

Omnivore Grinder Pump Retrofit Unit

FOR E-ONE* GP200, GP2000 AND EXTREME SERIES

Models to replace GP200 and GP2000:

LSG202-RE 2Hp, 208/230V, 1 phase, Automatic

LSGX202-RE 2Hp, 208-230V, 1 phase, Automatic

Models to replace the Extreme:

LSG202-REX 2Hp, 208/230V, 1 phase, Automatic

LSGX202-REX 2Hp, 208-230V, 1 phase, Automatic

***Do not throw away or lose this manual. Keep it with the installation and refer to it often.**

* E-One is a registered Trademark of Environment One Corporation and is not affiliated with Liberty Pumps.



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IMPORTANT:

Prior to installation, record Model, Serial Number, and Code Number from pump nameplate for future reference.

MODEL _____

SERIAL _____

CODE _____

**INSTALLATION
DATE** _____

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1. General Information – All Models

Before installation, read the following instructions carefully. Each Liberty pump is individually factory tested to ensure proper performance. Closely following these instructions will eliminate potential operating problems, assuring years of trouble-free service.

Model	HP	Volts	Phase	Full Load Amps	FNPT Discharge	Automatic or Manual*
LSG202-RE	2	208\230	1	15	1.25"	Automatic
LSGX202-RE	2	208-230	1	15	1.25"	Automatic
LSG202-REX	2	208\230	1	15	1.25"	Automatic
LSGX202-REX	2	208-230	1	15	1.25"	Automatic

⚠ DANGER



Risk of electric shock.

⚠ WARNING

* **Note:** Make sure the electrical specifications of the control selected properly match the electrical specifications of the pump. Always refer to control panel instructions for proper installation. A separate branch circuit is recommended. It must be sized in accordance with the National electric code for the current shown on the pump nameplate and literature.

- **Risk of electric shock.** Always disconnect the pump from the power source before handling or making adjustments.
- The electrical connections and wiring for a pump installation should only be made by qualified personnel.
- This pump is supplied with a grounding conductor and grounding-type attachment plug. To reduce the risk of electric shock, be certain that it is connected only to a properly grounded, grounding-type receptacle.
- DO NOT bypass grounding wires or remove ground prong from attachment plugs.
- DO NOT use an extension cord.
- This pump requires a separate, properly fused and grounded branch circuit. Make sure the power source is properly sized for the voltage and amperage requirements of the pump, as noted on the nameplate.
- The electrical outlet shall be within the length limitations of the pump power cord, and at least 4 feet above floor level to minimize possible hazards from flood conditions.
- The installation must be in accordance with the National Electric Code, Uniform Plumbing Code, International Plumbing Code, as well as all applicable local codes and ordinances.
- Sump and sewage pumps often handle materials which could cause illness or disease. Wear adequate protective clothing when working on a used pump or piping.
- Never enter a pump basin after it has been used. Sewage and effluent can emit several gases which are poisonous.
- Keep clear of suction and discharge openings. To prevent injury, never insert fingers into pump while it is plugged in.
- DO NOT use this product for flammable or corrosive liquid.
- DO NOT use this product in applications where human contact with the pumped fluid is common (such as swimming pools, fountains, etc.)
- NEVER dispose of materials such as paint thinner or other chemicals down drains, as they can chemically attack and damage pump components, potentially causing product malfunction or failure.

⚠ CAUTION

- **DO NOT use pumps in water over 140°F (60°C).**
- DO review applicable codes concerning maximum allowable temperature of water discharged into drain systems.
- DO NOT use pumps in mud, sand, cement, oil or chemicals.
- DO NOT modify the pump in any way.
- DO NOT lift or carry pump by power cord.
- DO NOT remove any tags from pump or cords.
- If pump is installed during construction before power is available, it must be protected from the environment to prevent water from entering through the cord plug end, etc.

2. Introduction

2-1 INTRODUCTION

This manual was prepared to assist you in the correct installation, operation, and maintenance of your Liberty Pump. Please read it completely before installing the pump. Make certain that you are familiar with the contents, and the chapters on installation and operation are fully understood before running the pump.

Liberty pumps are designed for minimal maintenance. However, regular checks will ensure longer life and greater operating reliability.

WARRANTY: No repair work should be carried out during the warranty period without prior factory approval. To do so may render the warranty void.

SERIAL # : In all correspondence and reports, make certain that the pump serial number is given.

2-2.1 DESIGN OF PUMP

⚠ WARNING The grinder pump contains metal parts that rotate at high speeds. Be careful around pump base while power is connected. Make sure that the pump is either in the tank or clear from people and wires when in operation.

1. The Liberty grinder pump is designed for continuous underwater operation. The induction motor is insulated against heat and moisture in accordance with Class B 265F (130C) regulations.
2. A thermal overload protector is imbedded in the stator windings. This is connected in series and wired to shut down the pump if overheating occurs. The overload switch resets automatically when the motor cools.
3. The motor is protected against damage from water entry by two seals at the impeller drive. The lower seal is a viton lip seal. The upper seal is mechanical, consisting of two silicon-carbide faces.
4. The impeller and volute are designed for efficient flow characteristics and clog-free operation. The hardened cutters grind solids and fibrous matter into small particles that can be safely pumped through small diameter piping.
5. For sewage systems, consult local plumbing codes on requirements of venting the tank. The pump shall not be installed in locations classified as hazardous in accordance with the National Electrical Code, ANSI/ NFPA70.

NOTE: The major material of Liberty Grinder Pumps is cast iron. They should not be used to pump corrosive liquids.

3. Mechanical Installation

3-1 INSPECTION UPON RECEIPT

The shipping container should be immediately inspected for damage that may have occurred in shipment. Exercise care in opening the shipping container to avoid damage to the pump. Remove any blocking and cushioning from within the container.

Check all cushioning for spare parts before discarding. Visually check the pump and any spare parts for damage. Check for damaged electrical wires, especially where they exit the motor housing. Report any damage or shortage of parts. Turn the hex socket head cap screw at the center of the cutter wheel on the bottom of the grinder several rotations clockwise. This will insure that the impeller and cutter are free of any seizure due to prolonged storage. If the impeller is not rotated, the pump may fail to activate. If the impeller's rotation is difficult or completely resistant, adjustments must be made.

3-2 STORAGE BEFORE USE

Liberty pumps are shipped from the factory ready for installation and use. They should be held in storage if the pump station is not complete. If storage is necessary, the pump should remain in its shipping container. It should be stored in a warehouse or storage shed that has a clean, dry temperature-stable area where the pump and its container should be covered to protect it from water, dirt, dust, etc. The ends of the cables - (plugs) must be protected against moisture.

⚠ CAUTION AT NO TIME SHOULD THE PUMP BE STORED WITHIN AN INCOMPLETE WET PIT. THE PUMP SHOULD NOT BE PLACED INTO THE PIT UNTIL IT CAN BE FULLY OPERATED.

LONG TERM STORAGE

1. If it is necessary to store a pump for a long period of time, it should be stored indoors in a clean, dry temperature-stable environment. The pump should be covered to protect it from dust, dirt and water. The plug end of the cable must be protected against moisture.
2. Do not allow the pump to freeze.
3. Prior to installation, the pump motor should be rotated to ensure the seals and cutters are free spinning.
4. Installed pumps which are idle for long periods of time should be manually operated through the breaker panel once a month to lubricate the seals. Turn off the breaker, unplug the piggyback switch, and plug the pump directly into the wall socket. Turn the breaker on for 30 seconds. Turn the breaker off, and then plug the piggyback switch back in. **(refer to Section 4-1)**

3-3 PUMP INSTALLATION

Grinder pumps must be installed in a tank that is vented in accordance with local plumbing codes. This pump is not to be installed in locations classified as hazardous in accordance with the National Electrical Code, ANSI/NFPA 70. Installation should be at a sufficient depth to ensure that all plumbing is below the frost line.

CAUTION NEVER LIFT THE PUMP BY PULLING ON THE POWER CORD. USE THE LIFTING CHAIN OR CABLE ONLY

3-4 OLD PUMP REMOVAL

1. The supply power must be turned off.
2. Liberty Pumps recommends the use of a 30 amp circuit breaker. Check the electrical panel and replace if necessary.
3. Locate the riser and remove basin lid from current unit.
4. If the basin is flooded, pump it out with separate pump or vacuum. All septage must be disposed of in accordance with local, state, and national codes.
5. Disconnect the electrical quick disconnect plug which is hanging in the basin if applicable.
6. Remove bolts securing the current unit if applicable.
7. Close valve on current unit.
8. Secure rope to hooks on cover. Lift the unit out of the basin.
9. Measure the distance from the cover to the base of the discharge elbow. Record this dimension so that you can set the new one to the same dimension. See figure (1)

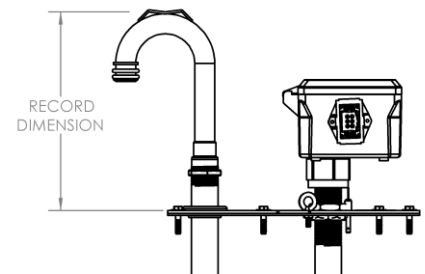


Figure 1

3-5 INSTALLING THE LSG202-RE OR LSGX202-RE

1. Apply Teflon tape to the threads of the pumps discharge pipe. Assemble the stainless steel elbow onto the discharge pipe. Make sure that the elbow is assembled on center once tightened.
2. Remove the quick release pin. Adjust the center nut until the elbow to cover dimension is the same as the old unit, it should be around 12.375". **NOTE:** Replace the pin so that the nut cannot vibrate and loosen. See figure(2).
3. Float switches must be positioned so that they will be free of any objects in the tank or tank walls. If adjustments are made to either one make sure that floats will activate. I.e. - Alarm float activates before hitting top cover.
4. Although the Liberty Pumps RE models come equipped with connectors that mate perfectly with existing control hardware, the following table may be used for troubleshooting, repair, or custom installation purposes.

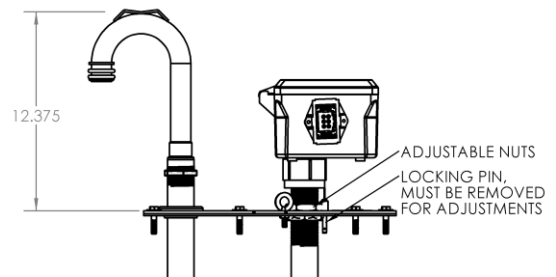


Figure 2

PIN	Function	2000S (square connector body)	Extreme (round connector body)	Liberty RE
1	Manual Run	Red	Brown	Red
2	L1	Black	Red	Black
3	L2	White	Black	Yellow
4	Ground	Green	Green/Yellow	Brown
5	Alarm Feed	Orange	Yellow	Orange
6	Alarm Return	Blue	Blue	Blue

3-6 FINISHING THE INSTALLATION

1. Make sure that all fittings are tight.
2. Apply gasket tape to the bottom of the cover at the perimeter.
3. Use an awl or similar tool to poke holes through the tape on the cover, allowing access for cover bolts.
4. Lubricate o-rings on the discharge elbow to ease installation of elbow into receiver.
5. Using lifting chain, lower the grinder assembly into the basin. Align the cover tabs to tank slots, and discharge elbow to the Receiver - ball valve. The unit should come to rest on the tank flange with the discharge elbow fully inserted into the existing receiver / ball valve.
6. Open the valve so that the handle/ latch encompass the discharge elbow. If problems exist with opening the latch, adjustments to the nut will have to be made to alter the height of the unit.
7. Install the 6 bolts into the cover.



8. **AFTER THE PUMP IS INSTALLED, THE FOLLOWING ELECTRICAL CHECKS OF SECTION 4 MUST BE PERFORMED. STEPS TO BE TAKEN BEFORE ENERGIZING**

Retighten all field-made connections. Retighten all factory-made connections. These may have loosened due to shipping and handling vibrations.

Check the security of mounting hardware.

Ensure that no wires or other obstacles are in the way of the pump cutter.

Conduct an electrical insulation resistance test to make sure that the control panel is free from short circuits and ground faults. This should be done both phase-to-phase and phase-to-ground.

MOTOR OVERLOAD PROTECTION: The pump motor is protected from locked rotor and running overloads by a thermal overload integrally mounted to the motor. No adjustments are required.

Check to determine that all grounding connections are made properly.

If a panel is used, remove all debris, scrap wire, etc., from the control panel interior before closing the doors. Install covers, close doors making certain that no wires are pinched and that all enclosure parts are properly aligned and tightened.



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 can result when power is applied (Refer to section 5).

9. Restore electricity. Fill the basin with water and test the operation of the pump and float. If a problem arises, refer to the trouble shooting chart on page (8)
10. Once testing is complete, replace the basin lid and lock if applicable.
11. Affix the second nameplate to the control box or panel so the unit can be identified.

Note: Please leave this manual with the equipment owner.

4. Operation

4-1 OPERATION

After the electrical and mechanical installations have been performed, the pump is ready for operation. No operational procedures are required except to apply rated power to the pump. There are no specific shutdown procedures beyond disconnecting the power supply.

CAUTION ALWAYS ENSURE THAT THE PUMP IS FREE OF WIRES OR OTHER OBSTRUCTIONS THAT MAY CAUSE HARM OR INJURY.

4-2 PERIODIC MAINTENANCE & LUBRICATION

Liberty pumps are designed for long lasting, efficient and reliable service with a minimum of preventive maintenance checks. These checks are few but will add years of satisfactory service to the life of the pump. Maintenance checks should be performed at the intervals stated. Severe operating environments will require more frequent checks.

4-3 LUBRICATION

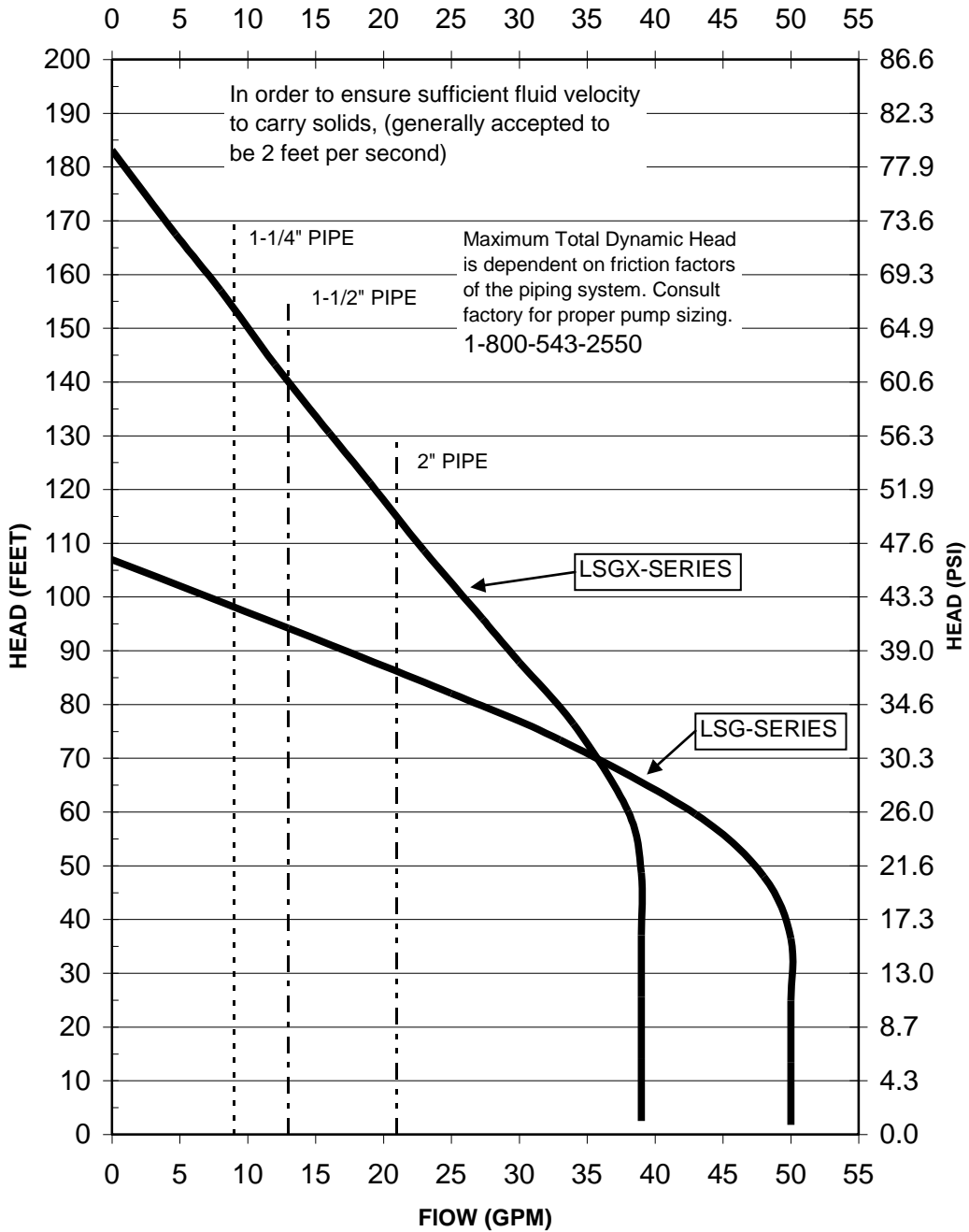
Ball Bearings: None required

Mechanical Seal: Lubricated by the motor oil

Seal Oil: 32W HIGH Detergent Oil Qty: .7 Gal

CAUTION NEVER LIFT THE PUMP BY PULLING ON THE POWER CORD. USE THE LIFTING “ROPE” ONLY.

PERFORMANCE CURVE Omnivore Grinders




TROUBLESHOOTING CHART

<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>ACTION</u>
1. PUMP WILL NOT START	<ul style="list-style-type: none"> A. Power supply failure B. Burned out fuse or tripped circuit breaker C. Damaged power cable D. Jammed impeller E. Water inside motor 	<ul style="list-style-type: none"> A. Check power supply Check out electrical system for loose connections Check operating voltage B. Check circuit protectors C. Check external cable for damage – replace D. Inspect and remove jamming object E. Refer to Symptom 5 and 6
2. REPEATED TRIPPING	<ul style="list-style-type: none"> A. Circuit protection under-rated B. Current unbalance C. Pump connected to incorrect voltage D. Wet or damaged wiring E. Obstruction in pump F. Incorrect motor rotation G. Foreign matter build-up 	<ul style="list-style-type: none"> A. Check rating and replace with proper size B. Check current draw C. Verify connections. See wiring diagram D. Inspect external cable, replace if worn or damaged E. Remove obstruction F. Check rotation G. Clean motor housing
3. PUMP WILL NOT SHUT OFF	<ul style="list-style-type: none"> A. Control panel failure B. Switch Failure 	<ul style="list-style-type: none"> A. Check control panel B. Replace the switch
4. LOW FLOW	<ul style="list-style-type: none"> A. Incorrect pump rotation B. Low liquid level C. Obstruction in pump or piping D. Partially closed valve(s) 	<ul style="list-style-type: none"> A. Check rotation B. Check liquid level C. Remove obstruction D. Check and adjust valve
5. WATER IN OIL CHAMBER	<ul style="list-style-type: none"> A. Loose or damaged oil plug 	<ul style="list-style-type: none"> A. Check plug and sealing washer
6. WATER INSIDE MOTOR CASING	<ul style="list-style-type: none"> A. Damaged lower lip seal or mechanical seal B. Damaged O-Ring between oil chamber and motor plate C. Damaged cable 	<ul style="list-style-type: none"> A. Replace seal B. Replace O-Ring C. Replace cable

IF SYMPTOMS CONTINUE, CONSULT THE LIBERTY PUMPS PRODUCT SERVICE DEPT.

CONTROL PANEL INSTALLATION INSTRUCTIONS

⚠ WARNING



ELECTRICAL SHOCK HAZARD

Disconnect all power sources before servicing. Failure to do so could result in serious injury or death.

This control panel must be installed by a LICENSED ELECTRICIAN and in accordance with the National Electric Code NFPA-70, and state and local codes.

All conduit running from the sump or tank to the control panel must be sealed with conduit sealant to prevent moisture or gases from entering the control panel. **NEMA 1 enclosures are for indoor use** primarily to provide a degree of protection against contact with enclosed equipment. Cable connectors are not required to be liquid tight on NEMA 1 enclosures. **Do not use NEMA 1 enclosures if subjected to rain, splashing water, or hose-directed water.** **NEMA 4X enclosures are for indoor or outdoor use** primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water. **Cable and conduit connectors must be liquid tight on NEMA 4X enclosures.**

Mounting and Wiring the Control Panel

1. Determine the mounting location for the control panel. If distance exceeds the length of either the control switch cables or the pump power cables, splicing will be required. For an outdoor or a wet installation we recommend the use of a junction box with liquid tight connectors to make required connections. You must use conduit sealant to prevent moisture or gases from entering the panel.
2. Mount the control panel (mounting devices are furnished with control panel).
3. Determine the conduit entrance locations on the control panel. Check local codes and schematic for power circuit requirements.

CAUTION: BE SURE THE POWER SUPPLY VOLTAGE AND PHASE ARE THE SAME AS THE PUMP MOTORS BEING INSTALLED. IF IN DOUBT, SEE THE PUMP IDENTIFICATION PLATE FOR VOLTAGE/PHASE REQUIREMENTS.

4. Drill proper size holes for connection to the panel.

CAUTION: IF USING CONDUIT, BE SURE THAT THE CONDUIT BEING USED IS OF ADEQUATE SIZE TO PULL THE PUMP AND SWITCH CABLES THROUGH. RECOMMENDED MINIMUM 1 1/2" FOR DUPLEX APPLICATIONS.
5. Attach cable connectors and/or conduit connectors to the control panel.

CAUTION: AT THIS POINT, TURN OFF ALL POWER SOURCES.

*FOR INSTALLATIONS WITHOUT A SPLICE, GO TO STEP 11.
FOR INSTALLATIONS REQUIRING A SPLICE, FOLLOW STEPS 6-10.*

6. Determine the location for mounting the junction box according to local code requirements. **Do not** mount the junction box inside the sump or basin.
7. Run the conduit or connectors to junction box and drill the junction box as required to make the proper connections. Attach the conduit or connectors to the junction box.
8. Mount junction box to proper support.
9. Identify and label each wire before pulling through conduit into junction box. Make necessary wire splice connections at the junction box.
10. Firmly tighten all fittings on the junction box.
11. Pull pump cables and control switch cables through connectors/conduit into the control panel.
12. Connect pump cables and control switch cables to the appropriate terminals. SEE SCHEMATIC INSIDE CONTROL PANEL.

CAUTION: IF CONTROL SWITCH CABLES ARE NOT WIRED IN THE CORRECT ORDER, THE PUMP SYSTEM WILL NOT FUNCTION PROPERLY.

13. Connect "power in" conductors to proper terminals. SEE SCHEMATIC.
14. Verify the correct operation of the control panel after installation is complete.

5. 3 Year Limited Warranty

* **NOTE:** Liberty Pumps, Inc. assumes no responsibility for damage or injury due to disassembly in the field. Disassembly, other than at Liberty Pumps or its authorized service centers, automatically voids warranty.

Liberty Pumps, Inc. warrants that pumps of its manufacture are free from all factory defects in material and workmanship for a period of 3 years from the date of purchase. 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 3 years from the "CODE" (date of manufacture) number noted on the pump nameplate.

The manufacturer's 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; 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, or water containing sand, lime, cement, gravel or other abrasives; if the product has been used to pump chemicals or hydrocarbons; if a non-submersible motor has been subjected to excessive moisture; or if the label bearing the serial, model and code 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 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.



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