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ZOELLER® PUMP COMPANY

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MODEL 942
GUIDE SPECIFICATIONS

1.00 GENERAL:

Provide a complete single pump elevator sump system designed to remove water under normal conditions and automatically manage oil contamination when detected. The system utilizes one pump for water removal and an integrated oil sensing control that actuates a dedicated valve to divert oil to a separate holding tank. Designed to prevent oil discharge to the environment, the system complies with ASME A17.1 and applicable local elevator and environmental codes.

Contractor shall furnish all labor, material, equipment and incidentals required to provide _____ (QTY.) 942-_____ Oil Guard ® Separator elevator pump system including submersible centrifugal pump and controls as specified herein.
The Zoeller Model 942 Oil Guard® Separator System shall include:

1. Submersible pump (cast iron construction)
2. Liquid Smart Control Panel
3. Holding tank Oil Smart® alarm panel
4. Normally open and normally closed solenoid valves

2.00 PUMPS:

2.01 OPERATING CONDITIONS

Each submersible pump shall be rated at _____ H.P. _____ volts, 1 phase, 60 HZ., 3450 RPM. The unit shall produce _____ Gallons Per Minute (GPM) at _____' of Total Dynamic Head (TDH).
The submersible pump shall be non-overloading throughout the length of the curve and be capable of operating not submerged without damaging the pump. The reserve service factor shall be a minimum of 1.0. The submitted performance curve shall show the flow and head capacity of the pump.
The pump housing configuration shall have a
_____ 1.5" N.P.T. vertical discharge.
_____ 2.0" N.P.T. vertical discharge.

2.02 CONSTRUCTION

Each pump shall be of the close coupled cCSAus listed model submersible pump as manufactured by Zoeller Pump Company of Louisville, Ky. (800-928-7867). The castings shall be constructed of epoxy coated cast iron. The motor housing shall be oil-filled to dissipate heat. All external-mating parts shall be machined and sealed with a Neoprene square ring. All fasteners exposed to the liquid shall be 300 series stainless steel. The motor shall be protected on the lower side with a tandem mechanical seal arrangement being separated by a spring assembly. The upper and lower ball bearings shall be capable of handling all thrust loads. The pump housing shall be of the concentric design thereby equalizing the pressure forces inside the housing which will extend the service life of the seals and bearings. The top cap shall have a stainless steel lifting handle. The pump shall have support legs enabling it to be a freestanding unit. The castings shall be protected with a green powder-coated finish.

2.03 ELECTRICAL POWER CORD

The pump shall be supplied with 25' multiconductor power cord. It shall be SJOOW type cord capable of continued exposure to the pumped liquid. Power cord shall be sized for the rated full load amp loading of the pump in accordance with the National Electric Code. Power cable shall enter into the cap through a compression type-sealing gland. Water sealing and strain relief are separated. The entire cap shall be sealed off from the motor housing by thru wall terminals to protect the motor from moisture.

2.04 MOTOR

The motor shall be an oil filled NEMA B design. At maximum load, the winding temperature will stabilize below the insulation class. Since air-filled motors are not capable of dissipating heat, they shall not be considered equal. Single-phase motors shall include an integral thermal overload switch and the capacitor circuit shall be located in the pump assembly. Three phase motors shall use magnetic starters with overload relays in the control panel for further protection.

2.05 BEARINGS AND SHAFT

The upper and lower ball bearing are continually lubricated by the oil which fills the motor housing. The motor shaft shall be made of ____ AISI 1215 steel (152, 153) or ____ 416 stainless steel (161, 284, 292, 294).

2.06 SEALS
Pump shall have a single carbon / ceramic seal configuration that is constructed with buna-n elastomers and a 316 SS spring. It shall be equal to a Crane Type 6a configuration.

2.07 IMPELLER
The impeller shall be of a fully balanced _____ Thermoplastic (152, 153) or _____ cast iron (161, 284, 292, 294) vortex design. It shall have pump out vanes located on the back shroud to keep debris away from the seal area. Attempts to improve efficiency by coating impeller shall not be acceptable.

2.08 SERVICEABILITY
Components required for the repair of the pump shall be readily available within 24 hours. Components such as mechanical seals and bearings shall not be of a proprietary design and be available from local industrial supply houses. Special tools shall not be required to service the pump. A network of service stations shall be available nationwide in those cases where service requirements are beyond the scope of in-house service mechanics.

2.09 TESTING
Each pump shall run in liquid before being shipped. It shall be checked at its maximum running point for performance, amps, grounding, winding insulation, and water tightness.

3.00 OIL GUARD® SEPARATOR CONTROLS:
3.10 115/200/230V SINGLE PHASE
3.11 GENERAL
These specifications describe the Liquid Smart® control panel and switches. The contractor shall furnish and install the Liquid Smart® Single Phase Simplex Control Panel as specified herein. Incoming pump power shall be single phase, 60 Hz, 115/200/230V, with incoming voltage to power the alarm circuit provided as single phase, 60 Hz, 115V. The Oil Smart® pump switch shall be capable of differentiating between oil and water and shall direct water discharge through the water solenoid valve to the sanitary sewer. A dual duty float shall activate pumping of oil through the oil solenoid valve to a secondary containment location. The Liquid Smart® alarm sensor shall provide high liquid level indication and shall differentiate between oil and water conditions.

3.12 CERTIFICATION
The system shall be built by a UL 508A approved control systems manufacturer and 100% tested at the factory prior to shipping. Additionally, the panel shall be certified by a second certification company (CSA International or approved equal).

3.13 CONSTRUCTION
The panel enclosure shall be polycarbonate, NEMA 4X rated, with lockable latches approved for both indoor and outdoor environments. The enclosure shall feature a clear front door to allow visibility of the control panel indicators, which shall include a green power on light, green pump run light, yellow high oil light, and white high water light. A high liquid level condition shall activate a red beacon light and an 85 decibel audible alarm. The front panel shall include a pump hand off auto (H.O.A.) switch, along with alarm test and silence buttons. The panel shall be equipped with remote monitoring dry contacts for high liquid, high oil, and high water present conditions. A general purpose motor contactor rated for the pump's full load amperes shall be provided, with a 120 VAC operating coil.
The system shall incorporate an Oil Smart® Pump Switch, a Dual Duty Float, and a Liquid Smart® Alarm Sensor. The Oil Smart® Pump Switch shall include separate "on" and "off" sensors to establish a defined water pumping range and shall direct water through the water solenoid valve, while the dual float switch shall activate pumping of oil through the oil solenoid valve to a secondary containment area. The Liquid Smart® Alarm Sensor shall detect high liquid level conditions and differentiate between oil and water, and both control devices shall be capable of oil to water differentiation.
The alarm component shall be mounted completely separate from the pump control component to prevent nuisance alarms and to allow alarm placement at the actual high liquid level; an alarm component connected directly to the pump control shall not be acceptable. All system components shall be hardwired into the panel, and plug in type systems shall not be acceptable. The control panel shall be designed to be operator and maintenance friendly to ensure ease of setup and servicing, with all internal wiring executed to the highest standards of quality and craftsmanship to ensure proper conductor routing and prevent interference with operating devices. A permanent nameplate shall be affixed inside the enclosure identifying the panel model number, drawing number, voltage, phase, and ampere ratings, and a complete schematic drawing shall be provided inside the enclosure for field personnel reference.

3.20 CONTAINMENT HIGH LIQUID ALARM - OIL GUARD® ALARM
3.21 GENERAL
These specifications describe the Oil Guard® alarm. The contractor shall furnish and install the Oil Guard® alarm as specified herein.
The Oil Guard® alarm shall plug into a single phase, 60Hz, 120V common receptacle. The system shall alert of a high liquid presence with audible and visual alarms.

3.22 CERTIFICATION
The system shall be built by a UL 508A approved control systems manufacturer and 100% tested at the factory prior to shipping. Additionally, the panel shall be certified by a second certification company (CSA International or approved equal

3.23 CONSTRUCTION

The enclosure shall be a wall-mount style type 3R. The control panel shall be UL listed and CSA approved. The control panel shall feature visible high liquid level alarm red beacon light, high water level white light, and high oil level yellow light. A high liquid level condition shall activate the 85 decibel alarm. The front panel shall include alarm test and silence buttons. The panel shall be equipped with remote monitoring dry contacts including high liquid, high oil and high water present conditions. The pump controller shall be UL listed as an across the line starter type pump switch and rated for the pump's full load amps.

The system shall incorporate an Oil Guard Pump Switch and Liquid Smart Alarm Sensor. The Oil Guard Pump Switch shall include "on" and "off" sensors providing a specific water pumping range and shall not pump oil. The Liquid Smart Alarm Sensor shall detect a high liquid level condition and differentiate between oil and water. The controls shall both be able to differentiate between oil and water and consist of no moving parts. The alarm component shall be completely separate from the pump control component to prevent nuisance alarms and so alarm component can be placed at the actual high liquid level. An alarm component connected to the pump control shall not be acceptable.

4.00 WARRANTY:

4.01 PUMPS

Standard warranty shall be 18 months from date of manufacture or 12 months from date of installation with proof of purchase required.

4.02 CONTROLS

Standard warranty shall be 5 years from date of manufacture or 5 years from date of installation with proof of purchase required.

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