Liquids to Value

Hygienic self-priming GEA Tuchenhagen®-VARIFLOW centrifugal pump

Series TPS

GEA Mechanical Equipment / **GEA Tuchenhagen**

GEA Tuchenhagen®-VARIFLOW TPS Series

The hygienic self-priming GEA Tuchenhagen®-VARIFLOW TPS series is based on the normal priming TP series of centrifugal pumps. A screw rotor is fitted upstream of the suction side of the TPS series. The rotor is simply screwed onto the pump shaft in place of the impeller nut. The rotor housing is welded eccentrically to the pump cover and ends in the pump's horizontal suction connection.

The TPS series is covering a capacity range up to 69 m³/h and flow heads up to 64 m w.c..
The TPS series is designed for pumping media up to a viscosity of 500 mPas.
Low flow velocities and gentle discharge of media through the spiral housing ensure extremely gentle product handling. The spiral housing for the TPS series is made of rolled stainless steel. This material has an excellent surface quality which is essential for optimum cleaning in CIP/SIP processes.
Wall thickness of 6 mm giving a high strength for critical pipings and high inlet pressures.
A aseptic mechanical sealing is used with an support spring outside the product room. Flushed and double mechanical seals are available as an option.

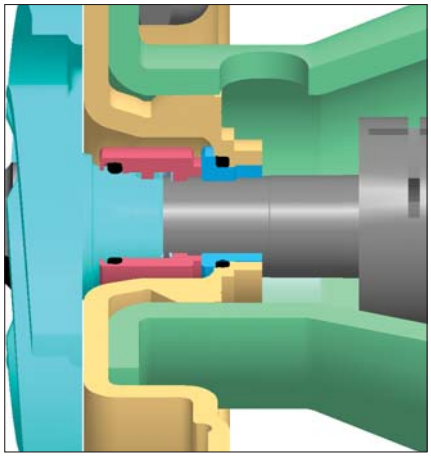
Benefits of the GEA Tuchenhagen®-VARIFLOW TPS Series

- **Low-noise operation**
  While liquid ring pumps create a noise similar to a turbine, the TPS series works as quietly as a conventional centrifugal pump.
- **Excellent hygiene**
  A generous design with good flow properties ensures optimum CIP capability of the pump.
- **Easy adjustment of hydraulic capacity**
  Different impeller diameter achieve an optimal process adaption. The TPS series also enables operation with variable frequency drive over the entire capacity range.
- **Low power consumption**
  The hydraulic efficiency of the TPS series almost corresponds to the efficiencies of normal priming centrifugal pumps. In the low flow rate range, the sizing of the motor for the TPS series can in most cases be one or in some cases two sizes smaller than for a liquid ring pump.

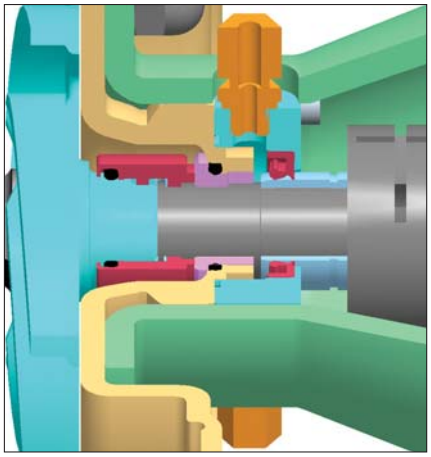
- **Maintenance / wearing parts**
  Maintenance is similar to the TP series. The wearing parts are identical with the TP series. Only an additional O-ring to seal the rotor housing cover is required.
- **Less sensitive to hard particles**
  Compared to liquid ring pumps the TPS series having larger gaps and is therfore more resistant against conveying particles.
- **Gentle product handling**
  Shearing forces within the TPS series are not much higher than in the non self-priming TP series, which already has the best flow properties.
- **NPSH-value**
  Low NPSH-value avoids early cavitation to the pump.

All pumps can be equipped with a variety of mechanical seals

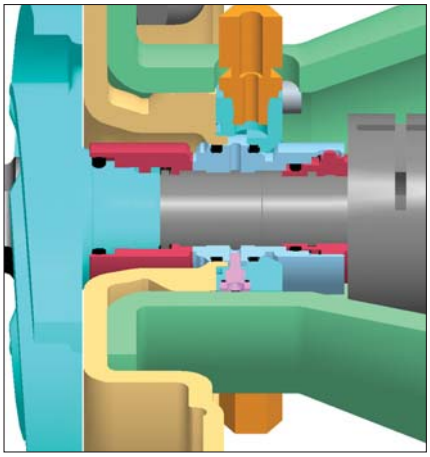
- Executions:
  - Single mechanical seal
  - Single mechanical seal with flush
  - Double mechanical seal
- Mechanical seal identical with TP series
- Isolated seal springs lead to optimum CIP/SIP characteristics
- Different seal face materials available:
  - Carbon/Silicon carbide (Standard)
  - Silicon carbide/Silicon carbide
  - Carbon/Stainless steel
- Different FDA approved gaskets:
  - EPDM
  - FKM
- Ease of maintenance:
  - Front access to mechanical seal
  - Mechanical seals as cartridge
  - No special tools
  - Only one mechanical seal sizes
  - Simple upgrade of flushing unit
  - Pump shaft protection by wear sleeve
  - No dismantling of the pipe system is required



Single mechanical seal



Single mechanical seal with flush

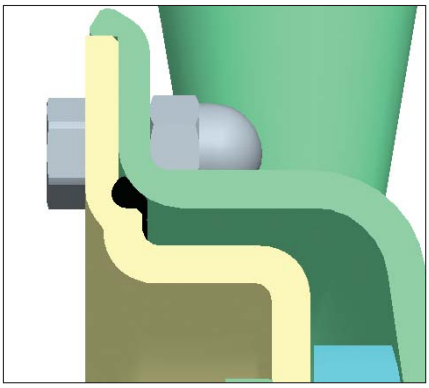


Double mechanical seal

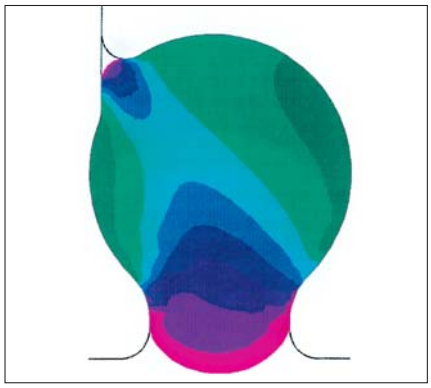
Type:	TPS 2030	TPS 3050
Flow rate:	max. 35 m^3/h (50 Hz)	max. 69 m^3/h (50 Hz)
Flow head:	max. 37 m (50 Hz)	max. 64 m (50 Hz)
Temperatures:	max. 140°C	max.140° C
Motors:	1.5 kW bis 11 kW	3.0 kW bis 18.5 kW
Max. efficiency:	38 %	44 %
Gas content:	0–100 %	0–100 %

VARIVENT® principle

The special groove ensures the safe seal location of the whole time. The shape of the groove is designed on the basis of FEM. The metallic stop allows the defined compression of the seal, ensuring gap-free sealing against the product chamber without dead corners and long service life of the gaskets.

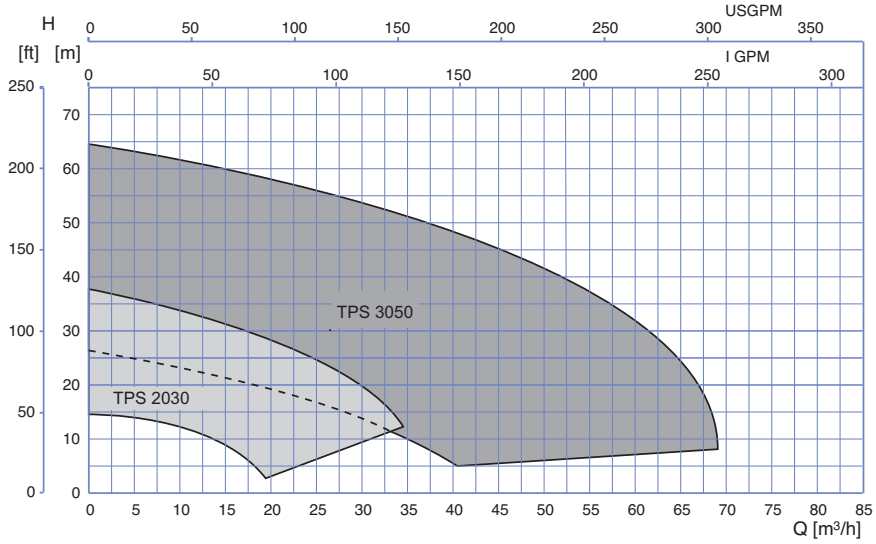


O-ring sealing between pump housing and cover



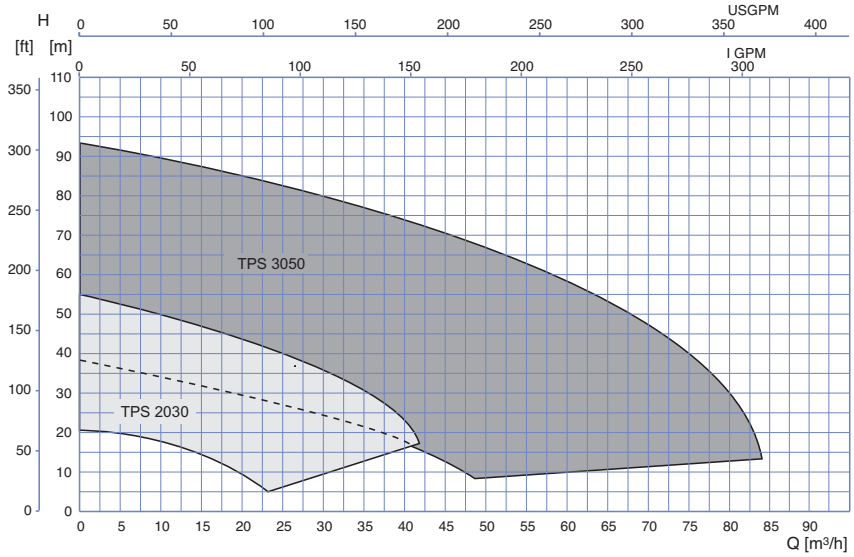
FEM showing the seal ring in operating mode

Performance characteristics TPS 2030 / 3050, n = 2.900 min-1, 50 Hz



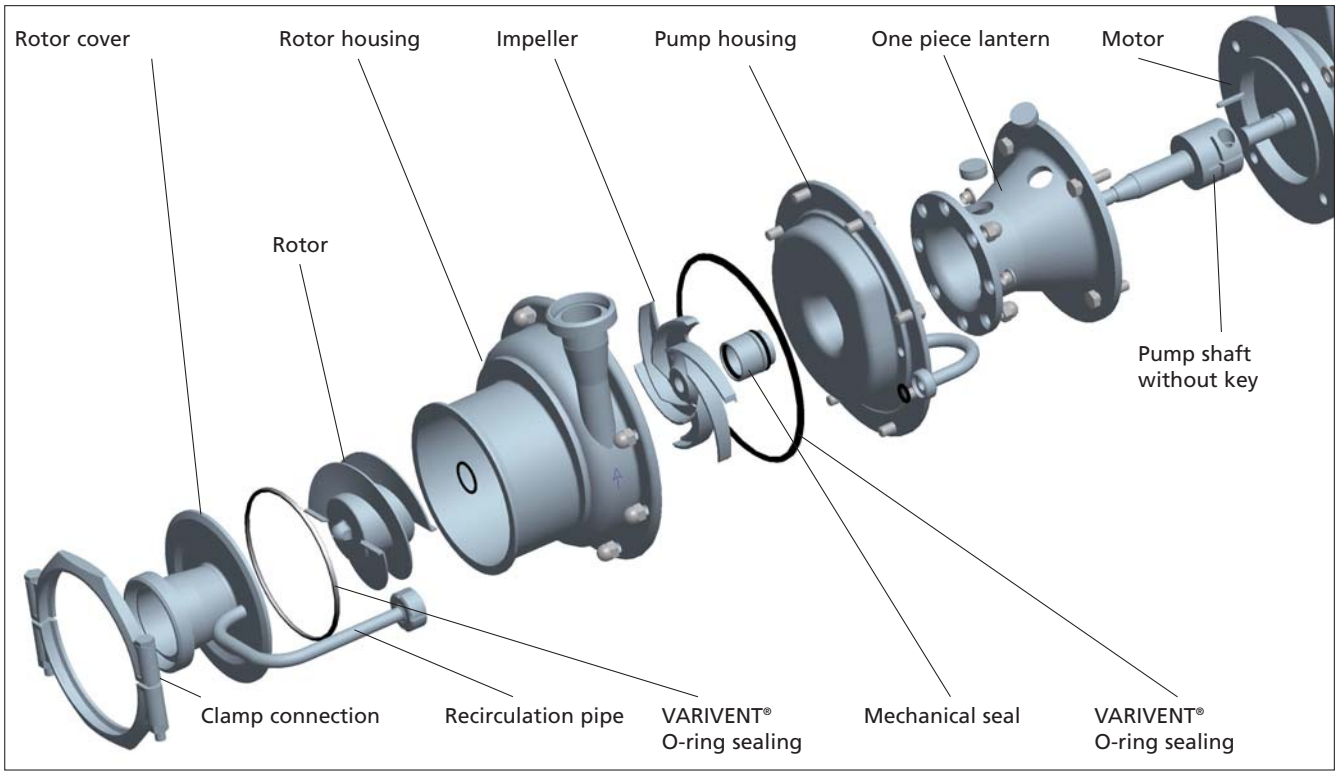
GEA Tuchenhagen®-VARIFLOW TPS 2030 in a dairy plant

Performance characteristics TPS 2030 / 3050, n = 3.500 min-1, 60 Hz



Two pneumatic and manual actuated drain valve for complete draining of the pump housing without dead pockets

Main components: Rotor cover, Rotor, Impeller, Pump housing, Lantern, Pump shaft and Motor



Design characteristics

- The open impeller design ensures optimum cleaning characteristics.
- Surface roughness of Ra ≤ 0,8 µm can be achieved by mechanical treatment of the surface.
  Better surfaces available on request.
- Standard foot and flange motors of type IM B35, according to IEC can be used as pump drive.

Special features

- All parts in stainless steel, wetted components are made of AISI 316L(1.4404)
- Acceptance test certificate 3.1 (optional)
- Max. operating pressure 16 bar
- High efficiency
- Low power consumption
- Gentle product handling
- Low noise
- No bearing flange needed due to low axial forces (pump shaft force-fit connected to motor shaft)

Connection fittings

- Metric and Inch OD diameters
- Threaded joint according to DIN 11851 (Standard)
- VARIVENT® flange connection, type tested and TÜV approved
- Aseptic union to DIN 11864-1
- Aseptic flange to DIN 11864-2
- Other marketable connections according to BS, SMS, RJT, Tri-Clamp

Process Equipment

GEA Tuchenhagen GmbH

Am Industriepark 2-10, 21514 Büchen, Germany
Phone +49-4155 49-0, Fax +49-4155 49-2423
sales.geatuchenhagen@geagroup.com, www.tuchenhagen.com

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