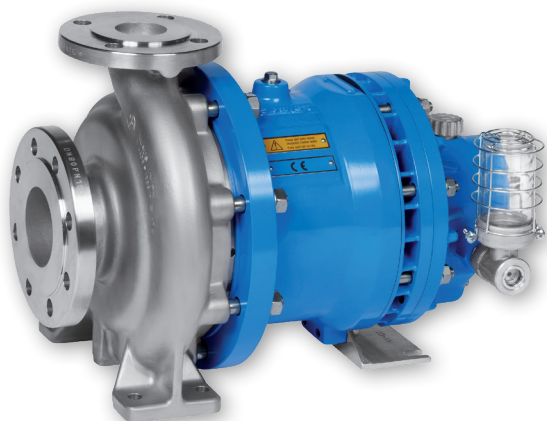


SLM NV



MAGNET DRIVE CENTRIFUGAL PUMP SERIES SLM NV

ACC. TO DIN EN ISO 2858
AND DIN EN ISO 15783



www.klaus-union.com

PUMP SERIES SLM NV

ACC. TO DIN EN ISO 2858

AND DIN EN ISO 15783



SLM NV – More than just a Standard Pump

This pump, to DIN EN ISO 2858, is more than just a standard pump. It is the consequent further development in our well-proven series of sealless magnet drive centrifugal pumps.

With the SLM NV, Klaus Union has developed a pump design to address today's industry requirements and to offer new efficient and demand-driven solutions.

Requirements have increased, become more complex, and more specific in recent years, particularly in the chemical and petrochemical industry where pumps handle aggressive, toxic and explosive liquids under highest safety requirements.

Klaus Union satisfies these requirements with over sixty years of experience in development, construction, manufacturing and in the application of magnet drive pumps.

SLM NV - "V" stands for "variable" through modular design. Features and benefits of the modular "V-Concept" are:

- ▶ Few Individual Components – Multifunctional, Individual Application
- ▶ Greater Safety over the entire Construction Range
- ▶ Suitable for Serial Fabrication at Competitive Prices
- ▶ Standard Modules offer many Design Variations
- ▶ Energy Efficient Systems
- ▶ Maximum Flexibility and Inter-Changeability
- ▶ Off-the-Shelf Availability of Parts, Components and Accessories

The construction series SLM NV covers the complete performance range of single-stage centrifugal pumps. Pumps for high system pressure applications and submerged design are available upon request.

Experience
Responsibility
Passion



Performance Range

- ▶ **Flow Rate:** Q = up to 3.500 m³/h
- ▶ **Delivery Head:** H = up to 220 m L. C.

Higher flow rates upon request

Pressure Ratings/Temperature Range

- ▶ **Standard construction:** PN 16 at 120 °C
- ▶ **Temperature Range:** -120 °C up to 350 °C
upon Request up to 450 °C
- ▶ **Pressure Rating:** up to PN 400

Higher pressure ratings upon request

Products (amongst others)

- ▶ Acids
- ▶ Lyes
- ▶ Hydrocarbon
- ▶ Heat Transfer Liquids
- ▶ Coolants
- ▶ Liquid Gases
- ▶ Aggressive, Explosive and Toxic Liquids
- ▶ Liquids Containing Solids
- ▶ High-Viscosity Liquids

Industries (amongst others)

- ▶ Chemical Industry
- ▶ Petrochemical Industries
- ▶ Refrigeration and Heat Treatment
- ▶ Oil & Gas
- ▶ Power

Quality Assurance

A major component of the Klaus Union ethos is to ensure highest product quality. Existing quality assurance procedures with Klaus Union suppliers are constantly monitored from order placement to goods receipt and final assembly. This quality assurance system, developed on latest technologies, complies with the requirements of international regulations.

Klaus Union is a DIN EN ISO 9001 certified company

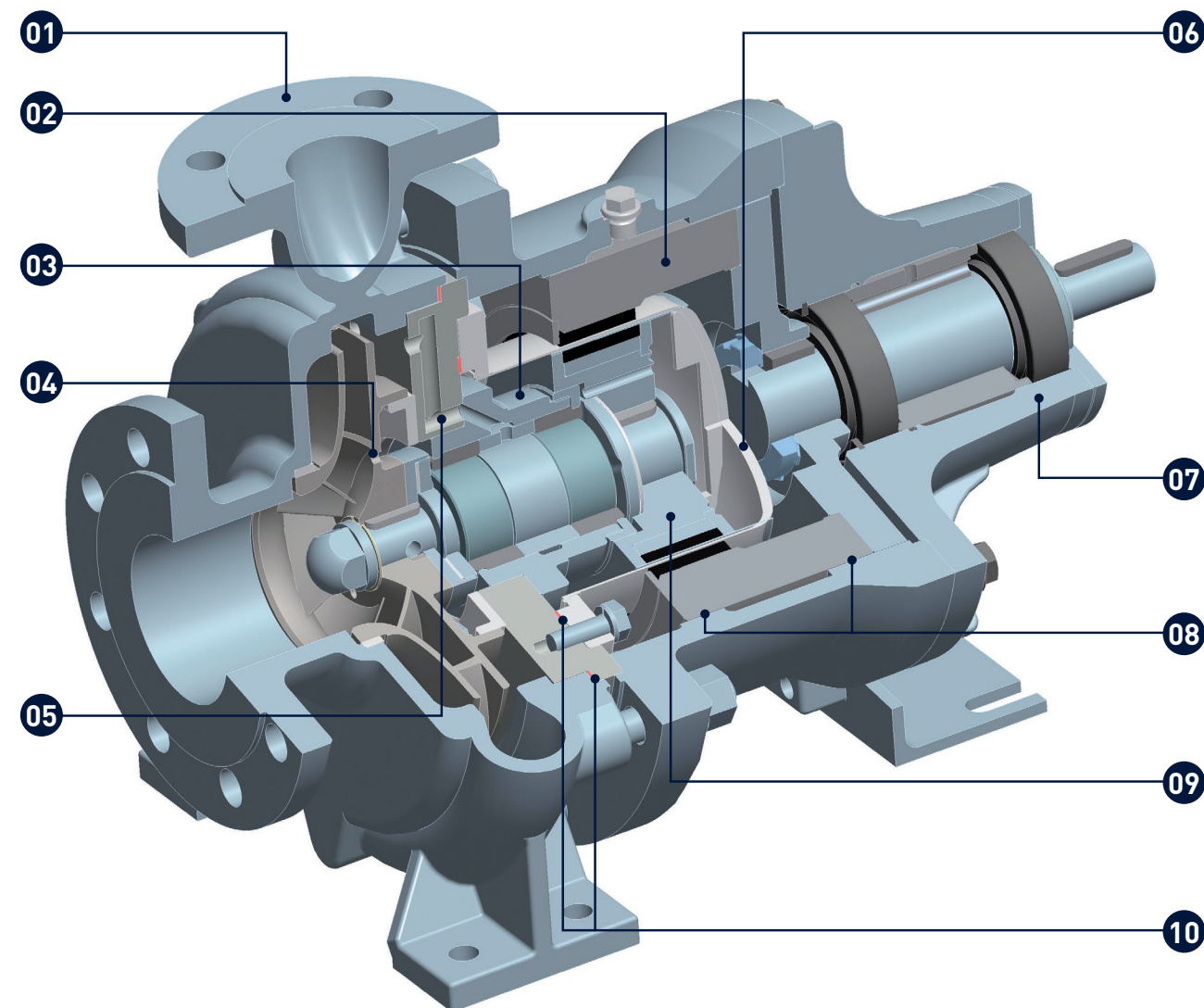


In accordance with
TÜV NORD CERT
procedures,

KLAUS UNION GmbH & Co. KG
Blumenfeldstraße 18, 44795 Bochum
&
KLAUS UNION Service GmbH & Co. KG
Blumenfeldstraße 18, 44795 Bochum

are certified according to
DIN EN ISO 9001

DESIGN DETAILS SERIES SLM NV



Please see
the description
on the following page
→

Design ACC. TO DIN EN ISO 2858

- 01 ▶ **Pump Casing**
PN 16 at 120 °C.
- 02 ▶ **Outer Magnet Carrier**
Rub Zone on the Intermediate Lantern.
- 03 ▶ **Journal Bearings**
Double Bearing made of SSiC;
Counter Centred Combination for Universal
Utilisation over a Wide Temperature Range.
- 04 ▶ **Balancing Holes**
Optimized Thrust Loads over the entire
Operating Range via Hydraulic Measures.
- 05 ▶ **Flushing System**
Pressurised to Safely handle Liquids close to
Boiling Point.
- 06 ▶ **Containment Shell**
Self-Venting and Fully Drainable;
Vortex Breaker.
- 07 ▶ **Bearing Support**
Bearing Bracket with Oil- or Greased-for-Life
Anti-Friction Bearings;
Optional: Close-coupled design.
- 08 ▶ **Intermediate Lantern**
With Outer Magnet Carrier Rub Ring
and Assembly/Disassembly Guidance.
- 09 ▶ **Inner Magnet Carrier**
With Rub Ring on the Journal Bearing Bush.
- 10 ▶ **Static Gaskets**
Only two Static Gaskets at Containment Shell
and Casing, Gaskets acc. to TA-Luft.

THE MODULAR SYSTEM FOR SEALLESS CENTRIFUGAL PUMPS

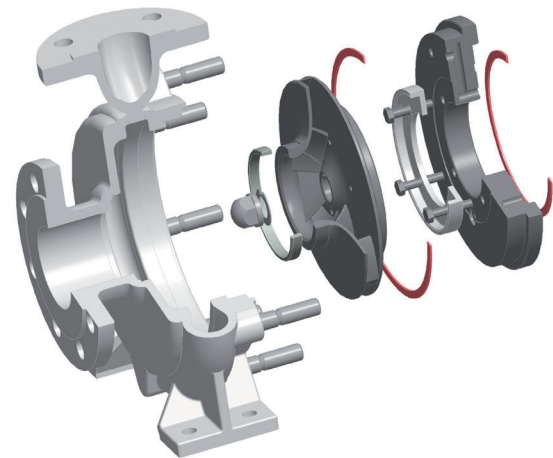


Fig. 1: Pump Hydraulic, 49 Sizes

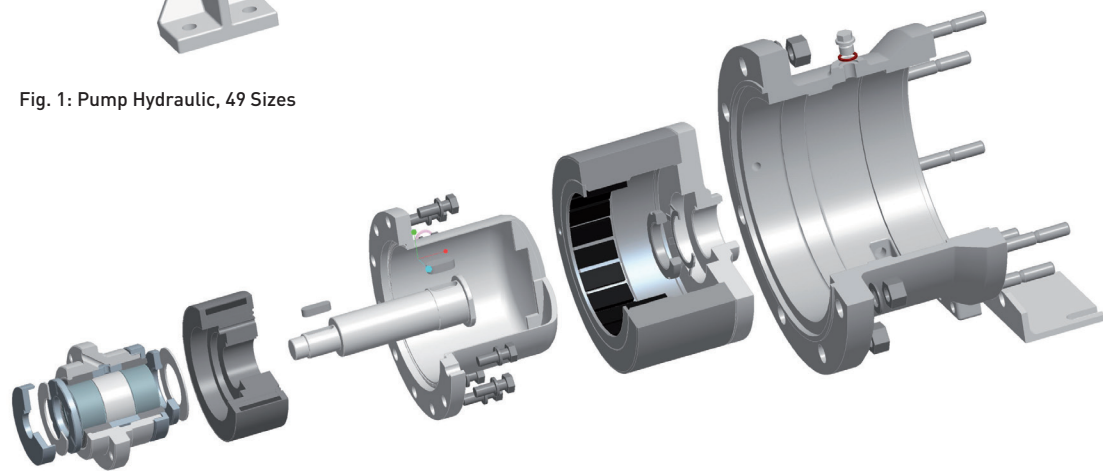


Fig. 2: Magnet Coupling, 54 Sizes

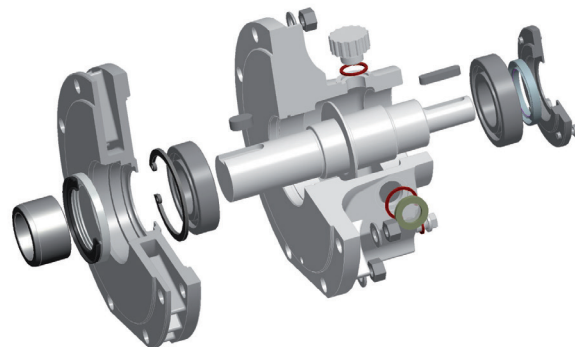


Fig. 3: Bearing Bracket, 5 Sizes

The Modular System

Klaus Union's modular pump system is consisting of three different elements:

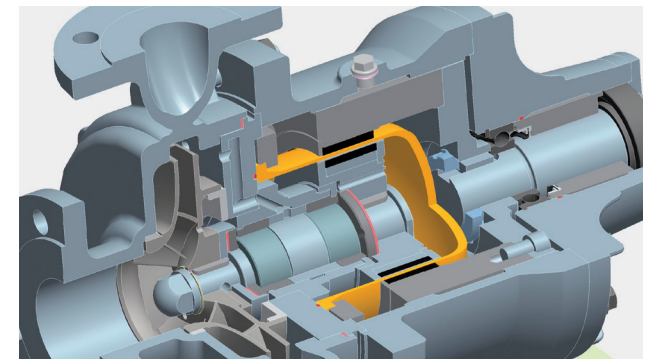
The combination of these elements allows a large operating envelope with less different parts. By usage of over 100 different pump sizes and magnet drives, operation parameters up to 3.500 m³/h and 400 bar are realized.

Interchangeability, stock size and services become easy subjects.

Quality and Know-How

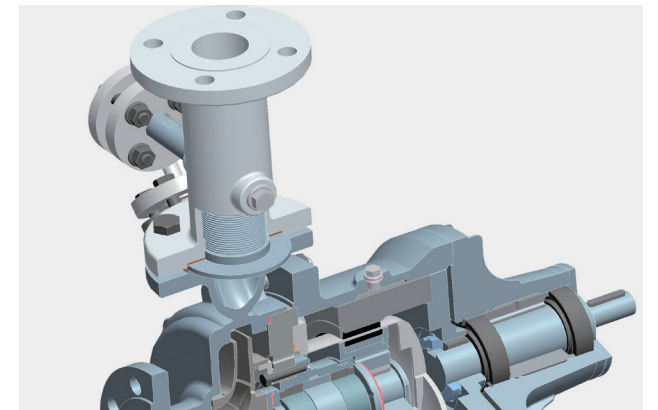
SLM NVS ... ZL

- ▶ Grease-Lubricated Anti-Friction Bearings with increased Bearing Spacing
- ▶ Non-Metallic Containment Shell "Z" (zirconium oxide)
- ▶ Secondary Sealing between the Anti-Friction Bearings "L"



SLM NVS ... E1F

- ▶ Grease-Lubricated Anti-Friction Bearings with Increased Bearing Spacing
- ▶ External Recirculation via Discharge Filter "E1F"



Construction Types

"Z" Containment Shell made of Zirconium Oxide
This containment shell generates no Eddy Current losses in the magnet drive. This containment shell offers maximum pump efficiency and is particularly beneficial where heat input into the pumped liquid is to be avoided.

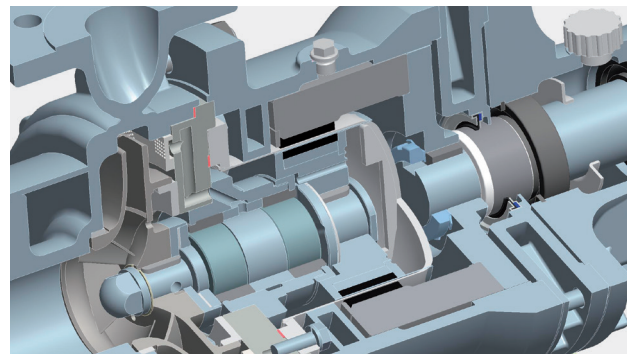
"L" Secondary Sealing between the Anti-Friction Bearings
The secondary sealing consists of a high-performance radial shaft seal ring, which ensures that there is no immediate leakage of the liquid to the atmosphere in the drive shaft area in the event of a containment shell failure.

"E1F" External Recirculation via Discharge Filter
The self-cleaning discharge filter is used for applications where liquids with a moderate percentage of solids are handled. The flush flow is picked up externally from the discharge filter and re-introduced into the magnet coupling. The internal flush flow ports are closed.

KLAUS UNION DESIGN VARIANTS

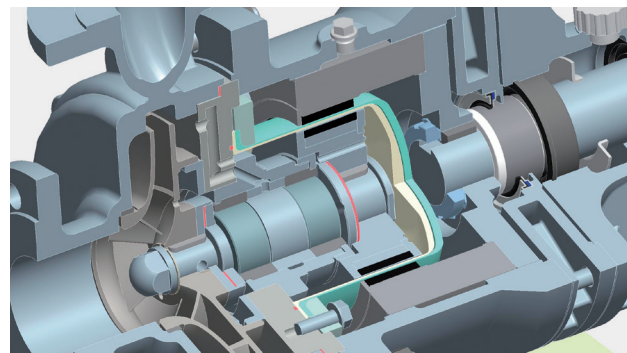
SLM NVO ... H12F

- ▶ Oil-Lubricated Anti-Friction Bearings with Thermal Barrier and Secondary Sealing
- ▶ Jacketed Hydraulic Casing "H1"
- ▶ Jacketed Intermediate Lantern "H2"
- ▶ Internal Filter "F"



SLM NVO ... C

- ▶ Oil-Lubricated Anti-Friction Bearings with Thermal Barrier and Secondary Sealing
- ▶ Plastic Containment Shell CFRP/PTFE "C"



Construction Types

"H1" Jacketed Hydraulic Casing for Heating

"H2" Jacketed Intermediate Lantern for Heating

The heating jacket serves to heat the pump prior to starting or to maintain temperature.

"F" Internal Filter

The self-cleaning internal filter is used for handling liquids with a low percentage of solids. The filter sits in front of the flush flow channel's entry ports. It ensures that no solid matter that could damage the magnet drive or the journal bearing can enter the flush flow circuit.

"C" Plastic Containment Shell

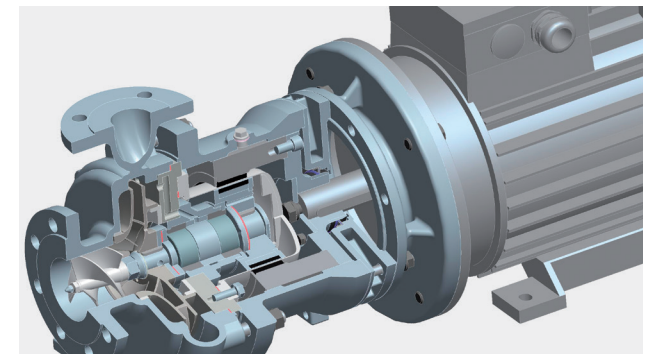
The plastic containment shell consists of two separate components – a carbon fibre reinforced outer shell, and an inner PTFE liner. The shell eliminates Eddy Current losses and is used to maximise the pump's over-all efficiency, or when a temperature rise of the internal flush flow must be avoided.

Options for every Requirement



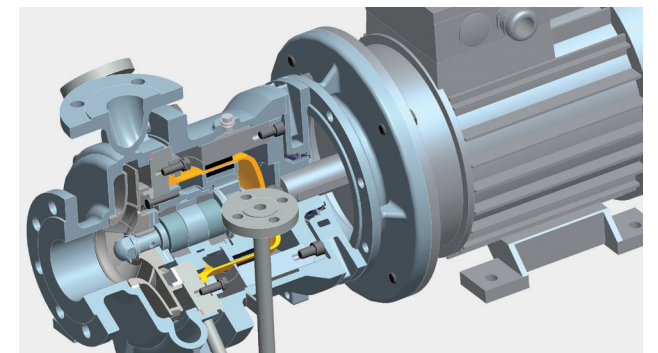
SLM NVB ... WJ

- ▶ Close-Coupled Construction
- ▶ Thermal Barrier with Secondary Sealing "W"
- ▶ Inducer "J"



SLM NVB ... OTZW

- ▶ Close-Coupled Construction
- ▶ Construction without Flush Flow "OT"
- ▶ Non-Metallic Containment Shell "Z" (Zirconium Oxide)
- ▶ Thermal Barrier with Secondary Sealing "W"



Construction Types

"W" Thermal Barrier with Secondary Sealing

The thermal barrier reduces heat transfer from the pump end to the anti-friction bearings.

By using the thermal barrier, the temperature at the anti-friction bearings is reduced by 20°C to 30°C. A high-performance radial shaft seal ring is integrated in the thermal barrier as a secondary sealing. The gasket prevents immediate liquid leakage in the event of containment shell failure.

"J" Inducer

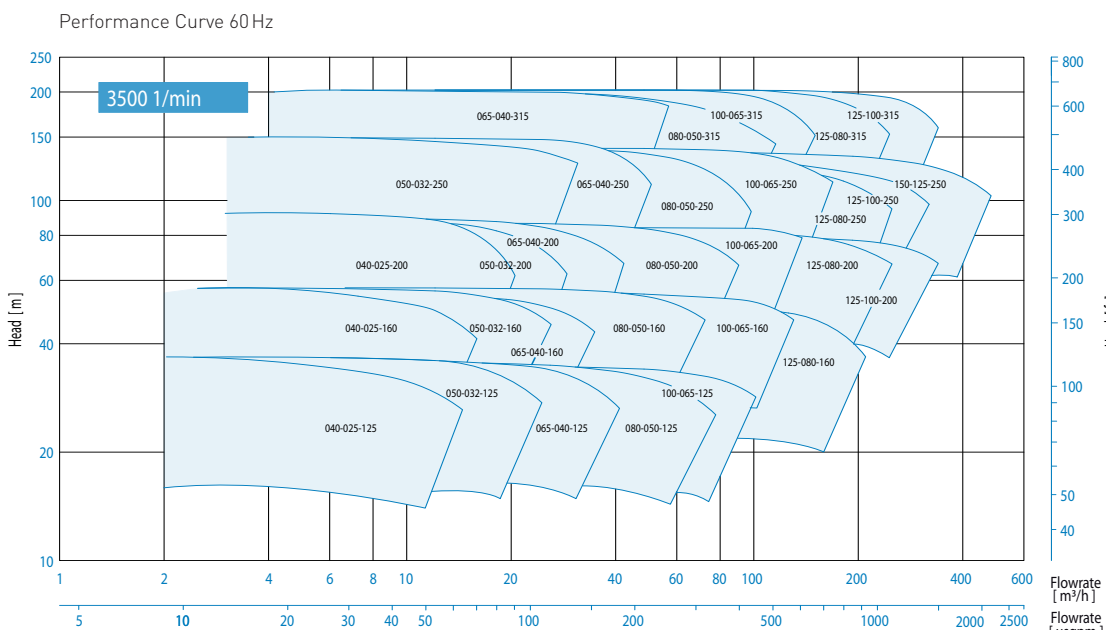
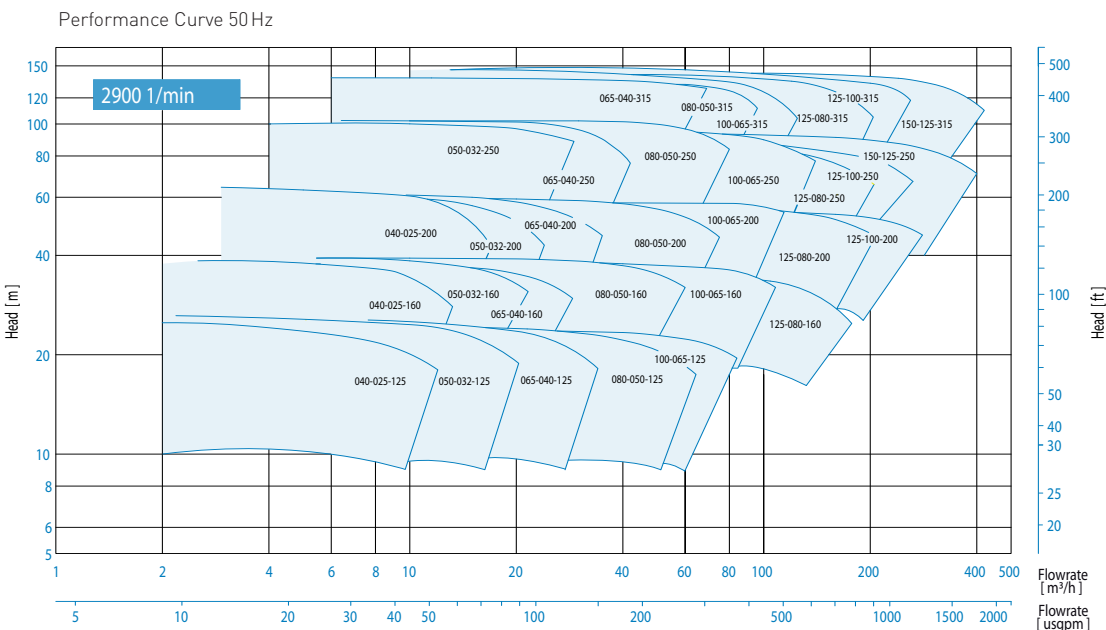
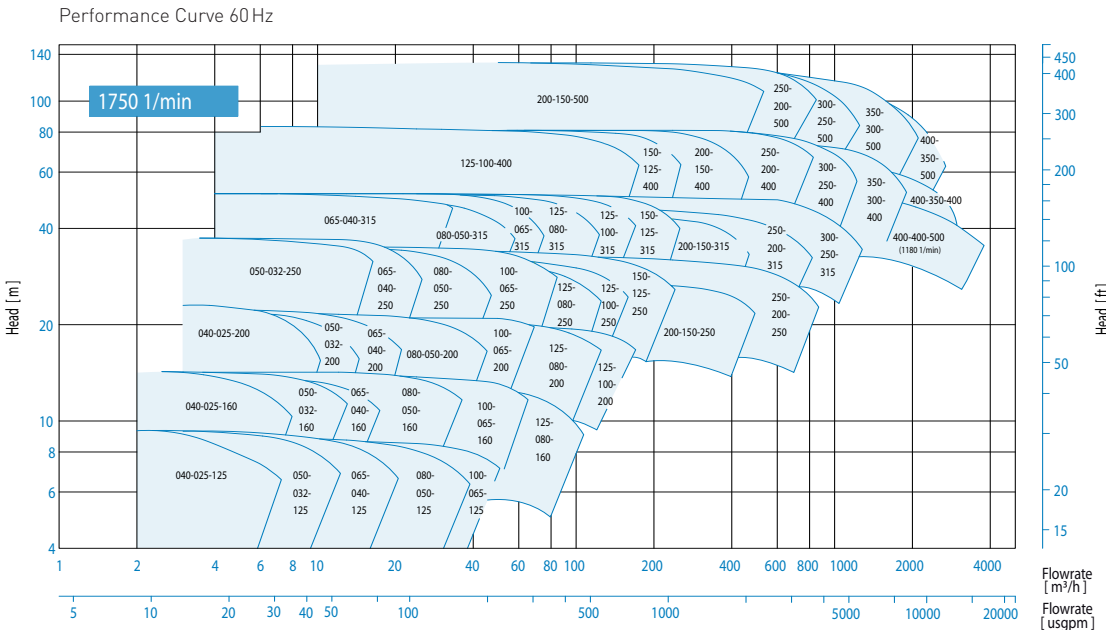
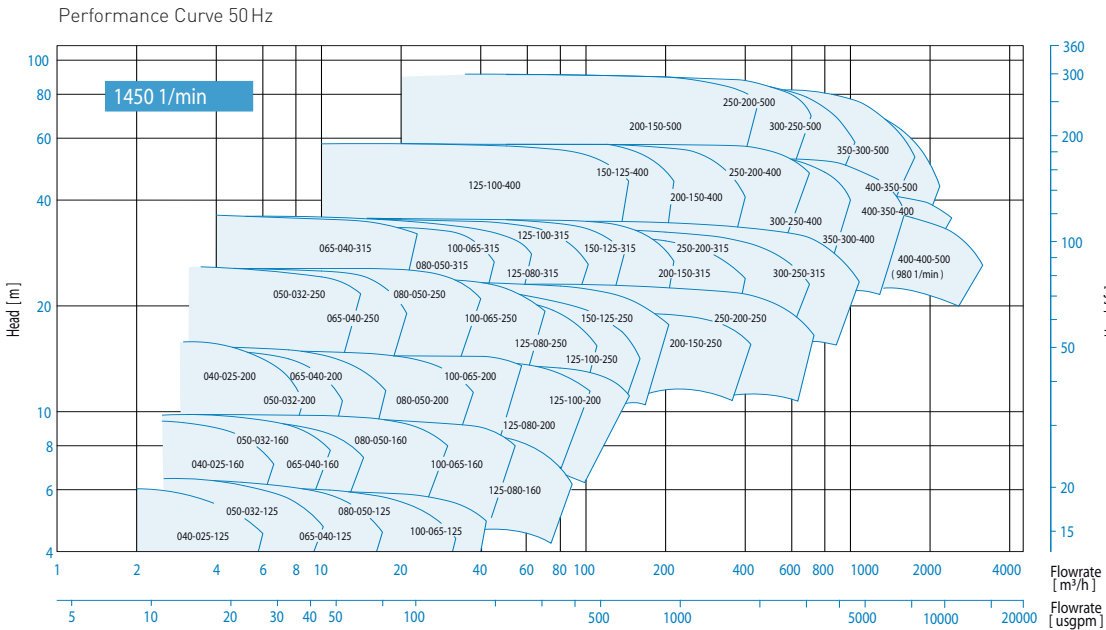
The inducer is fitted in front of the impeller and increases the suction pressure. It offers enhanced NPSH characteristics to the pump and can often almost half the NPSH requirements.

"OT" Construction without Flush Flow

This construction type is used for applications where liquids with a high percentage of solids are handled. The casing cover is equipped with two external connections for feeding and draining of the containment shell area. The specially designed journal bearings prevent any solids within the pumped liquid from entering the magnet drive.

PERFORMANCE CURVES

SERIES SLM NV



Product Range Pumps:

Magnet Drive Pumps

- ▶ Centrifugal Pumps according to DIN EN ISO 2858 & DIN EN ISO 15783
- ▶ Centrifugal Pumps according to ASME B73.3-2015
- ▶ Centrifugal Pumps according to API 685 2nd Edition
- ▶ Multi-Stage Centrifugal Pumps (Barrel-Type Design available)
- ▶ Side Channel Pumps following DIN EN ISO 15783
- ▶ Twin Screw Pumps, Single Volute, according to API 676 4th Edition
- ▶ Pumps in Close-Coupled Design
- ▶ Pumps for High Pressure Applications
- ▶ Pumps for High Temperature Applications
- ▶ Self-Priming Pumps
- ▶ Vertically Suspended (Sump) Pumps, Single- / Multi-Stage and Twin Screw Design
- ▶ Vertical Inline Pumps

Mechanically Sealed Pumps

- ▶ Centrifugal Pumps according to DIN EN ISO 2858 & DIN EN ISO 5199
- ▶ Centrifugal Pumps following API 610 12th Edition & ISO 13709 2010
- ▶ Multi-Stage Centrifugal Pumps (Barrel-Type Design available)
- ▶ Propeller Pumps, Horizontal / Vertical / Bottom-Flange
- ▶ Side Channel Pumps
- ▶ Twin Screw Pumps, Single / Double Volute, according to API 676 4th Edition
- ▶ Pumps for High Pressure Applications
- ▶ Pumps for High Temperature Applications
- ▶ Self-Priming Pumps
- ▶ Vertically Suspended (Sump) Pumps, Single- / Multi-Stage and Twin Screw Design
- ▶ Vertical Inline Pumps

Product Range Valves:

- ▶ Globe Valves, T-Pattern
- ▶ Globe Valves, Y-Pattern
- ▶ Control Valves
- ▶ Gate Valves, Isomorphous Construction Series
- ▶ Gate Valves, Wedge or Wedge Plates
- ▶ Check Valves
- ▶ Butterfly Valves, Metal Seated
- ▶ Control Butterfly Valves, Metal Seated

Klaus Union Service Performance:

- ▶ Workshop / On-Site Repairs
- ▶ Genuine Spare Part Delivery Worldwide
- ▶ Spare Parts Storage
- ▶ Customized Spare Parts Management
- ▶ On-Site Maintenance
- ▶ Installation
- ▶ Retrofitting
- ▶ On-Site Testing / Monitoring
- ▶ Customer Advisory Service
- ▶ Start Up & Commissioning
- ▶ Individual 24 / 7 Service
- ▶ Trouble-Shooting
- ▶ In-House & On-Site Training
- ▶ On-Site Assembly and Disassembly
- ▶ Long-Term Maintenance Contracts
- ▶ Maintenance Planning and Consulting
- ▶ Diagnostics

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