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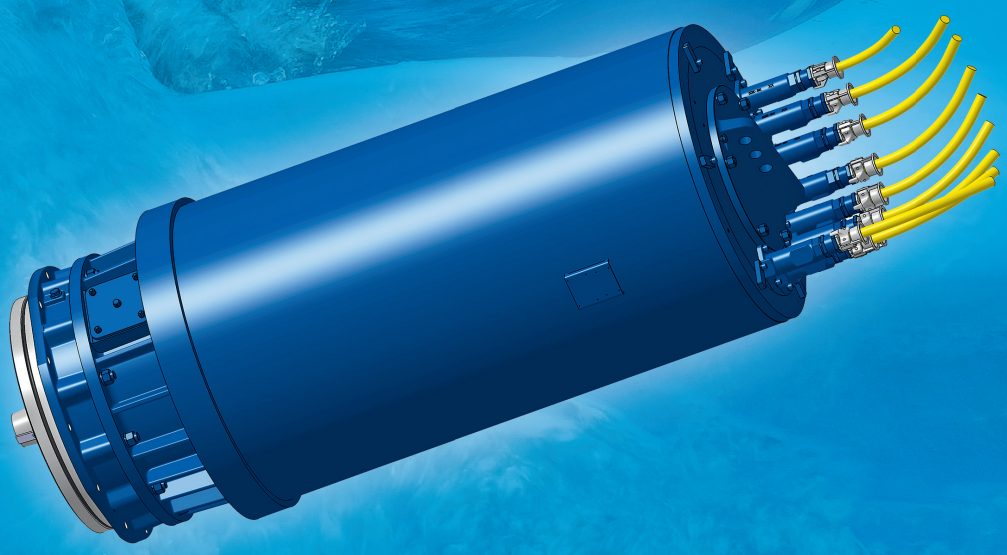
Electric Motors for Screw Centrifugal Pumps

Hidrostal submersible motors are available in various types and numerous designs. Cooling type, speed regulation, flameproof enclosure for potentially explosive atmospheres and various other options allow a solution suitable for each application.



Hidrostal Submersible Motors

For Hidrostal pumps a wide range of motors are available in different sizes and types, suitable for any number of applications. All motors are developed and optimized for submersible pump operation. The basic design of the respective nominal size is always the same, the motors differ primarily according to cooling type and design option. The different options cover almost every requirement: Flameproof enclosure for use in potentially explosive atmosphere, flywheel to reduce the risk of pressure hammer, many different supply voltages, variable speed, as well as various insulation classes and construction materials. Various protection and monitoring elements ensure safe operation.

Cooling

The type of cooling determines whether the motor must be completely submerged (wet installation) or can be installed dry during continuous operation. Depending on the requirements, motors are available for dry installation with self-cooling, convection cooling or external cooling.

Submersible motors for wet installation

Motors used for wet installation are usually installed stationary in the pump sump. The motor is permanently and completely immersed during operation. Heat generated by electrical and mechanical losses is thus transferred directly to the surrounding medium via the stator housing. If the pump sump has to be emptied for cleaning or maintenance work, short-term operation in dry condition is possible, provided that the maximum operating times are maintained.

Sewage pump with immersible motor in wet well

Dry-installed sewage pump, motor with convection cooling

Submersible motors for dry installation

Motors with immersible, convection and external cooling are designed for continuous operation in dry ambient. They can be continuously operated in the event of flooding and can be used with variable filling levels in the pump sump or tank. They are further easily accessible for maintenance and service.

Immersible

Other than motors for wet installation, immersible motors have a cooling jacket around the stator housing. The internal coolant circulation guarantees maximum operational reliability. The heat is efficiently transferred to the pumped medium via the exchange surface in the back cover.

Convection cooling

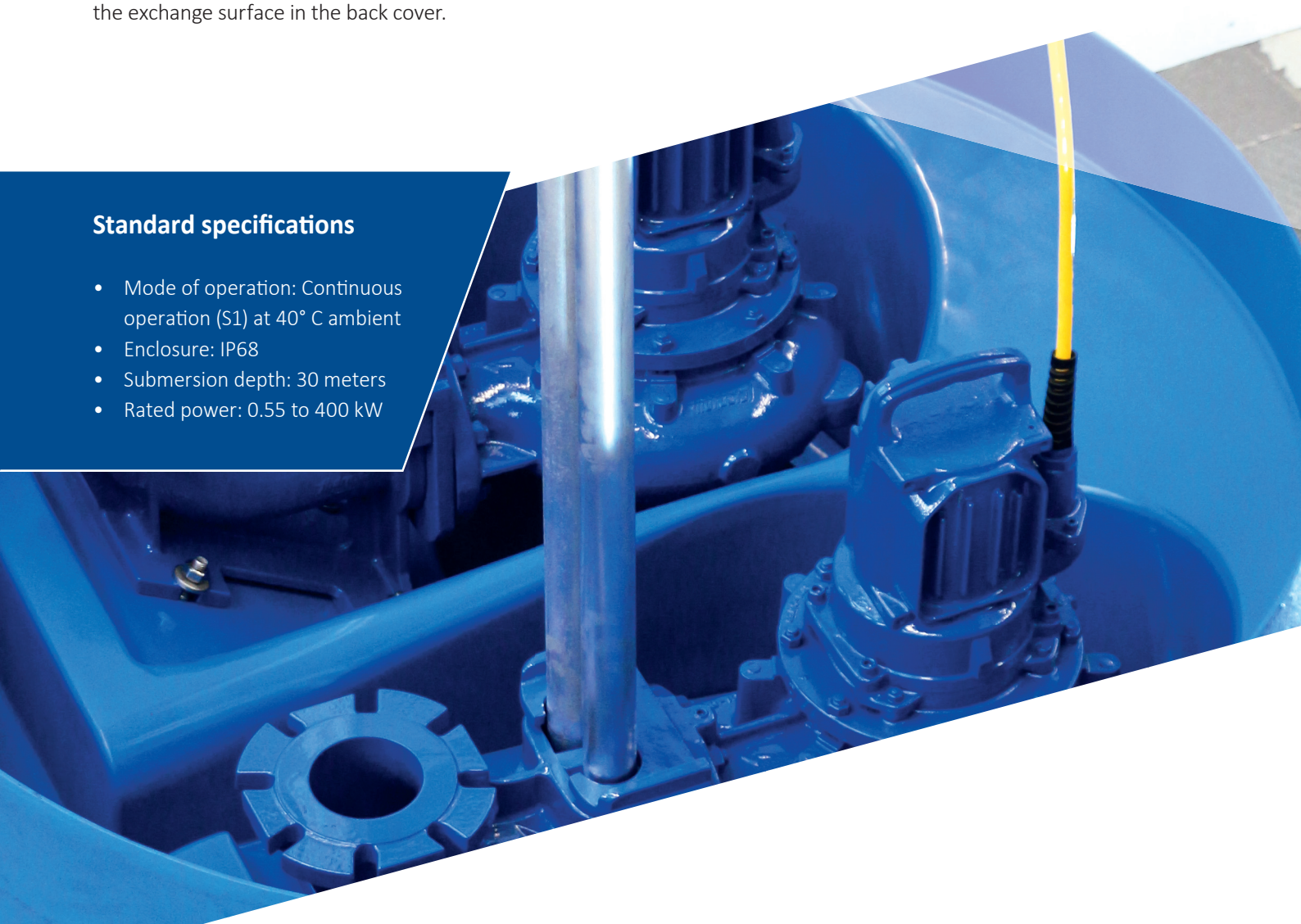
Motors with convection cooling are used for low power ratings. When the motor is not submerged, the heat generated by losses is transferred to ambient (air) via the stator housing on the one hand, and then again to the pumped medium via the exchange surface in the back cover.

External cooling

For applications with high medium or ambient temperatures, Hidrostal offers motors with external cooling circuit. Motors with external cooling also have a cooling jacket around the stator housing. A suitable coolant is fed from an external source into the circulation chamber and then discharged again. This enables motor cooling that is independent of the pumped medium and the environment and ensures maximum reliability, even for extremely high requirements.

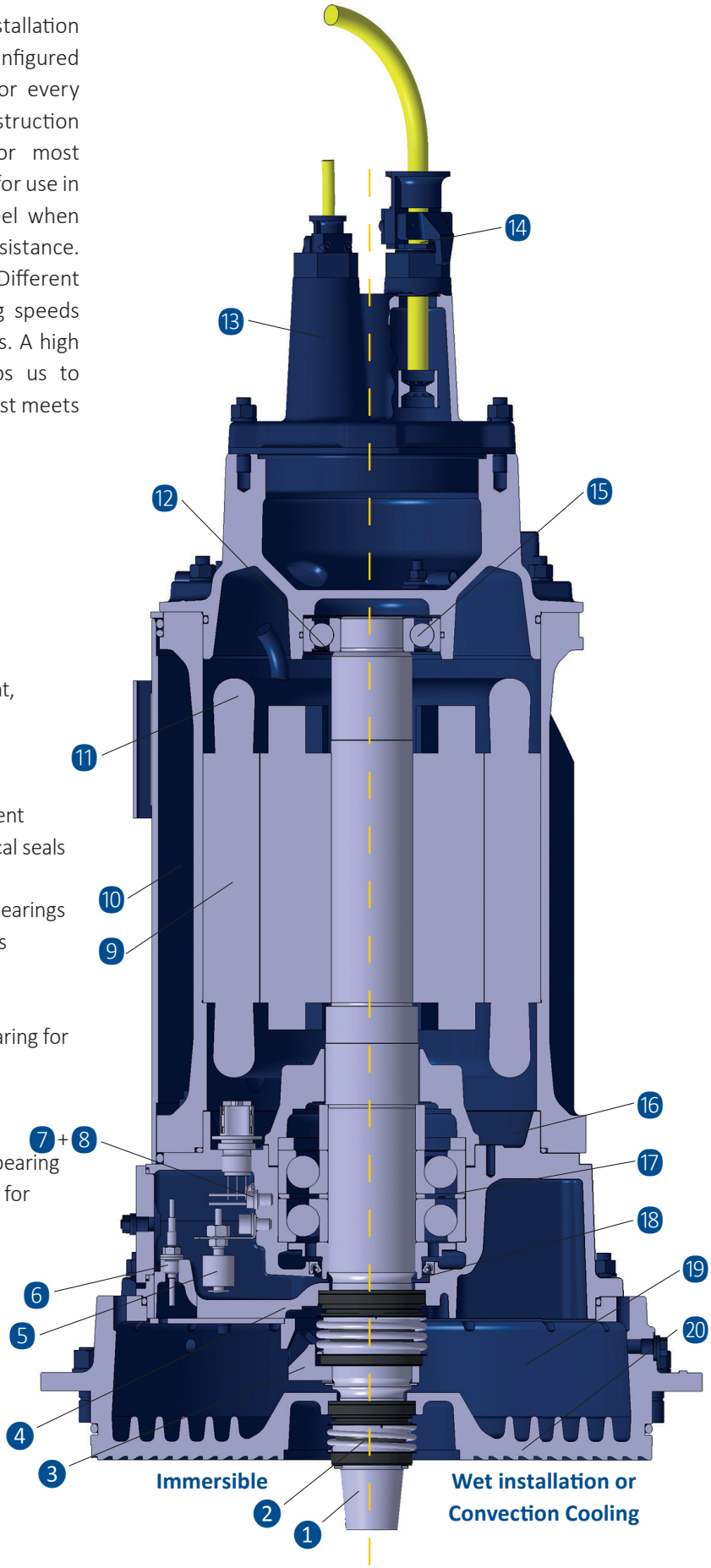
Standard specifications

- Mode of operation: Continuous operation (S1) at 40° C ambient
- Enclosure: IP68
- Submersion depth: 30 meters
- Rated power: 0.55 to 400 kW



Versatility as a strength

Whether for applications in wet ambient, for dry installation or at variable fluid levels - we offer the best configured motor with optimum performance and cooling for every field of application. Various combinations of construction materials guarantee reliable operation even for most challenges applications. We also supply our motors for use in potentially explosive ambient and in stainless steel when high demands are placed on the corrosion resistance. Extensive monitoring options allow safe operation. Different winding configurations allow operation at varying speeds even for applications without frequency converters. A high competence in electric motor construction helps us to develop and manufacture exactly the motor that best meets your requirements.



1. Shaft taper
2. Double mechanical seal in tandem arrangement, various options for pump end seal
3. Efficient coolant circulation impeller
4. Inspection chamber with monitoring elements
5. Float switch, leakage control motor compartment
6. Conductivity probe for monitoring of mechanical seals
7. Re-lubrication for larger motors
8. Bearing temperature measurement for lower bearings
9. Electrical components with high efficiency class
10. Coolant circulation
11. Winding temperature monitoring
12. Preloaded, clearance-free deep groove ball bearing for quiet running
13. Separate cable cover
14. Longitudinally watertight cable entry
15. Bearing temperature measurement for upper bearing
16. Engine compartment flameproof encapsulated for potentially explosive atmospheres
17. Heavy-duty and clearance-free rolling bearings
18. Shaft seal
19. Barrier fluid and coolant, large barrier fluid chamber
20. Back cover with heat exchange surface

Design Options

Our wide range of options enables us to configure the ideal motor for your application. Thanks to our high level of competence and flexibility, we can also offer custom-made products at attractive prices.

Explosion Protection

Explosion-proof motors are certified for applications in Ex zones 1 and 2 for the type of protection „flameproof enclosure“ and temperature classes T3 or T4. Approval meets in accordance with the requirements of ATEX and FM. All motors are approved for operation with frequency converters.
Electric motors are generally prohibited in Ex zone 0 (zero). For such applications Hidrostal can supply pumps with hydraulic drive for dry and wet installation. Our sales department will be ready to advise you on the available options.

Supply Voltages

Besides the standard supply voltages, we optionally provide a large number of additional supply voltages. In addition, voltage-switchable windings allow the use in different networks.

	Standard (in V)		**Option** (in V)
	Constant	**Switchable**	
50 Hz	230 400 690	200 / 400 220 / 440 230 / 400 400 / 690	220, 240, 380, 415, 480, 500, 525, 660, 1000
60 Hz	230 460 575	230 / 460 200 / 400 220 / 440	208, 380, 440, 480, 600

Insulation classes and temperature rise

Hidrostal motors are designed as standard in insulation class F, the utilization is according to insulation class B. Insulation class H and for applications with ambient temperature above 40° C can be manufactured on request.

Flywheel

The standard motors can be equipped with a flywheel. This extends the run-down time of the pump and reduces, for example, the risk of pressure hammers if the power supply is interrupted. Various flywheels with different masses are available for each motor size to meet the requirements of your application. Explosion proof versions for flywheel motors are not possible.

Materials of construction

The standard Hidrostal motors are made of **cast iron**. For increased corrosion resistance requirements, wetted parts or the complete motor is available in **stainless Duplex steel**. This guarantees maximum reliability and service life of the components even in challenging applications.

Monitoring Elements

Hidrostal submersible motors are equipped with various protection and monitoring elements to ensure safe operation and effective protection of the pump and system against damage or premature failure. The signals and recordings are analysed in the control system and can trigger operating alarms or a preventive shutdown.

Winding Temperature

To protect the winding from overheating, bimetal switches or PTC thermistors are attached to the winding heads. With the optional Pt100 sensors, the current winding temperature can be measured and analysed.

Mechanical Seal

Various elements guarantee efficient protection of the electrical components and rolling bearings: In Hidrostal submersible motors, the correct function of the pump end mechanical seal is monitored with a conductivity probe. An optional float switch gives notice of an increased leakage rate, collected in the inspection chamber, before the coolant penetrates the motor compartment.

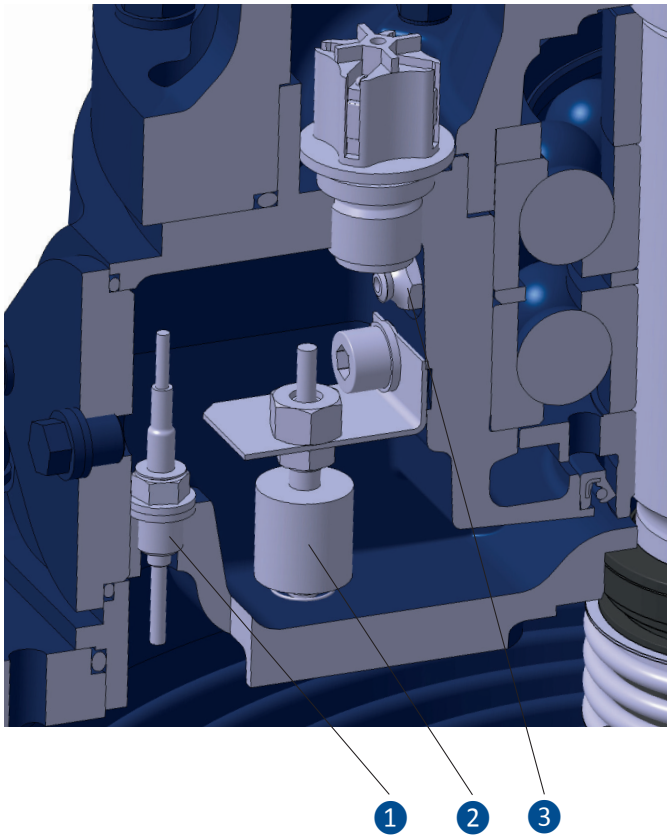
Rolling Bearings

For larger motors, the bearings are protected against overheating with a bimetal switch. The bearing temperature can be measured and evaluated with optional Pt100 sensors.

1. Conductivity probe
2. Float switch
3. Bearing temperature monitoring

Vibrations

Vibration measuring systems are optionally available for monitoring the pump operation and bearing condition. Our specialists are ready to advise you on the available options and possibilities.



Variable Speed

Optional multiple-speed motors are available. This allows switching between two fixed, nominal speeds and accordingly covers a wide speed range without a frequency converter. In order to reduce the load on the power supply and the connected pump during the start, start methods deviating from the standard are also possible. For larger regulation ranges and higher speed flexibility, the motors can also be operated with frequency converter. The motors can further be equipped with EMC cables, insulated bearings and shaft earthing.


Wastewater
Wastewater collection
Wastewater & sewage-sludge treatment
Industrial wastewater
Manure
Ship wastewater

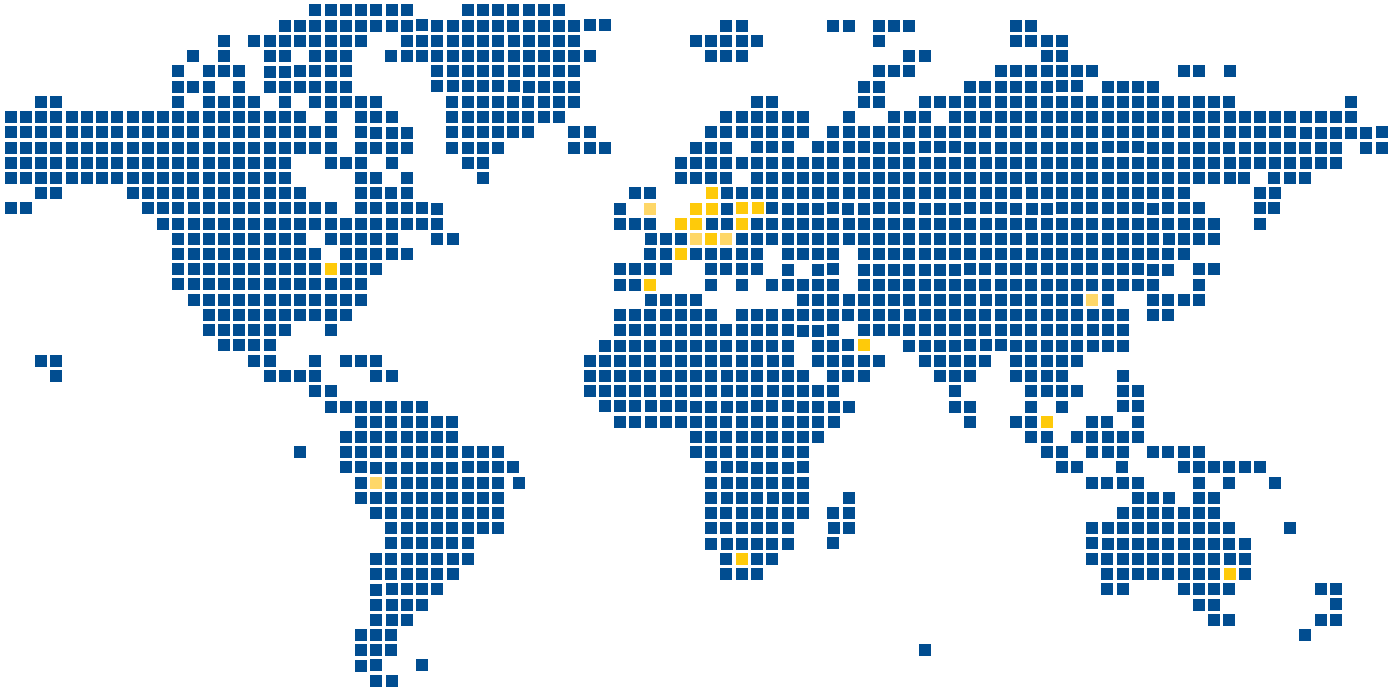

Industry
Paper
Cellulose & Chips
Biomass
Oil and gas
Adhesives
Paint
Plastic granulates
Solvents
Swarf and cooling lubricants
Brine


Dewatering & drainage
Bentonite
Sewer rerouting
Mine drainage
Water intake & power
Flood protection
Construction


Fruits
Vegetables
Live fish
Brewery
Molasses
Oils and pastes
Gels
Food

Hidrostal worldwide.

Pumps from Hidrostal are used all around the world. Our pumps are custom -made and are specially tailored to the needs of each location. With this procedure we achieve a high level of operational effectiveness and excellent energy efficiency. It is always worth investing in a Hidrostal pump in the long run because our pumps are low-maintance, they almost never clog, and their long service life is unique. Depending on the location, our clients are assisted by one of our subsidiary companies or sales partners. You will find your contact at www.hidrostal.com



Make a quick and accurate pump selection:
www.hidrostal.com/pumpselector.php

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