
BOESCH OIL SENTINEL SYSTEM SPECIFICATIONS

This specification covers a Boesch Oil Sentinel System with control panel, sensors and accessories as specified herein. The Oil Sentinel System shall be designed and furnished in to meet the ASME 17.1 safety code requirements for elevators and escalators.

Conditions of Operation

The Boesch Oil Sentinel System shall be designed and constructed to operate satisfactorily with a reasonable service life, when installed in a dependable and adequate water resource location. The Oil Sentinel System shall be the product of, and manufactured by Boesch Pumps. Factory pump performance curves for alternate pumps shall be submitted with the bid.

Oil Sentinel System Scope

Each Boesch Oil Sentinel System shall have (QTY____) Boesch (BC____) non-clog electric submersible vortex sump pump(s) capable of delivering a maximum capacity of ____ GPM at ____ feet of TDH when operated by (____) HP, 3450RPM ____ volt, ____ phase, 60Hz motor, (____)" discharge.

Each Boesch sump pump unit shall have (____) feet of power cable.

Each Oil Sentinel System unit shall have a NEMA 1 (indoor) Control Panel used for the safe operation of removing water from pits in accordance with ASME A17.1, stopping the pump before oil or other harmful substances enter the water supply.

The Control Panel shall be operated by a factory wired preset level sensor module for pump off, pump on, high water alarm, and oil detection alarm (high liquid level switch).

The Remote Alarm Panel shall have 9 VDC Battery Backup, LED alarm indicators and a 103 db audible buzzer with auto test/reset operation.

The preset level sensor shall have one PVC high level float switch and three stainless steel probes for pump off, pump on and high-level alarm.



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Pump Construction

The pump(s) shall be designed to handle, without clogging, clean water, contaminated water, wastewater effluent, stormwater, and other similar corrosive liquids which may contain small solids. The pump shall have integrated feet allowing it to stand on a hard bottom wet well.

Major pump components shall be of Stainless Steel 304 and ASTM A48 Class 30 Cast Iron with smooth surfaces devoid of porosity or other irregularities.

All exposed fasteners shall be AISI type 304 stainless steel.

Critical mating surfaces where a water tight seal is required shall be machined and fitted with Nitrile (Buna N) o-rings.

Sealing will be the result of controlled compression of rubber o-rings without requiring an specific torque on fasteners to accomplish sealing.

Rectangular cross sectioned gaskets requiring specific fastener torque to achieve compression shall not be considered adequate or equal. No secondary sealing compounds shall be used or required.

Impeller

The impeller shall be a non-clogging, dynamically balanced, vortex design, ASTM A48 Class 30 construction capable of passing a 2" (50 mm) diameter spherical solid. The impeller shall have threaded onto the motor shaft, and shall be fastened to the shaft by a stainless-steel impeller nut.

The use of adjustable bottom plates to maintain efficiency shall not be considered equal.

Pump Casing

The pump casing shall be a single piece ASTM A48 Class 30 construction design with vertical NPT discharge. Passages shall be smooth and large enough to pass any solids which may enter the impeller. Volute inlet opening shall be 50 mm.

Discharge design shall permit attachment to standard 2" NPT pipe fittings.

Shaft & Rotating Assembly

The common motor/pump shaft shall be of AISI type 410 stainless steel material that is in contact with pump's mechanical seal and shall have a polished finish and accurately machined shoulders to accommodate bearings, seals and impeller.

Carbon steel shafts shall not be considered adequate or equal. The rotating assembly (impeller, shaft and rotor) shall be dynamically balanced such that undue vibration or other unsatisfactory characteristics will not result when the pump is in operation.



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Sealing System

Each pump shall be equipped with a EKK Eagle Burgmann tandem mechanical shaft seal system consisting of two independent seal assemblies with a common spring between them and a radial lip seal; providing three complete levels of sealing between the pump wet end and the motor.

The mechanical seals shall operate in an oil filled chamber which is completely separate from the motor chamber. The seal faces shall be SiC/SiC for the lower seal and Carbon/Ceramic for the upper seal.

Metallic components of the mechanical seal shall be constructed of 300 series stainless steel.

The seal system shall not rely upon the pumped media for lubrication and shall not be damaged when the pump is run dry. A readily accessible inspection screw shall be provided for inspecting the condition of the seal chamber oil during routine maintenance.

Bearings

The pump shaft shall rotate on permanently lubricated, greased bearings. The upper bearing shall be a NTN or TPI single row deep grooved ball bearing. The lower bearing shall be a NTN or TPI heavy-duty single row, deep grooved ball bearing. Upper and lower bearings shall be of sufficient size and properly spaced to transfer all radial and axial loads to the pump housing and minimize shaft deflection. B-10 bearing life shall be a minimum of 30k hr at BEP. Pump designs utilizing other than ball bearings, or those requiring supplemental guide bushings for the shaft or impeller shall not be considered acceptable.

Motor

The motor housing shall be AISI type 304 stainless steel and the top motor cover of PA66+30GF. The motor shall be of the squirrel-cage induction design with copper windings, housed in an air filled, water tight chamber. The motor shall be capable of continuous submerged operation underwater to a depth of 33 feet. The stator windings and stator leads shall be insulated with moisture resistant Class B insulation rated for 130C (266F). The motor shall be capable of operating continuously, submerged in liquid of 40C (104F) without overheating. The motor shall be capable of handling up to 10 evenly spaced starts per hour. All motors shall have a voltage tolerance of +/-10% from nominal name plate rating.



Power Cable

The power cable shall be sized according to NEC and CSA standards and shall be of sufficient length to reach the junction box without requiring splices. The outer jacket of the cable shall be oil and water-resistant thermoplastic elastomer. The power cable shall be fitted to the motor using an epoxy potted water tight cable entry system with a rubber grommet as the secondary seal and strain relief.

Control Panel

The Control panel shall be Thermoplastic construction, 8 x 6 x 4 (inches), NEMA 1 Indoor with enclosure Screws, The Control Panel shall include a IEC Motor Contactor, 9VDC (200mA minimum) Auxiliary Dry Alarm contacts and fast acting type AGC fuses.

The control Panel shall be UL 508 (US and Canada) certified.

Preset Level Sensor

The Preset Level Sensor shall be ABS Plastic constructed with 25-foot of 18 AWG SJEOOW (UL) or SJTOOW (CSA) 5-conductor flexible and water/oil resistant cable.

The Preset Level Sensor shall have a PVC constructed Narrow Angle Normally Open High Liquid Level Alarm Switch with 1-foot 18 AWG SJOOW (UL/CSA) 2-conductor flexible and water/oil resistant cable and three stainless steel sensor probes.

Remote Alarm

The Remote Alarm shall be NEMA 1 indoor enclosure with Normally Open Class 2, 24VDC/24VAC (60 Hz) auxiliary contacts, a battery backup of 9VDC (not included) and a 103 db buzzer.

The Remote Alarm shall be CSA (US and Canada) certified.