PICOMASTER 150

Site Preparation Guide

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RAITH
NANOFABRICATION

Contact information

For help or other questions, please contact your local vendor or contact:

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Content

1 Introduction

In this Site Preparation Manual, information is given on building and utility requirements for the install of the PICOMASTER.

1.1 Document overview

For approximate dimensions and weight of the crates, see **"Preparing the unpack area" on page 5**.

Transport route requirement are given in **"Preparing the transport route" on page 6**.

In **"Preparing the install area" on page 8**, you find:

- Install area room sizes and floor carrying capacity.
- Building climate and vibration requirements.
- Utility installation.

1.2 General remarks

Correct preparation of the site of installation is essential for a successful and safe installation of the machine:

Carefully read and follow the instructions and comply with the requirements given in this site preparation manual. Raith Laser Systems BV is not liable for any injury or damage that may occur during install or usage as a result of improper site preparation.

2 Preparing the unpack area

Check the weight and size of the crate for your delivery configuration, see **Table 2-1 below**.

Package part	Size (length x width x height) Approximate values	Gross weight (kg) Approximate values	Nett weight (kg) Approximate values
PICOMASTER in crate	920x1465x 1630	850	720
PICOMASTER with air conditioner in crate	1000x1800x1630	920	800

Table 2-1 Size and weight of crates and contents for different delivery configurations

2.1 Transport equipment requirements

Check if your local transport equipment is suitable for the weight and the size of the crate.

2.2 Unpack area required dimensions

Check that the minimal area size is the size of the largest crate times two.

2.3 Unpack area floor requirements

Check that the floor of the unpacking area can safely carry the weight of the crate plus transport equipment.

3 Preparing the transport route

The machine can be rolled towards the install area on its four swivel wheels.

3.1 Machine dimensions

The dimensions of the PICOMASTERare shown in **Figure 3-1 below**.

Note: add 0.4m to machine height in case the window is opened.

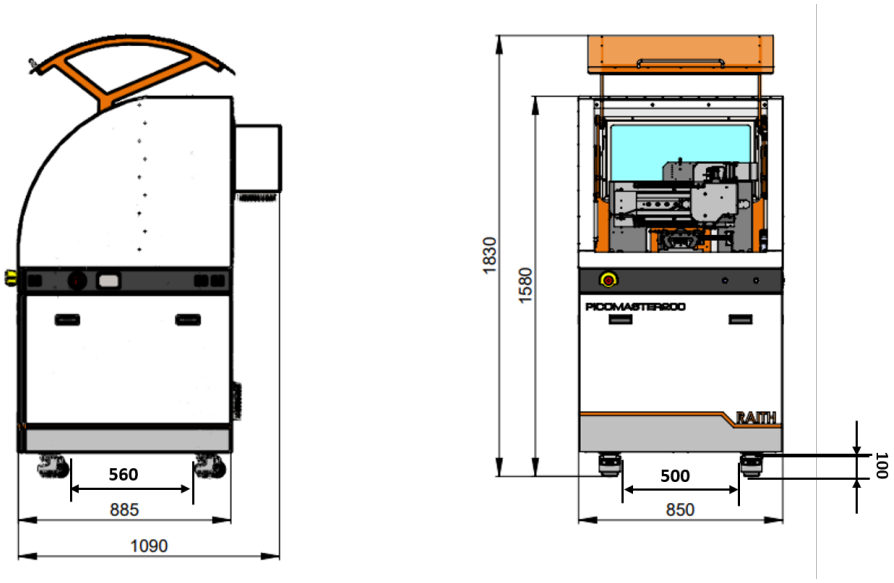

Figure 3-1 PICOMASTER dimensions

3.2 Transport route required dimensions

To transport the machine parts and utility related components, required dimensions are given in **Table 3-1 below**.
See also **"Preparing the install area" on page 8**.

Item	Value
Minimum width for transport corridors including doors (based in the dimensions of the main machine part)	0.9m
Minimum height for transport corridors including doors (based on the dimensions of the cabinet)	1.6m

Table 3-1 Transport route required dimensions

3.3 Transport route floor requirements

Floor requirements are listed in **Table 3-2 below**.

Floor requirement item	Value
Maximum floor unevenness	3%
Maximum height for doorsteps and stairs	NO height allowed
Maximum floor load for machine transport route	1500kg/m^2

Table 3-2 Floor requirements for the transport route

Make sure that the transport route floor can carry the weight of the machine (700kg) resting on 4 wheels while rolling it to the install location.

4 Preparing the install area

In your install area floor plan, electrical supply, pressurized air and an internet connection should be included. In case an air conditioner is ordered, check the air conditioner install guide for additional connections.

4.1 Machine install area required dimensions

Make sure in the floor plan that there is at least 1m of free space around the machine, see **"Machine dimensions" on page 6**.

Make sure that there is at least 0.4m of free space above the machine to be able to open the window.

4.2 Air conditioner area required dimensions

Note: The air conditioner may also be installed in a different location than the machine.

In case you ordered an air conditioner, check the dimensions in the air conditioner install manual.

Make sure that the air conditioner can be positioned such that there is enough space around the air conditioner for air inlets and outlets

4.3 Floor requirements at machine position

Floor requirements are listed in **Table 4-1 below**.

Floor requirement item	Value
Maximum floor unevenness	1%
Maximum floor load	1500kg/m^2

Table 4-1 Floor requirements for the install area

In particular, make sure the floor at the install position can carry the weight of the feet, see **Table 4-2 below**.

Item	Number	Total weight of machine part resting on each foot	Reference
Machine foot	4	175kg	**4 above**

Table 4-2 PICOMASTER install area weight per foot

4.4 Building climate system requirements (provisional)

Make sure your building climate system can keep the install room temperature en relative humidity within the limits as listed in **Table 4-3 on the next page**.

Item	Value
Install room temperature (**no** air conditioner installed)	22± 2°C
Stability of install room temperature (no air conditioner, **no active alignment**)	Within 0.5°C/24hour
Stability of install room temperature (no air conditioner, **active alignment**)	Within 0.1°C/24hour
Install room temperature range (**air conditioner installed**)	20 - 35°C
Stability of install room temperature (**air conditioner installed**)	Within 1°C/hour
Install room relative humidity	40% to 70%
Air cleanliness grade (**no air conditioner or input fan flow box installed**)	Customer dependent, contact Raith Laser Systems
Air cleanliness grade (**air conditioner or input fan flow box installed**)	No requirement, as the machine has a standard HEPA filter.

Table 4-3 PICOMASTER building climate control requirements

Notice: Risk of production loss. Temperature fluctuations may result in visible effects on the recorded structures.

4.5 Utility connection locations

Make sure that the utilities are available around the positions in **Figure 4-1 below**.

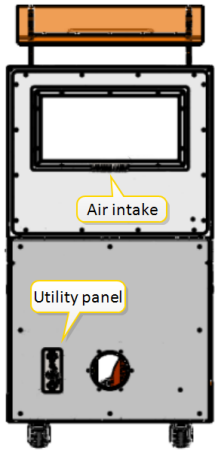

Figure 4-1 PICOMASTER backside

4.6 Install the utilities

4.6.1 Install the electrical supply

Notice: Risk of machine damage. Power failures may cause production loss. **An Uninterruptible Power Supply (UPS) is therefore strongly recommended.**

Check electrical power requirement, see **"Utility specifications" on page 11**.

Make sure a socket is available close to the machine position, as well as a cable towards the machine utility panel, see **Figure 4-1 above**.

In case you ordered an air conditioner, check the air conditioner documentation for the required electrical supply.

4.6.2 Install the pressurized air supply

Check pressurized air supply requirement, see **"Utility specifications" on page 11**.

Make sure that pressurized air is available in the install area. Guide the pressurized supply hose toward the machine at the utility panel, see **Figure 4-1 on the previous page**.

4.6.3 Prepare ethernet connection

Make sure an RJ45 socket is available and a cable for connecting to the machine utility panel, see **Figure 4-1 on the previous page**.

4.6.4 Installing additional air conditioner supply and drain

In case you ordered an air condition that has a humidifier, install an additional water connection and drain, see the air conditioner installation manual.

4.6.5 Installing air input

Note: Only in case no air conditioner is ordered and input air flow is needed.

Check air input specifications, see **"Utility specifications" on page 11**.

Make sure that air input is available at the location given in **Figure 4-1 on the previous page**.

5 Utility specifications

Note: For the utility specifications of the air conditioner, refer to the air conditioner documentation.

Check if the utilities meet the requirements as described in this chapter.

5.1 Electrical power

Electrical power requirements are listed below.

Item	Value
Phase	Single phase, 50 Hz
Voltage	230V
Recommended number of sockets	1
Peak power	1.5 kW
Recommended fuse	16A
Stability	Uninterrupted
Additional socket for air conditioner	See air conditioner installation manual

Table 5-1 PICOMASTER power requirements

Notice: Risk of machine damage. Power failures may cause production loss. **An Uninterruptible Power Supply (UPS) is therefore strongly recommended.**

5.2 Compressed air

Compressed air requirements are listed below.

Item	Value
Hose connection	**One Fitting for outer diameter ø6mm, inner diameter ø4mm tubing**
Minimum pressure	**6 Bar / 87 PSI**
Air consumption	**130 liter / hour @ 6 bar (corresponds to 780 normal liter/hour)**
Air quality according ISO8573-1	**Class 3 or better**
Note	**Recommended to use oil free compressor**

Table 5-2 PICOMASTER compressed air requirements

ISO8573-1 (2010) air quality classes

Air Class	Solid Particles				Water		Oil
	Maximum number of particles per m³			Concentration	Vapor	Liquid	Total oil (aerosol, liquid and vapor)
	0.1 - 0.5 micron	0.5 – 1 micron	1 – 5 micron	mg/m³	Pressure dew point	g/m³	ppm (mg/m³)
1	≤ 20,000	≤ 400	≤ 10	-	≤ -94°F (-70°C)	-	0.008 (0.01)

Air Class	Solid Particles				Water		Oil
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40°F(-40°C)	-	0.08 (0.1)
3	-	≤ 90,000	≤ 1,000	-	≤ -4°F(-20°C)	-	0.83 (1)
4	-	-	≤ 10,000	-	≤ -37°F(-3°C)	-	4.2 (5)
5	-	-	≤ 100,000-		≤ -45°F(-7°C)	-	-
6	-	-	-	≤ 5	≤ -50°F(-10°C)	-	-

Table 5-3 ISO8573-1 (2010) air quality classes

5.3 Ethernet

An RJ45 socket is available on the machine for connection to the office network.

5.4 Air conditioner water supply and drain

Check the air conditioner installation manual for additional water supply and drain requirements.

5.5 Machine air inlet

Note: Only in case no air conditioner is ordered and input air flow is needed.

Air input specifications are listed in **5 on the previous page**.

Item	Value
Air input diameter	Outer diameter ø150mm
Input air cleanliness grade	No requirements, as the machine has a standard HEPA filter
Air input flow	Depending on machine usage

5 Site preparation check list

To check if site preparation is done correctly, you may use **Table 5-4 below**.

Item	Detail	Reference	OK/NOK
Unpack area	Transport equipment suits weight and size of crate(s)	**"Size and weight of crates and contents for different delivery configurations" on page 5**	
	Area size is largest crate x2	See above	
	Floor can hold weight of crate plus transport equipment	See above	
Transport route	Corridors and doors are wide and high enough for machine including transport equipment	**"Machine dimensions" on page 6**	
	Floor can carry the weight of the machine including transport equipment	**Transport route floor requirements" Floor requirements for the transport route" on page 6**.	
Install area	Space around machine > 1m	**"Machine dimensions" on page 6**	
	Space above machine > 0.4m	**"Machine dimensions" on page 6**	
	Maximum floor load not exceeded	**" Floor requirements for the install area" on page 8**	
	Floor slope under limit	See above	
Air conditioner	Enough space around air conditioner	See air conditioner manual	
	Enough distance between air conditioner and machine	See air conditioner manual and **"Machine dimensions" on page 6**.	
Climate system	Building climate system sufficient	**"Building climate system requirements (provisional)" on page 8**	
Utilities	Electrical power installed within specification	**"Electrical power" on page 11**	
	Compressed air installed within specification	**"Compressed air" on page 11**	
	Ethernet installed within specification	**"Ethernet" on the previous page**	
	Air conditioner supply and drain installed within specification	See air conditioner manual	
	Air intake installed within specification	**"Machine air inlet" on the previous page**	

Table 5-4 Site preparation checklist

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