HP Latex 1500 Printer User guide

SUMMARY

The following sections provide details for this topic.

Legal notices

The information contained herein is subject to change without notice.

The only warranties for HP Products and services are set forth in the express warranty statement accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Safety notice

Read and follow the operating and safety instructions before starting the printer.

Trademarks

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1   Introduction

The HP Latex 1500 Printer allows you to print signs and graphics on a wide range of flexible materials up to 3.20 m (126 in) wide, and uses water-based HP Latex Inks to provide high quality, durable output.

Welcome to your printer

- High quality output, with rich colors, 1200 dpi resolution, and 12 picoliter drop size

- Print on a wide range of substrates—including PVC banners, self-adhesive vinyls, papers, wall coverings, PET films, and textiles

- Durable prints with outdoor display permanence of up to three years unlaminated, and up to five years laminated

- Accurate and consistent color reproduction with automatic color calibration (built-in spectrophotometer)

- Indoor-quality prints up to 45 m²/h (480 ft²/h)

- HP Print Care maintenance scheduler and proactive maintenance alerts

- At-a-glance monitoring on a busy production floor with internal print server alerts and status beacon signals

- Optional Double-Sided Day Night Kit, for printing double-side backlit applications on PVC banner and paper

- Optional Dual Roll Kit, to maximize productivity and unattended printing when SAV and other substrates up to 63 in (1.6 m)

Documentation

Documentation can be downloaded from HP website.

See: http://www.hp.com/go/latex1500/manuals/.

- Site preparation guide

- Site preparation checklist

- Installation guide

- Introductory information

- User's guide

- Legal information

- Limited warranty

See the Solutions Web site for information about new substrates, at http://www.hp.com/go/latex1500/solutions/. A new Web-based Media Solutions Locator (http://www.hp.com/go/mediasolutionslocator) has been developed to collect available substrate configurations for latex printers.

The Quick Response (QR) code images found in some parts of this guide provide links to additional video explanations of particular topics. For an example of such an image, see Dual roll printing on page 157.

Safety precautions

Before using your printer, read the following safety precautions and operating instructions to make sure you use the equipment safely.

You are expected to have the appropriate technical training and experience necessary to be aware of hazards to which you may be exposed in performing a task, and to take appropriate measures to minimize the risks to yourself and to others.

Operations must be supervised at all times.

General safety guidelines

This topic explains the concepts involved in this subject.

⚠ **WARNING!**   The information provided by the printer status light is only for functional information purposes and is not related to any safety provision or safety states. Warning labels on the printer must be always considered when operating the printer and prevail against any of the status indicated by the printer status lights.

● Turn off the printer, using the Branch Circuit Breakers located in the building's Power Distribution Unit (PDU), and call your service representative (see) in any of the following cases:

   – The power cord is damaged.

   – The drying or curing enclosures are damaged.

   – The printer has been damaged by an impact.

   – Liquid has entered the printer.

   – There is smoke or an unusual smell coming from the printer.

   – The printer's built-in Residual Current Circuit Breaker (Ground Fault Circuit Interrupter) has been repeatedly tripped.

   – Fuses have blown.

   – The printer is not operating normally.

   – There is any mechanical or enclosure damage.

● Turn off the printer using the Branch Circuit Breakers in either of the following cases:

   – During a thunderstorm

   – During a power failure

● Take special care with zones marked with warning labels.

Electrical shock hazard

Following standard Residual Current Circuit Breaker (RCCB) recommendations, it is recommended that the RCCBs are tested on a yearly basis.

The procedure is as follows:

⚠ **WARNING!**   The internal circuits and drying and curing modules operate at hazardous voltages capable of causing death or serious personal injury.

Turn off the printer using the Branch Circuit Breakers located in the building's Power Distribution Unit (PDU) before servicing the printer. The printer must be connected to earth at mains outlets only.

To avoid the risk of electric shock:

- Do not attempt to dismantle the drying and curing modules or e-cabinet during hardware maintenance tasks. In that case, follow the instructions strictly.

- Do not remove or open any other closed system covers or plugs.

- Do not insert objects through slots in the printer.

- Test the functionality of the Residual Circuit Breaker (RCCB) every year (refer to the procedure below).

📝 NOTE: A blown fuse may indicate malfunctioning electrical circuits within the system. Call your service representative (see HP Customer Care Centers on page 416), and do not attempt to replace the fuse yourself.

1. Turn off the built-in computer using the Internal Print Server's **Shutdown** button (or, in Print Care, select **Printer tools** > **Power options** > **Shutdown**). Do not turn off the printer from the mains switch or the circuit breakers.

   ⚠ CAUTION: The shutdown process takes some time to complete. Wait until the green Power Enabled light is off before proceeding.

2. Once the computer is off, test that the RCCB works correctly by pressing the test button.

   - If the RCCB does not trip when the test button is pressed, this indicates that it has failed. The RCCB must be replaced for safety reasons; call your service representative to remove and replace the RCCB.

   - If the RCCB trips, this indicates it is working correctly; reset the RCCB to its normal on state.

Heat hazard

The drying and curing subsystems of the printer operate at high temperatures and can cause burns if touched. LED's array supports, beam and enclosures can reach high temperatures. To avoid the risk of burns, take the following precautions:

- Do not touch the internal enclosures of the printer's drying and curing modules.

- Take special care when accessing the substrate path.

- Take special care with zones marked with warning labels.

- Do not place objects covering LED's arrays supports, beam and enclosures.

- Do not attempt to modify LED's array supports, beam and enclosures;

- Remember to let the printer cool down before performing some maintenance operations.

Fire hazard

The drying and curing subsystems of the printer operate at high temperatures. Call your service representative if the printer's built-in Residual Current Circuit Breaker (Ground Fault Circuit Interrupter) is repeatedly tripped.

To avoid the risk of fire, take the following precautions.

- Use the power supply voltage specified on the nameplate.

- Connect the power cords to dedicated lines, each protected by a branch circuit breaker according to the information detailed in the Site Preparations documentation.

- Do not insert objects through slots in the printer.

- Take care not to spill liquid on the printer. After cleaning, make sure all components are dry before using the printer again.

- Do not use aerosol products that contain flammable gases inside or around the printer. Do not operate the printer in an explosive atmosphere.

- Do not block or cover the openings of the printer.

- Do not attempt to modify the drying or curing module, or the e-cabinet.

- Ensure that the operating temperature of the substrate recommended by the manufacturer is not exceeded. If this information is not available, ask the manufacturer. Do not load substrates that cannot be used at an operating temperature above 125°C ((257°F)).

- Do not load substrates with auto-ignition temperatures below 250°C ((482°F)). See note below. No ignition sources are close to the substrate.Inline measure markup needed

    📝 **NOTE:** Test method based on EN ISO 6942:2002; Evaluation of materials and material assemblies when exposed to a source of radiant heat, method B. The test conditions, to determine the temperature when the substrate starts ignition (either flame or glow) were: Heat flux density: 30 kW/m2, Copper calorimeter, K type thermocouple.

- Proper maintenance and genuine HP consumables are required to ensure that the printer operates safely as designed. The use of non-HP consumables (foams, filters, printhead cleaning roll, and inks) may present a risk of fire.

LED's array supports, beam and enclosures can reach high temperatures. To avoid the risk of fire, take the following precautions:

- Take special care with zones marked with warning labels.

- Do not place objects covering LED's arrays supports, beam and enclosures.

- Take care not to spill liquid on the accessory. After cleaning, make sure all components are dry before using the printer.

- Do not attempt to modify LED's array supports, beam and enclosures.

Mechanical hazard

The printer has moving parts that could cause injury. To avoid personal injury, take the following precautions when working close to the printer and (optional) In-line slitters.

- Keep your clothing and all parts of your body away from the printer's moving parts.

- Avoid wearing necklaces, bracelets and other hanging objects.

- If your hair is long, try to secure it so that it will not fall into the printer.

- Take care that sleeves or gloves do not get caught in the printer's moving parts.

- Avoid standing close to the fans, which could cause injury and could also affect print quality (by obstructing the air flow).

- Do not touch gears or moving rolls during printing.

- Do not operate the printer with covers bypassed.

- Do not touch In-line slitters during printing.

- Handle In-line slitters with care and store them safely into their box when not used with the printer.

- Risk of cutting your fingers! Uninstall the In-line slitters when manipulating the curing module or accessing the substrate path.

- Take care when using the air gun. When used for cleaning purposes, make sure to use it according to the local regulations since additional safety provisions may apply.

⚠ **WARNING!** Be careful when you open the loading table, **NEVER** leave it unattended with both latches in the open position. It may open inadvertently and cause serious injuries. Always check it has both latches closed properly.

Light radiation hazard

UV radiation can be emitted from the LED's array in compliance with the requirements of the exempt group of IEC 62471:2006 Photobiological safety of lamps and lamp systems. However, you are recommended not to look directly for a long time at the output LEDs lights while they are on.

Sound pressure level

The sound pressure level could exceed 70 dB(A) in some print modes. Hearing protection may be required.

Chemical hazard

Sufficient ventilation should be provided to ensure that potential airborne exposure to these substances is adequately controlled.

See the safety data sheets available at http://www.hp.com/go/msds to identify the chemical ingredients of your consumables. Consult your usual air-conditioning or EHS specialist for advice on the appropriate measures for your location. For more detailed information, see the "Ventilation" and "Air conditioning" sections of the site preparation guide, available from http://www.hp.com/go/latex300/manuals/.

Heavy substrate hazard

Special care must be taken to avoid personal injury when handling heavy substrates.

- Handling heavy substrate rolls always requires two people. Care must be taken to avoid back strain and/or injury.

- Always use a forklift, pallet truck, or other handling equipment to lift substrates. The printer has been designed to be compatible with many of these devices.

- Always wear personal protective equipment including boots and gloves.

Ink and condensates handling

HP recommends that you wear gloves when handling ink and condensates system components.

Ventilation

Fresh air ventilation is needed to maintain comfort levels.

For a more prescriptive approach to adequate ventilation, you could refer as guidance to the latest edition of the ANSI/ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) document Ventilation for Acceptable Indoor Air Quality.

Follow the ventilation recommendations in the Site Preparation Guide.

⚠ **CAUTION:** The ventilation units should not blow air directly onto the printer.

Air conditioning

Air conditioning in the work area should take into account that the equipment produces heat.

In addition to fresh air ventilation, to avoid health hazards, also consider maintaining workplace ambient levels by assuring the climatic operating conditions specified in this document (see Environmental specifications on page 420) to avoid operator's discomfort and equipment malfunction. Typically, the printer's power dissipation is: 10 kW (34.1 kBTU/h).

📝 NOTE: Air conditioning and ventilation should meet local environmental, health, and safety (EHS) guidelines and regulations.

Use of tools and keys

This topic provides a full set of reference information for this subject.

- **Users:** Daily operations including printer settings, printing, substrate loading, replacement of ink reservoirs, and daily checks. Do not require any tool or maintenance key.

- **Maintenance personnel:** Hardware maintenance tasks and replacement of printheads, filters, ink waste bottles, foams, and printhead cleaning roll. Require maintenance key, and flat screwdriver.

- **Service personnel:** Any repair or maintenance operation, running diagnostics, and troubleshooting. Require maintenance key, e-cabinet key, mains switch key, internal print server key, and torx screwdriver set.

Table 1-1 Tools and keys

Maintenance:	E-Cabinet:	Main switch:
Maintenance key	E-cabinet key	Mains switch key
Internal Print Server key	Torx screwdriver set	

📝 NOTE: During the installation of the printer, the designated personnel receive training for the safe operation and maintenance of the printer. It is not allowed to use the printer without this training.

📝 NOTE: After using the maintenance key to open a door, remember to lock it afterwards, and return the key to safe and secure storage.

Warnings and cautions

The following symbols are used in this manual to ensure the proper use of the printer and to prevent the printer from being damaged. Follow the instructions marked with these symbols.

⚠ **WARNING!** Failure to follow the guidelines marked with this symbol could result in serious personal injury or death.

⚠ **CAUTION:** Failure to follow the guidelines marked with this symbol could result in minor personal injury or damage to the product.

Warning labels

This topic provides a full set of reference information for this subject.

Table 1-2 Warning labels

Label	Explanation
Located on the e-cabinet.	**Electric shock hazard** Heating modules operate at hazardous voltage. Disconnect power source before servicing. Caution! Double pole. Neutral fusing. Refer servicing to qualified service personnel. In case of operation of the fuse, parts of the printer that remain energized may represent a hazard during servicing. Turn off the printer using both Branch Circuit Breakers located in the building's Power Distribution Unit (PDU) before servicing. **Warning** High leakage current. Current leakage may exceed 3.5 mA. Earth connection essential before connecting supply. Equipment to be connected to earthed mains only. See installation instructions before connecting to the supply. Ensure that the input voltage is within the printer's rated voltage range. The printer requires up to two dedicated lines, each protected by a branch circuit breaker according to site preparation requirements. Read and follow the operating and safety instructions before starting the printer.
Located on the curing modules and universal support beam	Risk of burns. Do not touch the internal enclosures of the printer's drying and curing modules, universal support beam, and LED's array and enclosures when accessing substrate path.
	Crush hazard. Do not touch PPS while moving. When substrate has been loaded, the carriage descends into its normal position, and could crush your hand or anything else left underneath it.

Table 1-2 Warning labels (continued)

Label	Explanation
Located on each side of substrate path, close to PPS gear	
	Risk of trapped fingers. Do not touch gears while moving. Danger that your hands may become trapped between gearwheels.
Located on each side of substrate path, and close to PPS gear	
	Hazardous moving part. Keep away from moving carriage printhead. When printing, the printhead carriage travels back and forth across the substrate.
Located internally on substrate path and on printhead cleaning roll (web wipe); for maintenance/service personnel only	
	You are recommended to wear gloves when handling the maintenance cartridge, the platen, the ink collector, the condensates and the condensate system components.
Located on ink waste bottle and web wipe	
	Sound pressure level could exceed 70dB(A) in certain print modes. Hearing protection may be required.
Located on rear side on left cover	
	Electric shock hazard. Disconnect power before servicing. Heating modules and electrical cabinets operate at hazardous voltage.
Located internally on heating modules and electrical cabinets; for maintenance/service personnel only	

Table 1-2 Warning labels (continued)

Label	Explanation
Located internally, close to vacuum fan blades and Dryer PCA cooling fan; for maintenance/service personnel only	Hazardous moving parts. Keep away from moving fan blades. Internal close to Vacuum Fan Blades and Dryer PCA cooling fan.
Located on each side of the in-line slitters and close to carriage encoder strip	Risk of cutting your fingers. Do not touch in-line slitters during printing. Handle in-line slitters with care and store them safely in their box when not being used with the printer.
	Identifies the Protective Earth (PE) terminal for qualified electrician, and bonding terminals for maintenance/service personnel only. Earth connection essential before connecting supply.
PE1 PE2	Identifies the Protective Earth (PE) terminal for qualified electrician, and bonding terminals for maintenance/service personnel only. Earth connection essential before connecting supply.
WARNING! 6kA Short-circuit breaking capacity of printer's built-in supplementary circuit breakers	Identifies the short-circuit breaking capacity of printer's built-in supplementary circuit breakers beside mains input terminal, for qualified electrician and maintenance/service personnel only. Earth connection essential before connecting supply.
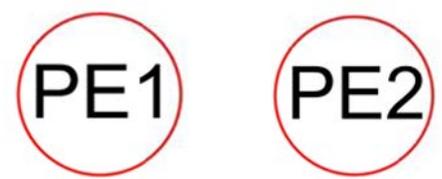
Emergency stop buttons

There are four emergency stop buttons distributed around the printer. If an emergency occurs, simply push one of the emergency stop buttons to stop all printing processes. A system error message is displayed, and the fans turn at maximum speed. Ensure that all emergency stop buttons are released before restarting the printer.
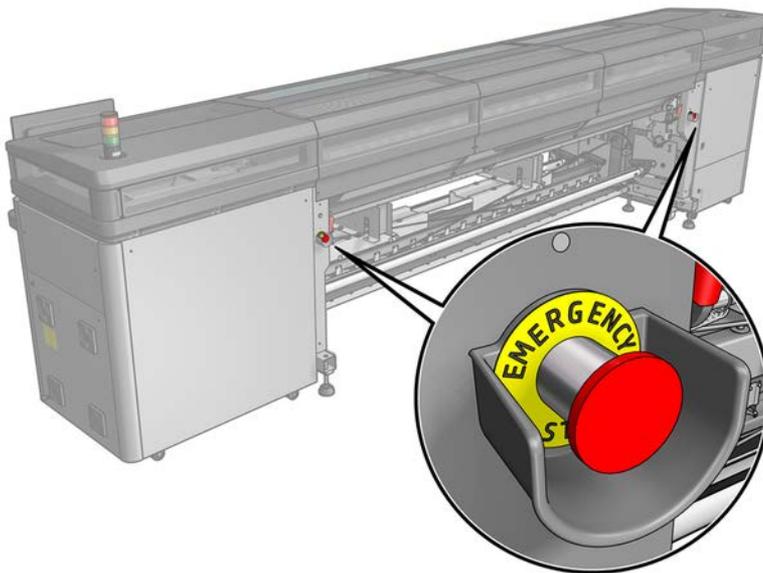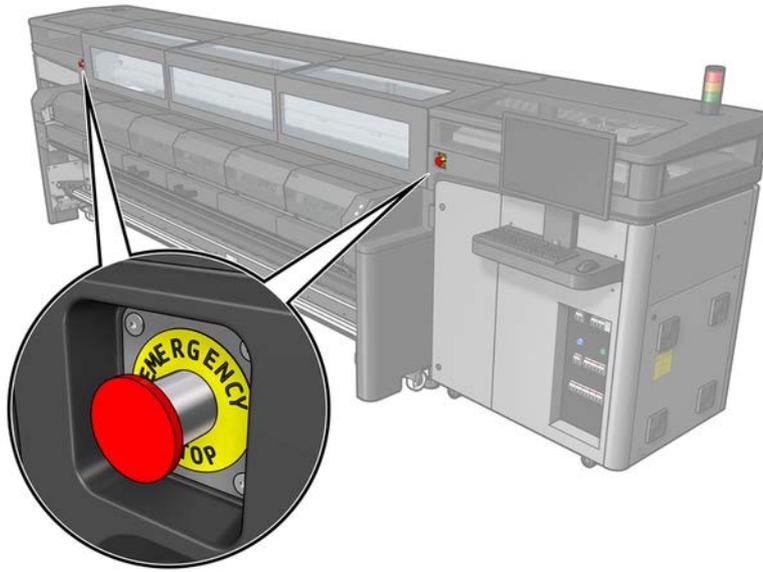
For safety reasons, access to the print zone is not permitted while printing is in progress. Therefore, if the window or the loading table is opened, power to the carriage and to the drying and curing module is disconnected. The print is cancelled and a system error may be displayed.

Main components

The following views of the printer illustrate the main components.

Front view

The following steps provide the complete procedure for this topic.
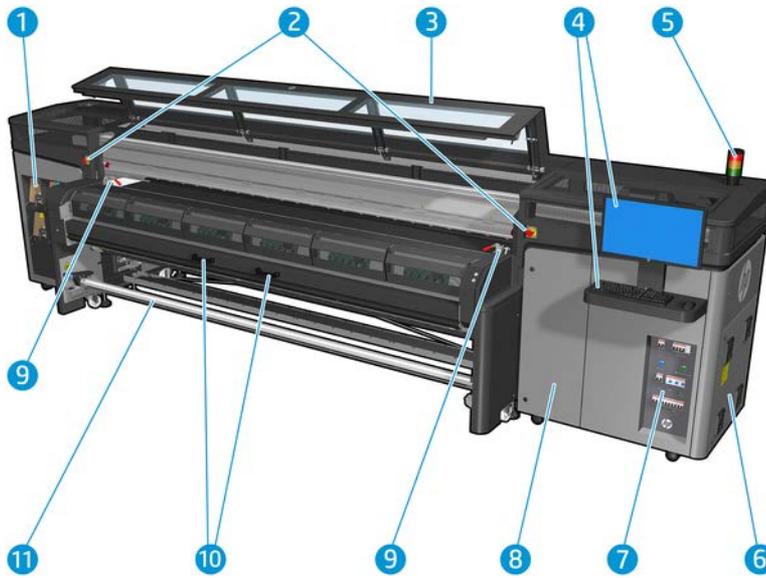
1. Ink cartridges

2. Emergency stop buttons

3. Front window for carriage and printzone access

4. Built-in computer

5. Printer status beacon

6. E-cabinet

7. Power switches, lights, and circuit breakers

8. Printhead cleaning roll door

9. Curing module latches, one on each side

10. Curing module handles

11. Substrate output spindle

Rear view

The following steps provide the complete procedure for this topic.
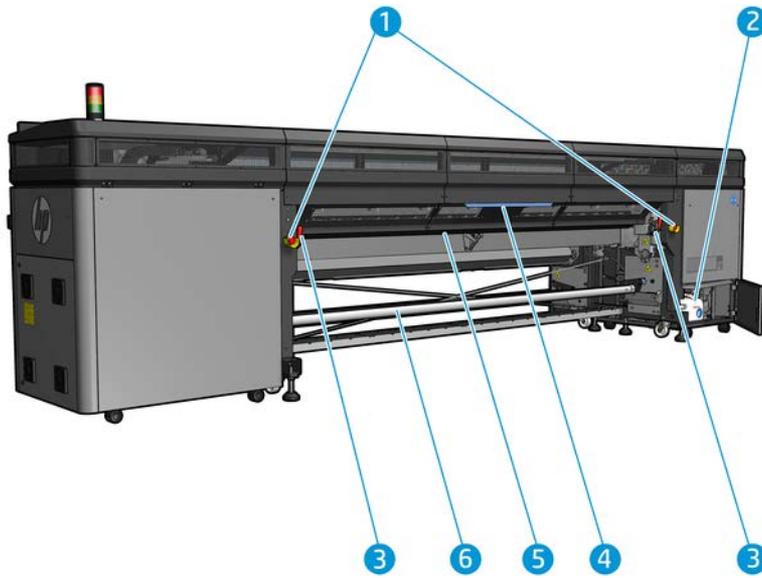
1. Emergency stop buttons

2. Condensation collector bottle

3. Loading table latches, one on each side

4. Loading table

5. Drive roller

6. Substrate input spindle

Carriage view

The following steps provide the complete procedure for this topic.
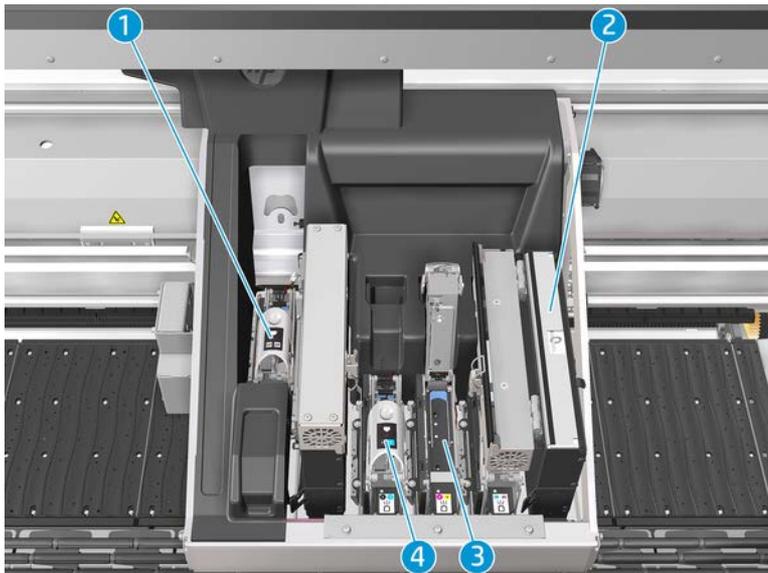
1. Optimizer printhead latch

2. Aerosol filters

3. Printhead

4. Color printhead latch

Printer software

Your printer requires the following software:

- The HP Internal Print Server is provided with your printer and is already installed in the printer's built-in computer. It displays printer alerts and a summary of printer status, manages print jobs, and must be used to interact with the printer in various ways. See HP Internal Print Server on page 17.

- The HP Print Care program is provided with your printer and is already installed in the printer's built-in computer. It displays printer status and history in detail, and helps you to maintain the printer and solve any problems that may arise. See HP Print Care on page 153.

- A Raster Image Processor (RIP) should be run on a separate computer; it cannot be installed on the printer's built-in computer. It is not provided with the printer and should be obtained separately. The printer is JDF-enabled. If your RIP supports this interface, it can retrieve and display printer and job status.

Turn on the printer for the first time

The following steps provide the complete procedure for this topic.

1. Make sure that the two bottom rows of circuit breakers at the front right of the printer are all in the up position.

2. Turn the main switch to the on position, and also turn on the PC switch beside it.

3. Check that all three green lights are on. In normal operation these lights should always be on. If any of them are off, check the Internal Print Server in case there is a system error, and see Printer messages on page 421 or check with your electrician.

4. Wait for the Internal Print Server to tell you that the printer is waiting for rearm.

5. Perform a visual check of the printer.

6. Press the blue rearm button at the front right of the printer. This enables all of the printer's high-power subsystems.

7. Check that the printer-enabled green light turns on. In normal operation this light should always be on. If at any time you notice that this light is off, check the Internal Print Server in case there is a system error, and see Printer messages on page 421.

8. Wait for the Internal Print Server to indicate that the printer is ready. This can take several minutes. When initialization is complete, the Internal Print Server displays a Ready message. If a system error message is displayed, see Printer messages on page 421.

Turn the printer on and off

The printer has three power-off levels. Each of them goes deeper, until you reach complete shutdown at level 3.

Table 1-3 Turn the printer on and off

Level	Turn off	Turn on
1: Major power electronics and engine off.	Wait for the Internal Print Server to indicate that the printer is ready, then turn off the high-power subsystems by pressing the shutdown icon near the top left corner of the screen. Wait until the Internal Print Server reports that it has lost its connection to the printer. NOTE: After the printer electronics have been turned off at the Internal Print Server, the fans turn at maximum speed for safety reasons. This is normal behavior and not a cause for concern.	Click the **Wake Up** button up in the top left corner of the Internal Print Server window, and wait for the printer to turn on the high-power systems. When prompted, press the blue rearm button at the front right of the printer.

Table 1-3 Turn the printer on and off (continued)

| Level	Turn off	Turn on
2: All printer systems off (recommended).	After completing level 1, turn off the main switch. The fans should stop.	After completing level 1, turn on the main switch, and ensure that the circuit breaker beside it is on. When prompted, press the blue rearm button and wait for the Internal Print Server to announce that the printer is Ready.
3: All printer systems and Internal Print Server off.	After completing level 2, shut down the Internal Print Server from the Windows Start button, and wait until you see a black screen with the message **No input signal**. CAUTION: The computer may be damaged if it is turned off incorrectly. Once the Internal Print Server is completely off and you see **No input signal** on the screen, turn off the computer power switch.	After completing level 2, see Turn on the printer for the first time on page 13.

Move the printer

The following steps provide the complete procedure for this topic.

If you wish to move the printer a short distance on the same site, across a horizontal floor with no steps and no slopes of more than 3% inclination, see the following instructions. For more difficult movement operations, call your service representative (see HP Customer Care Centers on page 416).

⚠ CAUTION: Slopes steeper than 3% may cause serious damage to the printer.

1.   Turn off the printer.

2.   Disconnect all power and network cables from the printer.

3.   Raise the feet gradually, applying two turns each time to each foot so that the wheels (A) touch the ground. To raise a foot:

   a.   Use a 24mm (15/16 in) open end wrench to unlock the nut at the top of the foot.

   b.   Rotate the nut manually down the bolt. Leave about 2cm (0.8 in) clearance at the bottom between nut and foot.

   c.   Use a 16mm (5/8 in) open end wrench to rotate the foot upwards. Use the flat hexagonal faces at the bottom of the bolt to fit the wrench.

   d.   Raise the foot as far as the bolt allows.

   e.   Use the 24mm (15/16 in) open end wrench to lock the nut again.

⚠ CAUTION: Take care to raise the feet as high as you can. They may break if they touch the ground while the printer is in motion.
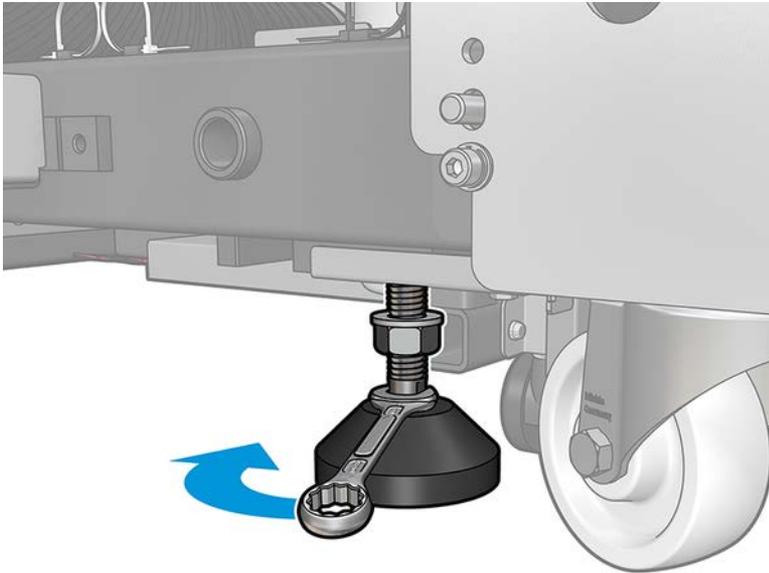
4. Push the printer from the outside corners of the main body. Remember to avoid slopes steeper than 3%.

5. Once the desired destination is reached, reverse the process described above to secure the printer in position.

After moving the printer, you may in some cases need an electrician to reconnect the power cables. You may also need to reconfigure the network, from the printer's built-in computer and from the RIP computer. See the *Installation Guide* for more details, including the minimum space required around the printer.

Printer status beacon

This topic provides a full set of reference information for this subject.

⚠ **CAUTION:** The information provided by the printer status beacon is for functional information purposes only, and is not related to any safety provision, or safety states. Warning labels on the printer must be always considered when operating the printer, and they prevail over any status indicated by the printer status beacon.

Printer status beacon messages mean:

Table 1-4 Printer status beacon

Color	Description
Red	Unexpected printing interruption. A job that had started to print stopped unexpectedly and appears as **Failed**. Attention required.
	An UI user confirmation appears in the IPS window. When attended to, the red color in the beacon changes to reflect the state of the printer.
Orange	Warning alert present in the IPS
Green	Idle
	Printing

2 HP Internal Print Server

The Internal Print Server starts automatically with Windows and runs continually, in the background if not in the foreground.

Start the Internal Print Server

If for some reason Internal Print Server has stopped running, or its window is not visible, you can start it from the Windows Start menu or by double-clicking its icon on the desktop.

Icon on the desktop:

When it starts, the main screen appears.
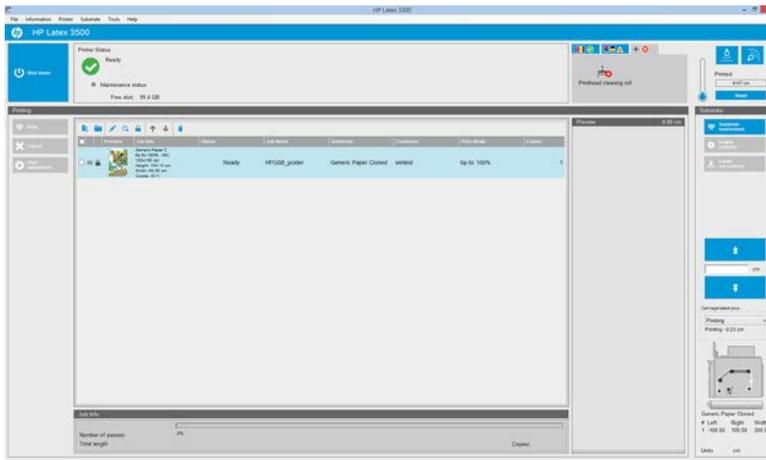
In the main screen:

- You can shut down the printer by pressing the **Shut down** button at the top left.

- The top central pane shows the printer status and maintenance status. See Printer status and alerts on page 22.

- The thermometer to the right of the status pane shows the curing temperature.

- To the right of the thermometer, you can see a summary of the status of the ink cartridges, the printheads, and the printhead cleaning roll.

- The **System Preheat** button preheats the whole system in printer **ready** status. It is useful for cold environments to avoid time-out errors during warm-up. It enables drying and curing to slowly preheat the system. Heating duration can be set from 1 to 60 minutes in **Tools** > **Preferences** > **Additional Settings**.
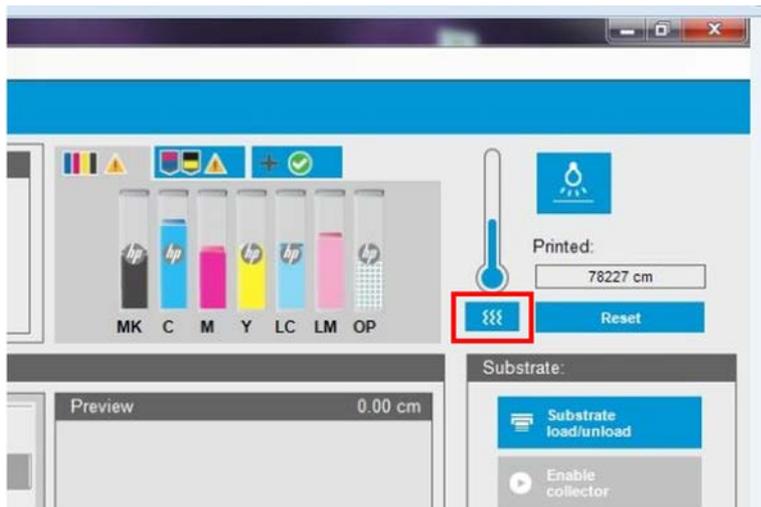
- The Printing pane occupies most of the window, and includes:

  - The **Print**, **Cancel**, and **Print adjustment** buttons

  - The job queue

  - The print preview and job settings

- The Substrate pane includes the **Substrate load/unload**, **Enable collector**, and move carriage beam buttons; and information about how the current substrate is loaded.

Change the language of the Internal Print Server

When the Internal Print Server starts, it uses the language selected in the Windows Regional and Language Options.

To change the selected language:

1. Open the Control Panel from the **start** menu.

2. If you are using the Category View of the Control Panel, open the **Clock, Language, and Region** category.

3. Open the **Regional and Language Options**.

4. In the **Formats** tab, change the current format to correspond with the language you want.

5. Press the **OK** button.

The change takes effect when Windows is restarted.

# Change the units of measurement in the Internal Print Server

To change the units of measurement in the Internal Print Server, select the **Tools** > **Preferences** > **Units**. You can change the units of length and temperature.

Set the Internal Print Server preferences

To change the Internal Print Server's preferences, select **Preferences** from the **Tools** menu. In the Preferences window, you will see four tabs.

General tab

This topic provides a full set of reference information for this subject.
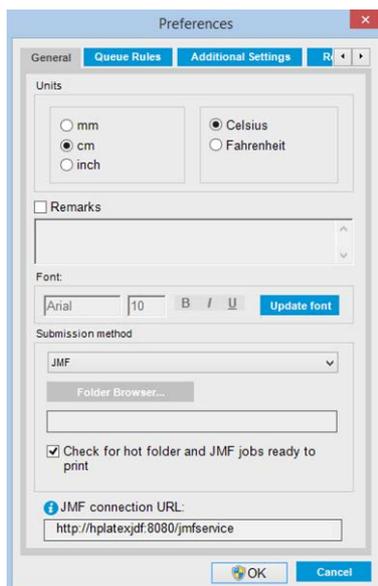
- Units of length and temperature
- Remarks (to add as a footer to the printed file)
- Font of footer text
- Hot folder
- JMF connection url

Queue Rules tab

This topic provides a full set of reference information for this subject.
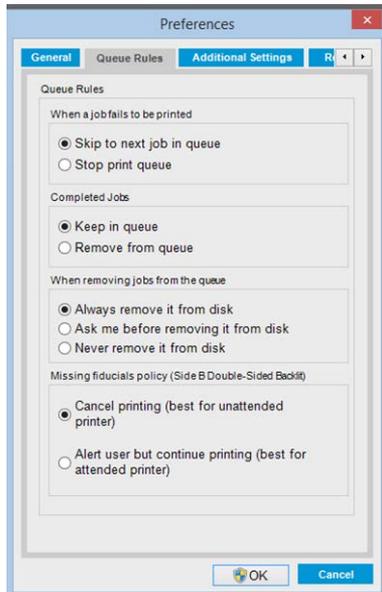
- Action when job fails

- Action when job has been printed

- Action when job is removed from the queue

Additional Settings tab

This topic provides a full set of reference information for this subject.

- Maximum roll length

- Gap between jobs

- Nesting gap between images

- Margins:

– RIP: Margins are set as defined in the RIP.

– Center: The image is horizontally centered on the loaded substrate.

– Default: The default margins are set to 5.0 mm (0.02 in). You can define the default left margin in the Job Properties window.

- Heating duration

- Optimize for tiling:

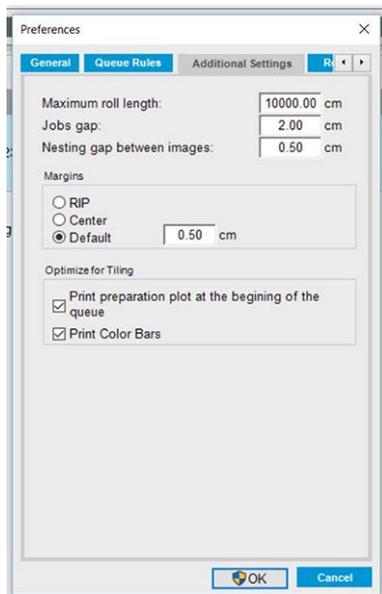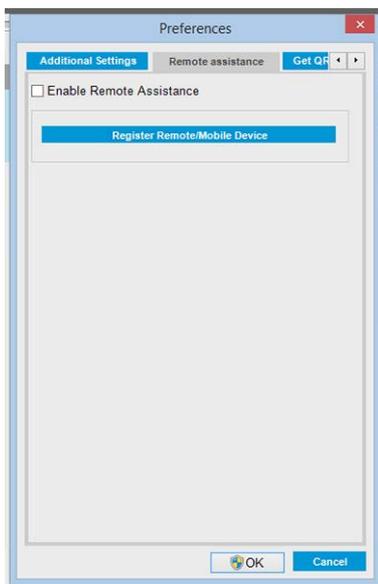 – Print preparation plot at the beginning of the queue.

  – Print color bars.

Remote Assistance tab

This topic provides a full set of reference information for this subject.

- Enable remote assistance

- Enable proxy server and give details

- Register Remote/Mobile Device

Internal Print Server menus

The Internal Print Server provides the following menus.

Table 2-1 Internal Print Server menus

Menu:	Menu:	Menu:
- Add New Job	- Alerts	- Printing adjustments
- Add Existing Job	- Supplies	- Printhead alignment
- Edit Job	- Service information	- Printhead cleaning
- Delete Job		- Replace printheads
- Exit		- Replace cleaning roll kit

Menu:	Menu:	Menu:
		• Advance calibration
		• Enable/Disable collector
• Load/Unload	• Preferences	• About
• Settings	• HP Scitex Print Care	• User's guide
• Create	• HP Proactive Support	
• Edit	• Firmware update	
• Clone	• Wake up	
• Optimize for tiling	• Shut down	
• Rename	• Reinitialize carriage	
• Remove		
• Color calibration		
• Presets management		
• Search substrate online		

Printer status and alerts

The Internal Print Server displays the general status of the printer, the maintenance status, the loaded substrate, and the ink system.

The printer can communicate the following types of alerts:

- **Errors:** When the printer is unable to print.

- **Warnings:** When the printer needs attention for an adjustment, such as a calibration, preventive maintenance or ink cartridge replacement.

A summary list of printer alerts appears in the main window of the Internal Print Server. To display a more complete and detailed list, select **Information** > **Alerts**.

For more information about a particular alert, see Printer messages on page 421.

- Green light: No maintenance is needed.

- Yellow light: Maintenance procedure date is approaching. Press the yellow button to check Print Care for details. See HP Print Care on page 153.

- Orange light: Maintenance is required. Press the orange button to check Print Care for details.

- Red light: Maintenance is required urgently. Press the red button to check Print Care for details.

- Grayed out: Print Care is not running. Press the orange button.

# Update the firmware and the Internal Print Server

The following sections provide details for this topic.

☼ **TIP:** When updating the firmware and the Internal Print Server, first update the firmware and then the Internal Print Server.

Update the firmware

From time to time firmware updates will be available from HP that increase the printer's functionality and enhance its features.

Firmware updates can be downloaded from the Internet and installed in your printer using the Internal Print Server: select **Firmware update** from the **Tools** menu.
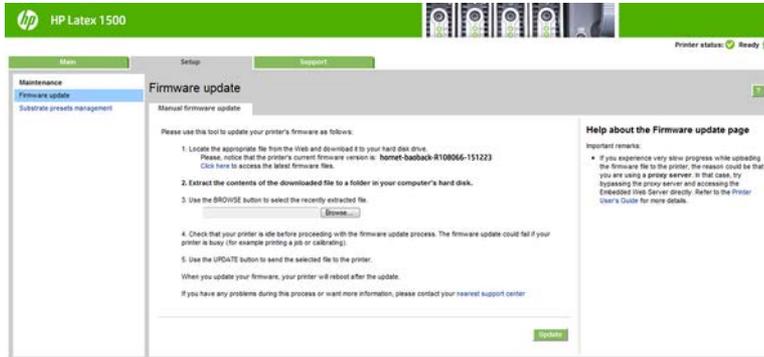
Follow the instructions on your screen to download the firmware file and store it on your hard disk. Then select the downloaded file and click **Update**.

The firmware includes a set of the most commonly used substrate presets. Extra substrate presets can be downloaded separately; see .

Update the Internal Print Server

The following steps provide the complete procedure for this topic.

IMPORTANT: Remove the previous version of the Internal Print Server in the printer's built-in computer before installing the new version.

1. Remove the current version of the Internal Print Server through the control panel. Select **Uninstall Internal Print Server Application** (this deletes any current job in the queue, but **not** ripped files).

2. Download the file to the built-in computer's hard disk (but not to the desktop).

3. Unzip/extract the files **HPIPS.msi** and **Setup.exe**.

4. Run the file **Setup.exe** and follow the onscreen instructions until the new software is installed.

Update the HP IPS Services

The following steps provide the complete procedure for this topic.

IMPORTANT: Remove the previous version of the Internal Print Server in the printer's built-in computer before installing the new version.

1. Remove the current version of the Internal Print Server through the control panel. Select **Uninstall Internal Print Server Application**.

2. Download the file to the built-in computer's hard disk (but not to the desktop).

3. Unzip/extract the files **HPIPSServices.msi** and **Setup.exe**.

4. Run the file **Setup.exe** and follow the onscreen instructions until the new software is installed.

3   RIP distribution

HP RIP Certification differentiates the RIP partners who reach a specific and superior level of integration, compatibility, and performance with the HP Latex 1500 Printer.

HP has increased the functionalities and RIPs certified for the HP Latex 1500 Printer.

The compatibility support matrix below presents the certified RIP partners and versions. As well as the different functionalities supported by each specific RIP partner, all certified RIP partners support, at least, all the mandatory functionalities. You can find more information on the HP Latex Knowledge center via the following link: http://h20435.www2.hp.com/t5/HP-Latex-Blog/Certified-RIPs-to-enable-seamless-integration-with-HP-Latex-1500/ba-p/298577.

	HP Latex 1500 printer						Solutions across HP printers
	Printing Performance	Media Management	Printer Management	Printer Reporting	Job Generation	Job Management	HP Application Center Integration
	★☆☆ Processing ☆★☆ Stress and print ☆☆★ Wider job management	★☆ Add new media support ☆★ Download ICC profile from printer	★☆☆ Show "media type unavailable" ☆★☆ Show layout conflict in HP IPS ☆☆★ Show printer unavailable	★☆ Show printer status ☆★ Show printer notifications	★☆☆ Color Bars ☆★☆ Improved preview ☆☆★ Send copies through JDF	★☆☆ Job cancel in RIP ☆★☆ Printer and Job Status ☆☆★ Job accounting	★☆ Protected PDF ☆★ Job automation
AVA							
Digital Print RIP 2.17	★★★	★☆	☆★★	☆☆	★☆☆	★☆☆	☆☆
Caldera							
Grand RIP+ 11, 12	★★★	★★	★★★	★★	★★★	★★★	★★
ONYX							
Thrive 10.0.5, 10.1	★★★	★★	★★★	★★	★★★	★★★	★★

4   Printing workflows integration

JDF is a software method by which devices from a variety of vendors and manufacturers can interoperate together.

What is JDF?

JDF uses a text-based language known as XML that is compliant with many devices and workflow controllers in varying vertical print markets.

JDF implementation is typically based upon an MIS system to be use for job scheduling, submission, accounting, and costing. An integrator typically interfaces an MIS system to the devices that are present in a workflow through JDF technology.

JMF is a communication protocol (based upon the JDF specification) that allows devices to communicate job status information and other real-time job metrics and parameters. It can be used to poll a device for status or to watch a device at regular intervals.

Benefits of working with JDF for file submission

JDF can be useful in providing an accurate MIS-driven way to know the job status of content as well as when a device has completed a job.

Since the role of an MIS is to track, schedule and cost-account for a job, JDF/JMF allows for a simple way to interface devices to an MIS for this task. JDF and JMF can be used to be able to analyze and later perform accounting principles upon work created in a JDF workflow. A detailed analysis can be performed after a day or series of jobs to see the profit margin of a job, the costs and materials consumed, as well as inventory control and stock consignment.

HP is a partner member of the CIP4 organization, and you can obtain many more details about JDF at the CIP4 www site at http://www.cip4.org.

Working with JDF

JDF Implementations typically use an MIS system to control and monitor a JDF/JMF workflow.

Creating JDF job tickets

The MIS can monitor a device's status, can track time and consumables and provide interfacing with counting and inventory control modules integrated into an MIS.

An MIS is typically the origin of a JDF job and resultant ticket. JMF communication can be used to send that ticket information to production milestones. An MIS is typically the origin of a JDF job and resultant ticket. JMF communication can be used to send that ticket information to production milestones.

What information is captured by the HP Latex 1500 printer series and what can be communicated by JMF to an MIS?

The printer implements a subset of the JDF 1.5 specification, using JMF. This allows it to communicate printer-status, and notifications together with job status, job ink, and substrate consumption to external applications.

NOTE: It is important to consider the fact that the RIP is capable of combining several jobs into one for the purpose of substrate optimization, and finishing. In this example, the printer sees the print as one job. In this situation, the MIS should query the RIP for the status of each individual job on the nest.

The RIP application can retrieve substrate and consumable tracking to report back to MIS.

Guidelines for Integration

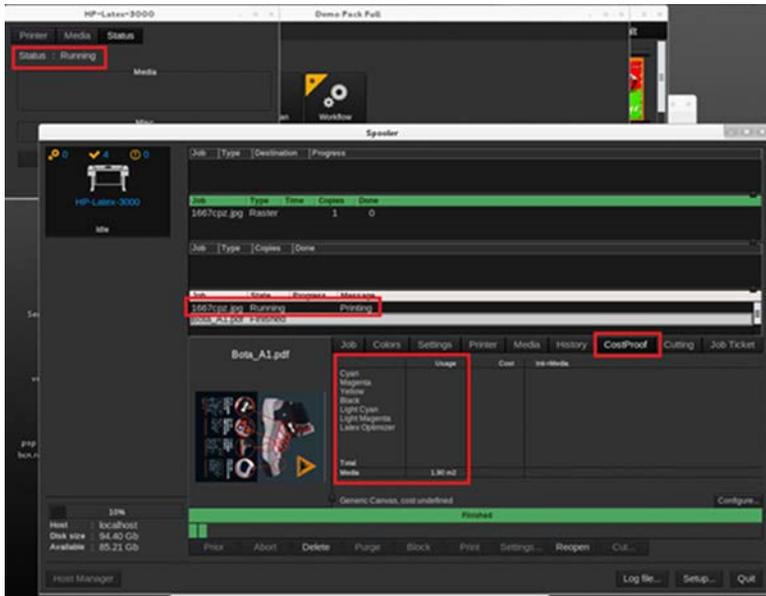You can integrate the HP Latex 1500 printer series into ONYX RIP and CALDERA RIP

How to integrate the HP Latex 1500 printer series into CALDERA RIP

CALDERA RIP can take advantage of the JDF interface in the printer by selecting the option on the printer driver setup. Once the JDF interface is enabled, the RIP will display printer status and notifications together with job status, job ink and substrate consumption.
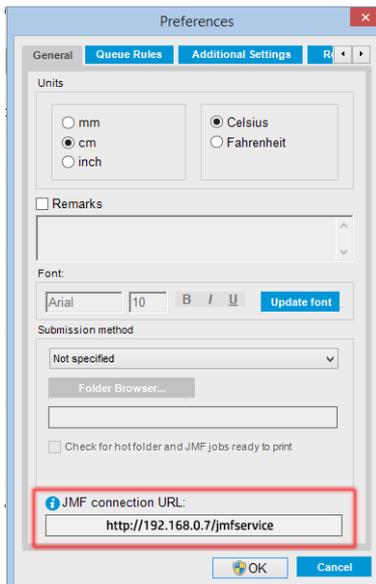
In order to activate this functionality in the CALDERA RIP, you need to type the printer's JMF url in the JDF area of the printer configuration dialog (IPS URL). Please, make sure you have the latest driver available from the CALDERA Website.
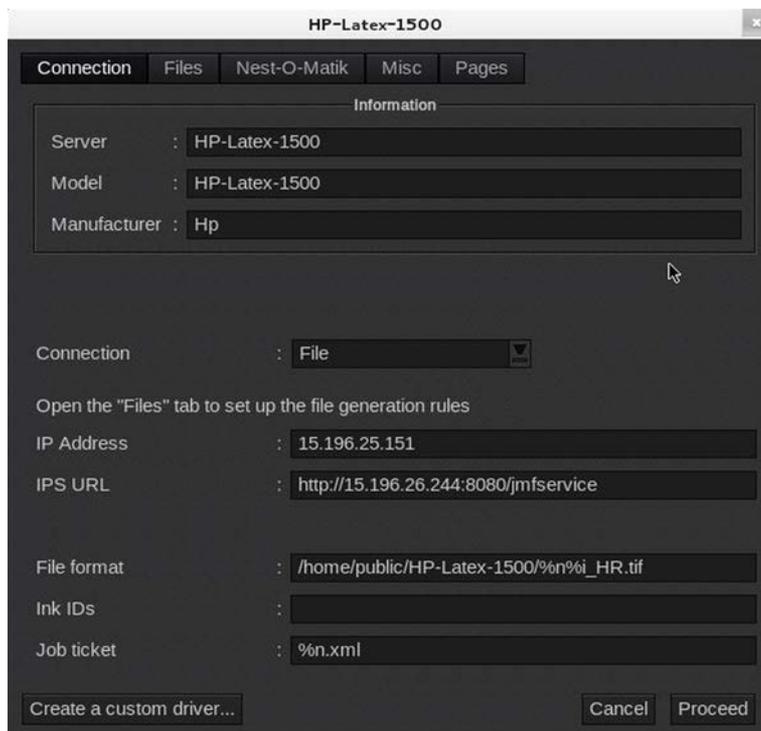
Once configured, you can display the printer status by opening the info window in the print client, and opening the spooler for the job status.

To obtain the JMF URL: Go to the **IPS PC**, on the Internal Print Server SW, and then **Tools**>**Preferences**>**General**.
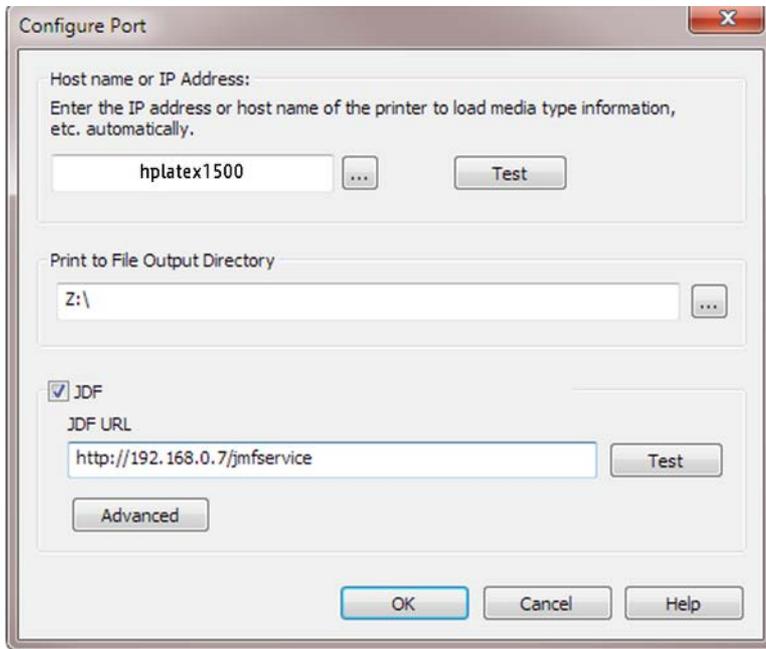

If there are problems using the printer's hostname, switch to the printer's IP using the HP Latex 1500 System Configuration Tool. For more details refer to the Service Manual or talk to your network administrator to solve hostname resolution.

How to integrate the HP Latex 1500 printer series into ONYX RIP

ONYX can take advantage of the JDF interface in the printer by selecting the option on the printer driver setup. Once the JDF interface is enabled, the RIP will display printer status and notifications together with job status, job ink and substrate consumption.

In order to activate this functionality in the ONYX RIP, you need to type the printer's JMF url in the JDF area of the printer configuration dialog (JDF URL). Please, make sure you have the latest driver version from the ONYX Download manager.

Once configured, you can display the printer and job status opening the info window in the RIP queue.
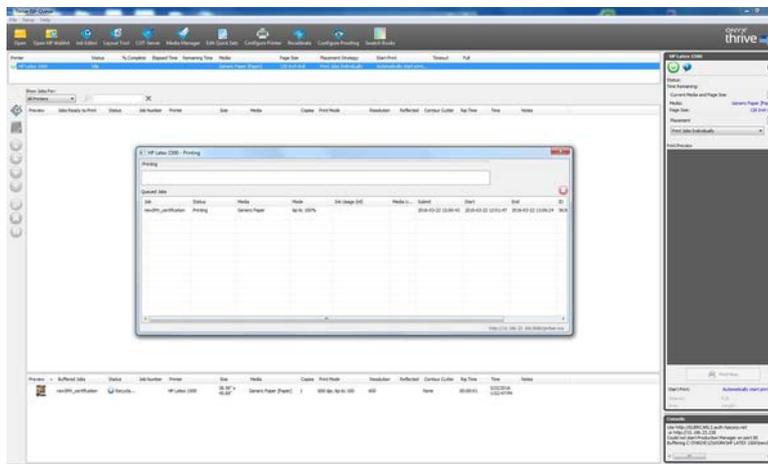
To obtain the JMF URL: Go to the **IPS PC**, on the Internal Print Server SW, and then **Tools**>**Preferences**>**General**.
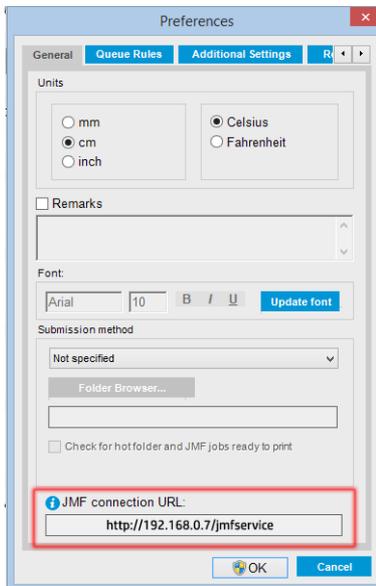
If there are problems using the printer's hostname, switch to the printer's IP using the HP Latex 1500 System Configuration Tool. For more details refer to the Service Manual or talk to your network administrator to solve hostname resolution.

Job submission methods

The HP Latex 1500 supports two file submission methods (in addition to open a file directly in HP IPS UI):

Select the submission method within the Preference dialog in HP IPS **Tools**>**Preferences**>**General**, in the Submit method drop down list:
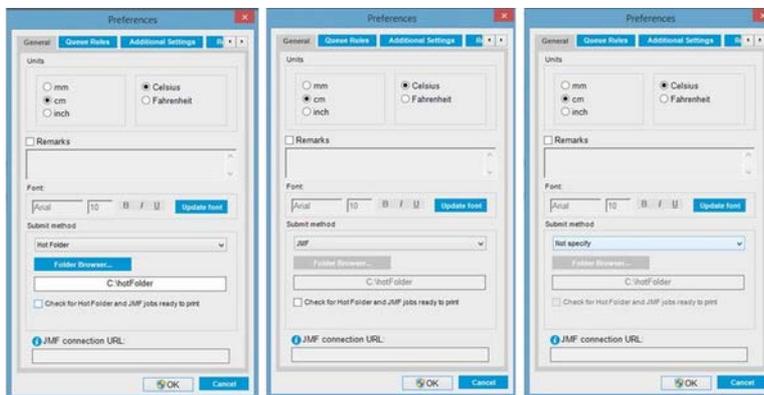
Hotfolder: Select a shared folder in the HP IPS PC and the RIP copies the output job there, the IPS automatically loads jobs into the queue.

📝 **NOTE:** The shared folder should be the same as the one configured in the RIP.

JMF: The RIP sends the location of the job via a JMF command and the IPS automatically looks for the files there and loads them directly into the printer queue.

Not specify: Load the file manually in the IPS **File**>**Open**.

Removing a queued job from the RIP:

Remove a job from the IPS/printer queue directly via the RIP interface, but only if it was submitted using the JMF method.

How to integrate the HP Latex 1500 printer series into an MIS system or production control software

Specific RIP/MIS implementations will require vendor specific configurations.

MIS or Production Control Software applications can retrieve **printer status and notifications together with job status, job ink and substrate consumption**, from the printer via the **HP JDF/JMF Interface**. It is also possible to remove a job in the printer queue via the **HP JDF/JMF Interface**.

As explained in the previous section, if the RIP combines several jobs into one before sending it to the printer, the recommendation is to connect the MIS or Production Control software to the RIP instead of the IPS in order to get the grouped jobs' individual job status.

Be sure to assign unique names to each job in order to identify them on the gathered information from the printer.
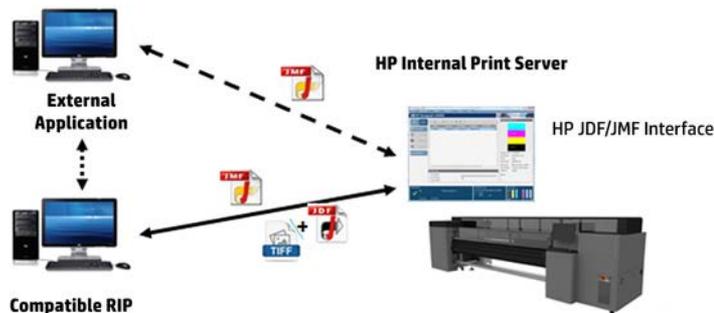
If you are using CALDERA 10.2 RIP, then the MIS can communicate using the Caldera Nexio module. **Caldera Nexio** is a tool that connects the Caldera RIP and other third-party software using standard JDF/JMF protocols, making it possible to produce automatic sequences of actions that speed up production and advanced reports to improve operations. Please, contact CALDERA for further information.

ONYX customers wishing to integrate with MIS solutions can use the **ONYX Connect** module to communicate via JDF. ONYX Connect does not currently support JMF. Please contact ONYX for further information.

If you are using another RIP solution, please contact your specific RIP vendor for JDF/JMF configuration and interface guidelines.

MIS vendors or customers that would like to integrate the printer with a solution directly, can obtain the HP specifically supported JDF Software Development Kit from the HP Solutions Portal: https://developers.hp.com/lfp-enroll.

5 Handle the substrate

Various substrate types are compatible with your printer.

Supported substrate types

For specific substrate settings and profiles visit HP Website.

See the .

- Cast self-adhesive vinyl
- Calendered self-adhesive vinyl
- Perforated self-adhesive vinyl
- Transparent self-adhesive vinyl
- Reflective self-adhesive vinyl
- Frontlit banner
- Backlit banner
- Scrim banner
- Scrimless banner
- Mesh banner with liner
- Blockout banner
- Truck curtain banner or tarpaulin
- Coated paper
- Uncoated paper
- Photo paper
- Photorealistic paper
- Blue-back paper
- Self-adhesive paper
- Polypropylene (PP) film
- Synthetic paper (such as Yupo)
- Tyvek
- Coated PE/HDPE (polyethylene) banner
- Polyester (PET) backlit film
- Polyester (PET) frontlit film
- Polyester (PET) grey-back film

To check the porosity of your substrate, see [Check the porosity of your substrate on page 34](#).

- Polyester textile and fabric
- Textile banner
- Backdrops
- Textile mesh with liner
- Frontlit textile with liner if porous
- Backlit textile with liner if porous
- Canvas
- Flag and voile with liner
- Cotton textile
- Self-adhesive textile

NOTE: This is an application example, not a selectable category.

- Paper wall covering or wallpaper
- PVC wall covering
- Pre-pasted wall covering
- Non-woven wall covering
- Textile wall covering
- Self-adhesive wall covering

Check the porosity of your substrate

The following steps provide the complete procedure for this topic.

1. If the printer has any substrate loaded, unload it.
2. Cut a piece of self-adhesive vinyl white gloss 15 × 50 mm (0.6 × 2 in) in size.
3. Stick it to the platen, covering the substrate-advance sensor.
4. Load the substrate that you want to check.
5. Open your RIP software.
6. Obtain the test file from the printer's built-in computer: **C:\Users\hplatex\Documents\HP IPS \InkTrespassingCheck\Ink_trespassing_check.pdf**.
7. Print the test file using the number of passes and substrate preset that you intend to use in future with this substrate (or a similar profile in terms of ink limit).
8. Unload the substrate.
9. Remove the strip of self-adhesive vinyl from the platen.
10. Look at the self-adhesive vinyl you have taken from the platen.

    - If the strip is completely white (has no ink on it), the tested substrate is non-porous and may be used for printing as described in this guide.

11. Clean the print zone, see [Clean the print zone on page 218](#).

Supported HP substrates

For specific substrate settings and profiles visit HP Website.

Table 5-1 Supported HP substrates

Category	Substrate	Automatic printhead alignment	Color calib.	Applications
HP Banners	HP HDPE Reinforced Banner 203 microns (8 mil) • 180 g/m2 (5 oz) • 45,7 m (150 ft)	NO	NO	Trade show and event displays, POP and retail displays, Banners
	HP Everyday Matte Polypropylene, 3-in Core 203 microns (8 mil) • 120 g/m² • 61 m (200 ft)	YES	YES	Trade show and event displays, POP and retail displays, Posters and photo enlargements, Banners
HP Self-adhesive Materials	HP Air Release Adhesive Gloss Cast Vinyl Without liner: 50 microns (2 mil) • 100 g/m² • 45,7 m (150 ft) With liner: 241 microns (9.5 mil) • 260 g/m² • 45,7 m (150 ft)	YES	YES	Trade show and event displays, Fleet graphics and vehicle wraps, Signage
	HP One-view Perforated Adhesive Window Vinyl Without liner: 165 microns (6.5 mil) • 155 g/m² • 50 m (164 ft) With liner: 406 microns (16 mil) • 288 g/m² • 50 m (164 ft)	NO	NO	Fleet graphics and vehicle wraps, Window graphics, POP and retail displays
	HP Permanent Gloss Adhesive Vinyl **REACH** Without liner: 121 microns (4.8 mil) •150 g/m² • 100 g/m² • 45,7 m (150 f • 91,4 m (300 ft) With liner: 266 microns (10.5 mil) • 280 g/m² • 45,7 m (150 ft • 91,4 m (300 ft)	YES	YES	Trade show and event displays, Signage, POP and retail displays
	HP Permanent Matte Adhesive Vinyl **REACH** Without liner: 121 microns (4.8 mil) •150 g/m² • 45,7 m (150 f • 91,4 m (300 ft) With liner: 266 microns (10.5 mil) • 280 g/m² • 45,7 m (150 ft • 91,4 m (300 ft)	YES	YES	
	HP Premium Removable Gloss Adhesive Vinyl **REACH** Without liner: 96 microns (3.8 mil) • 136 g/m² • 45,7 m (150 f) With liner: 284 microns (11.2 mil) • 298 g/m² • 45,7 m (150 ft)	YES	YES	
	HP Everyday Adhesive Matte Polypropylene, 3-in Core Without liner: 180 microns (7.1 mil) • 120 g/m² • 30,5 m (100 ft) With liner: 215 microns (8.5 mil) • 168 g/m2 ² • 30,5 m (100 ft)	YES	YES	Trade show and event displays, Signage, POP and retail displays, Banners
HP Films	HP Backlit Polyester Film 220 microns (8.7 mil) • 285 g/m² • 30,5 m (100 ft)	NO	NO	Trade show and event displays, Backlit displays, POP and retail displays, Posters and photo enlargements

Table 5-1 Supported HP substrates (continued)

Category	Substrate	Automatic printhead alignment	Color calib.	Applications
HP Fabrics	HP Light Fabric REACH ColorPlus ♻ 381 microns (15 mil) • 218 g/m2 (6.2 oz) • 45,7 m (150 ft)	NO	NO	Trade show and event displays, POP and retail displays, Textiles (fabric printing), Banners, Interior decorations
HP Papers/ Photographic Papers	HP PVC-Free Wall Paper ⬠ColorPlus ♻CE 177 microns (7 mil) • 175 g/m² • 30,5 m (100 ft) • 91,4 m (300 ft)	YES	YES	Trade show and event displays, Posters and photo enlargements, Interior decorations
	HP PVC-free Durable Smooth Wall Paper REACH ⬠ColorPlus ♻CE 431 microns (17 mil) • 290 g/m2 • 30,5 m (100 ft)	YES	YES	
	HP White Satin Poster Paper ⬠♻ 165 microns (6.5 mil) • 136 g/m² • 61 m (200 ft)	YES	YES	Trade show and event displays, Backlit displays, POP and retail displays, Posters and photo enlargements, Billboards
	HP Photo-realistic Poster Paper ♻ 205 microns (8.1 mil) • 205 g/m² • 61 m (200 ft)	YES	YES	Trade show and event displays, POP and retail displays, Posters and photo enlargements
	HP Premium Poster Paper ⬠♻ 228 microns (9 mil) • 200 g/m2 • 61 m (200 ft)	YES	YES	
	HP Blue Back Billboard Paper 165 microns (6.5 mil) • 123 g/m2 • 80 m (262 ft)	YES	YES	POP and retail displays, Textiles (fabric printing), Billboards
	HP Universal Heavyweight Coated Paper, 3-in Core ⬠♻ 172 microns (6.8 mil) • 131 g/m2 (33 lbs) • 61 m (200 ft)	YES	YES	POP and retail displays, Posters and photo enlargements
	HP Super Heavyweight Plus Matte Paper, 3-in Core ⬠♻ 264 microns (10.4 mil) • 210 g/m2 (55 lb) • 61 m (200 ft)	YES	YES	Trade show and event displays, POP and retail displays, Posters and photo enlargements
	HP Professional Gloss Photo Paper ⬠ 248 microns (9.8 mil) • 275 g/m2 • 30,5 m (100 ft)	YES	YES	Trade show and event displays, POP and retail displays, Posters and photo enlargements, Interior decorations
	HP Professional Satin Photo Paper ⬠ 248 microns (9.8 mil) • 275 g/m2 • 30,5 m (100 ft)	YES	YES	
	HP Everyday Satin Photo Paper ⬠ 187 microns (7.4 mil) • 180 g/m2 • 30,5 m (100 ft)	YES	YES	
	HP Matte Litho-realistic Paper, 3-in Core ⬠ 307 microns (12.1 mil) • 269 g/m2 • 30,5 m (100 ft)	YES	YES	Trade show and event displays, POP and retail displays, Posters

Table 5-1 Supported HP substrates (continued)

Category	Substrate	Automatic printhead alignment	Color calib.	Applications
				and photo enlargements, Art reproductions, Interior decorations
HP Canvas Materials	HP Premium Satin Canvas 462 microns (18.2 mil) •381 g/m2 •22,9 m (75 ft)	NO	NO	Trade show and event displays, POP and retail displays, Posters and photo enlargements, Art reproductions
	HP Everyday Satin Canvas 444 microns (17.5 mil) •340 g/m2 •22,9 m (75 ft)	NO	NO	

- For third-party substrate solutions with ColorPRO technology, see http://ColorPROtechnology.com/.

- HP PVC-free Wall Paper imprimé avec les encres HP Latex est classé A+ selon l'arrêté du 19 avril 2011 «Émissions dans l'air intérieur», qui définit des seuils sur l'émission de polluants volatils posant des problèmes en cas d'inhalation – sur une échelle de A+ (émission très basses) à C (émission élevée).

- HP PVC-free Wall Paper printed with HP Latex Inks is rated A+ according to *Émissions dans l'air intérieur*, which provides a statement of the level of emission of volatile substances in indoor air posing health risks if inhaled—on a scale from A+ (very low emission) to C (high emission).

* HP PVC-Free Wall Paper printed with HP Latex Inks is GREENGUARD Children & Schools Certified. See http://www.greenguard.org/.

* HP PVC-Free Wall Paper printed with HP Latex Inks meets AgBB criteria for health-related evaluation of VOC emissions of indoor building products. See http://www.umweltbundesamt.de/produkte-e/bauprodukte/agbb.htm.

♻ HP large-format substrate take-back program availability varies. Some recyclable HP substrates can be recycled through commonly available recycling programs. Recycling programs may not exist in your area. See http://www.hp.com/recycle/ for details.

Substrate tips

Handle unprinted and printed substrates with care, and preferably with cotton gloves, to avoid fingerprints.

Maintain the substrates

Keep substrates in their sealed wrapping material while they are in storage, and store rolls vertically to avoid the migration of plasticizers in some materials.

Move substrates from the storage area to the print production area at least 24 hours before use, so that they can adapt to its temperature and humidity.

General tips

For heavy rolls, use a forklift, and two people wearing security shoes.

Before loading a roll:

- Check that temperature and humidity in the room are within the recommended ranges for the printer. See Environmental specifications on page 420.

- Check that neither the roll nor its core are bent or deformed, which may cause the substrate to jam in the printer.

- If the roll has been stored in a place not offering the recommended environmental conditions, allow some time for it to adapt to the temperature and humidity of the printer's environment.

- Check which is the correct side for printing, by reading the label inside the core or the note inserted into the package.

- Check that the substrate is correctly attached to the input core. Otherwise, the Internal Print Server will report an error.

- Check the substrate thickness.

    - Up to 0.4 mm (0.016 in): Print normally.

    - 0.4 to 2 mm (0.016 to 0.079 in): Raise the carriage beam to a custom position. Edge holders are not needed and should not be used.

    - More than 2 mm (0.079 in): Not supported.

While loading a roll, ensure that the leading edge is parallel and straight across the output core, and attached evenly (start taping the substrate to the core at the center, then move towards the edges).

Also ensure that the side edges of the input and output roll are properly aligned. An incorrectly loaded roll may cause waves or cockles in the substrate, leading to ink smearing and printhead crashes.

After you have loaded a roll:

- If you intend to use substrate edge holders, do not use edge holders from another printer, use only the edge holders that came with your printer.

- Check the correct carriage beam position for printing: customized position for thick substrates, printing position for others. See Set the carriage beam position on page 86.

- Check that you are using the correct substrate preset in the Internal Print Server and the correct ICC profile and other settings in the RIP.

- HP substrates are optimized to provide the best out-of-the-box printing experience with your printer.

- Use the Internal Print Server to check that any calibrations appropriate for your substrate have been done: printhead alignment, color calibration. See Printer calibration on page 137.

- Do not cut off pieces of substrate while the substrate is loaded into the printer. This may cause the remaining substrate to jam.

You can find further information on the Web:

- The specifications, finishing, processing, and warranty information for each individual HP substrate are available from http://www.globalBMG.com/hp/signagemedia and http://www.globalBMG.com/hp/HPMediaWarranties.

- HP Image Permanence information is available from http://www.globalBMG.com/hp/printpermanence.

- HP offers to recycle some substrates through the HP Take-Back Program, such as HP HDPE Reinforced Banner, HP Light Textile Display Banner, HP Heavy Textile Banner, HP Everyday Matte Polypropylene, 3-in Core, and HP DuPont Tyvek Banner. Recycling opportunities for these products may not exist in all areas. You should consult local recycling resources about recycling these products. For recycling in the USA, see the HP recycling services site, http://www.hp.com/go/recycleLFmedia/.

  HP offers to recycle some other substrates through the standard paper recycling process, such as HP White Satin Poster Paper, HP Photo-realistic Poster Paper, HP Coated Paper (3-in core), HP Universal Coated Paper (3-in core), HP Universal Heavyweight Coated Paper (3-in core), HP Heavyweight Coated Paper (3-in core), and HP Super Heavyweight Plus Matte Paper (3-in core).

Color consistency

Your printer has been designed to provide an excellent experience in terms of color consistency and repeatability.

This allows large jobs such as fleet graphics and wall coverings to be printed in tiles or panels, with confidence that, when the finished panels are placed edge to edge, the colors will match at the joins. The color variation within a printed job has been measured to be within this limit:

Maximum color difference (95% of colors) <= 2 dE 2000

📝 NOTE: This is based on reflective measurements on a 943 color target under CIE standard illuminant D50, and according to the standard CIEDE 2000 as per CIE Draft Standard DS 014-6/E:2012. 5% of colors may experience variations above 2 dE 2000. Backlit substrates measured in transmission mode may yield different results.

Color matching is dependent on many external factors. Take the following points into account to achieve this level of consistency:

- If a large job is being printed in panels, more than one roll may be required. All rolls should be from the same batch, and stored under correct conditions according to the manufacturer's specifications.

- Operating conditions (temperature and humidity) should be kept constant during the printing of the entire job.

- Ensure that a printhead check and clean routine has been run prior to starting the job. If any printhead changes are required during the job, printhead alignment and color calibration should be done.

See also Color calibration on page 144.

Substrate configurations

The substrate can be loaded in a variety of different configurations to suit your different needs. Before loading, you must go to the Internal Print Server and select **Substrate load/unload**, then select the configuration you intend to use.
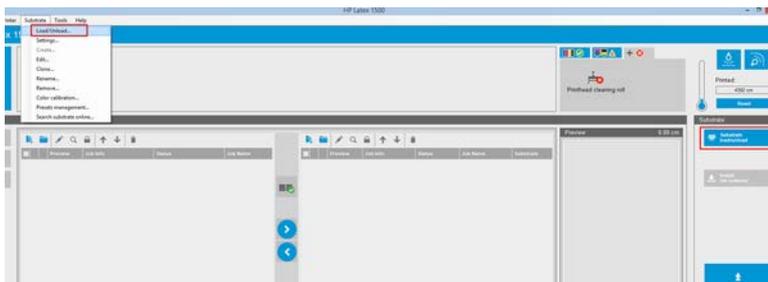
You can also start to load the substrate and start the load process by pressing the corresponding button at the input side of the printer.
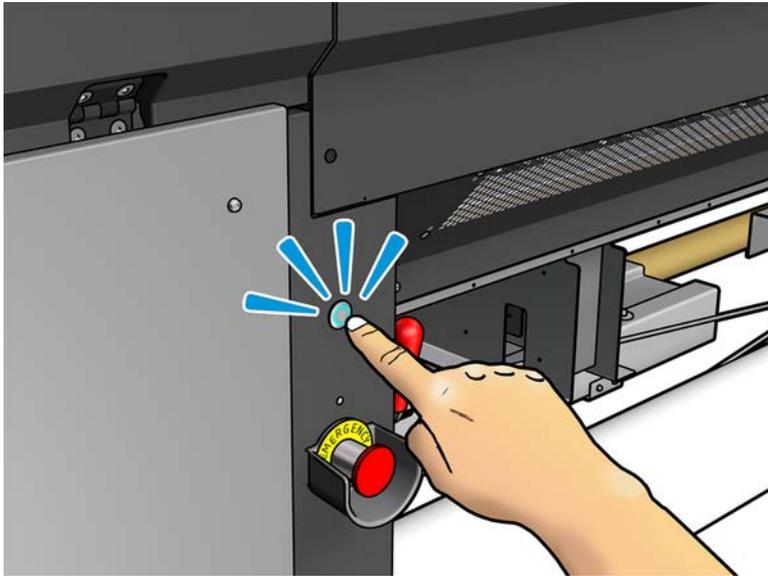
The physical button is permitted when its light is on.
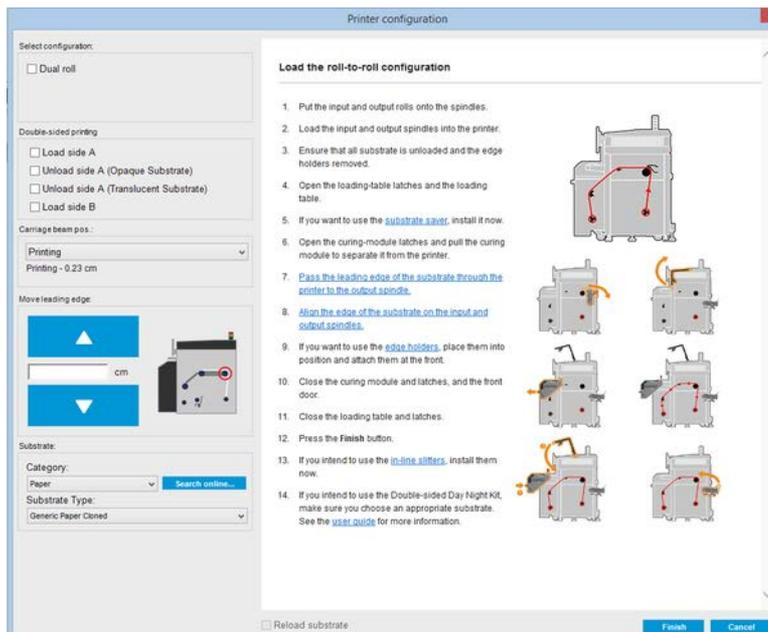
The basic printer configuration is roll-to-roll, and can be used for single-roll or dual-roll printing.

- **The roll-to-roll configuration** is suitable when you do not intend to cut and take away some prints or the output roll in the middle of a print job being done using a particular input roll. The substrate cannot be cut in mid-roll, except during double-sided printing, and then it must be reloaded afterwards.
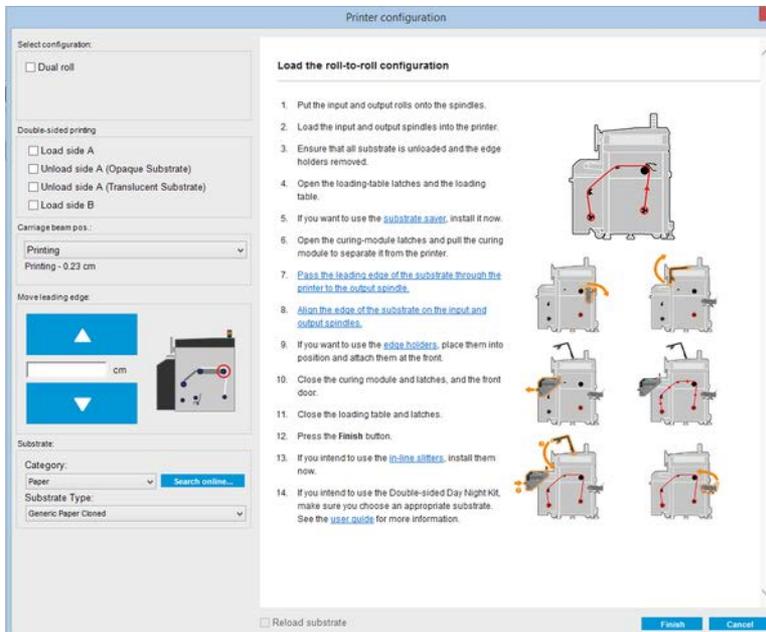

Prepare to print

The following steps must be followed before the printer can print:

1. Go to the Internal Print Server and select **Substrate Load/Unload** to open the Printer Configuration window or start the loading process by pressing the physical button.
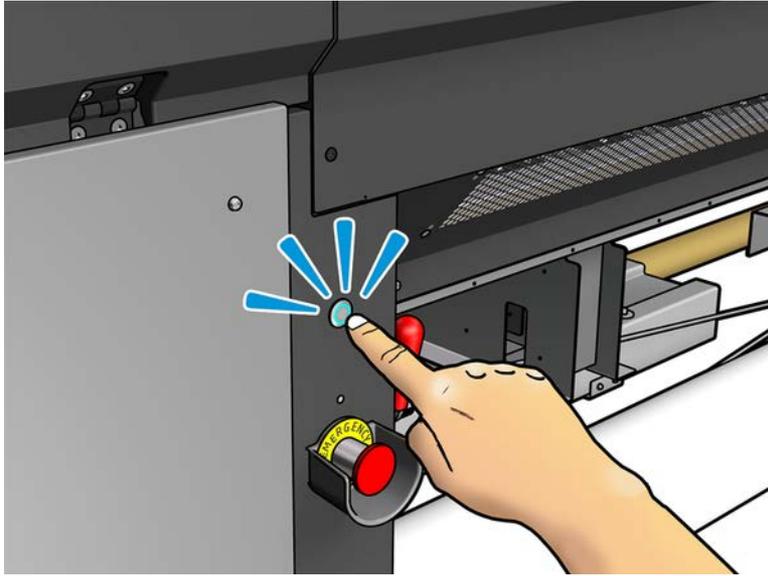
2. Select the printer configuration that you intend to use; the on-screen help will appear on the left.

📝 NOTE: The **Reload substrate check** box should be checked only if the printer has just previously had the same configuration (i.e. the same substrate, same profile), and because of a severe system error, you had to restart the printer.

3. Load the substrate. Substrate loading instructions are displayed in the Internal Print Server window. For more detailed instructions, see Load a roll onto the spindle on page 45 and Load a roll into the printer on page 47.

4. Select the substrate type.

5. Press the **Finish** button in the Internal Print Server to start the substrate check, then enter the substrate type in the Loaded Substrate window.

TIP: If the printer has been idle overnight with substrate loaded, and exposed to high or low temperatures, advance the substrate 13 to 25 cm (5 to 10 in) before printing, to avoid printhead crashes or ink smears on the substrate.

The substrate edge holders

The purpose of the substrate edge holders is to prevent the substrate edges from lifting up and jamming while printing. If you experience this kind of problem while printing, you can try using the edge holders to overcome it.

The edge holders are highly recommended when printing on textile substrates.

NOTE: When printing with the Double-sided Day and Night Kit, specific edge holders are also needed.

NOTE: The edge holders are not recommended when printing on substrate that is more than 0.4 mm (0.016 in) thick.

TIP: The edge holders may be easier to deploy if you raise the carriage beam (see); however, they can be deployed without raising the carriage beam.

The correct position is illustrated below. The substrate should be free to move, and should not touch the ends of the edge holder.
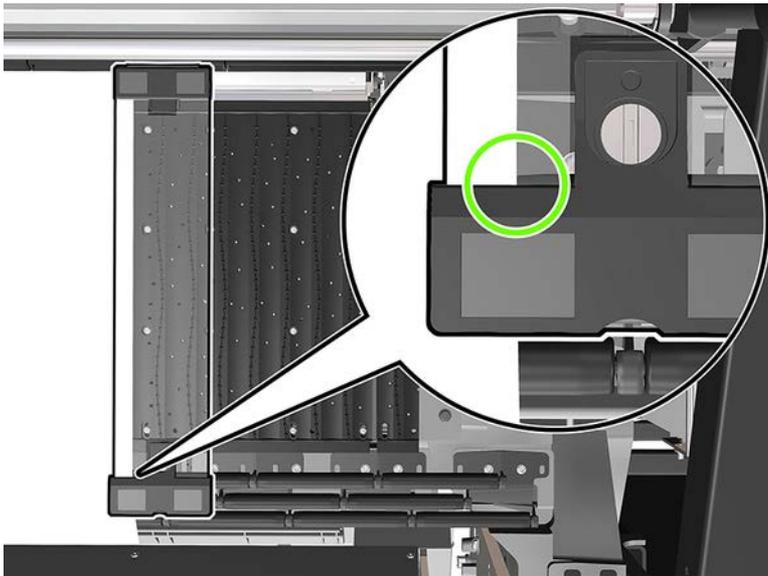
CAUTION: Wrongly positioned edge holders could severely damage the printheads and carriage.
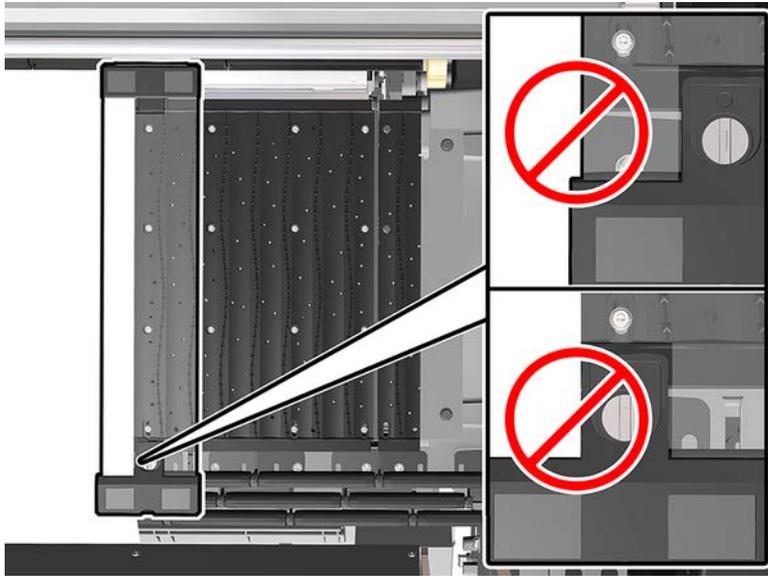
> **NOTE:** If the substrate is loaded with the right edge outside the 161 cm position on the spindle ruler, or the left edge outside the −162 cm position, the edge holders cannot be used because there is not enough space for them.

Install an edge holder

The following steps provide the complete procedure for this topic.

1. Standing in front of the printer, place the edge holder onto the far side of the platen and cover the edge of the substrate with it.
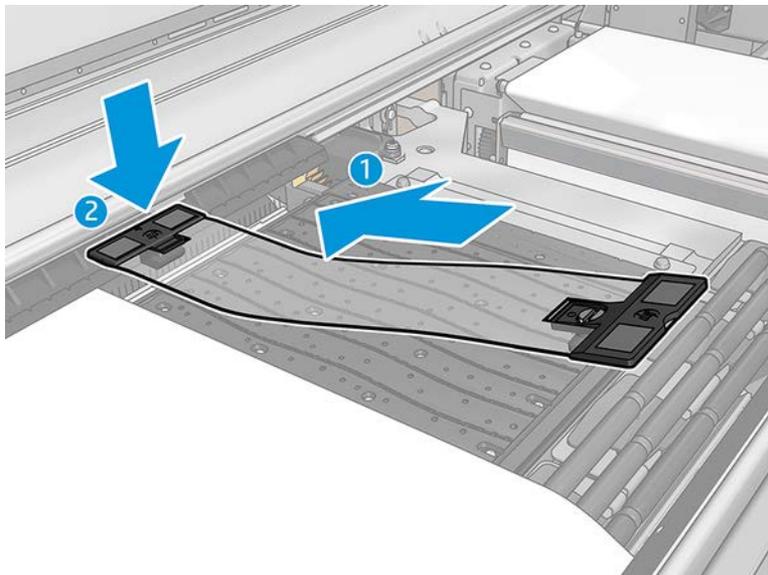
2. Attach other side of the edge holder in the space between the platen and diverter wheels, cover the edge of the substrate with it. Make sure that each edge holder is properly positioned and not bent as this could cause a carriage crash.
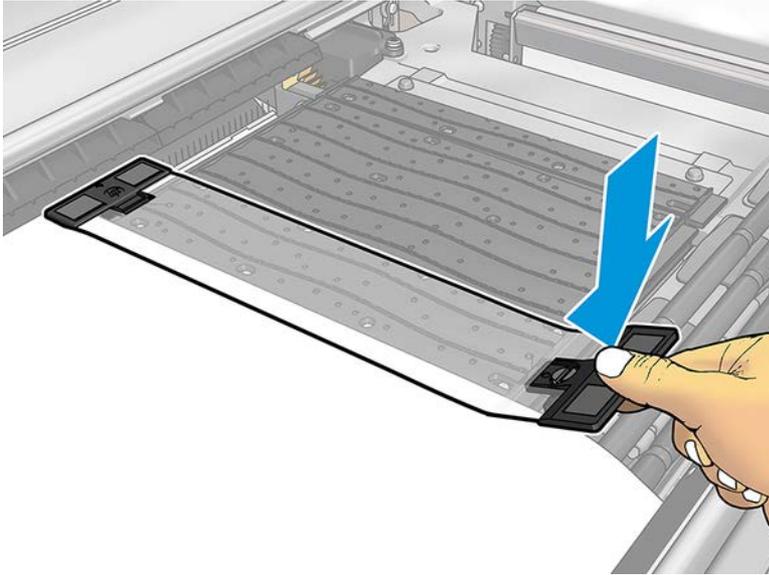
3. Turn the screw at the front part of the edge holder to fix it in place. If it interferes with the diverter wheels; move the edge holder slightly until a better position is found.
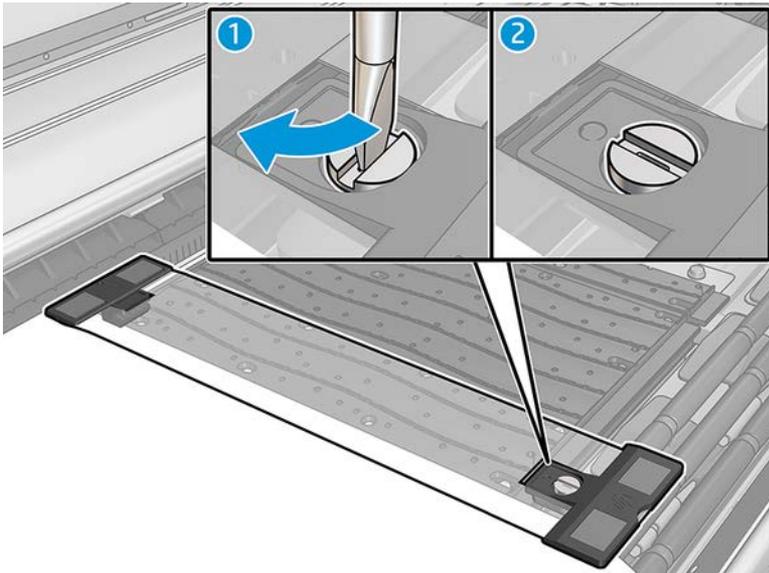
4. Ensure that the substrate is aligned with the edge holder.

⚠ CAUTION: Place the edge holder carefully. It should remain perfectly straight, otherwise it could damage the printheads and carriage.

📝 NOTE: If the edge holder interferes with a diverter wheel holder, move the edge holder slightly into a better position.

💡 TIP: Once installed, an edge holder cannot be slid sideways. If you want to move it sideways, you must remove it and reinstall it in the new position.

Replace an edge holder strip

Replacement edge holder strips come with the Cleaning Kit.

Replace the strip if it is broken (for example, by an impact) or deteriorated (for example, by accumulated ink).

1. If it is installed in the printer, remove the edge holder from the platen.

2. Remove the old strip and insert the new one.

3. Replace the edge holder on the platen, if you intend to use it.

Load a roll onto the spindle

Contact HP to know the recommended third party solutions for substrate lifter and core adaptors.

Single-roll printing

The spindle has a pneumatic connector at one end and a gear at the other.

1. Check that the gear is on the correct side.

2. Insert the spindle into the roll taking into consideration the winding direction.

    ☼ **TIP:** The spindle is quite heavy in order to ensure stiffness and so avoid skew and wrinkles, so two people are recommended for this operation.

3. Note the position of the end of the roll on the scale marked on both sides from the center of the spindle. The input and output rolls should be positioned identically on their respective spindles.
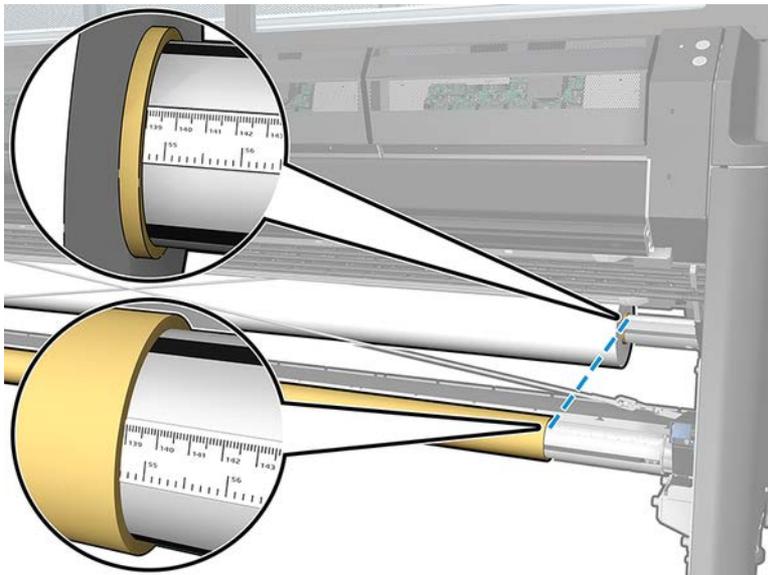
    ☼ **TIP:** The rolls should be centered to reduce the risk of skew, wrinkles, and telescoping.

    a. Off-centered:
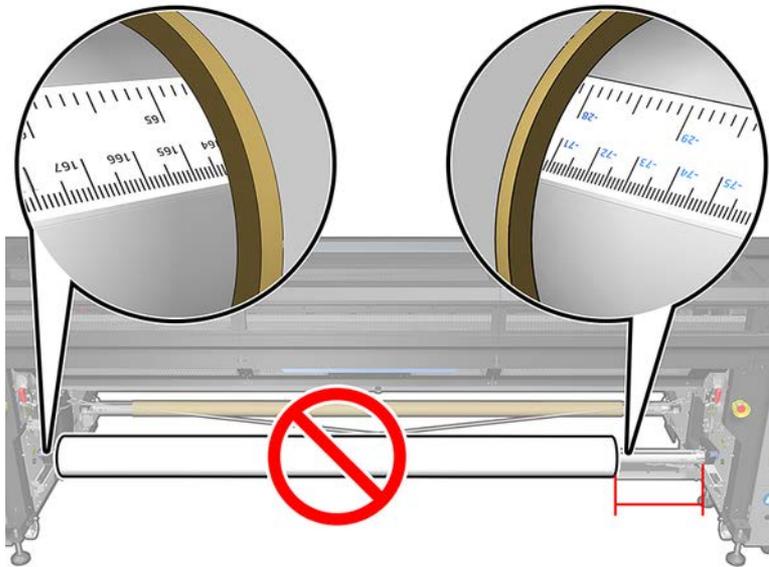
b. Centered:
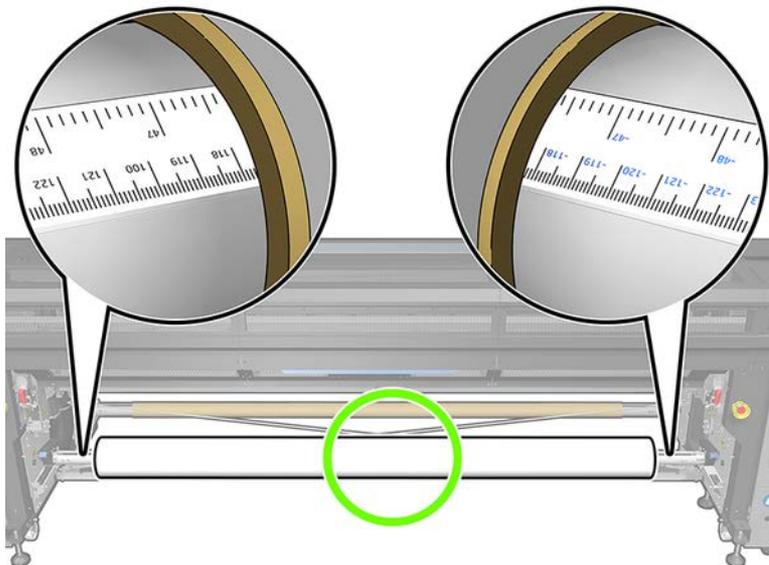
4. Connect the air gun to the pneumatic connector on the spindle, and inflate the spindle so that it cannot move inside the roll.

☼ **TIP:** Before inflating, use the pneumatic gun to blow air around the valve area to remove any dirt.

⚠ **WARNING!** The air gun provided with the printer is only intended to inflate the spindle. When recommended to use for cleaning purposes, make sure to do so according to local regulations since additional safety provisions may apply.

☼ **TIP:** If the substrate is telescoped on the input roll, there is a risk of substrate jams and damage to the printheads. Try to straighten the edges of the substrate to minimize telescoping on the input roll before loading it into the printer.

TIP: Check that the substrate is attached to the input core.

The roll is now ready to be loaded into the printer.

TIP: If you are a regular user of different substrate types, you can change rolls more quickly if you preload rolls of different substrate types on different spindles. Extra spindles are available for purchase.

Load a roll into the printer

The objective when loading substrate is to get a uniform tension across its width and length to minimize the risk of skew, wrinkles, and telescoping. There are different ways in which the substrate can pass through the printer:

- Roll-to-roll configuration
- Dual roll-to-roll configuration

Load a roll (roll-to-roll configuration)

The substrate roll is mounted on the input spindle (single or dual) and will be collected on the output spindle.

www.hp.com/go/Latex3000/Roll_to_Roll_loading

NOTE: This video applies to HP Latex 800, HP Latex 1500 and HP Latex 3x00 Series printers.

The substrate goes from the input spindle (1) over the main roller (2), over the platen (3), over the front diverters (4) and then to the output spindle (5).
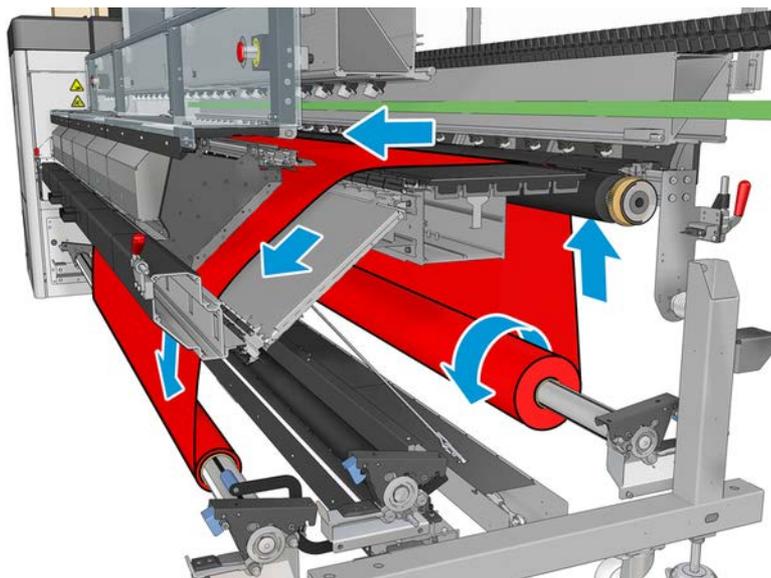
The above illustration shows the substrate loaded with the printed face outwards on both input and output rolls. You can also load substrate with the printed face inwards on either or both rolls, in which case the spindle will turn in the opposite direction. The printer asks you for the winding direction if it cannot detect it automatically.
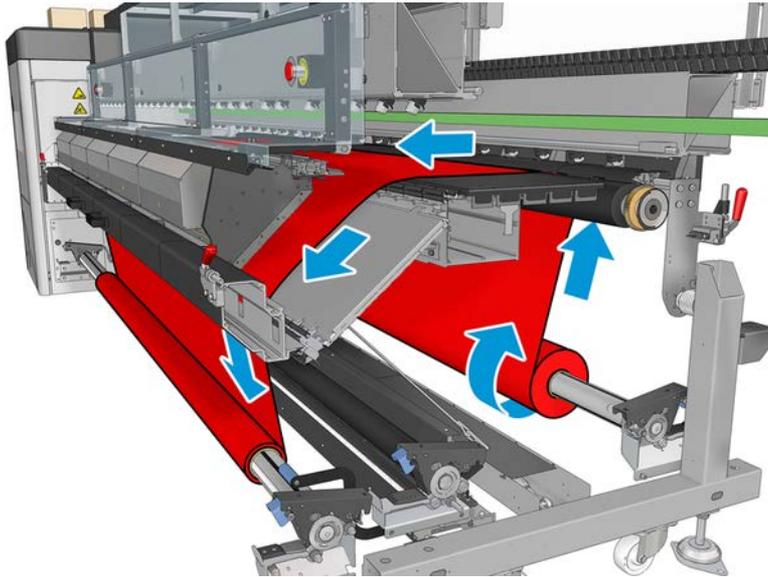
Each of the spindles has its own motor. The motors maintain tension on the substrate. Some vacuum is applied at the level of the platen to keep the substrate flat. The substrate is moved forwards by the drive roller motor, on which there is a pinch mechanism to prevent the substrate from slipping.

Before loading a roll into the printer, you must have a roll loaded onto a spindle (the input roll) and an empty core loaded onto another spindle (the output roll). See Load a roll onto the spindle on page 45.

📝 **NOTE:** For the output roll, use a single empty core the same length as the input core. Do not place two or more shorter cores on the same spindle, which could cause substrate-advance problems.

💡 **TIP:** The spindle and a roll of substrate can be heavy. You are recommended to use a forklift or some other equipment to move it into position; otherwise, lift one end into the printer, and then the other end.

Roll-to-roll configuration

The following steps provide the complete procedure for this topic.

1. Go to the Internal Print Server and select **Substrate Load/Unload**, then select the correct configuration.

2. In the Internal Print Server, choose from the list of substrate types the type that you have loaded.

3. If they are installed, remove the substrate edge holders from the print platen so that they do not get in the way while loading the substrate.

   ⚠️ **CAUTION:** Loading the substrate on top of the edge holders could severely damage the printheads and carriage.

4. Bring the new roll on its spindle to the rear of the printer, with the geared end of the spindle on the left.

5. Rest the ends of the spindle on the platforms provided at the rear of the printer; plastic pads are provided to absorb the impacts.

6. In the same way, load the spindle with the empty core into the front of the printer. In this case, the geared end of the spindle should be on the right.

Loading substrate

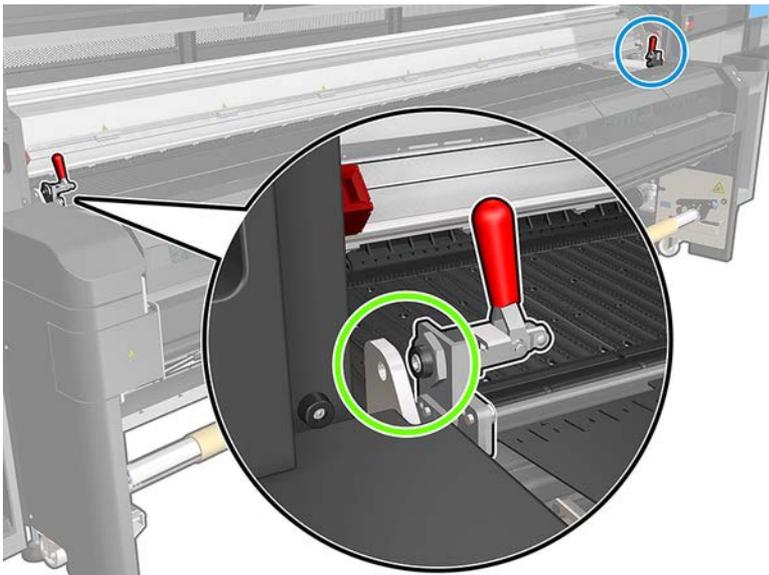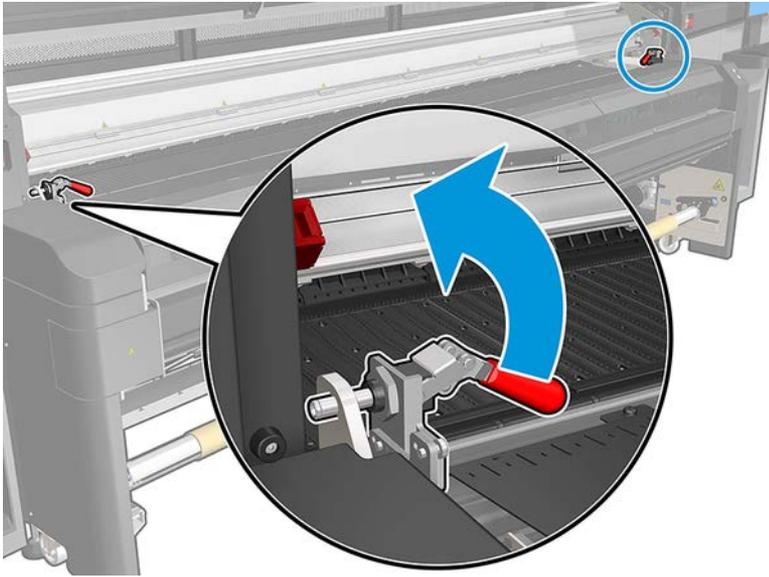The following steps provide the complete procedure for this topic.

1. Use the internal print server to raise the carriage beam to its loading position or start the loading process using the substrate paper button.
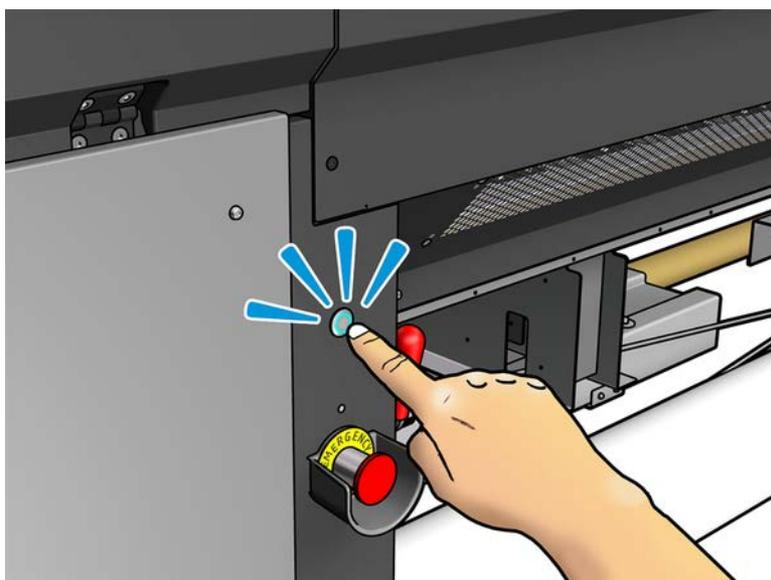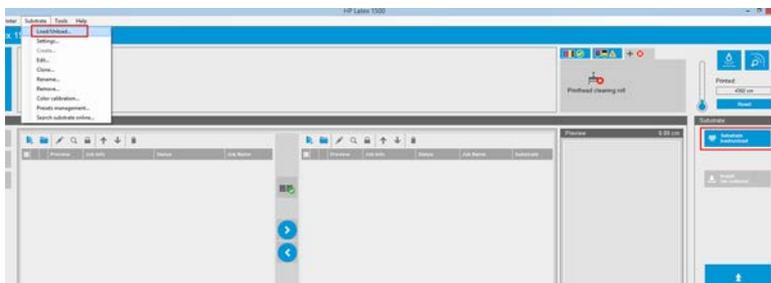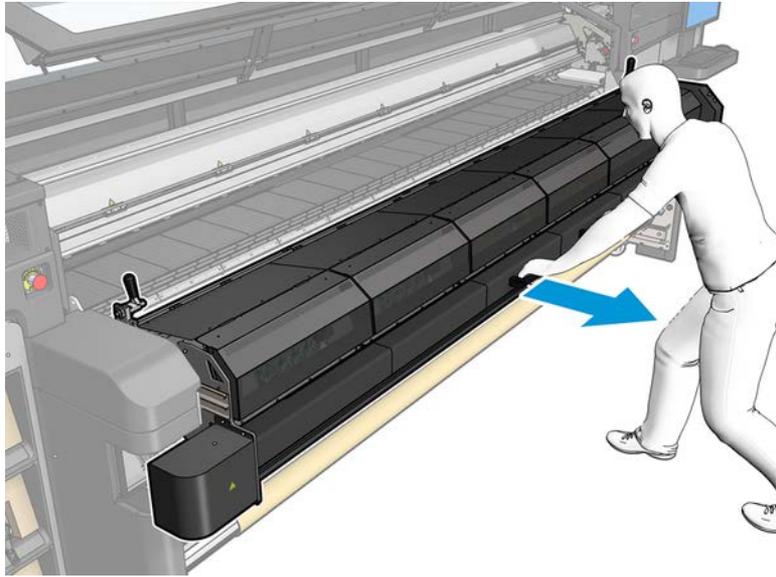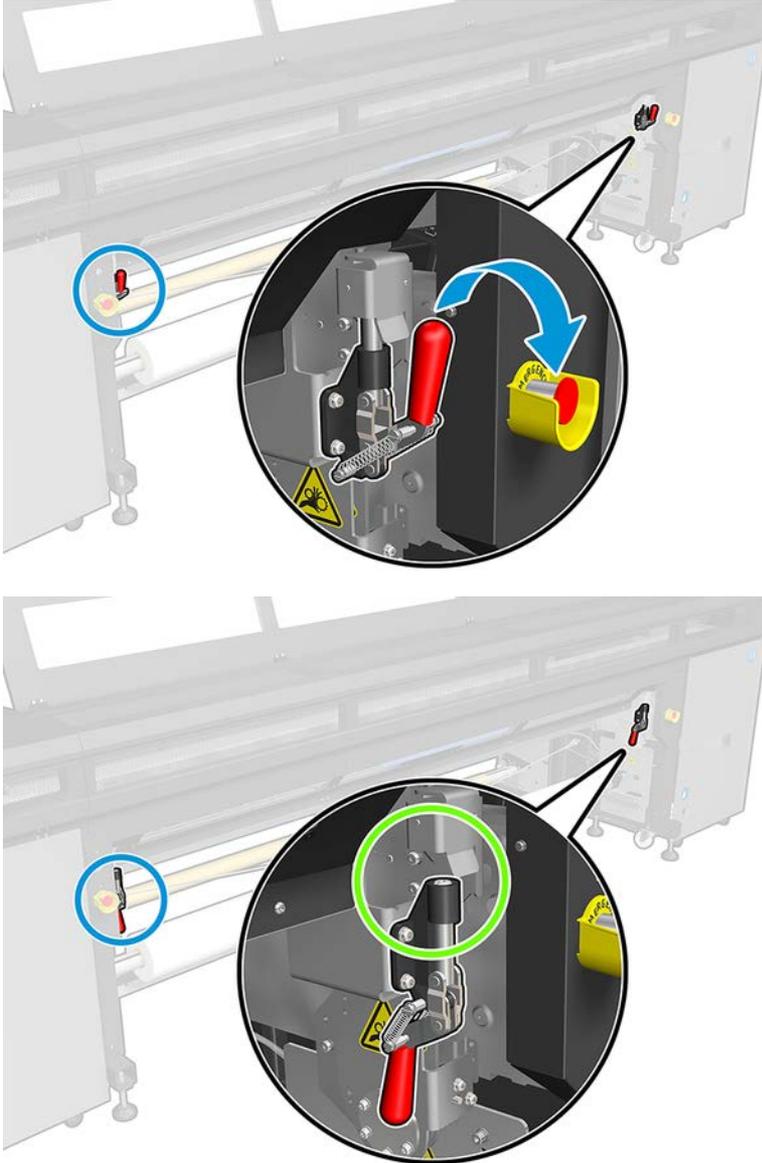

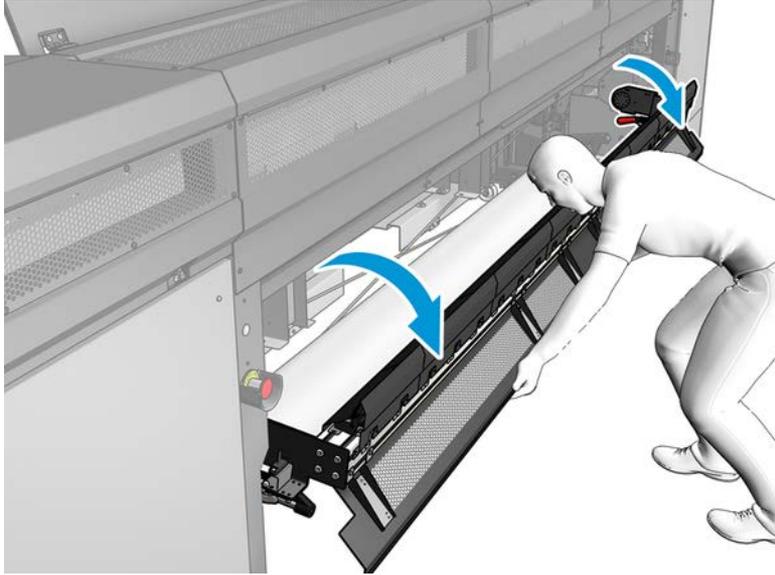2. Open the window.
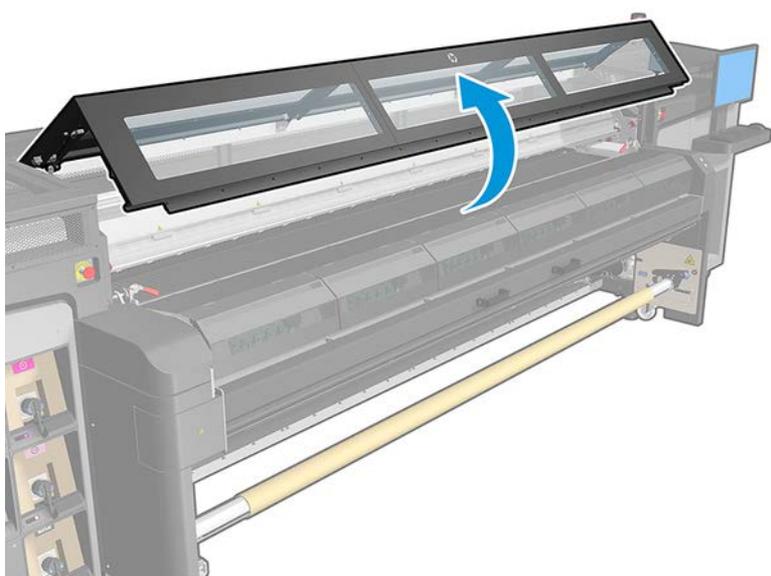
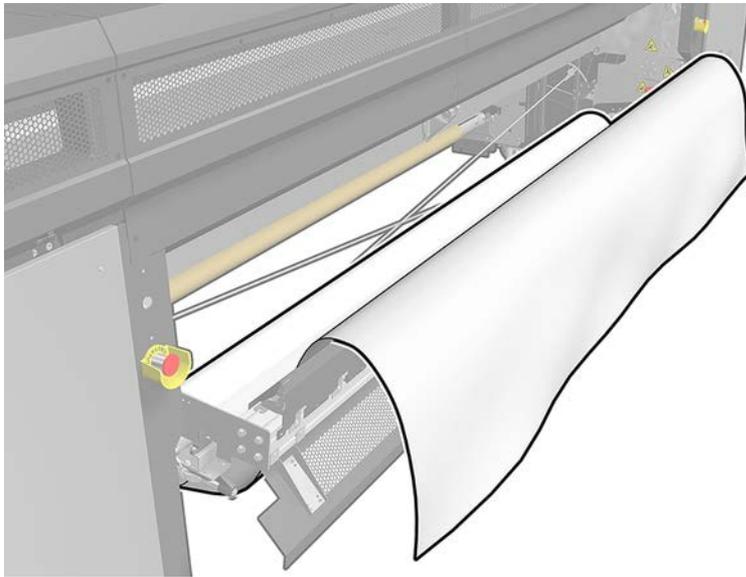**3.** Open the curing module latches.

4. Open the curing module.

5. Open the loading table latches.

6. Open the loading table.

7. Unwind a length of substrate.

8. Place it in the print zone.
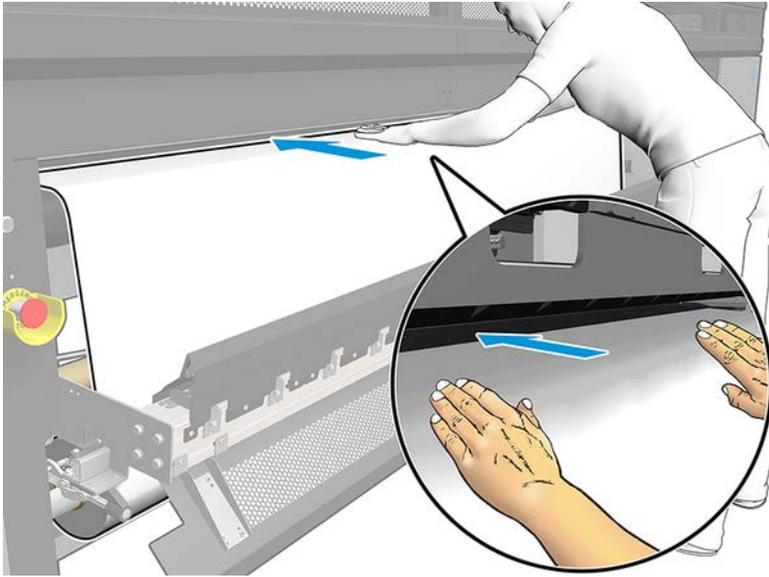
9. Push the substrate through the printer until it reaches the output spindle.

10. If the substrate saver is required, install it now. See Substrate saver on page 163.

11. Align the substrate by checking that the substrate edge is in the same position on the input and output spindles. This can be done by using the rulers on the spindles or by measuring the distance between the right edge and the side plate.

12. When the substrate is evenly tensioned and flat (no wrinkles or bumps), attach it to the empty core with adhesive tape. Tape it first in the center, and then at the left and right sides, making sure not to pull the substrate excessively or leave it wrinkled.
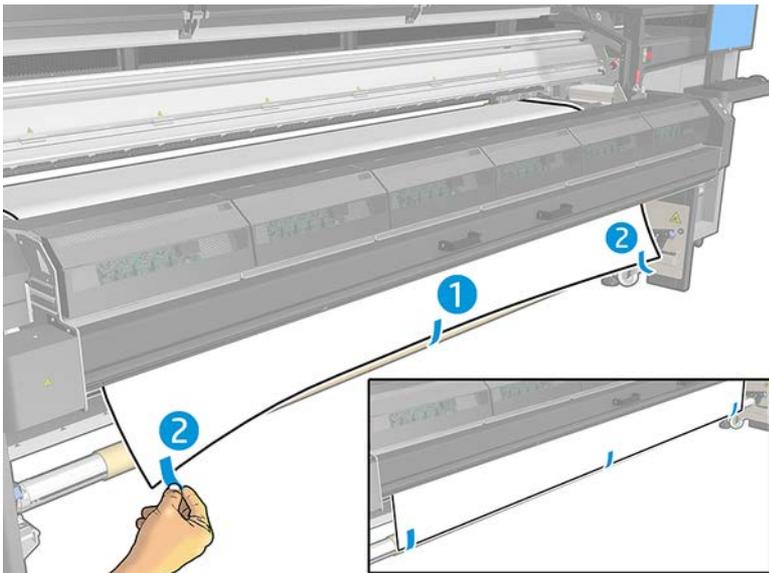
13. Close the window and the curing module.

14. Close the loading table.

15. If you are using the substrate edge holders, place them on the platen before closing the window.

16. Use the Internal Print Server to lower the carriage beam to its printing position.

17. Go to the Internal Print Server and press the **Finish** button. The printer rotates both rolls to check their diameters, and it also checks the width of the roll, the winding direction, the vacuum, and the substrate advance calibration (this takes about a minute).

    📝 **NOTE:** Some substrates (such as transparent substrates) cannot be measured by the printer in this way. In such cases, you will be asked to enter the Left Edge and Width fields yourself into the Internal Print Server. Use the ruler on the spindle to check these values.

18. An alert about substrate-advance tracking may appear at this point. For more information on when you might want to turn off automatic tracking, see Substrate-advance compensation on page 148.

The printer is now ready to print.

Load a roll (dual roll-to-roll configuration)

The two substrate rolls are mounted on the rear dual-roll spindle and will be collected on the front dual-roll spindle.

www.hp.com/go/Latex3000/Dual_roll_loading

📝 **NOTE:** This video applies to HP Latex 800, HP Latex 1500 and HP Latex 3x00 Series printers.
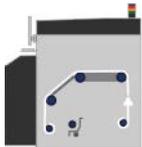
The substrate goes from the input spindle over the main roller, over the platen, over the front diverters and then to the output spindle.

📝 **NOTE:** When using dual rolls, you have to use the roll-to-roll configuration as it is the only configuration supported.
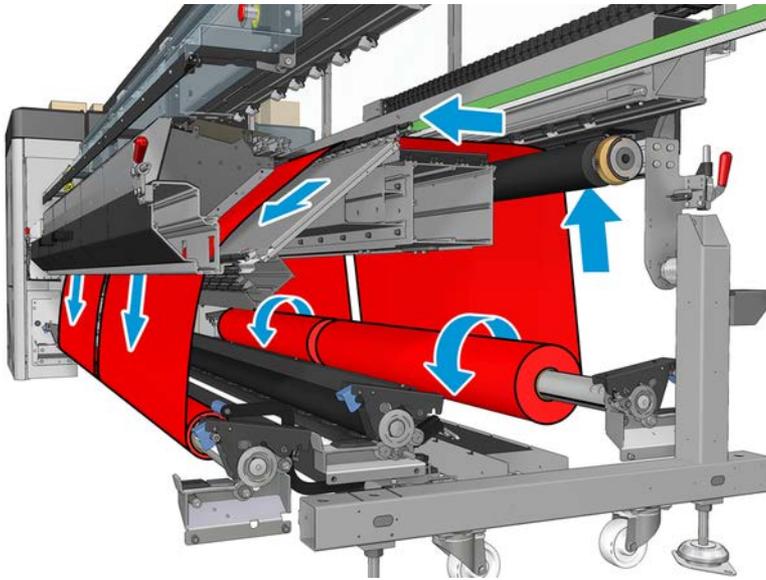
You can load substrate with the printed face inwards or outwards on the spindle, in which case the spindle will turn in the opposite direction. The printer asks you for the winding direction if it cannot detect it automatically.
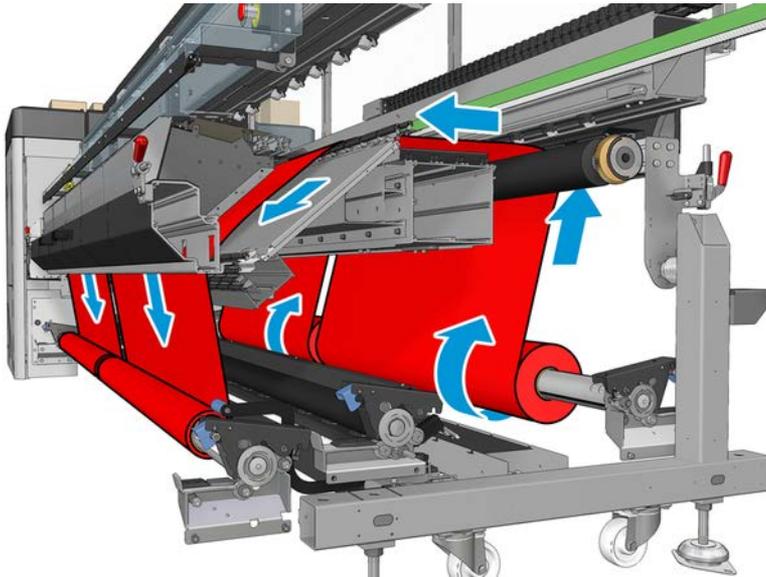
Before loading two rolls into the printer, you must have both rolls loaded on the rear dual-roll spindle and two empty cores loaded on the front dual-roll spindle. See Load a roll onto the spindle on page 45.

If the rolls are of unequal lengths, the longer roll should be on the right as seen from the front of the printer; on the left as seen from the rear. That way, when the shorter rolls runs out, you can continue printing on the other roll.
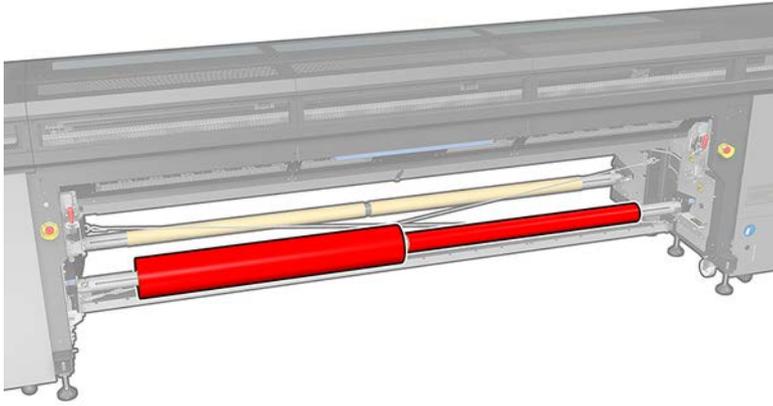
📝 **NOTE:** When one roll runs out, you should lock the differential in the middle of the spindle, using the lever on the left-hand side.

Dual roll-to-roll configuration

The following steps provide the complete procedure for this topic.

1. Go to the Internal Print Server and select **Substrate Load/Unload**, then select the correct configuration.

2. In the Internal Print Server, choose from the list of substrate types the type that you have loaded.

3. If they are installed, remove the substrate edge holders from the print platen so that they do not get in the way while loading the substrate.

    ⚠ **CAUTION:** Loading the substrate on top of the edge holders could severely damage the printheads and carriage.

4. You may find it helpful to lock the differentials on the input and output spindles while loading.
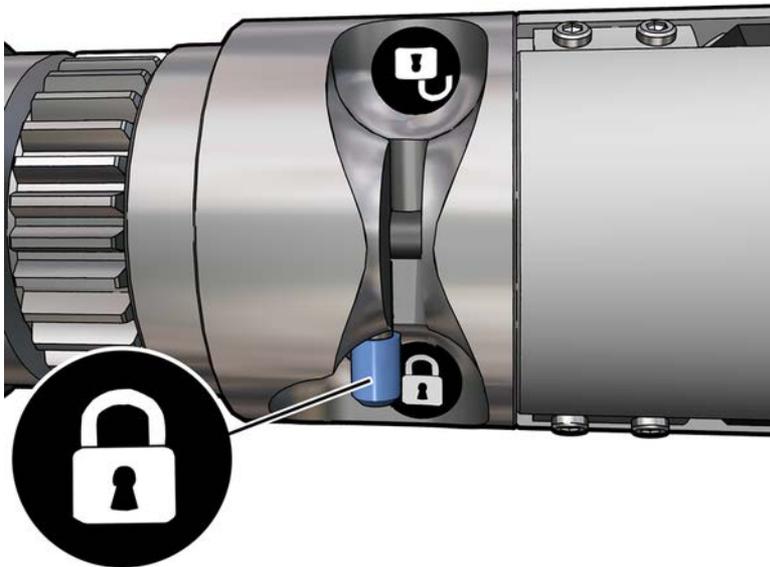
5. Rest the ends of the spindle on the platforms provided at the rear of the printer; plastic pads are provided to absorb the impacts.

6. In the same way, load the spindle with the empty cores into the front of the printer. In this case, the geared end of the spindle should be on the right.

7. If you intend to use the Dual Roll Center Supports, install them now, for both input and output spindles, and move them up to their calibrated positions to ensure that the substrate is later brought to the output spindle and properly wound. See Dual roll-to-roll configuration on page 57for more information.

⚠ CAUTION: The calibrated position should be set following the instructions provided with the accessory (see Calibrate the dual-roll center support on page 373). An incorrect position could cause the carriage to crash (see There are wrinkles and ink smears on the substrate on page 369).

Manual loading

Assisted loading is not recommended in a dual-roll configuration.

1. Use the Internal Print Server to raise the carriage beam to its loading position or use the physical button.

2. Open the front door and the curing module.

3. Open the loading table.

4. Unwind a length of substrate from the first input roll and place it in the print zone.

5. Push the substrate from the first roll through the printer until it reaches the output spindle.

6. Unwind a length of substrate from the second input roll and place it in the print zone.

7. Push the substrate from the second roll through the printer until it reaches the output spindle.

8. Align the substrate by checking that the substrate edge is in the same position on the input and output spindles. This can be done by using the rulers on the spindles or by measuring the distance between the right edge and the side plate.

📝 NOTE: You are recommended to align the edges of both rolls by the lines on both sides of the spindle's center mark.

📝 NOTE: The substrate-advance sensor must be covered by the substrate (from 252 to 310 cm on the ruler).Inline measure markup needed


9. When the substrate is evenly tensioned and flat (no wrinkles or bumps), attach it to each empty core with adhesive tape. Tape it first in the center, and then at the left and right sides, making sure not to pull the substrate excessively or leave it wrinkled.

10. If you are using them, place the four substrate edge holders into position and attach them at the front.

☀ **TIP:** When aligning the roll edges with the marks on the dual-roll spindle, the center edge holder (if needed) is shared by both rolls. If you position the rolls differently, and you are using edge holders, take into account the distance required for the edge holders.

11. Close the front door and the curing module.

12. If you are using them, attach the substrate edge holders.

13. Close the loading table.

14. Ensure that the spindle differentials are unlocked.
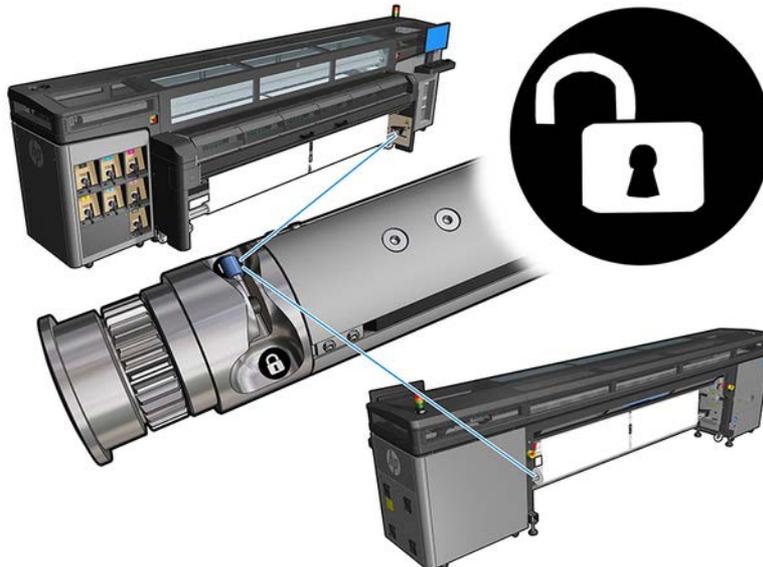
15. Use the Internal Print Server to lower the carriage beam to its printing position.

16. Go to the Internal Print Server and press the **Finish** button. The printer rotates the rolls to check their diameters, and it also checks the width of the roll, the winding direction, the vacuum, and the substrate advance calibration (this takes about a minute).

NOTE: Some substrates (such as transparent substrates) cannot be measured by the printer in this way. In such cases, you will be asked to enter the Left Edge and Width fields yourself into the Internal Print Server. Use the ruler on the spindle to check these values.

17. An alert about substrate-advance tracking may appear at this point. For more information on when you might want to turn off automatic tracking, see Substrate-advance compensation on page 148.

18. For more information on when you might want to change the carriage beam position, see Substrate tips on page 37.

The printer is now ready to print.

Double-sided printing

Selecting the double-sided printing option will provide you with guidance and help specific to double-sided printing during the load process.

Blockout (opaque substrate)

Double sided printing is designed for single jobs with multiple copies, it does not work properly with multiple jobs.

The roll-to-roll configuration is recommended for double-sided printing. You cannot perform double-sided printing if the dual-roll spindle is in use.

A double-sided job must be defined as a pair of images.

- Side A is the first image to be printed.

- Side B is the second image to be printed, on the reverse of Side A.

On Side A, after each row of images a black continuous line called a "registration line" is automatically printed: (a) and (b) below. These registration lines are used while printing Side B to minimize any registration errors in the direction of substrate movement.

When the whole of Side A has been printed, a space (c) is normally left blank for calibrations (the substrate is already warmed up), and a further space (d) is left blank so that the substrate can be loaded for printing Side B. However, these blank spaces are optional: you can turn them off.
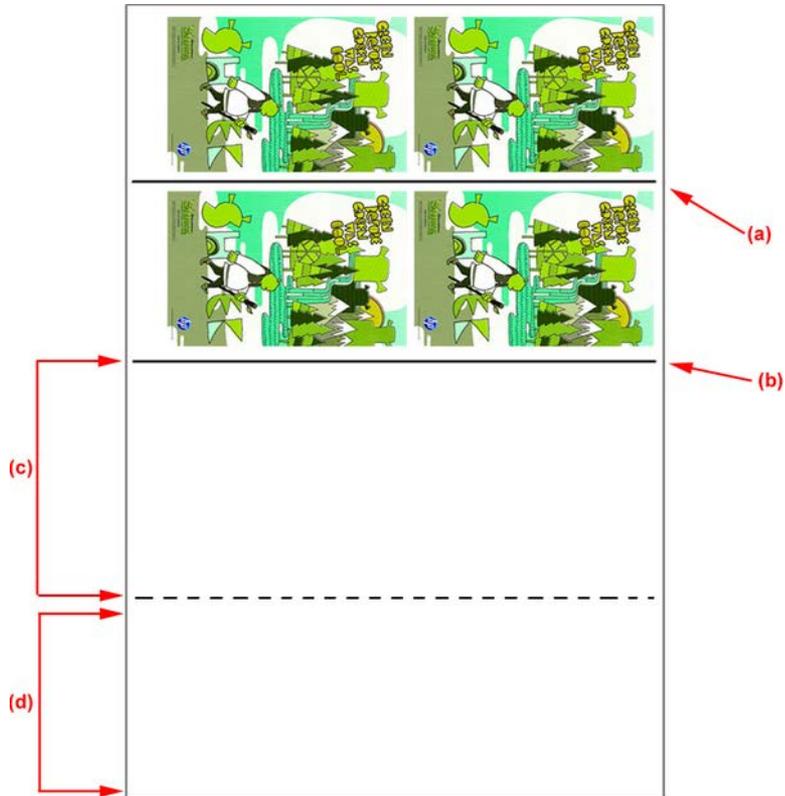
Side A: Load and print

The following steps provide the complete procedure for this topic.

1. Load the roll-to-roll configuration: see Load a roll (roll-to-roll configuration) on page 47.

    📝 **NOTE:** The dual-roll spindle cannot be used while printing double-sided jobs.

2. Define side A preferences (see Double-sided on page 95) and select the **Print** button.

3. Before unloading the substrate, select the **Substrate load/unload** button in the IPS, select **How to unload side A**, and follow the on-screen instructions.
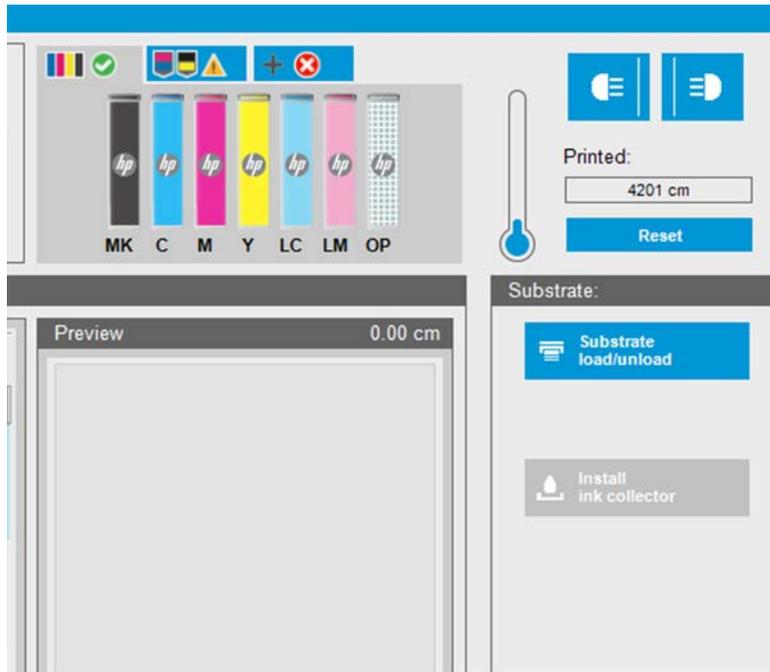
📝 NOTE: Jobs must be defined for double-sided printing, side A and side B, this information is available while a job is printing in Print Properties.

📝 NOTE: Selecting the check boxes **Side B: loading space** and **Side B: Calibration space** is highly recommended, see Define double-sided job on page 96.

Side A: Unload

The following steps provide the complete procedure for this topic.

1. Cut the substrate close to the input roll.
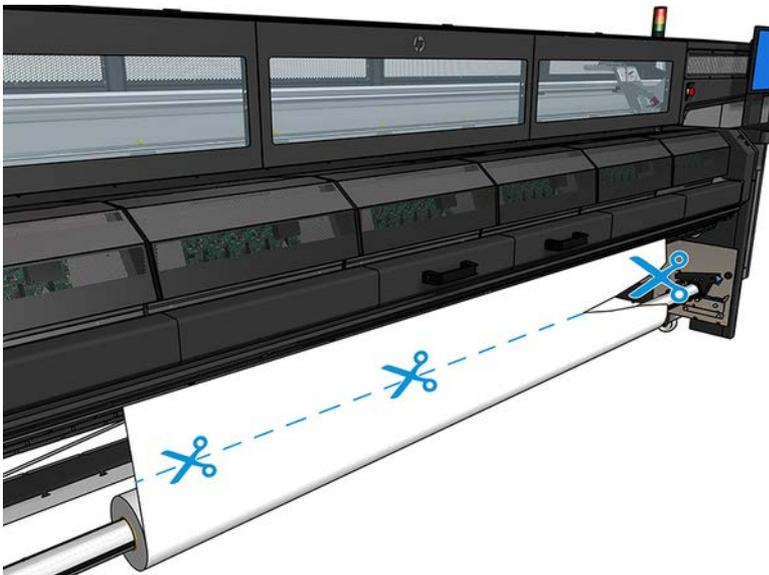
2. Collect the substrate onto the output spindle. Check the substrate is collecting correctly on to the spindle to avoid telescoping.
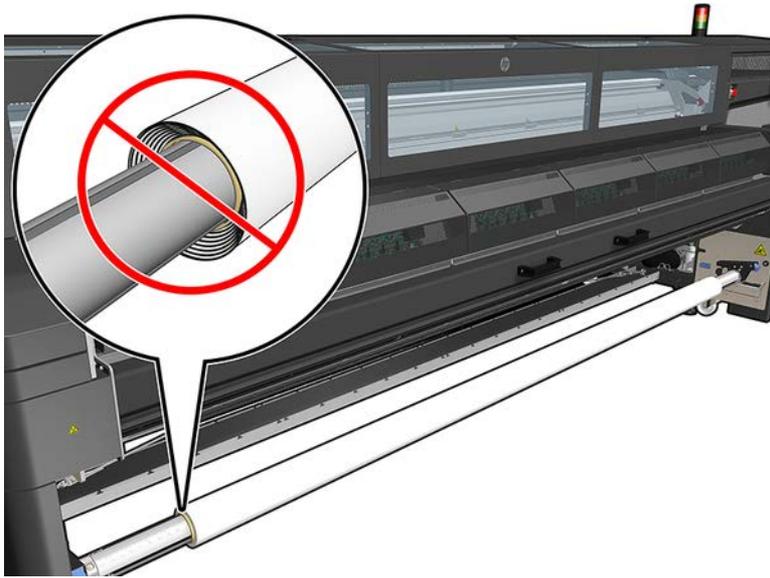
3. Remove the input spindle.

4. Remove the output spindle (1), carry it around to the input side with the same orientation (2) and install it into the input position (3). **Maintain the same orientation:** Left edge always on the left, as indicated below with the colors blue and red.
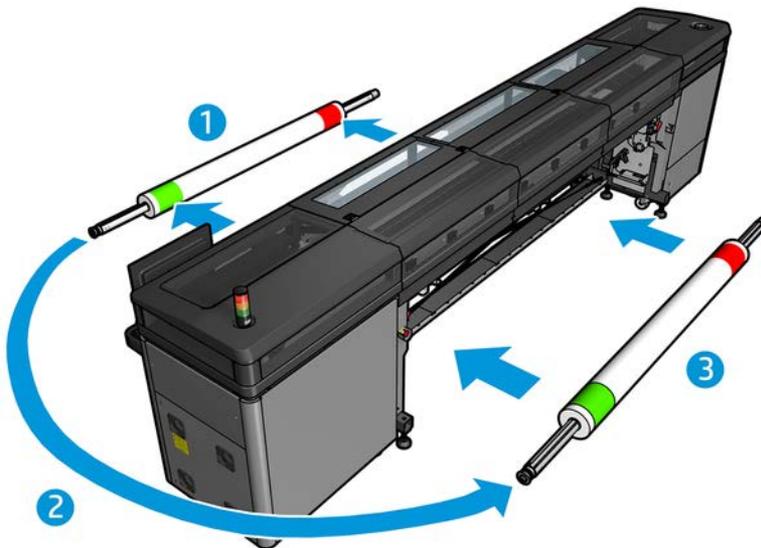
5. When completed, click **Done** in the IPS window to confirm.

Side B: Load and print

The following steps provide the complete procedure for this topic.

1. Load roll-to-roll configuration: see <u>Load a roll (roll-to-roll configuration) on page 47</u>.

NOTE: By default the left edge of the substrate is detected to minimize registration errors along the scan axis when printing double-sided. When printing on translucent substrates or types of substrate with irregular edges you can disable this option by clicking **Double-sided substrate edge detection**.
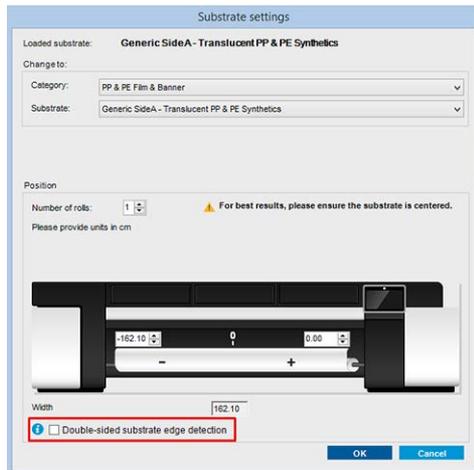
2. Align the registration line with the beginning of the platen.

   ● If Side B: Calibration space was selected, align the dotted line.
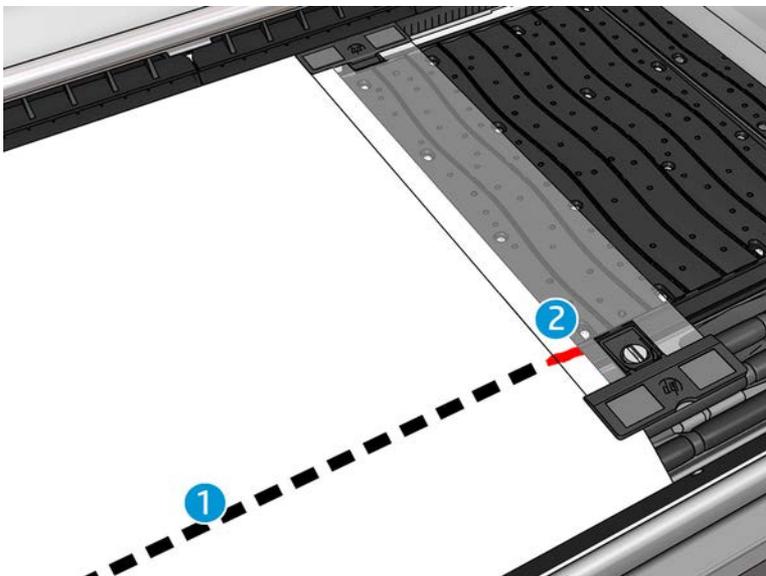
- Align the registration line (continuous line).
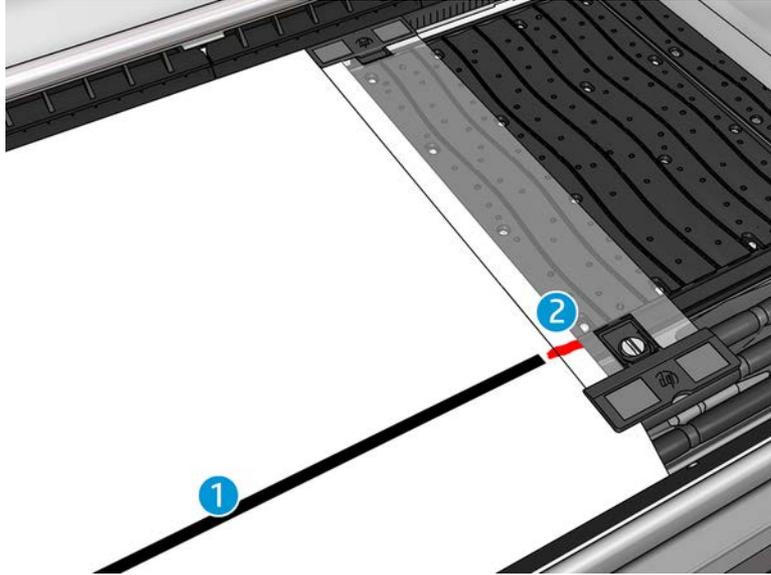
NOTE: To help make the alignment we recommend making a mark with a pen or pencil at the registration line (1), but on Side B (2). **Do not** make a mark by cutting with scissors as this can cause the substrate to come into contact with the printheads.

3. Define Side B (see) and press the **Print** button.

NOTE: Before pressing **Print**, ensure that the correct side is selected.

The printer will automatically detect the registration line and the Side B image will be positioned to minimize registration errors. This detection occurs automatically after each row detected and an adjustment is made accordingly.

4. Unload the roll.

Print a double-sided job with dual-roll

You can also print side A of a double-sided job with dual rolls. To print side B, each roll has to be printed one at a time.

IMPORTANT: See for information on appropriate dimensions of substrate rolls.

1. When you have printed all jobs on side A, make a small mark on the registration line so that it can be aligned later with the platen.

NOTE: When loading side A, check the **Dual roll** and **Load side A** boxes.

2.	Cut the substrate on the output side, near the spindle.

📝 NOTE:	Before unloading the substrate, select the **Substrate load/unload** button in the IPS, select **Unload side A** (opaque substrate).
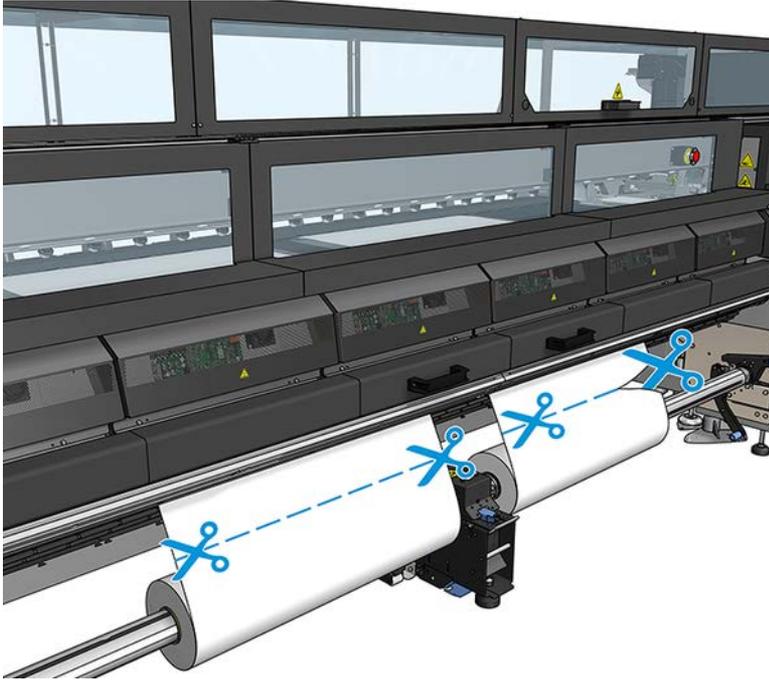
3.	Put one of the two already-printed rolls onto a single spindle and place it in the input position. It is important that substrate orientation remains the same.
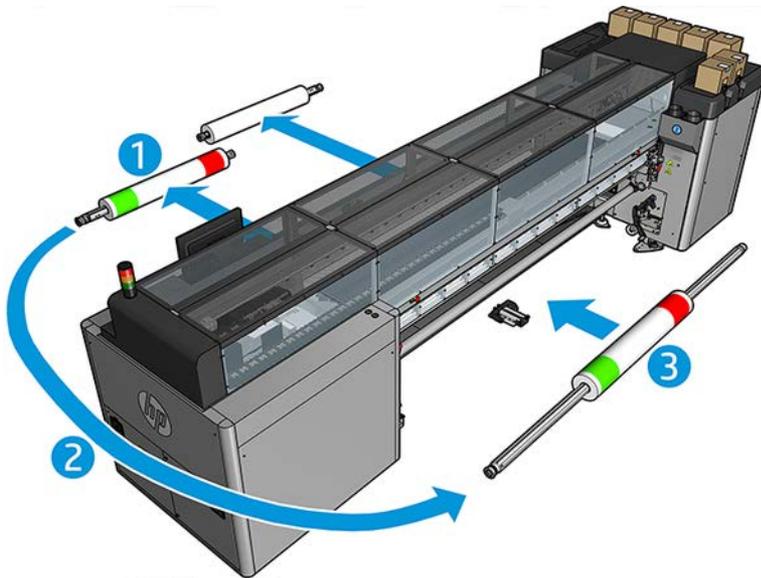
4. Once side B is on the first roll, put the second roll onto the single spindle and print side B. Again, it is important that substrate orientation remains the same.
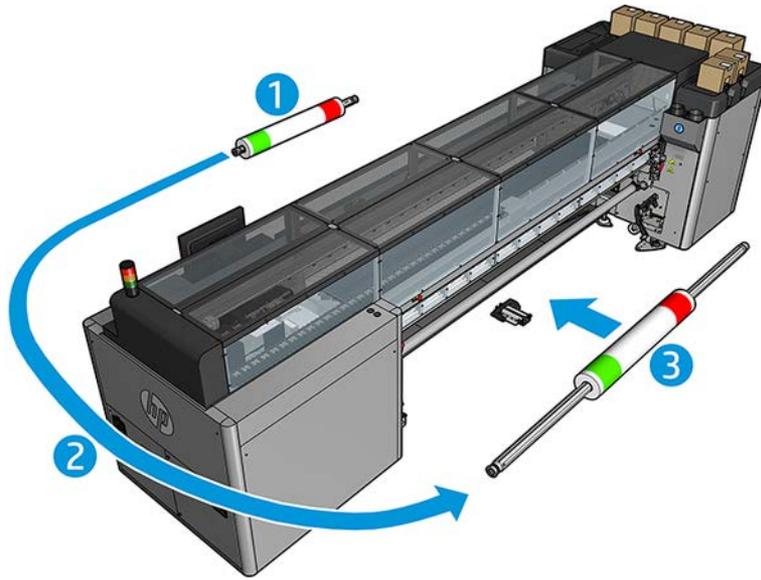
View information about the loaded substrate

Information about the loaded substrate is displayed at the bottom of the main screen of the Internal Print Server.

To see more information, select the **Substrate** menu and then **Settings**.

Unload a roll

Contact HP to know the recommended third party solutions for substrate lifter and core adaptors.

1. Check that the printing is not printing.

2. Go to the Internal Print Server and select **Substrate Load/Unload**.

3. Lift the loading table latches at the rear of the printer.

4. If you need to raise the carriage beam, go to the Internal Print Server and select **Carriage beam position** > **Move to substrate load position**. The printer raises the carriage.

☼ **TIP:** This step is optional. It may be feasible to unload some substrates without raising the carriage beam.

5. When the carriage has been raised, cut the substrate

6. Wind the substrate manually onto the output roll.

7. Open the two latches at each side of the spindles.

8. Remove the output roll from the printer.

9. Press the valve to deflate the spindle and remove it from the roll.

IMPORTANT: When you press the spindle valve, make sure nobody else is touching the spindle/roll to minimize the risk of trapping a finger between any spindle component and the roll.

10. Rewind the substrate manually onto the input roll.

11. Open the two latches at each side of the spindles.

12. Remove the input roll from the printer.

13. Press the valve to deflate the spindle and remove it from the roll.

IMPORTANT: When you press the spindle valve, make sure nobody else is touching the spindle/roll to minimize the risk of trapping a finger between any spindle component and the roll.

The printer is now ready for new input and output rolls to be loaded.

If you need more information about how to load/unload a roll, see Dual roll printing on page 157 for dual-roll.

Output platen light

The output platen light illuminates both the platen and the job that is being printed. It can be switched on and off manually.
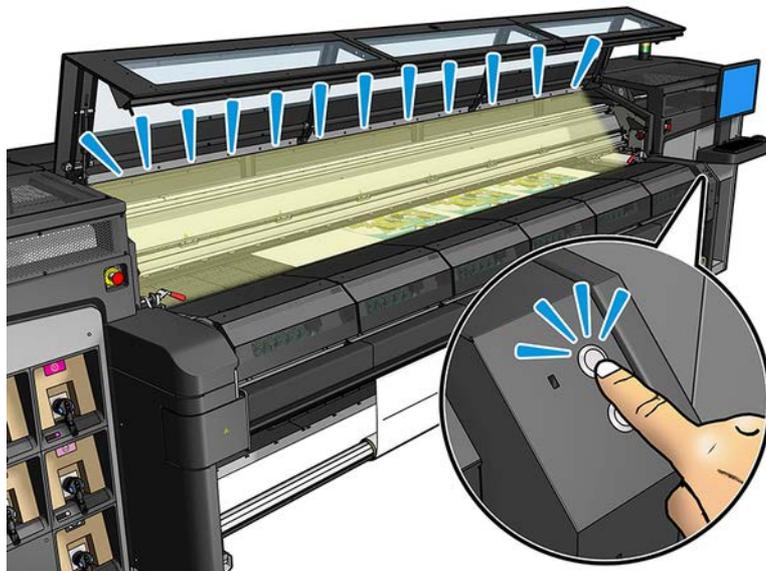
Table 5-2 Warning

Be aware:
Risk of burns

For more safety information, see Safety precautions on page 2

Substrate presets

Each supported substrate type has its own characteristics.

For optimum print quality, the printer changes the way it prints on each different substrate type. For example, some may need more ink and some may require higher temperatures for drying and curing. So the printer must be given a description of the requirements of each substrate type. This description is called a substrate preset. The printer is supplied with substrate presets for some specific substrate types, and also with presets for some generic types. As it is inconvenient to scroll through a list of all substrate types available, your printer contains substrate presets for only the most commonly used substrate types.

You can check substrate availability from the Online substrate manager on page 83.

To install a new substrate preset without .oms, go to the Internal Print Server and select **Substrate** > **Search substrate online**, then search for your specific substrate file and click the **Down arrow** of the Status column.

To install a new substrate preset that you have downloaded, go to the Internal Print Server and select **Substrate** > **Presets management** > **Import label**, then search for your **.oms** file and click **Update**. You can also export substrate presets using **Export label**.
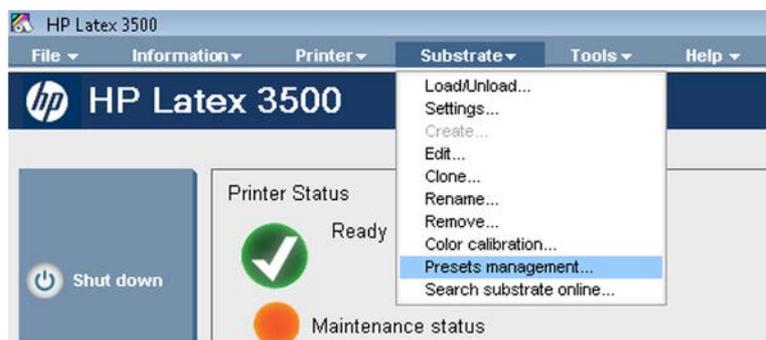
Export multiple presets

Multiple substrate presets can be exported together in a single .oms substrate file.

How to export multiple substrate presets

The following steps provide the complete procedure for this topic.

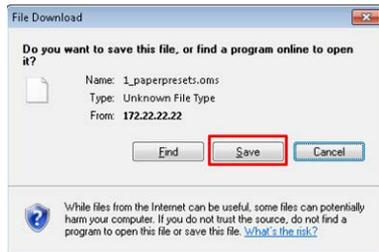1. Via the IPS, select **Substrate** > **Preset management**.

2. Go to the **Export** tab, select all the substrates to export, and click **Export**.

📝 **NOTE:** This functionality allows up to 120 substrate presets to be exported at once.
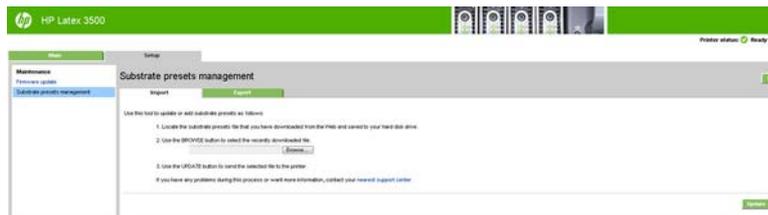
3. A window pops up asking to save the generated .oms file. Click **Save** to continue.

How to import the generated .oms file

The following steps provide the complete procedure for this topic.

1. Via the IPS, select **Substrate** > **Preset management** > **Import**.

2. Browse to select the **.oms** file (in this case '1_paperpresets.oms') and click **Update**.

3. When the **.oms** file has been imported, the following information is displayed:
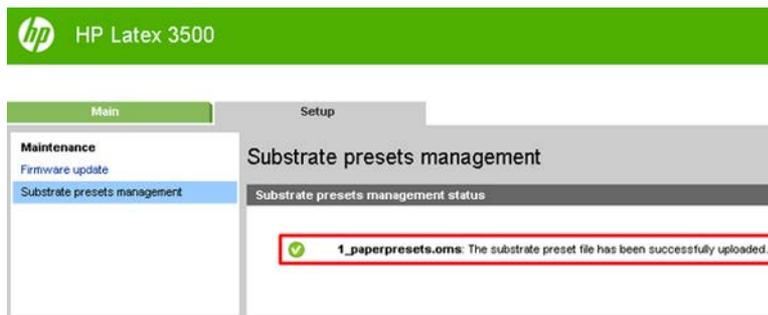
Use a new substrate

Whenever you load a new substrate type into your printer, you must choose a substrate preset for it.

1. If no specific preset for that substrate appears in the list, check the <u>Online substrate manager on page 83</u> in case a preset for your substrate is available there. Alternatively, get the specific preset from your substrate reseller or the substrate manufacturer.

2. If no specific preset is available, try using a generic preset in the same substrate category.

3. If you are not satisfied with the results, use the Add New Substrate wizard to create a new preset for your substrate. See <u>Create a new substrate preset with the Add New Substrate wizard on page 74</u>.

4. For full control of your preset, clone a generic preset (or the preset obtained from the Add New Substrate wizard) and adjust the settings manually. See <u>Edit a substrate preset on page 76</u>. This is recommended for advanced users only.

5. Tiling optimization for a new substrate. To optimize tiling performance, create a new substrate via the IPS, **Substrate** > **Optimize for tiling**.

Optimize for tiling

Optimize for tiling improves color consistency, specifically for tiling applications within a printer, within a single job, and within the same substrate roll.

It also:

- Creates a new substrate structure, based on existing ones, with tiling specific optimizations.

- Reduces color variations during long printing to maximum color difference (95% of color) <=1 dE 2000 in Tiling mode.

- Has a workflow to create substrate optimized for tiling based on customer substrate.

- An automated introduction of preparation plot and color bars to plot stream to stabilize system during long runs.

It is/does not:

- A printer to printer color consistency solution.

- Does not modify existing print modes or substrate.

It only supports the following print modes:

- 8p 70% – 120%

- 10p 70% – 130%

- 14p 70% – 140%

1. Select **Substrate** > **Optimize for tiling**, then select the required substrate from the list.

NOTE: Only substrates that can be optimized for tiling appear in the list. Supported types are: front-lit substrate, vinyl, wallpaper and PVC banner. Substrates that have been converted as optimized for tiling will not appear.
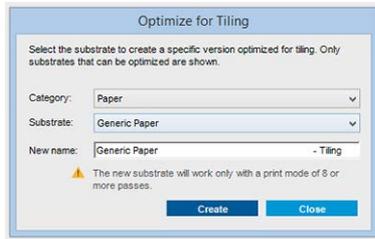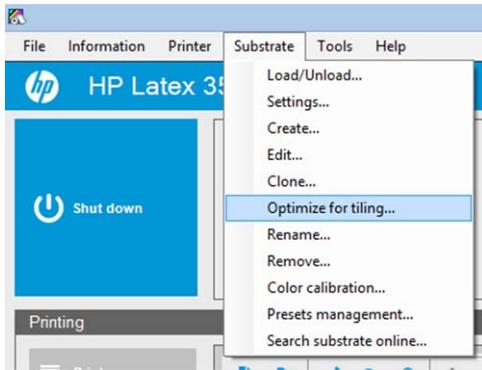
NOTE: A **Tiling** suffix is added to the name of the substrate, you edit the name, but you cannot erase the suffix.

2. A warning about the solution space change in the new substrate appears, click **OK**.

3. A window appears to recommend the CLC to select before the first time the substrate is used.

4. **System Preheat** is automatically checked for the selected tiling substrate, it is greyed out in the window, and cannot be unchecked. Only the recommended solution space, (number of passes and ink levels) appears in the tiling window.
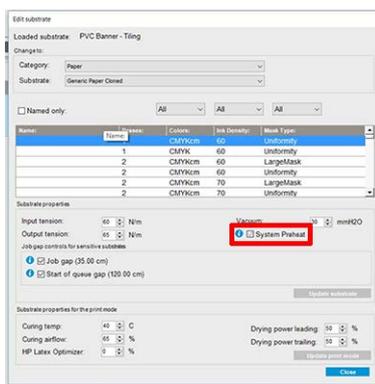
NOTE: If the paper mode from the original substrate is not within the recommended solution space, it is deleted from the list. If the existing paper modes have been deleted during creation, a recommended paper mode is automatically added.

5. During creation, the CLC color reference is reset and the status appears as **Color reference not set** in the IPS.

> **NOTE:** After creation, a CLC is required to create the reference for future color calibration. A warning window appears straight after substrate creation. You can create an ICC profile from the RIP and manage the substrate as normal from this point on.

6. A beginning of job preparation plot (A) and sideway color bars (B) are automatically added.
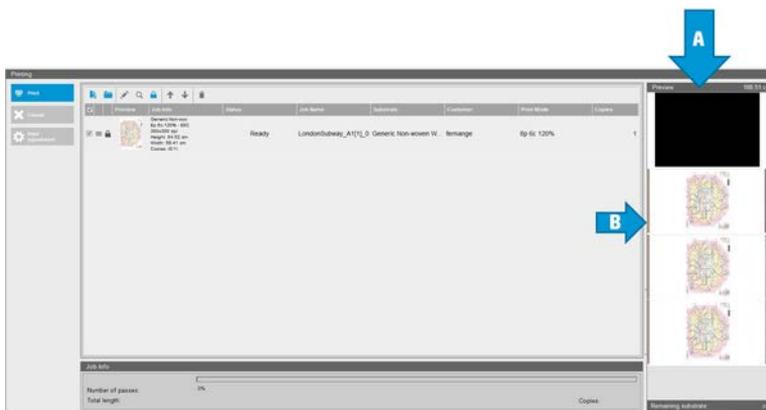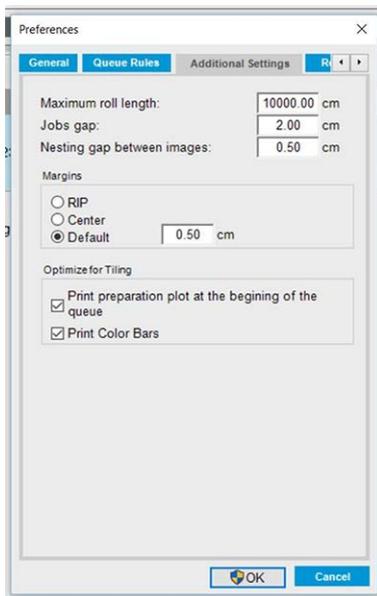
> **NOTE:** When tiling optimized substrate is loaded, the specific workflow changes and beginning of job preparation plot and sideway color bars are automatically introduced. Workflow for non-optimized substrates is not affected.

7. Substrate can be exported from one printer to another.

IMPORTANT: Tiling substrates can only be imported with the latest firmware. See .

Prepare the printer for a new substrate

The following steps provide the complete procedure for this topic.

1. Whenever possible, try to ensure that your printer is in an optimum state before you create a new preset: run any pending maintenance task, in particular printhead checks and alignment.

2. Stop the print queue and wait for the printer to finish the current job. No jobs should be sent to the printer until the new substrate preset is complete.

3. Load your new substrate. The process of loading a substrate into the printer has been designed to be completely independent of the substrate type. When loading, follow the correct procedure and ensure that the roll width is specified, either automatically by the printer or by yourself. You may not experience the best possible results if there are significant differences between the specified and the actual roll width.

   NOTE: You are recommended to use the roll-to-roll configuration when creating a new preset.

4. Choose a suitable carriage beam printing position: see .

Create a new substrate preset with the Add New Substrate wizard

The Add New Substrate guides you to work out the best settings for your substrate. It first requests some information about the substrate and your intended use of it, then prints some test prints and asks you to evaluate them. From this information, it creates the new preset.

To use the wizard, first ensure that the new substrate is loaded in the roll-to-roll configuration, then go to the Internal Print Server, select the **Substrate** tab, and then **Create**.

Material

The first question from the wizard asks for the primary material of which your substrate is made.

- **Self-Adhesive Vinyl** includes cast self-adhesive vinyl, calendered self-adhesive vinyl, perforated self-adhesive vinyl, transparent self-adhesive vinyl, and reflective self-adhesive vinyl.

- **PVC Banner** includes frontlit banner, backlit banner, scrim banner, scrimless banner, mesh banner with liner, blockout banner, truck curtain banner, tarpaulin, and PVC wall covering.

- **Paper** includes coated paper, uncoated paper, photo paper, photorealistic paper, blue-back paper, paper wall covering or wallpaper, self-adhesive paper, and non-woven wall covering.

- **PP & PE Film & Banner** includes polypropylene (PP) film, synthetic paper (such as Yupo), Tyvek, and PE or HDPE (polyethylene) banner.

- **PET Film** includes polyester (PET) backlit film, polyester (PET) frontlit film, and polyester (PET) grey-back film.

- **Textile** includes polyester textile and fabric, textile banner, backdrops, textile mesh with liner, frontlit textile, backlit textile, canvas, flag and voile *, cotton textile, textile wall covering, self-adhesive textile, and woven wall covering.

Application

The next question asks how you intend to use your substrate.

- **Frontlit** means that the print will be viewed by light from in front of the substrate.

- **Backlit** means that the print will be viewed by light from behind the substrate.

Optimized for

The next question asks whether you want to give priority to speed, quality, or neither.

- **Print Quality:** You want the best possible print quality.

- **Print Speed:** You want fast printing.

Test print

The following steps provide the complete procedure for this topic.

Next, the wizard shows you the proposed settings for the first test print. These settings are generated based on the information you have already given.

📝 **NOTE:** If you are an advanced user and the suggested settings do not meet your expectations, you can select **Advanced settings** at any time and make manual changes. However, you are recommended to print the first test print as an indication of overall performance on your substrate.

📝 **NOTE:** If you cancel the test print because you are experiencing substrate issues or print-quality issues such as banding, consider modifying the substrate preset, following the guidelines provided in Troubleshoot substrate issues on page 365 and Troubleshoot print-quality issues on page 383.

When the test print has been made, the wizard asks you some questions about it.
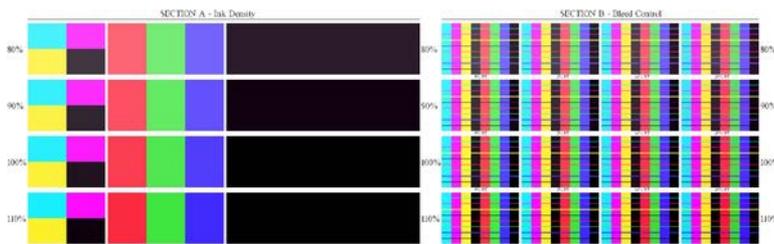
The print is organized into horizontal bands which are printed at a range of different ink densities. There are two different sections. The left part (Section A) is focused on color saturation and curing performance. The right part (Section B) is focused on the interaction of several ink densities with different levels of optimizer.

1. Start with Section A. Check whether any of the bands is completely cured. Use the black 4-color patch for this purpose. Do a smudge test if possible. Check whether any curing defects are visible. One possible curing defect appears as a pattern of small round spots on the print, from the perforated plate through which the curing air passes.

   If you have found an ink density that is perfectly cured, choose this or a lower ink density in the Ink Density drop-down menu. Never select a ink density with curing defects.

If none of the ink density bands is completely cured, or the ink density you prefer for your application is not cured, select **NONE** in the Ink Density menu. The wizard then generates another test print with different settings.

2. When you have found a satisfactory ink density, you need to select the best amount of optimizer for this ink density.

    Within the ink density band you have selected, look at Section B of the print to determine the best amount of optimizer. Look at color-to-color bleed and smooth area fills. If you see several levels of optimizer performing equally well, you are recommended to choose the lowest amount without defects.

    If you cannot find any amount of optimizer giving satisfactory performance with the selected ink density, look at neighboring ink densities (usually lower, but could be higher in some rare cases). Consider changing the selected ink density if there is a combination without defects. If you do so, remember to change the ink density in the drop-down menu.

3. Once you have found a good combination of ink density and optimizer, click **Next** to add the substrate and the printing condition you just selected. You can rename both. In some cases, several printing conditions are offered at once. You can deselect the options you are not interested in.

4. You are recommended to perform color calibration immediately after completing the wizard, to ensure that the calibration process can cope with the selected ink density.

5. The new preset is now loaded into the Internal Print Server. You can print your own test prints or create an ICC profile with your RIP software.

☼ **TIP:** If you need to provide different printing conditions or change those currently available in the new preset, you can select **Edit** from the **Substrate** menu.
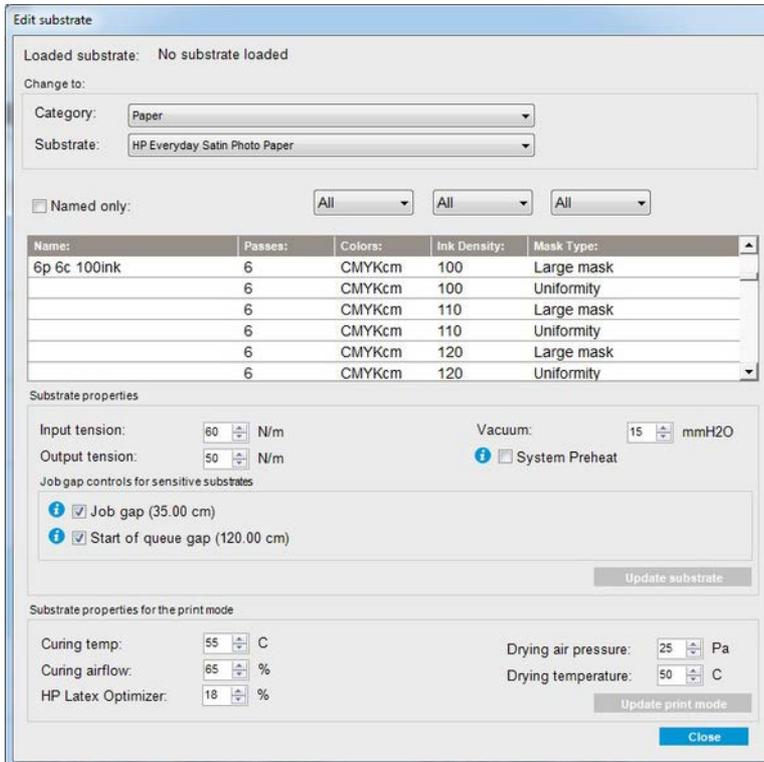
Edit a substrate preset

Editing a preset has several purposes.

- You can assign a name of your own choice to a particular substrate.

- You can adjust the preset to suit the precise characteristics of your substrate.

- You can adjust the preset to your intended use of the substrate, which may range from highest-quality printing to fast production output.

To edit the technical characteristics of a custom substrate type, go to the Internal Print Server and select **Substrate** > **Edit**. This allows you to change all the important settings in the substrate preset. It is recommended for advanced users only.

📝 **NOTE:** You can change only the presets that you have created yourself. The presets supplied by HP cannot be changed.
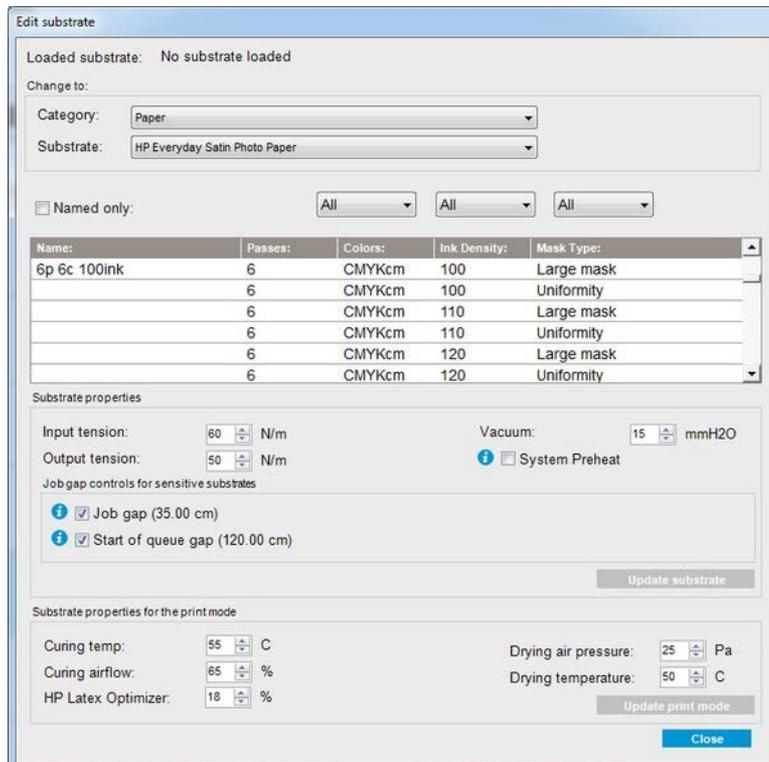
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📝 NOTE: You can change only the presets that you have created yourself. The presets supplied by HP cannot be changed.

1. In the upper part of the Edit Substrate window, select the substrate category and the name of the specific substrate preset that you want to edit.

   NOTE: Generic presets cannot be edited.

2. In the central part of the window, select the number of passes, number of colors, and ink density; and name the combination to make it visible in the Print dialog.

3. Under the printmode table, change the substrate settings.

4. Check **System Preheat** to achieve more stable color consistency over long runs.

   NOTE: This option only enables drying and can take up to two minutes and is not for single prints or short runs. Only applicable to front-lit substrates and the following print modes:

   - 6p 80% - 140% Ink Density

   - 8p 80% - 150% Ink Density

   - 8p 80% - 150% Ink Density

5. Press **Update substrate** if you want to change the settings.

6. In the lower part of the window, change the settings for your named combination. Press **Update print mode** if you want to change an already-existing named combination.

   TIP: The recommended print mode mask type is **Large mask** to obtain the best color balance.

   TIP: The **Uniformity mask** is recommended to obtain better grain uniformity.

In order to achieve a highly optimized preset for one specific purpose and substrate, you may need to adjust other settings to compensate. To achieve a balanced preset, you are recommended to use the Add New Substrate wizard or a generic preset.

Printing masks

The concept of **printing masks** refers to the relative positions of the ink drops on the substrate.

The mask uses a randomization algorithm to avoid visual patterns, and the result is a visually smooth surface, with minimal graininess, and no banding. Inaccurate alignment or substrate advance can interfere with the algorithm, causing different grain patterns along long jobs. On tiling applications, differences between panels can lead to visible seams.

The new **Uniformity mask** is more robust against this kind of phenomenon, delivering a uniformly textured look in long runs, and enabling seamless tiling applications even when using Dual-roll. This is why the **Uniformity mask** is recommended for applications such as wall-covering, or vehicle wrapping; while the **Large mask** is recommended for applications such as posters, roll-up banners, or backlit signs

The following images show the performance of the two types of masks when the substrate does not advance uniformly.

Large mask

Uniformity mask

1. You can select the desired mask by creating the corresponding print mode on the **Edit Substrate** menu. Remember that generic substrate presets must be cloned before being edited.

2. Provide a name to the print mode with **Uniformity mask** to make it accessible for printing.
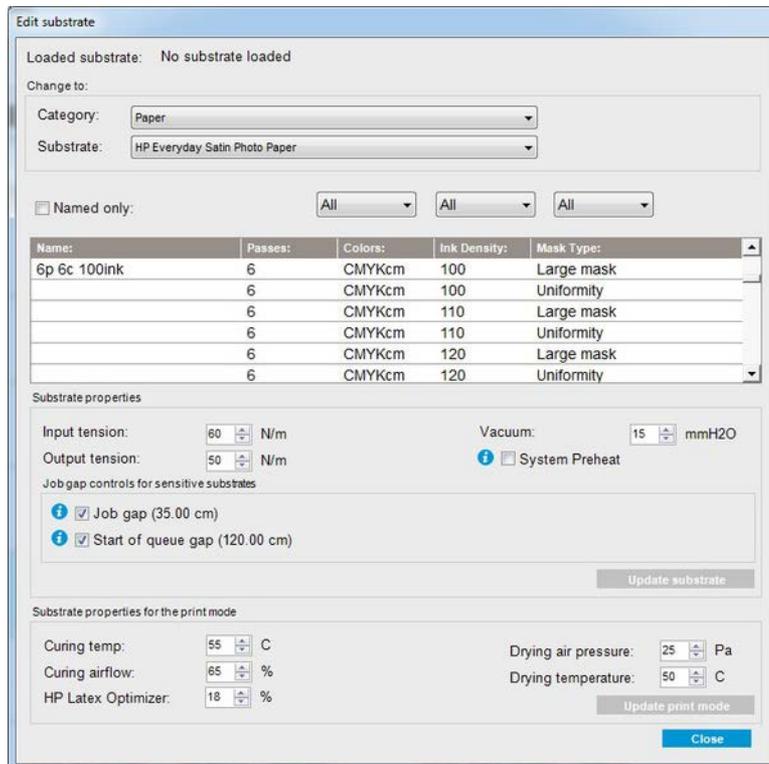
By default, all the generic print modes use the **Large mask**.

Consider the **Optimize for Tiling** option to get the best color consistency when printing tiles.

On-the-fly adjustments

You can modify the substrate settings while printing.

In the Internal Print Server main window, press the **Print adjustment** button, and a dialog box opens.

The dialog box is divided into sections for the substrate advance (see Substrate-advance compensation on page 148), the curing and drying temperatures, and the substrate tension.
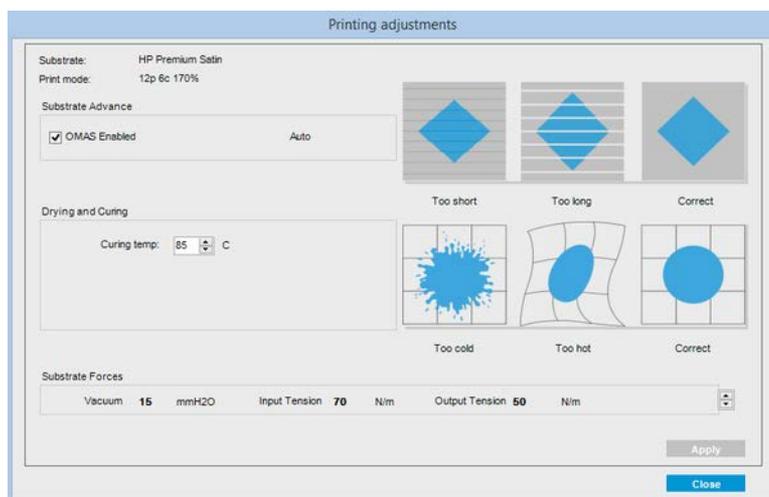
1. Adjust the drying power up or down.

2. Adjust the curing power up or down.

3. Illustrations of the possible effects of not enough, too much, and correct heating respectively.

4. Adjust the vacuum level up or down. The input and output tensions are adjusted automatically, depending on the vacuum level.

5. Illustrations of the possible effects of not enough, too much, and correct tension respectively.

To apply and save the values, press the **Apply** button in the dialog box before closing it. The new settings are saved for that particular substrate type for the current and future prints. They are not applied to all substrate types.

Optimize the preset for higher print speed

Reduce the number of passes.

Possible risks and compensations

Risk: Poor curing performance.

- **Compensation 1:** Reduce the ink density by one or two levels for each level that the number of passes is reduced.

  Example: For most front-lit materials, 6-pass 100% ink > 4-pass 80% ink > 3-pass 60% ink.

- **Compensation 2:** Slightly increase the curing airflow to eliminate minor curing artifacts.

- **Compensation 3:** Increase the curing temperature if you choose not to compensate with the ink density.

📝 NOTE: This is feasible only with substrates that do not show thermal deformation defects at higher temperatures.

Risk: When you reduce the number of passes, especially to 4 or fewer, some artifacts such as grain, bleed, and coalescence may become visible. It is possible to compensate to some extent with the following settings:

Risk: When you reduce the number of passes, especially to 4 or fewer, some artifacts such as grain, bleed, and coalescence may become visible. It is possible to compensate to some extent with the following settings:

- **Compensation 1:** Reduce the ink density as described above.

- **Compensation 2:** Increase the optimizer ink level in 2% steps for each level that the number of passes is reduced.

  Example: 6-pass 12% optimizer > 4-pass 14% optimizer.

- **Compensation 3:** Increase the drying temperature in 5 degree Celsius steps.

  Example: 6-pass 50% power > 4-pass 60% power.

Optimize for best print quality and/or widest gamut

This topic explains the concepts involved in this subject.

- Use a 6-color ink set.

- Increase the number of passes.

- Increase the ink density.

Considerations

This topic explains the concepts involved in this subject.

- A 6-color ink set enables smooth transitions; always use this option for best print quality.

- Use an 8-pass print mode for best print quality with frontlit substrates.

- Use a 14- or 18-pass print mode for best print quality with backlit substrates and textiles.

- When using a high number of passes, substrates can be saturated above 100% ink (example: 130% frontlit, 300% backlit). Higher ink densities may increase gamut and color saturation, and, in backlit materials, increase opacity of printed areas.

NOTE: This is highly substrate-dependent.

Optimize for ink consumption

This topic explains the concepts involved in this subject.

- Reduce ink density.

- Use a 4-color ink set.

Considerations

This topic explains the concepts involved in this subject.

- Reducing the ink density usually reduces the gamut and color saturation.

- A lower ink density may permit a lower number of passes.

- A 4-color ink set may reduce overall ink consumption, as the light cyan and light magenta inks are not used in printing.

NOTE: Some ink is still used from each printhead to maintain the health of the printhead.

- A 4-color ink set is less resistant to some print-quality defects, such as contouring.

Recommended print modes for each substrate type

List of recommended print modes for each substrate type.

* Non-porous textile or canvas. See Check the porosity of your substrate on page 34.

Adjust the printing workflow for optimum color performance

The following steps provide the complete procedure for this topic.

1. Check your substrate's color calibration status and calibrate it if recommended, by selecting **Substrate** > **Color calibration** in the Internal Print Server. See Printer calibration on page 137.

2. Create ICC profiles for your substrate; see your RIP documentation for instructions.

Remove a substrate preset

To remove a substrate preset from your printer, go to the Internal Print Server and select **Substrate** > **Remove**. Then select the category and type of the substrate you wish to remove from a list of removable substrates.

Online substrate manager

From the menu select **Substrate** > **Search substrate online**, or click the **Search online** button in the **Load printer configuration** dialog. This screen is shown:
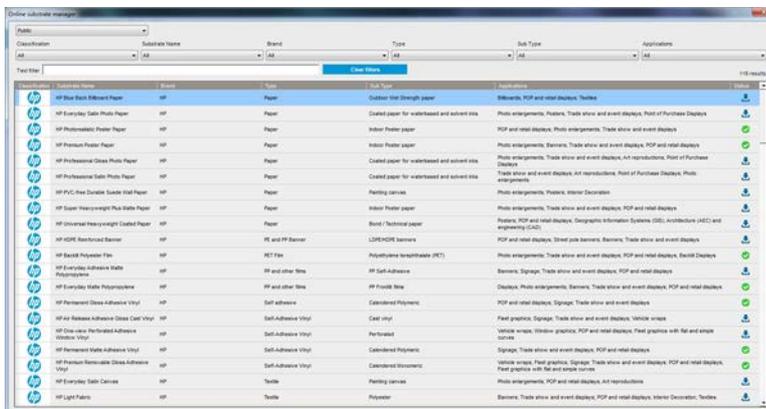
Sorting

To sort, click on the column title or place the mouse cursor over the column title and click on the drop down arrow.

Structured search

There are several structured search fields. You can use a single search field or a combination of fields.

- There are several search options:
    - Select a manufacturer to find substrates from a specific manufacturer.
    - Select a category and grade to find specific substrate types.
    - Select applications to find optimized and certified substrates.
- Application Remote Media searches automatically.
- Click Clear filters to display the full list.

Free text search

The free text search locates substrates by checking the substrate name, supplier name, the comments and technical note, for the presence of the specified text string.

- Type a text string.
- Application Remote Media searches automatically if search text contains more than one character.
- Click Clear filters to display the full list.

Install new substrate

To install a new substrate preset, go to the Internal Print Server and select **Substrate** > **Search substrate online**, then search for the specific substrate file and click the. **Down arrow** in the status column.

This agreement dialog is shown:
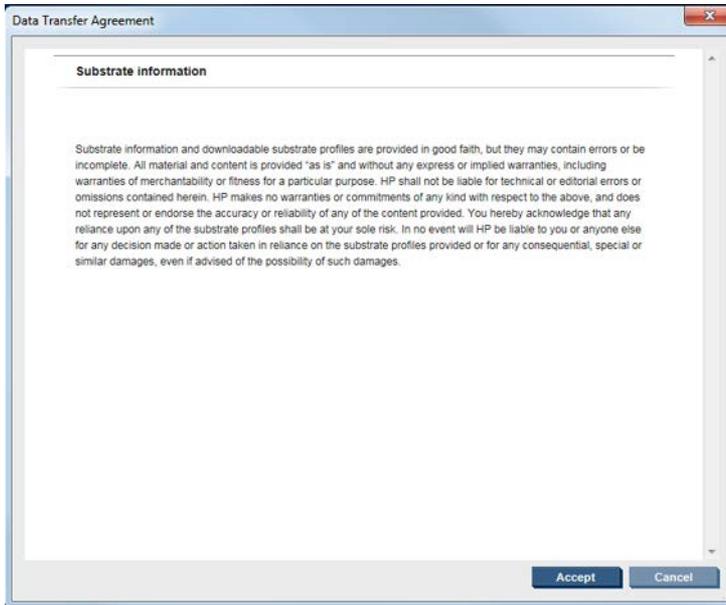
The agreement dialog must be accepted to continue with the installation.

If installation is successful a check icon is shown in the status column.
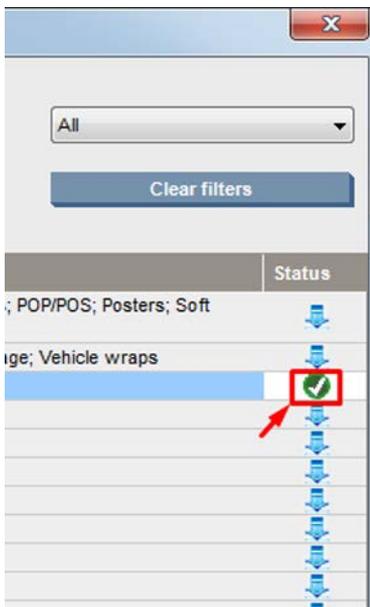
Update existing substrate

The substrate update option is shown when a new substrate version is available on the server. To update a substrate, go to Internal Print Server and select **Substrate** > **Search substrate online**, then click on the **substrate update** icon in the status column.

Substrate synchronization

In order to make sure that the RIP has the latest substrates available, check the RIP help section: **Substrate synchronization**.

In order to retrieve the new substrates installed in the printer from the RIP:

- Open the **Easy Media** component and select the printer.
- Once in the printer dialog, select **AutoSync**.
- Choose between "**Missing presets only**" or "**Full reset**".

📝 **NOTE:** Take into account that only substrates downloaded from the HP Media Locator will include an ICC profile. For custom substrates, an ICC profile needs to be created in, or imported to the RIP.

Set the carriage beam position

The carriage beam position determines the vertical distance between the printheads and the platen. If it is too great, print quality will be impaired. If it is too small, there is a risk that the printheads will come into contact with the substrate, causing smears or damage.

- The **substrate-load** position is not used for printing: it may be used for loading thick substrates or for maintenance tasks.
- The **printing** position is a fixed height suitable for unwrinkled substrates up to 0.4 mm (0.016 in) thick.
- A **custom** position is used for substrates thicker than 0.4 mm (0.016 in), or for substrates that wrinkle slightly due to heating. We recommend setting the custom position as follows:
  - The thickness of the substrate plus 1.9 mm for substrates that do not wrinkle.
  - The thickness of the substrate plus 2 to 3 mm for substrates that wrinkle.

  You cannot exceed the maximum height permitted by the Internal Print Server.

💡 **TIP:** Try to avoid wrinkling by using substrates that do not wrinkle, or by using a slower print mode that will allow you to lower the drying and curing power.

To set the carriage beam position, go to the Internal Print Server and select the appropriate position from the drop-down list.
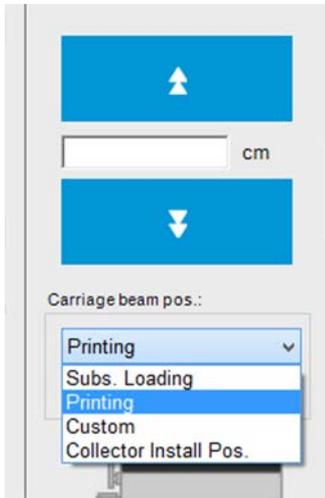
WARNING! Keep away from the printer's moving parts until the carriage beam has reached its new position.

CAUTION: Do not change the carriage beam position while the printhead cleaning roll is out of place.

6 Create and manage print jobs

Each print job must be created in your Raster Image Processor (RIP) and then added to the Internal Print Server.

Add a new print job

The output folder should be the shared folder on the Internal Print Server computer that was created during printer installation. The Internal Print Server cannot take files directly from the network because access would not be fast enough.

When the RIP has generated a print job, its output folder will contain at least three files:

- An XML or JDF file containing job settings
- A low-resolution TIFF file for use in previews
- At least one high-resolution TIFF file containing the image to be printed

Single roll printing

The following steps provide the complete procedure for this topic.

1. Go to the Internal Print Server.
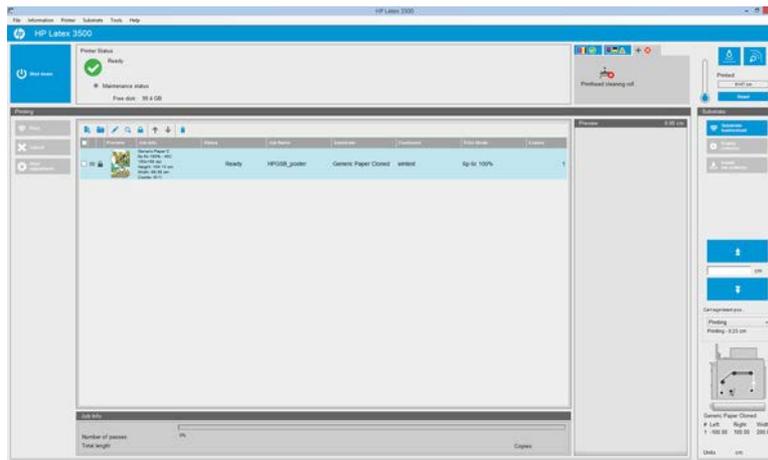
2. Select the Add New Job icon or **File** > **Add New Job**. Navigate to the folder containing the print job files, and click **Open** to import the job into the Internal Print Server.
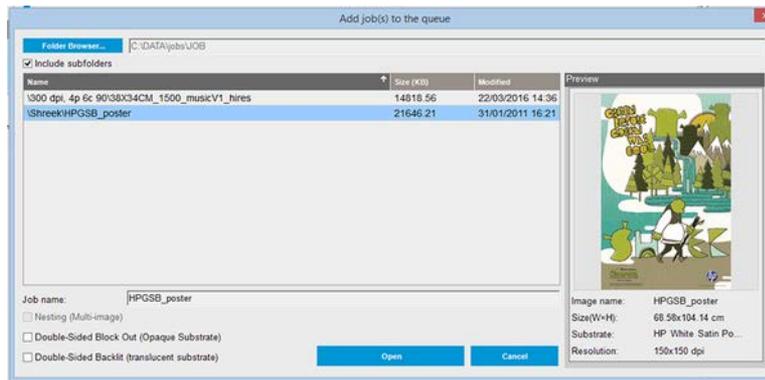
☆ TIP: You can sort the list by any column.

3. The next dialog box displays information about the job.

You can change the default job name the first time you open its properties window. Once you save the job name, it cannot be changed. Use the **Save As** button to create a copy of an existing job with a different name. This dialog has the following options:

● **Number of copies:** the total number of copies to print

● **Number of columns:** the number of copies to print horizontally, across the width of the substrate

● **Max:** if this option is checked, the number of steps will be set to the maximum that will fit into the substrate width

In the **Spacing** section, this dialog gives the opportunity to define a horizontal margin that will be left blank, or to center your jobs on the substrate so that there is an equal amount of white space on both sides. If the number of copies is more than one, then it will apply these properties:

● **Horizontal Space:** the horizontal gap between copies

● **Vertical Space:** the vertical gap between copies

Although the substrate and print mode can be changed from this dialog window using the change button, it is recommended not to do so because it may adversely affect print quality. It is better to make such changes from the RIP. The drop-down list at the top of the preview field allows to choose all sections or just one of the sections to be printed, and with the other drop-down list, can select the roll preference where the job will be queued.

4. To see more job options, click the **Advanced settings** button in the Job Properties dialog.
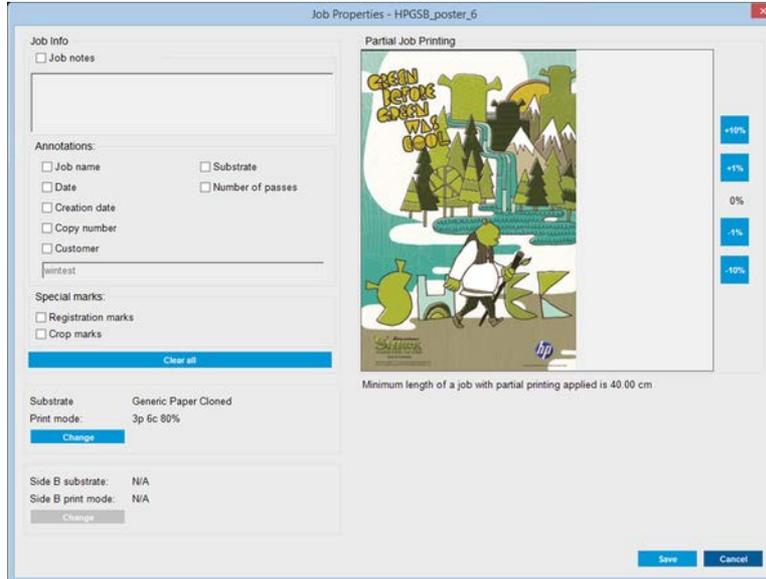
In this dialog, although the substrate and print mode can be changed from this window by using the Change button, it is recommended not to do so, because it may adversely affect print quality. It is better to make such changes from the RIP.The **Job Info** paragraph can be used to select annotations and special marks to be printed alongside the image. The **Job Notes** field can be used to add some text to be printed in the bottom of each copy with the annotations, if any.The **Partial Job Printing** section appears only when the number of copies is one, the job is not double sided, contains one whole image, and can be used to select the job printing offset. The hatched area will not print.The **Easy Printing** resume can be useful to resume a job after an unexpected interruption.
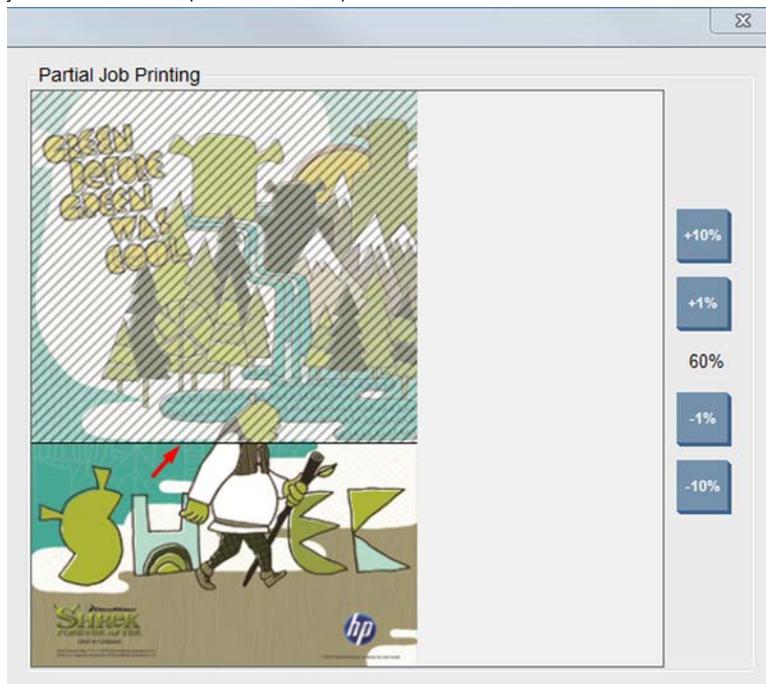
Click the **Save** button to store the advanced settings, or **Cancel** to discard them and return to the previous main dialog.

5. Click the **Save** button to store the job in the Internal Print Server for further processing in the main job dialog.

NOTE: The Internal Print Server gives you a warning if you select layout changes that are not compatible with your selections in the RIP software.

6. Click the **Save** button to store the job in the Internal Print Server for further processing.

NOTE: The Internal Print Server gives you a warning if you select layout changes that are not compatible with your selections in the RIP software.

Dual-roll printing

If two rolls have been loaded and the dual-roll checkbox has been checked when loading, the following window appears:
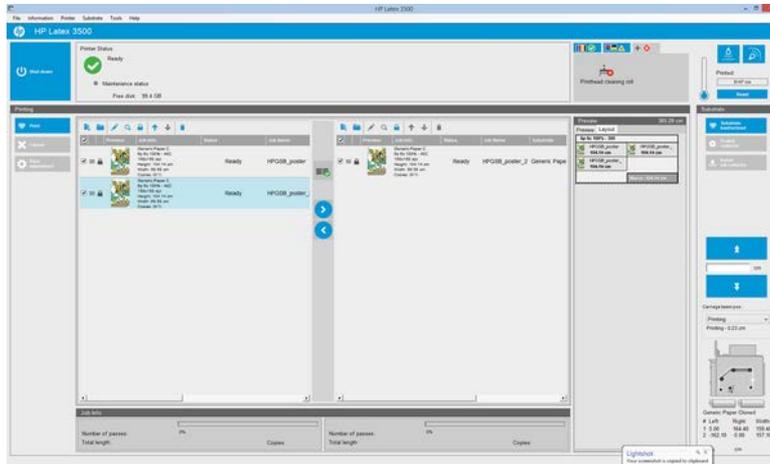
The main difference is that there are now two queues, one per roll. Jobs sent to roll 1 will be seen in the first queue, and jobs sent to roll 2 in the second queue.

When printing, jobs with the same resolution and print mode are printed at the same time (one on each roll). You can see in the preview how they will be processed.

You can move from one queue to another by clicking the ⟩ and ⟨ icons.

If you click the ⚖ icon, the jobs are automatically arranged to minimize substrate waste without altering the order.

The closed padlock icon indicates jobs that cannot be moved when you click the ⚖ icon. The closed padlock appears when a manual update to the job has been made. To lock or unlock a job, just click the padlock.

Rotate a print job

A job can be rotated by 90 degrees in either direction by using the rotation icons at the top right of the Job Properties window of the dialog that appears when clicking the **Image composition** button.
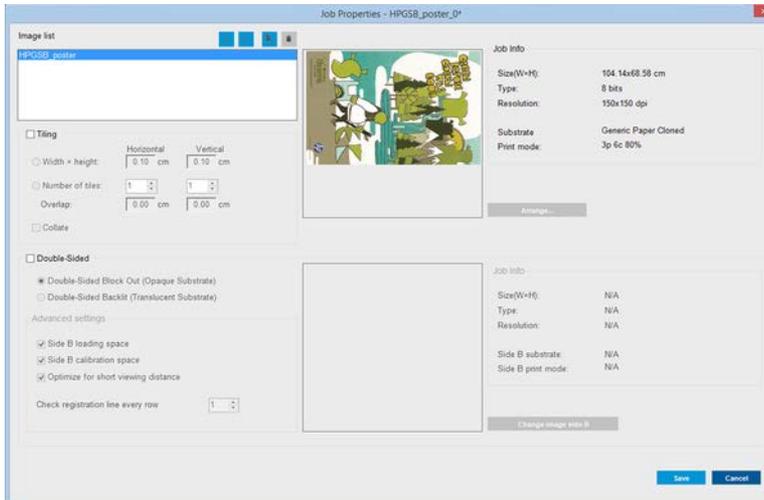
📝 **NOTE:** Rotation is available only when the printer is not printing.

Press the **Save** button to store the current image rotation or **Cancel** to discard the changes and return to main dialog of the properties of the job.

The rotation effect is shown in the preview. After you press the **Save** or **Save As** button in the Job Properties window, the actual rotation of the job takes place. This could take a few minutes, depending on the image size and resolution, during which time the job can neither be printed nor edited, and the job status is shown as **Rotating**.

Manage the print queue

The main screen of the Internal Print Server displays the queue of print jobs and various icons that can be used to manage the queue.
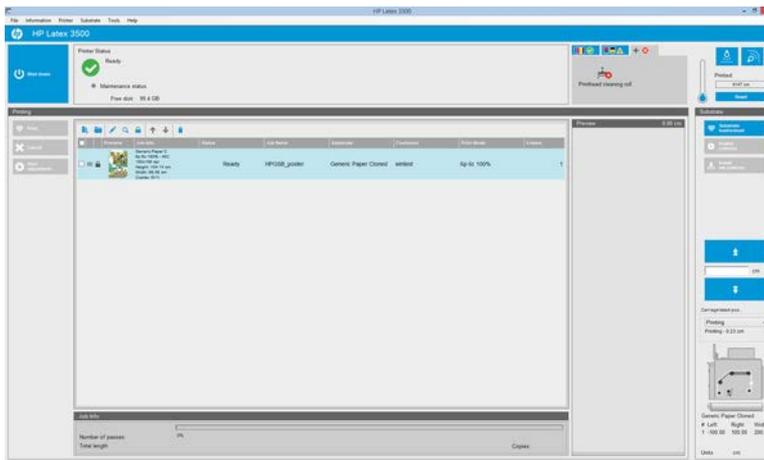
Above the print queue are the following icons:

- Add New Job ▣ : See .

- Add Existing Job ▣ : Return a job to the queue that has been printed already. Printed jobs remain available unless deleted manually.

- Edit Job ✎ : Edit the properties of a job in the queue.

- Proof : Proof a job in the queue (not available for nested jobs). This can be used to crop the image before printing.

- Lock Job : Lock a job in the queue.

- Up : Select the next job upwards in the queue.

- Down : Select the next job downwards in the queue.

- Remove : Delete the selected job from the queue.

You can check the boxes of the jobs you want to print, and press the **Print** button to print them.

You can cancel all jobs in the queue by pressing the **Cancel** button.

The **Print adjustment** button displays the substrate-advance compensation (which can be changed).

Delete a print job

This is the correct procedure to delete a job.

1. Remove the job from the queue by using the Remove icon or by ticking the job in the queue and selecting **Remove**. When deleting a job in this way, the files may or may not be left on the printer's hard disk, and the file may or may not still be available from the list in the Add Existing Job window, depending on the settings in **Tools** > **Preferences** > **Queue Rules**, in the section "When removing jobs from the queue".

2. Remove the job with **File** > **Delete job**, select the job and press the **Delete** button. Now the file cannot be retrieved from the **Add existing job** window.

Image composition

The Job Properties window is displayed when you import a job into the Internal Print Server, or when you right-click the job queue in the Internal Print Server.

This window contains an **Image composition** button that allows you to choose among the following alternatives:

- **Tiling:** A single job is printed in sections, to be put together later. See Tiling on page 94.

- **Nesting (Multi-image):** The selected jobs are printed one after the other, across the width of the substrate if there is room. You can use the Advanced Nesting Arrangement window to alter the layout manually. See What is JDF? on page 27.

- **Double Sided**: Block Out.

All image compositions can be used with dual-roll printing, when so, the software will warn if the layout involves printing in the gap between rolls; but it will allow so it if the warning is disregarded. Involves printing in the gap between rolls; but it will allow so it if the warning is disregarded.

Tiling

Tiling is a layout method that allows you to print a large image in sections, and then put the sections together later.
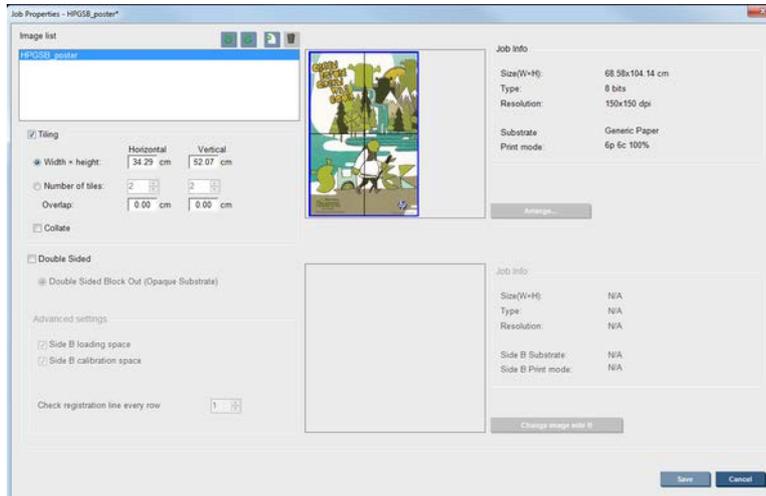
Click the Tiling Check and the Tiling section will be activated.

This composition will automatically cut your image into sections and print the sections separately. There are two alternative ways to select the size of the sections:

- Select the width and height of each section. The number of sections is then calculated automatically.

- Select the number of horizontal and vertical sections. The width and height of each section is then calculated automatically.

If you choose a non-zero overlap, the size of each section will be increased by that amount so that the printed sections will overlap when put together.

The drop-down list at the top of the preview in the main properties job dialog field allows to choose all sections or just one of the sections to be printed.
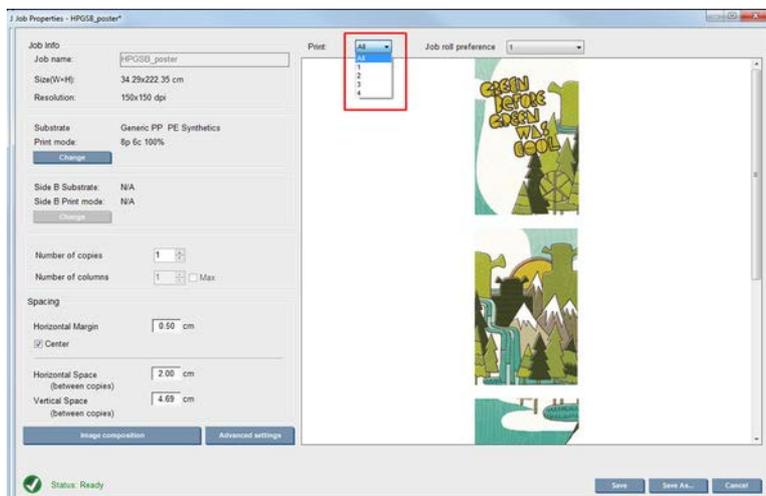
Double-sided

Double-sided printing helps you to print rows of images on both sides of the substrate.

- There is a process to guide you when printing a substrate on both sides.

- Double-sided printing can be used to print the same image or different images on each side.

- The process automatically compensates for any registration errors, of the position of the plot, along both axes (along the substrate width + substrate advance) to minimize any errors.

- The dual-roll spindle cannot be used when printing double-sided.

- The images of Side A and Side B must have approximately the same dimensions. The image that you select for each side must be the same image for the entire side.

Create a job

Any image created in the RIP can be printed in either side A or side B, without any special requirements.

However, side A and side B must have the same dimensions when printed on the substrate.

📝 NOTE: In order to minimize registration errors on some substrates, you are recommended to compensate for substrate contraction in the RIP when the image is generated.

Define double-sided job

From the Internal Print Server's main window, click the Add New Job icon ▶ to open the Choose Image File window. You will see the **Double sided** check box on the bottom left of the window. If you select more than two jobs, double sided is impossible and the box is grayed out.

Any image created in the RIP can be printed in either side A or side B, without any special requirements. However, side A and side B must have the same dimensions when printed on the substrate.

📝 NOTE: In order to minimize registration errors on some substrates, you are recommended to compensate for substrate contraction in the RIP when the image is generated.

This type of composition works for opaque substrates. Click the **Image composition** button from main job dialog and the following screen is displayed. Here you can define the Double Sided Block Out job properties.
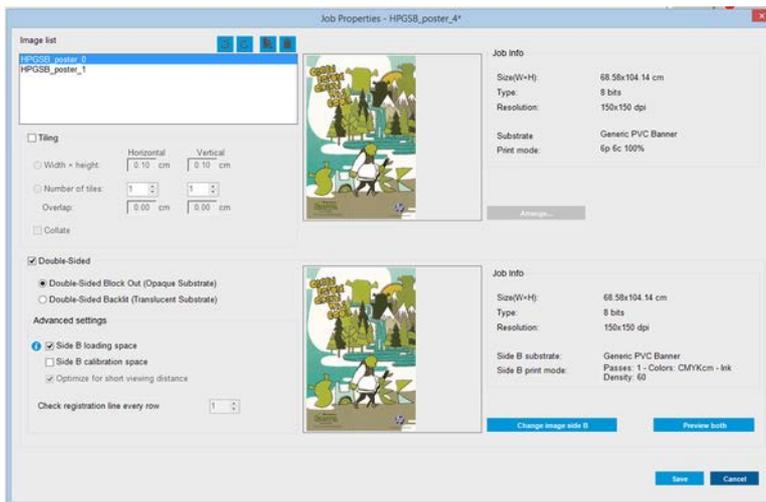
1. If Check Double Sided is not checked then click it.

2. Press the **Change image side B** button to select a filename containing the image to be printed on Side B if a different image than side A on side B is required.

3. In the Advanced settings section, the following options are recommended when printing double sided block out:

   - **Side B calibration space:** When selected, the printer leaves an area of substrate empty after the images have been printed (the substrate is warmed-up). This is to give space to perform substrate-

advance compensation on side B, which is recommended. At the end of the empty space a dotted line is printed.

- **Side B loading space:** When selected, the printer will advance the substrate so that there is sufficient substrate to load side B.

- **Check registration line every row:** This option enables you to choose which registration lines are scanned by the printer, if you select 1 (the default), the printer stops printing and checks every registration line, if you select a higher number, for example 2, the printer only scans every second registration line. This increases the speed of the job, but also slightly increases the chances of misregistration.

📝 **NOTE:** This option is enabled when the second image is selected (from Side B).
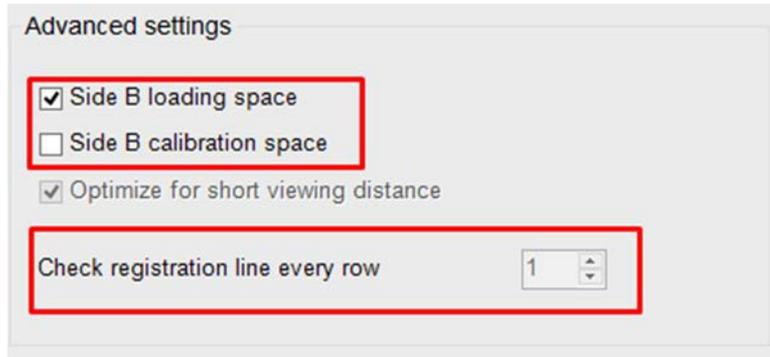
4. From the Image list section, you can rotate the selected image 180°.

5. Press the **Save** button to store the current image composition or the **Cancel** button to discard the changes and return to the main job properties dialog.

   The following screen is displayed where the double-sided job properties can be defined:
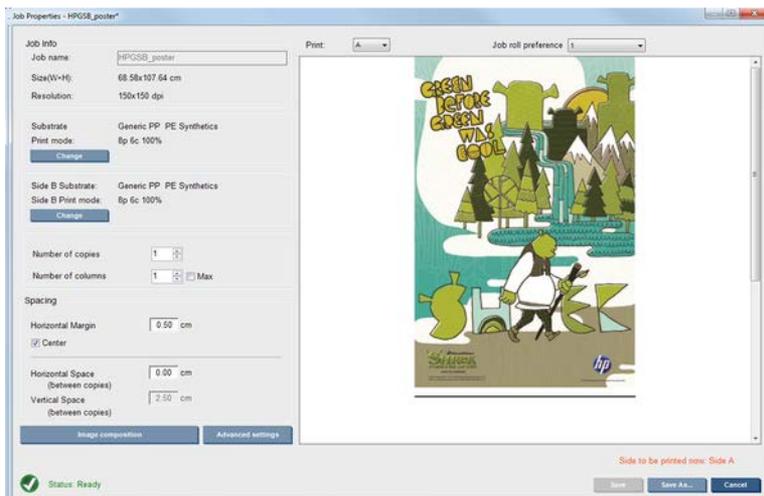
6. From the drop-down menu, select the side with the properties you want to define or view.

📝 **NOTE:** The side selected here is the side that will be printed. To print side B, select **B**.
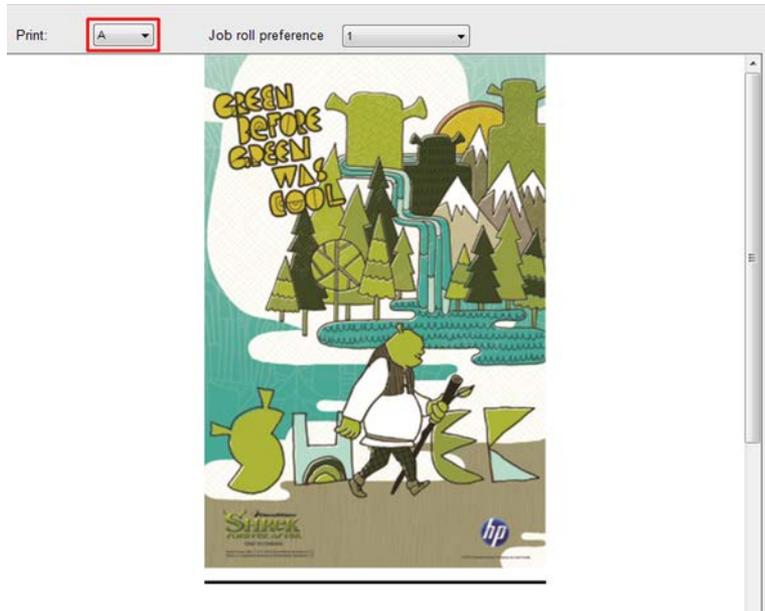
- For both sides you can define the following properties:

    - **Number of copies:** The number of total copies to print

    - **Number of columns:** The number of copies to print horizontally, across the width of the substrate

    - **Max:** If this option is checked, the number of steps will be set to the maximum that will fit into the substrate width

- For side A you can define the following properties:

    - **Horizontal Margin:** Gives the opportunity to define a left margin that will be left blank

    - **Center**: To center your jobs on the substrate so that there is an equal amount of white space on both sides

    > **NOTE:** Centering the images is highly recommended to compensate for any possible registration errors that may occur.

    - **Horizontal Space:** Gives the opportunity to define the horizontal gap between copies

Preview (Image/Layout/Preview both)

There are three different previews:

1. Main dialog of the job properties and preview how the printer will print each side.

2. Click the **Image composition** button to see the image that contains the job on each side.

3. Click the **Preview both** button to see a simulation of how both images will print on side A and on side B. You can use this simulation preview to check that the orientation of the images relative to each other is how you expect the finished result to be.
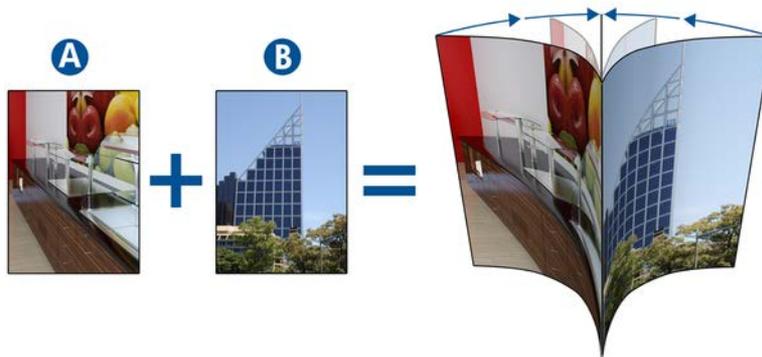
Print

The following steps provide the complete procedure for this topic.

1. Select **Side A** from the drop-down menu.

2. Select **Save** or **Save As**.
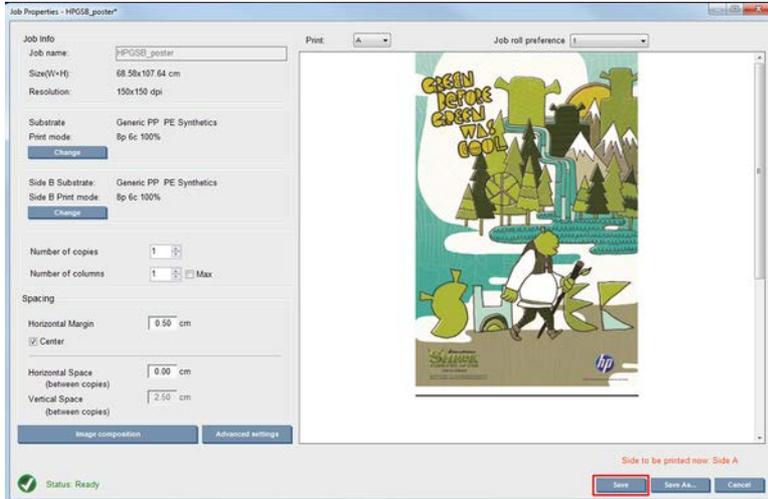
3. Select **Print Job** and print the selected images.
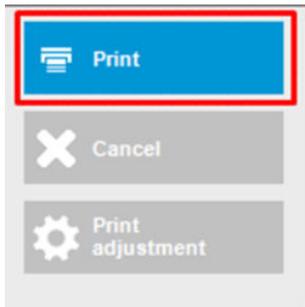
The number of copies are automatically distributed according to the parameters defined in Define double-sided job on page 96 (number of rows, column, centered).

- At the end of each row a black registration line is printed automatically (a). This registration line is used while printing side B, to position the side B rows and minimize the registration errors.

- It is recommended to mark with a marker the back side of the last registration line (b) to position the substrate during the side B loading process.

- When side A has been printed, after the last continuous black registration line, the printer automatically provides an area in which to perform the side B calibration (c) and side B loading (d) area.
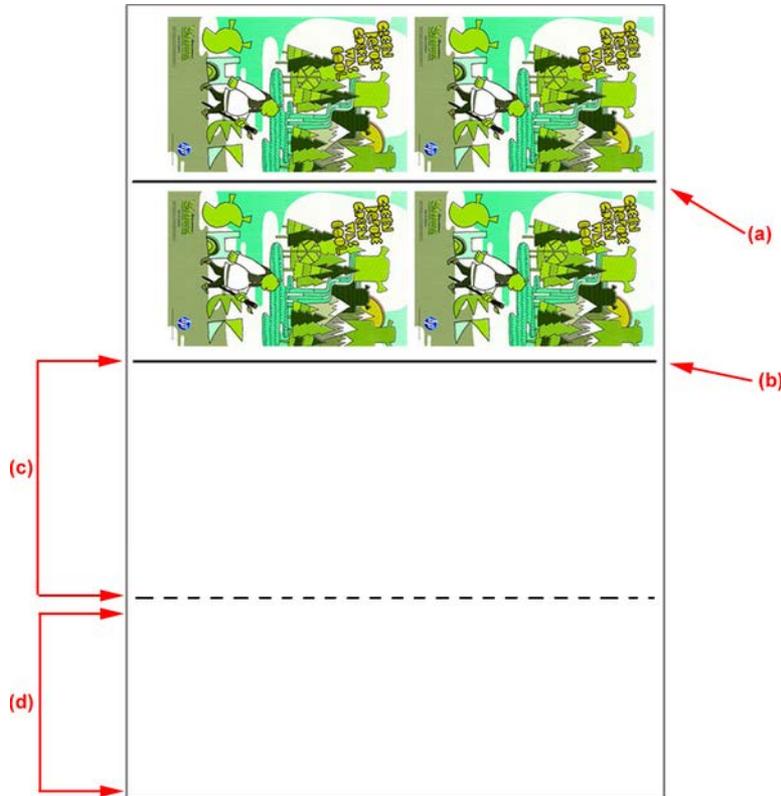
> **NOTE:** The area dedicated to calibration, between the continuous registration line and the dotted line (c), must be advanced at the same speed as the printed area, and at the same temperature, to ensure an effective calibration.

4. When Side A has finished printing, unload side A. See Side A: Unload on page 62.

5. Check that the substrate-advance sensor is clean, and do not hesitate to clean it. See Clean the substrate-advance sensor on page 230.

6. Load Side B. See Side B: Load and print on page 63.

> 📝 NOTE: For accurate printing we recommend that **Double-sided substrate edge detection** is selected.
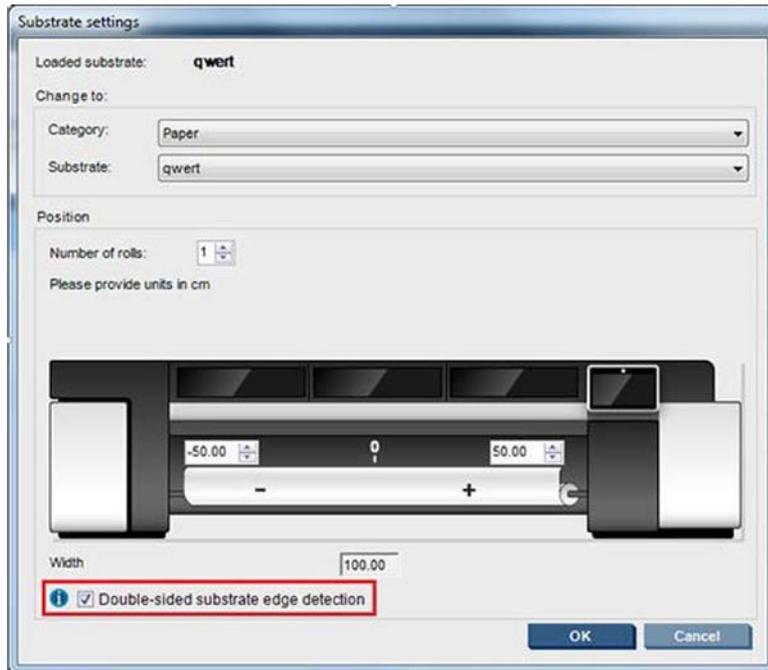
7. When Side B is loaded, perform the following steps. For more details of these procedures, refer to Side B: Load and print on page 63:

    a. Align the dotted line with the platen

    b. Perform substrate-advance compensation.

    c. Select **Side B** from the drop-down menu.

    d. Ensure that the registration line is aligned with the platen and start printing side B.

    e. Configure **Rows to register**, see Define double-sided job on page 96.

    f. Select **Save** or **Save as**.

    g. Select **Print Job** and print the selected image.

       While printing Side B the printer will automatically read each registration line and Side B will be positioned to minimize the registration errors.

> 📝 NOTE: To activate the side you want to print, always select it from the drop-down menu first, make any changes to the image, and select **Save**.

Side to be printed now: Side B
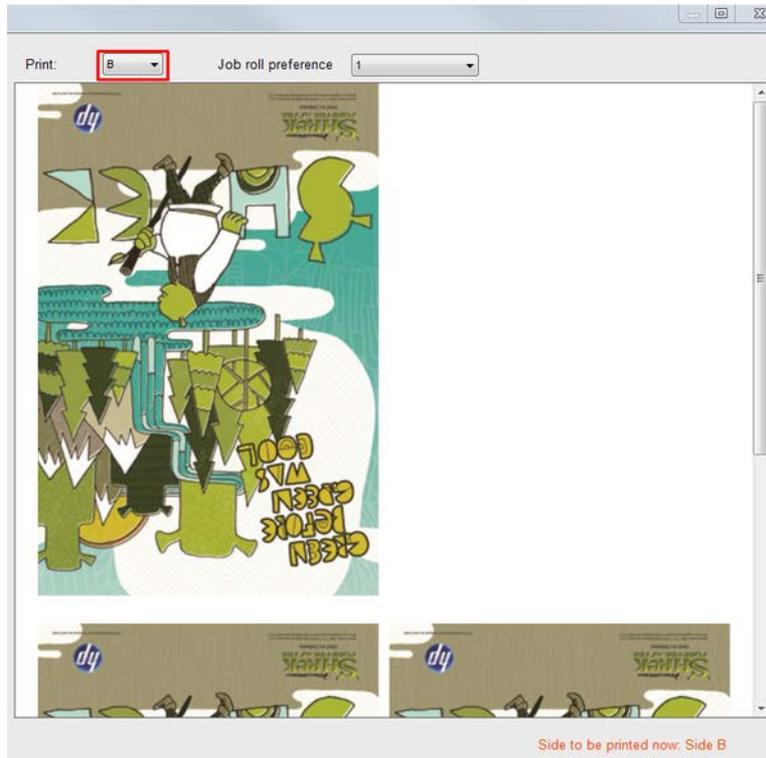
> 💡 **TIP:** If a particular substrate is often used for double-sided printing, to avoid having to redo the substrate-advance compensation between side A and side B, a second specific substrate could be used based on the initial one. Apply the substrate-advance compensation of sie B, and select this new substrate preset each time side B is loaded (and select the previous one each time side A is used).

Nesting

Nesting is a layout method that allows you to choose the layout of your printed jobs on the substrate, relative to one another, instead of simply printing them one after another as usual. Jobs can be printed side by side if there is room.

> 💡 **TIP:** Printing jobs side by side on the substrate gives you faster throughput and uses less substrate.

You can use nesting in the Internal Print Server, from the Choose Image File window or the Job Properties window.

The Choose Image File window

f you select only one job, nesting is impossible and the box is grayed out. If you select more than one job, you can click the box to enable nesting.

From the Internal Print Server's main window, click the Add New Job icon 📇 to open the Choose Image File window. You will see the **Nesting** check box on the bottom left of the window. I
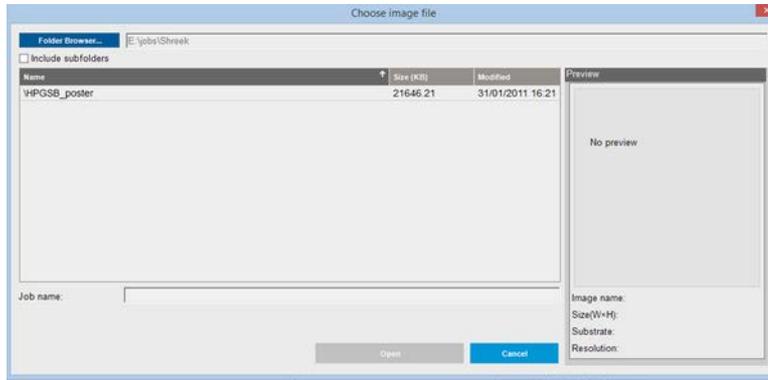
NOTE: To be nested together, jobs must be of the same resolution and printed on the same substrate. Any incompatible job is added to the queue as a separate, non-nested job, and an explanatory message is displayed.

When you press the **Open** button with nesting enabled, the Advanced Nesting Arrangement window opens (see The Advanced Nesting Arrangement window on page 105).

The Job Properties window

Nested jobs must all be printed with the same number of passes. Therefore, the number of passes used for all jobs will be copied from the first job.

From the Internal Print Server's main window, right-click the print queue to open the Job Properties window. In this window, you can click the Add New Job icon ![icon] to add more jobs, in which case you will see a Nesting section in the Layout pane.
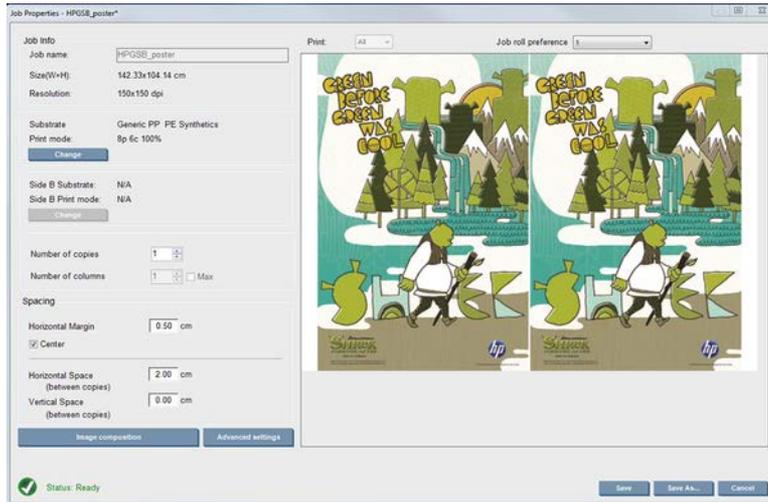
From the current dialog, press the **Image composition** button to access another dialog where the **Arrange** button can be selected.
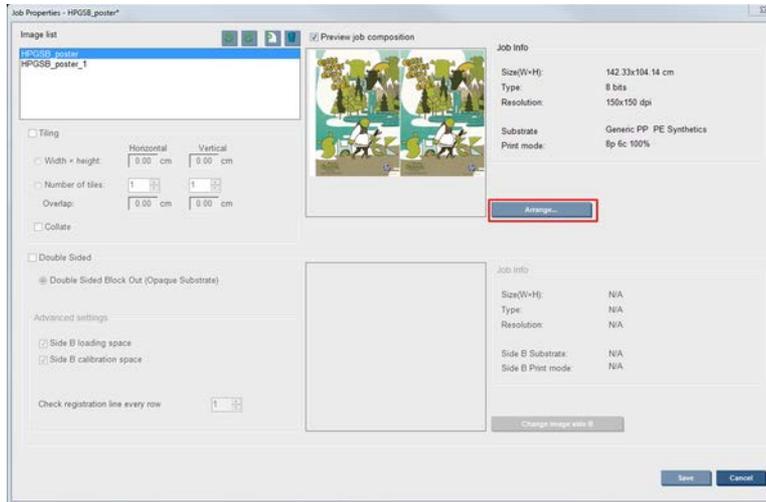
If you press the **Arrange** button in this section, the Advanced Nesting Arrangement window opens. If you use advanced nesting, the number of passes used for all jobs will be copied from the job with the highest number of passes specified.

The best location for the next added image is selected automatically.

The Advanced Nesting Arrangement window

The Advanced Nesting Arrangement window displays a preview of your jobs and their layout on the substrate.

- You can alter the layout by selecting a job in the preview and changing the Left and Top values, or by dragging with the mouse.

- You can zoom and scroll the preview.

- You can rotate images at any stage.

- You can rotate images at any stage.
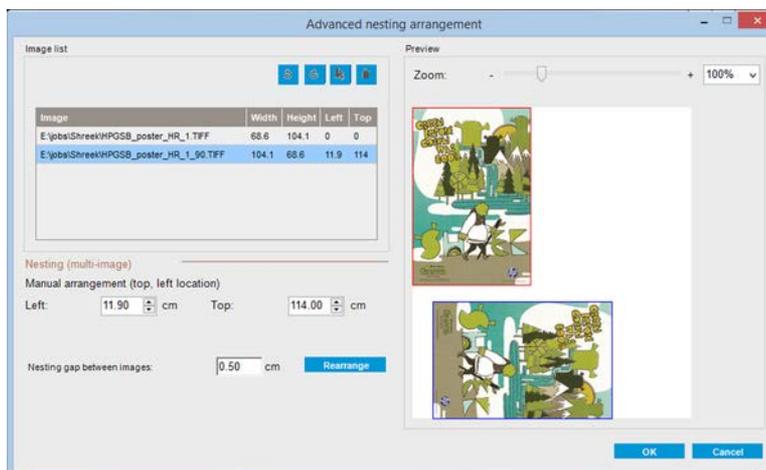
The **Rearrange** button automatically optimizes the positions of the images, keeping the established margin.

When you are satisfied with the layout, press the **OK** button.

Restart and Print

If the printer suddenly shut downs and the Internal Print Server goes offline, you can ready the printer to continue rapidly

To use this feature, via the Internal Print Server, go to **Tools**>**Restart and Print**.
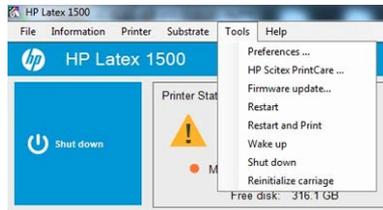
By selecting this option:

- The substrate will automatically load during boot up. All the print queue checked jobs, except the failed one, will automatically print.

- No operator interaction is required, just press the **re-arm** button.

7 Handle the ink system

Ink system components

Ink cartridges

Ink cartridges store the ink and are connected to the printheads, which deposit the ink on the substrate.
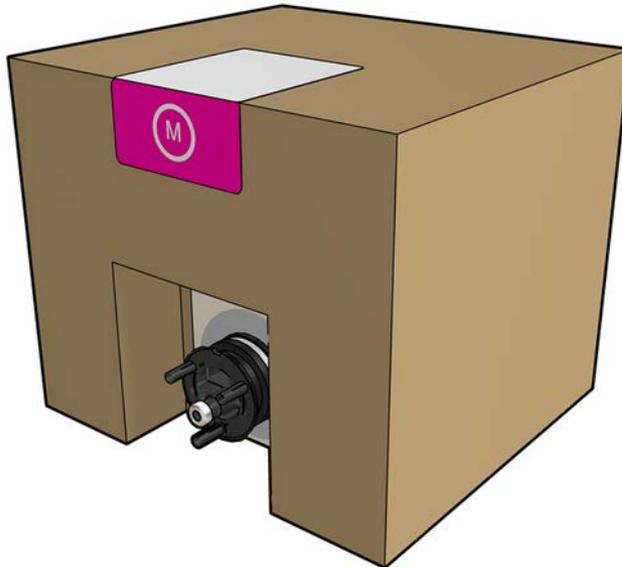
Each cartridge contains HP Latex Ink, and consists of a bag within a recyclable cardboard box.

⚠ **CAUTION:** Observe precautions when handling ink cartridges because they are ESD-sensitive devices (see the Glossary on page 425). Avoid touching pins, leads, and circuitry.

If pressure is put on a cartridge while it is connected to the printer, the pressure is transmitted to the ink pressure sensor, which may break; in which case ink may leak from the cartridge. To avoid such ink leaks, avoid putting any pressure on cartridges while they are connected to the printer. In particular:

● Always disconnect cartridges from the printer before handling them.

● Never place anything heavy—more than 1 kg (2.2 lb)—on top of a cartridge.

● Take care not to drop a cartridge.

● Do not try to force the last of the ink out of an almost-empty cartridge by pressing the ink bag inside the cartridge.

Remove an ink cartridge

An ink cartridge should be removed and replaced when it is empty or past its expiry date.

An empty cartridge is indicated in the Internal Print Server and by an orange blinking light beside the cartridge itself. You may also decide to remove a cartridge if it contains little ink and you want to provide for a long period of unattended printing.

The printer can continue printing without any ink cartridges for at least 10 minutes, depending on the print mode and the job being printed. Therefore, cartridges can be replaced while printing continues. A functional ink cartridge is required in order to start a new job.

1. Go to the cartridge that you intend to remove. The cartridges are arranged as shown below.
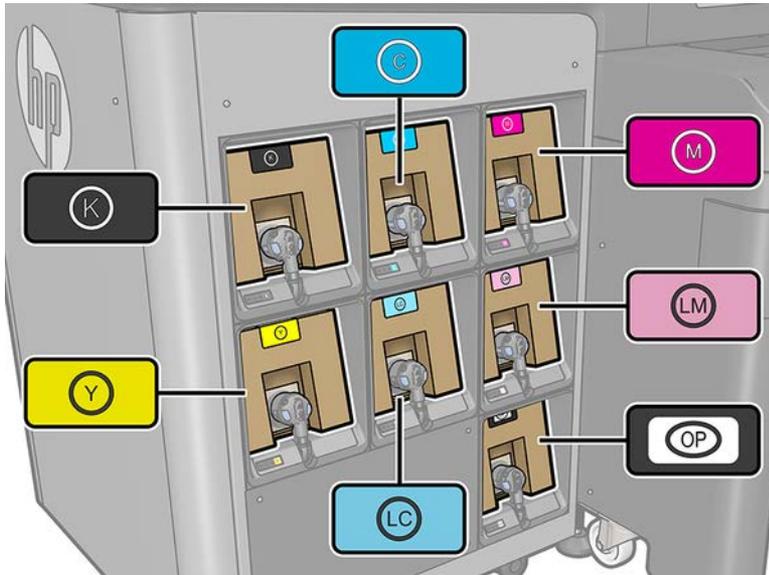
2. Disconnect the cartridge connector by pressing the tabs on each side of it and pulling it gently away from the cartridge.
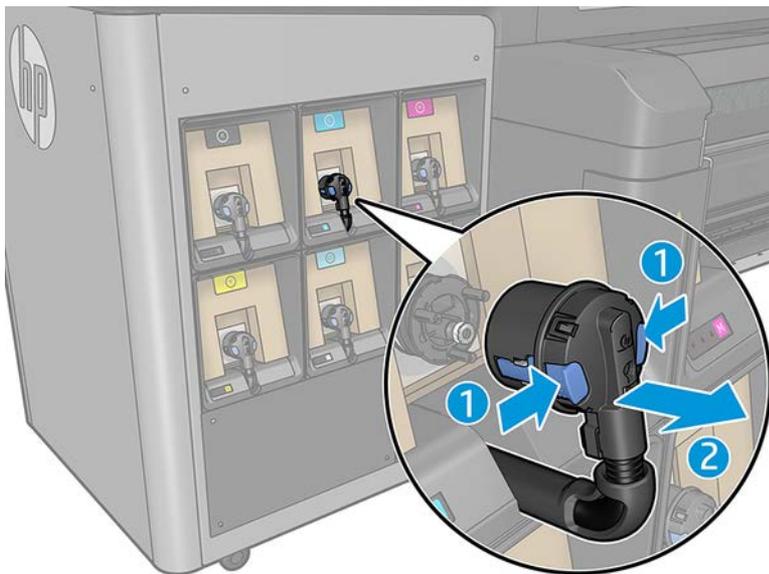
3. Remove the empty cartridge from the printer.

    📝 NOTE: Some residual ink can be expected in the cartridge, ranging from 2% to 5% of the original content.

Insert an ink cartridge

The ink cartridge is supplied in an insulating bag; do not open it until you are ready to use the cartridge.

1. Check that the new cartridge is of the correct color.

2. Place the cartridge on a flat surface and turn it four times (rotating it through 360 degrees) as indicated on the label, to ensure that the ink is well mixed before use.
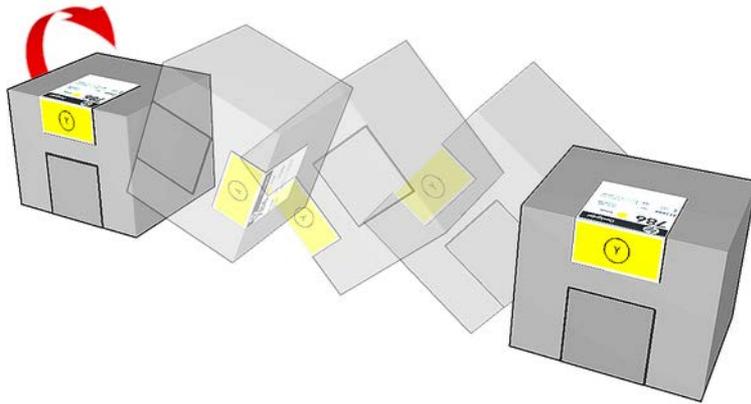
3. Tear off the square and fold it inside the handle as illustrated.

4. Put the new cartridge into its correct place on the printer.

☼ **TIP:** Use both hands: the cartridge is quite heavy.

5. Check that the rubber part around the needle in the cartridge connector is clean. Clean gently if necessary.

6. Connect the cartridge connector to the cartridge.
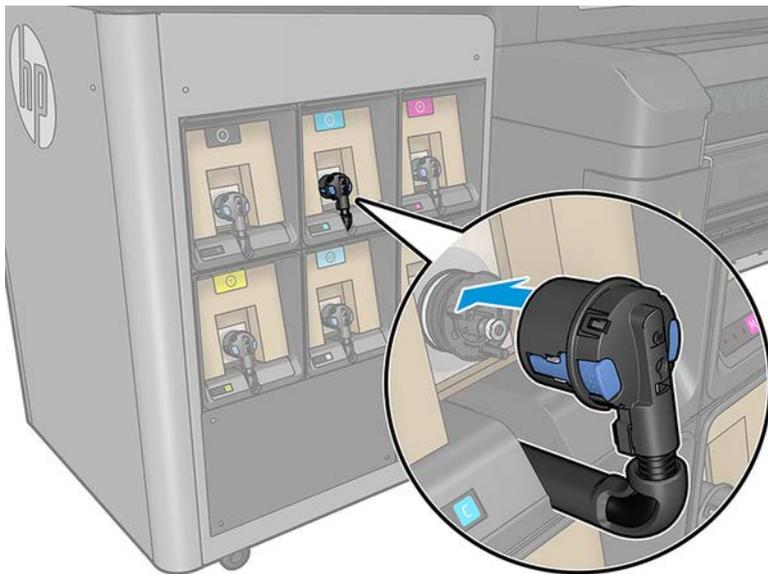
📝 **NOTE:** The cartridge connectors will refuse connection to the wrong type or color of cartridge. If you cannot connect the connector easily to the cartridge, check that you have the correct cartridge.

7. Ensure that the tabs on each side of the cartridge connector are opened but in place, showing successful connection. You will hear a click.

8. A few seconds after you have connected the cartridge, the white LED should be lit. If it is not lit after 10 seconds, reconnect the cartridge. The LED will turn red if the cartridge is expired or not valid; see the Internal Print Server for further details and corrective action.

Although it is possible to use non-HP ink cartridges, this choice has several serious disadvantages. It may not be possible to determine with enough accuracy the ink level or status of used, refilled, or counterfeit ink cartridges.

Any service or repair required as a result is not covered under the warranty. System ink flushing, color calibration, and printhead alignment are recommended. If you experience print-quality problems, HP recommends changing to Original HP inks.

Maintain the ink cartridges

During the normal lifetime of a cartridge, no specific maintenance is required.

However, in order to maintain the best print quality, replace a cartridge when it reaches its expiration date. An alert notifies you when any cartridge reaches its expiration date. You can also check a cartridge's expiration date at any time: see Printer status and alerts on page 22.

Check the status of the ink cartridges

The Internal Print Server provides information about the status of the ink cartridges. Additional information can be obtained from the status lights in front of each ink cartridge (on the left side).
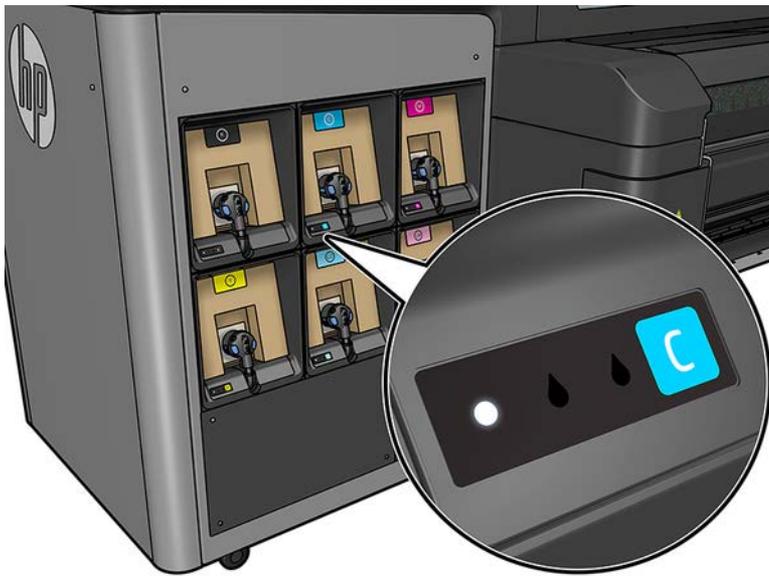
- White steady light: no problems

- White slowly blinking light: cartridge in use, do not touch

- Orange blinking light: cartridge is empty

- Red steady light: there is a problem, check the Internal Print Server for more information

- All lights off: no cartridge, cartridge not connected, or unknown problem

The level of ink remaining in each color is displayed at the top right of the Internal Print Server's main screen. You can see more details of ink cartridge and printhead status by selecting **Information** > **Supplies**.

📝 **NOTE:** The ink level estimates are not guaranteed to be accurate.

📝 **NOTE:** If the warranty status is **See warranty note**, this indicates that expired ink is being used. If the warranty status is **Out of warranty**, this indicates that non-HP ink is being used. See the limited warranty document provided with your printer for details of the warranty implications.

Aerosol filters

The printheads produce many fine droplets of ink, most of which are placed accurately on the substrate. However, a small proportion of these droplets escape sideways; the two aerosol filters are placed on either side of the printhead carriage to intercept them.

The filters should be changed every time the printhead cleaning roll is replaced. They are provided with the HP 871 Latex Printhead Cleaning Kit.

Left spittoon

The left spittoon is a rectangular piece of foam that allows the printhead nozzles to be refreshed at the left side, before printing a pass from left to right.

Change one or two foams from the left spittoon every time the cleaning roll is replaced. The foam is provided with the HP 871 Latex Printhead Cleaning Kit.

Condensation collector bottle

The printer has a system that collects most of the vapor generated while drying and curing the ink and condenses it in a bottle located at the left side of the printer. You should check the bottle from time to time and empty it when necessary. Consult your local authorities to determine the correct manner in which to dispose of wastes.

Waste profile datasheet contains the required information for an adequate disposal. This document is located here https://hplatexknowledgecenter.com/applications/wasteprofiles.

Ink deposits

The printer can check the firing capacity of each single nozzle. Doing so causes small amounts of ink to accumulate close to the drop detector. This ink gradually forms ink deposits that need to be cleaned.

Printheads

The printheads take ink from the ink cartridges and deposit it on the substrate.

⚠ **CAUTION:** Observe precautions when handling printheads because they are ESD-sensitive devices (see the Glossary on page 425). Avoid touching pins, leads and circuitry.

The printer's six-color writing system uses 3 dual-color printheads with a total of 31,680 nozzles, and an HP Latex Optimizer printhead with 10,560 nozzles.

⚠ **WARNING!** Printheads should be stored vertically: if boxed, with the box arrows pointing up; if out of the box, with the nozzle cap up.

Remove a printhead

During the installation of the printer, the designated personnel received training for safe operation and maintenance of the printer.

See a video here:

www.hp.com/go/Latex3000/Replace_Printhead

📝 **NOTE:** This video applies to HP Latex 800, HP Latex 1500 and HP Latex 3x00 Series printers.

⚠ **WARNING!** This operation is limited to trained personnel only!

📝 **NOTE:** It is not allowed to use the printer without this training.

Table 7-1 Warnings Removing a Printhead

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

If a printhead develops an electrical fault or overheats, the Internal Print Server will indicate that it should be reseated or replaced. In addition, you may wish to replace a printhead if its warranty has expired or if you feel that its performance is not adequate.

Replacing the printheads

The following steps provide the complete procedure for this topic.

1. Ensure that the printer is not trying to print: Stop the job queue.

2. In the Internal Print Server, select **Printer** > **Replace printheads**.

3. If the window is open, you are asked to close it.

4. The carriage moves automatically to service position. Open the window to access it.
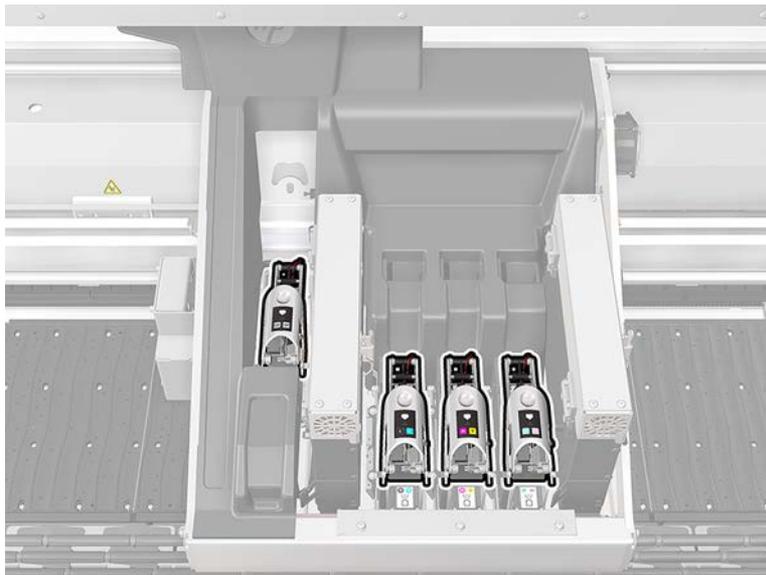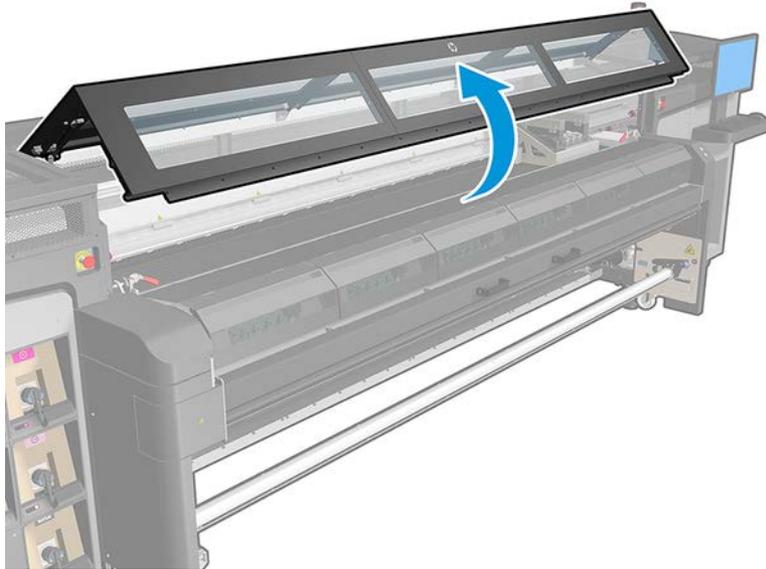
5. The Internal Print Server tells you which printhead to remove. Release the latch that secures the printhead, and lift it.
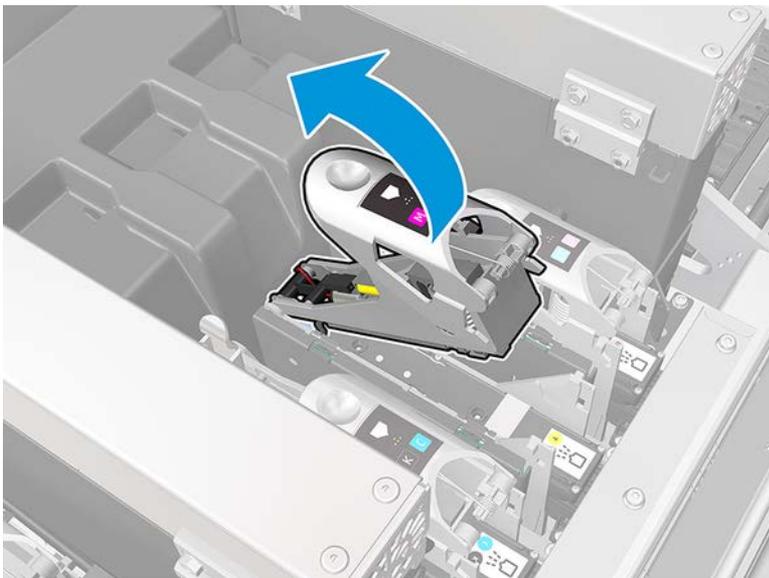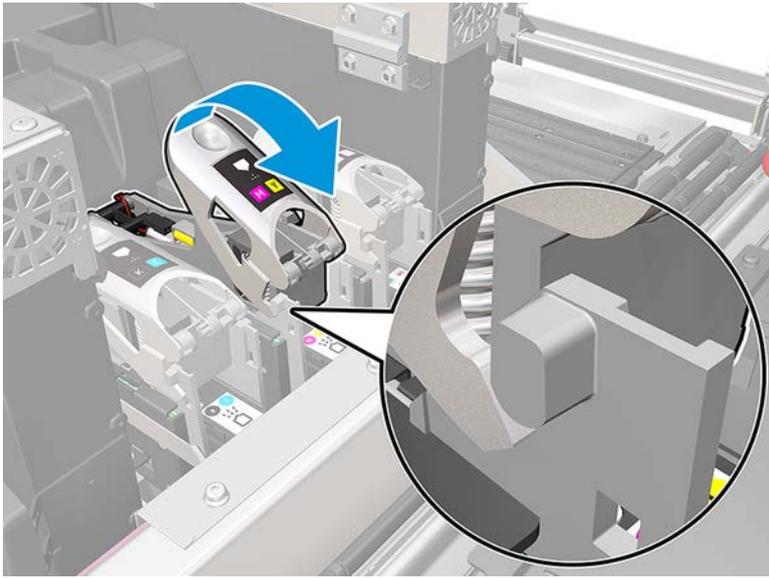
6. Lift the blue handle provided with the printhead, and pull the handle gently upwards to disconnect and extract the printhead from the carriage.
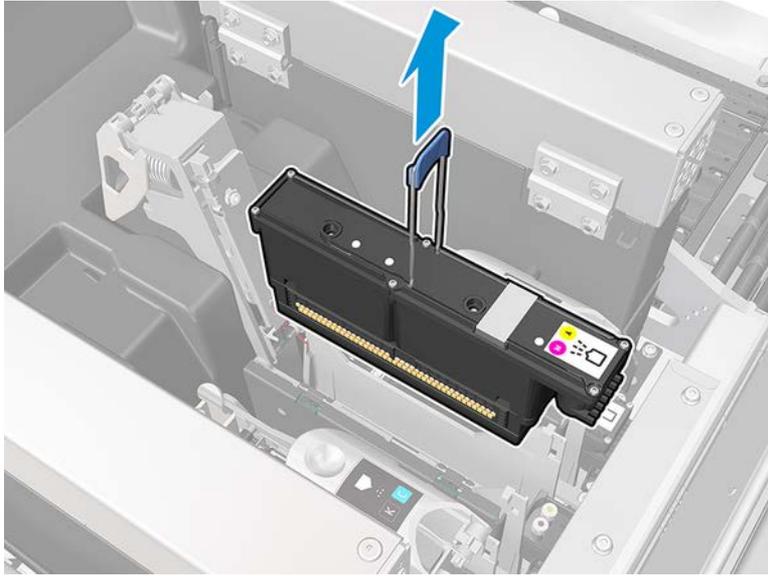
7. Remove the printhead from the printer. The original packaging materials can be used to discard the old printhead or in case there is a need to return it to HP.

When removing the optimizer printhead

The following steps provide the complete procedure for this topic.

1. Locate the optimizer printhead.
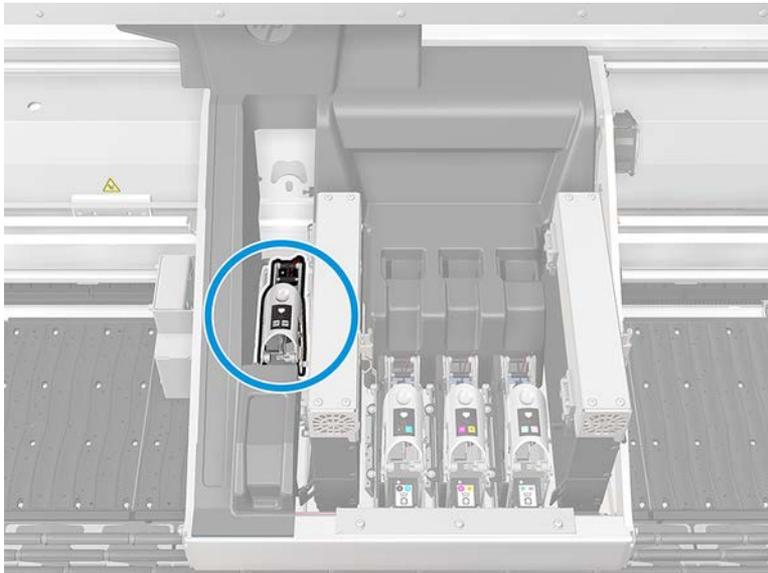
2. Open the latch.

3. Insert the latch handle in the hole at the rear wall of the carriage.
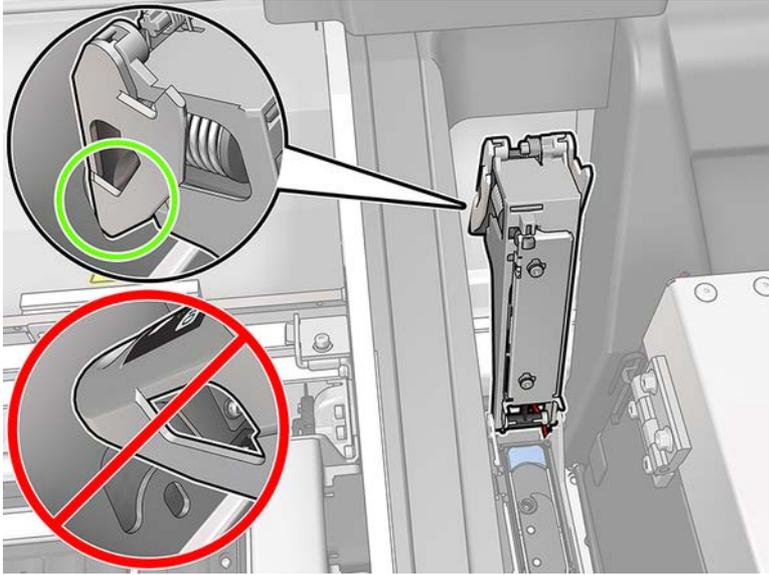
4. Tilt the printhead forward a little before taking it completely out of its pocket in order to avoid damage to delicate parts.
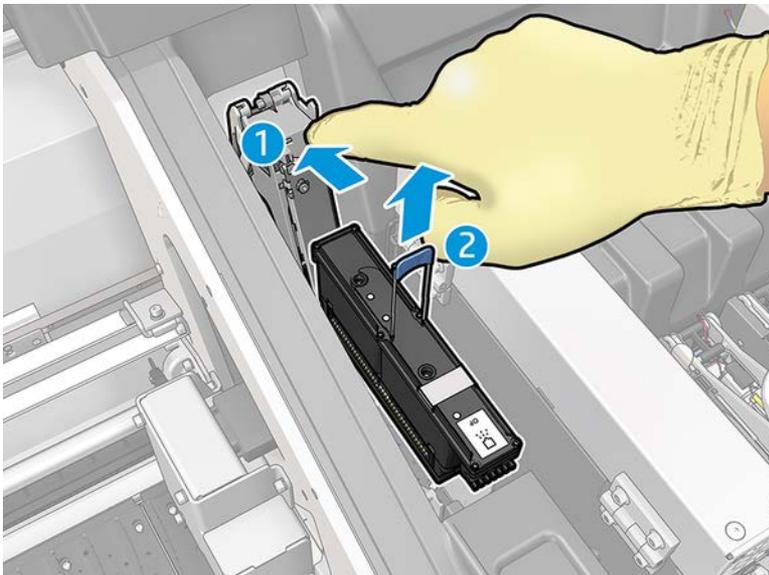
5. If the printhead is to be reused, protect it using its orange sealing cap.

⚠ CAUTION: Make sure each printhead uses its own cap and not the cap for some other printhead. This is especially important with the optimizer printhead caps as there is a high risk of nozzle damage if they are mixed with the color printheads and vice versa. The optimizer caps are labeled as shown below.

📝 NOTE: Remember which printhead came from which slot; the printer will report an error if you later replace a printhead in a different slot.

Insert a Printhead

The following steps provide the complete procedure for this topic.

1. Check that the new printhead is of the correct colors.

📝 NOTE: Each printhead has a unique shape and cannot be inserted into the wrong slot. Do not try to force it.

2. Shake the printhead according to the instructions on the packaging.
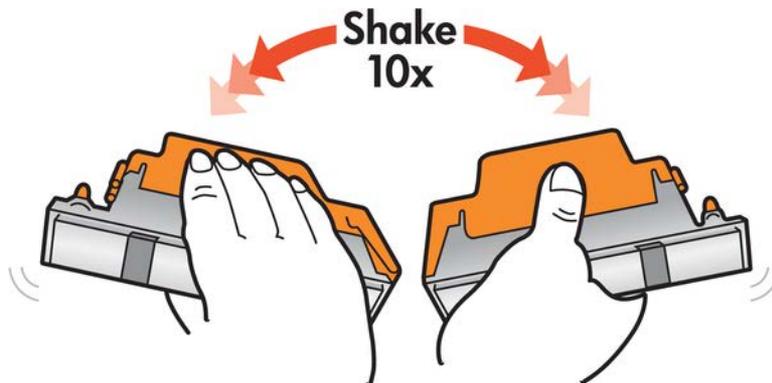
3. Remove its packaging and protective caps.

    ☀ **TIP:** You may wish to keep the protective caps for later reuse, in case you ever want to remove a printhead from the printer.
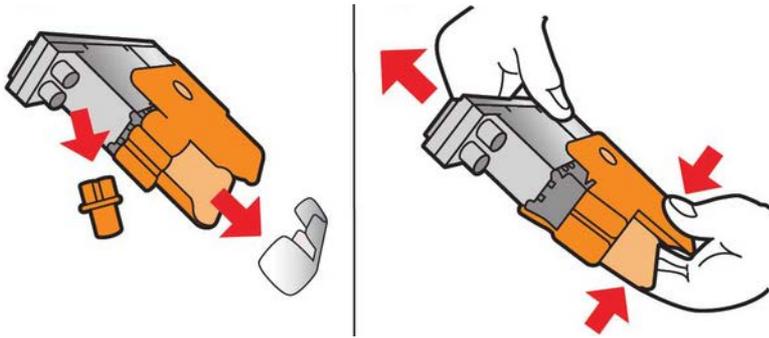
4. Put the new printhead into its correct place in the printer, and lower its handle.

⚠ CAUTION: Insert the printhead slowly. It is recommended to insert it as vertically as possible without hitting any parts of the carriage or the sides of the slot. It may be damaged if you insert it too fast, or if you hit something.
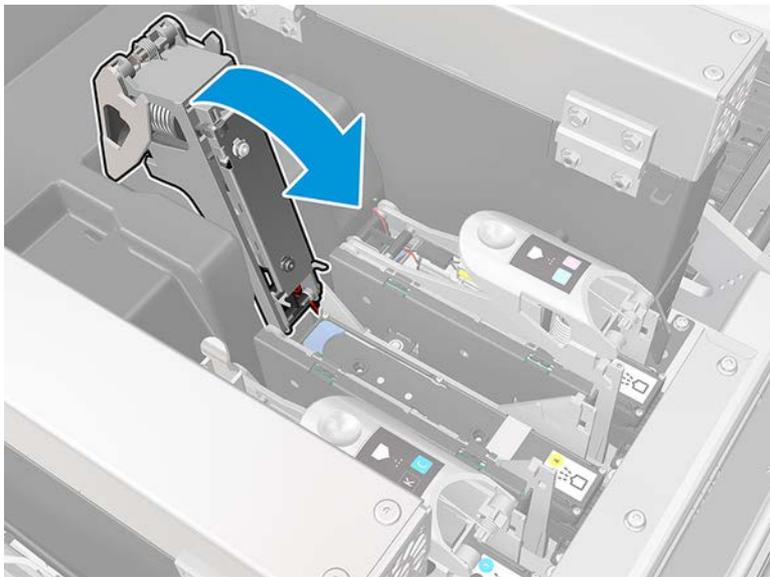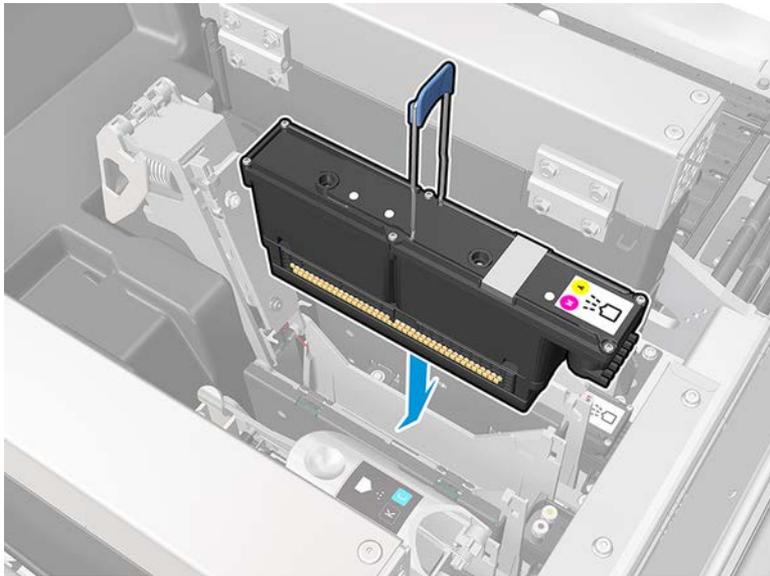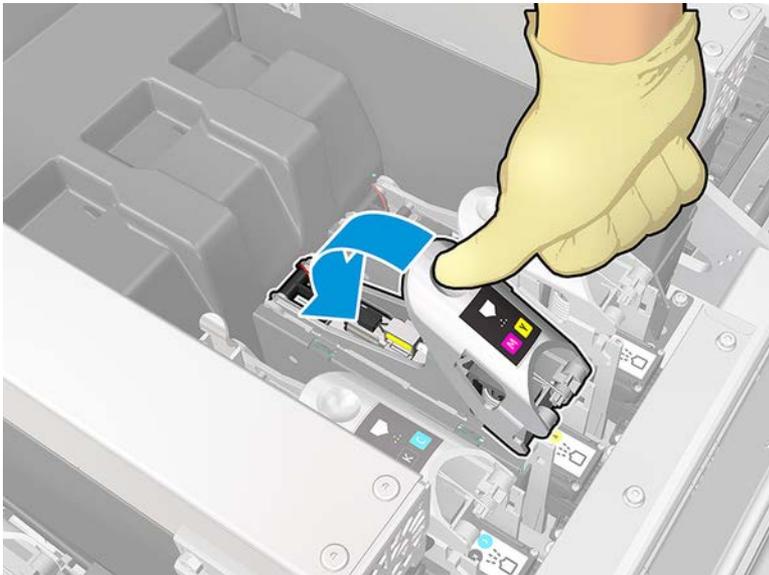

5. Lower the latch until it lies on the printhead but do not close it yet.

6. Press with two fingers on the primer to ensure the primer ports are well inserted.
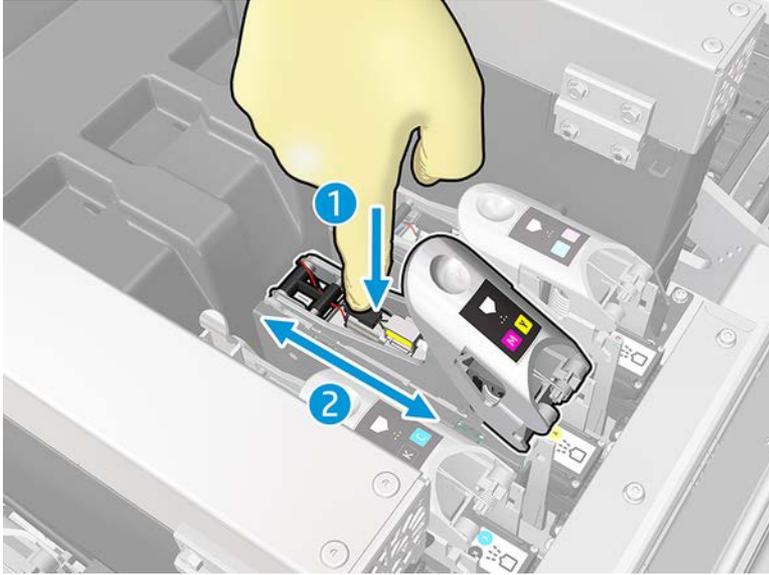
7. Secure the latch.

8. Close the window and press **OK**. The printer checks that the new printhead has been correctly inserted (the status is shown in the Internal Print Server), and recommends printhead alignment, which is optional.

9. Restart the job queue.

When inserting the optimizer printhead

The following steps provide the complete procedure for this topic.

1. Push the latch handle against the rear beam and Insert the latch handle into the hole in the rear wall of the carriage.
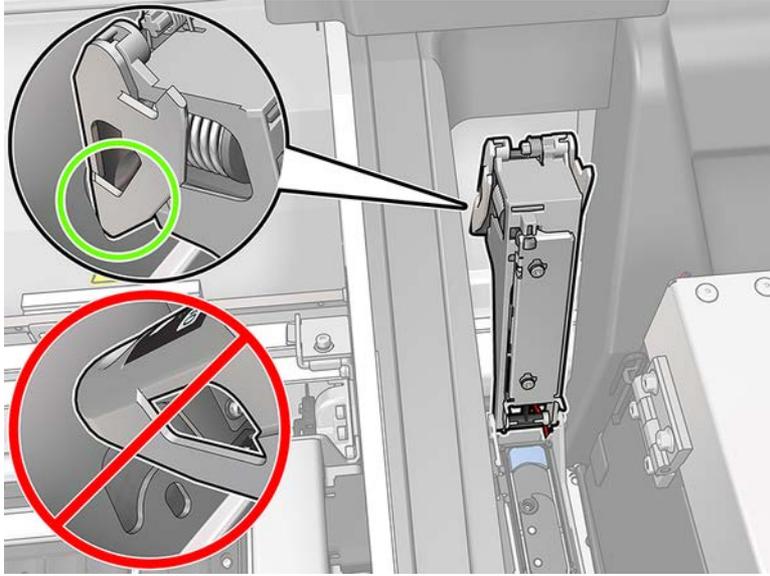
2. Insert the printhead at an angle and below the two little latches shown below. Rotate it until it is vertical and press it to insert.
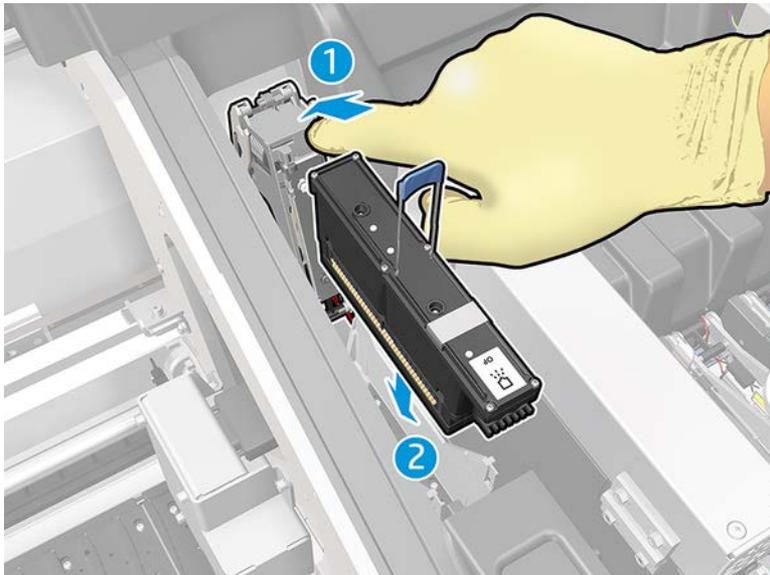
3. Press on the primer with two fingers before securing the latch to ensure proper connection.

Maintain the printheads

You should perform an automatic printhead check and clean every morning, before starting to print.

While the printer is idle, the components of the ink can precipitate inside the printhead and block the nozzles. The check and clean process pre-cleans the printheads, checks them with the drop detectors, and cleans them further if necessary. It takes between 10 and 30 minutes, depending on the condition of the printheads. To maintain the best print quality, replace a printhead when it reaches its expiration date. An alert notifies you when any printhead reaches its expiration date.

You can also check a printhead's expiration date at any time: see Printer status and alerts on page 22.

Printheads should be aligned from time to time: see Align the printheads on page 137.

TIP: If you remove an unexpired printhead from the printer, planning to reuse it later, the best way to protect it is by replacing the protective caps that you removed before inserting it into the printer.

CAUTION: It is important to use the HP Latex Optimizer sealing cap for the HP Latex Optimizer printhead.

Check and clean the printheads

This procedure should be followed daily.

1. Go to the Internal Print Server and select **Printer** > **Printhead cleaning**.
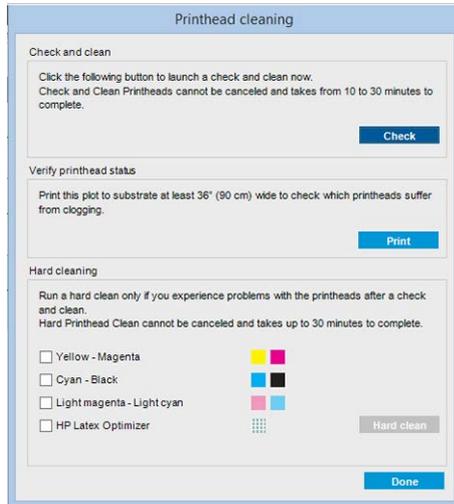
2. Press the **Check** button to perform routine cleaning automatically.

Printhead cleaning roll

The printhead cleaning roll is a roll of absorbent material used in the normal operation of the printer to clean the printheads periodically (at the beginning and end of printing, on printhead check and clean, and so on).

This helps the printheads to deliver continuous ink and maintain print quality. The roll should be replaced whenever it is used up, to avoid damaging the printheads. The frequency of replacement depends on your use of the printer. A single roll will last approximately 40 liters; this may take about 3.5 weeks at a usage level of 5,000 m²/month (50,000 ft²/month).

An alert is displayed when 75% of the roll has been used, and again when 95% of it has been used. You can choose to replace the roll at any time. The printer will not print when the roll has been 100% used.

If there is not enough of the roll to start a new job, the printer cancels the job.

To change the printhead cleaning roll, see . The HP 871 Latex Printhead Cleaning Kit can be ordered in the normal way.

TIP: You should not touch the printhead cleaning roll except when you need to replace it. Any interference with the roll may prevent the printer from keeping track of roll usage, in which case you may see spurious error messages, and a printing job may be cancelled unnecessarily.

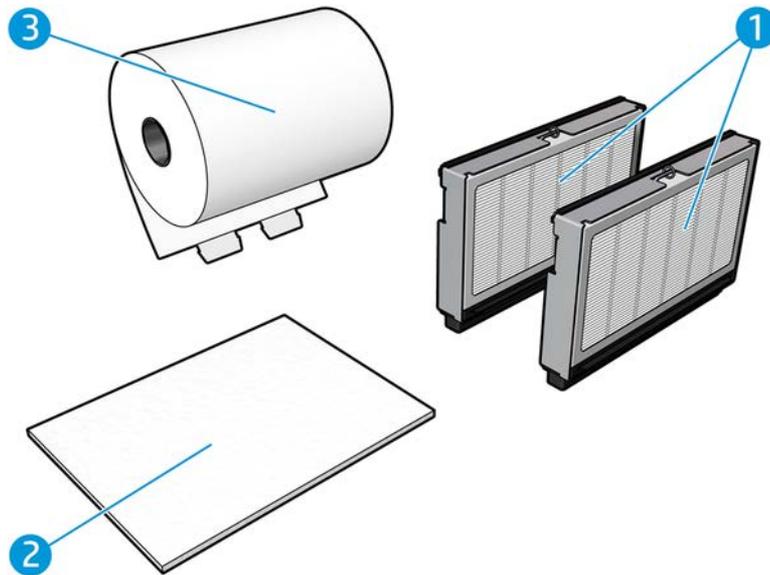## Replace the printhead cleaning roll, filters, and spittoon

When the cleaning roll reaches its end, it must be replaced, together with the aerosol filtersand left spittoon. All these parts are supplied together with the HP 871 Latex Printhead Cleaning Kit.

WARNING! This operation is limited to trained personnel only!

NOTE: During the installation of the printer, the designated personnel received training for safe operation and maintenance of the printer. It is not allowed to use the printer without this training.

Table 7-2 Precautions

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

Replacements

The Internal Print Server provides instructions for all replacements.

1. Aerosol filters

2. Left spittoon

3. Printhead cleaning roll

Go to the Internal Print Server and select **Printer** > **Replace cleaner roll**. A wizard appears summarizing all the operations to be done:

● Replace the aerosol filters.

● Replace the left spittoon.

● Replace the printhead cleaning roll.

TIP: You are recommended to wear gloves.

Click **Next** at the bottom of the wizard window to start the replacement of the aerosol filters.

Replace the aerosol filters

The following steps provide the complete procedure for this topic.
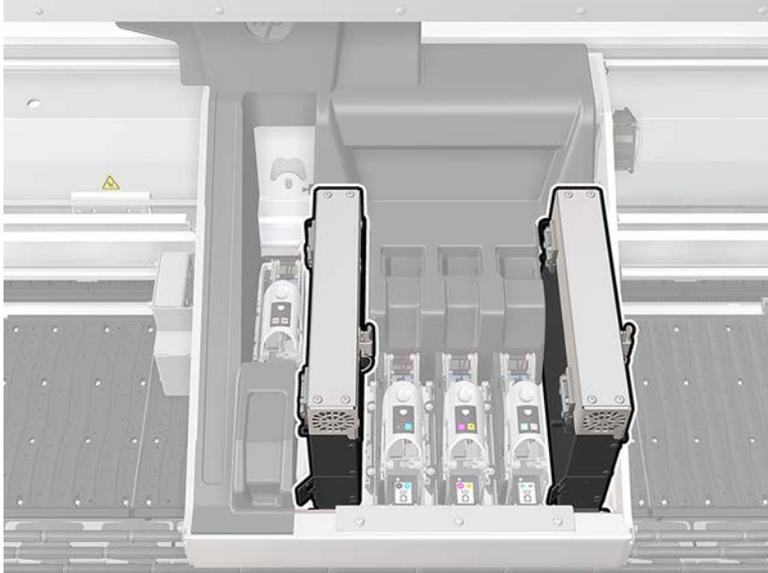
1. Ensure that the printer is not printing.

2. Ensure that all windows, covers, and doors are closed and remain in their original position.
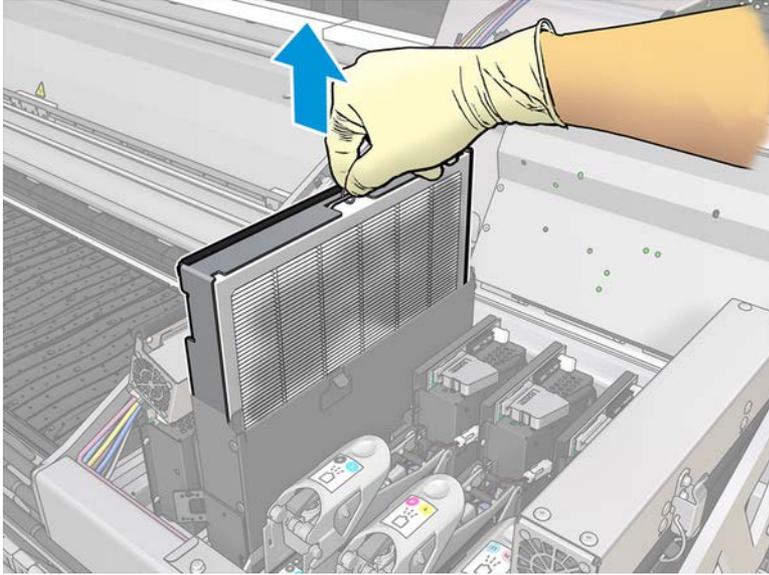
3. Open the window.
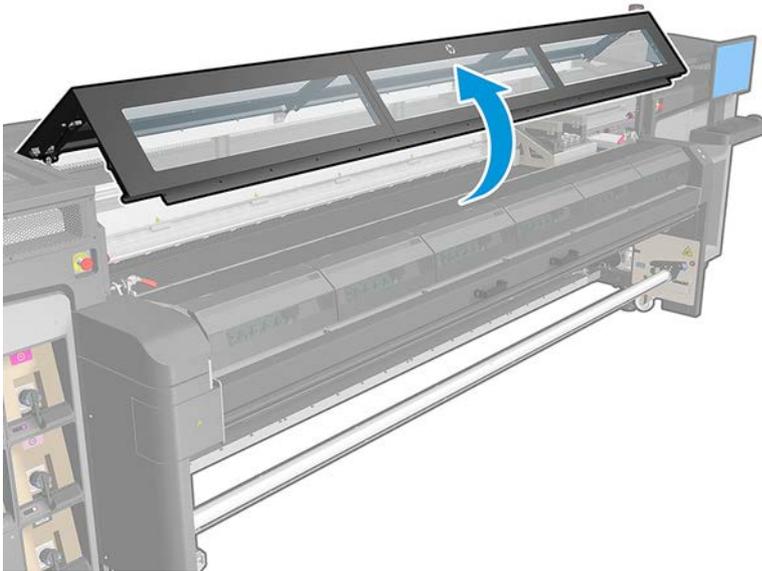
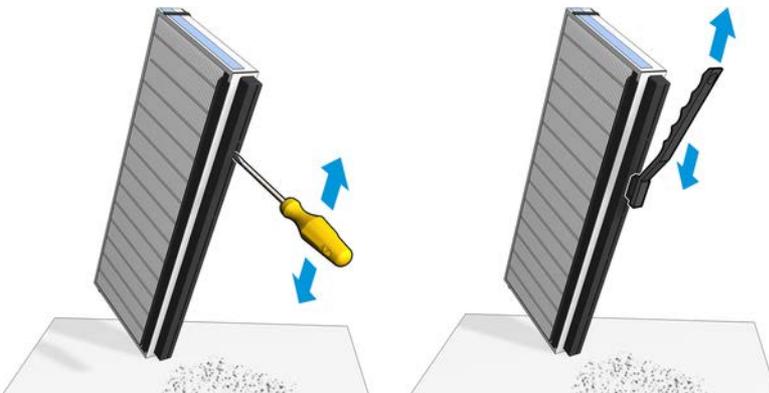4. Open one latch on the right side of each aerosol filter module.
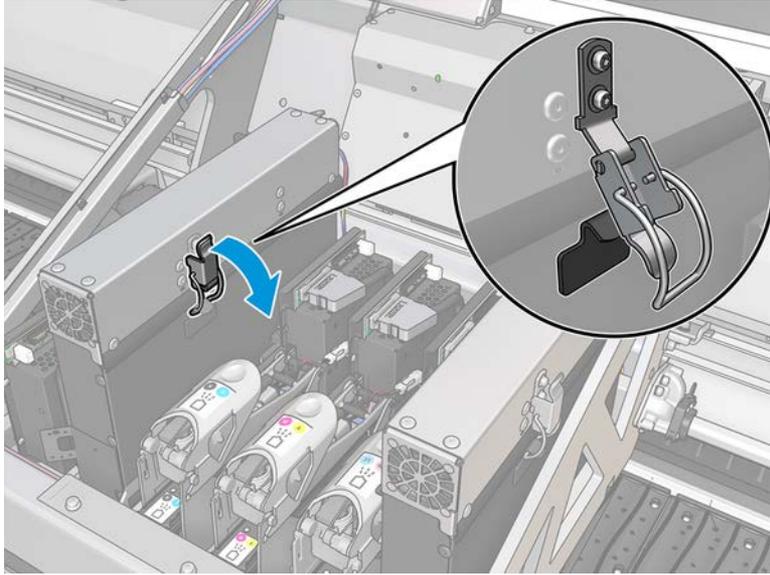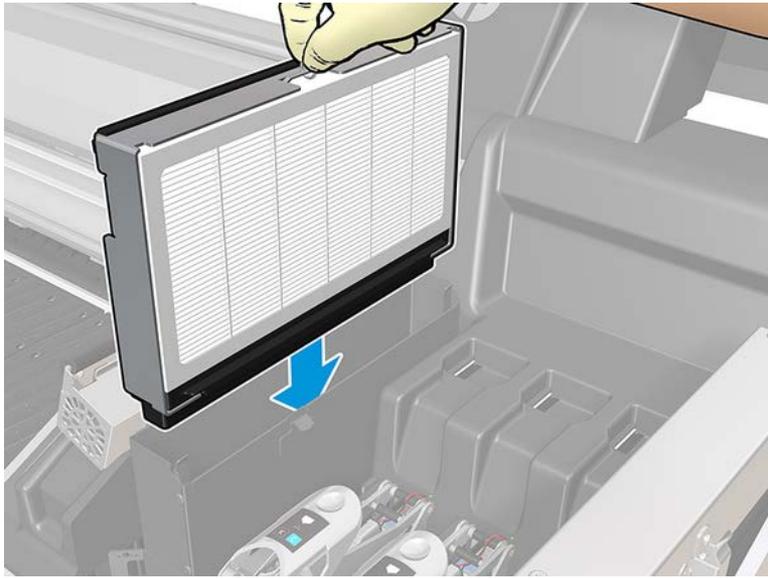

5. Open the lid of each filter.

6. Extract the frame from the aerosol container and remove the filter from the frame.

7. Clean the frame nozzle with the Maintenance Kit brush.

8. Insert the two new filters into each frame. There is only one way to insert the frames that works. If you feel resistance, try to insert the frame the other way round.

9. Close the lids.

10. Close the latches.

11. Click **Next** at the bottom of the wizard window to start the replacement of the left spittoon.

Replace the left spittoon

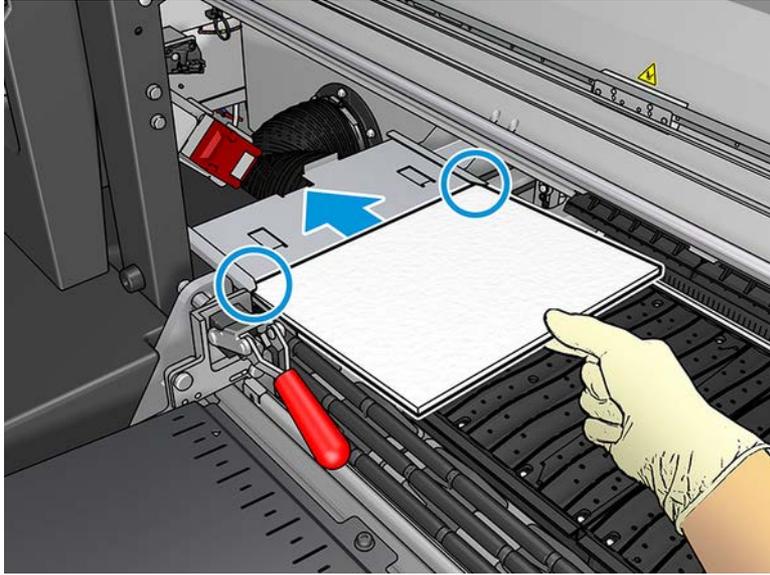The following steps provide the complete procedure for this topic.

1. Open the window.

2. Locate the left spittoon at the left side of the print area.

3. Slide out the left spittoon foam.
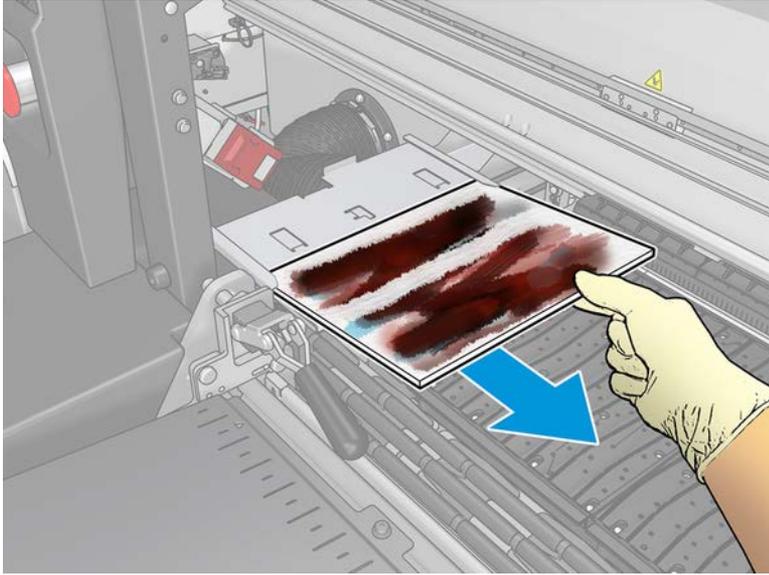
4. Insert the left spittoon into the left spittoon housing. Ensure that it is flat.
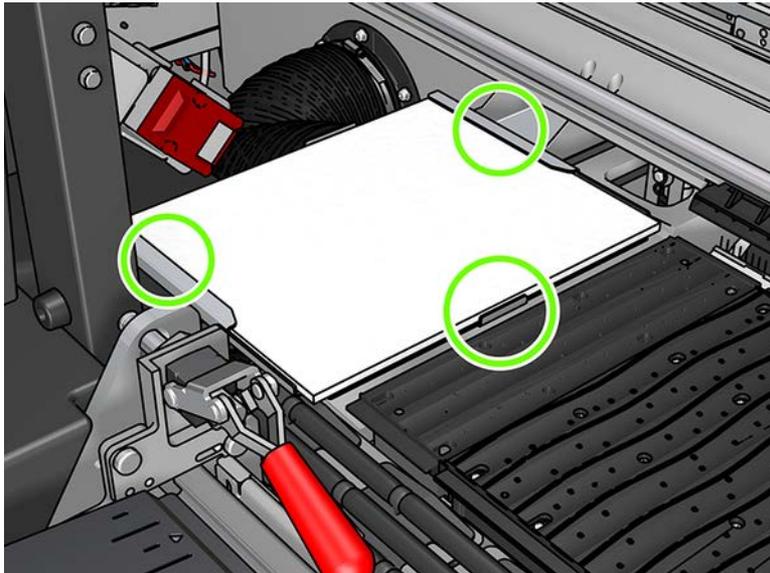
5. Click **Next** at the bottom of the wizard window to start the replacement of the printhead cleaning roll.

Replace the printhead cleaning roll

See a video here:

www.hp.com/go/Latex1500/Cleaning_roll_and_filters_replacement

📝 **NOTE:** This video applies to HP Latex 800, HP Latex 1500 and HP Latex 3x00 Series printers.

1. Any unused portion of the roll is wound on to the takeup roll at this time. You will be warned if the unused portion is more than 5% of the whole roll.

2. In order to replace the printhead cleaning roll, unlock and open the door on the front right of the printer.
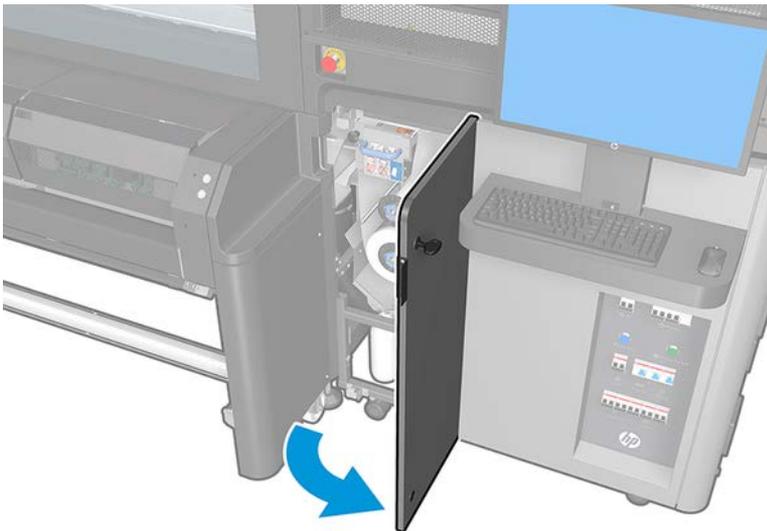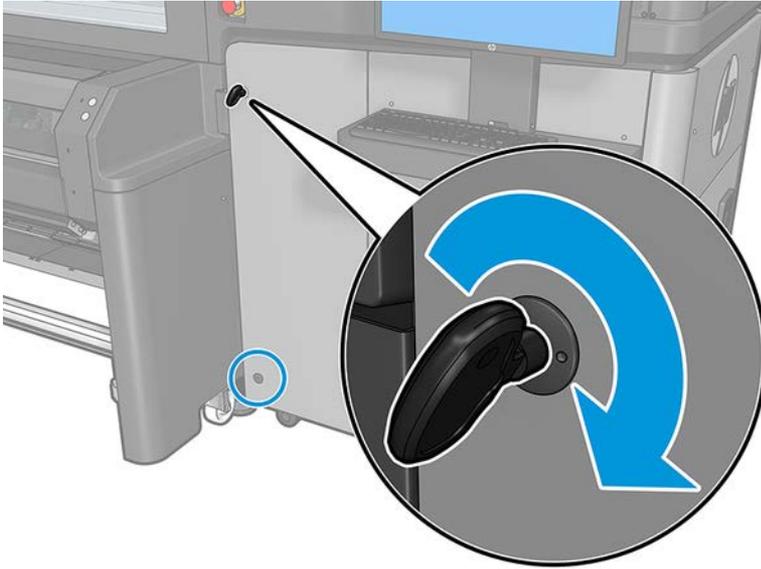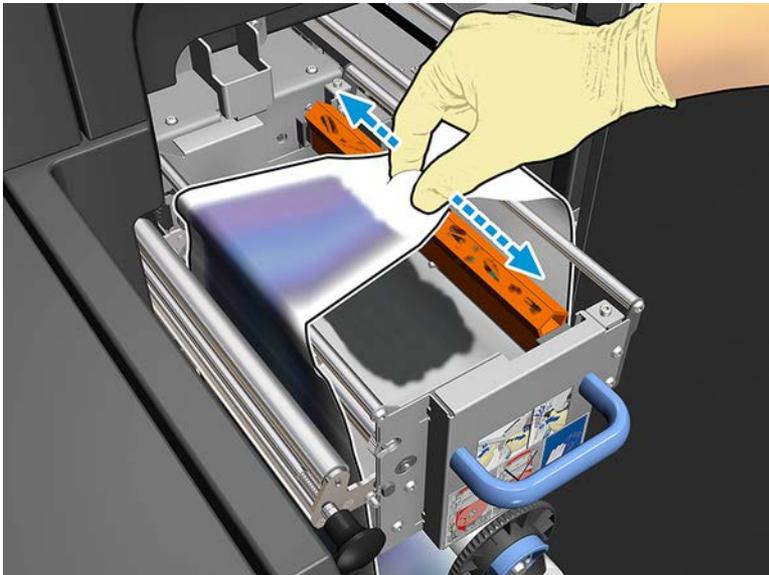
3. Grip the handle and pull the whole printhead cleaning roll assembly out through the door.
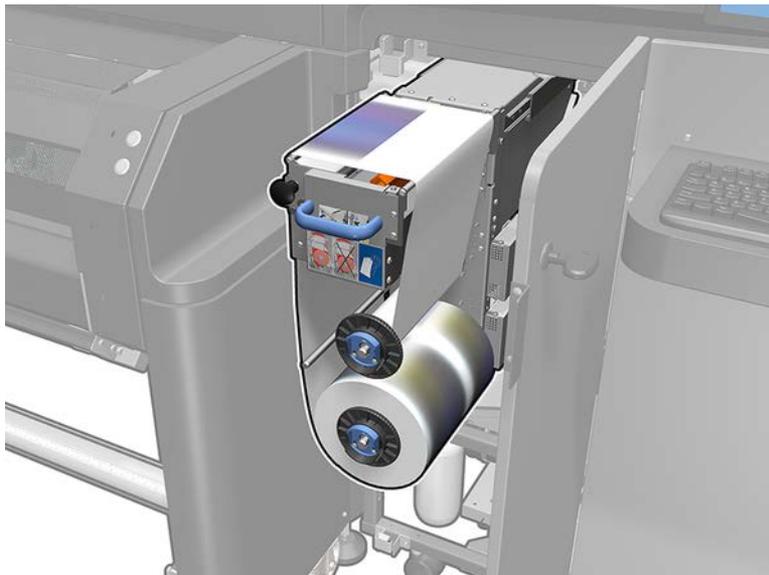
4. Pull the black knob on the upper left and move the pinch system aside.
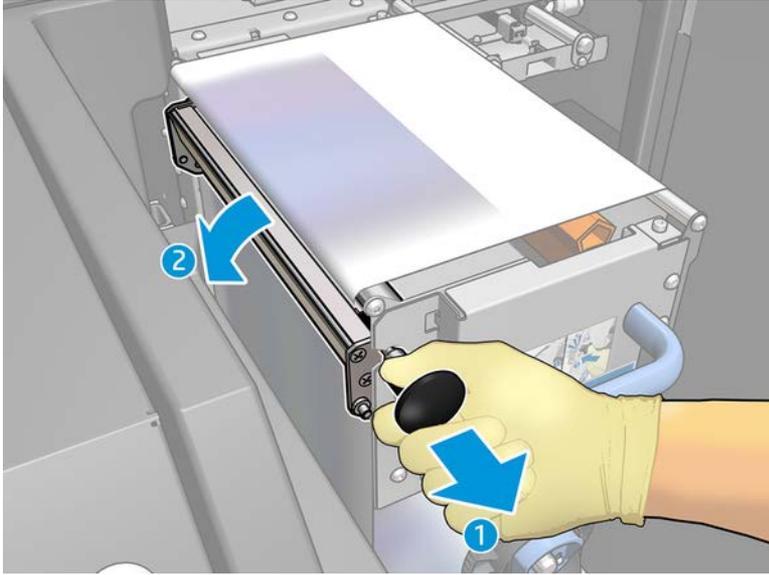
5. Clean the rubber blade with the end of the roll.

6. Slide both rolls off their axles and dispose of the roll with the used cleaning material according to the instructions provided with the new roll. Also consult your local authorities to determine the correct manner in which to dispose of wastes. Keep the empty core to use as a takeup core.
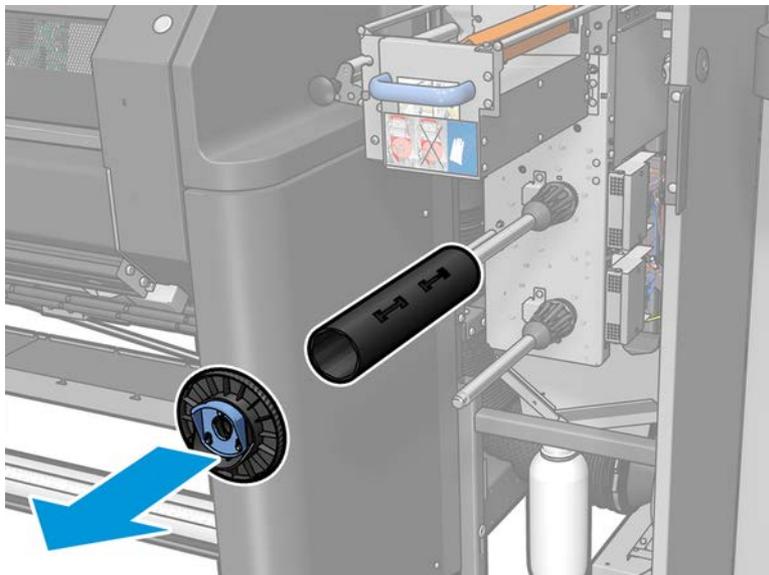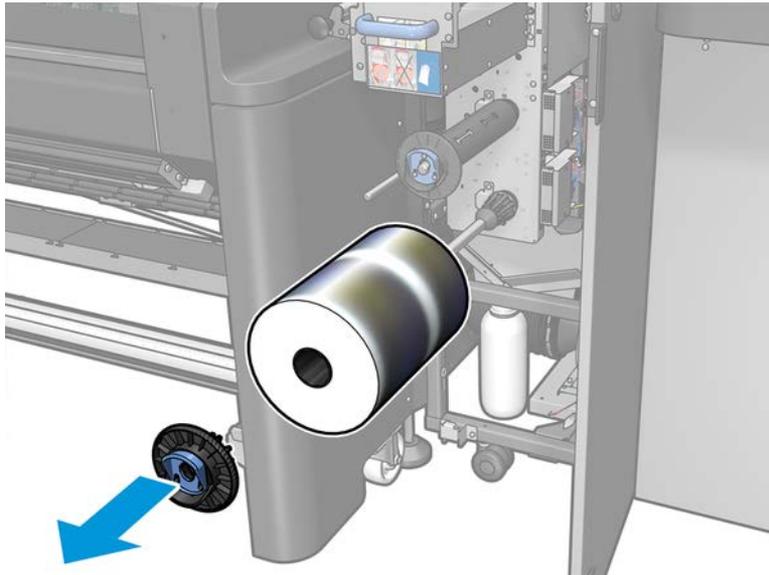

7. Slide the new roll onto the upper axle.

8. Insert the upper axle, placing the end cap on the side, and slide it all together until you hear a click.

9. Pass the leading edge of the roll over the upper rollers, and thread the cleaning material through the rollers on the left.
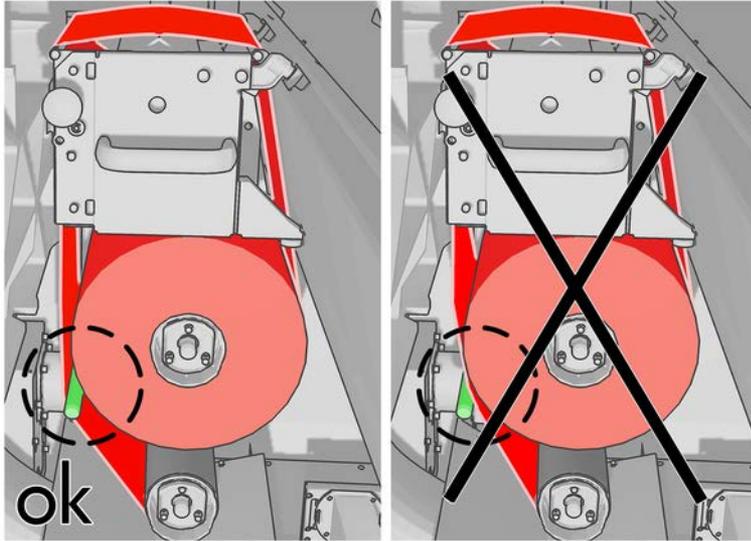
10. There is a strip of polyester film on the leading edge of the cleaning material. Insert it into the hole in the takeup core, which takes hold of it.

11. Slide the takeup core onto the lower axle.
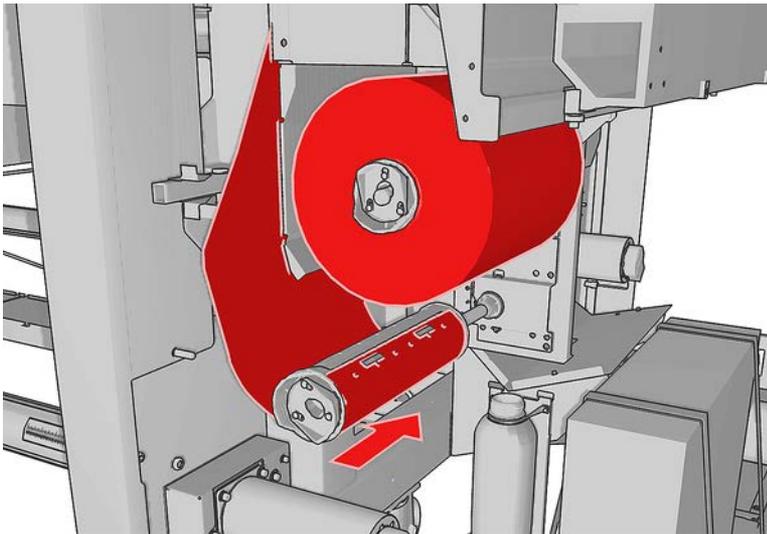
📝 **NOTE:** If the cleaner roll has not been properly installed, you may see a message about clearing a printhead cleaning roll jam. Pull the whole assembly out, wind a little of the roll forward, then slide it back in again. The printer will check the roll again.

📝 **NOTE:** Do not cut the cleaning material in order to reattach it to the lower roller. An unexpected roll radius can produce errors on the cleaning roll system.

12. Restore the pinch system by moving the black knob back into place. If you feel resistance because the cleaning roll is too tight, turn the roll slightly counter-clockwise.

💡 **TIP:** There is a green ring on the far side of the black knob, which should not be visible if the knob has been correctly placed. If it is visible, try again.
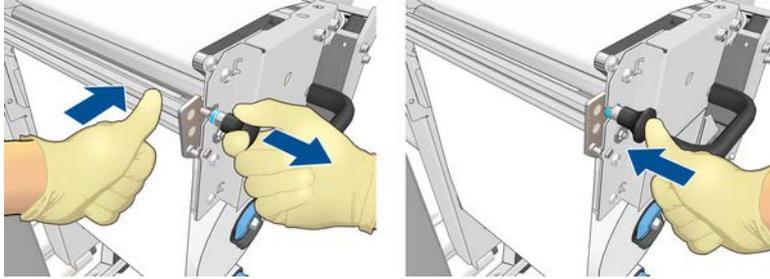
13. Grip the handle and push the whole printhead cleaning roll assembly back into the printer. Ensure that you push it as far as it will go.
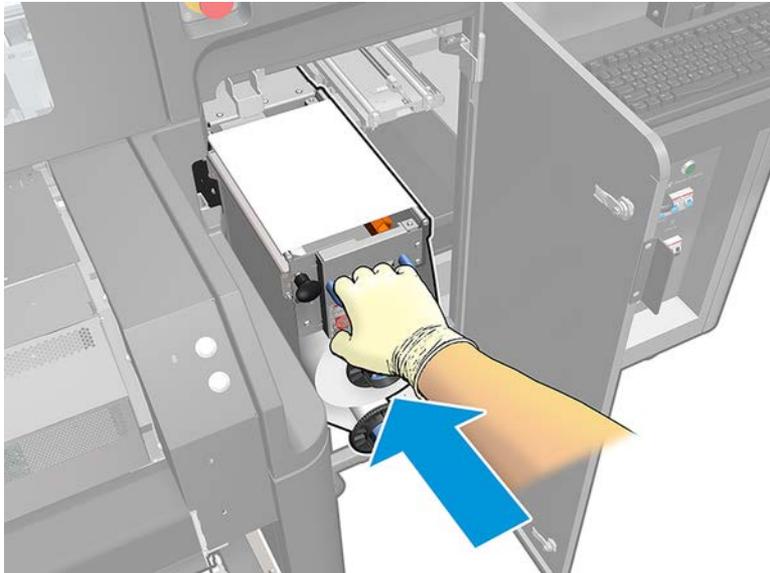
14. Close and lock the door.

15. Click **Finish** in the wizard window.

The printhead cleaning roll length tracking is now reset to zero.

📝 **NOTE:** If you tamper with half-used rolls, the usage shown in the Internal Print Server will not be accurate.

Do not empty or remove the waste bottle unless you are following the corresponding process described in Empty the printhead cleaning waste bottle on page 362.
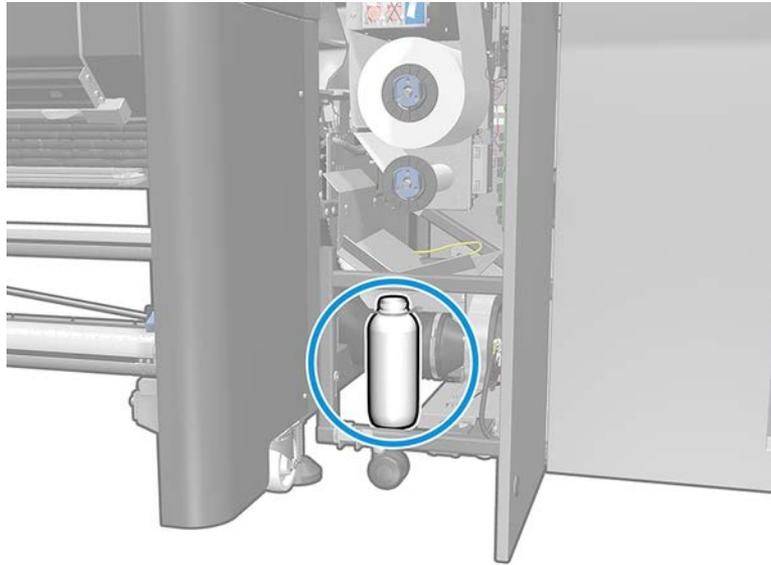
Safe mode

Under certain conditions, including printer operation outside of environmental specifications, and when a used, refilled, or counterfeit ink cartridge has been detected, the printer will operate in 'safe' mode.

HP is unable to warrant the performance of the printing system when operated outside of environmental specifications or when a used, refilled, or counterfeit ink cartridge is installed. Safe mode is designed to protect the printer and the printheads from damage due to unexpected conditions, and is in operation when the ⚠ icon is displayed on the printer's computer. For optimal performance, use Original HP ink cartridges. HP Latex printing systems, including Original HP inks and printheads, are designed and engineered together to provide uncompromising print quality, consistency, performance, durability, and value—with every print.

NOTE: This printer is not designed to use continuous ink systems. To resume printing, remove the continuous ink system and install genuine HP (or compatible) cartridges.

NOTE: This printer is designed for ink cartridges to be used until they are empty. Refilling cartridges prior to depletion might cause the printer to fail. If this happens, insert a new cartridge (either genuine HP or compatible) to continue printing.

8 Printer calibration

Precise alignment between printheads is essential for color accuracy, smooth color transitions, and sharp edges in graphical elements.

Align the printheads

You are recommended to align the printheads only when using a single-roll-to-roll configuration.

📓 **NOTE:** Printhead alignment with dual rolls is not recommended.

Printhead alignment is recommended in these situations:

- After replacing or reseating a printhead.

- When a new substrate is loaded and the printhead-to-paper spacing changes significantly.

- When there are print-quality problems that could be caused by printhead misalignment.

To align the printheads, go to the Internal Print Server and select **Printer** > **Printhead alignment**. There are two alignment types to choose from, automatic and manual.

Printhead alignment can be affected by wrinkles or other substrate deformations in the print zone. Therefore, if the printer has recently been printing, you should wait for some minutes while it cools down. Just in case, the printer advances the substrate before aligning the printheads.

Automatic alignment procedure

Automatic alignment is a fully automated procedure that ensures optimal print quality in most cases.

The printer prints three blocks of patterns and scans them with the built-in line sensor. This method is intended for any smooth, high-quality substrates (including vinyl and banner substrates).

Automatic alignment takes about 15 minutes. It is an unattended process, and uses printed substrate with dimensions 35 cm (13.8 in) wide by 54 cm (21.3 in) high. To launch, go to the Internal Print Server and select **Printer** > **Printhead alignment** > **Automatic** > **Align**.
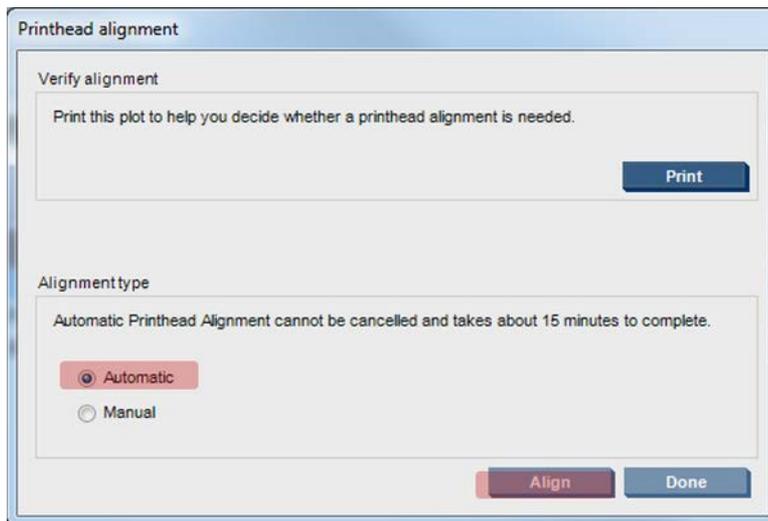
The picture below shows the three printed patterns:

- Scan axis alignment of each colorant, speed of 50 ips
- Scan axis alignment of each colorant, speed of 40 ips
- Substrates axis alignment of each colorant
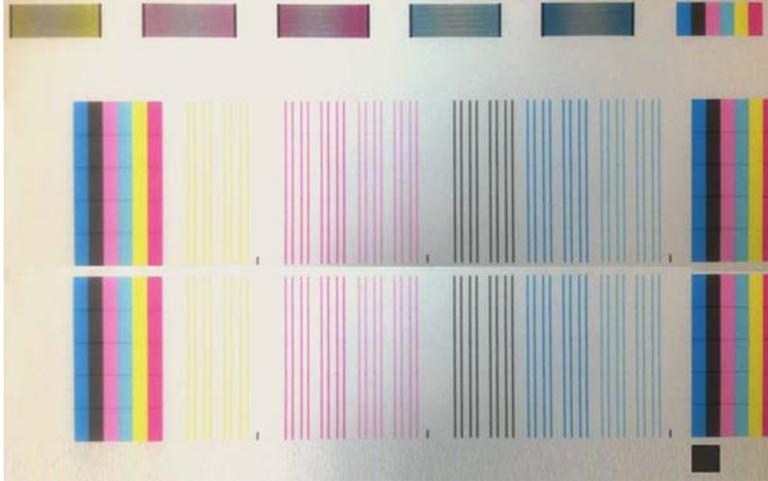
IMPORTANT: Automatic alignment does not align the optimizer. If trying to align the optimizer or install a new printhead optimizer, manual alignment is required. Modify the A and B values as shown in the manual alignment table, then execute the Automatic PH Alignment process.

NOTE: If automatic alignment fails, see .

Manual Alignment procedure

To launch Manual Alignment, go to the Internal Print Server and select **Printer** > **Printhead alignment** > **Manual** > **Align**.
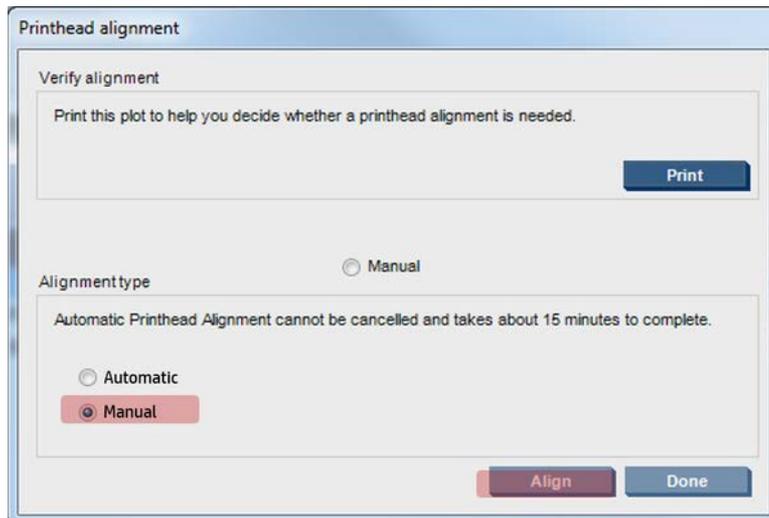

The printer prints 21 series of patterns, each one named with a letter (A–U). You must choose the best result from each of the series (for example, number 10 in the picture below).
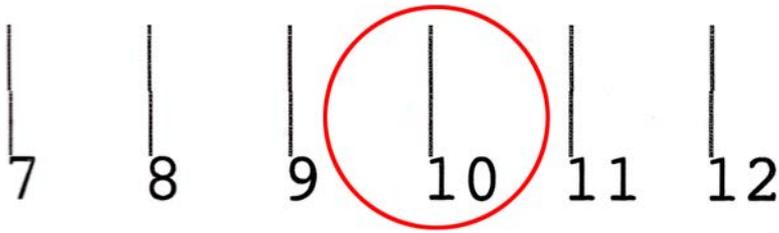
The alignment procedure includes both the colored printheads and the optimizer printhead, and takes about 10 minutes. It consumes printed substrate of 72 cm width x 37 cm height ((28.3 × 14.6 in)).

📝 NOTE: Depending on the firmware version, this pattern could be slightly different.
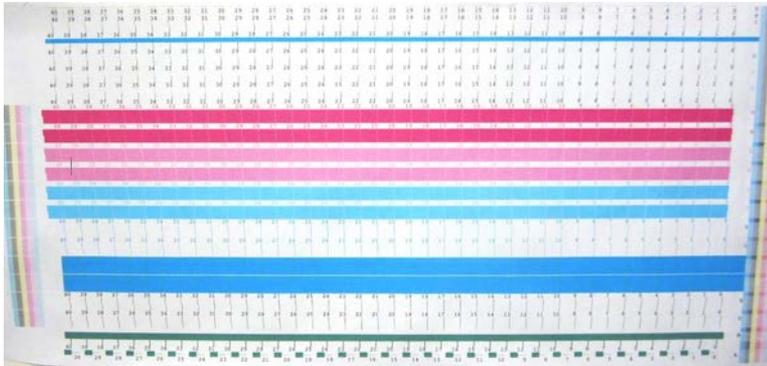
The picture below shows the distribution of printheads in the carriage. It also shows the correspondence between printhead and patterns, with guidance on the direction of the corrections (0–40) applied.
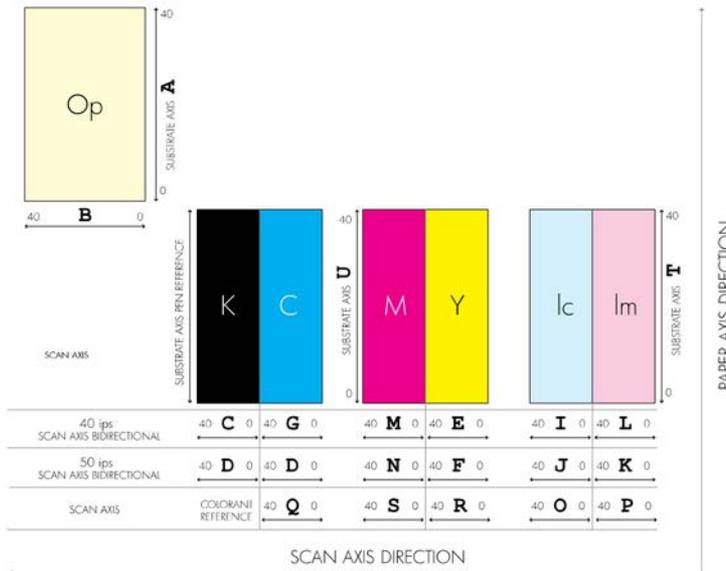
The following table summarizes the correction type controlled by each pattern:

Table 8-1 Correction type by each pattern

Pattern	Affected printheads	Correction type
A	Optimizer	Substrate Axis
B	Optimizer	Scan Axis
C	K	Scan Axis, Bidirectional 40 ips

Table 8-1 Correction type by each pattern (continued)

Pattern	Affected printheads	Correction type
D	K	Scan Axis, Bidirectional 50 ips
E	Y	Scan Axis, Bidirectional 40 ips
F	Y	Scan Axis, Bidirectional 50 ips
G	C	Scan Axis, Bidirectional 40 ips
H	C	Scan Axis, Bidirectional 50 ips
I	lc	Scan Axis, Bidirectional 40 ips
J	lc	Scan Axis, Bidirectional 50 ips
K	lm	Scan Axis, Bidirectional 40 ips
L	lm	Scan Axis, Bidirectional 50 ips
M	M	Scan Axis, Bidirectional 40 ips
N	M	Scan Axis, Bidirectional 50 ips
O	lc	Scan Axis
P	lm	Scan Axis
Q	C	Scan Axis
R	Y	Scan Axis
S	M	Scan Axis
T	lm, lc	Substrate Axis
U	M, Y	Substrate Axis

Take this into account when trying to compensate for any misalignment observed in the printhead alignment diagnostics plot.

The central correction is 20 (15 for A), being the default value for each pattern in the Internal Print Server.

Aligning the optimizer printhead

The optimizer ink is transparent, so it is not easy to detect visually. To make it easier, a background of composite ink has been added on top of it. It highlights the optimizer, making it visible most of the time.

The patterns A and B are intended to align the optimizer printhead to the colored printheads in both directions (scan axis and substrate axis).

The image below shows the background with the optimizer lines on top of it.
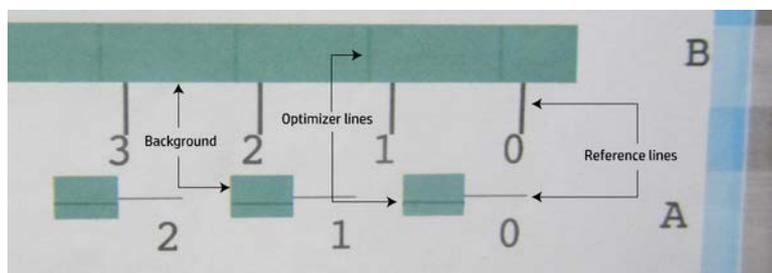
Possible difficulties with printhead alignment

The optimizer printhead or the colored printheads may have too many clogged nozzles, resulting in a poor background area fill, which makes it difficult to detect the optimizer bars.

In this case, see Check and clean the printheads on page 122.

The optimizer ink is invisible or hardly visible

The composite background to highlight the optimizer ink works for most substrates, but occasionally, with some substrates, there is not enough contrast to highlight the optimizer ink.

In these cases there are two possible solutions:

- Load a different substrate with more contrast to perform the alignment.

- Insert an intermediate correction (A=15, B=20), assuming the optimizer is well aligned. In this case, take a close look afterwards for associated defects, such as bleed, halo, or wicking (see Bleed, halo, wicking on page 397).

The optimizer printhead is still misaligned in the substrate axis after alignment

The optimizer printhead is staggered and there is a gap between it and the other printheads, so in the patterns A and B a substrate advance is needed to align it to the background and the reference black.

If the substrate advance is inaccurate, the optimizer correction for the substrate axis (pattern A) may not be valid. You may detect some bleed in the boundaries between colors in the substrate axis direction, usually when passing from high ink density areas to lower ink density areas. In this case, ensure that the substrate advance is accurate (see Substrate-advance compensation on page 148) before performing alignment.

A pattern shows more than one good correction

Occasionally you may find that a pattern has two or more possible good corrections, separated by two or more steps. This could be due to wrinkles on the substrate that change the printhead-to-paper spacing along the scan axis. To avoid this, ensure that the substrate is cold before starting the alignment, and advance it at least 70 cm to ensure that it is not deformed by the curing of the previous job.

Printhead alignment diagnostics plot

The printer offers a printhead alignment diagnostics plot, to assess the quality of the current printhead alignment. To print it, in the Internal Print Server select **Printer** > **Printhead alignment** > **Verify alignment** > **Print**.

NOTE: You can use the diagnostics plot to check printhead alignment, then fine-tune the values by following the instructions on the diagnostics plot. Also, if the substrate is similar to one that you already use, you can print only the diagnostic plot (much faster than printhead alignment) and fine-tune the values in the Internal Print Server.

IMPORTANT: The diagnostic plot is not designed to fine-tune automatic printhead alignment; in that case, the diagnostic plot is only used to check printhead alignment.

The next picture shows an example of the diagnostics plot. Each part is described following the terminology of the manual alignment. Row0 is the row of printheads closer to the substrate output, while Row1 is the row of printheads closer to the substrate input. In the same plot there is an area in which the carriage layout is described with the appropriate labels, just for reference.
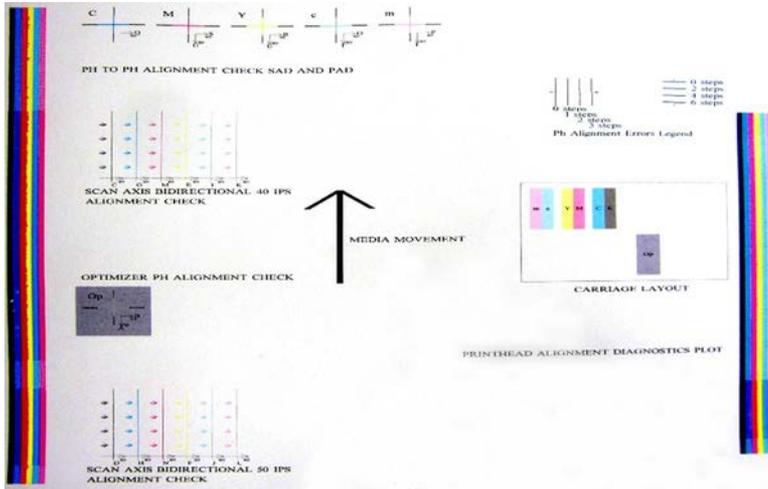
Zone 1: Printhead alignment check Scan Axis and Substrate Axis

This area shows printhead-to-printhead alignment. Each printhead has crosses, where it is compared to a reference printhead. In this case the black printhead has been chosen as a reference.

The colors are labeled C, M, Y, c, m. In each case, the inner cross should be aligned with the outer cross.

In case of misalignment the arrows indicate the pattern of the manual alignment that will correct the misalignment. Also, the '40' label indicates the direction towards where the line will be moved when a '40' value is applied. For example, imagine that in the manual alignment the chosen value for S is 23, and the chosen value for U is 17. Imagine also a misplacement in the M:
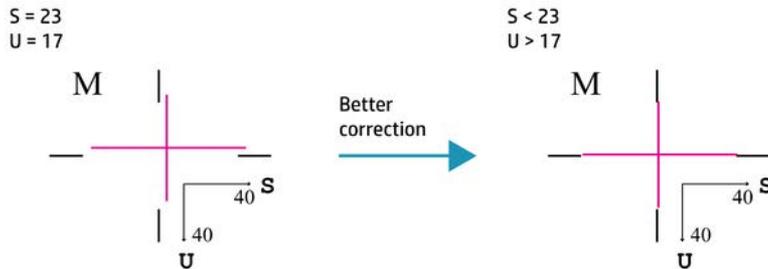

- **Scan axis misplacement:** The M line is displaced to the right. Since the '40' arrow points to the right, if you apply values bigger than your actual value it will be moved further to the right. But, since the vertical M line is displaced to the right, you need to move it to the left. Therefore, a value lower than your actual selection (S=23) is needed.

- **Substrate axis misplacement:** The M line is displaced to the top. Since the '40' arrow points to the bottom, if you apply values bigger than your actual value it will be moved to the bottom. This is just what you want, so a value higher than the actual selection (U=17) is needed.
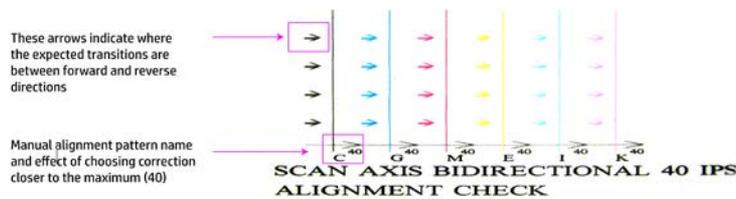
Zone 2: Optimizer printhead alignment check

This area shows the optimizer-to-color printhead alignment. The optimizer is referenced to the black ink. It works exactly the same as Zone 1. However, there is a background color that highlights the presence of the optimizer.

OPTIMIZER PH ALIGNMENT CHECK

Reference lines (outer cross)

Optimizer lines (inner cross)

Background of composite ink
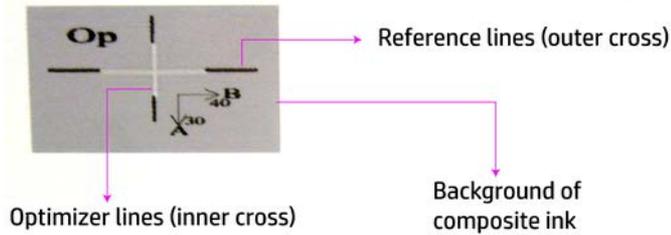
Zone 3: Scan-axis bidirectional alignment check

This area shows scan-axis bidirectional alignment between colors. As in the descriptions of the previous areas, in case of misalignment the bottom arrows indicate the pattern of the manual alignment that will correct the misalignment (I, J patterns). Also, the '40' label indicates the direction in which the line will be moved if a '40' value is applied. There are two areas for scan-axis bidirectional check, one for each speed (40ips and 50ips).

These arrows indicate where the expected transitions are between forward and reverse directions

Manual alignment pattern name and effect of choosing correction closer to the maximum (40)

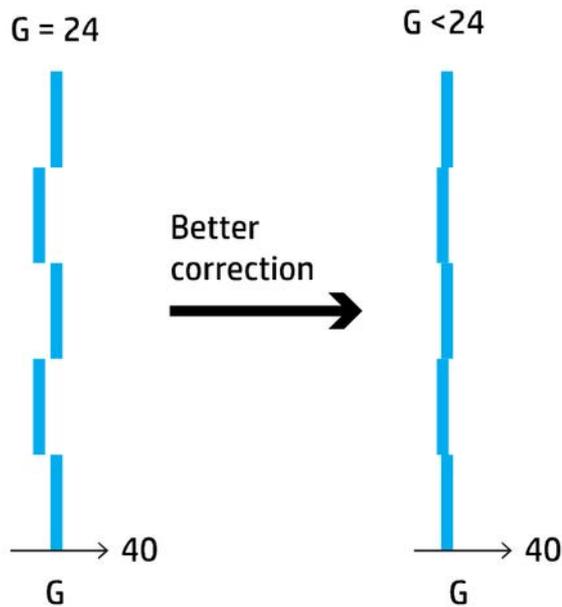SCAN AXIS BIDIRECTIONAL 40 IPS ALIGNMENT CHECK

This pattern is formed by a series of vertical lines, printed unpaired as follows:
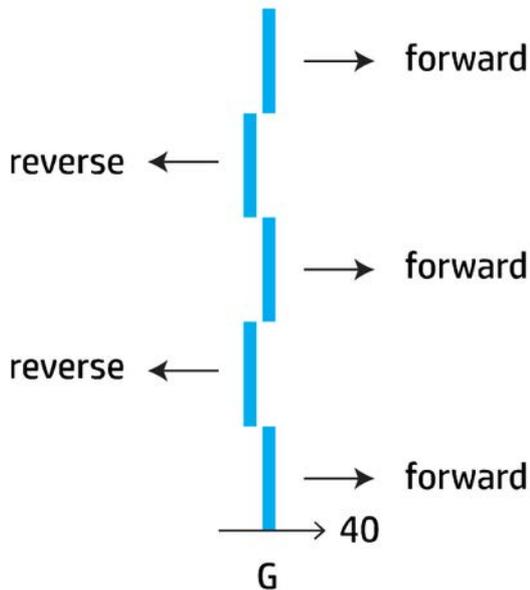
The correct bidirectional alignment has been found when the Fwd and Rev lines are perfectly aligned.

The following example shows a misalignment situation with an existing correction G=24, and how to correct it:

In this case, the diagram shows the need to change the value corresponding to the G pattern, it also indicates that the correction needs to be moved towards lower values, because the '40' value would move it in the wrong direction.

Color calibration

Color calibration enables your printer to produce consistent colors with a particular substrate type, even if printheads, ink cartridges, and environmental conditions change.

Color calibration sets the ink restriction and linearization, which varies with the drop weight of the printhead. This calibration has been designed to provide consistency as the printhead ages (drop-weight degradation) and from one printer to another. For example, to reach a maximum cyan density of 0.6, one printhead may require 3 drops while another one may require 3.5 drops (lower drop weight).

For generic substrate profiles, there are no factory-reference color-calibration values in the printer or within the presets: the first calibration for each substrate sets the color reference for future calibrations. The future calibrations will therefore try to match the colors of the first calibration. In this way you maintain consistency as the printhead ages.

HP substrate loaded from HP Substrate On-line Manager contain color reference files.

Good nozzle health is important, and the printheads should also be as new as possible for best performance when you make the first calibration.

It is also important to have the printheads well aligned (see Align the printheads on page 137), and to make sure the substrate is advancing correctly (see Substrate-advance compensation on page 148), otherwise the color pattern may appear blurry or with slightly different colors.
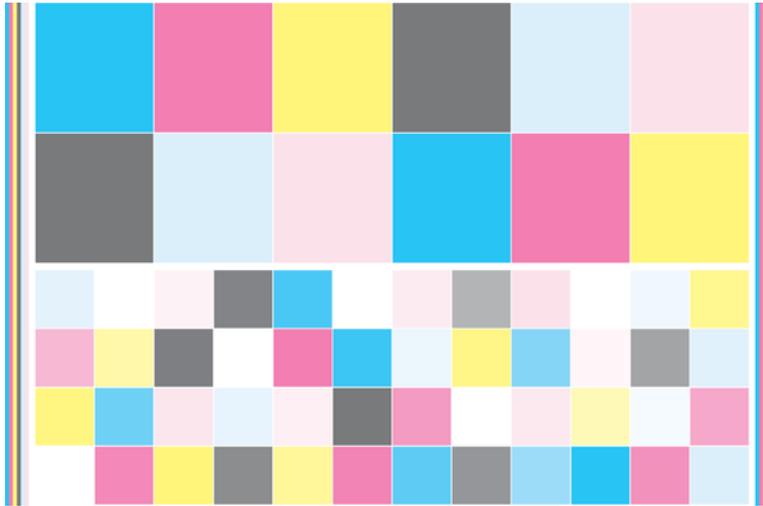
To start color calibration from the Internal Print Server, select **Substrate** > **Color calibration**, then click the **Calibrate** button.

📝 NOTE: Only non-porous substrates wider than 61 cmInline measure markup needed (24 in) can be calibrated. Porous substrates cannot be calibrated.

📝 NOTE: Color calibration is not recommended when the carriage beam is in a higher position than normal.

The calibration process is fully automatic and can be performed unattended after you have loaded substrate of the type you wish to calibrate. The process takes about 15 minutes and consists of the following steps:

1. The color calibration test chart is printed, which contains patches of different densities of each ink used in your printer.


2. The test chart is scanned and color-measured using the embedded spectrophotometer. If the scan cannot be completed successfully, a message is displayed by the Internal Print Server; see Color calibration fails on page 414.

3. From the measurements made by the spectrophotometer, the printer calculates the necessary correction tables to apply to your print jobs for consistent color printing on that substrate type—except in the case of the first calibration, which sets the reference for later ones.

Calibration should be done in any of the following circumstances:

● Whenever a new substrate type is introduced that has not yet been calibrated: to set the reference.

● Whenever you notice excessive color differences between prints. Such color differences can be caused by aging and wear of the printheads, installing new printheads, changes in substrate characteristics between one roll and another, changing environmental conditions, and so on.

You can check the color calibration status of your substrates with the Internal Print Server: select **Substrate** > **Color calibration** > **Show all**.
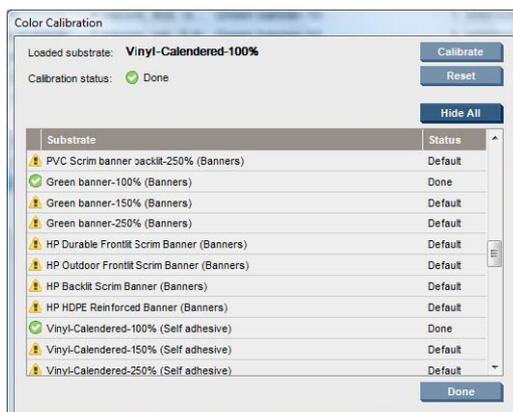
● **Default** status indicates that this substrate has never been calibrated, and therefore no reference state is defined.

● **Done** status indicates that a color calibration has been performed successfully on this substrate, the reference state is defined and still up to date.

- **Obsolete** status indicates that the printer status has changed since the reference was defined, so a new calibration must be done in order to maintain color consistency.

Color calibration is based on the color measurement of printed color patches, using the embedded spectrophotometer. Some characteristics of substrates, such as surface roughness or transparency, may make reflective color measurement of some substrate types very inaccurate. Color calibration of these substrates may fail or produce unacceptable printing results.

☀ **TIP:** If color calibration fails at the first attempt, it is worth trying again.

To delete the reference for a given substrate, so that you can create a new reference for that substrate, you must reset the color calibration. In the Internal Print Server, select **Substrate** > **Color calibration** > **Reset**.

You should calibrate a substrate type before creating its color profile; however, you can later recalibrate without needing to recreate the color profile.

Color consistency between different HP Latex printers

It is possible to print consistent colors on different HP Latex printers by exporting a calibrated substrate preset from one calibrated printer to another.

See . This process ensures that both printers use the same color references.

1. Create the reference for the first printer: do at least the first color calibration with the substrate in question.

2. Export the substrate preset from the first printer. The reference is also exported.

3. Import the substrate preset to the second printer.

4. Perform color calibration with the same substrate for the second printer, to make it consistent with the reference imported with the preset.

Now both printers have the same reference for the same substrate, and all the consecutive color calibrations will be trying to match this reference state.

Color emulation of other printer models

An HP Latex 500 series printer can be set up to emulate colors printed by an HP Latex 1500/3000 Printer.

The emulation process is done by importing a source (XXXX series) substrate preset into the destination (500 series) printer, that was created, color-calibrated, and ICC-profiled in the source printer. The original or source substrate preset contains a number of paper modes and a color-calibration reference.

A new substrate preset is then added to the destination substrate library that keeps the same name as the source substrate preset, suffixed by **Emulated**. This destination preset contains the paper modes that are the closest equivalent to the source ones in terms of ink density and number of passes. Color emulation between source and destination, for the given substrate material, can then be achieved by performing color calibration and profiling of the destination substrate preset.

If the source substrate preset has not been color-calibrated, it can still be imported into the destination printer. A translated set of paper modes will still be created, but color emulation of the source printer cannot be optimized.

Color emulation between printers of different models is based on the same principle as color consistency between printers of the same model; that is, exporting a source color-calibrated substrate preset and then importing it and color-calibrating it in a destination printer. When the printer model is the same, most printing settings and color resources are implicitly matched, such as printing engine, mechanical settings, paper mode

and associated ICC profiles. However, when emulating the colors of a different printer model, you are advised to follow these recommendations:

- Use the same substrate type in both source and destination printer (this is also recommended between printers of the same model).

- Choose a paper mode in the destination substrate preset that is as close as possible to the active paper mode in the source substrate preset.

- Use the same workflow in your RIP software to print to the source and destination printers.

> ☀ **TIP:** The best color emulation can be achieved by setting relative colorimetric rendering intent in the RIP for printing to both source and destination printers.

- Choose ICC profiles in the source and destination paper modes that are both made with the same type of spectrophotometer and profiling software. For example, either use ICC profiles made with external software using a brand A spectrophotometer in both cases, or ICC profiles made with the HP Embedded Spectrophotometer and internal ICC profiler in both cases.
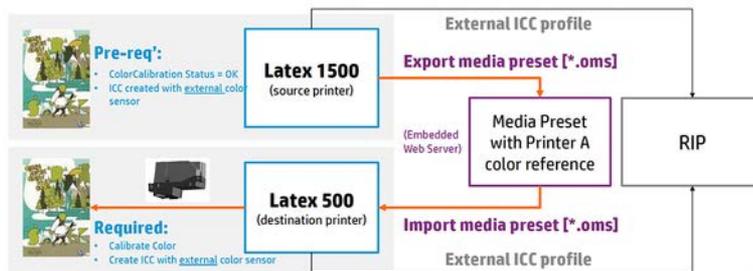

Emulating an HP Latex 15xx or 3xxx printer

To set up a new substrate preset in an HP Latex 560/570 printer that provides color emulation of a source substrate preset in a HP Latex 15xx or 3xxx printer:

1. Using the source printer, select the desired substrate preset. Refer to the printer's own documentation whenever necessary.

2. Perform color calibration.

3. Use the Internal Print Server to export the calibrated substrate preset.

4. Using the destination HP Latex 560/570 printer, import the new substrate preset.

5. After a successful import, a confirmation popup window appears in the front panel. Press **OK** to continue.

6. Go to the substrate library, and select the just-created emulation substrate preset by pressing the **Select** button.

7. Press the **Modify** button to see the color emulation status of the preset. The initial color emulation status is **Not ready**.

8. Press **Start color calibration**. After a successful color calibration, the color calibration status changes to **OK**, and the color emulation status changes to **Ready**.
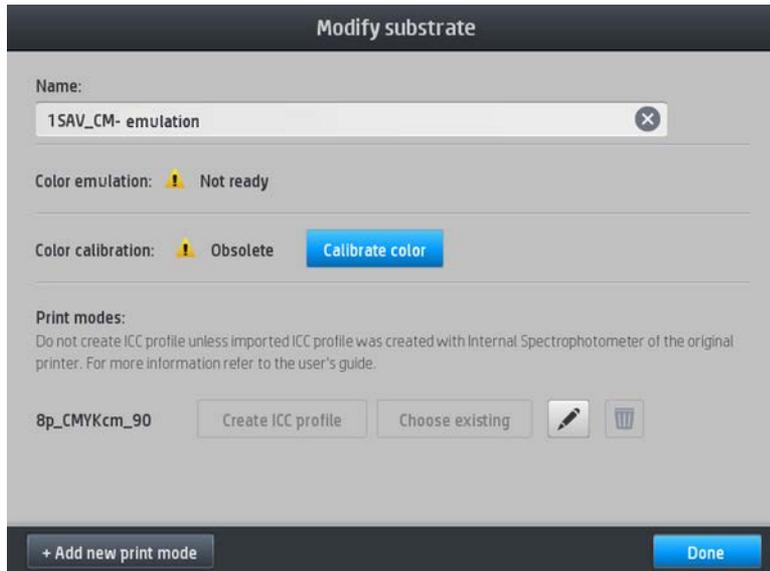
9. *Do not* press **Create ICC profile**. ICC color profiles must be created externally; see step 11.

10. Press **Done** to finish the process.

11. Create the ICC profiles that are needed for printing, in both the source and the destination printers. They should be created using the same external spectrophotometer and external profiling software in both cases. Most RIP applications support stand-alone spectrophotometers for creating ICC profiles.

☼ **TIP:** This process, based on an external spectrophotometer, can also be used for color matching the HP Latex 36x/37x printer and the HP Latex 560/570.

TIP: To emulate the same source printer on several HP Latex 560/570 destination printers, you can export the newly created preset from the HP Latex 560/570, and then import it into other HP Latex 560/570 printers. See Color consistency on page 39.

📝 **NOTE:** If the source substrate has not been color-calibrated, it still can be imported into the HP Latex 560/570 printer. A confirmation window appears. Color emulation status is fixed at **Not ready**.

Color profiles

Color calibration provides consistent colors, but consistent colors are not necessarily accurate. For instance, if your printer prints all colors as black, its colors may be consistent but they are not accurate.

In order to print accurate colors, it is necessary to convert the color values in your files to the color values that will produce the correct colors from your printer, your inks, and your substrate. An ICC color profile is a description of a printer, ink, and substrate combination that contains all the information needed for these color conversions.

These color conversions are performed by your Raster Image Processor (RIP), not by the printer. For further information on the use of ICC profiles, see the documentation for your application software and for your RIP.

Substrate-advance compensation

Accurate substrate advance is important to print quality because it is part of controlling the proper placement of dots on the substrate.

If the substrate does not advance the proper distance between printhead passes, light or dark bands appear on the print, and there may be an increase in graininess. The printer has a substrate-advance sensor and is calibrated to advance correctly with most of the substrates that appear in the Internal Print Server. When the substrate is loaded, the substrate-advance sensor checks the substrate and decides whether it can be adjusted automatically or not. If not, the automatic adjustment is disabled.

If the substrate cannot be adjusted automatically by the substrate-advance sensor and the substrate advance is not correct, you may wish to change the substrate-advance compensation manually. See Troubleshoot print-quality issues on page 383 for steps to determine whether substrate-advance compensation will help you. In general, substrate-advance calibration is recommended when you see print-quality problems related to substrate advance, or when you define a new substrate.

📝 **NOTE:** Manual substrate-advance compensation is available only when the substrate-advance sensor is disabled—automatically, or manually through the Printing adjustments button in the Internal Print Server main window.

The substrate-advance sensor may not work correctly if it is dirty. See Clean the substrate-advance sensor on page 230.

If the sensor was dirty, after cleaning it the advance compensation already calculated may not be valid, so you are recommended to set the advance compensation for this substrate to zero and check that the advance is correct. If the advance is still not accurate, follow the advance compensation process, bearing in mind that the sensor is not dirty and probably your substrate type is not compatible with it.

Manual substrate-advance compensation

While printing, you can view and change the substrate-advance compensation of the currently loaded substrate at any time from the Internal Print Server by selecting the print job and then the **Printing Adj.** button, or by selecting **Printer** > **Printing adjustments**.

Alternatively, you can use the **Print adjustment** button in the Internal Print Server main window. This opens a dialog box with an advance compensation section, in which there are three main areas:
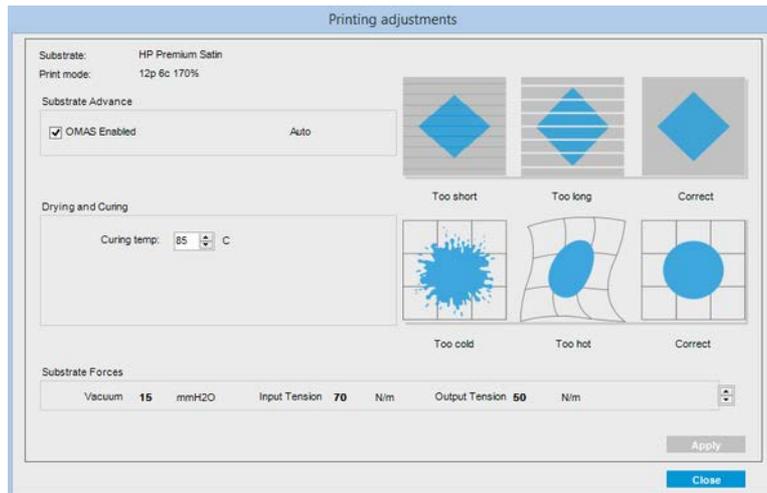
1. Check the box to enable the OMAS (substrate-advance sensor). If it is disabled automatically while loading, you cannot enable it. However, if you disable it yourself, you can re-enable it.

2. If the substrate-advance sensor is disabled, you can increase or decrease the substrate-advance compensation.

3. Three images of possible defects due to substrate-advance issues, to help to you decide whether the substrate-advance compensation should be increased or decreased.

In order to apply and save the values, press the **Apply** button in the dialog box before closing it. Then the substrate-advance compensation value is saved for that particular substrate. Other substrates are not affected.

If you are using a generic substrate preset, you are recommended to clone the preset (**Substrate** > **Clone**) and work with that before adjusting the substrate-advance compensation, as the print adjustment is not available for generic presets. See Edit a substrate preset on page 76.

Substrate-advance test print

The following steps describe the process to determine the IPS **Printing adjustment** dialog advance compensation value.

The substrate-advance test print can help you to adjust the substrate advance more accurately. In the Internal Print Server, select **Printer** > **Advance calibration**. The printer prints several repetitions of a special numbered pattern that help you to apply the correct substrate-advance adjustment. Locate the pattern in the center of the substrate.

NOTE: Printheads must be correctly aligned before the test.
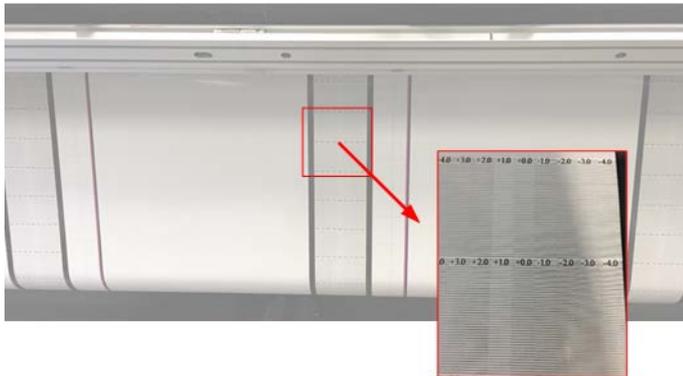
1.   While the test is being printed, in the last 8–10 plots of the substrate central pattern (the sides might be affected by skew), locate the value that corresponds to the lightest column.

TIP: If the test shows two possible values (two continuous columns), the value selected is the average of both values. For example, if the test says the value could be +2.0/+3.0, then +2.5 is selected.

2.   Via **IPS** > **Printer** > **Printing adjustments**, look for the current advance value set and add to this number the value chosen in step number 1. For example, if the value shown in the **Printing adjustment** dialog is -2.0 and the chosen value in the first step is +2.5, then the value chosen should be +0.5.

NOTE: The print adjustments dialog is only enabled when printing with non-generic substrate presets.

3. Insert the chosen advance compensation value, and select **Apply** to implement the change.
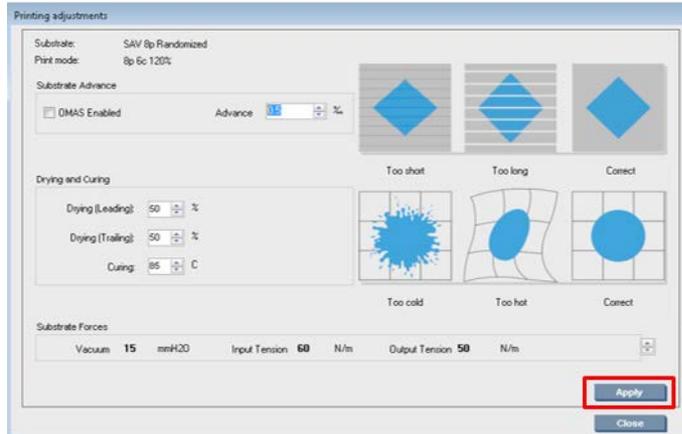
By applying the correct advance compensation value, the lightest columns should be located at value 0. This means the printer compensates for the substrate advance error, and provides good substrate feed.

📝 **NOTE:** The manual substrate advance compensation obtained through this process is only usable for the loaded substrate. It is important to note that this value cannot be used on another printer. If you planned to use the same substrate on multiple printers you need go through the complete process on each printer.

☆ **TIP:** The value used for the substrate advance depends directly on the thickness of the substrate, and needs to be changed only when you are suffering print-quality issues that are caused by the substrate advance, as explained in Substrate-advance sensor check on page 388. To obtain the right value faster and more accurately, see the following table:

Table 8-2 Substrate-advance test print

Normal substrate advance value based on substrate thickness							
50 µm (2 mil)	150 µm (5.9 mil)	250 µm (9.8 mil)	400 µm (15.7 mil)	550 µm (21.7 mil)	700 µm (27.6 mil)	850 µm (33.5 mil)	1000 µm (39.4 mil)
+1.8 ‰	+0.9 ‰	0	−1.0 ‰	−1.8 ‰	−2.7 ‰	−4.5 ‰	−6.8 ‰

Calibrations specific to one substrate preset

Some calibrations that the printer performs are specific to the substrate preset in use at the time the calibration was performed and some are not. The calibrations that are specific to one substrate must be performed again if the substrate or preset is changed. Shown below are the calibrations showing which ones are specific to one preset and which ones are not:

- **Printhead Alignment**: This is applied to all presets and print modes. Usually, when switching from one substrate to another, there is no need to realign the printheads. However, if the printhead-to-paper spacing has changed significantly (different thickness, etc.), then the printheads should be realigned.

- **Substrate Advance Compensation**: This is specific to each substrate preset.

- **Color Calibration**: This is specific to each substrate preset.

Recommended calibrations after particular events

This topic provides a full set of reference information for this subject.

Table 8-3 Recommended calibrations after particular events

–	Printhead replacement	New substrate created	New substrate imported	New substrate loaded	Print mode changed	Poor print quality
Printhead alignment	Recommended	Not needed unless new substrate has different thickness	Not needed	Not needed unless carriage beam has moved	Not needed	Recommended if relevant
Color calibration	Recommended	Recommended	Recommended	Not needed, unless never done before	Not needed	Recommended if relevant
Substrate advance compensation	Not needed	Not needed, as long as the substrate-advance sensor is working	Not needed, as long as the substrate-advance sensor is working	Not needed, as long as the substrate-advance sensor is working	Not needed	Recommended if relevant

9   HP Print Care

Print Care is a program that helps you to maintain your printer in optimal condition and advises you how to solve any problems that occur. It can also give you full information about the current status and past history of the printer.

The program is already installed in the printer's built-in computer; you can run it by clicking its icon in the Windows Quick Launch toolbar, or by double-clicking some parts of the Internal Print Server (for instance, Print Care status).
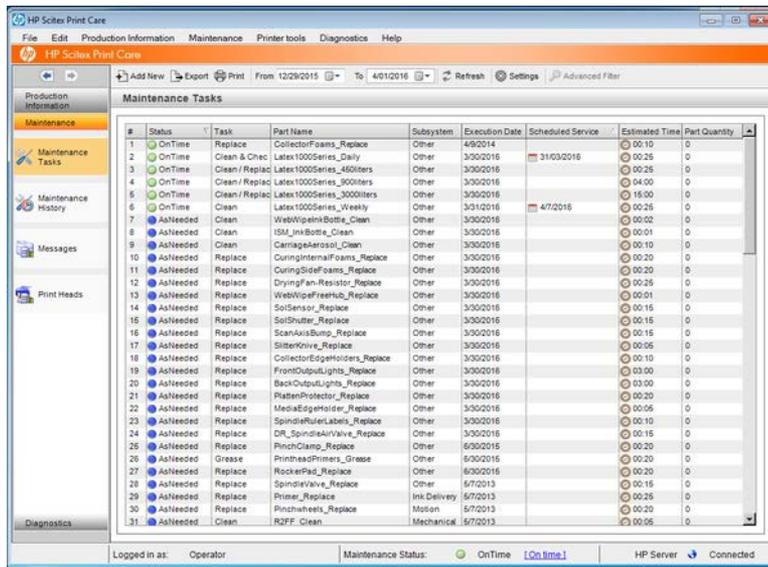
Its functions are divided into the following categories.

- **Production Information** displays information about printer status and printing history (paper usage, ink usage, jobs). The information can be displayed in graphical charts or text reports, all of which you can filter to select different subsets of information.

- **Maintenance** prompts you to perform maintenance tasks, and provides instructions on how to perform them. It can also list the maintenance tasks that have been performed in the past, and the printer messages that have been displayed in the past.

- **Diagnostics** can run functional tests on printer systems and components to check for failures and malfunctions. Each diagnostics run generates a report that provides detailed results and troubleshooting instructions. It can also list the tests that have been run in the past. See Print Care diagnostics on page 154 for more details.

> **NOTE:** Individual tests are not selectable: the whole series of tests is run automatically.

- **Printer Tools** help you to perform maintenance operations without an Internet connection.

The Print Care program has online help that explains all its functions in detail.

To change the units of measurement in Print Care, select **Edit** > **Preferences** > **Units**.

Print Care uses the language selected in the Windows Regional and Language Options; to change the language, see Change the language of the Internal Print Server on page 18.

Print Care diagnostics

The Print Care diagnostics help you to minimize downtime. When you call your support representative to report an issue, pass on the results of any diagnostics that you ran.
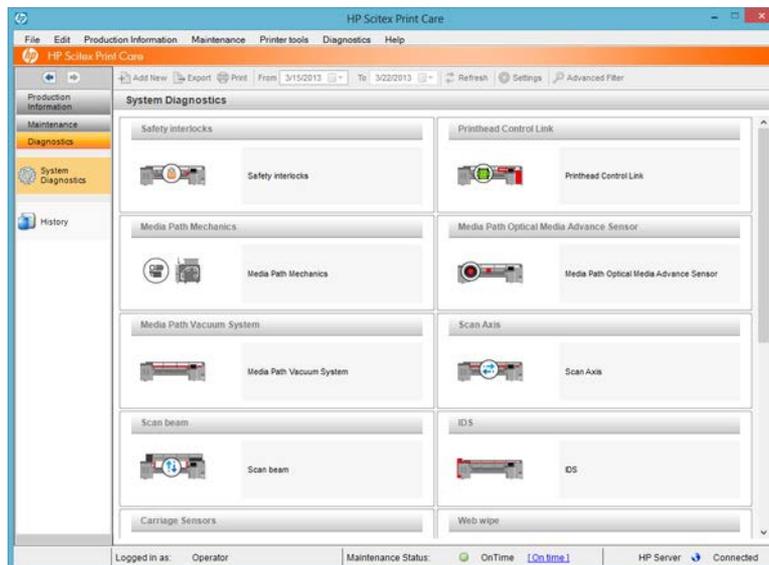
Most of these diagnostics can be run with the printer started normally. However, if you experience a severe error in the start-up progress that prevents you from running the diagnostics, an extra start-up mode has been provided for this situation. To use it, go to Print Care and select **Printer Tools** > **Power options** > **Reboot in diagnostic mode**. Then the printer will start only a minimal set of components, so the progress bar in the Internal Print Server will stop at around 20% and display **Diagnostic mode**. You can then go to the Diagnostics section and run the diagnostic you need.

NOTE: Read the descriptions of the diagnostics and follow the instructions.

IMPORTANT: When the printer is started in diagnostic mode, it is unable to print.

When you have finished the diagnostics, select **Printer Tools** > **Power options** > **Reboot** to restart the printer normally.

When you get a message from the printer with a numerical code in the form XX.XX.XX.XX:, we recommend locating the first two digits in the following table to identify the correct diagnostic.

Table 9-1 Print Care diagnostics

Number	Subsystem
01	E-box
10	E-cabinet
11	Printhead Control Link
16	Curing
17	Drying
22	Ink Distribution System
30	Vapor Removal
41	Substrate Path Mechanics

Table 9-1 Print Care diagnostics (continued)

Number	Subsystem
43	Substrate Path Vacuum System
46	Printhead Primers
47	Printhead Cleaning Roll
48	Scan Beam
49	Carriage Aerosol
50	Substrate Advance Sensor
51	Safety Interlocks
52	Drop Detector
55	Carriage Sensors
58	Carriage Sensors
86	Scan Axis
89	Illumination and Buttons
90	Double-sided Day and Night Kit

NOTE: Some of these subsystems may be available only to service engineers, because they require specific knowledge or for safety reasons.

NOTE: In any case we recommend running the Safety Interlocks diagnostic to ensure that printing is not disabled by a safety interlock.

10 Accessories

There are a wide range of accessories that can be used with the printer, below is detailed usage and compatibility information.

Compatibility table

This topic provides a full set of reference information for this subject.

Table 10-1 Compatibility

-		SUBSTRATE SAVER	DUAL ROLL	IN-LINE SLITTERS	INK COLLECTOR	DOUBLE-SIDED DAY AND NIGHT
EDGE HOLDERS	REGULAR	YES	YES	YES	YES	YES
	INK COLLECTOR	YES	YES	YES	YES	NO
	DOUBLE-SIDED DAY AND NIGHT KIT	YES	NO	YES	NO	YES
INK COLLECTOR	-	YES	YES	NO	-	NO
DAY AND NIGHT	DOUBLE-SIDED DAY AND NIGHT KIT	YES	NO	YES	NO	-
ROLL-TO-FREE-FALL	-	NO	NO	YES	YES	NO
WORKS TOGETHER	YES	-				
DOES NOT	NO					

Dual roll printing

See a video here:

www.hp.com/go/Latex3000/Dual_roll_loading

NOTE: This video applies to HP Latex 800, HP Latex 1500 and HP Latex 3x00 Series printers.

Print on two rolls at the same time by using the dual-roll spindle.

1. Insert the first roll on the spindle.
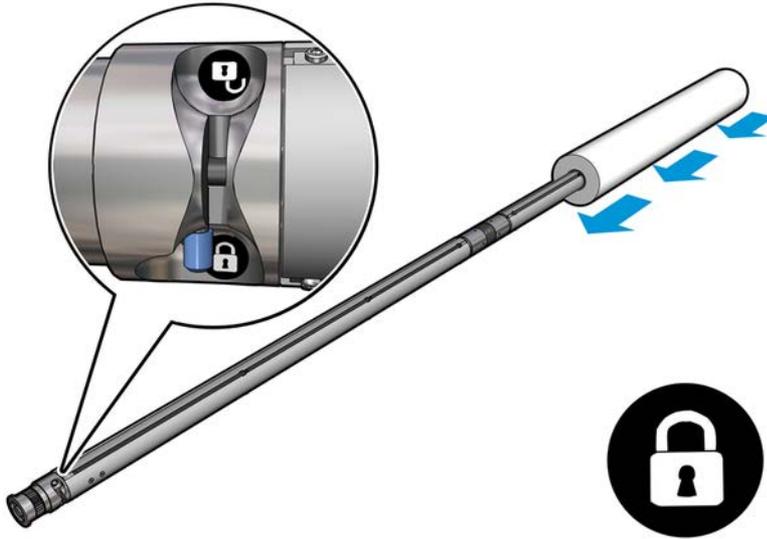
2. Insert the second roll on the spindle.
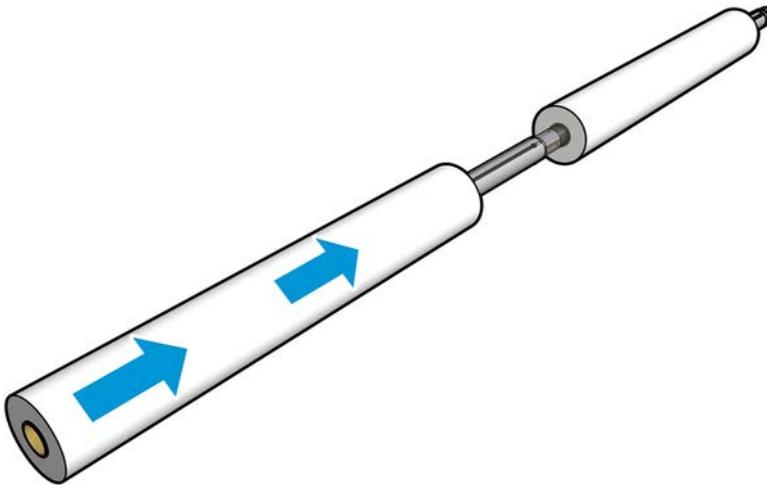
3. Center both rolls, using the marks on both sides of the center of the spindle. The input and output rolls should be positioned identically on their respective parts of the spindle.

4. Inflate the valves at both ends.

    ☼ TIP: Before inflating, use the pneumatic gun to blow air around the valve area to remove any dirt.

    ⚠ WARNING!   The air gun provided with the printer is only intended to inflate the spindle. When recommended to use for cleaning purposes, make sure to do so according to local regulations since additional safety provisions may apply.

5. Place the spindle with the roll in the substrate input.

6. Place the dual-roll spindle on the printer with the long lever up.

TIP: The spindle and two rolls of substrate are heavy. You are recommended to use a forklift to move it into position.

7. Position the dual-roll center support under the center of the dual-roll spindle.
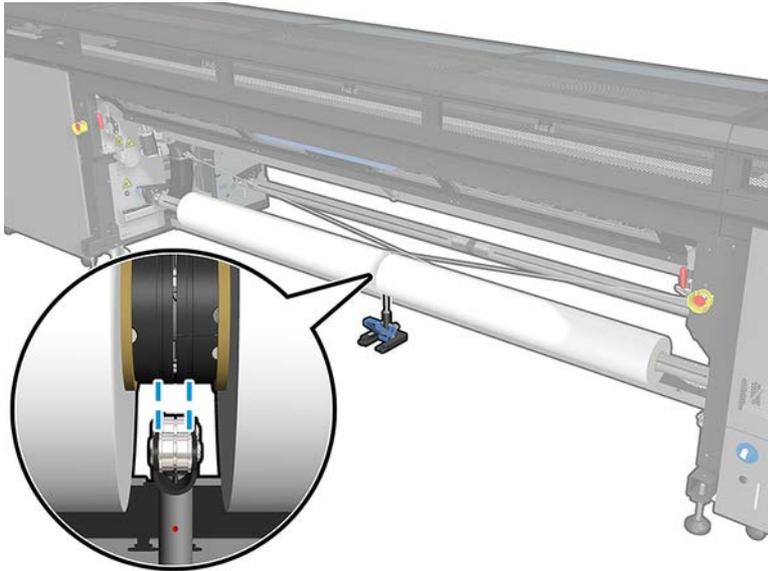
8. Pull the long lever down.

   When engaging the support, make sure that the position of the support bearings corresponds to the grooves of the differential cover and that the two sets of bearings are approximately the same distance from the middle of the spindle to maximize their contact.
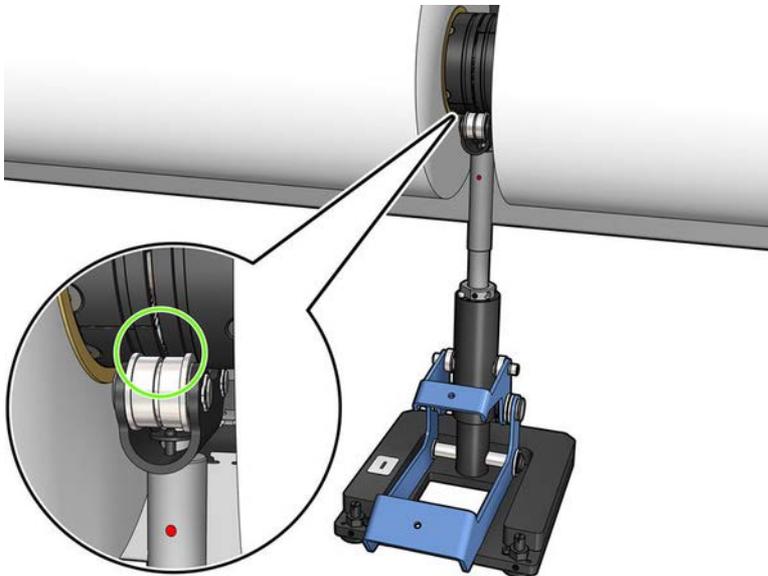
9. Repeat the procedure for the output dual-roll spindle.

10. You can now feed the substrates into the printer.

11. Once the substrates are in the printer, unlock the dual roll spindle.

12. Once the substrate is aligned, automatic substrate-edge detection can be run. If this automatic process fails, or if you are using a roll width not within the dual-roll spindle specifications shown below, introduce

the substrate edge values manually. Physically measure the position of the substrate edges on the dual-roll spindle ruler. The dual-roll spindle ruler, in inches and centimeters, uses positive (+) signs on one side and negative (−) signs on the other side.

Table 10-2 HP Latex 1500 dual-roll spindle specifications

Type:	Values:
Minimum roll width	635 mm ((25 in))
Maximum roll width	2 × 1.60 m ((2 × 63 in))
Minimum gap between rolls	40 mm ((1.6 in))
Maximum roll diameter	300 mm ((11.8 in))
Maximum total weight of both rolls	2 × 70 kg ((2 × 154 lb))

If this is the first time you use the dual roll, it has to be installed and calibrated. See the Installation Guide for more information.

In-line slitters

In-line slitters are vertical cutters that allow you to cut the substrate in the direction of the substrate advance, and they have to be installed, one by one, on the universal mounting beam; the position on it is decided and fixed by the user.

⚠ **WARNING!**   Do not touch the in-line slitters when printing.

⚠ **WARNING!**   Handle in-line slitters with care and store them safely.

⚠ **WARNING!**   Risk of cutting your fingers! Uninstall the In-line slitters when manipulating the curing module or accessing the substrate path.

📝 **NOTE:**   The in-line slitters cannot be used when the ink collector is installed.

Table 10-3 Warnings

Risk of cutting your fingers.	Risk of trapped fingers	Risk of burns

For more safety information, see

In-line slitters are an optional accessory for the HP Latex 1500 printer.

IMPORTANT: The in-line slitters can be used with a wide range of papers, but a successful cut with canvas, fabrics, and some banners is not guaranteed.

In-line slitters can be used all at the same time or individually, depending on your necessities.

IMPORTANT: The in-line slitters can be installed onto the mounting beam when needed, but have to be placed on the cutting position once the substrate is already loaded.

To install the in-line slitters on the mounting beam the hooks have to be inserted into the mounting beam guides. To move the hooks, untighten the top blue labeled thumb screw and pull it to help the hooks fit into the mounting beam guides.
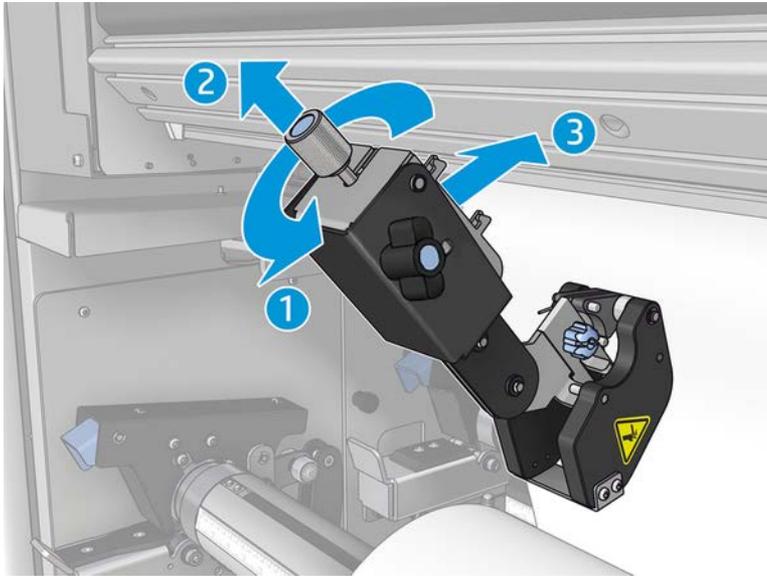
Once the vertical cutter is placed onto the mounting beam, slide it to the desired position. Untighten the lateral thumb screw to be able to move the slitter without interfering with the substrate in case it is loaded.
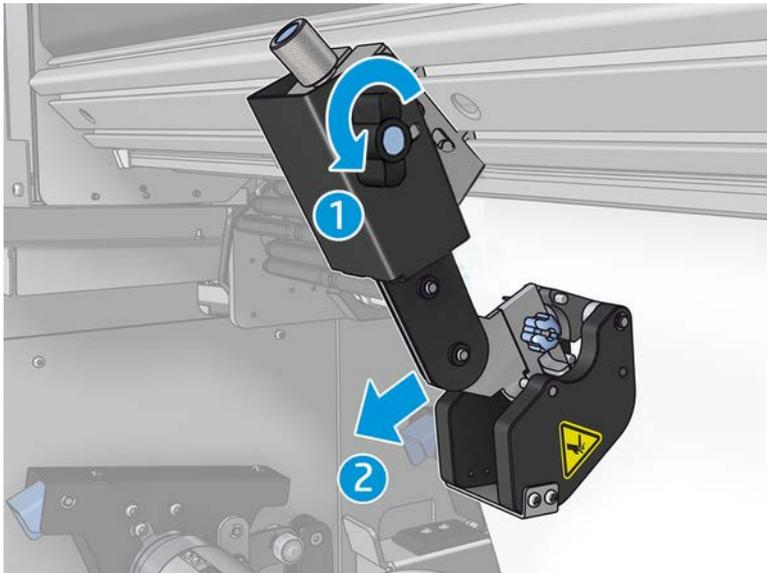
Once installed, check the slitter can run through all of the universal mounting beam.

Once the slitter is in the desired position, tighten the top blue labeled screw to fix it.

To proceed with the cut, push the slitter until you cut the paper, then fix the position by tightening the lateral screws.

⚠ **WARNING!**   With in-line slitters installed, special care must be taken when handling heavy substrates and when manipulating the curing module.

To uninstall the in-line slitters, reverse the process described above.

We recommend always storing the in-line slitters in the box provided if you don't wish to use them.

See how to rotate the blades when necessary or how to replace them in <u>Slitter poor cutting quality on page 380</u>.

Substrate saver

See a video here:

www.hp.com/go/latex1500/substrateloading

NOTE: This video applies to the HP Latex 1500 Printer only.

IMPORTANT: Before using the substrate saver; make sure the substrate is loaded, reaches the print zone, and that the loading table is closed.

NOTE: The standard model provided with the product supports substrates from 48 to 63 inchers (1220mm to 1600mm)width. For smaller substrate widths, special solutions are available. Contact HP Support.

1. Place the substrate saver on the curing module (hold it with a single magnet in the center), and make sure it is fixed; use the 3 magnets under the accessory.
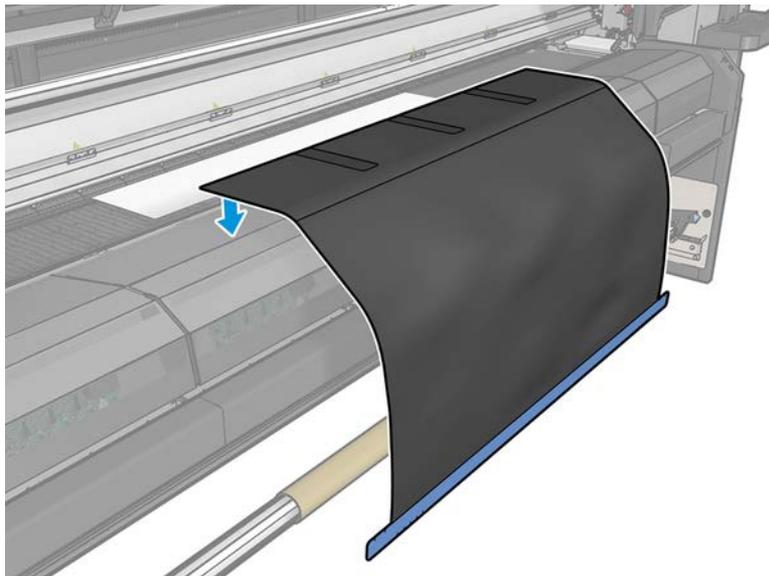
2. Use the curing top plate tool and the marks to ensure that the substrate is centered (no ruler, marks on the metallic part).

3. Open the substrate saver flaps.
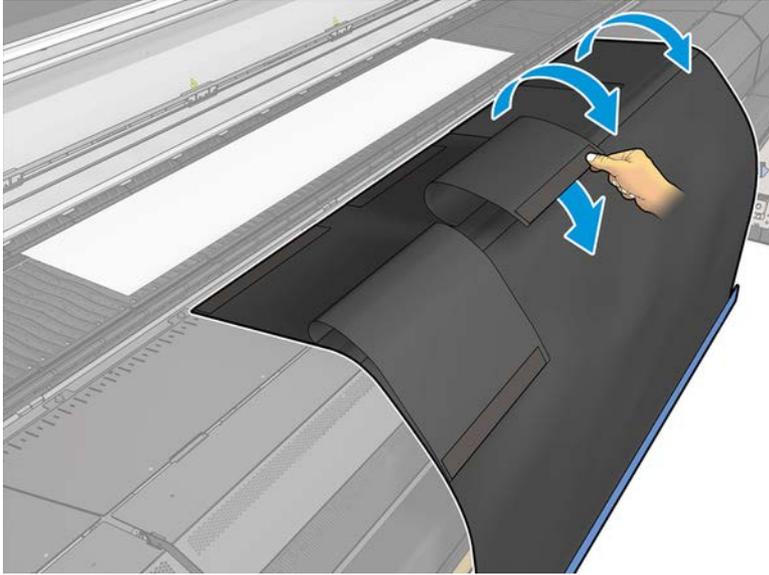
4. Advance the substrate manually or automatically but do not surpass the red line inside the flaps. Make sure to advance enough paper to reach the substrate saver.
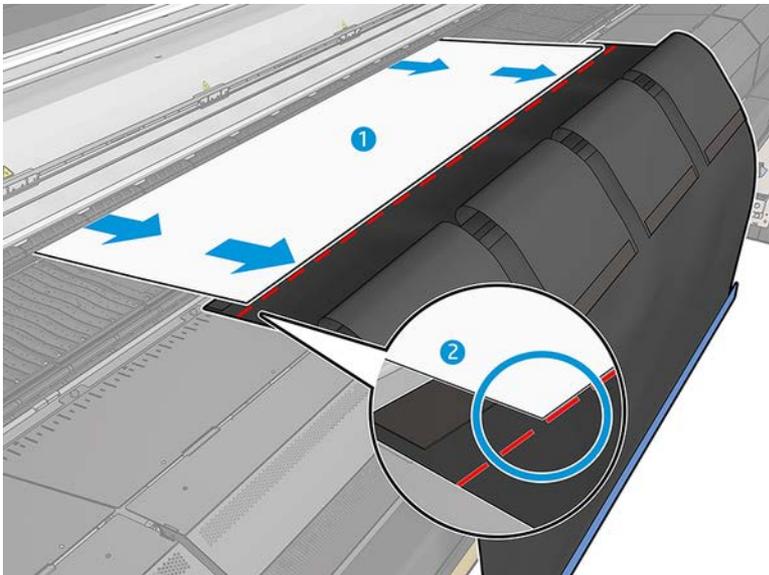
5. Grip the substrate with the substrate saver. Make sure there are no wrinkles in the substrate or the tool flaps.
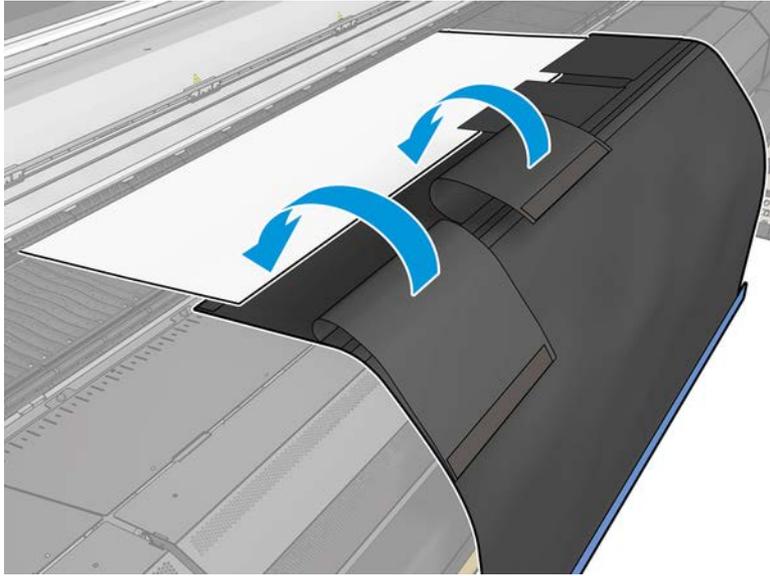
6. Open the curing module.
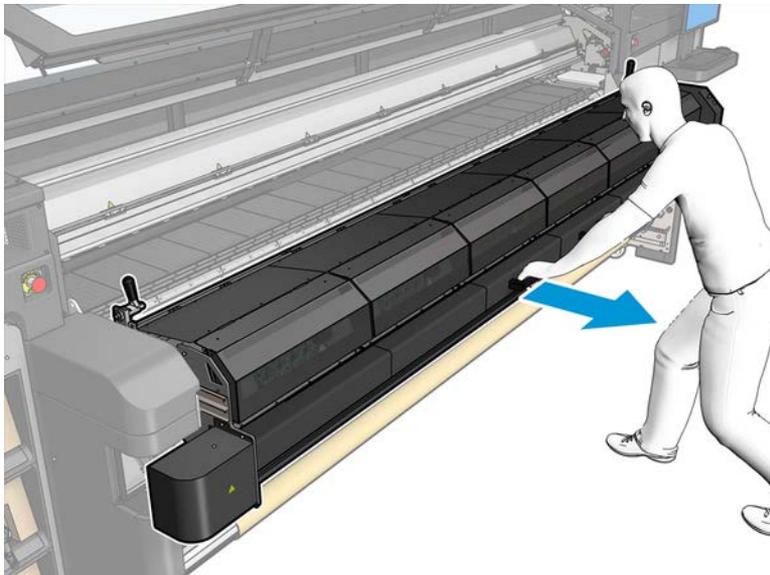
7. Push the substrate saver through the curing module.
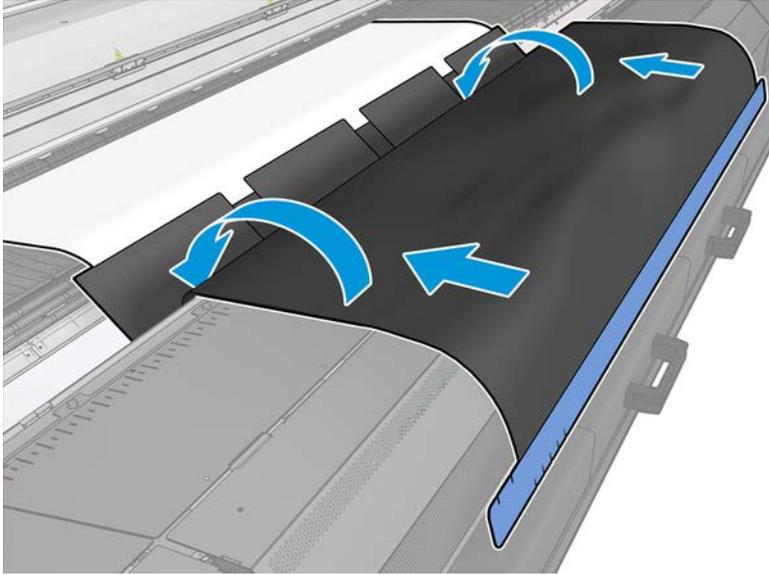
8. Go to the Internal Print Server to start the loading process. Use the move the substrate buttons manually to move the substrate backwards to detach the substrate saver magnets from the curing module and up to the platen.

📝 **IMPORTANT:** To avoid damage; do not let the substrate saver reach the loading table.

9. Rewind the substrate saver in order to position the lower side of the tool next to the core.
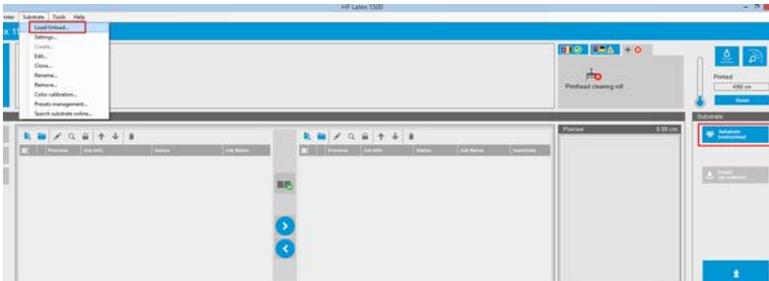
10. Turn the input spindle to tighten the substrate on the roll and avoid any sag.

11. Open the loading table.

12. Pull the edge of the tool and center it on the core.

13. Attach the tool to the core with tape. Make sure to put the tape on the blue edge of the substrate saver.

14. Roll the tool on the core until the tool's upper edge lies beyond the platen.
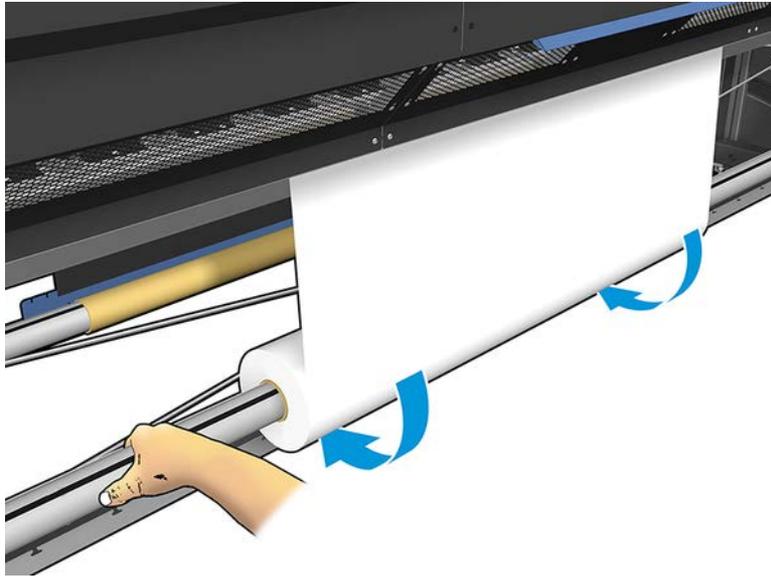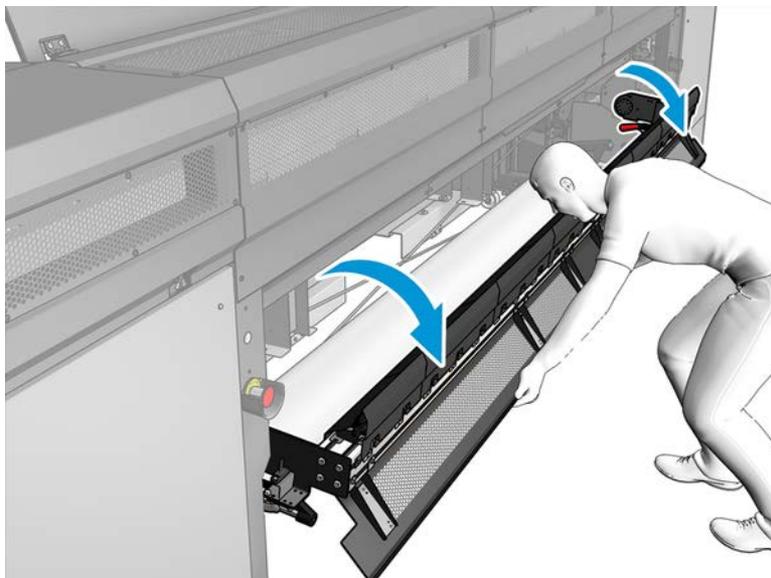
15. Close the loading table and finish the loading process in the IPS.
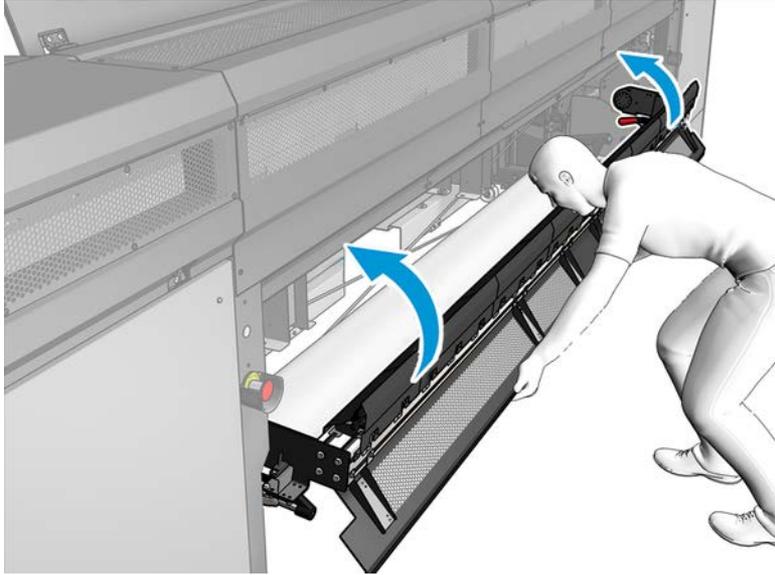
📝 **NOTE:** When processing a finished roll, see if the tool is inside by locating the blue edge of the saver on the core. If necessary, make use of the substrate-saver edge holders.

HP Latex Double-sided Day and Night Kit

The HP Latex Double-sided Day and Night Kit is an accessory that allows to easily print on translucent substrate double-sided prints for outdoor advertising with better color appearance in any light—frontlit during the day or backlit at night.

See a video here:

www.hp.com/go/latex1500/DSDN

📝 **NOTE:** This video applies to HP Latex 1500 and HP Latex 3x00 Series printers.

Roll-to-Free-Fall Kit

With the Roll-to-Free-Fall Kit installed, you can work with the roll-to-free-fall configuration.

Introduction

The substrate can be loaded in a variety of different configurations to suit your different needs. Before loading, you must go to the Internal Print Server and select **Substrate load/unload**, then select the configuration you intend to use.

The roll-to-free-fall configuration is suitable when you want to cut and remove one or more prints as soon as they come out of the printer. The substrate is kept under tension between the input roll and the tension roller; but it can be cut after the tension roller because then it is no longer under tension.

Substrate configurations

See a video here:

www.hp.com/go/Latex3000/Roll_to_free_fall_loading

NOTE: This video applies to HP Latex 800, HP Latex 1500 and HP Latex 3x00 Series printers.
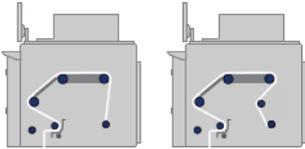
The substrate roll is mounted on the input spindle; the printed substrate will be deposited on the floor in front of the printer. The substrate goes from the input spindle (1) over the main roller (3), over the platen, over the front diverters (5) and then to the tension roller (7), after which it continues to the floor.
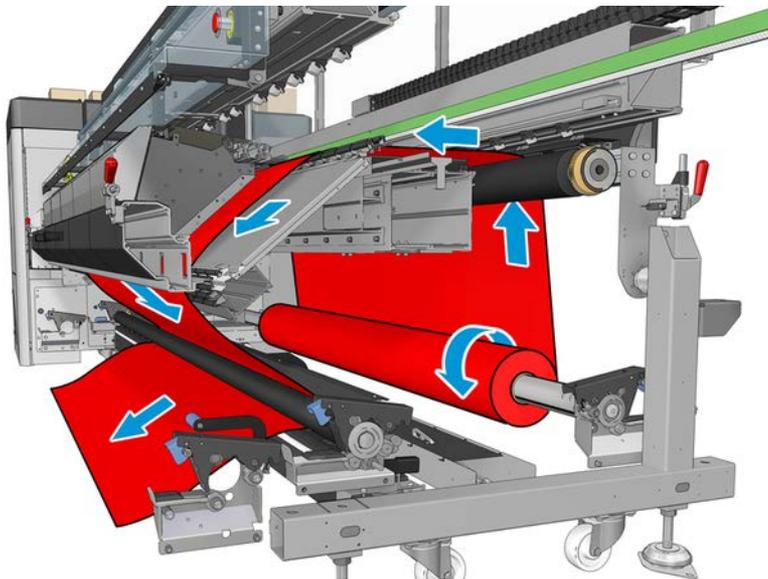
You can load substrate with the printed face inwards or outwards on the spindle, in which case the spindle will turn in the opposite direction. The printer asks you for the winding direction if it cannot detect it automatically.
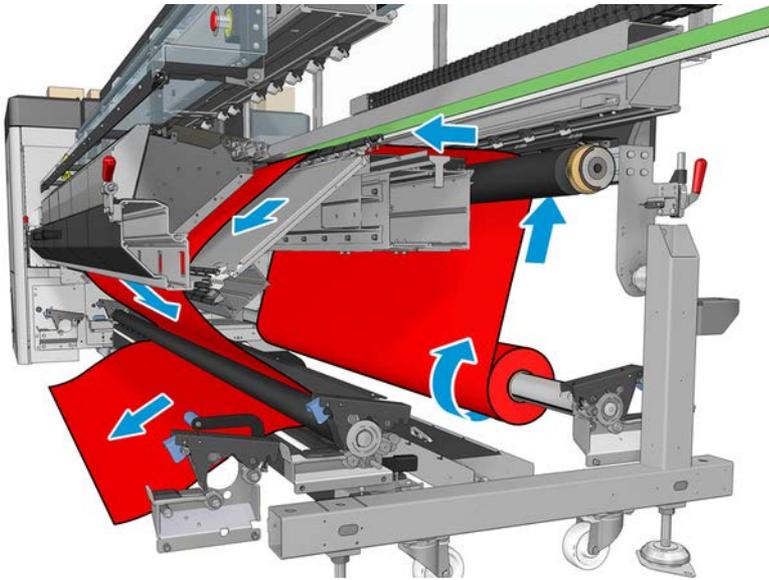
Before loading a roll into the printer, you must have a roll loaded onto the input spindle. See .

💡 **TIP:** The spindle by itself is quite heavy, and a roll of substrate can be much heavier. You are recommended to use a forklift or some other equipment to move it into position; otherwise, lift one end into the printer, and then the other end.

To load the substrate, follow the same procedure as in the roll-to-roll configuration, except that the output spindle is not needed.

1. Ensure that the tension roller lever is raised.
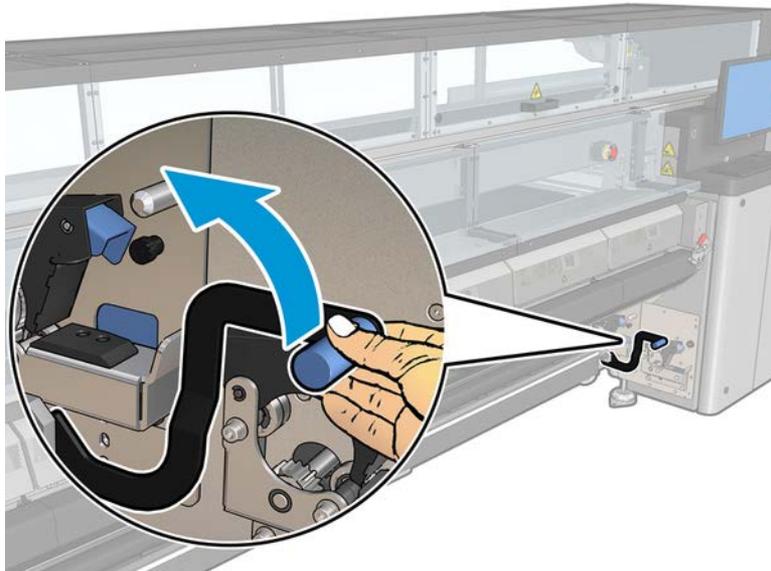
2. Unlatch the tension roller at both ends.
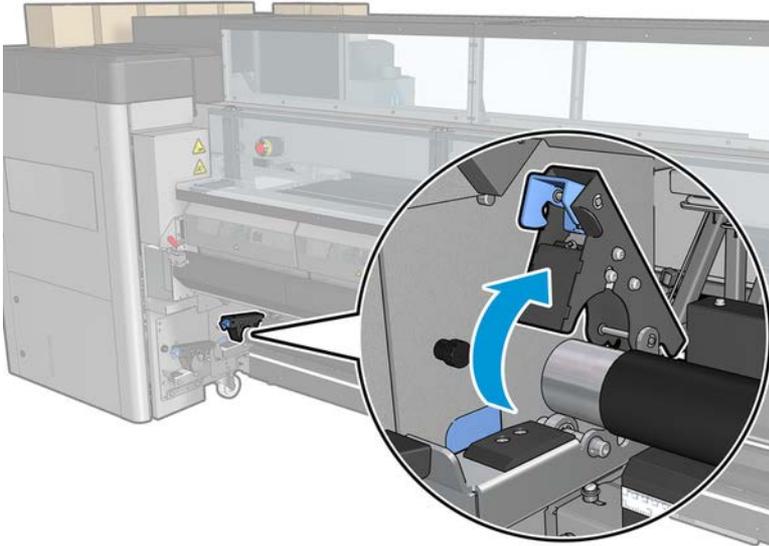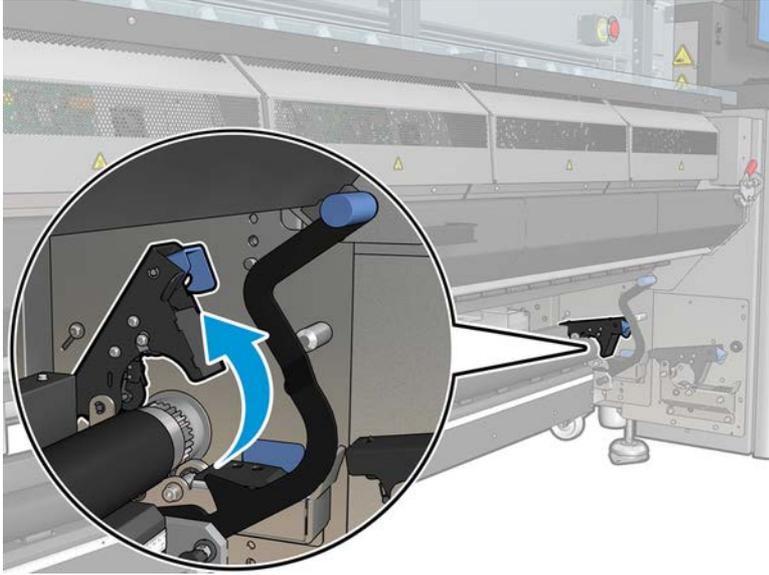
3. Move the roller to the front, so that you have more space to pass the substrate behind the roller.
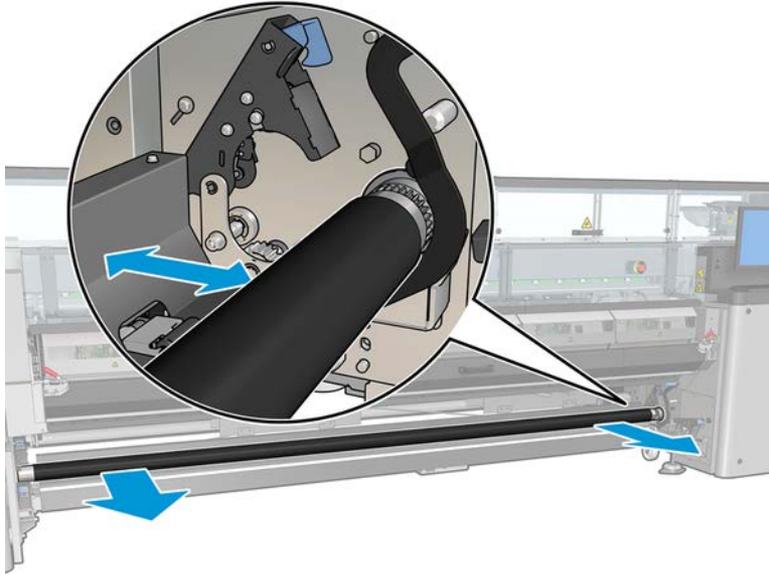
4. Pass the substrate through and push the roller backwards, taking care not to trap your fingers between the roller and the black substrate guide lying underneath and behind.

5. Close the latches at both sides.

6. Align the substrate by checking that the substrate edge is in the same position on the input spindle and tension roller. This can be done by using the rulers on the spindle and tension roller or by measuring the distance between the right edge and the side plate.

7. Ensure that the substrate is evenly tensioned and flat (no wrinkles or bumps), and close the tension roller lever.

8. Go to the Internal Print Server and press the **Finish** button as in the roll-to-roll configuration.

Hardware maintenance

Hardware maintenance may be performed by trained personnel only.

Clean the roll-to-free-fall roller and pinchwheels

The following sections provide details for this topic.

Table 10-4 Warnings

Risk of burns	Crush hazard	Risk of trapped fingers

For more safety information, see Safety precautions on page 2

The roll-to-free-fall roller should be cleaned whenever it is visibly dirty (for instance, whenever ink has not cured properly when using the roller), or when you notice that substrate advance is no longer smooth and regular (for instance, if you notice that the roller often slips when trying to keep the substrate under tension).

Prepare to clean the roll-to-free-fall roller and pinchwheels

The following steps provide the complete procedure for this topic.

1. Check that the printer is not printing.

2. Unload the substrate.

3. Raise the pressure roller lever if it was previously lowered.

Clean the roll-to-free-fall roller

The following steps provide the complete procedure for this topic.

1. Clean the roller with a clean cloth dampened with water (for persistent dirt you may use isopropyl alcohol, but do not use petroleum-based cleaning liquids).
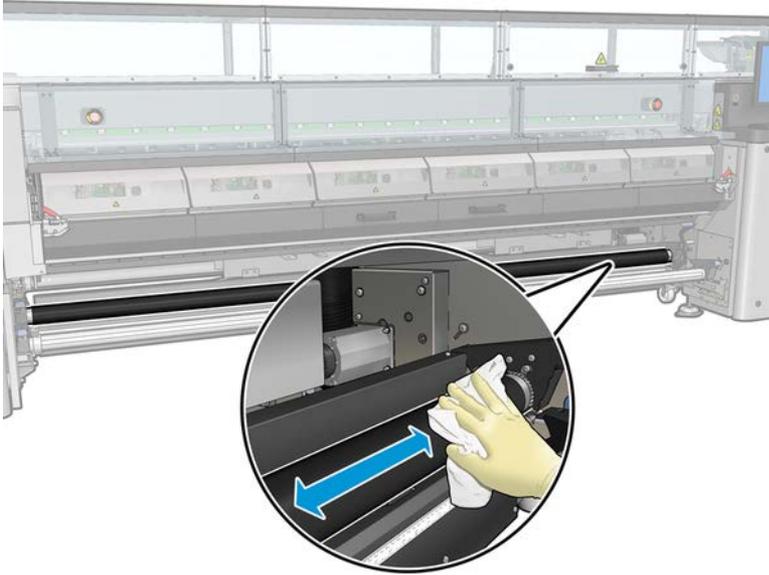
2. Turn the roller manually and keep cleaning to make sure the rubber surface of the roller is cleaned all around.

   ⚠ **WARNING!** Take care not to trap your finger when turning the roller.

3. Ensure that the cleaned parts are completely dry and the vapors have completely evaporated.

Clean the pinchwheels

The following steps provide the complete procedure for this topic.

1. Open the roller latches at both sides and move the roller to the front.

2. Lower the pressure roller lever so that the pinchwheels are accessible.
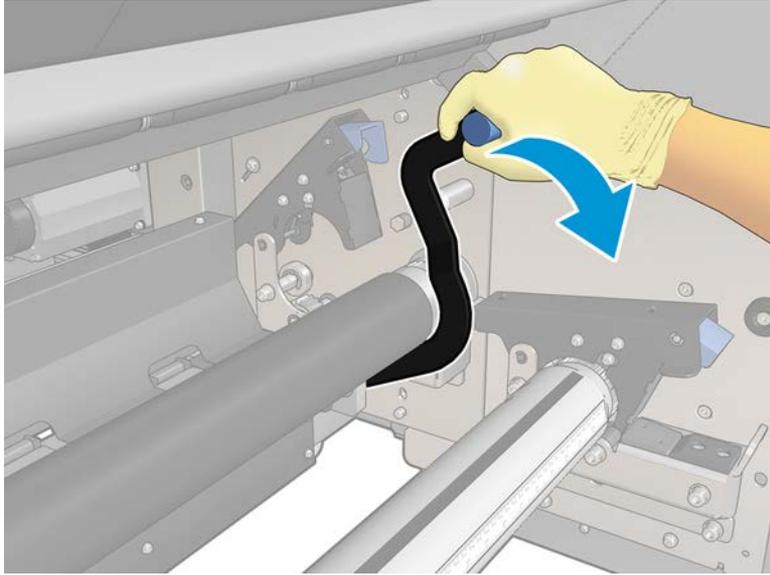
3. Clean the pinchwheels carefully with a cloth dampened with water (for persistent dirt you may use isopropyl alcohol, but do not use petroleum-based cleaning liquids).
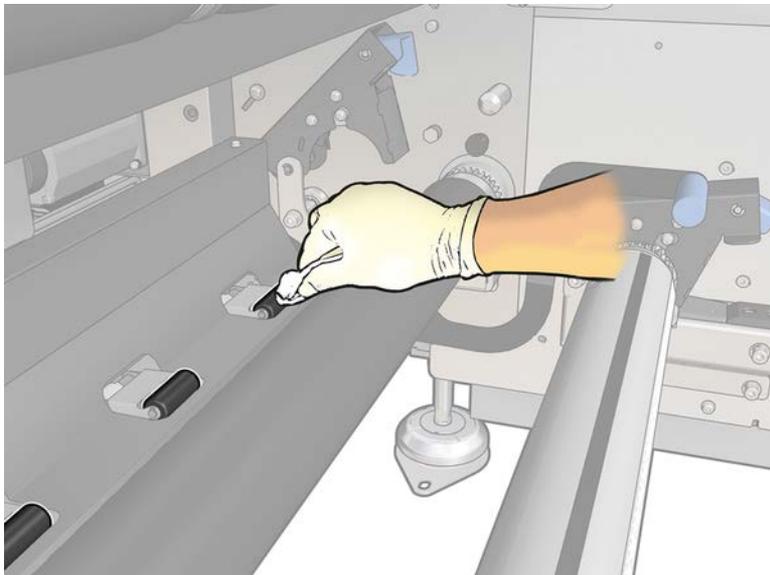
4. Once the pinchwheels are clean, raise the pressure roller lever.

5. Roll the roller backwards by pushing it (not by grabbing it).

⚠ **WARNING!** Take special care when moving the roller backwards not to hit your fingers against the black substrate guide behind and under the roller.

6.   Once the roller is in position, close the latches at both sides.

7.   Ensure that the cleaned parts are completely dry and the vapors have completely evaporated.

Ink collector

You must install the ink collector kit available as an accessory, to protect the printer from the ink that falls through the substrate.

Use the ink collector

Use the ink collector before printing on porous substrates (textile mesh, flag, and voile). The kit should be removed before printing on non-porous substrates.

See a video here:

www.hp.com/go/latex1500/inkcollector

⚠ **CAUTION:**   Ensure that the operating temperature of the substrate recommended by the manufacturer is not exceeded. If this information is not available, ask the manufacturer. Do not load substrates that cannot be used at an operating temperature above 125°C ((257°F)).

CAUTION: Proper maintenance and genuine HP consumables are required to ensure that the printer operates safely as designed. The use of non-HP consumables (foams, filters, printhead cleaner roll, and inks) may present a risk of fire.

CAUTION: Do not load substrates with auto-ignition temperatures below 250°C ((482°F)). Ensure that no ignition sources are close to the substrate.Inline measure markup needed

Kit components

The following steps provide the complete procedure for this topic.
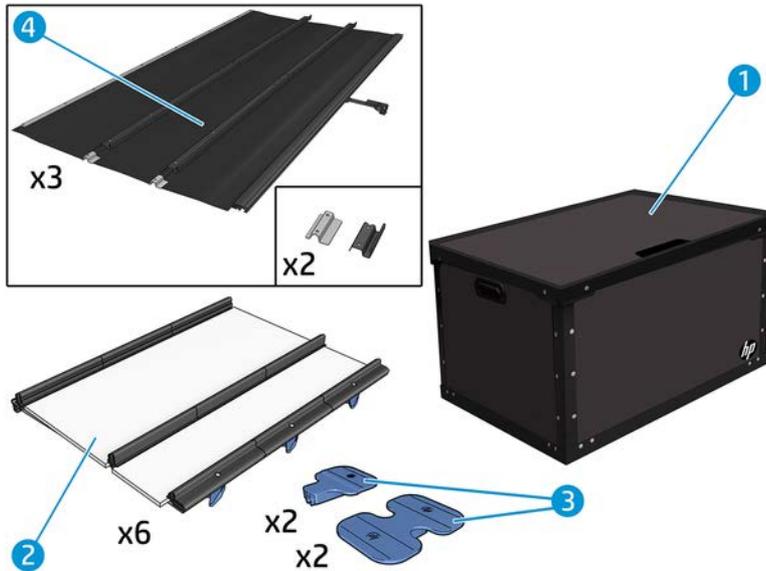
1. Ink collector container

2. Ink collectors with two replaceable foams

3. Ink collector edge holders

4. Protector modules

NOTE: Keep the ink-collector container and protector core to protect and store the ink-collector parts when not in use.

Recommended solution space

Always use the default printmode settings as a starting point for your substrate. The following settings ensure proper curing and quality at nominal printing conditions for generic materials.

Table 10-5 Recommended solution space

Type:	Availability:
✓	Recommended print mode for this substrate type
✓	Alternative print mode for this substrate type.
	Available, but setting adjustment may be required. Risk of condensation and exceeding curing capacity for long jobs.

Assemble the protector

The following steps provide the complete procedure for this topic.

IMPORTANT: Before using the ink collector kit and the protector, assemble the three protector modules, as the protector has to be used as a one whole part.

1. Locate the three protector modules and remove them from their packaging.

2. Look for a flat surface and unfold them side by side, with the red side facing down.

3. Starting on your right, overlap the middle protector over the right one, and attach the two protectors to each other as follows:

   ▲ Look for the metallic elements and use them to fix the two modules with the screws (0515-48013), 2 for each metallic piece provided with the kit, and connect the ribs as shown below.
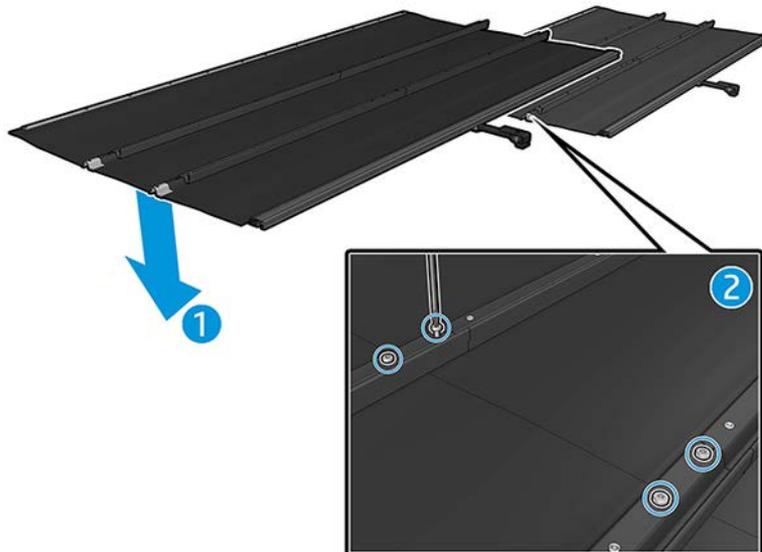
4. Repeat the process to attach the left protector to the middle one.

5. Once the three protector modules are assembled, locate the end covers of the ribs (P4P92-0001 and P4P92-0002), place them in each end, and fix with two screws (0515-4813) as shown below. Use the same metallic element used to join the protector ribs at the end of the ribs.
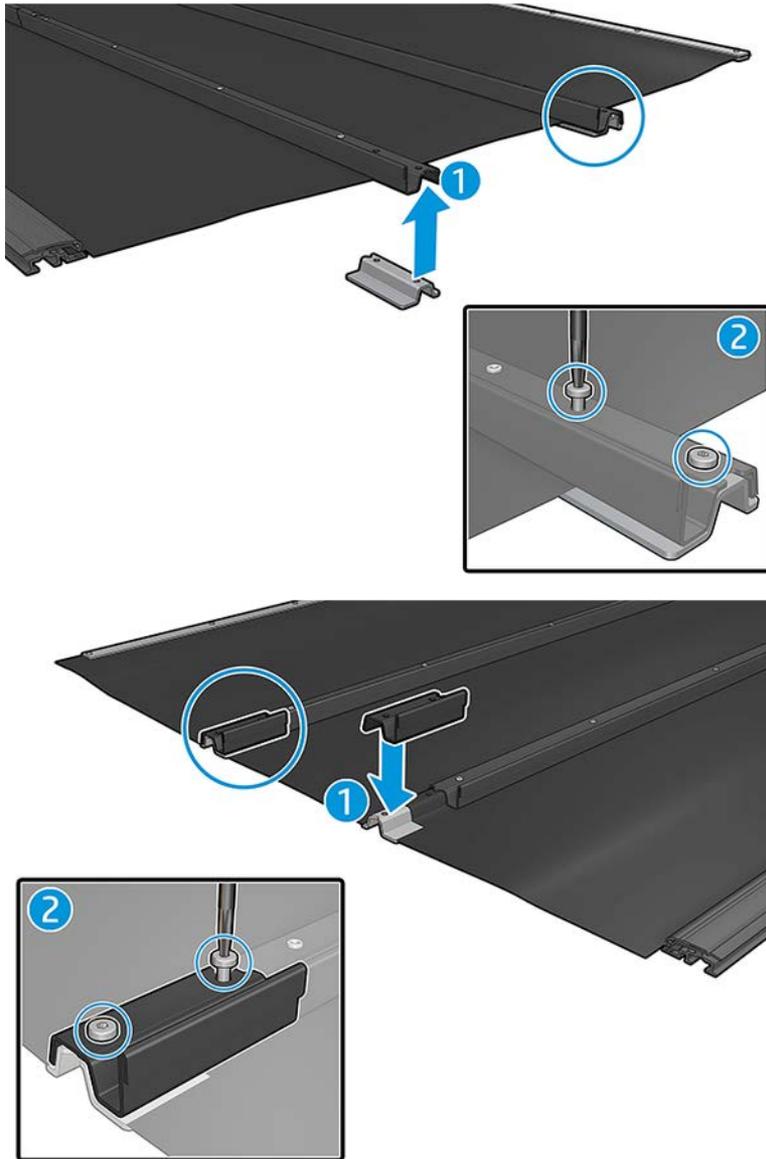
Install the kit

The following sections provide details for this topic.

Table 10-6 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

IMPORTANT: Before starting to install the kit, make sure you have assembled the protector: see Assemble the protector on page 177.

TIP: You are advised to wear gloves.

Install the six ink-collector modules

The following steps provide the complete procedure for this topic.

1. Ensure that the printer is not printing.

2. If any substrate is loaded, unload it. Then remove the edge holders from the substrate path.

3. To facilitate module installation, HP recommends raising the carriage beam to the installation position, by clicking the **Raise carriage beam to install position** button.

4. Ensure that all windows, covers and doors are closed and remain in their original position.

5. Open the ink collector container and check that the ink collector foams are dry and clean enough to be used.

    Also check that the foams fit into the spaces provided for them. If they have expanded and no longer fit, replace them.

    NOTE: Ensure that you dispose of the used foams correctly. Consult the guidelines from your local authority.

6. Go to the Internal Print Server and click the **Install ink collector** button on the main screen.

7. Follow the instructions in the Internal Print Server to complete the installation. If you need further information, read the steps below.

    CAUTION: If you install the kit incorrectly, some parts of the printer may be damaged.

8. Ensure that the module latches are open (turned to the left).

9. To facilitate module installation, we recommend raising the carriage beam to the installation position.

10. Open the window.
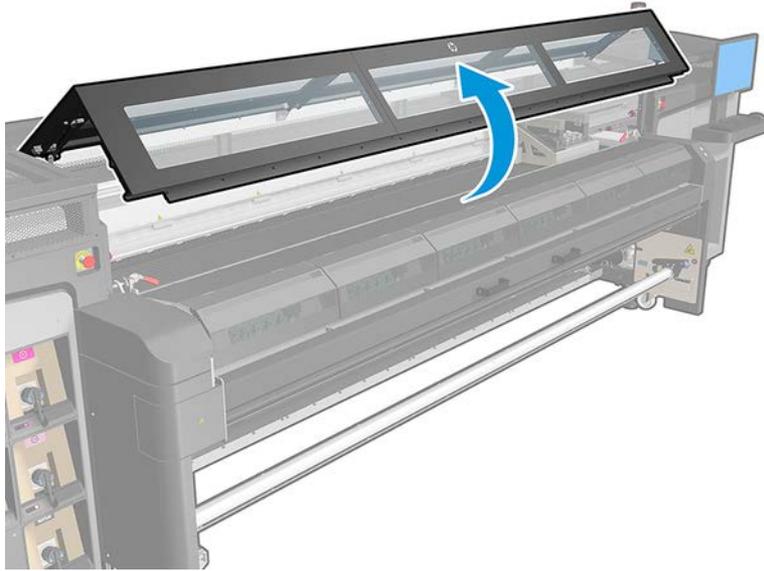
11. Ensure that the label under the first module that you place is clean.

12. From the front on the right side, install the first module and insert it into the guide.
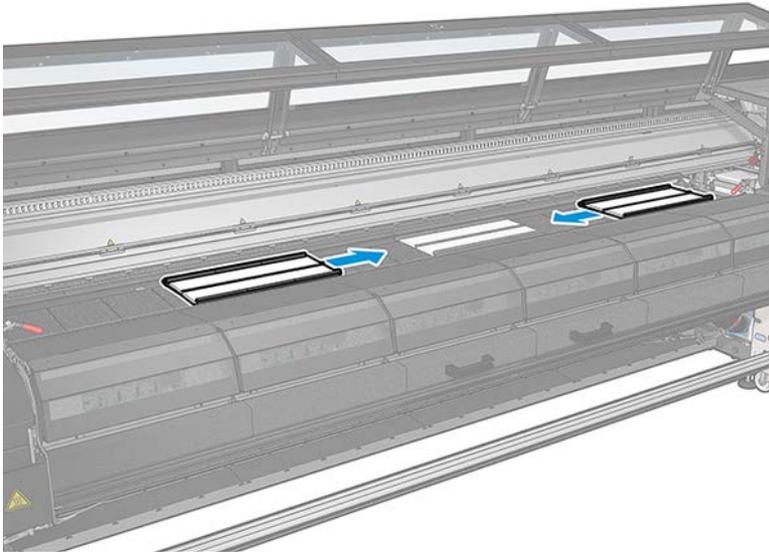
    📝 **NOTE:** At this point, you will have better access if you have raised the carriage beam.
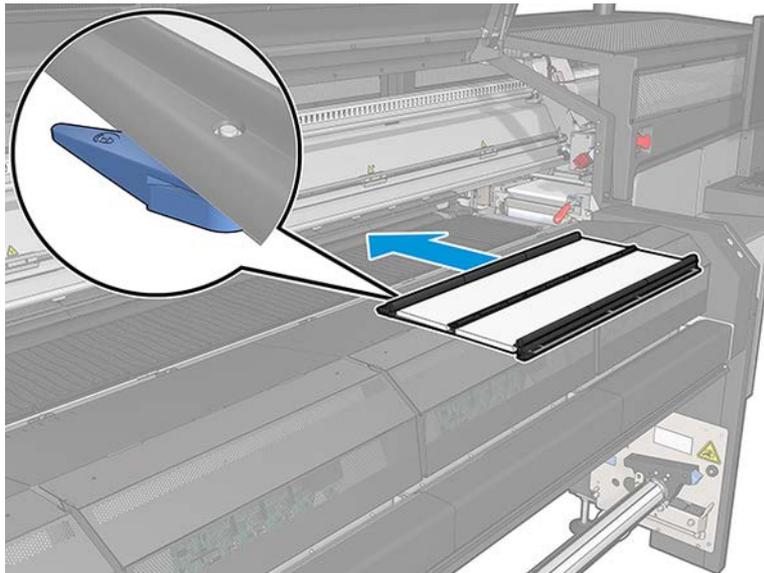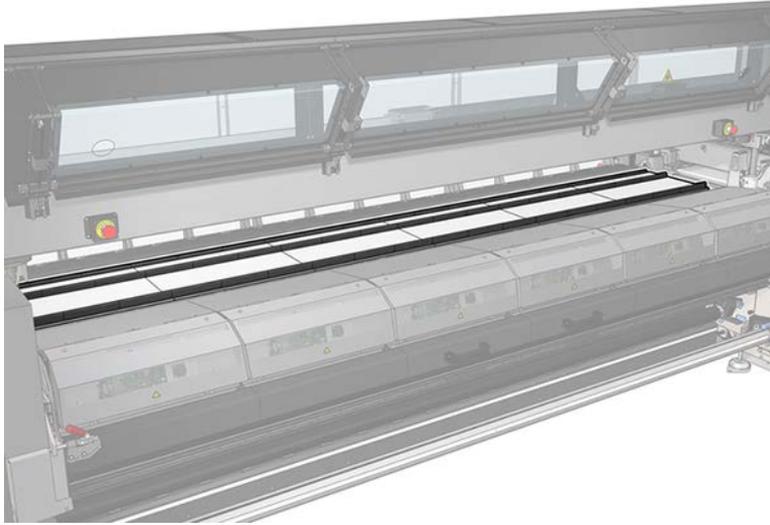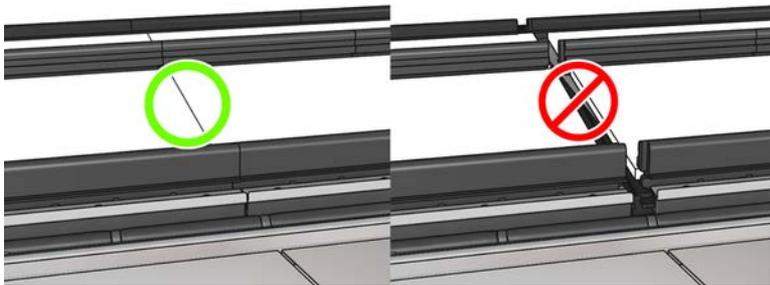
13. Slide the module to the middle until the stop.
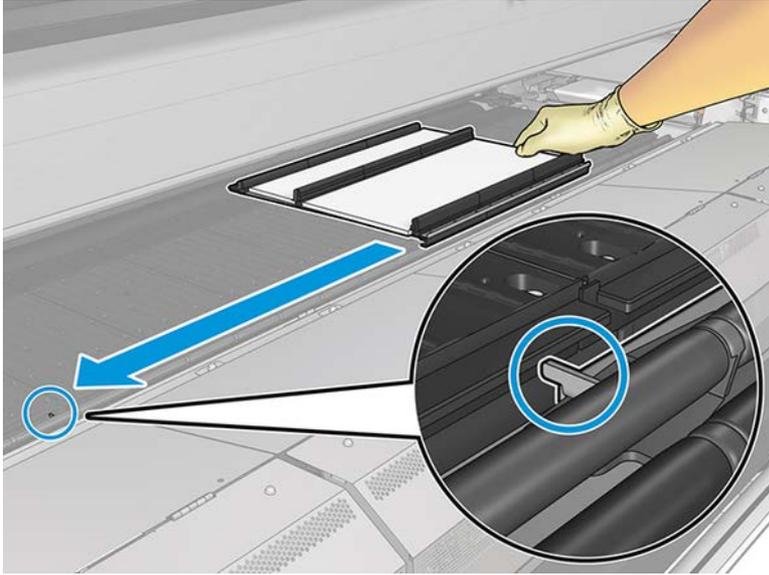
14. Insert all the ink collector modules on either side of the central one.
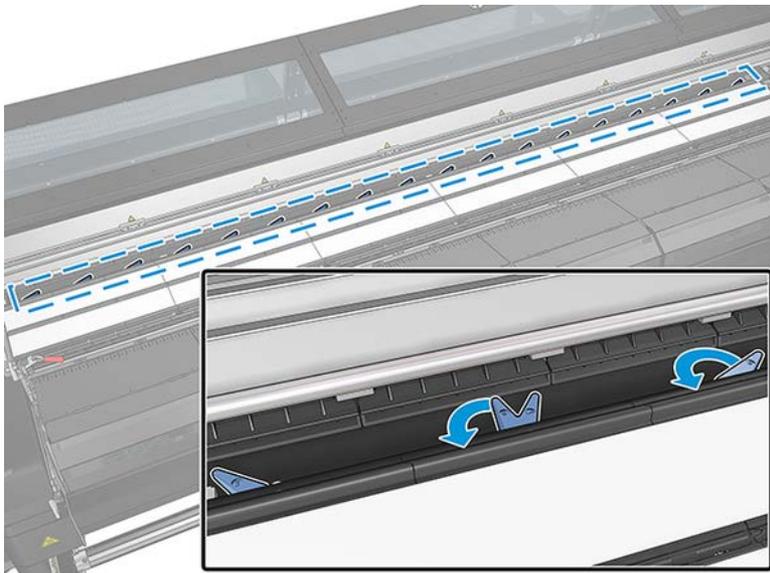
15. Attach each one inserted to a module that is already in place.

16. Check that all the ink collector modules are aligned with each other and that there are no gaps between them.

17. Close the latches of all modules (turn to the right).

📝 NOTE: You can do this from the front or from the rear of the printer.

Install assembled protector modules

The following steps provide the complete procedure for this topic.

1. Place the assembled protector (rolled up) on the curing module. Do not open the curing module yet.
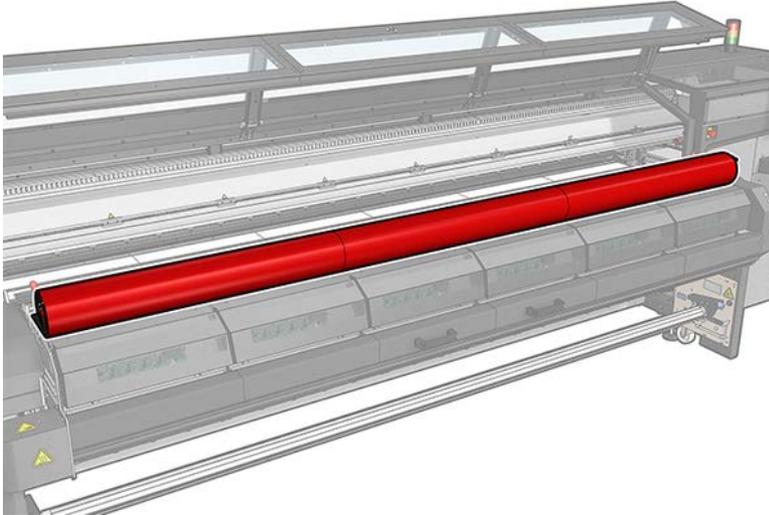
2. Start the installation on the right-hand side of the printer, next to the built-in computer.
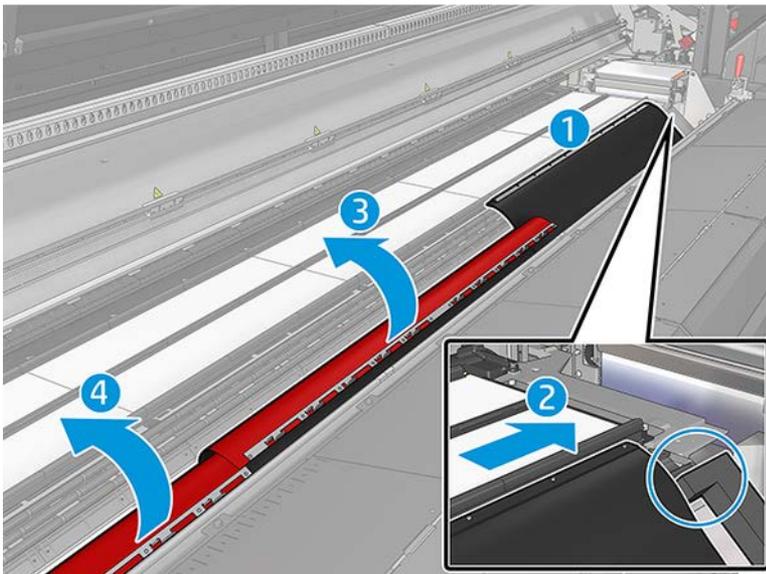
3. Hook the tabs of the flaps of the first protector module onto the slots of the first two ink collector modules. It should be at the top right of the printer, in contact with the lateral foams. The black side should be facing up.

4. Locate the flaps and tabs of the second protector module and place them on the slots of the next ink collector modules.

    IMPORTANT: Make sure the flaps are overlapped once installed.

5. Repeat the process with the third protector module.

6. Open the curing module latches and the curing module, and let the protector drop down gently.
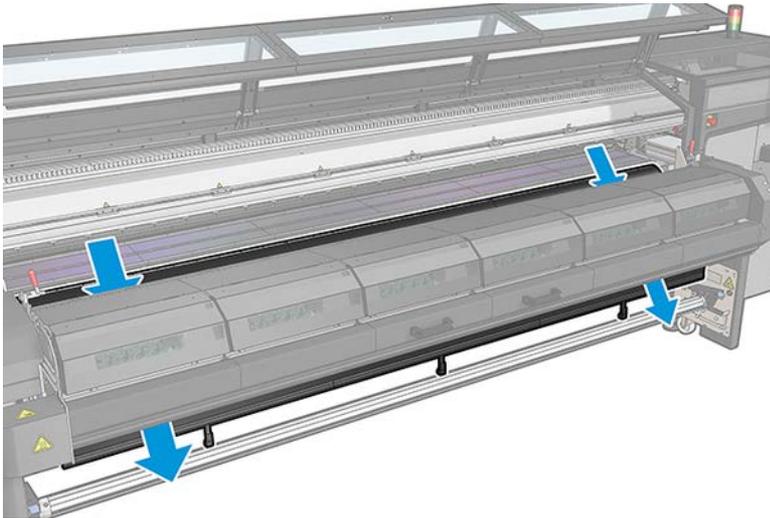
Pull up the latches
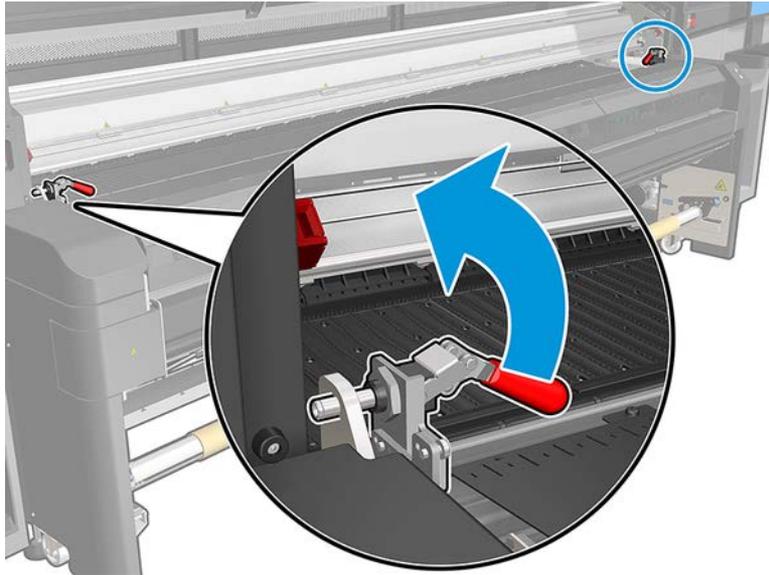
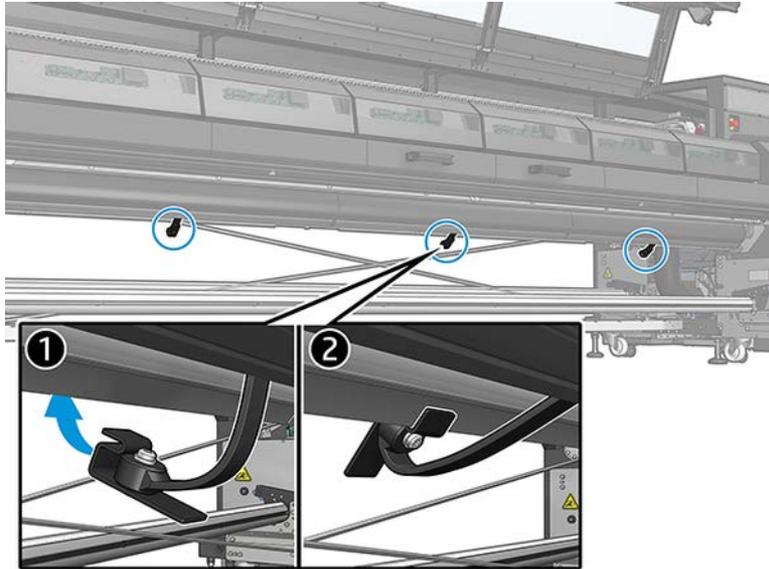

Make sure the bolt is free
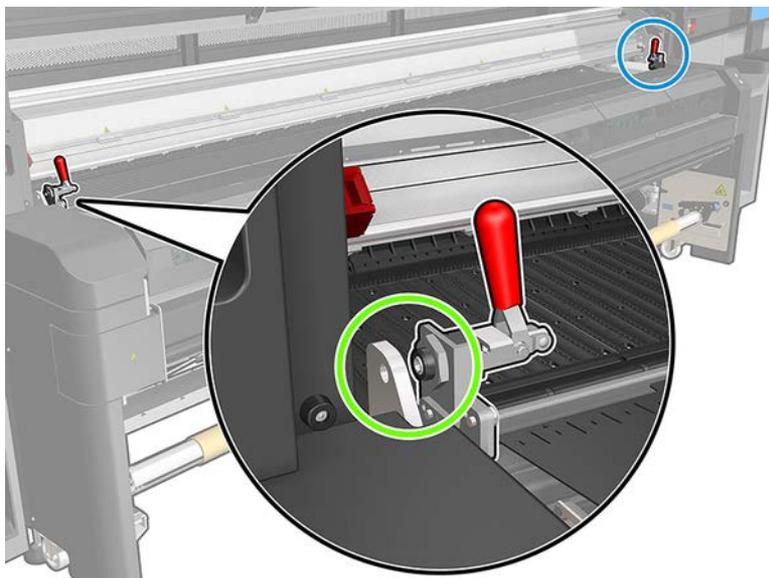
Open the Curing module
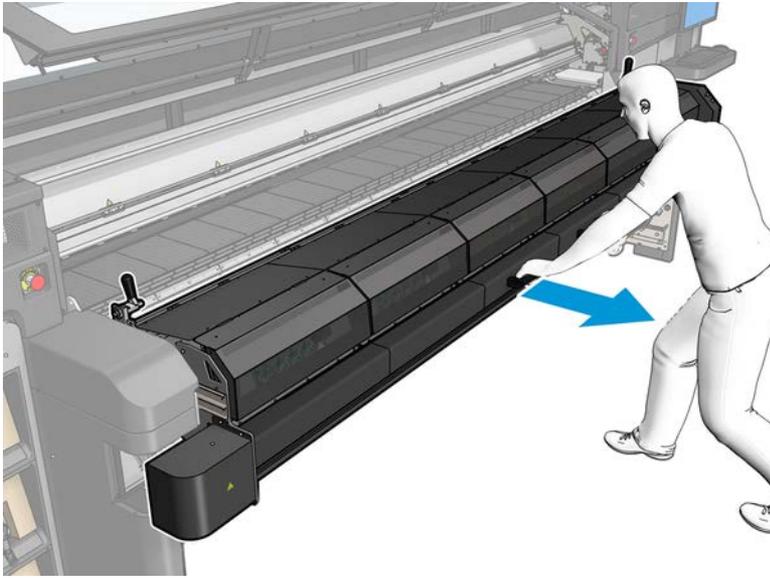
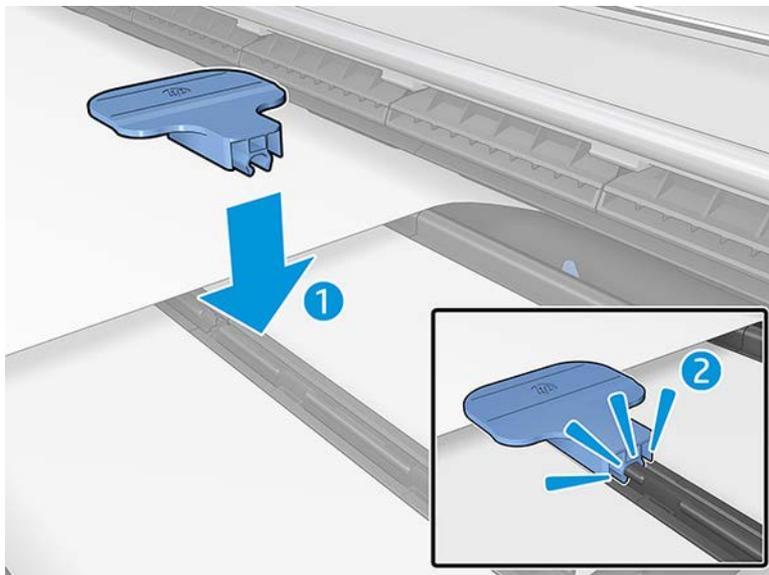Let the protector drop down

7. Close the curing module and the latches.

8. Hook the clips from each protector module to the bottom part of the printer.

9. Deploy the edge holders that are designed to be used with the ink collector. To do this, place each edge holder on the ink collector's middle rib, between the foams, and adjust it to the substrate as needed.

10. Close the window.

📝 NOTE: If you plan to load substrates thicker than the value shown on the main screen, set the thickness value appropriately.

11. Press **Finish** to complete the ink collector installation. The carriage beam will adjust to the ink collector height.

HP Latex 1500 Ink Collector Serial Number Label

The HP Latex 1500 ink collector accessory serial number is a 12 digit code, (ICLwwyyXXXXA). There are two serial number labels where you can find the accessory serial number.

Accessory serial number label location

1.   There is a serial number label pasted on the main box:
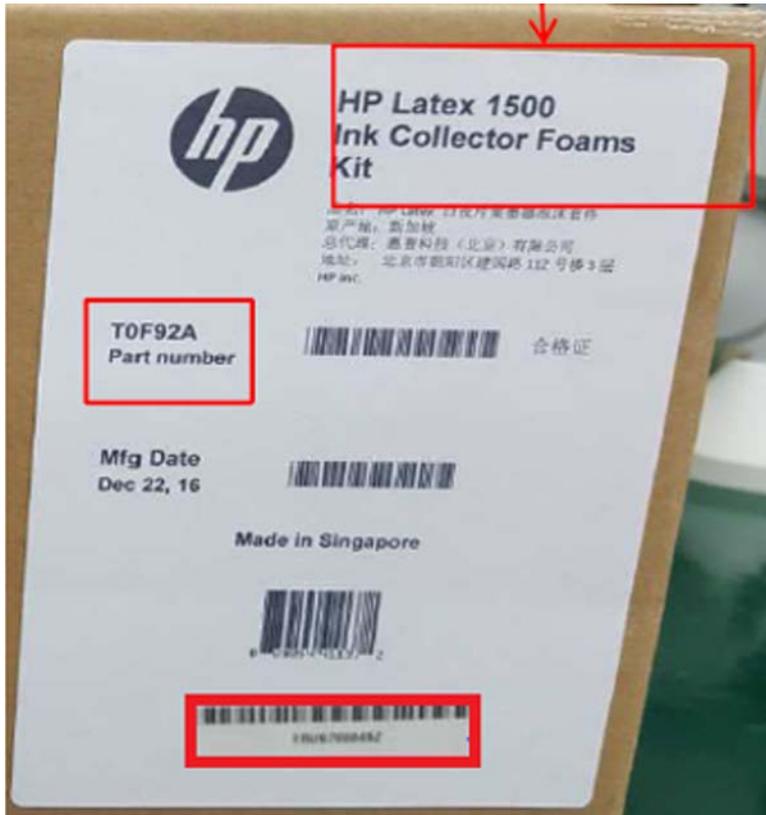
2.   There is another serial number label pasted on the ink collector modules black box:

Note and remember where the serial number codes are in case the firmware requests it during accessory installation.

Uninstall the kit

Unload the substrate and remove the output spindle.

TIP: You are advised to wear gloves.

To facilitate module uninstallation, we recommend raising the carriage beam to the installation position, by pressing the **Raise carriage beam to install position** button.
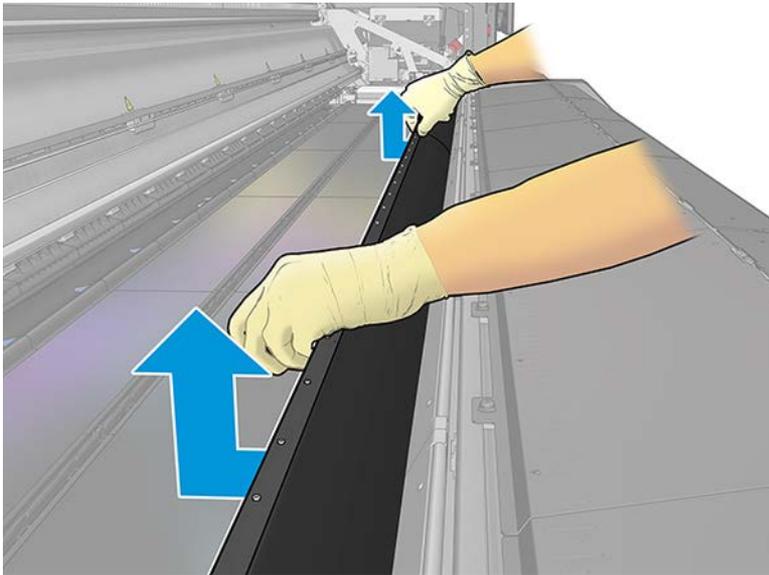
Uninstall the protector modules

The following steps provide the complete procedure for this topic.

1. Go to the Internal Print Server and click **Uninstall ink collector**.

2. Unhook the clips from the bottom.
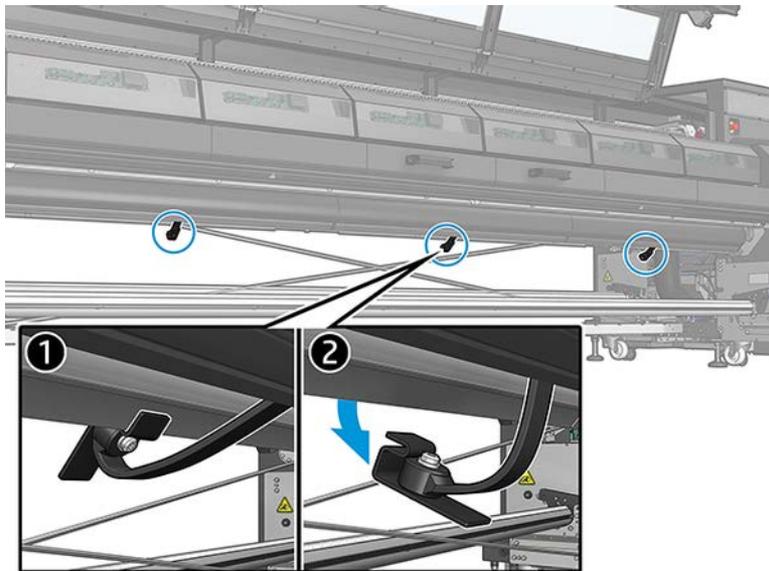
3. Uninstall the whole protector starting on the left, extracting the tabs of each flap from the ink collector module slots.
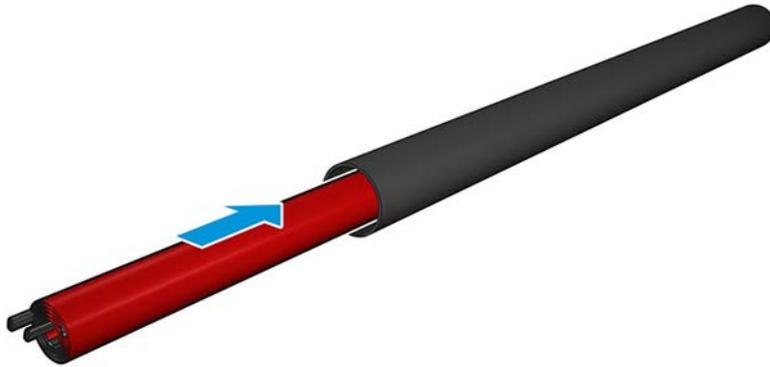

4. Open the curing module latches and the curing module, and leave it/the protector to slide down gently.

5. Check that nothing is dirty or broken. If necessary, clean with a lint-free cloth moistened with distilled water.

📝 IMPORTANT: Avoid using a broken protector, which compromises the integrity of the printer. Order a replacement.

6. Roll up each protector module with the red side on the bottom and the black part on the top. Start rolling up on the side of the clips.
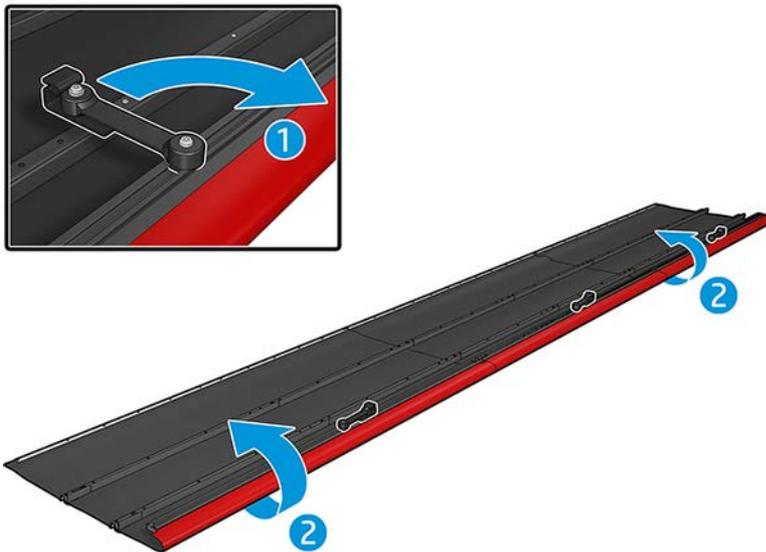
7. Place the protectors in their packaging, and store them.

Uninstall the six ink-collector modules

The following steps provide the complete procedure for this topic.

1. Close the curing module and latches.

2. Open the three latches of each module.

3. From the front of the printer, remove each module.

4. Press **Finish** to complete the removal process. The carriage beam moves down and the carriage moves along the platen for checking.

5. Check whether the foams need to be replaced; if so, replace them. Store them in the ink collector container, keeping the latches on top. You can also store the edge holders there.

6. Perform the maintenance operations recommended after uninstalling the kit (see).

Maintain the ink collector

Summary of maintenance operations.

Table 10-7 Maintenance operations

| Frequency	Maintenance operation
After 3 liters of ink or at the end of each roll	Clean the aerosol nozzle plate and filters on page 226
	Wipe the top of the protector on page 192
	Maintain the ink collector on page 191
	Maintain the ink collector on page 191
Every 40 liters of ink	Replace the ink collector foams on page 199
	Clean curing module plate and airlet plate on page 200
	Check and clean condensates, window rubber and bottom plate sides on page 200
	Clean the bottom of the carriage and the line sensor on page 223
Every 500 liters of ink	Clean the curing fans on page 198
	Clean curing module plate and airlet plate on page 200
	Clean two dryer PCA fan filters on page 267

Clean the aerosol nozzle plate and filters

The aerosol nozzle plate and fliters should be kept clean for optimal performance and reliability.

See Clean the aerosol nozzle plate and filters on page 226.
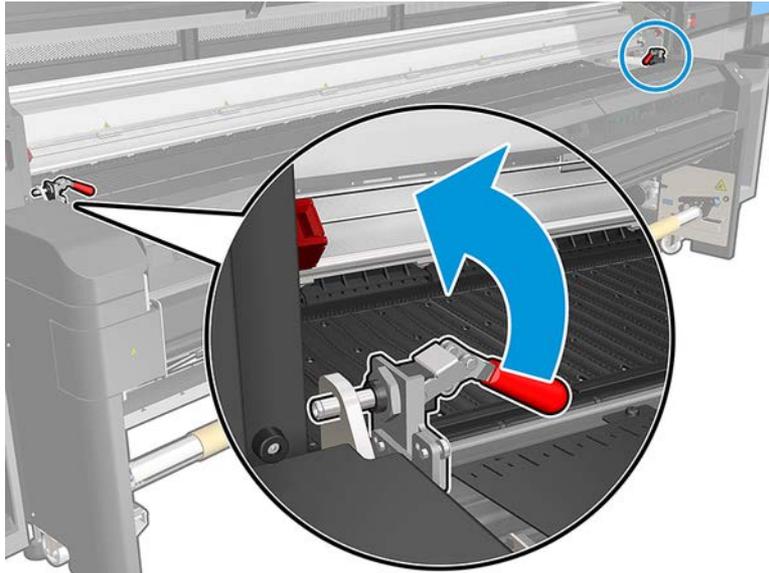
Wipe the top of the protector

The protector should be kept clean for optimal performance and reliability.

1. Ensure that the printer is not printing.

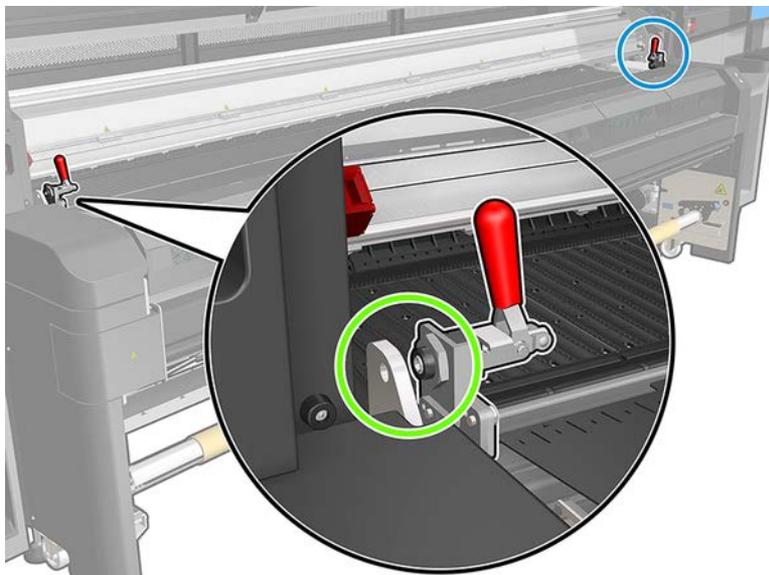2. Unload the substrate.

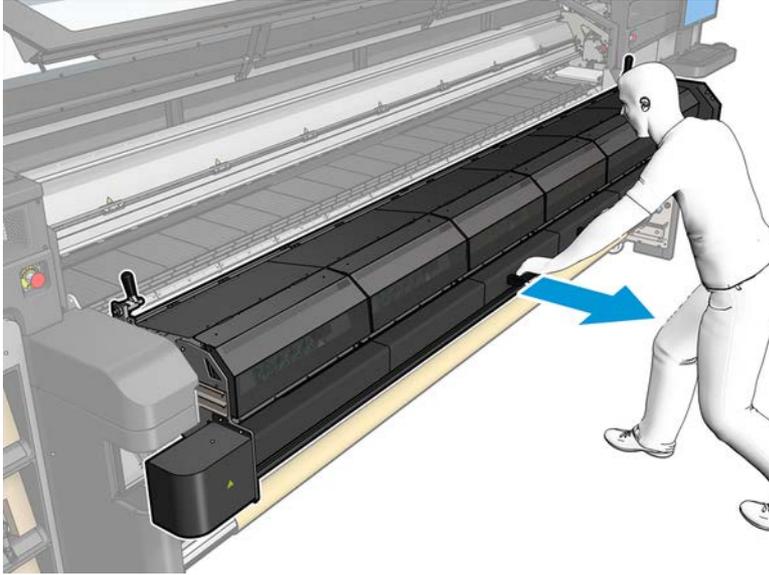3. Open the window.
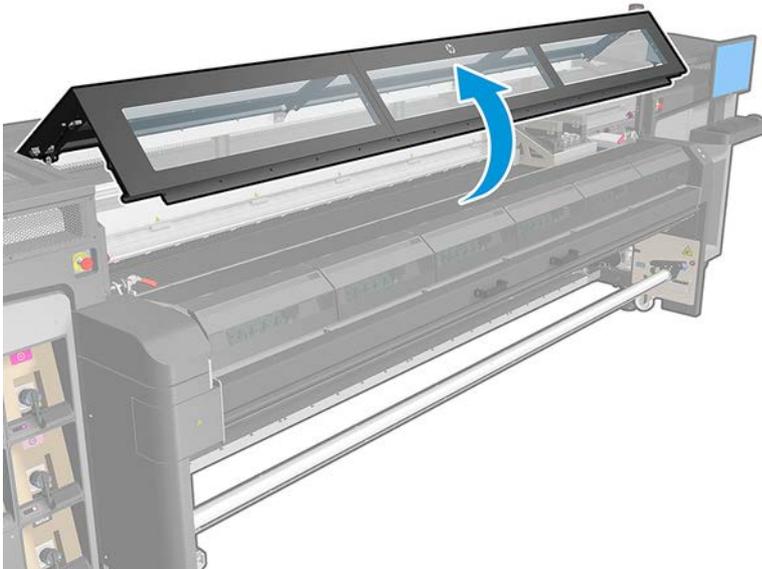
4. Open the curing module latches.

Open the latches

Make sure the bolt is free

5. Open the curing module.

⚠ **CAUTION:** Wait for the curing modules to cool down.

6. Wipe the visible part of the protector with a lint-free cloth dampened with distilled water.

7. Close the curing module and latches.

Wipe the ribs of the ink collector modules

The following steps provide the complete procedure for this topic.

1. Wipe the ribs of the ink collector modules with a lint-free cloth dampened with distilled water.

2. Close the window.

Clean the output platen

The output platen is made of plain sheet metal with two rows of plastic ramps.

See .

Wipe the protector modules

While you have the protector modules out of the printer, wipe all surfaces and check the ribs.

Wipe the ink collector modules

While you have the ink collector modules out of the printer, wipe all dirty surfaces. If necessary, replace the foams.

CAUTION: Proper maintenance and genuine HP consumables are required to ensure that the printer operates safely as designed. The use of non-HP consumables (foams, filters, printhead cleaner roll, or inks) may present a risk of fire.

Printer maintenance

First ensure that you have turned the printer off, and be careful to follow the appropriate safety precautions.

Table 10-8 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

After using the ink collector kit, the following parts of the printer may be dirty. Check them as follows.
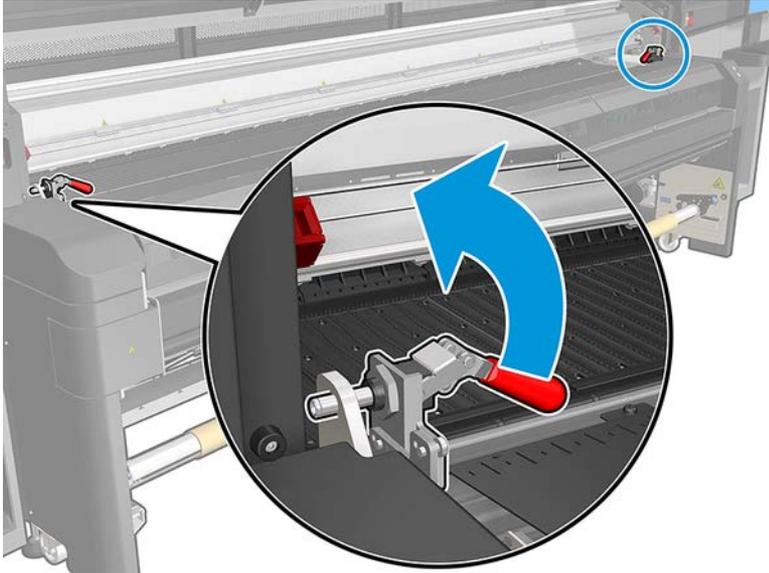
Curing lip

The following steps provide the complete procedure for this topic.

1. Open the window.
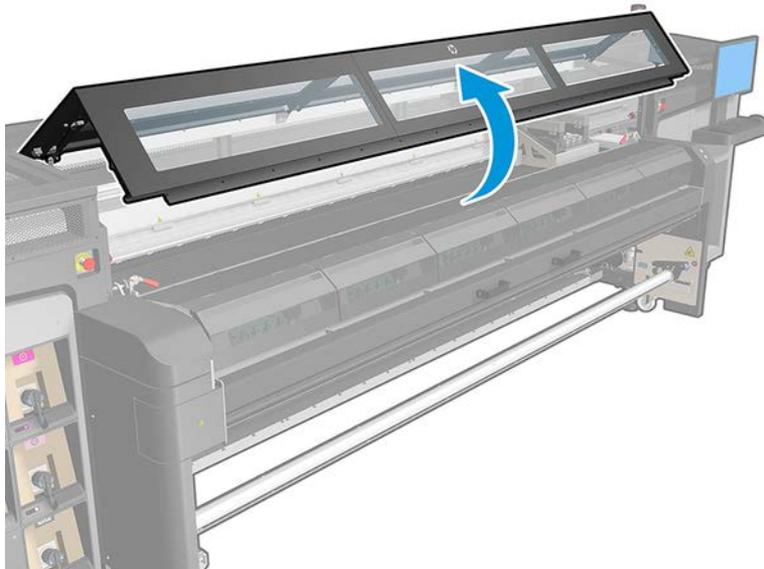
2. Open the curing module latches.

   Open the latches

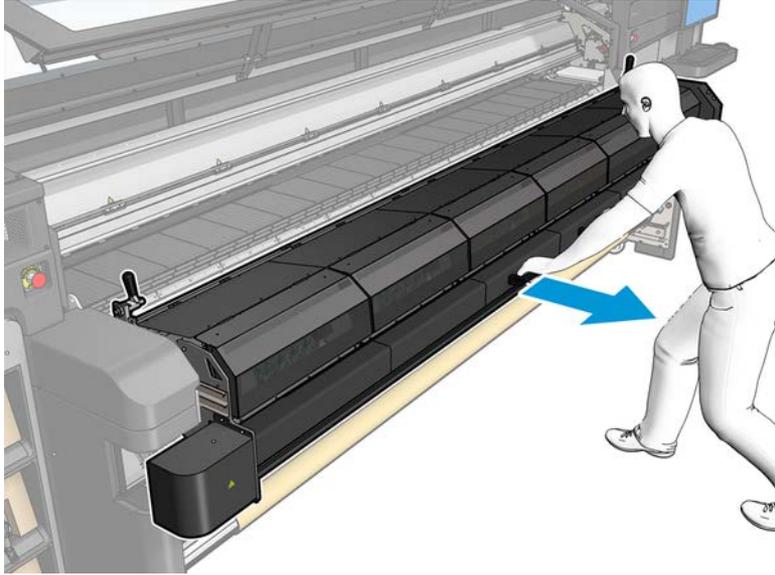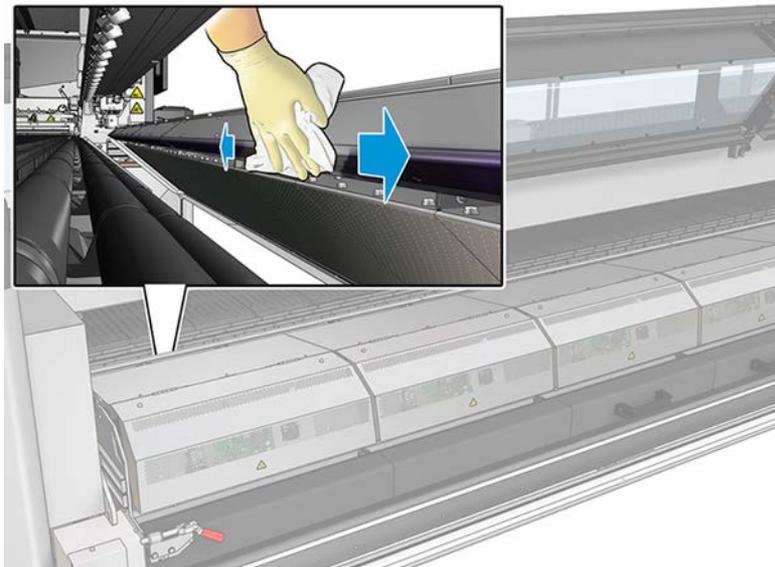   Make sure the bolt is free
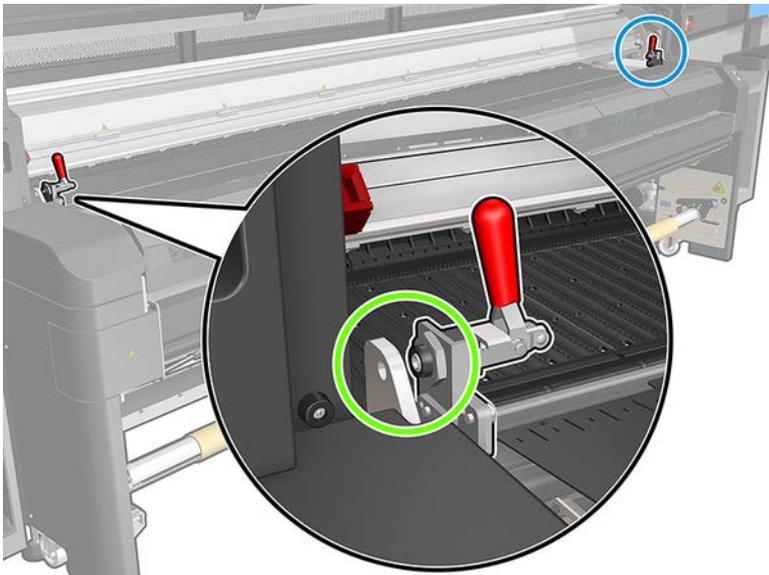
3. Open the curing module.

CAUTION: Wait for the curing modules to cool down.

4. Wipe the curing lip with a lint-free cloth dampened with distilled water, and make sure that the platen is dry before printing.

Bottom plate

Wipe the bottom plate with a lint-free cloth dampened with distilled water, and make sure that the platen is dry before printing.

Diverter interwheels

The following steps provide the complete procedure for this topic.

1. Wipe the diverter interwheels with a lint-free cloth dampened with distilled water, and make sure that the platen is dry before printing.
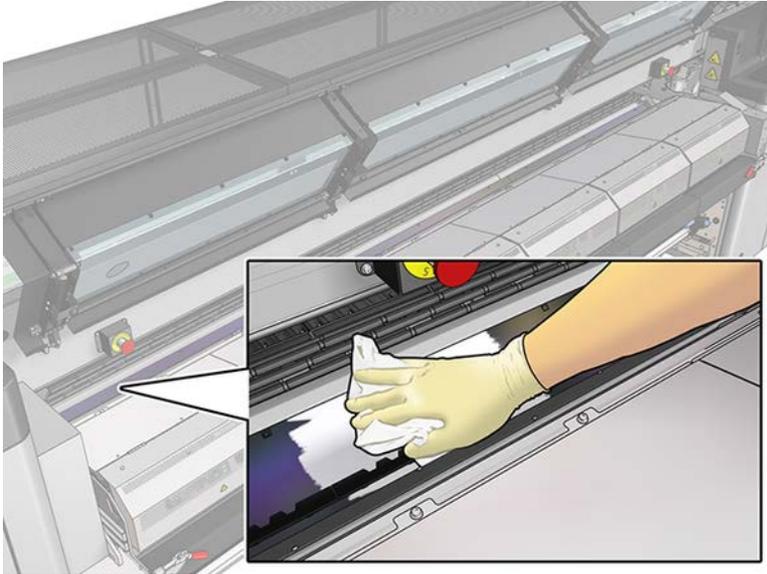
2. Close the curing module and the window.

Clean the print zone

The platen should be cleaned whenever it is visibly dirty, or when you notice marks on the back of the substrate.

See .

Clean the curing fans

The following steps provide the complete procedure for this topic.

1. Ensure that the printer is not printing.

2. Turn off the printer and the power-enable switch.

3. Use a screwdriver to remove the screws from the curing module.
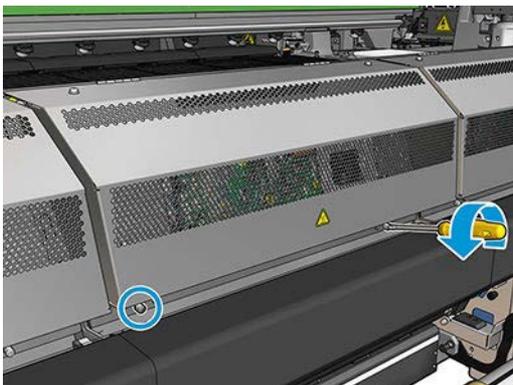
4. Lift the PCA module in order to reach the interior.
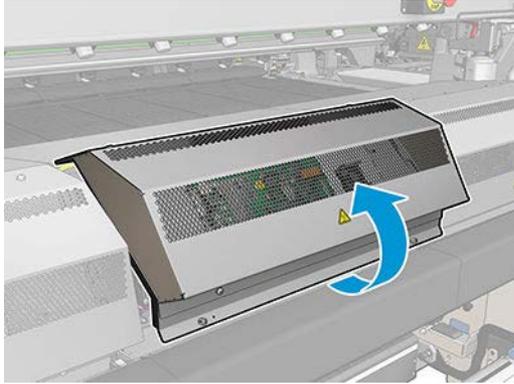
5. Clean the fans.
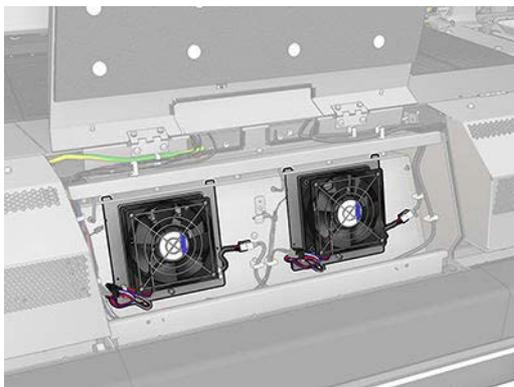
6. Close the PCA module.

7. Secure the curing module by reinserting and tightening the screws with a screwdriver.

8. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

Replace the ink collector foams

Do this away from the printer to avoid ink dripping on the printer.

1. Slide out the dirty old foams.

NOTE: Consult your local authorities to determine the correct manner in which to dispose of them.

2. Slide in the new foams.

⚠ **CAUTION:** Proper maintenance and genuine HP consumables are required to ensure that the printer operates safely as designed. The use of non-HP consumables (foams, filters, printhead cleaner roll, or inks) may present a risk of fire.
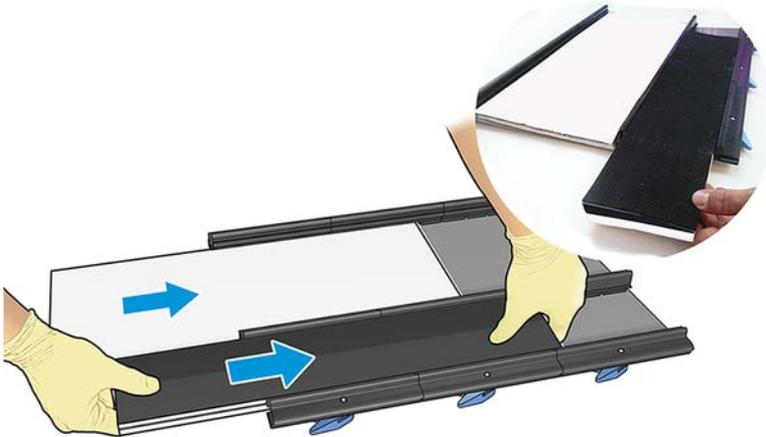
Clean curing module plate and airlet plate

The perforated plate is a drilled metallic sheet located in the curing assembly. Through its holes the curing fans blow hot air onto the substrate.

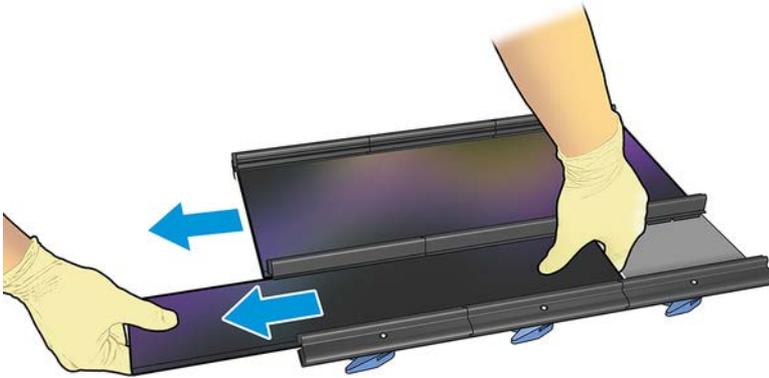See Clean the perforated plate and curing entrance cover on page 239.

Check and clean condensates, window rubber and bottom plate sides

This procedure is included in the check and clean the printer section.

See Check and clean the printer on page 217.

Troubleshooting for Ink Collector enabled substrates

This topic provides a full set of reference information for this subject.

There are marks on ink collector enabled substrate

This problem can occur if any component in contact with the substrate is dirty or damages the substrate or its coating. Verify the pressure of the pinchwheels is correct, check for excessive dirt in the diverters, print platen, and especially the ink collector foams, and clean them if necessary.

If marks are continuous along the advance of the plot, verify substrate condition looking for unevenness in the coating of the material in the input side of the printer.

Grain and text sharpness

This problem mainly occurs when printhead calibration or substrate advance are not correct.

Printhead alignment on porous substrate may be difficult because alignment plot lines can be printed in the mesh and therefore not visible. In such cases it is recommended to run printhead alignment on a self adhesive vinyl or a substrate with a similar width to the substrate to be printed on.

With substrate advance when using the ink collector, OMAS is automatically disabled and therefore substrate advance is controlled by the drive roller encoder. Manual advance calibration adjustment can be used while printing in order to correct the advance factor for best results with the material used. If experiencing problems with substrate advance, pay special attention to substrate deformation as textile materials can be easily stretched when applying incorrect tensions, and produce advance problems. Refer to the default settings for you material.

Color consistency

Due to the porosity and unevenness of textile and mesh materials, color calibration is not enabled, and color consistency between rolls, printheads, or printers is not assured. In order to improve color consistency for long runs, make sure that substrates from the same batch are used. In order to ensure color consistency between printers, external profiling of the material is required.

Below is an example of color differences from using the same material from different batches:

11 Hardware maintenance

Hardware maintenance may be performed by trained personnel only.

⚠ WARNING! During printer installation, the designated personnel received training for safe operation and maintenance of the printer. It is not allowed to use the printer without this training.

Safety precautions

You are expected to have the appropriate technical training and experience necessary to be aware of hazards to which you may be exposed in performing a task, and to take appropriate measures to minimize the risks to yourself and to others.

Read and follow the safety precautions section to make sure you use the equipment safely.

See Safety precautions on page 2.

Maintenance resources

The printer comes with a cleaning kit, in-box material, and a basic up-time kit. These cover all maintenance operations during the first months, and consist mainly of printer requested cleaning operations via Print-Care.

HP Latex 1500 Printer Series maintenance kits and tools

User maintenance operations and their timing are described in the following chart.

The PMK (printer maintenance kit) must be acquired when prompted by the printer.

The SMK (service maintenance kit) is also requested by the printer and needs to be acquired. The service team or technical support should perform SMK operations.

Task numbers 1,2,3,4,6 are maintenances tasks.

The kits are related to printer repairs.

1. Daily clean

2. Weekly clean

3. 450 l cycles maintenance (~750000 cycles)

4. PMK @ 900 litres (~1.5 million cycles)

5. SMK1 @ 2,5 million cycles (~1500 l) (This maintenance is only for certain printers, depending on the printer serial number)

6. SMK2 @ 5 million cycles (~3000 l)

7. User Basic Up-Time Kit

8. User Expert Up-Time Kit

9. Reseller Up-Time Kit

Table 11-1 Kits and parts required for maintenance operations

Name	Part number	Purpose	How to order
HP Latex 1500 Cleaning Kit	K4T88-67255 (inside printer)	User maintenance For daily and weekly checks, maintenance 450 Liters, approx. every 750.000 cycles of scan axis	Provided with the printer and included in the printer maintenance kit. Covers all required maintenance up to 900 L.
HP Latex 1500 User Maintenance Kit	K4T88-67259 (Buy when required)	User maintenance For user 900 liter maintenance. Printer life, approx. 1.5M carriage cycles*	Through the usual channel. Includes 900 liter maintenance and new cleaning kit.
HP Latex 1500 Series Service Maintenance Kit	K4T88-67260 (order/buy when required)	Service maintenance For 5M carriage cycle maintenance routine*	Through the usual channel

📝 **NOTE:** For the latest information on kits available for your printer and their contents, see http://hp.com.

*Frequencies are approximate and will depend on print mode usage.

Up-time user spare parts kits

This topic provides a full set of reference information for this subject.

Table 11-2 Up-time user spare parts kits

Name	Part number	Purpose	How to order
Basic Uptime Kit	K4T88-67256	Set of spare parts that can be replaced by customers and resolve the most common failures	Provided with your printer in most locations worldwide. If necessary, you can purchase the kit through the usual channel.
Expert User Kit (optional)	K4T88-67257	Set of spare parts that due to their technical complexity, can be replaced only by trained customers	Through the usual channel. Requires 2 days training.

HP Latex 1500 Printer Cleaning Kit contents K4T88-67255

This topic provides a full set of reference information for this subject.

Table 11-3 Cleaning Kit contents

Part	Quantity
Flex cleaner and 12 flex sponges	1

Table 11-3 Cleaning Kit contents (continued)

Part	Quantity
Cleaning Brush	1
Cotton swabs	100
SAX Lubricant oil	4 bottles
Cleaning sponges	12
Plastic gloves	24
Grease for substrate advance worm	1
Grease syringe	1 3 ml bottle
Filters (e-cabinet, e-box)	6
Filters for drying EE fan	2
Key for carriage bearings wicks/felts replacement	1

HP Latex 1500 Printer Maintenance kit contents K4T88-67259

This topic provides a full set of reference information for this subject.

Table 11-4 Maintenance kit contents

Content	Quantity
HP Latex 1500 cleaning kit	1
Carriage oiling felts	1 kit
Printhead cleaning blades	2
Intermediate tanks	7
Diverter module	1

NOTE: The contents of the kit may vary.

NOTE: Some keys are provided with the printer. See Safety precautions on page 2 to identify the one you may require for maintenance operations.

Use the keys only for accessing the intended doors and keep them always under your control. Store them in a safe and secure place.

Maintenance tools recommended but not provided

This topic provides a full set of reference information for this subject.

Table 11-5 Maintenance tools recommended

Items:	Items:	Items:
Spiral brushes, for Clean the bottom of the carriage and the line sensor on page 223	Absorbent all-purpose cloth, for cleaning covers, sensors, and delicate parts	Distilled water for general cleaning, or Isopropyl alcohol when indicated

NOTE: If you are in an area (such as California) that regulates VOC cleaning and maintenance fluids, instead of isopropyl alcohol use a VOC-certified cleaner such as a properly diluted Simple Green All-Purpose Cleaner. |
Vacuum cleaner, handy or normal, with nozzle accessories; for Clean the scan-axis beam on page 307	Flashlight, for general use	Folding steps, for general use
A flat screwdriver	Allen keys	Torx screwdriver set

Summary of repairs kits and maintenances

This topic provides a full set of reference information for this subject.

Table 11-6 Maintenance operations for all substrates

Frequency	Maintenance operation	Cross-reference	Part number and description
Weekly	Check and clean the printer, printzone and output platen	Check and clean the printer, printzone and output platen on page 217	HP Latex 1500 Printer Cleaning Kit, provided with your printer
	Clean the bottom of the carriage and the line sensor	Clean the bottom of the carriage and the line sensor on page 223	HP Latex 1500 Printer Cleaning Kit, provided with your printer
	Clean the aerosol nozzle plate and filters	Clean the aerosol nozzle plate and filters on page 226	-
	Clean the substrate-advance sensor	Clean the substrate-advance sensor on page 230	HP Latex 1500 Printer Cleaning Kit, provided with your printer
	Clean the drop detector and the capping station	Clean the drop detector and the capping station on page 233	-
	Clean the drive roller and pinchwheels	Clean the drive roller and pinchwheels on page 237	-
	Clean the perforated plate and curing entrance cover	Clean the perforated plate and curing entrance cover on page 239	-
	Clean the e-Box fan filter	Clean the e-box fan filters on page 245	HP Latex 1500 Printer Cleaning Kit, included in your printer
	Clean the e-Cabinet fan filter	Clean the e-cabinet fan filters on page 250	HP Latex 1500 Printer Cleaning Kit, included in your printer
	Clean the heat exchanger air entrance filter	Check and clean the heat exchanger air entrance filter on page 253	-
	Check and empty the condensation collector bottle	Check and empty the condensation collector bottle on page 254	-
Every 450 liters of ink	Clean the scan axis and mechanical transmissions	Clean the scan axis and mechanical transmissions on page 258	-
	Clean and lubricate the drop detector rods	Clean and lubricate the drop detector rods on page 263	-
	Clean the carriage cooling fan	Clean the carriage cooling fan on page 266	HP Latex 1500 Printer Cleaning Kit, included in your printer
	Clean two dryer PCA fan filters	Clean two dryer PCA fan filters on page 267	-
	Replace the printhead cleaning blade	Replace the printhead cleaning blade on page 272	-
Every 900 liters of ink	Clean the substrate drive transmission	Clean the substrate drive transmission on page 277	-
	Grease the printhead primers	Grease the printhead primers on page 278	-
	Clean scan axis encoder	Clean scan axis encoder on page 280	-
	Clean impelling dust in scan axis chain	Clean impelling dust in scan axis chain on page 282	-
	Clean the drying fans and diffuser	Clean the drying fans and diffuser on page 283	-

Table 11-6 Maintenance operations for all substrates (continued)

Frequency	Maintenance operation	Cross-reference	Part number and description
	Clean the drop detector encoder strip	Clean the drop detector encoder strip on page 286	–
	Replace the curing module side rubbers	Replace the curing module side rubbers on page 290	–
	Replace the carriage felts and clean and oil the scan axis and rods	Replace the carriage oil wicks, felts, and clean and oil the scan axis rods on page 291	–
	Replace damaged diverter wheels	Replace damaged diverter wheels on page 292	–
	Replace an intermediate tank	Replace an intermediate tank on page 294	–
	Replace the e-Cabinet fan filters	Replace the e-cabinet fan filters on page 296	–
	Replace e-Box fan filter	Replace the E-box fan filter on page 299	–
	Replace dryer fan filter	Replace dryer fan filter on page 303	–
Every 1500 liters of ink	–	To be done by a service engineer. Call your service representative (see HP Customer Care Centers on page 416).	–
Every 3000 liters of ink	–	To be done by a service engineer. Call your service representative (see HP Customer Care Centers on page 416).	–

Up-time user spare parts kits

The table below covers items from the basic up-time kit and expert up-time kit which contain:

Basic up-time kit:

- Two substrate edge holders and 24 straps
- Diverter wheels
- E-cabinet fuses
- Service station caps
- Ink supply module intermediate tank
- Printhead cleaning rubber
- Printhead cleaning rubber free hub
- Prime and latch
- Spectrophotometer shutter

Expert up-time kit:

- Spindle air valve
- Scan-axis bump
- Impelling belt
- Impelling tensioner
- Spectrophotometer
- Curing side foams
- Printhead interconnect
- Ink delivery system air pump and valve
- Drying diffusor
- Drying heater/fan
- Drying PCA
- PCA curing
- Curing PCA cooling fan
- Carriage oiling felts
- ISM pressure sensor

Table 11-7 When required maintenance operations

Frequency	Maintenance operation	Cross-reference	Part number and description
When required	Printer safety check	Printer safety check on page 305	-
	Check and clean printheads	Check and clean the printheads on page 122	-
	Clean the scan-axis beam	Clean the scan-axis beam on page 307	-
	Clean the printhead contacts	Clean the printhead contacts on page 310	-
	Clean the carriage rails manually	Clean the carriage rails manually on page 314	-
	Check and clean dirt from scan axis and mechanical transmissions	Check and clean dirt from scan axis and mechanical transmissions on page 317	-
	Replace a pinchwheel submodule	Replace a pinchwheel submodule on page 318	-
	Replace a primer and latch	Replace a primer and latch on page 321	K4T88-67013: Primer and latch, included in the Basic Uptime Kit
	Replace the aerosol fan module (trained expert users only)	Replace the aerosol fan module (expert users only) on page 324	K4T88-67003: Aerosol top case assembly, included in the Basic Uptime Kit
	Replace a service station cap	Replace a service station cap on page 330	K4T88-67073: SVS Caps Kit, included in the Basic Uptime Kit

Table 11-7 When required maintenance operations (continued)

Frequency	Maintenance operation	Cross-reference	Part number and description
	Replace an intermediate tank	Replace an intermediate tank (trained users only) on page 334	CZ056-67073: ISM intermediate tank, included in the Basic Uptime Kit
	Replace an e-cabinet fuse	Replace an e-cabinet fuse on page 337	K4T88-67209: E-cabinet PCA Fuses Kit, included in the Basic Uptime Kit
	Replace a spindle valve	Replace a spindle valve on page 340	-
	Replace pinch clamp	Replace the pinch clamp on page 341	-
	Replace rocker pads	Replace the rocker pads on page 343	-
	Replace the curing module side rubbers	Replace the curing module side rubbers on page 290	-
	Replace spindle gear and end cap	Replace spindle gear and end cap on page 343	-
	Replace the in-line slitter blades	Replace the in-line slitter blades on page 351	-
	Replace the curing fan and resistor module	Replace the curing fan and resistor module on page 353	-
	Replace the drying fan and resistor module	Replace the drying fan and resistor module on page 356	-
	Replace the spectrophotometer shutter	Replace the spectrophotometer shutter on page 360	-
	Empty printhead waste bottle	Empty the printhead cleaning waste bottle on page 362	-

The table below includes cleaning or replacement of basic parts. The tools are included in kits.

Table 11-8 On demand oiling and greasing operations

Clean and grease operations	Cross-reference	Part number and description
Grease the printhead primers	Grease the printhead primers on page 278	HP Latex 1500 Printer Cleaning Kit, provided with your printer

Table 11-9 ON demand operations and customer replaceable parts (CSR)

Frequency	Maintenance operation	Cross-reference	Part number and description
Operations and parts to be replaced as required, on demand in case of breaks or low performance	Clean the printhead pocket and electrical contacts	Clean the printhead contacts on page 310	HP Latex 1500 Printer Cleaning Kit, provided with your printer
	Clean the pinchwheels and drive roller	Clean the drive roller and pinchwheels on page 237	-
	Clean the perforated plate and curing assembly	Clean the perforated plate and curing entrance cover on page 239	-
	Clean and check substrate advance sensor	Clean the substrate-advance sensor on page 230	-
	Grease the printhead primers	Grease the printhead primers on page 278	-

Frequency	Maintenance operation	Cross-reference	Part number and description
	Replace a primer and latch	Replace a primer and latch on page 321	K4T88-67013: Primer and latch, included in the Basic Uptime Kit
	Replace the aerosol module fans	Replace the aerosol fan module (expert users only) on page 324	K4T88-67003: Aerosol top case assembly, included in the Basic Uptime Kit
	Replace a service station cap	Replace a service station cap on page 330	K4T88-67073: SVS Caps Kit, included in the Basic Uptime Kit
	Replace an intermediate tank	Replace an intermediate tank on page 294	CZ056-67073: ISM intermediate tank, included in the Basic Uptime Kit
	Replace an e-cabinet fuse	Replace an e-cabinet fuse on page 337	K4T88-67209: E-cabinet PCA Fuses Kit, included in the Basic Uptime Kit
	Replace an edge holder strip	Replace an edge holder strip on page 45	-
	Replace the spectrophotometer shutter	Replace the spectrophotometer shutter on page 360	-
	Pinch clamp replacement	Replace the pinch clamp on page 341	-
	Replace rocker pads	Replace the rocker pads on page 343	-
	Replace a pinchwheel submodule	Replace a pinchwheel submodule on page 318	-
	Replace spindle valve	Replace a spindle valve on page 340	K4G10-67094: Spindle air valve, included in the Basic Uptime Kit
	Replace the printhead cleaning blade	Replace the printhead cleaning blade on page 272	-
	Replace spindle gear and end cap	Replace spindle gear and end cap on page 343	-
	Replace curing module side foams	Replace the curing module side rubbers on page 290	-
	Replace the in-line slitter blades	Replace the in-line slitter blades on page 351	-
	Replace a spindle valve	Replace a spindle valve on page 340	-

How to perform maintenance operations

The Maintenance section of the Print Care program reminds you when routine hardware maintenance should be done.

See HP Print Care on page 153)

Perform maintenance with Print Care wizards

If your printer is connected to the Internet, Print Care provides guidance (wizards) to help you to perform the maintenance operations correctly. Click the maintenance operation and the wizard will appear; then follow its instructions.
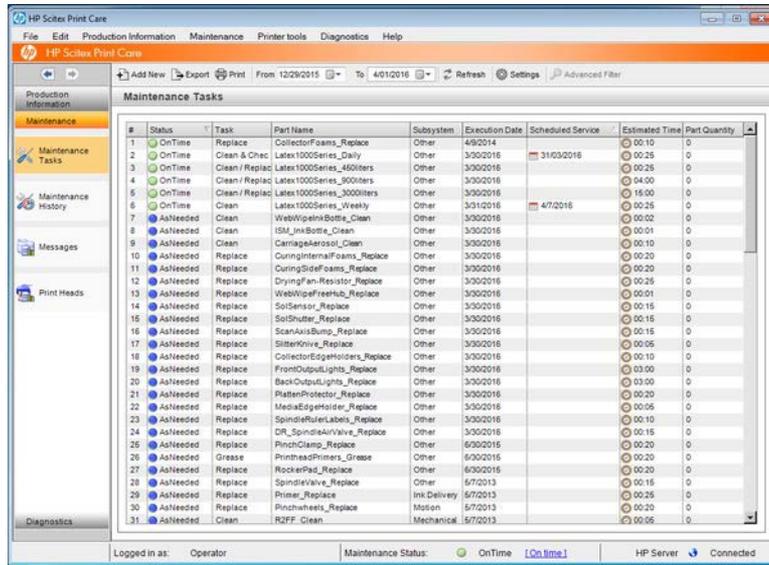
IMPORTANT: Strictly follow all the recommended steps for safety reasons. For example, switching the printer off protects you from electric shock and hazardous moving parts, among other risks; it may also be required for other reasons.

IMPORTANT: Follow the wizard to the end so that the appropriate alert is reset automatically.

The wizard has the necessary buttons so that all printer actions, such as moving the carriage beam, can be done directly from the wizard when they are needed.

It also provides instructions to replace parts and resolve the most common failures.

Because this information is in the HP cloud, HP can update and improve it so that Print Care will always show the latest version.

Perform maintenance without Print Care wizards

The following printer-system movements and processes are required during maintenance operations. The **Printer tools** menu in Print Care can be used when the printer is not connected to the Internet. Remember to follow all the safety precautions.

IMPORTANT: If your printer is **not connected** to the Internet, you must perform maintenance operations manually with the help of this guide. Without a connection:

- **The alerts are never reset.** Both the Internal Print Server and Print Care always show a red alert for maintenance status.

- Tracking the maintenances must be done manually, according to the time and ink usage thresholds shown in the Summary of repairs kits and maintenances on page 206.

- This guide appears in the Print Care window, for reference, instead of the list of maintenances.

HP strongly recommends an Internet connection as it makes it much easier to deal with the maintenance tasks of the printer, in addition to providing auto-update of the maintenance procedure and automatic notification of firmware upgrades. Contact your service representative for more information.

IMPORTANT: Strictly follow all the recommended steps for safety reasons. For example, switching the printer off protects you from electric shock and hazardous moving parts, among other risks; it may also be required for other reasons.

Table 11-10 Warnings

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see

- To move the carriage beam, select **Printer tools** > **Move the carriage beam**.

    - Move up

    - Move down

- To move the printhead carriage, select **Printer tools** > **Move the printhead carriage**.

    - Move to the service position

    - Move to the leftmost position

    - Move to the normal position

- To move the drive roller, select **Printer tools** > **Move the drive roller**.

  – **Move (backwards)**

  – **Move (forwards)**

  – **Stop**

  – Keep your clothing and all parts of your body away from the printer's moving parts.

  – Avoid wearing necklaces, bracelets, and other hanging objects.

  – If your hair is long, try to secure it so that it will not fall into the printer.

  – Do not touch gears or moving rolls during printing.

- To move the rubber blade, select **Printer tools** > **Move the rubber blade**.

  – **Move to service position**

  – **Move to normal position**

How to turn the printer off and on for maintenance operations

The following sections provide details for this topic.

IMPORTANT: When performing maintenance operations, **always** turn the printer off and on as described below. Do not use the normal procedure.

IMPORTANT: Strictly follow all the recommended steps, for safety reasons.

NOTE: If your printer is connected to the Internet, you do not need to remember these instructions, because they are included in the maintenance wizards.

Turn the printer off

The following steps provide the complete procedure for this topic.

1.   In Print Care, select **Printer tools** > **Power options** > **Shutdown**.
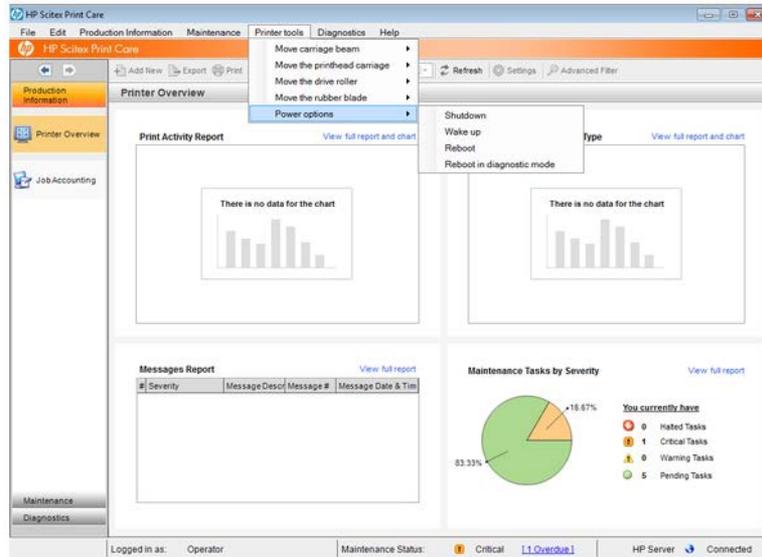
CAUTION: The shutdown process takes some time to complete. Wait until the green power light is off before proceeding.

2. Turn off the printer using the main switch at the front right of the printer.

CAUTION: With this procedure, the printhead carriage will not return to the normal position, and therefore the printheads will remain uncapped. Make sure the maintenance operation is done quickly to minimize the time in which the printheads are uncapped.

Turn the printer on

The following steps provide the complete procedure for this topic.

1. Turn on the printer using the main switch at the front right of the printer.

2. Pay attention to the Internal Print Server and rearm the printer when requested, as usual.

⚠ **CAUTION:** In some maintenance procedures, the carriage beam is up when you turn on the printer, and the carriage moves during initialization. Avoid putting any part of your body in the print area.

Weekly maintenance

Before any cleaning maintenance, ensure that you have turned the printer off, and be careful to follow the appropriate safety precautions.

Table 11-11 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

Introduction

The following maintenance procedures are required weekly:

- Check and clean the printer, printzone and output platen on page 217
- Clean the bottom of the carriage and the line sensor on page 223
- Clean the aerosol nozzle plate and filters on page 226
- Clean the substrate-advance sensor on page 230
- Clean the drop detector and the capping station on page 233

- Clean the drive roller and pinchwheels on page 237

- Clean the perforated plate and curing entrance cover on page 239

- Clean the e-box fan filters on page 245

- Clean the e-cabinet fan filters on page 250

- Check and clean the heat exchanger air entrance filter on page 253

- Check and empty the condensation collector bottle on page 254

Check and clean the printer, printzone and output platen

The following sections provide details for this topic.

Table 11-12 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard
⚠	⚠	⚠	⚠	⚠

For more safety information, see Safety precautions on page 2

Check and clean the printer

Some cleaning operations are on demand depending on your print duty cycle, substrates or print modes used, and environment.

1. Check the printer for dust and aerosol on the covers, windows, computer screen etc.

2. If condensation is seen on the inside of the window over the middle of the printer, wipe it with a dry cloth. Use folding steps to reach the inside of the window.

3. Clean condensation from the print-zone diverter wheels and bottom-beam output platen under the curing module.

4. Also check and clean the drive rollers, substrate drive, and roll-to-free-fall roller if the printer has this accessory.

5. Check the bottom of the carriage and aerosol outlet nozzle is not clogged.

6. Clean the service station cap and the left spittoon area. If dust or ink is found, wipe it off with a lint-free cloth dampened with distilled water only. Do not apply alcohol to rubber materials.

For a more thorough clean up, follow the steps described in the following sections.

Clean the print zone

The platen should be cleaned whenever it is visibly dirty, or when you notice marks on the back of the substrate. Before cleaning the platen, take notice of the substrate-advance sensor in the middle of the platen: clean it, but be careful to avoid scratching it.

If you sometimes print with very small side margins and with substrate edge holders, ink may accumulate on the edge holders, which can cause smears on your prints and blocked nozzles in the printheads.

Check the substrate edge holder strips weekly for dried ink or any other defect. If necessary, replace the strip with a new one. See .

Prepare to clean the print zone

The following steps provide the complete procedure for this topic.

1. Ensure that you have the HP Latex 1500 Printer Cleaning Kit, provided with your printer.

2. Ensure that the printer is not printing.

3. Unload the substrate.

4. Ensure that all windows, covers, and doors are closed and remain in their original positions.

5. Turn off the printer in the correct way for maintenance operations: see .

6. Open the front door.
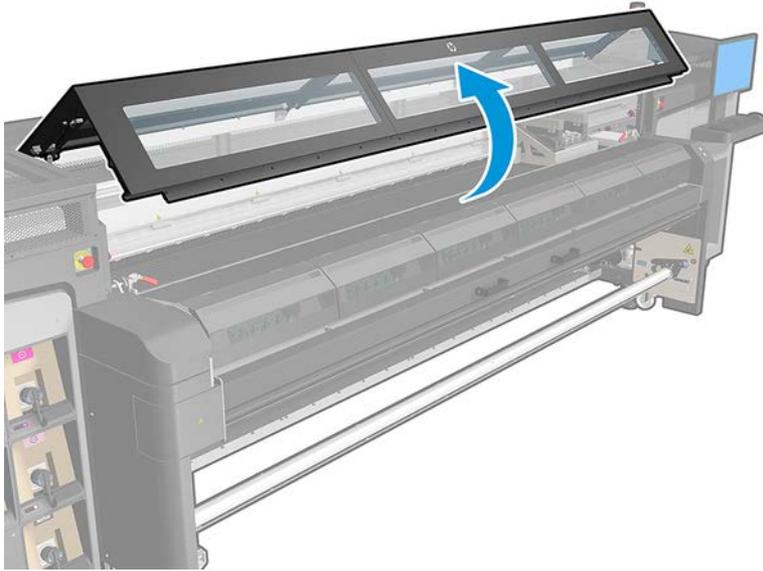
Remove the edge holders (if they are in use)

The following steps provide the complete procedure for this topic.

1. Remove the two substrate edge holders from the platen.

2. Replace the edge holder strips if necessary. See Replace an edge holder strip on page 45.

Clean the platen

The following steps provide the complete procedure for this topic.

1. Clean the platen with a clean cloth dampened with distilled water, and if needed isopropyl alcohol. Be very careful not to touch the printheads

2. Check the print zone and remove any dirt, aerosol or ink from the platen. Check the substrate paths, focusing on the diverter wheels and curing and bottom plate zone. Check the print output areas for ink drops, aerosol, or condensation, especially the area around and below the diverter wheels and tension roller. Clean the substrate edge holders if required.

IMPORTANT: Clean the drive roller with a cloth dampened with distilled water. Do not apply alcohol to rubber materials.

Clean the diverter wheels with a cloth dampened with distilled water. Avoid applying alcohol to plastic materials.

Clean the substrate edge holders with a cloth dampened with distilled water. Do not apply alcohol to rubber materials.
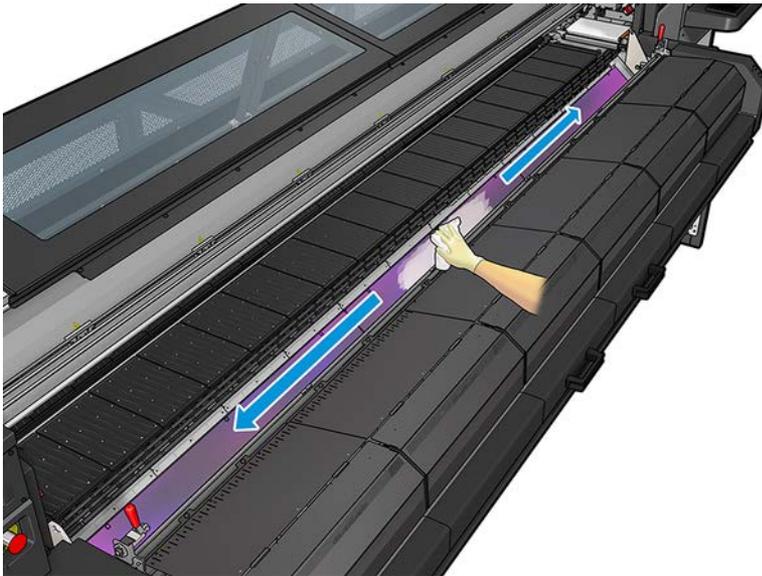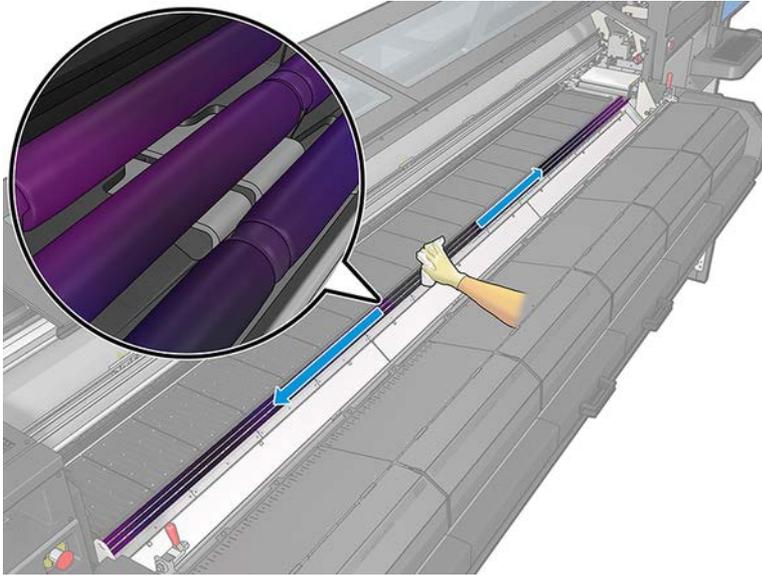
NOTE: If you are in an area (such as California) that regulates VOC cleaning and maintenance fluids, instead of isopropyl alcohol use a VOC-certified cleaner such as a properly diluted Simple Green All-Purpose Cleaner.

Clean the substrate-advance sensor

The following steps provide the complete procedure for this topic.

▲   See Clean the substrate-advance sensor on page 230.

Clean the output platen lights

Clean the output platen lights with a clean cloth or a piece of cellulose paper dampened with distilled water.

Clean the output platen

The output platen is made of plain sheet metal with two rows of plastic ramps.

Prepare to clean the output platen

The following steps provide the complete procedure for this topic.

1.   Ensure that the printer is not printing.

2.   Unload the substrate.

3.   Turn off the printer in the correct manner for maintenance operations: see Turn the printer off on page 214.

4.   Wait for the curing modules to cool down (approx. 5min).

Pull out the curing assembly

The following steps provide the complete procedure for this topic.

1.   Open the front door.
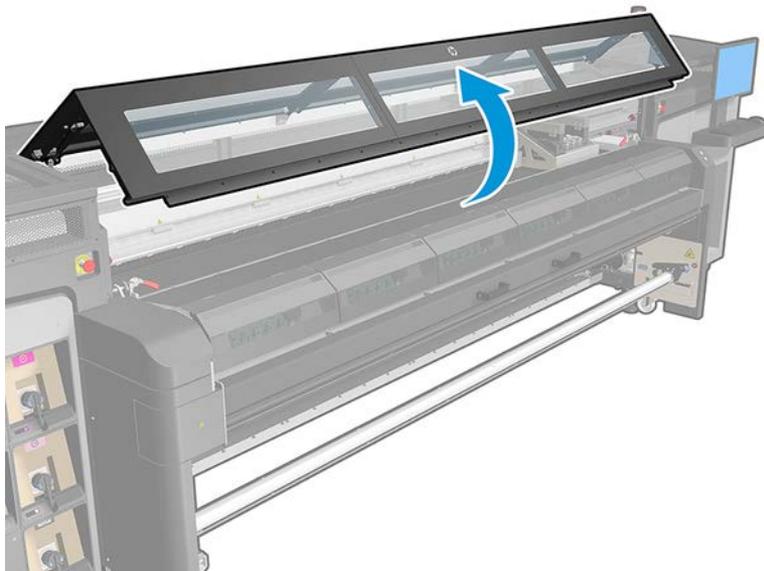
2. Open the curing module latches.
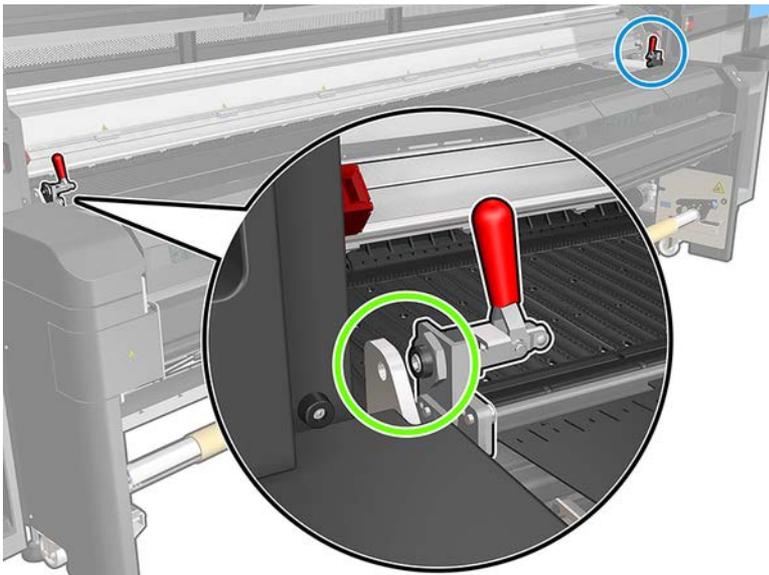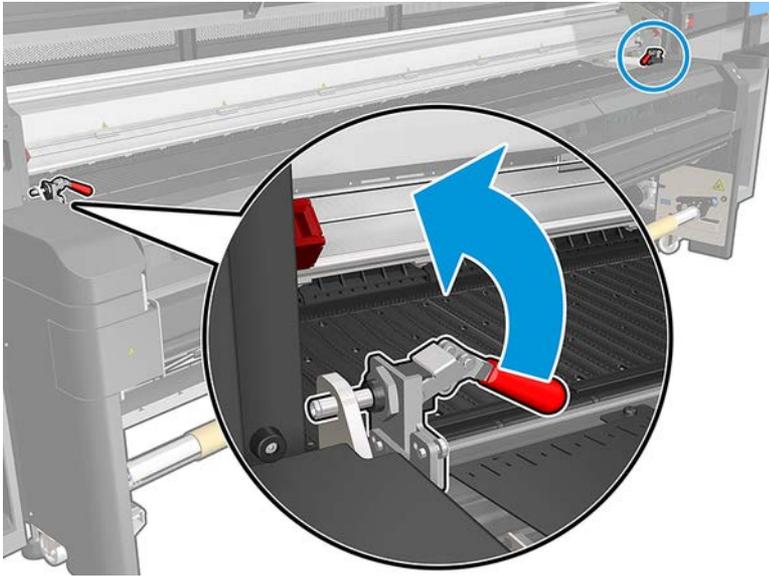
3. Pull out the curing assembly.
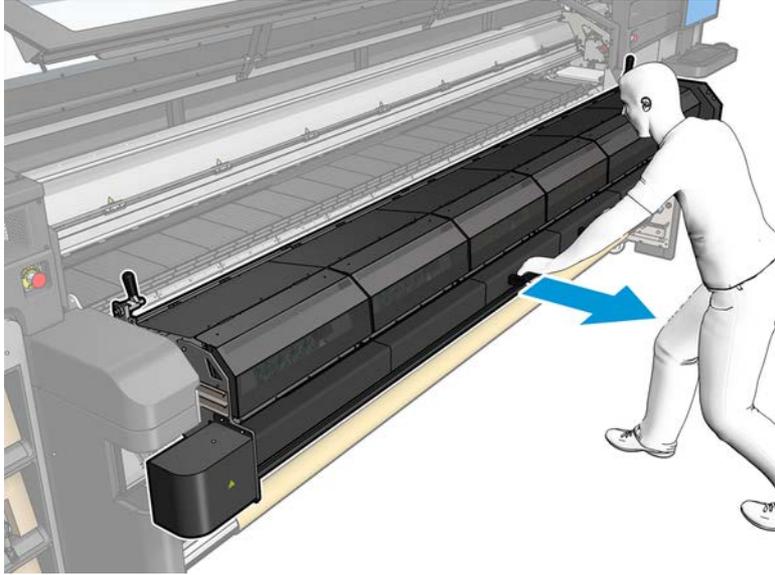
Clean the output platen

In order to clean the output platen, access it from the top of the curing module.

Finish off cleaning the output platen

The following steps provide the complete procedure for this topic.

1. Push the curing assembly back to its working position.

2. Close the curing latches.

3. Put the spindle back in position.

4. Ensure that the cleaned parts are completely dry and all vapor has completely evaporated.

Clean the bottom of the carriage and the line sensor

The following sections provide details for this topic.

Table 11-13 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

Prepare to clean the carriage bottom

The following steps provide the complete procedure for this topic.

1. Ensure that you have the HP Latex 1500 Printer Cleaning Kit, provided with your printer.

2. Ensure that the printer is not printing.

3. Unload the substrate.

4. Wait for the curing modules to cool down (about 10 min).

5. Ensure that all windows, covers, and doors are closed and remain in their original positions.

6. Move the printhead carriage to the service position.

7. Move the carriage beam to its highest position.

8. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

9. Tools required:

Table 11-14 Tools required:

Brushes	All-use cleaning cloth	Distilled water and Isopropyl alcohol

10. Open the window.
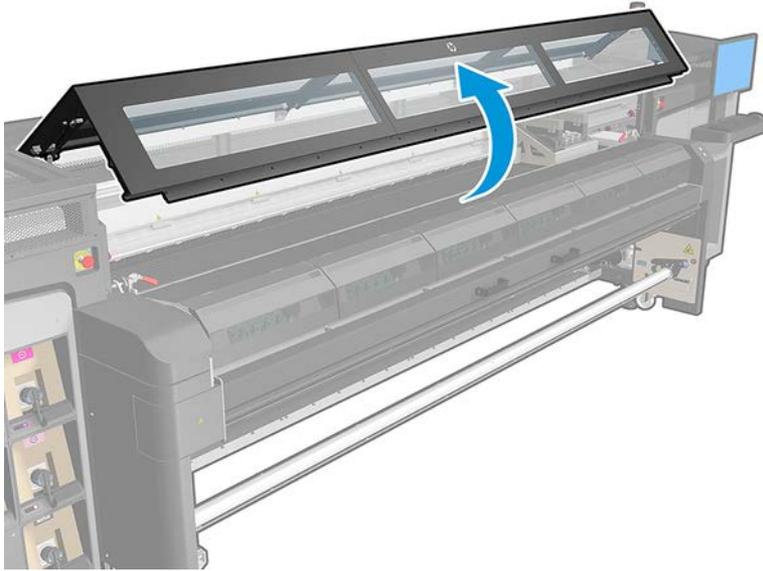
> **NOTE:** For some operations, there is better access from the back of the printer. Open the loading table too if you find it useful.

11. Move the printhead carriage and place it above the printhead cleaning roll.

Clean the carriage bottom

The following steps provide the complete procedure for this topic.

1. Unlock and open the printhead cleaning roll door.

2. Clean the carriage bottom with a lint-free cloth dampened with distilled water, and if needed isopropyl alcohol. Be very careful not to touch the printheads

> **NOTE:** If you are in an area (such as California) that regulates VOC cleaning and maintenance fluids, instead of isopropyl alcohol use a VOC-certified cleaner such as a properly diluted Simple Green All-Purpose Cleaner.
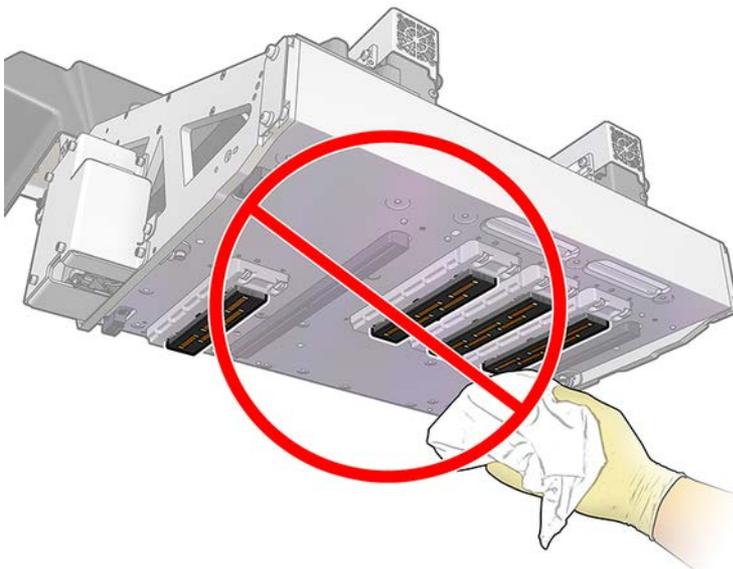
Clean the line sensor

Wipe both line sensors and the spectrophotometer with one of the cotton swabs provided in the Printer Cleaning Kit, slightly dampened with isopropyl alcohol.

Finish off cleaning the carriage bottom

The following steps provide the complete procedure for this topic.

1. Ensure that the cleaned parts are completely dry and that all vapor has completely evaporated.

2. Close and lock the printhead cleaning roll door.

3. Ensure that all windows, covers, and doors are closed and remain in their original positions.

4. Turn on the printer in the correct way for maintenance operations: see .

5. Move the carriage beam back to its working position.

6. Move the carriage back to its working position.

Replace protector and textile substrate edge holders

After using 500 litres with the ink collector, you need to replace the protector and edge holders if they are damaged.

Clean the aerosol nozzle plate and filters

The aerosol nozzle plate and fliters should be kept clean for optimal performance and reliability.

Table 11-15 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

It is critical that when the nozzle plate is in some printing conditions with high scan beam or textile materials that more aerosol is generated, and blocks the aerosol removal system nozzle or filter.
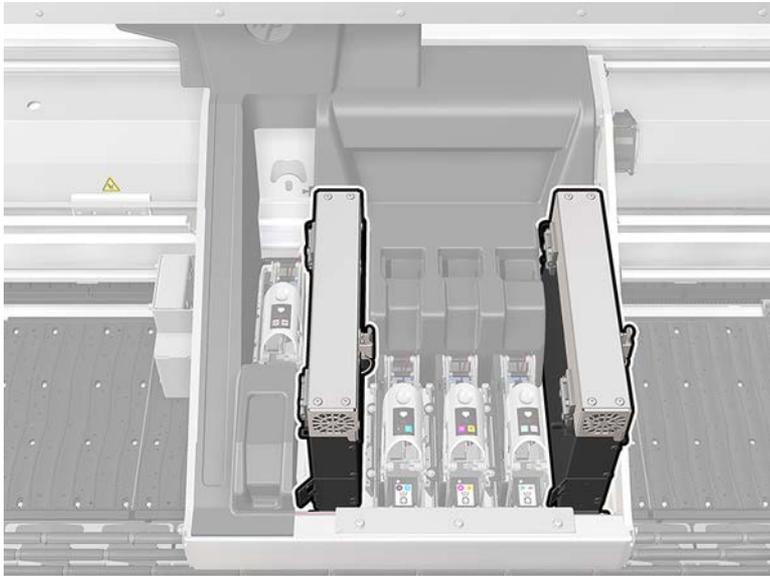
1. Ensure that the printer is not printing.

2. Ensure that all windows, covers, and doors are closed and remain in their original positions.

3. Move the printhead carriage to the service position.

4. Open the window.
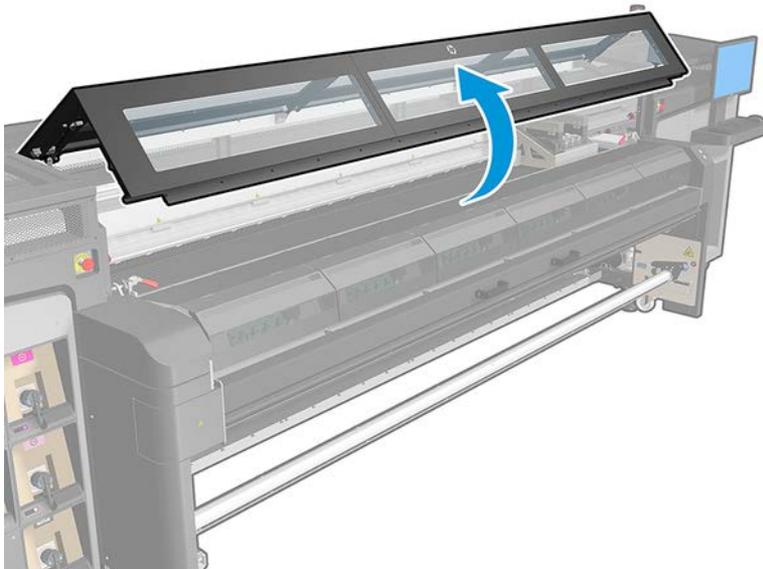
5. Open one latch on the right side of each aerosol filter module.
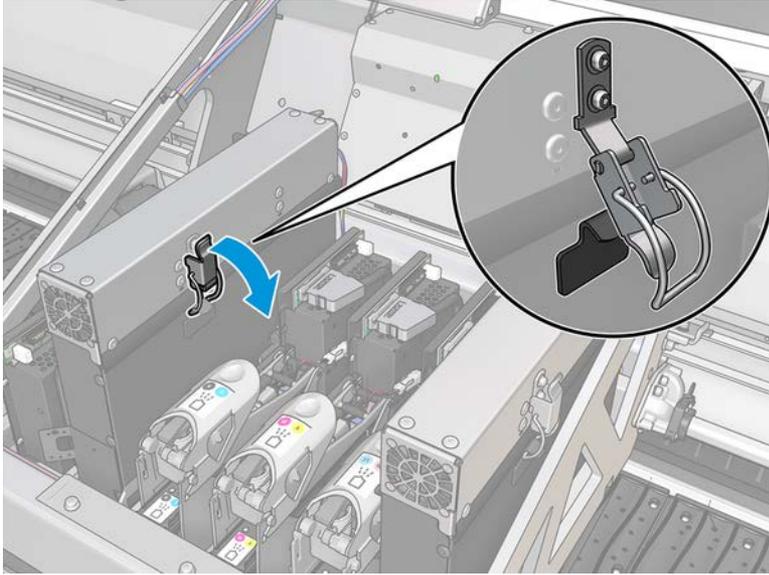
6. Open the lid of each filter.

7. Remove both aerosol filters, using their handles.
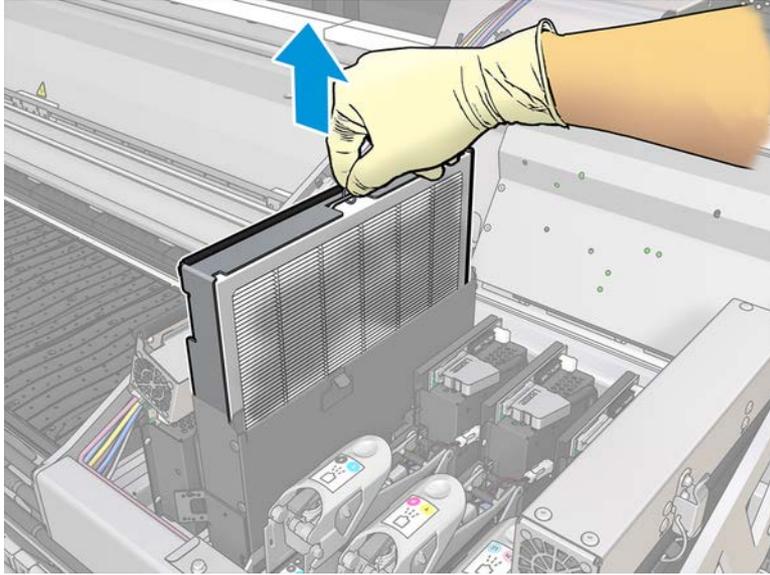
8. Use a flat screwdriver to remove the dry aerosol and then a brush to remove any remaining dirt. Try to avoid loose dirt falling into the filter.
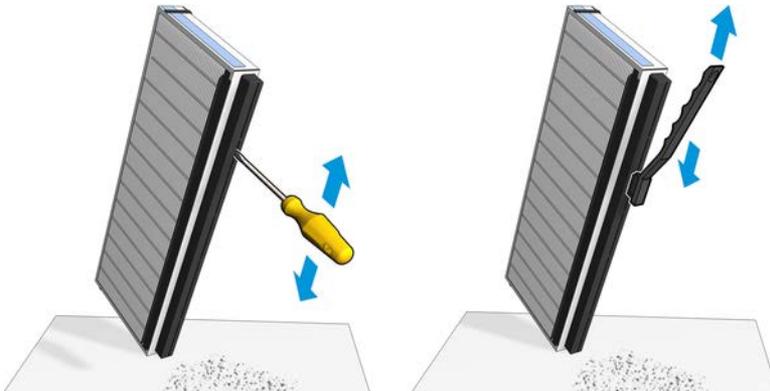
☼ **TIP:** It is recommended to remove the filter from the frame to better access and clean the nozzle.

📝 **IMPORTANT:** Be sure to reinstall the filter on the frame before you reinstall it on the printer.

9. Reinsert both filters. There is only one way to insert them that works. If you feel resistance, try to insert the filter the other way round.
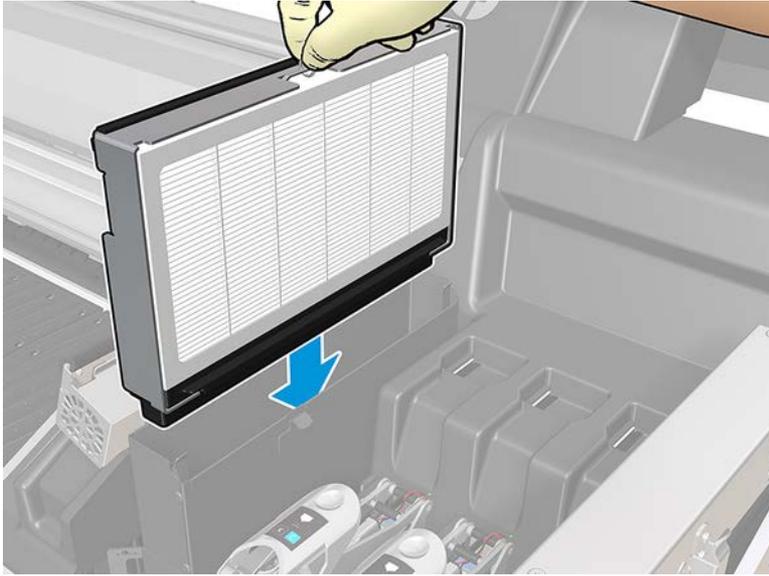
10. Close the lids.

11. Close the latches.

12. Close the window.

13. Move the printhead carriage back to the working position.

Clean the substrate-advance sensor

The following sections provide details for this topic.

Table 11-16 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

Remember that porous substrates, or substrates with porous liners, are not supported without the ink collector accessory and should not be used with your printer. However, under normal printing conditions with non-porous substrates, some dirt, dust, and ink aerosol can reach the substrate-advance sensor window and impair the performance of the sensor.

Prepare to clean the substrate-advance sensor

The following steps provide the complete procedure for this topic.

1. Ensure that you have the HP Latex 1500 Printer Cleaning Kit, provided with your printer.

2. Ensure that the printer is not printing.

3. Unload the substrate.

4. Ensure that all windows, covers, and doors are closed and remain in their original position.

5. Open the front door.
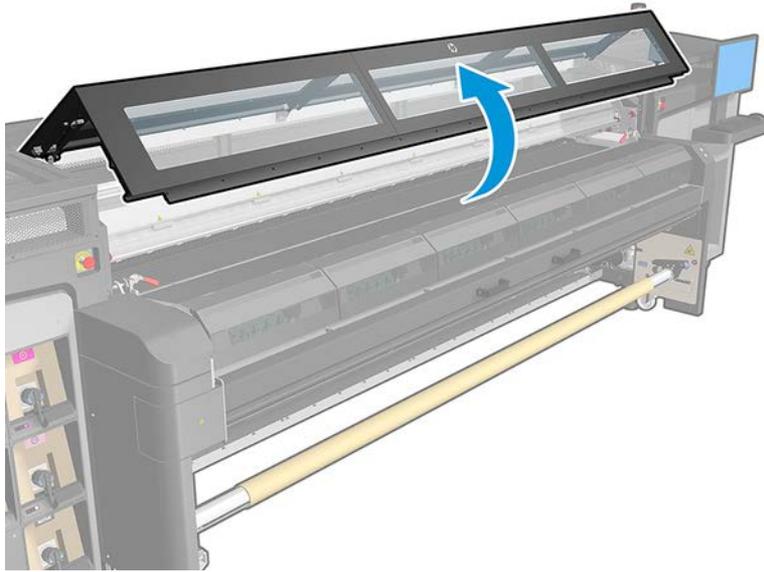
Clean the substrate-advance sensor

The following steps provide the complete procedure for this topic.

1. Find the sensor in the middle of the platen.
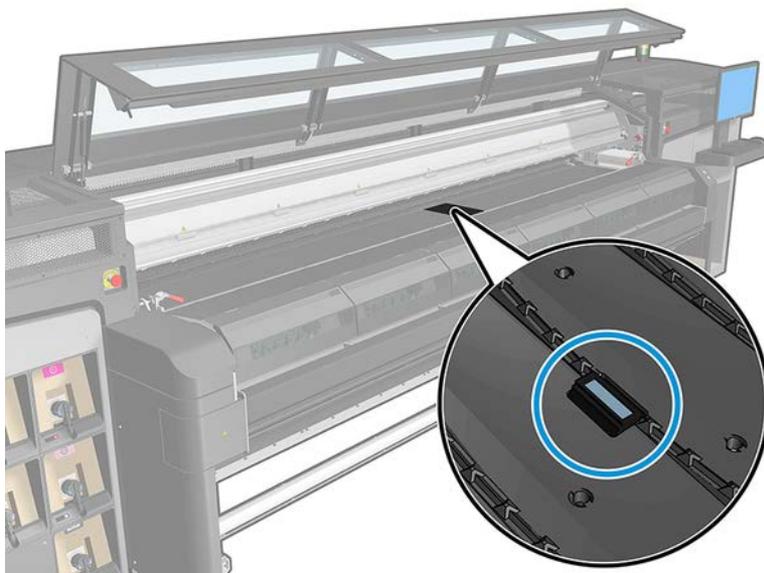
2.	Clean the platen area around the sensor thoroughly with a clean cloth dampened with isopropyl alcohol.

📝 NOTE:	If you are in an area (such as California) that regulates VOC cleaning and maintenance fluids, instead of isopropyl alcohol use a VOC-certified cleaner such as a properly diluted Simple Green All-Purpose Cleaner.
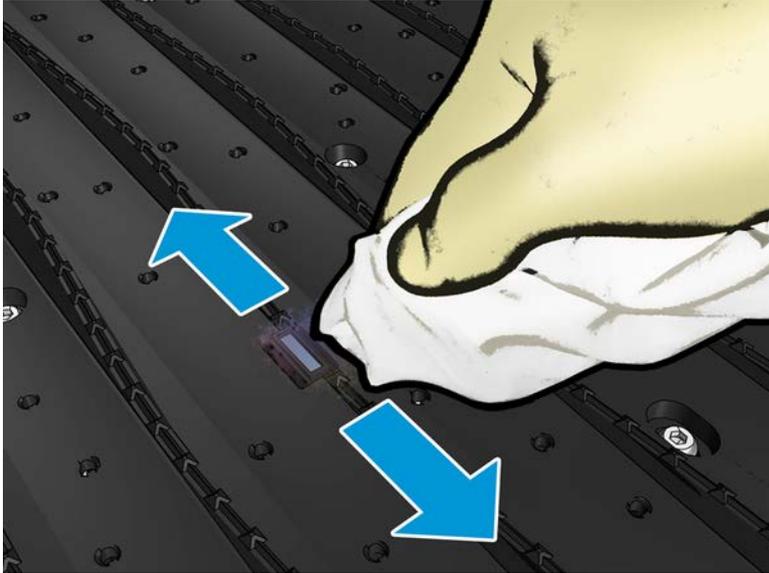
3.	Wipe the sensor window with one of the cotton swabs provided in the Printer Cleaning Kit, slightly dampened (not soaked) with distilled water, and if needed isopropyl alcohol to remove dried ink. If the sensor window is heavily coated with dry ink, you may need to apply some pressure while wiping, helping the cotton to absorb the ink.
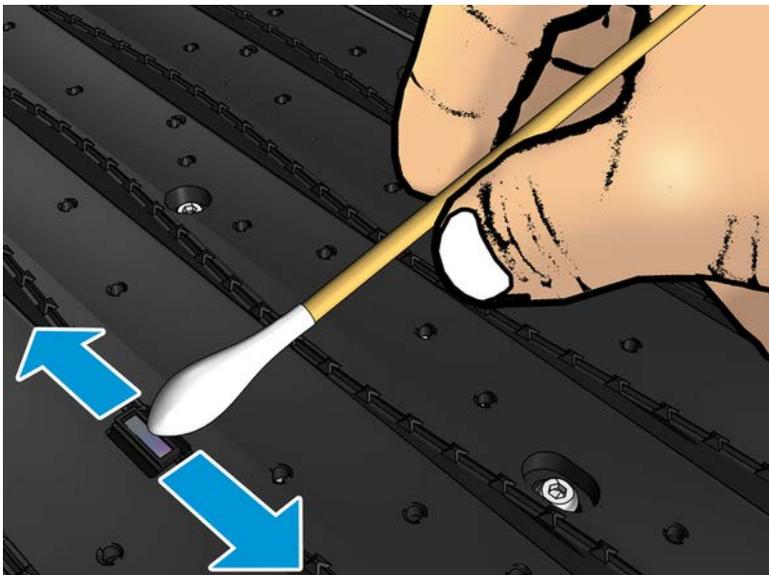
4.	Continue cleaning with fresh swabs until the cotton stays clean and the sensor window looks clean.

💡 TIP:	When reflecting ambient light, a clean sensor window shows a blue-colored reflection that should extend uniformly across its whole surface. You can see this reflection by moving closer and slightly changing your angle of view.

Finish off cleaning the substrate–advance sensor

The following steps provide the complete procedure for this topic.

1. Wait 3 or 4 minutes, so that the alcohol can evaporate completely.

2. Close the front door.

3. Ensure that all windows, covers, and doors are closed and remain in their original position.

4. Move the carriage beam back to its normal position.

5. Run a diagnostic test to check that the sensor is now working correctly.

Clean the drop detector and the capping station

The following sections provide details for this topic.

Table 11-17 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard
For more safety information, see Safety precautions on page 2				

Prepare to clean the substrate–advance sensor

On the following screen, the drop detector diagnostic will launch in order to move the carriage and drop detector to the service position.

Table 11-18 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard
For more safety information, see Safety precautions on page 2				

⚠ **WARNING!**   Read the instructions below before clicking **Next**.

1. Run the diagnostic to move the drop detector and carriage to the service position.
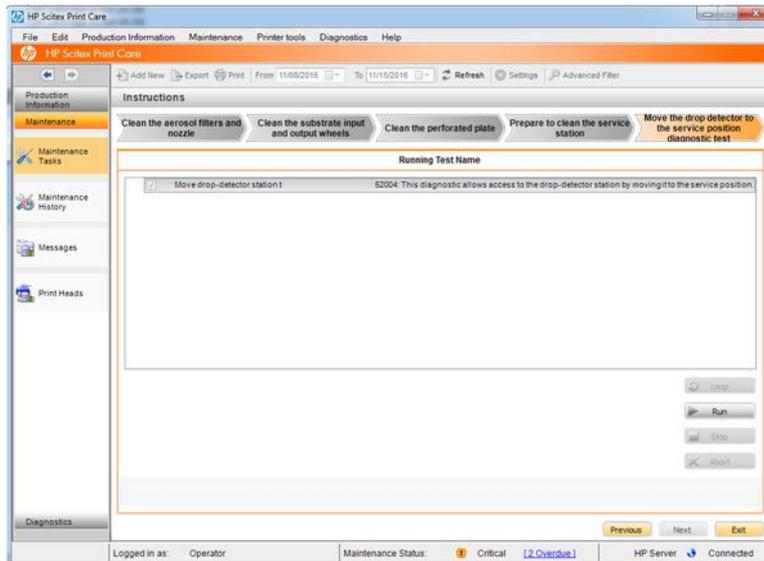
2. Once the drop detector is in the service position, turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

3. Unlock and open the printhead cleaning roll door.
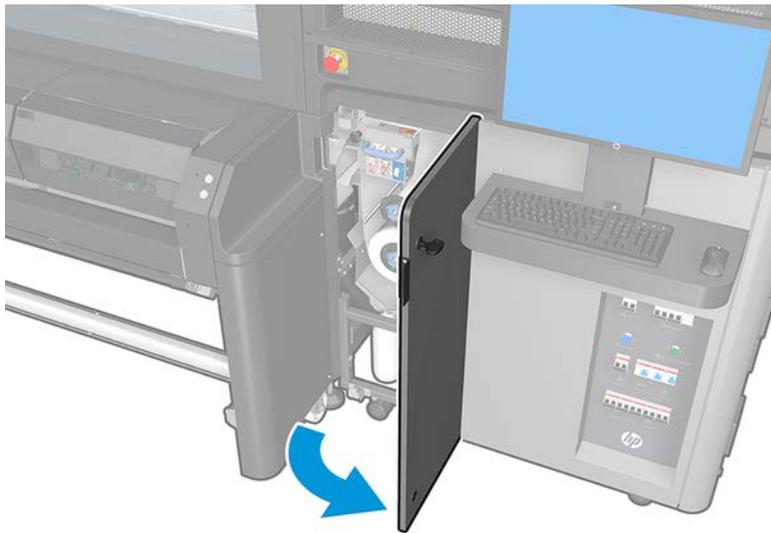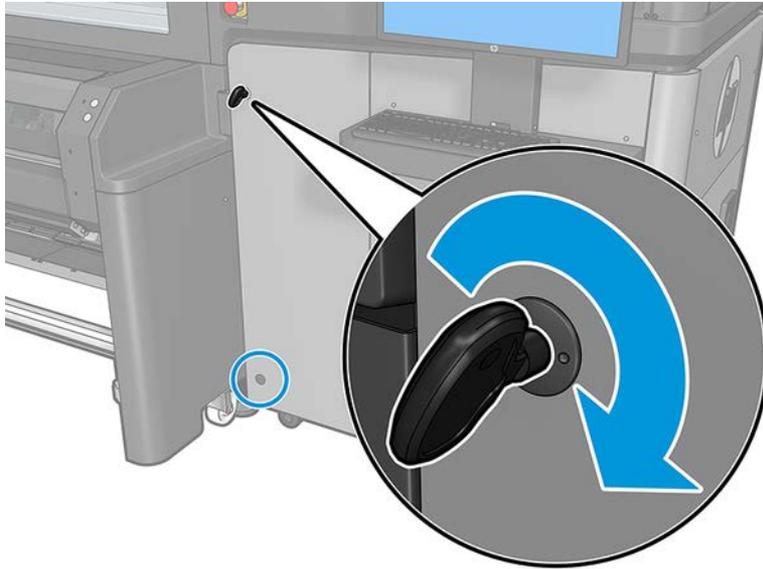
4. Put on gloves to protect your hands.

5. Access the service station via the open door and clean the top surface with a lint-free cloth dampened with isopropyl alcohol.
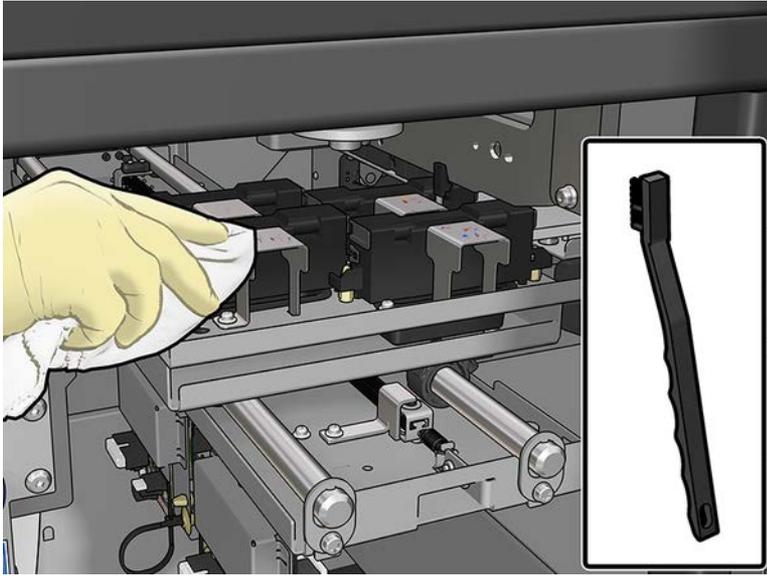
6. Take special care when cleaning the metallic plates close to the drop-detector module.
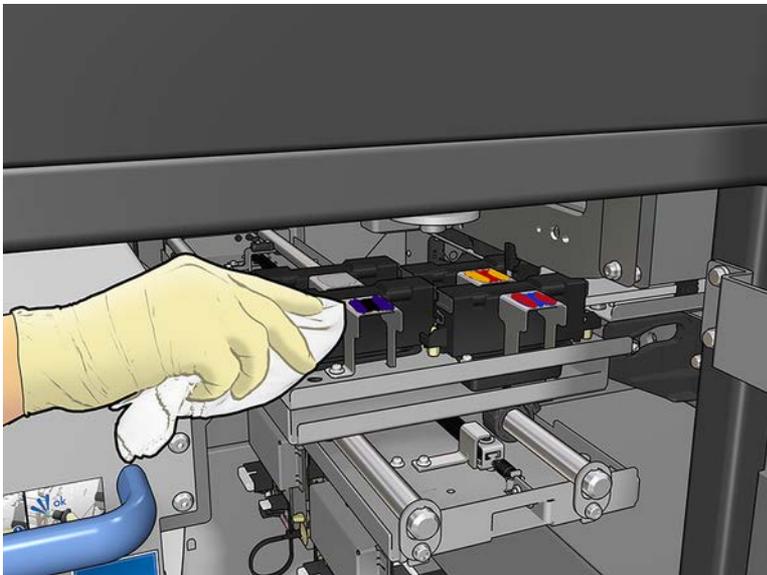
Finish off cleaning the drop detector and the capping station

The following steps provide the complete procedure for this topic.

1. Close and lock the printhead cleaning roll door.

2. Close the right cover.

3. Turn on the printer using the main switch, see Turn the printer on on page 215.

    📝 **NOTE:** While the printer restarts, the carriage and drop detector move back to their normal positions.

4. Finish the diagnostic. Click **Next** even if the diagnostic fails as cleaning has already completed.

Clean the drive roller and pinchwheels

The following sections provide details for this topic.

Table 11-19 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part

For more safety information, see Safety precautions on page 2

The drive roller should be cleaned whenever it is visibly dirty, or when you notice that substrate advance is no longer smooth and regular.

Prepare to clean the pinchwheels and drive roller

The following steps provide the complete procedure for this topic.

1. Ensure that the printer is not printing.

2. Unload the substrate.

Clean the pinchwheels

The following steps provide the complete procedure for this topic.

1. Open the latches.
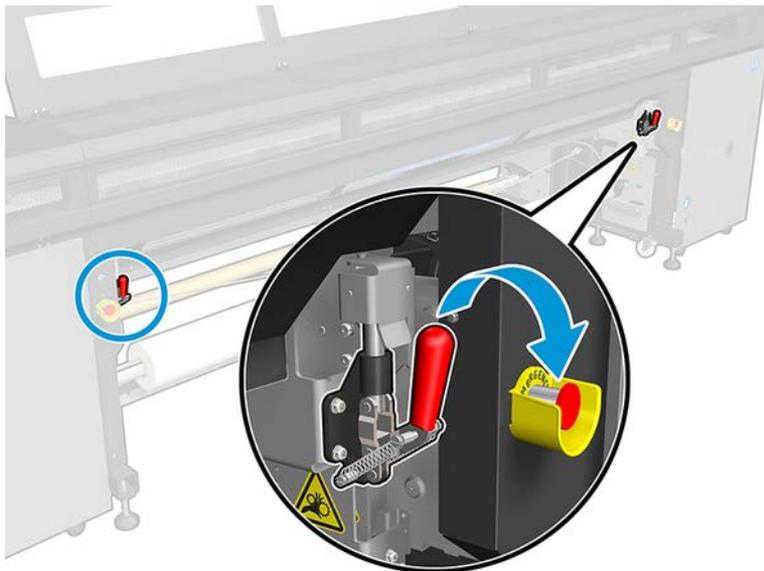
2. Pull the pinchwheel module to its lowest position.
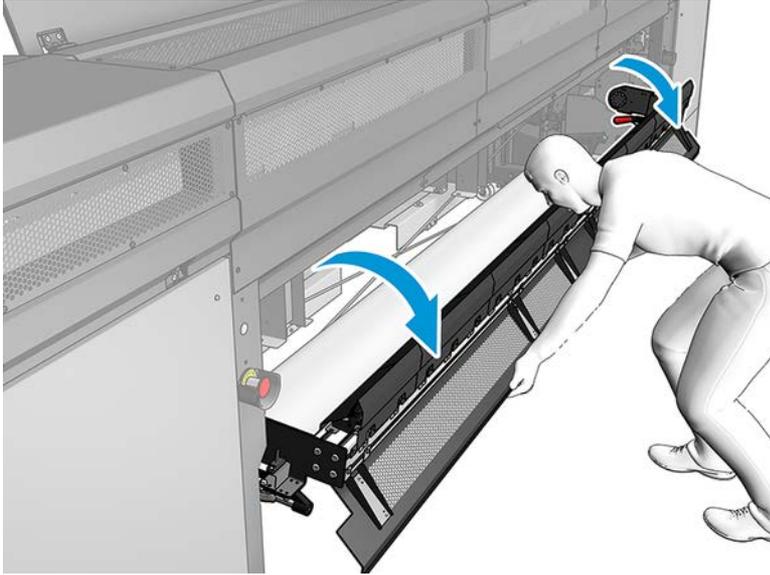
3. Clean the pinchwheels carefully with a cloth dampened with water; do not use petroleum-based cleaning liquids.
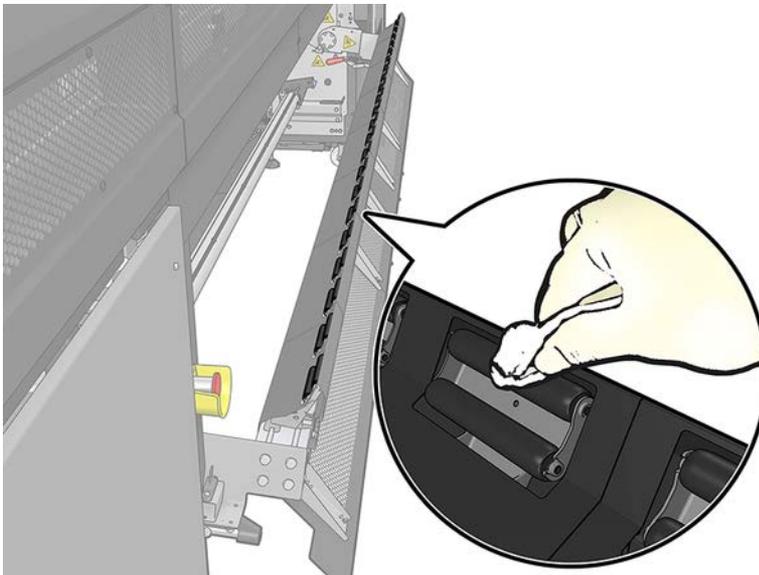
Clean the drive roller

The following steps provide the complete procedure for this topic.

1. Start the drive roller moving slowly backwards.

2. Clean the roller with a clean cloth dampened with water; do not use petroleum-based cleaning liquids.

⚠ CAUTION: Take care not to allow the roller to trap your hands while cleaning (this is less likely if it is moving backwards).
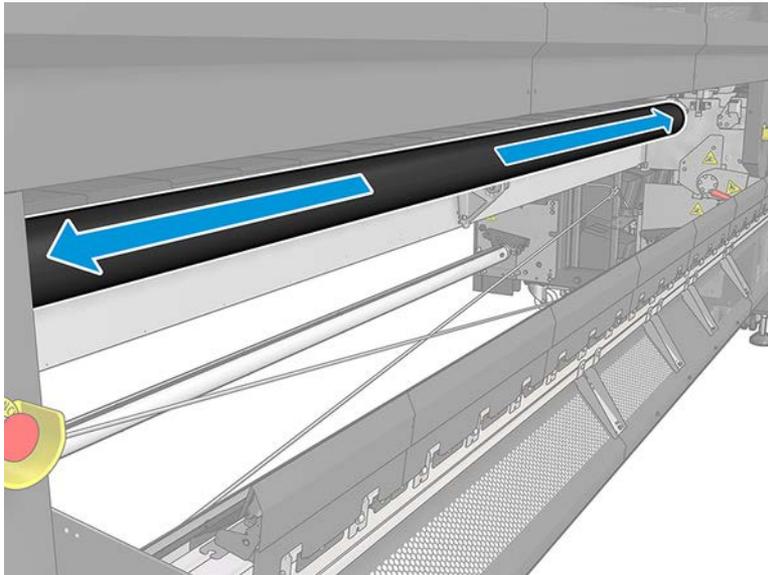
3. Stop the drive roller.

4. Wait until the roller is dry.

5. Return the pinchwheel module to its original position and close the latches.

Clean the perforated plate and curing entrance cover

The perforated plate is a drilled metallic sheet located in the curing assembly. Through its holes the curing fans blow hot air onto the substrate.

Table 11-20 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

Prepare to clean the perforated plate

The following steps provide the complete procedure for this topic.

1. Ensure that the printer is not printing.

2. Unload the substrate.

3. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

4. Wait for the curing modules to cool down (approx. 5 min).

5. Remove the spindle.

Pull out the curing assembly

The following steps provide the complete procedure for this topic.

1. Open the front door.
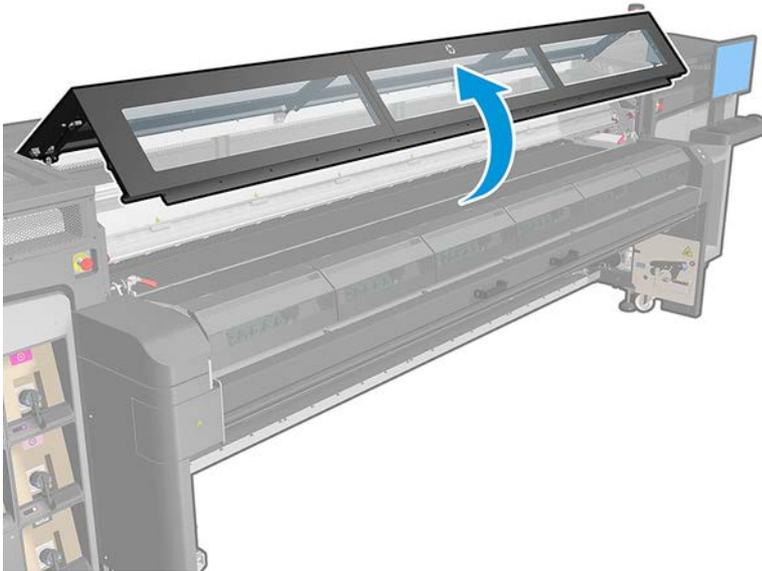
2. Open the curing module latches.
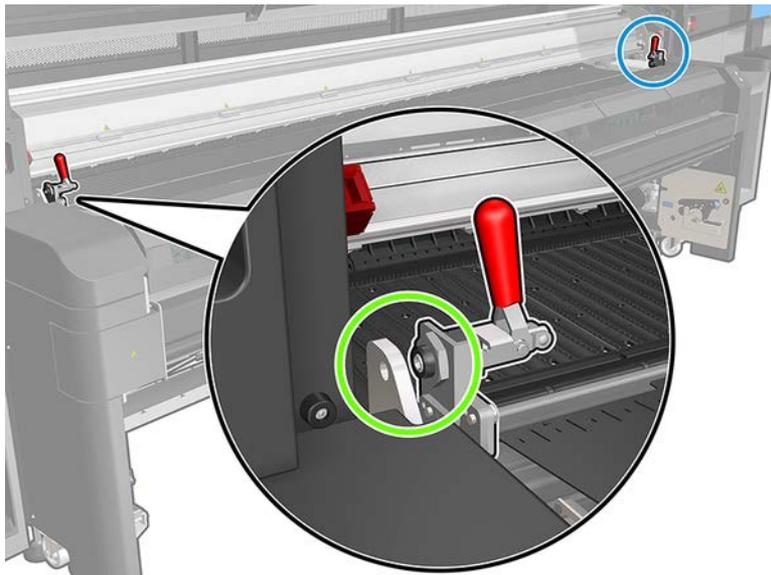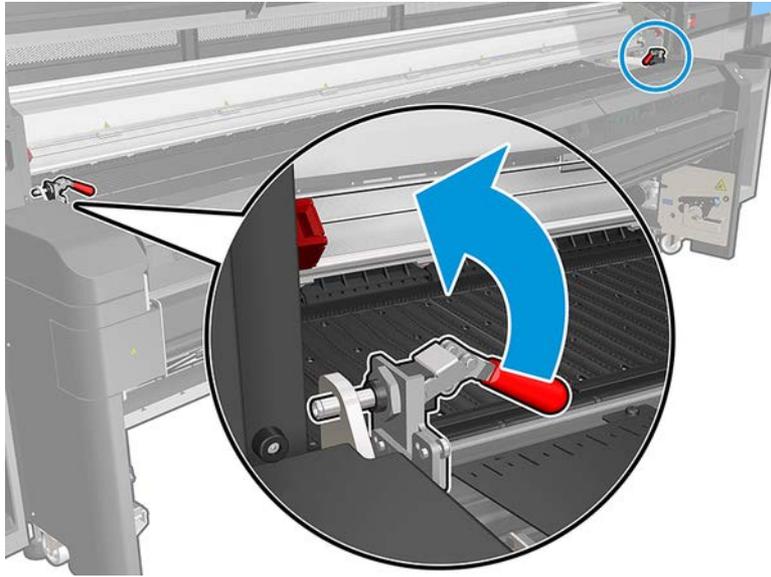
3. Pull out the curing assembly.
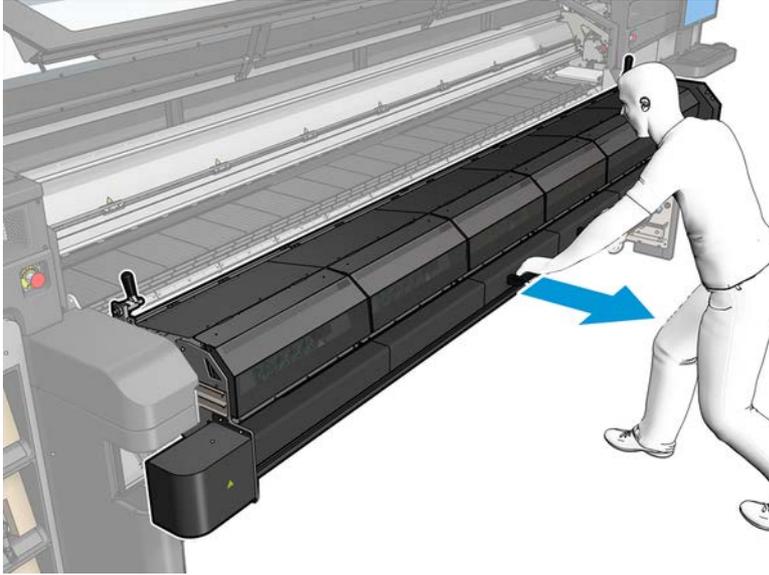
Clean the perforated plate

The following steps provide the complete procedure for this topic.

1. Lying on the floor as shown in the picture, clean the perforated plate of the curing modules with a lint-free cloth dampened with distilled water, and if needed isopropyl alcohol.

NOTE: If you are in an area (such as California) that regulates VOC cleaning and maintenance fluids, instead of isopropyl alcohol use a VOC-certified cleaner such as a properly diluted Simple Green All-Purpose Cleaner.
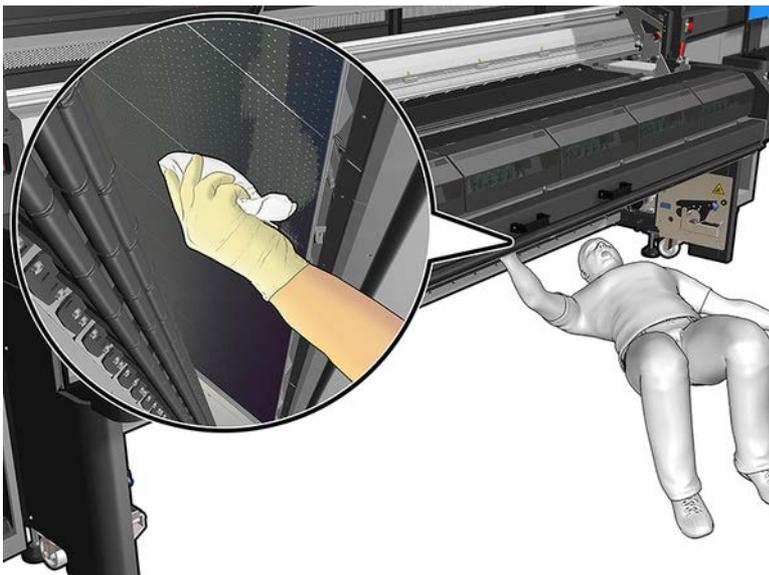
2. With the curing module open, clean the platen diverter wheels and the bottom frontal plate.
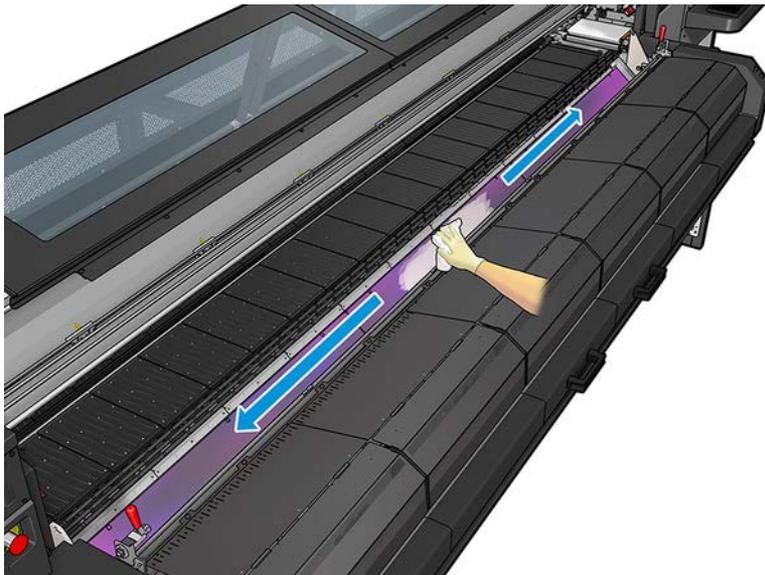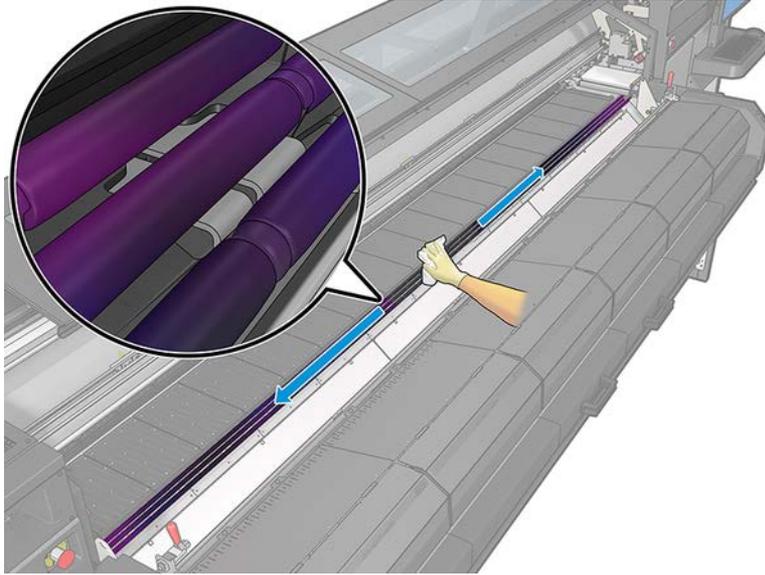
3. Clean the entrance cover.
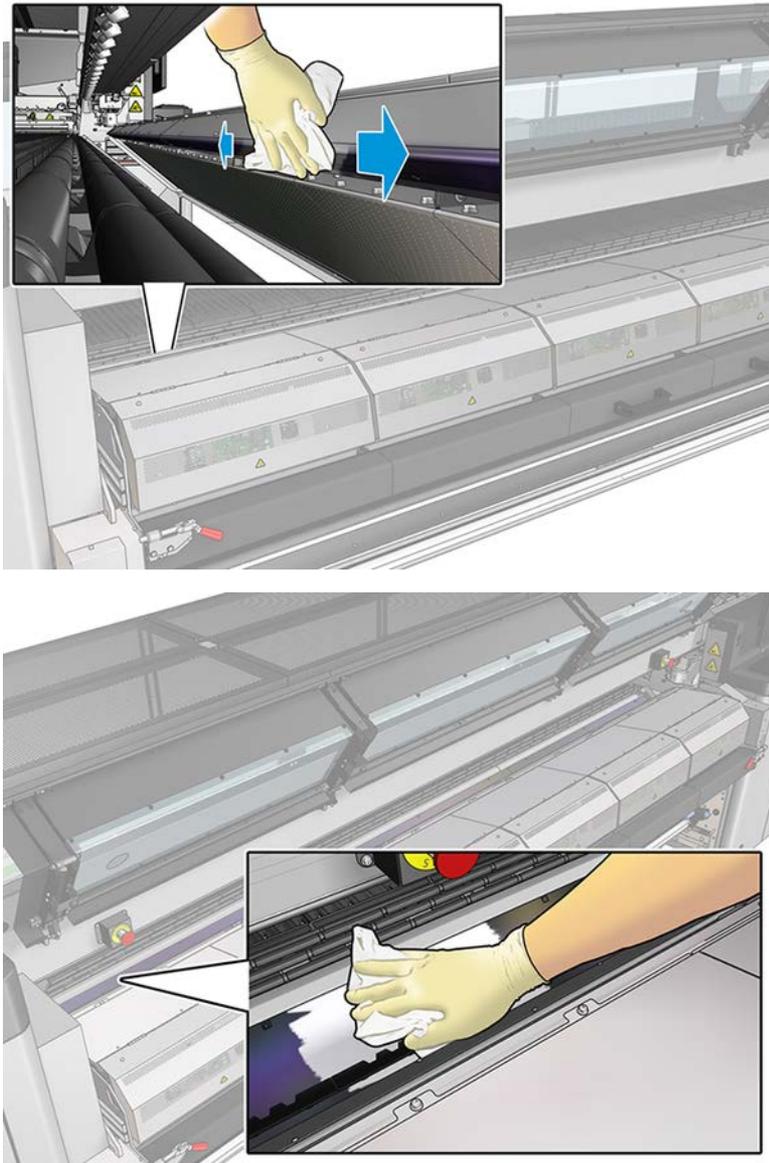
Finish off cleaning the perforated plate

The following steps provide the complete procedure for this topic.

1. Push the curing assembly back to its working position.

2. Close the curing latches.

3. Put the spindle back in position.

4. Ensure that the cleaned parts are completely dry and all vapor has completely evaporated.

5. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

Clean the e-box fan filters

The following sections provide details for this topic.

Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Moving fan blades

For more safety information, see Safety precautions on page 2

Prepare to clean the E-box fan filter

The e-box fan filter is provided with your printer in the HP Latex 1500 Printer Cleaning Kit.

1. Turn off the printer and the power-enable switch.

2. Locate the rear right panel assembly.

3. Remove the two pointed T-20 screws that attach the rear right panel assembly.

4. Remove the rear right panel assembly.
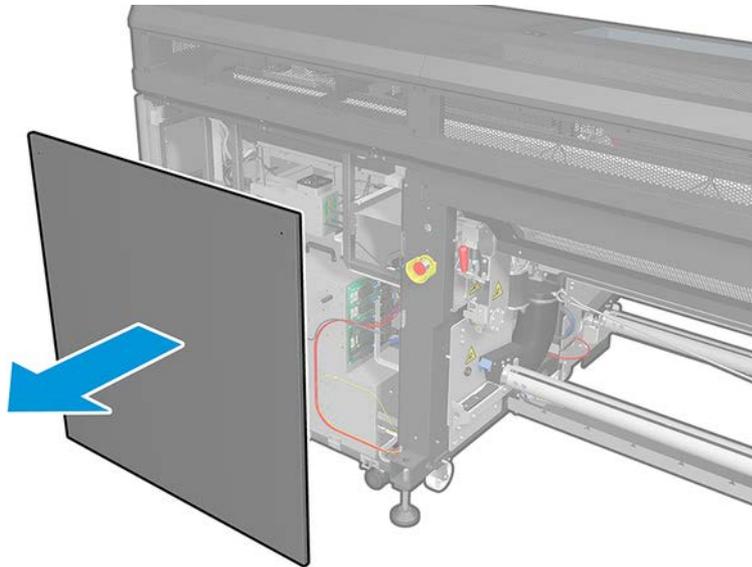
5. Remove the T-20 screw from the e-box support and pull it out carefully.
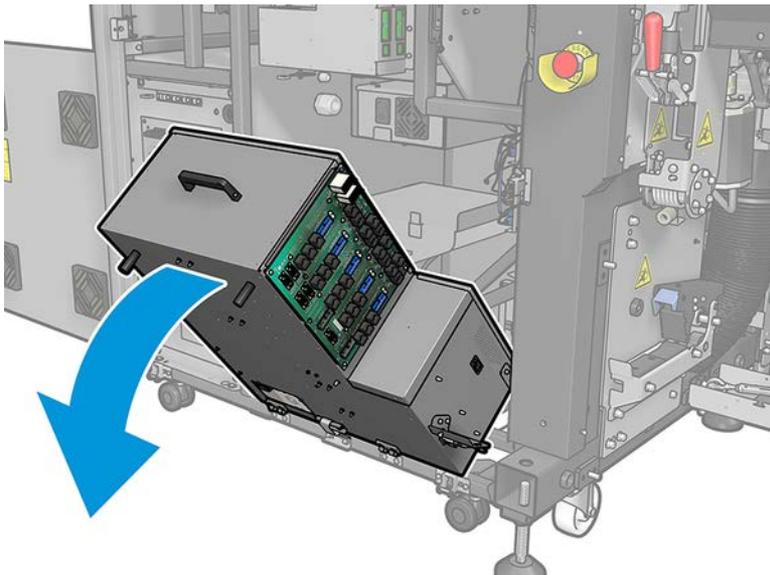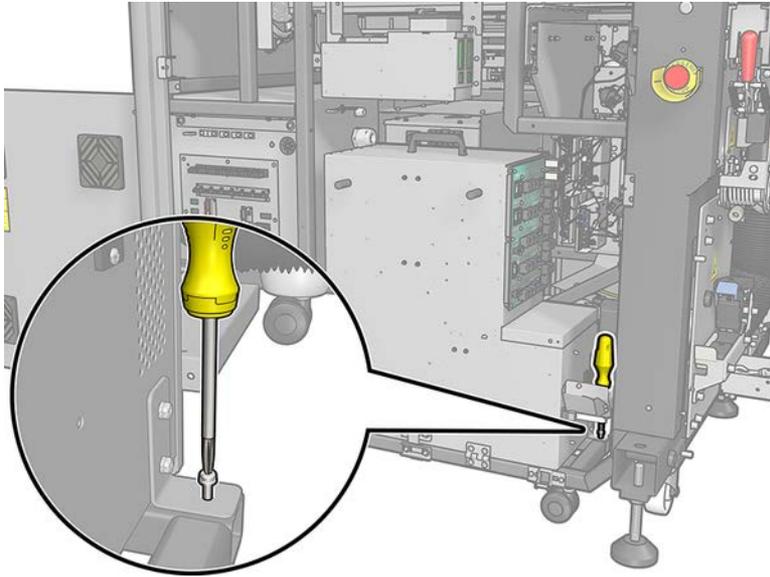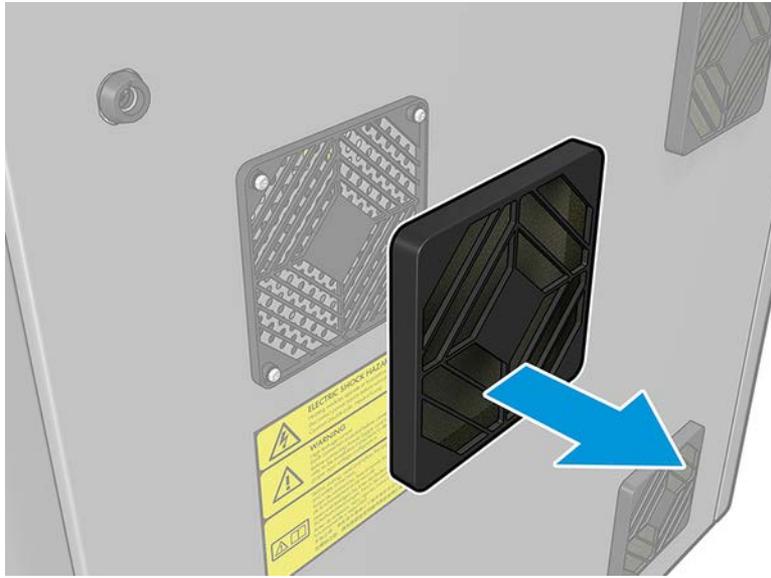

Clean the E-box fan filter
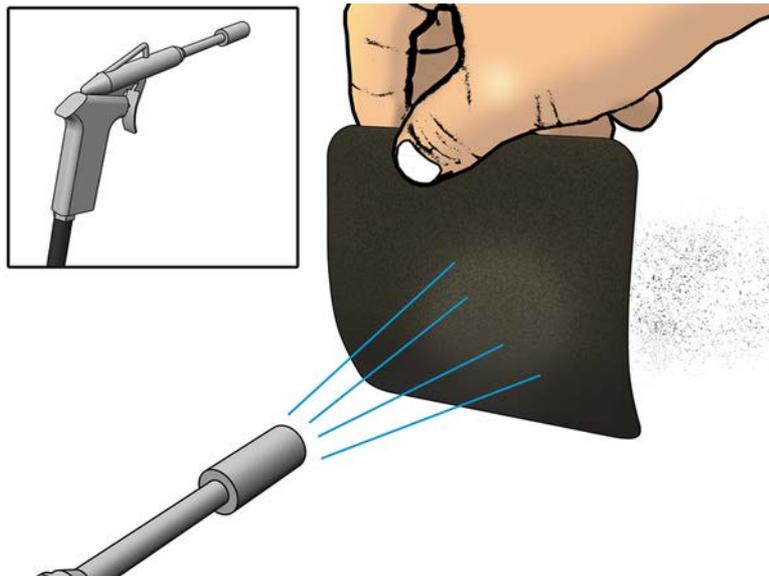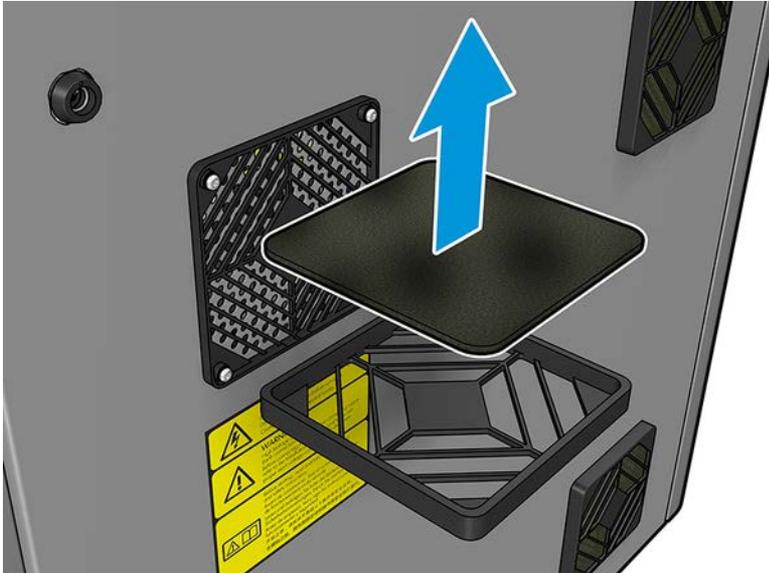
The following steps provide the complete procedure for this topic.

1. Pull off the plastic fan filter cover.
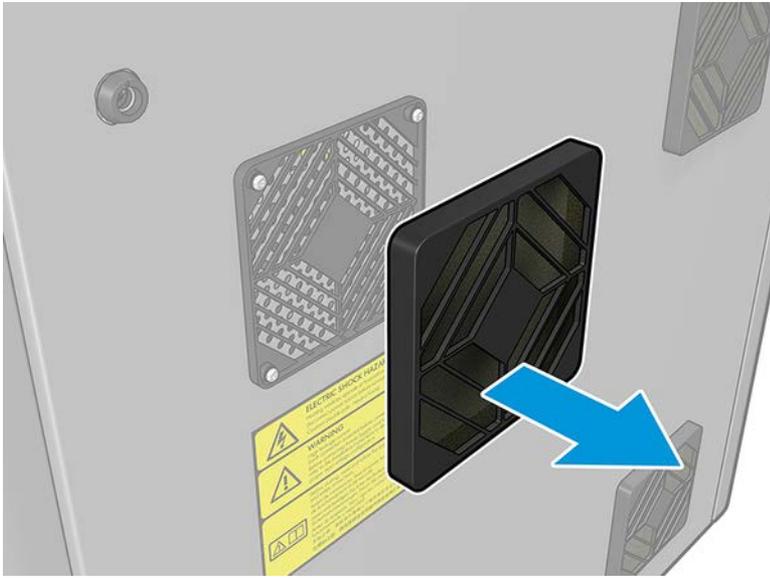
2. Take the fan filter and clean by blowing it with the air gun. Be careful to locate it back correctly: it must cover the fan's square surface.

⚠ **WARNING!** The air gun provided with the printer is only intended to inflate the spindle. When recommended to use for cleaning purposes, make sure to do so according to local regulations since additional safety provisions may apply.
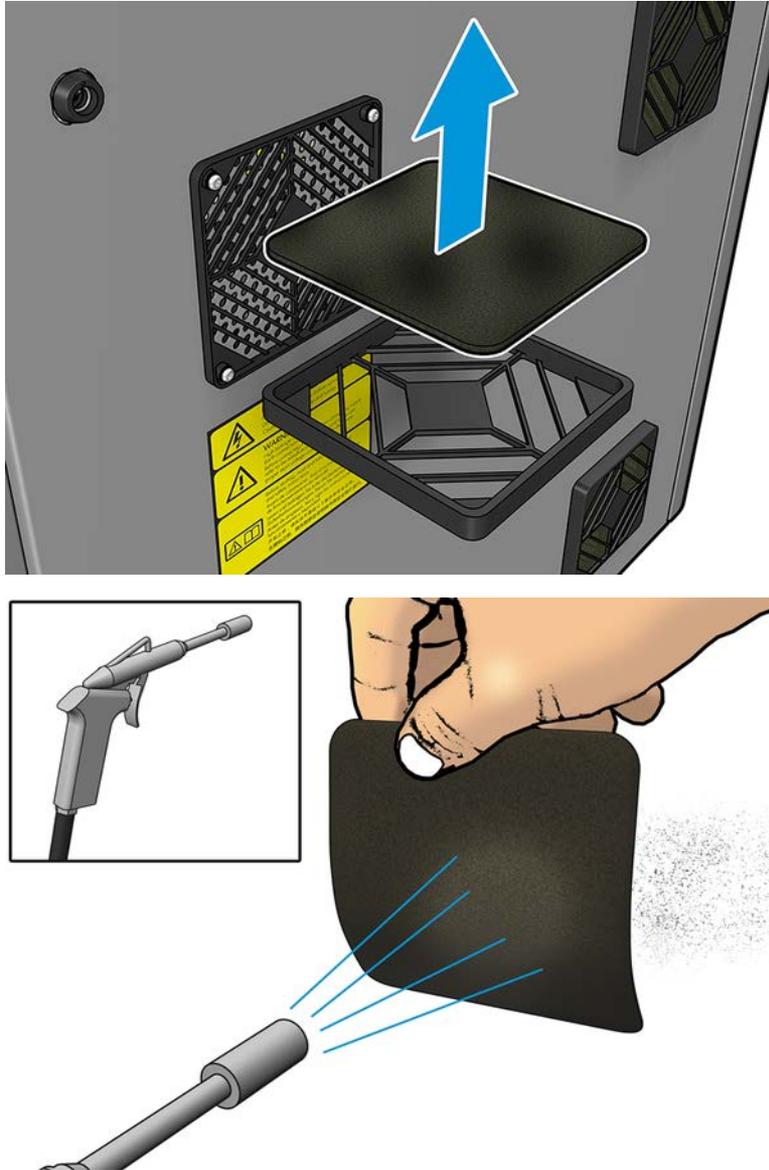
3. Put back the fan cover.

Clean the e-cabinet fan filters

The following steps provide the complete procedure for this topic.

1. Pull off the plastic fan filter cover.

2.	For each fan, take the fan filter and clean by blowing it with the air gun. Be careful to locate it back correctly: it must cover the fan's square surface.

⚠ **WARNING!**	The air gun provided with the printer is only intended to inflate the spindle. When recommended to use for cleaning purposes, make sure to do so according to local regulations since additional safety provisions may apply.

3. Put back the fan cover.
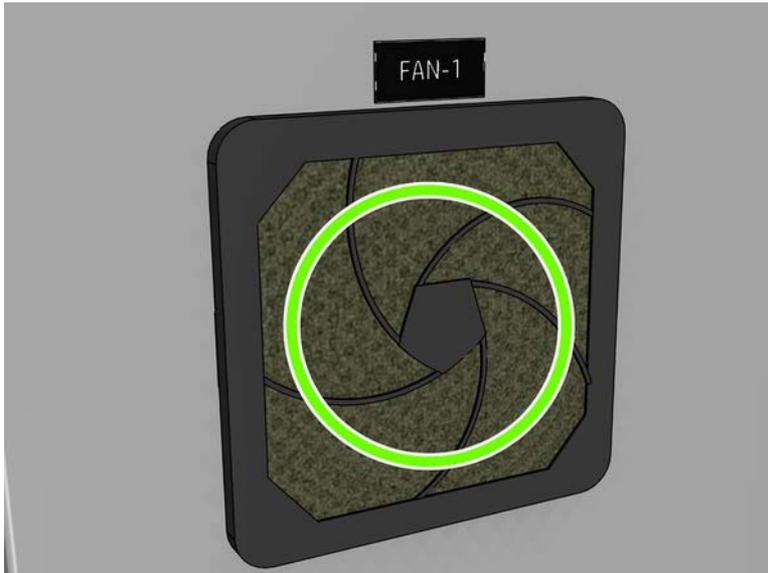
Check and clean the heat exchanger air entrance filter

The following steps provide the complete procedure for this topic.
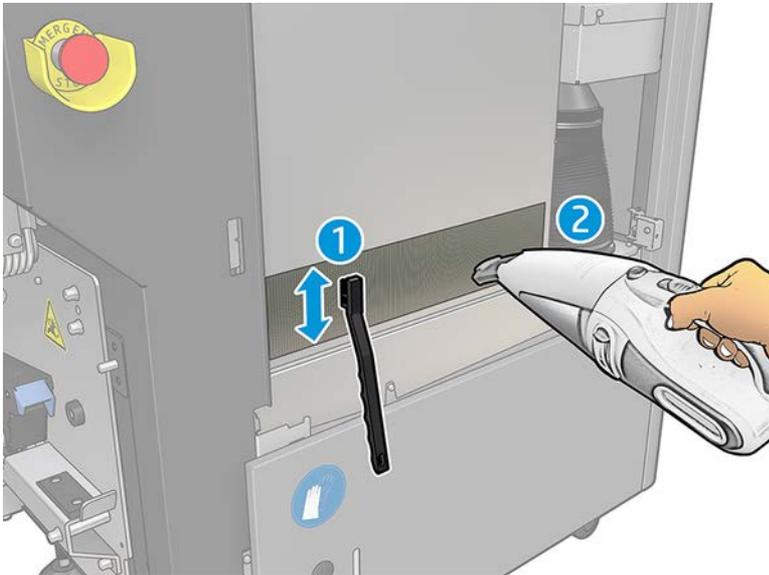
Table 11-22 Warning

Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Moving fan blades

For more safety information, see Safety precautions on page 2

1. Switch off the printer.

2. Unscrew and open the back cover that guards the condensation bottle.
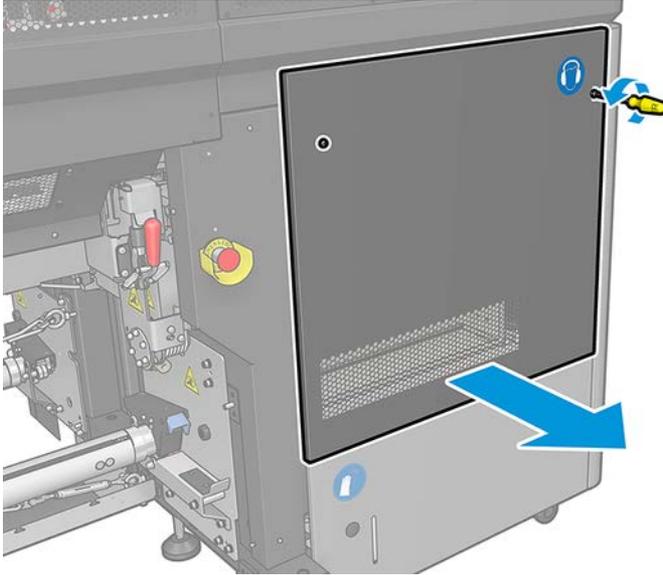
3. Using a brush and vacuum cleaner, clean the metal filter.

4. While here, check the fans to see if they also need cleaning.

Check and empty the condensation collector bottle

The condensation collector bottle is stored behind the right cover at the rear of the printer. You can see the level of liquid in the bottle through a narrow window at the bottom of the cover.

TIP: You are recommended to wear gloves for this operation.
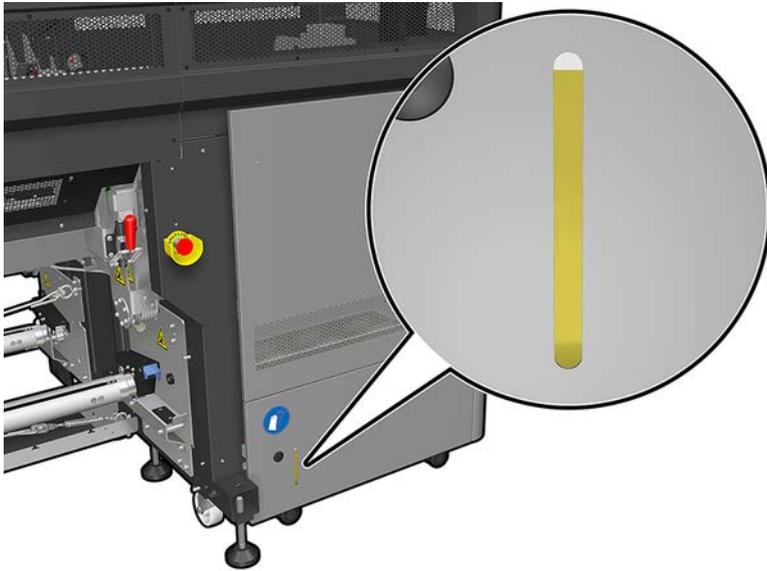
The bottle should be emptied before it is full, which will typically be after about 60–70 liters of ink have been used. You should check the bottle periodically, depending on your usage of the printer.

1. To remove the bottle, first open the two locks on the left, then open the cover; the hinges are on the right, and remove the bottle.
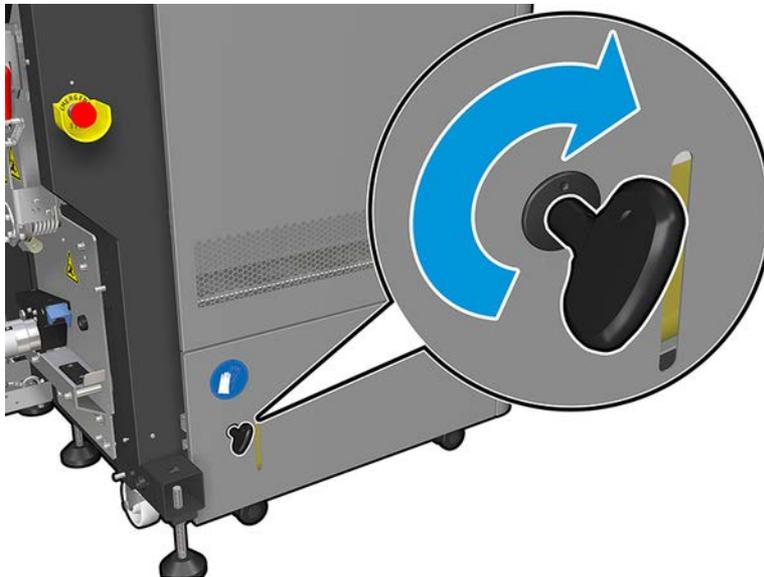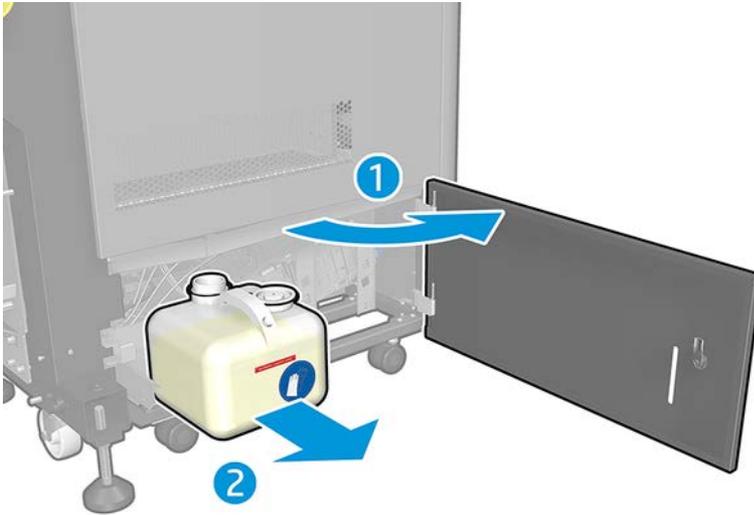
2. Empty the bottle.

📝 NOTE: If you notice that the red label on the waste bottle has been reached then empty the bottle.

📝 NOTE: The condensates are a mix of ink additives and water. Dispose of the condensates according to local regulations. Waste profile datasheet contains the required information for an adequate disposal. This document is located here https://hplatexknowledgecenter.com/applications/wasteprofiles.

3. Put back the empty bottle.
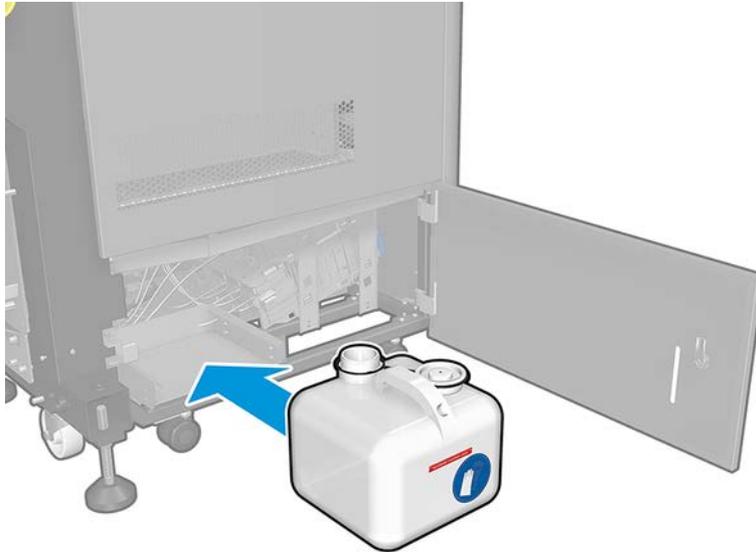
4. Take care that the mouth of the bottle is well positioned to receive the liquid falling from above.
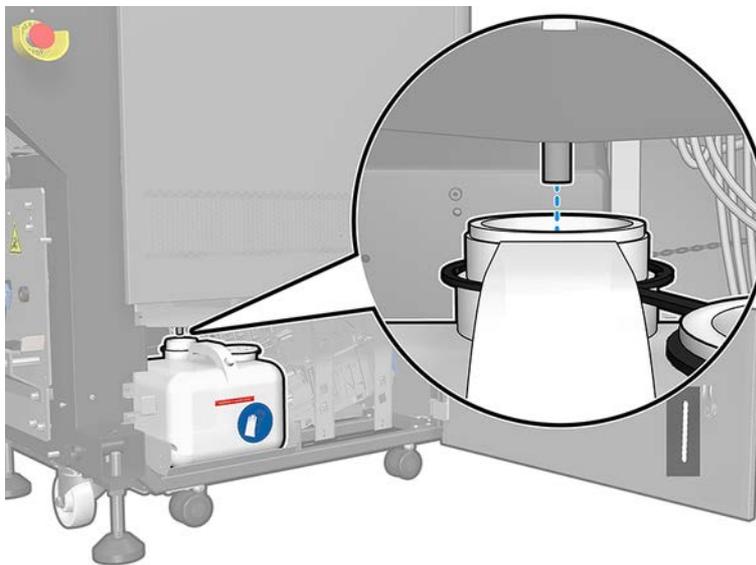
5. Close the door.

450 liter maintenance

Before any cleaning maintenance, ensure that you have turned the printer off, and be careful to follow the appropriate safety precautions.

Table 11-23 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard
⚠️	⚠️	⚠️	⚠️	⚠️

For more safety information, see Safety precautions on page 2

Introduction

The following maintenance procedures are required every 450 liters:

- Clean the scan axis and mechanical transmissions on page 258
- Clean and lubricate the drop detector rods on page 263
- Clean the carriage cooling fan on page 266
- Clean two dryer PCA fan filters on page 267
- Replace the printhead cleaning blade on page 272

Clean the scan axis and mechanical transmissions

The following sections provide details for this topic.

Table 11-24 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Risk of cutting fingers
⚠️	⚠️	⚠️	⚠️	⚠️	⚠️

For more safety information, see Safety precautions on page 2

Prepare to clean the carriage rails

The following steps provide the complete procedure for this topic.

1. Ensure that you have the printer maintenance kit (K4T88-67259 or W0R39A), which includes two right oiling felts, two left oiling felts, the required tools (Torx 8 and 3mm allen key) to remove and replace the screws holding them to the carriage and cloths.

2. The oiling felts are already soaked in oil, but lubricating oil bottles are included in case it has been used up already for some reason (for example, the environment caused dirt/dust accumulation), and has been noticed that the carriage rails were dry even after the felts have passed along them. You can add one drop of oil into the felt (be careful as oil could spill) via the holes indicated:
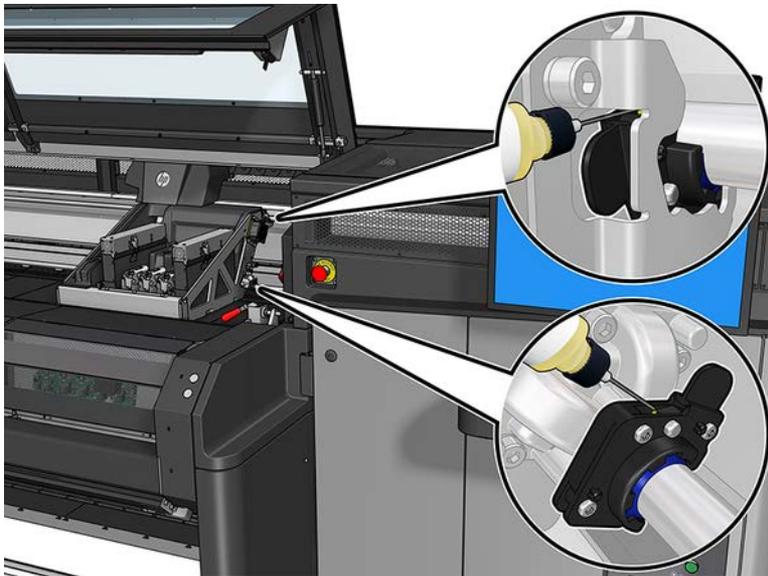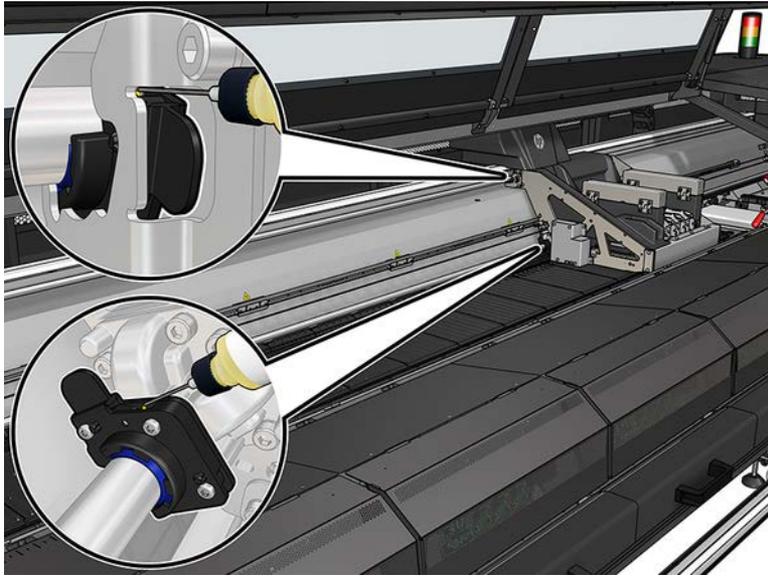

3. Ensure that the printer is turned off in the correct way for maintenance operations: see .

4. You are recommended to wear gloves when manipulating oiled parts (not for fastening/unfastening screws).

5. Ensure that all windows, covers, and doors are closed and remain in their original positions.

Clean the carriage rails

The following steps provide the complete procedure for this topic.

1. Open the front window in order to access the carriage rails.

IMPORTANT: Take care not to damage the strip encoder.
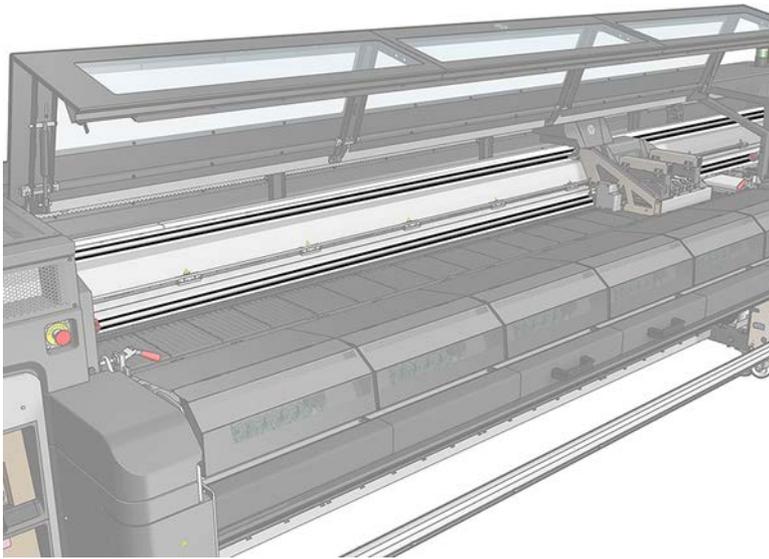
2. Clean the carriage rails with absorbent kitchen paper or with one of the cloths provided. If available put alcohol on the cloth to better wipe clean the rails.

TIP: It may help to use a small ladder or similar to better reach the carriage rails.

IMPORTANT: Take special care when cleaning the front lower rail to avoid cutting yourself with or breaking the encoder strip.
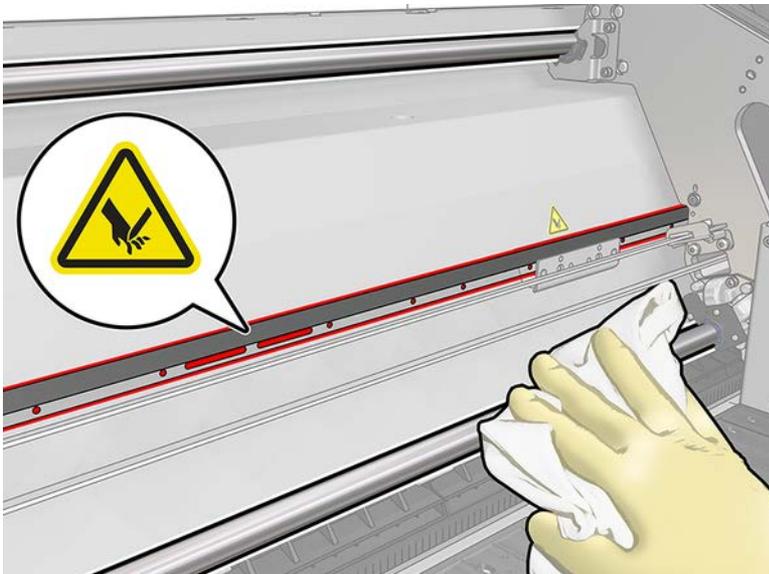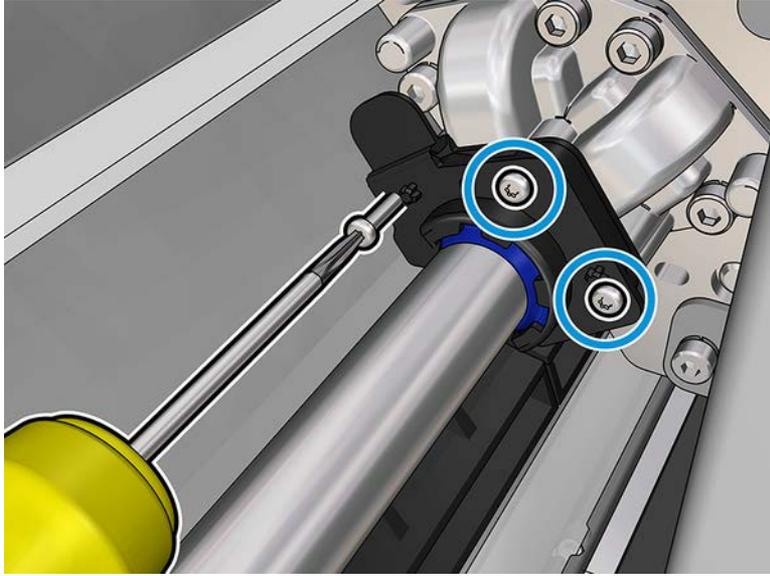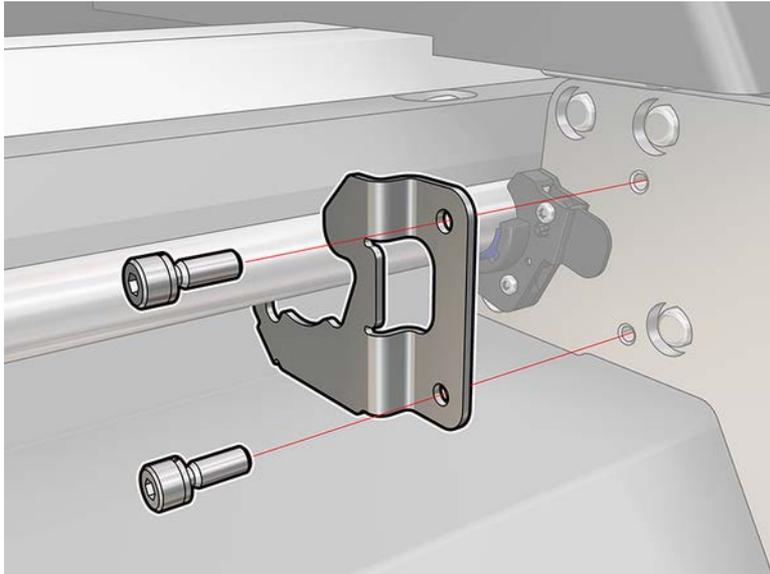

Replace the oiler felts

The following steps provide the complete procedure for this topic.

1. Remove the left oiler felts screws using the torx 8 and 3mm allen key to unfasten the screws.
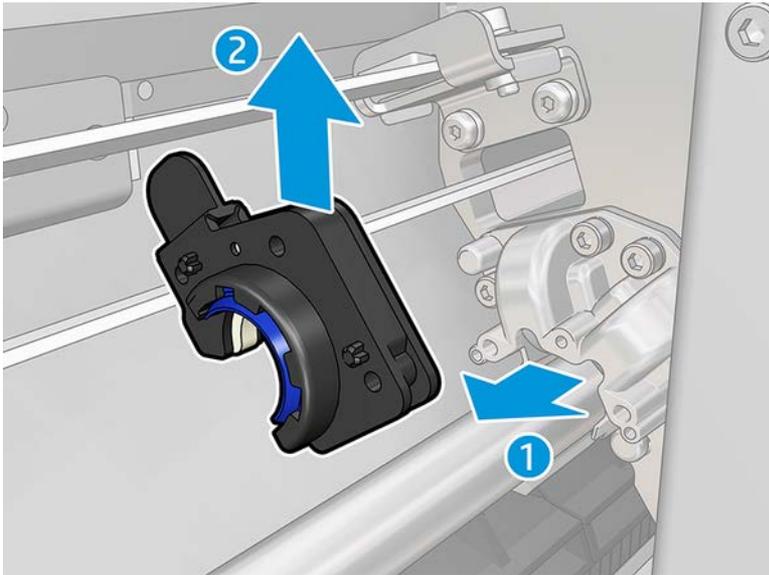
IMPORTANT: Take care not to lose the screws once removed.

2. Remove and guard the metal part covering the rear oiling felt.

3. Move the felts to be replaced a few millimeters away from the carriage and then pull them out of the carriage rail (turning them clockwise or counterclockwise will help). Dispose of the used/dirty felts as waste material.

4. Take the two clean left oiling felts from the printer maintenance kit and install them.

Make sure that once installed the blue plastic part in the oiler felt has to be outwards (not inwards).

5. Insert the oiling felts into each rail and slide towards the carriage. Notice the cross shaped features in the oiler felt housing shown below have to go into the holes provided in the carriage. Also, for the rear oiler felt notice two pins in the carriage have to pass through holes in the oiler felt housing.
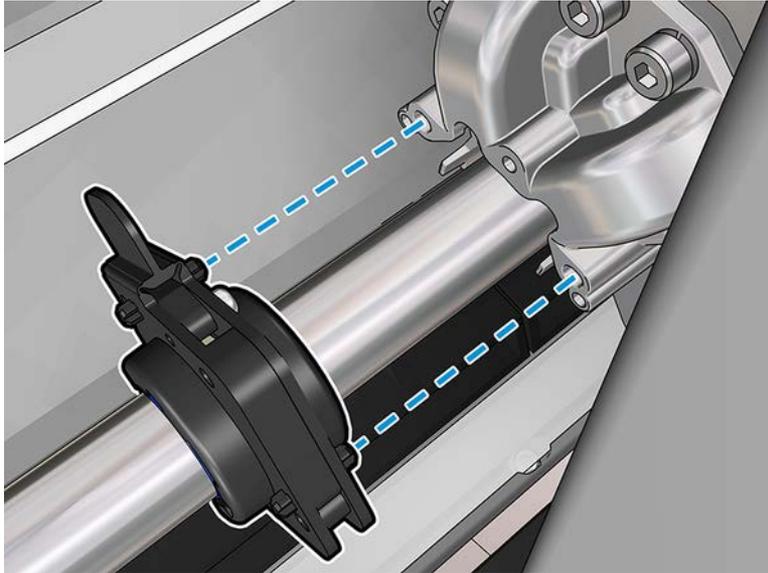
6. Replace the screws previously removed to fix the felts to the carriage.

📝 NOTE: For the rear felt replace the sheet metal part previously removed before replacing the screws.

7. Move the carriage manually to the left until the right felts are accessible.

8. Repeat steps 1, 2, 3 and 4 for the right felts.

Finish cleaning the carriage rails

The following steps provide the complete procedure for this topic.

1. Clean the right part of both carriage rails with a clean cloth because the carriage was covering that area before.

2. When finished move the carriage carefully back to the right until it stops.

3. Close the window.

4. Turn on the printer in the correct way for maintenance operations: see .

Clean and lubricate the drop detector rods

The following steps provide the complete procedure for this topic.

Table 11-25 Warning

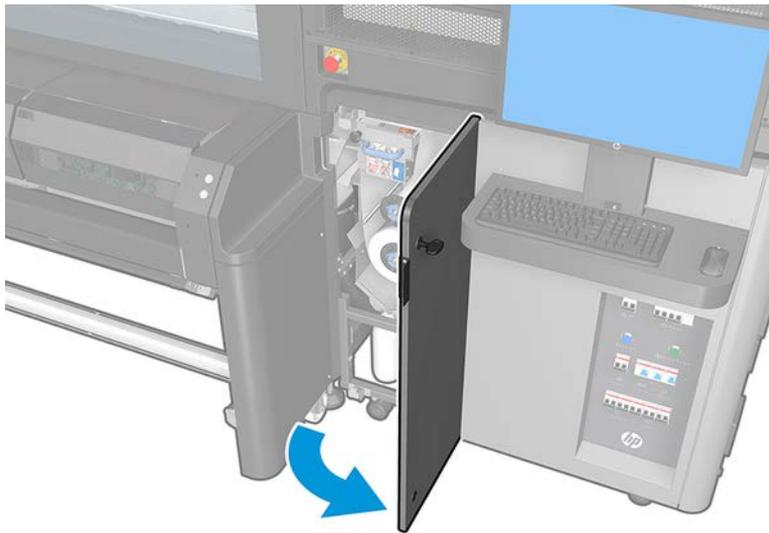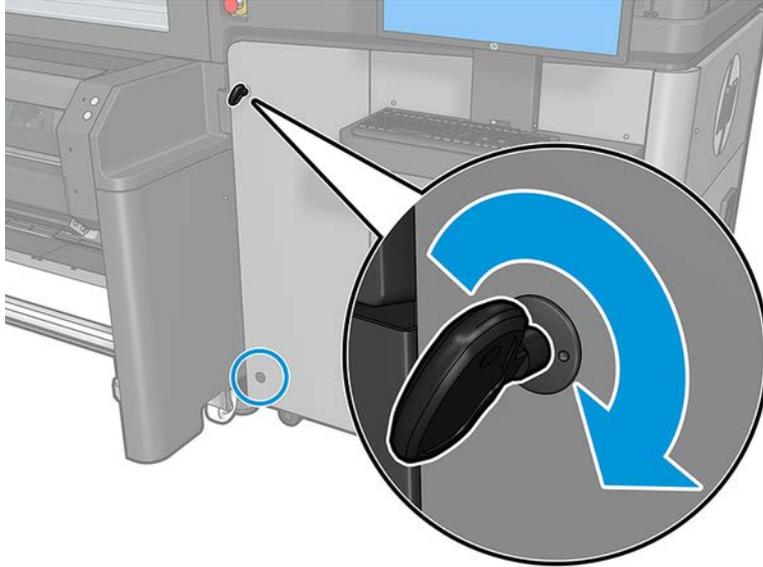| Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see

1. Turn off the printer in the correct way for maintenance operations: see .

2. Unlock and open the printhead cleaning roll door.

3. Put on gloves to protect your hands.

4. Clean both rods with a lint-free cloth dampened with isopropyl alcohol.

📝 NOTE: If you are in an area (such as California) that regulates VOC cleaning and maintenance fluids, instead of isopropyl alcohol use a VOC-certified cleaner such as a properly diluted Simple Green All-Purpose Cleaner.

5. Put a few oil drops along the drop detector rods.

6. Close and lock the printhead cleaning roll door.

7. Turn on the printer in the correct way for maintenance operations: see .

Clean the carriage cooling fan

The following sections provide details for this topic.

Table 11-26 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

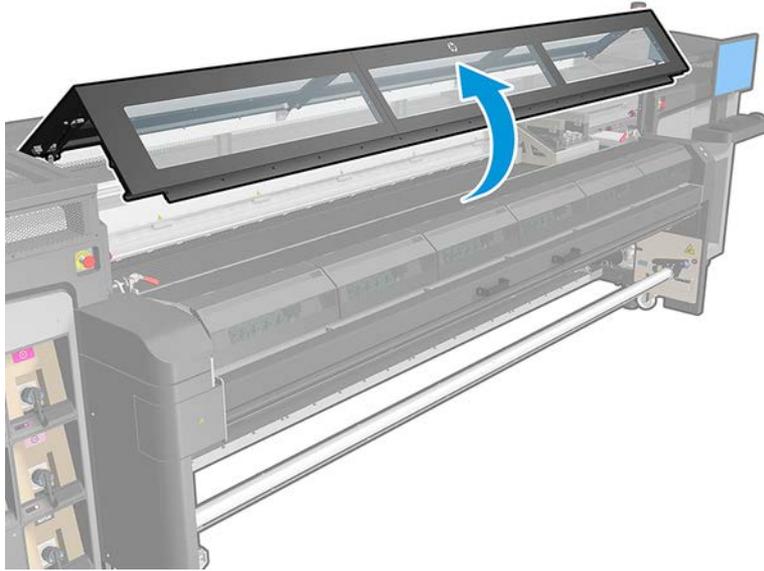For more safety information, see

Prepare to clean the carriage cooling fan

The following steps provide the complete procedure for this topic.

1. Ensure that you have the HP Latex 1500 Printer Cleaning Kit, provided with your printer.

2. Ensure that the printer is not printing.

3. Unload the substrate.

4. Wait for the curing modules to cool down (about 10 minutes).

5. Ensure that all windows, covers, and doors are closed and remain in their original positions.

6. Move the printhead carriage to the service position.

7. Move the carriage beam to its highest position.

8. Turn off the printer in the correct way for maintenance operations: see .

9. Open the front door.

Clean the carriage cooling fan

The following steps provide the complete procedure for this topic.

1. Move the carriage by hand to the left if needed in order to access the carriage cooling fan.

2. Clean the carriage cooling fan with a lint-free cloth dampened with distilled water, or isopropyl alcohol if necessary.

   NOTE: If you are in an area (such as California) that regulates VOC cleaning and maintenance fluids, instead of isopropyl alcohol use a VOC-certified cleaner such as a properly diluted Simple Green All-Purpose Cleaner.

Finish cleaning the carriage cooling fan

The following steps provide the complete procedure for this topic.

1. Ensure that the cleaned parts are completely dry and all vapor has totally evaporated.

2. Close the front door.

3. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

4. Move the carriage back to its working position.

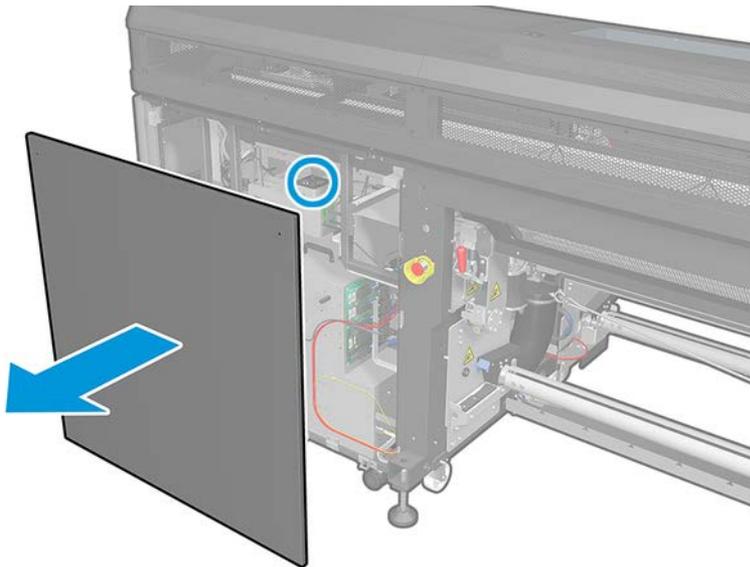## Clean two dryer PCA fan filters

The following steps provide the complete procedure for this topic.

1. Turn off the printer and the power-enable switch.

2. Locate the rear right panel assembly.

3. Remove the two pointed T-20 screws that attach the rear right panel assembly.
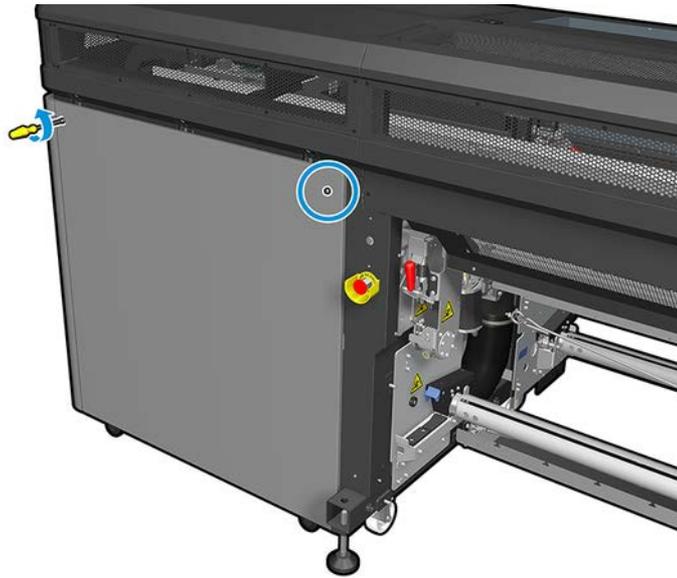
4. Remove the rear right panel assembly and locate the first Dryer PCA fan filter.

5. Pull off the plastic fan filter cover.

6. Take the fan filter and clean by blowing it with the air gun.

    ⚠ **WARNING!**   The air gun provided with the printer is only intended to inflate the spindle. When recommended to use for cleaning purposes, make sure to do so according to local regulations since additional safety provisions may apply.
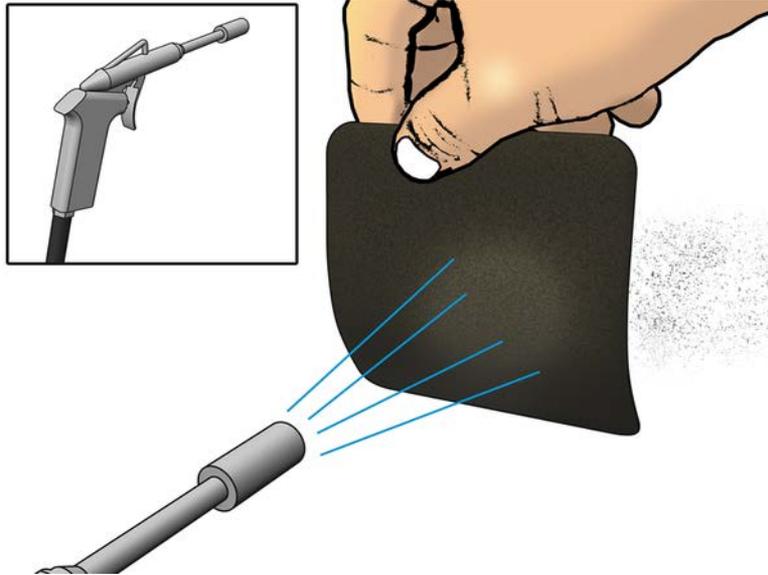
7. Put back the fan cover. Be careful to put it back correctly: it must cover the fan's square surface.

8. Remove the seven pointed screws that attach the top left perforated metal sheet (1 in fig. below).
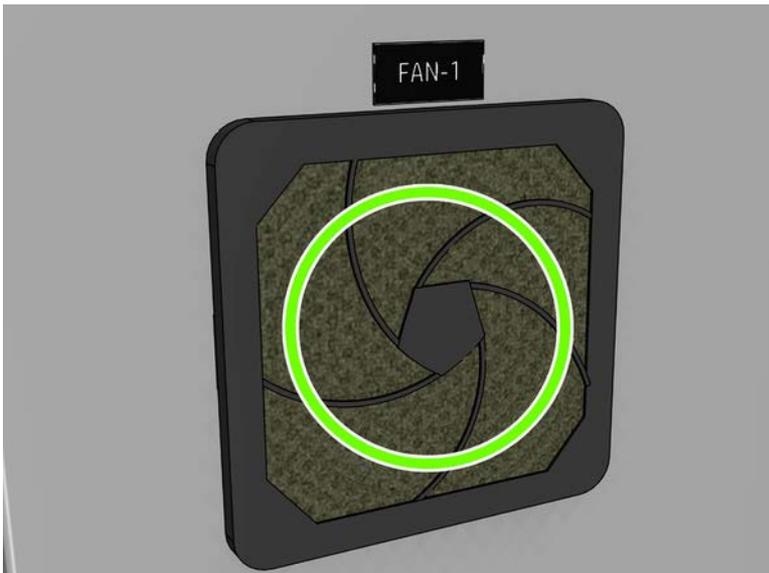

9. Locate the fan and pull off the plastic fan filter cover.

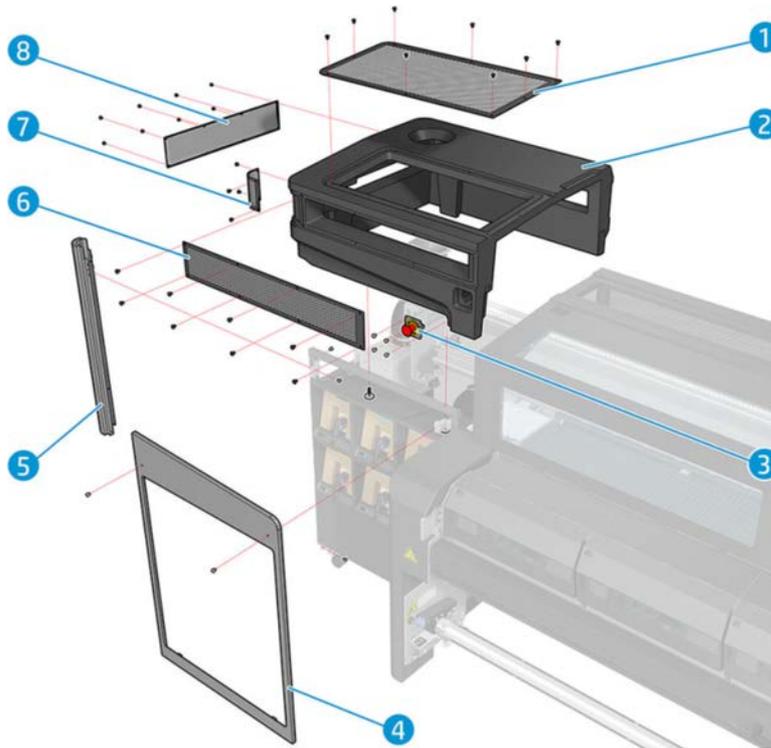10. Take the fan filter and clean by blowing it with the air gun.

⚠ **WARNING!**   The air gun provided with the printer is only intended to inflate the spindle. When recommended to use for cleaning purposes, make sure to do so according to local regulations since additional safety provisions may apply.
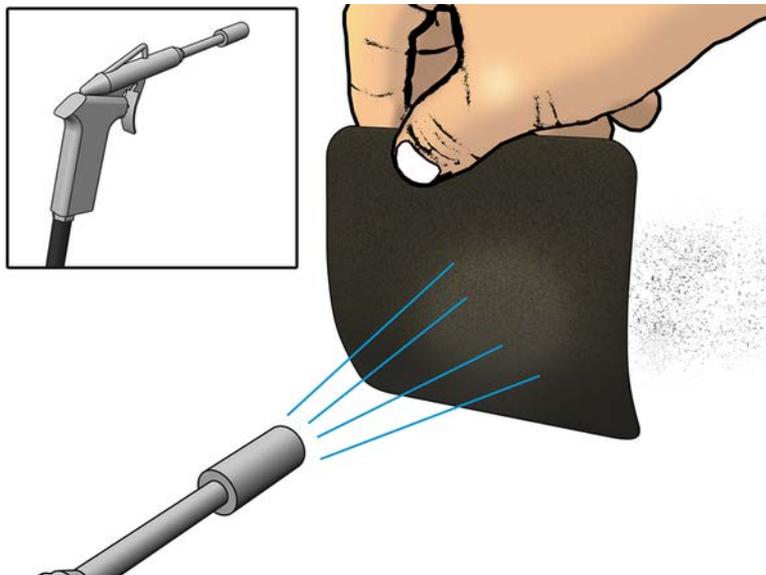
11. Put back the fan cover. Be careful to put it back correctly: it must cover the fan's square surface.
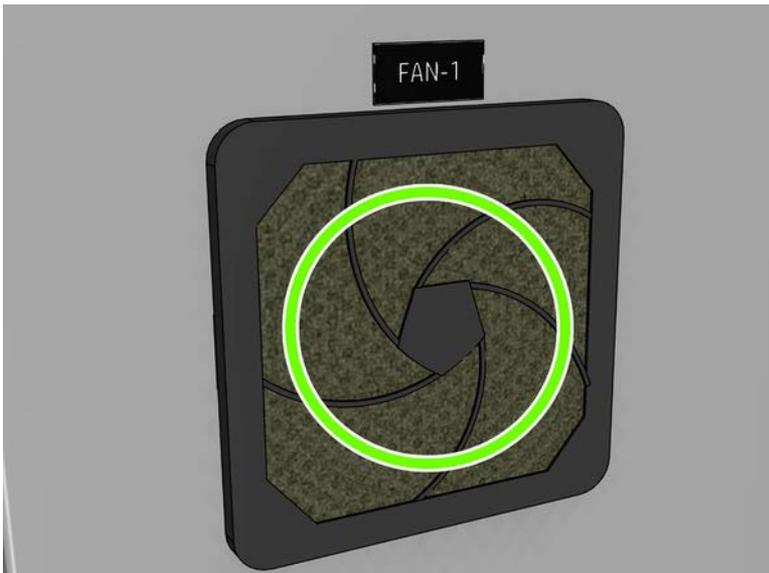
Replace the printhead cleaning blade

The following steps provide the complete procedure for this topic.

1. Ensure that you have the Printhead Cleaning Roll Rubber Blade Kit (K4T88-67116), which is included in the Printer Maintenance Kit (K4T88-67259 or W0R39A) but can also be purchased separately.

2. Ensure that the printer is not printing.

3. Unlock and open the printhead cleaning roll door.
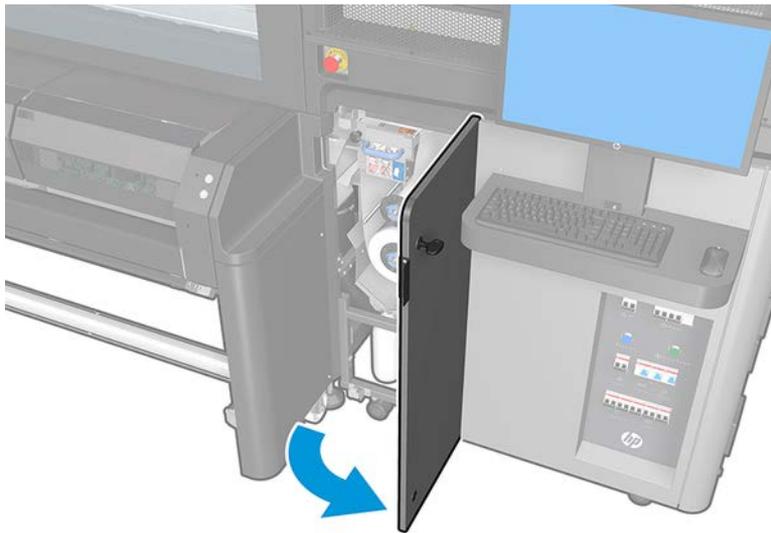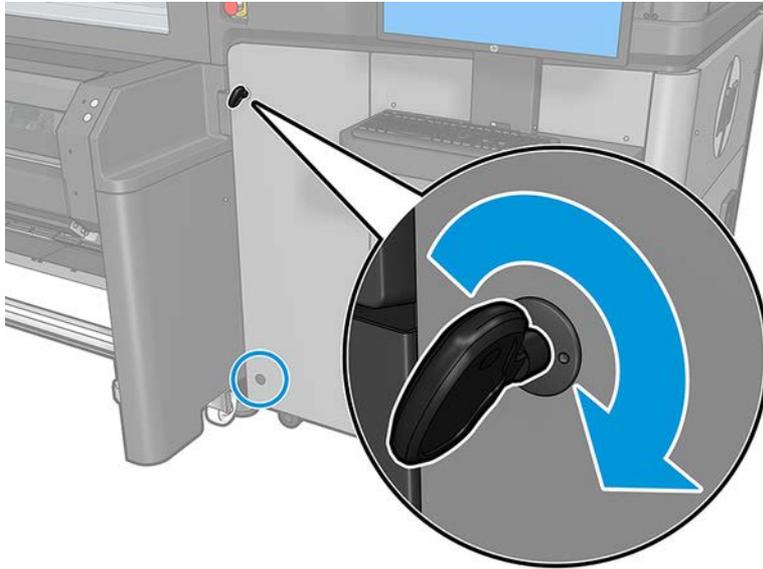
4. Pull out the printhead cleaning roll carriage.
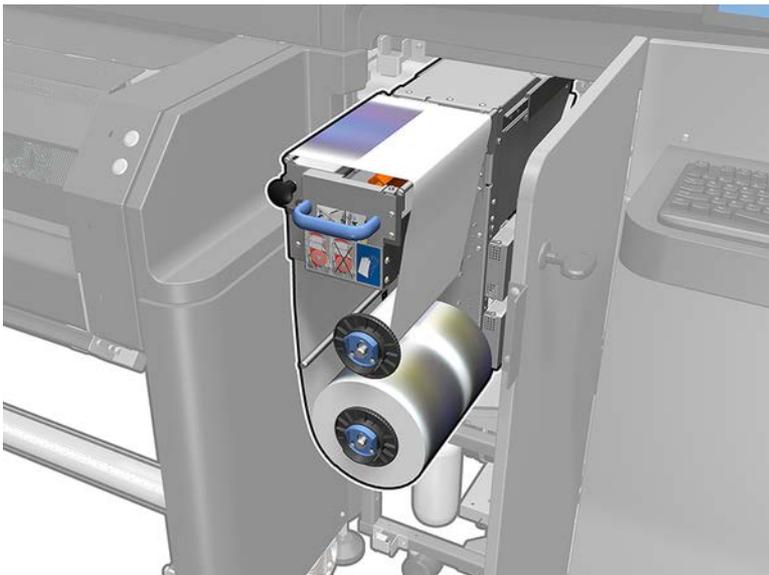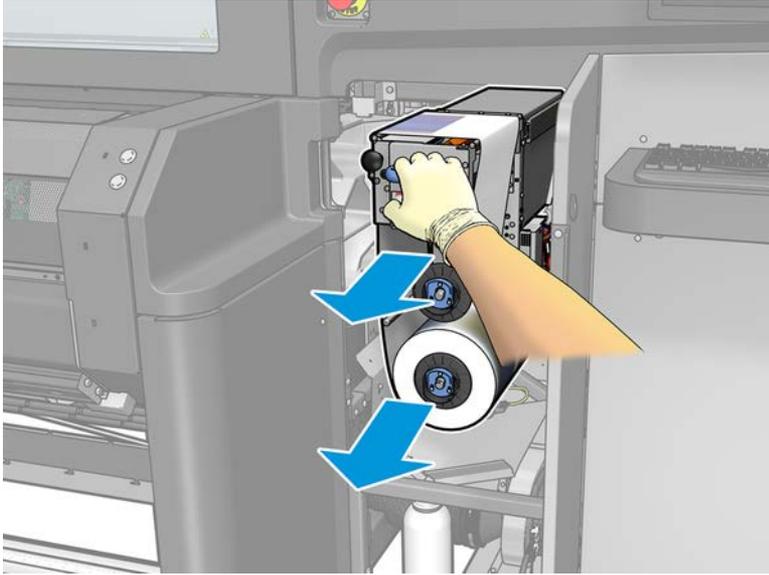
5. Put on gloves to protect your hands.

6. Open the pinchwheel (pull out and rotate the black plastic knob).
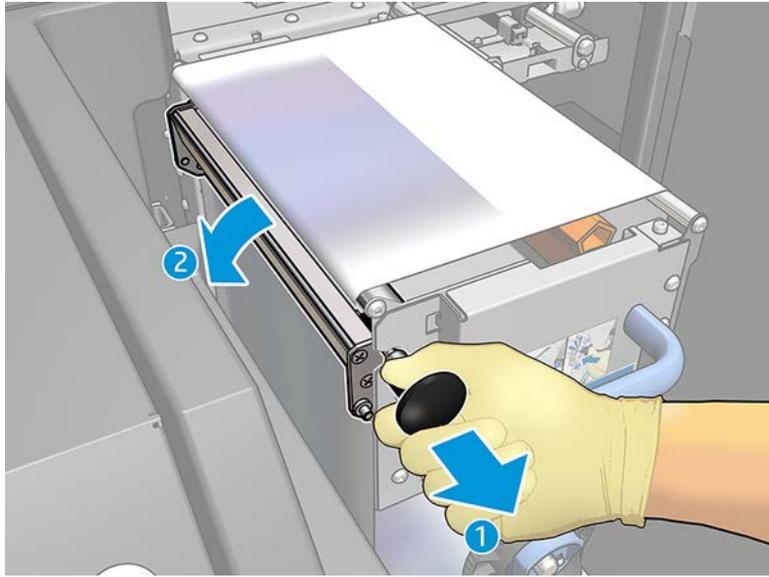
7. Move the printhead cleaning material aside in order to uncover the rubber blade.
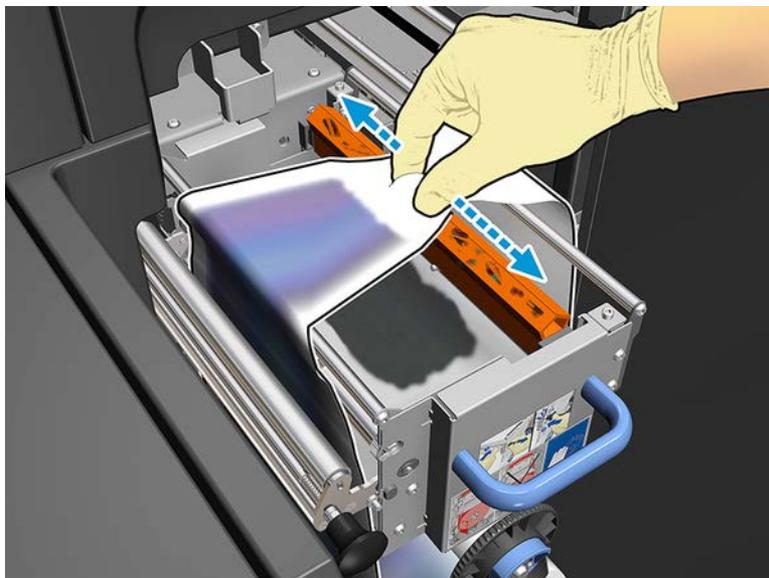
8. Move the rubber blade to the replacement position and remove it.

IMPORTANT: Be careful not to damage the printhead cleaning material when replacing the rubber blade.
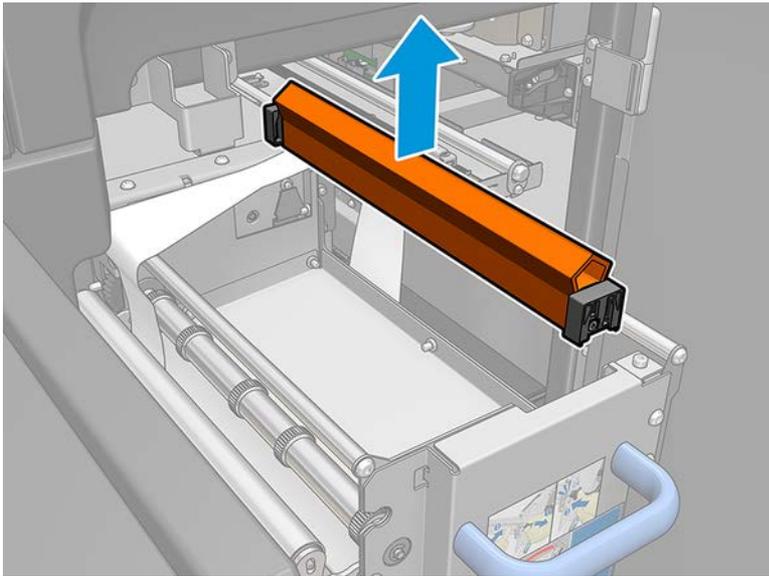
9. Place the new one in position.

NOTE: The black element has to stay firmly in place on the corresponding printer support.
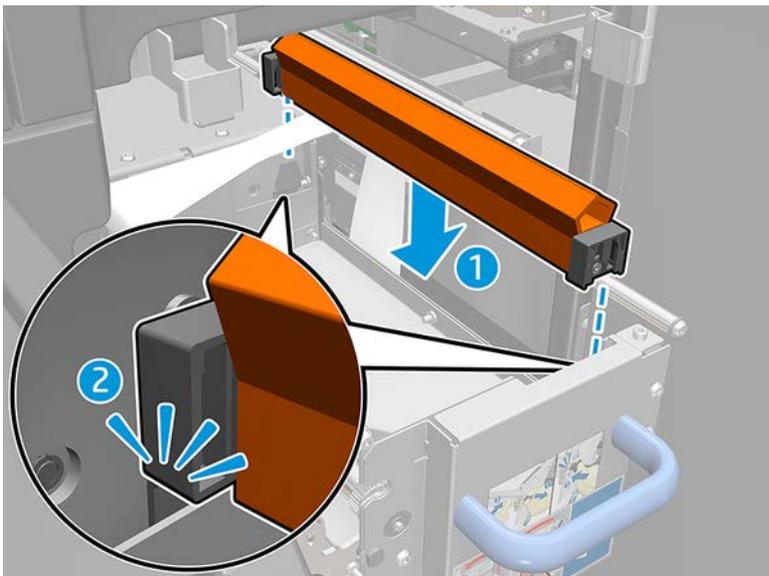
10. Push the printhead cleaning material back into place and close the pinchwheel (using the black plastic knob).

11. Close and lock the door.

12. Carefully push the printhead cleaning roll carriage back into its working position.

13. From printcare, run printhead cleaner calibration.

900 liter maintenance

Before any cleaning maintenance, ensure that you have turned the printer off, and be careful to follow the appropriate safety precautions.

Table 11-29 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

Introduction

The following maintenance procedures are required every 900 liters:

- Clean the substrate drive transmission on page 277
- Grease the printhead primers on page 278
- Clean scan axis encoder on page 280
- Clean impelling dust in scan axis chain on page 282
- Clean the drying fans and diffuser on page 283
- Clean the drop detector encoder strip on page 286
- Replace the curing module side rubbers on page 290
- Replace the carriage oil wicks, felts, and clean and oil the scan axis rods on page 291
- Replace damaged diverter wheels on page 292
- Replace an intermediate tank on page 294
- Replace the e-cabinet fan filters on page 296
- Replace the E-box fan filter on page 299

Clean the substrate drive transmission

The following steps provide the complete procedure for this topic.

Table 11-30 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Risk of cutting fingers
⚠️	⚠️	⚠️	⚠️	⚠️	⚠️

For more safety information, see Safety precautions on page 2

1. Move the carriage beam to the highest position.

2. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

3. Open the loading table.

4. Carefully raise the plastic cover.

5. Clean the bronze gear through the space created, taking care not to damage the encoder.

6. Grease the transmission through the gap.

Grease the printhead primers

The following steps provide the complete procedure for this topic.

Table 11-31 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard
⚠️	⚠️	⚠️	⚠️	⚠️

For more safety information, see Safety precautions on page 2

📝 **NOTE:** Perform this procedure when the system error 46.02.0Y:06 appears.

1. Ensure that the printer is not printing.

2. Ensure that all windows, covers, and doors are closed and remain in their original position.

3. Move the printhead carriage to the service position.

4. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

5. Stand on the folding steps and open the window.
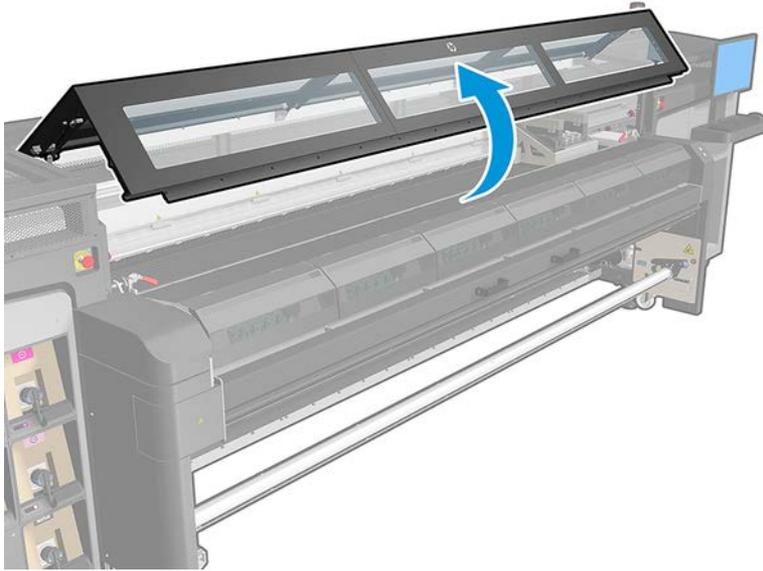
6. Remove the carriage cover.

7. After lifting the printhead covers, two 'O' rings can be seen that seal the joints between the printhead cover and printhead.
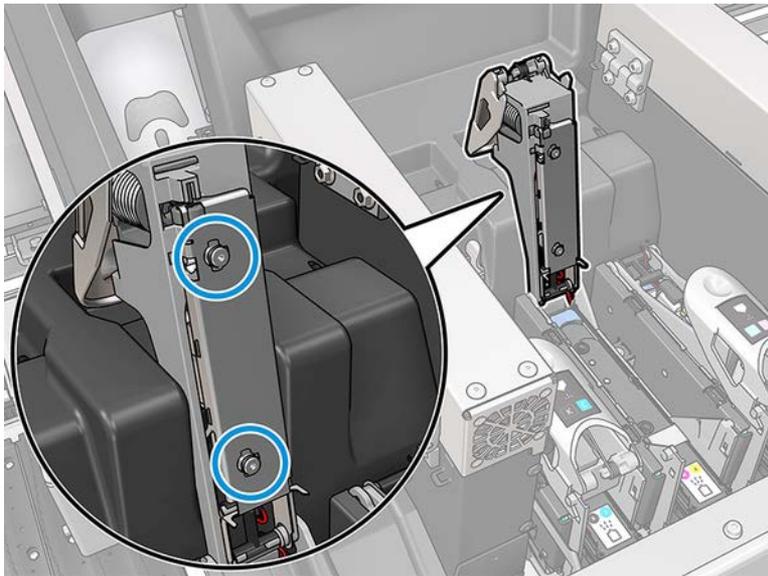
8. With a finger, apply a little grease to the 'O' rings to improve their performance. A suitable grease is available in a syringe from the cleaning kit.
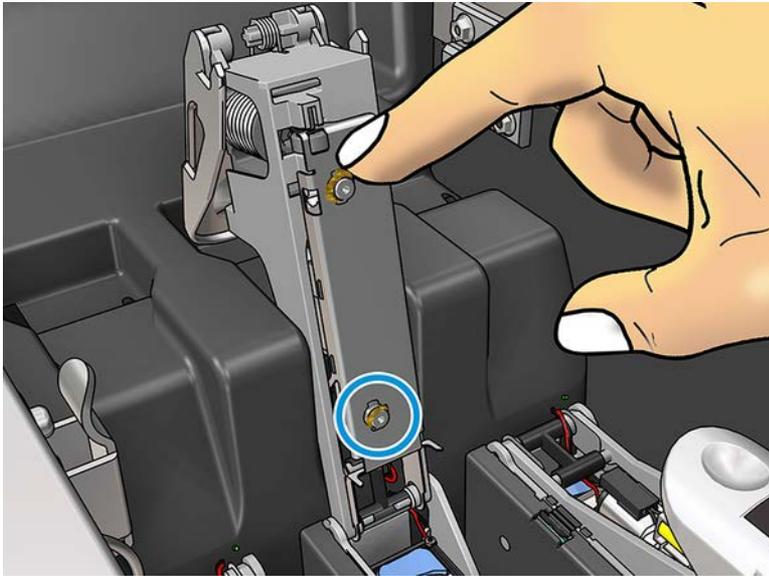
▲ The grease should be applied to the black rubber part only. If grease gets into the central hole, remove it with a toothpick or similar tool.
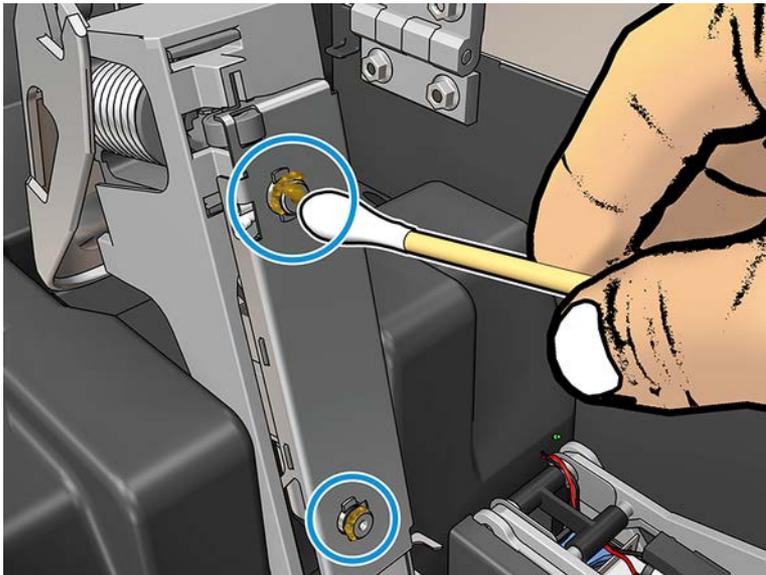
9. Close the printhead cover, the carriage cover, and the printhead access door.

Clean scan axis encoder

The following steps provide the complete procedure for this topic.

Table 11-32 Warning

Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Moving fan blades

For more safety information, see

1. Turn off the printer in the correct way for maintenance operations: see .

2. Open the window.

3. Check if the encoder strip needs to be cleaned. If so, gently clean it with a wipe. Take special care, as the strip is weak and easy to break. Clean the dirty areas only.

4. Run the scan axis length diagnostic test.

Clean impelling dust in scan axis chain

The following steps provide the complete procedure for this topic.

Table 11-33 Warning

Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Moving fan blades
⚠	⚠	⚠	⚠	⚠

For more safety information, see Safety precautions on page 2

1. Turn off the printer in the correct way for maintenance operations: see .

2. Open the window.

3. Visually check the carriage chain for dust, debris, or pieces of rubber, aerosol, etc.

4. If any of the above are present, clean with a handheld home vacuum cleaner.

5. At the end of the 900 liter maintenance task, a diagnostic runs to ensure correct function and performance.

Clean the drying fans and diffuser

The following steps provide the complete procedure for this topic.

Table 11-34 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part

For more safety information, see Safety precautions on page 2

The drive roller should be cleaned whenever it is visibly dirty, or when you notice that substrate advance is no longer smooth and regular.

1. Ensure that the printer is not printing.

2. Unload the substrate.

3. Open the latches.
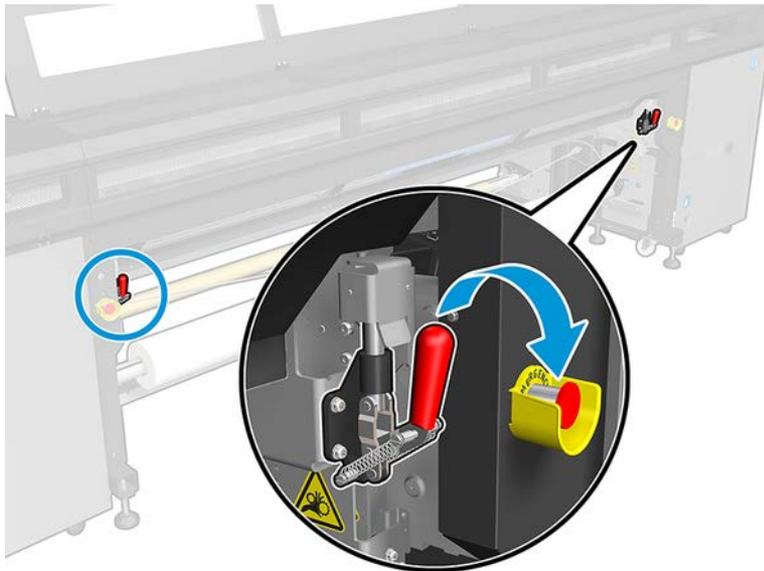
4. Pull the pinchwheel module to its lowest position.
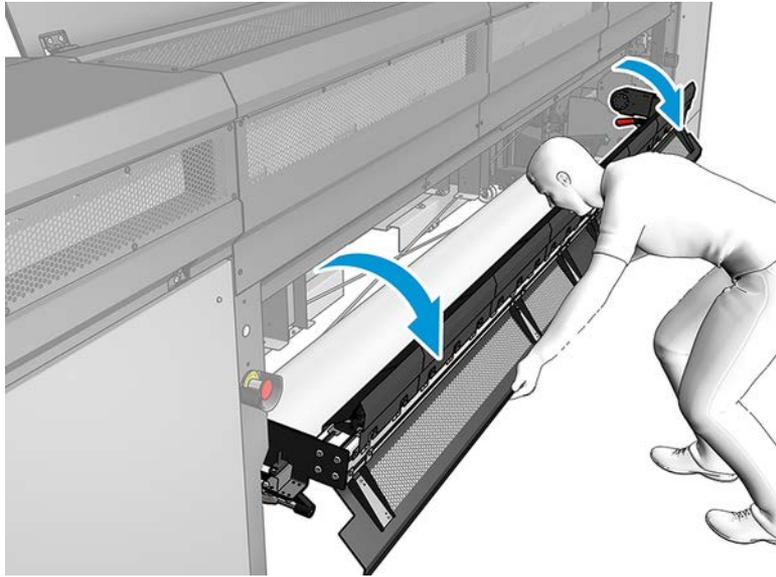
5. Remove any dust from the drying fans with a lint-free cloth dampened with distilled water (5 in Fig below).
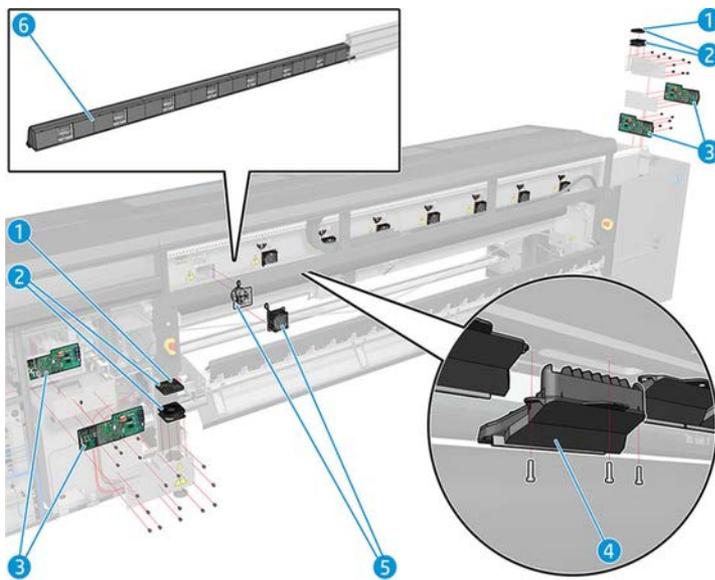
6. Wait until the drying fans are dry.

7. Return the pinchwheel module to its original position and close the latches.

8. Open the front door.
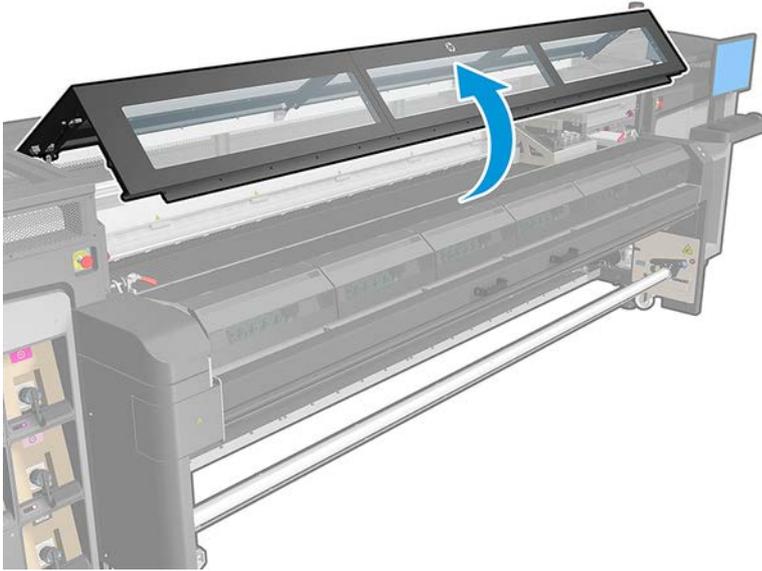
9. Remove any dust from the drying diffuser, clean with a brush and vacuum the outlet nozzle of the heater diffusers (4 in Fig below). Uninstall if not needed.
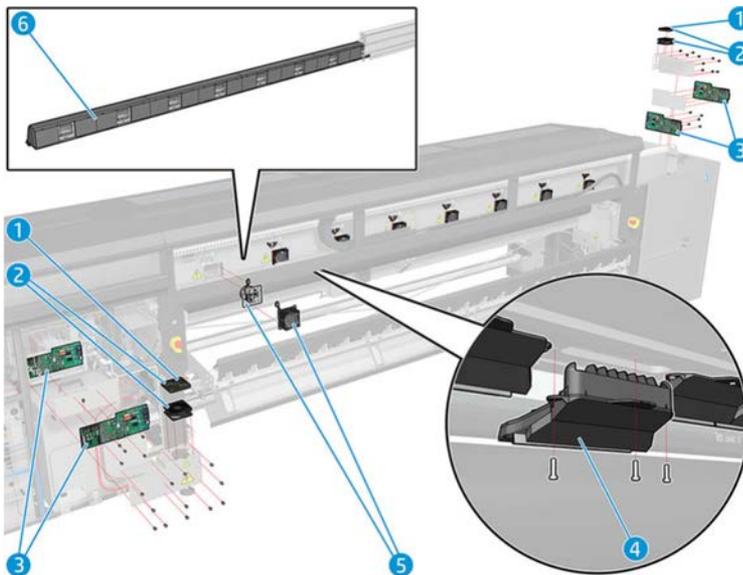
10. Close the front door.

Clean the drop detector encoder strip

The following steps provide the complete procedure for this topic.

Table 11-35 Warning

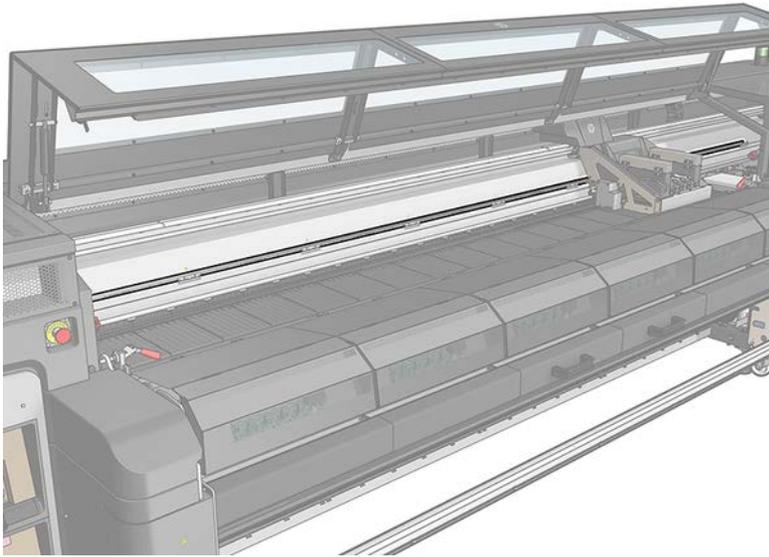| Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

1. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

2. Unlock and open the printhead cleaning roll door.
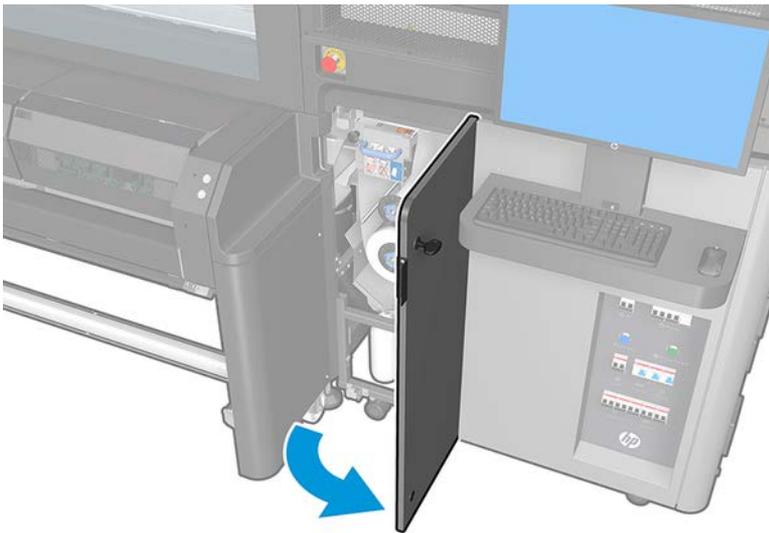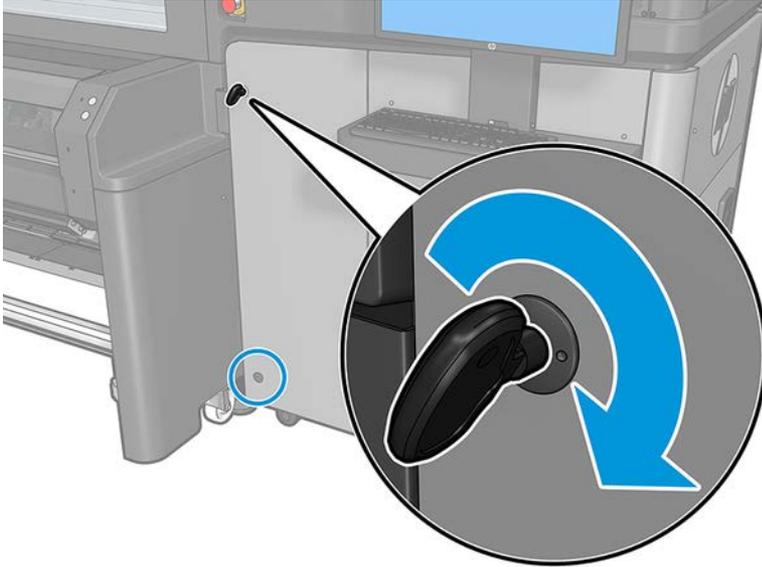
3. Put on gloves to protect your hands.

4. If dirty, clean the drop detector encoder strip with a lint-free cloth dampened with distilled water (3 in Fig. below).
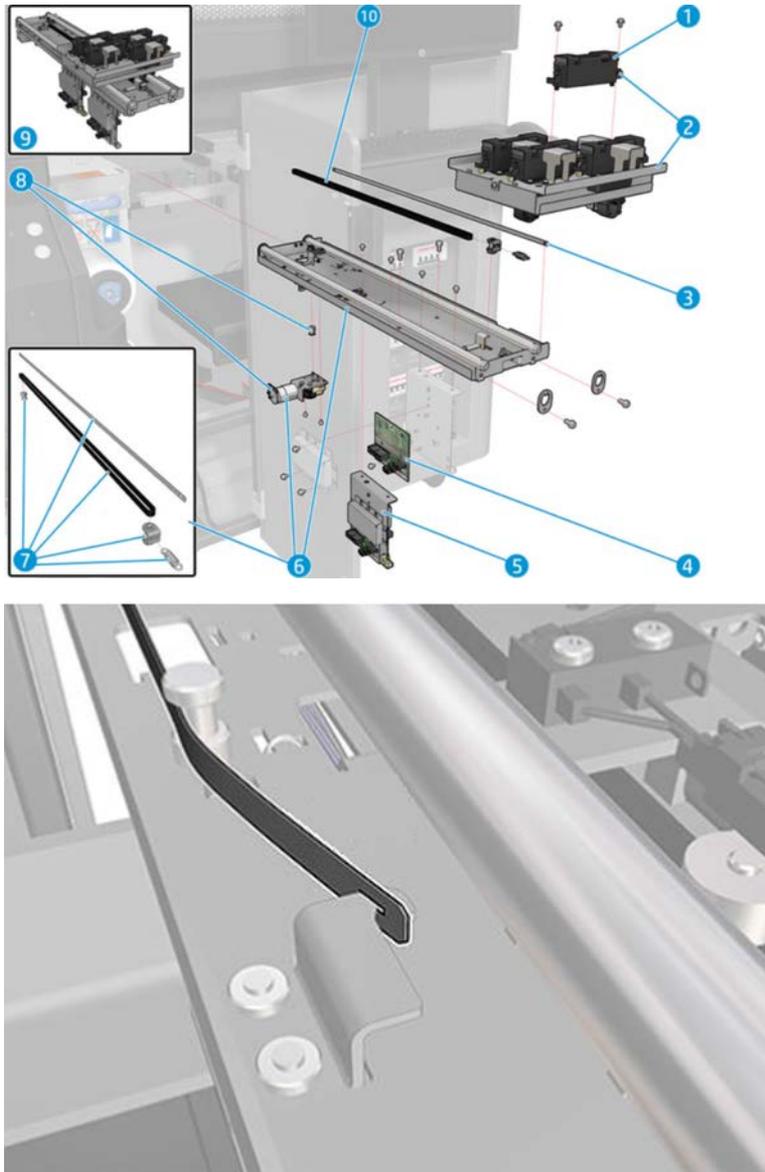
5. Ensure that the cleaned strip is completely dry.

6. Close and lock the printhead cleaning roll door.

7. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

Replace the curing module side rubbers

The following sections provide details for this topic.

Table 11-36 Warning

Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Moving fan blades

For more safety information, see

Removal

The following steps provide the complete procedure for this topic.

1. Open the latches and pull the curing module out.

2. Remove any remaining bits of rubber from both sides.
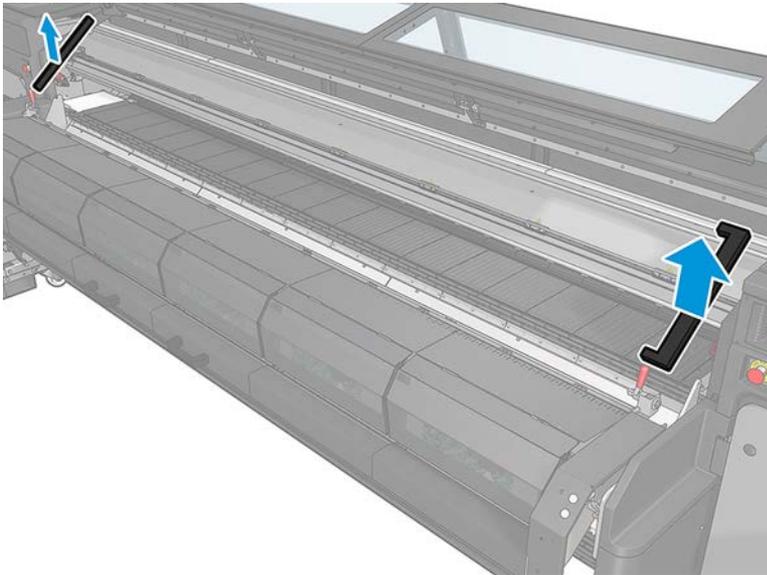
Installation

The following steps provide the complete procedure for this topic.

1. Insert new rubbers. Tape them in to insure they are well sealed between the curing module and front bottom plate to avoid any vapor condensation leakage.
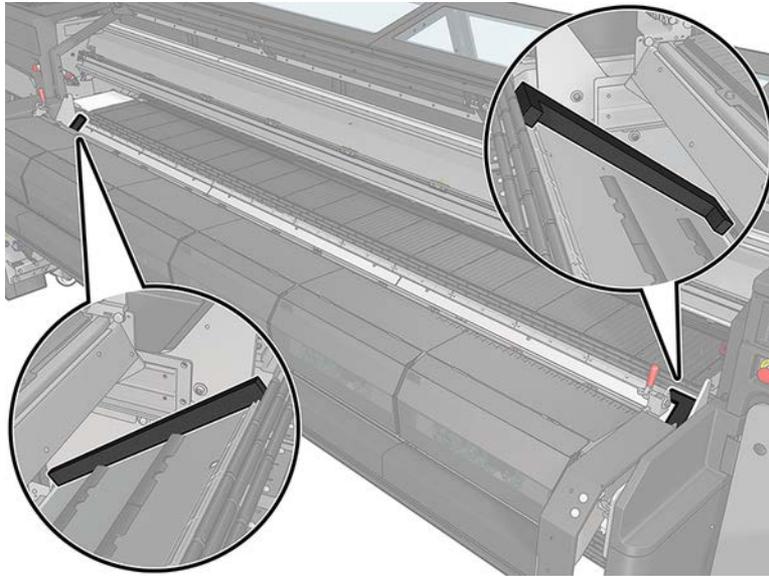
2. Push the curing module in and close the latches.

Replace the carriage oil wicks, felts, and clean and oil the scan axis rods

The following sections provide details for this topic.

Table 11-37 Warning

Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Moving fan blades

For more safety information, see Safety precautions on page 2

Removal

The following steps provide the complete procedure for this topic.

1. Open the front window and move the carriage to its service position. Do not leave the carriage out of its home position too long.

2. Turn off the printer in the correct way for maintenance operations: see .

3. Unscrew the felts and wicks retainers as indicated.
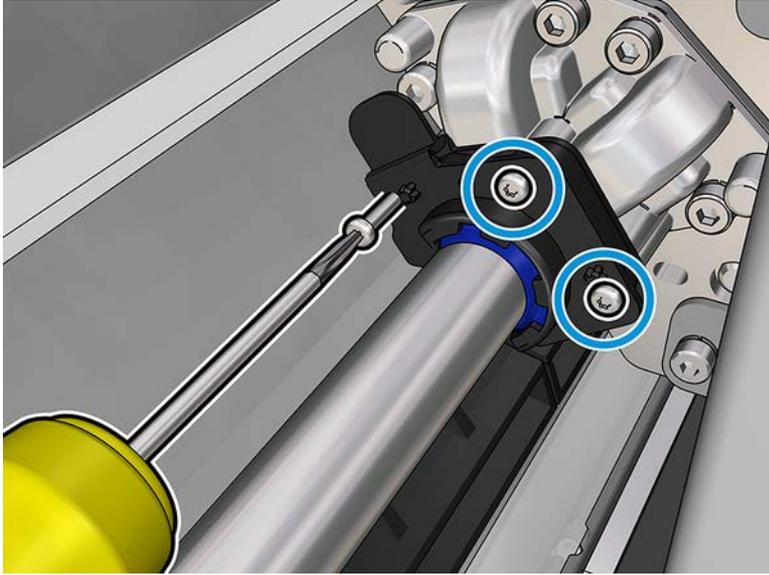
Installation

The following steps provide the complete procedure for this topic.

1. Replace the required parts (foams and/or wicks).
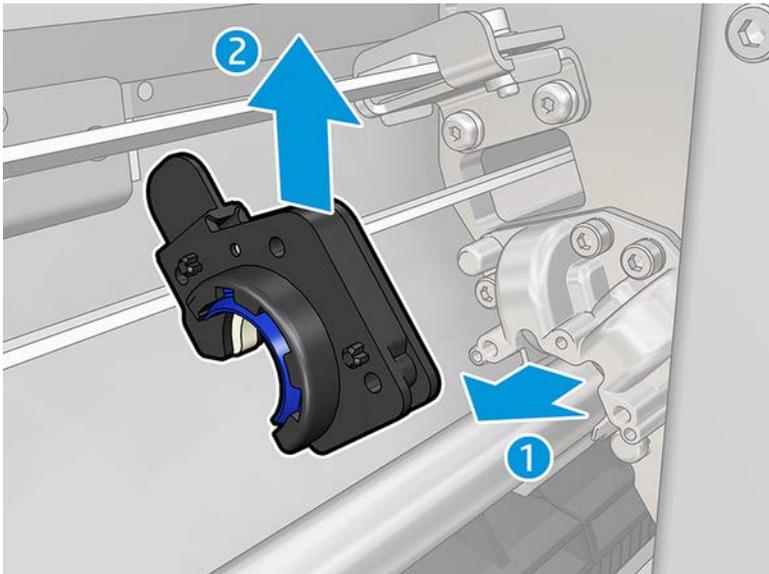
2. Reassemble, close the window and switch the printer on again in order to move carriage to its capping position.

3. At the end of the maintenance, the scan axis friction test (Diagnostic) runs to ensure correct function and performance.

Replace damaged diverter wheels

The following sections provide details for this topic.

Table 11-38 Warning

Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Moving fan blades

For more safety information, see Safety precautions on page 2

Removal

The following steps provide the complete procedure for this topic.

1. Open the curing module.

2. Using a screwdriver, remove the damaged parts.
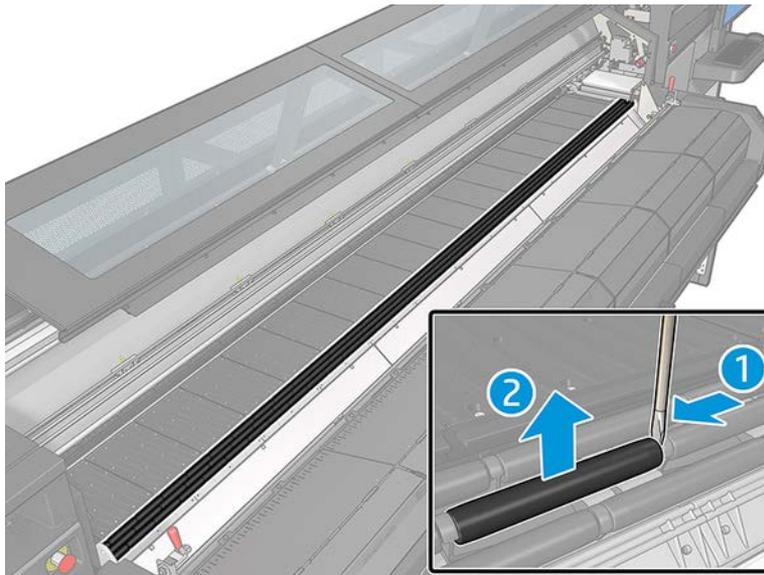
Installation

The following steps provide the complete procedure for this topic.

1. Replace the damaged parts with new ones. Ensure they are aligned with the other wheels.
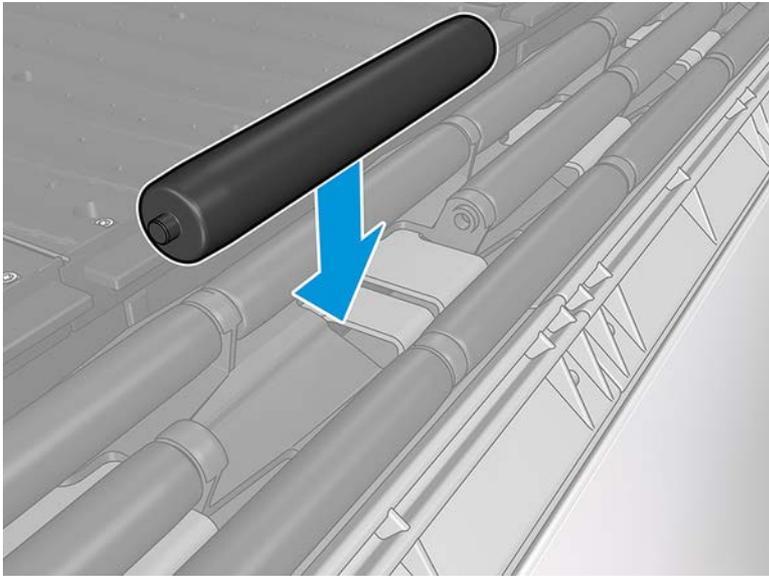
2. Close the curing module.

Replace an intermediate tank

The following steps provide the complete procedure for this topic.

Table 11-39 Warning

Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Moving fan blades

For more safety information, see Safety precautions on page 2

Every 900 liters the intermediate tanks have to be replaced.

1. Ensure that you have the Intermediate Tank Kit, which is included in the Basic Uptime Kit (K4T88-67259).

2. Ensure that the printer is not printing.

3. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

4. Unscrew the pointed screws and remove the cover to access the intermediate tanks.
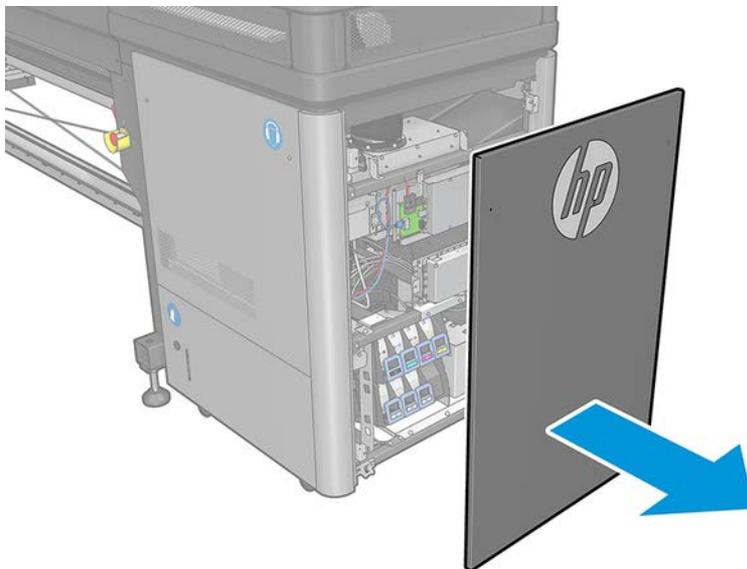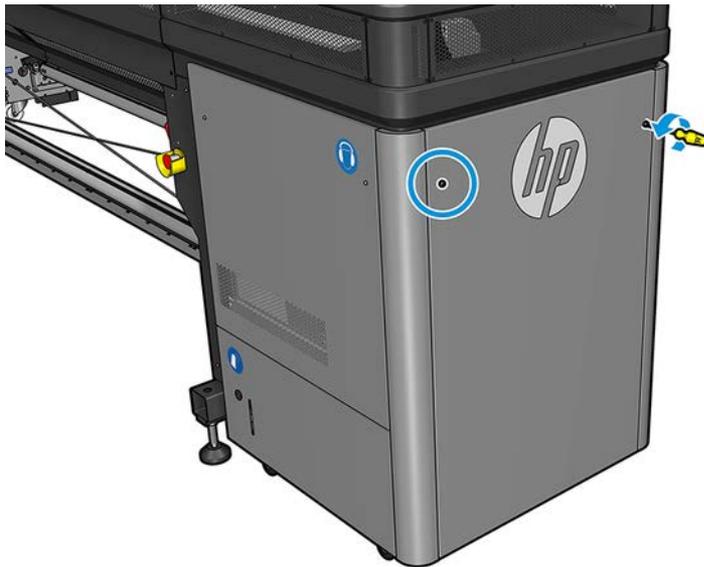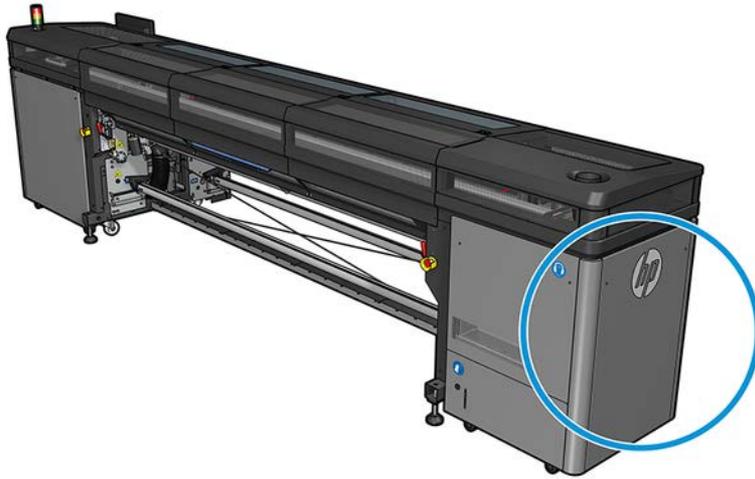
5. Remove all the intermediate tanks.
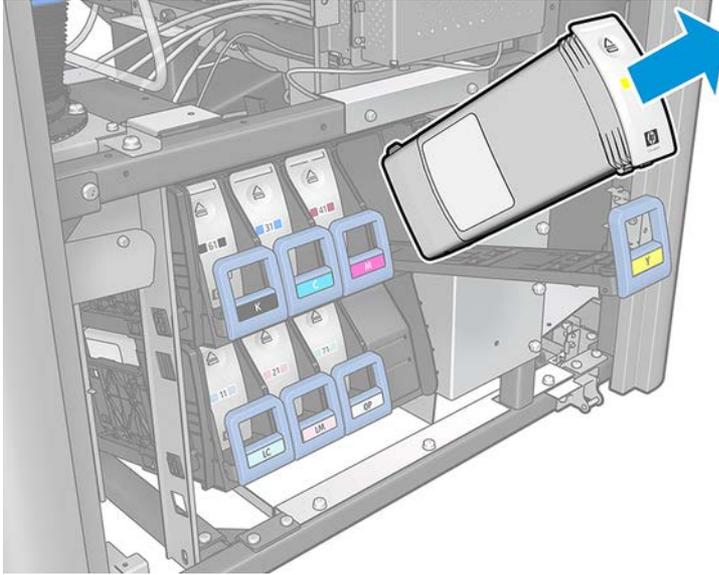
6. Reinstall all the intermediate tanks.

7. Replace the cover and fix with the screws.

8. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

9. Once the printer is on, restart the printer again in diagnostic mode.

10. Click **Next**, when prompted the printer will automatically run the diagnostic test to refill the intermediate tank.

📝 IMPORTANT: Do not use the printer until the diagnostic has finished.

Replace the e-cabinet fan filters

The following steps provide the complete procedure for this topic.

1. E-cabinet fan filters are provided with your printer in the HP Latex 1500 Printer Cleaning Kit: the necessary sets of two filters are provided; only one set is needed for this operation.
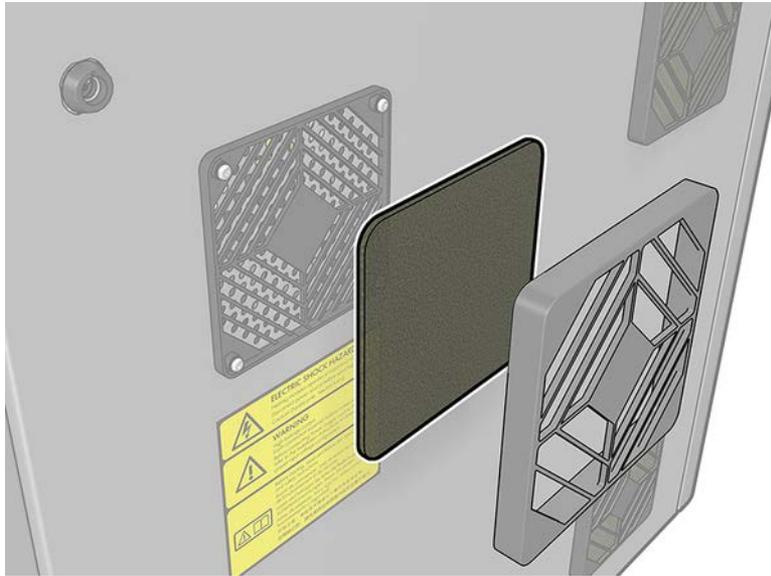
2. Ensure that the printer is not printing.

3. Locate the fan filters on the printer.
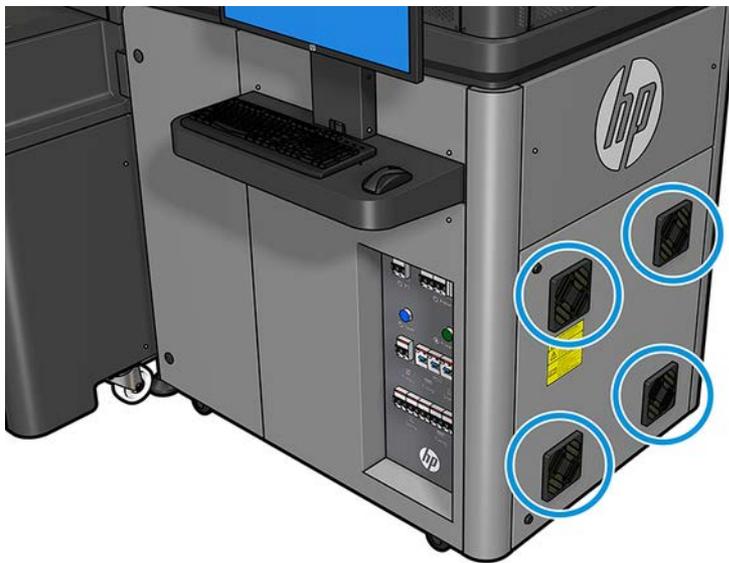
4. Pull off the plastic fan filter cover.
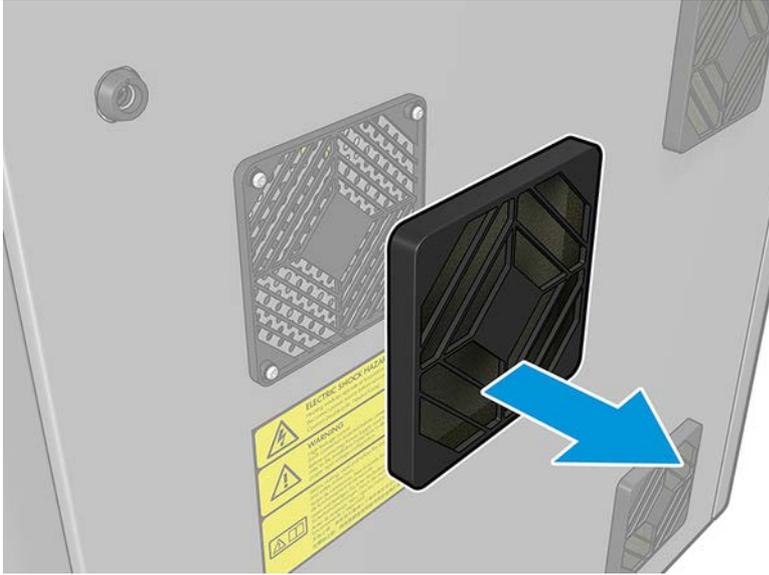
5. For each fan, change the fan filter for the new one provided. Be careful to locate it correctly: it must cover the fan's square surface.
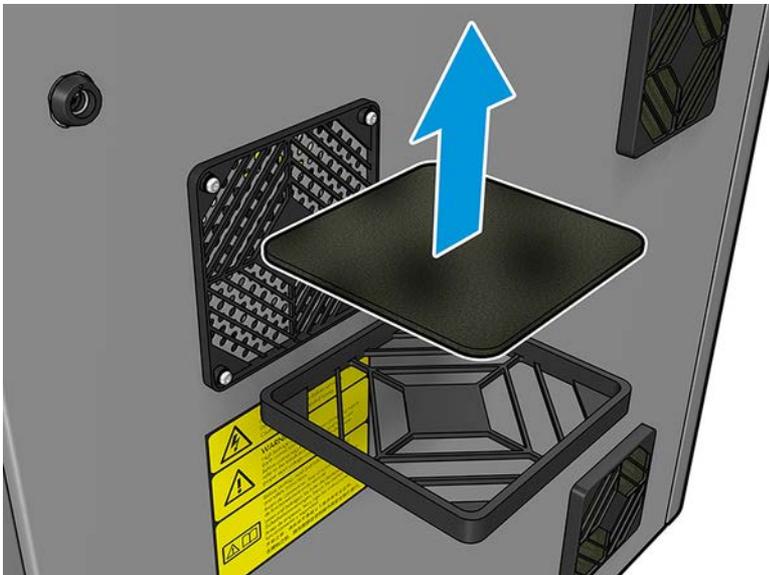
6. Put back the fan cover.
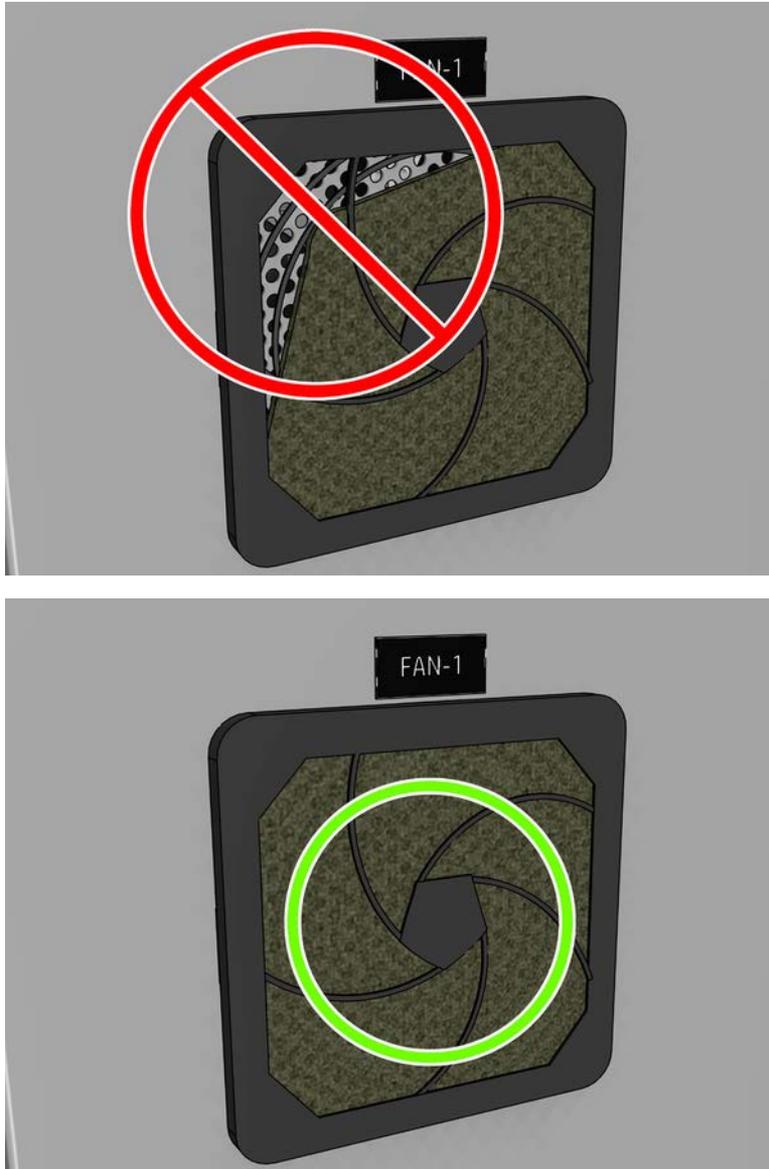
Replace the E-box fan filter

The e-box fan filter is provided with your printer in the HP Latex 1500 Printer Cleaning Kit.

Table 11-40 Warning

Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Moving fan blades

For more safety information, see Safety precautions on page 2

1. Turn off the printer and the power-enable switch.

2. Locate the rear right panel assembly.

3. Remove the two pointed T-20 screws that attach the rear right panel assembly.

4. Remove the rear right panel assembly.

5. Remove the two T-20 screws from the e-box support and pull it out carefully.
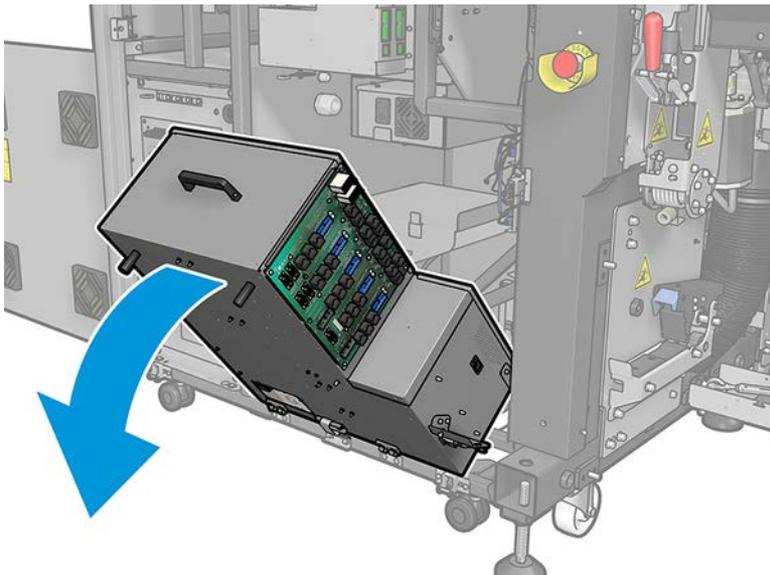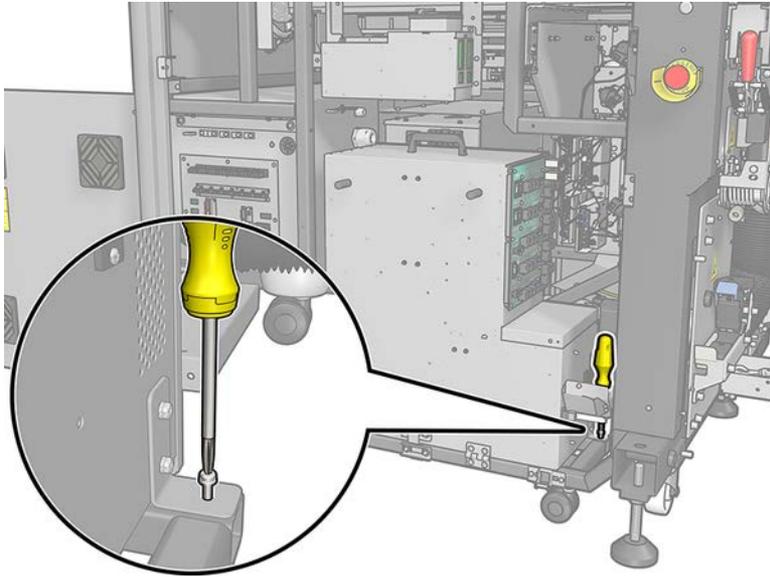
6. Pull off the plastic fan filter cover.
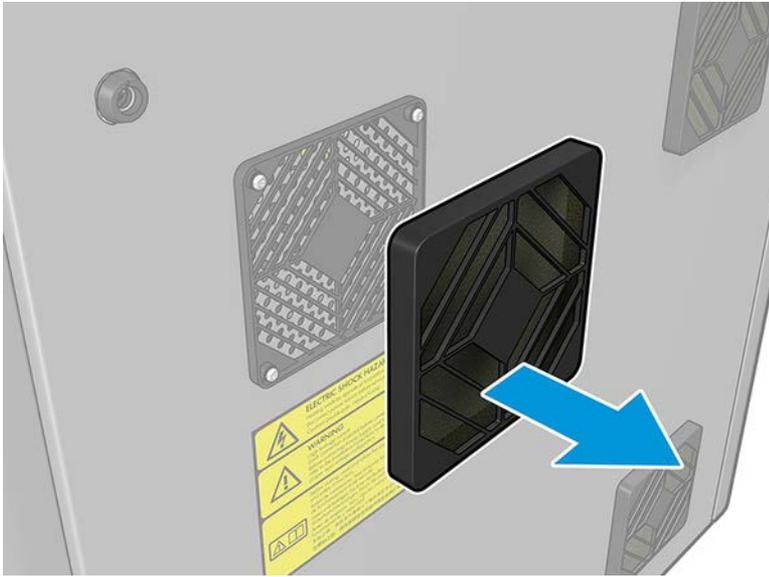
7. Change the fan filter for the new one provided. Be careful to locate it correctly: it must cover the fan's square surface.
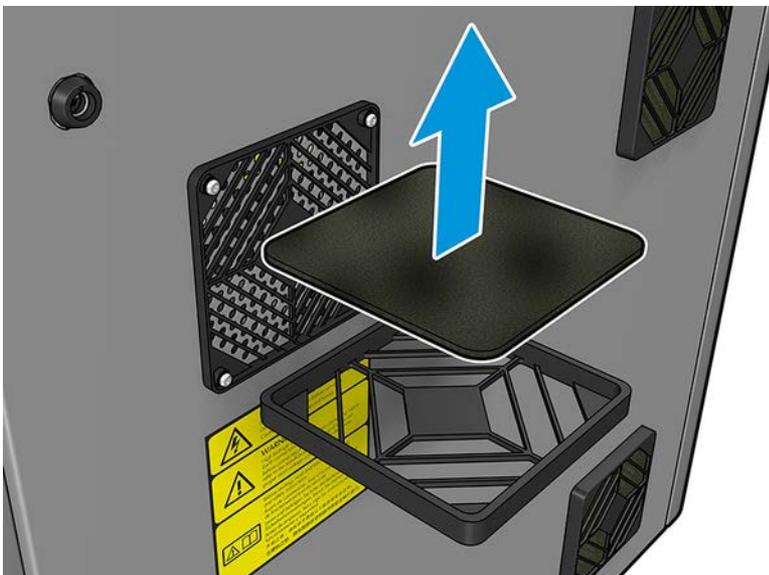
8. Put back the fan cover.
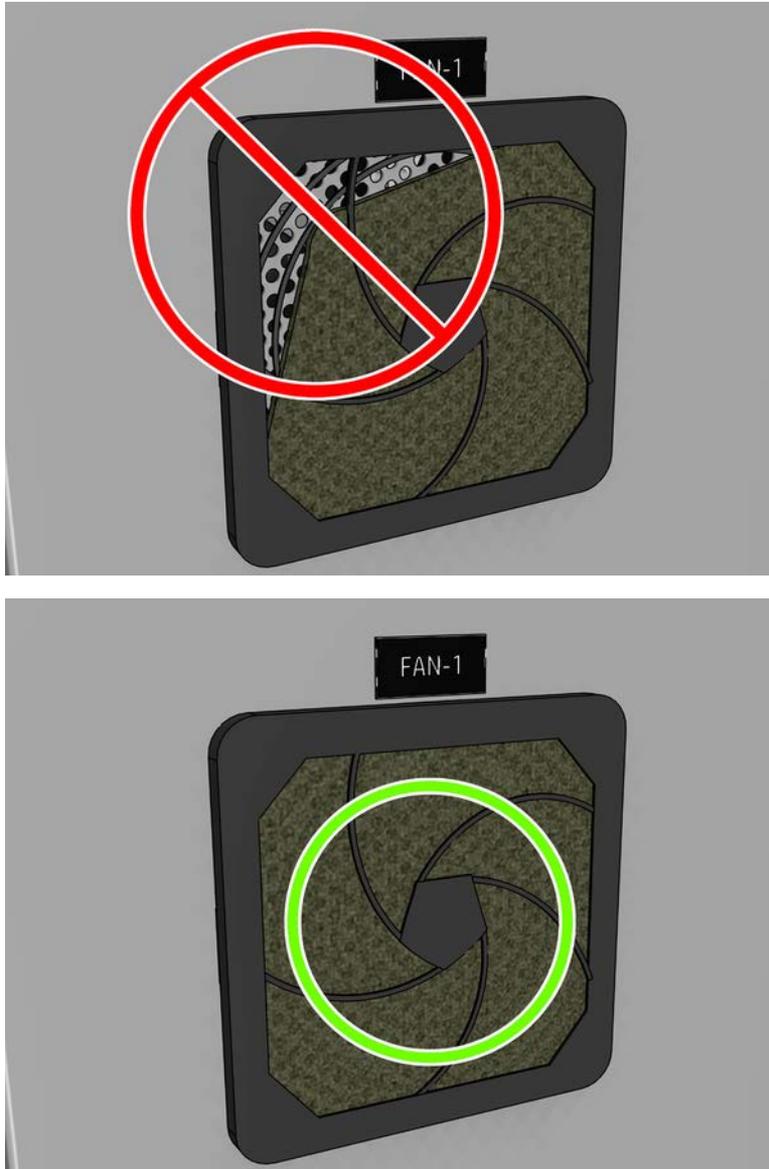
Replace dryer fan filter

Before any cleaning maintenance, ensure that you have turned the printer off, and be careful to follow the appropriate safety precautions.

Table 11-41 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

⚠ **CAUTION:** Be careful not to damage your hands.

CAUTION: Be careful not to transfer dirt to other printer parts.

1. Turn off the printer.

2. Open the dryer cover.

3. Remove filter clips with care.

4. Manually clean the filters with a normal vacuum cleaner.

When required

Before any cleaning maintenance, ensure that you have turned the printer off, and be careful to follow the appropriate safety precautions.

Table 11-42 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

Introduction

Apart from the periodic cycle and ink consumption based maintenance procedures, there are other maintenance tasks that have to be carried out when required:

- Printer safety check on page 305

- Check and clean the printheads on page 306

- Clean the scan-axis beam on page 307

- Clean the printhead contacts on page 310

- Clean the carriage rails manually on page 314

- Check and clean dirt from scan axis and mechanical transmissions on page 317

- Replace a pinchwheel submodule on page 318

- Replace a primer and latch on page 321

- Replace the aerosol fan module (expert users only) on page 324

- Replace a service station cap on page 330

- Replace an intermediate tank (trained users only) on page 334

- Replace an e-cabinet fuse on page 337

- Replace a spindle valve on page 340

- Replace the pinch clamp on page 341

- Replace the rocker pads on page 343

- Replace the curing module side rubbers on page 290

- Replace spindle gear and end cap on page 343

- Replace the in-line slitter blades on page 351

Printer safety check

Check the status of the alarms in the IPS. Check that the beacon works and there are no critical errors. Check the status of door and covers, make sure they are all closed before you start to print. Make sure the carriage beam is in the right position, and the loading table well closed.

Table 11-43 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

1. Check that all doors and covers are closed before you start to print.

2. Check that the beacon is indicating **Ready**.

3. Check that the carriage beam is in the right position for the task you are going to perform, see Set the carriage beam position on page 86 for more information. Make sure there is nothing left on the printzone that should not be there.

4. Check that the Internal Print Server is indicating **Ready** with no alerts or maintenance required. Take the corresponding actions if required.

5. Check the Internal Print Server that there are no messages referring to supplies.

6. Check the Internal Print Server that there are no messages referring to substrate load.

7. Check that the substrate is loaded correctly, the curing module and the loading table are closed and that the substrate edge holders are in place.

8. Check that the cartridges and the waste bottle are correct, empty the waste bottle if needed.

9. Check that the printhead cleaning waste bottle is correct, empty if needed.

10. Check that e-Cabinet filters are clean and the e-Cabinet is closed.

Check and clean the printheads

The following steps provide the complete procedure for this topic.

Table 11-44 **Warning**

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

1. Go to the Internal Print Server and select **Printer** > **Printhead cleaning**.
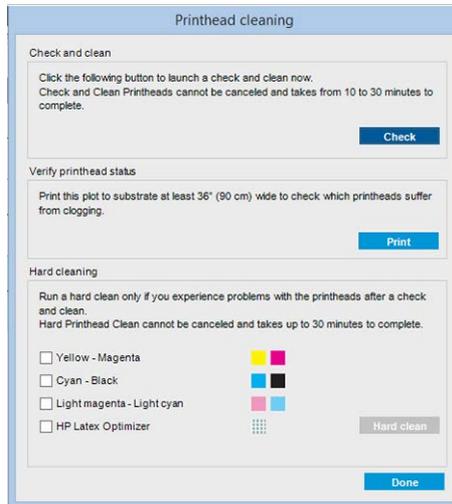
2. Press the **Check** button to perform routine cleaning automatically.

Clean the scan-axis beam

The following steps provide the complete procedure for this topic.

Table 11-45 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

1. Ensure that you have a vacuum cleaner and an absorbent all-purpose cloth (not provided).

2. Ensure that the printer is not printing.

3. Ensure that all windows, covers, and doors are closed and remain in their original position.

4. Move the carriage to its leftmost position.

5. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

6. Open the window.
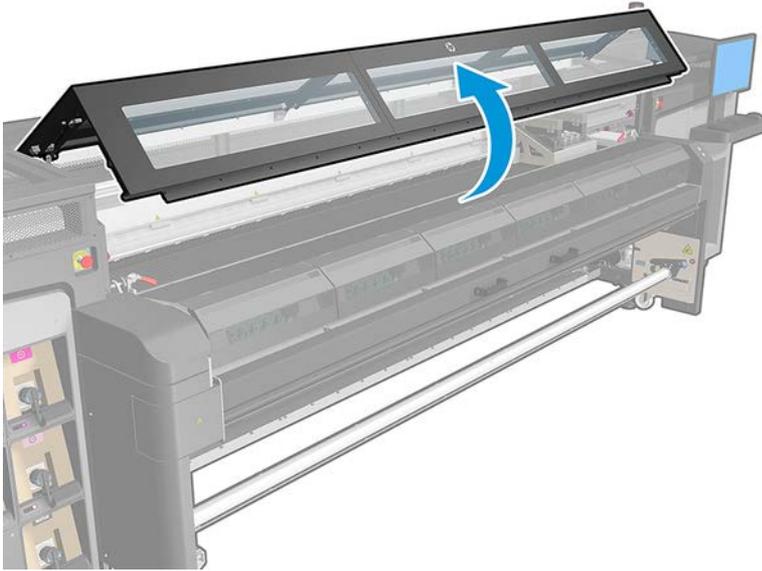
7. Move the carriage to the IDS side of the printer.
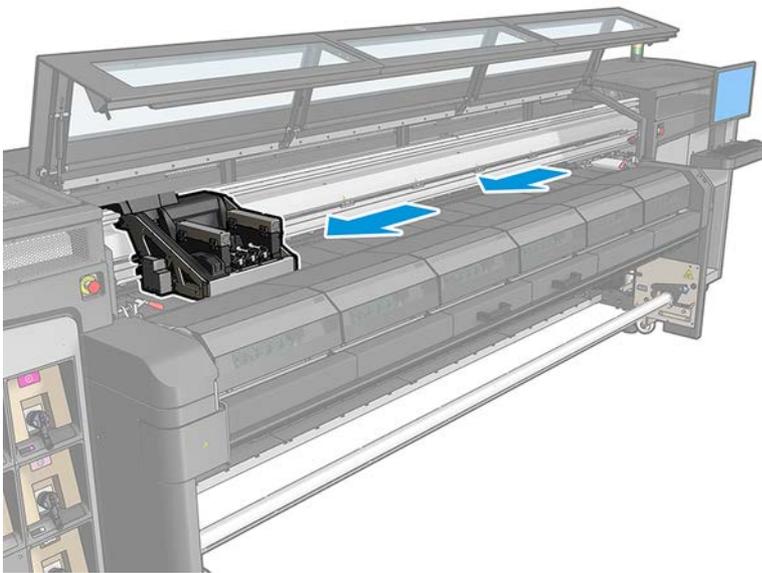
8. Remove the pointed screws indicated below and remove the covers.
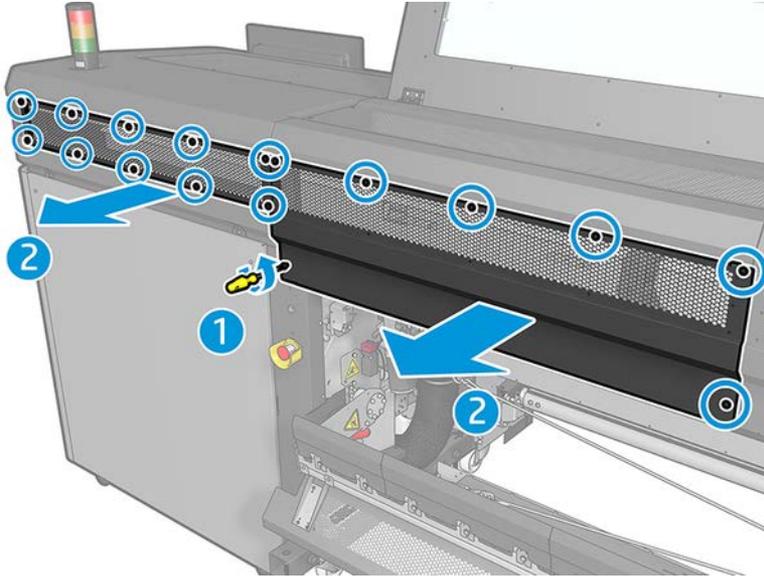
9. Clean the dust from the rear scan-axis beam, using a vacuum cleaner.
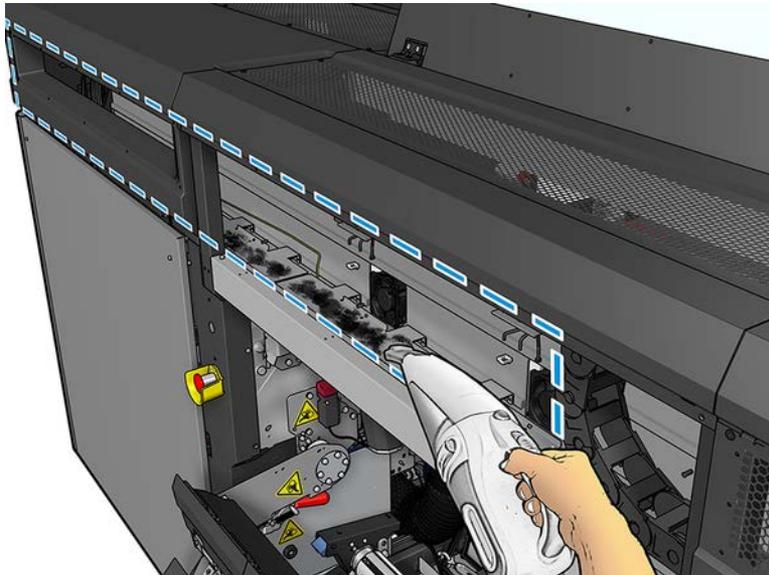
▲   Alternatively, use an absorbent cloth, moistened with deionized water, to wipe off the dust. Ensure that the dust adheres to the cloth and does not fall into the printer.
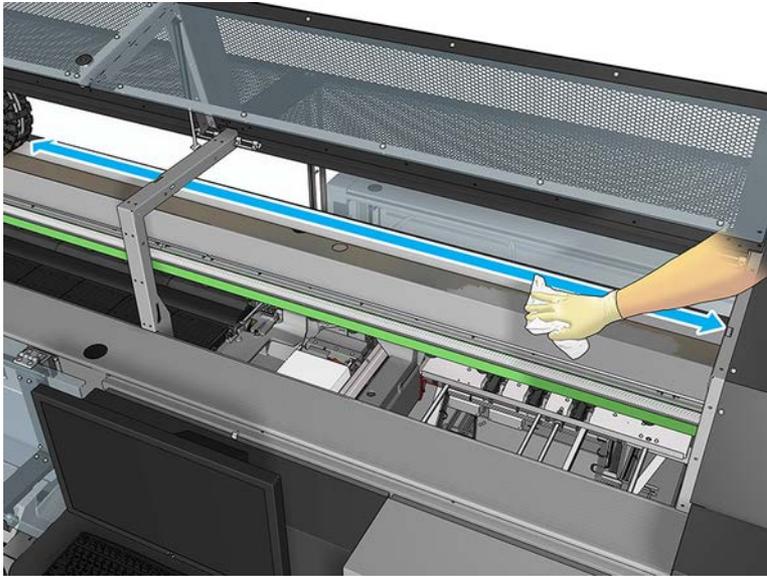
10. Use the absorbent cloth, moistened with deionized water, to wipe off any other dirt stuck to the scan-axis beam.

11. Lower the transparent cover and screw it into place.

12. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

Clean the printhead contacts

During the installation of the printer, the designated personnel received training for safe operation and maintenance of the printer. It is not allowed to use the printer without this training.

⚠ **WARNING!**   This operation is limited to trained personnel only!

⚠ **WARNING!**   Read and follow the safety precautions section to make sure you use the equipment safely: see Safety precautions on page 2. You are expected to have the appropriate technical training and experience necessary to be aware of hazards to which you may be exposed in performing a task, and to take appropriate measures to minimize the risks to yourself and to others.

Table 11-46 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard
⚠	⚠	⚠	⚠	⚠

For more safety information, see Safety precautions on page 2

1. Ensure that you have the HP Latex 1500 Printer Cleaning Kit, which is provided with your printer.

2. Ensure that the printer is not printing.

3. Identify which printheads need cleaning, usually after the Internal Print Server recommends replacing or reseating them.

4. Ensure that all windows, covers, and doors are closed and remain in their original position.

5. Move the printhead carriage to the service position.

6. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

7. Stand on the folding steps and open the window.
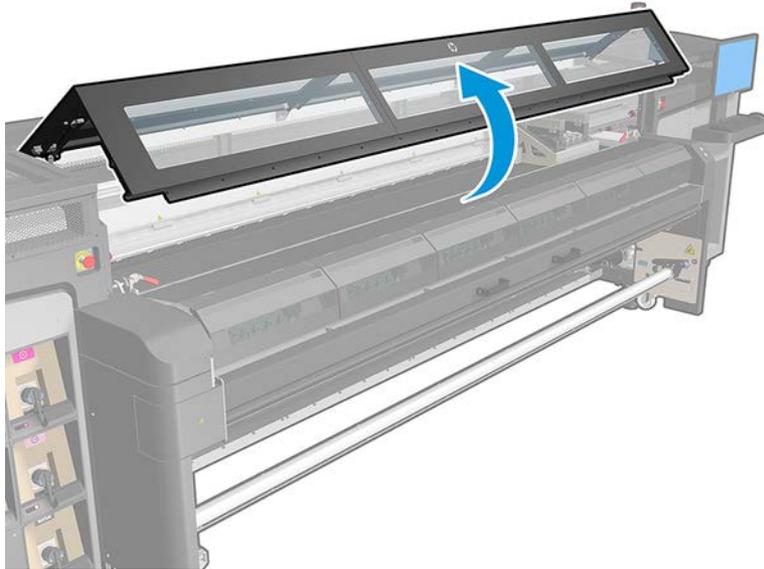
Clean the printhead contacts (in the carriage slot).

1. Carefully remove the printheads that may need cleaning from the carriage and protect them using their orange sealing caps.

⚠ **CAUTION:** **Ensure that each printhead uses its own color cap.** This is especially important with the Optimizer printhead caps as there is a high risk of nozzle damage if they are used with the color printheads and vice-versa. The optimizer caps are labeled as shown below.

☼ **TIP:** Remember which printhead came from which slot; the printer will report an error if you later replace a printhead in the wrong slot.

2. Illuminate the printhead slot in the carriage and check the electrical connections to the printhead for dirt.

☼ **TIP:** Placing some white paper behind the electrical connections will improve contrast and may help you to check for dirt.

3. Clean the dirty connections gently but thoroughly using a lint-free cloth. A piece of paper or cloth can be used to collect the dirt.

📝 **IMPORTANT:** Clean in a vertical movement, horizontal movement could damage the pins.
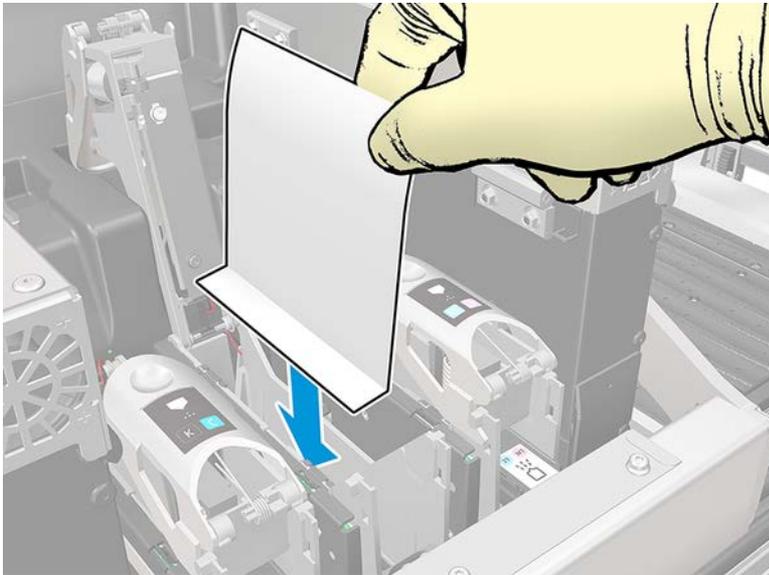
4. Remove the piece of paper or cloth to prevent the dirt from spreading.
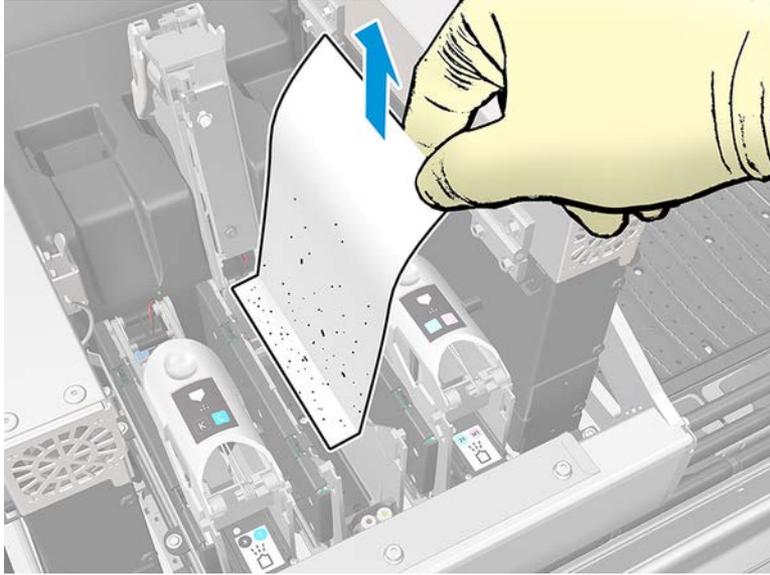
5. Illuminate the printhead slot again to check that the electrical connections are now clean and undamaged.

Clean the printhead contacts (on the printhead).

1. Use an appropriate wipe that doesn't lose fibers to carefully clean the EE connectors.

    ⚠ **WARNING!**   Only apply vertical movements because the EE connectors can be damaged if cleaned in other directions.

2. Take special care to clean the bottom part of the printhead pocket

3. Remove the printhead cap and locate the contacts.
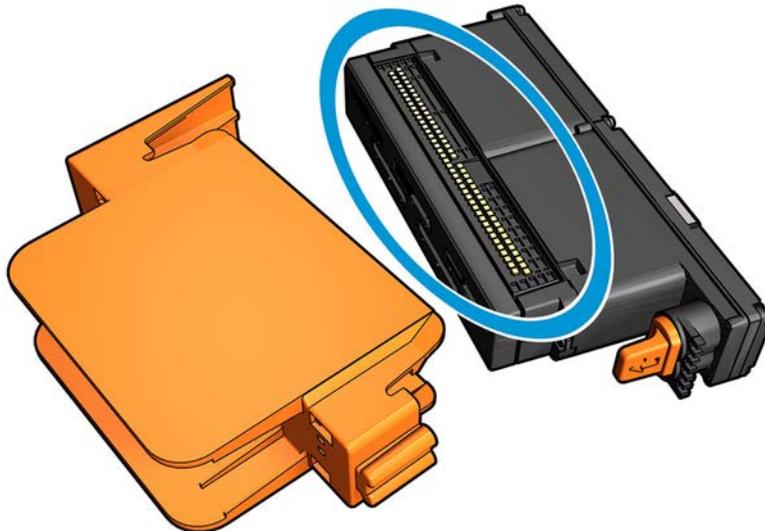
4. Clean the contacts.
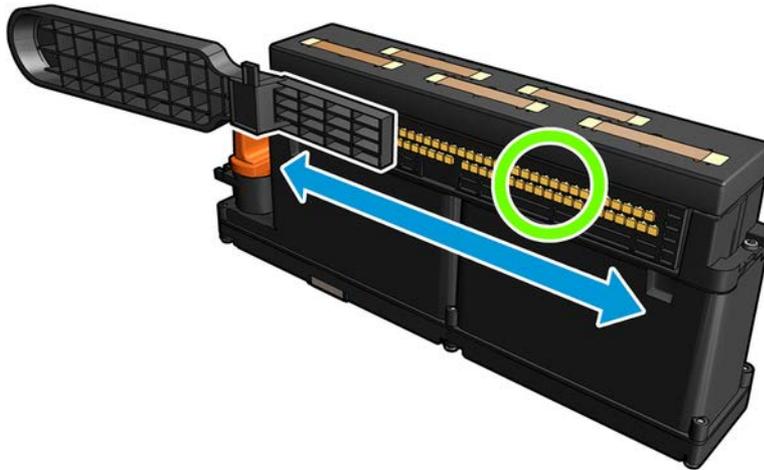
> ⚠ **CAUTION:** Do **not** use the printhead interconnect wiper to clean the nozzles!
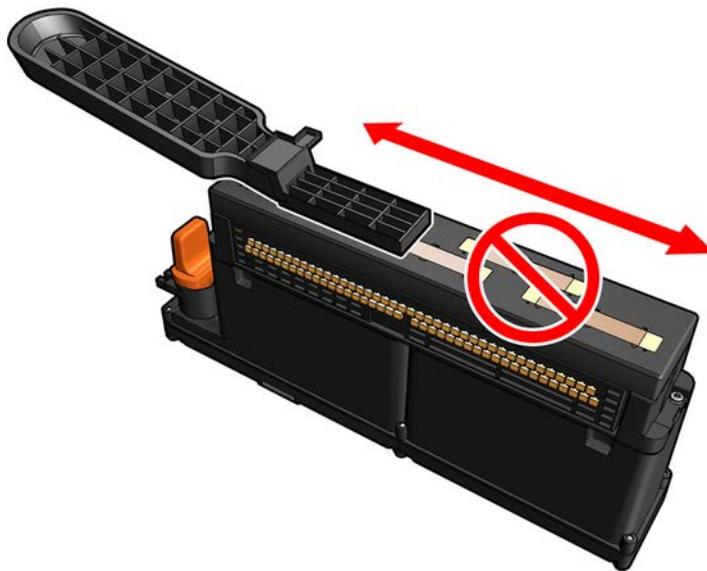
Finish offcleaning the printhead contacts.

1. Wait until the contacts are dry.

2. Put back the printheads, each in the same slot from which it came.

3. Close the window.

4. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

Clean the carriage rails manually

The following steps provide the complete procedure for this topic.

Table 11-47 Warning

| Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

NOTE: Perform this procedure only if the automatic cleaning procedure fails.

1. Ensure that the printer is not printing.

2. You are recommended to wear gloves.

3. Ensure that all windows, covers, and doors are closed and remain in their original position.

4. Move the carriage beam to its highest position.

5. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

6. Open the front door.
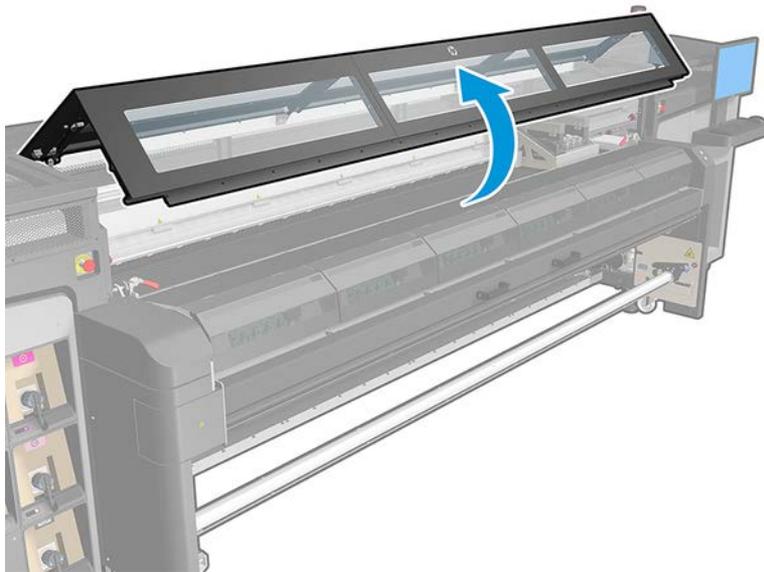
7. Standing at the front of the printer, clean the front rail using a lint-free cloth dampened with distilled water, and if needed isopropyl alcohol.

📝 NOTE: If you are in an area (such as California) that regulates VOC cleaning and maintenance fluids, instead of isopropyl alcohol use a VOC-certified cleaner such as a properly diluted Simple Green All-Purpose Cleaner.
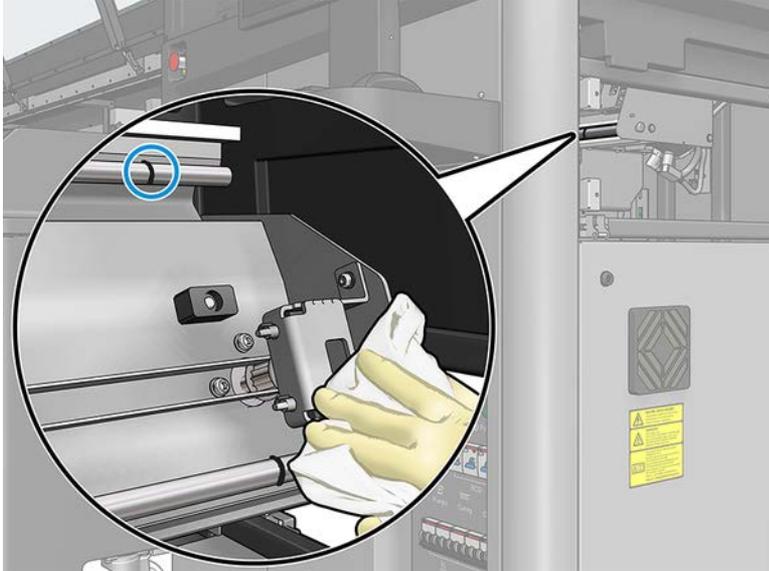
8. Close the front door.

9. Go to the rear of the printer and open the loading table.

10. Standing at the rear of the printer, clean the rear rail in the same way. You can access the rail from below, through the gap between the platen and the beam.
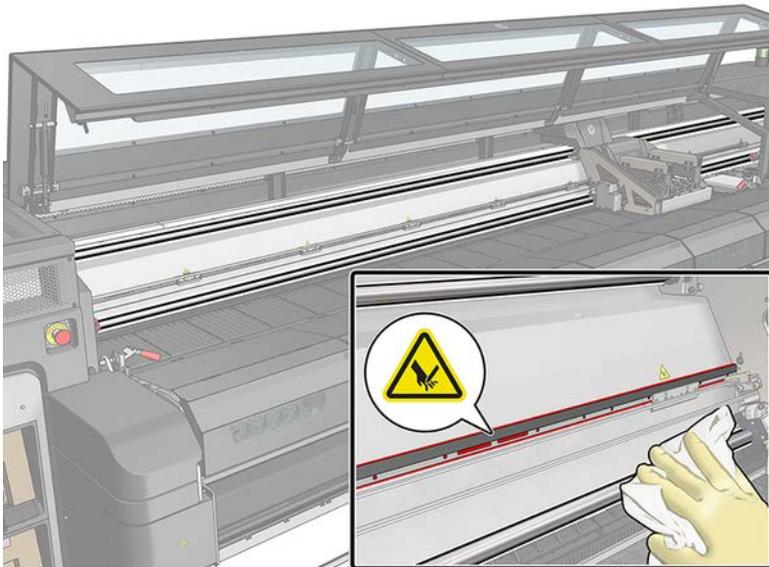
⚠ CAUTION: Be careful not to stain the encoder strip. Keep the cloth well away from the encoder housing.

11. Ensure that the cleaned parts are completely dry and all vapor has completely evaporated.

12. Close the loading table.

13. Ensure that all windows, covers, and doors are closed and remain in their original position.

14. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

Check and clean dirt from scan axis and mechanical transmissions

The following steps provide the complete procedure for this topic.

Table 11-48 Warning

Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard	Moving fan blades

For more safety information, see Safety precautions on page 2

1. Switch off the printer.

2. Open the front window.

3. Clean the scan axis rails with a wipe. Take special care to clean the sides.
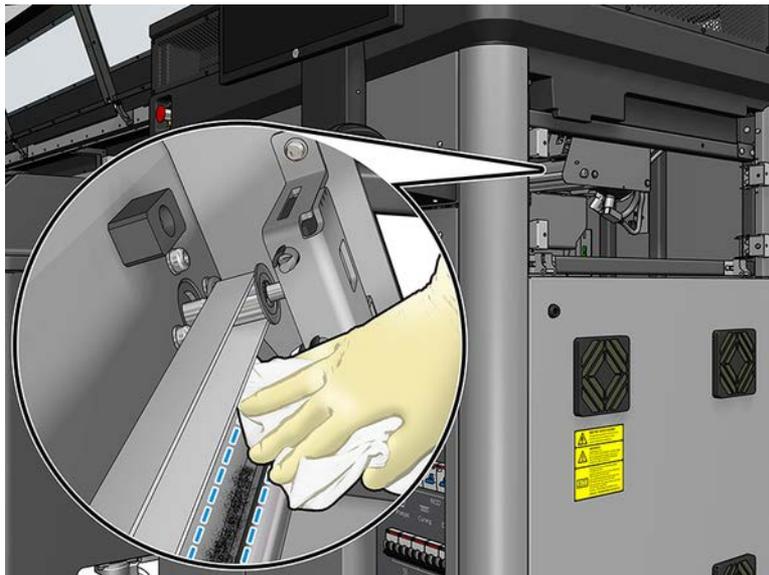
4. Lubricate the 2 rods with a few drops of oil.
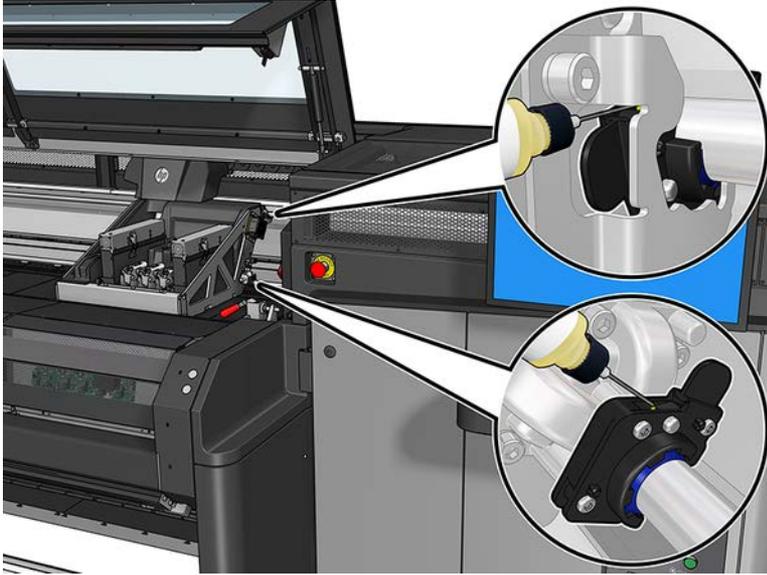
5. Run the scan axis length diagnostic test.

Replace a pinchwheel submodule

Ensure that you have the Pinchwheel Assembly (K4T88-67088), which is included in the Basic Uptime Kit (D4J02A).

1. Open the loading table.

2. Locate the pinchwheeel submodule that needs replacement.

3. Remove the screws shown below.
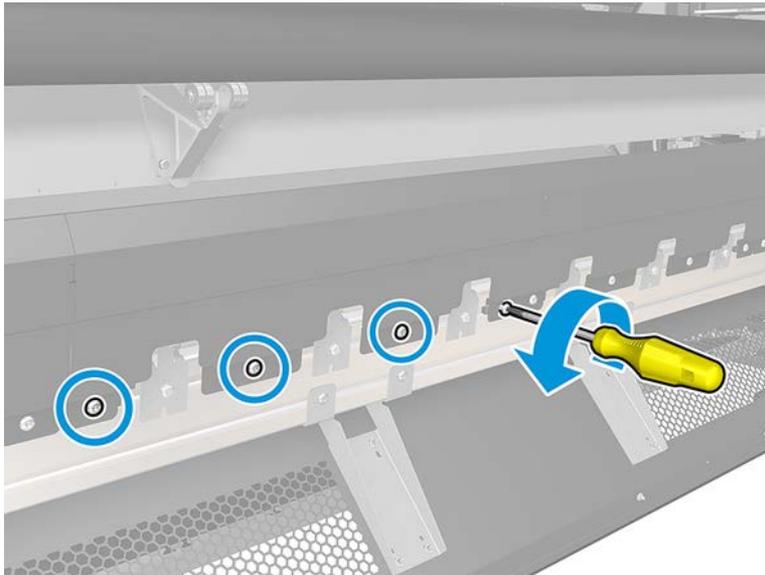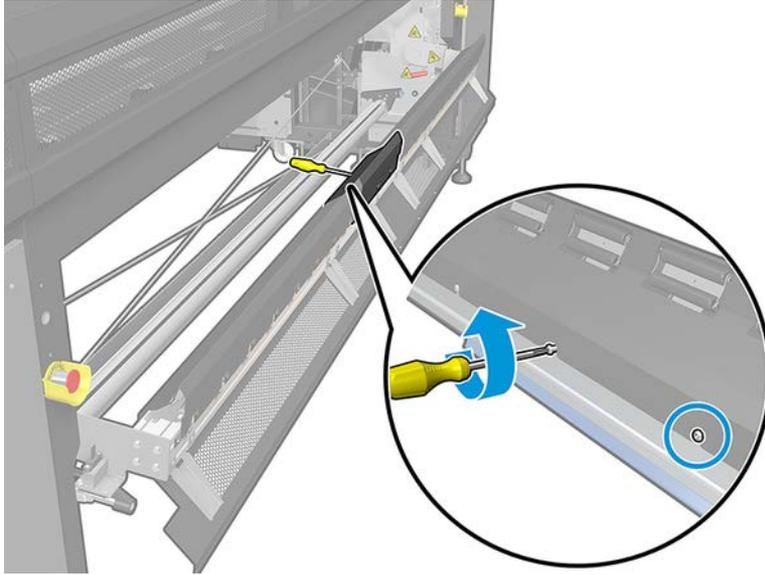
4. Remove the pinchwheel cover.
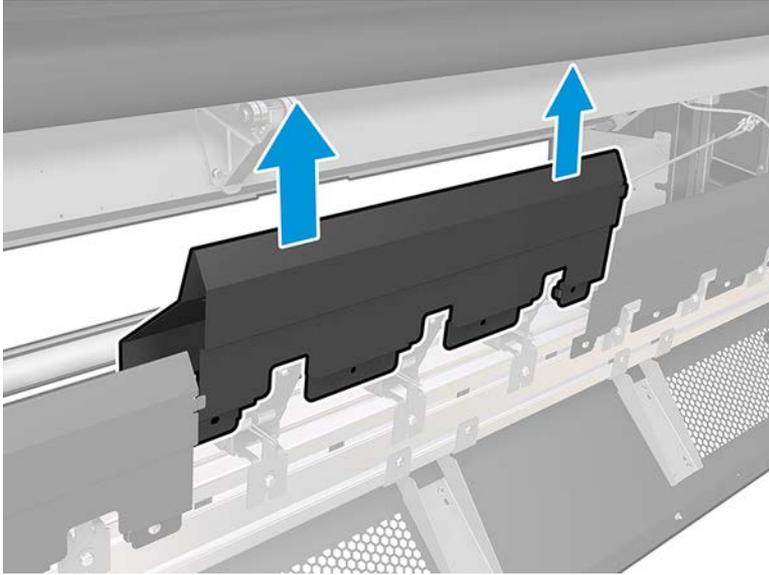
5. Remove the screws that attach the pinchwheel submodule.
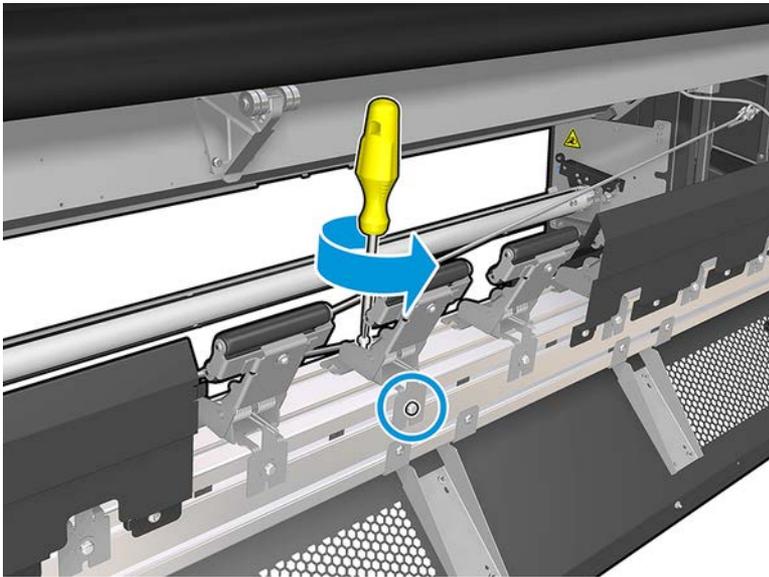
6. Remove the broken submodule.
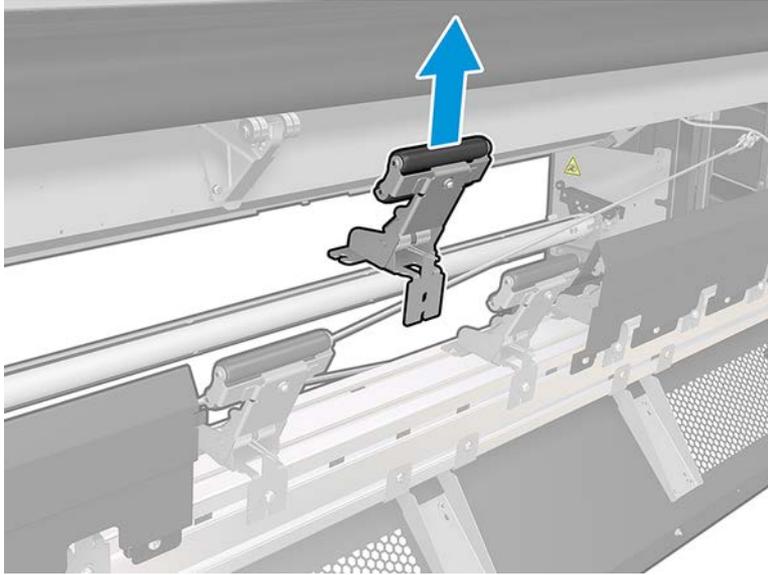
7. Place the new submodule and attach the screws.

8. Place the cover and insert the screws.

9. Close the loading table.

Replace a primer and latch

The following steps provide the complete procedure for this topic.

Table 11-49 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

1. Ensure that you have the Primer and Latch Kit (K4T88-67013), which is included in the Basic Uptime Kit (D4J02A).

2. Ensure that the printer is not printing.

3. Ensure that all windows, covers, and doors are closed and remain in their original position.

4. Move the carriage to the service position.

5. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

6. Open the window.
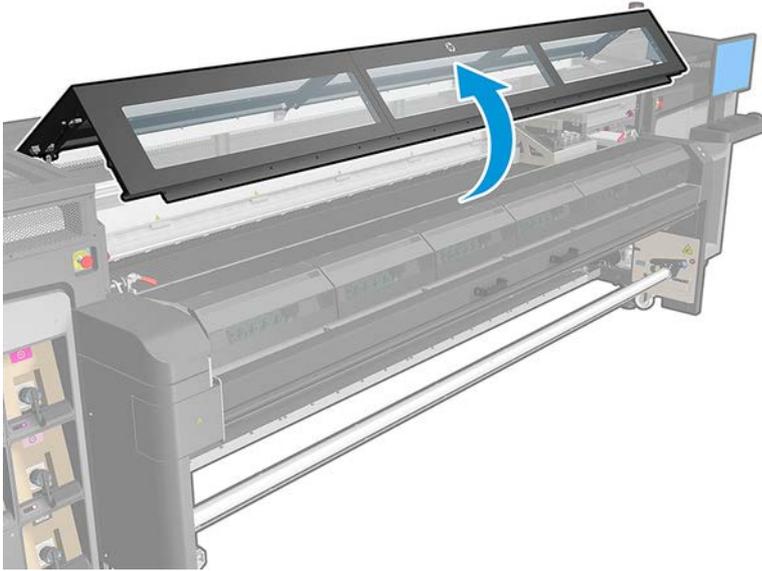
7. Disconnect both cables. You have to disconnect a white connector that you can find at the back of the printhead whose primer is to be replaced.
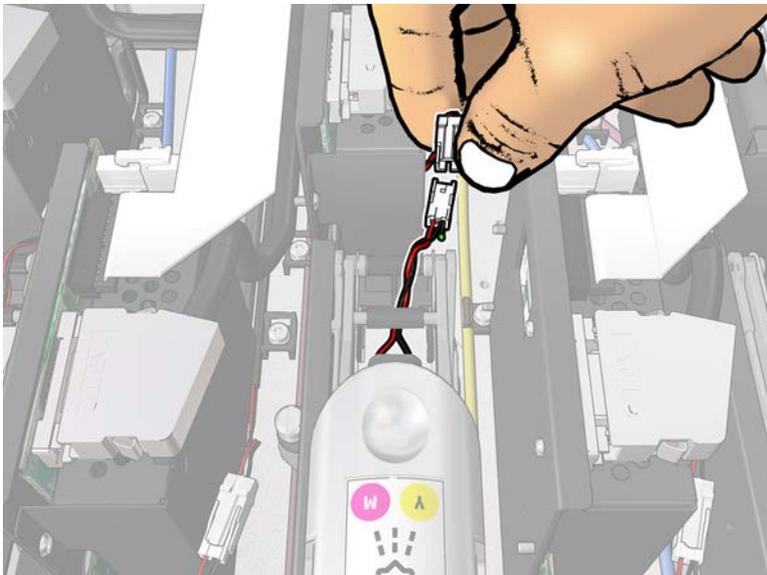
8. Open the latch. It is not usually necessary to remove the printhead.

9. Remove the latch of the printhead whose primer is to be replaced. To remove it, you have to push open the printhead pocket wall to the right while pulling the latch up.
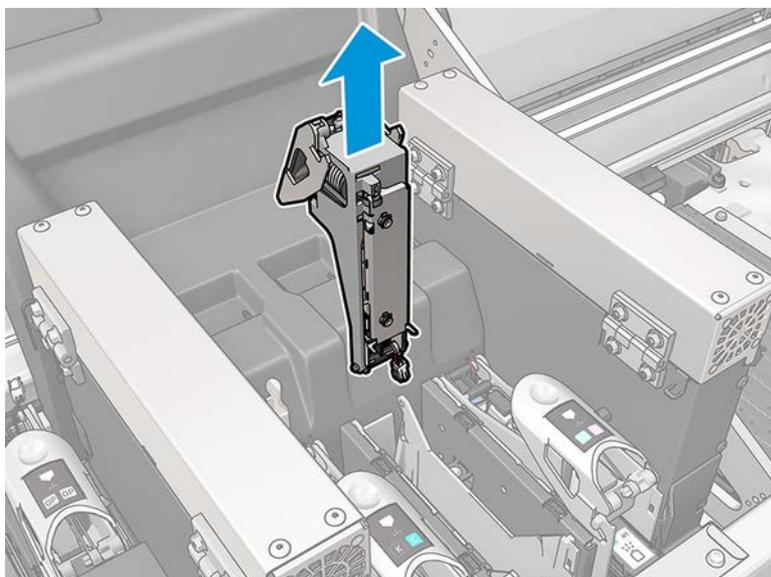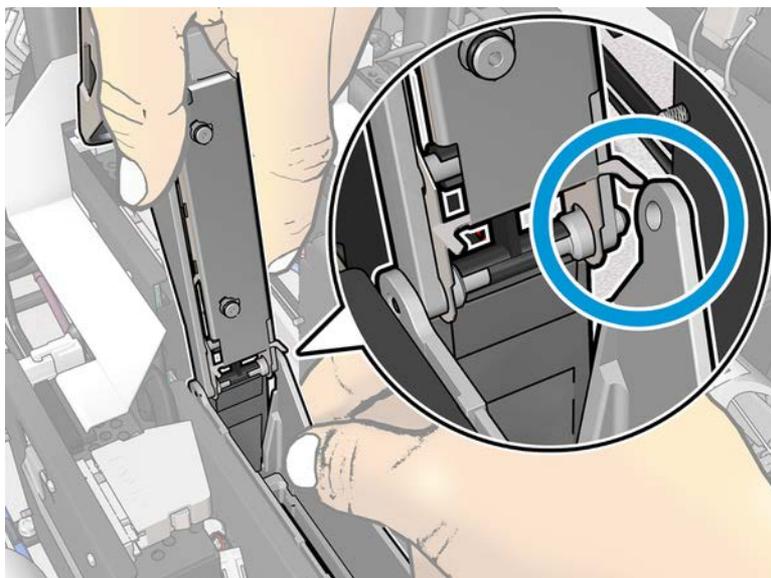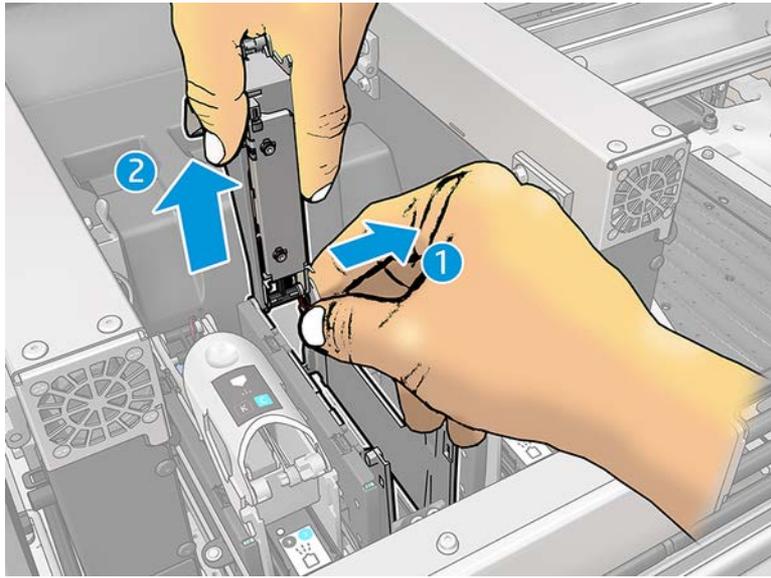
10. Stick the corresponding printhead color label on the latch. Be careful with the orientation.

11. Install the new latch with primer.

12. Replace the printhead, if it was removed, and close the latch.

13. Close the window.

14. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

15. Run a diagnostic test to check that the new primer is working correctly, and calibrate it.

16. Dispose of the old primer.

# Replace the aerosol fan module (expert users only)

The following steps provide the complete procedure for this topic.

Table 11-50 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part

For more safety information, see Safety precautions on page 2

1. Ensure that you have the Aerosol Fan Module (K4T88-67003), which is included in the Basic Uptime Kit.

2. Ensure that the printer is not printing.

3. Ensure that all windows, covers, and doors are closed and remain in their original position.

4. Move the carriage to the service position.

5. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

6. Open the window.
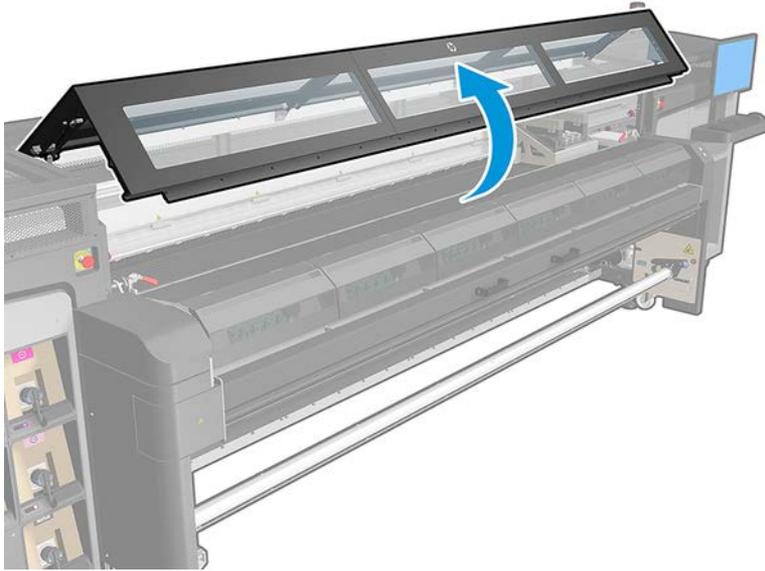
7. Open the aerosol fan cover, as if you were going to replace the filters. See .
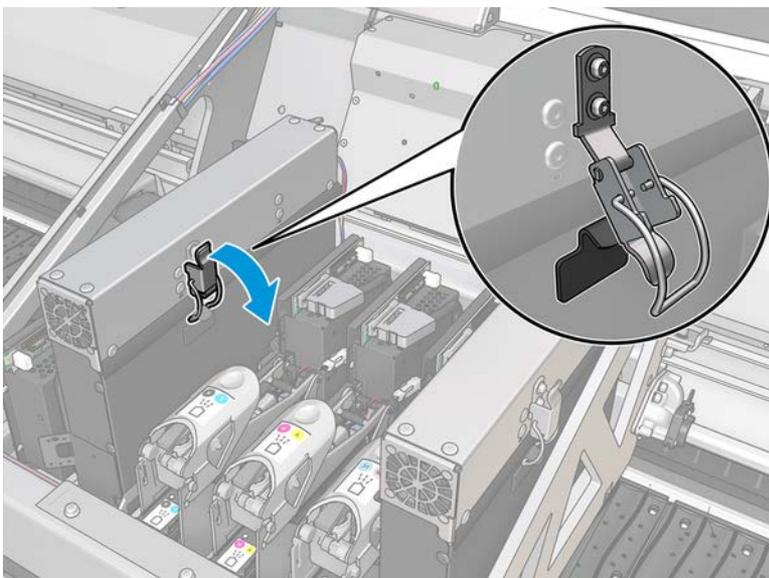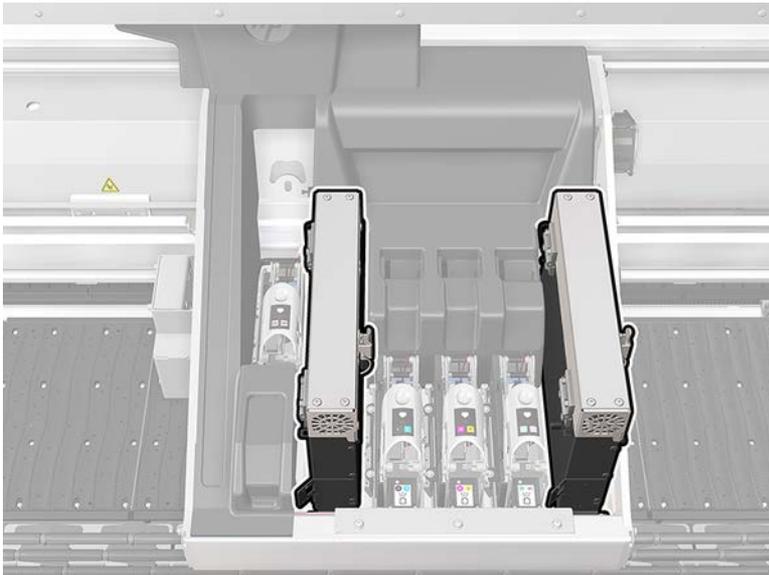
8. Remove the two screws that attach the cover, and remove the cover.
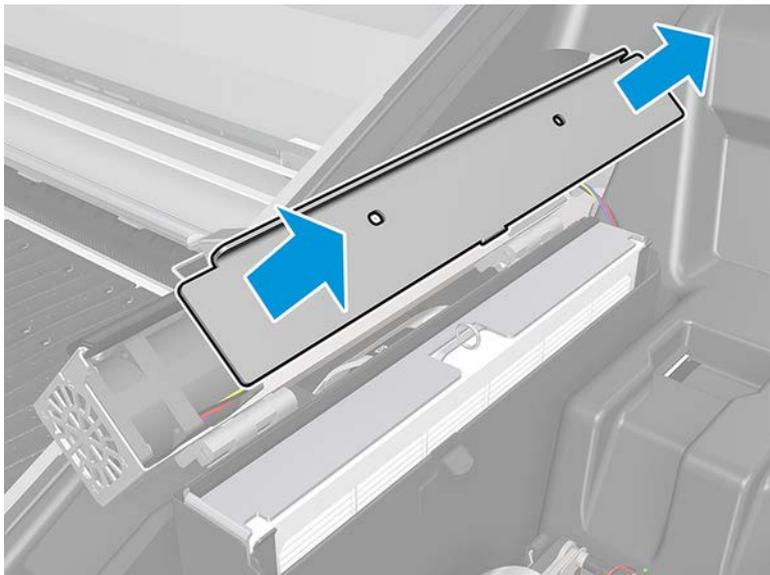
9. Disconnect the aerosol fan cable connector.

10. Remove the main cable harness from the cover slot.
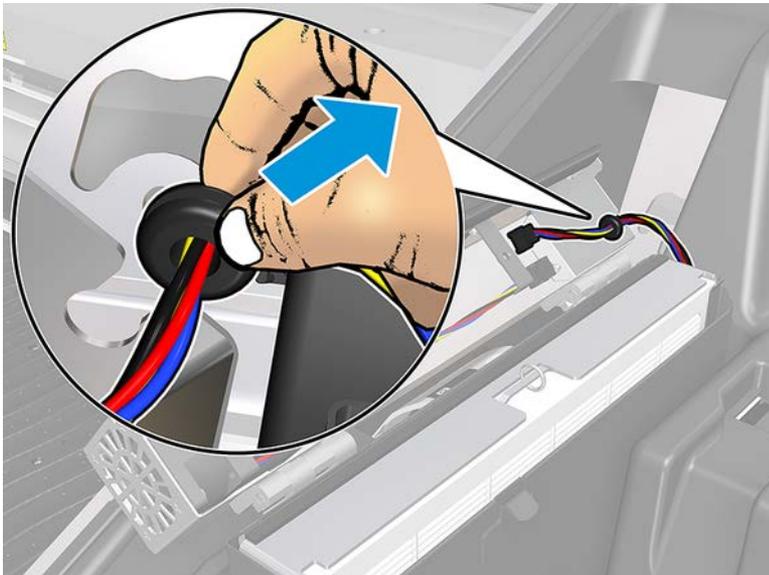
11. Close the cover.
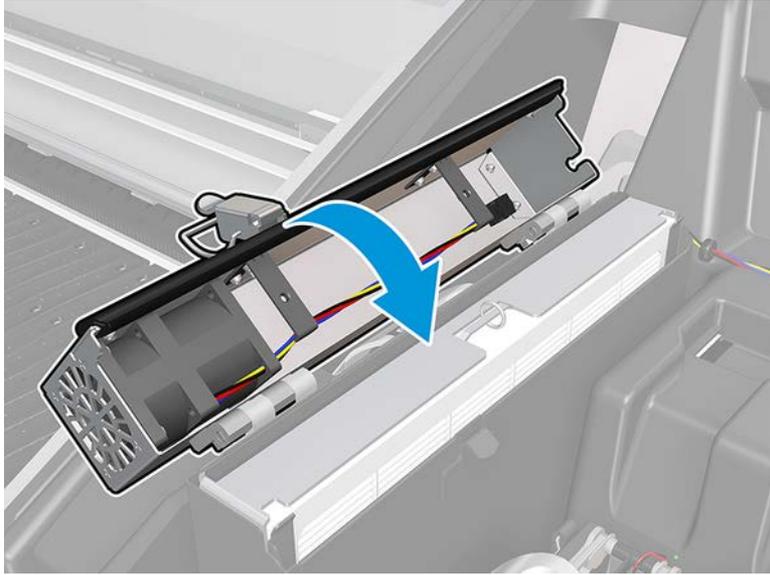
12. Remove the nuts from the hinges. You must hold the nuts to prevent them from falling and get lost inside the carriage.
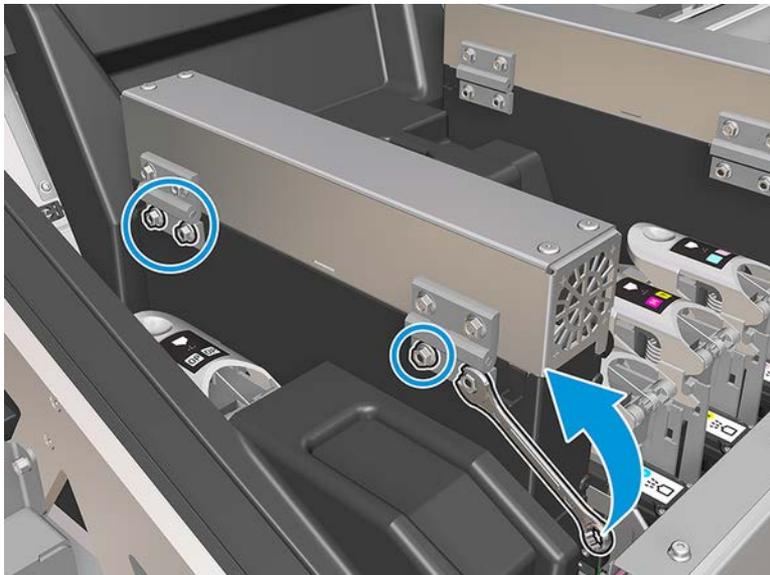
13. Remove the aerosol fan module and insert the new one.
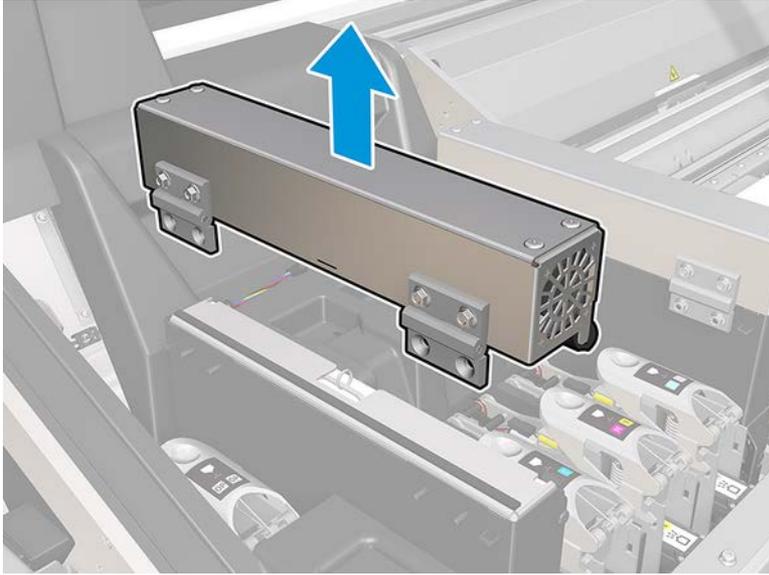
14. Put the hinges back in place, put back the nuts and tighten them.

15. Open the new aerosol fan cover.

16. Remove the two screws that attach the new fan cover, and remove the cover.

17. Connect the aerosol fan cable connectors.

📝 IMPORTANT: Make sure the fan cable is correctly connected.

18. Route the main cable harness and insert the grommet in the cover slot. Make sure the cables are not tight inside the cover.

19. Install the aerosol fan cover and attach the two screws.

20. Close the cover.

21. Close the window.

⚠ CAUTION: Do not leave anything in the way of the carriage.

22. Turn on the printer in the correct way for maintenance operations: see .

23. Run a diagnostic test to check that the aerosol fans are working correctly.

24. Dispose of the old aerosol module fans.

Replace a service station cap

The following steps provide the complete procedure for this topic.

Table 11-51 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

1. Ensure that you have the Service Station Caps Kit (K4T88-67073), which is included in the Basic Uptime Kit (D4J02A).

2. Ensure that the printer is not printing.

3. Ensure that all windows, covers, and doors are closed and remain in their original position.

4. Move the carriage to the service position.

5. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

6. Unscrew and remove the cover as shown below, to access the capping station.
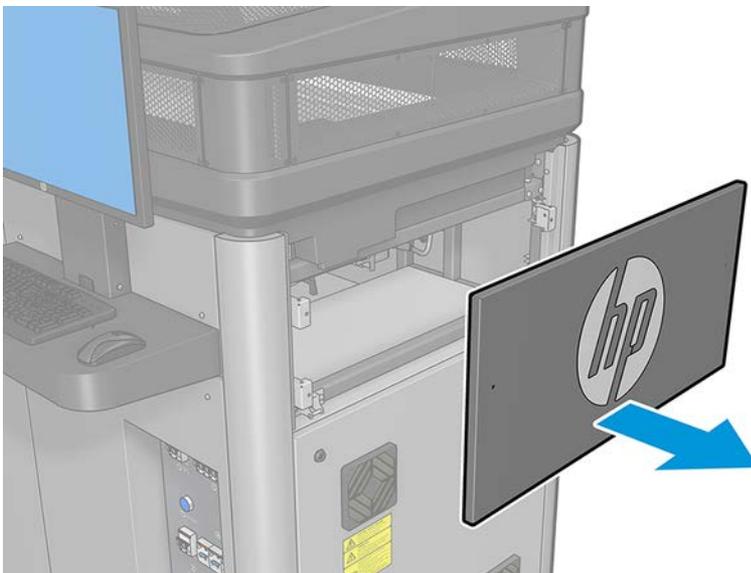
7. Remove the service station cap by pressing on the four lateral fixings (two each side), and pulling up.
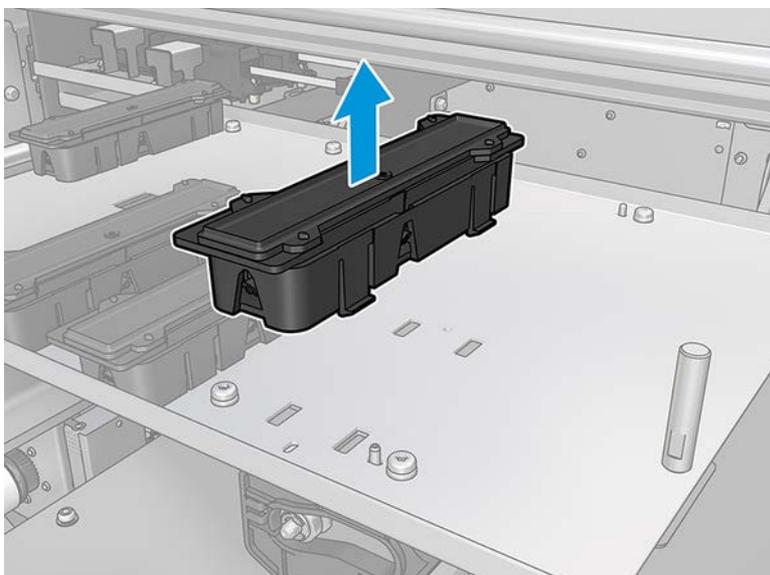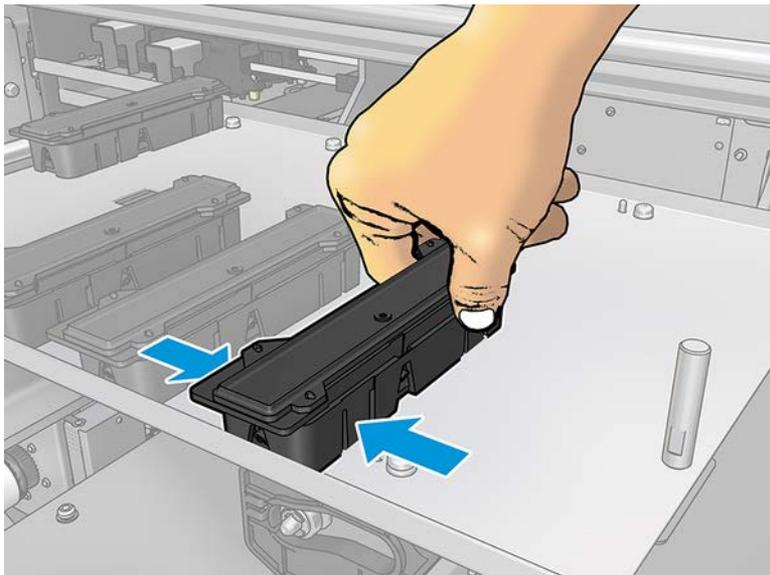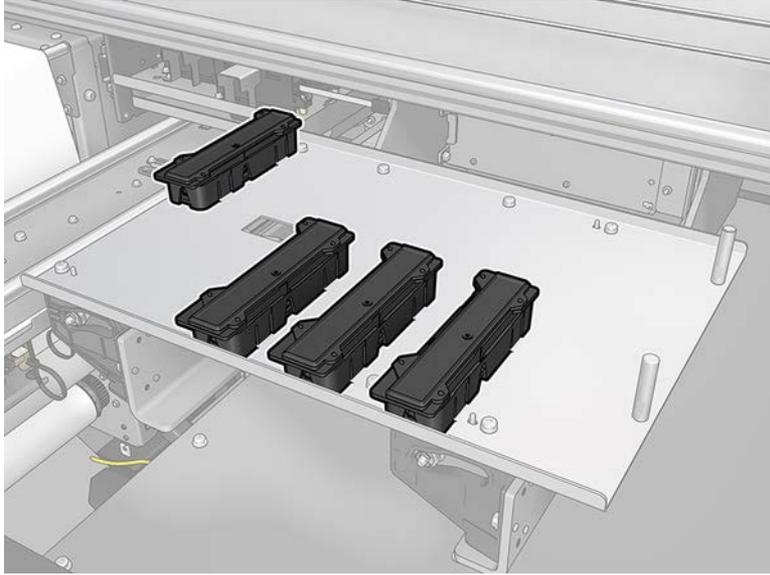
8. Take the new service station cap and install it by pressing the fixings to lock it into position.

📝 IMPORTANT: Make sure when in place, that the rubber surface that covers the service station cap is well located on the four pins.

Repeat this replacement process for all service station caps that have to be replaced.

9. Put back the cover and screw it into place.

10. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

Replace an intermediate tank (trained users only)

The following steps provide the complete procedure for this topic.

Table 11-52 Warning

Risk of burns	Crush Hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard
⚠️	⚠️	⚠️	⚠️	⚠️

For more safety information, see Safety precautions on page 2

1. Ensure that you have the Intermediate Tank Kit, which is included in the Basic Uptime Kit (K4T88-67256).

2. Ensure that the printer is not printing.

3. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

4. Unscrew the pointed screws and remove the cover to access the intermediate tanks.
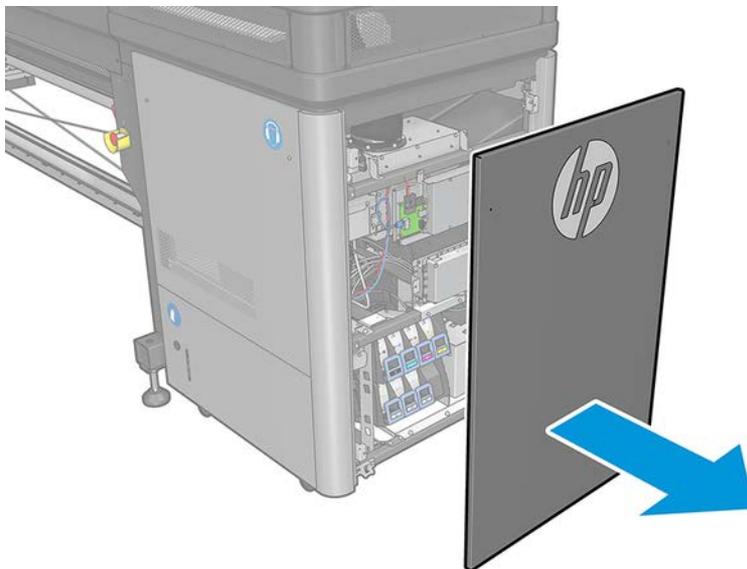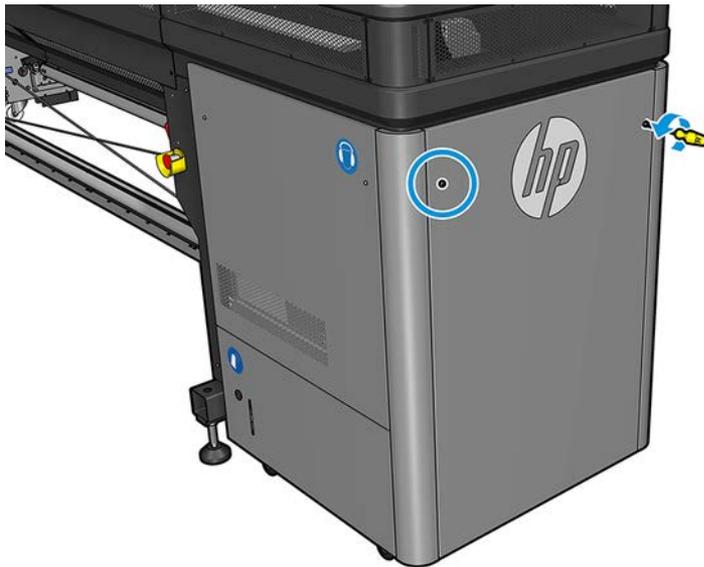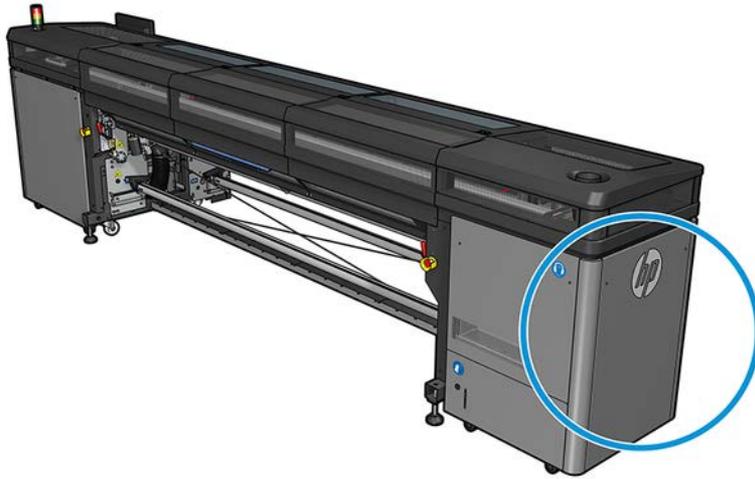
5. Remove the intermediate tank with the broken bag.
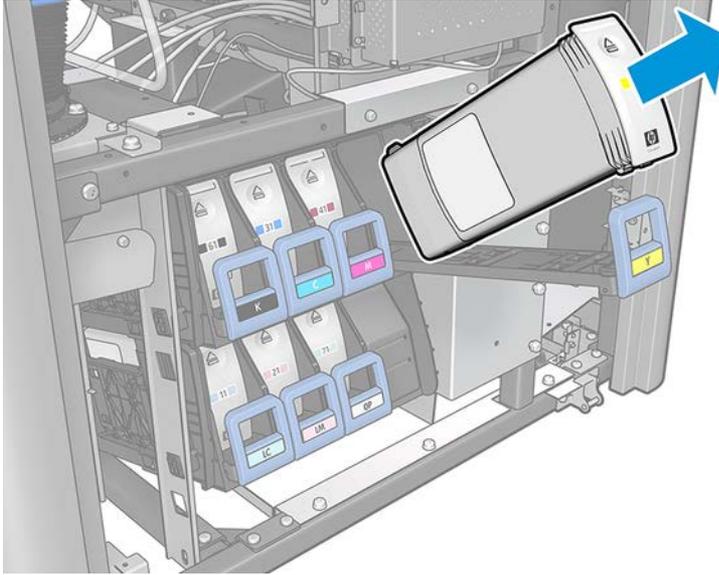
6. Put a piece of cloth in its place.

7. Unplug the air tube from each bottle shown below.
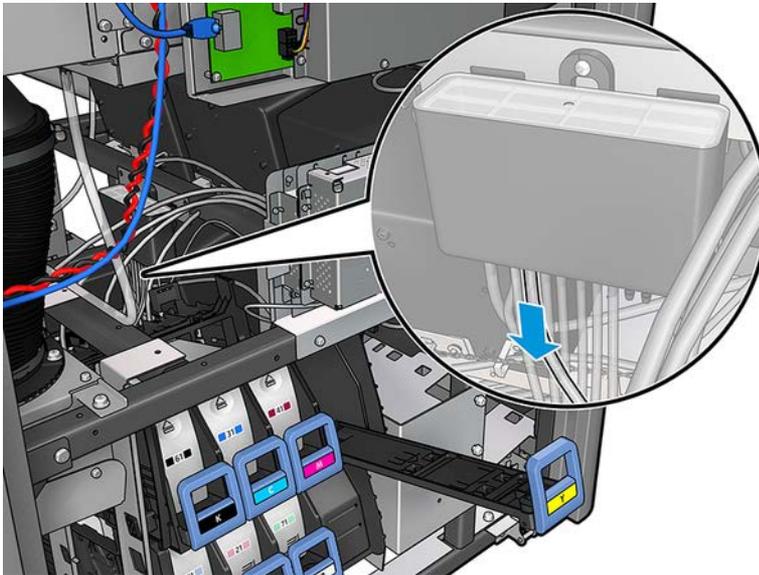
8. From the air tube, inject air (using the air pressure gun, for example) to clean the interior of the tube. The ink accumulated in the interior of the tube should be ejected onto the piece of cloth that you have put in place of the intermediate tank.

9. If air is not enough to clean it, use water, and then air again to remove the water and dry the tube.

10. Remove the cloth.

11. Plug in the air tubes.

12. Insert the new intermediate tank.

13. Put back the cover and screw in the screws.

14. Run a diagnostic test to refill the intermediate tank.

15. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

Replace an e-cabinet fuse

The following steps provide the complete procedure for this topic.

Table 11-53 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

⚠ **CAUTION:** Do not attempt to replace fuses other than those in this specific area of the e-cabinet. These are the only ones you are allowed to replace. Call your service representative in all other cases.

1. Ensure that you have the E-cabinet PCA Fuses Kit (K4T88-67209), which is included in the Basic Uptime Kit (D4J02A).

2. Check the Print Care error message log to find out which fuse needs to be replaced.

3. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

4. Ensure that the printer is not printing.

5. Remove the screws shown below, then remove the rear right cover.
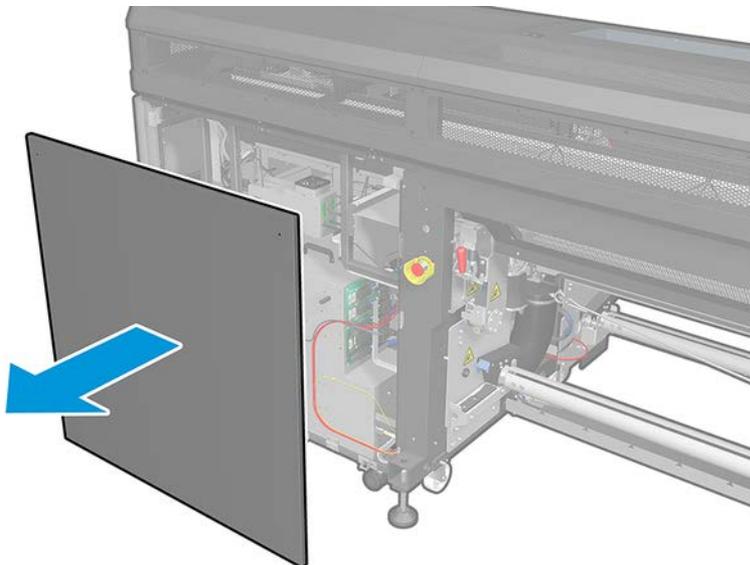
6. Locate the e-cabinet fuses.
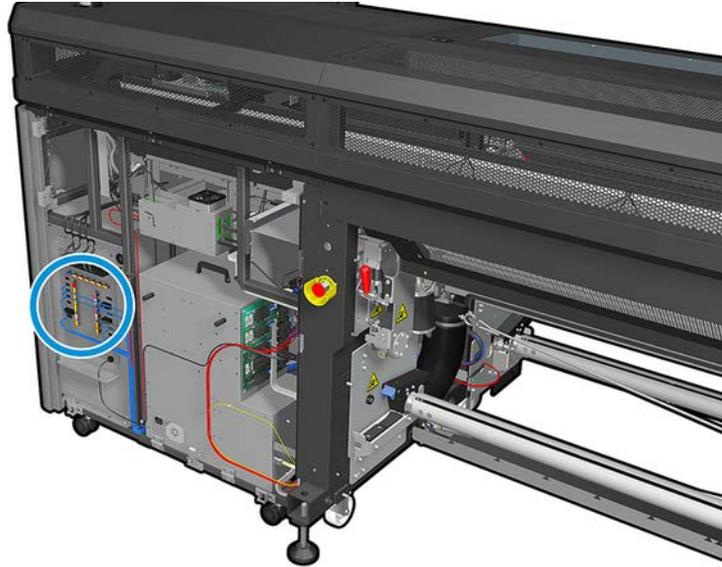
7. Locate the failing fuse identified by the Print Care error message logs.
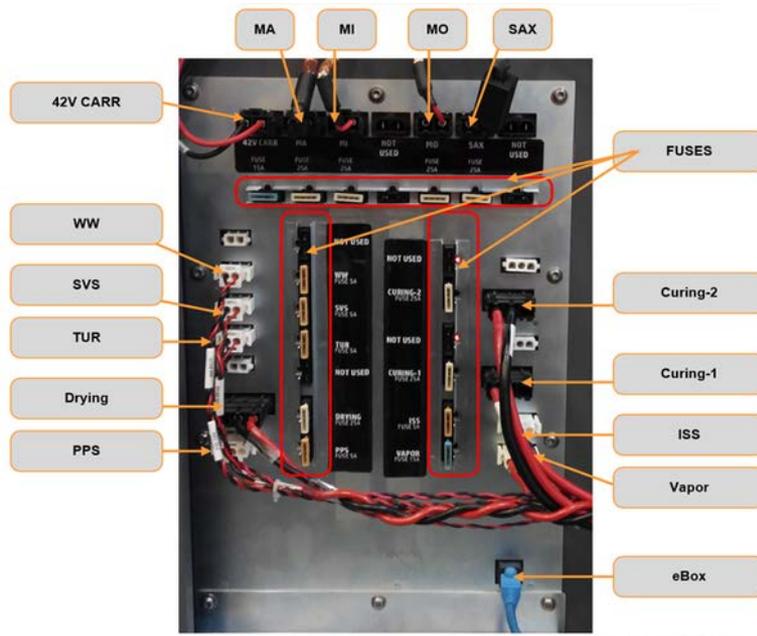
8. Pull out the fuse and insert a new one. Ensure that the new fuse matches the old one in size, rating, and color.

9. Run a diagnostic test to check that the new fuse is working correctly.

⚠ **CAUTION:** Fire risk! A blown fuse may indicate malfunctioning electrical circuits within the system. If a fuse trips repeatedly, call your service representative and do not attempt to replace the fuse with one with a higher current rating.

10. Dispose of the old fuse.

11. Put back the rear right cover and screw it into place.

12. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

Replace a spindle valve

The following steps provide the complete procedure for this topic.

Table 11-54 Warning

Risk of trapped fingers
For more safety information, see Safety precautions on page 2

1. Ensure that you have the Spindle Air Valve (K4G10-67094), which is included in the Basic Uptime Kit (D4J02A).

2. Ensure that you have an 11 mm (7/16 inch) tube wrench key and the pneumatic gun.

3. Ensure that the printer is not printing.

4. Press the valve to deflate the spindle.

5. Remove the spindle valve with the tube wrench key.
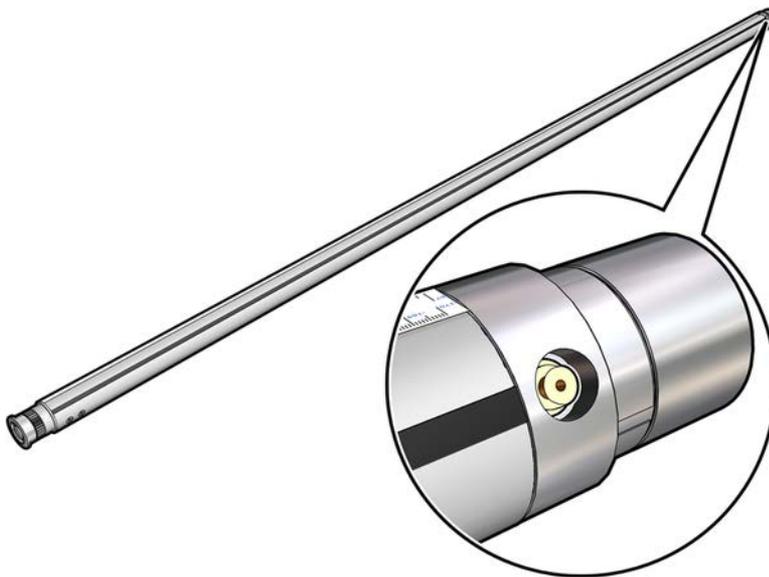
> **NOTE:**
>
> Remember that the dual-roll spindle has two valves; identify the one that needs replacement.
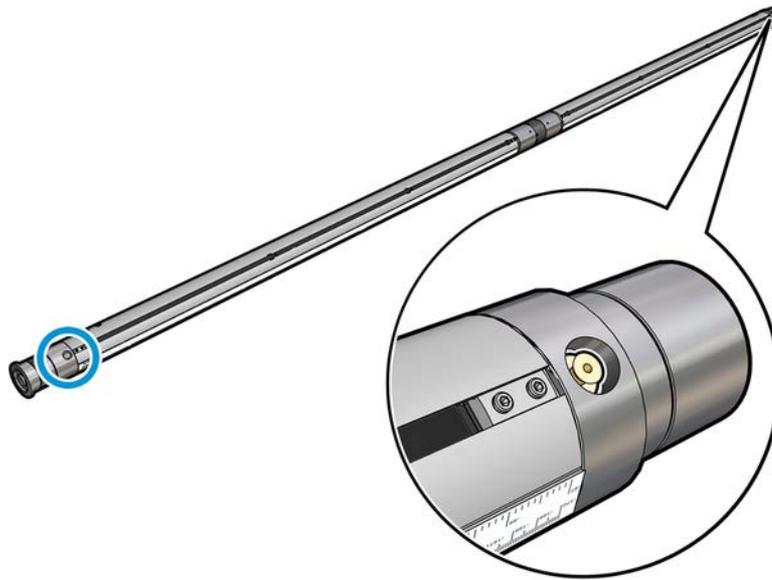
6. Insert the new valve and tighten it. The valve must be well seated in position and firm, but do not force it with the key.

7. Test the new valve by inflating and deflating the spindle.

Replace the pinch clamp

The following sections provide details for this topic.

Table 11-55 Warning

Crush hazard	Risk of trapped fingers	Hazardous moving part	Risk of cutting fingers

For more safety information, see Safety precautions on page 2

Removal

The following steps provide the complete procedure for this topic.

1. Ensure that the printer is not printing.

2. Turn off the printer and the power-enable switch.

3. Locate the pinch clamp to be replaced and open it.

4. Remove the four T-30 screws and the pinch clamp.
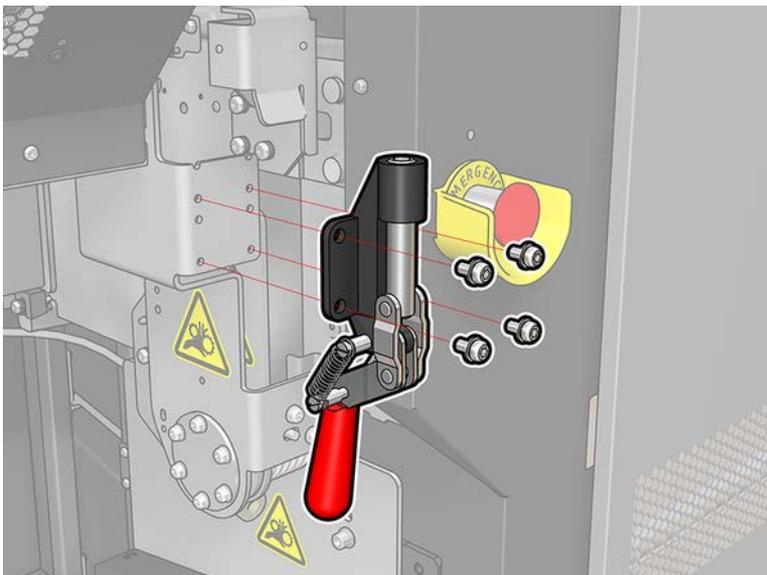
Installation

The following steps provide the complete procedure for this topic.

1. Install the new pinch clamp and attach it with the screws.

2. Perform the safety interlock diagnostic (51001)

Replace the rocker pads

The following sections provide details for this topic.

Table 11-56 Warning

Risk of trapped fingers
For more safety information, see Safety precautions on page 2

Removal (same for all four sides)

The following steps provide the complete procedure for this topic.

1. Unload all the spindles from both sides of the printer.

2. Open the latch.

3. Unscrew the 2 hexagonal cap screws with a wrench and remove the rocker pad.

Installation

The following steps provide the complete procedure for this topic.

▲ Install the new rocker pad and replace the 2 screws.

Replace spindle gear and end cap

The following sections provide details for this topic.

Table 11-57 Warning

Risk of trapped fingers
For more safety information, see Safety precautions on page 2

📝 **IMPORTANT:** Check the gears to install in each spindle, as not all can be used in any of them.

Removal

The following steps provide the complete procedure for this topic.

1. Remove the spindle from the printer.

2. Place the gearwheel side in an elevated position.
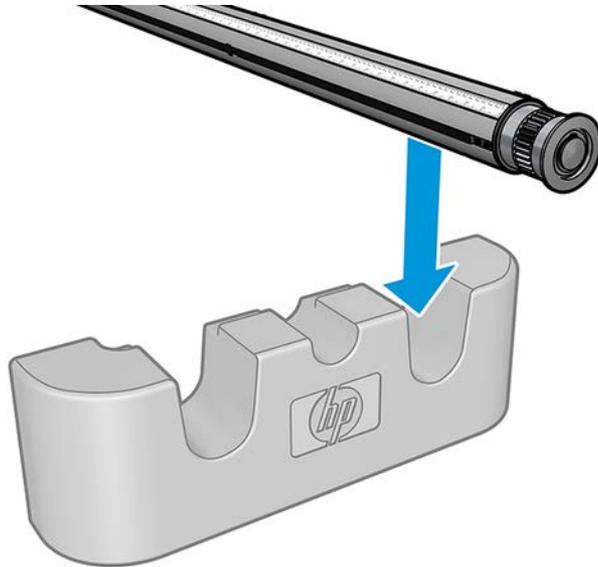
3. Remove the C-clip.
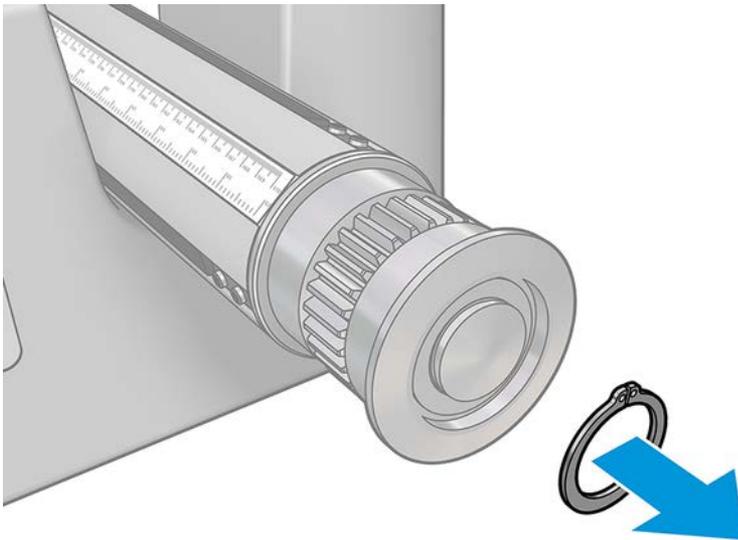
4. Remove the end cap. If necessary, you can use the gear extractor to remove the end cap.
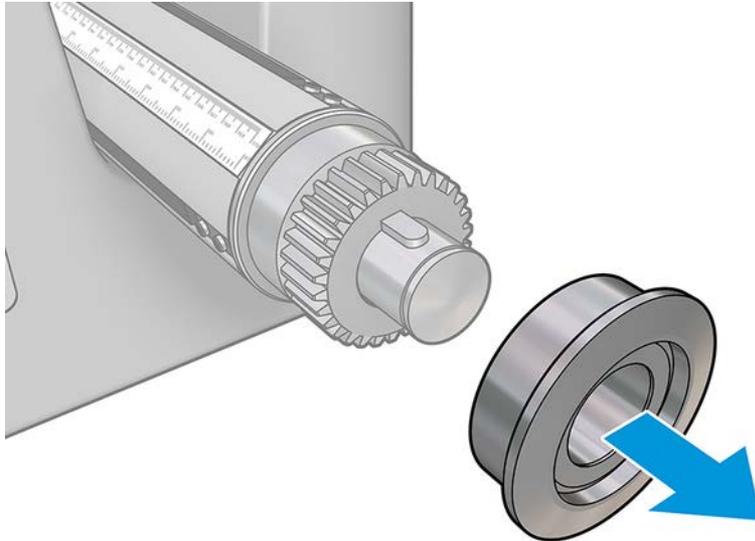
5. Remove the gearwheel, using the gear extractor.
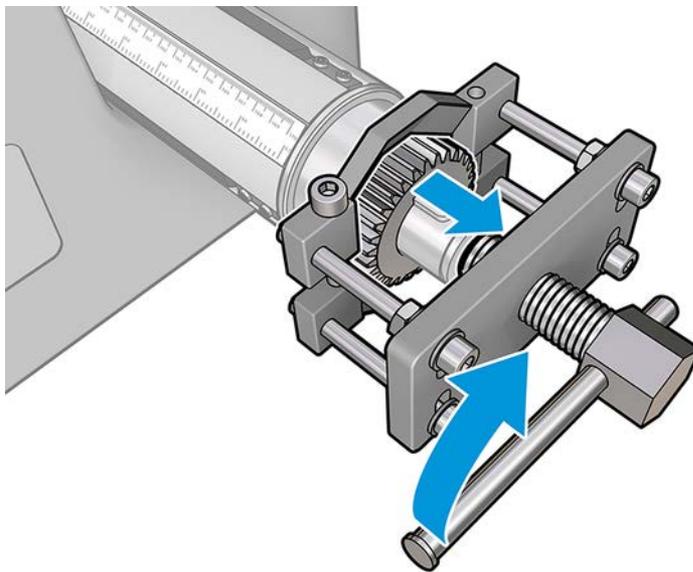
Installation

The following steps provide the complete procedure for this topic.

1. If necessary, use sandpaper for 5 minutes to increase the diameter where the gear slides in; this is mostly likely to be useful for dual-roll spindles. The same could be done for the end cap.
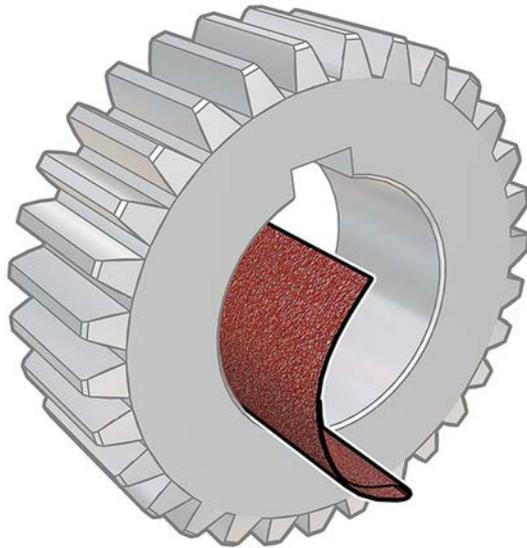
One small piece of sandpaper is provided with the upgrade kit. If it is not enough, use some similar sandpaper.

2. In some cases, mainly with dual-roll spindles, the black gear may not be well positioned: the axis on which the gear slides can have slack. When placing the gear, it is important that there is no slack, or it will not be possible to place the C-clip. The two axis positions are shown below, with the gear in two different positions:
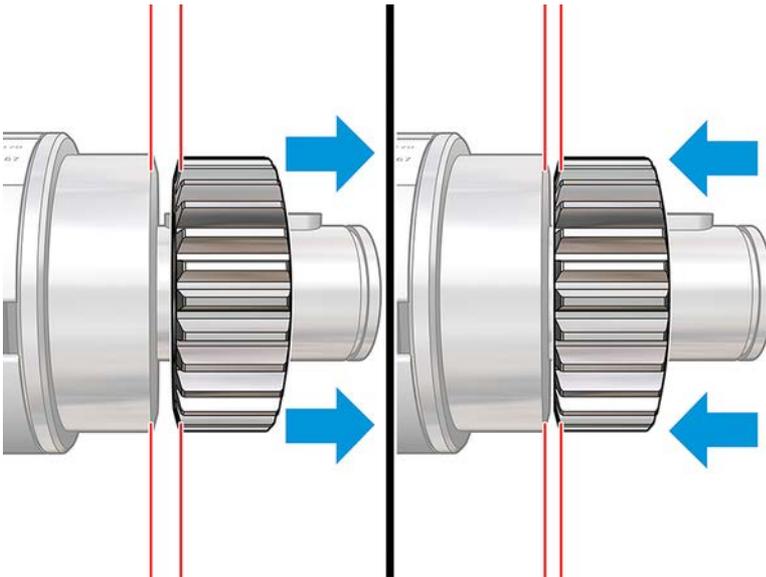
▲ There may be up to 2 mm of slack when moving the gear left and right. A small steel cylinder is

provided in the kit:

a. Move the gear as far to the left as it will go.

b. Place the cylinder provided with the kit as shown in the picture below, and hold it in place.
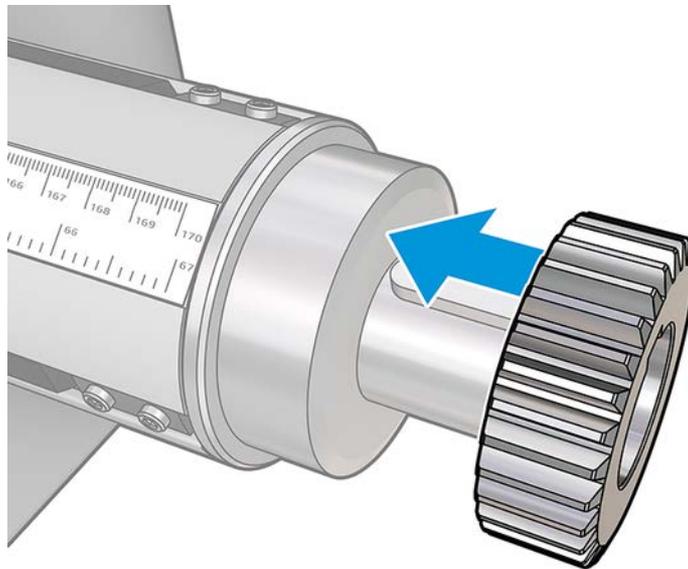
c. ⚠ CAUTION:

Be careful not to trap your fingers.
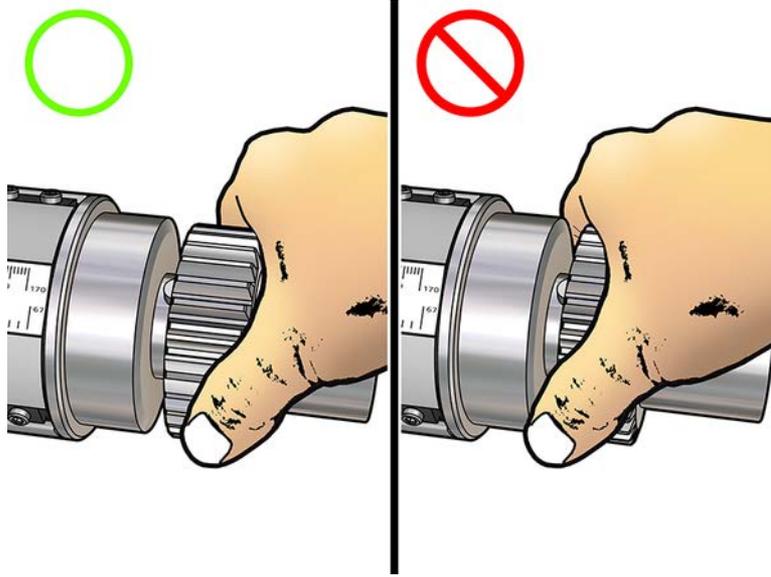
d. Hit the right end of the cylinder with a hammer (not provided) to force the gear onto the axis.
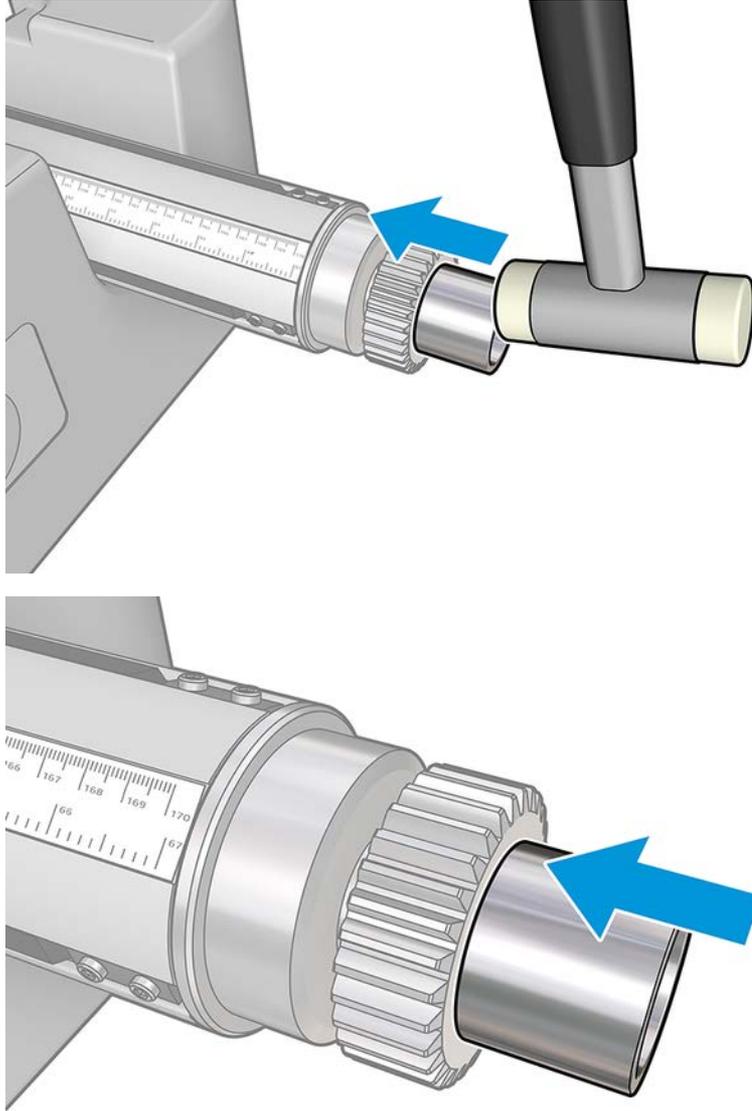
If necessary, try again after using the sandpaper.

3. Insert the end cap. Use sandpaper if necessary.
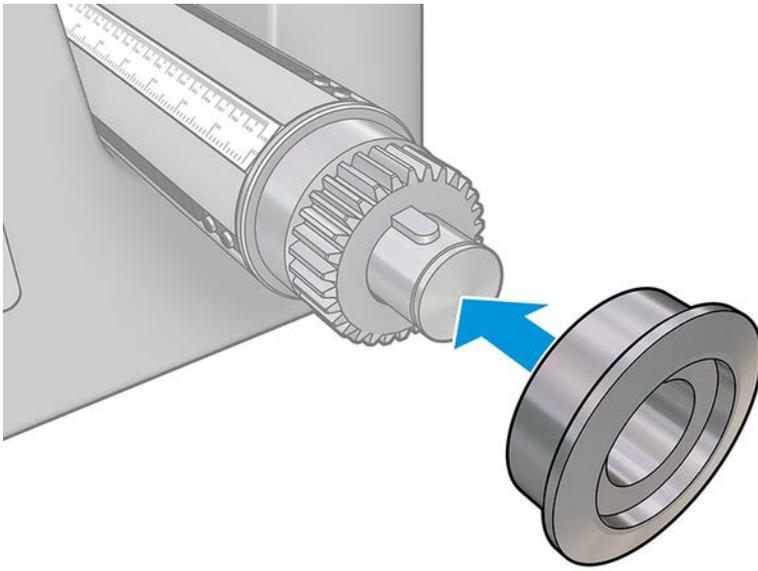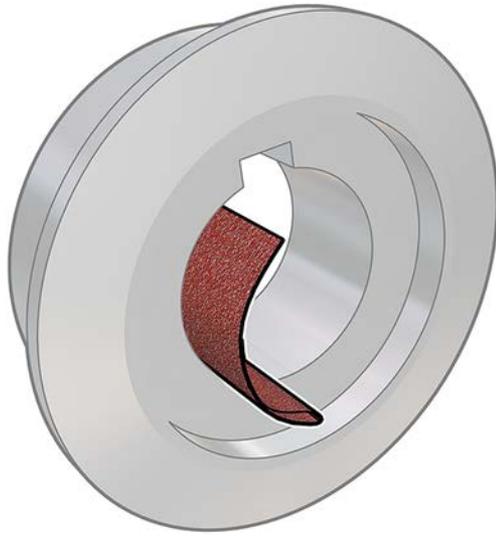
▲ You can also use a flat screwdriver to fix the shaft in place (as shown), and hit the end cap with a

nylon hammer.
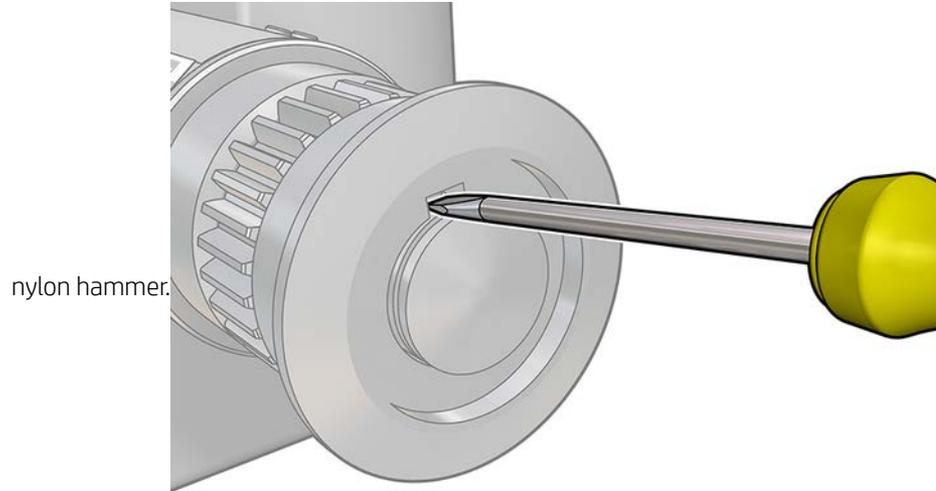
4. Insert the C-clip.
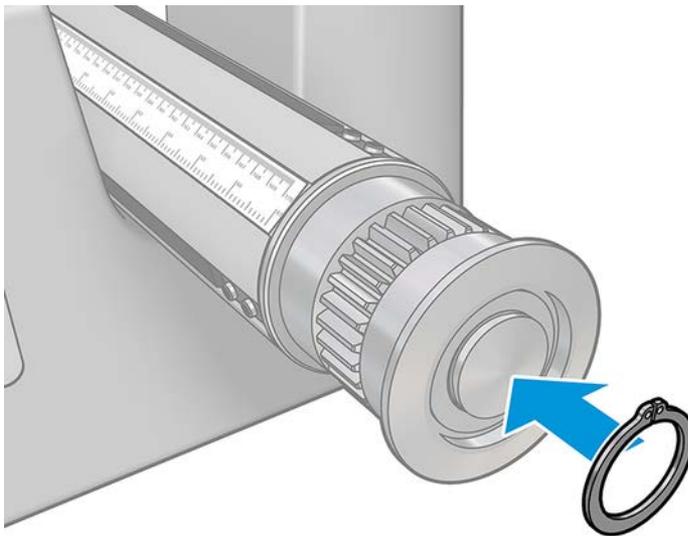
5. Put the spindle back into the printer.

Replace the in-line slitter blades

The following sections provide details for this topic.

⚠ WARNING! Handle in-line slitters with care and avoid touching the blade.

Table 11-58 Warning

| Risk of cutting your fingers.	Risk of trapped fingers	Risk of burns

For more safety information, see Safety precautions on page 2

Removal

The following steps provide the complete procedure for this topic.

1. Loosen the lateral thumb screw holding the blade.
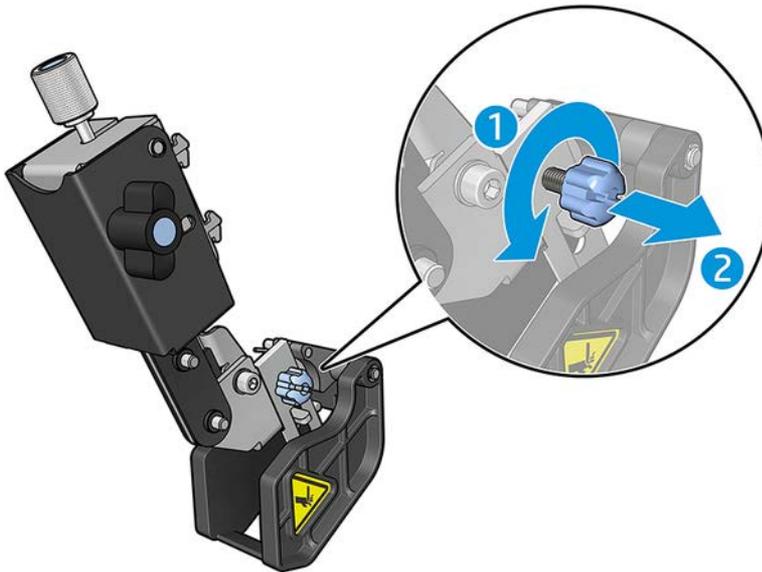
2. Handle the protected blade carefully and remove it from the support.
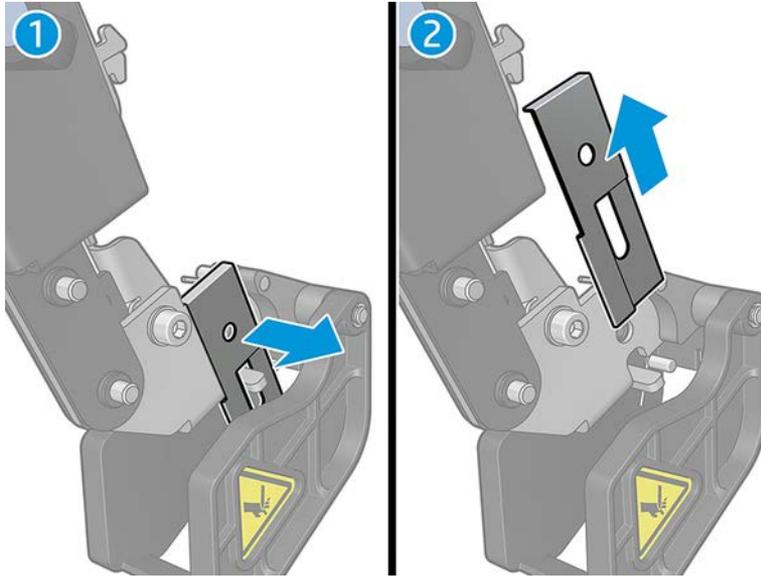
WARNING! Handle with care and be careful to avoid cutting your fingers.

3. Remove the blade from the protector.

Installation

The following steps provide the complete procedure for this topic.

1. Turn the blade over, then reinstall the blade with the sharp side facing out, unless:

   ● If both sides of the blade are worn, replace with a new one.

2. Put the blade into the protector, then insert the assembly into the support.

3. Tighten the lateral thumb screw to set the blade into the correct position.

Replace the curing fan and resistor module

The following sections provide details for this topic.

Preparation

The following steps provide the complete procedure for this topic.

1. Ensure that the printer is not printing.

2. Turn off the printer and the power-enable switch.

Removal

The following steps provide the complete procedure for this topic.

1. Use a screwdriver to remove the screws from the curing module.
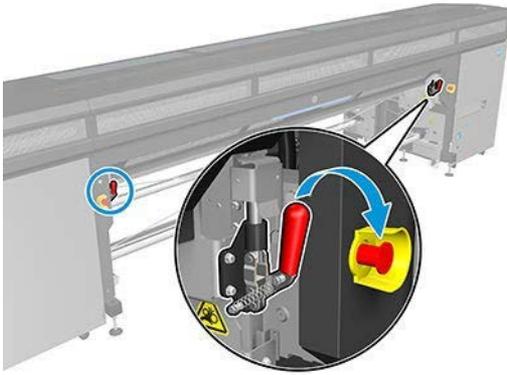
2. Lift the module cover to reach the interior.
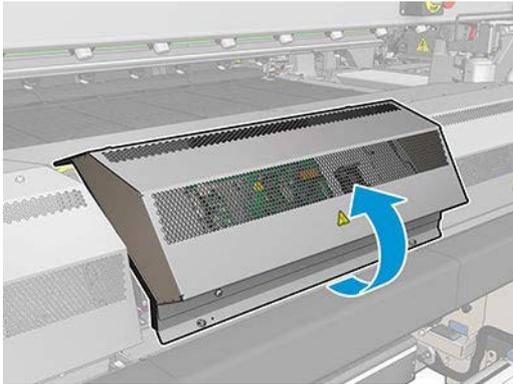
3. Disconnect the two cables shown below. You have to press the retention clip on each of the two connectors, and gently pull the cable. The black one is for the DC supply to the fans, and the white one is for the AC supply to the curing heaters.
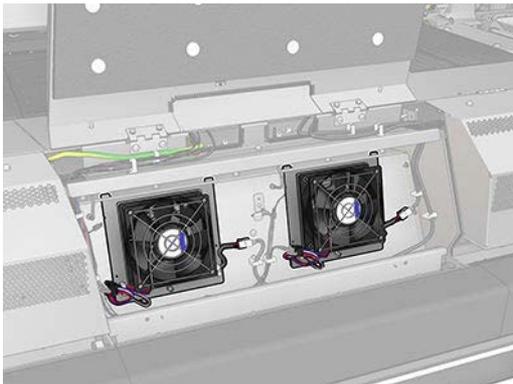
4. Use a screwdriver to remove the screws of the fan/resistor module.
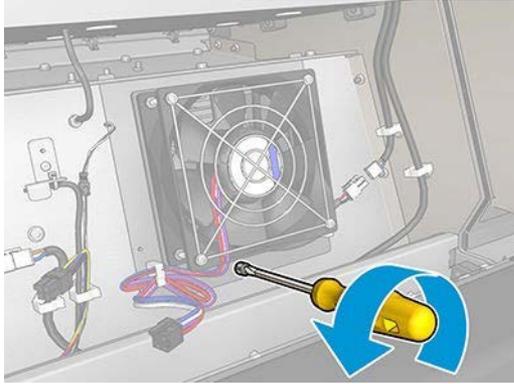
5. Remove the fan/resistor module.

Table 11-59 Fan removal

Unlock the fan module	Gently pull the fan out
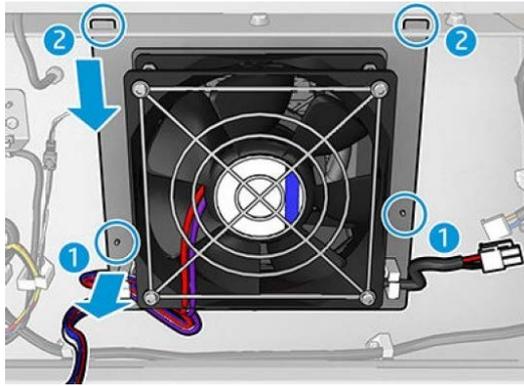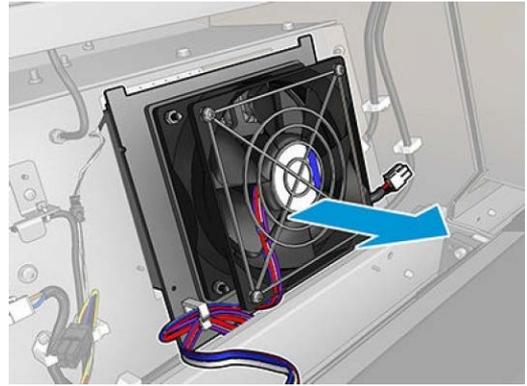
Installation

The following steps provide the complete procedure for this topic.

1. Put the new fan/resistor module into position. Insert and tighten the screw, and connect the two cables to each fan/resistor module.

Table 11-60 Installing fans
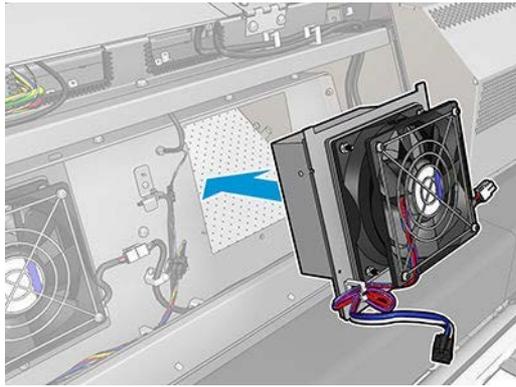
Put the new fan/resistor module into position	Insert and tighten the screw, and connect the two cables
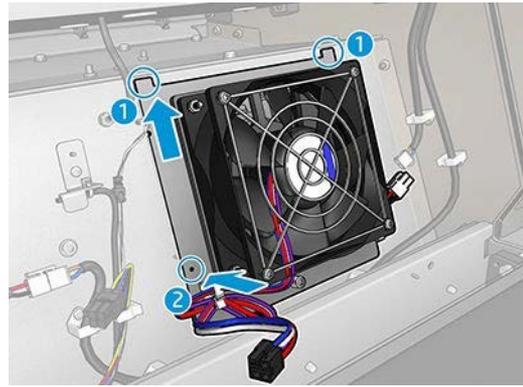
2. Close the curing module and make sure the pins are in the correct position; then secure them.

Conclusion

The following steps provide the complete procedure for this topic.

1. Close the module cover.

2. Use a screwdriver to secure the module cover.

3. Turn off the printer in the correct way for maintenance operations: see Turn the printer off on page 214.

Replace the drying fan and resistor module

The following sections provide details for this topic.

Preparation

The following steps provide the complete procedure for this topic.

1. Move the carriage beam to the loading position.

2. Turn off the printer and the power-enable switch.

3. Open the loading table.

Table 11-61 Preparation steps

Unlock the hatches	Open the loading table
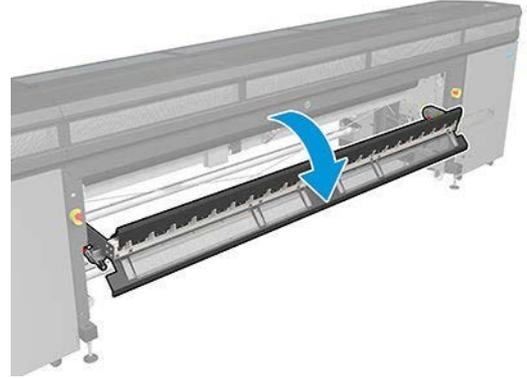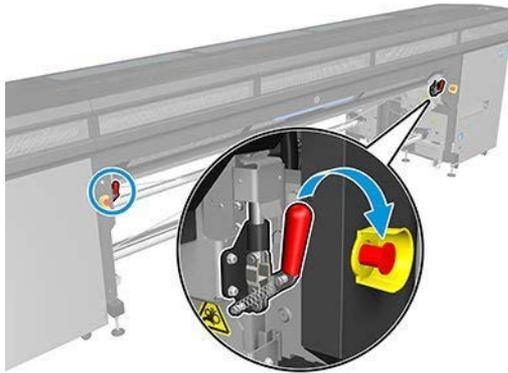
Removal

The following steps provide the complete procedure for this topic.

1. Remove the seven cover screws.

2. Remove the cover.
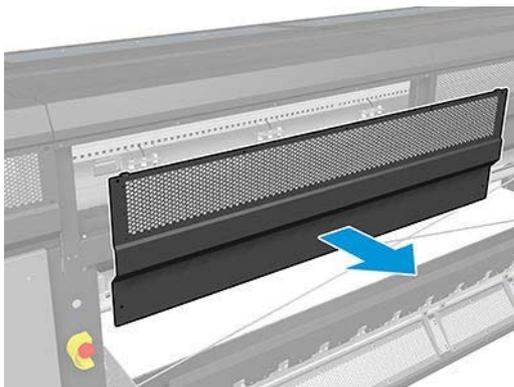
3. Remove another screw.
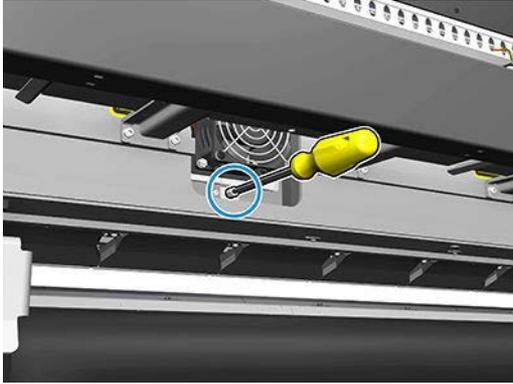
4. Disconnect and unroute the cables (from the motor cable tie where marked).

NOTE: The red cable goes through the left cable tie and is connected to the left connector. The colored cable passes through the right cable tie and is connected to the middle connector. The thinnest cable goes through the right cable tie and is connected to the right connector.

5. Remove the fan.
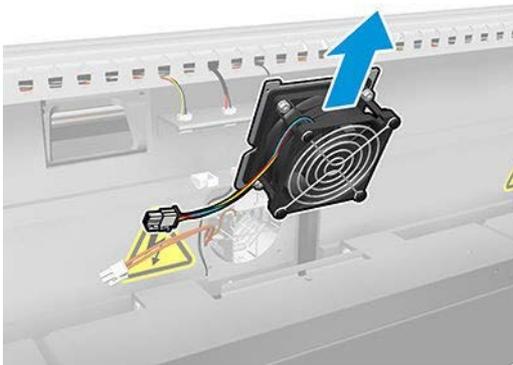
6. Remove the heater.
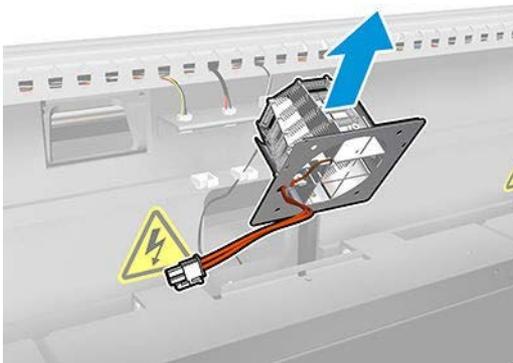
Installation

The following steps provide the complete procedure for this topic.

1. Put the heater in place with its pins.
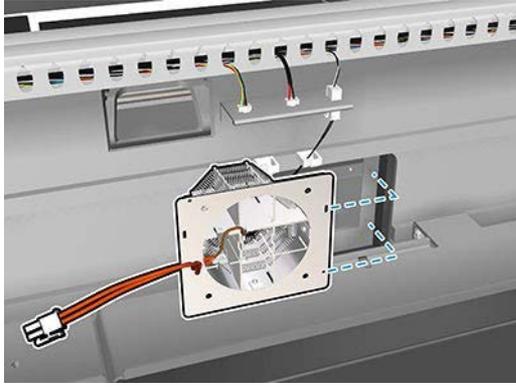
2. Put the fan in place with its pins.

IMPORTANT: The fan cable **must** go in with the hook facing to the left.
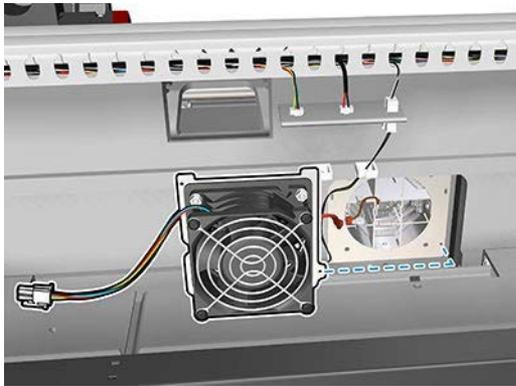
3. Insert and tighten one screw.
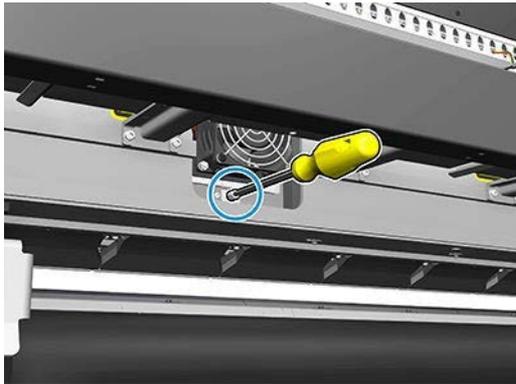
4. Reconnect the cables.

5. Reattach the cover with its seven screws.
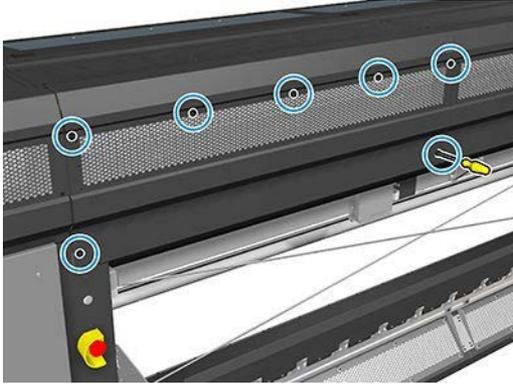
Conclusion

The following steps provide the complete procedure for this topic.

1. Close the loading table.

2. Turn on the printer in the correct way for maintenance operations: see .

Replace the spectrophotometer shutter

The following sections provide details for this topic.

Removal

The following steps provide the complete procedure for this topic.

1. Turn off the printer and the power-enable switch.

2. Remove two cover screws from the front left cover.

3. Remove the front left cover.
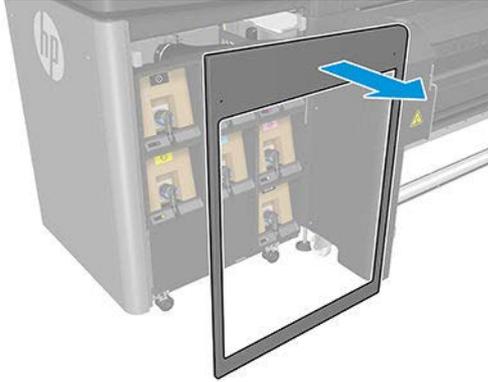
4. Locate the spectophotometer shutter.

5. Unplug the power cable.
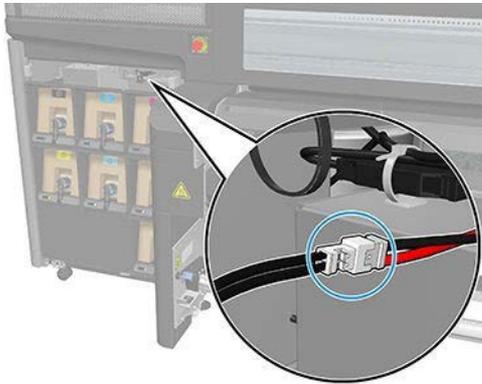
6. Remove one screw and keep it for the new spectrophotometer.
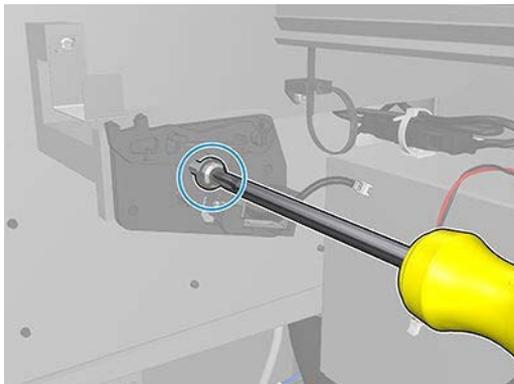
7. Remove the spectrophotometer shutter.
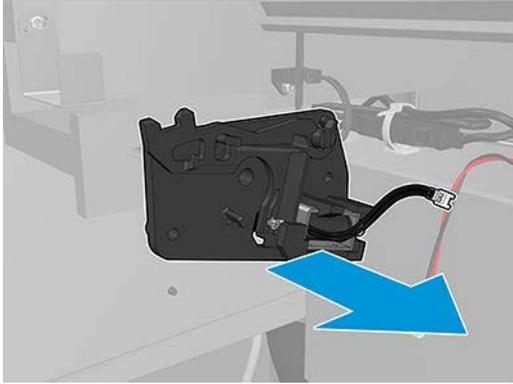
Installation

The following steps provide the complete procedure for this topic.

1. Locate the new spectrophotometer shutter in the appropriate kit.

2. Place it where the old one was installed and attach it with the screw.
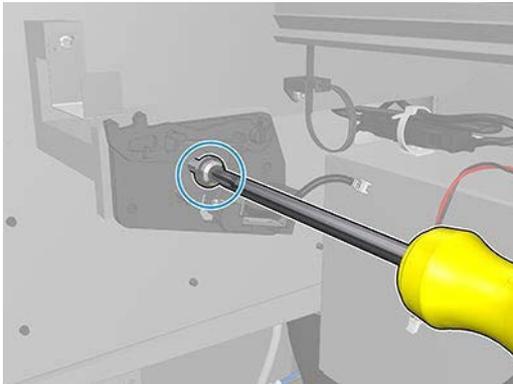
3. Plug in the cover cable.

4. Reinstall the front left cover.

Empty the printhead cleaning waste bottle

The following sections provide details for this topic.

Table 11-62 Warning

Risk of burns	Crush hazard	Risk of trapped fingers	Hazardous moving part	Electric shock hazard

For more safety information, see Safety precautions on page 2

Removal

The following steps provide the complete procedure for this topic.

1. Turn off the printer and the power-enable switch.

2. Unlock and open the printhead cleaning roll door.
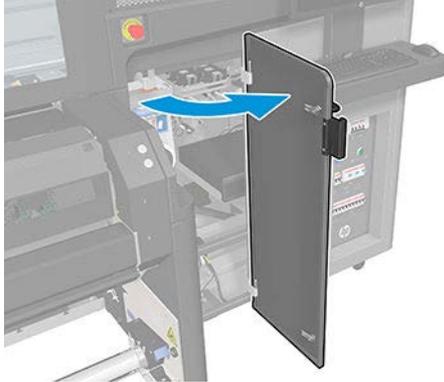
3. Remove two screws.
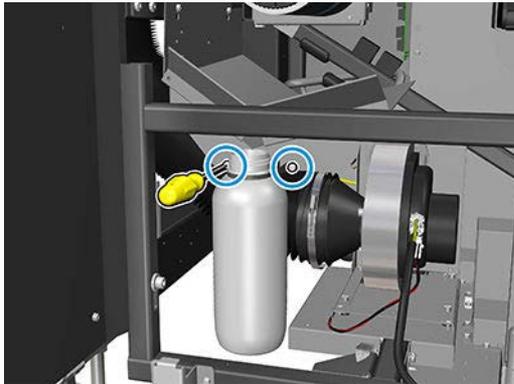
4. Remove the waste bottle.

☀️ **TIP:** You are recommended to wear gloves for this operation.

5. Empty the bottle.

📝 **NOTE:** The bottle contains a mixture of ink additives and water. Dispose of this mixture according to local regulations. You can find the Material Safety Data Sheets (MSDS) for the ink at http://www.hp.com/go/msds.

Installation

The following steps provide the complete procedure for this topic.

1. Put the empty bottle back in place.

2. Take care that the mouth of the bottle is well positioned to receive the liquid falling from above.

3. Insert and tighten the screws that fix the position of the bottle.
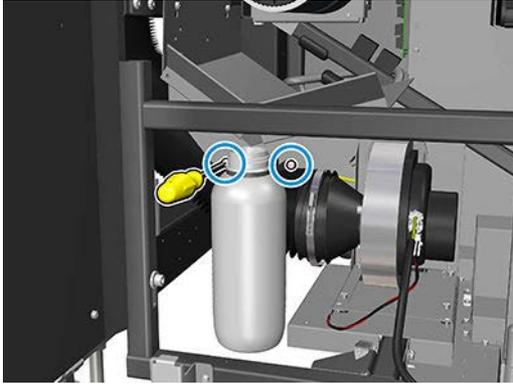
4. Close the printhead cleaning roll door.

5. Turn on the printer in the correct way for maintenance operations: see Turn the printer on on page 215.

12 Troubleshoot substrate issues

Loading and printing issues.

The substrate cannot be loaded successfully

This topic explains the concepts involved in this subject.

- A substrate cannot be loaded unless all printer subsystems (such as the ink system) are ready.

- Check that the spindle is correctly inflated.

- Try using the Internal Print Server to advance the substrate at least 3 m (10 ft), then move it back and try to load it again. If it will not load, perhaps the substrate is not attached to the input core: try a different roll.

- If the Internal Print Server displays a message 'The carriage beam height is not suitable for loading substrate', call your service representative (see HP Customer Care Centers on page 416).

The substrate has jammed

If the printer reports a substrate jam, follow these steps.

1. Press an emergency stop button as quickly as possible to minimize damage to the printheads.

   📝 **NOTE:** The printer may shut itself down automatically.

2. Wait about 10 minutes for the printer to cool down.

3. Open the front door.
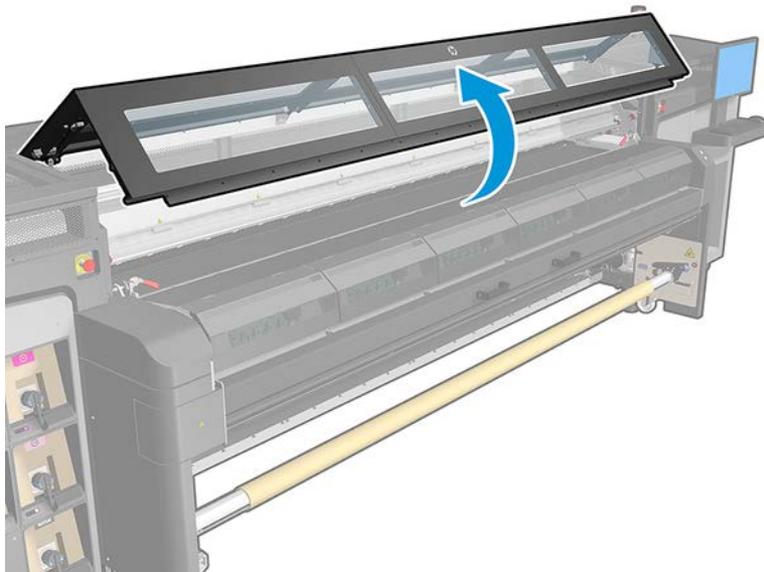
4. Remove all substrate and pieces of substrate from the printing zone and from any other parts of the printer into which they may have fallen. Check the curing zone in particular. Make sure that nothing remains on the substrate path. If you are unable to remove all obstructions, call your service representative (see HP Customer Care Centers on page 416).

5. Use Print Care to start the printer in service mode.

6. Use the Print Care diagnostic menu to raise the carriage beam, and check underneath for any pieces of substrate.

7. Use the same menu to lower the carriage beam to its normal position.

8. Before restarting the printer, check that all circuit breakers are on and all emergency stop buttons released.

9. Use Print Care to restart the printer in normal mode.

10. Reload the substrate.

The substrate is not attached to the core and/or spindle

If the printer detects a lack of tension during the substrate check after loading, it will ask you to confirm the winding direction. If the roll is not firmly attached during printing, you may see banding on your prints, or hear metallic noises.

If you see an error message numbered 41.00.00.62 or 41.00.01.62 while printing, it means that the substrate may have become detached from the spindle, or the core is slipping on the spindle. This could mean that you have reached the end of the roll, or the spindle is not correctly inflated, or the dual-roll differential hub is locked. The substrate is automatically unloaded when this error occurs.

You should respond to this error in the following ways.

● Check whether you have reached the end of a roll.

● Check that the spindle is correctly inflated: one valve for the single-roll spindle, and both valves for the dual-roll spindle.

📝 NOTE: If you are using only one half of the dual-roll spindle, only that half needs to be inflated.

● For dual-roll printing, check that the differential hub is unlocked.

● Check that the inner diameter of each substrate core is not too large for the spindle.

If the roll is not firmly attached to the input core, proceed as follows.

1. Unload the roll from the input spindle and load it onto the output spindle. Take care to avoid telescoping.

2. Raise the pinches and, using the Internal Print Server, raise the carriage beam to its maximum height.

3. Unload substrate from the roll and pass it backwards through the printer towards the input spindle. Attach it to the empty core on the input spindle, securing it with adhesive tape. Wrap a couple of turns of substrate around the input core. Take care to align the substrate with the output roll.

4. Lower the pinchwheels.

5. Go to the Internal Print Server and select **Substrate Load/Unload**, then select the printer configuration and press **Load**.

6. Select the correct substrate in the Internal Print Server.

7. Press Move substrate in the Internal Print Server, then Back, and wait until all the roll has been wound onto the input spindle.

8. You may decide to cancel rewinding when the substrate is detached from the output roll. Then attach it to the output core to print immediately, or rewind it completely onto the input core if you want to remove the roll.

The substrate is not flat

If the substrate does not lie flat when it comes out of the printer, but has shallow waves in it, you are likely to see defects in the printed image, such as vertical stripes.

This can happen when you use thin substrate that becomes saturated with ink; it can also be caused by the combination of heat and vacuum pressure that is applied to the substrate.

1. Check that the substrate type you have loaded corresponds to the substrate type selected in the Internal Print Server and in your software.

2. If you are using a paper-based substrate, try changing to a thicker substrate, or reduce the amount of ink.

A spindle latch suddenly opens during printer operation

If a spindle latch is not closed before starting the substrate load, or it is opened by someone after the spindle was already moving or while the substrate was under tension, the spindle can move out of place. Closing the latch in those conditions can cause an incomplete latch engagement, and then at some point the latch may spontaneously open completely.

The best solution is to eliminate substrate tension, avoid spindle movement, and then close the latch properly. To do this, return to the substrate load/unload menu, ensure that the spindle is properly in place (in case of doubt, extract it a bit and then push it back fully inside again), then close the latch (the blue part should now go down completely).

The substrate advances with a loud continuous sound of vibration

A loud continuous sound of vibration during the substrate advance can be caused in the following ways:

●   The input spindle is not applying tension.

●   Wrong tension or vacuum settings result in an incorrect balance of forces on the main roller.

If you hear this sound, here are some suggestions:

1. Check that the substrate you are using is the same as the one you have selected in the Internal Print Server.

2. Check that you are using the generic substrate presets for the category. The use of incorrect values may result in incorrect substrate behavior.

    📝 NOTE: Only substrates with high friction along the platen or substrates that easily wrinkle with temperature need high output tension values. Check that your output tension is recommended for your substrate.

3. Check that there is no telescoping of the input roll.

4. If you are using the roll-to-roll configuration with dual-roll spindles and you see smears, or the substrate is not adhering to the platen, mainly at the outer sides of both rolls, you are recommended to use the center support with both spindles.

Once installed, you can try to move it up slightly from its calibrated position if you are suffering from wrinkles or the substrate is not adhering to the platen at the outer edges. This could mean that the support has been calibrated below the correct position.

Otherwise, you can try to move the support down a bit if you are suffering from wrinkles or the substrate is not adhering to the platen at the inner edges near the center of the printer. This could mean that the support has been calibrated above the correct position.

📝 NOTE: Although the center support can be installed while printing, you are recommended to stop the job, unload the substrate, and reload completely, even unwinding the substrate from the output spindle. See Load a roll (dual roll-to-roll configuration) on page 55.

5. Reload the substrate and try to minimize skew while loading. Check that you using the correct loading procedure.

6. Increase the input tension in steps of +5 N/m from the recommended setting for each category until you eliminate the issue.

There is skew or telescoping on the output spindle

Extreme skew (approximately 10 mm peak to peak) and telescoping in the output spindle while it winds can be caused in three main ways.

● The substrate has not been correctly loaded and aligned during the loading procedure.

● The roll loaded on the input spindle is skewed, and this skew is transferred to the output spindle.

● The roll loaded on the input spindle has been wound with different tensions at its two ends.

Printing on rolls that are not wound accurately during manufacturing may lead to wrinkles and skew problems and, generally, this problem can be identified easily because you can see a loss of tension at one side of the substrate between the input roll and the main roller. In that case, see the relevant information provided in the section There are wrinkles and ink smears on the substrate on page 369.

📝 NOTE: When printing with dual rolls, you are more likely to notice skew on the output spindle. However, it is not necessarily a problem. If it becomes a problem, proceed in the same way as for a single-roll configuration and consider the use of the recommended center support for dual-roll spindle in both input and output.

☀ TIP: If you notice that one of the substrate edges is not as well tensioned as the other between the platen and the main roller, showing a wave-like shape as it enters the platen, then you are likely to have skew, and you should consider the use of the center support for dual-roll spindle in both input and output.

TIP: When suffering from extreme skew that tends to increase (normally with highly temperature-sensitive substrates), try to use a thicker core that is not deformed by the rubber traction grooves on the spindle when inflated. Then follow the guidelines below for reducing skew.

Generally, the main contributor to skew is an imprecise substrate load, and the effects of that are worse with wide rolls. However, if you have some skew or telescoping but this does not affect your print quality, and does not generate wrinkles in the substrate (see There are wrinkles and ink smears on the substrate on page 369), there is no need to take any action. However, you are recommended to reload the substrate in order to eliminate any potential problem.

Some substrate rolls already come with skew; in that case the recommendations are as follows:

1. Try to load the substrate following the correct procedure, taking as a reference of the roll's width the average between peaks of skew.

2. Start with the recommended configuration and increase vacuum and tensions step by step (i to iv), following the table below.

	Generic Vinyl		Generic Cast Vinyl		PVC Banner		CoatedPaper & Wallpaper		Offset Paper		PET film		PP PE film and banner		Canvas		Generic Textile	
recomended	15	60 50	10	35 30	10	60 60	15	60 50	15	60 50	10	60 55	15	60 50	15	70 55	0	50 40
i	15	60 55	10	45 40	10	60 65	15	65 55	15	65 55	10	65 60	15	65 55	15	75 60	5	50 45
ii	20	60 55	15	60 55	10	65 70	20	65 55	20	65 55	10	70 65	15	70 60	15	80 65	10	60 50
iii	20	70 60	20	75 80	20	70 75	25	70 60	25	70 60	20	70 75	25	70 70	25	80 75	15	65 60
iv	20	70 65	25	80 85	30	75 80	30	75 65	30	75 65	25	75 80	30	75 80	30	85 80	25	70 75
v	25	80 70	30	100 100	35	85 85	35	85 85	35	85 85	35	85 85	35	85 85	35	85 85	35	85 85

There are wrinkles and ink smears on the substrate

Wrinkles in the substrate indicate that the substrate settings that control the substrate shape are not optimized. This can cause various printing defects.

- Colored bands in area fills in the vicinity of the wrinkles

- Ink smears if the printhead touches the substrate

- Cockle

- A substrate crash if the printhead's movement over the substrate is impeded

There are various reasons why wrinkles and other consequent effects could appear while printing:

- Incorrect loading of the substrate

- Incorrect routing of the substrate through the printer

- Incorrectly positioned edge holders

- Drying and curing temperatures too high for the substrate

- Differential expansion of the substrate due to variations in temperature

- Insufficient tension settings

- Non-uniform tension across the substrate when loading

- The roll loaded on the input spindle has been wound with different tensions at its two ends.

NOTE: When printing with rolls that have not been precisely wound with the same tension along their width during manufacturing, you may notice that, while printing, one of the sides of the substrate between the input spindle and the main roller loses all tension. This may cause wrinkles on the platen or telescoping on the output spindle.

TIP: If you notice that you are suffering wrinkles on the platen and that the substrate between the input spindle and the main roller has lost all tension at one side, try printing in the roll-to-floor configuration, and using the substrate collector if required. If you still see some problems, try to increase tension by following the recommendations below.

TIP: When suffering from wrinkles and extreme skew with a self-adhesive vinyl, calendered materials are typically more sensitive to temperature. Try to use a thicker core to reduce the effects of the spindle's rubber traction grooves, and increase tension as recommended below, using configuration iii, iv, or v in the table.

If your prints suffer from any of the defects caused by wrinkles, here are some suggestions.

1. Check that the substrate you are using is the same type as the one you have selected in the Internal Print Server.

2. Check that you are using the generic substrate preset for the substrate category. The use of incorrect values may cause incorrect substrate behavior.

3. Check that there is no telescoping of the input roll.

4. Reload the substrate and try to minimize skew while loading. Check that you are loading the substrate using the correct procedure.

5. If you have experienced a substrate crash because the lateral edge of the substrate in the print zone is not flat enough, and is raised or even partially cut because you are not using edge holders, then you are recommended to use them.
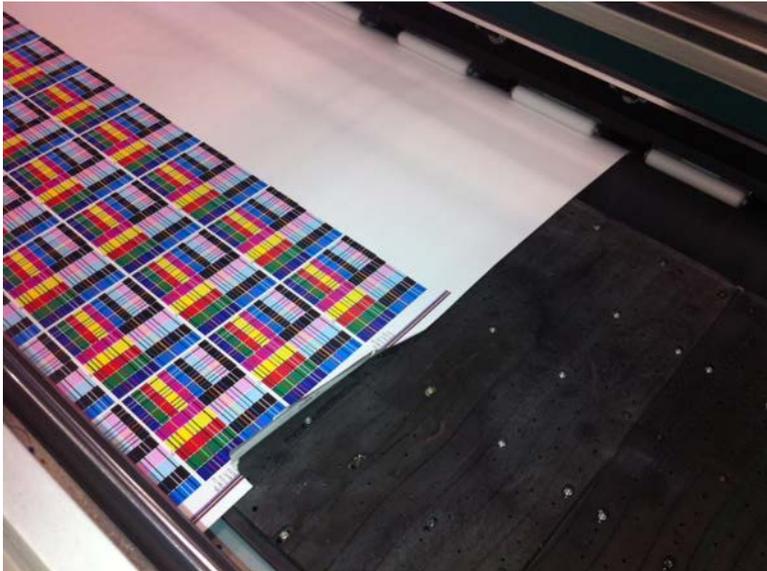
NOTE: If you are already using edge holders, check that they are correctly positioned (see).

6. Try reducing the drying power and curing temperature.

7. Start with the recommended configuration and increase vacuum and tensions step by step (i to iv), following the table below.

	Generic Vinyl		Generic Cast Vinyl		PVC Banner		CoatedPaper & Wallpaper		Offset Paper		PET film		PP PE film and banner		Canvas		Generic Textile	
recomended	15	60 / 50	10	35 / 30	10	60 / 60	15	60 / 50	15	60 / 50	10	60 / 55	15	60 / 50	15	70 / 55	0	50 / 40
i	15	60 / 55	10	45 / 40	10	60 / 65	15	65 / 55	15	65 / 55	10	65 / 60	15	65 / 55	15	75 / 60	5	50 / 45
ii	20	60 / 55	15	60 / 55	10	65 / 70	20	65 / 55	20	65 / 55	10	70 / 65	15	70 / 60	15	80 / 65	10	60 / 50
iii	20	70 / 60	20	75 / 80	20	70 / 75	25	70 / 60	25	70 / 60	20	70 / 75	25	70 / 70	25	80 / 75	15	65 / 60
iv	20	70 / 65	25	80 / 85	30	75 / 80	30	75 / 65	30	75 / 65	25	75 / 80	30	75 / 80	30	85 / 80	25	70 / 75
v	25	80 / 70	30	100 / 100	35	85 / 85	35	85 / 85	35	85 / 85	35	85 / 85	35	85 / 85	35	85 / 85	35	85 / 85

TIP: If you have suffered a substrate crash, try starting with step iv and moving backwards up the table until you find settings that work.

8. Try reducing the curing temperature and ink quantity, and raise the curing airflow to help in reducing the substrate's thermal contraction.

9. Consider changing the printer configuration. Use the roll-to-free-fall configuration as it is least prone to wrinkles.

10. If you cannot get rid of the wrinkles, try raising the carriage beam slightly, so that the printhead is not so close to the substrate.

For information on how to adjust printer settings, see .

There are ink marks on the substrate

This problem can occur if any component in contact with the substrate is dirty. Check the pinchwheels, diverters, print platen, curing module plates, and roller, and clean them if necessary.

If the ink marks occur at the sides of the substrate and not in the center, and you are using the substrate edge holders, check that they are correctly placed and clean.

The substrate sticks to the platen

When the substrate sticks to the platen, the most likely causes are excessive heat applied by the drying system, excessive vacuum, or a dirty platen, which increases friction and can impede the substrate advance.

In the latter case, the substrate may rise up in a bubble or wave before reaching the platen.

Here are some suggested ways to correct the problem:

1. Check that the substrate you are using is the same type as the one you have selected in the Internal Print Server.

2. Check that you are printing on the correct side of the substrate.

3. Check that you are using the generic substrate preset for the substrate category. The use of incorrect values could cause incorrect substrate behavior.

4. Reload the substrate and try to minimize skew while loading. Check that you are loading the substrate using the correct procedure.

5. Increase vacuum and tensions step by step (i to v) following the table below, until you find settings that work.

	Generic Vinyl	Generic Cast Vinyl	PVC Banner	CoatedPaper & Wallpaper	Offset Paper	PET film	PP PE film and banner	Canvas	Generic Textile
recomended	15 60 50	10 35 30	10 60 60	15 60 50	15 60 50	10 60 55	15 60 50	15 70 55	0 50 40
i	15 60 55	10 45 40	10 60 65	15 65 55	15 65 55	10 65 60	15 65 55	15 75 60	5 50 45
ii	20 60 55	15 60 55	10 65 70	20 65 55	20 65 55	10 70 65	15 70 60	15 80 65	10 60 50
iii	20 70 60	20 75 80	20 70 75	25 70 60	25 70 60	20 70 75	25 70 70	25 80 75	15 65 60
iv	20 70 65	25 80 85	30 75 80	30 75 65	30 75 65	25 75 80	30 75 80	30 85 80	25 70 75
v	25 80 70	30 100 100	35 85 85	35 85 85	35 85 85	35 85 85	35 85 85	35 85 85	35 85 85

There are physical marks on the substrate

This only can occur when substrates sensitive to permanent deformation are used. These marks are usually seen in isolated areas and mainly caused by high curing temperature or substrate tensions.

Here are some suggested ways to correct the problem:

1. Check that the substrate you are using is the same type as the one you have selected in the Internal Print Server.

2. Check that you are using the generic substrate preset for the substrate category. The use of incorrect values could cause incorrect substrate behavior.

3. Reload the substrate and try to minimize skew while loading. Check that you are loading the substrate using the correct procedure.

4. Try to reduce curing temperature and ink quantity if possible, and raise the curing airflow to help in reducing the substrate deformation.

5. Reduce tensions and modify vacuum settings, following the table below step by step (a to c), until you find settings that work.

	Generic Vinyl	Generic Cast Vinyl	PVC Banner	CoatedPaper & Wallpaper	Offset Paper	PET film	PP PE film and banner	Canvas	Generic Textile
c	- - / -	- - / -	5 40 / 30	- - / -	- - / -	5 40 / 30	5 40 / 30	5 50 / 35	0 35 / 30
b	5 50 / 35	- - / -	10 50 / 40	15 50 / 40	5 40 / 30	10 50 / 40	10 50 / 40	10 60 / 45	0 40 / 30
a	10 60 / 50	5 35 / 30	10 60 / 50	15 55 / 45	10 50 / 40	10 60 / 50	10 60 / 50	10 70 / 55	0 45 / 35
recomended	15 60 / 50	10 35 / 30	10 60 / 60	15 60 / 50	15 60 / 50	10 60 / 55	15 60 / 50	15 70 / 55	0 50 / 40

There are drops of ink on the substrate

The following steps provide the complete procedure for this topic.

NOTE: In the above example, the distance between the drops is about 1 cm (0.4 in).

1. If you are using the substrate edge holders, clean them.

2. Clean the sides of the printheads and the sides of the printhead slots.

3. Clean the electrical connections to the printheads. See The Internal Print Server recommends replacing or reseating a printhead on page 406.

Dual roll printing issues

When printing with the dual roll, the following issues could appear if misalignment occurs:

- Wrinkles

- Ink smears

- Uneven performance between the two rolls

- Telescoping due to Skew convergence

Calibrate the dual-roll center support

The following steps provide the complete procedure for this topic.

1. Load a single-roll spindle into the printer.

   ⋅⋅⋅ **TIP:** Use a single-roll spindle to calibrate the height of the dual-roll center support accurately. Do not use the dual-roll spindle, as it is heavier and it may not be level along its length.

2. Place the dual-roll center support under the center of the spindle.
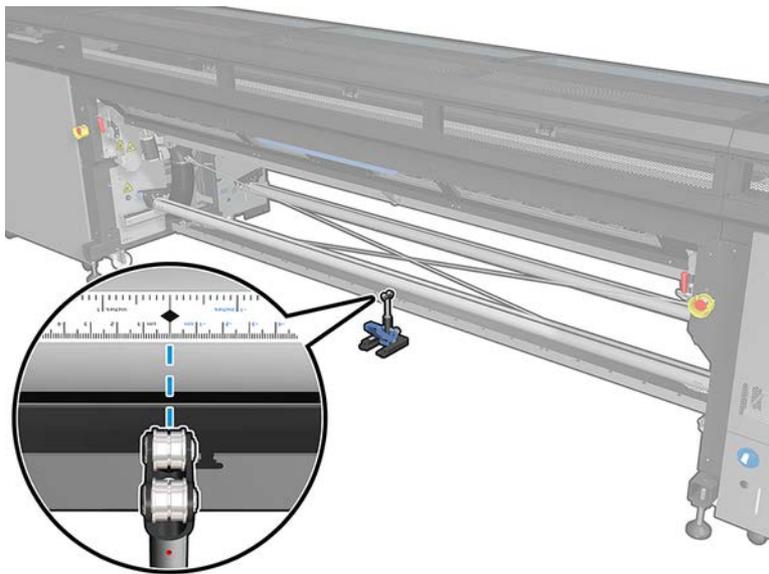
3. Pull the lever down.
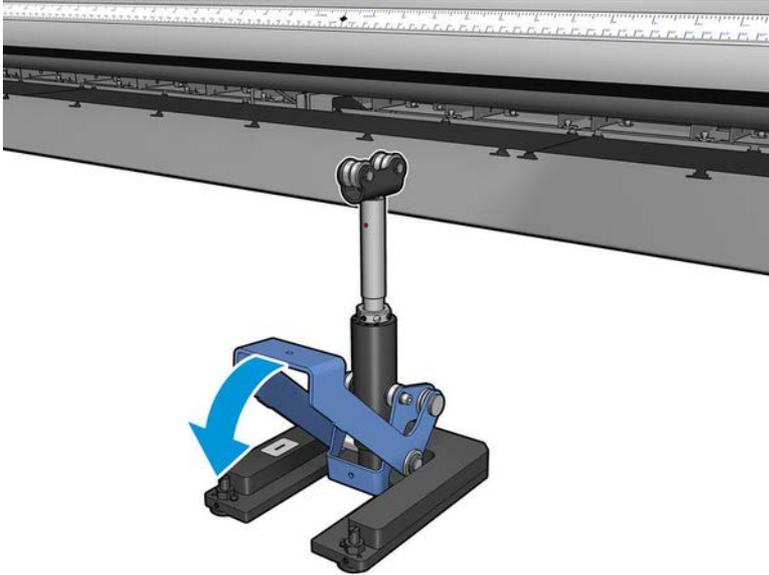
4. Adjust the height of the support by turning it counterclockwise. The bearings at the top of the dual-roll center support must touch the spindle.
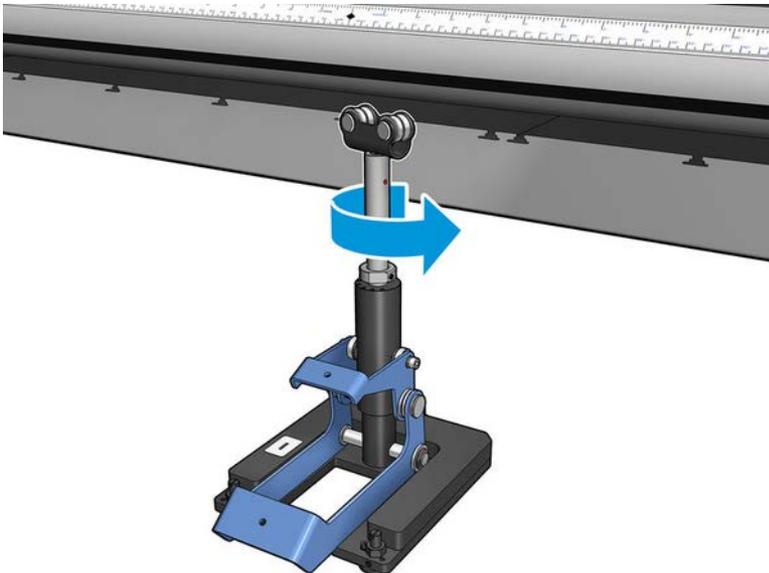
5. Manually turn the spindle 360 degrees. Make sure there is full contact between the bearings on the support and the face of the spindle except along the ruler groove and pneumatic groove. Turn the bearings on the support. If you cannot turn them, lower the height of the support.
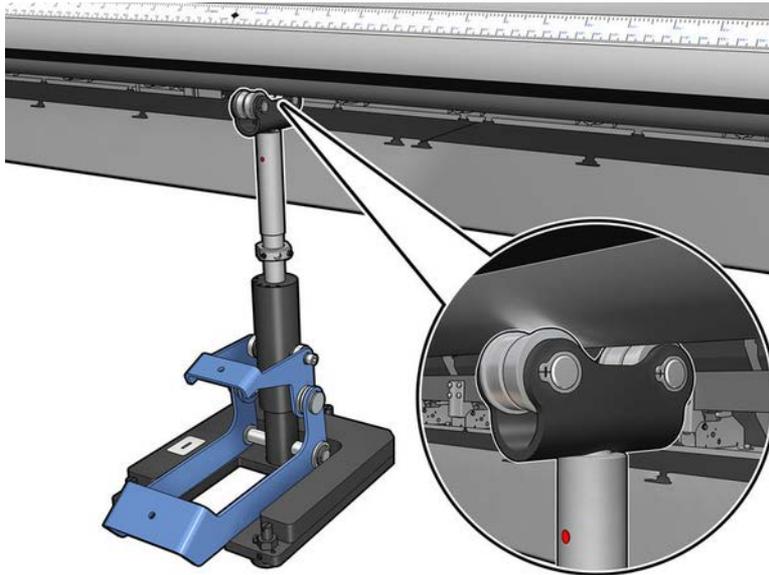
NOTE: If a red groove is visible in the thread of the support shaft, it has reached its maximum limit. Do not turn. Adjust the height using the three height screws under the support base. Tighten the three hexagonal nuts on the top of the support base to lock the three height screws.

6. Pull the small lever down.
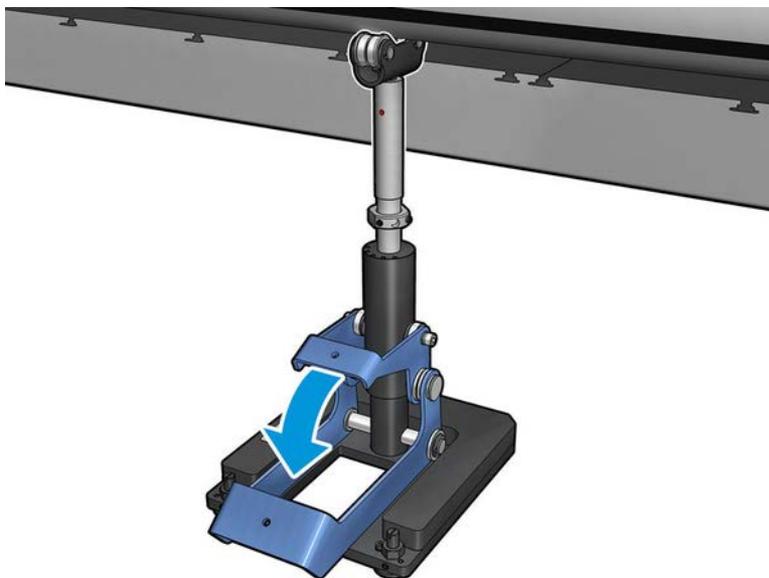
7. Lift the base nut one extra turn by rotating counterclockwise. There are two red dots in the central shaft for your reference.
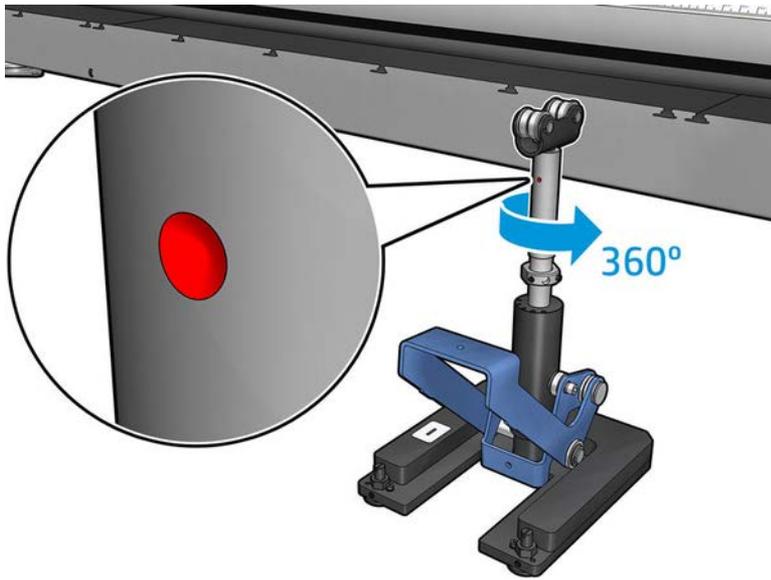
8. Tighten the base nut.
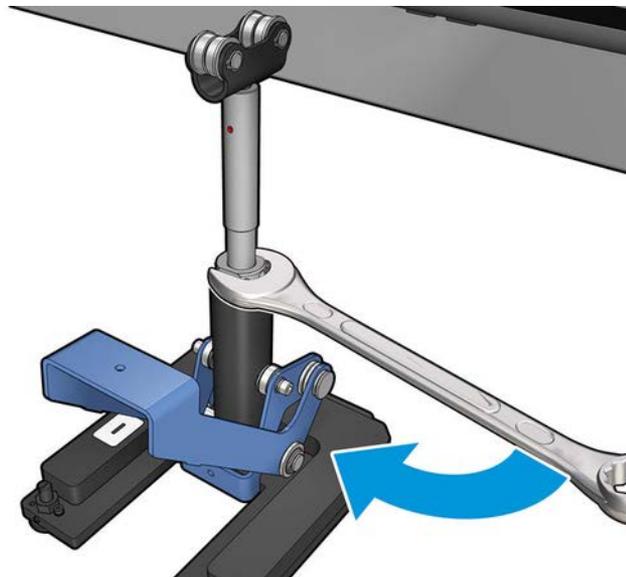
9. Tighten the two screws to fix the final position of the dual-roll center support.

📝 **NOTE:** Hold the support shaft firmly in position when tightening the screws.
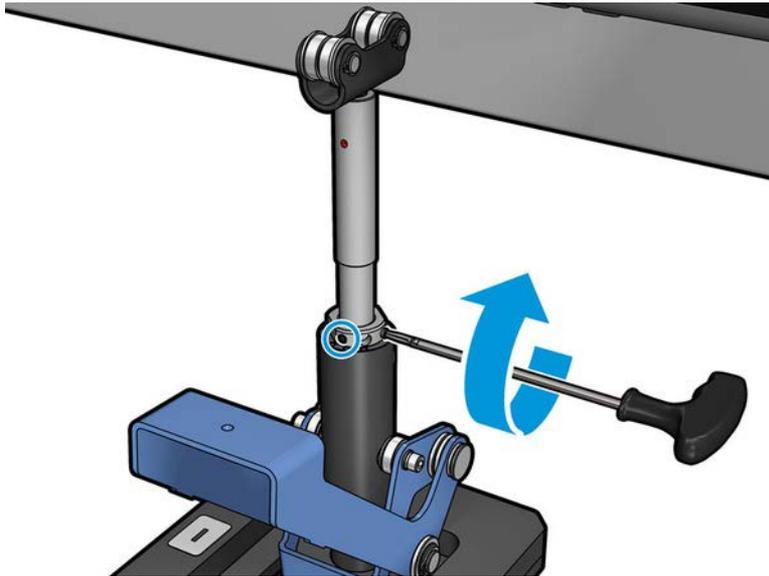
10. Insert the screw into the support base.
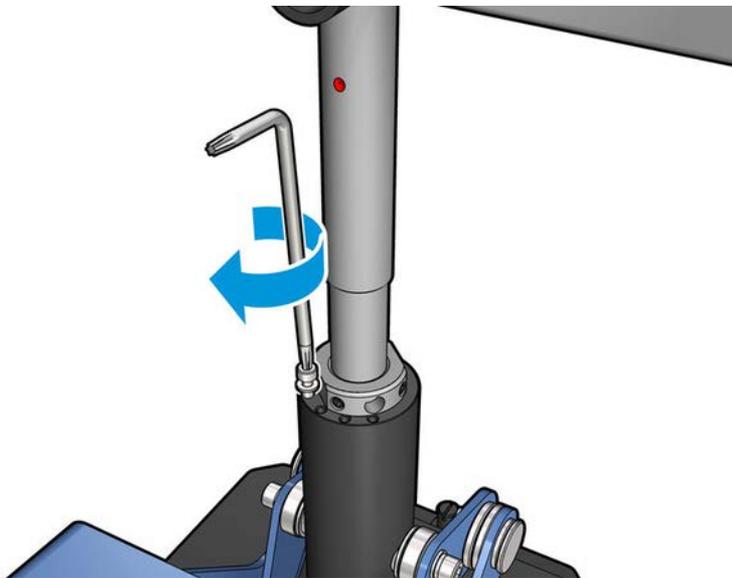
11. Remove the single-roll spindle.

12. Repeat the process for calibration of the front dual-roll spindle.

📝 **IMPORTANT:** If you can't realign the center support with the adjustment done using the screws located in the rear side of the center support base, the misalignment has to be fixed following the installation process. Contact HP.

The print is shorter than expected

Some substrates naturally contract when they are printed on and cured, this can mean the total length of the print is shorter than expected. If this is the case, you can expand the length of the print from the RIP, which will

compensate for the contraction of the substrate. Alternatively, change to a less thermal-dependent substrate to reduce the contraction.

How to achieve better consistency between jobs of the same length

The printer has been designed to maximize consistency in the length of the printed substrate.

However, there are external variables that can contribute to variability: substrate variations and enviromental conditions.

1. Select a substrate which is less susceptible to expansion when being printed on. Most paper-based substrates have a tendency to expand.

   - If you need to print on a substrate susceptible to expansion:

     – Ensure that the density of ink is similar between each tile (if not, the tile with less ink might be shorter).

     – If possible, decrease the heating temperature.

     – Reduce the ink restrictions as much as possible.

   - Make sure that the roll is left within the room where the printer is located for at least 24 hours, this is to ensure the complete roll has the same temperature as the printer.

2. **Do not touch** the print adjustments (no change of substrate advance compensation) between tiles.

3. Print all the tiles at once.

   - Do not split the jobs at different times (1 tile one day, and the 2nd tile the 2nd day)

   - Do **not** change the print mode or the substrate width between tiles.

   The objective is to make sure that there is no pause between the tiles. When using the Queue mode in the Internal Print Server, there is still a small time between jobs, which could add more variability between the lengths of the tiles.To print the tiles all at once, we recommend the following:

   a. Create the tiles from the Internal Print Server.

   b. If you are creating the tiles from the RIP, ensure that you send all the tiles within the same jobs sent to the printer/Internal Print Server.

4. In order to make sure that even the first tile has less difference in length compared with the other ones, add a top margin of 50 cm.

   In case you have to reprint one tile, in order to ensure the length will be as close as the previous jobs:

   - Make sure that the substrate and also the ambient temperature of the printer are the same as when the previous job was printed.

   - Add a top margin of 50 cm.

   - ▲ But in any case, when having to reprint a tile later, there is a higher probability that the length will be different from the other tile length. The total length repeatability depends on the substrate, the changes in environmental conditions, and the contents of each job (mainly when the substrate is reacting differently depending on the ink density).

The collector stops winding

The collector has a safety timer that will stop rewinding substrate if it is not fully collected after 30 seconds, and will stop unwinding substrate after 5 seconds if the substrate loop is not detected by the collector sensor. If you

have a lot of substrate to be collected lying on the floor, you will have to restart the collector by clicking the corresponding icon.

- If the collector keeps stopping, and collector movement causes the substrate to be tight between pressure roller and collector when winding, there could be an object blocking the collector sensor path, or the winding direction may not have been selected correctly when restarting the collector.

- If the collector keeps stopping, and collector movement makes substrate loops accumulate on the ground when unwinding, it is possible that the winding direction has not been selected correctly when restarting the collector, or that the collector sensor or electronics are broken and should be replaced.

The collector occasionally fails to work correctly

The collector may fail to work correctly if its optical sensor is dirty or blocked by some obstacle.

The collector winds in the wrong direction

The following steps provide the complete procedure for this topic.

1. Check that the winding direction is set correctly in the Internal Print Server.

2. Check that there is no obstacle blocking the collector's optical sensor.

The substrate is detached or winds around the collector in the wrong direction

Here are some possible explanations.

- The winding direction has been set wrongly.

- The collector has been loaded wrongly.

There is skew or telescoping on the collector

This may happen if the substrate was not properly aligned when attaching it to the collector core. You are recommended to follow the loading instructions; in particular, align the substrate well.

☆ TIP: If you have a lot of substrate lying on the ground after printing in roll-to-free-fall mode, and you want to attach it to the core, you are recommended to choose a core that is the same width as the substrate, so that a good length of substrate can be aligned around the core before you attach it.

If you cannot resolve the problem satisfactorily, you are recommended to use the roll-to-roll configuration instead, which has better winding performance.

The substrate has jammed on the collector

Here are some possible explanations.

- Too much substrate on the collector. The maximum diameter of the output roll is 300 mm (11.8 in) for the recommended outwards winding, or 200 mm (7.9 in) for inwards winding.

- The substrate is misaligned.

- The loop shaper is the wrong length.

Slitter poor cutting quality

If the in-line slitters do not cut the substrate properly, the main reasons could be:

- Unsupported substrate: look for a compatible blade if using unsupported substrates.

- Blade worn out: use the other side of the cutter blade or replace it by removing the lateral blue screw that fixes it.

For use with the in-line-slitters, provided with the printer are standard slotted 2.25 inch (57mm) x 0.75 inch (19mm) blades, with a thickness of up to 0.025 inches (0.6mm). Different blade coating or finishing can affect cut performance and blade life duration. Based on the specific application; please take this into account when replacing blades.

- The slitter is not properly adjusted: check if the slitter is properly installed, that it is in contact with the diverter wheels, and that the blade reaches the paper. Check on the images below for the correct position, and adjust the blade's position accordingly if necessary.
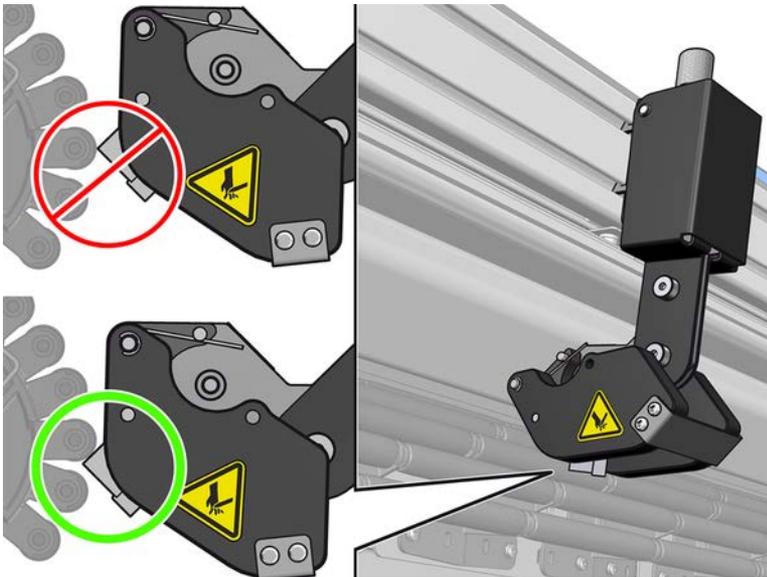
To adjust the cutter blade positions, untighten the two lateral screws with an Allen key, then adjust the position as shown in the image. To fix the correct position; tighten the screws.
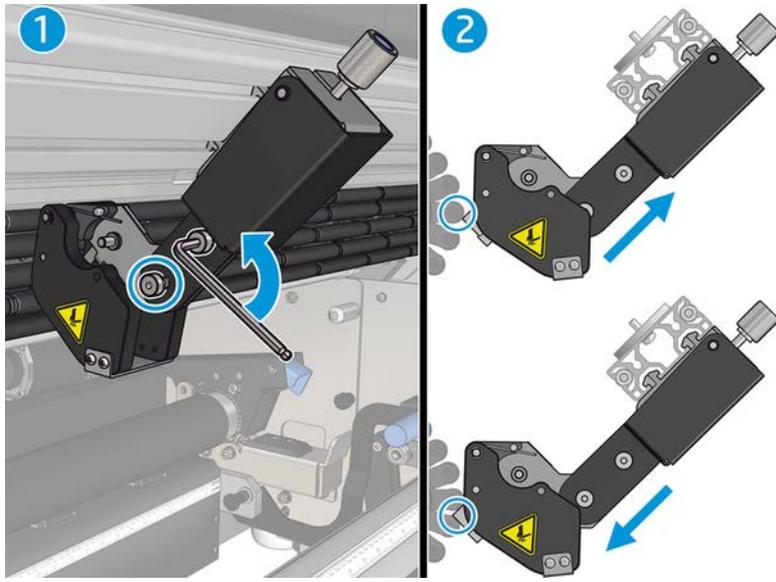
13 Troubleshoot print-quality issues

The HP Latex 1500 printer has been designed and qualified to the highest standards to provide the optimal compromise between print quality and productivity.

General advice

Prints for outdoor use can accommodate more visible defects as they are viewed from a long distance. For shorter distances, as in indoor advertising, defects need to be less visible. To decide whether a defect is considered acceptable, as a rule of thumb, the table below shows the appropriate viewing distances.

Table 13-1 Appropriate viewing distances

Print mode	m²/h	ft²/h	To view output at...	
3 pass (outdoor)	74	800		3 m − 5 m
4 pass (outdoor plus)	57	610		3 m − 5 m
6 pass (indoor high quality)	45	480		1 m − 3 m

You are recommended to review the acceptability of a defect according to this table before proceeding to diagnose it to make sure the selected print mode is the most appropriate for the purpose of the job. Increasing the number of passes to 8 or more enables higher ink quantities if needed and/or the use of difficult printing materials thanks to the longer drying and curing times. Print modes with more passes are more resistant to banding. In general, follow these recommendations:

- Avoid touching the substrate while printing is in progress.

- Judge the print quality after the print has completely emerged from the printer. In some cases, defects seen while printing disappear after the image is completely cured.

- Check that the environmental conditions (room temperature and humidity) are in the recommended range. See Environmental specifications on page 420.

Before troubleshooting, check the following points:

- To achieve the best performance from your printer, use only genuine HP supplies and accessories, whose reliability and performance have been thoroughly tested to give trouble-free performance and best-quality prints.

- Check that the substrate type selected in the Internal Print Server is the same as the substrate type loaded into the printer.

  ⚠ CAUTION: If you have the wrong substrate type selected, you could experience poor print quality and incorrect colors, and perhaps even damage to the printheads.

- Check that you are printing on the right side of the substrate.

- Check that you are using in the RIP software the correct substrate preset, which includes the ICC profile for your substrate and print mode.

- Check whether there are any outstanding printer alerts in the Internal Print Server. React to the alert as instructed in this guide.

In particular:

- Make sure the substrate is flat and has no wrinkles. See .

- Check that the substrate has no skew or telescoping. Check that you are loading the substrate using the correct process. See .

- For color consistency issues, check that the color calibration was performed when the substrate was added to the Internal Print Server. See .

- Make sure it has also been performed in the current conditions, especially considering substrate batch and printheads. See .

Image quality inspection plot

The Image Quality Inspection Tool is designed to provide a guided troubleshooting process for users facing banding issues, especially horizontal banding.

The tool consists of two parts: an image to print, and a guide for the troubleshooting process. The image consists of 12 solid area fills of 7.62 cm x 22.86 cm ((3 x 9 in)). The six rectangles in the top row are printed by a single ink each, and the six rectangles in the bottom row are secondary or tertiary colors printed using more than one ink. Note that colors in this image may differ from the ones expected. This is a desired behavior, since this image is not used to verify color accuracy.

This plot can be printed from the **Internal Print Server** in the **Printer** menu.

When facing banding issues, print the Image Quality Inspection Plot from the **Printer** menu: go to **Printer** > **IQ Inspection** > **Add New Job**. This will add a job to the print queue. To print it, edit the details of the job to select the substrate and print mode you want to check. Once the plot has printed, start the troubleshooting process. See

the **Image Quality Troubleshooting Process** image at the end of this section for a summary diagram of the troubleshooting process.

1. Determine if the banding in the image is caused by aeroworms. Aeroworms are thin bands with higher density than the surrounding area that appear randomly and are not continuous across the substrate.

    - To correct this kind of non-uniformity:

        –   Increase the number of passes

        –   Reduce the ink density

        –   Check the carriage beam position

        –   Check the aerosol filters

2. If the banding is not caused by aeroworms, continue with the following procedure:

    a. Horizontal banding

        i.   Banding present in all colors:

            -   Check the Substrate-Advance Compensation and calibrate if necessary. (**Printer menu** > **Advance calibration** ...)

        ii. Banding in one or more colors of the top row:

            -   Execute a check and clean routine, print the printhead status plot and check the number of blocked nozzles.

            -   If the number of blocked nozzles is roughly greater than 300 in any printhead, perform a hard cleaning routine, selecting the colors affected.

            -   After executing the cleaning routines, reprint the printhead status plot, the image quality troubleshooting plot, and check the current state of the printheads (expect to see less nozzles clogged) and of the banding. If banding is still visible, increase the number of passes.

            -   If none of the above work, replace the printhead that caused the banding (the one with most nozzles clogged).

            -   If the problem persists after replacing the printhead, consider it may be a substrate compatibility issue.

        iii. Banding in one or more colors of any row:

- Execute printhead alignment and recheck uniformity with the Image Quality Troubleshooting Plot.

- Execute check and clean, print the Printhead Status Plot, and check the number of blocked nozzles. If the number of blocked nozzles is greater than 300 in any printhead, perform a hard cleaning routine, selecting the colors affected.

- Check the Substrate-Advance Compensation and calibrate if necessary.

- Change the type of mask and/or increase the number of passes.

- Reduce the ink density.

- If the problem persists after all the corrective actions, consider it may be a substrate compatibility issue.

b. Vertical Banding

i. Wide bands:

- Execute printhead alignment.

- Check carriage beam position.

- Decrease curing temperature to reduce deformation.

- Change from 4 to 6 colors to reduce grain.

- Check substrate settings (vacuum and tension).

ii. Microbanding (vertical high-frequency lines, less than 2mm [0.08 in] wide):

- Print the Printhead Alignment Plot to see the printhead responsible, and replace it.

3. After finishing the troubleshooting process, delete the image quality inspection job from the queue, and keep the files on the disk.

NOTE: For more information on print quality troubleshooting, see the .

Table 13-2 Image Quality Troubleshooting Process

Image Quality Troubleshooting

After finishing the troubleshooting process, delete the image quality inspection job, and keep the files on disk.

Basic and advanced troubleshooting

The print-quality troubleshooting process is divided here, for convenience, into two levels: basic and advanced.

- Basic troubleshooting will help to resolve the majority of the typical print-quality issues related to banding, graininess, and printhead alignment.

- Advanced troubleshooting helps to resolve the above issues when the basic steps did not work, but it also covers other possible print-quality defects, diagnosis, and resolution.

Basic print-quality troubleshooting

The following sections provide details for this topic.

Identify the defect.

The following steps provide the complete procedure for this topic.

1. This basic procedure applies to the following defects:

   - Horizontal banding

   - Graininess

   - Color misalignment

- Blurred lines, edges, and text, horizontally and vertically

- Halo of a different color around color lines and at the edges of color areas or text

- Ink bleeding or wicking or different gloss at the edges of color areas

2. Perform the actions described in the following table.

Table 13-3 Actions to perform

Defect	Image quality inspection plot procedure	Substrate-advance sensor check	Printhead alignment	Possible causes (for reference only)
Horizontal banding	X	–	–	• Blocked nozzles • Substrate advance accuracy • Intra-color alignment
Isolated bands (usually of different texture or grain)	–	X	–	• Substrate-advance accuracy and navigability
Graininess	–	X	X	• Substrate advance accuracy • Color alignment
Blurry edges or text lines, horizontally	–	X	X	• Substrate advance accuracy • Color alignment
Blurry edges or text lines, vertically	–	–	X	• Color alignment
Color halo on objects (e.g., magenta shows up under a blue line)	–	–	X	• Color alignment
Ink bleeding, wicking, or different gloss at the edges of color areas	–	–	X	• Optimizer alignment

Printhead check and clean

The check and clean process will check the printheads, recover the ones with blocked nozzles, and replace the nozzles that are not recovered with healthy ones for printing.

See Check and clean the printheads on page 122.

Substrate-advance sensor check

Run the OMAS Diagnostic Test from the HP Print Care window. The test will tell you whether the substrate-advance sensor is working correctly or not (either dirty or damaged).

📝 NOTE: OMAS stands for Optical Media Advance Sensor, usually known as the substrate-advance sensor in this guide.

If the substrate-advance sensor is dirty, clean the sensor. See Clean the substrate-advance sensor on page 230.

Even if the sensor is working correctly, the substrate may not be navigable, meaning that the substrate-advance sensor cannot see it properly (as in the case of transparent substrates or substrates with very smooth back side). In this case, the substrate-advance sensor disables itself automatically. You are then recommended to adjust the substrate-advance compensation: see Substrate-advance compensation on page 148.

For best results, cleaning the substrate-advance sensor is included in the printer's weekly maintenance.

Printhead alignment

Automatic alignment is recommended.

See Automatic alignment procedure on page 137.

In case you want to perform manual printhead alignment. Ssee Manual Alignment procedure on page 138.

The result of the alignment can be verified with the printhead alignment diagnostics plot. See Printhead alignment diagnostics plot on page 141.

Advanced print-quality troubleshooting

One of the most important parts of print-quality troubleshooting is to ensure that the printheads are healthy.

If the basic print-quality troubleshooting does not solve the problem, here are some further procedures that you can try. See Printhead health troubleshooting on page 408.

Print-quality artifacts troubleshooting

Troubleshoot print-quality issues as horizontal banding, vertical banding, color misalignment, bleed halo wicking, low gloss haze, color accuracy, local colors variations, color variations when tiling, edge roughness text quality, graininess, phyisical deformations marks and poor curing.

Horizontal banding

Horizontal banding means that your print suffers from added horizontal lines or bands, in a regular pattern. They can look different depending on the cause.

Thin dark lines

These are thin dark lines across the entire image with certain frequency, more easily seen in solid area fills. There are two likely causes:

- **Printhead alignment.** This is a clear contributor to banding. If printheads are not correctly aligned, the misplaced dots could correlate directly with the severity of the banding, by putting more ink in the same place and thus creating darker lines.

  To check printhead alignment, print the printhead alignment diagnostics plot (see Printhead alignment diagnostics plot on page 141). As a general rule, the biggest contributors to thin-dark-line banding caused by printhead alignment are (in this order):

  - Inter-color alignment (alignment between different colors)

  Here are some tips for solving this problem:

  - If the printhead alignment was done with a different substrate of different thickness, probably a new printhead alignment is needed.

  - Fine-tune the alignment by identifiying the offenders in the printhead alignment diagnostics plot. See Automatic alignment procedure on page 137.

- **Substrate advance.** Before trying to adjust any parameter, make the following checks:

- Check that no substrate-advance factor was set earlier that could prevent the substrate-advance sensor from working correctly.

- Run the diagnostics to check that that the substrate-advance sensor is not dirty.

If the substrate advance is not well adjusted, particularly if it is under-advancing, a dark line can appear between passes.

A clear symptom of this is when the dark lines appear across all colors, because the cause is common to all of them. To confirm it, in the Internal Print Server, select **Printer** > **Advance Calibration** to check the substrate advance. See Substrate-advance test print on page 150.

You can usually correct this problem by adjusting the substrate advance compensation (see Substrate-advance compensation on page 148). However, you are recommended to run the OMAS Diagnostic Tests from the Print Care window as soon as the substrate is unloaded, to avoid having the same problem with other substrates. See Clean the substrate-advance sensor on page 230.

If the problem persists, try adjusting tension and vacuum settings according to the table below, step by step (a to c), until you find settings that work.

	Generic Vinyl		Generic Cast Vinyl		PVC Banner		CoatedPaper & Wallpaper		Offset Paper		PET film		PP PE film and banner		Canvas		Generic Textile	
c	-	-	-	-	5	40	-	-	-	-	5	40	5	40	5	50	0	35
		-		-		30		-		-		30		30		35		30
b	5	50	-	-	10	50	15	50	5	40	10	50	10	50	10	60	0	40
		35		-		40		40		30		40		40		45		30
a	10	60	5	35	10	60	15	55	10	50	10	60	10	60	10	70	0	45
		50		30		50		45		40		50		50		55		35
recomended	15	60	10	35	10	60	15	60	15	60	10	60	15	60	15	70	0	50
		50		30		60		50		50		55		50		55		40

Thin white lines

These are thin white/light lines across the entire image at regular intervals, more easily seen in solid area fills.

There are three likely causes:

- **Nozzle clogging.** A printhead nozzle can be sealed temporarily, by some fibers or dirt in the ink bore. Then not all the ink is fired and a lighter horizontal band appears. Sometimes a bigger drop with all the accumulated ink appears at the end of this light thin line, meaning that the bore is clear then. See Printhead health troubleshooting on page 408.

- **Printhead alignment.** This is a clear contributor to banding. If printheads are not correctly aligned, the misplaced dots could correlate directly with the severity of the banding, by leaving lighter bands where the ink should have been placed.

  To check printhead alignment, print the printhead alignment diagnostics plot (see Printhead alignment diagnostics plot on page 141). As a general rule, the biggest contributors to thin-white-line banding caused by printhead alignment:

  — Inter-color alignment (alignment between different colors)

  Here are some tips for solving this problem:

  — Execute automatic alignment.

  — If the printhead alignment was done with a different substrate of different thickness, probably a new printhead alignment is needed.

  — Fine-tune the alignment by identifiying the offenders in the printhead alignment diagnostics plot. See Automatic alignment procedure on page 137.

- **Substrate advance.** Before trying to adjust any parameter, make the following checks:

  — Check that no substrate-advance factor was set earlier that could prevent the substrate-advance sensor from working correctly.

  — Run the diagnostics to check that that the substrate-advance sensor is not dirty.

  If the substrate advance is not well adjusted, particularly if it is over-advancing, a white line can appear between passes.

  A clear symptom of this is when the white lines appear across all colors, because the cause is common to all of them. To confirm it, in the Internal Print Server, select **Printer** > **Advance Calibration** to check the substrate advance. See Substrate-advance test print on page 150.

  You can usually correct this problem by adjusting the substrate advance compensation (see Substrate-advance compensation on page 148). However, you are recommended to run the OMAS Diagnostic Tests from the Print Care window as soon as the substrate is unloaded, to avoid having the same problem with other substrates. See Clean the substrate-advance sensor on page 230.

  If the problem persists, try adjusting tension and vacuum settings according to the table below, step by step (a to c), until you find settings that work.

	Generic Vinyl	Generic Cast Vinyl	PVC Banner	CoatedPaper & Wallpaper	Offset Paper	PET film	PP PE film and banner	Canvas	Generic Textile
c	- - -	- - -	5 40 30	- - -	- - -	5 40 30	5 40 30	5 50 35	0 35 30
b	5 50 35	- - -	10 50 40	15 50 40	5 40 30	10 50 40	10 50 40	10 60 45	0 40 30
a	10 60 50	5 35 30	10 60 50	15 55 45	10 50 40	10 60 50	10 60 50	10 70 55	0 45 35
recomended	15 60 50	10 35 30	10 60 60	15 60 50	15 60 50	10 60 55	15 60 50	15 70 55	0 50 40

These are periodic horizontal bands formed of a lighter band and a consecutive darker band. This pattern is mostly seen in solid color area fills (such as light purple or gray).
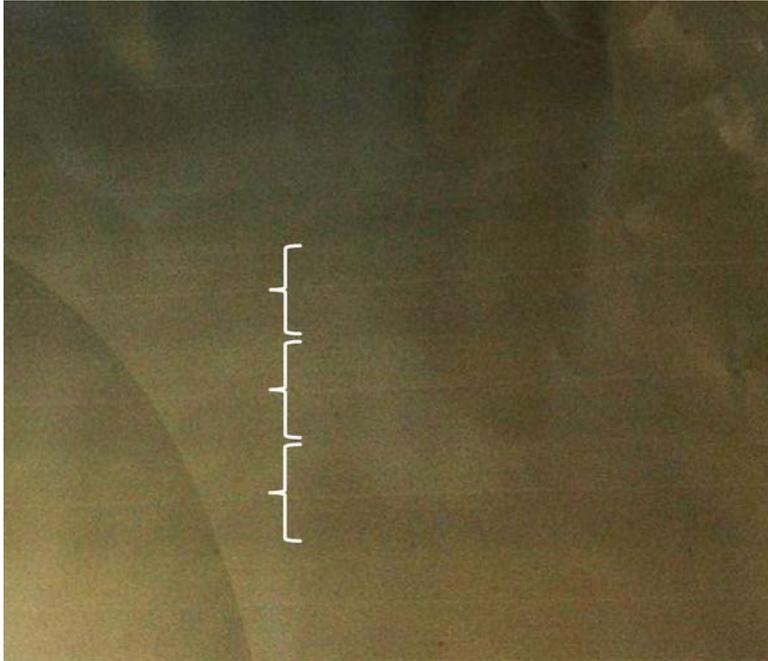
There are three likely causes:

● **Coalescence.** This is due to an excessive amount of ink, and the ink being misplaced as it is deposited on the substrate, generating bands with more ink than other alternate bands. It can also be caused by firing too much ink in a short time. Coalescence is most likely to be seen in areas of high ink density.

Here are some tips for solving this problem:

– Use lower ink density.

– Increase the number of passes.

– Change the type of mask (large/uniformity).

● **Printhead alignment.** This is a clear contributor to banding. If printheads are not correctly aligned, the misplaced dots could correlate directly to the severity of the banding.

To check printhead alignment, print the printhead alignment diagnostics plot (see Printhead alignment diagnostics plot on page 141). As a general rule, the biggest contributors to light-and-dark banding caused by printhead alignment are (in this order):

– Bidirectional alignment

– Inter-color alignment (alignment between different colors)

Here are some tips for solving this problem:

– Execute automatic alignment.

– If the printhead alignment was done with a different substrate of different thickness, probably a new printhead alignment is needed.

– Fine-tune the alignment by identifiying the offenders in the printhead alignment diagnostics plot. See Automatic alignment procedure on page 137.

- **Substrate advance.** Before trying to adjust any parameter, make the following checks:

  – Check that no substrate-advance factor was set earlier that could prevent the substrate-advance sensor from working correctly.

  – Run the diagnostics to check that that the substrate-advance sensor is not dirty.

  When the substrate advance is incorrect, some light and dark horizontal bands can appear from the misplacement of the ink.

  To confirm it, in the Internal Print Server, select **Printer** > **Advance Calibration** to check the substrate advance. See Substrate-advance test print on page 150.

  You can usually correct this problem by adjusting the substrate advance compensation (see Substrate-advance compensation on page 148). However, you are recommended to run the OMAS Diagnostic Tests from the Print Care window as soon as the substrate is unloaded, to avoid having the same problem with other substrates. See Clean the substrate-advance sensor on page 230.

  If the problem persists, try adjusting tension and vacuum settings according to the table below, step by step (a to c), until you find settings that work.

	Generic Vinyl		Generic Cast Vinyl		PVC Banner		CoatedPaper & Wallpaper		Offset Paper		PET film		PP PE film and banner		Canvas		Generic Textile	
c	-	-	-	-	5	40	-	-	-	-	5	40	5	40	5	50	0	35
		-		-		30		-		-		30		30		35		30
b	5	50	-	-	10	50	15	50	5	40	10	50	10	50	10	60	0	40
		35		-		40		40		30		40		40		45		30
a	10	60	5	35	10	60	15	55	10	50	10	60	10	60	10	70	0	45
		50		30		50		45		40		50		50		55		35
recomended	15	60	10	35	10	60	15	60	15	60	10	60	15	60	15	70	0	50
		50		30		60		50		50		55		50		55		40

Gloss banding

This appears in dark, high-density areas as horizontal gloss or matte bands about 1 cm wide. It can happen when the curing system settings are not correct for the substrate.

If the bands are more apparent when tilting the print or changing your viewing position, then it is likely to be gloss banding.

To solve the problem, check your curing settings (airflow, curing temperature). You could also try using a different print mode.

Aeroworms

Aeroworms consist of thin bands with higher density than the surrounding area. They are about 6 cm long and have a horizontal tendency, but they tend to curve like worms. They are not continuous across the substrate, and seem to appear at random.

When the ink is being fired, there are airflow turbulences under the carriage that can affect the positioning of the drops. Therefore, some waves of ink can be formed and deposited on the substrate to create this effect.

Here are some tips for solving this problem:

- Increase the number of passes.

- Reduce the ink density.

- Check the printhead-to-ribs spacing in the Internal Print Server. If it is higher than normal, try reducing it.

- Check that the aerosol filters are not saturated or broken (see Replace the aerosol filters on page 124).

Vertical banding

Vertical banding means that your print suffers from added vertical lines or bands, in a regular pattern.

Microbanding

This consists of vertical lines less than 2 mm (0.08 in) wide, of very high frequency, that appear in some area fills. Often they are hardly visible.
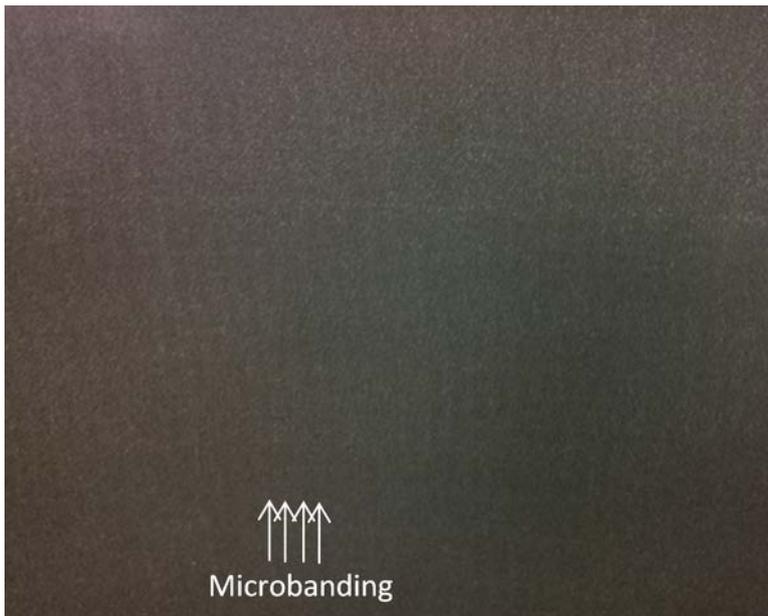
Microbanding is probably caused by a faulty printhead. Print the printhead alignment diagnostics plot (see Printhead alignment diagnostics plot on page 141) to find which printhead is responsible. Try a hard recovery to see if the fault has gone. If the microbanding remains, replace the printhead.

Wide bands 2 cm (0.8 in)apart

If the bands are about 2 cm (0.8 in) apart, it means that the substrate is well controlled in the print zone and is in contact with all the ribs in the platen as intended. However, if the suction is too high, a difference in grain can be seen, and bands appear 2 cm apart.

Here are some tips for solving this problem:

- Align the printheads.

- Check the scan-beam height in the Internal Print Server. If it is higher than normal, try lowering it.

- Decrease the drying temperature to reduce deformation.

- Change from 4 to 6 colors to reduce grain.

- Decrease vacuum and tension settings according to the table below, step by step (a to c), until you find settings that work.

	Generic Vinyl		Generic Cast Vinyl		PVC Banner		CoatedPaper & Wallpaper		Offset Paper		PET film		PP PE film and banner		Canvas		Generic Textile	
c	-	-	-	-	5	40	-	-	-	-	5	40	5	40	5	50	0	35
		-		-		30		-		-		30		30		35		30
b	5	50	-	-	10	50	15	50	5	40	10	50	10	50	10	60	0	40
		35		-		40		40		30		40		40		45		30
a	10	60	5	35	10	60	15	55	10	50	10	60	10	60	10	70	0	45
		50		30		50		45		40		50		50		55		35
recomended	15	60	10	35	10	60	15	60	15	60	10	60	15	60	15	70	0	50
		50		30		60		50		50		55		50		55		40

Wide bands at least 4 cm apart

A small amount of vertical banding (like waves) can be seen, with a frequency from about 4 cm (1.6 in) to 10 cm (3.9 in), when printing large area fills of the same color.

The substrate is not in contact with all the ribs in the platen, which means that it is not fully controlled, so wide wrinkles appear on the print zone. As the height of the printhead above the substrate varies, there are local differences in grain that can be seen as lighter or darker wide bands (see picture). To solve this, it is important to improve substrate control in this zone and reduce the wrinkles.

Here are some tips for solving this problem:

- Check the scan-beam height in the Internal Print Server. If it is higher than normal, try lowering it.

- Align the printheads.

- Increase the drying temperature in steps of 5 degrees Celsius.

- Decrease the curing temperature to reduce deformation.

- Change from 4 to 6 colors to reduce grain.

- Increase vacuum and tension settings according to the table below, step by step (i to iv), until you find settings that work (by improving control in the print zone).

	Generic Vinyl		Generic Cast Vinyl		PVC Banner		CoatedPaper & Wallpaper		Offset Paper		PET film		PP PE film and banner		Canvas		Generic Textile	
recomended	15	60 50	10	35 30	10	60 60	15	60 50	15	60 50	10	60 55	15	60 50	15	70 55	0	50 40
i	15	60 55	10	45 40	10	60 65	15	65 55	15	65 55	10	65 60	15	65 55	15	75 60	5	50 45
ii	20	60 55	15	60 55	10	65 70	20	65 55	20	65 55	10	70 65	15	70 60	15	80 65	10	60 50
iii	20	70 60	20	75 80	20	70 75	25	70 60	25	70 60	20	70 75	25	70 70	25	80 75	15	65 60
iv	20	70 65	25	80 85	30	75 80	30	75 65	30	75 65	25	75 80	30	75 80	30	85 80	25	70 75
v	25	80 70	30	100 100	35	85 85	35	85 85	35	85 85	35	85 85	35	85 85	35	85 85	35	85 85

Color misalignment

Colors appear misaligned. Typically, lines and text are most affected by this issue.

It can happen in both axes: the substrate axis and the scan axis.
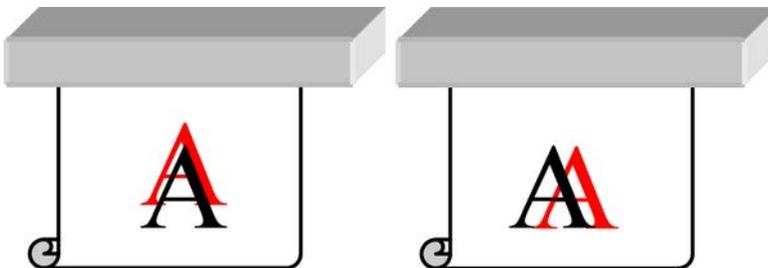
Color misalignment is most likely to be caused by printhead misalignment. To check printhead alignment, print the printhead alignment diagnostics plot (see Printhead alignment diagnostics plot on page 141).

Bleed, halo, wicking

Sometimes a small color migration may be observed at the border between different colors (bleed). It may also happen at the border between a color and blank substrate (no ink), reducing the sharpness of the shape. On some substrates, a gloss halo can be observed at the border between colors.
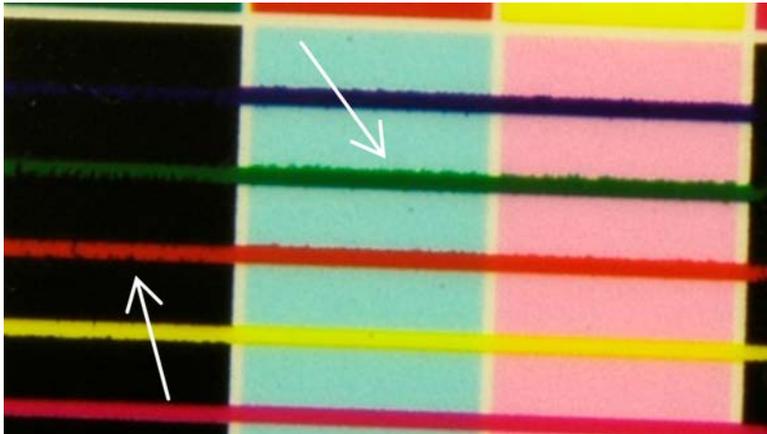
There are three likely causes:

- **Optimizer misalignment:** There may be misalignment between the optimizer printhead and the other printheads. To check the printhead alignment, print the printhead alignment diagnostics plot (see Printhead alignment diagnostics plot on page 141). If necessary, perform a manual alignment, then reprint the printhead alignment diagnostics plot.

  If the problem is in the substrate axis direction, it may also be caused by incorrect substrate advance. See Substrate-advance test print on page 150 and Substrate-advance compensation on page 148.

- **Optimizer level**, which may be too low for this substrate and ink density. Other associated defects may also appear, such as coalescence or grain in the area fills due to low wetting of the ink on the substrate. You can correct this problem by increasing the optimizer percentage in the substrate preset.

- **Drying temperature**, which may be too low for this substrate and ink density. Other associated defects may also appear, such as coalescence or grain in the area fills due to low wetting of the ink on the substrate. You can correct this problem by increasing the drying temperature in the substrate preset.

Low gloss, haze

On glossy substrates, the print may have lower gloss than expected, which is probably due to the optimizer level. To investigate and correct this problem, try increasing and decreasing the optimizer percentage in the substrate preset.

Color accuracy

Ideally, the colors that you see on the screen should match the colors in the print. In practice, you may find that the colors are not sufficiently accurate. There are three possible causes:

- **Color calibration** provides consistent colors, but consistent colors are not necessarily accurate. However, if the combination of substrate and printheads has not been calibrated recently (or ever), that is a possible

source of color inaccuracy. You can eliminate the possibility by performing a color calibration (see Color calibration on page 144).

- **ICC profile.** If you are using the wrong profile, your colors are likely to be inaccurate. Check which profile you are using. If necessary, you can make your own ICC profile for the printer, printheads, print mode, and substrate that you are using.

- **Ink density**, which affects color saturation. If the color saturation of your print seems wrong, try changing the ink density in the substrate preset; you may need to change the number of passes at the same time.

Local color variations

In some cases, at the edges of area fills, a small number of ink drops may be missing or slightly darker, producing a local color variation.
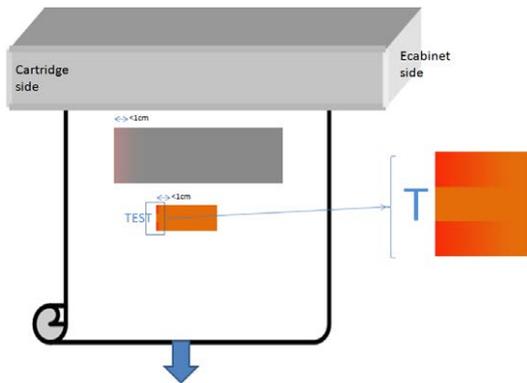
These defects are due to the printheads travelling from side to side without printing.

- In each pass, the first 1 or 2 drops of a color are missing or smaller.

- In each pass, the first 1 or 2 drops of a color are darker because they are more concentrated with pigment.

To resolve these defects, add spit bars at each side of the image, to make sure nozzles are refreshed before printing each pass. If possible, you could also rotate the image to avoid situations such as shown in the example.

Color variations when tiling

When tiling, it is important that all tiles have the same length and that the colors of the mating edges match.

This section focuses on color variations; for recommendations about length consistency, see Edit a substrate preset on page 76.

To achieve better color consistency it is recommended to optimize tiling performance via the IPS (**Substrate** > **Tiling optimization**). See Optimize for tiling on page 71.
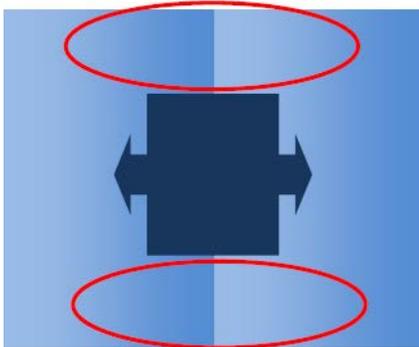
- **Uniform variations from tile to tile.** When color changes uniformly it must be within the color consistency specification; see Color consistency on page 39 for more details. Usually grays are much more sensitive: differences of much less than 2 dE 2000 may be visible, although other colors would not show a difference.

- **Small color variation left to right.** The tile itself looks uniform, but when putting it beside the adjacent tile the differences become visible.

- **Local color variations.** See Local color variations on page 398. Sometimes these defects become visible only when printing tiles, showing in one of the tiles but not in the adjacent. They are also more visible when printing grays.

- Try to ensure uniform printing of all tiles, and all tiles printed in the same run.

- Rotate every other tile, to compensate for left to right differences.

- Adding spit bars at both sides of the image helps overall, especially when there are local color variations.

Edge roughness, text quality

The edges of objects may appear rough or blurred; this is especially noticeable in text.
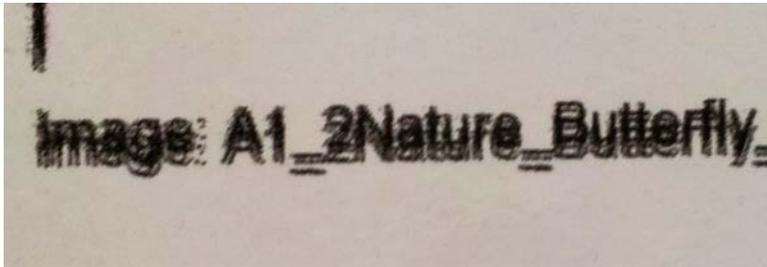
There are five possible causes:

- **Bleed:** see Bleed, halo, wicking on page 397.

- **Printhead alignment.** As ink could be deposited by a combination of different colored printheads, it is important that all printheads are correctly aligned. To do so, print the Printhead alignment diagnostics plot on page 141, and correct any misalignment.

- **Substrate advance.** Before trying to adjust any parameter, make the following checks:

  - Check that no substrate-advance factor was set earlier that could prevent the substrate-advance sensor from working correctly.

  - Run the diagnostics to check that the substrate-advance sensor is not dirty.

  If the substrate advance is incorrectly adjusted, particularly if it is under-advancing, a dark line can appear between passes. When the problem of line roughness or text quality applies to all colors and appears in the substrate axis direction, it is likely to be related to incorrect substrate advance. Another clue that could point to substrate advance as a cause is to observe that the defect is not constant, appearing and disappearing along the print in the substrate axis.

  To confirm it, go to the Internal Print Server and select **Printer** > **Advance Calibration** to check the substrate advance. See Substrate-advance test print on page 150.

  To correct the substrate advance, see Substrate-advance compensation on page 148. In most cases, this will solve the problem. However, you are recommended to run the OMAS Diagnostic Tests from the Print Care window as soon as the substrate is unloaded, to avoid having the same problem with other substrates. See Clean the substrate-advance sensor on page 230.

  If the problem persists, try adjusting tension and vacuum settings according to the table below, step by step (a to c), until you find settings that work.

	Generic Vinyl	Generic Cast Vinyl	PVC Banner	CoatedPaper & Wallpaper	Offset Paper	PET film	PP PE film and banner	Canvas	Generic Textile
c	- -	- -	5 40 30	- -	- -	5 40 30	5 40 30	5 50 35	0 35 30
b	5 50 35	- -	10 50 40	15 50 40	5 40 30	10 50 40	10 50 40	10 60 45	0 40 30
a	10 60 50	5 35 30	10 60 50	15 55 45	10 50 40	10 60 50	10 60 50	10 70 55	0 45 35
recomended	15 60 50	10 35 30	10 60 60	15 60 50	15 60 50	10 60 55	15 60 50	15 70 55	0 50 40

- **Printhead-to-ribs spacing.** Check the printhead-to-ribs spacing in the Internal Print Server. If it is higher than normal, try reducing it.

- **Vacuum.** In some thin substrates, if the vacuum is too high, the substrate follows the shape of the platen ribs, modifying the printhead-to-substrate spacing and causing vertical line roughness. In this case, as the substrate advances, vertical lines get wider after each pass, while horizontal lines are not affected.

  To correct this problem, try adjusting tension and vacuum settings according to the table below, step by step (a to c), until you find settings that work.

	Generic Vinyl	Generic Cast Vinyl	PVC Banner	CoatedPaper & Wallpaper	Offset Paper	PET film	PP PE film and banner	Canvas	Generic Textile
c	- -	- -	5 40 30	- -	- -	5 40 30	5 40 30	5 50 35	0 35 30
b	5 50 35	- -	10 50 40	15 50 40	5 40 30	10 50 40	10 50 40	10 60 45	0 40 30
a	10 60 50	5 35 30	10 60 50	15 55 45	10 50 40	10 60 50	10 60 50	10 70 55	0 45 35
recomended	15 60 50	10 35 30	10 60 60	15 60 50	15 60 50	10 60 55	15 60 50	15 70 55	0 50 40

Graininess

The print shows a higher level of grain than expected, either throughout the print or in some specific areas. The example below shows more grain in the lower half than in the upper half.
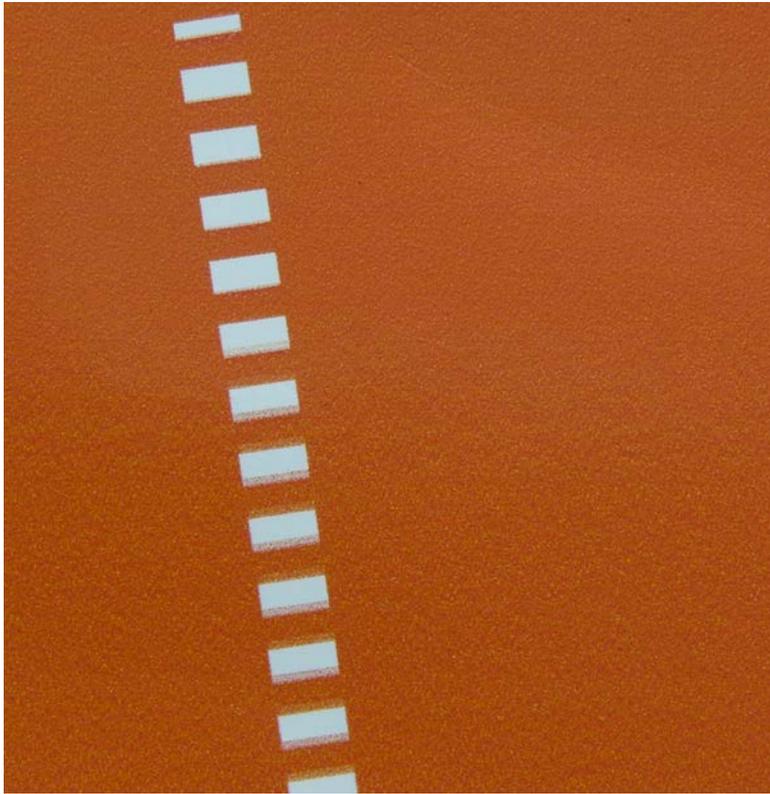
This can occur for various different reasons.

- **Coalescence.** Some substrates, in some particular conditions, can produce a type of grain due to wetting issues. For example, in high humidity or low temperature environments, the ink may not dry fast enough in fast print modes, producing a grainy effect on the print. The example below shows worse coalescence on the right-hand side.
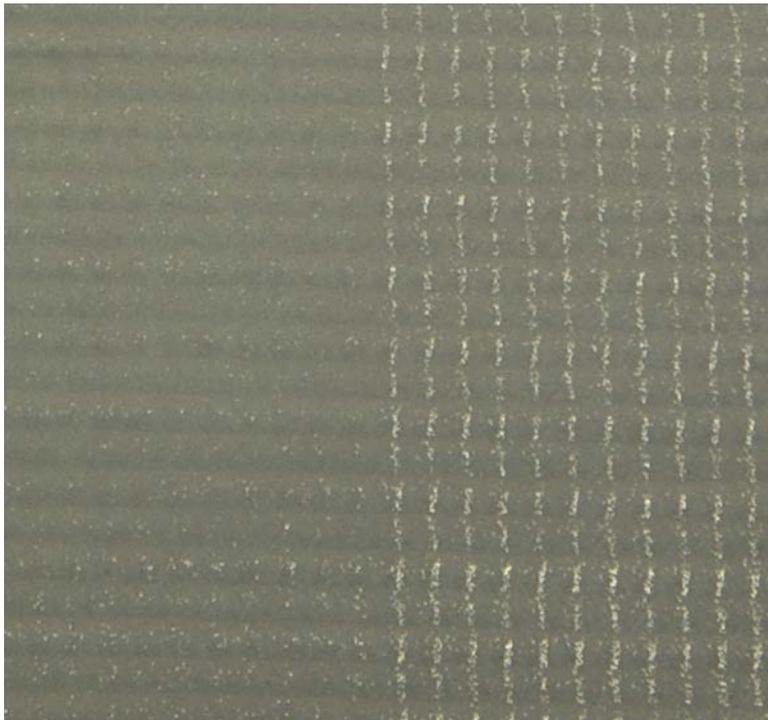
It is difficult to decide whether this kind of problem is due to wetting or to dot placement error (described below). The type of grain could be a clue: in the case of wetting issues, dots tend to aggregate into bigger dots, with empty spaces in between. A magnifying glass can be useful to examine the print in more detail.

Here are some tips for solving this problem:

- Increase the optimizer level.
- Increase the drying temperature.
- Increase the number of passes.
- Change from 6 to 4 colors (less ink on the substrate).

● **Printhead alignment.** This is a clear contributor to grain. If printheads are not correctly aligned, the misplaced dots could correlate directly with the severity of the graininess.

To check printhead alignment, print the printhead alignment diagnostics plot (see Printhead alignment diagnostics plot on page 141). As a general rule, the biggest contributors to grain caused by printhead alignment are (in this order):

- Bidirectional alignment
- Inter-color alignment (alignment between different colors)

Here are some tips for solving this problem:

- If the printhead alignment was done with a different substrate of different thickness, probably a new printhead alignment is needed.
- Fine-tune the alignment by identifiying the offenders in the printhead alignment diagnostics plot. See Automatic alignment procedure on page 137.

● **Substrate advance.** Before trying to adjust any parameter, make the following checks:

- Check that no substrate-advance factor was set earlier that could prevent the substrate-advance sensor from working correctly.
- Run the diagnostics to check that that the substrate-advance sensor is not dirty.

Grain in a print can be increased by incorrect substrate advance, due to mispositioning of the dots.

To check the substrate advance, go to the Internal Print Server and select **Printer** > **Advance Calibration**. See Substrate-advance test print on page 150.

To correct the substrate advance, see Substrate-advance compensation on page 148. In most cases, this will solve the problem. However, you are recommended to run the OMAS Diagnostic Tests from the Print Care window as soon as the substrate is unloaded, to avoid having the same problem with other substrates. See Clean the substrate-advance sensor on page 230.

If the problem persists, try adjusting tension and vacuum settings according to the table below, step by step (a to c), until you find settings that work.

	Generic Vinyl	Generic Cast Vinyl	PVC Banner	CoatedPaper & Wallpaper	Offset Paper	PET film	PP PE film and banner	Canvas	Generic Textile
c	- - / -	- - / -	5 40 / 30	- - / -	- - / -	5 40 / 30	5 40 / 30	5 50 / 35	0 35 / 30
b	5 50 / 35	- - / -	10 50 / 40	15 50 / 40	5 40 / 30	10 50 / 40	10 50 / 40	10 60 / 45	0 40 / 30
a	10 60 / 50	5 35 / 30	10 60 / 50	15 55 / 45	10 50 / 40	10 60 / 50	10 60 / 50	10 70 / 55	0 45 / 35
recomended	15 60 / 50	10 35 / 30	10 60 / 60	15 60 / 50	15 60 / 50	10 60 / 55	15 60 / 50	15 70 / 55	0 50 / 40

- **Substrate wrinkles.** If you see patches of high grain in some local areas of the print, this could be caused by wrinkles in the substrate. See There are wrinkles and ink smears on the substrate on page 369.

- **Color usage.** In general, 4-color printing produces more grain than 6-color printing.

- **Dual-roll printing.** If you see a different level of grain in dual-roll printing, a uniformity mask is recommended to equalize the grain. See Edit a substrate preset on page 76.

Physical deformation marks

You may occasionally see physical deformation of the substrate. This issue is not a mispositioning of the dots, but a physical deformation of the substrate that usually occurs after the dots have been printed.

- There are various kinds of deformation that may occur:

    Diverter horizontal marks: Deformations of the substrate in the shape of straight lines (about 6 cm long) towards the printed side of the substrate. They are separated about 2 cm vertically and 1 cm horizontally.

- **Diverter vertical marks:** These physical marks have the appearance of a braid. They consist of small wrinkles just below the curing module, forming a vertical line of small deformations.

Both kinds of deformations can be the result of an excessive curing temperature. See There are physical marks on the substrate on page 372.

Poor curing

When the heat applied to the printed substrate is not enough for the quantity of ink laid down, the print may appear wet or with some gloss marks. The heat needed to cure is directly dependent to the combination of: ink density, time under the curing module (printmode), curing temperature, airflow, and drying power.

These are the defects you may see:

- **Perforated plate gloss marks:** The print suffers from an added matte pattern over the areas with more ink density. You can see small circles scattered over the picture with different levels of gloss.

- **Wet print:** The ink comes out of the curing module not perfectly dry, and in severe cases the ink can be smudged by touching it.

Here are some tips for solving both problems:

- Increase the curing temperature and/or airflow.

- Decrease the ink density.

- Reduce throughput.

- Repeat the Add New Substrate procedure in case you had wrong settings in the substrate preset.

14 Troubleshoot ink cartridge and printhead issues

The following steps provide the complete procedure for troubleshooting some ink cartridge and printhead issues

Cannot insert an ink cartridge

The following steps provide the complete procedure for this topic.

1. Check that the cartridge (type and capacity) is the correct one for the printer. See http://www.hp.com for the latest information on printer supplies.

2. Use the correct procedure to change ink cartridges, through the Internal Print Server. See Remove an ink cartridge on page 107.

3. Check that there is no obstruction in the ink cartridge connector.

4. Check that the ink cartridge is of the correct color. A connector will refuse to connect to a cartridge of the wrong color.

5. Check that the ink cartridge is correctly oriented (compare with the others).

The Internal Print Server does not recognize an ink cartridge

The following steps provide the complete procedure for this topic.

1. Ensure that you have inserted the cartridge correctly and fully. You should hear a click.

2. Ensure that the tabs on each side of the cartridge connector are opened but in place, showing a successful connection.

3. If the problem persists, check the ink cartridge connector (see Bent ink cartridge connector on page 406).

4. If the problem still persists, call your service representative (see HP Customer Care Centers on page 416).

The Internal Print Server recommends replacing or reseating an ink cartridge

General recommendations.

1. Disconnect the ink cartridge.

2. Reconnect the ink cartridge and check the Internal Print Server message.

3. If the problem persists, check the ink cartridge connector (see Bent ink cartridge connector on page 406).

4. If the problem persists, insert a new ink cartridge.

5. If the problem still persists, call your service representative (see HP Customer Care Centers on page 416).

Bent ink cartridge connector

You may find that the ink cartridge connectors have become bent while the cartridge was disconnected . This means that they cannot connect properly, and you will see a reseat message.

See Remove an ink cartridge on page 107)To correct this problem, use pliers to straighten the connectors so that they will fit into their slots.

Cannot insert a printhead

The following steps provide the complete procedure for this topic.

1. Check that you are inserting the printhead into the correct slot.

2. Use the correct procedure to change printheads, through the Internal Print Server. See Remove a printhead on page 112 and Insert a Printhead on page 117, bearing in mind the special tips for the optimizer printhead.

3. Check that there is no obstruction in the printhead slot.

4. Check that the printhead is correctly oriented (compare with the others).

The Internal Print Server recommends replacing or reseating a printhead

General recommendations.

1. Remove the printhead.

2. Reinsert the printhead into the carriage and check the Internal Print Server message.

3. If the problem persists, check the printhead contacts for dirt or aerosol and clean them if necessary. See Clean the printhead contacts on page 310.

4. Find more troubleshooting information in the following sections, Problem due to overheating on page 406 and Problem due to the primer system on page 406.

5. If the problem persists, insert a new printhead.

6. If no printhead works in that slot, call your service representative (see HP Customer Care Centers on page 416).

Problem due to overheating

A printhead may overheat for several reasons:

● The room temperature may be too high.

● The printhead may be suffering from blocked nozzles. You may be able to cure this problem by cleaning the printheads (see Check and clean the printheads on page 122).

● The printhead may be faulty, in which case it should be replaced.

Problem due to the primer system

Primers are important to the printheads' nozzle health.

When there is a problem with a primer, the Internal Print Server displays the following messages.

- A reseat message for a particular printhead

- A printhead replacement incomplete message

- A numerical error code starting with 46 (46.0X.0Y:ZZ)

- A reseat message for a particular printhead

- A numerical error code starting with 46 (46.0X.0Y:ZZ)

The message **46.05.0Y:06 – Primer 0Y leakage detected** indicates that one of the primer systems leaks. The number 0Y, where Y ranges from 1 to 7, indicates which primer is leaking.

You are recommended to:

- Run the primer diagnostic test from the Print Care window to confirm the cause of the error.

- Reseat the printhead. Make sure to push the primer into position before securing the latch. While running the test, you will already have done it at least once.
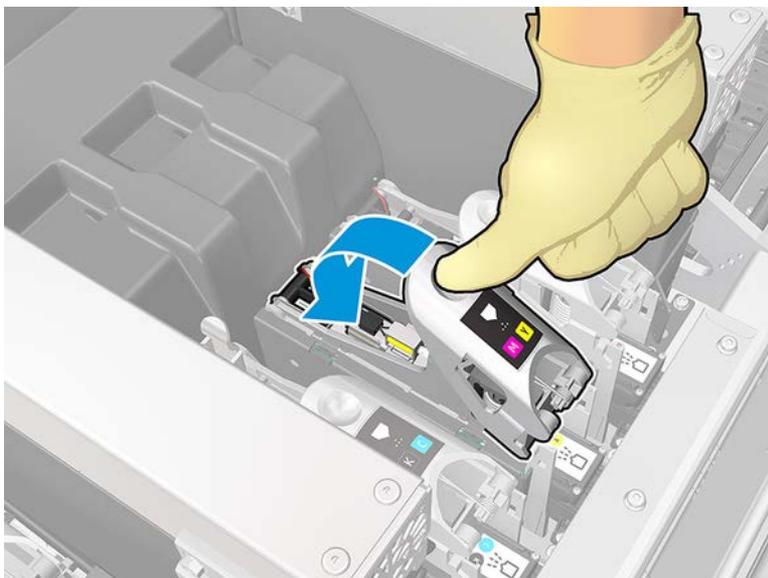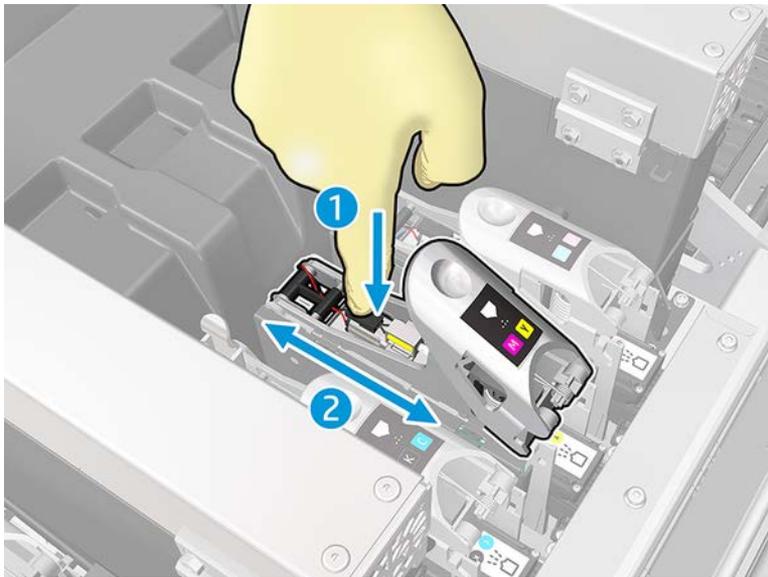
- Check that the O-rings in the primer ports are not broken or damaged. Replace the primer if any O-ring is missing or dented.
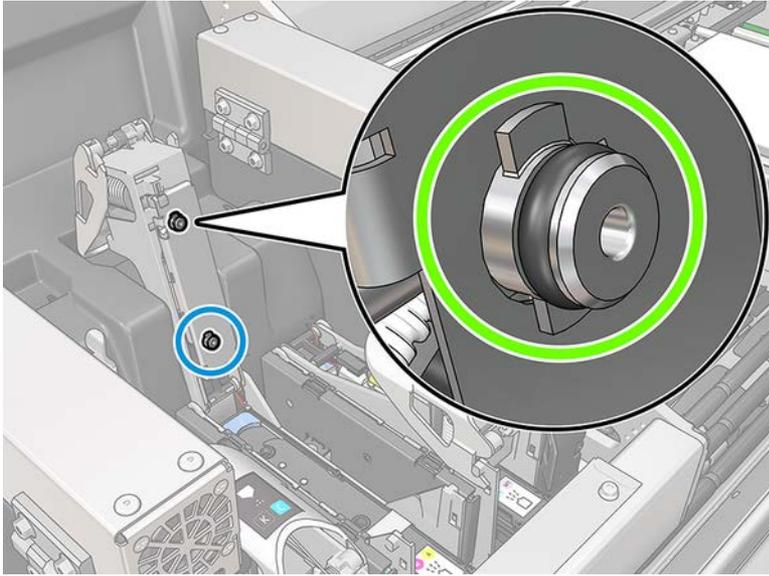
- Replace the primer. See Replace a primer and latch on page 321.

- Grease the printhead primers. See Grease the printhead primers on page 278.

If none of these actions resolve the problem, call your service representative.

If you see the message **46.01.0Y:YY**, run the primer diagnostic test from the Print Care window to confirm the cause of the error.

If the test instructs you to replace the primer, replace it. See Replace a primer and latch on page 321. Otherwise, call your service representative with the test results at hand.

Printhead health troubleshooting

There are two diagnostics to check the status of the printheads: the printhead status plot and the drop detector diagnostics in Print Care. Always use both, as they provide complementary information.

Printhead status plot

To print the printhead status plot, go to the Internal Print Server, select **Printer** > **Printhead cleaning** and press the **Print** button.
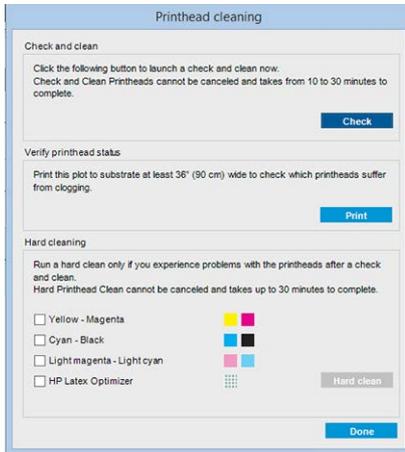
The following image is printed.

▲   The image below shows plainly which nozzles in each printhead are printing and not printing.
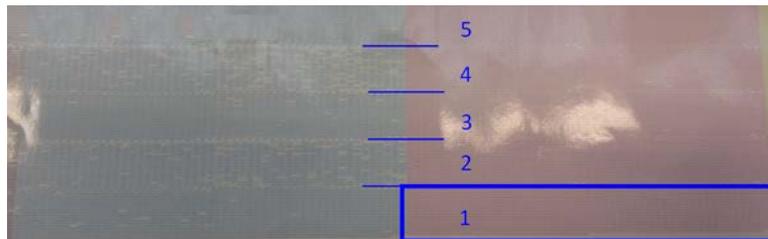
For reference, each one of the 5 areas (square in the picture and 1 to 5) of each color corresponds to approximately 1000 nozzles.

Drop detector diagnostics

Execute the Drop Detector diagnostics from the Print Care window. This will identify blocked nozzles in each printhead.

Decision table

The following table summarizes the data that can be seen in each diagnostic, the possible causes, and the decisions.
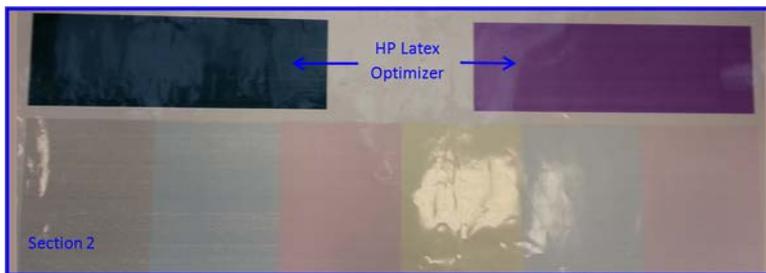
Table 14-1 Decision Table

Mid-tones (section 1)	Nozzle health (sectiion 2)	Drop detector	Possible cause	Action
No banding	< 300 blocked (all colors)	< 300 blocked (all colors)	Other	Continue banding troubleshooting.
Banding in all colors	< 300 blocked (all colors)	< 300 blocked (all colors)	Substrate advance, or other	Check the substrate-advance sensor.

Table 14-1 Decision Table (continued)

Mid-tones (section 1)	Nozzle health (sectiion 2)	Drop detector	Possible cause	Action
				Continue banding troubleshooting.
Banding in one color	< 300 blocked (that color)	< 300 blocked (that color)	Other	Continue banding troubleshooting.
	> 300 blocked	> 300 blocked	Printhead failure	Hard-clean the printhead, twice if necessary.
				Replace the printhead.
N/A	< 300 blocked (at least one color)	> 300 blocked (at least one color)	Drop detection failure	Call your service representative.

Hard clean

To perform a hard cleaning routine, go to the Internal Print Server, select **Printer** > **Printhead cleaning**, select the printhead(s) to clean and press the **Hard clean** button.
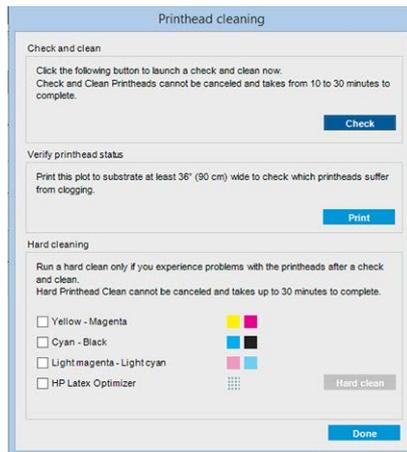
Sometimes, when the printhead is quite damaged, running the hard-clean routine twice helps to recover its performance.

New printhead is rejected

If the printer will not accept a new printhead, try the following steps in sequence:

1. Ensure that the printhead was correctly stored in its orange cap.

2. Ensure that the electrical contacts are clean.

3. Run the primer system diagnostic.

4. Assume that the printhead is faulty, and try another one.

5. If no printhead works in that slot, call your service representative.

Automatic Printhead Alignment fails

Automatic printhead alignment may fail occasionally.

You may see the alert **Automatic Printhead Alignment cancelled because of scanning errors**, which can be caused by different problems:

- The scans of the printed blocks cannot be performed reliably on the current substrate. The scans of the patterns maybe unreliable or impossible on substrates that are non-white, transparent, or translucent, or have a very rough or punched surface. For these substrates, automatic printhead alignment using the built-in line sensor may not be possible.

- Some patterns of the automatic printhead alignment plot are defective due to:

  - Stains or printhead crash marks on the substrate that can be easily seen by visual inspection of the three blocks in the plot. Make sure the substrate has no stains before running automatic printhead alignment.

  - Printhead crash marks may occur when the substrate is wrinkled. See There are wrinkles and ink smears on the substrate on page 369

  - Generally poor print quality due to clogged nozzles. See Check and clean the printheads on page 122.

- Either the built-in line sensor is not working properly or is not well calibrated. Automatic printhead alignment uses the black colorant as reference to align the rest of colorants, therefore the line sensor has a specific calibration that saves the proper distance between the line sensor and the black printhead (see Print Care diagnostics on page 154). If the LsToK (line sensor to black) calibration is not done, it can be seen by a visual inspection of the plot. In this case, the black patch is overlapping the spitbars of the first block of patterns, shown here:
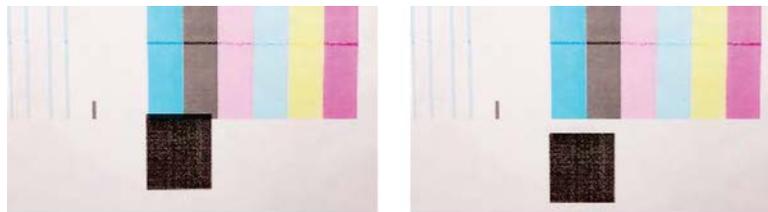
Incorrect calibration of LstoK   Successful calibration of LsToK

If the problem persists, call your service representative (see HP Customer Care Centers on page 416)

Printhead cleaning roll errors

You should not touch the printhead cleaning roll except when you need to replace it.

When the printhead cleaning roll reaches its end, it should be replaced. Always do this by following the Internal Print Server wizard. See Printhead cleaning roll on page 122.

Any handling of the roll may prevent the printer from keeping track of roll usage, in which case you may see spurious error messages, and a printing job may be cancelled unnecessarily.

15 Troubleshoot other issues

The following steps provide the complete procedure for troubleshooting other issues.

The printer does not start

The following steps provide the complete procedure for this topic.

1. Check that the power supply to the printer is working.

2. Check that the main power switch and PC switch are both on.

3. Check that the main power lights are on and the circuit breakers are all up.

4. Check that the IPS is working with no alerts showing.

5. Try turning the main switch off (not the PC switch) and turning it on again after 10 seconds.

6. If any of the circuit breakers trip (from up to down) while the printer is operating, switch off the printer and call your service representative (see HP Customer Care Centers on page 416).

The printer does not print

If all is in order (substrate loaded, all ink components installed, and no file errors), there are still reasons why a file you have sent from your computer may not start printing when expected:

- You may have an electrical power problem. If there is no activity at all from the printer, nor from its built-in computer, check that the power cables are connected correctly and that there is power available at the source.

- You may be experiencing unusual electromagnetic phenomena, such as strong electromagnetic fields or severe electrical disturbances, which can cause the printer to behave strangely or even stop working. In this case, turn off the printer, wait until the electromagnetic environment has returned to normal, then turn it on again. If you still experience problems, call your service representative (see HP Customer Care Centers on page 416).

The printer cannot be restarted from the Internal Print Server

In rare cases, the printer may be unresponsive to the **Shutdown** and **Wake up** buttons. If this happens, turn off the main switch, then turn it on again after 10 seconds and restart the built-in computer.

The printer seems slow

You may experience a temporary delay while the printer's drying and curing modules are warming up.

In some circumstances, the printer will deliberately print more slowly than usual to prevent the printheads from overheating. There are several possible reasons why a printhead may start to overheat:

- The room temperature is too high.

- The printhead is suffering from blocked nozzles (see Check and clean the printheads on page 122).

- The printhead is faulty and should be replaced.

Request to reinitialize the carriage

In some cases you may be asked to reinitialize the carriage. This operation restarts some mechanical subsystems, avoiding the need to restart the whole printer.

The Internal Print Server cannot detect the printer

Internal Print Server cannot establish communication with the printer, without apparent reason of after modifying Windows properties.

Follow these steps:

1. Use the **Wake up** button in the **Tools** menu to try to reactivate the printer.

2. Turn off the printer's main switch, then turn it on again after 10 seconds and restart the built-in computer.

3. Check the cable connecting the built-in computer to the printer.

4. Check that the Internal Print Server is correctly set up.

5. Contact your service representative.

Print Care spontaneously restarts

The Print Care software may restart itself when it detects that the printer's firmware or the Internal Print Server or some of their components have been updated, so this can happen from time to time.

Color calibration fails

Automatic color calibration may fail occasionally. You may see the alert **Color calibration cancelled because of scanning errors**, which can be caused by various different problems.

- Reflective color measurements of the printed target cannot be performed reliably on the current substrate. Reflective color measurement can be unreliable or impossible on substrates that are non-white, transparent or translucent, very glossy, or have a very rough or punched surface. For these substrates, automated color calibration using the embedded spectrophotometer may not be possible.

- Some of the color measurements of the color calibration test chart are defective due to:

  - Stains or printhead crash marks on the substrate, that can be easily seen by visual inspection of the printed chart. Make sure the substrate has no stains before running color calibration. Printhead crash marks may occur when the substrate is wrinkled. See There are wrinkles and ink smears on the substrate on page 369.

  - Wrinkles or bubbles in the substrate, even when there has been no printhead crash.

  - Generally poor print quality (such as banding). See Troubleshoot print-quality issues on page 383.

- Either the embedded spectrophotometer or the line sensor is not working properly. If the problem persists, call your service representative (see HP Customer Care Centers on page 416).

16 When you need help

HP Support is available, use the Remote Support HP option, in the IPS Help menu to connect.

Call your remote support assistant and follow his instructions. Enter the 6 digit code when provided by the operator to allow remote connection: Webcam streaming is now possible. The call can include chat, remote desktop access, and the sharing of files, images, and video.

NOTE: Remote support may not be available if you are not directly supported by HP or if you have not accepted the Data Transfer Agreement. To enable HP Support, go to the Internal Print Server, select **Tools** > **Preferences** > **Remote assistance**, and ensure that the Enable Remote Assistance checkbox is ticked.

HP Proactive Support

HP Proactive Support helps reduce costly printer downtime by preemptively identifying, diagnosing and resolving printer issues before they become problems for you. HP's Proactive Support tool is designed to help businesses of all sizes reduce support costs and maximize productivity—all with the click of a mouse.

A component of the HP Imaging and Printing suite of services, Proactive Support helps you gain control of your printing environment—with a clear focus on maximizing the value of your investment, increasing printer uptime and reducing printer management costs.

HP recommends that you enable Proactive Support right away to save you time and prevent problems before they occur, reducing costly downtime. Proactive Support runs diagnostics and checks for software and firmware updates.

You can enable Proactive Support in the Internal Print Server by selecting **Tools** > **Proactive Support**, where you can specify the frequency of connections between your computer and HP's Web server, and the frequency of diagnostic checks. You can also choose to run the diagnostic checks at any time.

If Proactive Support finds any potential problem, it notifies you with an alert, which will explain the problem and recommend a solution. In some cases, the solution may be applied automatically; in other cases, you may be asked to perform some procedure to solve the problem.

HP Customer Care

HP Customer Care offers award-winning support to ensure you get the most from your printer, providing comprehensive, proven support expertise and new technologies to give you unique end-to-end support.

Services include setup and installation, troubleshooting tools, warranty upgrades, repair and exchange services, phone and Web support, software updates and self-maintenance services. To find out more about HP Customer Care, visit us at: http://www.hp.com/go/graphic-arts/

or call us on the telephone (see HP Customer Care Centers on page 416). To register your warranty:

http://register.hp.com/

HP Customer Care Centers

Help is available to you by telephone.

For the right telephone numbers in your location, see http://www.hp.com/go/LatexCareCenters.

- Review the troubleshooting suggestions in this guide.

- Review your RIP's documentation, if relevant.

- Ensure that you have the following information available:

    - The printer you are using: the product number and the serial number, found on the label on the door of the electrical compartment

    - If there is an error code in the Internal Print Server window, note it down; see Printer messages on page 421

    - The printer's Service ID

    - The RIP you are using, and its version number

    - The software application you are using, and its version number

    - If you have a problem directly related to an ink supply component (printhead, ink cartridge), take note of the product part number and warranty end date.

    - The text displayed by the Internal Print Server when you select **Help** > **About**

Service information

The printer can produce on request a list of many aspects of its current status, some of which may be useful to a service engineer trying to fix a problem. There are two different ways to request this list:

- In the Internal Print Server, select **Information** > **Service information**.

- From any computer with Internet access, enter the URL of your printer into a Web browser, followed by `/hp/device/webAccess/allServicePlot.htm`. For instance, if the URL of your printer is **http://123.123.123.123**, enter `http://123.123.123.123/hp/device/webAccess/allServicePlot.htm`.

You can request the whole list, which takes a significant time to generate; or you can request specific parts of it. If in doubt, you are recommended to request the whole list (select **All pages**).

If you need to send the list by e-mail, you can save the page as a file from your Web browser, and later send the file.

17 Printer specifications

The HP Latex 1500 Printer allows you to print signs and graphics on a wide range of flexible materials up to 3.20 m (126 in) wide, and uses water-based HP Latex Inks to provide high quality, durable output.

Functional specifications

This topic provides a full set of reference information for this subject.

Table 17-1 Ink supplies

Type:	Values:
Printheads	Cyan and black, light magenta and light cyan, yellow and magenta, HP Latex Optimizer
Ink cartridges	Cyan, magenta, yellow, black, light cyan, light magenta, HP Latex Optimizer

Table 17-2 Substrate sizes

Type:	Minimum	Maximum
Roll width	635 mm (25 in)	3.20 m (126 in)
Dual roll width	635 mm (25 in)	2 × 1.60 m (2 × 63 in)
Roll diameter	80 mm (3.15 in) (core diameter)	300 mm (11.8 in)
Roll weight	-	160 kg (350 lb)
Dual roll weight	-	2 × 70 kg (2 × 154 lb)

NOTE: Narrow substrates can be damaged during printing if they are very weak.

Table 17-3 Passes, resolutions, and speeds

Passes	Ink density	Resolution (ppi)		Printing speed (m²/h)	Printing speed (ft²/h)
		Rendering	Printing	3.2 m roll	126 inch roll
1	≤ 40%	300 × 300	600 × 1200	160	1720
2	≤ 60%	300 × 300	600 × 1200	94	1010
3	≤ 90%	300 × 300	600 × 1200	74	800
4	≤ 110%	300 × 300	600 × 1200	57	610
6	≤ 140%	600 × 600	600 × 1200	45	480
8	≤ 170%	600 × 600	600 × 1200	34	370
10	≤ 300%	600 × 600	600 × 1200	24	260
14	≤ 300%	600 × 600	600 × 1200	21	225

Table 17-3 Passes, resolutions, and speeds (continued)

| Passes | Ink density | Resolution (ppi) | | Printing speed (m²/h) | Printing speed (ft²/h) |
		Rendering	Printing	3.2 m roll	126 inch roll
18	≥150%	600 × 600	600 × 1200	16	170
18	≤ 150%	600 × 600	1200 × 1200	16	170

Table 17-4 Standard print modes

Print mode name	Viewing distance	Print mode	Printing speed (m²/h)	Printing speed (ft²/h)
High-saturation backlit	1–3 m	18p 6c 260%	16	170
Frontlit textiles and canvas	1–3 m	12p 6c 170%	24	260
Front vivid mode	1–3 m	12p 6c 150%	24	260
Indoor high-quality plus	1–3 m	6p 6c 120% 6p 6c 100%	45	480
Outdoor plus	3–5 m	4p 6c 90%	57	610
Outdoor	3–5 m	3p 6c 90%	74	800
Billboard	> 5 m	2p 4c 60%	94	1010

NOTE: Printing speed is measured using rolls 3.2 m (126 in) wide.

Physical specifications

This topic provides a full set of reference information for this subject.

Table 17-5 Printer physical specifications

Type:	Values:
Weight	1200 kg (2645.5 lb)
Width	5.72 m (225.2 in)
Depth	1.37 m (53.9 in)
Height	1.53 m (60.2 in)

Memory specifications

This topic provides a full set of reference information for this subject.

Table 17-6 Memory specifications for the Internal Print Server computer

Type:	Values:
Memory (DRAM) supplied	8 GB
Hard disk	500 GB

Power specifications

The drying and curing components are powered with a three-phase line that requires a power distribution unit (PDU).

Table 17-7 Power specifications for drying and curing components

Mains power, input rated current	HP Latex 1500
3-phase (line-to-line voltage)	200–240 V AC, 50/60 Hz, 48 A max
3-phase (line-to-line voltage)	380–415 V AC, 50/60Hz, 30 A max
PC power (optional), input rated current	**HP Latex 1500**
1-phase	100–127 V AC, 50/60Hz, 10 max
1-phase	200–240 V AC, 50/60Hz, 10 max

Air supply requirements (pneumatic spindle)

The pneumatic spindle requires an air compressor or a pressurized air line, not supplied with the printer.

Air pressure supply

You are recommended to use a pressure gauge that indicates the pressure in bars.

Table 17-8 Air supply specifications

Type:	Values:
Air pressure	5.5 bar (80 psi)
Minimum airflow	Recommendation: 30 l/min
Lubricator	Not recommended
Air filter (recommended)	Recommendation: 5 µm, auto-drain, 99.97% coalescing efficiency
Regulator (required)	Regulator with pressure gauge

Pneumatic connector

The printer comes with an air gun that you must attach to your air supply. In order to connect your air supply to the air gun, you must meet the following requirements:

- 9.84-mm (0.25-in) female connector, BSP or NPT thread
- Tape to secure the connection and prevent air leaks

Ecological specifications

The up-to-date ecological specifications of your printer,

Go to http://www.hp.com/ and search for "ecological specifications".

Environmental specifications

This topic provides a full set of reference information for this subject.

Table 17-9 Printer environmental specifications

Conditions	Temperature range	Humidity range	Temperature gradient
Operating for optimal print quality	20 to 25°C (68 to 77°F)	30 to 60% relative humidity	10°C/h (18°F/h) or less
Operating for standard printing	15 to 30°C (59 to 86°F)	20 to 70% relative humidity	10°C/h (18°F/h) or less
Not operating, in transport or storage, ink in tubes	5 to 55°C (41 to 131°F)	90% relative humidity at 55°C (131°F)	10°C/h (18°F/h) or less
Not operating, in transport or storage, no ink in tubes *	−25 to 55°C (−13 to 131°F)	90% relative humidity at 55°C (131°F)	10°C/h (18°F/h) or less

* If the printer is going to be kept at a temperature of less than 5°C, call your service representative to empty the ink from the tubes.

Maximum operating altitude: 3000 m (10000 ft)

The printer should not be exposed to direct sunlight or any other strong light source, and it should not be used in a dusty environment.

Acoustic specifications

Printer acoustic specifications

Table 17-10 Printer acoustic specifications

Type:	Values:
Average idle sound pressure at bystander position	< 57 dB (A)
Average operating sound pressure at bystander position	< 73 dB (A)

A Printer messages

Occasionally you may see messages such as the following in the Internal Print Server window.

There are two types: text messages, which are more informative, and messages containing numerical codes, which mean that the printer has detected a problem or malfunction.

When one of these messages appears, follow any instructions provided by the printer, and consult the tables below. If you feel in doubt about the correct response, or if you have followed the recommendation but the problem persists, call your service representative. See HP Customer Care Centers on page 416.

Table A-1 Text messages

Message	Recommendation
{Color} cartridge has expired	You are advised to replace the ink cartridge. See Remove an ink cartridge on page 107.
{Color} cartridge is altered	You are advised to replace the ink cartridge. See Remove an ink cartridge on page 107.
{Color} cartridge is low on ink	Be ready to replace the ink cartridge soon.
{Color} cartridge is missing	Install the correct ink cartridge. See Insert an ink cartridge on page 108.
{Color} cartridge is non-HP ink	You are recommended to install an HP ink cartridge for best performance.
{Color} cartridge is out of ink	Replace the ink cartridge. See Remove an ink cartridge on page 107.
{Color} printhead is missing	Install the correct printhead. See Insert a Printhead on page 117.
{Color} printhead out of warranty	The printhead's warranty has ended, because of the length of time it has been in operation, because of the volume of ink used, or because non-HP ink has been used in the system. See the limited warranty document.
An error has occurred in printhead detection	Remove the printhead, clean any ink from the electrical connectors on the printhead (do not try to clean the nozzles), and reinsert the printhead. See The Internal Print Server recommends replacing or reseating a printhead on page 406.
Checking file system	After a dirty power off, the printer performs a file system check, which will take some minutes.
Checking printer	The printer is completing checks and cool-down cycle after finishing a job.
Clean drop detector spittoon	You are advised to clean the ink deposits.
Cleaner roll jam.	Go to the Internal Print Server and select the Ink System menu, then **Check cleaner roll**. Pull out the printhead cleaning roll assembly, raise the pinchwheels, wind the roll forward manually, then lower the pinchwheels and push the assembly back into the printer.
Color calibration cancelled because of scanning errors	The color calibration chart could not be scanned successfully with the current substrate. See Color calibration fails on page 414.
FW upgrade post actions	The firmware update is being performed.

Message	Recommendation
Initializing	The Internal Print Server is connecting to the printer.
Initializing, please wait	The Internal Print Server is starting the printer.
Ink drying	The printer is drying the last passes of a job after printing it.
Ink system not ready to print	Wait a while. If the printer does not recover, restart it.
Job canceled due to lack of data received from the IPS	If the problem persists, check the configuration of the Internal Print Server computer.
Line sensor calib. error: substrate too small	Load a larger substrate.
Low cleaner roll	Be ready to replace the printhead cleaning roll soon.
Lower lever	Lower the substrate pressure handles.
Maintenance #N advised. Please contact HP	You are advised to contact your service representative. See HP Customer Care Centers on page 416.
No substrate loaded	Load substrate.
Offline	The printer is shut down or not detected.
Please close safety sensor	An open safety circuit has been detected, and should be closed in order to continue working.
Please turn emergency stop buttons to release them.	An emergency button has been pressed, and must be released to continue working.
Preparing to print	The printer is performing checks and warm-up prior to printing.
Printer cannot carry on printing	Check that the three-phase power supply is working and that the ambient temperature is within the normal range. This problem can also be caused by holes in the substrate, by reflective or transparent substrates, or by a dirty or faulty temperature sensor.
Printer cannot cool down	If the ambient temperature is within the normal range, this problem may be caused by removing the substrate too quickly after printing. Try leaving the substrate in the printer until temperatures settle down after printing.
Printer cannot warm up	Check that the three-phase power supply is working. This problem can also be caused by holes in the substrate, by reflective or transparent substrates, or by a dirty or faulty temperature sensor.
Printheads not aligned	Align the printheads. See Align the printheads on page 137.
Printhead replacement incomplete	The printhead replacement process was unsuccessful. See The Internal Print Server recommends replacing or reseating a printhead on page 406.
Printing	The printer is printing.
Ready	The printer is ready to receive and print a job.
Remove {color} printhead	Remove the printhead. See Remove a printhead on page 112.
Replace {color} cartridge	Replace the ink cartridge. See The Internal Print Server recommends replacing or reseating an ink cartridge on page 405.
Replace {color} printhead	Replace the printhead. See The Internal Print Server recommends replacing or reseating a printhead on page 406.

Message	Recommendation
Replace aerosol filter	You are advised to replace both aerosol filters. See Replace the aerosol filters on page 124.
Reseat {color} cartridge	Reseat the ink cartridge. See The Internal Print Server recommends replacing or reseating an ink cartridge on page 405.
Reseat {color} printhead	Reseat the printhead. See The Internal Print Server recommends replacing or reseating a printhead on page 406.
Select substrate name in the IPS	Select the name of the loaded substrate in the Internal Print Server.
Starting up	The printer is being detected while starting up.
Substrate jam: remove substrate	See The substrate has jammed on page 365.
Substrate may be detached from the rear spindle or slippage detected. Substrate will be unloaded.	See The substrate is not attached to the core and/or spindle on page 366.
System error	The printer has a system error. In the alert window, you should see the numerical code of the system error.
System in sleep mode	The printer is in sleep mode.
The front cover is open. Close the front cover to continue printing. If the problem persists, run a diagnostic to identify the issue.	Proceed as described in the message.
The loading table is not closed. Close the loading table to continue printing. If the problem persists, run a diagnostic to identify the issue.	Proceed as described in the message.
The main window is open. Close the window to continue printing. If the problem persists, run a diagnostic to identify the issue.	Proceed as described in the message.
Very low cleaner roll	Be ready to replace the printhead cleaning roll very soon.
Visually check printer for readiness, then press the blinking rearm button to provide full power.	Press the blue, blinking button to finish the printer's start-up procedure.

Table A-2 Numerical error codes

Error code	Recommendation
10.04.XX:YY	Problem with e-cabinet fuses. The message in the IPS will indicate which fuse is causing the issue in order to replace it. Diagnostic E-cabinet state can be used to confirm that the issue is solved.
10.06.09:40	The emergency stops and/or safety relay have been activated. Check that the emergency stops are not activated. If the problem persists, run a diagnostic to identify the issue.
22.02.0X:06	Intermediate tank broken bag detected. Proceed with the intermediate tank maintenance procedure (see the Print Care wizard: "Replace an intermediate tank").
22.02.0X:07	Intermediate tank end of life reached. Proceed with the intermediate tank maintenance procedure (see the Print Care wizard: "Replace an intermediate tank").
22.02.01:74	Intermediate tank empty. Proceed with the intermediate tank maintenance procedure (see the Print Care wizard: "Replace an intermediate tank"). If during the replacement you detect that there is still ink in the replaced Intermediate tank, call your support representative.
46.05.0X:06	Primer X leakage. Reset primer latch and/or check o-rings. If problem persists, call your support representative.

Error code	Recommendation
47.01.06:52	Printhead cleaning roll pinch unlocked. Ensure that the pinch system of the printhead cleaning roll assembly is properly closed, and that there is no slippage between the core of the printhead cleaning roller and its motor.
58.02.00:02	Spectrophotometer shutter door open/close check fail. Run the Color sensor check diagnostic and check at the IDS side of the printer that the shutter is opening and closing properly. If the door is opening and closing but the printer does not detect it, clean the spectrophotometer. If the door is not opening and closing, install a new shutter mechanism (see Replace the spectrophotometer shutter on page 360). If the problem persists, call your support representative.
58.03.00:84	Spectrophotometer calibration failure. Run the Color sensor check diagnostic. If there is an issue related to the spectrophotometer shutter, replace it (see Replace the spectrophotometer shutter on page 360). Otherwise clean the spectrophotometer. If the problem persists, call your support representative.
86.01.00:01	Carriage movement failure. Ensure that maintenance routines are up to date, then perform Reinitialize carriage from the Internal Print Server. Also perform the carriage-rail cleaning process (see Clean the scan axis and mechanical transmissions on page 258).

NOTE: The above table includes the most significant numerical codes. If you receive an error code that is not in the table, follow the instructions in the message.

Glossary

Aerosol filter
The printheads produce many fine droplets of ink, most of which are placed accurately on the substrate. However, a small proportion of these droplets escape sideways; the two aerosol filters are placed on either side of the printhead carriage to intercept them.

Bleeding
A print-quality defect that occurs when the ink spreads on the substrate across areas of different colors.

Carriage beam
The beam supporting the printhead carriage as it moves back and forth across the printer.

Coalescence
A print-quality defect that looks like a higher level of whiter grain.

Cockle
A substrate condition in which it is not lying perfectly flat, but rises and falls slightly in shallow waves.

Color accuracy
The ability to print colors that match the original image as closely as possible, bearing in mind that all devices have a limited color gamut and may not be physically capable of matching certain colors precisely.

Color consistency
The ability to print the same colors from a particular print job from print to print and from printer to printer.

Color model
A system of representing colors by numbers, such as RGB or CMYK.

Color space
A color model in which each color is represented by a specific set of numbers. Many different color spaces can use the same color model: for instance, monitors generally use the RGB color model, but they have different color spaces, because a particular set of RGB numbers results in different colors on different monitors.

CSR
Customer replaceable parts.

Curing
Curing is needed to coalesce the latex, creating a polymeric film which acts as a protective layer, while at the same time removing the remaining co-solvents from the print. Curing is vital to ensure the durability of the printed images.

Drying
The heat applied in the printing zone removes water and fixes the image to the substrate.

ESD
ElectroStatic Discharge. Static electricity is common in daily life. It is the spark when touching the car door, or the cling of clothing. Although controlled static electricity has some useful applications, uncontrolled electrostatic discharges are one of the main hazards to the electronics products. Therefore, to prevent damage some precautions are needed when setting up the product, or handling ESD sensitive devices. This type of damage may reduce the life expectancy of the device or render it unusable. One way to minimize uncontrolled ESDs, and therefore reduce this type of damage is by touching any exposed grounded part of the product (mainly metal parts) before handling ESD sensitive devices (such as the printheads or ink cartridges). Additionally, to reduce the generation of electrostatic charge in your body try to avoid working in a carpeted area, and keep your body movements to a minimum when handling ESD sensitive devices. Also, avoid working in low humidity environments.

Ethernet

A popular computer networking technology for local area networks.

Firmware

Software that controls your printer's functionality and is stored semi-permanently in the printer (it can be updated).

Gamut

The range of colors and density values reproducible on an output device, such as a printer or monitor.

I/O

Input/Output: this term describes the passing of data between one device and another.

ICC

The International Color Consortium, a group of companies that have agreed on a common standard for color profiles.

Ink cartridge

A removable printer component that stores ink of a particular color and provides it to the printhead.

Ink density

The relative amount of ink that is deposited on the substrate per unit of area.

Ink deposit

The printheads sometimes expel a small amount of ink into the ink deposits in order to check the status of each nozzle.

Ink limits

A means of specifying the maximum amount of ink of all colors in total that can be laid down onto a given substrate.

Ink restrictions

A means of specifying the maximum amount of each color of ink that can be laid down onto a given substrate.

IP address

A unique identifier that identifies a particular node on a TCP/IP network. It consists of four integers separated by dots.

LED

Light-Emitting Diode: a semiconductor device that emits light when electrically stimulated.

Nozzle

One of many tiny holes in a printhead through which ink is deposited onto the substrate.

Passes

The number of passes specifies how many times the printheads will print over the same area of substrate.

Platen

The flat surface within the printer over which the substrate passes while it is being printed on.

Printhead

A removable printer component that takes ink of a particular color or colors from the corresponding ink cartridge(s) and deposits it on the substrate, through a cluster of nozzles.

Printhead cleaning roll

A roll of absorbent material used to clean surplus ink from the printheads after each pass over the substrate.

Spindle

A rod that supports a roll of substrate while it is being used for printing.

Substrate

A thin, flat material made to be printed on.

TCP/IP

Transmission Control Protocol/Internet Protocol: the communications protocols on which the Internet is based.

Tension

Tension is applied at the input and the output side of the printer. It needs to be evenly distributed along the whole width of the substrate, thus substrate loading is a critical operation.

Vacuum pressure

The vacuum applied to the substrate in the printing zone helps to hold the substrate down on the print platen, keeping the distance to the printheads constant.

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