# Diffusion Pump Systems | DP

Model
DP

- **High pumping speed**
- **Quick attainment of ultimate vacuum pressure**
- **Air-cooled and water cooled diffusion pump options**
- **Manual and electro-pneumatic options for opening high vacuum valve**

DP oil diffusion pump systems are used to economically generate high vacuum to $1x10^{-6}$ mbar ($7.5 x10^{-7}$ torr). The system consists of an oil diffusion pump backed by oil sealed rotary vane pump, MRV100 high vacuum gauge, high vacuum valve, backing valve, connecting tubing, charge of silicone oil for diffusion pump, charge of oil for the backing pump, and cables/plugs. All components are mounted on a trolley with wheels. Both air cooling and water cooled diffusion pump systems are available.

The backing valve is part of the by-pass line to allow initial evacuation of vacuum chamber without air from chamber passing through the diffusion pump. The high vacuum valve is located at the inlet of the diffusion pump and must be opened slowly to prevent the pressure in the exhaust of the oil diffusion pump from rising too quickly.

Two options of high vacuum valve are available – manual and electro-pneumatic – in DP systems. The high vacuum gauge tube from the MRV100 high vacuum gauge monitors the pressure at the inlet of the diffusion pump. With a electro-pneumatic backing valve system, the MRV100 vacuum gauge sends a signal to the electro-pneumatic valve to slowly open when set pressure is reached. Manual high vacuum valve type systems require operator to open up slowly the high vacuum valve.

The oil diffusion pump has no moving parts. Within the diffusion pump is a stationary multi-stage jet assembly. Hot oil vapor passing thru the jet assembly creates the pumping action. When the oil is boiled below the multi-jet assembly, a stream of silicone oil molecules is ejected thru these jets at supersonic speeds. Gas molecules are hit by this supersonic jet stream. The oil jet with gas molecules hits the outer cooled shell of the oil diffusion pump. The oil is condensed and falls down to the boiler carrying with it the gas molecules. The rotary vane pump removes these compressed gas molecules at the exhaust port of the diffusion pump. This cyclic process creates the pumping action of an oil diffusion pump.

| Specifications | | | | | |
|---|---|---|---|---|---|
| **Model** | **DP 25L/4DM** | **DP 63/4DM** | **DP 100/8DM** | **DP 63/4DP** | **DP 100/8DP** |
| Backing pump displacement | DN 40 KF | DN 40 CF | DN 63 ISO-K | DN 63 CF | DN 63 ISO-K |
| m3/hr(l/min.) @50Hz | 4.6(77) | 4.6(77) | 7.2(120) | 4.6(77) | 7.2(120) |
| cfm(l/min.) @60Hz | 3.2(92) | 3.2(92) | 5.1(143) | 3.2(92) | 5.1(143) |
| Pumping speed for air, l/s | 15 | 110 | 210 | 110 | 210 |
| Ultimate pressure, mbar | $1x10^{-6}$ | $1x10^{-6}$ | $1x10^{-6}$ | $1x10^{-6}$ | $1x10^{-6}$ |
| Inlet connection flange | DN 25 KF | DN 63 ISO-K | DN 100 ISO-K | DN 63 ISO-K | DN 100 ISO-K |
| Cooling method | Air | Water | Water | Water | Water |
| Cooling water consumption, l/min | N/A | 0.7 | 1.0 | 0.7 | 1.0 |
| Oil filling (oil diffusion pump), ml | 30 | 55 | 100 | 55 | 100 |
| Valve type | Manual | Manual | Manual | Electro-pneumatic | Electro-pneumatic |
| Power, W | 650 | 800 | 1000 | 800 | 1000 |
| Dimensions, in.(cm) | 19.7x18.9x31.3 (50x48x80) | 19.7x18.9x27.3 (50x48x69) | 19.7x18.9x27.3 (50x48x69) | 19.7x18.9x27.3 (50x48x69) | 19.7x18.9x27.3 (50x48x69) |
| Weight, lbs.(kg) | 55(25) | 63.8(29) | 81.4(37) | 68(30) | 89.1(40.5) |
| Shipping dimensions, mm | | | | | |
| Shipping weight, lbs.(kg) | | | | | |
| Ordering information | | | | | |
| 230V, 50Hz | 100221 | 100326 | 100327 | 100328 | 100329 |
| 115V, 50/60Hz | 100221-01 | 100326-01 | 100327-01 | -- | -- |

Note: Replacement silicone XT704 oil used in diffusion pump, CAT. No. 800106 (0.5 liter).