SULZER

Submersible Propeller Pump Type ABS VUPX

Main Applications

The submersible propeller pump type ABS VUPX is designed for use where larger water volumes without fibrous materials must be pumped up to relatively low heads (up to approx. 10 m). Equipped with a premium-efficiency IE3 motor, it is suitable for:

- Hazardous locations:
  - Approval for ATEX (EX II 2G k Ex d IIB T4), FM and CSA available as an option
- Return sludge or return activated sludge (RAS)
- Combined sewage and surface water
- Storm water protection, irrigation and aquaculture
- Industrial raw water and process water

Premium efficiency

The VUPX pump benefits from significant efficiency in both motor and hydraulics, resulting in substantial savings:

- Lower energy consumption
- Reduced operating costs
- Reduced maintenance costs
- Less downtime caused by breakdowns and blockages

Great savings means a healthier environment, reducing your carbon footprint and the risk of harmful overflows. The VUPX pump makes your operation more competitive while contributing to a greener future.

The right installation to fit any needs

The submersible VUPX pump can be installed according to the following, to fulfill virtually any customer requirements:

- Steel column pipe installation
- Concrete rising main installation

PE6

Hydraulic Features and Benefits

1 a) Versatile range of axial-flow propellers (VUPX 403 and 503)

- Highly efficient three-blade axial-flow propellers
- Optimal propeller designs based on extensive Computational Fluid Dynamics (CFD) research and testing
- Non-clogging and self-cleaning propeller blades
- Low-vibration design
- Low-NPSH design
- Blockage-free pumping of liquids containing fibrous materials in combination with screens. For detailed information please contact your local Sulzer representative
- Applicable for delivering return sludge or return activated sludge (RAS) at wastewater treatment plants

1 b) Versatile range of axial-flow propellers with adjustable blades (VUPX 401/2 to 1201/2)

- Highly efficient three- and four-blade axial-flow propellers
  - Spherical propeller and wear ring design for adjustable propeller blade pitch without re-machining of the propeller circumference
  - Possibility to adjust the duty point on site
- Hydraulically optimized propeller designs based on extensive research and testing
- Low-vibration design
- Low-NPSH design

2 a) Inlet bellmouth and slotted wear ring (VUPX 403 and 503)

- Slotted wear ring adapted from the Contrablock Plus series to ensure blockage-free operation
- Efficient handling of fibrous material throughout the hydraulic lifetime

2 b) Inlet bellmouth and axially adjustable wear ring (VUPX 401/2 to 1201/2)

- Axial adjustment of the propeller to restore pump efficiency after wear
- Significant energy savings throughout the hydraulic lifetime

3 Slim motor design

- Opportunities for compact rising main and pumping station design
- Gearbox available from 132 kW for VUPX 1001/2 and VUPX 1201/2
  - Wide range of gearbox ratios to meet the duty point with the best efficiency
  - Better adaptation compared to a direct high-pole motor drive
  - Higher efficiency and lower current due to the better power factor of 4-pole motors compared to high-pole motors
  - Lower weight

4 Double mechanical seals

- Silicon carbide/silicon carbide (SiC/SiC) for maximum resistance against abrasives
- Chemical resistance in wastewater and most other industrial applications
- Seal blockage prevention that reduces operational costs

5 Heavy-duty stainless steel shaft

- Deflection at the mechanical seal minimized to <0.05 mm / 0.002 inches
- Increased safety against fatigue fractures
- Extended seal and bearing life

6 Heavy-duty bearings

- Minimum lifetime of 100,000 h
- Electrically insulated upper bearing as standard for PE6, which protects against stray electrical currents and avoids micro-cratering in the raceway of the inner and outer rings

7 Installation into rising main

- Automatic self-centering of the pump and column pipe by means of a conical coupling ring
- No screw or bolt fixing needed

8 Premium-efficiency IE3 motor in accordance with IEC 60034-30

Hydraulics / propeller type	
VUPX 403	3 blades (skew design)
VUPX 503	3 blades (skew design)
VUPX 401/2	3 blades / 4 blades
VUPX 501/2	3 blades / 4 blades
VUPX 601/2	3 blades / 4 blades
VUPX 801/2	3 blades / 4 blades
VUPX 1001/2	3 blades / 4 blades
VUPX 1201/2	3 blades / 4 blades

Premium-Efficiency Submersible Motors (IE3)

Sulzer was the first company in the world to offer premium-efficiency IE3 submersible motors, in order to achieve the perfect balance of reliability and energy consumption. Using premium-efficiency IE3 motors and engineered propellers, the VUPX pump is the most efficient axial-flow vertical column pump on the market.

Motor power and speed overview

No. of poles		Power P2 (kW)		
		PE4	PE5	PE6
4	50 Hz 60 Hz	22-54 25-65	55-110 63-125	132-350 150-400
6	50 Hz 60 Hz	9-37 13-43	45-90 52-104	110-225 125-250
8	50 Hz 60 Hz	7.5-30 9-35	37-75 43-86	90-250 104-200
10	50 Hz 60 Hz		30-55 35-63	75-200 86-200
12	50 Hz 60 Hz			75-132 86-150

Motor features and benefits

1 Class H (140°C / 284°F) insulation, temperature rise according to IEC / NEMA Class A up to 110 kW / 168 hp and Class B above

- Unprecedented motor reliability due to low winding and bearing temperature
- Extremely long motor lifetime

2 Service factor 1.3

- Short-term operation at lower voltage, higher frequency (generator sets) and higher medium temperature

3 Versatile cable types

- Country-specific cables with European, FM or CSA approval for use in sewage water

4 Optional shielded cable (EMC)

- For operation with frequency-controlled AC drives
- Installation according to EMC directives

5 Moisture DI probe in inspection chamber in standard execution

- Early indication of mechanical seal failure
- Additional moisture DI probe (separate for cable connection chamber and motor compartment) to provide early indication of moisture ingress, standard for PE6 and optional for PE4 and PE5

6 Thermal protection switch in stator as standard

- Motor protection in the event of a power supply failure, e.g. low line voltage or single-phase operation
- Additional separate thermal protection switch (bimetallic, PTC or PT100) in the upper and lower bearing as an early warning of bearing malfunction, standard for PE6 and optional for PE4 and PE5
- Vibration sensor for indication of vibration and warning when the set limit is exceeded, optional for PE4 to PE


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6

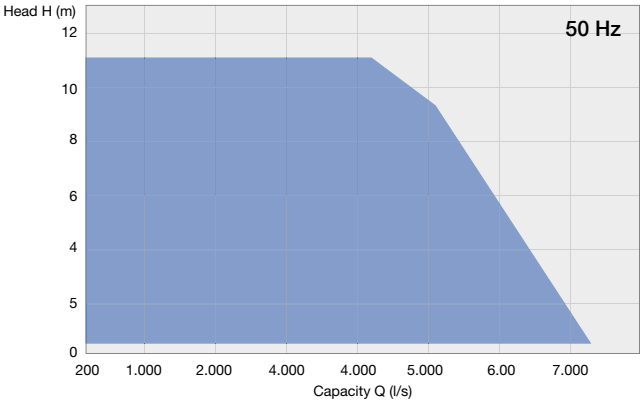
Submersible Propeller Pump Type ABS VUPX

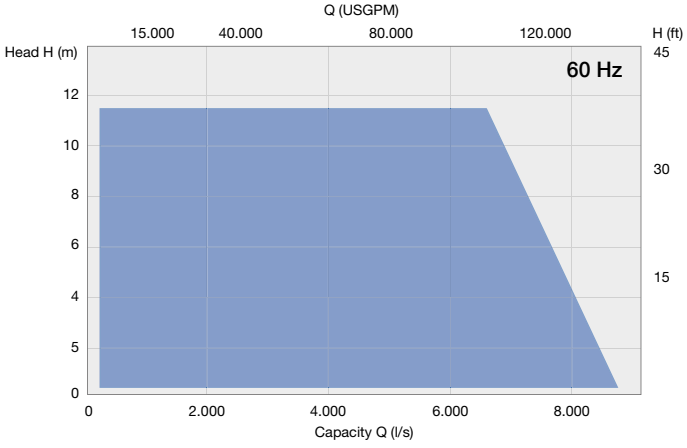
Oil and gas | Hydrocarbon processing | Power generation | Pulp and paper | **General industry** | Chemical processing | **Water and wastewater**

Operating data

50 Hz		60 Hz
600 to 1,400 mm	Pipe diameters	600 to 1,400 mm 23 to 55 in
Up to 7,000 l/s	Capacities	Up to 8,500 l/s 134.700 USgpm
Up to 10 m	Heads	Up to 10 m 33 ft
7.5 to 350 kW	Motor power	9 to 400 kW 12 to 536 hp

Performance curves





Materials

Pump part	Material
Motor housing / connection chamber	EN-GJL-250
Cooling / oil chamber	EN-GJL-250
Motor shaft	1.4021, 1.4462
Outlet diffuser / inlet bellmouth	EN-GJL-250
Propeller (VUPX 403 and 503)	2.0975.01, 1.4581
Propeller hub (VUPX 401/2 to 1201/2)	EN-GJS-400-18, 1.4581
Propeller blades (VUPX 401/2 to 1201/2)	1.4340, 1.4581
Wear ring	1.4008
Lifting hoop (PE4 & PE5)	EN-GJS-400-18, 1.4470
Lifting hoop (PE6)	1.0060, 1.4462

We Do What We Say

Customer partnership
- We are **reliable partners**
- We provide a **high level of service**
- We **make our customers more competitive**

Committed people
- We drive **accountability**
- We are **open** and **transparent**
- We are **team players**

Operational excellence
- We **focus on results**
- We take **initiative** and work within **established processes**
- We **act safely**

A Global Specialist at Your Doorstep

Sulzer serves clients worldwide through a network of over 150 production and service sites and has a strong footprint in emerging markets.

Sulzer headquarters, Winterthur, Switzerland

www.sulzer.com