

Sealless Technology
Unlimited



PRODUCT OVERVIEW

Worldwide convincing pump technology
at the highest level of security

CHEMICAL | OIL & GAS | REFRIGERATION | POWER GENERATION

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 - Canned motor pumps
 - Magnetically coupled pumps
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Pump technology has been our passion and inspiration for more than 150 years!



Overview

Canned motor pumps

intended for use in potentially explosive atmospheres

Performance

Capacity [Q]:	max. 1600 m ³ /h
Head [H]:	max. 2300 m
Conveyed material temperature [t]:	-160°C to +450°C
Operating pressure:	max. PN 1200
Power:	1 kW to 690 kW

Canned motor pumps

intended for use outside potentially explosive atmospheres

Performance

Capacity [Q]:	max. 85 m ³ /h
Head [H]:	max. 190 m
Conveyed material temperature [t]:	-80°C to +30°C
Operating pressure:	max. PN 52
Power:	1 kW to 25 kW

Magnetically coupled pumps

intended for use in potentially explosive atmospheres

Performance

Capacity [Q]:	max. 700 m ³ /h
Head [H]:	max. 270 m
Conveyed material temperature [t]:	-40°C to +350°C
Operating pressure:	max. PN 25
Power:	max. 70 kW

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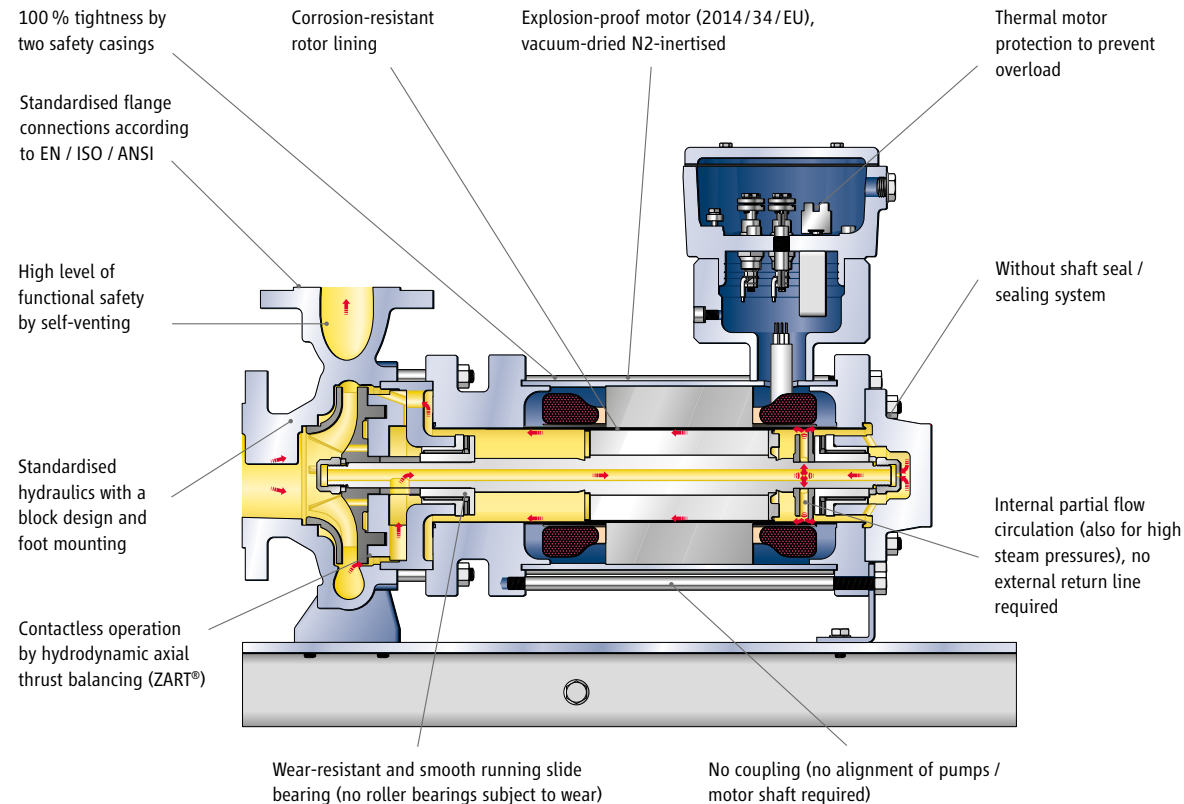
Contact



Description of the canned motor pump

Canned motor pumps are characterised by a compact, integrated unit without mechanical seal. The motor and pump form a unit with the rotor and the impeller fitted onto a common shaft. The rotor is guided by two identical, medium-lubricated slide bearings. The stator on the drive motor is separated from the rotor space using a thin stator liner. The rotor cavity itself, along with the hydraulic section of the pump, create a combined cavity which needs to be filled with pumping medium before commissioning.

The heat loss from the motor is carried off by a partial flow between the rotor and the stator. At the same time, the partial flow lubricates both slide bearings in the rotor cavity. Both the can, which is a hermetically sealed component, and the motor casing are used as a safety containment. Because of that, canned motor pumps always ensure highest safety level when conveying dangerous, toxic, explosive and valuable media.



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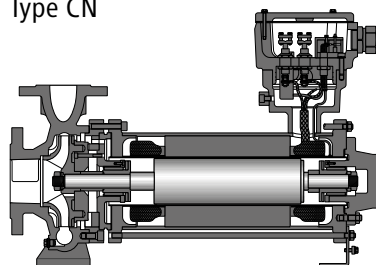
Performance

Capacity [Q]:	max. 1600 m ³ /h
Head [H]:	max. 240 m
Conveyed material temperature [t]:	-120 °C to +120 °C
Operating pressure:	PN 16 to PN 50

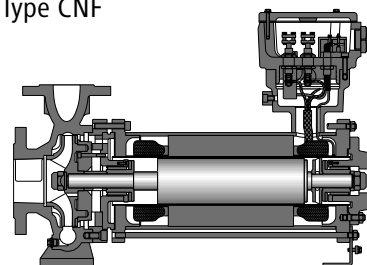
Model / design

Horizontal, sealless spiral housing pumps in process design with completely closed canned motor with radial impeller, single-stage, single-flow. The connection measurements of the housing comply with EN 22 858 / ISO 2858.

Type CN



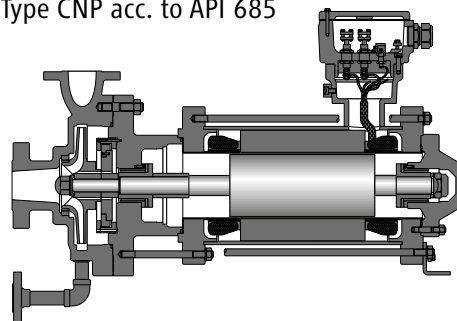
Type CNF



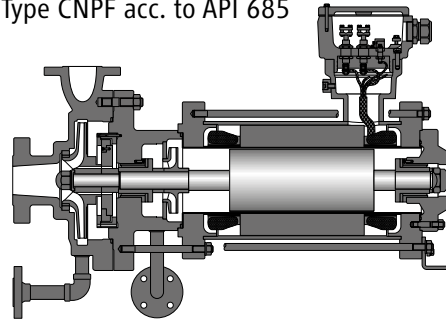
Model / design

Horizontal, sealless spiral housing pumps in process design with completely closed canned motor with radial impeller, single-stage, single-flow. Design according to API 685.

Type CNP acc. to API 685



Type CNPF acc. to API 685



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Standard applications

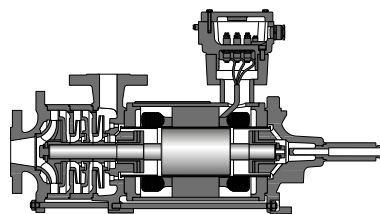
Performance

Capacity [Q]:	max. 350 m ³ /h
Head [H]:	max. 1200 m
Conveyed material temperature [t]:	-120 °C to +100 °C
Operating pressure:	PN 16 to PN 100

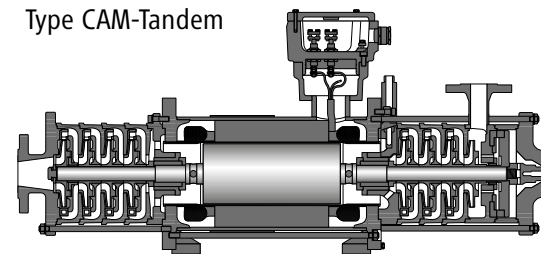
Model / design

Horizontal, sealless section-type pumps with completely closed canned motor, with radial impellers, multi-stage, single-flow.

Type CAM



Type CAM-Tandem



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Thermal applications

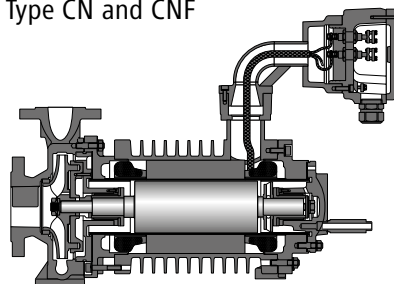
Performance

Capacity [Q]:	max. 1600 m ³ /h
Head [H]:	max. 240 m
Conveyed material temperature [t]:	max. +425 °C
Operating pressure:	PN 16 to PN 50

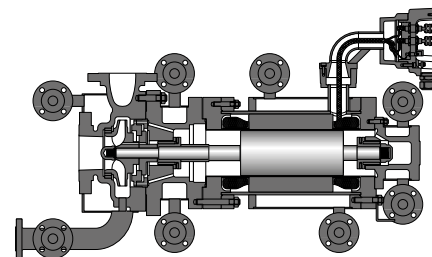
Model / design

Horizontal, sealless spiral housing pumps in process design with completely closed canned motor with radial impeller, single-stage, single-flow. The connection measurements of the housing comply with EN 22 858 / ISO 2858.

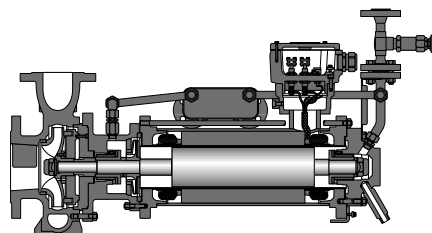
Type CN and CNF



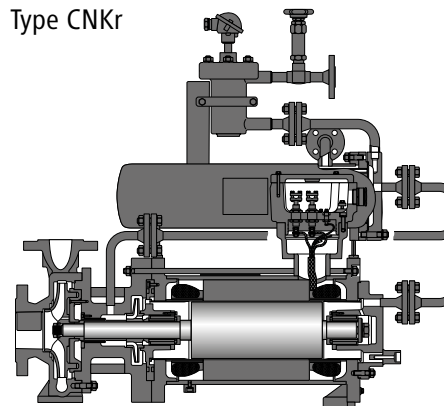
Type CN and CNF



Type CNKp



Type CNKr



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Thermal applications

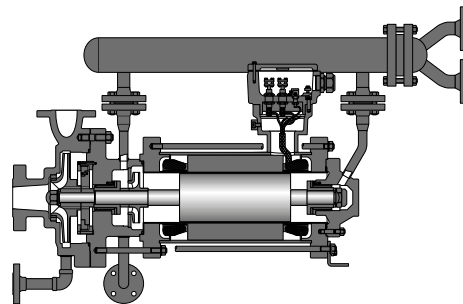
Performance

Capacity [Q]:	max. 1600 m ³ /h
Head [H]:	max. 240 m
Conveyed material temperature [t]:	max. +425 °C
Operating pressure:	PN 16 to PN 50

Model / design

Horizontal, sealless spiral housing pumps in process design with completely closed canned motor with radial impeller, single-stage, single-flow. Design according to API 685.

Type CNPKf acc. to API 685



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Thermal applications

Performance

Capacity [Q]: max. 350 m³/h

Head [H]: max. 1200 m

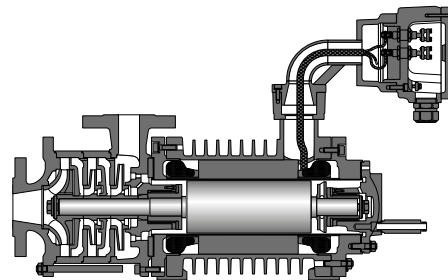
Conveyed material temperature [t]: max. +400 °C

Operating pressure: PN 16 to PN 100

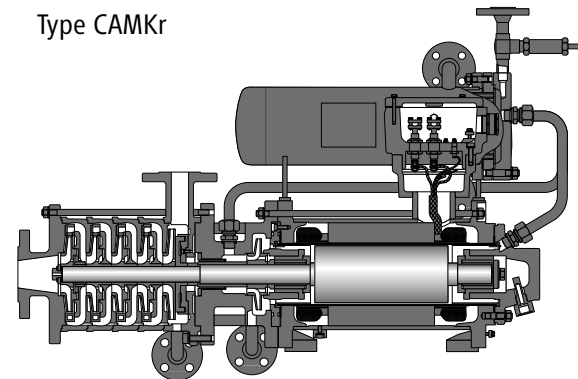
Model / design

Horizontal, sealless section-type pumps with completely closed canned motor, with radial impellers, multi-stage, single-flow.

Type CAM



Type CAMKr



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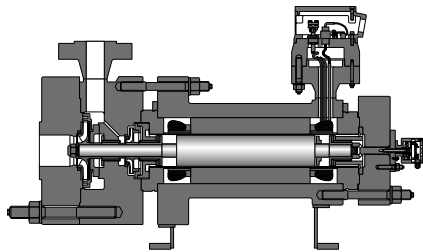
Contact



High pressure applications

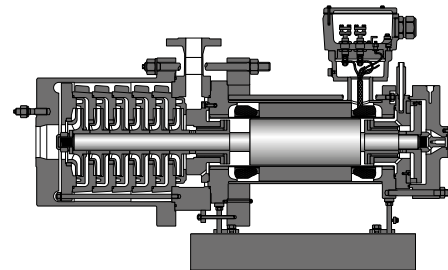
Performance

Capacity [Q]:	max. 1600 m ³ /h
Head [H]:	max. 1200 m
Conveyed material temperature [t]:	-120 °C to +360 °C
Operating pressure:	max. PN 1200



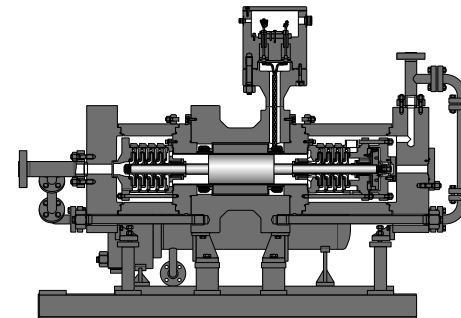
Type CNH, CNFH and CNKH

- single-stage design
- suitable for high system pressure



Type CAMH

- multistage design
- with pressure barrel for high system pressure



Type CAMH-Tandem

- multistage, in tandem design
- with pressure barrel for high system pressure

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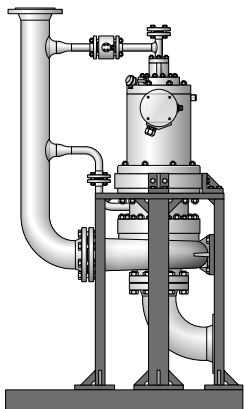
Contact



Vertical design

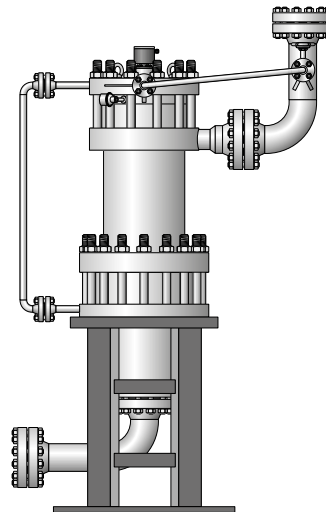
Performance

Capacity [Q]:	max. 1600 m ³ /h
Head [H]:	max. 2300 m
Conveyed material temperature [t]:	-120°C to +360°C
Operating pressure:	PN 16 to PN 150



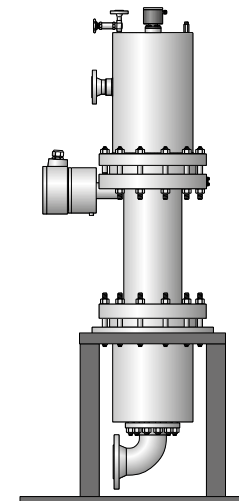
Type CNV and CNFV

- single-stage design
- suitable for pressure gases / liquefied gases



Type CAMTV

- multistage design
- with pressure barrel for high system pressure
- suitable for pressure gases / liquefied gases



Type CAMTV-Tandem

- multistage design
- tandem design
- with pressure barrel for high system pressure
- suitable for pressure gases / liquefied gases

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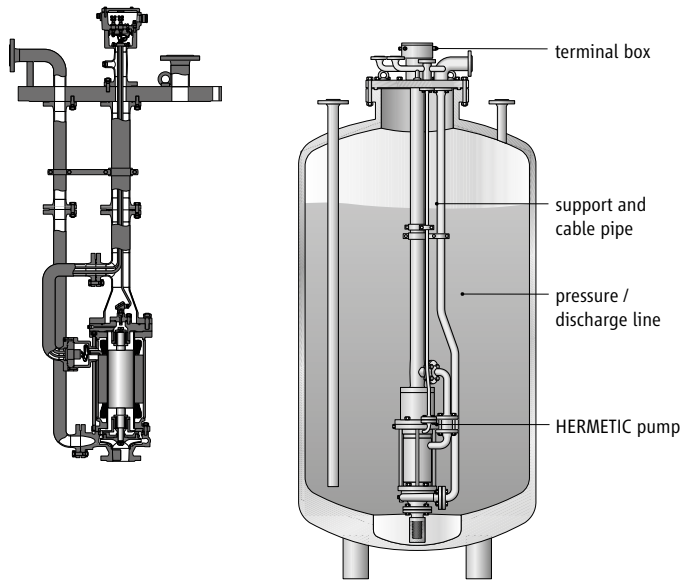


Submerged design

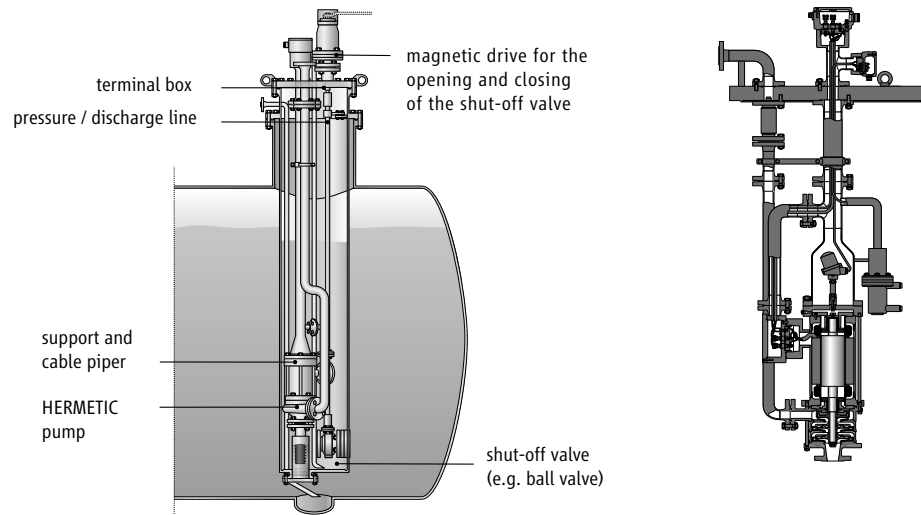
Performance

Capacity [Q]:	max. 1600 m ³ /h
Head [H]:	max. 1200 m
Conveyed material temperature [t]:	-160 °C to +250 °C
Operating pressure:	PN 16 to PN 100

Type TCN



Type TCAM



- Contents
- Hermetically sealed centrifugal pumps
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- Monitoring equipment
- Contact



Modular configurable canned motor pumps

Performance CN / CNF

Capacity [Q]:	max. 130 m ³ /h
Head [H]:	max. 145 m
Conveyed material temperature [t]:	-40°C to +120°C
Operating pressure:	PN 16 / PN 25
Power:	max. 48 kW

Model / design

Horizontal, sealless spiral housing pumps in process design with completely closed canned motor with radial impeller, single-stage, single-flow. The connection measurements of the housing comply with EN 22 858 / ISO 2858.

ONLINE – pump selection:

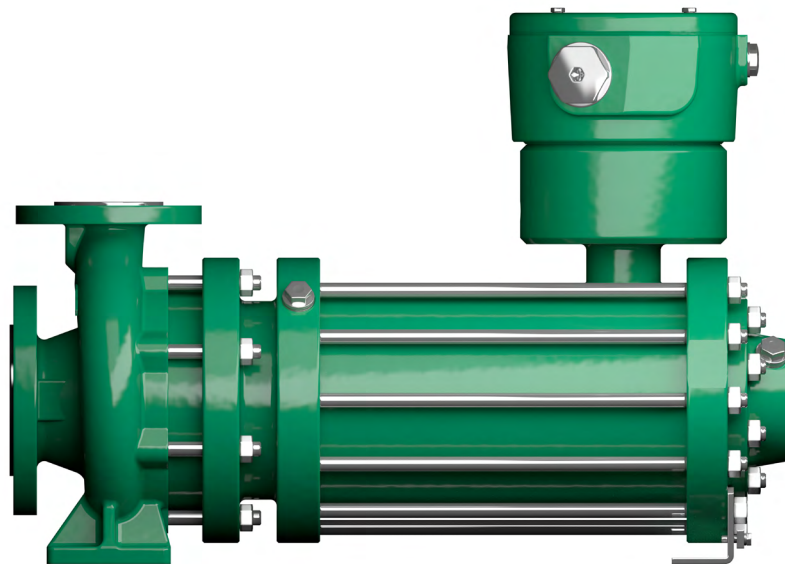
vline.hermetic-tools.de

Canned motor pump type CN

The CN model is a standard design of the HERMETIC canned motor pump and is suitable for conveying all common liquids that are not close to steam pressure (not boiling media).

Canned motor pump type CNF

The CNF model is the version for liquefied gases, boiling media and condensate. With an integrated auxiliary impeller and internal fluid return, it is suitable for conveying liquids close to steam pressure.



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Modular configurable canned motor pumps

Performance CAM

Capacity [Q]:	max. 40 m ³ /h
Head [H]:	max. 295 m
Conveyed material temperature [t]:	-40°C to +120°C
Operating pressure:	PN 40
Power:	max. 48 kW

Model / design

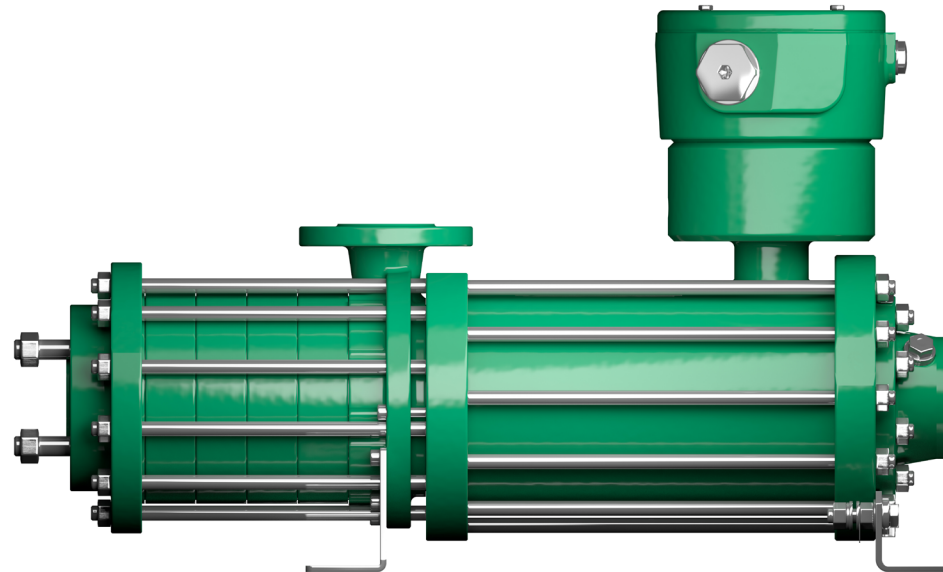
Horizontal, sealless section-type pumps with completely closed canned motor, with radial impellers, multi-stage, single-flow.

ONLINE – pump selection:

vline.hermetic-tools.de

Canned motor pump type CAM

This pump is suitable for conveying liquids close to steam pressure and also for standard applications.



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Canned motor pumps in refrigeration applications

Performance CN / CNF

Capacity [Q]:	max. 85 m ³ /h
Head [H]:	max. 90 m
Conveyed material temperature [t]:	-50°C to +30°C
Operating pressure:	PN 25 / PN 40
Power:	3 kW to 15.7 kW

Model / design

Horizontal, sealless spiral housing pumps in process design with completely closed canned motor with radial impeller, single-stage, single-flow. The connection measurements of the housing comply with EN 22 858 / ISO 2858.

ONLINE – pump selection:

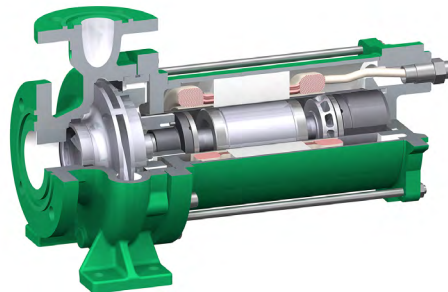
sline.hermetic-tools.de

Canned motor pump type CN

The CN model is a standard design of the HERMETIC canned motor pump and is suitable for conveying all common liquids that are not close to steam pressure (not boiling media).

Canned motor pump type CNF

The CNF model is the version for liquefied gases, boiling media and condensate. With an integrated auxiliary impeller and internal fluid return, it is suitable for conveying liquids close to steam pressure.



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Canned motor pumps in refrigeration applications

Performance CAM

Capacity [Q]:	max. 45 m ³ /h
Head [H]:	max. 190 m
Conveyed material temperature [t]:	-50 °C to +30 °C
Operating pressure:	PN 25 / PN 40 / PN 52
Power:	1 kW to 25 kW

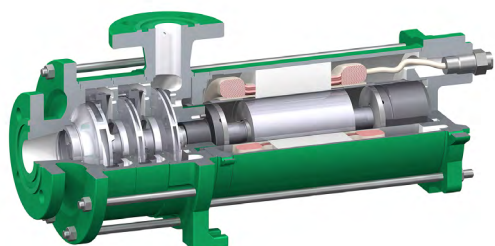
Model / design

Horizontal, sealless section-type pumps with completely closed canned motor, with radial impellers, multi-stage, single-flow.

This pump is suitable for conveying liquids close to steam pressure and also for standard applications.

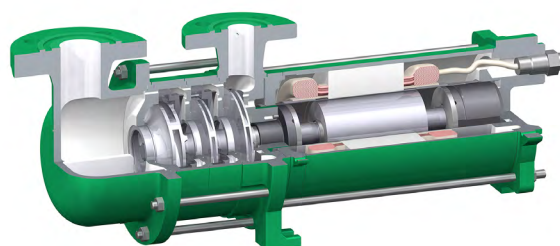
ONLINE – pump selection:

sline.hermetic-tools.de



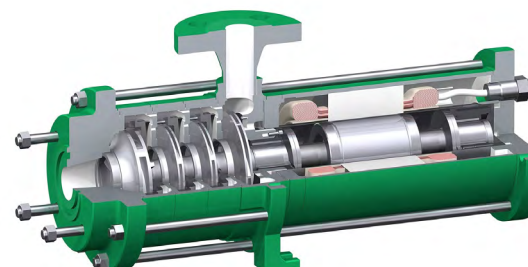
Type CAM

- multistage canned motor pump
- suitable for refrigerants and liquefied gases
- low NPSH values



Type CAMR

- with radial suction for hanging and space-saving installation



Type CAMh

- special high pressure design for CO₂ applications

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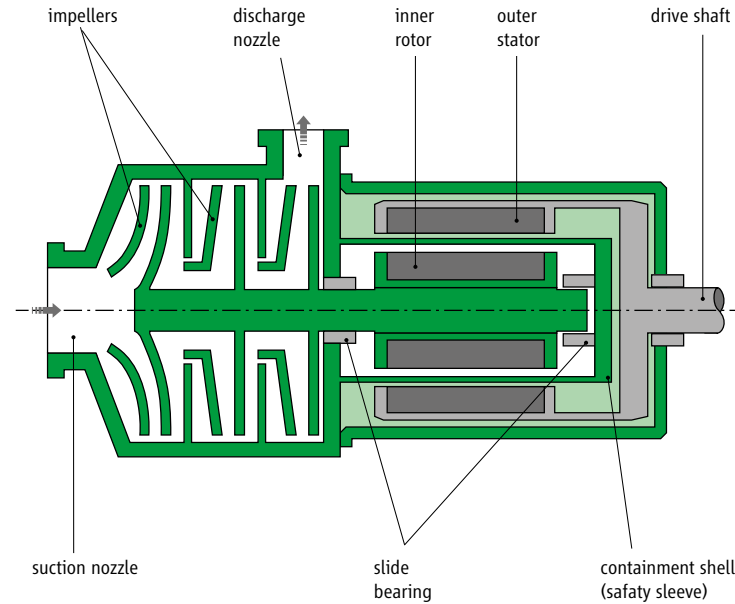
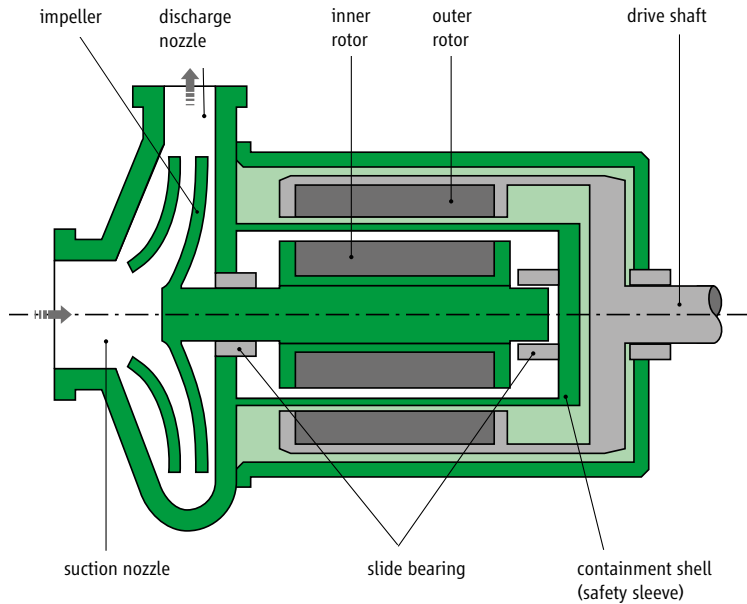
Description of the magnetically coupled pump

Magnetically coupled pumps are a combination of conventional pump hydraulics with a permanent-magnetic drive system and a three-phase motor. This system uses the attraction and repulsion forces between permanent magnets in both coupling halves for contactless and slip-free torque transmission. Between the two coupling halves equipped with

magnets is the can separating the product space from the surroundings. The hermetic leak tightness of the magnetically coupled pumps is ensured by a single-acting safety casing. Magnetically coupled pumps are used particularly for toxic, odour-intensive or otherwise hazardous pumped media as the can shields the medium hermetically from the surroundings.

single-stage magnetically coupled pump

multistage magnetically coupled pump



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Magnetically coupled pumps

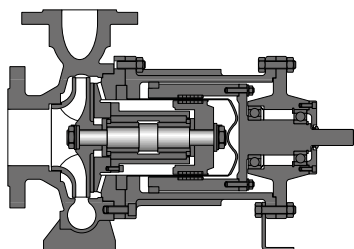
Performance

Capacity [Q]:	max. 700 m ³ /h
Head [H]:	max. 220 m
Conveyed material temperature [t]:	-40°C to +350°C
Operating pressure:	PN 16 / PN 25

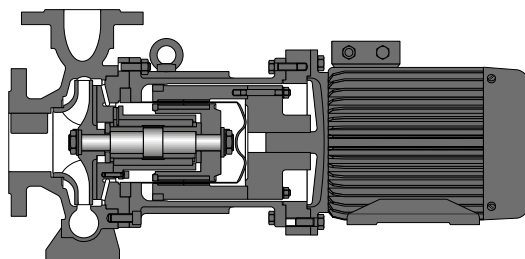
Model / design

The construction and ratings scheme of the pumps conform to EN 22858 / ISO 2858 / ISO 5199 and have a permanent magnetic coupling as an integral component. The required output is transferred to the pump via a conventional standard three phase current motor of type B 3 or B 35 with the corresponding intermediate coupling.

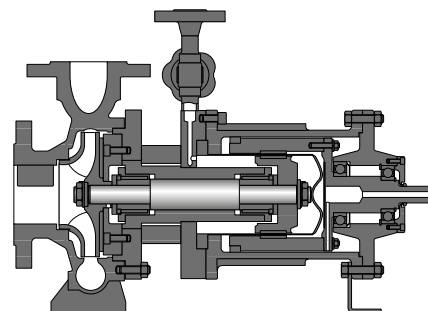
Type MCN



Type MCN close-coupled



Type MCNK



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Magnetically coupled pumps

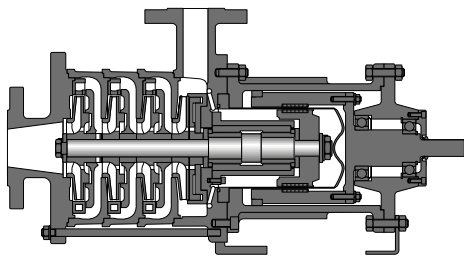
Performance

Capacity [Q]:	max. 45 m ³ /h
Head [H]:	max. 270 m
Conveyed material temperature [t]:	-40°C to +220°C
Operating pressure:	PN 16 / PN 25

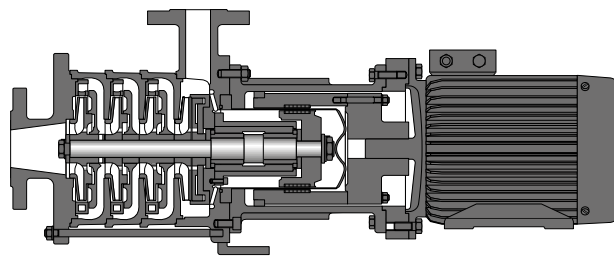
Model / design

The constructional features of these pumps correspond to those of a multistage pump and consist of a permanent magnetic coupling as an integral part. The required output is transferred to the pump via a conventional standard three phase current motor of type B 3 or B 35 with the corresponding intermediate coupling.

Type MCAM



Type MCAM close-coupled



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Description of the liquid ring vacuum pump

A liquid ring vacuum pump is a rotary displacement pump in which an eccentrically mounted rotor with fixed blades pushes a liquid against the wall of the stator (housing). The liquid takes the form of a ring concentric to the stator and forms together with the rotor blades several spaces with changing volumes. The pumps can be manufactured conventionally as well as hermetically sealed with magnetic drive or canned motor drive. The leak tightness of these pumps is particularly important when it comes to pumping highly toxic, carcinogenic or radioactive gases and / or vapours where leakage of operating liquid is unacceptable. The main field of application is in the chemical industry and in process engineering for the extraction and compression of dry and above all moist process vapours.

Description of the Package Unit

Compact, ready-to-connect vacuum systems have proven to be particularly advantageous for research, planning and production. All components, such as vacuum pump / compressor, liquid separator, heat exchanger, gas ejector, valves, fittings, operating and supply lines, etc. housed in a space-saving package unit are easy to operate and maintain. When using sealless vacuum pumps / compressors, these systems are hermetically sealed. The tight ring liquid circuit ensures completely leak-free operation; therefore, no operating liquid can reach either the atmosphere or the disposal facilities. Operating liquid and cooling liquid are in separate circuits to ensure that the cooling liquid is not subject to contamination by process gas components. Aggressive, toxic, foul-smelling gases and vapours can be neutralised using a suitable operating liquid in the ring liquid circuit. Condensable intake mixtures, such as solvent vapours, are condensed through the installation of condensers and immission coolers in the package unit allowing cost-saving recovery of solvent. The hermetically sealed package unit is, therefore, a modern, perfect solution to problems in modern vacuum and process technology characterised by maximum environmental friendliness and cost-effectiveness.

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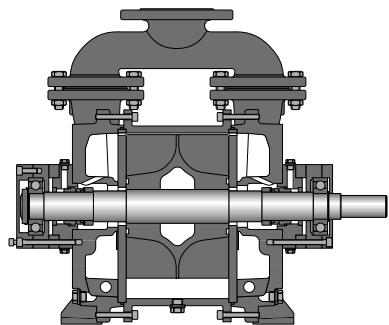
Liquid ring vacuum pumps

Performance

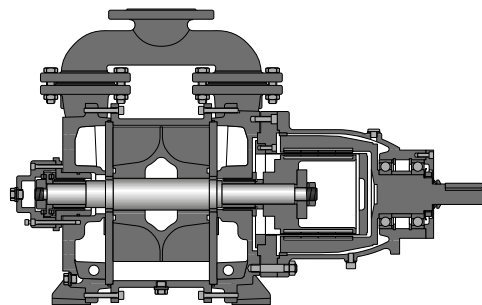
Suction capacity:	max. 3000 m ³ /h
Suction pressure:	min. 33 mbar (abs)
Discharge pressure:	max. 2500 mbar (abs)
Conveyed material temperature [t]:	-20°C to +100°C
Pressure rating:	PN 10

Model / design

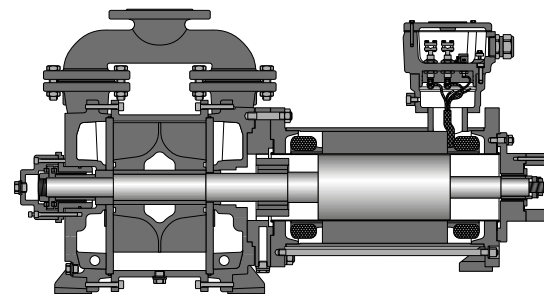
Depending on the application and the conditions of use, liquid ring vacuum pumps are manufactured in a conventional or hermetically sealed design. The design using a magnetic drive or canned motor ensures maintenance-free operation without leakage.



Type LVPG
Mechanical seal design



Type LVPM
Magnetic coupled design



Type LVPH
Canned motor design

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Various vacuum systems

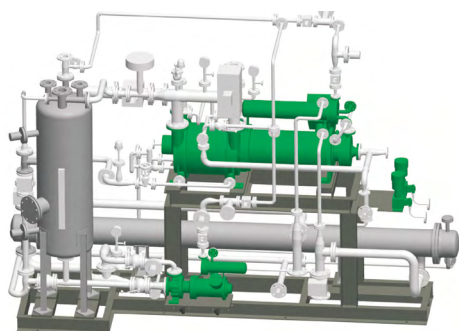
Vacuum package unit type ALVPH 1800

Liquid ring vacuum pump type LVPH 1800 with canned motor, double-flow

- For suction of nitrogen
- Suction temperature approx. 40 to 45 °C
- Pumping capacity 1007 m³/h at 30 mbar
- Compression to 1113 to 1120 mbar

Special features:

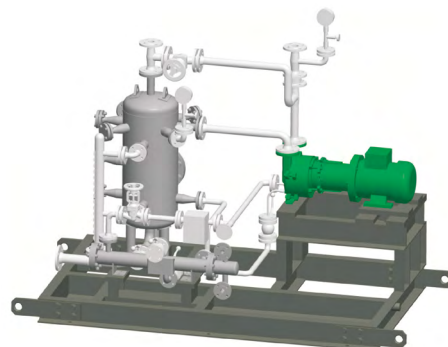
vacuum package unit with integrated canned motor pump type CNK and 2 metering pumps



Vacuum package unit 0PMB 150

Liquid ring vacuum pump type LVPMB 150 with magnetic coupling, close-coupled, single-flow

- For suction of a mixture of:
air, nitrogen, epichlorohydrin and water vapour
- Suction temperature approx. 25 °C
- Pumping capacity 81 m³/h at 106 mbar
- Compression to 1113 mbar



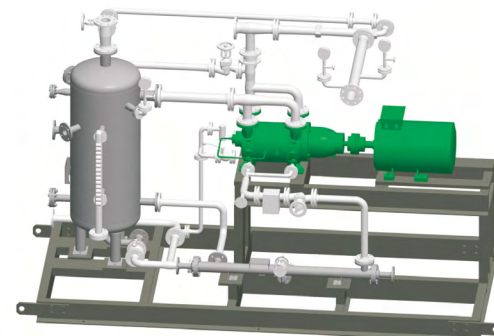
Vacuum package unit type ALVPM 800

Liquid ring vacuum pump type LVPM 800 with magnetic coupling, double-flow

- For suction of a mixture of:
air, nitrogen, epichlorohydrin and water vapour
- Suction temperature approx. 20 °C
- Pumping capacity 280 m³/h at 26 mbar
- Compression to 1113 mbar

Special features:

vacuum package unit with connected gas ejector



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Hermetically sealed centrifugal pumps

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Overview of the safety- and function-related monitoring equipment

Hermetically sealed centrifugal pumps are principally manufactured for use in potentially explosive atmospheres. For this reason the pumps comply with electrical as well as non-electrical explosion protection requirements.



Level monitoring of the pumped liquid for detecting and avoiding dry run

The pump's interior and rotor chamber must be always filled with the pumped liquid for reasons of safety. HERMETIC provides suitable level monitoring equipment for each pump complying with the explosion protection requirements according to directive 2014 / 34 / EU. Level monitoring can be recommended principally for application cases which do not mandatory comply with explosion protection requirements. Level monitoring prevents the pump from running dry and to be affected by major damages such as by destruction of the slide bearings or by exceeding inadmissible high temperatures caused by missing cooling and lubricating flow. In addition the pump can be prevented from cavitation damages by means of level monitoring equipment which are caused by evaporation of boiling liquids in the suction pipe.



Temperature monitoring for detecting and avoiding inadmissible high temperatures in the pump and the motor

Temperature monitoring ensures that the pump is switched off when achieving inadmissible high temperatures. HERMETIC provides suitable temperature monitoring equipment for each pump complying with explosion protection requirements according to directive 2014 / 34 / EU. Monitoring of the liquid temperature allows a reliable control to ensure the operation of the pump within the admissible range and to ensure the internal motor cooling of a canned motor pump. For liquids with a pour point that is higher than the ambient temperature, the liquid temperature monitoring can also be used to prevent the start-up of the pump as long as the maximum admissible viscosity of the liquid is reached.

In order to protect canned motors against inadmissible high temperatures, the winding is equipped either with PTC thermistors or PT100 resistance thermometers.



Rotor position monitoring for detecting and avoiding axial wear

Axial thrust balancing is mainly influenced by the operating method of the pump, plant conditions and various physical properties of the pumped liquid. For an early detection of an imminent malfunction it is recommended to install a rotor position monitoring device. This electronic protection equipment monitors the axial shaft position of the rotor during operation in a hermetically sealed and contact-free way. Combined with the level and temperature monitoring an efficient detection of imminent failures is possible.



Rotation monitoring for detecting and avoiding incorrect phase sequence

The correct rotating direction of hermetically sealed centrifugal pumps with canned motor cannot be checked visually from the outside. Due to a wrong phase sequence in the power line the pump is operated with an incorrect rotating direction without being noticed what might result in considerable damages to the pump. By default, hermetically sealed centrifugal pumps with canned motor are equipped with an electronic rotation monitor in the form of a phase sequence relay.

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Level monitoring of the pumped liquid for detecting and avoiding dry running



Level monitoring by / with:

- KSR magnetic float switch [LS]
- Vibration limit switch [LS]
- Optoelectronic liquid level limit transducer [LS]

Temperature monitoring for detecting and avoiding inadmissible high temperatures in the pump and the motor



Temperature monitoring by / with:

- Resistance thermometer PT100 [TI]
- Thermistor [TS]

Rotor position monitoring for detecting and avoiding axial wear



Rotor position monitoring by / with:

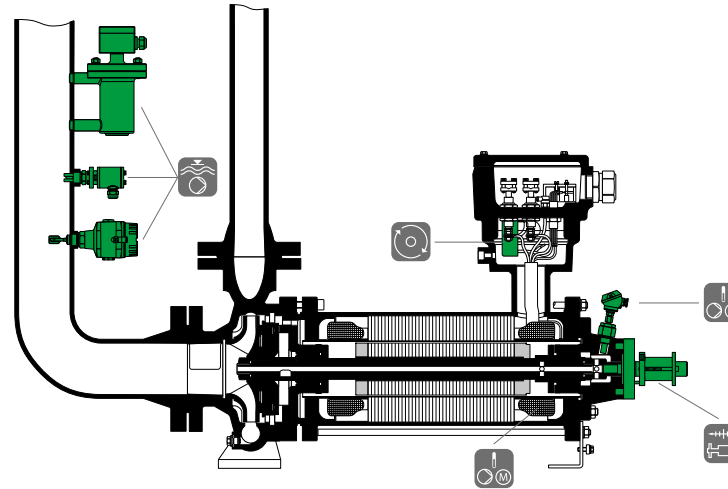
- MAP [GI]

Rotation monitoring for detecting and avoiding incorrect phase sequence



Rotation monitoring by / with:

- ROMi [GS]



Example shown

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PRODUCT OVERVIEW

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sales-support@hermetic-pumpen.com

www.hermetic-pumpen.com

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