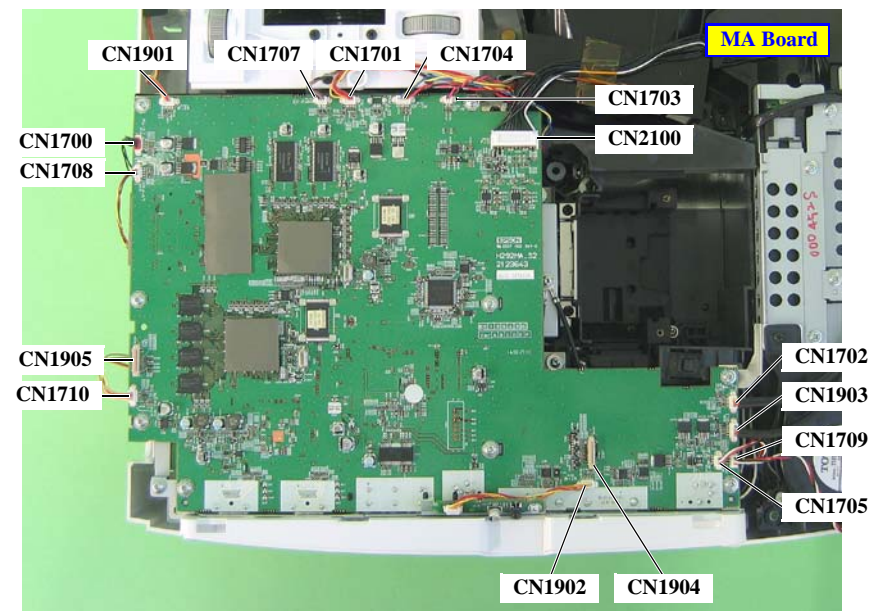
Figure 2-5. Connector layout of the MA Board/ DR Board (EH-TW4500/5500)

MAL-CONNECTION ON EACH CONNECTOR (MA BOARD)

Connector No. (EH-TW3500 / EH-TW4500/ 5500)	Destination	Status
CN2200/ CN3800 (DR Board)	Optical Engine (L/V(R))	The power can turn on and the Power LED lights blue. When pressing the power button, initialization starts normally, then the projection starts. But the black part of the projected image is reddish. (See *" Trouble Shooting on image Display & Quality (p35)"*)
CN2500/ CN4000 (DR Board)	Optical Engine (L/V(G))	The power can turn on and the Power LED lights blue. When pressing the power button, initialization starts normally, then the projection starts. But the black part of the projected image is greenish. (See *" Trouble Shooting on image Display & Quality (p35)"*)
CN2700/ CN4200 (DR Board)	Optical Engine (L/V(B))	The power can turn on and the Power LED lights blue. When pressing the power button, initialization starts normally, then the projection starts. But the black part of the projected image is bluish. (This phenomenon is not easily distinguished on Logo screen or No Signal screen. (See *" Trouble Shooting on image Display & Quality (p35)"*)
CN4000/ CN2100	PS Ballast	Even if the AC cable is connected, the power LED does not light. The power button does not work either. (See *" Troubleshooting at Power-ON (p34)"*.)
CN1501/ CN1903	Ballast (SCI)	The power can turn on and the Power LED lights blue. When pressing the power button, initialization starts with blue LED blinking. But the lamp is not ignited, so no image is projected. After a while, the projector changes to the Lamp Error mode. The power turns off automatically after a certain period. The LED Indicator's warning display can be turned off once the main power is turned off. (See *" Trouble Shooting on Lamp Errors (p23)"*.)

Connector No. (EH-TW3500 / EH-TW4500/ 5500)	Destination	Status
CN1503/ CN1904	SW1 Board	When the AC cable is connected, the power LED lights blue. But the power button does not work. The power cannot be turned on. (See *" Troubleshooting at Power-ON (p34)"*.)
CN1507/ CN1905	SW2 Board	When the AC cable is connected, the power LED lights blue. But the Menu button, Esc button, Enter/Line Menu button, ⊕ button do not work. (See *" Troubleshooting at Power-ON (p34)"*.)
CN1504/ CN1901	RCF Board	The power can turn on and the Power LED lights blue. When pressing the power button, initialization starts normally, then the projection starts. But the control from the front does not function. The control from the rear is still effective. When checking, send the signal to the front of the projector only. Otherwise, this error can be easily slipped over, so be careful. (See *" Trouble Shooting on Operation Abnormality (p37)"*.)
CN1505/ CN1902	RCR Board	The power can turn on and Power LED lights blue. When pressing the power button, initialization starts normally, then the projection starts. But the control from the front does not function. The control from the rear is still effective. When checking, send the signal to the front of the projector only. Otherwise, this error can be easily slipped over, so be careful. (See *" Trouble Shooting on Operation Abnormality (p37)"*.)
CN1700/ CN1703	CF Motor	The power can turn on and the Power LED lights blue. When pressing the power button, instantly the projector changes to the Cinema Filter Error mode with the Lamp LED and the Temperature LED blinking red. The lamp is not ignited, so no image is projected. The power turns off automatically after a certain period. The LED Indicator's warning display can be turned off once the main power is turned off. (See *" Troubleshooting from the Error Code on Electric Circuit Errors (p31)"*.)

Connector No. (EH-TW3500 / EH-TW4500/ 5500)	Destination	Status
CN1701/ CN1704	CF Switch	The power can turn on and the Power LED lights blue. When pressing the power button, the projector starts initializing itself. But during the initialization the projector changes to the Cinema Filter Error mode with the Lamp LED and the Temperature LED blinking red. The lamp is not ignited, so no image is projected. The power turns off automatically after a certain period. The LED Indicator's warning display can be turned off once the main power is turned off. (See *"Troubleshooting from the Error Code on Electric Circuit Errors (p31)"*.)
CN1702/ CN5000 (DR Board)	Auto Iris Motor	The power can turn on and the Power LED lights blue. When pressing the power button, the projector starts initializing itself. But during the initialization the projector changes to the Auto Iris Error mode and a message for the user to turn off the projector and contact the service office. When pressing the power button again, the projector changes to the error mode with the Lamp LED and the Temperature LED blinking red. The power turns off automatically after a certain period. The LED Indicator's warning display can be turned off once the main power is turned off. (See *"Troubleshooting from the Error Code on Electric Circuit Errors (p31)"*.)
CN1703/ CN5001 (DR Board)	Auto Iris Sensor	

Connector No. (EH-TW3500 / EH-TW4500/ 5500)	Destination	Status
CN1300/ CN1700	Light Valve TH	The power can turn on and Power LED lights blue. When pressing the power button, initialization starts, but instantly the projector changes to the Fan/Sensor Error mode. The power turns off automatically after a certain period with two beeps. The LED Indicator's warning display can be turned off after the power is off. (See *"Troubleshooting of Fan Error/Sensor Error (p22)"*.)
CN1301/ CN1701	TH Board (2)	
CN1306/ CN1702	TH Board (PS Ballast)	
CN1308/ CN1710	TH Board (1)	
CN1302/ CN1705	Lamp Fan	
CN1303/ CN1707	EX Fan	
CN1304/ CN1708	INT Fan	
CN1305/ CN1709	PS Fan	

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 (p96)" and carry out the necessary procedure for safety.

Procedure	Check item
1. Connect the power cable, and turn on the Main Switch.	Does [Power] LED light blue?
2. Press [Power] button on the projector.	Does [Power] LED flash blue, then light blue?
	Does Lamp illuminate?

2.5.1 Each Operation Check

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

OPERATION CHECK FOR SW BOARD

When repairing the SW Board, carry out the check below following the instructions. (See *" Trouble Shooting on Operation Abnormality (p37)"*.)

Procedure	Check item
1. Press [Power] button on the projector to turn it on.	Does [Power] button switch on/off the projector?
	Does [Source Search] button switch the sources?
	Does [Menu] button display/close the menu?
	On the menu screen, do [Esc] button, [Enter/Line Menu] button, and [⊞] button function correctly?

OPERATION CHECK FOR REMOTE CONTROLLER

When repairing the Remote Controller, carry out the check below following the instructions. (See *" Trouble Shooting on Operation Abnormality (p37)"*.)

Procedure	Check item
1. Press [Power] button on Remote Controller to turn the projector on.	Does [Power] button on the controller switch on/off the projector?
	Do all the buttons function correctly?
	Can Remote Controller work approx. 6m away from the front/rear of the projector?

OPERATION CHECK FOR VIDEO INPUT/OUTPUT

When repairing the parts related with video input/output, carry out the check below following the instructions. (See *" Trouble Shooting on image Display & Quality (p35)"*.)

Procedure	Check item
1. Set the projector on an even workbench.	• Does Lamp illuminate? • Is the image projected after the lamp lit? • Is "No Signal" message displayed on screen? • Does closing/opening the Shutter turn on/off the image?
2. Press [Power] button to turn the power ON.	
3. Adjust the projected image position up or down with the vertical lens adjustment dial.	
4. Adjust the projected image position to the right or to the left with the horizontal lens adjustment dial.	
5. Adjust the focus with Focus Ring.	
6. Adjust the image size with Zoom Ring.	
7. Adjust keystone with the [Keystone] buttons of the controller.	
8. From menu, select [Position], and adjust it.	
9. Connect all the IF cables to check.	Is image vivid enough?
10.Press [Source] button, and switch to the corresponding source.	

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 the MA Board, make sure to check all the cables are connected correctly referring to " 2.4.5 Cable Connection and Projector's Status (p41)".

DISASSEMBLY AND ASSEMBLY

> In this chapter, the models are categorized into two group according to the mechanical differences, and named generally as shown in **" 1.1 About Model Names *(p10)*"**.

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 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.

⚠ CAUTION

- Do not disassemble any components (such as the power supply unit) which do not have express disassembly procedures described in this Service Manual.
- The Optical Engine, the circuit boards and the Loader Assy. are very sensitive to static electricity. Be sure 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, so handle it with care.
- The speaker unit contains a permanent magnet, so keep it away from any storage media such as floppy disks and magnetic cards.

⚠ CAUTION

- 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.
- When carrying out any of the following operations, check that there is no dust or dirt on the respective components or on any glass surfaces before installation. If any contamination is found, clean it off using isopropyl alcohol.
  - Optical Engine removal
  - Lamp assembly removal
  - Air filter removal
- When the projector is disassembled, the dust in and around parts (such as the fans and 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 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.
- When replacing or disassembling, do not re-use old heat-resistant tape that secures cables inside the projector, but make sure to use new one.

3.1.2 Precautions

The precautions given below must be always observed whenever you disassemble/ reassemble the projector to maintain the quality.

⚠ WARNING

- **Never touch the current-carrying part 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.**

- **When disassembling/assembling, be sure to turn off the power switch and pull out the power cable from the projector beforehand.**

⚠ CAUTION

- **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 contact the anti-static case containing the new one to the metal part of this product before taking it out.

- **Disconnect any interface cables from the projector.**

- **Before disassembling the projector, make sure to clean any dust or dirt on the air filter, interface section and outer case using a vacuum cleaner or other method.**

3.1.3 Workflow

Disassembly
Disassemble the product following the given instructions.

↓

Repair/Maintenance
Perform the repair and cleaning, etc.

↓

Reassembly
Unless otherwise specified, reassembly is the reverse of the disassembly procedure.

When carrying out repair or maintenance of a safety device.

↓

Safety Check after servicing
Refer to "Safety Check after servicing (p.96)", and carry out the safety checks.

↓

Finish

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.
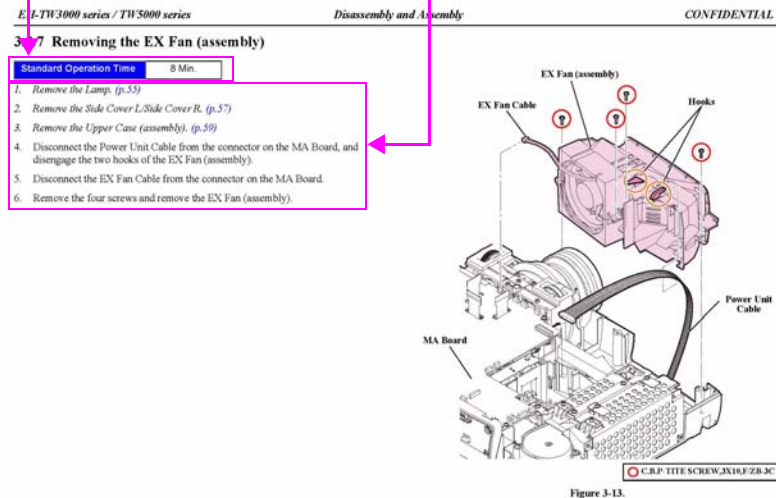
3.1.5 Tools

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

Table 3-1. List of Tools

Tool Name	Qt.	Application
Phillips screwdriver No. 0 (8cm)	1	Disassembling the focus ring and the zoom ring
Phillips screwdriver No. 1 (10cm)	1	Disassembling the outer case and inner components
Phillips screwdriver No. 2 (10cm)	1	Disassembling the outer case and inner components
Hexagonal box screwdriver (5 mm)	1	Removing the computer interface
Tweezers	1	Removing 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	
Anti-static wrist band	1	

Note :   *1   q.s.: Sufficient quantity

3.1.6 Precautions for Optical Engine and MA Board

The Optical Engine and Main (MA) Board are paired together as a single service part. Neither is available separately. For servicing that requires the replacement either of the MA Board or the Optical Engine, both components must be replaced together. When sending the defected Optical Engine and MAB set to the designated engine repair center, make sure to send all the specified components together.

The component parts of the Optical Engine require mechanical installation positions to be adjusted in relation to each other. In addition, the control circuit also has its own unique characteristics, such as display signal output drivers, that differ from projector to projector. There are also unique differences in each optical system mechanism, such as in the light valves.

In order to obtain the optimum display, it is necessary to eliminate these differences in electrical and mechanical characteristics as well as to make mechanical adjustments. The various correction values are set at the time of shipment from the factory and are stored in ROM on the MA Board.

⚠️ **CAUTION**

■ **Do not replace either the Optical Engine or MA Board alone. (As stated before, you cannot replace any one of the Optical Engine and MA Board, or change the combination of them.)**

■ **Do not disassemble the Optical Engine. Special jigs are required for reinstalling the optical components in the engine, such as POP Assy., condenser lens, mirrors. Reassembling the Optical Engine without using the jigs are strictly prohibited.**

⚠️ **CAUTION**

■ **Do not remove the upper guide cover of the Optical Engine. Doing so may contaminate the internal components with dust or dirt attached to the Optical Engine and adversely affect the image quality.**

Removable screws
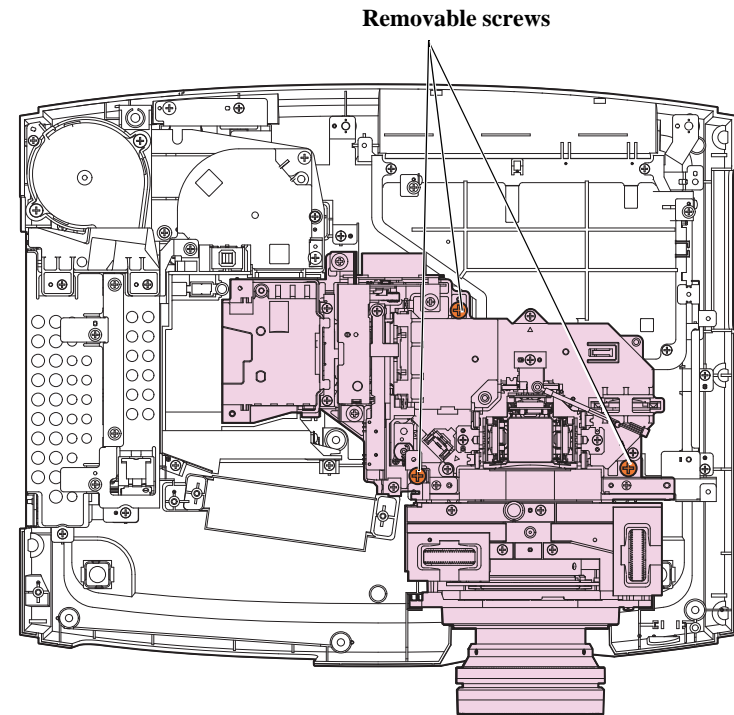
3.2 Flowchart

The general disassembly procedure for the EH-TW3500/4500/5500 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.99)" 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

```
                    ┌──────────────┐
                    │    Start     │
                    └──────┬───────┘
         ┌─────────────────┼─────────────────┐
┌────────────────┐ ┌──────────────────────┐ ┌────────────────────┐
│"3.3.2 Lamp(p55)"│ │"3.3.1 Air Filter      │ │"3.3.3 Front Foot   │
└────────┬────────┘ │ Assembly (p54)"       │ │ (p56)"             │
         │          └──────────────────────┘ └────────────────────┘
┌────────────────┐
│"3.3.4 Side Case│
│ L/Side Case R  │
│ (p57)"         │
└────────┬───────┘
┌────────────────┐
│"3.3.5 Removing │
│ the Upper Case │
│ (assembly)(p59)"│
└────────┬───────┘
┌────────────────┐
│"3.3.8 Removing │
│ the MA Board   │
│ (assembly)(p68)"│
└────────┬───────┘
┌────────────────┐
│"3.3.8.3 DR     │
│ Board (EH-TW4500/│
│ 5500 series     │
│ only)(p73)"     │
└────────┬───────┘
┌────────────────┐
│"3.3.9 Removing │
│ the Optical    │
│ Engine(assembly)│
│ (p75)"         │
└────────┬───────┘
┌────────────────┐
│"3.3.9.1 Focus  │
│ Ring/Zoom Ring │
│ (p78)"         │
└────────────────┘
```

Housings

Start

" *3.3.2 Lamp (p55)* "

" *3.3.4 Side Case L/Side Case R (p57)* "

" *3.3.4 Side Case L/Side Case R (p57)* "

" *3.3.5 Removing the Upper Case (assembly) (p59)* "

" *3.3.8 Removing the MA Board (assembly) (p68)* "

" *3.3.8.3 DR Board (EH-TW4500/ 5500 series only) (p73)* "

" *3.3.8.1 IF Case (p71)* "

" *3.3.9 Removing the Optical Engine (assembly) (p75)* "

" *3.3.10 Lamp Fan (p83)* "

" *3.3.7.2 PS Fan (p67)* "

" *3.3.13 Inner EX Duct (p90)* "

" *3.3.15 PS Ballast (p92)* "

" *3.3.11 INT Fan (assembly) (p85)* "

" *3.3.16 Removing the Lower Case (p93)* "

Electric Circuit Parts/Optical Part

Start

" *3.3.2 Lamp (p55)* "

" *3.3.4 Side Case L/Side Case R (p57)* "

" *3.3.4 Side Case L/Side Case R (p57)* "

" *3.3.4.1 SW2 Board (p58)* "

" *3.3.5 Removing the Upper Case (assembly) (p59)* "

" *3.3.8 Removing the MA Board (assembly) (p68)* "

" *3.3.5.1 SW1 Board (p62)* "

" *3.3.6 RCF Board/RCR Board (p63)* "

" *3.3.8.3 DR Board (EH-TW4500/ 5500 series only) (p73)* "

" *3.3.8.1 IF Case (p71)* "

" *3.3.9 Removing the Optical Engine (assembly) (p75)* "

" *3.3.8.2 MA Board (p72)* "

" *3.3.10 Lamp Fan (p83)* "

" *3.3.9.3 CF Frame (p80)* "

" *3.3.9.2 Auto Iris (p79)* "

" *3.3.7.2 PS Fan (p67)* "

" *3.3.9.4 CF Motor (p82)* "

" *3.3.13 Inner EX Duct (p90)* "

" *3.3.12 TH Board (1) (p89)* "

" *3.3.15 PS Ballast (p92)* "

" *3.3.14 TH Board (2) (p91)* "

Cooling Mechanism Devices

```
          ┌─────────────┐
          │    Start     │
          └──────┬──────┘
                 │
     ┌───────────────────────┐
     │  " 3.3.2 Lamp (p55) "  │
     └───────────┬───────────┘
                 │
     ┌───────────────────────────┐
     │ " 3.3.4 Side Case L/Side Case R│
     │           (p57) "          │
     └───────────┬───────────────┘
                 │
     ┌───────────────────────────┐
     │ " 3.3.5 Removing the Upper Case│
     │        (assembly) (p59) "  │
     └───────────┬───────────────┘
                 │
     ┌──────────────────┐   ┌──────────────────────┐   ┌──────────────────────┐
     │ " 3.3.8 Removing the MA Board │ " 3.3.7 Removing the EX Fan │ " 3.3.7.2 PS Fan (p67) " │
     │    (assembly) (p68) " │   │    (assembly) (p65) " │   └──────────────────────┘
     └─────────┬────────┘   └──────────┬───────────┘
               │                       │
               │              ┌──────────────────────┐
               │              │  " 3.3.7.1 EX Fan (p66) " │
               │              └──────────┬───────────┘
               │                         │
     ┌──────────────────┐   ┌──────────────────────┐
     │ " 3.3.8.3 DR Board (EH-TW4500/ │ " 3.3.10 Lamp Fan (p83) " │
     │   5500 series only) (p73) " │   └──────────────────────┘
     └─────────┬────────┘
               │
     ┌──────────────────┐
     │ " 3.1.6 Precautions for Optical │
     │  Engine and MA Board (p50) " │
     └─────────┬────────┘
               │
     ┌──────────────────────┐
     │ " 3.3.11 INT Fan (assembly) (p85) " │
     └─────────┬────────────┘
               │
     ┌──────────────────┐
     │ " 3.3.11.1 INT Fan (p87) " │
     └──────────────────┘
```
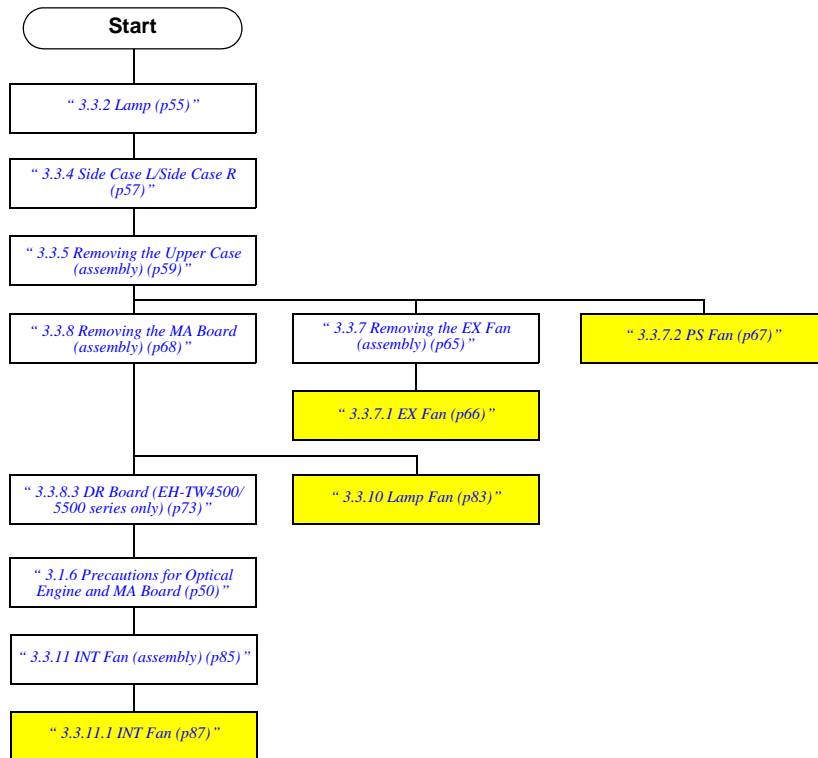
3.3 Disassembly

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

3.3.1 Air Filter Assembly

Standard Operation Time	- Min.

1. Release the two hooks and remove the Air Filter Cover.

2. Remove the Air Filter Assembly.
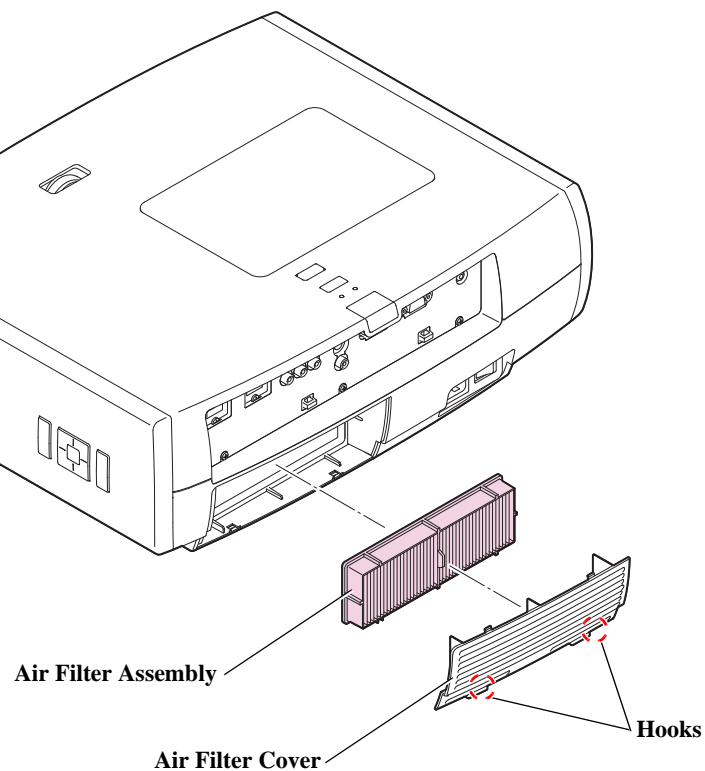
Figure 3-1.

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.96)". According to the instructions in it, handle the part and perform the procedure after servicing.**

1. Insert the a flat-blade screwdriver or similar tools into the holes of the IF Case on the location show in the figure below.
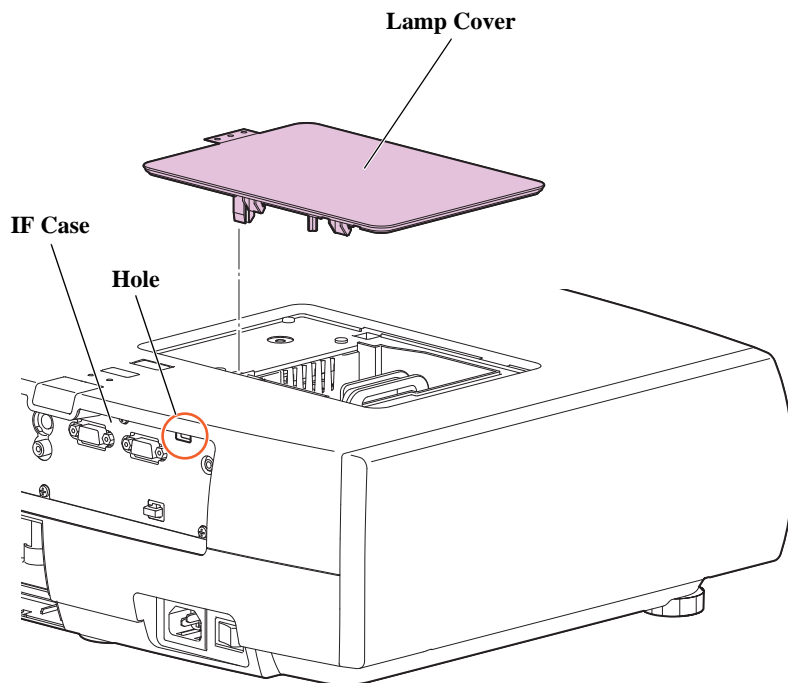
Figure 3-2.

2. Loosen the two screws and remove the Lamp.
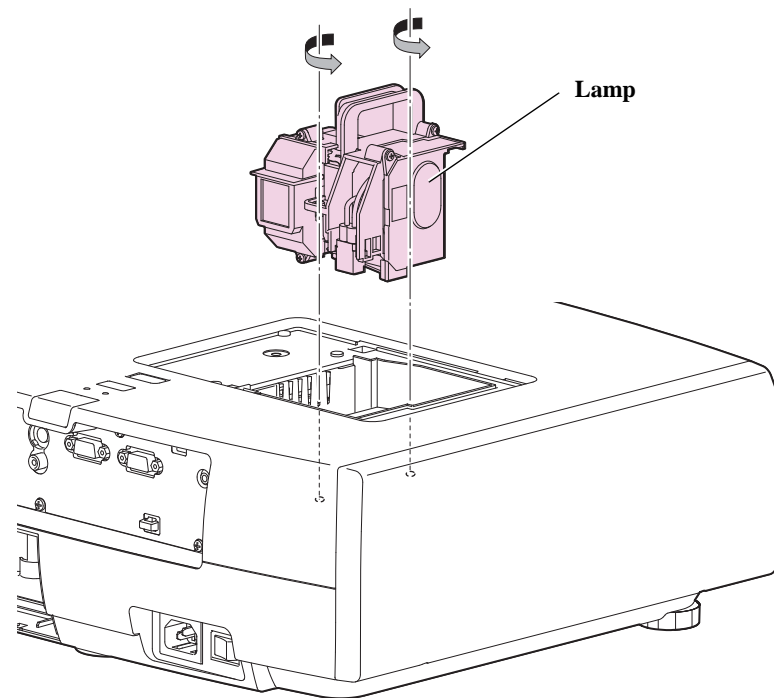
Figure 3-3.

3.3.3 Front Foot

Standard Operation Time	1 Min.

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

2. Remove the Foot Rubber from the Front Foot.

3. Remove the Foot Rubber from the Lower Case.
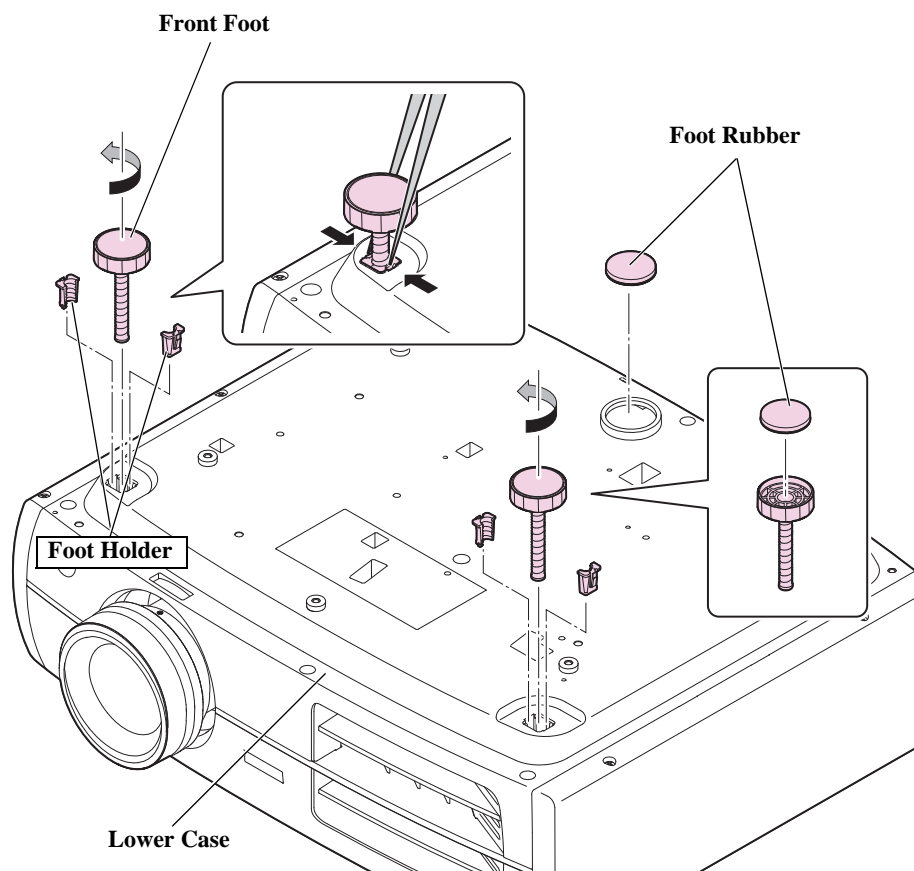
Figure 3-4.

> ### ⚠ CAUTION
>
> **When attaching the Foot Rubber, take care in the following instructions.**
>
> ■ **Do not touch the double-sided tape of the new Foot Rubber or the installation part of the Front Foot with bare hands.**
>
> ■ **If the installation part is dirty, clean the part using alcohol before attaching the Foot Rubber.**
>
> ■ **After attaching the Foot Rubber, make sure to press the part tightly to make it attached firmly.**

3.3.4 Side Case L/Side Case R

Standard Operation Time	1 Min.

1. Remove the two screws and remove the Side Case L from the Upper Case.

> ### ⚠ CAUTION
>
> **In the next step, make sure not to pull away the Side Case R too far because the cables are connected to it.**

2. Remove the three screws.

3. Disconnect the SW2 Cable from the SW2 Board and remove the Side Case R from the Upper Case.

Side Case L   SW2 Cable

SW2 Board

Side Case R

⭘ C.B.P-TITE SCREW,4X10,F/ZB-3C
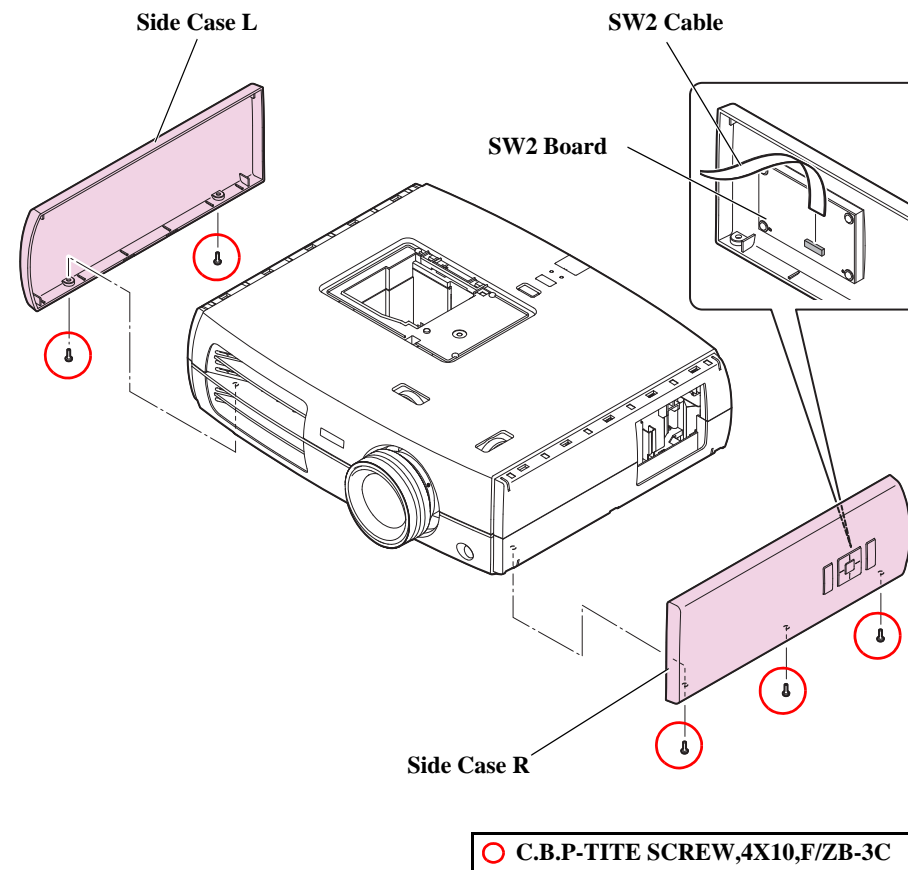
Figure 3-5.

3.3.4.1 SW2 Board

Standard Operation Time	2 Min.

1. *Remove the Side Case R. (p.57)*

2. Remove the four screws and remove the SW2 Board from the Side Button.

3. Remove the Enter Button from the Side Case R.

4. Remove the Side Button from the Side Case R.

Side Button

Enter Button

Side Case R

SW2 Board

○ **C.C.P-TITE SCREW,3X8,F/ZB-3C**
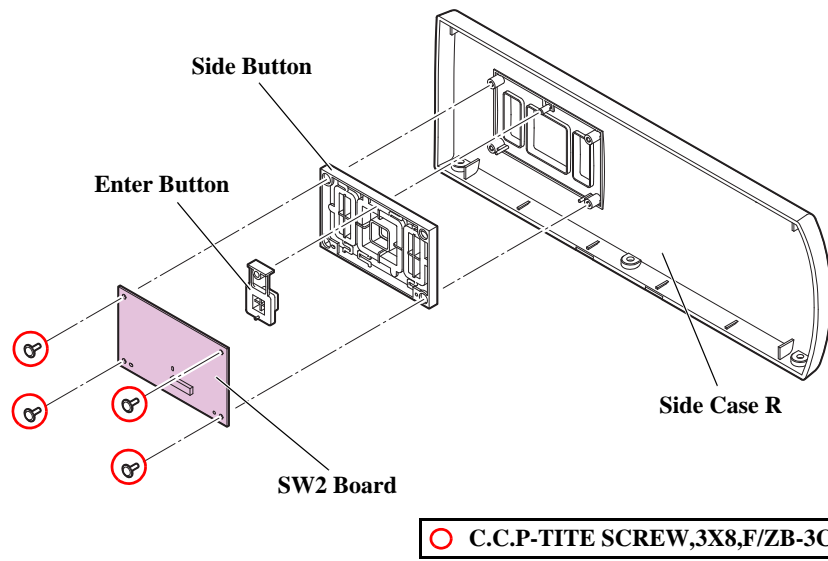
Figure 3-6.

3.3.5 Removing the Upper Case (assembly)

Standard Operation Time	• Upper Case (assembly): 6 Min. • Inner Upper Cover/Lamp Latch Cover/Latch Spring: 8 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Case L/Side Case R. (p.57)*

3. Remove the seven screws on the bottom (Lower Case side).

Lower Case

Upper Case
(assembly)
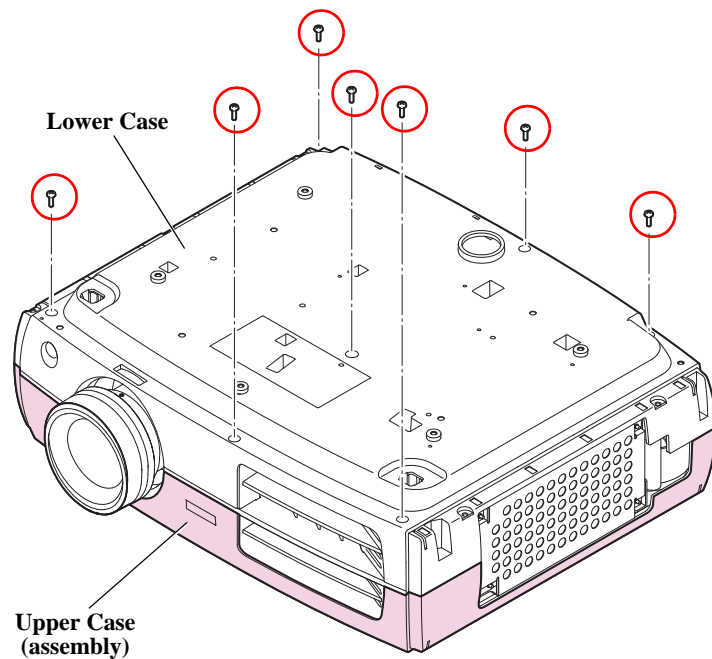
○ **C.B.P-TITE SCREW,4X10,F/ZB-3C**

Figure 3-7.

⚠ **CAUTION**

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

4. Remove the two screws on the side (IF Case side).

5. Disconnect the SW1 Cable from the MA Board, and remove the Upper Case (assembly).

Upper Case
(assembly)

SW1 Cable

MA Board
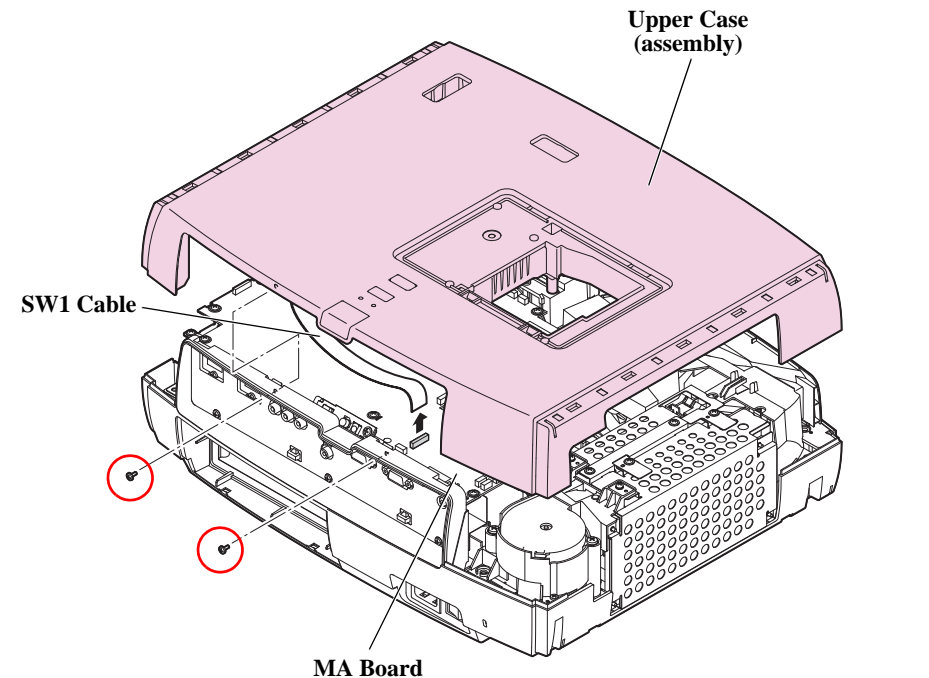
○ **C.B.SCREW,3X6,F/ZB-3C**

Figure 3-8.

6. Remove the six screws and remove the Inner Upper Cover from the Upper Case (assembly).

7. Remove the two screws (◯) and remove the Lamp Latch Cover from the Upper Case (assembly).

8. Remove the Latch Spring from the Lamp Latch Cover.

9. Remove the Logo Plate Base from the Upper Case (assembly).

10. Remove the EX Seal from the Upper Case (assembly).

C.C.P-TITE SCREW,3X8,F/ZB-3C

Figure 3-9.

⚠ CAUTION
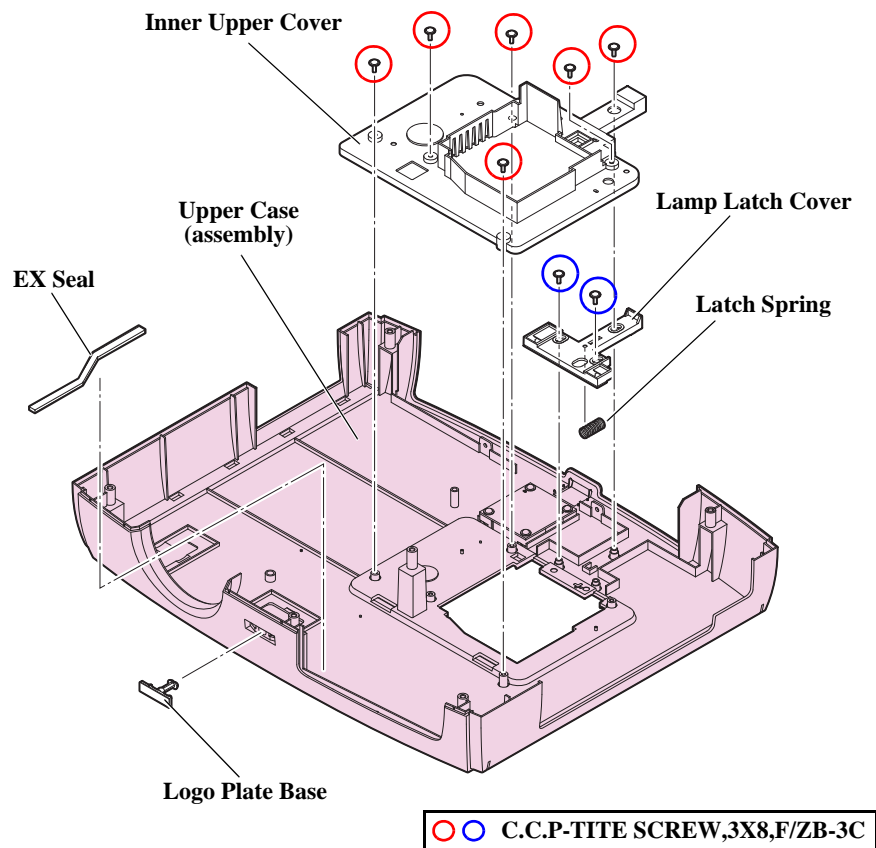
When reassembling the Lamp Latch Cover and Latch Spring, follow the procedure below.

1. **Insert the Latch Spring into the attachment location until the spring is firmly secured into the pin.**
2. **Place the Lamp Latch Cover on the Upper Case (assembly) correctly, then install the end of the spring into the Spring holder adjusting it from the slit on the Lamp Latch Cover.**
3. **Secure the Lamp Latch Cover with the screws.**
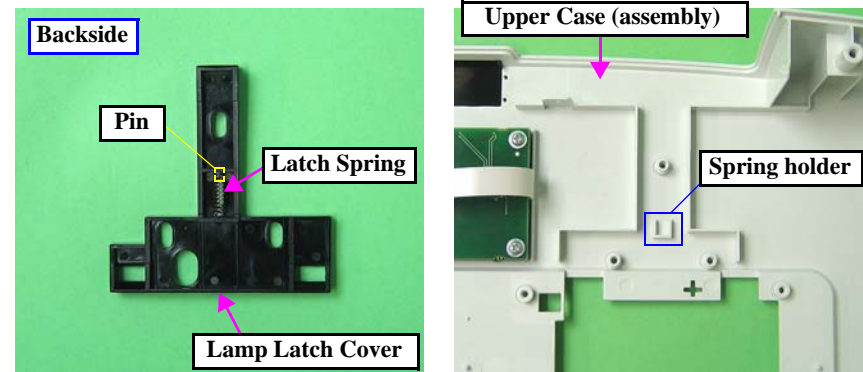
❑ Checking Caution Labels

⚠️ **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.96)**". According to the instructions in it, handle the part and perform the procedure after servicing.

⚠️ **CAUTION**
When replacing parts with caution labels attached, make sure to stick the label to the replaced parts.

Check if each caution label is attached on the location shown below.
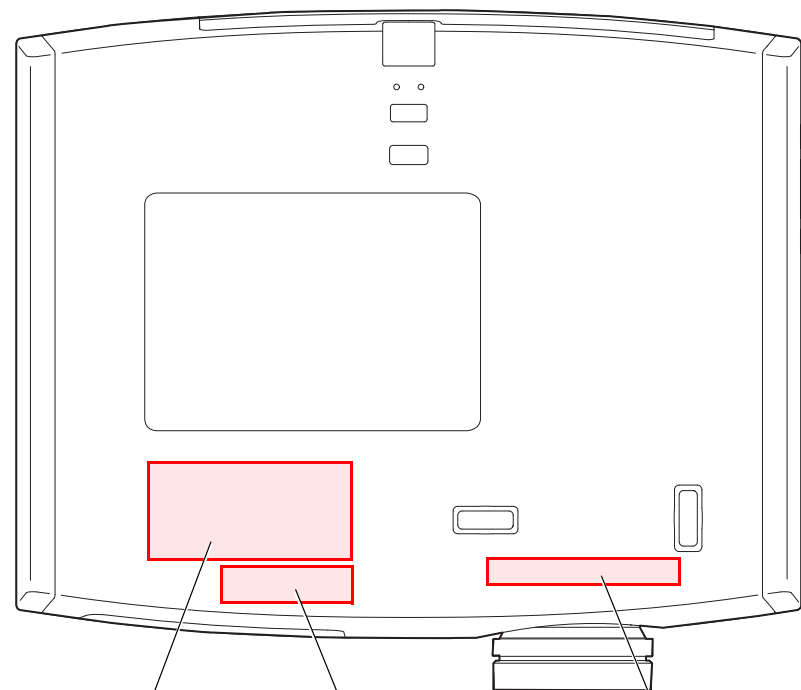
WARNING LABEL, LAMP REPLACEMENT; LP49

WARNING LABEL, LOOK INTO THE LENS

CAUTION LABEL, HOT

3.3.5.1 SW1 Board

Standard Operation Time	7 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. Remove the four screws and remove the SW Board from the Upper Case.

5. Remove the SW1 Cable from the SW1 Board.

6. Remove the following parts from the Upper Case.

   - Top Button
   - LED Lens

7. Remove the following parts from the Top Button.

   - Diffusion Plate
   - Cushion LED
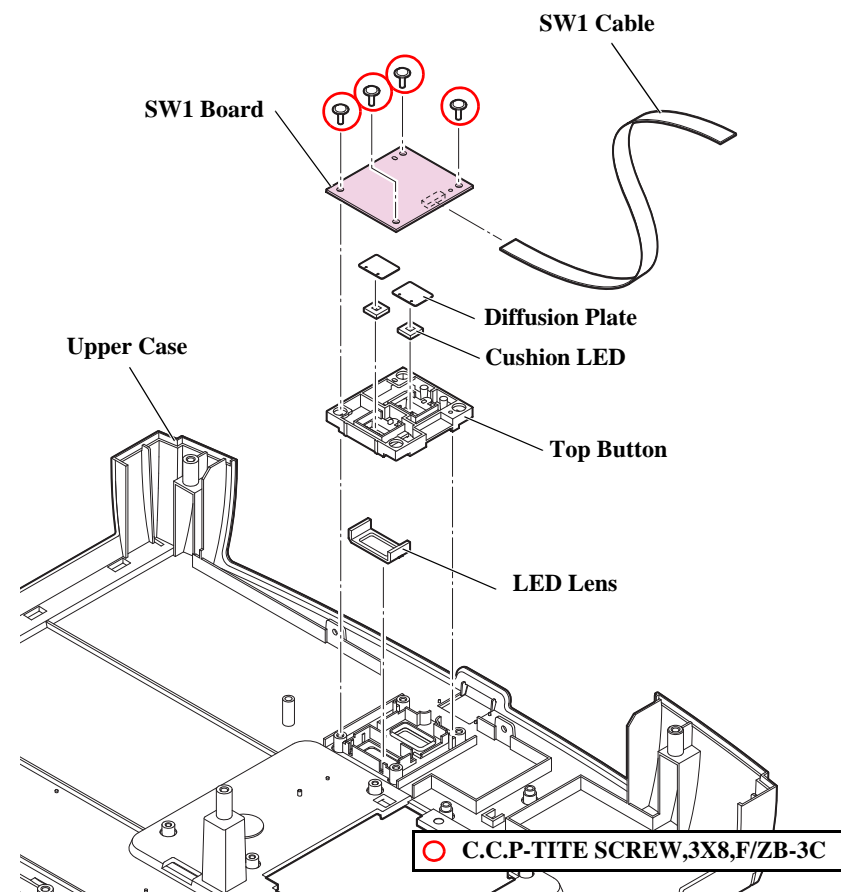
Figure 3-10.

3.3.6 RCF Board/RCR Board

Standard Operation Time	7 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. Disconnect the RCR Cable from the connector on the MA board.

5. Remove the screw and remove the RCR Board from the MA Plate.

6. Remove the RCR Cable from the RCR Board.
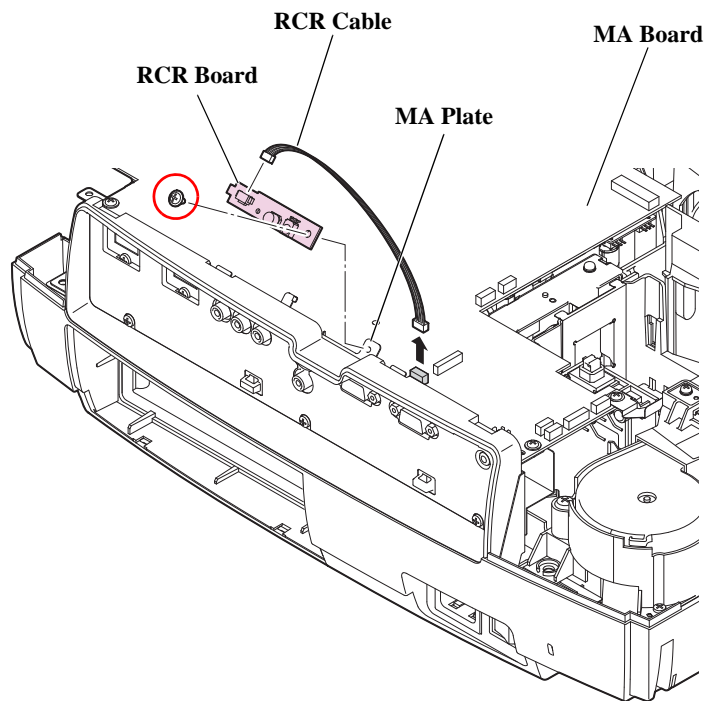
7. Disconnect the RCF Cable from the connector on the MA board.

8. Remove the screw and remove the Decoration Plate R from the Lower Case.

9. Remove the RCF Board.

10. Remove the RCF Cable from the RCF Board.

○ C.C.P-TITE SCREW,3X8,F/ZN-3C
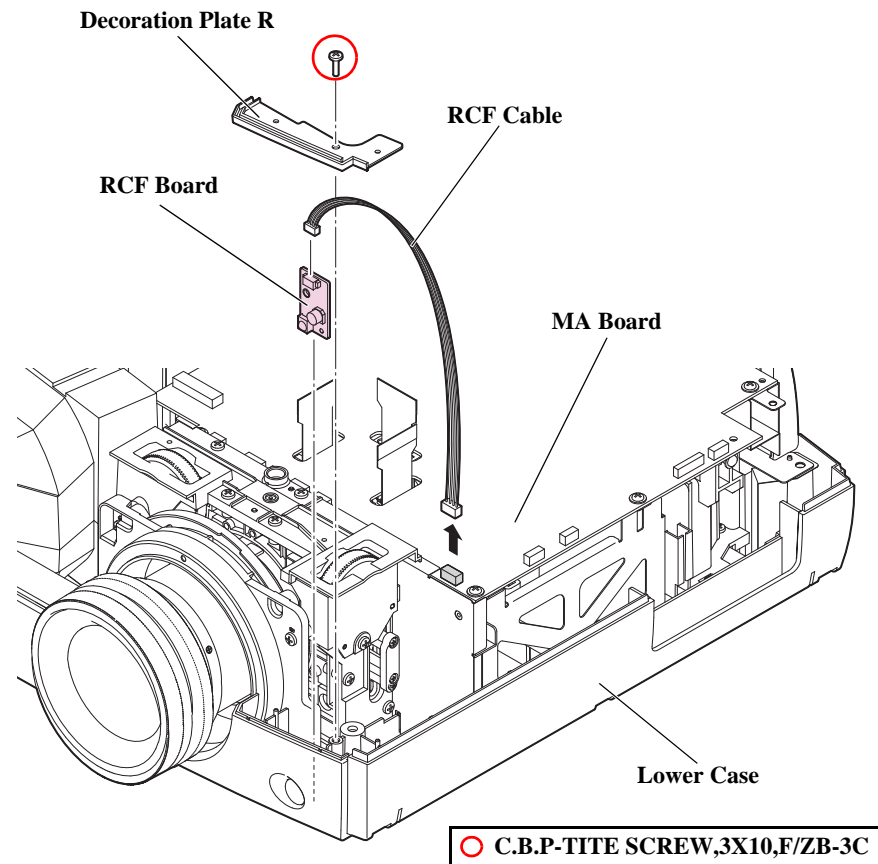
Figure 3-11.

○ C.B.P-TITE SCREW,3X10,F/ZB-3C

Figure 3-12.

⚠ CAUTION

■ **When installing the RCF Board, route the RCF Cable into the grooves (x2) on the Lower Case shown below.**

RCF Cable

RCF Board

☐ Groove
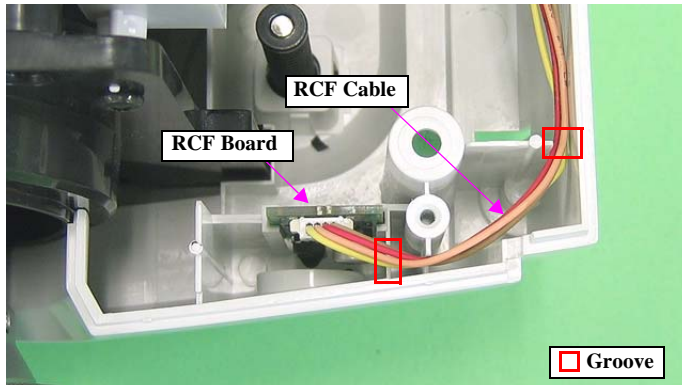
■ **When installing the Decoration Plate R, make sure to align the positioning holes (x2) with the guide pins (x2) on the Lower Case.**

Positioning holes and guide pins

Decoration Plate R
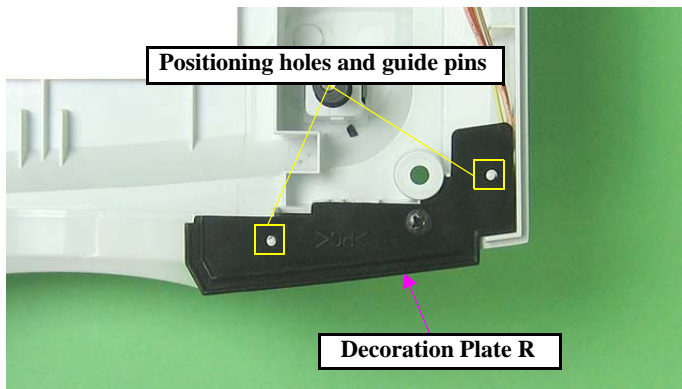
3.3.7 Removing the EX Fan (assembly)

Standard Operation Time	8 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. Disconnect the Power Unit Cable from the connector on the MA Board, and disengage the two hooks of the EX Fan (assembly).

5. Disconnect the EX Fan Cable from the connector on the MA Board.

6. Remove the four screws and remove the EX Fan (assembly).

○ C.B.P-TITE SCREW,3X10,F/ZB-3C
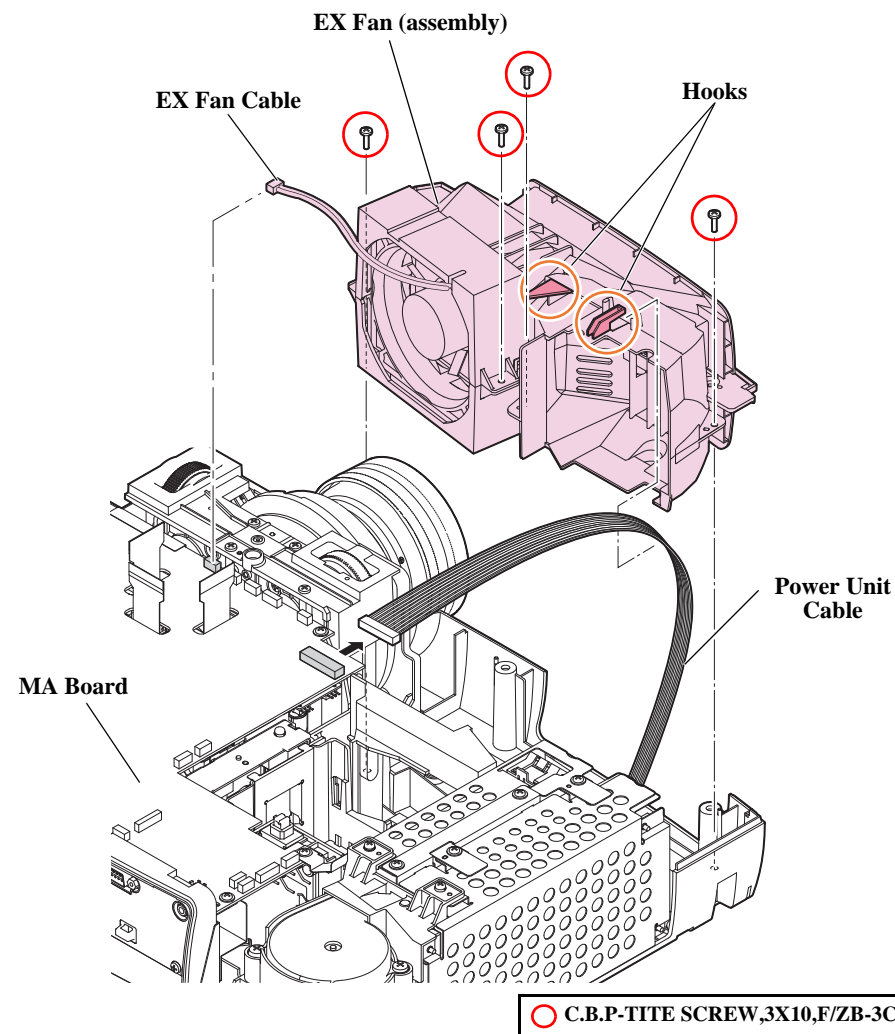
Figure 3-13.

3.3.7.1 EX Fan

Standard Operation Time	11 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the EX Fan (assembly). (p.65)*

5. Remove the EX Duct PS from the EX Fan (assembly).
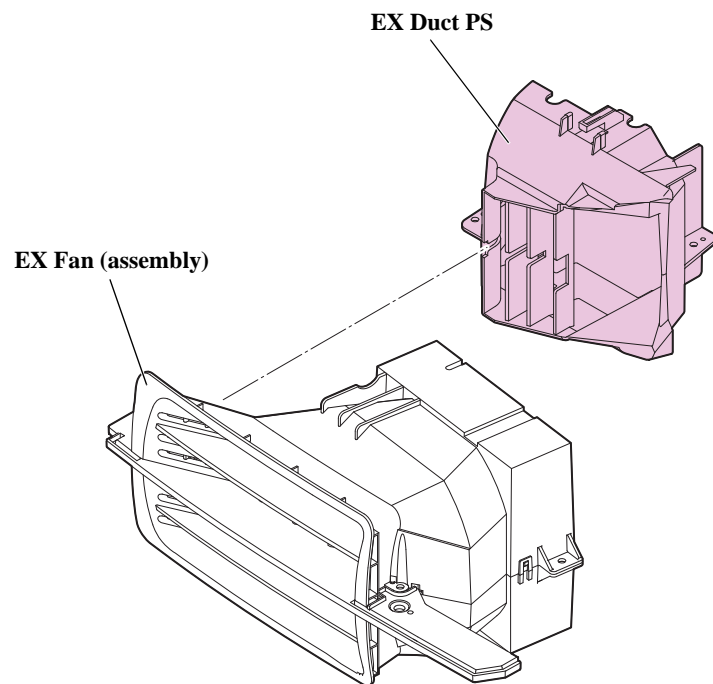
Figure 3-14.

6. Remove the two screws.

7. Release the two hooks and remove the EX Fan from the Upper EX Duct.

8. Remove the Decoration Plate L.

9. Remove the EX Fan from the Upper EX Duct.

10. Remove the EX Fan Cushion from the EX Fan.
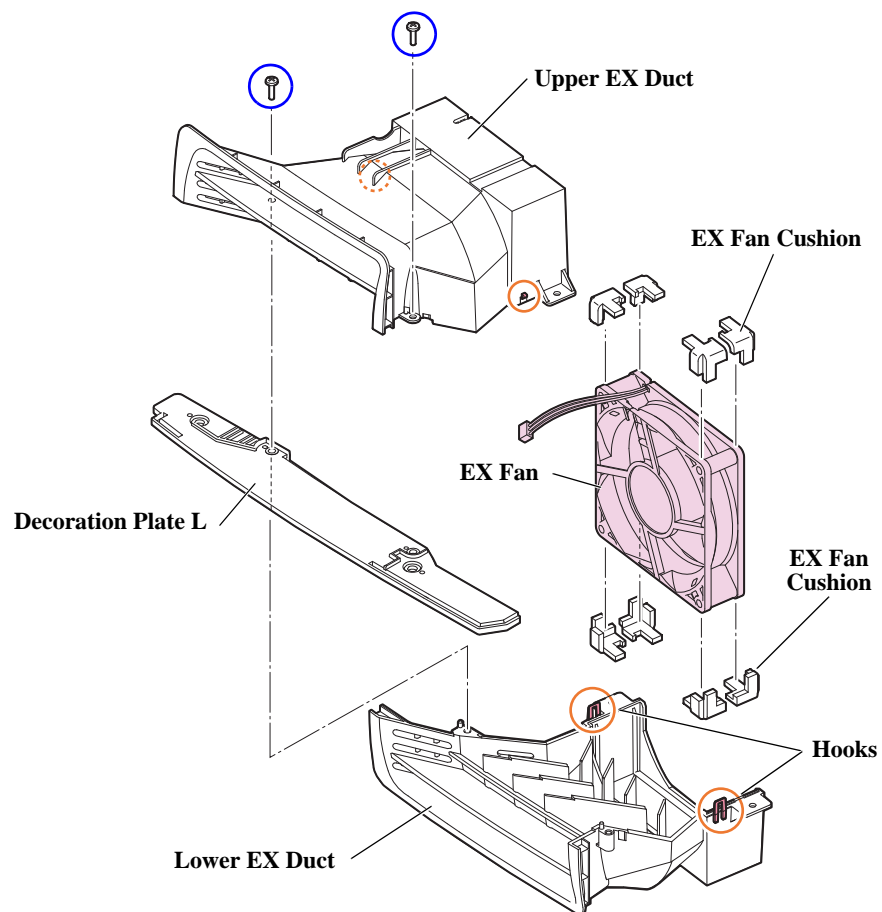
C.B.P-TITE SCREW,3X10,F/ZB-3C

Figure 3-15.

3.3.7.2 PS Fan

Standard Operation Time	11 Min.

1. *Remove the Lamp.* *(p.55)*

2. *Remove the Side Cover L/Side Cover R.* *(p.57)*

3. *Remove the Upper Case (assembly).* *(p.59)*

4. Remove the four screws and remove the PS Fan Duct.

5. Remove the PS Fan.

6. Remove the eight LV Cushions from the PS Fan.

❗	**The Sheet, Intake Fan is affixed to the PS Fan.** **Be sure to replace / affix the Sheet, Intake Fan, when replacing the PS Fan.**

PS Fan Duct

Sheet, Intake Fan

LV Cushion

PS Fan

○ **C.B.P-TITE SCREW,3X10,F/ZB-3C**
○ **C.P.(S-P1)SCREW,3X5,F/ZN-3C**
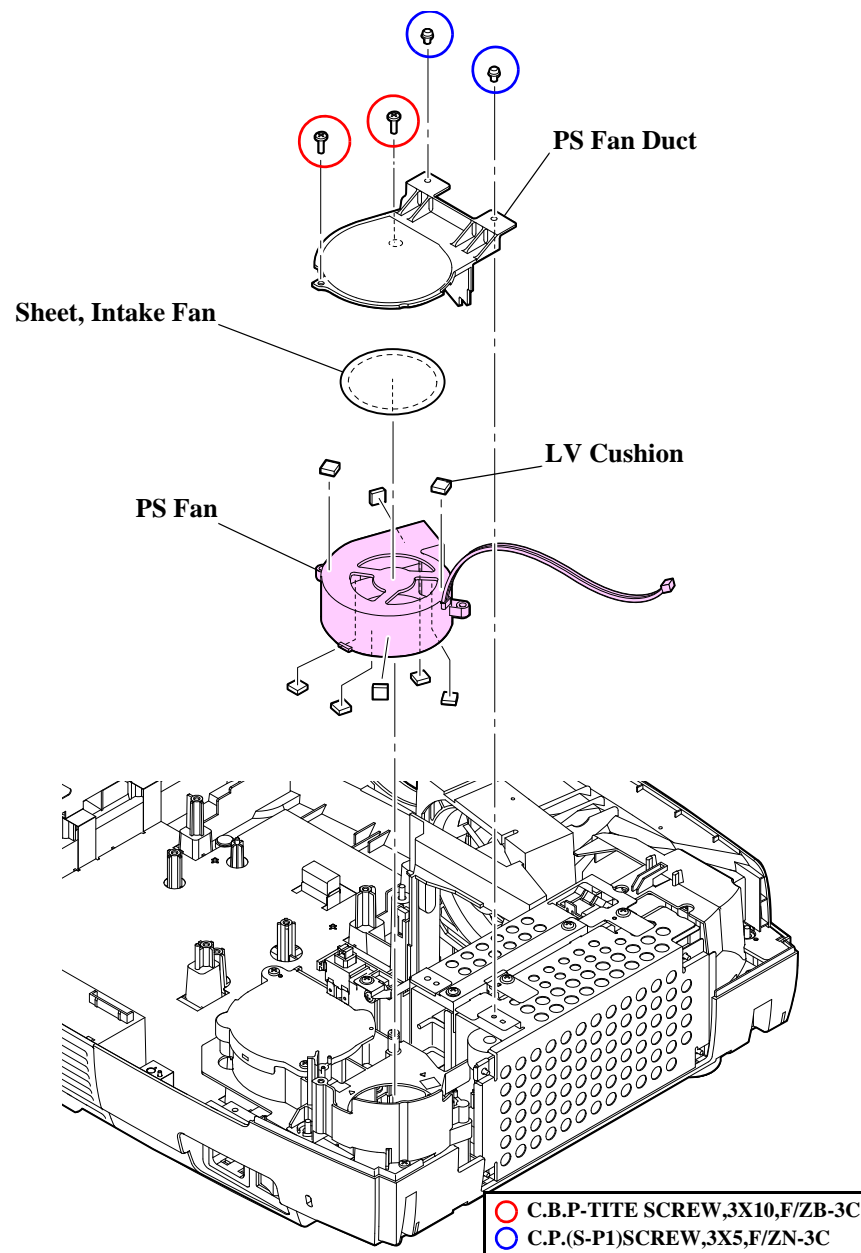
Figure 3-16.

3.3.8 Removing the MA Board (assembly)

Standard Operation Time	10 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

⚠ CAUTION

When connecting the R/G/B Light Valve cables to the MA Board (assembly), be sure to insert the R/G/B Light Valve cables securely into the connectors to the end and lock the connectors. If there is a loose connection such as a half-way or slant connection, it may cause short-circuiting, or malfunction.

---

4. Disconnect all the cables from the MA Board (assembly).

☐ EH-TW3500 series's Case

Figure 3-17.

⚠ CAUTION
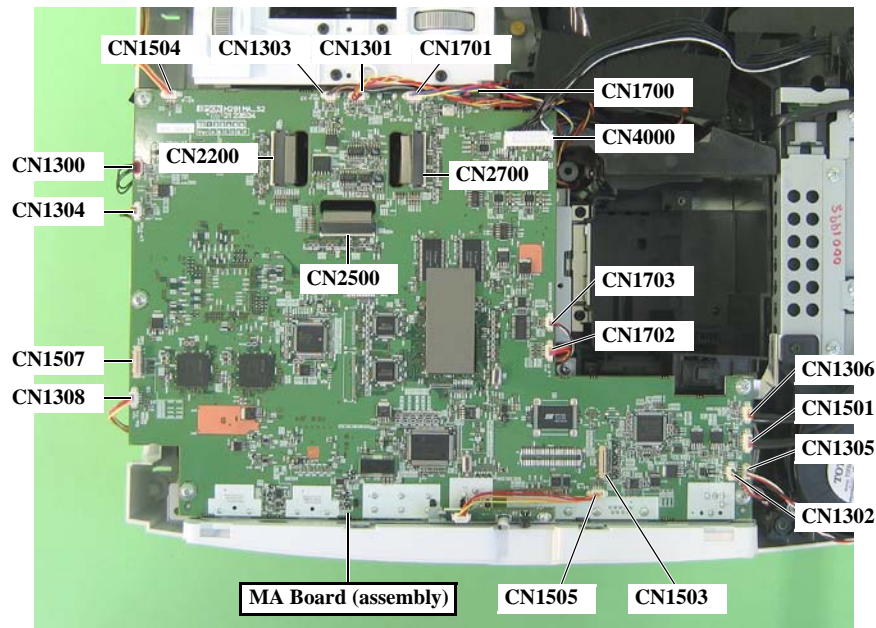
Reference

Table 3-2. Connector No. and its destination (EH-TW3500 series)

CN No.	Destination	CN No.	Destination
CN1300	Light Valve TH	CN1505	RCR Board
CN1301	TH Board (2)	CN1507	SW2 Board
CN1302	Lamp Fan	CN1700	CF Motor
CN1303	EX Fan	CN1701	CF Switch
CN1304	INT Fan	CN1702	Auto Iris Motor
CN1305	PS Fan	CN1703	Auto Iris Sensor
CN1306	TH Board (PS Ballast)	CN2200	L/V (R) of Optical Engine
CN1308	TH Board (1)	CN2500	L/V (G) of Optical Engine
CN1501	Ballast Assembly (SCI)	CN2700	L/V (B) of Optical Engine
CN1503	SW1 Board	CN4000	Power Assembly
CN1504	RCF Board		

□   EH-TW4500/5500 series's Case

Figure 3-18.

⚠️ **CAUTION**
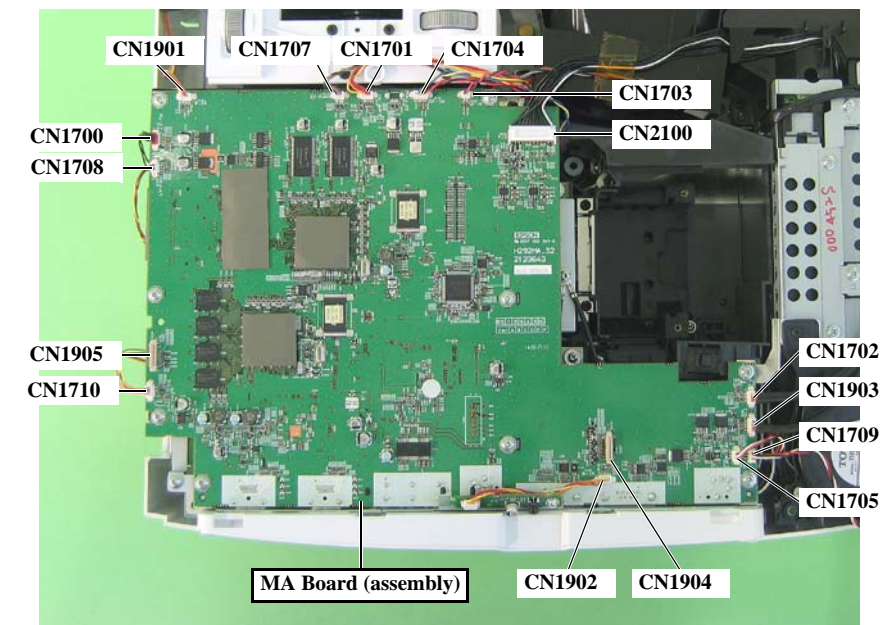
Reference

Table 3-3. Connector No. and its destination (EH-TW4500/5500 series)

CN No.	Destination	CN No.	Destination
CN1302*	DR Board	CN1903	Ballast Assembly (SCI)
CN1700	Light Valve TH	CN1904	SW1 Board
CN1701	TH Board (2)	CN1901	RCF Board
CN1705	Lamp Fan	CN1902	RCR Board
CN1707	EX Fan	CN1905	SW2 Board
CN1708	INT Fan	CN1703	CF Motor
CN1709	PS Fan	CN1704	CF Switch
CN1702	TH Board (PS Ballast)	CN2100	Power Assembly
CN1710	TH Board (1)		

Note＊:   CN1302 is located on the back of the board.

☐ EH-TW3500 series's Case

5. Remove the four screws and remove the PS Fan Duct.

6. Remove the screw (○) and remove the PS Plate.

7. Remove the four screws and remove the MA Board (assembly).

☐ EH-TW4500/5500 series's Case

8. Remove the four screws and remove the PS Fan Duct.

9. Remove the screw (○) and remove the PS Plate.

10. Remove the eight screws and remove the MA Board (assembly).

C.C SCREW,3X6,F/ZN-3C
C.B.P-TITE SCREW,3X10,F/ZB-3C
C.P.(O) SCREW,4X6,F/ZI
C.P.(S-P1)SCREW,3X5,F/ZN-3C

Figure 3-19.

C.C SCREW,3X6,F/ZN-3C
C.B.P-TITE SCREW,3X10,F/ZB-3C
C.P.(O) SCREW,4X6,F/ZI
C.P.(S-P1)SCREW,3X5,F/ZN-3C
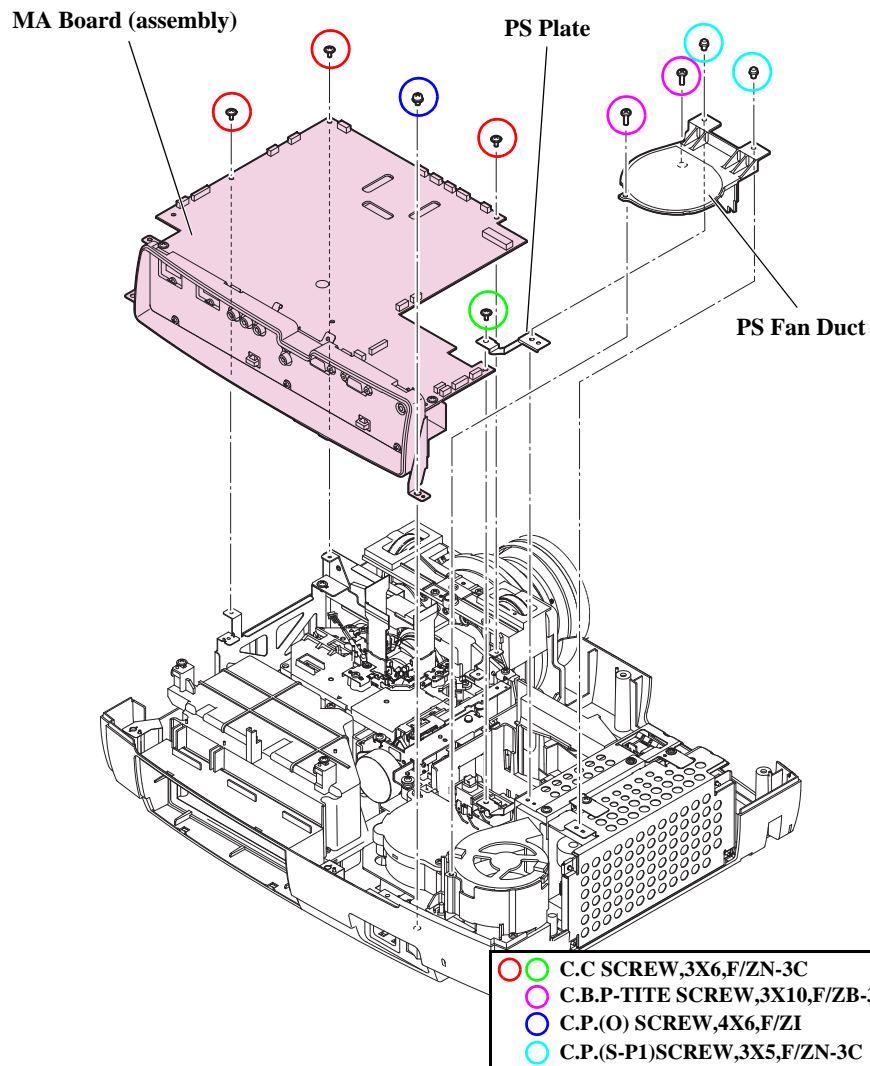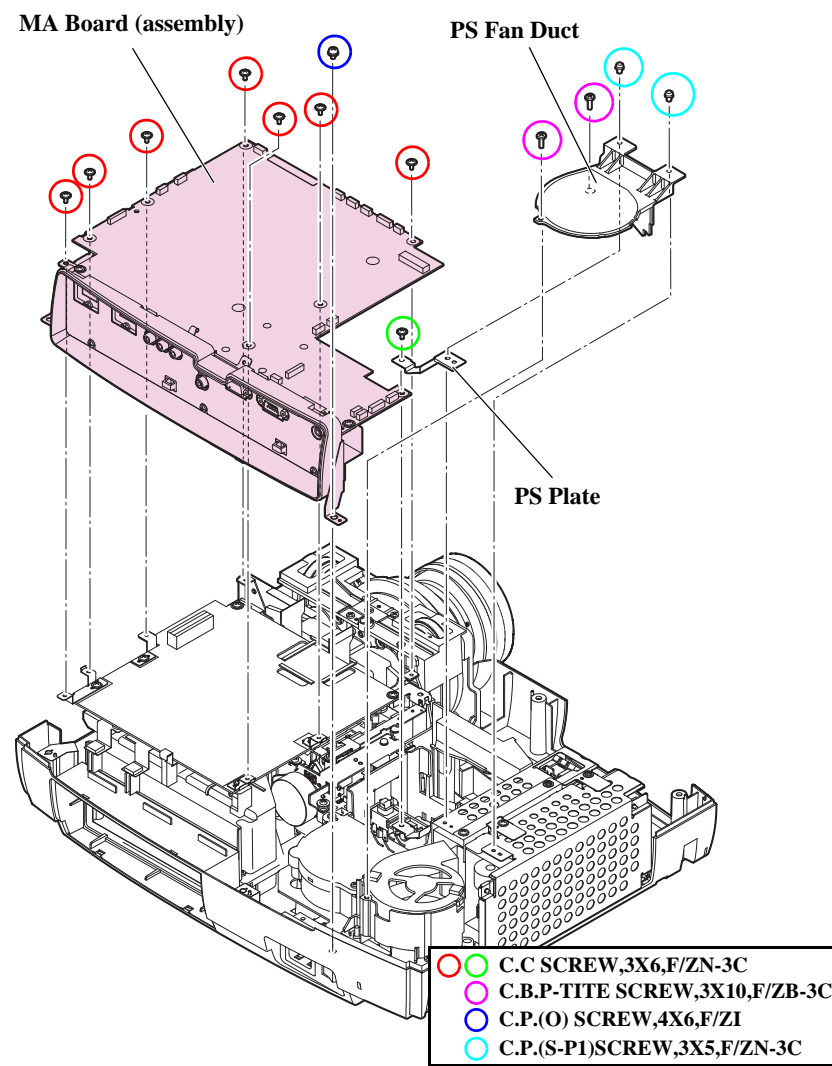
Figure 3-20.

3.3.8.1 IF Case

Standard Operation Time	10 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. Remove the four screws, and remove the IF Case.

6. Peel off the IF Label.

7. Peel off the IF Shading Sheet.

⭕	C.B.SCREW,3X6,F/ZB-3C
⭕	C.C.P-TITE SCREW,3X8,F/ZN-3C
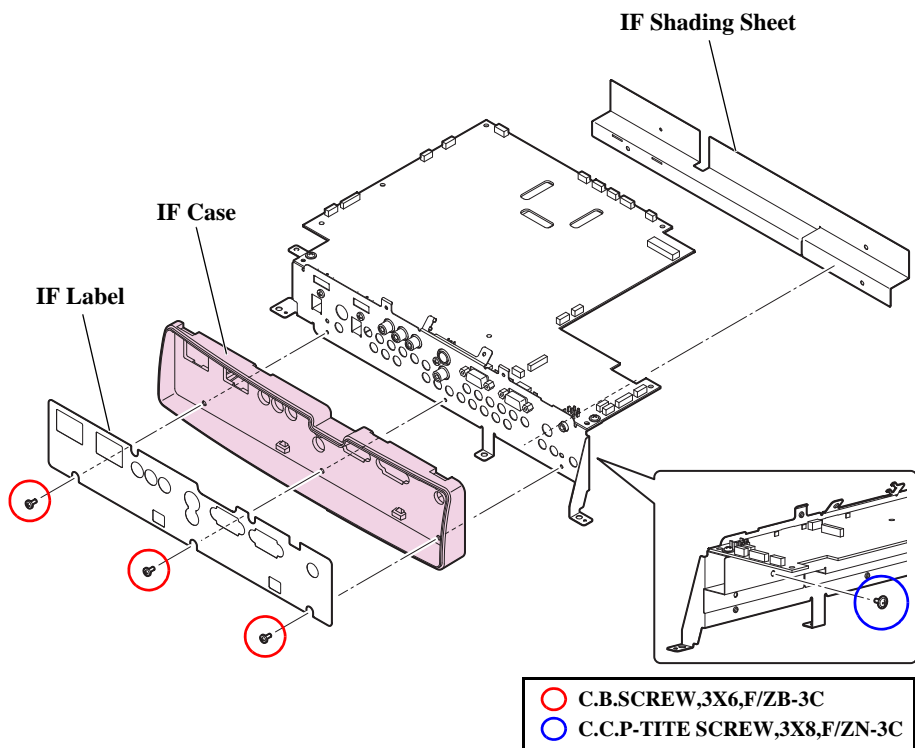
Figure 3-21.

3.3.8.2 MA Board

Standard Operation Time	12 Min.

1. *Remove the Lamp.*

2. *Remove the Side Cover L/Side Cover R.*

3. *Remove the Upper Case (assembly).*

4. *Remove the MA Board (assembly).*

5. Remove the 11 screws and remove the MA Board from the MA Plate.

6. Remove the Gasket (1) from the MA Board.

7. Remove the Gasket (2) from the MA Board (EH-TW4500/5500 series only).

	C.C.SCREW,3X6,F/ZN-3C
	C.B.SCREW,3X6,F/ZB-3C
	C.B.P-TITE SCREW,3X10,F/ZB-3C
	1/4-40X1/4,H.H.,F/NI,O SCREW
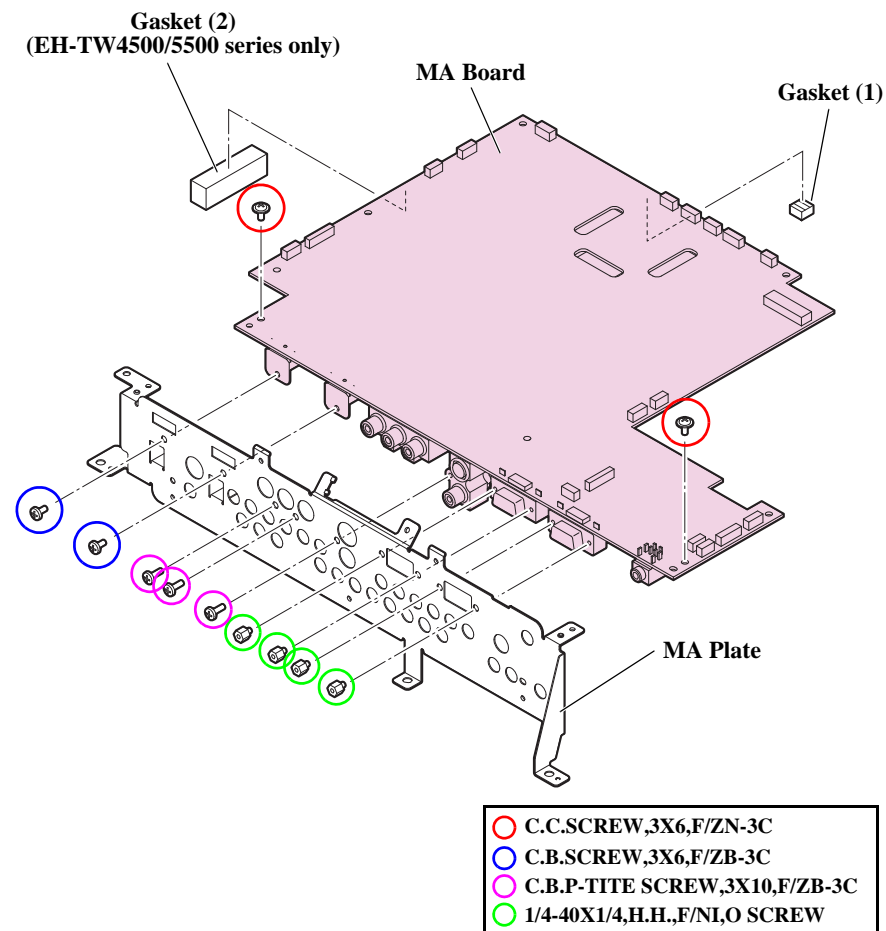
Figure 3-22.

3.3.8.3 DR Board (EH-TW4500/5500 series only)

Standard Operation Time	13 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. *Remove the IF Case. (p.71)*

6. *Remove the MA Board. (p.72)*

7. Disconnect all the cables from the DR Board.

Figure 3-23.

⚠️ **CAUTION**

Reference

Table 3-4. Connector No. and its destination

CN No.	Destination	CN No.	Destination
CN3000	MA Board	CN4200	L/V (B) of Optical Engine
CN3800	L/V (R) of Optical Engine	CN5000	Auto Iris Motor
CN4000	L/V (G) of Optical Engine	CN5001	Auto Iris Sensor

8. Remove the five screws and remove the DR Board, Plate DR A and the Plate DR B.

9. Remove the screw and remove the Plate DR C from the DR Board.

Plate DR B   **Plate DR A**

DR Board

Plate DR A

| ◯ **C.C SCREW,3X6,F/ZN-3C** |

Figure 3-24.

DR Board

Plate DR C

| ◯ **C.C SCREW,3X6,F/ZN-3C** |
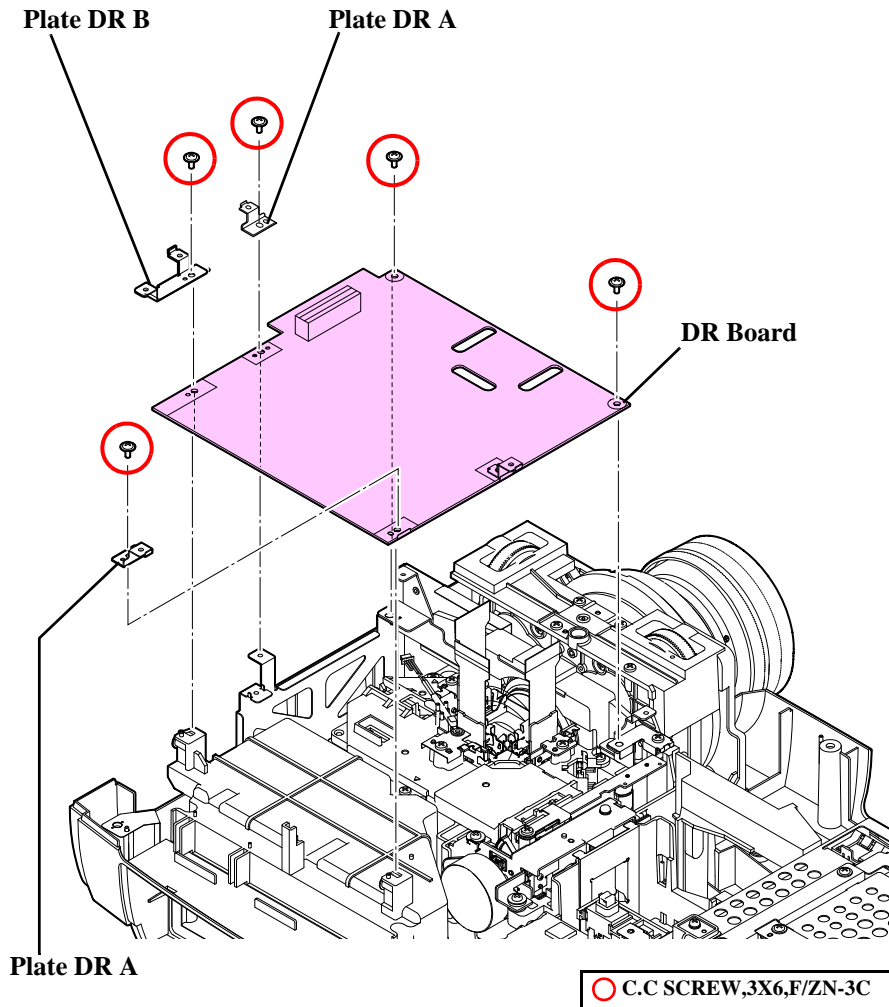
Figure 3-25.

3.3.9 Removing the Optical Engine (assembly)

Standard Operation Time	15 Min.

⚠️ **CAUTION**

- **Do not disassemble the Optical Engine more than necessary.**

- **To prevent causing damage to the Optical Engine; when removing it, make sure to hold the two locations shown below and lift it straight upwards.**

Positions to hold
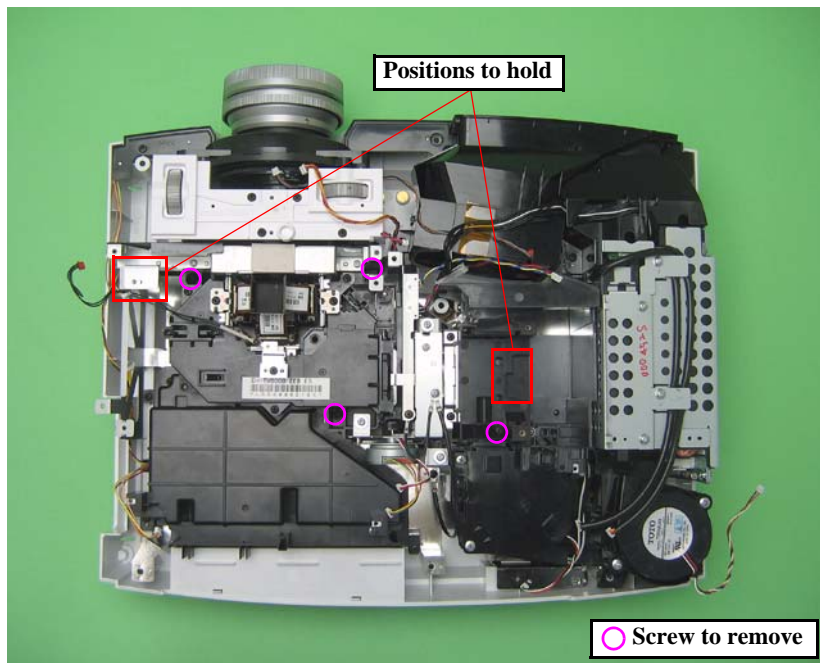
⭕ Screw to remove

⚠️ **CAUTION**

1.   *Remove the Lamp. (p.55)*

2.   *Remove the Side Cover L/Side Cover R. (p.57)*

3.   *Remove the Upper Case (assembly). (p.59)*

4.   *Remove the MA Board (assembly). (p.68)*

5.   *Remove the DR Board (EH-TW4500/5500 series only). (p.73)*

6.   Remove the screw that secures the GND cable (1) (EH-TW4500/5500 series only).

7.   Remove the four screws and remove the Optical Engine (assembly).

8.   Remove the screw and remove the Shade Sheet.

9.   Remove the Projection Lens Sheet from the Optical Engine (assembly).
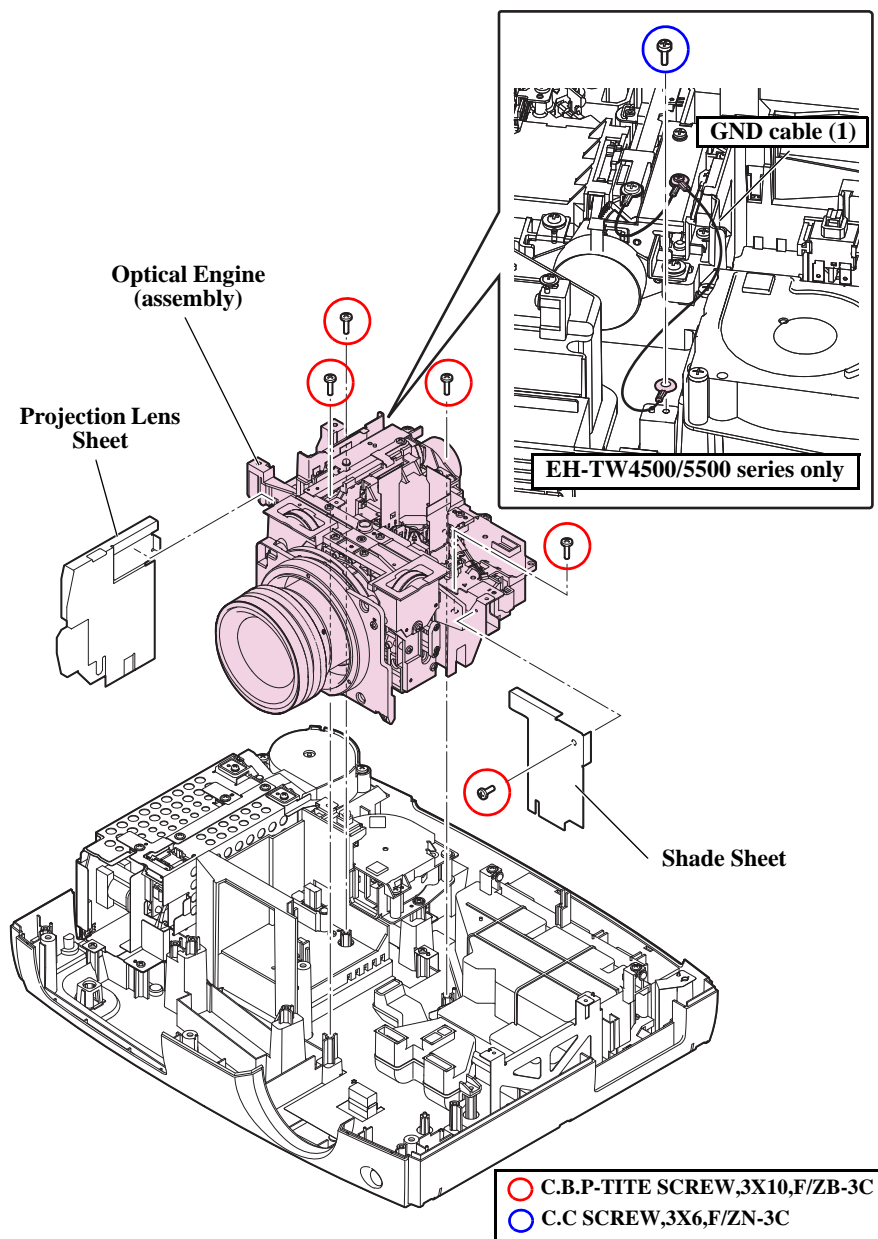
Figure 3-26.

⚠️ CAUTION

When sending the defective Optical Engine and MAB set to the designated engine repair center, make sure to send all the specified components together.

■ **EH-TW3500 series**

Table 3-5. Components of Optical Engine and MAB set

Part name	Qt.	Part name (SPI)
Optical Engine	1	OPTICAL ENGINE
CF Motor	1	MOTOR CF ASSY.
Auto Iris	1	AUTO IRIS ASSY
CF Frame	1	FRAME CF ASSY.
ML Fasten Spring	1	SPRING,ML FASTEN,TOP
CF Switch	1	SW CF ASSY.
LG Spring	1	SPRING,LG FASTEN
Focus Ring	1	FOCUS RING;S
Zoom Ring	1	ZOOM RING
Left MA Plate	1	PLATE,MAFASTEN;LEFT
Right MA Plate	1	PLATE,MAFASTEN;RIGHT
MA Board (assembly)	1	PRINTED CIRCUIT BOARD ASSEMBLY;MA_R1
EMI Sheet	1	EMI, SUPPRESOR
Gasket (1)	1	GASKET 6_10_10

> ⚠ **CAUTION**

- **EH-TW4500/5500 series**

  Table 3-6. Components of Optical Engine and MAB set

Part name	Qt.	Part name (SPI)
Optical Engine	1	OPTICAL ENGINE
CF Motor	1	MOTOR CF ASSY.
Auto Iris	1	AUTO IRIS ASSY
GND cable (1)	1	CABLE,GND
GND cable (2)	1	CABLE, GND
CF Frame	1	FRAME CF ASSY.
ML Fasten Spring	1	SPRING,ML FASTEN,TOP
CF Switch	1	SW CF ASSY.
CF Plate	1	PLATE,CONDUCTION,CF
LG Spring	1	SPRING,LG FASTEN
Focus Ring	1	FOCUS RING;S
Zoom Ring	1	ZOOM RING
Left MA Plate	1	PLATE,MAFASTEN;LEFT
Right MA Plate	1	PLATE,MAFASTEN;RIGHT
DR Board (assembly)	1	PRINTED CIRCUIT BOARD ASSEMBLY;DR_R1
Gasket (3)	3	GASKET 2_3_35
Gasket (2)	1	GASKET 13_10_40
EMI Sheet	4	EMI, SUPPRESOR

3.3.9.1 Focus Ring/Zoom Ring

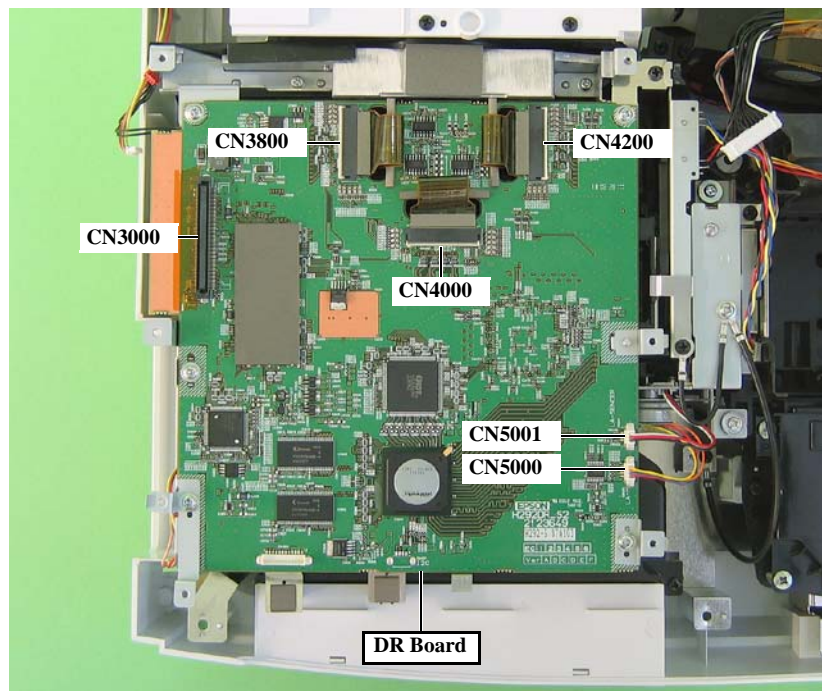| Standard Operation Time	16 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. *Remove the DR Board (EH-TW4500/5500 series only). (p.73)*

6. *Remove the Optical Engine (assembly). (p.75)*

7. Remove the three screws that secure the Zoom Ring.

7. Remove the three screws and remove the Focus Ring.

8. Remove the Zoom Ring.

Optical Engine (assembly)

Zoom Ring

Focus Ring

○ **C.P.B-TITE SCREW,1.7X4,F/NI**
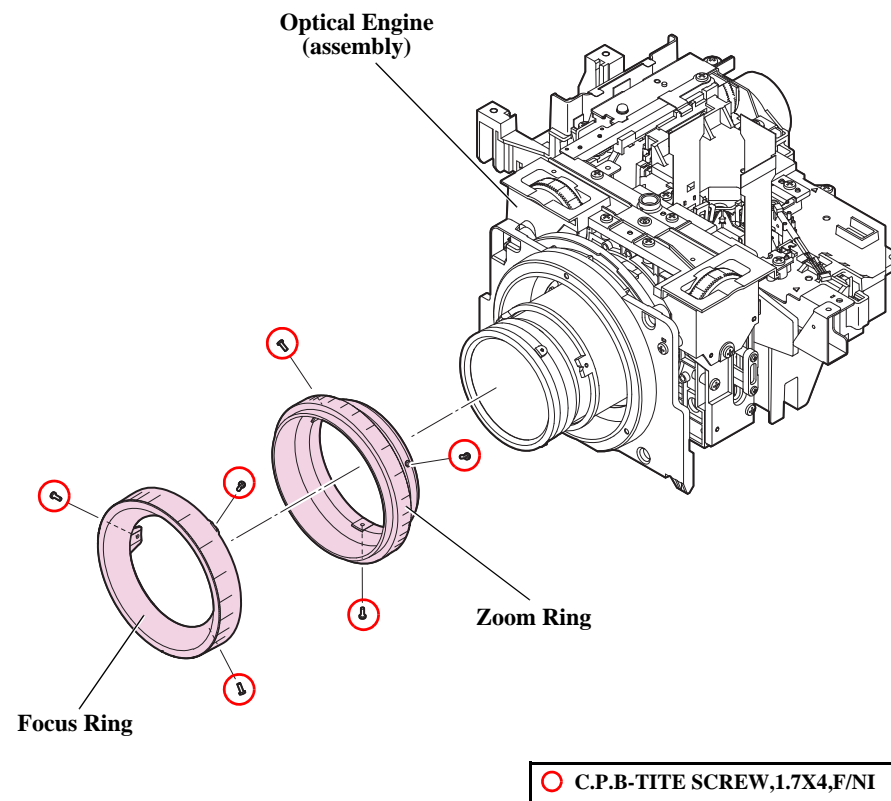
Figure 3-27.

3.3.9.2 Auto Iris

Standard Operation Time	17 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. *Remove the DR Board (EH-TW4500/5500 series only). (p.73)*

6. *Remove the Optical Engine (assembly). (p.75)*

7. Remove the screw (○) and release the GND cable (2) (EH-TW4500/5500 series only).

8. Remove the three screws.

9. Rotate the gear in the direction of the arrow up to the state as shown below, and remove the Auto Iris.

⚠ **CAUTION**

The shape of the shutter of the Auto Iris for EH-TW3500 series and EH-TW4500/5500 series differs. Referring to the figures below, make sure to confirm the shape before installing the Auto Iris.

EH-TW3500 series   **EH-TW4500/5500 series**

A2 Shutter

Auto Iris

Optical Engine (assembly)

Gear

GND cable (2)

EH-TW4500/5500 series

○	SCREW,AI FASTEN
○	C.B.P-TITE SCREW,3X10,F/ZB-3C
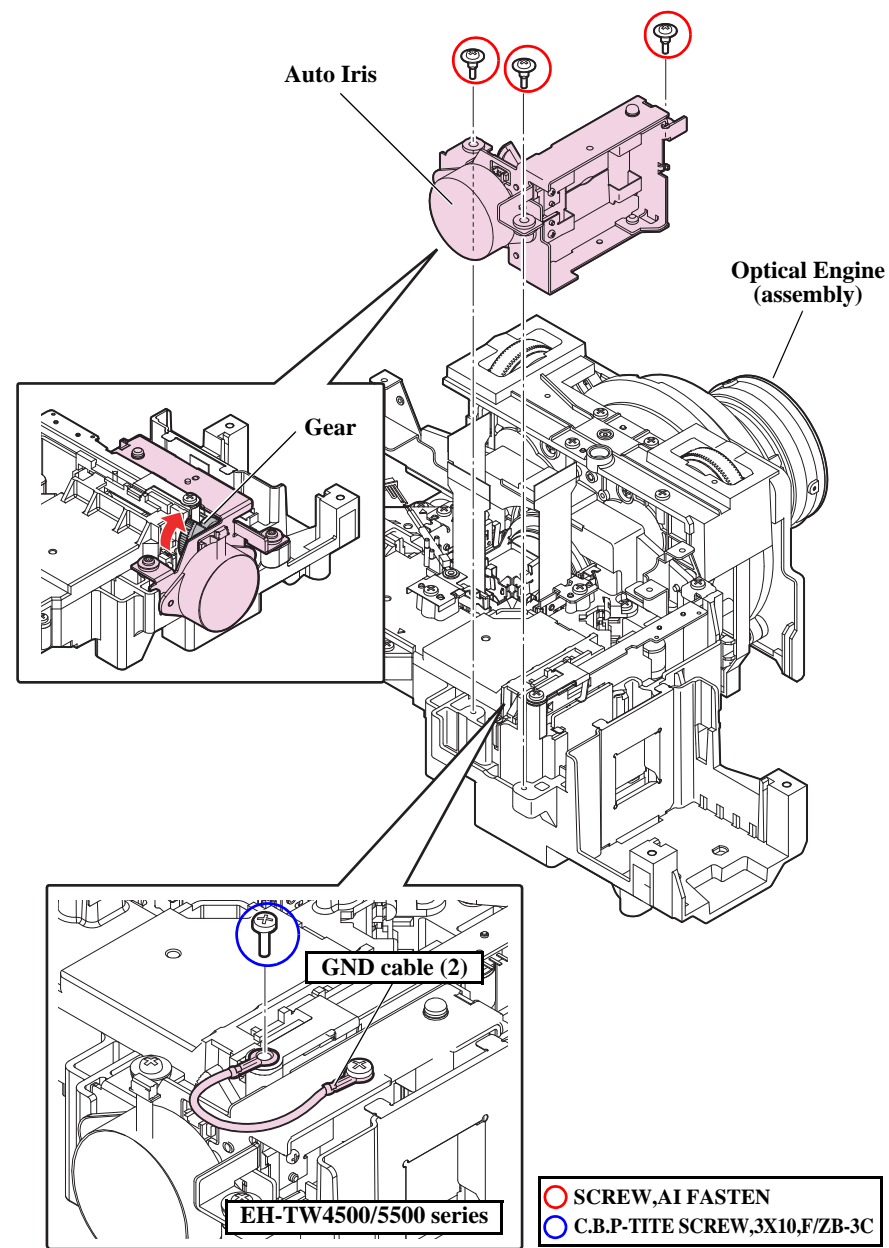
Figure 3-28.

3.3.9.3 CF Frame

Standard Operation Time	16 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. *Remove the DR Board (EH-TW4500/5500 series only). (p.73)*

6. *Remove the Optical Engine (assembly). (p.75)*

7. Remove the two screws and remove the CF Switch, LG Spring and the CF Plate (EH-TW4500/5500 series only). (In EH-TW4500/5500 series's case, remove the GND cable (2) screwed together.)

8. Remove the ML Fasten Spring from the CF Switch.

9. Remove the CF Frame.

Figure 3-29.

⚠ **CAUTION**
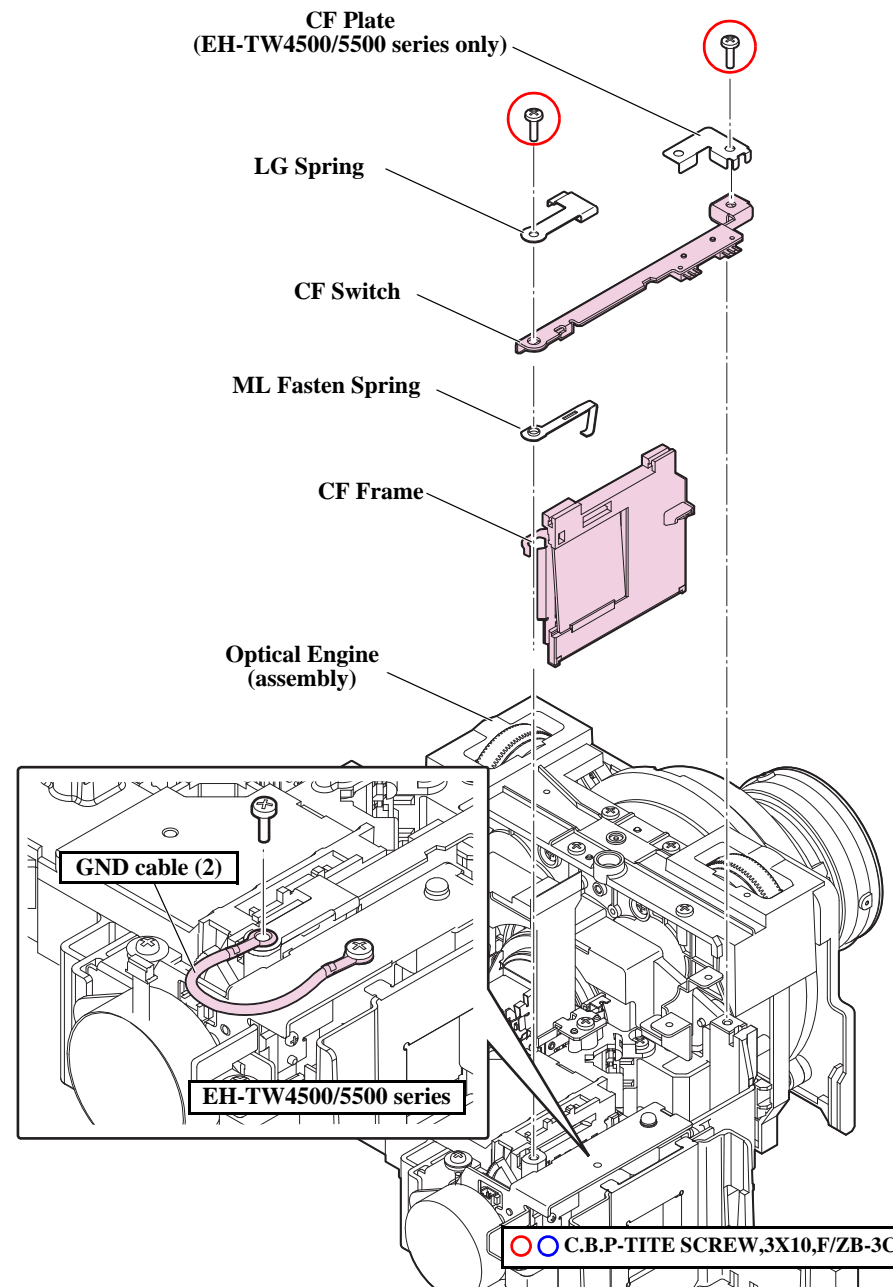
When installing the CF Frame, make sure to align the center of the frame with the center of the CF Motor as shown below.

Positions to hold

CF Motor

Edge of the frame

Center line

CF Frame
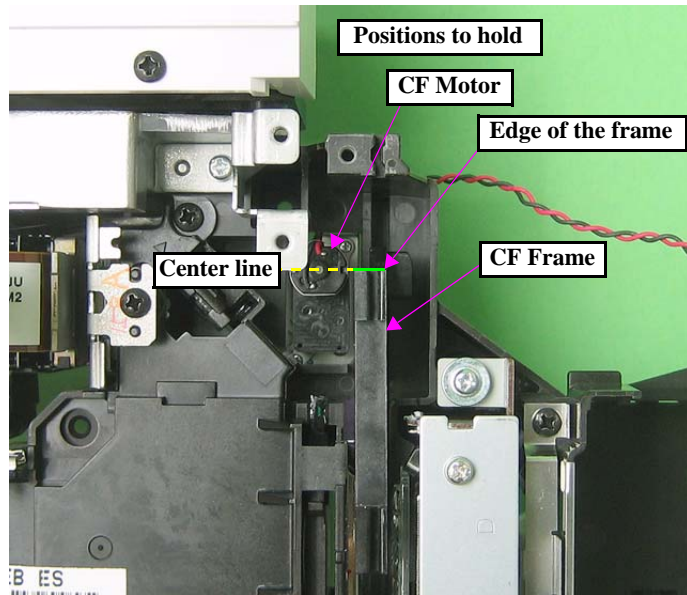
3.3.9.4 CF Motor

Standard Operation Time	15 Min.

1.   Remove the Lamp. (p.55)

2.   Remove the Side Cover L/Side Cover R. (p.57)

3.   Remove the Upper Case (assembly). (p.59)

4.   Remove the MA Board (assembly). (p.68)

5.   Remove the DR Board (EH-TW4500/5500 series only). (p.73)

6.   Remove the Optical Engine (assembly). (p.75)

7.   Remove the two screws and remove the CF Motor.

Optical Engine (assembly)

CF Motor

⭘ **C.B.P-TITE SCREW,3X10,F/ZB-3C**
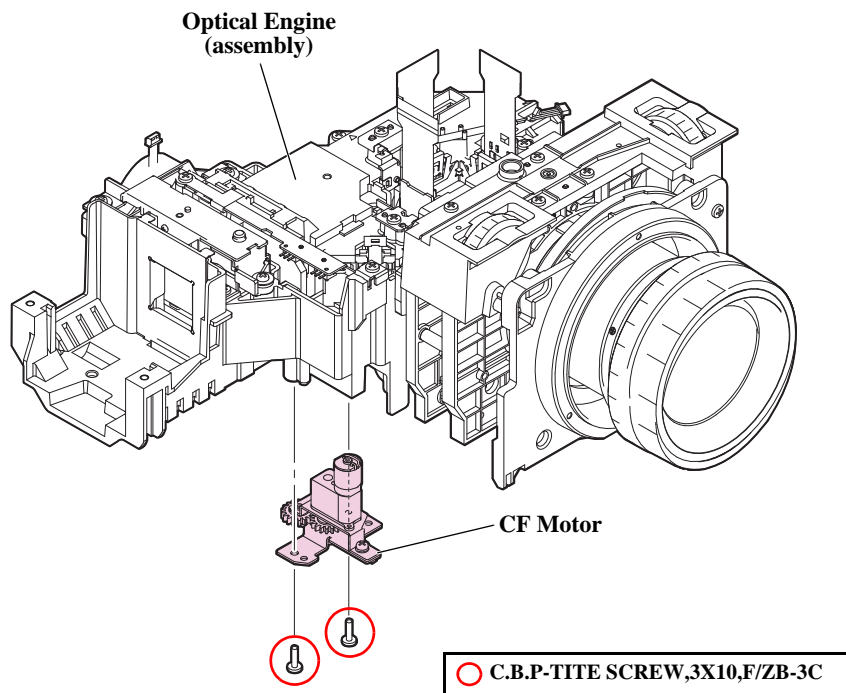
Figure 3-30.

3.3.10 Lamp Fan

Standard Operation Time	11 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. Remove the LC Switch from the Inner EX Duct.

Inner EX Duct

LC Switch
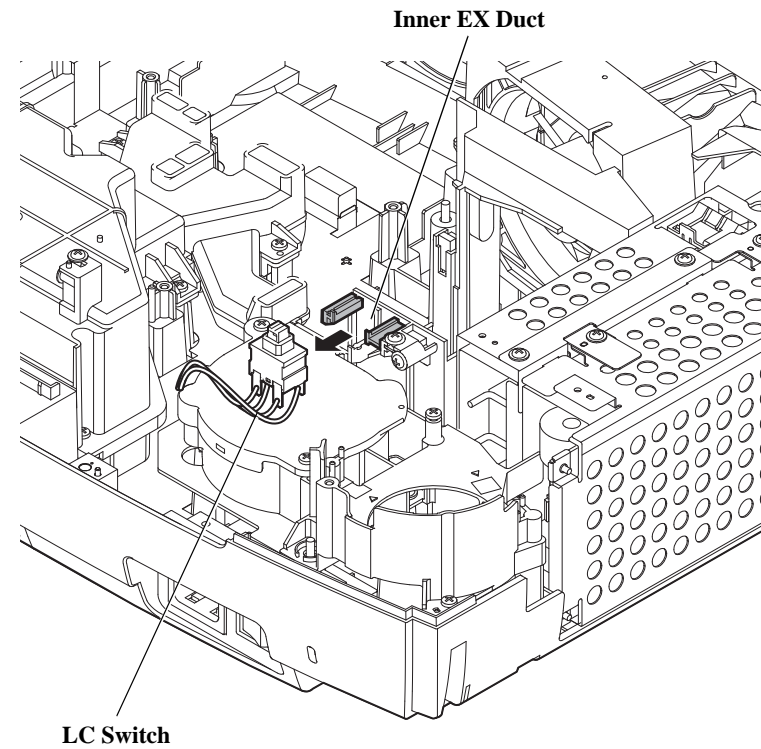
Figure 3-31.

6.   Remove the two screws and remove the Lamp Fan Cover.

7.   Remove the Lamp Fan.

8.   Remove the seven LV Cushions from the Lamp Fan.

> **The Sheet, Intake Fan is affixed to the Lamp Fan.**
> **Be sure to replace / affix the Sheet, Intake Fan, when replacing the Lamp Fan.**

Lamp Fan Cover

Sheet, Intake Fan

LV Cushion

Lamp Fan

◯ **C.B.P-TITE SCREW,3X10,F/ZB-**
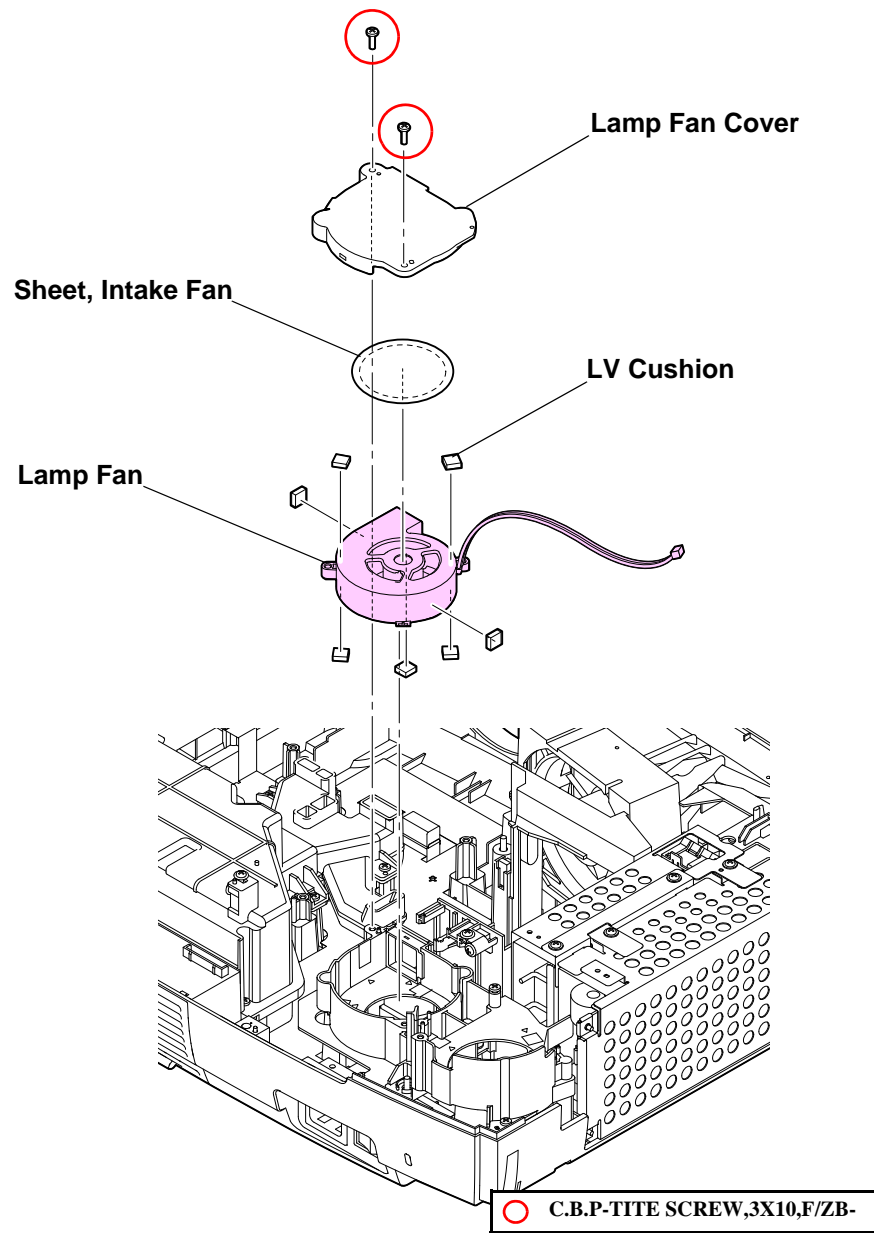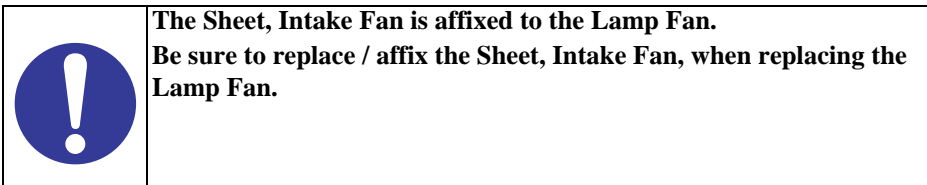
Figure 3-32.

3.3.11 INT Fan (assembly)

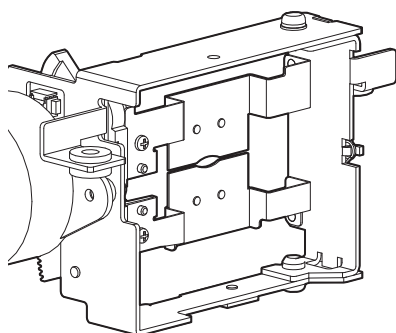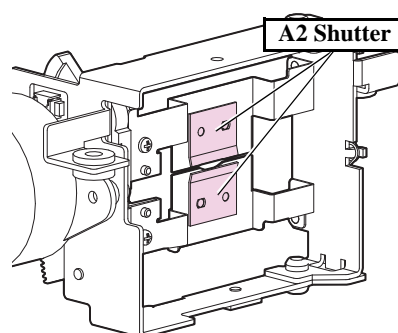| Standard Operation Time	16 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. *Remove the DR Board (EH-TW4500/5500 series only). (p.73)*

6. *Remove the Optical Engine (assembly). (p.75)*

7. Peel off the heat-resistant tape that secures the INT Fan cable to the MA-DR Plate.

8. Remove the six screws, and remove the INT Fan (assembly).

INT Fan (assembly)

MA-DR Plate

⭕ C.B.P-TITE SCREW,3X10,F/ZB-3C
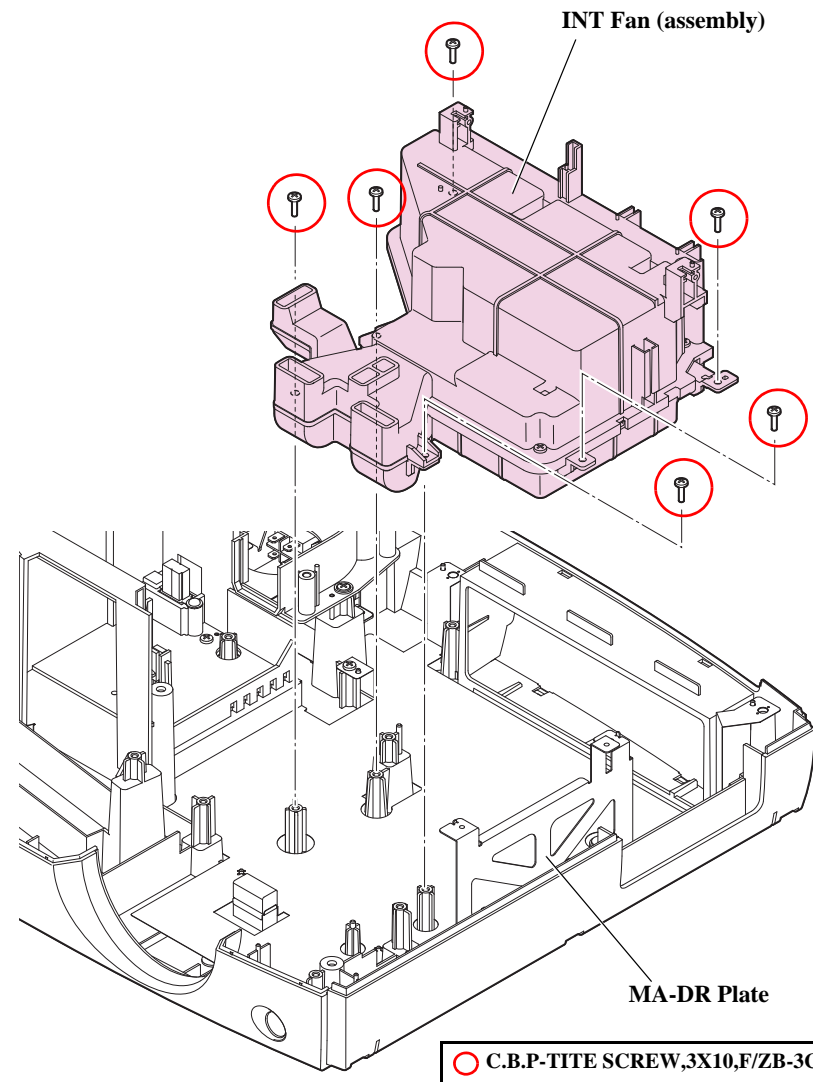
Figure 3-33.

⚠ CAUTION

When installing the INT Fan (assembly), make sure of the following.

- Route the Cable C170 and the INT Fan cable over the INT Seal C.
- Pull out the Cable C170 and the INT Fan cable from the holes on the Upper INT Duct.
- Route the Cable C170 and the INT Fan cable through the guide on the Upper INT Duct.
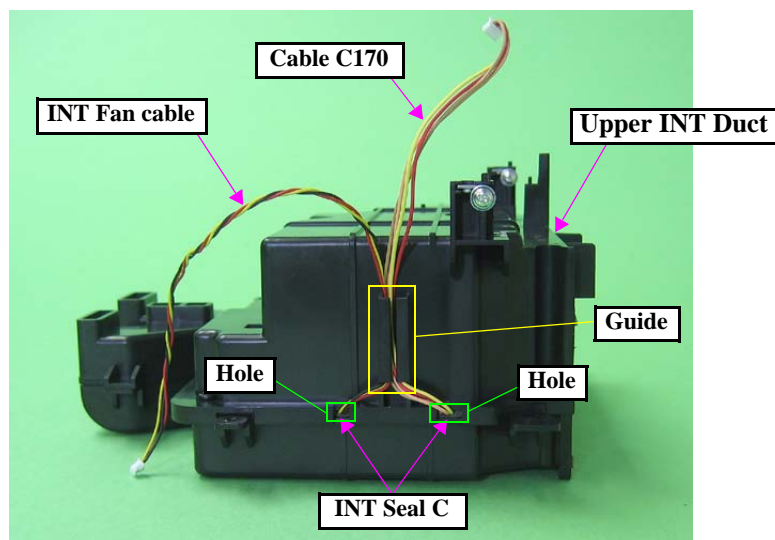
⚠ CAUTION

- Secure the INT Fan cable to the MA-DR Plate with heat-resistant tape.
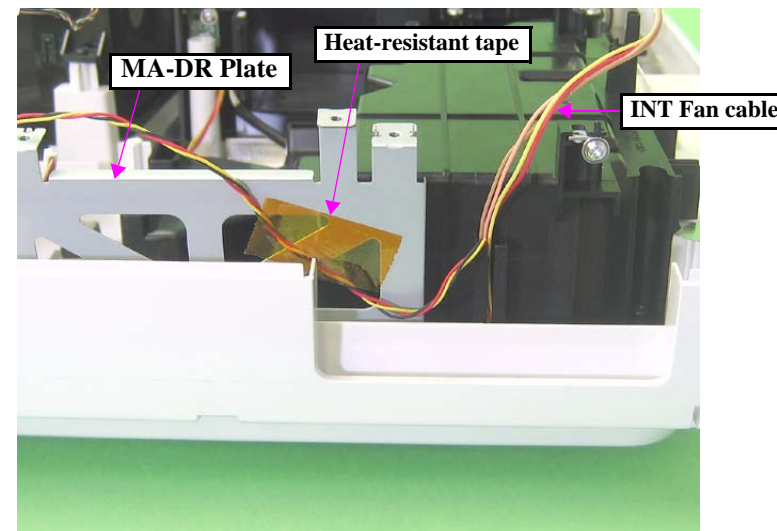
3.3.11.1 INT Fan

Standard Operation Time	17 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. *Remove the DR Board (EH-TW4500/5500 series only). (p.73)*

6. *Remove the Optical Engine (assembly). (p.75)*

7. *Remove the INT Fan (assembly). (p.85)*

8. Remove the INT Seal B1 and INT Seal B2 from the INT Fan (assembly).

9. Remove the three screws and Upper INT Duct from INT Fan.

10. Remove the INT Fan.

Upper INT Duct

INT Fan

Lower INT Duct

INT Seal B2

○ **C.B.P-TITE SCREW,3X10,F/ZB-3C**
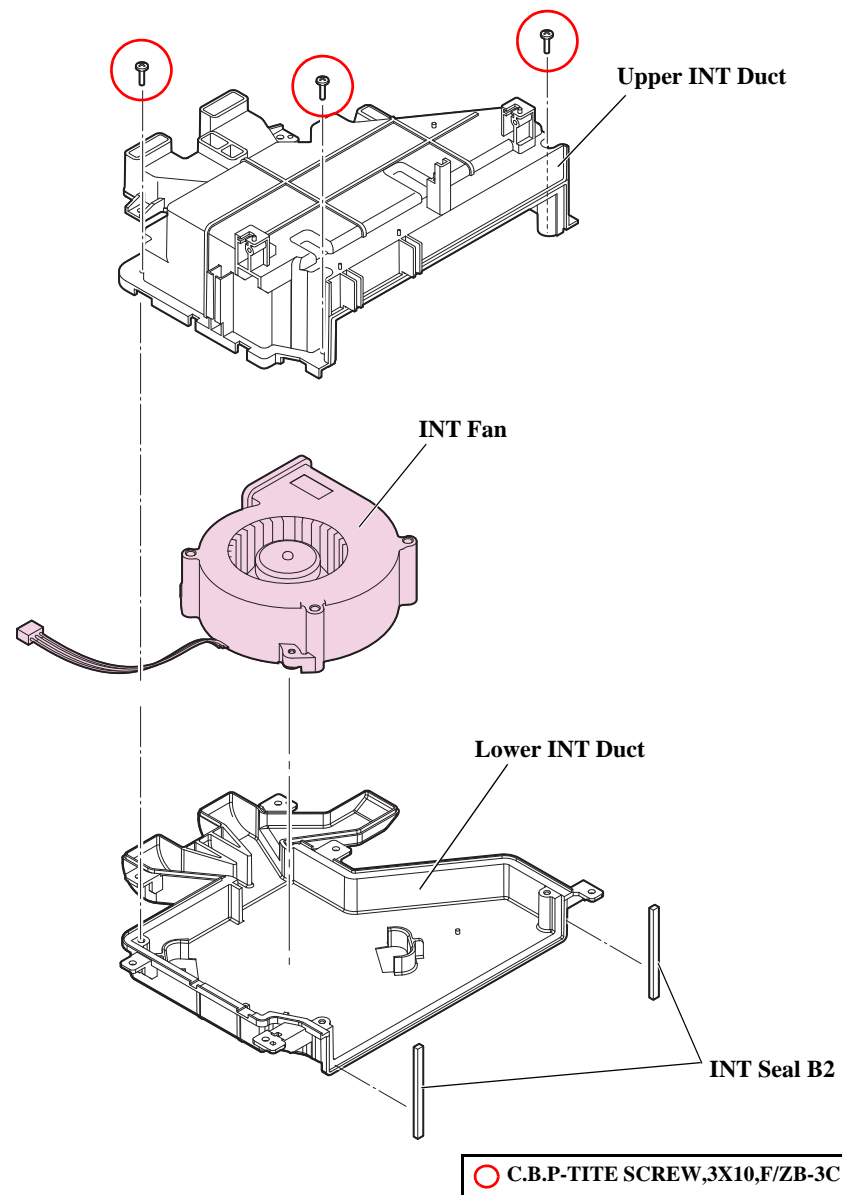
Figure 3-34.

11. Remove the following parts from the INT Fan.

- INT Seal A
- INT Cushion
- Light Valve Cushion

Figure 3-35.

⚠ **CAUTION**
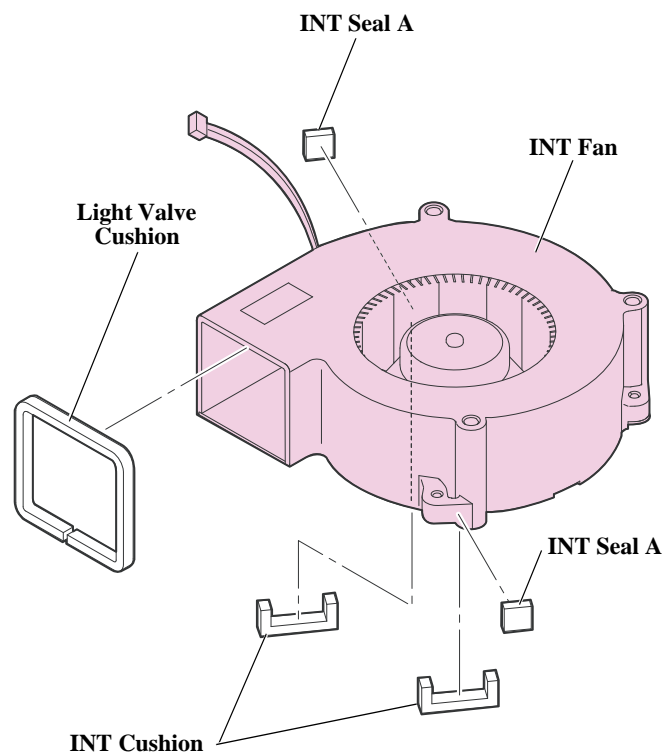
- **When reassembling the INT Fan, do not re-use the old INT Seal A or INT Cushion, but make sure to use new ones.**

- **When attaching the INT Seal B2 to the INT Fan (assembly), do not use the old one, but make sure to use a new one.**

3.3.12 TH Board (1)

Standard Operation Time	17 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. *Remove the DR Board (EH-TW4500/5500 series only). (p.73)*

6. *Remove the Optical Engine (assembly). (p.75)*

7. *Remove the INT Fan (assembly). (p.85)*

8. Remove the TH Board (1).

9. Remove the Cable C170 from the TH Board (1).

Cable C170

TH Board (1)

Lower INT Duct
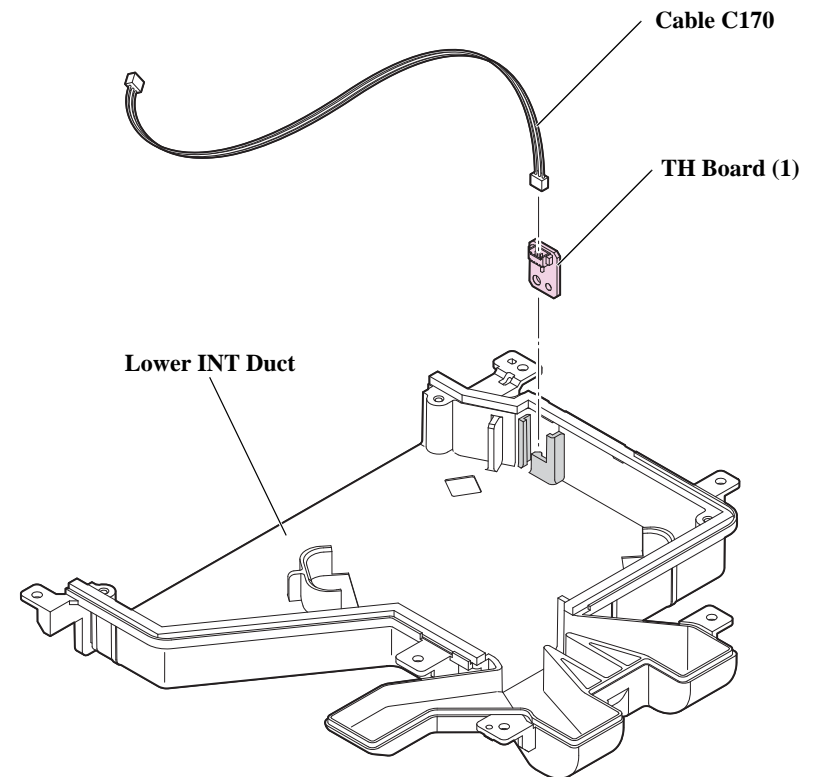
Figure 3-36.

3.3.13 Inner EX Duct

Standard Operation Time	18 Min.

1. *Remove the Lamp. (p.55)*

2. *Remove the Side Cover L/Side Cover R. (p.57)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. *Remove the DR Board (EH-TW4500/5500 series only). (p.73)*

6. *Remove the Optical Engine (assembly). (p.75)*

7. *Remove the Lamp Fan. (p.83)*

8. *Remove the PS Fan. (p.67)*

9. Remove the three screws and remove the Fan Holder.

10. Remove the Lamp Fan Duct from the Fan Holder.

11. Remove the Safety Switch from the Inner EX Duct.

12. Remove the screw (○) and release Lamp Connector.

13. Remove the three screws and remove the Inner EX Duct.
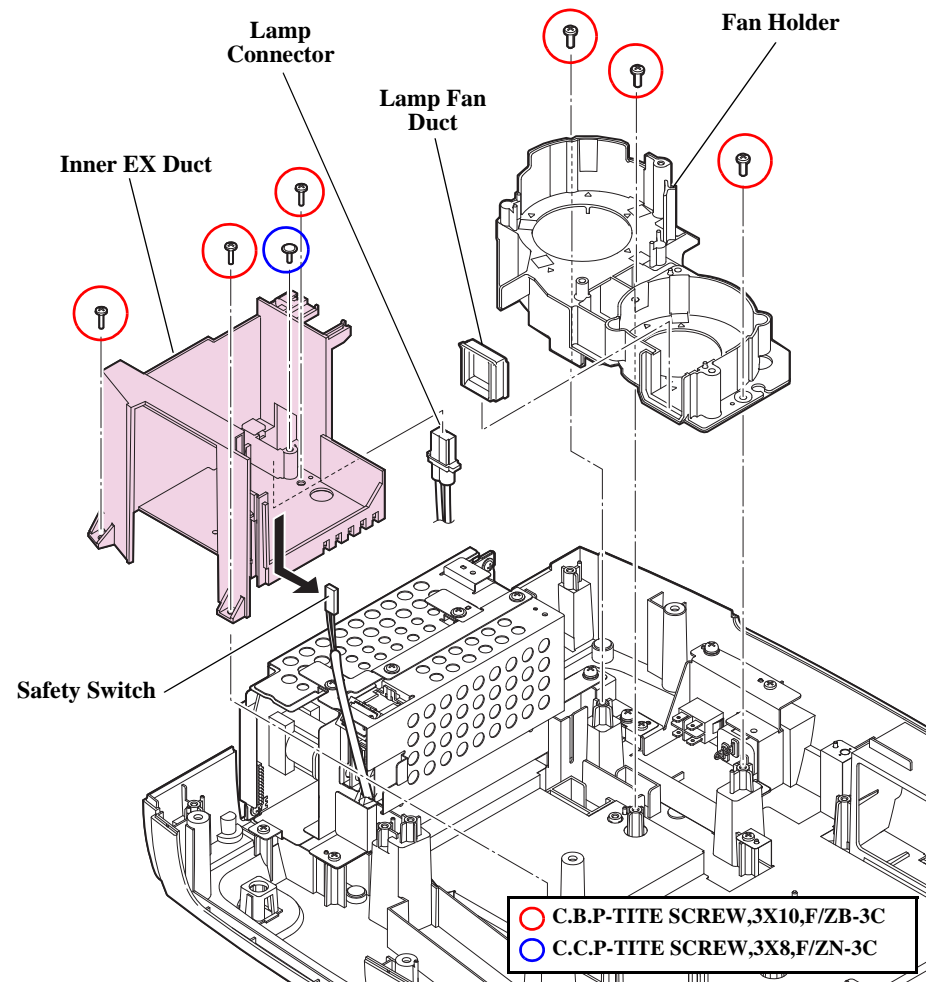
Figure 3-37.

3.3.14 TH Board (2)

Standard Operation Time	19 Min.

1. *Remove the Air Filter Assembly. (p.54)*

2. *Remove the Lamp. (p.55)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. *Remove the EX Fan (assembly). (p.65)*

6. *Remove the DR Board (EH-TW4500/5500 series only). (p.73)*

7. *Remove the Optical Engine (assembly). (p.75)*

8. *Remove the Lamp Fan. (p.83)*

9. *Remove the PS Fan. (p.67)*

10. *Remove the Inner EX Duct. (p.90)*

11. Remove the screw and remove the TH Board (2).

12. Remove the Cable TH from the TH Board (2).

Inner EX Duct

TH Board (2)

Cable TH

○ C.C.P-TITE SCREW,3X8,F/ZN-3C
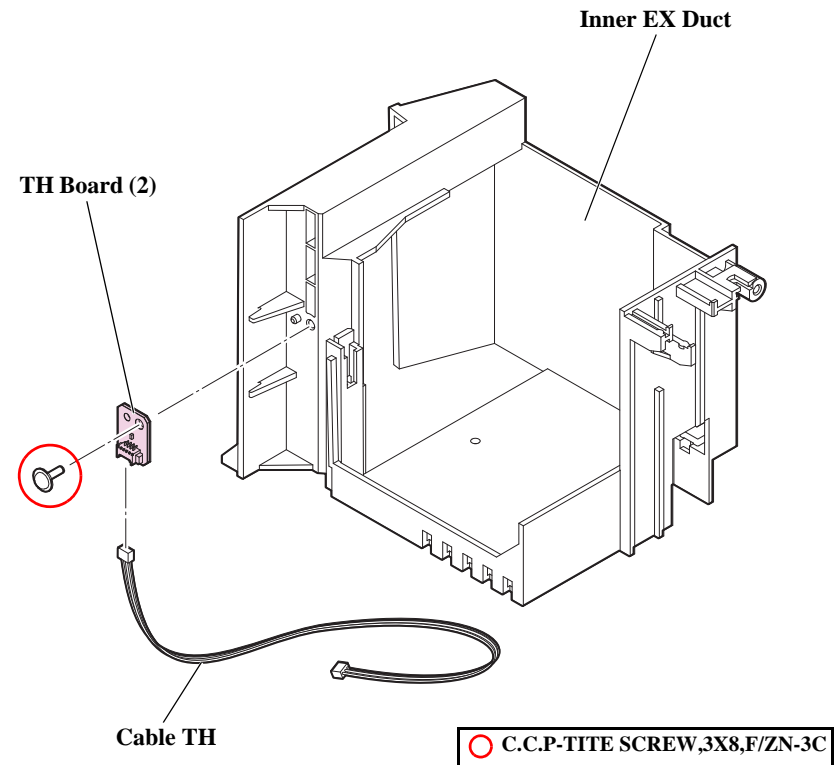
Figure 3-38.

3.3.15 PS Ballast

⚠️ **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.96)**". According to the instructions in it, handle the part and perform the procedure after servicing.

Standard Operation Time	19 Min.

1. *Remove the Air Filter Assembly.* *(p.54)*

2. *Remove the Lamp.* *(p.55)*

3. *Remove the Upper Case (assembly).* *(p.59)*

4. *Remove the MA Board (assembly).* *(p.68)*

5. *Remove the EX Fan (assembly).* *(p.65)*

6. *Remove the DR Board (EH-TW4500/5500 series only).* *(p.73)*

7. *Remove the Optical Engine (assembly).* *(p.75)*

8. *Remove the Lamp Fan.* *(p.83)*

9. *Remove the PS Fan.* *(p.67)*

10. *Remove the Inner EX Duct.* *(p.90)*

11. Disconnect the AC Cable from the connector on the PS Board.

12. Remove the four screws and remove the PS Ballast.

PS Ballast

AC Cable

PS Board

⬤	C.B.P-TITE SCREW,3x10,F/ZB-3C
⬤	C.P.(O) SCREW,4x6,F/NI
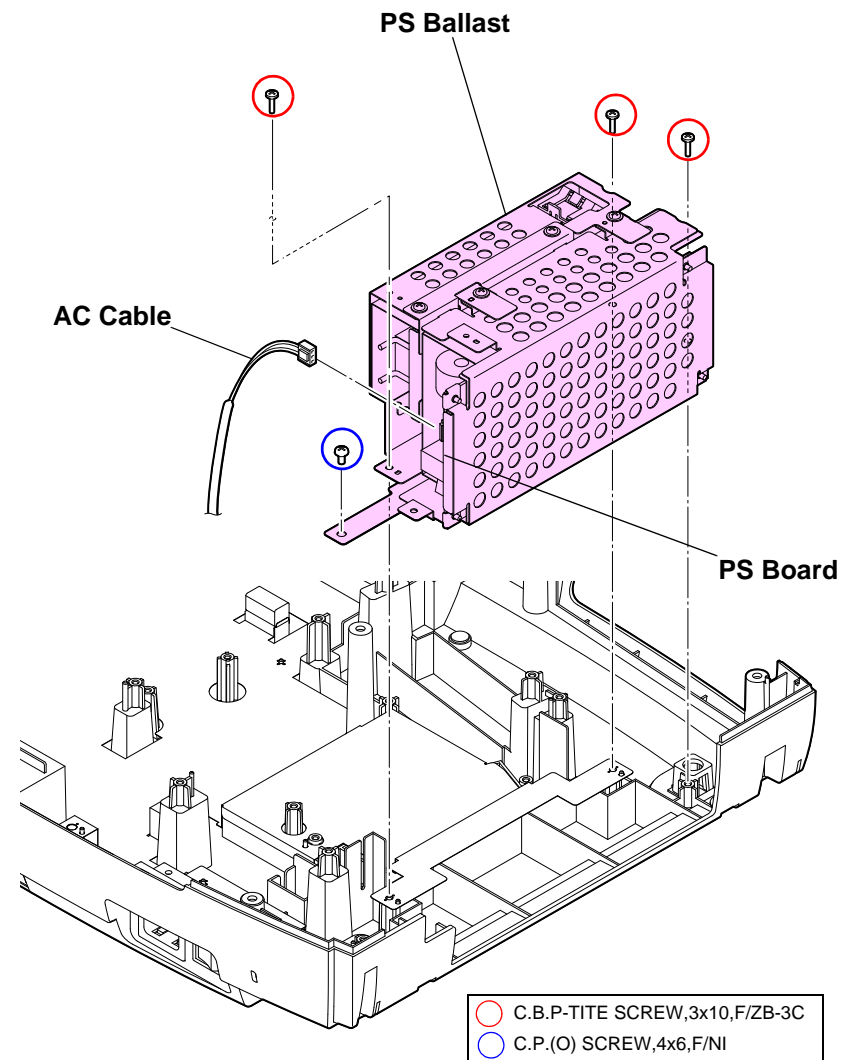
Figure 3-39.

3.3.16 Removing the Lower Case

Standard Operation Time	22 Min.

1. *Remove the Air Filter Assembly. (p.54)*

2. *Remove the Lamp. (p.55)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. *Remove the EX Fan (assembly). (p.65)*

6. *Remove the DR Board (EH-TW4500/5500 series only). (p.73)*

7. *Remove the Optical Engine (assembly). (p.75)*

8. *Remove the Lamp Fan. (p.83)*

9. *Remove the PS Fan. (p.67)*

10. *Remove the Inner EX Duct. (p.90)*

11. *Remove the PS Ballast. (p.92)*

12. *Remove the INT Fan (assembly). (p.85)*

13. Remove the two screws (○) and remove the MA-DR Plate.

14. Remove the four screws and remove the Lower Shield.

15. Remove the Gasket (4) from the Lower Shield.

16. Remove the EX Seal from the Lower Case.

	C.B.P-TITE SCREW,3X10,F/ZB-3C
	C.P.(O)SCREW,4X6,F/NI
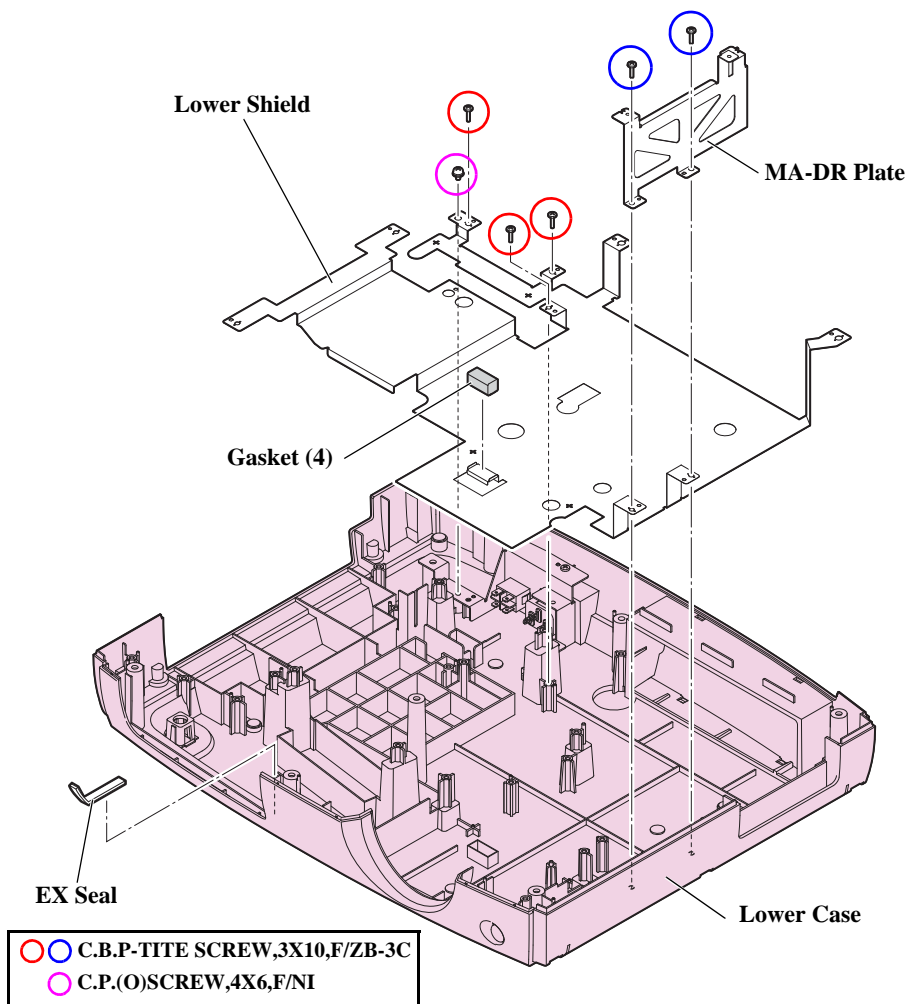
Figure 3-40.

> ⚠️ **CAUTION**
>
> **When attaching the Lower Shield to the Lower Case, do not use the old one, but make sure to use a new one.**

3.3.17 AC Cable

Standard Operation Time	19 Min.

1. *Remove the Air Filter Assembly. (p.54)*

2. *Remove the Lamp. (p.55)*

3. *Remove the Upper Case (assembly). (p.59)*

4. *Remove the MA Board (assembly). (p.68)*

5. *Remove the DR Board (EH-TW4500/5500 series only). (p.73)*

6. *Remove the Optical Engine (assembly). (p.75)*

7. *Remove the Lamp Fan. (p.83)*

8. *Remove the PS Fan. (p.67)*

9. *Remove the Inner EX Duct. (p.90)*

⚠ **CAUTION**

When removing the AC Cable, take care not to damage the positioning pins (x4) on the Lower Case shown below.

AC Cable   ☐ Positioning pin

10. Remove the five screws and remove the AC Cable.

AC Cable

○ C.B.P-TITE SCREW,3X10,F/ZB-3C
○ C.P.(O)SCREW,4X6,F/NI

Figure 3-41.
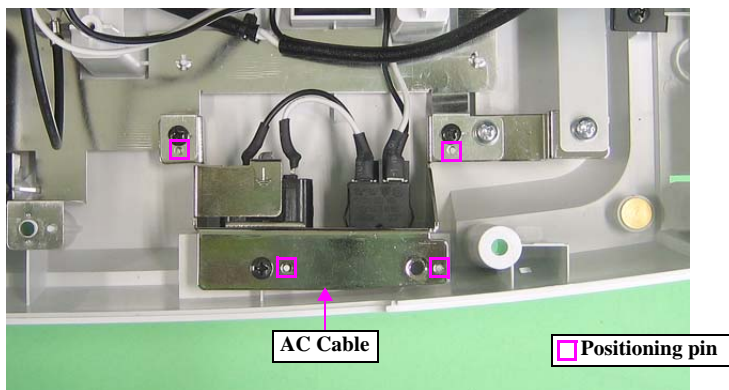
⚠ CAUTION

When installing the AC Cable, make sure of the following.

- **Route the AC Cable under the shield plate.**
- **So as not to cross the AC Cable and the Lamp cable, route them in front and in the rear of the screw boss.**
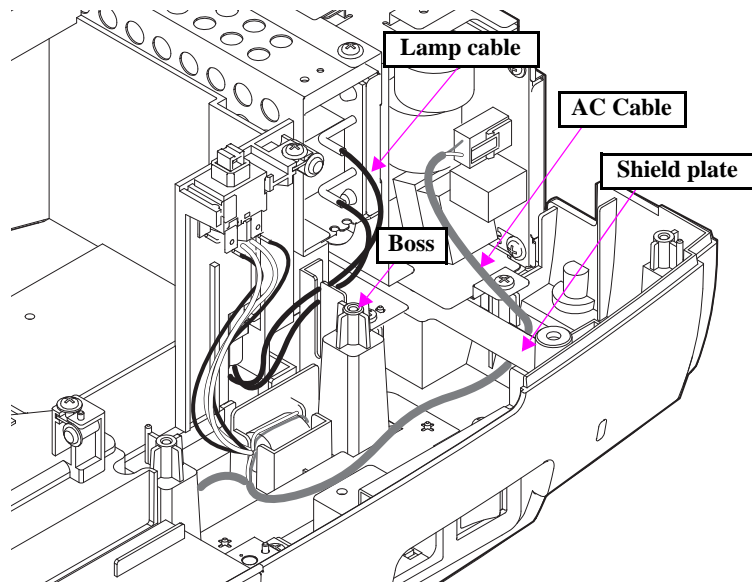
⚠ CAUTION

- **Secure the ferrite core of the AC Cable firmly into the attachment location of the Lower Case.**
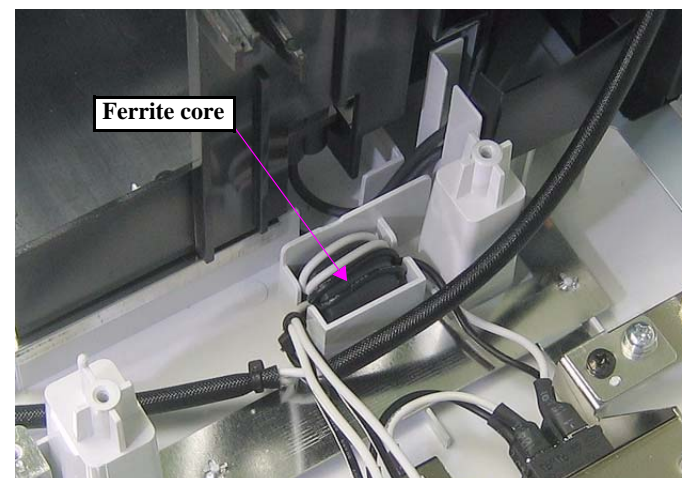
3.4 Safety Check after Servicing

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

"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

☐ Safety Device/Functions are:
- the parts that become unsafe 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.

☐ 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
- PS Ballast
- Lamp
- LC Switch
- Caution Label, A
- Caution Label, F

☐ Method to check the Safety Control Points

Carry out the Check in the order given below.

Repair → Insulation resistance test → Ground continuity check → Illumination check → End

Safety inspections
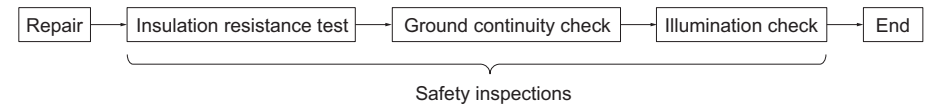
■ Testing apparatus

Testing apparatus: Insulation ohmmeter (Rating: 500 V/100 MΩ)
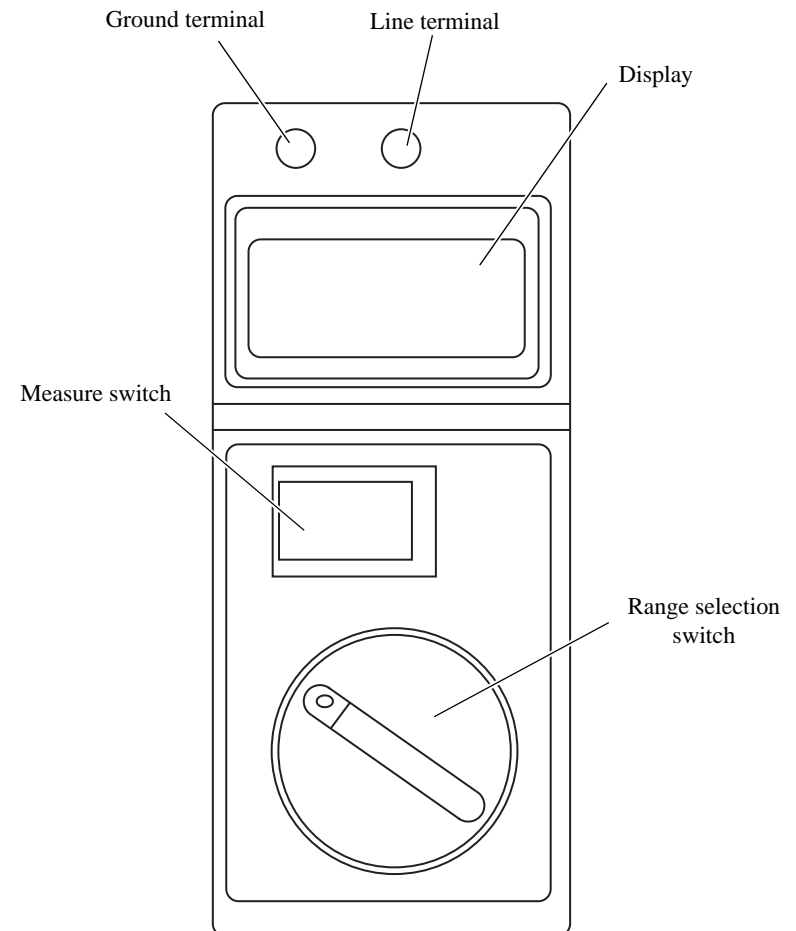
■ Standard

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. 3-42)
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. Measure the insulation resistance between "b" and "c" (2) in the same way as for (1).

Power supply lines

a b

Projector AC inlet

(1) (2)

c

Exposed metal part of the device   PC connector
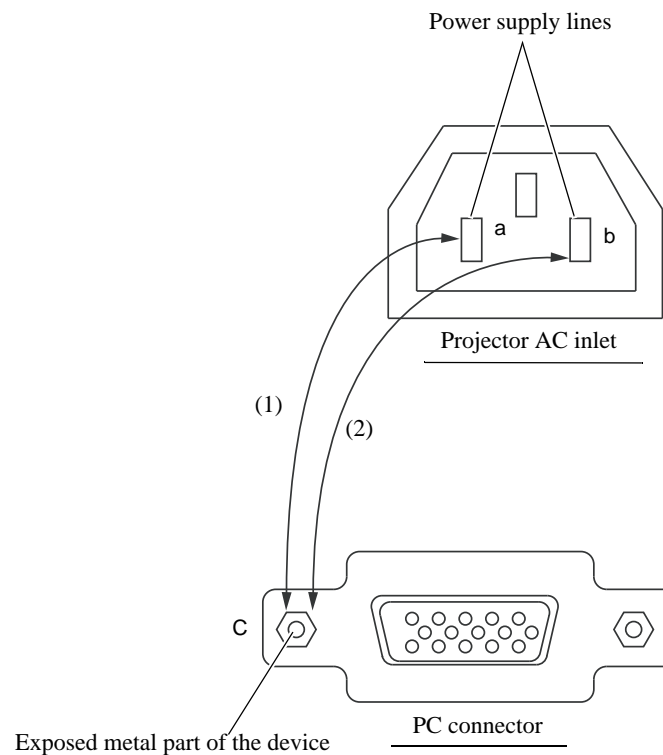
Figure 3-42.

2. Ground continuity check

■ Testing apparatus

Multimeter (with sensitivity down to 0.1 Ω)

Display

MEASURE SW

DC/AC, SW

Range selection switch

Terminals

COM   V, É¹, Hz
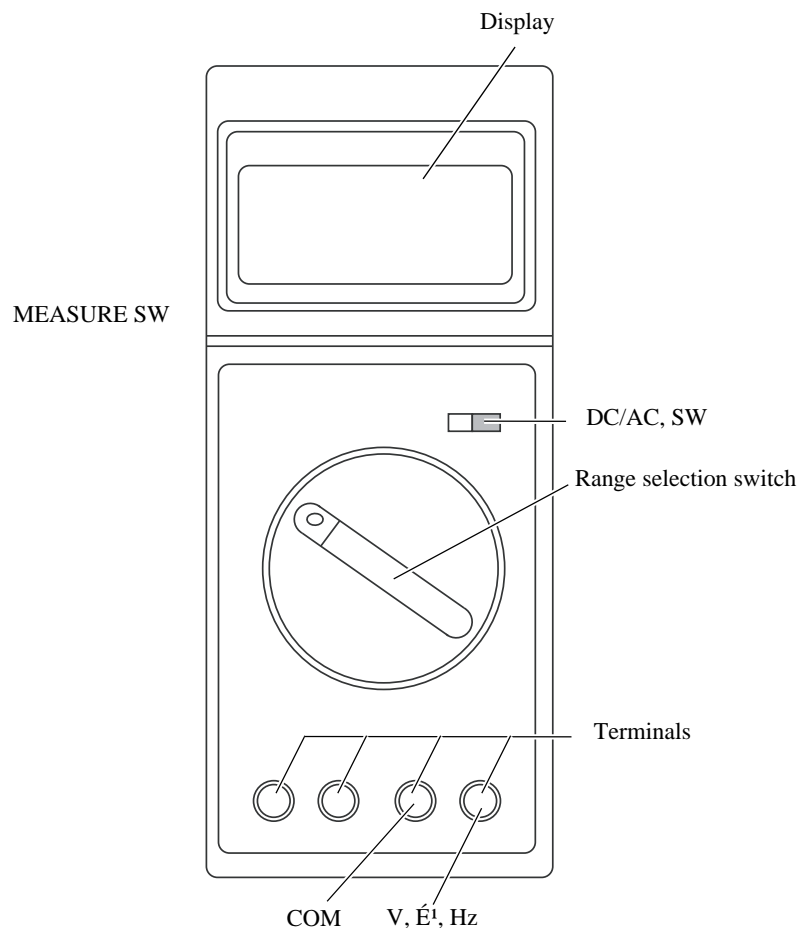
■ Standard/Judgment level

Should be no resistance (0.5Ω or less)

■ Testing procedure

1. Insulation resistance test
   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.

Power supply lines

Projector AC inlet

①

PC connector

Exposed metal part of projector
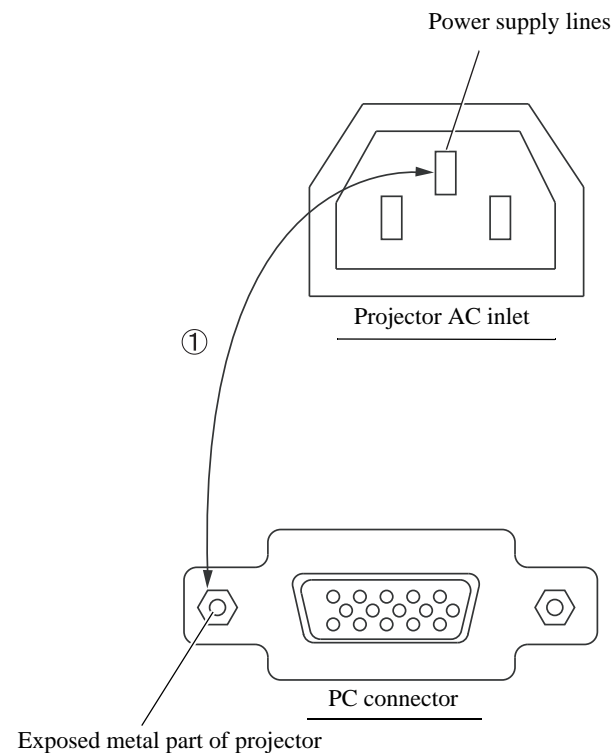
Figure 3-43.

2. Illumination check
   • Test conditions: Input a PC or video signal to the LCP and check the illumination for about 5 minutes.
   • Judgment : Projector should operate normally with no smoke or fire.

3.5 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
AC Cable	CABLE,AC
Air Filter Assembly	AIRFILTER
Air Filter Cover	LID,AIR FILTER;B
Auto Iris	AUTO IRIS ASSY
Cable C170	CABLE,C;170
Cable TH	Cable,TH
CF Frame	FRAME CF ASSY.
CF Motor	MOTOR CF ASSY.
CF Plate	PLATE,CONDUCTION,CF
CF Switch	SW CF ASSY.
Cushion LED	CUSHION,LED
Decoration Plate L	DECORATION PLATE;L
Decoration Plate R	DECORATION PLATE;R
Diffusion Plate	PLATE,DIFFUSION
DR Board	PRINTED CIRCUIT BOARD ASSEMBLY;DR_S2
Enter Button	BOTTON,SW,SIDE;ENTER,B
EX Duct PS	Duct,Exhaust;PS
EX Fan	FAN,EXHAUST
EX Fan Cushion	Cushion,Exhaust Fan
EX Seal	SEAL,EX
Fan Holder	HOLDER,FAN
Fan sheet	SHEET,HOLDER,FAN.

Names used in this Chapter	Official Name given in SPI
Focus Ring	FOCUS RING;S
Foot Holder	HOLDER FOOT;A
Foot Rubber	RUBBER FOOT;A
Front Foot	Foot;A38,silver
Gasket (1)	GASKET 6_10_10
Gasket (2)	GASKET 10_10_20
Gasket (3)	GASKET 2_3_35
Gasket (4)	GASKET 10_10_20
IF Case	CASE,IF;B
IF Label	LABEL,IF;B
IF Shading Sheet	SHEET,SHADE,IF
Inner EX Duct	DUCT,EXHAUST,INNER
Inner Upper Cover	COVER,UPPER,INNER
INT Cushion	Cushion,Floating;a
INT Fan	FAN,INTAKE
INT Seal A	SEAL,INTAKE;A
INT Seal B1	SEAL,INTAKE;B1
INT Seal B2	SEAL,INTAKE;B2
INT Seal C	SEAL,INTAKE;C
Lamp	LAMP,ASSEMBLY;AS
Lamp Cover	LID ASSY,LAMP;B4000
Lamp Fan	FAN,LAMP
Lamp Fan Cover	COVER,LAMP FAN
Lamp Fan Duct	DUCT,LAMP FAN
Lamp Latch Cover	LATCH,LID,LAMP
Latch Spring	SPRING,LATCH,LID LAMP
LED Lens	LENS,LED;PW
LG Spring	SPRING,LG FASTEN

Names used in this Chapter	Official Name given in SPI
Light Valve Cushion	CUSHION,LIGHT VALVE
Logo Plate Base	base rogoplate assy;B
Lower Case	CASE,LOWER;B
Lower EX Duct	Duct,Exhaust;Lower
Lower INT Duct	DUCT,INTAKE,LOWER
Lower Shield	SHIELD PLATE,CASE LOWER
MA Board	PRINTED CIRCUIT BOARD ASSEMBLY;MA_S2
MA Plate	PLATE MA
MA-DR Plate	PLATE,CONDUCTION,MA-DR
ML Fasten Spring	SPRING,ML FASTEN,TOP
Optical Engine	OPTICAL ENGINE;AS
Optical Engine and MAB Set	OPTICAL ENGINE AND MAB SET
Plate DR A	PLATE,CONDUCTION,DR;A
Plate DR B	PLATE,CONDUCTION,DR;B
Plate DR C	PLATE,CONDUCTION,DR;C
Projection Lens Sheet	SHEET,PJ LENS
PS Ballast	PS,BALLAST ASSY
PS Fan	FAN,PS
PS Fan Duct	DUCT,PS FAN
PS Plate	PLATE,GND,PS
RCF Board	PRINTED CIRCUIT BOARD ASSEMBLY;RCF_R1
RCF Cable	CABLE,C;170
RCR Board	PRINTED CIRCUIT BOARD ASSEMBLY;RCR_S2
RCR Cable	CABLE RCR;FIF
Shade Sheet	SHEET,SHADE,LENS SHIFT
Side Button	BOTTON,SW;SIDE,B

Names used in this Chapter	Official Name given in SPI
Side Case L	CASE,SIDE,L;B
Side Case R	CASE,SIDE;R,B
Shield Plate 7130	SHIELD PLATE,7130
Shield Plate DR	SHIELD PLATE,DR
SW1 Board	PRINTED CIRCUIT BOARD ASSEMBLY;SW1_S2
SW1 Cable	CABLE,SW;Au
SW2 Board	PRINTED CIRCUIT BOARD ASSEMBLY;SW2_S2
SW2 cable	CABLE,SW;Au
TH Board (1)	PRINTED CIRCUIT BOARD ASSEMBLY;TH_R1
TH Board (2)	PRINTED CIRCUIT BOARD ASSEMBLY;TH_R1
Top Button	BOTTON,SW,TOP,B
Upper Case	CASE UNIT,UPPER;B
Upper EX Duct	Duct,Exhaust;Upper
Upper INT Duct	DUCT,INTAKE,UPPER
Zoom Ring	ZOOM RING

APPENDIX

4.1 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.

4.1.1 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 at least 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] => [Right] => [Left]
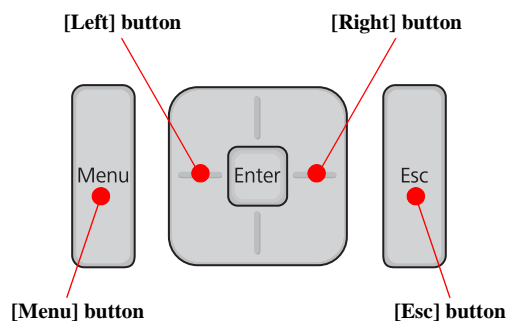
4.1.2 Displaying the Pages

The AS Menu consists of 2 pages. You can switch the pages with the [Right] and [Left] buttons either on the projector or the remote controller. The contents of each page are described next 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.

Component, PC input's case

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

```
                              XXXXXXXXXX ——————— (1)

Input Signal        :  XXXXXXXXXXXXXXX ———— (2)
Frequency           :  H ---.---KHz/  V ---.---Hz ——— (3)
Sync Polarity       :  H ----          / V ---- ———— (4)
Sync Mode           :  ---- —————————————————————— (5)
Detected Comp Mode  :  XXXX ————————————————————— (6)
Total Operation Time :  0H ——————————————————————— (7)
Lamp Op. Time (C)   :  0H ———————————————————————— (8)
          (H/M/L)   :  0H/  ----H/  0H ——————————— (9)
Lamp Replacement    :  0Times ——————————————————— (10)
Lamp ON/Lamp OFF    :  0Times/  0Times ——————————— (11)
Cool Down Completed :  0Times ——————————————————— (12)
Destination         :  XXXX ————————————————————— (13)
Engine Type         :  XXXXXX ———————————————————— (14)
          P 0Z00023041XV111 ——————————————————— (15)
          R ------------
          O ------------
          J 0Z1XV100 —————————————————————————— (16)
```

S-Video/ Video's case

```
XXXXXXXXXXXXX                    (1)

Video Signal        :  -----------      (2)
Total Operation Time :  0H              (3)
Lamp Op. Time (C)   :  0H/  0H          (4)
         (H/M/L)    :  0H/ -----H/ 0H   (5)
Lamp Replacement    :  0Times           (6)
Lamp ON/Lamp OFF    :  0Times/  0Times  (7)
Cool Down Completed :  0Times           (8)
Destination         :  XXXXXXXX         (9)
Engine Type         :  XXXXX            (10)
      P 0Z00023041XV111                 (11)
      R  -----------
      O  -----------
      J 0Z1XV100                        (12)
```

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

☐ 2nd page

The error log of the projector is displayed.

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

Table 4-1. Error log items

Item	Contents		Representation
Error Log	CD	Error Code	Two alphabets
	TOT	Total Operation Time	h: 5-digit number (00000-65535)
	LOT	Lamp Operation Time	Over 65535: "65535" (Not cleared to "0.")
	POT	Time after Lamp is ON	m: 2-digit number (00-59) s: 2-digit number (00-59)
	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 seconds 34 minutes, 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".
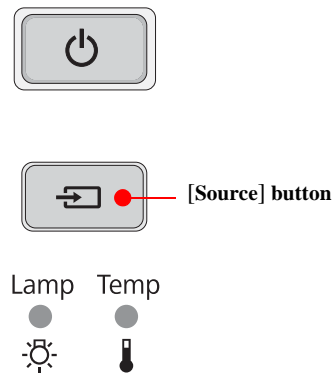
Item		Contents	Representation
Error Count	TH	Internal overheat	2-digit number (00-99) Over 99: "99" (Not cleared to "0.")
	FN	Fan error	
	SE	Thermistor error	
	LE	Lamp burnt out	
	LF	Lighting failure	
	RA	Internal error (RAM)	
	RO	Internal error (ROM)	
	II	Internal error (I2C)	
	ID	Internal error (DR)	
	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 (ROM)	
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	Acquired data of TEMP? of the ESC/VP21 command

4.1.3 Initializing (Resetting) the AS Menu Values

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

Type	Clearing the Lamp Information	Clearing the AS Information	Clearing the Log Information
Operation / Item	Press [Source] and [Up] on the projector for 10 sec. during displaying the menu.	Press [Source] and [Down] 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	N/A	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
Cool Down Completed	Reset to 0	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

Top control panel

Side control panel

[Up] button   [Right] button

Menu   Enter   Esc

[Enter] button   [Down] button

[Source] button

Lamp   Temp