



ITT

Vogel Pumpen

# Vogel - Multistage Pumps

Design MP, MPA, MPB, MPV

Sizes DN 40 - DN 125



*Engineered for life*

**VOGEL MULTISTAGE PUMPS**

**Performance range:**

Capacities up to 340 m<sup>3</sup>/h (1500 USgpm)

Head up to 500 m (1640 feet)

Max. speed up to 3600 min<sup>-1</sup> (3600 rpm)

Multistage pumps for capacities up to 2.000 m<sup>3</sup>/h (8800 USgpm), available - Series P refer to, catalogue 2300.1.B.

**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

**Pumpenfabrik ERNST VOGEL has developed and manufactured multistage pumps since 1910.**

**Our application and manufacturing expertise provide you with the BEST SOLUTION to meet your pumping needs.**

## VOGEL MULTISTAGE PUMPS

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.

### Modular system:

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

Size	Discharge branch DNd [mm]	Suction branch DNs [mm]	Hydraulics	Capacity Q [m <sup>3</sup> /h]	
				50 Hz	60 Hz
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 designed for casing 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**

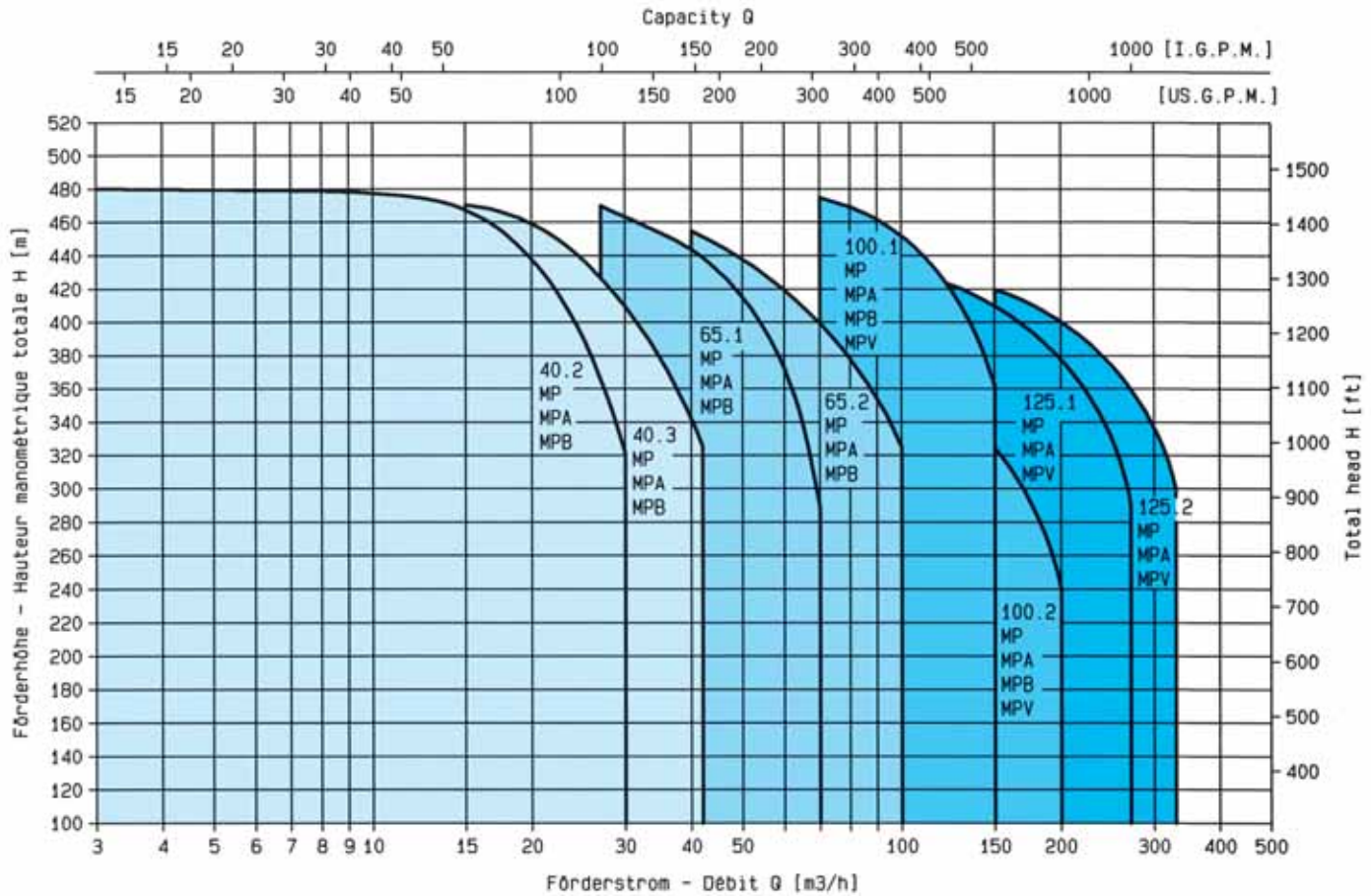
**ISO 9001 certifications guarantees high quality  
standards and reliability of our products.**



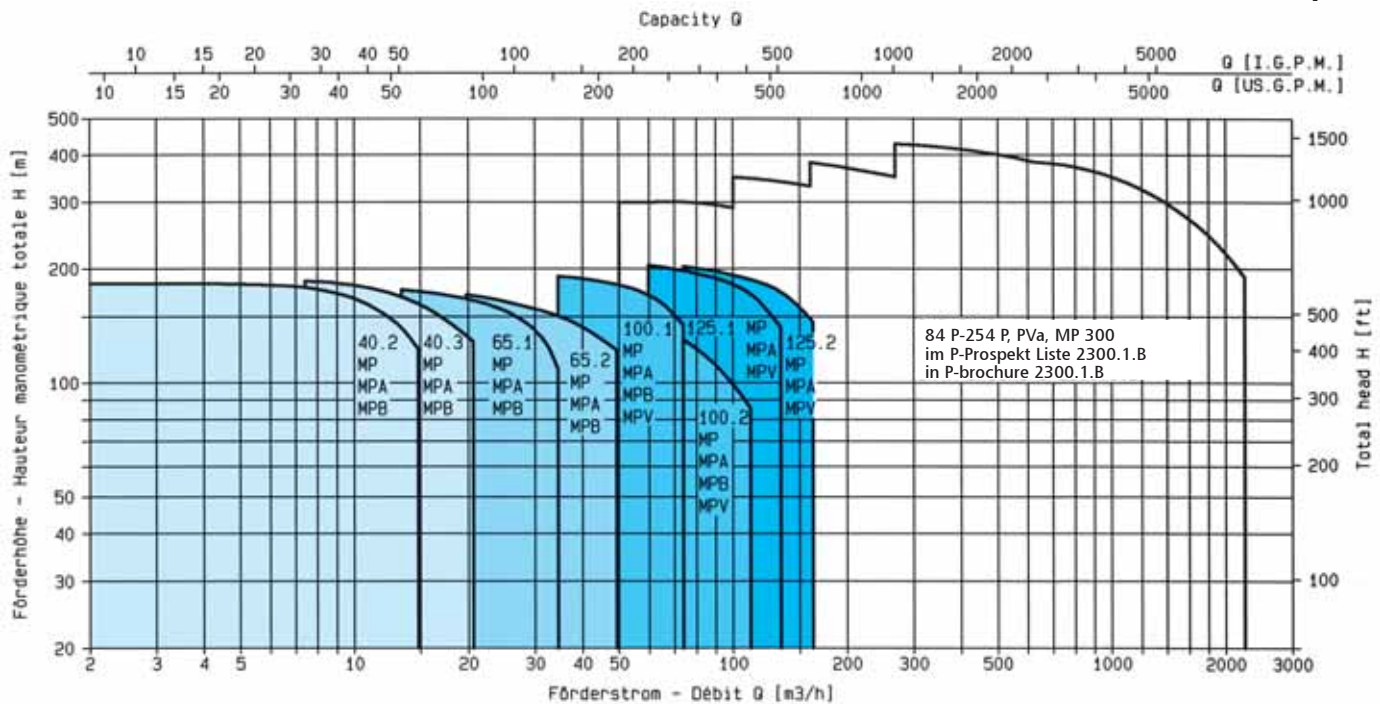
**VOGEL MULTISTAGE PUMPS**

Performance range - 50 Hz

2950 r.p.m.



1450 r.p.m.





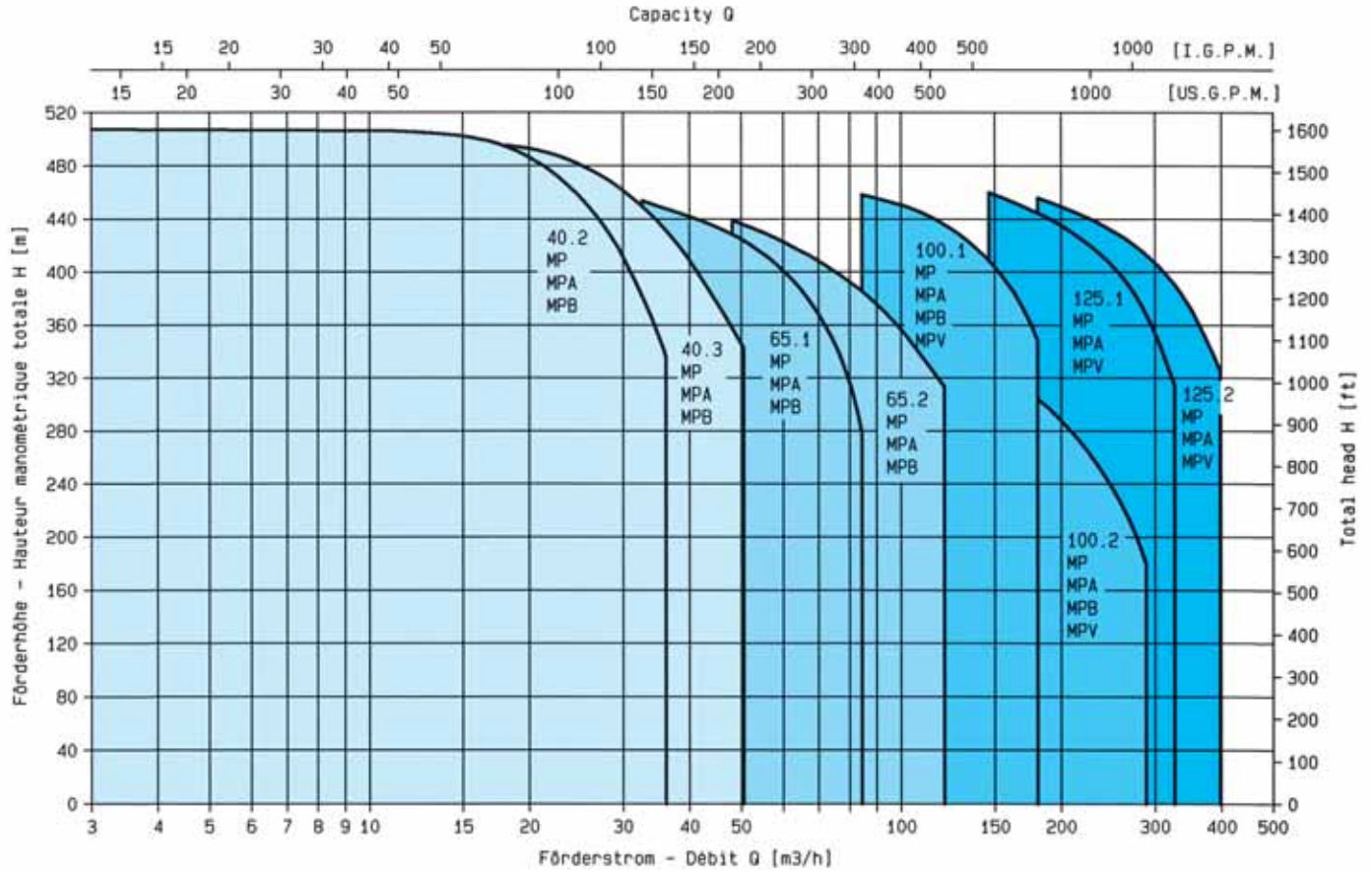
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Vogel Pumpen

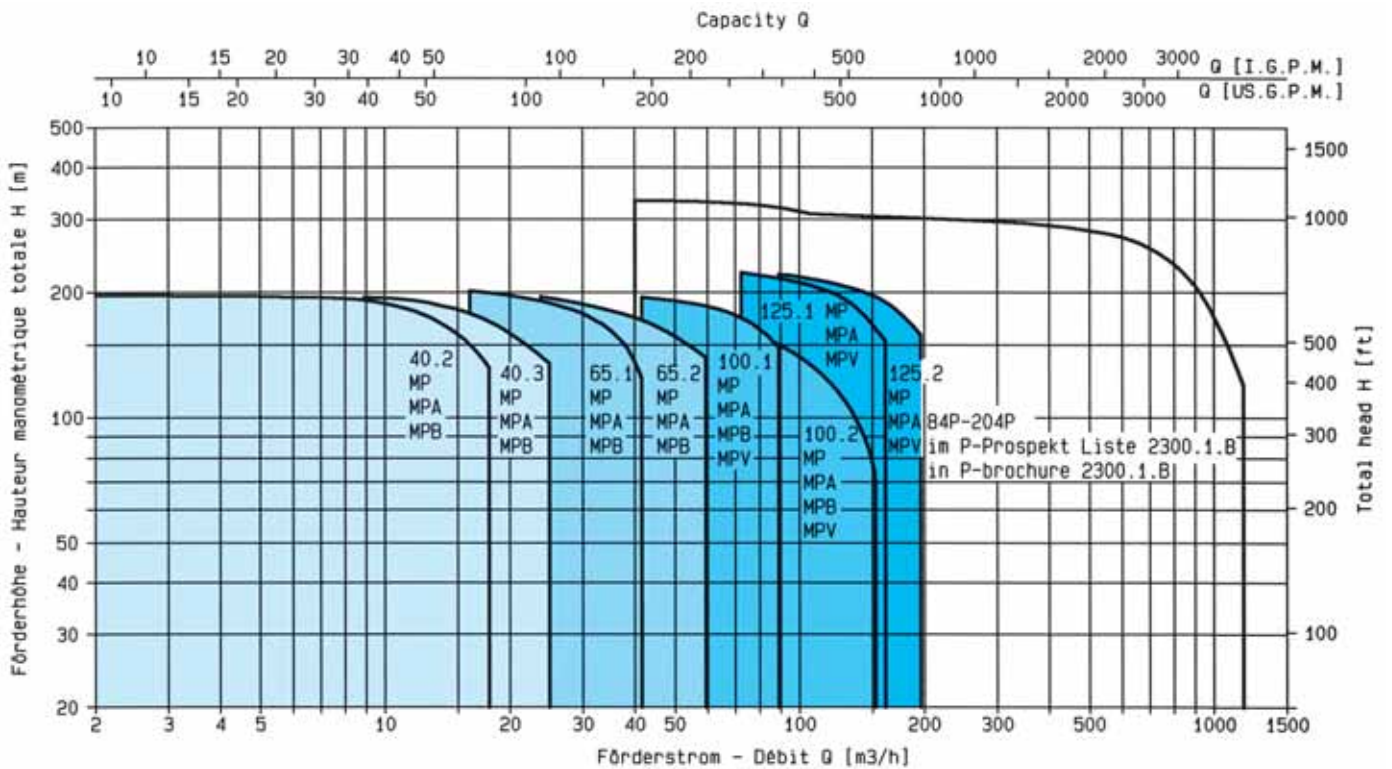
VOGEL MULTISTAGE PUMPS

Performance range - 60 Hz

3550 r.p.m.



1750 r.p.m.



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**VOGEL MULTISTAGE PUMPS**

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 90 kW. The pump shaft is directly coupled to the motor shaft.

**Type MPV:**

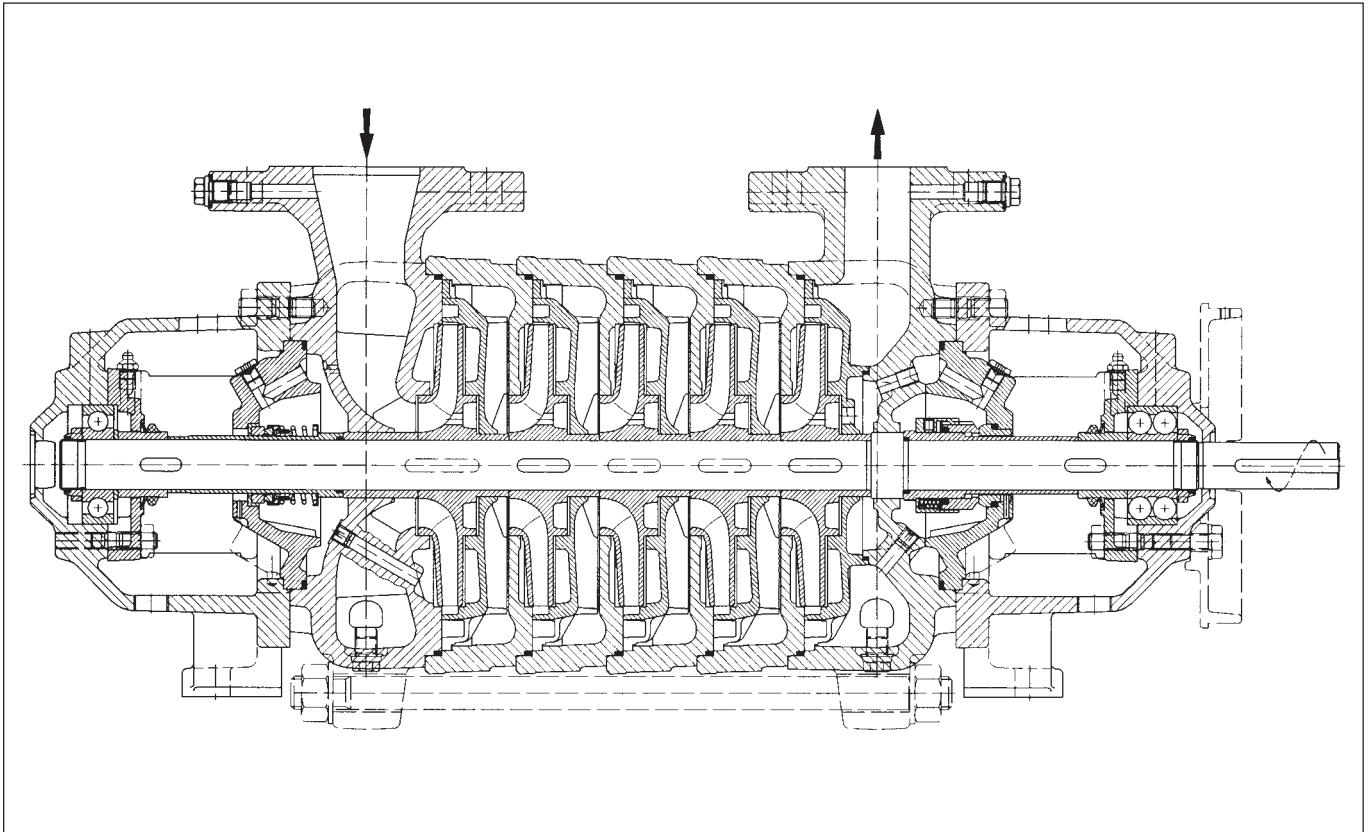
Vertical design with separate thrust bearing and flexible coupling between motor and pump shaft. Standard IEC motors for 90 kW and larger.

**Type MPVS:**

Vertical wet pit configuration lengths:  
 at 2950/3550 r.p.m.: max. 4 m  
 at 1450/1750 r.p.m.: max. 10 m  
 Inducer design available.

**VOGEL MULTISTAGE PUMPS**

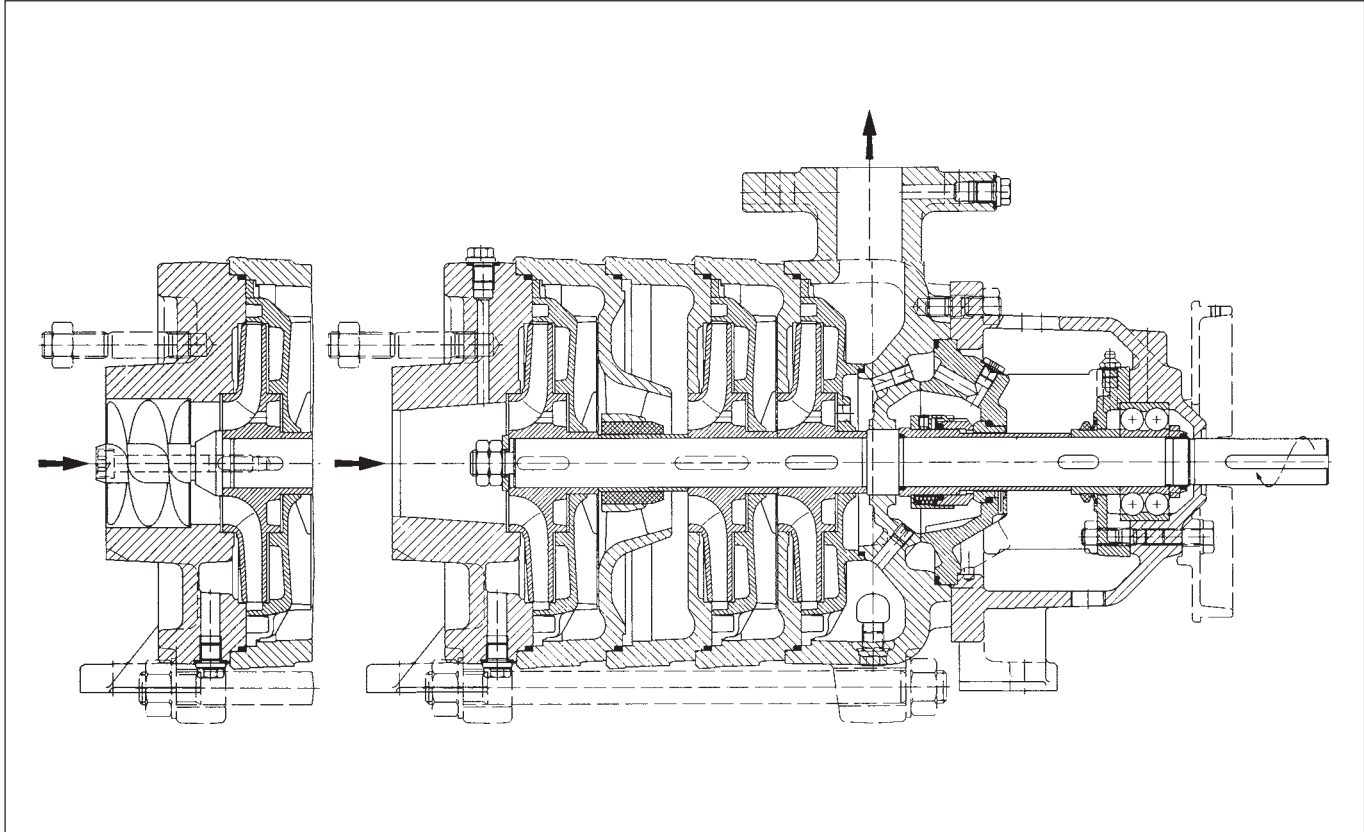
Type MP:



- 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)
- 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 shaft alignment.
- Shaft sealing arrangements (mechanical seal or gland packing) see page 10, 11.
- Maintenance friendly design. Bearings and shaft seal are maintainable without pump disassembly.

**VOGEL MULTISTAGE PUMPS**

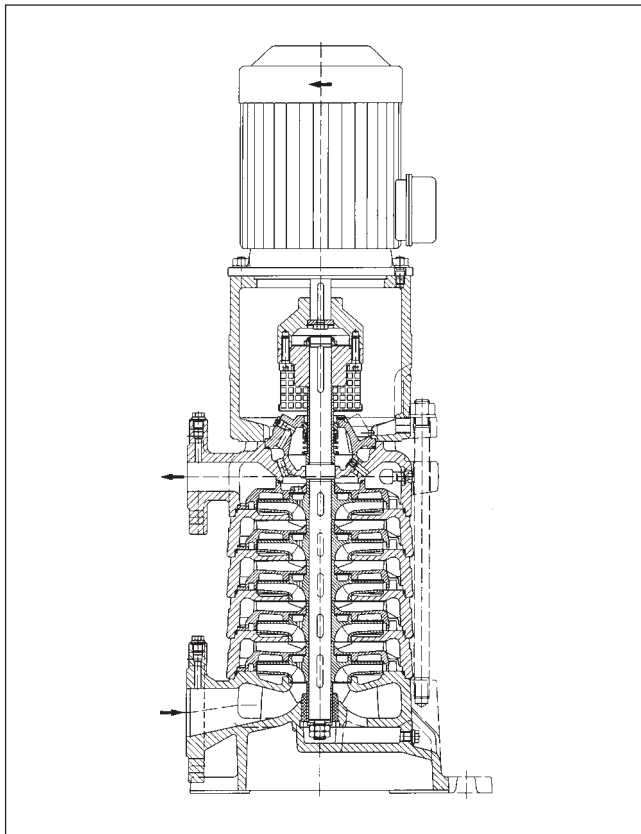
Type MPA:



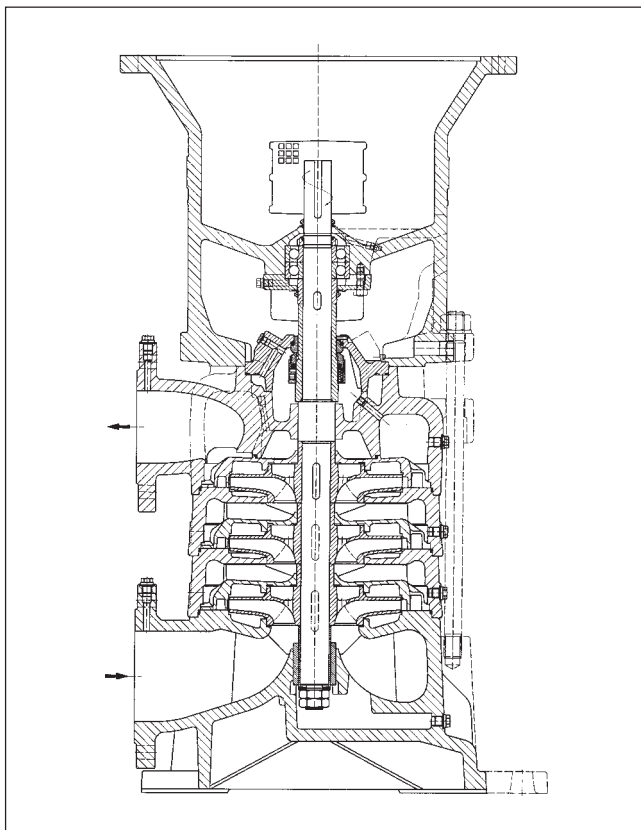
- Endsuction design provides optimum flow into the first stage impeller for best suction performance.
- Inducer design available for low NPSH applications when pumping volatile and warm media
- Eliminates the need for a second shaft seal.
- Drive end discharge, rotation clockwise viewed from drive end.
- 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 will be balanced internally without affecting the shaft alignment.
- Shaft sealing arrangements (mechanical seal or gland packing) see page 10, 11.
- Maintenance friendly design. Bearings and shaft sealing are maintainable without pump disassembly.

**VOGEL MULTISTAGE PUMPS**

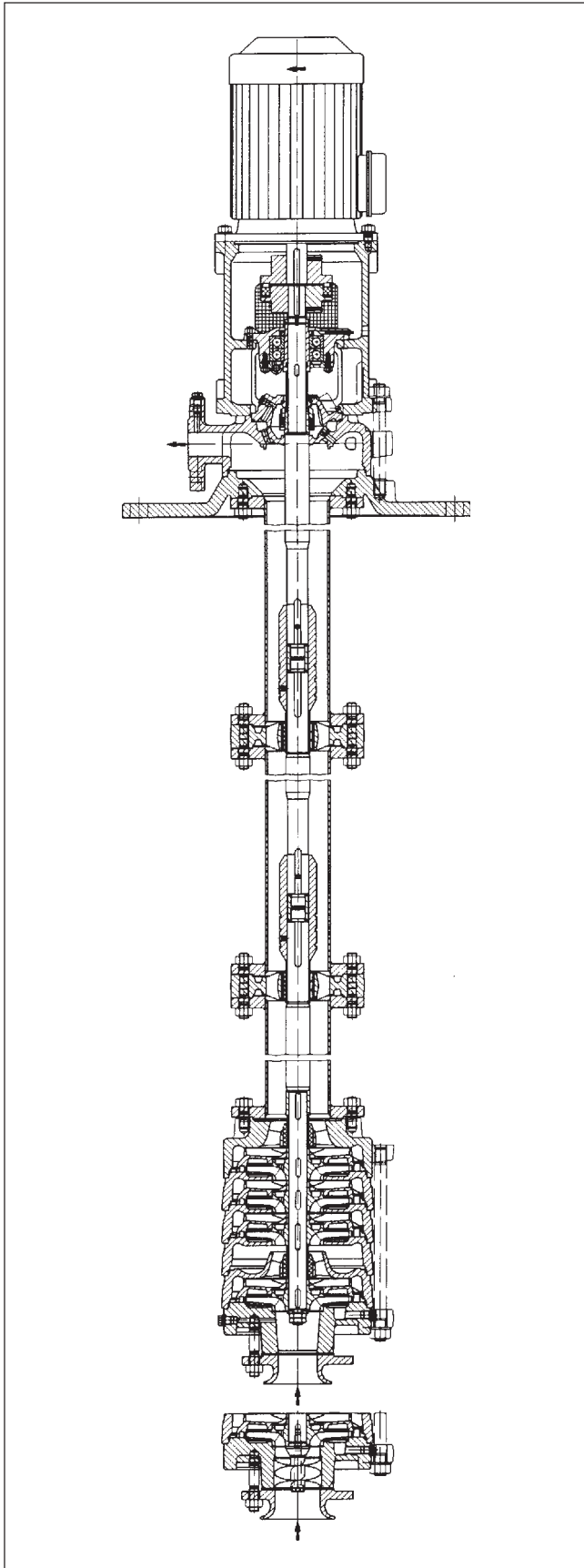
All sizes are available in a space saving vertical design.


**Type MPB:**

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


**Type MPV:**

- Vertical configuration with separate thrust bearing, grease lubrication with grease nipples
- Standard motor according to IEC, design V1, 90 kW to 355 kW
- Flexible coupling between pump and motor
- Medium lubricated sleeve bearing in suction casing
- Maintenance friendly design. Shaft sealing maintainable without pump disassembly.

**VOGEL MULTISTAGE PUMPS**

**Type MPVS:**

- Vertical wet pit design
- Installation lengths:  
2950/3550 r.p.m. - max. 4 m  
1450/1750 r.p.m. - max. 10 m
- 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.

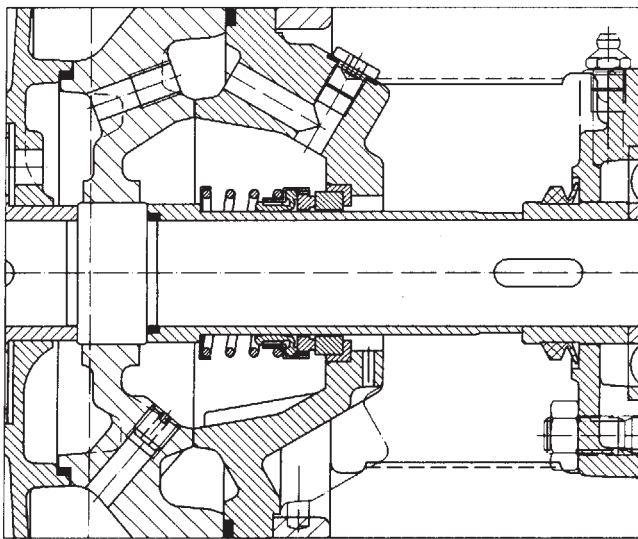
## VOGEL MULTISTAGE PUMPS

Shaft seal options:

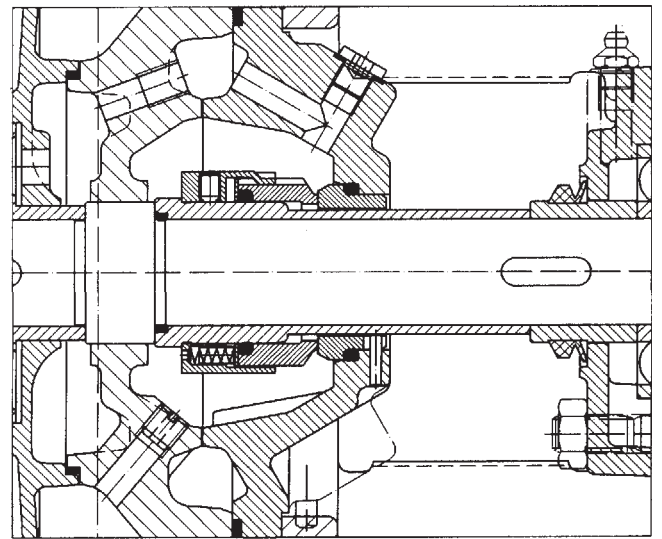
**Mechanical seal:**

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.



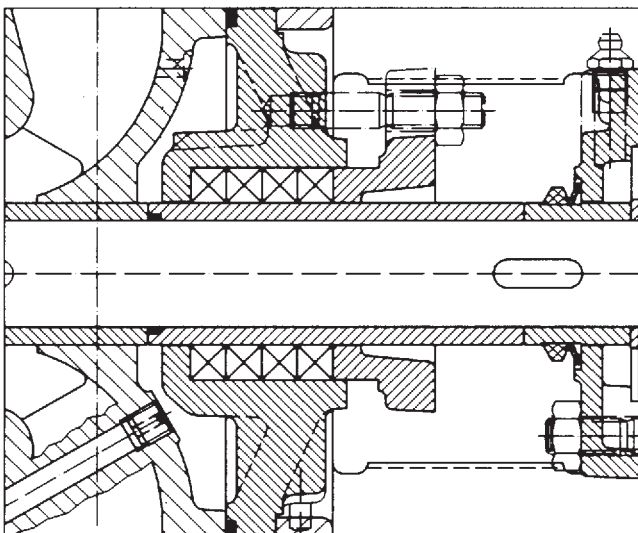
Single mech. seal, design U  
unbalanced up to max. 16 bar



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

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 25 bar.

Above 25 bar operation pressure only mechanical seals are available.

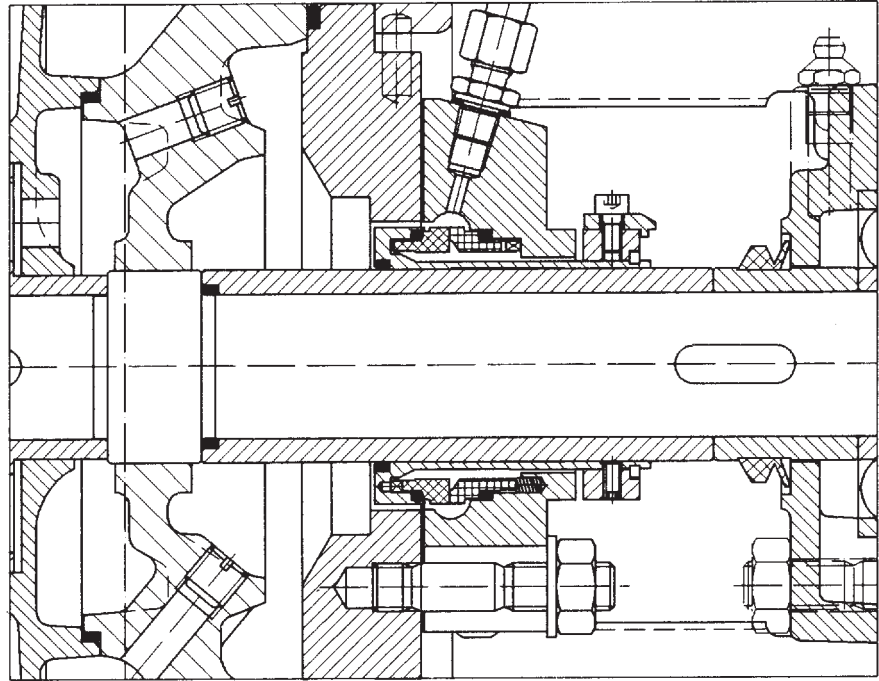
## VOGEL MULTISTAGE PUMPS

Shaft seal options:

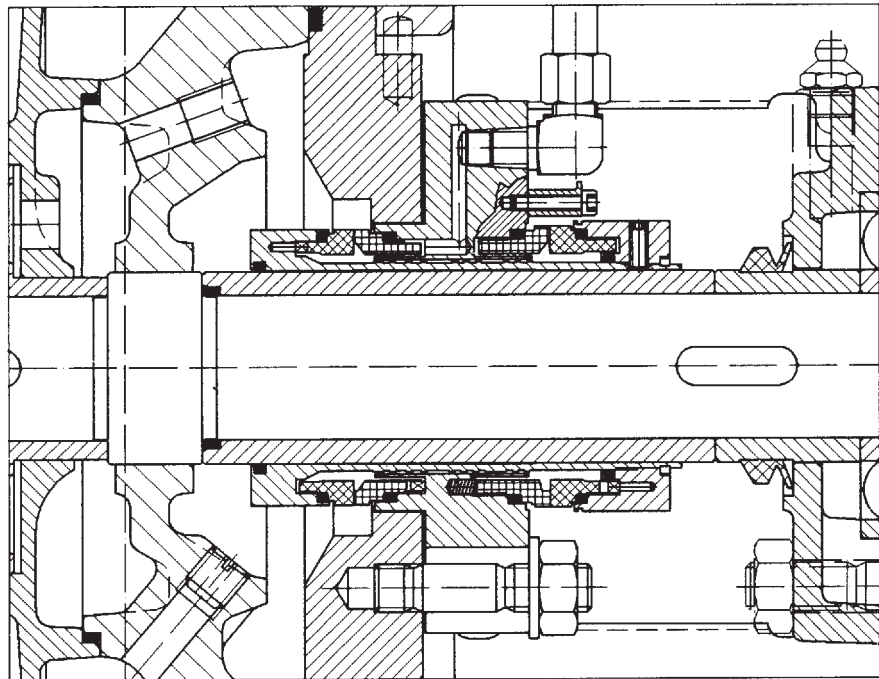
**Cartridge mechanical seal:**

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.



**VOGEL MULTISTAGE PUMPS**
**Materials**

Material Code	Impeller	Diffuser	Stage casings	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>	2)	1.4021	1.4021
211	CC480K	0.6025	0.6025	0.6025	0.6025 <sup>1)</sup>	2)	1.4021	1.4021
311	1.4408	0.6025	0.6025	0.6025	0.6025 <sup>1)</sup>	2)	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	2)	1.4021	1.4021
341	1.4408	0.6025	0.7040	0.7040	0.7040	2)	1.4021	1.4021
151	0.6025	0.6025	1.0619	1.0619	1.0619	2)	1.4021	1.4021
351	1.4408	0.6025	1.0619	1.0619	1.0619	2)	1.4021	1.4021

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

2) Optional casing wear rings made of 1.4462 possible

**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
<b>0.6025</b>	EN-GJL-250 (GG 25)	185/Gr. 250	1452 Gr. 220		A 278 Class 30
<b>0.7040</b>	EN-GJS-400-15 (GGG 40)	1083/400-12			A 536 Gr. 60-40-18
<b>1.0619</b>	GP 240 GH (GS-C 25)		1504 161 Gr. 480		A 216 Gr. WCB
<b>CC480K</b>	G-CuSn10				B 584 C 90700
<b>1.4021</b>	X20Cr13	683-13-4	970 420 S 37	420	A 276 Type 420
<b>1.4408</b>	G-X6CrNiMo 18-10		3100-316 C 16	CF8M	A (351) 743 Gr. CF8M
<b>1.4410</b>	X2CrNiMoN25-7-4				
<b>1.4462</b>	X2CrNiMoN22-5-3		1503 318 S13		A 276 S31803

**Mechanical seal materials:**
**Standard materials**

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

1) Carbon resin impregnated

2) Pure silicon carbide (without free silicone)

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

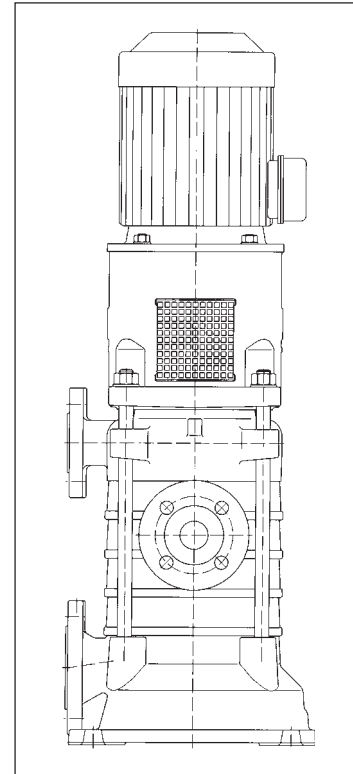
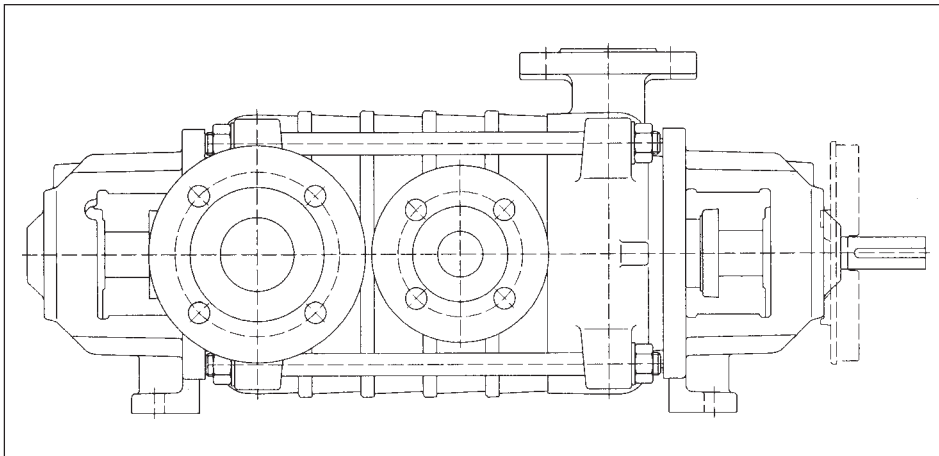
Optional materials upon request.

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**VOGEL MULTISTAGE PUMPS**
**Pumps with more than one discharge - Multioutlet design:**

Multistage Pumps in Multioutlet 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.

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

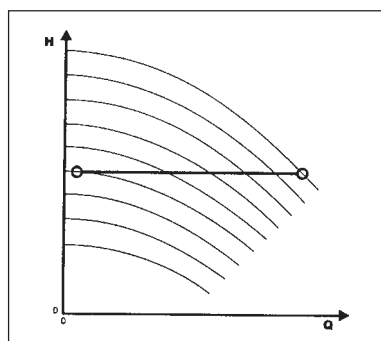

**Pumps sets:**
**Accessories available**

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



## VOGEL MULTISTAGE PUMPS

### Vertical close coupled pumps with HYDROVAR, MPBH



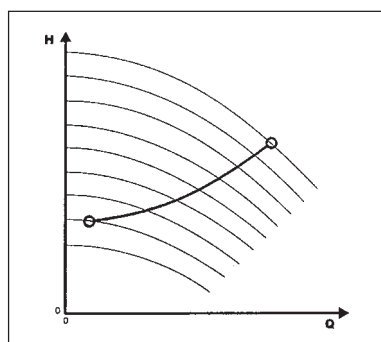
Control for constant pressure

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

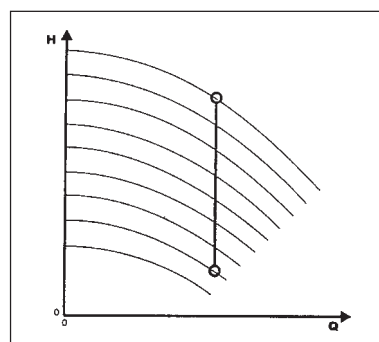
Power range: from 1,5 to 22 kW  
(split version up to 45 kW)

Easy handling and installation, no separate switchboard required.

HYDROVAR is capable to control acc. pressure, differential pressure or flow.

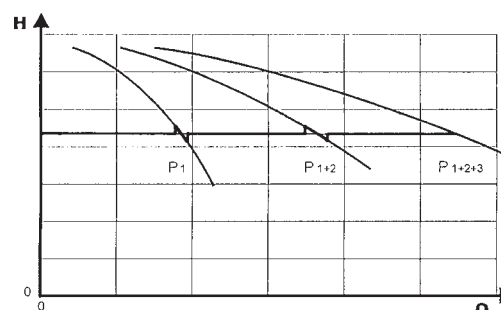


Control to match a system curve



Control for constant flow

- **Constant pressure control:**  
Pump stops immediately at zero flow.
- **Following a system characteristics:**  
Without using any different devices the HYDROVAR will adjust the speed of the motor to follow a preset and programmable system curve. System pressure is lifted depending on the actual flow rate.
- **Constant flow control:**  
The sensor used either be a flow meter or a differential pressure transmitter in combination with an orifice plate. HYDROVAR can be set according to the type of sensor used and will keep the flow rate in the system constant.
- **Actuator made:**  
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. Again the system is self-sufficient without the need of additional equipment:
  - automatic cycling
  - cut in / cut out pumps according system demand
  - changing of pumps in case of a failure



More detailed HYDROVAR catalogues available upon request.

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Liability of manufacturer and/or supplier

The mentioned limits of operation and/or application are only a general information and may not be applied for every case. The permitted range of operation and/or application for the specific case is to be obtained from our acknowledgement of order and/or the instructions for installation, operation and maintenance, sent with the goods.

Liste 2200.1.B

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