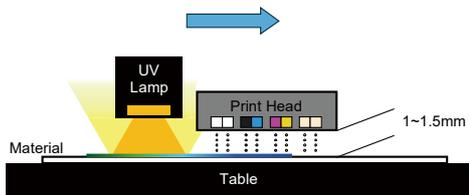# Precautions for Printing with Increased Head Height (Print Head Protection)

Thank you for purchasing the MUTOH printer.

This product uses UV-curable ink. The printing process involves jetting ink onto the media and then curing it with UV light. For the most stable print quality, we recommend maintaining a gap of 1.0 mm to 1.5 mm between the print head and the material.

When printing with a head gap wider than 1.5 mm (e.g., high-build printing, Braille printing, materials thicker than 2 mm, or transparent acrylics), UV light reflected from the table or the material may reach the nozzle plate. This reflected UV light is known as "stray light."
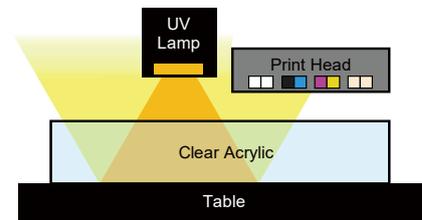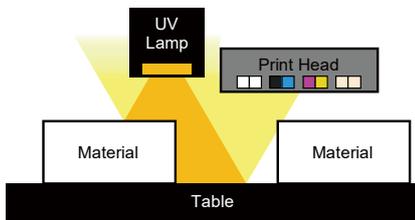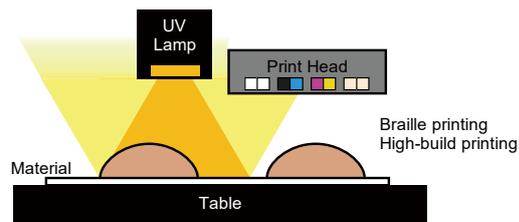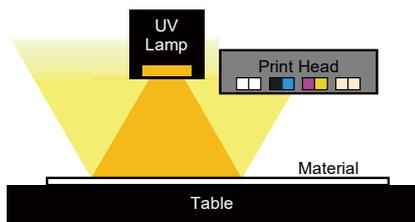
If the gap between the nozzle plate and the media is too wide, fine ink mist generated during printing may not reach the surface. Instead, it can float back and adhere to the nozzle plate. This adhered ink is then cured by stray UV light, clogging the nozzles and preventing proper ink ejection. It has been confirmed that this process eventually leads to critical print head failure.
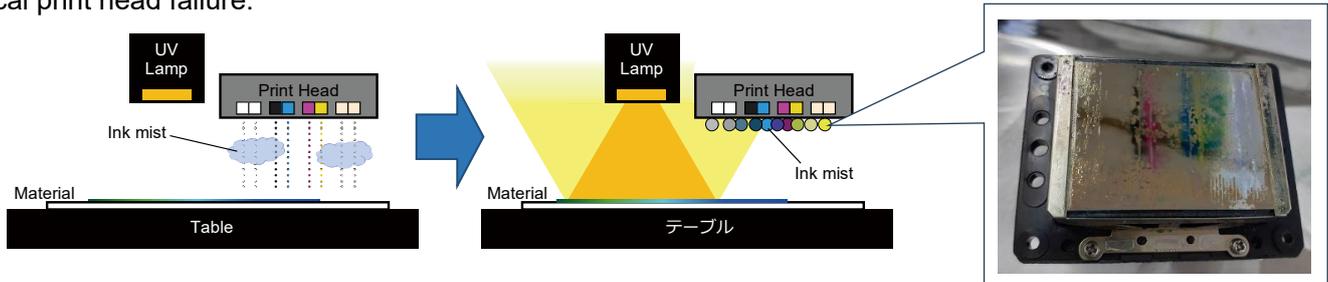
To ensure the most stable print quality, please review the following precautions before starting your print job.

1. Use a jig to mask areas other than the printing surface

When performing "borderless" printing or printing on thick materials, please use a jig to mask any areas outside of the actual print surface.
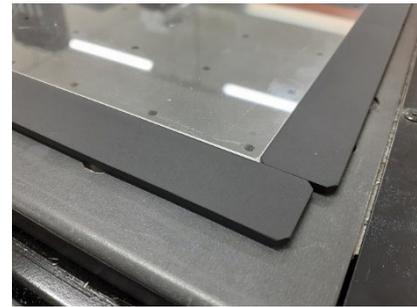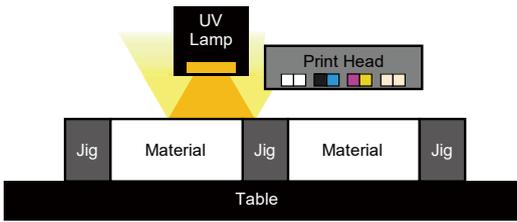

Important!

Points to note when using a jig:

- Minimize the gap between the jig and the media: Keep the height of the jig as close as possible to the printing surface. (Ensure the jig height is within 2 mm lower than the printing surface.)
- Create a jig larger than the printing area: This is necessary to prevent ink from soiling the table and to block stray light.
- Use non-reflective materials for the jig: The jig should be designed to prevent UV light reflection. In particular, the surface should be colored black with a matte finish to minimize reflection.

2. Remove the protective sheets from transparent acrylic

Acrylic materials come with protective sheets to prevent scratches. However, UV light passes through the acrylic and reflects strongly off these sheets. When printing, please remove the protective sheets from both sides—not just the printing surface—before placing the material on the table.
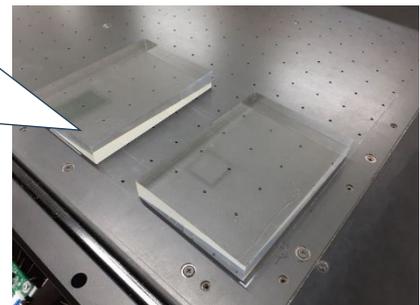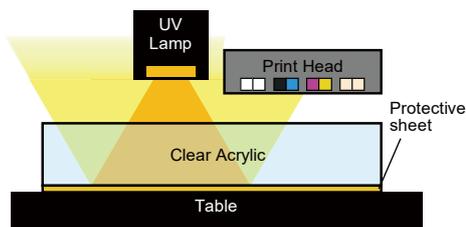

Reference

Our measurements confirm that the intensity of stray light varies depending on the protective sheet. The levels are ranked as follows (from strongest to weakest reflection): White sheet > Brown sheet > No sheet (or Black sheet)

To minimize the risk of stray light, it is highly recommended to remove the sheets or use a black protective layer.
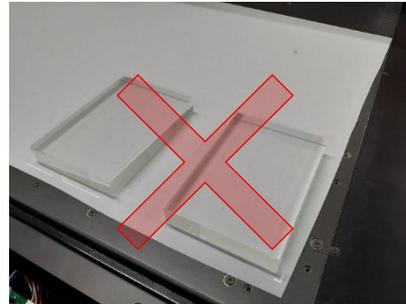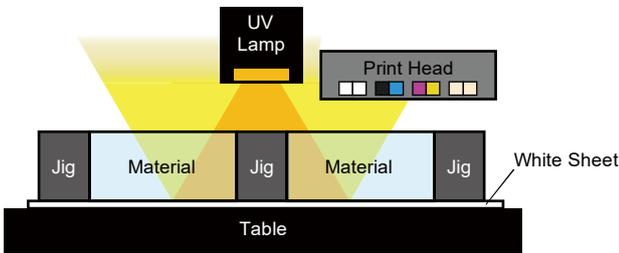
3. Use Matte Black Sheets for the Table

If you apply a sheet to the table for positioning or to protect materials from scratches, please ensure it is a matte black sheet.
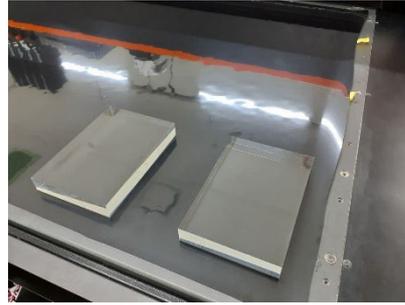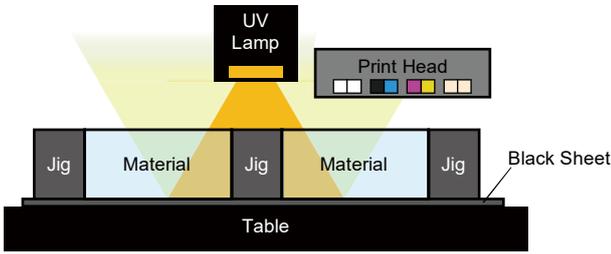
📢 **Important!**

Do not use white sheets, as they cause strong UV light reflections.

4. Perform Daily Maintenance Regularly

Printing on 3D objects generates more ink mist, increasing the risk of ink curing on the nozzle plate. To prevent print head failure, please perform **"Special Daily Maintenance"** every 3 hours during operation, as well as at the end of each workday.

What is "Special Daily Maintenance"?

After completing step "2. Wetting the Print Head Nozzle Surface" on the daily maintenance sheet that came with your printer, please add the following procedure: "Wiping the nozzle surface and its surroundings with a poly-knit wiper."

✏️ **Reference**

The document numbers for the daily maintenance sheets for each model are as follows:

XPJ-461UF	(JP/EN)CS3014-01
XPJ-661UF	(JP/EN)CS3015-01
XPJ-1462UF	(JP/EN)CS3022-01
VJ-1638UH/VJ-1638UH2	(JP)CS3001-05, (EN)CS3002-05, (CH)CS3003-05, (KR)CS3004-05

- Items to Prepare

    Please prepare a commercially available poly-knit wiper (similar to the one shown below).
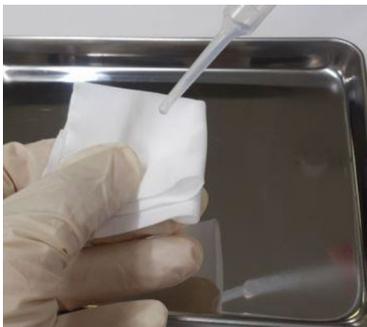

- Procedure: Wiping the Nozzle Surface and Surroundings

1. Fold the wiper: Fold a single poly-knit wiper into a size that is easy to handle.

2. Apply maintenance liquid: Hold the wiper and use a dropper to soak it with the specified maintenance liquid. (Estimated amount: 2 ml)
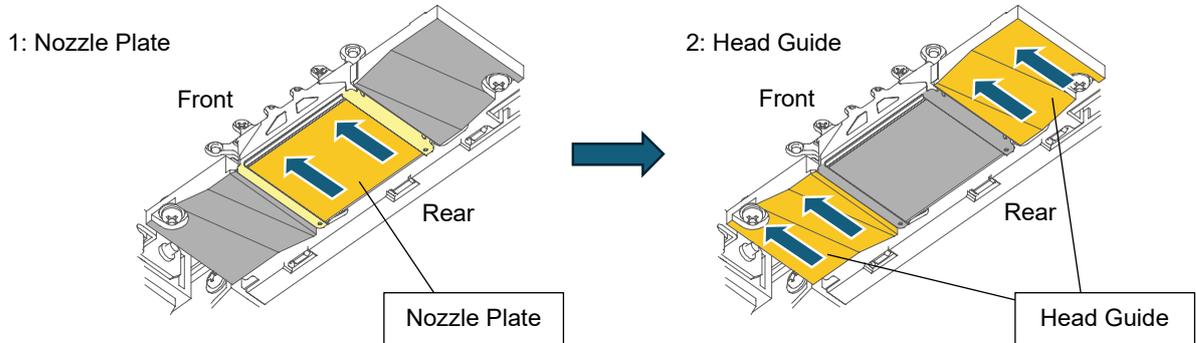

3. Position the tray: Place a stainless steel tray underneath the carriage and check the nozzle surface reflected in the tray. Wipe the nozzle surface: Place the wiper at the back of the print head and pull it toward you to wipe the nozzle surface. Ensure you wipe the entire surface.
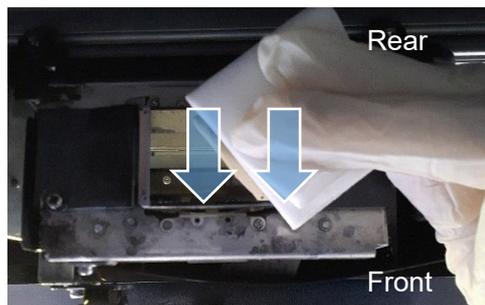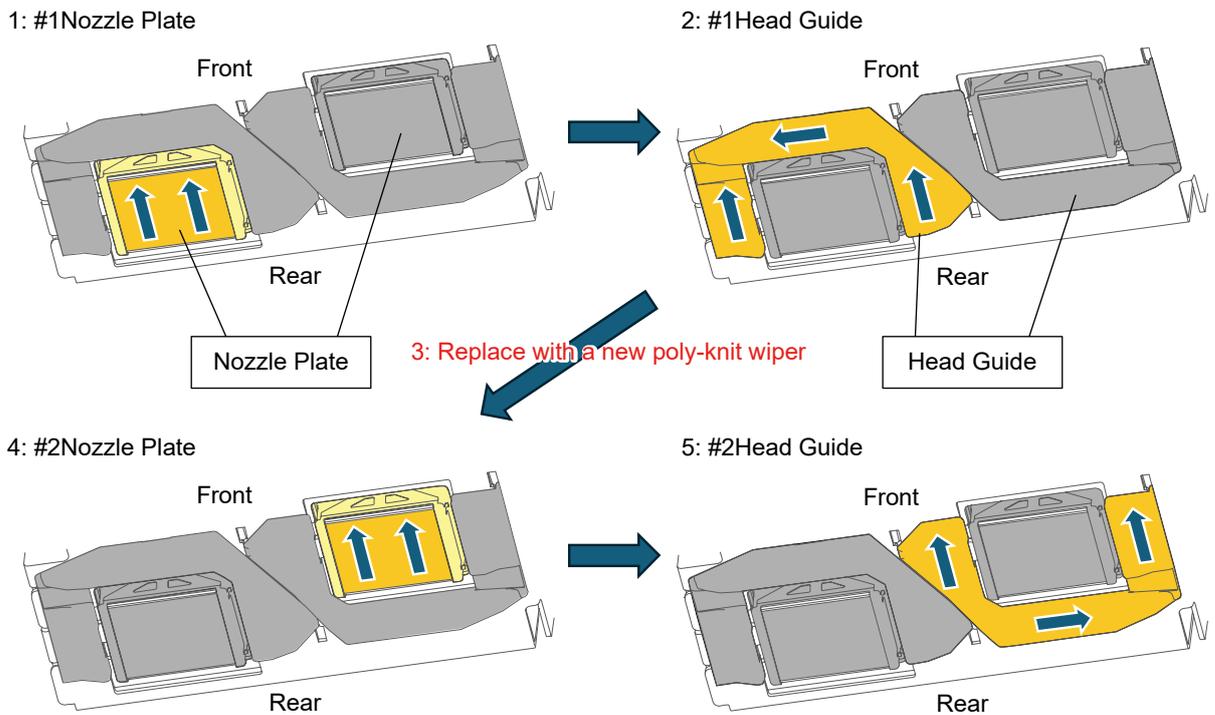
4. Wipe the head guide: Once the nozzle surface is clean, continue by wiping the head guide area (black plastic part).

The wiping order for each model is as follows:

One Print Head Model (XPJ-461UF/XPJ-661UF)

1: Nozzle Plate

Front

Rear

Nozzle Plate

2: Head Guide

Front

Rear

Head Guide

Two Print Heads Model (XPJ-1462UF/VH-1638UH2)

1: #1Nozzle Plate

Front

Rear

Nozzle Plate

2: #1Head Guide

Front

Rear

Head Guide

3: Replace with a new poly-knit wiper

4: #2Nozzle Plate

Front

Rear

5: #2Head Guide

Front

Rear

Important!

Please strictly adhere to the following when cleaning:

- Follow procedures: Always perform cleaning exactly according to the instructed steps.
- Use specified materials: Always use a poly-knit wiper to wipe the nozzle surface.
- Apply gentle pressure: When wiping the nozzle surface, use the same amount of pressure as if you were swiping a smartphone screen.
- Avoid excessive force: Do not press down hard on the nozzle surface.
- Wipe in one direction: Do not scrub the wiper back and forth or side to

- Single-use surface: Never reuse a section of the wiper that has already been used. Use a clean area by flipping it over.
- One wiper per head: For models with two print heads, use a separate poly-knit wiper for each head.
- Proper disposal: Used poly-knit wipers are industrial waste. Please dispose of them in accordance with your local regulations and ordinances.