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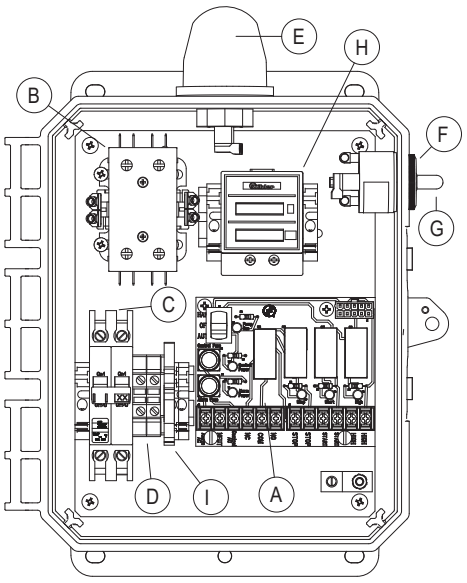
PIVOT RL SERIES
PUMP CONTROL PANELS
INSTALLATION, OPERATION, AND TROUBLESHOOTING MANUAL

GENERAL INFORMATION

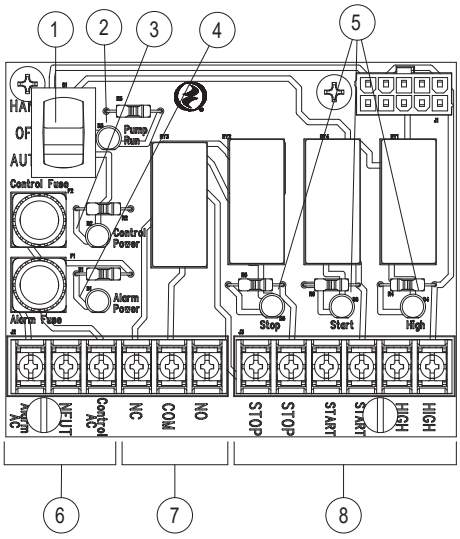
This Pivot RL electrical control panel is designed to operate one (1) sump, sewage, or effluent pump and provide an audible and visual alarm notification should a high-water condition occur. This panel is intended to operate with three normally-open float switches (not included). Applicable pumps must be single phase, 120V, 208V, or 240V, and must be rated at or below 20FLA. The control and alarm circuits require incoming power of 120V single phase.



tsk0100

Panel Components
(A) Control board
(B) Motor contactor
(C) Pump circuit breaker
(D) Pump connection terminals
(E) Beacon
(F) Audible alarm
(G) Test/Silence switch
(H) Elapsed time/event counter*
(I) Control/Alarm fused disconnect*
*Available in certain models only

Control Board Components
Hand/Off/Auto switch (1)
Pump Run LED (2)
Control Fuse and LED (3)
Alarm Fuse and LED (4)
Float LEDs (5)
Control/Alarm power terminals (6)
Dry contact terminals (7)
Float terminals (8)



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This panel must be installed and serviced by a licensed electrician in accordance with the National Electric Code NFPA-70, state, and local requirements/codes.

DO NOT DISCARD THIS MANUAL. It contains important information regarding safe use of this product. This manual should always be referenced during installation and operation. Please store this manual in a safe location.

This Technical Guide is aimed at professional users and is only intended to provide them guidelines for the definition of an industrial, tertiary or domestic electrical installation. Information and guidelines contained in this Guide are provided AS IS. Zoeller Pump Company and its parent company Zoeller Company makes no warranty of any kind, whether express or implied, such as but not limited to the warranties of merchantability and fitness for a particular purpose, nor assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed in this Guide, nor represents that its use would not infringe privately owned rights. The purpose of this guide is to facilitate the implementation of International installation standards for designers & contractors, but in all cases the original text of International or local standards in force shall prevail. Professional installers should adapt these guidelines as required for their specific circumstances as required for each application and their specific jurisdiction.

LIMITED WARRANTY

Manufacturer warrants, to the purchaser and subsequent owner during the warranty period, every new product to be free from defects in material and workmanship under normal use and service, when properly used and maintained, for a period of 3 years from date of purchase by the end user. Proof of purchase is required. Parts that fail within the warranty period, that inspections determine to be defective in material or workmanship, will be repaired, replaced or remanufactured at Manufacturer's option, provided however, that by so doing we will not be obligated to replace an entire assembly, the entire mechanism or the complete unit. No allowance will be made for shipping charges, damages, labor or other charges that may occur due to product failure, repair or replacement.

This warranty does not apply to and there shall be no warranty for any material or product that has been disassembled without prior approval of Manufacturer, subjected to misuse, misapplication, neglect, alteration, accident or uncontrollable act of nature; that has not been installed, operated or maintained in accordance with Manufacturer's installation instructions; that the interior components of which have been subjected to outside substances including but not limited to the following: moisture, gases, dust, insects or other pests, or corrosive substances in all applications. The warranty set out in the paragraph above is in lieu of all other warranties expressed or implied; and we do not authorize any representative or other person to assume for us any other liability in connection with our products. Contact Manufacturer at, 3649 Cane Run Road, Louisville, Kentucky 40211, Attention: Customer Support Department to obtain any needed repair or replacement of part(s) or additional information pertaining to our warranty.

MANUFACTURER EXPRESSLY DISCLAIMS LIABILITY FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES OR BREACH OF EXPRESSED OR IMPLIED WARRANTY; AND ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND OF MERCHANTABILITY SHALL BE LIMITED TO THE DURATION OF THE EXPRESSED WARRANTY. IN NO CASE, SHALL THE AMOUNT COVERED BY THE WARRANTY EXCEED THE PURCHASE PRICE.

Some states do not allow limitations on the duration of an implied warranty, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

In instances where property damages are incurred as a result of an alleged product failure, the property owner must retain possession of the product for investigative purpose.

Electrical Preparation

Refer to the panel's wiring schematic for detailed electrical connections. Best practice installation of the Pivot RL control panel requires delivering separate incoming power circuits for the pump versus the control and alarm circuits. The pump model chosen will dictate the necessary voltage for the pump circuit. Ensure that the incoming power wiring for the pump circuit is sufficient to handle the pump's load, and that it conforms to all applicable codes. The panel's control and alarm systems require 120V incoming power, which should be on a separate circuit from the pump supply. The Pivot RL provides the installer with the option of utilizing separate power feeds for the control circuit and the alarm circuit, though these two circuits most commonly utilize a single incoming power feed.

Installation

1. **Initial Inspection:** Remove the panel from the carton and inspect for damage or missing components. Damage claims must be submitted to the panel's sales location or distributor.

2. **Mounting:** Mount the panel enclosure to a post or building. Depending on the model, it may be necessary to first install the included mounting flanges.

3. **Conduit Holes:** Identify the number and sizes of required conduits (consult the wiring schematic and ensure compliance with all local and national codes). Drill the appropriate conduit holes in the bottom of the panel, paying special attention to avoid hitting any internal panel components.

4. **Conduits:** Install the conduits and proper conduit fittings, and route the conduits to their various locations (breaker box for incoming power, tank or basin for floats or pump cables, etc.).

NOTE: If possible, purchase equipment with sufficiently long cords to avoid splicing. If splicing is required, be sure to use a proper junction box mounted above grade and utilize wire conductors of sufficient size to meet applicable codes. If a junction box is used, be sure to follow all installation instructions provided with the box.

5. **Floats:** Float switches should be installed according to the manufacturer's instructions and secured properly to a float tree, discharge pipe, or by using appropriate float weights. Secure the float switches in the appropriate positions in the wet well and verify that they have free range of motion and do not interfere with any other equipment. Verify that the cables cannot be cut, pinched, or otherwise damaged throughout each float's range of motion. Floats should be installed in the following order from highest to lowest:
    - High Water Alarm Float
    - Start Float
    - Stop Float

6. **Float Cords:** Label the free ends of each float cord with its position in the tank and fish the float cables through the conduit(s) to the panel. Land each float in the appropriate terminal location on the bottom of the control board.

7. **Pump Power Supply:** Run a pump supply power circuit, sufficient to meet the voltage and amperage needs of the pump, from the breaker box through the appropriate conduit and into the panel. Land the incoming power wires (L1 and L2/N) directly onto the bottom of the pump circuit breaker. Land the ground wire to the panel's ground lug.

8. **Pump Cord:** Fish the pump power cord through the appropriate conduit and land the cord wires onto terminals T1 and T2 next to the circuit breaker. Connect the black lead to T1 and the white lead to T2. Land the ground wire to the panel's ground lug.

9. **Control/Alarm Power Supply:** Identify whether the panel model for your installation includes a fused disconnect (L3) located to the right of the pump connection terminals.

    a. **Fused Disconnect:** If your application has the fused disconnect, run a 120V supply power circuit from the breaker box through the appropriate conduit and into the panel. Land the incoming hot wire (black) to the bottom of the fused disconnect (L3). Land the neutral wire (white) to the circuit board terminal labeled NEUT. Land the ground wire to the panel's ground lug. Panels with the fused disconnect will have a jumper preinstalled between circuit board terminals 'Alarm AC' and 'Control AC'.

    b. **No Fused Disconnect:** If your application does not have the fused disconnect, you have a choice to run one 120V circuit to serve both the control and alarm systems, or two 120V circuits to separate the control power from the alarm power. Running two circuits has the advantage of extra protection against a single breaker trip that could sever power to both control and alarm circuits in the panel.

        i. If using one power supply for both the control and alarm systems, run a 120V power circuit from the breaker box through the appropriate conduit and into the panel. Land the incoming hot wire (black) to the circuit board terminal labeled 'Alarm AC'. Land the neutral wire (white) to the circuit board terminal labeled 'NEUT'. Land the ground wire to the panel's ground lug. Remove the included forked jumper wire from the pouch on the inner door and install it between the two circuit board terminals labeled 'Alarm AC' and 'Control AC'. **Both terminals ('Alarm AC' and 'Control AC' must be powered for the panel to function properly.** Land the ground wire to the panel's ground lug.

        ii. If using separate power supplies for the control and alarm circuits, run two 120V power circuits from the breaker box through the appropriate conduit(s) and into the panel. Land the incoming hot wire (black) for the alarm power to the circuit board terminal 'Alarm AC'. Land the incoming hot wire (black) for the control power to the circuit board terminal 'Control AC'. Land the neutral wires (white) for both circuits to the board terminal 'NEUT'. Land the ground wires to the ground lug.

10. **Seal Conduits:** All conduits must be sealed on both ends using an appropriate duct seal putty. Silicone or other caulks should not be used to seal conduits as they are not maintenance friendly and may still allow dangerous gasses to pass the barrier.

11. **Dry Contacts:** The panel comes with a set of dry contacts on the control board. One is normally-open and the other normally-closed. They share a common. These switching contacts will change states during a high water alarm condition.

Startup and Operation

The Pivot RL panel features a Hand/Off/Auto switch (HOA) on the control board which sets the operation of the system. The audible and visual High Water Alarm will respond to a tripped 'High Water' float regardless of the position of the HOA switch. Should an alarm occur, the audible component of the alarm can be silenced by pressing down on the 'Silence' switch on the external right side of the panel enclosure.

When the HOA is set to 'Off', the system will ignore input from the 'Stop' and 'Start' floats and will not operate the pump. When the HOA is set to 'On', the system will immediately call the motor contactor to engage, allowing the pump to operate (a tripped pump circuit breaker will prevent the pump from running). When the HOA is set to 'Auto', the system will automatically start and stop the pump based on input from the float switches. If both 'Stop' float and 'Start' float rise, the system will call the pump to operate, and the pump will continue operating until the 'Stop' float drops out.

1. Verify that there is sufficient water in the tank to operate the pump.
2. Set the pump circuit breaker in the panel to 'Off', and the Hand/Off/Auto switch (HOA) on the circuit board to 'Off'.
3. Turn on all source power breakers to supply incoming power to the Control, Alarm, and Pump circuits.

Note: If the tank has sufficient water to trip the High Water float, the alarm will sound. Pressing down on the Test/Silence switch on the exterior of the panel will silence the audible alarm.

4. Verify that the two LEDs on the control board adjacent to the fuse holders are illuminated. If either fuse LED is not illuminated, check the associated fuses. Ensure that the source power for each circuit is live and that both Control AC and Alarm AC lugs on the circuit board are powered.
5. Each float has an associated LED on the control board. When the float is in the 'up' position (closed), its LED will illuminate. Actuate each float and confirm that the associated LEDs respond correctly to each float's status.
6. Set the pump circuit breaker in the panel to 'On'. Set the HOA switch to 'Hand'. Verify that the Pump Run LED illuminates, the motor contactor engages, and that the pump runs. After confirmation, set the HOA back to 'Off'.
7. Set the HOA to 'Auto'. If both the 'Stop' and 'Start' floats are already up (as noted by their illuminated LEDs), the pump will start automatically. If this happens, observe the system as the water level drops. When the 'Stop' float drops out, the system will disengage the motor contactor and the pump will stop. If there wasn't sufficient water present to have raised both floats at the start, manually operate the floats to ensure proper automatic operation of the pump.
8. Once operation has been verified, ensure the HOA is in 'Auto' and that the LEDs for both fuses are illuminated before closing and locking the panel.

Maintenance

This panel is designed to be relatively maintenance free. That said, it is good practice to inspect the components of any lift station periodically. This includes, at a minimum, the pump, floats, and control panel.

During panel inspection, check for moisture, insect infestation, gaseous odors, or component corrosion. The presence of any of these conditions implies that the panel is not sealed appropriately. Verify that all conduits are sealed at both ends with appropriate duct seal and that the door seals are in good condition.

Verify that the beacon and audible alarm both function properly by lifting the Test/Silence switch on the exterior of the panel.

Verify that the floats are unobstructed and can move freely in the wet well. Repeat steps 4 through 8 of the Startup and Operation procedure outlined above.

Fuse Specifications: Control Board Fuses – 5x20mm, 3A, Fast Acting, rated 240VAC
Disconnect Fuse (select models only) – 5x20mm, 5A, Fast Acting, rated 240VAC