Multi Media Projector

PROJECTOR

Service Manual

EMP-TW1000

EPSON

INTRODUCTION

This Service Manual describes the hardware information necessary for troubleshooting and field service of the EMP-TW1000 HOME PROJECTOR.
Before starting service on this unit, always check the EPSON website for additional up-to date service information provided in Technical Information Bulletins.

HOW TO USE THE SERVICE MANUAL

This product lineup offers four types by destinations; EMP-TW1000.
Since they are the same except for a few specifications (see page.1-7 to 1-9), this manual used EMP-TW1000 to explain the product.
Before you start the maintenance service, read the SAFETY INSTRUCTIONS carefully.
The contents are as follows:

- Safety Instructions: Operator Safety, Maintaining the projector in good condition
- Chapter 1: PRODUCT SPECIFICATION (Part name, System function, Specification, etc.)
- Chapter 2: THEORY OF OPERATION (Hardware, Internal connection, Function of units, etc.)
- Chapter 3: TROUBLE SHOOTING
- Chapter 4: DISASSEMBLY & ASSEMBLY (Procedures to disassemble the main unit)
- Chapter 5: APPENDIX (AS (After Service) menu)

TRADEMARK

EPSON is a trademark of SEIKO EPSON CORPORATION.

PRECAUTIONS

Some procedures require specific precautions that must be followed, and those will be noted throughout this manual. Note the following precaution definitions:

WARNING

Procedures which, if not strictly observed, could result in personal injury are described under the heading **WARNING**

CAUTION

CAUTION signals a precaution which, if ignored, could result in damage to equipment.

REASSEMBLY

If assembly needs special attention or the procedure is different from the reversed disassembly procedure, the correct procedure is described under the heading **REASSEMBLY**.

CHECK POINT

Important tips for procedures are described under the heading **CHECK POINT.**

Manual Revision History

History	Date	Detail of change
Rev.A	2006.11.02	First Release

Service memo

Make a note here of important technical information from Technical Information bulletins.

SAFETY INSTRUCTIONS

1. MAINTAINING OPERATOR SAFETY

1. PREVENTING ELECTRIC SHOCKS
   - Turn off the power switch and disconnect the power cord from the AC outlet before carrying out any disassembly and assembly work on this projector.
   - If power needs to be supplied to the projector while the cover is removed (such as when making adjustments), take off any metallic objects such as wristwatches, shirt cuff buttons, rings and tie pins which may pose the danger of coming into contact with the projector.
2. PREVENTING INJURY
   - Do not touch the lamp assy and the area around it with bare hands immediately after turning the power off, or even after cool-down period is completed since the lamp and the area around it may still remain hot.
   - When removing the cover in order to carry out adjustments while power is being supplied to the projector, be careful not to touch the fans (intake and exhaust).
   - Always wear gloves when disassembling and reassembling the projector in order to avoid injury from metallic parts with sharp edges.
   - Do not look directly into the projector's lens while power is being supplied to the projector, otherwise your eyes may be injured.
3. PREVENTING ACCIDENTS
   - Place the projector on a stable, level surface when carrying out any repair or adjustment work, to prevent the projector and its components from slipping and falling down. Furthermore, do not place any tools or projector components on top of or underneath the projector.
   - Avoid working on the projector in places where other people might receive injuries from touching the projector while it is in a state of disassembly. Furthermore, do not leave the projector unattended in the workplace at such times.
   - When turning on the projector's power, always use the accessory power cord to connect the projector to the power supply, and always make sure that the power supply is properly grounded.

2. MAINTAINING THE PROJECTOR IN GOOD CONDITION

1. PREVENTING STATIC ELECTRICAL DAMAGE
   - When disassembling and assembling the projector, always use a grounding strap and a grounding mat. Furthermore, when replacing electrical circuit components (such as circuit boards and optical engine), bring the static-proof bag containing the new parts into contact with a metallic section of the projector before taking out the component from the static-proof bag.
2. USE OF GENUINE PARTS
   - When replacing the structural components inside the projector (including the lamp assy), use only replacement parts supplied by EPSON and listed in the projector's Parts List.
   - Use the accessory power cord and interface cable provided with the projector.
3. SAFETY TESTING

   The following tests should be carried out on repair parts used in the LCP.

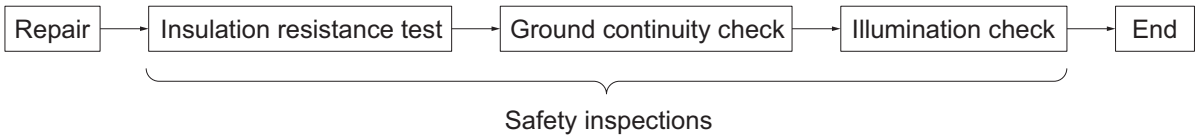
   Note: These are simplified tests that can be carried out at a repair centre that is not equipped with full safety testing equipment.

☐ Test items

1). Insulation resistance test
2). Ground continuity check
3). Illumination check

☐ Testing procedure

Carry out testing in the order given below.



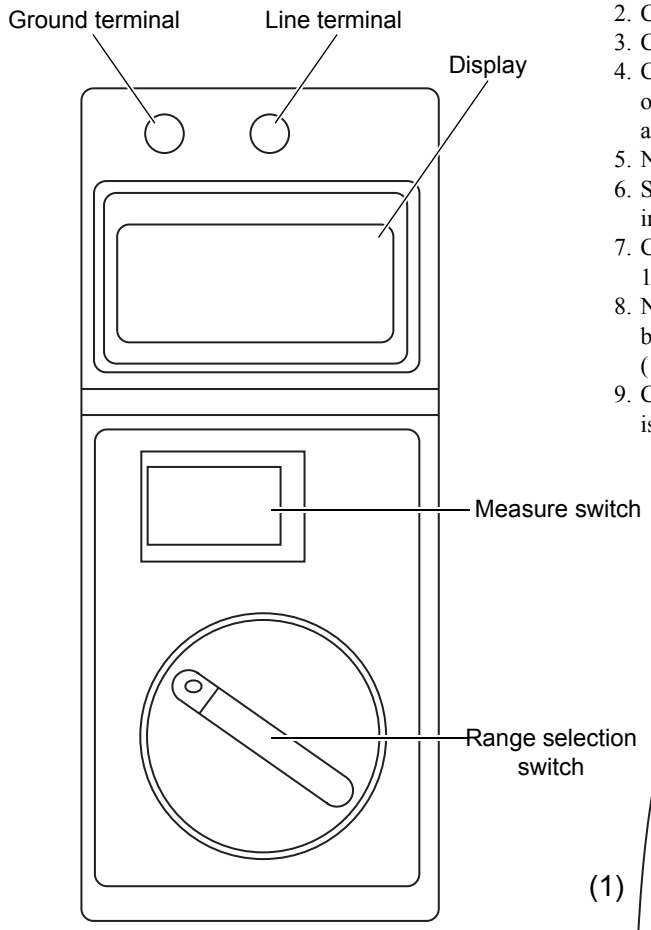
☐ Testing methods

1). Insulation resistance test

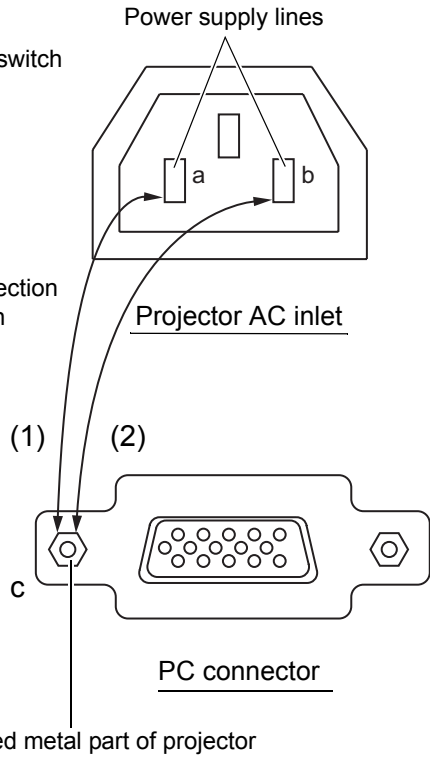
- Testing apparatus: Insulation ohmmeter (Rating: 500 V/100 MΩ)

Check Item	Tool	Standard
Insulation resistance check	Insulation ohmmeter	Insulation resistance should be 10 MΩ or more.

- Insulation ohmmeter settings



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.
4. Connect the black lead wire (crocodile clip) to c in order to measure the insulation resistance (1) (between a and c) in the diagram below.
5. Next, insert the probe of the red lead wire into a.
6. Set the measure switch to LOCK, and then measure the insulation resistance after 1 minute.
7. Check that the insulation resistance after 1 minute is 10 MΩ or more.
8. Next, measure the insulation resistance at (2) (between b and c) in the diagram below in the same way as for (1).
9. Check that the insulation resistance at (2) after 1 minute is 10 MΩ or more.



Caution

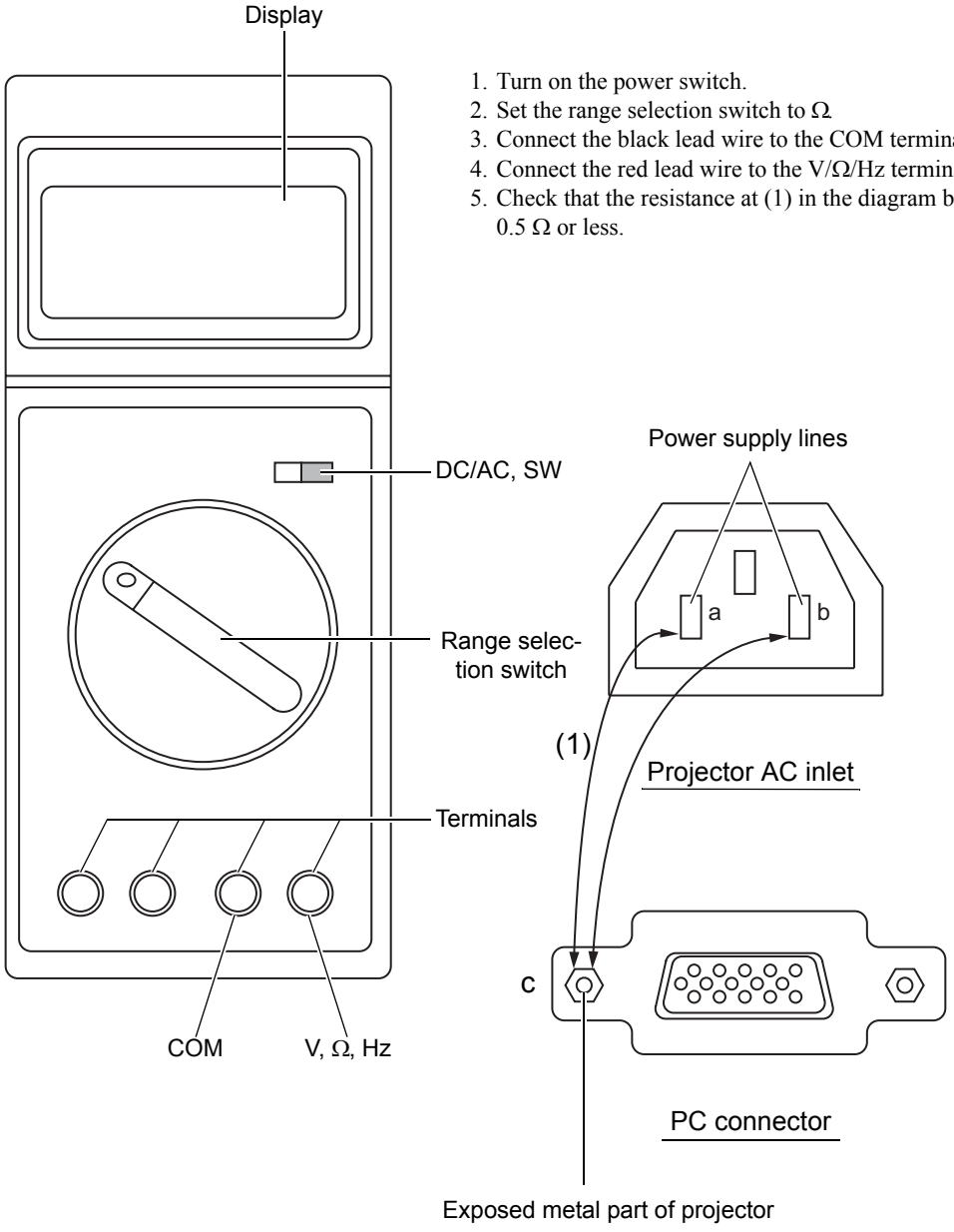
Because high voltage (500 V) is present, do not touch the probe during testing.

2). Ground continuity check

- Testing apparatus: Multimeter (with sensitivity down to 0.1 Ω)

Check Item	Tool	Standard
Ground continuity check	Multimeter	Should be no resistance (0.5 Ω or less)

- Multimeter settings

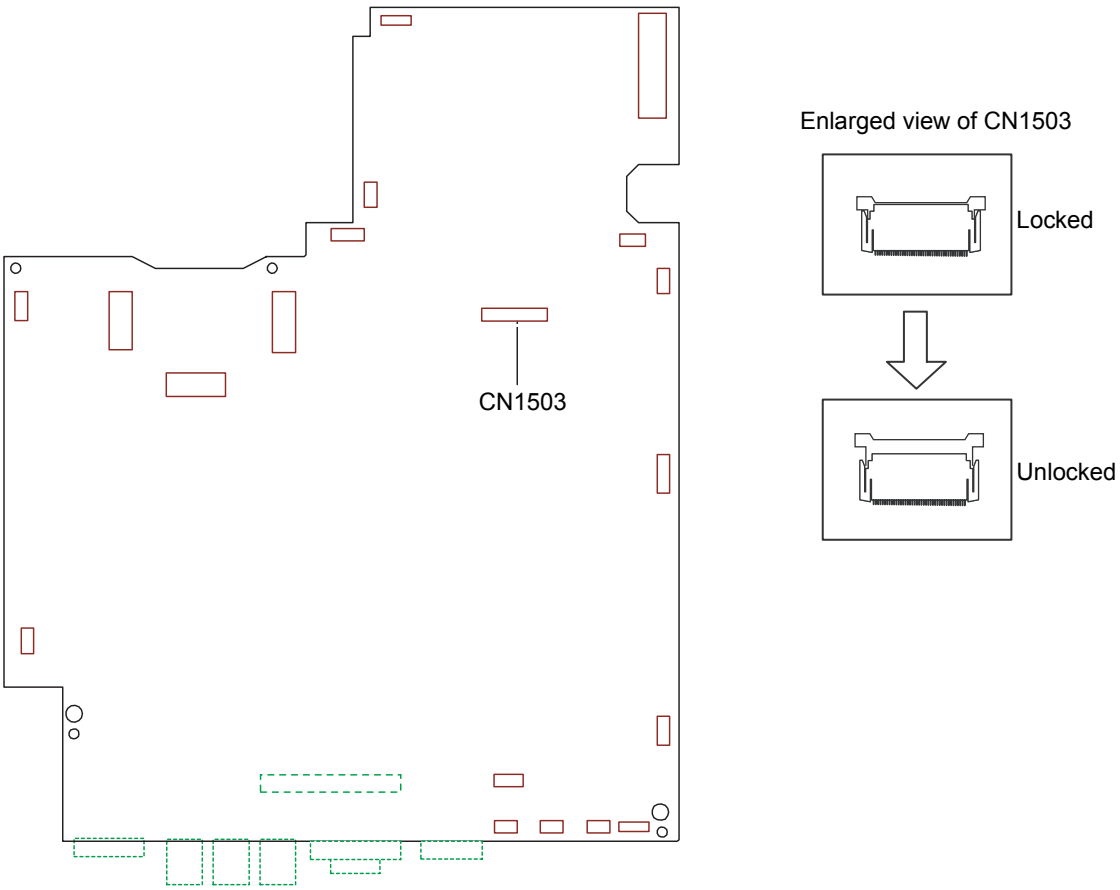


3). Illumination check

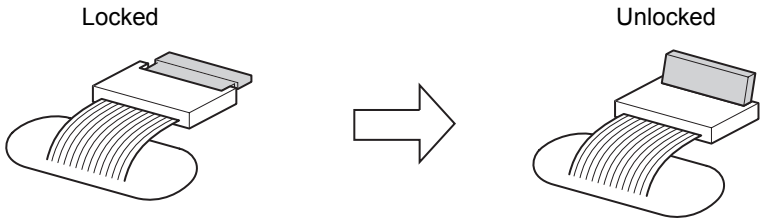
- Test conditions: Input a PC or video signal to the projector and check the illumination for about 5 minutes.
- Evaluation: Projector should operate normally with no smoke or fire.

☐ Other

- Check that the connectors at both ends of the power cord are not dirty or bent, and clean them if they are dirty. Furthermore, if there is any noticeable discoloration on the power cord, it should be replaced.
- When connecting the connector cables and interface cables inside the projector, make sure that the cable connectors are pushed on as far as they will go.
- To prevent problems caused by dirt getting into the optical system, always disassemble and assemble the projector in an area which is free from floating dust.
- When disconnecting the SW cable from the CN1503 of the MA board assembly, release the connector locks. To release the connector lock, push up both ends of the connector simultaneously with tweezers.



- When disconnecting the three FPC cables for the light valves from their connectors, release the connector locks first.



3. NECESSARY REQUIREMENTS FOR SERVICE TECHNICIANS

Service technicians who carry out repairs and servicing work on the EMP-TW1000 must possess the following knowledge and abilities:

- The service technician must have read and fully understood the contents of the User's Guide, especially projector operation.
- The service technician must have a fundamental knowledge of working with electricity, including safety procedures, knowledge regarding electrical circuits, and knowledge regarding static electricity.

4. Others

- Any questions regarding repairs and service to this projector (such as supply of parts and the contents of this Service Manual) should be directed to EPSON at the address below. Furthermore, information regarding matters such as technical changes to the projector are released when necessary in the form of Technical Information bulletins, and these should be referred to also.

SEIKO EPSON CORPORATION
ADDRESS 4897 OH-AZA, SIMAUCHI, MATSUMOTO-SHI,
NAGANO-KEN, 390-8640 JAPAN
TEL. 81-263-48-5437
FAX. 81-263-48-5680
SECTION VI.CS Quality Assurance Department

Chapter 1 Product Specifications

Chapter 2 Theory of Operation

Chapter 3 Troubleshooting

Chapter 4 Disassembly/Assembly

Chapter 5 Appendix

Chapter 1 Product Specifications

1.1 Product Features

The EMP-TW1000 is a full Hi-vision projector developed to target the home theater market that requires color reality and wide screens. With a lightweight and compact body, EMP-TW1000 offers high-quality color images in full colors sent from various compatible devices such as a VCR, video disc player, video camera, and personal computer.

1.1.1 Feature of the projector

High Brightness and Contrast

The multiple reflection efficient lamp (E-TORL) developed by EPSON enables the projector to produce a high luminance of 1200 ANSI lumens achieving high contrast with the auto iris function.

Preset Color Mode

Adjustable six color modes to quickly optimize viewing for different lighting environments.

Dynamic:	Ideal for using in bright rooms
Living Room:	Ideal for using in rooms in which the curtains are closed.
Natural:	Ideal for using in dark rooms. It is recommended that you start in this mode when making color adjustments.
Theater:	Ideal for using in dark rooms.
Theater Black1:	Suitable for use in a completely darkened room. Fit for videos.
Theater Black2:	Suitable for use in a completely darkened room. Fit for films.

Various Image Quality Adjustment Functions

EPSON Super White: Washed out or overexposed bright parts of the image can be compensated.
A variety of color and sharpness settings:
Abs. Color Temp. and Flesh Tone adjustment
6-axis Color adjustment
Customized Gamma adjustment
Advanced Sharpness adjustment

Flexible Setup Configuration

Vertical and horizontal lens shift allows the projected image to move across a wide area without distorting the image (up to a range of approximately three screens vertically, two screens horizontally). (The vertical and horizontal positioning limits with the lens shift cannot be achieved at the same time.)
The short focus and high-power 2.1X zoom lens needs only 3.0 m to project the image on a 100" screen.

Other Features

Supports a variety of interfaces
Newly designed remote control
Auto aspect ratio
Direct Power On
Quiet (26 db) so as not to disturb watching movies
Memory function
User's logo
Selectable menu color

1.2 Components, Connectors and Switches

1.2.1 External Components

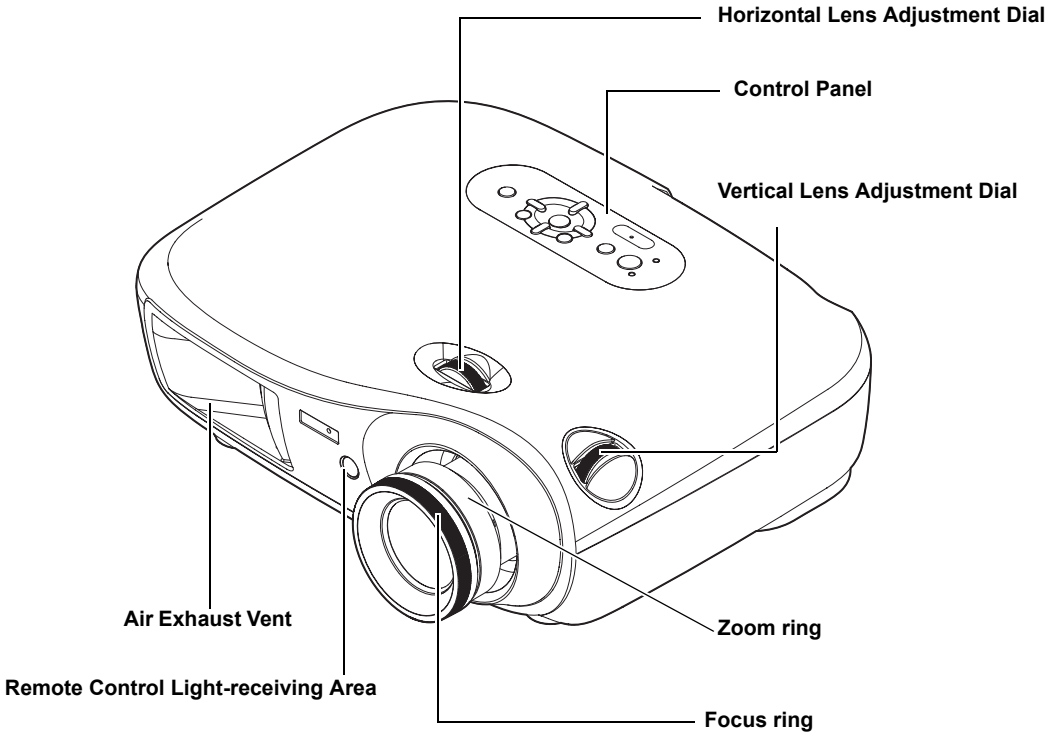


Figure 1-1. Main Unit Front

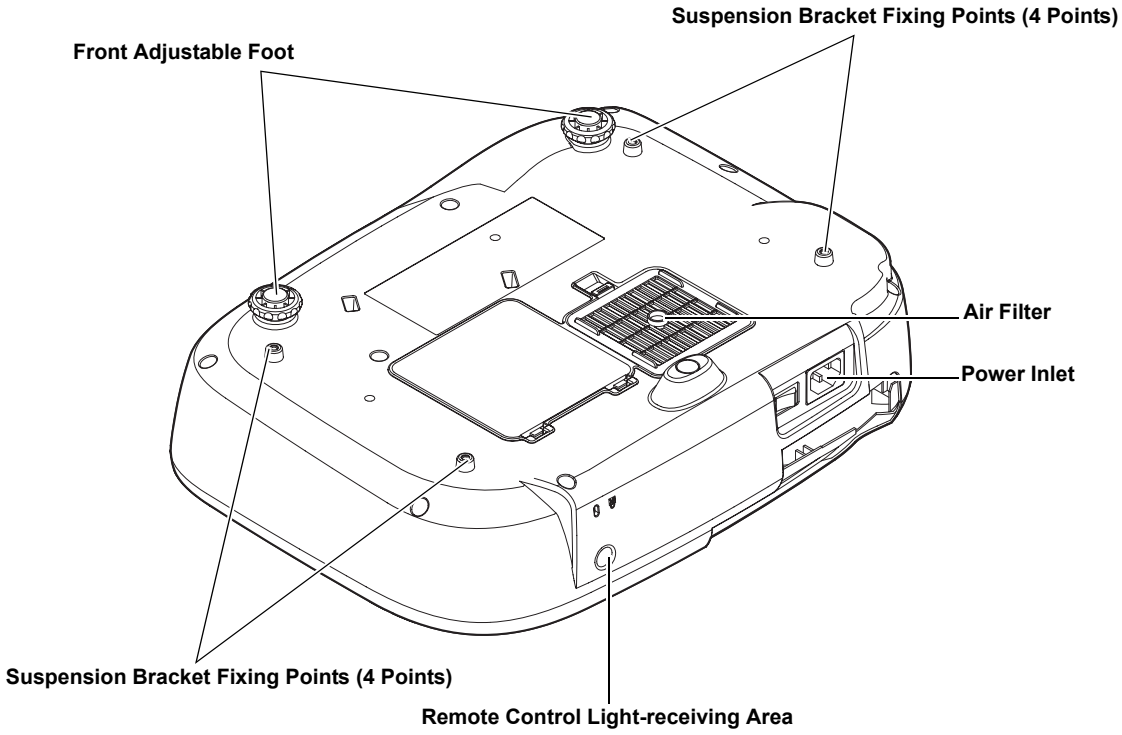


Figure 1-2. Main Unit Bottom

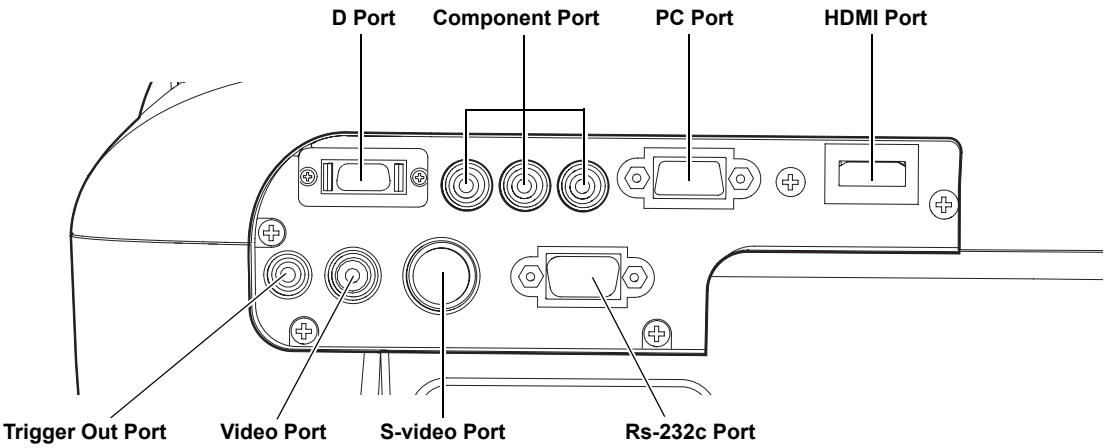


Figure 1-3. Input and Output Connectors

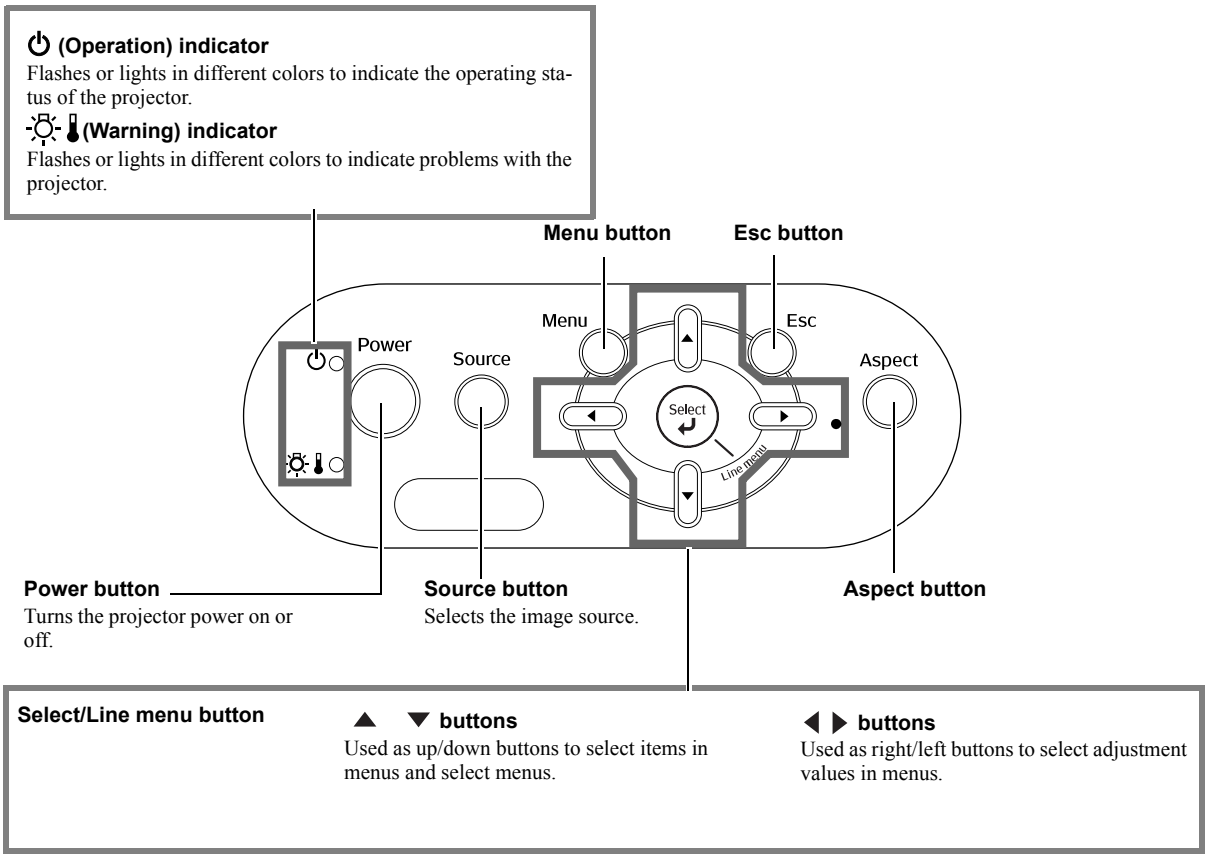


Figure 1-4. Control Panel

1.2.2 Internal Components

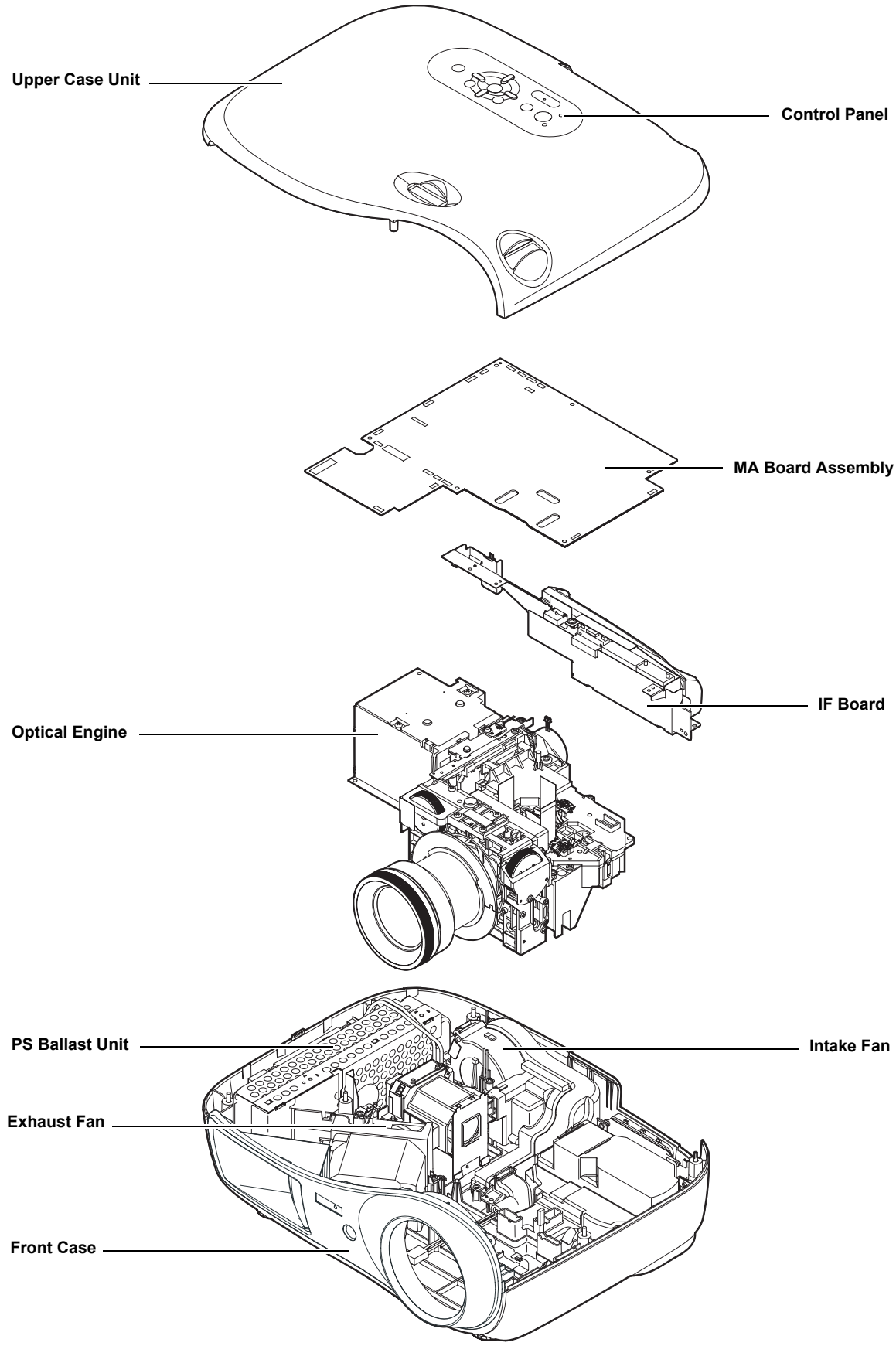


Figure 1-5. Major Internal Components

1.2.3 Remote Control

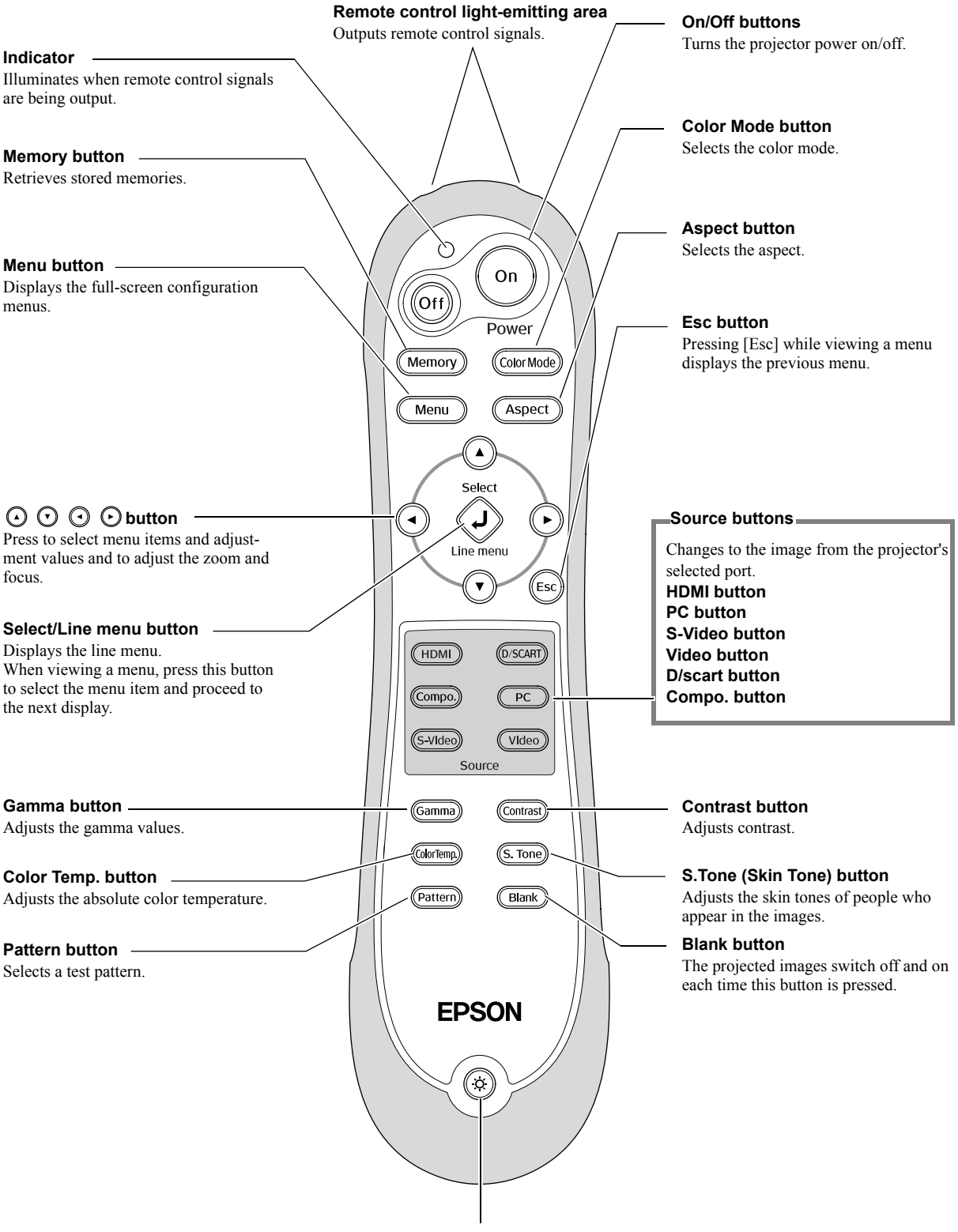


Figure 1-6. Remote Control

1.3 Specifications

Projection System			RGB Liquid Crystal Shutter Projection System
Projection Method			Front / Rear / Ceiling Mount
Specification of main parts	LCD	Size	0.74 inches wide with MLA
		Driving Method	Poly-silicon TFT Active Matrix
		Pixel number	2073600 dots (1920 x 1080) x 3
		Native Resolution	1080P
		Aspect ratio	16 : 9
		Pixel Arrangement	Stripe
		Refresh rate	50Hz or 60Hz (based on input signal)
	Projection Lens	Type	Manual zoom / focus
		F-number	2.0 - 3.17
		Focal length	22.5 - 47.2mm
		Zoom ratio	1.0 to 2.1
	Lamp	Type	170W UHE Lamp / E-TORL
		Life	1700 hours (Lamp brightness: High) 3000 hours (Lamp brightness: Low)
	Optical System		Dichroic Mirror Separation & Prism combine Method
Screen size (Projected Distance)			30 to 300inch [0.87 m to 9.03 m] (Wide) 30 to 300inch [1.88 m to 19.15 m] (Tele)
Lens shift range			Vertical : 96.3% max. (Upward and Downward) Horizontal : 47.1% max. (Left and Right)
Brightness	High Brightness		1200 ANSI lm (Color mode: Dynamic, Zoom: Wide, Lens shift: V 10:0 / H Center)
	Low Brightness		300 ANSI lm (Color mode: Theater Black 1, Zoom: Wide, Lens shift: V 10:0 / H Center)
Contrast			12000 : 1 (Color mode: Dynamic, Zoom: Wide, Lens shift: Full, Auto iris: On) 1500 : 1 TBD (Color mode: Dynamic, Zoom: Wide, Lens shift: Full, Auto iris: Off)
Brightness Uniformity			89% (Lens shift: V 10:0 / H Center)
Color reproduction			Full-color (1073.74 million colors)
Color Mode			Dynamic, Living room, Natural, Theater, Theater black 1, Theater black 2 Vivid, Cinema day, Standard, Natural, Cinema night, HD, Silver screen*
Remote Control Infrared Receiver Directivity			Right / Left : -30 to +30 degrees Upper / Lower : -30 to +30 degrees
Effective Scanning Frequency Range (Analog)	Pixel Clock		13.5MHz to 150MHz
	Horizontal		15KHz to 80KHz
	Vertical		50Hz to 85Hz

Adjustment Function		Projector / Remote Control		Brightness / Contrast / Tint / Saturation/ Input signal etc.
		Tilt Angle		0 to 2.1 degrees
		Epson Cinema Filter		Controlled automatically with color mode (ON : Theater / Theater black 1 / Theater black 2 / Natural, OFF : Living room / Dynamic)
		Auto Iris		Controlled automatically adjusting to video source
		Epson Super White		Controlled automatically adjusting to video source (Available at Natural / Theater / Theater black 1 / Theater black 2)
		Customized Gamma Adjustment		9 points of gamma curve are adjustable
		Six-Axis Color Adjustment		Hue and saturation for each of RGBCMY are adjustable
		Advanced Sharpness Adjustment		Thin line Enhancement / Thick line Enhancement / V-line Enhancement / H-line Enhancement
Video I/O	Component Input	Input Signal	Video Standard	525i / 625i / 525P / 625P / 750P / 1125i/ 1125P
			Video signal	Component Video(Analog Y level 0.7 V 75 ohm/ Cr Cb level +/-0.35V 75 ohm/ sync.negative 0.3 V or 3-state+/-0.3 V on Y)
		Input Terminal	Video	RCA x 3 (Red / Green / Blue), D5 port (only for Japan)
	Composite / S Input	Input Signal	Video Standard	NTSC / NTSC4.43 / PAL / M-PAL / N-PAL / PAL60 / SECAM
			Video signal	Composite Video (1.0 Vp-p/ Sync.negative, 75 ohm) / S-Video (Luminous0.714 Vp-p, Chrominous 0.286 Vpp, 75 ohm)
		Input Terminal	S-Video	Mini DIN 4pin
			Video	RCA (Yellow) x 1
	SCART Input	Input Signal	Video Standard	625i
			Video signal	RGB Video (0.7Vp-p 75 ohm), Sync:CVBS (1.0Vpp / Sync.negative, 75ohm)
		Input Terminal		RCA x 1 (Yellow) + D port (in common with Component Video and D5 terminal)
Analog RGB I/O		Display Performance	Native	1125P
			Resize	1280 x 1024 / 1360 x 768 / 1024 x 768 / 800 x 600 / 640 x 480 / 525i / 625i / 525P / 625P / 1125i / 1125P
		Input Signal	Signal type	Separate signal
			Video Signal	Analog (0.7V p-p,75 ohm / Mac0.714Vp-p, 75ohm)
			Sync. Signal	Separate (positive&negative, bi-polarity 2-5Vpp) / Composite (positive&negative, bi-polarity 2-5Vpp) / Sync-on-green (negative, 0.3Vpp)
		Input Terminal	Video	Mini D-sub 15pin x 1
HDMI		Input Signal	Video Standard	525i / 625i / 525p / 625p / 750p / 1125i/1125P
			Video Signal	TMDS
		Input Terminal	Video	HDMI x 1
Control I/O		Serial I/O	I/O Terminal	Mini D-sub 9 pin x 1
			I/O Signal	RS-232C
		Trigger Out	Output Terminal	3.5mm mini-jack x 1
			Output Signal	Power on: 12V DC Power off: 0V
Lock Function				Key Lock, Child Lock
Operating Temperature				5°C to 35°C <41°F to 95°F>
Operating Altitude				up to 7,500 ft < up to 2,286 m>
Start-up period				about 10 seconds
Power Supply Voltage				100-240VAC ±10%, 50/60Hz

Power Consumption	100V area (JAPAN etc.)	Lamp on	245W (Lamp high), 200W at (Lamp low)
		Standby mode	4W
	120V area (USA etc.)	Lamp on	245W (Lamp high), 200W at (Lamp low)
		Standby mode	4W
	200-240V area (Europe etc.)	Lamp on	240W (Lamp high), 200W at (Lamp low)
		Standby mode	5W
Rated Voltage & Current	Except JAPAN		100 - 240VAC 50 / 60Hz 2.7 - 1.2A
Dimension	Exclude Feet		406mm (W) x 310mm (D) x 124mm (H)
	Maximum dimension		406mm (W) x 353mm (D) x 143mm (H)
Weight			Approx. 12.3lbs / 5.6Kg
Fan Noise	High Brightness Mode		33dB (Dynamic)
	Silent mode		26dB (Theater black 1 / Theater black 2)
Accessories	Power cord		3m
	Remote Control		Stick type
	Battery		LR6 <AA> x 2
	D / SCART Adapter Cable		EEB only
	Users Manual Set		attached
Options			Lamp, air filter, Soft carrying case, Ceiling mount kit, Screen, Screen stand

1.4 Interface Specifications

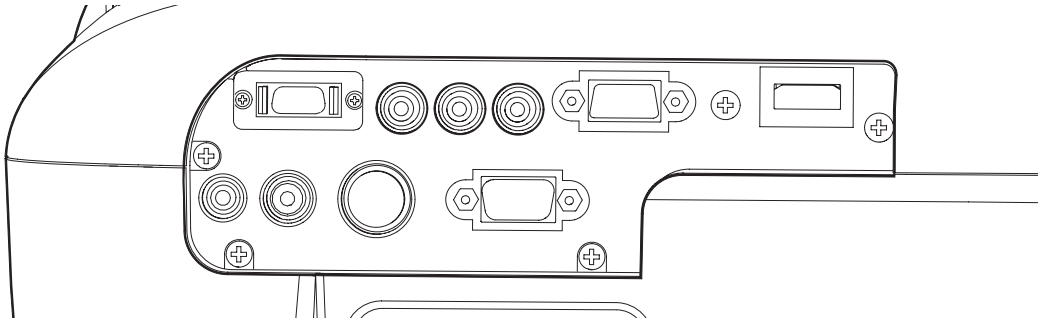
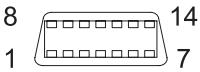


Figure 1-7.

1.4.1 D terminal

☐ SENTORO half 14Pin

CN102
YKF45-3001N

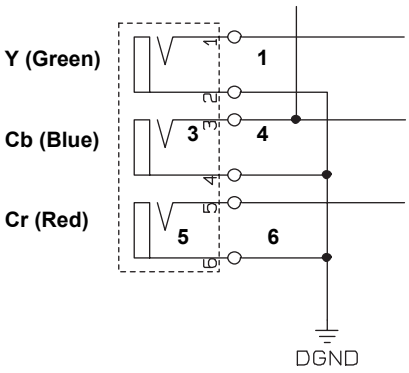


Pin No.	Pin Name	Pin No.	Pin Name
1	Y	8	(Not in use)
2	GND	9	(Not in use)
3	Pb	10	(Not in use)
4	GND	11	D_ID3
5	Pr	12	GND
6	GND	13	(Not in use)
7	(Not in use)	14	D_DETX

1.4.2 Component terminal

☐ RCA pin jack x 3

CN101
YKC21-4113N

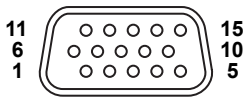


Pin No.	Signal Name
1	Y
2	GND
3	Cb
4	GND
5	Cr
6	GND

1.4.3 PC

☐ Mini D-sub, 15pin

CN100
7513S-15G2-08

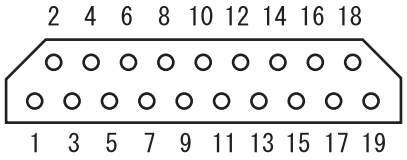


Pin No.	Signal Name	Pin No.	Signal Name
1	R	9	(Not in use)
2	G	10	GND
3	B	11	GND
4	GND	12	SDA
5	GND	13	H Sync
6	GND	14	V Sync
7	GND	15	SCL
8	GND		

1.4.4 HDMI

☐ 19 pin

CN300
DC1R019NBA

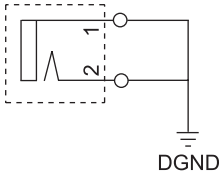


Pin No.	Pin Name	Pin No.	Pin Name
1	Rx2+	11	GND
2	GND	12	RxC-
3	Rx2-	13	(Not in use)
4	Rx1+	14	(Not in use)
5	GND	15	SCL
6	Rx1-	16	SDA
7	Rx0+	17	GND
8	GND	18	+5V
9	Rx0-	19	HTPLG
10	RxC+		

1.4.5 Video (CVBS) Interface

☐ RCA pin jack

J3000
HSP-251VY

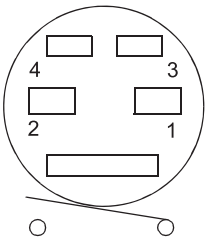


Pin No.	Signal Name
1	GND
2	CVBS

1.4.6 S-Video Interface

☐ 4-pin mini-DIN with detect pin

CN3001
TCS7708-012021

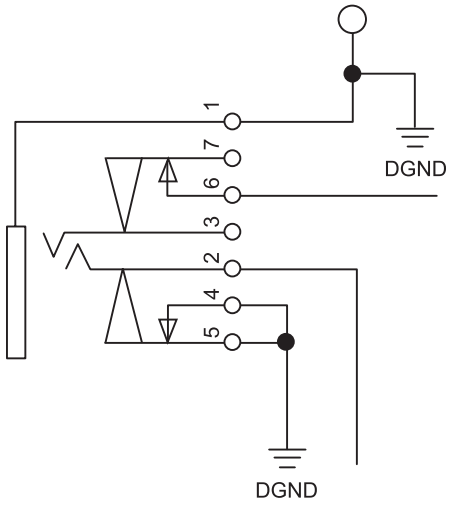


Pin No.	Signal Name
1	GND
2	GND
3	Y signal input
4	C signal input
5	DET
6	GND

1.4.7 Trigger out

☐ 3.5 Mini jack

J3001
HTJ-035-18ABT

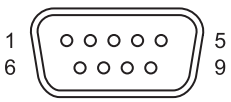


Pin No.	Signal Name
1	GND
2	+12V
3	(Not in use)
4	GND
5	GND
6	GND
7	(Not in use)

1.4.8 RS-232C

☐ D-Sub, 9pin

CN3000
JES-9P-4A3F LEAD



Pin No.	Signal Name
1	CD
2	RXD (Receive Data)
3	TXD (Transmit Data)
4	DTR
5	GND
6	DSR
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	RI

1.5 External Views

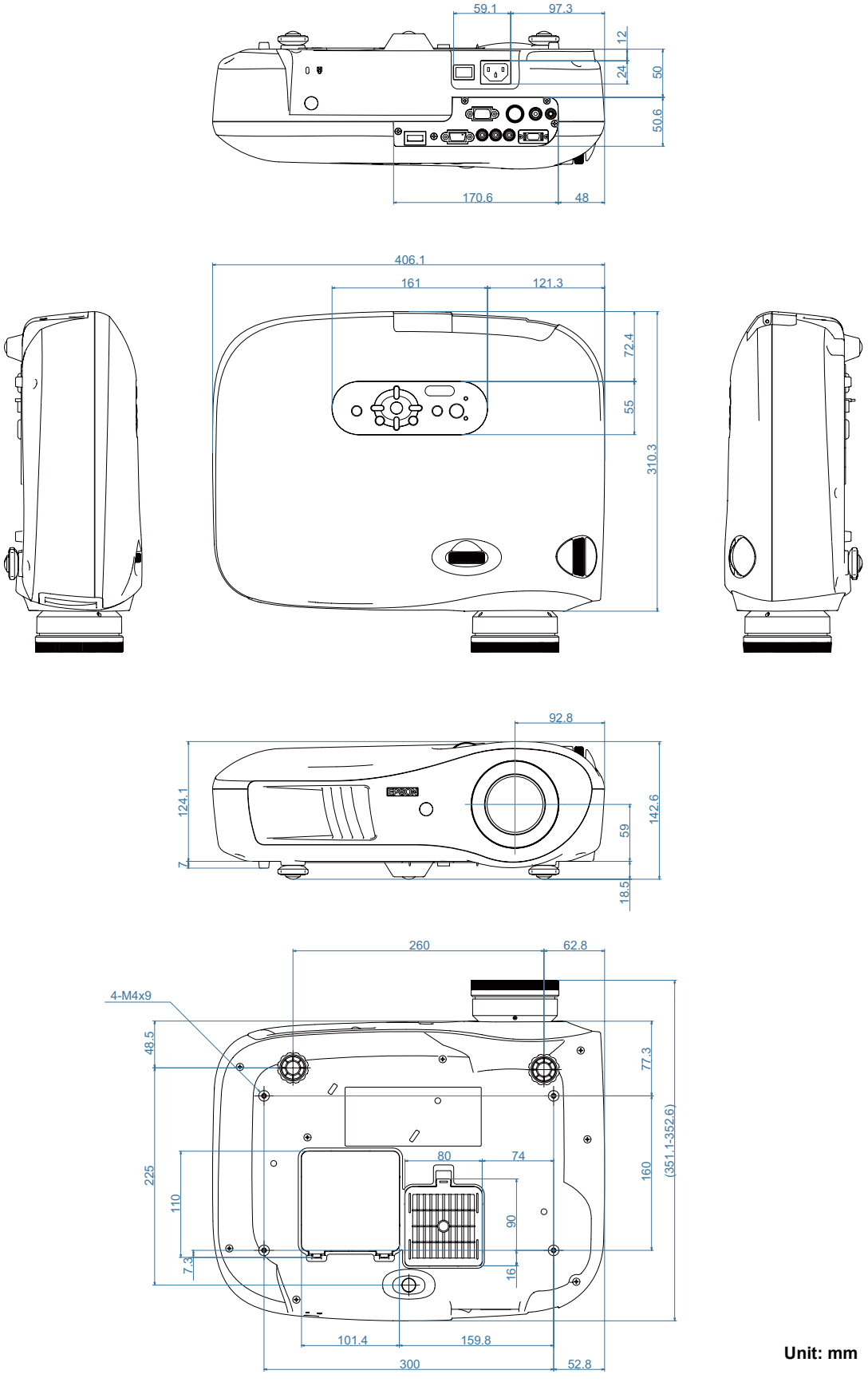
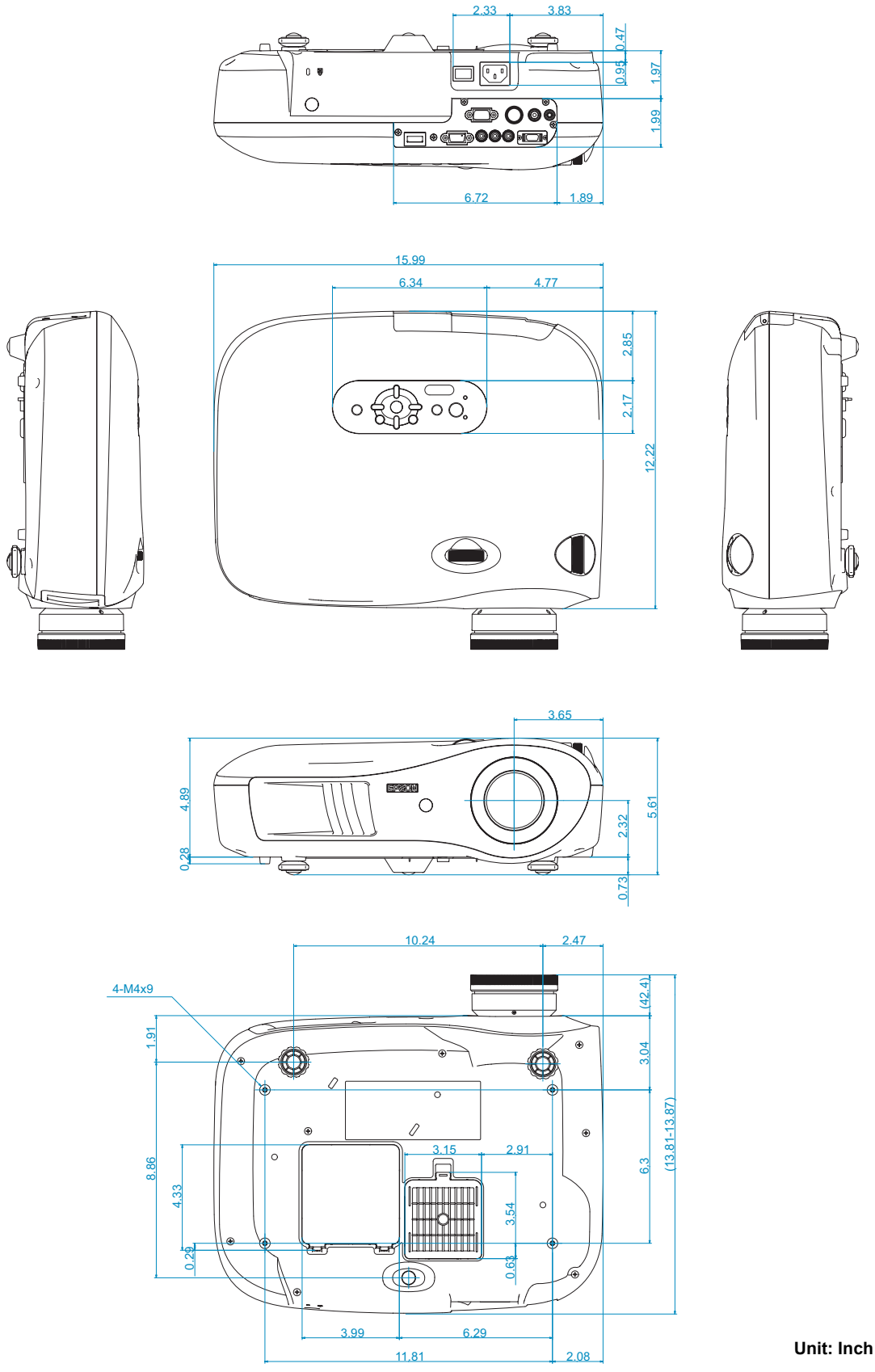


Figure 1-8. External Dimensions



Unit: Inch

Figure 1-9. External Dimensions

Chapter 2 Theory of Operation

2.1 Hardware Overview

The hardware for the EMP-TW1000 can basically be divided into two sections: the optical engine and the circuit system. This section of the manual describes functions of the major hardware components.

The components and unit in the dotted frame shown in the diagram below make up an optical engine and MA Board Kit, which is provided as one part.

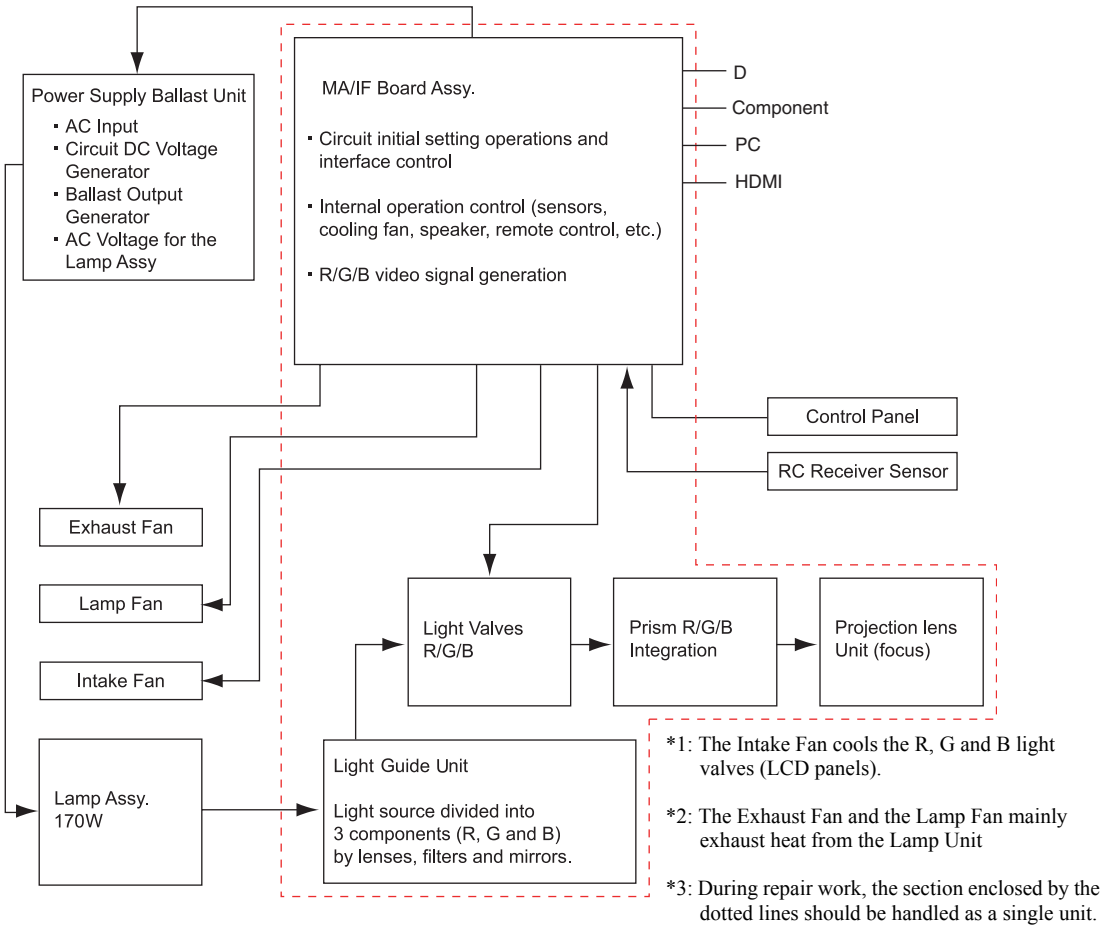


Figure 2-1.

Overview of Display Operation

1. The MA Board receives RGB/Component signals from the Computer port. Video signals or S-Video signals are provided to the MA Board from the CVBS input or S-Video port. Analog signals are converted to digital signals at the MA board.
2. The digital display signals are temporarily stored in video memory on the MA board.
3. The R, G and B light valves control the amount of light that passes through the valves.
4. The light that passes through the light valves is combined by the prism and projected as an image through the projection lens unit.

2.1.1 Circuit Component Connection Diagram

The circuit system is shown in the following diagram. The various components are connected to the MA board which is the central component of the system.

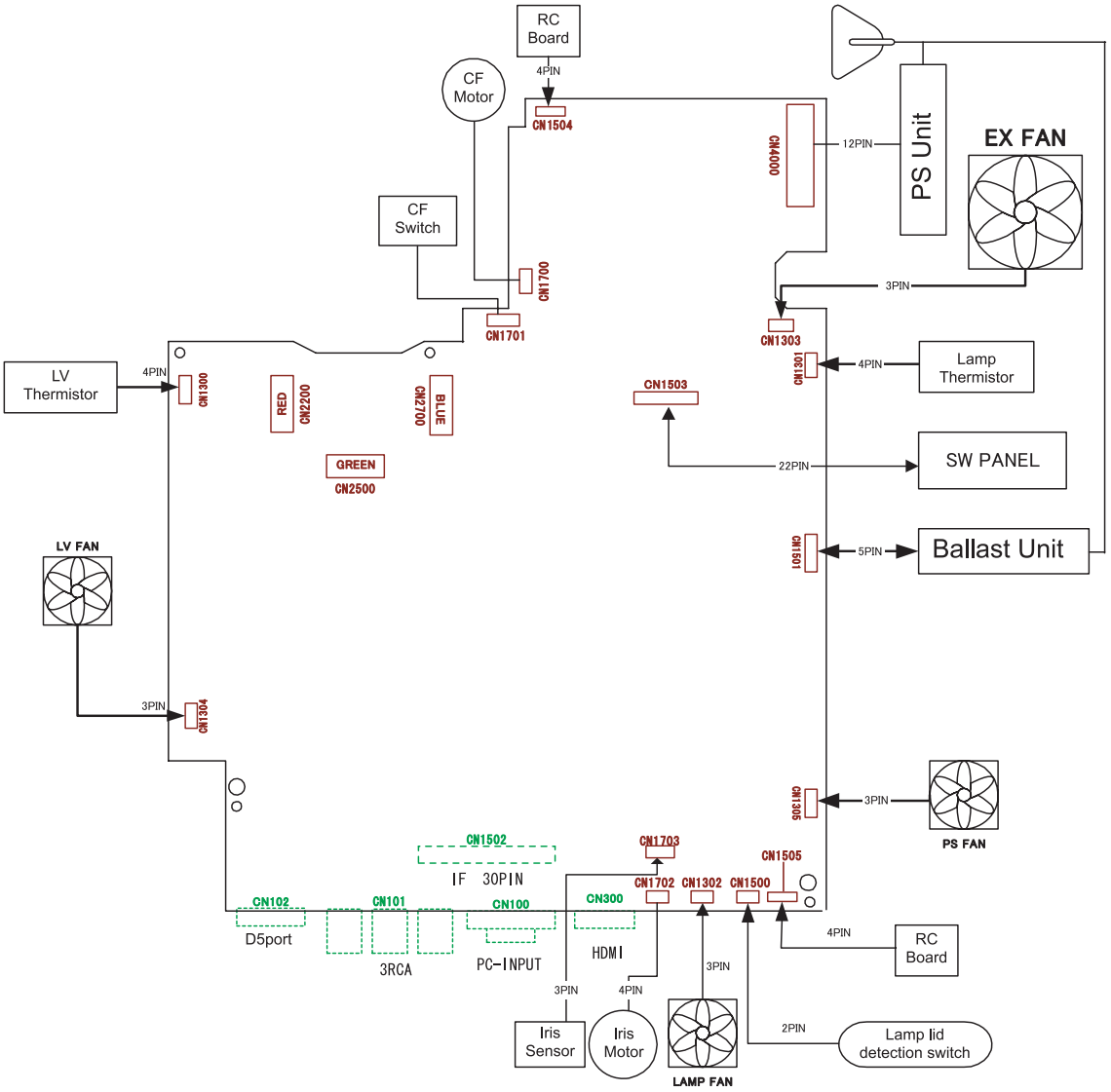


Figure 2-2. MA Board Connectors

2.1.2 Control Circuitry

The control circuits are illustrated in the following block diagram.

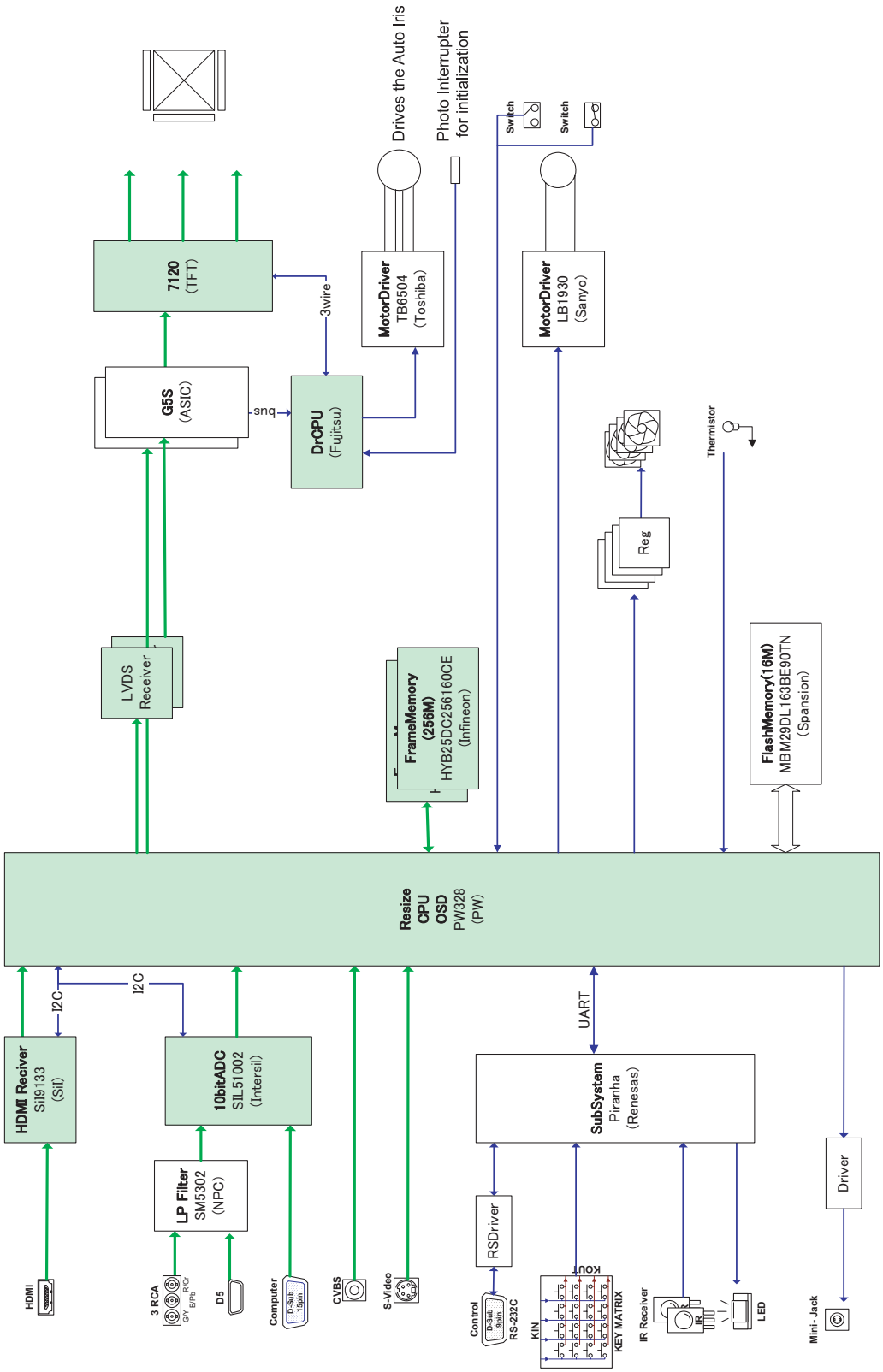


Figure 2-3. Control Circuit Block Diagram

2.2 Optical Engine

The optical system consists of four components: the Lamp Unit, the Light Guide Unit, the Panel-on-Prism (POP) Unit, and the projection lens. These four components together are called the Optical Engine. This projector is equipped with the D6 series light valves using the brand-new high-quality picture technology "Crystal Clear Fine (C^2 Fine)."

☐ Features of D6 series (hybrid driving technology)

The hybrid driving technology enables downsizing of the driver circuit board by mounting the horizontal driver IC and LCD driving controller IC on the FPC of each light valve (Since the ICs with superior driving capabilities are used on the FPCs, only one controller IC is used on the new circuit board. (16-18 ICs on the board of a conventional model.)) Along with this feature, the following is achieved.

1). Improved writing characteristics

The superior driving ability of ICs considerably reduces the variance in writing characteristics onto pixels. Consequently achieved uniform writing to all the pixels produces smoother images.

2). Low power consumption

Power consumption of the panel driving system is highly reduced. (Only about 10 % of power consumption compared with a conventional EPSON 1080P panel.)

☐ Features of "Crystal Clear Fine (C^2 Fine)"

- Adoption of inorganic LC alignment layer reduces unevenness of molecular orientation. Improved evenness realizes smoother images.
- Use of vertical alignment technology achieves high contrast.
- Along with the above technology, adoption of the normally-black mode realizes jet-black reproduction.

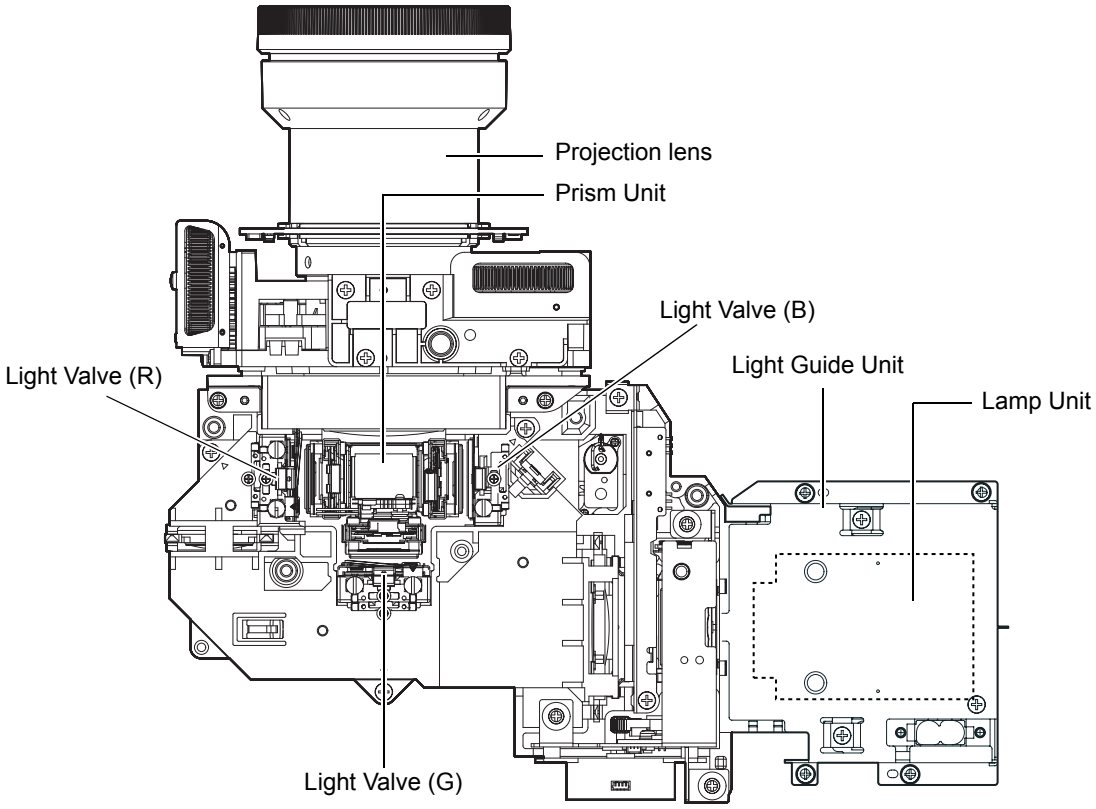


Figure 2-4. Optical Engine

Optical system drive block

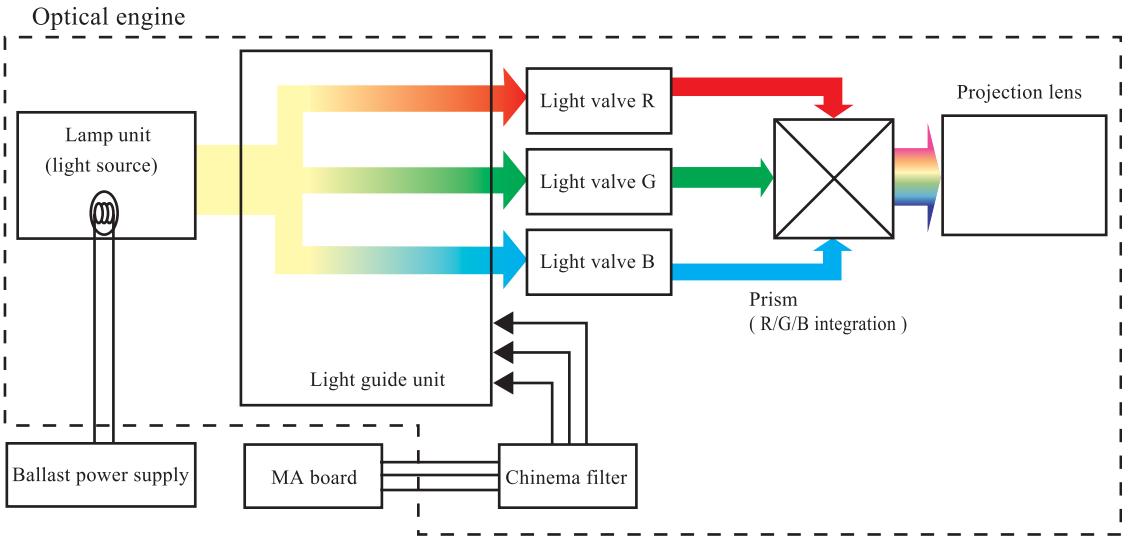


Figure 2-5. Optical Engine Functional Diagram

CHECK POINT

The Lamp Unit, Light Guide Unit, POP Unit, and Projection Lens together make up the Optical Engine. These components are assembled and adjusted together at the factory, and are not available as separate service parts.

CAUTION

- Do not subject the optical system components to physical shocks or strong vibration.
- Do not disassemble the Light Guide Unit. Disassembly will cause color distortion, even if reassembled very carefully.
- The Optical Engine and MA Board are figured and adjusted together at the factory. They are only available as a matched pair, and ***must always be replaced together*** when either the Optical Engine or MA Board has a failure.

Table 2-1.

Component Name	Function/Other
Lamp Unit	An UHE-170W discharge lamp is the light source.
Light Guide Unit	The light guide unit disperses the light from the light source via lens arrays A and B in order to provide uniform illumination. In addition, a UV filter removes any harmful ultraviolet light from the LCD. After this light is polarized, it is then split into 3 spectrums (R, G and B).
Light Bulbs	The intensity of the distributed components of the RGB light is controlled by means of the light valve.
Prism Unit	The prism unit integrates the red, green and blue light and sends it through the projection lens.
Projection Lens	The projection lens focuses the light composed by the prism and projects an image on the screen.
Cinema Filter	When the color mode is set to the Natural, Theater, Theater black 1, Theater black 2, the cinema filter changes the luminance level to low.

2.2.1 Lamp Unit

The Lamp Unit is comprised of the Lamp (UHE-170W) and Ballast Power Supply Connector. The Ballast Power Supply Connector is used to supply the AC voltage from the ballast unit for driving the lamp. The lead wires are connected to the lamp.

The lamp is fastened to the bottom of the projector body with 2 screws. The lamp is a consumable part, and is to be replaced as the luminance of the Lamp Unit declines over time as the lamp is used. Maximum luminance is obtained when a new lamp is first installed. After approximately 1700 hours at high brightness or 3000 hours at low brightness, the luminance will drop by approximately 50%.

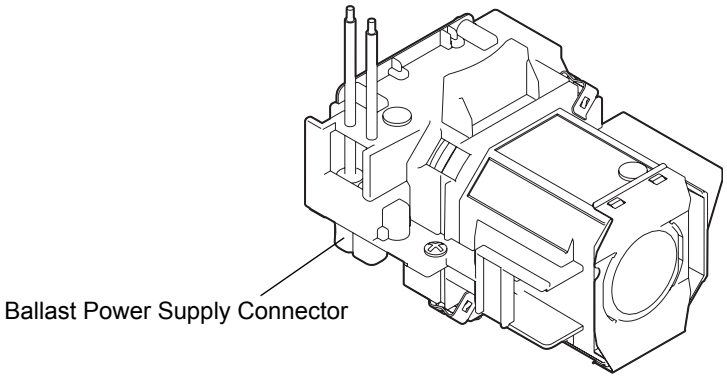


Figure 2-6.

The Lamp may be replaced at any time. Replace the Lamp Unit before the full 1700-hour period (at high brightness) or 3000-hour period (at low brightness) has been reached if it seems that the luminance of the lamp is unacceptable during actual use.

The cumulative operating time for the Lamp Unit is stored in IC503 on the MA board. When the lamp is replaced, the lamp timer should be reset using the Reset Lamp Timer function in the Reset menu. Check the Lamp Time in the [Info] menu to confirm that the timer has been correctly reset.

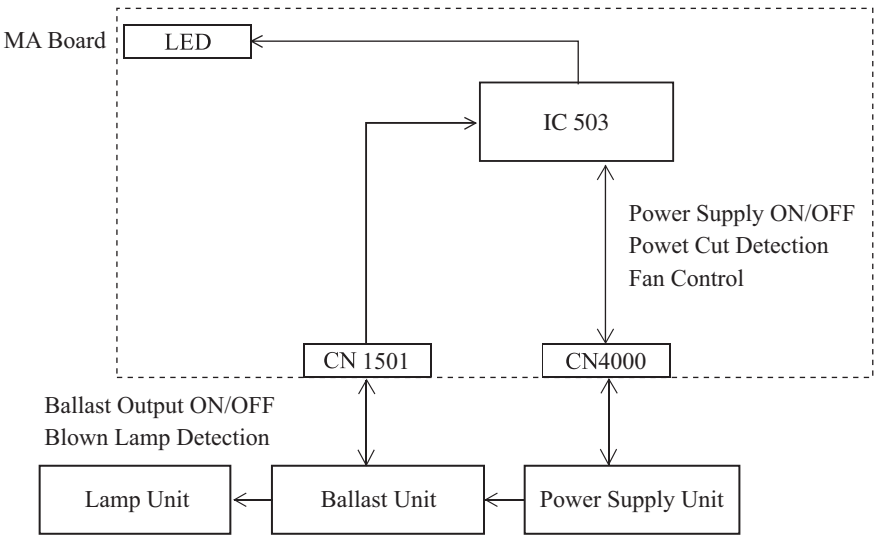


Figure 2-7. Lamp Unit Control Circuits

- The EMP-TW1000 has a sleep mode function that will automatically turn off the lamp if no new signals are input for a continuous period (Default is 30 minutes, the time can be set by the minute).

2.3 MA Board

The MA board processes the core circuit controls for the projector, including interface control, operation panel control, temperature sensor circuit and fan control, ballast power supply control and the Infrared RC board interface.
The MA board also contains an imaging processor (PW328), EEPROM, digitizers (ADC and video decoder), and SDRAM memory.

2.3.1 External View of MA Board

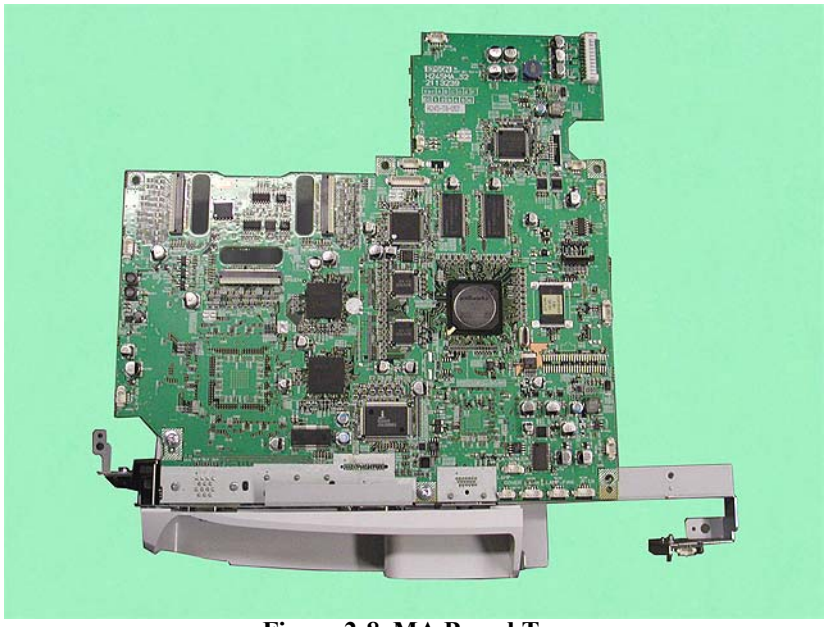


Figure 2-8. MA Board Top

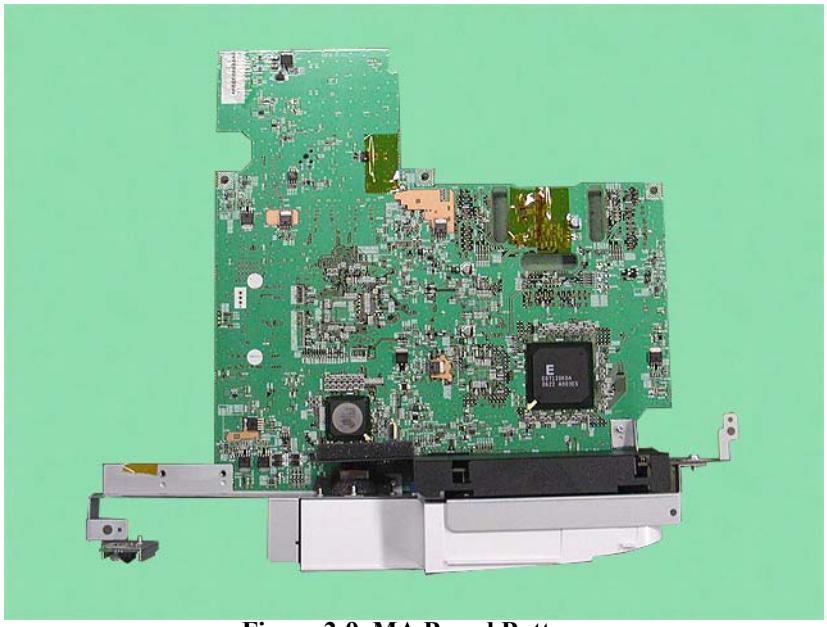


Figure 2-9. MA Board Bottom

* The MA Board and the Optical Engine must always be replaced together.

2.3.2 Overview of Operation

Projector control

Controls the IF board, RC boards, etc.

Digitalization control of the picture signal

Converts the analog RGB image signals input from Computer and BNC from analog to digital form.

Definition transformation control by the digital filter of the input picture signal

Converts the resolution of the image signals input from Video and S-Video with the digital filter.

Frequency transformation control

Transforms the picture signal into the appropriate signals to drive the R, G and B LCD panels.

Cinema filter control

Operates automatically according to the user-selected image mode to improve the quality of video images.

On screen display

Displays the menu, EMP link function, and other information overlaid onto the input picture signal.

Remote control

Receives and decodes IR signals from the remote control and supplies control signals to various MA board circuits.

Lamp control

Controls the ballast and lamp illumination.

LED control

Controls the display characteristics of the LEDs that indicate the power, temperature and operational status of the projector.

Cooling control

Measures temperature and controls the speed of the fan.

Power supply control

Controls low-power consumption, sleep and stand-by modes.

2.4 Interface Connectors

The MA board / IF board includes interface connectors for external devices such as video equipment and external control. The MA board / IF board is equipped with the following connectors.

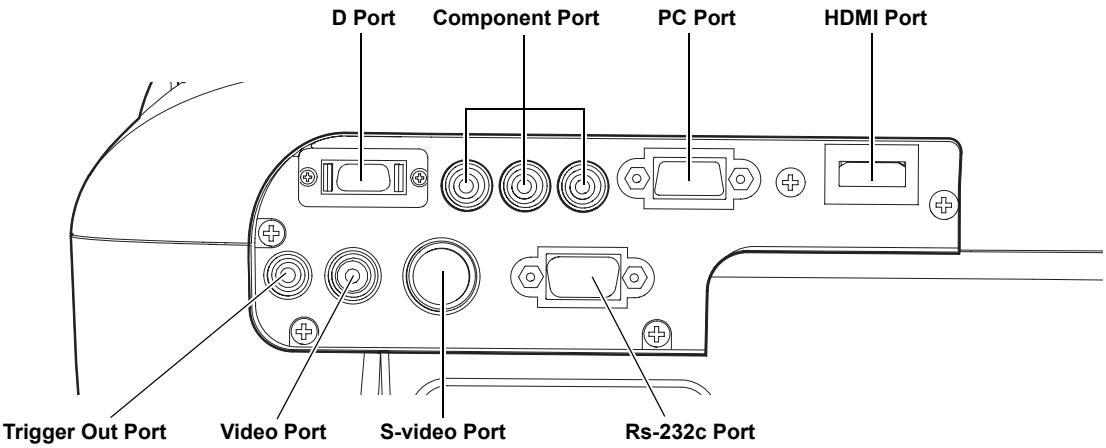


Figure 2-10. IF Board External Connectors

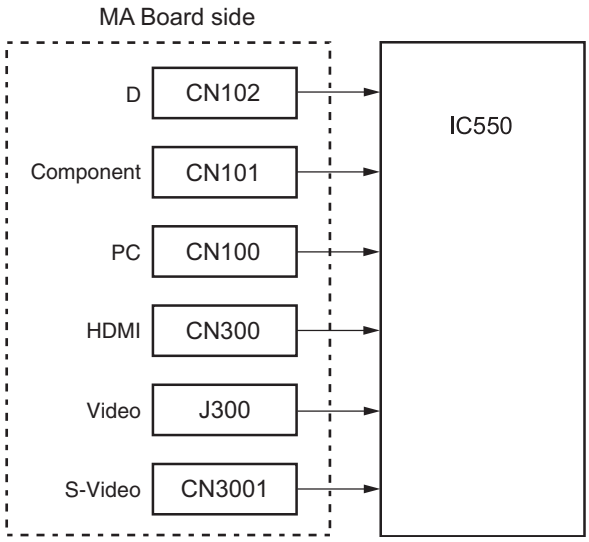


Figure 2-11. MA Board / IF Board Block Diagram

2.5 Power Supply Unit

The Power Supply Unit contains the power supply filter and the AC cord socket.

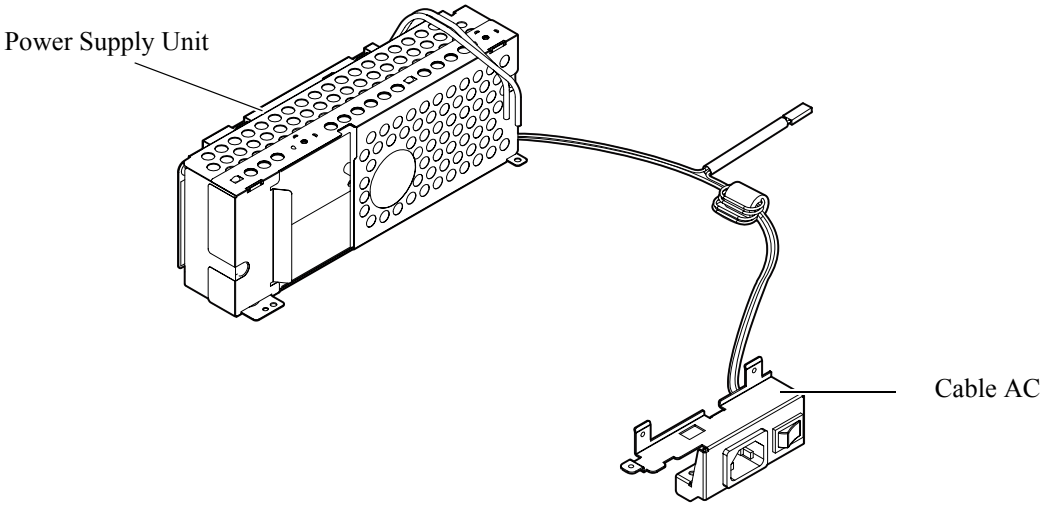


Figure 2-12. Power Supply Unit

2.5.1 Power Supply Circuit Block Diagram

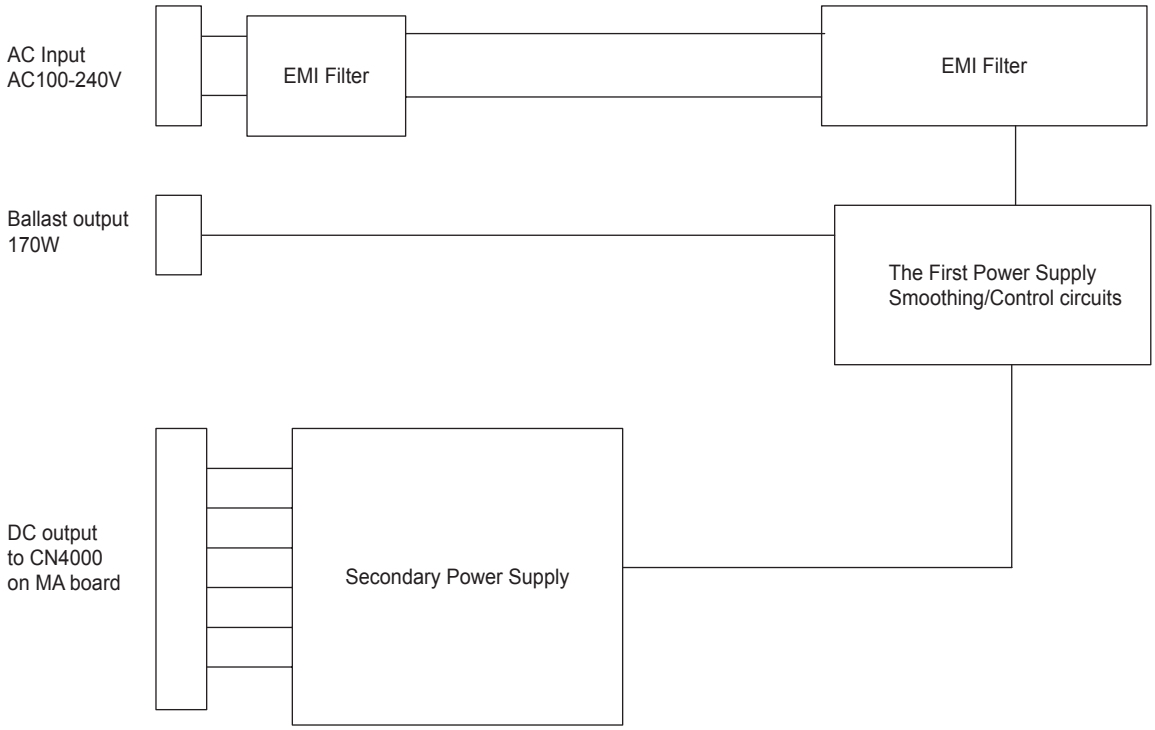


Figure 2-13. Power Supply Circuit Block Diagram

Fuse:	Protects the power supply and internal circuitry from overcurrent on the AC supply line.
EMI filter circuit:	Eliminates interference from the AC power supply input.

2.5.2 Overview of Operation

The output cable of the power supply unit is connected to CN4000 on the MA board. It allows the following voltages and signals to be transmitted.

- DC output
- The power supply On/Off signal (PWON)

CAUTION

- Background power is still supplied to the MA board through CN4000 connector as long as the power cord is connected to the projector, even if the **[Power]** switch is turned off.
- The EMI filter/regulator circuit eliminates interference (noise) from the AC line and generates the DC voltage for the regulators.
- The DC voltages shown in the tables below are generated by a Switching Regulator. No fluctuations in output potential occur as a result of load fluctuations, and the individual output voltages cannot be adjusted.

Table 2-2.

Output voltage		Output voltage accuracy	Ripple (mVpp)	Ripple/ Spike (mVpp)	Output current			Protection circuit		Load capacity (Reference) (μF)
Signal name	Voltage				Standby mode	MIN.	Typ	Over voltage	Over current	
+5	+5V	4.75 - 5.25V	100	200	20mA-220mA	0.9A	3.5A	-	short-circuit protection	200
+13.0	+13.5V	13.5 - 16.0V	200	300	0A	0.2A	1.5A	-	short-circuit protection	100+470
+18	+18V	16 - 23V	400	400	0A	0.2A	0.6A	-	short-circuit protection	47
Ballast output	375V	360 - 400V	25Vpp	25Vpp	-			410V	-	-

The power supply fan reduces the internal heat in the power supply unit. The heated air discharged from the power supply unit is then exhausted with the exhaust fan connected to CN1303 on the MA board.

2.5.3 Connector CN4000 Pin Layout

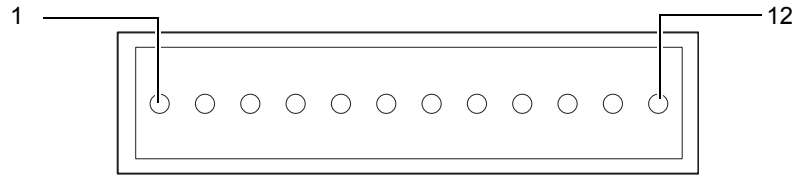


Figure 2-14.

Power Supply Connector (connected to CN4000 on the MA board) Pinout Definition

Pin No.	Signal name
1	PFCON
2	+5 V_T
3	GND
4	+5 V_T
5	+5 V_T
6	-
7	GND
8	+13 V
9	GND
10	+18 V
11	GND
12	(Not in use)

2.6 Ballast Unit

The Ballast Unit re-regulates a DC voltage (340-400VDC) supplied from the Power Supply Unit, and generates 170W for the UHE lamp.

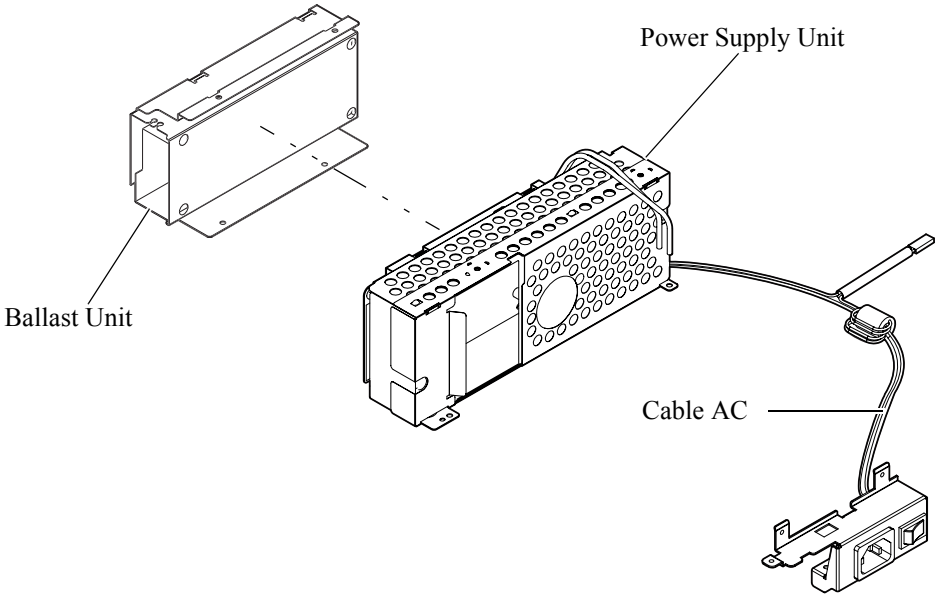


Figure 2-15. Ballast Unit

2.6.1 Power Supply Circuit Block Diagram

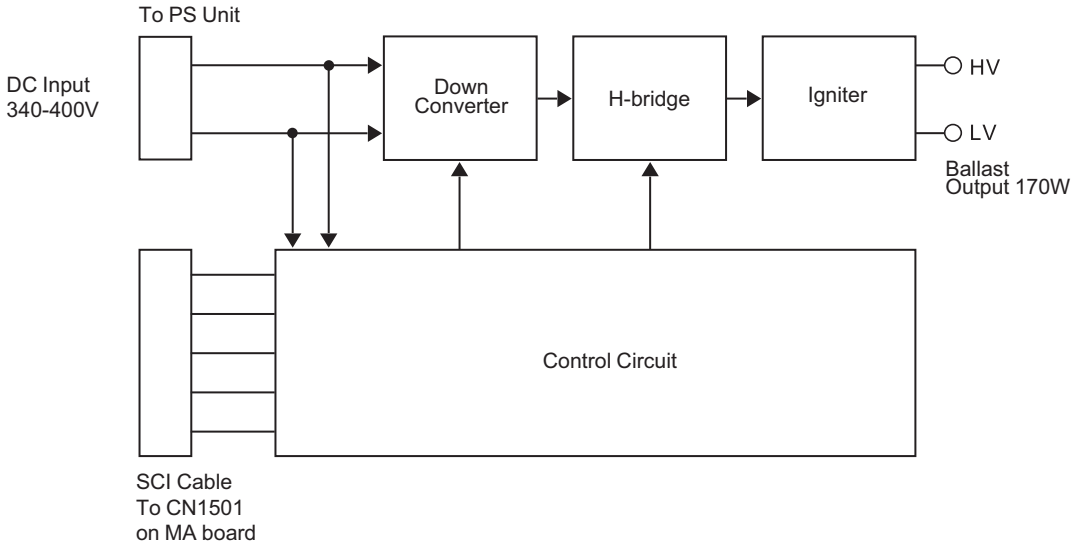


Figure 2-16. Power Supply Circuit Block Diagram

(1). Operating principles

- Control circuit : This generates the voltages (360V-400V DC) for the control circuit inside the ballast unit. Re-regulation switching operations are carried out based on the MA board output signal. The output voltage is adjusted to stabilize the output power supply.
- Igniter circuit : Generates the 170W lamp voltage.

2.7 RC Receiver Sensor

The Remote Control (RC) board is equipped with sensors that detect (receive) infrared signals transmitted from the remote control. The two RC IR sensors are mounted on the front and rear of the projector.

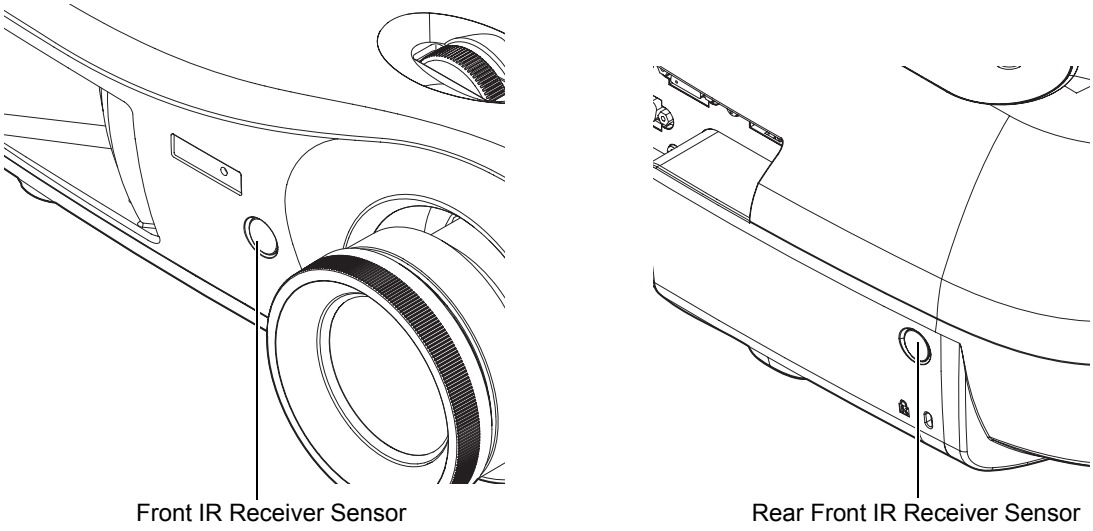


Figure 2-17. RC Receiver Sensor

The output signals (serial data) received by the sensors are sent to IC1103 on the MA board. The MA board uses the serial data received from the remote control button switches to control the power ON/OFF status, menu start, and control the display (temporary stop, blank, etc.).

The remote control function is illustrated in Figure 2-18.

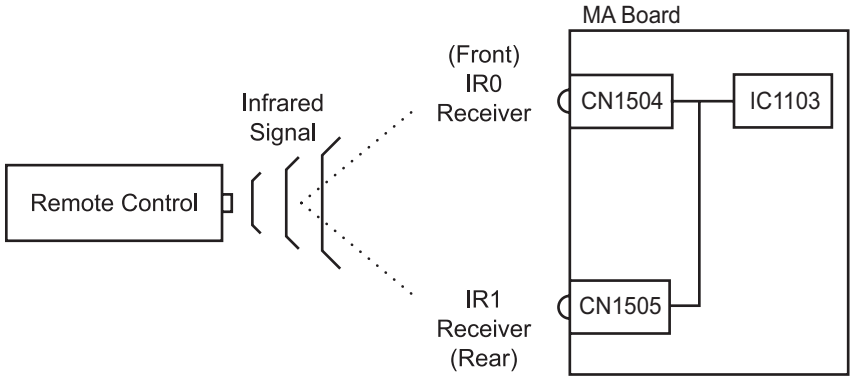


Figure 2-18. Remote Control Circuit Block Diagram

2.8 Temperature Control

2.8.1 Sensors and Switches

This projector is equipped with the devices shown in the table below in order to protect the safety of the operator and maintain general safety with regard to the projector itself by preventing abnormalities in operation.

Table 2-3.

Sensor / Switch	Location / Type	Function
Lamp lid detection switch	On the Lower Case	Interrupts AC power when the lamp lid is opened. Power cannot be turned on until the lid is closed.
Safety Switch	Thermal switch that is on the side of the Optical Engine (light guide unit)	Prevents overheating around the Lamp Unit Turns the lamp off when a temperature rises above a certain level.
TH board	On the Exhaust Duct	Prevents overheating around the Lamp Unit Interrupts the AC power when a temperature rises above a certain level.
LV Thermistor	On the upper surface of the Optical Engine (Prism Unit)	Prevents overheating around the Light Valve. Interrupts the AC power when the temperature rises above a certain level.

Lamp Lid Detection Switch

This switch is located on the Lower Case and connected to the lamp lid latch on the inside base of the projector, and prevents current from going to the lamp if the lamp lid is open. This lid is opened only when the operator is replacing the Lamp Unit The switch is provided in order to prevent the danger of burns that could occur if the lamp turned on accidentally.
The lamp lid detection switch is on the AC input line. When the lamp lid opens, the AC power supply is cut off so that the power is turned off.

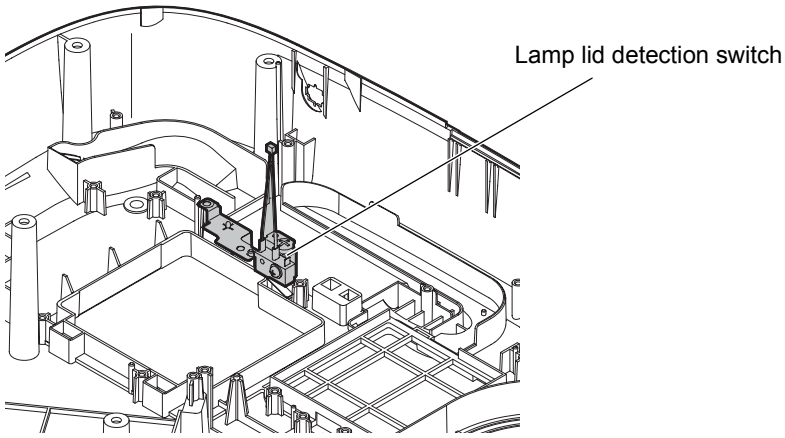


Figure 2-19. Lamp Lid Detection Switch

TH Board

The TH Board is attached to the Exhaust Duct to detect the temperature of the lamp section. To prevent damage to the surrounding components from overheating, the power save controller on the MA board first provides a warning indication through the temperature indicator LED, and stops the output of the ballast when the temperature rises above a given level.

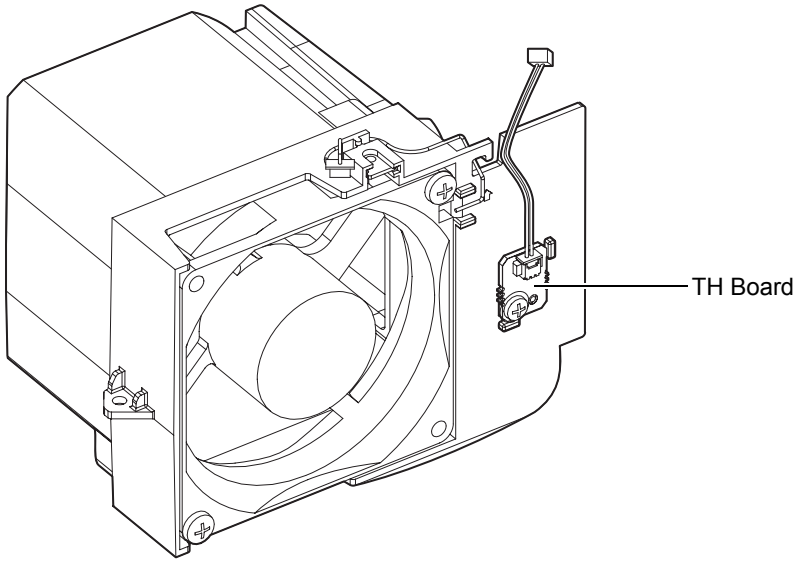


Figure 2-20. TH Board

Safety Switch

This is a backup overheating prevention switch mounted on the side of the Optical Engine (Light Guide Unit). If overheating occurs around the Lamp Unit due to problems with the exhaust fan, the lamp is normally turned off by the TH Board to prevent overheating. The Safety Switch is provided as a backup in case the TH Board and temperature detection circuit fail simultaneously. When the temperature rises above a given level, the safety switch interrupts AC power to stop all regular operations. Once the safety switch is activated, power cannot be switched on again until the temperature falls below the given level.

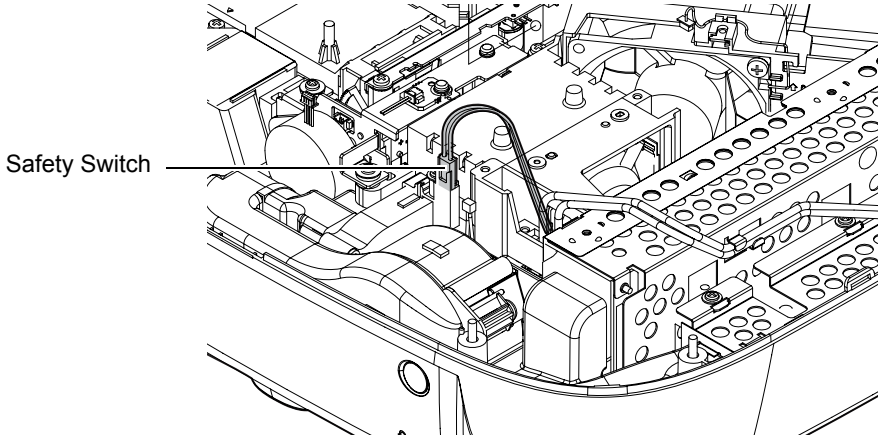


Figure 2-21. Safety Switch

LV Thermistor

This is a backup overheating prevention sensor mounted on the upper surface of the Optical Engine (Prism Unit). To prevent damage to the surrounding components from overheating, the power save controller on the MA board first provides a warning indication through the warning indicator LED, and stops the output of the ballast when the temperature rises above a given level.

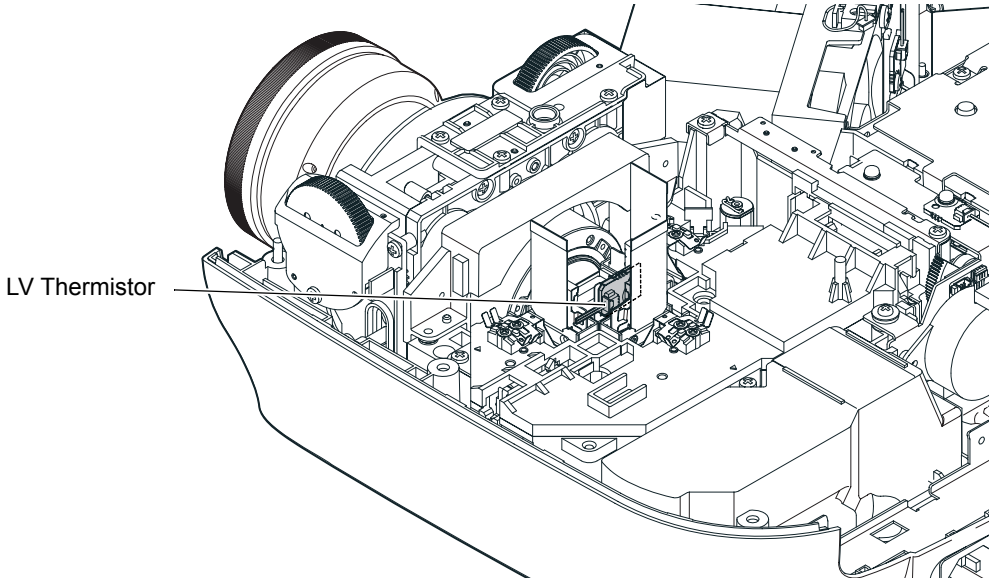


Figure 2-22. LV Thermistor

Thermistor and Temperature Sensor Operation

Analog/Digital converters in IC550 on the MA board detect the temperatures of the Optical Engine and Power Supply sections by means of the two thermistors at intervals of 1 second. Based on the measurement results, the CPU controls fan operations and power supply shutdown operations as necessary.

Table 2-4. Temperature Sensors

Condition	Warning Indicator	Meaning
Normal temperature	Off	Normal operation in progress
Warning temperature	Flashes orange	If temperature rises any higher, projection stops.
Abnormal temperature	Steady red	Overheating (no projection)
Internal error	Flashes red	Problem with fans, thermistors or temperature detection circuit

See Section 2.8.2 for more information on fan operation, and Section 2.9 for more information on the LED status indicators.

2.8.2 Fan Operation

There are four cooling fans inside the projector. These fans discharge heated air produced mainly by the Lamp Unit, Power Supply Unit.

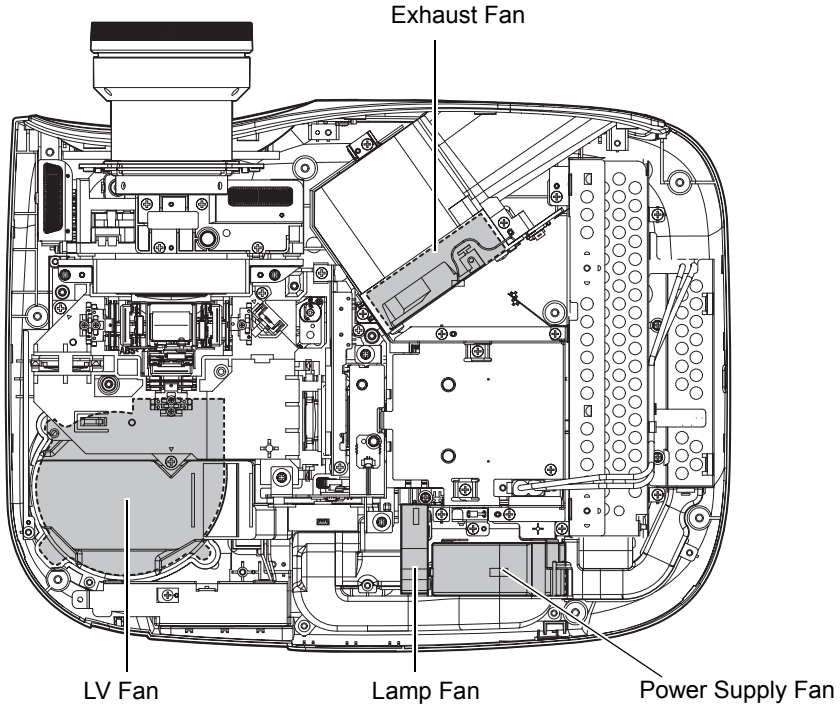


Figure 2-23. Fan Locations

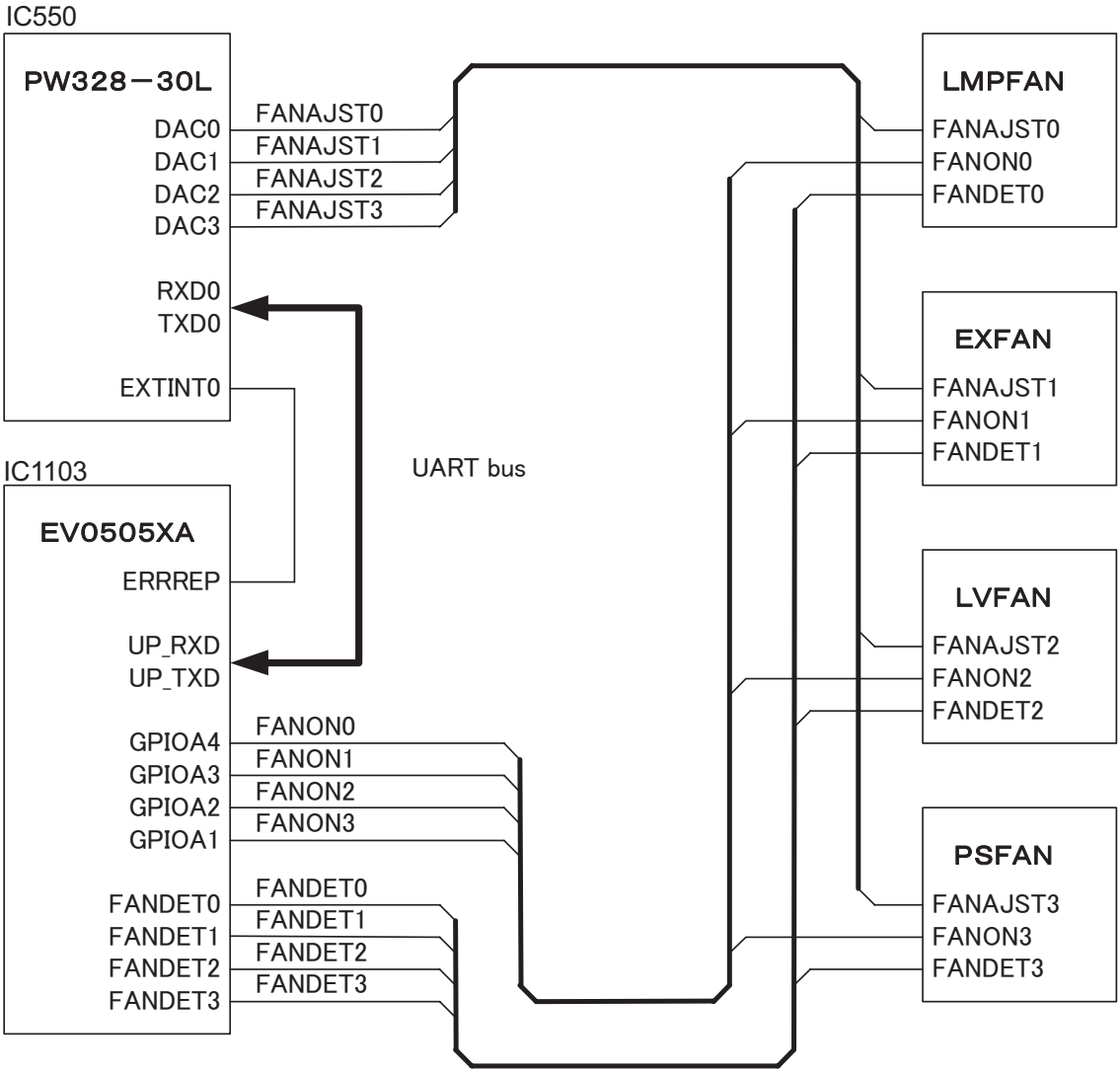


Figure 2-24. Fan Control Circuit Block

Operation Control

The MA board is connected to two thermistors monitoring the internal temperature. The thermal monitor CPU (IC1103) controls the operation of the three fans* (LV fan, Exhaust fan and Power Supply fan), based on the temperatures detected by the thermistors. (*: Lamp fan runs at a constant speed.)

The signals output by IC550, the main CPU on the MA board, are used to change the output from the fan drive regulator circuit on the MA board in order to control three intake fans and the Exhaust fan. The feedback signals from the fans are used by the thermal monitor CPU to monitor the fan operation (stopped or running) for any abnormalities. If the themal monitor CPU detects abnormality from the feedback signals, the main CPU executes a process predetermined depending on the error status.

Fan Operation

☐ Standby Mode

LV Fan :	The rotating speed is controlled according to temperature detected by the LV themistor.
Power Fan:	The rotation speed is controlled in conjunction with the LV fan.
Lamp Fan :	Operates at a constant speed from power-on.
Exhaust Fan:	The rotating speed is controlled according to the thermal data detected by the Lamp themistor.

☐ When the Lamp is ON

The intake fans and Exhaust fan start to operate at low speed (the initial speed) 0.5 seconds before turning the lamp on. After the lamp turns on, each fan operates at a designated speed based on the temperature detected by the corresponding thermistor.

☐ During Cool-down

When the lamp is turned off, the fans operate for a few seconds to cool the projector.

2.9 LED Indicators

The MA board has two LEDs that indicate the operating status of the projector.

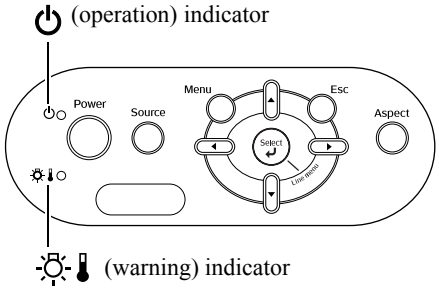


Figure 2-25. Status Indicator LEDs Location

The following tables show what the indicators mean and how to remedy problems the they indicate.

□ When the (warning) indicator is lit or flashing **warning/problem**

●: Lit ☼: Flashing

Red ☼ (Lit/off for 1 sec.)

Internal problem / Fan problem / Sensor problem / Cinema filter problem / Auto iris problem

CAUTION Disconnect the power cable from the electrical outlet. Then contact your dealer or the nearest address provided in the "International Warranty Conditions" section of the Safety Instructions/World-Wide Warranty Terms booklet.

Red ☼ (Lit/off for 0.5 sec.)

Lamp problem / Lamp on error / Lamp cover open error

Check if the lamp is broken.

Clean the air filter.

If the lamp is not broken → Replace the lamp and then turn the power on. → If the problem is still not solved after the lamp is replaced, stop using the projector and disconnect the power cable from the electrical outlet. Then contact your dealer or the nearest address provided in the "International Warranty Conditions" section of the Safety Instructions/ World Wide Warranty Terms booklet.

If the lamp is broken → Contact your local dealer for further advice.

Check that the lamp and the lamp cover are securely installed.

When using above an altitude of about 1500 m, make sure you set the "High Altitude Mode" to "On".

Red ●

High internal temperature (overheating)

The lamp will switch off automatically and projection will stop. Wait for approximately 5 minutes. When the cooling fan stops, turn off the main power switch at the rear of the projector.

Orange ☼

High-speed cooling in progress

You can continue using the projector, but if the temperature rises again, it will switch off automatically.

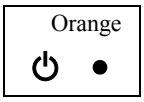
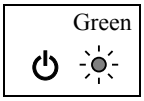
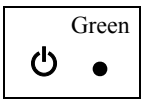
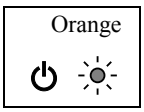
- If the projector is installed against a wall, leave a space of 20 cm or more between it and the wall.
- Clean the air filters if they are blocked.

→ If the problem is not solved when the power is turned back on, stop using the projector, turn off the main power switch, and disconnect the power cable from the electrical outlet. Then contact your dealer or the nearest address provided at "International Warranty Conditions" in Safety Instructions/World-Wide Warranty Terms booklet.

☐ When the ⏻ (operation) indicator is lit or flashing **normal**

When the ☼🌡 (warning) indicator is off

●: Lit ☼: Flashing

	**Standby condition**	If you press ⏻ , projection will start after a brief interval.
	**Warm-up in progress**	Warm-up time is approximately 30 seconds. Power off operations are ignored while warm-up is in progress.
	**Projection in progress**	Normal operation is in progress.
	**cool-down in progress**	Cool-down time is approximately 30 seconds. After cool-down is complete, the projector goes to standby mode. You cannot use the remote control or the projector's control panel during cool-down. If the main power switch at the rear of the projector is turned off before cool-down is complete, wait for the lamp to cool down (normally about one hour is required) before turning the power back on again.

Chapter 3 Troubleshooting

3.1 Before Carrying Out Troubleshooting

- If repairs involving the replacement of parts or components have been carried out, always be sure to re-check whether the replacement parts themselves are operating correctly or not in order to determine whether the problem is the result of something such as a loose connector.
- All instructions and procedures listed in troubleshooting flowcharts should be carried out as given.
- Follow the procedures given in Chapter 4 Disassembly and Assembly when replacing any of the projector components.
- When checking the operation of the projector, always check that the connectors are connected securely before proceeding to other checks.
- In order to confirm proper operation, use AC power from a normal source and use the correct cable type.

3.1.1 Troubleshooting Tools and Equipment

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

Table 3-1.

Name	Quantity	Application/Other
Projection screen	1	Projecting images
Tape measure (3 m)	1	Measuring projection distances
Host computer	1	Transmitting audio and image data
USB mouse	1	Checking the operation of the mouse
Video equipment	1	Transmitting audio and image data
Multi meter	1	Measuring resistance values and voltages (AC/DC)
Double-sided tape	Short length	Attaching parts
General tools	1 set	Tools and equipment listed in Section 4.1.2

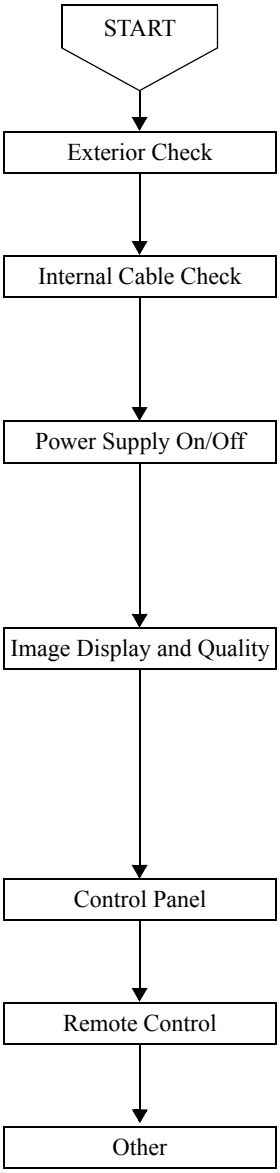
3.1.2 Field Replacement Parts

Many of the components that comprise a service unit have each been adjusted in relation to each other. Therefore, when replacing parts during troubleshooting or repair, do not disassemble service units in order to harvest and use constituent components. This is especially critical for the components in the optical engine (Light Guide Unit, Light Valves, Projection Lens, Prism Unit) and the MA Board.

- Carry out the safety tests after parts replacement is completed.

3.2 Overview

Check the nature of the problem using the following flow diagram, and then proceed to the corresponding flow chart (on the following pages).



- Check for any external abnormalities, such as a damaged case.

- Remove the Upper Case unit and check the cable connectors on the MA Board. Reconnect any loose cables as required.

- Connect the power cord and turn on the power. Check the initial operations until the **NO SIGNAL** message appears, and then check the power off operation.
  1). After power is turned on, the operation indicator flashes green and projection starts.
  2). After about 10 seconds, the operation indicator lights green, and projection starts at maximum brightness.

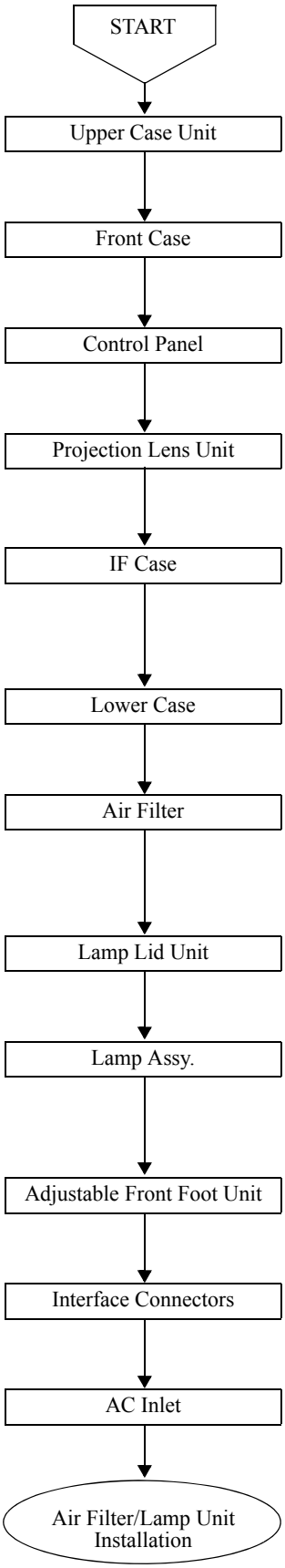
- Carry out the following steps.
  1). Check and adjust the projector's Front Feet as appropriate for the projection position and distance.
  2). Adjust the image using the Focus Ring.
- Display input/output and image quality. Use the **[Source]** and **[Enter]** buttons to change input.
  Check the quality of input and output signals from Component, S-Video, Video, PC, D, HDMI sources.

- Test the operation of each button on the control panel.

- Test the operation of each button on the remote control.

- Examine the unit for abnormal noise, image problems, unusual odors, and smoke.

3.2.1 Exterior Check



- There should be no damage, deformation or cracking due to external forces.
- The lower case should be installed correctly.

- The remote signal receiver should be clean and free from foreign materials.
- Air vents should be clean.

- The Upper Case should be correctly installed.
- No buttons should be stuck down.

- The Vertical lens adjustment dial and Horizontal lens adjustment dial should turn smoothly.
- The Lens should be clean and free from damage.

- There should be no damage, deformation or cracking due to external forces.

- The remote signal receiver should be clean and free from foreign materials.
- There should be no damage, deformation or cracking due to external forces.
- The vent hole should be clean and free from any foreign materials.

- The Air filter should be installed to the lower case correctly.
- Remove the Air Filter from the Lower Case to check that it is clean.

- The Lamp lid should be securely attached to the Lower Case.
- The Lamp Lid Detection Switch latch should be free from damage.

- Plastic frame should be free from any deformation, damage or discoloration from heat. Remove the Lamp Assy. to check.
- Power supply connector should be free from discoloration.
- The glass surface of lamp should be clean.

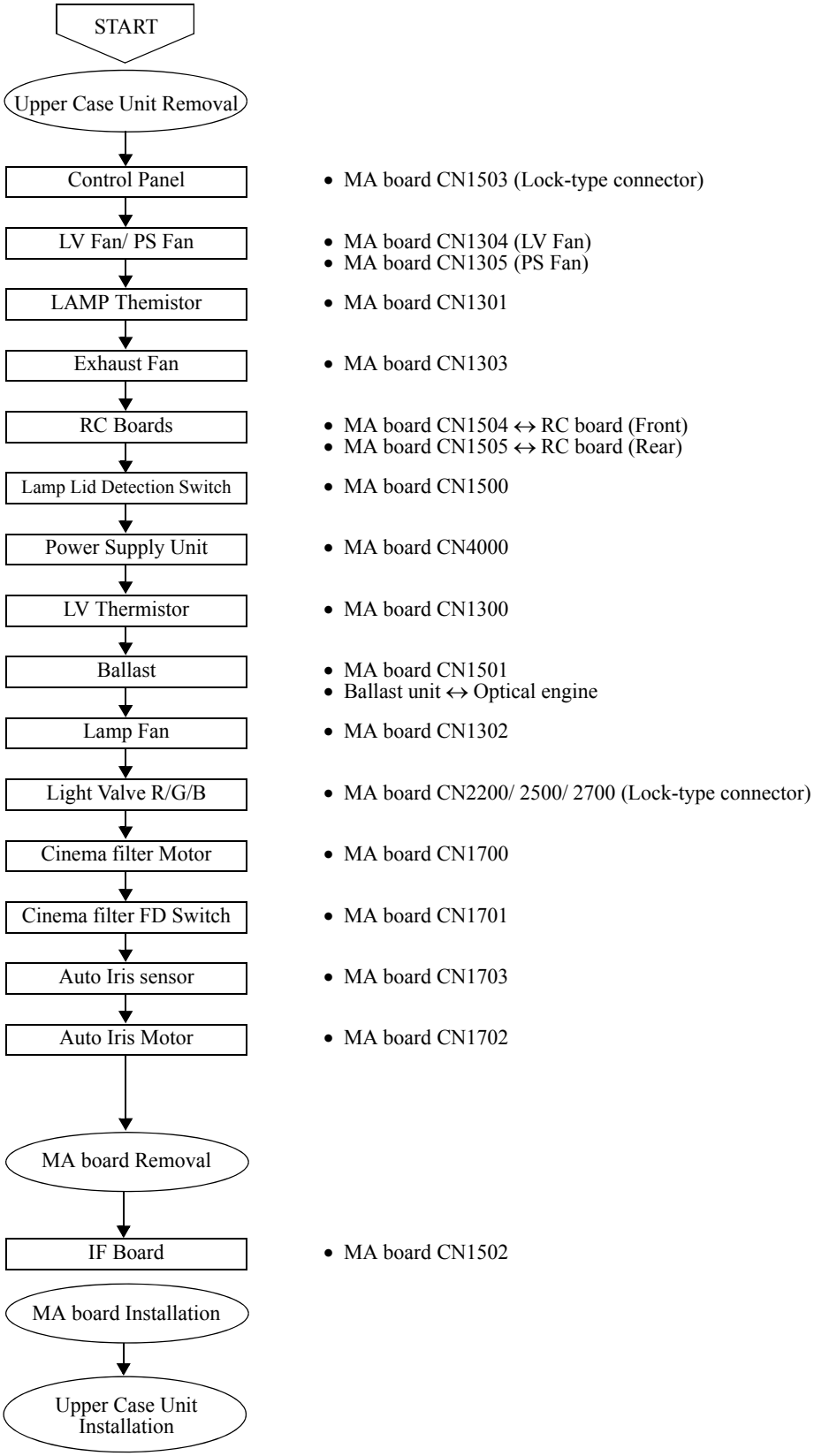
- Can the projection height be adjusted with the foot unit?

- The connectors and terminals should not be bent or discolored.
- The connectors and terminals should be free from foreign materials.

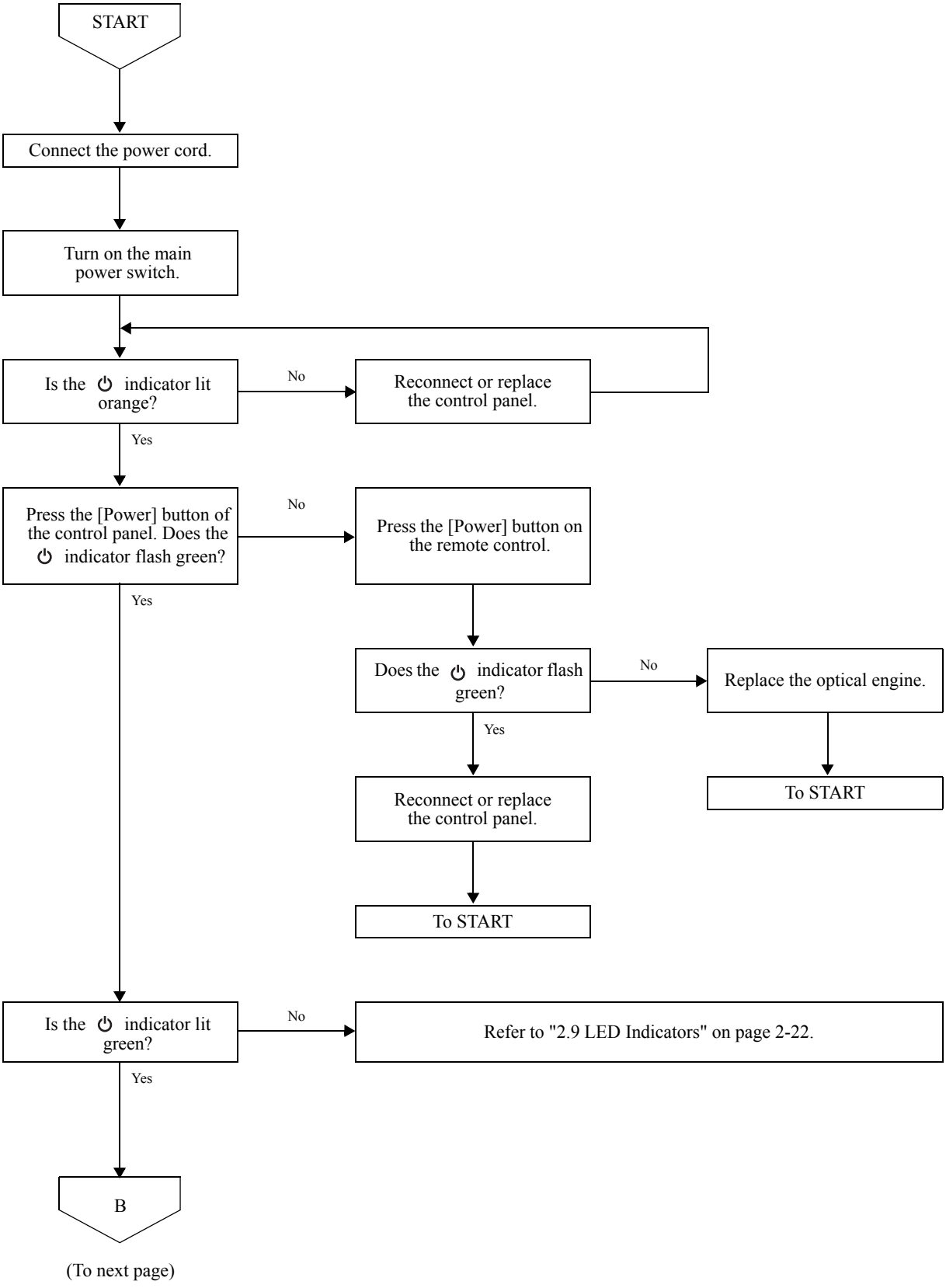
- The AC Connectors should not be discolored.
- The AC source Socket should be free from damage.

3.2.2 Internal Cable Check

Turn off the power and disconnect the power cable before you begin the following connector checks. See Figure 2-2 on page 2-3 for the location of the MA Board connectors.



3.2.3 Power Supply On/Off



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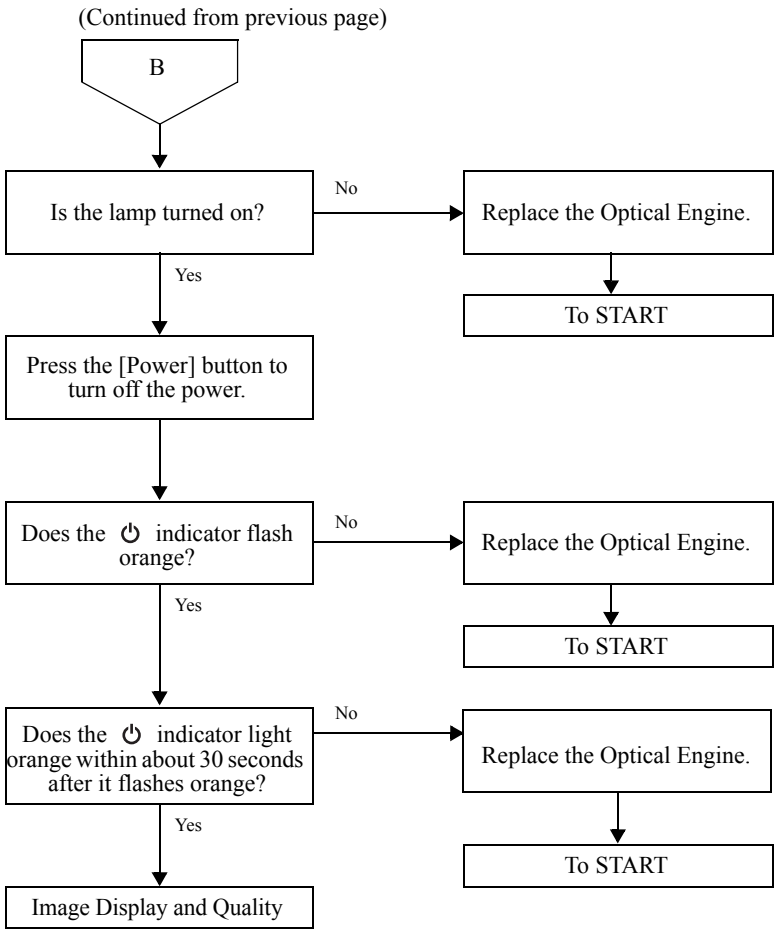


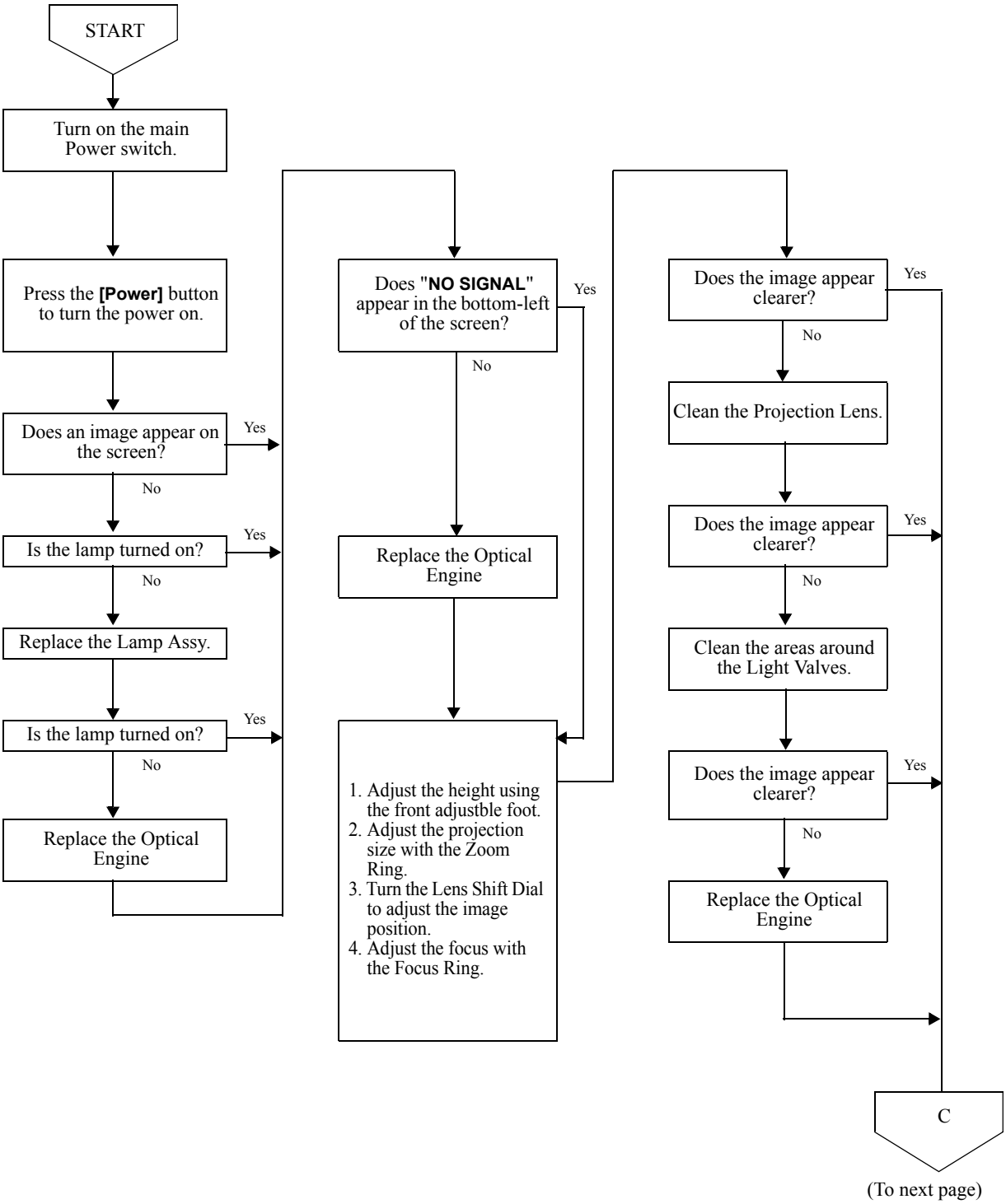
Remedy For Power Supply Problems

1. Determine whether the problem is being caused by components inside the power supply unit, or whether it is being caused by some external factor. To determine this, check factors such as output voltage, internal temperature, appearance of components, odors and smoke.
2. If the cause is judged to be an internal problem, replace the power supply unit. If the newly-replaced power supply unit also has a problem and the symptoms are the same as before, then the cause of the problem is probably some external factor. Eliminate the external factor that is causing the problem.
3. If the power supply unit is recoverable but is not working properly, for example if high temperatures are causing the thermostat to shut down the power supply, or if the overcurrent protection circuit has tripped, then there is no need to replace the power supply unit.
4. If the power supply unit is not recoverable and is not working properly, for example if an overcurrent has repeatedly blown the fuse, replace the power supply unit.

3.2.4 Image Display and Quality

CAUTION

■ The image quality can also be affected by condensation or by a dirty lens. If condensation forms, the problem will correct itself naturally if the projector is left to stand for a while.



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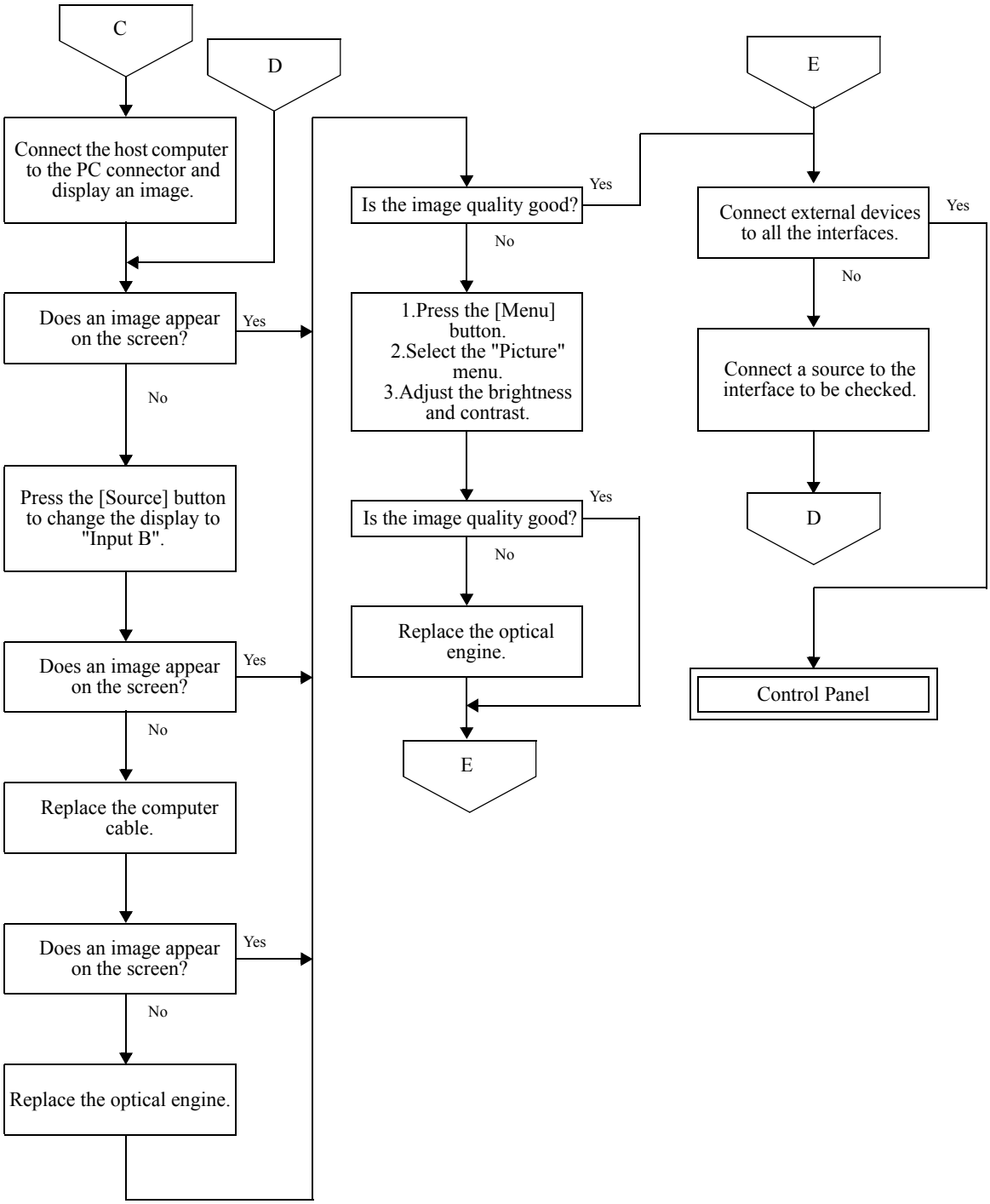
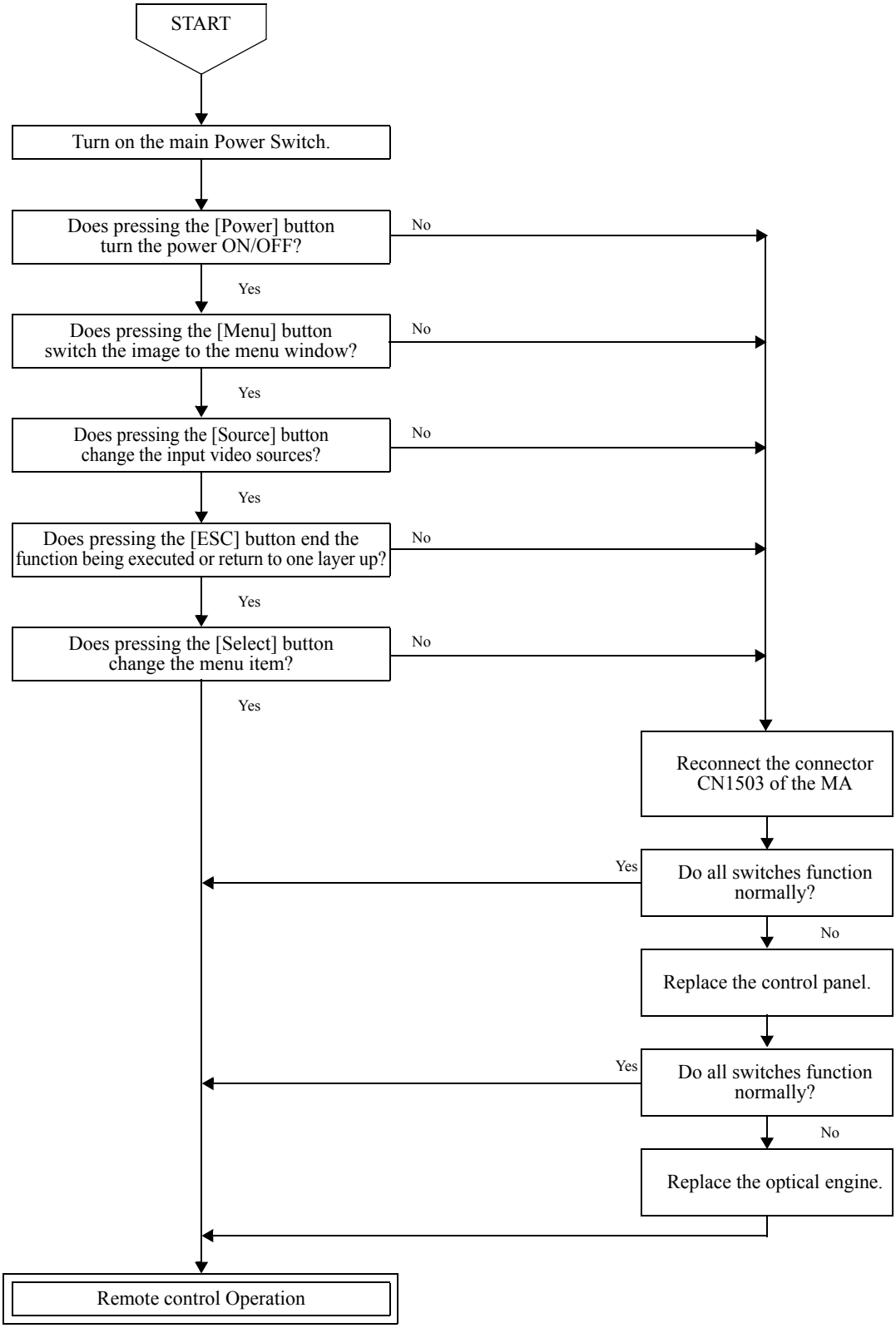
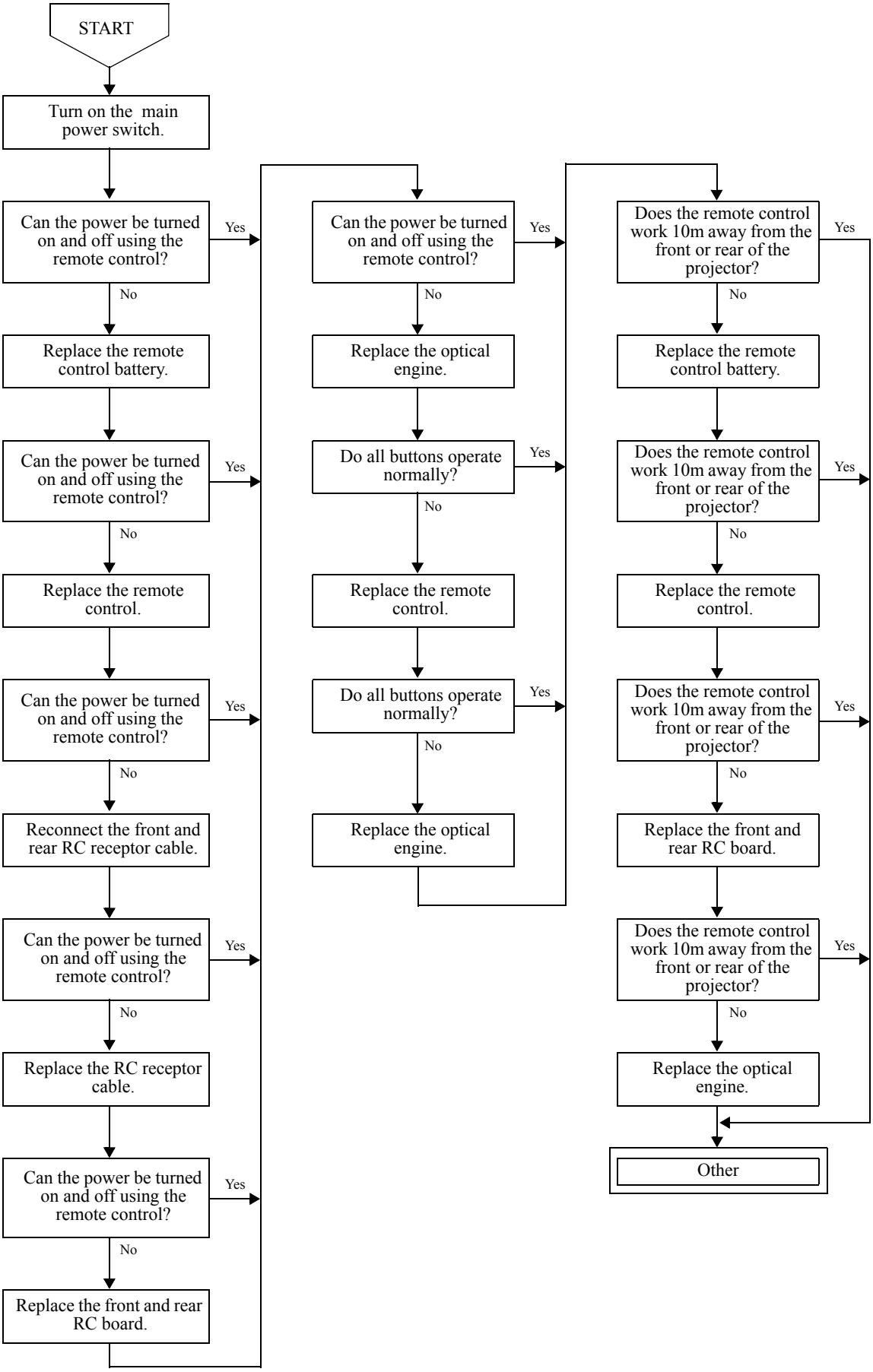


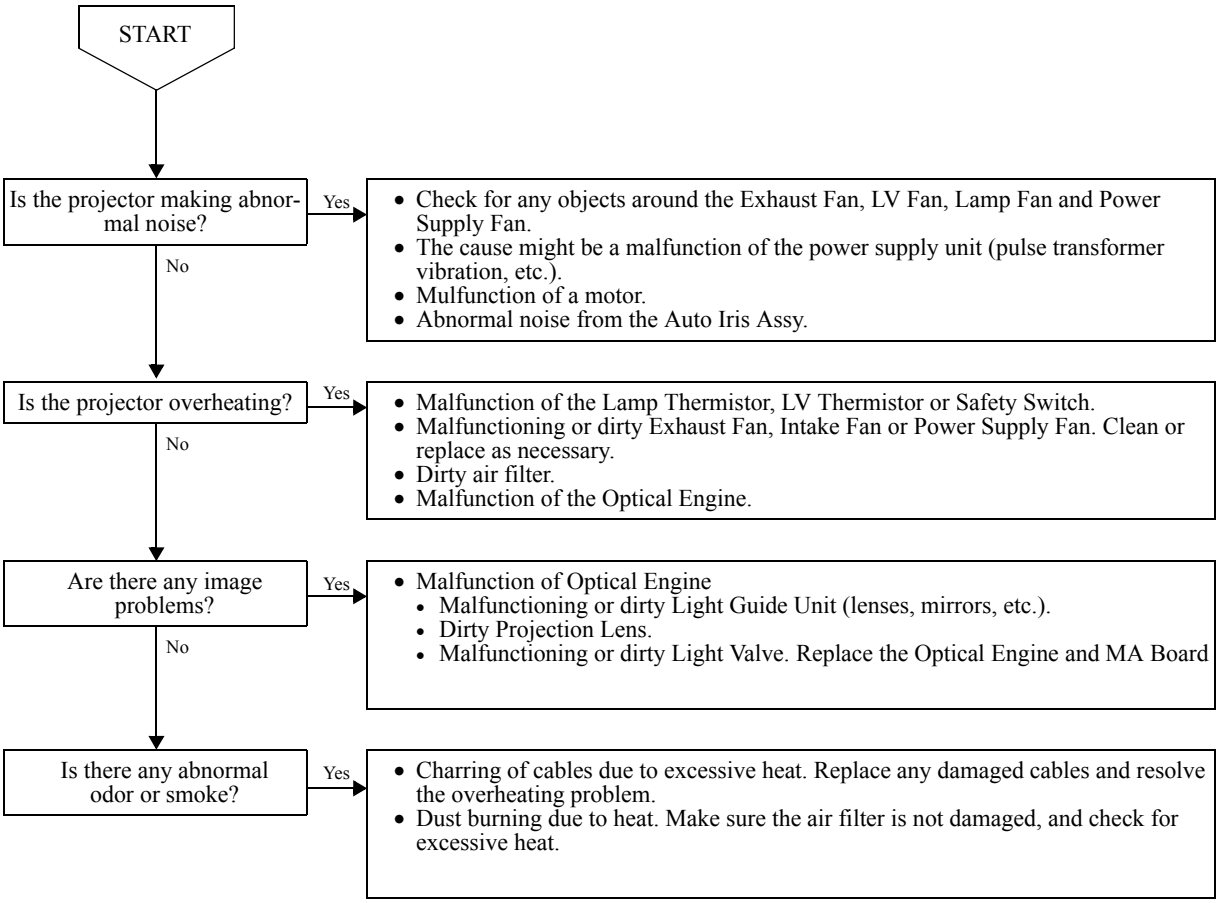
3.2.5 Control Panel



3.2.6 Remote control operation



3.2.7 Other


START
Is the projector making abnormal noise?
Yes
• Check for any objects around the Exhaust Fan, LV Fan, Lamp Fan and Power Supply Fan.
• The cause might be a malfunction of the power supply unit (pulse transformer vibration, etc.).
• Mulfunction of a motor.
• Abnormal noise from the Auto Iris Assy.
No
Is the projector overheating?
Yes
• Malfunction of the Lamp Thermistor, LV Thermistor or Safety Switch.
• Malfunctioning or dirty Exhaust Fan, Intake Fan or Power Supply Fan. Clean or replace as necessary.
• Dirty air filter.
• Malfunction of the Optical Engine.
No
Are there any image problems?
Yes
• Malfunction of Optical Engine
• Malfunctioning or dirty Light Guide Unit (lenses, mirrors, etc.).
• Dirty Projection Lens.
• Malfunctioning or dirty Light Valve. Replace the Optical Engine and MA Board
No
Is there any abnormal odor or smoke?
Yes
• Charring of cables due to excessive heat. Replace any damaged cables and resolve the overheating problem.
• Dust burning due to heat. Make sure the air filter is not damaged, and check for excessive heat.

Chapter 4 Disassembly/Assembly

4.1 Overview

This chapter describes the procedures for disassembling and assembling the main components of the EMP-TW1000 projector. Unless otherwise specified, reassembly is the reverse of the disassembly procedure. Read the precautions described in the next section before starting.

4.1.1 Precautions

Some procedures require specific precautions that must be followed, and those will be noted throughout this chapter. Note the following precaution definitions:

WARNING

Procedures which, if not strictly observed, could result in personal injury are described under the heading **WARNING**

CAUTION

CAUTION signals a precaution which, if ignored, could result in damage to equipment.

REASSEMBLY

If assembly needs special attention or the procedure is different from the reversed disassembly procedure, the correct procedure is described under the heading **REASSEMBLY**.

CHECK POINT

Important tips for procedures are described under the heading **CHECK POINT.**

The precautions in the two lists below, WARNING and CAUTION, must always be followed during disassembly and assembly. Before starting the disassembly work on this product, read and follow these precautions.

WARNING

- No work should be performed on the unit by persons unfamiliar with basic safety measures as dictated for all electronics technicians in their line of work.
- Remove any metallic objects such as wristwatches, shirt cuff buttons, rings and tie pins which may pose a danger of coming into contact with the projector.
- Always wear gloves when disassembling and reassembling the projector.
- Disconnect the power cord from both the projector and the electrical outlet.
- If you need to work on the projector with power applied, strictly follow the instructions in this manual. When the power supply cable must be connected, use extreme caution in working on the power supply and other electronic components.

CAUTION

- Repairs on Epson product should only be performed by an Epson certified repair technician.
- Turn off the power for both the projector and the host computer before disconnecting or connecting them.
- Once all power has been turned off, disconnect any interface cables that are still connected.
- Use a vacuum cleaner to clean the air filter, interface panel and outer case.
- Use only recommended tools for disassembly, assembly or adjustment of the projector.
- Always verify that the product has been unplugged from the AC power source before disconnecting, removing, or replacing any cables or printed circuit boards.
- Use static discharge equipment such as anti-static wrist straps when accessing internal components to protect sensitive electronic components and circuitry.
- Do not use second source ICs or other components not approved by Epson. They could cause damage to the Epson product or could void the Epson warranty.

4.1.2 Tools and Equipment

The tools and equipment in the following table will be needed. All are commercially available, and should be made ready beforehand.

Table 4-1. Tools Needed

Name	Application
Phillips screwdriver No. 0	Disassembling the Focus ring
Phillips screwdriver No. 2 (20 cm)	Disassembling the outer case and inner components
Flathead screwdriver	Disassembling the rear foot and the front foot
Flathead precision screwdriver	Removing the front foot
Hexagonal box screwdriver (5 mm)	Removing the computer interface
Brush	Cleaning away dust
Vacuum cleaner	Cleaning away dust
Lens cleaner	Cleaning the projection lens
Air blower	Cleaning the light valves and fans
Gloves	Protection against sharp edges Antislip and static protection
Grounding strap	Anti-static protection
Heat-resistant tape	Securing cables

4.1.3 Projector-Specific Service Precautions

CHECK POINT

The Optical Engine and Main (MA) Board are paired together as a single service part. Neither is available separately. For service that requires the replacement of either the MA Board or the Optical Engine, both components must be replaced 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.

- Always replace the Optical Engine and MA Board together as a matched pair.
- Do not disassemble the Optical Engine.
- Do not replace the component parts of the Optical Engine with parts from other Optical Engines.

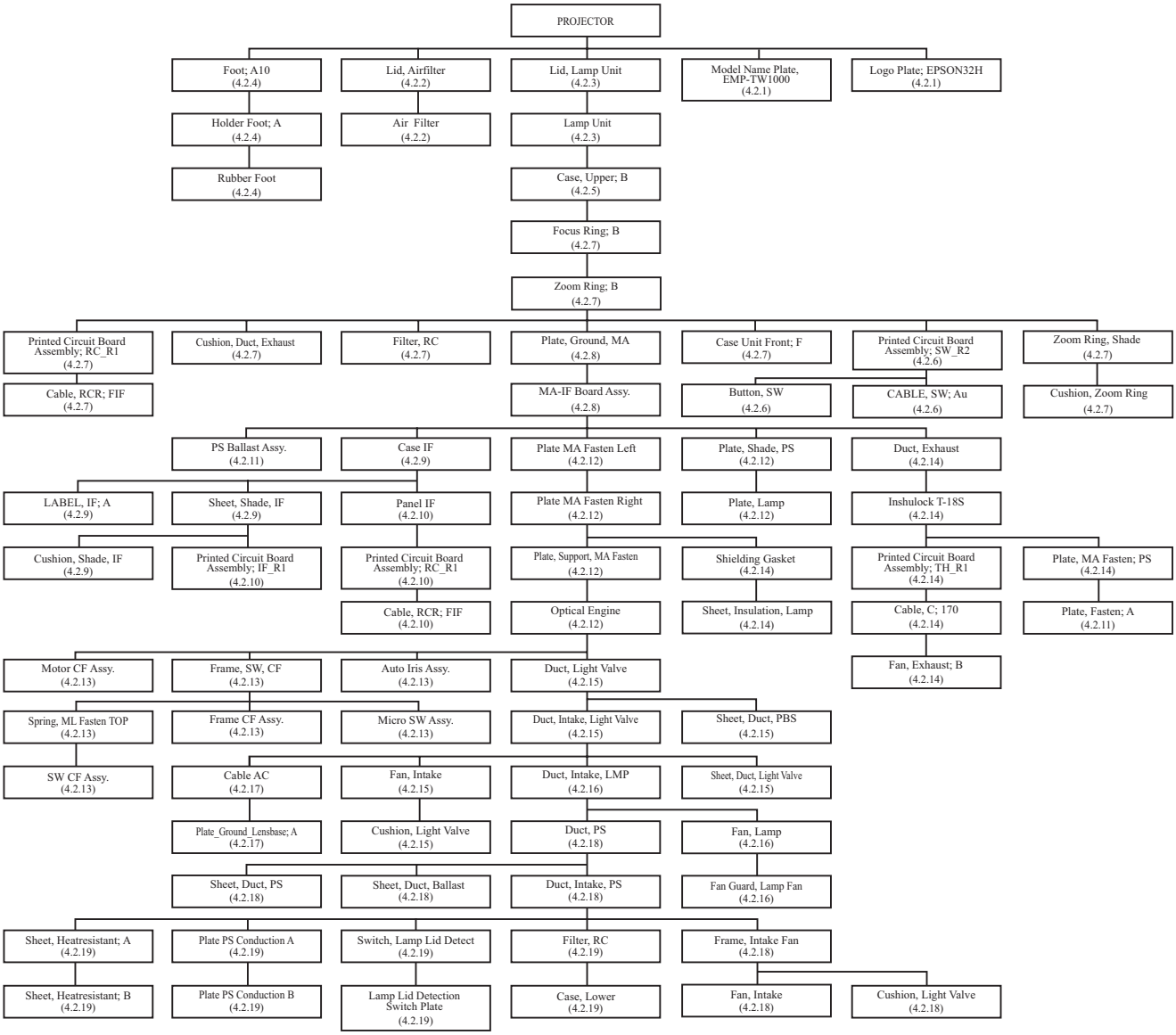
Points to Note When Working

Detailed points to note are given in each section, so be sure to read each section thoroughly before beginning the disassembly procedure. Below are several general points which should be noted.

- 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, check whether any of the parts are dusty or dirty, and use a vacuum cleaner to ***clean them first before carrying out disassembly work***.
- The Optical Engine and the circuit boards are very sensitive to static electricity. Place them inside static-proof bags once they have been removed from the projector.
- When carrying out any of the following operations, check that there is no dust or dirt on the respective components or on any lens and glass surfaces before installation. If any such contamination is found, clean it off using isopropyl alcohol.
  - Optical engine removal
  - Lamp inner unit removal
  - Air filter removal
- The speaker unit contains a permanent magnet, so keep it away from any storage media such as floppy disks and magnetic cards.
- The Optical Engine is very sensitive to vibration and shocks, so handle it with care.
- Do not disassemble any components (such as the power supply unit) which do not have express disassembly procedures described in this Service Manual.

4.2 Projector Disassembly and Assembly

The general disassembly procedure for the EMP-TW1000 projectors is illustrated below. Except where indicated separately, all reassembly should be carried out by following the disassembly procedures in reverse. Detailed disassembly procedures for each component are given in Sections 4.1.2 to 4.2.19, which links to the flowchart given below.



CHECK POINT

Part names indicated in the above flow and used in this chapter are simplified names. See the “Part Names given in the SPI” table on the next page to know their corresponding official names.

Figure 4-1.

The table below shows the part names used in this chapter and their official names given in the After Service Part List in the SPI (Service Part Information).

Official Name used in SPI	Names used this Chapter
Optical Engine and MAB set	Optical Engine
ELPLP35 Spare Lamp	Lamp Unit
CASE, LOWER	Lower Case
LAMP LID DETECTION SWITCH PLATE	Lamp Lid Detection Switch Plate
SWITCH,LAMP LID DETECT	Lamp Lid Detection Switch
AIR FILTER	Air Filter
LID, AIRFILTER	Air Filter Lid
FILTER, RC	RC Filter
PLATE PS CONDUCTION A	Plate PS Conduction A
PLATE PS CONDUCTION B	Plate PS Conduction B
CUSHION, LIGHT VALVE	Light Valve Cushion
CABLE AC	AC Cable
PLATE_GROUND_LENSBASE; A	Lensbase Ground Plate; A
Foot; A10	Foot; A10
RUBBER FOOT	Foot Rubber
HOLDER FOOT; A	Foot Holder; A
SHEET, DUCT, PS	PS Duct Sheet
LID, LAMP UNIT	Lamp Unit Lid
sheet, heatresistant; A	Heatresistant Sheet; A
sheet, heatresistant; B	Heatresistant Sheet; B
DUCT, INTAKE, PS	PS Intake Duct
FAN, INTAKE	Intake Fan
frame, intake fan	Intake Fan Frame
DUCT, INTAKE, LIGHT VALVE	Light Valve Intake Duct
SHEET, DUCT, LIGHT VALVE	Light Valve Intake Sheet
SHEET, DUCT, PBS	PBS Duct Sheet
DUCT, LIGHT VALVE	Light Valve Duct
DUCT, INTAKE, LMP	LMP Intake Duct
FAN, LAMP	Lamp Fan
FAN GUARD, LAMP FAN	Lamp Fan Guard
DUCT, PS	PS Duct
SHEET, DUCT, BALLAST	Ballast Duct Sheet
PS BALLAST ASSY.	PS Ballast Assy.
MOTOR CF ASSY.	Motor CF Assy.
AUTO IRIS ASSY	Auto Iris Assy.
FRAME CF ASSY.	Frame CF Assy.
SPRING, ML FASTEN, TOP	Top ML Fasten Spring
SW CF Assy.	CF SW Assy.
MICROSW, ASSY.	Micro SW Assy.
PLATE, LAMP	Lamp Plate
DUCT, EXHAUST	Exhaust Duct
PLATE, FASTEN; A	Fasten Plate; A

Official Name used in SPI	Names used this Chapter
FAN, EXHAUST; B	Exhaust Fan; B
PRINTED CIRCUIT BOARD ASSEMBLY; TH_R1	TH Board Assy.
INSHULOCK T-18S	Inshulock T-18S
CASE UNIT, FRONT; F	Front Case Unit; F
PRINTED CIRCUIT BOARD ASSEMBLY; RC_R1	RC Board Assy.
CABLE, C; 170	C Cable; 170
CABLE, RCR; FIF	RCR Cable; FIF
LOGO PLATE; EPSON32H	EPSON 32H Logo Plate
CUSHION, DUCT, EXHAUST	Exhaust Duct Cushion
PLATE, SHADE, PS	PS Shade Plate
PLATE, SUPPORT, MAFASTEN	MA Fasten Support Plate
PLATE MAFASTEN RIGHT	MA Fasten Plate Right
SHIELDING GASKET	Shielding Gasket
PLATE MAFASTEN LEFT	MA Fasten Plate Left
PLATE, MAFASTEN; PS	MA Fasten Plate; PS
CASE IF	IF Case
SHEET, SHADE, IF	IF Shade Sheet
LABEL IF; A	IF Label; A
PRINTED CIRCUIT BOARD ASSEMBLY; IF_R1	IF Board Assy.
PANEL IF	IF Panel
cushion_shade_if	IF Shade Cushion
PLATE, GROUND, MA	MA Ground Plate
CASE, UPPER;B	Upper Case; B
PRINTED CIRCUIT BOARD ASSEMBLY; SW_R2	SW Board Assy.
BUTTON, SW	SW Button
cable sw; Au	Cable SW; Au
MODEL NAME PLATE, EMP-TW1000	EMP-TW1000 Model Name Plate
FOCUS RING; B	Focus Ring; B
ZOOM RING; B	Zoom Ring; B
ZOOM RING,SHADE	Zoom Ring Shade
CUSHION,ZOOM RING	Zoom Ring Cushion
SHEET,INSULATION,LAMP	Lamp Insulation Sheet

4.2.1 Removing the EMP-TW1000 Model Name Plate and EPSON 32H Logo Plate

1. Using a screwdriver or a similar tool, push the EMP-TW1000 Model Name Plate from its backside through the hole of the Upper Case; B, and remove the plate. (When removing the Upper Case; B, refer to p.13)
2. Using a screwdriver or a similar tool, push the EPSON 32H Logo Plate from its backside through the hole of the Upper Case; B, and remove the plate. (When removing the Front Case Unit; F, refer to p.17)

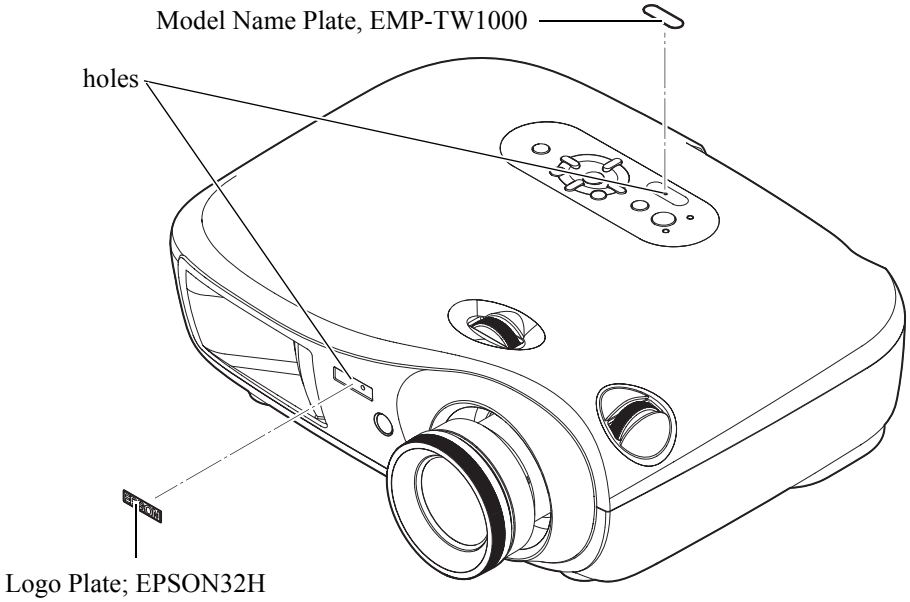


Figure 4-2.

4.2.2 Removing the Air Filter Lid and Air Filter

1. Press the tab of the Air Filter Lid in the direction of the arrow, and remove the Air Filter Lid.
2. Remove the Air Filter from the main unit.

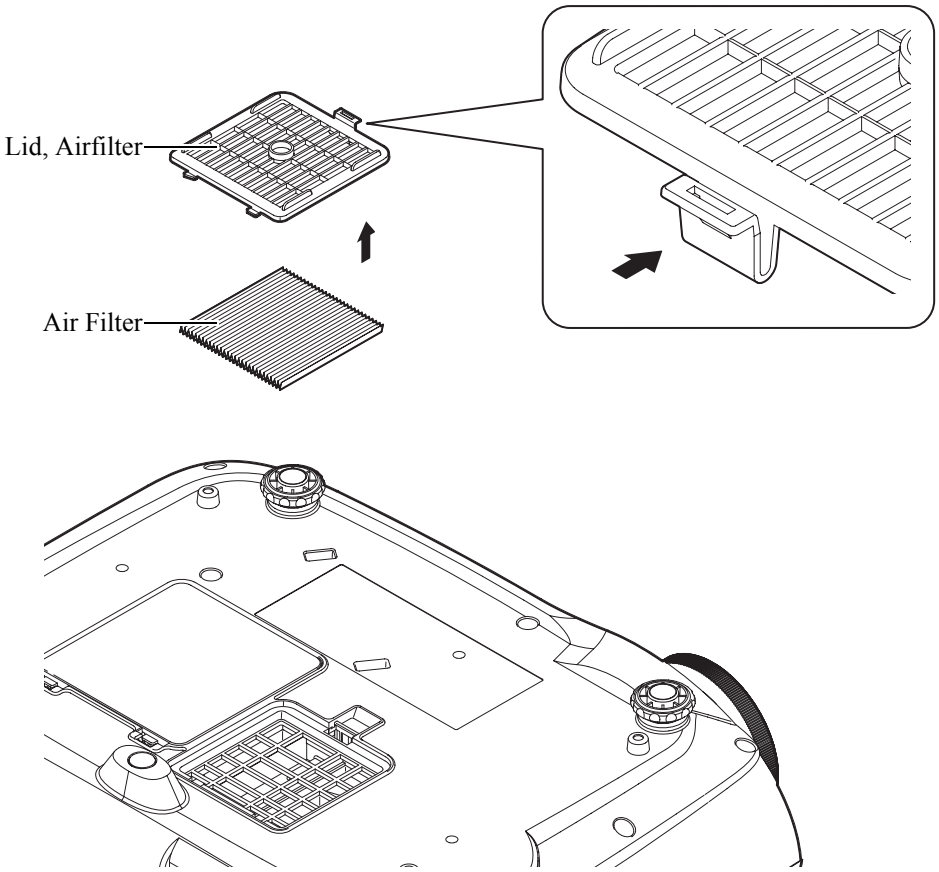


Figure 4-3.

4.2.3 Removing the Lamp Unit Lid and Lamp Unit

1. Press the tabs of the Lamp Unit Lid in the direction of the arrow, and remove the Lamp Unit Lid.
2. Loosen the two screws that secure the Lamp Unit, and remove the Lamp Unit.

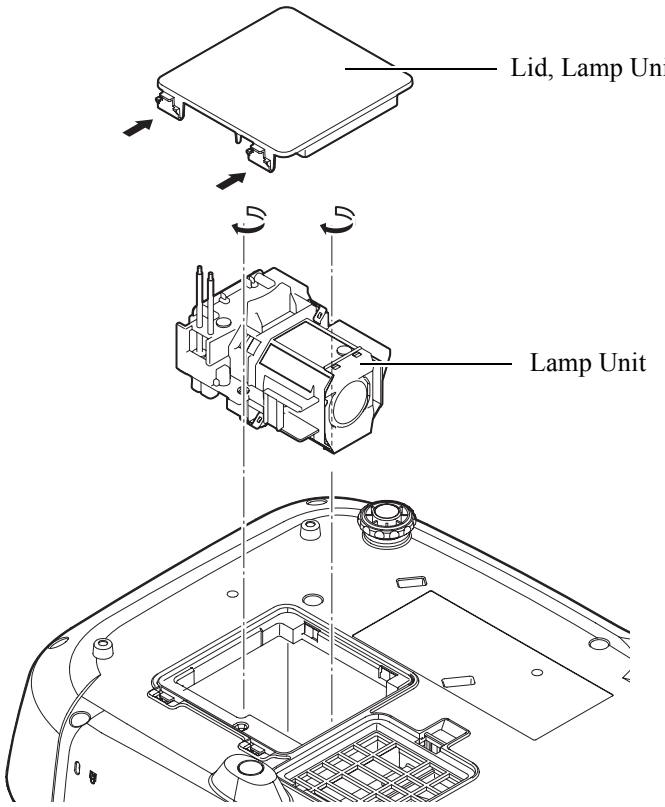


Figure 4-4.

4.2.4 Removing the Foot; A10, Foot Holder; A, and Foot Rubber

1. Pull out the foot as far as it will go, insert a flat-blade screwdriver into the grooves on both sides of the Foot; A10, and remove the Foot Holder; A and the Foot; A10 while pressing the tabs in the direction of the arrow.
2. Insert a flat-blade screwdriver or a similar tool into the contact surface of the Foot; A10 and Foot Rubber, and push out the Foot Rubber.

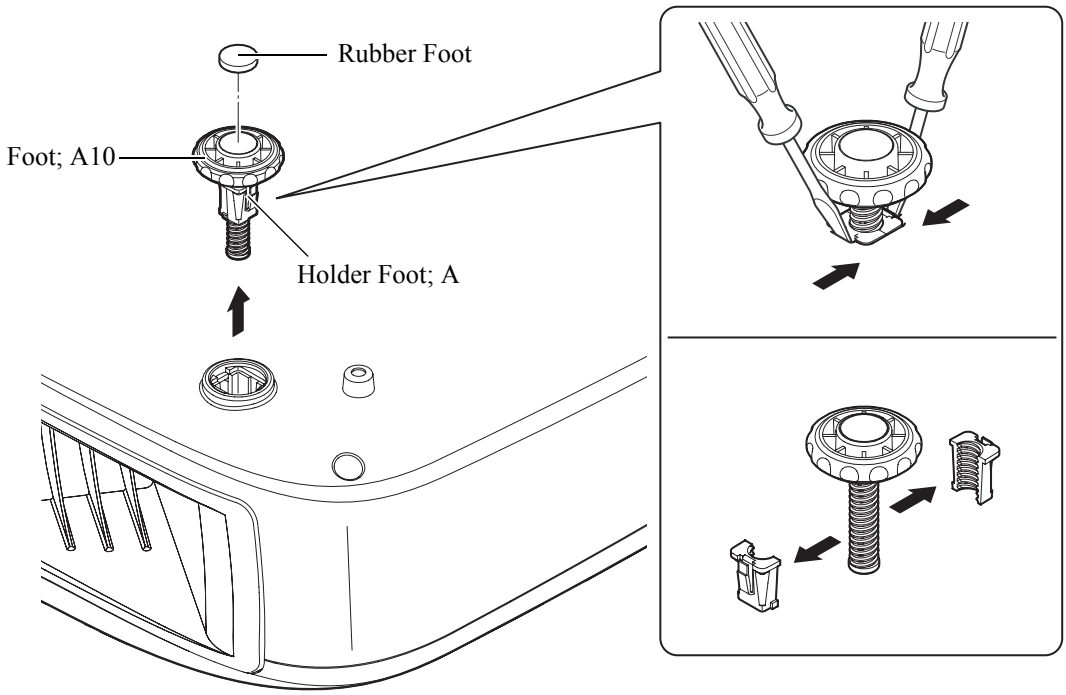


Figure 4-5.

4.2.5 Removing the Upper Case; B

1. Remove the eight screws (C.B.P-TITE SCREW, 4x10, F/ZN-3C) that secure the Upper Case; B.

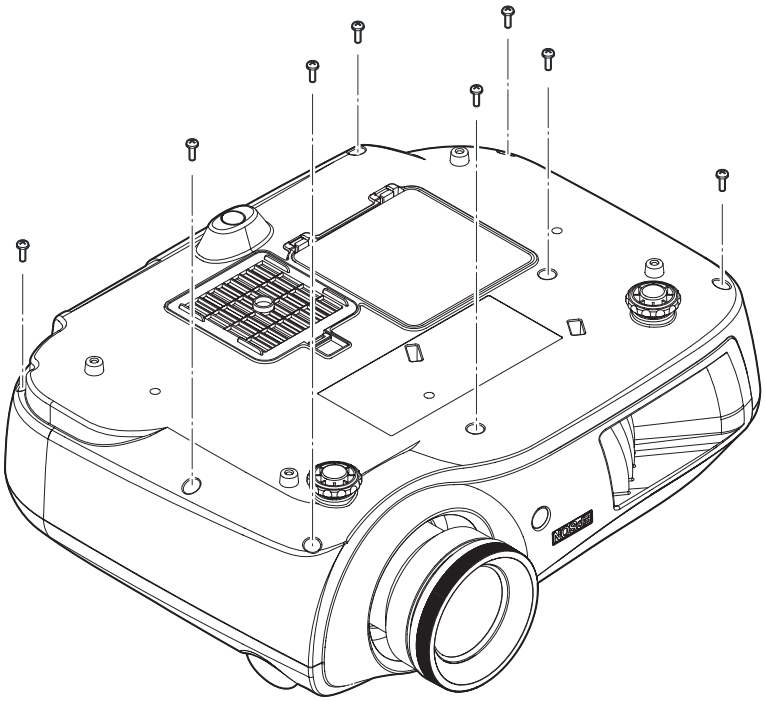


Figure 4-6.

2. Remove the two screws (C.B.SCREW, 3x8, F/NI) that secure the IF Case to the Upper Case; B.
3. Lift up the Upper Case; B.
   (Pay attention to the Cable SW; Au connecting the Upper Case; B and the MA board.)

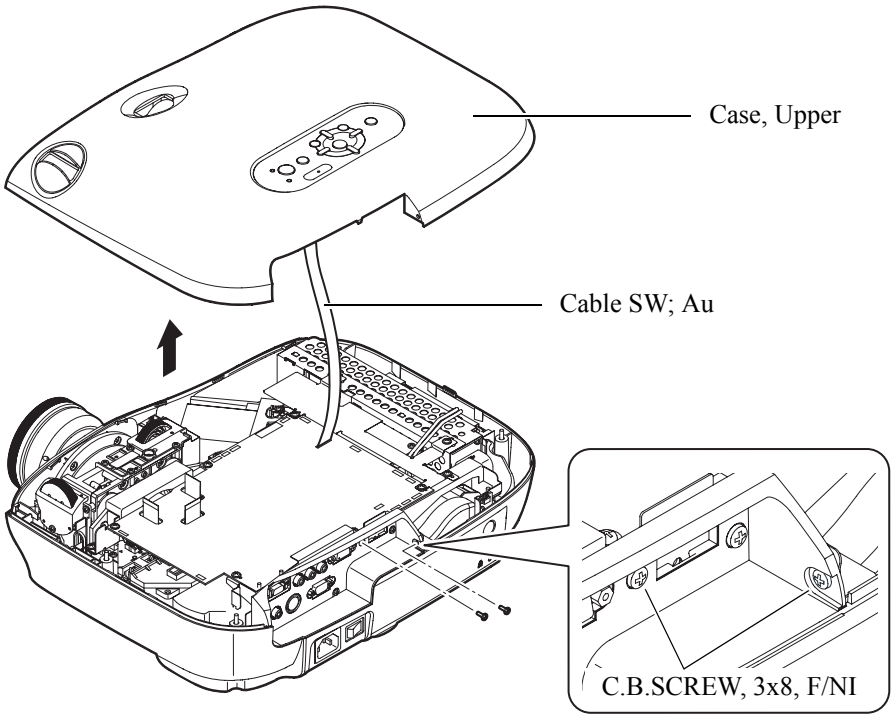


Figure 4-7.

4. Release the lock of the connector (CN1205) on the MA board, and take out the Cable SW;Au.

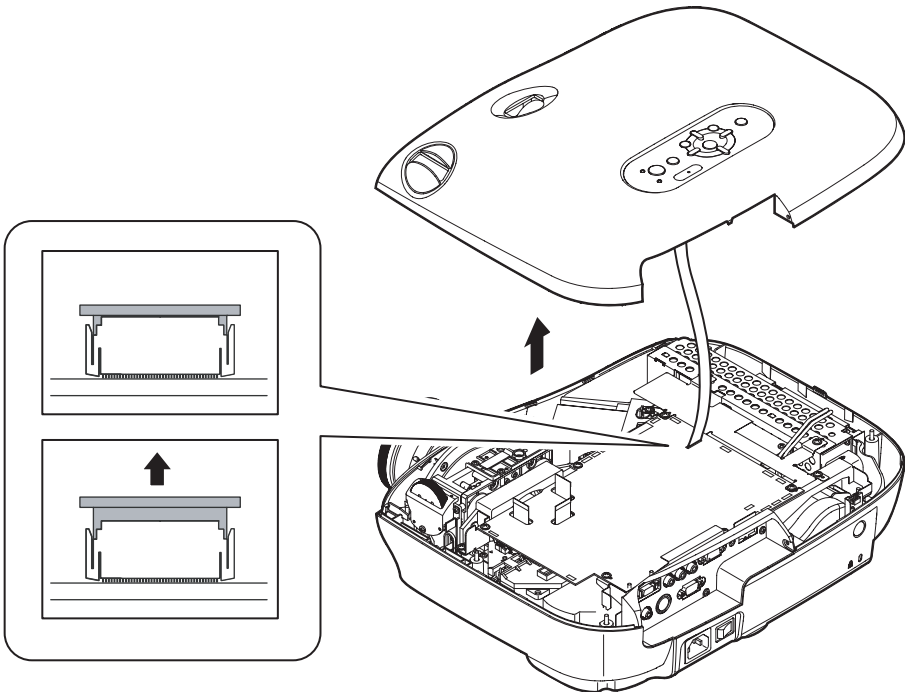


Figure 4-8.

4.2.6 Removing the SW Board Assy., Cable SW;Au, and SW Button

1. Remove the four screws (C.C.P-TITE SCREW 3x8, F/ZN-3C) that secure the SW Board Assy., and remove the screw (C.C.P-TITE SCREW 3x8, F/ZN-3C) that secures the SW Button.
2. Remove the SW Board Assy. and SW Button.
3. Pull out the Cable SW;Au from the SW Board Assy.

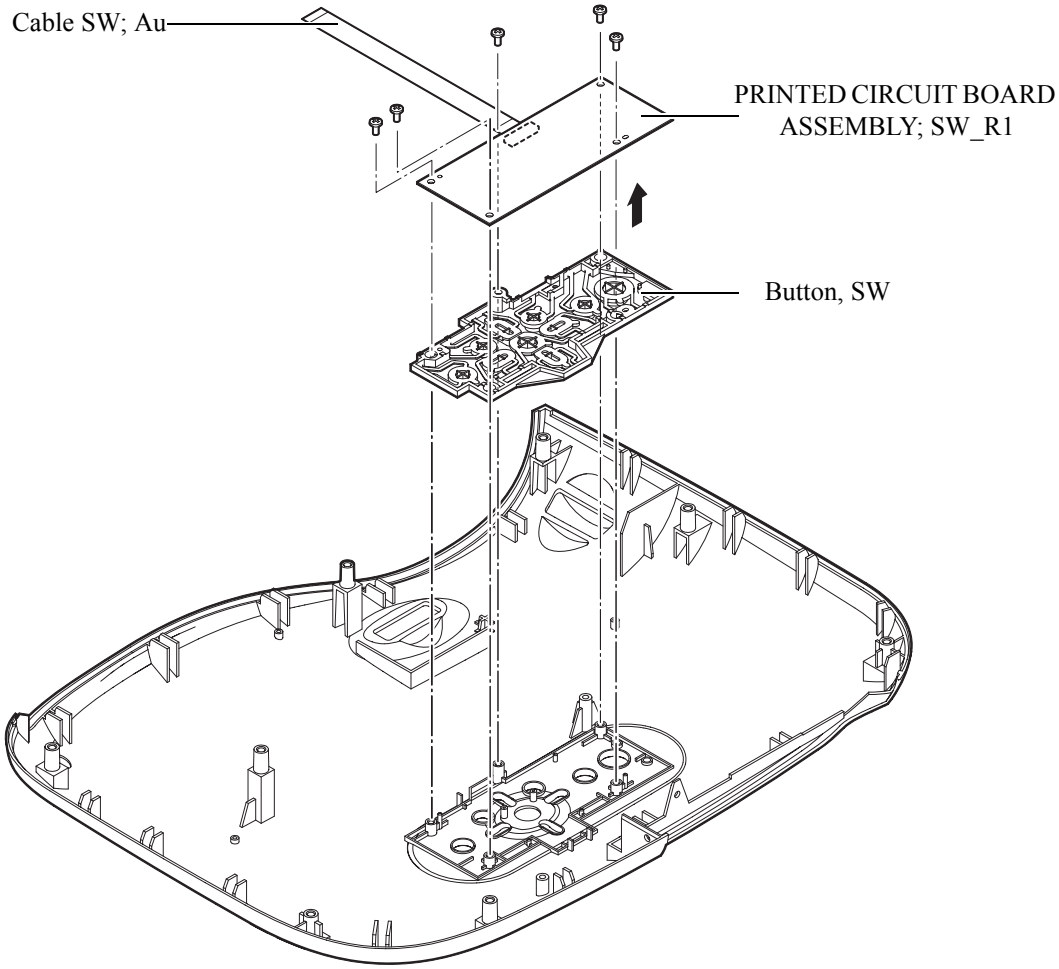


Figure 4-9.

CAUTION

Fold the EMI suppressor;B along the dotted line and attach it on the Cable SW;Au while wrapping the Cable SW;Au as shown in Figure 4-10.

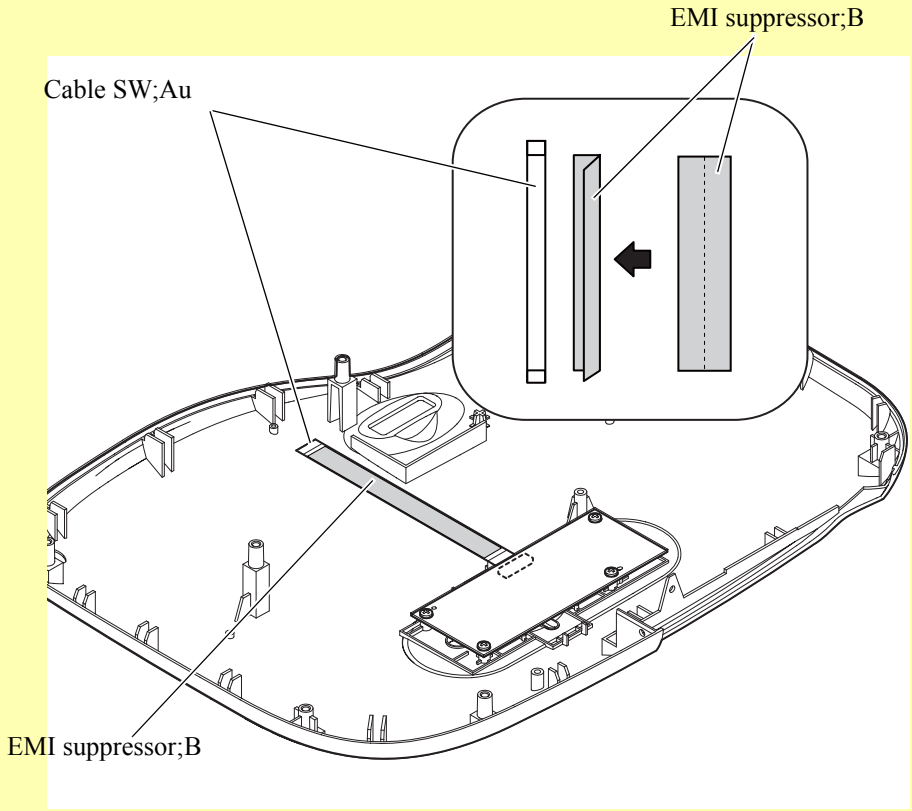


Figure 4-10.

4.2.7 Removing the Focus Ring; B, Zoom Ring; B, Zoom Ring Shade, Zoom Ring Cushion, Front Case Unit; F, RC Board Assy., RCR Cable; FIF, RC Filter, and Exhaust Duct Cushion

1. Remove the three screws (C.P.B-TITE SCREW, 1.7x4, F/NI) that secure the Focus Ring; B, and remove the Focus Ring; B.
2. Remove the three screws (C.P.B-TITE SCREW, 1.7x4, F/NI) that secure the Focus Ring; B, and remove the Focus Ring; B.
3. Remove the two screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the Front Case Unit; F.
4. Disconnect the RCR Cable; FIF from CN1504 connector on the MA board, and remove the Front Case Unit; F.
5. Remove the Zoom Ring Shade from the Optical Engine.
6. Remove the Zoom Ring Cushion from the Zoom Ring Shade.

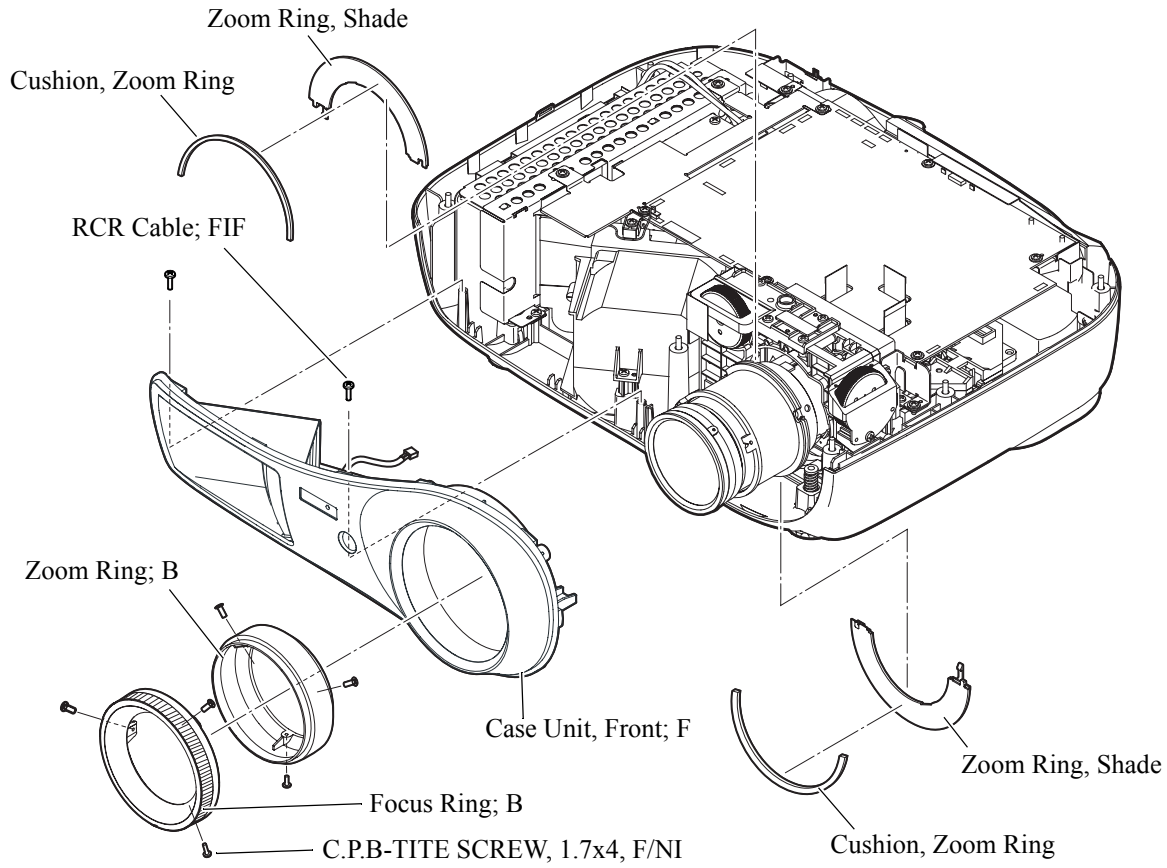


Figure 4-11.

7. Remove the screw (C.C.P-TITE SCREW, 3x6, F/ZN-3C) that secures the RC Board Assy., and remove the RC Board Assy.
8. Remove the RCR Cable; FIF from the RC Board Assy.
9. Remove the RC Filter from the Front Case Unit; F.
10. Remove the Exhaust Duct Cushion from the Front Case Unit; F.

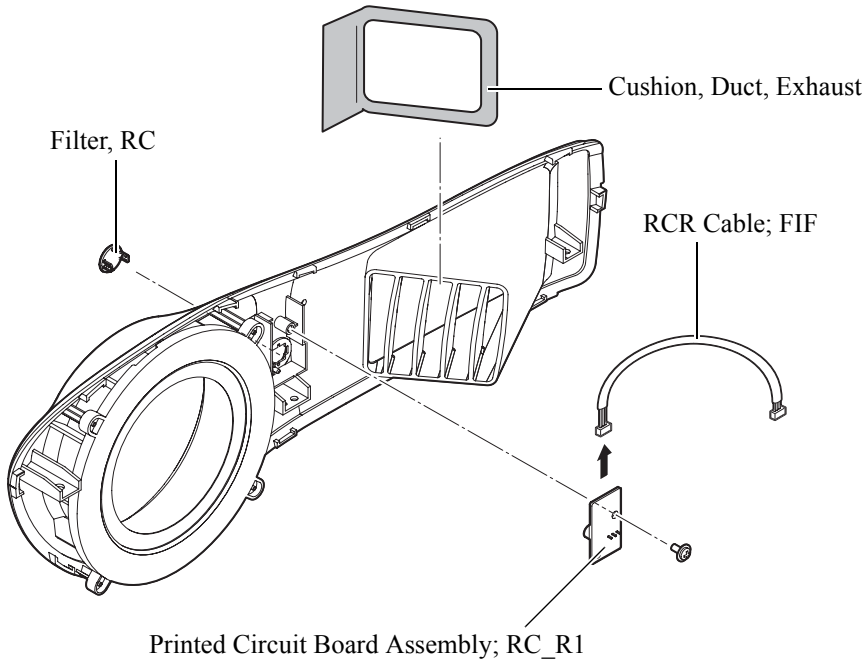


Figure 4-12.

CAUTION

When connecting the RCR Cable; FIF, route the cable toward the Projection Lens as shown in the Figure 4-13.

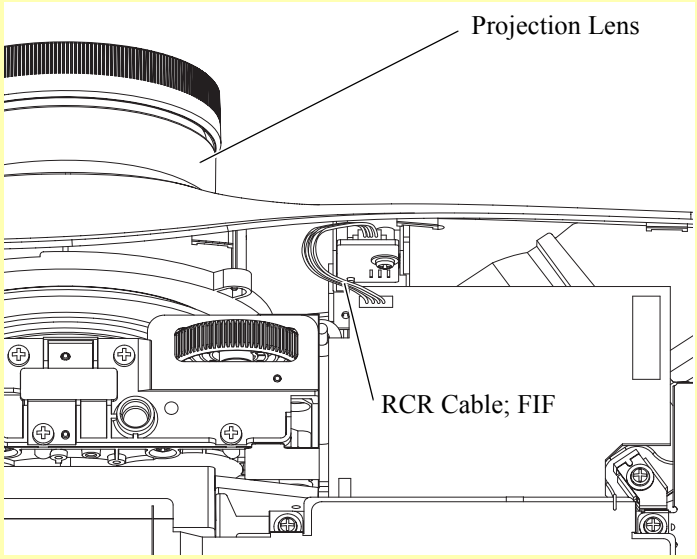


Figure 4-13.

4.2.8 Removing the MA Ground Plate and MA-IF Board Assy.

1. Release the locks of the R, G, and B light valve cable connectors, and disconnect the R, G, and B light valve cables.

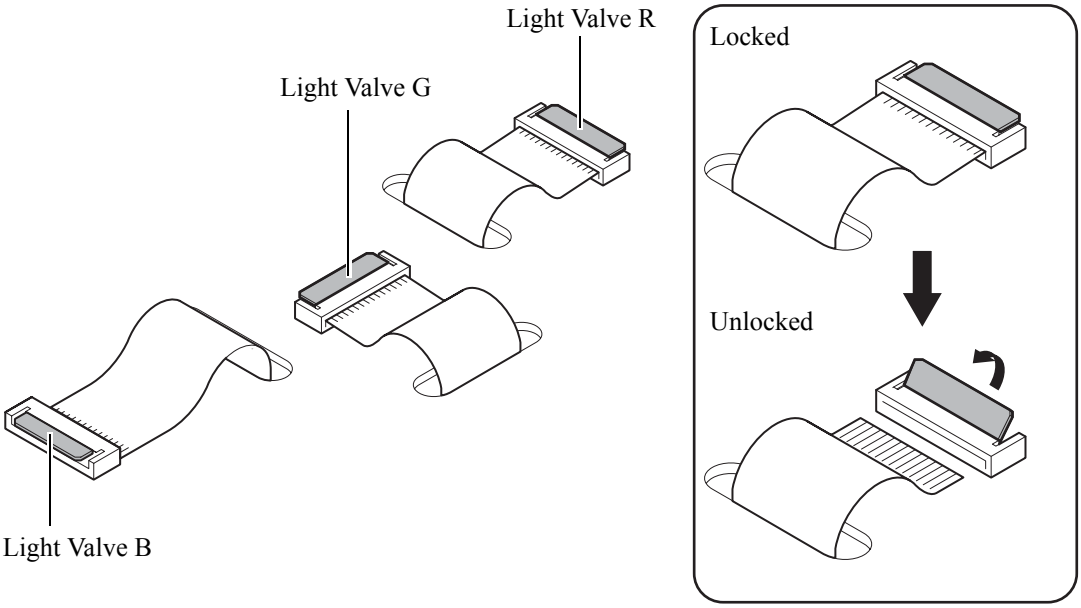


Figure 4-14.

CAUTION

When connecting the R, G, and B light valve cables, be sure to insert the R, G, and B light valve cables securely into the connectors to the end. If there is a loose connection (a half-way/slant connection), it may cause short-circuiting, or malfunction, and which may result in damage to or overheating of the ICs on the cables.

2. Disconnect all the cable connectors that are connected to the MA board.

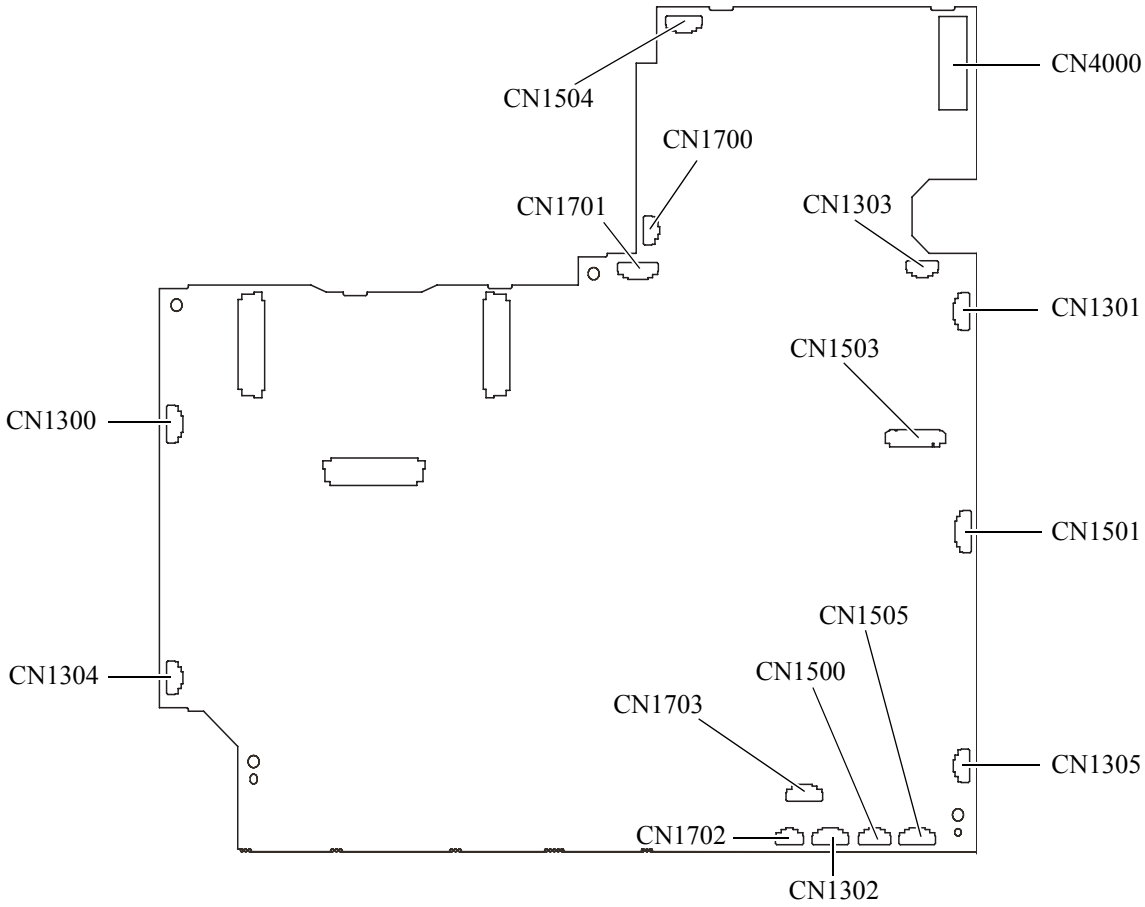


Figure 4-15.

CAUTION

■ When installing the MA-IF Board Assy., pay attention to the following instructions.

1). Twist the TH Board Assy. Cable and Exhaust Fan; B Cable around the Power Cable, then secure the cables by putting them into the space by the Exhaust Duct as shown in Figure 4-16.

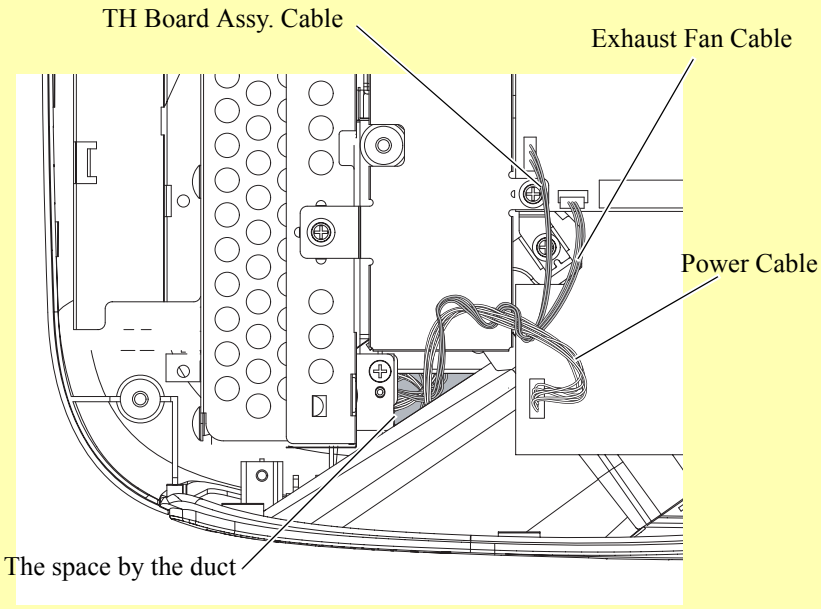


Figure 4-16.

2). Route the LV Thermistor Cable as shown in Figure 4-17, and secure it with heat-resistant tape.

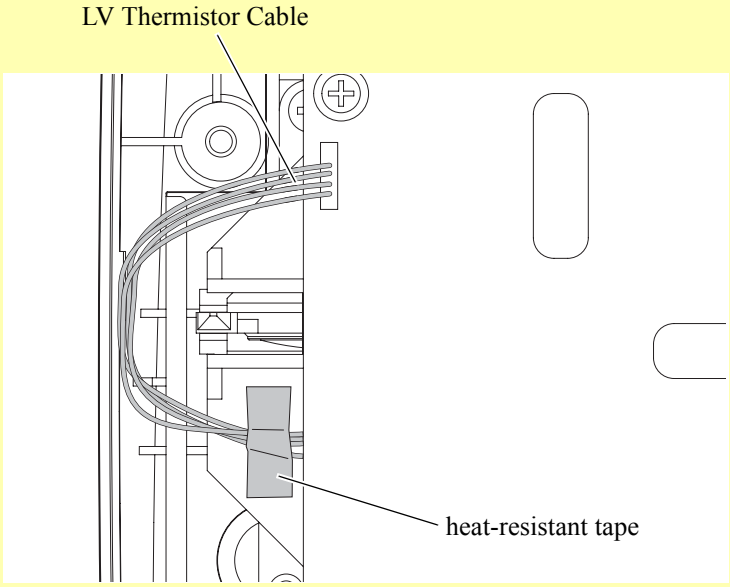


Figure 4-17.

3. Remove the five screws (C.C.SCREW, 3x6, F/ZN-3C) that secure the MA Ground Plate, and remove the MA Ground Plate.

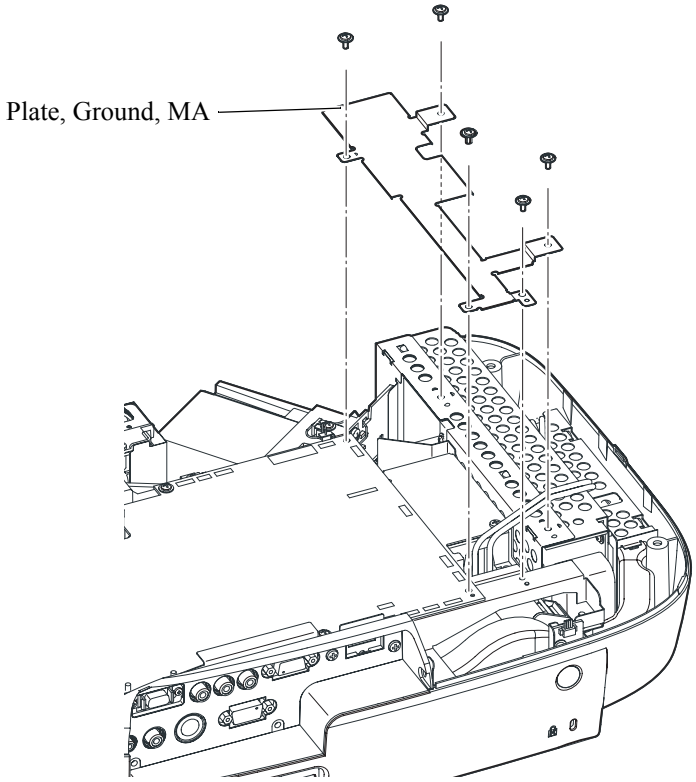


Figure 4-18.

4. Remove the screw (C.C.SCREW, 3x6, F/ZN-3C) that secure the IF Panel and the screw that secures the IF Ground Plate, and remove the two screws (C.B.SCREW, 3x8, F/NI) that secure the IF Case to the Lower Case.
5. Remove the two screws (C.C.SCREW, 3x6, F/ZN-3C) that secure the MA-IF Board Assy., and remove the MA-IF Board Assy.

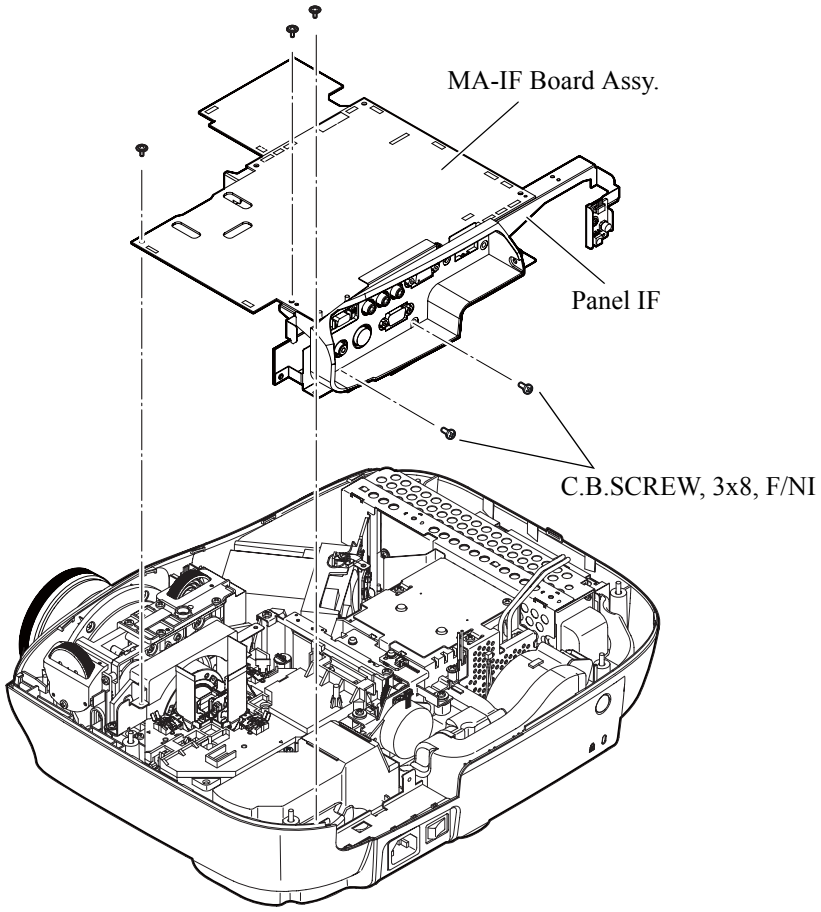


Figure 4-19.

4.2.9 Removing the IF Case, IF Label; A, IF Shade Sheet, and IF Shade Cushion

1. Remove the two screws (C.B.SCREW, 3x8, F/ZI) that secure the IF Case, and remove the IF Case from the MA-IF Board Assy.
2. Remove the IF Label; A from the IF Case.
3. Remove the IF Shade Sheet from the MA-IF Board Assy.
4. Remove the IF Shade Cushion from the MA-IF Board Assy.

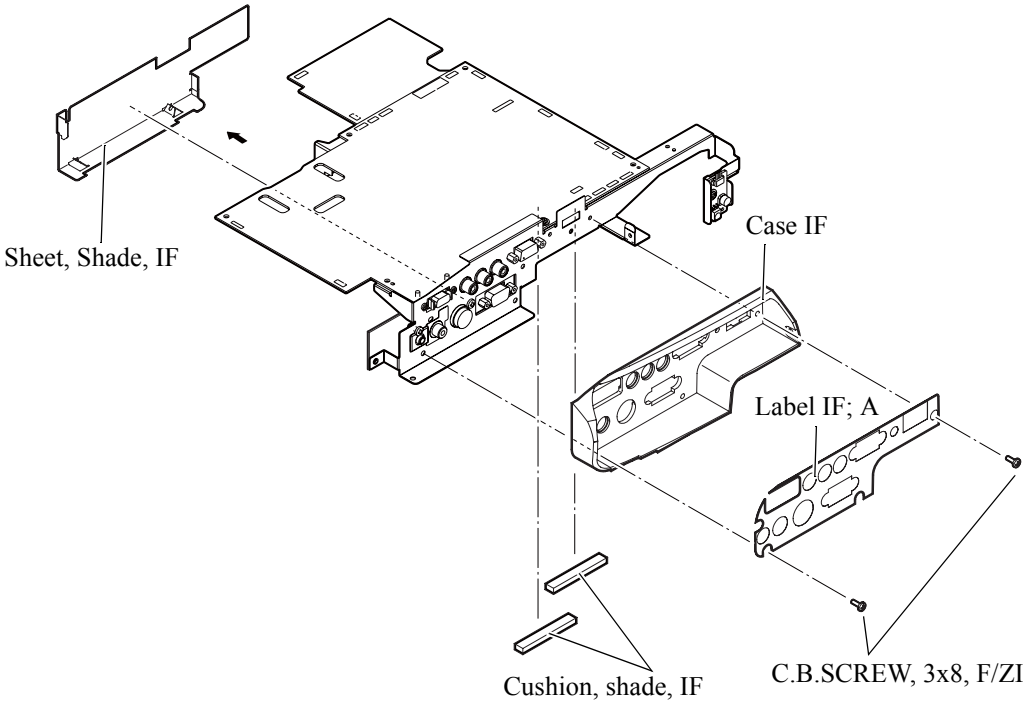


Figure 4-20.

CAUTION

3). Attach the IF Shade Cushions on the positions shown in Figure 4-21. Make sure that the IF Shade Cushion is not overlapping the IC (Integrated Circuit).

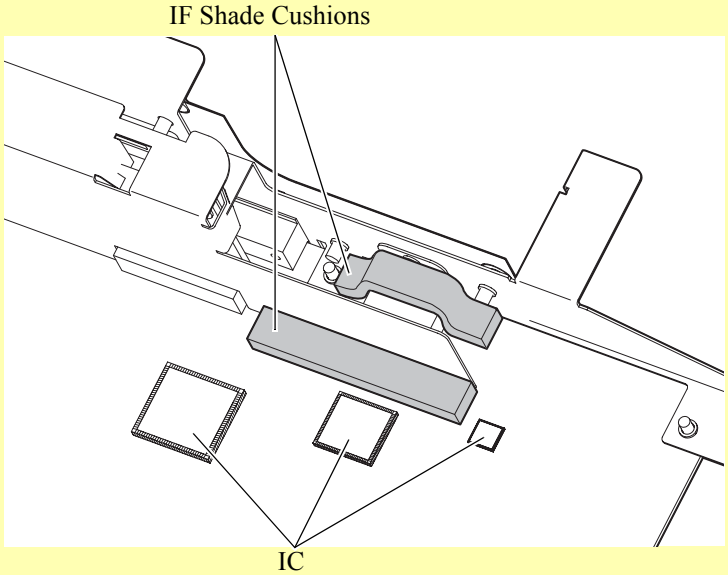


Figure 4-21.

4.2.10 Removing the IF Panel, RC Board Assy., RCR Cable; FIF, IF Board Assy.

1. Remove the one screw (C.C.SCREW, 3x6, F/Z-3C) that secures the RC Board Assy.
2. Remove the two screws (C.P.B-TITE-A.SCREW, 3x8, F/NI) that secure the D-terminal connector, and remove the four screws (Screw, HSH 4-40) that secure the D-SUB connector.
3. Remove the screw (C.C.SCREW, 3x6, F/Z-3C) that secures the HDMI connector, remove the three screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the S-component, and remove the IF Panel from the MA-IF Board Assy.
4. Remove the screw (C.C.SCREW, 3x6, F/ZN-3C) that secures the RC Board Assy., and remove the RC Board Assy. from the IF Panel.
5. Remove the RCR Cable; FIF from the RC Board Assy.

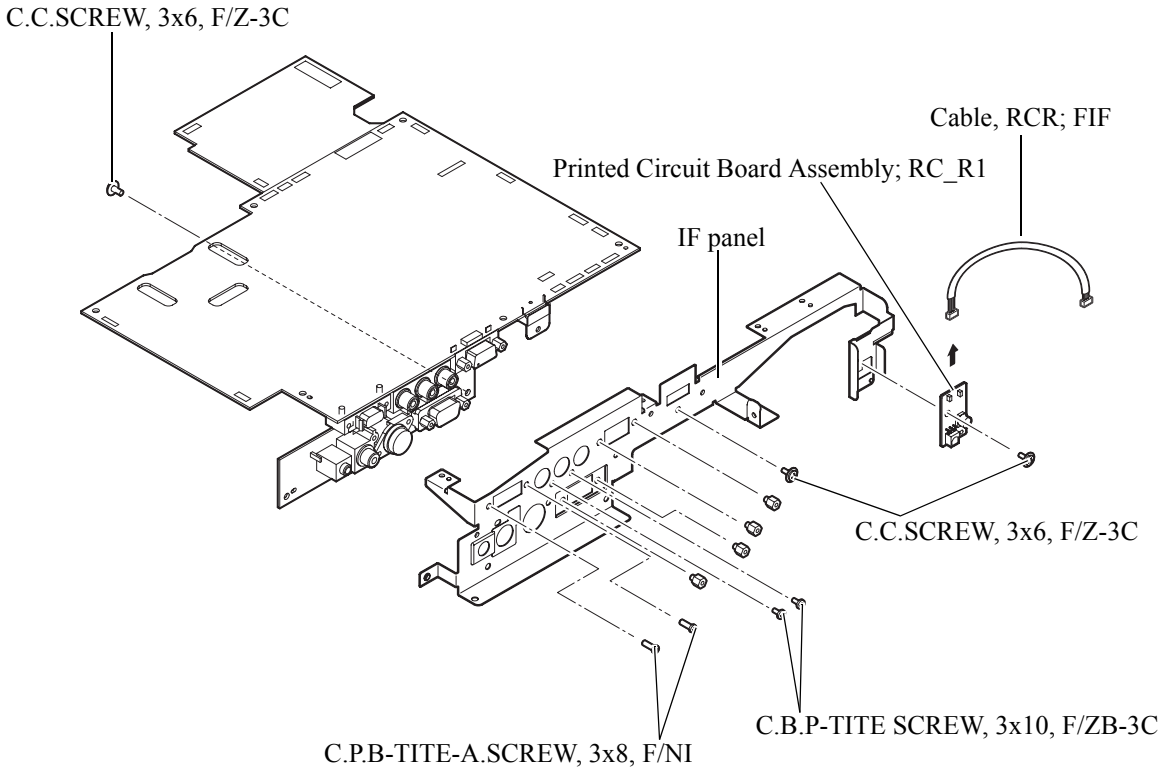


Figure 4-22.

6. Remove the IF Board Assy. from the MA Board Assy.

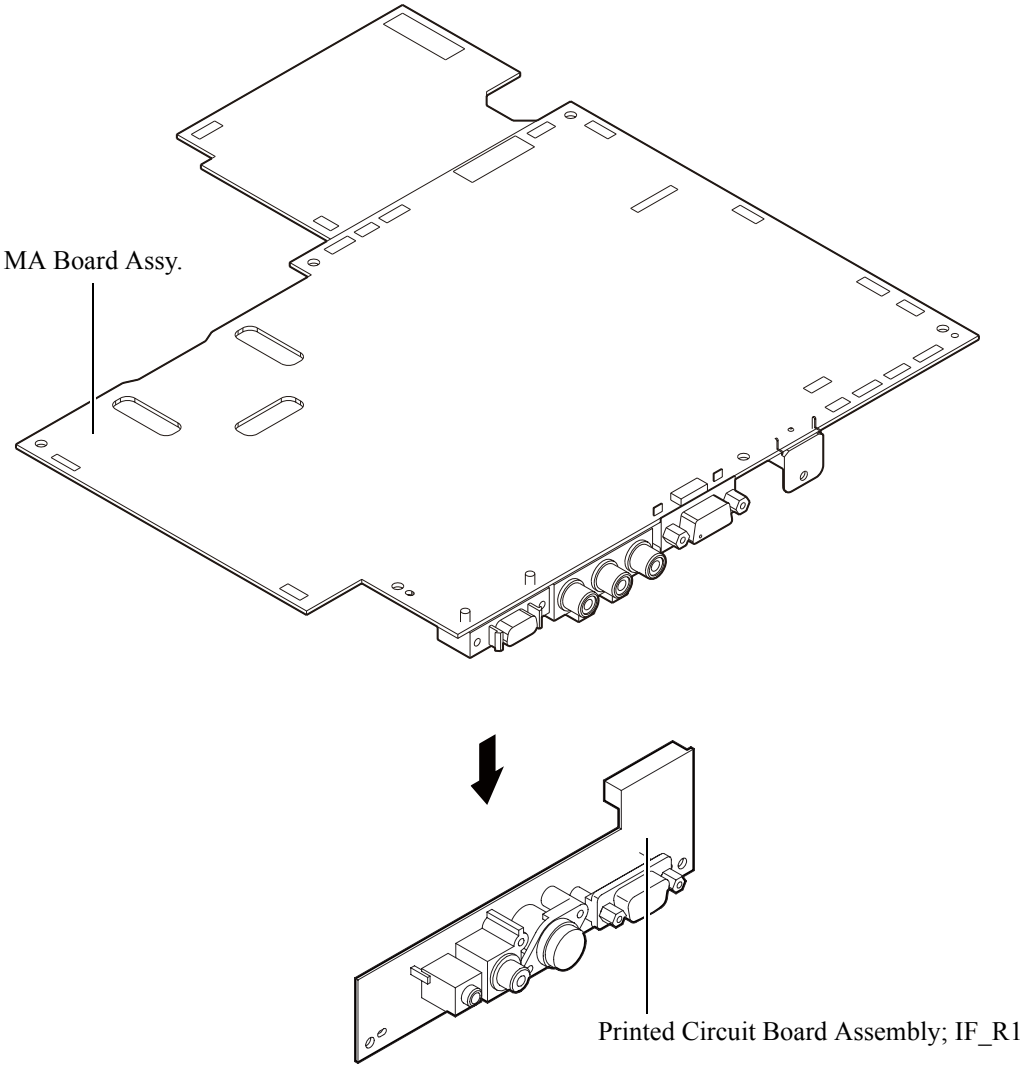


Figure 4-23.

CAUTION

■ Attach EMI Suppressors on top of the MA board following the instructions below.

1). Attach the EMI Suppressor on the ICs (1) while matching the centers as shown in Figure 4-24.

2). Attach two EMI Suppressor; C on top of each other on the IC (2) while matching the centers as shown in Figure 4-24.

3). Attach two EMI Suppressor on top of each other while aligning them along the standard line as shown in Figure 4-24.

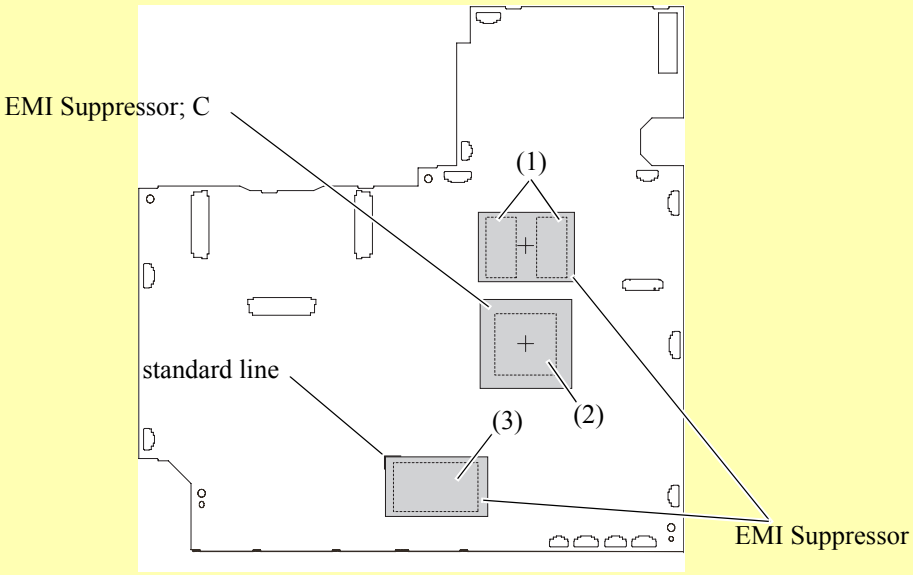


Figure 4-24.

CAUTION

■ Attach EMI Suppressors and heat-resistant tape on the bottom of the MA board following the instructions below.

1). Attach the EMI Suppressor; D on the area (1) while aligning it along the standard line (A) as shown in Figure 4-25.

2). Attach the EMI Suppressor; E on the area (2) while aligning it along the standard line (B) as shown in Figure 4-25.

3). Attach heat-resistant tape on the area (3) as shown in Figure 4-25. Do not cover the electrolytic condenser with the tape when attaching it.

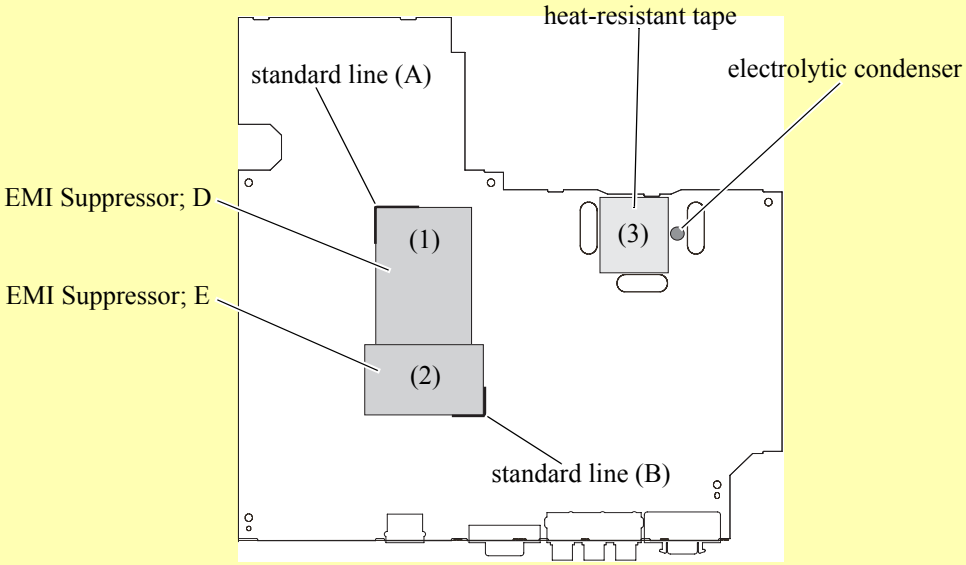


Figure 4-25.

4.2.11 Removing the PS Ballast Assy.

1. Remove the screw (C.C.P-TITE SCREW 3x8, F/ZN-3C) that secures the Safety Switch, and remove the Safety Switch.
2. Remove the two screws (C.C.P-TITE SCREW 3x8, F/ZN-3C) that secures the Ballast Connector, and remove the Ballast Connector.
3. Remove the four screws (C.B.P-TITE SCREW, 3X10, F/ZB-3C) that secure the PS Ballast Assy.

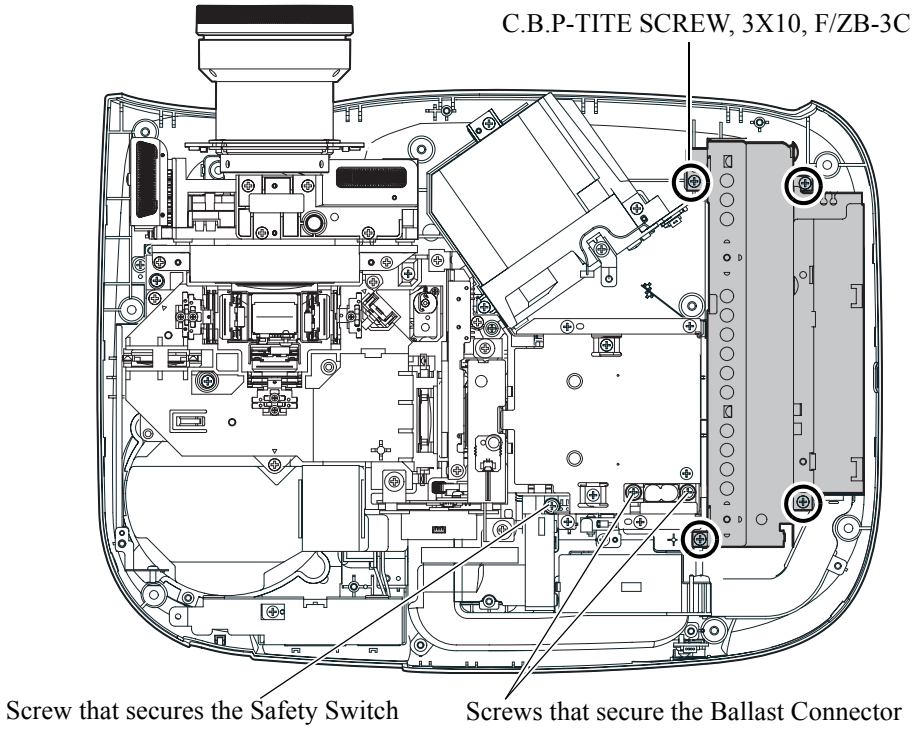


Figure 4-26.

4. Disconnect the AC Cable Connector from the PS Ballast Assy, and remove the PS Ballast Assy.

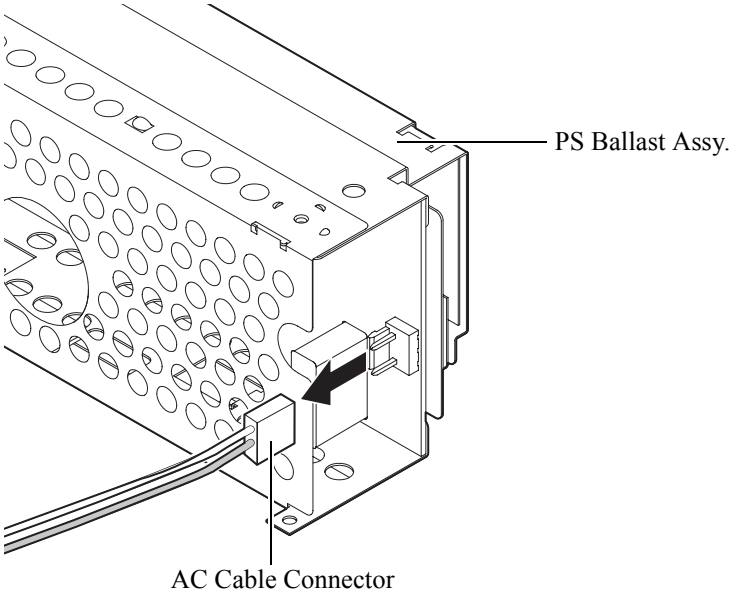


Figure 4-27.

4.2.12 Removing the Lamp Plate, PS Shade Plate, MA Fasten Plate Left, MA Fasten Plate Right, Shielding Gasket, MA Fasten Support Plate, Lamp Insulation Sheet and Optical Engine

1. Remove the seven screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the Lamp Plate and remove the Lamp Plate.
2. Remove the Lamp Insulation Sheet from the Lamp Plate.
3. Remove the screw (C.P.(S-P1) SCREW, 3x10, F/ZN-3C) that secures the MA Fasten Plate Left and remove the MA Fasten Plate Left.
4. Remove the screw (C.C.SCREW, 3x6, F/ZN-3C) that secures the MA Fasten Plate Right, and remove the MA Fasten Plate Right.
5. Remove the Shielding Gasket from the MA Fasten Plate Right.
6. Remove the screw (C.P.(S-P1) SCREW, 3x10, F/ZN-3C) that secures the MA Fasten Support Plate, and remove the MA Fasten Support Plate.

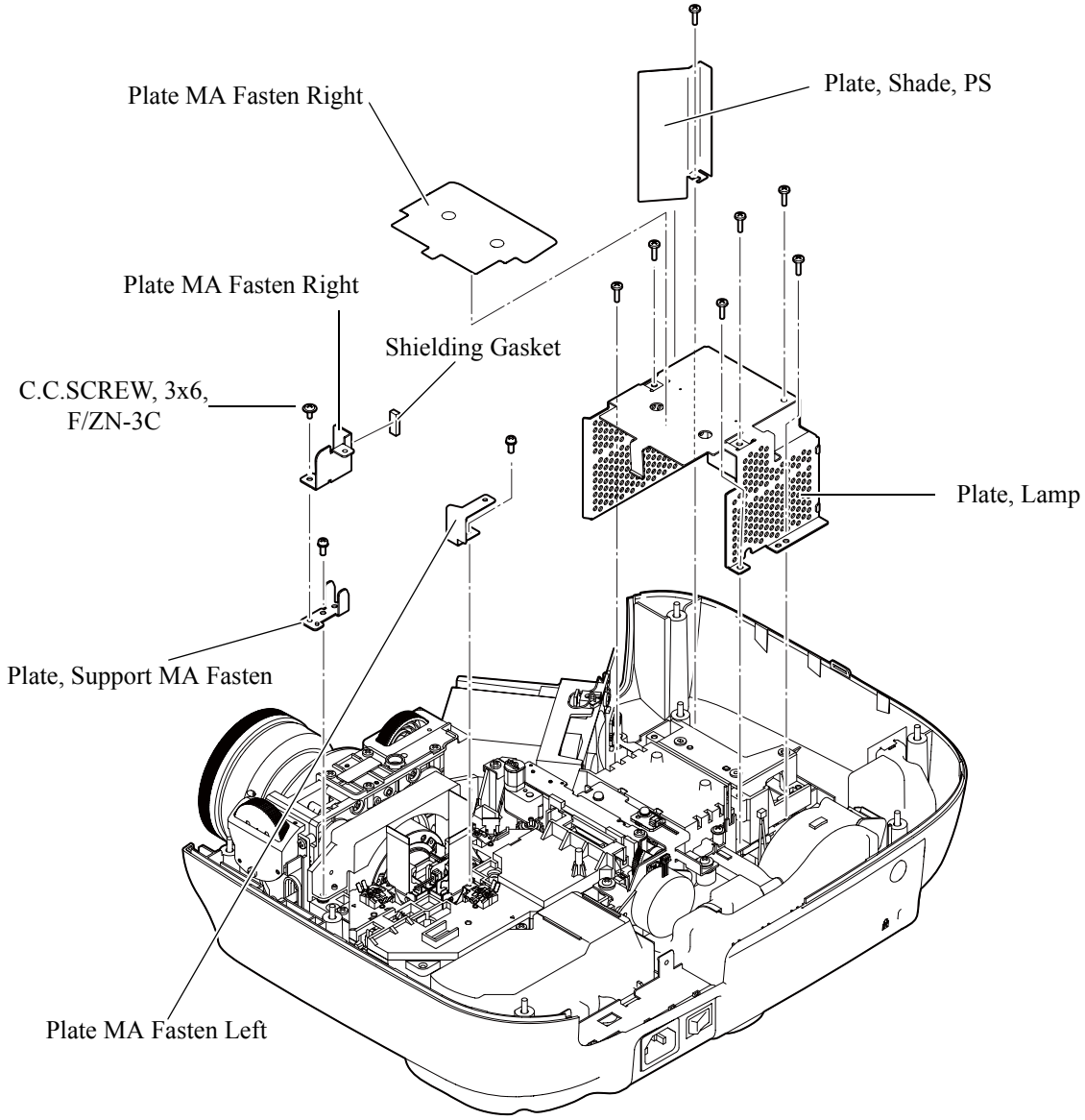


Figure 4-28.

CAUTION

■ The Optical Engine can be divided into two parts A and B. Be careful not to drop the Optical Engine when removing it.

7. Remove the fore screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the Optical Engine, and remove the Optical Engine.

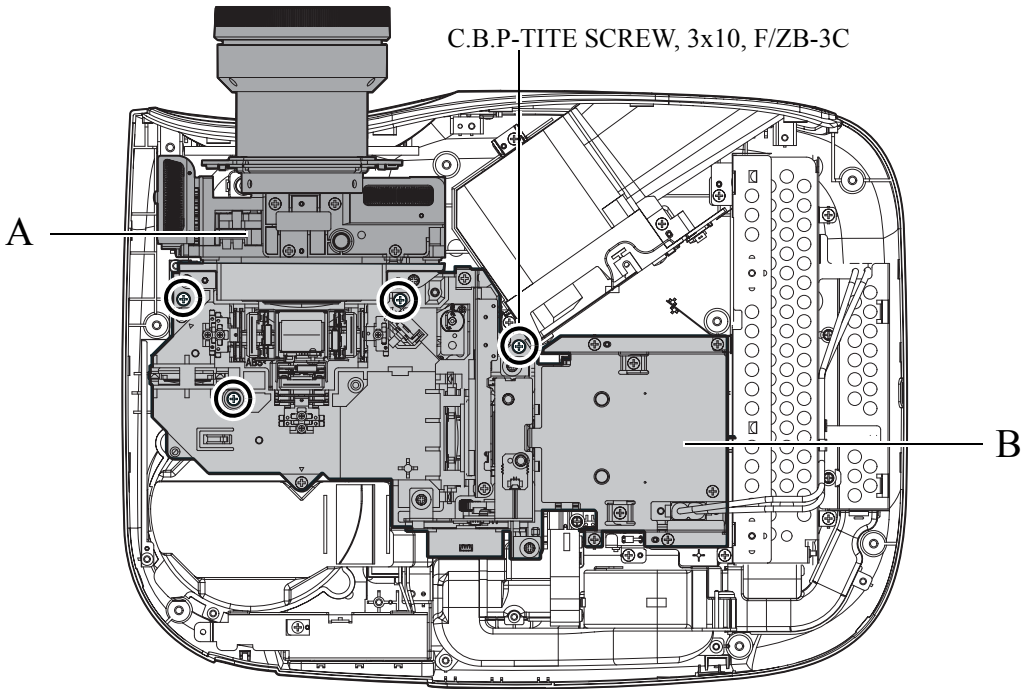


Figure 4-29.

CAUTION

■ Secure the CF Motor Cable and Auto Iris Sensor Cable with heat-resistant tape as shown in Figure 4-30.

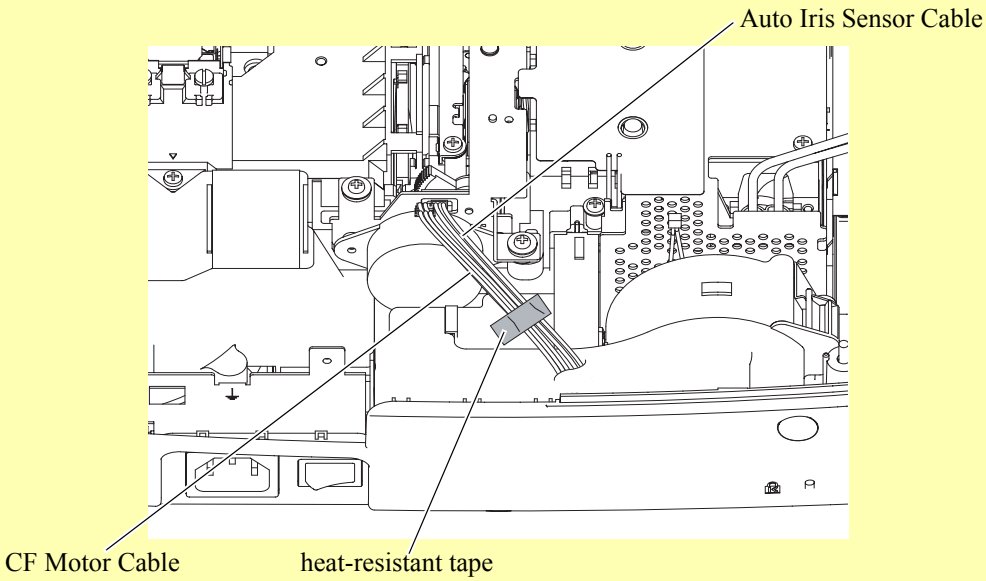


Figure 4-30.

CAUTION

Handle with care! The FPCs of EMP-TW1000 are very thin and fragile. Do not bend the FPCs forcibly. Since the ICs are mounted on the FPCs, strong bending may cause the ICs to peel off or breaking of the FPCs.

- If the heat-resistant tape on the FPC(s) comes off, replace it with new one. When replacing the tape, align it following the standard as shown in Figure 4-31.

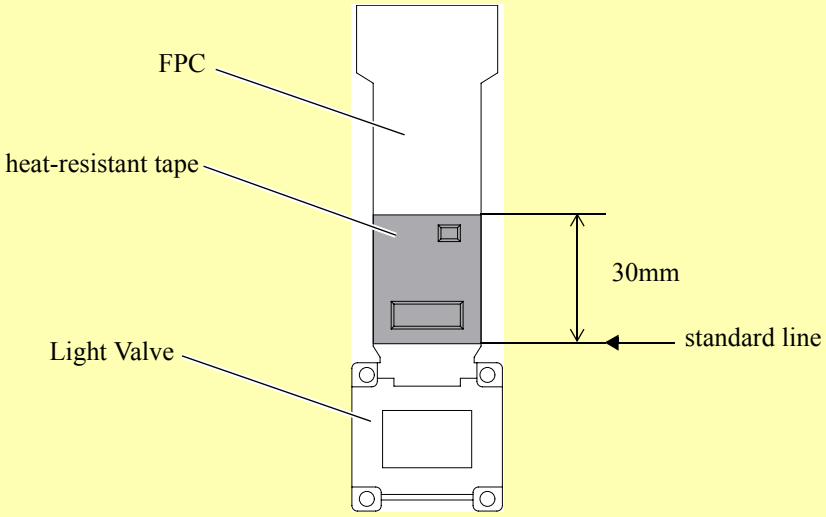


Figure 4-31.

- Attach the EMI Suppressor; A onto the outside of each FPC (R/G/B) as shown in Figure 4-32.

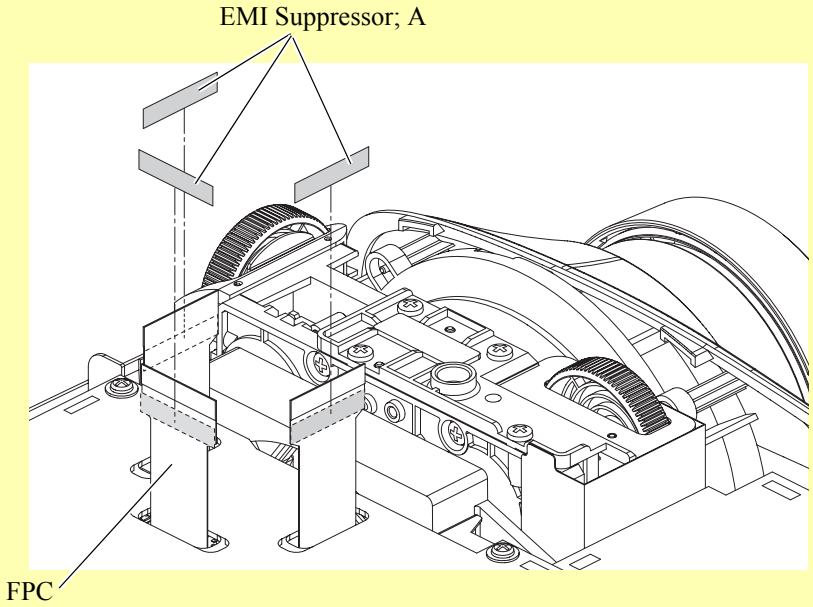


Figure 4-32.

4.2.13 Removing the Motor CF Assy., CF SW Assy., Micro SW Assy., Top ML Fasten Spring, Frame CF Assy., and Auto Iris Assy.

1. Remove the two screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the Motor CF Assy., and remove the Motor CF Assy. from the Optical Engine.
2. Remove the two screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the CF SW Assy, and remove the CF SW Assy.
3. Remove the Top ML Fasten Spring from the CF SW Assy.
4. Remove the two screws (C.P. SCREW, 1.6x6, F/ZN-3C) that secure the Micro SW Assy., and remove the Micro SW Assy. form the CF SW Assy.
5. Remove the Frame CF Assy.
6. Remove the three screws (SCREW,AI FASTEN) that secure the Auto Iris Assy., and remove the Auto Iris Assy.

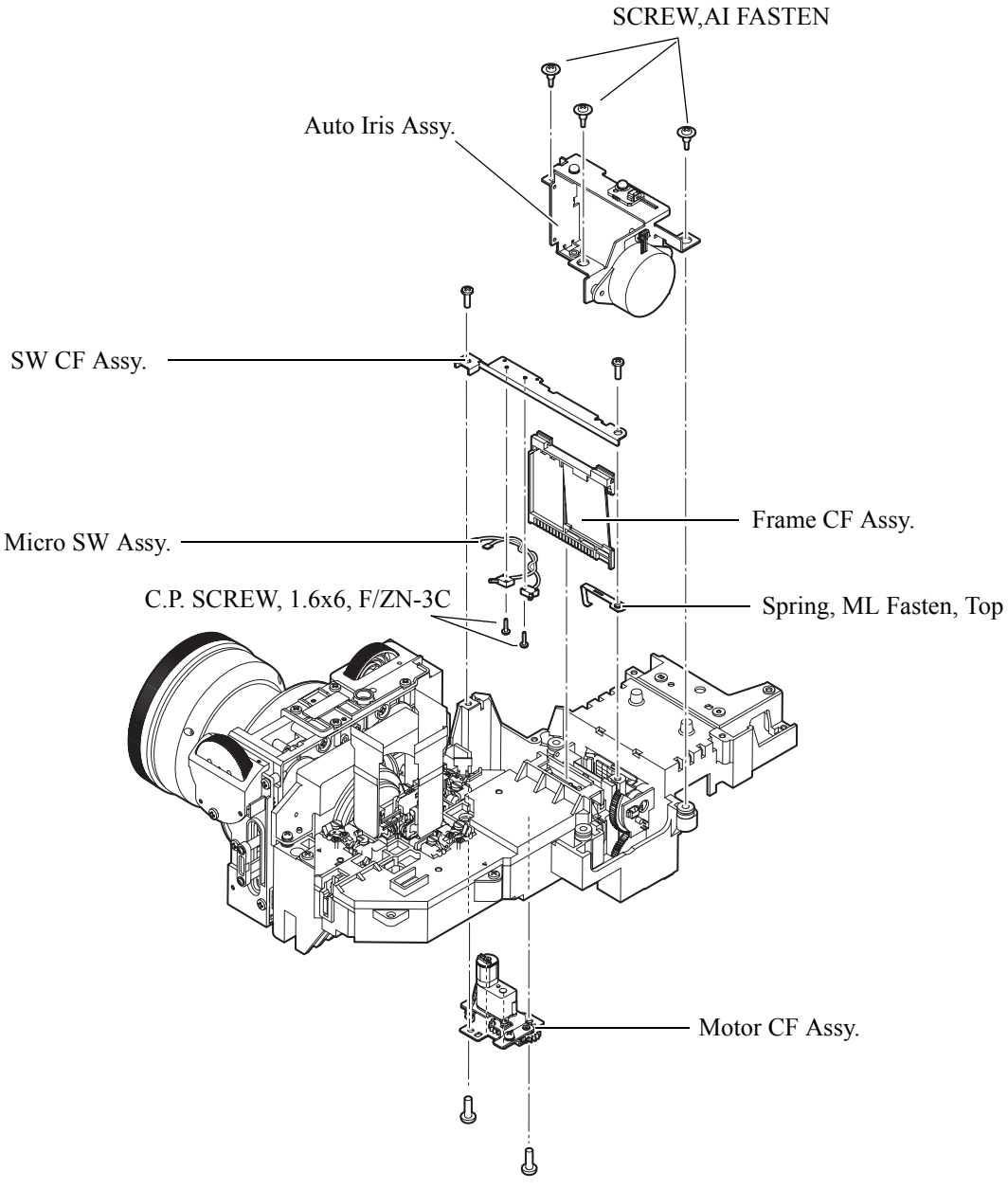


Figure 4-33.

CAUTION

■ Install the Auto Iris Assy. with the shutters closed.

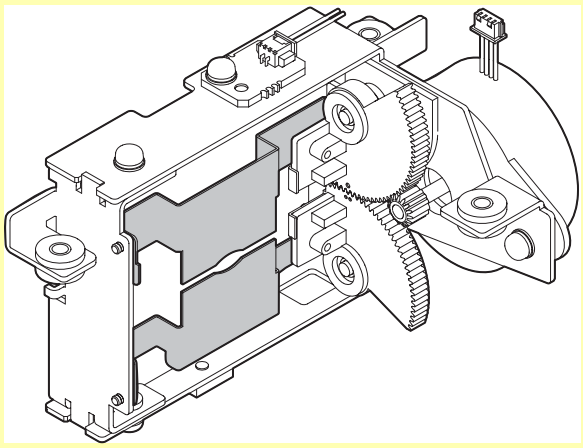


Figure 4-34.

■ When installing the Frame CF Assy., align the left edge of the Frame CF Assy. with the mark-off line marked on the CF SW Assy.

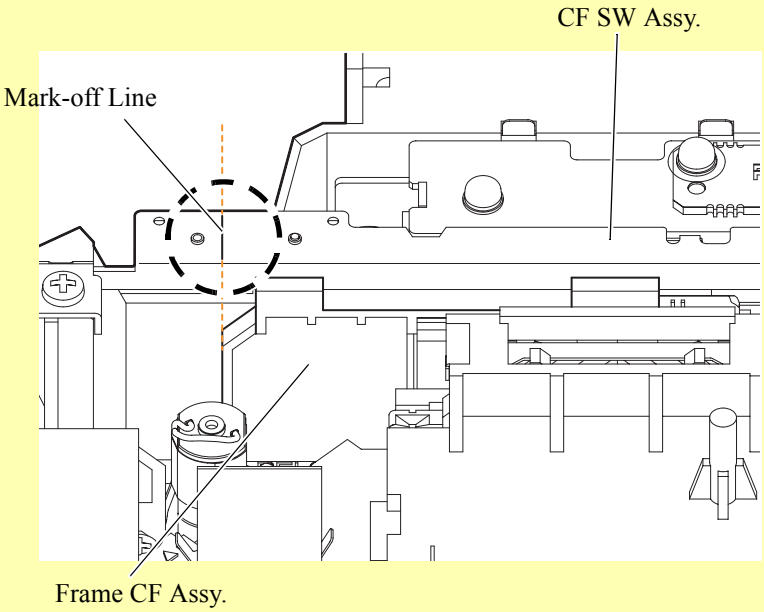


Figure 4-35.

4.2.14 Removing the Exhaust Fan; B, Exhaust Duct, Inshulock T-18S, TH Board Assy., C Cable; 170, MA Fasten Plate; PS, and Fasten Plate; A

1. Remove the three screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the Exhaust Fan Assy., and remove the Exhaust Fan Assy.

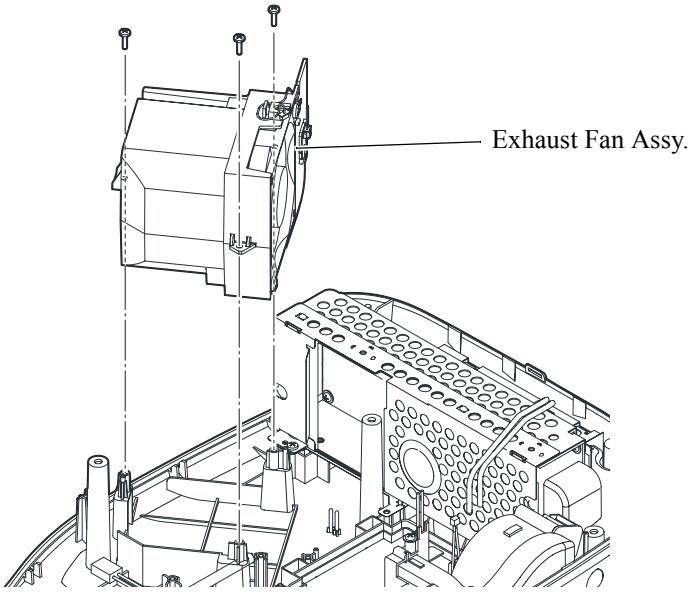


Figure 4-36.

2. Remove the screw (C.C. SCREW, 3x6, F/ZN-3C) that secures the MA Fasten Plate; PS, and remove the MA Fasten Plate; PS and Fasten Plate; A.
3. Cut off the Inshulock T-18S that secures the Exhaust Fan Cable and TH Board Cable.
4. Remove the screw (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secures the TH Board Assy., and remove the TH Board Assy. from the Exhaust Duct.
5. Remove the C Cable; 170 from the TH Board Assy.
6. Remove the two screws (C.B.P-TITE SCREW, 4x35, F/ZN-3C) that secure the Exhaust Fan; B, and separate the Exhaust Fan; B from the Exhaust Duct.

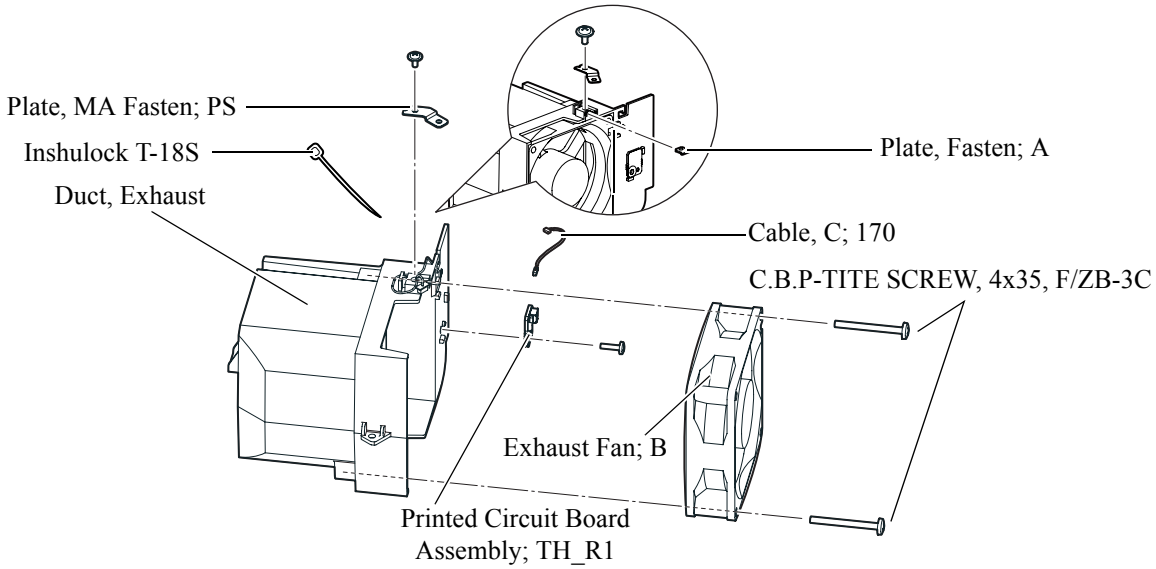


Figure 4-37.

CAUTION

■ When installing the Inshulock T-18S, pay attention to the following instructions.

1). Route the Exhaust Fan Cable and TH Board Assy. Cable as shown in Figure 4-32. Make sure not to let the parts of the cables shown in the dotted circle slacken.

2). Cut off the excess length of the Inshulock T-18S.

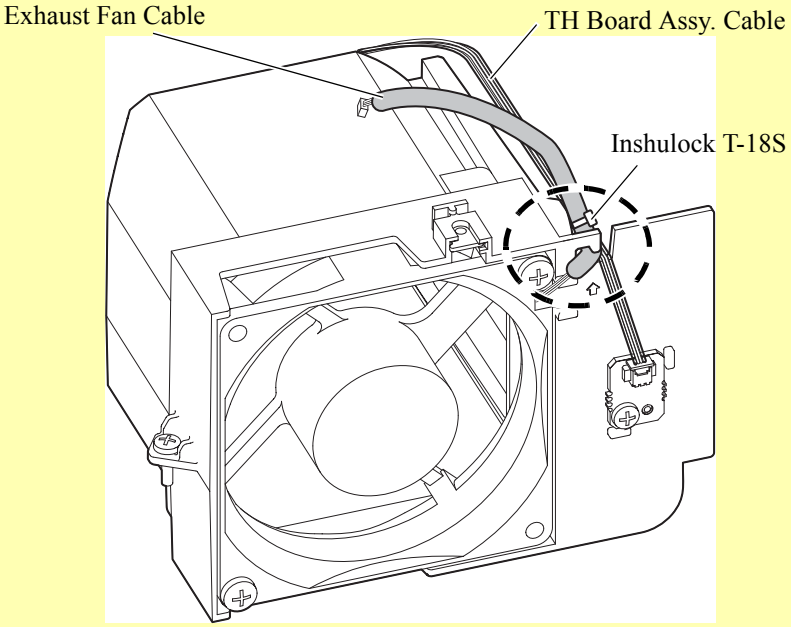


Figure 4-38.

4.2.15 Removing the Light Valve Duct, PBS Duct Sheet, Light Valve Intake Duct, Light Valve Sheet, Intake Fan, and Light Valve Cushion

1. Remove the two screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the Light Valve Duct, and remove the Light Valve Duct.
2. Remove the PBS Duct Sheet from the Light Valve Duct.
3. Remove the four screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the Light Valve Intake Duct, and remove the Light Valve Intake Duct.
4. Remove the Light Valve Sheet from the Light Valve Intake Duct.
5. Remove the Inteke Fan.
6. Remove the Light Valve Cushon from the Intake Fan and Lower Case.

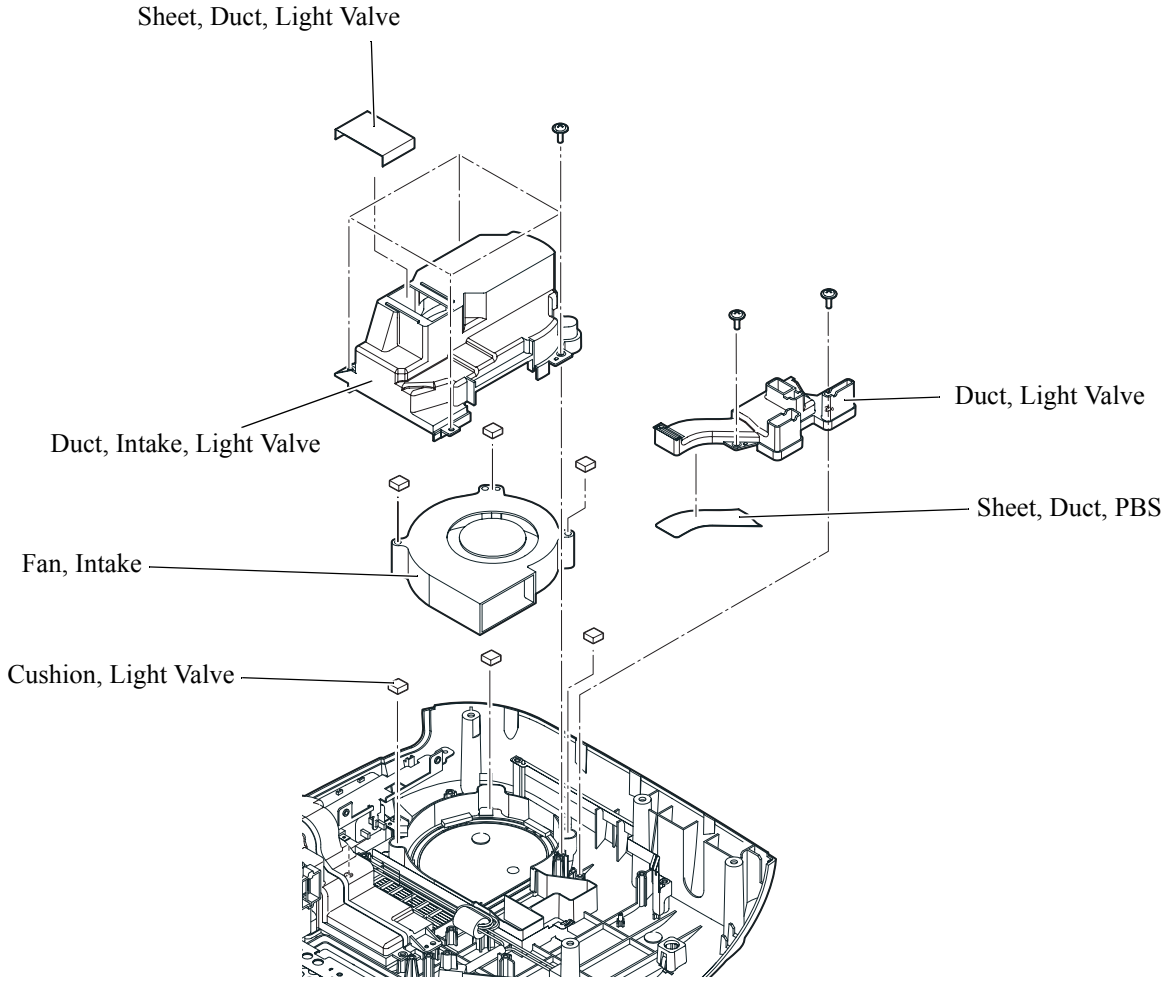


Figure 4-39.

4.2.16 Removing the LMP Intake Duct, Lamp Fan, and Lamp Fan Guard

1. Remove the two screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the LMP Intake Duct, and remove the LMP Intake Duct.
2. Remove the two screws (C.B.P-TITE SCREW, 3x25, F/ZN-3C) that secure the Lamp Fan, and remove the Lamp Fan from the LMP Intake Duct.
3. Remove the Lamp Fan Guard from the LMP Intake Duct.

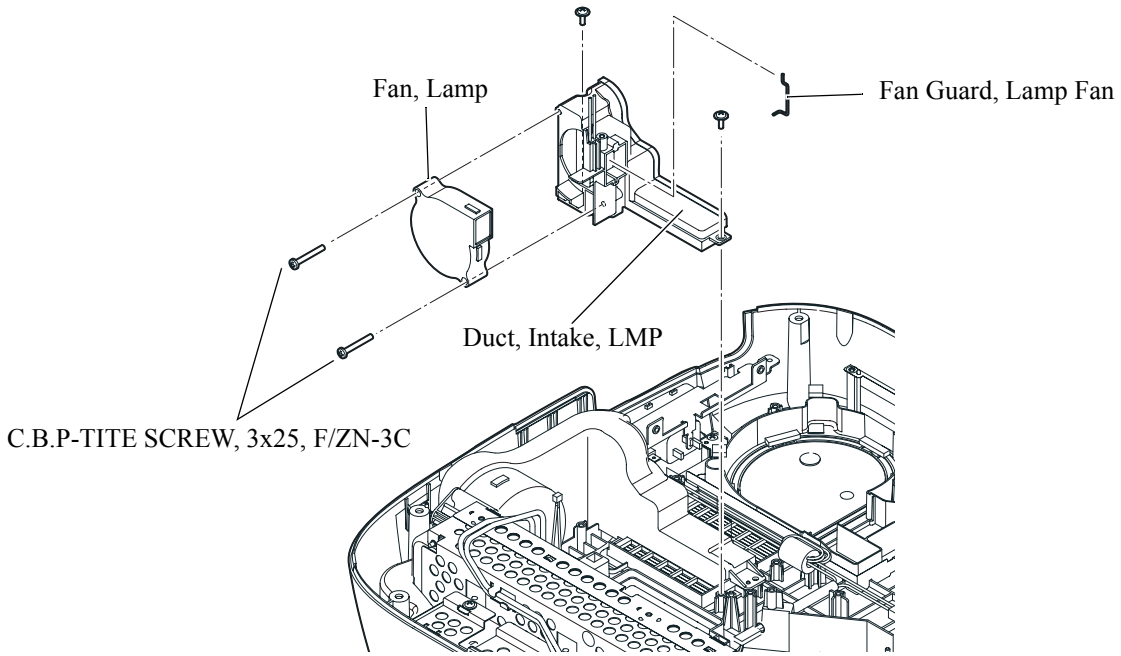


Figure 4-40.

CAUTION

■ When installing the LMP Intake Duct, be sure to secure the Lamp Fan Cable with heat-resistant tape as shown in Figure 4-41.

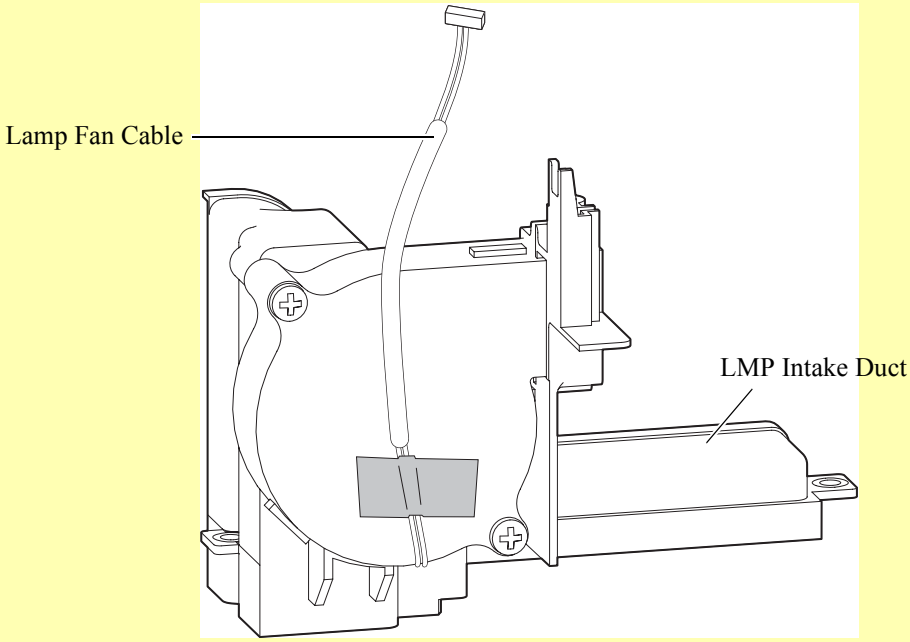


Figure 4-41.

4.2.17 Removing the AC Cable, and Lensbase Ground Plate; A

1. Remove the screw (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secures the AC Cable, and remove the AC Cable.
2. Remove the Lensbase Ground Plate; A from the AC Cable.

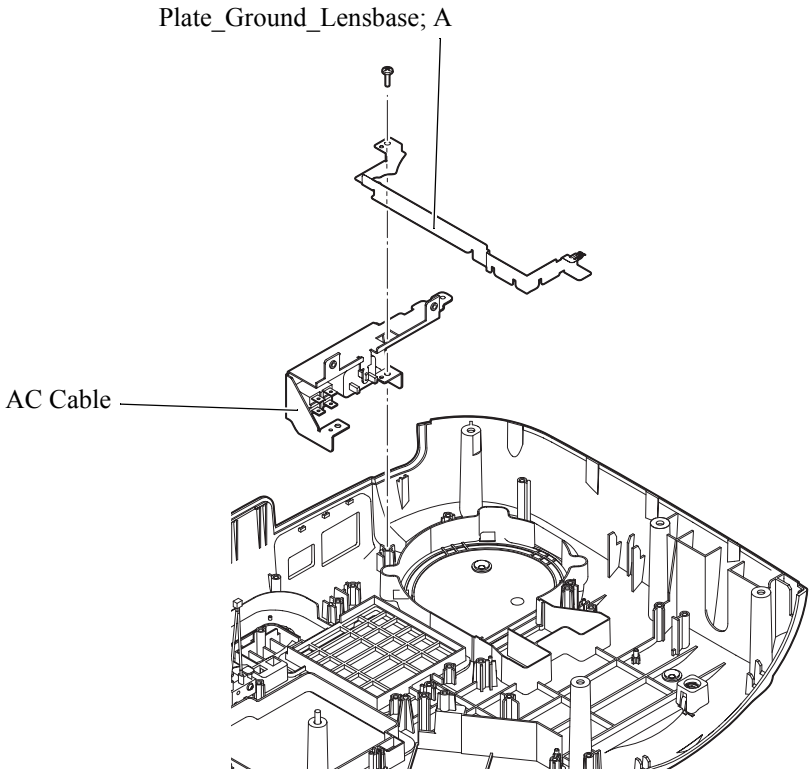


Figure 4-42.

CAUTION

■ Route the AC cable as shown in Figure 4-43, putting the cable into the Lower Case as much as possible.

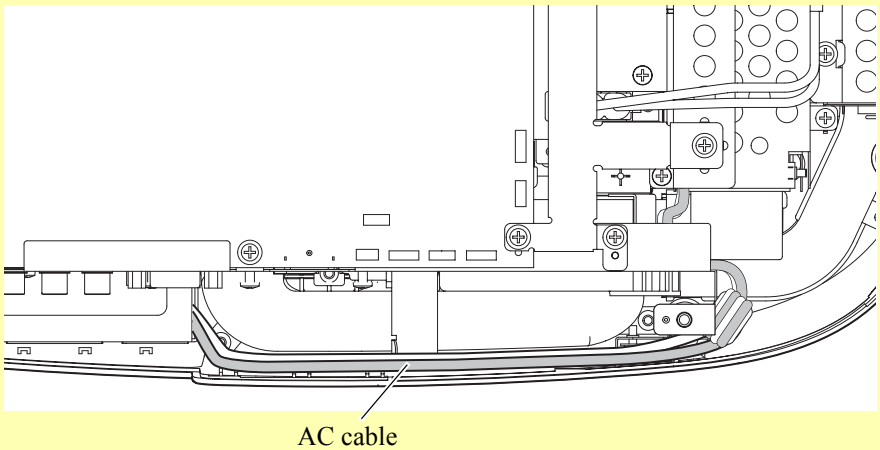


Figure 4-43.

4.2.18 Removing the PS Duct, PS Intake Duct, Intake Fan, Intake Fan Frame, Ballast Duct Sheet, PS Duct Sheet, and Light Valve Cushion

1. Remove the two screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the PS Duct, and remove the PS Duct.
2. Remove the Ballast Duct Sheet from the PS Duct.
3. Remove the PS Duct Sheet from the Lower Case.
4. Remove the three screws (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secure the PS Intake Duct, and remove the PS Intake Duct.

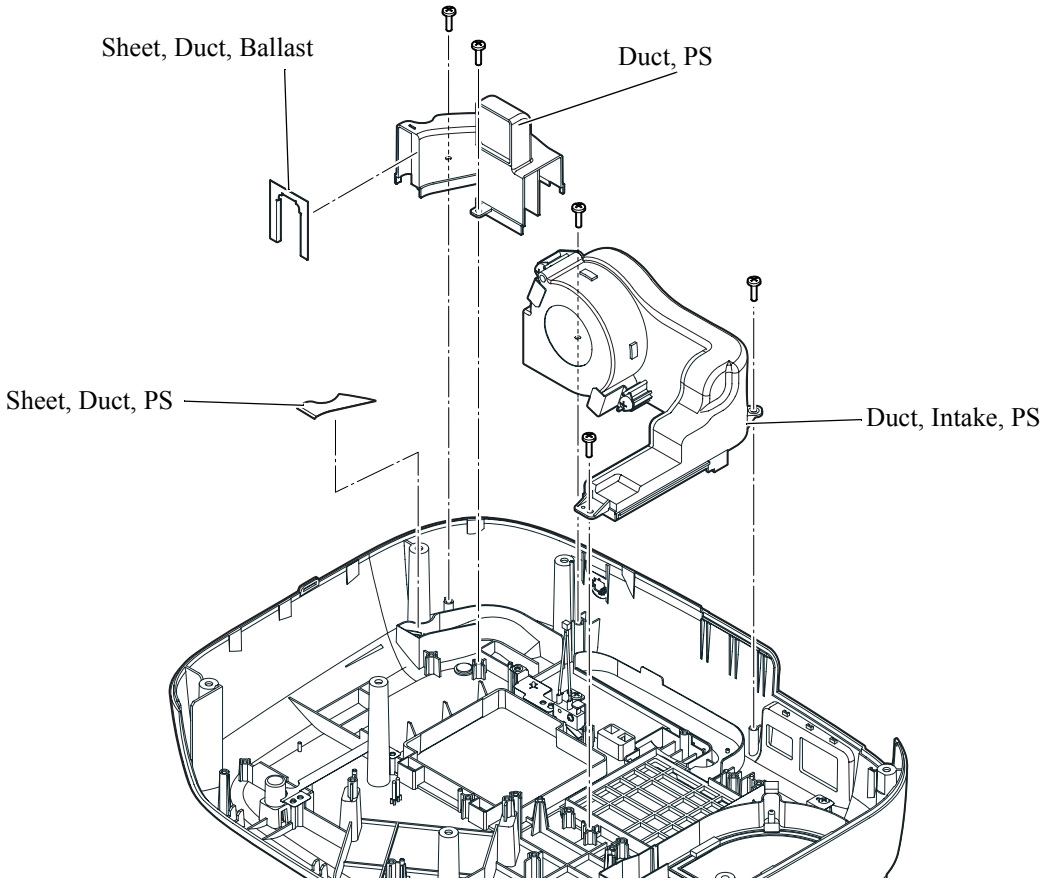


Figure 4-44.

5. Remove the two screws (C.C.P-TITE SCREW, 3x8, F/ZN-3C) that secure the Intake Fan, and remove the Intake Fan Frame and the Intake Fan.
6. Remove the Light Valve Cushion from the Intake Fan Frame.

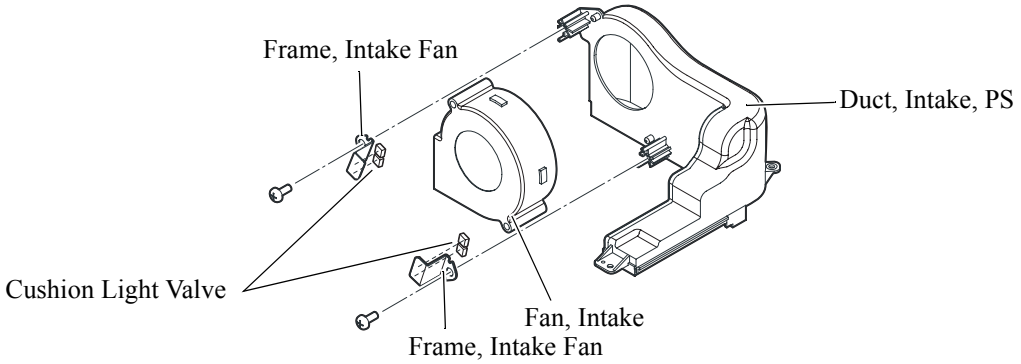


Figure 4-45.

4.2.19 Removing the Lamp Lid Detection Switch, Lamp Lid Detection Switch Plate, Plate PS Conduction A, Plate PS Conduction B, RC Filter, Heatresistant Sheet; A, Heatresistant Sheet; B, and Lower Case

1. Remove the screw (C.B.P-TITE SCREW, 3x10, F/ZB-3C) that secures the Lamp Lid Detection Switch Plate, and remove the Lamp Lid Detection Switch Plate.
2. Remove the screw (C.P.(S-P1) SCREW, 2.3x10, F/ZN-3C) that secures the Lamp Lid Detection Switch, and remove the Lamp Lid Detection Switch.
3. Remove the Plate PS Conduction A and Plate PS Conduction B from the Lower Case.
4. Remove the RC Filter from the Lower Case.
5. Remove the Heatresistant Sheet; A and Heatresistant Sheet; B from the Lower Case.

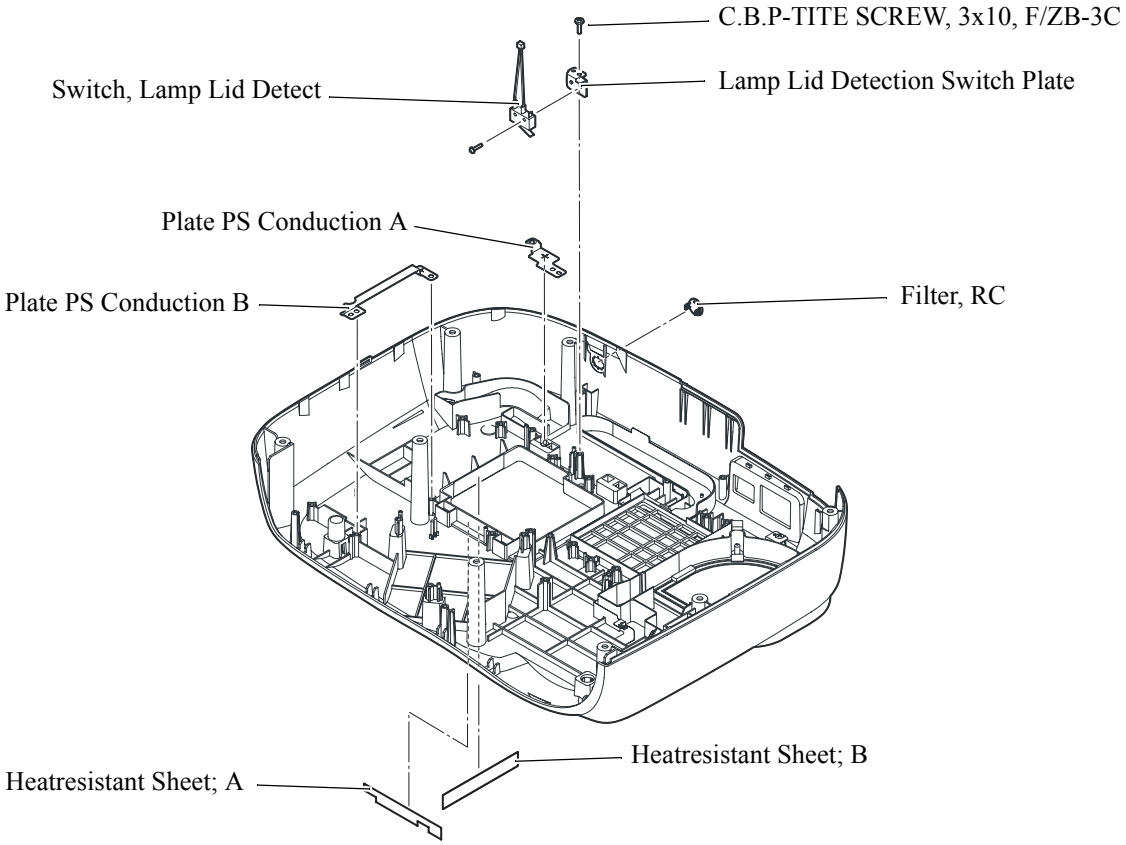


Figure 4-46.

CAUTION

■ Affix the Heatresistant Sheet; A and Heatresistant Sheet; B as shown in Figure 4-47.

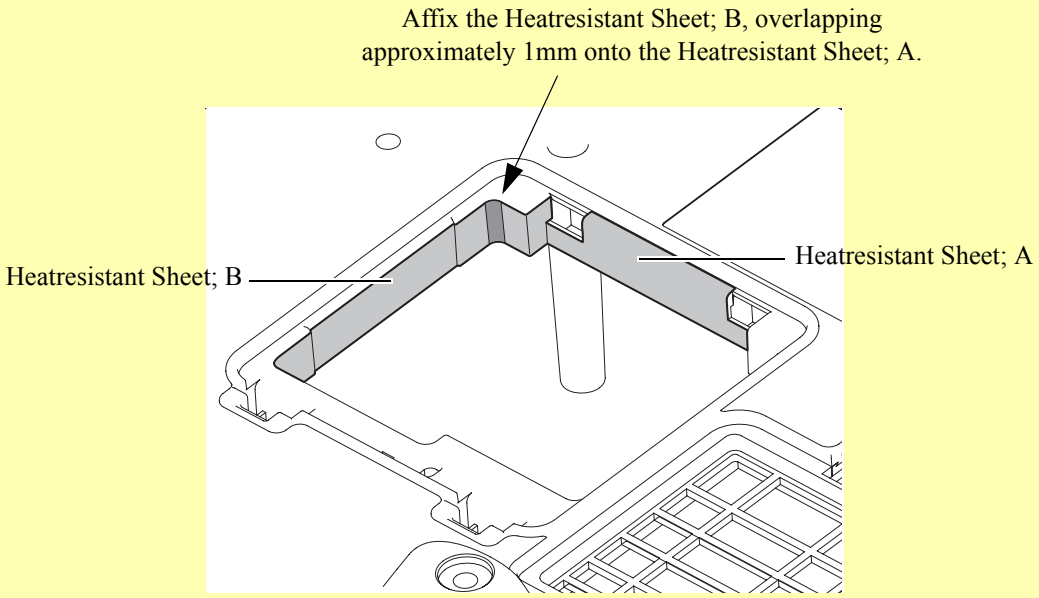


Figure 4-47.

Chapter 5 Appendix

CAUTION

The contents of this chapter are for use only by Epson Authorized Servicers, and are not to be disclosed to others without the express written consent of Epson.

5.1 AS (After Service) Menu

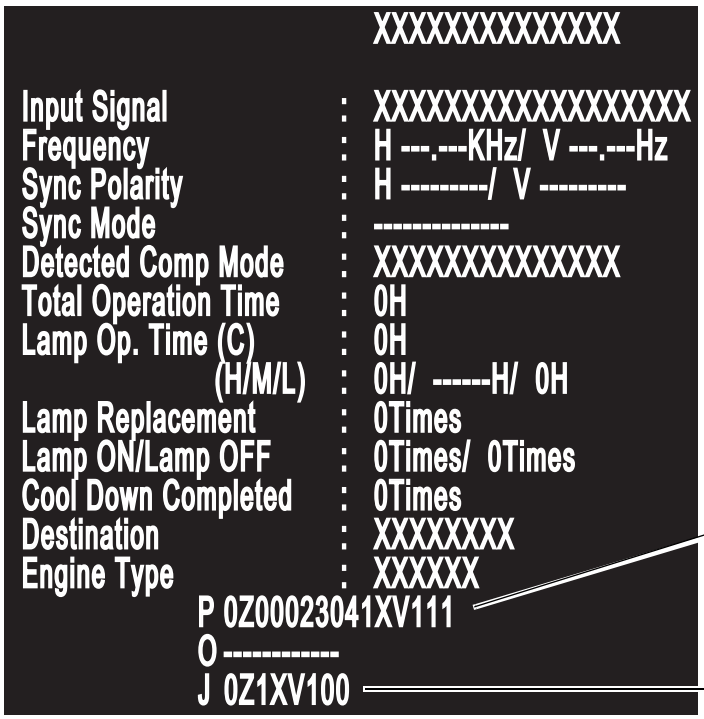
The AS (After Service) menu provides information and settings that are not displayed on the standard menu.

5.1.1 How To Display the AS (After Service) Menu

Press the **[Menu]** button either on the remote control or on the projector's control panel for at least 5 seconds. Within 4 seconds after pressing the **[Menu]** button, hit these buttons in order shown below to display AS menu.

[Esc] → [Esc] → [Right] → [Left]

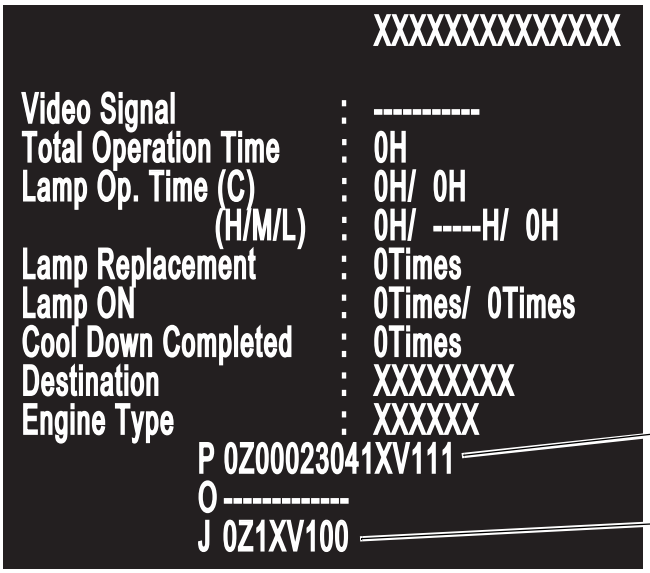
- When the video source is Component, PC, HDMI, or D the following screen (Page 1) appears.



The last four digits show the PW firmware version.

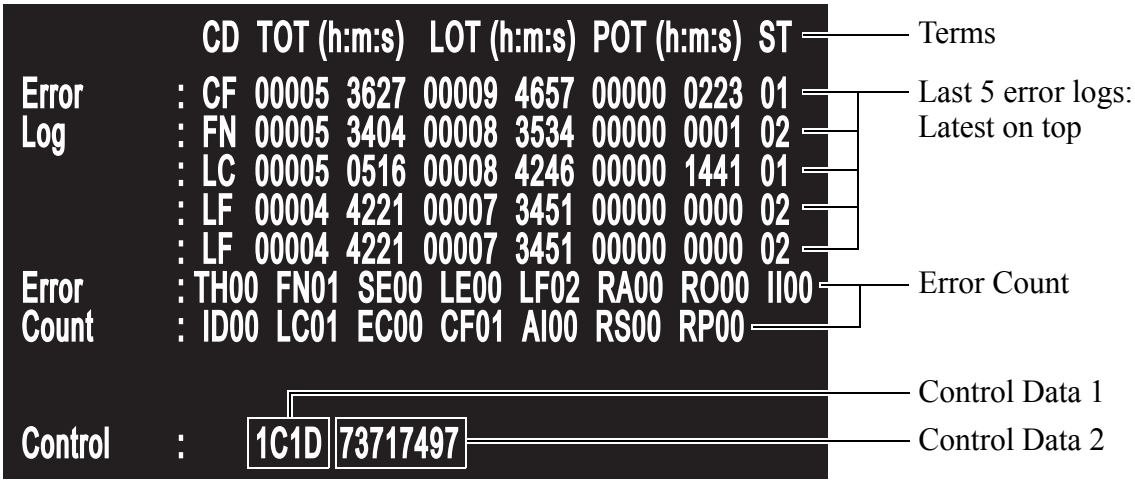
The last four digits show the Y43 firmware version.

■ When the video source is S-Video or Video, the following screen (Page 1) is displayed.



■ Error Log Window (Page 2)

While the AS menu is displayed, the Error Log Window can be displayed by pressing the **[Right]** button. To go back to the AS menu, press the **[Left]** button.



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

- The last 5 error logs are displayed (the latest on top). None is displayed if there's no error.
- In the case of the above window, the latest error is "Cinema Filter Error" (TOT: 5 hours 36 minutes 27 seconds, LOT: 9 hours 46 minutes 57 seconds, POT: 0 hours 2 minutes 23 seconds, PJ's status: Lamp ON).
- The 2nd latest error is "Fan Error" (TOT: 5 hours 34 minutes 4 seconds, LOT: 8 hours 35 seconds 34 minutes, POT: 0 hours 0 minutes 1 second, PJ's status: Warming up).

Item	Contents		Representation
Error Count (times)	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 (I2S)	
	ID	Internal error (DR)	
	LC	Lamp cover open	
	EC	Connection failure to Electrical double layer capacitor	
	CF	Cinema Filter error	
	AI	Auto IRIS error	
	RS	Sub system ROM error	
	RP	Sub system error (PW error)	
Control	Control data 1	Thermal data of each thermistor	Acquired data of TEMP? of the ESC/VP21 command
	Control data 2	Voltage of each fan	Acquired data of TEMP? of the ESC/VP21 command

5.1.2 Initializing (Resetting) the AS Menu Values

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

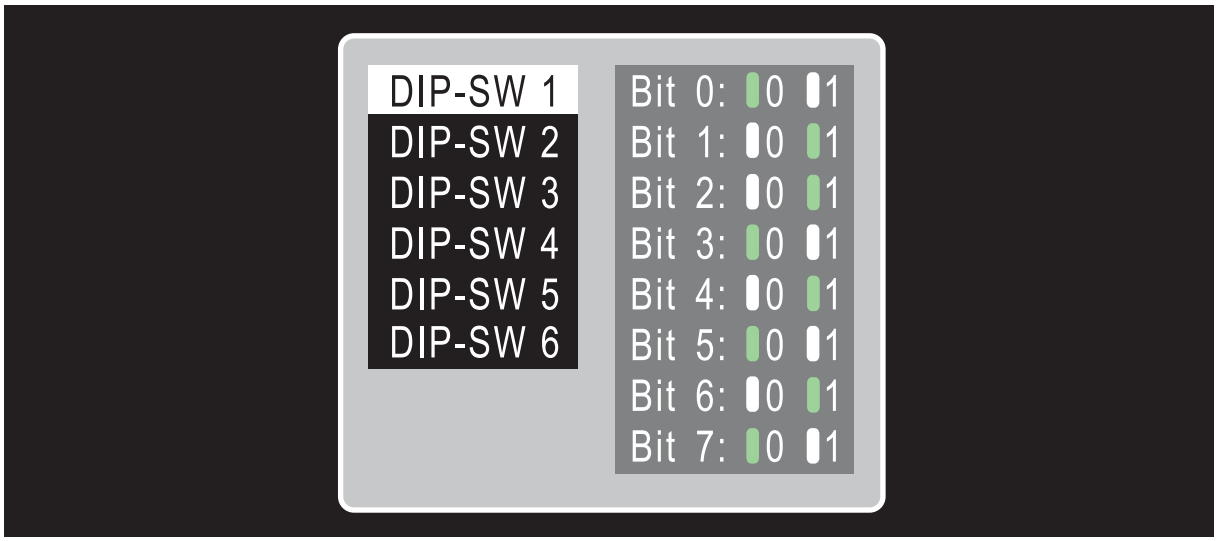
Type Operation / Item	Clearing the Lamp Information	Clearing the AS Information	Clearing the Log Information
	Press **[Up]** and **[Source]** for 10 sec. during displaying Page 1/Page 2.	Press **[Down]** and **[Source]** for 10 sec. during displaying Page 1/Page 2.	Press **[Right]** for more than 5 sec., then within 3 sec. press **[Select]** for 2 sec. during displaying Page 2.
Total Operation Time	No Change	Reset to 0H	No Change
Lamp Operation Time (C/H/M/L)	Reset to 0H	Reset to 0H	No Change
Lamp ON	Reset to 1	Reset to 1	No Change
Lamp OFF	Reset to 0	Reset to 0	No Change
Lamp Replacement	Add 1 to the current value	Reset to 0	No Change
Cool Down Complete	Reset to 0	Reset to 0	No Change

Type	Clearing the Lamp Information	Clearing the AS Information	Clearing the Log Information
Error Log	No Change	No Change	Spacing (Status of acquiring none)
Error Count	No Change	No Change	Reset to 0
Control	No Change	No Change	No change

5.1.3 Software DIP Switches

Some software DIP-switch settings are only accessible from the AS menu. To display the DIP-SW Setting Menu, do the following operation.

1. Press the **[Menu]** button either on the remote control or on the projector's control panel for at least 5 seconds.
2. Within 4 seconds after releasing the **[Menu]** button, hit these buttons in order shown below.
   [Esc] → **[Esc]** → **[Right]** → **[Left]**
   The following sub-menu is displayed.



Switch On or Off, as necessary

DIP-SW No	BIT	Function	Default Setting	Setting Value	Note
SW1	0	reserved	-	-	-
	1	reserved	-	-	-
	2	DSR	1	0: disabled 1: enabled	-
	3	reserved	-	-	-
	4	reserved	-	-	-
	5	reserved	-	-	-
	6	reserved	-	-	-
	7	reserved	-	-	-

DIP-SW No	BIT	Function	Default Setting	Setting Value	Note
SW4	0	reserved	-	-	-
	1	Setup level	0	0: 0 %, 1: 7.5 %	Varies by destination
	2	Lamp noise analysis mode	0	0: disabled 1: enabled	-
	3	reserved	-	-	-
	4	reserved	-	-	-
	5	reserved	-	-	-
	6	reserved	-	-	-
	7	reserved	-	-	-
SW6	0	Dot defect detection pattern	0	0: disabled (no display) 1: enabled (displays)	-
	1	reserved	-	-	-
	2	reserved	-	-	-
	3	Power button at button-lock	1	0: disabled 1: enabled	-
	4	reserved	-	-	-
	5	reserved	-	-	-
	6	reserved	-	-	-
	7	reserved	-	-	-

3. When DIP-SW setting is changed, turn off the power button and cool down the projector as usual. After the cool down is complete, the new setting is effective.