



# HP Jet Fusion 5200/5600 3D Printer Series

## Product Documentation Introductory Information

### **SUMMARY**

Introductory information for the HP Jet Fusion 5200/5600 3D Printer Series.

## Legal information

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Edition 1

### **Legal notices**

The information contained herein is subject to change without notice.

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

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# HP Jet Fusion 5200/5600 3D Printer Series

This introductory document includes legal notices and safety instructions, describes the use of the front panel, introduces Web Services, and lists error messages that you may encounter.

## what is it?

Your HP Jet Fusion 3D Printer is a device designed to produce prototypes and truly functional parts with optimal mechanical properties that match your design.

HP fusing and detailing agents work with HP Multi Jet Fusion technology and materials to deliver fine details and dimensional accuracy. The accurate thermal control of every layer enables predictive corrections voxel by voxel for optimal mechanical properties.

This document is a supplement to the main HP Jet Fusion 3D Printing Solution documentation. It includes legal notices, safety precautions, front panel description, system error notice, and power specifications.

## Where is the user guide?

User documentation and resources for your printer.

You can download the user guide for your printer from:

- HP Jet Fusion 3D 5200 Printer: <http://www.hp.com/go/jetfusion3D5200/manuals/>
- HP Jet Fusion 3D 5210 Printer: <http://www.hp.com/go/jetfusion3D5210/manuals/>
- HP Jet Fusion 3D 5210 Pro Printer: <http://www.hp.com/go/jetfusion3D5210pro/manuals/>
- HP Jet Fusion 3D 5600 Printer: <http://www.hp.com/go/jetfusion3D5600/manuals/>

Further information is available from:

- HP Jet Fusion 3D 5200 Printer: <http://www.hp.com/go/jetfusion3D5200/support/>
- HP Jet Fusion 3D 5210 Printer: <http://www.hp.com/go/jetfusion3D5210/support/>
- HP Jet Fusion 3D 5210 Pro Printer: <http://www.hp.com/go/jetfusion3D5210pro/support/>
- HP Jet Fusion 3D 5600 Printer: <http://www.hp.com/go/jetfusion3D5600/support/>

For more information, see your HP Jet Fusion 3D Printing Solution documentation.

## Safety precautions

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

Operations must be supervised at all times.

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

## General safety guidelines

Follow the advice at all times for your personal safety. Turn off all equipment, using the branch circuit breakers located in the building's Power Distribution Unit (PDU).

Call your service representative in any of the following cases:

- The electrical supply cable is damaged.
- The top heating and fusing lamp enclosures are damaged, the glass is missing or broken, or the sealing is defective.
- 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.
- Fuses have blown.
- The equipment is not operating normally.
- There is any mechanical or enclosure damage.

Turn off the equipment using the branch circuit breakers in either of the following cases:

- During a thunderstorm
- During a power failure

Operate the equipment only within the specified ranges of operating temperature and humidity; see the *Site Preparation Guide*.

The equipment should always be kept in the same environmental conditions.

Take special care with zones marked with warning labels.

Use HP-certified and HP-branded material and agents only. Do not use unauthorized third-party material or agents.

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.

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

The printer, build unit, and processing station should always be kept in the same environmental conditions.

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

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

Avoid the risk of explosion by taking the precautions described here.

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 **WARNING!** Combustible 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.).


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

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To avoid the risk of explosion, 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.
- Smoking, candles, welding, and open flames should be forbidden close to the equipment or material 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).
- Inside and outside the equipment should be cleaned regularly with an explosion-proof vacuum cleaner to avoid dust accumulation. Do not sweep the dust or try to remove it with a compressed-air gun.

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 **CAUTION:** In case of a massive spillage, immediately clean the bulk of the spilled powder by using conductive, non-sparking scoops and soft brushes that have natural fiber bristles. Residual

amounts of material remaining after preliminary cleanup, should be removed using an explosion-protected vacuum cleaner.

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

**⚠ 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.

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- 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.
- Check the air filters and the sealing of the heating lamps regularly. Do not remove filters or lamp glasses.
- 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.
- Material storage, handling, and disposal as per local laws. Follow your Environmental Health and Safety processes and procedures. For further information, see the Safety Data Sheets (SDS), which you can find on the HP website at the following link: <http://www.hp.com/go/msds>.
- Do not place the equipment in a hazardous location area, keep separated from other equipment that could create a combustible dust cloud during its operation.
- Auxiliary post-processing equipment, as sand blasting, must be suitable for combustible dust.
- 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 free of static electricity by means of using conductive or dissipative footwear and clothing and a conductive or dissipative floor.
- Keep the lid on top of the build unit at all times when it is outside of host equipment.

Use powder complying with HP guidelines as follows:


- Explosion characteristics acceptance criteria:
  - Minimum Ignition Temperature (MIT) 360°C (680°F) or higher
  - Layer Ignition Temperature (LIT) 375°C (707°F) or higher

- Auto Ignition Temperature (AIT) 375°C (707°F) or higher
- Minimum Ignition Energy (MIE) 10 mJ or higher
- Minimum particle:
  - Average particle size (d50) > 10 µm
  - Minimum particle size (d10) > 2 µm
- Melting temperature: less than 210°C (410°F)
- Non conductive material
- Non-reactive with other materials or HP agents (see the Safety Data Sheets for the agents on the HP website at the following link: <http://www.hp.com/go/msds>).


## Electrical shock hazard

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

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 **WARNING!** The internal circuits inside the e-cabinet, top heating, fusing lamps, build unit, and processing station 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.

 **NOTE:** Risk of electric shock. Power cabinet access for HP trained personnel only.


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

To avoid the risk of electric shock:

- Do not attempt to dismantle the internal circuit enclosures, top heating, fusing lamps, build unit, processing station, or e-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 Breaker (RCCB) every year (see the procedure below).

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

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1. Turn off the equipment from the front panel, not using the main switch.
2. Once the computer is off, test that the RCCB works correctly by pressing the test button.
  - If the RCCB does not trip when the test button is pressed, this indicates that it has failed. The RCCB must be replaced for safety reasons; call your service representative to remove and replace the RCCB.
  - If the RCCB trips, this indicates it is working correctly; reset the RCCB to its normal on state.



## Heat hazard

The top heating, fusing, and build chamber subsystems of the printer operate at high temperatures and can cause burns if touched.

To avoid personal injury, take the following precautions:

- Use of appropriate personal protective equipment (i.e. heat resistant gloves) when extracting the build unit from host equipment.
- Take special care when accessing the printing area. Let the equipment cool down before you open the covers.
- Take special care with zones marked with warning labels.
- Do not place objects inside the equipment while operating.
- Do not cover enclosures while operating.
- Remember to let the equipment cool down before performing some maintenance operations.
- Take special care when assembling or removing the safety lid on/from the build unit. Let the build unit cool down before handling the safety lid.

## Fire hazard

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.

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

- Use the power supply voltage specified on the nameplate.
- Connect the electrical supply cable to a dedicated line, protected by a branch circuit breaker according to the information detailed in the *Site Preparation Guide*.
- Call your service representative if the built-in Residual Current Circuit Breaker (Ground Fault Circuit Interrupter) is repeatedly tripped.
- 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.
- Do not block or cover the openings of the equipment.
- Do not attempt to modify the top heating, fusing, build chamber, e-cabinet, or enclosures.
- Proper maintenance and genuine HP consumables are required to ensure that the equipment operates safely as designed. The use of non-HP consumables may present a risk of fire.
- 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.

Suitable materials for fire-fighting include carbon dioxide, water spray, dry chemicals, or foam.

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**⚠ 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 Environmental Health and Safety (EHS) specialist should consult the Safety Data Sheet (SDS) about each material, available on the HP website at the following link: <http://www.hp.com/go/msds>, and advice on the appropriate measures for your location.

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## 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.
- Avoid standing close to the fans, which could cause injury and could also affect print quality (by obstructing the air flow).
- Do not operate the equipment with covers bypassed.

## Light radiation hazard

Infrared (IR) radiation is emitted from the top heating and fusing lamps. The enclosures limit radiation in compliance with the requirements of the exempt group of IEC 62471:2006, *Photobiological safety of lamps and lamp systems*. Do not modify the top cover enclosure, nor the glasses or windows.

## Chemical hazard

Sufficient ventilation needs to be provided to ensure that potential airborne exposure to chemical substances is adequately controlled. Consult your usual air conditioning or Environmental Health and Safety (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 (SDS) of your 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 (SDS) 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

Ensure that the room in which the equipment is installed meets local environmental, health, and safety (EHS) guidelines and regulations.

Adequate ventilation also needs to be provided to ensure that potential airborne exposure to powders and agents is adequately controlled according to their safety data sheets. Consult the Safety Data Sheets available on the HP website at the following link: <http://www.hp.com/go/msds> to identify the chemical ingredients of your consumables (powders and agents).

Airborne powders can be readily identified and quantified by using established indoor air-quality testing protocols.

It is the customer's responsibility to ensure that the installation is compliant with the minimum ventilation rate and volume to operate in safe conditions. Personal Protective Equipment (PPE) may be required throughout the machine operation. Please follow safety warnings and instructions.



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

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## Air conditioning

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. As with all equipment installations, to maintain ambient comfort levels, air conditioning in the work area should take into account that the equipment produces heat.

Air conditioning in the work area should take into account that the equipment produces heat. Typically, the printer's power dissipation is about 13 kW (44.3 kBTU/h). About 70% of this power is removed throughout the exhaust connection.



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

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## Sound pressure level

The emitted sound pressure level could exceed 70 dB(A) in certain print modes and user positions. The maximum emitted sound pressure level is below 80 dB(A) during printing (measurements according to ISO 11201). Hearing protection may be required as per local laws; consult your Environmental, Health, and Safety (EHS) specialist.

## 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. Refer to the *Site Preparation Guide*, "Moving equipment" section for more information.

## Build unit transport hazard

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 the printer or processing station.
- Steer the build unit using the handle only.
- Move the build unit over smooth, flat surfaces without steps.

- Move with care and avoid shocks during transport, which could spill the material.
- Lock the front casters when not moving the build unit. Remember to unlock them before moving it.

If moving the build unit between different rooms, bear in mind that it should be kept in constant environmental conditions.

## 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.

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 **CAUTION:** Heavy loads.

 **CAUTION:** Work platform recommended.

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.

 **NOTE:** The build unit, empty or full, is a heavy device. Take into consideration its weight during daily moving or transporting tasks.

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 *Site Preparation Guide*, "Moving equipment" section.

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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 (SDS) of the powder and agent and meet local regulations.


Refer to the safety data sheet instructions of your powder or consult your Environmental Health and Safety (EHS) specialist for advice on appropriate measures for your location and application.


## Use of tools


Maintenance of your product may sometimes require the use of a tool.

- **Users:** Daily operations including printer settings, printing, unpacking and refilling, replacement of agent reservoirs, and daily checks. No tool is required.

- **Maintenance personnel:** Hardware maintenance tasks and replacement of Customer Self-Replaceable (CSR) parts may require a screwdriver.


 **NOTE:** During installation, the designated personnel receive training for the safe operation and maintenance of the equipment. The equipment should not be used without this training.


 **WARNING!** Hot surfaces, hot flames and gases, and mechanical and electrical sparks, can only be generated during maintenance or repair operations (use of a permit work system according to the *Service Manual*).


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


## Warnings and cautions

Warning and caution symbols are used in this manual 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!** Indicates a hazardous situation, that if not avoided, could result in death or serious injury.

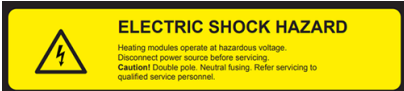


 **CAUTION:** Indicates a hazardous situation, that if not avoided, could result in minor or moderate injury.

 **NOTE:** Indicates information considered important but not hazard related.

## Warning labels

Warning labels for your printer.

### Warning labels

Label	Explanation
 <p><b>ELECTRIC SHOCK HAZARD</b> Heating modules operate at hazardous voltage. Disconnect power source before servicing. Caution! Double pole. Neutral fusing. Refer servicing to qualified service personnel.</p>	<p><b>DANGER!</b> Electric shock hazard</p> <p>Heating modules operate at hazardous voltage. Disconnect power source before servicing.</p>
 <p><b>WARNING</b> High leakage current. Earth connection essential before connecting supply. Equipment to be connected to earthed mains only.</p>	<p><b>CAUTION:</b> Double pole. Neutral fusing. Refer servicing to qualified service personnel.</p>
 <p><b>READ INSTRUCTIONS</b> Before starting, read and follow the operating and safety instructions. Avant de commencer, lisez et suivez les instructions de fonctionnement et de sécurité. Lesen und befolgen Sie bitte die Bedienungs- und Sicherheitsanweisungen, bevor Sie starten. Antes de empezar, lea y siga las instrucciones sobre funcionamiento y seguridad. 开始之前, 请阅读并遵循操作和安全说明 開始之前, 請閱讀並遵守操作和安全說明</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><b>WARNING!</b> 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><b>Before starting</b></p> <p>Read and follow the operating and safety instructions before starting the equipment.</p>

For service personnel only



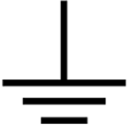

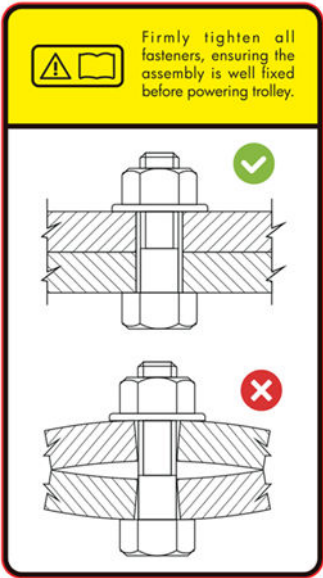
Warning labels (continued)

Label	Explanation
	<p><b>CAUTION:</b> Hot surface.</p> <p>Do not touch.</p> <p>Let the equipment cool down or use heat-resistant gloves.</p>
	<p><b>CAUTION:</b> Personal protective equipment (PPE) required.</p> <p>Use of protective gloves for operating and handling machine, supplies or waste.</p> <p>Refer to supplies Safety Data Sheets (SDS).</p>
	<p><b>CAUTION:</b> Personal protective equipment (PPE) required.</p> <p>Use of safety mask for operating and handling machine, supplies or waste.</p> <p>Refer to supplies Safety Data Sheets (SDS).</p>
	<p><b>CAUTION:</b> Personal protective equipment (PPE) required.</p> <p>Use of safety goggles for operating and handling machine, supplies or waste.</p> <p>Refer to supplies Safety Data Sheets (SDS).</p>
	<p><b>CAUTION:</b> Do not step.</p> <p>Do not step over any machine part. It is not intended for this use and could result in broken parts and user injuries.</p>
	<p><b>CAUTION:</b> Do not climb.</p> <p>Do not climb onto the structure or any other machine part.</p>
	<p><b>WARNING!</b> 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>

## Warning labels (continued)

Label	Explanation
	<p><b>WARNING!</b> No ignition sources permitted nearby.</p> <p>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, sparks, or open flames close to equipment or material storage area.</p>
	<p><b>WARNING!</b> An explosion-protected vacuum cleaner certified for collection of metal combustible dust is required for cleaning.</p> <p>Do not sweep the dust or try to remove it with a compressed-air gun.</p> <p>Follow maintenance, cleaning tasks and housekeeping to ensure correct operation and safety. Inside and outside, the equipment should be cleaned regularly to avoid dust accumulation.</p> <p>Refer to the material Safety Data Sheet (SDS) and meet local regulations. Disposal as per local laws.</p> <p>In addition, 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 data-bbox="252 1167 667 1188">For maintenance and service personnel only</p>	<p><b>DANGER!</b> Electric shock hazard.</p> <p>Authorized personnel only.</p> <p>Disconnect before servicing.</p> <p>Do not operate with guards removed, lockout/tagout before servicing.</p>
 <p data-bbox="252 1419 667 1440">For maintenance and service personnel only</p>	<p><b>WARNING!</b> Moving fan blades.</p> <p>Hazardous moving parts. Keep hands away from moving fan blades.</p> <p>Do not operate with guards removed, lockout/tagout before servicing.</p>
 <p data-bbox="252 1671 667 1692">For maintenance and service personnel only</p>	<p><b>WARNING!</b> Hand entanglement hazard.</p> <p>Moving parts can crush and cut.</p> <p>Keep body parts away from moving parts or rotating gears.</p> <p>Do not operate with guards removed, lockout/tagout before servicing.</p>

Warning labels (continued)

Label	Explanation
 <p>For service personnel only</p>	<p><b>WARNING!</b> Hazardous moving part.</p> <p>Moving parts can crush and cut.</p> <p>Keep hands away from moving parts or rotating gears.</p> <p>Do not operate with guards removed, lockout/tagout before servicing.</p>
	<p><b>WARNING!</b> Protective conductor connecting point.</p> <p>Protective earth terminal marked with <b>PE</b> for qualified electricians during mains connection.</p> <p>Earth connection essential before connecting supply.</p> <p>Ensure proper bonding after a repair.</p> <p>Protective bonding conductor are identified by bi-color combination GREEN-AND-YELLOW.</p>
	<p><b>NOTICE:</b> Functional bonding conductor connecting point.</p> <p>Bonding connection required against maloperation.</p>
	<p>Do not disconnect the hoses during the purging process.</p>
	<p>Firmly tighten all fasteners, ensuring the assembly is well fixed before you switch on the build unit.</p>

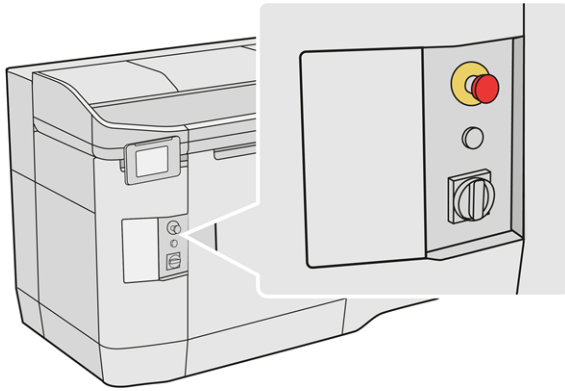


## Emergency stop buttons

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

- In 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.



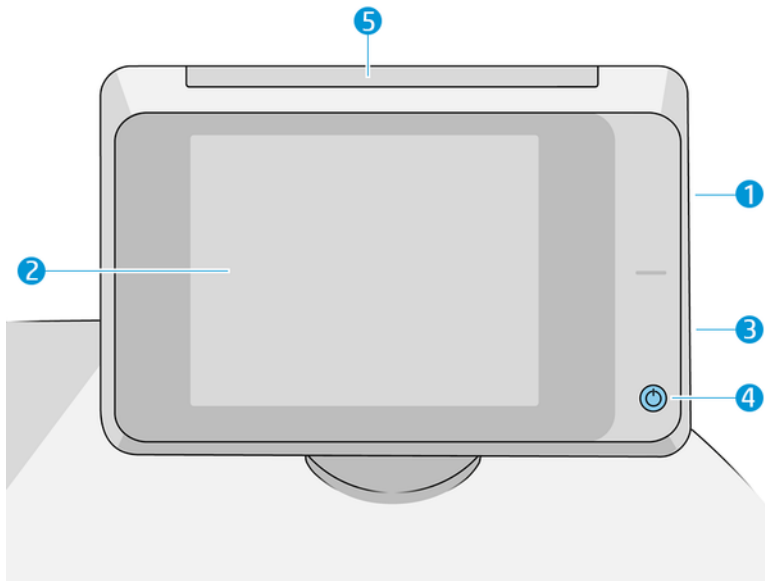
For safety reasons, access to the print zone is not permitted while printing is in progress. Let the printer cool down before touching anything inside it.

To stop the equipment completely, turn it off.

## 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.

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, which is illuminated when the printer is on. It flashes when the printer is in sleep mode.
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 up to four fixed icons at different times. Normally they are not all displayed at the same time.

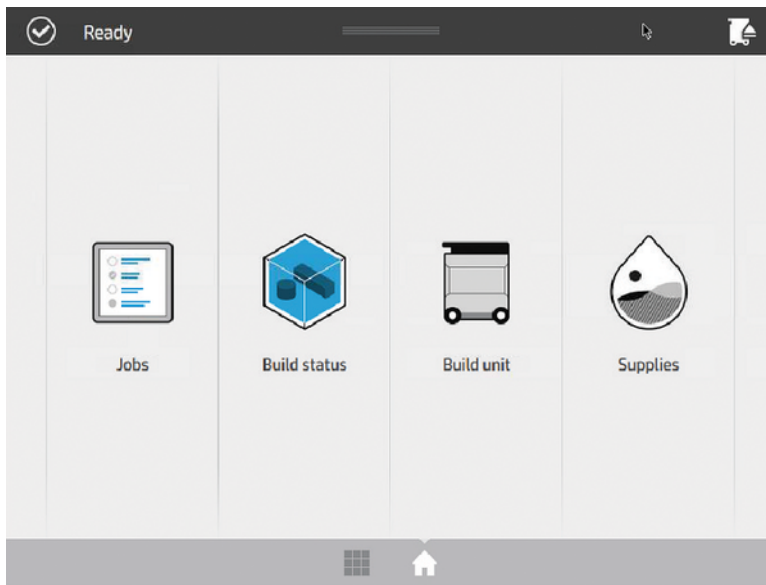
#### Left and right fixed icons

- Tap the **Home** icon  to return to the home screen.
- Tap the **Help** icon  to view help about the current 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.

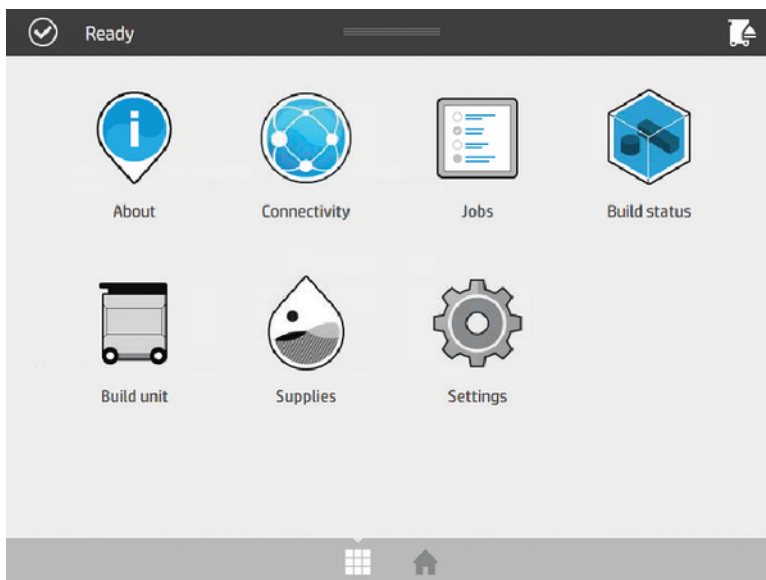
#### Home screens

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.



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



## System errors

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 support representative and be ready to give the numerical code from the error message. If the error message contains some other recommended action, follow the instructions.

## Power specifications

Power specifications for your printer.

## Configuration 1: 380–415 V line-to-line three-phase configuration

### Printer specifications

Description	Specifications
Number of power lines	3 lines + N + PE
Input voltage (line to line)	380–415 V~ (±10%)
Input voltage (line to neutral)	220–240 V~ (±10%)
Input frequency	50/60 Hz
Power consumption (typical)	12–14 kW
Maximum load current (per phase)	48 A

### Branch circuit breaker specifications

Description	Specifications
Branch circuit breaker	4 poles, 50/60 A

### Power cable specifications

Description	Specifications
Configuration	3 lines + N + PE
Minimum cross-sectional area	16 mm <sup>2</sup> (0,63 in <sup>2</sup> ) or 6 AWG
Terminals	Ferrule terminals, except the PE terminal, which uses the M10 ring type
External diameter range	18.0–32.0 mm (0,71–1,26 in)

## Configuration 2: 200–240 V line-to-line three-phase configuration

### Printer specifications

Description	Specifications
Number of power lines	3 lines + PE
Input voltage (line to line)	200–240V (±10%)
Input frequency	50/60 Hz
Power consumption (typical)	12–14 kW
Maximum load current (per phase)	80 A

### Branch circuit breaker specifications

Description	Specifications
Branch circuit breaker	3 poles, 80/100 A

### Power cable specifications

Description	Specifications
Configuration	3 lines + PE
Minimum cross-sectional area	35 mm <sup>2</sup> (1,38 in <sup>2</sup> ) or 2 AWG
Terminals	Ferrule terminals, except the PE terminal, which uses the M10 ring type
External diameter range	18.0–32.0 mm (0,71–1,26 in)