



# INSTALLATION INSTRUCTIONS FOR SYMCOM'S PUMPSAVER® MODELS 111 AND 233

## DANGER!



HAZARDOUS VOLTAGES MAY BE PRESENT DURING INSTALLATION.

Electrical shock can cause death or serious injury.

Installation should be done by qualified personnel following all national, state and local electrical codes.



Single-phase PumpSaver® are designed to protect single-phase pumps from dry well, dead head, rapid cycle, jammed impeller, and over / under voltage conditions. The PumpSaver® Model 233 protects 230 volt, 2 or 3 wire pumps from 1/3 to 3 HP. The PumpSaver® Model 111 protects 115 volt pumps rated 1/3 to 1 HP. Typical applications include submersible pumps, centrifugal pumps, circulating pumps, cooling pumps, environmental pumps, residential waterwells, commercial waterwells, irrigation wells, and golf course or other sprinkler systems.

## CONNECTIONS

**NOTE:** Use in conjunction with UL listed or recognized thermal or solid state overload relays only.

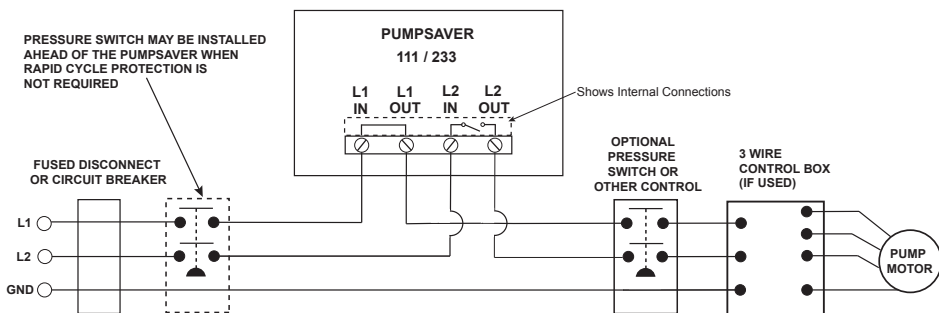
1. Mount the PumpSaver® in a convenient location in or near the pump control box. If the location is wet or dusty, a NEMA 3R, 4, or 12 enclosure should be used.
2. Connect one line from the fused disconnect to the PumpSaver's "L1 IN" terminal. Run a wire from the "L1 OUT" terminal to the other in-line controls such as a pressure switch. See Figure No. 1.
3. Connect the other line from the fused disconnect to PumpSaver's "L2 IN" terminal. Run a wire from the "L2 OUT" terminal to the other in-line controls such as pressure or float switches. See Figure No. 1.
4. See Figure No. 1 for Electrical diagram. See Figure No. 2 for Mechanical wiring diagram for standard 3 wire control boxes. See Figure No. 3 for Mechanical wiring diagram for Deluxe control boxes. See Figure No. 4 for Mechanical wiring diagram for direct feed of 2-wire pumps.

**NOTE:** The PumpSaver® may not detect a dead head (blocked pipe) condition on applications where the pump is undersized for a given motor or flow restrictors are used on high stage pumps or low yield wells.

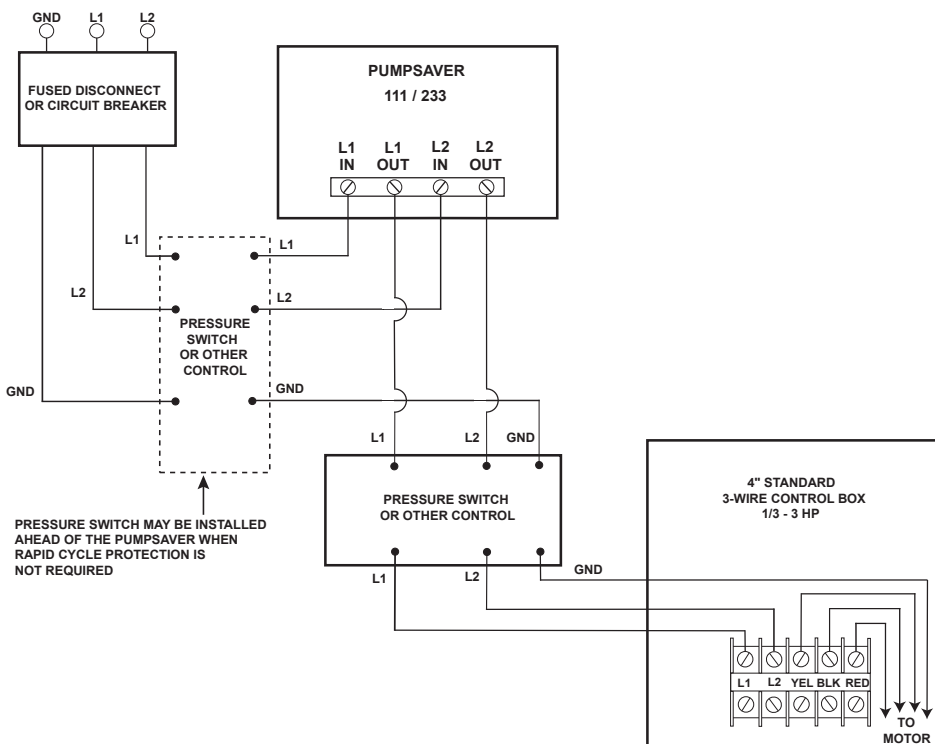


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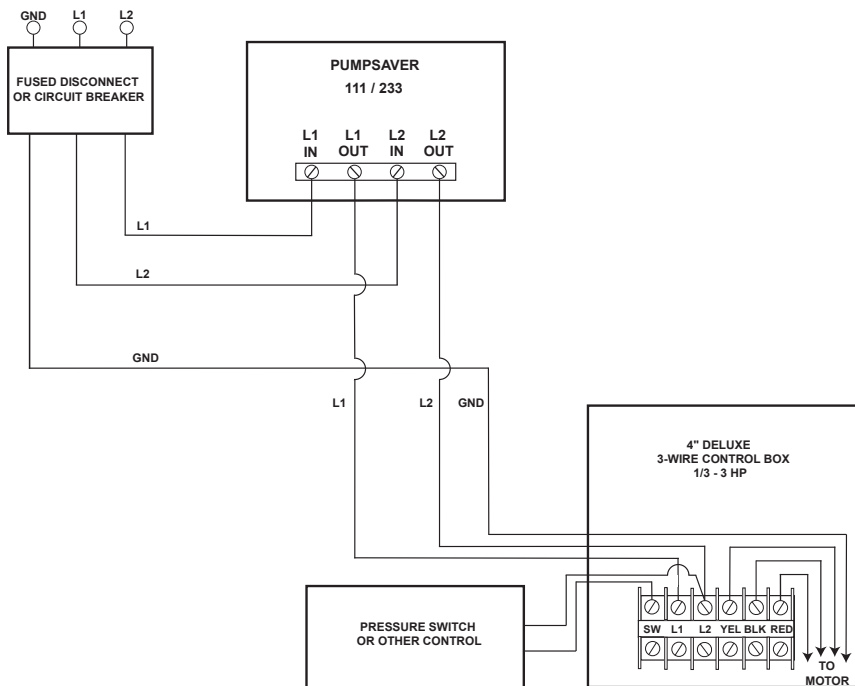
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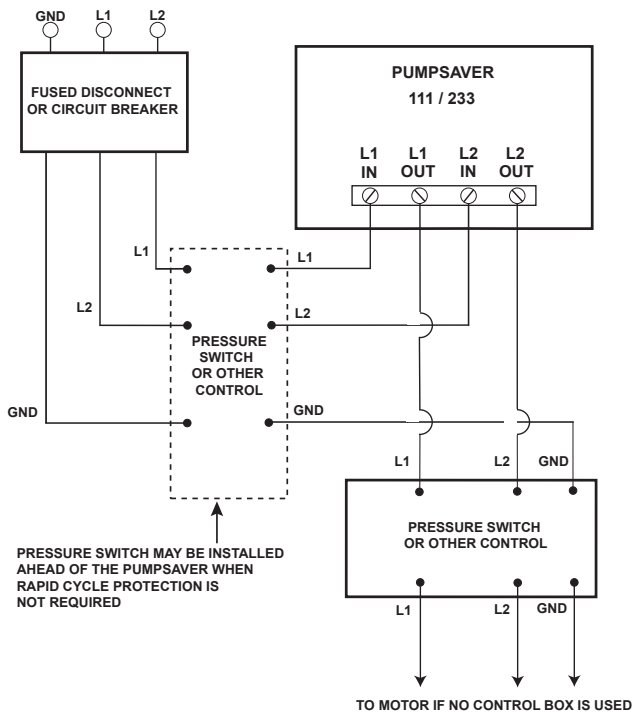
**Figure No. 1: Typical Wiring Diagram for Models 111 and 233**



**Figure No. 2: Standard Control Box**



**Figure No. 3: Deluxe Control Box**



**Figure No. 4: 2-Wire Pump Application**

## **CALIBRATION / SETTINGS**

**Note:** The PumpSaver® should be calibrated during normal pumping conditions.

1. Turn the RESTART DELAY / CALIBRATION adjustment fully counter-clockwise to the “CAL.” position.
2. Apply power to the PumpSaver®. The pump motor should be running at this point.
3. When the CAL. LIGHT turns on (approximately 5 seconds), the PumpSaver® is being calibrated. Within 10 seconds, proceed to step 4.
4. Set the RESTART DELAY / CALIBRATION adjustment to the desired Restart Delay (Dry Well Recovery Time). If you leave the RESTART DELAY / CALIBRATION adjustment in the “CAL.” position, the unit will trip off and stay off. Turn the adjustment out of the “CAL.” position to start the pump.

**Manual Reset Mode:** If the RESTART DELAY / CALIBRATION adjustment is set to “RESET”, the PumpSaver® is in Manual Reset mode. After the PumpSaver® shuts down due to a voltage or load problem, the RESTART DELAY / CALIBRATION adjustment must be rotated out of the “RESET” position to restart the pump.

**Note:** Any restart delay can be by-passed by rotating the RESTART DELAY / CALIBRATION adjustment to the “RESET” position and back to the desired Restart Delay setting.

**Rapid Cycling Protection:** Rapid cycling is defined as more than 4 restarts in a 60 second period. The PumpSaver® will lock-out upon detecting a rapid cycling condition until power is removed and re-applied to the L1 IN and L2 IN terminals. See the Diagnostics Table for instructions to diagnose a rapid cycling fault.

# CONGRATULATIONS!!

## YOU HAVE JUST INSTALLED THE FINEST PUMP PROTECTION AVAILABLE!!

### DIAGNOSTIC INDICATOR TABLE

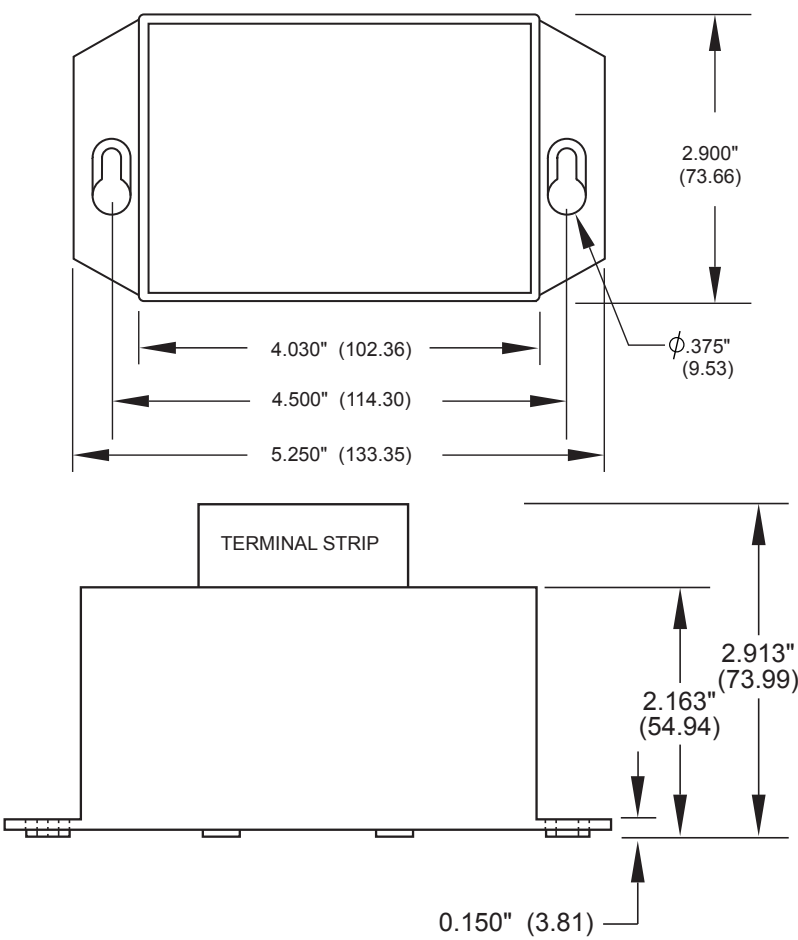
| RUN LIGHT                                | CAL. LIGHT                              | PROBLEM or FUNCTION                                                                                                                                                                                                                 | CORRECTIVE ACTION                                                                                                                                                                                                                                                  |
|------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| On Steady                                | Off                                     | <b>RUN:</b><br>Pump is running, no problems in operation.                                                                                                                                                                           | None                                                                                                                                                                                                                                                               |
| On Steady                                | On Steady                               | <b>CAL:</b><br>The PumpSaver® is in the calibration process.                                                                                                                                                                        | None                                                                                                                                                                                                                                                               |
| Off                                      | On Steady                               | <b>CAL COMPLETE:</b><br>The PumpSaver® is calibrated, RESTART DELAY / CALIBRATION pot was left in "CAL." position. Pump is off.                                                                                                     | Pump will restart as soon as the RESTART DELAY / CALIBRATION pot is rotated out of the "CAL." position.                                                                                                                                                            |
| Off                                      | Off                                     | <b>OFF / MANUAL RESTART:</b><br>The pump is not running. Either the PumpSaver has tripped on dry run, dead head, or overload while the RESTART DELAY / CALIBRATION pot was in the "RESET" position, or source power is not present. | If pot is in the "RESET" position, rotate out of that position. If the "CAL" light blinks, check for an overload condition. If the "RUN" light blinks, look for a dry run or dead head condition. If no lights come on, check incoming power for adequate voltage. |
| Blinking                                 | Off                                     | <b>DRY RUN / DEAD HEAD:</b><br>The PumpSaver® has shut the pump off due to a dry run or dead head condition. The unit is timing through the restart delay and will try to restart.                                                  | Check for restricted flow or inadequate supply of liquid.                                                                                                                                                                                                          |
| Off                                      | Blinking                                | <b>OVERLOAD:</b><br>The PumpSaver® has shut the pump off due to an overload condition. The unit is timing through the restart delay and will try to restart if line voltage is at an acceptable level.                              | Check for low or high voltage or jammed pump impellers. If these condition do not exist, recalibrate the unit while it is drawing higher amps (Amps should not exceed SFA).                                                                                        |
| Blinking alternately with the CAL. Light | Blinking alternately with the RUN Light | <b>VOLTAGE FAULT:</b><br>The PumpSaver® is preventing the pump from starting due to voltage problems. The voltage is being interrogated and the unit will remain in this mode until the voltage is at an acceptable level.          | If the unit remains in this state for more than 5 seconds, check for high or low voltage.                                                                                                                                                                          |
| Blinking in unison with the CAL. Light   | Blinking in unison with the RUN Light   | <b>RAPID CYCLE:</b><br>The PumpSaver has shut down on rapid cycling. Power must be removed and reapplied to reset the unit.                                                                                                         | Check for broken bladder on the pressure tank (if used), or check for defective pressure or float switch.                                                                                                                                                          |

## **SPECIFICATIONS**

|                                                                | Model 111                                        | Model 233                      |
|----------------------------------------------------------------|--------------------------------------------------|--------------------------------|
| 1-Phase Line Voltage                                           | 115 VAC                                          | 230 VAC                        |
| Load Range                                                     | 1/3 to 1 hp                                      | 1/3 to 3 hp                    |
| Frequency                                                      | 50 or 60 Hz                                      |                                |
| Note: 50 Hz will increase all delay timers by 20%              |                                                  |                                |
| Operating Points                                               |                                                  |                                |
| Overload                                                       | 125% of Calibration Point                        |                                |
| Underload (Dry Well) <sup>1</sup>                              | Aproximately 80% of Calibration Point            |                                |
| Over Voltage Trip Point                                        | 132.5 VAC                                        | 265 VAC                        |
| Under Voltage Trip Point                                       | 95 VAC                                           | 190 VAC                        |
| Number of Restarts Allowed in a 60 Second Period (Rapid Cycle) | 4                                                |                                |
| Trip Delay Time (Overload)                                     | 5 Seconds                                        |                                |
| Trip Delay Time (Dry Well)                                     | 2 Seconds                                        |                                |
| Restart Delay Time                                             |                                                  |                                |
| Over / Under Voltage                                           | 5 Seconds                                        |                                |
| All Other Faults                                               | Manual, 2-225 Minutes                            |                                |
| Output Contact Rating - SPST                                   | 1 hp, 120 VAC<br>(17 AMPS MAX)                   | 3 hp, 240 VAC<br>(17 AMPS MAX) |
| Electrostatic Discharge (ESD)                                  | IEC 1000-4-2, Level 2,<br>4 kv Contact, 6 kv Air |                                |
| Power Consumption                                              | 5 Watts (maximum)                                |                                |
| Weight                                                         |                                                  |                                |
| PumpSaver®                                                     | 14 Ounces                                        |                                |
| PumpSaver® with 3R Enclosure                                   | 1.6 Pounds                                       |                                |
| Terminal                                                       |                                                  |                                |
| Wire AWG                                                       | 12-22 Gauge                                      |                                |
| Maximum Torque                                                 | 7 inch-pounds                                    |                                |
| Operating Temperature                                          | -40° to +70° C                                   |                                |
| CSA                                                            | LR 46510-12                                      |                                |

<sup>1</sup>High Sensitivity Mode increases Dry Well Trip to approximately 87% of Calibrated Amperage. Call Factory at (800) 843-8848 or (605) 348-5580 for details.

**DIMENSIONS**



**Any questions or comments call SymCom at 1-800-843-8848 or 1-605-348-5580**

SymCom warrants its microcontroller based products against defects in material or workmanship for a period of five (5) years\* from the date of manufacture. All other products manufactured by SymCom shall be warranted against defects in material and workmanship for a period of two (2) years from the date of manufacture. For complete information on warranty, liability, terms, and conditions, please refer to the SymCom Terms and Conditions of Sale document.

\* The 520 Series has a one (1) year warranty and the LSRU series has a two (2) year warranty.

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