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SECTION: Z5.00.130

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0514

Supersedes

0402

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CONTROL PANEL GUIDE SPECIFICATIONS

Solids-Handling Pumps



1.01 GENERAL

Contractor shall furnish all labor, materials, equipment and incidentals required to provide a UL listed pump control panel compatible with the submersible pump(s) specified.

The control panel shall be assembled and tested by a supplier meeting UL Standard 508 for industrial controls. The same manufacturer supplying the submersible pump so as to insure compatibility and assurance in matching the proper panel and features with the pump being supplied shall furnish the control panel and to assure single source responsibility for the equipment supplied.

The panel shall be of a

- Simplex (1 pump) configuration.
- Duplex (2 pump) configuration.
- Triplex (3 pump) configuration

2.01 CONSTRUCTION

The control panel shall be housed in a NEMA 4X thermoplastic enclosure. Panel shall include a visible and audible high water alarm with dry auxiliary contacts, alarm test and silence switch, IEC rated motor contactor, pump disconnect switch, 3 phase overload protection, control power disconnect switch, selector switches and pilot lights. The duplex panel configuration shall incorporate a pump alternator function, which enables each pump to operate as the "lead" pump during the alternation sequence. The panel circuitry is to be mounted on a plate, which is bolted to the enclosure with 300 series SS fasteners. The enclosure shall have a hinged front cover with lockable hasp. The control panel shall provide adjustable overload protection if the pump(s) being controlled does not have an integral thermal overload protection in its motor winding. Single phase controls shall have capacitors and relay mounted in the control panel. The control panel shall include a seal leak monitoring circuit with an external indicator and a thermal cutout circuit, interfaced with the motor contactor and pump's thermal sensor. Pump run pilot lights and selector switches shall be mounted in the enclosure. The visual high water alarm shall be a top mounted red beacon with 360 degree visual check. The 120 volt control voltage shall be an external dedicated source in single-phase panel. A three-phase panel shall get its 120 volt control power from an internal transformer. A wiring schematic shall be provided and stored in a plastic packet provided in the enclosure. The schematic is to be an exact representation of the panel circuitry identifying the terminal locations for the float switch, pump(s) and incoming power connections. All ground wires shall be terminated at the grounding lug furnished inside the enclosure. Contractor is responsible for installing the panel so as to maintain the NEMA 4X rating. All conduit, cord connections and enclosure openings are to be properly sealed in a manner, which prevents any liquids or vapors from entering the enclosure. A properly sized and rated main disconnect switch, separate from the panel, is to be installed by the contractor in front of the panel and pump(s), per NEC Code.

3.01

OPTIONS

- Flashing high water alarm light.
- Elapsed time meter. Tracks the number of hours that each pump has operated.
- Cycle counter. Tracks the number of cycles that each pump has operated.
- Inner door with dead front enclosure, where all pilot lights, selector switches and other monitoring features are mounted.
- Lightning arrestor. Protects the panel components and pump motor from electrical surges.
- Anti-Condensation heater. A heater thermostat which protects panel components from condensing moisture by keeping the air temperature above dew point.
- Alternator selector switch. Enables the operator to manually preset the lead pump or allows the control system to automatically alternate the pumps with each duty cycle.
- Automatic reversing function (available for reversible grinder pumps only). Enables the panel to automatically reverse the cutter's rotational direction with each duty cycle.
- Intrinsically safe relays. Reduce the voltage passing through the float switches to less than 12 volts, which will prevent arcing in case of float damage. Feature is required for a Class 1 Division 1 Group C & D hazardous location.
- Redundant off switch. Provides an additional "off" float switch to shut down the pump(s) in case the primary "off" float switch malfunctions.
- Additional dry contact for remote monitoring: Pump Run; Seal Fail; Pump Failure; Control Power Loss.
- 115 volt, 15 amp GFI receptacle with circuit breaker. Externally mounted NEMA 3R enclosure. Power to the receptacle is a dedicated circuit independent of panel voltage.
- Phase monitor for 3 phase power systems.
- Heavy duty oil tight pilot lights and selector switches.
- Stainless Steel enclosure.
- Auto-dialer.

4.01

FLOAT SWITCHES AND MOUNTING ACCESSORIES

Provide (QTY.) UL listed narrow-angle sensor switches with normally open contacts, which close as the float tips slightly above the horizontal plane. Rated at 5 amps, with 2 conductor 16-gauge cable. Float housing to consist of high impact corrosion resistant PVC. The switch shall be suitable for intrinsically safe control circuits.

- The switch shall be suitable for intrinsically safe control circuits.
- Mounting shall utilize an external cable weight where the switches shall be suspended from above with a cable bracket (not included).
- Mounting shall utilize a pipe type clamp where the float switch is attached to the discharge pipe or similar pipe.

The float switch cable length shall be: 15 feet 25 feet 35 feet 50 feet

A cable bracket for suspending the externally weighted float switch shall be:

- Type 304 SS bracket with six (6) 3/16" diameter hooks.
- Type 304 SS steel construction with cord grips for four (4) floats.
- Provide a watertight junction box suitably sized and constructed to accept and seal all float switch and pump cords located in the basin. A potting kit shall be included and installed, preventing the entry of groundwater through the conduit.



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