Skidmore®
A Swan Group Company

SM-7
May 2021

Installation, Operation, & Service Instructions

UV Condensate and Boiler Feed Pumps

KEEP THESE INSTRUCTIONS NEAR THE PUMP FOR USE OF OPERATOR

INSTALLATION INSTRUCTIONS

LOCATING PUMP: Install unit in a clean, dry, well-ventilated, and drained location for inspection and care, with the cover of the receiver flush with the concrete floor. This unit must be placed so that the condensate will flow into the receiver by gravity, otherwise the returns will be wet, and the system cannot free itself of air.

PIPING: Connect returns to inlet of receiver with a gate valve in each return and with a union or flange joint next to the receiver. Connect discharge of pump to boiler with a union, swing check valve, and a gate valve: with the check valve as close to the discharge as possible. If discharge pipe is longer than 50 ft, increase piping to the next larger size. Piping must be of the correct length to prevent any pipe strain upon the unit.

WIRING: The electrical connection between the motor, float switch and automatic starter (if furnished) are made at the factory. Connect the electrical service to the float switch or automatic starter using conduit and wire sizes as required by local power companies. Provide a fused main line switch in motor circuit. CAUTION: The motor is wired and connected at the factory to operate at the voltage specified. If voltage is different than originally specified, consult motors manufacturer's instructions for proper wiring. Where a polyphase motor is furnished with only a float switch, IT WILL BE NECESSARY TO INSTALL A SUITABLE PHASE PROTECTOR SWITCH IN THE MOTOR CIRCUIT TO PREVENT MOTOR BURNOUTS SHOULD A SINGLE-PHASE CONDITION OCCUR.

FUSES: Be sure fuses are installed and comply in size with National Electric Code recommendations. When a fuse blows out it indicates that something is wrong either in the motor, pump, switch, fuse rating, or electric service. Do not replace fuse until the cause for it blowing out has been determined. If a thermal cut-out is used, an element with a maximum tripping current rating 50% greater than the motor nameplate current may be selected. Condensate and boiler feed pumps only operate intermittently and therefore is permissible.

OPERATING INSTRUCTIONS

CAUTION: New or repaired heating systems should be operated for several days with the returns open to sewer until water appears clear to thoroughly flush the lines and prevent clogging of the pump when it is put in operation. This may take a few days to two weeks.

LUBRICATION: Motors that do not have regrease capability are lubrication for the life of the bearing. If a motor does have regrease capability, please see the manufacturer's recommended schedule for lubrication instructions.

BEFORE STARTING UNIT FOR THE FIRST TIME:

1. Turn shaft and see that it rotates freely by hand. Failure of shaft to turn freely may be caused by packing glands drawn too tightly, motor bearings that need lubricated, or debris clogging pump or becoming lodged in motor.
2. Be sure current characteristics of voltage, phase, and frequency on motor nameplate are the same as the service available. Also be sure that wires are connected to the motor as per manufacturer's instructions for voltage and phase used, and that the correct size fuses and thermal overloads are installed.

4. Be sure that piping connections have been made as per instructions, and that the air vent pipe leading from the receiver is open to atmosphere.
5. Be sure that the engineering characteristics of the complete pumping unit are identical to the capacity, discharge pressure, and other requirements of the heating system.
6. Be sure that the float in the receiver is free to operate float switch.

STARTING: Open valves in discharge and return lines, close valve on drains and throw in fused knife switch. If an automatic starter with selector switch is installed, be sure selector switch is in "Automatic" position.

AFTER STARTING:

1. With vent pipe open to atmosphere, air and steam can escape as fast as condensation flows into the receiver. If vent is restricted or clogged, receiver will not fill.
2. Be sure pump and motor rotate in proper direction. Correct direction of rotation is clockwise when looking at top of motor. If rotation is reversed, the trouble may be corrected in polyphase motors by simply reversing any pair of leads. If the motor is single phase, adjust the brush settings. (See motor instruction card.) If motor is D.C., reverse armature leads.
3. Be sure bearings of the motor do not overheat.
4. Be sure float switch closes and opens properly as receiver fills and is empties by the pump. Normally this need not be touched. If required however, refer to float switch instruction card.
5. Be sure all connections are tight.
6. Observer operation of unit closely for approximately three hours after starting and at regular intervals for ten days. A new unit is frequently stiff, and bearings are tight, and therefore should be watched to note performance.

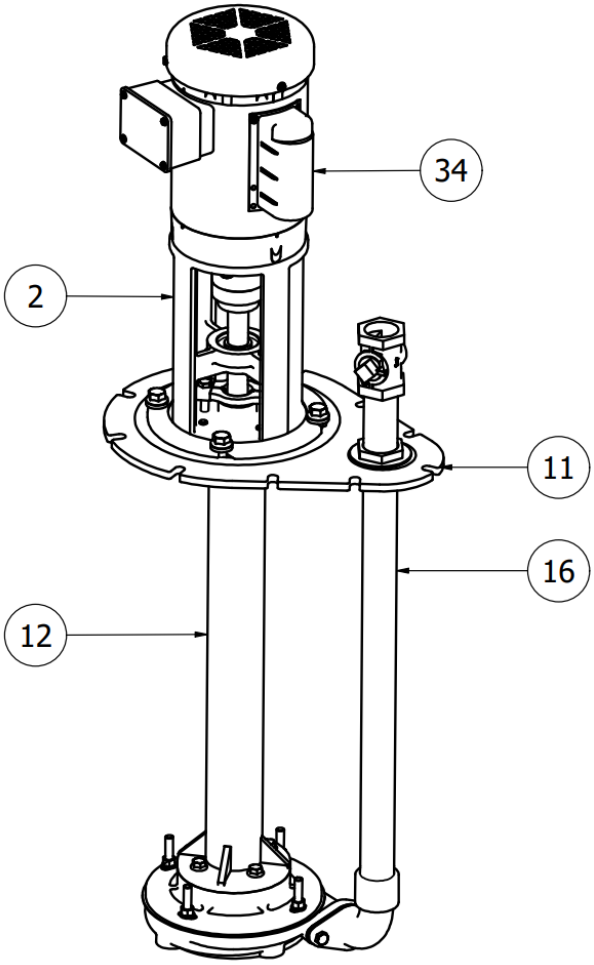
CARE

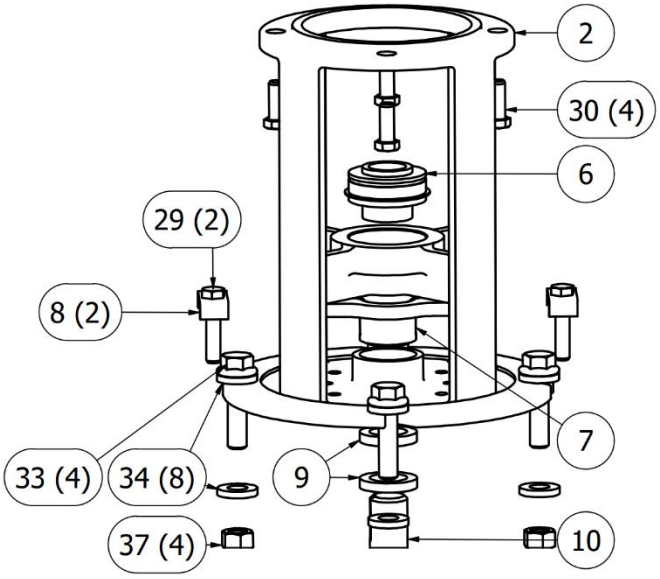
1. INSPECTION: To ensure the best operation of the unit, make weekly systematic inspections.
2. CLEANLINESS: Keep the interior and exterior of motor and automatic switches free from moisture, oil and dirt. When necessary, blow out the interiors with compressed air or a bellows. Occasionally drain and flush receiver to remove sediment and scale, frequency depending upon operating conditions.
3. BEARINGS: Prevent excessive heating and wear of bearings by proper lubrication at regular intervals, depending upon the type of pump service and cleanliness of location. Avoid over lubrication, which also causes bearings to heat up and produce excessive wear. When bearings are worn and unit is noisy, replace immediately with new bearings so as not to injure the other rotating parts.
4. AUTOMATIC SWITCHES: Occasionally examine contacts of automatic switches and see that they make a full firm contact and break the circuit quickly. See that all terminal connections are tight.
5. STUFFING BOXES: Keep packing glands just tight enough to allow a slight drip for lubrication, but not too tight as to bind the pump shaft. Tighten opposite nuts evenly. After tightening nuts turn shaft by hand; if it binds, loosen nuts slightly. Use only packing as furnished in pump or as recommended by Skidmore.
6. SHUTTING DOWN: At the end of the heating season open main line switch, close valves on return and discharge, and drain receiver and pump. Cover motor and automatic switches to protect them against dirt, etc.
7. CAUTION: Never run pump when it is empty or expose it to freezing temperatures when filled with water.

ORDERING PARTS

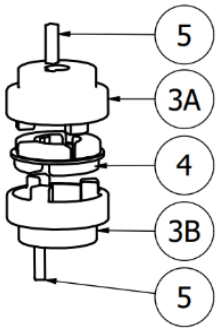
When ordering parts, always furnish pump serial number indicated on nameplate, which may be attached to receiver, pump or base depending upon convenience. State quantity, name or description and part number if a casting.

PUMP ASSEMBLY

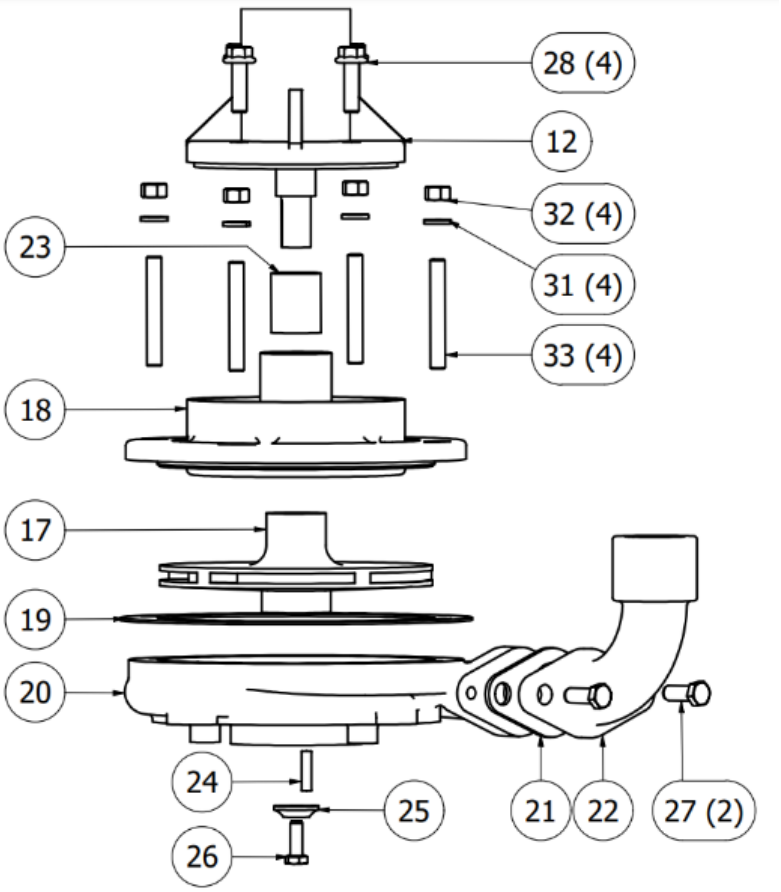




Motor Bracket Assembly

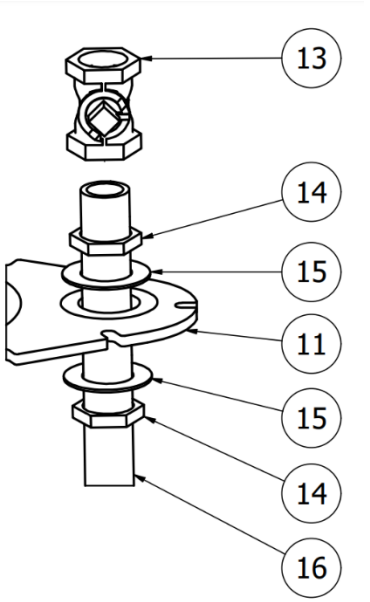


Shaft Coupling

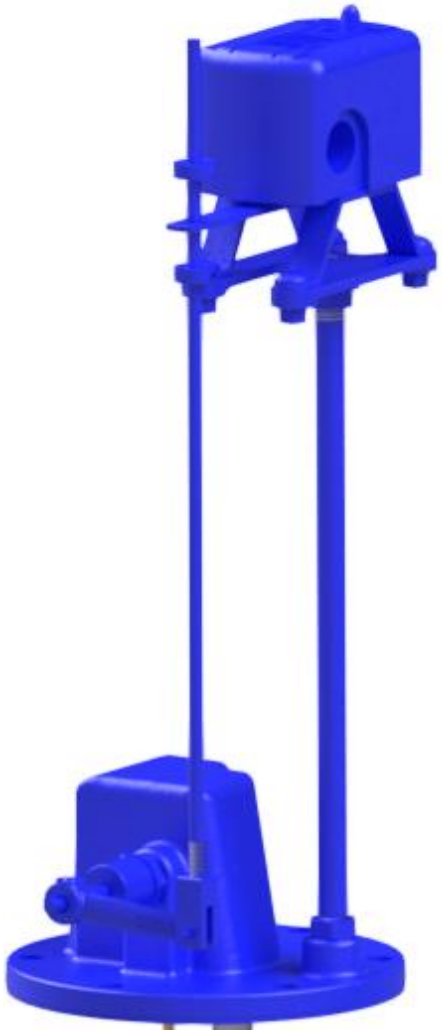


Volute Assembly

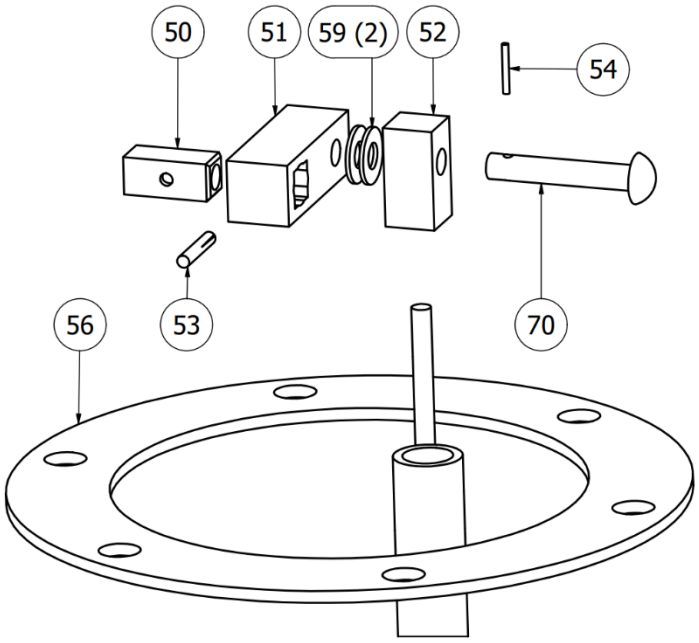




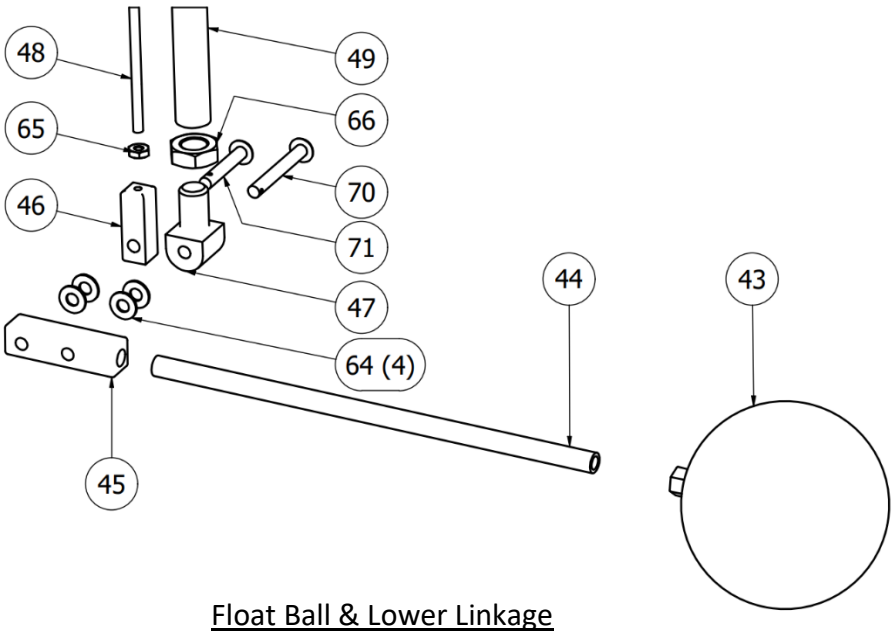
Discharge Line



FLOAT ASSEMBLY

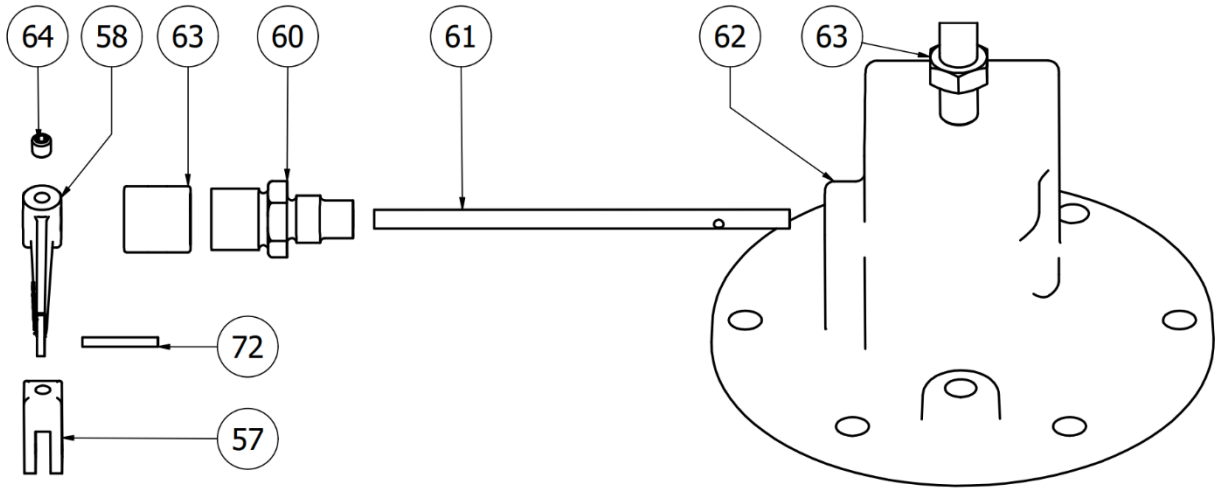


Upper Linkage (Inside Cover)

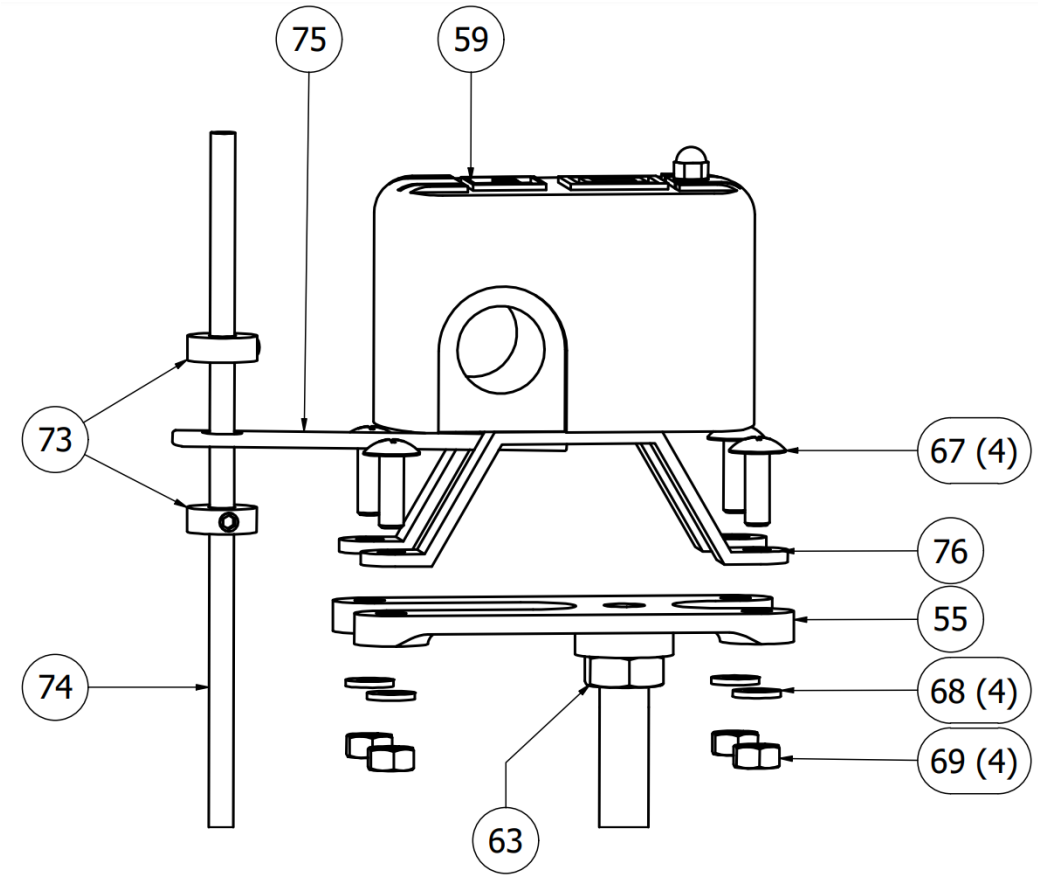


Float Ball & Lower Linkage



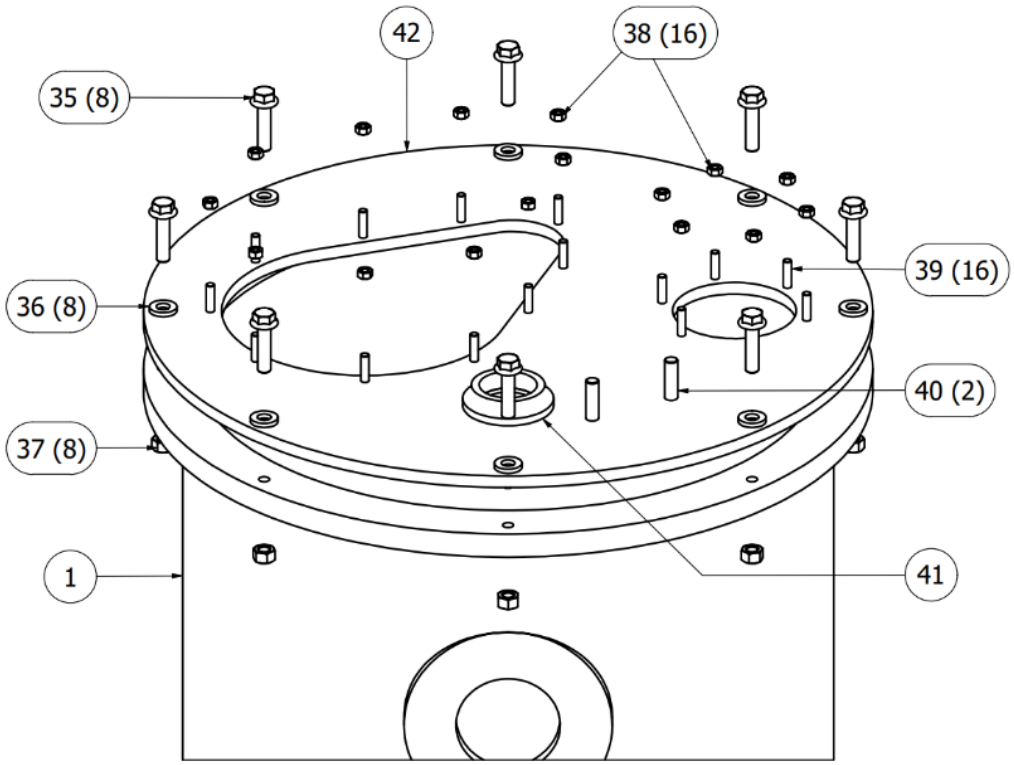


Upper Linkage (Outside Cover)



Float Switch and Mounting Hardware

TANK COVER ASSEMBLY



PARTS LIST

1	Receiver
2	Motor Bracket
3A	Motor Coupling
3B	Shaft Coupling
4	Coupling Insert
5	Coupling Key
6	Shaft Bearing
7	Packing Gland
8	Packing Gland Retaining Washer
9	Shaft Packing Material
10	Shaft
11	Pump Assembly Tank Cover
12	Shaft Housing
13	Discharge Valve
14	Discharge Pipe Nut
15	Discharge Pipe Gasket
16	Discharge Pipe
17	Impeller
18	Volute Adapter
19	Volute Gasket
20	Volute
21	Volute Discharge Gasket
22	Volute Discharge Elbow
23	Shaft Bushing
24	Impeller Key
25	Impeller Retaining Washer
26	Impeller Bolt
27	Volute Discharge Bolt
28	Volute Adapter Bolt
29	Packing Gland Bolt
30	Motor Bolt
31	Volute Washer / Lockwasher
32	Volute Nut
33	Volute Stud
34	Motor
35	Tank Cover to Receiver Flange Bolt
36	Tank Cover to Receiver Washer
37	Tank Cover to Receiver Nut
38	Tank Cover to Motor Bracket and Float Nut
39	Tank Cover Weld Stud
40	Tank Cover Large Weld Stud
41	Tank Cover Weldolet
42	Tank Cover
43	Float Ball
44	Float Ball Rod
45	Float Ball Link
46	Float Push Rod Lower Link
47	Float Push Rod Lever Support
48	Float Switch Push Rod
49	Float Pipe Support
50	Float Key Support
51	Float Upper Lever Link
52	Float Upper Push Rod Link
53	Float Linkage Pin
54	Float Rivet Pin
55	Float Switch Mounting Bracket
56	Float Switch Gasket
57	Float UV Link
58	Float Switch UV Lever
59	Float Switch
60	Float Bushing and Stuffing
61	Float Operating Shaft
62	Float Cover Plate
63	Float Support Rod Nut
64	Float Lever Set Screw
65	Float Push Rod Nut
66	Float Pipe Support Nut
67	Float Switch Mounting Bolt
68	Float Switch Mounting Washer
69	Float Switch Mounting Nut
70	Float Linkage Long Rivet
71	Float Linkage Rivet
72	Float Lever Pin
73	Float Operating Rod Collar
74	Float Operating Rod
75	Float Switch Arm
76	Float Switch Base

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OVERFLOWS AND VENTS – INSTALLATION INSTRUCTIONS

Proper installation of overflow and vent piping is critical to the success of your installation. The tank you have purchased is **not a pressure vessel**, and properly locating the overflow and vent piping will help prevent damage to the tank. Overflow and vent piping should always be properly supported to avoid damaging the tank.

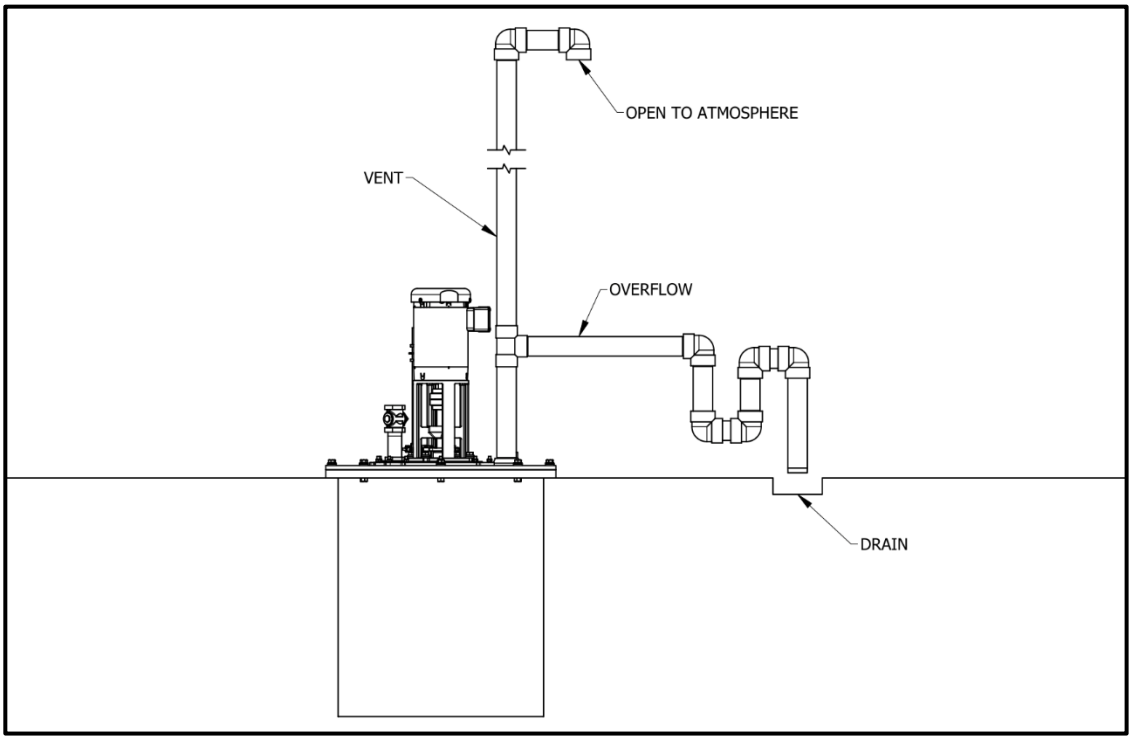
The purpose of the **overflow** is to provide a path for the tank contents to escape the tank in the event of flooding caused by mechanical or technical failure. An overflow should extend no higher than one foot above the top of the tank, because each additional foot of height in the overflow adds about 0.5 PSI to the pressure in the vessel if the tank floods. Overflows typically are directed into floor drains.

The purpose of the **vent** is to maintain atmospheric pressure on top of the liquid in the tank (that is, to prevent pressurization of the tank). There is no limit to the height of the vent since it is only carrying air at low velocity. Tall vents should be supported from above to ensure stability and to reduce weight load on the tank.

Some tanks have separate vent and overflow ports, while others have a single port that must serve both purposes. See The figures below for the proper method for plumbing vent and overflow to a single port. **Never reduce pipe size on vent or overflow lines.**

⚠ WARNING

FAILURE TO PROPERLY INSTALL VENT AND OVERFLOW PIPING AS DESCRIBED HEREIN COULD ENDANGER PERSONNEL AND RESULT IN DAMAGE TO PROPERTY.



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MANUFACTURING AND DESIGN OF QUALITY HVAC SYSTEMS SINCE 1921

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