

Sealless Magnet Drive Pumps



KLAUS UNION, INC.

Klaus Union, Inc. provides a full range of quality magnet-drive pumps and metal bellow sealed globe valves to satisfy the requirements of the refining, chemical processing, pharmaceutical and other related industries. To support the customer's needs, the Houston, Texas facility maintains a broad inventory and provides a complete service department.



◀ Service

Customers and products are supported by the Houston service department. Klaus Union's factory-trained engineers and technicians provide the experience required for training, commissioning, repairing and troubleshooting. Personnel are on call at all times to provide assistance when required.



▲ Magnet-Drive Pumps

Klaus Union's extensive inventory of ANSI magnet-drive centrifugal pumps are maintained in the Houston warehouse to provide immediate shipment for customer requirements.

▶ **Fabricating Department**

All pump baseplates are manufactured at the Houston facility per API, ANSI, customer or Klaus Union specifications. Capabilities for production in a wide range of materials and special needs are provided.

▼ **Bellow Sealed Globe Valves**

Klaus Union's inventory of double-walled, metal bellow sealed globe valves are available for immediate shipment from the Houston warehouse. A wide range of sizes, styles and materials are available.

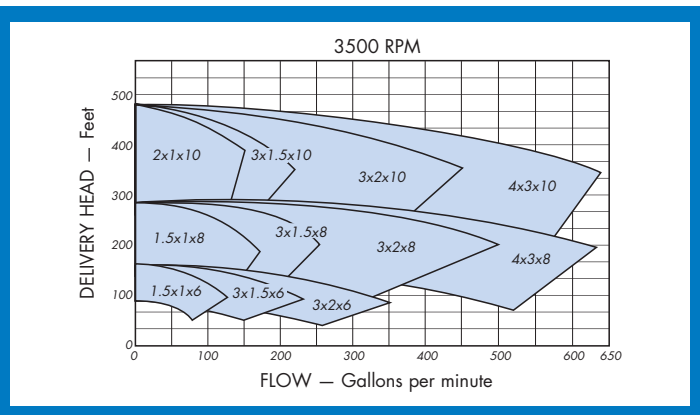
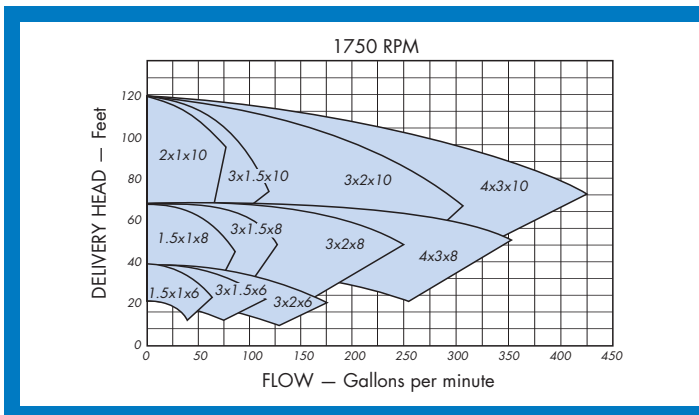
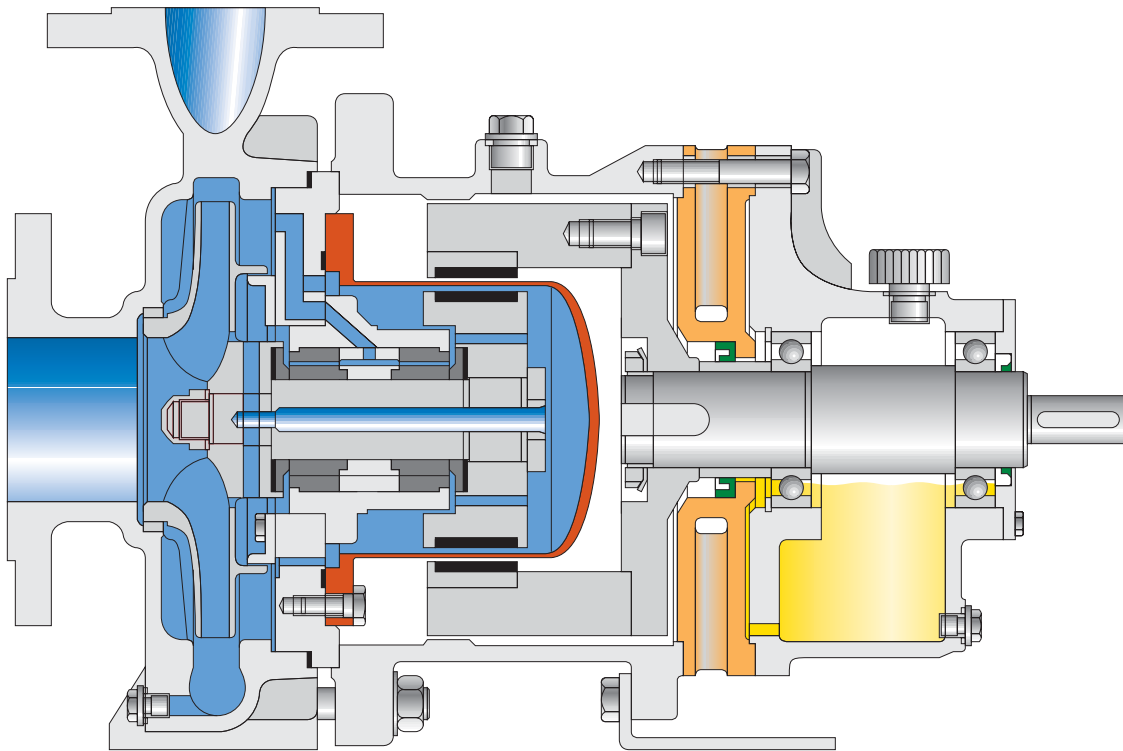


▲ **Engineering & Design**

A complete CAD system allows Klaus Union to provide detailed engineering drawings and data from the Houston facility. Drawings are provided in any dimensional standard required by the customer.

◀ **Parts Inventory**

An extensive parts inventory stocked at the Houston facility supports Klaus Union's line of magnet-drive pumps. Personnel are on call 24 hours to provide emergency customer support.



Technical Data

- Flow rates up to 600 GPM
- Total delivery heads up to 450 feet
- Temperature rating from -185°F (-120°C) to +575°F (+300°C)
- Flange connections per ANSI B16.5 Class 150 and Class 300

Applications

Refineries
 Chemical/petrochemical industries
 Environmental control
 Personnel safety
 Refrigeration and heat engineering
 Liquid gas plants
 Galvanic engineering
 Power stations
 Tank installations
 Pharmaceutical industries
 Fibers industries

Pumping

acids
 lyes
 hydrocarbons
 heat transfer liquids
 liquid gases
 aggressive, explosive, toxic liquids

Construction

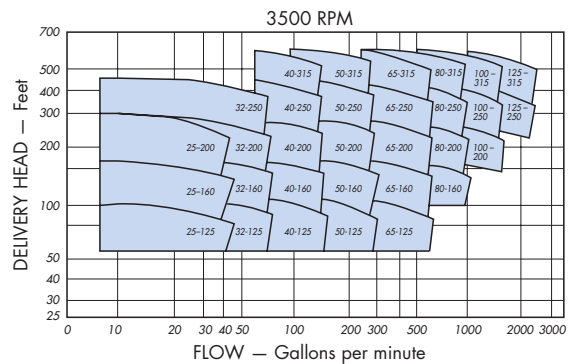
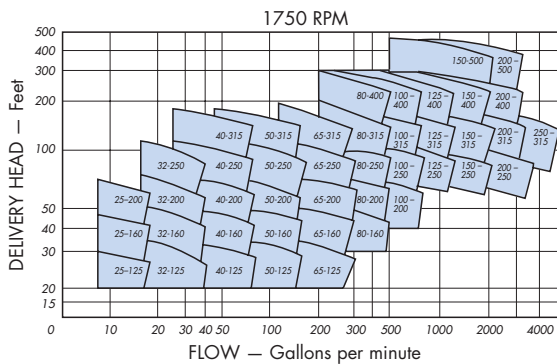
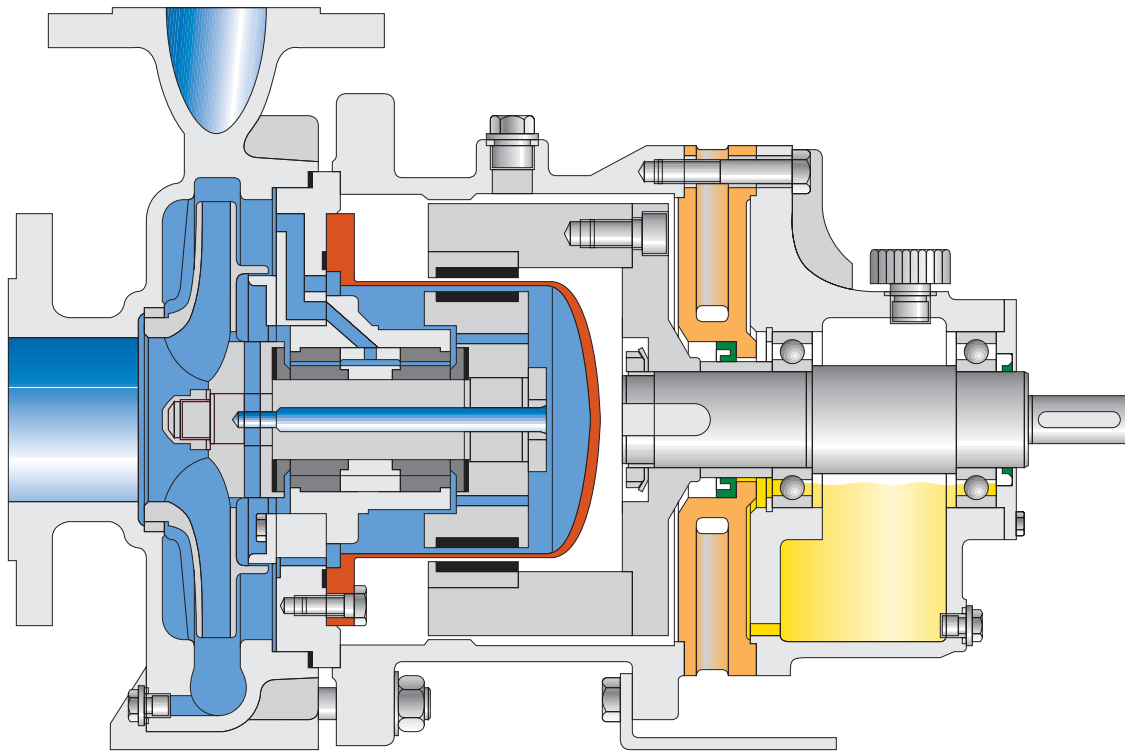
- horizontal centrifugal pump
- separation of liquid chamber/atmosphere by means of an isolation shell
- permanent magnet drive system, no mechanical seal
- synchronous drive transmitted by inner and outer magnet systems
- internal bearings made of pure sintered silicon carbide, alpha grade, liquid lubricated, for absorption of radial and axial loads
- bearings of outer magnet carrier: deep groove ball bearings

Standard Construction

pump casing: 316 SS
 impeller: 316 SS
 isolation shell: 316 Ti/ Hastelloy C4
 inner magnet carrier: 316 Ti/ Hastelloy C4
 internal bearings: Silicon Carbide, Alpha Grade
 bearing frame assembly: Cast Steel/ Nodular Cast Iron
 magnets: Rare Earth Samarium Cobalt

Special Alloys

Hastelloy B 1 (B)
 Hastelloy C 1 (C)
 Titanium
 Further materials are available.



Technical Data

- Flow rates up to 5500 GPM
- Total delivery heads up to 575 feet
- Temperature rating from -240°F (-150°C) to +840°F (+450°C)
- Flange connections per ANSI B16.5 Class 300
- Special constructions up to 5800 PSIG

Special constructions available.

Pumping

hydrocarbons
heat transfer liquids
aggressive, explosive, and toxic liquids

Applications

Refineries
Chemical and petrochemical industries

Construction

- horizontal centrifugal pump
- permanent magnet drive system, no shaft duct
- separation of liquid chamber/atmosphere by means of an isolation shell
- synchronous drive transmitted by inner and outer magnet systems
- internal bearings made of pure, sintered silicon carbide, alpha grade, liquid lubricated, for absorption of radial and axial loads
- bearings of outer magnet carrier: deep groove ball bearing
- centerline mount

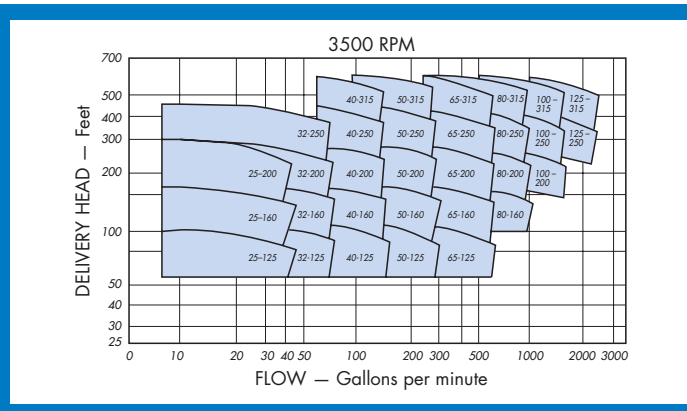
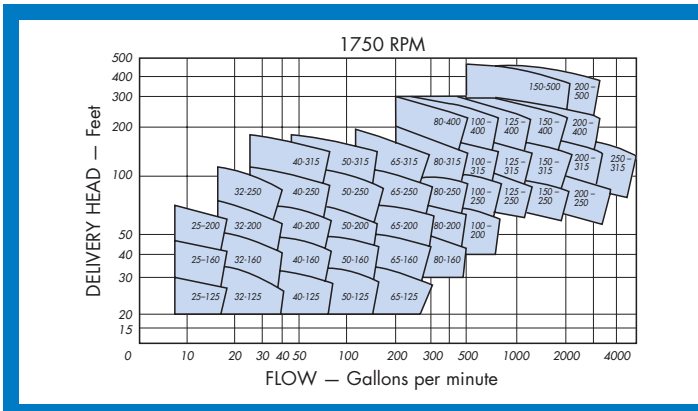
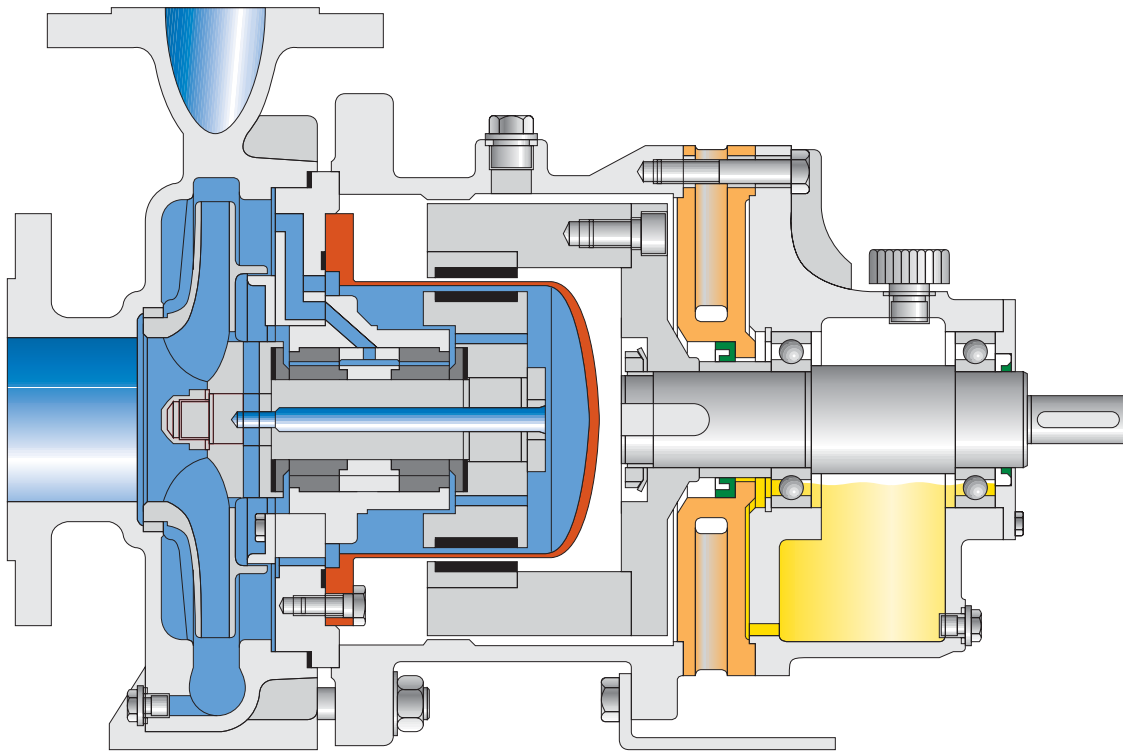
Standard Construction

pump casing: 316 SS
impeller: 316 SS
isolation shell: 316 Ti/Hastelloy C4
inner magnet carrier: 316 Ti/Hastelloy C4
internal bearings: Silicon Carbide, Alpha Grade
bearing frame assembly: Cast Steel/
Nodular Cast Iron
magnets: Rare Earth Samarium Cobalt

Special Alloys

Hastelloy B 1 (B)
Hastelloy C 1 (C)
Titanium

Further materials are available.



Technical Data

- Flow rates up to 5500 GPM
- Total delivery heads up to 575 feet
- Temperature rating from -185°F (-120°C) to +575°F (+300°C)
- Flange connections per ANSI B16.5 Class 150 and Class 300
- Special constructions up to 5800 PSIG

Special constructions available.

Applications

- Refineries
- Chemical and petrochemical industries
- Refrigeration and heat engineering
- Liquid gas plants
- Galvanic engineering
- Power stations
- Tank installations
- Pharmaceutical industries
- Fibers industries

Pumping

- acids
- lyes
- hydrocarbons
- heat transfer liquids
- liquid gases
- aggressive, explosive, and toxic liquids

Construction

- horizontal centrifugal pump
- permanent magnet drive system, no shaft duct
- separation of liquid chamber/atmosphere by means of an isolation shell
- synchronous drive transmitted by inner and outer magnet systems
- internal bearings made of pure, sintered silicon carbide, alpha grade, liquid lubricated, for absorption of radial and axial loads
- bearings of outer magnet carrier: deep groove ball bearing

Standard Construction

- pump casing: 316 SS
- impeller: 316 SS
- isolation shell: 316 Ti/Hastelloy C4
- inner magnet carrier: 316 Ti/Hastelloy C4
- internal bearings: Silicon Carbide, Alpha Grade
- bearing frame assembly: Cast Steel/ Nodular Cast Iron
- magnets: Rare Earth Samarium Cobalt

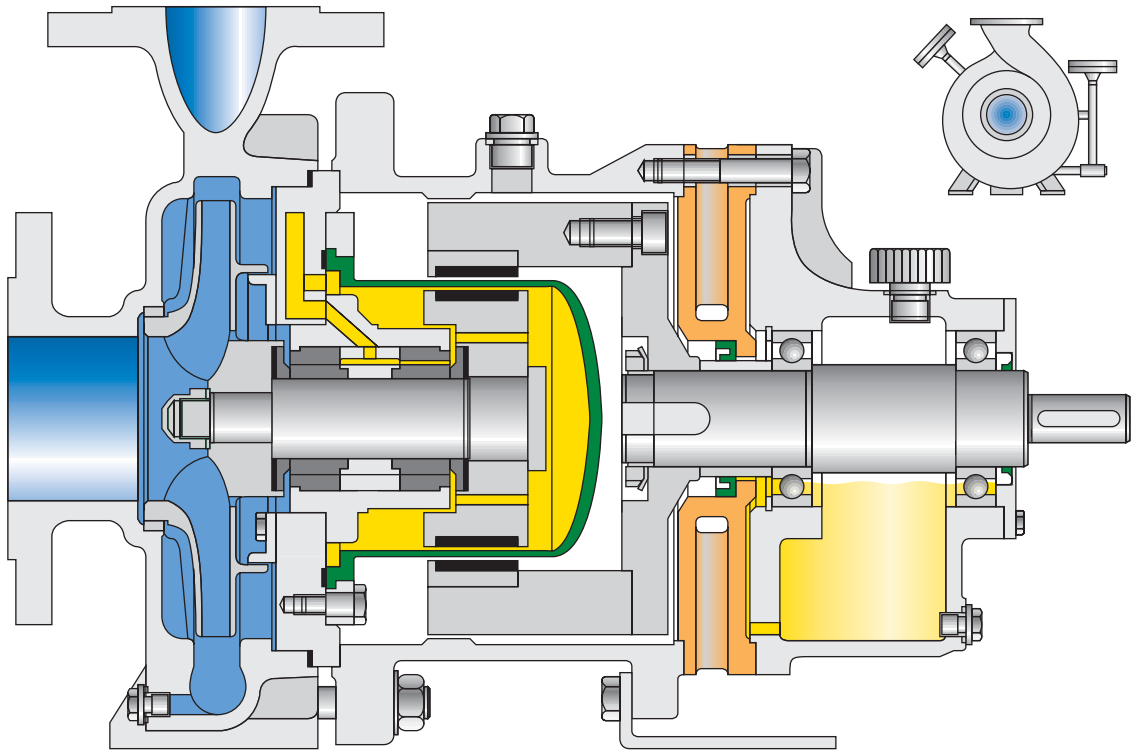
Special Alloys

- Hastelloy B 1 (B)
- Hastelloy C 1 (C)
- Titanium

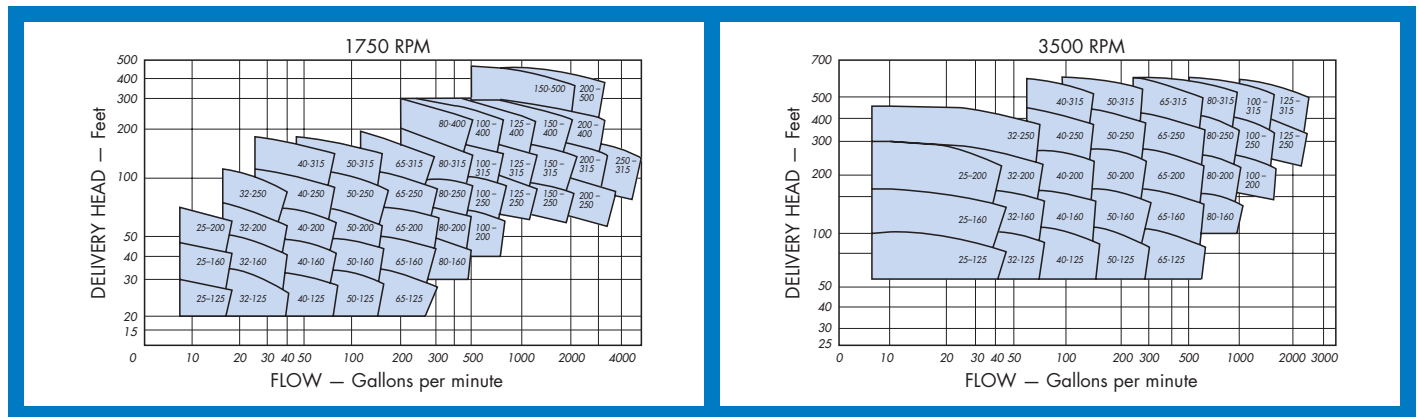
Further materials are available.

SLM-NVO-ZOT Dry running centrifugal pump with ceramic isolation shell

Designed for dry running, this system features a pump liquid chamber that is separated from the magnet system. The task of the separate system is to lubricate the journal bearings. The separate system uses a clean process-compatible liquid.



Also available in model SLM-AVO-ZOT.



Technical Data

- Flow rates up to 5500 GPM
- Total delivery heads up to 575 feet
- Temperature rating from -28°F (-2°C) to +250°F (+120°C)
- Flange connections per ANSI B16.5 Class 150 and Class 300

Pumping

catalyst slurries
acid slurries
hydrocarbons
aggressive, explosive, and toxic liquids
abrasive liquids
polymer slurries

Applications

Refineries
Chemical and petrochemical industries
Galvanic engineering
Tank installations
Pharmaceutical industries
Plastics industries

Construction

- horizontal centrifugal pump
- permanent magnet drive system, no shaft duct
- separation of liquid chamber/atmosphere by means of an isolation shell
- synchronous drive transmitted by inner and outer magnet systems
- internal bearings made of pure, sintered silicon carbide, alpha grade, liquid lubricated, for absorption of radial and axial loads
- bearings of outer magnet carrier: deep groove ball bearing
- secondary impeller for recirculation of clean flush source

Standard Construction

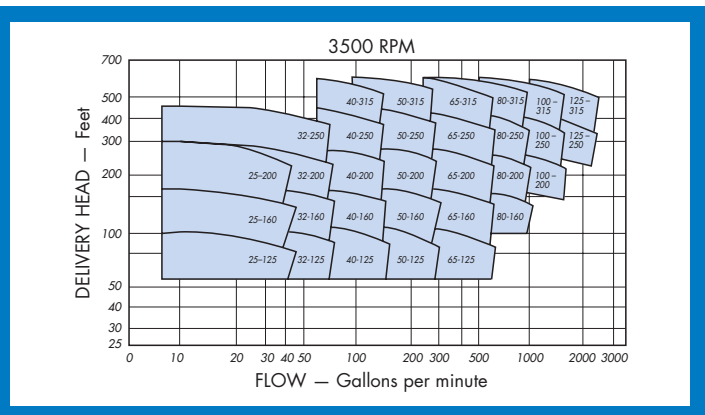
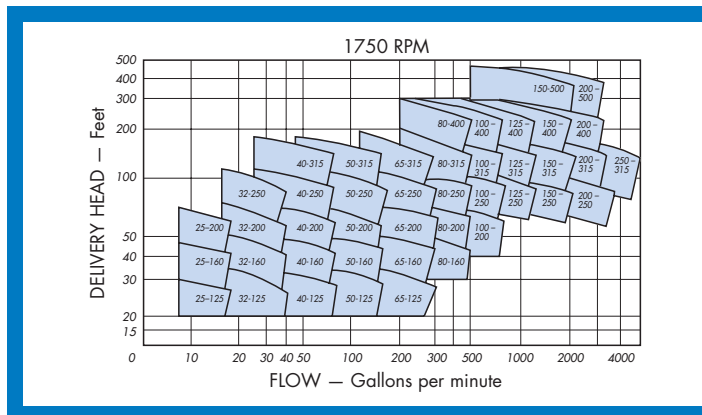
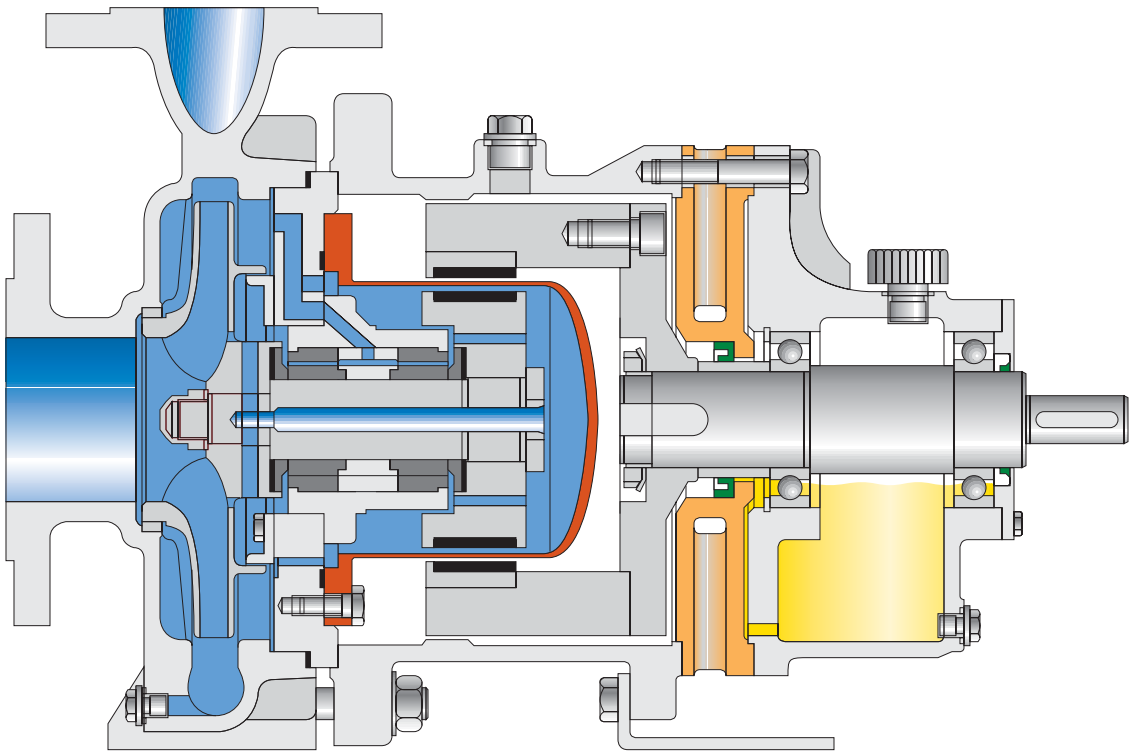
pump casing: 316 SS
impeller: 316 SS
isolation shell: Ceramic
inner magnet carrier: 316 Ti/Hastelloy C4
internal bearings: Silicon Carbide, Alpha Grade
bearing frame assembly: Cast Steel/
Nodular Cast Iron
magnets: Rare Earth Samarium Cobalt

Special Alloys

Hastelloy B 1 (B)
Hastelloy C 1 (C)
Titanium

Further materials are available.

For applications with temperatures up to 840°F (450°C), the high temperature design utilizes special internal bearings that allow for high operating temperatures and/or rapid temperature changes. For temperatures above 575°F (300°C) the aluminum nickel cobalt magnets are utilized, providing a synchronous coupling that does not require an outside cooling system.



Technical Data

- Flow rates up to 5500 GPM
- Total delivery heads up to 575 feet
- Temperature rating from -185°F (-120°C) to +840°F (+450°C)
- Flange connections per ANSI B16.5 Class 300
- Special constructions up to 5800 PSIG

Special constructions available.

Pumping

hydrocarbons
heat transfer liquids
aggressive, explosive, and toxic liquids

Applications

Refineries
Chemical and petrochemical industries
Fibers industries
Pharmaceutical industries

Construction

- horizontal centrifugal pump
- permanent magnet drive system, no shaft duct
- separation of liquid chamber/atmosphere by means of an isolation shell
- synchronous drive transmitted by inner and outer magnet systems
- internal bearings made of pure, sintered silicon carbide, alpha grade, liquid lubricated, for absorption of radial and axial loads
- bearings of outer magnet carrier: deep groove ball bearing
- centerline mount

Standard Construction

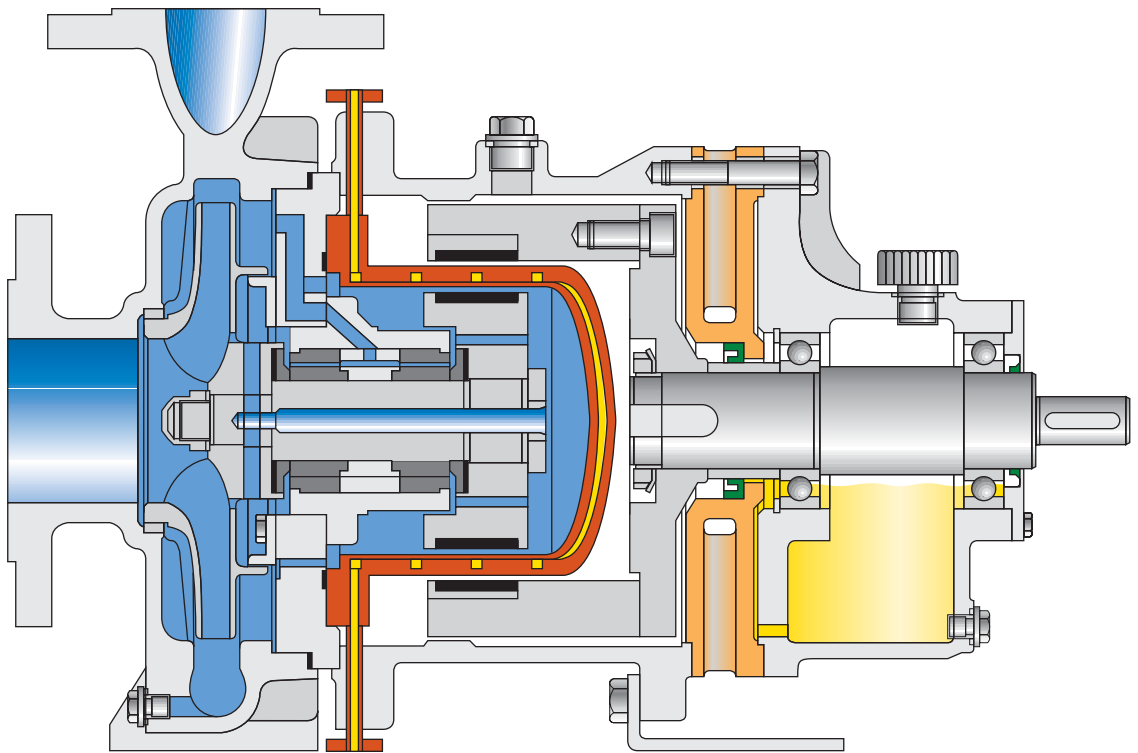
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|-------------------------|--|
| pump casing: | 316 SS |
| impeller: | 316 SS |
| isolation shell: | 316 Ti/Hastelloy C4 |
| inner magnet carrier: | 316 Ti/Hastelloy C4 |
| internal bearings: | Silicon Carbide, Alpha Grade |
| bearing frame assembly: | Cast Steel/
Nodular Cast Iron |
| magnets: | Rare Earth Samarium
Cobalt or Aluminum
Nickel Cobalt |

Special Alloys

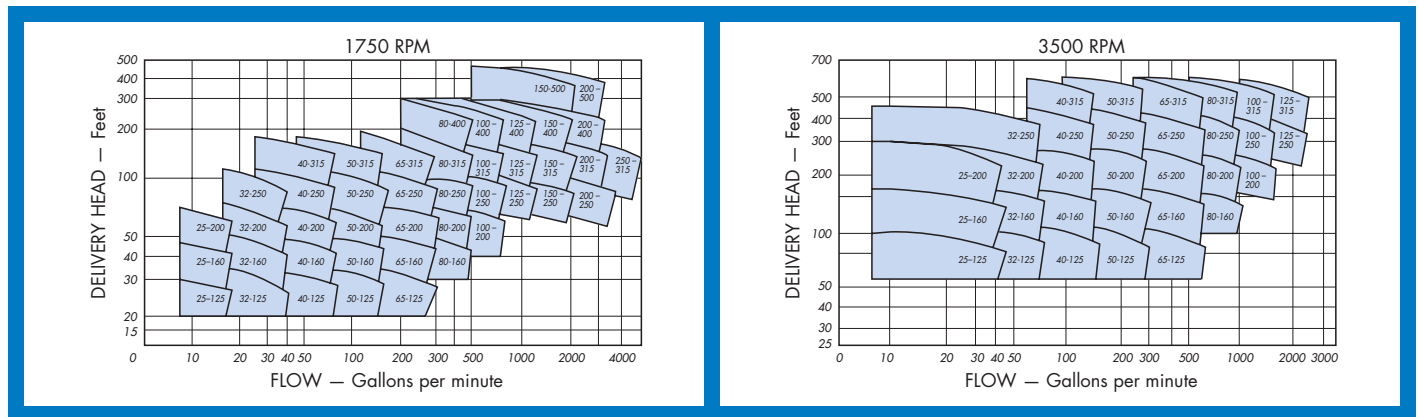
Hastelloy B 1 (B)
Hastelloy C 1 (C)
Titanium

Further materials are available.

The double isolation shell consists of two metallic isolation shells placed one inside the other. A network of paths between the two isolation shells allows for an effective control via a pressure switch. Any damage to either the interior or exterior isolation shell will cause the pump to shutdown before any leakage would occur. The design of both isolation shells is made consistent with the design pressure, thus enhancing safety.



Also available in model SLM-AVO-TD.



Technical Data

- Flow rates up to 5500 GPM
- Total delivery heads up to 575 feet
- Temperature rating from -40°F (-40°C) to +575°F (+300°C)
- Flange connections per ANSI B16.5 Class 150 and Class 300

Special constructions available.

Pumping

cyanide
acids
hydrocarbons
aggressive, explosive, and toxic liquids
phosgene
hydrofluoric acid
lethal services

Applications

Refineries
Chemical and petrochemical industries
Liquid gas plants
Tank installations
Pharmaceutical industries

Construction

- separation of liquid chamber/atmosphere by means of a double isolation shell
- horizontal centrifugal pump
- permanent magnet drive system, no shaft duct
- synchronous drive transmitted by inner and outer magnet systems
- internal bearings made of pure, sintered silicon carbide, alpha grade, liquid lubricated, for absorption of radial and axial loads
- bearings of outer magnet carrier: deep groove ball bearing

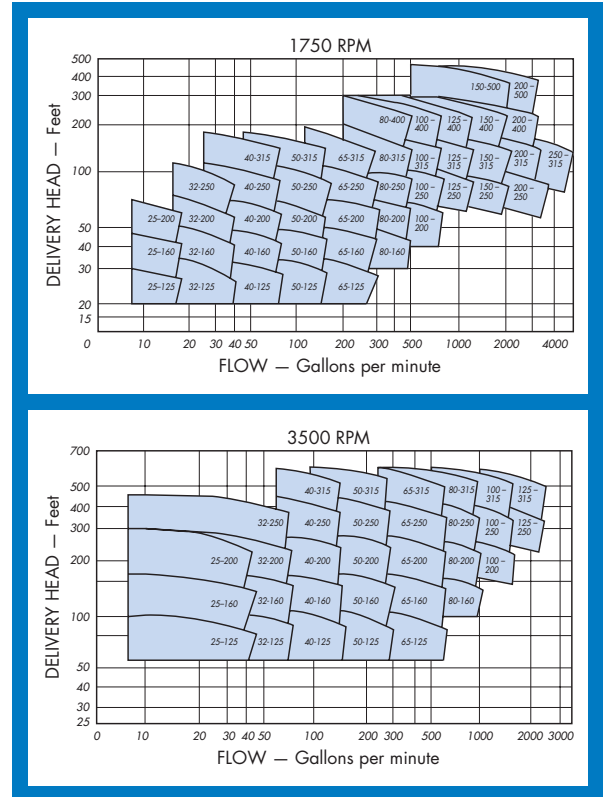
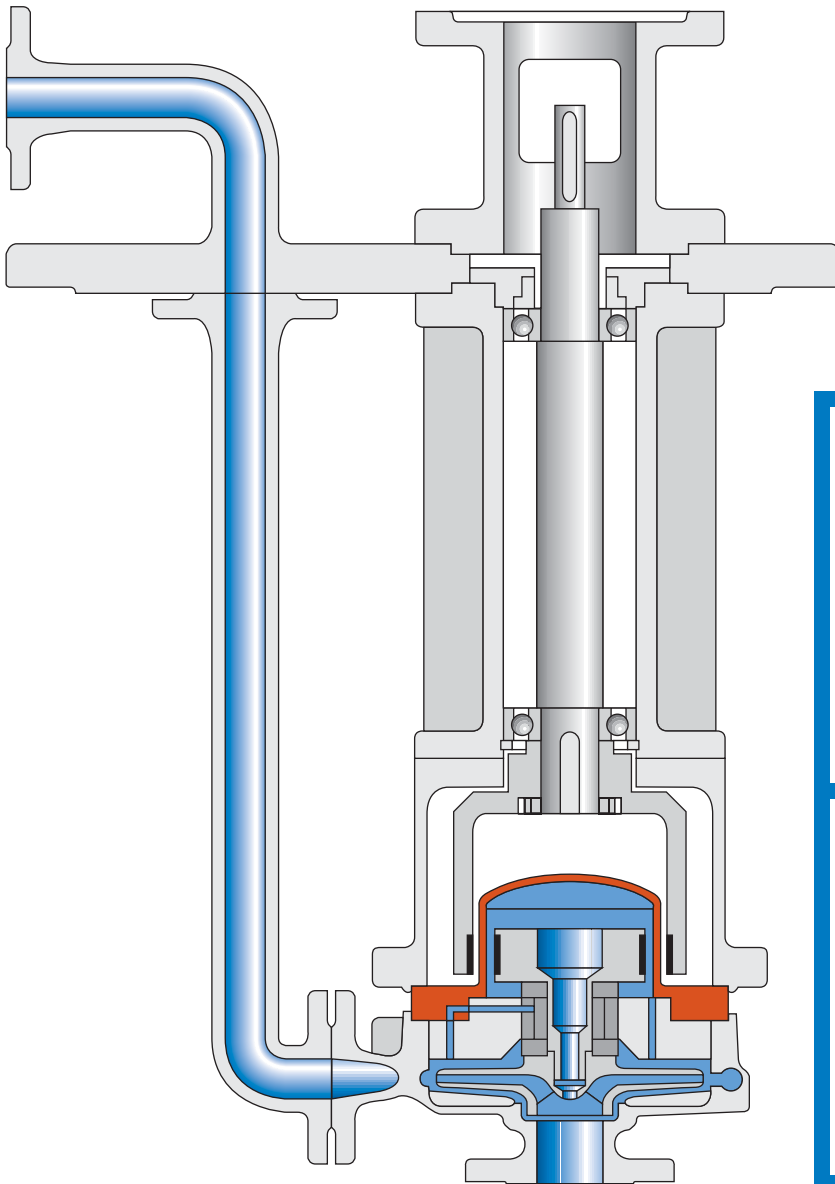
Standard Construction

pump casing: 316 SS
impeller: 316 SS
isolation shell: 316 Ti/Hastelloy C4
inner magnet carrier: 316 Ti/Hastelloy C4
internal bearings: Silicon Carbide, Alpha Grade
bearing frame assembly: Cast Steel/
Nodular Cast Iron
magnets: Rare Earth Samarium Cobalt

Special Alloys

Hastelloy B 1 (B)
Hastelloy C 1 (C)
Titanium

Further materials are available.



Technical Data

- Flow rates up to 5500 GPM
- Total delivery heads up to 575 feet
- Temperature rating from -185°F (-120°C) to +575°F (+300°C)
- Flange connections per ANSI B16.5 Class 150 and Class 300
- Pressure ratings up to 580 PSIG

Special constructions available.

Pumping

acids
lyes
hydrocarbons
heat transfer liquids
liquid gas
aggressive, explosive and toxic liquids
mercury

Applications

Chemical and petrochemical industries
Refrigeration and heat engineering
Galvanic engineering
Power stations
Tank installations

Construction

- vertical centrifugal pump with dry supporting column
- permanent magnet drive system, no shaft duct
- separation of liquid chamber/atmosphere by means of an isolation shell
- synchronous drive transmitted by inner and outer magnet systems
- internal bearings made of silicon carbide for absorption of radial and axial loads
- bearings of outer magnet carrier: deep groove ball bearing

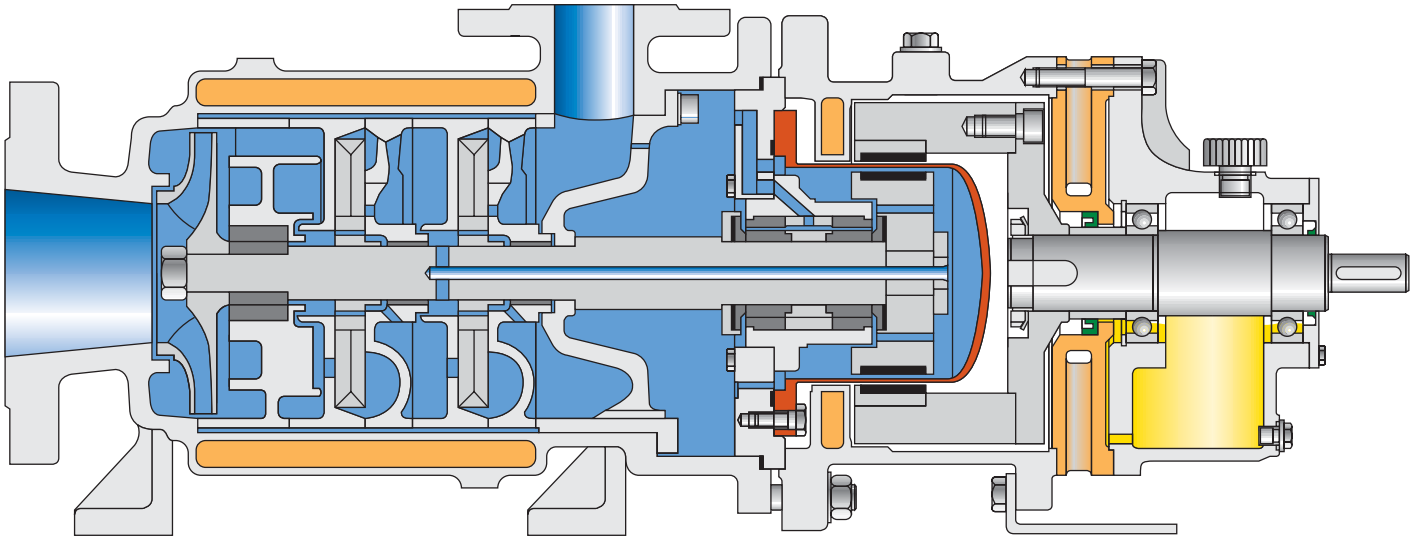
Standard Construction

pump casing: 316 SS
impeller: 316 SS
isolation shell: 316 Ti/Hastelloy C4
inner magnet carrier: 316 Ti/Hastelloy C4
internal bearings: Silicon Carbide, Alpha Grade
stand pipe assembly: Nodular Cast Iron
magnets: Rare Earth Samarium Cobalt

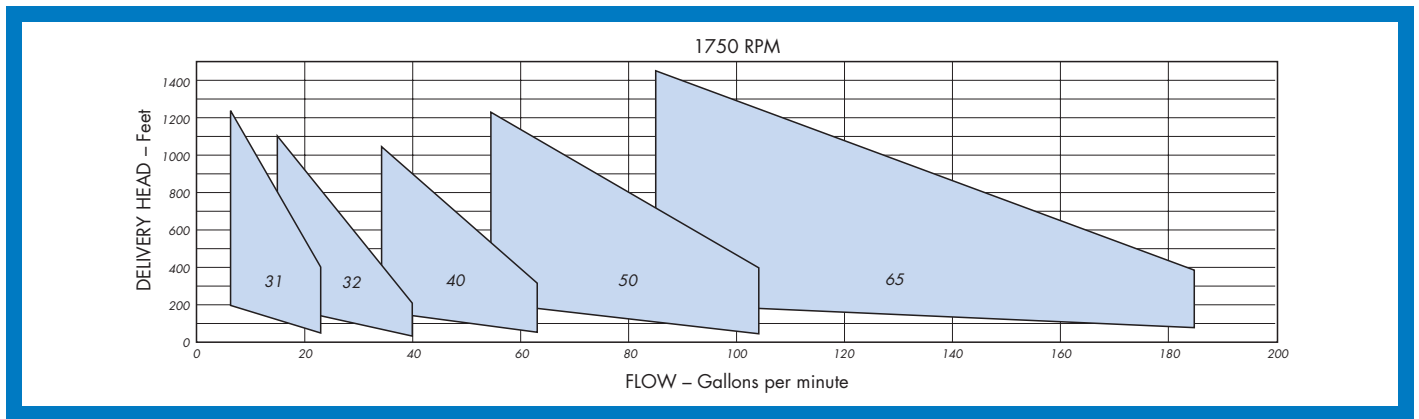
Special Alloys

Hastelloy B 1 (B)
Hastelloy C 1 (C)
Titanium

Further materials are available.



Shown with optional jacketed case and jacketed bearing lantern.



Technical Data

- Flow rates up to 185 GPM
- Total delivery heads up to 1450 feet
- Temperature rating from -185°F (-120°C) to +575°F (+300°C)
- Pressure rating up to 580 PSIG
- Flange connections per ANSI B16.5 Class 150 and Class 300

Special constructions and higher pressure ratings are available.

Applications

- Refineries
- Chemical and petrochemical industries
- Refrigeration engineering
- Liquid gas plants
- Galvanic engineering
- Tank installations
- Vacuum technology
- Extracting plants

Pumping

- acids/lyes
- hydrocarbons
- solvents
- liquid gases
- oxidate
- refrigerants

Construction

- horizontal multi-stage pump
- permanent magnet drive system, no shaft duct
- separation of liquid chamber/atmosphere by means of an isolation shell
- synchronous drive transmitted by inner and outer magnet systems
- internal bearings made of carbon or pure, sintered silicon carbide, alpha grade, liquid lubricated, for absorption of radial and axial loads
- bearings of outer magnet carrier: deep groove ball bearing
- self-priming
- low NPSH first stage impeller

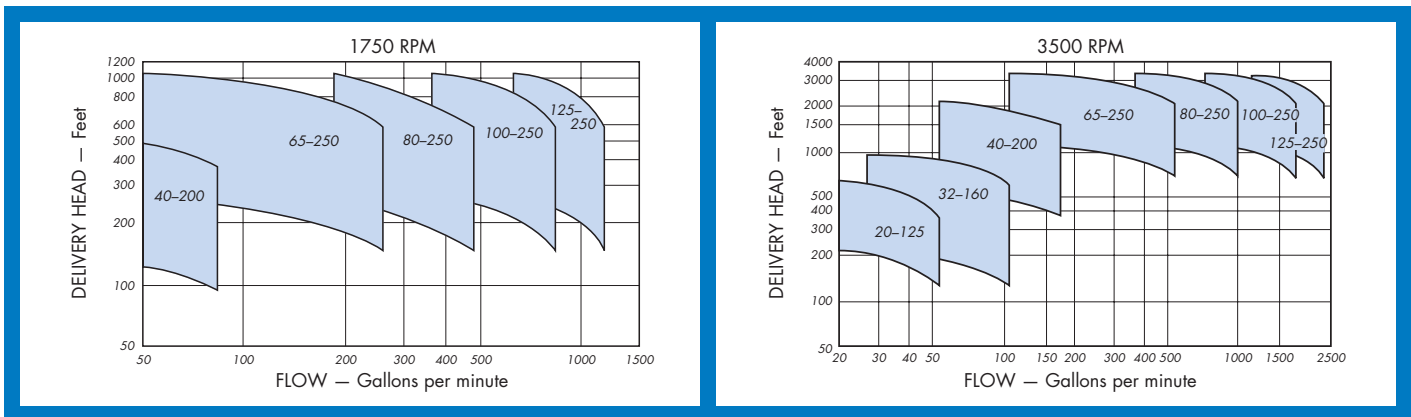
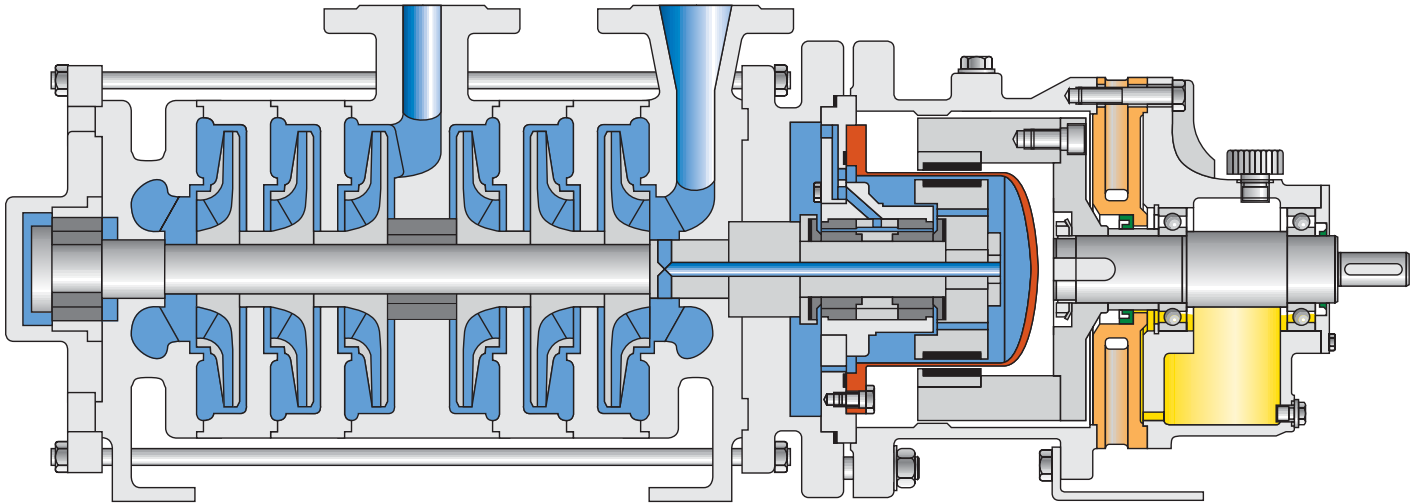
Standard Construction

- suction casing: 316 SS
- impellers: 316 SS
- intermediate casings: 316 SS
- isolation shell: 316 Ti/Hastelloy C4
- inner magnet carrier: 316 Ti/Hastelloy C4
- internal bearings: Carbon/Silicon Carbide
- bearing frame assembly: Cast Steel/ Nodular Cast Iron
- magnets: Rare Earth Samarium Cobalt

Special Alloys

- Cast Steel
- 304 SS

Further materials are available.



Technical Data

- Flow rates up to 2400 GPM
- Total delivery heads up to 3300 feet
- Temperature rating from -185°F (-120°C) to +575°F (+300°C)
- Pressure rating up to 1450 PSIG

Special constructions available.

Pumping

acids
lyes
hydrocarbons
hot water
sea water
fuels
fatty acids

Applications

Refineries
Chemical and petrochemical industries
Industries
Liquid gas plants
Power plants

Construction

- horizontal high pressure multi-stage pump
- permanent magnet drive system, no shaft duct
- separation of liquid chamber/atmosphere by means of an isolation shell
- synchronous drive transmitted by inner and outer magnet systems
- internal bearings made of pure, sintered silicon carbide, alpha grade, liquid lubricated, for absorption of radial and axial loads
- bearings of outer magnet carrier: deep groove ball bearing
- impellers mounted in pairs, back-to-back arrangement

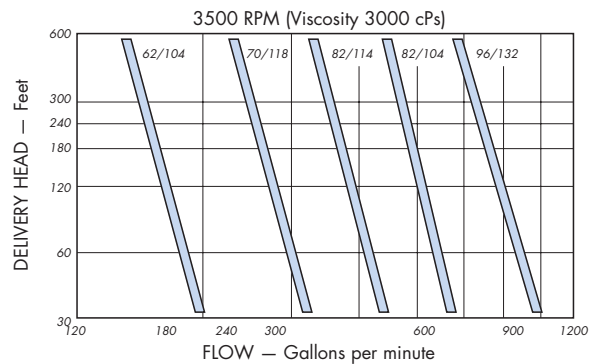
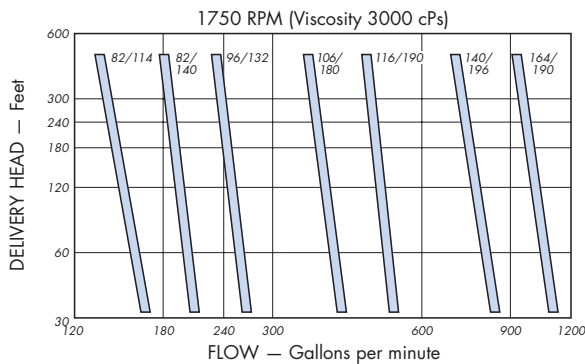
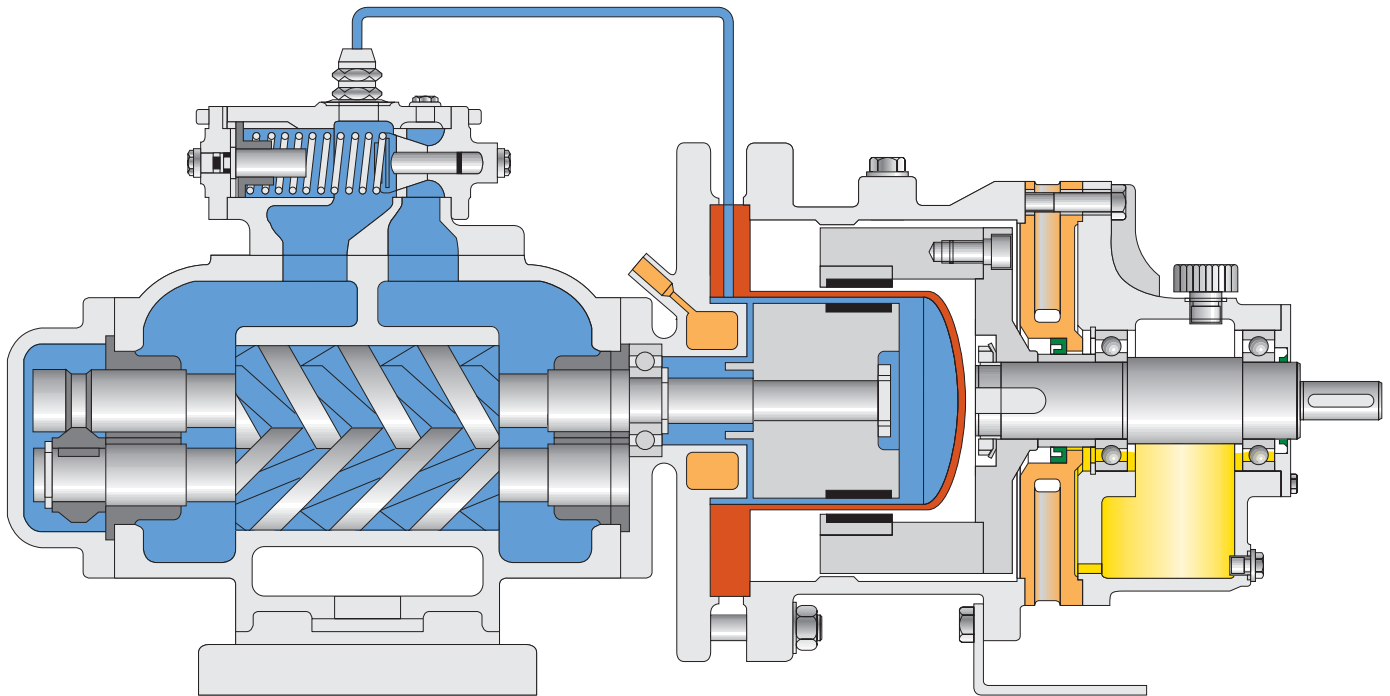
Standard Construction

suction casing:	316 SS
pressure casing:	316 SS
inter-stage casing:	316 SS
impellers:	316 SS
isolation shell:	316 Ti/Hastelloy C4
inner magnet carrier:	316 Ti/Hastelloy C4
internal bearings:	Carbon or Silicon Carbide, Alpha Grade
bearing frame assembly:	Cast Steel/ Nodular Cast Iron
magnets:	Rare Earth Samarium Cobalt

Special Alloys

Cast Steel
304 SS
Titanium

Further materials are available.



Technical Data

- Flow rates up to 1250 GPM
- Total delivery heads up to 575 feet
- Temperature rating from +15°F (-10°C) to +575°F (+300°C)
- Pressure rating up to 580 PSIG

Special constructions available.

Pumping

isocyanates
polycarbonates
oils and fats
manomeres
polyesters
resins
viscous liquids

Applications

Refineries
Chemical and petrochemical industries
Synthetic and rubber industries
Mineral oil industry
Paint and lacquer industries

Construction

- horizontal screw pump
- permanent magnet drive system, no shaft duct
- separation of liquid chamber/atmosphere by means of an isolation shell
- synchronous drive transmitted by inner and outer magnet systems
- internal bearings made of pure, sintered silicon carbide, alpha grade, and carbon, liquid lubricated
- bearings of outer magnet carrier: deep groove ball bearing
- two screw spindles, rotating towards each other
- spindles supported in bearing bushings
- hydraulic compensation of axial force

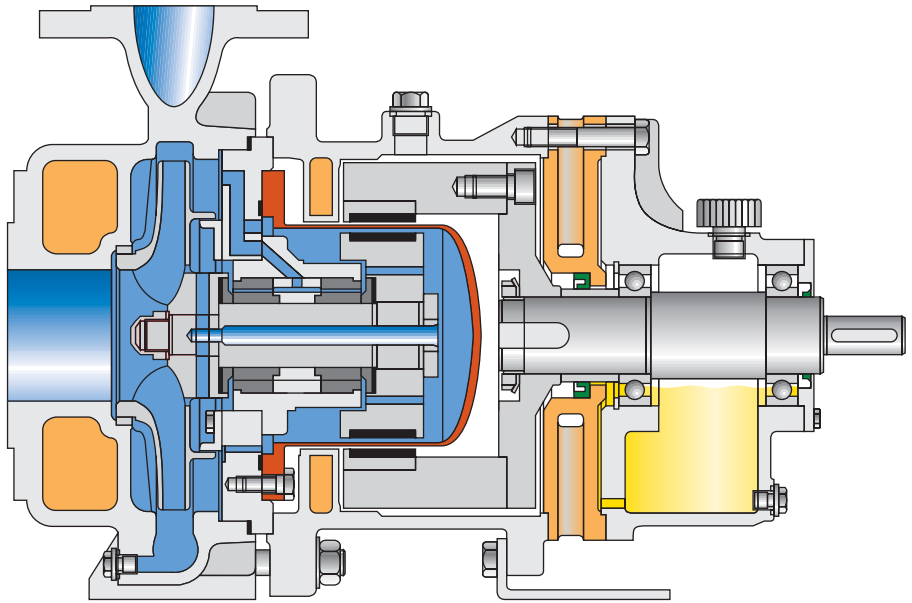
Standard Construction

casing:	Nodular Cast Iron
spindle:	Hardened Steel
internal bearings:	Carbon/Silicon Carbide
isolation shell:	316 Ti/Hastelloy C4
inner magnet carrier:	316 Ti/Hastelloy C4
bearing frame assembly:	Cast Steel/ Nodular Cast Iron
magnets:	Rare Earth Samarium Cobalt

Further materials are available.

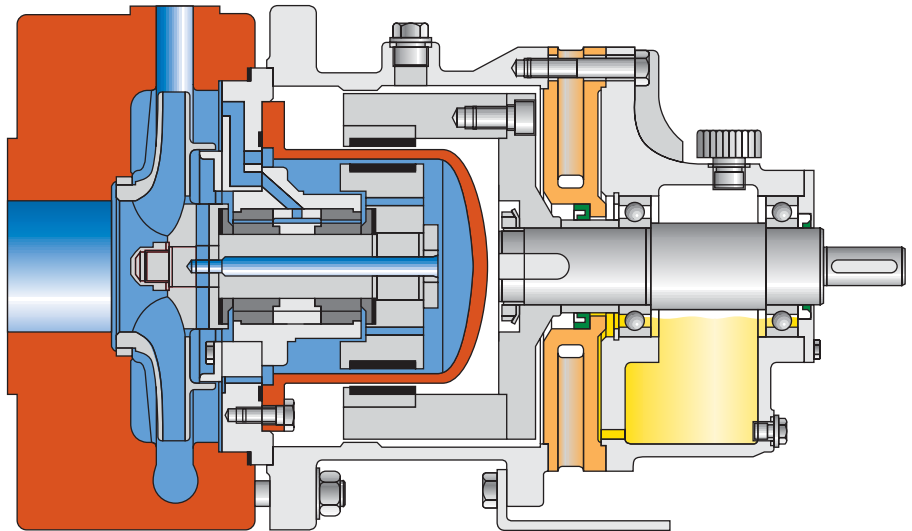
Heating/Cooling

Heating of the pump is achieved by jackets on the casing and bearing frame. The two areas can be heated separately or together as a combined heating system. The jackets can be fed with steam, heat transfer oil or any other readily available heat transfer medium. Conversely, the heating system can also be used as a cooling system if necessary.



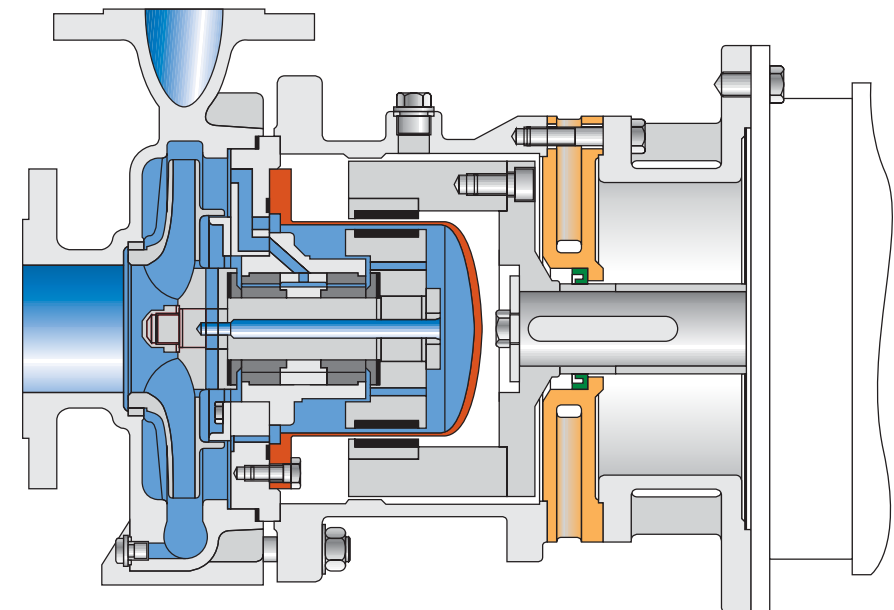
High Pressure

For high pressures up to 5800 PSI, this design utilizes forged casings and special isolation shells.



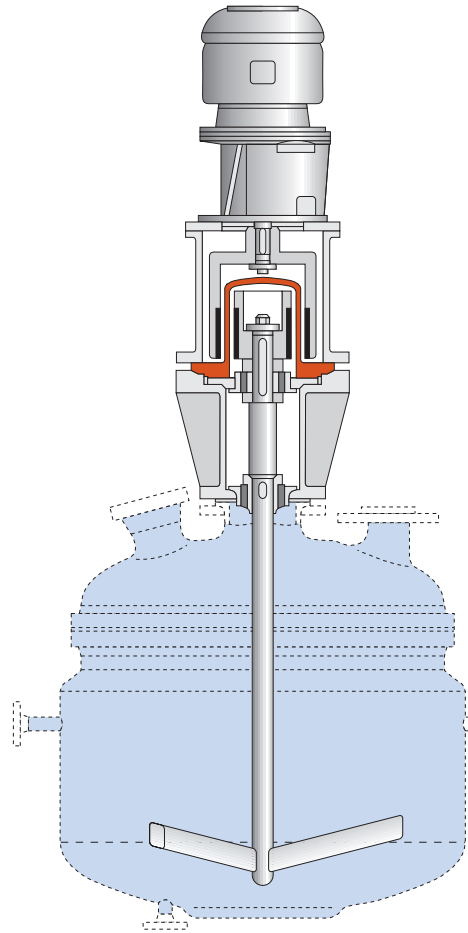
Close Coupled

Basic design with close coupling for temperatures from -185°F (-120°C) to $+485^{\circ}\text{F}$ ($+250^{\circ}\text{C}$).



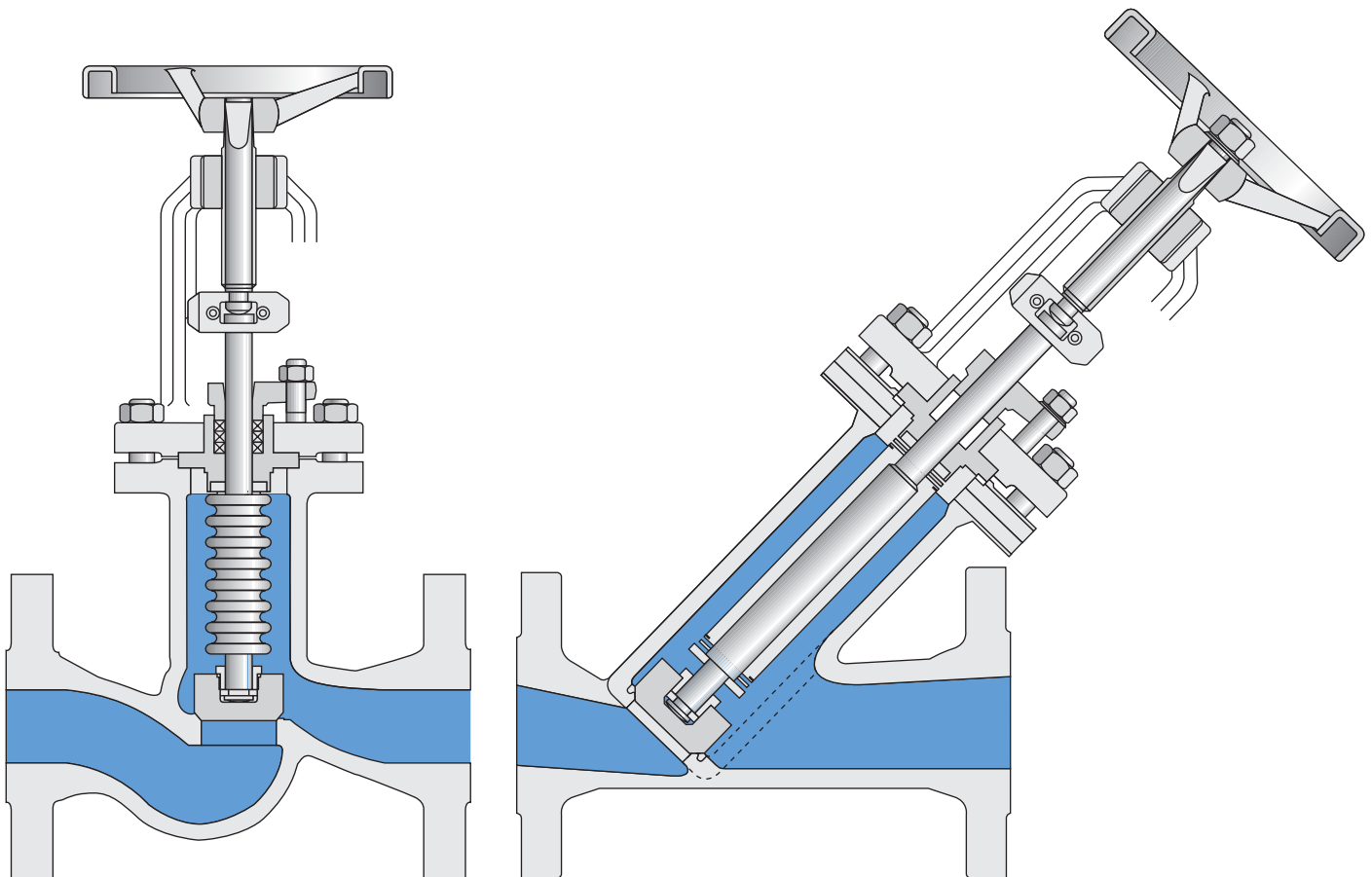
Sealless Mixers

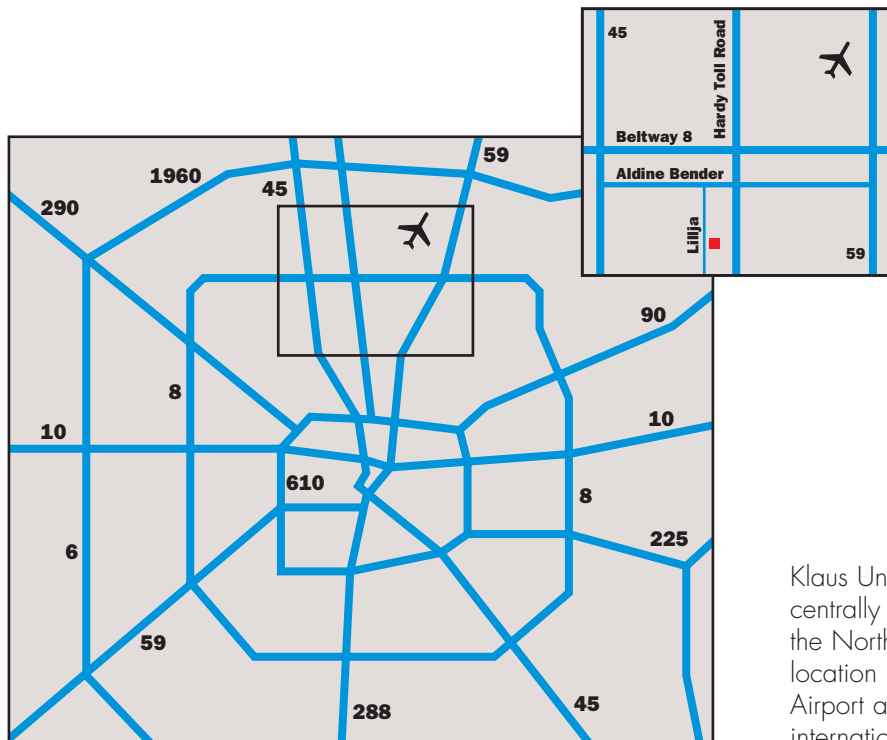
Magnetic drive mixers and agitators with torque capabilities to 2,200 ft-lbs without gear reduction and up to 11,000 ft-lbs with gear reduction. Temperature capabilities up to 840°F (450°C) and pressure ratings up to 4500 psi. For use in chemical and pharmaceutical industries where leakage cannot be tolerated, or where product purity is important. Mixer/agitator has a dry run capacity of 960 rpm.



Sealless Valves

Klaus Union offers ANSI dimensional bellow sealed globe valves in the "T" or "Y" patterns with 150# and 300# ratings. These valves are offered in sizes from 1/2" to 10" in a variety of materials. Klaus Union valves are used wherever fugitive emissions are a concern.





Klaus Union, Inc. is conveniently situated centrally in the United States to service the North American markets. The strategic location near Houston Intercontinental Airport allows easy access for domestic and international shipping and transportation.



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