



HP Jet Fusion 5000 Series 3D Printing Solution

Product Documentation

User Guide

SUMMARY

How to use your product.

About this edition

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1 Welcome to your MJF system

An introduction to your product.

Documentation

Full documentation is available for your product.

The following documents are available:

- Site preparation guide
- Introduction information
- User guide (this document)
- Legal information
- Limited warranty
- Declaration of conformity
- *HP SmartStream 3D Build Manager User Guide*
- *HP SmartStream 3D Command Center User Guide*

These documents can be downloaded from the appropriate HP webpage at the following link:

- <http://www.hp.com/go/jetfusion3D5000/manuals/>

Product usage requirements

The products, services, and consumables are provided subject to various conditions.

The conditions are as follows:

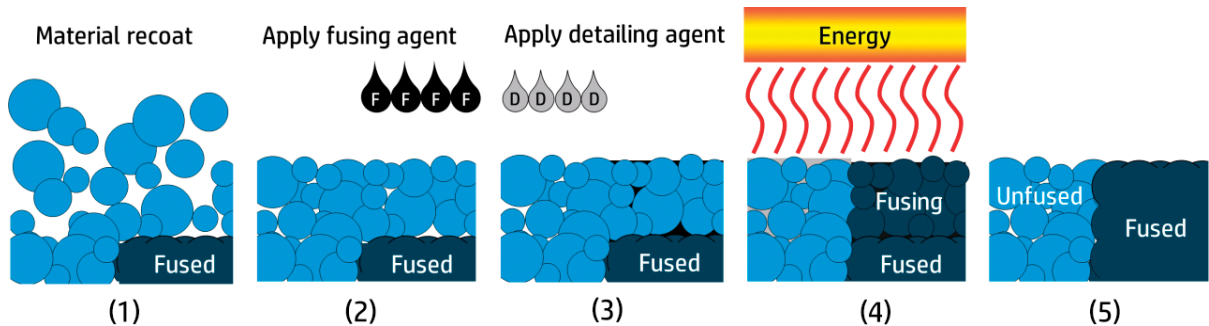
- The customer agrees to use only HP Branded Consumables and HP Certified Materials in the 3D HP printer product, and understands that use of any consumables other than HP consumables may cause serious product functionality and/or safety issues, including, but not limited to those outlined in the user guide. The customer agrees not to use the product and/or consumables for uses not permitted by US, EU, and/or other applicable law.
- The customer agrees not to use the product and/or consumables for the development, design, manufacture, or production of nuclear weapons, missiles, chemical or biological weapons, and/or explosives of any kind.
- The customer agrees to comply with the connectivity requirement outlined below.
- The customer may use firmware embedded in the product only to enable the product to function in accordance with its published specifications.
- The customer agrees to comply with the user guide.

- Products, services, and/or technical data provided under these terms are for the customer's internal use and not intended for further resale.

MJF technology

HP Multi Jet Fusion technology offers speed advantages and control over part and material properties beyond those found in other 3D printing processes.

HP Multi Jet Fusion technology starts by laying down a thin layer of material in the working area. Next, the carriage containing an HP Thermal Inkjet array passes from left to right, printing chemical agents across the full working area. The layering and energy processes are combined in a continuous pass of the second carriage from top to bottom. The process continues, layer-by-layer, until a complete part is formed. At each layer, the carriages change direction for optimum productivity.



1. The material is recoated across the work area.
2. A fusing agent (F) is selectively applied where the particles are to fuse together.
3. A detailing agent (D) is selectively applied where the fusing action needs to be reduced or amplified. In this example, the detailing agent reduces fusing at the boundary to produce a part with sharp and smooth edges.
4. The work area is exposed to fusing energy.
5. The part now consists of fused and unfused areas.

The process is repeated until the complete part has been formed.

NOTICE: The sequence of steps above is typical, but may be changed in specific hardware implementations.

HP Multi Jet Fusion technology can realize the full potential of 3D printing through the production of highly functional parts. Using HP Thermal Inkjet arrays, HP Multi Jet Fusion technology is built on HP's technical core competency of rapidly and accurately placing precise (and minute) quantities of multiple types of fluids. This gives HP Multi Jet Fusion technology a versatility and potential not found in other 3D printing technologies.

In addition to fusing and detailing agents, HP Multi Jet Fusion technology can employ additional agents to transform properties at each volumetric pixel (or voxel). These agents, transforming agents, deposited point-by-point across each cross-section, allow HP Multi Jet Fusion technology to produce parts that cannot be made by other methods.

For example, taking advantage of HP's in-depth knowledge of color science, HP Multi Jet Fusion printers could selectively print a different color at each voxel with agents containing cyan, magenta, yellow, or black (CMYK) colorants.

The long-term vision for HP Multi Jet Fusion technology is to create parts with controllably variable—even quite different—mechanical and physical properties within a single part or among separate parts processed simultaneously in the working area. This is accomplished by controlling the interaction of the fusing and detailing agents with each other, with the material to be fused, and with additional transforming agents.

HP Multi Jet Fusion technology can provide design and manufacturing possibilities that surpass the limits of our imagination. That's what technological breakthroughs do.

Usage recommendations

A summary of the printing process.

1. **Prepare your design for printing:** Open your 3D model and check for errors with easy-to-use HP software.
2. **Pack models and send to printer:** Place multiple models into the software and submit the job to the printer.
3. **Add materials:** Load the materials into the build unit either using the manual workflow or automatically using the processing station.
4. **Slide the build unit into the printer.**
5. **Printing with voxel-level control:** Just tap **Start** to get extreme dimensional accuracy and fine detail, thanks to HP's unique multi-agent printing process.
6. **Streamlined workflow:** The build unit can be removed from the printer—which is now ready for the next build—and slid back into the processing station.

2 Safety precautions

How to use your product safely.

Introduction

Before using the equipment, read the following safety precautions and operating instructions to make sure you can use it 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.

Perform the recommended maintenance and cleaning tasks to ensure the correct and safe operation of the equipment.

Operations must be supervised at all times.

The equipment is stationary, and should be located in a restricted-access area, for authorized personnel only.

General safety guidelines

Use the equipment only when it is in good working order and in the recommended environmental conditions.

Turn off all equipment in any of the following cases:

- The power cord is damaged.
- The equipment has been damaged by an impact.
- Liquid has entered the equipment.
- There is smoke or an unusual smell coming from the equipment.
- The built-in Residual Current Circuit Breaker (Ground Fault Circuit Interrupter) has been repeatedly tripped.
- The equipment is not operating normally.
- There is any mechanical or enclosure damage.

Operate the equipment only within the specified ranges of operating temperature and humidity. See the site preparation guide, which can be downloaded from one of the following HP webpages:

- <http://www.hp.com/go/jetfusion3D5000/manuals/>
- <http://www.hp.com/go/jetfusion3D5000/support/>

The area in which the equipment is installed should be free from liquid spillage and environmental condensation.

Ensure that there is no condensation inside the equipment before turning it on.

In case of unexpected malfunction, anomaly, ESD (ElectroStatic Discharges), or electromagnetic interference, press the emergency stop button and disconnect the equipment. If the problem persists, contact your support representative.

The area in which the equipment is installed should be free from liquid spillage and environmental condensation.

Users and operators must be trained for explosive atmospheres and associated hazards during cleaning and maintenance operations, according to local laws and company requirements.

Ensure that there is no condensation inside the equipment before turning it on.

Take special care with zones marked with warning labels.

Use HP-certified equipment and accessories only. The use of third-party equipment and accessories can cause safety risks, powder leakages, and malfunctions in the equipment; and may affect your system warranty.

In case of unexpected malfunction, anomaly, ESD (ElectroStatic Discharges), or electromagnetic interference, press the emergency stop button and disconnect the equipment. If the problem persists, contact your support representative.

Do not repair or replace any part of the equipment or attempt any servicing unless specifically recommended in the user-maintenance instructions or in published user-repair instructions that you understand and have the skills to carry out.

Do not attempt to repair, disassemble, or modify the equipment by yourself; and do not use any part other than original HP spare parts.

To repair or reinstall the equipment, please contact your nearest service authorized provider; otherwise, you may experience electric shock, fire, problems with the product, or injury.


Final parts/builds

The customer assumes all risk relating to or arising from the 3D printed parts.

The customer is solely responsible for the evaluation of and determination of the suitability and compliance with applicable regulations of the products and/or 3D printed parts for any use, especially for uses (including but not limited to medical/dental, food contact, automotive, heavy industry, and consumer products) that are regulated by US, EU, and other applicable governments.

Explosion hazard

Take precautions to avoid the risk of explosion.

 **WARNING!** Dust clouds can form explosive mixtures with air. Take precautionary measures against static charges, and keep away from sources of ignition (hot surfaces, hot flames or gases, mechanical sparks, electrical equipment, electromagnetic waves, exothermic reactions including self-combustion of solids).

NOTICE: The equipment is not intended for hazardous locations or ATEX classified zones: ordinary locations only.

Take the following precautions:

- The customer takes full responsibility for assessing the customer's site according to the Explosion Protection Document (EPD), Dust Hazard Analysis (DHA), or any required document of the local jurisdiction of the country where the equipment is installed, to avoid the risk of explosion.
- Users and operators conducting cleaning operations must have training in explosive atmospheres and associated hazards, according to local laws and company requirements.
- Smoking, candles, welding, and open flames should be forbidden close to the equipment or material storage area.
- Inside and outside the equipment should be cleaned regularly with an explosion-protected vacuum cleaner to avoid dust accumulation. Do not sweep the dust or try to remove it with a compressed-air gun.
- An explosion-protected vacuum cleaner certified for collection of combustible dust is required for cleaning. Take measures to mitigate material spillage and avoid potential ignition sources such as ESD (ElectroStatic Discharges), flames, and sparks. Do not smoke nearby.

⚠ CAUTION: In case of a massive spillage, immediately clean the bulk of the spilled powder by using conductive, nonsparking scoops and soft brushes that have natural fiber bristles. Residual amounts of material remaining after preliminary cleanup, shall be removed using an explosion-protected vacuum cleaner.

An explosion-protected vacuum cleaner compliant with the following normative specifications:

- Europe/International Electrotechnical Commission (IEC): Zone 22 or better, temperature Class 200°C (392°F) maximum.
- United States/National Electrical Code (NEC): Class II, division 2 or better, temperature Class 200°C (392°F) maximum.
- Suitable for conductive powder (IIIB and/or group F).
- Refer to the material safety data sheet (MSDS) and meet local regulations.
- Recommended equipment fitted with wet filter (vacuum with submerged flow inches inert liquid) or High Efficiency Particulate Air (HEPA) filter grade.


Vacuum system required for maintenance operations and general cleaning. Recommended specifications:

- Air flow > 250 m³/h (150 cfm)
- Depression > 19 kPa (2.75 psi)

⚠ CAUTION: Customers take full responsibility for using an explosion-protected vacuum cleaner according to zone classification and risk analysis, carried out by the customer, to avoid the risk of an explosion.

- The equipment and accessories must be properly grounded at mains outlets only; do not manipulate internal bonding. If static discharges or electrical sparks are noticed, stop operation, disconnect the equipment, and contact your support representative.
- Use HP-certified and HP-branded material and agents only. Do not use unauthorized third-party material or third-party agents.

- HP recommends the use of HP accessories for unpacking 3D parts and refilling the build chamber. If other methods are used, read the following notes:
 - Dust clouds generated during handling and/or storage can form explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.
 - Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to fall freely or be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.
- Powder, agents and solvents storage, handling, and disposal as per local laws. See the Safety Data Sheets of your processed powder and solvent powder for adequate handling and storage. Follow your Environmental, Health, and Safety processes and procedures.
- Do not place the equipment in a hazardous location area, keep it separated from other equipment that could create a combustible dust cloud or explosive gas atmospheres during its operation.
- Stop operation immediately if sparks or material spillages are seen, and call your HP service representative before continuing.
- All personnel, when handling combustible dust, should be freed from static electricity by using conductive or dissipative footwear and clothing, and a conductive floor.
- Users and operators must be trained for explosive atmospheres and associated hazards during cleaning operations, according to local laws and company requirements.
- Keep the safety lid on top of the build unit at all times, except when it is inside the printer.

 **CAUTION:** Follow the safe cooling time and ensure a maximum powder temperature at the core of 80 °C (176 °F) prior to unpack.

Use powder complying with HP guidelines, as follows:

- Explosion characteristics acceptance criteria
 - Minimum Ignition Temperature (MIT) 360°C or higher
 - Layer Ignition Temperature (LIT) 375°C or higher
 - Auto Ignition Temperature (AIT) 375°C or higher
 - Minimum Ignition Energy (MIE) 100mJ or higher
- Minimum particle size
 - Average particle size (d50) >10µm
 - Minimum particle size (d10) >2µm
- Melting temperature
 - Less than 210°C
- Other requirements
 - Non-conductive material

- Material non-reactive with other material or HP agents (refer to agents MSDS), stable.

⚠ WARNING! Dust clouds can form explosive mixtures with air. Take precautionary measures against static charges and keep away from sources of ignition. Unpacking parts can cause dust clouds. Keep a clear area of at least 2 m (78.7 in) around electric/electronic devices or any source of ignition.

⚠ CAUTION: As the build unit operates at a high temperature while curing, you must wait for it to cool before extracting it from the cure station to unpack it. An earth connection from the build unit is required when unpacking parts; you must use static earthing clamps connected to the build unit during the process.

Electric shock hazard

Take precautions to avoid the risk of electric shock.

⚠ WARNING! The internal circuits of the equipment operate at hazardous voltages capable of causing death or serious personal injury.

⚠ WARNING! High leakage current! The equipment must be connected to earth at all times.

Turn off the equipment using the branch circuit breakers located in the building's Power Distribution Unit (PDU) before servicing. The equipment must be connected to earth at mains outlets only.

NOTICE: Risk of electric shock. Power cabinet access to HP trained personnel only.

To avoid the risk of electric shock:

- Do not attempt to dismantle the internal circuit enclosures, BU, or electrical cabinet except 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 equipment.
- Test the functionality of the Residual Current Circuit Breakers (RCCBs) every year.

NOTICE: A blown fuse may indicate malfunctioning electrical circuits within the system. Call your service representative, and do not attempt to replace the fuse yourself.

Heat hazard

To avoid personal injury, take the following precautions:

- Use the appropriate personal protective equipment (i.e. heat resistant gloves) during the powder removal process.
- Take special care with zones marked with warning labels.
- If heat resistance gloves are required according to the Explosion Protection Document (EPD) or Dust Hazard Analysis (DHA), it is recommended to choose them according to standard ISO/EN 13732-1 Ergonomics of the thermal environment - Methods of assessment of human responses to contact with surfaces. Part 1: Hot Surfaces. Follow the cooling times before handling.
- Follow the cooling times before handling.

- Remember to let the equipment cool down before performing some maintenance operations.
- Take special care when assembling or removing the Build Unit's safety lid. Let the Build Unit cool down before handling the safety lid.

Fire hazard


Take precautions to avoid the risk of fire.

The top heating, fusing, and build chamber subsystems of the printer operate at high temperatures. Call your service representative if the built-in Residual Current Circuit Breaker (Ground Fault Circuit Interrupter) is repeatedly tripped.

Take the following precautions:

- Do not insert objects through slots in the equipment.
- Take care not to spill liquid on the equipment. After cleaning, make sure all components are dry before using the equipment again.
- Do not use aerosol products that contain flammable gases inside or around the equipment. Do not operate the equipment in an explosive atmosphere.
- Take special care with zones marked with warning labels.
- Do not place objects covering top cover, enclosures, or air ventilation.
- Do not leave tools or other materials inside equipment after maintenance or servicing.

 **CAUTION:** Do not use a jet of water, as it could scatter and spread the fire.

 **WARNING!** Depending on the material used, some unhealthy substances can be released into the air in case of incidental fire. Wear self-contained pressure-demand breathing apparatus and full protective gear. Your EHS specialist should consult the Safety Data Sheet (SDS) about each material, available at <http://www.hp.com/go/msds>, and advice on the appropriate measures for your location.

Mechanical hazard

The equipment has moving parts that could cause injury.

To avoid personal injury, take the following precautions when working close to the equipment:

- Keep your clothing and all parts of your body away from 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 equipment.
- Take care that sleeves or gloves do not get caught in moving parts.
- Take care when handling the safety lid; hold it by the two handles provided and ensure you fix it well to the Build Unit or securely store it in its storage position.

Chemical hazard

Take precautions to avoid the risk of exposure to hazardous substances.

Sufficient ventilation needs to be provided to ensure that potential airborne exposure to these substances is adequately controlled. Consult your usual air conditioning or EHS specialist for advice on the appropriate measures for your location.

- Respiratory personal protective equipment may be required throughout the entire operation of these machines. Refer to the Safety Data Sheet of your metallic powder and consult your Environmental Health and Safety (EHS) specialist for advice on the appropriate measures for your location and application.
- To manipulate material (load, unpack, and so on) and green parts, use protective personal equipment according to the Safety Data Sheets of your processed material.
- Use HP-branded agents only. Do not use unauthorized third-party agents.
- Take special care in any zones marked with warning labels.

Ventilation

Fresh air ventilation is needed to maintain comfort levels.

Adequate ventilation needs to be provided to ensure that potential airborne exposure to materials and agents is adequately controlled according to their Safety Data Sheets.

Air conditioning and ventilation should meet local environmental, health, and safety (EHS) guidelines and regulations. Please follow these instructions carefully when designing the air-conditioning installation and placing your equipment in the room

NOTICE: The ventilation units should not blow air directly onto the equipment.

Extraction system

The printer has been designed to be able to work either exhausting air into the room or connected to an extraction system installed by the customer.

There are various advantages of the latter: first, it's a way to decrease the printer's heat output into the room, so room temperature will be reduced. Additionally, with the extraction, room air ventilation requirements are lower, the presence of airborne materials is reduced, and the level of noise is lower. Therefore, HP highly recommends connecting the printer to an extraction system, and this may be obligatory depending on the material processed and local regulations.

To install an extraction system that meets the printer's requirements, follow the extraction system recommendations in the site preparation guide. As ventilation and air conditioning are related to the extraction system, you should also follow the ventilation and air-conditioning recommendations in the site preparation guide.

In general, you should not need to adjust the extraction system after installation. However, if too much or too little aspiration occurs, system errors will be reported and some readjustment may be required. For that purpose, a maintenance procedure is provided to assist you.

Air conditioning

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

For more information, see the air-conditioning section in the site preparation guide.

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

NOTICE: The air conditioning units should not blow air directly onto the equipment.

Sound pressure level

Specifications of the sound emission levels you can expect from your products.

Printer and build unit

Declared dual number noise emission values in accordance with ISO 4871, corresponding to the worst bystander position according to ISO 11202, located at the rear of the printer:

- LpA = 75 dB(A), measured with the fans turning at maximum speed
- KpA = 5 dB

Transport

In case of equipment relocation, remove all material (powder) and consumables.

The customer takes full responsibility for moving equipment, the use of auxiliary lifting/carrying aids, and providing the required personnel.

Build unit transport

Special care must be taken to avoid personal injury when moving the build unit.

- Always wear personal protective equipment including boots and gloves.
- Keep the safety lid on top of the build unit at all times, except when it is inside another equipment.
- Steer the build unit using the handle only.
- Move the build unit over smooth, flat surfaces without steps, with a maximum ramp allowed of 2°.
- Move with care and avoid shocks during transport, which could spill the powder.
- Lock the front casters when not moving the build unit. Remember to unlock them before moving it.
- Take care when handling the safety lid; carry it with the two handles provided and ensure to attach it correctly to the build unit or store it securely in the designated way.
- If moving the build unit between different rooms, bear in mind that it should be kept in constant environmental conditions with its lid secured.
- Before transporting the build unit, check that the safety lid is well attached to it with the two clamps provided.

Drum transport

Special care must be taken to avoid personal injury when moving the Drum.

Always wear personal protective equipment including boots and gloves.

Always transport the Drum with the lid properly placed and the clamp closed to avoid generating dust clouds.


Take note that the forklift or some similar device must be chosen considering a device compatible with ATEX Zone 22 and conductive combustible dust (IIIC) and/or prevent ignition sources as:

- Mechanical or electrical sparks
- Hot surfaces
- Static electricity
- Stability for moving drums with powder on top
- Recommended device with locking wheels to prevent undesired movements when unattended
- Recommended use of antistatic device

Ergonomic risk

Operation and maintenance tasks require handling heavy loads. For instance, Build Unit transport, safety-lid handling, opening the print station's top cover, consumables, and feedstock material, among others.

 **CAUTION:** Heavy loads.

 **CAUTION:** To avoid muscle strain or back injury when moving equipment or handling items, follow proper techniques for the use of auxiliary lifting/carrying aids, and use more than one person if required.

NOTICE: The Build Unit, empty or full, is a heavy device. Take into consideration its maximum weight during daily moving or transport tasks.

During daily operations, the Build Unit can be moved on a ramp with no more than 2° of inclination.

In case of equipment relocation, remove all material (powder) and consumables. The customer takes full responsibility for moving equipment, the use of auxiliary lifting/carrying aids, and providing the required personnel. See the "Moving equipment" section in the site preparation guide.

Operation and maintenance tasks may require the use of a ladder or work platform to reach remote parts.

The customer takes full responsibility for room layout, auxiliary equipment, personal protective equipment (PPE), and working procedures, among other safety aspects, throughout the entire operation of the equipment. See the Site Preparation Guide for more information.

3D part unpacking

Refer to the safety data sheet and meet local regulations in order to use the appropriate personal protective equipment needed, including heat and chemical resistant gloves when unpacking 3D printed parts.


Personal protective equipment


It is recommended to use heat and chemical resistant gloves, mask, goggles, safety conductive or dissipative footwear, safety boots, coat, anti-static wrist straps, conductive or dissipative clothing, and hearing protection for maintenance tasks, cleaning and powder handling. Refer to the Safety Data Sheet of the powder and agent and meet local regulations.


Respiratory personal protective equipment may be required for the whole operation of these stations. Refer to the safety data sheet instructions of the powder or consult your environmental health and safety (EHS) specialist for advice on appropriate measures for your location and application.

Warnings and cautions

Warning and caution symbols are used to ensure the proper use of the equipment and to prevent it from being damaged. Follow the instructions marked with these symbols.

 **DANGER!** Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

 **WARNING!** A hazardous situation that, if not avoided, can result in death or serious injury.

 **CAUTION:** A hazardous situation that, if not avoided, can result in minor or moderate injury.

NOTICE: Indicates information considered important but not hazard related.

Warning labels

Labels are placed on the product for your protection. Familiarize yourself with their meaning and heed their warning at all times.

Table 2-1 Warning labels

| Label | Explanation |
|-------|--|
| | <p>Electric shock hazard</p> <p>Heating modules operate at hazardous voltage. Disconnect power source before servicing.</p> <p>CAUTION: Double pole. Neutral fusing. Refer servicing to qualified service personnel.</p> <p>In case of operation of the fuse, parts of the equipment that remain energized may represent a hazard during servicing. Before servicing, turn off the equipment using the Branch Circuit Breakers located in the building's Power Distribution Unit (PDU).</p> <p>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.</p> <p>See installation instructions before connecting to the supply. Ensure that the input voltage is within the equipment's rated voltage range.</p> <p>Before starting</p> <p>Read and follow the operating and safety instructions before starting the equipment.</p> |
| | <p>Risk of burns. Let the equipment cool down before accessing internal parts.</p> |
| | <p>You are required to wear gloves when handling material cartridges, agents, printheads, the printhead cleaning roll, and when performing maintenance and cleaning tasks. Chemical protection gloves are suitable, and should be tested according to EN 374.</p> <ul style="list-style-type: none">Glove material: NBR (nitrile rubber)Thickness > 0.11 mm (0.0043 in)Breakthrough time > 480 minutes (permeation leave 6) <p>You are recommended to wear a pair of heat-resistant gloves per person when unpacking parts. The temperature can be up to 200°C (392°F), depending on the material being processed.</p> |

Table 2-1 Warning labels (continued)

| Label | Explanation |
|---|---|
|  | <p>You are recommended to wear a safety mask when replacing filters.</p> <p>During the first seven full-build-chamber jobs you are required to use a mask with filter type A (according to DIN 3181) for vapors of organic compounds.</p> |
|  | <p>You are required to wear tightly fitting safety goggles:</p> <ul style="list-style-type: none"> • For the first seven full-build-chamber jobs • When replacing filters • For maintenance and cleaning tasks |
|  | <p>Do not step over the support platform of the material cartridges.</p> |
|  | <p>Do not climb onto the external tank, which could cause the processing station to fall over.</p> |
|  | <p>Crush hazard. Keep your hands clear of the edge of the top cover. Open and close the top cover using the handle (highlighted in blue) only.</p> |
|  | <p>WARNING! Dust clouds can form explosive mixtures with air. Take precautionary measures against static charges, and keep away from sources of ignition.</p> <p>No smoking, matches, or open flames close to equipment or material storage area.</p> |
|  | <p>An explosion-protected vacuum cleaner certified for collection of combustible dust is required for cleaning.</p> <p>Take measures to mitigate material spillage and avoid potential ignition sources such as ESD (ElectroStatic Discharges), flames, and sparks. Do not smoke nearby.</p> <p>Disposal as per local laws.</p> |

Table 2-1 Warning labels (continued)









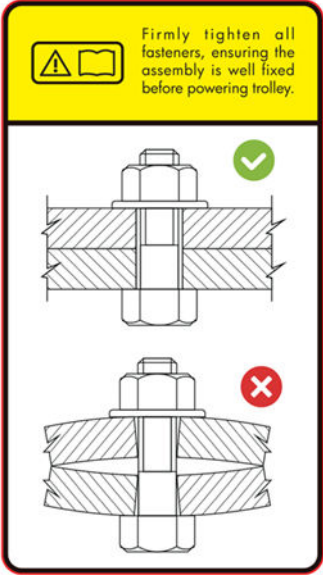
| Label | Explanation |
|--|---|
|  For maintenance and service personnel only | Electric shock hazard. Disconnect power before servicing. Heating modules and electrical cabinets operate at hazardous voltage. |
|  | Protective conductor current. CAUTION: High touch current. Connect to earth before connecting to supply. |
|   For service personnel only | |
|  For maintenance and service personnel only | Hazardous moving parts. Keep away from moving fan blades. |
|  For maintenance and service personnel only | Risk of trapped fingers. Do not touch gears or rollers while moving; your hands may be trapped between the gearwheels. |
|  For service personnel only | Hazardous moving part. Keep away from the moving print carriage and cable/hose carriers. When printing, the print carriage travels back and forth. |
|  | Identifies the Protective Earth (PE) terminal for qualified electricians, and bonding terminals for maintenance/service personnel only. An earth connection is essential before connecting to the supply. |

Table 2-1 Warning labels (continued)

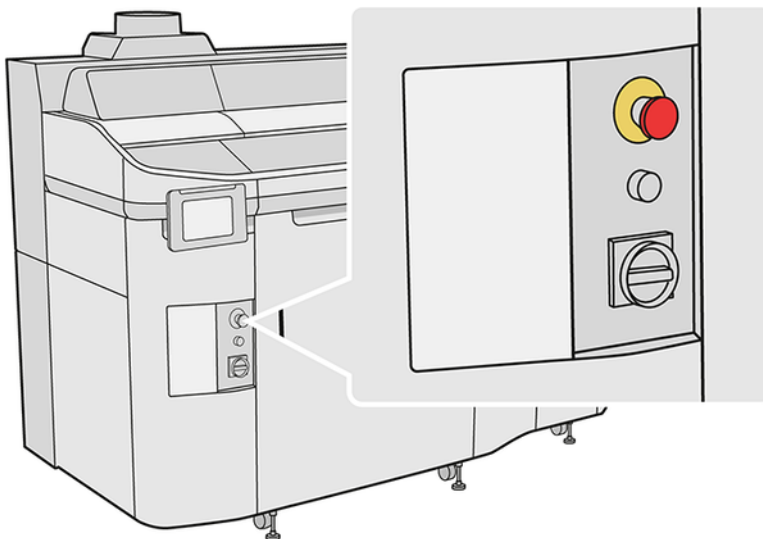
| Label | Explanation |
|---|--|
|  | <p>Firmly tighten all fasteners, ensuring that the assembly is well fixed together before turning on the build unit.</p> |

Emergency stop buttons

There is an emergency stop button on the printer. If an emergency occurs, simply push the emergency stop button to stop all processes.

- In the case of the printer, the printer carriage, the recoater, the lamps, and the build unit are halted; the build-unit door and top cover are locked until the internal temperature decreases.

A system error message is displayed, and the fans turn at maximum speed. Ensure that the emergency stop button is released before restarting the equipment.



For safety reasons, access to the print zone is not permitted while printing is in progress. Let the printer cool down before touching anything inside it.

To stop the equipment completely, turn it off. See [Turn the printer on and off on page 41](#).

Site safety precautions

The customer takes full responsibility for preparing the physical site. Follow the recommendations in the site preparation guide.

To avoid the risk of explosion, take care following precautions:

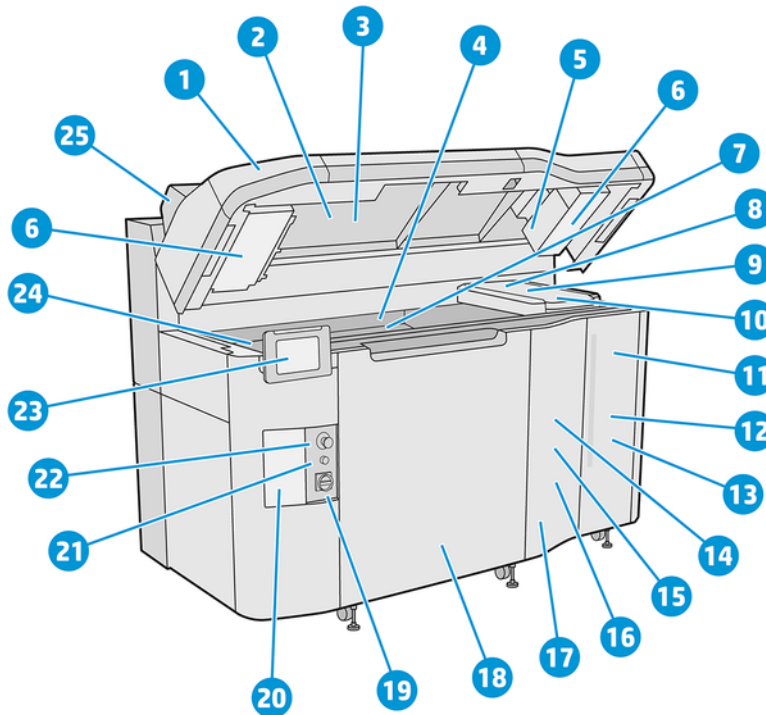
- The customer takes full responsibility for assessing the customer's site according to the Explosion Protection Document (EPD), Dust Hazard Analysis (DHA), or any required document of the local jurisdiction of the country where the equipment is installed, to avoid the risk of explosion.
- Users and operators conducting cleaning operations must have training in explosive atmospheres and associated hazards, according to local laws and company requirements.
- Smoking, candles, welding, and open flames should be forbidden close to the equipment or powder storage area.
- Hot surfaces, hot flames and gases, and mechanical and electrical sparks, only can be generated during maintenance or repair operations (use of a permit work system according to the service manual).

3 Main components

These are the principal components of your 3D printing solution.

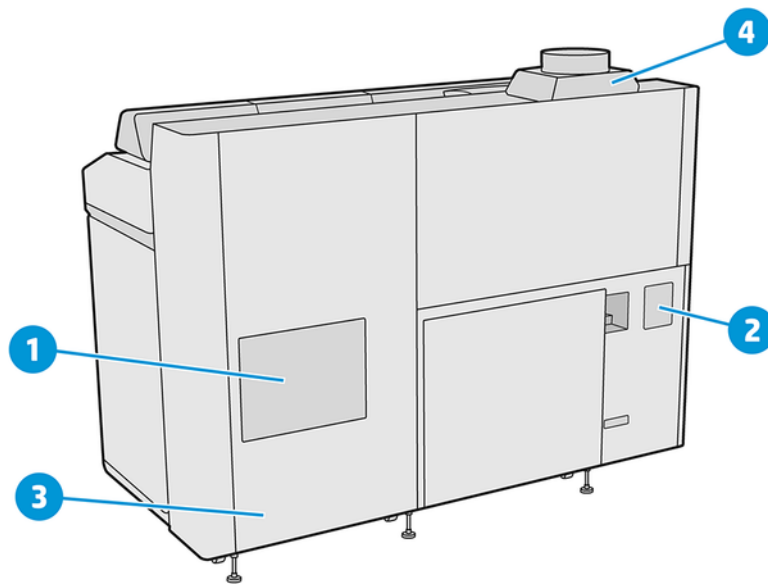
Printer

Parts of the printer.



1. Top cover
2. Heating lamps
3. Thermal camera
4. Recoating unit and recoating roller
5. Heating-lamps filter
6. Top-enclosure filters
7. Print bed
8. Printhead
9. Fusing lamps
10. Print carriage
11. Fusing agent

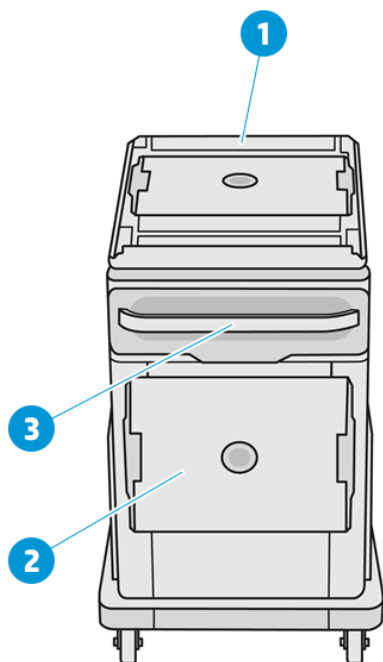
- 12. Agent door
- 13. Detailing agent
- 14. Printhead cleaning roll
- 15. Internal cleaning-roll door
- 16. Cleaning-roll collector
- 17. External cleaning-roll door
- 18. Build-unit door
- 19. Main switch
- 20. Circuit breaker
- 21. Rearm button
- 22. Emergency stop button
- 23. Front panel
- 24. Spittoon
- 25. Air exhaust



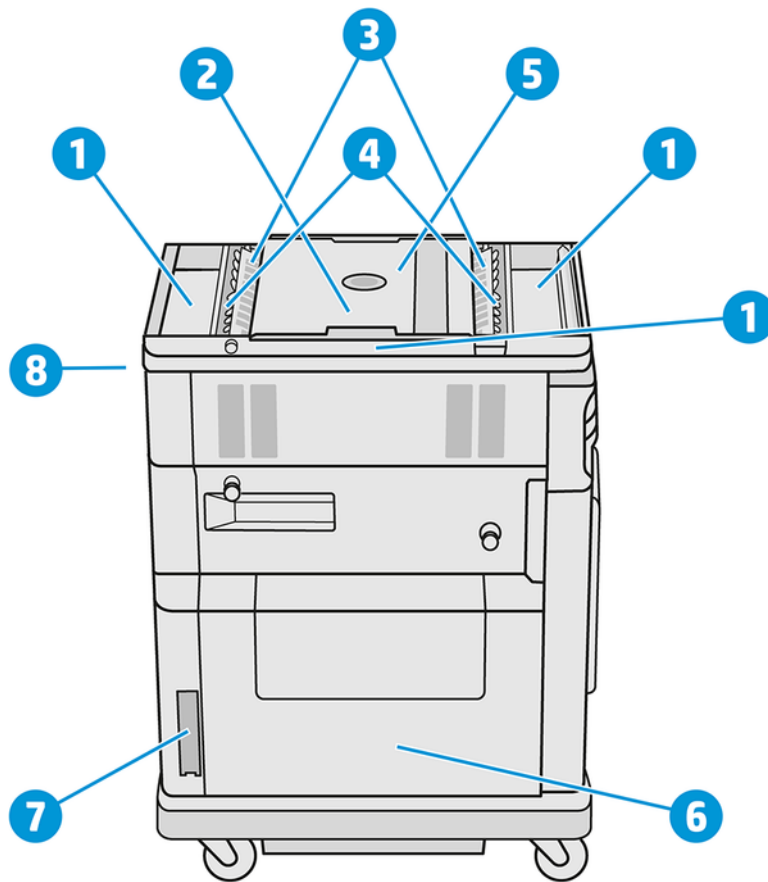
- 1. Print-zone filter
- 2. E-cabinet filter
- 3. Network and electrical connections
- 4. Air exhaust system

Build unit

Parts of the build unit.



1. Material loading inlet
2. Safety lid
3. Handle



1. Overflow trays (4)
2. Printing platform
3. Feed trays (2)
4. Vane feeders (2)
5. Build chamber
6. Material chamber
7. Material chamber filter
8. Build unit socket

Equipment overview

It is recommended to use dissipative footwear, safety and anti-static shoes, coat, anti-static wrist straps, conductive or dissipative clothing, and hearing protection for maintenance tasks, cleaning and powder handling. Refer to the Safety Data Sheet of the powder and agent and meet local regulations.

NOTICE: If heat resistance gloves are required according to the Explosion Protection Document (EPD) or Dust Hazard Analysis (DHA), it is recommended to choose them according to standard *ISO/EN 13732-1 Ergonomics of the thermal environment - Methods of assessment of human responses to contact with surfaces*.

Respiratory personal protective equipment may be required for the whole operation of these stations. Refer to the safety data sheet instructions of the powder or consult your environmental health and safety (EHS) specialist for advice on appropriate measures for your location and application.

Explosion-protected industrial vacuum cleaner

An explosion-protected vacuum cleaner will be needed both to perform the regular operations to pre- and post-process the powder used for printing as well as for regular maintenance and cleaning tanks. A kit of two hoses to connect an external tank between the vacuum cleaner and the powder inlet is needed as well. The diameter of the hose needs to fit both the vacuum cleaner and the tank inlets.

⚠ WARNING! Dust clouds and flammable vapors can form explosive mixtures with air. Take precautionary measures against static charges and keep away from sources of ignition (hot surfaces, hot flames or gases, mechanical sparks, electrical equipment, electromagnetic waves, exothermic reactions including self-combustion of solids, etc.).

The equipment must have the following characteristics:

Table 3-1 Specifications

| | |
|--------------------|--|
| Power | 1.1 kW / 1.5 HP or higher |
| Surface | 4000 cm ² / 620 in ² or higher |
| Maximum depression | 220 mBar / 88 inH ₂ O or higher |
| Maximum air flow | 210 m ³ /h / 124 CFM or higher |
| Filter type | HEPA filter (H14) |
| Inlet | 50 mm / 1.96 in |
| Accessories | ATEX hose kit with nozzle of Ø 40mm |

EX requirements

- Europe → International Electrotechnical Commission (IEC): Zone 22 or better, temperature Class 200°C (392°F) maximum.
- United States → National Electrical Code (NEC): Class II, division 2 or better, temperature Class 200°C (392°F) maximum.
- Suitable for non - conductive material (IIIB and/or group F).
- Refer to the Material Safety Data Sheet (MSDS) and meet local regulations.

Any equipment with similar characteristics is suitable for the application.

⚠ CAUTION: Customers take full responsibility for using an explosion-protected vacuum cleaner according to zone classification and their own risk analysis to avoid the risk of an explosion.



NOTICE: HP does not take any responsibility if selected vacuums are above or below specifications; chemical and explosive hazards are possible and hardware integrity may be compromised.

Fresh powder tank

The tank must be electrically conductive or dissipative, and the powder cannot generate mechanical sparks. In addition, the earthing clamps are necessary to ground the tank during use.

An external tank to keep the fresh powder will be needed to follow the specified workflow. The recommended tank to be used should meet the following characteristics:

- Metallic tank provided with earthing clamp.
- Capacity of 100 liters / 26 gal or higher.
- Metallic cyclone with inlet and outlet connections of Ø 50mm / 1.96 in.
- To avoid muscle strain or back injury when moving equipment or handling items, follow proper techniques or use of auxiliary lifting/carrying aids or using more than one person if required.



NOTICE: It is highly recommended to purchase the tanks together with the vacuum cleaner to ensure that the connections between both assets fit. It is also recommended to choose a tank with wheels for ergonomics and usability reasons.

NOTICE: The customer takes full responsibility for moving equipment, the use of auxiliary lifting/carrying aids, and providing the required personnel. Refer to the Site Preparation Guide, "Moving equipment" section.

Recycled powder tank

The tank must be electrically conductive or dissipative, and the powder cannot generate mechanical sparks. In addition, the earthing clamps are necessary to ground the tank during use.

An external tank to collect the powder during the unpack of the plot will be needed. The recommended tank to be used should meet the following characteristics:

- Metallic tank provided with earthing clamp.
- Capacity of 65 liters / 17 gal or higher.
- Metallic cyclone with inlet and outlet connections of Ø 50mm / 1.96 in.
- To avoid muscle strain or back injury when moving equipment or handling items, follow proper techniques or use of auxiliary lifting/carrying aids or using more than one person if required.



NOTICE: It is highly recommended to purchase the tanks together with the vacuum cleaner to ensure that the connections between both assets fit. It is also recommended to have minimum 2 units so that excess of recycled powder can be stored and to choose a tank with wheels for ergonomics and usability reasons.

NOTICE: The customer takes full responsibility for moving equipment, the use of auxiliary lifting/ carrying aids, and providing the required personnel. Refer to the Site Preparation Guide, "moving equipment" section.

Powder drums

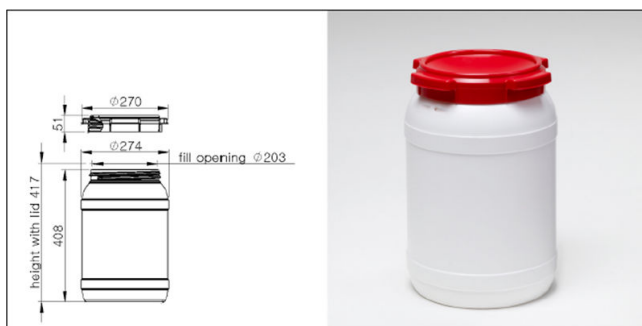
Special care must be taken to prevent personal injury when moving the drum.

- Always wear personal protective equipment including boots and gloves.
- Always transport the drum with the lid properly placed and the clamp closed to avoid generating dust clouds.

A minimum of 8 drums of 20 liters will be needed to prepare the mix of powder to be loaded in the build unit.

HP recommends you select the drum considering the following characteristics:

- Capacity of 20 liters / 5.3 gal.
- Height of 471mm / 18.5 in (including the lid)
- Diameter of 274 mm / 10.78 in.
- Sealing gasket included in the lid



NOTICE: Any drum with similar characteristics is suitable for the application as well however, the user might need to adapt some of the specific accessories provided in the HP kit to make them fit in drums, so it is highly recommended to use a tank with these specific dimensions.

NOTICE: HP does not take any responsibility if selected drums are above or below specifications.

NOTICE: The customer takes full responsibility for moving equipment, the use of auxiliary lifting/ carrying aids, and providing the required personnel. Refer to the Site Preparation Guide, "Moving equipment" section.

Scale

A scale is needed to check the quantity of fresh or recycled powder loaded in each drum to prepare the powder mix.

The recommended scale should meet the following characteristics:

- Maximum weight of 15 kg / 33 lb.
- Maximum error of 1g / 0.005 lb.
- Minimum size of 300 mm x 300 mm / 12 in x 12 in or $\varnothing = 300$ mm / 12 in.
- EX requirements
 - Europe → International Electrotechnical Commission (IEC): Zone 22 or better, temperature Class 200°C (392°F) maximum.
 - United States → National Electrical Code (NEC): Class II, division 2 or better, temperature Class 200°C (392°F) maximum.

NOTICE: HP does not take any responsibility if selected drums are above or below specifications.

Sieve

A sieve is needed to process the used powder before loading it in the Build Unit.

The recommended sieve should the following characteristics:

- Mesh diameter of 400 mm / 15.8 in.
- Mesh size of 355 μ m / 0.014 in according to ISO 9044.
- Suitable vibramotor for its intended use, conform to the relevant standard and installed in according with the supplier's instructions.

- EX requirements
 - Europe → International Electrotechnical Commission (IEC): Zone 22 or better, temperature Class 200°C (392°F) maximum.
 - United States → National Electrical Code (NEC): Class II, division 2 or better, temperature Class 200°C (392°F) maximum.

The equipment and accessories must be properly grounded at mains outlets only; do not manipulate internal bonding. If static discharges or electrical sparks are noticed, stop operation, disconnect the equipment, and contact your support representative.

⚠ CAUTION: Customers take full responsibility for using a sieve according to zone classification and its own risk analysis to avoid the risk of an explosion

NOTICE: HP does not take any responsibility if selected drums are above or below specifications.

The recommended dimensions are the following:

- Height of 910 mm / 36 in.
- Sieve output diameter or 65.75 mm / 2.59 in.



NOTICE: It is important to ensure that the used mesh has the same size as the recommended one. Using a bigger size could cause part quality issues.

Mixer

A mixer is needed to ensure that the powder mix is homogeneous.

The selected recommended mixer should meet the following characteristics:

- Roller length of 550mm / 22 in or higher.
- Maximum drum weight of 15 kg / 33 lb.
- Speed: Minimum 240 RPM's.
- Drum diameter of 274mm / 10.8 in.

CAUTION: Customers take full responsibility for using a mixer according to its own risk analysis to avoid the risk of an explosion.

NOTICE: HP does not take any responsibility if selected drums are above or below specifications.



Shovel

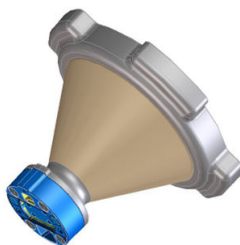
A regular shovel is needed to fill the drums where the mix of powder to be loaded in the build unit is prepared.



HP Jet Fusion 5000 accessories

The HP kit provided with the machine includes the following accessories:

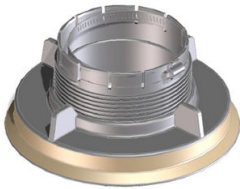
- The **Discharge funner** assembly is used to discharge the powder loaded in the drums. It replaces the drum lid and has a mechanical valve to allow the powder discharge without removing the lid. The valve is opened when the drum is placed upside down on top to the sieve, if the sieve lid is installed, or on top of the Build Unit if the Build Unit cap is removed. Thus, this accessory is used during the sieving and the Build Unit loading.



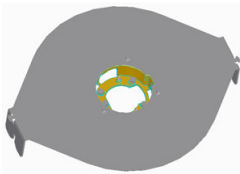
- The **Powder supply adaptor** assembly is used to connect the explosion-protected vacuum cleaner to the HP 3D HR PA 12 300L/130 kg powder cartridge so that the powder from each of the 4 bags can be removed from the supply and placed in an external tank. This accessory is used to load the fresh powder tank.



- The **Sieve discharge adaptor** assembly is installed in the sieve outlet and it is used to being able to connect a drum so that the sieved powder is discharged directly inside the drum, minimizing the powder losses and reducing the risk of spillage. This accessory is used during the sieving process.



- The **Sieve lid** assembly is installed on top of the Sieve and it is used as the interface to connect the drums with the powder mix so that the powder can be loaded in the Sieve, reducing the powder spillages and the powder losses. This accessory is used during the sieving process.



- The **Aspiration nozzle grid** is added to the explosion-protected vacuum cleaner hose nozzle to do the unpack of the Build. This part is prepared to fit a nozzle of 40mm of diameter and acts as a grid to avoid vacuuming small parts.



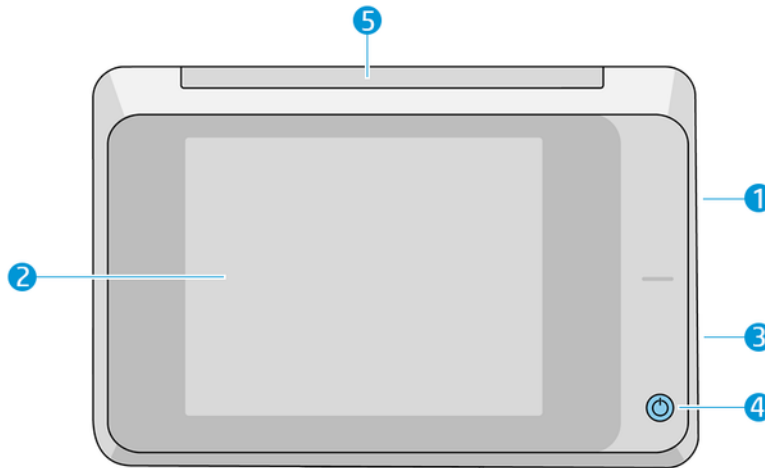
See also [Ordering information on page 278](#).

Front panel

The front panel is a touch-sensitive screen with a graphical user interface.

There is a front panel on the front left of the printer and another on the front right of the processing station. Each front panel is attached to a movable arm, allowing you to adjust it to a comfortable working position.

The front panel gives you complete control of your printer and processing station: from the front panel, you can view information about the device, change device settings, monitor device status, and perform tasks such as supplies replacement and calibrations. The front panel displays alerts (warning and error messages) when necessary.






It includes the following components:

1. A Hi-Speed USB host port, intended for connecting a USB flash drive, which can provide firmware update files to the printer
2. The front panel itself: an 8 inch, full-color, touch-sensitive screen with a graphical user interface
3. The loudspeaker
4. The power key
5. The beacon

The front panel has a large central area to display dynamic information and icons. On the left and right sides you can see some fixed icons at different times. Normally they are not all displayed at the same time.

Left and right fixed icons

- Tap the **Home** icon  to return to the home screen.
- Tap the **Go back** icon  to go back to the previous screen. This does not discard any changes made in the current screen.
- Tap the **Cancel** icon  to cancel the current process.

Home screens

There are two top-level screens that you can move between by sliding your finger across the screen, or tapping the appropriate button at the bottom of the screen:

The first main screen provides direct access to the most important functions.

Figure 3-1 Printer

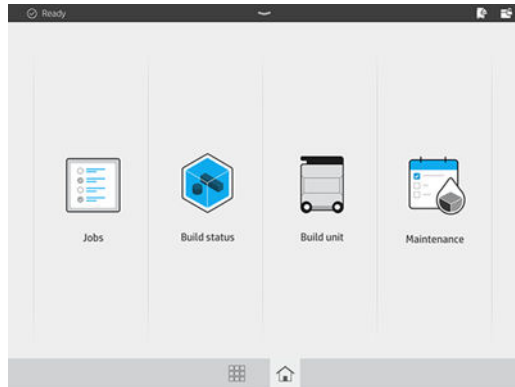
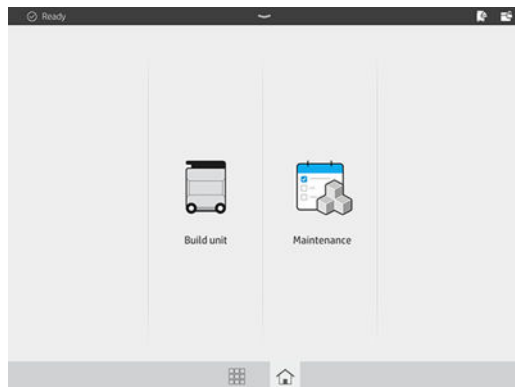


Figure 3-2 Processing station



The all-app screen displays a list of all available apps.

Figure 3-3 Printer

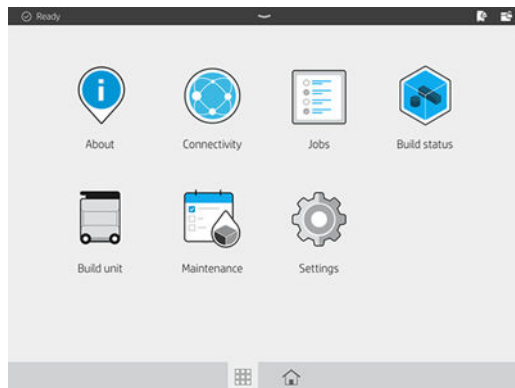
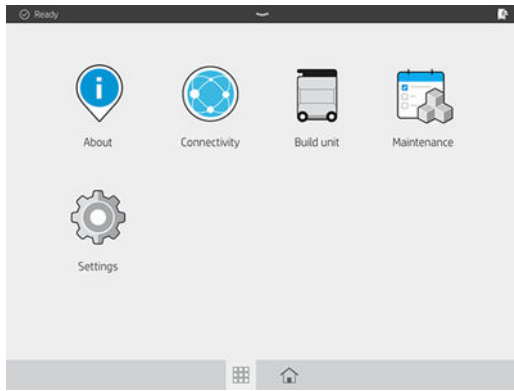


Figure 3-4 Front panel



Status center

At the top of the front panel is the status center, which can be expanded by swiping down from the top. This is visible on almost all screens, except when an action is taking place. In the status center, you can see the status of the printer or processing station, and can directly cancel its status (for example, **Printing**) and alerts.

There are other actions you can perform from the status center, such as moving the carriage and recoating unit for maintenance, ejecting the build unit, or unlocking the top cover.

Beacon

The printer has a beacon located on top of the front panel; it gives a summary of the printer status that can be seen from a distance.



IMPORTANT: The information provided in the beacon is for functional information purposes only, and is not relevant to your safety. Warning labels on the equipment should always be heeded, regardless of the status indicated by the beacon lights.

Table 3-2 Beacon



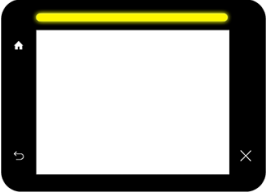
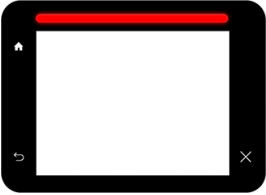
| Graphics | State | Description |
|---|--------------------|--|
|  | White light | The printer is ready. |
|  | White moving light | The printer is printing or preparing to print. |

Table 3-2 Beacon (continued)

| Graphics | State | Description |
|---|--------------|--|
|  | Yellow light | The printer can print, but there is something wrong. If the problem persists, contact your service representative. While printing, you will see a yellow instead of a white light. |
|  | Red light | The printer is unable to print and needs attention, or a major subsystem of the printer is not working. |

Change system options


You can change various printer system options from the front panel.

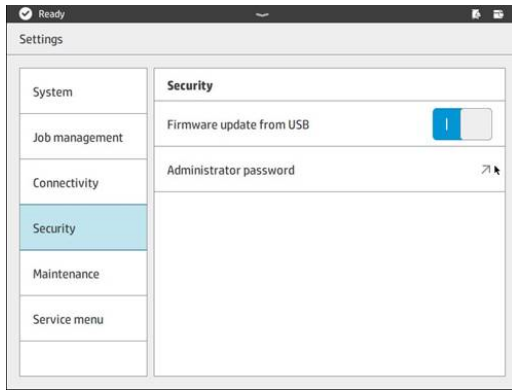
Tap the **Settings** icon , then **System**.

- **Date and time options** to view or set the printer's date and time.
- **Speaker volume** to change the volume of the printer's loudspeaker. Select **Off**, **Low**, or **High**.
- **Front panel brightness** to change the brightness of the front-panel display. The default brightness is 50.
- **Unit selection** to change the units of measurement in the front-panel display. Select **English** or **Metric**. By default, units are set to **Metric**.
- **Restore factory settings** to restore the printer settings to their original values as set in the factory. This option restores all of the printer settings except the Gigabit Ethernet settings.

Set the administrator password

You can set the administrator password from the front panel.

Tap the **Settings** icon , then **Security** > **Administrator password**, and enter the password. If a password has already been set, you will need to give the old password in order to set a new one.



The administrator password must be given in order to change printer settings.

Software

HP provides software to accompany your 3D printing solution.

The software can be downloaded from the HP website:

- <http://www.hp.com/go/jetfusion3D5000/software/>

Compatible software:

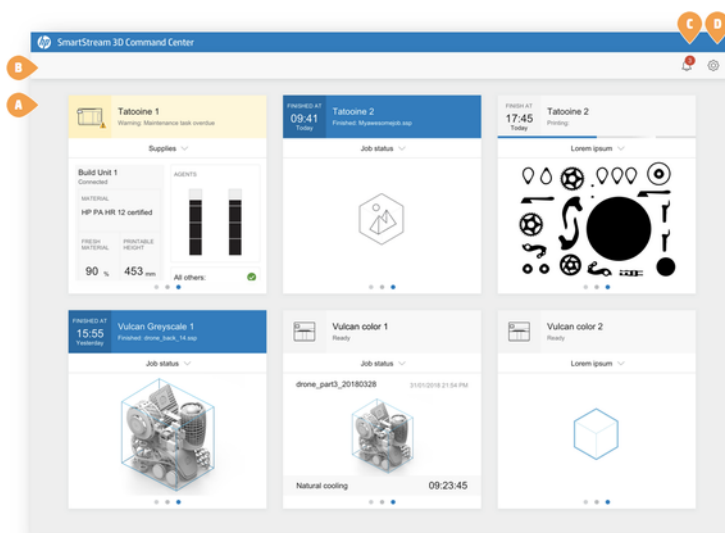
- 3D Build Manager, HP 3D Command Center, HP 3D Center

Certified third party software:

- Autodesk® Netfabb® with HP Work-space, Materialise Build Processor for HP Multi Jet Fusion technology

HP SmartStream 3D Command Center

NOTICE: Ensure that the release installed is at least 4.2.5010 or higher.



Each device is represented by a card that summarizes the most important information about the device. By default, the build status information is shown.

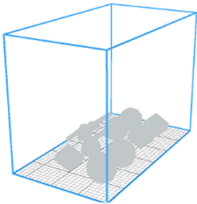
Table 3-3 Cards

Card Information

Finish all
15:59
Today

PR1_509
printing: SmokeMono_geartools_sph...

Build status ▾

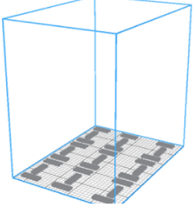


Card Information

Completed
12:11
Today

alpha2_02
Printhead is underperforming. Part qu...

Build status ▾



The upper part of the card shows the following information:

- Icon that helps to identify the type of device.
- Shows the expected finish time, if a part is being built.
- Name of the device chosen by the user who registered it in Command Center.
- Current status of the device.

You can use the drop-down menu to view information on builds and supplies.


Table 3-4 Cards

Buils

Finish all
16:40
Today

alpha2_03
printing: SIT_Long_v1.5

Buils ▾



Supplies

Finish all
16:40
Today

alpha2_03
printing: SIT_Long_v1.5

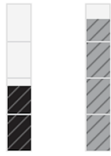
Supplies ▾

Pb_alpha2_07
Material inside

MATERIAL
HP 3D HR SS316L

FRESH MATERIAL
20 %

AGENTS



All others ✓

Click the card for more detailed information about the device.

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Figure 3-5 The Build status tab

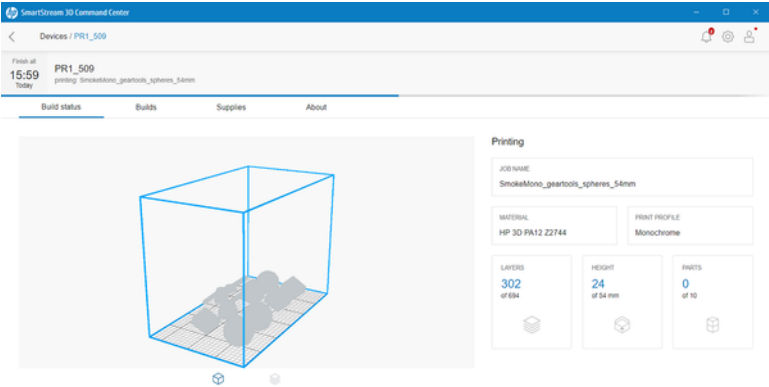


Figure 3-6 The Builds tab

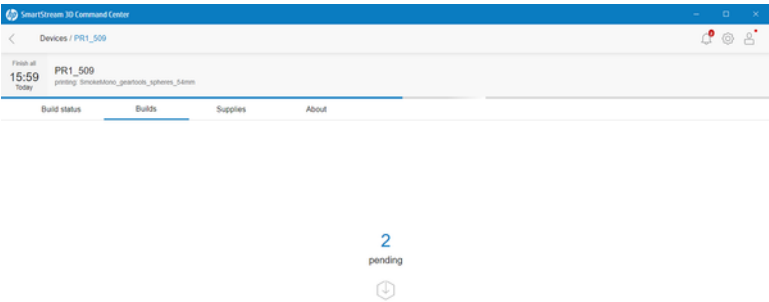


Figure 3-7 The Supplies tab

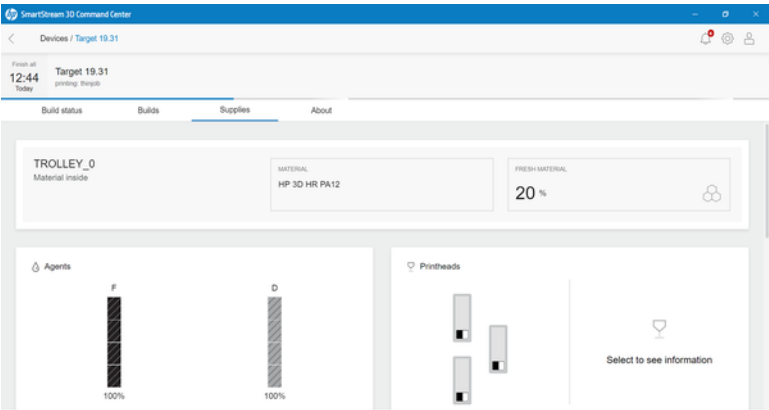
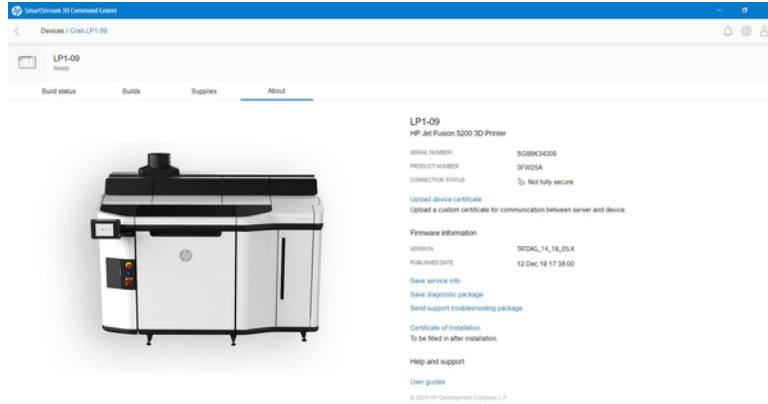


Figure 3-8 The About tab



Click **Back** or the breadcrumb to go back to the monitoring overview area.

Types of devices

Command Center can monitor all models of 3D printers, processing stations, build units, and cooling frames.

3D printers

This topic explains the concepts involved in this subject.

3D printers have the following sections:

- **Build status:** Information about the ongoing activity of the printer.

While a job is being printed, you can see the following information:

- JOB NAME
- MATERIAL
- PRINT PROFILE
- LAYERS: The number of layers printed, and the total number of layers to print
- HEIGHT: The height printed, and the total height to print
- PARTS: The number of parts printed, and the total number of parts to print

- **Builds:** Information about the current job file that is being printed, the upcoming jobs, and the pending jobs to be printed.
 - UPCOMING JOB: This appears only when a new job has been submitted while the current job is printing, to be printed in the same build chamber
 - PENDING JOBS: Jobs that are already stored in the printer, waiting to be printed when selected
- **Supplies:** Information about the health of all your supplies, with further information in case of any warning or error.

NOTICE: Different printer models may have different types of supplies.

- **BUILD UNIT:** Shows the status of the build unit and type of material in the build chamber, if the printer supports build units.

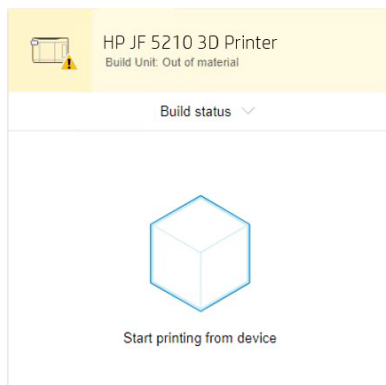
- **FRESH MATERIAL:** The percentage of material that is fresh (from a material cartridge); the rest of the material is from the storage tank (only if the Processing Station is used).
- **AGENTS:** A real-time display of the level of the agents.
- **PRINTHEADS:** Displays alerts or errors if any.
- **OTHER SUPPLIES:** Displays alerts or errors if any.
- **FUSING LAMPS:** Displays alerts or errors if any.
- **HEATING LAMPS:** Displays alerts or errors if any.
- **About:** Information about the printer, such as model and product number, as well as a link to activate the warranty, and a link to the printer's user guide.

Device alerts

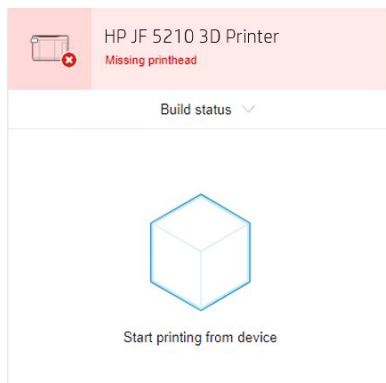
The following steps provide the complete procedure for this topic.

Cards may display warnings or errors, which may override the printer status, depending on their importance, which is determined by the printer.

- **Warnings** are about non-urgent issues, such as a maintenance routine. A warning about a particular component is displayed on the icon representing that component.



- **Errors** are about urgent issues that could stop the printer from starting a job, such as a broken lamp. An error about a particular component is displayed on the icon representing that component.



HP SmartStream 3D Build Manager

Use the powerful 3D print-preparation capabilities of HP SmartStream 3D Build Manager to help make all of your 3D printing jobs successful:

1. Add parts to begin preparing the print job.
2. Rotate, size, and position the part on the bed.
3. Automatically locate and fix 3D geometry errors.
4. Send a printer-ready file to a connected 3D printer or save the printable file.

You can find more information about the Build Manager in the *HP SmartStream 3D Build Manager User Guide*; see [Documentation on page 1](#).

4 Power on and off

How to turn your printer on and off.

NOTICE: Operate the equipment only within the specified ranges of operating temperature and humidity (see the site preparation guide). If the equipment or supplies are exposed to conditions outside the environmental operating range, wait at least 4 hours for everything to reach environmental operating conditions before turning on the equipment or using the supplies.

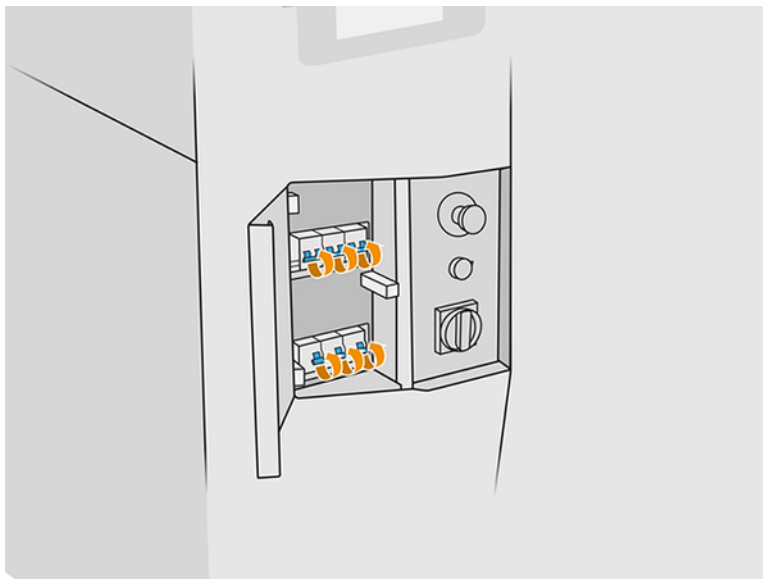
Turn the printer on and off

The correct procedure changes after the first time.

Turn on the printer for the first time

Follow these steps carefully, the first time that you turn on the printer.

1. Make sure that the two bottom rows of circuit breakers at the front right of the printer are all in the up position and that the three green lamps are on. If any of them are off, check with your electrician.



2. Turn the main switch to the on position.



3. Wait for the front panel to tell you that the printer is waiting for rearm.
4. Perform a visual check of the printer.
5. Press the blue rearm button at the front left of the printer. This enables all of the printer's high-power subsystems.
6. Wait for the front panel to indicate that the printer is ready. This can take several minutes. When initialization is complete, the front panel displays a **Ready** message. If a system error message is displayed, see [System errors on page 279](#).

Turn the printer on and off after the first time

After you have turned on the printer for the first time, you can use any of these methods to turn it on and off.

Table 4-1 Turn the printer on and off









| Method | Turn off * | Turn on |
|-------------|--|---|
| Front panel | Soft: Select from menu Hard: Hold down the front-panel power button | Hold down the front-panel power button |
| Red switch | Hard: Turn the red power switch off | <ol style="list-style-type: none">1. Turn the red power switch on2. Hold down the front-panel power button |

* Any of these methods will shut down the printer completely. HP strongly recommends not turning off the printer immediately after printing a job: you should leave the printer on while it cools down for at least 2 hours. If it will be idle for a long time and you want to turn it off, HP recommends the soft method from the front panel.

Circuit-breaker labels

You may see these labels on your circuit breakers.

Table 4-2 Circuit-breaker labels

| Label | Description |
|--|---------------|
|  | Main power |
|  | DC power |
|  | E-box |
|  | Build unit |
|  | Fusing lamps |
|  | Heating lamps |
|  | Rearm |
|  | LAN |

5 Printer networking

The printer provides a single RJ-45 port for a network connection.

In order to meet Class B specifications, the use of shielded I/O cables is required. For optimal performance, you are recommended to use Cat 5/5e or Cat 6 cabling and gigabit-capable local network equipment.

A correct network setup is required to operate the printer, as all communication with printing and management software happens through the network.

Connectivity and remote monitoring requirements

Your 3D printing solution requires a permanent Internet connection to the HP secure cloud.

Definitions

- **Product(s)** means the HP-branded 3D printing hardware and any related HP-branded 3D printing accessories, including but not limited to the 3D printer, processing station, and build unit, as well as any accompanying HP-branded 3D software, listed in the customer order and excluding consumables or services.
- **Site Preparation Guide** means the site preparation guide for the Product that has been provided to the customer by HP or HP authorized personnel (either online or in paper form) in advance of the sale of the Product.
- **Customer Computer** means the computer, as further specified in the Site Preparation Guide, provided by the customer at the customer's sole expense, which will be hosting the required HP 3D software necessary to manage the Product(s).
- **Customer Machine Data** means data collected from the customer's Product that may include, but is not limited to the following: Product usage data; Product production data; Product system events; Product maintenance and calibration history; Product model number; Product serial number; Product firmware version; Product IP address; consumables status and history; sensors activity; quantity and type of printheads used; build ID; build duration; and/or print mode. Customer Machine Data does not include: design files, parts files, job names, job contents, part geometries, thermal maps, user names or part names.

Requirements

- The customer will allow HP to install the required HP 3D software on the Customer Computer, keep the Customer Computer connected to the Product, and keep such HP 3D software running on the Customer Computer at all times.
- The customer will provide, at the customer's sole expense, HP 3D software connectivity to the HP secure cloud via permanent Internet connection through an HP-approved communications channel and will ensure such connectivity at all times as further specified in the Site Preparation Guide. The customer is responsible for restoring connectivity in a commercially reasonable timely manner in the event of unforeseen interruptions.

- THE CUSTOMER AGREES THAT FAILURE TO MAINTAIN THE PRODUCT'S CONNECTION TO THE HP CLOUD AS SPECIFIED IN THE SITE PREPARATION GUIDE WILL RESULT IN LIMITED OR NO PRODUCT FUNCTIONALITY AND LIMITED SERVICE LEVEL.
- Products may collect Customer Machine Data. The customer grants HP and/or an HP authorized agent permission to remotely access, via the HP 3D software, the Customer Machine Data from Products. The Customer Machine Data will be used by HP and/or an HP authorized agent for the purpose of providing remote support, enabling enhanced diagnostics, preventive maintenance, software updating, calculating supplies and consumables usage and statistics, and evaluating improvements to HP's products and offerings in the future. In addition, the Customer Machine Data will help HP determine how Products are being used, which product features are used the most, and to calculate various aggregate Product usage statistics.
- HP and/or HP authorized agents respect your privacy, are committed to protecting Customer Machine Data, and will take reasonable precautions to prevent unauthorized access or disclosure and ensure the appropriate use of Customer Machine Data. In the event that some data may be categorized as individual level data, HP and/or HP authorized agents will maintain the privacy of any such data, as well as all data collected, in accordance with the HP Privacy Statement (<http://www.hp.com/go/privacy>) and the Personal Data Rights Notice (<http://welcome.hp.com/country/privacy/privacynotice>) where applicable.

EU Data Act overview

Users of connected products sold in the EU market are entitled to access the data generated through their use.

Requesting data

You can request access to data via the EUDA portal.

The EUDA portal is located at <https://compliance-euda.hp.com>.

We will provide the requested data without undue delay, free of charge, and in a common, structured, and machine-readable format, in accordance with the EU Data Act.

Sharing data with third parties

You also have the right to share data with a third party of your choice: for example, a repair service provider, data analytics company, or other service provider.

Data shared will be facilitated on fair, reasonable, and non-discriminatory terms, as required by the EU Data Act.

Configuration

Your network configuration requires some configuration.

To access the network settings, tap the **Connectivity** icon  and then the **Settings** icon  on the printer's front panel.

Hostname

You can assign a customized hostname to the printer.

If the network infrastructure supports it, the printer will attempt to register the hostname to the DNS service, making it possible to address the printer using the hostname rather than the IP address.

Similarly, you can assign the domain suffix, to define the printer's fully qualified domain name.

IPv4 configuration

You can let the printer try to discover the IPv4 network settings automatically using the DHCP protocol, or choose to configure them manually.

The IPv4 settings include:

- **IP address:** The unique Internet Protocol address assigned to the printer.
- **Subnet mask:** The mask corresponding to the printer's IP address.
- **Default gateway:** The IP address of the network gateway.
- **DNS configuration method:** Whether DNS servers should be assigned by DHCP service or manually.
- **Primary and secondary DNS servers:** The IP addresses of the DNS servers.

Link speed

When connected and powered on, the printer auto-negotiates with your network to operate with a link speed of 10, 100, or 1000 Mbps, and to communicate using full- or half-duplex mode.

However, you can manually configure the link using the printer's front panel, or through other configuration tools once network communication is established.

The embedded network controller supports connection to IEEE 802.3 10Base-T Ethernet, IEEE 802.3u 100Base-TX Fast Ethernet, and 802.3ab 1000Base-T Gigabit Ethernet compliant networks.

Troubleshooting

Some suggestions in case you have trouble configuring your network connection successfully.

Link issues

The printer has status lights (LEDs) beside the network connector that indicate the link status and network activity.

- When the green light is on, the printer has successfully linked to the network.
- When the yellow light is blinking, there is transmission activity over the network.

If the printer fails to connect to the network, both LEDs will be off. In this situation, try the following steps:

1. Check the cable connections at both ends.
2. Consider replacing the cables with ones that are known to work.
3. Consider switching to another network connector in the network switch, hub, or device to which the printer is connected.
4. Manually configure the link setting to match the port configuration of the network hub or switch.

5. In case of doubt or misconfiguration of link settings, reset the network parameters to their factory settings.

Restore factory settings

In the case of accidental misconfiguration, you can reset the network settings to the factory defaults.

Tap **Restore factory settings** in the Network Settings configuration menu.

6 Prepare a file for printing

The printer cannot interpret a 3D image file directly: you must use software to convert it into a format that the printer is designed to accept.

Introduction

You can create a print job using HP SmartStream Build Manager or various third-party programs.

HP SmartStream 3D Build Manager supports STL and 3MF files.

The software creates slices that the printer can convert to layers in order to prepare the job. This preparation process may take from 15 minutes to 2 hours depending on the complexity of the job. It can be done while printing other jobs. Once ready, you can select the job to be printed from the job queue on the printer's front panel. If an error occurs while processing, a message appears on the front panel, and the printer cancels the job. To retry, you have to resubmit the job.

The rest of this chapter may help you to avoid such errors.

File preparation

Tips to help you prepare files for printing.

Tessellation

Before sending a job to a 3D printer, the model to be printed needs to be tessellated. That means that its geometry needs to be converted into triangles, which are used by the printer to create layers.

It is very important to pay attention to this step: if not done correctly, it can cause problems such as inaccuracy or slow processing.

Standard formats in the additive manufacturing industry include 3MF (with more information about the model) and STL.

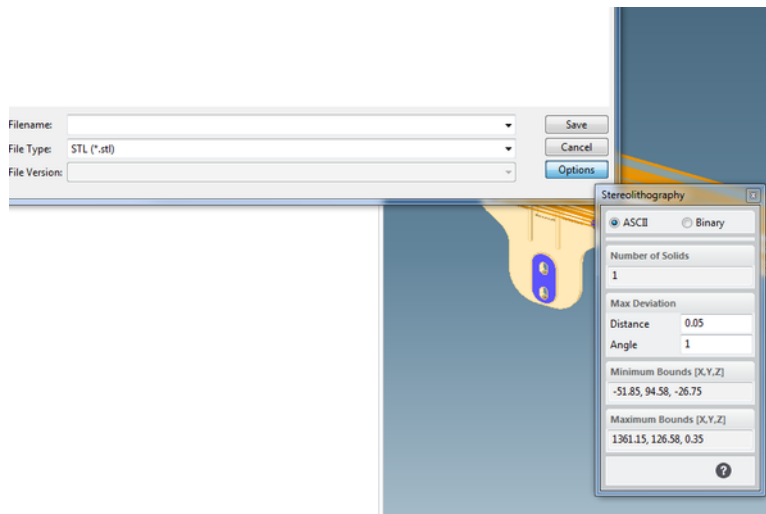
A normal file size for a model is about 1-30 MB, but the size depends on the type of software that created it, the number of triangles, the number and level of details, and so on.

When exporting to STL in a CAD package, you are often required to introduce some parameters such as angle tolerance and deviation chord height. These parameters define the resolution and file size of the part. The following tips may help you to export with the best surface to file size ratio.

Solid Designer settings

Solid Designer is one of the available software options.

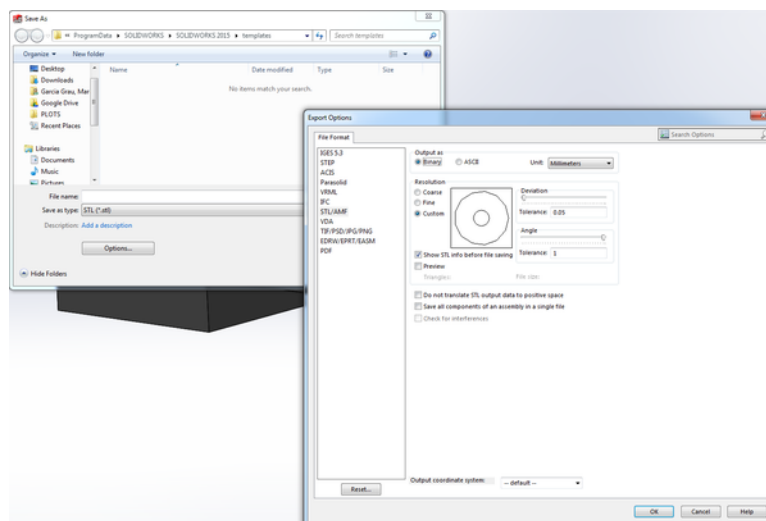
Save as STL, click **Options**, and check the ASCII option. The recommended values for the Distance and Angle box are 0.05 and 1.



SolidWorks settings

SolidWorks is one of the available software options.

1. Click **File > Save As**.
2. Select **STL (*.stl)** as the file type.
3. Click **Options**.
4. Choose the **Binary** option. Binary files are smaller than ASCII files for the same tessellation.
5. Choose **Custom** resolution.
6. Set the deviation tolerance to 0.05 mm.
7. Set the angle tolerance to 1°.



Rhinoceros settings

Rhinoceros is one of the available software options.

1. Click **File > Save As**.
2. Select **STL (*.stl)** as the file type.
3. Click **File Name > Save**.
4. Select **Binary**.
5. Select **Detail Controls** from the Mesh Options.
6. Set the maximum angle to 1, the maximum aspect ratio to 6, and the minimum edge length to 0.05.

STL problems

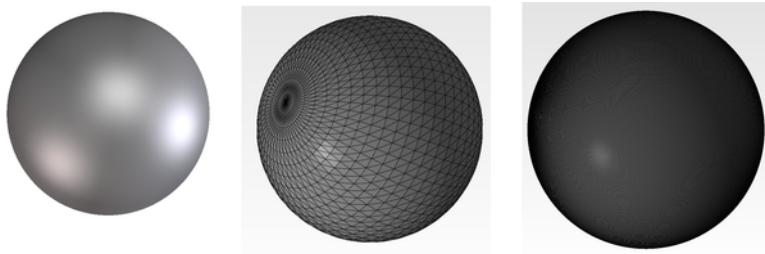
You may experience these problems with your STL files.

- Too many or too few triangles

Too many triangles are difficult to process and, when a certain size is reached, the extra triangles do not provide any further accuracy. For this reason, an excess of triangles could increase processing time for no benefit.

Triangulation of a surface causes faceting of the 3D model. The parameters used to output an STL model affect how much faceting occurs.

Example of tessellation:



- Holes in triangles

STL models commonly suffer from surfaces that are not joined to their neighbors, and missing surfaces.

Repairing STL files

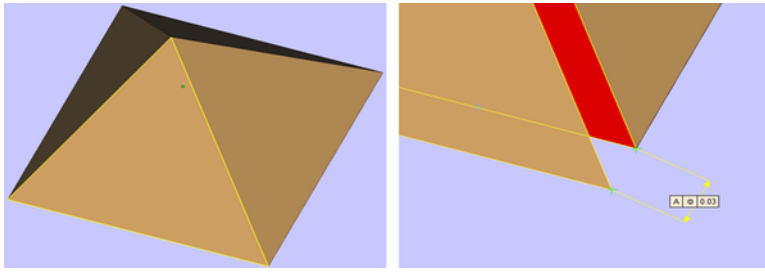
Software tools and common STL file errors

STL-repairing software

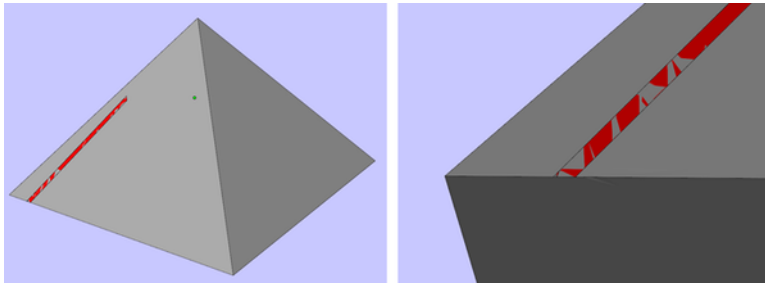
- Magics - Materialise
- Netfabb
- HP SmartStream 3D Build Manager

Common errors in STL files

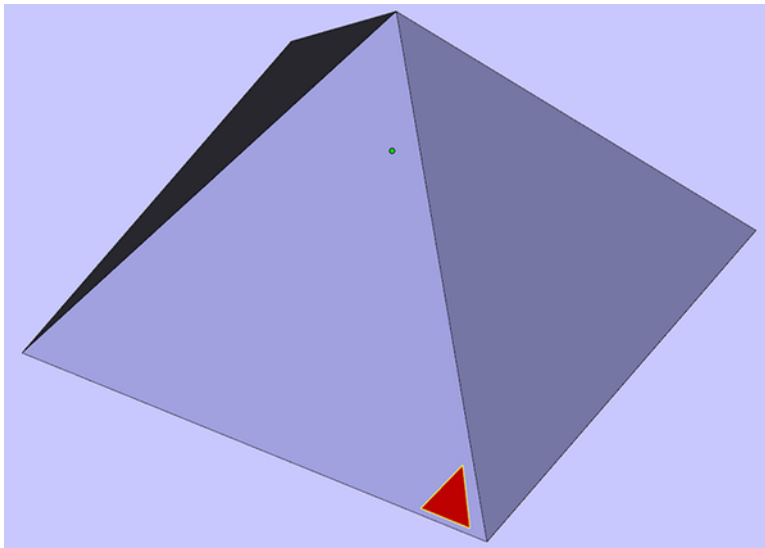
- Triangles not joined



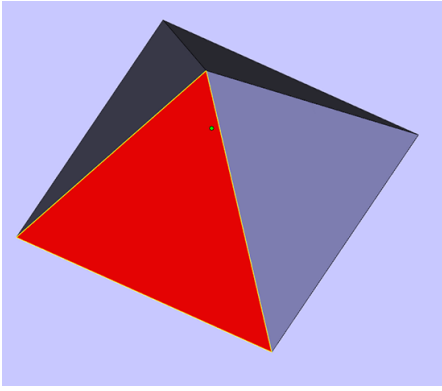
- Overlapping triangles



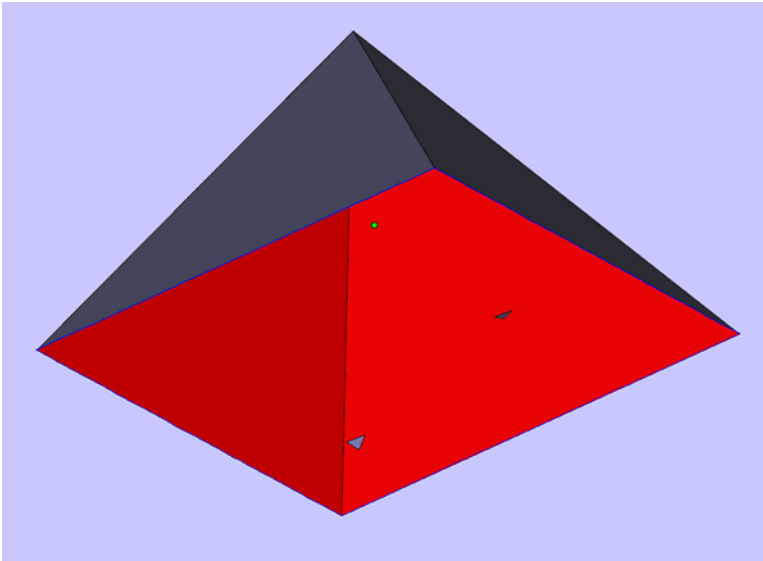
- Holes in parts



- Flipped-direction triangles



- Tiny shells

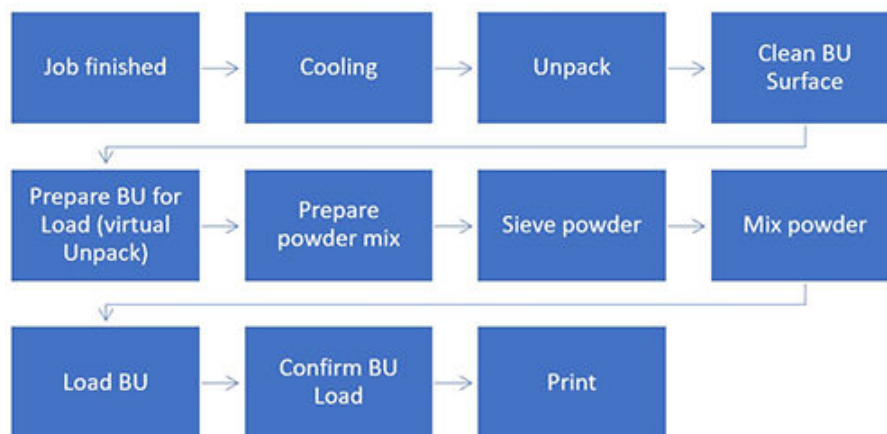


7 Load material into the Build Unit

In order to print, you need material in the Build Unit.

Workflow overview

The following workflow chart shows the required steps to operate the HP Jet Fusion 5000 system.



Load fresh powder tank



For more safety information, see [Safety precautions on page 4](#).

- ⚠ WARNING!** Explosion hazard. The customer takes full responsibility for assessing the site according to the Explosion Protection Document (EPD), Dust Hazard Analysis (DHA), or any required document of the local jurisdiction of the country where the manual processes are handled, to avoid the risk of explosion among other hazards. Dust clouds generated during handling and/or storage can form

explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.

- ⚠ **WARNING!** Chemical hazard. Powder, agents and solvents storage, handling, and disposal as per local laws. See the Safety Data Sheets of your processed powder and solvent powder for adequate handling and storage. Follow your Environmental, Health, and Safety processes and procedures.
 - ⚠ **CAUTION:** The customer takes full responsibility for room layout, auxiliary equipment, personal protective equipment (PPE), and working procedures, among other safety aspects, throughout the entire operation of the equipment.
 - ⚠ **WARNING!** The room where this task is performed should be free from liquids and condensation.
 - ⚠ **WARNING!** Keep the room clean from dust and isolate it from the outside as much as possible. Close windows and doors.
 - ⚠ **WARNING!** Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to fall freely or be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.
-

Load fresh powder tank

Load the fresh powder tank once every time it is empty. The frequency of this operation will depend on the printed job size.

To load the fresh powder tank, follow the instructions in the order presented:

1. Use a pallet jack to move the 300-liter material cartridge to the desired area.

NOTICE: The customer takes full responsibility for moving equipment, the use of auxiliary lifting/ carrying aids, and providing the required personnel. Refer to the Site Preparation Guide, "moving equipment" section.

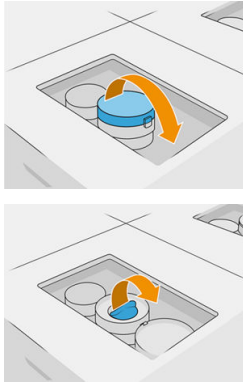
2. Move the vacuum cleaner and fresh powder tank close to the material supply.
3. Remove the cardboard from the packaging.



4. Remove the seal from the rear sprout of the used slot. The cartridge will not work unless seal is properly removed.



5. Open the front sprout and remove the seal.



⚠ CAUTION: Once the seal has been removed, the cartridge should be used until it is empty, and not put into storage. Cartridges are not designed for storing material after removing the seal, and storing an opened cartridge containing material can render the material unusable and cause safety hazards, such as a cloud of material if dropped. Depending on the material, it can be sensitive to temperature, humidity, or other factors. Using cartridges under uncontrolled conditions can affect the functionality of the equipment or severely damage it.

6. Connect the vacuum cleaner hose to the fresh powder tank outlet. Make sure that the tank is empty. The fresh powder tank should have a capacity larger than the supply content (75-liters) to make sure all transferred fresh material fits in the tank. If the tank is not empty some of the material might be mixed with the vacuum cleaner tank content. If the recycled powder tank is connected instead of the fresh powder tank, the material will be mixed in an uncontrolled way. Make sure that the tanks are properly identified.
7. Connect the material supply adaptor to the desired cartridge.
8. Plug the fresh powder tank hose into the material supply adaptor.



9. Connect the fresh powder tank to the ground by placing an earth clamp on the tank lid. The other end of the grounding cable should be connected to the vacuum cleaner grounding.



10. Switch on the explosion-protected vacuum cleaner and wait for 5 minutes to transport the powder from the material supply to the fresh powder tank. After this time, the material supply should be empty. A change in the noise of the vacuum cleaner and the hose movement can also be used to determine that the supply is empty.
11. Check that the material supply is empty by unfastening the rear sprout and looking into the supply with a light. If there is still available material inside, repeat step 10.



Before turning off the explosion-protected vacuum cleaner, it is recommended to allow some air to be vacuumed to ensure that the remaining powder in the hose is sent to the tank. It is also recommended to quickly cover and open again the hose inlet several times to better remove the powder remaining in the hose.

NOTICE: Take measures to mitigate powder spillage and avoid potential ignition sources such as ESD (ElectroStatic Discharges), flames, and sparks.

Prepare powder mix ratio



For more safety information, see [Safety precautions on page 4](#).

- ⚠ **WARNING!** Explosion hazard. The customer takes full responsibility for assessing the site according to the Explosion Protection Document (EPD), Dust Hazard Analysis (DHA), or any required document of the local jurisdiction of the country where the manual processes are handled, to avoid the risk of explosion among other hazards. Dust clouds generated during handling and/or storage can form

explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.

- ⚠ **WARNING!** Chemical hazard. Powder, agents and solvents storage, handling, and disposal as per local laws. See the Safety Data Sheets of your processed powder and solvent powder for adequate handling and storage. Follow your Environmental, Health, and Safety processes and procedures.
- ⚠ **CAUTION:** The customer takes full responsibility for room layout, auxiliary equipment, personal protective equipment (PPE), and working procedures, among other safety aspects, throughout the entire operation of the equipment.
- ⚠ **WARNING!** The room where this task is performed should be free from liquids and condensation.
- ⚠ **WARNING!** Keep the room clean from dust and isolate it from the outside as much as possible. Close windows and doors.
- ⚠ **WARNING!** Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to fall freely or be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.

When using an HP Jet Fusion 5000 printer without a processing station, the mix ratio must be manually prepared using a mix ratio of minimum 20% fresh powder and 80% recycled powder. A higher percentage of fresh can be used if needed. If there is not enough recycled powder to perform the load, increase the fresh ratio percentage or generate extra recycled powder. To prepare the ratio it is needed to load the drums in two steps, first the fresh powder and then the recycled powder.

The recommended size for the drum is 20 liters (larger drums are not recommended due to ergonomics). It is recommended to fill the 20 liters drums with a max weight of 7 kg or 15.5 lbs (1.4 kg / 3.1lb of fresh powder and 5.6kg / 12.4 of recycled). It is recommended to not exceed these values to ensure that there is a minimal empty volume to allow a proper mixing.

Table 7-1

| Drum Capacity | Maximum powder full | Fresh powder (considering 20% fresh ratio) | Recycled powder (considering 20% fresh ratio) |
|---------------|---------------------|--|---|
| 20 liters | 7 kg (15.5 lbs) | 1.4 kg (3.1 lbs) | 5.6 kg (12.4 lbs) |

When preparing the mix ratio, it is recommended to estimate how much powder is needed for the next load and prepare at least enough drums for completing the load. The remaining powder can be used for successive loads.

Load fresh powder

To prepare the powder mix ratio, follow the steps below in the order presented to load fresh powder into the drums:

1. Use the Personal Protective Equipment for this operation according to your EHS requirements. Check the HP Personal Protective Equipment recommendations in this document.

⚠ **WARNING!** It is highly recommended that operators wear anti-static shoes, clothing, and wrist straps.

2. Open the drum and check that the drum to fill is empty.

3. Place the drum on a scale, then tare the scale.
4. Open the fresh powder tank and place the lid on a table or on the floor. It is recommended to use a tray to prevent any powder on to the lid from spilling onto the working surface.
5. Place the tank as close as possible to the drum on the scale to minimize the distance between the two containers.
6. Use a shovel to load the desired mass of powder from the fresh tank into the drum. A careful handling of the shovel is recommended to prevent the formation of powder clouds.
7. Install the drum lid.

⚠ CAUTION: Risk of explosion. If the lid is not installed, the dust cloud inside drum in explosive conditions will be released to the outside, take precautionary measures against static charges and keep away from ignition sources

Evaluate ergonomic conditions of this operation with your EHS department, some users might prefer performing this operation seated. To avoid muscle strain or back injury when moving equipment or handling items, follow proper techniques or use of auxiliary lifting/carrying aids or using more than one person if required.

It is recommended to load several drums with fresh material before start loading with recycled material to avoid unnecessary tank changes.

Load recycled powder

To prepare the powder mix ratio, follow the steps below in the order presented to load recycled powder into the drums:

1. Use the Personal Protective Equipment for this operation according to your EHS requirements. Check the HP Personal Protective Equipment recommendations in this document.


⚠ WARNING! It is highly recommended that operators wear anti-static shoes, clothing, and wrist straps.

2. Open the drum and place it on a scale, then tare the scale.
3. Open the recycled powder tank and place the lid on a table or on the floor. It is recommended to use a tray to prevent any powder on to the lid from spilling onto the working surface.
4. Place the tank as close as possible to the drum on the scale to minimize the distance between the two containers.
5. Use a shovel to load the desired mass of powder from the recycled tank into the drum. A careful handling of the shovel is recommended to prevent the formation of powder clouds.
6. Install the drum lid.
7. Store the loaded drum in a designated area for this purpose.

NOTICE: It is highly recommended to track the powder status (ready to load) in the drum using a label or a material tracker to avoid mixing different drums. Using a rack with different shelves or separated areas per each type of drum is also recommended.









Evaluate ergonomic conditions of this operation with your EHS department, some users might prefer performing this operation seated. To avoid muscle strain or back injury when moving equipment or handling items, follow proper techniques or use of auxiliary lifting/carrying aids or using more than one person if required.

 **NOTE:** Since several drums might need to be prepared, the user can either load all the drums with fresh powder and afterwards all the drums with recycled powder or fill fresh and recycled powder in one drum and afterwards continue with the following drum.

Sieve powder



For more safety information, see [Safety precautions on page 4](#).

-  **WARNING!** Explosion hazard. The customer takes full responsibility for assessing the site according to the Explosion Protection Document (EPD), Dust Hazard Analysis (DHA), or any required document of the local jurisdiction of the country where the manual processes are handled, to avoid the risk of explosion among other hazards. Dust clouds generated during handling and/or storage can form explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.
-  **WARNING!** Chemical hazard. Powder, agents and solvents storage, handling, and disposal as per local laws. See the Safety Data Sheets of your processed powder and solvent powder for adequate handling and storage. Follow your Environmental, Health, and Safety processes and procedures.
-  **CAUTION:** The customer takes full responsibility for room layout, auxiliary equipment, personal protective equipment (PPE), and working procedures, among other safety aspects, throughout the entire operation of the equipment.
-  **WARNING!** The room where this task is performed should be free from liquids and condensation.
-  **WARNING!** Keep the room clean from dust and isolate it from the outside as much as possible. Close windows and doors.
-  **WARNING!** An earth connection is required during sieving process, you must use static earthing clamps connected to metal parts during the process.

Install drum in the sieve discharge adaptor

To install a drum in the sieve discharge adaptor, follow the instructions in the order presented:

1. Use the Personal Protective Equipment for this operation according to your EHS requirements. Check the HP Personal Protective Equipment recommendations in this document.

⚠ WARNING! It is highly recommended that operators wear anti-static shoes, clothing, and wrist straps.

2. Open the lid of the drum to be loaded.
3. Place the drum below the sieve and align it with the adaptor. Raise the adaptor lid by rotating it counterclockwise to make room for the drum.
4. Fasten the adaptor lid to the drum by rotating the adaptor clockwise. It is recommended to apply a gentle torque to close this adaptor to ensure that the drum is securely fixed and to prevent any powder loss.

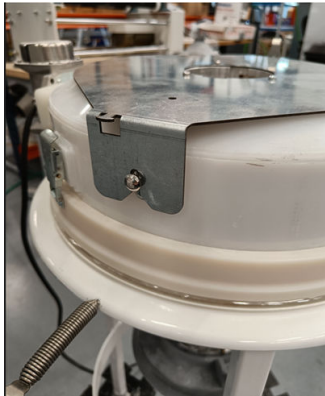


Install the sieve lid

To install the sieve lid, follow the instructions in the order presented:

1. Ensure the sieve is clean before installing the lid. If not, proceed with the cleaning procedure.

2. Place the sieve lid on top of the sieve, ensuring that the two locators on the sides align with the sieve body locating pins.



3. Pull the springs and attach them to the sieve lid snaps. If the springs and the snaps are not aligned, turn the sieve body on top of the sieve structure until they are both completely aligned.



Load sieve

To load the sieve with powder, follow the instructions in the order presented:

1. Before installing a drum to load the sieve, ensure that an empty drum is always installed at the bottom to avoid any powder spillage on the floor. If a drum is not installed, an explosive powder cloud could be generated. If the installed drum is already full, there may be a powder spillage when removing the drum.

⚠ WARNING! Risk of explosion. Ensure that the drum is installed to avoid powder spillage.

NOTICE: Evaluate ergonomic conditions of this operation with your EHS department. To avoid muscle strain or back injury when moving equipment or handling items, follow proper techniques or use of auxiliary lifting/carrying aids or using more than one person if required.

2. Install the discharge funnel to a drum with the prepared mix ratio pending to sieve.



3. Bring the drum close to the sieve and rotate it to align the discharge funnel with the sieve lid interface.



Sieve powder

To sieve powder, follow the instructions in the order presented:

1. After securely attaching the bottom drum to the discharge adaptor and inserting the top drum into the sieve lid, activate the sieve vibration by turning on the sieve.
2. The process of sieving a drum may take several minutes. To check if the process is completed, turn off the sieve, disconnect the top drum from the sieve lid and check if there is still powder on the mesh. Install the drum again on top of the sieve lid if there is still powder pending to sieve, either inside the drum or on top of the sieve mesh.
3. Once the sieving process is complete, switch off the vibration and then remove the empty drum from the top of the sieve lid.
4. After removing the top drum and checking that there is no remaining powder on top of the sieve mesh, remove the bottom drum by unfastening the discharge adaptor lid. It is recommended to gently tap the sieve cone to ensure that any powder remaining inside the sieve cone is discharged.

into the drum before removing it. Some remaining powder agglomerates may remain on top of the sieve mesh, which has no risk of falling onto the floor.



5. Verify that the powder sieved does not contain any external particles or contamination and install the lid onto the full drum with sieved powder.

⚠ CAUTION: Risk of explosion. If the lid is not installed, the dust cloud inside drum in explosive conditions will be released to the outside, take precautionary measures against static charges and keep away from ignition sources.

6. Store the loaded drum in a designated area for this purpose.

NOTICE: It is highly recommended to track the powder status (ready to load) in the drum using a label or a material tracker to avoid mixing different drums. Using a rack with different shelves or separated areas per each type of drum is also recommended.



Repeat the process with new drums as many times as required, always considering that there should always be an empty drum in the bottom before loading a new drum.

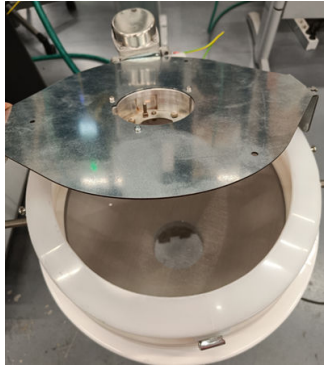
⚠ WARNING! Please be aware that the sieve legs can accumulate electrostatic charges. Ensure that the equipment is properly grounded.

Clean sieve and sieve area

Sieve cleaning is recommended after every load preparation (up to 5 drums). If not frequently cleaned, the sieve mesh might get obstructed and the sieving output could be compromised, increasing the required time to sieve a drum of powder.

To clean the mesh, follow the instructions in the order presented:

1. Remove the sieve lid by releasing the springs from the sieve lid snaps, then lift the sieve lid.



2. Use the explosion-protected vacuum cleaner hose (not connected to any drum or cyclone) to directly vacuum the powder agglomerates and contamination from the sieve mesh.

NOTICE: It is recommended to use a HEPA filter before the vacuum pump to reduce the powder that could arrive.

CAUTION: Customers take full responsibility for using an explosion-protected vacuum cleaner according to zone classification and their own risk analysis to avoid the risk of an explosion.



3. For further sieve mesh cleaning, the sieve mesh can safely be disassembled following the manufacturer's guidelines.

NOTICE: After every load preparation (up to 5 drums) it is recommended to clean the sieve area floor with the explosion-protected vacuum cleaner to prevent any dust build up in the sieve discharge area.

Mix powder



For more safety information, see [Safety precautions on page 4](#).

WARNING! Explosion hazard. The customer takes full responsibility for assessing the site according to the Explosion Protection Document (EPD), Dust Hazard Analysis (DHA), or any required document of the local jurisdiction of the country where the manual processes are handled, to avoid the risk of

explosion among other hazards. Dust clouds generated during handling and/or storage can form explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.

- ⚠ **WARNING!** Chemical hazard. Powder, agents and solvents storage, handling, and disposal as per local laws. See the Safety Data Sheets of your processed powder and solvent powder for adequate handling and storage. Follow your Environmental, Health, and Safety processes and procedures.
 - ⚠ **CAUTION:** The customer takes full responsibility for room layout, auxiliary equipment, personal protective equipment (PPE), and working procedures, among other safety aspects, throughout the entire operation of the equipment.
 - ⚠ **WARNING!** The room where this task is performed should be free from liquids and condensation.
 - ⚠ **WARNING!** Keep the room clean from dust and isolate it from the outside as much as possible. Close windows and doors.
 - ⚠ **WARNING!** Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to fall freely or be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.
-

Prepare drum for mixing

To prepare the drums for mixing, follow the instructions in the order presented:

1. Use the Personal Protective Equipment for this operation according to your EHS requirements. Check the HP Personal Protective Equipment recommendations in this document.

- ⚠ **WARNING!** It is highly recommended that operators wear anti-static shoes, clothing, and wrist straps.
-

2. Set the recommended mixing time and mixing speed in the mixer.

Mix powder

To mix powder, follow the instructions in the order presented:

1. Place the first drum to be mixed next to the mixer.
2. Ensure that the drum lid is properly fastened to prevent any powder spillage.
3. Ensure that the exterior of the drum is free of powder to ensure the proper rotation of the drum.
4. Place the tank on the mixer horizontally, between the two rods.
5. Ensure that the speed setting and the time to mix are properly set, start the mixer and wait for the time to complete.

NOTICE: The mixing setting recommended to ensure a proper mixing is the one needed to ensure that the drum (not the mixer roller) rotates at 60 rpm and the mixing time is 5 to 7 minutes.



Settling after mixing

Once the mixing time has been completed, follow the instructions in the order presented:

1. Remove the drum from the mixer.
2. Store the loaded drum in a designated area for this purpose.

NOTICE: It is highly recommended to track the powder status (ready to load) in the drum using a label or a material tracker to avoid mixing different drums. Using a rack with different shelves or separated areas per each type of drum is also recommended.



Repeat the process with new drums as many times as required.

NOTICE: After every load preparation (up to 5 drums) it is recommended to clean the surroundings of the mixer with the explosion-protected vacuum cleaner to avoid dust build up in the mixer area.

NOTICE: After mixing the powder, it is recommended to load it in the Build Unit as soon as possible to avoid the powder to segregate inside the drum. Do not leave already mixed powder (ready to load) inside a drum for more than a few hours. If the powder is left for more time, repeat the Mix Powder process before loading it to the Build Unit.

Load Build Unit



For more safety information, see [Safety precautions on page 4](#).

-
- ⚠ **WARNING!** Explosion hazard. The customer takes full responsibility for assessing the site according to the Explosion Protection Document (EPD), Dust Hazard Analysis (DHA), or any required document of the local jurisdiction of the country where the manual processes are handled, to avoid the risk of explosion among other hazards. Dust clouds generated during handling and/or storage can form explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.
 - ⚠ **WARNING!** Chemical hazard. Powder, agents and solvents storage, handling, and disposal as per local laws. See the Safety Data Sheets of your processed powder and solvent powder for adequate handling and storage. Follow your Environmental, Health, and Safety processes and procedures.
 - ⚠ **CAUTION:** The customer takes full responsibility for room layout, auxiliary equipment, personal protective equipment (PPE), and working procedures, among other safety aspects, throughout the entire operation of the equipment.
 - ⚠ **WARNING!** The room where this task is performed should be free from liquids and condensation.
 - ⚠ **WARNING!** Keep the room clean from dust and isolate it from the outside as much as possible. Close windows and doors.
 - ⚠ **WARNING!** Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to fall freely or be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.
-

Prepare drum for loading

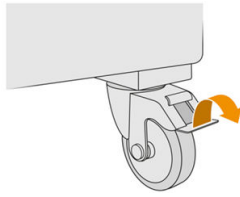
To prepare the drum for loading the powder in the Build Unit, follow the instructions in the order presented:

1. Use the Personal Protective Equipment for this operation according to your EHS requirements. Check the HP Personal Protective Equipment recommendations in this document.

-
- ⚠ **WARNING!** It is highly recommended that operators wear anti-static shoes, clothing, and wrist straps.
-

2. Move the Build Unit to the designated area to perform the loading operation. Ensure that the Build Unit safety lid is correctly installed during any transport operation.

3. Lock the wheels of the Build Unit.



4. Remove the Build Unit cap and place it on top of the Build Unit platform.

Load the powder

To load the powder in the Build Unit, follow the instructions in the order presented:

-
- ⚠ **WARNING!** Explosion hazard. An earth connection from the build unit is required while manual powder loading.
 - ⚠ **WARNING!** Explosion hazard. Build Unit is not intended for ATEX classified zones or Hazardous Locations. Minimize dust cloud generation during the process. Take measures to mitigate powder spillage and avoid potential ignition sources such as ESD (ElectroStatic Discharges), flames, and sparks.
-

1. Install the discharge funnel to the drum to be loaded with mixed powder.



2. Bring the drum close to the Build Unit and rotate it to align with the discharge funnel in the Build Unit central opening.



3. The process of discharging a drum may take several minutes. It is recommended to gently tap the drum during the discharge process to ensure a proper flow of powder. If the powder is not flowing, it is also recommended to disconnect the drum, shake it and reattach it again. To check if the process is complete, disconnect the drum from the Build Unit and check for any remaining powder inside the drum. Reattach the drum to the top of the Build Unit if there is still powder inside the drum.
4. Once the discharging process is complete, remove the empty drum from the top of the Build Unit. Repeat the process with new drums as many times as required. For an empty Build Unit, 5 drums will be needed. For a Build Unit with remaining powder, between 1 and 3 drums will be needed based on the powder consumed in the previous job.
5. Once the Build Unit is full (with powder reaching the central feature on the Build Unit platform), position the Build Unit cap on the Build Unit platform and clean the build unit platform if there is any powder on top of it.

NOTICE: Evaluate the ergonomic conditions of this operation with your EHS department. To avoid muscle strain or back injury when moving equipment or handling items, follow proper techniques or use of auxiliary lifting/carrying aids or perform the operation with more than one person if required.

Clean loading area and the drums

Once the Build Unit is loaded, follow the instructions in the order presented to clean the loading area and the drums :

1. Unlock the Build Unit wheels, then move the Build Unit to a designated waiting area that is not exposed to powder clouds.
2. Ensure that there is no tank connected to the hose of the explosion-protected vacuum cleaner.
3. Remove the remaining powder in the drums and any remaining powder on the floor with the explosion-protected vacuum cleaner.

Confirm Build Unit load

Follow the instructions in the order presented:

⚠ WARNING! Ensure that the Build Unit is fully loaded before doing this process.

After loading the powder in a Build Unit, it is needed to mark the Build Unit as loaded, otherwise the checks done before printing will fail.

1. Move the Build Unit to the printer, insert it and close the front door.
2. Once the Build Unit is connected, go to the Build Unit App and press the Load button.
3. Select the fresh ratio used for loading the Build Unit and press Continue.
4. Once the process is complete, the Build Unit is ready for printing.

Average time for loading material steps

Table 7-2 Average time in minutes per process

| Process | Average process time (min) |
|--------------------------|---|
| Load fresh powder tank | 5 (not done every load) |
| Prepare powder mix ratio | 5 (time per drum) |
| Sieve powder | 5 (time per drum) |
| Mix powder | 5 (time per drum) |
| Load Build Unit | 5 if attended/7 if unattended (time per drum) |

8 Print

How to print a job.

Job list app

The Jobs icon on the printer's front panel displays the status of all jobs.

Possible statuses are:

- **Waiting to process**
- **Processing**
- **Processed:** The job is ready to be sent for printing. Either it has never been printed, or it is ready for reprinting.
- **Sent to print:** The job has started printing.

Send a job to be printed

Before sending a print job, make sure that the printer is ready for it.


Make sure that you have done at least the required daily maintenance tasks. See [Hardware maintenance on page 90](#).

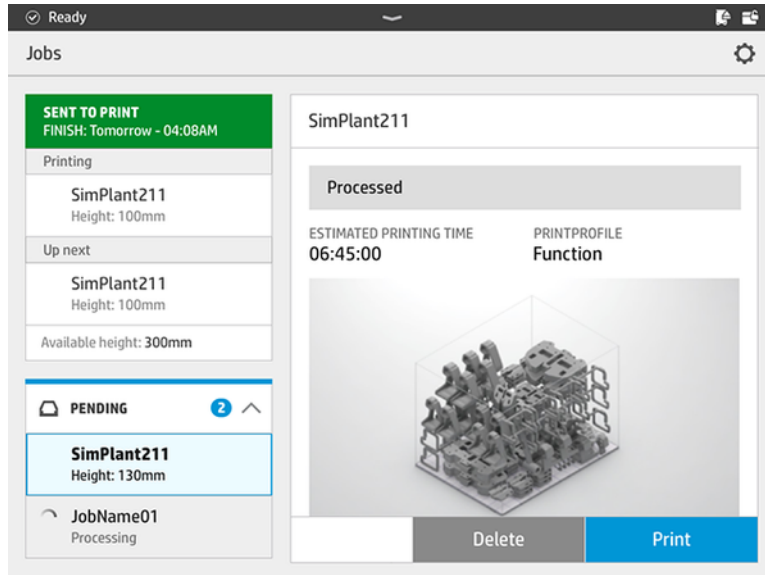
Make sure you have the build unit filled with the correct material and in the printer. See [Load material into the Build Unit on page 53](#).

Then use the HP SmartStream 3D Build Manager to send the job to the printer. See the *HP SmartStream 3D Build Manager User Guide*.

Select a job to be printed

Select the job and start printing.

1. At the printer's front panel, tap the **Jobs** icon  on the home screen.



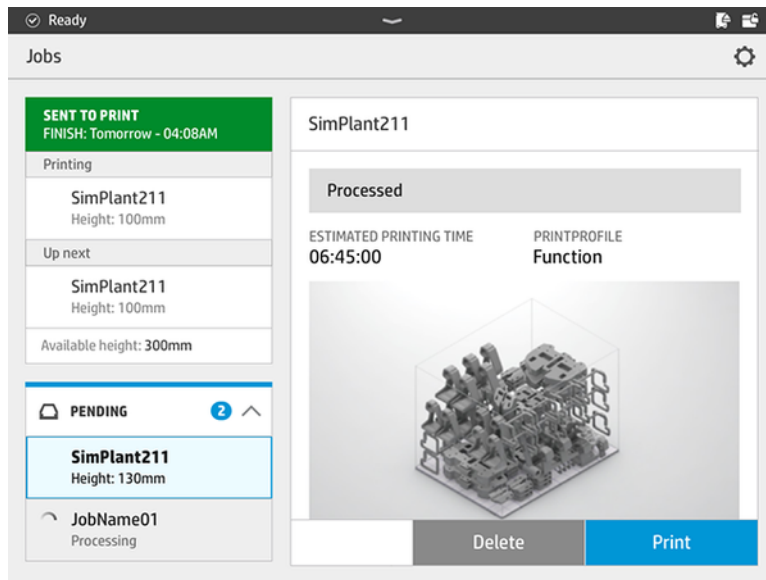
2. If the build unit has not been inserted, open the door and insert the build unit by pushing the handles.
3. Select the processed job and tap **Print**.
4. The printer checks that all subsystems and supplies are ready to complete the build. If one of them is not ready, the printer notifies and advises you: a notification appears in the job details with an accessible summary of any issues. If necessary, correct the issue(s) and resend the job for printing.
5. The printer starts the printing process. Wait until the printer tells you that the process is complete, then remove the build unit.

Add job while printing

If you have available space in the build unit and enough material, you can add a job to be printed while the previous job is still being printed.

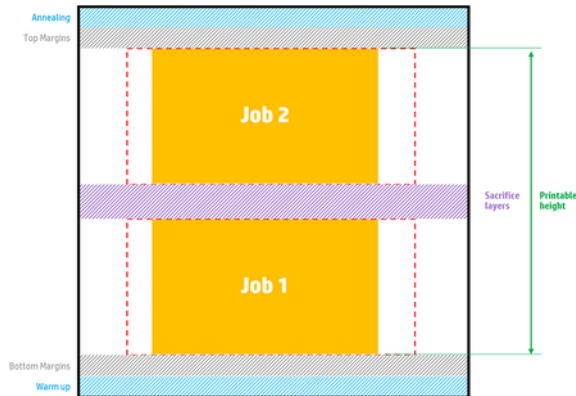
To do so, select the job to be printed and tap **Add**. The printer checks whether it can be added, and adds it if feasible.

On the **Jobs** page, the **FINISH** line shows the total time to finish the currently printing job and the following jobs in the queue. It is updated whenever a job is added or removed.



NOTICE: When adding a job to the queue, the button at the bottom of the page becomes **Remove**, allowing you to remove the job from the queue and return it to its initial location.

When you add a job while printing, sacrifice layers are added between jobs; see diagram below.



Available printable height = Printable height – (Job CAD height + Sacrifice layers)

Repeated per job

A job can be added only if there is enough height available for it. Take into account that the height required is the printed height plus the sacrifice layers between jobs.


You cannot add a job while the current job is annealing.


NOTICE: Adding a complex job during printing may slow down the processing of the current job, which could cause printing problems.

Cancel a job

You can cancel a job while it is printing.

If you need to cancel the job while printing, tap **Cancel** and confirm it in the build status app on the printer's home screen. The printer will cancel the job.

 **IMPORTANT:** When printing with TPU material, if you cancel during the annealing process, your parts may have major print-quality issues. HP does not recommend canceling.

 **IMPORTANT:** Wait until the printer tells you it is safe to remove the build unit.

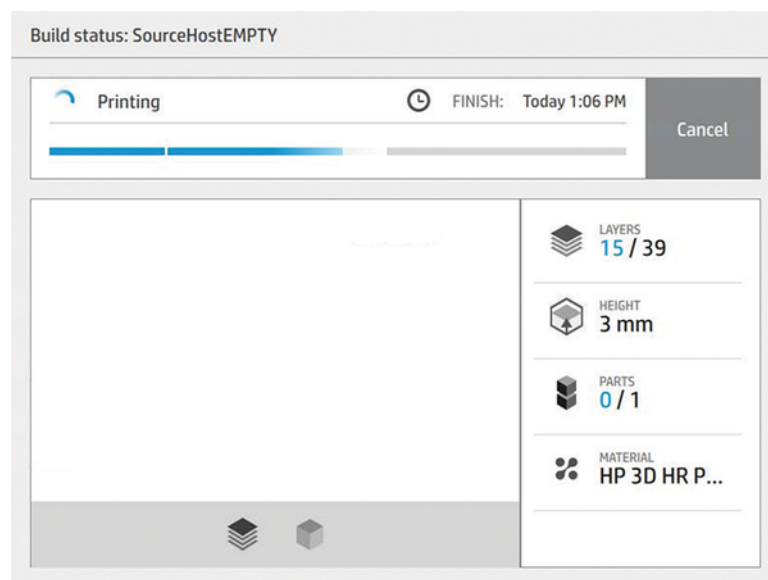
Proceed with the cooling process and unpacking if relevant. If no parts have been printed, the build unit should be cleaned and loaded before using it again.

Check status on the front panel

You can monitor the status of the current job from the front panel.

At the printer's front panel, the **Build status** icon  on the home screen shows you the status of the build currently being printed.

- Status of the job: A progress bar shows the phase completed. The phases are warming, printing, and annealing (if selected when the job was sent to print).
- Estimated finishing time
- Job name
- Layers printed and layers in total
- Parts printed and parts in total
- Height printed and total height
- Material type



You can select an isometric or section view of the current layer, and you can navigate through layers.

When printing with TPU, after the job has been printed successfully, the build unit will be maintained at optimal temperature for manual unpacking for 4 hours. This process is canceled by removing the build unit from the printer, after which it cannot be resumed. After disconnecting the build unit from the printer, manual unpacking must be finished in the time indicated on the front panel (2 hours for a full build chamber).

Check status remotely

You can check the job status from the Command Center.

See [HP SmartStream 3D Command Center on page 35](#).

Possible errors while printing

If one of these errors occurs, the printer cancels the job immediately.

- Out of agent
- Out of cleaning roll
- Printhead error
- Broken lamp
- Crash during printing
- Power cut



IMPORTANT: Wait until the printer tells you it is safe to remove the build unit.

Proceed with the cooling process and unpacking if relevant. If no parts have been printed, the build unit should be cleaned and loaded before using it again.

Print modes

In the HP SmartStream 3D Build Manager, the print mode available is **Balanced mode**, which delivers balanced properties.

9 Unpack job

- ⚠ **WARNING!** Explosion hazard. The customer takes full responsibility for assessing the site according to the Explosion Protection Document (EPD), Dust Hazard Analysis (DHA), or any required document of the local jurisdiction of the country where the manual processes are handled, to avoid the risk of explosion among other hazards. Dust clouds generated during handling and/or storage can form explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.
- ⚠ **WARNING!** Chemical hazard. Powder, agents and solvents storage, handling, and disposal as per local laws. See the Safety Data Sheets of your processed powder and solvent powder for adequate handling and storage. Follow your Environmental, Health, and Safety processes and procedures.
- ⚠ **CAUTION:** The customer takes full responsibility for room layout, auxiliary equipment, personal protective equipment (PPE), and working procedures, among other safety aspects, throughout the entire operation of the equipment.
- ⚠ **WARNING!** The room where this task is performed should be free from liquids and condensation.
- ⚠ **WARNING!** Keep the room clean from dust and isolate it from the outside as much as possible. Close windows and doors.
- ⚠ **WARNING!** Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to fall freely or be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.
- ⚠ **CAUTION:** Follow the safe cooling time and ensure a maximum powder temperature at the core of 80°C (176°F) prior to unpack.

Prepare Build Unit and equipment for unpacking

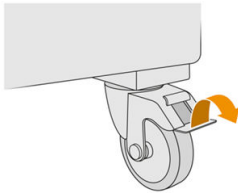
Before unpacking a job from a Build Unit with the explosion-protected vacuum cleaner, follow the instructions in the order presented to prepare the Build Unit and the required equipment:



For more safety information, see [Safety precautions on page 4](#).

1. Use the Personal Protective Equipment for this operation according to your EHS requirements. Check the HP Personal Protective Equipment recommendations in this document.
2. Wait for the recommended cooling time before performing the unpacking process. Cooling time status for the Build Unit can be checked in the printer. Ensure that the powder is below the vacuum cleaner manufacturer specifications before starting the unpacking by the means of a thermal probe, otherwise, the hose can become damaged.

3. Move the Build Unit to the designated area to perform the unpack operation. Ensure that the Build Unit safety lid is correctly installed during any transport operation.
4. Lock the wheels of the Build Unit.



5. Remove the Build Unit safety lid and install it in the Build Unit's hangers provided for this purpose.
6. Connect the Build Unit to the ground by placing an earth clamp on the Build Unit lateral overflow tray. Connect the other end of the grounding cable to the vacuum cleaner grounding.
7. Ensure that the recycled powder tank is empty. If not, transfer the recycled powder tank content into another container to ensure there is room enough for recovered material during unpack. If the tank is not empty, the recovered material could fill the tank and some of the material could be lost into the vacuum cleaner tank.

NOTICE: It is recommended to have at least 2 external tanks to store the possible excess of recycled powder and ensure that there is an empty tank available when doing an unpack.

8. Connect the recycled powder tank to the ground by placing an earth clamp on the tank lid. Connect the other end of the grounding cable to the explosion-protected vacuum cleaner grounding.



9. Connect the vacuum hose from the explosion-protected vacuum cleaner to the recycled powder tank cyclone outlet.



10. Install the aspiration nozzle grid to prevent any small parts from being accidentally vacuumed into the recycled powder tank or vacuum cleaner tank.



11. Place a table or cart next to the Build Unit with a box to gather the unpacked parts.

Unpack job

To unpack a job from a Build Unit with the vacuum cleaner, follow the instructions in the order presented:



For more safety information, see [Safety precautions on page 4](#).

1. Use the Personal Protective Equipment for this operation according to your EHS requirements. Check the HP Personal Protective Equipment recommendations in this document.

NOTICE: If heat resistance gloves are required according to the explosion protection document (EPD) or Dust Hazard Analysis (DHA), it is recommended to choose them according to standard ISO/EN 13732-1 Ergonomics of the thermal environment - Methods of assessment of human responses to contact with surfaces. Part 1: Hot Surfaces

- ⚠ WARNING!** It is highly recommended that operators wear anti-static shoes, clothing, and wrist straps.

2. Turn on the explosion-protected vacuum cleaner.

NOTICE: It is recommended to use a HEPA filter before the vacuum pump to reduce the powder that could arrive.

3. Vacuum the build to reveal the parts.
4. Vacuum the external perimeter of the build. It is recommended to stand on the Build Unit side to gain better access to the build area.
5. Clean each part separately to avoid having big clumps of material covering the part. You don't need to clean every surface thoroughly because:
 - The material that is closest to the part or attached to it may reduce the overall quality of reused material.
 - That material will be removed anyway during sandblasting and postprocessing.

The example below shows a part that is ready for the bead blast.



6. Once the part is thoroughly clean, place it in the box.
7. Continue until all parts are extracted from the build area and placed in the box to take them to the post-processing section.
8. Vacuum the empty printing platform and build area walls. Ensure that the build area walls are also properly cleaned. A brush accessory can be used to better clean the build unit platform the walls.

Clean Build Unit surface

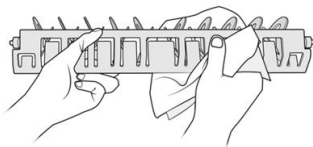
To properly clean the Build Unit surface, follow the instructions in the order presented:



For more safety information, see [Safety precautions on page 4](#).

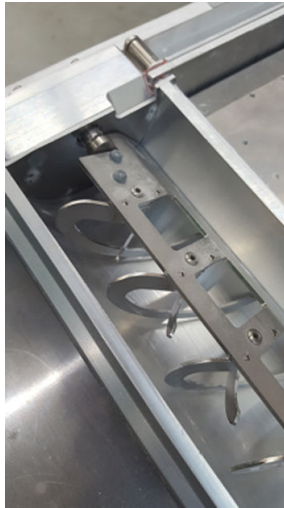
⚠ WARNING! Explosion hazard. Build Unit is not intended for ATEX classified zones or Hazardous Locations. Minimize dust cloud generation during the process and clean any visible dust on BU external covers and connector.

1. Pull away the front and rear vane feeders to remove them.
2. Clean the front and rear vane feeders with a cloth. Additionally, you can use a spiral scourer if necessary to remove all the material.



3. Vacuum the feed trays, ensuring that no material is left behind.

4. Wipe the feedtray cavities with a cloth, ensuring that no solidified material remains. The result should be as clean as shown below.



5. Vacuum the front and rear overflow trays.
6. Clean the recoating unit wiper at the rear.
7. Vacuum the lateral overflow trays.
8. Place the vane feeders back into their original positions.
9. Clean the Build Unit lateral covers and bumpers if any powder has fallen during the unpacking process.

Before turning off the explosion-protected vacuum cleaner, it is recommended to allow some air to be vacuumed to ensure that the remaining powder in the hose is sent to the tank. It is also recommended to quickly cover and open again the hose inlet several times to better remove the powder remaining in the hose.

⚠ WARNING! Risk of Explosion. Dust cloud can form explosive mixtures with air. Wait at least 5 minutes before opening the drum container after any operation.

Clean unpack area

To properly clean the unpack area surface, follow the instructions in the order presented:



For more safety information, see [Safety precautions on page 4](#).

⚠ WARNING! Explosion hazard. Build Unit is not intended for ATEX classified zones or Hazardous Locations. Minimize dust cloud generation during the process.

1. Unlock the Build Unit wheels, then transport the Build Unit to a waiting area not exposed to powder clouds.
2. Disconnect the aspiration hose of the explosion-protected vacuum cleaner from the recycled powder tank cyclone outlet.
3. Use the explosion-protected vacuum cleaner to remove any powder on the floor.

Prepare Build Unit for load (virtual unpack)



For more safety information, see [Safety precautions on page 4](#).

-
- ⚠ **WARNING!** Explosion hazard. The customer takes full responsibility for assessing the site according to the Explosion Protection Document (EPD), Dust Hazard Analysis (DHA), or any required document of the local jurisdiction of the country where the manual processes are handled, to avoid the risk of explosion among other hazards. Dust clouds generated during handling and/or storage can form explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.
 - ⚠ **WARNING!** Chemical hazard. Powder, agents and solvents storage, handling, and disposal as per local laws. See the Safety Data Sheets of your processed powder and solvent powder for adequate handling and storage. Follow your Environmental, Health, and Safety processes and procedures.
 - ⚠ **CAUTION:** The customer takes full responsibility for room layout, auxiliary equipment, personal protective equipment (PPE), and working procedures, among other safety aspects, throughout the entire operation of the equipment.
 - ⚠ **WARNING!** The room where this task is performed should be free from liquids and condensation.
 - ⚠ **WARNING!** Keep the room clean from dust and isolate it from the outside as much as possible. Close windows and doors.
 - ⚠ **WARNING!** Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to fall freely or be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.
-

Prepare Build Unit for load (virtual unpack)

To prepare Build Unit for load (virtual unpack), follow the instructions in the order presented:

-
- ⚠ **WARNING!** Ensure that the unpack has been done before doing this process and ensure that there is no remaining powder on top of the Build Unit platform.
-

After performing the unpack of a Build Unit, it is necessary to perform a virtual unpacking of the job to raise the Build Unit platform and clear the job information stored in the Build Unit.

1. Move the Build Unit to the printer, insert it and close the front door.

2. Open the printer top cover.
3. Once the Build Unit is connected, go to the Build Unit App and press the Unpack button.

NOTICE: Ensure that the top cover is opened before starting the virtual unpack.

4. Once the process is complete, disconnect the Build Unit from the printer.

Empty the Build Unit



For more safety information, see [Safety precautions on page 4](#).

- ⚠ WARNING!** Explosion hazard. The customer takes full responsibility for assessing the site according to the Explosion Protection Document (EPD), Dust Hazard Analysis (DHA), or any required document of the local jurisdiction of the country where the manual processes are handled, to avoid the risk of explosion among other hazards. Dust clouds generated during handling and/or storage can form explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables.
- ⚠ WARNING!** Chemical hazard. Powder, agents and solvents storage, handling, and disposal as per local laws. See the Safety Data Sheets of your processed powder and solvent powder for adequate handling and storage. Follow your Environmental, Health, and Safety processes and procedures.
- ⚠ CAUTION:** The customer takes full responsibility for room layout, auxiliary equipment, personal protective equipment (PPE), and working procedures, among other safety aspects, throughout the entire operation of the equipment.
- ⚠ WARNING!** The room where this task is performed should be free from liquids and condensation.
- ⚠ WARNING!** Keep the room clean from dust and isolate it from the outside as much as possible. Close windows and doors.
- ⚠ WARNING!** Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to fall freely or be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.
- ⚠ WARNING!** Explosion hazard. Build Unit is not intended for ATEX classified zones or Hazardous Locations. Minimize dust cloud generation during the process.

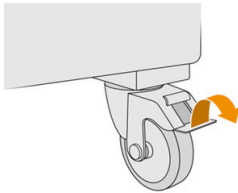
Prepare Build Unit and equipment to empty the Build Unit

To prepare the Build Unit and the required equipment, follow the instructions in the order presented:

1. Use the Personal Protective Equipment for this operation according to your EHS requirements. Check the HP Personal Protective Equipment recommendations in this document.

⚠ WARNING! It is highly recommended that operators wear anti-static shoes, clothing, and wrist straps.

2. Move the Build Unit to the designated area to perform the unpacking operation. Ensure that the Build Unit safety lid is correctly installed during any transport operation.
3. Lock the wheels of the Build Unit.



4. Remove the Build Unit cap and place it on top of the Build Unit platform.
5. Connect the Build Unit to the ground by placing an earth clamp on the Build Unit lateral overflow tray. Connect the other end of the grounding cable to the vacuum cleaner grounding.
6. Ensure that the recycled powder tank is empty. If not, transfer the recycled powder tank content into another container to ensure there is room enough for recovered material during unpack. If the tank is not empty, the recovered material could fill the tank and some of the material could be lost into the vacuum cleaner tank.
7. Connect the recycled powder tank to the ground by placing an earth clamp on the tank lid. Connect the other end of the grounding cable to the explosion-protected vacuum cleaner grounding.



8. Connect the vacuum hose from the explosion-protected vacuum cleaner to the recycled powder tank cyclone outlet.



Empty the Build Unit

To empty the remaining powder inside the Build Unit with the vacuum cleaner, follow the instructions in the order presented:

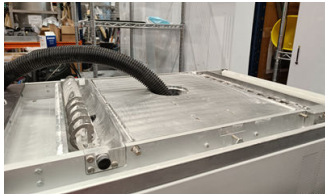
1. Use the Personal Protective Equipment for this operation according to your EHS requirements. Check the HP Personal Protective Equipment recommendations in this document.

⚠ WARNING! It is highly recommended that operators wear anti-static shoes, clothing, and wrist straps.

2. Turn on the explosion-protected vacuum cleaner.

⚠ CAUTION: Customers take full responsibility for using an explosion-protected vacuum cleaner according to zone classification and their own risk analysis to avoid the risk of an explosion.

3. Vacuum the external perimeter of the build including the trays and Archimedes areas. It is recommended to stand on a Build Unit side to have a better access to the build area.
4. Insert the powder hose without any accessory to the central inlet of the Build Unit in the center of the platform. To ensure that the hose reaches the powder, insert at least around 370mm of hose. A lance accessory can also be used to perform the process but ensure that the lance is not damaged with the bottom meshes.



5. Direct the hose towards the front of the Build Unit and wait approximately 5 minutes to vacuum the powder from one side.
6. Then, move the hose towards the rear side of the Build Unit and wait approximately 5 minutes to vacuum the powder from the other side.
7. Remove the vacuum hose from the center of the Build Unit and conduct a visual check to confirm that the remaining powder inside the Build Unit is under the metallic meshes. If any powder is found on top of the meshes, repeat steps 5 and 6. If, after repeating the process several times, there is still powder on top of the meshes, open the lateral window as specified in Check and clean the interior of the Build Unit to remove the remaining powder.

Check and clean the interior of the Build Unit

Make sure that no material is left in the Build Unit.

📋 IMPORTANT: All Build Units to be used with the new material must be clean before starting: see [Empty the Build Unit on page 85](#).

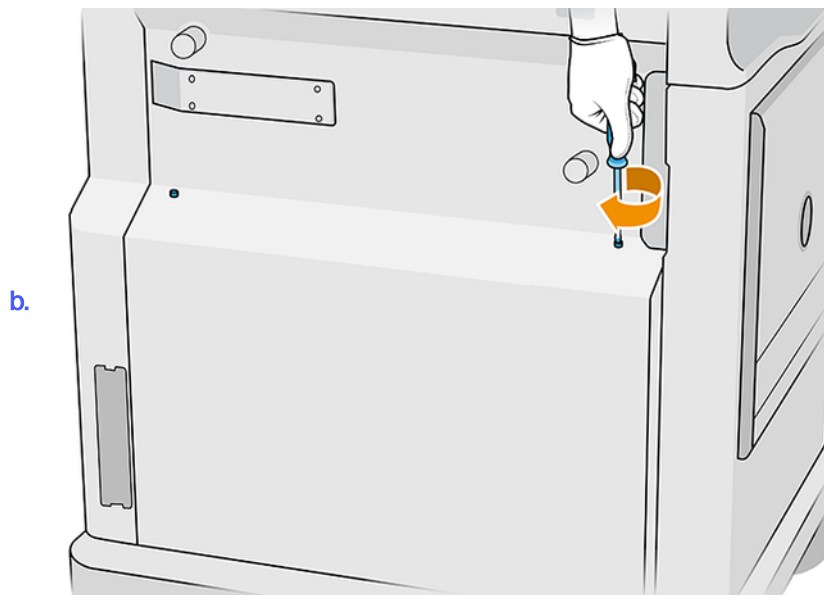
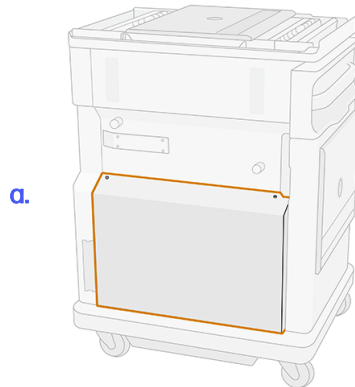
Prepare for cleaning

1. Ensure that you have an explosion-protected vacuum cleaner with soft-brush nozzle, an absorbent all-purpose cloth, a flat screwdriver, a Torx 20 screwdriver, and deionized water (these things are not provided by HP).

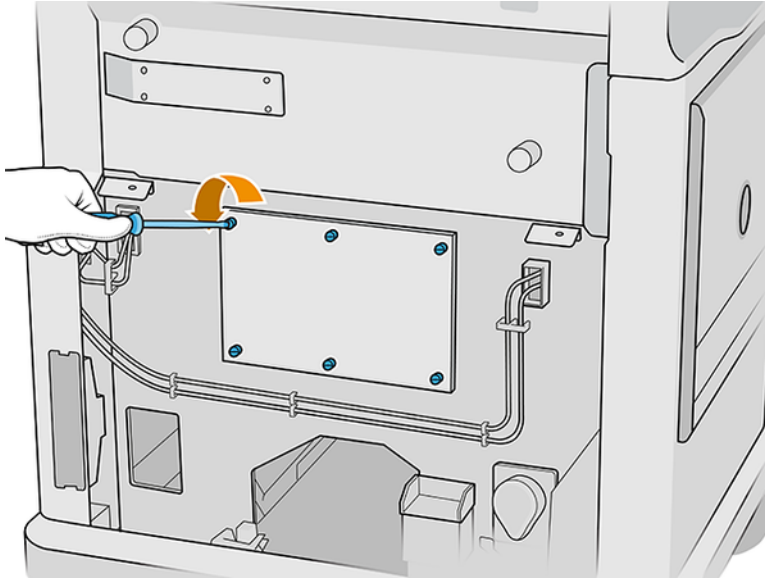
2. You are recommended to wear gloves, goggles, and mask.

Check and clean the interior of the Build Unit

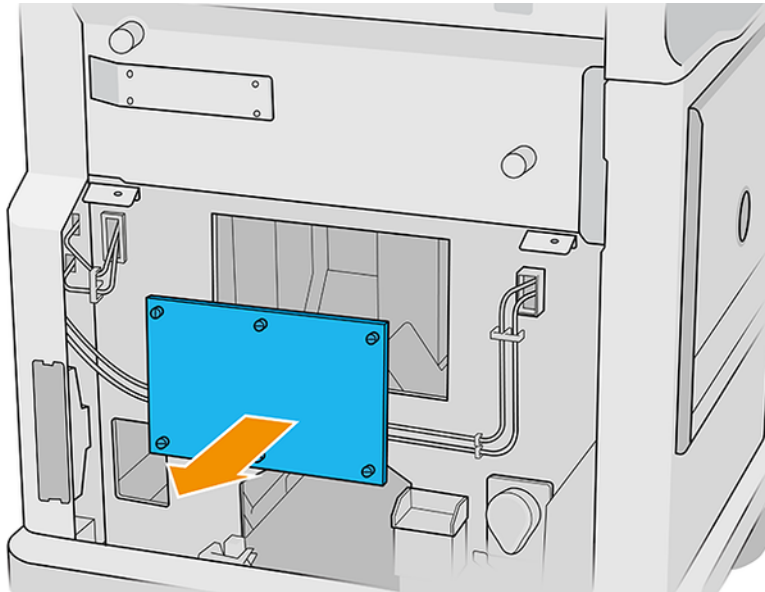
1. Locate the material lid and remove the two Torx 20 screws from it.



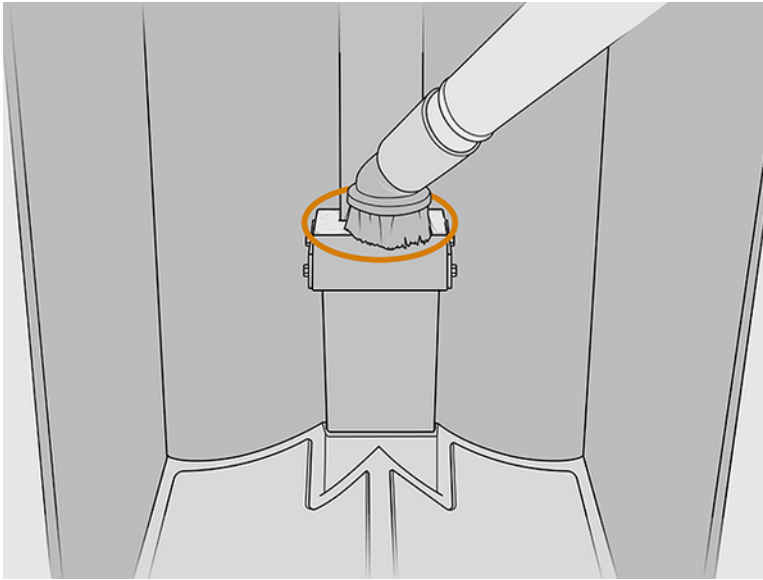
2. Loosen the six flat screws.



3. Remove the lid.

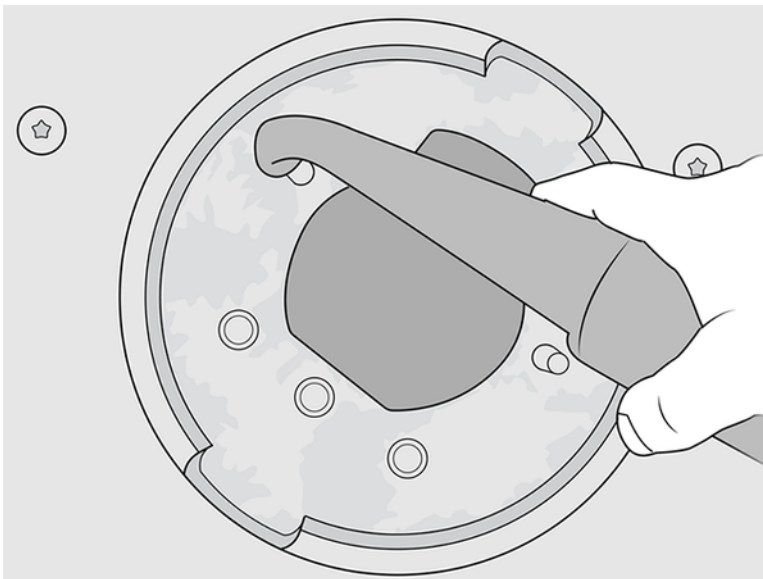


4. Check the interior of the Build Unit and use the explosion-protected vacuum cleaner with soft-brush nozzle, if needed, to remove the remaining material.



Finish cleaning

1. Tighten the four captive flat screws.
2. Put back and tighten the two Torx 20 screws.
3. Vacuum the area below the cap of the Build Unit's loading inlet.



10 Part cleaning and postprocessing

Once parts have been unpacked from the build, they should be cleaned.

There are different processes that can be followed, depending on your needs. In general, you will need equipment not provided by HP. The main process recommended by HP is a combination of bead blasting (first) and air blasting (second).

- Bead blasting consists of applying compressed air mixed with an abrasive to the part in order to remove the attached material. This is a generally appropriate solution; however, you may want to select different abrasives or pressures for specific purposes.
- Air blasting consists of applying compressed air to the part in order to remove any material remaining after bead blasting.

Depending on your specific needs, other postprocessing methods may be suitable for you.

The following options are available to improve surface finishing:

- Tumbling: The part is immersed in a vibro-tumbler full of abrasives, to smooth any surface roughness.
- Hand sanding: The surfaces of the part are smoothed by abrasion with sandpaper.

The following options are available for color-related finishing:

- Bead blasting with other additives consists of applying compressed air mixed with an abrasive and a colored additive to the part in order to achieve homogeneous surface color.
- Dyeing consists of immersing the part in a controlled dyeing bath. All details and cavities of the part can be reached.
- Painting the part with spray can, spray gun, or brush. For specific color finishing, HP recommends applying a primer before painting the part. Repeat the process several times for optimal results.

Other industry-standard postprocessing methods may be used:


- Gluing, bonding, sealing
- Drilling, tapping
- Plating
- Coatings for wear resistance, conductivity, temperature resistance, strength, watertightness, resistance to chemicals, gloss properties, UV protection, and so on

Contact your HP support representative to discuss solutions for your specific needs.

Consult your usual EHS specialist for advice on the appropriate measures for your location depending on the post-processing method you use. Consult your local authorities to determine the correct manner in which to dispose of wastes.

11 Hardware maintenance

Hardware maintenance is needed from time to time, to keep your products in good working order.

 **WARNING!** Hardware maintenance may be performed by trained personnel only. During printer installation, the designated personnel receive training for safe operation and maintenance of the printer. No-one should use the printer without this training.

Safety precautions

Read and follow the safety precautions in this guide to make sure you use the equipment safely.

See [Safety precautions on page 4](#).

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.

The customer takes full responsibility for room layout, auxiliary equipment, personal protective equipment (PPE), and working procedures, among other safety aspects, when processing powder and performing the maintenance tasks specified in this chapter.

General cleaning instructions


For general cleaning, a lint-free cloth dampened with distilled water is recommended. After cleaning, let the cleaned part dry or use a cloth to dry it completely.

Do not spray fluids directly onto the product. Spray the fluid onto the cloth used for cleaning.

To remove stubborn dirt or stains, moisten a soft cloth with water and a neutral detergent, or a general-purpose industrial cleaner (such as the Simple Green industrial cleaner). Remove any remaining soap foam with a dry cloth.

For glass surfaces, use a soft, lint-free cloth lightly moistened with a non-abrasive glass cleaner or with a general-purpose glass cleaner (such as the Simple Green glass cleaner). Remove any remaining soap foam with a lint-free cloth dampened with distilled water, and dry it with a dry cloth to prevent spotting.

 **WARNING!** Make sure to use adequate personal protective equipment. See [Personal protective equipment on page 13](#) and [Warning labels on page 13](#).

 **CAUTION:** Do not use abrasives, acetone, benzene, sodium hydroxide, or carbon tetrachloride on the glass: they can damage it. Do not place or spray liquid directly on the glass, the liquid might seep under the glass and damage the device.

You can use a canister of compressed air to remove dust from electronic/electrical parts.

CAUTION: Do not use water-based cleaners for parts with electrical contacts: such cleaners may damage electrical circuits.

CAUTION: Do not use wax, alcohol, benzene, thinner, ammonia-based cleaners, or other chemical detergents, to prevent damage to the product or the environment.

NOTICE: In some locations the use of cleaner products is regulated. Ensure that your cleaner follows federal, state, and local regulations.

Maintenance resources

Supplies and tools that you may need for maintenance operations.

Maintenance kits

These maintenance kits are available from HP.

Table 11-1 Maintenance kits

| Name | Purpose | How to order | Part number |
|--|--|---------------------------|-------------|
| Printer initial maintenance kit (3FW25A) | For periodic maintenance operations that require the replacement of printer parts; lasts for about 100 full jobs | Through the usual channel | 8VJ71A |
| Printer initial maintenance kit (3FW25B) | For periodic maintenance operations that require the replacement of printer parts; lasts for about 100 full jobs | Through the usual channel | 348C4A |

Kit contents and recommended tools

These are the expected contents of each kit in detail.

NOTICE: The contents may vary in future.

Printer initial maintenance kit contents (8VJ71A)

The maintenance kit contains spare components that you may need to replace from time to time.

NOTICE: This kit is for 3FW25A model printers.

Table 11-2 Printer initial maintenance kit contents (8VJ71A)

| Part Description | SKU | Quantity of items inside each SKU | Quantity of SKUs in Initial kit for 5200A (8VJ71A) | Purpose |
|--|--------|-----------------------------------|--|--|
| HP Jet Fusion 5200 Series 3D Printer Top Enclosure Right Filters | 1X9A5A | 2 | 2 | Replace the top-enclosure left and right fan filters on page 199 |
| HP Jet Fusion 5200 Series 3D Printer Top Enclosure Left Filters | 1X9A4A | 1 | 2 | Replace the top-enclosure left and right fan filters on page 199 |

Table 11-2 Printer initial maintenance kit contents (8VJ71A) (continued)

| Part Description | SKU | Quantity of items inside each SKU | Quantity of SKUs in Initial kit for 5200A (8VJ71A) | Purpose |
|--|--------|-----------------------------------|--|--|
| HP Jet Fusion 5200/4200 Series 3D Printer Heating Lamps | 8VJ63A | 2 | 1 | Replace a heating lamp on page 236 |
| HP Jet Fusion 5200 Series 3D Printer Fusing Lamps | 8VJ73A | 1 | 1 | Replace the fusing lamps on page 118 |
| HP Jet Fusion 5200 Series 3D Printer Intermediate Tank | 8VJ74A | 2 | 2 | Replace an intermediate tank on page 241 |
| HP Jet Fusion 5200/4200 Series 3D Printer Top Heat Lamps Filter | 8VJ67A | 1 | 1 | Replace the heating-lamp filter on page 186 |
| HP Jet Fusion 5200/4200 Series 3D Printhead Cleaning Roll Rubber | 8VJ64A | 1 | 2 | Replace the printhead cleaning roll's rubber blade on page 215 |
| HP Jet Fusion 5200/4200 Series 3D Printer Print-zone Filter | 8VJ65A | 1 | 1 | Replace the print-zone filter on page 197 |
| Cleaning kit (protective eyewear and mask) | - | | 2 | General maintenance processes |
| Kit includes: | | | | |
| - Protective glasses (qty: 1) | | | | |
| - Protective mask (qty: 2) | | | | |
| Printer & Build Unit PowerBox Filters for 3FW25A model printers | 8VJ66A | | 1 | Replace the power-box fan filters on page 191 |
| Kit includes: | | | | |
| - Power Box 1 filter (for 4200 and 5200A) (qty: 1) | | | | |
| - Power Box 2 filter (qty: 1) | | | | |
| - E-cabinet filter (qty: 1) | | | | |
| - Build-unit material-chamber filters (for 3 build units) (qty: 6) | | | | |
| PowerBox 3 Filter for 3FW25A model printers | 2E7N3A | 1 | 1 | Replace the power-box 3 filter (2E7N3A) on page 194 |

Each SKU can be ordered separately if needed.

Printer initial maintenance kit contents (348C4A)

The maintenance kit contains spare components that you may need to replace from time to time.

NOTICE: This kit is for 3FW25B model printers.

Table 11-3 Printer initial maintenance kit contents (348C4A)

| Part Description | SKU | Quantity of items inside each SKU | Quantity of SKUs in Initial kit for 5200A (8VJ71A) | Purpose |
|---|--------|-----------------------------------|--|--|
| HP Jet Fusion 5200 Series 3D Printer Top Enclosure Right Filters | 1X9A5A | 2 | 2 | Replace the top-enclosure left and right fan filters on page 199 |
| HP Jet Fusion 5200 Series 3D Printer Top Enclosure Left Filters | 1X9A4A | 1 | 2 | Replace the top-enclosure left and right fan filters on page 199 |
| HP Jet Fusion 5200/4200 Series 3D Printer Heating Lamps | 8VJ63A | 2 | 1 | Replace a heating lamp on page 236 |
| HP Jet Fusion 5200 Series 3D Printer Fusing Lamps | 8VJ73A | 1 | 1 | Replace the fusing lamps on page 118 |
| HP Jet Fusion 5200 Series 3D Printer Intermediate Tank | 8VJ74A | 2 | 2 | Replace an intermediate tank on page 241 |
| HP Jet Fusion 5200/4200 Series 3D Printer Top Heat Lamps Filter | 8VJ67A | 1 | 1 | Replace the heating-lamp filter on page 186 |
| HP Jet Fusion 5200/4200 Series 3D Printhead Cleaning Roll Rubber | 8VJ64A | 1 | 2 | Replace the printhead cleaning roll's rubber blade on page 215 |
| HP Jet Fusion 5200/4200 Series 3D Printer Print-zone Filter | 8VJ65A | 1 | 1 | Replace the print-zone filter on page 197 |
| Cleaning kit (protective eyewear and mask) | - | | 2 | General maintenance processes |
| Kit includes: | | | | |
| - Protective glasses (qty: 1) | | | | |
| - Protective mask (qty: 2) | | | | |
| Printer & Build Unit Powerbox Filters Kit for 3FW25B model printers | 348C5A | | 1 | Replace the power-box fan filter (348C5A) on page 196 |
| Kit includes: | | | | |
| - Power box filter for 5200B (qty: 1) | | | | |
| - E-cabinet filter (qty: 1) | | | | |
| - Build-unit material-chamber filters (for 3 build units) (qty: 6) | | | | |

Each SKU can be ordered separately if needed.

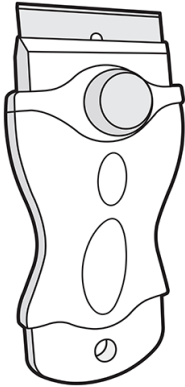
Maintenance tools recommended but not provided

These common tools may be needed but are not provided by HP.

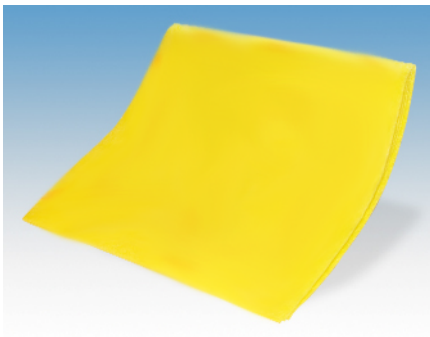
- Spiral scourer, for some cleaning operations

Use a scourer that does not scratch glass; test it on a corner if in doubt.

- Razor scraper



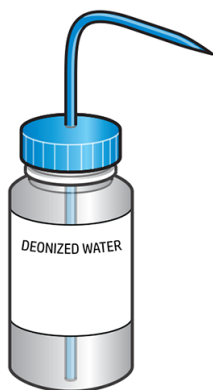
- Absorbent all-purpose cloth, for cleaning covers and general cleaning



- Lint-free cloth or all-cotton cloth, for cleaning covers and general cleaning



- General-purpose industrial cleaner (such as Simple Green industrial cleaner), for general cleaning
- Deionized water, for general cleaning



- Explosion-protected vacuum cleaner, with nozzle accessories for general cleaning (crevice and soft brush nozzles highly recommended)



NOTICE: Inside and outside the equipment should be cleaned regularly with an explosion-protected vacuum cleaner to prevent dust and condensation from accumulating. Do not sweep the dust or try to remove it with a compressed-air gun.

An explosion-protected vacuum cleaner certified for collection of combustible dust is required for cleaning. Take measures to mitigate material spillage and avoid potential ignition sources such as ESD (ElectroStatic Discharges), flames, and sparks. Do not smoke nearby.

- Flashlight, for general use



- Folding steps, for general use



- Flat screwdriver



- Torx screwdriver



Preventive maintenance

The purpose of scheduled preventive maintenance is to perform regular maintenance operations as required, in order to prevent possible failures from occurring and ensure good performance throughout the life of the product.

For each scheduled preventive maintenance action, there is an internal life counter in the firmware that counts a variable related to the life of the component.

When the internal life counter reaches the limit for a preventive maintenance action (set according to testing and development), an alert is displayed in the notification center on the front panel.

Preventive maintenance alerts and actions

An alert tells you that some maintenance action is required.

There are two types of preventive maintenance alerts:

- Alerts that require a service engineer to complete the action (contact your service representative)

There are three such alerts, corresponding to the three maintenance kits described below.

- Alerts that require you to complete the action

Service preventive maintenance alerts

Service alerts require action by a service engineer.

When a preventive maintenance number is displayed, before dispatching the part, a check is required in case there are other preventive maintenance alerts almost due; in which case, they can be done together.

Table 11-4 Service preventive maintenance alerts

| Alert | Description |
|--|--|
| Printer maintenance kit #1 required | Replace the scan-axis motor and front bar SRV |
| Printer maintenance kit #2 required | Replace the recoating unit carriage and sax chain assy SRV |
| Printer maintenance kit #3 required | Replace the carriage |
| Build unit maintenance kit #1 required | Replace platform nut and column gasket |

NOTICE: The Notification Center displays alerts only for the build unit that is inserted at that time.

Operator preventive maintenance alerts

Operator alerts require action by you.

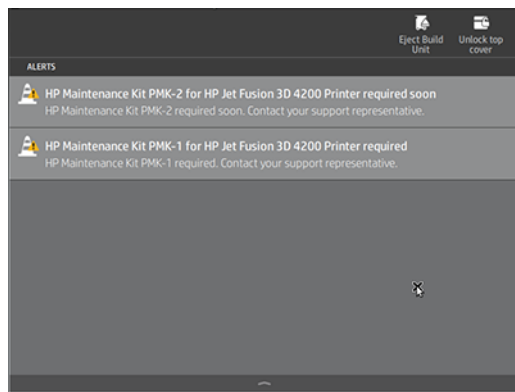
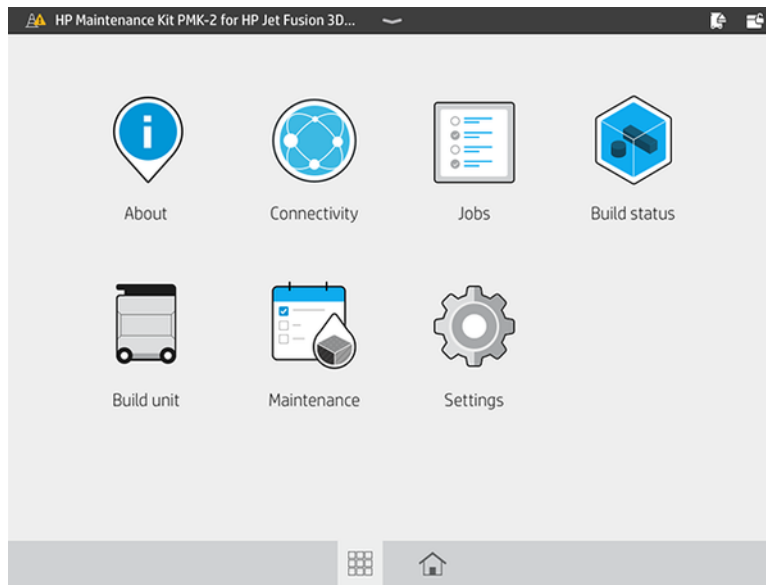
The notification center displays alerts whenever a maintenance action is required.

Table 11-5 Operator preventive maintenance alerts

| Alert | Action required |
|---|--|
| Replace fusing agents intermediate tanks | Replace an intermediate tank on page 241 |
| Replace detailing agents intermediate tanks | Replace an intermediate tank on page 241 |
| Replace rubber blade | Replace the printhead cleaning roll's rubber blade on page 215 |

Check for alerts through the front panel status center

Any alert concerning the printer and the build unit is displayed at the top of the front panel in the status center, which can be expanded by swiping down from the top.

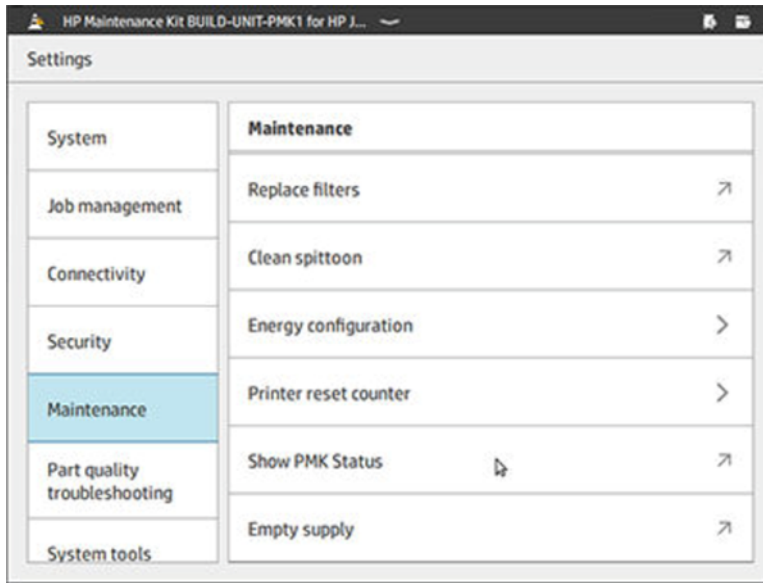


NOTICE: The status center displays alerts only for the build unit that is inserted at that time.

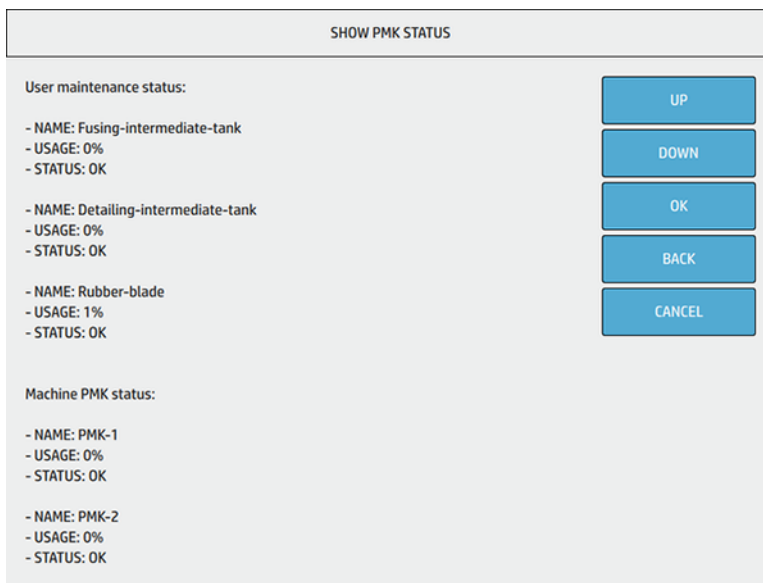
Check preventive maintenance usage level on the front panel

You can check the preventive maintenance usage levels, which are automatically converted to a percentage according to the life counter values, on the front panel.

To do so, tap the **Settings** icon , then **Utilities > Maintenance > Show PMK status** and follow the instructions.



The front panel displays the current status of all user and service preventive maintenances. It also displays the maintenances required for the build unit currently inserted, if any.



NOTICE: Only the usage levels for the build unit that is inserted at that time are displayed.

NOTICE: The percentages given are estimates only.

Consumables

Consumables need to be replaced periodically as a matter of routine.

Printer

The printer consumables include agents, printheads, printhead cleaning rolls, and fusing lamps.

Agents

There are two kinds of agents: fusing and detailing agents.

The printer accepts agent cartridges with a capacity of 3 or 5 liters.

Please note:

- This is a dynamic security-enabled printer. Cartridges using a non-HP chip may not work, and those that work today may not work in the future. For more information, see the HP website <http://www.hp.com/go/learnaboutsupplies>.
- This printer is not designed to use continuous agent systems. To print successfully, remove any continuous agent system and install genuine HP cartridges.
- This printer is designed for HP-approved agent cartridges to be used until they are empty. When a cartridge is empty, insert a new cartridge to continue printing. Do not refill the cartridge.

Status

At the printer's front panel, tap the **Maintenance** icon , then **Agents**, then tap any agent to see its status:

- **Missing:** The agent is missing.
- **Empty:** The agent is empty and should be replaced.
- **Replace:** The agent is faulty and should be replaced.
- **Reset:** The agent is not responding; removing and reinserting it may solve the problem.
- **Wrong:** The agent type is not suitable for this printer.
- **Expired:** The agent has reached its expiration date. Using expired agents may affect the warranty on your printheads.
- **Low on agents:** The agent is low and should be replaced soon.
- **Very low on agents:** The agent is very low and should be replaced soon.
- **Incorrect**
- **Non-HP**
- **OK:** The agent is working normally.
- **Out of agents:** The agents should be replaced.

NOTICE: The level of each agent shown on the front panel is an estimate.


LEDs

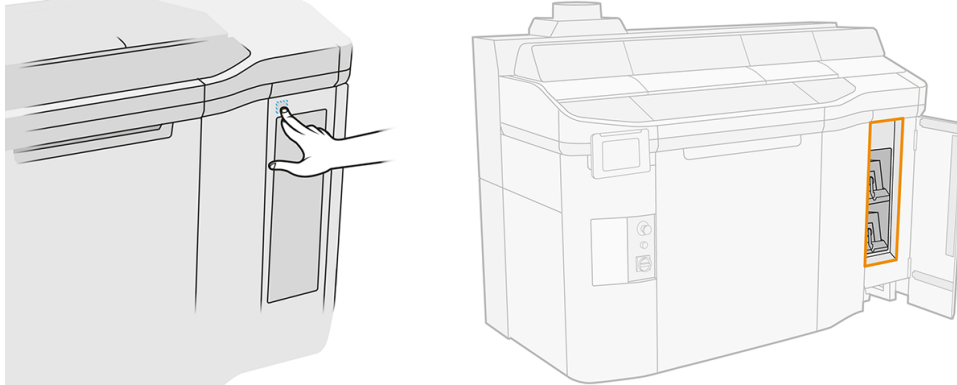
- White: OK
- Yellow: Warning

- Red: Error, out of agent


Replace an agent

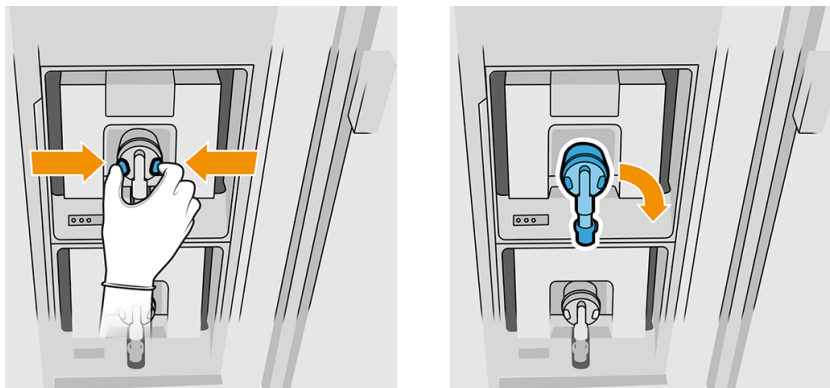
NOTICE: You can replace the agent cartridges while printing continues, because the printer is supplied from the intermediate tanks.

1. At the printer's front panel, tap the **Maintenance** icon , then **Agents > Replace**.
2. Press the agent door to release it, and open the door.

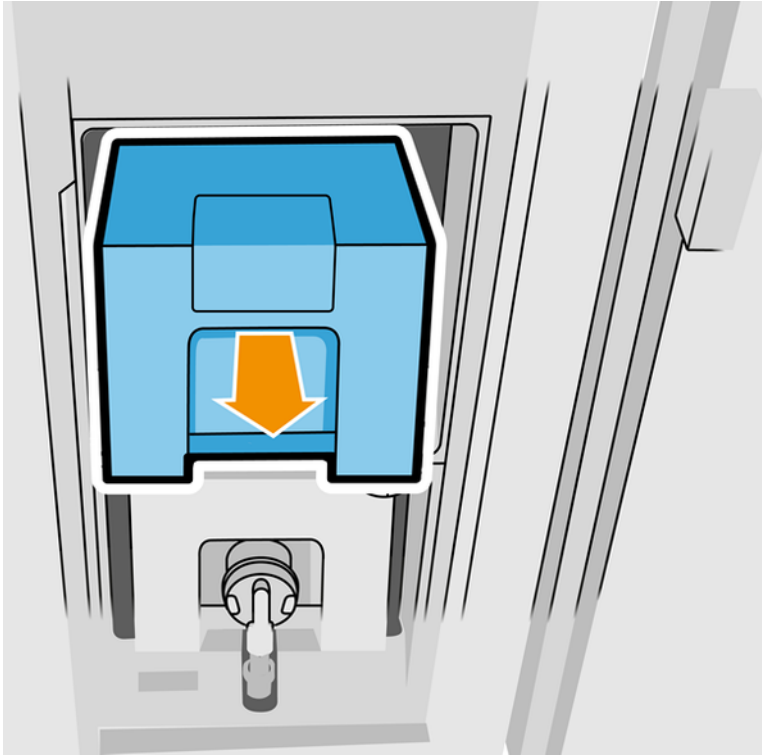


3. Locate the agent to be replaced. You can see which agent needs to be replaced on the front panel; it is also indicated by a red LED beside the cartridge.
4. Disconnect the agent connector by pressing the tabs on each side of it and pulling it away gently.

 **TIP:** When removing or inserting an agent connector, rotate it clockwise a little to avoid interference between the connector and the agent box.



5. Remove the agent.



6. Dispose of the old agent, following the instructions on the packaging. The agent bag should be removed and disposed of in compliance with federal, state, and local regulations. The other agent parts (plastic retainer and packaging box) can be recycled through commonly available recycling programs. HP recommends that you wear gloves when handling supplies.
7. Remove the new agent from its packaging, place it on a flat surface, and turn it four times (rotating it through 360 degrees) as indicated on the label, to ensure that the agent is well mixed before use.



8. Push down and fold inward the top part of the handle. Do not cut it.
9. With one hand on the bottom of the agent and the other on the fold, put the new agent into its correct place in the printer.
10. Without pressing the tabs, connect the agent connector to the cartridge.



IMPORTANT: If you press the tabs when connecting it, the agent will not be locked.



11. Ensure that the tabs on each side of the agent connector are open but in place, showing a successful connection. You will hear a click.
12. Close the door.
13. Tap **Finish** and **Check** on the front panel.

Agent troubleshooting

If a new agent fails to work, try these suggestions. The problem may be with the connector rather than the agent itself.

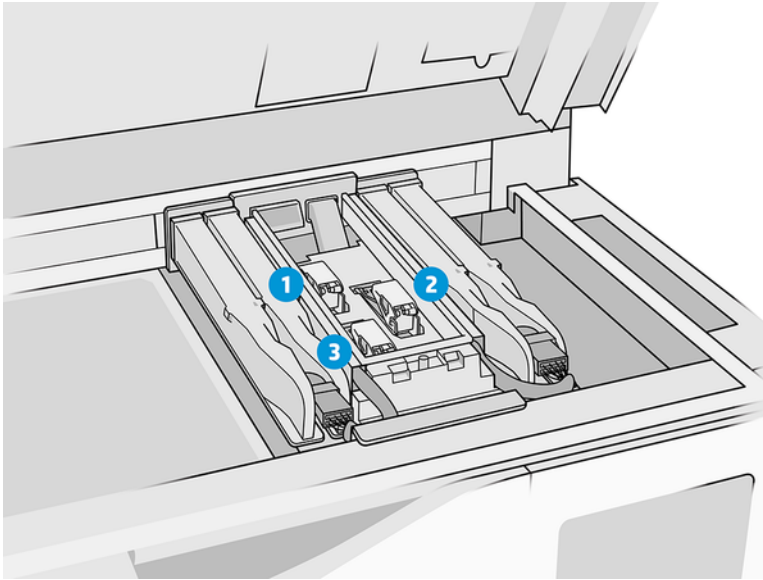
1. Check that the agent is designed for your printer.
2. Use the correct procedure to change agents, through the front panel.
3. Check that there is no obstruction in the agent connector.
4. Check that the agent is of the correct type (fusing or detailing agent). The wrong type will not match the connector.
5. Check that the agent connector is correctly oriented (compare with another agent).
6. Ensure that you have inserted the connector correctly and fully. You should hear a click.
7. Ensure that the tabs on each side of the agent connector are open but in place, showing a successful connection.
8. Check the agent connector. You may find that the agent connectors have become bent while the agent was disconnected. This means that they cannot connect properly, and you will see a reseal message. To correct this problem, use pliers to straighten the connectors so that they will fit into their slots.
9. If the problem still remains, call your service representative.

Printheads

The printheads take agents and deposit them on the build.

⚠ CAUTION: Observe precautions when handling printheads because they are ESD-sensitive devices (sensitive to ElectroStatic Discharges). Avoid touching pins, leads, and circuitry.


The printer's writing system uses three dual-agent printheads with 31,680 nozzles each; so each agent has 15,840 nozzles. The printheads are numbered as shown below.



1. Rear printhead
2. Middle printhead
3. Front printhead

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


Status

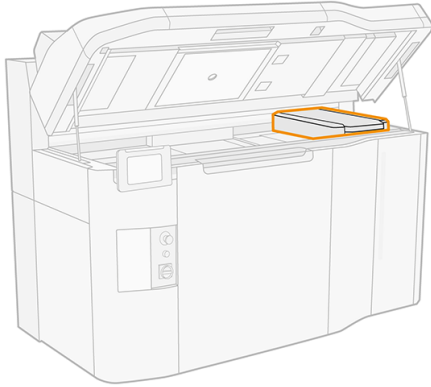
At the printer's front panel, tap the **Maintenance** icon , then **Printheads**, then tap any printhead to see its status:

- **OK:** The printhead is working normally.
- **Check pending**
- **Missing:** The printhead is missing.
- **Error**
- **Warning**
- **Non-HP**

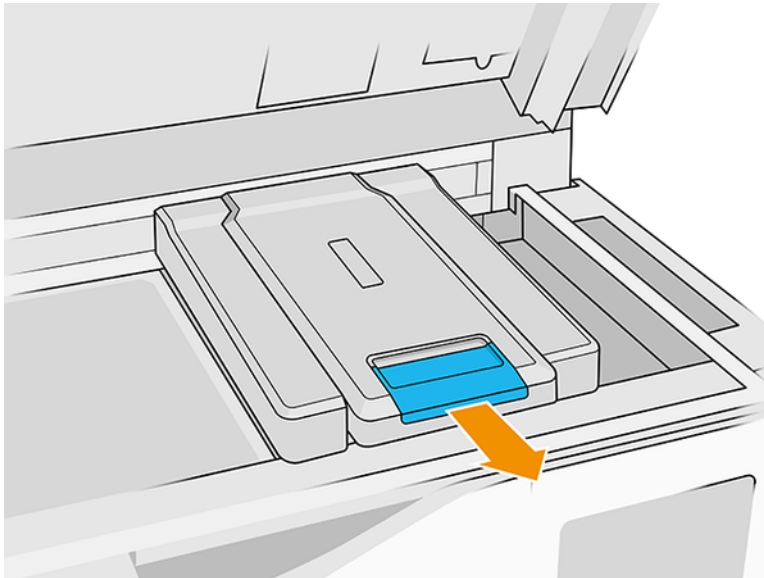
Replace a printhead

Follow these steps to replace a printhead.

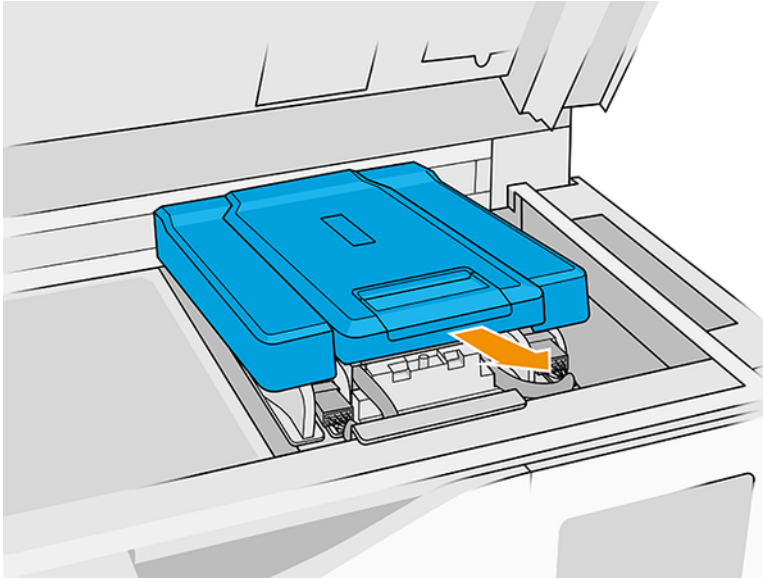
1. At the printer's front panel, tap the **Maintenance** icon , then **Printheads > Replace**.
2. Put on chemical-resistant gloves.
3. Open the top cover.



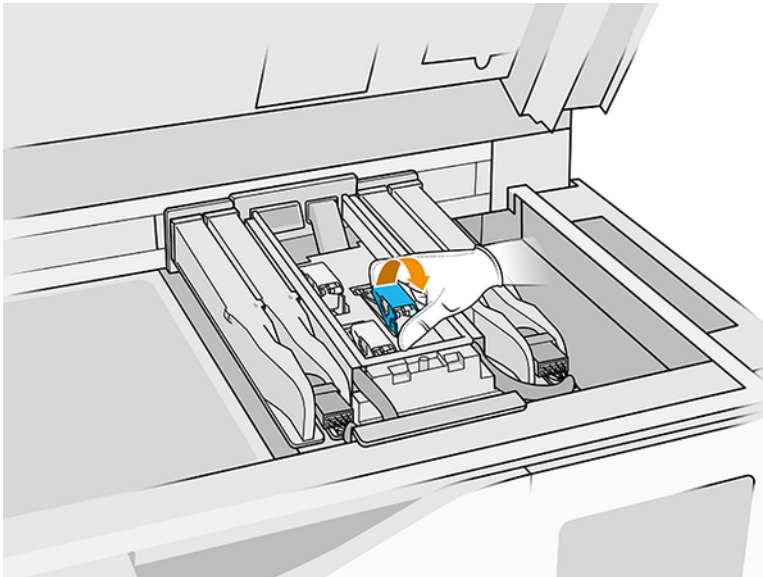
4. Pull the handle to open the printhead cover.



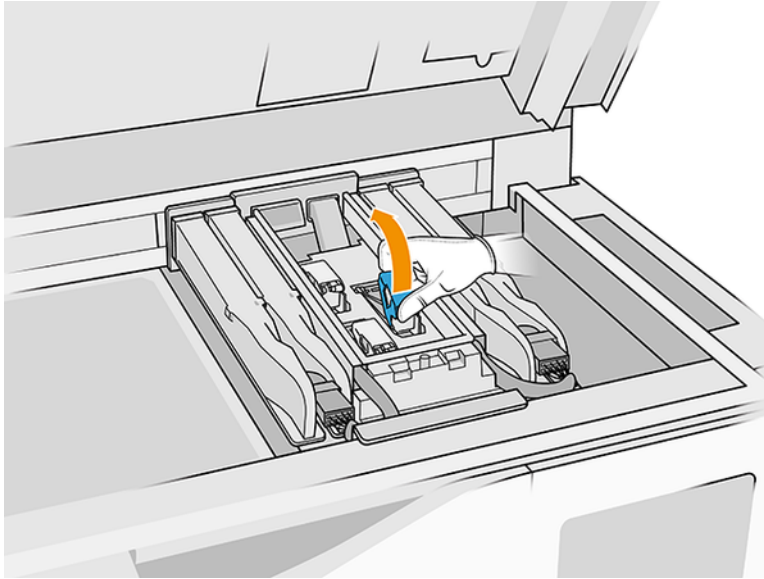
5. Lift off the printhead cover.



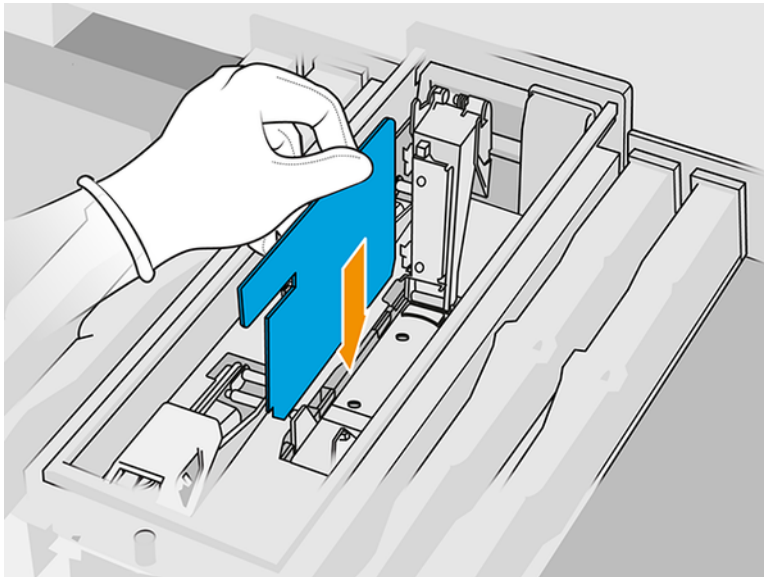
6. Release the printhead latch.



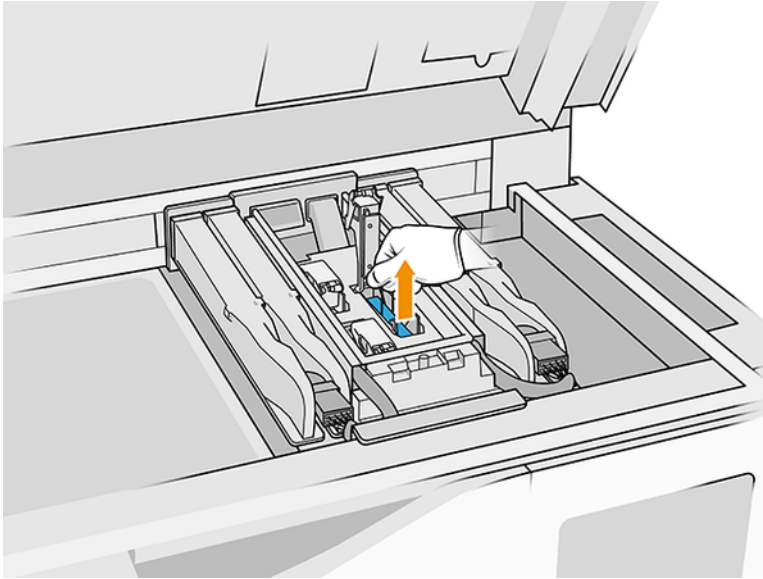
7. Lift the printhead latch.



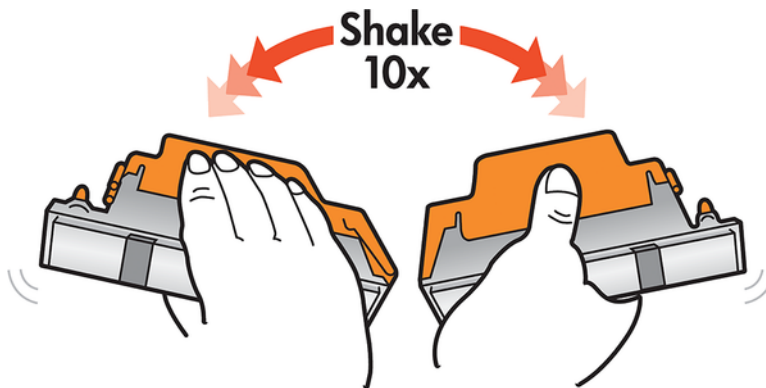
8. Place the extraction tool on the left side of the printhead.




9. Lift the printhead handle, and pull it gently upwards to disconnect the printhead from the carriage.

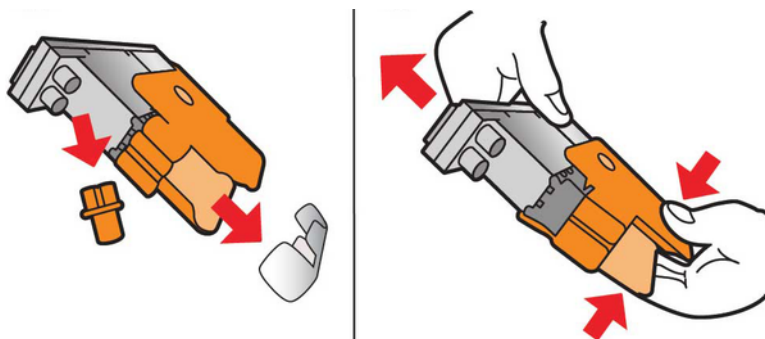


10. After removing the printhead, remove the extraction tool, and clean it with a lint-free cloth dampened with deionized water.
11. Dispose of the old printhead in accordance with local regulations. Most HP printheads can be recycled through the HP supplies recycling program. For more information, see the HP website <http://www.hp.com/recycle/>. HP recommends that you wear gloves when handling supplies.
12. Shake the printhead according to the instructions on its packaging.



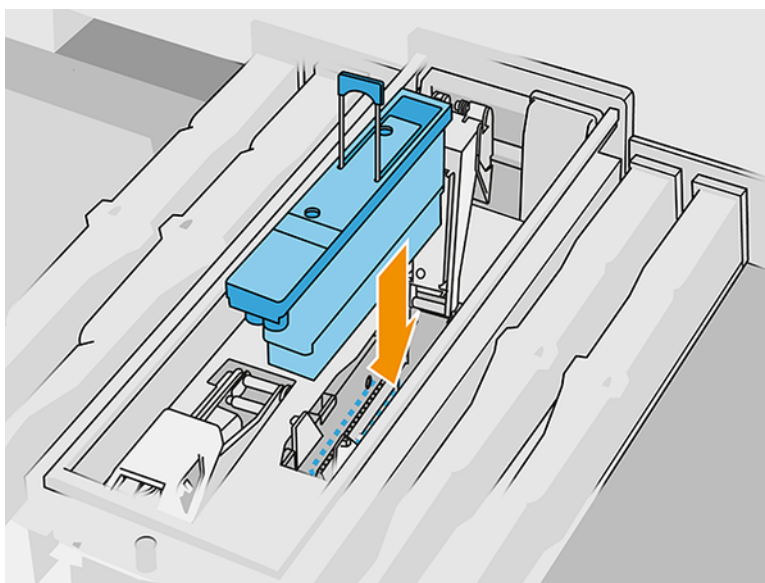
13. Remove its packaging and protective caps.

 **TIP:** You may wish to keep the protective caps for later reuse, in case you ever want to remove a printhead from the printer temporarily.



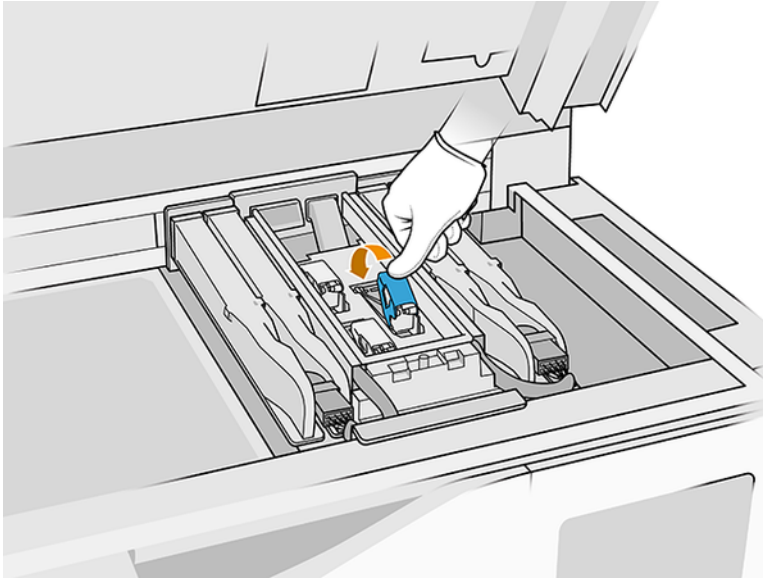
14. Put the new printhead into its correct place in the printer, and lower its handle.

CAUTION: Insert the printhead slowly, without hitting any parts of the carriage. It may be damaged if you insert it too fast, or if you hit something.



15. Lower the latch until it lies on the printhead.

16. Close and secure the latch.



17. Put the printhead cover back into place.
18. Close the top cover.
19. Tap **Finish** and **Check**. The printer checks that the new printhead has been correctly inserted, and recommends printhead alignment. See [Align the printheads on page 251](#).

If the printhead alignment process is canceled, the printer will not print.

NOTICE: If the new printhead is rejected or you are asked to reseal it, try cleaning the printhead contacts (see [Clean the printhead contacts on page 179](#) and [System errors on page 279](#)).

Printhead cleaning roll


The printhead cleaning roll is a roll of absorbent material used in the normal operation of the printer to wipe the printheads periodically: at the beginning and end of printing, while printing, on printhead check and clean, and so on. This helps the printheads to deliver agents continuously 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 full jobs of 4750 layers each with PA12 in balanced print mode.

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 finish a new job, the printer will not start the job.

At the printer's front panel, tap the **Maintenance** icon , then **Printhead cleaning roll** to see the status of the roll.

 **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 canceled unnecessarily.

Replace the printhead cleaning roll

Follow these steps to replace the printhead cleaning roll.

1. Ensure that you have a new cleaning roll ready.

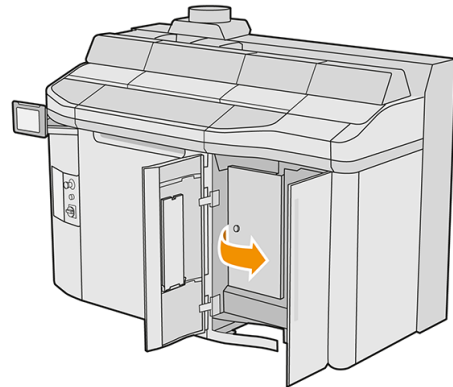
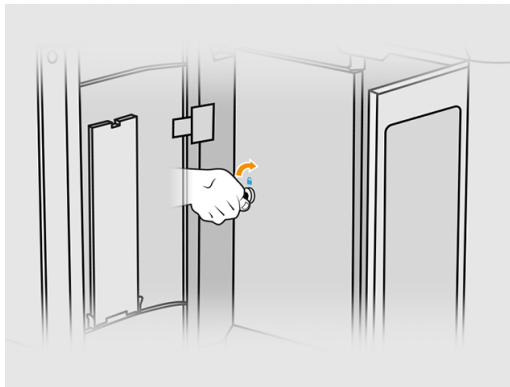


2. Put on chemical-resistant gloves.

3. At the printer's front panel, tap the **Maintenance** icon , then **Printhead cleaning roll** > **Replace**.

4. Tap **Start** when ready.

5. Open the agent door and the cleaning-roll doors.



6. Open the top cover.

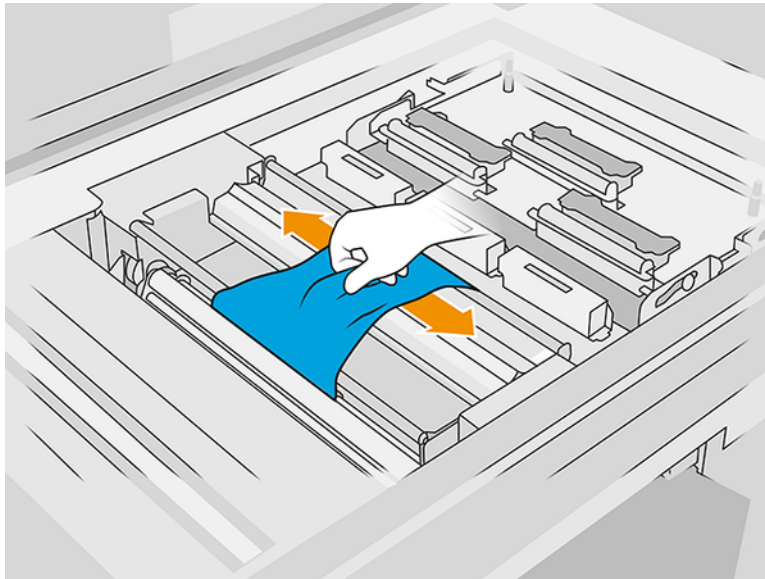
7. Detach the end of the cleaning roll from the upper roll core.



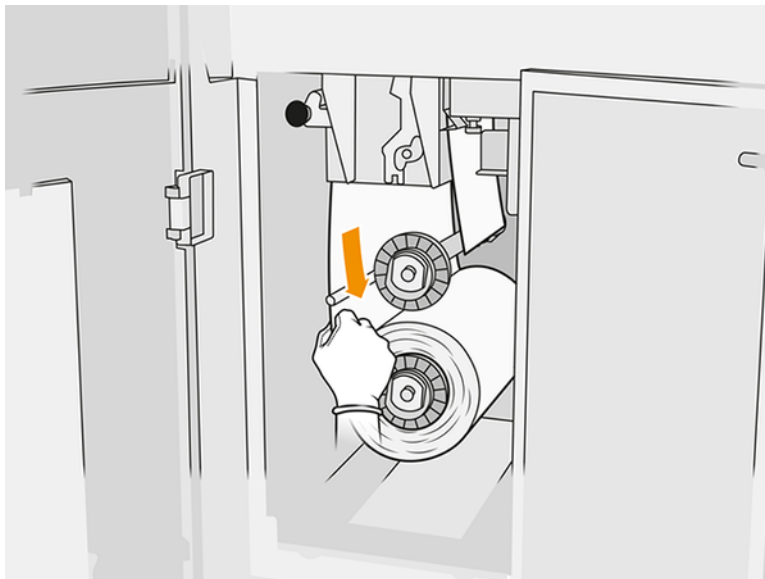
8. Pull the black knob at the top left and move the pinch system aside.



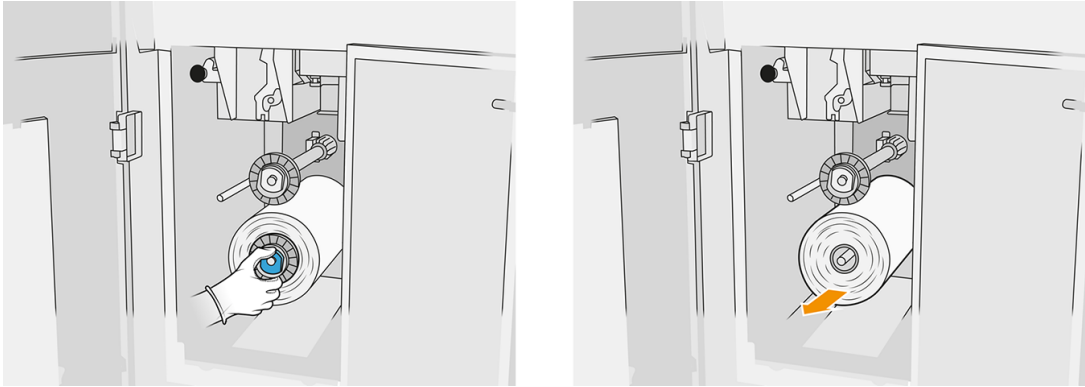
9. Clean the rubber blade, the roll input, and the cleaning roll platen with the end of the roll.



10. Wind the remainder of the cleaning roll onto the lower axle.

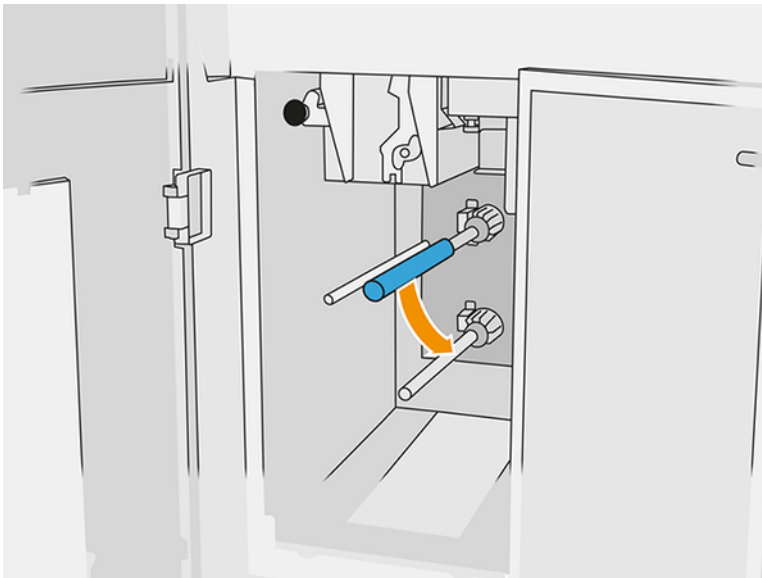


11. Remove the hub of the lower roll by pressing on the tab, then remove the lower roll.

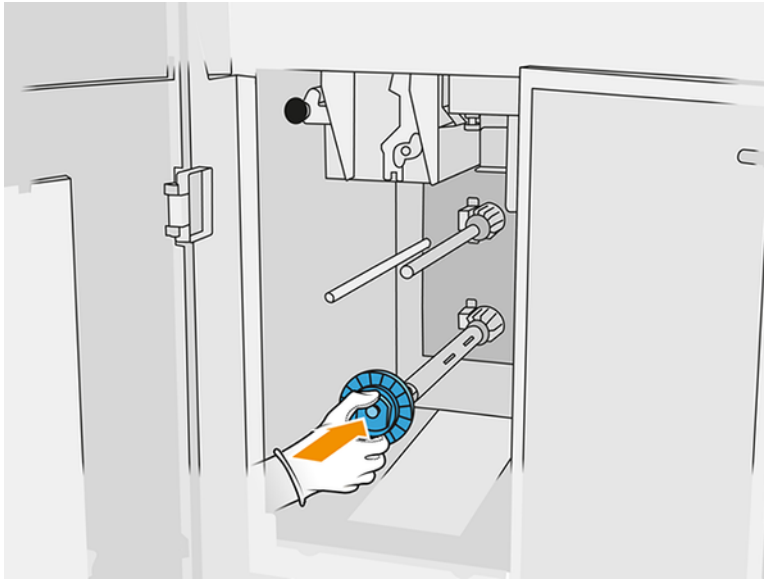


Dispose of the roll of used cleaning material according to the instructions provided with the new roll. Also consult your local authorities to determine the correct manner in which to dispose of wastes.

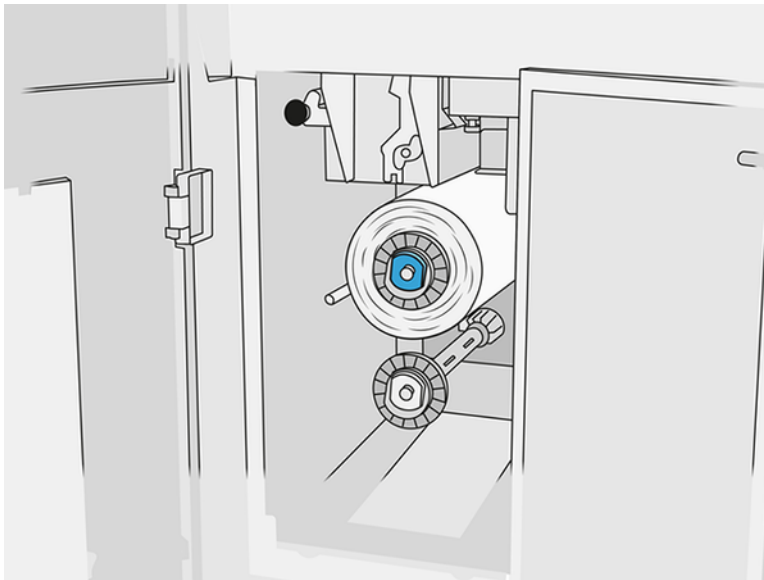
12. Remove the hub of the upper roll, then remove the roll core and place it on the lower axle.



13. Place the lower hub, pull the core against the hub, and push them both in until the hub snaps into place (you will hear a click).

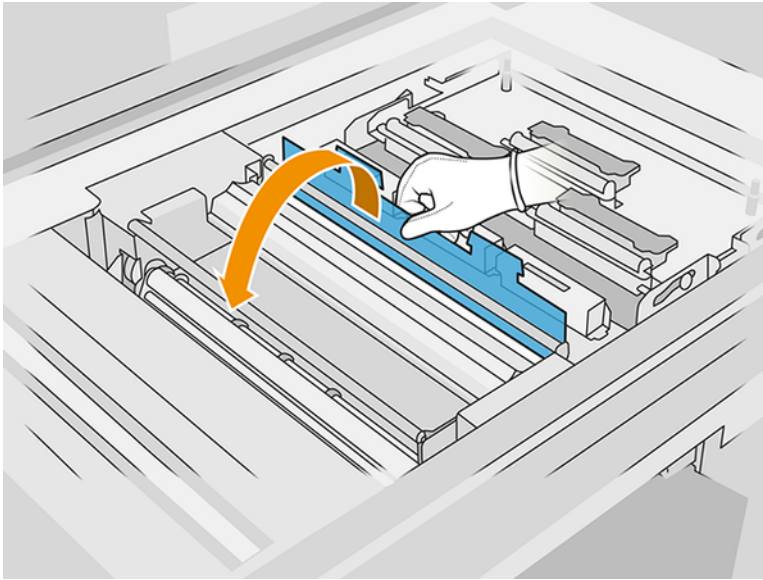


14. Place the upper hub onto the new roll, and slide them onto the upper axle until you hear a click.

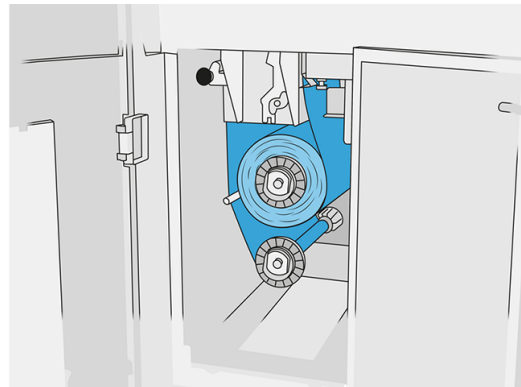
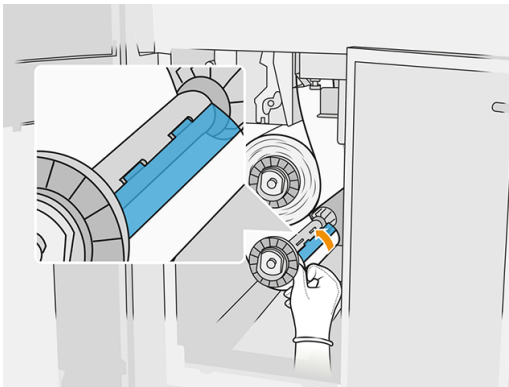


⚠ CAUTION: Make sure the cloth is aligned with the front of the core, touching the hub. If you push the roll by the cloth when placing the new roll, you could detach the cloth from the core, causing problems while printing.

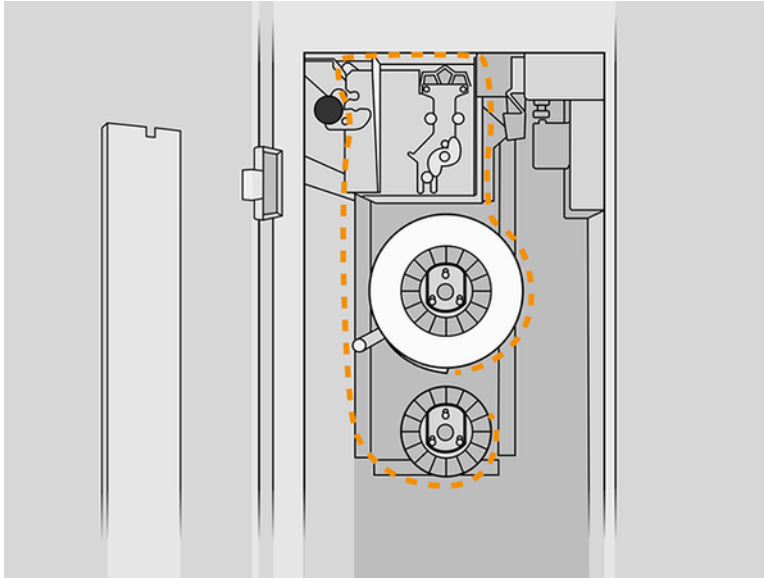
15. Pass the leading edge of the roll over the upper rollers, and thread the cleaning material through the rollers on the left.



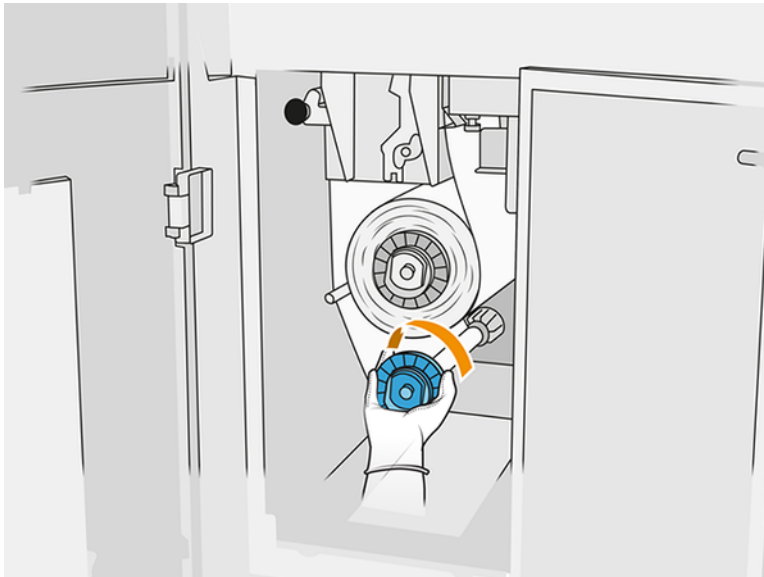
16. There is a strip of polyester film on the leading edge of the cleaning material. Insert it into the hole in the takeup core, which takes hold of it.



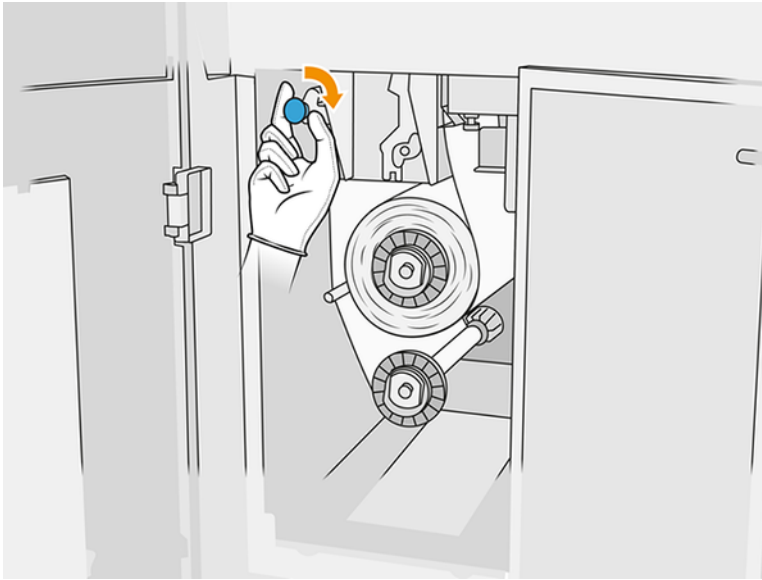
17. Take care to route the cleaning material correctly.



18. Rotate the lower roll one full turn.



19. 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.



20. Close and lock the doors.

The length of used printhead cleaning roll tracked by the printer is now reset to zero.

NOTICE: If you tamper with partly-used rolls, the usage shown in the front panel will not be accurate.

21. Tap **OK** on the front panel.

Replace the fusing lamps

Follow this procedure to replace the fusing lamps.

At the printer's front panel, tap the **Maintenance** icon , then **Fusing lamps** to see the status of each lamp:

- **Missing:** The lamp is missing.
- **Replace:** The lamp has been identified as faulty. It should be replaced by a functional lamp.
- **Wrong:** The lamp type is not suitable for this printer.
- **Not in warranty:** The lamp is no longer covered by warranty.



Prepare for replacement

1. Ensure that you have the fusing lamp kit, which is included in the printer initial maintenance kit, but can also be purchased separately.
2. Ensure that the printer is not printing.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are required to wear cotton gloves and mask.

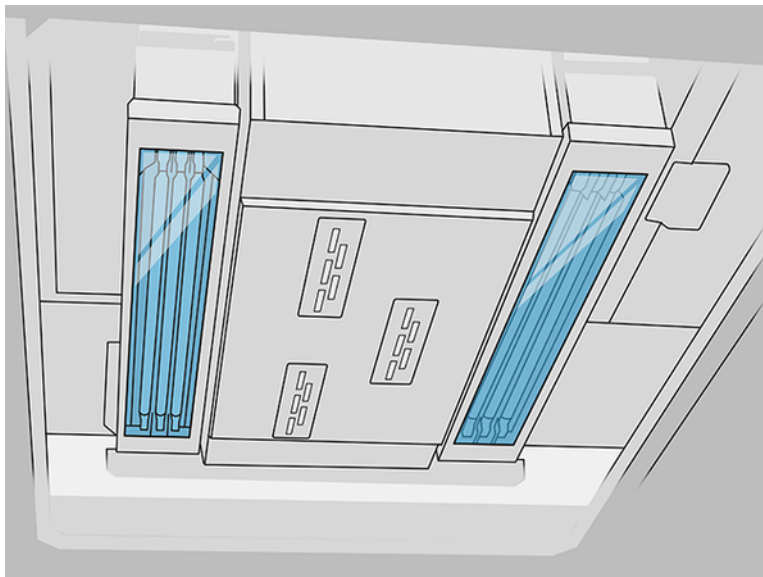
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Turn off the printer.

Remove the fusing-lamp module

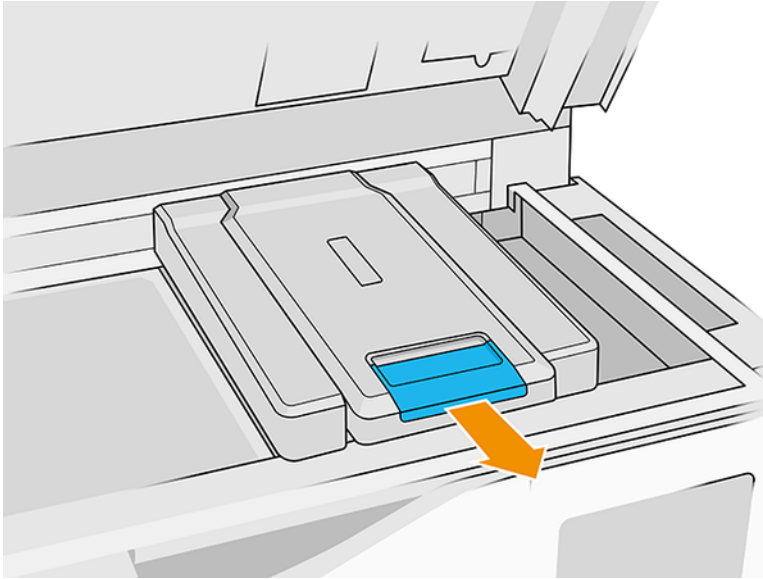
Table 11-6 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

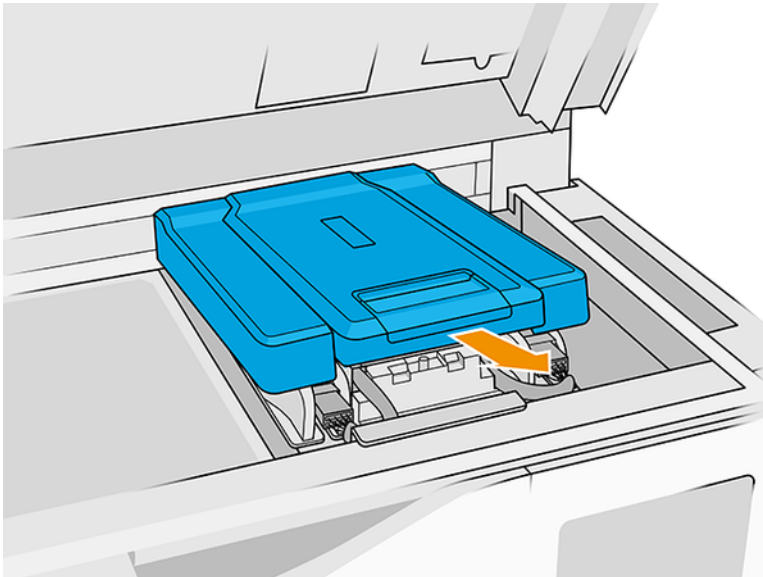
1. Identify the fusing-lamp modules.



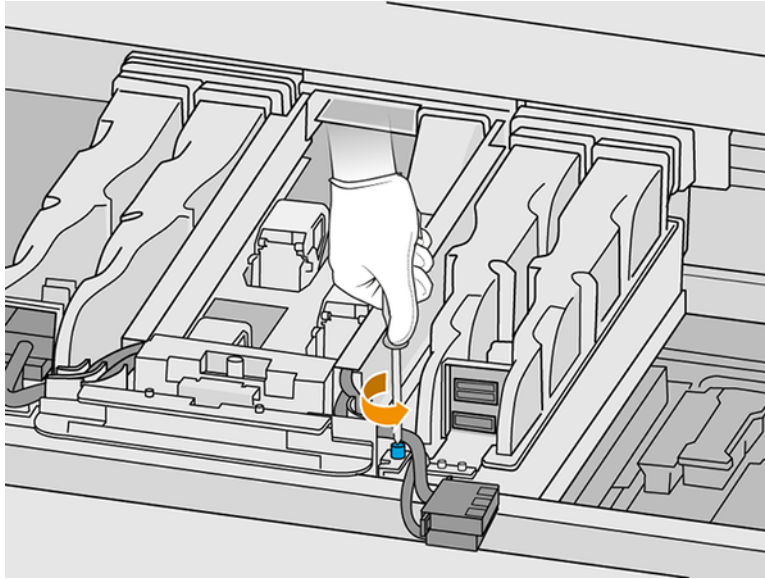
2. Pull the print carriage handle to open the cover.



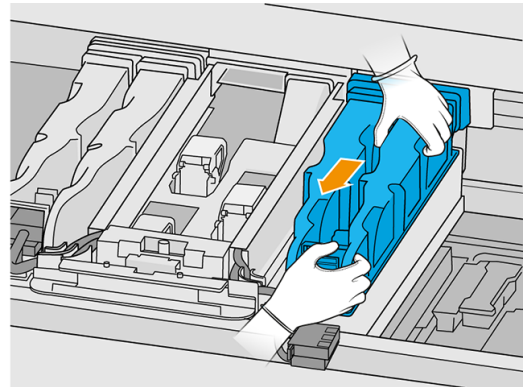
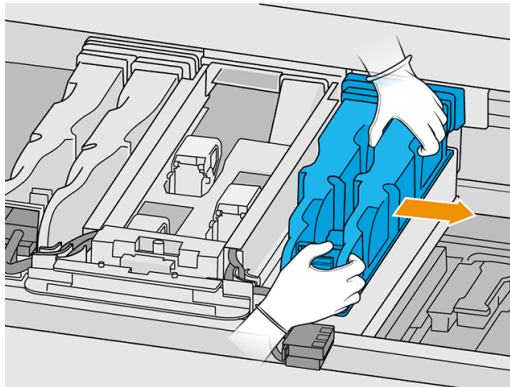
3. Remove the print carriage cover.



4. Unscrew the captive screw at the front of the fusing module and disconnect the wires.



5. Pull the fusing-lamp assembly sideways and then toward you.



6. Take the fusing-lamp module out of the carriage and place it gently on a table.

Safety precautions for the fusing-lamp emitter

- Disregard of the safety precautions or improper operation of the infra-red (IR) emitter can lead to injuries and material damage.
- The IR heating device should be operated only by specialists or trained personnel.
The operator of the system should compile specific instructions for personnel training.
- The safety and functional reliability of the IR heating device are guaranteed only if you are using original accessories and spare parts from HP.
- After an emitter break, a dangerous voltage may be exposed to contact by the heating spiral.
- The reflector side should not be cleaned.

Transport and handling of the fusing-lamp emitter

- Transport the IR emitter, in the packaging provided, to the place of installation.

⚠ CAUTION: If the IR emitter must be transported without its packaging, wear linen gloves. Fingerprints on the quartz tube will cause devitrification, which leads to radiation losses and mechanical failure.

- Always carry the emitter with both hands. Carry it so that the cross-section faces up, to avoid bending and breaking.
- Grip the emitter only by the glass tube, and not by the pinches or ceramics.

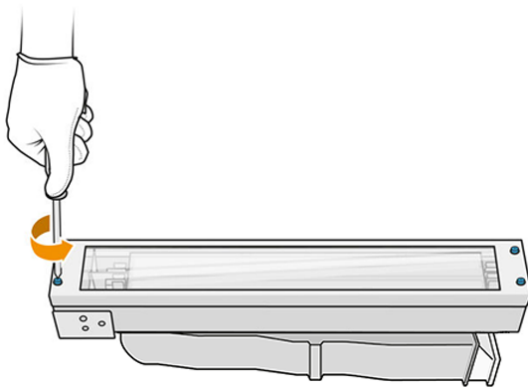
When installing IR emitters

- HP recommends that you wear protective goggles when installing or replacing emitters, to protect yourself from broken glass that you may come into contact with.
- Pulling the connection cable should not cause any tension to the flat base. Bending radius of connection cable: > 30 mm.
- The safety and functional reliability of the IR heating device are guaranteed only when using original accessories and spare parts from HP.
- After an emitter break, a dangerous voltage may be exposed to contact by the heating spiral.
- The reflector side should not be cleaned.

After installation, the bottom glasses of the IR emitter must be cleaned of any soiling or perspiration. See [Clean the fusing-lamp glasses on page 162](#).

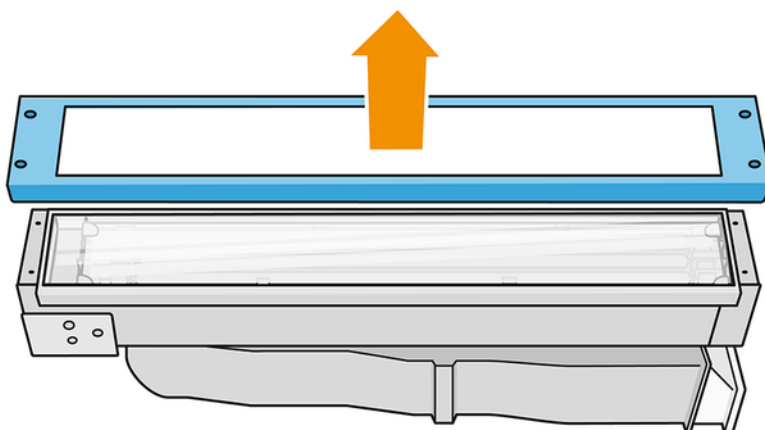
Replace a fusing lamp

1. Turn the assembly upside down and unscrew the four screws of the exterior glass frame.

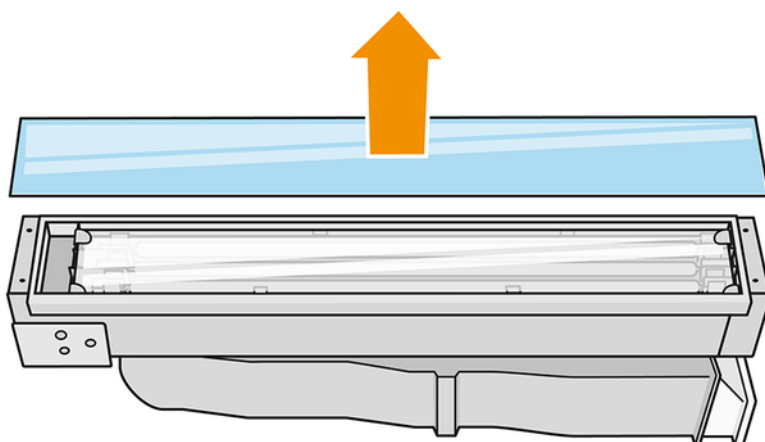


2. Carefully remove the frame of the exterior glass.

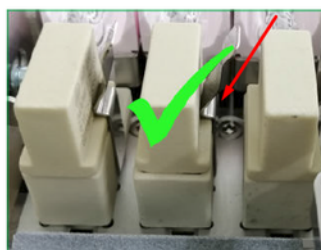
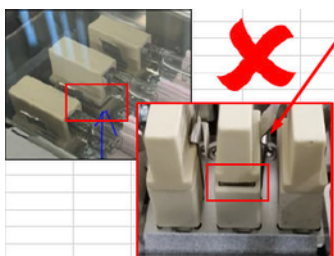
⚠ CAUTION: When you remove the frame, the glass may stick to it. Take care that the glass does not fall out of the frame as you pick it up.



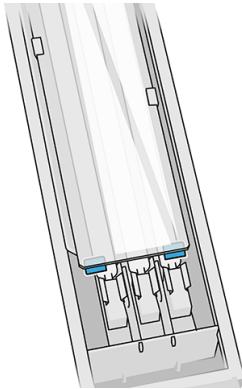
3. Remove the exterior glass.



4. Remove the middle glass.
5. Open the metallic clip on one side, remove the fusing lamp, then do the same on the other side.
6. Insert the fusing lamp, making sure that it is fully inserted into the ceramic connector.



7. Insert the internal glass by pulling the metallic clip.




8. Add the frame with the bottom glass, securing it with four screws.

Reassemble the fusing-lamp module

1. Turn the assembly upside down and put it back into the print carriage.
2. Tighten the captive screw.
3. Plug in the black power connector.
4. Plug in the gray sensor connector.
5. Put back the cover.

Finish the replacement

1. Close the top cover.
2. Turn on the printer.
3. At the front panel, tap the **Settings** icon , then **Utilities** > **Maintenance** > **Replace parts** > **Replace heating/fusing lamps**.
4. Dispose of the old fusing lamp according to local regulations.

How to recycle supplies

Parts and waste generated during the printing process should be disposed of in compliance with federal, state, and local regulations.

Consult your local authorities to determine the correct manner in which to dispose of wastes. It may be possible to recycle printed parts for non-3D uses. Where appropriate, HP recommends that the parts be marked with the applicable plastic marking code according to ISO 11469 to encourage recycling.

HP provides many free and convenient ways to recycle your used HP cartridges and other supplies. For information about these HP programs, see the HP website <http://www.hp.com/recycle/>.

The following supplies for your printer can be recycled through the HP supplies recycling program:

- HP printheads

High-volume 3-liter cartridges should be disposed of by following the instructions on the cartridge packaging. The agent bag should be removed and disposed of in compliance with federal, state, and local regulations. The other cartridge parts (plastic retainer and packaging box) can be recycled through commonly available recycling programs.

Dispose of the following supplies in compliance with federal, state, and local regulations:

- Material cartridges

For further information about recycling cartridges, see the HP website: [HP Take Back and Recycling Process](#)

- Printhead cleaning roll
- Lamps
- Filters

HP recommends that you wear gloves while handling printer supplies.

Printer maintenance

Maintenance operations on the printer.

Summary of maintenance operations

The printer maintenance operations, and how frequently each one is required.

Table 11-7 Summary of maintenance operations

| Frequency | Maintenance operation |
|-----------------|--|
| After every job | Clean the print zone, carriage, and housing structure on page 127 |
| | Clean the front bar (after every job/daily) on page 133 |
| | Clean the spittoon on page 134 |
| | Clean the bottom of the carriage and of the fusing lamps on page 137 |
| | Clean the thermal camera glass on page 139 |
| | Clean the service-station caps on page 153 |
| | Cooling plate maintenance on page 245 |

Table 11-7 Summary of maintenance operations (continued)

| Frequency | Maintenance operation |
|-------------------------------|--|
| Once a week | Clean the exterior of the printer on page 142 |
| | Clean the recoating roller and recoating plates on page 143 |
| | Clean the scan-axis wipers on page 149 |
| | Clean the inside of the carriage on page 151 |
| | Clean the top-enclosure fan filters on page 155 |
| | Clean the front bearing on page 159 |
| | Clean the material extraction system on page 161 |
| | Clean the print-zone window on page 183 |
| | Clean underneath the reflective recoating unit plate on page 185 |
| | Cooling plate maintenance (Weekly) on page 246 |
| Once every 2 weeks | Clean the fusing-lamp glasses on page 162 |
| | Clean the recoating unit curtain wipers on page 169 |
| Once every 6 months | Clean the bottom glass of the heating lamps on page 172 |
| | Clean the recoater's left box and left rod on page 175 |
| Once a year | Check the functionality of the Residual Current Circuit Breakers (RCCBs) on page 248 |
| | Check that the printer is correctly earthed on page 249 |
| At printhead reject or reseal | Clean the printhead contacts in the carriage on page 180 |
| | Clean the printhead contacts on the printhead on page 181 |


Table 11-7 Summary of maintenance operations (continued)

| Frequency | Maintenance operation |
|---------------|--|
| When required | Replace the print-zone filter on page 197 |
| | Replace the heating-lamp filter on page 186 |
| | Replace the e-cabinet filter on page 188 and Replace the power-box fan filters on page 191 |
| | Replace the top-enclosure left and right fan filters on page 199 |
| | Replace a primer on page 202 |
| | Replace a service-station cap module on page 207 |
| | Rubber-blade height adjustment on page 209 |
| | Replace the printhead cleaning roll's rubber blade on page 215 |
| | Replace a service-station drop-detector module on page 220 |
| | Replace the recoating roller and recoating plates on page 225 |
| | Replace the bottom glass of the heating lamps on page 231 |
| | Replace the fusing lamps on page 118 |
| | Replace a fusing-lamp external glass on page 231 |
| | Replace a fusing-lamp internal glass on page 233 |
| | Replace a heating lamp on page 236 |
| | Replace an intermediate tank on page 241 |
| | Replace the cleaning-roll collector on page 242 |
| | Replace the material extraction system on page 246 |
| | Go through the usual channel to purchase spares |

Quick graphical reminders of frequent operations

The following link provides graphical reminders for the most frequent maintenance actions:

<https://www.printos.com/knowledge-zone/#/view/asset/211156>

 **CAUTION:** When moving the print carriage manually, do it slowly, and be careful not to crash it into any other component or the sides of the printer.

Maintenance operations

Each maintenance operation in detail.

Clean the print zone, carriage, and housing structure

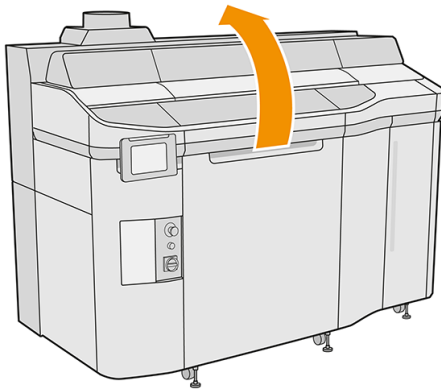
Cleaning inside the printer.

Figure 11-1 Safety warnings



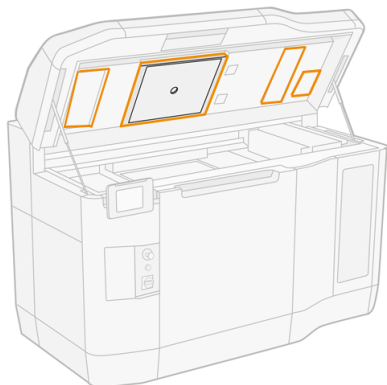
Prepare for cleaning

1. Ensure that you have an explosion-protected vacuum cleaner, an absorbent all-purpose cloth, and deionized water (these things are not provided by HP).
2. If the build unit is in the printer, remove it.
3. Ensure that the printer is not printing.
4. Turn off the printer.
5. If a job has just been printed, wait about 20 minutes for the printer to cool down.
6. You are required to wear gloves and goggles.
7. Open the top cover.



Clean the printer

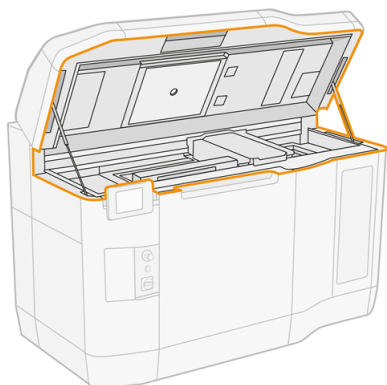
1. Vacuum all the top-cover surfaces including the heating-lamp quartz-glass zone and the left and right filters.



NOTICE: If the internal metallic part is dirty, clean it with a lint-free cloth dampened with water.

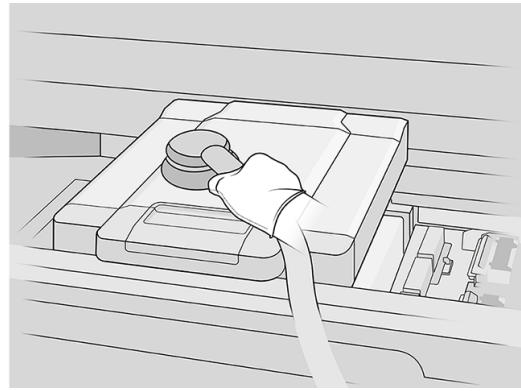
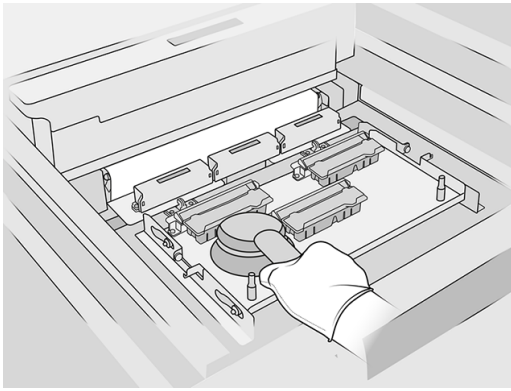
2. Clean the dust from the print zone using an explosion-protected vacuum cleaner with a soft brush nozzle.

CAUTION: When vacuuming the scan axis or recoater curtains, do not push too hard against the curtains: they could bend inside and slip out of their guides.

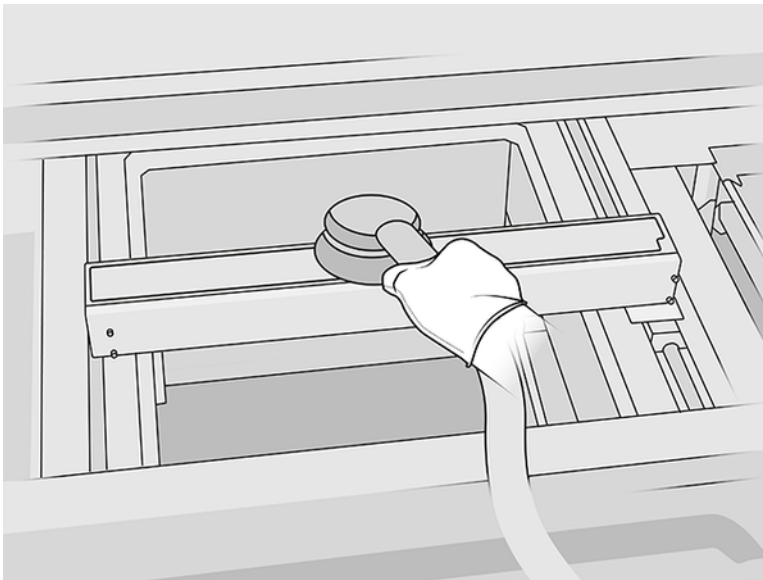


3. Vacuum the whole print carriage and capping zone. Move the print carriage manually if necessary. Additionally, you must use a lint-free cloth dampened with general-purpose industrial cleaner to clean the surfaces. Make sure that the carriage is dry before printing.

CAUTION: When moving the print carriage manually, do it slowly, and be careful not to crash it into any other component or the sides of the printer.

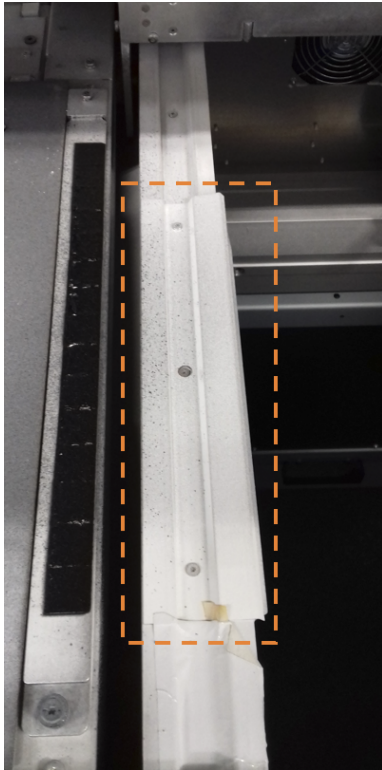


4. Vacuum the whole recoating unit. Additionally, you can use a lint-free cloth dampened with general-purpose industrial cleaner to clean the surfaces. Make sure that the carriage is dry before printing.

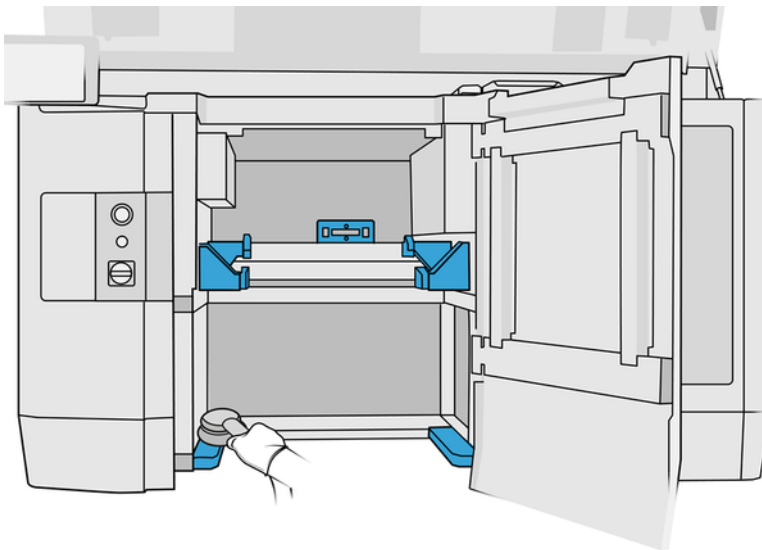


5. Vacuum the left area of the printing zone: the spittoon, cooling plates, and blowers.

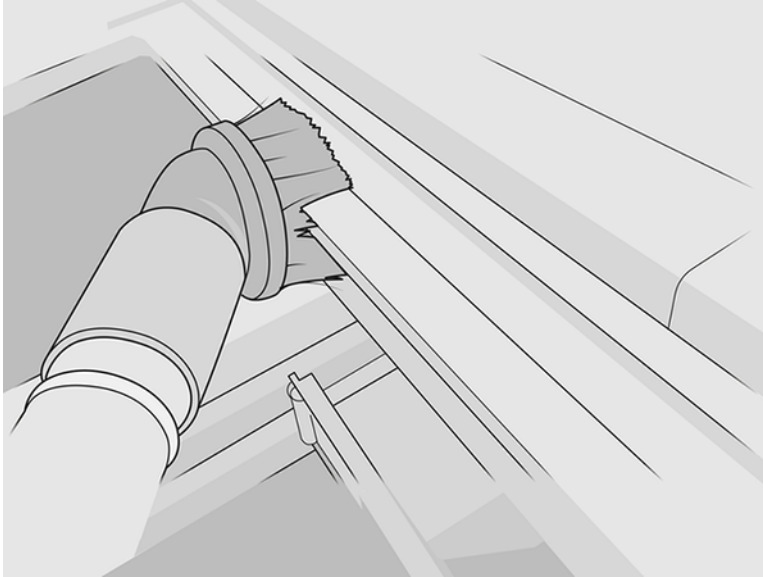
6. Vacuum the metallic sheets on both sides of the printing platform, then clean them with a lint-free cloth dampened with deionized water.



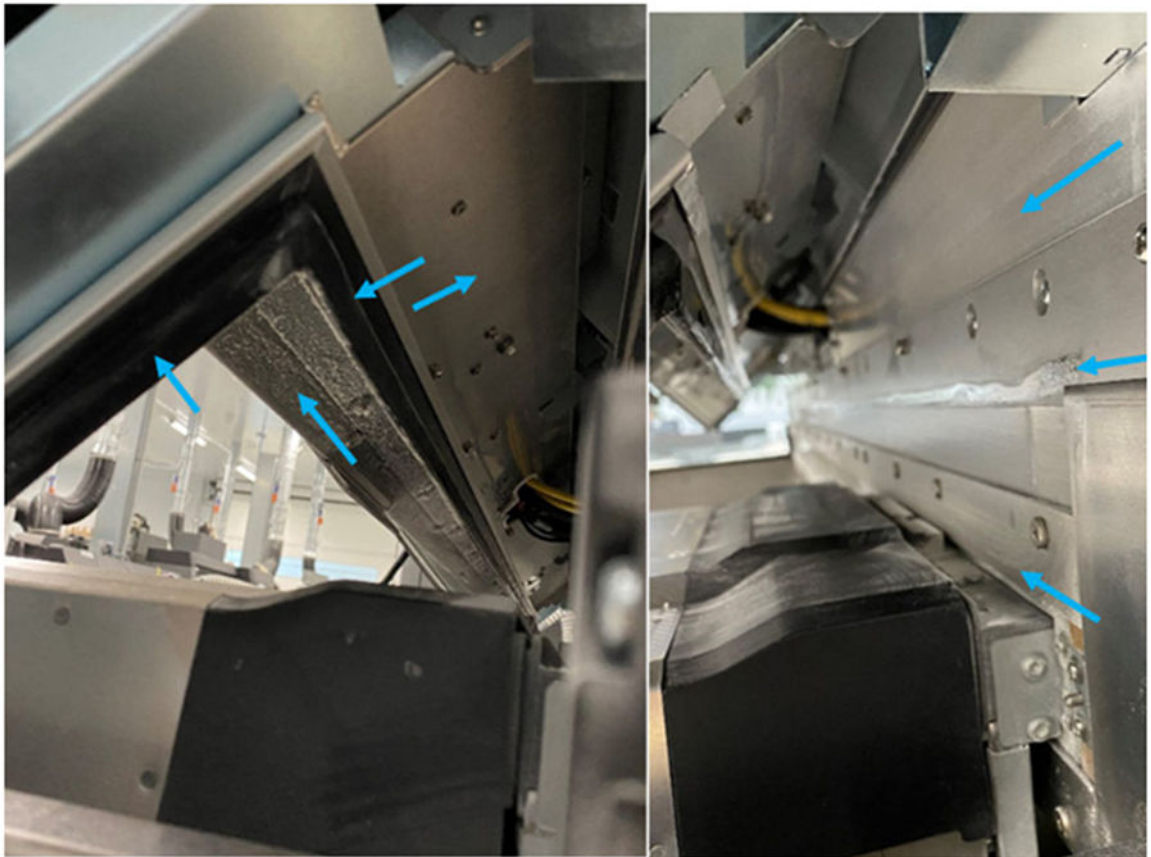
7. Vacuum the housing structure for the build unit and its internal parts.



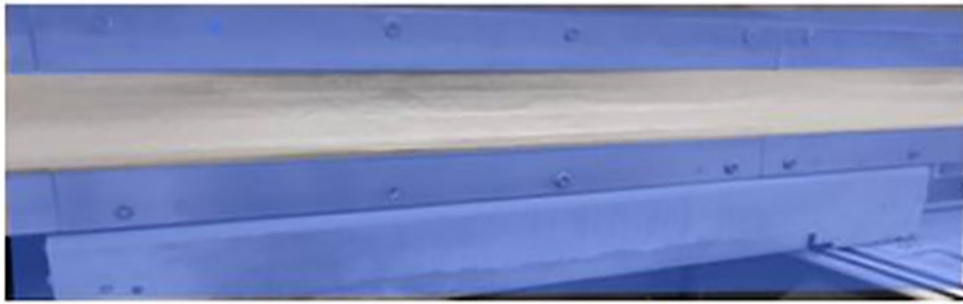
8. Make sure there is no material left on the build-unit seal. Clean it with an explosion-protected vacuum cleaner, then wipe it with a cloth dampened with deionized water. If any material is still left, remove it with a scraper.



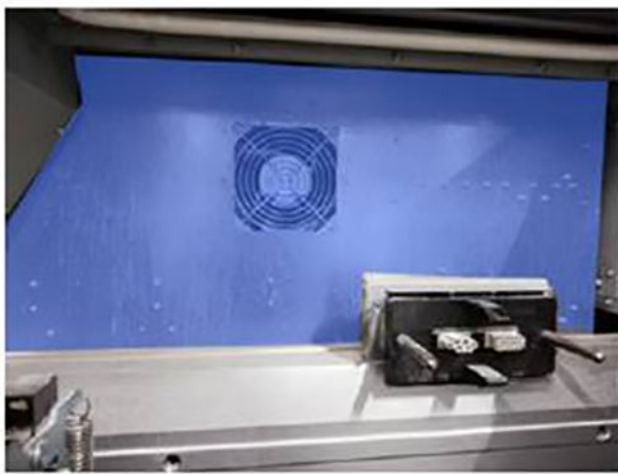
9. Besides vacuuming, you must clean the rear areas indicated below with a lint-free cloth dampened with general-purpose industrial cleaner



The entire metal frames of the SAX Curtain Frames unit (marked in blue in the following image) must be cleaned with a lint-free cloth and general-purpose industrial cleaner.



The entire rear metal plate from the Build Unit must also be cleaned with the lint-free cloth and general purpose industrial cleaner (marked in blue in the following image).



Clean the front bar (after every job/daily)

Cleaning inside the printer.



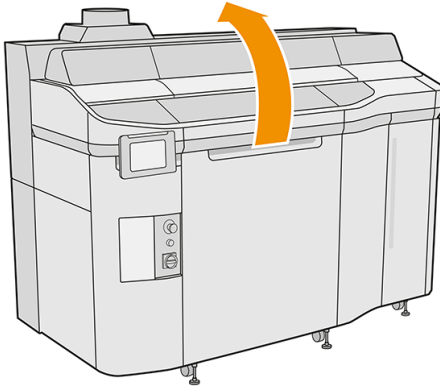
Prepare for cleaning

1. Ensure that you have an absorbent all-purpose cloth (not provided by HP).
2. Ensure that the printer is not printing.
3. Turn off the printer.
4. If a job has just been printed, wait about 20 minutes for the printer to cool down.

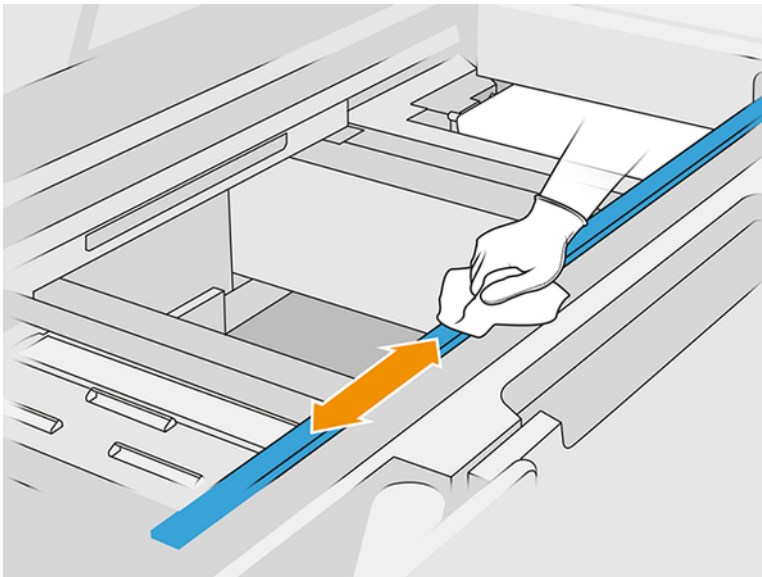
5. You are recommended to wear gloves.

Clean the front bar

1. Open the top cover.



2. Clean the front bar using a lint-free cloth dampened with deionized water.



3. Move the carriage manually in order to clean the part of the bar underneath the carriage.

⚠ CAUTION: When moving the print carriage manually, do it slowly, and be careful not to crash it into any other component or the sides of the printer.

Finish cleaning

1. Close the top cover.
2. Ensure that all windows, covers, and doors are closed and remain in their original positions.

Clean the spittoon

Cleaning inside the printer.

Figure 11-2 Safety warnings

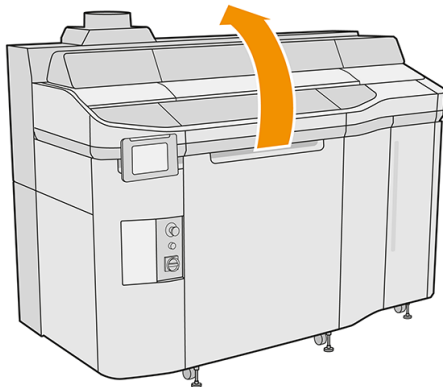


Prepare for cleaning

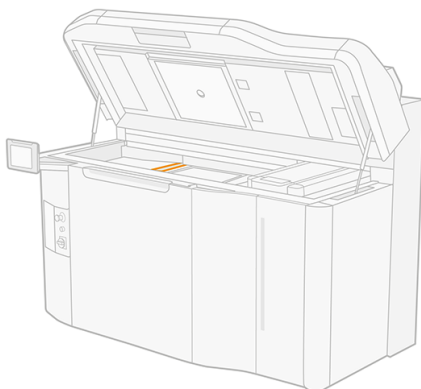
1. Ensure that you have a plastic scraper, lint-free cloth, deionized water, and a general-purpose industrial cleaner, such as Simple Green industrial cleaner (these things are not provided by HP).
2. Ensure that the printer is not printing.
3. Turn off the printer.
4. If a job has just been printed, wait about 20 minutes for the printer to cool down.
5. You are recommended to wear gloves.

Locate the spittoon

1. Open the top cover.

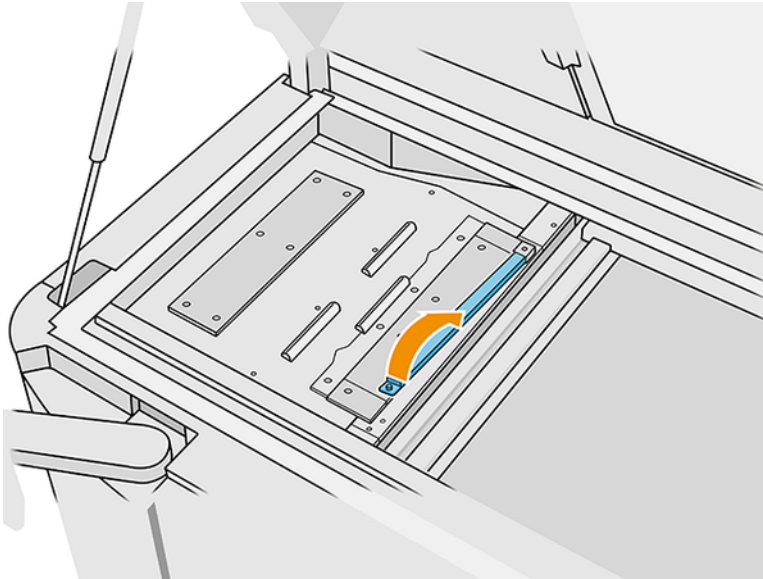


2. Locate the spittoon and check whether it is dirty.

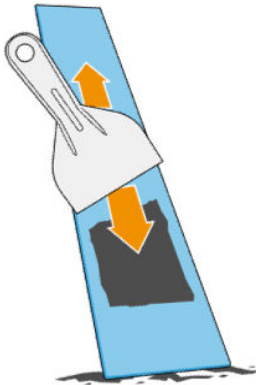


Clean the spittoon

1. Remove the screw, then remove the spittoon from the printer.



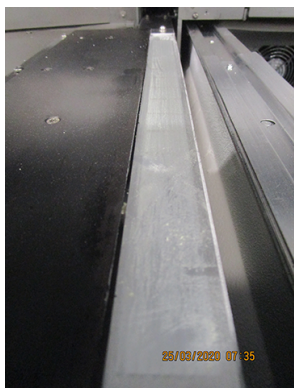
2. Wet the surface covered with ink and wait 5 minutes.
3. Scrape the spittoon with a plastic scraper.



4. Clean the spittoon with a lint-free cloth dampened with deionized water.

NOTICE: About once a month, turn off the printer, and clean the spittoon area with a lint-free cloth dampened with a general-purpose industrial cleaner, such as Simple Green industrial cleaner. Remove any remaining soap foam with a dry cloth.

NOTICE: The stain on the spittoon will be different depending on the material you are using. The expected stain for PA11, PA12, and PA12GB is black, but the stain left by PP or TPU is almost transparent.



5. Put back the cleaned spittoon, inserting the rear end first.
6. Reinsert and tighten the screw.

Finish cleaning

1. Close the top cover.
2. At the front panel, tap the Settings icon , then **Utilities** > **Maintenance** > **Clean spittoon**.

Clean the bottom of the carriage and of the fusing lamps

Cleaning inside the printer.

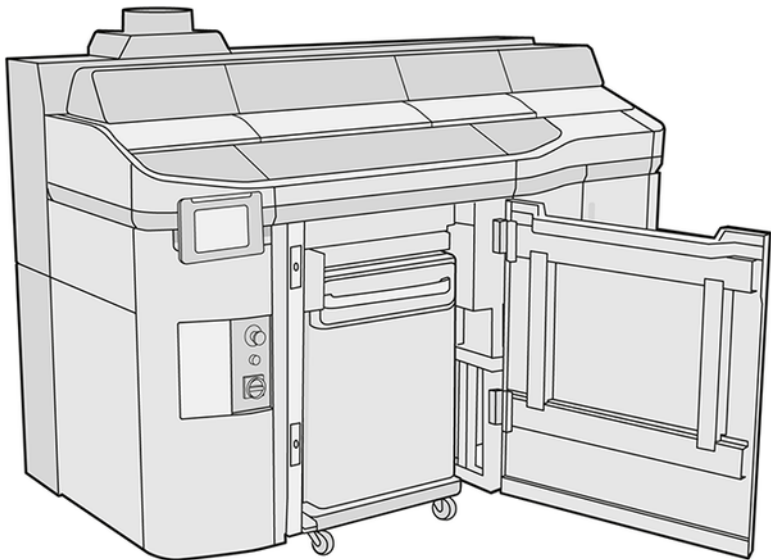
Figure 11-3 Safety warnings



Prepare for cleaning

1. Ensure that you have a lint-free cloth and deionized water (these things are not provided by HP).
2. Ensure that the printer is not printing.
3. Turn off the printer.
4. If a job has just been printed, wait about 20 minutes for the printer to cool down.
5. You are required to wear gloves and goggles.

6. Open the build-unit door and remove the build unit from the printer, if it is present.








7. Open the top cover.
8. Move the print carriage manually over the build unit space.

⚠ CAUTION: When moving the print carriage manually, do it slowly, and be careful not to crash it into any other component or the sides of the printer.

Clean the bottom of the carriage

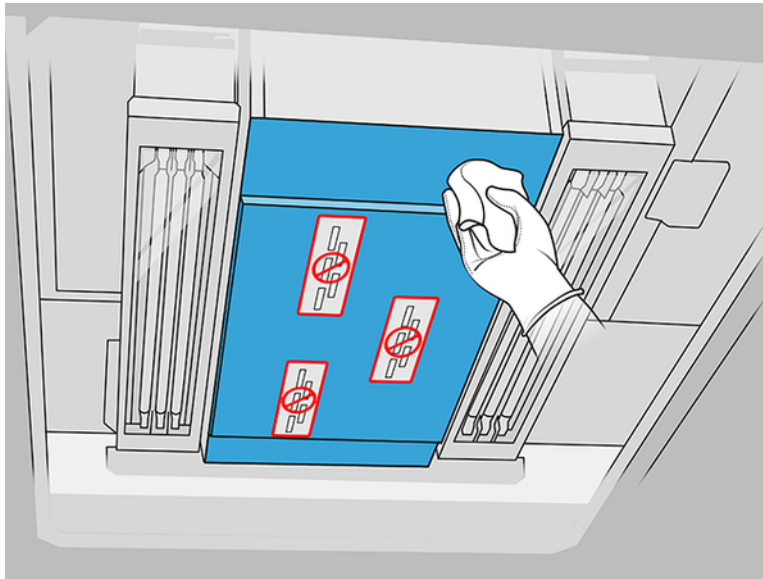
Table 11-8 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

1. Clean the carriage bottom and the external side of the fusing lamps glasses with an explosion-protected vacuum cleaner.

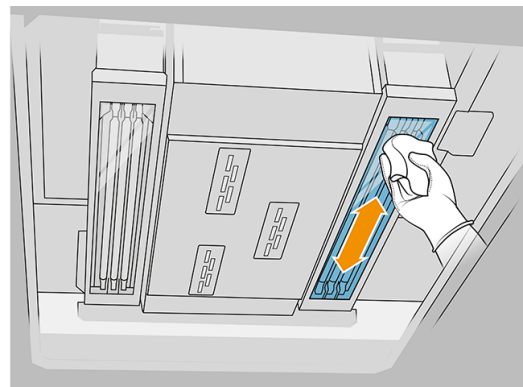
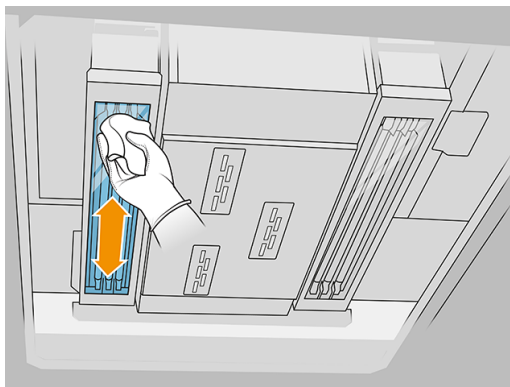
⚠ CAUTION: Be very careful not to touch the printheads.

2. Clean the carriage bottom with a lint-free cloth dampened with deionized water.



⚠ CAUTION: Be very careful not to touch the printheads.

3. Clean the bottoms of both fusing-lamp glasses with the same cloth.



Finish cleaning

1. Close the top cover.
2. Close the build-unit door.
3. Ensure that all windows, covers, and doors are closed and remain in their original positions.

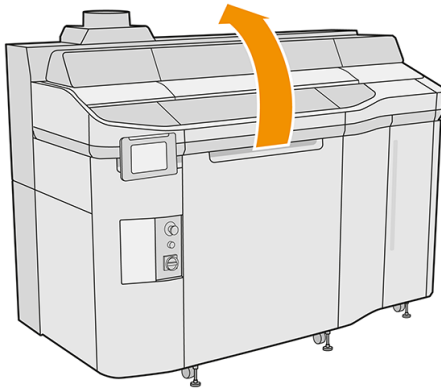
Clean the thermal camera glass

Cleaning inside the printer.

Prepare for cleaning

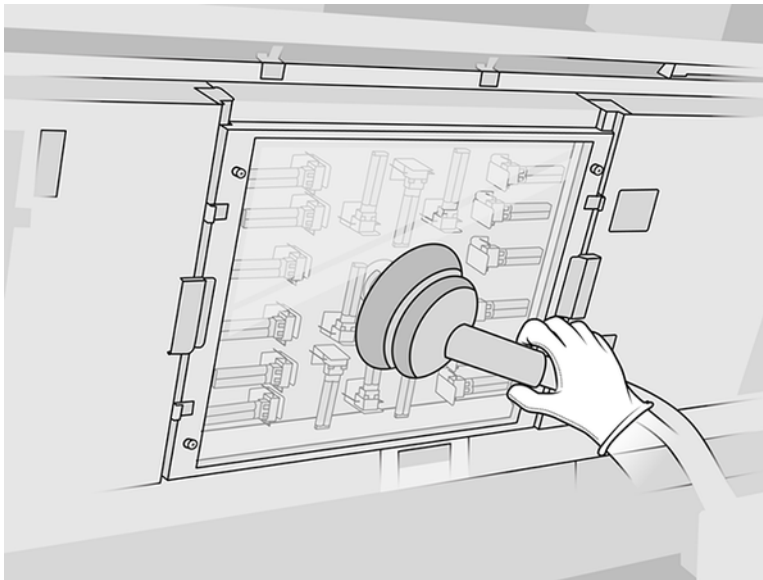
1. Ensure that you have an explosion-protected vacuum cleaner, a supply of soft cloths, a mild, non-abrasive detergent, a general-purpose industrial cleaning liquid, and deionized water (these things are not provided by HP).

2. If the build unit is in the printer, remove it.
3. Ensure that the printer is not printing.
4. Turn off the printer.
5. If a job has just been printed, wait about 20 minutes for the printer to cool down.
6. You are recommended to wear gloves and goggles.
7. Open the top cover.



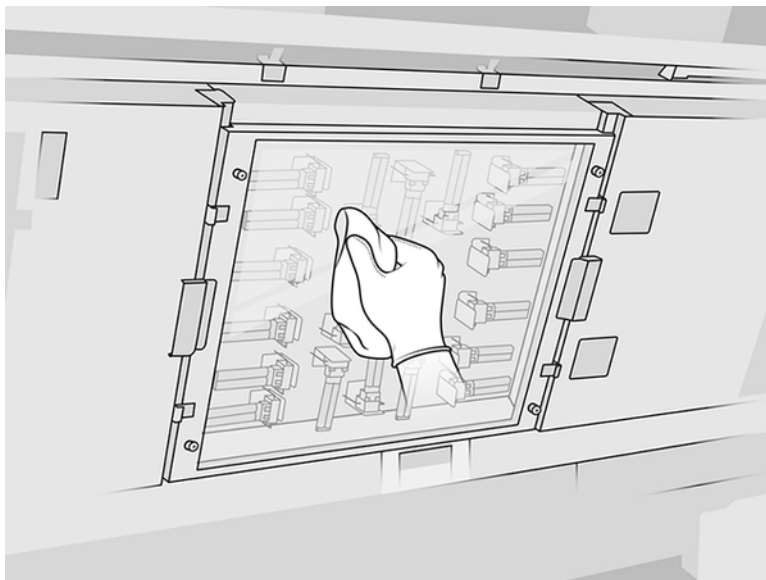
Clean the thermal camera glass

1. Vacuum the sensor glass with a soft brush nozzle.



2. Clean the external surface of the sensor glass:
 - a. Wipe the glass surface with a soft, clean cloth dampened with a general-purpose industrial cleaner, such as Simple Green industrial cleaner. Remove any remaining soap foam with mixture of mild, non-abrasive detergent and deionized water (in proportions recommended

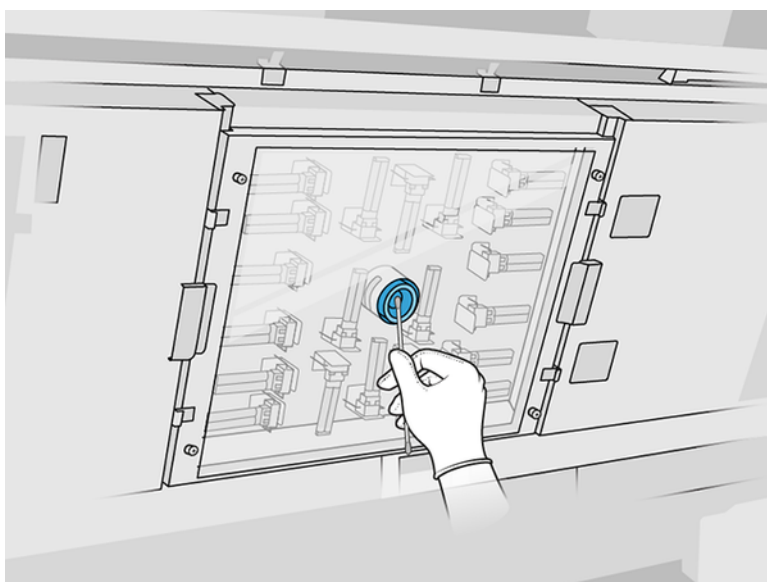
by the detergent manufacturer). Then rinse the glass with another cloth dampened with deionized water, and wipe it with a dry cloth.



- b. If necessary, clean the glass with a sponge scourer.
 - c. Continue cleaning the glass with the cloth and sponge scourer until it is completely clean.
 - d. Wait until the glass is dry to start printing.
3. Wipe the sensor glass clean by rubbing the surfaces with a clean, soft, all-cotton cloth or cotton swab dampened with a mixture of mild, non-abrasive detergent and deionized water (in proportions recommended by the detergent manufacturer). Then rinse the sensor glass with another cloth dampened with deionized water, and wipe it with a dry cloth.

⚠ **CAUTION:** Clean only the sensor glass: try to avoid wetting any other parts of the printer.

⚠ **CAUTION:** If the sensor glass is left to dry by itself, it may become permanently stained.



Clean the exterior of the printer

Cleaning the outside of the printer.



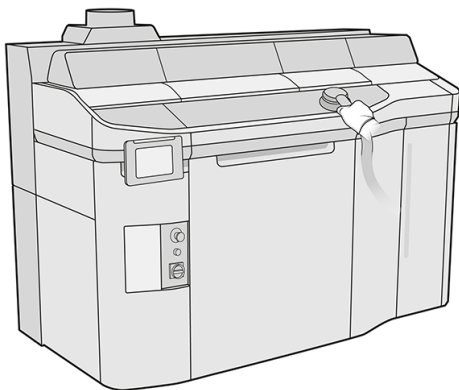
Prepare for cleaning

1. Ensure that you have an explosion-protected vacuum cleaner, an absorbent all-purpose cloth, and deionized water (these things are not provided by HP).
2. Ensure that the printer is not printing.
3. Turn off the printer.
4. If a job has just been printed, wait about 20 minutes for the printer to cool down.

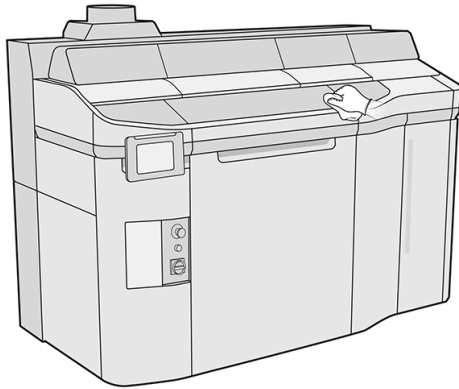
Clean the printer

⚠ WARNING! Hazardous substances—in the form of Volatile Organic Compounds (VOC) from agents—could condense on surfaces. To avoid the risk of chemical contact, wear personal protective equipment (see [Personal protective equipment on page 13](#)).

1. Clean the whole printer with a dry cloth to remove dust, material, and condensation on covers, print-zone windows, doors, and so on.
2. If necessary, clean the printer further using an explosion-protected vacuum cleaner with a soft brush nozzle.



3. Afterwards, you can wipe it with a dry cloth.



4. Still wearing gloves and goggles, clean condensation from the external surfaces behind the air-collection hoods.



Clean the recoating roller and recoating plates

Cleaning inside the printer.

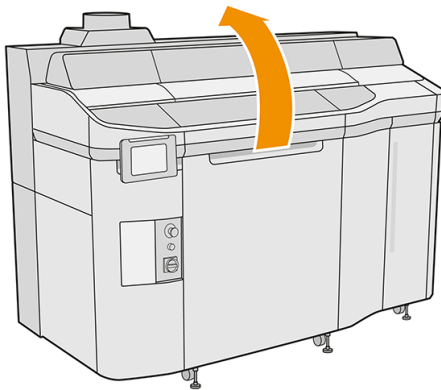
Figure 11-4 Safety warnings



Prepare for cleaning

1. Ensure that the printer is not printing.
2. Turn off the printer.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear gloves.


5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Open the top cover.

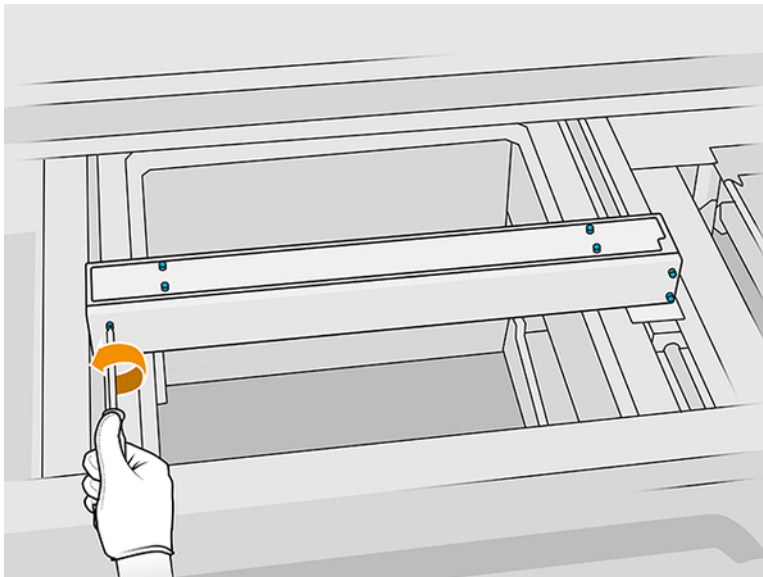


7. Remove the build unit from the printer, if it is present.
8. Move the recoating unit manually to the front, slowly and carefully.

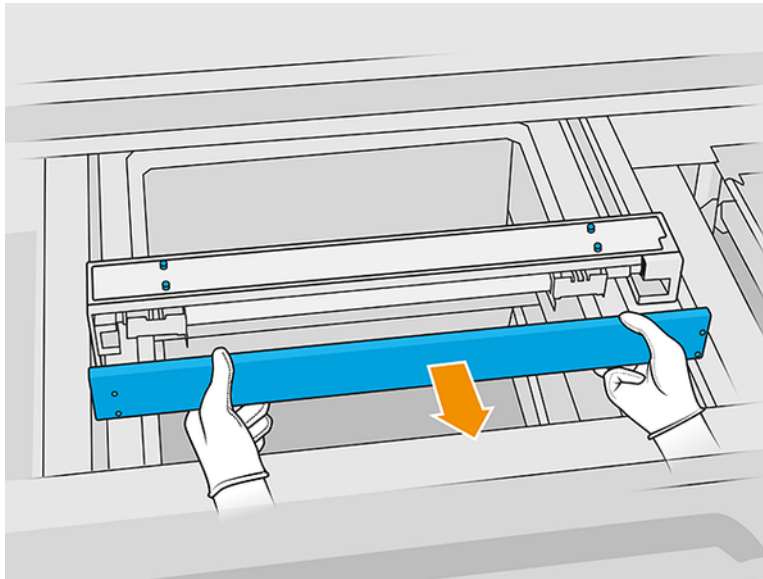
Clean the recoating roller and recoating plates

1. Locate the recoating unit and use a flat screwdriver to remove four T15 screws.

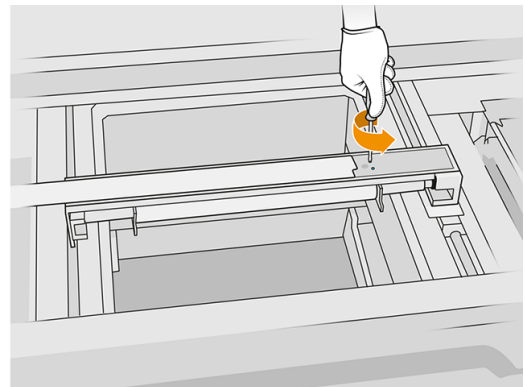
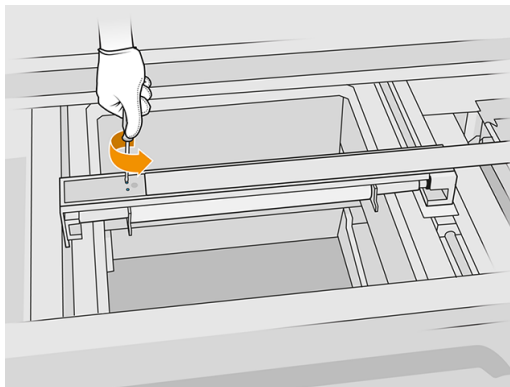
 **CAUTION:** Be careful not to drop the screws.



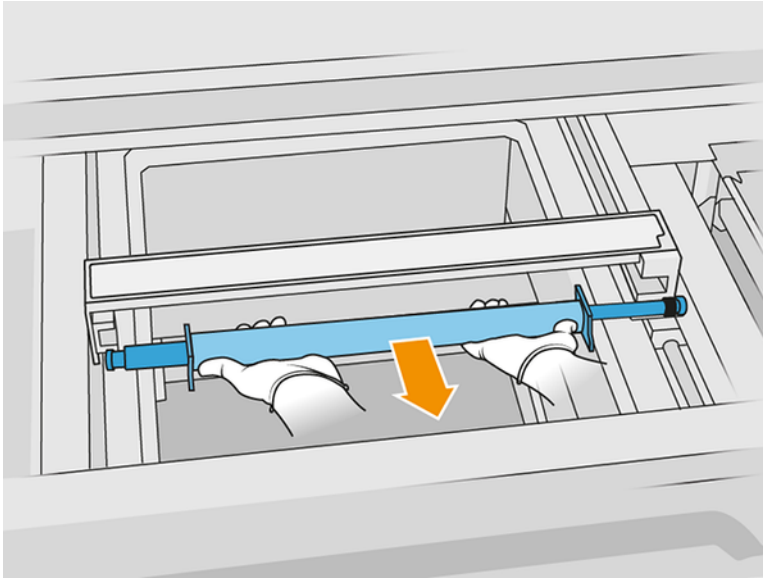
2. Remove the front lid.



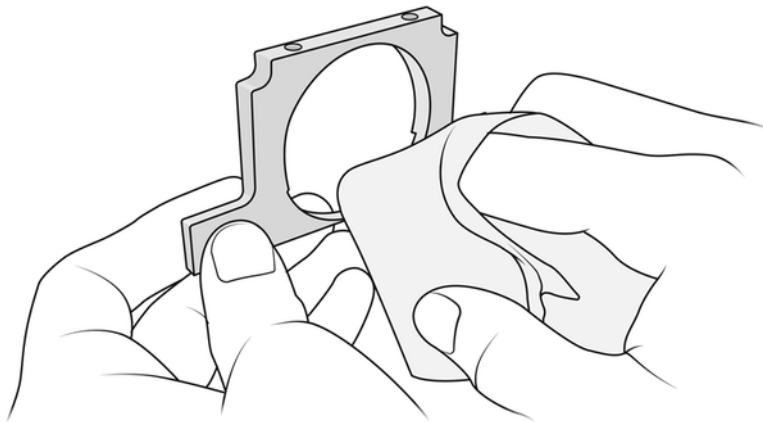
3. Remove four T10 screws (two on each side).



4. Remove the roller by pulling it towards you, and place it gently on a table or flat surface.



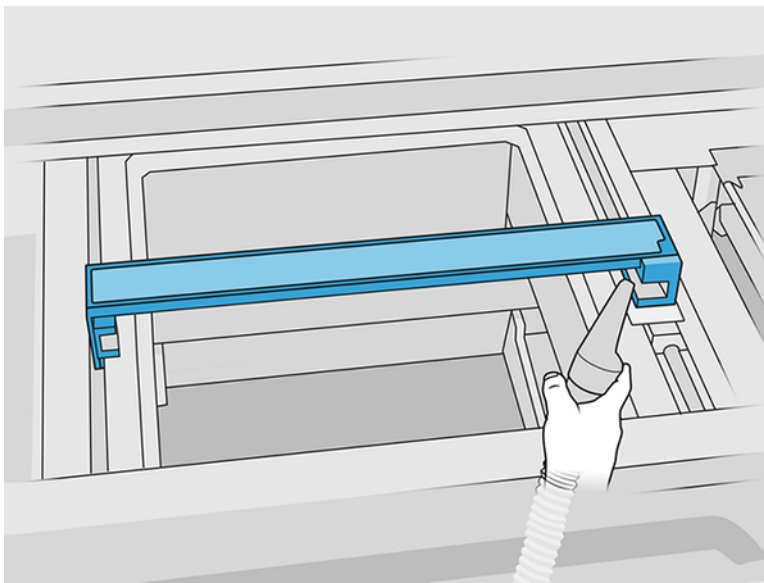
5. Use a lint-free cloth dampened with a general-purpose industrial cleaner, such as Simple Green industrial cleaner, to clean all along the recoating roller. Remove any remaining soap foam with a dry cloth.
6. Remove the recoating plates for easy cleaning, and clean them thoroughly, especially on the inner side.



IMPORTANT: No material should be left on the plate.



7. Clean the dust from the inside of the recoating unit, using an explosion-protected vacuum cleaner with a crevice nozzle. Place special attention to the right-hand side, where the gears are located.

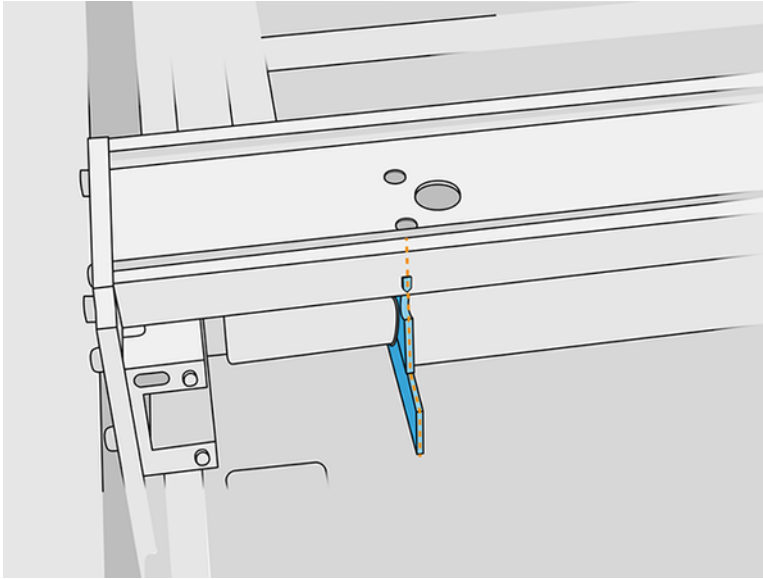


Finish cleaning

1. Put back both recoating plates.
2. Carefully reinsert the recoating roller by placing it and pushing it to the end.

NOTICE: The gears should be on the right when placing the roller.

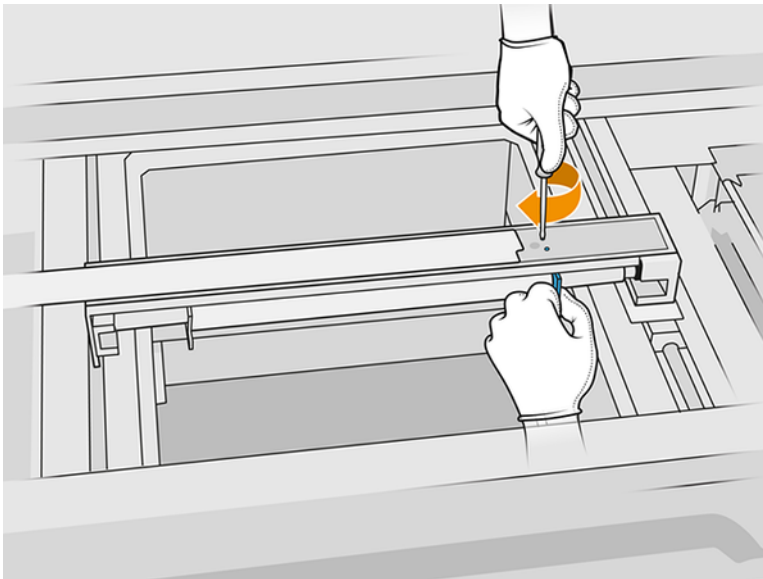
3. Align the plates with the line as shown below.



4. Secure the recoating roller with the top four screws.



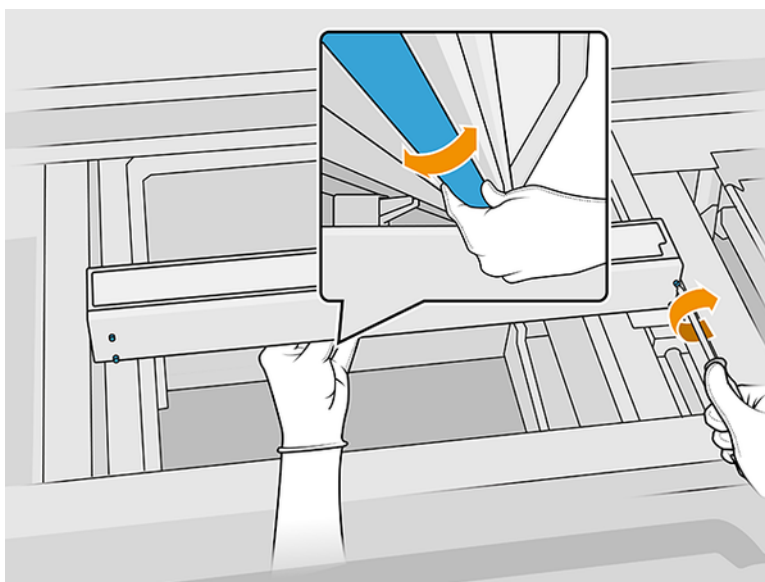
TIP: Hold the plate up while tightening the top screws.



5. Put back the front lid of the recoating unit, but do not insert the screws yet.
6. Attach the lid with the four T15 screws. Use a dynamometric wrench with the torque set to 2 N·m.



IMPORTANT: While tightening the screws on the right, smoothly rotate the roller in both directions to check that the gear teeth are properly engaged.



7. Close the top cover.
8. Ensure that all windows, covers, and doors are closed and remain in their original positions.

Clean the scan-axis wipers

Cleaning inside the printer.

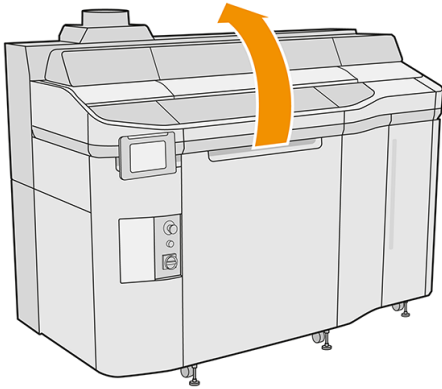


Prepare for cleaning

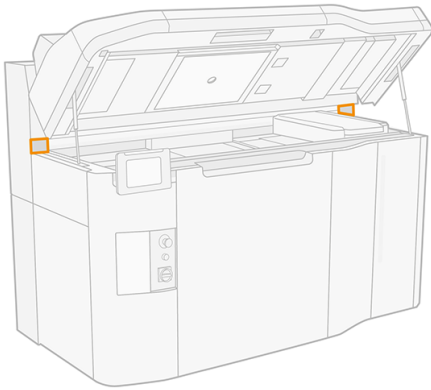
1. Ensure that you have an explosion-protected vacuum cleaner and a screwdriver.
2. Ensure that the printer is not printing.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. Turn off the printer.
5. You are recommended to wear gloves.

Clean the scan-axis wipers

1. Open the top cover to access the scan-axis wipers.

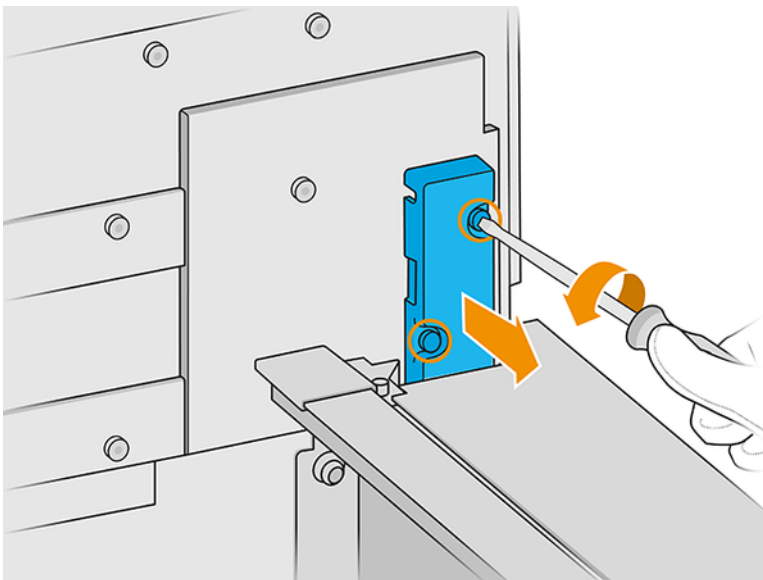


2. Locate the scan-axis wipers, one on each side.



3. Remove two screws from each wiper, and remove the wipers.

⚠ CAUTION: Material can fall when you remove the wipers.



4. Vacuum the wiper hole until there is no material left in it.
5. Vacuum the wipers until there is no material left on them. Additionally, you must use a lint-free cloth dampened with general-purpose industrial cleaner. If the wipers present a high accumulation of material and the curtain is not properly cleaned after the required maintenance frequency, contact your service representative to proceed with the replacement of the part.
6. Inspect the scan-axis wiper status. If there is clustered powder that cannot be removed with vacuum, and the felt is damaged, it must be replaced. The following picture shows an example of a damaged scan-axis wiper.



Finish cleaning

1. Put the wipers back in place, and fasten them with the screws.
-
- CAUTION:** If you print before putting back the wipers, material can fall outside the printer.
2. Close the top cover.
 3. Ensure that all windows, covers, and doors are closed and remain in their original positions.
 4. Turn on the printer.

Clean the inside of the carriage

Cleaning inside the printer.

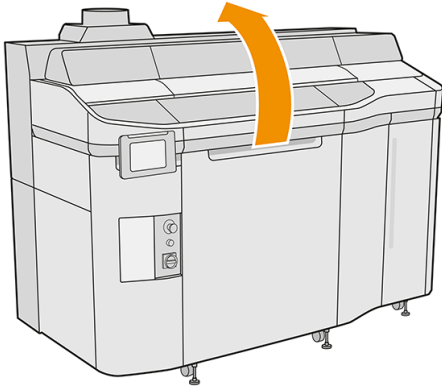
Figure 11-5 Safety warnings



Prepare for cleaning

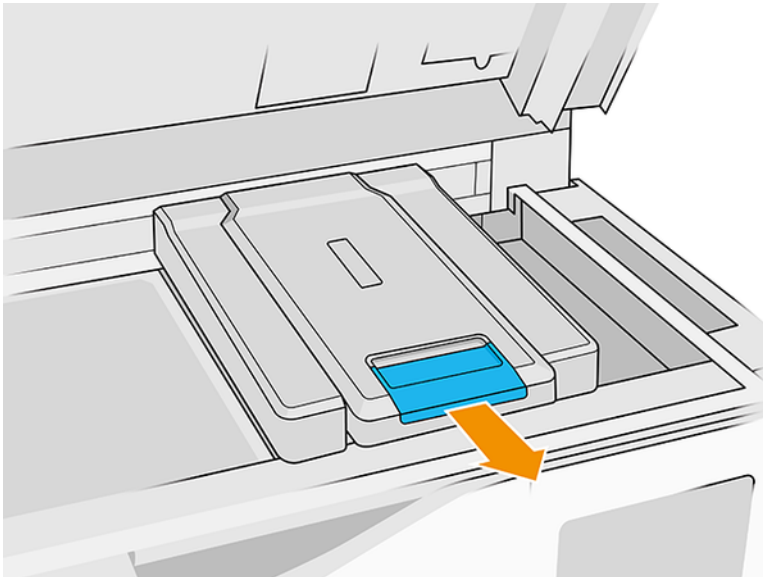
1. Ensure that you have an explosion-protected vacuum cleaner (not provided by HP).

2. Ensure that the printer is not printing.
3. Turn off the printer.
4. If a job has just been printed, wait about 20 minutes for the printer to cool down.
5. You are recommended to wear gloves and goggles.
6. Open the top cover.

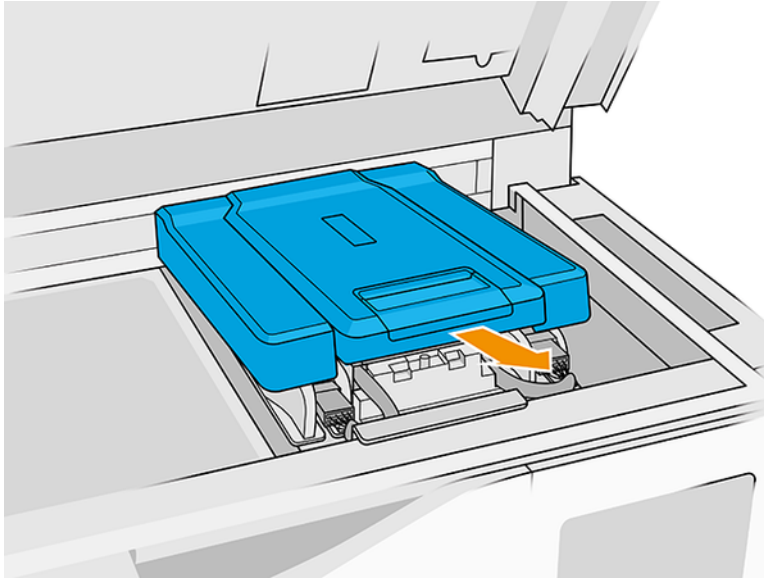


Clean the inside of the carriage

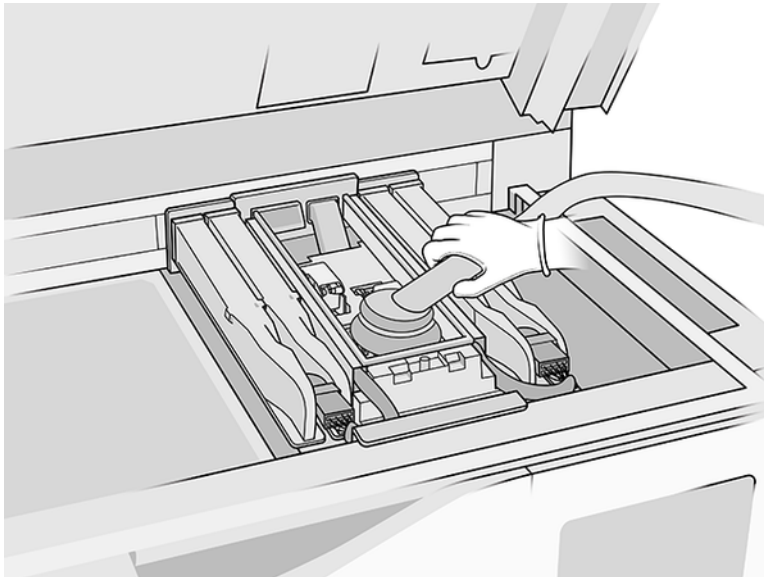
1. Pull the print carriage handle to open the cover.



2. Remove the print carriage cover.



3. Vacuum inside the carriage, using an explosion-protected vacuum cleaner with a soft brush nozzle.



Finish cleaning

1. Put the print carriage cover back into place.
2. Close the top cover.

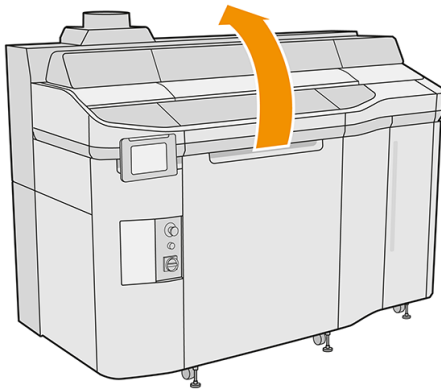
Clean the service-station caps

Clean the service-station caps with a cloth and industrial cleaner.

Prepare for cleaning

1. Ensure that you have a lint-free cloth and a general-purpose industrial cleaner, such as Simple Green industrial cleaner (these things are not provided by HP).

2. Ensure that the printer is not printing.
3. Turn off the printer.
4. If a job has just been printed, wait about 20 minutes for the printer to cool down.
5. You are recommended to wear gloves.
6. Open the top cover.








7. Move the print carriage manually to the left to access the capping station.

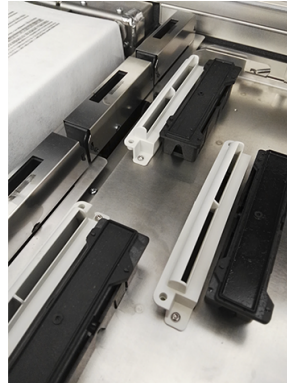
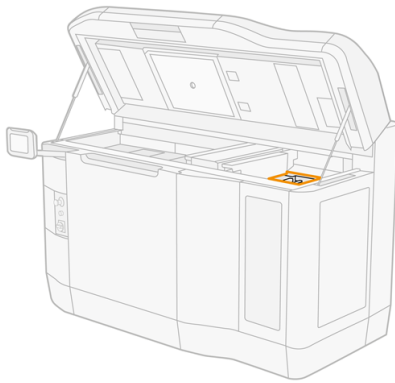
⚠ CAUTION: When moving the print carriage manually, do it slowly, and be careful not to crash it into any other component or the sides of the printer.

Clean the service-station caps

Table 11-9 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

1. Locate the three service-station caps to be cleaned.



2. Clean the service-station caps using a lint-free cloth dampened with a general-purpose industrial cleaner, such as Simple Green industrial cleaner.

CAUTION: Take special care not to disengage the spring and not to pull any cap out of position.

CAUTION: Do not try to clean the caps with a vacuum cleaner, which could disengage the capping rubber from the module and affect capping functionality, causing print-quality issues such as cross-contamination between agents.

3. Remove any remaining soap foam with a clean cloth moistened with deionized water.

Finish cleaning

1. Close the top cover.
2. Ensure that all windows, covers, and doors are closed and remain in their original positions.
3. Turn on the printer.

Clean the top-enclosure fan filters

Clean the filters and check them for damage.

Figure 11-6 Safety warnings

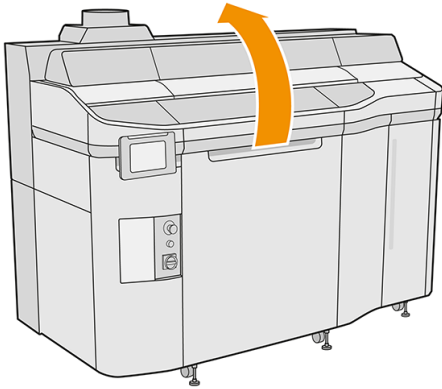


Prepare to clean

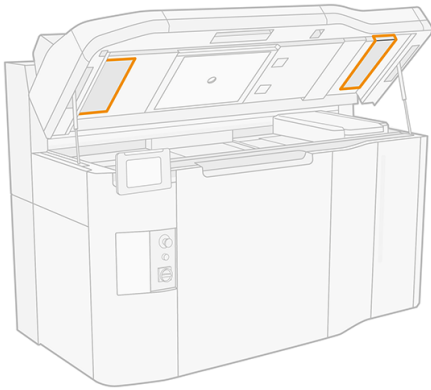
1. Ensure that the printer is not printing.
2. If a job has just been printed, wait about 20 minutes for the printer to cool down.
3. You are recommended to wear gloves, goggles, and mask.

Clean the top-enclosure left and right fan filters

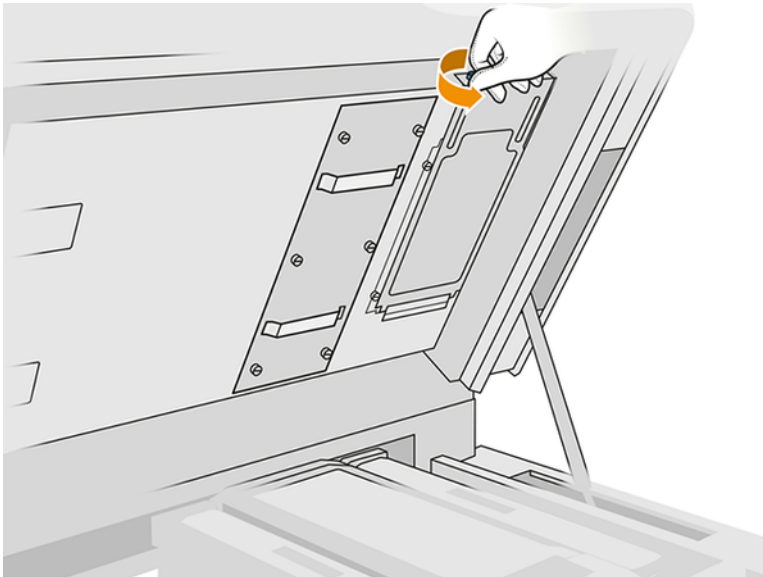
1. Open the top cover.



2. Locate the fan filters on the printer top cover at right and left.

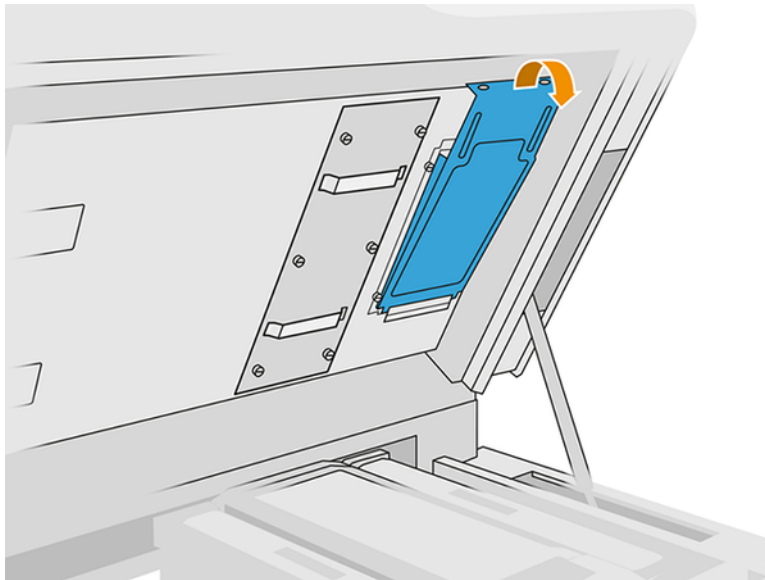


3. Unscrew the captive screws.

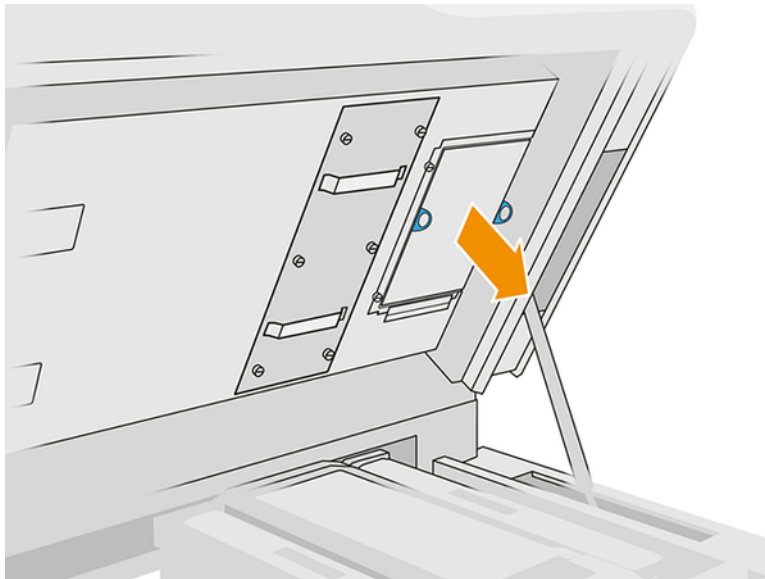


4. At the front panel, tap the **Maintenance** icon , then **Filters > Replace**


5. Remove the filter cover.




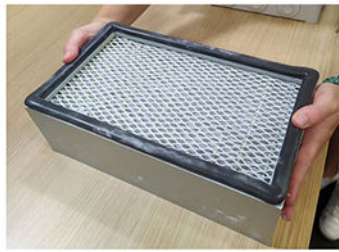
6. Remove each filter assembly, and take it somewhere with a non-explosive atmosphere.



7. Position the filter horizontally over a hard surface, with the airflow direction arrow pointing upwards. Then knock the filter gently against the hard surface until no material drops out of it.

 **CAUTION:** Do not clean the filter with a vacuum cleaner, which could damage it.

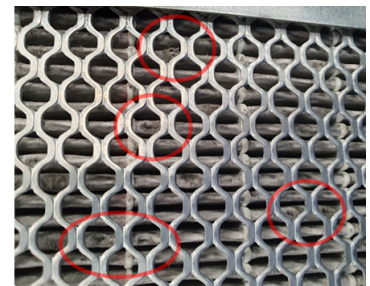
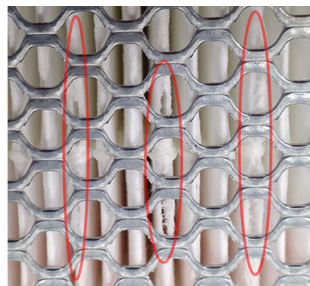
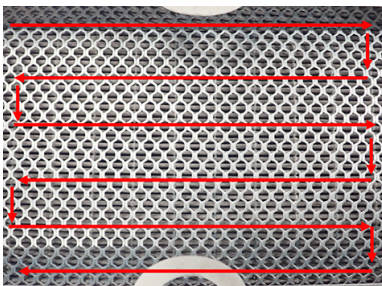
 **CAUTION:** Do not press the filter with your fingers, which could also damage it. Hold the filter frame without touching the filter itself.

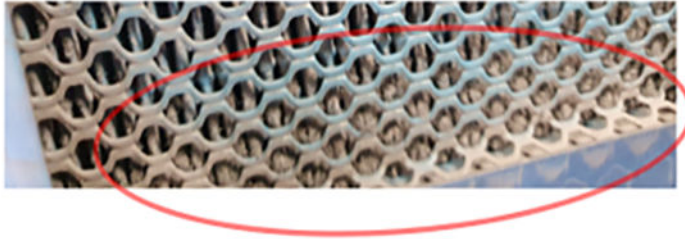
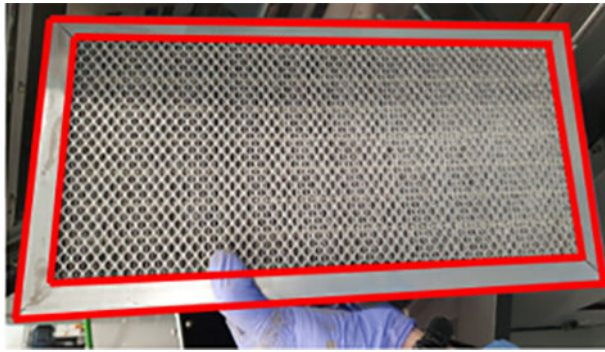



8. Inspect the folds of the filter, following the direction of the fold to try to detect holes, which may be small and hard to see.

Inspect both sides of the filter media following this checklist:

- a. Inspect along the folds of the media, following the direction of the fold with your eyes to detect if there are holes. The holes are often small and not immediately clear. Care should be taken during inspection.
- b. Inspect the media near the filter sides. Damage of the media is common here and is more difficult to see as the view is obstructed by the lips of the filter frame.





9. Inspect also the edges of the filter, next to the frame, where holes are more common and harder to see.
10. If you find any holes in the filter, replace the filter with a new one. See [Replace the top-enclosure left and right fan filters on page 199](#).
11. Put each filter assembly back into the top enclosure (with the arrow pointing upwards) and tighten the screws.
12. At the front panel, tap the **Settings** icon , then **Utilities > System Tools > Calibrations > Cooling system calibration**.

Clean the front bearing

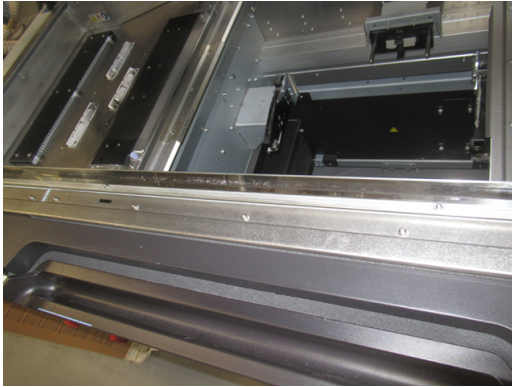
Clean the front bearing carefully with a dampened cloth.

Figure 11-7 Safety warnings



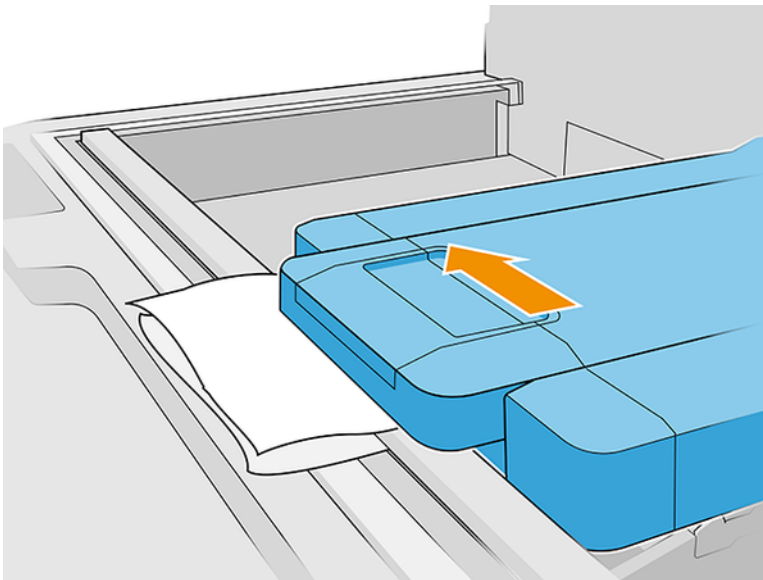
1. Ensure that the printer is not printing.
2. Turn off the printer.

3. Clean the front bearing with a lint-free cloth dampened with deionized water.

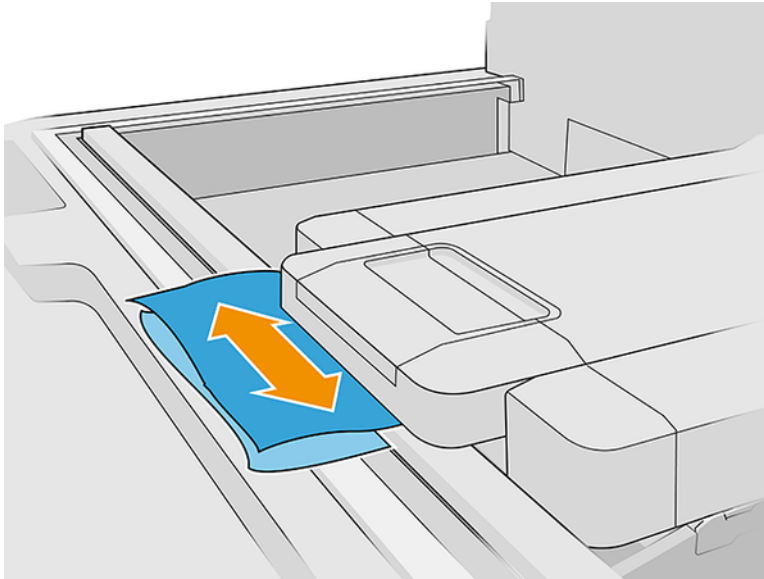


4. Move the carriage over the cloth.

⚠ CAUTION: When moving the print carriage manually, do it slowly, and be careful not to crash it into any other component or the sides of the printer.



5. Move the cloth back and forth below the carriage (parallel to the front bar) to ensure that the bearing's surface is being cleaned. Repeat this movement in different positions to ensure that the whole bearing surface is cleaned.

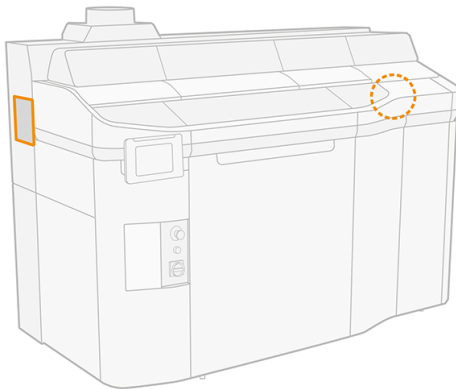


Clean the material extraction system

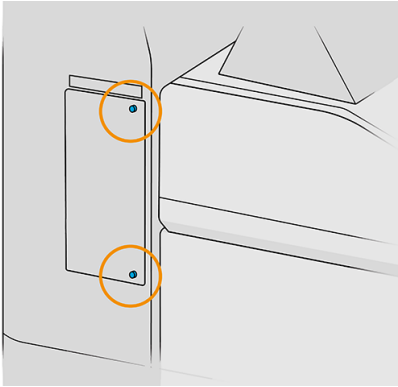
Clean the material extraction system with a vacuum cleaner.



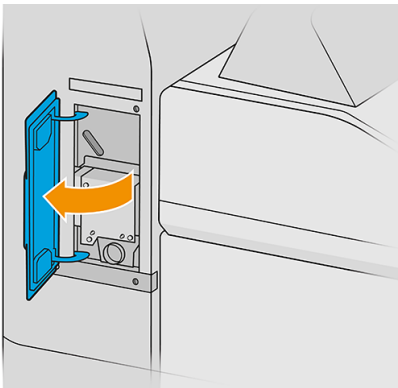
1. Locate the material extraction system doors on both sides of the printer, and choose one to start with.



2. Unscrew the two screws.



3. Open the door.



4. Plug the explosion-protected vacuum cleaner into the material extraction hole, and turn it on for 10 s.
5. Close the door.
6. Put back and tighten the two screws.
7. Repeat the process with the other door.

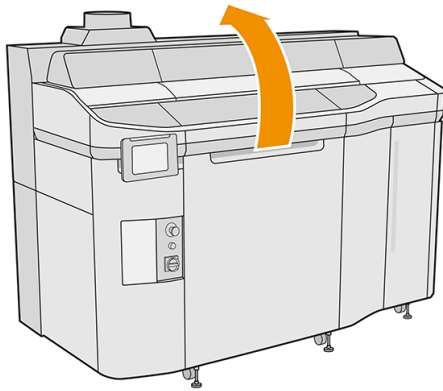
Clean the fusing-lamp glasses

Clean the fusing-lamp glasses with a cloth and industrial cleaner.

Prepare for cleaning

1. Ensure that you have a lint-free cloth, a general-purpose industrial cleaner (such as Simple Green industrial cleaner), and a razor scraper (these things are not provided by HP).
-
- ⚠ WARNING!** Sharp knife blade. Handle with care. When scraping a part, do not hold the part in your hand.
-
2. Ensure that the printer is not printing.
 3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
 4. You are required to wear gloves.

5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Turn off the printer.
7. Open the top cover.







8. Move the print carriage manually over the build-unit space.

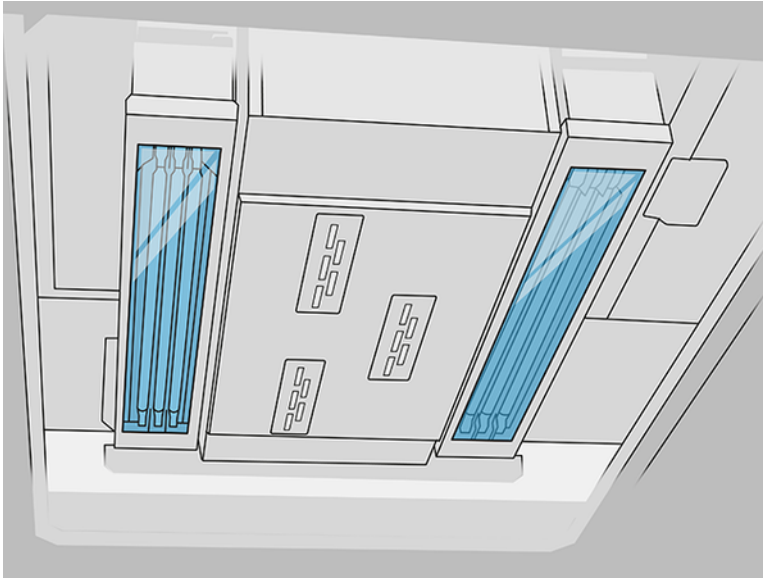
⚠ CAUTION: When moving the print carriage manually, do it slowly, and be careful not to crash it into any other component or the sides of the printer.

Remove the fusing-lamp module

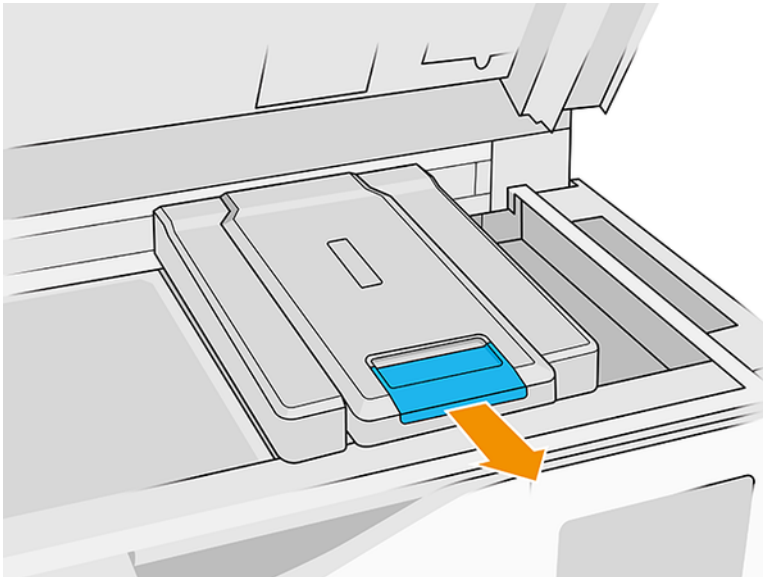
Table 11-10 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

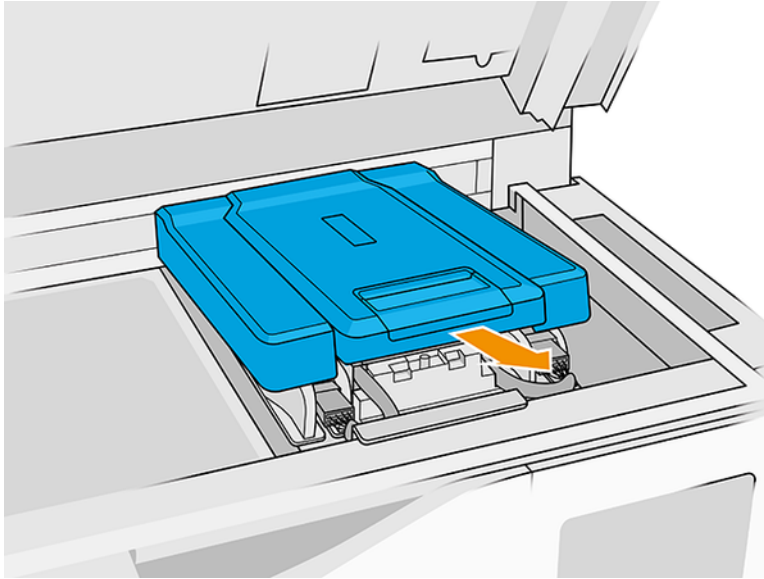
1. Identify the fusing-lamp modules.



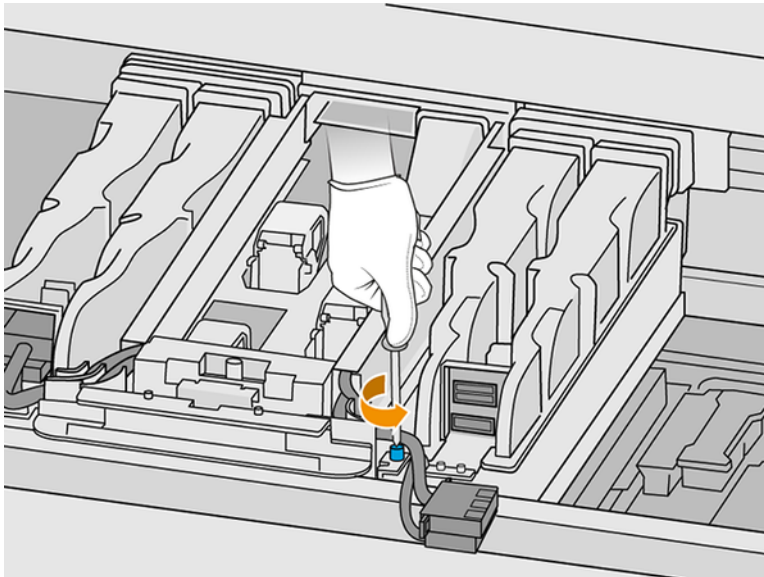
2. Pull the print carriage handle to open the cover.



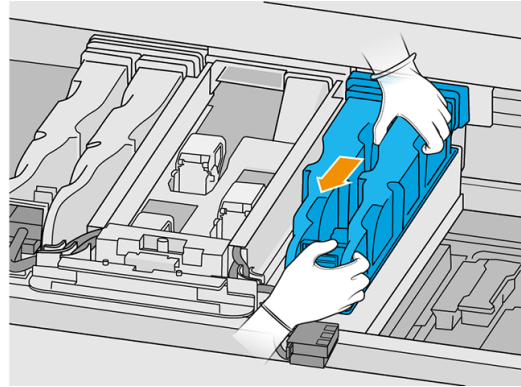
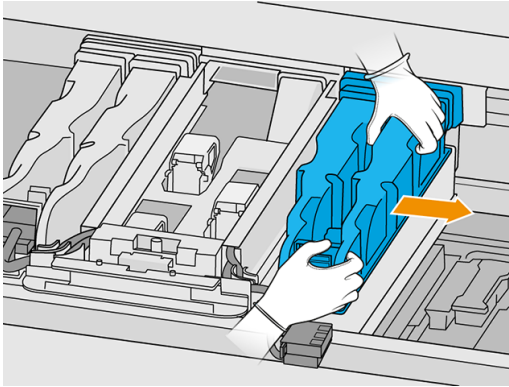
3. Remove the print carriage cover.



4. Unscrew the captive screw at the front of the fusing module and disconnect the wires.



5. Pull the fusing-lamp assembly sideways and then toward you.



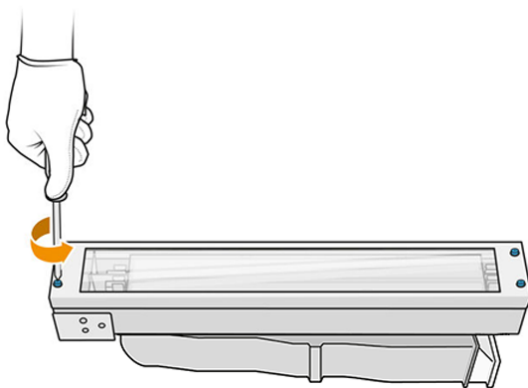
6. Take the fusing-lamp module out of the carriage and place it gently on a table.

Safety precautions for the fusing-lamp emitter

- Disregard of the safety precautions or improper operation of the infra-red (IR) emitter can lead to injuries and material damage.
- The IR heating device should be operated only by specialists or trained personnel.
The operator of the system should compile specific instructions for personnel training.
- The safety and functional reliability of the IR heating device are guaranteed only if you are using original accessories and spare parts from HP.
- After an emitter break, a dangerous voltage may be exposed to contact by the heating spiral.
- The reflector side should not be cleaned.

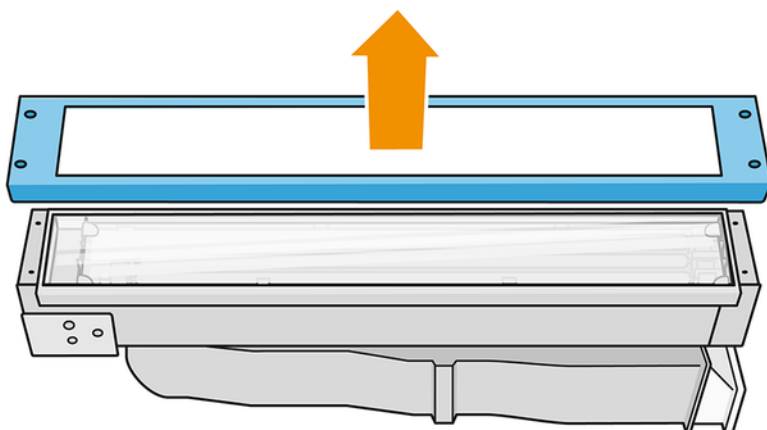
Clean the fusing-lamp glasses

1. Turn the assembly upside down and unscrew the four screws of the exterior glass frame.




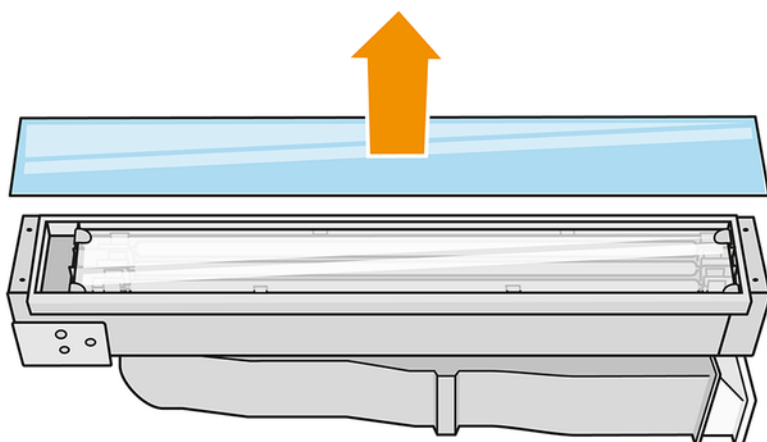
2. Carefully remove the frame of the exterior glass.

⚠ CAUTION: When you remove the frame, the glass may stick to it. Take care that the glass does not fall out of the frame as you pick it up.

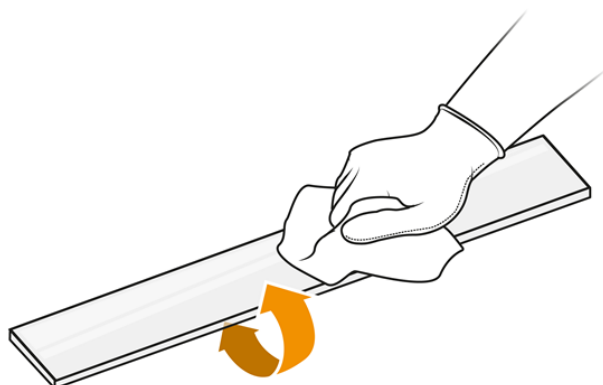


3. Remove the exterior glass and place it gently on a table or other flat surface.

 **CAUTION:** Do not hold the glass in your hand while cleaning it.




4. Moisten both sides of the glass with a lint-free cloth dampened with a general-purpose industrial cleaner, such as Simple Green industrial cleaner. Remove any remaining soap foam with a lint-free cloth dampened with distilled water, and dry it with a dry cloth.

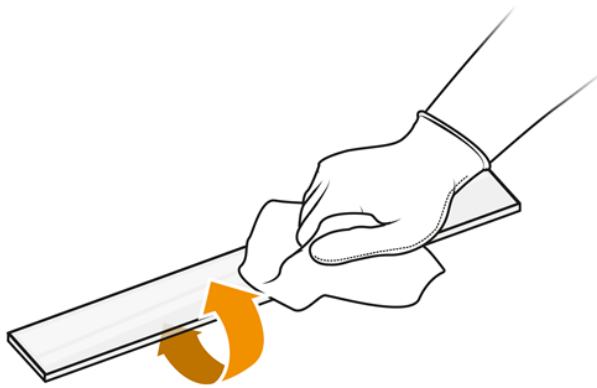


5. Continue cleaning until the glass is clean.

If there is some plastic or material fused to the glass, clean it with a razor scraper.

 **WARNING!** Sharp knife blade. Handle with care. When scraping a the glass, do not hold the glass in your hand.

6. Clean the frame using the same damp cloth.
7. Pull the metallic clip and remove the internal glass.
8. Moisten both sides of the internal glass with a lint-free cloth dampened with a general-purpose industrial cleaner, such as Simple Green industrial cleaner. Remove any remaining soap foam with a lint-free cloth dampened with distilled water, and dry it with a dry cloth.





9. Continue cleaning until the glass is clean.

If there is some plastic or material fused to the glass, dispose of the glass and insert a new glass: see [Replace a fusing-lamp internal glass on page 233](#).

Reassemble the lamp glasses

1. Insert the internal glass into the two rear brackets, and pull the front of the metallic clip to insert the other side.
2. Add the bottom glass and then the frame, securing it with four screws.

 **IMPORTANT:** The bottom glass must be centered when placed.

 **WARNING!** While securing the frame, do not sit on the lateral walls. They can break easily.

Reassemble the fusing-lamp module

1. Turn the assembly upside down and put it back into the print carriage.
2. Tighten the captive screw.
3. Plug in the black power connector.
4. Plug in the gray sensor connector.
5. Put back the cover.

Finish cleaning

1. Close the top cover.
2. Ensure that all windows, covers, and doors are closed and remain in their original positions.
3. Turn on the printer.

Clean the recoating unit curtain wipers

These are the cleaning procedures.

Figure 11-8 Safety warnings



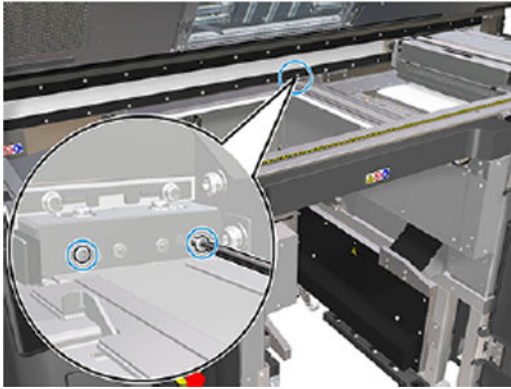
Recoating unit curtain wipers

This is the procedure to clean the recoating unit curtain wipers.

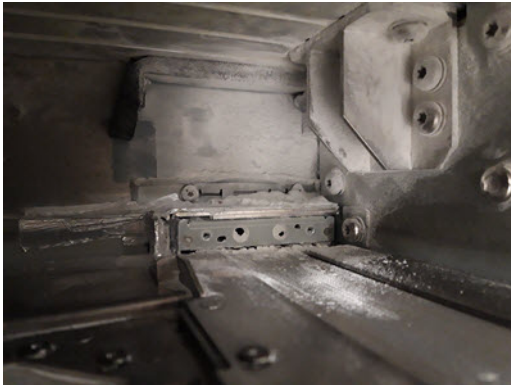
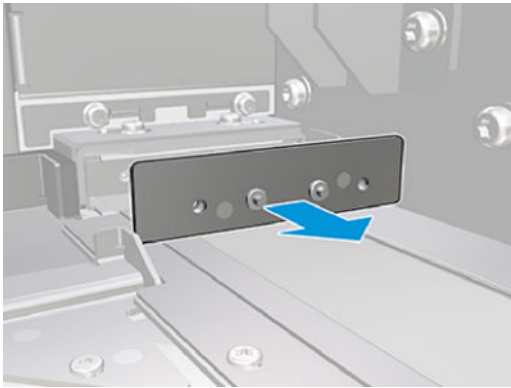
1. Open the top enclosure and the machine door to get access to the side wall.



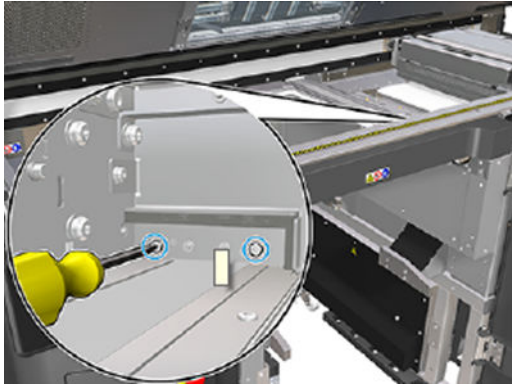
2. Remove the two screws shown in the following image.



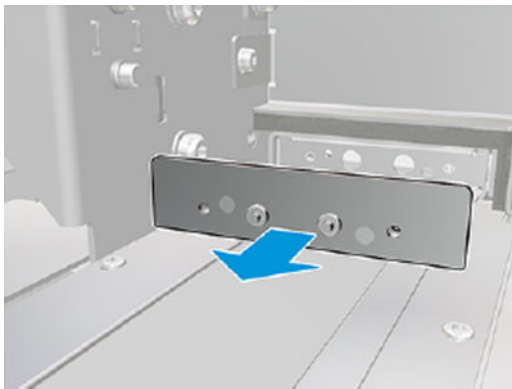
3. Remove the rear wiper and vacuum the wiper area when the wiper is removed.



4. Remove the two screws on the front side.



5. Remove the front wiper and vacuum the wiper area when the wiper is removed.



6. Clean the wipers with a vacuum cleaner and scrape the dirt away with your fingers at the same time. The result should be as follows:



Finish cleaning

1. Put the wipers back in place and fasten them in place with the screws.

⚠ CAUTION: If you print before putting the wipers back, some material may fall out of the printer.

2. Close the top cover.
3. Ensure that all windows, covers and doors are closed and remain in their original positions.
4. Switch the printer on.

Clean the bottom glass of the heating lamps

Clean the bottom glass with a cloth and industrial cleaner, then with a razor scraper.

Figure 11-9 Safety warnings

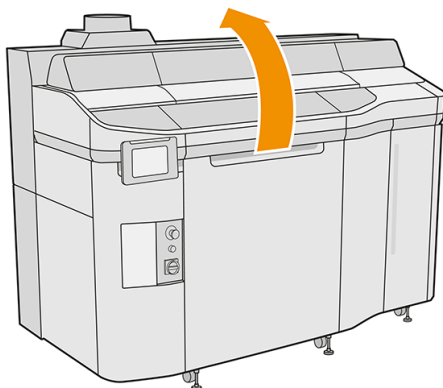


Prepare for cleaning

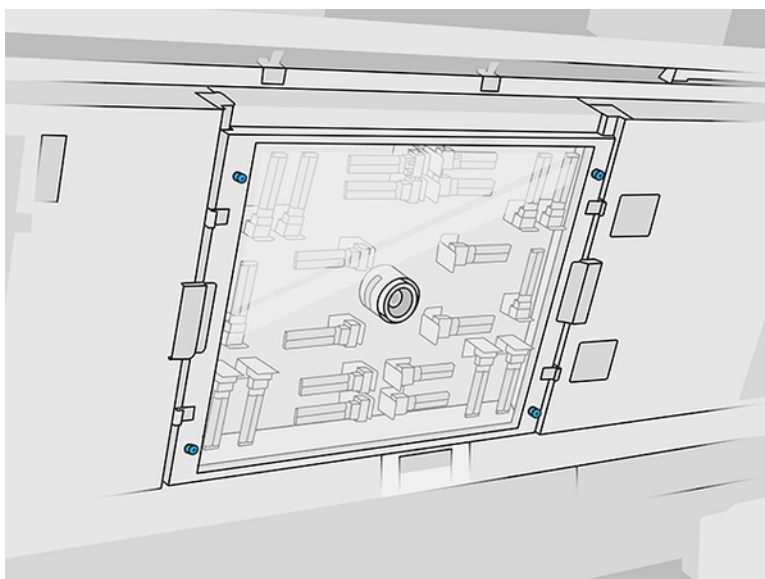
1. Ensure that you have a lint-free cloth, a general-purpose industrial cleaner (such as Simple Green industrial cleaner), and a razor scraper (these things are not provided by HP).
- ⚠ WARNING!** Sharp knife blade. Handle with care. When scraping a part, do not hold the part in your hand.
2. Ensure that the printer is not printing.
 3. Turn off the printer.
 4. If a job has just been printed, wait about 20 minutes for the printer to cool down.
 5. You are recommended to wear gloves and safety goggles.
 6. Ensure that all windows, covers, and doors are closed and remain in their original positions.

Remove the bottom glass of the heating lamps

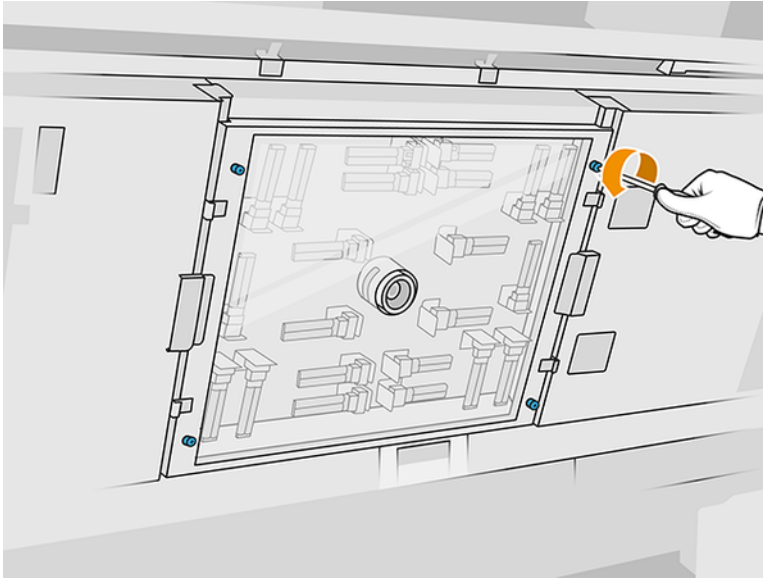
1. Open the top cover.



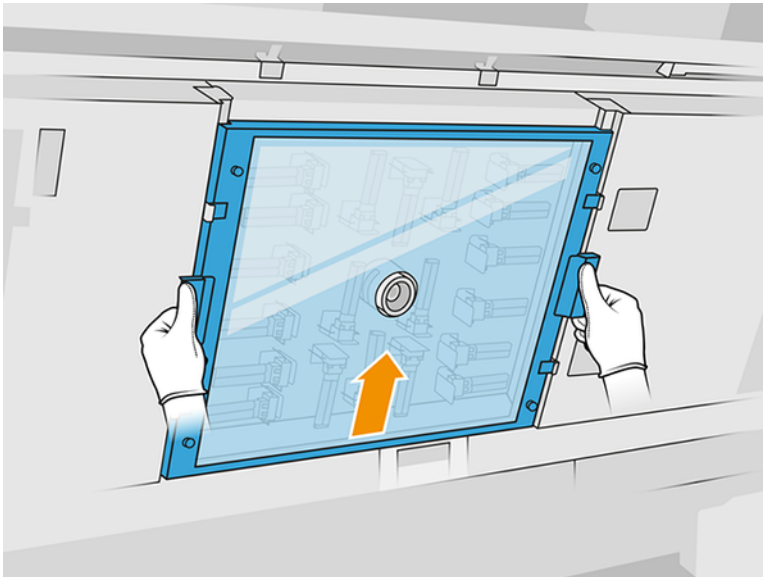
2. Locate the bottom glass of the heating lamps.



3. Unscrew the four captive screws to remove the bottom glass.

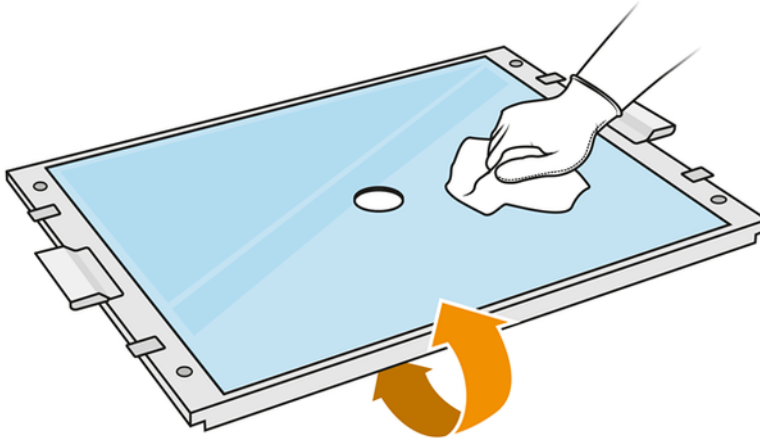


4. Pull the bottom glass out of the top cover and place it gently on a table.



Clean the bottom glass of the heating lamps

1. Moisten both sides of the glass with a lint-free cloth dampened with a general-purpose industrial cleaner, such as Simple Green industrial cleaner. Remove any remaining soap foam with a lint-free cloth dampened with distilled water, and dry it with a dry cloth.



2. Scrub both sides of the glass with the razor scraper.

⚠ WARNING! Sharp knife blade. Handle with care. When scraping the glass, do not hold the glass in your hand.

3. Continue cleaning with cloth and sponge scourer until the glass is clean.

Reinstall the bottom glass of the heating lamps

1. Put back the bottom glass in the correct position.
2. Tighten the four captive screws.
3. Ensure that the cleaned parts are completely dry and all vapor has completely evaporated before proceeding.

Finish cleaning

1. Close the top cover.
2. Ensure that all windows, covers, and doors are closed and remain in their original positions.
3. Turn on the printer.

Clean the recoater's left box and left rod

Clean the box and rod with a vacuum cleaner, a cloth, and industrial cleaner.

Prepare for cleaning

1. Ensure that the printer is not printing.
2. If a job has just been printed, wait about 20 minutes for the printer to cool down.
3. You are recommended to wear gloves.
4. Ensure that all windows, covers, and doors are closed and remain in their original positions.

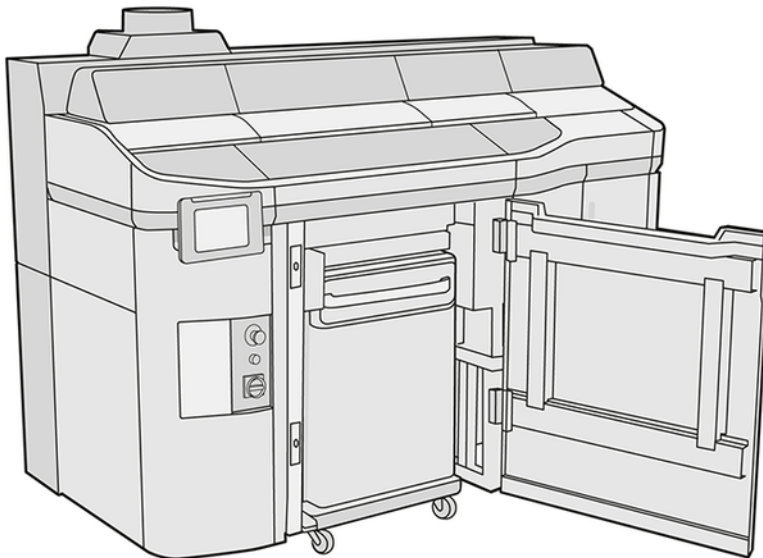
5. Remove the build unit from the printer.
6. Turn off the printer.

Clean the recoater's left box and left rod

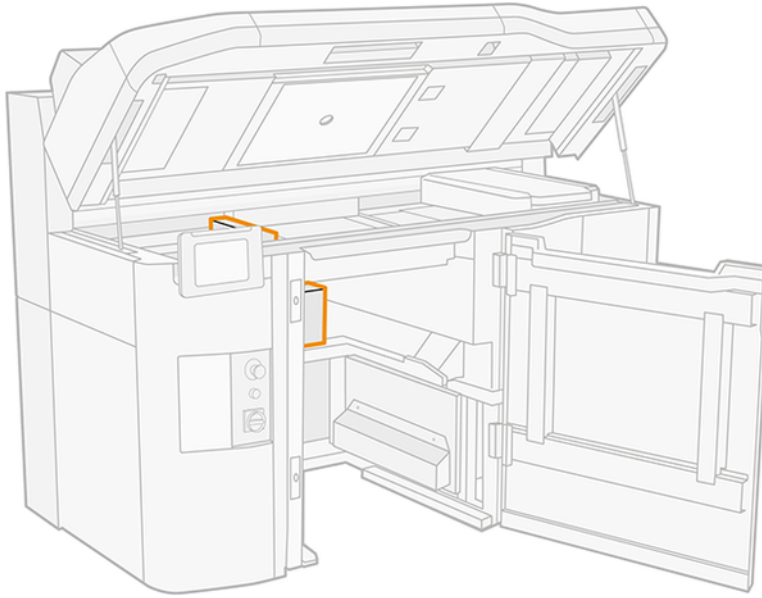
Table 11-11 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

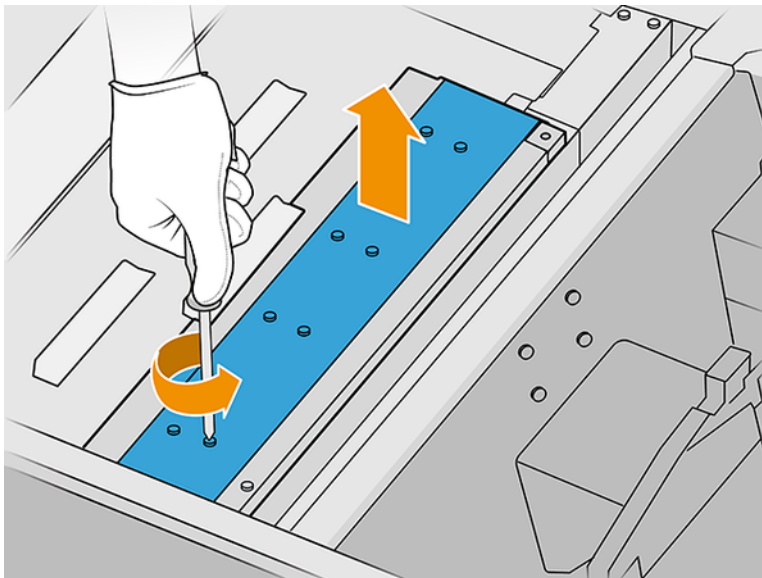
1. Open the build-unit door.



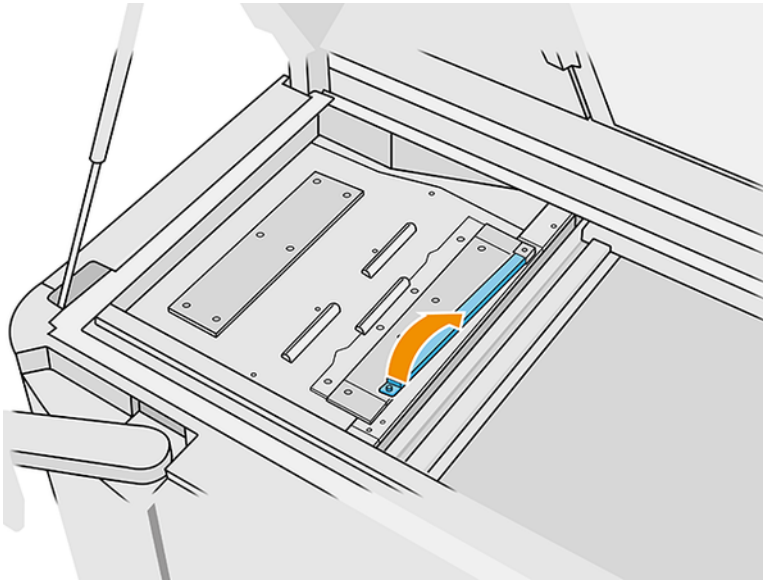
2. Locate the recoater's left box.



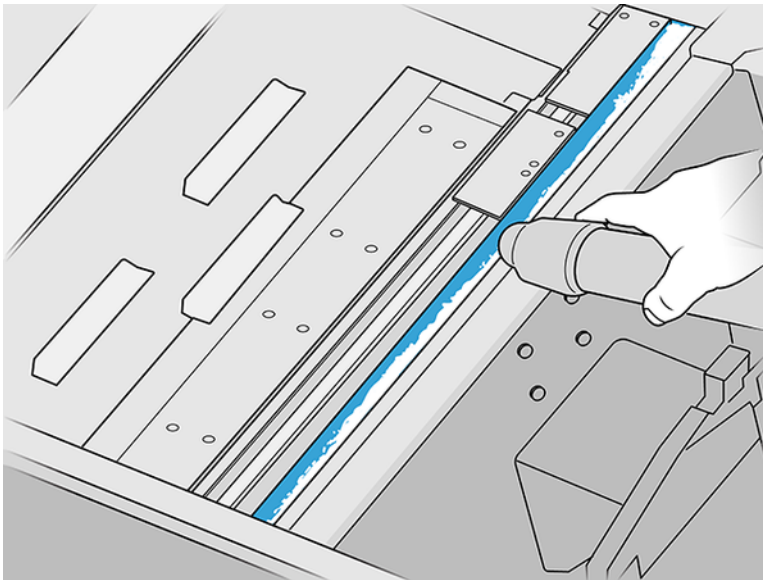
3. Remove the eight screws to open the recoater's left box.



4. Remove the spittoon and the plate underneath it.



5. Clean the dust from the recoater's left box, using an explosion-protected vacuum cleaner with a narrow nozzle.



6. Wipe the left rod with a lint-free cloth dampened with a general-purpose industrial cleaner, such as Simple Green industrial cleaner. Remove any remaining soap foam with a dry cloth.
7. Continue cleaning with the cloth until the rod is clean.

Finish cleaning

1. Put back the front sheet metal, restoring the screws.
2. Close the build-unit door.
3. Close the top cover.

4. Ensure that all windows, covers, and doors are closed and remain in their original positions.
5. Turn on the printer.

Clean the printhead contacts


Clean the contacts with a brush, a cloth, industrial cleaner, and deionized water.

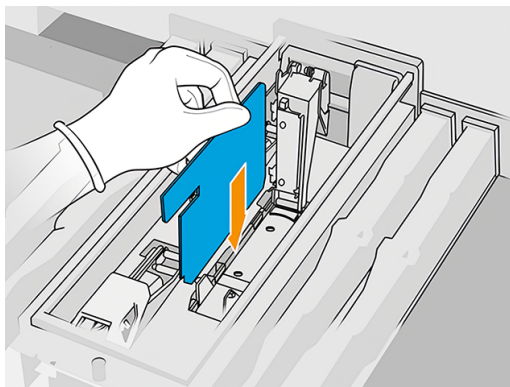


Prepare for cleaning

1. Ensure that you have several dry cloths, a general-purpose industrial cleaner (such as Simple Green industrial cleaner), and deionized water.
2. Ensure that the printer is not printing.
3. Turn off the printer.
4. If a job has just been printed, wait about 20 minutes for the printer to cool down.
5. You are recommended to wear gloves.
6. If the build unit is in the printer, remove it.

Open covers and extract the failing printhead

1. Start a printhead replacement by following the printhead replacement instructions on the printer's front panel.
2. At the front panel, tap the **Maintenance** icon , then **Printheads > Replace**.
3. Use the printhead extraction tool to extract the printhead.



4. Extract the printhead.



NOTE: Always use the printhead extraction tool. Before using the tool, ensure that it is clean.

Clean the printhead contacts in the carriage

1. Carefully remove the three printheads from the carriage. See [Replace a printhead on page 105](#).
2. Turn off the printer.
3. Move the print carriage manually over the build unit space.

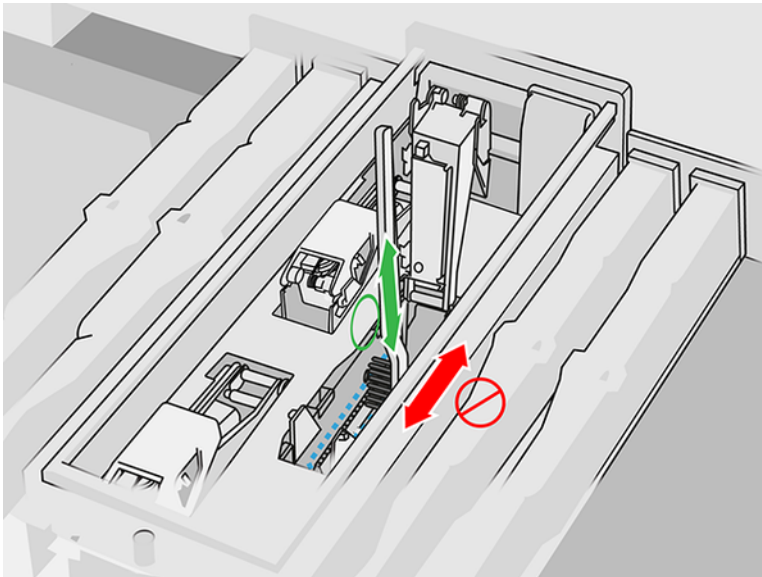


CAUTION: When moving the print carriage manually, do it slowly, and be careful not to crash it into any other component or the sides of the printer.

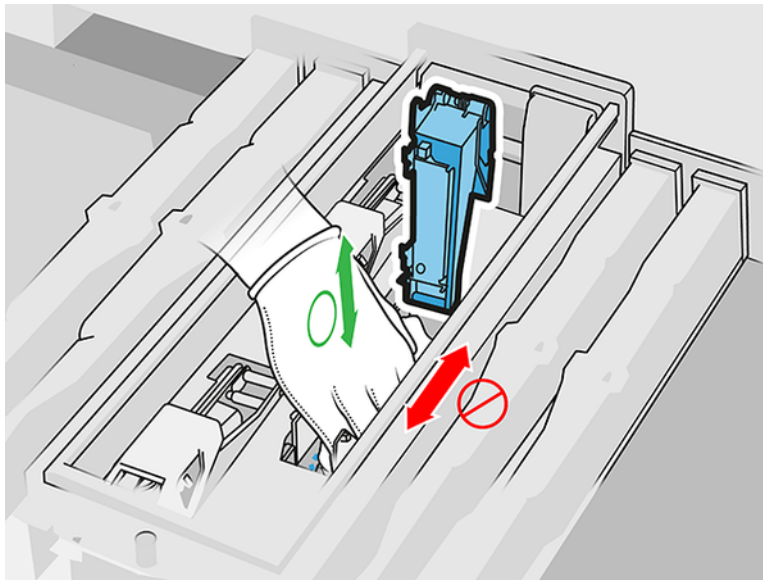
4. Illuminate the printhead slot in the carriage and check the electrical connections to the printhead for dirt.



5. Clean the right side of the printhead slot (not the side with the contacts) with a soft brush, such as a toothbrush.




6. Wipe the printhead contacts as instructed in the front panel, moving the cloth up and down (not side to side).

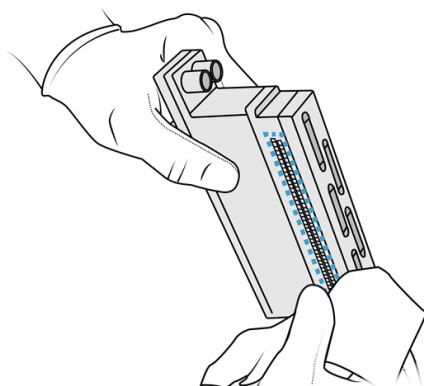


7. Illuminate the printhead slot again to check that the electrical connections are now clean and undamaged.

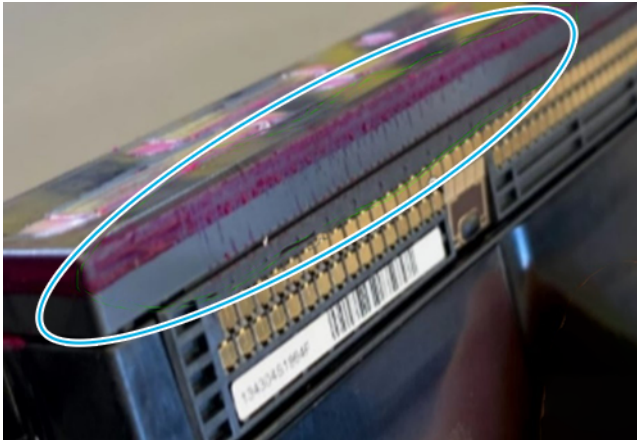
Clean the printhead contacts on the printhead

1. Place the printheads on a table.
2. Clean the parts of the printhead away from the contacts with a soft brush; and then with a cloth moistened with water.
3. Clean the contact side of the printhead with a lint-free cloth moistened with a general-purpose industrial cleaner, such as Simple Green industrial cleaner. Remove any remaining soap foam with a clean cloth dampened with deionized water.

 **IMPORTANT:** Ensure that you do not touch the dies.

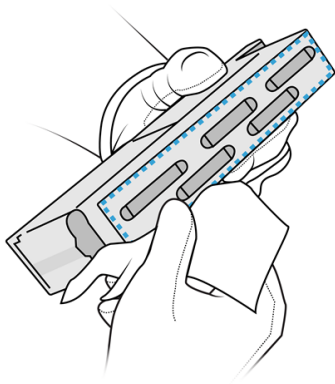


4. Ensure that you clean the sides of the die carrier because these areas tend to accumulate the most ink.



5. Clean the printhead nozzles with a different cloth moistened with deionized water.

⚠ CAUTION: Do not touch or press on the printhead nozzle's area (the yellowish dies) with alcohol. The nozzle area must be cleaned with deionized water.



6. Wipe the printhead dry with a similar but dry cloth.

Finish cleaning

1. Wait until the contacts and other parts are dry.
2. Put back the print carriage cover.
3. Close the top cover.
4. Ensure that all windows, covers, and doors are closed and remain in their original positions.
5. Turn on the printer.
6. Start a printhead replacement from the front panel to reinsert the printheads in the normal way. See [Replace a printhead on page 105](#).
7. Align the printheads. See [Align the printheads on page 251](#).

Clean the print-zone window

Clean the window with a cloth and deionized water.

Figure 11-10 Safety warnings

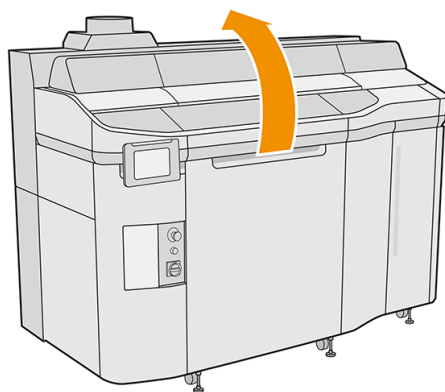


Prepare for cleaning

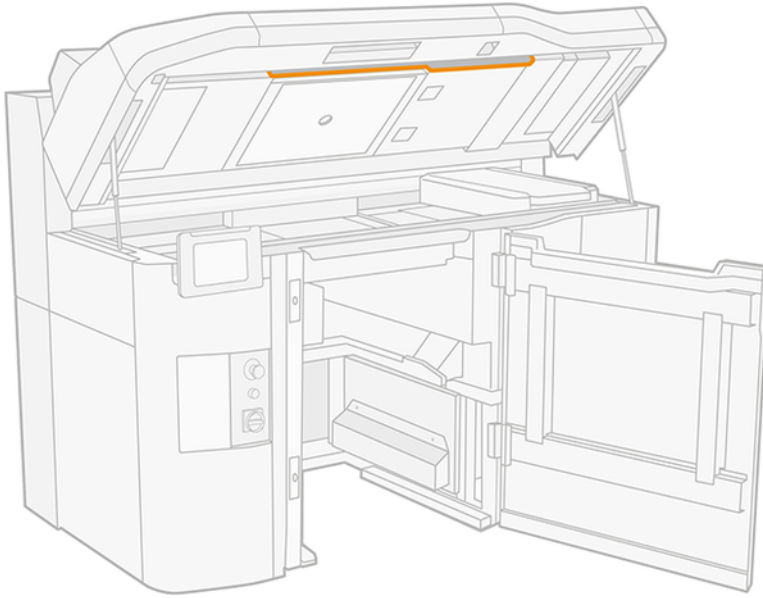
1. Ensure that you have an absorbent all-purpose cloth.
2. Ensure that the printer is not printing.
3. Turn off the printer.
4. If a job has just been printed, wait about 20 minutes for the printer to cool down.
5. You are recommended to wear gloves.
6. Ensure that all windows, covers, and doors are closed and remain in their original positions.

Clean the print-zone window

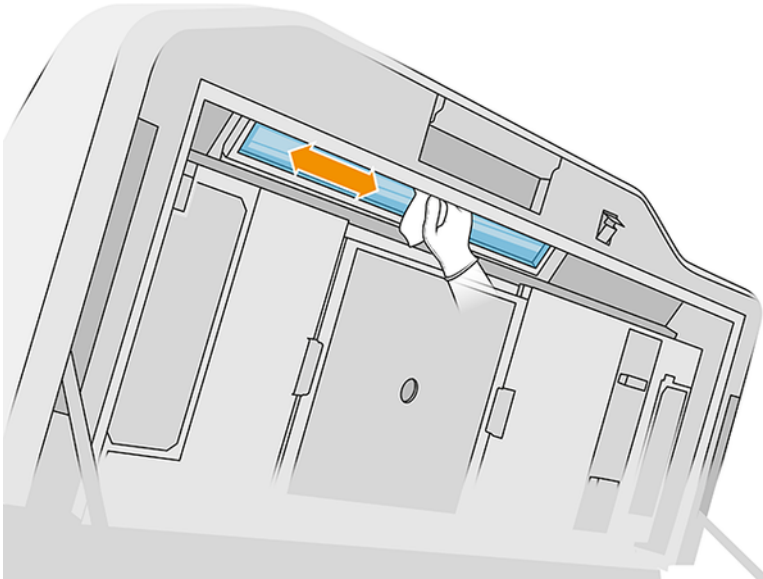
1. Open the top cover.



2. Locate the print-zone window.



3. Wipe the glass with an absorbent all-purpose cloth dampened with deionized water.



4. Close the top cover and clean the external part of the print-zone window.

Clean underneath the reflective recoating unit plate

Figure 11-11 Safety warnings



Prepare for cleaning

1. Ensure that the printer is not printing.
2. Switch off the printer.
3. If a job has just been printed, wait approximately 20 minutes for the printer to cool down.
4. HP recommends that you wear gloves to carry out this procedure.

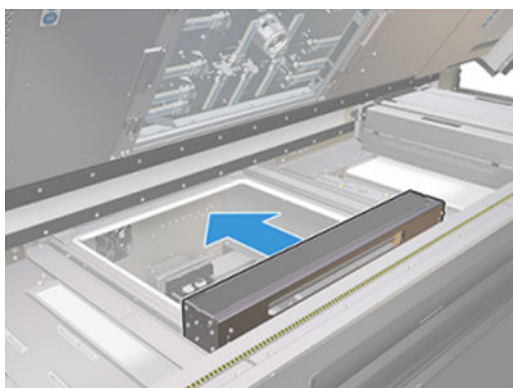
Clean underneath the reflective recoating unit plate

Clean underneath the reflective recoating unit plate and ball bearing area using a vacuum cleaner.

1. Open the top cover to access the recoating unit.



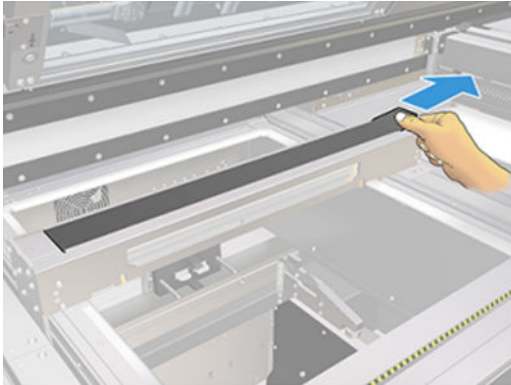
2. Move the recoating unit back.



3. Remove the four screws shown in the following image (two on each side).



4. Remove the reflective plate by pulling it to the right.



5. Vacuum the entire area, including the ball bearing area. It should look as shown in the following image once properly cleaned.



Replace the heating-lamp filter

Remove the filter and replace it with a new one.





Prepare for replacement

1. Heating-lamp filters are provided with your printer in the printer yearly maintenance kit.
2. Ensure that the printer is not printing.

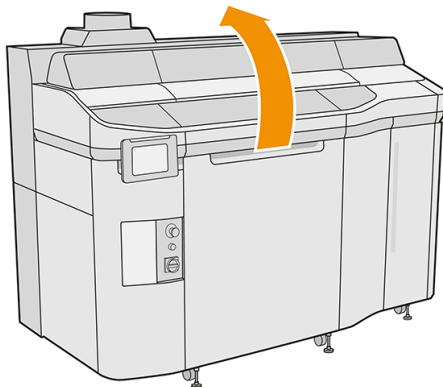
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear gloves and mask.
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Turn off the printer.

Replace the heating-lamp filter

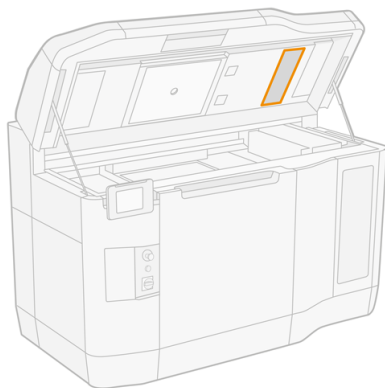
Table 11-12 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|--|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

1. Open the top cover.

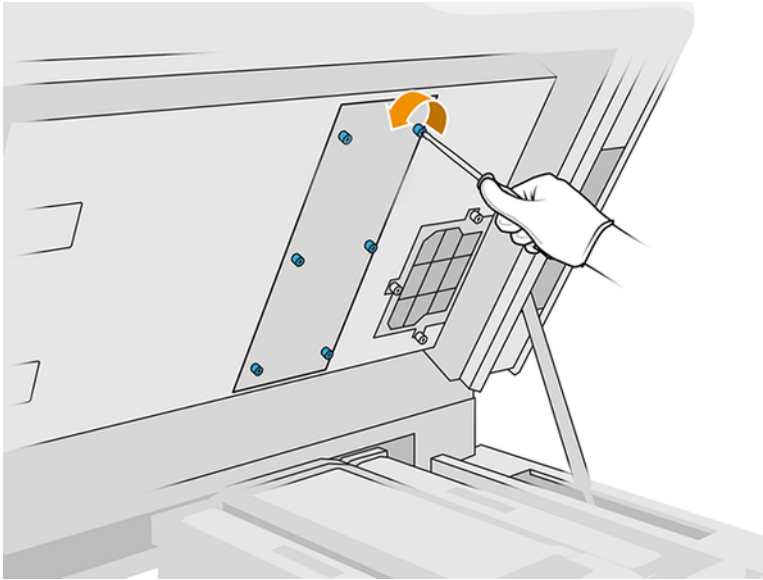


2. Locate the heating-lamp filter at the right of the top cover.

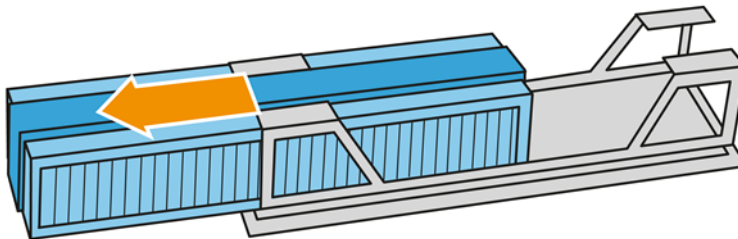


3. Remove the six screws and slide out the filter assembly.

⚠ CAUTION: The filter will fall out unless you hold it.



4. Slide the filter out of its frame.



5. Remove and dispose of the old filter according to local regulations.
6. Insert the new filter into its frame.
7. Put back the filter grid and tighten its six screws.

Finish the replacement

1. Close the top cover.
2. Ensure that all windows, covers, and doors are closed and remain in their original positions.
3. Turn on the printer.

Replace the e-cabinet filter

Remove the filter and replace it with a new one.



Prepare for replacement

1. Replacement filters are provided with your printer in the printer yearly maintenance kit.
2. Ensure that the printer is not printing.

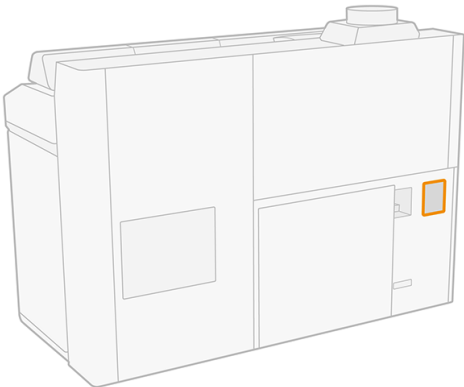
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear gloves, mask, and safety goggles.
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Remove the build unit from the printer.
7. Turn off the printer.

Replace the e-cabinet filter

Table 11-13 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

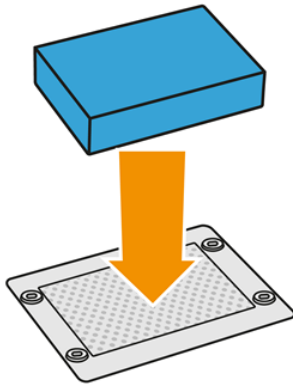
1. Locate the e-cabinet filter.



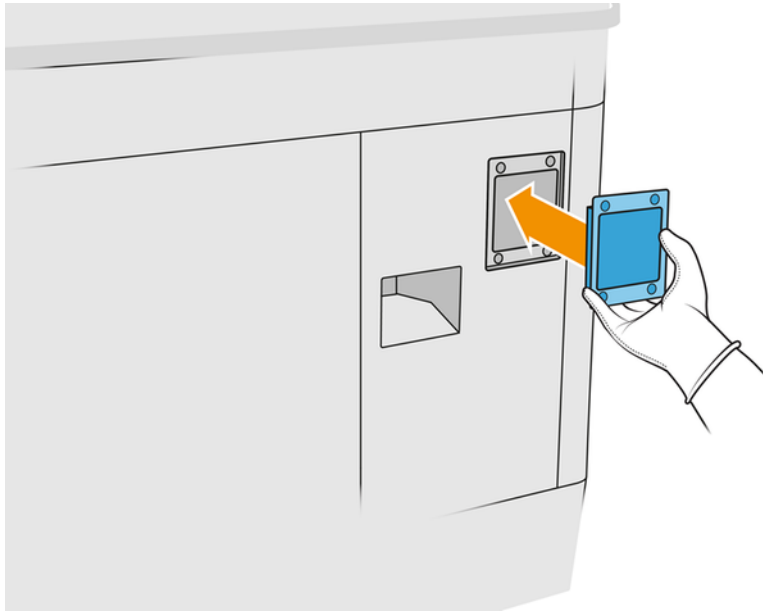
2. Unscrew four screws and remove the plastic filter cover.



3. Remove and dispose of the old filter according to local regulations, and insert the new one.



4. Carefully insert the new filter cover and secure it with the screws.



Finish replacement

1. Ensure that all windows, covers, and doors are closed and remain in their original positions.
2. Turn on the printer.

Replace the power-box fan filters

Remove the filters and replace them with new ones.

Prepare for replacement

1. Replacement fan filters are provided with your printer in the printer yearly maintenance kit. Only one set of filters is needed for this operation.
2. Ensure that the printer is not printing.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear gloves, mask, and goggles.
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Remove the build unit from the printer.
7. Turn off the printer.

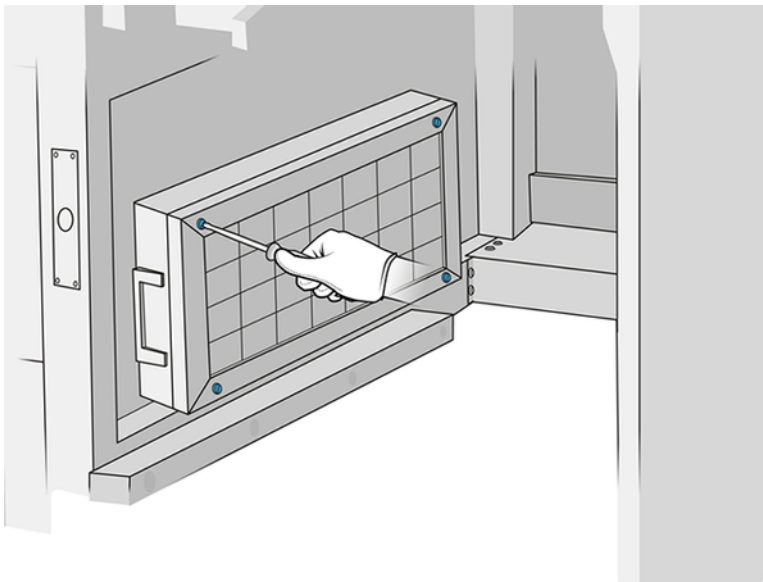
Replace the power-box fan filters (8VJ66A)

The following steps explain how to replace the power-box fan filters on 3FW25A model printers.

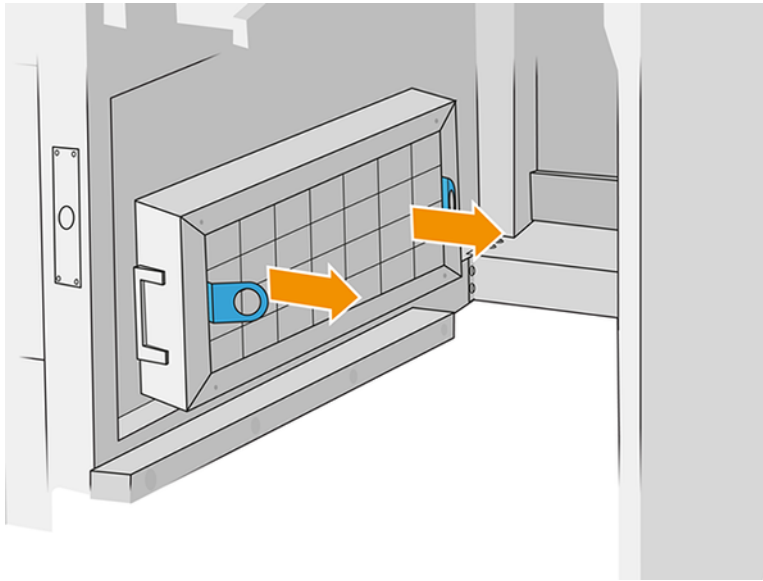
Table 11-14 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

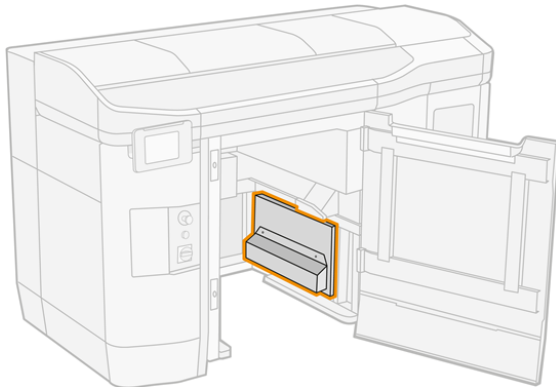
1. Open the build-unit door.
2. Locate the power-box left fan filter and loosen the four captive screws.



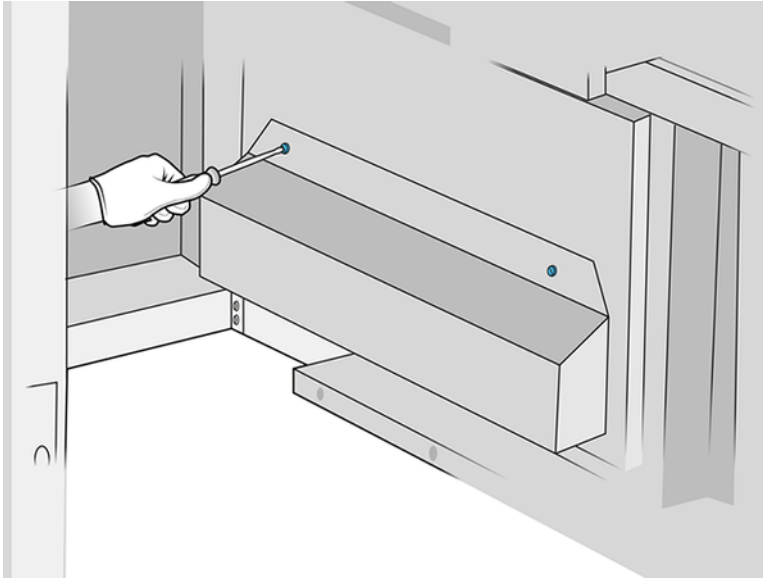
3. Remove the filter grid.



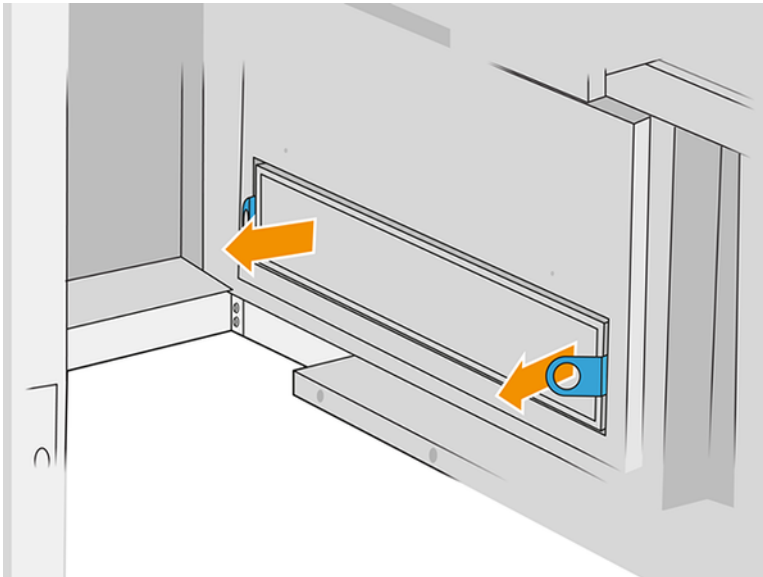
4. Remove and dispose of the old filter and insert the new one.
5. Put back the filter grid and tighten the screws.
6. Locate the power-box right fan filter.



7. Loosen the two captive screws and remove the filter case.



8. Remove and dispose of the old filter and insert the new one.



9. Put back the filter case and tighten the screws.

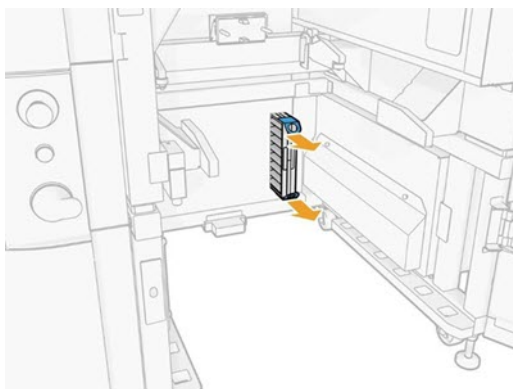
Replace the power-box 3 filter (2E7N3A)

The following steps explain how to replace the power-box fan filter 3 on 3FW25A model printers:

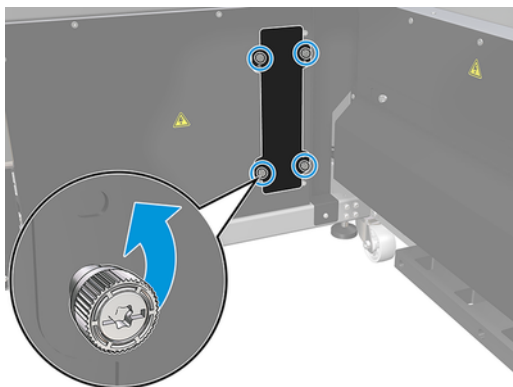
Table 11-15 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

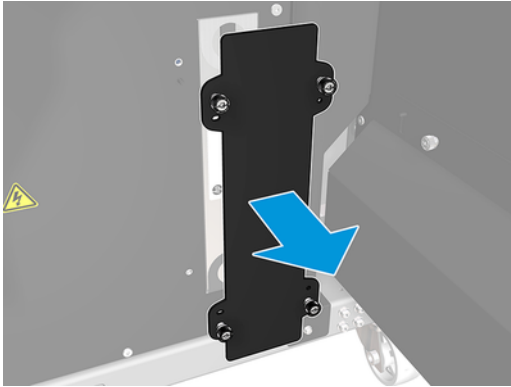
1. Locate the power-box filter to be removed.



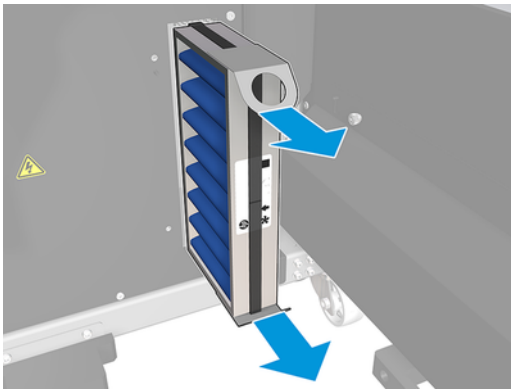
2. Remove by hand the 4 Southco screws.



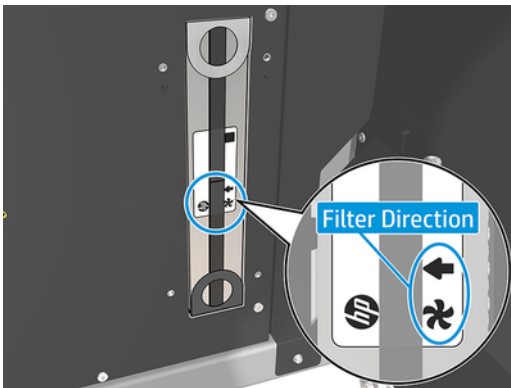
3. Remove the filter cover sheet metal.



4. Pull by the Mylars to remove the filter.



5. Install the filter paying attention to the filter's directional arrow (it should point inside).



6. Put back the filter case and tighten the screws.

Replace the power-box fan filter (348C5A)

The following steps explain how to replace the power-box fan filter on 3FW25B model printers.

Table 11-16 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

- Follow step 1 to step 5 in [Replace the power-box fan filters \(8VJ66A\) on page 191](#).

Finish replacement

The following steps provide the complete procedure for this topic.

1. Ensure that all windows, covers, and doors are closed and remain in their original positions.
2. Turn on the printer.

Replace the print-zone filter

The following sections provide details for this topic.

Prepare for replacement

The following steps provide the complete procedure for this topic.

1. Print-zone filters are provided with your printer in the printer yearly maintenance kit. Sets of two filters are provided; only one filter is needed for this operation.
2. Ensure that the printer is not printing.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear gloves and mask.
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Turn off the printer.

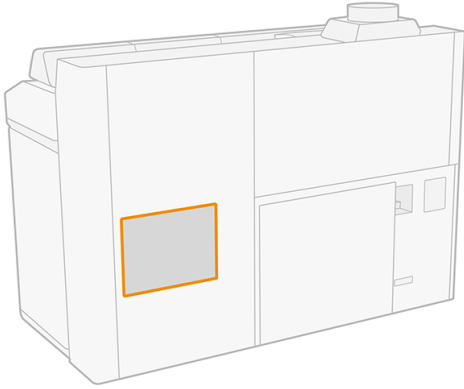
Replace the print-zone filter

The following steps provide the complete procedure for this topic.

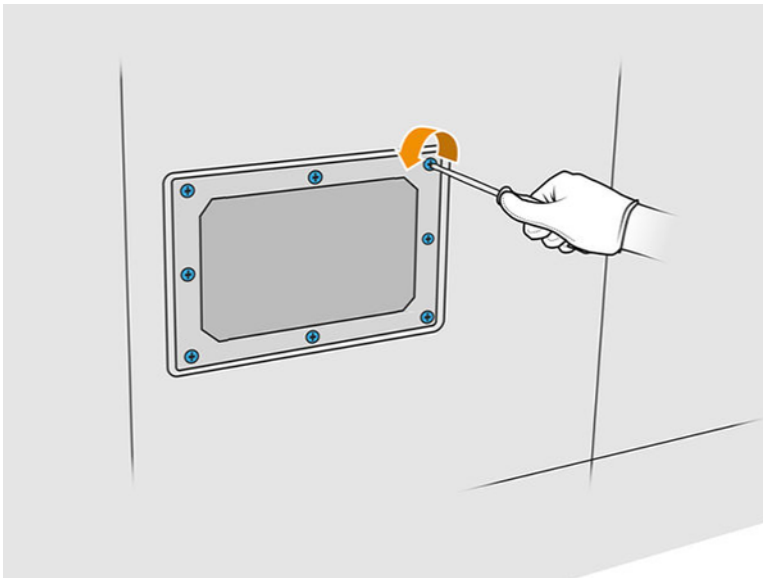
Table 11-17 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

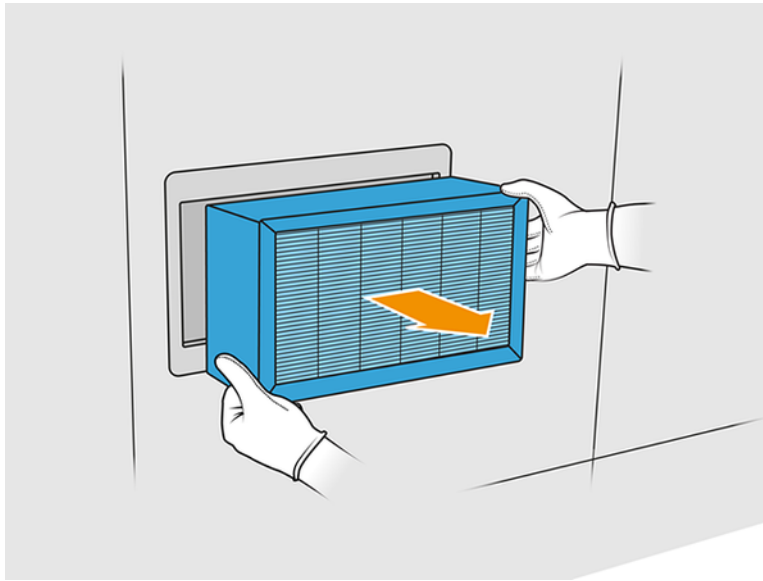
1. Locate the fan filters at the rear left of the printer.



2. Remove eight screws, then remove the grid.




3. Pull the filter out of the frame and dispose of it according to local regulations.



4. Insert the new filter provided in the kit.
5. Put back the filter grid and its screws.

Finish the replacement

The following steps provide the complete procedure for this topic.

1. Ensure that all windows, covers, and doors are closed and remain in their original positions.
2. Turn on the printer.
3. At the front panel, tap the **Maintenance** icon , then **Filters** > **Print zone** > **Replace**.

Replace the top-enclosure left and right fan filters

Replace the right or left top-enclosure filter when requested by the front panel.

Figure 11-12 Safety warnings




Tap the **Maintenance** icon , then **Filters** > **Left/right top enclosure** > **Replace**.

When a top-enclosure filter becomes clogged with material, the printer shows a **Left/right top-enclosure filter full** alert. Normally, cleaning the filter is enough to recover its functionality (see [Clean the top-enclosure fan filters on page 155](#)). However, after several cleaning operations, the top-enclosure filter

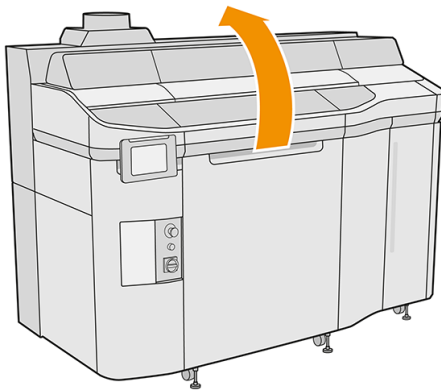
is not recoverable as it becomes permanently clogged. When the filter has just been cleaned and the printer shows the alert during the next job, HP recommends replacing the filter.

Prepare to replace

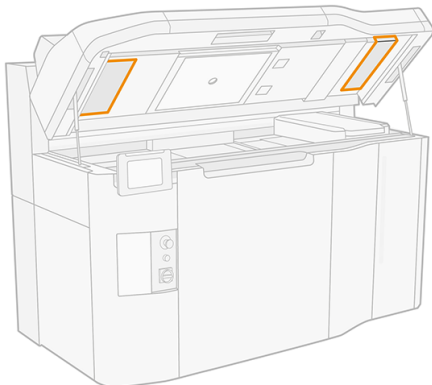
1. Top-enclosure left and right fan filters are provided with your printer in the printer initial maintenance kit. Only one set of filters is needed for this operation.
2. Ensure that the printer is not printing.
3. At the front panel, tap the Maintenance icon , then **Filters > Left/right top enclosure > Replace**.
4. Turn off the printer.
5. If a job has just been printed, wait about 20 minutes for the printer to cool down.
6. You are recommended to wear goggles and mask.

Replace the top-cover left and right fan filters

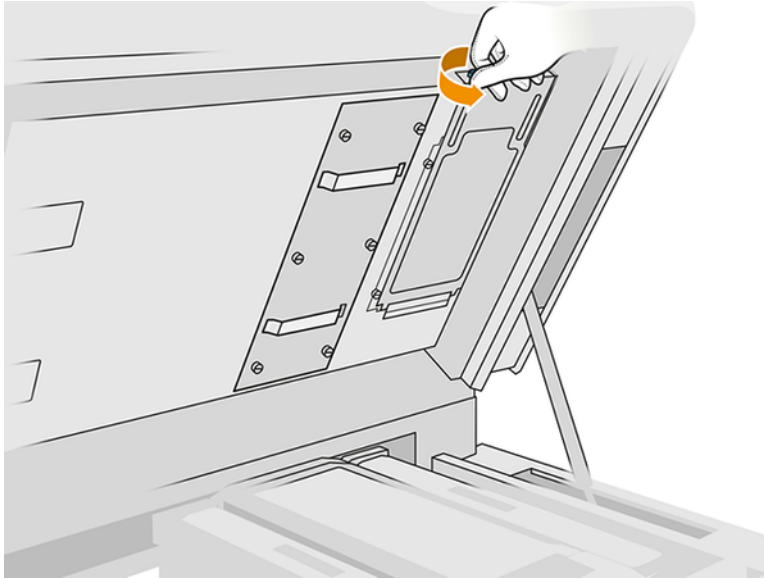
1. Open the top cover.



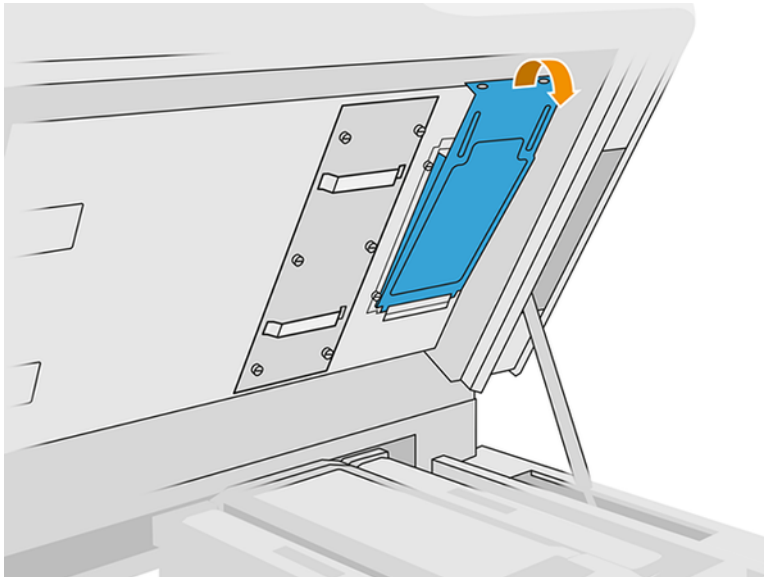
2. Locate the fan filters on the printer top cover at right and left.



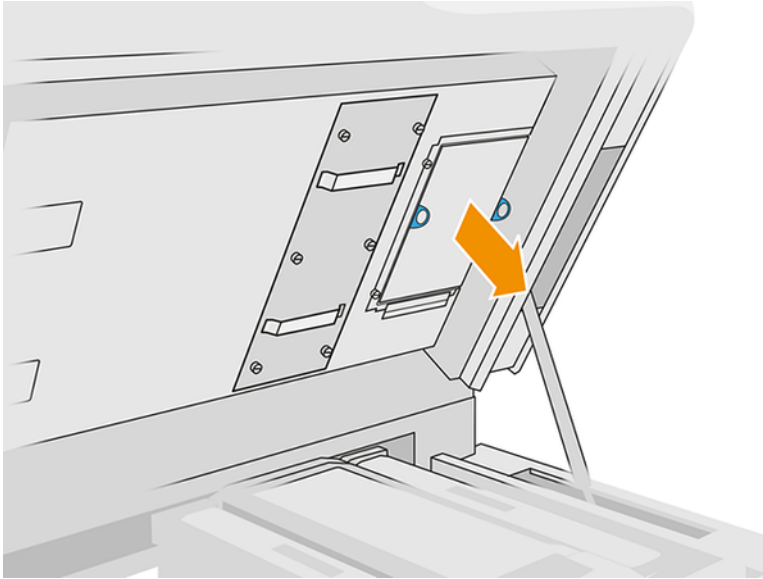
3. Unscrew the captive screws.




4. Remove the filter cover.



5. Remove each filter and dispose of it according to your local laws.



6. Put each new filter into its corresponding place in the top cover (with the arrow pointing upwards), place the filter cover, and tighten the screws.
7. Turn on the printer.
8. At the front panel, tap the **Maintenance** icon , then **Cooling system calibration**.

Replace a primer

The following sections provide details for this topic.

Prepare for replacement

The following steps provide the complete procedure for this topic.

1. Ensure that you have the primers and latch kit.
2. Ensure that the printer is not printing.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear gloves and goggles.
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Turn off the printer.

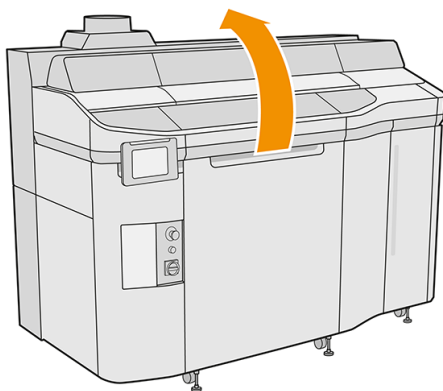
Open covers

The following steps provide the complete procedure for this topic.

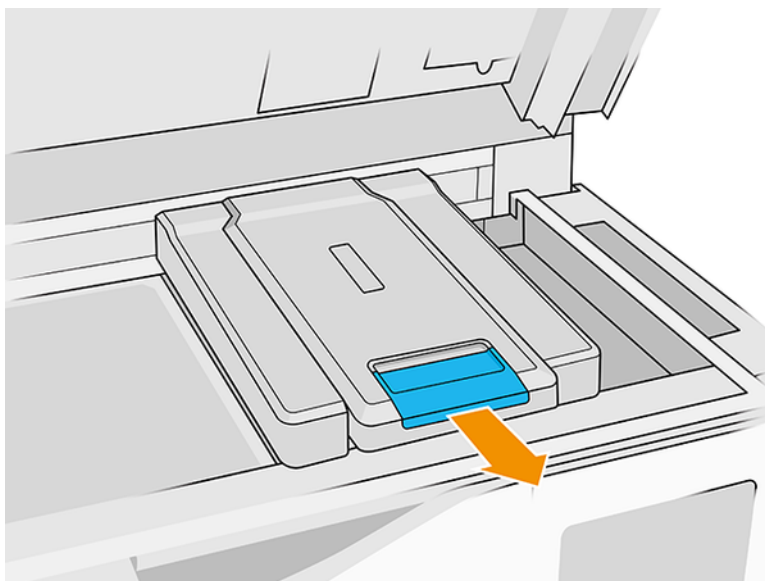
Table 11-18 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

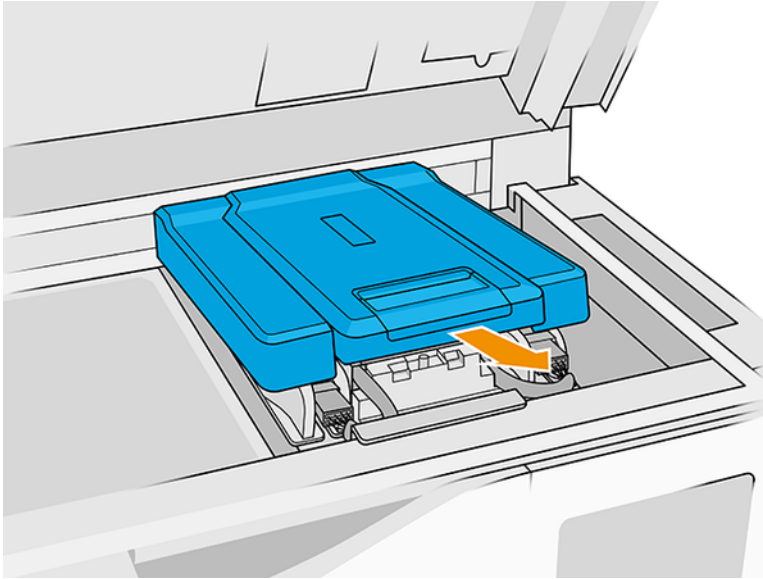
1. Open the top cover.



2. Pull the print-carriage handle to open its cover.



3. Remove the print-carriage cover.



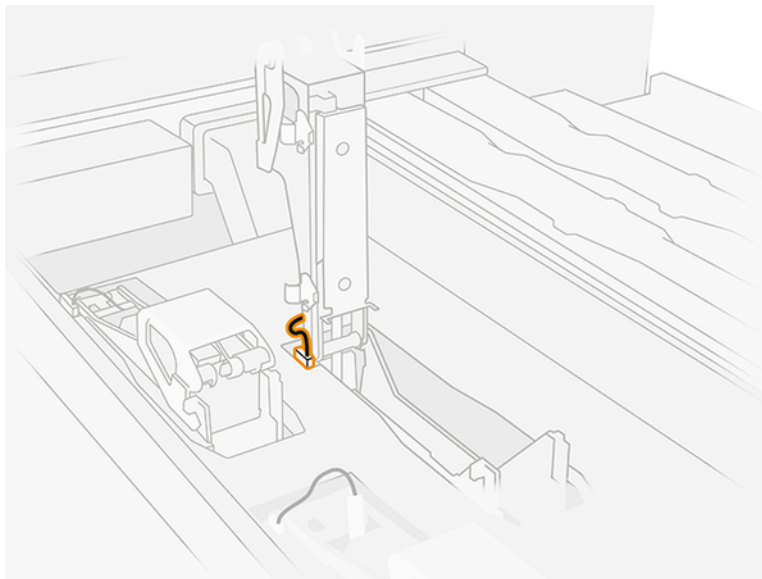
Replace a primer

The following steps provide the complete procedure for this topic.

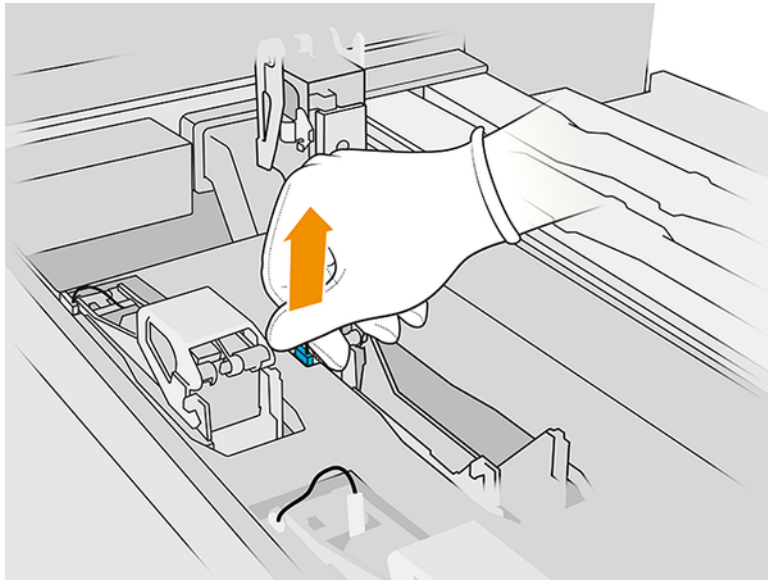
NOTICE: You can replace a primer while the printheads are installed.

1. Disconnect the primer cable, by disconnecting the white connector that you can find at the left side of the printhead whose primer is to be replaced.

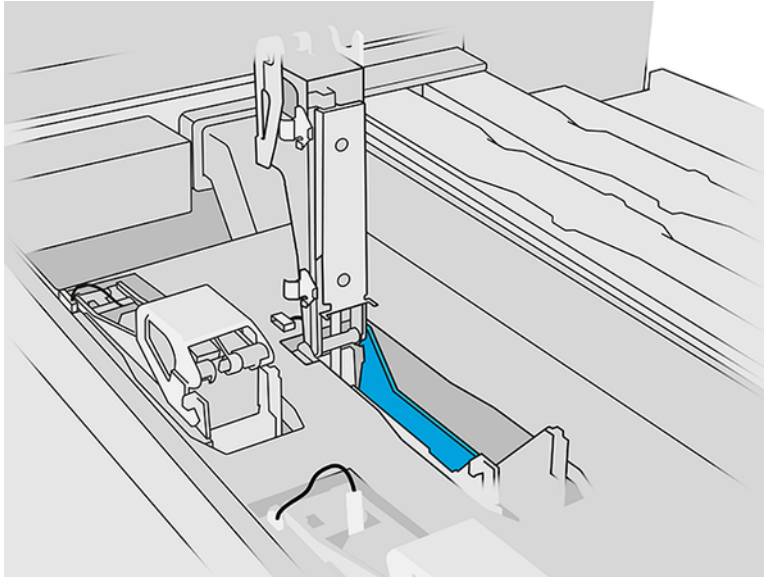
a.



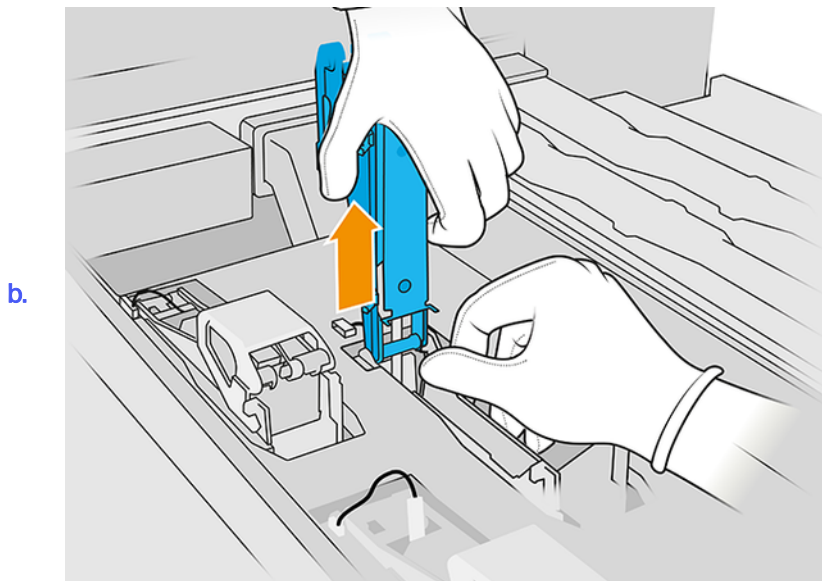
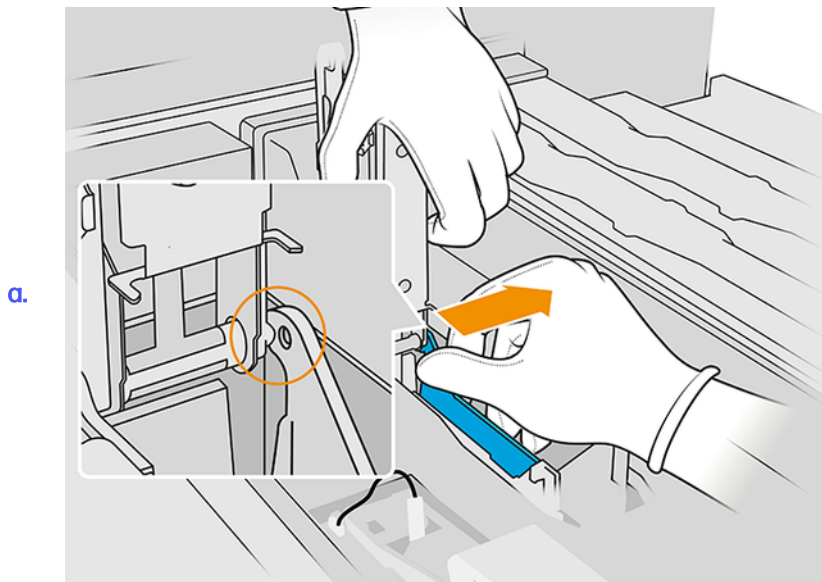
b.



2. Open the printhead latch.



3. Remove the old latch and dispose of it according to local regulations.





4. Connect the new latch primer cable.
5. Install the new latch with the primer.
6. Check that the new latch can move freely through the whole stroke.
7. Close the new latch.

Finish the replacement

The following steps provide the complete procedure for this topic.

1. Close the print-carriage cover.
2. Close the top cover.
3. Ensure that all windows, covers, and doors are closed and remain in their original positions.
4. Turn on the printer.

5. At the front panel, tap the **Settings** icon , then **Utilities > System tools > System checks > Primer check**, to test the primer functionality.
6. Tap tap the **Settings** icon , then **Utilities > Maintenance > Replace parts > Printer reset counter > Reset printhead primer counter**, to reset the usage of the replaced primer to zero.


Replace a service-station cap module

The following sections provide details for this topic.



Prepare for replacement

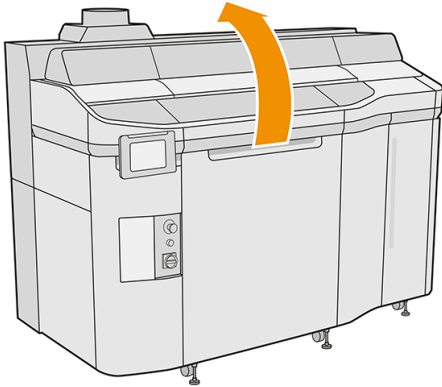
1. Ensure that you have the service station caps kit.
2. Ensure that the printer is not printing.
3. Turn off the printer.
4. If a job has just been printed, wait about 20 minutes for the printer to cool down.
5. You are recommended to wear gloves and goggles.
6. Ensure that all windows, covers, and doors are closed and remain in their original positions.
7. Move the print carriage manually to the left to access the capping station.

 **CAUTION:** When moving the print carriage manually, do it slowly, and be careful not to crash it into any other component or the sides of the printer.

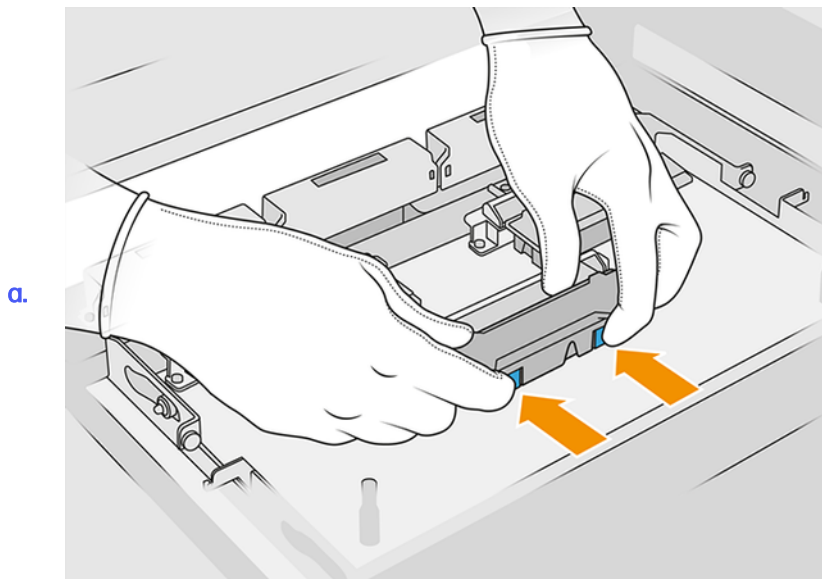
Replace a service-station cap module

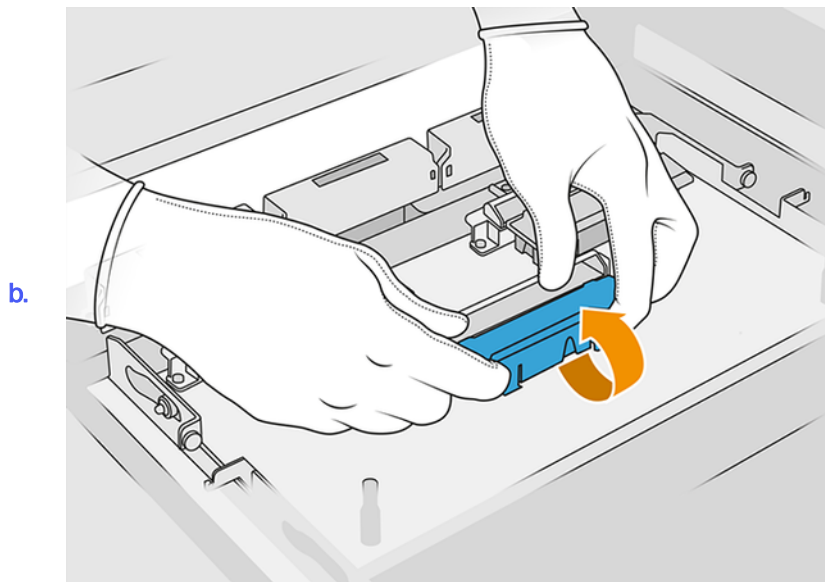
The following steps provide the complete procedure for this topic.

1. Open the top cover to access the capping station.



2. Remove the service-station cap, by pushing both snaps at the same time and rotating the cap about the y axis. Dispose of the old cap according to local regulations.






3. Place the new cap.

Finish the replacement

The following steps provide the complete procedure for this topic.

1. Close the top cover.
2. Ensure that all windows, covers, and doors are closed and remain in their original positions.
3. At the front panel, tap the **Settings** icon , then **Utilities** > **Maintenance** > **Replace parts** > **Printer reset counter** > **Service-station cap replacement**.

Rubber-blade height adjustment

Purpose of the adjustment

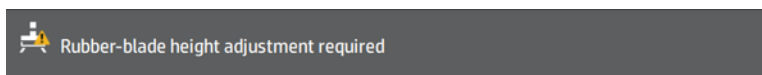
The printhead cleaning roll's rubber-blade height adjustment is intended to adjust the distance between the rubber blade and the printheads to its correct value. Too large a distance causes defective cleaning and lower printhead life, while too small a distance causes mechanical problems and excessive rubber-blade wear.

When to perform the adjustment

This topic explains the concepts involved in this subject.


During the course of time, the rubber blade gradually wears down, increasing the distance to the printheads. The printer monitors the situation, and shows an alert in the following cases:

- **Rubber blade mid-life:** The rubber blade is worn but still usable. Perform the height adjustment to maintain correct operation.



- **Rubber blade end of life:** The rubber blade should be replaced by a new one. See [Replace the printhead cleaning roll's rubber blade on page 215](#).

The height of the new blade will need adjusting, so you should also perform the height adjustment in this case.



HP Maintenance Kit Rubber-blade for HP Jet Fusion 3D 5210 Printer required
HP Maintenance Kit Rubber-blade required. Contact your support representative.

Adjustment procedure

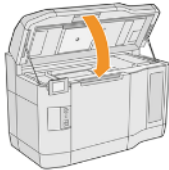
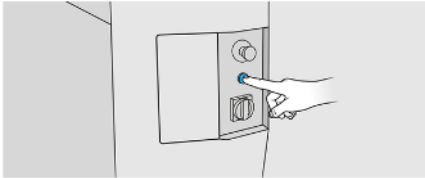
The following steps provide the complete procedure for this topic.

1.
- At the front panel, tap the **Settings** icon , then **Utilities > System tools > Calibrations > Rubber-blade height adjustment**.

| Settings | | |
|------------------------------|------|----------------------------------|
| Job management | < | Calibrations |
| Connectivity | Cali | Drop detector calibration ↗ |
| Security | Dro | Rubber-blade height adjustment ↗ |
| Maintenance | Prin | Fusing-lamp calibration ↗ |
| Part quality troubleshooting | Oth | Vane length calibration ↗ |
| System tools | Har | |
| Service menu | | |

2.
- Close the top cover and rearm the printer if necessary.

Table 11-19 Close the top cover and rearm the printer

| Close the top cover | Rearm the printer |
|--|---|
| <div><div>✖ Top cover open</div><div></div><div>Close top cover</div></div> | <div><div>✖ Printer not rearmed</div><div></div><div>Press rearm button to continue</div></div> |

3. When you see the question, **Do you want to perform the wiper height and tilt adjustment?**, tap **OK**.

RUBBER-BLADE HEIGHT ADJUSTMENT

Confirm that the printer is fully initialized
Do you want to perform the wiper height and tilt adjustment?

Tap OK for yes or Cancel for no

UP

DOWN

OK

BACK

CANCEL

4. The printer prints a pattern on the cleaning roll. This pattern is coarse, but it gives a rough idea of the rubber-blade height. When prompted, open the cover to evaluate the pattern.

RUBBER-BLADE HEIGHT ADJUSTMENT

Printing coarse pattern. Please wait...

UP

DOWN

OK

BACK

CANCEL

RUBBER-BLADE HEIGHT ADJUSTMENT

Printing coarse pattern. Please wait...
Open top cover to evaluate wiper height coarse selection

UP

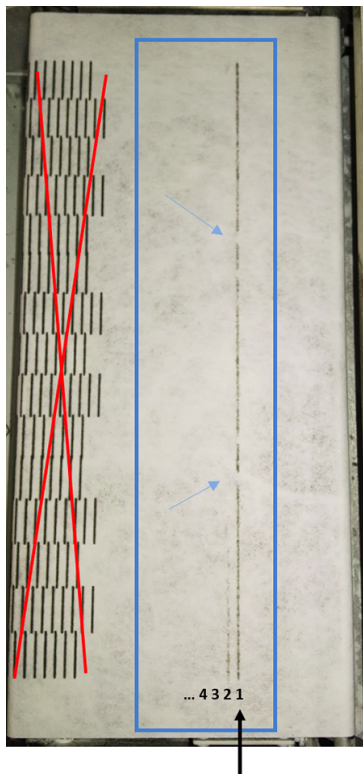
DOWN

OK

BACK

CANCEL

5. Look at the lines at the right side of the pattern (blue box) and, from right to left, count the number of **complete lines**, which may range from 0 to 9. In the example below, the number is 1.



NOTICE: A line is complete if it extends across the width of the roll. Such a line should be counted even if it contains short breaks, as indicated above by blue arrows.

6. Use the **UP** and **DOWN** keys on the front panel to enter the number of complete lines, and tap **OK** to continue.

RUBBER-BLADE HEIGHT ADJUSTMENT

Printing coarse pattern. Please wait...

Open top cover to evaluate wiper height coarse selection

Count and select the number of visible and complete black lines.

Tap UP (increase) or DOWN (decrease), or OK to continue.

Coarse selected value: 1

UP

DOWN

OK

BACK

CANCEL

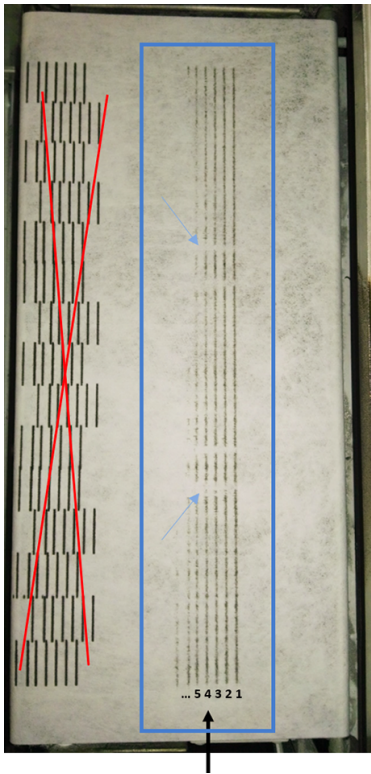
7. The printer prints a second pattern on the cleaning roll. This pattern is finer, designed to fine-tune the adjustment. When prompted, open the cover to evaluate the pattern.

The image displays two sequential screenshots of a printer's adjustment menu titled "RUBBER-BLADE HEIGHT ADJUSTMENT".


The top screenshot shows the screen during the initial adjustment phase. The text "Printing fine pattern. Please wait..." is displayed on the left. On the right, there are five blue buttons stacked vertically: "UP", "DOWN", "OK", "BACK", and "CANCEL".

The bottom screenshot shows the screen after the initial adjustment. The text "Printing fine pattern. Please wait..." is still present, but an additional instruction, "Open top cover to evaluate wiper height fine selection", is now displayed below it. The same five buttons ("UP", "DOWN", "OK", "BACK", "CANCEL") are still present on the right side of the screen.

8. Once again, look at the lines at the right side of the pattern (blue box) and, from right to left, count the number of complete lines, which may range from 0 to 7. In the example below, the number is 4.



NOTICE: A line is complete if it extends across the width of the roll. Such a line should be counted even if it contains short breaks, as indicated above by blue arrows.

 **IMPORTANT:** If you see no complete lines in this fine-tuning adjustment, so that you have to enter the number 0 (zero), the adjustment will fail. In this case, contact your support representative.

9. Use the **UP** and **DOWN** keys on the front panel to enter the number of complete lines, and tap **OK** to continue.

RUBBER-BLADE HEIGHT ADJUSTMENT

Printing fine pattern. Please wait...
Open top cover to evaluate wiper height fine selection
Count and select AGAIN the number of visible and complete black lines.
Tap UP (increase) or DOWN (decrease), or OK to continue.
Fine selected value: 1
Fine selected value: 2
Fine selected value: 3
Fine selected value: 4

UP
DOWN
OK
BACK
CANCEL

10. On reaching the final screen, tap **OK** to complete the adjustment procedure.

RUBBER-BLADE HEIGHT ADJUSTMENT

Diagnostic result: OK

Tap OK to continue

UP
DOWN
OK
BACK
CANCEL

Replace the printhead cleaning roll's rubber blade



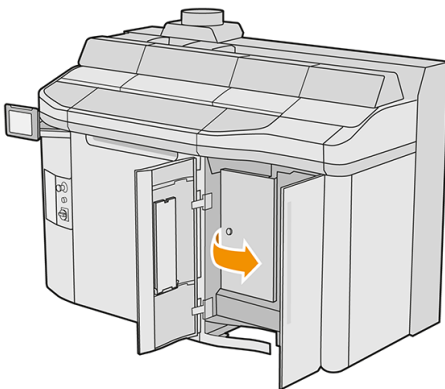
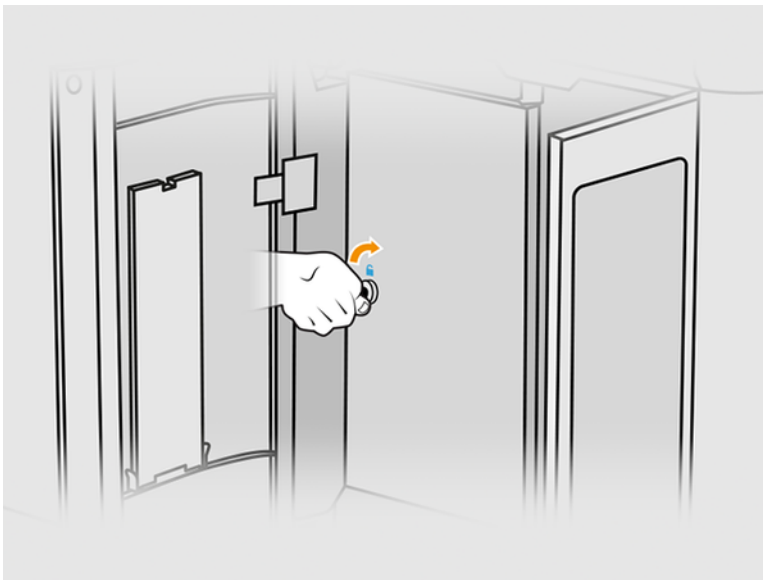
Prepare for replacement

1. Ensure that you have the printhead cleaning roll rubber blade kit, which is included in the printer initial maintenance kit, but can also be purchased separately.
2. Ensure that the printer is not printing.
3. Turn off the printer.
4. If a job has just been printed, wait about 20 minutes for the printer to cool down.
5. You are required to wear gloves and goggles.



NOTE: Use the original screws installed in the device and discard the longer screws provided with the kit 8VJ64A.

6. Open the agent door and the external cleaning-roll door.

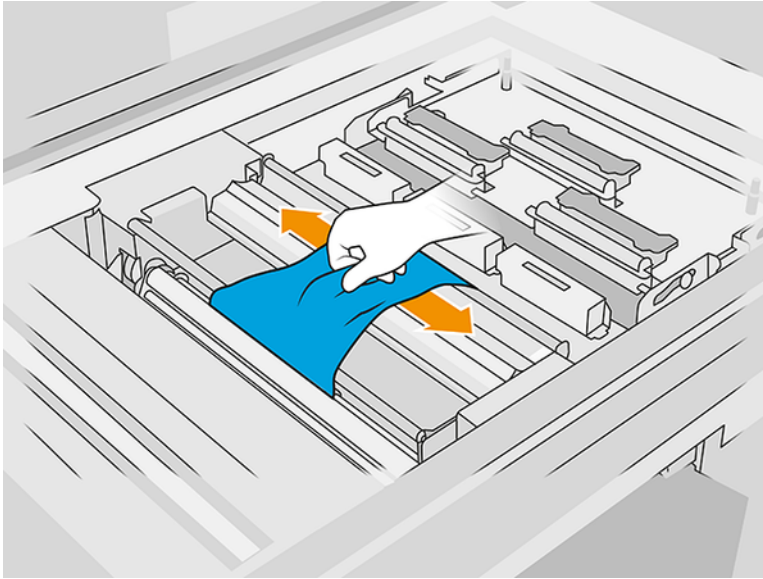


7. Open the top cover.

8. Pull the black knob at the top left and move the pinch system aside.



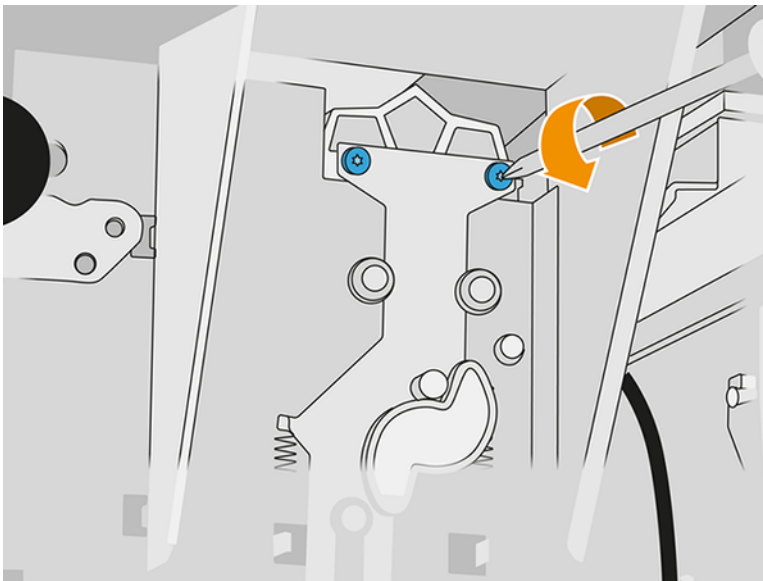
9. Move the printhead cleaning material aside to uncover the rubber blade.



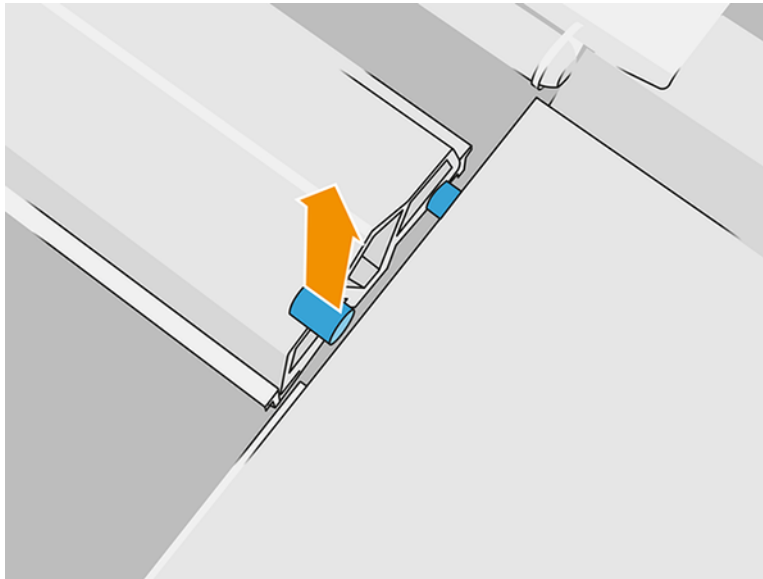
Replace the rubber blade

The following steps provide the complete procedure for this topic.

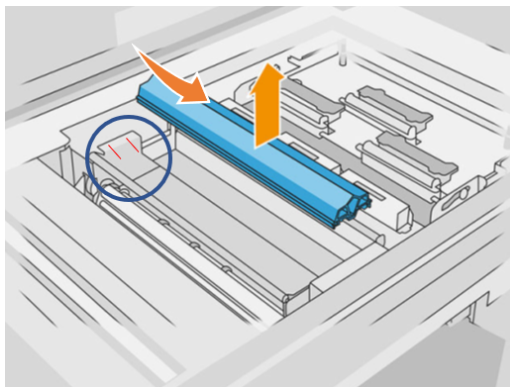
1. Use a Torx 15 screwdriver to remove two screws. While you unscrew them, you must hold the two spacers on the inside (otherwise, they will fall and might get lost).



2. Remove the two spacers. Be careful not to lose them!




3. Pull out the old rubber blade from the two pins at the back, then remove and dispose of it according to local regulations.



4. Insert the new rubber blade, carefully aligning the two pins at the back.
5. At the front, reinsert and tighten each screw with one hand, while holding the spacer on the other side with the other hand.

Finish the replacement

1. Push the printhead cleaning material back into place, and close the pinch system (using the black plastic knob).
2. Close the printhead cleaning roll door and agent door.
3. Turn on the printer.
4. At the front panel, tap the **Settings** icon , then **Utilities > Maintenance > Replace parts > Printer reset counter > Reset rubber-blade counter**.

5. Tap the **Settings** icon , then **System tools > Calibrations > Rubber-blade height adjustment**.

See [Rubber-blade height adjustment on page 209](#) for more details.


Replace a service-station drop-detector module

The following sections provide details for this topic.

Prepare for replacement

The following steps provide the complete procedure for this topic.

1. Ensure that you have the service-station drop-detectors kit.
2. Ensure that the printer is not printing.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear gloves and goggles.
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Move the print carriage manually to the left to access the capping station.







 **CAUTION:** When moving the print carriage manually, do it slowly, and be careful not to crash it into any other component or the sides of the printer.

7. Turn off the printer.

Replace a service-station drop-detector module

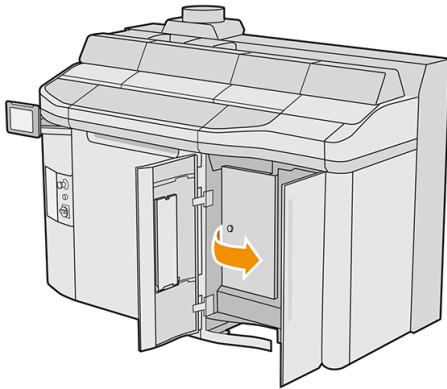
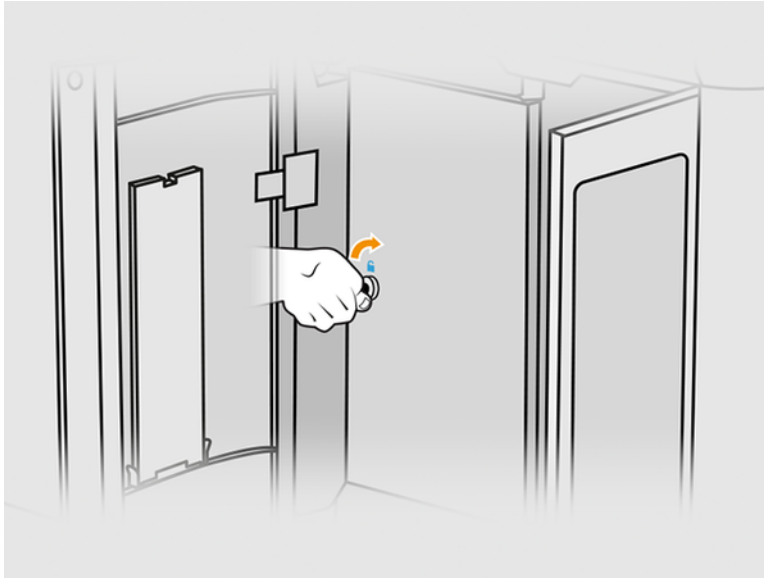
The following steps provide the complete procedure for this topic.

Table 11-20 Warning labels

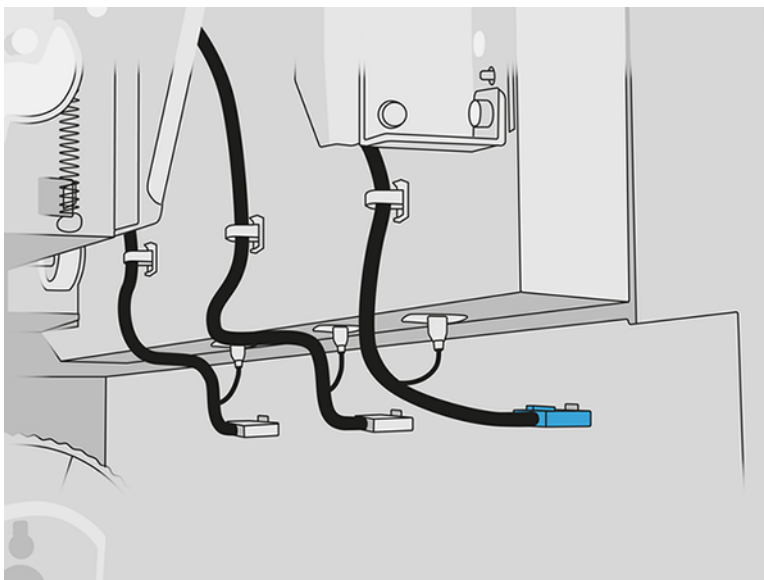
| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |

For more safety information, see [Safety precautions on page 4](#)

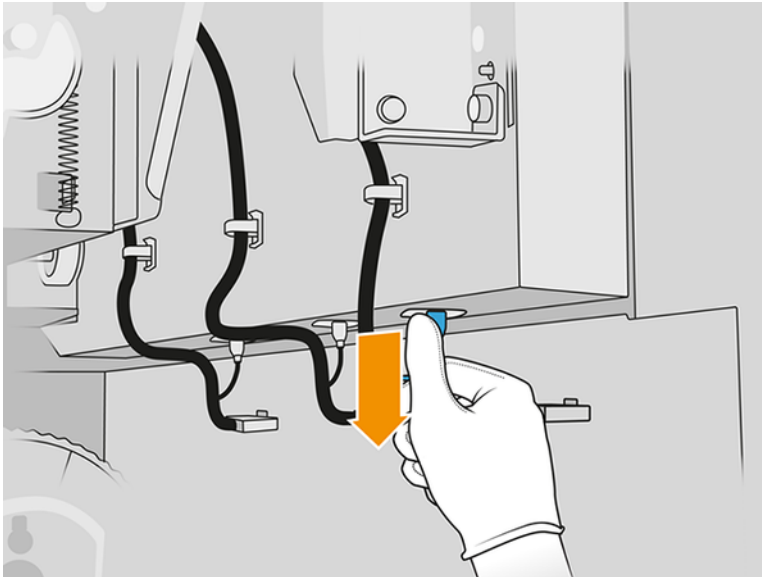
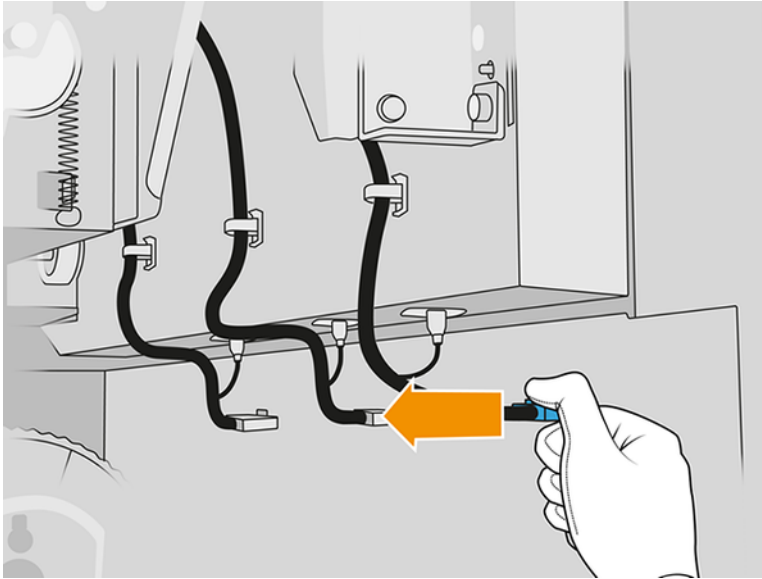
1. Open the agent door and the external cleaning-roll door.



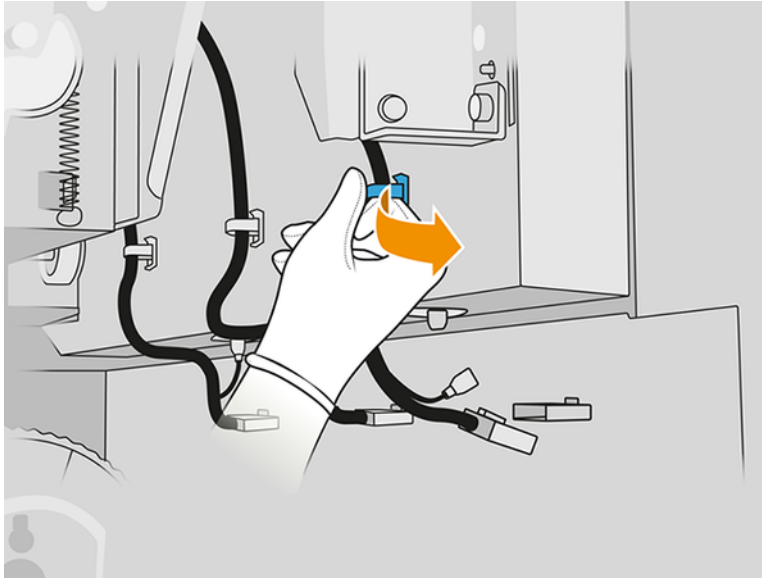
2. Locate the drop-detector cable to be replaced.



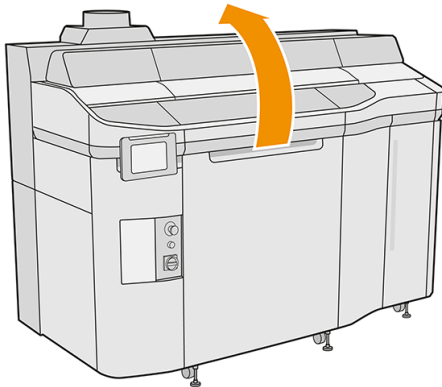
3. Disconnect the drop-detector cable from both connectors.



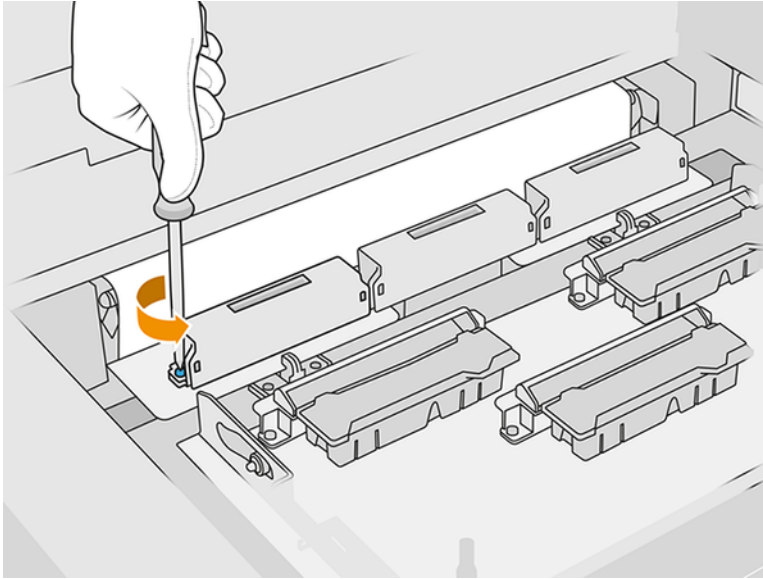
4. Remove the cable from its holder.



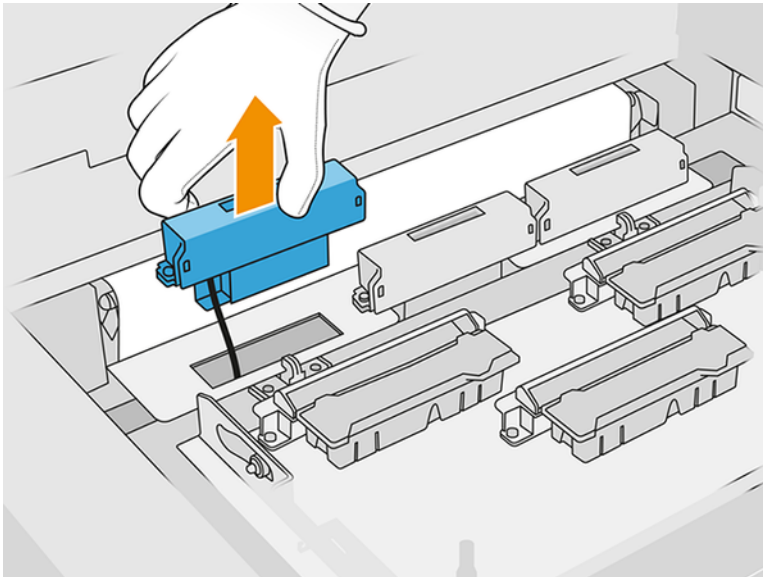
5. Open the top cover to access the drop-detection station.




6. Use a Torx screwdriver to remove the screw.



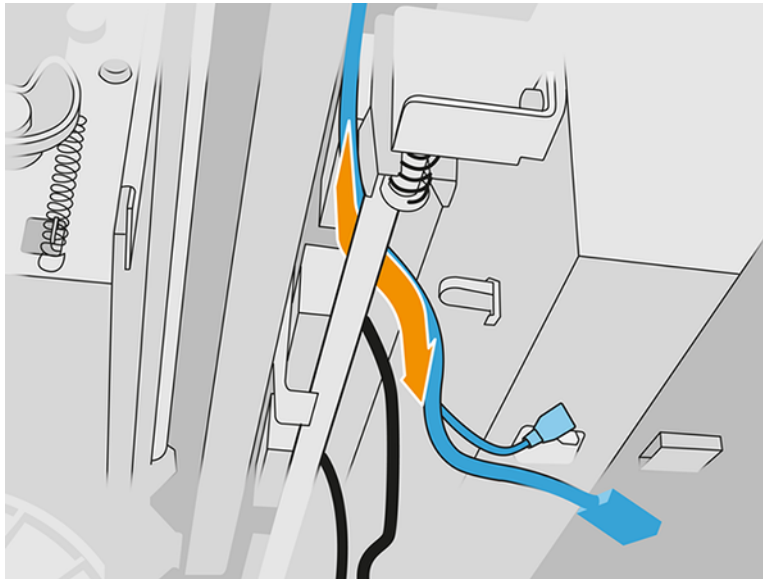
7. Rotate and remove the old drop detector, and dispose of it according to local regulations.



8. Perform the same operations in reverse to install the new drop detector.

 **CAUTION:** Be careful to place the new drop detector on the right side of the belt.




9. Route the cable through its holder.



10. Connect the new drop-detector cable to its connectors.

Finish the replacement

The following steps provide the complete procedure for this topic.

1. Close the top cover.
2. Close the printhead cleaning roll door and agent door.
3. Ensure that all windows, covers, and doors are closed and remain in their original positions.
4. Turn on the printer.
5. At the front panel, tap the **Settings** icon , then **System tools** > **Printer reset counter** > **Drop detector replacement**.
6. Tap the **Settings** icon , then **System tools** > **Calibrations** > **Drop detector calibration**.
7. Tap the **Settings** icon , then **System tools** > **Drop detector utilities** > **Drop detector test**.

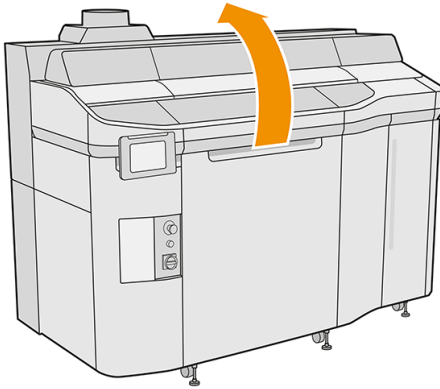
Replace the recoating roller and recoating plates

The following sections provide details for this topic.

Prepare for replacement

1. Ensure that the printer is not printing.
2. Turn off the printer.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.

4. You are recommended to wear gloves.
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Open the top cover.




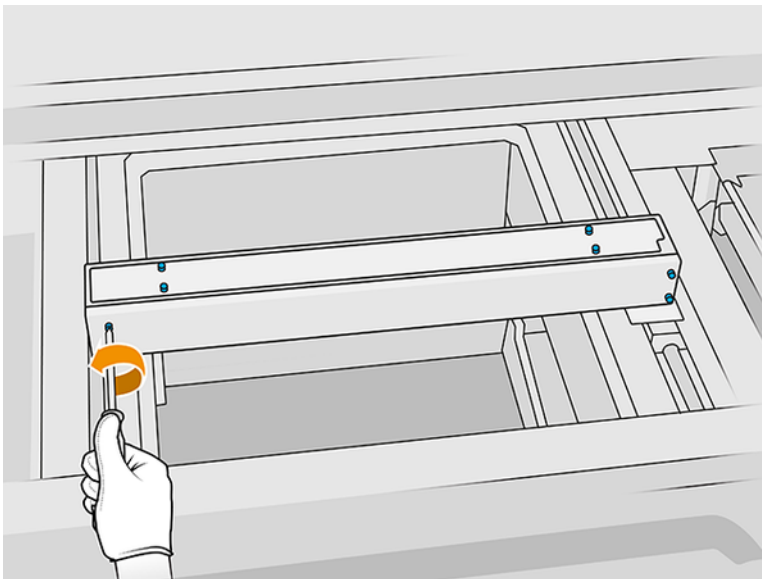
7. Remove the build unit from the printer, if it is present.
8. Move the recoating unit manually to the front, slowly and carefully.

Replace the recoating roller and recoating plates

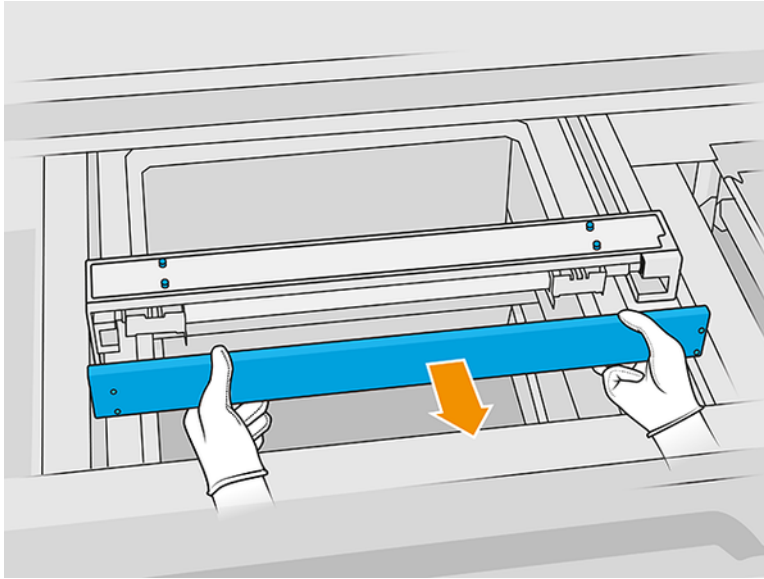
The following steps provide the complete procedure for this topic.

1. Locate the recoating unit and use a flat screwdriver to remove four T15 screws.

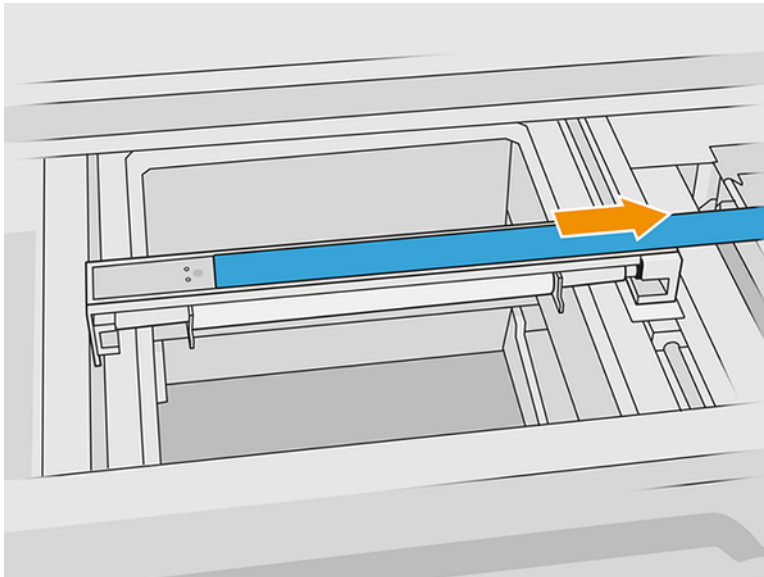
 **CAUTION:** Be careful not to drop the screws.



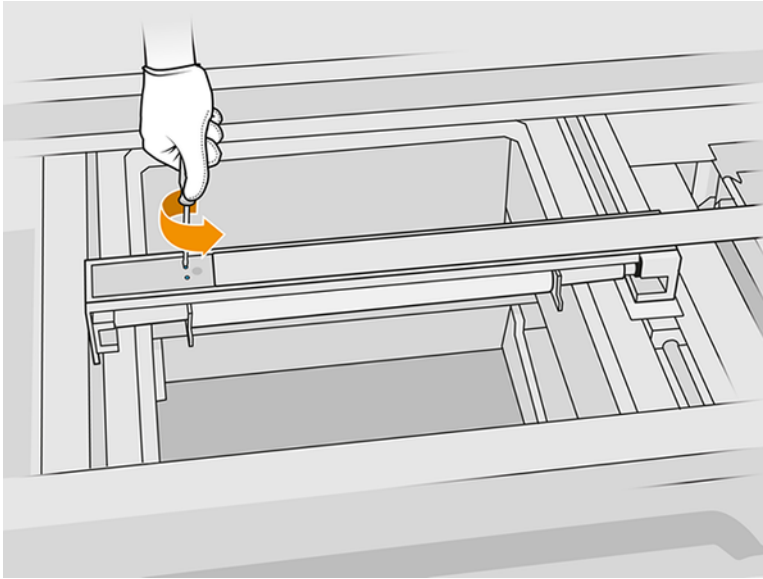
2. Remove the front lid.



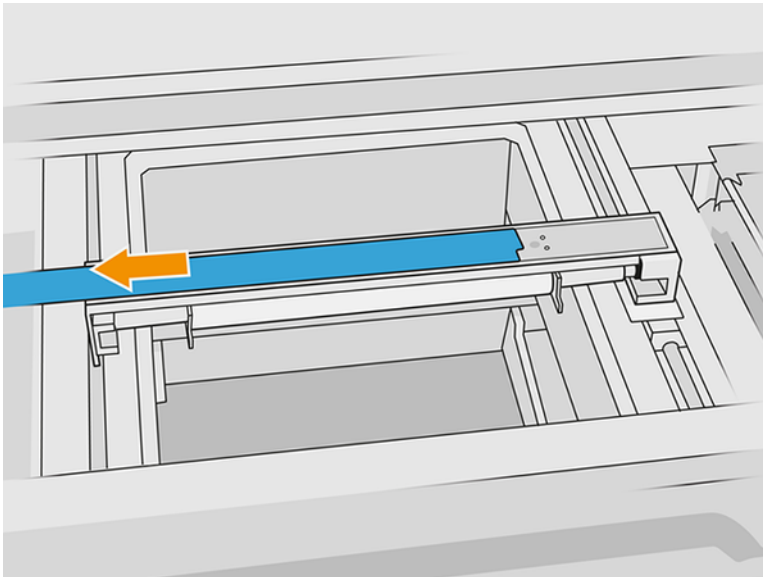
3. Slide the top sheet to one side until you can see the holes; do not remove it completely.

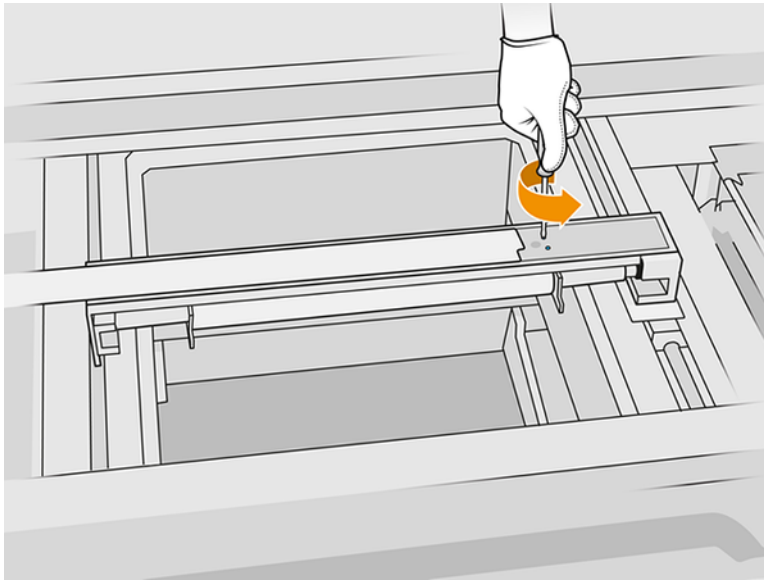


4. Remove two T10 screws from the reflecting plate.

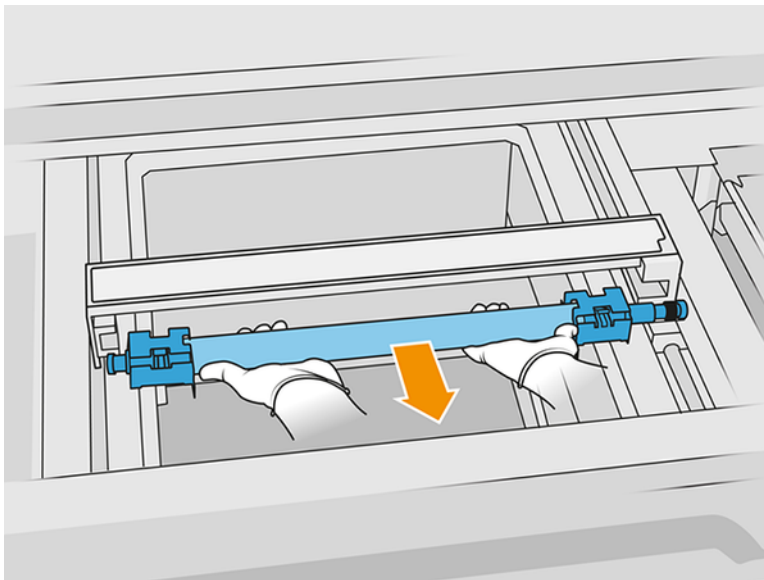


5. Repeat steps 3 and 4 on the other side.





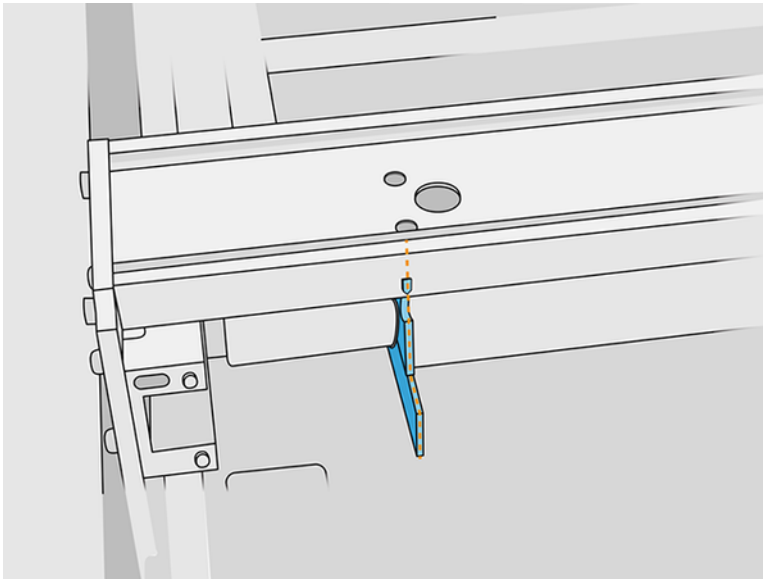
6. Remove the roller by pulling it towards you, and place it gently on a table or flat surface.




7. Insert the new recoating plates.
8. Carefully insert the new recoating roller by placing it and pushing it to the end.

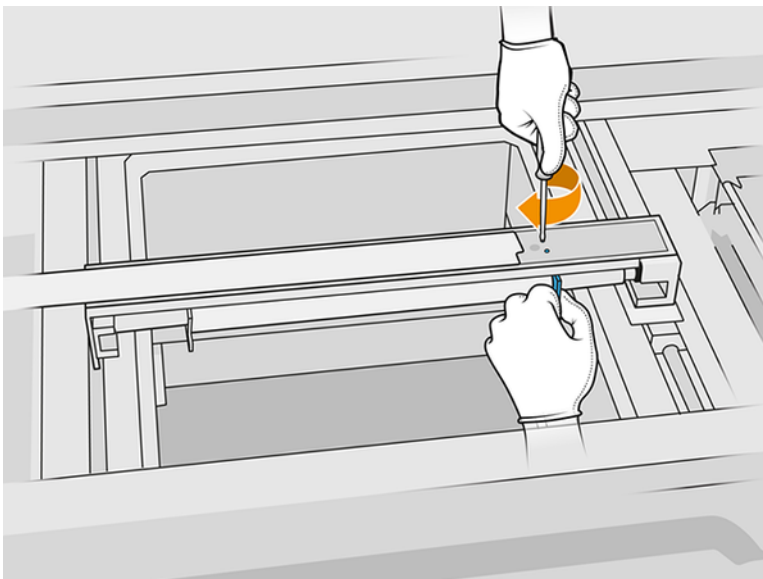
NOTICE: The gears should be on the right when placing the roller.

9. Align the plates with the line as shown below.




10. Secure the recoating roller with the top four screws.

 **TIP:** Hold the plate up while tightening the top screws.



11. Put back the front lid of the recoating unit, but do not insert the screws yet.
12. Slightly rotate the recoating unit in both directions with your hand, ensuring that the roller gears are correctly engaged.

 **CAUTION:** Some parts may be damaged if the gears are not correctly engaged when the lid is closed.

13. Attach the lid with the four T15 screws.

Finish the replacement

The following steps provide the complete procedure for this topic.

1. Close the top cover.
2. Ensure that all windows, covers, and doors are closed and remain in their original positions.

Replace the bottom glass of the heating lamps

The following sections provide details for this topic.

Prepare for replacement

1. Ensure that the printer is not printing.
2. Turn off the printer.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear gloves.
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.

Remove the bottom glass of the heating lamps

The following steps provide the complete procedure for this topic.

- See [Remove the bottom glass of the heating lamps on page 173](#).

Finish the replacement

The following steps provide the complete procedure for this topic.

1. Close the top cover.
2. Ensure that all windows, covers, and doors are closed and remain in their original positions.

Replace a fusing-lamp external glass

The following sections provide details for this topic.

Prepare for replacement

The following steps provide the complete procedure for this topic.

1. Ensure that you have the fusing lamp glass kit.
2. Ensure that the printer is not printing.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear gloves and mask.
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Turn off the printer.

Remove the fusing-lamp module

The following steps provide the complete procedure for this topic.

Table 11-21 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

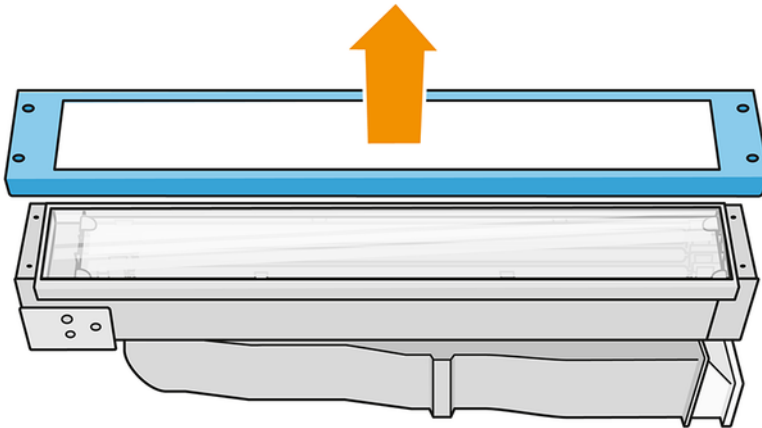
- See [Remove the fusing-lamp module on page 119](#).

Replace the fusing-lamp external glass

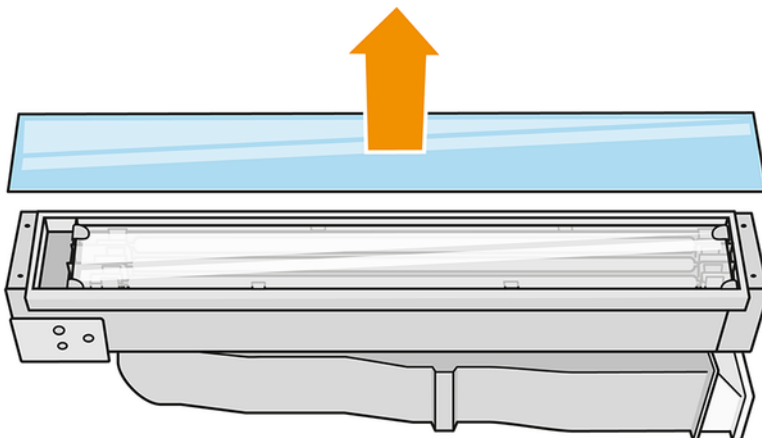
The following steps provide the complete procedure for this topic.

1. Turn the assembly upside down and unscrew the four screws of the exterior glass frame.
2. Carefully remove the frame of the exterior glass.

⚠ CAUTION: When you remove the frame, the glass may stick to it. Take care that the glass does not fall out of the frame as you pick it up.



3. Remove the exterior glass and dispose of it according to local regulations.



4. Insert the new glass into the frame.
5. Add the bottom glass and then the frame, securing it with four screws.

Reassemble the fusing-lamp module

The following steps provide the complete procedure for this topic.

- See [Reassemble the fusing-lamp module on page 124](#).

Finish the replacement

The following steps provide the complete procedure for this topic.

1. Close the top cover.
2. Ensure that all windows, covers, and doors are closed and remain in their original positions.
3. Turn on the printer.

Replace a fusing-lamp internal glass

Prepare for replacement


The following steps provide the complete procedure for this topic.

1. Ensure that you have the fusing lamp glass kit.
2. Ensure that the printer is not printing.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear gloves and mask.
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.
6. Turn off the printer.

Remove the fusing-lamp module

The following steps provide the complete procedure for this topic.

Table 11-22 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

- See [Remove the fusing-lamp module on page 119](#).

Replace the fusing lamp

The following steps provide the complete procedure for this topic.

Safety precautions for the fusing-lamp emitter

- Disregard of the safety precautions or improper operation of the infrared emitter can lead to injuries and material damage.
- The IR heating device should be operated only by specialists or trained personnel.
The operator of the system should compile specific instructions for personnel training.
- The safety and functional reliability of the IR heating device are guaranteed only if you are using original accessories and spare parts from HP.
- After an emitter break, a dangerous voltage may be exposed to contact by the heating spiral.
- The reflector side should not be cleaned.

Transport and handling of the fusing-lamp emitter

- Transport the IR emitter, in the packaging provided, to the place of installation.

⚠ CAUTION: If the IR emitter must be transported without its packaging, wear linen gloves. Fingerprints on the quartz tube will cause devitrification, which leads to radiation losses and mechanical failure.

- Always carry the emitter with both hands. Carry it so that the cross-section faces up, to avoid bending and breaking.
- Grip the emitter only by the ceramic edges, and not by the pinches. Do not touch the glass unless you are wearing gloves.
- Avoid any pressure on the flat base.

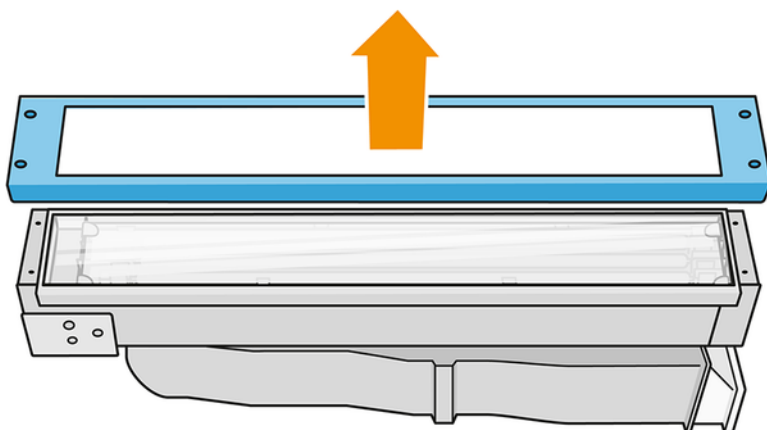
When installing IR emitters

- HP recommends that you wear protective goggles when installing or replacing emitters, to protect yourself from broken glass that you may come into contact with.
- The safety and functional reliability of the IR heating device are guaranteed only when using original accessories and spare parts from HP.
- After an emitter break, a dangerous voltage may be exposed to contact by the heating spiral.
- The reflector side should not be cleaned.

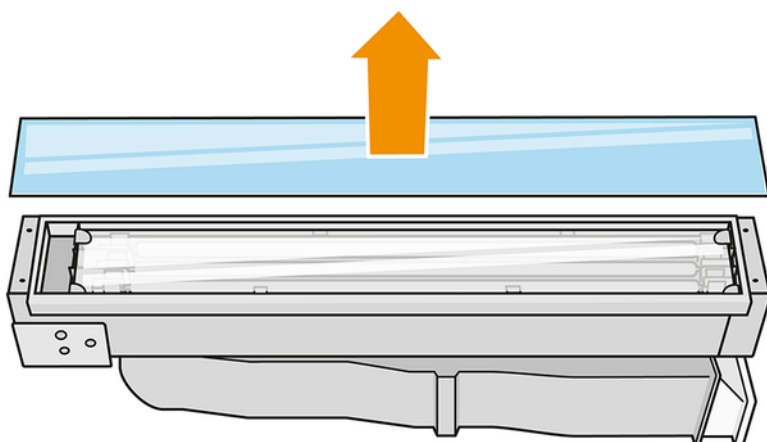
After installation, the bottom glasses of the IR emitter must be cleaned of any soiling or perspiration. See [Clean the fusing-lamp glasses on page 162](#).

1. Turn the assembly upside down and unscrew the four screws of the exterior glass frame.
2. Carefully remove the frame of the exterior glass.

⚠ CAUTION: When you remove the frame, the glass may stick to it. Take care that the glass does not fall out of the frame as you pick it up.

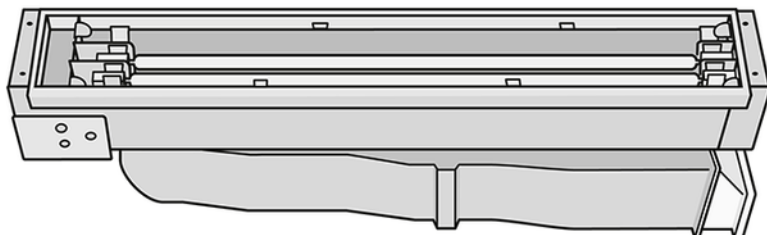


3. Remove the exterior glass.



4. Pull the metallic clip and remove the internal glass.

5. Remove the lamp, by pulling it upwards.



6. Insert the new lamp.

7. Insert the new internal glass into the two rear brackets, and pull the metallic clip to insert the other side.
8. Add the frame with the bottom glass, securing it with four screws.

Reassemble the fusing-lamp module

The following steps provide the complete procedure for this topic.

- See [Reassemble the fusing-lamp module on page 124](#).

Finish the replacement

The following steps provide the complete procedure for this topic.

1. Clean the fusing-lamp glasses. See [Clean the fusing-lamp glasses on page 162](#).
2. Close the top cover.
3. Ensure that all windows, covers, and doors are closed and remain in their original positions.
4. Turn on the printer.

Replace a heating lamp

The following sections provide details for this topic.

At the printer's front panel, tap the **Maintenance** icon , then **Heating lamps** to see the status of each lamp:

- **Missing:** The lamp is missing.
- **Replace:** The lamp has been identified as faulty. It should be replaced by a functional lamp.
- **Wrong:** The lamp type is not suitable for this printer.
- **Not in warranty:** The lamp is no longer covered by warranty.



Prepare for replacement

The following steps provide the complete procedure for this topic.

1. Ensure that you have the heating lamps kit, which is included in the printer initial maintenance kit, but can also be purchased separately.
2. Ensure that the printer is not printing.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear goggles and cotton gloves.
5. If present, remove the build unit.




IMPORTANT: The heating lamps located at zones with 2 lamps (A and B), MUST be replaced simultaneously. This means that if, for example, lamp 1A is fused and has to be replaced, lamp 1B has to be replaced at the same time as well, before resetting the counter.

6. At the printer's front panel, tap the **Maintenance** icon , then **Heating lamps** to see the status of each lamp. Any lamp identified as faulty should be replaced by a functional lamp: tap the **Settings** icon , then **Utilities > Maintenance > Replace parts > Replace heating/fusing lamps**. The lamps are numbered; remember the numbers of any lamps to be replaced.
7. Ensure that all windows, covers, and doors are closed and remain in their original positions.
8. Turn off the printer.

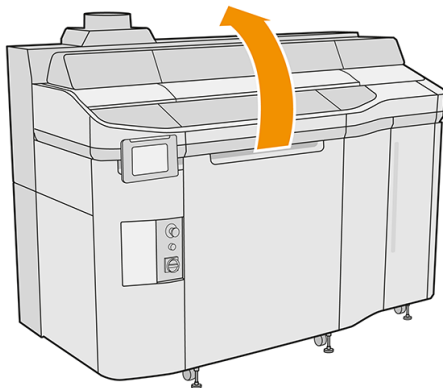
Remove a heating lamp

The following steps provide the complete procedure for this topic.

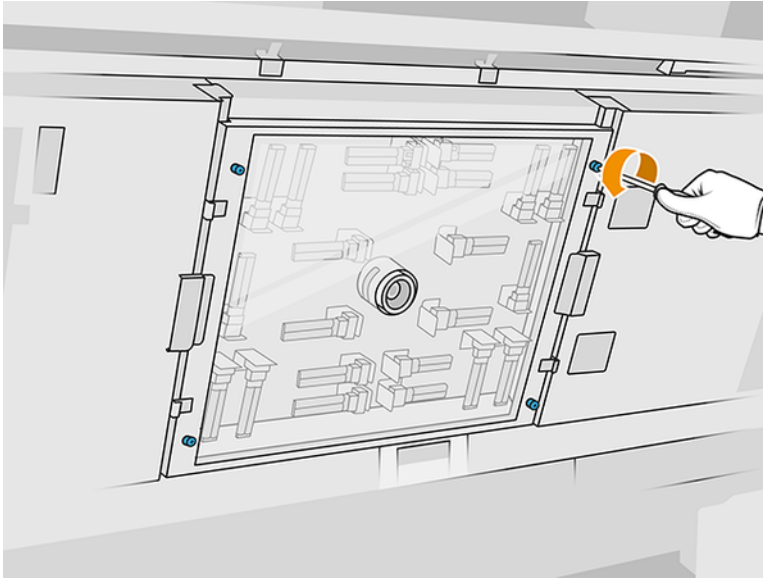
Table 11-23 Warning labels

| Risk of burns | Crush hazard | Risk of trapped fingers | Hazardous moving part | Light radiation hazard | Electric shock hazard |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| For more safety information, see Safety precautions on page 4 | | | | | |

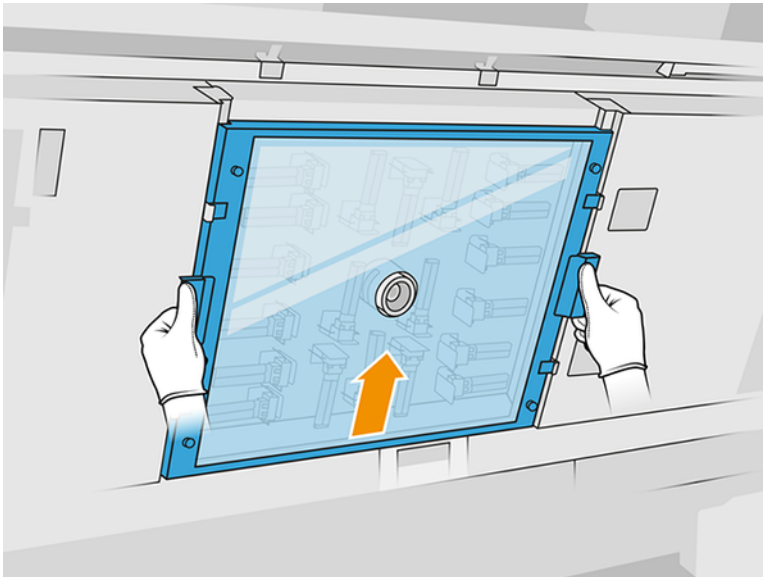
1. Open the top cover.



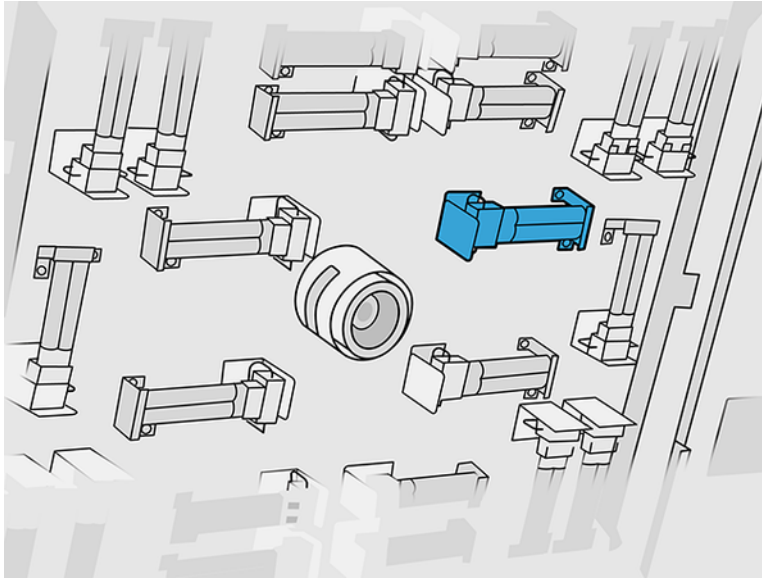
2. Unscrew four captive screws to remove the heating-lamp bottom glass.



3. Pull the bottom glass out of the top cover and place it gently on a table.

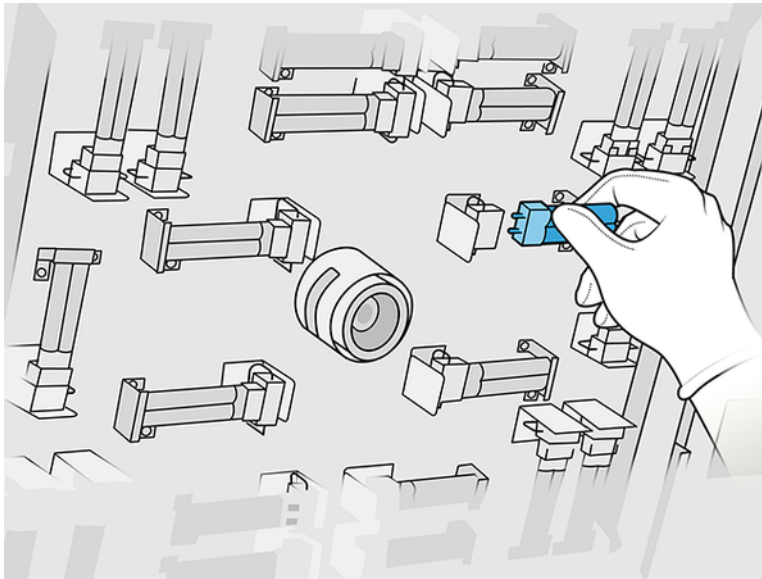


4. Identify which lamp you intend to replace.



5. Remove the two screws.
6. Remove the old lamp by sliding it out to disconnect it from its connector, then dispose of it according to local regulations.

CAUTION: It is important not to touch the lamps with your fingers. Always wear cotton gloves to handle the lamps.



Insert a new heating lamp


The following steps provide the complete procedure for this topic.

Safety precautions for the heating-lamp emitter

- Disregard of the safety precautions or improper operation of the infrared emitter can lead to injuries and material damage.
- The IR heating device should be operated only by specialists or trained personnel.
The operator of the system should compile specific instructions for personnel training.
- The safety and functional reliability of the IR heating device are guaranteed only if you are using original accessories and spare parts from HP.
- After an emitter break, a dangerous voltage may be exposed to contact by the heating spiral.
- The reflector side should not be cleaned.

Transport and handling of the heating-lamp emitter

- Transport the IR emitter, in the packaging provided, to the place of installation.

 **CAUTION:** If the IR emitter must be transported without its packaging, wear linen gloves. Fingerprints on the quartz tube will cause devitrification, which leads to radiation losses and mechanical failure.

- Always carry the emitter with great care, avoiding any impact or shaking. Carry it so that the cross-section faces up, to avoid bending and breaking.
- Grip the emitter only by the sides of the ceramic connector.
- Avoid any pressure on the flat base.


When installing IR emitters

- HP recommends that you wear protective goggles when installing or replacing emitters, to protect yourself from broken glass that you may come into contact with.
 - The safety and functional reliability of the IR heating device are guaranteed only when using original accessories and spare parts from HP.
 - After an emitter break, a dangerous voltage may be exposed to contact by the heating spiral.
 - The reflector side should not be cleaned.
1. Insert the new heating lamp in the correct position.
 2. Put back and tighten the two screws.
 3. Put the bottom glass back in place and tighten the four captive screws.
 4. Close the top cover.

Finish the replacement

The following steps provide the complete procedure for this topic.

1. Ensure that all windows, covers, and doors are closed and remain in their original positions.

2. At the front panel, tap the **Settings** icon , then **Utilities > Maintenance > Replace parts > Heating lamps replacement**.
3. Next time you switch on the printer, you can check the heating lamp status in the front panel's Supplies app.

Replace an intermediate tank


The following sections provide details for this topic.

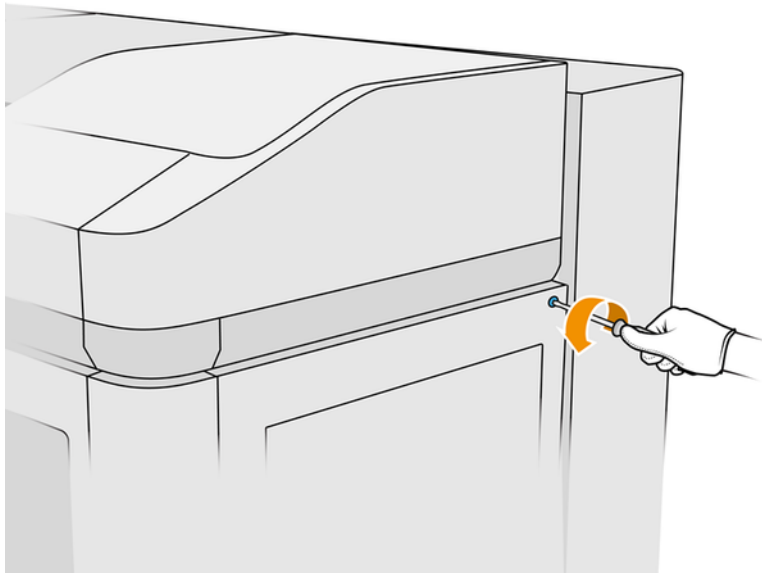
Prepare for replacement

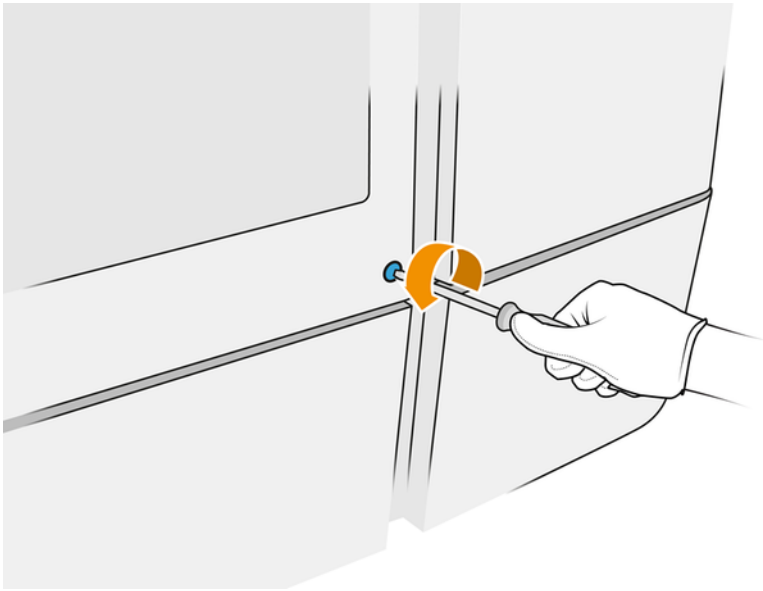
1. Ensure that the printer is not printing.
2. Turn off the printer.
3. If a job has just been printed, wait about 20 minutes for the printer to cool down.
4. You are recommended to wear gloves.
5. Ensure that all windows, covers, and doors are closed and remain in their original positions.

Replace an intermediate tank

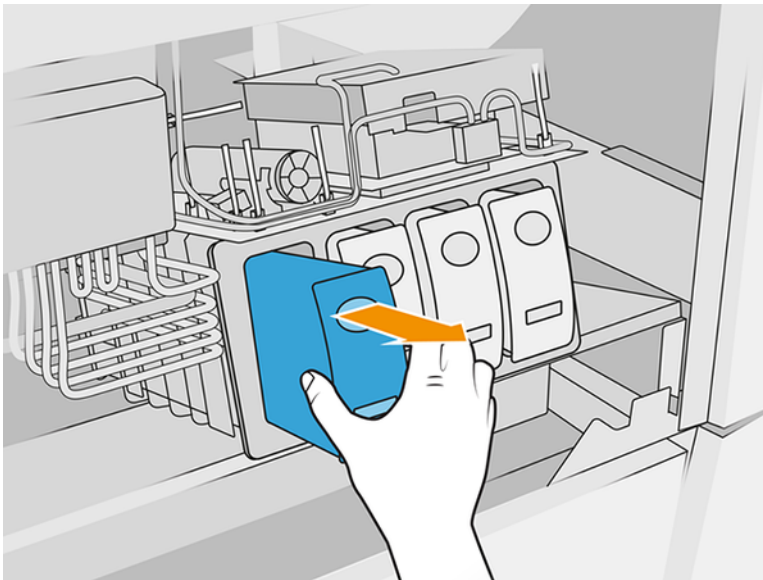
The following steps provide the complete procedure for this topic.

1. At the front panel, tap the **Settings** icon , then **System tools > Printer reset counter > Intermediate tank replacement**.
2. Remove two screws from the side cover, then remove the cover.





3. Follow strictly the instructions on the front panel. First you will need to remove the F1 or D1 tank and replace it by a new one. After a while, the front panel will tell you to do the same with the F2 or D2 tank. If necessary, repeat the process with the other pair.



NOTICE: Intermediate tanks must be changed in pairs (F1+F2 and D1+D2).

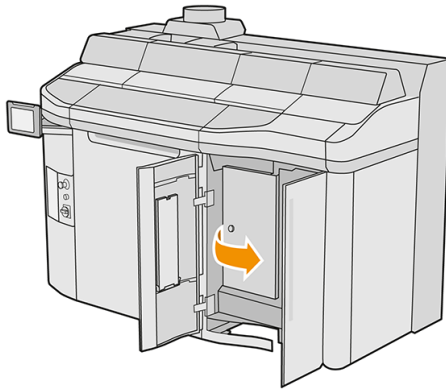
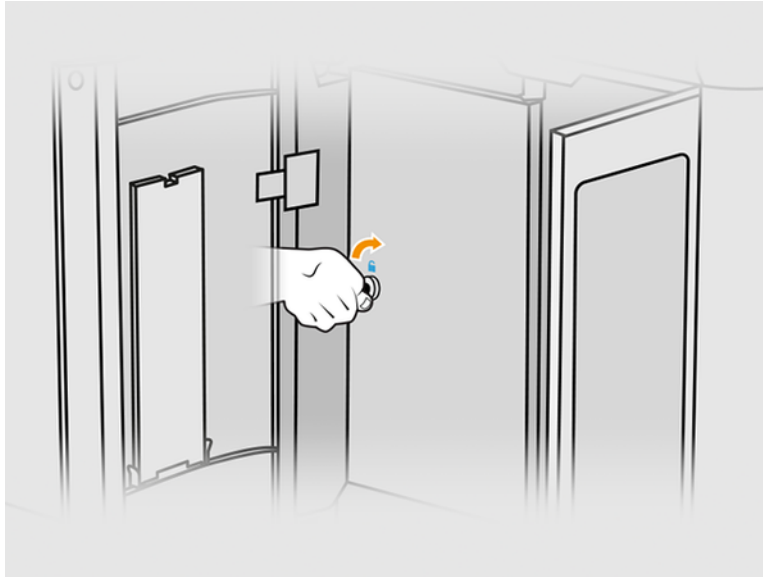
4. Identify the intermediate tanks you have just installed by attaching the appropriate stickers, which are provided.
5. Put back the side cover and the screws.
6. At the front panel, confirm that tanks have been replaced, so that the refilling process can start. This may take some time.

Replace the cleaning-roll collector

The following sections provide details for this topic.

Prepare for replacement

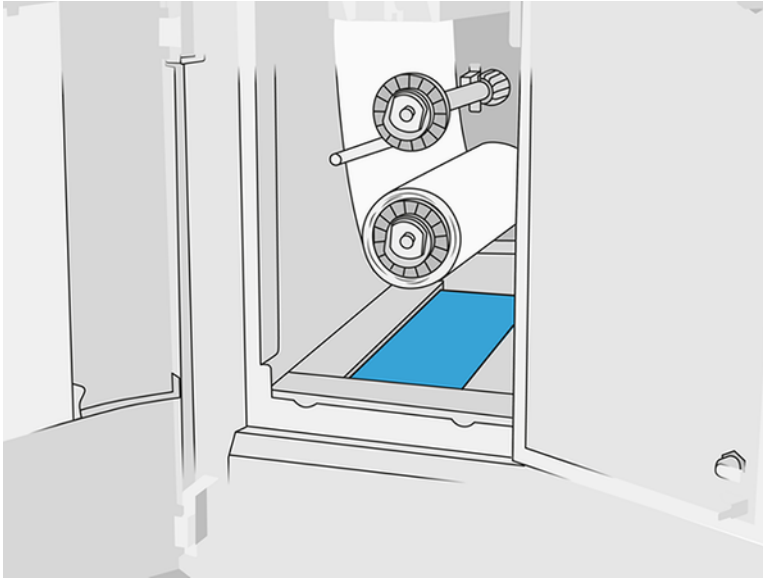
1. Ensure that you have the printer user maintenance kit.
2. Ensure that the printer is not printing.
3. Turn off the printer.
4. If a job has just been printed, wait about 20 minutes for the printer to cool down.
5. You are required to wear gloves and goggles.
6. Open the agent door and the external cleaning-roll door.



Replace the cleaning-roll collector

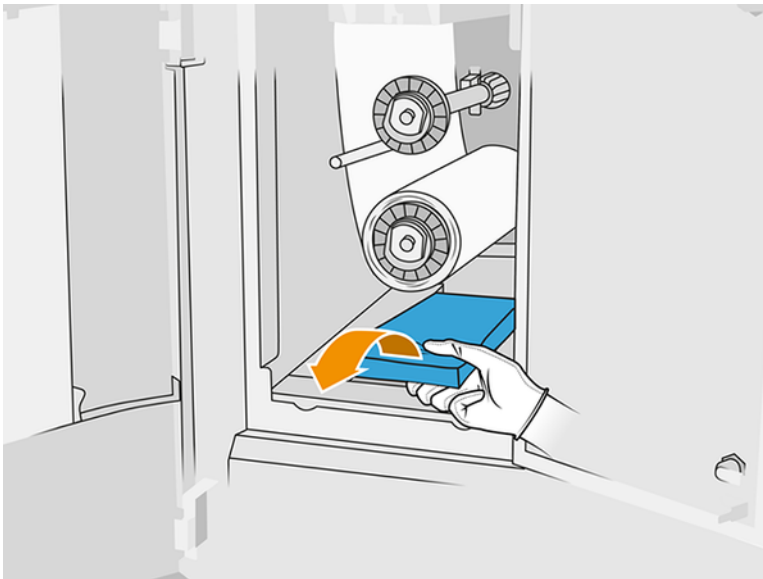
The following steps provide the complete procedure for this topic.

1. Locate the cleaning-roll collector, underneath the printhead cleaning roll.




2. Pull out the old collector (foam).

 **TIP:** Remember to wear gloves.



3. Slide in the new collector.

 **CAUTION:** Proper maintenance and genuine HP consumables are required to ensure that the printer operates safely as designed. The use of non-HP consumables (supplies, filters, accessories) may present a risk of fire.

Finish the replacement

The following steps provide the complete procedure for this topic.

1. Close the printhead cleaning roll and agent doors.

2. Consult your local authorities to determine how to dispose of the old collector.

Cooling plate maintenance

The cooling plates should be cleaned after each job printed (daily maintenance), but after the fifth consecutive job, the weekly maintenance should be performed.

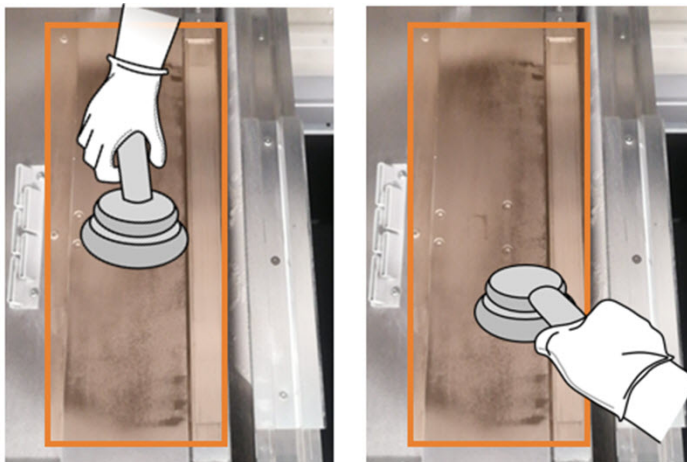
These are the cooling plates:



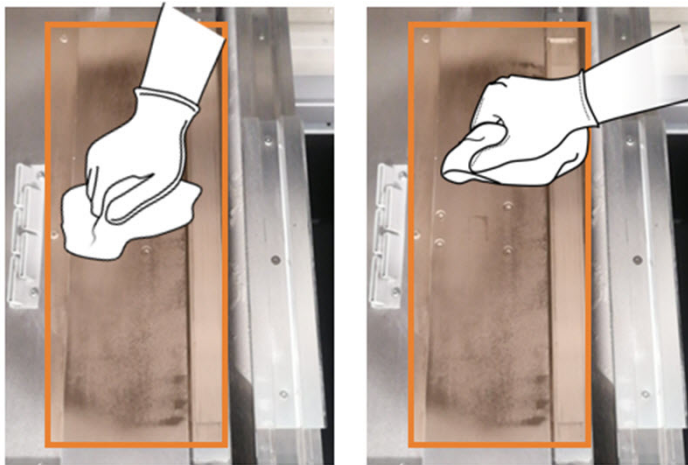
Maintenance steps (daily maintenance)

Perform this cooling plate maintenance procedure after every job.

1. Clean the cooling plates with an explosion-protected vacuum cleaner to remove all the powder remaining on this area.



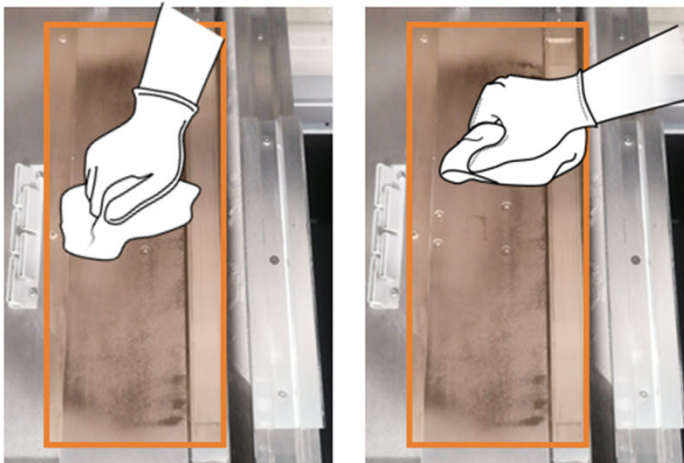
2. Wipe the area with a cloth dampened with deionized water.



Cooling plate maintenance (Weekly)

Perform this maintenance procedure weekly on the cooling plates.

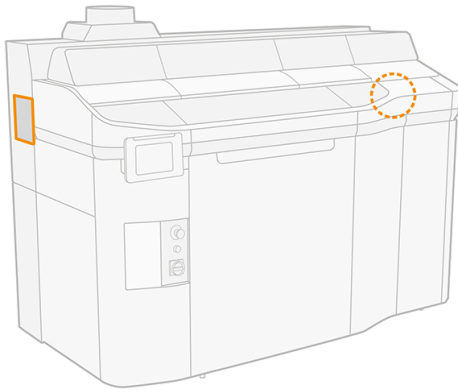
- Wipe the area with a cloth dampened with an industrial cleaner like Simple Green.



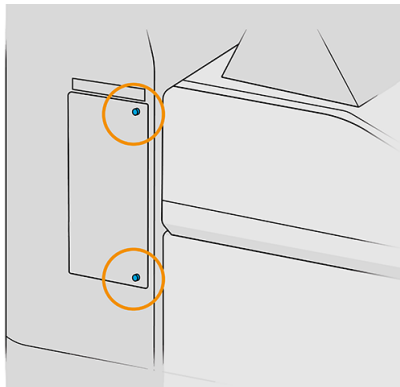
Replace the material extraction system

The following steps provide the complete procedure for this topic.

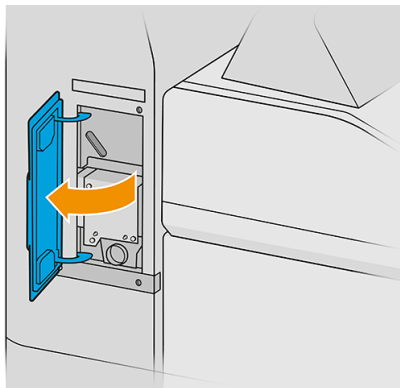
1. Locate the material extraction system doors on both sides of the printer, and choose one to start with.



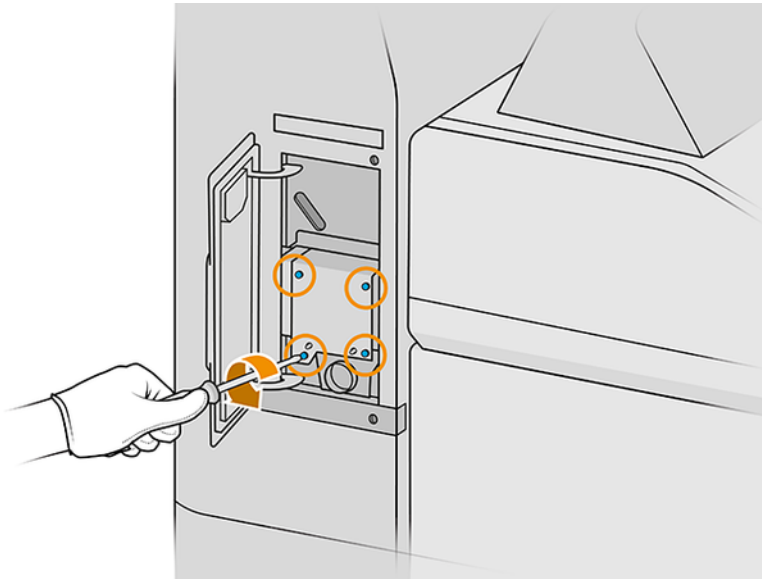
2. Unscrew the two screws.



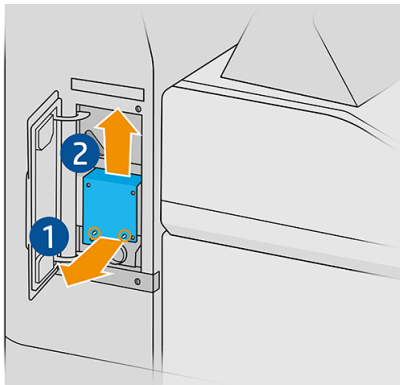
3. Open the door.



4. Remove four more screws.



5. Move the material extraction system 5 mm to the front to disengage the positioning pins, and remove it vertically.



6. Insert the new kit and position it using the pins.
7. Attach it with the four new screws provided with the kit.
8. Close the door.
9. Put back and tighten the two screws.
10. Repeat the process with the other door.

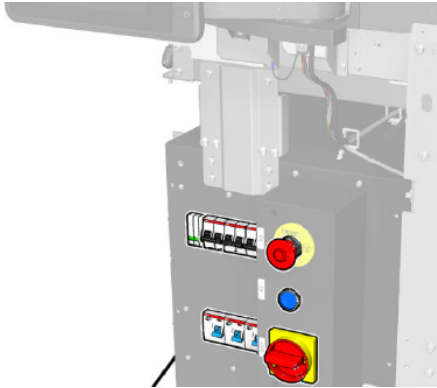
Safety maintenance of the printer

Check the functionality of the Residual Current Circuit Breakers (RCCBs)

Following standard RCCB recommendations, it is recommended that the RCCBs are tested on a yearly basis. The procedure is as follows:

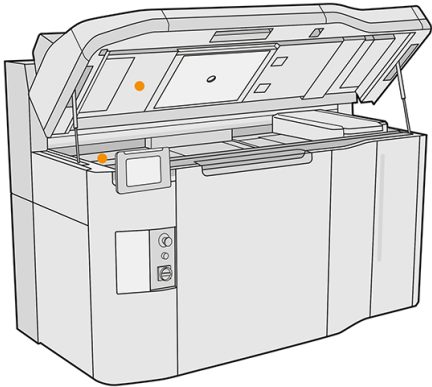
1. Turn off the printer from the front panel, not using the service switch.

2. 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.



Check that the printer is correctly earthed

Check that the resistance between any metal part of the printer's internal chamber and the building's earth is less than 1 Ω .



Build-unit maintenance

Summary of maintenance operations

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

Table 11-24 Summary of maintenance operations

| Frequency | Maintenance operation |
|---------------------------------|---|
| Once per build, after unpacking | Clean Build Unit surface on page 80 |

Move or store the product

This topic explains the concepts involved in this subject.



IMPORTANT: If your HP Jet Fusion 3D Printing Solution needs to be moved to a different location or room, you should contact your reseller for assistance. This product has sensitive components that can be damaged during transportation: special transportation features and tools are needed.

Take care that connecting cables do not damage any painted surfaces, bellows, and so on.

Do not move the printer for any purpose without service assistance. Additional packing precautions and installation calibrations are required for significant displacements of the equipment.

To store the printer and Build Unit for an extended period of time (longer than a weekend), first clean each device, ensuring that there is no material left inside:

- See: [Clean the print zone, carriage, and housing structure on page 127](#)
- See: [Empty the Build Unit on page 83](#)
- See: [Check and clean the interior of the Build Unit on page 85](#)

Material extracted must be kept within the storage conditions of the material. The equipment should be stored at a temperature of -25°C to 55°C-13°F to 131°F and humidity of less than 90% (without condensation). Before using it again, allow at least 4 hours for it to acclimatize to operating conditions, and check for condensation before turning it on.

For a shorter period (one weekend), if you want to keep material inside the product, the product operating conditions must be met.

12 Troubleshooting

The following sections provide details for this topic.

General advice

This topic explains the concepts involved in this subject.

When you have any print-quality problem:

- To achieve the best performance from your system, use only genuine manufacturer's supplies and accessories, whose reliability and performance have been thoroughly tested to give trouble-free performance and best-quality prints.
- Check that your environmental conditions (temperature, humidity) are in the recommended range.
- Check that your material cartridges and printheads have not passed their expiration dates.
- Check that you are using the most appropriate settings for your purposes.

For the latest information, go to the HP website at the following link:

- <http://www.hp.com/go/jetfusion3D5000/support/>

The following procedures may help to solve some print-quality issues, see specific print-quality issues for details if the issue is detected:

- See: [Align the printheads on page 251](#)
- See: [Print the printhead status plot on page 260](#)
- See: [Recover \(clean\) the printheads on page 273](#)

Printhead health troubleshooting

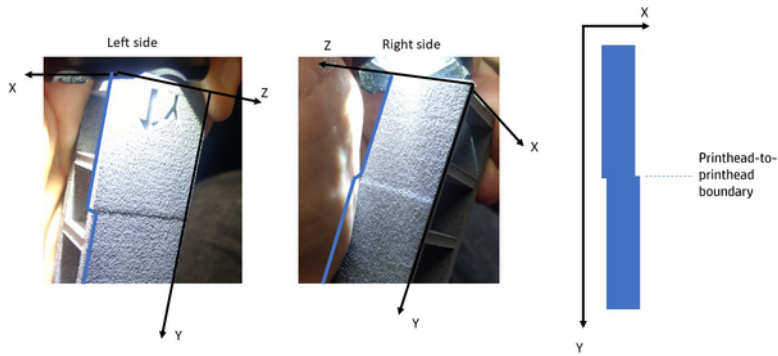
Align the printheads

The following sections provide details for this topic.

Printhead alignment is recommended in these situations:

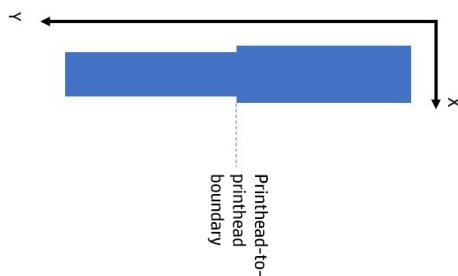
- After replacing or reseating a printhead
- After a printhead crash
- When there are print-quality problems that could be caused by printhead misalignment, such as:
 - Printhead-to-printhead misalignment along the X axis

If a flat plane is printed parallel to the YZ plane and there is a printhead-to-printhead misalignment, there will be a shift of the whole plane along the X axis.



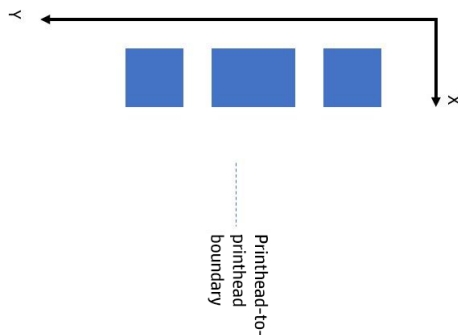
- Bi-directional alignment error

If a flat plane is printed parallel to the YZ plane and there is a bi-directional alignment error, the part may be thinner or thicker than intended.




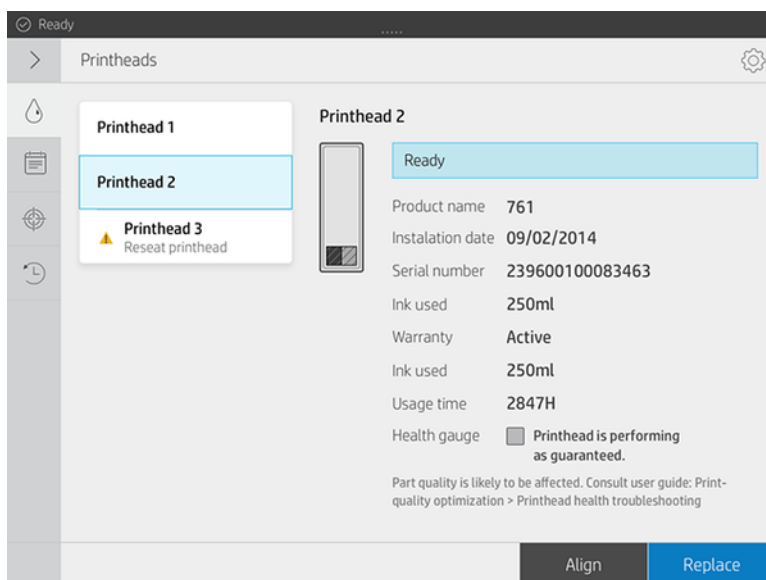
- Printhead-to-printhead misalignment along the Y axis

If there is a printhead-to-printhead misalignment along the Y axis, parts that are printed in the printhead-to-printhead boundary area may be larger or smaller than parts printed by a single printhead.



NOTICE: If the paper is moved out of the printer by mistake during the alignment process, restart the process.

To align the printheads, go to the front panel and tap the **Maintenance** icon , then **Printheads > Align**, then follow the instructions on the front panel.



You can choose between semi-automatic and manual printhead alignment. Semi-automatic alignment is recommended if feasible, as it is more accurate and more objective than the manual method.

Semi-automatic printhead alignment

Tools required

This topic explains the concepts involved in this subject.

- HP OfficeJet Pro 7740 multi-function printer or HP OfficeJet 7612 scanner (for Japan and Asia/Pacific regions)
- HP OfficeJet Pro 9010 / 9015 and 9020 scanners.
- Single sheet of Tabloid or A3 paper
- Triphase to monophase power adaptor (if needed)

NOTICE: HP recommends setting up the multi-function printer or scanner by following the instructions on the scanner front panel after it is first turned on. This step can be skipped for the semi-automatic printhead alignment.

The validation plot

To check that the semi-automatic alignment has been performed correctly, you can print a diagnostic plot. The following pattern is printed for each of the 15 dyes except the last. The pattern is designed with each line being composed of two little segments. Those segments have an induced incremental alignment error and are centered on the diamond (◆) and triangle (▲) positions.

The printhead is well aligned when all segments indicated by a diamond (◆) or a triangle (▲) are seen as a single continuous line. If the line is broken into two pieces, repeat the process of printhead alignment.

NOTICE: Not all the lines indicated by the diamond and triangle need to be perfectly aligned. A tolerance of ± 1 is accepted and is not a defect.

Figure 12-1 Well aligned examples

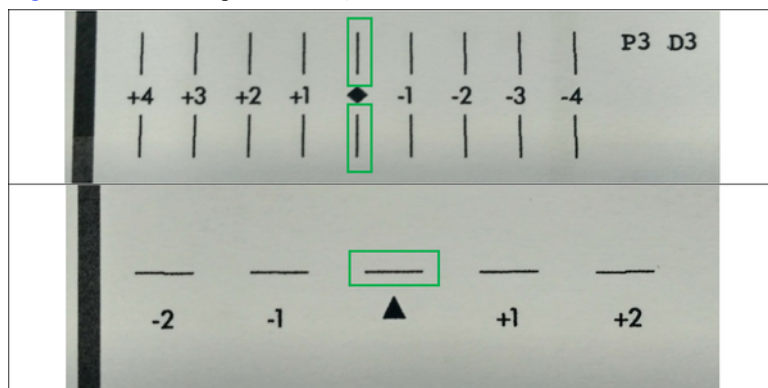
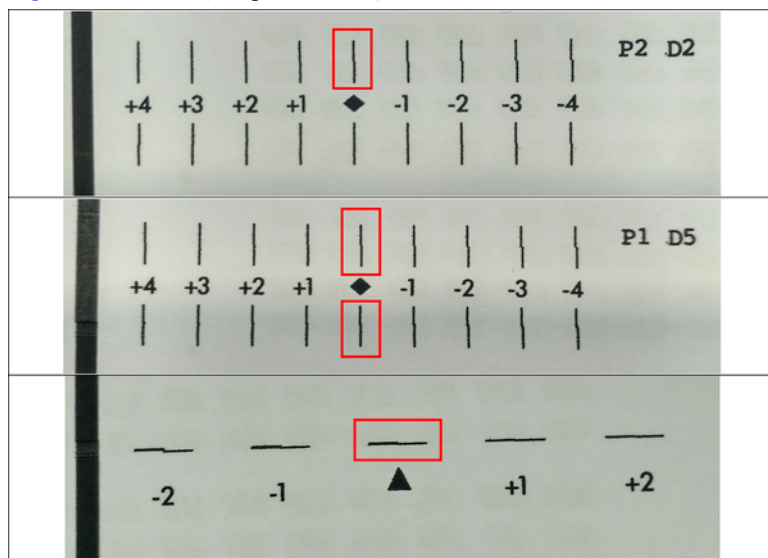


Figure 12-2 Poorly aligned examples



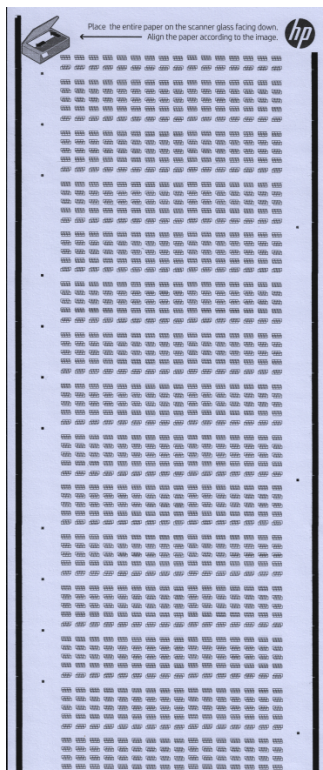
Troubleshooting

The printer may display the following message:

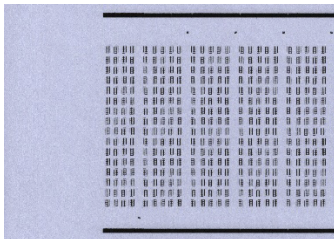
ERROR during the analysis of the plot, printheads are not aligned. The plot scanned will be displayed.

To respond to this message, read this section.

An example of a correctly scanned plot is shown below.



- If the image is blank, probably the printed plot is not present in the scanner, or it is facing up. Ensure that the plot is in the scanner, facing down, and aligned according to the instructions; then try again.
- If the scanned plot appears horizontally, probably the printed plot is rotated in the scanner. Ensure that the plot is aligned according to the instructions; then try again.



- If the scanned plot is clipped and not all of it is visible, probably the printed plot is not well aligned in the scanner. Ensure that the plot is aligned according to the instructions; then try again.
- If the scanned plot is smudged and shows ink smears, perhaps the printhead touched the paper while printing. Go back to the beginning and repeat the alignment plot, ensuring that the paper is perfectly flat on the calibration tool.
- If the scanned plot shows other quality defects, perform a printhead recovery (see [Recover \(clean\) the printheads on page 273](#)), then try again.
- If the scanned plot is tilted to one side, but the plot is aligned with the paper edge, then the printed plot is not well aligned on the scanner. Realign the printed plot on the scanner according to the instructions, and try again.

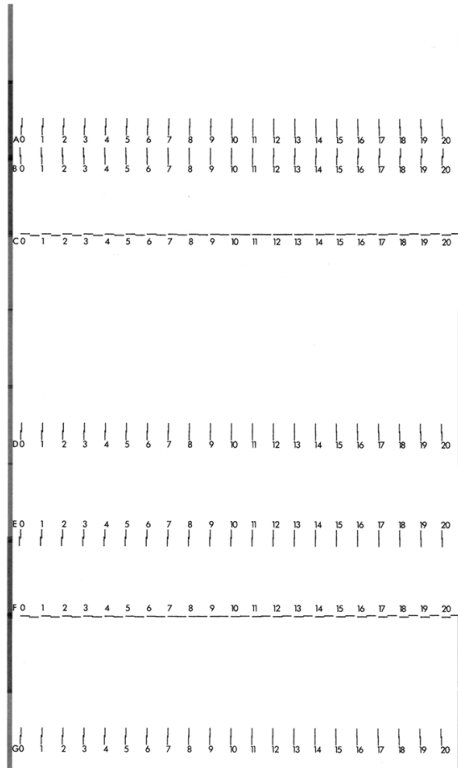
- If the scanned plot is tilted to one side, and the paper edge is aligned with the scanner, but the plot is not aligned with the paper edge, then the sheet of paper was not positioned correctly on the calibration tool when the print was made. Go back to the beginning and reprint the alignment plot, ensuring that the paper is well aligned on the calibration tool.

If these suggestions do not solve the problem, contact your service representative.

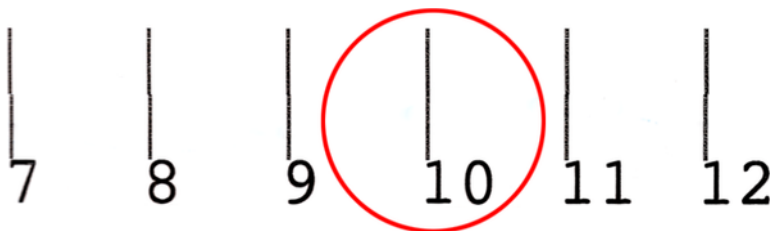
Manual printhead alignment

The following steps provide the complete procedure for this topic.

1. In order to perform the alignment, a pattern is printed. Check the pattern.



2. For every letter, choose the line that is continuous (with no break in the middle), and enter at the front panel the number next to the continuous line. If you see several lines that seem continuous, choose the middle one.



Printhead alignment

Alignment values
For each letter on the printout, enter the number where the line appears as one.

A, C, D, E, G

A: [- 8 +] B: [- 6 +]
C: [- 13 +] D: [- 4 +]
E: [- 0 +] F: [- 0 +]
G: [- 0 +]

Visual feedback: A, C, D, E, G (vertical lines) and B, F (horizontal lines) are shown with green checkmarks for correct and red X's for incorrect alignment.

Finish

3. Check that the alignment has been done correctly by tapping **Print diagnostic plot** from the settings icon on the **Printheads** page. Place the tool covered by paper in position 1 again; and, after printing, check that the triangle is next to the continuous line in all cases. If it is, the alignment is correct.

If there is not a continuous line above the triangle, the pattern should be fine-tuned. To do that, look for the continuous line in the pattern and add its number to the number you used before. For example, if the continuous line is above -2 and the number you entered was 12, change it to 10 on the front panel and tap **Finish**.

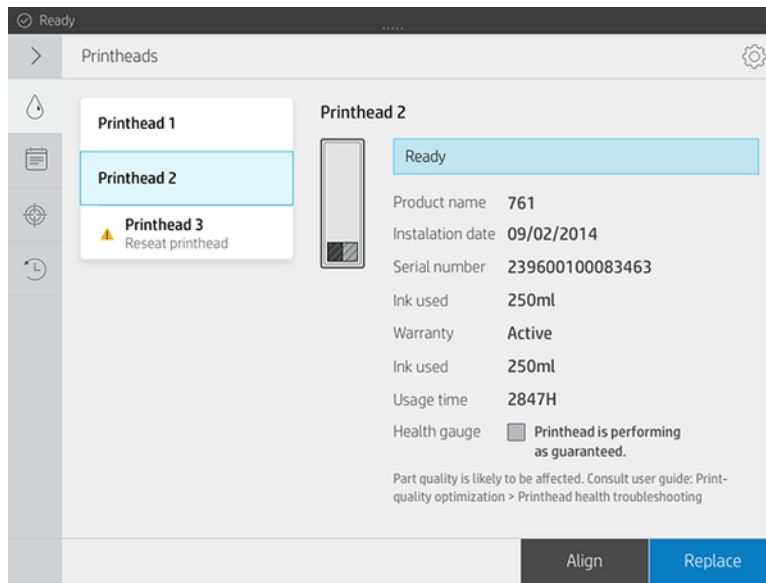
If all lines seem broken in a pattern, repeat the alignment.

You are recommended to reprint the diagnostic plot until all patterns are perfectly aligned.

Printhead Health Gauge front-panel messages

Message descriptions and actions

The printhead Health Gauge is shown in several places in the front panel. For example, you can always check it on the printhead detailed information screen.



The printhead Health Gauge has three levels:

- There is no problem with the printhead nozzles.



Printhead is performing as expected.

- The printhead has relatively few clogged nozzles. This is unlikely to produce any defects in the printed parts, but it could happen.



Printhead has clogged nozzles.

Part quality may be affected. Consult user guide: Print-quality optimization > Printhead health troubleshooting.

- The printhead has more clogged nozzles, which may produce defects in the printed parts.



Printhead is underperforming.

Part quality is likely to be affected. Consult user guide: Print-quality optimization > Printhead health troubleshooting.

Troubleshooting


This topic explains the concepts involved in this subject.

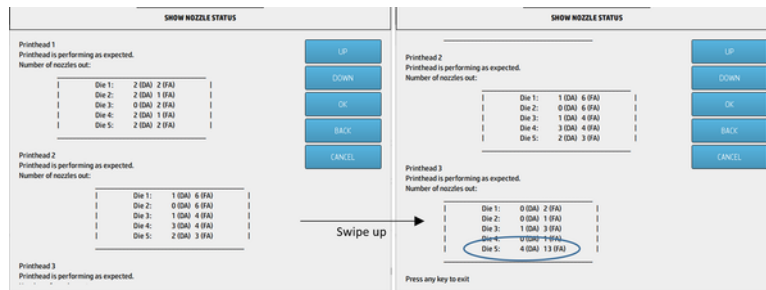
There are two main tools for investigating clogged nozzles:

- Check the nozzle status screen. See [Nozzle status on page 258](#).
- Print the printhead status plot (for fusing-agent nozzles only). See [Print the printhead status plot on page 260](#).

Nozzle status

You can view the nozzle status from the the front panel.

Tap the **Maintenance** icon , then **Printheads > Settings > Printhead status plot**, then follow the instructions on the front panel. The following screen appears.



The lists show the number of clogged nozzles in each die for each agent, Detailing Agent (DA) and Fusing Agent (FA).

For example, in the above example, the die that is closest to the front of the printer, which is Printhead 3, Die 5, has 4 clogged nozzles in the Detailing Agent and 13 clogged nozzles in the Fusing Agent (blue balloon).

How the Health Gauge relates to the number of clogged nozzles


The following table summarizes the relation between clogged nozzles and the Health Gauge.

Bear in mind that the analysis in the printer is more thorough, and takes more into account than just the number of clogged nozzles.

Table 12-1 How the Health Gauge relates to the number of clogged nozzles

| Clogged nozzles | Health Gauge message | Action |
|-----------------|--|---|
| 0–99 | Printhead is performing as expected | None needed |
| 100–119 | Transition to Printhead has clogged nozzles | When convenient (between jobs), see What to do when the printheads show these defects on page 263 |
| 120–149 | Probably Printhead has clogged nozzles | |
| 150–169 | Transition to Printhead is underperforming | See What to do when the printheads show these defects on page 263 |
| 170+ | Probably Printhead is underperforming | |

Any time the number of clogged nozzles in one or more dies/agents in one printhead is more than 900 (maximum is 1056), it is very unlikely that so many nozzles became clogged suddenly. Therefore, these are the possible causes:

- They could be genuine clogged nozzles after some damaging event such as, for example, the carriage crashing into the material. In this case, follow the guidelines in [What to do when the printheads show these defects on page 263](#).
- There could be a problem with the drop-detector calibration. Tap the **Settings** icon , then **Utilities > System tools > Calibrations > Drop-detector calibration**.


- There could be a connection problem in the affected printhead. Try reseating the affected printhead, see [Replace a printhead on page 105](#) (after removing the printhead, you can reinsert the same printhead).

After these actions, run a printhead recovery 1 routine to force a health status update. See [Recover \(clean\) the printheads on page 273](#).

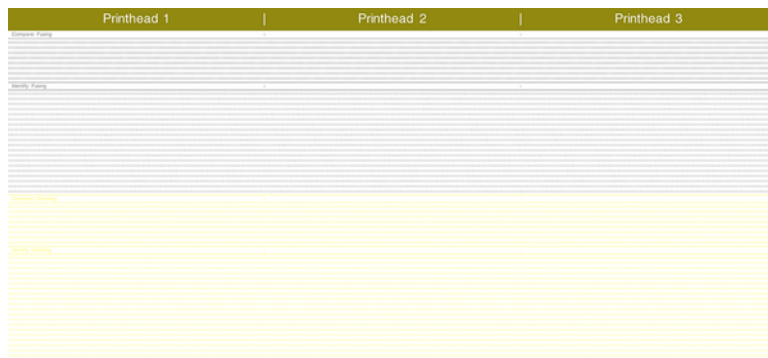
If all else fails, replace the printhead with a new one. If that also fails, contact your service representative.

Print the printhead status plot

You can use the printhead status plot to assess printhead nozzle health.

At the front panel, tap the **Settings** icon , then Printheads > **Settings** > **Printhead status plot**, then follow the instructions on the front panel.

The printhead status plot is printed, as shown below.



NOTICE: The detailing agent, shown in yellow in the above image, is not normally visible. However, it may sometimes appear partially in a very light shade of gray.

How to interpret the printhead status plot

Use a 10× magnifier to look at the plot. There are patterns corresponding to each of the printheads, Printhead 1, Printhead 2, and Printhead 3.

Each of these has two sections: Compare and Identify.

Compare: Fusing

This section shows isolated (or individual) nozzles. You can use it to assess by inspection the percentage of random nozzles out in an area of a printhead.



Random nozzles out have a much lower impact on mechanical properties than consecutive nozzles out.

It is not easy to estimate the percentage of nozzles out visually; therefore some aids are provided in the table below.

Table 12-2 Nozzles

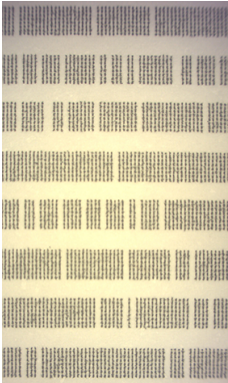
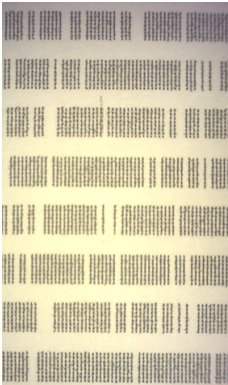
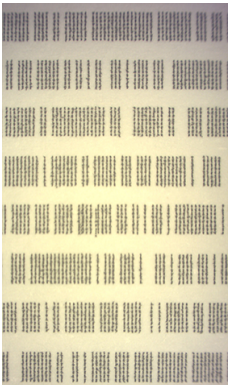
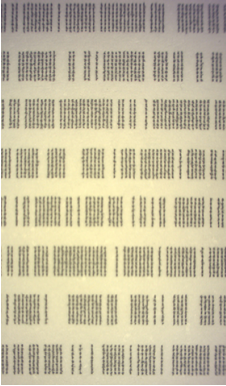
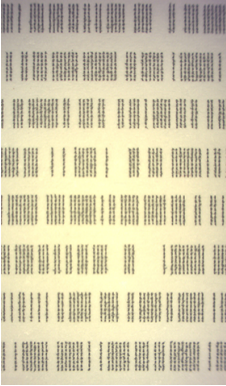
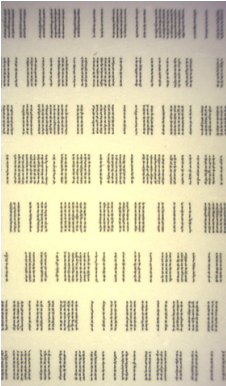
| Nozzles out | Effect on mechanical properties | View |
|-------------|---------------------------------|--|
| 10% | No risk of defects |  |
| 15% | No risk of defects |  |
| 20% | Low risk of defects |  |

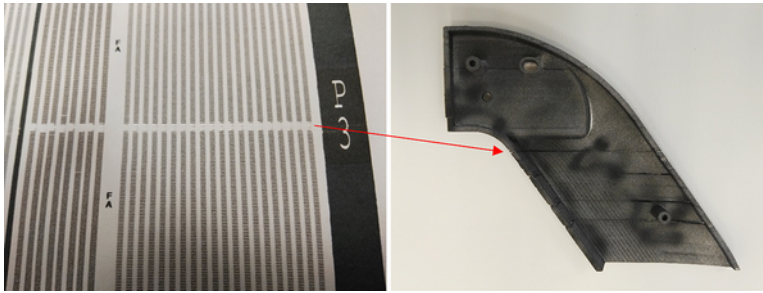
Table 12-2 Nozzles (continued)

| Nozzles out | Effect on mechanical properties | View |
|-------------|---------------------------------|--|
| 25% | Low risk of defects |  |
| 30% | High risk of defects |  |
| 40% | High risk of defects |  |

Identify: Fusing

This section shows small groups of consecutive nozzles. A group of more than a certain number of consecutive nozzles out can produce a flaw in the part.

This type of flaw in a fusing agent can produce bad mechanical properties. If there are a number of consecutive fusing-agent nozzles out, covering 1 mm or more (for example), the parts printed in that area will come out of the build unit severely damaged or even split in two.



You are more likely to see a small number of consecutive nozzles out. The identify pattern allows you to check in which areas there could be a problem and decide whether the number of consecutive missing nozzles could produce defects. The table below summarizes the impact.

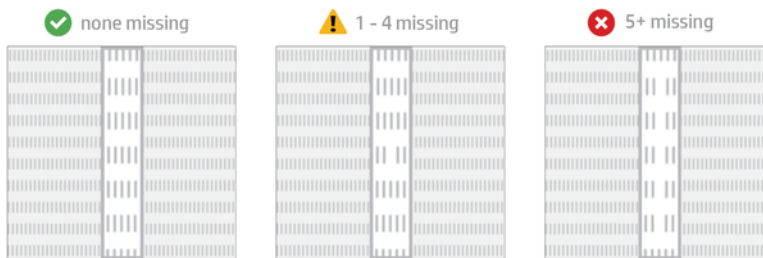


Table 12-3 Consecutive nozzles out

| Low risk of impact on mechanical properties: 1 to 4 sequential groups missing (1 shown) | High risk of impact on mechanical properties: 5 or more sequential groups missing (5 shown) |
|---|---|
| | |

What to do when the printheads show these defects

The following steps provide the complete procedure for this topic.

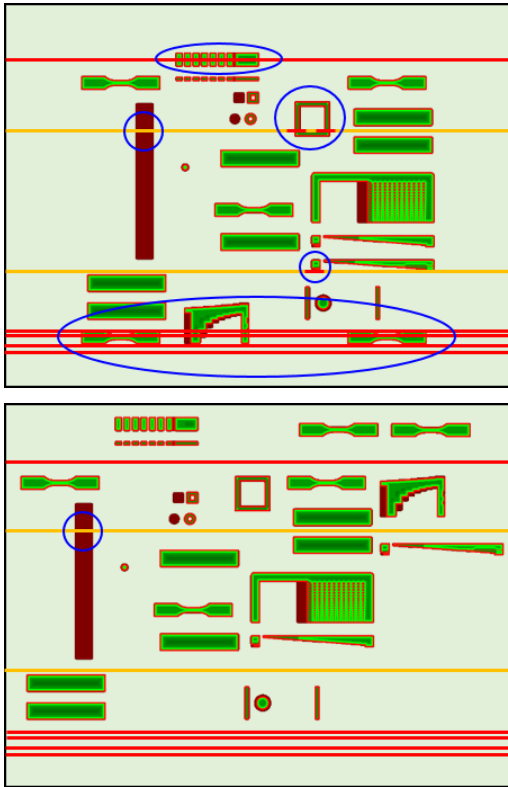
1. Try to recover the affected printhead(s).

See [Recover \(clean\) the printheads on page 273](#). Start with the recovery 1 operation, then reprint the printhead status plot to check the effect. If you are still seeing defective nozzles, try the recovery 2 operation.

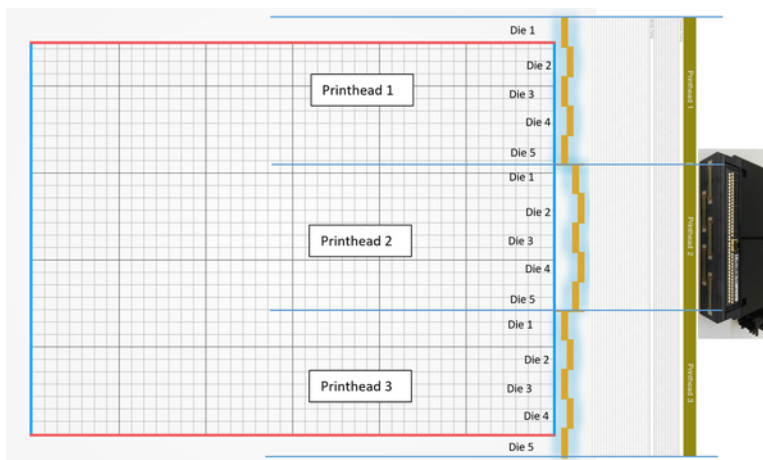
2. Rearrange the parts.

If possible, this is sometimes very straightforward. Simply move the parts of the next job to positions in the print bed that will not be affected by the defective nozzles.

An example is shown below. The yellow lines represent areas with possible defects; the red lines represent areas with probable defects; the blue ellipses enclose parts affected by the defective nozzles. On the left, a number of parts are affected by yellow and red lines; on the right, the parts have been rearranged so that only one part is affected by a yellow line.



For reference, the location of each printhead and die with respect to the bed is shown below.



3. Replace the affected printhead(s).

If the printhead recovery is not sufficiently effective, you can choose to replace a malfunctioning printhead with a new one.

Cross contamination troubleshooting

What is cross contamination

Cross contamination can manifest as grey light melted burrs or fins, light lines, or areas on the surface of parts going along the carriage axis (right to left of the bed).

How can we detect it

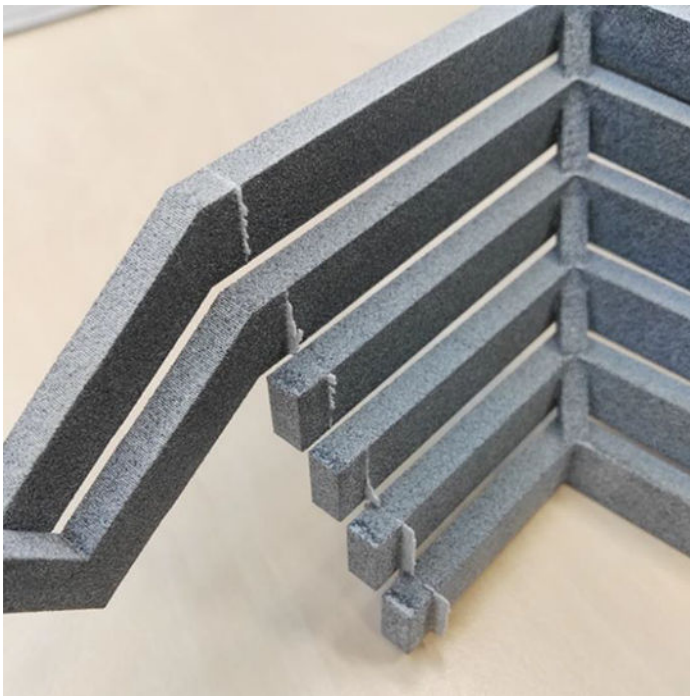
Cross contamination can be detected on the parts printed, the printhead status plot, or via automatic detection.

On parts printed

How can we detect cross contamination on parts printed.

On parts printed

Figure 12-3 Burrs or fins



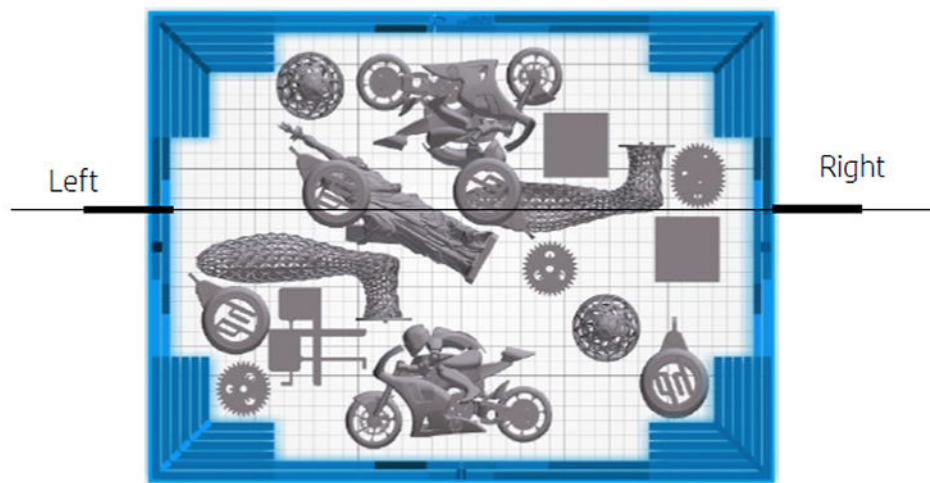
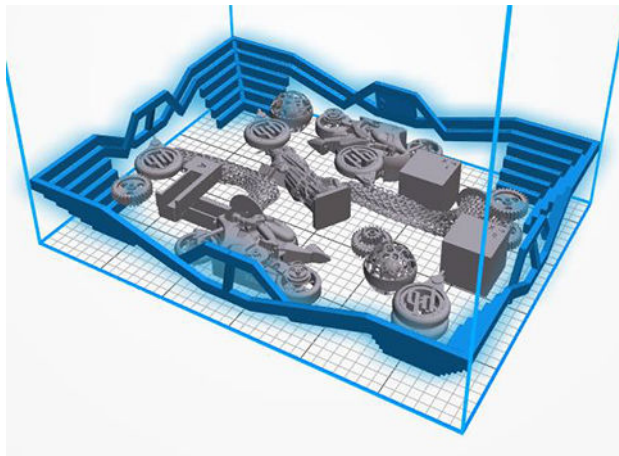


Figure 12-4 Light marks or lines

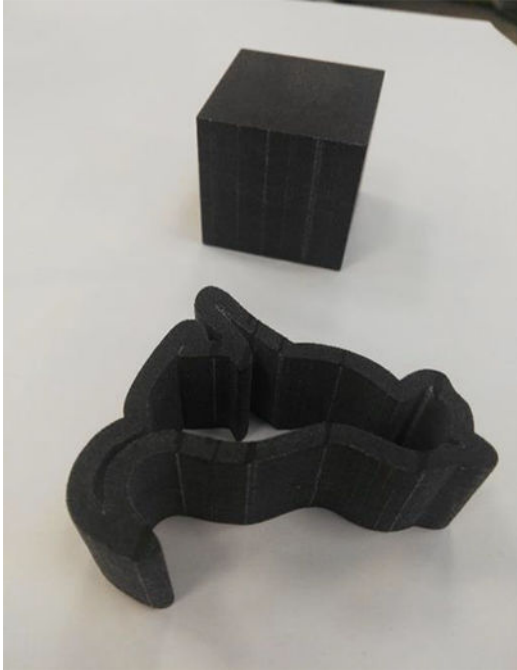


Figure 12-5 Areas



On a printhead status plot

Zooming in on the status plot (focusing on Printhead 3 in this example), we can see that the part which should be completely clean of fusing agent instead contains some amount of it. Once seen, the printhead troubleshooting must be started.

Fusing Agent region: in this area we should see only black lines coming from the fusing agent.

Detailing Agent region: in this area we should not see anything as detailing agent has no colour.



Automatic detection

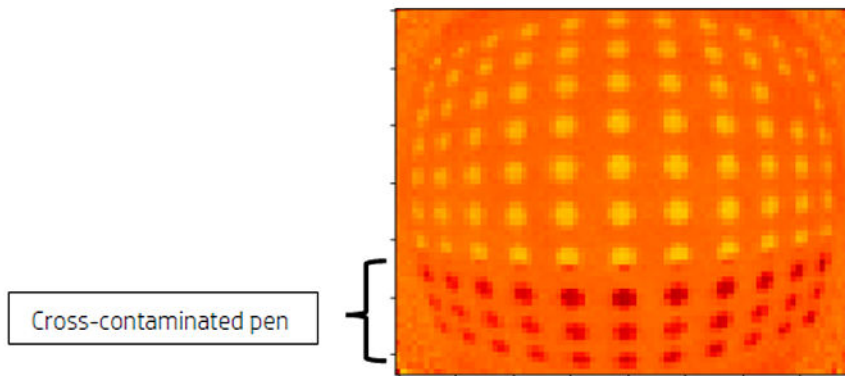
During the warmup process we do the Heimann Optical Calibration, where we print a pattern of 11x10 circles with Detailing Agent.

When finishing the calibration, we run a script which takes images of the calibration and looks for hot spots. If the algorithm finds a line of hot spots it automatically raises the error *0085-0008-0099 - Carriage Printhead with cross contamination*.

After raising the error, the system automatically runs the "Detailing agent cleanliness" diagnostic (see following), which allows the user to confirm cross contamination and check if it was internal or external.

In any case this automatic diagnostic indicates a Heimann issue, so any action related to Heimann must be taken.

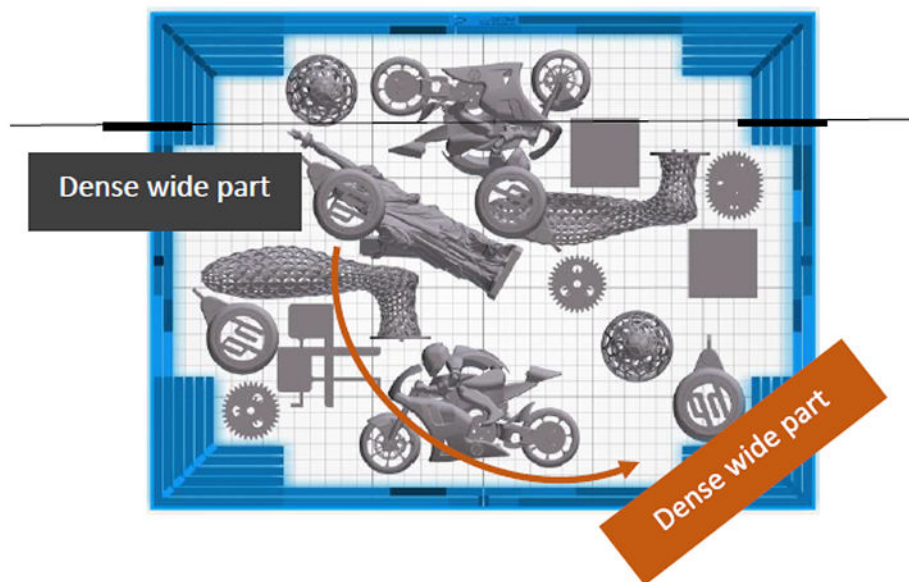
The following image shows a Heimann image during the calibration for a contaminated pen:



Possible causes and solutions

Detailing agent is dirty due to a dense wide part with its edge(s) aligned to the defect

This topic describes what to do if the detailing agent is dirty due to a dense wide part with its edge(s) aligned to the defect.

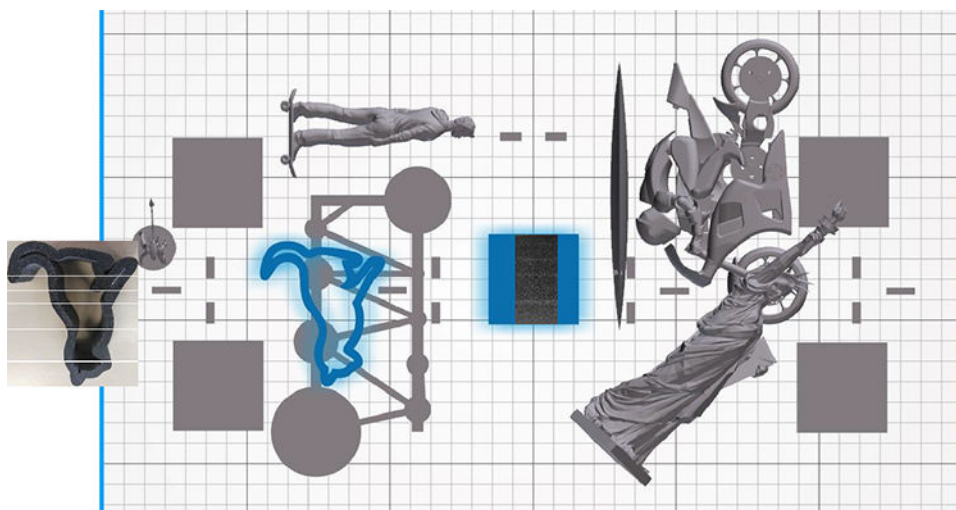


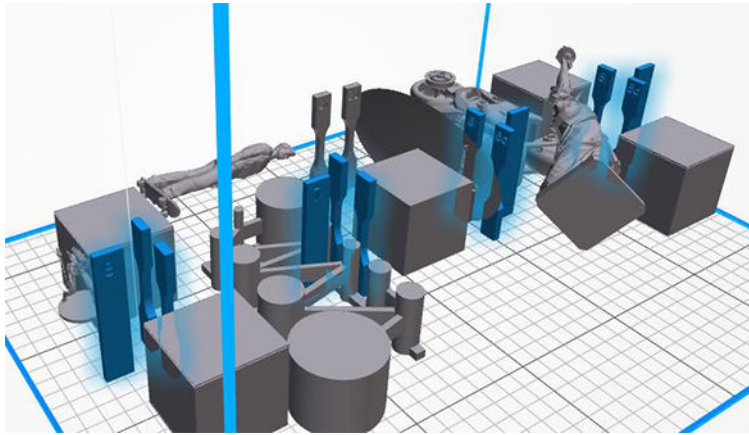
Solution: position the part tilted in the bed, not aligned with any of the two bed axes, as shown.

Detailing agent is dirty due to a high number of layers printing the same edge or the edges of one or several parts, the edges being aligned with the defects

Check the job for parts positioned vertically in which several edges align, and edges stay aligned for a high number, as in this example:

The parts circled in blue are positioned vertically and they are quite tall, as is shown in the second picture. Therefore, exactly the same Fusing Agent nozzles are used for a significant number of layers with a very small amount of Detailing Agent in the adjacent ones. The latter get dirty.





Solution: move the parts slightly off one from the other so that their edges are not exactly aligned, as shown (the same would be done for the other two groups not highlighted).

Detailing agent has a group of clogged nozzles in that area

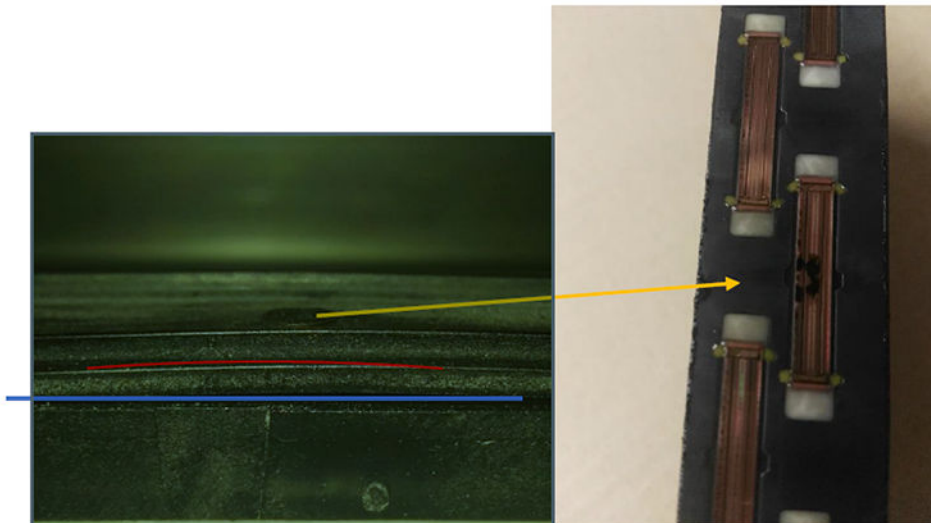
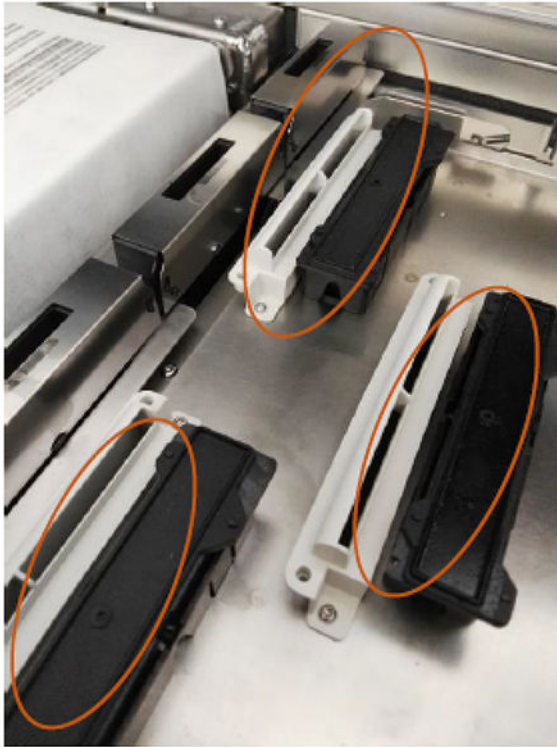
Check the printheads Health Gauge through the Front Panel. If the Health Gauge shows “Printhead is performing as expected”, run a User Recovery routine and check the Health Gauge again.

Solution: Health Gauge reads “Printhead is underperforming. Part quality will be affected”: replace the affected printhead(s).

The printhead caps are wrongly assembled and they touch the nozzle plate of one of the printheads

This topic describes what to do if the printhead caps are wrongly assembled and they touch the nozzle plate of one of the printheads.



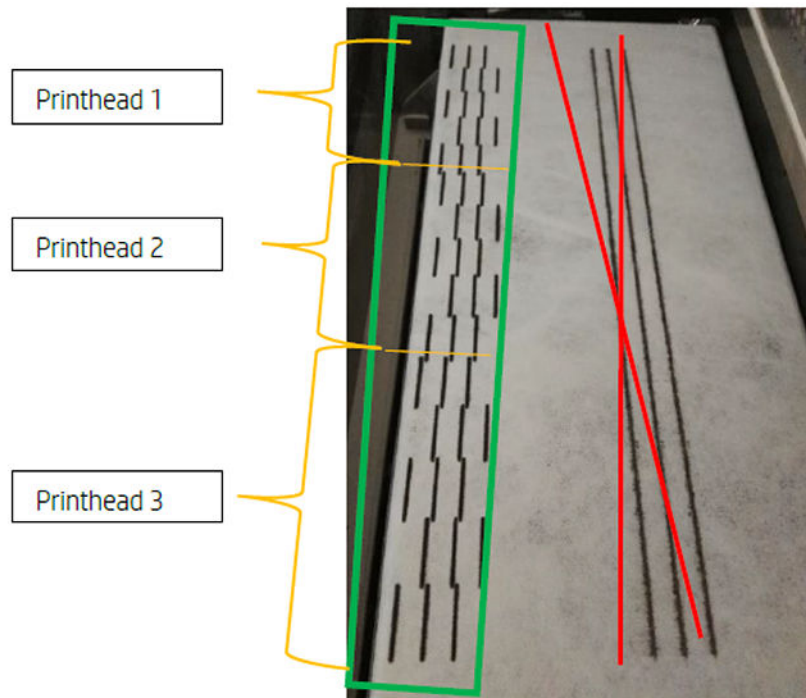


Solution: Check the printhead caps (rubber caps) at the right side of the printer: they should be flat and well-adjusted on their supports.

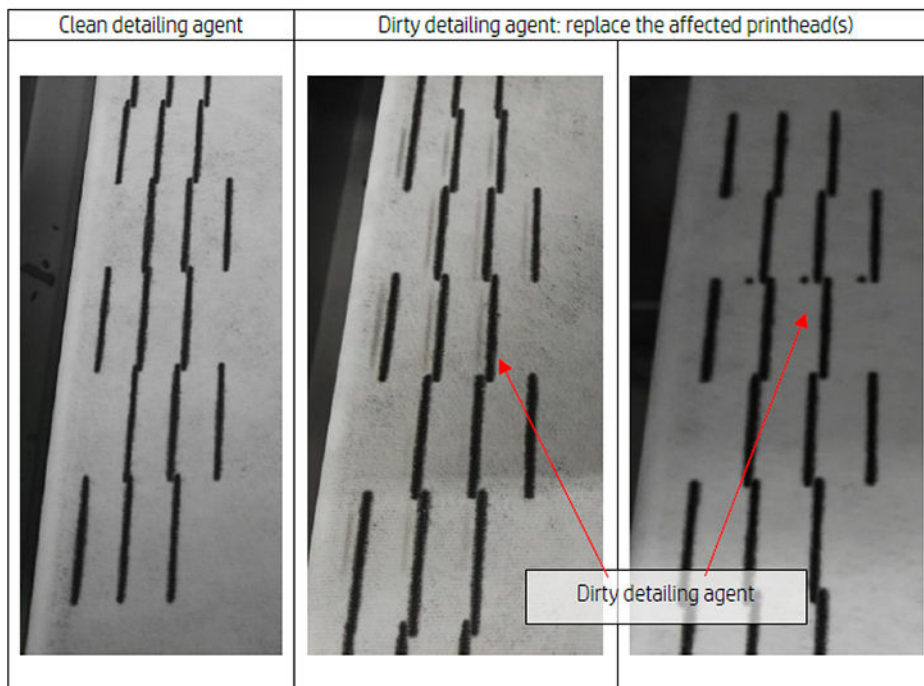
Detailing agent is dirty due to an internal printhead problem

Run the “Detailing agent cleanliness” diagnostic: **Settings > Part quality troubleshooting > Printheads > Detailing agent cleanliness.**

The printer will print the following pattern on the cleaning roll.



Solution: when the detailing agent is clean, only black fusing lines appear in the pattern. The dirty detailing agent appears as dots or grey lines parallel to the left side of the black ones.



A clean detailing agent (leftmost image) indicates that the cross-contamination detected was external and the dirtied agent has been ejected from the printhead. It does not require a printhead replacement.

Any markings present (central and rightmost images) are symptoms of internal cross-contamination and the printhead should be replaced.


However, If the printhead's rubber caps are detected to be wrongly adjusted, it is recommended to run a second DA cleanliness routine.

A wrongly adjusted rubber cap in combination with an idle printhead for a long period of time (a few days) can contaminate a volume of agent big enough that a single DA cleanliness execution is not able to clean the printhead completely.

After a second execution of the routine, if the markings have disappeared or they are fading, the cross-contamination was external, and the dirtied agent has been or is being ejected. In this case, run additional routines until the DA is no longer visible and thus clean. No printhead replacement is required.

Recover (clean) the printheads

The printer can try to recover the use of a malfunctioning printhead by cleaning it.

At the front panel, tap the **Maintenance** icon , then **Printheads** > **Settings** > **Printhead recovery 1**. If the initial recovery is not completely successful, you can try **Printhead recovery 2**.

Airflow check

This topic explains the concepts involved in this subject.

For optimal printer performance, the ambient temperature should be maintained within the specified range (see the site preparation guide), and the airflow into and out of the printer should be unimpeded.

- Make sure that the print-zone inlet (behind the printer) is not blocked by any obstruction.
- Make sure that the fans on top of the printer are not blocked by any obstruction.

Manual powder workflow troubleshooting

The following tables explain the causes and recommended checks for troubleshooting issues.

Part Quality

Table 12-4 Powder

| Issue | Cause | Recommended checks |
|---------------------------|---|--|
| Powder not properly mixed | Scale not calibrated or not weighing properly | Verify that the scale is working properly |
| | Drum not properly rotating in the mixer | Verify that the mixer is working properly |
| | | Verify that the outside part of the drum is clean before placing the drum in the mixer |

Table 12-4 Powder (continued)

| Issue | Cause | Recommended checks |
|--------------------------|---|---|
| Residues in powder | Sieve is not working properly | Verify that the sieve is working properly |
| | | Verify that the sieve mesh is not broken or damaged |
| | | Verify that there are no residues on the powder after sieving it. If residues are seen, repeat the sieving process. |
| | | Ensure that there is not waste or agglomerated on top of the sieve |
| | | Ensure that the sieve mesh is properly cleaned with a vacuum cleaner after each load |
| | Sieve process not performed | Review the process instructions to ensure that the process is not skipped |
| Powder contamination | | Review the process instructions to ensure that no process is not skipped or done in a different order |
| | | Ensure that the drums are not mixed along the process or with other materials and that the recommendation on having different storage areas or label the drum is followed |
| Mix ratio is not correct | Scale not calibrated or not weighing properly | Verify that the scale is working properly |
| | Quantity of fresh or recycled powder inserted not correct | Check the kg of fresh are correct based on our recommendation (at least 20% F) |
| | | Review the process instructions to ensure that the process is done correctly |

Table 12-5 Calibration

| Issue | Cause | Recommended checks |
|---------------------|--|------------------------------------|
| Part quality issues | The printer is not properly calibrated | Review the printer troubleshooting |

Powder quality

Table 12-6 Powder degraded or with cake

| Issue | Cause | Recommended checks |
|---------------------------|---|--|
| Powder not properly mixed | Scale not calibrated or not weighing properly | Verify that the scale is working properly |
| | Drum not properly rotating in the mixer | Verify that the mixer is working properly |
| | | Verify that the outside part of the drum is clean before placing the drum in the mixer |

Table 12-6 Powder degraded or with cake (continued)

| Issue | Cause | Recommended checks |
|--------------------------|---|--|
| Residues in powder | Sieve is not working properly | Verify that the sieve is working properly |
| | | Verify that the sieve mesh is not broken or damaged |
| | | Verify that there are no residues on the powder after sieving it. If residues are seen, repeat the sieving process. |
| | | Ensure that there is not waste or agglomerated on top of the sieve |
| | | Ensure that the sieve mesh is properly cleaned with a vacuum cleaner after each load |
| | Sieve process not performed | Review the process instructions to ensure that the process is not skipped |
| Powder contamination | | Review the process instructions to ensure that no process is not skipped or done in a different order |
| | | Ensure that the drums are not mixed along the process or with other materials and that the recommendation on having different storage areas or label the drum is followed |
| Mix ratio is not correct | Scale not calibrated or not weighing properly | Verify that the scale is working properly |
| | Quantity of fresh or recycled powder inserted not correct | Check the kg of fresh are correct based on our recommendation (at least 20% F) |
| | | Review the process instructions to ensure that the process is done correctly |
| Powder is degraded | Powder is expired | Ensure that the fresh powder is not expired |
| | Supply stored outside the recommended conditions | Review the ambiantal conditions range specified in the User Guide |
| | Powder color has varied and it is turning yellow | The powder color can vary when jobs with high packing density are printed or the refresh ratio is too low. Ensure that the Check the kg of fresh are correct based on our recommendation and increase the fresh ratio if needed. |

Table 12-7 Process

| Issue | Cause | Recommended checks |
|--------------------------------|---|--|
| Powder is not flowing properly | Ambiental conditions in the working or storage area not within specs | Review the ambiental conditions range specified in the User Guide |
| | Vacuum pump suction is decreased during the unpack | Ensure that the vacuum pump filter is not full |
| | | Ensure that the hoses are properly connected to the vacuum cleaner |
| | | Ensure that the hoses and the mesh accessory are not broken or damaged |
| | | Ensure that the unpack is done after the recommended cooling time so that the vacuum cleaner hoses are not damaged |
| | The powder is compacted in the drum and it cannot be loaded in the Build Unit | Ensure that the powder has not been stored in the drum more than the recommended time. If so, repeat the sieving and mixing processes. |
| Powder losses | Powder losses in the vacuum pump during the unpack | Ensure that the external tank is empty before unpack |
| | Powder losses in the vacuum pump during the fresh extraction process | Ensure that the fresh external tank is empty before the extract process |
| | | Ensure that the accessory used to connect the hose to the supply is not broken or damaged |
| | Powder losses in the sieve | Ensure that sieve mesh is not broken or damaged |
| | | Ensure that the sheet metal accessory and the bottom connection parts are not broken or damaged |
| | | Ensure that the conical accessory connected to the drum is properly closed and is not broken or damaged |
| | Powder losses while the powder is loaded in the Build Unit | Ensure that the conical accessory connected to the drum is properly closed and is not broken or damaged |
| | | Ensure that Build Unit connection point in clean and that it is not damaged |
| Issues with 3rd party assets | The 3rd party asset is not working properly | Contact your reseller or the supplier to solve the issue directly |
| | Vacuum pump hose deformed or damaged | Ensure that the unpack is done after the recommended cooling time so that the vacuum cleaner hoses are not damaged |

Table 12-7 Process (continued)

| Issue | Cause | Recommended checks |
|---------------------------------|-------------------------------------|--|
| Job failed due to out of powder | Not enough powder in the Build Unit | If the Build Unit is almost empty after completing the job, ensure that the drums are completely emptied in the Build Unit |
| | | If the Build Unit is almost empty after completing the job, ensure that the Build Unit is fully loaded before marking it as loaded |
| | | If there is powder compacted inside the Build Unit. It is not recommended to keep the Build Unit loaded during several days without using it. |
| | | If there is powder inside the Build Unit but it is not compacted, it might be a hardware error from the Build Unit. Contact HP to solve the issue. |

13 Ordering information

This chapter lists the available supplies and accessories and their part numbers, at the time of writing.

Contact your support representative and check that what you want is available in your area and for your model.

Table 13-1 Ordering information

| Part number | Name |
|-------------|--|
| G5J38A | HP OfficeJet Pro 7740 (Printhead Alignment Scanner) |
| 8Q6G2B | HP Jet Fusion 5000 3D Printer |
| 8Q6G3A | HP Jet Fusion 5000 3D Build Unit |
| 3FW27A | HP Jet Fusion 5200 3D Processing Station |
| 4QG11A | HP Jet Fusion 5200 3D Series Automatic External Tank Starter Kit |
| 5ZR21A | HP Jet Fusion 5200 3D Semaphore |
| 915Y0A | HP Jet Fusion 5000 to 5200 Upgrade kit |

14 System errors

The following sections provide details for this topic.

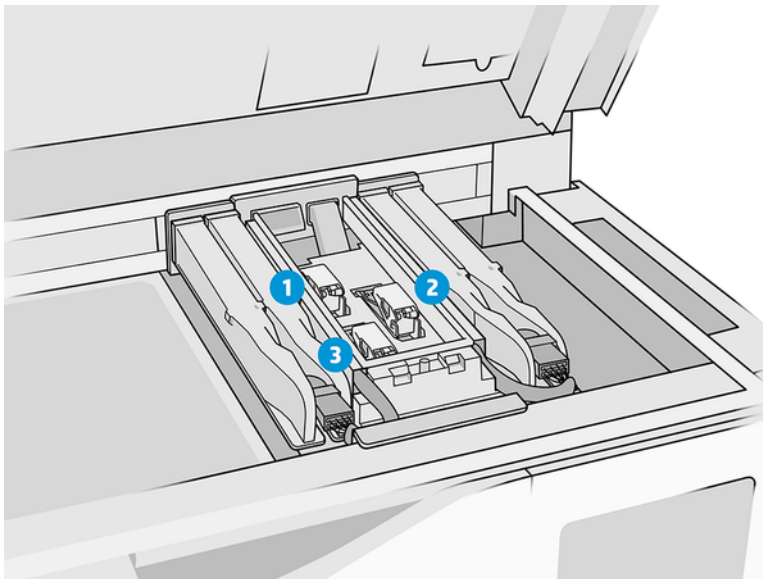
Introduction

The system may occasionally display a system error, consisting of a numerical code of 12 digits followed by the recommended action that you should take.

In most cases you will be asked to restart the equipment. When the printer or processing station starts, it can diagnose the issue better and may be able to fix it automatically. If the problem persists after restarting, contact your service representative and be ready to give the numerical code from the error message.

Instructions for some specific messages are given below. In other cases, follow the instructions in the message.

In every error code, the printheads are numbered as shown below:



1. Rear printhead
2. Middle printhead
3. Front printhead

0051-0008-0001 Mixer loading nozzle sensor PCA malfunction

The following steps provide the complete procedure for this topic.

1. Check that the nozzle sensor is clean.
2. Check that the area where the nozzle sensor is connected is clean.

3. Turn the processing station off and then on again.
4. Try again to load the material into the build unit.
5. If the problem persists, contact your service representative.

0085-0008-0X94 Carriage – Printhead – Temperature extremely high

The following steps provide the complete procedure for this topic.

(0085-0008-0194, 0085-0008-0294, 0085-0008-0394)

Where X is the number of the printhead.

1. Remove the printhead and weigh it. If it weighs less than 255 g, replace it: see [Replace a printhead on page 105](#). If the weight is correct, continue with the following steps.
2. Clean the printhead contacts: see [Clean the printhead contacts on page 179](#).
3. If the problem persists, swap the printhead with another to check whether the problem moves to the new location of the original printhead. If this is the case, replace the printhead: see [Replace a printhead on page 105](#).
4. Look in the software for job sections that are too dense, and try to change the orientation. Start with a small area to fuse and also finish with a small area to print/fuse, if you are faced with abraded tops or sinks. This can easily be achieved by rotating the part at a certain angle: HP recommends rotating the part more than 20 degrees to minimize stair-stepping.

0085-0008-0X86 Carriage – Printhead – Temperature too high

The following steps provide the complete procedure for this topic.

(0085-0008-0186, 0085-0008-0286, 0085-0008-0386)

Where X is the number of the printhead.

1. Remove the printhead and weigh it. If it weighs less than 255 g, replace it: see [Replace a printhead on page 105](#). If the weight is correct, continue with the following steps.
2. Look in the software for job sections that are too dense, and try to change the orientation.

0085-0008-0X95 Carriage – Printhead – Temperature extremely low

The following steps provide the complete procedure for this topic.

(0085-0008-0195, 0085-0008-0295, 0085-0008-0395)

Where X is the number of the printhead.

1. Clean the printhead contacts: see [Clean the printhead contacts on page 179](#).

2. If the problem persists, swap the printhead with another to check whether the problem moves to the new location of the original printhead. If this is the case, replace the printhead: see [Replace a printhead on page 105](#).

0085-0008-0X87 Carriage – Printhead – Temperature too low

The following steps provide the complete procedure for this topic.

(0085-0008-0187, 0085-0008-0287, 0085-0008-0387)

Where X is the number of the printhead.

1. Clean the printhead contacts: see [Clean the printhead contacts on page 179](#).
2. If the problem persists, swap the printhead with another to check whether the problem moves to the new location of the original printhead. If this is the case, replace the printhead: see [Replace a printhead on page 105](#).

0085-0008-0X82 Carriage – Printhead – Data not responding

The following steps provide the complete procedure for this topic.

(0085-0008-0182, 0085-0008-0282, 0085-0008-0382)

Where X is the number of the printhead.

1. Clean the printhead contacts: see [Clean the printhead contacts on page 179](#).
2. If the problem persists, swap the printhead with another to check whether the problem moves to the new location of the original printhead. If this is the case, replace the printhead: see [Replace a printhead on page 105](#).

0085-0008-0X98 Carriage – Printhead – Transmit error

The following steps provide the complete procedure for this topic.

(0085-0008-0198, 0085-0008-0298, 0085-0008-0398)

Where X is the number of the printhead.

1. Clean the printhead contacts: see [Clean the printhead contacts on page 179](#).
2. If the problem persists, swap the printhead with another to check whether the problem moves to the new location of the original printhead. If this is the case, replace the printhead: see [Replace a printhead on page 105](#).

0085-0008-0X96 Carriage – Printhead – Energy calibration failure

The following steps provide the complete procedure for this topic.

(0085-0008-0196, 0085-0008-0296, 0085-0008-0396)

Where X is the number of the printhead.

1. Clean the printhead contacts: see [Clean the printhead contacts on page 179](#).
2. If the problem persists, swap the printhead with another to check whether the problem moves to the new location of the original printhead. If this is the case, replace the printhead: see [Replace a printhead on page 105](#).

0085-0008-0X93 Carriage – Printhead – Fails continuity

The following steps provide the complete procedure for this topic.

(0085-0008-0193, 0085-0008-0293, 0085-0008-0393)

Where X is the number of the printhead.

1. Clean the printhead contacts: see [Clean the printhead contacts on page 179](#).
2. If the problem persists, swap the printhead with another to check whether the problem moves to the new location of the original printhead. If this is the case, replace the printhead: see [Replace a printhead on page 105](#).

0085-0008-0X85 Carriage – Printhead – Fails logical

The following steps provide the complete procedure for this topic.

(0085-0008-0185, 0085-0008-0285, 0085-0008-0385)

Where X is the number of the printhead.

1. Clean the printhead contacts: see [Clean the printhead contacts on page 179](#).
2. If the problem persists, swap the printhead with another to check whether the problem moves to the new location of the original printhead. If this is the case, replace the printhead: see [Replace a printhead on page 105](#).

0085-0008-0X10 Carriage – Printhead – Voltage out of range

The following steps provide the complete procedure for this topic.

(0085-0008-0110, 0085-0008-0210, 0085-0008-0310)

Where X is the number of the printhead.

1. Clean the printhead contacts: see [Clean the printhead contacts on page 179](#).
2. If the problem persists, swap the printhead with another to check whether the problem moves to the new location of the original printhead. If this is the case, replace the printhead: see [Replace a printhead on page 105](#).

0085-0013-0X01 Carriage – Primer – Malfunction

Where X is:

1. Primer on Printhead 1
2. Primer on Printhead 2

3. Primer on Printhead 3

The primer is wrongly connected or its cable is broken. Just disconnect the primer cable and reconnect it. See [Replace a primer on page 202](#), step 1 to disconnect the primer cable and step 4 to reconnect it.

If the problem persists after fixing the connection, it is also possible that the primer itself is broken. In this case, replace the corresponding primer. See [Replace a primer on page 202](#).

0085-0013-0X33 Carriage - Primer - Current too high

Where X is:

1. Primer on Printhead 1
2. Primer on Printhead 2
3. Primer on Printhead 3

The primer is broken. Replace the corresponding primer. See [Replace a primer on page 202](#).

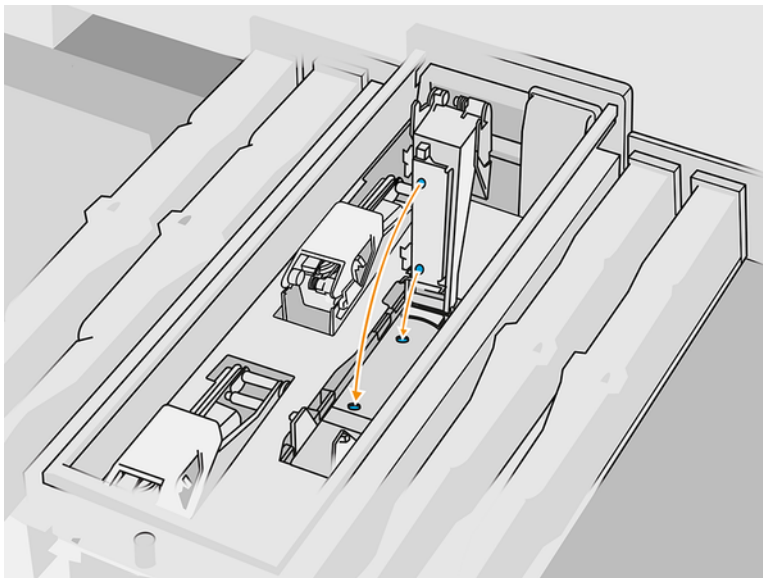
0085-0013-0X41 Carriage - Primer - Leakage

Where X is:

1. Primer on Printhead 1
2. Primer on Printhead 2
3. Primer on Printhead 3

There is a leak in the primer air circuit. The most probable cause is that the primer ports were wrongly inserted when latching the printhead. Re-latch the corresponding printhead.

The primer ports are two small air ports below the latch that must fit into the two top printhead holes.



See [Replace a printhead on page 105](#), steps 5 and 6 to release and lift the latch, step 12 and 13 to ensure primer ports are well inserted, and step 14 to close it.



IMPORTANT: Just lift the latch and close it; do not extract the printhead.

If the problem persists after re-latching the printhead, it is also possible that the primer ports are broken or the primer circuit itself leaks. In this case, replace the corresponding primer. See [Replace a primer on page 202](#).

15 When you need help

Request support

This topic explains the concepts involved in this subject.

Support is provided by your support representative: usually from the company from which you bought the printer. If this is not the case, contact HP Support on the HP Web site at the following link:

- <http://www.hp.com/go/jetfusion3D5000/support/>

Before calling your support representative, prepare for the call as follows:

- Review the troubleshooting suggestions in this guide.
- Review your software documentation, if relevant.
- Check that you have the following information ready:
 - The product and serial numbers of the printer you are using
 - The error code displayed on the front panel, if any (see [System errors on page 279](#))
 - The name and version number of your software
 - If you have a print-quality problem, the name and product number of the material that you were using

Customer Self-Repair

HP's Customer Self-Repair program offers our customers the fastest service under either warranty or contract. It enables HP to ship replacement parts directly to you (the end user) so that you can replace them. Using this program, you can replace parts at your own convenience.

Convenient and easy to use

- Your service representative will diagnose and assess whether a replacement part is required to address a defective hardware component.

For more information about Customer Self-Repair, see <http://www.hp.com/go/selfrepair/>.

Service information

The Command Center can produce on request a list of many aspects of the printer's current status, some of which may be useful to a service engineer trying to fix a problem.

16 Accessibility

Front panel

If required, the front-panel display brightness and the loudspeaker volume can be changed.

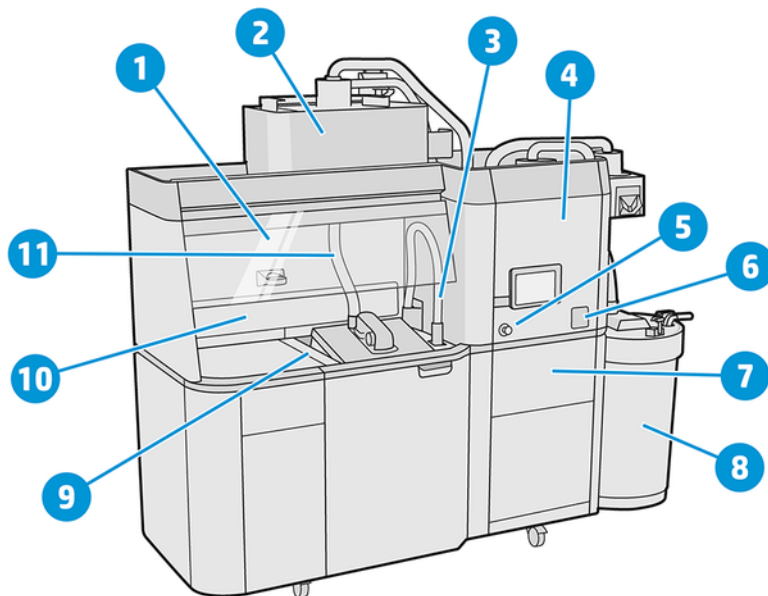
See [Change system options on page 34](#)

A Processing station user guide

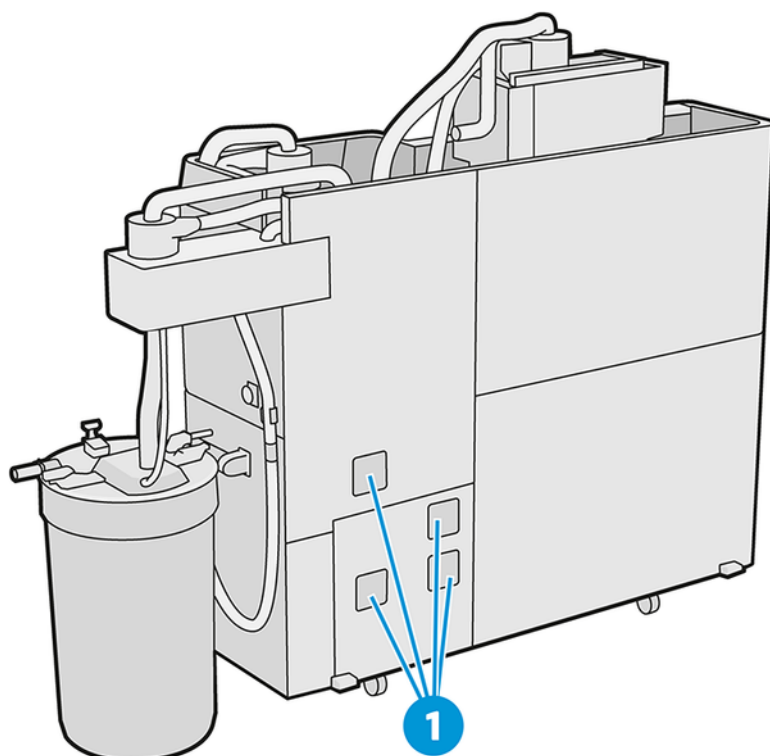
How to use your product.

Processing station

Parts of the processing station.



1. Hood
2. Mixer
3. Reusable material collector
4. Storage tank
5. Emergency stop button
6. Service switch
7. Sieve
8. External tank
9. Platform control buttons
10. Dust extractor
11. Material loading nozzle



1. E-cabinet filters

Turn the processing station on and off

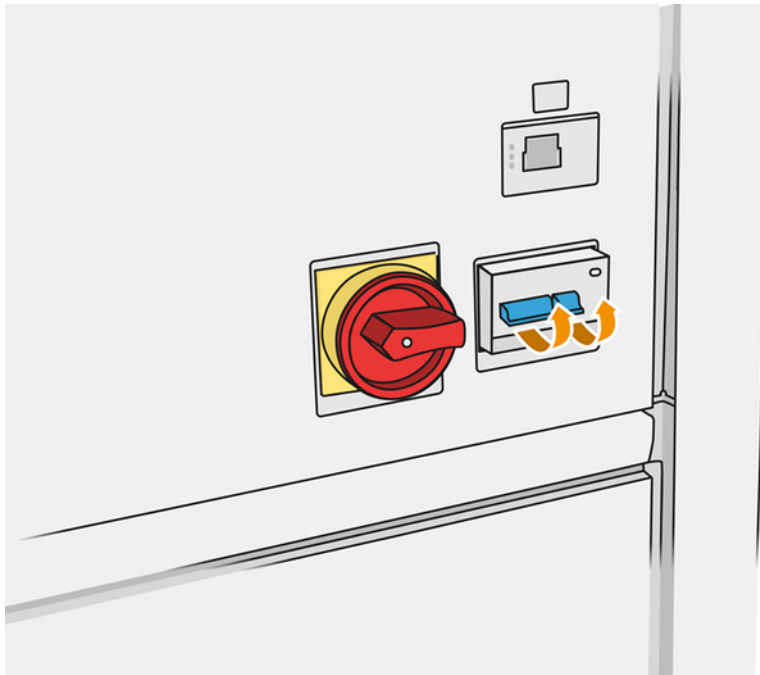
The correct procedure changes after the first time.

Turn on the processing station for the first time

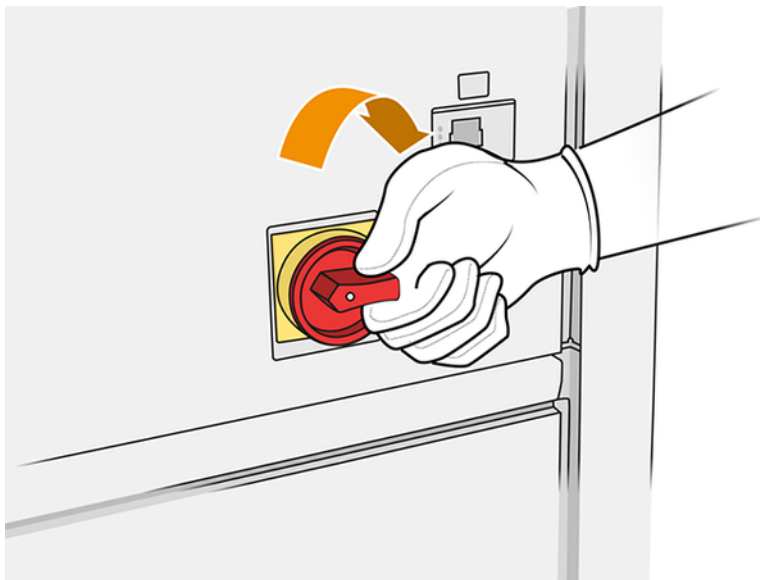
Follow these steps carefully, the first time that you turn on the processing station.

1. Make sure that the wheels are braked: the processing station should remain stationary while operating.

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



3. Turn the service switch to the on position.



4. Perform a visual check of the station.
5. Wait for the front panel to indicate that the station is ready. This can take several minutes. When initialization is complete, the front panel displays a **Ready** message. If a system error message is displayed, see [System errors on page 279](#).

Turn the processing station on and off

After you have turned on the processing station for the first time, you can use any of these methods to turn it on and off.

The processing station has two power-off levels. Level 1 is recommended if you intend to use it again soon. Otherwise, you are recommended to use level 2, which is complete shutdown.

Table A-1 Turn the processing station on and off

| Level | Turn off | Turn on |
|---------------------------------------|--|--|
| 1: Standby (5 V) | Front-panel power button off | Front-panel power button on |
| 2: All processing-station systems off | <ol style="list-style-type: none">1. Front-panel power button off2. Red main power switch off | <ol style="list-style-type: none">1. Red main power switch on2. Front-panel power button on |

Load material into the build unit

In order to print, you need material in the build unit.

Loading procedure

Follow these steps to load material into the build unit.

1. Ensure that the build unit is located on the processing station.
2. Ensure that the build unit printing platform is clean.
3. If you want to change the mix ratio, HP recommends cleaning the build unit first. See [Empty the Build Unit on page 83](#).



 **NOTE:** If you do not clean the build unit, it will contain some remaining material with the previous mix ratio. In fact, some of the previous material may remain even after cleaning, so you may prefer to use a different build unit. Check the material compatibility specifications.


Table A-2 Recommended mix ratios

| Material | Reusable proportion |
|-------------------------------|---------------------|
| HP and Certified Polyamide 12 | ≤ 80% |

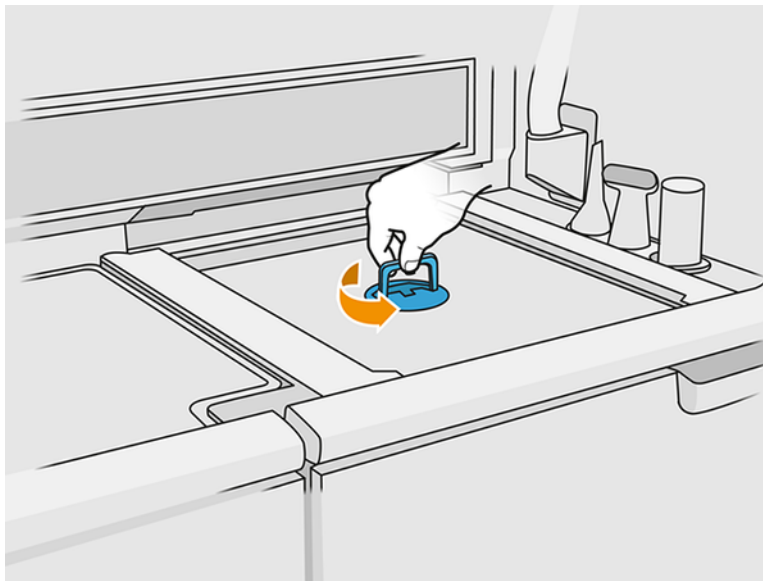
In some exceptional cases you may want to change this ratio; for example, when using the processing station for the first time you may need to use 100% fresh material.

4. If you want to change to a different type of material, you should first clean and then purge the processing station, or clean it manually. See [Change to a different type of material on page 295](#).

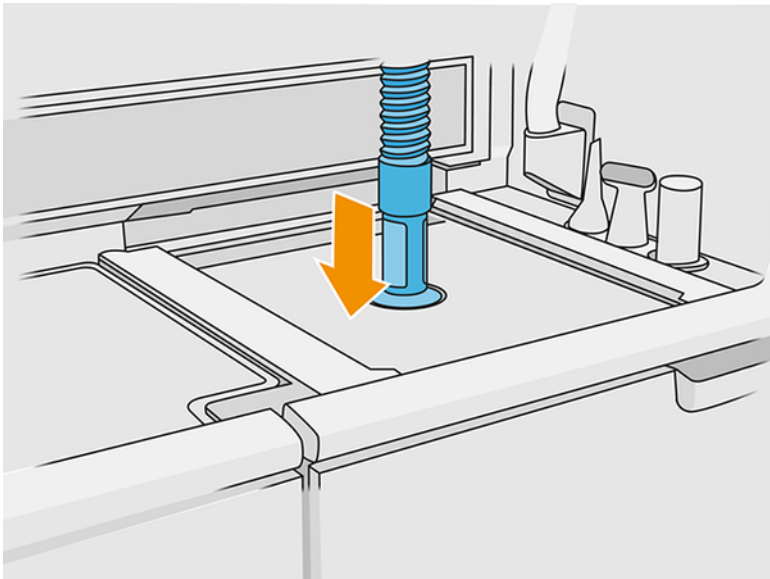
 **NOTE:** If you do not intend to change the type of material, you may sometimes decide to clean the processing station without purging it, perhaps because you think there is a problem with the particular material that you have been using. See [Clean the processing station on page 338](#).

 **CAUTION:** A small amount of material may remain after cleaning. If your new material cannot tolerate any contamination at all, you should clean the processing station manually. Contact your service representative if you are not trained to do this yourself.

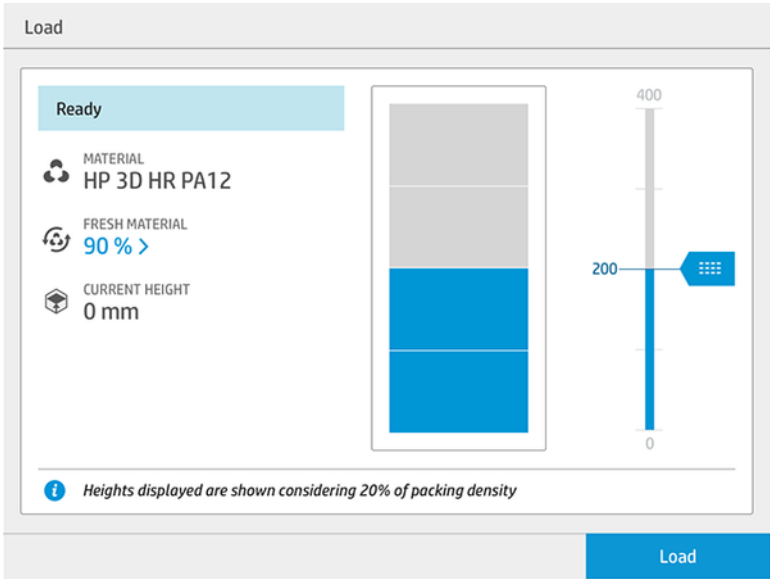
5. Ensure that the material cartridges are loaded.
6. At the front panel, tap **Build unit** > **Load**.
7. Clean the sieve when requested by the front panel. See [Clean the sieve on page 333](#).
8. Clean the loading nozzle sensor. See [Clean the loading nozzle sensor on page 335](#).
9. Ensure that the material loading inlet is clean.
10. Open the lid of the material loading inlet of the build unit.



11. Attach the material loading nozzle.



12. Define the height by scrolling up and down the right bar. You can change the mix ratio if required.



The loading time depends on the mix ratio used and the quantity to load; here are some approximate examples:


Table A-3 Loading time

| Estimated loading time (min) | | | |
|------------------------------|---------------|--------------------|--------------------|
| Material | Mix ratio | Full print chamber | Half print chamber |
| HP 3D HR PA12 | 80% R - 20% F | 45 | 25 |

NOTE: The percentage full assumes a 20% packing density.


13. Tap **Load** to continue.

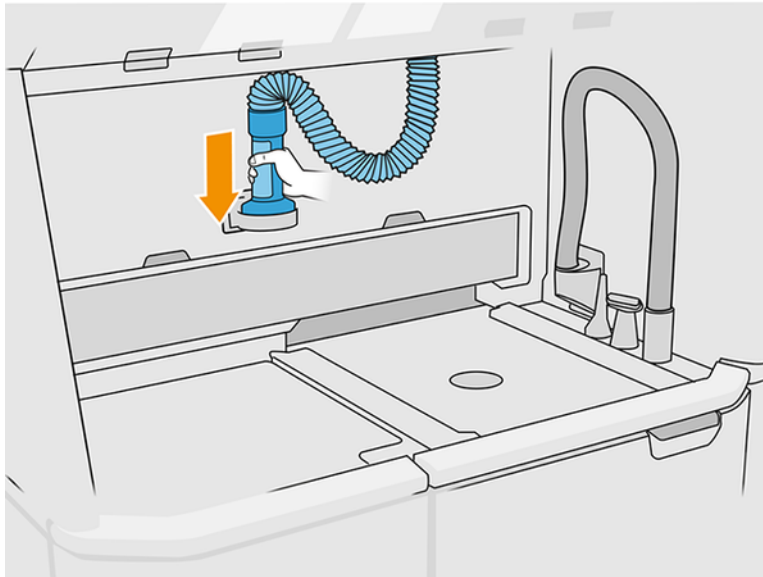
14. Tap **Start**.

 **NOTE:** To fill the build unit completely with a mix ratio of 80% reusable, 20% fresh, you may need to do it in two steps if the external tank is not automatic or if it does not contain enough reusable material.

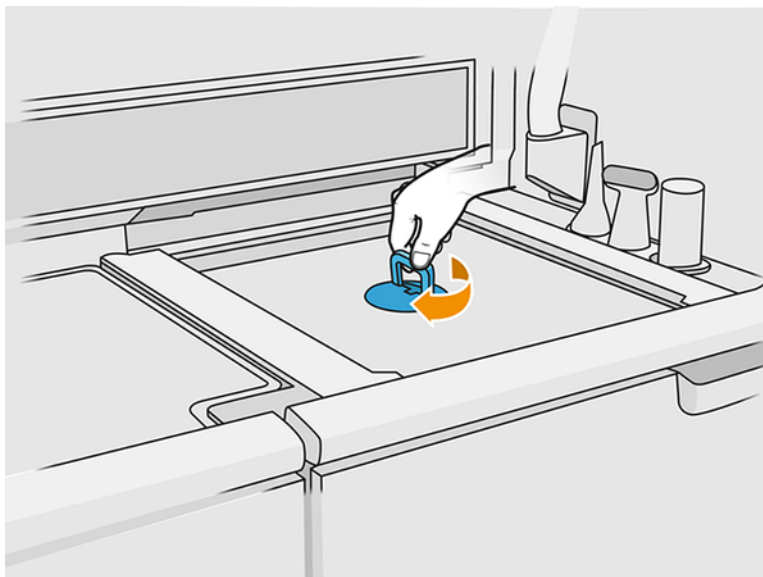
15. The supply container of the unit is filled. Wait for front panel to report that it has been successfully loaded.

16. Detach the material loading nozzle and leave it in parking position.

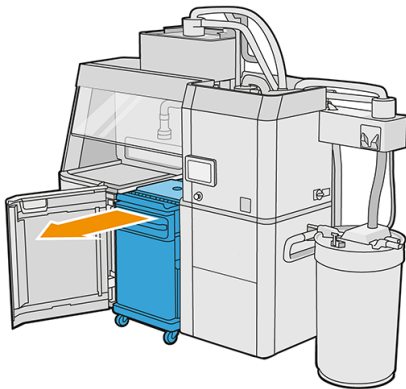
 **NOTE:** If the loading nozzle is not correctly parked, there could be a material spillage while the processing station is idle.



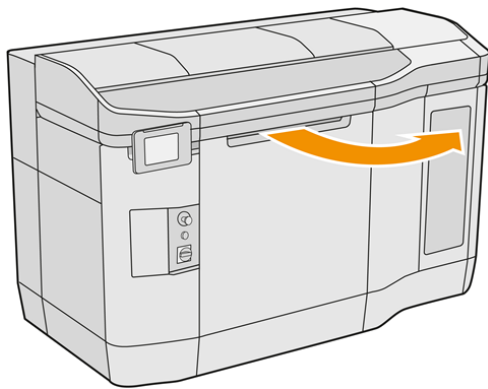
17. Close the material loading inlet.



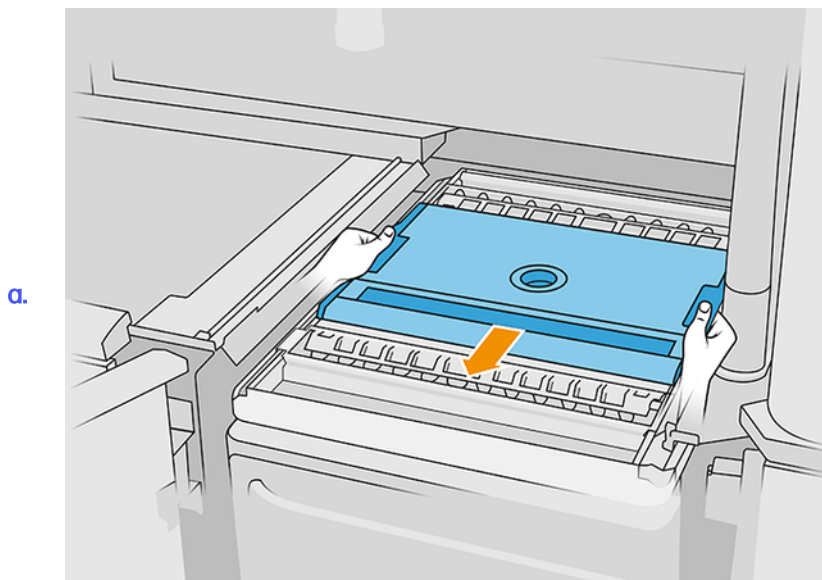
18. At the front panel, tap **Eject the build unit**.
19. Extract the build unit from the processing station by pulling the handle, put the safety lid on top of the build unit, and move it to the printer.



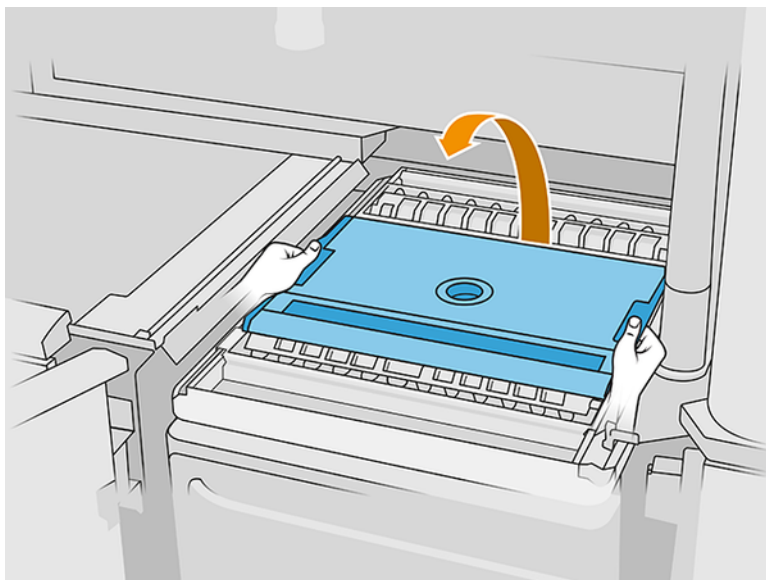
20. Open the printer door.



21. Remove the lid of the build unit.

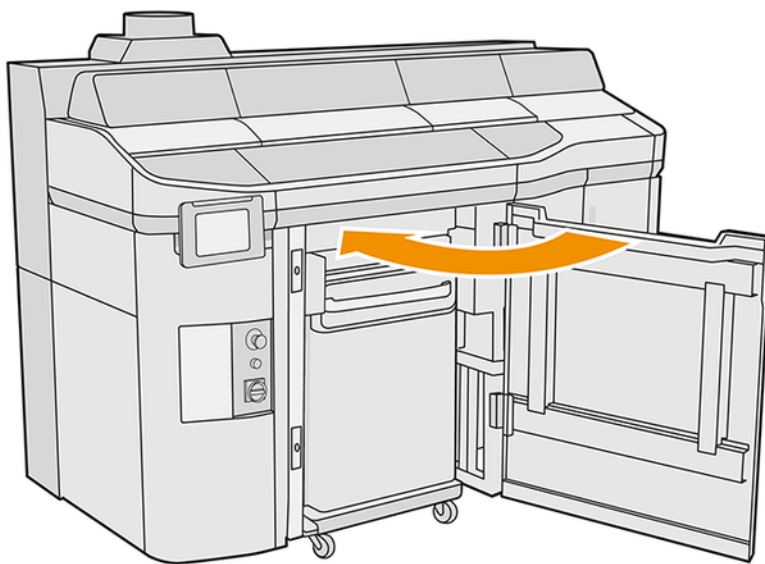


b.



22. Insert the build unit by pushing the handles.

23. Close the printer door.



Change to a different type of material

When changing from one material to another, some special procedures may be needed, depending on the compatibility of the materials.

Table A-4 Vane types

| Material | Vane types |
|----------------------------------|------------|
| HP 3D HR PA12 enabled by Evonik | Vanes |
| HP 3D HR PA 12 GB | Vanes |
| HP 3D HR PA 11 | Z-Vanes |
| HP 3D HR PA12S enabled by Arkema | Z-Vanes |


Table A-4 Vane types (continued)

| Material | Vane types |
|--|------------|
| HP 3D HR PP enabled by BASF | Vanes |
| HP 3D HR TPU 01 and BASF Ultrasint TPU01 | Vanes |
| ESTANE® 3D TPU M88A | Vanes |

The processing station stores and moves the material from the cartridges to the build unit, and it may be difficult to remove all material particles from the loading path. Check the compatibility chart on the webpage and follow the procedures below, depending on the level of compatibility.

Table A-5 Compatibility chart

| From / To: | HP 3D HR PA12 enabled by Evonik | HP 3D HR PA 12 GB | HP 3D HR PA 11 | HP 3D HR PA12S enabled by Arkema | HP 3D HR PP enabled by BASF | HP 3D HR TPU01 / BASF Ultrasint TPU01 | ESTANE® 3D TPU M88A Z-vanes |
|---|------------------------------------|-------------------|----------------|-------------------------------------|--------------------------------|---|--------------------------------|
| HP 3D HR PA12 enabled by Evonik | Grade 1 | Grade 2 | Grade 2 | Grade 2 | Grade 3 | Grade 3 | Grade 3 |
| HP 3D HR PA 12 GB | Grade 2 | Grade 1 | Grade 2 | Grade 2 | Grade 3 | Grade 3 | Grade 3 |
| HP 3D HR PA 11 | Grade 2 | Grade 2 | Grade 1 | Grade 2 | Grade 3 | Grade 3 | Grade 3 |
| HP 3D HR PA12S enabled by Arkema | Grade 2 | Grade 2 | Grade 2 | Grade 1 | Grade 3 | Grade 3 | Grade 3 |
| HP 3D HR PP enabled by BASF | Grade 3 | Grade 3 | Grade 3 | Grade 3 | Grade 1 | Grade 3 | Grade 3 |
| HP 3D HR TPU01 / BASF Ultrasint TPU01 | Grade 3 | Grade 3 | Grade 3 | Grade 3 | Grade 3 | Grade 1 | Grade 3 |
| ESTANE® 3D TPU M88A | Grade 3 | Grade 3 | Grade 3 | Grade 3 | Grade 3 | Grade 3 | Grade 1 |

Download the material package from the HP webpage to a USB flash drive, connect it to the processing station, and then to the printer. At the processing station's front panel, tap the **Maintenance** icon , then **Material > Settings > Change material**.

Grade 1: Light cleaning

Light cleaning is sufficient when the materials are relatively compatible.

Perform the following operations:

- See: [Empty the Build Unit on page 83](#)
- See: [Check and clean the interior of the build unit on page 310](#)
- See: [Clean the processing station on page 338](#)
- Daily printer maintenance: see [Printer maintenance on page 125](#)

Grade 2: Deep cleaning and material purge

Deep cleaning should be used when the materials are not compatible.

Perform the following operations:

- See: [Empty the Build Unit on page 83](#)
- See: [Check and clean the interior of the build unit on page 310](#)
- See: [Clean the processing station on page 338](#)
- See: [Purge the processing station on page 298](#)



NOTE: You will need 30 liters of the new material (15 liters from each of the supplier connectors), to be used for purging.

For the printer, follow these steps:

1. Turn off the printer (see [Turn the printer on and off on page 41](#)).
2. [Clean the print zone, carriage, and housing structure on page 127](#).
3. [Clean the inside of the carriage on page 151](#).
4. [Clean the service-station caps on page 153](#).
5. [Clean the top-enclosure fan filters on page 155](#).
6. [Clean the print-zone window on page 183](#).
7. [Clean the bottom glass of the heating lamps on page 172](#).
8. [Clean the front bar \(after every job/daily\) on page 133](#).
9. [Clean the scan-axis wipers on page 149](#).
10. [Clean the bottom of the carriage and of the fusing lamps on page 137](#).
11. [Clean the fusing-lamp glasses on page 162](#).
12. [Clean the recoating roller and recoating plates on page 143](#).
13. [Clean the spittoon on page 134](#).
14. [Clean the thermal camera glass on page 139](#).
15. Turn on the printer (see [Turn the printer on and off on page 41](#)).
16. Perform diagnostics:
 - a. Calibrate the cooling system.
 - b. Finish checking/cleaning the spittoon.
17. [Clean the exterior of the printer on page 142](#).


Grade 3: Full deep clean

If your new material cannot tolerate any contamination at all, you should clean the processing station manually.


Contact your service representative if you are not trained to do this yourself.


Purge the processing station


The processing station should be cleaned and purged before changing to a different type of material.


 **NOTE:** You will need 30 liters of the new material (15 liters from each of the supplier connectors), to be used for purging. This material will be disposed at the end of the purge process.

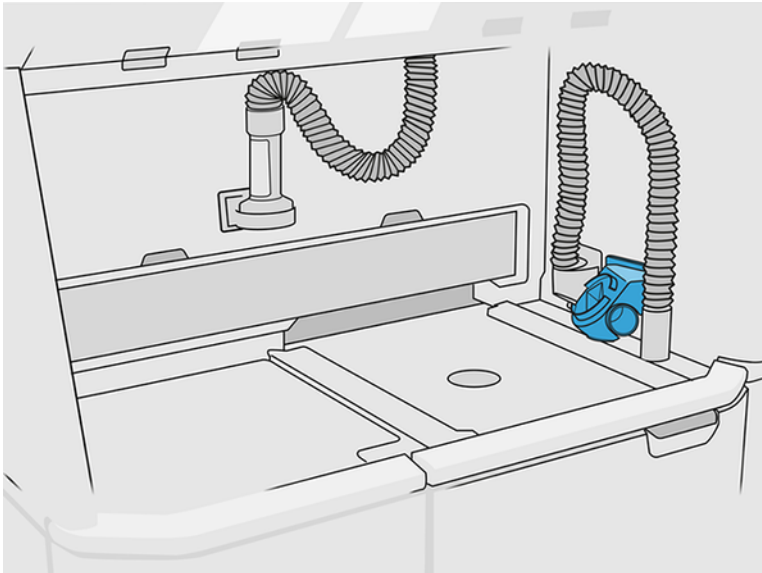
The purge process will use new material to recirculate it multiple times through all the subsystems and hoses of the processing station. The new material circulation will remove the remaining particles of the old material, and, eventually, the purge process will get rid of it.

 **IMPORTANT:** The processing station should always be cleaned before purging. See [Clean the processing station on page 338](#).

 **IMPORTANT:** If the system is switched off in the middle of the process, the process will need to be started again (cleaning included), and more fresh material will be needed.

 **CAUTION:** It is important to keep the purge tool in the indicated position during the whole process. In case of system error, do not disconnect the hoses; restart the processing station and restart the process, or start an unpacking process to ensure that the material left in the hoses is properly cleaned. If it is not possible to do either of these things, remove the tool from its position, keeping it horizontal to avoid possible material spillages.

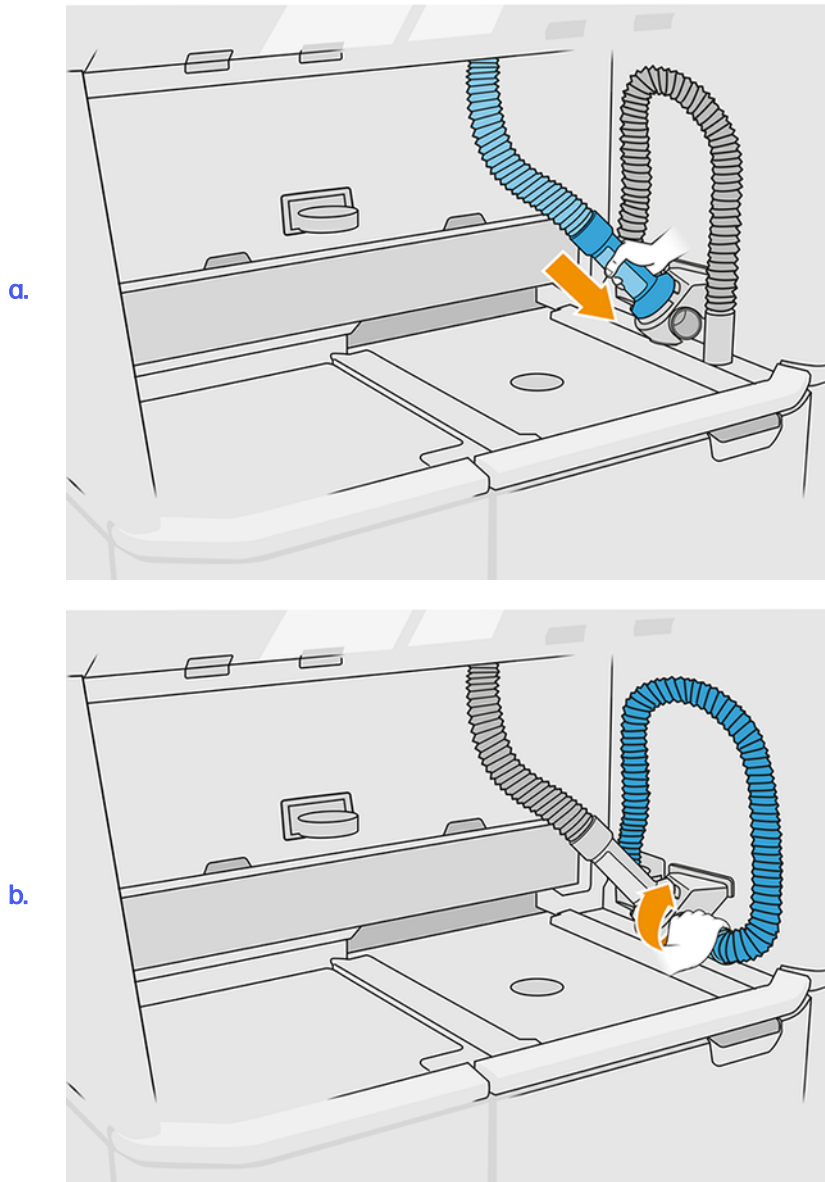
1. At the front panel, tap the **Settings** icon , then **Material management > Purge processing station**.
2. Replace the external tank by a new one, which will be used for waste material.
3. Put in place the new material cartridges containing the material that you want to use.
4. Take the purge tool from the drawer and place it on the side of the working area.



5. Connect the material loading nozzle to the reusable material collector with the purge tool.

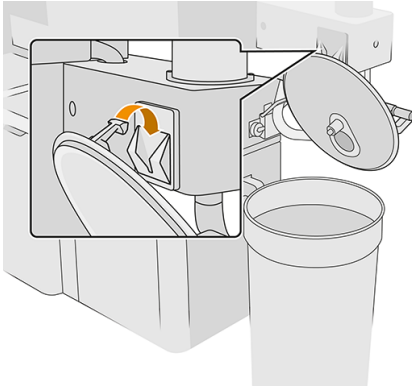
⚠ CAUTION: Ensure that the hoses are connected properly. The loading nozzle should be connected to the top and the material collector to the side. If the loading nozzle is correctly connected, the hose should slope gradually downwards; it should not have an 'S' shape.

💡 TIP: Tape the unpacking hose and the loading hose to the purge tool to prevent interruptions during the process. If the process is interrupted, the user should start it from scratch, cleaning included.

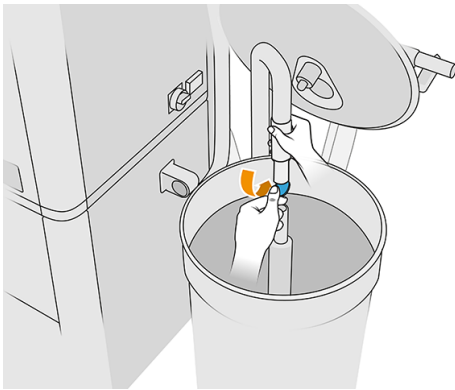



6. Tap **Continue**.

7. Unlatch and open the external tank lid.



8. Connect the external tank collector and pipe. You are recommended to wear gloves and goggles.

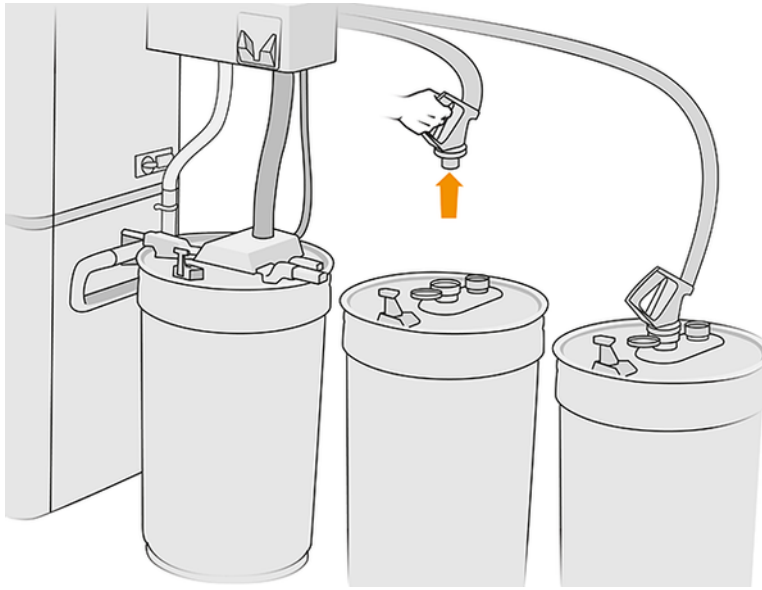


 **NOTE:** The pipe sucks up material in its immediate vicinity. If you leave it in one position, it will consume all the material in that area, while there is still material elsewhere in the tank. You should therefore move the pipe around in the tank to access all the available material.

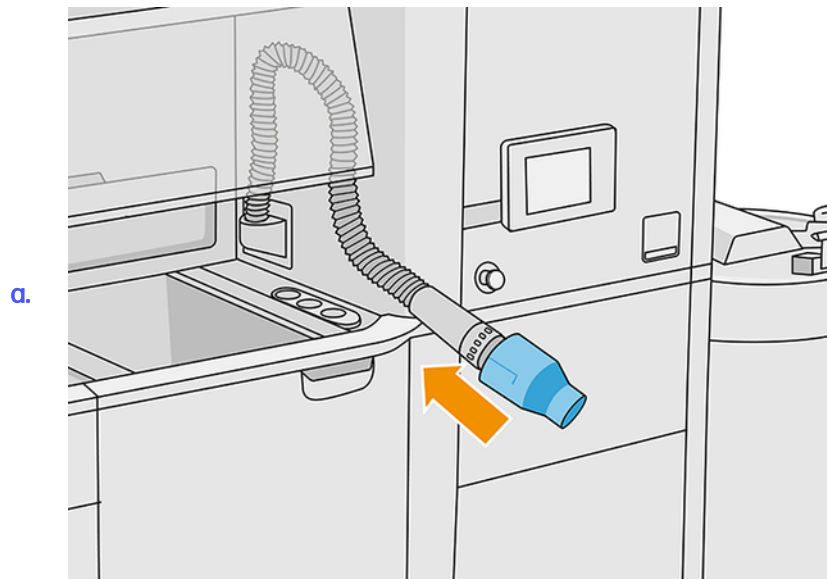
 **NOTE:** You can insert the pipe with the vacuum switched off, if you like.

9. Start the process from the front panel to extract the material from the external tank.
10. Confirm that all the material has been removed from the external tank.
11. Tap **Continue**. The process will continue unattended almost until the final steps.

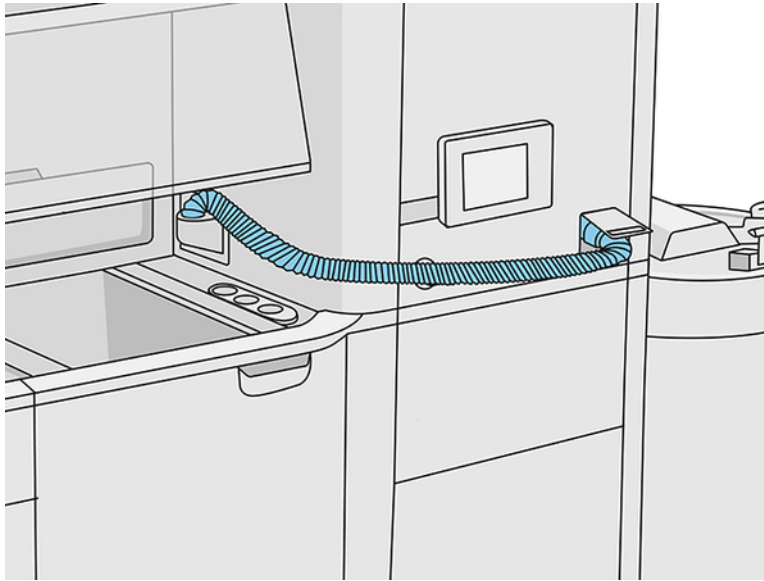
12. When prompted by the front panel, disconnect the material cartridge connectors.



13. Place the sieve connector on the reusable material collector, and connect it to the sieve.



b.



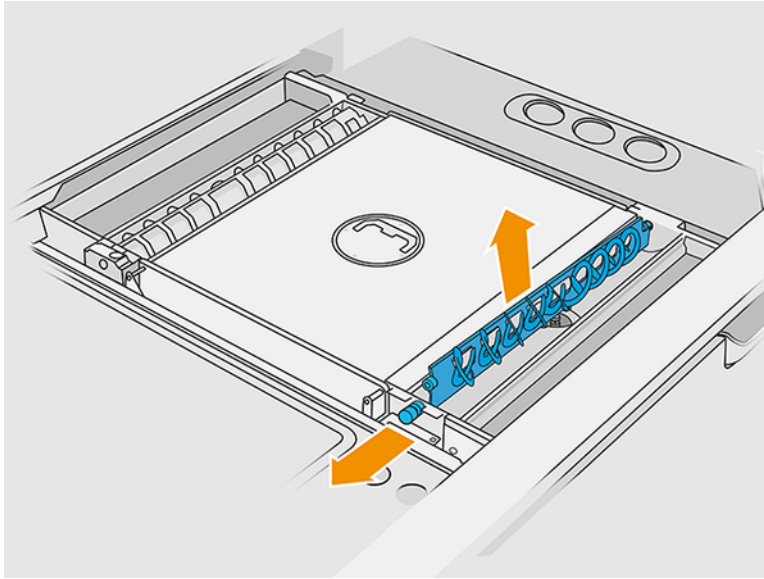
14. Tap **Continue**, and follow the instructions on the front panel to complete the process. When it is complete, tap **Finish**.
15. Dispose of the material from the external tank according to local laws.
16. Clean the external tank with an explosion-protected vacuum cleaner.
17. Connect the material cartridges that you intend to use.

Empty the material from the build unit

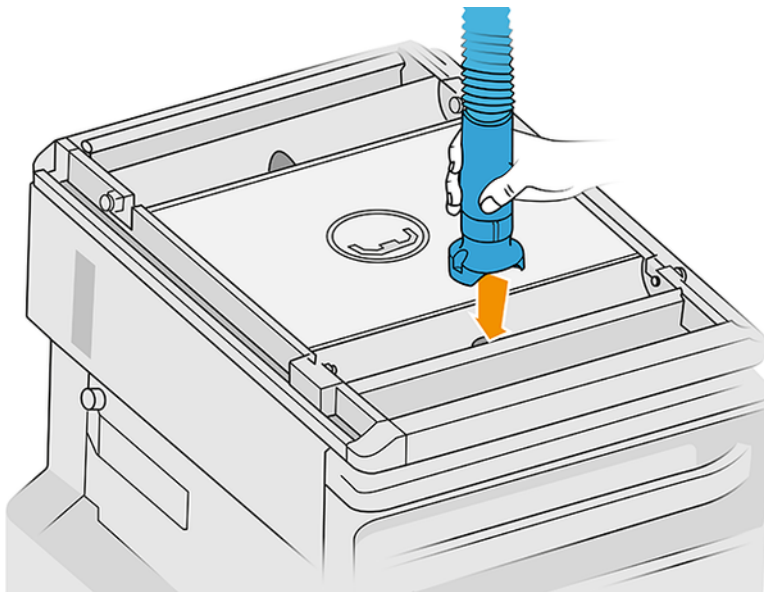
Use the material collector to vacuum up any loose material in the build unit.

1. Insert the build unit into the processing station with no job inside it.
2. Clean the surface of the build unit, if you have not already done so. See [Clean Build Unit surface on page 80](#).
3. At the front panel, tap **Build unit** > **Empty**.

4. Remove both vane feeders.

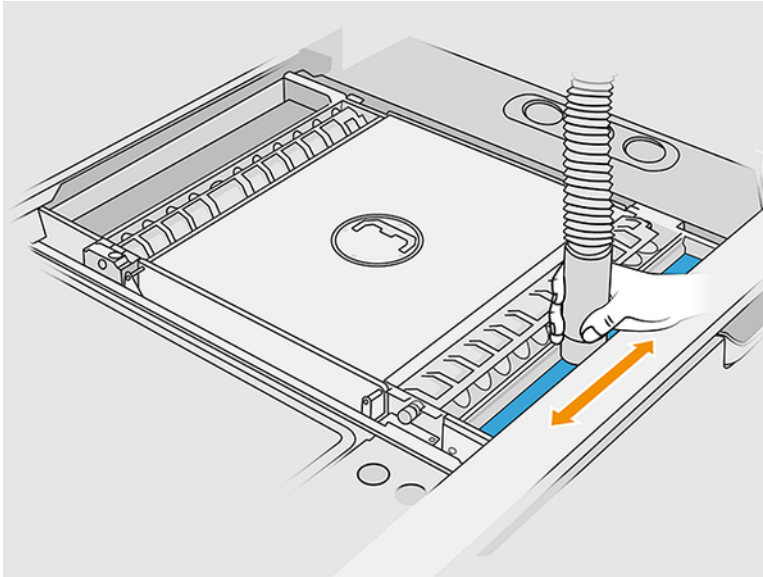


5. Follow the front panel instructions to vacuum the material inside the build unit.
6. Connect the material collector to the front material lifter, and tap **Start** on the front panel.

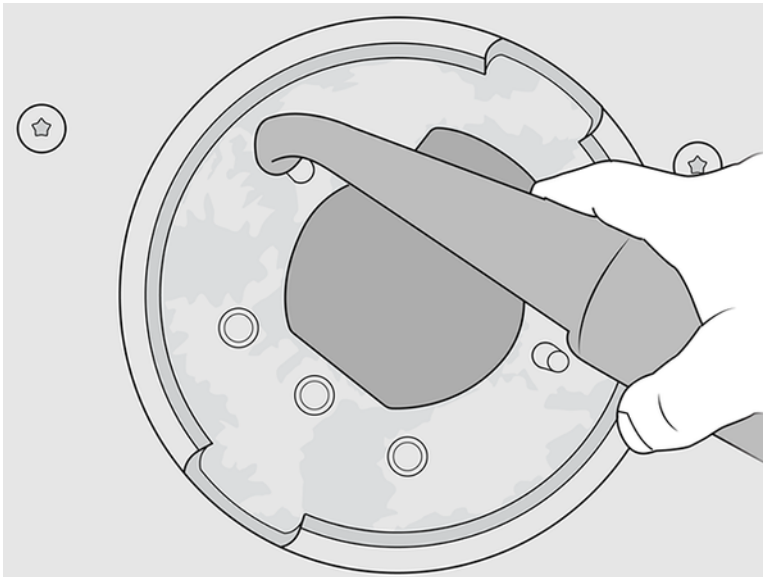


7. Repeat the same process with the rear material lifter.
8. Repeat again with the front material lifter until there is no material left inside.
9. Vacuum the build-unit printing platform with the reusable material collector.

10. Vacuum the front overflow tray.



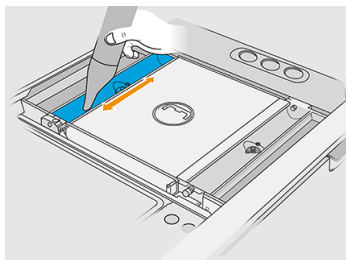
11. Vacuum the area below the cap of the build unit's loading inlet.



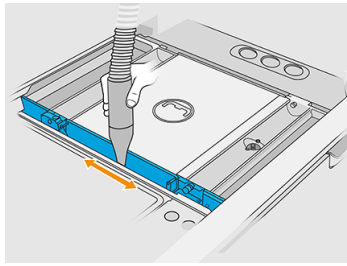
12. Vacuum the feed trays, making sure there is no material left.

13. Vacuum the other overflow trays.

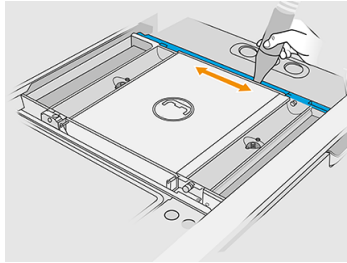
a.



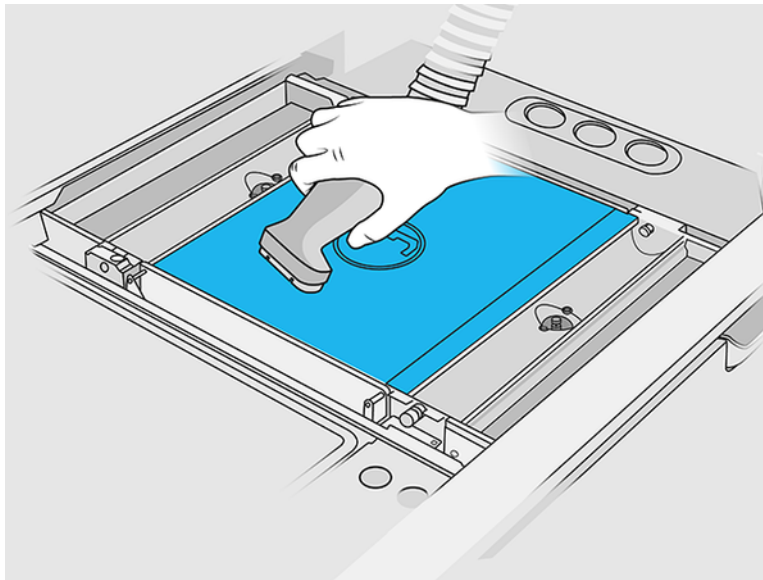
b.



c.



14. Attach the wide nozzle to the reusable material collector.
15. Vacuum the build unit platform.

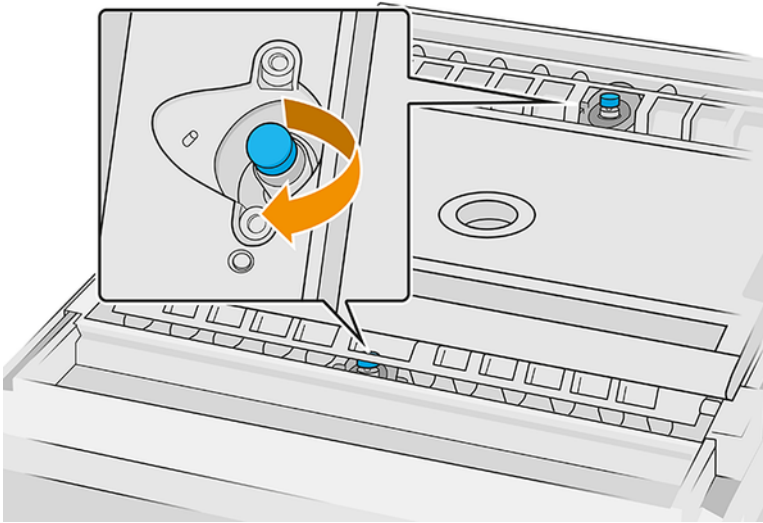


16. Go to the front panel and move down the platform of the build unit by 350 mm.

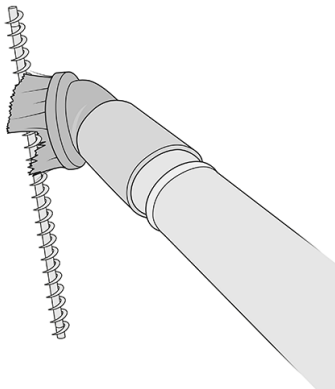
To do this, tap the **Settings** icon , then **Utilities** > **Maintenance** > **Lower build platform**.

17. Remove the build unit from the processing station.

18. Manually remove the screw on top of each material lifter, and remove both material lifters.

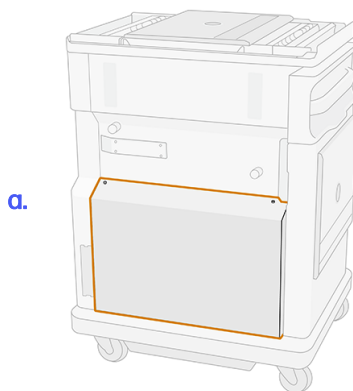


19. Vacuum both material lifters with a soft-brush nozzle.

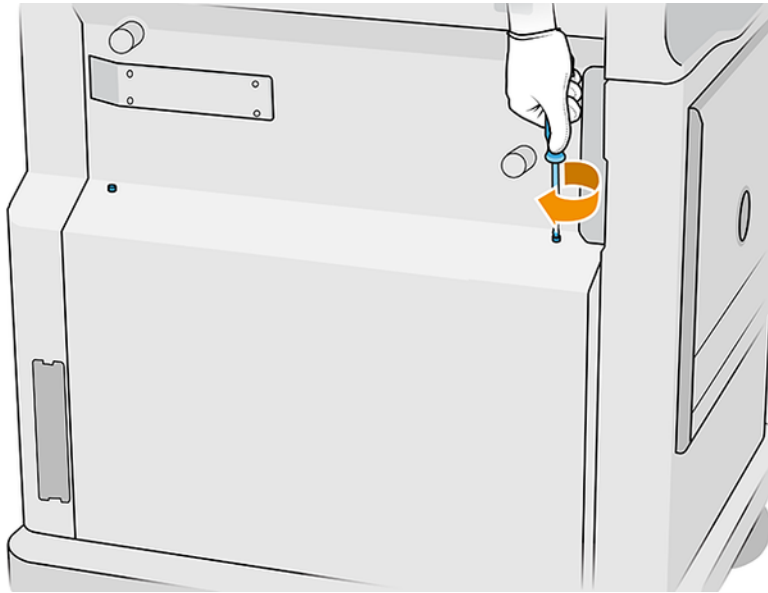


20. Clean the material lifter duct with a hand-held low-scratch tube brush.

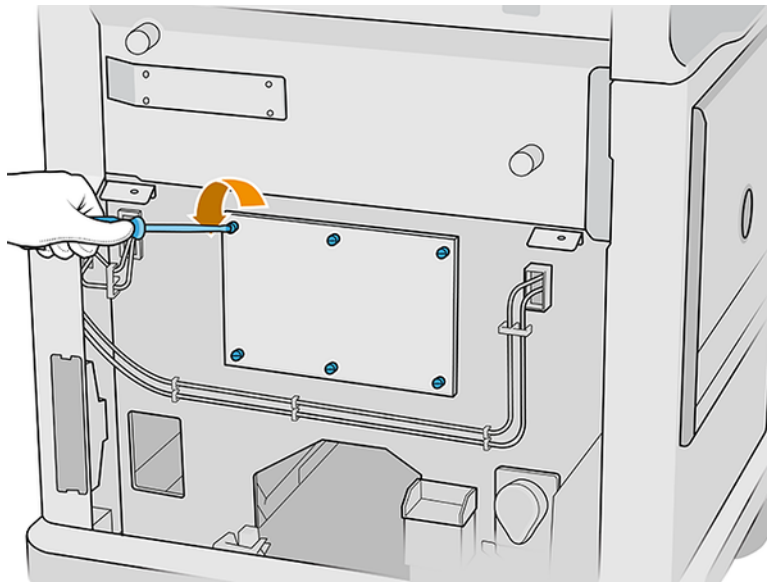
21. Locate the material lid and remove the two Torx 20 screws from it.



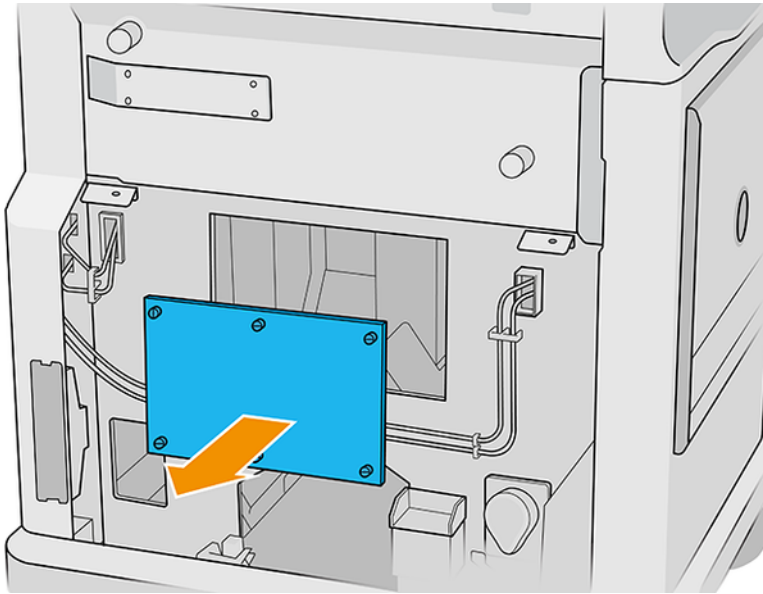
b.



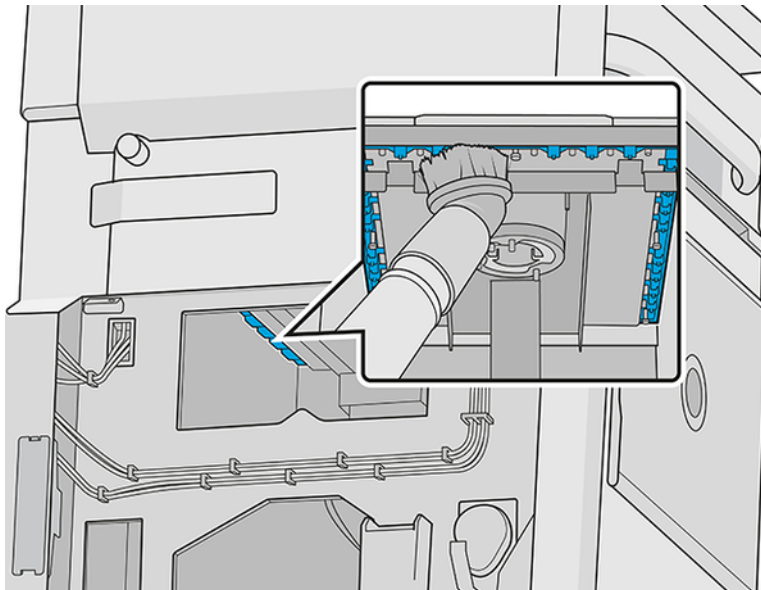
22. Loosen the six flat screws.



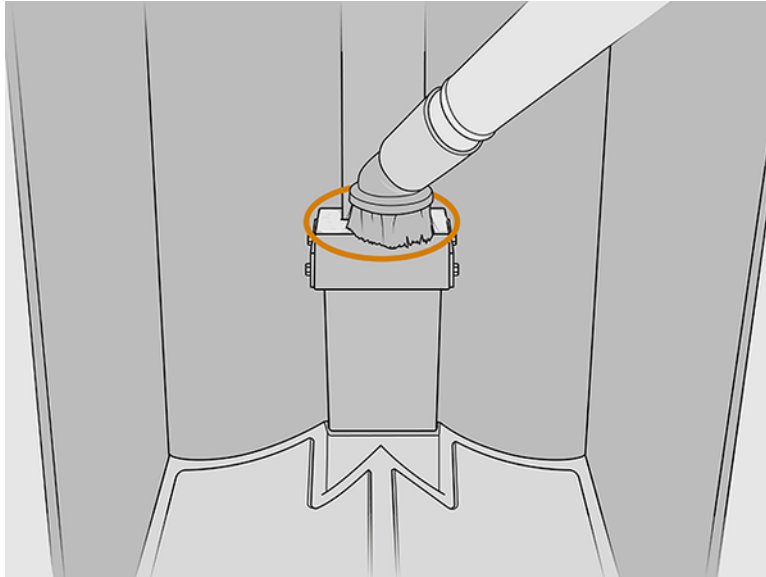
23. Remove the lid.



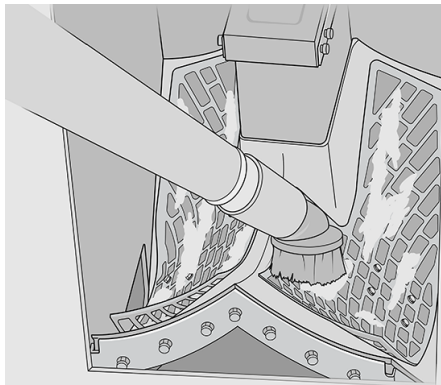
24. Using a soft-brush nozzle, vacuum the material inside the build unit from top to bottom.
- a. Vacuum the perimeter below the platform.



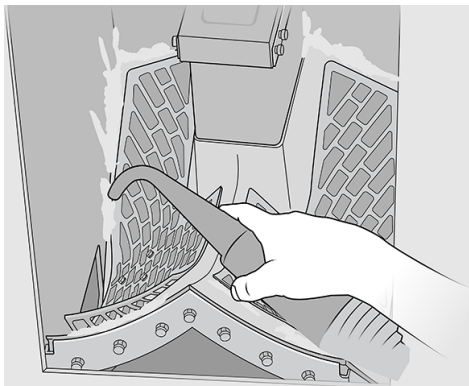
- b. Vacuum the column gasket.



- c. Vacuum the mesh point by point. You cannot slide the nozzle over the mesh, but must vacuum one point and then lift the nozzle and put it down in another point.



25. Using a narrow nozzle, vacuum first around the mesh and then the material-lifter inlets.



Check and clean the interior of the build unit

Make sure that no material is left in the build unit.



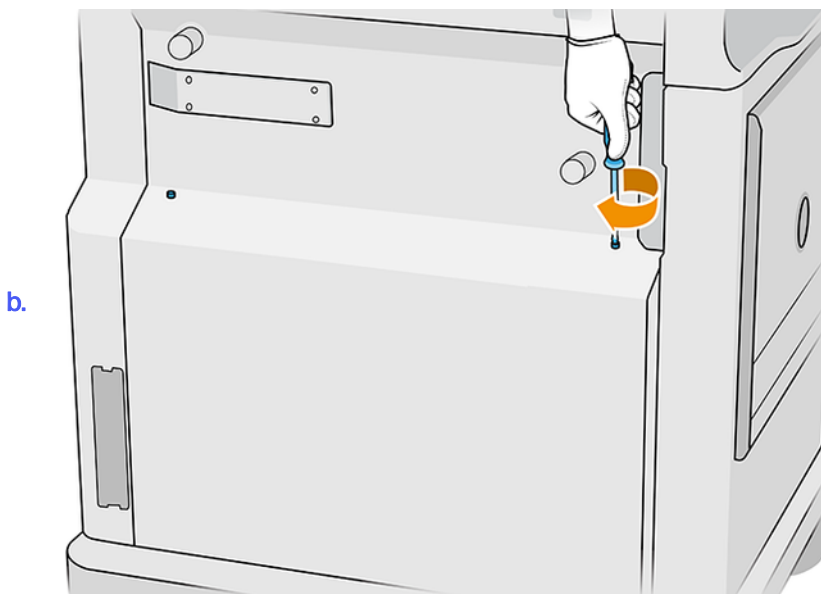
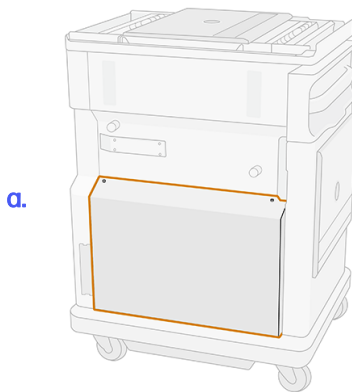
IMPORTANT: All build units to be used with the new material must be clean before starting: see [Empty the Build Unit on page 83](#).

Prepare for cleaning

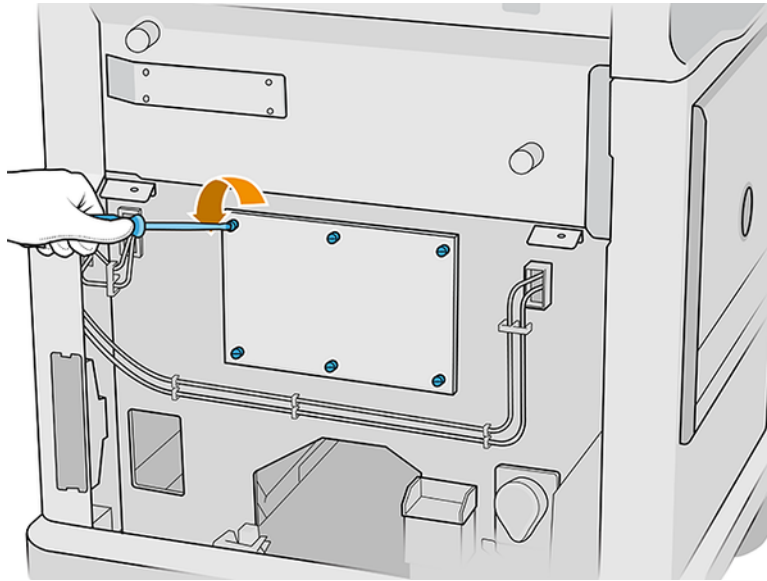
1. Ensure that you have an explosion-protected vacuum cleaner with soft-brush nozzle, an absorbent all-purpose cloth, a flat screwdriver, a Torx 20 screwdriver, and deionized water (these things are not provided by HP).
2. You are recommended to wear gloves, goggles, and mask.

Check and clean the interior of the build unit

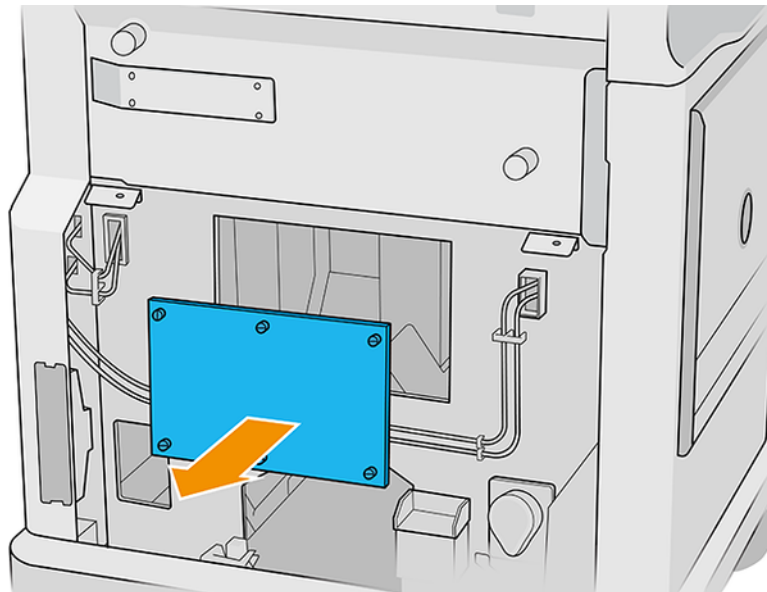
1. At the front panel, tap the **Settings** icon , then **Maintenance** > **Utilities** > **Set build unit as clean**.
2. Locate the material lid and remove the two Torx 20 screws from it.



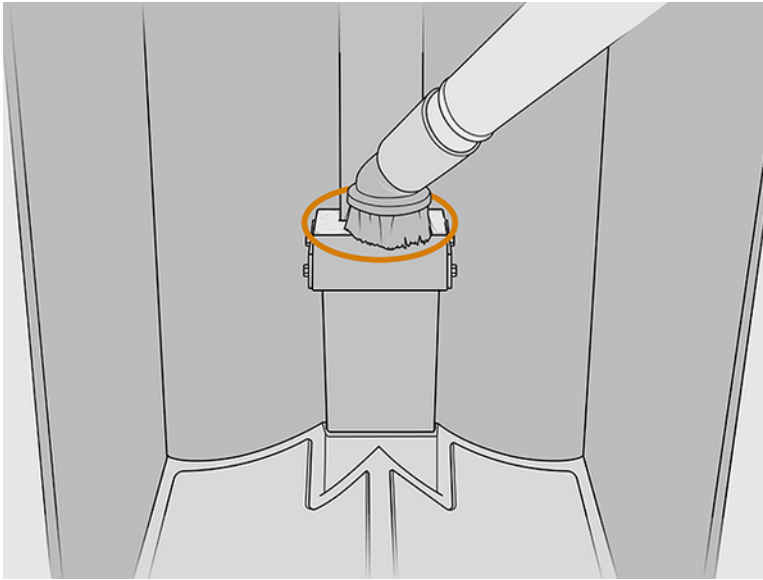
3. Loosen the six flat screws.



4. Remove the lid.

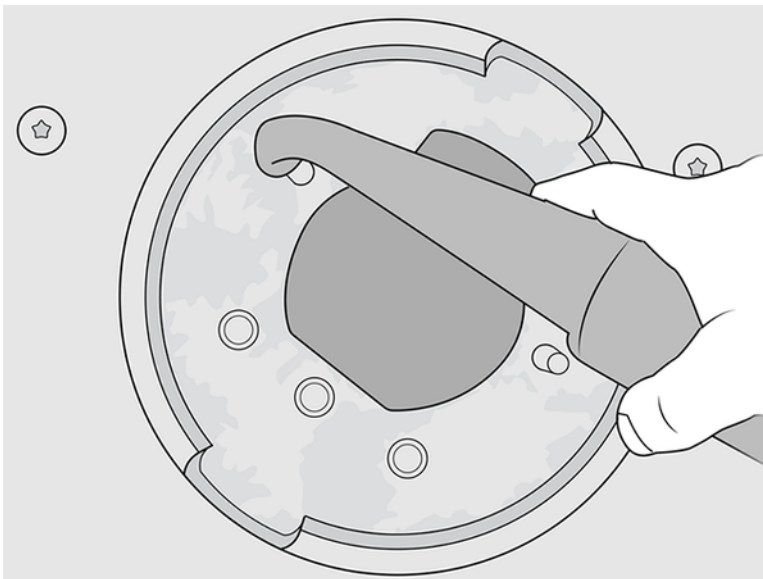


5. Check the interior of the build unit and use the explosion-protected vacuum cleaner with soft-brush nozzle, if needed, to remove the remaining material.



Finish cleaning

1. Tighten the four captive flat screws.
2. Put back and tighten the two Torx 20 screws.
3. Vacuum the area below the cap of the build unit's loading inlet.



Unpack the build

After printing, the build must be extracted from the build unit.

General advice and precautions

As the build is at a high temperature while printing, you must wait about 30 minutes before extracting the build unit from the printer. Then some further cooling time is required in order to preserve part quality.

Tips

- Wear personal protective equipment: see [Personal protective equipment on page 13](#).
- Unpack calmly.
- There are physical buttons with which you can raise or lower the printing platform to make the unpacking process more convenient.
- The sides and corners of the build chamber are colder than the center.
- If the parts are large, or the material around the parts seems very hot, leave them aside to cool down.
- If you notice that the vacuum speed slows down, try to unpack material from cooler locations or from cooled parts.

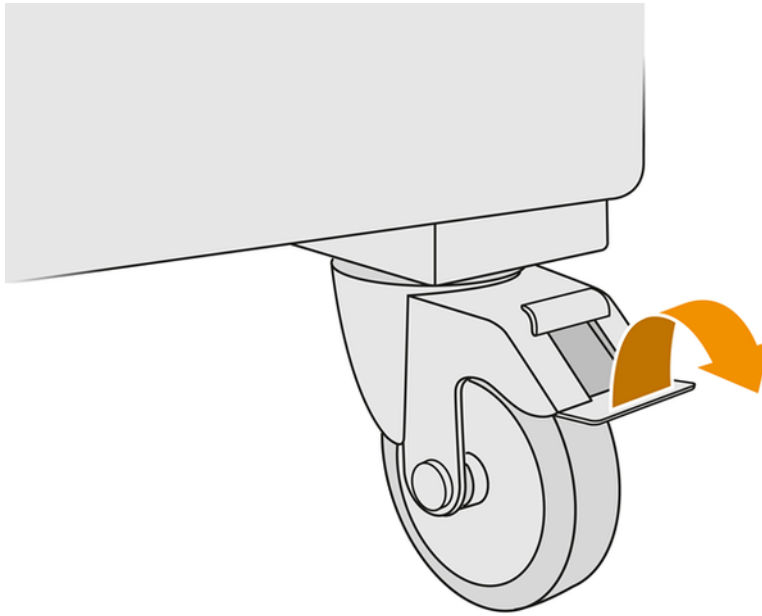
Unpacking

Without the natural cooling unit, you can choose one of two cooling processes.

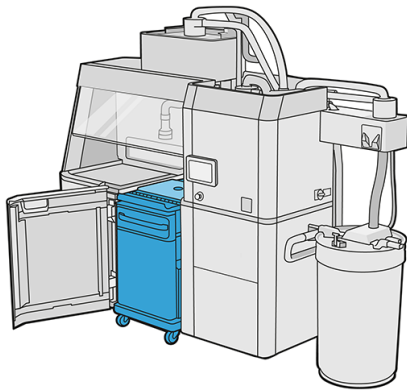
1. When the printer tells you to proceed, open the door, extract the build unit, and place the safety lid over it.
2. Put on heat-resistant gloves and vacuum the top surface of the build unit with an external explosion-protected vacuum cleaner.
3. At this point you can choose to follow the natural cooling process:
 - a. Move the build unit aside to cool down further.



CAUTION: You are recommended to lock the wheels of the build unit while it is outside the printer.



- b. Wait. The cooling time depends on the size of the build.
- c. Insert the build unit into the processing station.





- 4. Alternatively, you can follow the fast cooling process:
 - a. The build unit must be left to cool naturally for 3 or 4 hours before fast cooling can start. It does not need to be inside the processing station during this time.
 - b. When you have inserted the build unit into the processing station, go to the processing station's front panel and tap **Build unit** > **Fast cooling**.
 - c. Fast cooling starts. You can tap the **Cancel** icon  at any time to cancel fast cooling. To resume the process, ensure that the build unit is inserted, and tap **Fast cooling**.


Table A-6 Default fast cooling times for PA12 material

| Description | PA12 |
|----------------------------------|------|
| Half-full build chamber (190 mm) | 6 h |
| Full build chamber (380 mm) | 11 h |

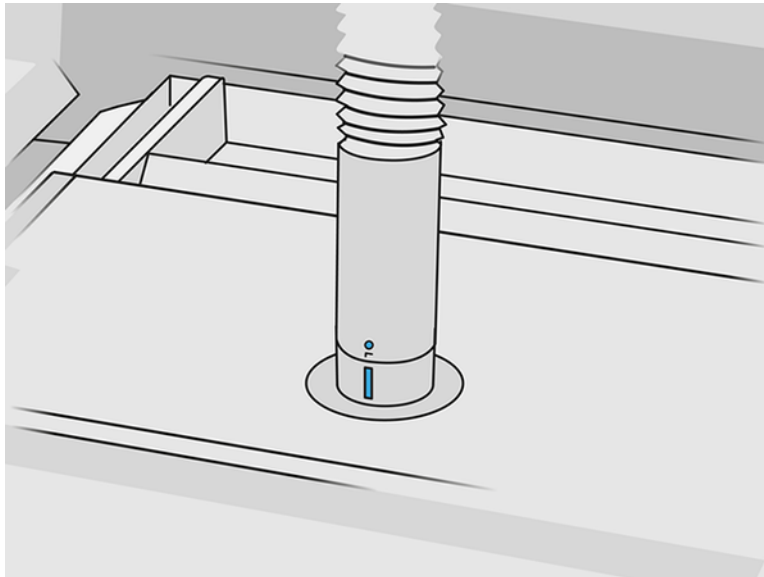
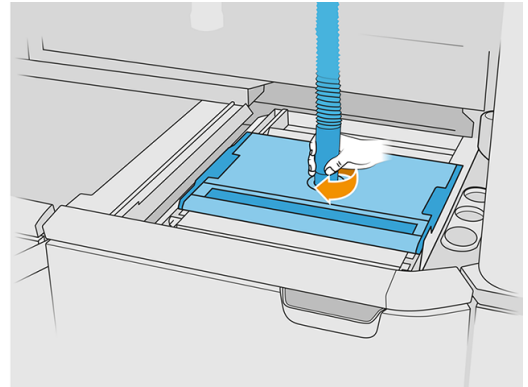
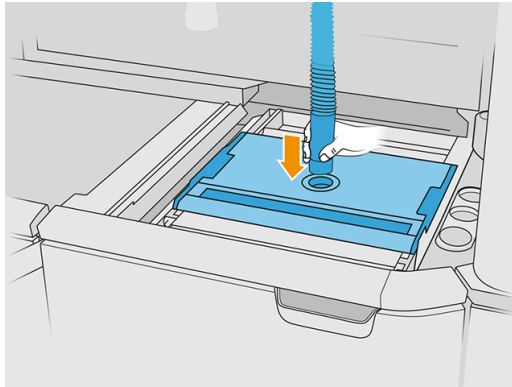
Before starting the fast cooling process, you can modify the timing by tapping **Modify**.

 **TIP:** **Modify** can be locked so that only administrators can modify the timing.

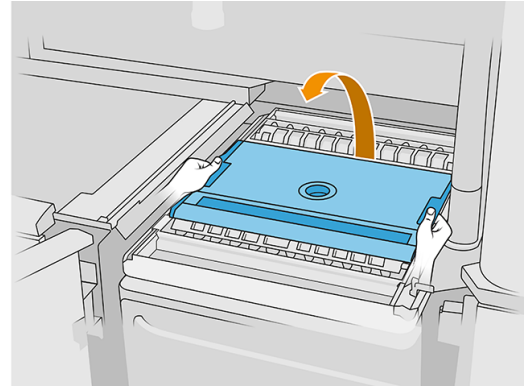
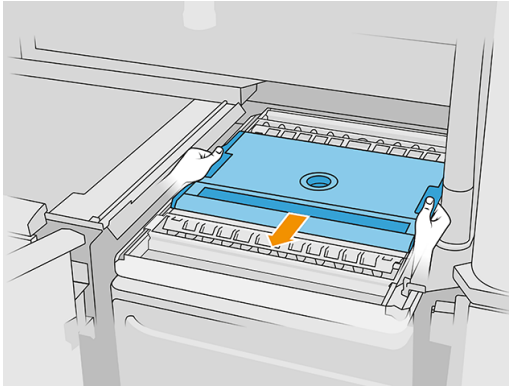
The timing is changed based on a cooling factor, which is related to speed; it is used to calculate the fast cooling time for different job heights. Modifying this value may compromise part quality.

 **NOTE:** The use of fast cooling may cause less uniformity in part cooling rates, and parts may finish at higher temperatures than with natural cooling.


- d. Connect the reusable material collector to the safety lid, and tap **Start** on the front panel, which will tell you the remaining time.





5. When cooling is complete, remove the safety lid and park it on the front of the build unit.



6. Use the build unit app on the processing station's front panel to check that the build is ready for unpacking.
7. At the processing station's front panel, tap **Build unit** > **Unpack** > **Start** to start the unpacking process.


 **IMPORTANT:** The vacuum is activated when you tap **Start**, and the dust extractor is activated to keep the process clean.

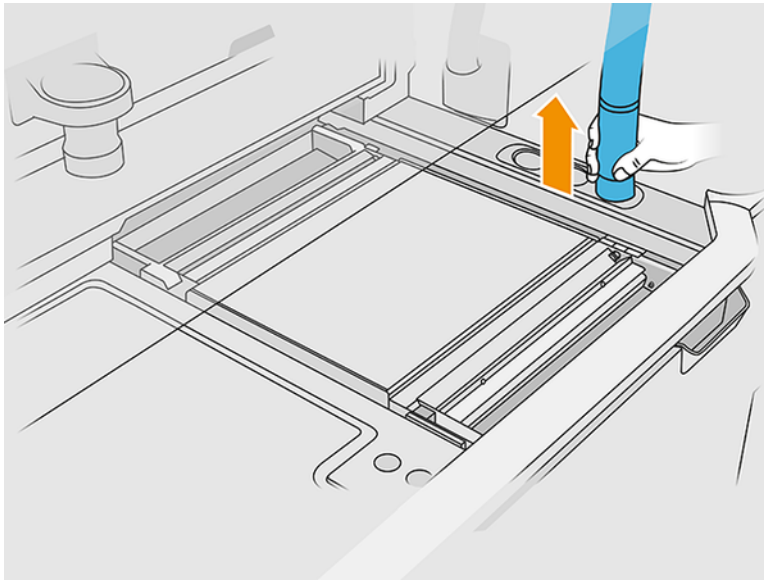
 **CAUTION:** Wear heat-resistant gloves.

 **TIP:** Close the hood to improve the performance of the dust extractor.

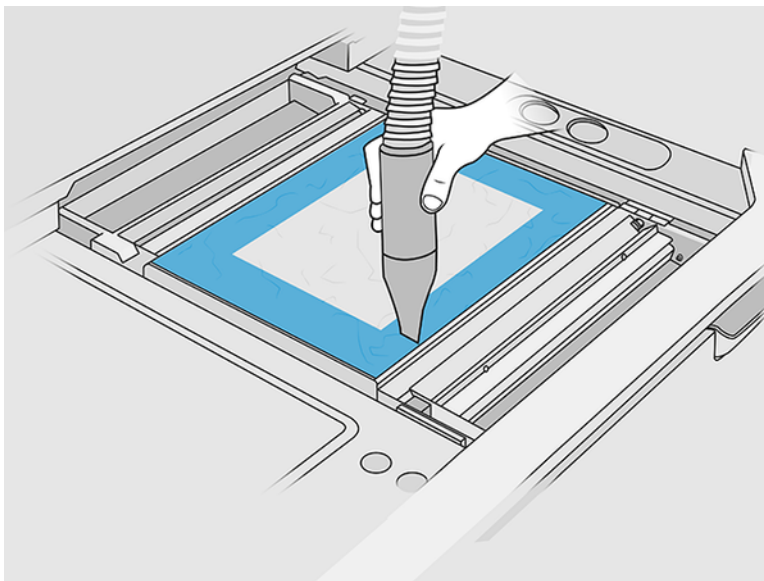
8. Redeploy the reusable material collector. You can use one of the following nozzles:

- Crevice nozzle, for cleaning the feed tray and narrow areas
- Fine mesh nozzle, with a 2 mm mesh, for unpacking very small parts
- Wide nozzle, for cleaning the working area rapidly

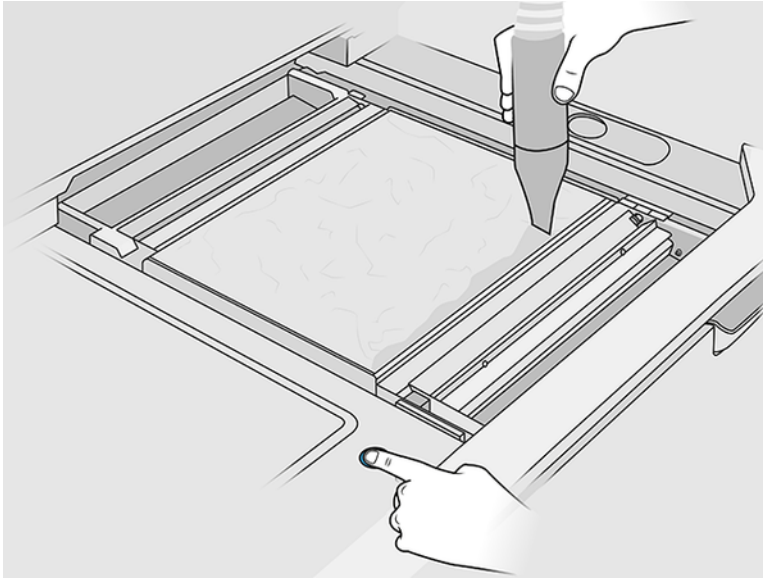
 **CAUTION:** Do not use the wide nozzle to clean the mesh shaker (on the feed trays of the build unit), as you could damage the accessory and leave residues inside.



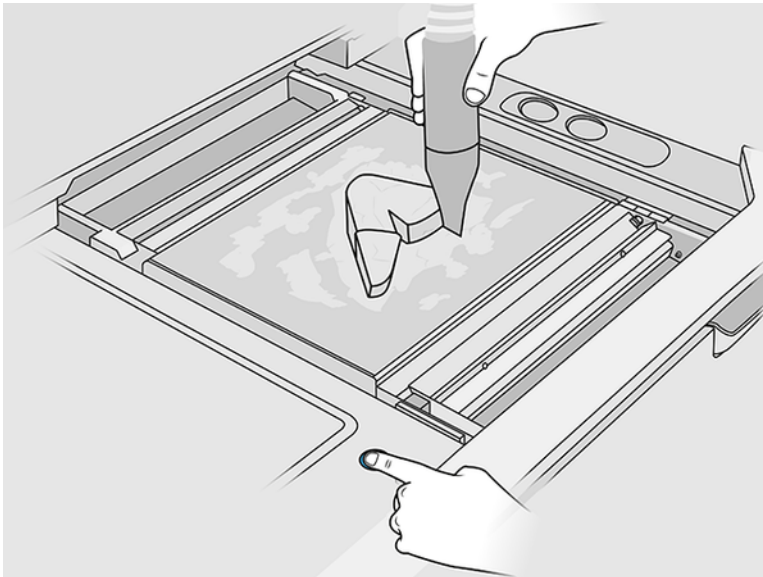
9. Vacuum the external perimeter of the platform (this step is unnecessary if you have used fast cooling).



10. Raise the platform by pressing the button.



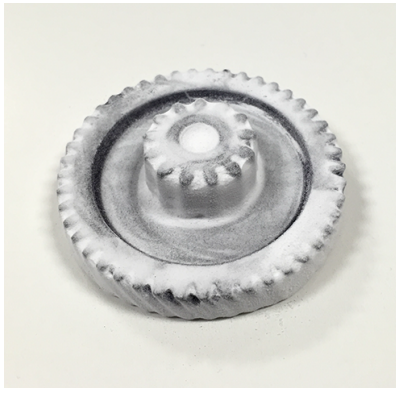
11. Vacuum the build to reveal the parts.



12. Clean each part separately to avoid having big clumps of material covering the part. You don't need to clean every surface thoroughly because:

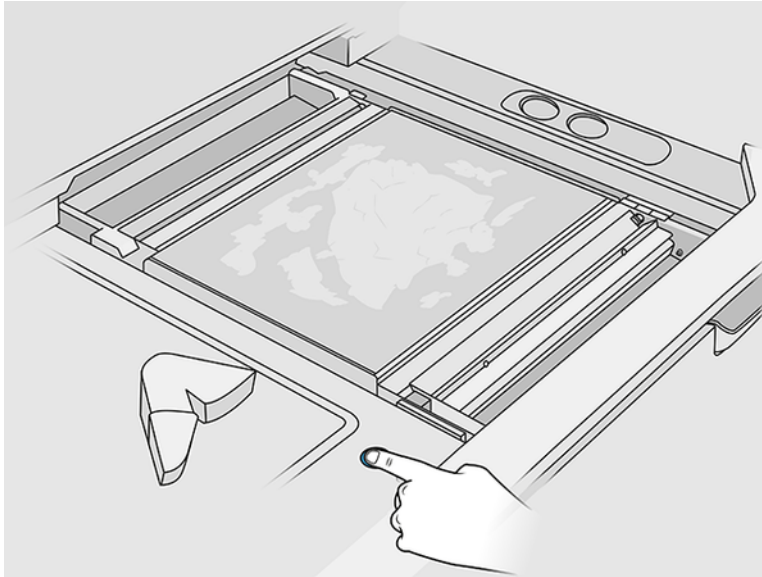
- The material that is closest to the part or attached to it may reduce the overall quality of reused material.
- That material will be removed anyway during sandblasting and postprocessing.

The example below shows a part that is ready for the bead blast.



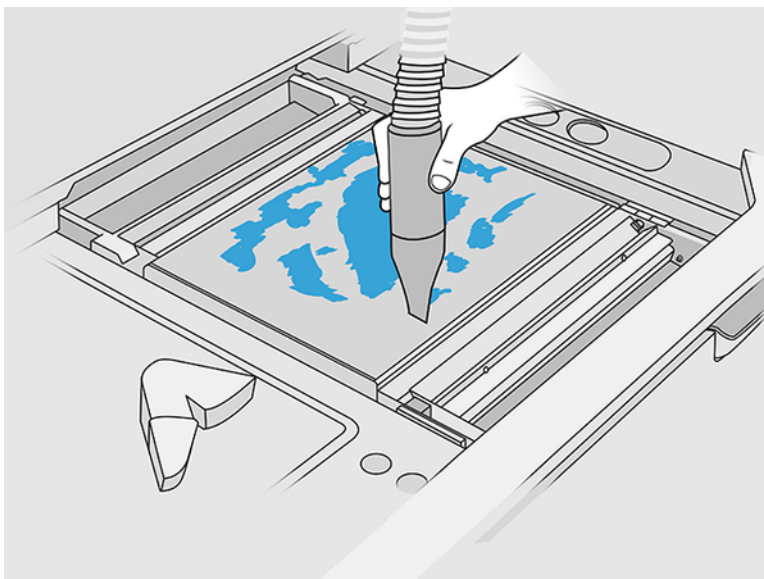
Continue until all parts are extracted from the build chamber. Use the physical buttons to lift the platform to reach all parts.

13. After checking that all parts are unpacked, put them in a box and take them to the postprocessing section.



14. Ensure that the printing platform is at its highest position.

15. Vacuum the empty printing platform and feed tray.



16. Tap **Finish** on the front panel.
17. Clean the surface of the build unit. See [Clean Build Unit surface on page 80](#).
18. Vacuum the platform control buttons to prevent loose material from blocking them.

Processing-station maintenance kit contents

The maintenance kit contains spare components that you may need to replace from time to time.

Table A-7 Processing-station maintenance kit contents (8VJ72A)

| Part Description | SKU | Quantity of items inside each SKU | Quantity of SKUs for one year of operation | Purpose |
|--|--------|-----------------------------------|--|--|
| HP Jet Fusion 5200 Processing Station E cabinet filters | 6J6S3A | 1* | 1 | Replace an e-cabinet fan filter on page 349 |
| HP Jet Fusion 5200/4200 Processing Station Dust Extractor Filter | 8VJ69A | 2 | 2 | Replace the dust extractor filters on page 353 |
| HP Jet Fusion 5200/4200 Processing Station Vacuum Pump Filter | 8VJ68A | 1 | 2 | Replace the vacuum-pump filter on page 355 |

*SKU 6J6S3A includes: 2 fan filters + 1 foam + 1 fan filter cartridge. This is what is required for one replacement of all 5200 Processing Station E-Cabinet filters.

Each SKU can be ordered separately if needed.

Processing station

The processing-station consumables include material cartridges, bulk material supplies, and storage and external tanks.

Material

Material is the basic ingredient used to build parts.

Material states

- **Reusable:** Material that can be reused
- **Waste material:** Used material that should not be reused
- **Mixed:** A mixture of new and used material, by default up to 80% used
- **Fresh:** New material

Material cartridges

The material cartridges deposit the material in the build unit.

See the material list for ordering information.

- The HP Jet Fusion 5200 accepts cartridges with a capacity of 30 or 300 liters.

The weight of the cartridge varies according to the material type. Special care must be taken to avoid personal injury when handling heavy cartridges.


If pressure is put on a cartridge while it is being vacuumed, and the connection is removed, material spills may happen. To avoid spills:


- Do not remove the handle while vacuuming.
- 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 material out of an almost-empty cartridge by pressing the bag inside the cartridge.

Replace a cartridge

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


An empty cartridge is indicated in the front panel and by the LED beside the cartridge.

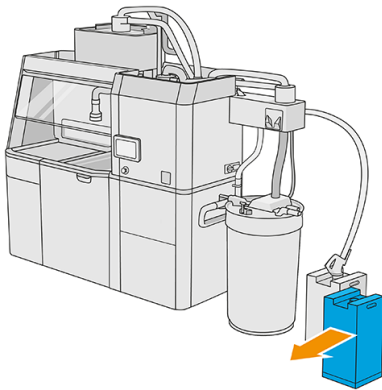
 **CAUTION:** Removing a cartridge before it is empty is not recommended. Cartridges are not designed for storing material after removing the seal, and storing an opened cartridge containing material can render the material unusable and cause safety hazards, such as a cloud of material if dropped. Depending on the material, it can be sensitive to temperature, humidity, or other factors. Using cartridges under uncontrolled conditions can affect the functionality of the equipment or severely damage it.

 **NOTE:** The processing station can continue filling the build unit without any cartridges for some time, depending on the material needed.

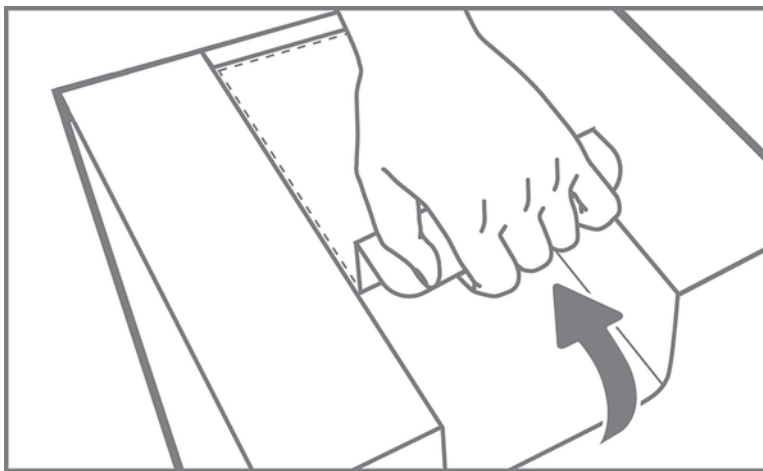
30 liter cartridge replacement

Follow these steps to replace a 30 liter cartridge.

1. At the processing station's front panel, tap the **Maintenance** icon , then **Material > Replace**.
2. Go to the cartridge that you intend to remove and hold it with one hand while disconnecting the cartridge connector, by pulling it gently away from the cartridge.
3. Remove the empty cartridge.
 - If the cartridge is not empty and you intend to use it later, make sure to close the front spout.
 - If it is empty, dispose of it according to local regulations.



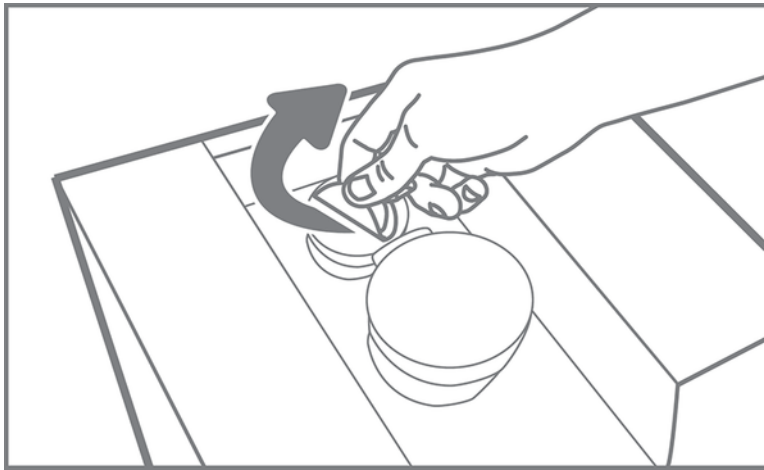
4. To prepare the new cartridge, tear off the square and fold it inside the handle as illustrated on the box.



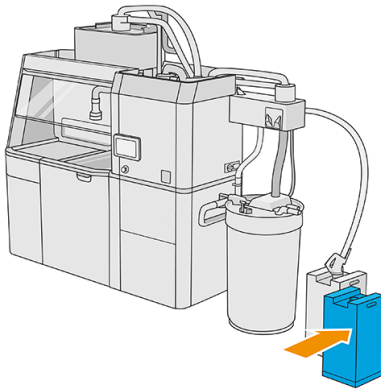
5. Remove the seal from the rear spout.



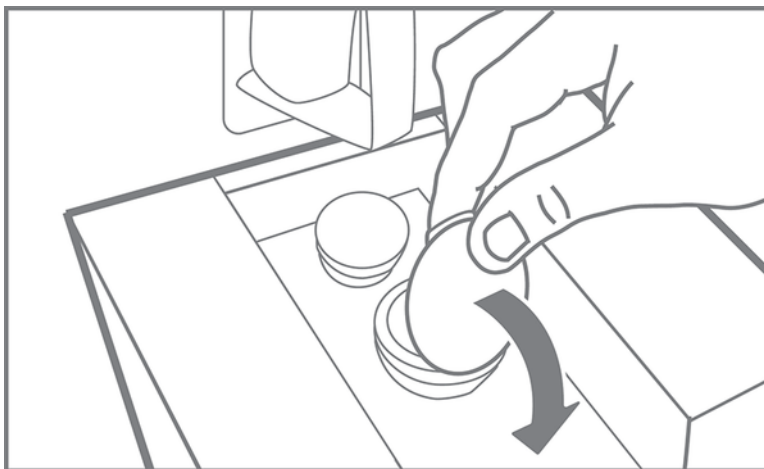
IMPORTANT: The cartridge will not work unless you remove the seal.



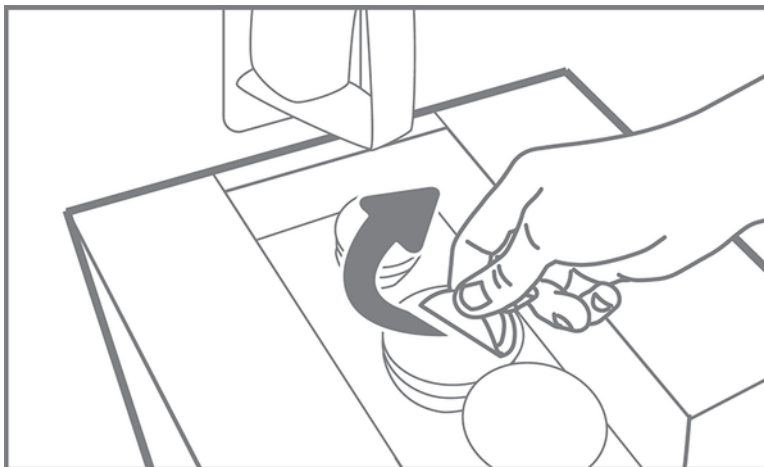
6. Put the new cartridge into its correct place next to the storage tank.



7. Open the front spout.

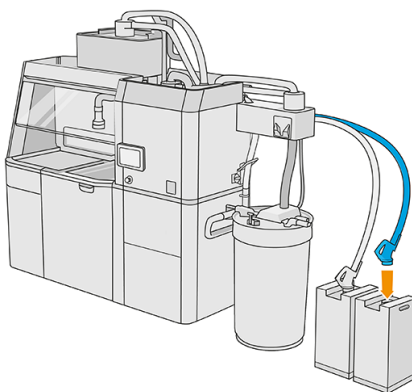


8. Remove the seal from the front spout.



⚠ CAUTION: Once the seal has been removed, the cartridge should be used until it is empty, and not put into storage. Cartridges are not designed for storing material after removing the seal, and storing an opened cartridge containing material can render the material unusable and cause safety hazards, such as a cloud of material if dropped. Depending on the material, it can be sensitive to temperature, humidity, or other factors. Using cartridges under uncontrolled conditions can affect the functionality of the equipment or severely damage it.

9. Connect the cartridge connector to the cartridge.

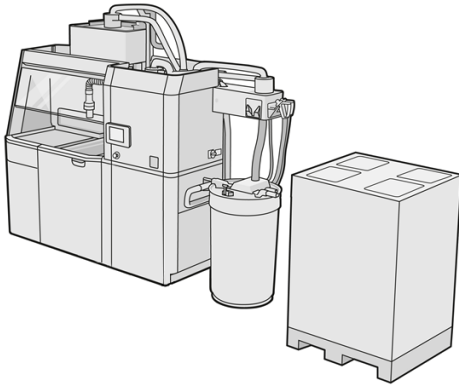


300 liter cartridge replacement

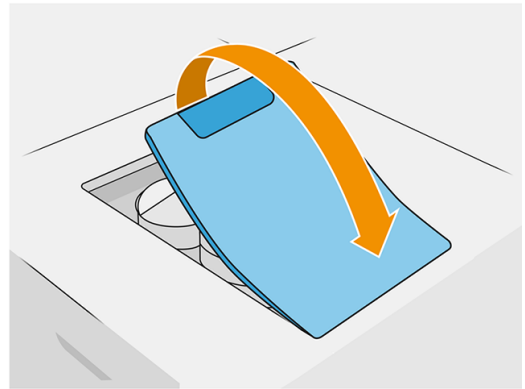
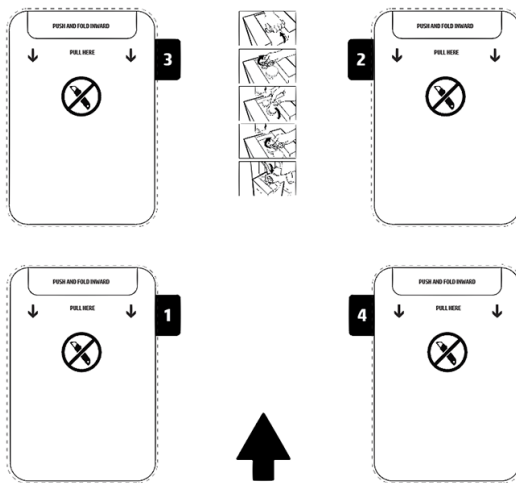
Follow these steps to replace a 300 liter cartridge.

1. At the processing station's front panel, tap the **Maintenance** icon , then **Material > Replace**.

2. Use a pallet jack to move the large material cartridges next to the external tank.



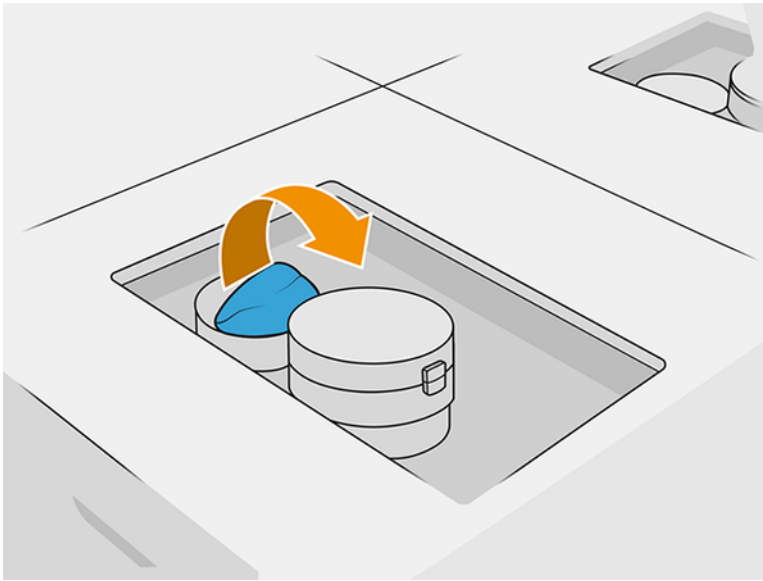
3. Remove the cardboards indicated on the packaging as 1 and 2.



4. Remove the seal from the rear spout of slot 1.



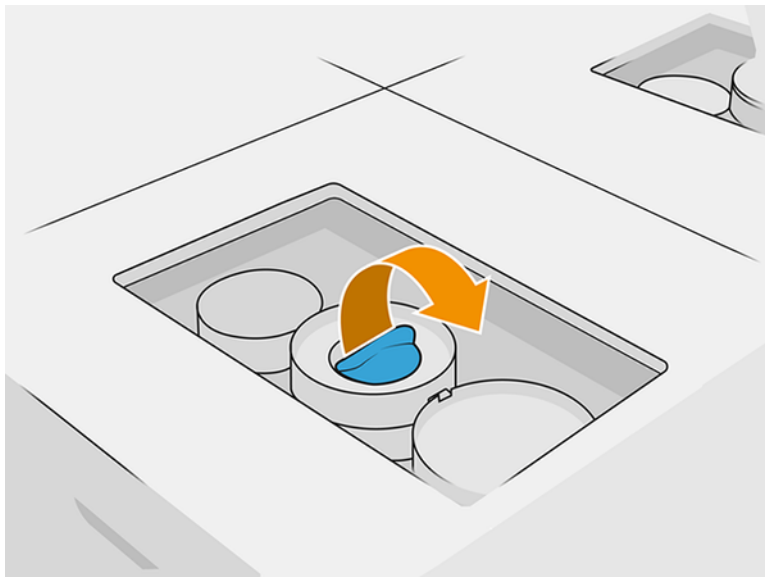
IMPORTANT: The cartridge will not work unless you remove the seal.



5. Open the front spout.

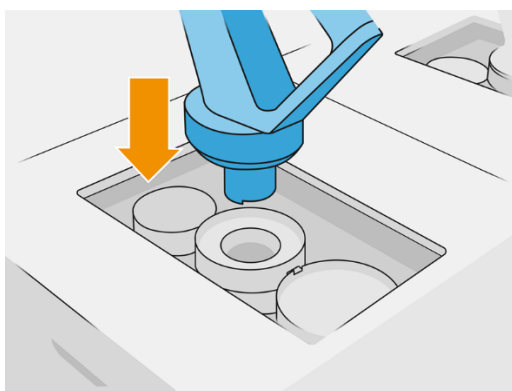


6. Remove the seal from the front spout.



⚠ CAUTION: Once the seal has been removed, the cartridge should be used until it is empty, and not put into storage. Cartridges are not designed for storing material after removing the seal, and storing an opened cartridge containing material can render the material unusable and cause safety hazards, such as a cloud of material if dropped. Depending on the material, it can be sensitive to temperature, humidity, or other factors. Using cartridges under uncontrolled conditions can affect the functionality of the equipment or severely damage it.

7. Repeat steps 4-6 on spout 2.
8. Connect the cartridge connectors to the cartridge 1 and 2. You are recommended to wear gloves and goggles.



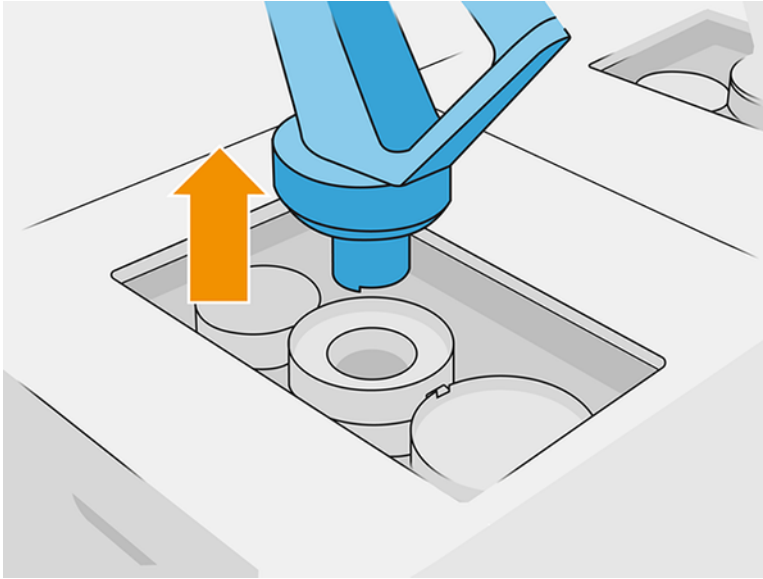
9. Tap **Finish and check** on the front panel.

300 liter cartridge: Swap the material connector

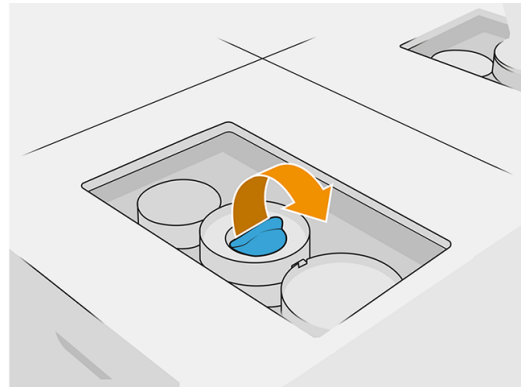
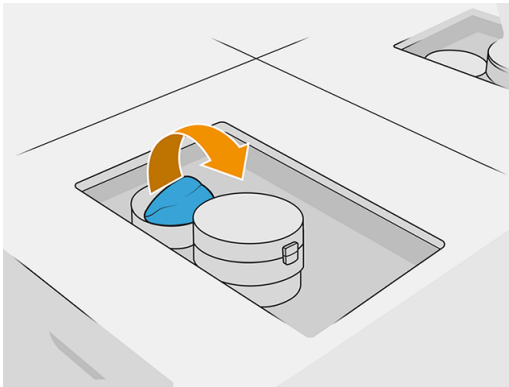
When running out of material on one connector, you can swap it for a full one. Number 1 can be replaced by 3 and 2 by 4.

1. At the processing station's front panel, tap the **Maintenance** icon , then **Material > Replace**.

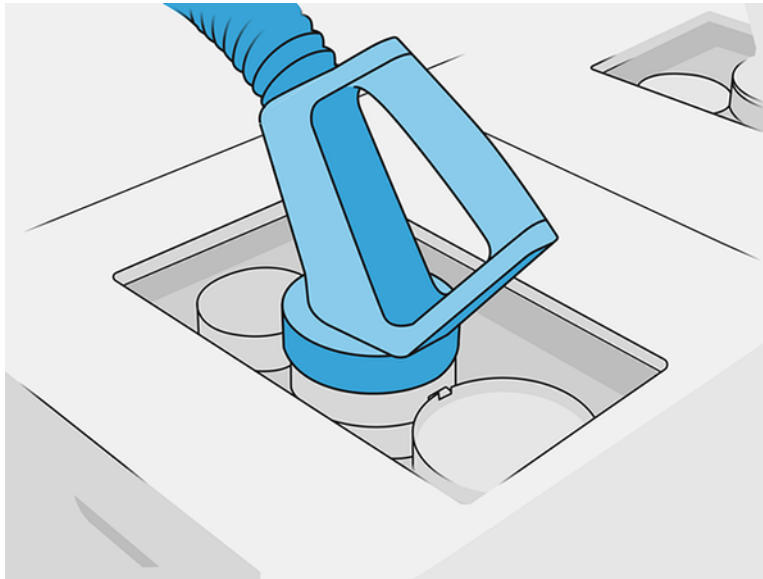
2. Disconnect the material cartridge connector from the used material supply.



3. Remove the cardboard and seal from the rear and front spouts.




4. Connect the material cartridge connector to the new material cartridge.



5. Tap **Finish and check** on the front panel.

Material cartridge troubleshooting

If a new cartridge fails to work, follow the troubleshooting procedure below.

 **TIP:** The problem may be with the connector rather than the cartridge itself.

1. Check that the cartridge is designed for your printer.
2. Use the correct procedure to change cartridges, through the front panel.
3. Check that there is no obstruction in the cartridge connector.
4. Check that the cartridge is correctly oriented (compare with another cartridge).
5. Ensure that you have inserted the connector correctly and fully. You should hear a click.
6. If the problem still remains, call your service representative.

Maintain the cartridges

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


However, to maintain the highest quality, replace a cartridge when it reaches its expiration date. An alert notifies you when any cartridge reaches its expiration date.

Before you use a cartridge for the first time, the material should acclimatize to the environmental conditions of the room for at least 2 days.

Store the cartridges

Cartridges should be stored according to cartridge specifications.

Before use, a cartridge should be kept at processing-station environmental conditions for at least 2 days.

-
-  **CAUTION:** HP recommends storing only sealed cartridges. Cartridges are not designed for storing material after removing the seal, and storing an opened cartridge containing material can render the material unusable and cause safety hazards, such as a cloud of material if dropped. Depending on the material, it can be sensitive to temperature, humidity, or other factors. Using cartridges under uncontrolled conditions can affect the functionality of the equipment or severely damage it.
-

Storage in the build unit

Material may be stored temporarily in the build unit.

-
-  **CAUTION:** HP recommends not storing material in the build unit for more than one or two weeks.
-

Storage and external tanks


When unpacking, all reused material is stored in the storage tank until it is full, but there are some cases in which it will be stored directly in the external tank even if the storage tank is not full.


These are when working with certain materials such as HP 3D HR TPU 01 or TPU Ultrasint, or when the build unit is unpacked before finishing the cooling safely.

There are two types of external tanks: the ones with the auto-fill storage tank and the ones that can only be emptied through the manual-fill storage tank process. The automatic storage tank, which is the one that includes the processing station, is equipped with a cone at its internal base and a lance with 5 levels, fixed through a Y structure at the top of the tank. These levels indicate the quantity of material available, and will be needed when loading a build unit.

While loading a build unit, the mixer is fed with fresh material from the material cartridge and reusable material from the storage tank. If the storage tank is empty when you need to fill the build unit with material for printing, the system will fill the storage tank automatically from the external tank. At the beginning of the load, the front panel will tell you the minimum level of material needed to complete the requested load. Make sure there is enough material before or during the load. If the quantity of material is below the requested level, the loading process will stop without completing.

If you want to fill the storage tank in advance for future jobs, you can do it automatically from the front panel by tapping **Reclaimed material > Storage tank > Fill automatic**, or manually by tapping **Reclaimed material > Storage tank > Fill manual**. If an automatic fill of the storage tank stops when there is still material inside the external tank, check that the external material collector is not obstructed with useless broken fragments of material. If the external material collector is clean but there is a hole in the material near the external tank lance, continue the fill manually.

-
-  **CAUTION:** Use HP-certified external tanks only. The use of third-party external tanks can cause safety risks, material leakages, and malfunctions in the processing station; and may affect your system warranty.

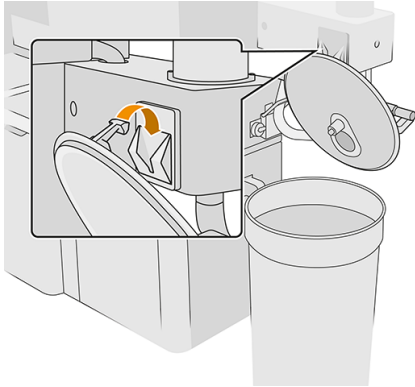
-  **NOTE:** The processing station may ask you to check the material quantity in the storage tank. To do so, check the ruler in the tank, and follow the steps in the front panel.
-

To replace the external tank, see [Replace the external tank on page 359](#)

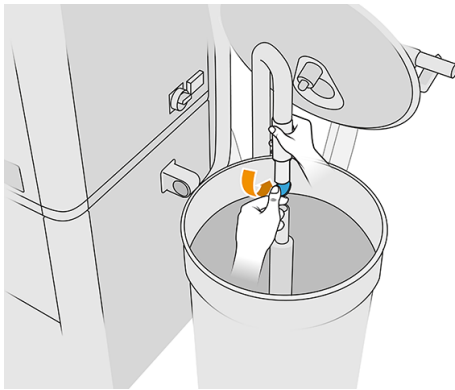
Manual fill process


Follow these steps to fill the storage tank manually.

1. Unlatch and open the lid.




2. Connect the external tank collector and pipe. You are recommended to wear gloves and goggles.



 **NOTE:** If you leave the pipe in one position, it will consume all the material in that area, while there is still material elsewhere in the tank. You should therefore move the pipe around in the tank to access all the available material.

 **NOTE:** You can insert the pipe with the vacuum switched off, if you like.

3. The process ends when the storage tank is full or the external tank is empty, whichever happens first.

 **TIP:** If the process stops during an automatic fill of the storage tank, and there is still material inside the external tank, ensure that the external material collector is not obstructed by broken parts of non-useful material. If the external material collector is clean but there is a hole in the material near the external tank lance, continue the fill manually.

4. Unplug the external tank collector.
5. Close the lid and latches.

How to recycle supplies

Parts and waste generated during the printing process should be disposed of in compliance with federal, state, and local regulations.

Consult your local authorities to determine the correct manner in which to dispose of wastes. It may be possible to recycle printed parts for non-3D uses. Where appropriate, HP recommends that the parts be marked with the applicable plastic marking code according to ISO 11469 to encourage recycling.

HP provides many free and convenient ways to recycle your used HP cartridges and other supplies. For information about these HP programs, see the HP website <http://www.hp.com/recycle/>.

The following supplies for your printer can be recycled through the HP supplies recycling program:

- HP printheads

High-volume 3-liter cartridges should be disposed of by following the instructions on the cartridge packaging. The agent bag should be removed and disposed of in compliance with federal, state, and local regulations. The other cartridge parts (plastic retainer and packaging box) can be recycled through commonly available recycling programs.

Dispose of the following supplies in compliance with federal, state, and local regulations:

- Material cartridges

For further information about recycling cartridges, see the HP website: [HP Take Back and Recycling Process](#)

- Printhead cleaning roll
- Lamps
- Filters

HP recommends that you wear gloves while handling printer supplies.

Processing-station maintenance

Summary of maintenance operations

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

Table A-8 Summary of maintenance operations

| Frequency | Maintenance operation |
|-----------------|--|
| Before loading | Clean the sieve on page 333 |
| | Clean the loading nozzle sensor on page 335 |
| After unpacking | Clean the working area on page 336 |
| Once a week | Clean the exterior of the processing station on page 338 |
| | Clean the sieve lid on page 335 |
| Once a year | Replace an e-cabinet fan filter on page 349 |
| | Safety maintenance of the processing station on page 352 |
| When requested | Clean the sieve mesh on page 342 |
| | Replace the dust extractor filters on page 353 |
| | Replace the vacuum-pump filter on page 355 |
| | Replace the external tank on page 359 |

Quick graphical reminders of frequent operations

The following link provides graphical reminders for the most frequent maintenance actions:

<https://www.printos.com/knowledge-zone/#/view/asset/211156>

Maintenance operations

Clean the sieve

The following sections provide details for this topic.



NOTE: Before some tasks, the front panel may ask you to clean the sieve. At that point, tap **Start** and proceed.



IMPORTANT: If you do not clean the sieve when requested, the loading time may be affected.

Prepare for cleaning

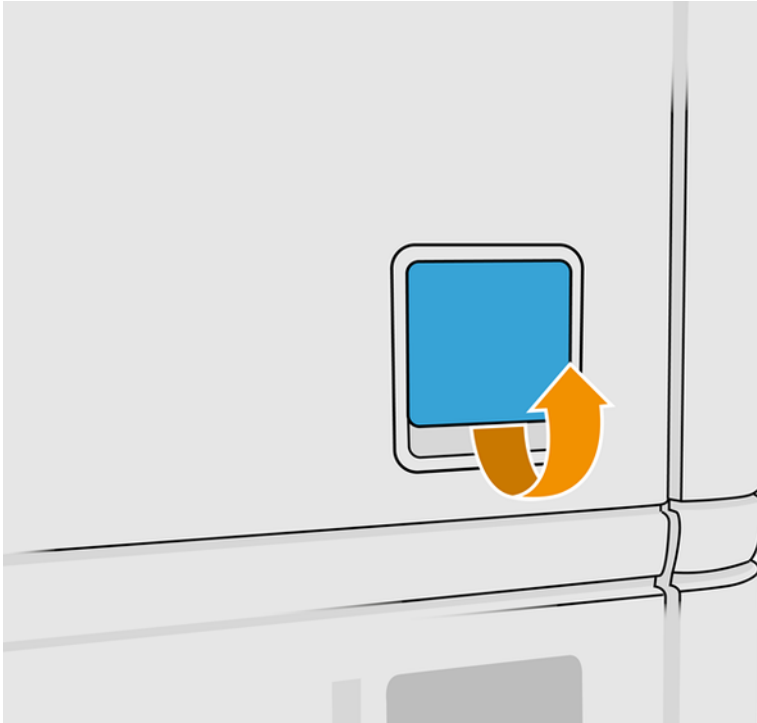
The following steps provide the complete procedure for this topic.

- Ensure that you have an explosion-protected vacuum cleaner with the following minimum specification:
 - Air flow: 250 m³/h
 - Depression: 19.6 kPa
 - Power: 1800 W

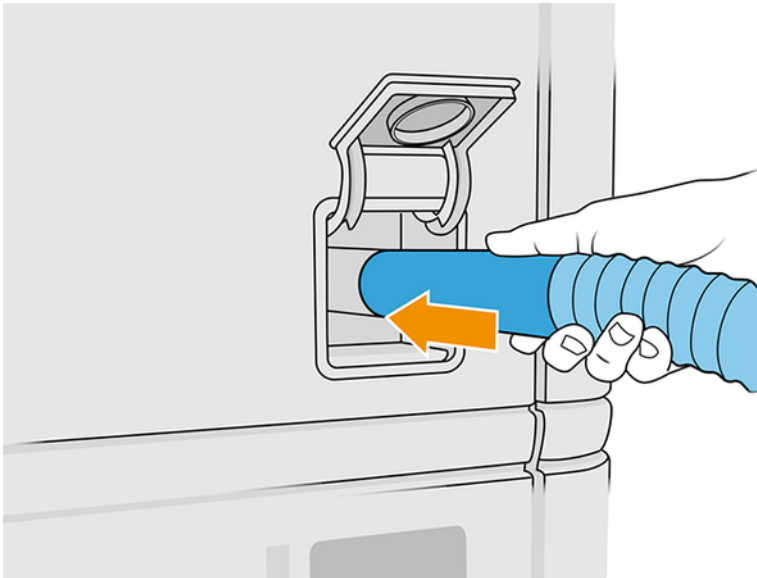
Clean the sieve

The following steps provide the complete procedure for this topic.

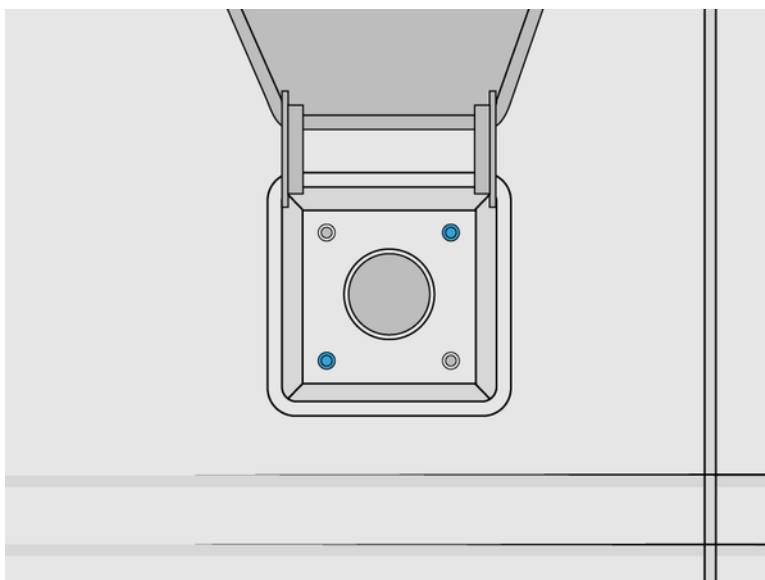
1. Open the lid of the vacuum hose connection to the sieve.



2. Connect an explosion-protected vacuum cleaner, and turn it on.



NOTE: If your vacuum hose is different in diameter from the processing station's connector, there are three files for adaptors (50, 60, and 65 mm) that you can find: <https://support.hp.com/es-es/product/details/hp-jet-fusion-5200-3d-processing-station/29099694>. To use them, first print them out, then remove two screws as indicated below, introduce the printed adaptor, and secure it with the removed screws.



3. When finished, turn off the vacuum cleaner and unplug the hose.

Clean the sieve lid


The following sections provide details for this topic.

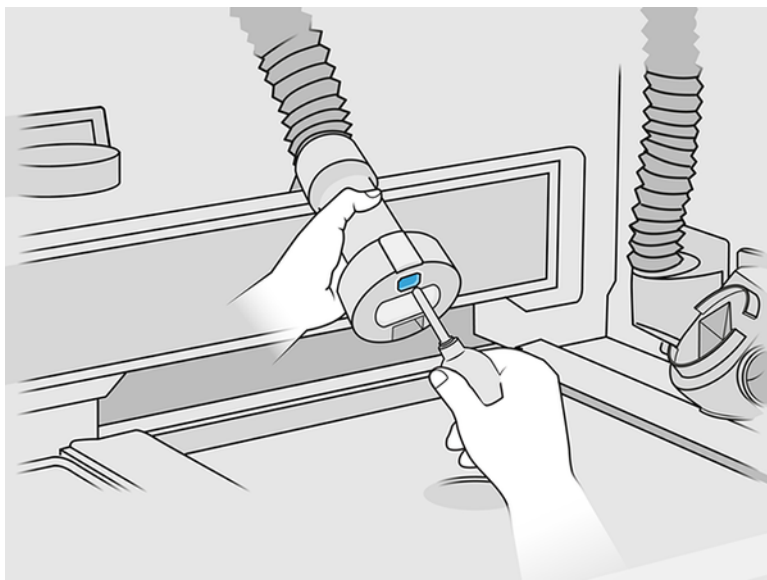
Remove the dust on the sieve lid and the floor of the machine. If there is a significant accumulation of powder in this area, look for powder leakages in seals on the sieve lid, bellows, hoses, and clamps.



Clean the loading nozzle sensor

Take the loading nozzle and use the hand air blower to blow air on the inner part.

 **IMPORTANT:** Do not touch the sensor.



If you can see that the sensor is still dirty, or if you accidentally touched it with your hand, wipe the sensor glass clean by rubbing the surfaces lightly with a lint-free cloth moistened with a general-purpose industrial cleaner, such as Simple Green industrial cleaner. Then immediately wipe it dry with another clean, soft, all-cotton cloth or cotton swab.

Clean the working area

The following sections provide details for this topic.

Prepare for cleaning

The following steps provide the complete procedure for this topic.

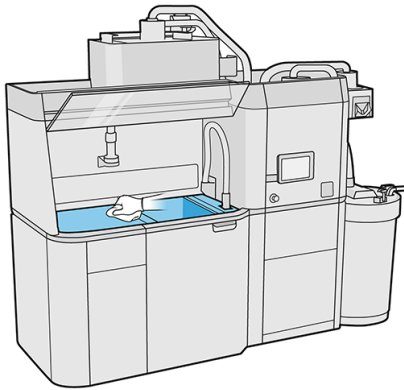
1. Ensure that you have an explosion-protected vacuum cleaner and an absorbent all-purpose cloth (these things are not provided by HP).
2. Remove the build unit.
3. You are recommended to wear gloves and goggles.

Clean the working area

The following steps provide the complete procedure for this topic.

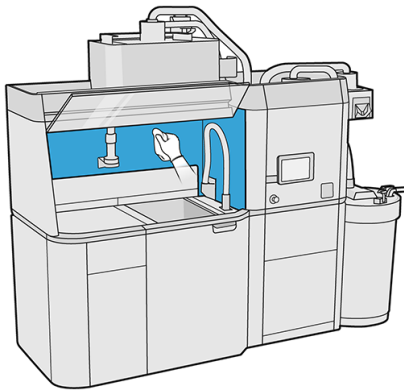
1. Open the hood.
2. Remove the perforated metal sheet from the working area.

3. Clean the whole working surface, including under the perforated metal sheet, and the edges of the build unit using an explosion-protected vacuum cleaner.

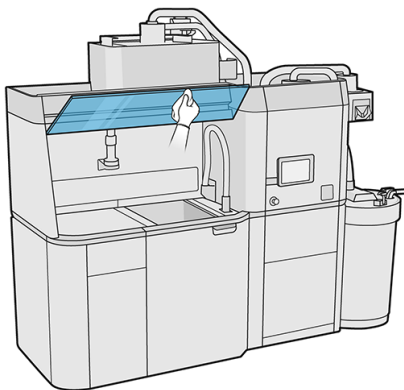


NOTE: Make sure the platform control button area is clean.

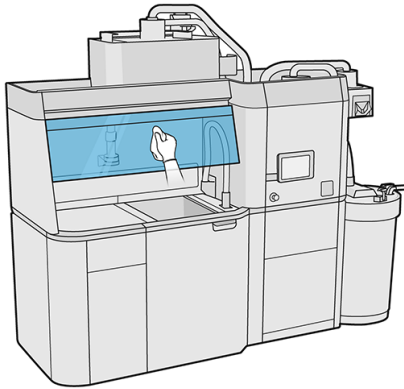
4. Clean the front and sides of the processing station using an absorbent all-purpose cloth.



5. Clean the perforated metal sheet, away from the processing station, using an absorbent all-purpose cloth.
6. Clean the inner side of the hood using the same kind of cloth, then close the hood.



7. Clean the outside of the hood using the same kind of cloth.

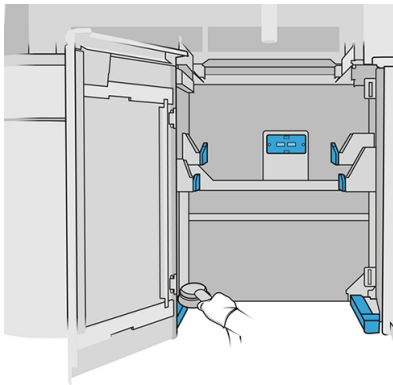


8. Put back the perforated metal sheet.

Clean the build-unit housing

The following steps provide the complete procedure for this topic.

1. Open the build-unit door.
2. Vacuum the build-unit housing and its internal parts.



Clean the exterior of the processing station

The following steps provide the complete procedure for this topic.

1. Check the whole processing station for dust, material, or aerosol on covers, doors, and so on.
2. If necessary, clean the processing station further using a vacuum cleaner with a soft brush nozzle.
3. Additionally, you can wipe it with a dry cloth.


Clean the processing station

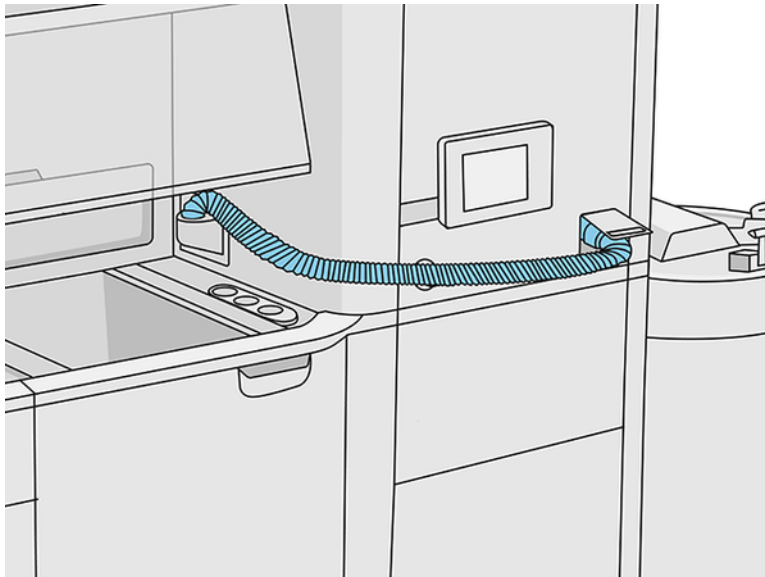
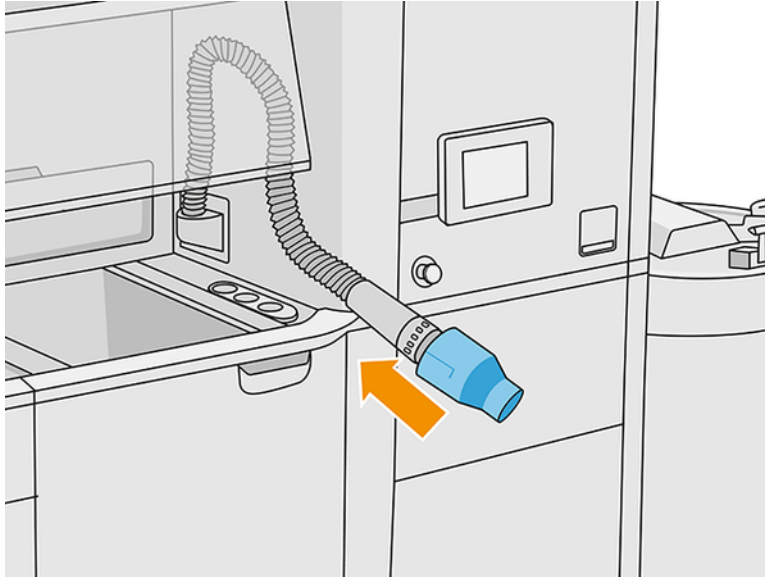
The following steps provide the complete procedure for this topic.


You may sometimes decide to clean the processing station without purging it, in order to remove the material inside it.



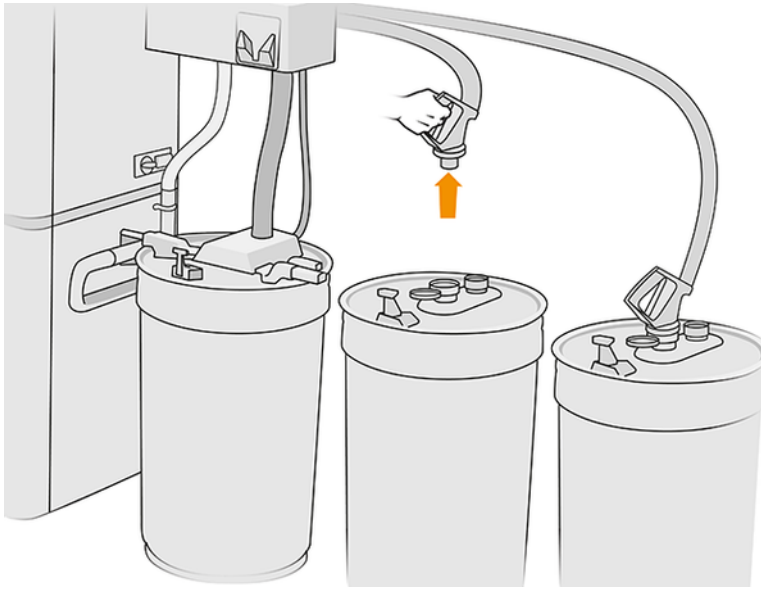
NOTE: After cleaning, some residual material may still remain in the processing station. You can remove more of the material by purging.

1. You are recommended to replace the external tank with a new one. Otherwise, the process may be interrupted when the tank is full.
2. At the front panel, tap the **Settings** icon , then **Material management** > **Clean the processing station**.
3. Ensure that the external tank is closed, and that the external-tank collector pipe is connected to the cover.
4. Place the sieve connector on the reusable material collector and connect it to the sieve.

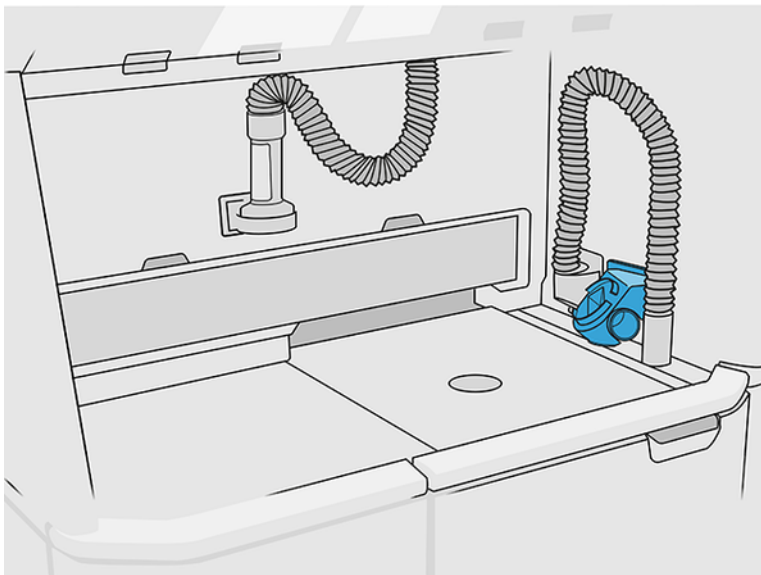


 **IMPORTANT:** Make sure the reusable material collector is properly connected.

5. Disconnect the material cartridge connectors.



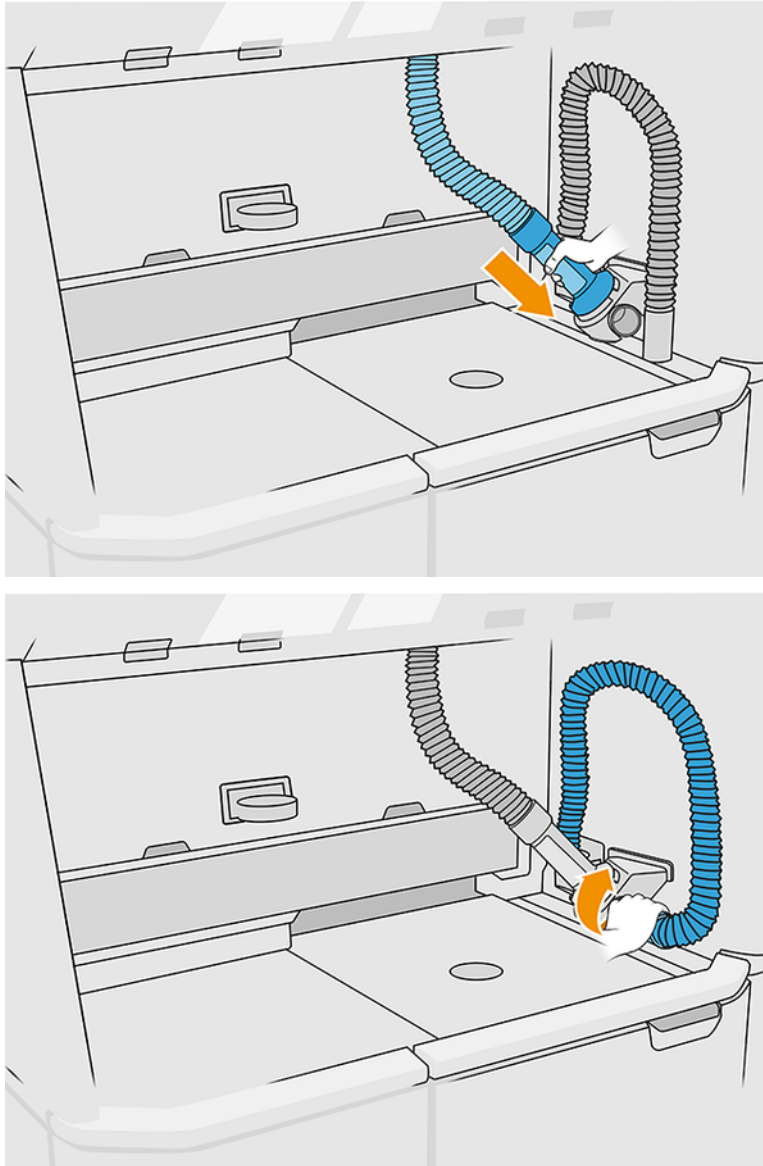
6. Place each cartridge connector in the parking area.
7. Tap **Continue** on the front panel. When prompted by the front panel, remove the external tank collector pipe.
8. Tap **Continue** on the front panel. When the processing station notifies you that it has finished, disconnect the material collector from the sieve and remove the collector.
9. Take the purge tool from the drawer and place it on the side of the working area.



10. Connect the material loading nozzle to the reusable material collector with the purge tool.

CAUTION: Ensure that the hoses are connected properly. The loading nozzle should be connected to the top and the material collector to the side. If the loading nozzle is correctly connected, the hose should slope gradually downwards; it should not have an 'S' shape.

CAUTION: It is important to keep the purge tool in the indicated position during the whole process. In case of system error, do not disconnect the hoses; restart the processing station and restart the process, or start an unpacking process to ensure that the material left in the hoses is properly cleaned. If it is not possible to do either of these things, remove the tool from its position, keeping it horizontal to avoid possible material spillages.



11. Tap **Continue** on the front panel.

IMPORTANT: Do not disconnect the tubes until the cleaning process has finished.

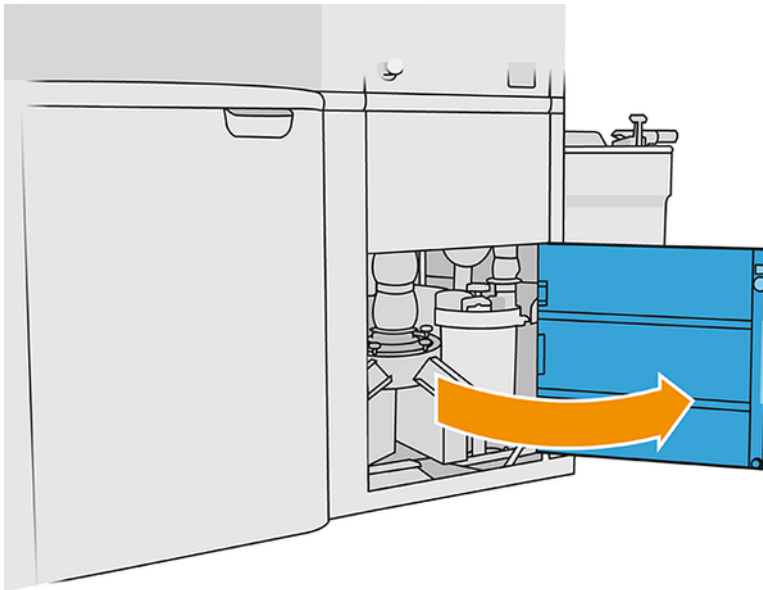
12. Remove the purge tools and place the material collector and material loading nozzle in the parking position. Tap **Continue** on the front panel.
13. Clean the sieve. See [Clean the sieve on page 333](#).

Clean the sieve mesh

The following steps provide the complete procedure for this topic.

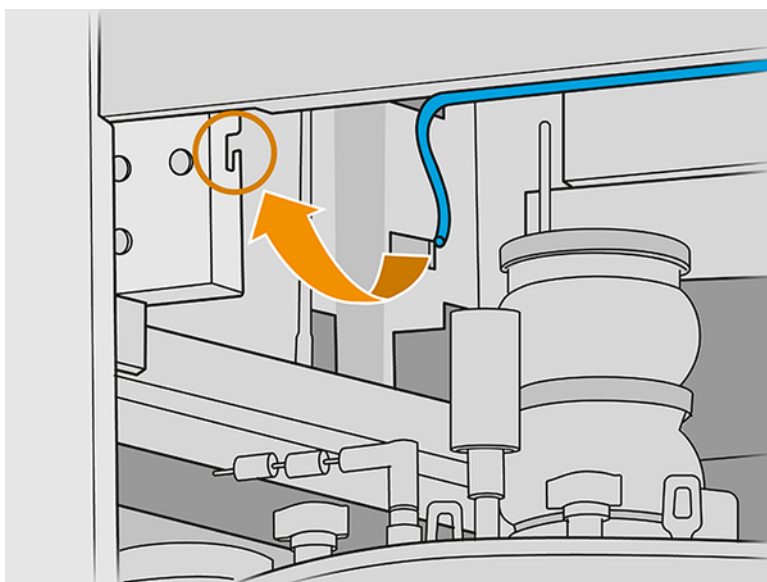
You may decide to clean the sieve mesh in this way if there is material attached to it that cannot be removed by the routine sieve cleaning procedure (see [Clean the sieve on page 333](#)).

1. Turn off the processing station.
2. Open the vacuum-pump filter door.

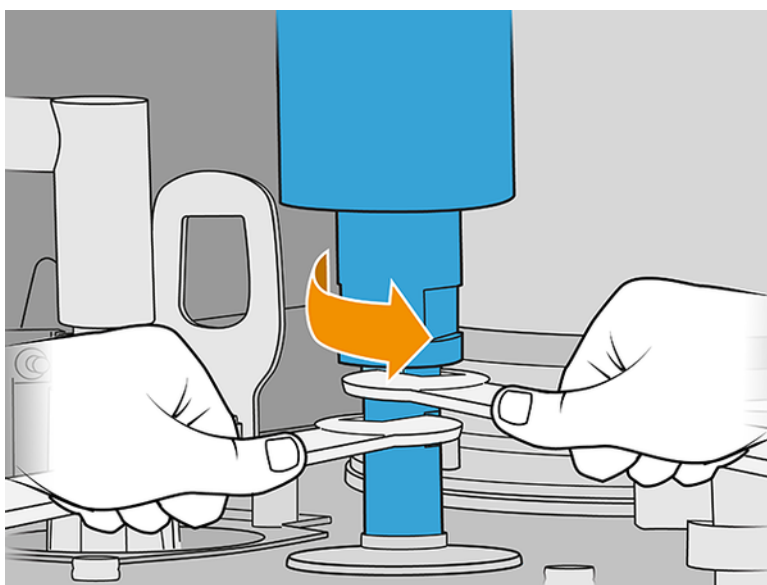


3. Disconnect the Ultrasonic converter cable and hang it from the indicated hook.

⚠ CAUTION: To disconnect the Ultrasonic converter cable, grip the plug and pull it out. Do not pull the cable, which could damage the cable, causing a risk of fire and electric shock.



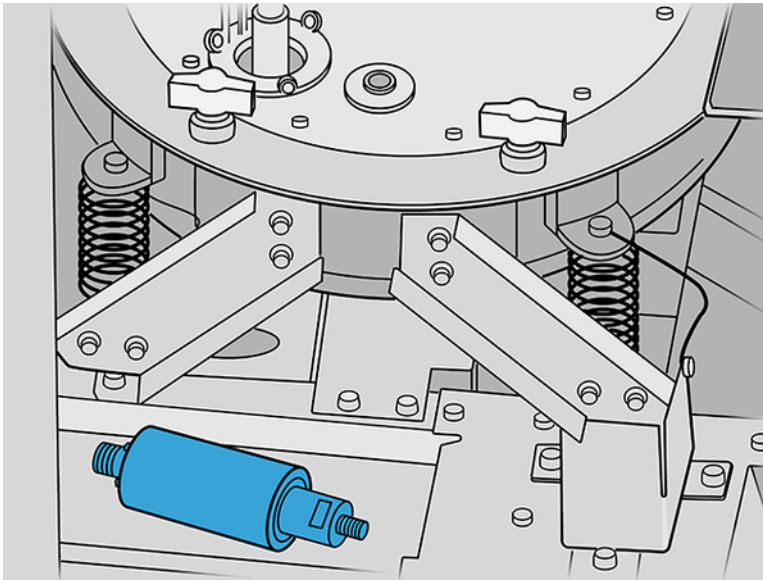
4. Use the provided torque wrench tool to release the Ultrasonic converter, by using a fixed wrench to hold the lower shaft and the torque wrench to unfasten the hexagonal adapter.



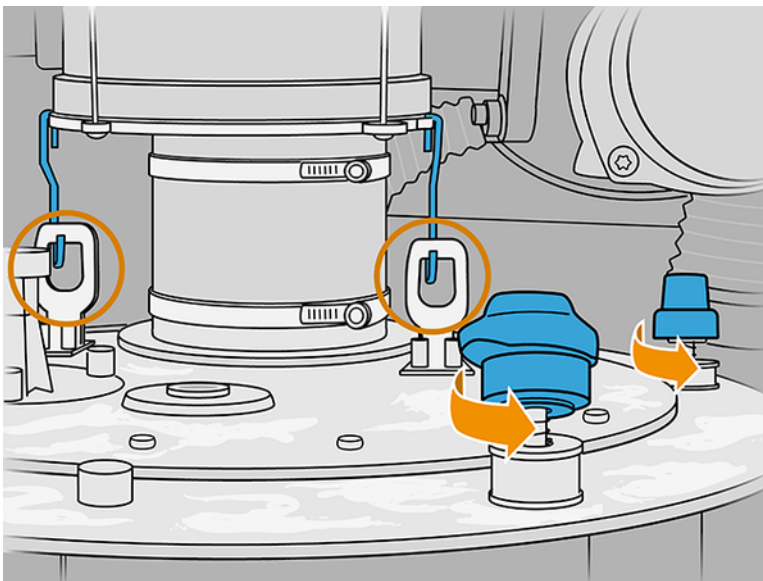
⚠ CAUTION: Not using the fixed wrench to hold the lower shaft could damage the mesh irreversibly.

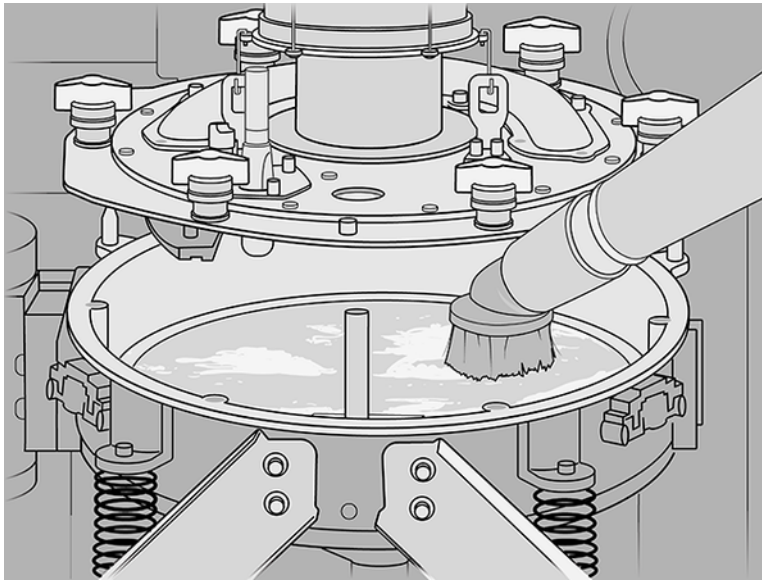
5. Leave the Ultrasonic converter very carefully where indicated, over the foam.

⚠ CAUTION: Be careful when putting the converter over the foam.



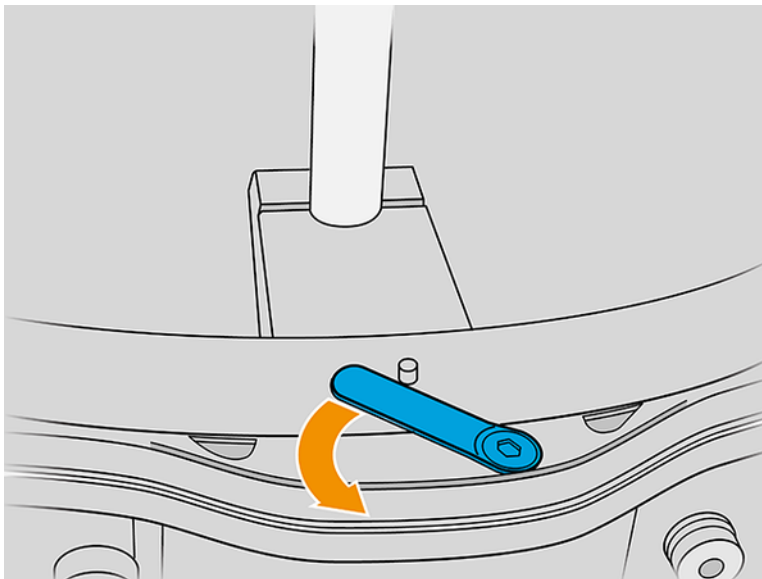
6. Unscrew the six knobs to open the sieve cover and hang it from the two hooks. Vacuum the interior of the sieve with a soft-brush nozzle.





7. Unlock the mesh.

⚠ CAUTION: If you see accumulated material on the mesh, vacuum it using a soft-brush nozzle before unlocking it.



8. Remove the sieve mesh and vacuum it. Clean the cone.
9. Vacuum the screw holes and the screws hanging from the cover.
10. Vacuum the sieve perimeter, being careful of the sensors.

⚠ CAUTION: Damage to the sensors can cause a sieve malfunction.

11. Put back the mesh and lock it..

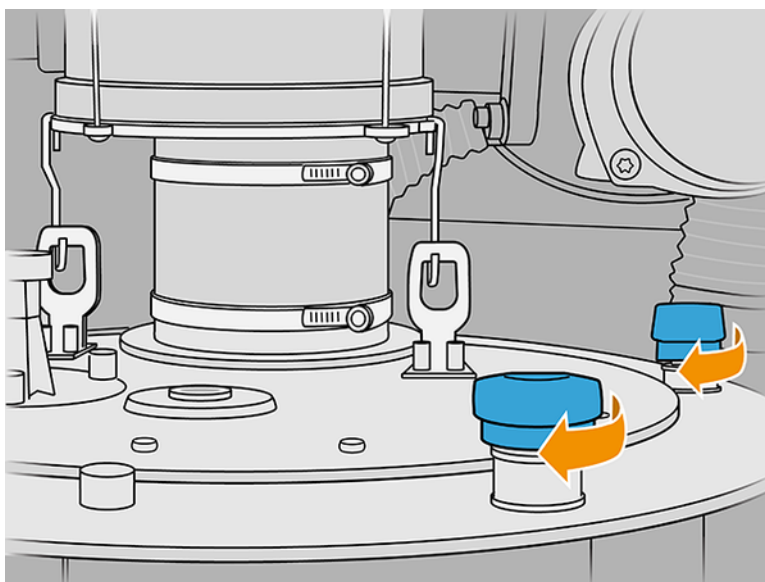
⚠ CAUTION: Make sure the mesh lock is correctly positioned.

12. Place the sieve lid very carefully and ensure that the shaft grommet is properly installed, as shown in the following image.



13. Tighten each of the six knobs until you hear a click.

⚠ CAUTION: Make sure all knobs are properly tightened, to avoid material spillages outside the sieve.

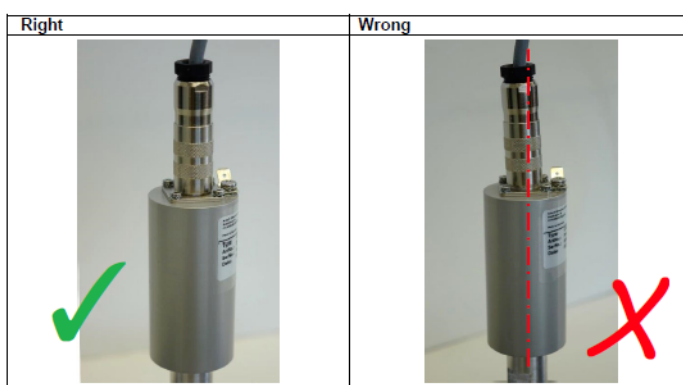


14. Clean the exterior of the sieve area to remove any material that may have fallen there during this procedure.
15. Put back the converter by using a fixed wrench to hold the lower shaft and the provided torque wrench to apply a defined torque of 20 N·m to the hexagonal adapter.

⚠ CAUTION: Not using the fixed wrench to hold the lower shaft could damage the mesh irreversibly.



16. Release the connector from the hook and plug it into the converter. Make sure it is well connected.



17. Close the door.
18. Turn on the processing station.

Replace the sieve mesh

You may sometimes decide to replace the mesh if there is material stuck in it that cannot be removed by cleaning. Follow the same steps as in the reference below, but replace the mesh with a new one, instead of cleaning the old one.

[Clean the sieve mesh on page 342](#)

Replace an e-cabinet fan filter

The following sections provide details for this topic.

Prepare for replacement

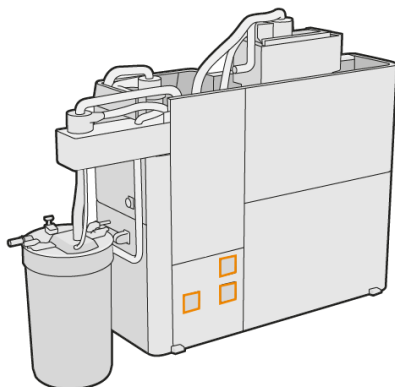
The following steps provide the complete procedure for this topic.

1. Locate the replacement filters provided in the Processing-station maintenance kit.
2. You are recommended to wear gloves, mask, and safety goggles.
3. Ensure that all windows, covers, and doors are closed and remain in their original positions.
4. Turn off the processing station.

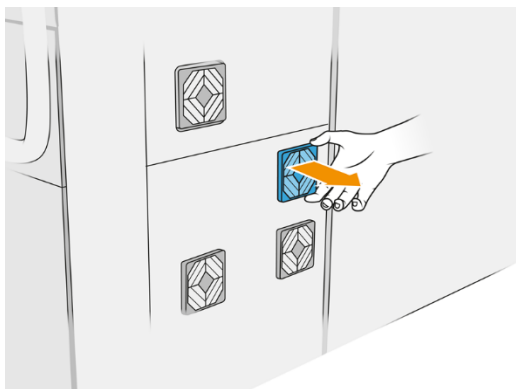
Replace an e-cabinet filter

The following steps provide the complete procedure for this topic.

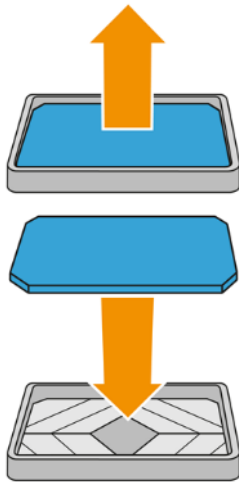
1. Locate the e-cabinet filters.



2. Remove the plastic filter cover.



3. Remove and dispose of the old filter according to local regulations, and insert the new one.



4. Carefully put back the filter cover.

Finish replacement

The following steps provide the complete procedure for this topic.

1. Ensure that all windows, covers, and doors are closed and remain in their original positions.
2. Turn on the processing station.
3. After replacing the filters, the customer must reset the counter to zero in the utilities menu.

Prepare for replacement

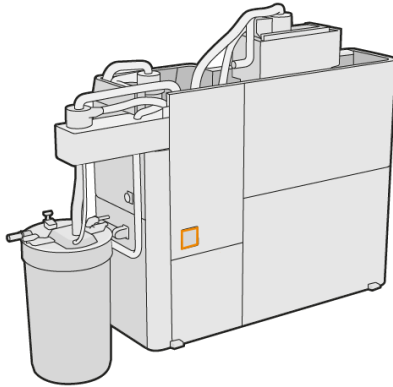
The following steps provide the complete procedure for this topic.

1. Locate the replacement filters provided in the Processing-station maintenance kit.
2. You are recommended to wear gloves, mask, and safety goggles.
3. Ensure that all windows, covers, and doors are closed and remain in their original positions.
4. Turn off the processing station.

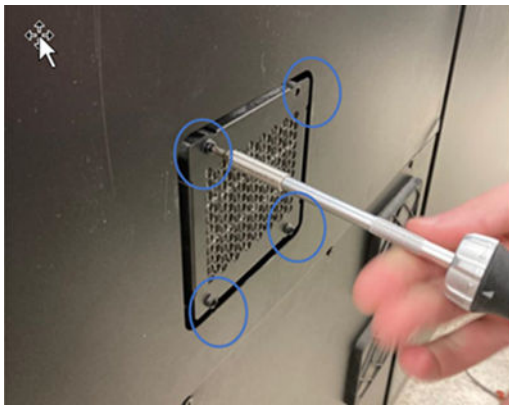
Replace an e-box fan filter

This is the procedure to replace the e-box fan filter.

1. Locate the e-box fan filter.



2. Remove the indicated screws (x4).



3. Remove the filter cover.



4. Remove the filter.



Finish replacement

The following steps provide the complete procedure for this topic.

1. Install the new filter. Notice that the arrow should appear in the upper part of the filter.



2. Place the cover.
3. Put back the 4 screws.
4. Reset the filter after installation. Go to front panel > **Settings** > **Utilities** > **Maintenance** > **Replace parts** > **Reset e-box fan filter counter**.

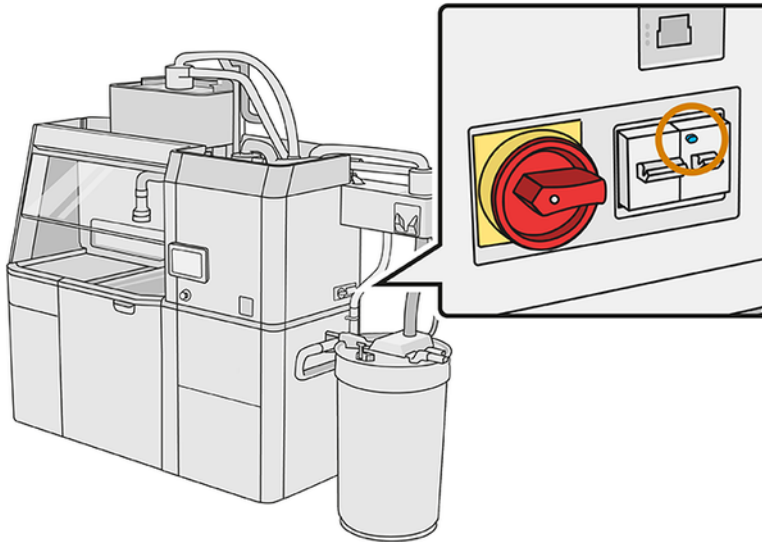
Safety maintenance of the processing station

Check the functionality of the Residual Current Circuit Breaker (RCCB)

Following standard RCCB recommendations, it is recommended that the RCCB is tested on a yearly basis. The procedure is as follows:

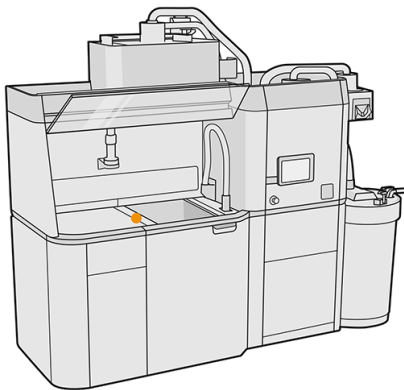
1. Turn off the processing station from the front panel, not using the service switch.

2. 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.



Check that the processing station is correctly earthed

Check that the resistance between any metal part of the processing station's internal chamber and the building's earth is less than 1 Ω .

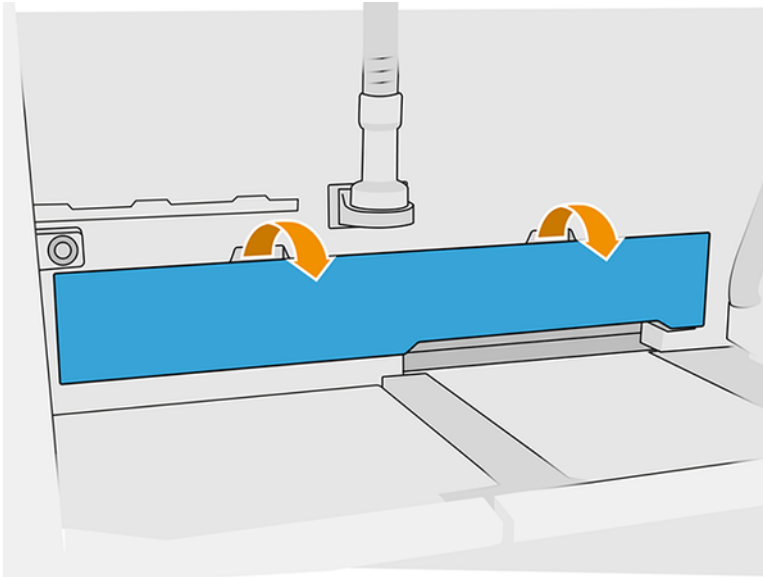


Replace the dust extractor filters

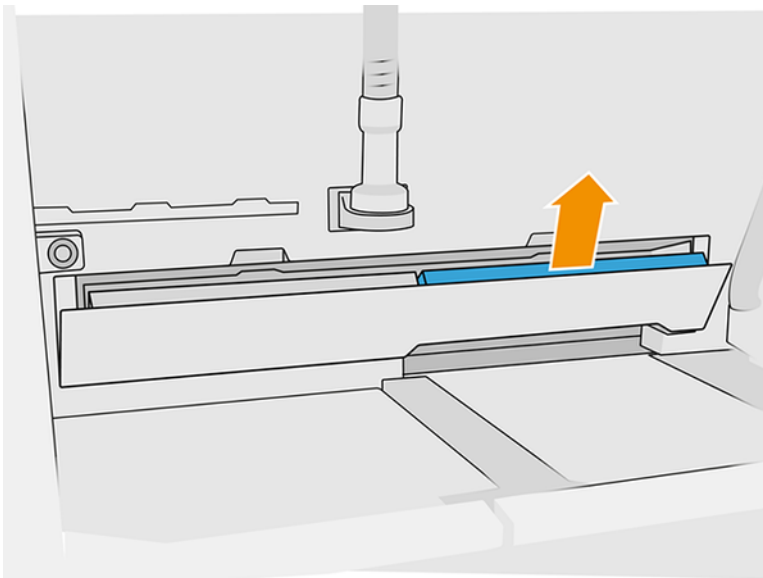
The following steps provide the complete procedure for this topic.

1. Start the replacement from the front panel, when requested.
2. Clean the door with an explosion-protected vacuum cleaner.
3. HP recommends cleaning the filters through the door grid, to avoid splashing the material when extracting the filters.
4. Ensure that the build unit is inserted.

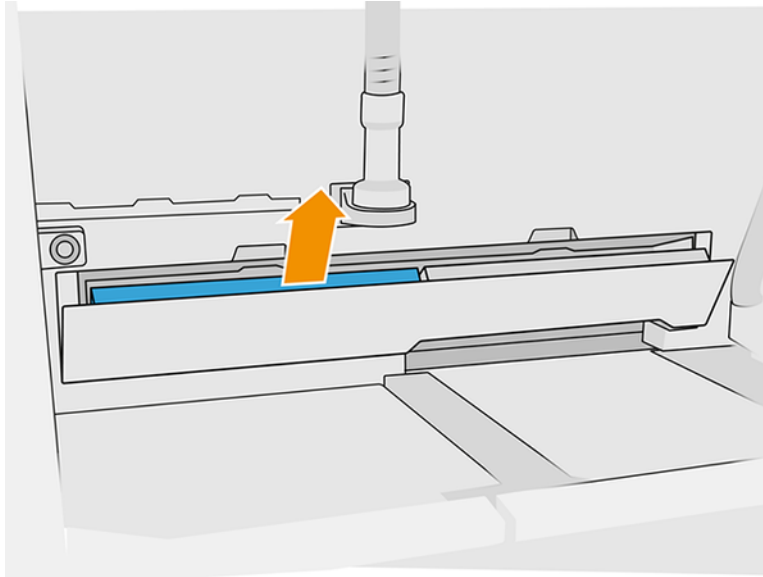
5. Do not touch the filter papers, and always follow the instructions from the manufacturer.
6. Remove the cover locking screws by hand, and open the cover to access the filters.



7. Pull the right-hand filter out of its enclosure.



8. Pull the left-hand filter out of its enclosure.



9. Dispose of the old filters according to local regulations.
10. Vacuum the area with an explosion-protected vacuum cleaner.
11. Insert the two new filters. Take care to insert the filter correctly: the arrow on the side of the filter should point towards the interior of the processing station.



12. Close the cover, pushing it back. At the same time, tighten the door locking screws by hand. Make sure they are completely tightened.

Replace the vacuum-pump filter

The following sections provide details for this topic.

Prepare for replacement

The following steps provide the complete procedure for this topic.

1. Locate the new vacuum-pump filters, which are provided in the Processing-station maintenance kit.
2. Ensure that the processing station is not in use.
3. You are recommended to wear goggles, gloves, and mask.

Replace the vacuum-pump filter

The following steps provide the complete procedure for this topic.

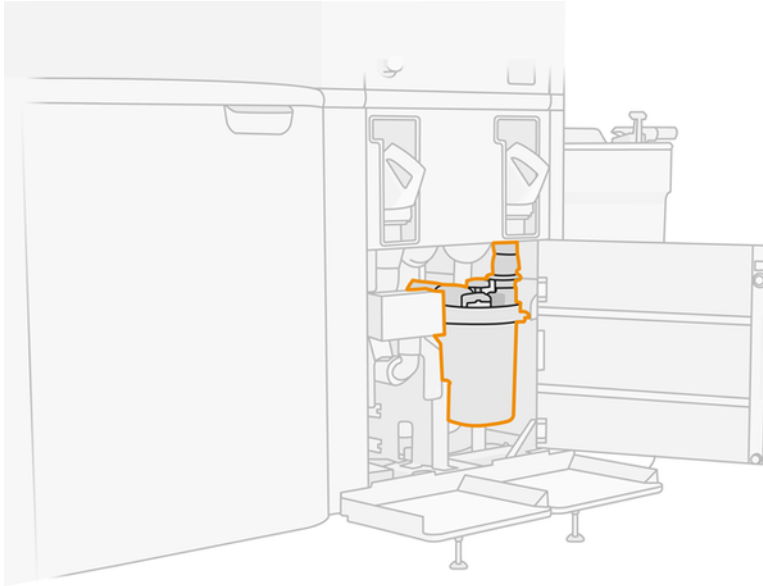
1. Start the replacement from the front panel, when requested.
2. If material cartridges are placed on the front of the processing station, remove them.

3. Clean the handle parking area and the top surface of the material cartridges with an explosion-protected vacuum cleaner.

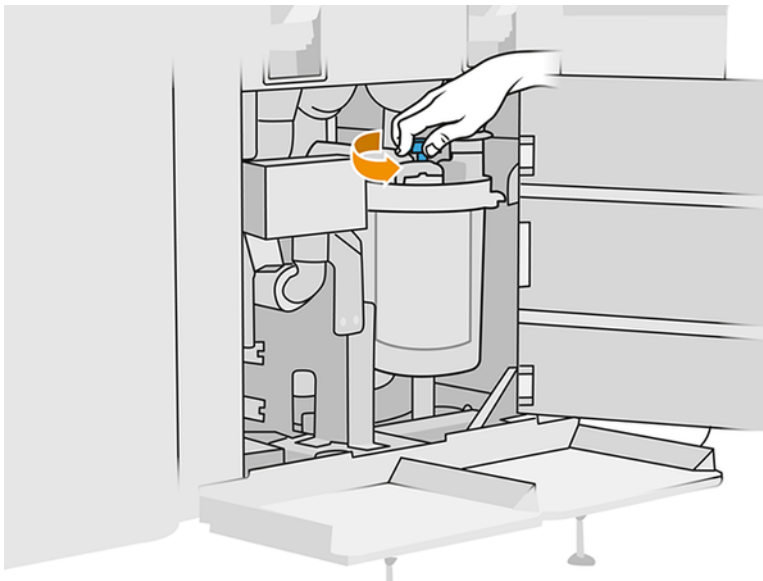


NOTE: Material may leak from the handles.

4. Open the cover.



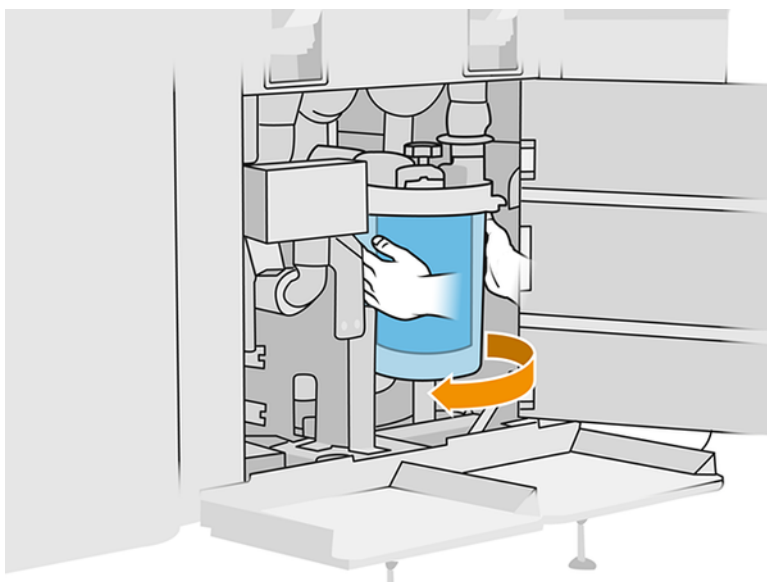
5. Completely unscrew the knob to release the filter.



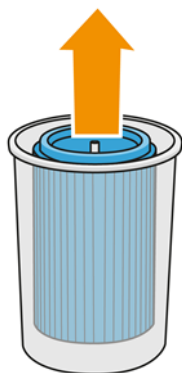
6. Rotate the container clockwise to release it.



CAUTION: Be careful with the sensor when removing the container. Damage to the sensors can cause a sieve malfunction.



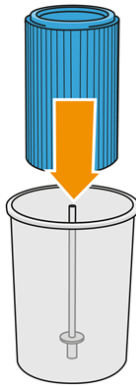
7. Remove the filter and dispose of it according to local regulations.



8. Clean the inside of the container with an explosion-protected vacuum cleaner.

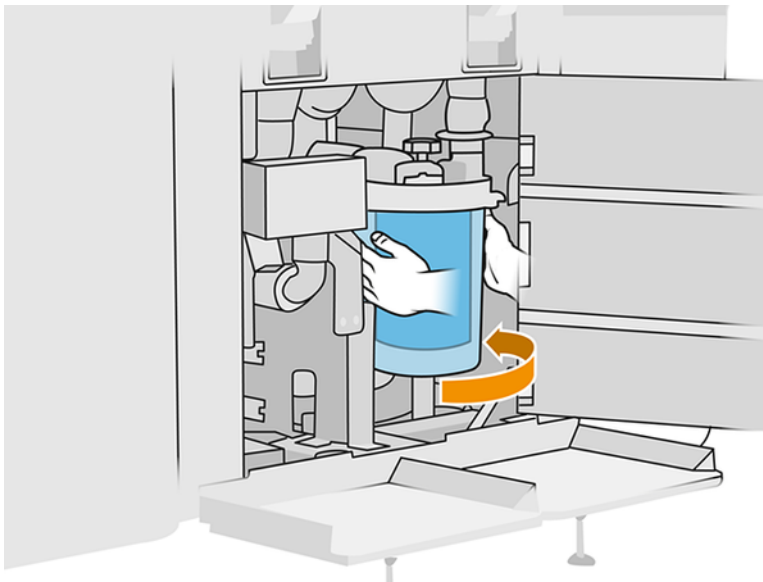


9. Insert the new filter between the container and the central tube, with the closed end at the top and the open end at the bottom.



10. Rotate the container anti-clockwise.

⚠ CAUTION: Be careful with the sensor when removing the container. Damage to the sensors can cause a sieve malfunction.

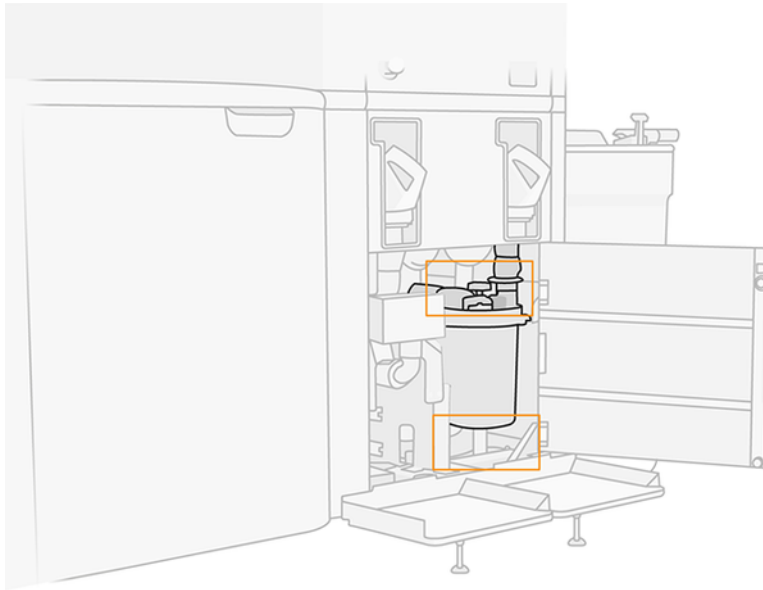


11. **IMPORTANT:** Tighten the knob to lock the container and filter.

Finish the replacement

The following steps provide the complete procedure for this topic.


1. Clean the sieve lid and bottom area cover with an explosion-protected vacuum cleaner.

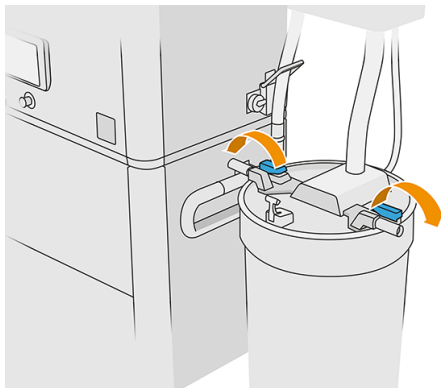


2. Close the cover.
3. Place and connect the material cartridges.

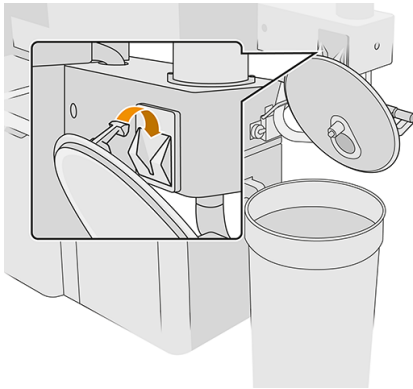
Replace the external tank

The following steps provide the complete procedure for this topic.

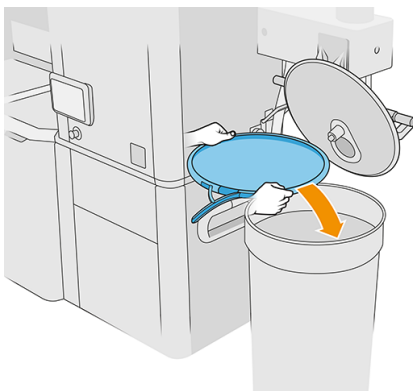
1. Start the replacement from the front panel by tapping the **Maintenance** icon , then **External tank > Replace** (on the external tank card).
2. Open the two latches that lock the lid.



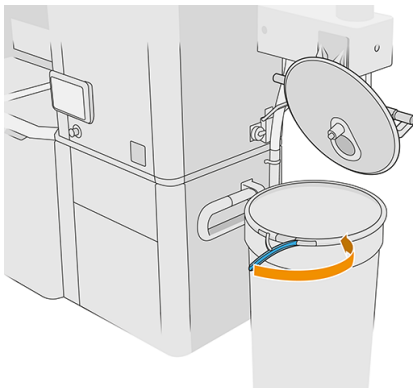
3. Open the lid by pulling it up, and hang it on the structure.



4. Get the storage lid that came with the external tank when purchased and use it to close the tank.



5. Latch the lid.



6. Use a lift trolley to remove the tank to a storage area.




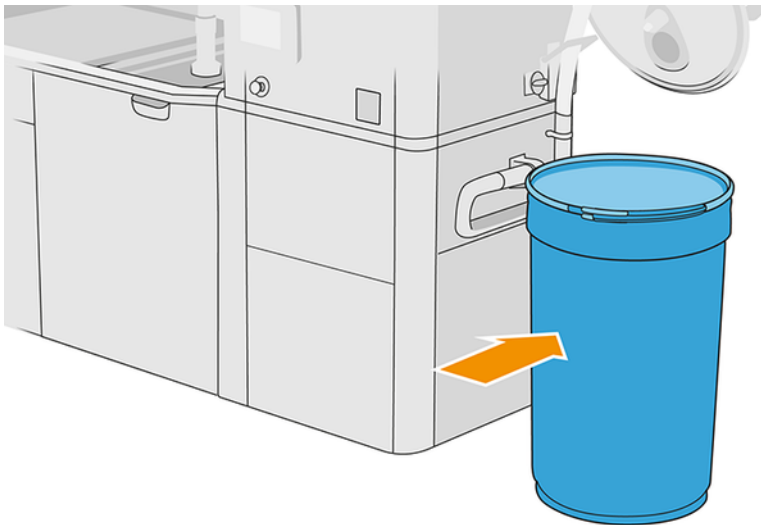
IMPORTANT: The tank should be stored in the same environmental conditions as specified for the processing station, otherwise the material may become unusable. The simplest solution is to keep it in the same room as the processing station, well away from sources of heat or cold. Depending on the material, it may be sensitive to temperature, humidity, or other factors.

7. Clean the inner side of the lid using an explosion-protected vacuum cleaner.

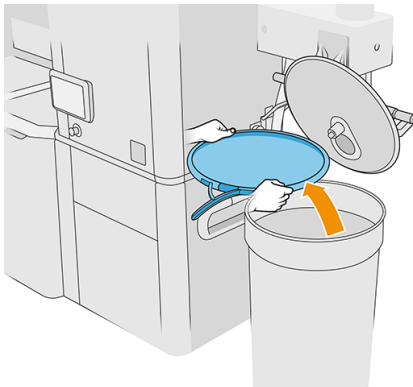


8. Use a lift trolley to bring the tank that you intend to use.

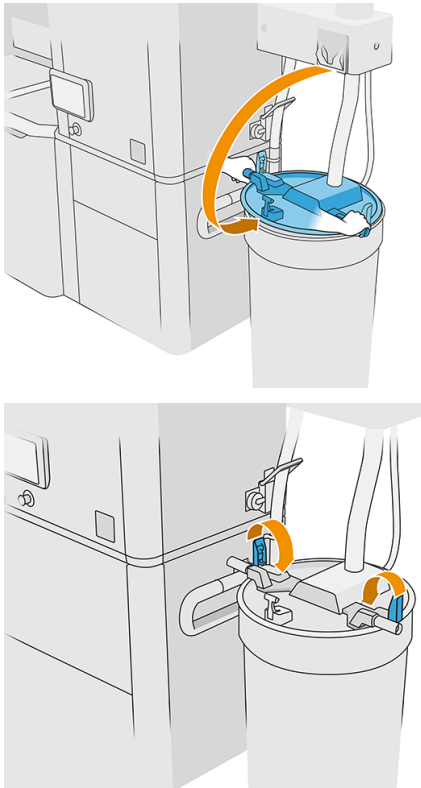
 **IMPORTANT:** Use a trolley only to move the external tank. When the processing station is working, the external tank should be on the floor, at the same level as the processing station.



9. Unlatch and remove the storage lid.



10. Close the lid and lock it with the latches.



NOTE: Check that the external-tank collector is connected to the storage-tank cover.

11. The front panel displays the status as ready.



CAUTION: Use HP-certified external tanks only. The use of third-party external tanks can cause safety risks, material leakages, and malfunctions in the processing station; and may affect your system warranty.

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