KAISZER PUMP

WATER & WASTEWATER TREATMENT

HD serie

Oil cooling submersible and dry installed screw centrifugal pump.

APPLICATION:

Water treatment plants
Industrial waste liquid
Unfiltered sewage
Activated sludge
Sewage and rainwater
Process waste
Tank cleaning
Bacterial flocs
Fruits and vegetables

The screw impeller is excellent to handle:

Food products
Sealants
Fibrous materials
Abrasive media
Gaseous medi

General description:

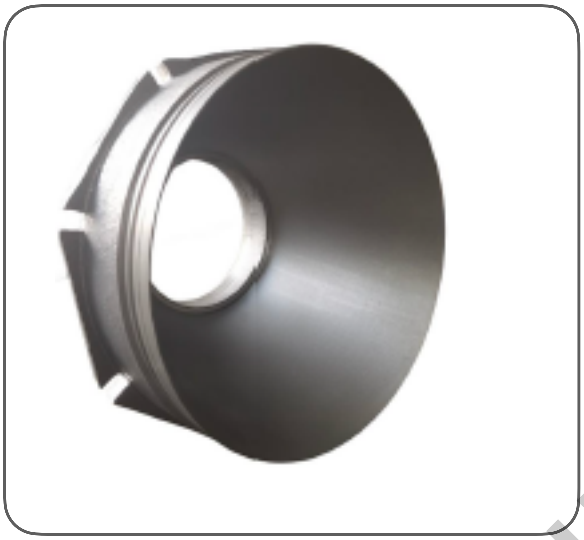
The Screw-centrifugal pump can go beyond the limits of classical centrifugal pumps, and even into the application area of positive displacement pumps. The construction is suitable for the handling of solids in suspension and viscous liquids, as well as for applications with larger negative suction heads.
The shape of the inlet edge creates an "inducer effect", which makes a large negative suction head possible (or a higher transportation media temperature). A pronounced screw shape creates a displacement effect with high viscosities, which makes possible the handling of viscous liquids well into the displacement pump application range.

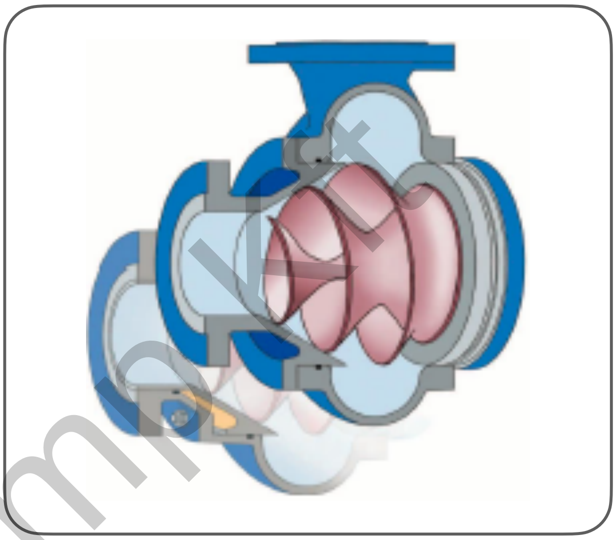
Volute casing：

The volute casing is designed based on non-blocking in large flow channels, flange standards comply with ISO7005.1 PN10 RF.

Wear disc:

The high-precision combination design of the suction chamber and screw centrifugal impeller ensures higher pump efficiency.





The specially designed suction wear-resistant lining structure ensures longer pump service life and lower operating costs.

Non-blocking
High suction head
Low shear force, soft conveying
High efficiency
Stable and steep curve
Long service life
Low disturbance
Flow proportional to the speed
Stable operation in a wide speed

Operating conditions:

Fluid: Raw sewage and industrial wastewater with grid filtration, long fiber, transporting activated sludge without damaging biological bacteria, transport sludge with a solid content of up to 18%.

Working Temperature Range: -10°C ~ 80°C

When working temperature exceeds 80°C，shall clarify clearly and in advance.

Operating pressure:

PN1.0 MPa - Hydrostatic test pressure = PN1.6MPa

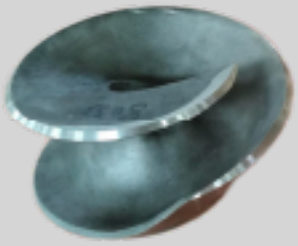
Specifications:

Pump suction flange (mm): DN50 to DN500
Pump discharge flange (mm): DN50 to DN500
Capacity Q: 7 to 5040 m3/h
Head H: 0.5 to 100 m
Liquid temperature: -10°C up to +80°C
Wide hydraulic coverage
Low NPSH requirement

Product Characteristics:

Compact integrated design
Sealed rotating shaft and coupling
Stable operation, low noise
Non clogging hydraulic design
Oil cooled jacket design effectively reduces the temperature of the motor, minimizing the surface temperature of the submersible motor
Multiple monitoring and security devices available
Bearing: FAG,SKF or NSK
Two sets of single end mechanical seals

Screw impeller types:

Impeller	Type	Sample of application
	Screw Centrifugal type Good No-clogging performance Medium and high-pressure impeller.	Handling of granulates Coarse solid suspensions Cereal suspensions, crystals, flakes Media contaminated with solid matter, such as unscreened sewage, abattoir waste.
	Screw Centrifugal type Good No-clogging performance Medium and high-pressure impeller.	Handling of granulates Coarse solid suspensions Cereal suspensions, crystals, flakes Media contaminated with solid matter, such as unscreened sewage, abattoir waste.
	Screw Centrifugal type Good No-clogging performance Low-pressure impeller.	Handling of granulates Coarse solid suspensions Cereal suspensions, crystals, flakes Media contaminated with solid matter, such as unscreened sewage, abattoir waste.
	Screw Centrifugal type Good No-clogging performance Low capacity.	Handling of granulates Coarse solid suspensions Cereal suspensions, crystals, flakes Media contaminated with solid matter, such as unscreened sewage, abattoir waste.

Submersible motor with oil cooling:

1. The cable inlet allows no moisture to penetrate into the interior of the motor. The cable is sealed with epoxy resin, the wires are fed into separate guides, which also form the connection to the motor, and, in this way, even the interior space between the cable sheathing and the wires is completely sealed off.

2. Separate cable covers permit the simple insertion of a new cable.

3. Temperature sensor in the upper bearing (optional).

4. Temperature sensor built into the winding.

5. High-efficiency motor with dry stator winding, insulated to Class F.

6. Oil cooling jacket with forced
7. Re-lubrication facility for the axial bearing.

8. Temperature sensor in the lower bearing.

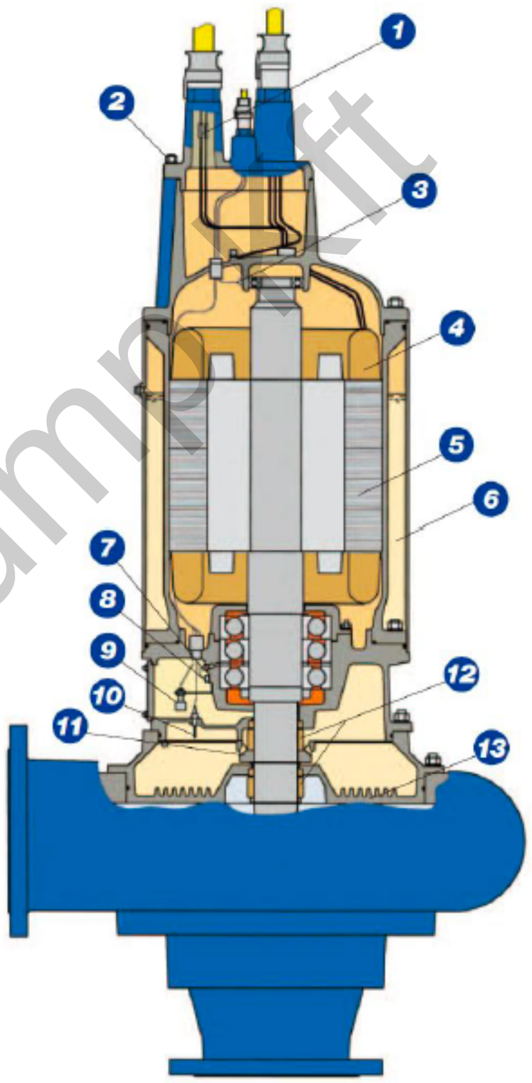
9. Float switch for warning of leakage from the upper seal (optional).

10. Moisture sensor in sealant oil gives warning of water penetration.

11. Oil pump impeller, rigidly mounted on the shaft.

12. Tandem Mechanical Seal in wide oil chamber.

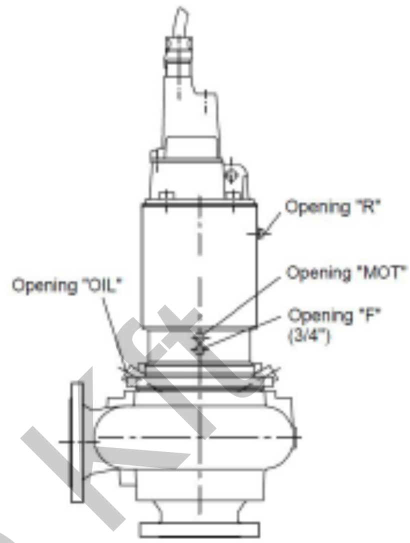
13. Seal plate part with cooling ribs serves as a heat exchanger to the transported medium.



Cooling system (motor):

OIL Jacket:
The circulation pump in the oil cooling reservoir, which runs synchronously with the motor, guarantees absolute operational reliability. The process heat is transferred to the transported medium via cooling ribs on the rear of the hydraulic system. Therefore no special cooling channels are necessary for this in the oil chamber. The channels that are common used often become coated with sludge, thereby hindering an efficient heat transfer and leading to undesirable overheating.

KEY FOR SYMBOLS:
MOT = Stator housing opening OIL = Oil drain opening
R = Oil refill opening (cooling outlet) F = Flushing connection
X = Cooling inlet (for code "F" only)



External cooling:
This type transfers motor heat from the stator into a coolant liquid circulating through a cooling jacket surrounding the stator housing. The coolant transfers this heat to an external heat exchanger, and it must be circulated by an external coolant Pumping system
This type is provided for cases where internal cooling is not sufficient, especially where the temperature of the pumped media is too high for effective cooling.

KEY FOR SYMBOLS:
R = Oil refill opening (cooling outlet) MOT = Stator housing opening OIL = Oil drain opening
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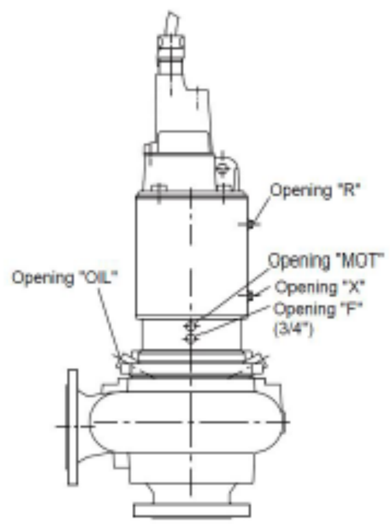
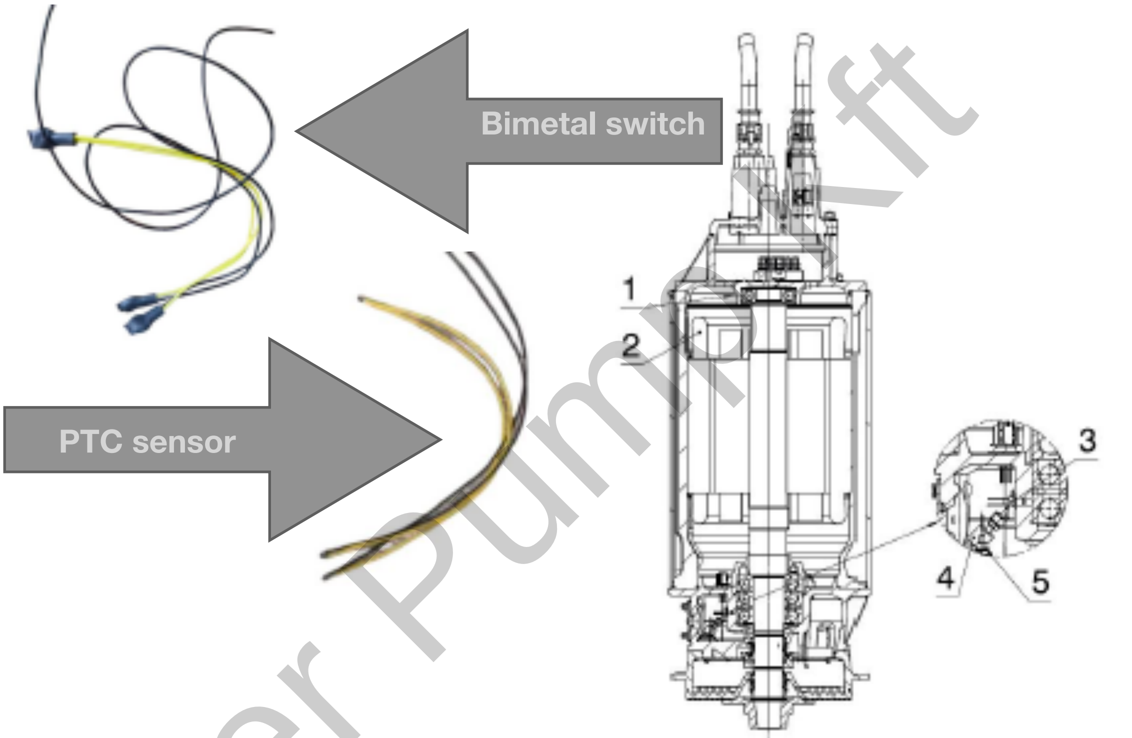


Safety components (Monitoring):

- Coil head with built-in temperature limiter (bimetal switch or PTC sensor).

Pos. 2 = Coil head with built-in temperature limiter (bimetal switch or PTC sensor)



Temperature monitoring sensors can protect the motor against excessive temperature in case of blocking rotors (PTC probe only), heavy start-ups counter flow operation, increased ambient temperature and impaired cool. A bimetal switch and a PTC sensor are built into the motors coil head. Depending on the specific application, either the bimetal switch or the PTC sensor is connected to control unit via the connection cable. The signal from one of these sensors must be evaluated to protect the motor against thermal destruction. Bimetal switches can be directly connected to the motor's control circuit (max of 250VAC, 2.5 A) PTC sensors must be connected to an electronic evaluation system (max. 2.5 V).

- Monitoring moisture:

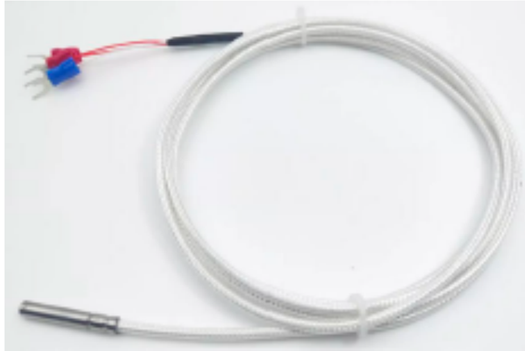
If the amount of water in the oil chamber exceeds a certain level, the built-in moisture detector gives an alarm. The necessary service can then be organized.

Pos. 5 = Conductivity sensor (optional)

The conductivity sensor (optional) monitors the mechanical seal at the pumped medium side for leakage. The sensor and the electronic evaluation system measure the electrical resistance of the barrier fluid. If the water content in the barrier fluid increases, the resistance value decreases. The electronic evaluation system can trigger an alarm when a value of 60 kΩ is reached. These sensors can be analysed to provide additional pump
protection and trigger a precautionary switch-off.

- Monitoring bearing temperature:

The bearing temperatures of the upper and lower bearings can be monitored using temperature sensors. In this way, bearing damage can be detected at an early stage, and the necessary steps be taken.



Pos. 1 = Temperature sensor in the upper bearing (optional)
Pos. 3 = Temperature sensor in the lower bearing

The operating temperatures of the lower and the upper bearing of the electric motor can be monitored by temperature sensors or Pt100 sensors. Potential bearing damage can be detected early. These sensors can be analysed to provide additional pump protection and an alarm function and trigger the precautionary switch-off. Recommended temperature limit values for bearings:
1.Alarm: 70°C
2.Machine stop: 90°C

These temperature limit values are applicable only the temperature is measured directly on the bearing. The measuring point of the switch or sensor must be indirect contact the outer race.

Bearings: SKF, NSK or FAG.

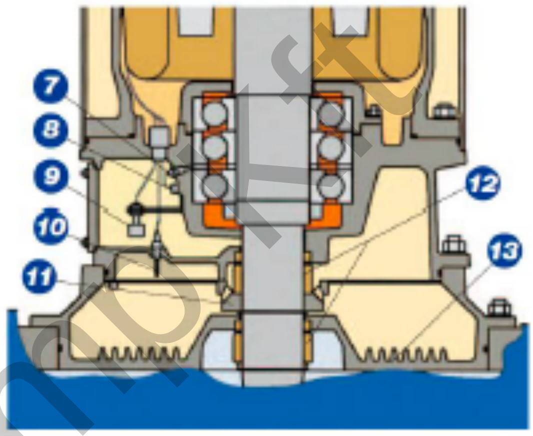
Shaft seal:

Shaft type: Tandem Mechanical seal
The seals run in the oil bath.
The seal at the pump-side is made from material that is specially resistant to abrasive media.
Pump end: WC / SSiC / Viton / 1.4436
Motor end: SSiC / SSiC / Viton / 1.4436

Lubrication of the lower bearing:

The lower bearing is loaded by the weight of the rotor and by the hydraulic forces acting vertically downwards.

This bearing requires a corresponding lubrication. For this reason, the watertight protective cover is removed, exposing the lubrication points.



The direction of rotation:

The rotation of the pump rotor is clockwise looking from the motor to the pump.

Material combinations:

Part	EN200 SIS0120 Grey cast iron	EN1563 SIS1407 Ductile iron	EN10025-2 SIS2333 Stainless steel	EN1.4462 SIS2324 Duplex steel
Suction casing.	✓	✓	✓	✓
Suction bushing	✓	✓	✓	✓
Liner	✓	✓	✓	✓
Screw impeller		✓	✓	✓
Pump casing	✓	✓	✓	✓
Pump cover	✓	✓	✓	✓
Shaft			✓	✓
Motor housing	✓		✓	✓
Cable cover	✓		✓	✓

Application:

Sewage field:
Raw sewage and industrial wastewater without grid filtration, long fibers.
Transporting activated sludge without damaging biological bacteria, transport sludge with a solid content of up to 18%.

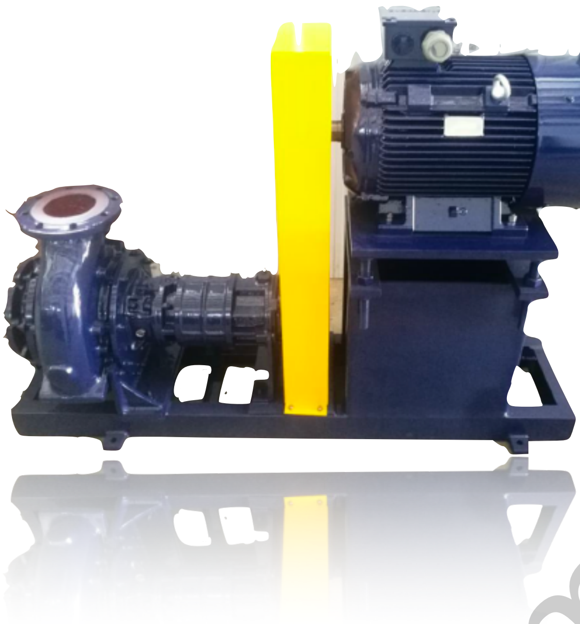
Chemical industry:
Conveying chemical pulp containing particles.
Transporting oil water mixtures to transport chemicals with a viscosity of up to 4000 cSt has a much lower correction factor than other centrifugal pumps.

Pulp and Paper Industry:
Flexible conveying of pulp containing fibers.
Conveying long paper fibers

Maximum Particle Diameter Allowed to Pass Through:

Impeller model	Suction end DN mm	Discharge end DN mm	Solid size particle dia
33*	80	80	Ø60
33*	80	80	Ø75
83*	80	80	Ø50
83*	80	80	Ø65
03*	100	80	Ø50
04*	100	100	Ø75
06*	150	150	Ø75
05*	150	80	Ø60
05*	150	125	Ø75
05*	150	125	Ø100
05*	150	125	Ø90
05*	150	125	Ø60
05*	150	150	Ø75
05*	150	150	Ø100
05*	150	150	Ø95
58*	200	125	Ø100
58*	200	200	Ø100
66*	200	150	Ø115
10*	250	250	Ø110
10*	250	250	Ø120
55*	250	125	Ø95
88*	250	200	Ø145
12*	300	300	Ø150
12*	300	300	Ø140
16*	400	400	Ø180
20*	500	500	Ø230

Dry installed HD (T) pump belt driven also with coupling version:



HD with oil cooled motor for submersible and dry installation:

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