



**DICKOW
PUMPEN**



**Vertical Selfpriming
Side-Channel Pumps**

Type WPV

Applications

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. Application limit for self-priming design is 100 cSt.

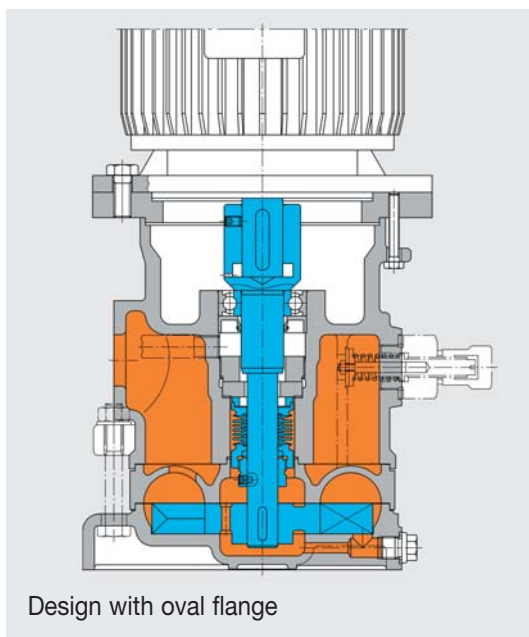
The vertical side-channel pumps are suitable especially for tank farms with underground storage tanks with a diameter of max. 2,5 m (8.2 ft). The design of the pumps allows an installation directly on the dome cover. That means, suction lift is only slightly above the tank diameter and the suction pipe can be kept short.

The maximum allowable operating pressures are 6 bar (PN6) and 10 bar (PN16), the maximum operating temperatures are 100°C (212°F).

Design

The WPV-types are single stage, single flow, self-priming Inline-pumps. The opposite located suction and discharge flanges have identical nominal diameters. The pump consists of the socket, the suction and pressure disc, the bearing housing with mechanical seal and the impeller.

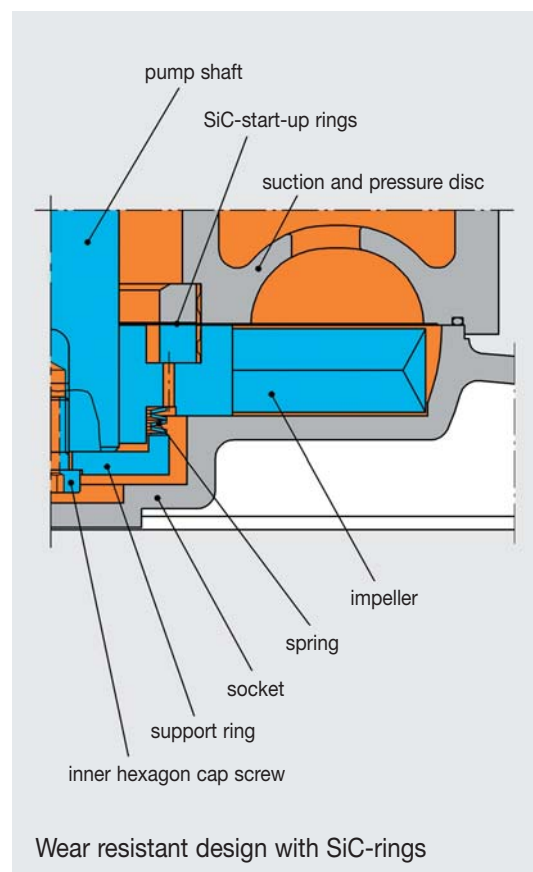
For the sizes 25/35/40 a design with oval flanges PN6 and impeller arrangement without SiC-rings is available.



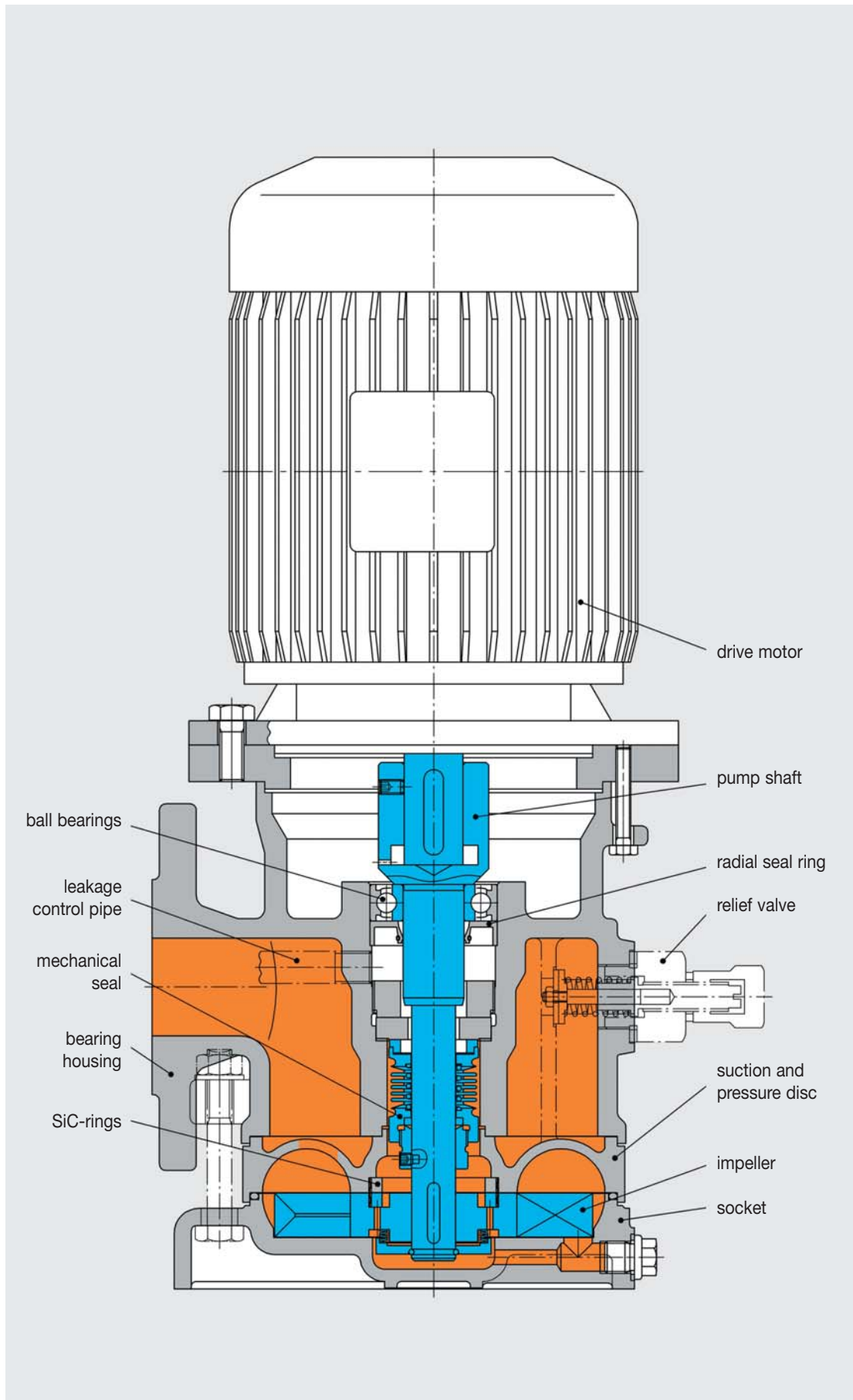
Impeller, design PN16

The hydraulically balanced side-channel impeller is keyed to the pump shaft and located in a chamber between the socket and the suction and pressure disc. To achieve selfpriming capability, best efficiency and differential pressure, tight clearances between the rotating impeller and the stationary pump parts are required.

To avoid seizing of the impeller due to the tight internal clearances, the pumps are fitted with additional wear resistant SiC-rings. The SiC-rings are placed in the suction and pressure disc as well as in the impeller hub. The impeller is pushed concentric to the SiC-ring in the suction and pressure disc by a spring fixed by the support ring. With this design, a clearance is guaranteed between impeller vanes and the stationary parts. Metallic contact between the parts and seizing is excluded.



Sectional drawing, design PN16



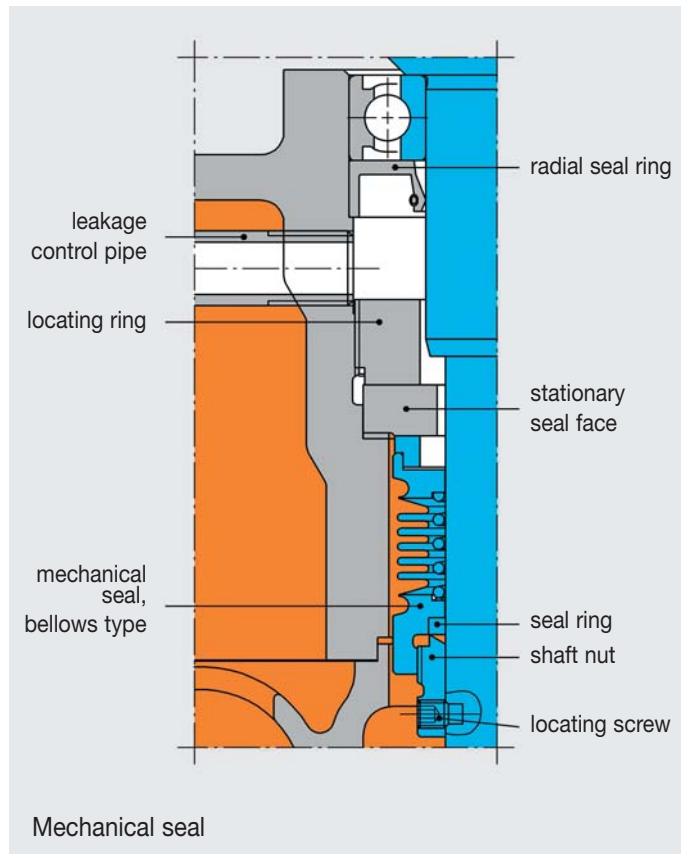
Mechanical seal

The pumped liquid is sealed against the atmosphere and the drive motor by a single metal bellows seal.

The rotating mechanical seal is fixed to the pump shaft by a shaft nut and sealed by a seal ring. The stationary seal face is fitted to the bearing housing via a locating ring and sealed against the atmosphere by a gasket.

The drive motor is protected against mechanical seal leakage by a grease lubricated radial seal ring.

Possible leakage of mechanical seal is dissipated by the leakage control pipe and therefore visible.



Standard material

| | |
|-----------------------------------|--|
| Bearing housing | EN-GJL-250 (PN6), EN-GJS-400-18-LT (PN16), 1.4408 (PN16) |
| Socket, suction and pressure disc | EN-GJS-400-18-LT, 1.4408 (PN16) |
| Impeller | Ms (PN6), 1.4457 (PN16) |
| Pump shaft | St, 1.4571 |
| Mechanical seal | Metal bellows 1.4571, seal faces SiC/Carbon |
| Start-up rings | SiC |
| Relief valve | Ms, 1.4571 |

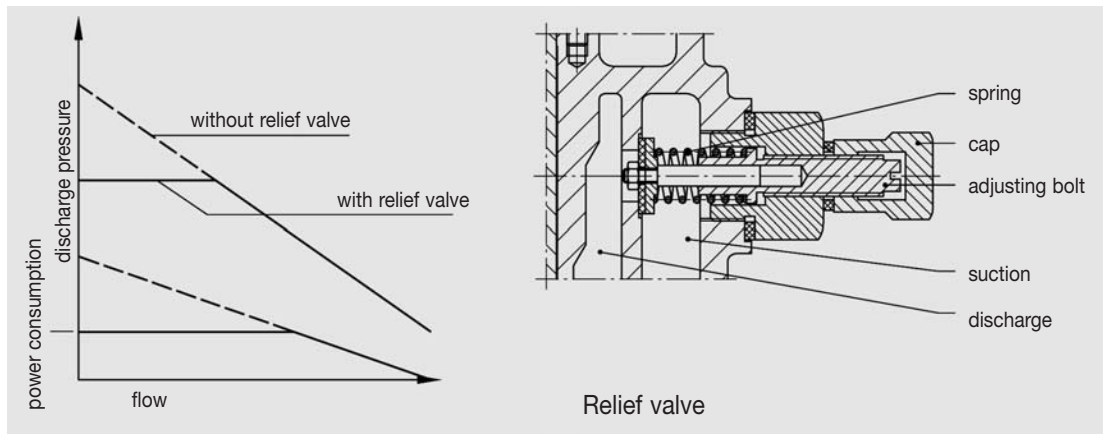
Drive motors

IEC-motors design V1, will be applied.
Standard rotating speed 1450 rpm / 50 Hz,
resp. 1750 rpm / 60 Hz.

Hazardous area

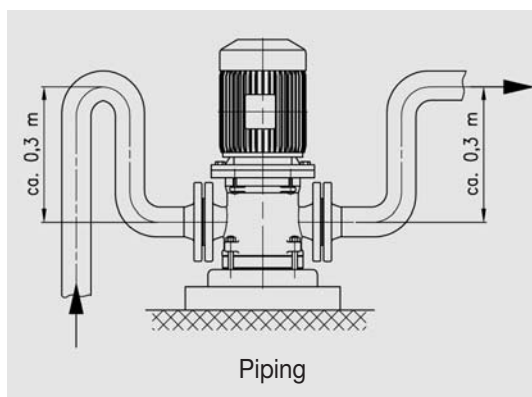
Together with the required Ex-drive motors, the WPV-pumps can be applied in hazardous area Group II, Category 2. The pumps meet the basic safety and health requirements of Explosion-proof Directive 94/9 EC and are suitable for plants with increased safety requirements.

Relief valve



Contrary to centrifugal pumps, the side channel pumps generate a steep head rise and an increased power consumption at lower flow rates. Power consumption and discharge pressure reach the maximum at closed discharge. To protect discharge pipes and to avoid overload of the motors and unacceptable temperature rise in the pump, an additional relief valve can be fitted to the WPV-pumps.

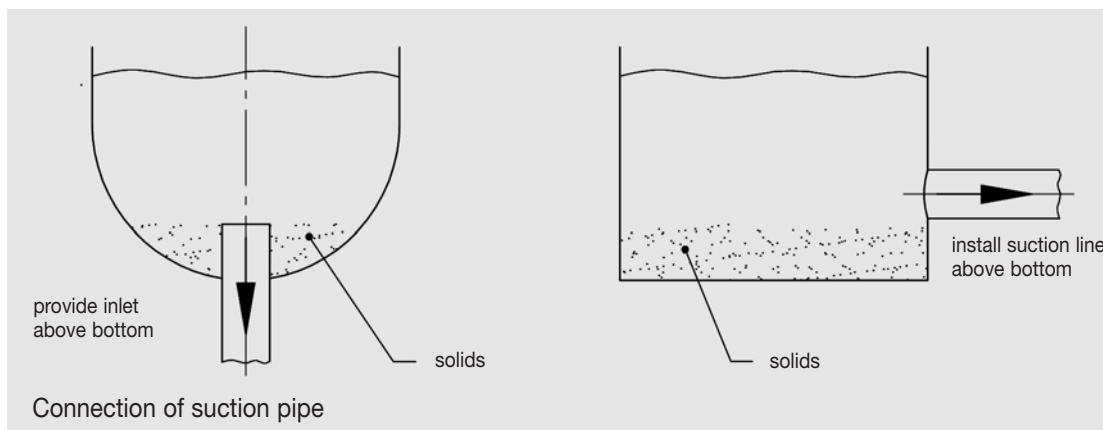
Installation at site, suction piping



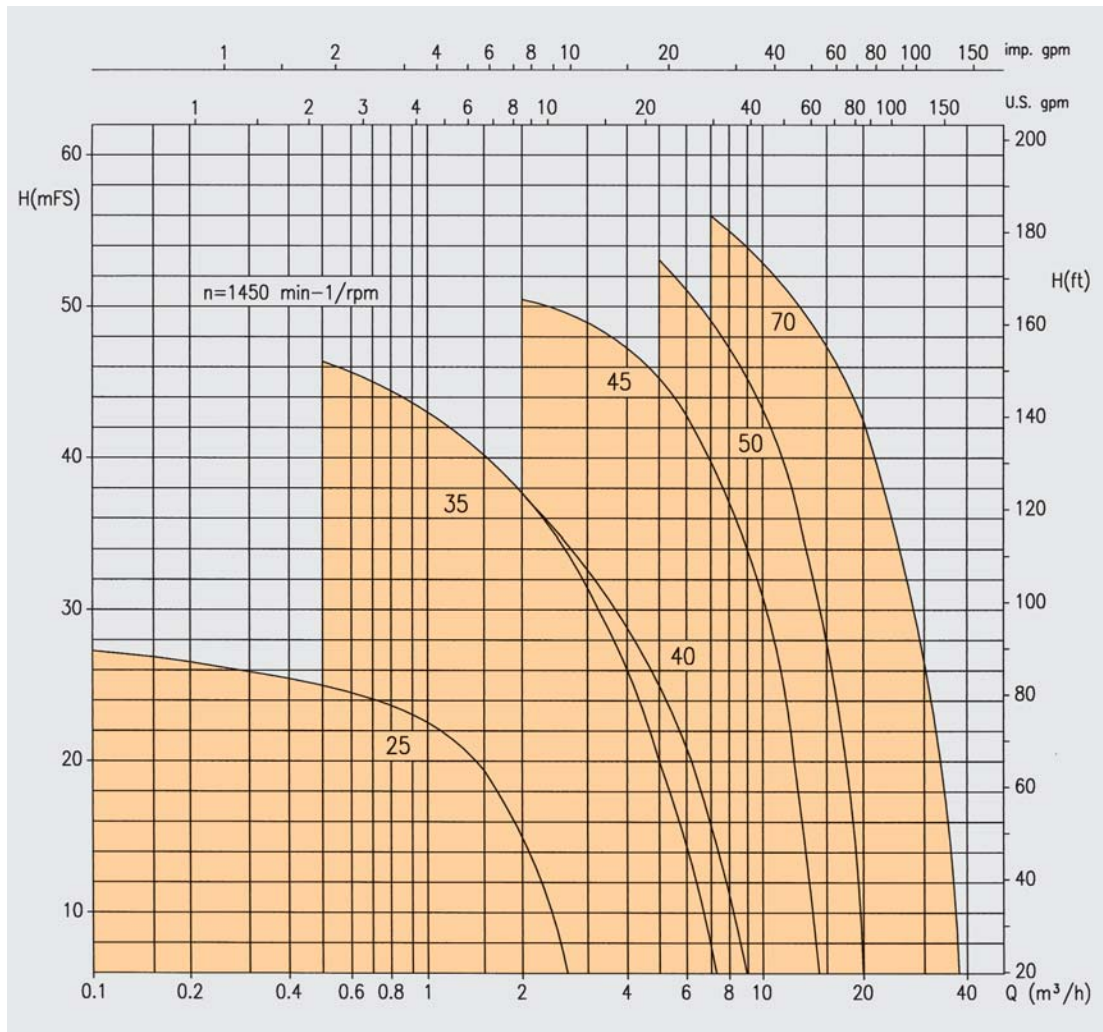
During the suction phase – when priming the empty suction line – the side-channel pumps build up a gas/liquid mixture. The gas or air will be separated and pressed into the pressure pipe while the operating liquid returns to the pump. It is therefore necessary to install the piping in a way that the operating liquid can remain in the pump.

Side-channel pumps with their tight internal clearances do not tolerate solids or abrasives in the pumped liquid.

Solids, such as welding beads or forging scales, concentrate on the bottom of the suction vessel. This should be considered when connecting suction line to suction vessel.



Performance range



Performance curves of the individual pump sizes, also for 1750 rpm, with NPSH-values and power consumption are available on request.

