

Installation Manual

8338000E

ProVore® Duplex Control

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

Indoor Models

PDC-115

115 Volt

PDC-230

230 Volt

Outdoor Models

PDCW-115

115 Volt

PDCW-230








230 Volt





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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.
	Warns of hazards which, if not avoided, will result in serious injury or death.
	Warns of hazards which, if not avoided, could result in serious injury or death.
	Warns of hazards which, if not avoided, could result in minor or moderate injury.

	Read every supplied manual before using pump system. Follow all the safety instructions in manual(s) and on the pump. Failure to do so could result in serious injury or death.
	Installer: manual must remain with owner or system operator/maintainer.
Record information from pump nameplate:	
Keep this manual handy for future reference.	Model #: _____
For replacement manual, visit LibertyPumps.com, or contact Liberty Pumps at 800-543-2550.	Serial #: _____
Retain dated sales receipt for warranty.	Manufacture Date: _____
	Install Date: _____

Safety Precautions

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.).

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.

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 product with flammable, explosive, or corrosive fluids. Do not use in a flammable and/or explosive atmosphere as serious injury or death could result.

Control Panel Design

The ProVore® Duplex Control system (PDC-Series) monitors the operation of two ProVore grinder pumps. The control system comes in two parts: the controller with user interface and the float switches mounted inside the basin. The P680 system includes two ProVore pumps and two float switches.

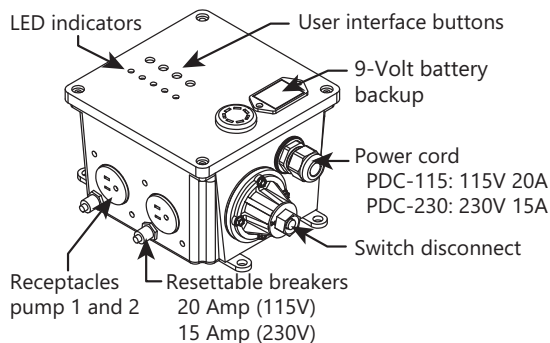
The control panel monitors the liquid level in the basin and alternates the two grinder pumps each cycle such that both pumps receive equal wear. In the event one pump should fail, the system automatically switches to the other pump.

LEDs and pushbuttons allow the operator to monitor and control the system. Controllers require a dedicated circuit of proper amperage. The PDC(W)-115 requires 115V/20A dedicated service, while the PDC(W)-230 requires 230V/15A dedicated service.

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

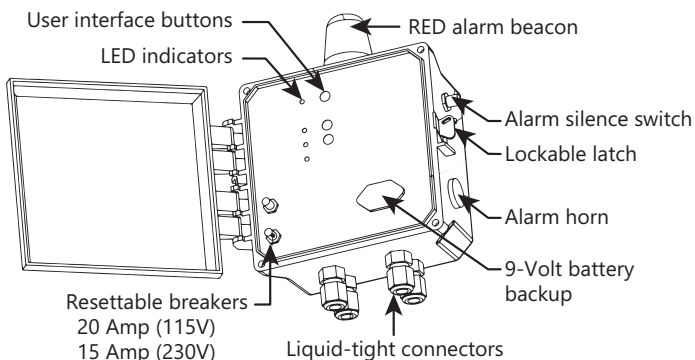
On backup power (9-volt battery), the controller **cannot** run the pumps. **Pumps will only operate when primary power is supplied to the control panel.** The operator can test the alarm circuits, change the horn status. Since pumps do not operate while the controller is on backup power, the manual pump run feature will not be functional.

Indoor PDC Models

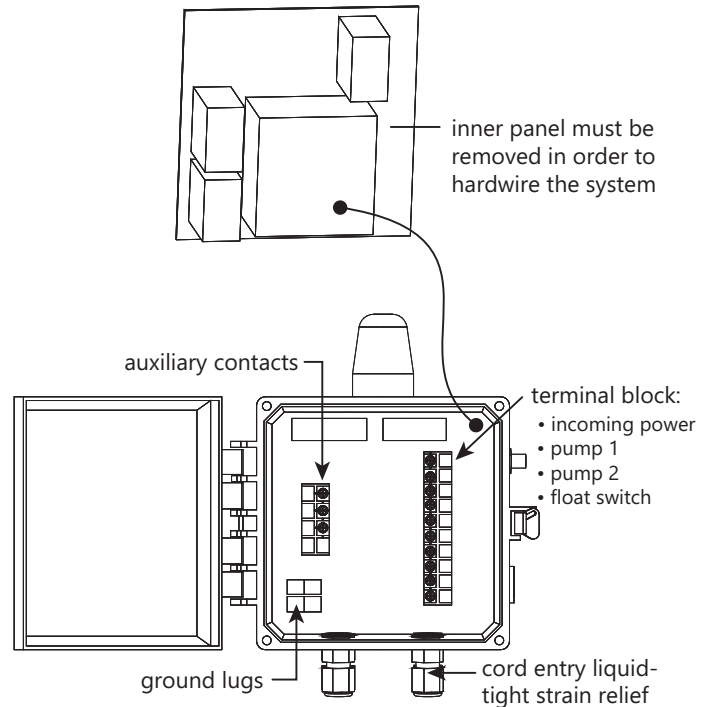


The two float switches are connected such that only three cords exit the cover. All three cords (two pump power cords and one control cord) must be plugged into the controller box.

Outdoor PDCW Models



Outdoor models require power and control cord hardwiring. The inner panel must be removed to provide access to the terminal blocks inside the panel. The pump and switch plugs must be cut off and wires stripped. 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 panel. A wiring schematic is provided next to the terminal block. The panel has a secondary terminal block for auxiliary contacts as required.



Primary Power

General Operation (115 VAC and 230 VAC)

The PDC panel controls the operation of two ProVore grinder pumps in a pump-down application. Two floats are mounted to the quick tree: a primary pump control float switch and an alarm float switch. On the controller are indicators that show operating conditions: **High Water Alarm** status, **Pump Run** status, **Horn** status (indoor model), and incoming **Power** status. Operator pushbutton controls are available to manually run the pumps, test the alarm, enable or disable the horn (indoor model), as well as reset the system. Both pumps are individually protected with a manual resettable fuse to 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. Upon 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, LED indicators, and Alarm Beacon (outdoor models) are used to show various conditions of the controller. Each indicator is described in Table 1. *A flashing LED indicates a component has failed or is disabled.

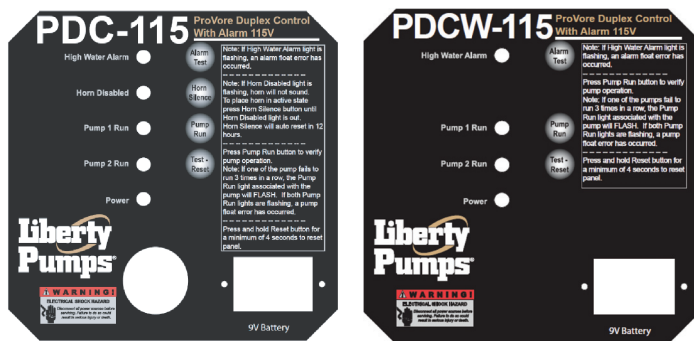


Figure 1. Indoor and Outdoor Panels

Table 1. Indicators

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, may be mechanically stuck closed or tangled in a closed condition.
Horn Disabled LED (indoor models)	Flashing*	Horn operation is Disabled. The horn will <u>not</u> sound in an alarm condition.
	OFF	Horn operation is Enabled. The horn <u>will</u> sound in an alarm condition.
Alarm Beacon (outdoor models)	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; fuse tripped, jammed impeller, unplugged, short circuit, etc.
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; fuse tripped, jammed impeller, unplugged, short circuit, etc.
Pump 1 Run and Pump 2 Run LED	Flashing*	Primary float switch is not working properly, may be mechanically stuck closed or tangled in an open condition.

Table 1. Indicators (continued)

Indicator	State	Description
Power LED	OFF	No AC power, main breaker has tripped, or power outage and battery is dead.
	ON Steady	Primary power to the panel is ON.
Alarm Horn	Flashing*	Primary power to the panel is OFF; the panel is on alarm backup power. Pumps will NOT run.
	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 and the battery should be replaced.

Operator Controls

The operator has access to controls to silence the horn alarm, test the alarm circuits, manually run the pumps, and reset the panel.

Each pump is protected by a manual resettable fuse. 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	Action When Pressed
Alarm Test	—	Alarm indicator, auxiliary relay, and horn (if enabled) turn ON. These actions remain until the button is released.
Horn Silence (indoor models)	Horn Disabled LED flashing	Horn Disabled indicator will turn OFF and the horn be Enabled.
	Horn Disabled LED OFF	Horn Disabled indicator will start flashing and the horn will be Disabled for 12 hours. After 12 hours, the indicator 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. That pump will remain ON as long as the pushbutton is held. When the pushbutton is released, 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 button is released.

Table 2. Operator Controls (continued)

Control Pushbutton	Existing Condition	Action When Pressed
Test - Reset	High Water Alarm, Pump 1 Run and/or Pump 2 Run LEDs are flashing	When pushbutton is depressed, the system will reset and LEDs will stop flashing.
Alarm Silence Switch on unit exterior (outdoor models)	Alarm is sounding	Alarm is silenced.
Fuse	Blown fuse.	Reset fuse.

Alarm Operation

In the event 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 is turned 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 sec., the **High Water Alarm** LED will illuminate steady.
3. The auxiliary relay will activate, closing its normally open contacts and opening its normally closed contacts.
4. If the horn is enabled (i.e., **Horn Disabled** LED 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. The horn (if ON) will turn OFF.

Pumping Alarm Condition

The controller monitors a “pumping alarm condition” where 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 LED will flash indicating system components should be checked. Any of the following conditions could 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 assist the service technician, the controller will indicate 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 control panel.

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, then will deactivate.
3. If the horn is enabled (i.e., **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. Note that on backup power, no LEDs will be illuminated steady.

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)	OFF	Horn operation is Enabled. The horn <u>will</u> beep in an alarm condition.
	Flashing	Horn operation is Disabled.
Pump 1 Run LED	OFF	The Pump 1 indicator will always be OFF when on alarm backup power.
Pump 2 Run LED	OFF	The Pump 2 indicator 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 <u>will not</u> run.
Alarm Horn	OFF	No alarm condition is present.
	Beeping	An alarm condition is present.

Operator Controls

The operator has access to controls to silence the horn alarm, test the alarm circuits, and reset the panel.

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 button is released.
Horn Silence (indoor models)	Horn Disabled indicator is flashing	Horn Disabled indicator will stop flashing and the horn will be enabled.
	Horn Disabled indicator is OFF	Horn Disabled LED will start flashing and the horn will be disabled for 12 hours. After 12 hours, the indicator will turn off automatically and the horn will then be enabled.
Pump Run	—	Not available on battery power.
Test - Reset	—	Resets the system; all LEDs will stop flashing.
Alarm Silence Switch on unit exterior (outdoor models)	Alarm is sounding	Alarm is silenced.

Warranty

Liberty Pumps Wholesale 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). 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 indirect, incidental, and consequential damages, including costs of removal, reinstallation or transportation.

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.