

# Multistage Pumps

## Vogel Series MP, MPA, MPB, MPV

SIZES DN 40 - DN 125

# Technical Data

## Performance range:

- Capacities up to 340m<sup>3</sup>/h (1500USgpm)
- Head up to 500m (1640feet)
- Max. speed up to 3600rpm

Multistage pumps for capacities up to 1.800m<sup>3</sup>/h (7900USgpm), available - Series P refer to separate leaflet.

## Sizes:

- DN 40 up to DN 125 (from 1 1/2" to 5") discharge

## Max. temperature:

- 140°C (280°F)

## Max. casing pressure:

- 55 bar (800 psig)

For more detailed information about operation limits with regard to material of construction and operating conditions please refer to data sheets or actual quotations.

## Handled liquids:

Pure as well as slightly contaminated media such as:

- cold and hot water
- condensate
- oil suspensions
- acids as well as their watery solutions
- caustic solutions
- brine

## Applications:

- water supply
- booster systems
- irrigation
- fire fighting
- snow making
- cooling circuits
- boiler feed
- condensate
- district heating
- osmosis and ultra filtration
- spray water systems
- cleaning systems
- mining



We have developed and manufactured multistage pumps since 1910. Our application and manufacturing expertise provide you with the BEST SOLUTION to meet your pumping needs.

# Modular system

VOGEL Multistage pumps utilize a modular design concept which maximizes component interchangeability. As such, multiple design configurations can be engineered to meet customer requirements without compromise to repair part inventories.

The entire performance range is covered by 4 mechanical sizes that hold 8 different hydraulics.

Size	Discharge branch DN d [mm]	Suction branch DNs [mm]	Hydraulics	Capacity Q [m <sup>3</sup> /h]	
				50Hz	60Hz
MP 40.	40	65	40.2	30	36
			40.3	42	50
MP 65.	65	100	65.1	70	80
			65.2	90	110
MP 100.	100	125	100.1	150	180
			100.2	200	240
MP 125.	125	150	125.1	240	280
			125.2	300	360

## Hydraulics

Closed radial type impellers with wear rings on both sides. Axial thrust is minimized by balance holes for minimum bearing loads and maximum bearing lifetime.

Diffusers separated from stage casings, easily exchangeable. Balanced radial forces, minimum shaft deflection, minimum vibrations.

Heavy duty design for long term  
operation in industrial applications.

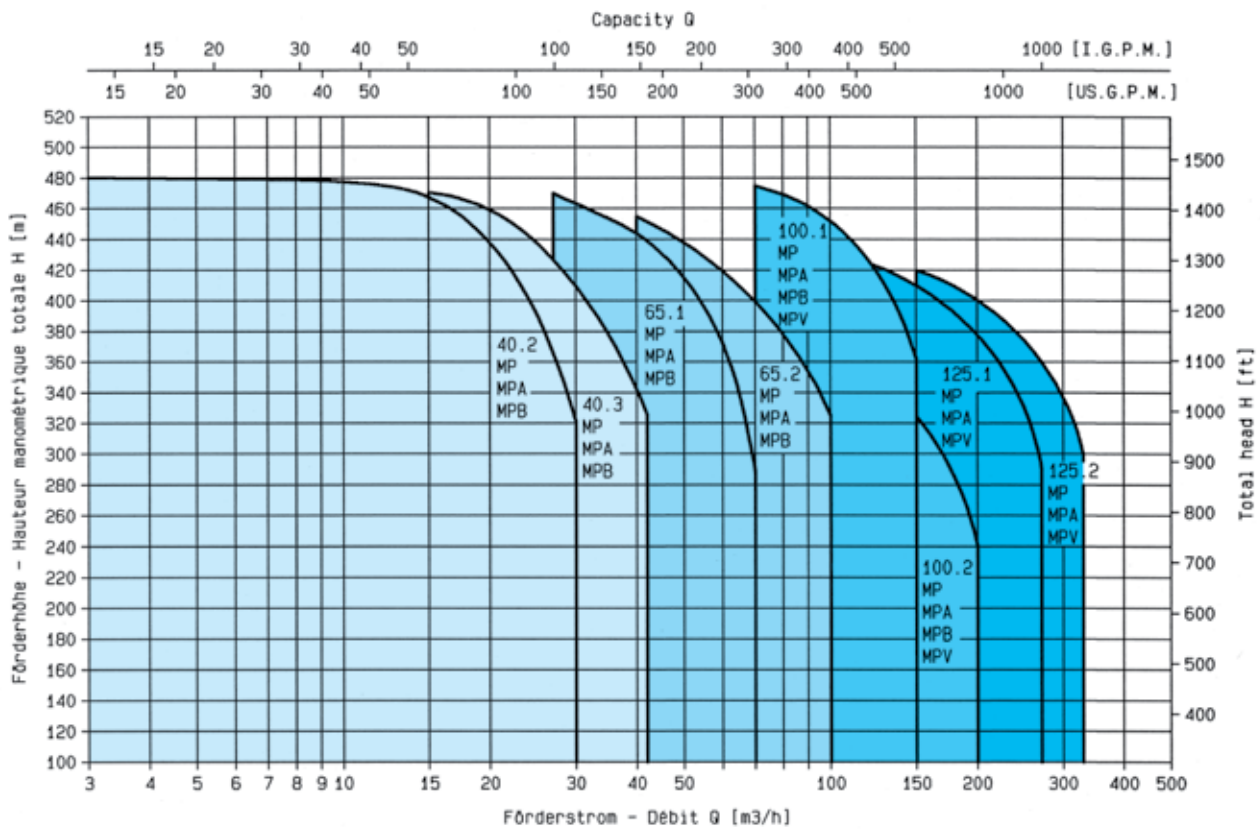
All design versions acc. to ISO 5199 / EN 25199

ISO 9001 + 14001 certifications guarantee high  
quality standards and reliability of our products as  
well as environmentally friendly production process.

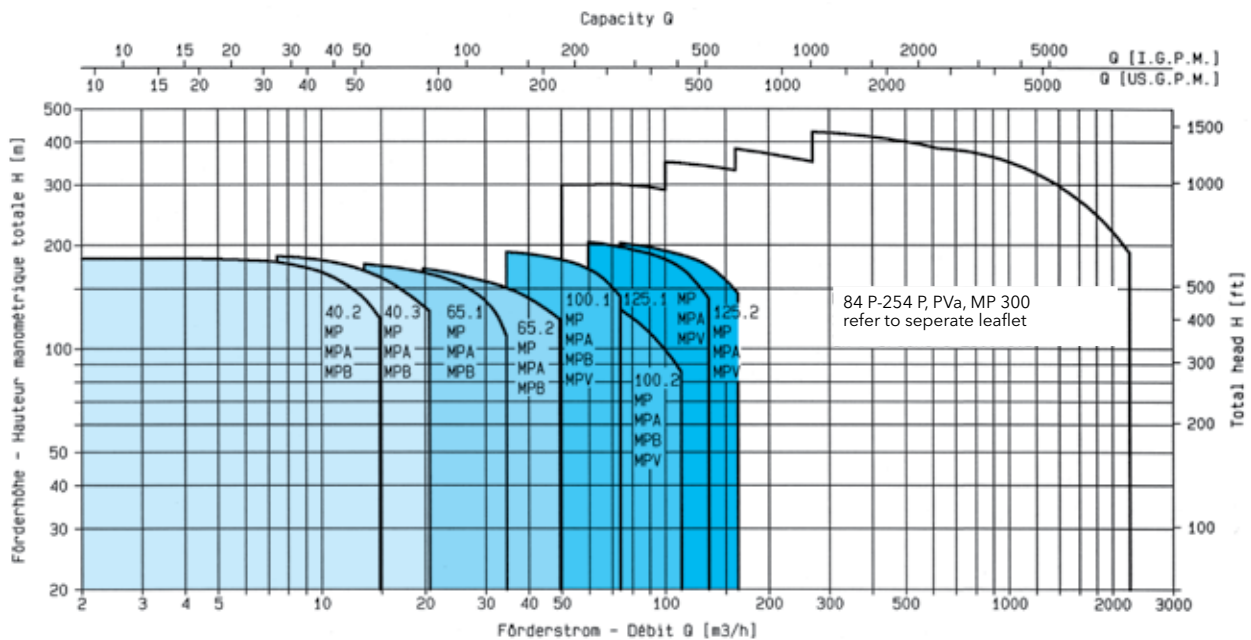


Performance range - 50 Hz

2950 rpm

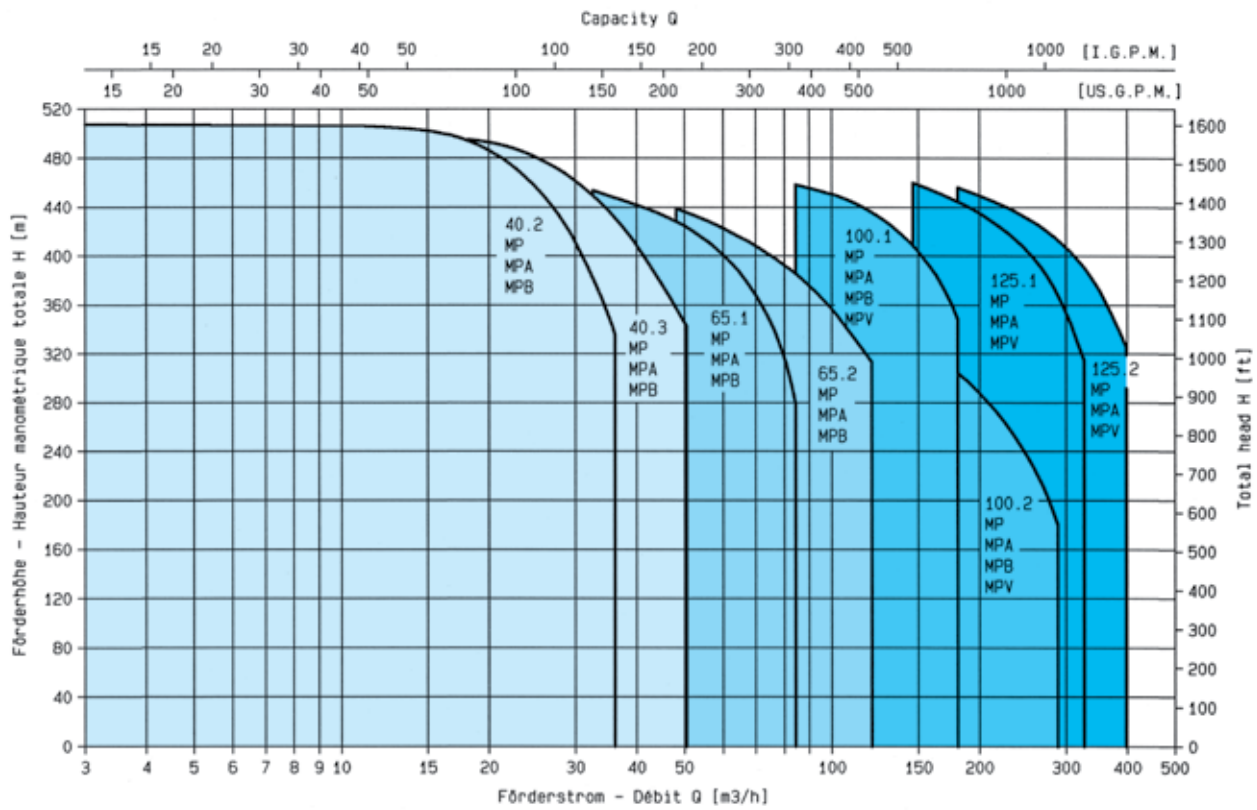


1450 rpm

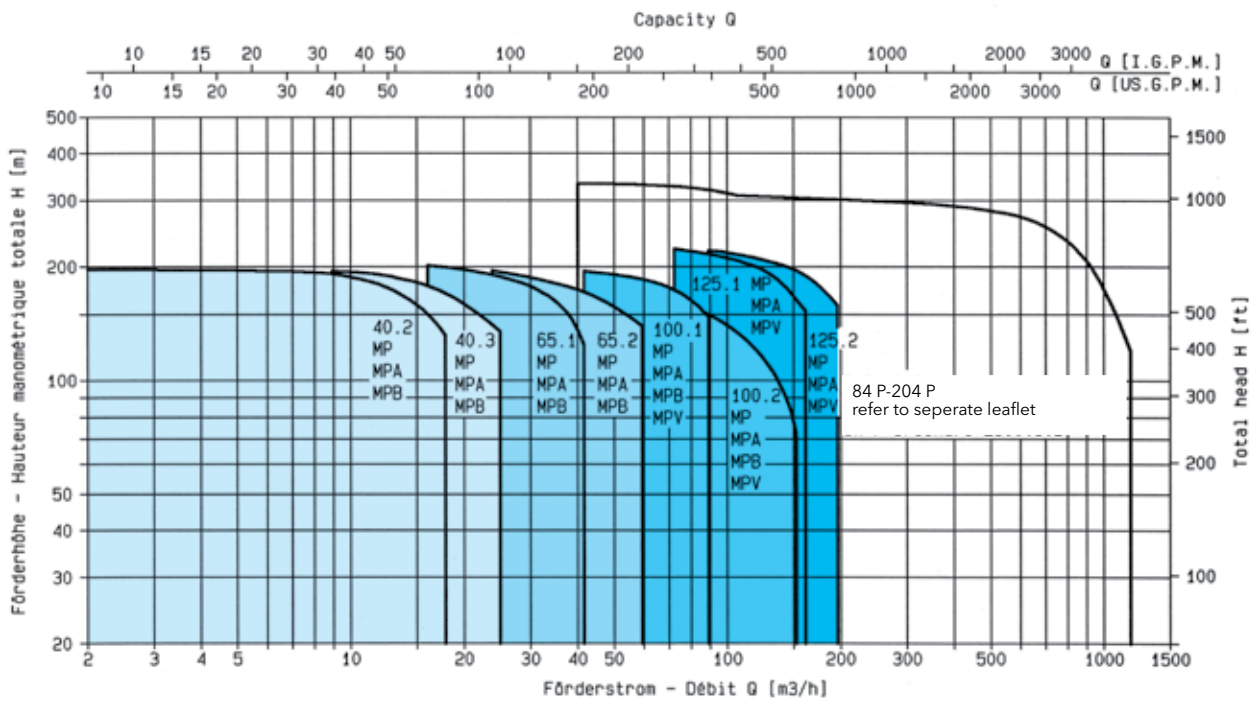


Performance range - 60 Hz

3550 rpm



1750 rpm



# Design Versions

## Type MP:

Horizontal shaft with bearings at both ends, drive-end at discharge side (standard), rotation clockwise, with suction branch left and discharge branch radially upwards, grease lubrication. Counter clockwise rotation and other flange orientations available as an option.



## Type MPA:

Endsuction type, discharge branch radially upwards. Drive end at discharge side. Thrust bearing at drive side, grease lubrication, medium lubricated slide bearing between first and second stage. Inducer design available for low NPSH applications.



## Type MPB:

Vertical close coupled design using standard IEC motors up to 90kW. The pump shaft is directly coupled to the motor shaft.

## Type MPV:

Vertical design with separate thrust bearing and flexible coupling between motor and pump shaft. Standard IEC motors for 90kW and larger.

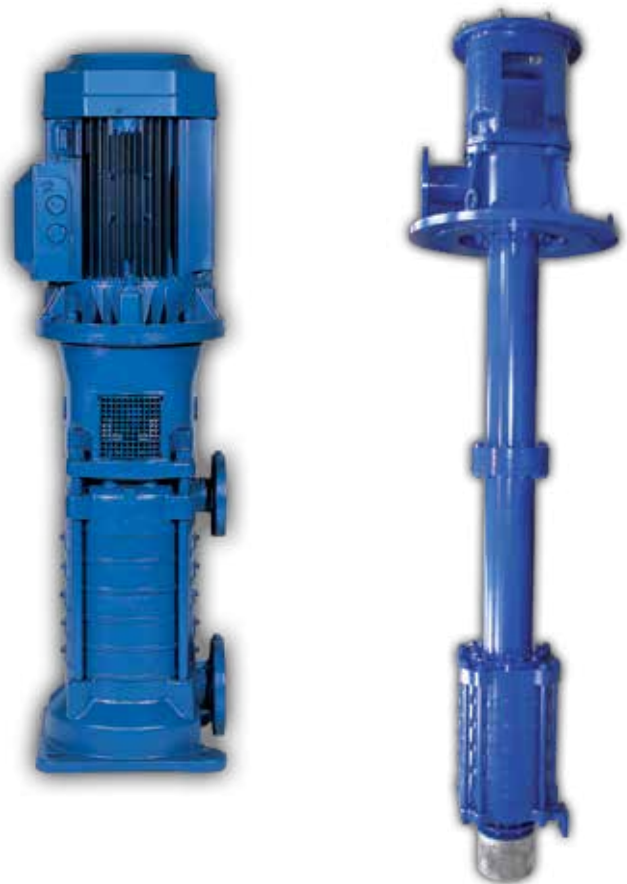
## Type MPVS:

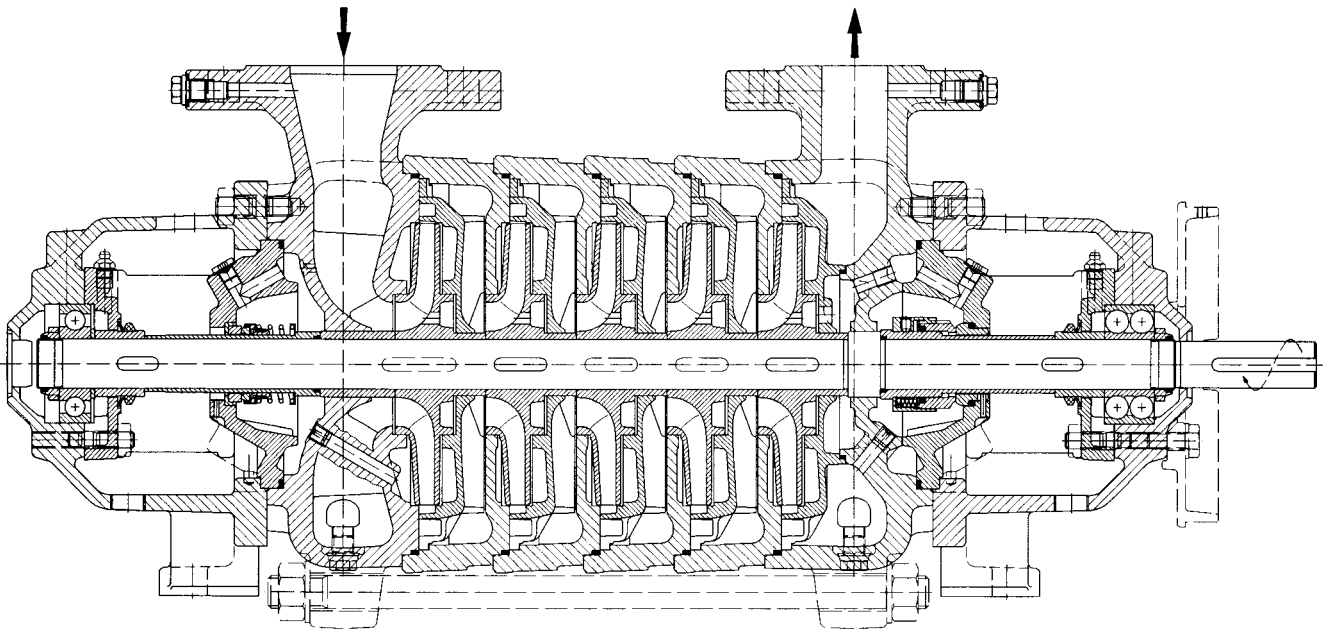
Vertical wet pit configuration lengths:

at 2950/3550rpm: max. 4m

at 1450/1750rpm: max. 10m

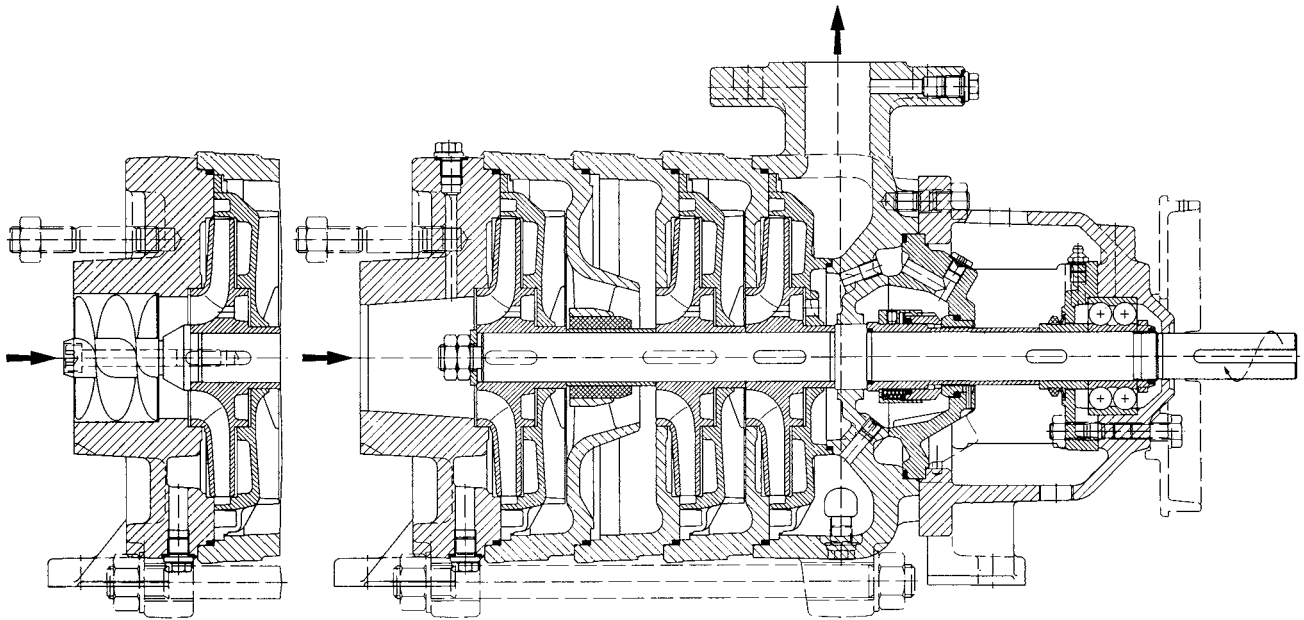
Inducer design available.





## Design features MP:

- Horizontal configuration with outer bearings on both sides.
- Driven by electric motors, combustion engines or steam turbines via flexible coupling.
- Drive end discharge, clockwise rotation (Counter clockwise rotation available with drive end on suction side)
- Branch directions: suction left viewed from drive end, discharge radially upwards.  
Branches can be adjusted to meet customer requirements in 90° increments.
- Drive end thrust bearing, double row bearing. Suction side ball bearing, grease lubrication with grease nipples.
- Thermal expansion of the pump rotor will be balanced internally without affecting the coupling alignment.
- Shaft sealing arrangements (mechanical seal or gland packing) as per „shaft sealing options“.
- Maintenance friendly design. Bearings and shaft seal are maintainable without pump disassembly.

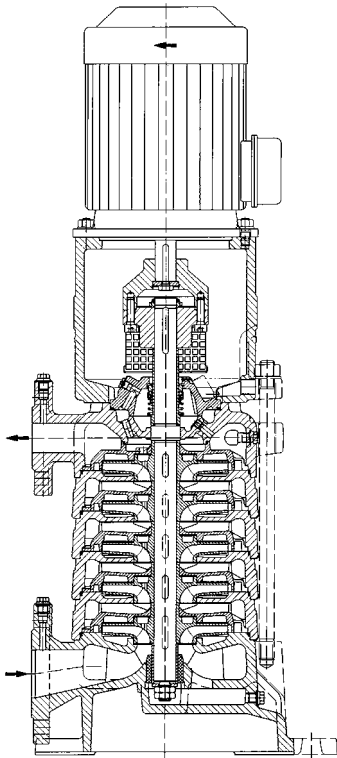


### Design features MPA:

- Endsuction design provides optimum flow into the first stage impeller for best suction performance.
- Inducer design available for low NPSH applications when pumping volatile and warm media.
- Eliminates the need for a second shaft seal.
- Drive end discharge, rotation clockwise viewed from drive end.
- Drive end thrust bearing, double row bearing. Grease lubrication with grease nipples.  
Medium lubricated slide bearing between first and second impeller.
- Thermal expansion of the pump rotor is balanced internally without affecting the coupling alignment.
- Shaft sealing arrangements (mechanical seal or gland packing) as per „shaft sealing options“.
- Maintenance friendly design. Bearings and shaft sealing are maintainable without pump disassembly.

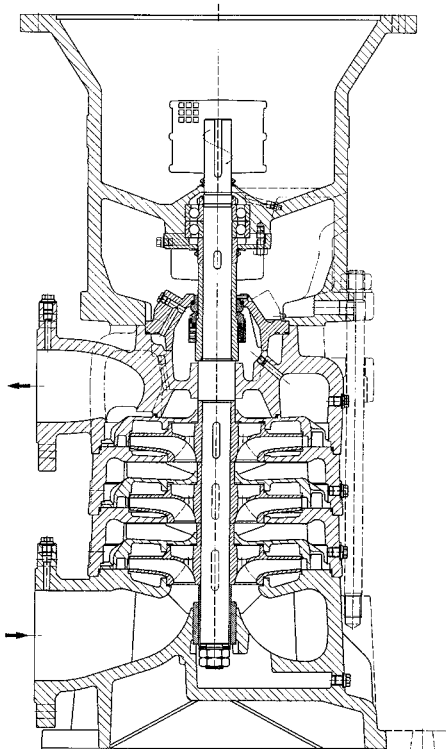


All sizes are available in space saving vertical design.



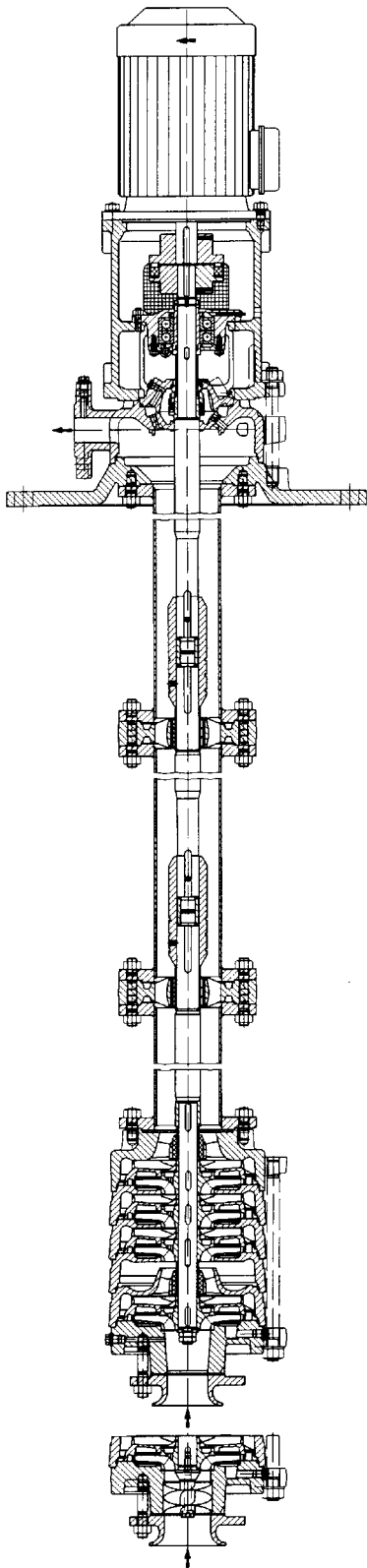
### Design features MPB:

- Vertical close coupled design
- Standard motor according to IEC, design V 1, up to 90kW
- Non flexible coupling between pump and motor
- All axial forces are absorbed by motor bearings
- Medium lubricated slide bearing in suction casing
- Maintenance friendly design. Shaft sealing maintainable without pump disassembly.



### Design features MPV:

- Vertical configuration with separate thrust bearing, grease lubrication with grease nipples
- Standard motor according to IEC, design V1, 110kW to 355kW
- Flexible coupling between pump and motor
- Medium lubricated sleeve bearing in suction casing
- Maintenance friendly design. Shaft sealing maintainable without pump disassembly.



## Design features MPVS:

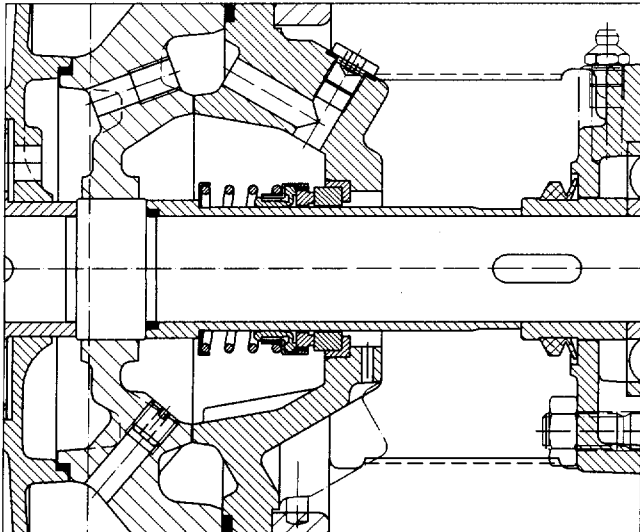
- Vertical wet pit design
- Installation lengths:  
2950/3550rpm - max. 4m  
1450/1750rpm - max. 10m
- Separate grease lubricated thrust bearing with grease nipples
- Standard motors according to IEC, design V1
- Flexible coupling between pump and motor
- Drive and discharge branch always above liquid level
- Medium lubricated sleeve bearings in pump body and shaft section. Number of bearings depending on installation length
- Suitable for variable speed control
- Mechanical seal or gland packing available
- Maintenance friendly design
- Suction bells, suction strainers or foot valves available
- Can design available when pumping hot or volatile media
- Inducer design available for low NPSH applications when pumping volatile and warm liquids.

# Shaft Seal Options

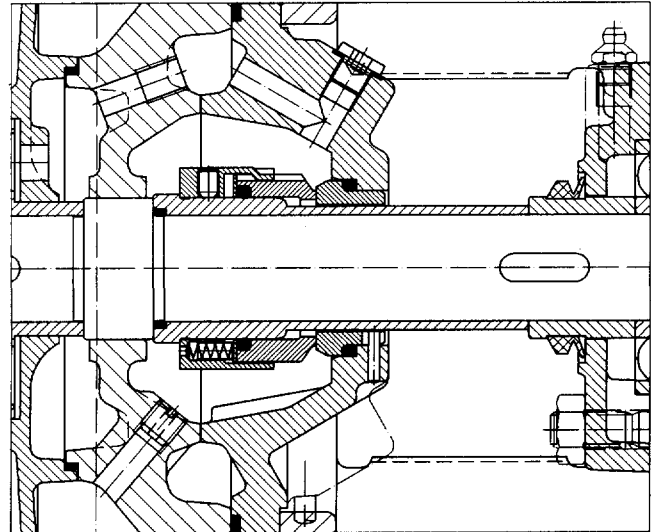
## Mechanical seal:

Seal chamber dimensions comply with ISO 3096. Mechanical seals of all brands that comply with this standard and EN 12756, version „k“ can be used without modification of the standard parts.

The taper bore type seal chamber is self venting and guarantees optimum lubrication and cooling of the seal faces.



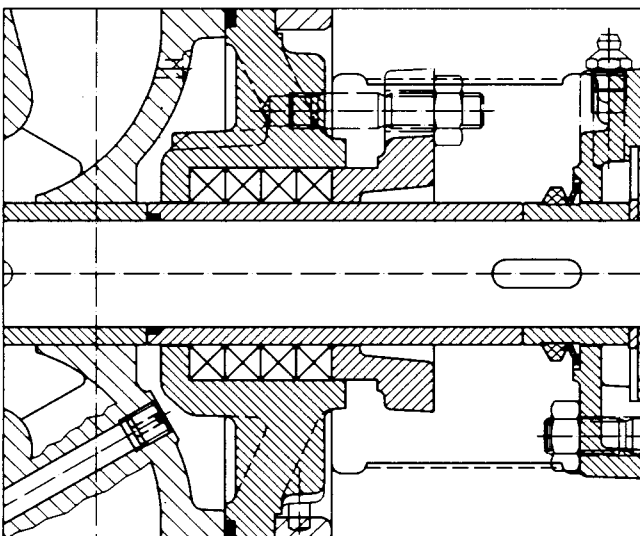
Single mech. seal, design U  
unbalanced up to max. 16bar



Single mech. seal, design B  
balanced up to max. 55bar

For more detailed information about operation limits with regard to material configuration and operation conditions please refer to data sheets or actual quotations.

## Gland packing:

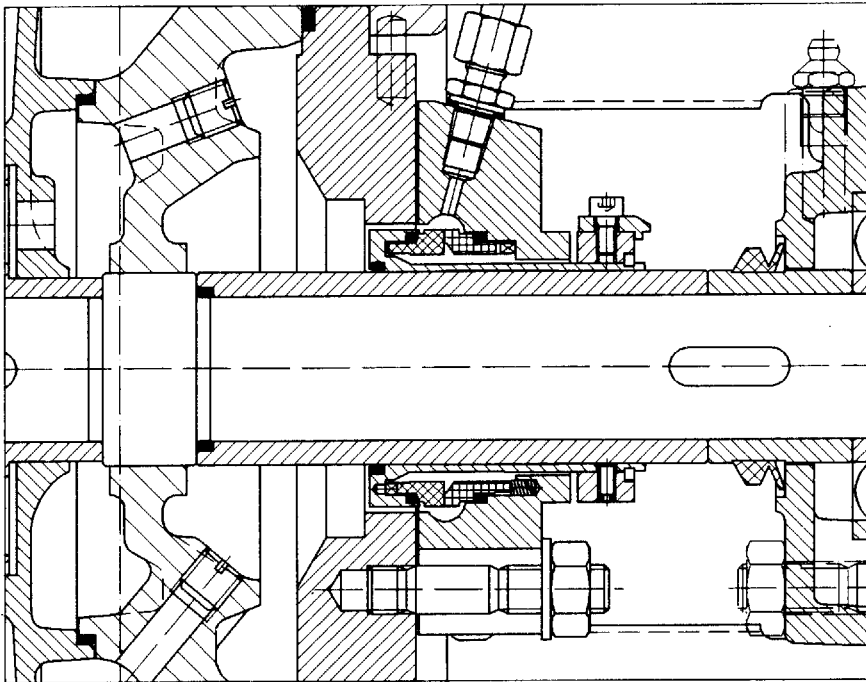


The availability of gland packings is limited to max. operation pressure of 25bar.

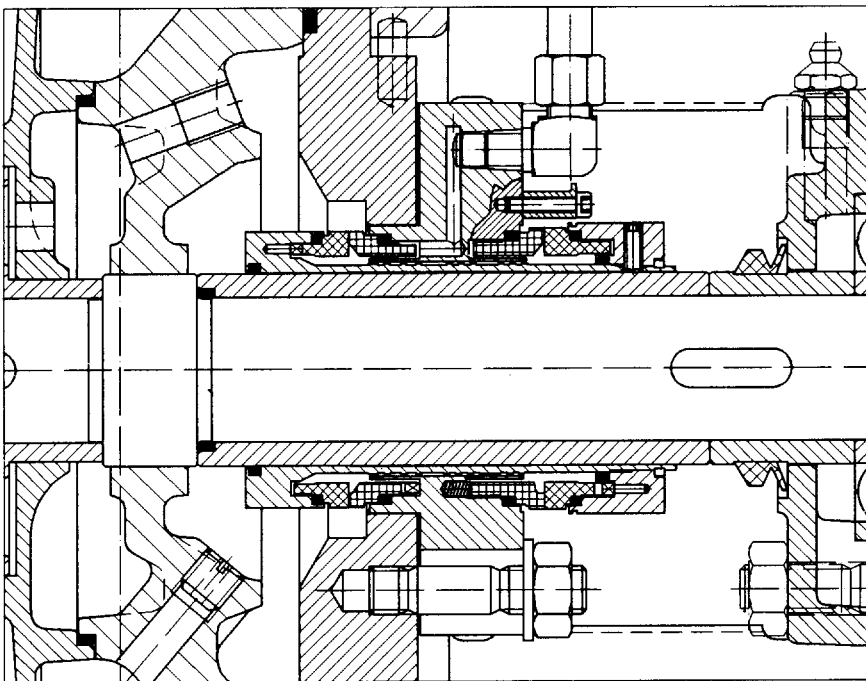
Above 25bar operation pressure only mechanical seals are available.

## Cartridge mechanical seal:

Cartridge seals are pre-assembled units that guarantee trouble free mounting as well as reliability. Cartridge seals also minimize the maintenance cost arising while changing the seal.



Single mechanical seal cartridge, also available with Quench.



Double mechanical seal cartridge with connection for external flush.

# Materials

Material Code	Impeller	Diffuser	Stage casing	Suction casing	Discharge casing	Casing wear rings	Shaft	Shaft sleeves
<b>Standard materials</b>								
111	0.6025	0.6025	0.6025	0.6025	0.6025 <sup>1)</sup>	<sup>2)</sup>	1.4021	1.4021
211	CC480K	0.6025	0.6025	0.6025	0.6025 <sup>1)</sup>	<sup>2)</sup>	1.4021	1.4021
311	1.4408	0.6025	0.6025	0.6025	0.6025 <sup>1)</sup>	<sup>2)</sup>	1.4021	1.4021
532	1.4408	1.4408	1.4408	1.4408	1.4408	1.4462	1.4462	1.4462

<b>Material options</b>								
141	0.6025	0.6025	0.7040	0.7040	0.7040	<sup>2)</sup>	1.4021	1.4021
341	1.4408	0.6025	0.7040	0.7040	0.7040	<sup>2)</sup>	1.4021	1.4021
151	0.6025	0.6025	1.0619	1.0619	1.0619	<sup>2)</sup>	1.4021	1.4021
351	1.4408	0.6025	1.0619	1.0619	1.0619	<sup>2)</sup>	1.4021	1.4021
672	1.4517	1.4517	1.4517	1.4517	1.4517	1.4462	1.4462	1.4462

1) At discharge pressure > 40bar discharge casing standard of 0.7040

2) Optional casing wear rings made of 1.4462

Elastics (O-rings) EPDM for hot water up to 140 °C, optional VITON (Pay attention to operation limits and chemical resistance)

Temperature and pressure operating limits depending on the material version, please refer to techn. data sheets.

## Materials - Comparison of various standards

	EN (DIN)	ISO	BSI (UK)	AISI	ASTM
0.6025	EN-GJL-250 (GG 25)	185/Gr. 250	1452 Gr. 220		A 278 Class 30
0.7040	EN-GJS-400-15 (GGG 40)	1083/400-12			A 536 Gr. 60-40-18
1.0619	GP 240 GH (GS-C 25)		1504 161 Gr. 480		A 216 Gr. WCB
CC480K	G-CuSn10				B 584 C 90700
1.4021	X20Cr13	683-13-4	970 420 S 37	420	A 276 Type 420
1.4408	G-X6CrNiMo 18-10		3100-316 C 16	CF8M	A (351) 743 Gr. CF8M
1.4517	G-X3CrNiMoCuN26-6-3-3				A 351 CD4-MCu
1.4462	X2CrNiMoN22-5-3		1503 318 S13		A 276 S31803

## Mechanical seal materials - Standard materials

DIN Code	Mech. seal	Stationary ring	Elastics	Metal parts
BQ 1 EGG	Carbon <sup>1)</sup>	SIC <sup>2)</sup>	EPDM	1.4571
BQ 1 VGG	Carbon <sup>1)</sup>	SIC <sup>2)</sup>	Viton	1.4571
Q1 Q1 VGG	SIC <sup>2)</sup>	SIC <sup>2)</sup>	Viton	1.4571

1) Carbon resin impregnated

2) Pure silicon carbide (without free silicon)

Application limits regarding pressure, temperature and speed as well as chemical resistance refer to data sheets or actual quotations.

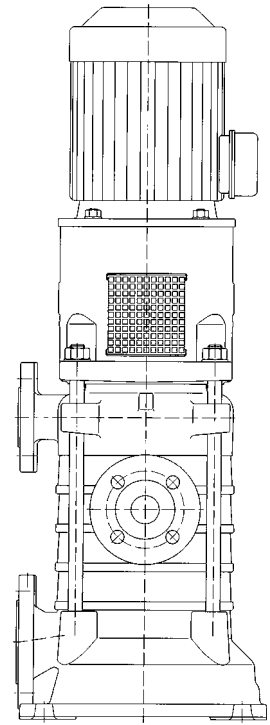
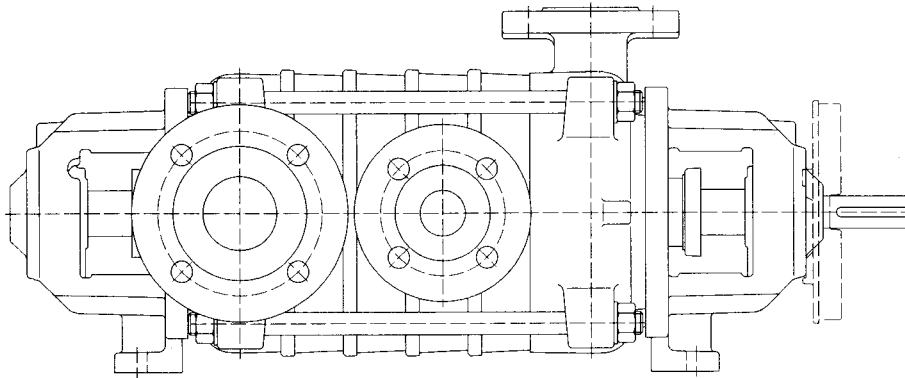
Optional materials upon request.

# Multioilet design

Pumps with more than one discharge outlet

Multistage pumps in multioilet design can be fitted with a random number of discharge branches. The pumps are mostly used in fire fighting applications to serve different pressure zones with different pressure levels.

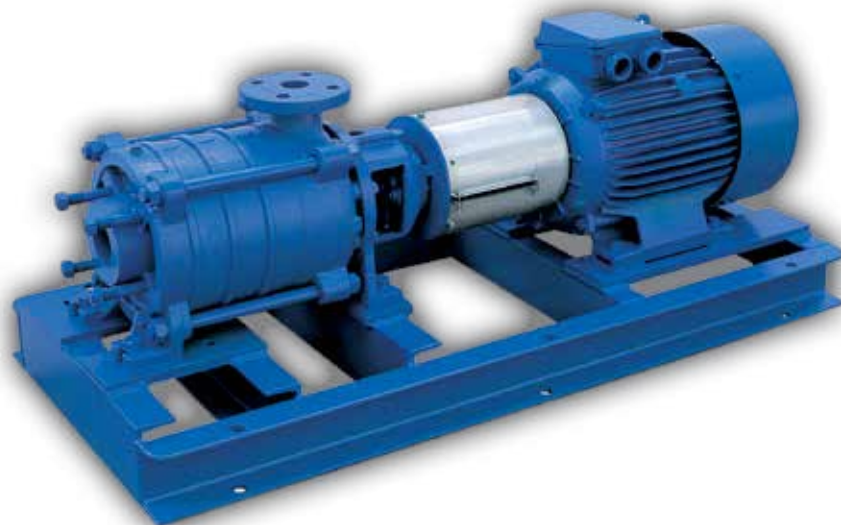
Multioilet configurations are available for all horizontal and vertical MP designs.



## Pump sets:

Accessories available

- baseframes
- couplings
- coupling guards
- motors
- minimum flow valves
- speed control
- special accessories to meet customer requirements



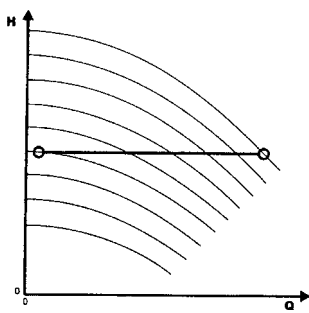
# Vertical close coupled pumps with HYDROVAR, MPBH

HYDROVAR is a programmable pump control system which incorporates a frequency inverter as well as control logic and is directly mounted on the pump motor.

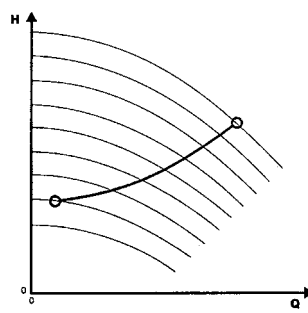
Power range: from 1,5 to 22kW (split version up to 45kW)

Easy handling and installation, no separate switchboard required.

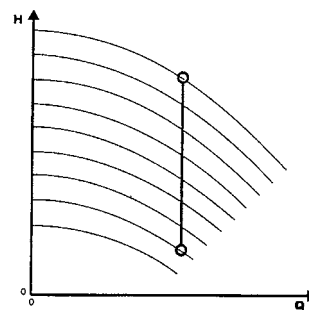
HYDROVAR is capable of controlling according to pressure, differential pressure or flow.



Control for constant pressure



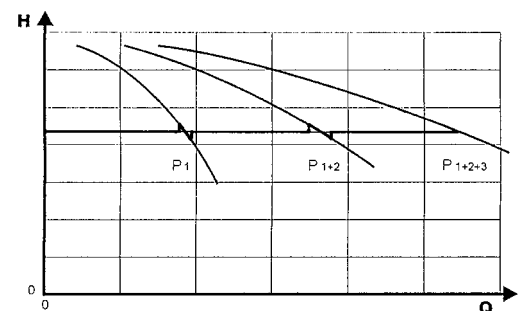
Control to match a system curve



Control for constant flow



- **Constant pressure control:**  
Pump stops immediately at zero flow.
- **Following a system characteristic:**  
Without using any additional device the HYDROVAR adjusts the speed of the motor to follow a preset and programmable system curve. System pressure is increased depending on the actual flow rate.
- **Constant flow control:**  
The used sensor is either a flow meter or a differential pressure transmitter in combination with an orifice plate. HYDROVAR is set according to the type of installed sensor and keeps the flow rate in the system constant.
- **Actuator mode:**  
HYDROVAR'S own logic section is frozen while a superior system only takes advantage of the frequency inverter inside the HYDROVAR.
- **External communication** with HYDROVAR is possible via an RS 485 interface with Modbus RTU as standard.
- **Multi pump systems:**  
The system is self-sufficient without the need of any additional equipment:
  - automatic cycling
  - cut in / cut out pumps according to system demand
  - changing of pumps in case of a failure



More detailed HYDROVAR catalogues available upon request.

# Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're 12,500 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

**For more information on how Xylem can help you, go to [xylem.com](http://xylem.com).**



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