RICOH

Y039/Y040
Service Training

Rigel-PJ2nx

Slide 1

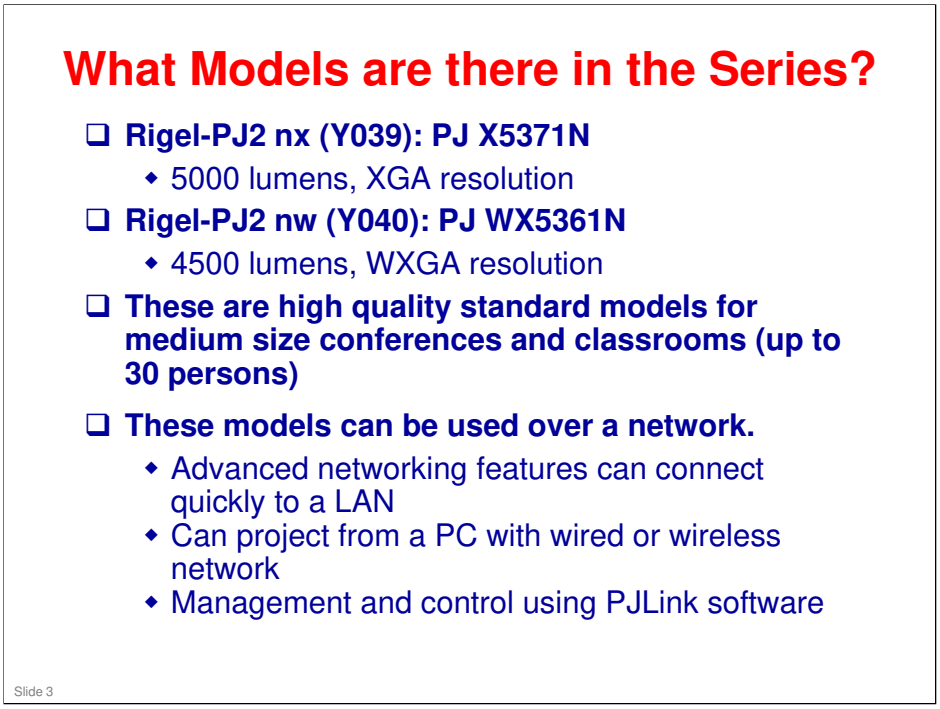
Version 1.0

This training course provides service technician training for the Rigel-PJ2nx series.

RigI-PJ2nx is a successor model to the Rigel-PJ1nx series.

This course will cover information related to service. To understand the features of the machine, the correct ways to turn the projector on or off, about power saving modes, and other matters that are related to operation, please study the user guide.

This section provides an overview of the machine, and the options that can be installed.



No additional notes

Main Specifications

	Rigel-PJ2 nx	Rigel-PJ2 nw
Type of Projector	LCD	
Brightness	5000 lm	4500 lm
Lamp type	270 W mercury lamp	
Resolution	XGA	WXGA
Keystone	Vertical, Horizontal, Pincushion L/R, Pincushion Top/Bottom	
Projection Screen Size	25" - 300" (63.5 – 762 cm)	
Projection Distance	0.6 to 13.8 m (26 to 543 inches)	0.69 to 14.6 m (27 to 573 inches)
Dimensions (W × D × H)	398 mm × 115 mm × 276 mm (15.7" x 4.5" x 10.9)	
Weight	4.1 kg (9.1 lbs)	
Power Consumption	Standard: 374 W (NA), 357 W (EU) Eco Mode 1: 304 W (NA), 292 W (EU) Eco Mode 2: 260 W (NA), 248 W (EU)	
Speaker	16 W x 1	
Wireless LAN	Option (USB)	
Wired LAN	Yes	
USB	Yes	
HDMI	Yes	

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- See the specifications table in the service manual for more details.

Changes from the predecessor model

- **Brighter lamp**
  - XGA 4200lm → 5000lm
  - WXGA 3500lm → 4500lm
- **2 new keystone adjustments in addition to vertical and horizontal**
  - Pincushion Left/Right
  - Pincushion Top/Bottom
- **Eco Mode 2**
- **Empowered speaker**
  - 10W → 16W
- **New OS support**
  - Windows 8
  - Mac OS 10.6, 10.7, 10.8
- **Utility change for Mac OS**
  - Advanced Network Utility → Projection Utility

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No additional notes

Features

- This product can be installed by users, except when mounted on a ceiling.
- This product is designed for user maintenance. Regular on-site maintenance is not needed.
- LEDs show the symptoms for troubleshooting (blinking/lit, number of times the LEDs blink, etc).
- A service mode is available.

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No additional notes

Take Care When Tilting

- Do not tilt the projector to the left to right at an angle of more than 10 degrees.
- Do not tilt upward/downward from the horizontal plane.

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No additional notes

Low Energy Consumption

- **4,000 or 6,000 hour lamp life and lower power consumption in Eco modes 1 and 2.**
  - The life of 4,000 hours (or 6,000 hours) is only achieved if the lamp is always used in either of the two Eco modes.
  - Lamp power in Eco mode 1 is 80% of full power. 60% in Eco mode 2.
- **Power consumption values:**
  - Eco Mode Off (Normal): 374 W (100-130 V), 357 W (200-240 V)
  - Eco Mode 1: 304 W (100-130 V), 292 W (200-240 V)
  - Eco Mode 2: 260 W (100-130 V), 248 W (200-240 V)
  - Standby (Normal): 10 W (100-130 V/200-240 V)
  - Standby (Network): 2.4 W (100-130 V), 2.8 W (200-240 V)
  - Standby (Power saving): 0.21 W (100-130 V), 0.43 W (200-240 V)

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- Note that in the service mode menu, Eco Mode is referred to as ‘Low Mode’.

Consumables and Options

- **Replacement lamp (Y204)**
  - 270W mercury lamp (Replacement Lamp Type 12)
    - » There may be a 50% decrease in brightness at the end of the lamp's life.
- **Wireless LAN unit (Y106)**
  - IEEE 802.11b/g/n are supported

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- Wireless LAN Unit M1: For USA, Canada, Mexico, Brazil. Colombia, and Taiwan
- Wireless LAN Unit M2: For CE Countries (27 EU countries, and Iceland, Liechtenstein, Norway, and Switzerland), UAE, Saudi Arabia, Oman, South Africa, Turkey, Egypt, Israel, Australia, NZ, Thailand, HK, Singapore, Malaysia, Sri Lanka, Pakistan, Vietnam, India, Philippines, Peru, Chile, Argentina, Ecuador
- Wireless LAN Unit M3: For Russia

Utilities

- **Projection Utility**
  - A utility for projecting from a computer over a network
- **Advanced Network Utility**
  - This allows you to send images from a PC to more than one projector at the same time.
- **JPEG Conversion Tool**
- **@Remote**
  - @Remote is not available on this model.

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No additional notes

Reliability Information

- **Average monthly projection time: 77 hrs/month**
  - 3.5 hrs/day x 22 working days/month
- **Failure Rate**
  - 0.004 cases/unit/month
- **Lamp Life**
  - Normal Mode: 3,500 hrs
  - Eco Mode 1: 4,000 hrs
  - Eco Mode 2: 6,000 hrs

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No additional notes

Lamp End Alerts

- **There is no near-end alert.**
  - The lamp end alert occurs when the machine calculates that the life time has expired.
  - If used in Normal Mode only, the alert appears after 3,500 hrs projection time
  - If used in Eco Mode 1 (2) only, the alert appears after 4,000 (6,000) hrs projection time.
  - If the user switches between modes, the machine calculates when to display the alert based on how long the lamp was used in each mode.
- **If the projector is used for 100 hours after the lamp has reached the end of its life, the projector will turn off and go into standby mode.**
  - In this condition, the lamp hours cannot be reset using the menu.
  - The user must replace the lamp, then press the Help button on the remote control for 10 seconds to reset the lamp clock back to zero (do this only after replacing the lamp).

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No additional notes

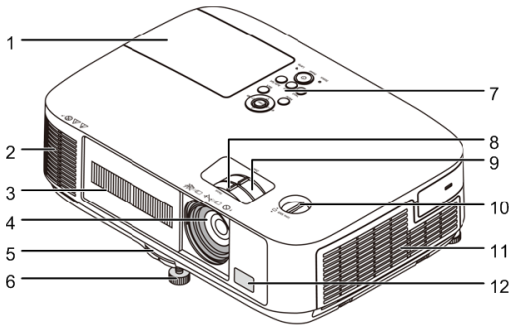
Disposal of Broken Lamps

- **Projector lamps normally contain mercury vapour.**
- **These lamps can rupture due to impact or being used longer than their life expectancy.**
  - The time that the breakage will occur differs widely for each lamp and its circumstances of use.
- **These lamps must be disposed of in accordance with local environmental regulations.**

Slide 13

No additional notes

External View - Front



1. Lamp Cover
2. Ventilation (outlet)
3. Lens Cover
4. Lens
5. Adjustable Tilt Foot Lever
6. Adjustable Tilt Foot
7. Controls
8. Focus Lever
9. Zoom Lever
10. Lens Shift Dial (Vertical)
11. Ventilation (inlet) / Filter Cover
12. 12. Remote Sensor

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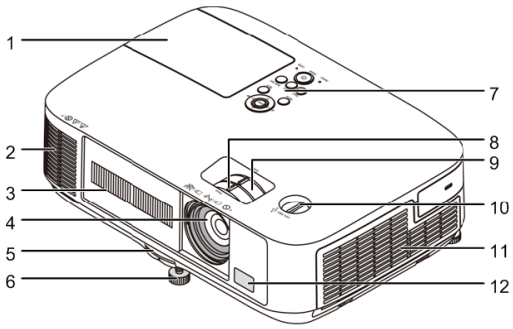
No additional notes

External View - Front



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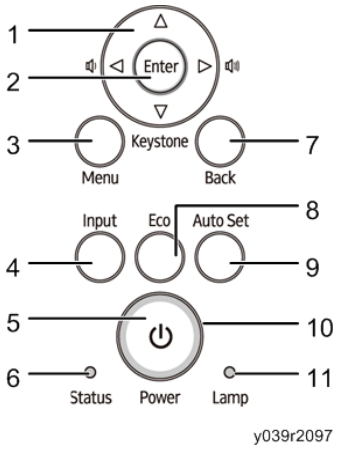
No additional notes

Operation Panel

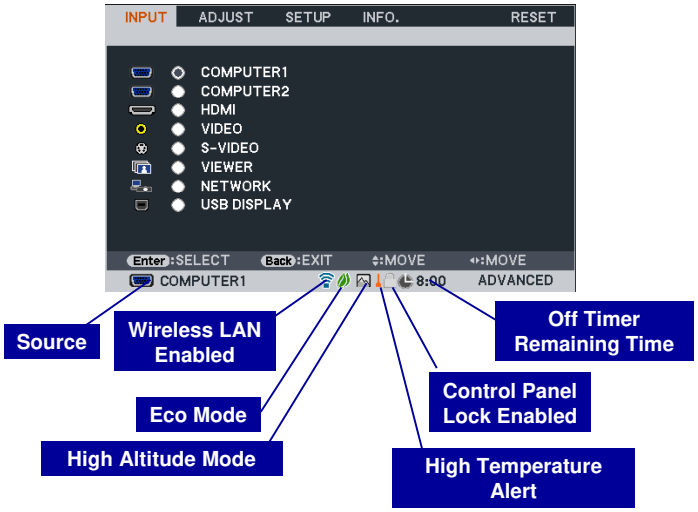


1. Volume Buttons, Keystone Buttons
2. Enter Button
3. Menu Button
4. Input Button
5. Power Button
6. Status Indicator
7. Back Button
8. Eco Button
9. Auto Set Button
10. Power Indicator
11. Lamp Indicator

Slide 16

No additional notes

Menus



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- This slide shows the Input Menu, and explains the symbols that appear on the menu screen.
- For details of all functions, see the user's manual.
- High Altitude Mode: The fans operate at a higher speed in this mode. Use this when the projector's location is more than 1700 m (5500 ft) above sea level (otherwise, the projector could overheat and shut down automatically).
  - Also, if you use high altitude mode at less than 1700 m (5500 ft) above sea level, the projector could become too cool, causing images to flicker. Switch [FAN MODE] to [AUTO].
- High Temperature Alert: High temperature detected inside the projector, Eco Mode is enforced
  - If the projector overheats, it shuts down automatically. Wait a few moments then turn back on again.

Menus

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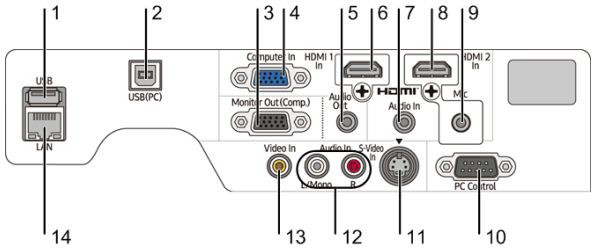
- This slide shows the other four menu tabs.
- Note that in the Adjust, Setup, and Info tabs, there is more than one page.
  - For example, in the Adjust tab, there are three pages: Picture, Image Options, and Audio.

Connection Ports



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1. USB Port (Type A)
2. USB (PC) Port (Type B)
3. Monitor Out (Comp.1) Connector (Mini D-Sub 15 Pin)
4. Computer In / Component Input Connector (Mini D-Sub 15 Pin)
5. Audio Out Mini Jack (Stereo Mini)
6. HDMI 1 In Connector (Type A)
7. Computer Audio In Mini Jack (Stereo Mini)
8. HDMI 2 In Connector (Type A)
9. Mic Input Jack (Mono Mini)
10. PC Control Port (D-Sub 9 Pin)
11. S-Video In Connector (Mini DIN 4 Pin)
12. Video/S-Video Audio In (L/Mono, R) Connectors (RCA)
13. Video In Connector (RCA)
14. LAN Port (RJ-45)

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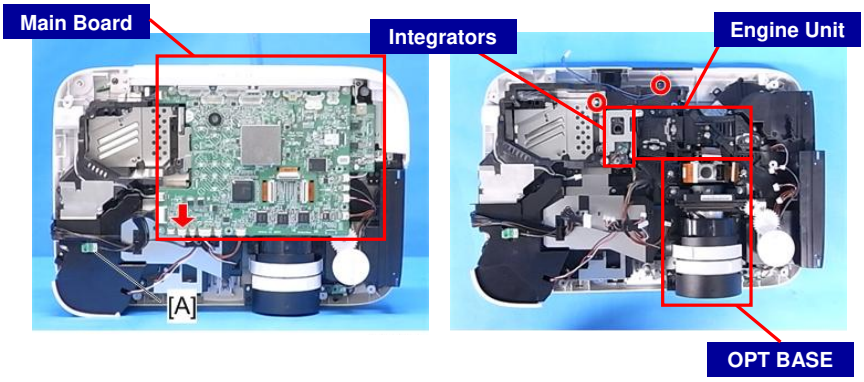
No additional notes

Locations of Main Units - 1

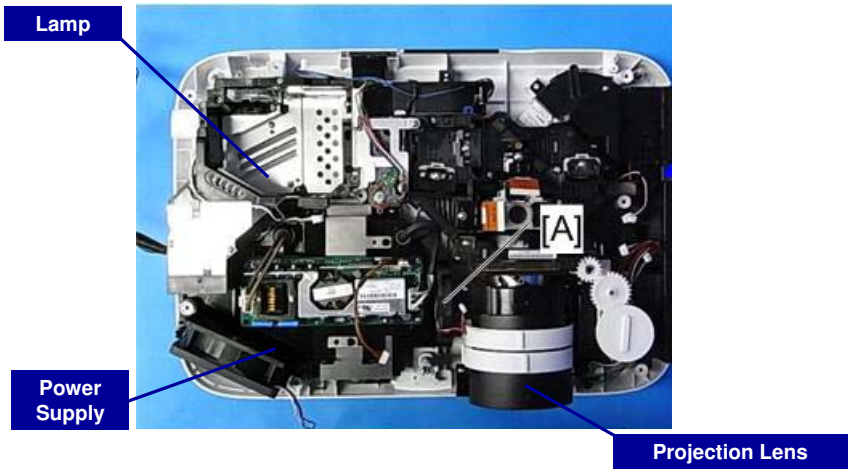


- After removing the top cover, you see the main board.
- This board must be removed to access the optical adjustments.
- After you remove the main board, you can see these major subassemblies:
  - OPT BASE: Contains the LCD panels, cross prism, and projection lens housing
  - Engine unit: Contains the relay lens, field lens, polarizers and the dichroic mirrors
  - Integrators: These are the PBS units

Slide 20

Please ignore the callouts [A] and red circles in the diagram.

Locations of Main Units - 2



Slide 21

Please ignore the callouts [A] and red circles in the diagram.

Iris Unit

- **The Iris unit physically blocks the light path from the projector to the screen when the projector is on but nothing is being projected.**
- **At these times during a presentation, a blank white screen is often not desirable. So, there are three ways to get around this.**
  - 1. Turn off the projector. If you do that, you have to think about cool-down and warm-up times. Also, if you keep turning the lamp off/on, the lamp's life can be reduced.
  - 2. Send an all-black video signal. This can cause delicate optical components to overheat, reducing the projector's life
  - 3. Physically block the light path inside the projector. The projector keeps working as normal but nothing comes out of the projector lens. This is how the Iris unit works.

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No additional notes

This section explains the basic points about servicing the machine.

Antistatic Clothing

- To protect the components from damage, wear anti-static clothing when you disassemble the machine.

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No additional notes

Special Tools

- **There are a lot of special tools for working on this machine.**
- **See the list in the service manual for details.**

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- Service manual: 3. Replacement and Adjustment > Special Tools

Software Required for Service
Overview

- **Software for the following purposes must be installed on the computer that you will use to service this machine:**
  - For writing data to the machine
    - » Used after replacing the Main PWB
  - For writing the EDID to the machine
    - » Used after replacing the Main PWB
  - For writing the serial number and model number to the machine.
    - » Used after replacing the Main PWB
  - For service adjustments
    - » Used after replacing either of these components: Main PWB, Opt Base

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- The next few slides explain what software must be installed, and how to install it. Using the software will be explained later, in the 'Adjustments after Replacing Components' section.

Software Required for Service For Writing Data to the Machine

- **There is a software package to install on your PC, and a data file (one for each model).**
  - For writing the model-specific product data
    - » Writing software: PJUpgrader2_108.exe
    - » File names: modelname_mdata.bin
- **These programs and files can go anywhere on the PC.**
- **If you install new versions, uninstall the old versions first.**
- **Always take care to use the correct files for the model you are working on. If you install the wrong files on the projector, you cannot replace them with the correct ones, so you must replace the Main PWB.**

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- This is a software exclusive for the Rigel-PJ2 series. Do not use software for Rigel-PJ1 series.

Software Required for Service
For Writing the EDID to the Machine

- **There is one software package to install on your PC, and two data files for each model.**
  - EDID rewriting software
    - » EDIDWrite.exe
  - EDID data (HDMI)
    - » modelname_EDID_HDMI_Vxxx.bin
  - EDID data (D-Sub)
    - » modelname_EDID_DSUB_Vxxx.bin
- **The PC must have Windows XP or 2000, with a cross (reverse) serial cable and RGB (analog) video connection with the projector.**
  - **This is a software exclusive for the Rigel-PJ2 series. Do not use software for Rigel-PJ1 series.**

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- In the data file names, ‘xxx’ denotes the version.

Software Required for Service
For Writing Serial No. and Model No. to the Machine

- **Software: snwriter000002.zip**
  - Decompress and install

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- This is a software exclusive for the Rigel-PJ2 series.

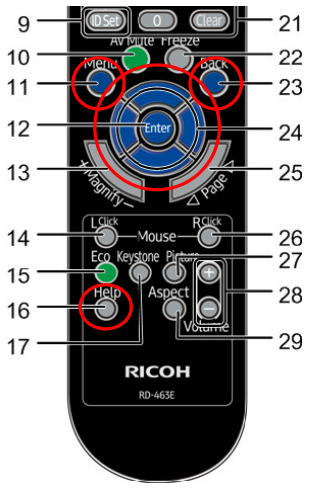
Software Required for Service
For Service Adjustments

- **Service adjustment software must be installed: Ser_X5371NSeries.exe**
- **The PC must use Windows XP or 2000, and either of serial ports COM1 - COM9 must be D-SUB9-pin**
- **To install the software, copy the following files to any folder on the PC.**
  - Ser_X5371NSeries.exe
  - Various DLL files

Slide 30

- This is a software exclusive for the Rigel-PJ2 series.

Entering Service Mode



- **There are two service modes.**
  - Expert Mode
  - Service Mode
- **You need to use the remote controller to access these modes.**
  - Expert mode:
    - » Help > Up > Left > Help.
    - » Then press the Menu button to display the menu.
  - Service mode:
    - » Help > Enter > Help > Enter > Help > Enter. Then press Menu for 3 seconds.
    - » When the Password menu is displayed, press Up > Right > Left > Right > Right > Right > Up > Up > Enter
    - » Then press the Menu button to display the menu.
- **There are two ways to leave Expert or Service mode**
  - Press the Back button twice when no menu is displayed.
  - Otherwise, press the Power button. The machine will go to standby mode.

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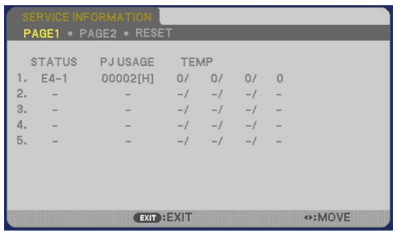
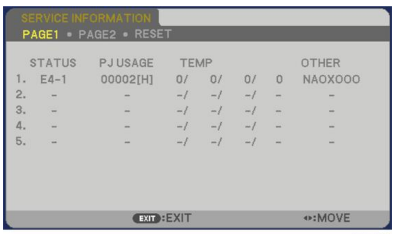
- Service manual > Troubleshooting > Service Mode > Mode change
- Same method to enter service and expert modes as for Sirius-PJ1, but the layout of the remote controller is different.

Page 1 – Error Log



Expert Mode



Service Mode

- The Error Log is seen on Page 1 of Expert Mode or Page 1 of Service Mode.
- The service mode screen has more detail.

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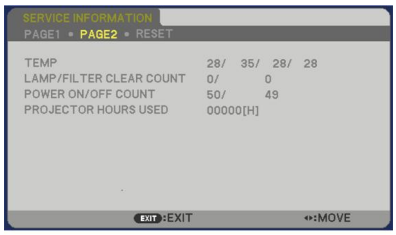
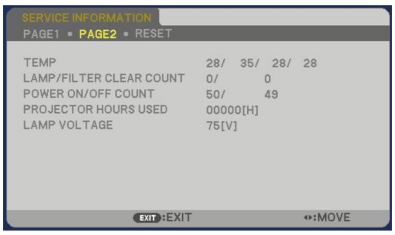
No additional notes

Page 2 – Various Data



Expert Mode



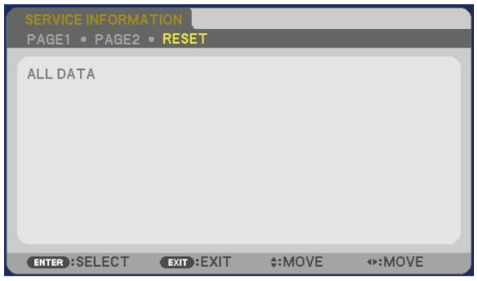
Service Mode

- The service mode screen has lamp voltage data.

Slide 33

No additional notes

Factory Reset



- **The items that are reset in service mode are the same as in user mode.**
  - See the service manual for a list of items that are reset.

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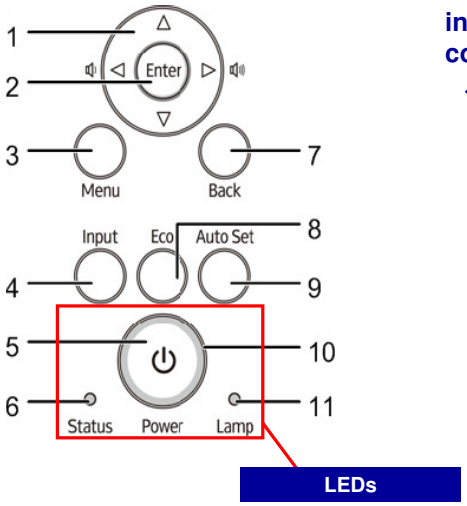
- Service manual: Troubleshooting > Service Mode

Troubleshooting - LED Display



- **The status of the LEDs indicate the machine's condition.**
  - See the table 'LED Display' in the Troubleshooting section of the service manual.

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No additional notes

Cleaning

- Filters, lens and cabinet are cleaned by the user.
- Do not use alcohol or glass lens cleaner for the lens. A plastic lens is used.
- Other optics parts can be cleaned with pure alcohol.

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No additional notes

Replacing the Lamp

- To replace the lamp, unplug the power cord and then wait for the lamp to become cool. This may take as long as 60 minutes.

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No additional notes

This section explains the most important points about replacing components.

Removing the Top Cover

- Be careful when lifting off this cover. The PCB Shutter and main board are attached to the top cover and connected through a cable.
- Remove them carefully, making sure the top cover faces down towards the lens side.
- When removing the top cover, make sure to keep the lens cover open.

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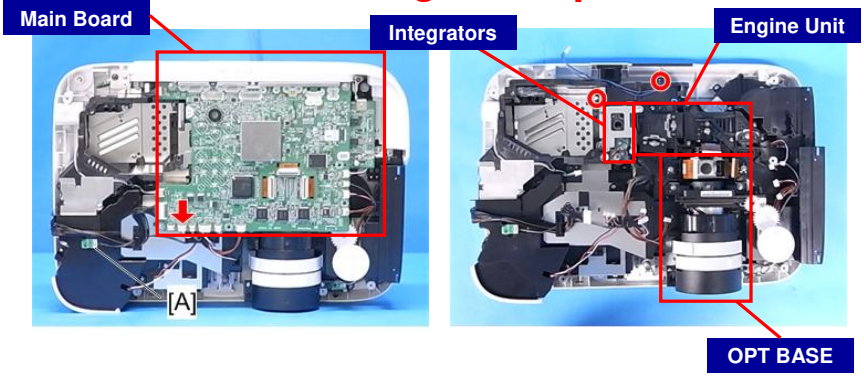
No additional notes

After Removing the Top Cover



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- This board must be removed to access the adjustments.
- After you remove the main board, you can see these major subassemblies:
  - OPT BASE: Contains the LCD panels, cross prism, and projection lens housing
  - Engine unit: Contains the relay lens, field lens, polarizers and the dichroic mirrors
  - Integrators: These are the PBS units

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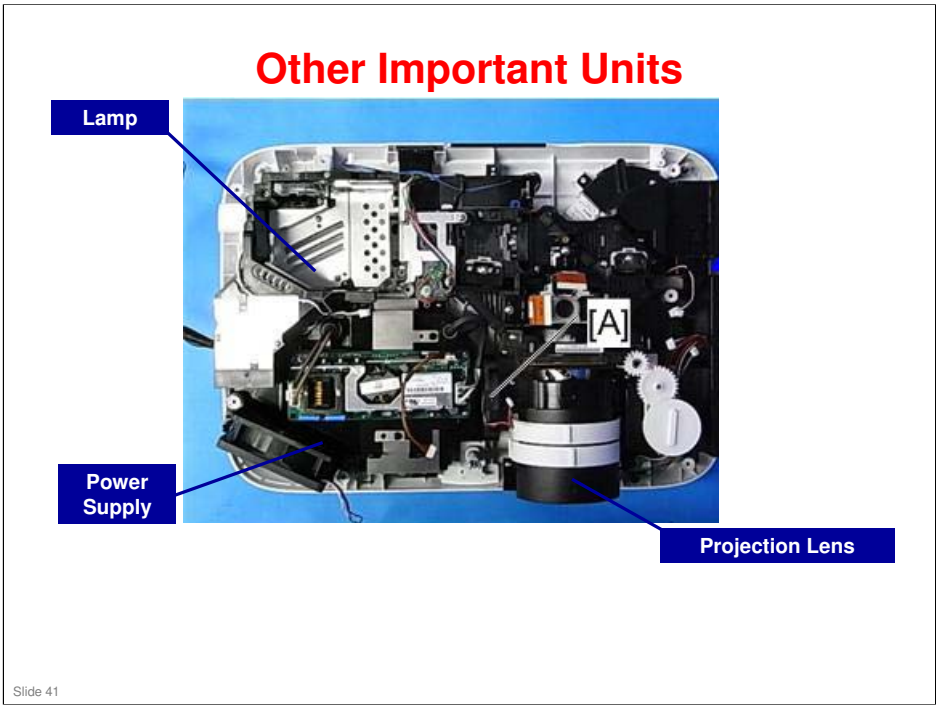
Please ignore the callouts [A] and red circles in the diagram.



Please ignore the callout [A] in the diagram.

Starting the Projector when the Top Cover and Lamp Cover have been Removed - 1

- The lamp cover switch is mounted on the main board.
- The projector cannot be started if the lamp cover and top cover have been removed.
- Prepare a strip of cardboard as shown on the left.
  - Length: 35 to 40 (mm), Width: 100 to 120 (mm), Thickness: 1 to 2 (mm)
- Fold it into a v-shape.

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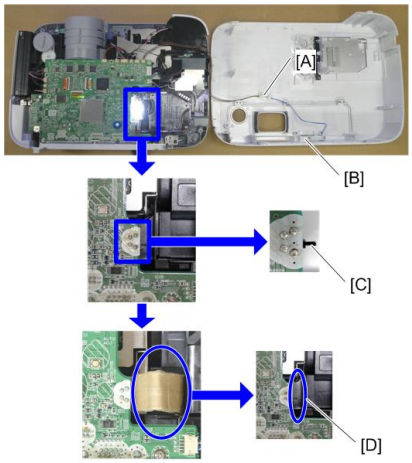
No additional notes

Starting the Projector when the Top Cover and Lamp Cover have been Removed - 2



- **Insert the folded cardboard in the right side of the lamp cover switch [C].**
  - Insert it along the lamp cover switch.
- **Connect the Main PWB Assy and the PWB Shutter Assy with the 3P extension board and extension connector [A].**
- **The lens cover should be left open.**

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No additional notes

Installing the Lamp Cover and Top Cover

- Install the top cover first, then the lamp cover.
- If you do it the other way, the lamp cover switch may be damaged by the embossed part of the lamp cover assembly.

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No additional notes

PCB Network

- When handling this board [A], keep it away from conductive materials such as metals.

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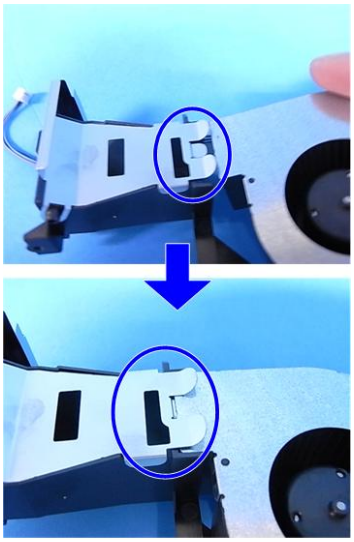
No additional notes

Lamp Fan



- When installing the lamp fan, pay careful attention to where the bracket is inserted.

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No additional notes

Replacing the Main PWB

- **Before replacing the main board, copy all data from the current Main PWB to your PC**
  - Service adjustment software is required: Ser_X5371NSeries.exe – see Software Required for Service earlier in the presentation).
  - If this process failed, then some steps of the data writing process have to be skipped, as shown below.
- **Do the following after replacing the Main PWB (software is required – see Software Required for Service earlier in the presentation):**
  - Data writing
    - » Data for each model
    - » EDID Data
    - » Serial number and Model number
  - Data Read/Write (skip this part if the data could not be copied from the old Main Board)
    - » Flicker Data
    - » VT Data
    - » Uniformity Data
    - » Color Correction Data
    - » WallColor Data
    - » Usage Time Data
  - Flicker adjustment (do this if the data could not be copied from the old Main Board)
  - Usage Time setup (do this if the data could not be copied from the old Main Board)

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- Adjustment Procedures: Service manual > Electrical Adjustment
- We will look at these adjustments and how to use the software later.

Replacing the OPT BASE

- **The service parts are all produced so that the configuration of the LCD panels is LRL.**
  - There is no need to worry about whether the LCD panels are L-type or R-type when installing new parts.
- **Do the following after replacing the OPT BASE:**
  - Optical Axis Adjustments (check, and adjust only if necessary)
  - Flicker adjustment
  - Usage Time setup

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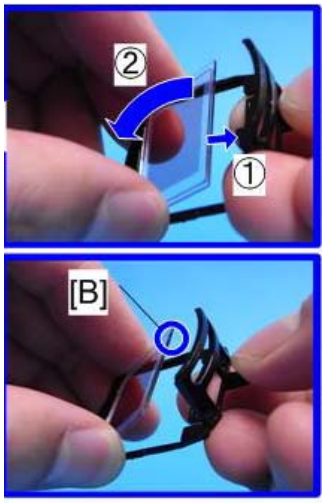
- Adjustment Procedure: Service manual > 3. Replacement and Adjustment > Replacement of Optical Parts > Optical Parts Adjustment > Adjustment of the optical axis (Shadow adjustment)
- We will look at these adjustments later.

Polarizers



- **The polarizers (Polarizer-G, Polarizer-R, Polarizer-B) can be removed from their frames.**
  - Make sure that the edge with the [B] faces upwards.
- **After you replace one or more polarizers, do the polarization plate adjustment.**

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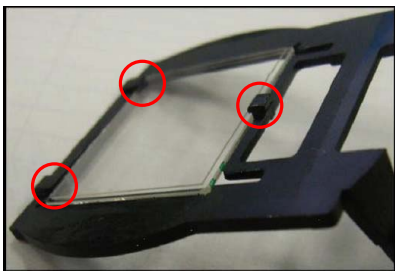
- Replacement Procedure: Service manual > 3. Replacement and Adjustment > Replacement of Optical Parts
- Adjustment Procedure: Service manual > 3. Replacement and Adjustment > Replacement of Optical Parts > Optical Parts Adjustment > Adjustment of the polarization plate (Contrast adjustment)
- We will look at these adjustments later.

Polarizers



OK

NG

- When you replace a polarizing plate inside its holder, make sure that the claws are holding the plate as shown on the left.
- Polarizer-B is provided as a service part together with the holder in a single set. Do not remove the polarization plate from the holder.

Slide 50

No additional notes

This section explains the most important points about adjustments that are needed after replacing components.

When are Adjustments Needed?

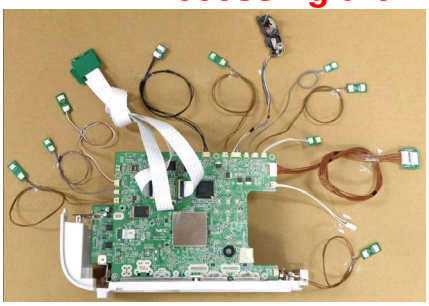
- **Adjustments are needed after replacing these parts:**
  - Main board
  - OPT BASE
  - Polarizers
- **After replacing the main board, data must be written to the new board, and adjustments must be made at the operation panel.**
  - After replacing the OPT BASE, some of this data must also be input (flicker adjustment, usage time)
- **However, after replacing the OPT BASE or polarizers, you must access the optical axis and polarizer adjustment points. These are hidden under the main board. So the main board must be removed.**
  - The procedure for accessing the adjustment points is the same in each case (optical axis or polarizers).

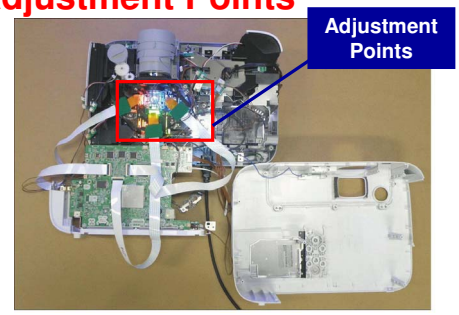
Slide 52

- We discussed the software needed for inputting data earlier in the course. In this section, we shall see how to use it.
- Optical axis adjustment: After replacing the OPT BASE, check and only do the adjustments if required.

Optical Axis and Polarizer Adjustments

Accessing the Adjustment Points



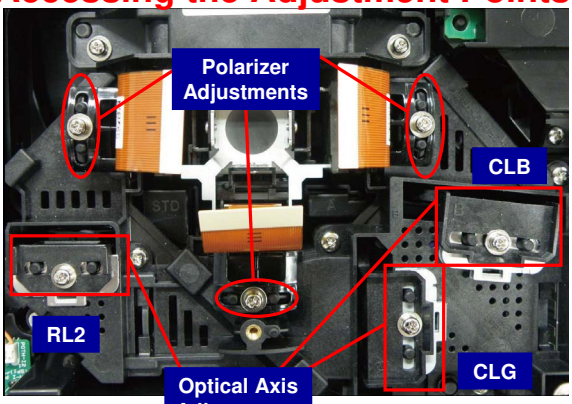


- **The main board must be removed (as shown on the left).**
- **Then, it must be connected again to the internal components of the projector (as shown on the right), because we have to switch the power on to make the adjustments.**
- **To do this, special connectors are required. These are service parts.**
  - See Replacement and Adjustment – Special Tools for details on these connectors, and important notes on how to use them.
- **The diagram on the left shows the main board removed from the projector, with the special connectors already connected to the main board.**
- **The diagram on the right shows the main board connected to the projector's components, and we are ready to turn the main power on.**

Slide 53

Optical Axis and Polarizer Adjustments

Accessing the Adjustment Points



- **Here is a close up of the adjustment points.**
  - The front of the projector is at the top of the diagram.
  - The three optical axis adjustments are called RL2, CLG, and CLB

Slide 54

- RL2, CLG, and CLB refer to various components in the machine, which you will move during the adjustment.
  - RL2: Relay lens 2
  - CLG, CLB: Condenser lens (green, blue)

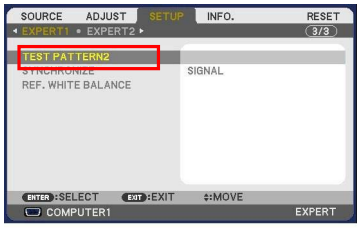
Optical Axis and Polarizer Adjustments
When to do These Adjustments?

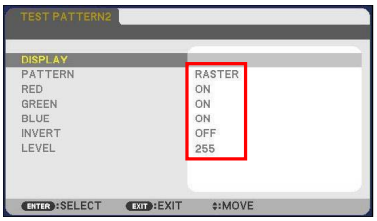
- Optical axis adjustment: After replacing the OPT BASE
- Polarizer adjustments: After replacing the polarizers or the OPT Base

Slide 55

No additional notes

Optical Axis Adjustment - 1



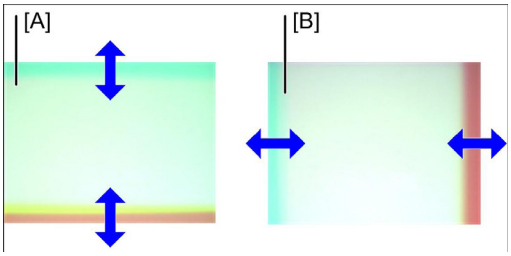


- **It is best to do this procedure in a dark room.**
- **Turn on the projector.**
- **In the SETUP menu, display a white test pattern.**
  - This can be done from the Expert mode or Service mode menus.

Slide 56

- Adjustment Procedure: Service manual > 3. Replacement and Adjustment > Replacement of Optical Parts > Optical Parts Adjustment > Adjustment of the optical axis (Shadow adjustment)

Optical Axis Adjustment - 2

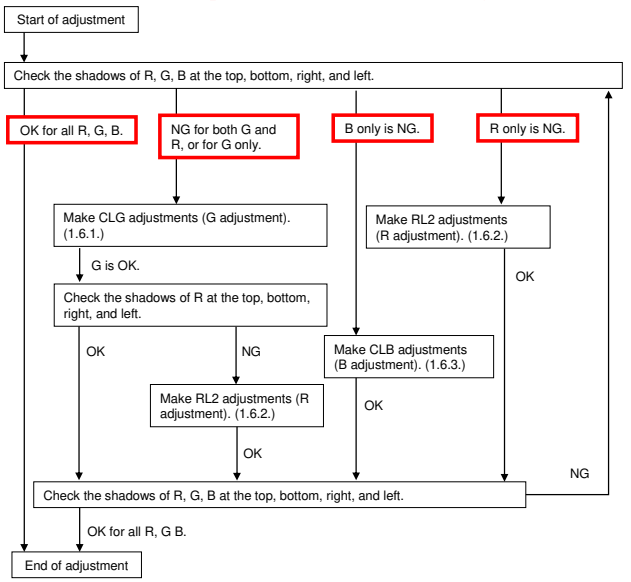


- **Check for shadows at the edges of the display. During the adjustment, we must try to get rid of the shadows as much as possible.**
  - If shadows appear at the top and bottom edges [A], adjustment is needed in the vertical direction.
  - If shadows appear at the left and right edges [B], adjustment is needed in the horizontal direction.
- **The color of the shadows at the edges tells you which colors must be adjusted.**
  - Cyan-like shade: R is missing at the edges and must be adjusted
  - Yellowish: B is missing at the edges and must be adjusted
  - Magenta-like shade: G is missing at the edges and must be adjusted
  - Blueish: G and R are missing at the edges and must be adjusted

Slide 57

- Adjustment Procedure: Service manual > 3. Replacement and Adjustment > Replacement of Optical Parts > Optical Parts Adjustment > Adjustment of the optical axis (Shadow adjustment)

Optical Axis Adjustment - 3



- **After you have looked at the shadows on the screen, then look at this flow chart to see which adjustments must be made.**
  - The red squares on the flow chart show the four possible decisions, as described on the previous slide.
- **There are three adjustments to choose from:**
  - RL2
  - CLG
  - CLB

Slide 58

- RL2, CLG, and CLB refer to various components in the machine, which you will move during the adjustment.
  - RL2: Relay lens 2
  - CLG, CLB: Condenser lens (green, blue)

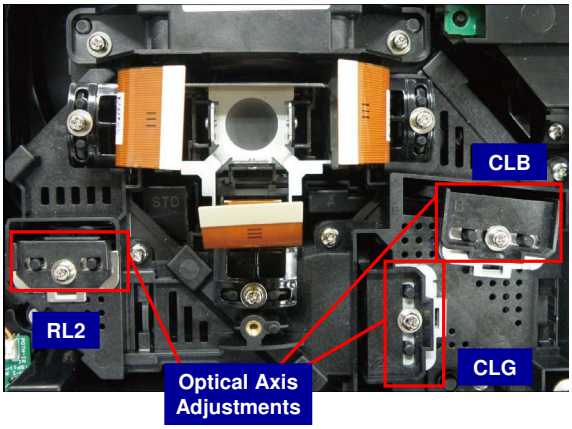
Optical Axis Adjustment - 4

- These spacers are used for the adjustments.
- They are available as service parts.
- They are not shipped with the projector.
- The same spacers can be used for all three adjustments.

Slide 59

- The numbers to the right of the diagram refer to the spacer thickness.

Optical Axis Adjustment - 5



- Just to remind you where the three adjustment points are.

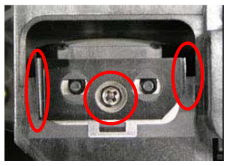
Slide 60

No additional notes

Optical Axis Adjustment - 6

CLG Adjustment

RL2 Adjustment



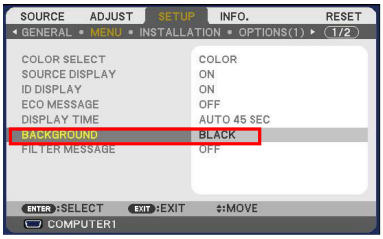
CLB Adjustment

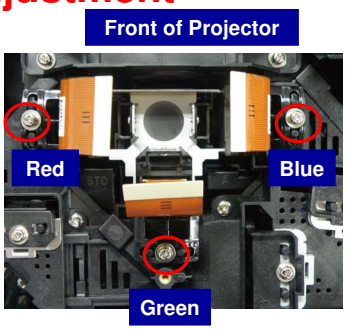
- **First, adjust in the vertical direction with spacers.**
  - Loosen the screw and insert spacers until the amount of shadow is as small as possible.
  - Use as few spacers as possible to make up the required thickness.
- **Then, adjust in the horizontal direction.**
  - Move the holder left and right until the amount of shadow is as small as possible.
  - Use the handles at the ends of each holder (marked in red).
- **Then tighten the screw.**

Slide 61

- Adjustment Procedure: Service manual > 3. Replacement and Adjustment > Replacement of Optical Parts > Optical Parts Adjustment > Adjustment of the optical axis (Shadow adjustment)

Polarizer Adjustment





- Turn on the projector.
- In the SETUP menu, set BACKGROUND to BLACK.
- Loosen the screw for one of the polarizers.
- Move the plate from side to side. Stop at the location where the screen is darkest, and tighten the screw.
- Do the same for the other polarizers.

Slide 62

No additional notes

Writing Data to New Boards

Before Removing the Main Board: Overview

- **Copy all data from the current Main PWB to your PC.**
  - If this process failed, then some steps of the data writing process have to be skipped.
  - This will be explained on the next slide.

Slide 63

- We will look at this procedure in more detail later.

Writing Data to New Boards

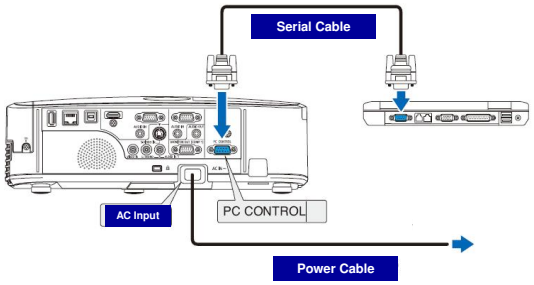
After Removing the Main Board: Overview

- **Data writing: After replacing the Main PWB**
  - Data for each model
  - EDID Data
  - Serial number and Model number
- **Data Read/Write: After replacing the Main PWB (skip this part if the data could not be copied from the old Main Board)**
  - Flicker Data
  - VT Data
  - Uniformity Data
  - Color Correction Data
  - Wall Color Data
  - Usage Time Data
- **Flicker adjustment: After replacing the OPT BASE**
  - Also after replacing the Main PWB, if the data could not be copied from the old Main Board
- **Usage Time setup: After replacing the OPT BASE**
  - Also after replacing the Main PWB, if the data could not be copied from the old Main Board

Slide 64

- Adjustment Procedures: Service manual > Electrical Adjustment
- We will look at these procedures in more detail later.

Writing Data to New Boards
Connect the Projector to a Computer



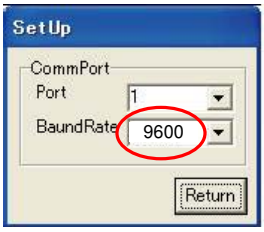
- **Before you remove the old main board:**
  - Connect the projector (PC CONTROL port) to your PC with a serial cable (D-SUB9pin - D-SUB9pin, Cross (reverse) cable)

Slide 65

No additional notes

Writing Data to New Boards

Copying Data from the Old Main Board to a PC - 1



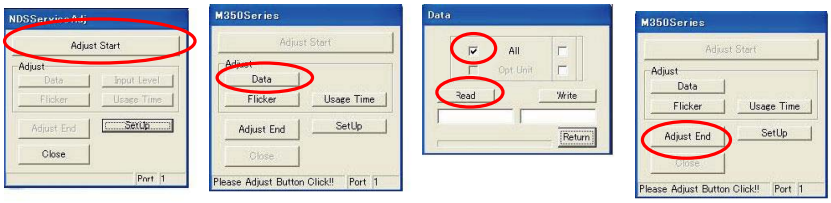
- **Do this procedure before you remove the main board.**
- **Start the service adjustment software**
  - Ser_X5371NSeries.exe
- **Click 'SetUp'.**
- **For Port, select the port that you are using.**
- **Then set the Baud rate to 9600 as shown above.**
  - The setting must be the same as the Baud rate setting on the projector (Menu button – Setup – Installation – Communication Speed).
  - **This is a software exclusive for the Rigel-PJ2 series. Do not use software for Rigel-PJ1 series.**

Slide 66

- This is a software exclusive for the Rigel-PJ2 series. Do not use software for Rigel-PJ1 series.

Writing Data to New Boards

Copying Data from the Old Main Board to a PC - 2



- Click 'Adjust Start'.
- Click 'Data'.
- Select 'All', then click 'Read'.
  - You will be asked to input a file name. The data from the old main board will be stored here.
- Click 'OK' when 'It completed' appears.
- Click 'Adjust End'.
- Note: If you now wish to do the same work on another projector, you must still click 'Adjust End', or there will be an error.

Slide 67

No additional notes

Writing Data to New Boards

Data Writing After Replacing the Main Board - 1

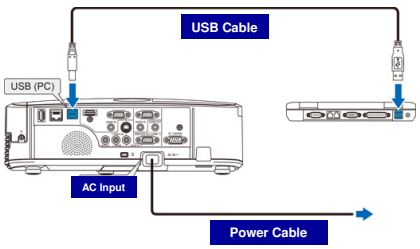
- **After we install a new main board, we use the following software:**
  - For writing the model-specific product data
    - » Writing software: PJUpgrader2_108.exe
    - » File names: modelname_mdata.bin
- **This software does not write the data you just copied from the old board. It copies firmware and other model-specific data to the new board.**
  - **This is a software exclusive for the Rigel-PJ2 series. Do not use software for Rigel-PJ1 series.**

Slide 68

Writing Data to New Boards

Data Writing After Replacing the Main Board - 2

- **Connect the computer to the projector (USB cable).**



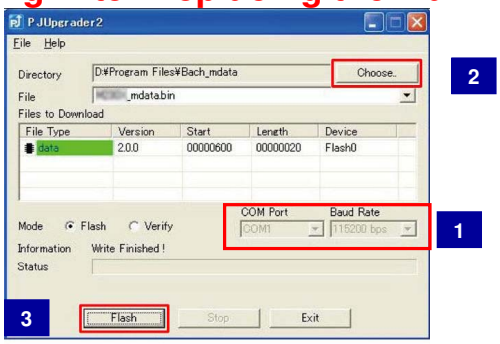
- **Hold down the Back and Menu buttons on the projector, and turn on the projector's power.**
  - Release the Back and Menu buttons when the Power lamp blinks green.
- **Then, start PJUpgrader2_108.exe.**

Slide 69

- This procedure requires a USB cable. The others use a serial cable.

Writing Data to New Boards

Data Writing After Replacing the Main Board - 3



- **First, select the COM port, and set the Baud rate.**
  - The setting must be the same as the Baud rate setting on the projector (Menu button – Setup – Installation – Communication Speed).
- **Click 'Choose'.**
- **Then, browse to the file where the data for your model is.**
  - The file name is modelname_mdata.bin
- **CAUTION: If you write the wrong file, you must replace the Main Board.**
- **Then click 'Flash', and follow the instructions. The data is written to the main board.**
- **Then switch the projector off.**

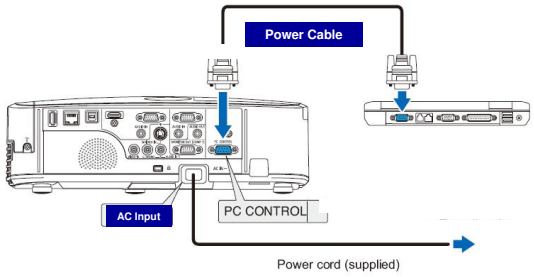
Slide 70

No additional notes

Writing Data to New Boards

Data Writing After Replacing the Main Board - 4

- **Now we must write EDID data to the main board.**
  - EDID rewriting software
    - » EDIDWrite.exe
  - EDID data (HDMI)
    - » modelname_EDID_HDMI_Vxxx.bin
  - EDID data (D-Sub)
    - » modelname_EDID_DSUB_Vxxx.bin
- **We copy the digital data first, then the analog data. The projector must be connected differently for each procedure.**
- **For the digital data, connect the computer to the projector (PC CONTROL port) with a D-SUB cross cable.**
  - **This is a software exclusive for the Rigel-PJ2 series. Do not use software for Rigel-PJ1 series.**

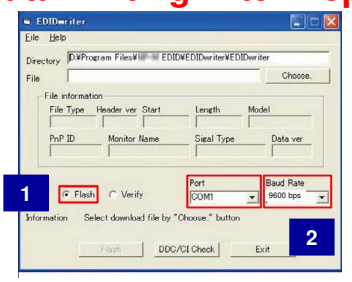


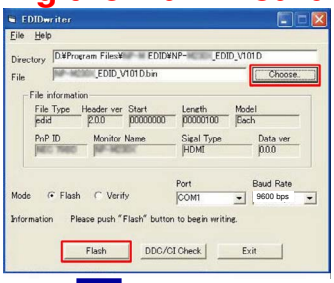
Slide 71

- Extended display identification data (EDID) is data which describes the capabilities of a video output device, such as a projector, to a source of video data, such as a computer.
- This is a software exclusive for the Rigel-PJ2 series. Do not use software for Rigel-PJ1 series.

Writing Data to New Boards

Data Writing After Replacing the Main Board - 5





- **Select 'Flash'.**
- **Set up the Port and baud rate (9600 bps).**
  - The Baud rate must be the same as the Baud rate setting on the projector (Menu button – Setup – Installation – Communication Speed).
- **Click 'Choose' and browse for the file.**
  - Select the digital file: modelname_EDID_HDMI_Vxxx.bin
- **Click 'Flash'.**
- **The data will be written. Click 'OK' when 'Finished' appears.**
- **Turn the projector power off.**

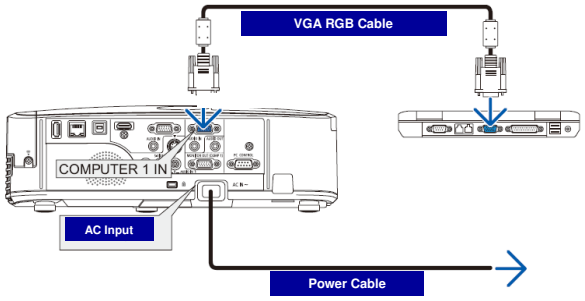
Slide 72

No additional notes

Writing Data to New Boards

Data Writing After Replacing the Main Board - 6

- **For the analog data, connect the computer to the projector with an RGB cable.**

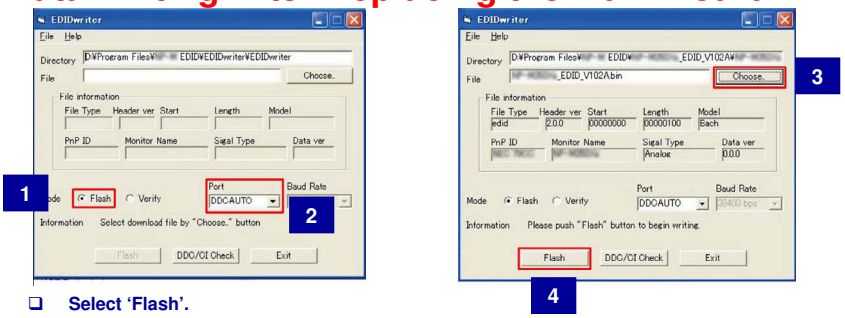


Slide 73

- Extended display identification data (EDID) is data which describes the capabilities of a video output device, such as a projector, to a source of video data, such as a computer.

Writing Data to New Boards

Data Writing After Replacing the Main Board - 7



- Select 'Flash'.
- Set the Port to DDCAUTO. No baud rate is selected.
- Click 'Choose' and browse for the file.
  - Select the analog file: modelname_EDID_DSUB_Vxxx.bin
- Put the projector in service mode.
- Click 'Flash'.
- The data will be written. Click 'OK' when 'Finished' appears.
- Do the same procedure for each D-SUB input (COMPUTER IN) terminal.
- Turn the projector power off.

Slide 74

No additional notes

Writing Data to New Boards

Data Writing After Replacing the Main Board - 8

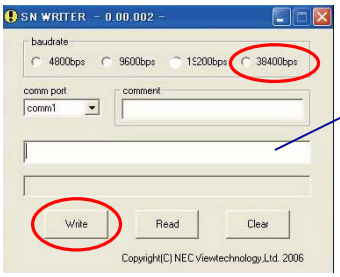
- Now we must write the serial number and model number to the new main board.
- Start snwriter000002.zip

Slide 75

No additional notes

Writing Data to New Boards

Data Writing After Replacing the Main Board - 9



Input serial number and model name here

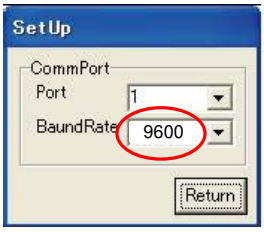
- **Set the Baud rate as shown above.**
  - The Baud rate must be the same as the Baud rate setting on the projector (Menu button – Setup – Installation – Communication Speed).
- **Input the serial number and model name in the following format, using asterisks and spaces as shown.**
  - * modelname serialnumber*
- **Click 'Write'**
- **No verification is performed, so click 'Read' after writing is finished, to make sure that the projector got the data correctly.**

Slide 76

No additional notes

Writing Data to New Boards

Data Writing After Replacing the Main Board - 10



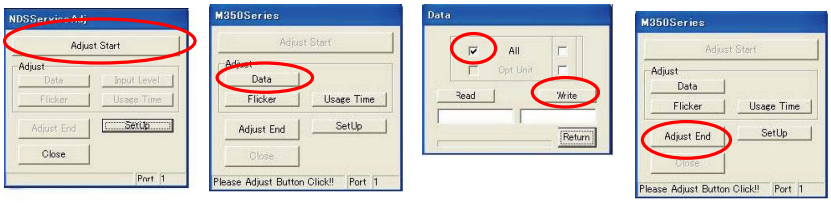
- **Start the service adjustment software**
  - Ser_X5371NSeries.exe
- **Click 'SetUp'.**
- **For Port, select the port that you are using.**
- **Then set the Baud rate as shown above.**
  - The Baud rate must be the same as the Baud rate setting on the projector (Menu button – Setup – Installation – Communication Speed).

Slide 77

No additional notes

Writing Data to New Boards

Data Writing After Replacing the Main Board - 11



- **Click 'Adjust Start'. Then click 'Data'.**
- **If data reading from the old main board failed, then skip the rest of this slide. Go to the next slide.**
- **Select 'All', then click 'Write'.**
  - You will be asked to input a file name. Select the file that has the data from the old main board.
- **When "Please Power Off (Standby state)." appears on the computer, make sure that the projector power is in the standby state, then click OK.**
- **Click 'OK' when 'It completed' appears.**
- **Click 'Adjust End'.**
- **Note: If you now wish to do the same work on another projector, you must still click 'Adjust End', or there will be an error.**

Slide 78

- In normal standby mode, the Power indicator is orange and the Status indicator is green.
- In power-saving standby mode, the Power indicator is red and the Status indicator is off.
- If the projector is not in standby mode, press the Power button one time.

Writing Data to New Boards

Data Writing After Replacing the Main Board - 12

- **The procedure on the previous slide copies the following data (which is from the old board) to the new board:**
  - Flicker Data
  - VT Data
  - Uniformity Data
  - Color Correction Data
  - Wall Color Data
  - Usage Time Data
- **If data reading from the old board failed, you are only able to input the flicker data and the usage time data.**
- **The next few slides explain how to input the flicker data and usage time data in this situation.**
  - These two items must also be input after you replace the OPT BASE.

Slide 79

- VT Data, Uniformity Data, Color Correction Data, Wall Color Data were input automatically when you used PJupgrader2_108 (see Data Writing After Replacing the Main Board – 3).

Writing Data to New Boards

Data Writing After Replacing the Main Board – 13

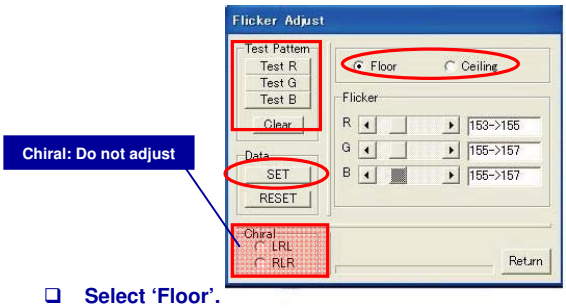
- To input flicker data and usage time data, we use the service adjustment software
  - Ser_X5371NSeries.exe
- Set up the software as shown on 'Data Writing After Replacing the Main Board, slide 10'.
- Then click 'Flicker'.
- Before you do any more adjustment, make sure that the projector power has been on for 5 minutes, with the lamp on.

Slide 80

No additional notes

Writing Data to New Boards

Data Writing After Replacing the Main Board – 14



- **Select 'Floor'.**
- **Display the Red raster signal by clicking 'Test R' in the Test Pattern box. Adjust the R-scroll bar so that the flicker in the middle of the window becomes as small as possible.**
- **Do the same for Test G, then Test B.**
- **When the adjustment is done, click 'Set' to write the new value to the projector**
  - If you need to restore the data to the state before the adjustment, click the 'Reset' button.
- **Select 'Ceiling' and repeat the procedure.**

Slide 81

- The values displayed by the side of each scroll bar show the original value to the left of the arrow, and the current value to the right of the arrow.
- If there are horizontal lines on the screen that prevent flicker from being seen clearly, click the Test R, G or B button a few times until they go away.
- Chiral adjustment: Do not use (the configuration of the LCD panels is always LRL)

Writing Data to New Boards

Data Writing After Replacing the Main Board – 15

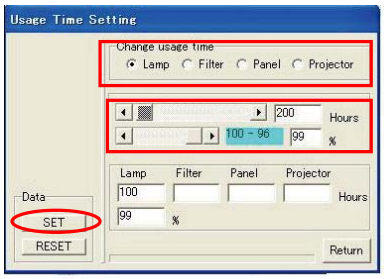
- Now we write the usage time data.
- Click 'Usage Time'.

Slide 82

No additional notes

Writing Data to New Boards

Data Writing After Replacing the Main Board – 16



- Select the type of usage time that you wish to input (lamp, filter, panel, or projector).
- Adjust the time with the scroll bar.
- Click 'Set'.
- When "Please Power Off (Standby state)." appears on the computer, make sure that the projector power is in the standby state, then click OK.
- After writing the data, turn the projector power on for at least one minute.

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- In normal standby mode, the Power indicator is orange and the Status indicator is green.
- In power-saving standby mode, the Power indicator is red and the Status indicator is off.
- If the projector is not in standby mode, press the Power button one time.

This section explains the basic points about updating the firmware.

- Service Manual Procedure: 4. System Maintenance > Firmware Update

Updating the System Firmware

- **Check the IP address of the projector.**
  - In the following example, the IP address is xxx.xxx.xxx.xxx
- **Open a browser, and input the following:**
  - http://xxx.xxx.xxx.xxx/upload.html
- **Click [Browse].**
- **Select the file to be overwritten, then click [Update], then [OK].**
  - 'File written successfully' will be displayed after the update is finished.
- **Check the history information that appears on the screen.**
- **If you have more firmware files to update, select another file and click [Update].**
- **Click [Reboot] when you have finished.**
  - Do not turn the power off or disconnect the LAN cable before rebooting.

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- The detailed procedure is in the System Maintenance - Firmware Update section of the service manual.

This section contains technical information on how the electronics in this model work.

- In many of the following slides, the main part of the slide shows a circuit diagram, and the notes page contains the description.

I/O Terminals - 1

- **Video input terminals**
  - Computer input (Mini D-SUB 15-pin, 1 system)
  - HDMI input (HDMI terminal, 2 systems)
  - Video input (RCA Phono terminal,1 system)
  - S-Video input (S terminal,1 system)
  - USB-B (USB-B terminal 1 system) *USB Display
- **Video output terminal**
  - Monitor output (Mini D-SUB 15-pin,1 system for Computer1 only)

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No additional notes

I/O Terminals - 2

- **Audio input terminals**
  - For COMPUTER input (Stereo mini jack, 1 system)
  - When USB Display, Viewer, or Network is selected, audio output is available when the input signal is applied to the Computer terminal.
  - When Audio Select is set at [Computer] for [HDMI Setting] or [HDMI2 Setting] in the menu, the audio input signal applied to the Computer terminal is output.
  - For S-Video /Video input (Stereo RCA Phono terminal, 1 system, Used in common with S-Video)
  - HDMI input (HDMI 1, 2 terminals, 2 systems)

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No additional notes

I/O Terminals - 3

- **Audio output terminal**
  - Computer/Video/S-Video input common (Mini jack, 1 system)
- **Control terminal**
  - PC control terminal (Min D-SUB 9-Pin, 1 system)
- **Wired LAN terminal**
  - RJ-45 terminal (RJ45, 1 system)
- **Wireless LAN Terminal**
  - USB-A terminal (USB-A terminal, 1 system exclusively for the wireless LAN unit)
- **USB Viewer Terminal**
  - USB-A terminal (USB-A terminal, 1 system)

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No additional notes

Input Signals - 1

- **Signal level**
  - RGB signal: 0.7Vp-p /75 Ω
  - Component signal: 1.0Vp-p/75 Ω ((Signal Y), 0.7Vp-p/75 Ω ((Cb/Cr,Signal Pb/Pr)
  - VIDEO signal: 1.0Vp-p/75 Ω
  - S-VIDEO signal: 1.0Vp-p/75 Ω ((Signal Y), 0.286Vp-p/75 Ω ((Signal C burst level)
  - Sync signal: TTL level (Positive/Negative polarity)/1k Ω
  - AUDIO signal: 0.5V rms/22k Ω or more
- **RGB signal frequencies**
  - Horizontal Maximum resolution: WUXGA (1920 x 1200)
  - sync frequency: 15 ~100kHz
  - Vertical sync frequency: 50 ~120Hz
  - Maximum resolution: UXGA (1600*1200)

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No additional notes

Input Signals - 2

- **HDMI digital signals**
  - Maximum resolution: WUXGA (1920 x 1200) @60Hz
- **Component signals**
  - 576i, 480i, 480p, 576p
  - 720p, 1080i, 1080p (HDTV signal)
- **Video input color system**
  - NTSC3.58
  - NTSC4.43
  - PAL
  - PAL-M
  - PAL-N
  - PAL-60
  - SECAM

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No additional notes

Lens Cover

- When the lens cover is shut, screen mute (all black display) is performed. Simultaneously, audio mute is also performed.

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Lamp Modes

- Lamp power 100%: For Off/Auto
- Lamp power 80%: For ECO 1
- Lamp power 60%: For ECO 2

Slide 93

Pre-cooling

- **The relationship between the lapse of time and the execution of pre-cooling is shown below. This is only for reference.**
  - 0 ~90 seconds after lamp OFF: The lamp is lit after 60 seconds of pre-cooling.
  - 90 ~150 seconds after lamp OFF: The lamp is lit after 30 seconds of pre-cooling.
  - 150 ~300 seconds after lamp OFF: The lamp is lit after 0 second of pre-cooling.
  - More than 300 seconds after lamp OFF: The lamp is lit without pre-cooling.

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Wireless LAN

- When an appropriate wireless LAN unit is connected to the USB-A terminal (used exclusively for wireless LAN), it becomes possible to maintain wireless communication with the PC.
- When appropriate software is used in addition to PJ control, the PC images can be displayed at the projector.
- Movie and audio signals are supported.

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USB Display

- When the PC and the projector are connected through a general-purpose USB cable (USB2.0), the PC images can be displayed at the projector.
- The projector terminal is [USB-B terminal].
- The appropriate software shall be the accessory CD-ROM or installed from the projector.
- Movie and audio signals are supported.

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USB Viewer

- Image files stored in the USB memory can be seen at the projector in viewer display mode.
- Applicable file type: JPEG

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MM PWB

- **External terminals**
  - USB-A terminal (External terminal)
    - » USB-A (USB-A terminal System 1) *For USB memory
    - » Standard: USB2.0
  - USB-A terminal (Exclusively for wireless LAN unit)
    - » USB-A (USB-A terminal System 1) *Exclusively for wireless LAN unit
    - » Standard: USB2.0
  - Wired LAN terminal (External terminal)
  - RJ-45 (RJ-45 terminal System 1) *100Base-TX/10base-T
  - Standard:100Base-TX/10base-T
- **Functions**
  - Display of image files saved in the external USB memory
  - Thumbnail display/Slideshow display
  - Still picture file display (GIF, JPEG, PNG, BMP)
  - Motion picture file display (MPEG2, WMV9, H.264)
  - Network
  - Common folder, media server connections

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No additional notes