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Specifications PB3 Vacuum Training System

The **Series PB3 Vacuum Training System** consists of individual vacuum process components assembled into a functional vacuum system designed for manual operation. This system and its components are easily up-fitted to provide additional functionality for processes such as plasma deposition or etching.



The base model includes these components:

- Vacuum chamber:
 - Stainless steel , 160mm 4-way cross with two 2-3/4" Conflat side mounted and blanked off (stainless steel) ports. The side mounted Conflat ports are typically used for customer supplied instrumentation.
 - Viton seals throughout.
 - All 160mm flanges are secured using claw type clamps.
 - Manually operated front access door with a protected, 4" diameter borosilicate glass viewport.
 - 160mm top access flange used to mount the optional sputter deposition source.
 - Bottom 160mm flange with an adjustable height, 5" diameter X 1" thick aluminum substrate holder.
 - 160mm vacuum pump / vacuum gauge interface located on the rear port.



- Vacuum gauging:
 - Full range Pirani - cold cathode gauge with a 750 Torr (1000 mbar) > 3.750e-9 Torr (5e-9 mbar) range. The complementary digital readout is included in the turbo pump controller and mounted on the front panel.
- High vacuum pump:
 - Pfeiffer HiPace 80 Turbo high-vacuum pump.
 - It has an N² pumping speed is rated at 35 l/s.
 - A fine mesh screen is included to protect the pump from ingesting contaminants and causing a failure.
 - This dry and hydrocarbon free pump package is designed only for use with non-corrosive gasses.
 - A combination digital control / display provides a user interface for pumping and vacuum chamber pressure measurement.
- Vacuum chamber valves:
 - A manually operated ball valve is used to rough the chamber.
 - An optional (manually operated) butterfly/shutoff valve is used to isolate the turbo pump from the chamber.
 - A manually operated toggle valve is used to isolate the turbo fore line.
 - Two manually operated and front panel mounted manual toggle type valves are used for chamber venting and process gas introduction.
- Vacuum system enclosure:
 - The system is constructed in an enclosed, steel tabletop electronics cabinet measuring 19.25" wide X 25" deep X 20" tall. The vacuum chamber assembly will add approximately 12" of height.
 - A steel frame base provides stability for the cabinet.
 - A laminate covered wooden top is provided to mount the vacuum chamber assembly and also used as a work surface.
 - All front and rear access and instrument panels measure 19" wide. There is 10RU of available height (each RU = 1.75").
 - A 2RU panel is used as enclosure "stiffener" on the top rear.
 - The front top panel includes the AC Mains power switch / circuit protector, process gas and vent toggle valves, a process gas flow needle valve and the pump control unit.
 - The remaining space is left open for optional components.
 - A rear bottom mounted panel includes the AC Mains cord strain relief and vent and process gas supply fittings.
 - The remaining space on the rear side is left open.
- Vacuum pressure and gas control:
 - The standard system package includes a needle valve to vary (only) the process gas flow and the resultant chamber pressure.
 - An optional butterfly valve may be mounted in between turbo pump and the vacuum chamber interface port and used to vary the pumping speed.
 - Optional mass flow controller(s) may be included to accurately control the process gas.
- Electrical controls:
 - The PB3 Vacuum Training System includes a basic AC mains connection and electrical distribution system. A primary AC power switch / circuit breaker is located on the front panel. All branch circuits are protected by a fuse located inside the enclosure.



- Safety and interlocks
 - The vacuum pumping controller has built in protection against over temperature and other outside conditions.
 - As this is a manually controlled system, it is important that the user understands the basic do's and don'ts of vacuum practice.
 - Versions of this system that are supplied with a deposition source and power supply will include enhanced and complementary functional and safety interlocks.
- Optional components and subsystems:
 - Butterfly type valve - mounted in between the turbo pump and the vacuum chamber interface port to enable changes in pumping speed.
 - Mass flow controller - to accurately control the process gas.
 - Sputter deposition subsystem - consists of a small round magnetron sputtering source and a complementary RF power system used to deposit a thin film.
 - Plasma etching subsystem - consists of a round, capacitive coupled electrode and a complementary RF power system used to etch a thin film or modify a substrate surface.

The above defined subsystems may require other up-fitting and changes to the basic vacuum system.

Contact Manitou Systems Inc. for additional information and to discuss your application.

