



HP SitePrint Robot Site Preparation Guide

SUMMARY

How to prepare your site for the installation of the product.

About this edition

© Copyright 2023 HP Development Company, L.P.

Edition 1, October 2023

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.

Table of contents

1 Introduction	1
Recommendations	1
Customer responsibilities	1
2 Requirements	2
Setup time and space	2
Operating space	2
Printable surface	2
Safety precautions	3
General safety guidelines	3
Electric shock hazard	4
Heat hazard	5
Fire hazard	5
Explosion hazard	6
Mechanical hazard	6
Light radiation hazard	7
Chemical hazard	7
Ventilation	7
Ink handling	8
Warnings and cautions	8
Warning labels	8
General cleaning instructions	8
Transportation and storage	9
3 Designing a suitable working area	11
4 Recycling and disposal instructions	12
5 Specifications	13
Environmental specifications	13
Battery-charger, battery, and robot power specifications	13
6 Site preparation checklist	15

1 Introduction

This site preparation guide specifies the work environment and characteristics needed for complete layout activities with your robot. It also tells you how to transport and store the robot.

It is important to read the guide thoroughly to ensure complete compliance with all setup and operational requirements, environmental health and safety procedures, warnings, cautions, and local regulations.

The robot is supplied in a case with ink, mini-prisms, battery, and battery charger. It is ready to be used after setting up.

Recommendations

A well-prepared site makes it easy to set up and use your robot.

After finalizing CAD preparation, and before helping to complete layout activities, you should visit the area where the job will be completed and ensure that:

- CAD references and obstacles match physical references and obstacles available in the layout area.
- Site preparation requirements are met.
- Ink type selected to complete the job matches the printable surface requirements.

Customer responsibilities

If you are unable to meet any of these requirements, contact your service representative.

- Prepare the layout area to meet the following requirements:
 - Temporary and/or movable obstacles not placed for safety reasons should be removed for maximum productivity and to reduce manual interactions.
 - Site specifications (space, surface, and so on) should be suitable for the robot, its accessories if any, and its set-up and usage.
 - The printable area should be surrounded by a safety net.
- Meet all the requirements of the local jurisdiction of the country in which the robot will be used.
- Meet temperature and humidity requirements and ensure proper ventilation for the robot.
- Meet software and networking requirements.

2 Requirements

There are various requirements for successful use of your robot.

Setup time and space

Robot setup can be performed by one person in a space of 2 m².

Allow a minimum of 15 minutes to complete robot setup; it may take longer, depending on the circumstances. Allow extra time for accessories, such as the Total Robotic Station and prisms.

Operating space

The printable area should be as clear as possible to improve productivity and reduce manual interactions with the robot.

The robot can navigate between obstacles with a minimum distance of 70 cm.

The robot can avoid obstacles and holes, but HP highly recommends covering them with boards when feasible to increase productivity.

The robot's maximum distance from the Total Robotic Station, without obstacles, ensuring the same level of accuracy across the printed area (± 3 mm), is 300 m.

Printable surface

The robot can print on porous and non-porous surfaces.

A specific ink has been validated for each type of surface: water-based ink for porous surfaces, solvent-based ink for non-porous surfaces. Take care to choose the correct ink for each surface.

Three types of water-based ink are available, with varying durability:


- Around 2 days (cyan)
- Around a week (magenta)
- Permanent (black)

How much printing you can do with one ink cartridge will depend on the selected ink density.

Safety precautions

Before using your robot, read, understand, and follow these safety precautions, and your local Environmental Health and Safety regulations.

This robot is not suitable for use in locations where children, or people not involved in the use of the robot, are likely to be present.

 **WARNING!** It is mandatory 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. It is the responsibility of the robot owner or manager to facilitate complete training of all possible robot users. Failing this requirement may result in personal injury or damage to equipment.

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

Operations must be supervised at all times.

General safety guidelines

Please read these safety guidelines carefully.

There are no operator-serviceable parts inside the robot except those covered by HP's Customer Self Repair program: see <http://www.hp.com/go/selfrepair>. Refer servicing of other parts to qualified service personnel.

Take these precautions before starting work:

- If the working area has access to a lower level (floors under construction above ground level, open ramps, uncovered underground work areas, or stairwells), ensure that local safety rules are followed to avoid the risk of falling people or objects. Ask your EHS site representative to confirm that the site is safe before starting a job; if necessary, inspect the working area together with the EHS site representative to avoid residual risks.
- Ensure that no people, machinery, or unnecessary objects are present in the working area.
- Check that during transportation and handling of the robot there is no appreciable damage, deformation, or displacement of any component (sensors in particular) and that there are no ink leaks. If you find any problem, do not start a job, and contact your service representative.
- This robot is provided with a safety function to avoid falling over. Disabling this function may result in a hazardous operation. It is important to regularly clean and maintain the sensors as per the Robot Maintenance instructions.
- Perform the required calibrations, verifications, maintenance, and cleaning tasks to ensure the correct and safe operation of your robot.
- The robot contains sensitive electronic components. Check that the working area is not exposed to strong electromagnetic fields, which can cause robot malfunction.
- Discharge yourself of static electricity each time before handling the robot in any way.
- Do not operate the robot with covers or doors open or wrongly assembled.
- Avoid operating the robot on windy days.

Turn off the robot, by pressing the disconnection button and removing the battery, and call your service representative in any of the following cases:

- The enclosures are damaged.
- The robot has been mechanically damaged or misassembled.
- Liquid has entered the robot.
- Ink is leaking inside the robot.
- Ink is leaking outside the robot and is out of control.
- There is smoke or an unusual smell coming from the robot.
- The robot has been dropped and a sensor may have been damaged.
- The robot will not start.
- The robot is not operating normally.

Press the disconnection button, shelter the robot, and remove the battery in any of the following cases:

- During a thunderstorm, electrostatic discharges, or other electromagnetic interference
- Before the onset of rain, snow, hail, or other precipitation (the robot is not designed to work in these conditions)
- If the robot is not working and exposed to outdoor high temperatures and sunshine
- When the robot is parked and people not involved in the use of the robot could approach the working area
- During a power failure

Use only HP-branded ink. Do not use unauthorized third-party ink.

Read and follow the instructions on safety warning labels on the robot before using it.


Take these precautions after finishing a job:

- Avoid storing the robot where it will be exposed to sunlight, or very high or low temperatures.
- Avoid storing or parking the robot where it can be exposed to rain, snow, hail, or other precipitation, or to any kind of liquid or dust.

Material storage, handling, and disposal should be done according to local laws. Follow your Environmental Health and Safety processes and procedures. For further information, see the Safety Data Sheets (SDS), which you can find at <http://www.hp.com/go/msds>.

Electric shock hazard

The battery-charger assembly uses a local power cord. Unplug the power cord if you notice smoke or an unusual smell when charging the battery.

 **WARNING!** The internal circuits of the battery-charger power module operate at hazardous voltages capable of causing death or serious personal injury.

To avoid the risk of electric shock:

- The battery-charger assembly should be connected to earthed mains outlets only.
- Always use the battery charger in indoor locations.
- Do not attempt to dismantle the battery charger or power module.
- Do not manipulate the power module or power cord. If you detect any imperfection, contact your service representative for assistance or change of component.
- Do not use electrical components not supplied with the robot.
- Do not try to use the battery charger for any purpose other than charging the robot battery.

Heat hazard

Take care when touching the external enclosure or handling the robot after long exposure to outdoor high temperatures.

To avoid personal injury, let the robot cool down before performing internal maintenance operations.

Fire hazard

The customer is responsible for meeting the robot's requirements and the Electrical Code requirements according to the local jurisdiction of the country where the equipment is installed.


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


- Use only the battery supplied with the robot.
- To charge the battery, use only the charger supplied with the robot.
- Do not use damaged components of the charger (power cord, power module, or the charger itself). Do not use the charger with other products.
- Ensure that the battery-charger power module is suitable for the power source to which it will be connected.
- When charging or removing the battery, try to avoid particles or liquid entering the battery compartment or charger.
- Do not operate the robot outdoors when it is raining.
- When closing the battery compartment, make sure it is fully closed, to keep out liquids and dust.
- Use the robot within its specified operating and storage ranges of temperature, humidity, and altitude.
- Do not insert objects through slots or doors in the robot.
- Take care not to spill liquid on the robot. After cleaning according to the maintenance instructions, make sure all components are dry before using the robot again. If a significant amount of liquid has entered the robot, contact your service representative.
- Do not clean the robot with pressurized water or a large quantity of water or other liquids. Follow the HP recommendations.

- Check the air filters regularly in accordance with the instructions in this guide, cleaning them if necessary. Do not remove the filters: if you think they should be removed, call your service representative.
- Do not use aerosol products that contain flammable gases inside or around the robot. Do not operate the robot in an explosive atmosphere.
- Do not block or cover the openings of the robot.
- Do not open the robot or manipulate anything inside it. The robot may use ethanol-based inks, which could cause a risk of fire if they leak.
- Follow all maintenance instructions.
- Proper maintenance and genuine HP consumables are required to ensure that the robot operates safely as designed. The use of non-HP consumables may present a risk of fire.

Explosion hazard

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

 **WARNING!** Ink-based ethanol leakages and especially vapors can be explosive in air in some concentrations. Take precautionary measures against static charges, and keep the robot away from sources of ignition.

 **WARNING!** Remove the battery from the robot before putting the robot into its case for transportation, and before starting any maintenance procedure.

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

- Follow all maintenance instructions promptly, as needed (cleaning, filter replacement, ink-circuit purge, and so on).
- Smoking, candles, welding, hot surfaces, and open flames should be forbidden close to the equipment and the ink-supply storage area.
- Avoid working in areas with powerful radio frequencies or electromagnetic fields in general.
- Do not work in areas where sparks can fly.
- Do not open the robot or manipulate it internally. Internal ink leakages or ink-vapor emissions, combined with the generation of ESD (ElectroStatic Discharges) inside the ink-circuit pipes and fittings when removed or generated from contact with people, could create an explosion or fire risk.
- Use HP recommended inks only. Do not use unauthorized third-party inks.
- In case of ink leaks, all personnel should be freed from static electricity by discharging it before handling the robot.
- Stop operation, remove the battery, and contact your service representative if any ink leak is detected.

Mechanical hazard

The robot has moving parts that could cause injury.

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

- The robot should be supervised during its operation.
- Always keep clean the four robot-safety floor sensors, and check frequently that they are working correctly.
- To reduce the risk of the robot falling onto someone from a height, ensure that the working area meets all the requirements of local safety laws according to the robot's size, weight, and operation. Get the approval of your EHS site specialist before starting work.

HP always recommends the use of safety nets or other protective barriers.

- To reduce the risk of the robot colliding with people, try to remove people from the working area. If they need to be there, remind them of the risk.
- Keep your clothing and all parts of your body away from the robot's moving parts.
- Avoid wearing necklaces, bracelets, and other hanging objects.
- If your hair is long, try to secure it so that it will not fall into the robot.
- Take care that sleeves or gloves do not get caught in the robot's moving parts.
- Do not touch gears or moving parts during operation or maintenance. Press the disconnection button and remove the battery before performing maintenance.
- Use personal protective equipment (PPE) as a preventive measure in case the robot runs into you during operation.
- Do not operate the robot with covers or doors open or wrongly assembled.
- Do not park the robot on a slope of more than 4.4% inclination, to avoid it sliding down.
- Handle the robot with care to avoid dropping it. If you drop it, call your service representative to check it for damage that may affect your safety.

Light radiation hazard

Light radiation is emitted from the warning lights.

This illumination is in compliance with the requirements of the exempt group of IEC 62471:2006: *Photobiological safety of lamps and lamp systems*. However, you are recommended not to look directly at the LEDs while they are on. Do not modify the module.

Avoid looking directly at the red LED light from the front and rear sensors.

Chemical hazard

There may be flammable liquid in the ink cartridges. Keep them away from heat, hot surfaces, sparks, open flames, and other sources of ignition.

Inks might be classified, see the safety data sheets available at <http://www.hp.com/go/msds> to identify the hazardous chemical ingredients of your consumables.

Ventilation

Fresh air ventilation is needed to maintain indoor comfort levels.

Ventilation should meet local Environmental Health and Safety (EHS) guidelines and regulations.

Ink handling

HP recommends that you wear protective gloves, protective clothing, and eye protection when handling ink-system components.



Please check the Safety Data Sheets available at <http://www.hp.com/go/msds> before handling the ink.

Ink, and components contaminated by ink, should be disposed of according to local laws. Follow your Environment Health and Safety processes and procedures. For further information, see the Safety Data Sheets.

The robot can work with ethanol-based inks. When handling or storing these inks, keep them away from sources of ignition, avoid high temperatures, and preferably store them in open locations.

Warnings and cautions

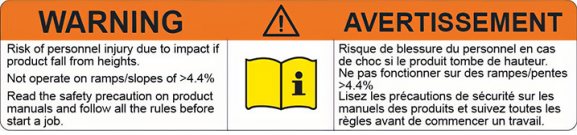

Symbols are used in this document to ensure the proper use of the robot and to prevent it from being damaged. Follow the instructions marked with these symbols.

-  **WARNING!** Failure to follow the guidelines marked with this symbol could result in serious personal injury or death.
-  **CAUTION:** Failure to follow the guidelines marked with this symbol could result in minor personal injury or damage to the robot.

Warning labels

Safety labels are included on your robot. See the table to understand what the labels mean; they are important.

Warning labels

Label	Explanation
	<p>Risk of personal injury due to impact if the robot falls from a height.</p> <p>Do not operate the robot on slopes of more than 4.4% inclination.</p> <p>Read the safety precautions in this guide and follow all instructions before starting a job.</p>
	<p>Read the documentation</p> <p>Read the safety precautions in this guide and follow all instructions before starting a job.</p>


General cleaning instructions

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


Do not spray fluids directly onto the product. Spray the fluid on 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 Simple Green industrial cleaner). Remove any remaining soap foam with a dry cloth.


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


 **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 onto the glass, as the liquid might seep under the glass and damage the device.


HP recommends using a canister of compressed air to remove dust from electronic or electrical parts.

 **CAUTION:** Do not use a water-based cleaner for parts with electrical contacts, as it may damage electrical circuits.

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

 **CAUTION:** Ink cleaning and maintenance materials should be disposed of according to local laws. Follow your Environmental Health and Safety processes and procedures. For further information, see the Safety Data Sheets, which you can find at <http://www.hp.com/go/msds>.

 **CAUTION:** Ink-based ethanol leakages and especially vapors can be explosive in air in some concentrations. Take precautionary measures against static charges, and keep the robot away from sources of ignition. See [Explosion hazard on page 6](#).

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


Transportation and storage

Transportation and storage instructions aim to ensure that your robot is safe and will function correctly.

Keep your robot safe and in order at all times. Take the following precautions when transporting or storing it:


- Turn off the robot and remove the battery.
- Turn off the HyperX joystick by selecting the USB mode (left position) in the switch.
- To prevent the nozzles from clogging the next time you try to print, clean the printhead with a lint-free cloth. If the printhead has been used with solvent-based inks, you should dampen the cloth using a cleaning agent based on substances compatible with the solvent ink (see ink composition at [SDS](#)), preferably ethanol.


Remember: never use distilled water or any other aqueous cleaner if solvent-based ink is on the printhead or in the circuit: this would damage the printhead. Distilled water is allowed only if you are sure to have used water-based inks.

 **NOTE:** In some places the use of cleaners is regulated. Make sure your cleaner complies with federal, state, and local regulations.


- Before transporting the robot by air or sea, use the purge procedure to deplete or remove ink from it.

- Remove the battery cover before putting the robot in its case.

 **CAUTION:** Batteries should not be kept in the same case with ethanol ink cartridges or with any other items classified as dangerous goods for transportation, such as the robot after use. Use qualified packaging to transport the battery, meeting local, national, and international regulations.

 **WARNING!** Batteries are classified as dangerous goods for transportation Class 9, and ethanol ink cartridges and cleaning fluids are classified as dangerous goods of transportation Class 3. Before transporting the product, ensure that you meet all the regulations for the transportation of dangerous goods.

- HP solvent-based ink cartridges have special requirements for transportation. For further information, see the Safety Data Sheets, which you can find at <http://www.hp.com/go/msds>.
- Keep ink cartridges stored in a temperate environment. Cartridges may leak if stored below freezing temperature (0°C).
- Dangerous goods transportation regulations may not permit transporting articles classified differently under those regulations. Before shipping your product, ensure with your transport agent that the shipment complies with all the regulations for the transportation of dangerous goods, and that it is labeled adequately.

 **TIP:** Whenever the robot is not operating, it should be kept indoors and in its case.

3 Designing a suitable working area

After setup has been done, the robot needs enough space for normal operation.

Normal operation includes the following tasks:

- Printing
- Navigating (forward movement and rotation)
- Servicing, and replacing components or ink

4 Recycling and disposal instructions

Within some countries covered by the HP Planet Partners Program, HP is offering a recycling program.

For full details of this program, see <http://www.hp.com/recycle>.

Items not covered by the HP Planet Partner Program need to be disposed of according to federal, state, and local regulations.

For further information, see the safety data sheets for your inks and batteries, available from <http://www.hp.com/go/msds>.

5 Specifications

Some relevant specifications of your robot.

Environmental specifications

For successful operation, the robot should be kept within the specified range of environmental conditions.

Using the robot outside the specified range may cause print-quality problems or damage electronic components.

Robot environmental specifications

Type	Value
Relative humidity range when operating	20–80%
Temperature range when operating	Solvent-based inks: –10 to +40°C (14 to 104°F) Water-based inks: 0 to +40°C (32 to 104°F)
Temperature range when in storage	–20 to +55°C (–4 to +131°F)
Temperature gradient	no more than 10°C/h (18°F/h)
Maximum altitude when operating	2000 m (6600 ft)
Surface condition when operating	Dry
Storage conditions	Indoor
Battery charging	Indoor
Temperature range when charging battery	0 to 40°C (32 to 104°F)



NOTE: If the robot or ink cartridges are moved from a cold location to a warm and humid location, water from the atmosphere can condense on the robot parts and cartridges and can result in ink leaks and robot errors. In this case, HP recommends that you wait at least 3 hours before turning on the robot or installing the ink cartridges, to allow the condensation to evaporate.

Battery-charger, battery, and robot power specifications

Power specifications of the robot, its battery, and its battery charger.

Battery-charger, battery, and robot power specifications

Characteristic	Specifications
Charger: Number of power cords	1
Charger: Input voltage	100–240 V (two wires and protective earth)
Charger: Input frequency	50–60 Hz
Charger: Maximum output voltage	17.4 Vdc
Battery: Nominal output voltage	14.4 Vdc
Battery: Nominal capacity	6.9 Ah, 99 Wh
Robot: Typical power consumption in operating mode	23 W
Robot: Power consumption in ready mode	17 W

Site voltage must be within the “Input voltage” range.

6 Site preparation checklist

This chapter gives a list of parameters to check before starting layout activities.

The checklist is designed to ensure that you are fully prepared to start with the layout activity. If a checklist item cannot be completed or is unnecessary, add a short explanation under 'Comments'. Once you have completed the checklist, sign it, and send it to your service representative before starting the layout activity.

The checklist should be completed 1 or 2 days before starting the layout. Any delay during the layout caused by an unprepared area will be the customer's responsibility.

Some checklist items are marked '(Required)', which means that you cannot proceed with installation until you have checked the 'Yes' box.

When you sign the checklist, you are confirming that the site has been prepared according to the specifications provided in the site preparation guide, and that all checklist items have been completed.

Work site address information

Company name	Postal code
Street address	Telephone number
City	Fax number
Country	Email address

User information

First name	Account name
Last name	Email address

EHS site representative

First name	Last name
Telephone number	Email address

Site preparation checklist

Question	Yes	No	Comments
Have you visited the construction area or site where the job will be completed 1 or 2 days before starting the layout?			(Required)
Do the layout area and the route to it have sufficient lighting?			

Site access requirements

Question	Yes	No	Comments
Has the route to the layout area been checked, and has it met all the transport requirements? The robot requires a minimum pass width of 80 cm and a clear conveyance route.			(Required)
Will you use the robot on different construction levels? If so, is there enough space to move the robot within its case up and down?			
Has the layout enough space to set up and maneuver the robot?			

Safety requirements

Question	Yes	No	Comments
Is there a risk of the robot falling from a height in the layout area? The layout area, and any hole or trench within the area, should be surrounded by a safety net or other protective barrier.			(Required)
Is there an emergency exit in the layout area, with easy access and free from any obstruction?			

Layout area and flooring requirements

Question	Yes	No	Comments
Is the layout area free of people not related to the work? If there are any such people present, have they been given clear and proactive communication of the risk and the precautions that need to be taken?			(Required)
Is the surface of the layout area free from dirt and dust?			(Required)
Are there any physical references or obstacles that do not match the CAD information?			(Required) Which:
Are there any temporary and/or movable obstacles not placed for safety reasons and pending to be removed?			Which:
Is the surface of the area where the layout will be completed ours?			
Is there any ramp with inclination greater than 4.4% within the layout area? The robot should not be operated on surfaces inclined by more than 4.4%.			(Required)

Environmental requirements

Question	Yes	No	Comments
Is the surface of the layout area dry, and free from ice and snow?			(Required)
Have the temperature and humidity requirements been satisfactorily met in the layout area and within the storage space?			(Required)
Does the route to the layout area have sufficient lighting? Have you checked the required ventilation and air-conditioning specifications with an expert?			
Is the layout area at an altitude of more than 2000 m?			
Is the working area protected as specified in local laws and confirmed by the EHS representative?			(Required)

Usage requirements

Question	Yes	No	Comments
Do those who will operate the robot have the technical training and/or the experience necessary to minimize risks to people and equipment?			(Required)
Will robot operations always be supervised by an operator?			(Required)
Is there a dedicated indoor area with a line to connect the battery charger? Battery charging should be done indoors.			

Other requirements

Question	Yes	No	Comments
Have you arranged for the necessary supplies (based on the surface and size of the printable area) to be available on the layout day?			(Required)
Have you met or exceeded all the requirements specified in this guide?			(Required)

Customer information

Date of site preparation completion	
Site preparation guide edition number or copyright date	
Company owner or EHS signature	

Customer information (continued)

User signature	
----------------	--