Deneb-PJ2

Machine Codes: Y068/Y069

Field Service Manual

20 January, 2015

Important Safety Notices

Lead-Free Solder

This product is manufactured using lead-free solder as a part of a movement within the consumer products industry at large to be environmentally responsible. Lead-free solder must be used in the servicing and repair of this product.

⚠WARNING

- This product is manufactured using lead free solder. DO NOT USE LEAD BASED SOLDER TO REPAIR THIS PRODUCT! The melting temperature of lead-free solder is higher than that of leaded solder by 86 °F to 104 °F (30 °C to 40 °C). Use of a soldering iron designed for lead-based solders to repair product made with lead-free solder may result in damage to the component and or PCB being soldered. Great care should be made to ensure high-quality soldering when servicing this product - especially when soldering large components, through-hole pins, and on PCBs - as the level of heat required to melt lead-free solder is high.

Prevention of Physical Injury

1. Before disassembling or assembling parts of the machine and peripherals, make sure that the machine power cord is unplugged.
2. The wall outlet should be near the machine and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
4. The machine drives some of its components when it completes the warm-up period. Be careful to keep hands away from the mechanical and electrical components as the machine starts operation.
5. Use brackets that are strong enough to support the projector.
6. The projector must be installed in a location that is sturdy enough to support the full weight of the projector and brackets.

Observance of Electrical Safety Standards

The machine and its peripherals must be serviced by a customer service representative who has completed the training course on those models.

Safety and Ecological Notes for Disposal

1. Dispose of replaced parts in accordance with local regulations.

⚠WARNING

- To prevent a fire or explosion, keep the machine away from flammable liquids, gases, and aerosols. A fire or an explosion might occur.

This product contains substances which are harmful to humans and the environment.

- The lamp contains mercury.

Please dispose of this product or used lamps in accordance with local regulations.

The following information is only for EU-member states:

The use of the symbol indicates that this product may not be treated as household waste. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. For more detailed information about recycling of this product, please contact your local city office or your household waste disposal service.

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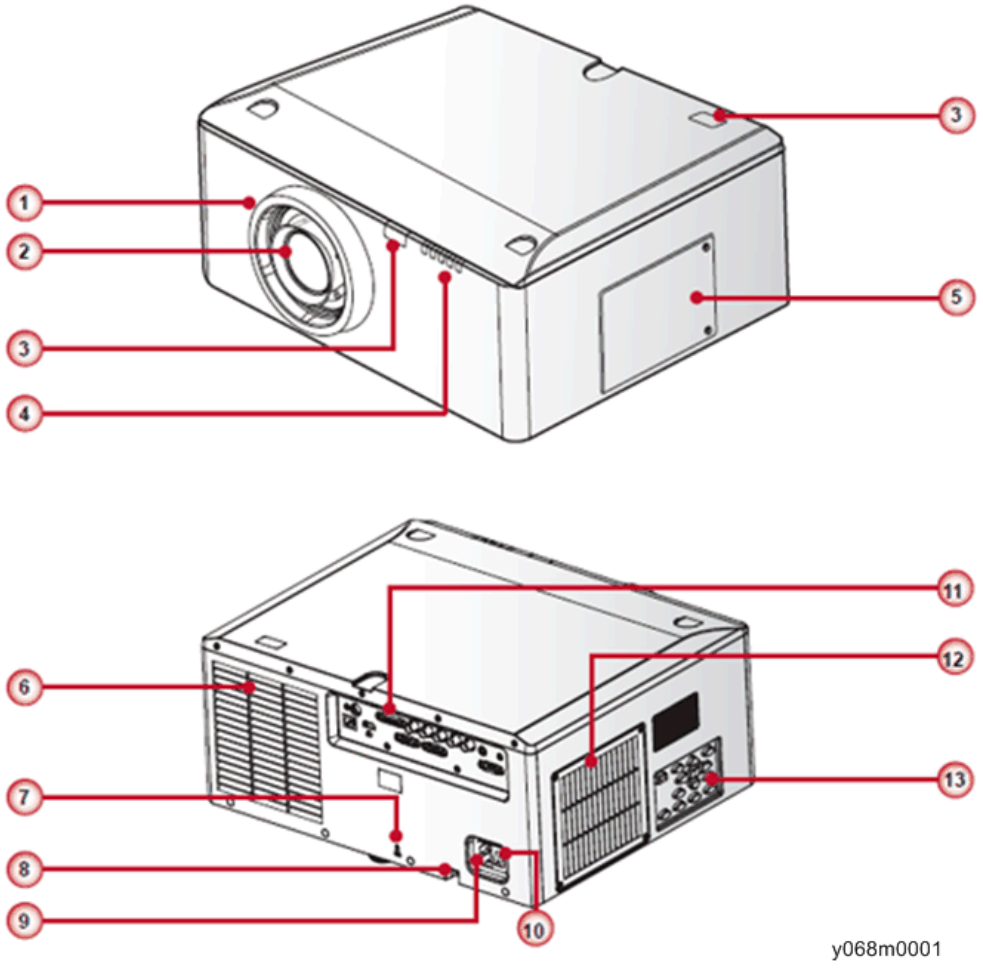
5. Test & Inspection

6. Firmware Update

1. Product Information

Overview

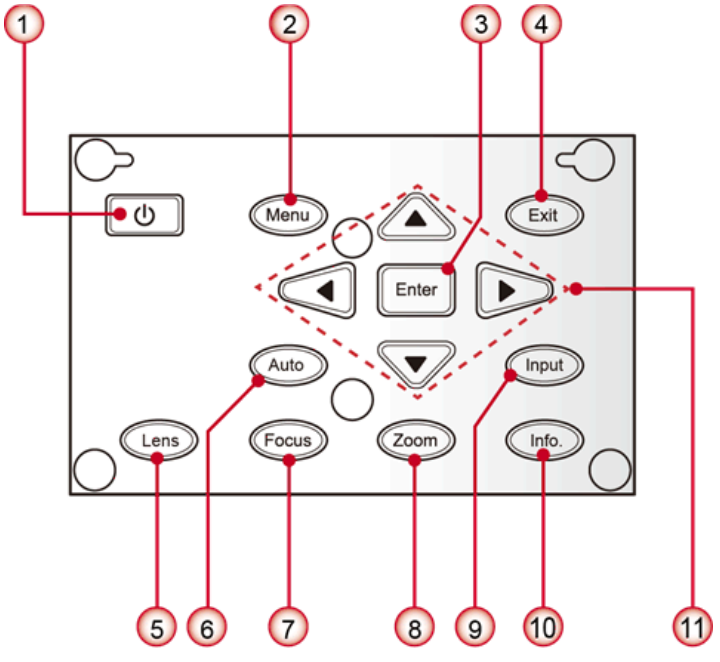
Main Unit



1. Lens ring
2. Zoom lens
3. IR receivers
4. LED indicators
5. Lamp door

6. Outlet vent
7. Kensington lock
8. Security bar
9. Power connector
10. Power switch
11. Connector panel
12. Inlet vent & filter
13. Keypad panel

Control Panel

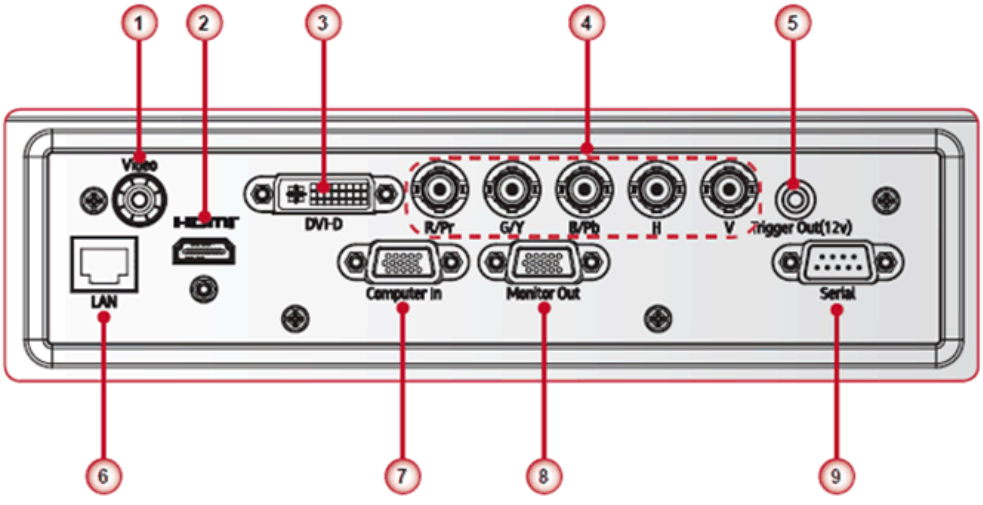


w_y041m0002

1. ⏻/ Power key
2. Menu key
3. Enter key
4. Exit key
5. Lens key
6. Auto key
7. Focus key

8. Zoom key
9. Input key
10. Info. key
11. Four directional select keys

Connection Ports



y068m0003

1. Composite video input connector
2. HDMI connector
3. DVI-D connector
4. BNC connector
5. Trigger out connector
6. LAN connector
7. Computer in connector
8. Monitor out connector
9. Serial connector (9-pin Dsub type)

Specifications

General Specifications

No	Item	Description
1	Technology	"TI" 0.7" XGA DMD, Type A, DC3 / "TI" 0.67" WUXGA DMD, Type A, DC3
2	Dimension (W x D x H)	452.8 x 389.9 x 205.5 mm (without lens, w/o elevators)
3	Weight	• Net weight (w/o lens): 13.9 kg • Weight with package (w/o lens): 17.3 kg
4	Power supply	Auto-ranging: 100V ~ 240V ± 10%, 50-60Hz • 465W Lamp @ Normal operation • 360W Lamp @ ECO operation
5	Keystone correction	V: +/- 20 degree
6	Resolution	• Native resolution: XGA (1024x768) / WUXGA (1920x1200) • Supported Resolution: Up to WUXGA@60Hz (Reduced Blanking) & UXGA@60Hz
7	Power consumption	• Normal Brightness mode: 580W+/-10%@ 110VAC • ECO Brightness mode: 450W+/-10%@ 110VAC • Standby mode (LAN off) < 0.5W
8	Throw ratio (XGA)	• 0.99-1.26 (Replacement Lens Type 5) • 1.26-1.58 (Standard Lens Type 2) • 1.58-3.00 (Replacement Lens Type 6) • 3.00-5.70 (Replacement Lens Type 7) • TBA (Replacement Lens Type 9)
9	Lamp life	• Normal mode: 1500 hours standard @465W, 50% survival rate • ECO mode: 2000 hours typical @360W, 50% survival rate

No	Item	Description	
10	Video compatibility	• NTSC: NTSC M 3.58MHz, 4.43MHz • PAL: PAL B/D/G/H/I/M/N, 4.43MHz • SECAM: SECAM B/D/G/K/K1/L, 4.25/4.4 MHz • SDTV: 480i/p, 576i/p • HDTV: 720p(50/60Hz), 1080i/p(50/60Hz), 1080p 24\25\30\50\60 Hz	
11	Brightness	• Typical: 6,300(XGA) /5,500(WXGA) • Minimum: 5,600(XGA) /4,900(WXGA)	
12	Contrast ratio *1	Full on/ Full off	• Typical: 1,200:1 (XGA) / 1150:1 (WXGA) • Minimum: 900:1 (XGA) / 1000:1 (WXGA)
		ANSI	• Typical: 250 (XGA) / 250 (WXGA) • Minimum: 150 (XGA) / 150 (WXGA)
		Dynamic ON	• Typical: 4,400:1 (XGA) / 4,400:1 (WXGA)
13	Uniformity (TBD) *2	JBMA Standard (Lens Center)	• Typical: 90% (XGA) / 90% (WXGA) • Minimum: 65% (XGA) / 70% (WXGA)
		ANSI Standard (Lens Center)	• Typical: +/-30% (XGA) / +/-30% (WXGA) • Minimum: +/-35% (XGA) / +/-35% (WXGA)

No	Item	Description
14	Color wheel	• 6 Segment—RGBCYW, Filter Diameter: 56mm • Filter Segment: 6S R81 Y41 G84 C31 W52 B71 • 2X, 7200RPM (120Hz) & 3X, 10800RPM (180Hz)
15	Lamp	465W, arc 1.1
16	Projection lens	See the section about the Lens (page 17 "Lens")
17	Temperature	• Operating: 5°C ~ 40 °C (0~40 °C for tests only) • Non-operation: -20°C ~ 60°C
18	Altitude	• Operating: for 0 ~ 2500 ft, 5 ~ 40°C for 2500 ~ 5000 ft, 5 ~ 35°C for 5000 ~ 10000 ft, 5 ~ 30°C • Non-operation: Sea Level to 40,000 feet

*1 ANSI contrast is verified in bright display mode and normal brightness mode.

Contrast spec is based on standard lens type 2. Other lens contrast will be different.

*2 Uniformity is measured in bright display mode, normal brightness mode and lens shift on center.

Contrast spec is based on standard lens type 2. Other lens contrast will be different.

The ANSI uniformity at dark corner as lens offset for XGA is -70% (Min.) (TBD)

Compatible Mode

Computer compatibility (for PC, Video, DVI, HDMI)

Signal	Resolution	Frequency H. [KHz]	Refresh rate [Hz]	Video	Digital	Analog	Remark
NTSC	-	15.734	60	O	-	-	
PAL/ SECAM	-	15.625	50	O	-	-	
	640 x 350	31.5	70.1		O	O	70Hz

Signal	Resolution	Frequency H. [KHz]	Refresh rate [Hz]	Video	Digital	Analog	Remark
	640 x 400	37.9	85.1		O	O	85Hz
	720 x 400	31.5	70		O	O	
	720 x 576		50		O	O	
VGA	640 x 480	31.5	60		O	O	
VGA	640 x 480		67		O	O	
VGA	640 x 480	37.9	72.8		O	O	72Hz
VGA	640 x 480	37.5	75		O	O	
VGA	640 x 480	43.3	85		O	O	
SVGA	800 x 600	35.2	56.3		O	O	56Hz
SVGA	800 x 600	37.9	60.3		O	O	60Hz
SVGA	800 x 600	46.9	75		O	O	
SVGA	800 x 600	48.1	72.2		O	O	72Hz
SVGA	800 x 600	53.7	85.1		O	O	85Hz
XGA	1024 x 768	48.4	60		O	O	
XGA	1024 x 768	56.5	70.1		O	O	70Hz
XGA	1024 x 768	60	75		O	O	
XGA	1024 x 768	68.7	85		O	O	
HD720	1280 x 720		50		O	O	
HD720	1280 x 720		60		O	O	
WXGA	1280 x 768	47.776	60		O	O	
WXGA	1280 x 768		75		O	O	
WXGA	1280 x 768		85		O	O	
WXGA-800	1280 x 800		60		O	O	

Signal	Resolution	Frequency H. [KHz]	Refresh rate [Hz]	Video	Digital	Analog	Remark
SXGA	1280 x 1024	64	60		O	O	
SXGA	1280 x 1024	80	75		O	O	
SXGA	1280 x 1024	91.1	85		O	O	
SXGA+	1400 x 1050		60		O	-	
UXGA	1600 x1200	75	60		O	O	
HD1080	1920 x 1080		24		O	O	
HD1080	1920 x 1080		50		O	O	
HD1080	1920 x 1080		60		O	O	
WUXGA	1920 x 1200		60		O	O	Only support [RB] timing
HDTV	1920 x 1080	33.8	30	O	-	-	
	1920 x 1080	28.1	25	O	-	-	
	1920 x 1080i	28.125	50	-	O	O (SOG)	
	1920 x 1080i	33.75	60	-	O	O (SOG)	
	1920 x 1080p		24	-	O	O (SOG)	
	1920 x 1080p		25	-	O	O (SOG)	
	1920 x 1080p		30	-	O	O (SOG)	
	1920 x 1080p		50	-	O	O (SOG)	

Signal	Resolution	Frequency H. [KHz]	Refresh rate [Hz]	Video	Digital	Analog	Remark
	1920 x 1080p		60	-	O	O (SOG)	
	1280 x 720	45	60	O	-	-	
	1280 x 720p		50	-	O	O (SOG)	
	1280 x 720p		60	-	O	O (SOG)	
SDTV	720 x 576	31.3	50	O	-	-	
	720 x 576i	15.625	50	-	O	O (SOG)	
	720 x 576p		50	-	O	O (SOG)	
	720 x 480	31.5	60	O	-	-	
	720 x 480i	15.734	60	-	O	O (SOG)	
	720 x 480p	31.5	60	-	O	O (SOG)	

Note

- **"O" expressed support this type of signal and "-" expressed that does not support this type of signal.**

3D timing table (Only support XGA, WUXGA does not support 3D function)

Input Signal	Resolution	V Freq.(Hz)	H Freq.(kHz)	Pixel Clock (MHz)	Video Image
SVGA	800 x 600	119.63	76.92	83.725	Frame sequential

Input Signal	Resolution	V Freq.(Hz)	H Freq.(kHz)	Pixel Clock (MHz)	Video Image
XGA	1024 x 768	120.13	98.87	139.276	Frame sequential
720p	1280 x 720	120.31	92.88	161.997	Frame sequential

Computer compatibility for MAC

Resolution	Hz	Mac book compatibility		Mac book Pro (Intel) compatibility		Power Mac G5 compatibility		Power Mac G4 compatibility	
		Digital	Analog	Digital	Analog	Digital	Analog	Digital	Analog
800x600	60	O	O	O	O	-	-	O	-
800x600	72	O	O	O	O	-	O	O	O
800x600	75	O	O	O	O	-	O	O	O
800x600	85	O	O	-	O	-	O	O	O
1024x768	60	O	O	O	O	-	O	O	O
1024x768	70	O	O	O	O	-	O	O	O
1024x768	75	O	O	O	O	-	O	O	O
1024x768	85	O	O	O	O	-	O	O	O
1280x720	60	O	O	O	O	-	O	O	O
1280x768	60	O	O	O	O	-	-	-	O
1280x768	75	-	O	-	O	-	O	O	O
1280x768	85	-	O	-	O	-	-	-	O
1280x800	60	-	O	-	O	-	O	O	O
1280x1024	60	O	-	-	O	-	O	O	O

Resolution	Hz	Mac book compatibility		Mac book Pro (Intel) compatibility		Power Mac G5 compatibility		Power Mac G4 compatibility	
		Digital	Analog	Digital	Analog	Digital	Analog	Digital	Analog
1280x1024	75	O	-	-	O	-	O	O	-
1920x1080	60	O	-	-	O	-	O	O	O
1920x1200 (*1)	60	O	-	-	O	-	O	O	O

(*1) 1920 x 1200 @60Hz only support RB (reduced blanking)

Note

- **"O" expressed support this type of signal and "-" expressed that does not support this type of signal.**

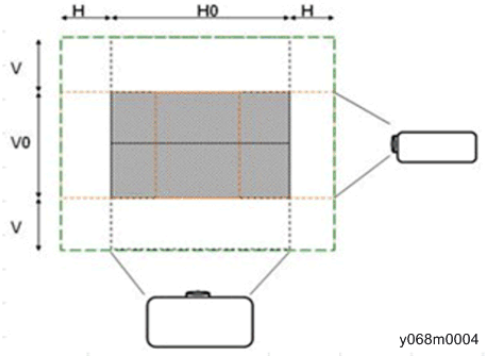
Lamp Information

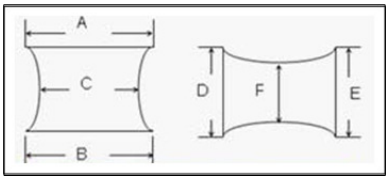
	Description
Type	465W, arc 1.1
Lamp life	• Normal mode: 1500 hours standard @465W, 50% survival rate • ECO mode: 2000 hours typical @360W, 50% survival rate
	Above spec only claimed for table top and ceiling mount, CW @2X
Lamp power	• Normal mode: 465W ± 3% • ECO mode: 360W

Lens

XGA/WUXGA: Type 2 is the standard lens.

Projection lens	Replacement Lens Type 5	Standard Lens Type 2	Replacement Lens Type 6	Replacement Lens Type 7	Replacement Lens Type 9
Focal length (f)	14.03-17.96	18.07-22.59	22.56-42.87	42.68-80.90	TBA
F number	2.30-2.57	2.00-2.32	2.30-3.39	2.30-2.74	TBA
Focus spec (MTF)	67 lp/mm	47 lp/mm	67 lp/mm	67 lp/mm	TBA
Zoom range (ratio)	1.28X	1.25X	1.9X	1.9X	TBA
Zoom & focus adjustment	Motorized				
Throw ratio (XGA)	0.99-1.26	1.26-1.58	1.58-3.00	3.00-5.70	TBA
Throw distance (XGA)	1.01~7.68m	1.28~9.63m	1.61~18.29m	3.05~34.75m	TBA
Projection image size	50~300"				

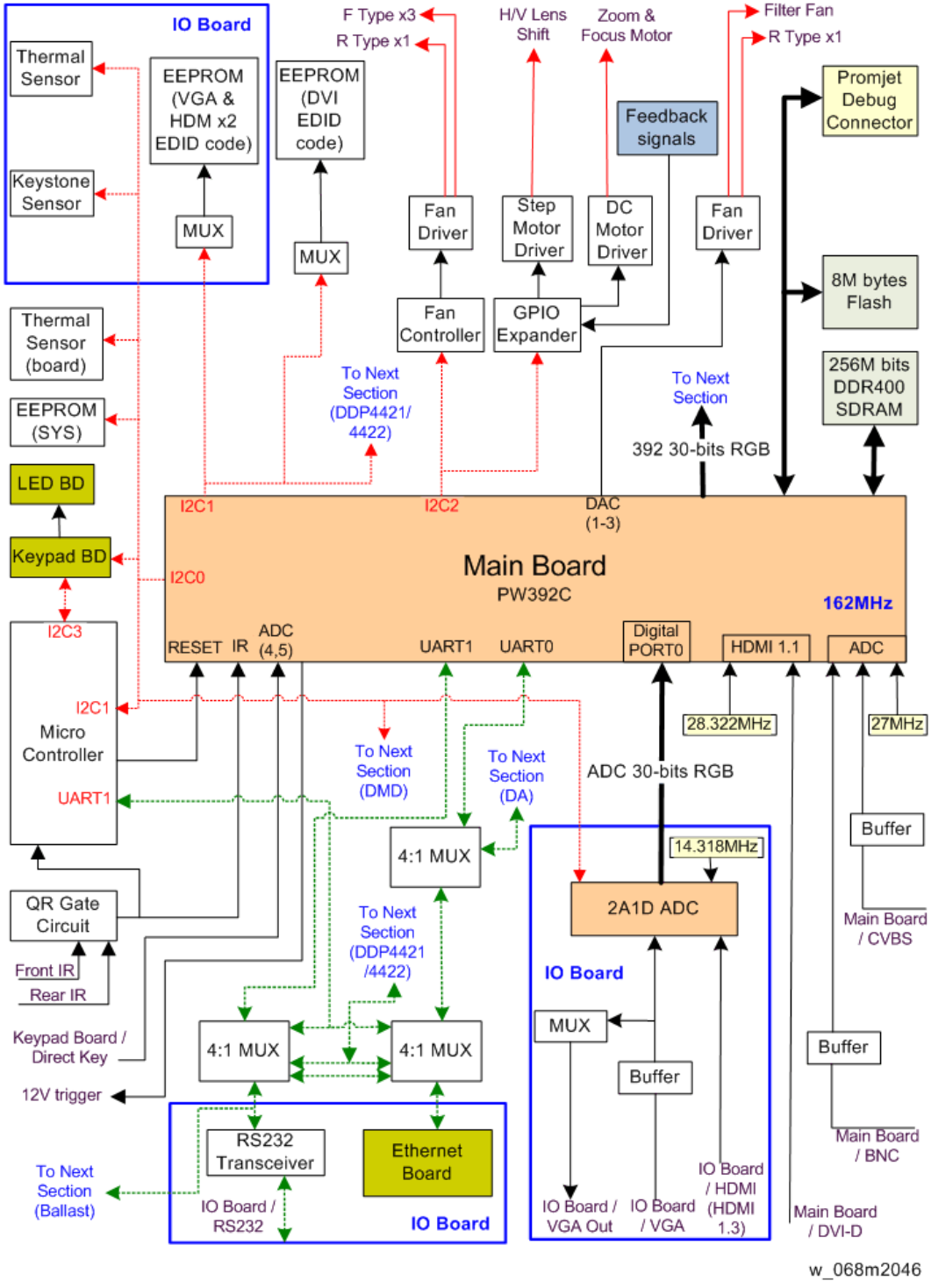
<table>
<tr><th>Projection lens</th><th>Replacement Lens Type 5</th><th>Standard Lens Type 2</th><th>Replacement Lens Type 6</th><th>Replacement Lens Type 7</th><th>Replacement Lens Type 9</th></tr>
<tr><td>Motorized lens shift</td><td colspan="5">XGA, WUXGA: (Dim corner is larger than 50%)
Horizontal: +/-15% (typical; tolerance +/-4%)
Vertical: +/-50% (typical; tolerance +/-4%)
<table><tr><th>Platform</th><th>H</th><th>V</th></tr><tr><td>0.7" XGA</td><td>15%</td><td>50%</td></tr><tr><td>0.67"WUXGA</td><td>15%</td><td>50%</td></tr></table>
 

Lens shift accuracy: 0.5 pixel per step
When the lens is shifted beyond the recommended range for operation, the screen edges may become darker or the images may become out of focus.</td></tr>
<tr><td>Keystone correction</td><td colspan="5">V: +/- 20 degree</td></tr>
<tr><td>Leakage</td><td colspan="5"><=0.8 Lx @ screen size diagonal 83” outside of active area</td></tr>
<tr><td>Distortion</td><td colspan="5"><+/- 1.0% @ 100” screen size
(all lens shift area, all optional lens)
 

Horizontal distortion = (A-C)/C (up) and (B-C)C (down)
Vertical distortion = (D + E - 2F)/2F</td></tr>
</table>

Projection lens	Replacement Lens Type 5	Standard Lens Type 2	Replacement Lens Type 6	Replacement Lens Type 7	Replacement Lens Type 9
Flare	1 pixel (core pixel) XGA=3.2mm @ 100" screen 2.Green flare<=2.5 pixels (Observable from 1.5m) 3.Blue/Red flare<=2.5 pixels (Observable from 1.5m)				
Unbalance	<50cm @100" full range for all lens.				
Thermal drift of focus	About 45cm @100" after 1 hr. burn-in				

Diagram


IO Board
Thermal Sensor
EEPROM (VGA & HDM x2 EDID code)
Keystone Sensor
MUX
EEPROM (DVI EDID code)
MUX
F Type x3
R Type x1
Fan Driver
Fan Controller
H/V Lens Shift
Step Motor Driver
Zoom & Focus Motor
DC Motor Driver
GPIO Expander
Feedback signals
Filter Fan
R Type x1
Fan Driver
Promjet Debug Connector
8M bytes Flash
256M bits DDR400 SDRAM
Thermal Sensor (board)
EEPROM (SYS)
LED BD
Keypad BD
To Next Section (DDP4421/ 4422)
To Next Section
392 30-bits RGB
I2C1
I2C2
DAC (1-3)
I2C0
Main Board
PW392C
162MHz
I2C3
RESET
IR
ADC (4,5)
UART1
UART0
Digital PORT0
HDMI 1.1
ADC
28.322MHz
27MHz
I2C1
Micro Controller
UART1
To Next Section (DMD)
To Next Section (DA)
ADC 30-bits RGB
4:1 MUX
14.318MHz
2A1D ADC
Buffer
Main Board / CVBS
QR Gate Circuit
Front IR
Rear IR
To Next Section (DDP4421 /4422)
IO Board
MUX
Buffer
Keypad Board / Direct Key
12V trigger
4:1 MUX
4:1 MUX
Buffer
Main Board / BNC
RS232 Transceiver
Ethernet Board
To Next Section (Ballast)
IO Board / RS232
IO Board
IO Board / VGA Out
IO Board / VGA
IO Board / HDMI (HDMI 1.3)
Main Board / DVI-D
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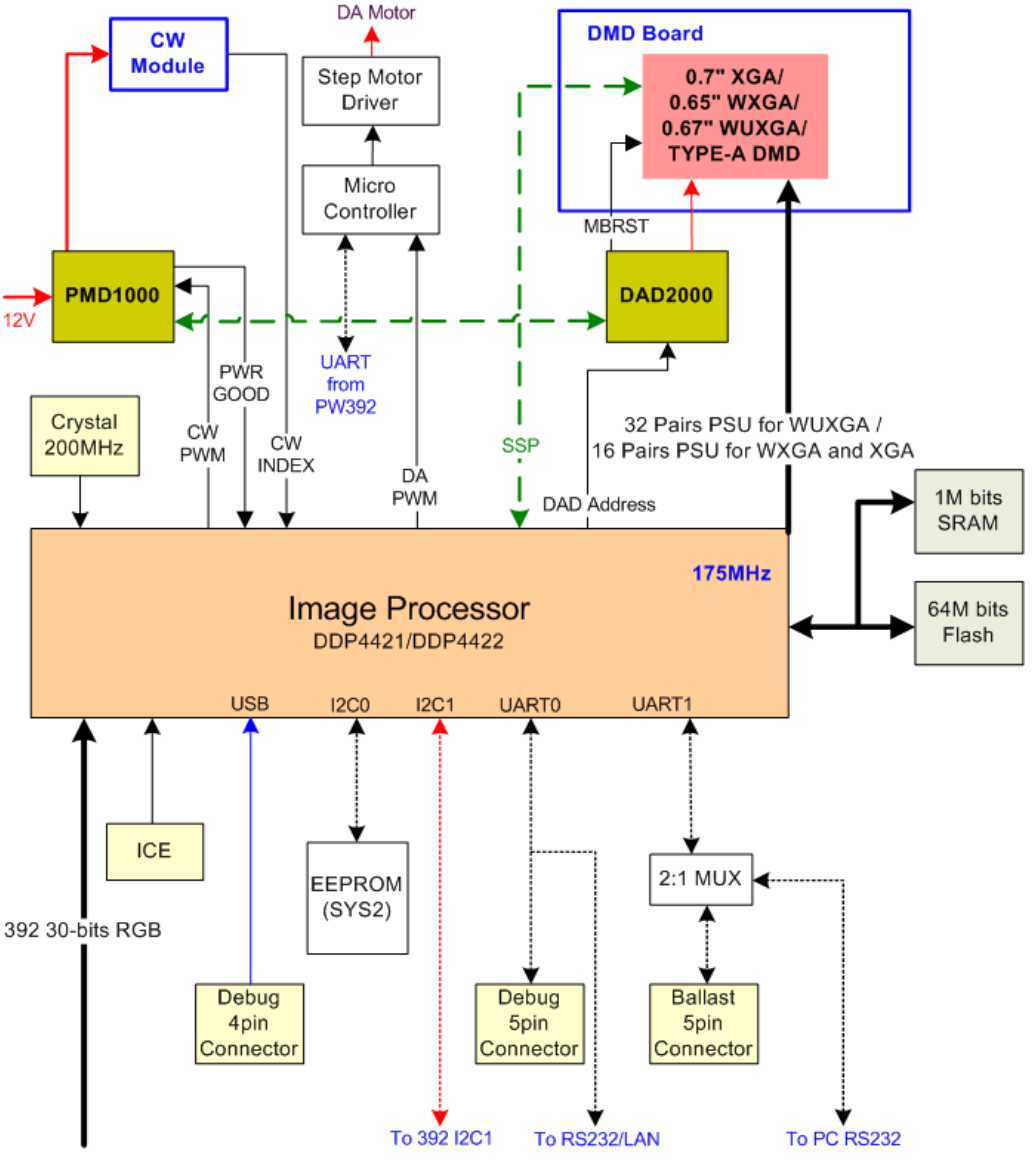

DA Motor
CW Module
Step Motor Driver
DMD Board
0.7" XGA/ 0.65" WXGA/ 0.67" WUXGA/ TYPE-A DMD
Micro Controller
MBRST
PMD1000
12V
DAD2000
PWR GOOD
UART from PW392
Crystal 200MHz
CW PWM
CW INDEX
DA PWM
SSP
32 Pairs PSU for WUXGA / 16 Pairs PSU for WXGA and XGA
DAD Address
1M bits SRAM
175MHz
Image Processor
DDP4421/DDP4422
64M bits Flash
USB
I2C0
I2C1
UART0
UART1
ICE
EEPROM (SYS2)
2:1 MUX
392 30-bits RGB
Debug 4pin Connector
Debug 5pin Connector
Ballast 5pin Connector
To 392 I2C1
To RS232/LAN
To PC RS232

w_068m2047

2. Installation

Installation Requirements

Environment/Power Requirements

Operating temperature

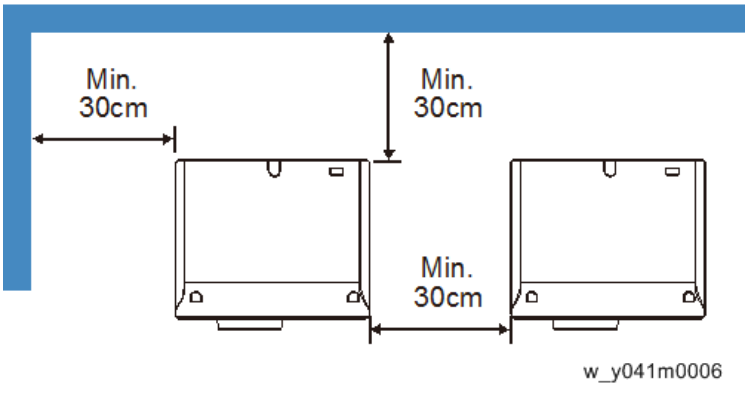
5ºC to 40ºC / 41°F~104°F

Power supply

100~240VAC ± 10%, 50~60Hz (Auto-ranging and power factor correction)

Machine Space Requirements

Do not block projector in/out air vents and keep 30 cm clearance around vents for air flow.



Machine Dimensions

453 mm (W) x 390 mm (D) x 212 mm (H) (without lens, with elevators)

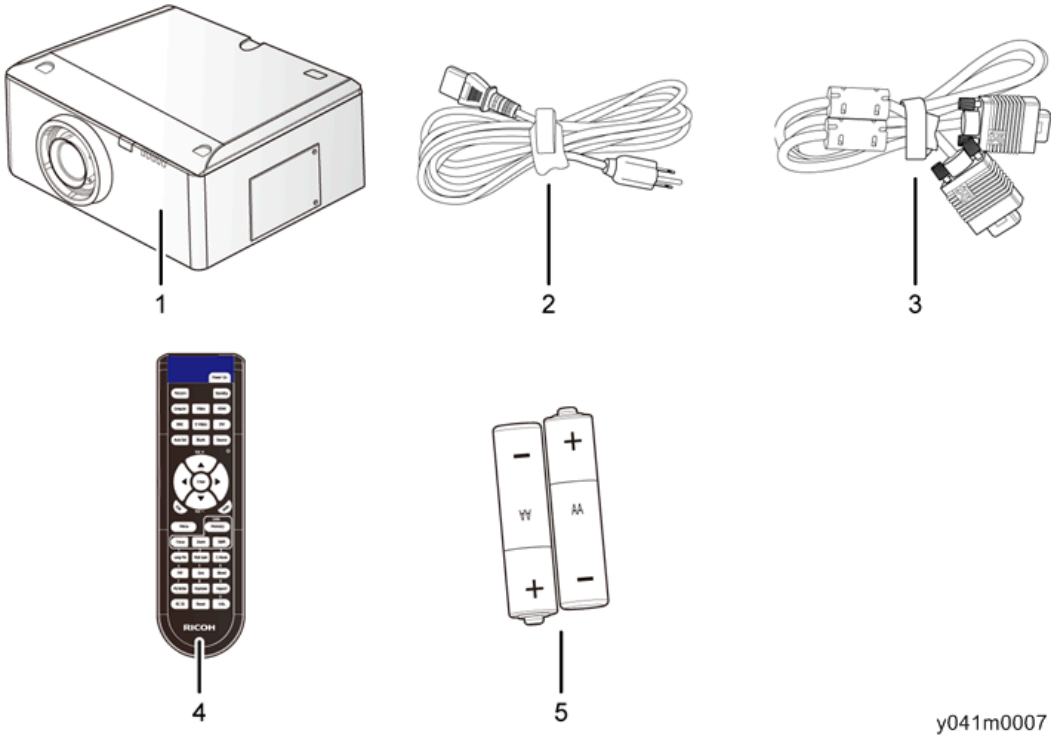
Main Machine Installation

The user must set this projector up.

Important

- About the handling of this machine, follow the contents with reference to Safety Information of the user manual.

Accessory Check



No	Description	Q'ty
1	Projector with lens cover	1
2	Power cord	1
3	VGA cable	1
4	Remote control	1
5	AA (R6) batteries (for remote control)	2

No	Description	Q'ty
-	Documentation: User's Manual (CD and Paper)	1
-	Documentation: Warranty Card	1

Note

- Due to different applications in each country, some regions may have different accessories.

Precautions

Please follow all warnings, precautions and maintenance as recommended in this manual.

⚠WARNING

- Do not look into the projector's lens when the lamp is on. The bright light may hurt your eyes.
- To reduce the risk of fire or electric shock, do not expose this projector to rain or moisture.
- When switching the projector off, please ensure the cooling cycle has been completed before disconnecting power. Allow 60 seconds for the projector to cool down.
- Do not use lens cap when projector is in operation.
- Do not look into or point the laser pointer on your remote control into your or someone's eyes. Laser pointer can cause permanent damage to eyesight.
- Do not transport the projector with any lens installed.

Do

- Turn off and unplug the power plug from the AC outlet before cleaning the product.
- Use a soft dry cloth with mild detergent to clean the display housing.
- Disconnect the power plug from AC outlet if the product is not being used for a long period of time.

Do not

- Block the slots and openings on the unit provided for ventilation.
- Use abrasive cleaners, waxes or solvents to clean the unit.
- Use under the following conditions:
  - In extremely hot, cold or humid environments.
    - Ensure that the ambient room temperature is within 5°C ~ 40°C
    - Relative humidity is 10% ~ 85%

- In areas susceptible to excessive dust and dirt.
- Near any appliance generating a strong magnetic field.
- In direct sunlight.

3. Replacement and Adjustment

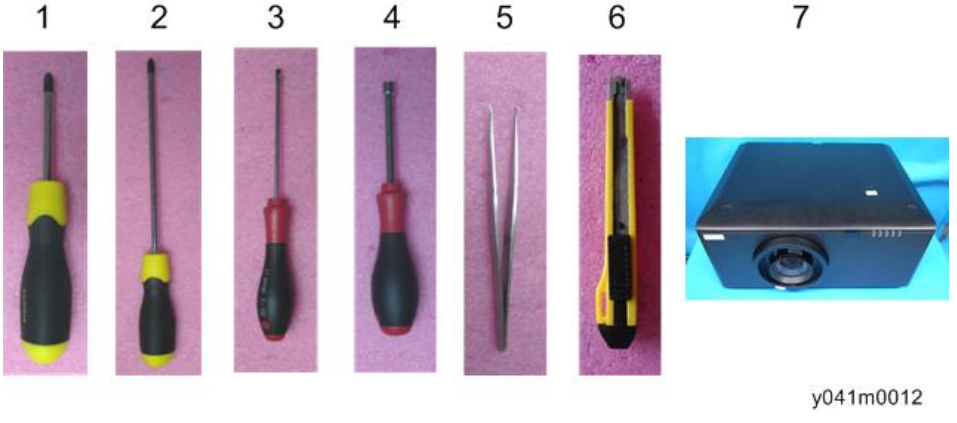
Special Tools

Make sure that engineers are equipped with the following tools, which will be necessary in order to update the firmware, and to perform adjustments that are necessary after replacing the optical engine (page 54 "Optical Engine") or main board(page 36 "Main Board, I/O Board, LAN Board").

1. RS-232C cable (cross)
2. Laptop
3. LAN Cable

Equipment Needed

1. Screw bit (+): 105
2. Screw bit (+): 107
3. Screw bit (-): 107
4. Hex sleeves 5 mm
5. Tweezers
6. Utility knife
7. Projector



Parts List

Service Parts List

1. Lens ring cover
2. Lamp unit
3. Top cover
4. IR-T sensor
5. Rear cover
6. Main board
7. I/O board
8. LAN board
9. Top/Bottom blower
10. TC blower
11. System fan
12. Thermal board
13. LED board
14. LED cover
15. IR-F sensor
16. IR-F cover
17. Right cover
18. Lamp cover
19. Interlock switch
20. Left cover
21. Vent cover
22. Filter vent cover
23. Keypad rubber
24. Keypad board
25. Harness (Main board to Keypad board)
26. Interrupt switch
27. Optical engine
28. Color wheel
29. Photo sensor board

30. DA module
31. DC Motor ×2
32. Horizontal Sensor
33. Vertical Sensor
34. Thermal switch
35. Ballast
36. Harness (Main board to Ballast)
37. Harness (Lamp to Ballast)
38. PSU
39. Harness (I/O board to PSU)
40. Harness (Thermal switch to PSU)
41. Harness (Ballast to PSU)
42. DMD fan
43. Bottom cover
44. Bottom shielding
45. AC inlet
46. Adjustable Foot
47. Nut (for Adjustable foot)

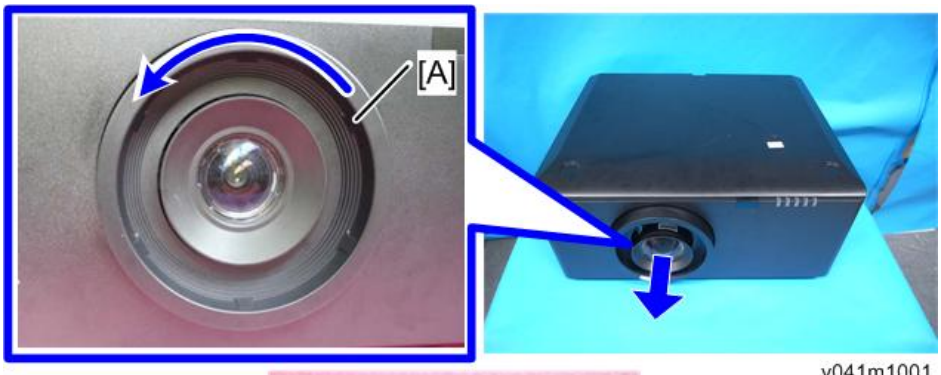
Part Replacement

Important

- This process is protective level II. Operators should wear electrostatic chains.
- When removing or disassembling the optical engine, please note that specific environmental conditions (clean room) are required.

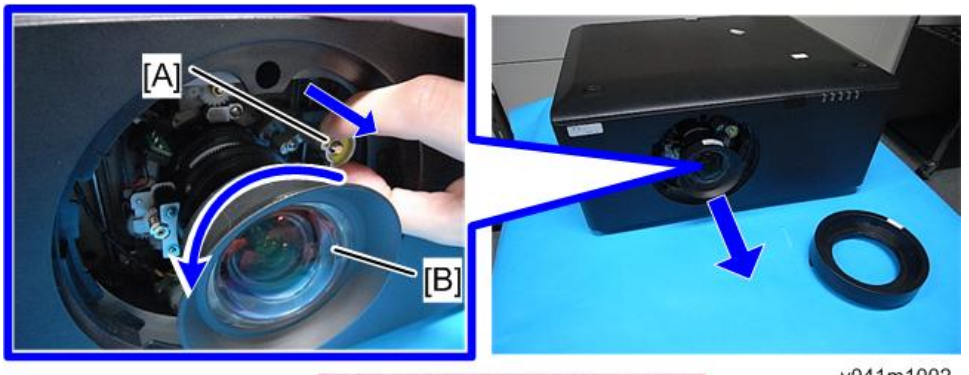
Lens Ring Cover, Projector Lens

1. Rotate the lens ring cover [A].
2. Pull out the lens cover strap to remove the lens ring cover.



y041m1001

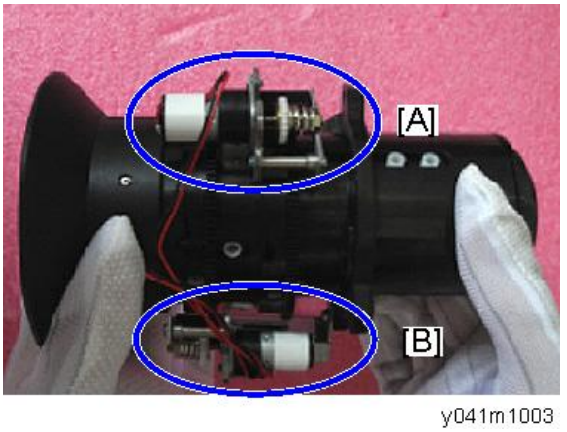
3. **Pull out the lens shift lock [A], and hold the projector lens [B], rotate it carefully. Then remove the projector lens carefully.**



y041m1002

Note

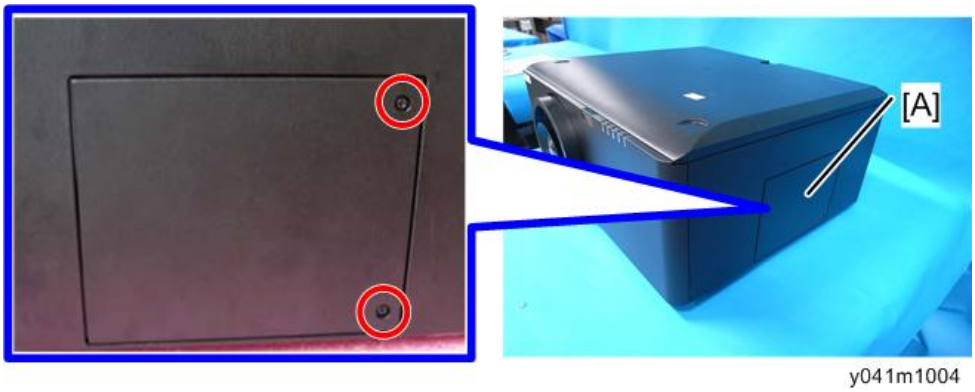
- Be careful not to dirty the glass of the projector lens.
- Be careful not to touch the motor [A] [B] of the projector lens.



y041m1003

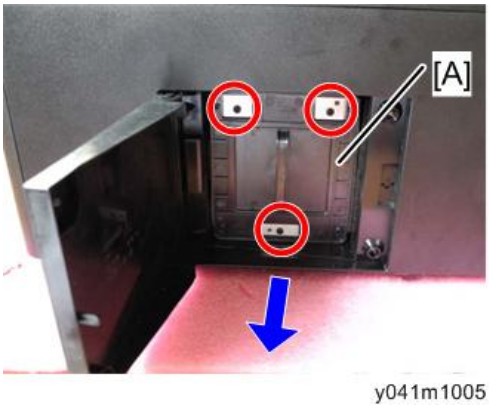
Lamp Unit

1. Loosen the 2 screws on the lamp cover [A].



y041m1004

2. Remove the 3 screws, and then take out the lamp unit [A].



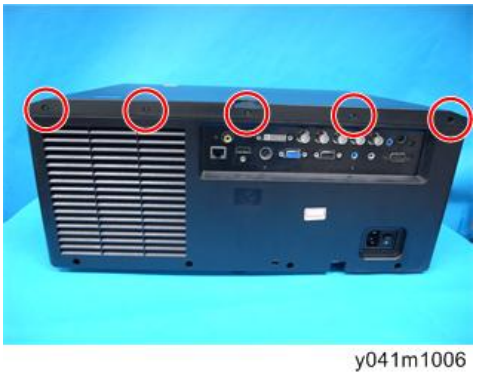
y041m1005

Top Cover, IR-T Sensor

1. **Remove the 1 screw on the front cover.**

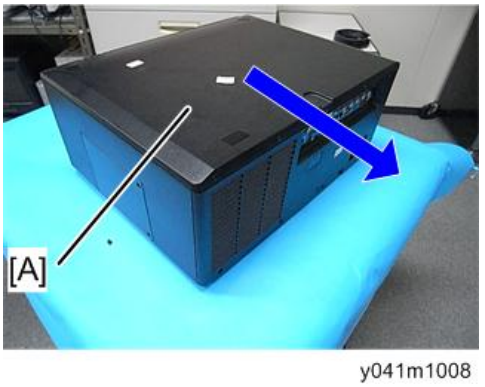
y041m1007

2. **Remove the 5 screws on the top cover.**



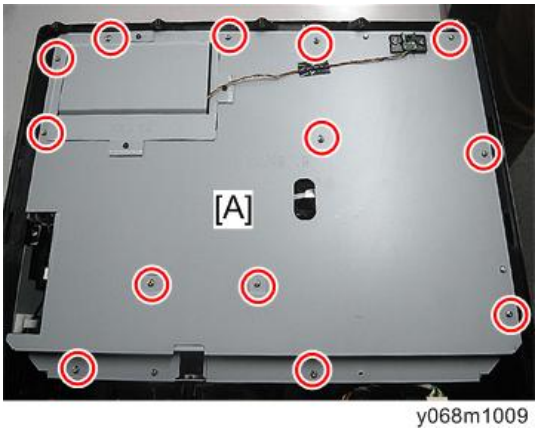
y041m1006

3. **Pull to remove the top cover [A].**



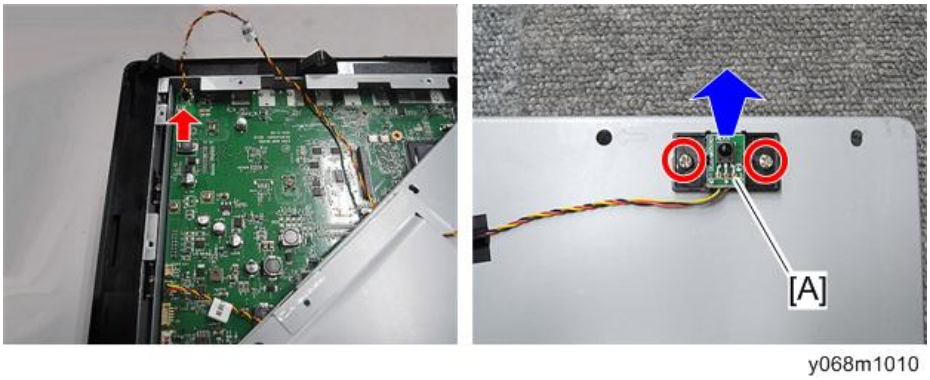
y041m1008

4. Remove the 13 screws to remove the top shielding [A].



y068m1009

5. Remove the 2 screws and unplug the 1 connector for the IR-T sensor [A].

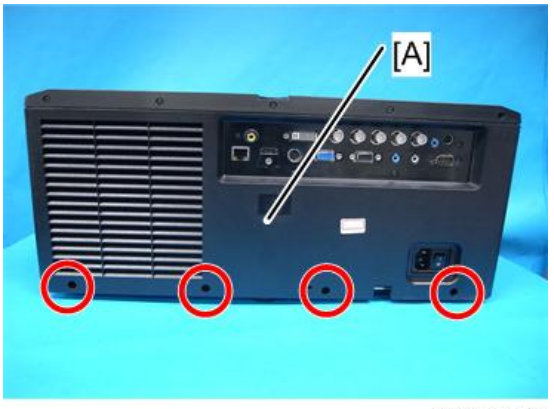


y068m1010

Rear Cover

1. Remove the 9 screws (red circle) and 8 hex screws (yellow circle) to remove the rear cover [A].

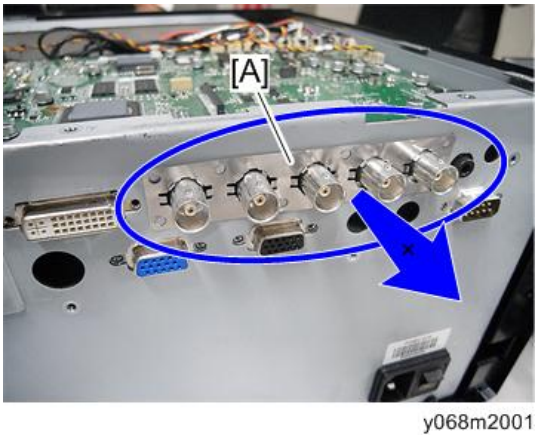
y068m1011



y041m1012

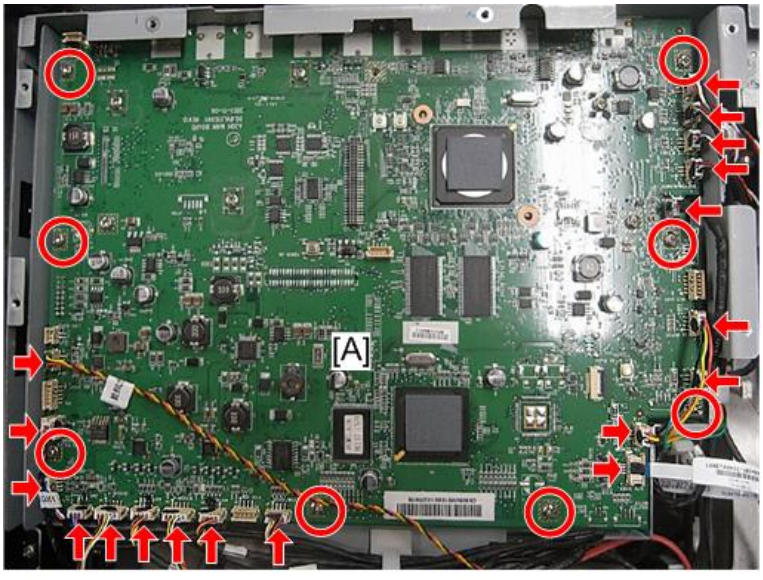
Main Board, I/O Board, LAN Board

1. **Remove the shield of terminal [A].**



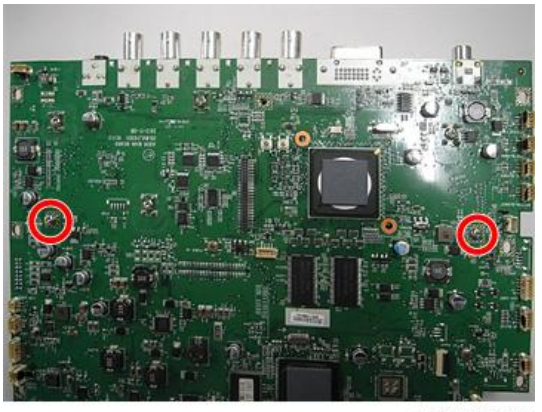
y068m2001

2. **Remove the 8 screws and 18 connectors on the front and the 2 connectors on the back to remove the main board modules.**

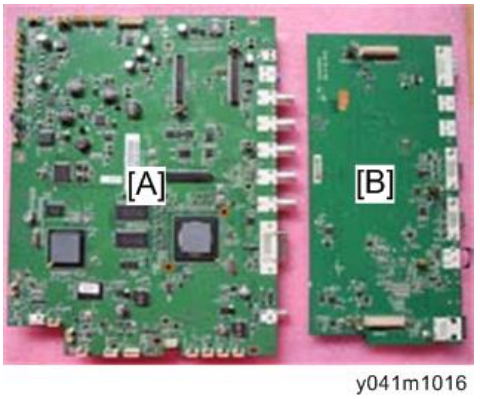


y068m1013

3. Remove the 2 screws to separate the main board [A] and the I/O board [B].



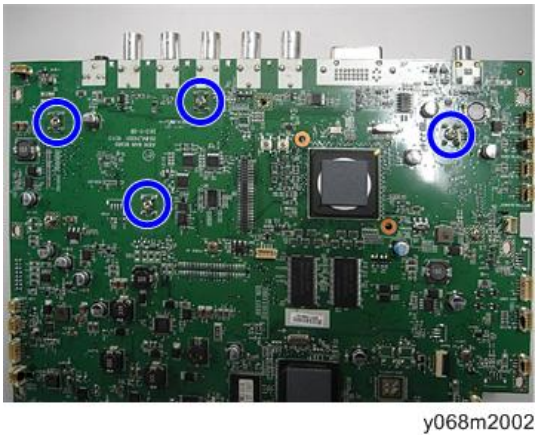
y068m1015



y041m1016

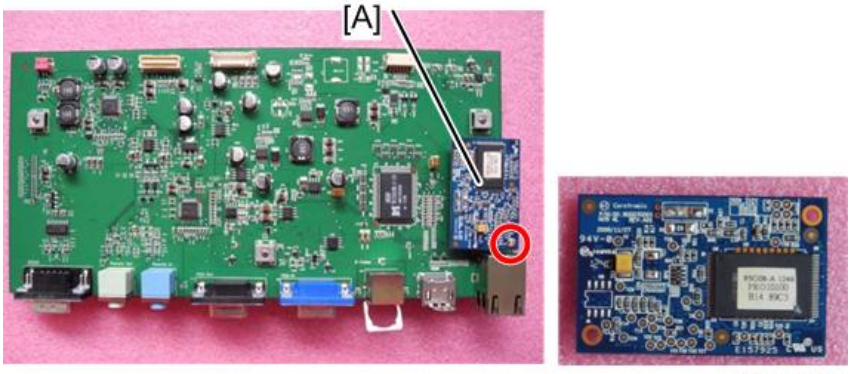
Note

- Do not remove the 4 screws circled in the picture below.



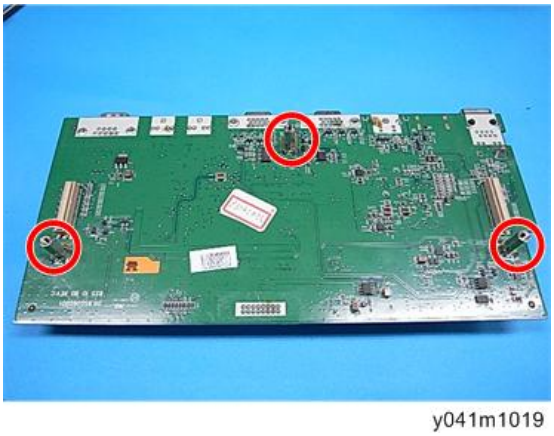
y068m2002

4. **Remove the 1 screw to remove the LAN board [A].**



y041m1018

5. **Remove the 3 hex screws.**



y041m1019

Connector list

Item	Name on board	Key feature	Figure
A	SYSTEM FAN	Red/white/black wire, white connector (3 pin)	
B	TOP BLOWR	Red/white/black wire, white connector and black wire tube (3 pin)	
C	TC BLOWER	Top blower [B], TC blower [C], and bottom blower [D] each have a three-pin connector of the same color. Be sure to identify the harness of each unit before connecting its connector to the board.	
D	BOTTOM BLOWER		
E	BALLAST	White connector and black wire tube (5 pin)	
F	DA MOTOR	Green/yellow/black/red wire, white connector (4 pin)	

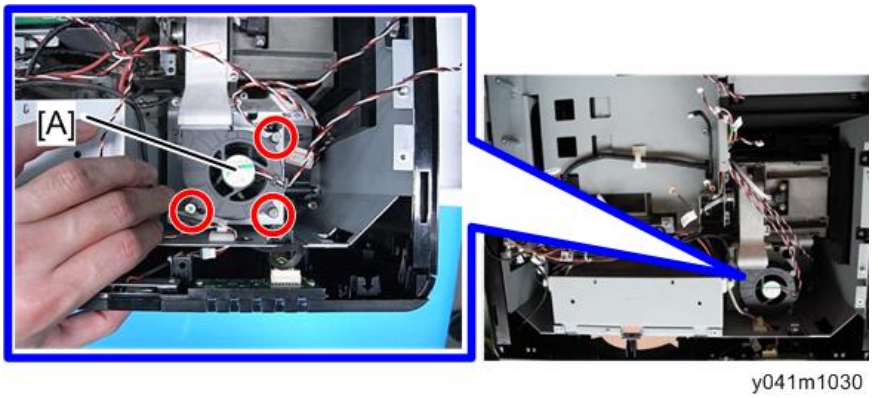
Item	Name on board	Key feature	Figure
G	DA SENSOR	Yellow/black/red wire, white connector and black wire tube (3 pin) DA sensor [G] and C/W sensor [I] each have a three-pin connector of the same color. Be sure to identify the harness of each unit before connecting its connector to the board.	
H	C/W SENSOR		
I	C/W DRIVER	FFC	
J	ZOOM/FOCUS	Yellow/black/red/white wire, white connector and black wire tube (4 pin)	
K	MOTOR-H	Yellow/black/brown/orange wire, white connector and black wire tube (4 pin) The harness is wired on the left of the lens unit.	
L	SENSOR-H	Yellow/black/red/white Wire, white connector and white wire tube (5 pin) The harness is wired on the left of the lens unit.	
M	MOTOR-V	Yellow/black/brown/orange wire, white connector and black wire tube (4 pin) The harness is wired on the right of the lens unit.	
N	SENSOR-V	Yellow/black/red/white wire, white connector and red wire tube (5 pin) The harness is wired on the right of the lens unit.	
O	DMD fan	Red/blue/black wire, white connector and black wire tube (3 pin)	

Item	Name on board	Key feature	Figure
P	THERMAL	Red/black/white/blue wire, white connector and black wire tube (4 pin)	
Q	FILTER SENSOR	Red/black wire, white connector (2 pin)	
R	IR-F	Red/black/yellow wire, green connector (3 pin)	
S	IR-T	Red/black/yellow wire, green connector (3 pin)	

Blower Module

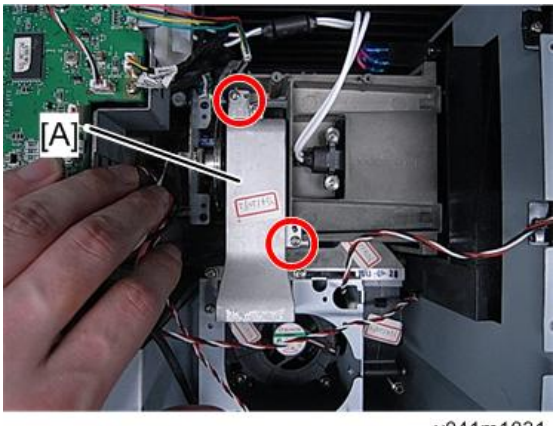
Top blower and duct

1. **Remove the 3 screws to remove the top blower [A].**



y041m1030

2. Remove the 2 screws to remove the top blower duct [A].

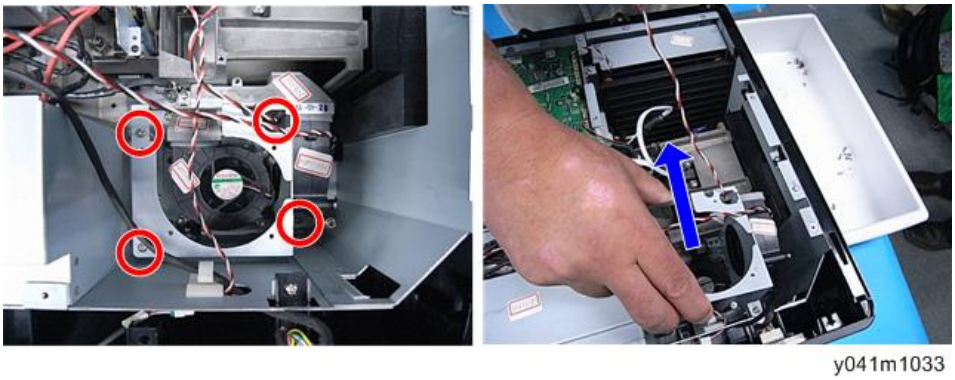


y041m1031

y068m1032

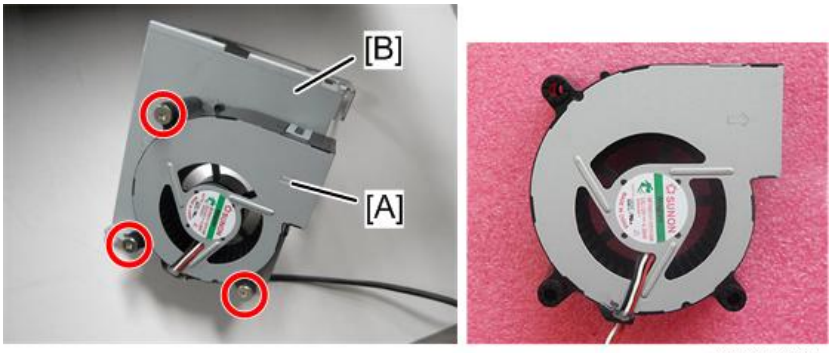
TC blower

1. Remove the top blower (page 42 "Top blower and duct")
2. Remove the 4 screws to remove the TC blower module.



y041m1033

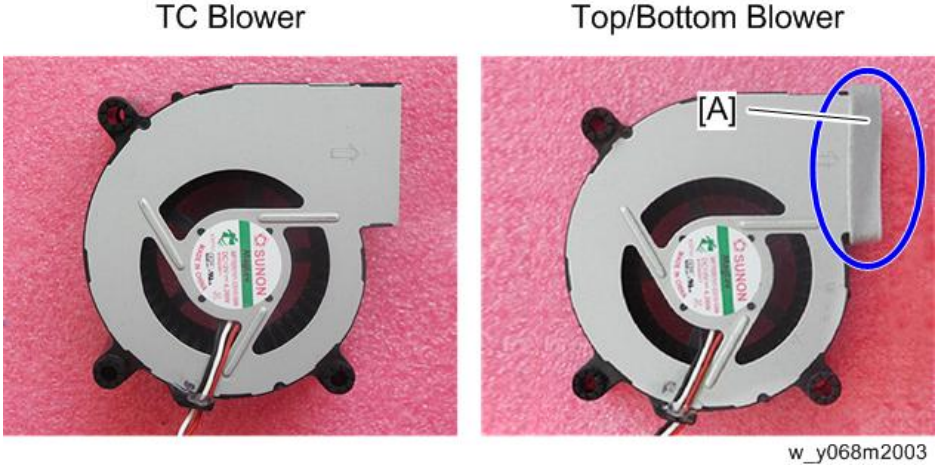
3. Remove the 3 screws to separate TC blower [A] and bracket [B].



y068m1034

Note

- TC blower does not have the sponge [A].

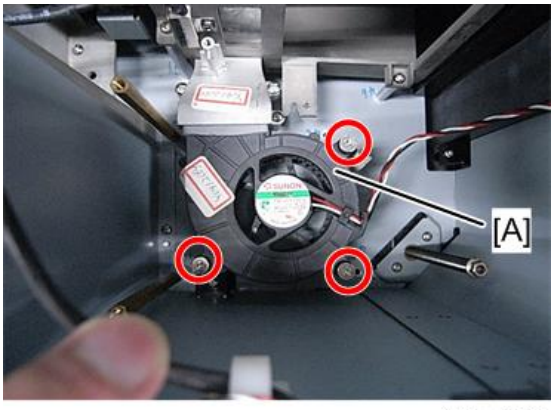


w_y068m2003

Bottom blower

1. Remove the TC blower. (page 43 "TC blower")

2. Remove the 3 screws to remove the bottom blower [A].

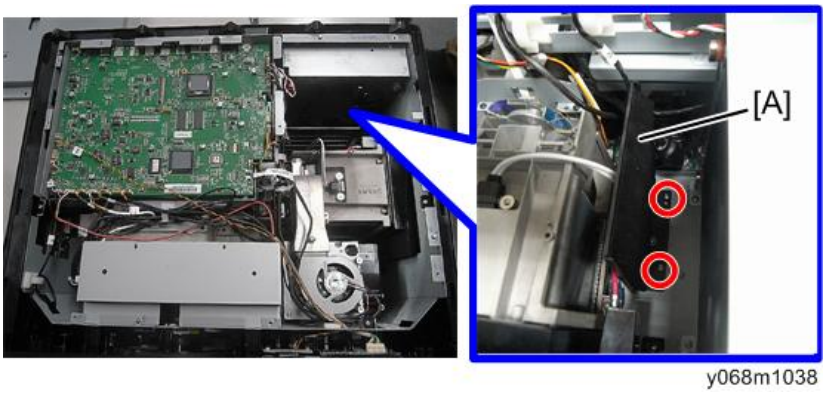


y041m1036

y068m1037

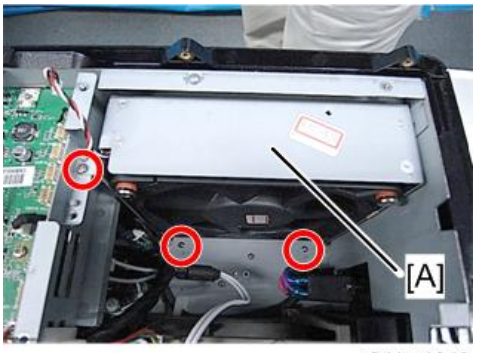
System Fan

1. Remove the 2 screws to remove the outlet vent [A].



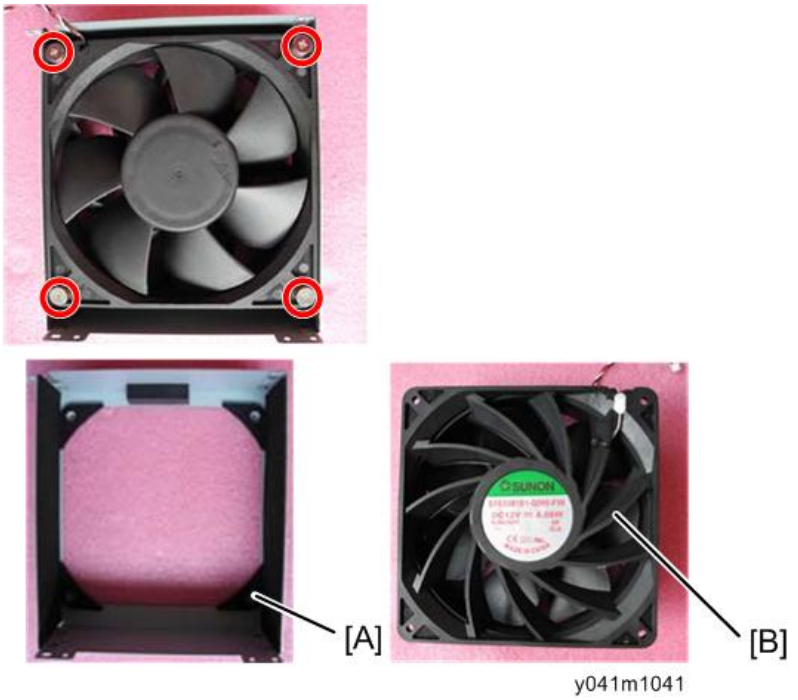
y068m1038

2. **Remove the 3 screws to remove the system fan module [A].**



y041m1040

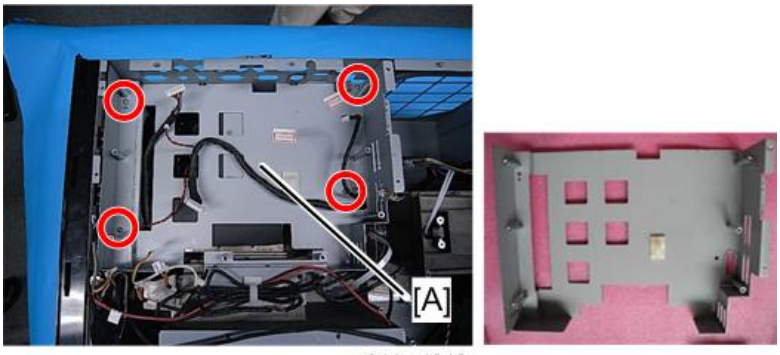
3. **Remove the 4 screws to separate the bracket [A] and fan [B].**



y041m1041

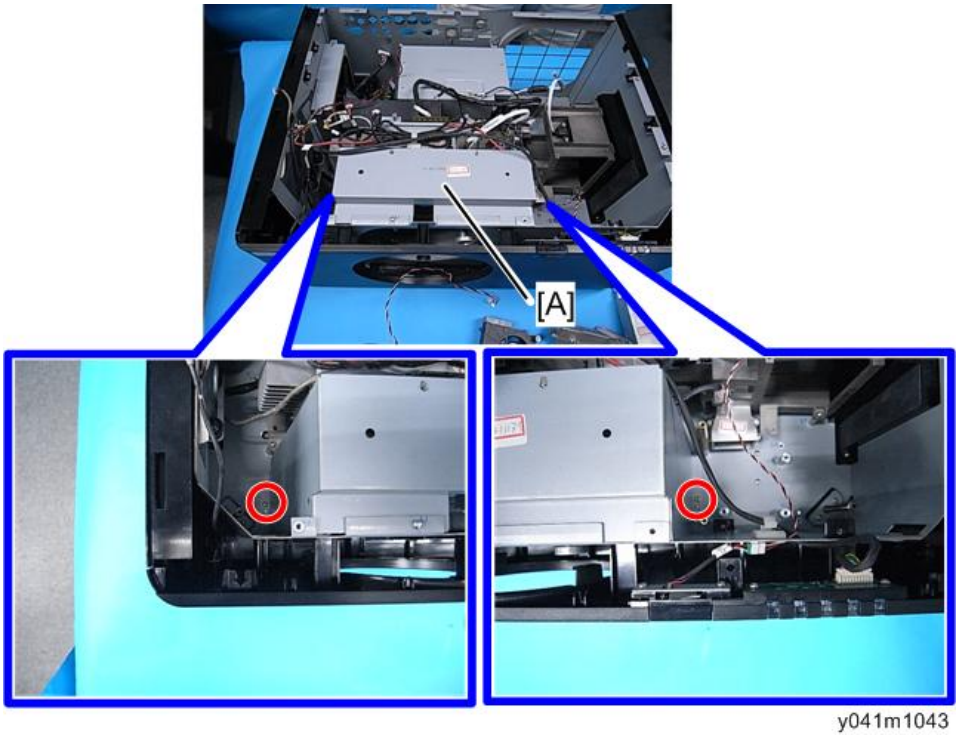
Main Board Shielding and Front Shielding

1. Remove the 4 screws to remove the main board shielding [A].



y041m1042

2. Remove the 2 screws to remove the front shielding [A].

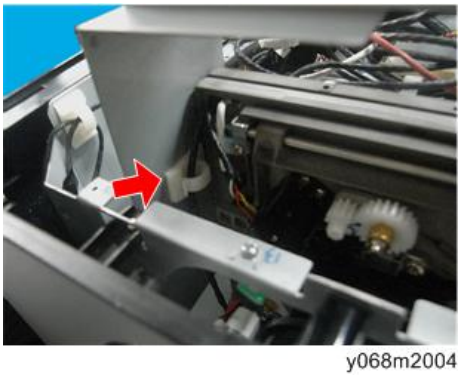


y041m1043

y068m1044

Note

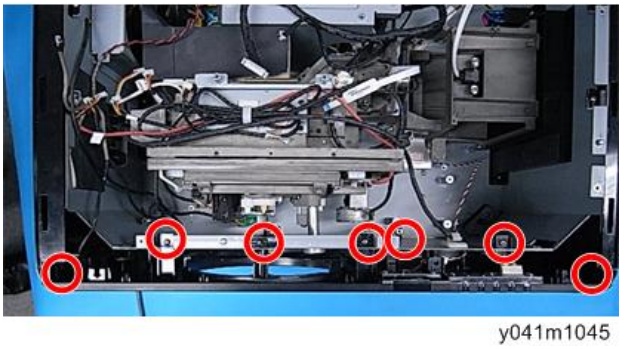
- When removing the front shield, take off the inner clip.



y068m2004

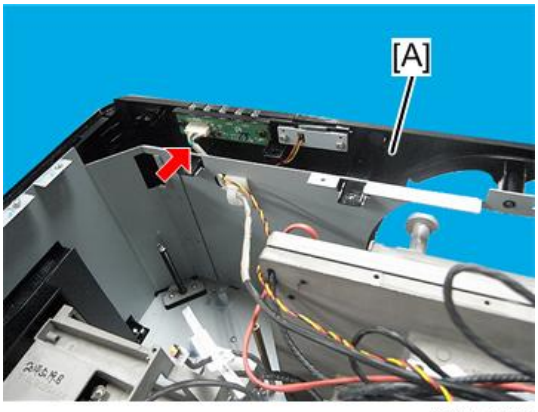
Front Cover, LED Board, LED Cover, Thermal Board, IR Cover

1. **Remove the 7 screws.**



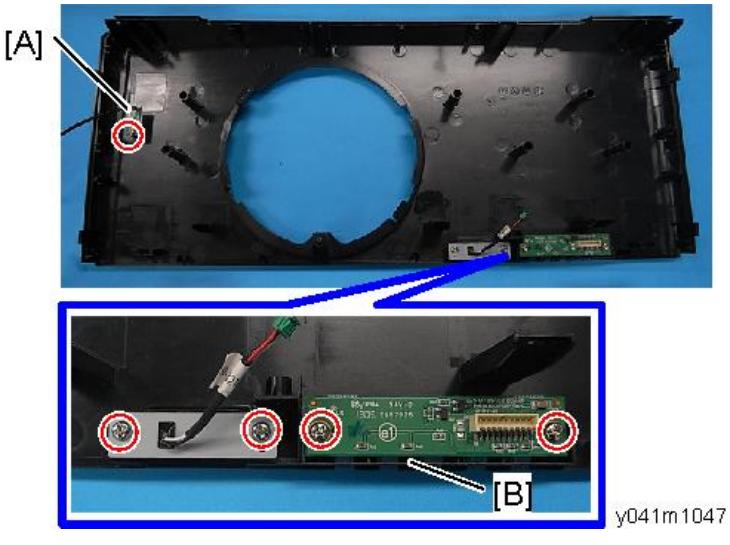
y041m1045

2. **Unplug the 1 connector to remove the front cover [A].**

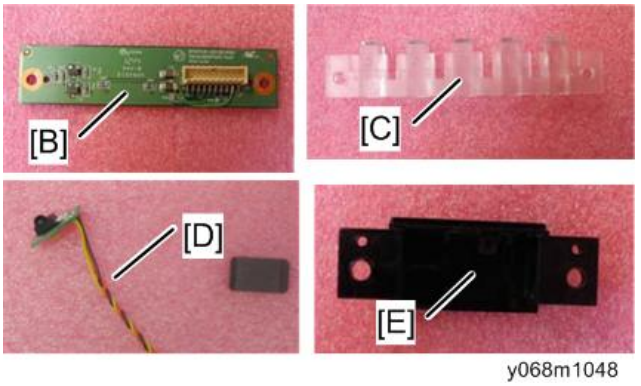


y068m1046

3. **Remove the 5 screws to disassemble:**
   - Thermal board [A],
   - LED board [B],
   - LED cover [C],
   - IR-F sensor [D],
   - IR-F cover [E].



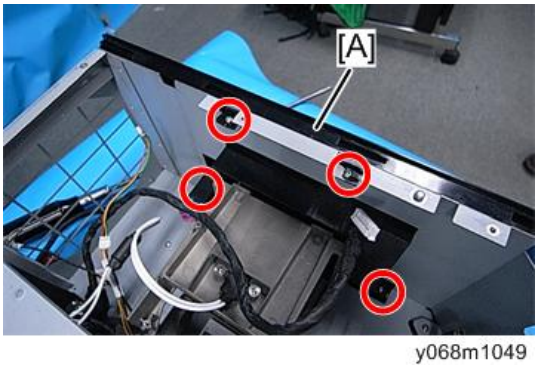
y041m1047



y068m1048

Right Cover, Lamp Cover, Interlock switch

1. **Remove the 4 screws to remove the right cover [A].**

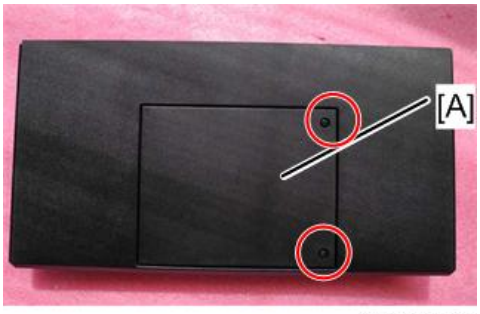


y068m1049

2. **Remove the 2 screws to remove the interlock switch [A].**

y068m1050

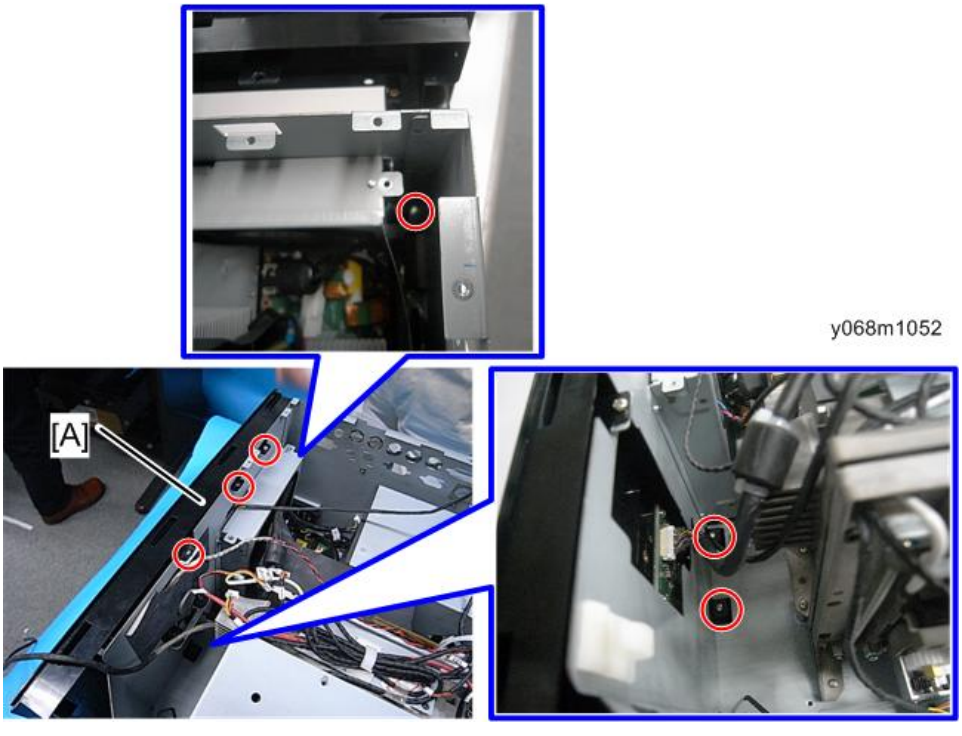
3. Remove the 2 screws to remove the lamp cover [A].



y041m1051

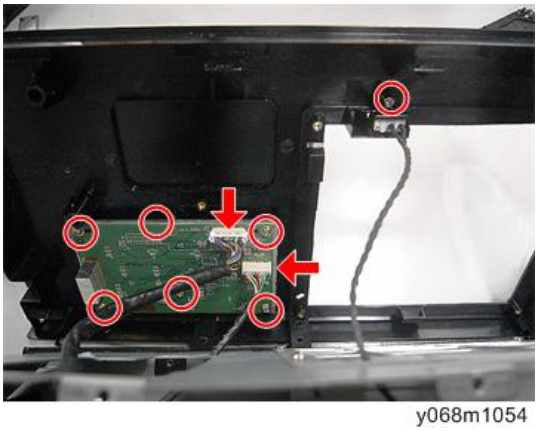
Left Cover, Keypad Rubber, Keypad Board, Interrupt switch

1. Remove the 6 screws to remove the left cover [A].

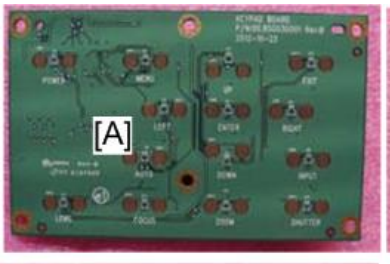


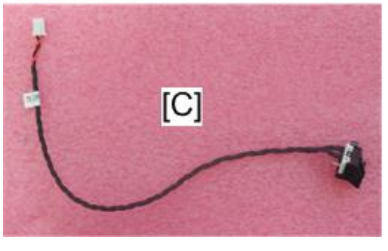
y068m1052

2. **Remove the 7 screws and unplug the 2 connectors to remove the keypad board [A], keypad rubber [B], and interrupt switch module [C].**



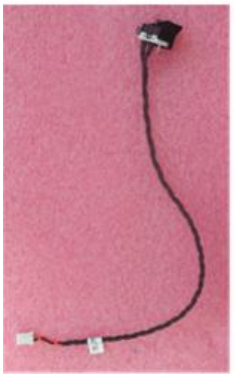
y068m1054

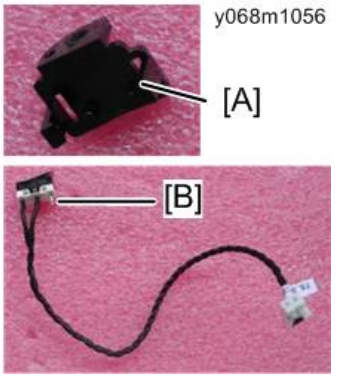




y068m1055

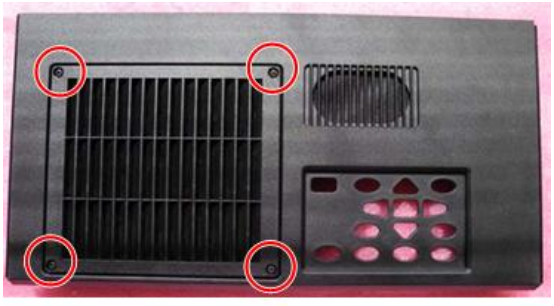
3. **Separate the switch holder [A] and interrupt switch [B].**



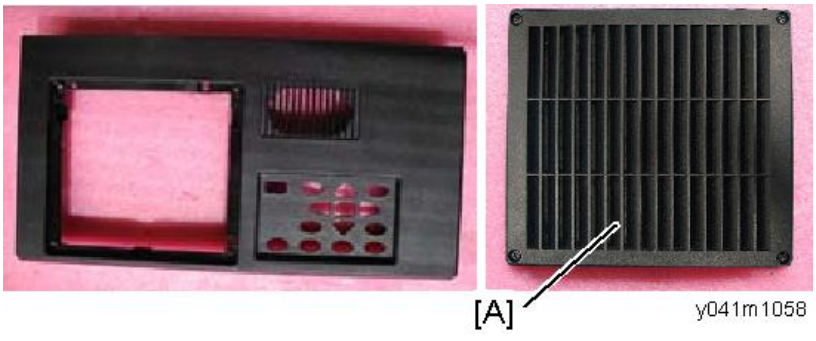


y068m1056

4. Remove the 4 screws to remove the vent cover and filter vent cover [A].

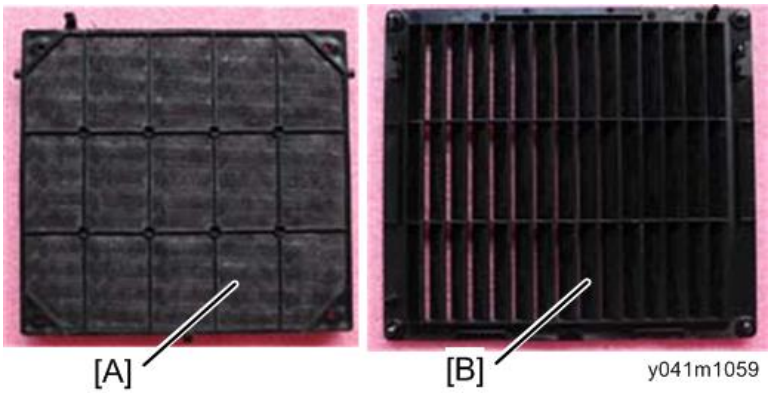


y041m1057



y041m1058

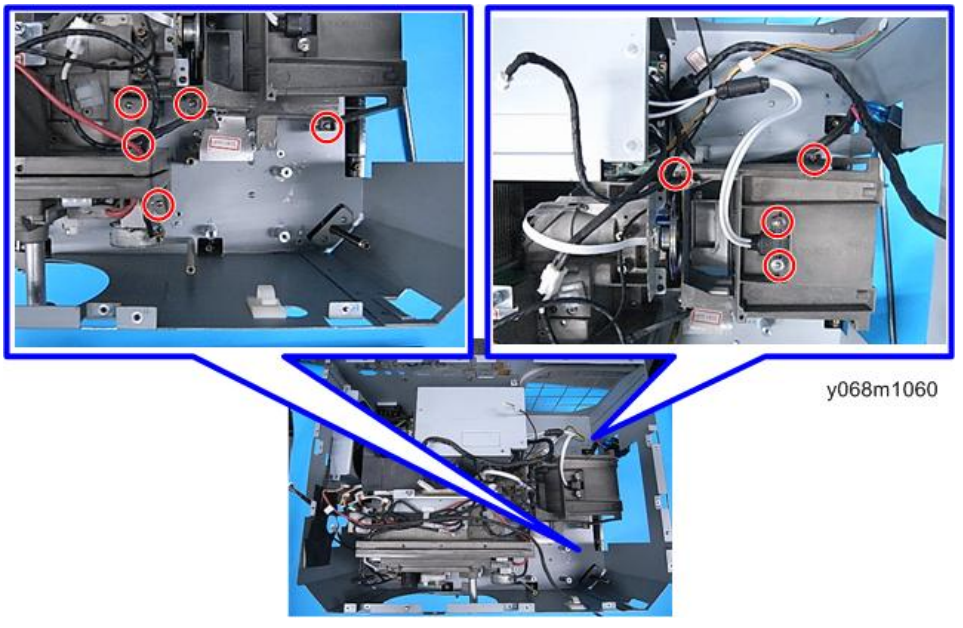
5. Separate the filter vent cover [A] and vent cover [B].



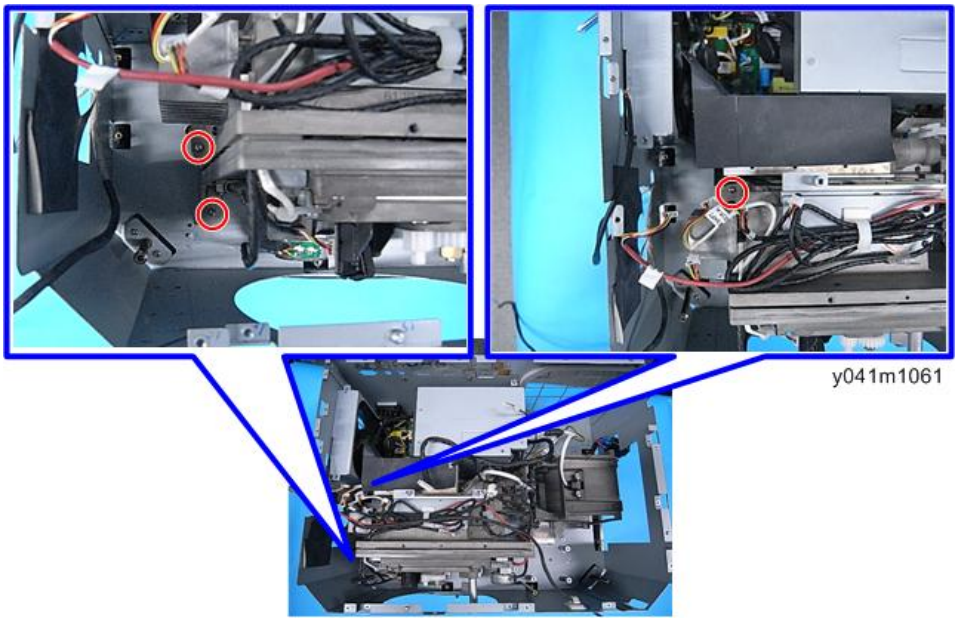
y041m1059

Optical Engine

1. **Remove the 12 screws.**

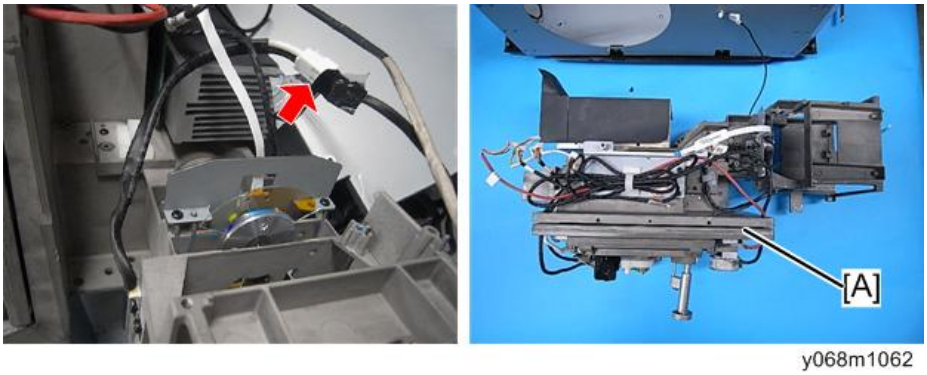


y068m1060



y041m1061

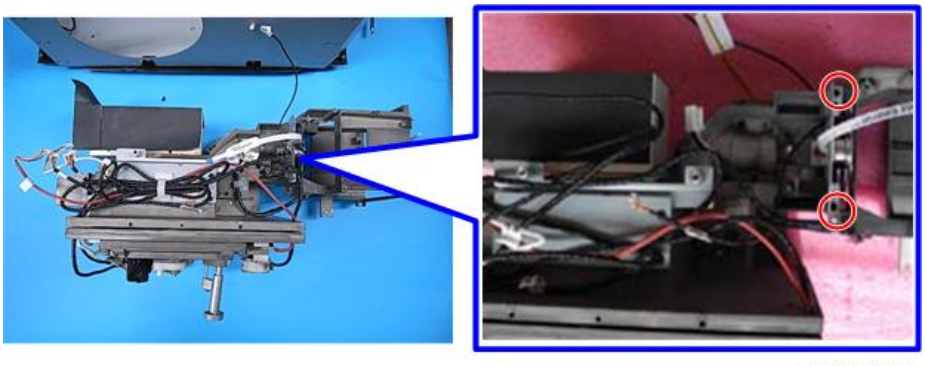
2. Remove the tape, unplug the thermal switch connector, and then remove the optical engine [A].



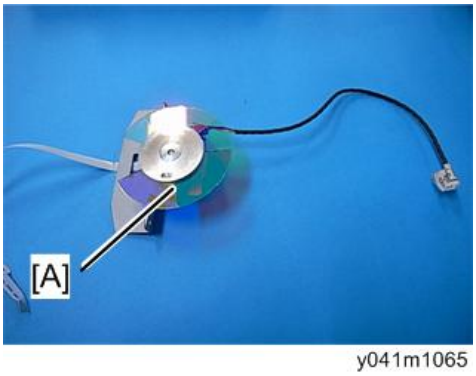
y068m1062

Color Wheel, Photo Sensor Board

1. Remove the optical engine. (page 54 "Optical Engine")
2. Remove the 2 screws to remove the color wheel [A].

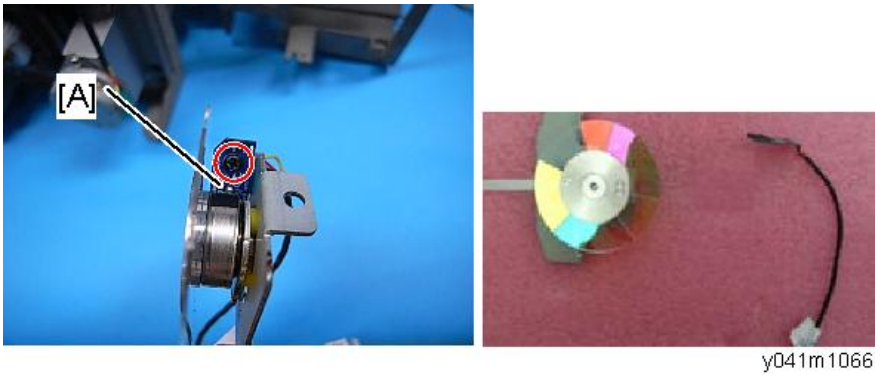


y041m1064



y041m1065

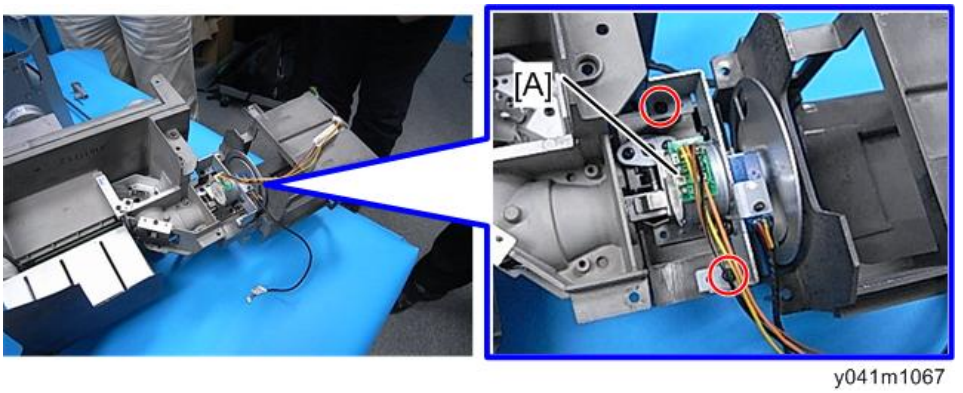
3. Remove the 1 screw to remove the photo sensor board [A].



y041m1066

DA module

1. Remove the optical engine. (page 54 "Optical Engine")
2. Remove the 2 screws to remove the DA module [A].

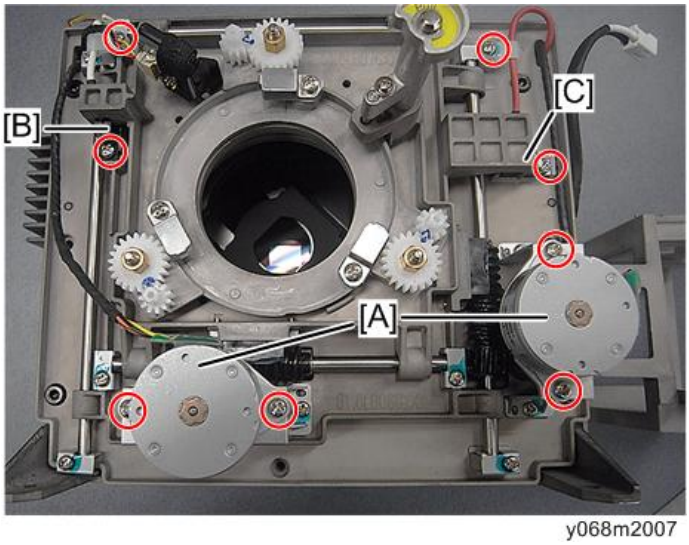


y041m1067

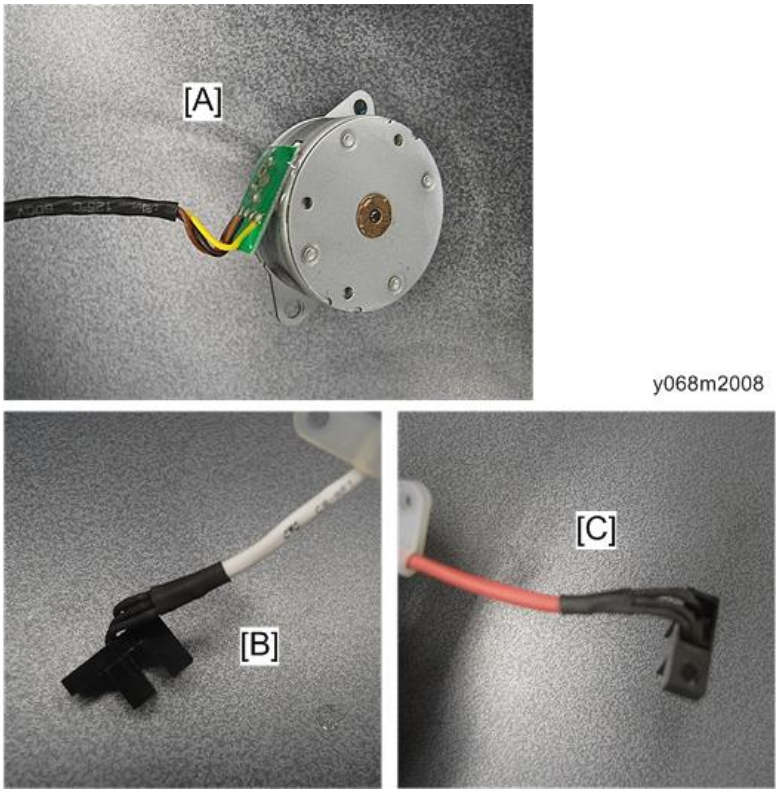
y068m1068

DC Motor, Horizontal/Vertical Sensor

1. Remove the optical engine. (page 54 "Optical Engine")
2. Remove the 8 screws to remove the DC motors [A], horizontal sensor [B], and vertical sensor [C].



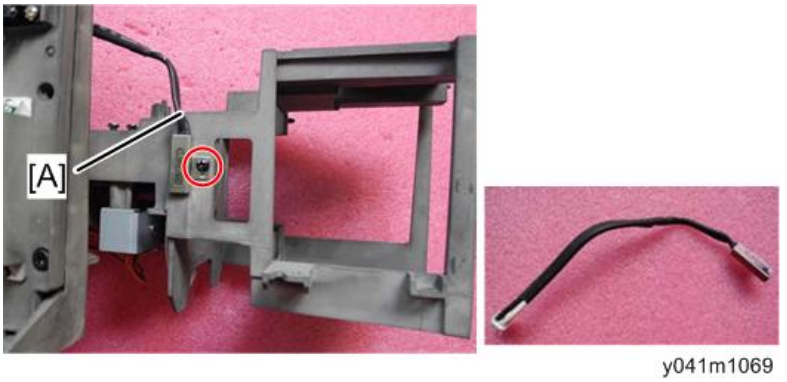
y068m2007



y068m2008

Thermal Switch

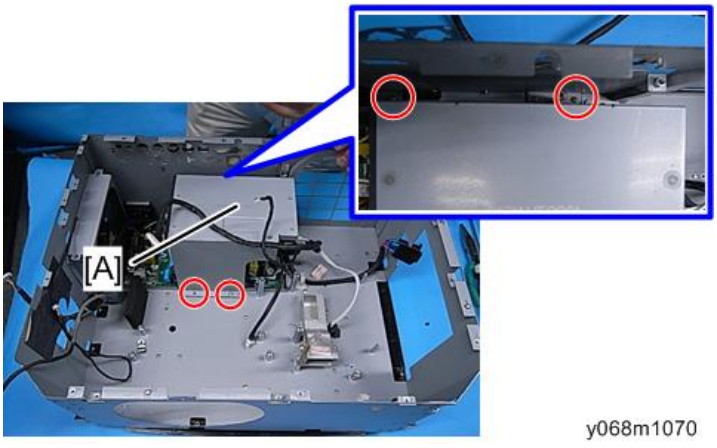
1. Remove the optical engine. (page 54 "Optical Engine")
2. Remove the 1 screw to remove the thermal switch [A].



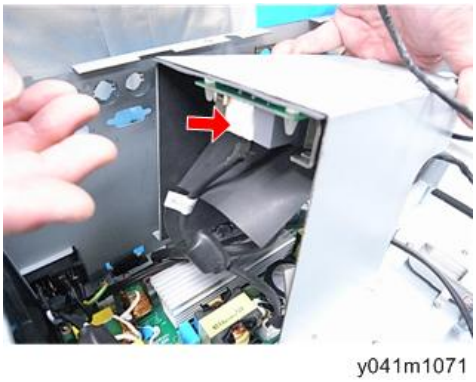
y041m1069

Ballast

1. Remove the 4 screws and unplug the 1 connector to remove the ballast module [A].



y068m1070

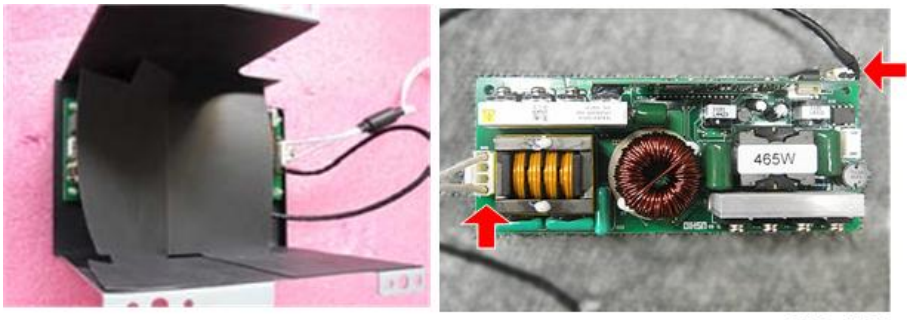


y041m1071

2. Separate the ballast from the ballast shielding (hook ×4).

y041m1072

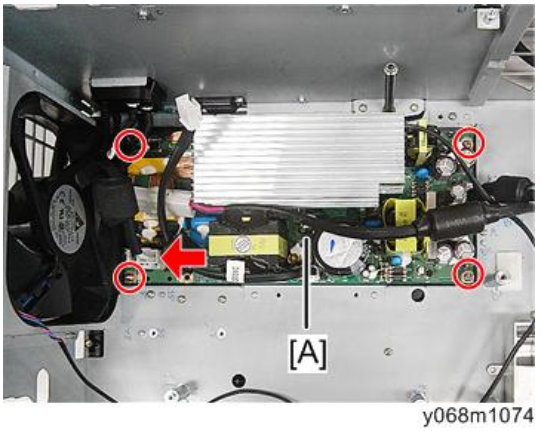
3. Unplug the 2 connectors.



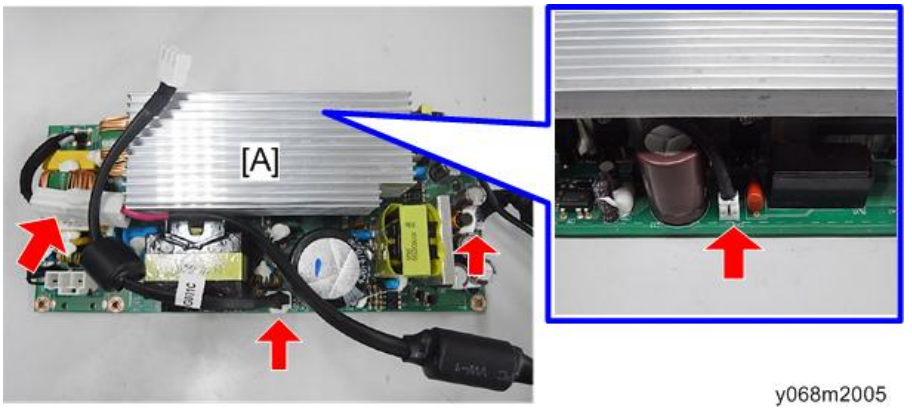
y068m1073

PSU

1. Remove the 4 screws and unplug the 5 connectors to remove the PSU [A].



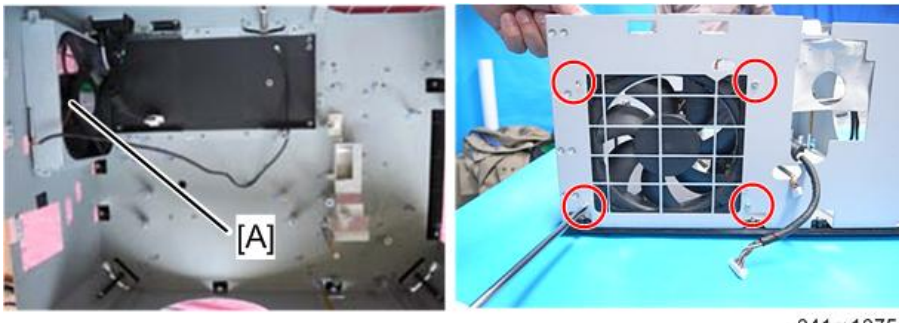
y068m1074



y068m2005

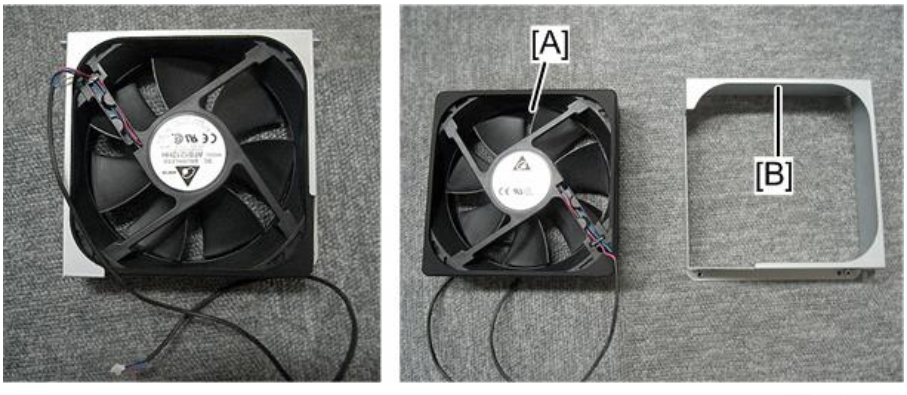
DMD Fan

1. Remove the 4 screws to remove the DMD fan module [A].



y041m1075

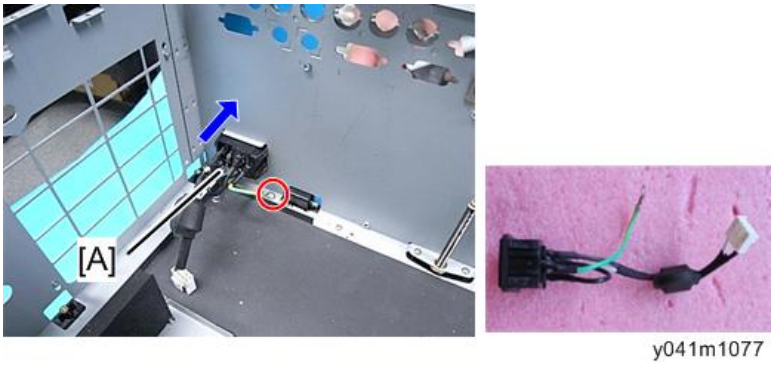
2. Separate the DMD fan [A] and fan bracket [B].



y068m1076

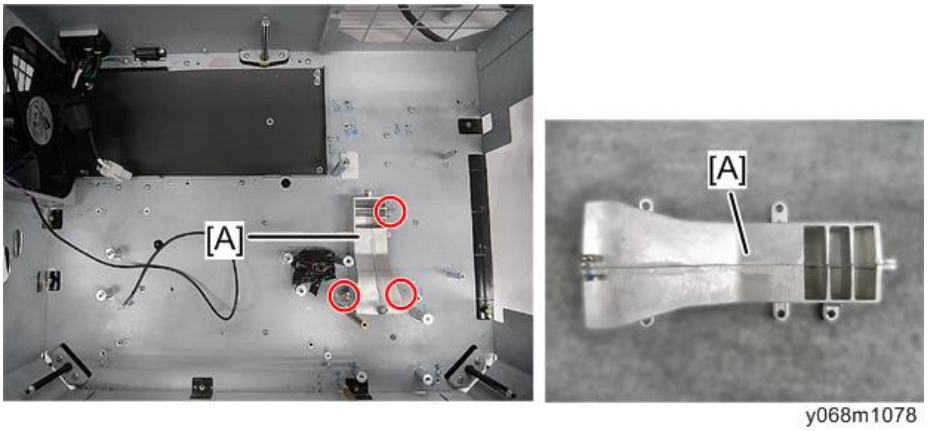
Bottom Cover, Bottom Shielding, AC inlet, Adjustable Foot

1. Remove the 1 screw to remove the AC inlet [A].



y041m1077

2. **Remove the 3 screws to remove the blower duct [A].**



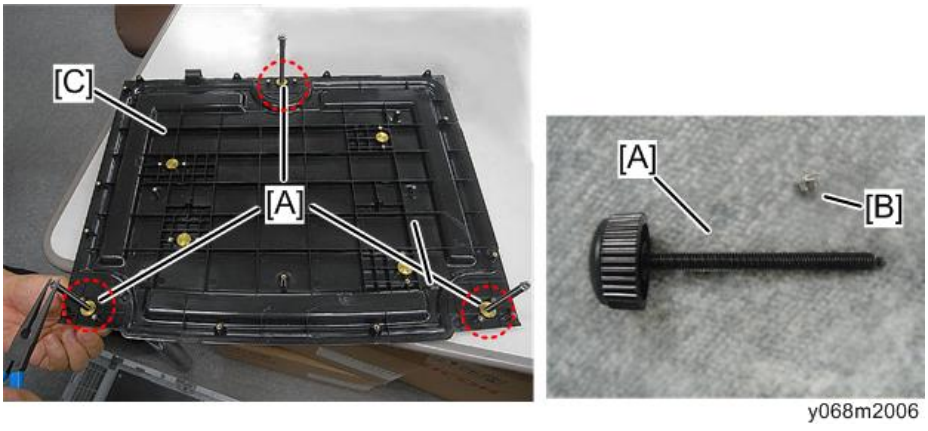
y068m1078

3. **Remove the 18 screws to separate the bottom shielding [A] and bottom cover [B].**

y041m1079

y041m1080

4. **Remove the 3 adjustable feet [A] and nuts [B] from the bottom cover [C].**



y068m2006

Required Action after Replacing Parts

After replacing parts, please execute the related items shown in the table below.

Action after repair	Changed parts						Software	Description page
	Main board	Optical engine	DA module	Blower	Color wheel	Lamp	After firmware update	
System firmware update	v						v	Chapter 6. (page 109 "Firmware Update")
Color wheel index	v				v			Chapter 5. (page 104 "Color Wheel Index")
OSD reset	v						v (*)	Chapter 5. (page 106 "OSD Reset")
DA calibration			v				v	Chapter 5. (page 99 "DA Calibration")
Lens calibration	v	v					v	Chapter 5. (page 99 "Lens Calibration")
Re-write lamp hours	v					v		Chapter 5. (page 102 "Re-write Lamp Hours")
Re-write Serial Number	v						v	Chapter 6. (page 122 "Re-write Serial Number")

Action after repair	Changed parts						Software	Description page
	Main board	Optical engine	DA module	Blower	Color wheel	Lamp	After firmware update	
Fan calibration	v			v				Chapter 5. (page 100 "Fan Calibration")
Focus adjustment		v						Chapter 3. (page 67 "Focus Adjustment")
Rod adjustment		v (*)	v (*)					Chapter 3. (page 66 "Rod Adjustment")

(*) This action is not always required. Perform it only if the situation demands it.

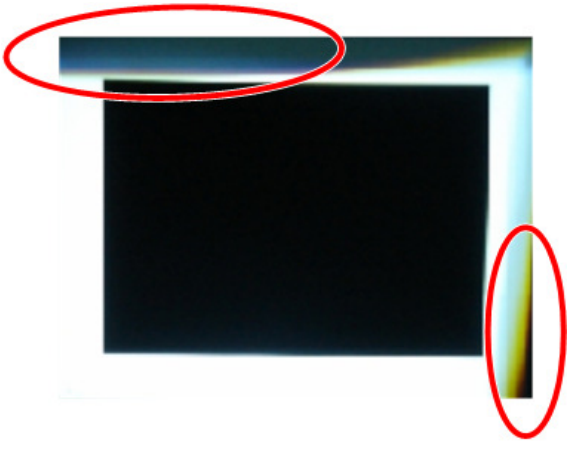
After parts replacement or repair, check that the projector works properly.

Project images on the screen and check that they are not faulty.

Adjustment

Rod Adjustment

If either of the defects ringed in red appears when projecting an image, perform the adjustment described below.



y0180040

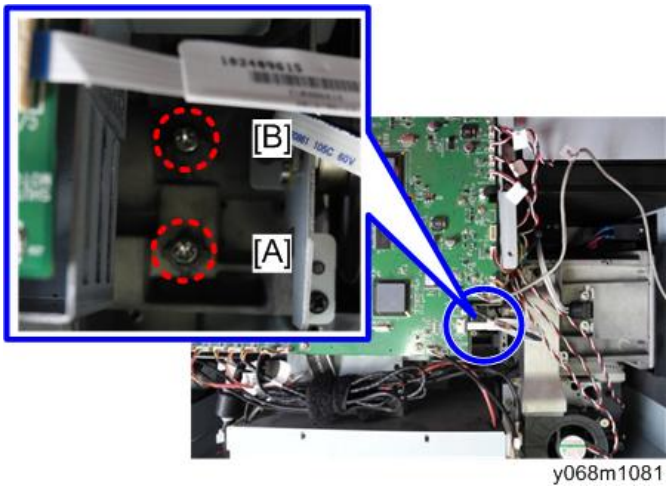
Environment

- The distance between the engine and the screen must be 2.0 M.
- This process should be done in a dark environment (under 2 lux).

Procedure

1. Display a "white" pattern.
2. Adjust the screws to readjust the image.

   Screw [A] should be adjusted first, and then Screw [B]. Adjust until the yellowish or bluish parts disappear.



y068m1081

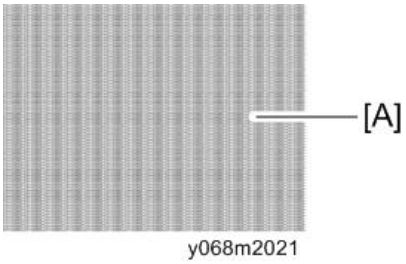
Focus Adjustment

Note

- This step must be done only when engine is changed.

Environment

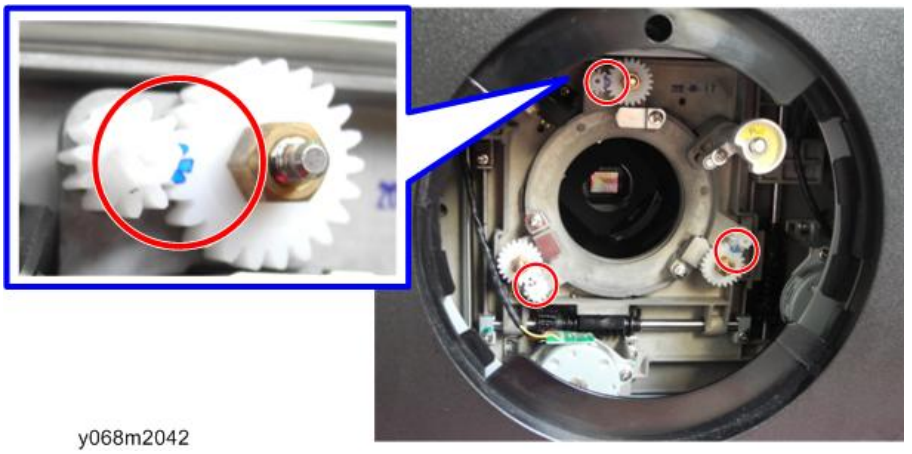
- Test equipment: Video generator.
- Test signal: Analog 1024x768@60Hz
- Test distance: 2.5m
- Test pattern: Full screen [A]



y068m2021

Procedure

- Adjust the three plastic studs (red circles) at the same time to make the entire image clear, crisp and sharp.



y068m2042

Inspection item

- Check the focus under the pattern of Full Screen at a distance of 2.5m.
- If focus is unacceptable, readjust the plastic stud. (Blurred words at one of the corners after adjustment are acceptable. However, the words should at least be recognizable.)

After the adjustment, check the color at the rim of the image.

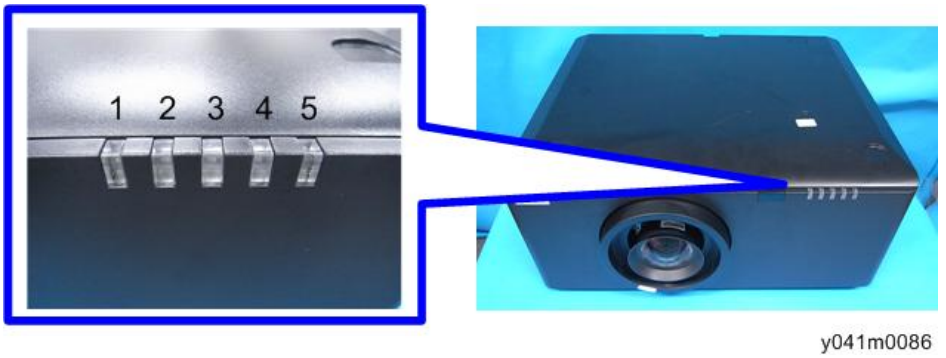
- If the color at the upper rim of the image is greenish, adjust the plastic stud A in the clockwise direction.
- If the color at the lower left rim of the image is greenish, adjust the plastic stud B in the clockwise direction.
- If the color at the lower right rim of the image is greenish, adjust the plastic stud C in the clockwise direction.
- If the color at the top right rim of the image is greenish, and the lower left is reddish, adjust the plastic stud B in the anticlockwise direction.
- If the color at the top left rim of the image is greenish, and the lower right is reddish, adjust the plastic stud C in the anticlockwise direction.

4. Troubleshooting

Equipment Needed

- Projector
- PC (Personal Computer)
- DVD Player
- Screw drivers
- VGA cable, power cord, component cable, audio cable, HDMI cable
- Voltage test meter

Front Panel LEDs



y041m0086

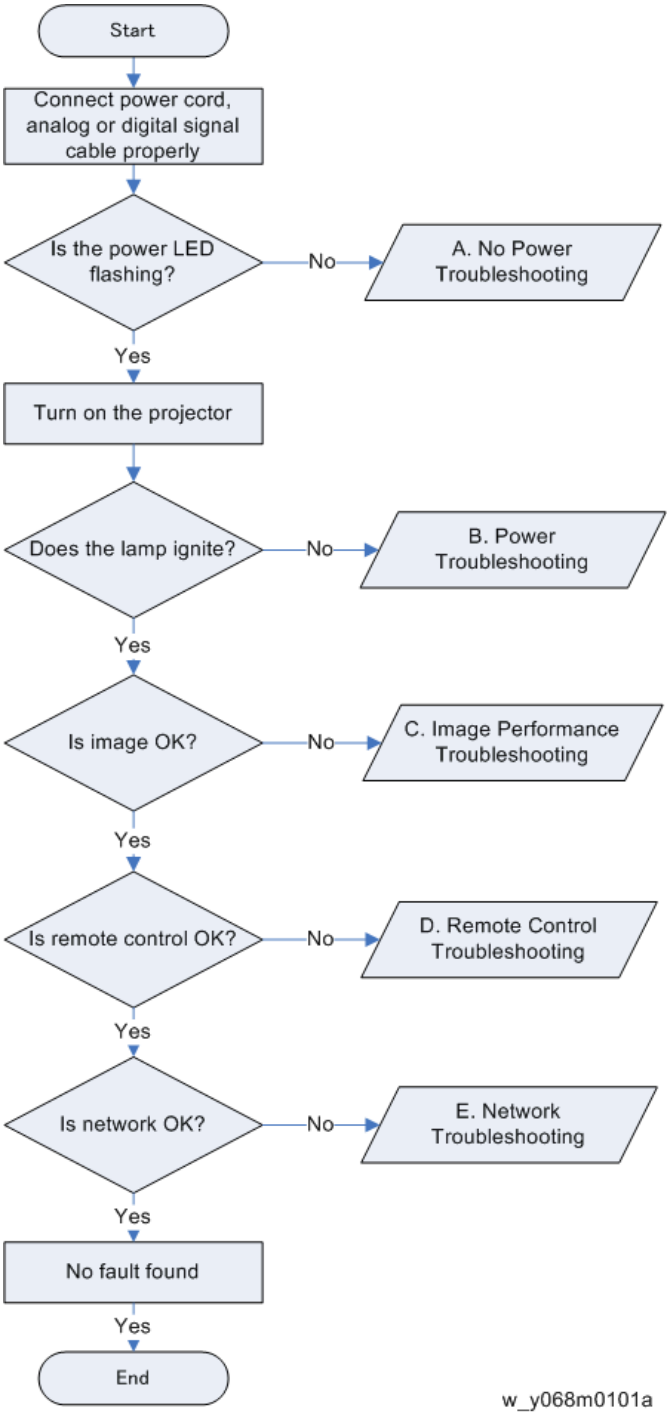
1. Filter LED
2. Error LED
3. Temp LED
4. Lamp LED
5. Power LED

LED status and meanings

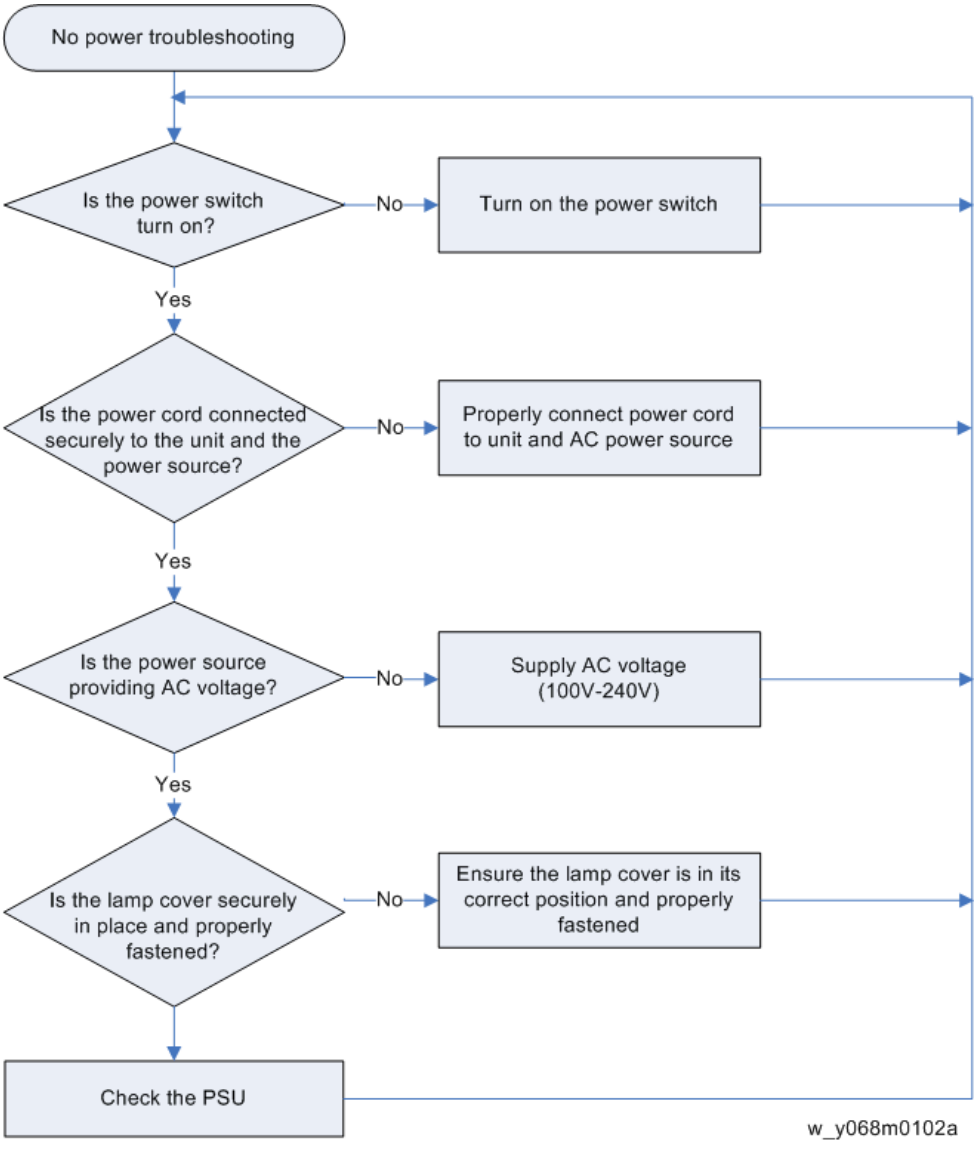
Message	Power LED		Lamp LED	Temp LED	Error LED	Filter LED
	Red	Blue	Red	Red	Red	Red
Standby state (LAN off)	-	Flashing, 1sec on /5sec off	-	-	-	-
Standby state (LAN on)	-	Flashing, 1sec on /1sec off	-	-	-	-
Power on & lamp lighting	-	Steady light	-	-	-	-
Power off (Cooling)	-	Flashing, 0.5sec on /0.5sec off	-	-	-	-

Message	Power LED		Lamp LED	Temp LED	Error LED	Filter LED
	Red	Blue	Red	Red	Red	Red
Error (Lamp fail)	-	-	Steady light	-	Flashing, 0.5sec on /0.5sec off	-
Error (Over temp)		-	-	Steady light	Flashing, 0.5sec on /0.5sec off	-
Error (Fan fail)	-	-	-	Flashing, 0.5sec on /0.5sec off	Flashing, 0.5sec on /0.5sec off	-
Error (Filter switch)	-	-	-	-	Flashing, 0.5sec on /0.5sec off	Flashing, 0.5sec on /0.5sec off
Error (Filter Cleaning)	-	-	-	-	-	Flashing, 1sec on /1sec off
Firmware Download	Steady light	Steady light	Steady light	Steady light	-	Steady light
Burn in (Lamp lightning)	Flashing, 3sec on /1sec off	-	-	-	Flashing	Flashing
Burn in (Cooling)	Flashing, 1sec on /1sec off	-	-	-	-	-
Burn in (Lamp off)	Flashing, 1sec on /3sec off	-	-	-	-	-

Main Procedures



A. No Power Troubleshooting

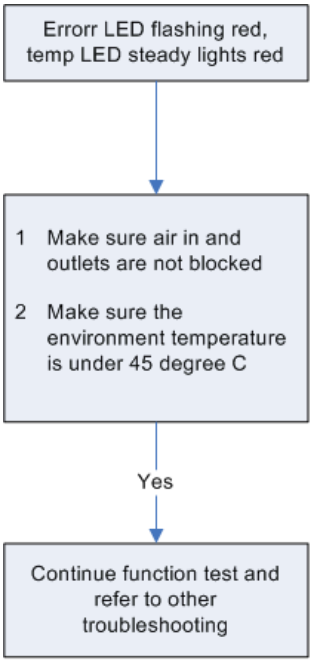


B. Power Troubleshooting

Make sure all connectors are connected properly.

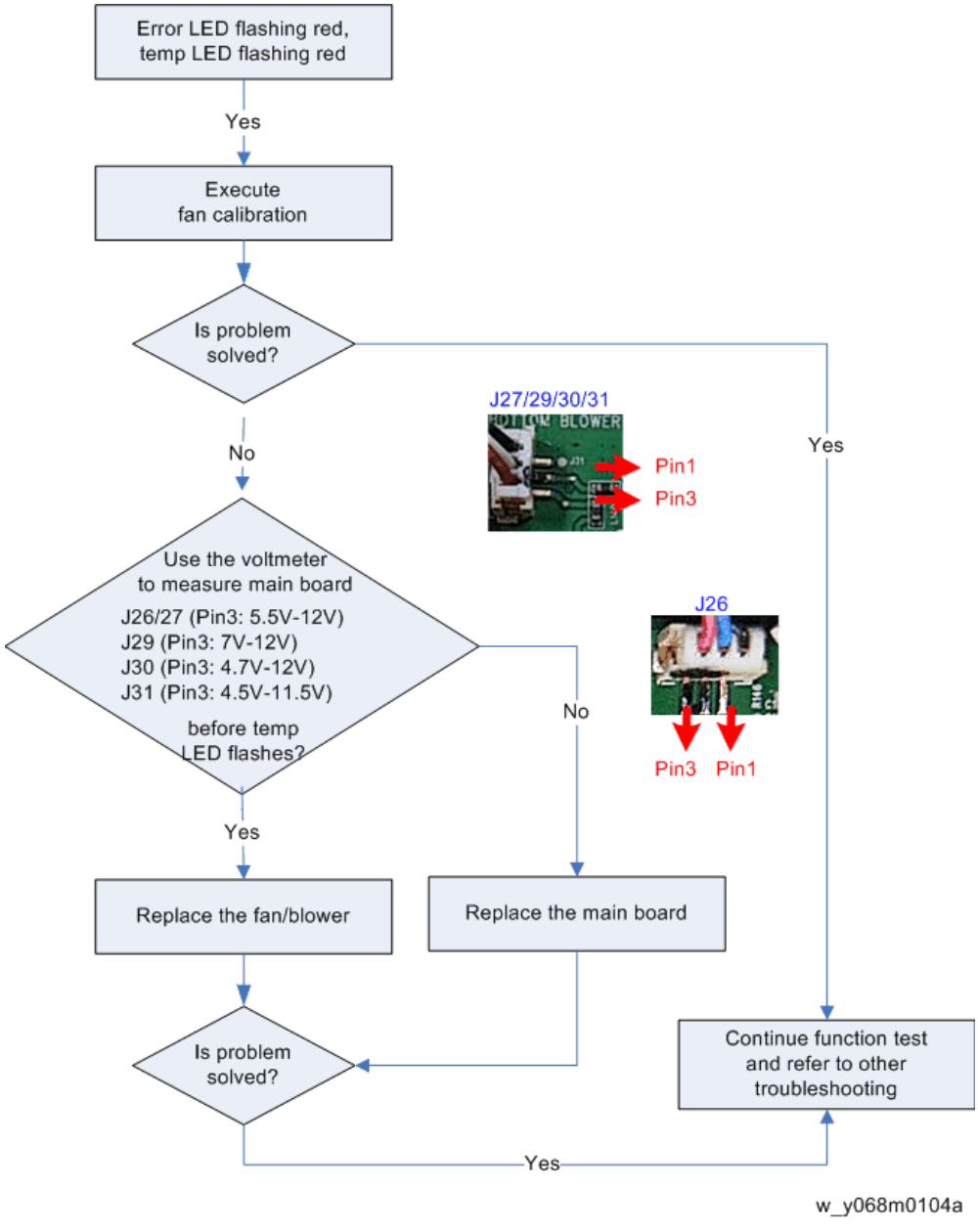
Check LED indicator.

Error LED flashing red, temp LED steady lights red

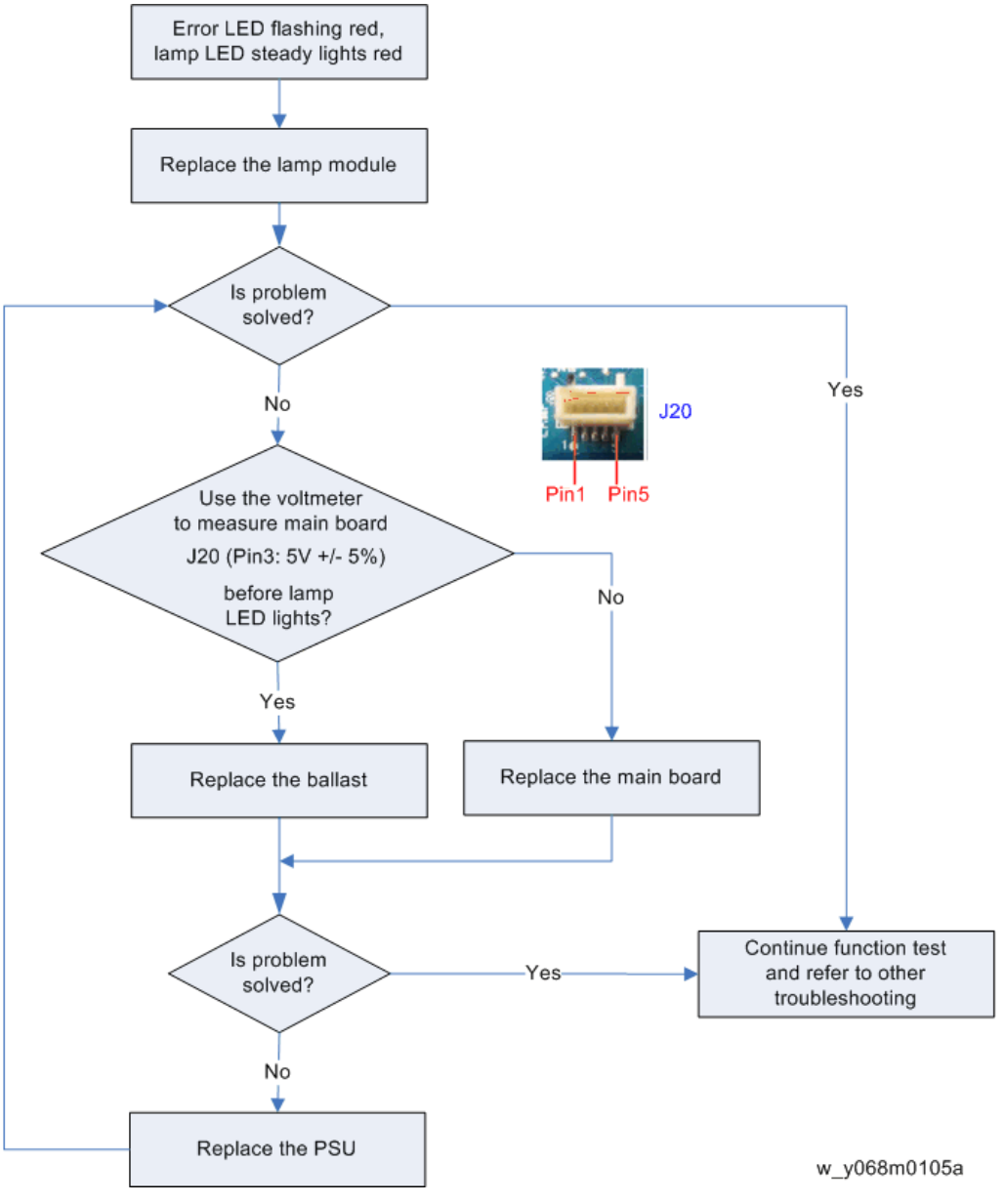


w_y068m0103a.

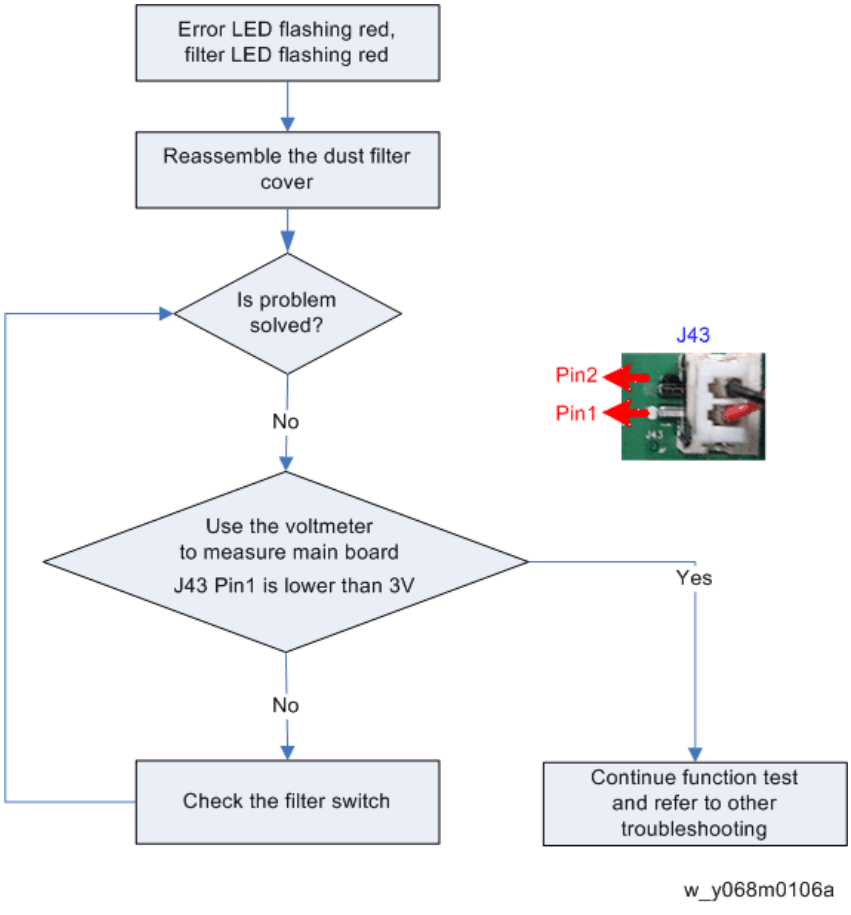
Error LED flashing red, temp LED flashing red



Error LED flashing red, lamp LED steady lights red

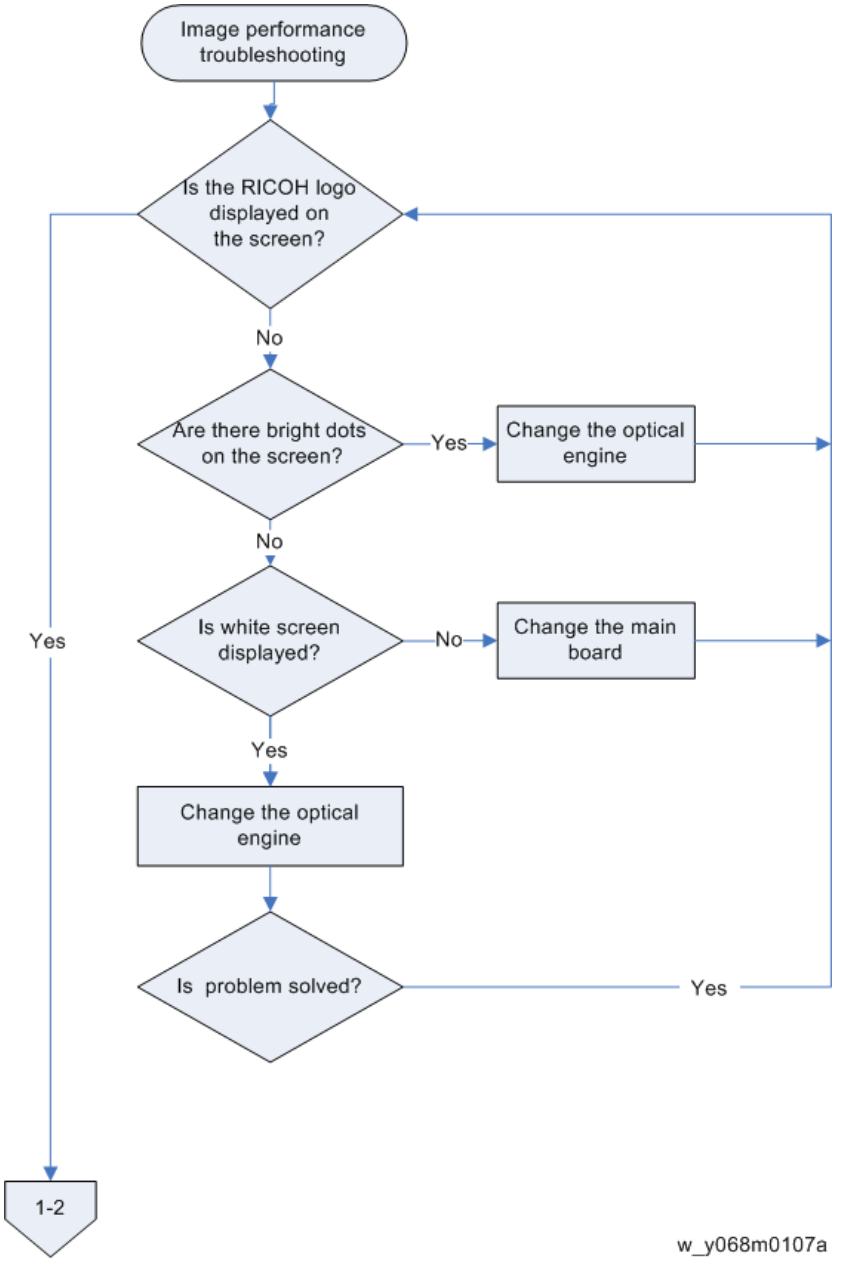


Error LED flashing red, filter LED flashing red

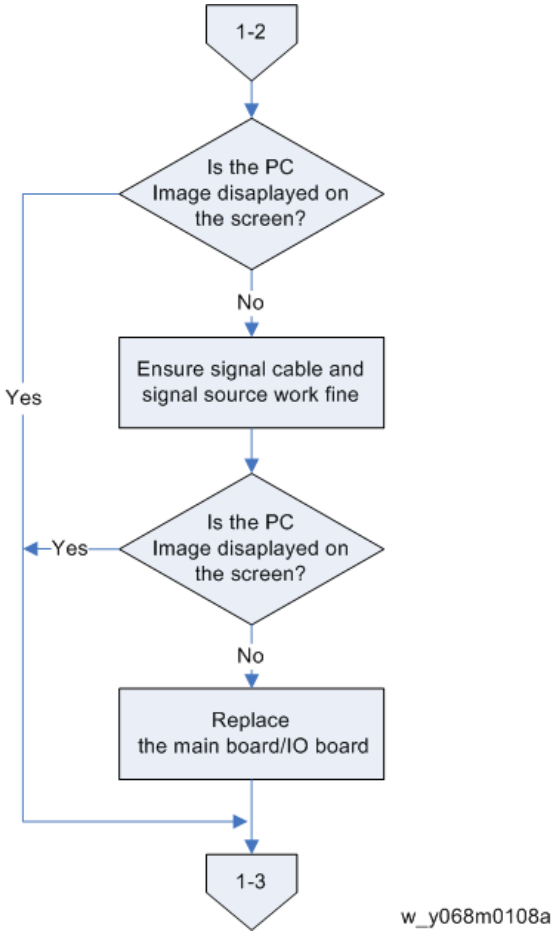


C. Image Performance Troubleshooting

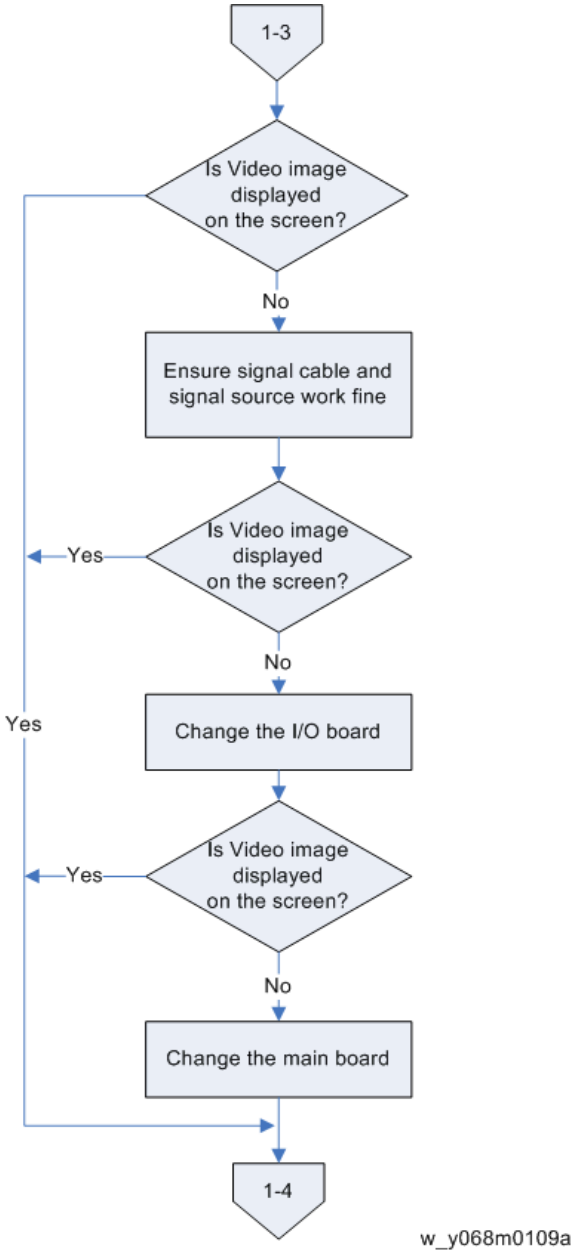
1-1 (Is the RICOH logo displayed on the screen?)



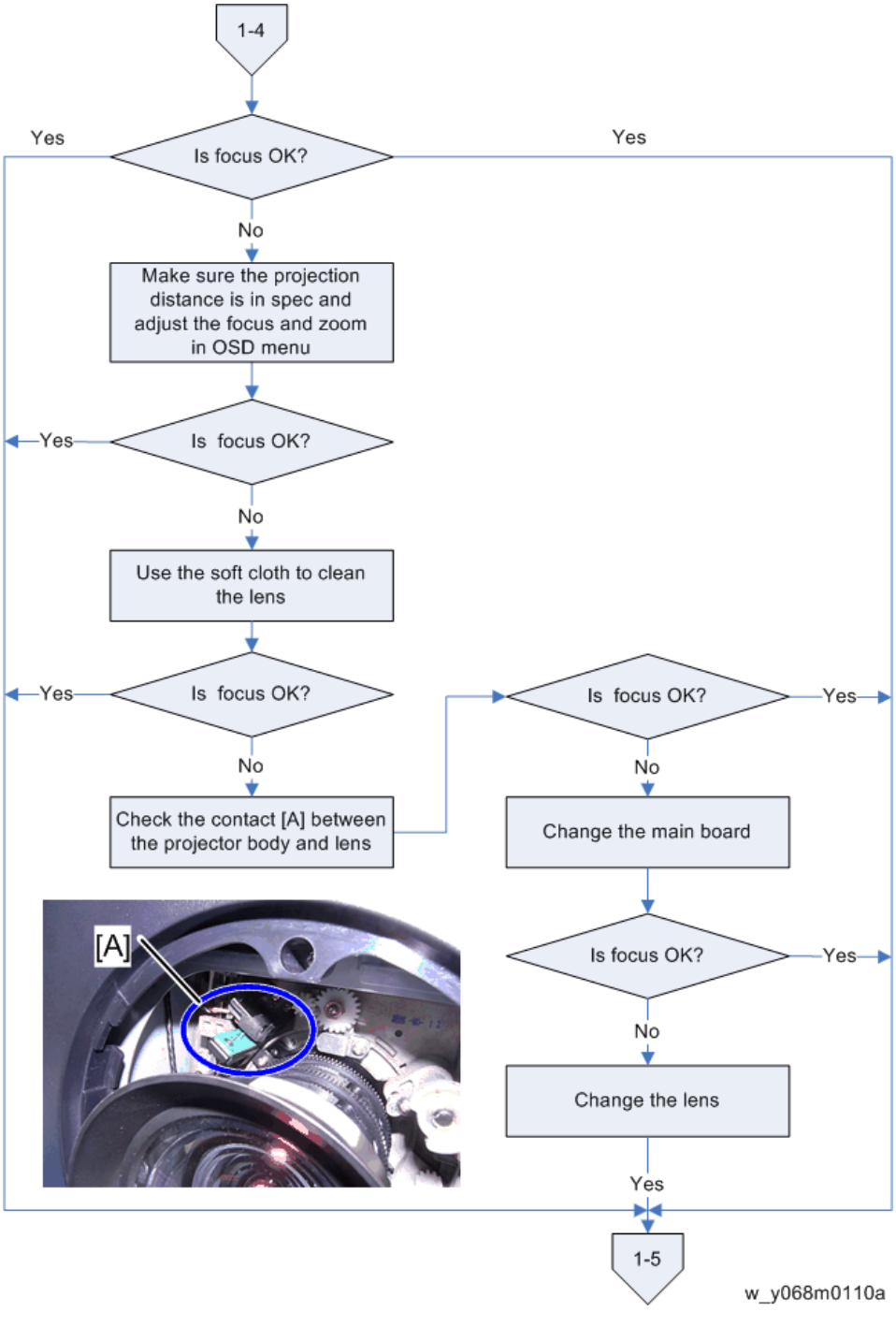
1-2 (Is the PC image displayed on the screen?)



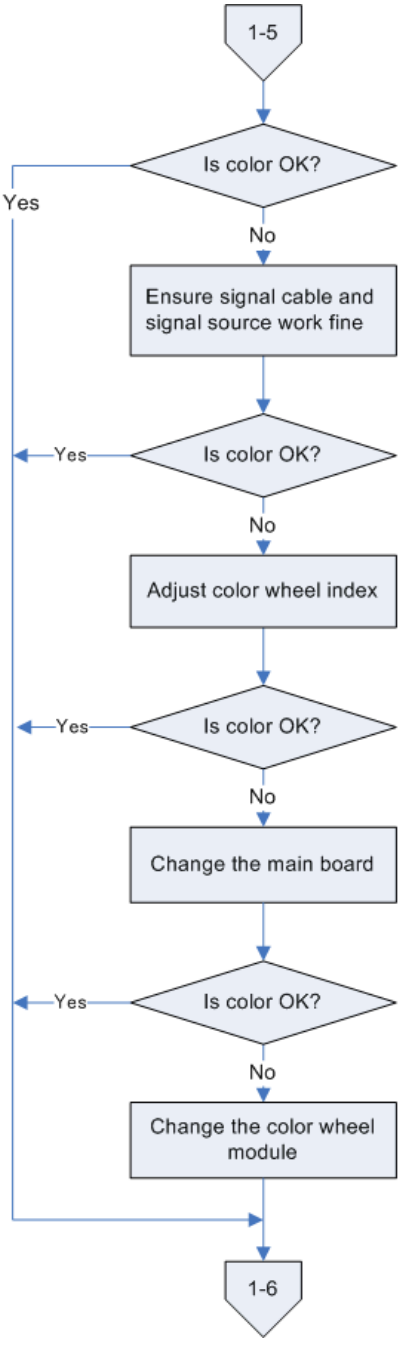
1-3 (Is video image displayed on the screen?)



1-4 (Is focus ok?)

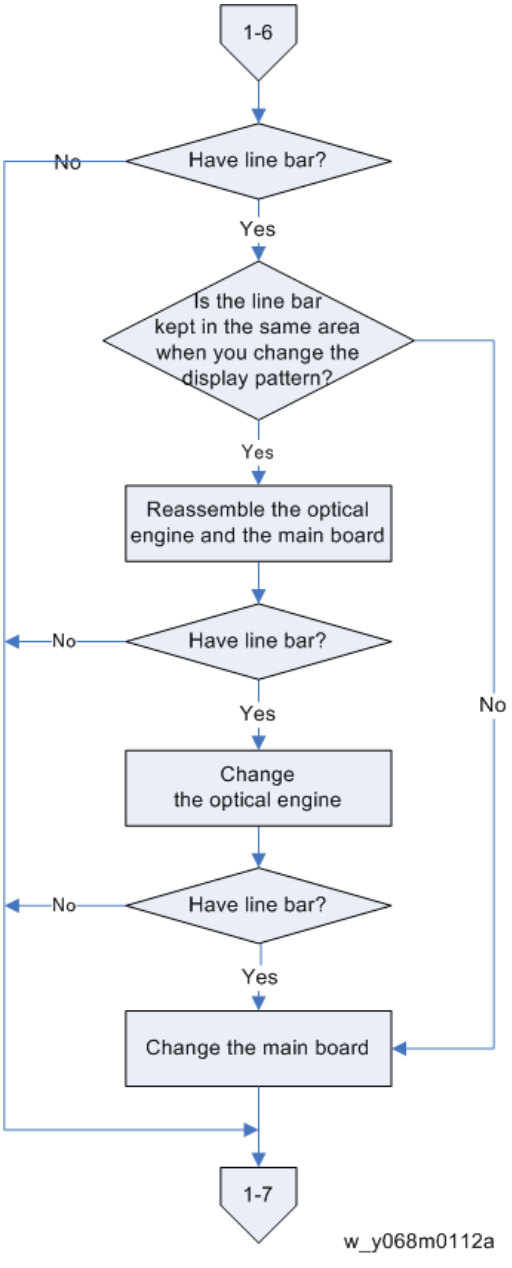


1-5 (Is color ok?)

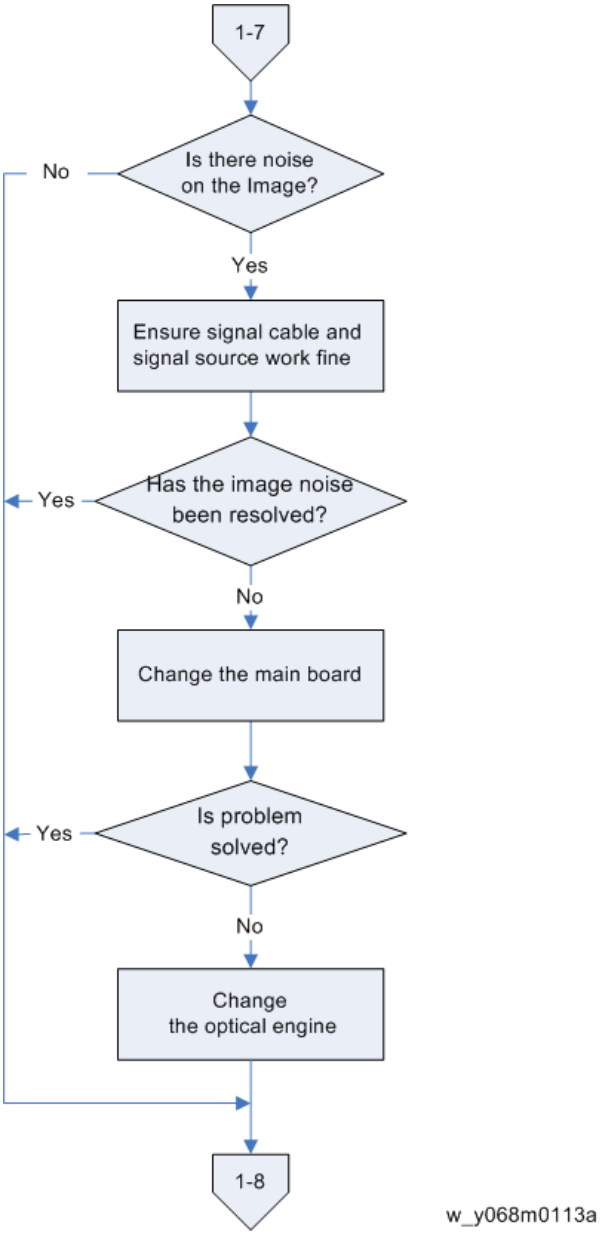


w_y068m0111a

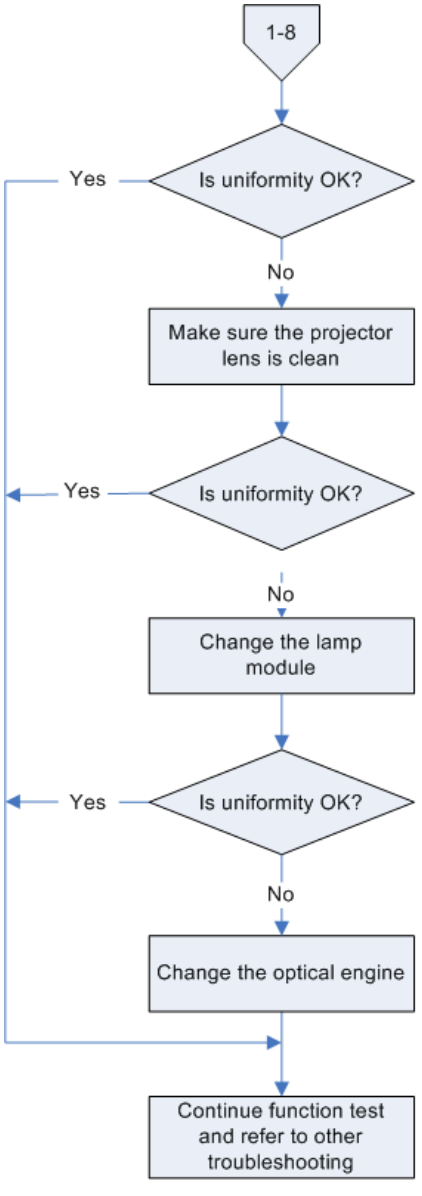
1-6 (Have line bar?)



1-7 (Is there noise on the image?)

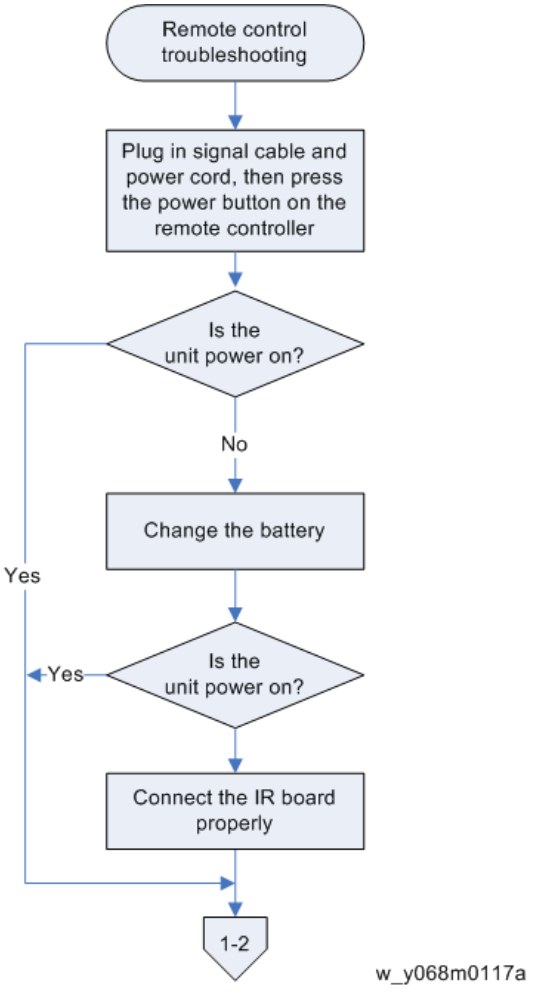


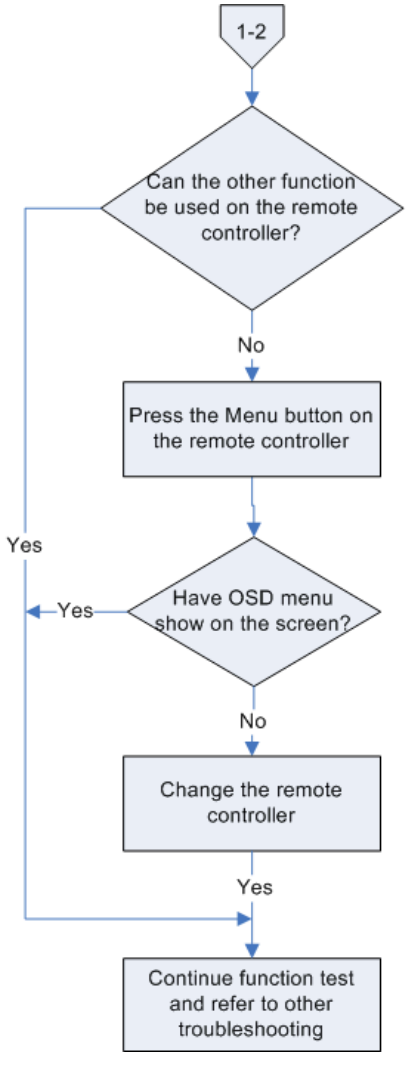
1-8 (Is uniformity ok?)



w_y068m0114a

D. Remote Control Troubleshooting

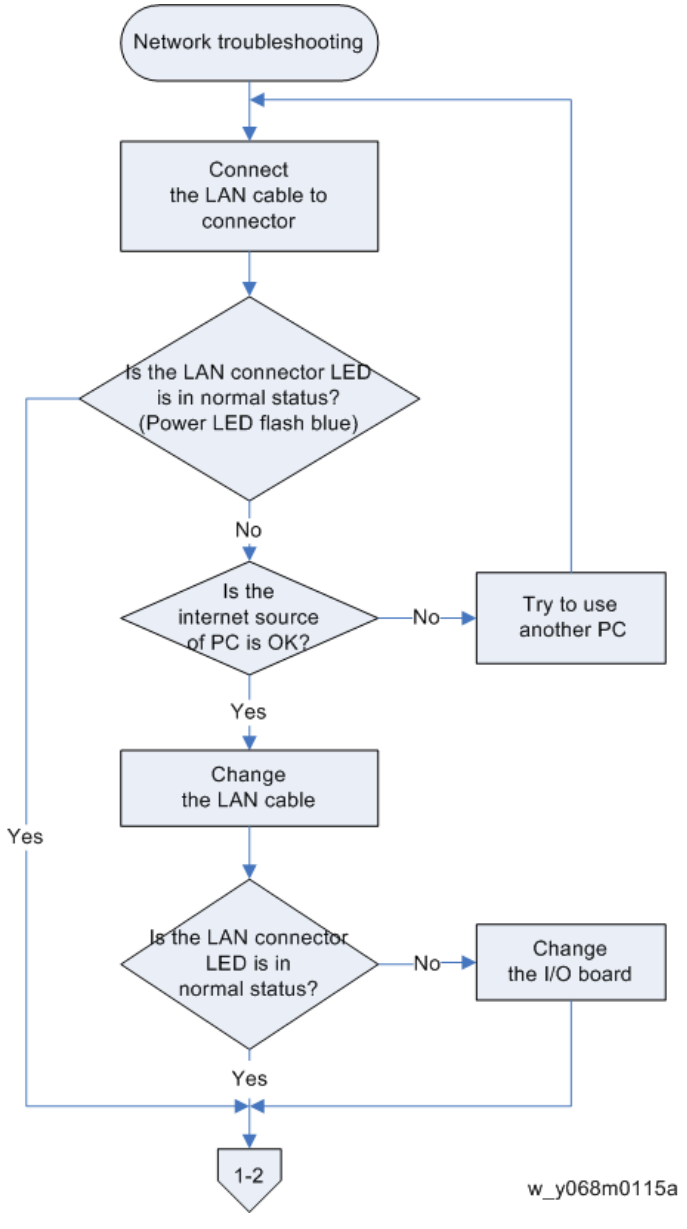




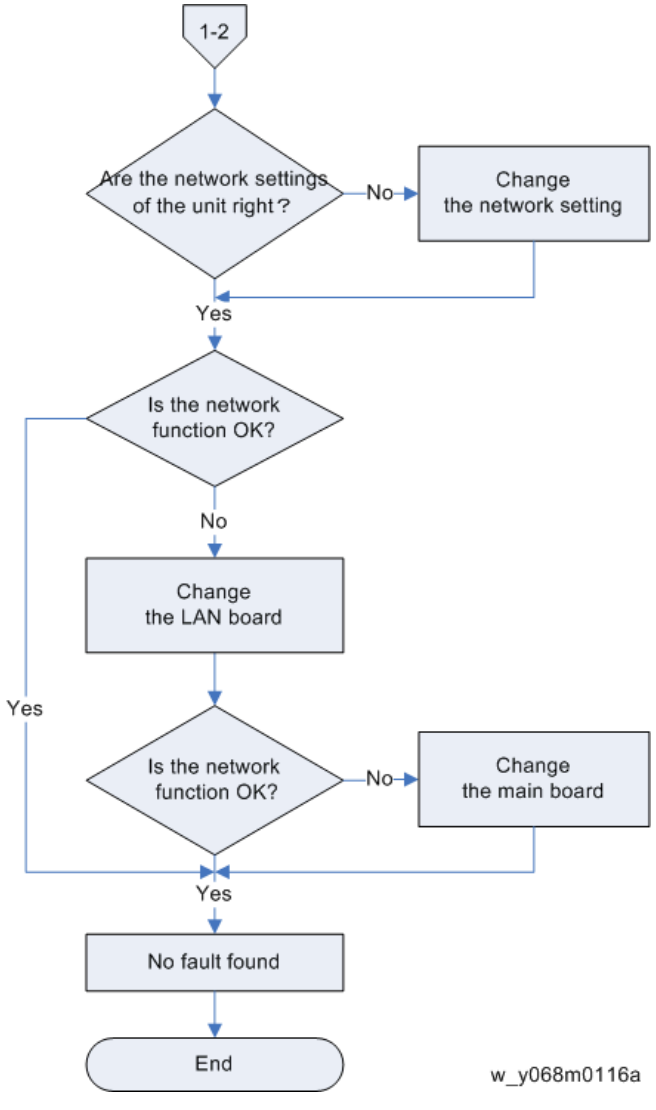
w_y068m0118a

E. Network Troubleshooting

1-1 Is the LAN connector LED in normal status?



1-2 Are the network settings of the unit right?



RS232 Error Log Troubleshooting

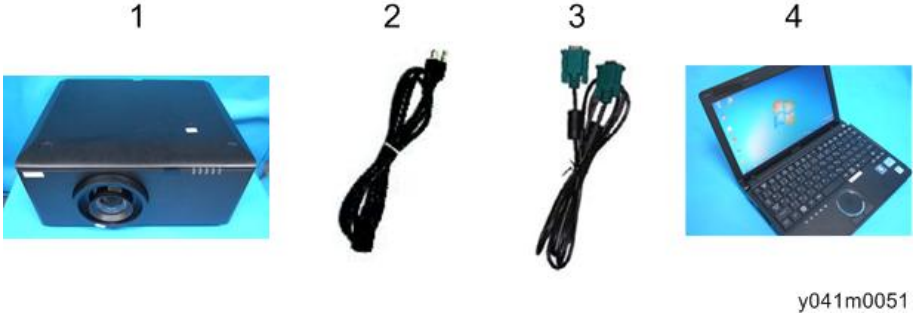
Equipment Needed

Software

- Terminal software

Hardware

1. Projector
2. Power cord
3. Female-to-female RS232 cable
4. PC/Laptop



Procedure

1. **Plug in the power cord.**
2. **Connect the projector and the PC with the RS232 cable.**
3. **Start the prepared terminal software.**
4. **Select the COM port and set up the COM port properties.**
   - Bits per second: 9600
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow control: None
5. **Configure the Terminal Settings.**
   - Function, arrow, and ctrl keys act as: Terminal keys
   - Backspace keys sends: Ctrl+H

- Emulation: Auto detect
- Telnet terminal ID: ANSI
- Backscroll buffer lines: 500

6. **Configure the ASCII Setup.**
   - Choose “Send line ends with line feeds”
   - Choose “ Echo typed characters locally”
   - Choose “ Append line feeds to incoming line ends”
   - Choose “ Wrap lines that exceed terminal width”
7. **Check the error log information.**

RS232 Feedback Command Explanation

Item	Error Log	Explanation	Related parts
1	INFO0	StandbyState	NA
2	INFO1	Warmup	NA
3	INFO2	Cooling	NA
4	INFO4	LampError, LampStrikeFail_Lamp	LAMP/LAMP DRIVER/CW/PHOTO SENSOR/ MB
5	INFO6	FanLockError , FtypeFanError	FAN/MB
6	INFO7	ThermalSensorError	THERMAL SENSOR/MB
	util_ErrorLogSet=0x?; 0x? 0x?		NA
7	x=0	FanLock = 0	FAN/MB
8	x=1	OverTemp	LAMP/CW/PHOTO SENSOR/LAMP DRIVER/MB
9	x=2	LampLiteFail	FAN/ENVIRMENT TEMP./MB
10	x=3	LampIgnitionFail	LAMP/CW/PHOTO SENSOR/LAMP DRIVER/MB

Item	Error Log	Explanation	Related parts
11	x=4	I2CFail	THERMAL SENSOR/MB

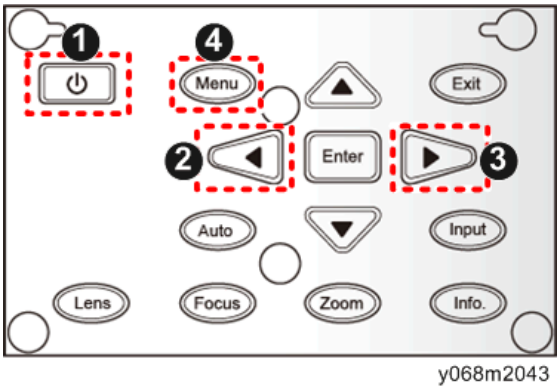
5. Test & Inspection

Service Mode and Engineering Mode

Service Mode

How to enter the Service Mode

1. Turn on the projector.
2. Press the "Power [1]", "Left [2]", "Right [3]" and "Menu [4]" keys sequentially.



y068m2043

Note

- You can use the remote controller to enter the service mode in the same way.
- To exit from the service mode or return to the previous menu, press the "Exit" key.

Service Mode settings

Note

- Here is a summary of common terms.

Term	What It Means
DFU	Denotes "Design/Factory Use". Do not change this value.

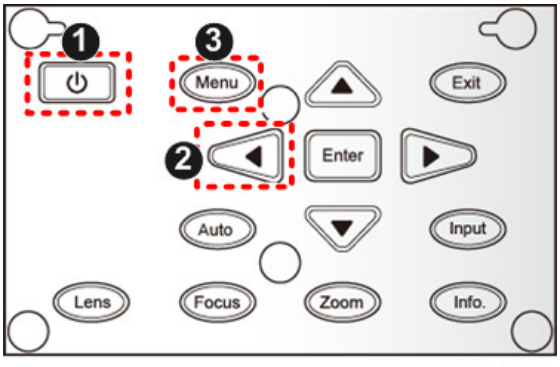
Menu

Setting Item	Description
Model Name	Shows the name of the projector.
FW / PIC ver:	Shows the present PW392/PIC firmware version of the projector. (page 109 "PIC, PW392, DDP4421/DDP4422 FW Update")
LAN / DDP ver:	Shows the present LAN, DDP4421/4422 firmware version of the projector. (page 109 "PIC, PW392, DDP4421/ DDP4422 FW Update") (page 114 "LAN Firmware Update")
Lamp Driver ver:	Shows the present lamp driver version of the projector.
MAC:	Shows the MAC address of the projector.
SN:	Shows the serial number of the projector. (page 122 "Re-write Serial Number")
Lens Calibration	Use this to calibrate the lens of the projector. (page 99 "Lens Calibration")
Temperature	Display only
Times of Power On/Off	Shows the number of times that power was turned on / off.
Security Code	Display only
Test Pattern	Shows the test pattern.
Lamp mode	Use this to change the lamp mode.
Error Log	Records the times of the failure of power on of the projector such as excessive temperature, lamp failure or fan lock.
Current Blower	Shows the current blower RPM values of the projector.
Factory Blower	Shows the factory blower RPM values of the projector.
Lamp Voltage	Shows the lamp voltage value of the projector.
Mode Adjust	DFU
Bore-Sight Pattern	DFU
Color Matching	DFU

Engineering Mode

How to enter the Engineering Mode

1. **Turn on the projector.**
2. **Press the "Power [1]", "Left [2]", "Left [2]" and "Menu [3]" keys sequentially.**



w_y041m0013

Note

- You can use the remote controller to enter the engineering mode in the same way.
- To exit from the engineering mode or return to the previous menu, press the "Exit" key.

Engineering Mode settings

Note

- Here is a summary of common terms.

Term	What It Means
DFU	Denotes "Design/Factory Use". Do not change this value.

Menu

Setting Item	Description
Model Name	Shows the name of the projector.
FW / PIC ver:	Shows the present PW392/PIC firmware version of the projector. (page 109 "PIC, PW392, DDP4421/DDP4422 FW Update")

Setting Item	Description
LAN / DDP ver:	Shows the present LAN, DDP4421/4422 firmware version of the projector. (page 109 "PIC, PW392, DDP4421/ DDP4422 FW Update") (page 114 "LAN Firmware Update")
Lamp Driver ver:	Shows the present lamp driver version of the projector.
MAC:	Shows the MAC address of the projector.
SN:	Shows the serial number of the projector. (page 122 "Re-write Serial Number")
Display Hour	Shows the operating hours of the projector. You can also rewrite the lamp hours. (page 102 "Re-write Lamp Hours")
Lens Calibration	Use this to calibrate the lens of the projector. (page 99 "Lens Calibration")
Temperature	Display only
Wave Form IDs	Shows the wave form IDs of the projector.
Wave Form ID	DFU
Security Code	Display only
Color Wheel	Use this to adjust the R/G/B value to improve the image when the color reproduction is not correct. (page 104 "Color Wheel Index")
Factory Reset	Use this to reset factory default.
Burn in setting	DFU
Spoke Test	DFU
Internal Pattern Test	Shows the test pattern.
Color Calibration	DFU
Error Log	Records the times of the failure of power on of the projector such as excessive temperature, lamp failure or fan lock.
Current Blower	Shows the current blower RPM values of the projector.
Factory Blower	Shows the factory blower RPM values of the projector.

Setting Item	Description
Lamp Voltage	Shows the lamp voltage value of the projector.
Mode Adjust	DFU
DA Calibration	Use this to calibrate the DA of the projector. (page 99 "DA Calibration")
Custom Pattern	DFU
Rotation Mode	DFU

Test Equipment and Conditions

Test Equipment Needed

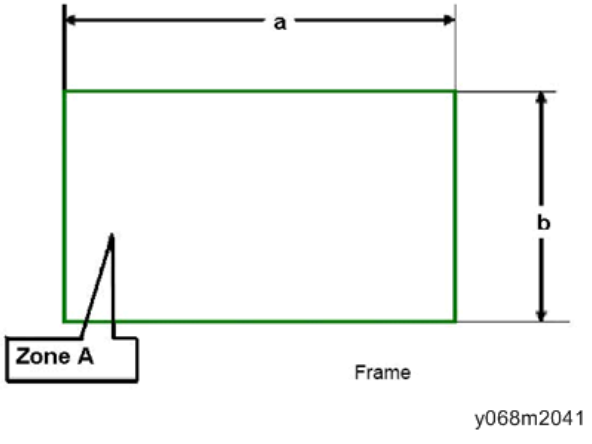
- PC
- DVD player with multi-system, equipped with "Component", "Composite", "S-Video" and "HDMI".
- HDTV source (480P,720P,1080i,1080P)*

  * You can also use a computer with an HDMI port.

Recommended Test Condition

- Ambient brightness: Dark room less than 2 lux.
- Product must be warmed up for 3 minutes.
- Screen size: 60 inches diagonal.

Zone Definition



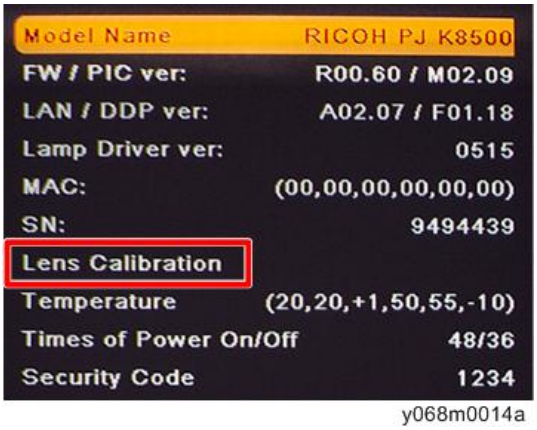
< Figure: Zone A (as shown by the green lines) Definition >

Calibration

Lens Calibration

After repairing the lens unit, lens calibration should be done.

1. **Put the projector on a horizontal place.**
2. **Get into Service Mode. (page 93 "How to enter the Service Mode")**
3. **Select "Lens Calibration" to execute lens calibration.**



y068m0014a

Inspection item

Check if the lens shift module is moving smoothly.

Criteria

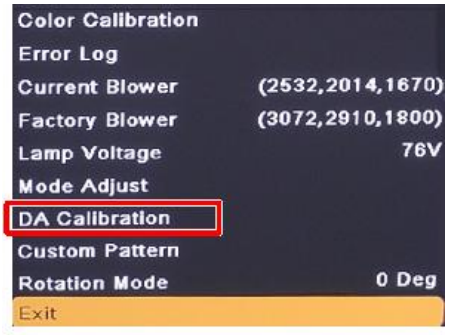
If the lens shift module does not move smoothly or sounds noisy, check whether the motor is working properly. If the motor is working properly, replace the optical engine.

DA Calibration

When the image is too dim, do ''DA Calibration".

1. **Get into Engineering Mode. (page 95 "How to enter the Engineering Mode")**

2. **Choose “DA Calibration”.**



w_y041m0015

3. **Select ‘‘DA Reset’’, then press the “Enter” key to reset.**

w_y041m0016

Fan Calibration

After replacing a Blower (TC Blower, Top Blower, Bottom Blower) or the main board, do the following steps.

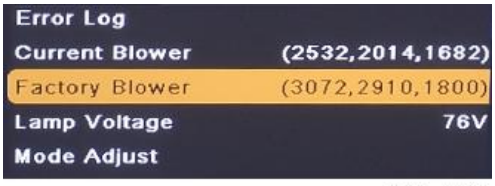
Before doing fan calibration, the unit must be cooled down, or the calibration will be fail.

1. **Put the projector on a horizontal surface.**
2. **Insert the power cord, and then turn the power switch.**
3. **Hold down the “Up” key and Press the "Power" key.**
4. **Release the "Up" key after the power LED changes from purple to blue.**

   The lamp does not light up during fan calibration.

   After fan calibration is finished, the projector will start automatically.
5. **Get into Service Mode. (page 93 "How to enter the Service Mode")**

6. **Check the "Factory Blower".**



w_y041m0017

The three numbers (RPM values) for “Factory Blower” must be within the following ranges: 2482~3698, 2382~3572, 1458~2164.

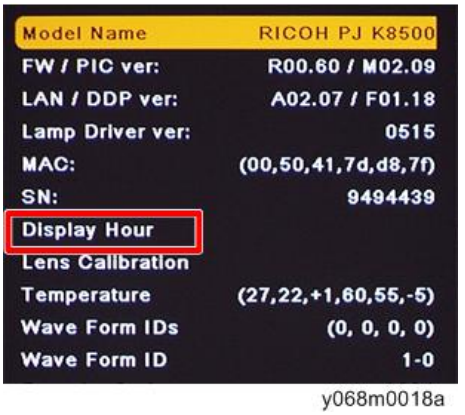
If the RPM does not meet the above ranges, replace the blower.

Lamp Hours

Reset Lamp Hour

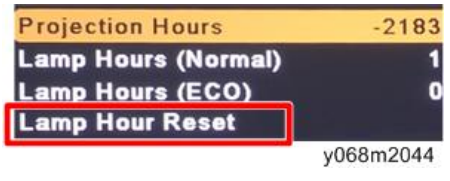
After replacing the lamp module, we have to reset the lamp hours.

1. Get into Engineering Mode. **(page 95 "How to enter the Engineering Mode")**
2. **Select "Display Hour" and then press the "Enter" key.**



y068m0018a

3. **Select "Lamp Hour Reset", then press the "Enter" key.**



y068m2044

4. **Select "Yes" to reset lamp hour.**

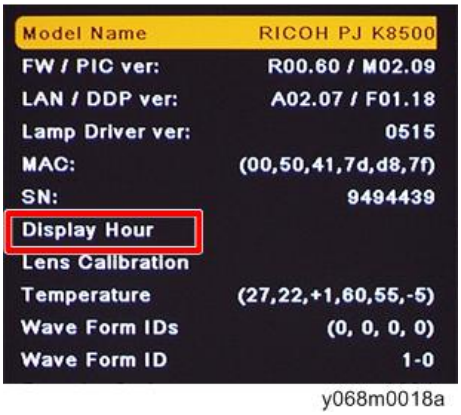
y068m2045

Re-write Lamp Hours

After replacing the main board, you must rewrite the lamp hours.

Write down the lamp hours before the replacement and put back the same value after replacing the board.

1. Get into Engineering Mode. (page 95 "How to enter the Engineering Mode")
2. Select "Display Hour" and then press the "Enter" key.



y068m0018a

3. Select “Lamp Hours (Normal)”, then use the “Left” or “Right” keys to re-write the Lamp Hours.

w_y041m0019

4. Select “Lamp Hours (Eco)”, then use the “Left” or “Right” keys to re-write the Lamp Hours.

w_y041m0020

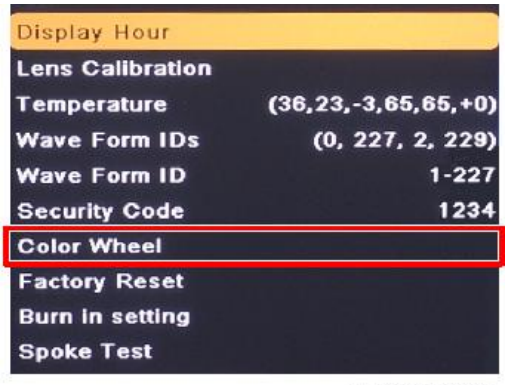
Note

- “Left” key = decrease lamp hours
- “Right” key = increase lamp hours

Color Wheel Index

After replacing the main board or color wheel, "Color Wheel Index" should be done.

1. Get into Engineering Mode. **(page 95 "How to enter the Engineering Mode")**
2. Select "Color Wheel", and then press the "Enter" key.



w_y041m0088

3. Select "CW Index ", then use the "Left" or "Right" keys to adjust the color balance of the projected image.

w_y041m0087

Test Inspection Procedure

Function Inspection

General

All OSD functions must be checked for functionality. When the OSD menu is displayed, there must be no visible peaking, ringing, streaking, or smearing artifacts on the screen.

Factory Default

The factory settings (with appropriate centering, size, geometry distortion, etc.) must be displayed when “Factory Reset” is selected from Engineering Mode.

Display Size

All preset modes must expand to full screen size using OSD Horizontal and Vertical Size controls.

Display Data Channel

The purpose of the DDC test is to verify the (DDC) DDC1/DDC2B operation of the projector and to verify Plug & Play function.

Acoustics

High-pitched sound from the cooling fan and color wheel is unacceptable.

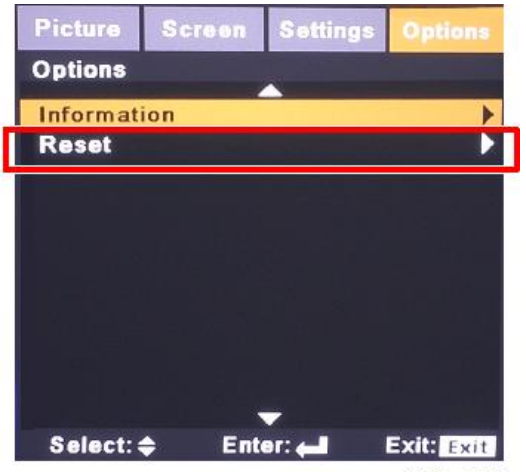
Check points

Check item	Check point
Firmware version	All firmware version must be the latest version
Exterior	The exterior must be undamaged.
Logo	Missing logo, missing prints and blurred prints are unacceptable
Lamp cover	It should be locked in the correct place.
Zoom in/out	The function should work smoothly
Keypad	All keypad keys must operate smoothly

OSD Reset

After the final QC step, we have to erase all saved change again and restore the OSD default setting. The following actions will allow you to erase all end-users' settings and restore the default setting:

1. **Press the “Menu” key to enter the OSD menu.**
2. **Select "Options" and then execute the "Reset" function.**



w_y041m0089

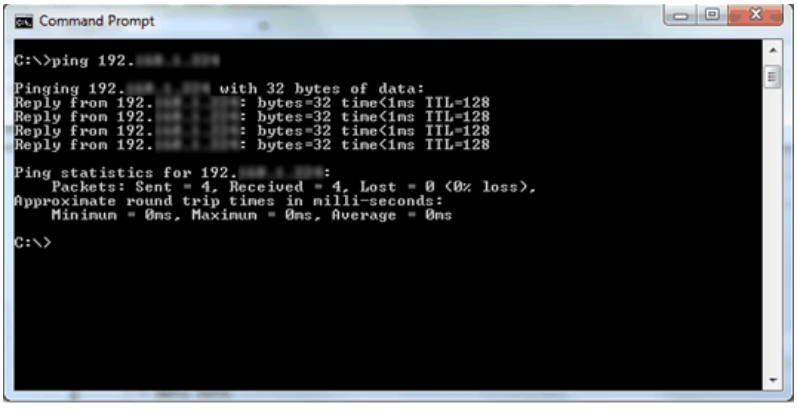
Network Test

1. **Connect one end of the LAN cable to the LAN connector on the projector and the other end to the network.**
2. **Connect the computer to the network.**
3. **Open the Windows Command Prompt.**
4. **Enter the ping command as follows, and then press the Enter key to execute it.**

   ping xxx.xxx.xxx.xxx

   The "xxx" fields represent the projector's IP address.

   Example: ping 192.168.0.100



w_y041m0090

5. **Check the communication result.**

   If communication succeeds

   The message "Reply from xxx.xxx.xxx.xxx: bytes=xxx time=xxms TTL=xxx" appears. (The "xxx" fields vary according to the operating environment.)

   If communication fails

   The message "Request timed out." or "Destination Host Unreachable." appears. If this happens, check the following:

   - Check whether the projector's LAN cable is connected properly.

   - Press the projector's Menu key and select "Settings" and then "Network" in the OSD menu to check whether the network settings have been configured correctly.

6. Firmware Update

PIC, PW392, DDP4421/DDP4422 FW Update

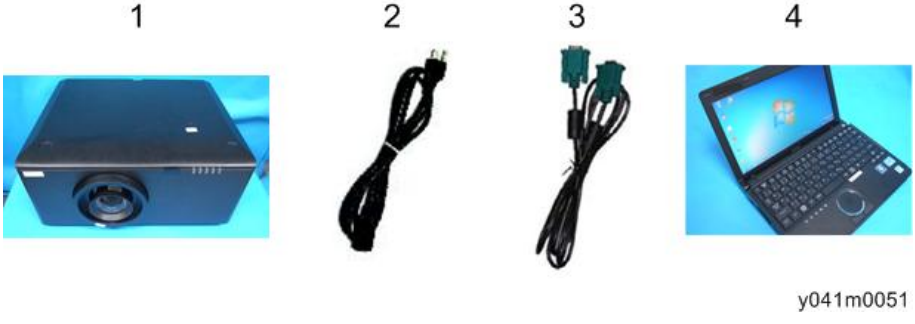
Equipment Needed

Software

- FW update file

Hardware

1. Projector
2. Power cord
3. Female to female RS232 cable
4. PC

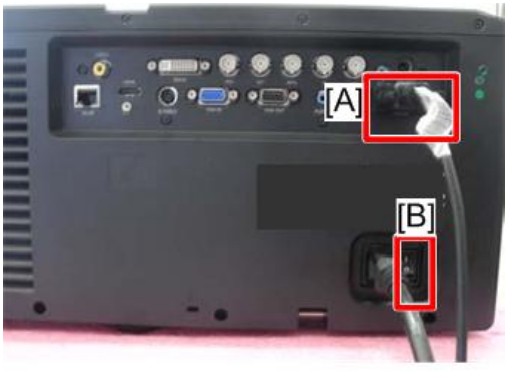


Firmware Update Procedure

Connection

1. **Plug in the power cord.**

2. Connect the projector and PC with the RS232 cable [A].

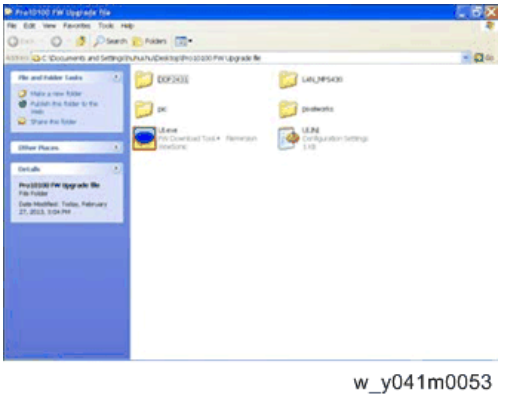


y041m0052

3. Turn on the "Power Switch" [B], and let the projector get into standby mode.

Download software and update

1. Download the latest FW program file from the website, unzip the file and save it on your desktop, then double click the folder.

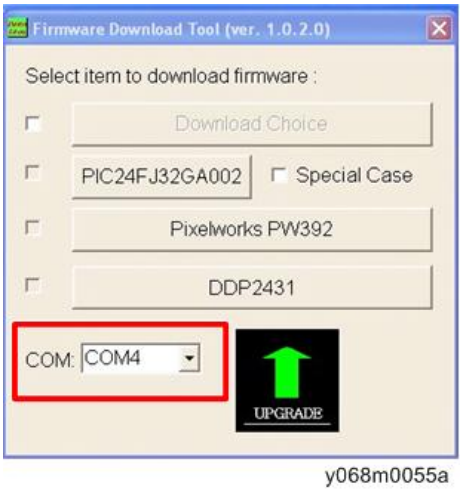


w_y041m0053

2. Execute the UI.exe file.

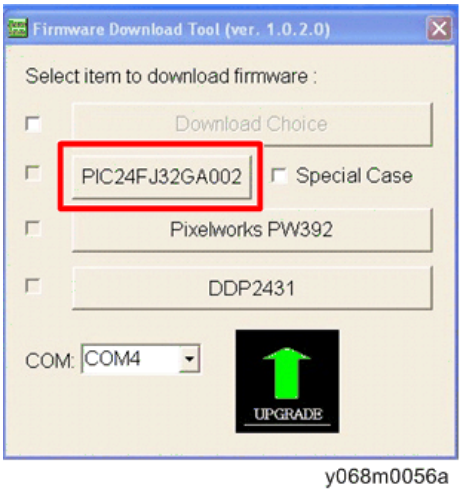
w_y041m0054

3. **Select the COM port which you are using (see the red square below for an example).**



y068m0055a

4. **Click "PIC24FJ32GA002" to update the PIC firmware.**



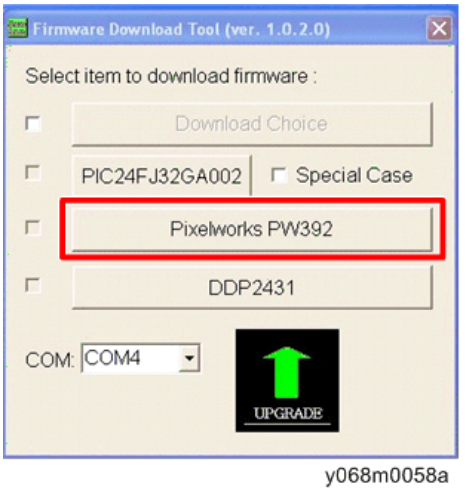
y068m0056a

The PIC firmware will run automatically.

5. **"Download OK" will appear. Click "OK".**

w_y068m0057

6. **Click "Pixelworks PW392" to update the PW392 firmware.**



y068m0058a

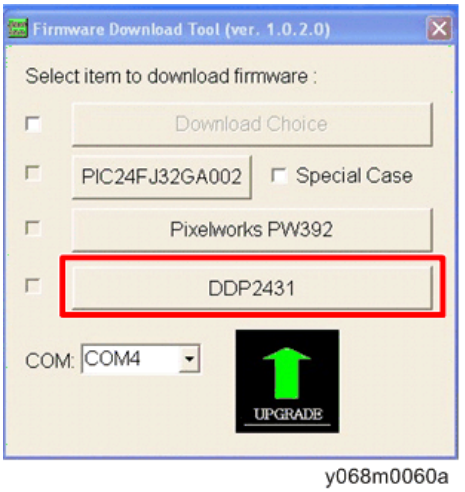
The PW392 firmware will run automatically.

7. **"Flash Completed" will appear. Click "OK".**

w_y068m0059

After updating the PW392 firmware, the projector power will turn on automatically. Please ignore it, and continue to update the DDP4421/DDP4422 firmware.

8. **Click "DDP2431" to update the DDP4421/DDP4422 firmware.**



y068m0060a

The DDP4421/DDP4422 firmware will run automatically.

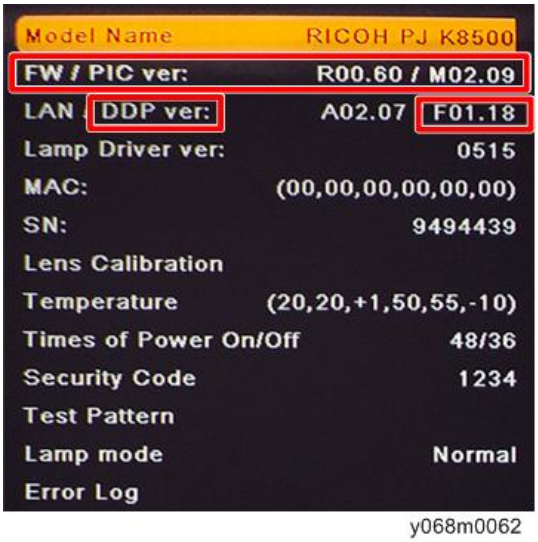
9. **"Flash Completed" will appear. Click "OK".**

w_y068m0061

Check PW392, PIC, DDP4421/DDP4422 FW Version

1. **Restart the projector.**
2. **Get into Service Mode. (page 93 "How to enter the Service Mode")**
3. **Check the PW392, PIC, DDP4421/DDP4422 FW version.**

"FW / PIC ver:" shows, on the left, the PW392 firmware version and, on the right, the PIC firmware version.



y068m0062

LAN Firmware Update

Equipment Needed

Software

- LAN firmware update file

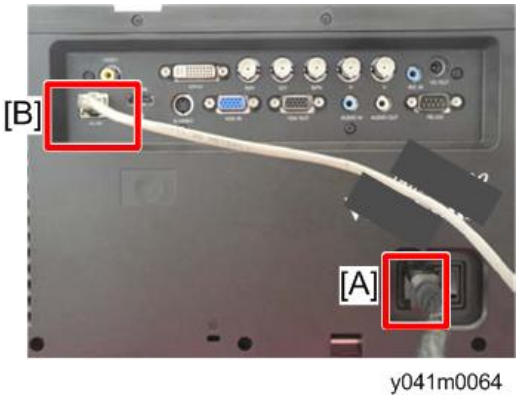
Hardware

1. Projector
2. Power cord
3. LAN cable
4. PC

y041m0063

Connect the Projector & Check the LAN Setting

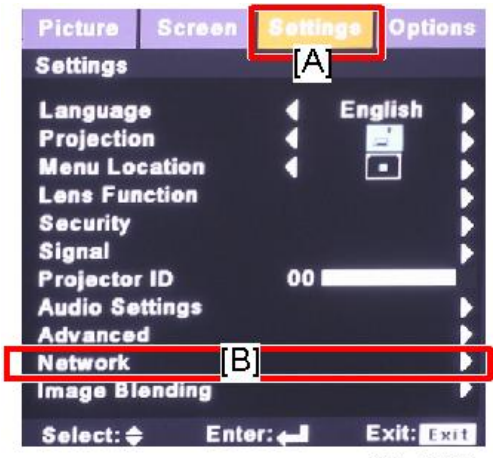
1. **Plug the power cord [A] into the projector.**



y041m0064

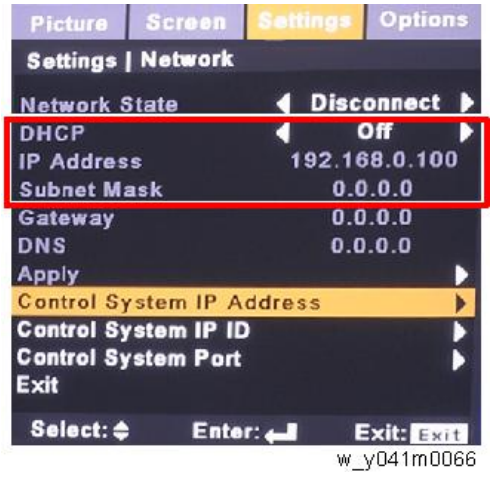
2. **Plug the LAN cable [B] into the projector.**
3. **Turn on the projector, then press the "Menu" key to access the OSD menu.**

4. Use the right key to select "Setting" [A].



w_y041m0065

5. Select "Network" [B], and then press the "Enter" key.
6. Make sure that “DHCP” is “Off”.

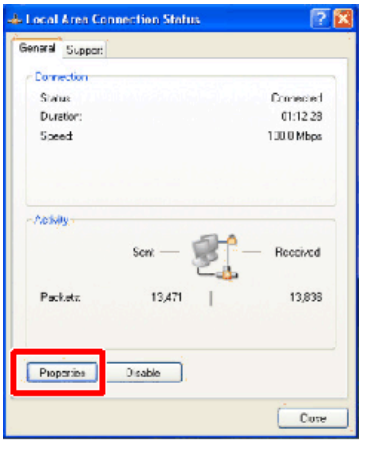


w_y041m0066

7. Write down the IP address and subnet mask: 192.168.0.100 and 255.255.255.0, in this example.

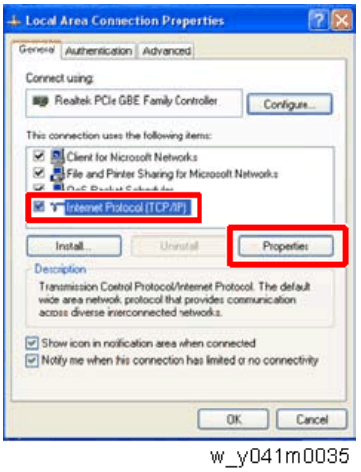
PC Network Setting

1. Double click “Local area connection”, then choose “Properties”.



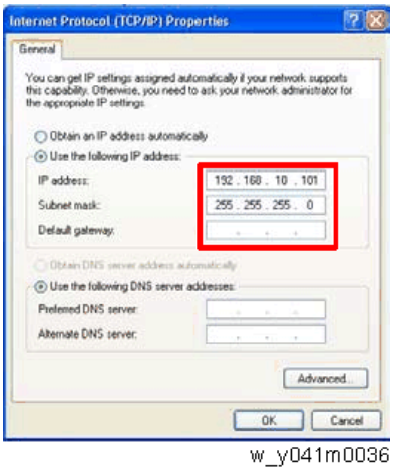
w_y041m0034

2. Select “Internet protocol (TCP/IP)”, and then click “Properties”.



w_y041m0035

3. **Modify the IP address to 192.168.0.101, and modify the subnet mask to 255.255.255.0.**



w_y041m0036

The subnet mask of the PC must be the same as the projector. The HOST ID or IP address (192.168.0.XXX) of the PC must be different from the projector IP address written down earlier.

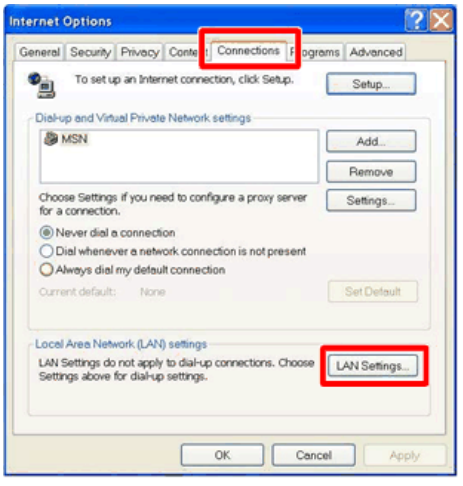
4. **Click "OK".**
5. **Click "Close" to quit the setting screen.**

Proxy Setting

1. **Execute “Internet Explorer”, and then choose “Tools -> Internet Options".**

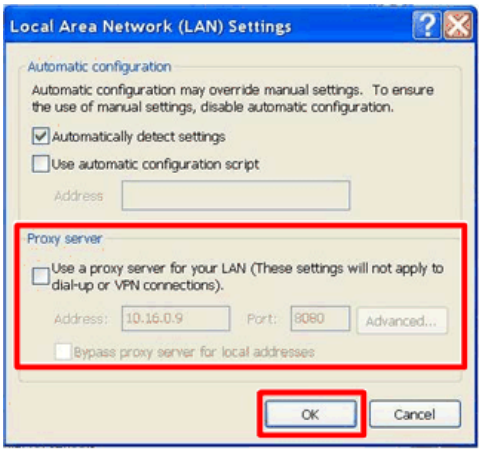
w_y041m0067

2. Select "Connections ", and then click "LAN Settings...".



y068m0068

3. Cancel selection of the proxy server as shown below, and then click "OK".

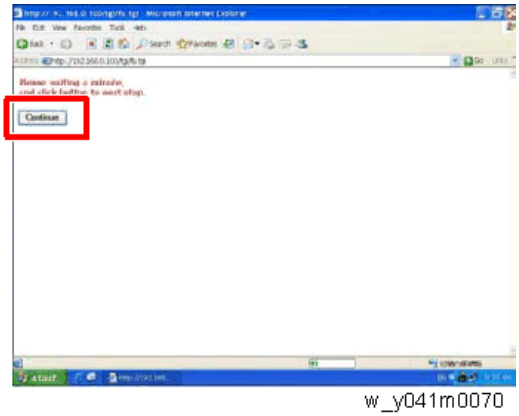


y068m0069

LAN FW Update Procedure

1. Execute "Internet Explorer" and visit "http://192.168.0.100/tgi/fu.tgi".

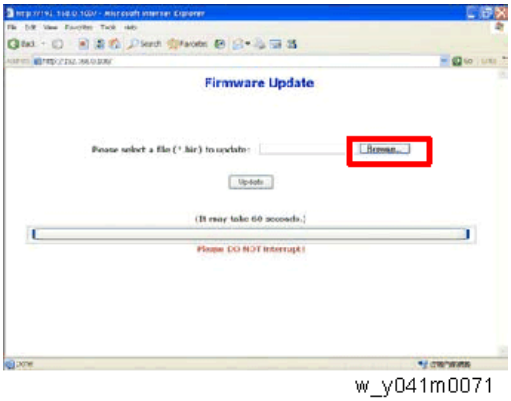
2. **Click “Continue”.**



w_y041m0070

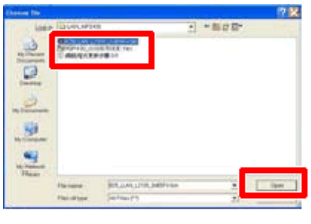
The “Firmware Update” image will appear on the screen.

3. **Click “Browse”.**



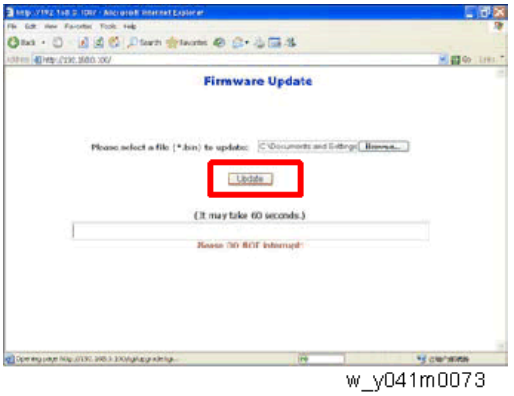
w_y041m0071

4. **Select the LAN FW file (*.bin) which you saved, and then click “Open”.**



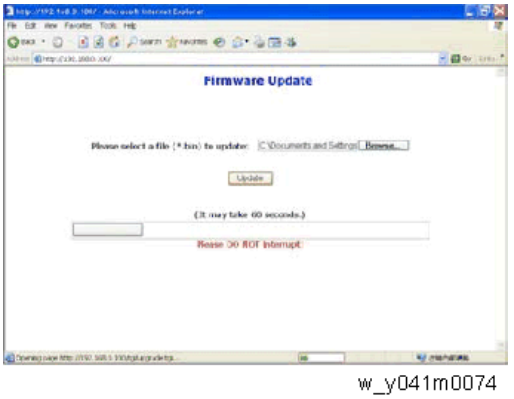
w_y041m0072

5. **Click "Update" to start updating.**



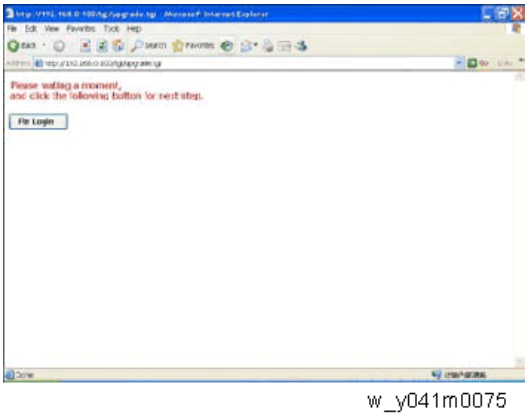
w_y041m0073

The screen appears like this during the firmware update procedure.



w_y041m0074

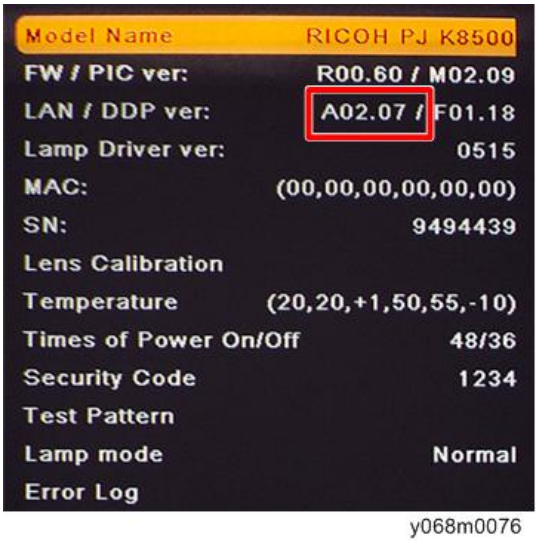
The following appears when the firmware update procedure is complete.



w_y041m0075

Check LAN FW Version

1. Restart the projector.
2. Get into Service Mode. (page 93 "How to enter the Service Mode")
3. Check the LAN FW version.



y068m0076

Re-write Serial Number

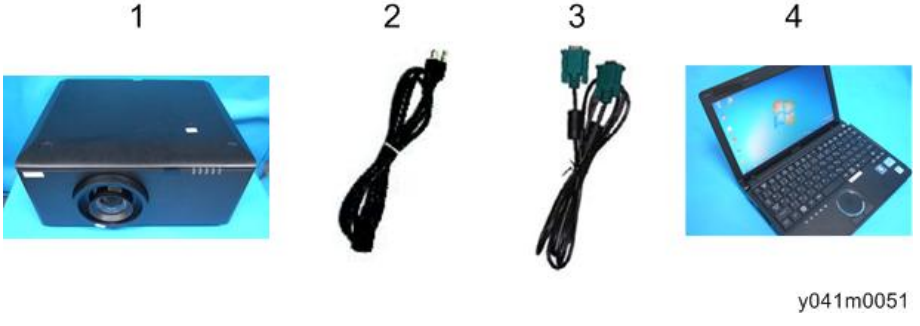
Equipment Needed

Software

Re-write Serial Number tool

Hardware

1. Projector
2. Power cord
3. Female to female RS232 cable
4. PC/Laptop

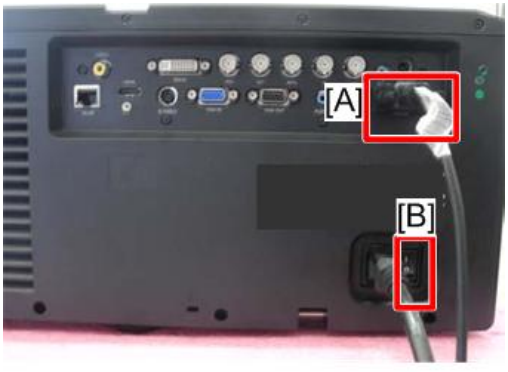


Re-write Serial Number

Connection

1. **Plug in the power cord.**

2. Connect the projector and PC with the RS232 cable [A].



y041m0052

3. Turn on the "Power Switch" [B], then press the "Power" key to turn on the projector.

Re-write serial number

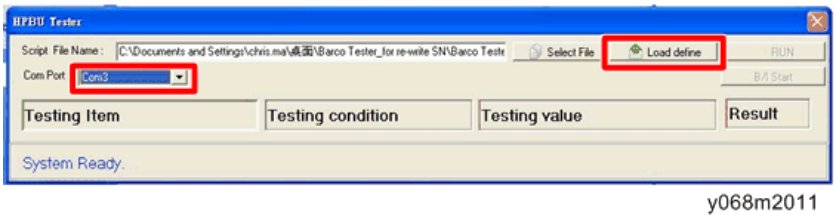
1. Download the re-write Serial Number tool (XXXX Tester for re-write SN.exe) from website, then double-click the file.
2. Execute "HPBU_Common Tester"

y068m2010

Note

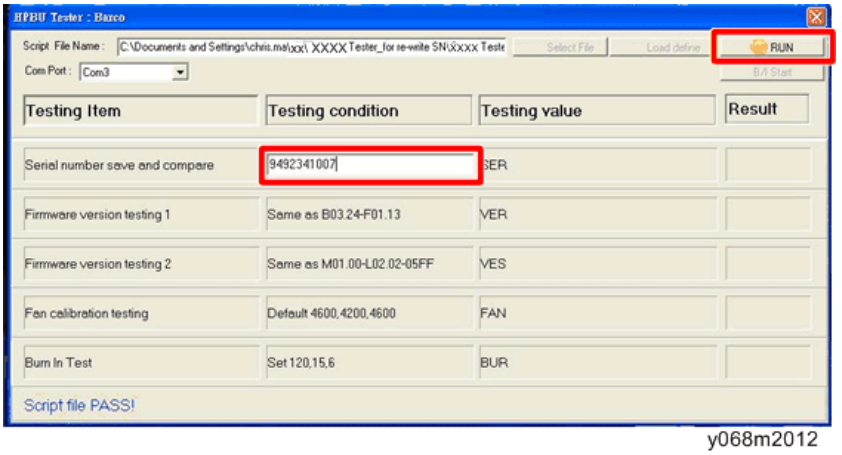
- Ensure that the projector baud rate is "9600".

3. Choose the com port which you are using.



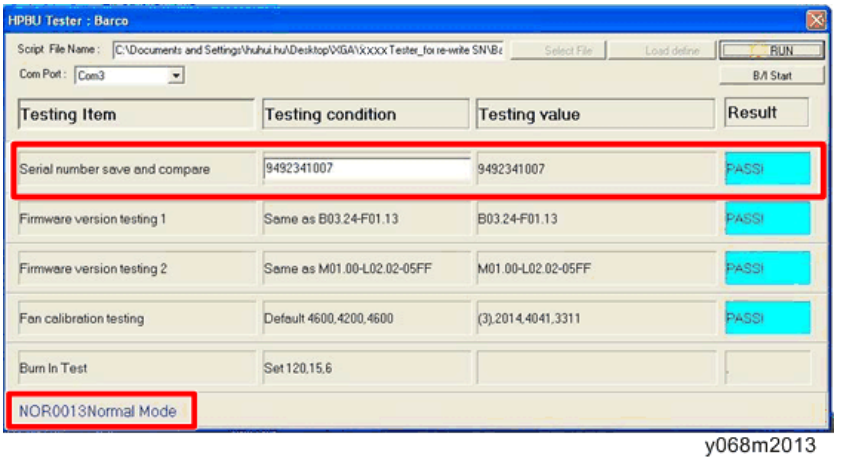
y068m2011

4. **Enter the serial number (for example "9492341007), and then Click "RUN" to re-write the Serial Number.**



y068m2012

The "Pass" and "Normal Mode" messages will be shown in the window.

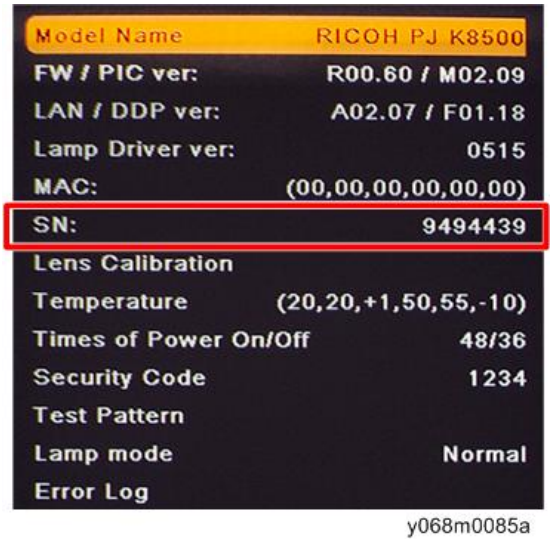


y068m2013

Check Serial Number (SN)

1. **Restart the projector.**
2. **Get into Service Mode. (page 93 "How to enter the Service Mode")**

3. Check the serial number.



y068m0085a

MEMO

MEMO

MEMO