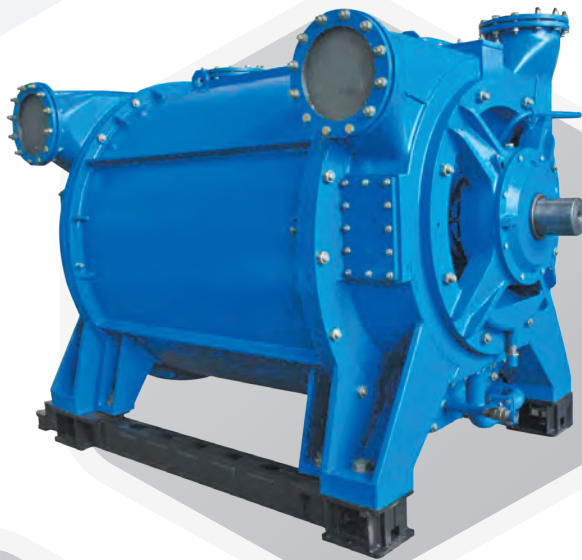




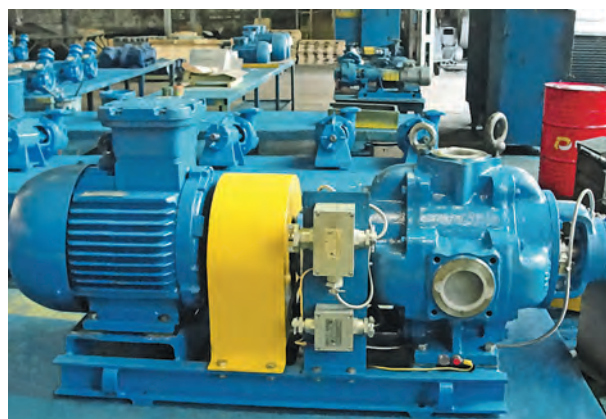
Engineering Flow Solutions

LIQUID RING VACUUM PUMPS VVN



Liquid Ring Vacuum Pumps

VVN



DESCRIPTION

The VVN series liquid ring vacuum pumps are intended for handling air, non-aggressive and inert gases as well as gas-vapor mixtures, preliminary cleaned from mechanical impurities and the most part of the liquid phase. The pumps do not require complete gas treatment off the liquid phase and allow its presence in the pumped gas.

The pump models VVN1-1.5 and 2VVN1-0.8 are manufactured as the monoblock versions close-coupled with the electric motor.

The models VVN1-3-E, VVN1-6-E, VVN1-12-E, 2VVN1-0.8-E are also available as the explosion-proof versions.

The VVN pumps are produced by the leading pump manufacturing companies of HMS Group: HMS Livgidromash (Russia) and Nasosenergomash (Ukraine).

APPLICATION

Pumps of the VVN series are widely applicable in various industries for handling gases and vapors for filtration under vacuum, in degassing systems, vacuum condensers and driers, evaporation, rectification, condensation, crystallization, concentration, sublimation, and other processes.

TECHNICAL DATA

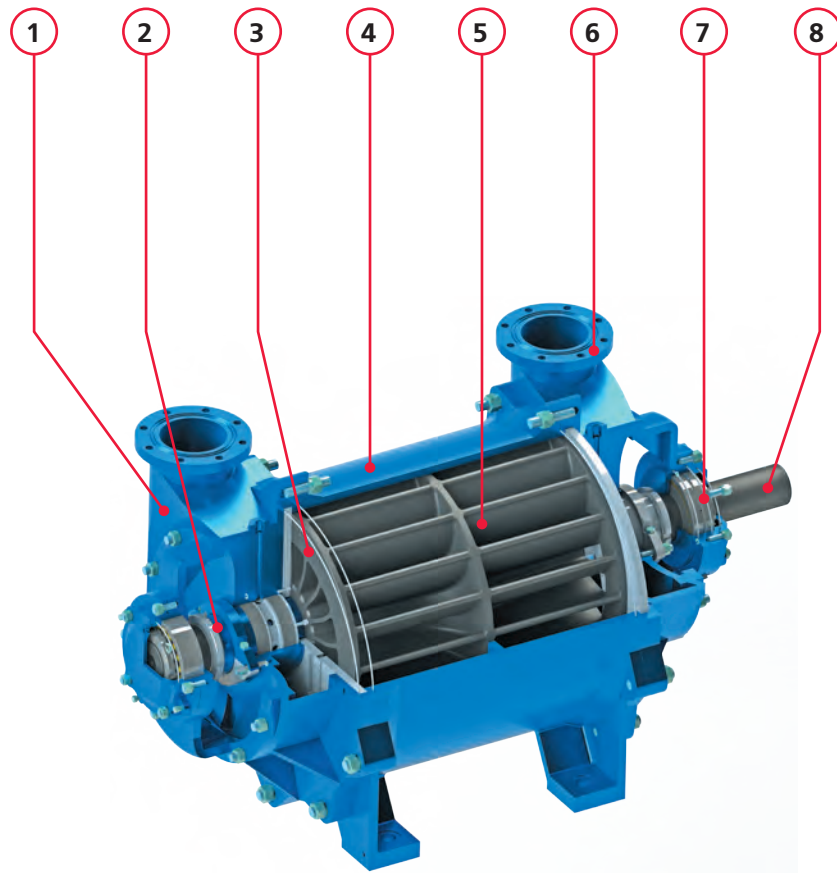
Capacity	up to 19 200 m ³ /h
Vacuum	up to 60 / 80 A %
Suction pressure	0.02 - 0.04 bar
Operation pressure	200 / 400 millibar (absolute)
Drive power	up to 630 kW
Power supply	220 / 380 / 6 000 V

Materials

Parts	Material options
Pump Casing	Grey Cast Iron / Steel A352GrLCC, J02503/J02505 / Steel X10CrNiTi18-9 or Steel 321
Casing covers	Grey Cast Iron / Steel A352GrLCC, J02503/J02505 / Steel X10CrNiTi18-9 or Steel 321
Impeller	Grey Cast Iron / Steel A352GrLCC, J02503/J02505 / Steel X10CrNiTi18-9 or Steel 321
Guide plate	Carbon Steel 1020, S20C and similar / Steel 321 or X10CrNiTi18-9 / Bronze
Shaft	Carbon Steel 1020, S20C and similar / Steel 431 or X20CrNi72

* Other construction materials are available in accordance with customer requirements. Some limitation in material options may apply.

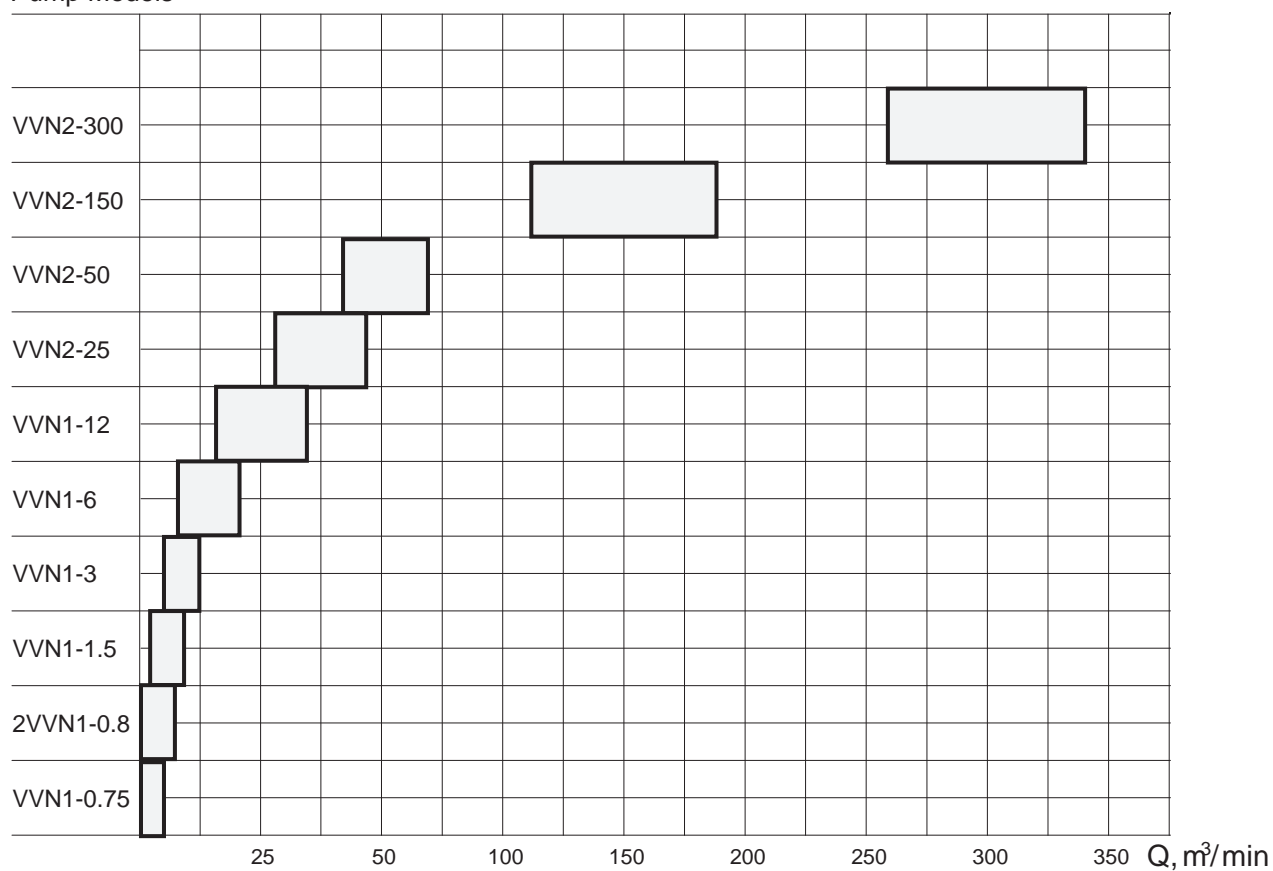
Design Features & Advantages



1. Casing covers (side lids) are made by casting of grey cast iron or construction steel. The die cast covers made of corrosion-resistant steel are also available as an option.
 2. The seal chambers allow installation of both gland seal with expanded graphite packing or single/dual mechanical seal with API 682 piping plans.
 3. High-strength guide plates are available in bronze, mild steel or stainless steel versions.
 4. The casing is made of cast iron with subsequent machining. The steel welded casings are also available by customer's request.
 5. The impeller is dynamically balanced to ensure low rotor vibration that increases the operational lifetime of bearings and seals.
 6. The nozzles flanges can be manufactured in accordance with the requirements of ISO, DIN, ASME, ANSI standards.
 7. The pumps are supplied with standard or heavy-duty bearings with at least 100 000 hours operational lifetime. Grease or oil bath lubrication with oil cooler is optionally provided.
 8. A rigid high-strength shaft provides minimal vibration and runout to increase operational lifetime of seals and bearings. A stainless steel shaft with a coating and complete isolation from the pumped fluid is optionally provided.
- Pumps models VVN1-3-E, VVN1-6-E, VVN1-12-E, 2VVN1-0.8-E are provided in high-grade explosion-proof version accordingly to the Russian state safety standards, with temperature resistance class up to +200 °C.
- The equipment is certified for application in explosion hazard zones in accordance with relevant industry requirements approved in the Russian Federation. Other countries may require specific certification procedures or harmonization of the applicable standards.

Performance Range

Pump Models



HMS Group Moscow International Sales Department

Phone: + 7 (495) 730 6601

E-mail: export@hms.ru

www.grouphms.com

www.hms.biz

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