REQUEST FOR PROPOSAL & SPECIFICATION DOCUMENT

MEMS & NANOFABRICATION SEMICONDUCTOR CLEANROOM FACILITY

ANNEXURE 8

Supporting documents of process tools for hook up

(Additional reference for Annex.4)

Facilities require for MABA6 System (Mask Aligner System)

Sr.no	Parameter	Requirement
1	Vacuum	< -0.8 bar (< 0.02 MPa) tubing 6mm outer / 4mm inner diameter (PU4 connect.)
2	CDA	5-7 bar (0.5-0.7 MPa), max. 1m3/h (35 ft³/h) free of water, oil and particles tubing 6mm outer / 4mm inner diameter (PU4 connect.)
3	Nitrogen	2-3 bar (0.2-0.3 MPa), 0.9 m3/h (32 ft³/h) with 1000W lamp 0.7 m³/h (25 ft³/h) with 500W lamp 0.3 m³/h (11 ft³/h) with 350W lamp dry and particle free tubing 6mm outer / 4mm inner diameter (PU4 connect.)
4	exhaust	° 7.5 m³/h - 0.25 m/s, with 500W lamp ° 43 m3/h - 1.5 m/s, with 1000W lamp
5	voltage	° 200-240V, L1/N/PE or L1/L2/PE, 50/60Hz
6	Power consumption	° 1.5kVA with 350W lamp ° 1.7kVA with 500W lamp ° 2.3kVA with 1000W lamp

Conditions

Sr. no		
1	Weight	° approx. 340kg (without Anti Vibration Table) ° Anti Vibration Table: 110kg
2	Dimensions (H x W x D)	° 1570 x 1214 x 1300 mm (MA/BA6 with LH1000) (with Anti Vibration Table)
3	temperature	° 20 - 22 °C (68 - 72° F)
4	humidity	° 45 - 55 %
5	Floor Conditions	flat floor and vibration-free or isolated
6	Room conditions	° free of dust, particles and acid fumes recommended clean room class 1000 or better

Oxford Instruments Plasma Technology

PlasmaPro®100 compact loadlock

Issue 01_0F / December 2015 / Original Instructions

www.oxford-instruments.com

The Business of Science®

Contents

About this data sheet

This data sheet provides basic information about the installation of a **Plasma**Pro®100 tool with a compact loadlock.

The **Plasma**Pro®100 platform supports different process modules, for example:

- Cobra ICP
- PECVD
- RIE
- ICPCVD

Information that is specific to a particular process module is clearly identified in this document. Otherwise assume that information in this document is the same for all process modules.

Hyperlinks

The PDF edition of this data sheet contains hyperlinks coloured blue. Click a link to go directly to the linked item.

Revision history

This is issue 01_0F of the **Plasma**Pro®100 Installation Data Sheet, as shown in the footer at the bottom of each page.

The changes made to this document and a summary of previous issues are listed in the table below.

Always use the latest issue of the manual.

Revision	Affected page(s)	Summary of changes
01	All pages.	First edition of the **Plasma**Pro®100 Installation Data Sheet.

General requirements

The tool must be installed in accordance with the relevant requirements of local regulations. These requirements include, but are not limited to:

- wiring regulations
- local building regulations
- building standards regulations
- environmental regulations

The tool is designed to meet the requirements of SEMI S2. If required, you should consider the installation requirements of SEMI S8 and SEMI S6.

The **Plasma**Pro®100 is delivered in six main sections:

main frame
PC controller
gas pod
backing pump
heater/chillers (if supplied)
control rack

Floor and wall loadings

Table 1 lists typical weights of tool components. Ensure that the floor is rated to support the weight of the main frame, the backing pump and the heater/chiller (if provided). Ensure that the wall is rated to support the weight of the gas pod.

Table 1 Typical weights of tool components

Item	Tool Type	Typical Weight (kg)	Comment
Main frame	PECVD with compact loadlock	355	
	PECVD process station	332	
	Cobra with compact loadlock	563	
	Cobra process station with slit valve	540	
Control rack	All	75	
12 line gas pod	All	110 maximum[1]	The gas pod fixings must be rated for four times this load.
Backing pump	All	Refer to the manufacturer's manual.	
Heater/chiller	All	Refer to the manufacturer's manual.	
PC controller	All	Refer to the manufacturer's manual.	

1. Assumes a fully populated 12 line gas pod with the purging system and line heating options fitted. Other configurations will weigh less than this.

Services

Consider the required services and plan how each service is to be provided to the tool. There must be a means of isolating each service (e.g. electrical isolator, water shut-off valves, gas shut-off valves). These isolators must be located in close proximity to the tool, must be clearly labelled, and must be easily accessible. Cables and pipes must not restrict access to the main electrical isolator, the emergency off buttons, or any other safety features.

Services panels

The services panel is mounted on the main tool frame. Figure 1 and Figure 2 show the connections you must make to the services panels for different tool types.

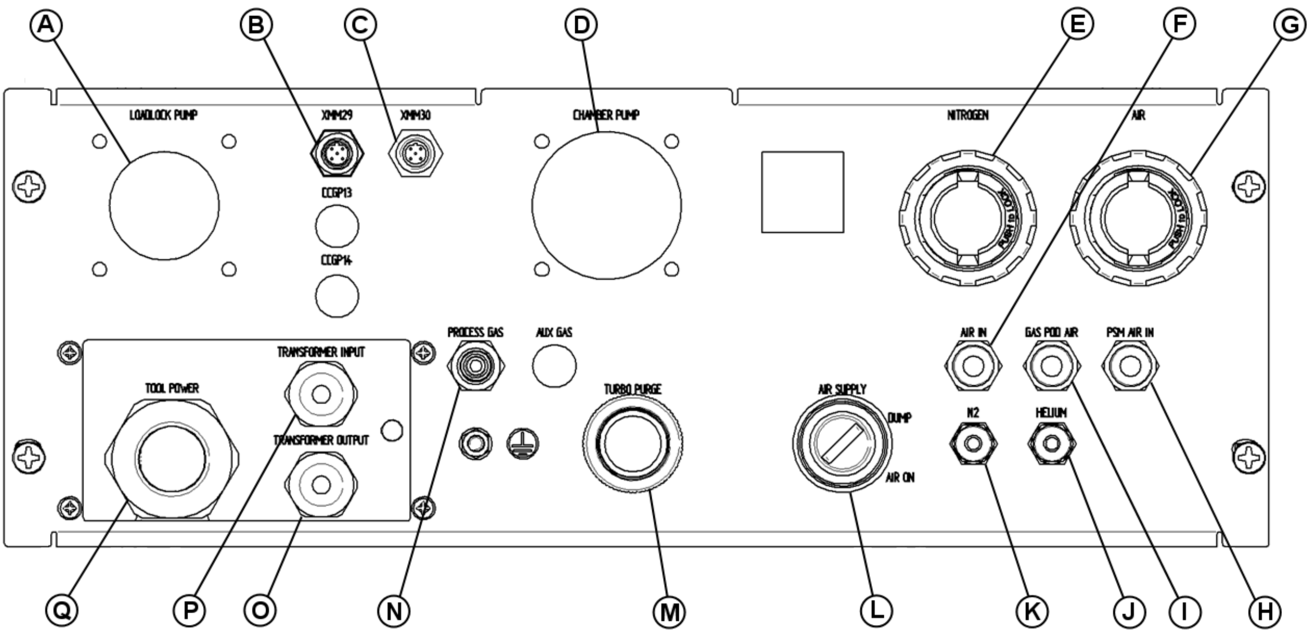


Figure 1 **Services panel for a typical etch tool, Plasma**Pro®100 **Cobra and RIE**

Table 2 **Items on the etch services panel**

ID	Connection	ID	Connection
A	Loadlock pump	J	Helium IN
B	PLC communications connection from control rack	K	Nitrogen IN
C	PLC communications connection to gas pod	L	Air dump valve
D	Process chamber pump	M	Turbo pump purge regulator
E	Nitrogen regulator	N	Process gas IN
F	CDA IN	O	Transformer OUT from control rack (for Paramount RF generator)
G	CDA regulator	P	Transformer IN to control rack (for Paramount RF generator)
H	Antenna cooling air IN	Q	Electrical power IN from control rack
I	CDA to gas pod OUT		

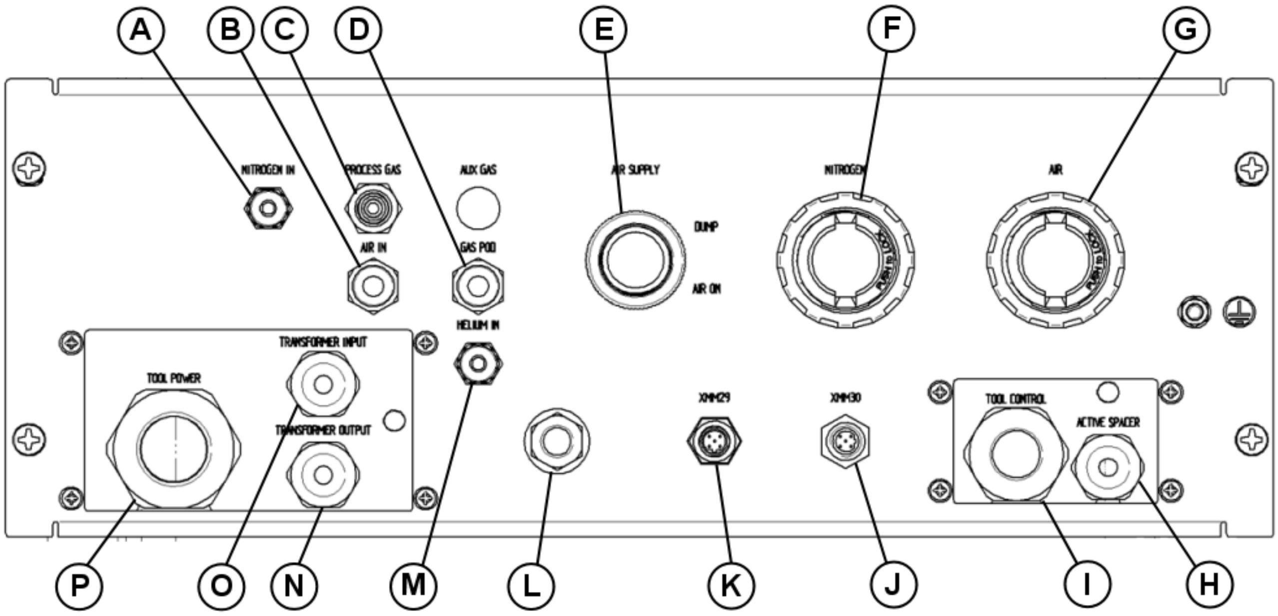


Figure 2 Services panel for a typical PECVD tool, Plasma Pro®100 **PECVD**

Table 3 Connections on the PECVD services panel

ID	Connection
A	Nitrogen IN
B	CDA IN
C	Process gas IN
D	CDA to gas pod OUT
E	Air dump valve
F	Nitrogen regulator
G	CDA regulator
H	Not used

ID	Connection
I	Electrical connection to control rack
J	PLC communications connection from control rack
K	PLC communications connection to gas pod
L	Not used
M	Helium IN
N	Transformer IN to control rack (for Paramount RF generator)
O	Transformer OUT from control rack (for Paramount RF generator)
P	Electrical power IN from control rack

Pump connection panel (PECVD tool only)

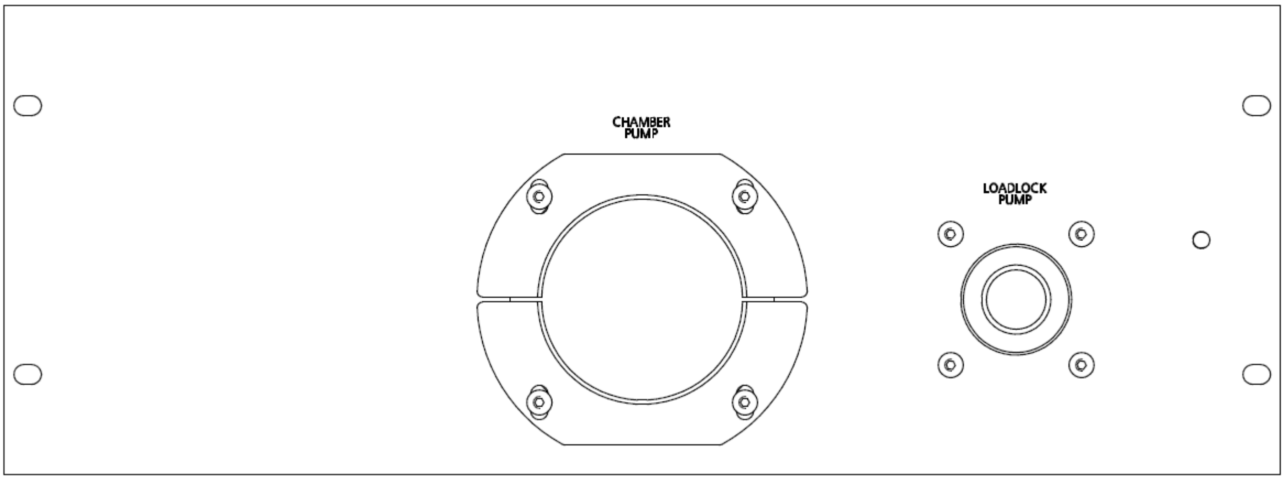


Figure 3 Pump connection panel for a typical PECVD tool, PlasmaPro®100 PECVD

Fluid connection panel

The fluid connection panels are mounted on the main tool frame. Figure 4 shows the panels for connecting the main cooling water and electrode cooling fluid. The electrode coolant can either be heater/chiller fluid or liquid nitrogen.

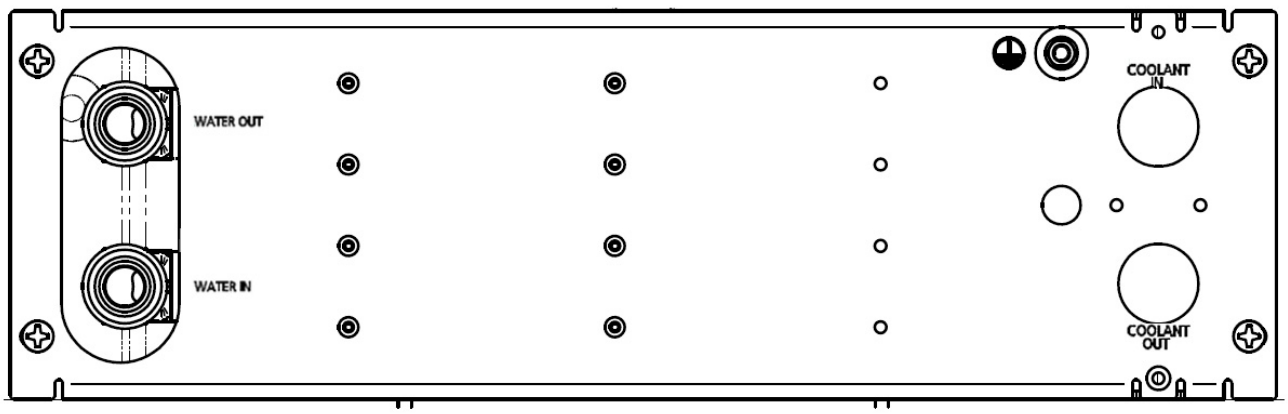


Figure 4 Connection panel for the main cooling water and electrode coolant

Tool dimensions

The generic drawings in Figure 5 to Figure 12 are for reference only. Dimensional drawings for a particular tool can be obtained from Oxford Instruments Plasma Technology (OIPT) on request. Please refer to the **Plasma**Pro®100 Site Planning Guide for centre of gravity information.

Dimensioned views

Figure 5 and Figure 6 show the dimensions of a Cobra loadlock tool, and a Cobra process station.

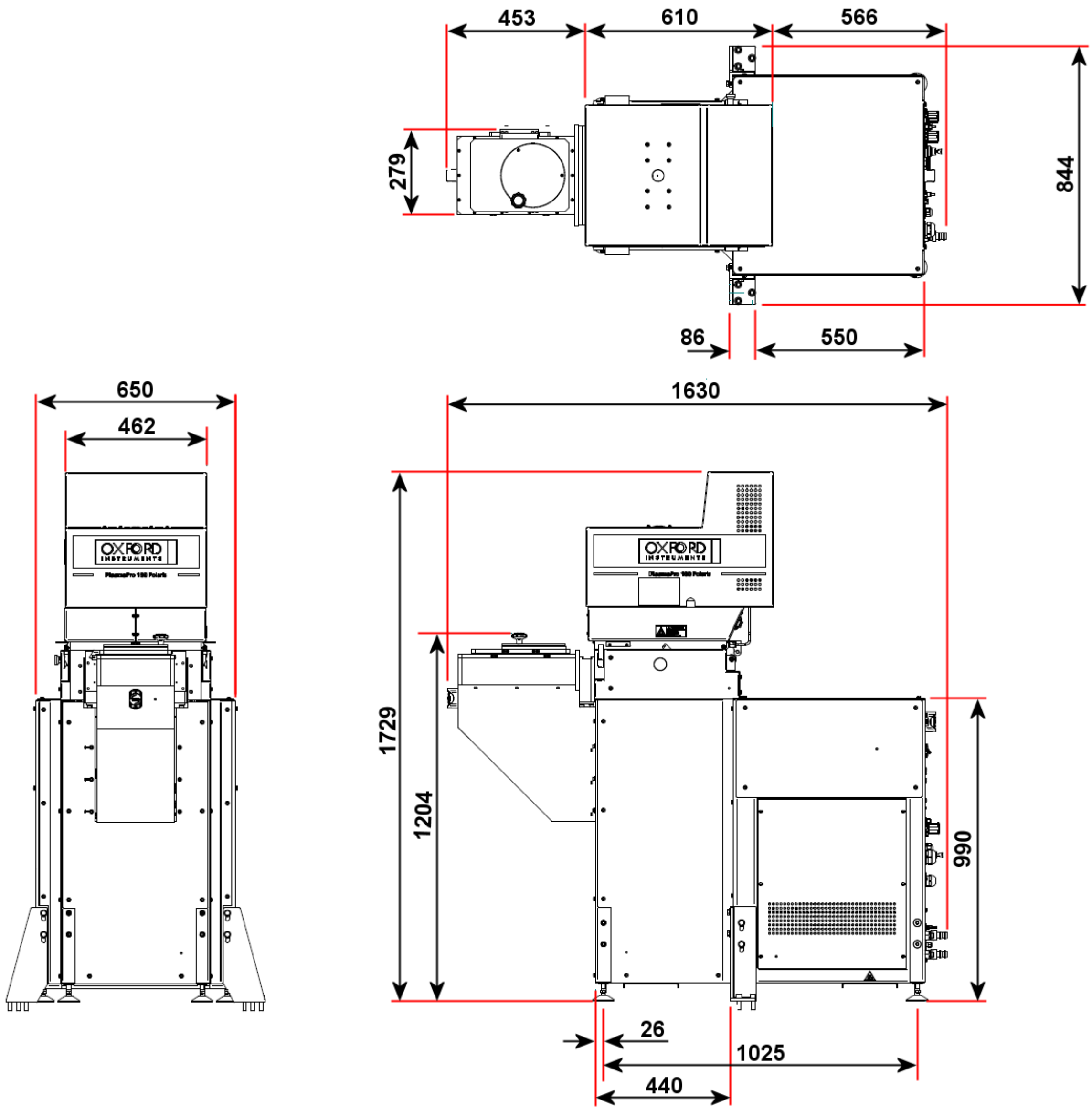


Figure 5 Front, side and top views of a typical Cobra tool with compact loadlock

Figure 6 shows the side view of a Cobra process station. Refer to Figure 5 for height and width dimensions.

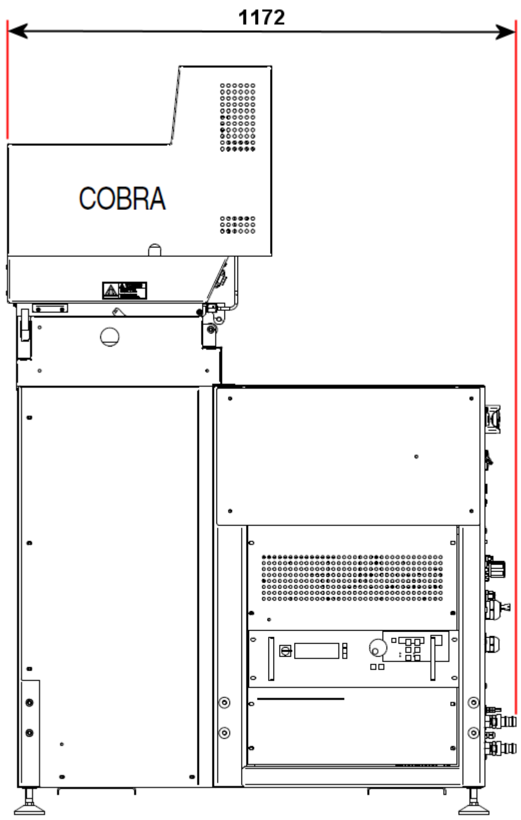


Figure 6 Side view of a Cobra cluster process station

Figure 7 and Figure 8 show the dimensions of a typical PECVD loadlock tool, and a PECVD process station.

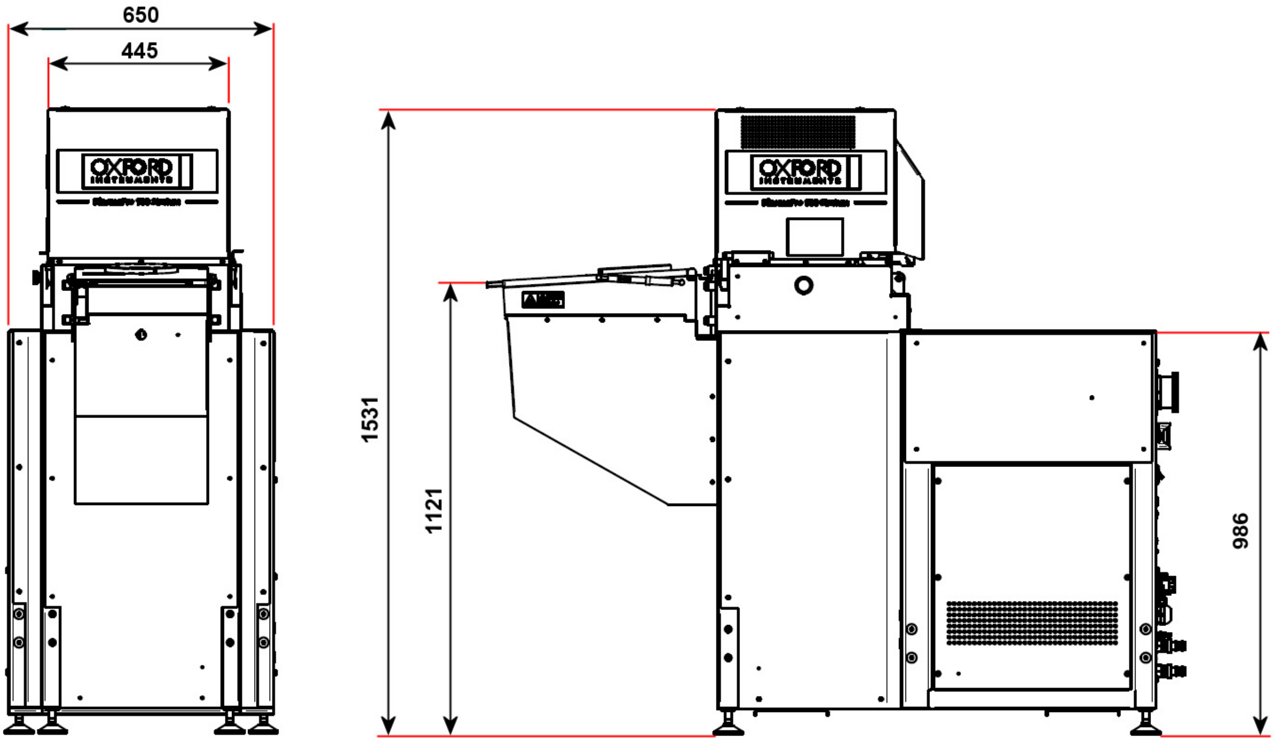


Figure 7 Front and side views of a typical PECVD tool

Figure 8 shows the side view of a PECVD process station. Refer to Figure 7 for height and width dimensions.

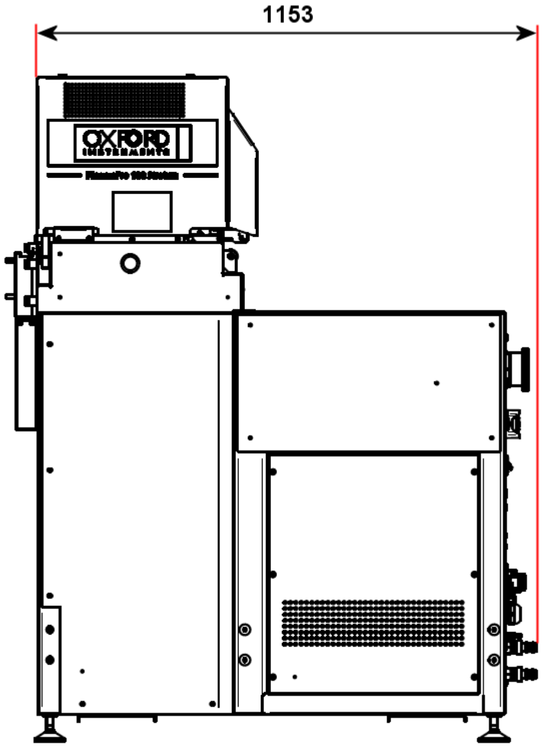


Figure 8 Side view of a PECVD process station

Figure 9 shows a typical tool with its transit wheels attached.

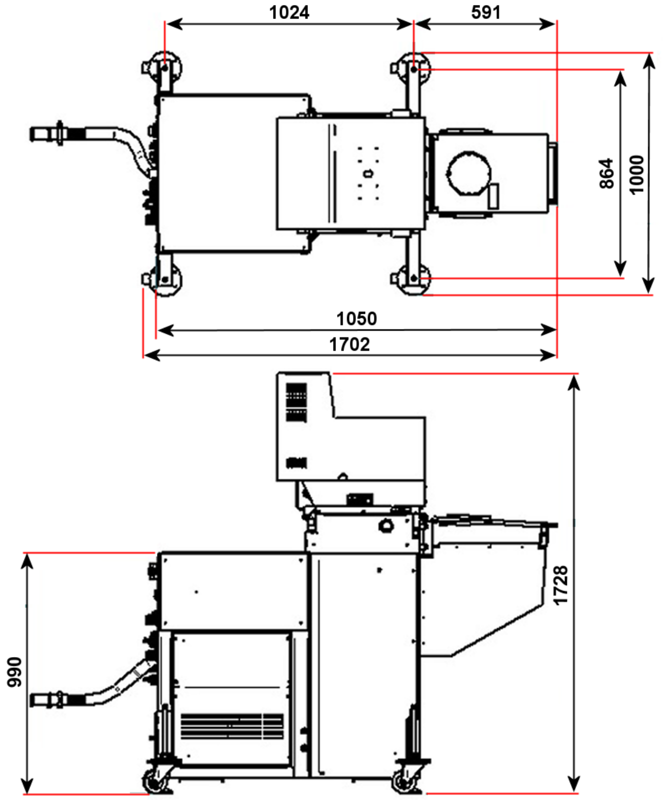


Figure 9 Typical tool with transit wheels

Control rack dimensions

The control rack is a standard rack that can be positioned remotely from the main tool. Table 4 lists the dimensions of the control rack.

Table 4 Dimensions of the control rack

Dimension	Value (mm)
Height	1095[1]
Width	600
Depth	600

1. If a control rack is servicing multiple process modules, the rack will be taller.

The control rack may contain units from more than one process station in the following circumstances:

- more than one tool is located in the same location or
- the **Plasma**Pro®100 process station is part of a cluster system

If this is the case, the control rack is configured to suit the customer's requirements.

Gas pod dimensions

Figure 10 shows the dimensions of the standard PlasmaPro 8-line gas pod. Figure 11 shows the dimensions of the 12-line gas pod with automatic purging.

Note that the 8-line gas pod shown has an optional expansion box fitted at the top. This box adds an additional 4 gas lines.

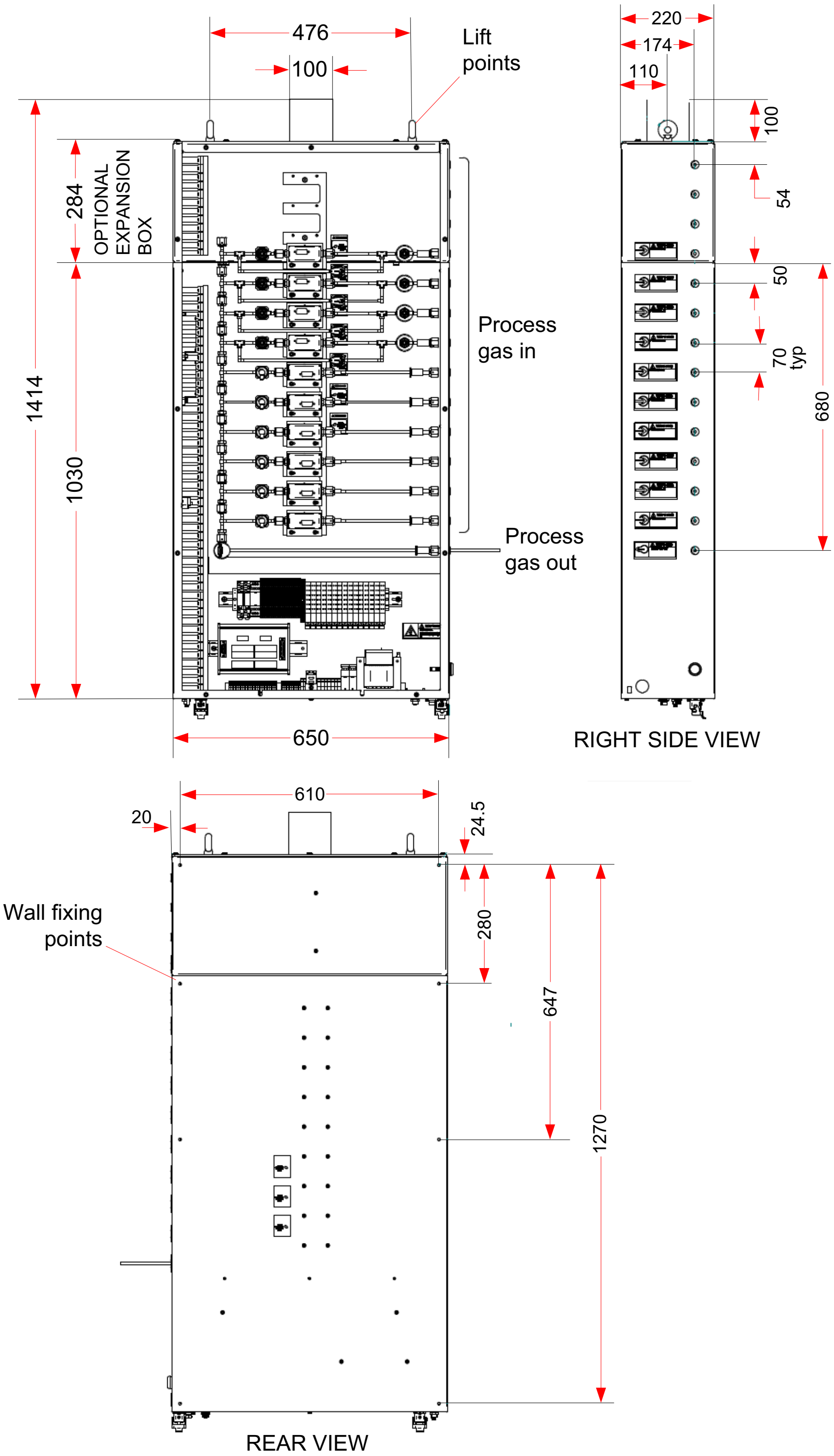


Figure 10 Dimensions of the PlasmaPro 8-line gas pod (mm)

All dimensions in mm.

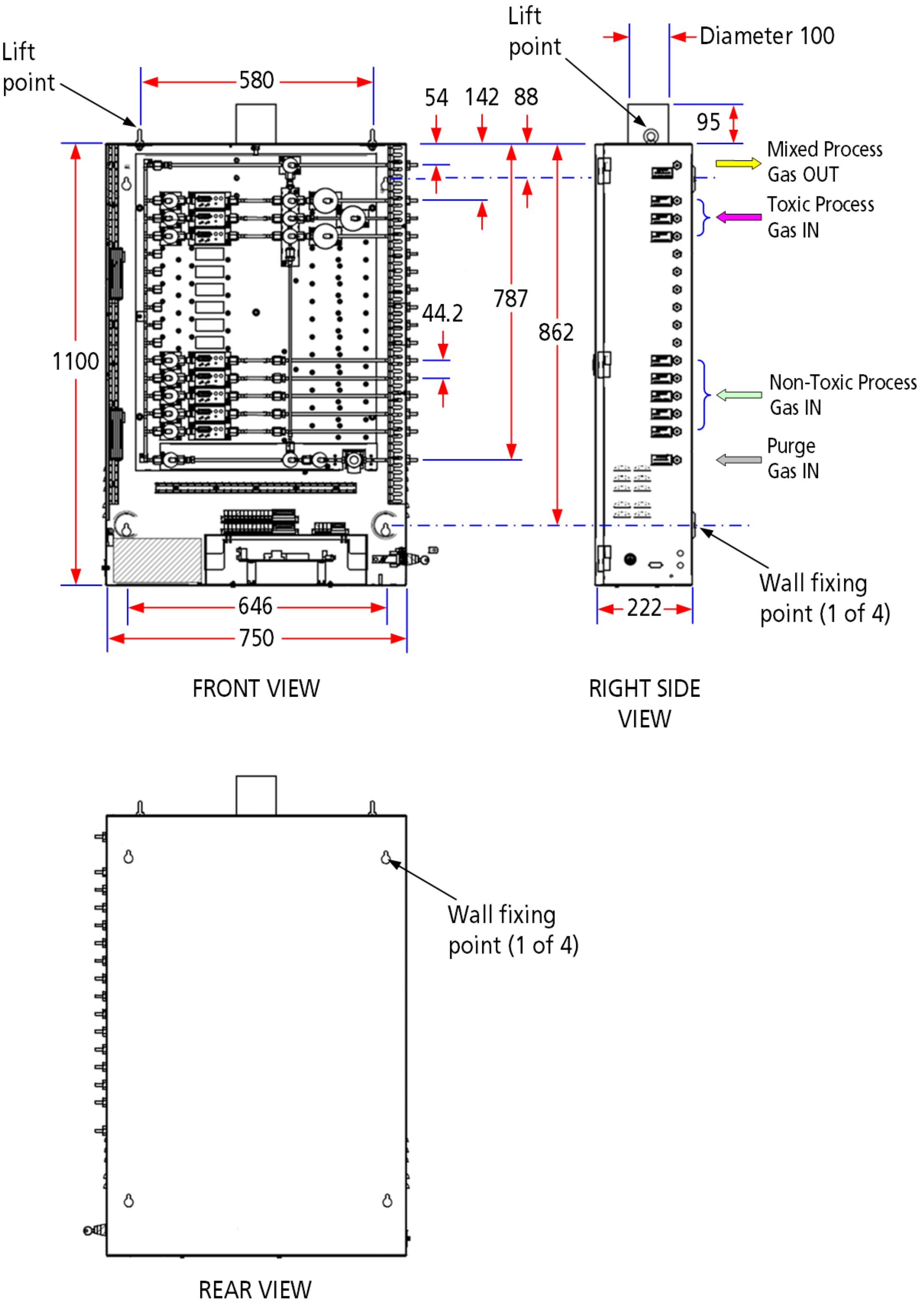


Figure 11 Dimensions of the PlasmaPro 12-line gas pod with auto-purge (mm)

Tool footprints

Figure 12 shows the typical footprint of a **Plasma**Pro®100 installation. This drawing includes a minimum access area of 600 mm around the tool.

Figure 13 shows a typical footprint with a 1000 mm access area around the tool, as recommended by BSEN/IEC 60204-33.

Ensure that the site conforms with all national and local regulations.

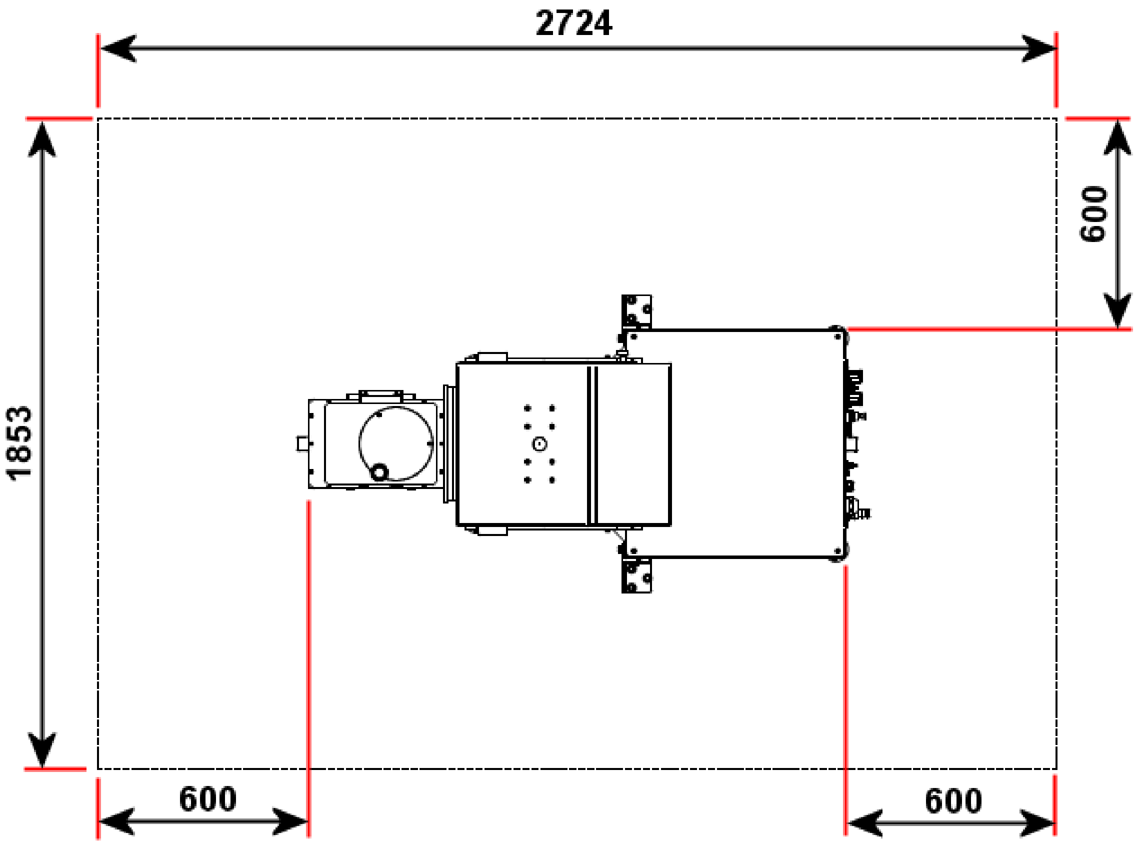


Figure 12 Typical tool footprint with minimum 600 mm access area

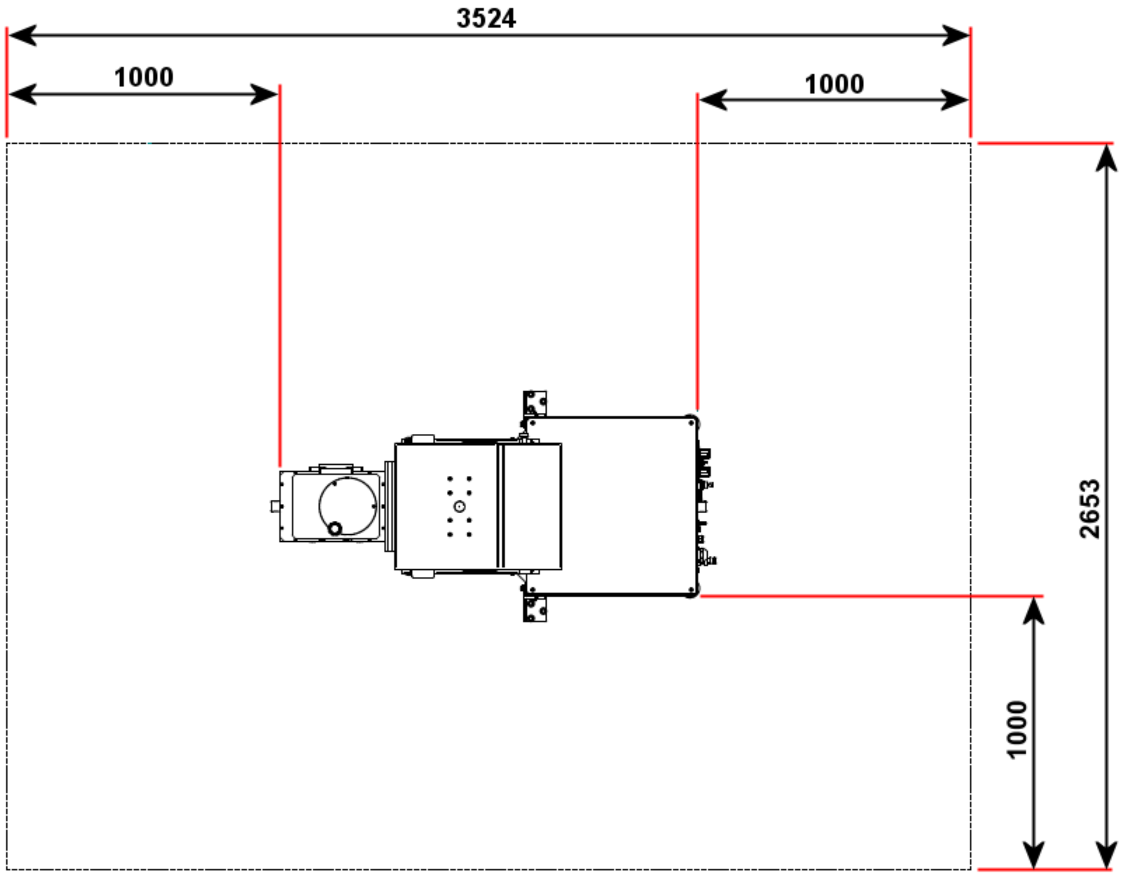


Figure 13 Access requirements as recommended by BSEN/IEC 60204-33

Floor fixings

Figure 14 shows the location of the floor fixing points. Use 6 off M10 x 40 hexagonal-head screws to fix the tool to the floor.

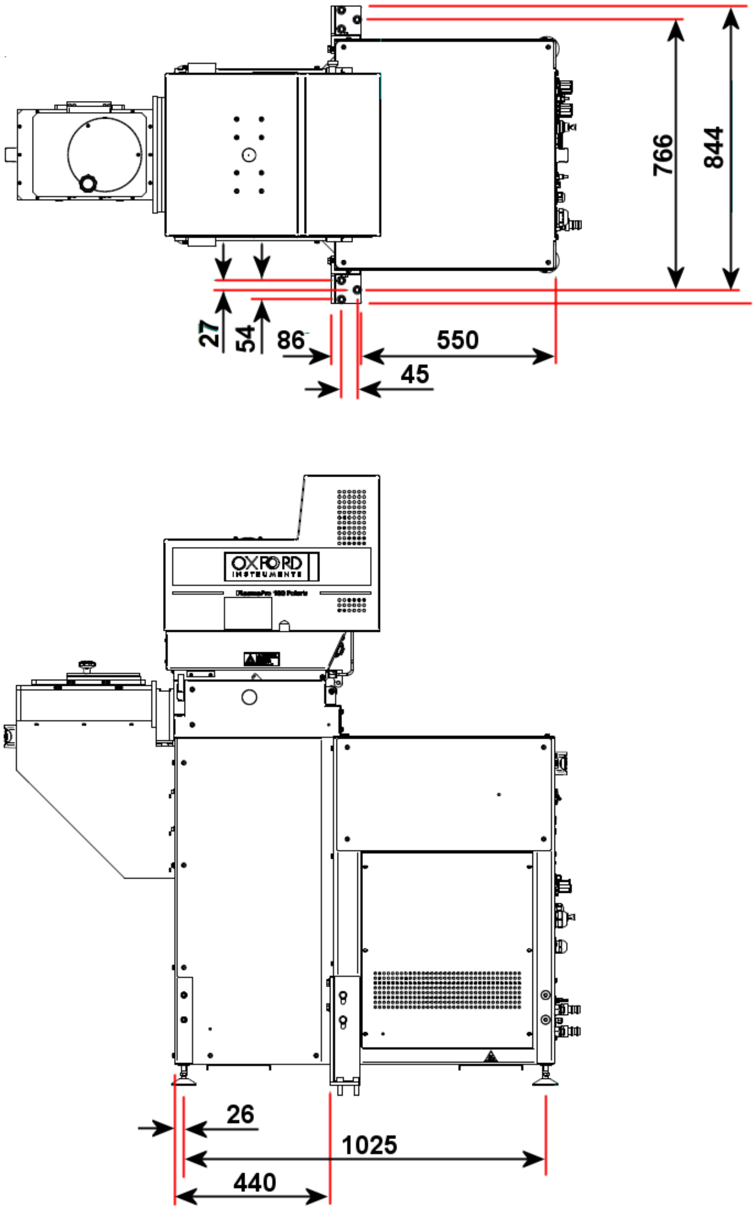


Figure 14 Floor fixing points for compact loadlock

Electrical power supply requirements

The tool requires one of the electrical supplies specified in Table 5. The supply must meet the requirements of BS EN60204-33.

Table 5 Electrical supply specification

Function	Parameter	Specification	Comment
Tool electrical supply (for a 208 V tool)	Voltage	208 VAC +10% -15%	
	Current	Typical 50 A maximum	Depends on the tool configuration (see note below).
	Frequency	50/60 Hz	
	Phases	3 phase, N + E	
Tool electrical supply (for a 400 V tool)	Voltage	400 VAC +10% -15%	
	Current	Typical 35 A maximum	Depends on the tool configuration (see note below).
	Frequency	50/60 Hz	
	Phases	3 phase, N + E	

NOTE: The values given in Table 5 may vary. Current ratings could be lower or higher than those specified, depending on the configuration of pumps, heating equipment and generators. To obtain a specific current rating for a particular configuration, please contact OIPT.

Figure 15 shows the recommended electrical installation.

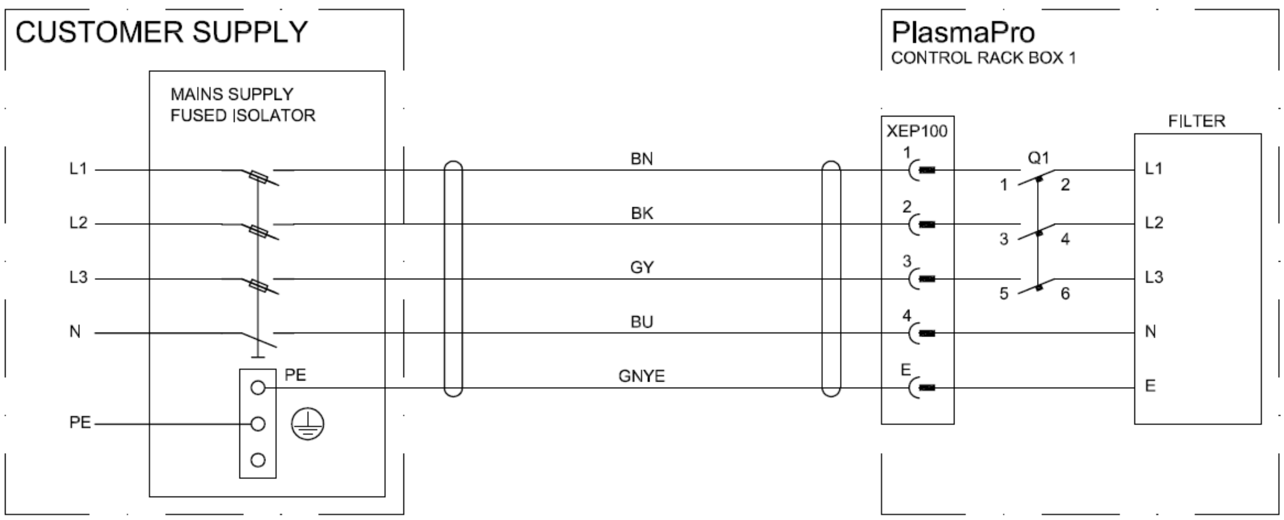


Figure 15 Recommended electrical installation

Notes on the electrical installation

a) The fused isolator (or similar) must be wired according to local regulations.

a) The mating half of connector XEP100 is supplied by OIPT. The customer must supply a suitably rated cable with outside diameter of 18 mm to 32 mm.

b) Circuit breaker Q1 will be a 4-pole device if required by specific country requirements.

c) The rating of circuit breaker Q1 depends on the tool configuration.

d) The external fuses/circuit breakers must be rated to work with the value of Q1 in control unit 1 in the **Plasma**Pro®100 control rack.

e) The external fuse/circuit breaker must be capable of interrupting 10 kA minimum.

Neutral supply bonding

The system is designed for a TN-S system with separate neutral and protective earth conductors. If the supply is not a TN-S type, the wiring must be adapted in line with local regulations.

The neutral conductor should be earthed at source (in line with local regulations).

Cluster tools

If the **Plasma**Pro®100 process station is part of a cluster system, a power distribution box is required. This box connects to a single electrical supply, and supplies electrical power to the transfer station and to each process station that is attached to the transfer station.

Water cooling requirements

The tool requires cooling water to the **Water In** and **Water Out** connections on the services panel, as specified in Table 6. The absolute maximum flow capacity required is 5.28 gpm (20.0 l/min) at the specified coolant supply pressure. The In and Out connections on the services panel are both 3/4” swaged connectors, which are fitted with a 3/4” barbed hose to 3/4” tube adaptor.

Table 6 Tool water cooling specification

System Type	Specified Flow		Inlet Temp (°C)		Max. Coolant Pressure		Configuration
	gpm[1]	l/min	Max	Min	kPa	psi	
Deposition	0.8	3.0	25	15			RF generator CB600S/13 No turbo pump on process chamber
Etch	1.5	5.7	25	15			RF generator CB600S/13 ATH 1600MT turbo pump on process chamber
ICP	6.1	23	25	15			RF generator CB600S/13 on table AE HFV 8000/5000 RF generator on ICP source ATH 1600MT turbo pump on process chamber 3 kW ICP180 source
	4.7	17.8	25	20			RF generator CB600S/13 on table AE Cesar 3 kW RF generator on ICP source ATH 1600MT turbo pump on process chamber 3 kW ICP180 source

1. US gallons per minute.

The lower electrode requires cooling fluid to the **Coolant In** and **Coolant Out** connections on the services panel, as specified in Table 7. The In and Out connections on the services panel are both 3/8” swaged connectors.

Table 7 Tool lower electrode cooling specification

Unit	Specified Flow		Inlet Temp (°C)		Max. Coolant Pressure		System Type
	gpm[1]	l/min	Max	Min	kPa	psi	
PECVD lower electrode	0.27	1.0	25	15			Deposition
Liquid cooled lower electrode	0.53	2.0	As required by the process				Etch

1. US gallons per minute.

Compressed air requirement

Compressed air must be supplied via a filter and oil mist separator as shown in Figure 16.

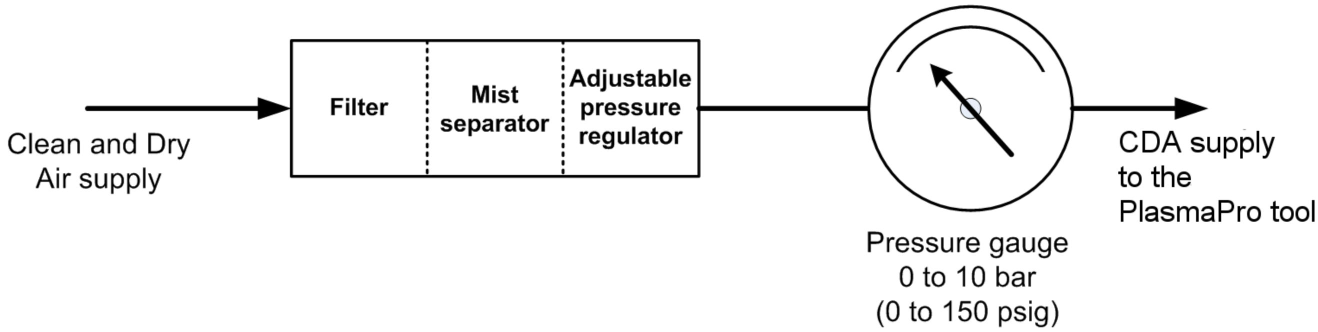


Figure 16 Compressed air supply

The tool requires compressed, clean dry air (CDA) in accordance with the specifications given in Table 8.

Table 8 Tool compressed air specification

Function	Connection	Parameter	Specification
CDA inlet to filter/mist separator/regulator unit	Customer specific	Minimum pressure	6 bar (90 psig)
CDA inlet to tool	8 mm push-fit connector	Maximum flow rate	135 lpm (5 cfm). (This flow is in addition to the gas pod flow)
		Regulated pressure	3.0 to 6.0 bar. (45 to 90 psi)
		Pressure monitoring	0 to 10 bar. (0 to 150 psi)
		Oil content	Less than 10 ppm
		Maximum moisture content (expressed as the dew point)	-3°C (25°F)
		Filtration	Maximum particle size of 0.3 microns
PSM air in (antenna cooling for Cobra systems only)	8 mm push-fit connector	Minimum pressure	6 bar (90 psig)
		Maximum flow rate	60 lpm (2.1 cfm)
CDA inlet to gas pod	4 mm push-fit connector	Flow	5 lpm (0.2 cfm). (This flow is in addition to the tool flow)
		Pressure	4.0 to 6.0 bar. (60 to 90 psi)

NOTE: The CDA inlet pressures to the tool must be limited to 6 bar (90 psi).

Nitrogen requirement

Compressed nitrogen must be supplied via a filter and semiconductor grade pressure regulator as shown in Figure 17. All tubing used in the installation must be electropolished stainless steel. All pipe-work fittings and pressure regulators must be semiconductor grade.

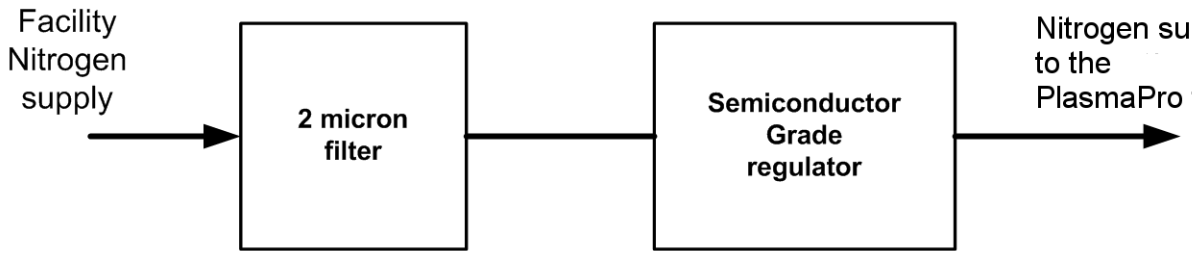


Figure 17 Nitrogen supply to the tool

The tool requires nitrogen in accordance with the following specification:

Table 9 Tool nitrogen specification

Function	Connection	Parameter	Specification
Regulated N_2 inlet to tool	1/4" stainless steel swaged connector	Flow	10 lpm (0.4 cfm)
		Pressure	3.0 bar (45 psi) minimum
		Regulation	0.5 bar to 5 bar (7.5 to 75 psig)
		Filtration	2 micron filter mounted adjacent to the tool
		Purity	Better than 99.99% to satisfy process requirements
Backing pump purge	It is the responsibility of customers to ensure that a rotary pump purge connection is fitted and used correctly. The purge flow is necessary to protect the pumping system from the customer's process, and may also be required by local safety regulations. Customer requirements vary, so special kits can be supplied on request. Any damage caused by the omission of a satisfactory pump purge supply cannot be covered by any tool warranty in effect at the time of use.		

Helium requirement (if helium option is fitted)

If helium is required, it must be supplied via a local pressure regulator as shown in Figure 18. All tubing used in the installation must be electropolished stainless steel. All pipe-work fittings and pressure regulators must be semiconductor grade.

Figure 18 Helium supply to the tool

If the **Plasma**Pro®100 tool is fitted with the helium substrate cooling option, the tool requires compressed helium that complies with the specification in Table 10.

Table 10 Tool helium specification

Function	Connection	Parameter	Specification
Tool He	1/4” stainless steel swaged connector	Flow	50 sccm
		Pressure	3.0 bar (45 psi) minimum

Process gas requirement

Process gas is supplied to the gas pod from an external supply. All tubing used for process gas supply must be electropolished steel. All pipework fittings and pressure regulators must be semiconductor grade.

On all gas lines, the customer must fit manual shut-off valves as close to the gas pod inlets as possible. Each valve must be clearly labelled with the gas it controls. These valves are sometimes referred to as *point-of-use* valves. Figure 19 shows a typical installation.

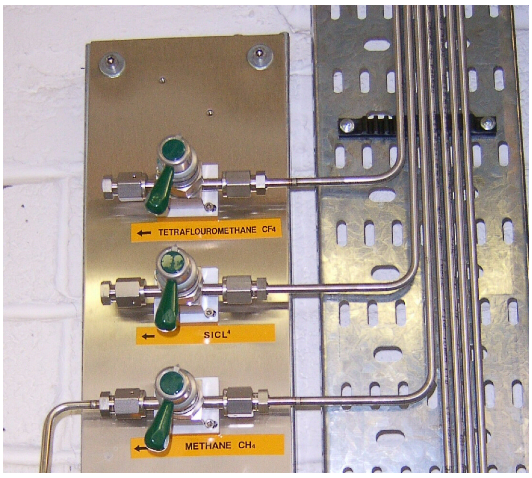


Figure 19 Gas supply point-of-use valves

All process gas supplies must conform to the specification given in Table 11.

Table 11 Process gas supply specification

Function	Parameter	Specification
Process gas supplies	Pressure	2 bar (30 psig) minimum [1]
	Regulation	0.5 to 5 bar (7.5 to 75 psig)
	Purity	At least 99.99% to satisfy process requirements
	Filtration	A 2 micron filter is fitted to each gas line, as part of the gas pod. Other grades of filter can be fitted, if required.

1. Low vapour pressure gases can be used (see Installation of low vapour pressure gases), but they require special consideration to prevent unwanted condensation of material in the gas lines. It may be necessary to heat the gas lines and the gas handling equipment in the gas pod. Contact Oxford Instruments Plasma Technology for advice.

The tool requires a pipework connection between the gas pod and the tool gas inlet. This connection must comply with the specification given in Table 12.

Table 12 Process gas connection specification

Function	Connection	Parameter	Specification
Process gas in	1/4” electropolished stainless steel pipe, welded at the gas pod	Pressure	2.0 to 3.0 bar (30 to 45 psi)
	1/4” stainless steel VCR at the tool		

Installation of low vapour pressure gases

Special precautions must be taken if low pressure gases (such as $SiCl_4$, BCl_3 or C_4F_8) are used. The low vapour pressure can lead to condensation in the gas supply lines, particularly where the gas passes through a cooler region of pipework. Condensation can result in a build up of liquid in the gas pipe, usually at the low points or U-bends in the gas line. Liquid build-up can produce unstable gas flows, especially if liquid condenses or flows into the mass flow controller (MFC).

The gas pressure at the tool can be very low if the gas cylinder is cold, e.g. if it is kept outdoors in the winter. Observe the following guidelines if using low vapour pressure gases:

Keep the gas cylinder indoors

Keep the gas cylinder in an extracted gas cabinet to avoid loss of line pressure when the outside temperature is cold. DO NOT heat the gas cylinder with a heated jacket as this can cause condensation when the gas passes through the cooler gas lines.

Maintain a positive temperature gradient

Maintain a positive temperature gradient from the cylinder to the MFC. This is best achieved by positioning the gas pod close to the tool, resulting in short pipe runs. If this is not possible, then the gas lines should be heated by wrapping them in suitable heater tape.

It may be necessary to heat the MFC in the gas pod. OIPT offers a heated MFC kit for use with low vapour pressure gases.

The MFC temperature should be maintained above the temperature of the gas line which should, in turn, be maintained at a higher temperature than the gas cylinder. A typical setup might be as shown in Figure 20.

MFC 40°C (104°F) or above;
gas line 30°C to 40°C (86°F to 104°F);
gas cylinder at room temperature.

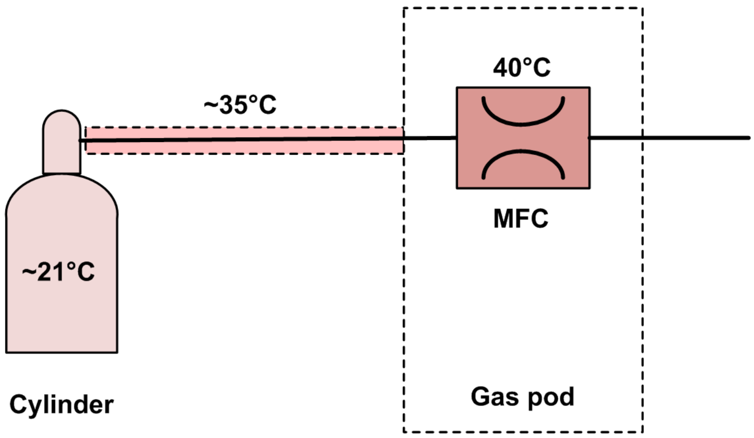


Figure 20 Typical heated gas line showing the temperature gradient

If condensation problems are suspected:

1. Pump out the gas lines completely.
2. Optimise the heater tape arrangement and temperature setpoints.
3. Refill the gas line.

For $SiCl_4$ it is important to use a dedicated $SiCl_4$ mass flow controller.

Extraction requirements

The tool requires air extraction for the pump exhausts and gas pod. The Cobra source also requires air extraction. If toxic, flammable or corrosive gases are to be used at any time, the extraction system must be designed accordingly.

The extraction system must comply with the specifications given in Table 13.

Table 13 Extraction specifications

Function	Connection	Parameter	Specification
Gas pod extraction	100 mm (4”) tube	Flow	3 m^3/min (106 cfm)
		Minimum vacuum	-375 Pa (-1.5 inches water)
Backing pump exhaust	Up to 50 l/min (refer to the manufacturer’s manual)		
Cobra source extraction (Cobra systems only)	100 mm (4”) tube	Flow	1 m^3/minute (35 cfm)

Mandatory requirements for backing pump extraction

The installation must provide an extraction system that matches the backing pump exhaust and conforms to local safety standards. In particular, all fittings and pipework connected to the backing pump exhaust must be made from industry standard stainless steel in accordance with local safety regulations.

Specialised equipment such as scrubbers and furnaces may be needed to dispose of hazardous gases. The routing of the pump exhaust line must be arranged so that condensates cannot flow back into the pump.

NOTE: There is a risk of damage from cross-contamination if backing pumps share the same exhaust system. This applies whether the pumps are on the same tool or on different tools. Damage caused by any cross-contamination is not covered by the tool warranty.

Care must be taken to route mutually incompatible exhaust gases through separate exhaust ducts. In particular, oxygen enriched exhaust gases must not be mixed with exhausts from mineral oil pumps as this can cause an explosion.

Mandatory requirements for gas pod extraction

The gas pod must be connected to the customer's gas extraction system via a 100 mm (4”) diameter pipe collar. Fit a suitable monitoring device to the gas pod extraction. The output contacts of the device must be closed when the minimum flow rate is achieved, and open when not.

It is the customer’s responsibility to ensure that the gas extraction system, including all necessary gas sensors, meets local safety regulations.

Liquid nitrogen requirements (if fitted)

The liquid nitrogen facilities must comply with the specifications given in Table 14.

Table 14 Liquid nitrogen installation specifications

Function	Requirement
Liquid nitrogen connection to tool	3/8” swaged connector.
Tool design	Adequate precautions must be taken to prevent pressure build-up (e.g. pressure relief valves).
	All liquid nitrogen carrying components must be thermally insulated. Components must also be covered to prevent accidental touching by personnel.
Inspection	The liquid nitrogen installation must be inspected by a specialist to confirm that it is safe to use.

Tool heat load

Table 15 shows the typical heat load for a clean room installation.

Table 15 Typical tool heat loads

Tool State	Heat Load
Operating	3.5 kW (3.0 kcal/hr)
Passive	1.5 kW (1.3 kcal/hr)

NOTE: These heat load values do not include externally sited components such as pumps, heater/chillers or transformers, etc.

Tool noise emission

The maximum noise emission from the tool is 75 dB, measured 500 mm above the backing pump. Noise emission from the tool could be reduced by siting ancillary equipment (e.g. backing pump, heater/chiller) remotely in a service area.

Environment

Statement of intended use

This equipment is intended to be used by skilled and trained personnel for processing materials within a controlled access environment.

Mandatory specifications for the tool environment

The **Plasma**Pro®100 tool is rated for use in a pollution degree 1 installation category environment (laboratory or clean industrial environment).

The tool must be located in a well ventilated location to prevent dangerous concentrations of nitrogen accumulating if an unintended release occurs. The room should have a volume of at least 9 m^3 and should have at least four changes of air per hour.

Table 16 lists the mandatory environmental specifications.

Table 16 Mandatory environmental specifications

Item	Specification
Operating temperature	5°C to 25°C (41°F to 77°F)
Storage temperature	0°C to 50°C (32°F to 122°F)
Maximum humidity	80%[1]
Minimum humidity	10%[2]
Electrostatic build-up	Low static environment [2]
Ambient light level	300 lux minimum
Altitude	Up to 2000 m (6562 ft)
Cleanliness	Clean room class 10,000 or better

1. High humidity has a progressively significant effect on tool performance. At humidity greater than 50%, the rate of chamber pump-down after venting the chamber is affected significantly, and at humidity greater than 65% the rate of chamber pump-down may not meet tool specifications.

2. Low humidity introduces a risk of electrostatic build-up, with subsequent discharge to the tool producing a malfunction or damage. The tools are tested to EN 61000-4-2:1995 + A1:1998, + A2:2001. OIPT recommend the use of an environment, which protects against electrostatic build-up, and extra precautions are necessary at low humidity.

Oxford Instruments Plasma Technology

For more information please email **plasma@oxinst.com**

Oxford Instruments Plasma Technology
North End, Yatton, UK
Tel: +44(0)1934 837000

Germany
Wiesbaden
Tel: +49 (0) 6122 937 161

Japan
Tokyo
Tel: +81 3 5245 3261

People's Republic of China
Beijing
Tel: +86 10 6518 8160/1/2
Shanghai
Tel: +86 21 6132 9688

Singapore
Tel: +65 6337 6848

Taiwan
Tel: +886 3 5788696

US, Canada and Latin America
Concord, MA
TOLLFREE: +1 800 447 4717

SPECIALTY COATING SYSTEMS™

SCS Labcoter® 2 (PDS 2010)

SCS Labcoter® 2 (PDS 2010)

For Parylene laboratory research, applications development and testing, the SCS Labcoter 2 Parylene Deposition System (PDS 2010) performs reliable and repeatable application of SCS Parylene conformal coatings. The portable Labcoter 2 applies Parylene coatings to components such as circuit boards, sensors, wafers, medical devices, MEMS and elastomeric components for research, development and repairs.

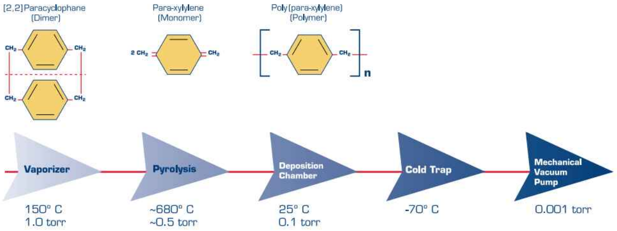
Labcoter® 2 Features

- Modular generation unit construction
- Interchangeable chamber modules
- Choice of LN_2 or mechanical chiller
- Closed-loop monomer pressure control
- Continuous process monitoring
- Low-noise, direct drive vacuum pumps
- Fixture rotation
- Optional tumble coat operation
- Optional remote vacuum pump

The Parylene Deposition Process

Ultra-thin Parylene coatings are inert and biocompatible and have excellent moisture, chemical and dielectric barrier properties. Parylene polymer coatings are applied via vapor deposition equipment, which allows for the precise control of coating rate and thickness. The deposition process begins as the powdered precursor (dimer) is vaporized under vacuum and heated to form a dimeric gas. The gas is then pyrolized to cleave the dimer into its monomeric form, and finally is deposited as a transparent polymer film. The polymerization process occurs at ambient temperatures and does not involve solvents, catalysts or cure forces. Parylene coatings can be applied in thicknesses from several hundred angstroms to 75 microns.

Parylene Deposition Process (Parylene N)



SCS LABCOTER® 2
PDS 2010

Optional Features

Cold Trap Options

Choose one of the following for use with the Labcoter 2:

- Manual-fill LN_2 cold trap
- Automatic-fill LN_2 control
- Mechanical chiller

Mechanical Chiller Specifications	
Dimensions (W x D x H)	10 x 20 x 18.5 in / 25.4 x 50.8 x 47 cm
Power	110 VAC, 60 Hz, 1Ø, 7A or 220 VAC, 50 Hz, 1Ø, 5A

Start-up Kit

Everything you need to start Parylene coating with your Labcoter 2 including Parylene C or N dimer, tape, microsoap and brushes.

Chamber Options

- Removable lid chamber: 12 x 12 in / 30.5 x 30.5 cm, electropolished stainless steel chamber with buna gasket and removable lid with handles (approximately 22 L capacity).
- Reduced capacity chamber: 12 x 3 in / 30.5 x 7.6 cm, electropolished stainless steel chamber with view port and buna gasket (approximately 5.5 L capacity).

Chart Recorder

Two-channel, two-color chart recorder to record vaporizer temperature and vacuum chamber pressure during the Parylene vacuum deposition process, with user-selectable chart speed.

Standard PDS 2010 Fixture

Used to hold parts in place during the Parylene vacuum deposition process.

Variable Speed Tumble Coat Adapter

Includes a variable speed DC rotation drive system (2 to 12 RPM), rotary coupling (used to rotate the parts basket) and three stainless steel mesh cylindrical parts baskets.

Parylene Dimer

SCS Parylene dimer is the chemical precursor in the deposition process, and its quality is critical. We have a dedicated and proprietary manufacturing source to ensure that all SCS dimer meets our precise and demanding standards. The dimer is a stable granular white powder and is available in one-pound and half-kilogram containers.

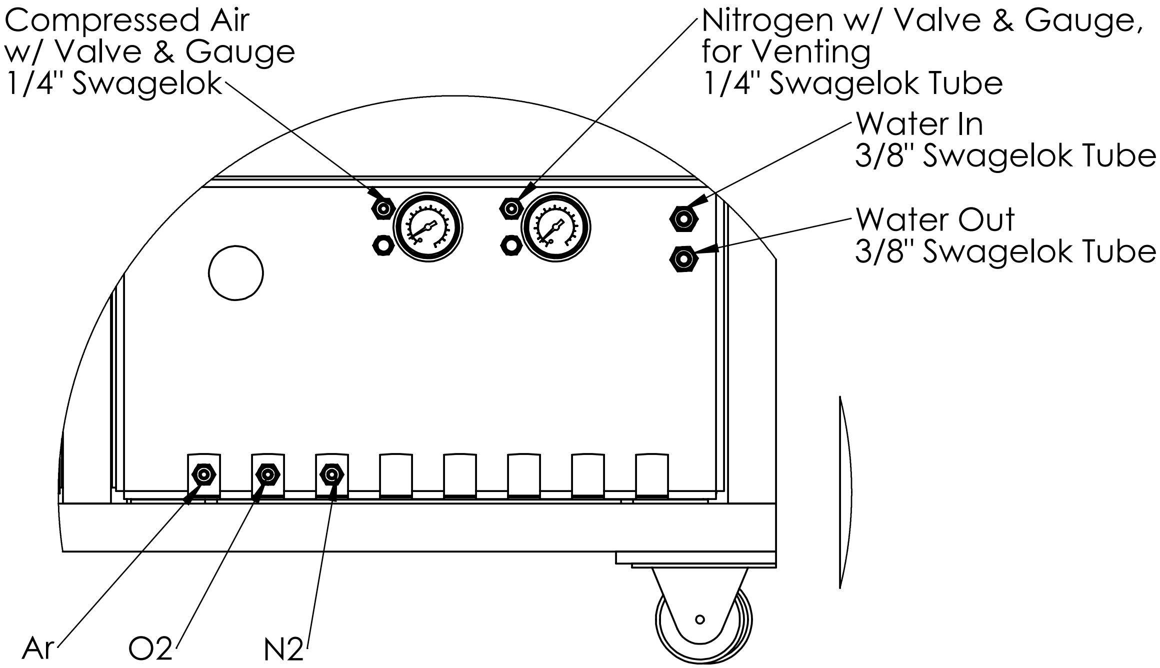
Labcoter® 2 Specifications	
Dimensions (W x D x H)	19.5 x 23.5 x 50.5 in / 49.5 x 59.7 x 128.3 cm
Weight	170 lb / 77.18 kg
Chamber size	12 x 12 in / 30.5 x 30.5 cm Electropolished stainless steel with view port (approximately 22 L capacity)
Power	110 VAC, 60 Hz, 1Ø, 20A or 220 VAC, 50 Hz, 1Ø, 15A
Dimer Capacity	Up to 0.38 lbs / 125 gm
Vacuum Pump	6.9 CFM / 11.72 m^3 / h, rotary vane (Optional remote mount 10 CFM)
Controls	Semiautomatic, microprocessor temperature and pressure controls, fault alarm monitoring

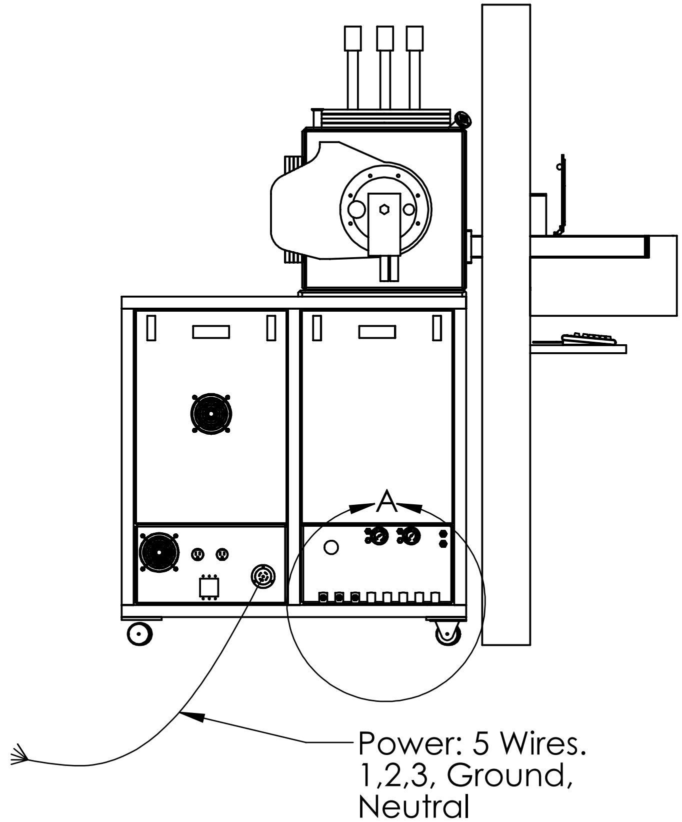
SCS Labcoter® 2 with optional mechanical chiller

SPECIALTY COATING SYSTEMS™

World Headquarters 7645 Woodland Drive, Indianapolis, IN 46278 USA
TF 800.356.8260 **P** 317.244.1200 **F** 317.240.2739 **W** scsequip.com

Facility Requirement for DC-RF Magnetron Sputtering System





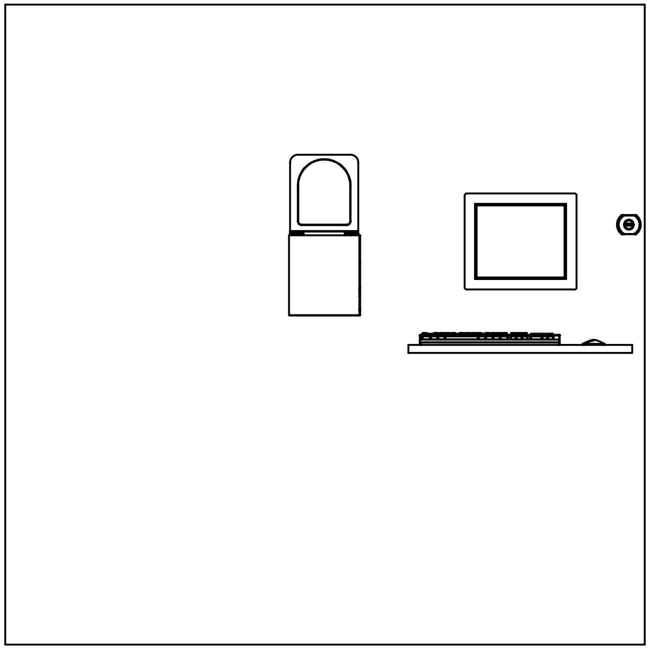
Connection Type	Connection Fitting	Specification
Water Input / Output	(2x) 3/8" Swagelok Fittings	4 GPM, 15°C, at 50 psi
Nitrogen for Venting	1/4" Swagelok Tube Fitting	8-10 PSIG
Compressed Dry Air	1/4" Swagelok Tube Fitting	80-100 PSIG
(3x) Process Gas	(3x) Swagelok Tube Fittings	15-20 PSI
Power	5 Wire cord. 1,2,3, Ground, Neutral	415 VAC 3 Phase, 20 Amp / phase, 50/60 Hz

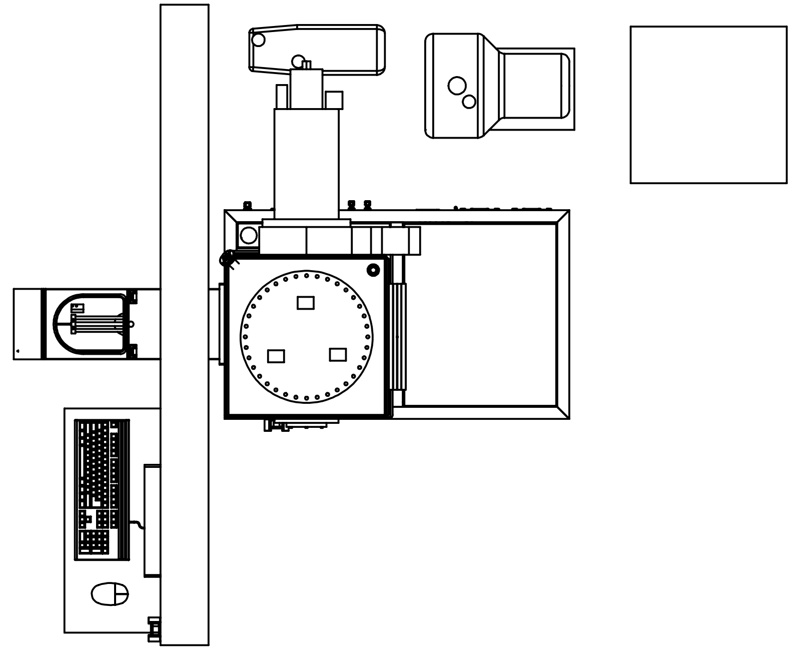
Nano-Master Inc.

SITAR NSC-4000 Facilities

SIZE A | DWG. NO. | REV. A

SCALE | CAD FILE: | SHEET 1 OF 1





Facilities Required	
1	Provide a chiller with 4GPM, 15°C, at 50 psi.
2	Provide process gas with regulators for 15-20 psi
3	Provide 1/4" stainless steel gas lines to tool
4	Provide extra N2 gas tank for venting
5	Provide a distribution box for 3 phase power with manual breaker switch and 20 A fuses (one for each phase)within 10 feet of system
6	Provide compressed dry air at 90 psi
7	Provide exhaust for mechanical pumps

Nano-Master Inc.

SITAR NSC-3000 Facilities

SIZE	DWG. NO.	REV.
A		A

SCALE | CAD FILE: | SHEET 1 | OF 1