

LE and LEH Series Sewage Pumps

Models

LE40-Series	4/10 HP
LE50-Series	1/2 HP
LE70-Series	3/4 HP
LE100-Series	1 HP
LEH100-Series	1 HP



Contents

- 1.) General Information
- 2.) The Basin
- 3.) Installation
- 4.) Electrical Service and Operation
- 5.) Maintenance and Troubleshooting

IMPORTANT:

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

MODEL _____

SERIAL _____

CODE _____

1. General Information

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

⚠ WARNING

- **Risk of electric shock.** To reduce risk of electric shock, always disconnect pump from power source before handling.
- These pumps are not to be installed in locations classified as hazardous in accordance with the National Electric Code, ANSI/NFPA 70.
- Installation must be in accordance with the National Electric Code and all applicable local codes.
- Installation and servicing is to be conducted by qualified personnel.

⚠ CAUTION

- Do not use these pumps in water over 140° F.
- The Uniform Plumbing Code (UPC) states that sewage systems shall have an audio and visual alarm that signals a malfunction of the system, to reduce the potential for property damage.

MODEL SPECIFICATIONS								
Model	HP	Volts	Phase	Full Load Amps	Solids Handling	FNPT Discharge	Automatic or Manual*	Shut-off Head
LE41A	4/10	115	1	12	2"	2"	Automatic	19'
LE41M	4/10	115	1	12	2"	2"	Manual	19'
LE51A	1/2	115	1	12	2"	2"	Automatic	25'
LE51M	1/2	115	1	12	2"	2"	Manual	25'
LE52A	1/2	208-230	1	6.8	2"	2"	Automatic	25'
LE52M	1/2	208-230	1	6.8	2"	2"	Manual	25'
LE71A	3/4	115	1	12	2"	2" or 3"	Automatic	28'
LE71M	3/4	115	1	12	2"	2" or 3"	Manual	28'
LE72A	3/4	208-230	1	6	2"	2" or 3"	Automatic	28'
LE72M	3/4	208-230	1	6	2"	2" or 3"	Manual	28'
LE73M	3/4	208-230	3	4.1	2"	2" or 3"	Manual	28'
LE74M	3/4	440-480	3	2.1	2"	2" or 3"	Manual	28'
LE102A	1	208-230	1	7	2"	2" or 3"	Automatic	36'
LE102M	1	208-230	1	7	2"	2" or 3"	Manual	36'
LE103M	1	208-230	3	5.3	2"	2" or 3"	Manual	36'
LE104M	1	440-480	3	2.5	2"	2" or 3"	Manual	36'
LE105M	1	575	3	1.9	2"	2" or 3"	Manual	36'
NOTE: LEH-Series High-Head pumps require a minimum application of 15' head.								
LEH102A	1	208-230	1	12	2"	2" or 3"	Automatic	53'
LEH102M	1	208-230	1	12	2"	2" or 3"	Manual	53'
LEH103M	1	208-230	3	9	2"	2" or 3"	Manual	53'
LEH104M	1	440-480	3	4.5	2"	2" or 3"	Manual	53'

* **Note:** Manual models ("M" suffix) and 3 phase models, as designated above, require a separate approved pump control device or panel for automatic operation. Operation of these models will be according to the control selected. Make sure the electrical specifications of the control selected properly match the electrical specifications of the pump. 3 phase models require overload elements selected or adjusted in accordance with the control or panel instructions.

2. The Basin

If the basin is already installed, proceed to Installation of the Pump.

The basin required for both effluent and sewage applications must be sealed and vented to meet health and plumbing code requirements. These pumps are not to be installed in locations classified as hazardous in accordance with the National Electric Code, ANSI/NFPA 70. The diameter should be a minimum of 18" and the depth a minimum of 24". (These are minimum requirements. A larger basin may be required in both effluent and sewage applications depending on local codes and the number of fixture units entering the system. Check with the local authorities or contact Liberty Pumps if you are unsure of the proper basin size.) Installation should be at a sufficient depth to ensure that all plumbing is below the frost line. If this is not feasible, remove the check valve and size the basin and/or adjust pump differential to accommodate the additional backflow volume.

A. **Excavation:** Excavate the hole as small as possible, with a minimum recommended 8" diametrical clearance around the tank. Never place the basin directly in contact with rocks or other sharp objects. Place only fine, 1/8" to 3/4" pea gravel or 1/8" to 1/2" washed, crushed stone as bedding between the basin and the hole walls. Do not use sand or native soil as backfill. Properly compact underneath the basin to provide a solid, level base that can support the weight of the filled basin.

B. **Inlet Connection & Initial Backfill:** Only fine, 1/8" to 3/4" pea gravel or 1/8" to 1/2" washed, crushed stone should be used around the bottom of the basin to hold it in place. Do not use sand or native soil as backfill. Make the inlet connection as required for your basin.

Liberty P370-Series: The Liberty P370-Series basins have a 4" inlet molded to the side of the tank. This inlet is sized to accept a 4" no-hub type coupling. Connect the gravity drainage line from the fixtures to this hub.

Other Basins: Other Liberty basins provide a 4" caulking hub or pipe grommet inlet. Hubs utilize caulking material (such as oakum and lead) or rubber donuts; grommets are a simple slip-fit. Connect the gravity drainage line from the fixtures to this opening. (Other inlet sizes available – consult factory.)

C. **Final Backfill:** Large rocks, clods, and foreign objects should be kept out of the backfill material. Only fine, 1/4" to 3/4" pea gravel, or 1/8" to 1/2" washed, crushed stone is recommended. Do not use sand or native soil as backfill. Mound the backfill slightly and allow for natural settling. Provide access to the basin cover for maintenance and service.



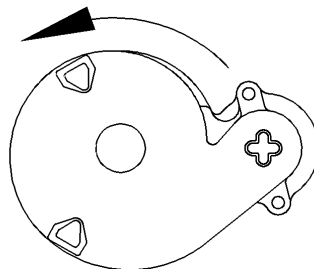
Do not exert heavy pressure or run heavy equipment on the backfill material as this could cause the tank to collapse.

3. Installation of the Pump



For 3-Phase pumps, check for proper rotation before installing pump into basin (see Fig. 1).

Fig. 1 – Proper impeller rotation, three phase models



Bottom View

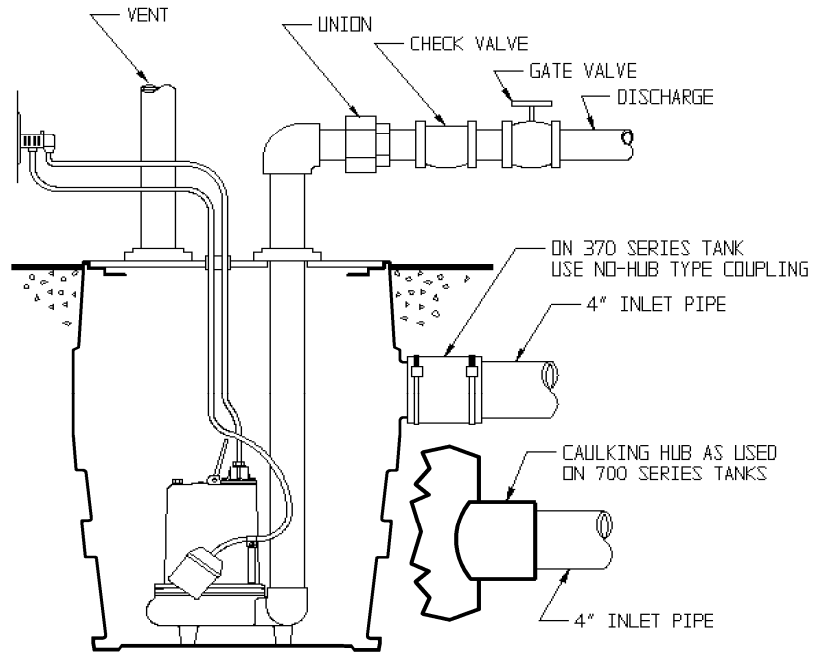
Check three phase pumps for proper rotation prior to installing pump(s) in basin. To change rotation, reverse any two of the three power leads to the pump. Code the wires for reconnection after installation.

Liberty pre-assembled sewage systems come with the pump(s) already pre-mounted in the basin. The discharge pipe(s) already exit through the cover, ready to be connected to the remaining discharge line. If you have purchased a pre-assembled system, disregard steps A and B below.

A. Simplex (One Pump) Systems (see Fig. 2):

Set the pump in place making sure the float has adequate clearance to the side wall of the basin. If an optional control device or float is used, follow the directions for mounting that accompany the optional control. Minimum pump turn off level should not be set below 6". Connect the discharge pipe to the pump's threaded discharge. **IMPORTANT: Do not reduce the discharge pipe size below that which is provided on the pump.** Sewage pumps should not be smaller than 2". In some applications, it may be necessary to increase the pipe size to reduce friction losses. Contact Liberty Pumps or other qualified person if you have questions regarding proper pipe sizes and flow rates. Mount the basin cover provided, making sure it is properly sealed. (This is a recommended installation. Variations may apply.)

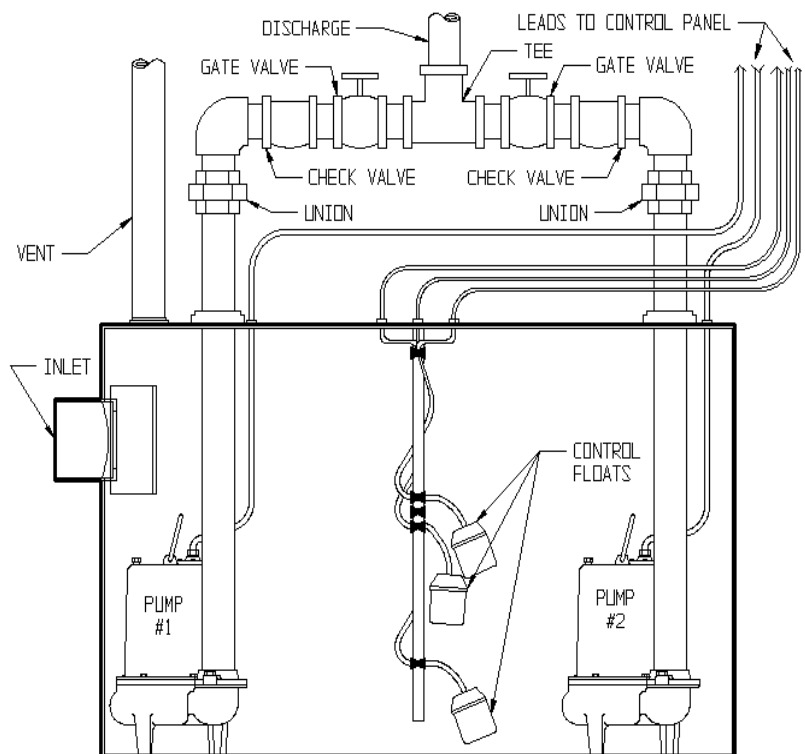
Fig. 2 – Typical Installation Simplex System
This is a recommended installation only. Variations may apply.



B. Duplex (Two Pump) Systems (see Fig. 3):

Set both pumps in place in the bottom of the basin. The duplex control used will include 3 or 4 floats that will either be tethered to one of the discharge pipes or to an independent rod hung from the cover. Follow the instructions provided with your duplex control device. Minimum pump turn off level should not be set below 6". Make sure all floats move freely. Connect an individual discharge pipe to each pump. **IMPORTANT: Do not reduce the discharge pipe size below that which is provided on the pump.** Sewage pumps should not be reduced below 2". In some applications, it may be necessary to increase the pipe size to reduce friction losses. Contact Liberty Pumps or other qualified person if you have any questions regarding proper pipe sizes and flow rates. To eliminate fluid recycling in duplex installations, it is necessary to have a check valve on each discharge line prior to tying the two discharges into one common line. Depending on the height of your basin, the check valves may either be installed inside or outside the basin. Mount the basin covers, making sure they are properly sealed.

Fig. 3 – Typical Installation Duplex System
This is a recommended installation only. Variations may apply.



- C. **Installation of Remaining Discharge (Simplex):** After the pump has been mounted and the cover sealed, install the remaining discharge line. A union should be installed just above the cover to facilitate pump removal if necessary. A check valve is recommended after the union to prevent the backflow of liquid after each pumping cycle. A gate valve should follow the check valve to allow periodic cleaning of the check valve or removal of the pump. The remainder of the discharge line should be as short as possible with a minimum number of turns, to minimize friction head loss. Do not restrict the discharge to below 2" in sewage applications. Larger pipe sizes may be required to eliminate friction head loss over long runs. Contact Liberty Pumps or other qualified person if there are questions regarding proper pipe size and flow rates. **Vent:** A connection is provided on top of the cover which must be piped to the existing building vent, or extended outside on its own standpipe. The vent size should be in accordance with applicable codes, but not less than the discharge size. **LE and LEH-Series pumps come equipped with an air bleed hole to help prevent air lock. A small spray of water from this hole is normal while pump is running.**
- D. **Installation of Remaining Discharge (Duplex):** Unions or flexible connectors should be installed just above the cover on each discharge to facilitate removal of the pump if necessary. Free-flow swing check valves should be installed on each discharge after the union and prior to the gate valve to prevent the back flow of liquid or gas. A check valve on each discharge line, prior to tying into one common line, is necessary to prevent the recycling of fluid from one pump to the other. A gate valve is recommended after the check valve to allow for periodic cleaning of the check valve or removal of the pump. The remainder of the discharge line should be as short as possible with a minimum number of turns to minimize friction head loss. Do not reduce the discharge to below 2" in sewage applications. Larger pipe sizes may be required to minimize friction head loss of longer runs. Contact Liberty Pumps or other qualified person if there are questions regarding proper pipe size or flow rates. **Vent:** A connection is provided on top of the unit for connection of the vent pipe. This pipe should be tied into the existing building vent stack, or extended outside on its own standpipe. The vent size should be in accordance with local codes, but not less than the discharge size. **LE and LEH-Series pumps come equipped with an air bleed hole to help prevent air lock. A small spray of water from this hole is normal while pump is running.**

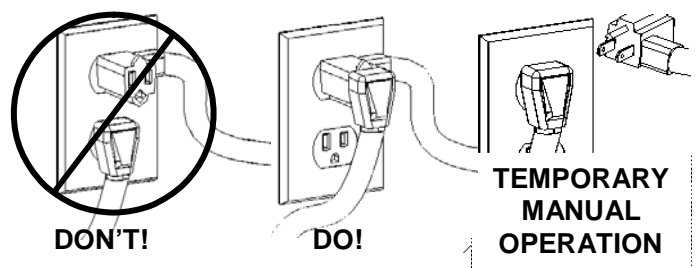
4. Electrical Service & Operation

⚠ WARNING

- **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 or a grounding type attachment plug. To reduce the risk of electric shock, be certain that the grounding conductor is connected only to a properly grounded control panel or, if equipped with a grounding type plug that it is connected to a properly grounded, grounding type receptacle.
- DO NOT bypass grounding wires or remove ground prongs from attachment plugs.
- DO NOT remove cord and strain relief and DO NOT connect conduit to pump.
- DO NOT use an extension cord.
- This pump requires separate, properly fused and grounded branch circuit. Make sure the power source is properly sized for the voltage and amperage requirements of the motor, as noted on the pump nameplate.
- The electrical outlet or panel 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 and all applicable local codes and ordinances.

All LE-Series "A" models (automatic pumps) come factory-equipped with a float switch mounted to the pump. These models come with two cords - one to the float switch and the other to the pump motor. The switch cord has a series (piggyback) plug enabling the pump (motor) cord to be plugged into the back of it (see Fig. 4). The purpose of this design is to allow manual operation of the pump.

Fig. 4 Piggyback plug installation.



For automatic operation using Liberty's supplied switch, the two cords should be interconnected and plugged into a separately fused, grounded outlet of proper amp capacity for your selected pump model. (See Section 1, General Information, or the pump nameplate for electrical specifications of your model.) Both cords are equipped with 3-prong plugs and must be plugged into a properly grounded 3-wire receptacle. **DO NOT REMOVE THE GROUND PRONGS.**

For manual operation, or in the event of switch failure, the pump cord can be separated and plugged into the electrical outlet, directly bypassing the switch. 208-230V single phase pumps should only be operated without the float switch by using the circuit breaker or panel disconnect. Do not let the pump run dry for extended periods.

The turn-on level of LE-Series "A" models is approximately 12" to 16" above the bottom of the basin. The turn-off level is approximately 6" above the bottom of the basin. Other pumping differentials may be obtained by tethering the switch cord to the discharge pipe. **NOTE:** A minimum cord length of 3.5" from the tether point to the top surface of the float is required for proper switch operation. If using a differential other than the factory setting, be sure when the pump shuts off at least 6" of fluid is left in the basin so the impeller remains submerged.

LE-Series pump models with an "M" designation are manual models with no switch. They are intended to be run using an approved liquid level control or approved motor control with correct rating that matches motor input in full load amperes. 3-phase models require the use of an approved motor control that matches motor input in full load amperes with overload element(s) selected or adjusted in accordance with control instructions.

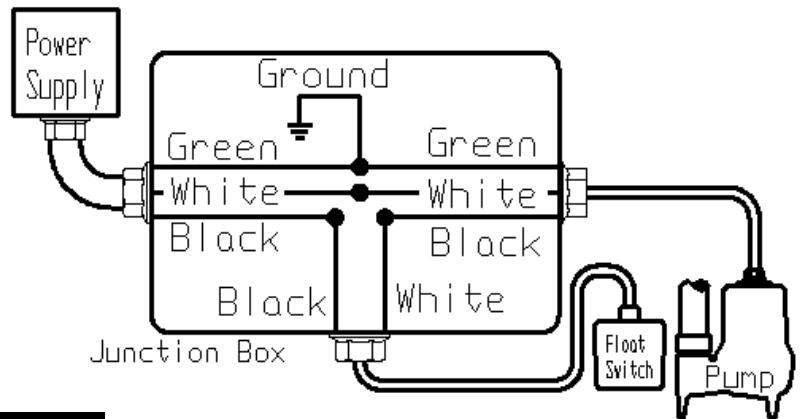
Automatic operation with optional control devices: If the pump(s) are to be operated by either a simplex or duplex control panel, or other optional control device, follow the installation instructions provided with your specific control and make the power connections per those instructions. If necessary, certain models may be run without a separate control. 208-230V single-phase pumps should only be operated without the float switch by using the circuit breaker or panel disconnect. Do not let the pump run dry for extended periods.

LE-Series "A" and "M" models: If the pump is to be wired directly into a control device or junction box, and it is necessary to remove the plugs, have a certified electrician do the wiring in accordance with the National Electric Code and applicable local codes. See Fig. 5 for direct wire installation of single phase, automatic pumps.

⚠ WARNING

In 208-230V installations, one side on the line going to the pump is always "hot", whether the float switch is on or off. To avoid hazards, install a double pole disconnect near the pump installation.

Fig. 5 – Direct Wiring of 115V or 208-230V, Single Phase, Automatic Pumps



5. Maintenance and Troubleshooting

⚠ WARNING

Risk of electric shock. Always disconnect the pump from the power source before handling or making adjustments.

Problem	Cause	Correction
Pump will not run.	<ul style="list-style-type: none"> Blown fuse or other interruption of power; improper voltage. 	<ul style="list-style-type: none"> Check that the unit is securely plugged in. Have an electrician check all wiring for proper connections and adequate voltage and capacity.
	<ul style="list-style-type: none"> Switch is unable to move to the "turn on" position due to interference with the side of basin or other obstruction 	<ul style="list-style-type: none"> Position the pump or switch so that it has adequate clearance for free operation.
	<ul style="list-style-type: none"> Insufficient liquid level. 	<ul style="list-style-type: none"> Make sure the liquid level is allowed to rise enough to activate switch(s).
	<ul style="list-style-type: none"> Defective switch. 	<ul style="list-style-type: none"> Remove and replace switch.

Pump will not turn off.	<ul style="list-style-type: none"> Switch(s) unable to move to the "turn off" position due to interference with the side of basin or other obstacle. 	<ul style="list-style-type: none"> Position the pump or switch so that it has adequate clearance for free operation.
	<ul style="list-style-type: none"> Defective switch. 	<ul style="list-style-type: none"> Remove and replace switch.
Pump runs or hums, but does not pump.	<ul style="list-style-type: none"> Discharge is blocked or restricted. 	<ul style="list-style-type: none"> Check the discharge line for foreign material, including ice if the discharge line passes through or into cold areas.
	<ul style="list-style-type: none"> Check valve is stuck closed or installed backwards. 	<ul style="list-style-type: none"> Remove check valve(s) and examine for freedom of operation and proper installation.
	<ul style="list-style-type: none"> Gate or ball valve is closed. 	<ul style="list-style-type: none"> Open gate or ball valve.
	<ul style="list-style-type: none"> Total lift is beyond pump's capability. 	<ul style="list-style-type: none"> Try to route piping to a lower level. If not possible, a larger pump may be required. Consult the factory.
	<ul style="list-style-type: none"> Pump impeller is jammed or volute casing is plugged. 	<ul style="list-style-type: none"> *Remove the pump from the basin. Detach the pump base and clean the area around the impeller. Reassemble and reinstall.
Pump runs periodically when fixtures are not in use.	<ul style="list-style-type: none"> Check valve was not installed, is stuck open or is leaking. 	<ul style="list-style-type: none"> Remove check valve(s) and examine for freedom of operation and proper installation.
	<ul style="list-style-type: none"> Fixtures are leaking. 	<ul style="list-style-type: none"> Repair fixtures as required to eliminate leakage.
Pump operates noisily.	<ul style="list-style-type: none"> Foreign objects in the impeller cavity. 	<ul style="list-style-type: none"> *Remove the pump from the basin. Detach the pump base and clean the area around the impeller. Reassemble and reinstall.
	<ul style="list-style-type: none"> Broken impeller. 	<ul style="list-style-type: none"> Consult the factory for information regarding replacement of impeller.
	<ul style="list-style-type: none"> Worn bearings. 	<ul style="list-style-type: none"> Return pump to the factory or authorized repair station for repair.
	<ul style="list-style-type: none"> Piping attachments to building are too rigid. 	<ul style="list-style-type: none"> Replace a portion of the discharge line with rubber hose or connector.

***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.

2 Year Limited Warranty Liberty Pumps, Inc. warrants that pumps of its manufacture are free from all factory defects in material and workmanship for a period of 2 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 2 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 damaged or improperly spliced; if the pump discharge has been reduced in size; if the pump has been used in hot water 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 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 two 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.

