

Varian, Inc.
Vacuum Technologies

High Performance
IDP-3 Dry Scroll Pump



Inspiring Excellence



New High Performance IDP-3 Dry Scroll Pump

A Simple,
Innovative Solution
to a Difficult Problem

The IDP-3 is a compact, high performance dry pump that provides affordable oil-free vacuum and easy system integration, and is suitable for a wide variety of applications. The IDP-3 employs an innovative hermetic design in which the motor and bearings are outside the vacuum

space, allowing full isolation of all pumped gases. Delivering a robust pumping speed of 60 l/m and a very low base pressure of less than 250 milliTor, the IDP-3 provides all the advantages of Varian's patented scroll pump technology in a compact, lightweight, cost-effective package.

IEC-320 Power
Connector and Switch



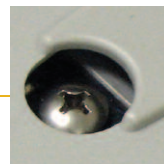
Hermetically Sealed,
Fully Isolated Bearing



Scroll



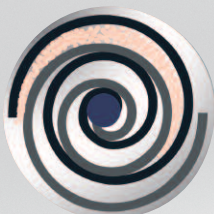
Gas Ballast



Removable Polypropylene
Exhaust Fitting



Scroll Technology



Gas enters scroll set



Gas is displaced and...



...compressed toward
center hub



Gas exhausted
at center hub

The IDP-3 creates vacuum using a simple dual scroll mechanism in which one of the nested scrolls orbits about the other, creating moving zones of captured gas. Gas enters the scroll set at the perimeter and is displaced and compressed toward the center hub where it is exhausted.

The IDP's uncomplicated dual scroll design offers many benefits including lower noise and vibration levels, simple and infrequent maintenance requirements, and the elimination of catastrophic failure modes.

Features and Benefits



Powerful – High Performance

The IDP-3 dry scroll pump delivers better vacuum performance than other pumps of similar size.

- 60 l/m pumping speed provides rapid pumpdown and high gas throughput
- Very low base pressure of less than 250 milliTorr ensures optimal performance of turbo pumps and increases system reliability



Oil-free – Affordable Dry Vacuum

Convenient, low maintenance pump provides affordable dry vacuum for research and industrial applications alike.

- IDP-3 eliminates hydrocarbon contamination in the vacuum system
- No oil leaks into the work environment



Innovative – Hermetic Design

The IDP-3 fully isolates bearings and motor from vacuum space and provides containment of all pumped gases.

- Allows recovery of precious process gases
- Prevents leakage of toxic gases



Economical – Low Cost of Ownership

Robust, efficient scroll pump technology has a long service interval and a very low cost of ownership.

- Maintenance time and costs of oil topping, replacement and disposal are eliminated
- Simple tip seal or module exchange requires less than 30 minutes



System Friendly – Easy to Integrate

With a small footprint, low weight, and low power requirements, the IDP-3 is easy to accommodate in system design.

- IDP-3 places little additional burden on system utilities and is suitable for use inside cabinet enclosures
- At only 21 pounds, the IDP-3 is lighter than mechanical rotary vane and membrane pumps of similar pumping speed
- Lower noise and vibration provide a quieter, more pleasant work environment

IDP-3 Scroll Pump vs. Rotary Vane

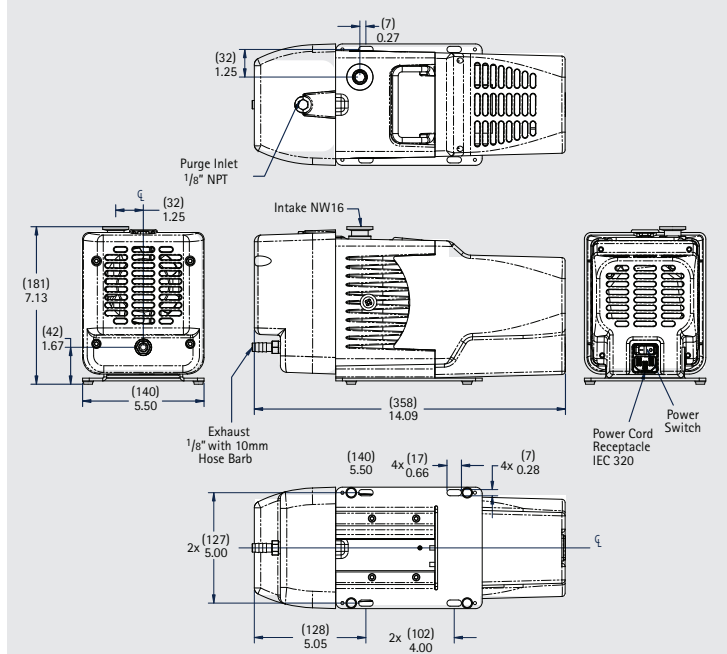
- > The oil-free technology of the IDP-3 eliminates the possibility of oil contamination in the vacuum system or of oil spills or leaks into the work environment.
- > Maintenance of the IDP-3 Dry Scroll Pump requires only a simple, infrequent tip seal change as compared to oil checks, changes, and disposal.
- > The IDP-3 Dry Scroll Pump does not depend on the presence of sufficient oil to prevent seizing.

IDP-3 Scroll Pump vs. Membrane Diaphragm Pumps

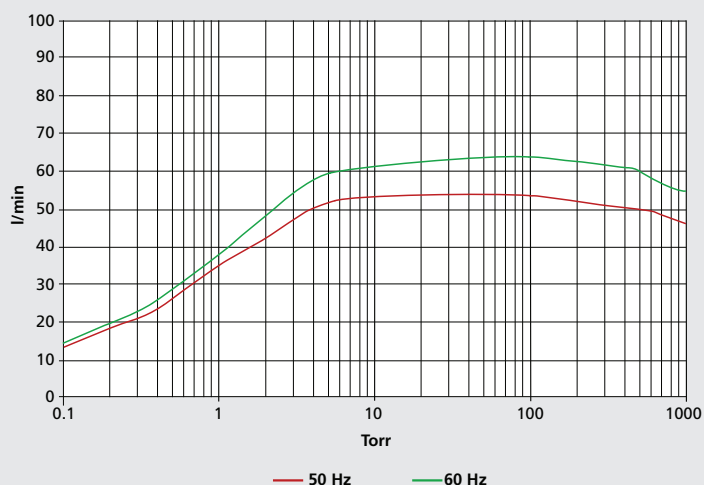
- > IDP-3 measures a diminutive 358 x 181 x 140 mm (14 x 7 x 6 in.), yet provides base pressure of less than 250 milliTorr – almost four times lower than equivalently sized membrane/diaphragm pump.
- > In turbo pump applications, the pump's lower base pressure reduces power consumption and bearing temperature, thereby increasing reliability of the system.
- > IDP-3 avoids catastrophic failure mechanisms. A diaphragm pumped system may suffer sudden, rapid loss of pressure when a membrane ruptures.
- > IDP-3 produces much lower noise and vibration levels than diaphragm pumps, creating a quiet, pleasant work environment, and much lower contribution to system noise and vibration.

Technical Specifications

OUTLINE DRAWING



PUMPING SPEED



TECHNICAL SPECIFICATIONS

Peak pumping speed	60 Hz – 60 l/m, 3.6 m ³ /hr, 2.1 cfm 50 Hz – 50 l/m, 3.0 m ³ /hr, 1.8 cfm
Ultimate pressure	2.5 x 10 ⁻¹ torr (3.3 x 10 ⁻¹ mbar)
Maximum inlet pressure	1 atmosphere (0 psig)
Maximum outlet pressure	1.4 atmospheres (6.5 psig)
Inlet connection	NW16 KF flange
Exhaust connection	Female 1/4" NPT (10 mm hose barb provided)
Exhaust connection adapter	NW16 KF adapter provided
Gas ballast connection	Female 1/8" NPT
Ambient operating temperature	5 to 45°C (41 to 113°F)
Storage temperature	-20 to 60 °C (-4 to 140°F)
Motor rating	0.16 horsepower (0.12 kW)
Supply power	1 phase – 100 VAC, 50-60 Hz, 115 VAC, 60 Hz 220-240 VAC, 50-60 Hz
Motor thermal protection	Automatic
Rotation speed	3200 RPM at 60 Hz 2600 RPM at 50 Hz
Cooling	Air-cooled
Weight	9.5 kg (21 lbs.)
Shipping weight	10.5 kg (23 lbs.)
Restrictions	No corrosive, explosive, or particulate-forming gases
Leak rate	<1 x 10 ⁻⁶ std-cc/sec helium
Noise level (per ISO 11201)	55 dB(A)
Vibration level at inlet (per ISO 10816-1)	1.5 mm/sec
Compliances	Conforms with CE, CSA, CSA/CUS, Semi S2-703, and RoHS

ORDERING INFORMATION

Description	Part Number
IDP-3 dry vacuum pump, 1 Ph, 220 VAC, 50/60 Hz	IDP3A01
IDP-3 dry vacuum pump, 1 Ph, 115 VAC, 60 Hz	IDP3B01
IDP-3 dry vacuum pump, 1 Ph, 100 VAC, 50/60 Hz	IDP3C01
IDP-3 dry vacuum pump with optional hour meter, 1 Ph, 220 VAC, 50/60 Hz	IDP3A11
IDP-3 dry vacuum pump with optional hour meter, 1 Ph, 115 VAC, 60 Hz	IDP3B11
IDP-3 dry vacuum pump with optional hour meter, 1 Ph, 100 VAC, 50/60 Hz	IDP3C11
Line power cords:	
Power Cord Selection	
Europe, 10A/220-230 VAC, 2.5 Meter	656494220
Denmark, 10A/220-230 VAC, 2.5 Meter	656494225
Switzerland, 10A/230 VAC, 2.5 Meter	656494235
UK/Ireland, 13A/230 VAC, 2.5 Meter	656494250
India, 10A/220-250 VAC, 2.5 Meter	656494245
Israel, 10A/230 VAC, 2.5 Meter	656494230
Japan, 12A/100 VAC, 2.3 Meter	656494240
North America, 15A/125 VAC, 2.0 Meter	656458203
North America, 10A/230 VAC, 2.5 Meter	656494255
Tip seal kit	IDP3TS
Replacement module	IDP3

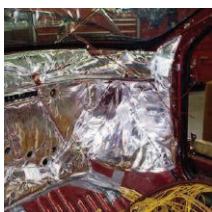
Applications



Analytical Instrumentation

Monitoring and maintenance of oil sealed rotary vane vacuum pumps and the disposal of oil are a nuisance in a laboratory environment. The high capacity IDP3 provides the pumping speed and base pressure required for your instruments that is simply not available with other types of dry pump technologies and allows the elimination of oil from your laboratory.

- GC/MS
- Residual gas analyzers
- Load locks for mass spectrometers
- Electron microscopes
- Surface area analyzers
- EM Sample prep coaters



Semiconductor Fabrication

The hermetic design of the IDP-3 ensures against gas leakage into the environment, essential for evacuation and cycle purging of gas transfer lines and gas panels in wafer fabs. Its low base pressure eliminates 99.9% of the volume gas on a single pumpdown allowing reductions in the number of purge/vent cycles to maintain ultra-pure gases.

- Gas panels
- Gas delivery systems
- Double wall containment vessels



High Energy Physics

Chamber evacuation and backing of turbo pumps on beam lines are just some of the applications that benefit from the clean, dry pump technology of the IDP-3. Its compact, rugged, high performance design makes it a superior choice over membrane pumps, and the 55 dBA noise spec makes it virtually unnoticeable when working around it.

- Accelerators
- Beam lines
- Synchrotrons



Industrial processing

Cleanliness of vacuum is critical for many precision components such as optics, lasers, and electron devices. With its hermetically sealed design and all bearings outside the vacuum space, the IDP3 is the ideal dry pump to provide clean vacuum. Its low 250 milliTorr base pressure and high pumping speed makes it a superior choice over membrane pumps.

- Laser evacuation
- Cryogenic dewars
- Glove boxes
- Gas recovery and recirculation
- Cryopump roughing
- Tube processing
- Vacuum chucks



General Research & Development

A cost effective solution for clean vacuum when fast pumpdown times are desired. The IDP-3 outperforms other dry technologies in having higher retained pumping speed both at high pressure and at base vacuum.

- Experimental chambers
- Sample prep systems
- Surface analysis systems
- Backing turbo pump on beam lines

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