

Item No. 9: Turbo molecular pumping system complete with all accessories (1 SET)

I) Turbo molecular drag pump with integrated drive: -

Inlet flange: DN 100 CFF

Fore vacuum connection flange: DN 25 ISO KF

Pumping speed for: Nitrogen: 210l/s

Helium: 220 l/s

Argon: 200 l/s

Compression ratio for: Nitrogen: $> 1 \times 10^9$

Helium: 3×10^5

Argon: $> 1 \times 10^9$

Maximum for vacuum pressure required: 10 mbar (for N₂)

Gas throughput for: Nitrogen: 7 mbar lit/s

Helium: 9 mbar lit/s

Argon: 4 mbar lit/s

Ultimate pressure with rotary vane backing pump: $< 5 \times 10^{-10}$ mbar as per DIN 28428 standards.

Rotation speed: 60,000 rpm

II) Double stage rotary vane pump with 10 m³/h pumping speed capacity.

Pumping speed: 10 m³/h

Ultimate pressure: Total with gas ballast: 1×10^{-2} mbar.

Ultimate pressure: Total without gas ballast: 5×10^{-3} mbar.

Flanges: Inlet and outlet: DN 25 ISO KF

Rated power: 0.45 kW.

Water vapor tolerance: 30 mbar.

Water vapor capacity: 210 g/h

Pump fluid filling: 1 lit

Supply: 200 – 230 V AC, 50 Hz, 1 phase.

- The turbo pump should have maintenance free, permanent magnetic bearing at the high vacuum side for hydrocarbon free vacuum in the vacuum system, and oil lubricated ceramic ball bearing at bottom side, and the magnetic bearing should have a dry emergency bearing embedded in to it.

III) Vacuum measurement system:

a) Compact full range gauge head

Qty: 1 no.

Connection flange: DN 25 ISO KF

Measurement range: 1000 mbar to 5.10^{-9} mbar.

Accuracy: $10^{-8} - 10^2$ mbar: $\pm 30\%$
Repeatability: $10^{-8} - 10^2$ mbar: $\pm 5\%$
Output signal: pressure range: 1.8 – 8.6 V DC
Feed through: Al₂O₃, Glass
Bakeout temperature: 150⁰C with electronics removed.
Flange: St. steel

b) Dual gauge control unit

Qty: 1 no.
No. of sensor connections: 2
Measurement range: 55000 mbar to $5 \cdot 10^{-11}$ mbar (depends on the type of gauge head connected)
Supply: 90 – 250 V AC, 50 Hz, 1 phase.
Interface: RS 232 C
Measurement signal output, analog: 0 – 10 V DC
Operating temperature: + 5 to + 50⁰C.
Measurement rate: 50 1/s
Display rate: 10 1/s.
Set point: potential free changeover contact: 4 pieces
Cables, centering rings and clamps to be quoted under main offer.

IV) Bellow sealed isolation valve, pneumatically activated with connection flange of DN 100 CF (with studs, bolts, washer, and gaskets)

Qty: 1 set
Housing: 5×10^{-10} mbar l/s.
Valve seat: 1×10^{-9} mbar l/s.
Material:
Housing: Metal
Valve seat: Viton.
Pressure range: 1.6 bar to 1×10^{-10} mbar.
Compressed air requirement: 5 to 7 bar
Supply: 230 V AC, 50 Hz.
Connecting components to be quoted under the main offer.

Installation and commissioning: At our site for free of cost.

After sales service: In case of break down, complete repairs of the Turbo Molecular Pump, viz. bearing replacement, motor part replacement, complete cleaning of pump etc. should be possible at site. The vendor should have Service Centre/Facility and complete infrastructure within India to handle complete repairs of the turbo pump, such as, changing of stator / rotor assembly, repairs of electronics, etc and availability of critical spares off the shelf, from Indian office.

The vendor must submit the compliance statement, along with the offer comparing with tender specifications.