



**DICKOW  
PUMPEN**



## **Vertical selfpriming Side-Channel Pumps**

**Type WPV/SMV**

Issue 04/97

### Field of application

The side-channel pumps are selfpriming and operate more economically (better efficiency) than normal centrifugal pumps, when handling low flows and high heads.

Due to these facts, the side-channel pumps are appropriate to solve many pumping problems in industrial processes. They can be used for almost all liquids which are free of any abrasive solids and of suitable viscosity.

The vertical side-channel pumps are suitable especially for tank farms with underground storage tanks with a diameter of max. 2,5 m (8.2 ft). The construction of the pumps enables an installation directly on the dome cover.

That means, suction lift is only slightly above the tank diameter and the priming pipe can be kept short.

For handling toxic, explosive and other dangerous liquids in chemical and petrochemical industries, a sealless pump design with permanent magnetic coupling - without shaft duct to the atmosphere - is also available. Since the static containment shell forms a closed system with hermetically sealed liquid end, an operation with zero leakage is granted. These pumps are maintenance free because no shaft sealing is provided.

### Construction

The WPV / SMV-types are single stage, close-coupled, selfpriming Inline-pumps. The opposite located suction- and discharge flanges have identical nominal widths and pressure ratings. The pumps consist of the socket, the suction and pressure disk, the bearing housing and the impeller.

The WPV-bearing housing holds the mechanical seal and the SMV-housing the sleeve bearings.

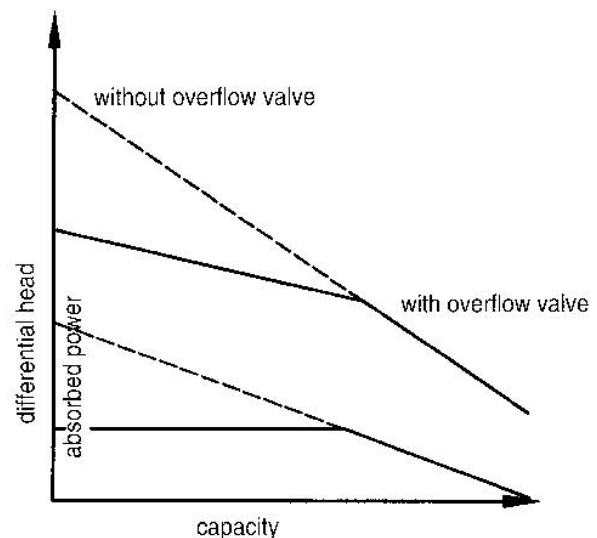
### Impeller

The pump impeller is a side-channel impeller and located on the motor shaft in overhung position. The impeller is axially movable and hydraulically balanced. Therefore, no hydraulic loads stress the motor bearings. The torque is transmitted to the impeller by a key.

### Overflow valve

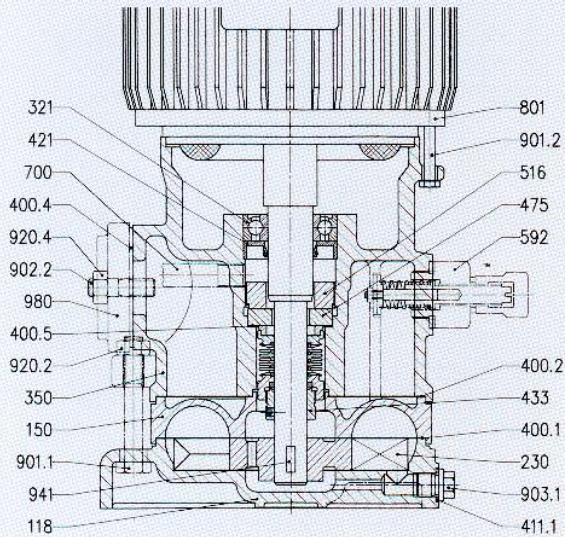
Side-channel pumps generate - compared to normal centrifugal pumps - a steep head rise and an increased power consumption with lower flows.

To protect pipes on the pressure side and to avoid overloading of the motor under throttled conditions, WPV-pumps can additionally be equipped with an overflow valve.

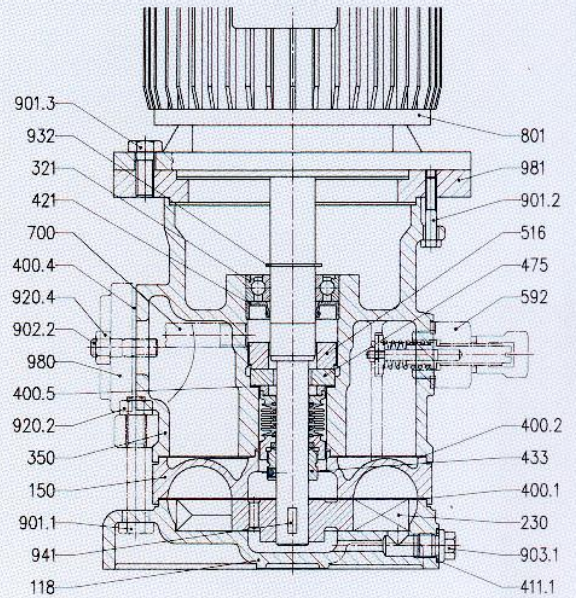


Sectional drawings, Parts List

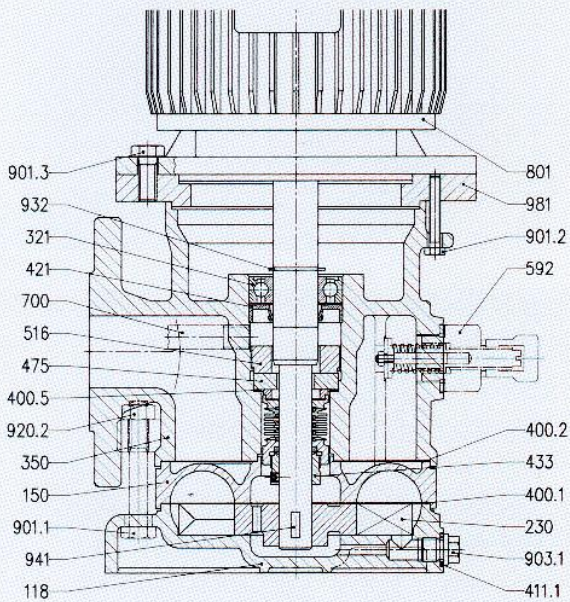
**WPV-PN6**, Design N1/N3, with overflow valve,  
motor design V8, enclosure IP54 / EExelIT3



**WPV-PN6**, Design N1/N3, with overflow valve,  
motor design V1, enclosure IP55 / EExelIT3 / EExdelICT4

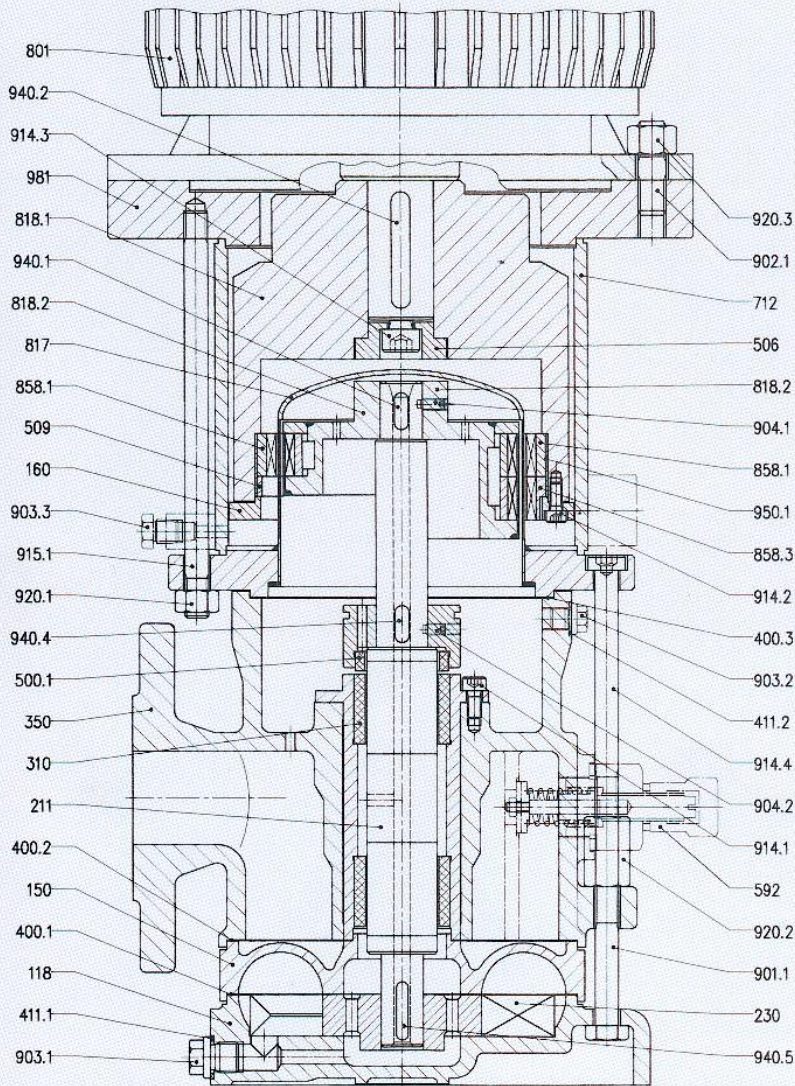


**WPV-PN16**, Design N1/N3, with overflow valve,  
motor design V1, enclosure IP55 / EExelIT3 / EExdelICT4



- 118 Socket
- 150 Suction- and Discharge casing
- 160 Cover
- 211 Pump shaft
- 230 Impeller
- 310 Sleeve bearing
- 321 Roller bearing
- 350 Bearing housing
- 400.1 Gasket
- 400.2 Gasket
- 400.3 Gasket
- 400.4 Gasket
- 400.5 Gasket
- 411.1 Joint ring

**SMV-PN16**, Design with permanent magnetic coupling, with overflow valve,  
motor design V1, enclosure IP55 / EExeII T3 / EExdeII CT4



411.2	Joint ring	858.1	Permanent magnet	914.4	Inner hex. cap screw
421	Seal/Bearing cover	858.3	Permanent magnet	915.1	Casing screw
433	Mechanical seal	901.1	Hexagon head bolt	920.1	Hexagon nut
475	Seal ring	901.2	Hexagon head bolt	920.2	Hexagon nut
500.1	Start-up ring	901.3	Hexagon head bolt	920.3	Hexagon nut
506	Retaining ring	902.1	Stud	920.4	Hexagon nut
509	Intermediate ring	902.2	Stud	932	Circlip
516	Locating ring	903.1	Screwed plug	940.1	Key
592	Overflow valve	903.2	Screwed plug	940.2	Key
700	Control pipe	903.3	Screwed plug	940.4	Key
712	Column pipe	904.1	Grub screw	940.5	Key
801	Flange motor	904.2	Grub screw	941	Disc spring
817	Containment shell	914.1	Inner hex. cap screw	950.1	Spring
818.1	Drive rotor	914.2	Inner hex. cap screw	980	Hand pump flange
818.2	Driven rotor	914.3	Inner hex. cap screw	981	Intermediate flange

### Drive motor

#### WPV-Pumps:

IEC-motors with extended special shaft are installed.

Design V8 at enclosure IP54 / EExeII T3 and design V1 at all enclosures. Speed 1450 or 1750 min<sup>-1</sup>.

#### SMV-Pumps:

All common standard motors of design V1 can be installed. Enclosure according to the plant requirements. Speed 1450 or 1750 min<sup>-1</sup>.

#### Shaft sealing - WPV-Pumps

The extended motor shaft is sealed against the atmosphere through a single metal bellows mechanical seal, make DICKOW. The drive motor is protected against possible leakage through an additional radial seal ring between the shaft sealing and the motor bearing. With a leakage drain pipe screwed into the bearing housing, leakage of the mechanical seal can be detected during operation.

#### Magnet coupling - SMV-Pumps

The single elements of the multipolar synchronous magnetic coupling are manufactured of permanent magnet material "Cobalt-Samarium Rare Earth". Power is transmitted to the hermetically sealed liquid end by a bank of external magnets, magnetically coupled through the containment shell to a bank of internal magnets. The inner magnet rotor transmits the required torque direct to the impeller.

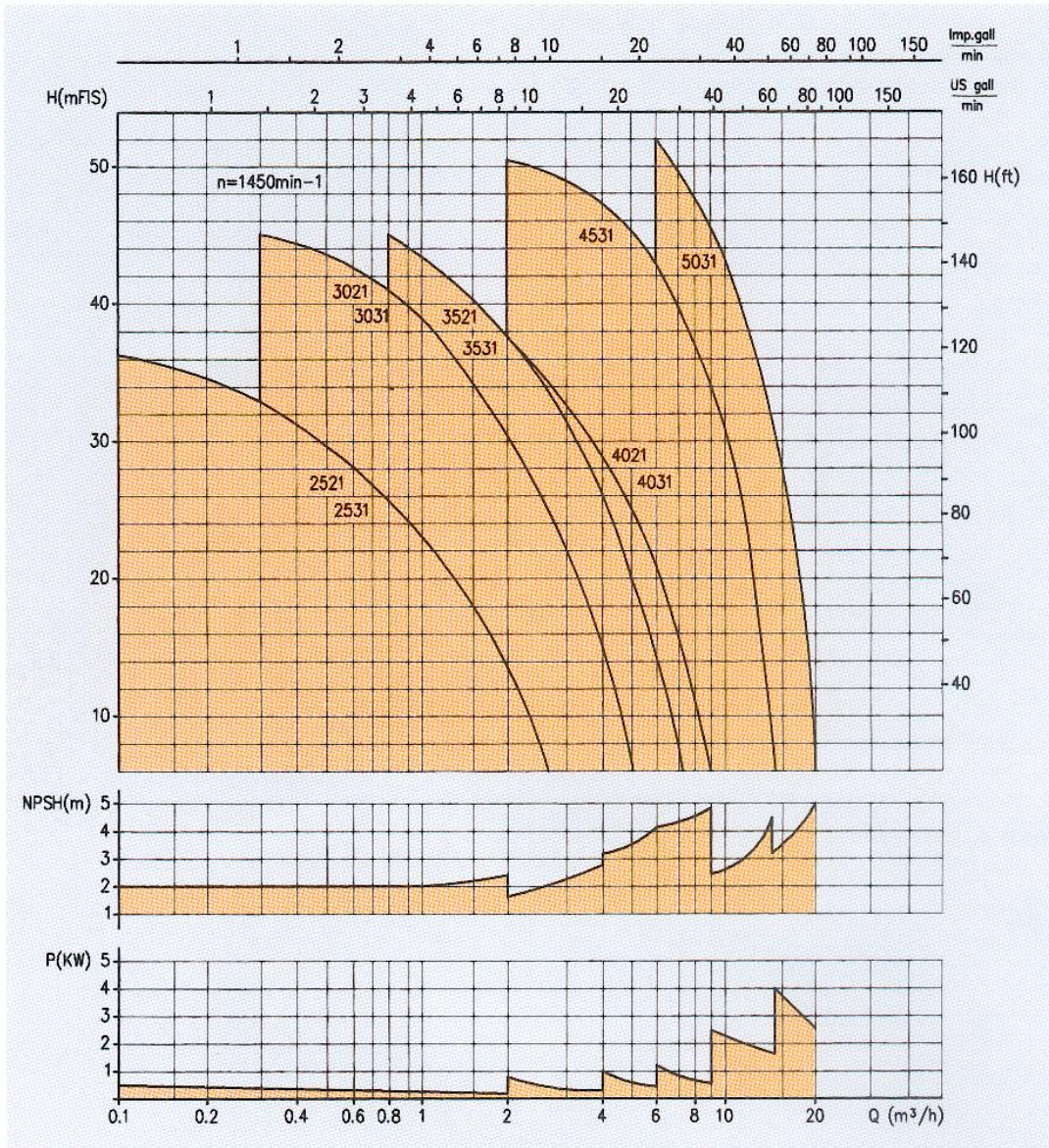
The liquid is hermetically sealed against the atmosphere by the static containment shell, no shaft sealing is available.

### Materials

Following standard materials are provided:

Bearing housing	GG25 (PN6), GGG40.3 (PN16), 1.4408
Socket, Suction and pressure disk	GGG40.3, 1.4408
Impellers	Ms, G-SnBz, 1.4457
Shaft extension	St, 1.4571
Pump shaft	1.4571/coated (SMV)
Start-up ring	1.4462/Carbon (SMV)
Radial bearing	Silicon Carbide (SMV)
Mechanical seal "N1"	Metal bellows Tombac, faces carbon/Cr-steel
Mechanical seal "N3"	Metal bellows 1.4571, faces carbon/SiC
Containment shell	1.4571, Hastelloy C
Overflow valve	Ms, 1.4571

Performance table WPV / SMV



Performance curves for the different pump sizes are available on request and are supplied with our technical offers in general.

Technical changes reserved!  
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