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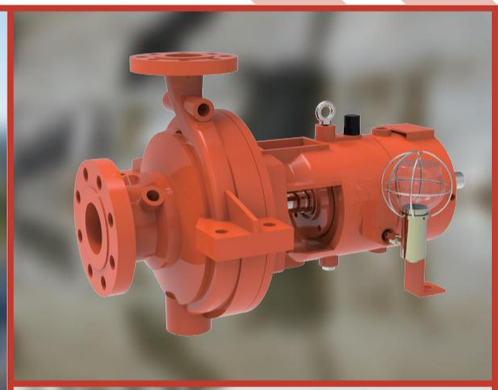
MIZZTECH



MIZZTECH *PUMP*

FOR OIL & GAS

Company Profile

MIZZTECH Minerals supply absolutely interchangeable equipments and parts for mineral processing and mining industry. We supply chemical pumps, slurry pumps, parts, crusher spares, rubber sheet, valves, rubber and PU parts, slurry hose, rubber and lined pipes, ceramic lined pipes, for global mining, quarrying, mineral process, power generation etc. industry. We use FARO 3D reverse engineering design, abrasion and corrosion materials forming technology, to supply our genuine clients longer wear life equipments and parts.

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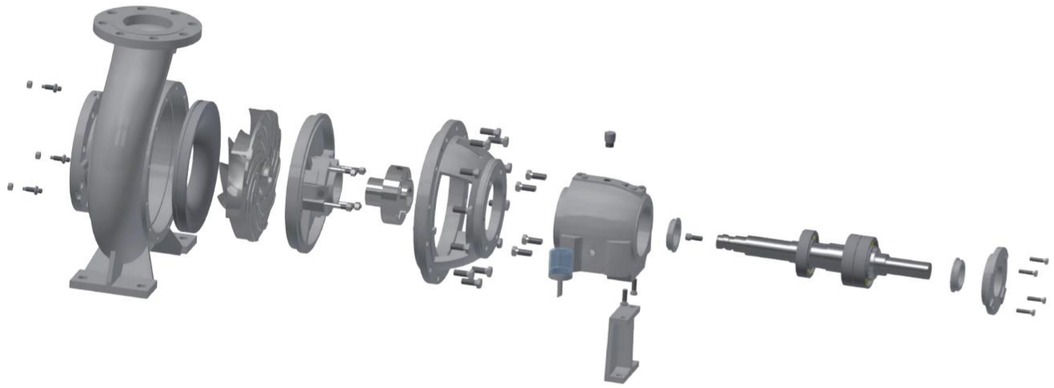
MAP/MUP ISO Process Pump

Main Applications

The MAP/MUP range of foot supported end suction single stage centrifugal pumps is suitable for demanding industrial applications in several industries such as oil and gas, hydrocarbon processing, power generation, pulp and paper, general and chemical industry and water to ensure process reliability, high efficiency and low operating costs. It has been designed in accordance with ISO 5199 and ISO 2858 international standards and to give the excellent pumping performance in demanding industrial applications.



Features and Benefits

01. **Versatile range of reliable and efficient impellers**

- Reduces life cycle costs, energy consumption, operation time and downtime

02. **Balancing holes**

- Ensure efficient liquid circulation behind the impeller and in the seal chamber
- Guarantee optimum shaft seal performance by reducing unexpected shutdowns and minimizing operation and maintenance costs

03. **Externally adjustable side plate**

- Allows fast and simple impeller clearance setting, thereby minimizing life cycle costs and ensuring continued high efficiency

04. **Innovative and reliable integrated degassing and self-priming units**

- Designed to help the centrifugal pump start quickly when the liquid level is below the pump in self-priming applications.
- For a variety of applications with difficult liquids.

05. **Heavy-duty shaft**

- Reduces deflection at stuffing box to <0.05 mm / 0.002 in
- Helps extend shaft seal lifecycle and reduces unexpected shutdowns and maintenance costs

06. **Variety of shaft seal**

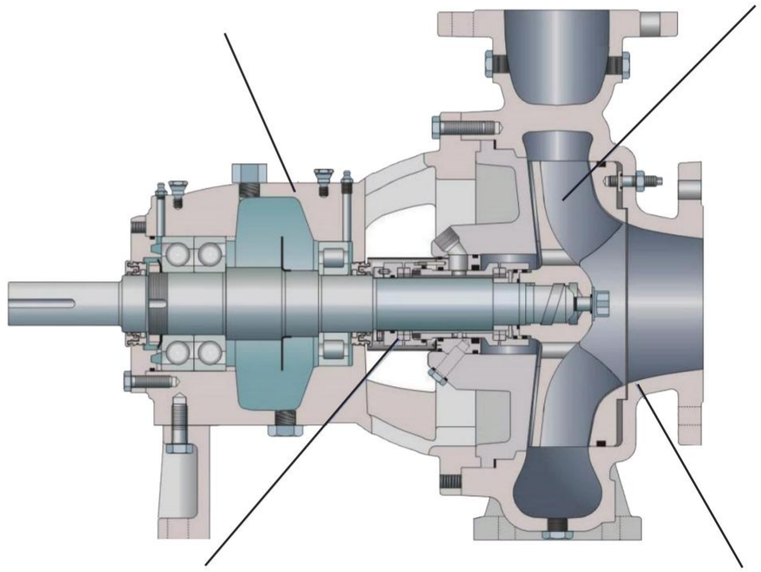
- Effective dynamic, single and double mechanical seals and gland packing
- Fast and simple installation

Modular and Rigid Bearing Unit Design

Shaft is made of strong duplex stainless steel Deflection at stuffing box less than 0.05 mm at the shaft seal area that extend lifecycle of bearing and mechanical seal Only 7 sizes of bearing housing 73 series and NU series bearings on both drive and non-drive ends are standard options

New Hydraulics Design

High efficiency up to 93% Wide performance range Reduced total operational cost &energy consumption For pumping clean, abrasive and erosive liquids



Shaft Seal Types

Variety of seal options are available, single, double, gland packing and dynamic seal Dynamic seal - no external sealing water or instruments needed No sealing water treatment costs

Structural Design Concept

Multi optional flange drilling standards. ISO, ASME, DIN, GB, JIS etc.
Back pull-out design facilitates fast and easy access when servicing Flexible coupling with spacer for quick service

Pump Materials

Stainless steel design		Nominal chemical composition % C max.	Cr	Ni	Mo	Cu	N
Duplex	ASTM A890 Grade 3A	0.06	24.0-27.0	4.0-6.0	1.75-2.50	-	0.15-0.25
	ASTM A890 Grade 1B	0.04	24.5-26.5	4.75-6.00	1.75-2.25	2.75-3.25	0.10-0.25
	ASTM A890 Grade 5A	0.03	24.0-26.0	6.0-8.0	4.0-5.0	-	0.10-0.30
Austenitic	AVESTA 654 SMO[1]	0.025	23.0-25.0	21.0-23.0	7.1-7.5	0.3-0.7	0.45-0.55
Martensitic	ASTM A747 Grade CB7Cu-2	0.07	14.0-15.5	4.5-5.5	-	2.5-3.2	-

Cast iron design		C	Cr	Ni	Mo	Cu	Si
Cast iron	ASTM A48 CL 35 B	-	-	-	-	-	-
Chromium iron*	A532 IIIA	2.0-3.3	23.0-30.0	2.5 max.	3.0 max.	1.2 max.	1.5 max.

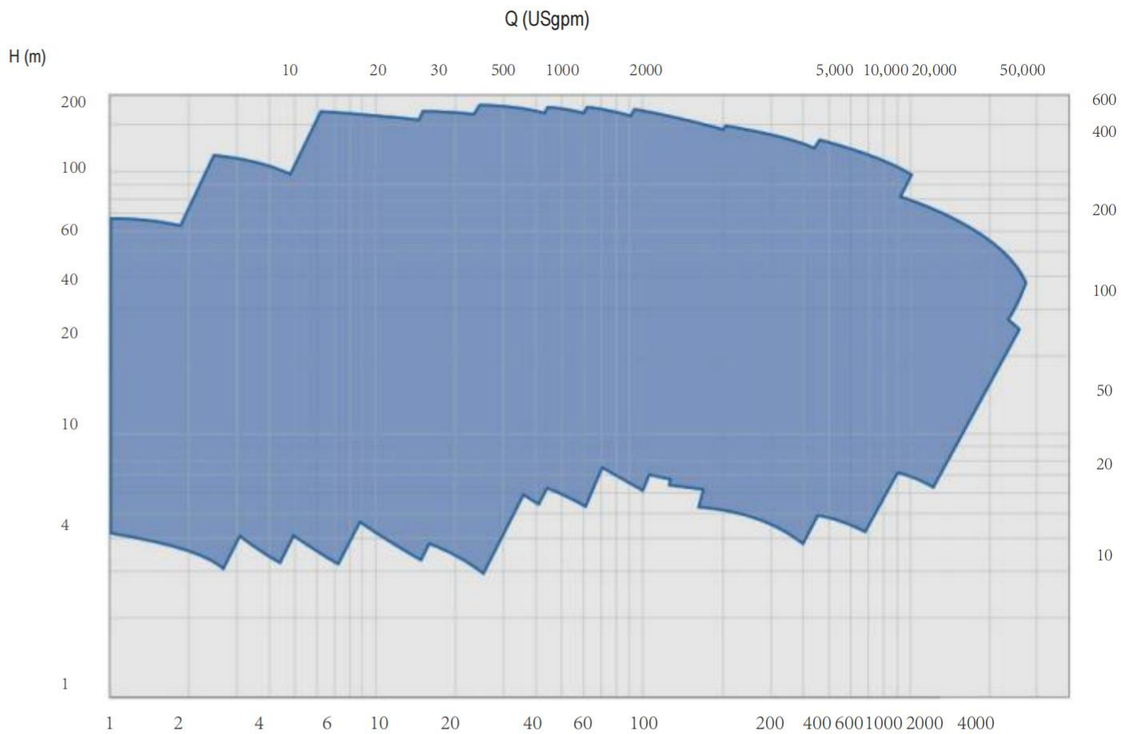
Material alternatives for other parts

Gasket material	Klinger SIL C-4430	Used in temperature range -40...+160 °C and pH 2-12
	PTFE/glass	Used in temperature range -190...+240 °C and pH 0-14
O-ring material	EPDM	Used in temperature range -50...+150 °C
	FKM	Used in temperature range -20...+250 °C

Oil & Gas · Hydrocarbon Processing Industry · Power Generation · Pulp and Paper · General Industry · Chemical Process Industry · Water

Operating Data

Metriec		Imperial
up to 2,500 l/s	Capacities	39,630 USgpm
up to 160 m	Heads	up to 525 feet
up to 25 bar	Pressures	up to 360 psi
up to 180°C	Temperatures	up to 356 °F
up to 3,600 rpm	Maximum speed of rotation	up to 3,600 rpm



Closed Impeller

is used for pumping clean liquids or liquids containing some impurities.

Open Impeller

is designed for liquids containing solid particles, abrasive liquids or paper stock up to 8% consistency

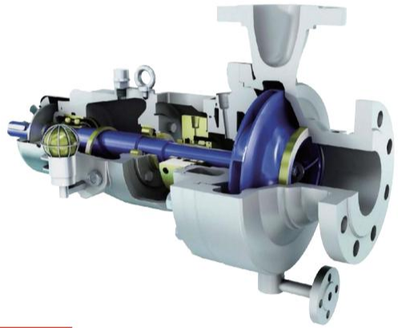
Special Open Impeller

is suitable for liquids containing bigger solid particles and long fibers, abrasive liquids or paper stock up to 8% consistency

ME/MF Process Pump API 610

Main Applications

The ME/MF is widely used in API 610 / ISO 13709 applications for oil production, pipeline boosting, refining, petrochemical, and chemical industries. They can be found in critical services for fossil and nuclear power plants. The ME/MF range also provides efficient, relable performance for desalination plants in selected services.



Features and Benefits

01. Pressure boundary

- MAWP up to 100 bar (1,440 psi)
- Self venting casings with double volutes on larger sizes

02. Enclosed dynamically balanced impeller

- Lowers Net Positive Suction Head required (NPSHr)
- Reduces vibration
- Maximizes bearing and seal life

03. Flanges

- 300# and 600# or DIN flanges available
- Wide range of Maximum Allowable Working Pressure (MAWP); can be used on boiler circulation and energy recovery booster services

04. Heavy duty radial and thrust bearings

- Long thrust bearing and radial bearing life
- in tough services Roller radial bearings handle more loads
- Ball radial bearing can be supplied when specifed

06. Bearing housing

- Maximum interchangeability
- Water cooling not required when fan supplied
- Bearing isolators to match customer needs
- Pure or purge oil mist prolongs bearing life

05. Mechanical seals

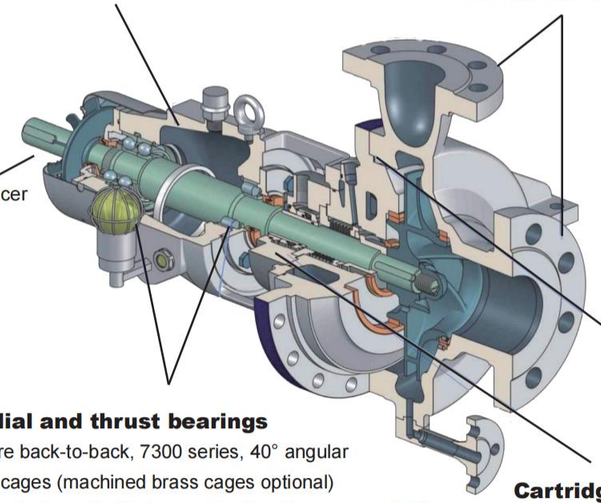
- Cartridge type API 682 seals normally supplied. Other types of seals to meet customer specifications

07. Heavy duty shaft

- Less defection adds life to bearings, mechanical seals, and wear rings

Bearing housing
8 sizes of bearing housings cover the entire product range for maximum interchangeability
Low noise fan added for high ambient or operating temperatures
Oil sump heater available for low ambient conditions Optional oil mist lubrication available
Carbon steel bearing housing finned for added heat

Flanges
Backfaced ANSI B16.5 300#R. F./600#R.F.
Flanges with required serrations
DIN and DIN-EN flanges available



Coupling
Flexible metal spacer coupling available

Casing gasket
Confined controlled compression gasket with metal to metal rabbet fit

High duty radial and thrust bearings
Thrust bearings are back-to-back, 7300 series, 40° angular contact with steel cages (machined brass cages optional)
For heavy duty applications double taper roller bearings are available
Radial bearings are cylinder roller bearings, ball bearings

Cartridge shaft seal
ISO21049 (API 682) seal chambers and Rush piping for improved seal life
Single or dual cartridge type mechanical seals available to meet all process requirements

Bearing Frame Size	Pump Size
LK2	25-200, 25-315, 40-160, 40-200, 40-250, 50-160, 50-200, 50-250, 80-160, 80-200, 80-250, 100-160, 100-200, 150-200
LK3	40-315, 40-400, 50-315, 50-400, 80-315, 80-400, 100-250, 100-315, 100-500, 150-250, 200-250, 250-315
LK4	50-450, 80-450, 80-500, 100-400, 100-450, 150-315, 150-400, 150-500, 200-315
LK5	150-450, 150-560, 150-630, 200-400, 200-500, 200-560, 250-400, 250-500, 300-400
LK6	200-450, 200-630, 250-560, 300-500, 300-560, 400-500
LK7	300-630, 400-560
LK8	400-720

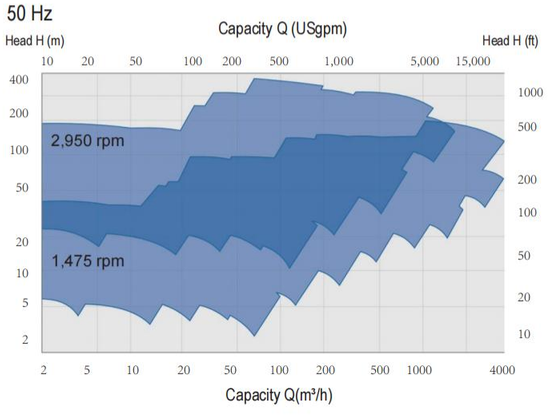
Oil & Gas · Hydrocarbon Processing · Power Generation · Pulp and Paper · General Industry · Chemical Process · Water and Wastewater

Operating Data

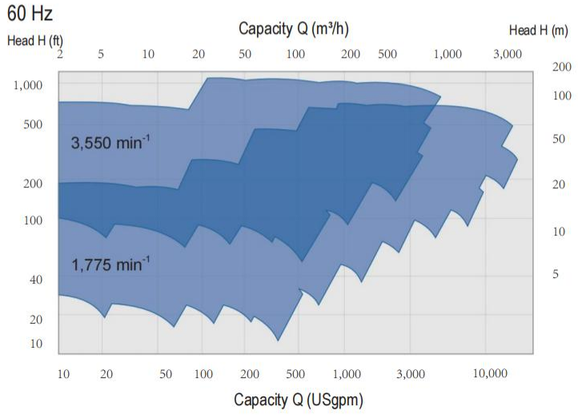
50 Hz		60 Hz
up to 400 mm	Pump sizes	up to 16 in
up to 2,600 m³/h	Capacities	up to 11,440 USgpm
up to 300 m	Heads	up 1,000 ft
up to 100 bar	Pressures	up to 1,450 psi
up to 425°C	Temperatures	up to 800°F

Performance Ranges

50 Hz



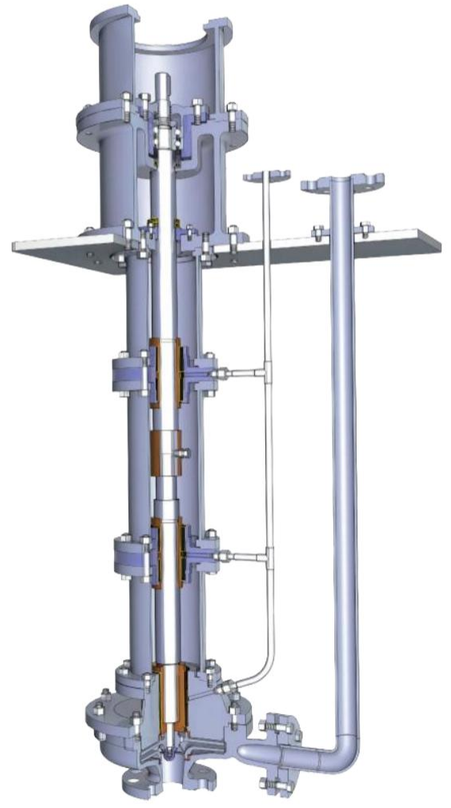
60 Hz



Materials

Pump Part	Material
Casing	Carbon steel, chrome steel, 316 SS, duplex, superduplex
Impeller	Chrome steel, 316 SS, duplex, superduplex
Shaft	Stainless steel, duplex, superduplex
API 610 / Material Codes S-5, S-6, S-8, C-6, A-8, D-1, D-2	

HLY Non-clogging Vertical Sump Pumps



Main Applications

HLY non-clogging vertical line shaft slide bearing sump pumps are used for:

- liquids containing large solids in deep sump pump applications
- fibrous slurries containing large solids in deep sump pump applications

Features and Benefits

01. Pump casing, impeller and side plate

- Volute casing with/without filter on suction end depends on pumping liquid
- Minimized spare parts inventory

02. Impeller

- Non-clogging impeller with wide open channels and self-cleaning vane profile
- Liquids containing large solids, long fibers, clips or plastics will not plug the impeller
- Non-plugging impeller back vane design prevents plugging caused by longer fibers or plastics
- Pressure-reducing impeller front vanes and self-cleaning cutter grooves prevent fibers from entering the gap between the impeller and side plate and reduce internal flow losses

03. Column bearing lubrication

- Water lubrication as standard
- Grease lubrication as option

04. Thrust bearing

- Heavy-duty roller bearing unit with angular contact ball bearings guarantees long bearing lifetime. Grease lubrication.

05. Drivers and coupling

- IEC 34-7 with IM code V1 or corresponding Nema vertical motors as standard
- Flexible Rex-Viva coupling is standard. Other coupling types also available

06. Suction bell

- Stainless steel suction bell with guiding and straining vanes to help prevent clogging

07. Line shaft and bearing design

- One-piece shaft guarantees straightness and easy assembly
- Strong and rigid intermediate support bearing of silicon carbide resists chemicals and abrasives

08. Mounting plate and driver support

- Epoxy-coated carbon steel mounting plate and motor stool as standard

09. Discharge pipe

- Length adjustment in discharge piping and flexible sealing water hoses for proper mounting

10. Shaft seal

- No shaft seal needed, resulting in more reliable operation

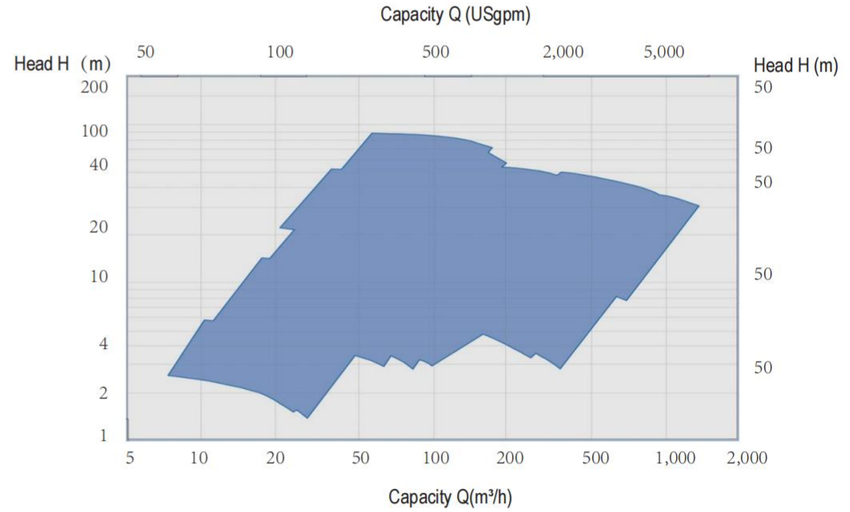
Oil & Gas | Hydrocarbon Processing Industry | Power Generation | Pulp and Paper | General Industry | Chemical Process Industry | Water

Operating Data

50 HZ		60 HZ
from 50 mm to 200 mm	Discharge sizes	from 2 in to 8 in
1200 m³/h	Capacities	5400 USgpm
up to 85 m	Heads	up to 280 ft
up to 10 bar*	Pressures	up to 150 psi*
up to 95 °C	Temperatures	up to 205 °F

* Depending on material and size

Performance Ranges



Materials

Name of part	Duplex stainless steel design	Cast iron design
Casing	Duplex SS ASTM A890 Grade 3A	Cast Iron ASTM A48 CL 35B
Impeller	Duplex SS ASTM A890 Grade 3A	Duplex SS ASTM A890 Grade 3A
Shaft	Duplex SS 2324	Duplex SS 2324
Side plate	Duplex SS ASTM A890 Grade 3A	Duplex SS ASTM A890 Grade 3A
Casing cover	Duplex SS ASTM A890 Grade 3A	Cast Iron ASTM A48 CL 35B

Other materials can be delivered on request

MFR Normalized Chemical Pump

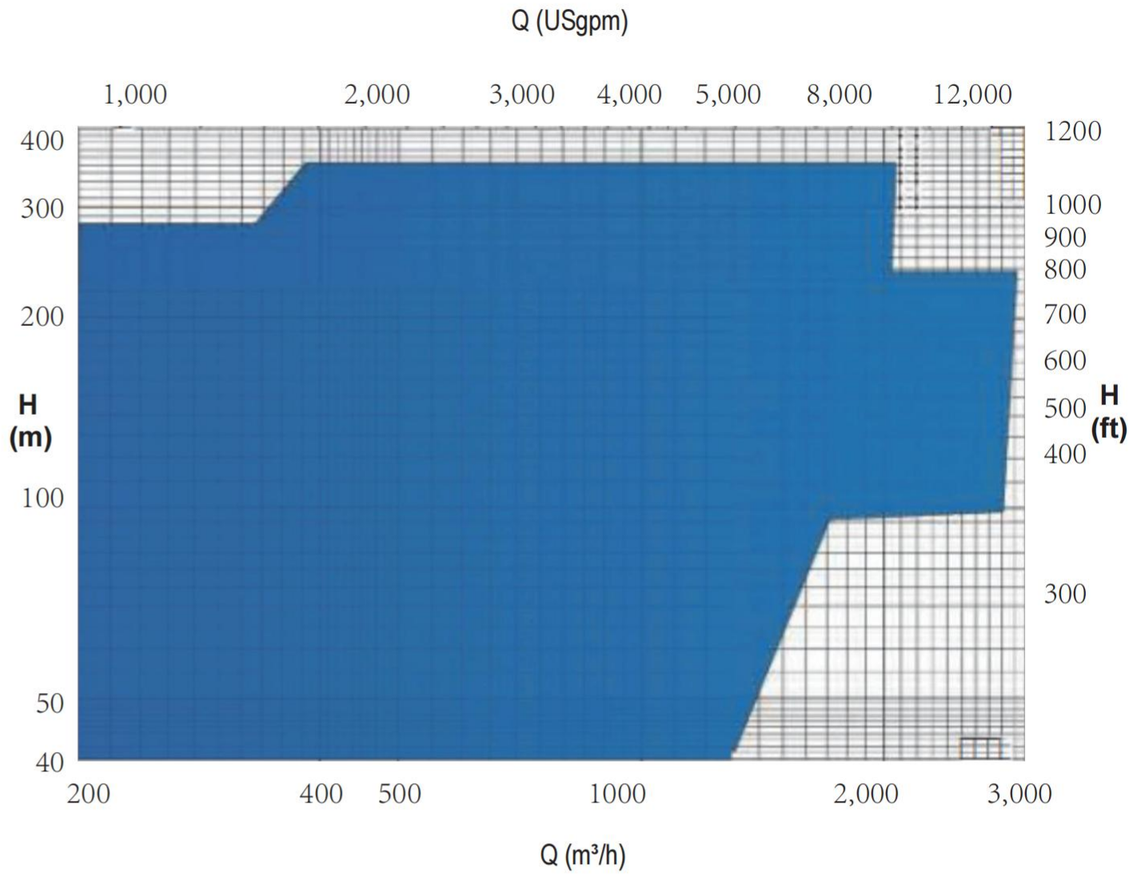
Design

- Construction in accordance with ISO 5199 and dimensions in accordance with ISO 2858
- BACK PULL-OUT design: dismantling without disturbing piping or motor
- Suitable for severe continuous duties
- Bearing type: three rolling-contact bearings lubricated by oil or by grease as required
- Semi-open or closed impeller
- Shaft fully protected from pumped liquid by shaft sleeve and O-ring
- Shaft seal by standard single, double, tandem or cartridge mounted mechanical seal
- Mechanical seal installation in open type stuffing box as standard
- Pressure in stuffing box controlled by impeller back vanes
- Low NPSHr
- Maximum interchangeability of parts throughout the series
- Most standard models available ex stock
- Adapter frame manufactured from 316 stainless steel upon request
- Heating or cooling jacket upon request
- Option: INPRO SEAL VBX

Performances

- Flow: up to 780 m³/h (3,434 US gpm)
- Total head: up to 160 m (525 ft)
- Maximum operating pressure: 16 bar (232 PSI)

- Temperature operating range: up to 180° C (356°F)
- Maximum speed: 3,600 rpm at 60 Hz
- Higher capacities and heads upon request



Standard Materials

- Duplex SS: A743 CD4Mcu
- Super Austenitic SS: A 743 CN7M
- Cast iron: A48 class 35B
- 30% chr. Cast iron A532 Class 3
- Other materials upon request, titanium, hastelloy, nickel…

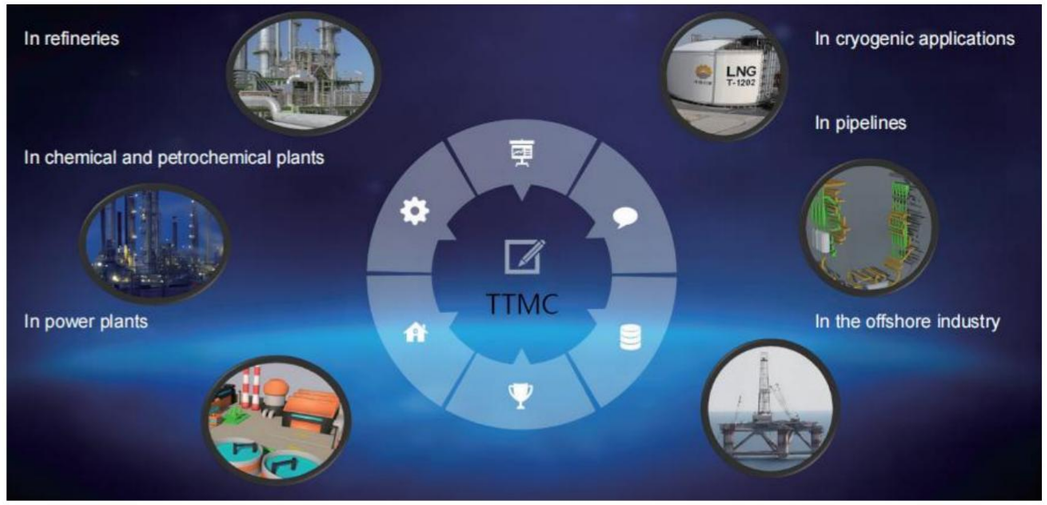
Industrial Applications

- Chemical industry
- Petrochemical industry
- Steel industry
- Paper industry
- Food industry

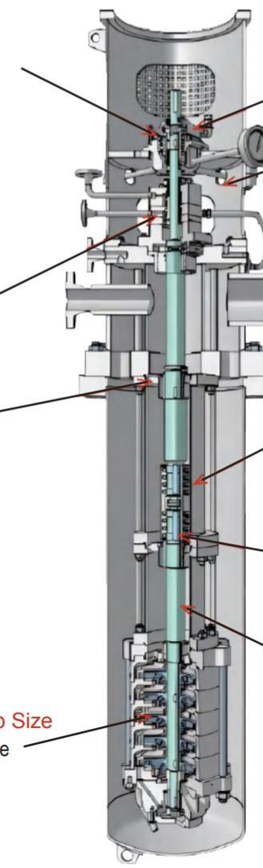
MTMC Vertical Multistage Can Pump API 610

Main Applications

MTMC Vertical Can Pumps are primarily designed for plants handling liquids with low suction heads. These low NPSH values normally preclude the use of horizontal pumps. MTMC pumps are therefore designed for pumping clean or slightly polluted, hot or cold, chemically neutral or aggressive liquids.
Various design options are available for special applications.
MTMC pumps fitted with a can are mainly used where there is low NPSHA. The can is mounted in the ground, its length providing the additional NPSH value required to prevent cavitation at the suction impeller.
The in-line design allow simple pipe connection and requires minimum space.
Vertical pumps are especially suitable for cryogenic applications pumping liquefied gases. Where the MTMC issued without a can (type TMC) the pump is installed at floor level and the suction pipe connected direct to the pump inlet.
Where space is at a premium the MTMC compact may be used. A pump of minimum length (minimum number of stages) is mounted in a support frame. Connections being made directly to suction and is charge nozzles.



Section Drawing



Thrust Bearing
- Oil lubricated anti-friction bearings
- Safe rotation independent lubrication with oil circulation
- Bearings rated for long life

Shaft Seal
- Seal housing allows installation of all API 682 standard combinations
- Simple removal of mechanical seals

Balance Piston
- Reliable balance of axial thrust shaft seal sees only suction pressure also acts as an additional intermediate radial bearing

Several Hydraulics for Each Pump Size
- High efficiency over the capacity range
- Low energy input

Bearing Housing
- Simple removal for changing the mechanical seal

Bearing Instrumentation
- Adjustable constant level oiler
- Oil level indicator
- Thermometer

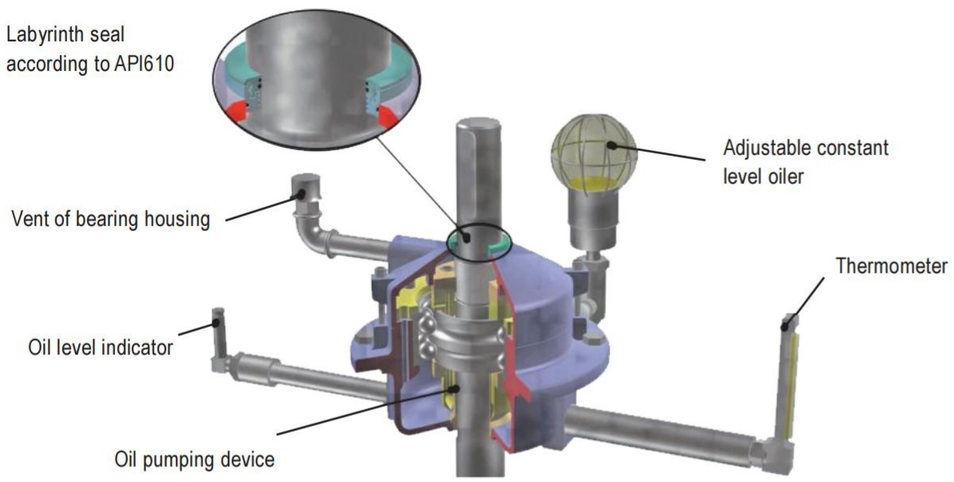
Large Nozzles
- Low velocities
- High forces and moments can be absorbed
- Relative position on the casing may be altered

Rigid Coupling
- Excellent alignment
- Shrink fitted (oil pressure)
- Not sensitive to rotation

Intermediate Bearing
- For longer shaft length
- Internal flush

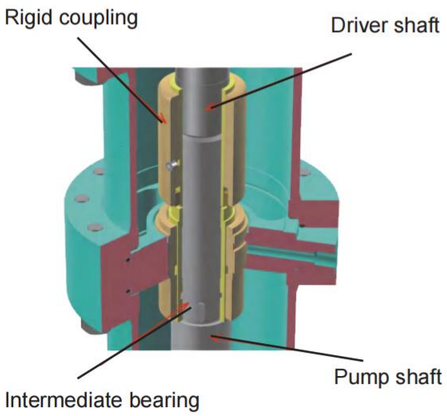
Stiff Shaft
- Critical speed greater than operating speed
- Bearing spacing and shaft diameter in accordance with API 610

Bearings, Intermediate Coupling



Safe Oil Lubrication

The bearing sleeve is equipped at its slower end with a rotation independent pumping device, oil is pumped to a level above the bearing where it is allowed to flow through the bearing returning to the sump. This arrangement ensures a constant supply of clean oil to the bearing without risk of foam entrapment.



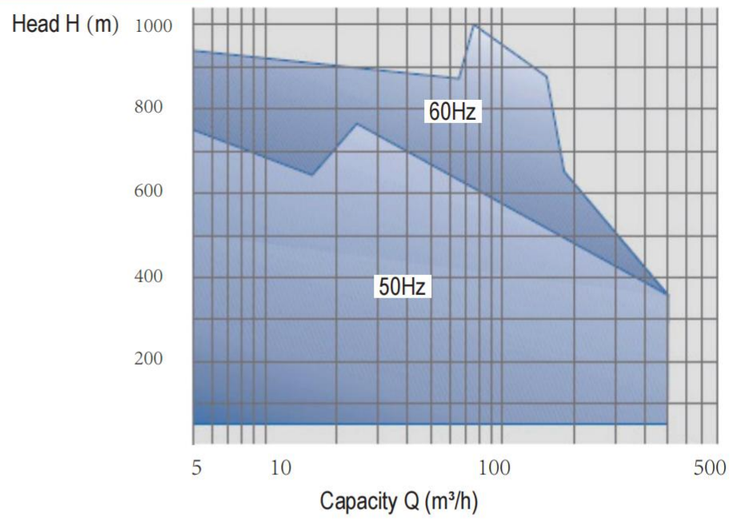
Intermediate Coupling for Separate Shafts

Depending on the can length, operating speed and pump size two shafts maybe required. Where this is the case a rigid SKF OK type coupling issued.

Working Principle of the Coupling

Depending on the can length, operating speed and pump size two shafts maybe required. Where this is the case a rigid SKF OK type coupling is used. The coupling consists of a thin internal sleeve which is slightly tapered and fits within a larger external sleeve whose bore is also slightly tapered. Injecting oil between the two sleeves by means of a small hand pump forces the outer sleeve over the internal sleeve resulting in the tapers locking together.

Performance Range



Technical Data

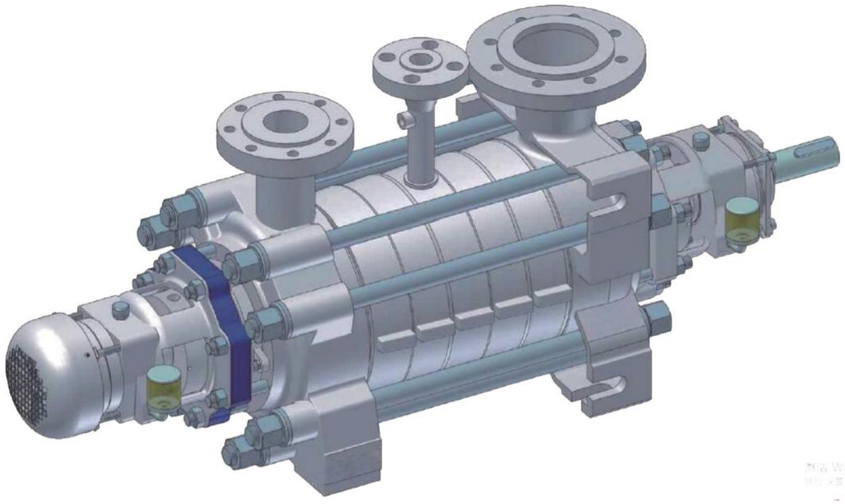
Operating Data				
Pump sizes	DN	40	to	200 m
		1.5	to	8 inch
Capacities	Q	up	to	800 m³/h
		up	to	3500 gpm
Heads	H	up	to	800 m
		up	to	2620 ft
Pressures	P	up	to	100 bar
		up	to	1450 psi
Temperatures	t	-65°C	to	+180°C
		-85°F	to	+356°F

Pump Parts	Material S-1		
Pressure Casings (outside)	Steel welded	Steel welded	Austenitic
Pressure Casings (inside)	Cast iron	Cast steel	Austenitic
Impeller, Diffusor	Cast iron	Chrome steel	Austenitic
Wearing Casing / Impeller	Cast iron / Chrome steel	Chrome steel	Austenitic Coated
Shaft	Steel	Chrome steel	Duplex

Advantage

- Lowered suction impeller allows operation even under extreme surface conditions.
- Only one shaft seal.
- Compact space requirement throughvertical design.
- Oil lubricated anti-friction bearings.
- Hydrodynamic radial bearing located at the pumps second stage
- No static seals under discharge pressure to atmosphere.
- Shaft seal operates at suction pressure.
- Balance piston also acts as a hydrodynamic radial bearing.
- Rotation independent internal oil circulation.
- Precisely aligned shaft due to hydraulically shrink coupling.

MMC Multi-Stage Pump
ISO 13709 (API 610) BB4



Extensive Knowledge in Products and Processes

- Oil or Gas
- Hydrocarbon Processing
- Pulp or Paper
- Power Generation
- Food, Metals, Fertilizers
- Water or Wastewater

MMC Design

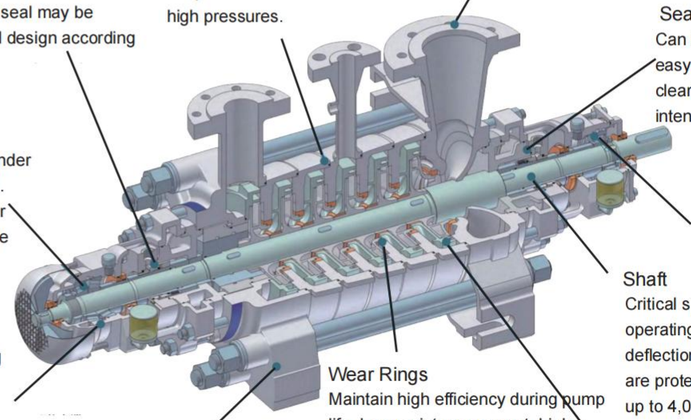
MMC pumps are horizontal, radially split ring section pumps of modular design. MMC pumps are suitable for pumping clean or slightly polluted, hot or cold, chemically neutral or aggressive liquids.

The design is ideal for

- Boiler feed duties up to 180°C pre-warming not required
- Condensate service in power stations and industrial plants

- Desalination (Reverse Osmosis)
- Auxiliary services within combined-cycle and industrial powe plant

Design Features and Benefits



Branch Size
Large branch optimizes inlet flow is enabled by external positioning of the tie bolts. Reduced noise levels through low branch velocities. Higher forces and moments allowed.

O-rings
Casing sealing by confined o-rings therefore unaffected by rapid temperature variations and high pressures.

Shaft Seal
Single or double mechanical seal may be installed. Cooled or uncooled design according to specifications available

Seal Housing
Can be cooled or uncooled design; easy access to cooling chamber; clearly arranged connections; intensive, uniform cooling

Axial Thrust Bearing
Designed for long life even under extreme operating conditions. Paired, fan-cooled taper roller bearings are standard. Sleeve bearing is available.

Radial Bearing
Oil lubricated antifriction bearing is standard; sleeve bearing also available.

Shaft
Critical speed is higher than operating speed; small shaft deflection. Areas subject to wear are protected. Running speeds up to 4,000 rpm.

Heavy Bearing Housing
With automatic lubrication using constant level oiler. Fan cooling available

Wear Rings
Maintain high efficiency during pump life. Low maintenance cost, high availability and short down times. Impeller wearings are optional.

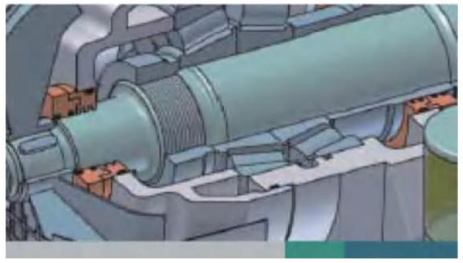
Casing Support
Foot mounted is standard. Centerline mounted is available for large sizes or high temperatures.

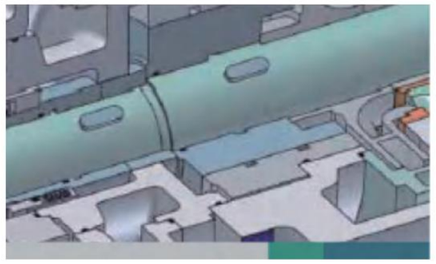
Impeller
In case of low NPSH available first stage double suction impeller can be provided for selected pump sizes.

NDE Bearing Arrangement with Balance Drum

The balance drum device carries the major proportion of the hydraulic thrust. The drum diameters are chosen to minimize the thrust at normal operating point. The residual and addtional thrust loads occurring above/below at the normal operating point are carried by the thrust bearing, typically a taper roller bearing

The balance drum design is suitable for pumps that operate at the end of the curve, up to 130% of the best efficiency point. The device nearly wear free and therefore suitable for frequent stop start applications.

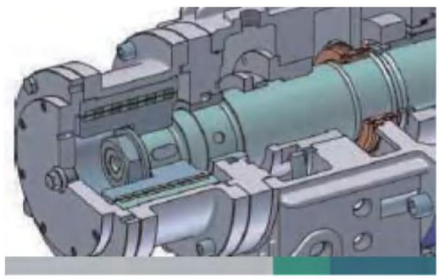


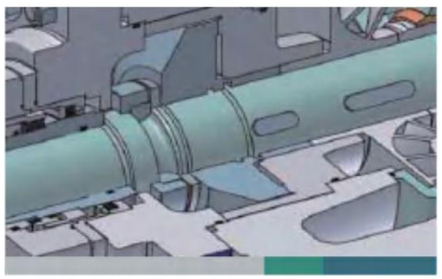


NDE Bearing Arrangement with Balance Disk

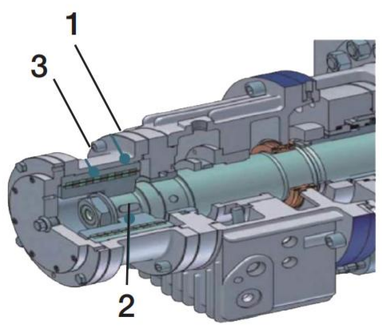
With a balance disk the axial force is completely compensated, no axial thrust bearing is required. Due to the smaller balancing leakage flow. Total efficiency of the pump is higher compared to the balance drum design.

For pumps with frequent start-stop operation, the installation of a Permavor® lift-off device is recommended.





Permanent Magnetic lift-off Device Permavor®

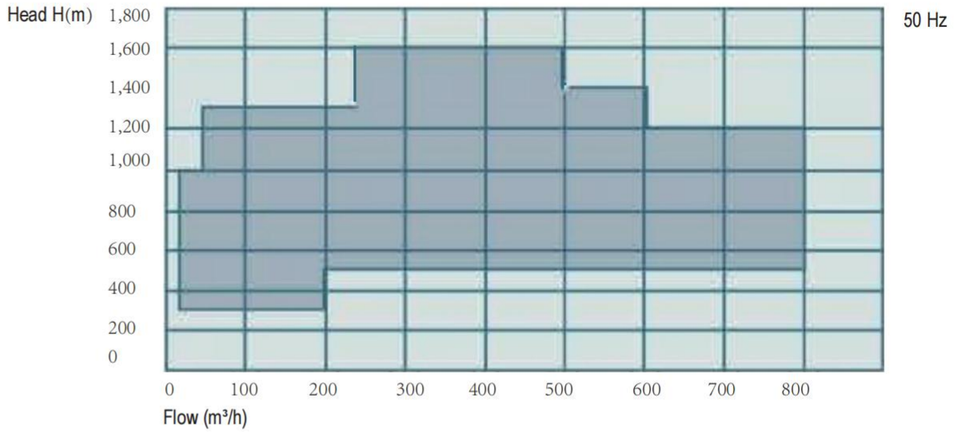


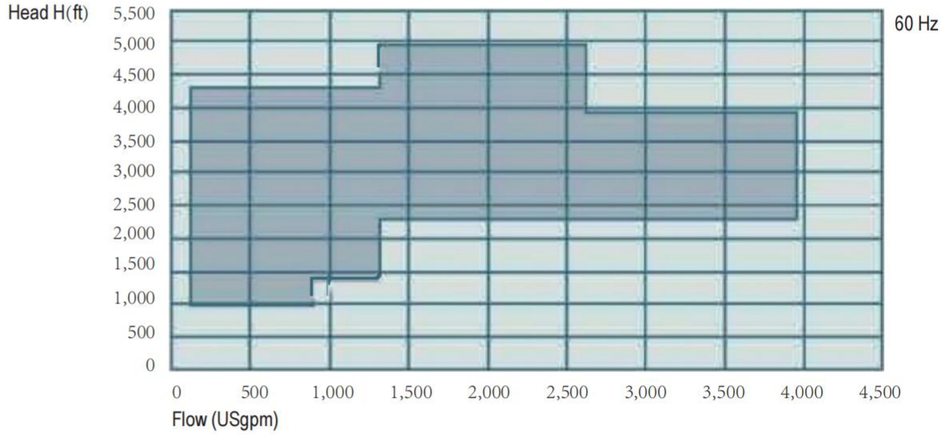
The exclusive Permavor® lift-off device prevents touching and wear of the disk/counter disk during operation at low speed, such as start up and shut down.

The Permavor® device is located at the non-driven end of the bearing housing and shaft. The inner magnet carrier (2) And outer magnet carrier (1) are equipped with permanent magnet rings (3). The magnetic rings generate the axial lift-off force.

No eddy currents, no heat generation and Mechanical contact during operation will occur. Permavor® provides an extra thrust bearing for operation at low speed without the requirement for extra lubrication or cooling normally associated with mechanical lift-off designs. Due to The contact-free operation, the service life is virtually unlimited.

Performance Range





Operating Data

	MMC 50Hz	MMC 60Hz
Pump sizes	40 to 200	1.5 to 8 inches
Capacities	20 to 800 m³/h	80 to 4,000 USgpm
Heads	up to 1,600 m	up to 5,500 feet
Pressures	up to 180 bar	up to 2,600 psi
Temperatures	up to 180 ℃	up to 355°F