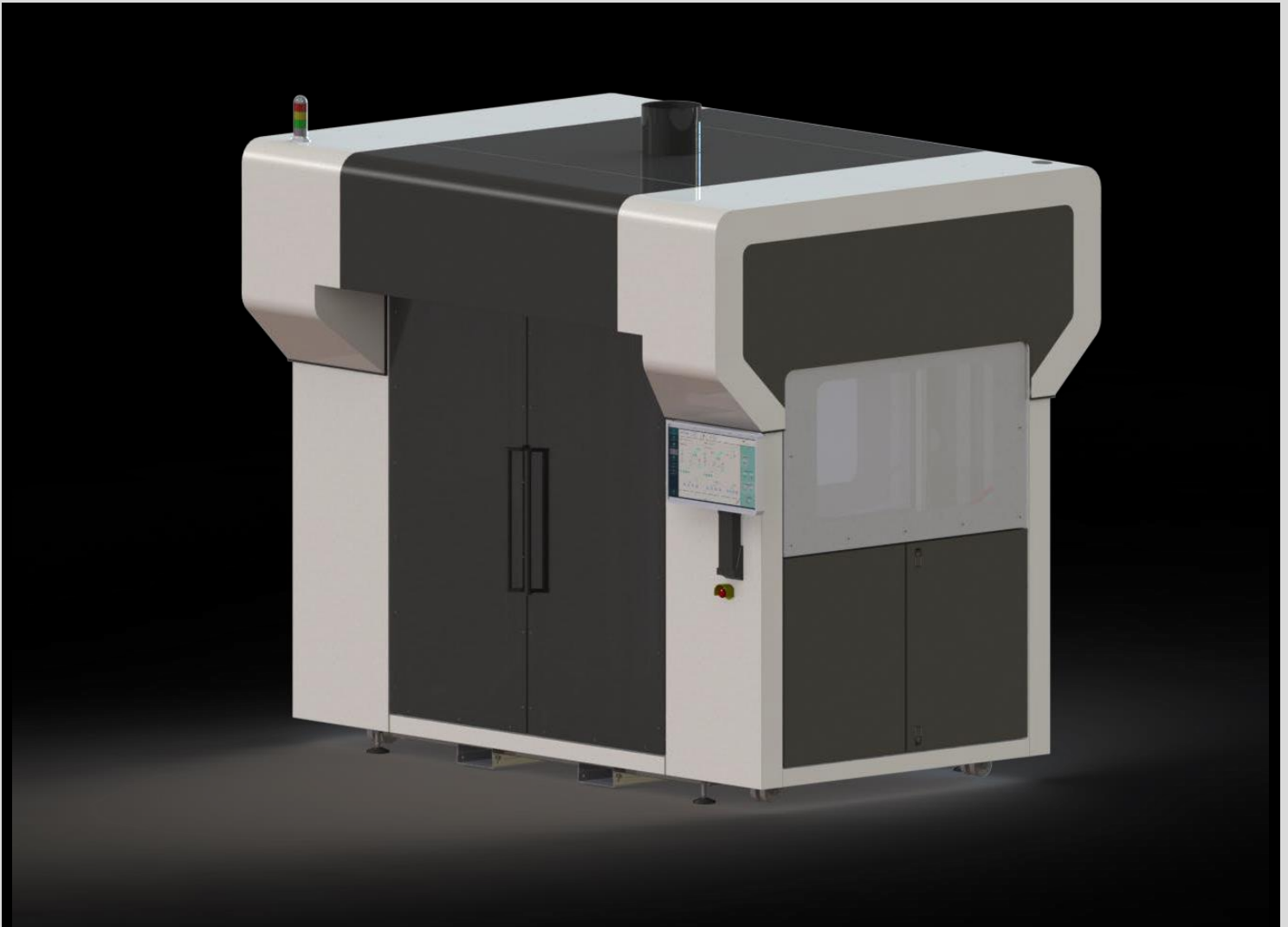


MASSIVit 3D Printers

1800 Series Site Preparation Guide



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Introduction

About the MASSIVit 3D Printers site preparation

This document is intended to guide and assist you in preparing your site for the MASSIVit 3D 1800 Series printers and includes prerequisites regarding the various elements needed on site prior to installation.

The tables and figures herein provide the different dimensions and weights of the assembled systems as well as various helpful information intended to assist you in planning the placement site.

Read and thoroughly understand the information in this manual safety instructions. If any part of this manual is not clear, contact MASSIVit 3D Customer Support for clarifications.

MASSIVIT representatives supervise the unloading, unpacking, transfer and placement of the printer at its destination and final installation process.

Safety

General Precautions and Cautions

This product is designed and manufactured to ensure maximum safety of operation. It should be operated and maintained in strict compliance with the safety precautions, warnings, and operating instructions contained in official MASSIVit 3D publications.

- Do not modify the printer in whole or in part in any way without prior written approval by MASSIVit 3D.
- Do not connect any third-party equipment to the printer without written approval from MASSIVit 3D.
- Make sure that only properly trained and fully qualified personnel are authorized to operate this equipment.
- Unauthorized personnel should not be allowed access and provide with any form of service to the printer.
- In the event of system malfunction or of improper response to safety controls, suspend all operation of the equipment, and notify MASSIVit 3D's Customer Support Department immediately.

Fire Prevention

- Do not use water to put out a fire. Use water spray only to cool containers. Do not pour water on leaked materials.
- Additional Fire Prevention equipment should be installed according to local laws and regulations.
- Extinguishing media:
- Suitable: Foam, carbon dioxide, dry chemical.
- Not suitable: Solid water stream as it may scatter and spread fire.
- Special hazards arising from the substance or mixture:
- Thermal decomposition can lead to release of irritating and toxic fumes.
- Advice for firefighters:
- Special protective equipment for fire fighters: Fire fighters should wear full protective clothing and self-contained breathing apparatus in positive pressure mode. Cool containers exposed to flame with water spray until well after fire is out.

Waste

Liquid and solid waste should be disposed of per local laws and regulations, including:

- Printing material containers
- Wipes and gloves used for cleaning the printer



Materials Handling

DIMENGEL 100 BASE pails should be kept tightly closed in a dry and well-ventilated place, keep away from heat and out of direct sunlight.

Rang for storage temperature: 18°C (64.4°F) - up to 28°C (82.4°F)

- ▶ DIMENGEL 100 pails can be stacked up to a maximum of 3 containers on top of one another.



Personnel Safety Considerations

Facility personnel (especially operators) should be familiar with the emergency power shutdown procedure and with how to notify the local fire department. Being sufficiently prepared for an emergency can help prevent injury and save expensive equipment.



Electrical Shock Hazard

The customer responsibility is to ensure that electrical works comply with the local electrical code and the relevant laws and regulations. The customer should provide qualified and registered electricians to perform operations as required by these laws and regulations.

Massivit Dealers and service personnel are not authorized to perform maintenance processes for the site electrical infrastructure and printer's connections to this structure. Safe isolation of the printer from power prior to service operations shall be done according to the local regulation and is the customer's responsibility.



Hand Protection

Always use powder free protective gloves when handling the Gel system, cleaning fluids or waste liquids. The Gel contains irritant materials. Prolonged or repeated contact with hands may result in symptoms such as redness and irritation. These symptoms may not appear immediately.



Eye Protection

Always use protective goggles when handling the Gel. The Gel contains irritant materials. Contact with eyes may result in symptoms such as redness and irritation. These symptoms may not appear immediately.

Accountability

Shipping and Handling

MASSIVit 3D will deliver the machine packed and ready for shipment (sea or air) at the MASSIVit 3D site. Shipping from the MASSIVit Production site to the customer dock is the customer's responsibility including insurance and taxes.

The Massivit system includes the Uptime Kit (if ordered) inside the Printer crate.

Site and Facilities Requirements

The customer is responsible for preparing the installation site according to the instructions and guidelines provided in this document. MASSIVit 3D will advise the customer on-site preparation upon request.

Lifting and Delivery

A professional mover that can provide the proper lifting and moving apparatus should lift and convey the printer from the truck to the installation site.

Unpacking and Installation

Unpacking and Installation of the printer must be performed by MASSIVIT authorized customer service engineers only.

System Overview

Printer Dimensions and Weight

The MASSIVit 1800 Printer Length and Weight are specified in the attached layout drawing.

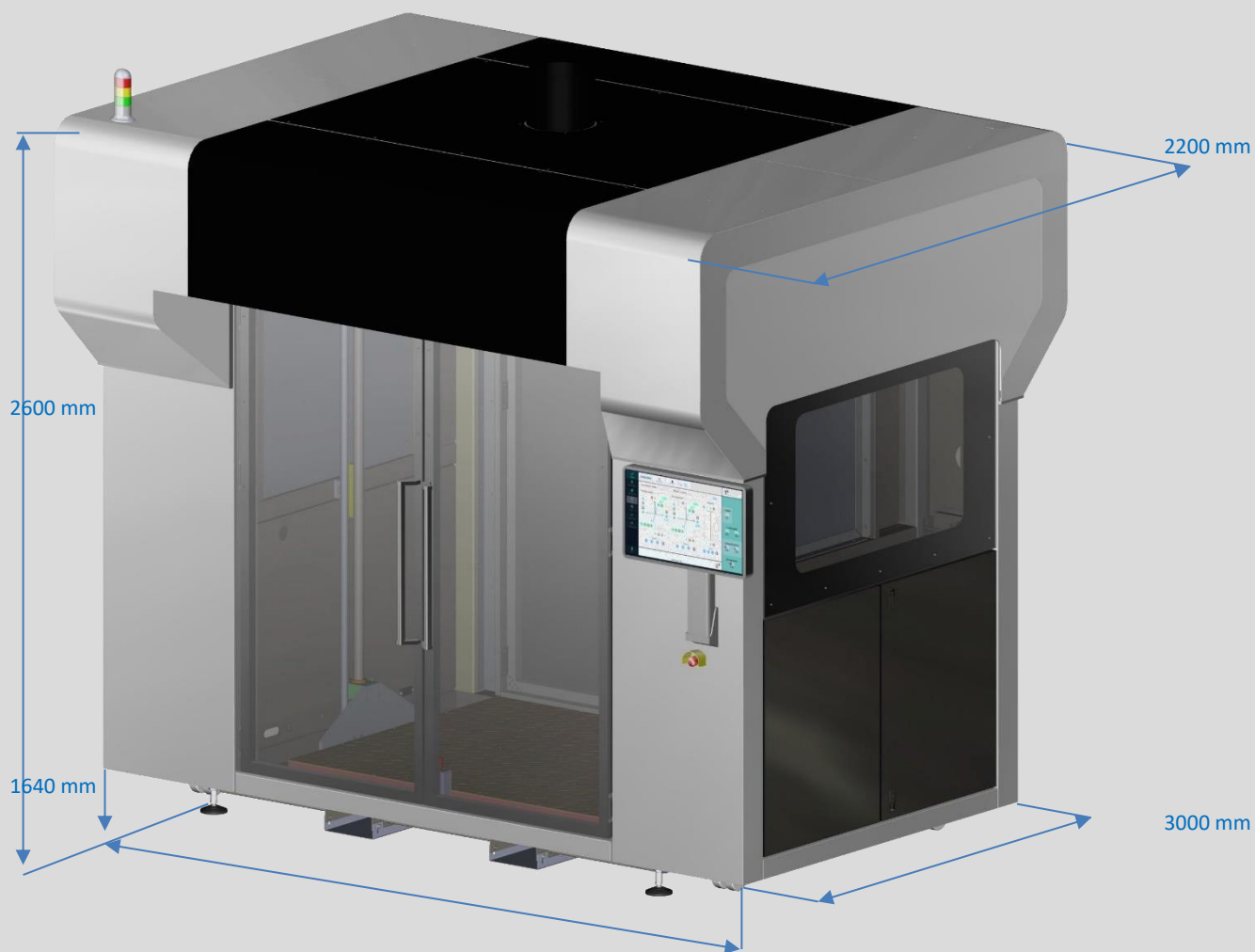


Figure 1: Printer Dimensions drawing

Machine Height Configurations

- ▶ Crating & transportation
- ▶ Printing

The MASSIVit 1800 Printer Length and Weight are specified in the attached table and the layout drawing.

Mode	Dimensions L.W.H	Weight
Printing	3 x 2.2 x 2.8 [m] 119 x 87 x 110 [inch]	2500[kg] 5511 [lb]
Shipping	3 x 2.2 x 2.4 [m] 119 x 87 x 95 [inch]	2500[kg] 5511 [lb]
Packed	3.4 x 2.3 x 2.55 [m] 134 x 91 x 101 [inch]	3000 [kg] 6613 [lb]

Table 1: Dimensions and Weight

Printing Height



Shipping Height



Figure 2: Printing/Shipping Layout drawing

System External Components

The Massivit1800 system external components are:

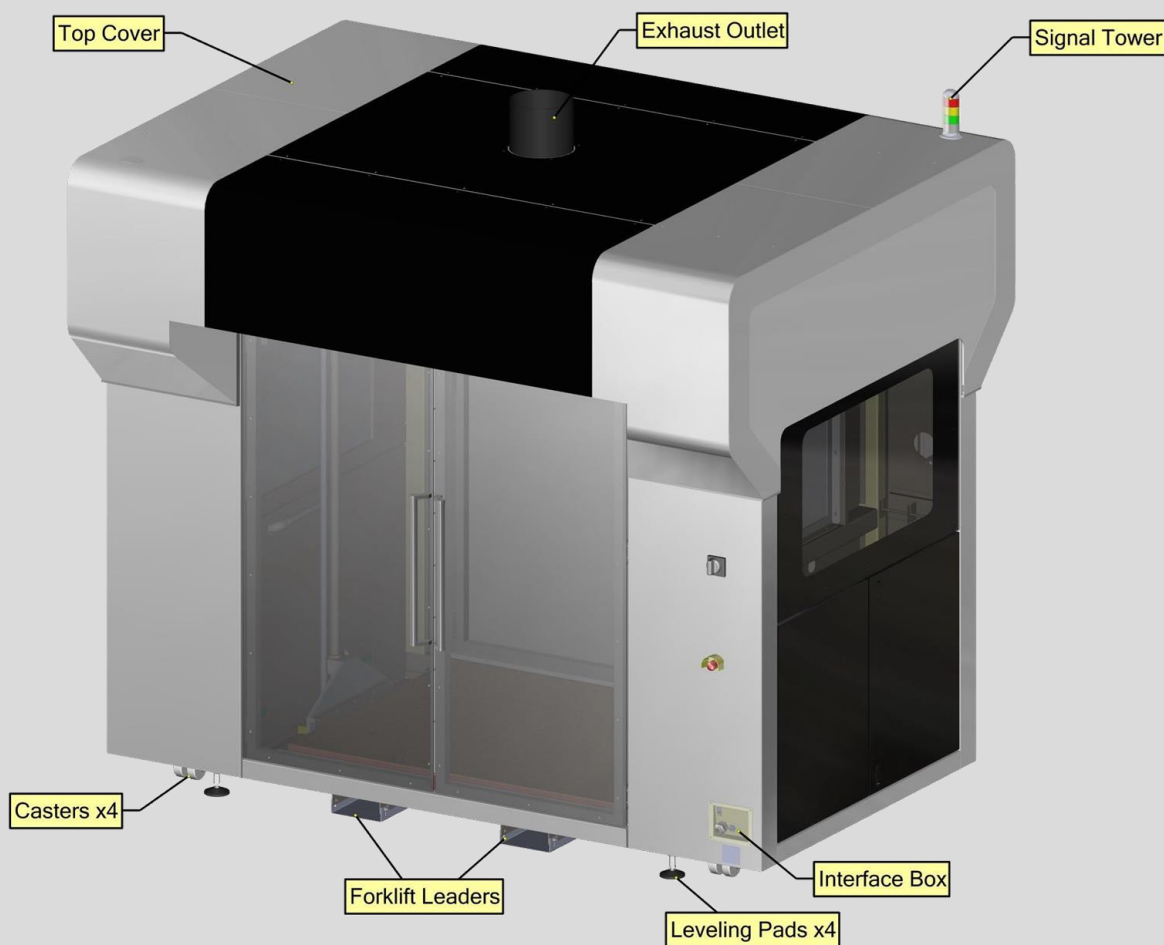


Figure 3: Machine layout

External Connections

The Printer is equipped with the following external connection interfaces:

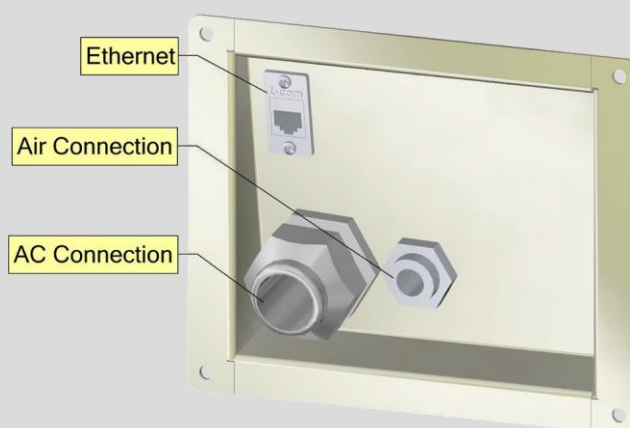


Figure 4: Interface Box

Site Requirements

This chapter describes the site preparation required for the MASSIVit 1800 printer operation.

Room Ventilation

The printer hall/room must be vented, and the air should be completely exchanged six times per hour.

Unloading Space

A suitable unloading area must be prepared. This area should be easily accessible to the delivery truck and be of sufficient space to unload the crates in which the printer is shipped. When planning this area, take into consideration:

- ▶ Height and width of the entrance to the unloading area
- ▶ Presence of any ramps or slopes
- ▶ Height and size of unloading dock (if applicable)

Doors and Hallways Clearances

An unobstructed pathway will be required when moving the crated equipment from the unloading area to the installation site. Doorways, corridors etc. must be of sufficient height and width to allow for easy maneuverability.

It is highly recommended that the shipping crate be unpacked as close as possible to the printer's final location.

Conveying equipment

Unloading and moving the Massivit 1800 printer and components is the responsibility of the customer only.

Forklift Specifications

The following forklift must be used for unpacking and installing the printer:

- ▶ Lift capacity: of 5000 [kg] (11023 lb) using 2.2 m extension forks
- ▶ 2 x 2.2m extension forks

Workspace Clearance

Below is the recommended minimum room size for the printer:

Take into consideration the following minimum clearance requirements to accommodate for opening the front and rear doors, service cabinets and to provide sufficient access to the printer.

- Minimum room 620X670 cm/19.5X21.5 ft (w) (42 sqm/452 sqft)
- Printer floor area = 6.2 sqm (66.7 sqft)

Final size of the room should be according to the machine drawings

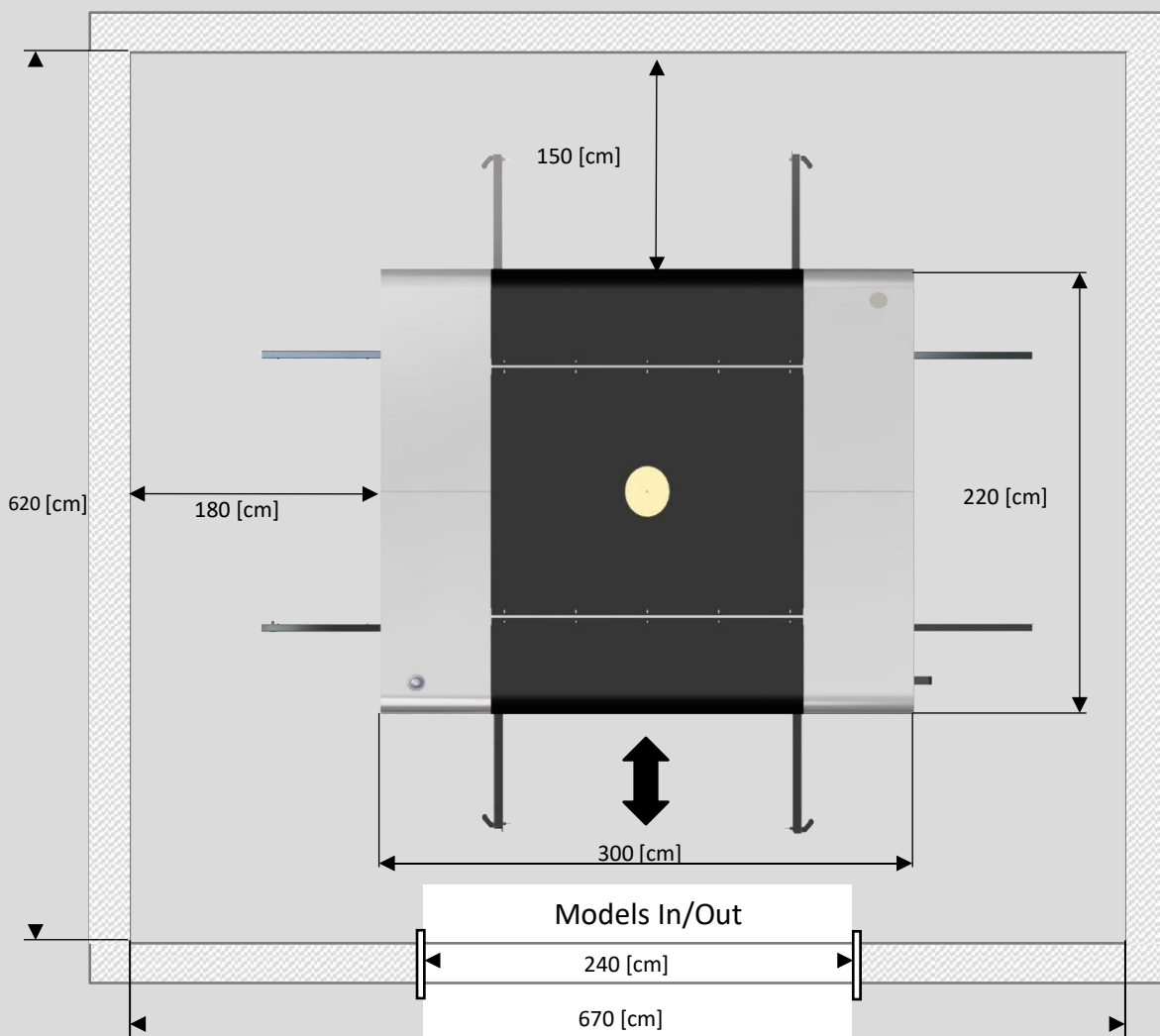


Figure 5: Workspace Clearances

Floor Surface and Strength

Note: The customer is strictly responsible for surface and load-bearing compliance.

It is important to ensure that the floor surface is solid, smooth, leveled, and free from any holes or indentations.

- ▶ Floor covering material should be durable and easy to clean.
- ▶ The floor of the print production area, as well as that on machine's way from the unpacking area, must be strong enough to support the entire weight of the printer, including all accompanying equipment.
- ▶ Floor load-bearing capabilities for the building in which the Massivit 1800 printer is to be installed require consulting a construction engineer.

The following information is provided to assist the engineer:

The floor must be strong enough to support the machine, while standing on its 4 supporting pads.



Figure 6: Leveling and Supporting Pads - Specifications

If the floor surface in the print production area is to be tiled, the tiles should be firmly cemented into position with tile cement applied to the full area of each tile base (and not just in the center). Notice: Floor must be level within a range of

$\pm 1.5^\circ$, unlevelled floor can cause problems in the printer calibration process.

Temperature and Humidity

Temperature and humidity, both in the print production and in the storage areas can affect the print output results. If not maintained within the recommended values, as shown below, they may have an adverse effect on the print quality and/or damage sensitive electronic devices in the system.

Print Production Area

Room temperature: 18°C - 26°C (64°F - 79°F) Suggested Relative humidity: 30% – 70%

Storage Area

18°C (64.4°F) - up to 26°C (79°F)

Ventilation and Fume Extraction

Important!

Material fumes emitted during printing and not properly removed from the printer can cause a significant reduction in print quality and model collapsing

To ensure proper operation of the printer and prevent the accumulation of hazardous vapors, sufficient ventilation must be installed by the customer to exchange the air in the area surrounding the MASSIVIT 1800 printer. **The MASSIVIT 1800 printer is not equipped with a fan for fume extraction, however it has a 10-inch duct fitting for exhaust connection.** The customer must ensure that the site and the area surrounding the MASSIVIT 1800 printer complies with all applicable local legislation and guidance relating to ventilation.

We strongly recommend removing freshly printed models from the printer room. This will significantly reduce fumes and smells in the printer room.

Direct printer ventilation

Capacity: Minimum of 18 CFM (30 m³/h).

Higher CFM (with variable strength) is recommended.

Air hose Connection size: 254 mm / 10-inch diameter

Facility Requirements

This chapter describes the facility required for the MASSIVit 1800 printer operation.

Electrical Infrastructure

This section provides the electrical specifications of the Massivit 1800 printer. Every system may be adapted to the mains power voltage of the country of installation.

- ▶ Tables below shows the electrical requirements and power consumption of the Massivit 1800 system.
- ▶ The figure shows the recommended power connection of the Massivit 1800 system.
- ▶ A dedicated power outlet should be provided for the UPS Backup unit located in the main cabinet

Important!

It is the responsibility of the customer to contact a local authorized electrician to prepare the site with the proper wiring, circuit breakers, fuses (and power transformer if necessary), and then to connect the Massivit 5000 system to the mains power outlet.

Unit	Connection type	Voltage input	CB Rating	Power Line Ø
Printing unit	5-wire connection, 3 + N + G	380 - 400 Vac ($\pm 10\%$) between phases, 50/60 (± 3 Hz)	3 x 32 A	Per local code

Table 2-Electrical Requirement

Power Consumption

Unit	Nominal
M1800	1.35 [kW]

Table 3-Power Consumption Facility Requirements

Important!

When connecting a Massivit printer to the power supply, it is important to note that standard protection systems cannot be installed to protect against electrical shock.

Printers connected to standard electrical shock protection systems will be disconnected from the power source during power on, off, and normal operation.

In countries where electricity laws require the installation of an electrical shock protection system, consult a local electrical engineer for a suitable protective device for the printer and on the type and quality of grounding at the customer's site.

In these sites, anti-shock protection systems shall be installed with a leakage current of no more than 300 mA. In addition, the ground resistance should not exceed 5 ohms.

Facility Requirements

Transformer specifications

- ▶ In countries where voltage is lower, a suitable step-up transformer must be used.
- ▶ In countries where voltage is higher, a suitable step-down transformer must be used

Only for 208/480 v (North America & Japan) Suggestible transformer:

Dongan : www.dongan.com, sales@dongan.com Catalog number 63-30-6056SH

Transformer information & specifications

Unit	Connection TAPS	Main Power C.B (max)
Primary	Δ 3x 208/240/480 +G	Depend on input voltage,30KVA
Secondary	Y 3x400+N+G	25 A

Table 4-Transformer specifications

European connection diagram (For all country with 3ph 380/400 VAC)

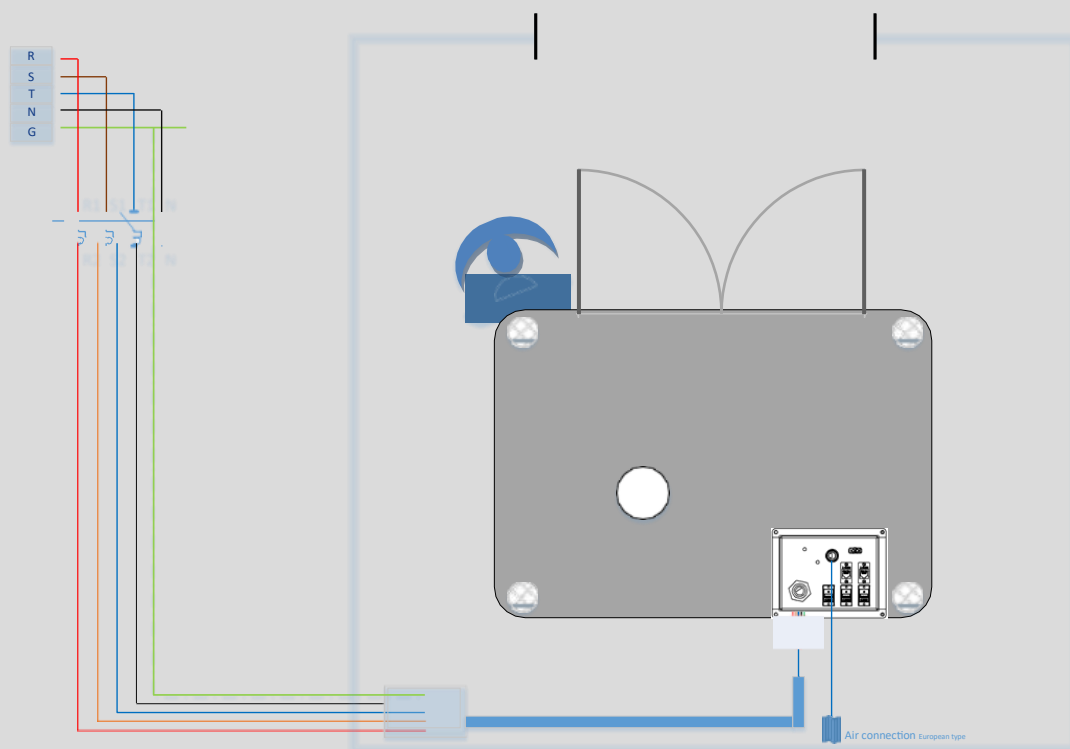


Figure 7-European connection diagram

North America connection diagram (For all country with 3ph 208/220 VAC)

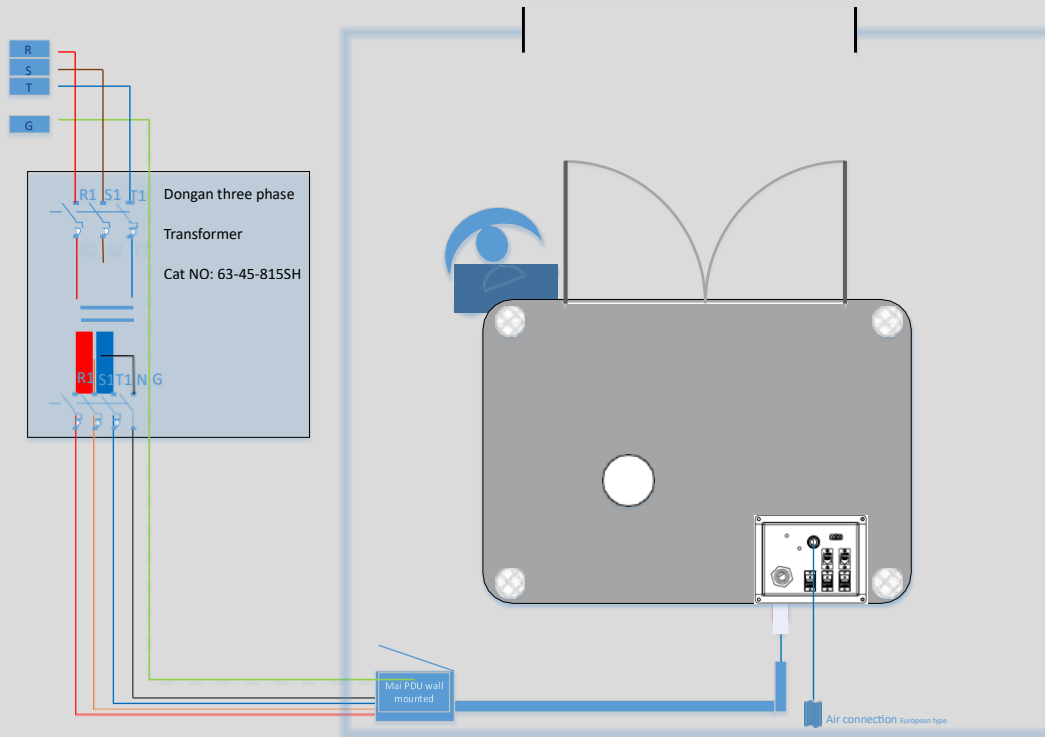


Figure 8-North America connection diagram

Uninterruptible Power Supply (UPS) Requirements

The customer is responsible for providing a UPS system to support the PC, monitor and controllers (if desired), with the following specifications:

For printer computer & monitor

- Voltage output: 230 VAC
- 24VDC_Power-Supply - 240W
- Monitor - 30W
- PC – 230VAC-60W

AC Cable

The Customer is responsible for providing a power cable with connector to fit gland type of PG29 or M32 to connect the printer to wall mounted **power distribution unit (PDU)** (Supplied with the printer).

Grounding

The MASSIVIT 1800 printer must be connected to a special ground line in order to protect the operator and the printer and minimize electrostatic affects.

The following grounding requirements must be fulfilled:

- ▶ Ground impedance must be less than 0.1 ohms.

Pneumatic Requirements

The supply of compressed air to the Massivit 1800 printer may be by way of a central air supply system, or with the use of a dedicated air compressor. In either situation, a wall- mounted air outlet will be required. This should have a quick-coupler fitting and be located near the MASSIVIT 1800 printer.

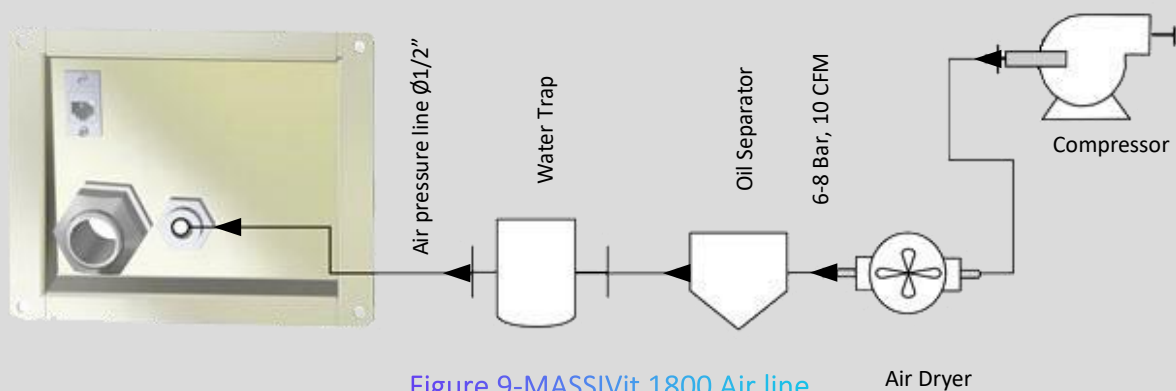


Figure 9-MASSIVit 1800 Air line

Air Compressor

Operating Pressure: 6 - 8 bars (88.2 - 117.6 psi) at Minimum of 250 liter/min (10 CFM).

Air Dryer

We suggest to customers who have moisture in airline consider installing an air dryer, Air dryer requirements:

Operating Pressure: 6 - 8 bars (88.2 - 117.6 psi) at Minimum of 250 liter/min (10 CFM) Dew point: 2°C (35.6°F).

 Lighting

The printer must be operated under sufficient lighting conditions to ensure operator safety. Recommended illumination level 50-foot lights (500 lux).

Use a lamp type that emits minimum heat (florescent, not halogen). To prevent dust accumulation, do not place lighting fixtures directly above the printer.

Lighting also ensures that the printed substrate can be viewed properly.

Be sure that the printer is not positioned in a location where it would be subject to direct sunlight.

 Communication

The customer is responsible for providing a standard Ethernet cable (Cat 5) with RJ 45 connector to connect the printer to the customer's 10/100 Base-T or GigaBit network.

- ▶ One RJ-45 network socket is needed to connect the Printer to customer Network and Internet

 Internet Connection

Internet access from the printer is required to enable remote access and easy file transfer to the printer. The remote access option can also help minimize printer downtime.

Graphic PC requirements

The customer is responsible for providing PC for the slicer workstation with the following:

Slicer workstation

- Processor – 4rd Generation Intel® Core™ or higher processor
- Operating System – Windows 10 64 bit
- Memory – 16 GB DDR3 (3 x 2 GB) 1066 MHz fully-buffered ECC RAM
- Hard Drive – From 1000GB SATA hard drive
- Ports- USB (at least 2)
- Optical Drive – DVDRW
- Video Card – 2GB RAM Nvidia Graphic Board with 1280 x 1024, min of 16-bit color.
- *Graphics board & drivers must be installed prior Slicer installation
- HD computer monitor with 1920x1080 resolution (4K is not supported) with display scaling settings set to 100%
- The user installing and/or running the slicer must have enough privileges to access the %localappdata% directory
- 1GB BASE-T adapter (for the network connection)
- Operating system-
 - Windows 7 or 10 Professional (64 bit) SP1
 - Insure updated USB drivers (last update to the slicer installation date), according to the computer manufacture.



Gel storage

DIMENGEL 100 pails should be kept tightly closed in a dry and well-ventilated place, keep away from heat and out of direct sunlight. Required storage temperature is:

18°C (64.4°F) - up to 28°C (82.4°F). No more than 200 liters of Gel should be stored in any single storage cabinet. Local fire ordinance regarding the use and storage of flammable materials must be strictly observed!



Fire Extinguisher

Fire extinguishers using carbon dioxide (CO₂) should be easily accessible and visible from all approaches to the Restricted Area. They should be reachable within the restricted area of the printers and the flammable liquids storage cabinets, or according to local authority regulations.



Eyewash

Eyewash Stations complying with local safety codes should be installed within the restricted area of the printer and the flammable liquid storage cabinets. The location of these stations should be clearly marked and easily accessible so that they can be reached quickly if needed. These stations are available from companies that supply occupational safety equipment.

Appendix A: Site Preparation Check List

Site Preparation Checklist

Please complete the following checklist and submit it to your MASSIVit 3D representative. The MASSIVit 3D representative will review the checklist and confirm whether all pre-installation requirements have been carried out as specified. The MASSIVit 3D representative must confirm the checklist and forward the signed checklist to MASSIVit 3D Customer Support.

Company Name:	
Address	

Printer Arrival and Expected Installation Date	Date	Comments
Printer Installation Date		

Contact Person	Name	Mobile	E-mail:
Company Representative			
Operator's name			

Safety Requirements	Y	N	Comments
Are storage cabinets available?	☐	☐	
Are waste containers available?	☐	☐	
Are there fire extinguishers?	☐	☐	
Are washing facilities with eye-washing equipment present and well designated?	☐	☐	

Equipment Receiving, Unloading and Delivery Requirements	Y	N	Comments
Are wide entrances available to allow easy delivery of the printer to the site?	☐	☐	
Is the unloading area accessible and its size adequate?	☐	☐	
Is a suitable forklift(s) for uncrating available?	☐	☐	

Equipment Receiving, Unloading and	Dimensions [M/F]	Comments
Provide 1st entrances if needed H-W-L [M/F]		
Provide 2nd entrances if needed H-W-L [M/F]		
Provide 3rd entrances if needed H-W-L [M/F]		
Provide final room entrances Final H-W-L [M/F]		
Minimum lift weight in printer entrance path [KG]		

Site Preparation	Y	N	Comments
Has a sufficient workspace clearance been provided?	☐	☐	
Have the required power outlets been installed?	☐	☐	
Has the input voltage been properly installed?	☐	☐	
If a transformer is required, has one been properly installed?	☐	☐	
Is the main power ready to be connected?	☐	☐	
Is there a UPS (Uninterrupted Power Supply) for the Printer?	☐	☐	
Is there a proper design workstation (PC)?	☐	☐	
Is the flooring capable of safely supporting and evenly distributing the weight of the printer?	☐	☐	
Has the floor surface been properly leveled?	☐	☐	
Has the positioning of the equipment been determined?	☐	☐	

Appendix A: Site Preparation Check List

Environmental Requirements	Y	N	Comments
Have all temperature and humidity (air conditioning) requirements been met?	☐	☐	
Has the site been equipped with an air compressor and air dryer per required specs?	☐	☐	
Is the site ready for operation?	☐	☐	
Has a suitable air ventilation unit been installed?	☐	☐	

3D Operators Experience	Y	N	Comments
Is there is a dedicated Operator?	☐	☐	
Is there is a dedicated Application designer?	☐	☐	
Does your team have any 3D modeling experience?	☐	☐	
Do you have any 3D SW in your site?	☐	☐	
Do you need MASSIVit Application Web training prior to the installation?	☐	☐	

General Comments:

By signing this form, I declare all above information is true and correct.

I hereby acknowledge that any additional expenses resulting from discrepancies between this document and the status onsite may result in the charging of said expenses to the customer.

Site Manager Name	
Site Manager Signature:	
Date:	



Please send the signed document to Support@Massivit.com

including your site name.