PROCESS PUMPS

FOR OIL & GAS, PETROCHEMICAL AND POWER GENERATION

PUMPS

SETTING
INNOVATIVE
STANDARDS

CONTENTS

PROCESS PUMPS FOR OIL & GAS, PETRO-CHEMICAL AND POWER GENERATION

M PUMPS benefit from 40-year experience in designing and manufacturing process pumps.

M PUMPS process application department can provide proposals as well as design and manufacturing of process centrifugal and other rotary pumps, meeting and exceeding the most stringent and demanding international standards and customers' specific requests.

- M PUMPS Process application Department set up:
- Experienced, skilled multilingual application engineers
- Technical department with advanced CAD software and FEM Analysis
- Internal R&D for custom-made pumps requirements
- Assembly department with dedicated team and supervision
- Europe's largest and most fully equipped centrifugal pump testing area
- Experienced engineering team for contractual technical documentation and witnessing
- Post sales assistance with worldwide service (via branch offices or trained partners) and 24-hour spare parts delivery

OH3 API 610 process pumps tested according to ISO 9614-2 . Test facility prepared with soundproofing walls.

All pumps manufactured by M Pumps are designed in full accordance with existing internetional standard.

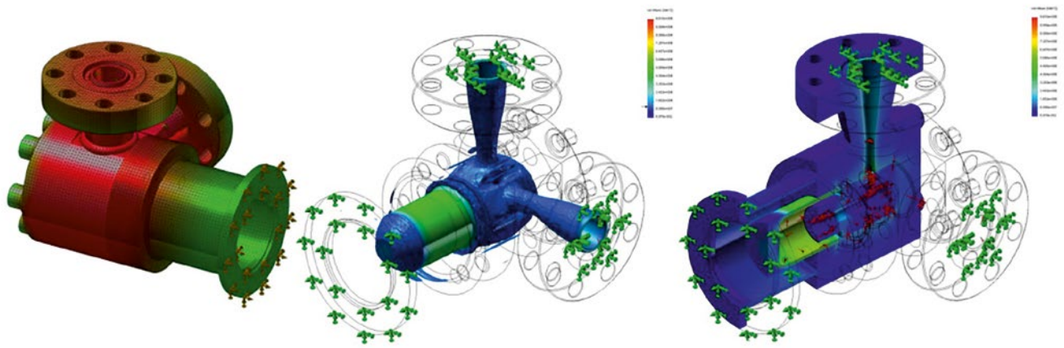
ISO 9001/2008 certification ensures compliance with highgest quality standards.

ISO 14001-2004 certification proves M Pumps absolute care for the environment.

OH2 API 685 centrifugal pump assembly phase trained workmen follow detailed instruction

CMM machine quality control activity prior to machining completion.

Each process pump undergoes detailed quality control plan of every component.



Full FEM analisys (stress, strain, displacement, heat transfer and temperature profile) of high system pressure/temperature pump (1050 bar - 280°C)

MAGNETIC DRIVE PUMPS

A magnetic drive pump uses a magnetic field to create the rotation of the impeller (or any other device utilized to displace fluid). The external magnet is mounted on the motor shaft. The liquid end consists of pump impeller (or any other device used to displace fluids) and an internal magnet mounted onto the driven shaft which is supported by bushing assembly and HERMETICALLY sealed by containment shell. Without the need of a mechanical seal.

The external magnet begins to rotate when the motor is started. The rotating magnetic field effects the inner magnet which begins to rotate the impeller as the same speed of the external magnet to displace the fluid.

MAGNETIC DRIVE PUMPS OFFER A SERIES OF SUPERIOR ADVANTAGES OVER MECHANICAL SEAL PUMPS:

- Pump is sealless guaranteeing operational safety for operators and environment, most of all in case of critical, hazardous, corrosive or expensive chemicals pumping.
- Without mechanical seal, both initial costs of the same and cumbersome auxiliary API flushed plans are avoided.
- For the same reason, pump selection, operation and maintenance are much simpler and less expensive than mechanical seal.
- Ability to handle high gas content fluids in which most mechanical seals would fail due to poor lubrication and cooling.

Are you concerned about energy costs, maintenance costs (Spare parts and downtime), leakages of dangerous/expansive chemicals, frequent seal failure and complex sealing system? M Pumps has the solution to address your concerns with its advanced sealless pump technology.

With its superior technology applied on the HYBRID containment shell which generates negligible Eddy current loss, M Pumps is now able to directly replace double mechanical seal pumps and canned motor pumps using standard motors. It is now possible to upgrade your conventional pumps into M Pumps most advanced and environmental friendly sealless pumps.

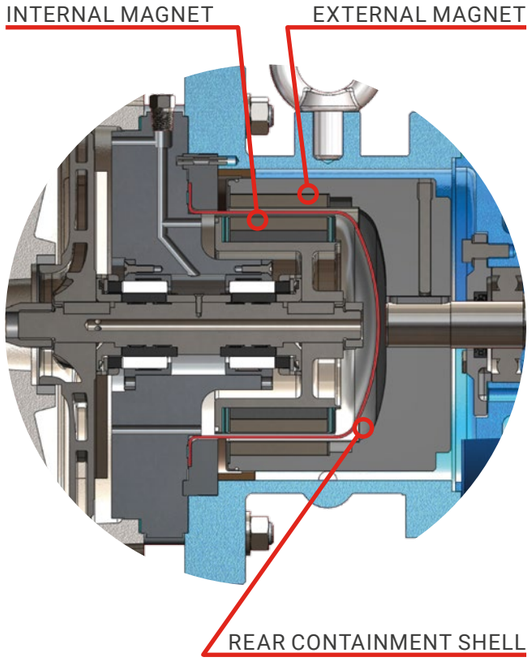
There are NO MORE technical reasons to choose a mechanical seal pumps Vs a M PUMPS magnetic sealless pump.

M PUMPS HAS SOLVED ALL THESE ISSUES WITH THE HYBRID CONTAINMENT SHELL

(SEE PAGE 9)

The Hybrid Rear Shell offers several advantages:

- Vs other magnetic drive manufacturers, much lower power absorption.
- Consequently the power consumption is much lower, offering very competitive Total Cost of Ownership.
- Almost negligible heat generation, with easy handling of: low boiling chemicals/cooling agents.
- 50 bar g design pressure and -90°C/+200°C design temperature.
- On demand: Reliable, immediate temperature reading (temperature sensor is located at the source of the magnetic field, providing accurate reading and timely response, avoiding pump failure).



HYBRYD REAR CONTAINMENT SHELL

Thanks to our 40 years of experience in magnetic drive technology, M Pumps is able to supply innovative and unique rear containment shell on magnetic drive pumps to enhance the competiveness and operational efficiency in today's process industry. As technology advances, the need for high pressure, high temperature and energy efficient become the top priorities among pump users.

Staying ahead of these priorities required M Pumps to adopt a forward thinking and proactive approach to pump design.

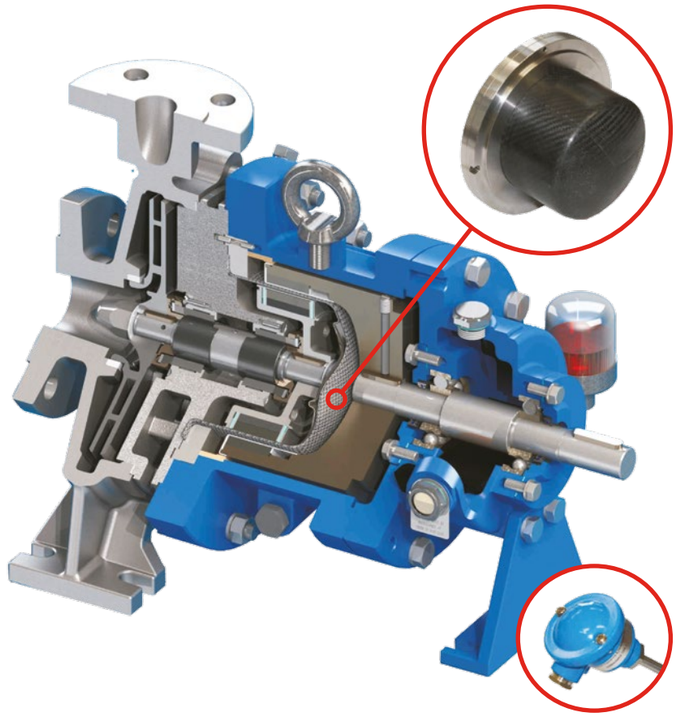
AVAILABLE ON ALL M PUMPS PROCESS PUMPS

Based on this Philosophy, M Pumps has created an advanced High pressure, High Temperature and Energy efficient Rear Containment Shell to eliminate the various concerns on the use of magnetic driven pumps in the process industry.

M PUMPS Hybrid Technology is the most advanced and attractive ENERGY SAVING solution available now in the market. Innovative and unique M Pumps solution offering:

MAIN ADVANTAGES

- Impressive reduction in Magnetic losses
- High Pressure design: vacuum to 50 bar g
- High Temperature design: -90°C to 200°C
- Motor power installation up to 1000 kW



The PATENT US 9841025 B2 hybrid echnology containment shell combines the reliability of a standard inner metallic shell (High Pressure and High Temperature) with the strength of Carbon Fibre outer shell to achieve an energy efficient (Reduction in magnetic loss and cost of ownership) and environmental friendly Hermetically sealed) solution.

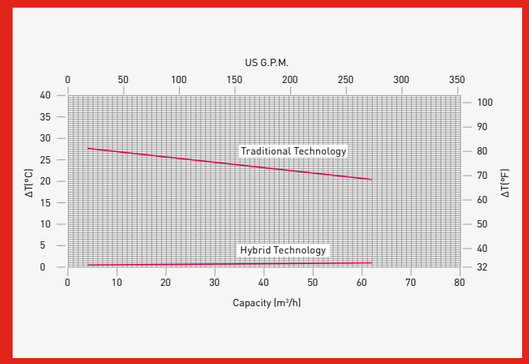
MAG LOSSES AND HEAT REDUCTION

	Hybrid shell containment comparison (*)				
	MATERIAL	DES PRESS (bar)	DESIGN TEMP °C	MAG-LOSSES (KW)	NOTES
HYBRID M PUMPS	HASTELLOY C / CARBON FIBER	50	-90/+200°C	0,78	EXTREMELY RELIABLE/SUITABLE FOR TEMP. PROBE/GREAT PRICE ADVANTAGE
COMPETITORS	ZIRCONIUM OXYDE	16	-190/+350°C	/	HIGH COST AND MUCH LOWER PRESSURE
	METAL ZIRCONIUM OXYDE	16	-190/+350°C	1,5	HIGH COST, MUCH LOWER PRESSURE AND HIGHER MAG LOSS COMPARED TO M PUMPS
	COMPOSITE PEEK	16(≤ 20°C)	-40/+120°C	/	HIGH COST AND PRESSURE AND TEMPERATURE LIMITATION
	PTFE - CARBON FIBER	16	-20/+200°C	/	PRESSURE LIMITS AND OVERSIZING OF MAGNET (DE-COUPLING RISK)
	BOROSILICATE GLASS	10	-40/+180°C	/	PRESSURE LIMITS, VERY FRAGILE AND HIGH COST (OVERSIZED MAGNET)

(*) Comparison with installed motor 18,5 kW, 2 poles, 50 Hz.

Comparison between M PUMPS and other rear shell solutions available now on the market.

MINIMIZED TEMPERATURE RISING ON REAR CASING REGION

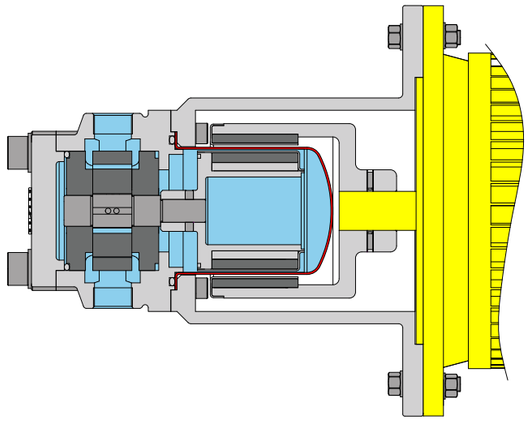


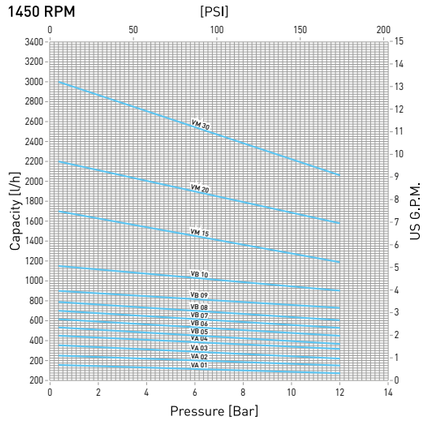
Hybrid technology reduces greatly heat generation in the rear casing region. This benefit is particularly important when pumping low boiling liquids.

MAGNETIC DRIVE PUMPS

V IN LINE

Sealless sliding vane pump with permanent magnet drive system





Operating Data

- Q (m3/h): 3
- H (bar): 12
- Press. Syst (bar): 25/150
- T (C°): 200

Design Features

Suitable for a variety of applications, including reverse osmosis systems, cooling circulation and sampling application in refi nery.

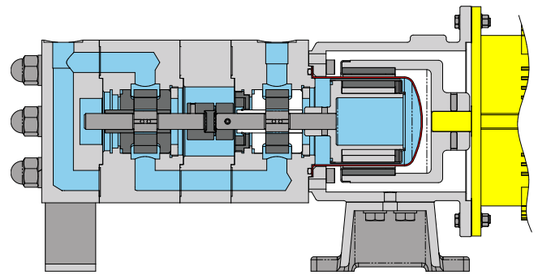
The sealing system with O-Rings prevents product from leaking in the atmosphere

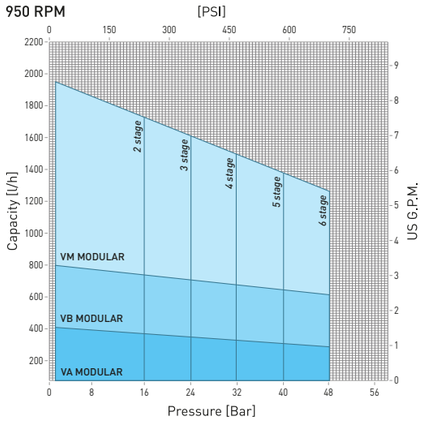
Materials

- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

V MODULAR

Sealless sliding vane multistage modular pump with permanent magnet drive system





Operating Data

- Q (m3/h): 2
- H (bar): 48
- Press. Syst (bar): 50/150
- T (C°): 200

Design Features

Close-coupled confi guration allows conventional drivers to be mounted directly to pump frame.

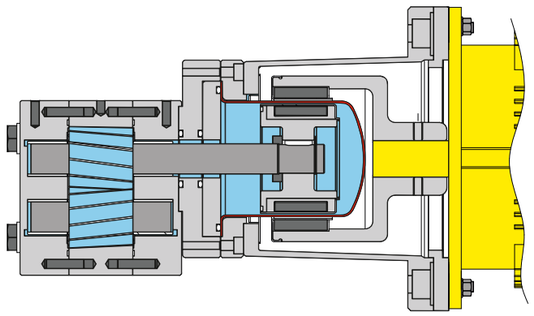
No base, coupling or guards are required for this mounting

Materials

- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

GS MAG-M

Sealless mag drive chemical gear pumps



Operating Data

- Q (m3/h): 80
- H (bar): 30
- Press. Syst (bar): 30
- T (C°): 200

Design Features

Rotors are achieved from rolled bar forging that is cut, turned and ground into its final shape as opposed to using cast parts, thus ensuring maximum hardness.

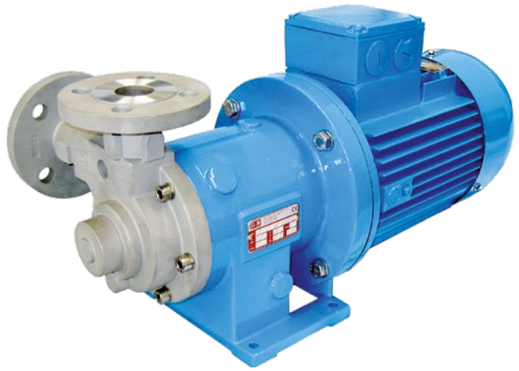
High power synchronous magnetic coupling

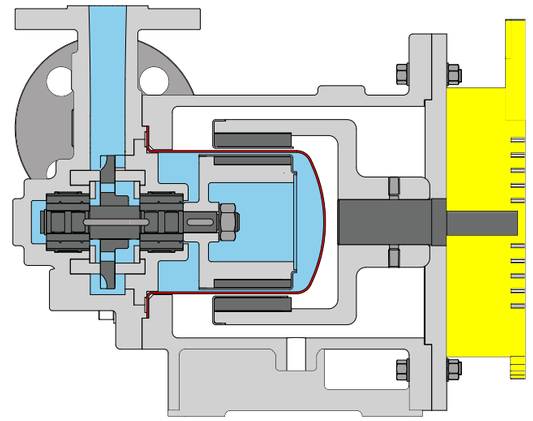
Materials

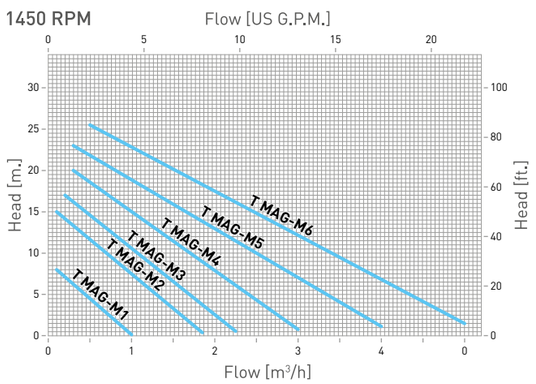
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

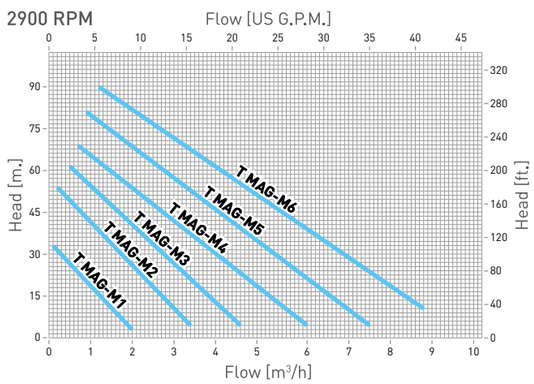
T MAG-M

Horizontal, sealless peripheral pump with permanent magnet drive system, no mechanical seal









Operating Data

- Q (m3/h): 9
- H (m): 90
- Press. Syst (bar): 25
- T (C°): 350

Design Features

Particular design of the hydraulic, with self balancing impeller to improve the the wear ring life.

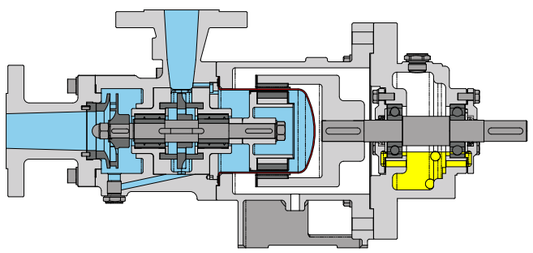
Low flow and high heads are the main characteristics of this pump design

Materials

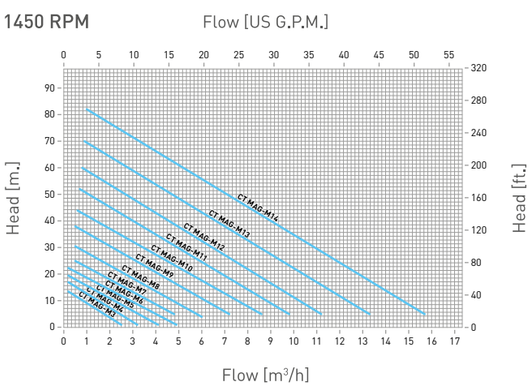
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

CT MAG-M

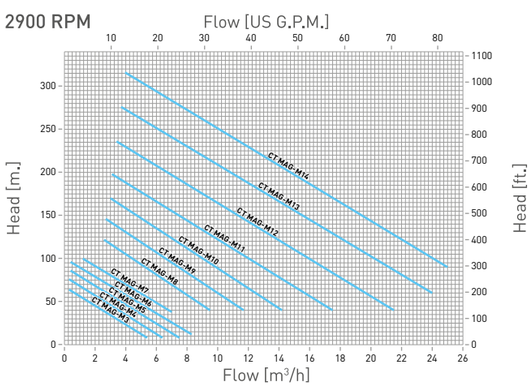
Horizontal, sealless low NPSHr peripheral pump with permanent magnent drive system



1450 RPM



2900 RPM



Operating Data

- Q (m3/h): 25
- H (m): 310
- Press. Syst (bar): 25
- T (C°): 350

Design Features

Low NPSH pumps (0,5 m) are the perfect design for the refrigeration market.

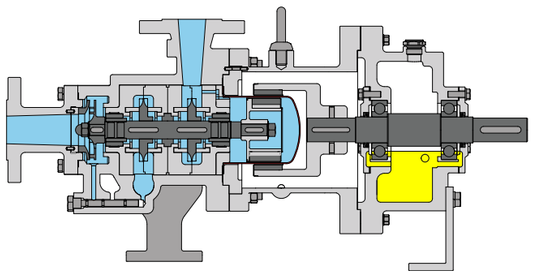
The separation of liquid chamber/ atmosphere by means of an isolation shell is the best solution to pump aggressive, explosive and toxic liquids, hydrocarbons, heat transfer liquids and liquids difficult to seal.

Materials

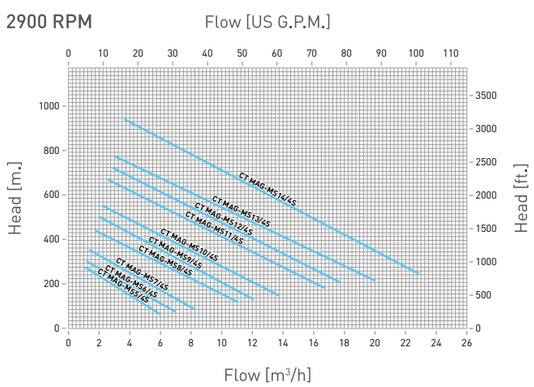
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

CT MAG-MS

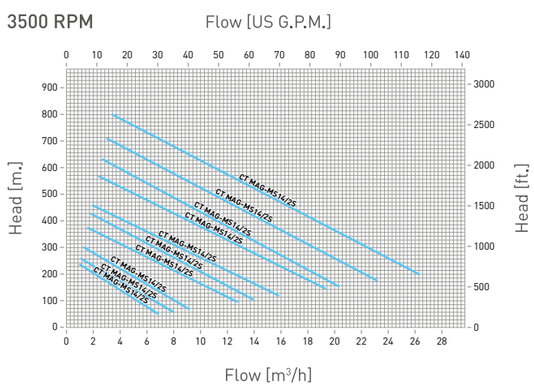
Horizontal peripheral pump multistage low NPSH



2900 RPM



3500 RPM



Operating Data

- Q (m3/h): 24
- H (m): 1000
- Press. Syst (bar): 50
- T (C°): 350

Design Features

Particular design of the hydraulic, with self balancing impeller to improve the wear ring life.

The range includes the construction with two and four stages, with or without centrifugal inducer to minimize the required NPSH up to 0,6 m, to allows the pumping of condensed and generally all low available NPSH installations.

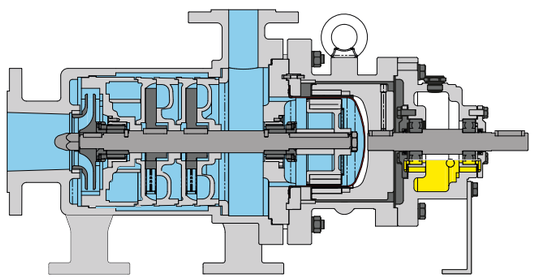
Materials

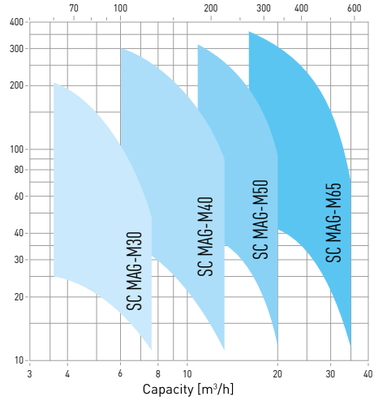
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

SC MAG-M

Side channel pump

Regenerative side channel Multistage Metallic Mag-Drive pumps





Operating Data

- Q (m3/h): 40
- H (m): 450
- Press. Syst (bar): 40
- T (C°): 120

Design Features

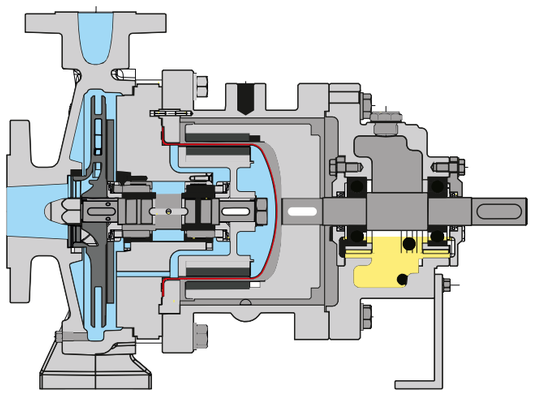
SC MAG-M pump series are heavy duty side channel pumps, designed specifically for clean chemical process, low boiling and highly volatile, explosive and dangerous liquids

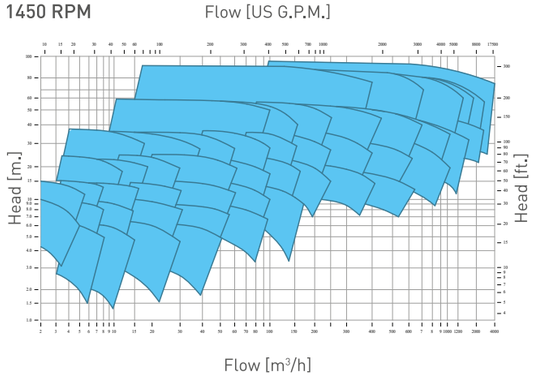
Materials

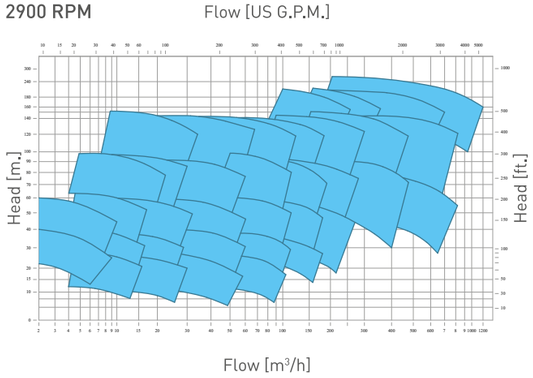
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

CN MAG-M ISO 2858

Heavy duty horizontal, sealless centrifugal pump with permanent magnet drive system no mecahnical seal ISO 2858 - DIN 24256







Operating Data

- Q (m3/h): 4000
- H (m): 220
- Press. Syst (bar): 150
- T (C°): 350

Design Features

with closed impellers, back-pull-out design, with end suction and top discharge flange.

Sturdy legs are provide as standard for foot mounting on the base plate.

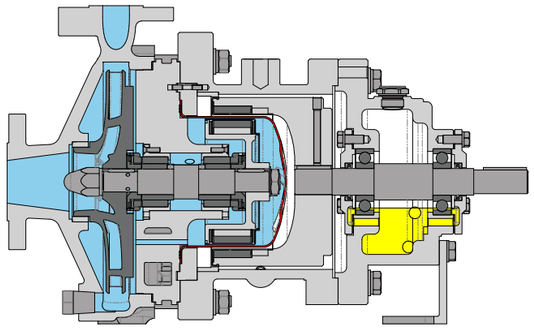
Capacity and outer dimension, according to DIN 24256/ISO 2858 Zero leakage (100% leak free)

Materials

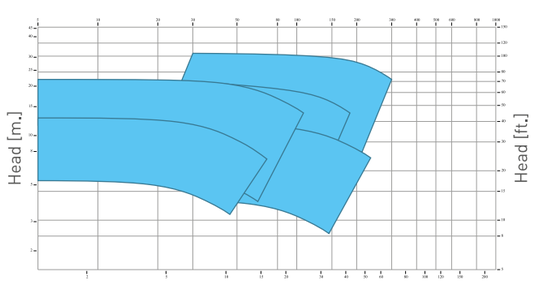
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

CN MAG-M ANSI

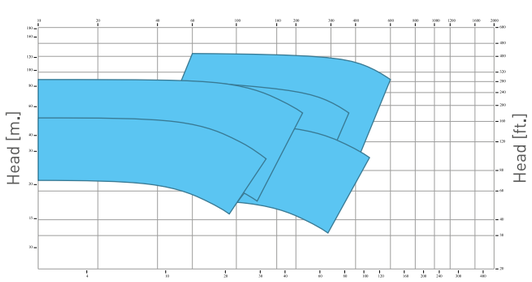
Heavy duty horizontal, sealless centrifugal pump with permanent magnet drive system



1750 RPM Flow [US G.P.M.]



3500 RPM Flow [US G.P.M.]



Operating Data

- Q (m3/h): 4000
- H (m): 155
- Press. Syst (bar): 50
- T (C°): 350

Design Features

Zero leakage (100% leak free) Ensure a clean and safe operating environment, highly efficient No mechanical seals or packed glands

No external flushing systems

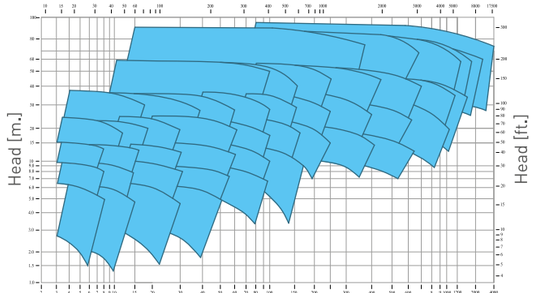
Materials

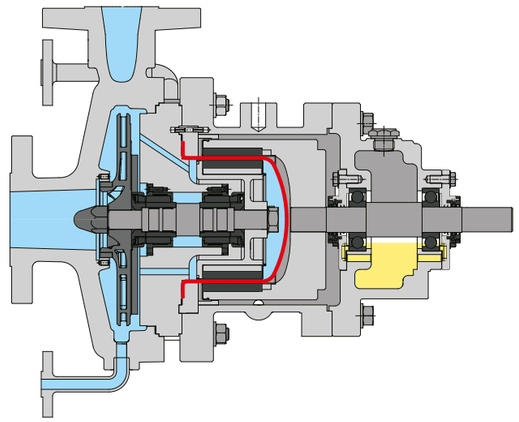
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

CN MAG-M API 685

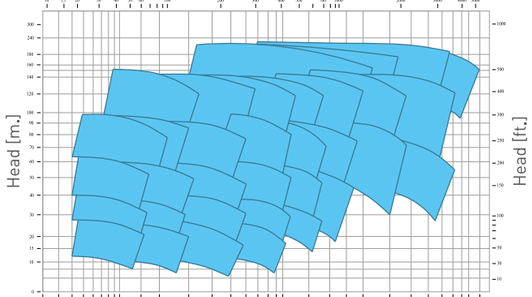
Horizontal, single stage, radially split centerline heavy duty OH2 to API 685 STD 2nd Ed.

1450 RPM Flow [US G.P.M.]





2900 RPM Flow [US G.P.M.]



Operating Data

- Q (m3/h): 4000
- H (m): 300
- Press. Syst (bar): 150
- T (C°): 400

Design Features

Meeting and exceeding API STD 685 2nd Ed.

Horizontal, single-stage, radial-split, heavy-duty design OH2.

Single or double rear containment shell (in Hastelloy C®, Titanium Grade 5 or Hybrid - patented).

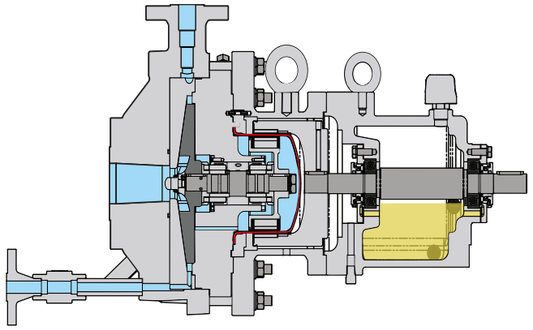
Secondary control/containment on demand according to API STD 685 2nd Ed.

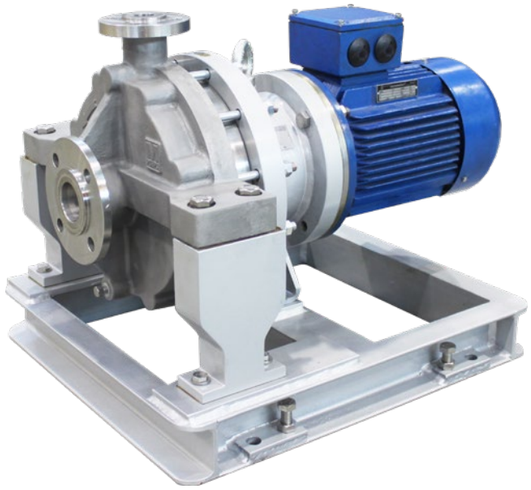
Materials

- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

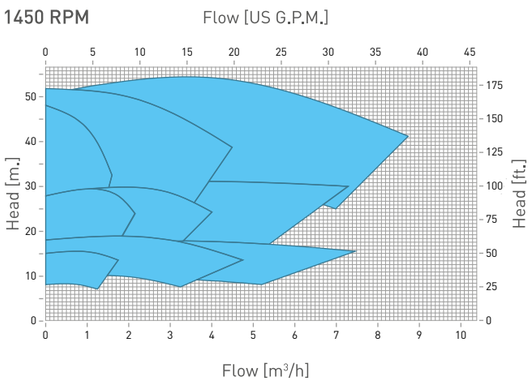
CPE MAG-M

Heavy duty horizonthal, sealless Magnet Drive partial emission pump, for low flow application

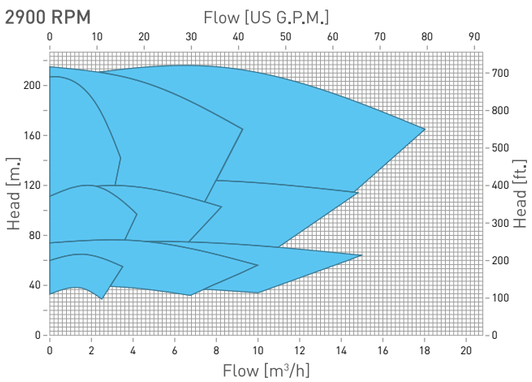




1450 RPM



2900 RPM



Operating Data

- Q (m3/h): 22
- H (m): 250
- Press. Syst (bar): 50
- T (C°): 350

Design Features

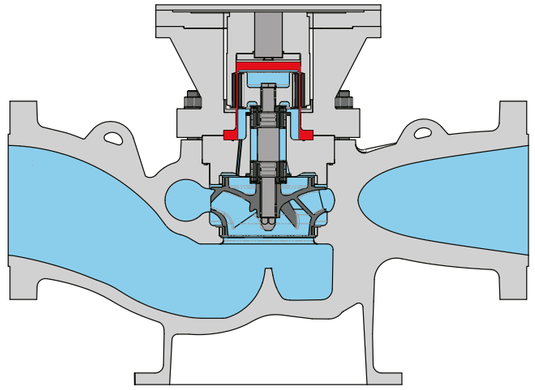
OH2 Heavy duty mounting feets accept ISO 13709/API-610 nozzle loads and maintain

Materials

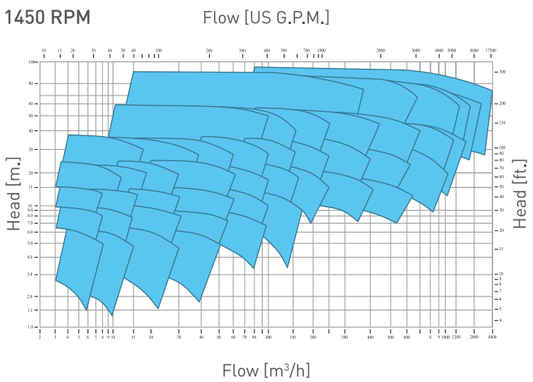
- Hastelloy C® 276
- Incoloy® 825
- Duplex
- Titanium
- Carbon Steel
- Stainless Steel®

CN MAG-MV API 685

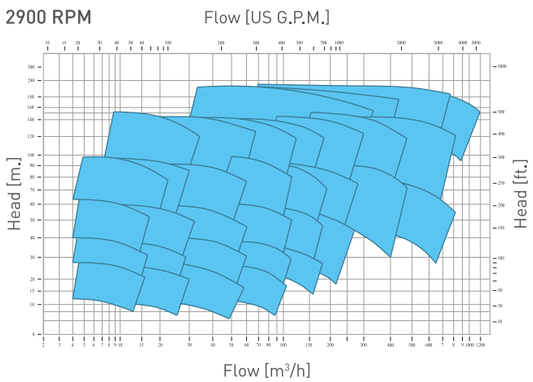
Close-couped, vertical, in-line, single-stage overhung heavy duty OH5 to API 685 STD 2nd Ed.



1450 RPM



2900 RPM



Operating Data

- Q (m3/h): 4000
- H (m): 300
- Press. Syst (bar): 150
- T (C°): 400

Design Features

Meeting and exceeding API STD 685 2nd Ed.

Horizontal, single-stage, radial-split, heavy-duty design OH5.

Single or double rear containment shell (in Hastelloy C®, Titanium Grade 5 or Hybrid - patented).

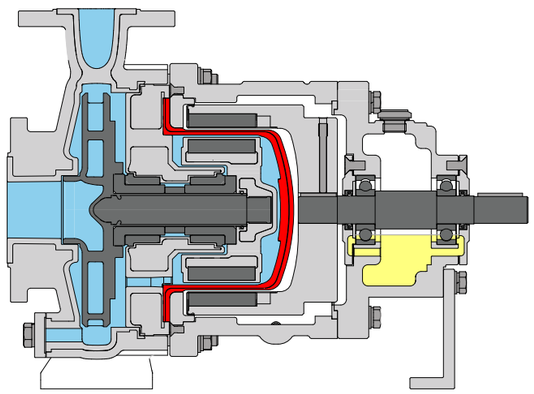
Secondary control/containment on demand according to API STD 685 2nd Ed.

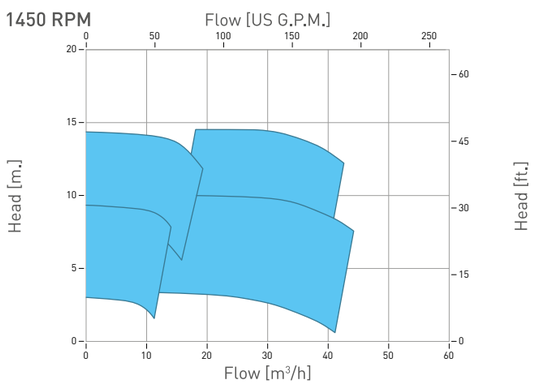
Materials

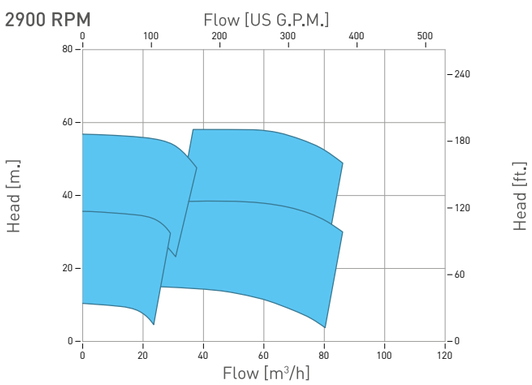
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

CL MAG-M ISO 2858

CL MAG M Horizontal centrifugal pump single stage OH1 ISO 2858







Operating Data

- Q (m3/h): 90
- H (m): 63
- Press. Syst (bar): 20
- T (C°): 150

Design Features

Ideal for pump highly corrosive.

High permeation resistance

Solid handling capability

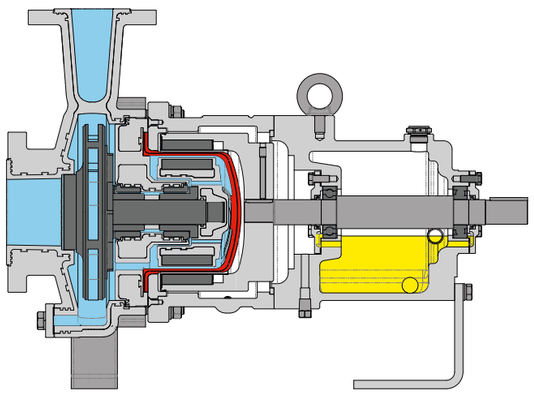
High strenght metallic lined rotating shaft with silicon carbide sleeves

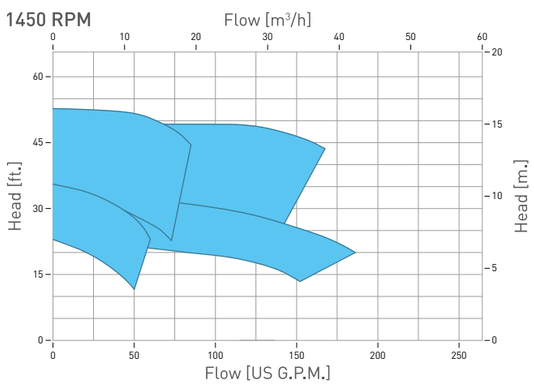
Materials

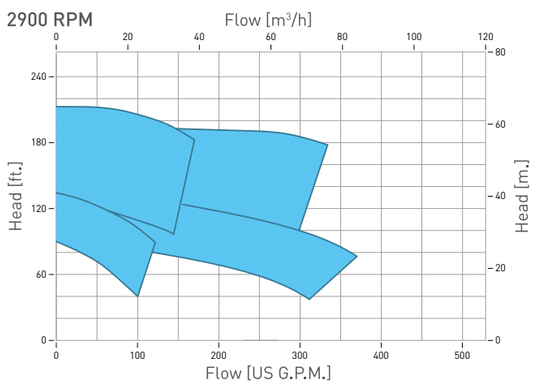
- PFA
- DUCTILE IRON
- SIC
- FFKM
- PTFE

CL MAG-M ANSI

Horizontal, sealless PFA lined centrifugal pump with permanent magnet drive system, acc. to ASME B73.3-2003







Operating Data

- Q (m3/h): 102
- H (m): 77
- Press. Syst (bar): 20
- T (C°): 150

Design Features

Hermetic construction is made by a thick PFA lining, transfer molding achieved, that ensure best quality and best corrosion resistance, allowing the handling of corrosive liquids.

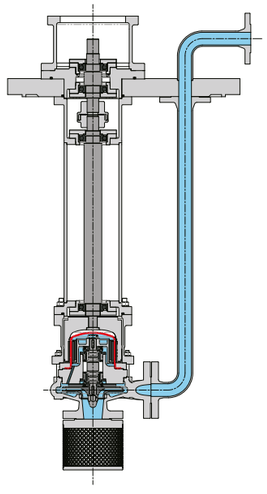
Smart construction for the maximun reduction of wearing parts and easy/ fast maintenance.

Materials

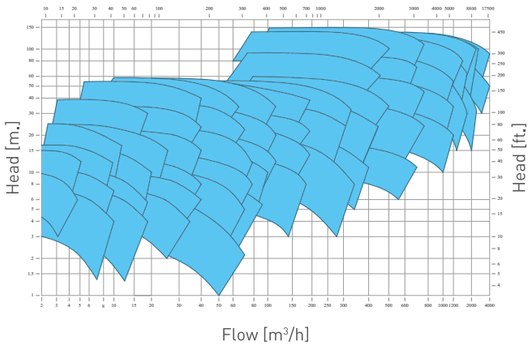
- PFA
- DUCTILE IRON
- SIC
- FFKM
- PTFE

CNV MAG-M

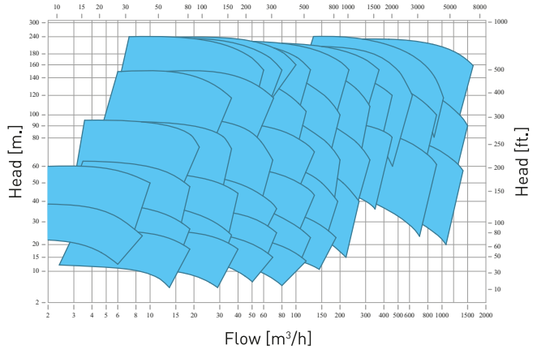
Vertical, sealless centrifugal pump with permanent magnet drive system



1450 RPM Flow [US G.P.M.]



2900 RPM Flow [US G.P.M.]



Operating Data

- Q (mc/h): 4000
- H (m): 350
- Press. Syst (bar): 16/150
- T (C°): 200

Design Features

This pump is te best solution for the chemical, pharmaceutical and petrolchemical industry.

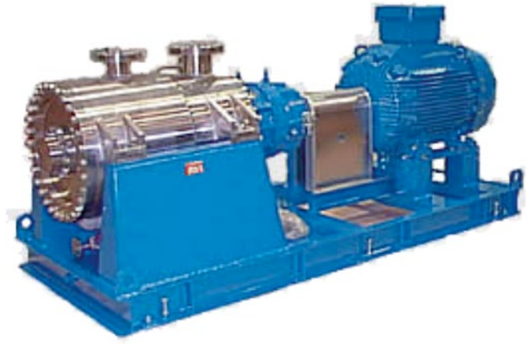
Modular construction allows lenghts up to 7 meters

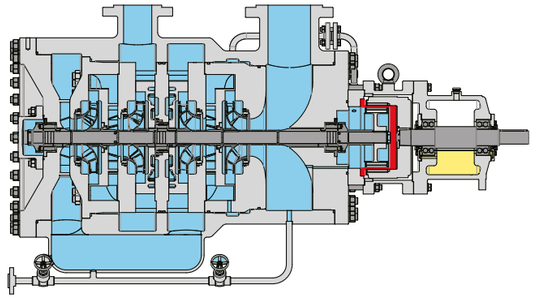
Materials

- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

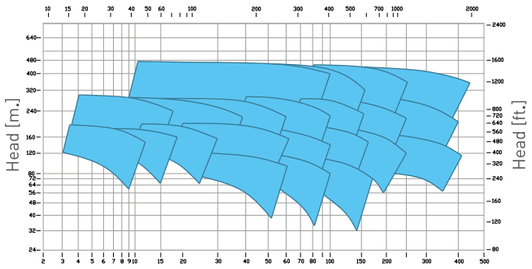
CN MAG-MS API 685

Radially split, multistage, between-bearings pumps heavi duty BB5 to API 685 STD 2nd Ed.

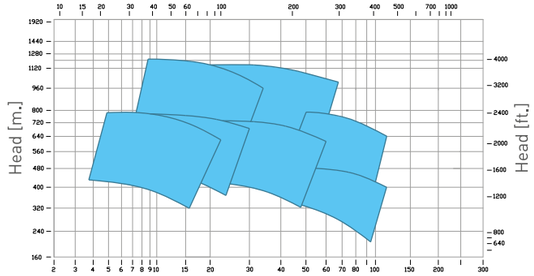




1450 RPM Flow [US G.P.M.]



2900 RPM Flow [US G.P.M.]



Operating Data

- Q (m3/h): 1000
- H (m): 2200
- Press. Syst (bar): 150
- T (C°): 400

Design Features

Meeting and exceeding API STD 685 2nd Ed.

Radially split, multistage, between bearings pumps, heavy duty design BB5.

Single or double rear containment shell (in Hastelloy C®, Titanium Grade 5 or Hybrid - patented).

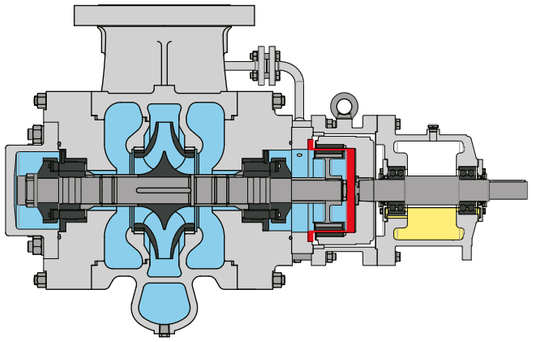
Secondary control/containment on demand according to API STD 685 2nd Ed.

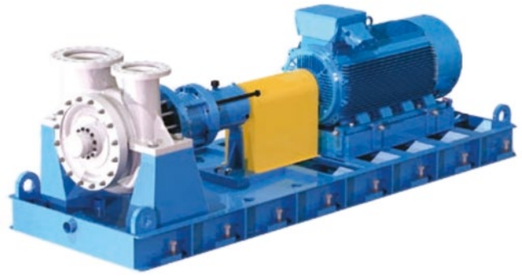
Materials

- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

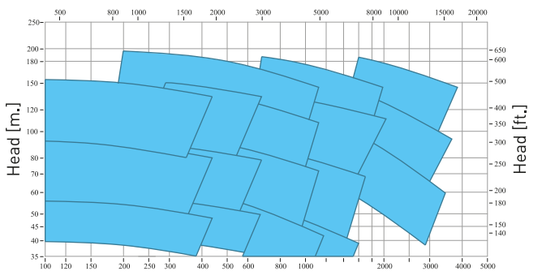
WN MAG-M API 685

Between bearings radially split, single stage heavy duty BB2 to API 685 STD 2nd Ed.

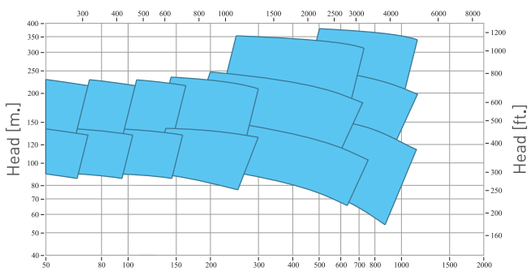




1450 RPM Flow [US G.P.M.]



2900 RPM Flow [US G.P.M.]



Operating Data

- Q (m3/h): 4000
- H (m): 240
- Press. Syst (bar): 150
- T (C°): 400

Design Features

Meeting and exceeding API STD 685 2nd Ed.

Between bearings radially split single stage heavy duty BB2.

Single or double rear containment shell (in Hastelloy C®, Titanium Grade 5 or Hybrid - patented).

Secondary control/containment on demand according to API STD 685 2nd Ed.

Materials

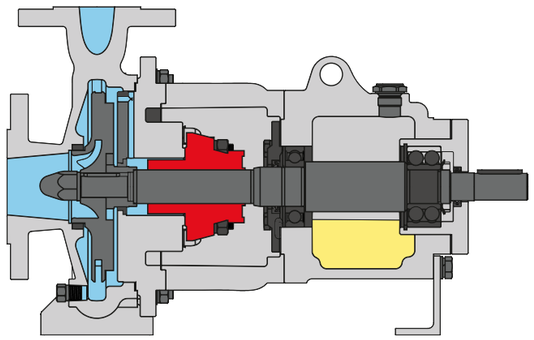
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

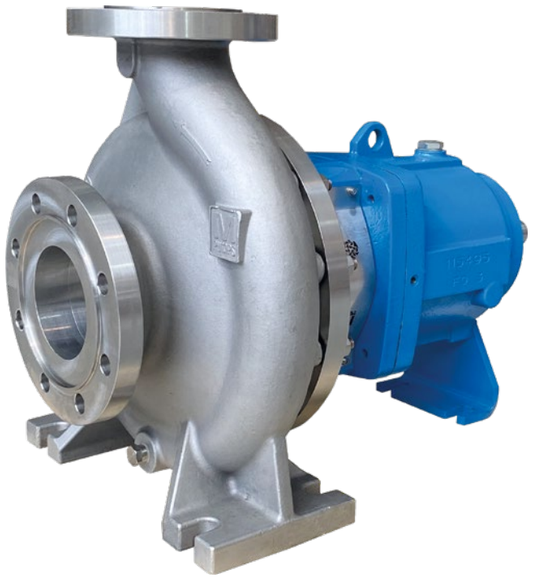
MECHANICAL SEAL PUMPS

CN SEAL-M ISO 2858

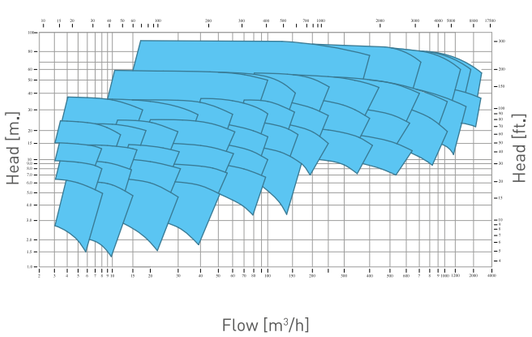
Centrifugal, single stage, metallic pumps according to ISO 2858 - 5199.

Mechanical seal chamber according to uni 3069

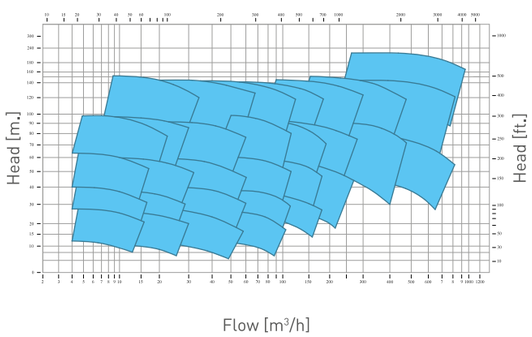




1450 RPM Flow [US G.P.M.]



2900 RPM Flow [US G.P.M.]



Operating Data

- Q (m3/h): 1000
- H (m): 225
- Press. Syst (bar): 16
- T (C°): 200

Design Features

Standard mechanical seal flushing with internal recirculation from pressure side to seal chamber.

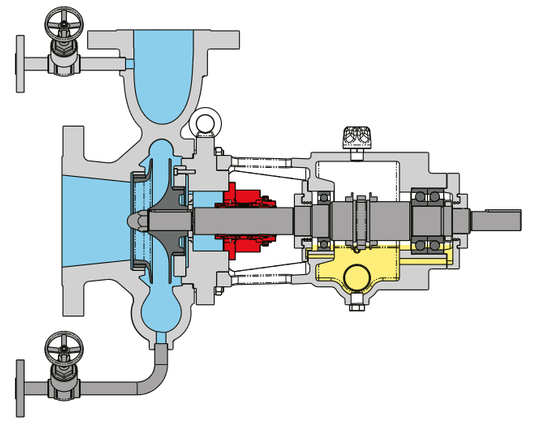
Possiblity to insert many.

Materials

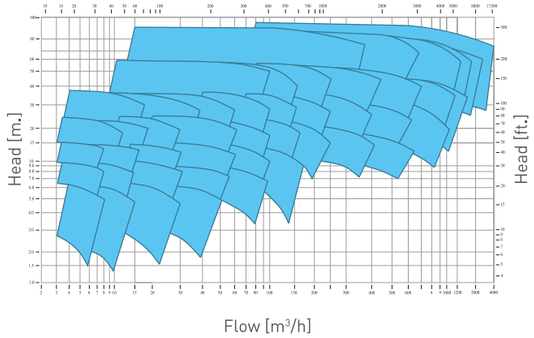
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

CN SEAL-M API 610

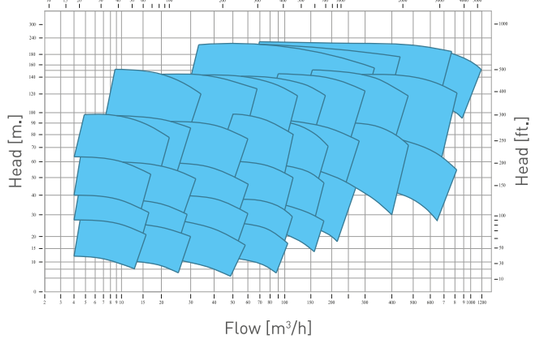
Horizontal, single stage, radially split centerline heavy duty OH2 to API 610 STD 11th Ed.



1450 RPM Flow [US G.P.M.]



2900 RPM Flow [US G.P.M.]



Operating Data

- Q (m3/h): 4000
- H (m): 2400
- Press. Syst (bar): 50
- T (C°): 400

Design Features

Meeting and exceeding API STD 610 11th Ed.

Horizontal, single stage, radial-split, heavy duty design OH2.

Back pull out.

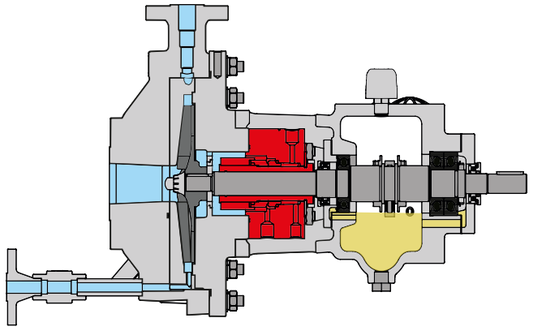
Possible updating to api 685 without disassembling pump from process connections.

Materials

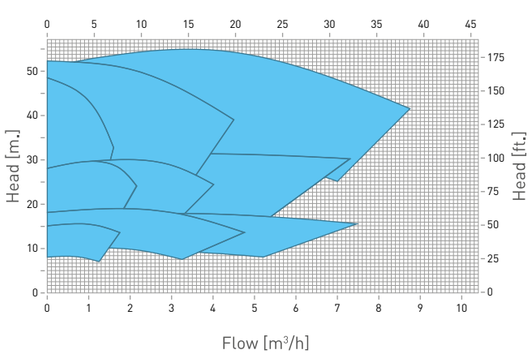
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

CPE SEAL-M API 610

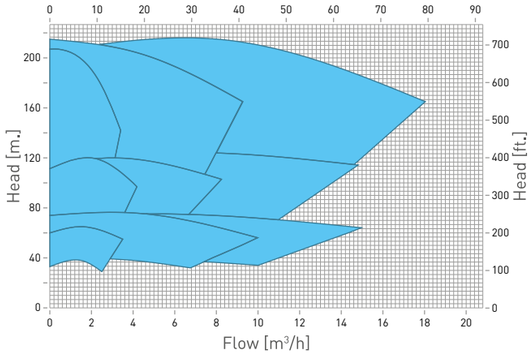
Low flow Centrifugal process pumps according to API 610 - XI edition Norms



1450 RPM Flow [US G.P.M.]



2900 RPM Flow [US G.P.M.]



Operating Data

- Q (m3/h): 22
- H (m): 250
- Press. Syst (bar): 50
- T (C°): 350

Design Features

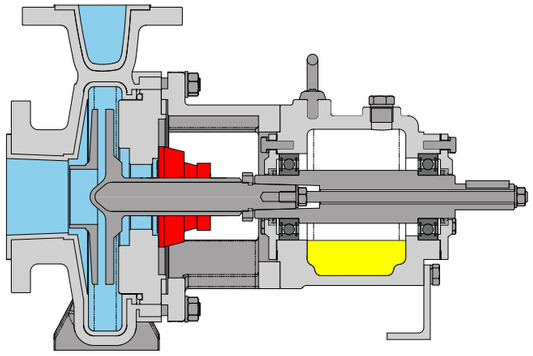
OH2 Heavy duty mounting feets accept ISO 13709/API-610 nozzle loads and maintain pump alignment under hard conditions.

Materials

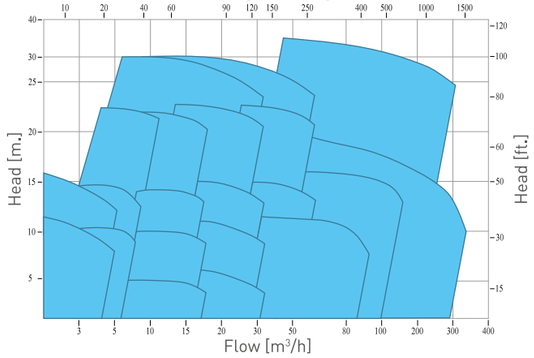
- Hastelloy C® 276
- Incoloy® 825
- Duplex
- Titanium
- Carbon Steel
- Stainless Steel

CL SEAL-M ISO 2858

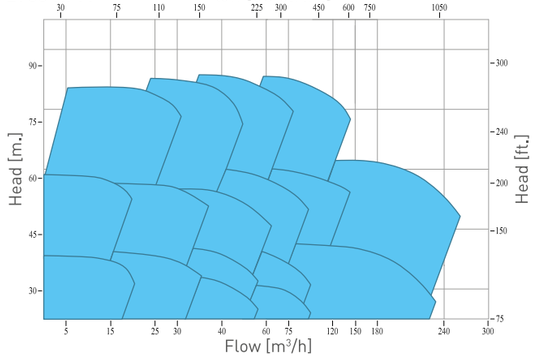
Centrifugal, single stage, lined, according to ISO 2858 - 5199.



1450 RPM Flow [US G.P.M.]



2900 RPM Flow [US G.P.M.]



Operating Data

- Q (m3/h): 340
- H (m): 86
- Press. Syst (bar): 16
- T (C°): 120

Design Features

A high thickness PFA lined coating made by transfer molding ensure exceptional corrosion resistance.

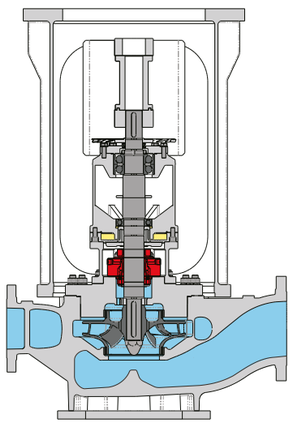
Robust cast iron (ASTM A395) casings absorbs pipework forces and eliminates need for expansion joint.

Materials

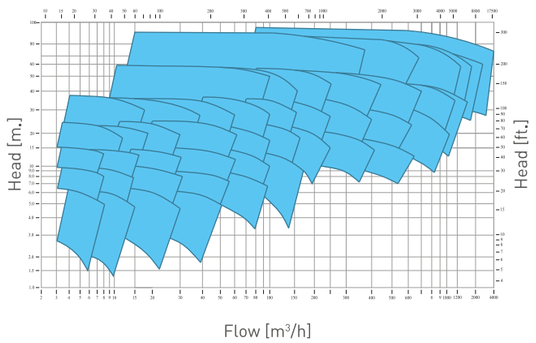
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

CN SEAL-MV API 610

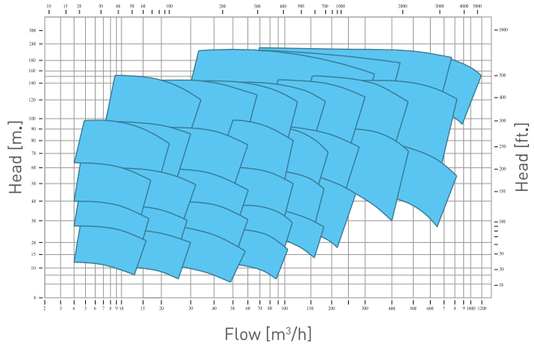
Vertical, in-line, single-stage overhunting pumps with separate bearing brackets OH3 to API 610 STD 11th Ed.



1450 RPM Flow [US G.P.M.]



2900 RPM Flow [US G.P.M.]



Operating Data

- Q (m3/h): 4000
- H (m): 350
- Press. Syst (bar): 50
- T (C°): 400

Design Features

Meeting and exceeding API STD 610 11th Ed.

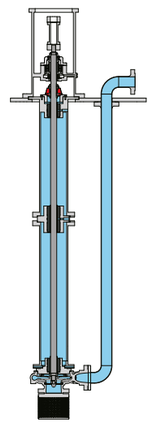
Vertical, in-line, single-stage overhunting pumps with separate bearing brackets OH3.

Materials

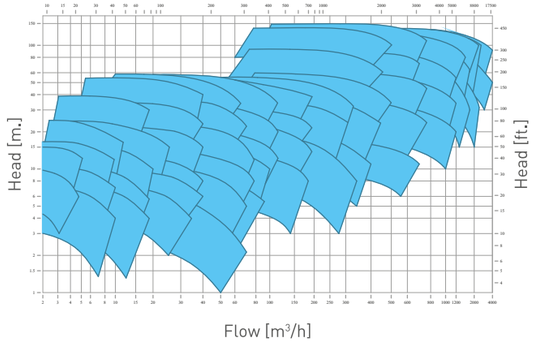
- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

CNV SEAL-M API 610

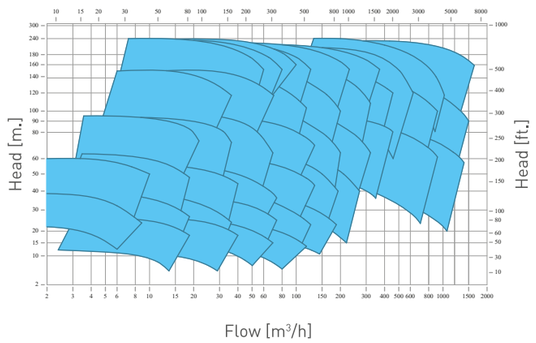
Vertical suspended, single-casing, volute, line-shaft-driven sump pumps heavy duty VS4 to API 610 STD 11 Ed.



1450 RPM Flow [US G.P.M.]



2900 RPM Flow [US G.P.M.]



Operating Data

- Q (m3/h): 600
- H (m): 220
- Press. Syst (bar): 25
- T (C°): 300

Design Features

Meeting and exceeding API STD 685 2nd Ed.

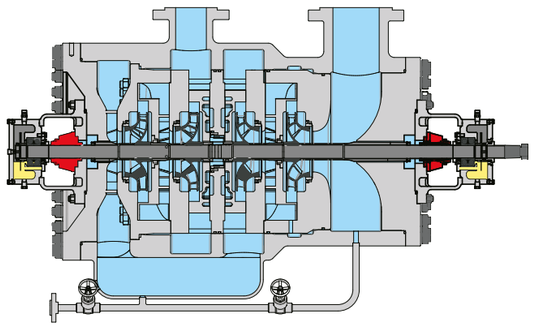
Vertically suspended, single-casing, volute, line-shaf-driven sump pump, heavy duty design VS4 Shaft length up to 7 meters.

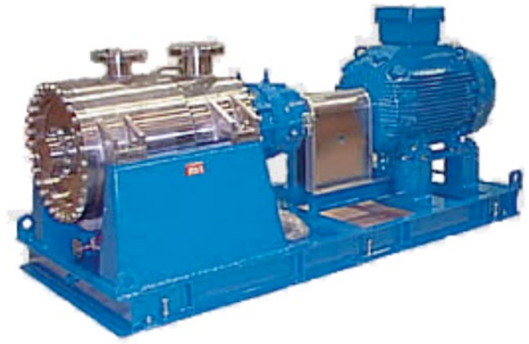
Materials

- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

CN SEAL-MS API 610

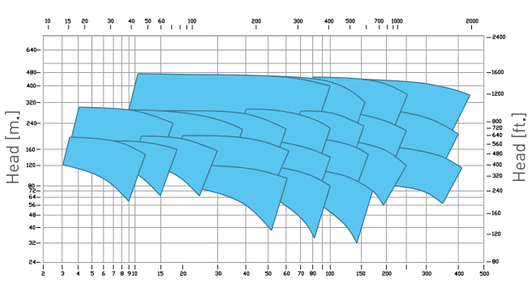
Radially split, multistage, between-bearings pumps heavi duty BB5 to API 610 STD 11nd Ed.

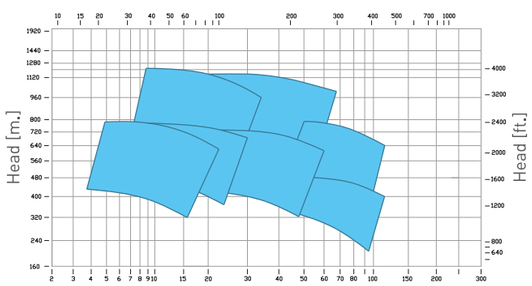




1450 RPM Flow [US G.P.M.]

2900 RPM Flow [US G.P.M.]





Flow [m³/h]

Flow [m³/h]

Operating Data

- Q (m3/h): 1000
- H (m): 2200
- Press. Syst (bar): 150
- T (C°): 400

Design Features

Meeting and exceeding API STD 610 11nd Ed.

Radially split, multistage, between bearings pumps, heavy duty design BB5.

Back pull out.

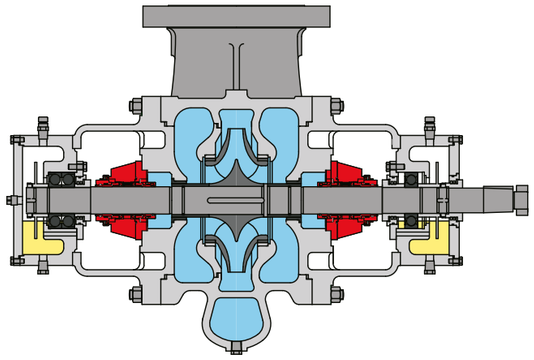
Possible upgrading to API 685 without disassembling pump from process connections

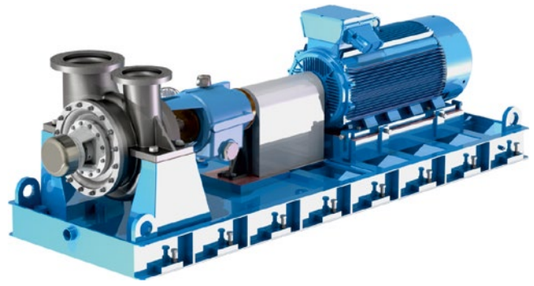
Materials

- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

WN SEAL-M API 610

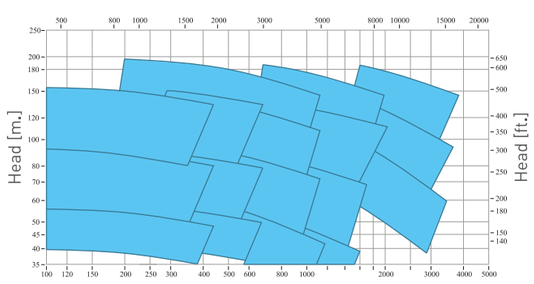
Between bearings radially split, single stage heavy duty BB2 to API 610 STD 11th Ed.

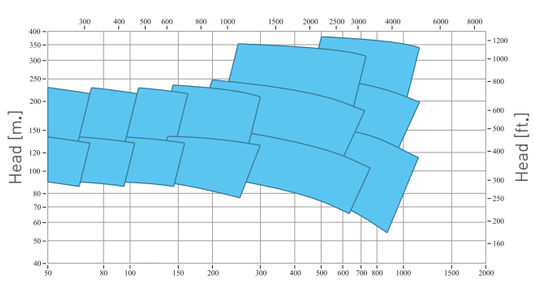




1450 RPM Flow [US G.P.M.]

2900 RPM Flow [US G.P.M.]





Flow [m³/h]

Flow [m³/h]

Operating Data

- Q (m3/h): 4000
- H (m): 240
- Press. Syst (bar): 150
- T (C°): 300

Design Features

Meeting and exceeding API STD 610 11th Ed.

Between bearings radially split single stage heavy duty BB2.

Back pull out.

Possible upgrading to API 685 without disassembling pump from process connections.

Materials

- ANSI 316 (basic version)
- Duplex or Super Duplex
- Hastelloy C® 276
- Incoloy® 825
- Titanium et
- Other alloys based on NORSOK/ NACE requirements

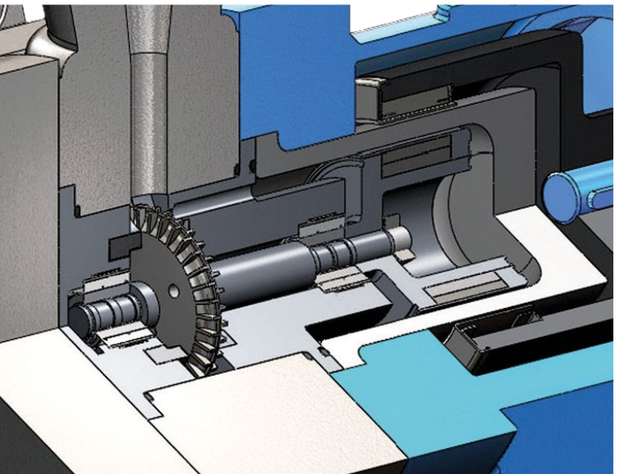
SPECIAL PUMPS

With almost 40-year experience in designing magnetic driven pumps for industrial demanding application, we have the ability to supply bespoke units.

All pumps are designed following the most rigorous methods of calculation, and, thanks to the FEM system specific analysis are carried out to simulate actual process conditions.

Special pumps are divided into five main categories:

- High system pressure (up to 1500 bar g)
- High design temperature (400°C)
- Low design temperature (liquid CO2 cryogenic application)
- Solid content
- Jacketing
- Exotic materials such as: Hastelloy C® 276 , Titanium, Monel®



High Temperature Applications

- First level with operating temperature up to 250°C
- Second with operating temperature up to 350°C
- Third level above 350°C

High System Pressure Applications

With solution both for positive displacement and centrifugal pumps, and pressure rating ranging from # 300, # 600, # 900, # 1500, # 2500 ANSI # 2500 rating

Combination of High Temperature & High Pressure

We successfully supplied pumps operating @ 270°C that were hydraulically tested @ 750 bar g.

Low Temperature Applications

Pumps with special construction are suitable to work with chemicals as low as – 120°C pumping temperature.

Special Materials

Exotic materials (meeting NACE and NORSOK requirements such as Duplex Steel, Hastelloy C® 276, Titanium etc. and various type of jacketing are available too

T MAG-XPM SERIES

High System Pressure Peripheral Pump

Flow up to 9 m³/h
Head up to 90 m
System Pressure up to 1500 bar

CN MAG-M SERIES

Process centrifugal pumps with Hybrid Rear Containment Shell and inducer for critical NPSH available–as low as 1,5 meters

SC MAG-M SERIES

Special jacketing on head and bracket to handle supercritical chemicals

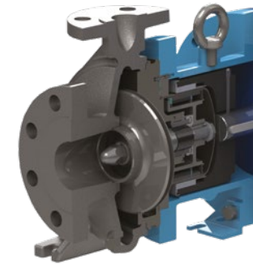
Mag drive side channel pump with cooling jacketing and brackets specifcally designed for pumping Hydrogen Peroxide.

M PUMPS RANGE

Centrifugal Pumps

State of the art centrifugal pumps from the simplest to the most demanding industrial process application. Suitable for transfer, unloading, circulation and many other applications. High efficiency, long life and low cost maintenance. Meeting several international standards (ISO/DIN/ANSI/API) and available in both magnetic drive (sealless) and traditional mechanical seal.

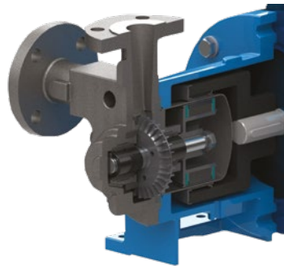
- Flow up to 4000 m³/h
- Head up to 2200 m
- System pressure from vacuum up to 1500 bar
- Temperature from -150°C up to +400°C
- No heat exchanger required up to +350°C



Regenerative Turbine Pumps

Low to medium flows, pulsation free, suitable where high pressure is required. Perfect solution where traditional centrifugal pumps are not suitable (used instead of a multistage pumps).

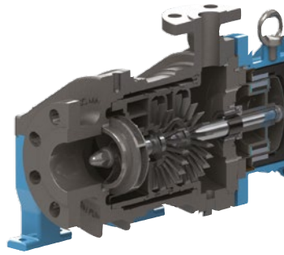
- Flow up to 24 m³/h
- Head up to 800 m
- System pressure from vacuum up to 1500 bar
- Temperature from -150°C up to +400°C
- No heat exchanger required up to +350°C



Side Channel Pumps

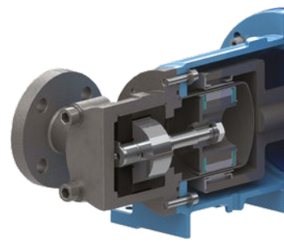
316 stainless steel (or better) multi-stage barrel construction. Ideal to pump liquefied gasses and liquids under vapor pressure like condensate, refrigerant, boiler feed water or LPG (up to 50% gas content).

- From low to medium flows ,best choice for truck unloading and natural gas handling.
- Low NPSHr 0,5 m
- Self priming up to 5 m.
- Flow up to 40 m³/h
- Delivery Head up to 450 m
- System pressure up 50 bar
- Temperature from -90°C up to +250°C



Volumetric Pumps

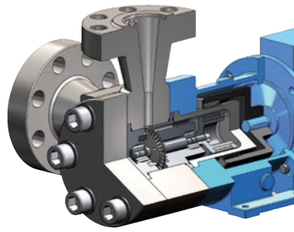
SLIDING VANE PUMPS	• Flow rates up to 3000 l/h, discharge pressure up to 48 bar g. • Suitable for viscosities from 1 to 1000 cP • Pulsation free dosing/sampling/transfer pumps
EXTERNAL GEAR PUMPS	• Flow rates up to 80 m³/h, discharge pressure up to 30 bar g. • Suitable for lubricating media up to 25000 cP • Temperature up to +200°C
HOLLOW DISC	• Flow rates up to 38 m³/h, discharge pressure up to 5 bar g • Viscosities up to 10000 cP



Special Pumps

M PUMPS is able to design and manufacture bespoke pumps for the most demanding applications:

- High system pressure (up to 1500 bar g)
- High design temperature (400°C)
- Low design temperature (liquid CO2 cryogenic application)
- Solid content
- Jacketing
- Exotic materials such as: Hastelloy C® 276, Titanium, Monel®



REFERENCE LIST

YEAR	END USER/EPC CONTRACTOR	PLANT TYPE PROJECT NAME	PLANT TYPE	COUNTRY
2015	Sanofi	Pharmaceutical BRINDISI PLANT	Solvent	**Italy**
2016	Johan Svendrum	Statoin, offshore	Cooling/Sea Water application	**Offshore**
2017	Lundin Petroleum	Edvar Greig Field	Various pumps for particular services	**Norway**
2017	UK governative agency	CO2 capture and storage project	Supercritical CO2	**UK**
2018	ENI - Gela	Raffineria ENI	Hydrocarbons	**Italy**
2018	PETRONAS CHEMICALS ISONONANOL SDN. BHD.	Unloading pump	Raffinate III Unloading Pump	**Asia**
2019	OMV	Produced Water	Produced Water plant	**Libya**
2019	LANXESS SOLUTIONS ITALY S.R.L.	Chemical Process	Water, Sulfuric Acid, Hydrochloric Acid	**Italy**
2020	Lundin Petroleum	Hot sea water - Crude Oil - Water Injection - Heatings Medium	Nr.12 Units, OH3, installed power from 30 to 320 kW	**Norway**
2020	Formosan Union Chemical Corp.	Ammonia Water	Hydrocarbon	**Taiwan**
2020	Himsen Corporation	25% Ammonia Hydroxide (NH4OH)	Loading, Unloading Pump	**South Korea**
2021	Vfuels (U.S.A)	Cabinda Refinery	Hot Oil	**Angola**
2021	Alcantara	Production	Solvent Circulation	**Italy**

CERTIFICATIONS

ISO 9001 : 2015

0273

ISO 14001 : 2015

0273

THE DRIVING FORCE IN MAGNETIC SEALLESS PUMPS TECHNOLOGY

Since its foundation in 1978, M Pumps has been the driving force in the design and development in magnetic driven sealless pumps technology. Our unparalleled expertise and unrelenting passion have created a new paradigm in the application of magnetic sealless pumps in the process industry.

Energy Saving, Environmental Friendly, Safety, Performance, Operation reliability, Total Cost of Ownership and pumps system simplification are now available with one supplier only:

M Pumps advanced magnetic sealless pumps and pump systems.

M Pumps with its wide portfolio of products incorporates over 26 designs and 350 basic models allow our engineering department to select the right pump for your exact process requirement. Pre-engineered pumps, highly engineered and special purpose pumps and systems can be tailor-made to meet any demanding operating parameters as required by today's complex processes.

ALL PUMPS MANUFACTURED BY M PUMPS ARE DESIGNED, DEVELOPED AND VALIDATED IN COMPILANCE WITH EXISTING INTERNATIONAL STANDARDS.

- ISO 9001:2015, ISO 5199:2005, ISO 3069:2005
  that denotes conformity to highest Quality Standard.
- ISO 14001:2015
  that denotes conformity to highest Environmental Standard.



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M PUMPS

SETTING
INNOVATIVE
STANDARDS