PENTAIR HYD838 Battery Backup System Owner's Manual

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PENTAIR HYD838 Battery Backup System

Product Information

Battery Backup System

The Battery Backup Syste (Model FG-100A-1) is a device designed to provide backup sump pump duty in residential applications. It is not intended to be used as a primary sump pump. The system comes with a battery charger and a battery box. The pump is permanently lubricated at the factory and does not require additional lubrication. The maximum vertical pumping distance for this model is 16 feet (4.9M).

Safety Instructions

It is important to follow the safety instructions carefully to avoid the risk of serious bodily injury due to electrical shock or burns and property damage due to flooding.

- **Risk of Electrical Shock:** Do not plug in or unplug the battery charger while standing on a wet floor or in water. Be sure one hand is free when plugging in or unplugging the charger. If the basement floor is wet, disconnect the power to the basement before walking on the floor.
- **Battery Acid:** Battery acid is corrosive. Do not spill on skin, clothing, or battery charger. Wear eye and head protection when working with the battery. Connect and disconnect DC output terminals only after removing the charger from the AC outlet. Never allow the DC terminals to touch each other.
- **Risk of Flooding:** Do not run the pump dry. To do so will damage seals and can cause leaking and property damage.
- **Local Codes:** Follow local and/or national plumbing and electrical codes when installing the system. A ground fault circuit interrupter (GFCI) is recommended for use on any electrical appliance submerged in water.
- **Pump Usage:** Pump clear water only with this pump. Debris can damage the pump which can result in flooding.
- **Lifting the Pump:** Do not lift the pump by the electrical cord; lift pump only by the discharge pipe, lifting ring or handle on the pump. Lifting by the cord can damage the cord.
- **Battery Charger and Box:** Keep battery charger and battery box off of the floor and in a dry, cool, well-ventilated area. If a Carbon Monoxide (CO) sensor is installed, it must be at least 15 feet away from the battery charger in order to avoid nuisance CO alarms. Please refer to your CO detector’s installation guidelines for

more information.

- **Fire and Explosion:** To avoid danger of fire or explosion, keep sparks and flame (pilot light) away from battery.

Installation Instructions

For further operating, installation, or maintenance assistance, call 1-888-957-8677. Follow the below instructions to install and operate the Battery Backup System:

1. Read and follow the safety instructions carefully before installing the pump.
2. Follow local and/or national plumbing and electrical codes when installing the system. A ground fault circuit interrupter (GFCI) is recommended for use on any electrical appliance submerged in water.
3. Keep battery charger and battery box off of the floor and in a dry, cool, well-ventilated area. If a Carbon Monoxide (CO) sensor
   is installed, it must be at least 15 feet away from the battery charger in order to avoid nuisance CO alarms. Please refer to your CO detector's installation guidelines for more information.
4. Make sure the sump is clear of debris. Debris can damage the pump which can result in flooding.
5. Connect and disconnect DC output terminals only after removing the charger from the AC outlet. Never allow the DC terminals to touch each other.
6. Do not lift the pump by the electrical cord; lift pump only by the discharge pipe, lifting ring, or handle on the pump. Lifting by the cord can damage the cord.
7. Pump clear water only with this pump.
8. To avoid risk of serious bodily injury due to electrical shock or burns and property damage due to flooding, do not run the pump dry. To do so will damage seals and can cause leaking and property damage.
9. The maximum vertical pumping distance for this model is 16 feet (4.9M).

For further operating, installation, or maintenance assistance:
Call 1-888-957-8677

Safety

READ AND FOLLOW
SAFETY INSTRUCTIONS!
This is the safety alert symbol. When you see this symbol on your pump or in this manual, look for one of the following signal words and be alert to the potential for personal injury!
DANGER
warns about hazards that will cause serious personal injury, death or major property damage if ignored.

WARNING
warns about hazards that can cause serious personal injury, death or major property damage if ignored.

CAUTION
warns about hazards that will or can cause minor personal injury or property damage if ignored. The word NOTICE indicates special instructions which are important but not related to hazards.

1. To avoid risk of serious bodily injury due to electrical shock or burns and property damage due to flooding, read the safety instructions carefully before installing pump.
   - Battery acid is corrosive. Do not spill on skin, clothing, or battery charger. Wear eye and head protection

when working with battery. Connect and disconnect DC output terminals only after removing the charger from the AC outlet. Never allow the DC terminals to touch each other.

- Hazardous Voltage. Can cause severe or fatal electrical shock. Do not plug in or unplug battery charger while standing on a wet floor or in water. Be sure one hand is free when plugging in or unplugging charger. If basement floor is wet, disconnect power to basement before walking on floor.
- Risk of flooding. Do not run pump dry. To do so will damage seals and can cause leaking and property damage.

2. Follow local and/or national plumbing and electrical codes when installing the system. A ground fault circuit interrupter (GFCI) is recommended for use on any electrical appliance submerged in water.
3. Use this system only for backup sump pump duty in a residential application. It is not designed as a primary sump pump.
4. Do not lift pump by electrical cord.
   Risk of electrical shock. Do not lift the pump by the electrical cord; lift pump only by the discharge pipe, lifting ring or handle on the pump. Lifting by the cord can damage the cord.
5. Pump clear water only with this pump.
6. Pump is permanently lubricated at the factory. Do not try to lubricate it!
7. Keep battery charger and battery box off of the floor and in a dry, cool, well ventilated area.
   NOTICE: If a Carbon Monoxide (CO) sensor is installed, it must be at least 15 feet away from battery charger in order to avoid nuisance CO alarms. Please refer to your CO detector's installation guidelines for more information.
8. To avoid danger of fire or explosion, keep sparks and flame (pilot light) away from battery.
9. Maximum vertical pumping distance is 16 feet (4.9M) for Model FG100-A1.
10. Make sure sump is clear of debris. Debris can damage the pump which can result in flooding.

California Proposition 65 Warning
This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

GENERAL INFORMATION

- The battery back-up sump system is not a sub stitute for your primary sump pump. It is designed to temporarily back up your primary sump pump during a power outage or other problem which prevents normal operation of the primary pump. Do not use this system to pump flammable liquids or chemicals. Pump clear water only with this pump.
- Keep the battery charger dry and protected from damage.
- This system is designed to work with a deep cycle marine battery, either a flooded lead-acid battery or a sealed maintenance free lead-acid AGM battery. In an emergency (such as an extended power outage) which depletes the system deep cycle battery, your automobile battery may be temporarily substituted. Be sure to replace the system deep cycle battery as soon as possible. Use of an automobile battery instead of a deep cycle battery in this system will significantly reduce the system's total performance. Automobile batteries are not designed for this type of application and will be quickly ruined by the repeated charge/discharge cycling. NOTICE: This system is not designed for applications involving salt water or brine! Use with salt water or brine will void warranty.

Installation

BATTERY BACKUP SYSTEM (BBU) INSTALLATION AND OPERATION
NOTICE:

- Install this system during a time when the primary pump will not be needed. Gather all supplies before starting. Read all warnings and installation steps before you start.
- Be prepared for water to leak from the coupling or piping when disassembling or cutting the discharge pipe. Protect system components, tools and supplies from getting wet. Dry any work areas that get wet.

BASIC TOOLS AND MATERIALS NEEDED
Channel locks or large pliers Tape measure
Socket wrench or 5/16” Nut driver Side cutters

- Hacksaw (to cut PVC pipe)
- Medium size pliers
- Pencil
- PTFE pipe thread sealant tape
- PVC glue (solvent weld)
- PVC pipe cleaner
- Cloth towel
- 100-120 Ampere-Hour Marine Deep Cycle Battery (sold separately)

Required Battery Capacity:
Single Battery: 120 ampere-hour maximum.
Double Batteries: 100 ampere-hours per battery (200 ampere-hours total)

WARNING
Personal injury and flood hazard. Do not turn the pump on until all the fittings are glued and the glue has dried. Loose fittings can explode off of pipes and cause personal injury and flooding

Limited Warranty

HYDROSTATIC warrants to the original consumer purchaser (“Purchaser” or “You”) of HYDROMATIC Sump Pumps, Effluent Pumps, Sewage Pumps (other than 2-1/2”), and Package Systems, that they will be free from defects in material and workmanship for the Warranty Period of 36 months from date of manufacture. Our warranty will not apply to any product that, in our sole judgement, has been subject to negligence, misapplication, improper installation, or improper maintenance. Without limiting the foregoing, operating a three phase motor with single phase power through a phase converter will void the warranty. Note also that three phase motors must be protected by three-leg, ambient compensated, extra-quick trip overload relays of the recommended size or the warranty is void. Your only remedy, and HYDROMATIC’s only duty, is that HYDROMATIC repair or replace defective products (at HYDROMATIC’s choice). You must pay all labor and shipping charges associated with this warranty and must request warranty service through the installing dealer as soon as a problem is discovered. No request for service will be accepted if received after the Warranty Period has expired. This warranty is not transferable.

EXCEPTIONS: Hydromatic Special Application Pumps, Battery Back-Up Sump Pumps, Filtered Effluent Pumps, Grinder Pumps, and 2-1/2” Sewage Pumps are warranted for a period of 12 months from date of purchase or 18 months from date of manufacture, whichever comes first.
HYDROMATIC SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR CONTINGENT DAMAGES WHATSOEVER. THE FOREGOING LIMITED WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL

OTHER EXPRESS AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE FOREGOING LIMITED WARRANTIES SHALL NOT EXTEND BEYOND THE DURATION PROVIDED HEREIN.
Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on the duration of an implied warranty, so the above limitations or exclusions 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.
This Limited Warranty is effective June 1, 2011 and replaces all undated warranties and warranties dated before June 1, 2011.

HYDROMATIC
293 Wright Street, Delavan, WI 53115
Phone: 888-957-8677 • Fax: 800-426-9446 • Web Site: **hydromatic.com**

BBU INSTALLATION INSTRUCTIONS

Risk of electrical shock. At the circuit breaker or fuse box, turn off the electrical power to the sump pump before beginning this installation.
Setup

1. Locate the high water level in your sump pit (that is, the water level at which the existing (primary) sump pump starts – see Figure 1). Mark this point on the discharge pipe with a pencil or marker.
2. Drain the sump pit as far as possible without running the pump dry. Do this by:
   A) PIGGYBACK SWITCH: Unplug the pump and switch from the outlet, then unplug the pump from the piggyback switch. Reset the circuit breaker or reinstall the fuse and plug the pump directly into the outlet. The pump will start. Drain the pit and unplug the pump. OR
   B) NO PIGGYBACK SWITCH: Reset the circuit breaker or reinstall the fuse and use a non-conducting broom handle or stick to raise the float switch; the pump should start. Drain the pit and then release the switch.
   C) ALL INSTALLATIONS: When the pit has drained, turn off (open) the circuit breaker or remove the fuse again to avoid electrical shock while working on the installation.
3. Support the discharge pipe so that it can’t collapse when you take it apart or cut it.
4. If your discharge pipe has a hose coupling, disconnect the coupling. If not, cut the vertical discharge pipe at any convenient spot above the floor level.
5. Lift the pump and attached pipe out of the sump pit.

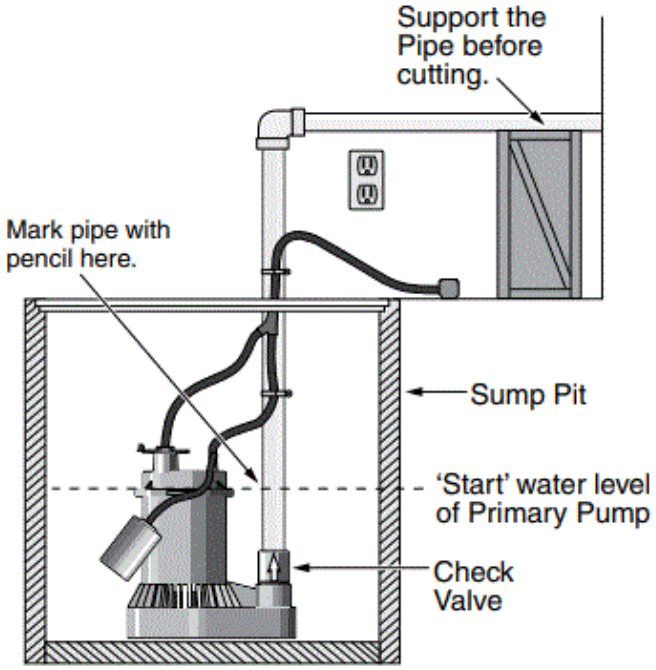
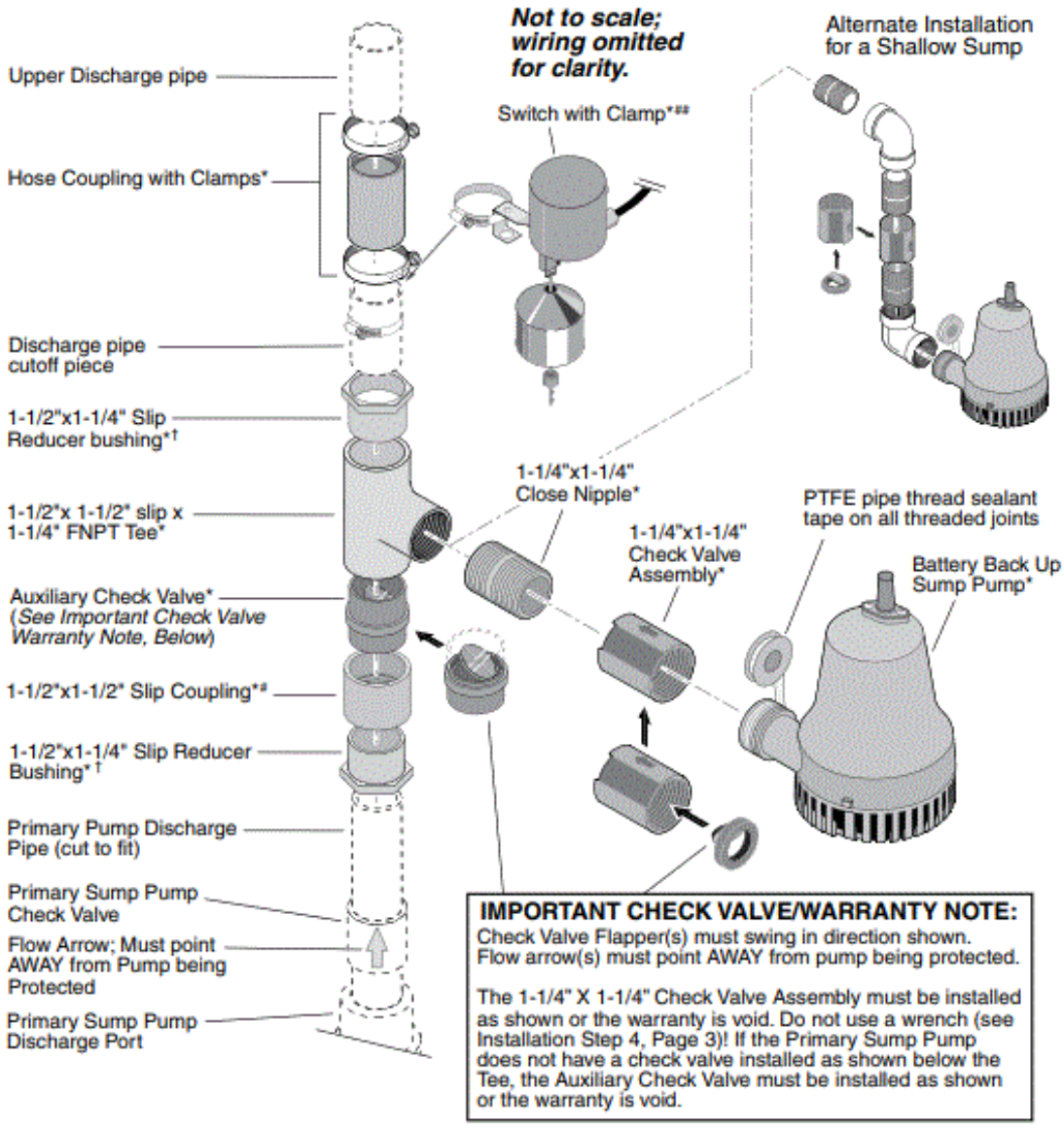


Figure 1: Mark pipe at 'start' water level

1. Study Figure 2 for suggested layouts.
   The Easy-Install layout works better for deeper sumps and allows a smaller diameter sump (diameter 13- 1/2" or larger, depth more than 22").
   The Alternate layout works better for wider, shallower sump pits (diameter 18" or larger, depth 18-22"). The Alternate layout will require that you purchase (2) 1-1/4" x 90° elbows and (2) 1-1/4" x close pipe nipples. Other layouts may require more pipe fittings.
2. Find the high water level mark you made on the discharge pipe in "Setup, Step 1". Cut the pipe at this point and set the cut-off piece aside for use later. Clean up and debur the cut ends.
3. Wrap the threads of the Battery Back Up pump (BBU pump) and the 1-1/4" x close nipple with 1-1/2 – 2 turns of PTFE pipe thread sealant tape (see Figure 2). Leave the first thread free of tape and wrap clockwise ( ).
4. Thread the tee, the close nipple, the 1-1/4" x 1-1/4" check valve, and the BBU pump together. To get them tight, hold the pump and insert a large screwdriver down through the tee and tighten the whole assembly with the screwdriver. DO NOT OVERTIGHTEN! When the assembly is tight, the pump and tee should align vertically (no twist – see Figure 2).
5. Glue the cut-off piece of pipe (which you set aside in Step 2) into the top of the tee.
   NOTE: If your discharge pipe is 1-1/4" inch, glue one of the reducer bushings supplied with the system into the tee, then glue the pipe into the bushing.
6. Look at your primary pump to determine if you have a check valve in or near the pump discharge. If not, install the auxiliary check valve in the bottom arm of the tee and install the slip coupling on the check valve (see Figure 2). For 1-1/4" discharge pipe, glue the remaining reducer bushing into the slip coupling. **NOTE**: If the primary pump assembly already includes a functioning check valve, do not use the auxiliary check valve included in the BBU system. You need one check valve between the primary pump and the tee (to prevent backflow from either pump into the sump pit), but two check valves will restrict the pipe too much.
7. Trial Fit (NO GLUE YET): Place the primary pump assembly back in the sump pit and add (dry) the tee/check valve/BBU pump assembly to it. If necessary, also include the 1-1/2 x 1-1/4 reducer bushing and the slip coupling and auxiliary check valve (see "NOTE", above).
8. Measure the assembly against the hanging upper discharge pipe (where you cut it in Step 1 under "Setup").

Mark the discharge pipe coming up from the tee 1/4” below the point of overlap (that is, you should have an air gap of 1/4” after you cut the pipe). Don’t cut anything yet.

“Easy Install” Layout



NOTICE

* Supplied with the Battery Backup System.

Use if necessary to adapt a 1-1/4” discharge pipe to the 1-1/2” fittings supplied.

Use to adapt the auxiliary check valve to the discharge pipe.

Water level when the switch shuts off must be above the BBU pump intake.

Figure 2: Typical Installation Layouts

9. Study the assembly in the pit for a moment and then adjust it so that nothing interferes with the primary pump or its switch. Mark the joints with a permanent marker so that you can realign everything after you pull it out of the pit for gluing (see Figure 3). NOTE: Take your time with this – it takes care but isn’t very difficult. Be sure you leave enough room for the BBU pump’s vertical switch. Mark everything that might move!
10. After you have marked everything, remove the assembly from the pit.
11. Cut off the vertical discharge pipe at the cut point you marked in Step 8. BE SURE YOU ARE CUTTING ON THE RIGHT MARK!
12. Recheck the alignment and glue up all the joints on the primary pump assembly.

    NOTE: You may need to support the assembly, which won’t balance very well, in order to preserve the alignment while gluing it. Check this before you start gluing. Another pair of hands may help here!

13. After the glue has set, slide the hose coupling and its clamps down over the assembled discharge pipe. If the pipe is 1-1/4", be sure to use the two reducing inserts included with the coupling.
14. Hook the switch clamp over the switch bracket and slide the assembly down over the hose coupling and discharge pipe. Clamp the switch so that the water level when the switch shuts off is above the BBU pump's intake.
15. Replace the assembly in the pit, slide the hose coupling up over the air gap so that it joins the pipes, and tighten the clamps enough to keep it there.

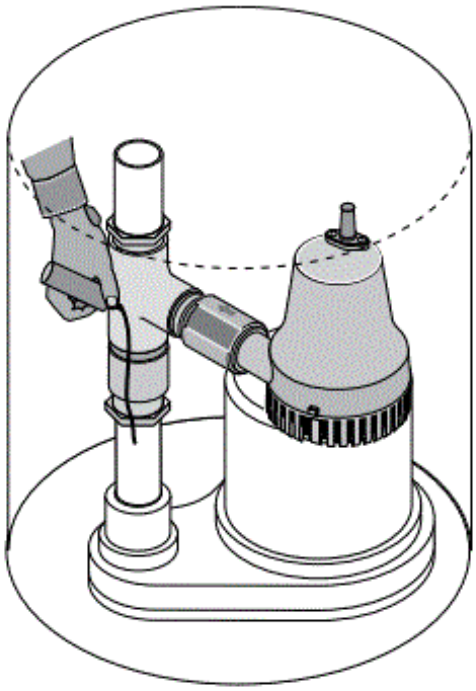


Figure 3: Mark joints for gluing

16. Check fit, alignment, etc. If everything looks good, make sure that the BBU vertical switch is at the right height and free of obstructions, then tighten the hose clamps on the coupling.
17. Adjust the rod stop location on the BBU float rod to give the desired switch travel. If necessary, nip off the bottom of the float rod to provide clearance.

BBU WIRING AND SETUP

See Figures 4, 5, and 6 for battery installation and connection information.

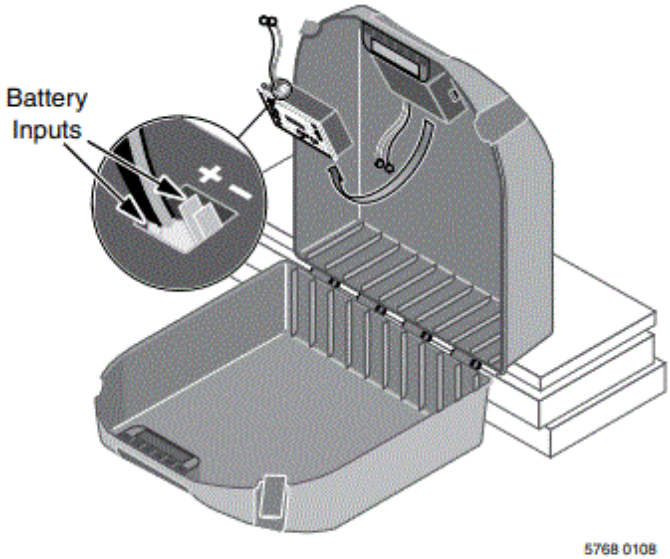


Figure 4: The battery input is inside the battery case. Support the case when opening it. The support must be at least 4" thick.

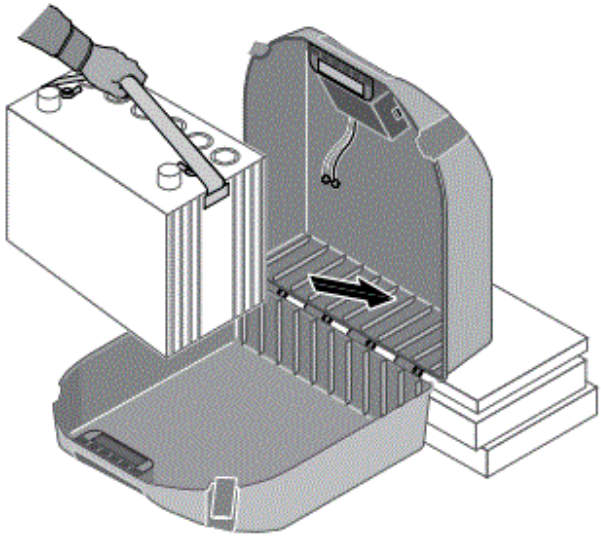


Figure 5: Install the battery in the case. Have someone support the case while you do this. Once the battery is in the case, connect the leads from the charger/controller: +(Red) to +(Red), and –(Black) to –(Black).

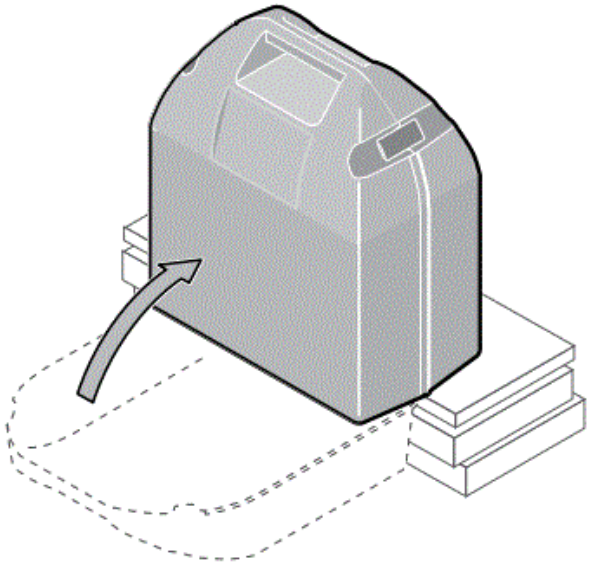


Figure 6: Close and latch the case while holding it in position.

1. The pump leads are polarity sensitive; connect the positive pump lead to the terminal labeled ‘Pump +’ and the negative pump lead to the terminal labeled ‘Pump –’.
   NOTE: If the leads are reversed, the pump will run backward and not pump water.
2. The vertical float switch leads are not polarity sensitive; connect the float switch leads to the ‘Float Switch’ tabs on the Charger/Controller. If you are using two batteries, use the second set of terminals and connect the second battery in the same manner. Connect the positive (+) battery lead (red) to the positive Charger/Controller terminal (red). Connect the negative (–) battery lead (black) to the negative terminal (black) on the Charger/Controller.
3. Test the float switch and the pump by lifting and holding the float rod. The ‘Pump Status’ LED will light continuously and the buzzer will beep steadily. The pump should start after 3 seconds. If the pump does not run, check all the connections and remake them as necessary.
4. With the pump operating, press the ‘Silence Alarm’ button; hold for one second; release. The ‘Silenced Alarm’ LED should illuminate and the buzzer should stop sounding. To reset the buzzer (make it sound) and extinguish the ‘Silenced Alarm’ LED, press the ‘Silence Alarm’ button again for one second.

5. A. To stop the pump, lower the float switch; after 3 seconds the pump should stop, the ‘Pump Status’ LED should flash, and the buzzer should beep.
   B. Depress the ‘System Test’ button; hold it for one second; release. The ‘Pump Status’ LED should stop flashing.
   NOTE: During normal operation, the flashing ‘Pump Status’ LED indicates that the pump has run in your absence. See Table II, “Operating Code Displays”,
6. Press and hold ‘System Test’ button. All LEDs will light up, pump will run and buzzer will sound. Release the button and LEDs should go off, pump should stop, buzzer should stop.
7. The ‘Battery Status’ LED indicates the battery capacity when the A.C. power is off.
   A. Continuously ‘ON” – the battery voltage is above 10.9 Volts Direct Current (10.9VDC) and capacity is above 20%.
   B. Slow Beep/Slow LED Flash – the battery’s capacity is between 0 and 20%.
   C. Fast Beep/Fast LED Flash – the battery is severely discharged. The battery will continue to charge (as long as the 115V AC power to the charger is on) at the rate of .5 AH until the battery’s charge is above 20%.
   When the first warning occurs (slow beep/slow flash), you will have approximately 2 hours (or less) of pump operation left. The actual time of operation will depend on the condition of the battery and may be as little as 15 minutes.
8. Connect the Power Supply cable (supplied) to the Charger/Controller’s Power Input jack.

LED Display and Control Buttons

(Tables II, III, IV, and V)
NOTE: When the unit is first plugged in, or when it first receives power from the battery, the Battery Status LED will flash for 3 seconds.
NOTE: To activate any Control Button, depress and hold it for 1 second.
Possible Remedies

1. Wrong Battery Voltage
   Reconnect charger to a 12 volt battery.
2. Reversed Battery Connections
   Check all connections. The negative (black) on the battery must connect to the negative (black) on the charger, and the positive on the battery must connect to the positive on the charger. Reversing the battery connections will cause the ‘System Alert’ and ‘Silenced Audible Alarm’ LEDs to flash.
3. Thermal Runaway Condition
   “Thermal Runaway” is the technical term for the condition of the battery when some (or all) of the cells have deteriorated to the point that they won’t take a charge. In this case, replace the battery.
4. Charge Time Monitor – 1 and 2
   Battery took too long to complete its charge. The ‘Charge Time Monitor’ will shut down the charger after 84 hours of continuous charging.
   Possible causes are:
   A) Pump ran for a long period of time during charging, or
   B) Battery is too large for the charger (including several batteries connected in a parallel circuit).
   Apply the formula in Table I to determine whether or not your battery is too large for the charger. If the calculated charging time is more than 84 hours, use a smaller battery (or group of batteries).

TABLE I – Battery Capacity Calculation

$$\text{Charge Time} = \frac{\text{Battery Capacity in Ampere Hours (AH)}}{\text{2 Amps}} \times 1.25$$

Example 1:

$$\text{Charge Time} = \frac{\text{130 Ampere Hours}}{\text{2 Amperes}} \times 1.25 =$$

$$\text{Charge Time} = \frac{130H}{2} \times 1.25 = 65H \times 1.25 = 81.25 \text{ Hrs}$$

Less than 84 hours to charge; OK to use.

Example 2:

$$\text{Charge Time} = \frac{\text{160 Ampere Hours}}{\text{2 Amperes}} \times 1.25 =$$

$$\text{Charge Time} = \frac{160H}{2} \times 1.25 = 80H \times 1.25 = 100\text{Hrs}$$

Capacity too large – use a battery of 130A-H or less.
NOTICE A 100AH battery in good condition should charge in approximately 62 hours.

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Excessive Battery Drain
Pump may have run for a very long time, discharging the battery. In this case:

- A) If 115VAC power is OFF, the charger shuts down until the power comes back on, but the pump will run as long as the battery charge lasts. You may need to replace the battery afterwards.
- B) If 115VAC power is ON, the charger/controller continues to try to charge the battery at a charging rate of .5 AH until the battery charge is more than 20%, at which point the charger will resume charging at a rate of 2 AH.
- C) If the pump is running and the AC power is on, you may need to stop the pump to allow the battery to charge.

Pre-Qualification Test – 1 and 2
Charger is charging at a very low level to try to bring a dead battery back to life. If the battery is taking too long, try resetting the charger once or twice (push the ‘System Test’ and ‘Silence Alarm’ buttons to reset the charger).
Special Features:

- The charger is equipped with reverse battery, short circuit, and “run-away charge” protection.

BATTERY REQUIREMENTS

Hazardous electrical current. Can cause severe burns and start a fire if the battery terminals are short circuited. Install the battery in the battery case (See Key No. 12, Page 11). To prevent accidental shorting across battery terminals, close and latch the battery case securely. Do not leave the battery uncovered. Do not allow children to play around the battery backup system installation. Your backup sump pump depends on the battery used with it for power. The better the battery, the better the performance of the pump. We recommend the use of a size 27M Marine Deep Cycle Battery. It will perform as indicated in Table VI, on Page 10, and will stand up well to long periods of little or no use. This system is designed to work with a deep cycle marine battery, either a flooded lead-acid battery or a sealed maintenance free lead-acid AGM battery. Use of a standard automobile battery with this charger is not recommended. An automobile battery may require charging after only 1 –2 hours of continuous use, and the repeated charging cycles may cause early plate failure in the battery. Use only the recommended battery or one of the same type and size so it will fit in the battery box (maximum size 13″ long, 7″ wide and 10″ high [330.2mm x 177.8mm x 254mm] including terminals) and supply enough voltage for full performance.

BATTERY MAINTENANCE

Severe burn hazard. An acid-filled standard lead-acid battery contains sulfuric acid. Avoid contact with skin, eyes or clothing.
NOTICE: To protect the battery case from chipping and gouging, do not let the battery sit on a concrete floor. Install the battery on a shelf or protective pad (plywood, 2x4s, etc.). Always install the battery in a dry location that is protected from flooding.
Follow the battery manufacturer's recommendations for maintenance and safe use of the battery.

TROUBLESHOOTING

Pump won't run.

1. Check all the wiring connections.
2. Check for a low or defective battery.
3. Check that the automatic switch is free to move up and down.
4. Press the circuit breaker reset button on the control panel.

Motor hums but pump won't run:

1. Check for low or defective battery.

Pump runs but pumps very little or no water:

1. Make sure a check valve is installed and functioning between the primary pump discharge and the Battery Backup tee.
2. Check for an obstruction in the discharge pipe.
3. The discharge pipe length and/or height exceeds the capacity of the pump. See Table VI, Page 10, for pump capacity.
4. Check for a low or defective battery.
5. The Positive (+) and negative (–) pump wires are reversed. Disconnect them and reconnect correctly.

Pump cycles too frequently:
The check valve located between the discharge of the primary pump and the Battery Backup tee is not installed or is not working properly. Install the auxiliary check valve (see Pages 4 and 5) or replace the existing check valve as required.

TABLE II – Operating Code Displays (LEDs Lighted Continuously or Flashing)

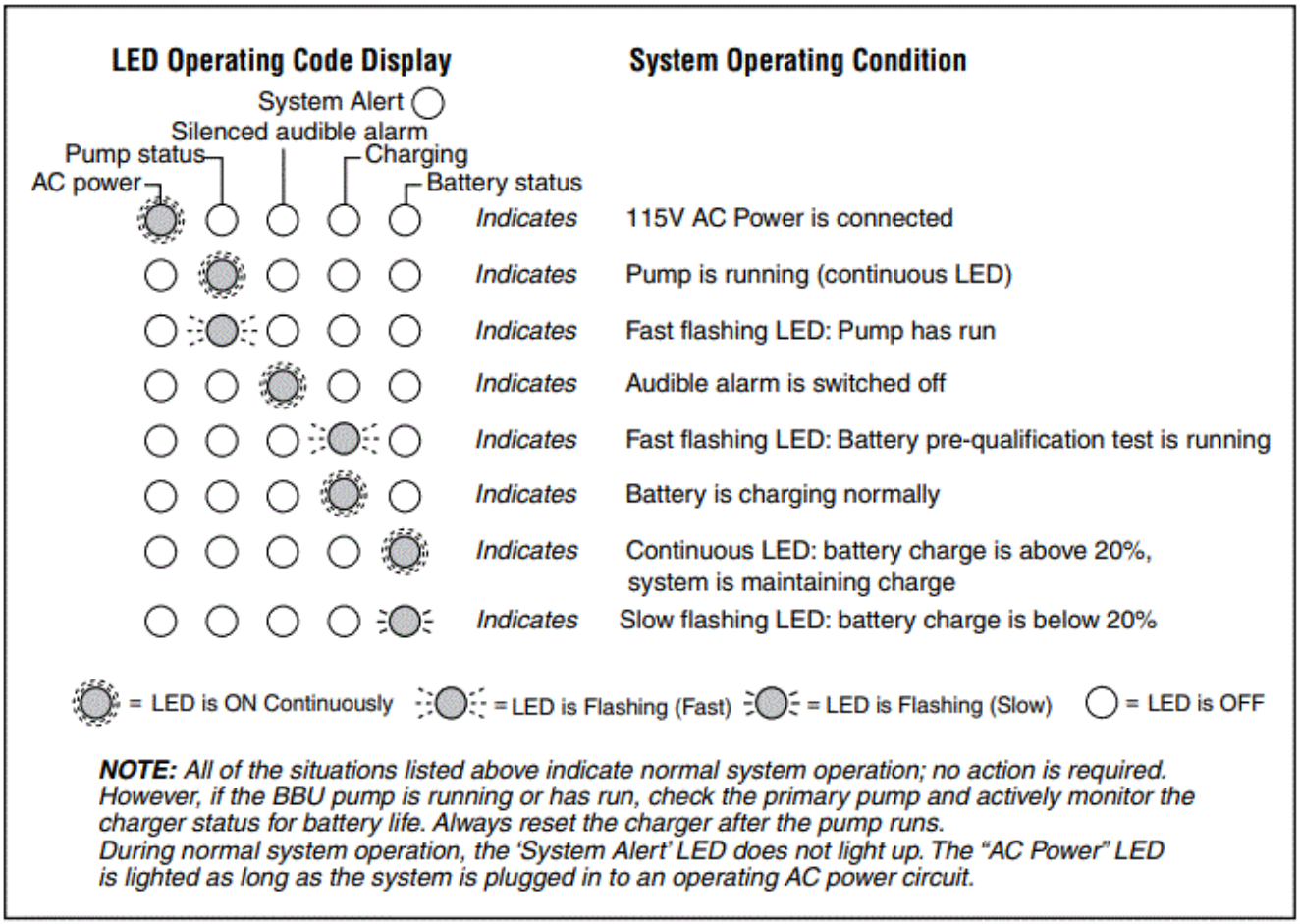


TABLE III – LED Function Displays (LEDs Lighted Continuously)

Control LED:	Continuous Illumination Indicates Normal Operation:
AC Power	AC power is present.
Pump Status	The float switch has been activated. The LED remains on (flashing) after the pump has stopped. Depress the'System Test' button to reset it.
Silenced Audible Alarm	Audible Alarm has been silenced. Press and release the 'Silence Alarm' button to reset (activate) the audible alarm and turn OFF the LED.
Charging	Indicates that the battery is charging – see Table II, above.
Battery Status	A. Continuous 'ON" - the battery voltage is above 10.9 Volts DC and capacity is above 20%. B. Slow Beep/Slow LED Flash - the battery's capacity is below 20%, and voltage is between 8.2VDC and 10.9VDC. C. Fast Beep/Fast LED Flash - the battery has been discharged to less than 8.2VDC.
System Alert	Flashing (in unison with the buzzer) indicates that the charger has entered 'Failure Mode'. Press the 'System Test' and 'Silence Alarm' buttons to reset it. **NOTE:** If the source of the failure is not corrected, the charger will reenter 'Failure Mode'. See Table IV for error code information.

TABLE IV – Error Code Displays (LEDs Flashing)

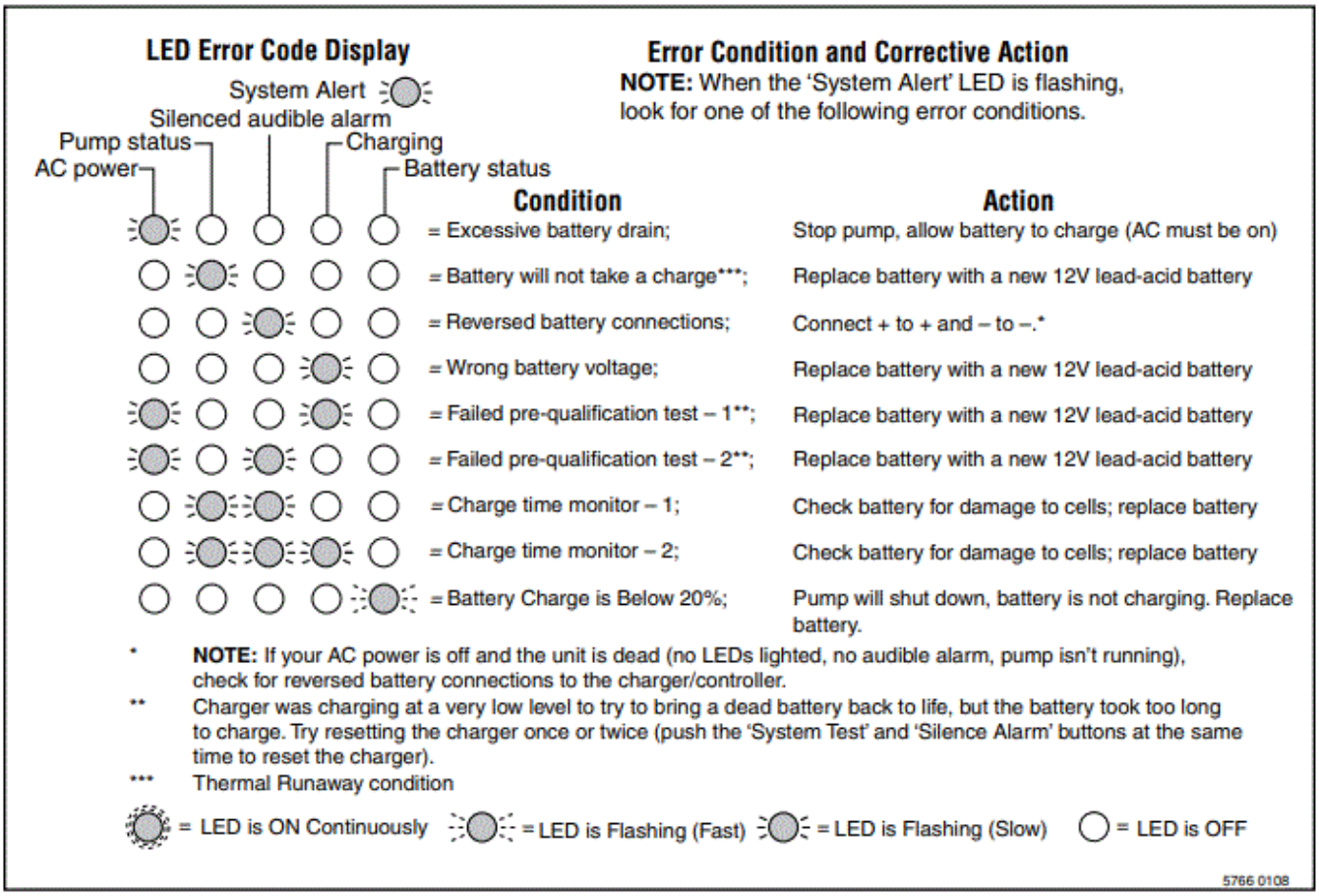


TABLE V – Control Button Functions

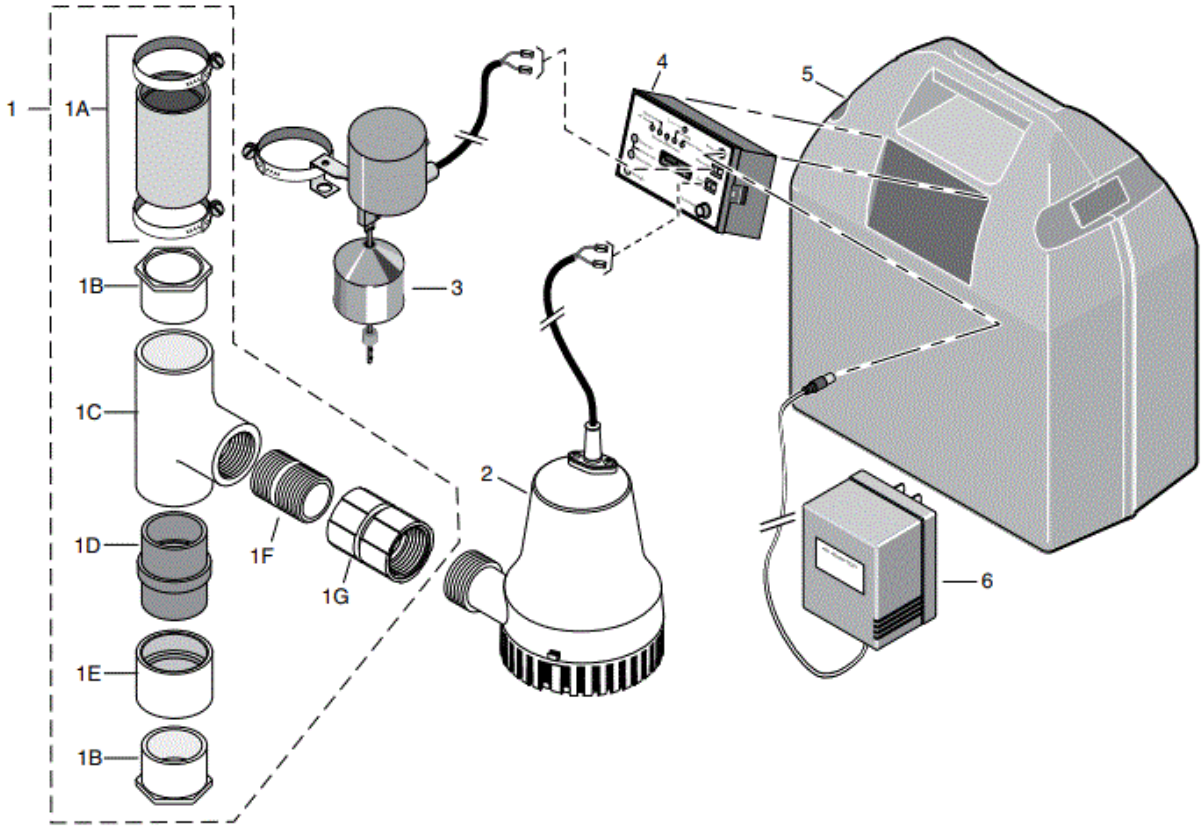
Control Button:	Result of Pushing Button:
System Test	Pump starts and all LEDs light up. Will reset the 'Pump Status' LED. When pushed with the 'Silence Alarm' button, the Charger/Controller microprocessor resets and error code resets.
Silence Alarm	Toggle; Prevents the audible alarm sounding. Press and release to reset.
Flood Light	Toggles the flood light on the Charger/Controller on and off.

TABLE VI – Capacity Ratings with a 100 A-H Deep Cycle Marine Battery

	VERTICAL PUMPING DISTANCE – MODEL FG100-A1			
	8 FEET (2.4 M)	**10 FEET (3.0 M)**	**12 FEET (3.7 M)**	**16 FEET (4.9 M)**
Gallons Per Hour	1,440	1,200	840	No Flow at this Height
Aproximate Hrs Available	10	11.5	13	–
Total Gallons Pumped	8,500	7,000	5,000	–

* These flow rates were obtained with a constant 12.7 VDC battery source. The actual GPH will vary due to a reduction in output voltage from the battery as it discharges.

Repair Parts



Key No.	Part Description	Part Number
1		
1A		PS198-270 U74-68
1B		*
1C	Hardware Replacement Kit (Includes Key Nos. 1A through 1G) Rubber Hose Coupling with Inserts (2) and Clamps (2)	*
1D		*
1E	1-1/2 x 1-1/4 PVC Slip Reducer Bushing (2) PVC Tee 1-1/2 x 1-1/2 Slip x 1-1/4 FNPT Auxiliary Check Valve	*
1F	1-1/2 x 1-1/2 PVC Slip Coupling PVC Pipe Nipple, 1-1/4 NPT x Close	*
1G	Check Valve Assembly, 1-1/4 FNPT x 1-1/4 FNPT DC Backup Pump	*
2	Vertical Float Switch Package Charger	**
3	Battery Case (Complete) AC Adaptor	PS198-269REP PS2
4	Electrical Replacement Kit (Includes Area Light LED and Battery Leads)	17-1512 PS17-1512 PS17-1530 PS1513REP
5		
6		
•		

- * Included in Hardware Replacement Kit, Key No. 1.
- ** If the pump fails, replace the entire system.

NOTE: Key No. 1G Check Valve Assembly must be correctly installed or the warranty is void. If the primary sump pump has no check valve installed below the Battery Backup Tee, Key No. 1D Auxiliary Check Valve must be correctly installed or the warranty is void.

Documents / Resources

	**PENTAIR HYD838 Battery Backup System** [pdf] Owner's Manual HYD838 Battery Backup System, HYD838, Battery Backup System, Backup System