

Cover the bottom of the basin excavation with suitably graded, leveled, and compacted backfill material to a depth of at least 12" (compacted sub-base). If a concrete hold-down/anti-flotation pad is required, this bedding can be reduced to a depth of at least 6". Carefully lower the basin into the excavated area and center on the compacted backfill or concrete pad.

### Backfill Material

Ensure backfill material is clean, well granulated, free-flowing, non-corrosive, and inert; free of ice, snow, debris, rock, or organic material, all of which could damage the basin and interfere with the compaction of the backfill material. The largest particles shall not be larger than 3/4". Not more than 3% (by weight) should pass through a #8 sieve, and the backfill material must conform to ASTM C-33, Paragraph 9.1 requirements. Approved backfill materials include:

- Pea gravel, naturally rounded particles, with a minimum diameter of 1/8" and a maximum diameter of 3/4"
- Crushed rock, washed and free-flowing angular particles between 1/8" and 1/2" in size

### Backfill Placement and Compaction

#### NOTICE

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

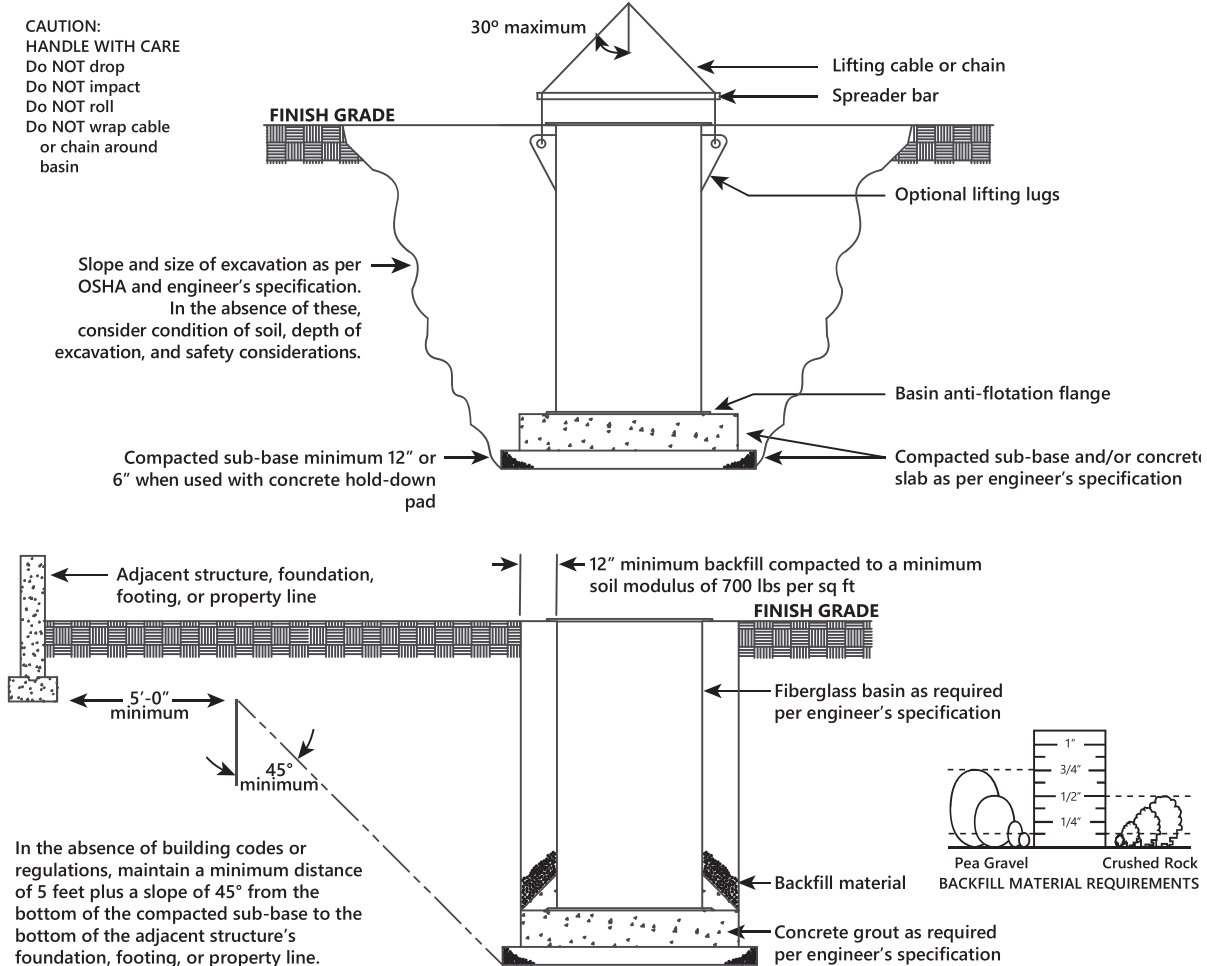
Make certain that compaction of backfill materials is adequate to ensure the support of the basin and to prevent movement or settlement. Place backfill materials in 12" lifts and compacted to a minimum soil modulus of 700 pounds per square foot.

### Support Piping, Equipment and Accessories

#### WARNING RISK OF SERIOUS INJURY OR DEATH

- Using the basin to support any loading carried or created by piping, equipment, cribbing, bracing, or blocking is never permitted.

Provide support for piping, equipment, and other accessories during backfilling. During backfilling, temporary support must be carefully installed and removed to prevent damage to the basin, piping, and/or equipment.



NOTE: The intent of these installation instructions and illustration is to ensure that damage or premature failure to the basin does not occur. These installation instructions and illustration are not intended to preclude normal safety procedures that should be followed to prevent injury to personnel.

**SAFE INSTALLATION PROCEDURES ARE ENTIRELY THE RESPONSIBILITY OF THE INSTALLER**

Figure 1. Basin Installation Reference

## Anchorage

When basin installations are located in areas subject to high water tables or flooding, make provisions to prevent the basin, either empty or filled, from floating. The buoyancy force to be offset is determined primarily by the volume of the basin. The principle offsetting factors include:

- Backfill materials
- Concrete hold-down pad
- Friction between the basin, backfill materials, and surrounding soil

### Anchorage Methods

All methods of anchoring the basin use the weight of the backfill materials to offset the buoyancy forces. The use of supplemental mechanical anchoring methods (i.e., a concrete hold-down pad) increases the amount of backfill ballast, which is mechanically attached to the basin. The recommended method of attachment is to pour concrete grout over the basin's anti-flotation flange and concrete hold-down pad.

### Anchorage Requirements

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

- Use "submerged" material weights when calculating anchorage requirements.

Requirements of anchorage, thickness of concrete hold-down pads, as well as the size of anchors and reinforcement must be calculated for each installation based on the environmental conditions of the specific installation.

**Example:** weight of concrete (150 pounds per cubic foot) minus the weight of the water (62.4 pounds per cubic foot) equals a "submerged" weight of 87.6 pounds per cubic foot.

## QE-Series Control Panel

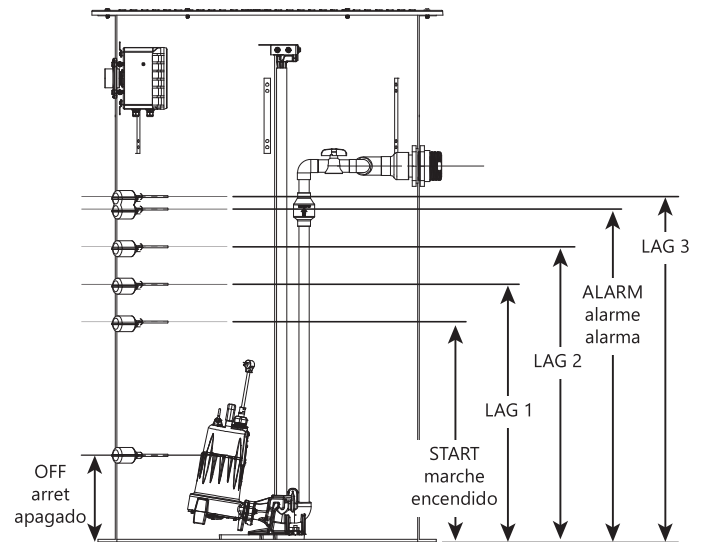
The Q4800 Quadplex System includes a QE-Series control panel, properly sized for the pumps and voltage. This control panel is designed to be used in multiple configurations to meet the needs of the application. The panel is capable of operating up to four pumps at once, and use between three and six floats. The system comes with six floats pre-installed at factory-recommended heights (refer to Table 1).

### Preset Float Levels

The six floats are pre-mounted on a float bracket. The pump cycle is pre-set at the factory according to the depth of the basin. The pump cycle can be adjusted by loosening the cord clamp and moving a float up or down. Do not adjust more than 3" in either direction—call the factory if adjustment to the pump cycle is required beyond this recommended level. To set system to use fewer floats, see **Electrical Connections**.

Table 1. Float Switch Levels

System	OFF	ON	LAG 1	LAG 2	ALARM	LAG 3
Q4884	13"	31"	37"	43"	49"	51"
Q4896	13"	37"	43"	49"	55"	57"
Q48120	13'	43"	49"	55"	61"	63"



### 3-Float System

A 3-float system has a pump OFF float, a START pump float, and a LAG/ALARM float. The OFF float controls the water level at which the pumps turn OFF. The START pump float will turn ON two of the four grinder pumps, and continue to the run the pumps until the water level falls to the OFF float level. The LAG/ALARM float will turn ON the other two grinder pumps that were not running, and trigger the high level ALARM. Jumper wires must be added to the terminal blocks in order to run the system with three floats.

### 4-Float System

A 4-float system will have a pump OFF float, a START pump float, a LAG pump float, and an ALARM float. The OFF float controls the water level at which the pumps turn OFF. The START pump float will turn ON two of the four grinder pumps, and continue to run the pumps until the water level falls to the OFF float level. The LAG pump float will turn ON the other two grinder pumps that were not running. The ALARM float will trigger the high level ALARM. Jumper wires must be added to the terminal blocks in order to run the system with four floats.

### 5-Float System

A 5-float system will have a pump OFF float, a START pump float, a LAG1 pump float, a LAG2 pump float, and a LAG3/ALARM float. The OFF float controls the water level at what the pumps turn OFF. The START pump float will turn ON one of the four grinder pumps, and continue to the run the pump until the water level falls to the OFF float level. The LAG1 pump float will turn ON a second grinder pump that was not running. The LAG2 float will turn ON a third grinder pump that was not running. The LAG3/ALARM float will turn on the final grinder pump and trigger the high level ALARM. Jumper wires must be added to the terminal blocks in order to run the system with five floats.

### 6-Float System

A 6-float system will have a pump OFF float, a START pump float, a LAG1 pump float, a LAG2 pump float, a LAG3 pump float, and an ALARM float. The OFF float controls the water level at what the pumps will turn off. The START pump float will turn ON one of the four grinder pumps, and continue to the run the pump until the

water level falls to the OFF float level. The LAG1 pump float will turn ON a second grinder pump that was not running. The LAG2 float will turn ON a third grinder pump that was not running. The ALARM float will trigger the high level ALARM. The LAG3 float will turn ON the final grinder pump. The panel comes preset for 6-float operation and no jumper wires are required.

## Installation

### **⚠️ WARNING** RISK OF ELECTRIC SHOCK

- 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.

### **NOTICE**

- ◆ For pressure sewer applications, verify a Redundant Check Valve Assembly (curb stop and check valve) is installed between the pump discharge and the street main, as close to the public right-of-way as possible, on all installations to protect from system pressures.

## Electrical Connections

With mains power disconnected, connect the electrical coupling to 2" electrical conduit and run the power and float cords through the conduit to the control panel. When complete, check all wires for unintentional ground.

Control panel wiring diagrams are supplied with the control panels. Use the control panel drawings in conjunction with the following to complete the wiring.

**IMPORTANT:** If control panel schematics differ from what is provided herein, always follow the manufacturer's drawings.

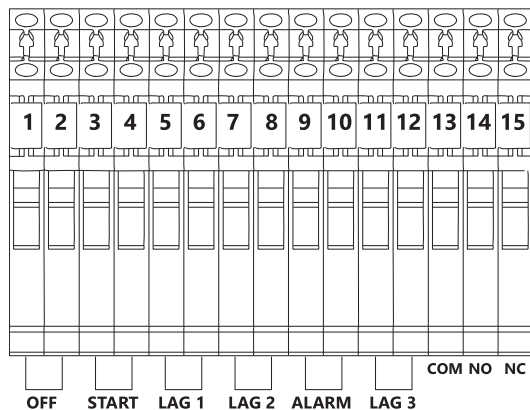


Figure 2. Terminal Block Connections (1-Phase and 3-Phase)

### **3-Float System**

Connect floats to the appropriate terminals for OFF, START, and LAG2. Use a jumper wire to connect terminals 4 and 6 to always operate two pumps when the START pump is triggered. Use another jumper wire to connect terminals 8 and 10 to always operate a separate pair of pumps when a LAG pump is triggered.

Use another jumper wire to connect terminals 10 to 12 to activate an ALARM when the LAG pumps are triggered.

### **4-Float System**

Connect floats to the appropriate terminals for OFF, START, LAG2, and ALARM. Use a jumper wire to connect terminals 4 and 6 to always operate two pumps when the START pump is triggered. Use another jumper wire to connect terminals 8 and 10 to always operate a separate pair of pumps when a LAG pump is triggered.

### **5-Float System**

Connect floats to the appropriate terminals for OFF, START, LAG1, LAG2, and LAG3. Use a jumper wire to connect terminals 10 and 12 to trigger the ALARM when the highest float is activated.

### **6-Float System**

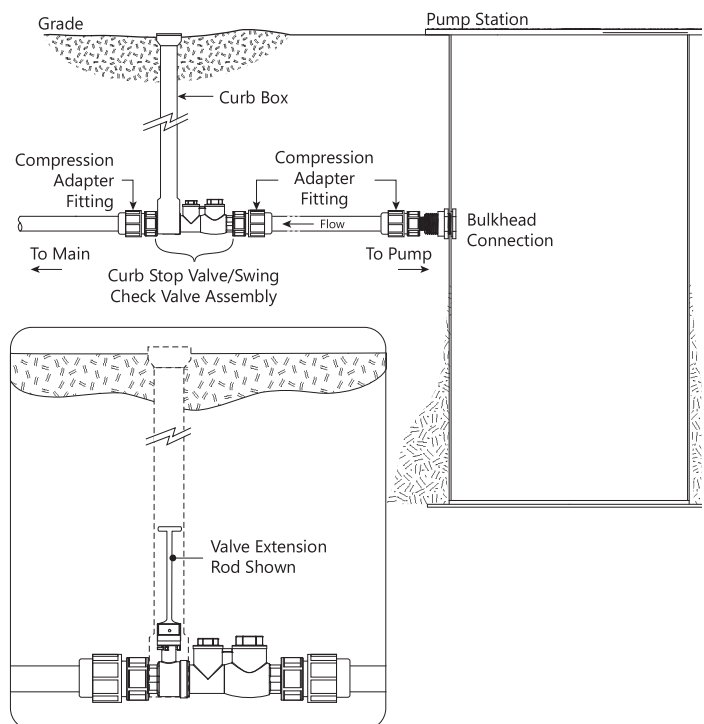
Connect all six floats to the appropriate terminals (i.e., lowest float to terminals 1 and 2 for the OFF float).

## Discharge Line

Connect appropriate pipe rated for at least 200 PSI to the pump discharge. Do not reduce the size of the discharge piping and do not increase the discharge piping to larger than 4". The remainder of the discharge line should be as short as possible with a minimum number of turns to minimize friction head loss.

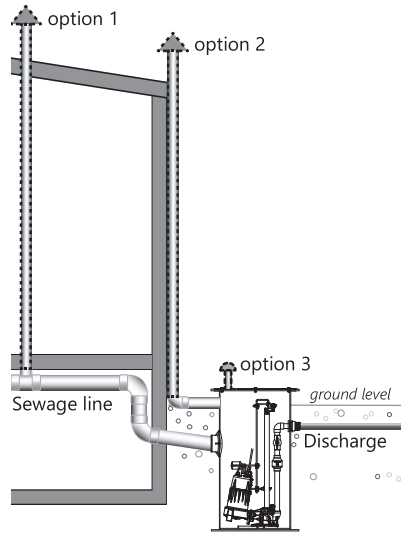
### **Pressure Sewer Applications**

A redundant check valve assembly consisting of a curb stop and check valve must be installed between the pump discharge and the street main, as close to the public right-of-way as possible, on all pressure (force main) sewer installations to protect from system pressures. The curb stop valve is necessary to isolate the site from the pressure sewer while the check valve provides redundant protection against potentially detrimental backflow. All valves and fittings should be rated for at least 200 PSI service. See Liberty Pumps line of CSV-Series Curb Stop/Swing Check Valve Assemblies and CK-Series Connection Kit.



## Vent

The fiberglass basin provided with the system must be completely sealed and properly vented per local health and plumbing code requirements. If the system is to be vented through the inlet to an existing building vent stack, there must be no traps between the system inlet and the nearest building vent stack connection (option 1). If this is not possible or desirable per the application, a standalone vent can be installed in tank side (option 2) or a vent flange or grommet can be installed in a hole cut into the cover (option 3).

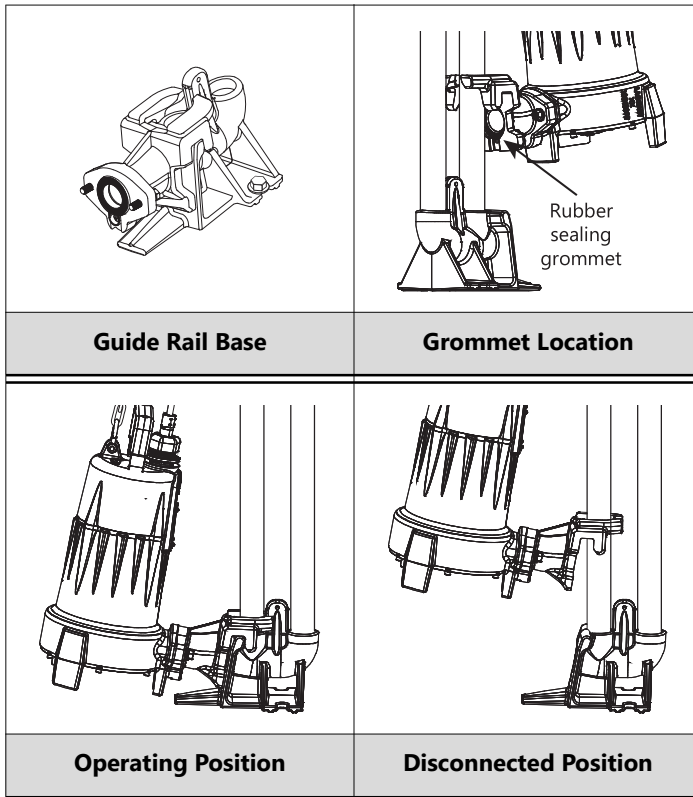


## Inlet Line

Connect the inlet line to the inlet hub per engineer's specifications.

## GR-Series Guide Rail System

The GR20 quick-disconnect assembly guide rail system provided with the system is designed to allow easy installation and removal of the pump. When installed correctly, it will seal and provide a means to lift the pump without disconnecting any of the discharge piping. Ensure installation is done as shown.



## Operation, Maintenance, Troubleshooting

Refer to supplied pump, alarm, and control panel manuals. For further questions, contact customer service at 1-800-543-2550 or support@LibertyPumps.com.

## 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 and "Commercial Series" models). The date of purchase shall be determined by a dated sales receipt noting the model and serial number of the pump. The dated sales receipt must accompany the returned pump if the date of return is more than three years from the date of manufacture noted on the pump nameplate.

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

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

Liberty Pumps, Inc. shall not be liable for any loss, damage, or expenses resulting from installation or use of its products, or for 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.**

\*Liberty Pumps, Inc. warrants StormCell® batteries for 1 year from date of purchase, and warrants that pumps of its Commercial Series are free from all factory defects in material and workmanship for a period of 18 months from the date of installation or 24 months from the date of manufacture, whichever occurs first, and provided that such products are used in compliance with their intended applications as set forth in the technical specifications and manuals.