Purchase Specification

Model No. PC-1
PUMP CONTROL PANEL

Operation

The PC-1 Pump Control Panel shall function as a pump starter controller and pump control valve sequencer and provide appropriate visual indication of system status throughout all modes of operation.

The control panel shall be constructed of a Nema 4 rated enclosure, with gasketed door and oil tight lights.

Colored lights shall be provided to indicate normal operation and alarm conditions of the pump and control valve.

Visual Indications

1. White - 120 VAC power is available to the panel.

2. Flashing blue - pump start command and initiation of Pressure Delay Sequence (PDS)

3. Steady blue - pump discharge pressure has reached a proper level.

4. Flashing green - Pilot Valve Solenoid (PVS) is energized and initiation of the Valve Sequence Timer (VST).

5. Steady green - valve open.

6. Steady yellow - loss of power-automatic restart shutdown.

7. Flashing yellow - loss of power-automatic restart shutdown.

8. Flashing red with flashing blue - failure to develop pressure on start-up.

9. Flashing red with steady blue - loss of pressure shutdown.

10. Flashing red with flashing green - failure of control valve to open on start-up.

11. Flashing red with steady green - valve closure without command.

The enclosure dimensions shall not exceed 14” x 16” x 8” and shall be provided with (4) mounting brackets for wall or panel mounting.

Normal Pump Start (Hand or Auto)

A pump start command shall be initiated by turning the HOA switch to the “Hand” position and pressing start or by a remote contact closure with the HOA switch in the “Auto” position. Either of these operations shall cause the PC-1 to initiate pump start.

A white light shall indicate that 120 VAC power is available to the PC-1 (visual indication #1). The pump starts and a flashing blue indicator light is displayed. The pressure delay sequence (PDS) shall be initiated simultaneously with the pump start (visual indication #2). The flashing blue light shall be displayed until pump discharge pressure exceeds static system head (pre-set on the pumps discharge pressure switch) or until the PDS expires.

A flashing red with flashing blue light shall indicate a failure of the pump to produce sufficient pressure to satisfy the pressure switch setting within the PDS time frame (visual indicator #8). Should this occur, motor starter contacts shall open de-energizing the pump motor. A manual “reset” of the HOA switch shall be required to restart the pump. A steady blue light shall indicate that the pump discharge pressure has reached a desired pressure (visual indication #3).

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Upon reaching discharge pumping pressure and PDS completion, a flashing green light shall indicate the solenoid on the pump control valve is energized and the start of the valve sequence time (VST) (visual indication #4). The flashing green light shall be displayed until the valve opens and actuates the limit switch, or until the VST expires.

A flashing red with flashing green light shall indicate failure of the control valve to open on startup (visual indication #10), motor starter contacts shall open, de-energizing the pump motor. A manual “reset” of the HOA switch shall be required to restart the pump.

A steady green light shall indicate the pump control valve opens and trips the limit switch prior to expiration of the VST (visual indication #5). The steady green light shall be displayed for the duration of the pumping operation. Normal Pump Shutdown

A normal pump shutdown sequence shall be initiated by either depressing the stop button or by remotely breaking contacts of the remote start circuit with the HOA switch in the “Auto” position. The solenoid pilot on the pump control valve shall be de-energized to initiate a normal valve closure. At a pre-set position, the pump control valve shall actuate the limit switch which opens the motor starter contacts and de-energizes the pump. When the pump control valve is closed and the pump de-energized, the steady green light shall be extinguished.

Pump Malfunction

Anytime during the pumping operation when the pump discharge pressure is not capable of satisfying the pressure switch setting, a flashing red with steady blue light shall appear (visual indication #9). This indicates a loss of pressure shutdown, the solenoid pilot(s) on the pump control valve shall de-energize to close the valve and the pump motor contacts shall open to turn off the pump motor. A manual “reset” of the HOA switch shall be required to restart the pump.

Valve Malfunction

If the solenoid pilot(s) of the pump control valve fail, or if any other event should cause the valve to close without a normal pump shutdown command, a flashing red with steady green light shall be displayed (visual indication #11) indicating valve closure without command. The pump motor contacts open to turn off the pump motor. A manual “reset” of the HOA switch shall be required to restart the pump.

Power Failure

In the event of a power failure, even momentary, a pre-set time delay period is initiated as soon as power is restored which shall be indicated by a flashing yellow light (visual indication #7). The adjustable time delay period shall range from instantaneous to ten (10) hours. During the power failure delay period, it shall not be possible to have an automatic pump restart. After the delay period has expired, a normal pump start sequence shall be initiated if a local or remote pump start command exists. It shall be possible to cancel the delay period by a manual reset of the HOA switch. A steady yellow light shall indicate a loss of power-automatic restart disabled (visual indication #6). A manual reset of the HOA switch shall be required to restart the pump. (Note: The customer supplied pressure switch must be installed in order for the pump discharge shutdowns to function.)

Specifications

Power Supply: 120 AC 60 Hz
Motor Starter Contacts: 10 amp
Remote Alarm Output Dry Contacts: 1 amp Loss of Power
Remote Alarm: 120 AC 60Hz Solenoid Control on Valve: 120 AC 60Hz output

This panel shall be a Cla-Val Co. Model No. PC-1 Pump Control Panel as manufactured by Cla-Val Co., Newport Beach, CA 92659-0325.