



A Family and Employee Owned Company

Installation Manual

8338000F

PDC Duplex Controller

Designed for use with Liberty Pumps ProVore® 1 hp residential grinder pumps and select sewage pumps

Indoor Models

PDC-115

115 Volt

PDC-230

230 Volt

Outdoor Models

PDCW-115

115 Volt

PDCW-230

230 Volt



NITW.E134903
NITW7.E134903



NOTICE

Installer: Manual must remain with owner/operator.

Record information:

7000 Apple Tree Avenue
Bergen, NY 14416
ph: 1-800-543-2550
fax: 1-585-494-1839
www.LibertyPumps.com

Keep this manual handy for future reference.
For replacement manual, visit LibertyPumps.com,
or contact Liberty Pumps.
Retain dated sales receipt for warranty.

Model: _____

Serial: _____

Date Code: _____

Install Date: _____

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Safety Guidelines

	This safety alert symbol is used in the manual and on the pump to alert of potential risk for serious injury or death.
	This safety alert symbol identifies risk of electric shock . It is accompanied with an instruction intended to minimize potential risk of electric shock.
	This safety alert symbol identifies risk of fire . It is accompanied with an instruction intended to minimize potential risk of fire.
	This safety alert symbol identifies risk of serious injury or death . It is accompanied with an instruction intended to minimize potential risk of injury or death.
	This safety alert symbol identifies battery hazards . It is accompanied with an instruction intended to minimize potential risk from the battery.
⚠ DANGER	Warns of hazards which if not avoided will result in serious injury or death.
⚠ WARNING	Warns of hazards which if not avoided could result in serious injury or death.
⚠ CAUTION	Warns of hazards which if not avoided could result in minor or moderate injury.
NOTICE	Signals an important instruction related to the pump. Failure to follow these instructions could result in pump failure or property damage.

⚠ WARNING	Read every supplied manual before using this product. Specifications are subject to change without notice. Follow all the safety instructions in manual(s) and on the pump. Failure to do so could result in serious injury or death.
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Safety Precautions

⚠ WARNING **RISK OF ELECTRIC SHOCK**

- Accidental contact with electrically live parts, items, fluid, or water can cause serious injury or death.

- Always disconnect pump(s) from power source(s) before handling or making any adjustments to either the pump(s), the pump system, or the control panel.
- All installation and maintenance of pumps, controls, protection devices, and general wiring shall be done by qualified personnel.
- All electrical and safety practices shall be in accordance with the National Electrical Code®, the Occupational Safety and Health Administration, or applicable local codes and ordinances.
- Pump shall be properly grounded using its supplied grounding conductor. Do not bypass grounding wires or remove ground prong from attachment plugs. Failure to properly ground the pump system can cause all metal portions of the pump and its surroundings to become energized.
- The electrical power supply shall be located within the length limitations of the pump power cord, and for below grade installations it shall be at least 4 ft (1.22 m) above floor level.
- Do not use this product in applications where human contact with the pumped fluid is common (such as swimming pools, fountains, marine areas, etc.).

⚠ WARNING **RISK OF FIRE**

- Do not use an extension cord to power the product. Extension cords can overload both the product and extension cord supply wires. Overloaded wires will get very hot and can catch on fire.
- This product requires a separate, properly fused and grounded branch circuit, sized for the voltage and amperage requirements of the pump, as noted on the nameplate. Overloaded branch circuit wires will get very hot and can catch on fire. When used, electrical outlets shall be simplex of the appropriate rating.

⚠ WARNING **RISK OF SERIOUS INJURY OR DEATH**

- Do not modify the pump/pump system in any way. Modifications may affect seals, change the electrical loading of the pump, or damage the pump and its components.
- All pump/pump system installations shall be in compliance with all applicable Federal, State, and Local codes and ordinances.
- Do not use this ordinary location product with flammable, explosive, or corrosive fluids. Do not use in a flammable and/or explosive atmosphere as serious injury or death could result.
- Energizing the control panel or breaker for the first time is potentially dangerous. Licensed electrical personnel should be present when the panel or breaker is energized for the first time. If faults caused by damage or poor installation practices have not been detected, serious damage, injury or death can result when power is applied.

Control Panel Design

The PDC-Series Pump Controller monitors the operation of two ProVore grinder pumps or sewage pumps. The system includes:

- a controller with user interface
- float switches mounted inside the basin

The P680 system includes two ProVore grinder pumps or two sewage pumps and two float switches.

The controller monitors the liquid level in the basin and alternates between the two grinder pumps each cycle to ensure that both pumps receive equal wear. If one pump fails, the system automatically switches to the other pump.

The LEDs and pushbuttons on the controller allow the operator to monitor and manage the system.

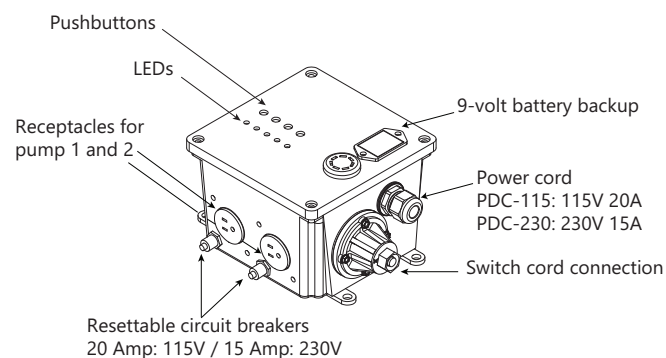
The system offers four controller models, and each requires a dedicated circuit of proper amperage:

- PDC-115: indoor model (115V/20A)
- PDC-230: indoor model (230V/15A)
- PDCW-115: outdoor or weatherized model (115V/20A)
- PDCW-230: outdoor or weatherized model (230V/15A)

The controller normally operates on primary power (115 VAC or 230 VAC), but if that power fails, an internal 9-volt battery acts as backup power to allow the controller to monitor liquid level and activate the alarm as necessary.

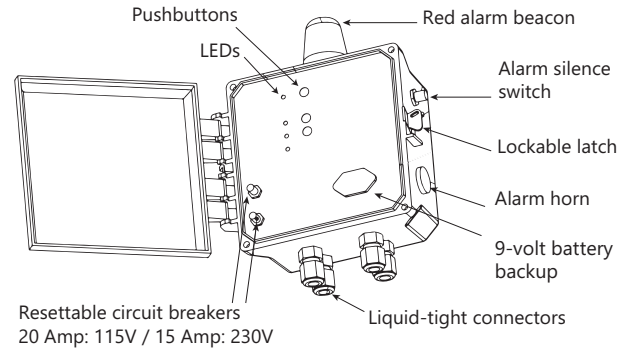
On backup power, the controller cannot run the pumps, but the operator can test the alarm circuits, change the horn status, and reset the pumps. **Pumps will only operate when primary power is supplied to the controller.** Since pumps do not operate while the controller is on backup power, the manual pump run feature will not be functional.

Indoor PDC Models

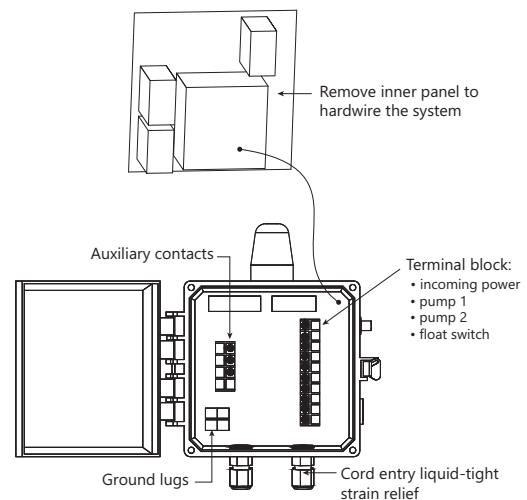


The two float switches are connected such that only three cords exit the cover. All three cords (two pump power cords and one control cord) must be plugged into the controller box.

Outdoor PDCW Models



Outdoor models require power and control cord hardwiring. To provide access to the terminal blocks inside the PDC enclosure, remove the inner panel. Next, cut off the pump plugs and strip the wires. And finally, feed the cords, along with the incoming power, through the liquid-tight strain relief bushings and wire into the terminal block mounted in the PDC enclosure. A wiring schematic is attached next to the terminal block on the controller. The PDC enclosure has a secondary terminal block for auxiliary contacts.



Primary Power

General Operation (115 VAC and 230 VAC)

The PDC enclosure controls the operation of two ProVore grinder pumps in a pump-down application. Two floats are mounted to the QuickTree®: a primary pump control float switch and an alarm float switch. The LEDs on the controller show operating conditions such as High Water Alarm status, Pump Run status, Horn status (indoor model), and incoming Power status.

The operator can manually run the pumps, test the alarm, enable or disable the horn of any indoor model, or reset the system using the pushbuttons. Each pump is protected by manual resettable circuit breakers to help the operator isolate a failed pump.

When the incoming water activates the primary pump float switch, the controller will energize one of the pumps. Normally the water level in the sump will recede as the pump operates and the pump will turn OFF when the primary pump float switch drops to the OFF position. On the next pumping cycle, the controller will activate the next pump in sequence from the one that ran previously, providing a pumping redundancy for the system. The controller will continue to alternate pumps on each cycle.

Controller Indicators

The horn, LEDs, and red alarm beacon found on the outdoor models can show various conditions of the controller. Each controller indicator is described in Table 1.

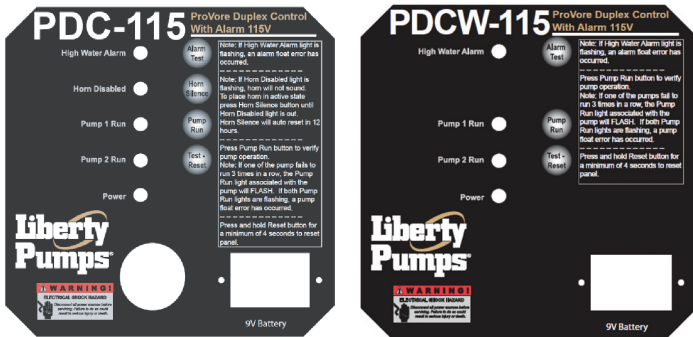


Figure 1. Indoor and Outdoor Panels

Table 1. Controller Indicators

Controller Indicator	State	Description
High Water Alarm LED	OFF	No alarm condition.
	ON Steady	An alarm condition is present.
	Flashing*	Alarm float switch is not working properly. It may be mechanically stuck in a Closed position or tangled in a closed condition.

Table 1. Controller Indicators (continued)

Controller Indicator	State	Description
Horn Disabled LED (indoor models only)	Flashing*	Horn operation is disabled. The horn will not sound in an alarm condition.
	OFF	Horn operation is enabled. The horn will sound in an alarm condition.
Alarm Beacon (outdoor models only)	ON Steady	An alarm condition is present.
Pump 1 Run LED	OFF	Pump is not being called to run.
	ON Steady	Pump is being called to run.
	Flashing*	Pump failed to operate due to tripped fuse, jammed impeller, unplugged pump, short circuit, or other condition.
Pump 2 Run LED	OFF	Pump is not being called to run.
	ON Steady	Pump is being called to run.
	Flashing*	Pump failed to operate due to tripped fuse, jammed impeller, unplugged pump, short circuit, or other condition.
Pump 1 Run and Pump 2 Run LED	Flashing*	Primary float switch is not working properly. It may be mechanically stuck in a Closed position or tangled in a closed condition.
Power LED	OFF	No AC power due to a tripped main breaker, power outage, or dead battery.
	ON Steady	Primary power to the panel is ON.
	Flashing*	Primary power to the panel is OFF; the panel is on alarm backup power. Pumps will NOT run.
Alarm Horn	OFF	No alarm condition and the alarm backup battery is in good condition.
	ON	An alarm condition is present.
	Chirping	The voltage of the alarm backup battery is low. The operator must replace the battery.

Note: *A flashing LED indicates a component has failed or is disabled.

Operator Controls

The operator can manually run the pumps, test the alarm, enable or disable the horn of any indoor model, or reset the system using the pushbuttons.

Each pump is protected by manual resettable circuit breakers. Fuses are located on the side panel for the indoor models and inside the cover for the outdoor models.

Table 2. Operator Controls

Control Pushbutton	Existing Condition	Result When Pressed
Alarm Test	—	Alarm Horn LED, auxiliary relay, and horn (if enabled) turn ON. These conditions will remain active until the operator releases the pushbutton.
Horn Silence (indoor models only)	Horn Disabled LED flashing	Horn Disabled LED will turn OFF and the horn will be enabled.
	Horn Disabled LED OFF	Horn Disabled LED will start flashing and the horn will be disabled for 12 hours. After 12 hours, the LED will automatically turn OFF and the horn will then be enabled.
Pump Run	A pump is running	The pump that is running will be turned OFF. The next pump in sequence will be turned ON and will remain ON as long as the operator holds the pushbutton. When the operator releases the pushbutton, that pump will turn OFF if the condition calling for a pump to run is no longer present.
	Neither pump is running	The next pump in sequence will be turned ON and will remain ON until the operator releases the pushbutton.
Test - Reset	High Water Alarm, Pump 1 Run and/or Pump 2 Run LEDs are flashing	The system will reset and LEDs will stop flashing.
Alarm Silence Switch on unit exterior (outdoor models only)	Alarm is sounding	Alarm is silenced.
Fuse	Blown fuse.	Reset fuse.

Alarm Operation

If water fills the tank faster than it can be pumped out, or if a pump fails to operate, the level can reach an alarm point by activating the alarm float switch. If the alarm float remains closed (up position) for 6 hours but the primary float switch is open (down position), the High Water Alarm LED will flash and the pump will turn OFF. This feature prevents the pump from running indefinitely.

Active Alarm Condition

The following occurs when an alarm condition activates:

1. The pump that is (or should be) running is turned OFF and the next pump in sequence is turned ON.
2. If the alarm float remains closed (float switch in up position) for 4 seconds, the High Water Alarm LED will illuminate steadily.
3. The auxiliary relay will activate, closing its normally open contacts and opening its normally closed contacts.
4. If the horn is enabled (the Horn Disabled LED is not flashing), the horn will sound.

Post Alarm Condition

An alarm condition will remain active until the liquid level drops below the pump float switch. When this occurs, the following will take place:

1. The running pump will turn OFF.
2. The High Water Alarm LED will turn OFF.
3. The auxiliary relay will deactivate.
4. If the horn is ON, it will turn OFF.

Pumping Alarm Condition

The controller monitors a **pumping alarm condition** when a pump is called to run and the liquid level continues to rise and goes above the alarm float switch. If a pumping alarm condition occurs three or more of the last five times a pump is called to run, the Pump 1 Run or Pump 2 Run LED will flash indicating that the operator must check the PDC-Series system components. Any of the following conditions may cause a pumping alarm condition:

1. A pump fails to operate.
2. The alarm float switch stays (mechanically stuck) in the closed (ON or up) position.
3. There is a problem (blocked or leak) in the outflow plumbing.
4. The water inflow rate is greater than the pump out rate.
5. The primary float switch stays (mechanically stuck) in the open (OFF or down) position.

A flashing LED indicates a component has failed and service is required. To help the service technician troubleshoot the issue, they can look at the controller to determine which component has failed. Refer to Table 1.

Battery Backup Power

General Operation

On battery backup power, the controller is limited to alarm and horn status indicators. The controller cannot run the pumps. Pumps will only operate when primary power (115 VAC or 230 VAC) is supplied to the controller.

The alarm float switch mounted in the tank monitors the liquid level to indicate when an alarm level is reached. The pump float switch is not used when the panel is on battery backup power since pumps cannot operate.

Panel indicators show operating conditions of High Water Alarm and Horn status. Operator pushbutton controls are available to disable the alarm horn and reset the system.

When the liquid level drops below the alarm float, the float switch will open, removing the alarm condition; likewise when the liquid level rises above the alarm float, the float switch will close and an alarm condition will be indicated.

Alarm Operation

As water fills the tank and the liquid level rises above the alarm float, the float switch will be ON and an alarm condition is activated. The following occurs when an alarm condition activates:

1. The High Water Alarm LED will flash.
2. The auxiliary relay will activate once for one minute, closing its normally open contacts and opening its normally closed contacts, and then it will deactivate.
3. If the horn is enabled (the Horn Disabled LED not flashing), the horn will sound.

Panel Indicators

The horn and LEDs are used to show various conditions in the controller. Each indicator is described in Table 3. On backup power, no LEDs will illuminate steadily.

Table 3. Backup Power Indications

Indicator	State	Description
High Water Alarm LED	OFF	There is no alarm condition.
	Flashing	An alarm condition is active.
Horn Disabled LED (indoor models only)	OFF	Horn operation is enabled. The horn will beep in an alarm condition.
	Flashing	Horn operation is disabled.
Pump 1 Run LED	OFF	The Pump 1 LED will always be OFF when on alarm backup power.
Pump 2 Run LED	OFF	The Pump 2 LED will always be OFF when on alarm backup power.
Power LED	OFF	Power is off to the panel and the backup alarm battery is dead.
	Flashing	Primary power to the panel is OFF; the panel is on alarm backup power. Pumps will not run.
Alarm Horn	OFF	No alarm condition is present.
	Beeping	An alarm condition is present.

Operator Controls

The operator can silence the horn alarm, test the alarm circuits, and reset the panel using the pushbuttons.

Table 4. Backup Power Operator Controls

Control Pushbutton	Existing Condition	Action When Pressed
Alarm Test	—	Horn, alarm indicator, and auxiliary relay will turn ON. They will remain in that state until the operator releases pushbutton.
Horn Silence (indoor models)	Horn Disabled LED is flashing	Horn Disabled LED will stop flashing and the horn will be enabled.
	Horn Disabled LED is OFF	Horn Disabled LED will start flashing and the horn will be disabled for 12 hours. After 12 hours, the LED will turn OFF automatically and the horn will then be enabled.
Pump Run	—	Not available on battery power.
Test - Reset	—	The system will reset and LEDs will stop flashing.
Alarm Silence Switch on unit exterior (outdoor models only)	Alarm is sounding	Alarm is silenced.

Warranty

Liberty Pumps Wholesale/Commercial Series Products Limited Warranty

Liberty Pumps, Inc. warrants that Liberty Pumps wholesale products are free from all factory defects in material and workmanship for a period of three (3) years from the date of purchase (excluding batteries* and **Commercial Series**** models). The date of purchase shall be determined by a dated sales receipt noting the model and serial number of the pump. The dated sales receipt must accompany the returned pump if the date of return is more than three years from the date of manufacture noted on the pump nameplate.

The manufacturer's sole obligation under this Warranty shall be limited to the repair or replacement of any parts found by the manufacturer to be defective, provided the part or assembly is returned freight prepaid to the manufacturer or its authorized service center, and provided that none of the following warranty-voiding characteristics are evident:

The manufacturer shall not be liable under this Warranty if the product has not been properly installed, operated, or maintained per manufacturer instructions; if it has been disassembled, modified, abused, or tampered with; if the electrical cord has been cut, damaged, or spliced; if the pump discharge has been reduced in size; if the pump has been used in water temperatures above the advertised rating; if the pump has been used in water containing sand, lime, cement, gravel, or other abrasives; if the product has been used to pump chemicals, grease, or hydrocarbons; if a non-submersible motor has been subjected to moisture; or if the label bearing the model and serial number has been removed.

Liberty Pumps, Inc. shall not be liable for any loss, damage or expenses resulting from installation or use of its products, or for consequential damages, including field labor costs, travel expenses, rental equipment, costs of removal, reinstallation or transportation to and from the factory or an authorized Liberty Pumps repair facility.

There is no other express warranty. All implied warranties, including those of merchantability and fitness for a particular purpose, are limited to three years from the date of purchase. This Warranty contains the exclusive remedy of the purchaser, and, where permitted, liability for consequential or incidental damages under any and all warranties are excluded.

*Liberty Pumps, Inc. warrants StormCell® batteries for 1 year from date of purchase.

Liberty Pumps, Inc. warrants that pumps of its **Commercial Series are free from all factory defects in material and workmanship for a period of 18 months from the date of installation or 24 months from the date of manufacture, whichever occurs first, and provided that such products are used in compliance with their intended applications as set forth in the **Commercial Series** technical specifications and manuals. The date of installation shall be determined by a completed pump start-up report and warranty registration form. A pump start-up report, filled out by a qualified installer, is required for warranty to take effect. The report must be submitted within 30 days from the installation date and submitted through the Liberty Pumps website.

www.libertypumps.com/wp/dom/Services/Warranty/Commercial-Series-Startup-Form