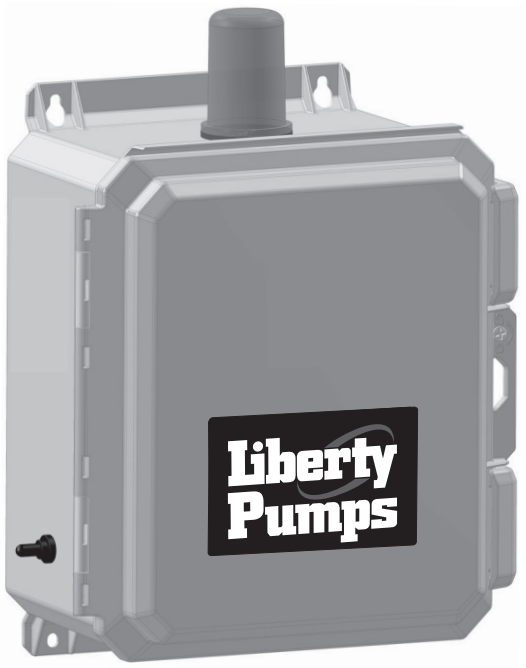
Liberty Pumps®
A Family and Employee Owned Company



Three-Phase Simplex SX-Series Control Panel

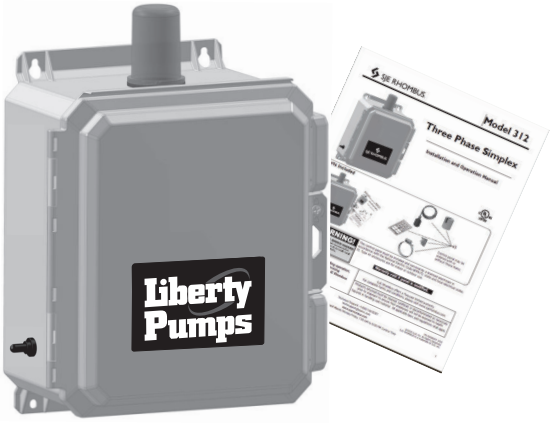
SX34=3-131, SX34=3-141, SX34=3-171, SX34=3-191, SX34=3-511 and SX54=3-121

Manufactured by SJE-Rhombus®

Installation Instructions and Operation Manual/Troubleshooting

c UL us LISTED

Parts Included



Float label sheet

Three each of the following:
- Floats
- Worm Clamps
- Pipe Mount Clamps

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 and serviced by a licensed electrician in accordance with the National Electric Code NFPA-70, state and local electrical codes. UL Type 4X enclosures are for indoor or outdoor use.

Warranty void if panel is modified.

Call factory with servicing questions:
1-800-543-2550

Liberty Pumps, Inc. offers a three-year limited warranty.
For complete terms and conditions, please visit www.libertypumps.com.

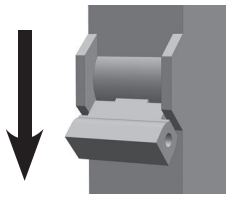
Products returned must be cleaned, sanitized, or decontaminated as necessary prior to shipment to ensure that employees will not be exposed to health hazards in handling said material. All applicable laws and regulations shall apply.

Specifications subject to change without notice.

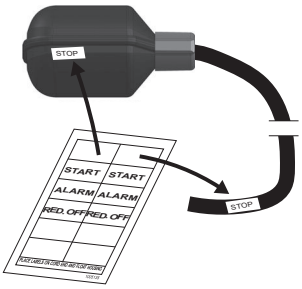
Installing the Float Switches

The 3-Phase simplex control panel operates with 3 float switches to activate pump STOP, START, and high-level ALARM functions.

1 **⚠ WARNING!**
Ensure all power is turned OFF before installing floats in tank. Failure to do so could result in serious or fatal shock.



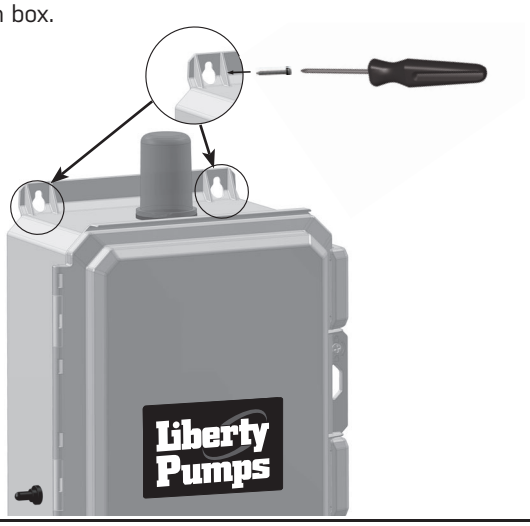
2 Label each float and cord end with the provided pairs of STOP, START, and ALARM stickers.



3 **⚠ CAUTION!**
If the floats are not properly mounted and connected in the correct order, the pumps will not function properly.

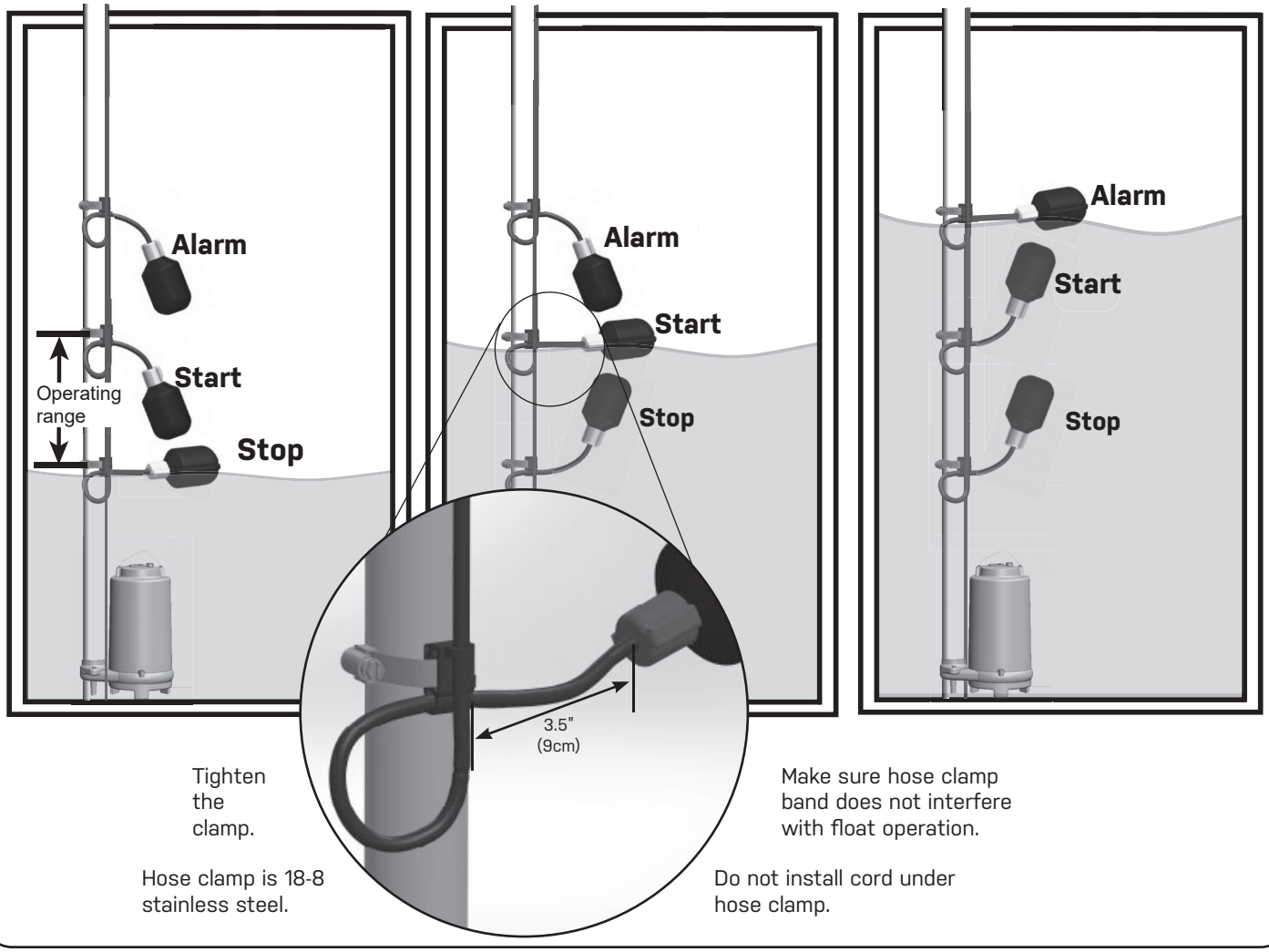
Mounting the Control Panel

NOTE
If the distance to the control panel exceeds the length of the float switch cords or the pump power cord, splicing in a liquid-tight junction box will be required. For outdoor or wet installation, we recommend an outdoor Type 4X junction box.



Floats require free range of motion.
They must not touch each other or any equipment in the pump chamber.

Pipe Clamp Mounting - Float Operation



Tighten the clamp.

Hose clamp is 18-8 stainless steel.

Make sure hose clamp band does not interfere with float operation.

Do not install cord under hose clamp.

Specifications subject to change without notice.

Wiring the Control Panel

1 Determine conduit entrance locations on control panel as shown. Check local codes and schematic inside the panel for the number of power circuits required.

⚠ CAUTION! Be sure the pump power voltage and phase are the same as the pump motor being installed.

2 Connect the following wires to the proper terminal positions:

- incoming power
- pump
- float switches

See schematic inside control panel for details.

⚠ CAUTION! You must use conduit sealant to prevent moisture or gases from entering the panel.

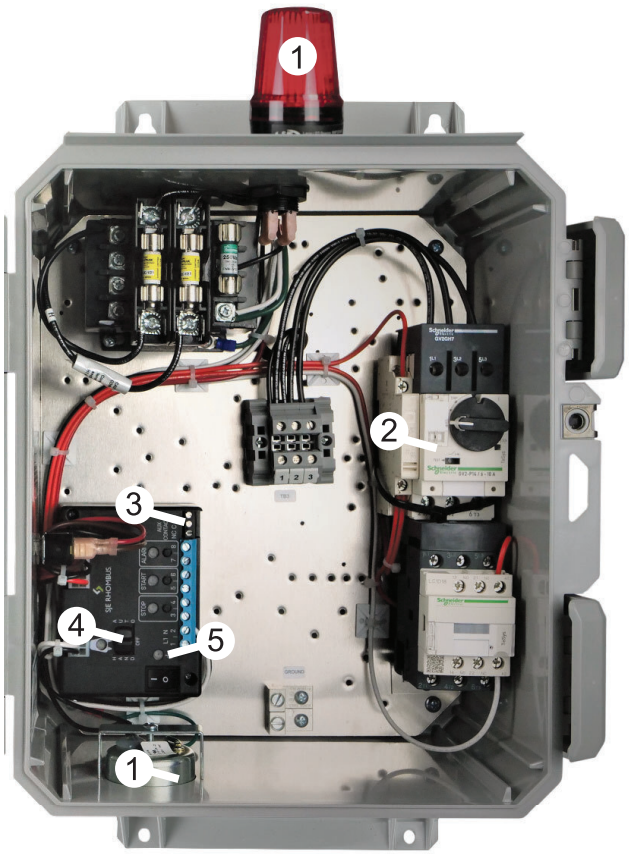
Type 4X conduit must be used to maintain a Type 4X rating of the control panel.

3 Verify correct operation of control panel after installation is complete.

Operation

1. Alarm System (Indicator Light and Horn)

When an alarm condition occurs, a red light and a horn will be activated. If the test/normal/silence switch is moved to the silence position, the horn will be silenced. When the alarm condition is cleared, the alarm system is reset. The alarm system can be tested by moving the test/normal/silence switch to the test position.



Typical Layout (May vary with options ordered).

2. Motor Protective Switch

A motor protective switch is supplied for the pump to provide an adjustable overload, branch circuit protection and disconnect. The overload must be set in the field. To set the overload, dial the amp scale to the pump's full load amps (FLA). If the FLAs are unknown, use a calibrated ammeter to measure the pump amperage draw under loaded conditions. An auxiliary contact is wired in series with the magnetic contactor coil so that on an overload trip, the magnetic contactor will be disabled. In the event of an overload trip, the motor protective switch must be reset by first turning the handle counterclockwise to the OFF position and then turning the handle 90° clockwise to the ON position.

3. Dry Auxiliary Contacts

Normally open - Contacts are open under normal conditions and closed when alarm condition is present.
Normally closed - Contacts are closed under normal conditions and open when alarm condition is present.
Both types automatically reset once alarm condition is cleared.

4. Hand-Off-Auto (HOA) Switch

A hand-off-automatic switch is provided for the pump. In the hand mode, the pump will turn on unless other safety features are employed. In the automatic mode, the pump will turn on from commands by the float switches.

5. Pump Run Light

The run light will be ON in either the hand or the automatic mode when the pump is called to run.

Troubleshooting

Alarm Horn
Moving the alarm test/normal/silence switch to the test position or activating the alarm float should turn on the alarm horn. If the horn does not sound replace with horn of same type.

Alarm Light
Moving the alarm test/normal/silence switch to the test position or activating the alarm float should turn on the alarm light. If the light does not activate, replace with bulb of same type.

Float Controls
Check the floats during their entire range of operation. Clean, adjust, or replace floats.

Checking the float resistance - The float resistance can be measured to determine if the float is operating correctly or is defective. Use the following procedure to measure the float resistance:

1. Isolate the float by disconnecting one or both of the float leads from the float terminals.

2. Place one ohmmeter lead on one of the float wires, and the other ohmmeter lead on the other float wire.

3. Place the ohmmeter dial to read ohms and place on the RX1 scale. With the float in the "off" position, the scale should read infinity (high resistance). Replace the float if you do not get this reading. With the float in the ON position, the scale should read nearly zero (very low resistance). Replace the float if you do not get this reading.

NOTE: Readings may vary depending on the length of wire and accuracy of the measuring device.

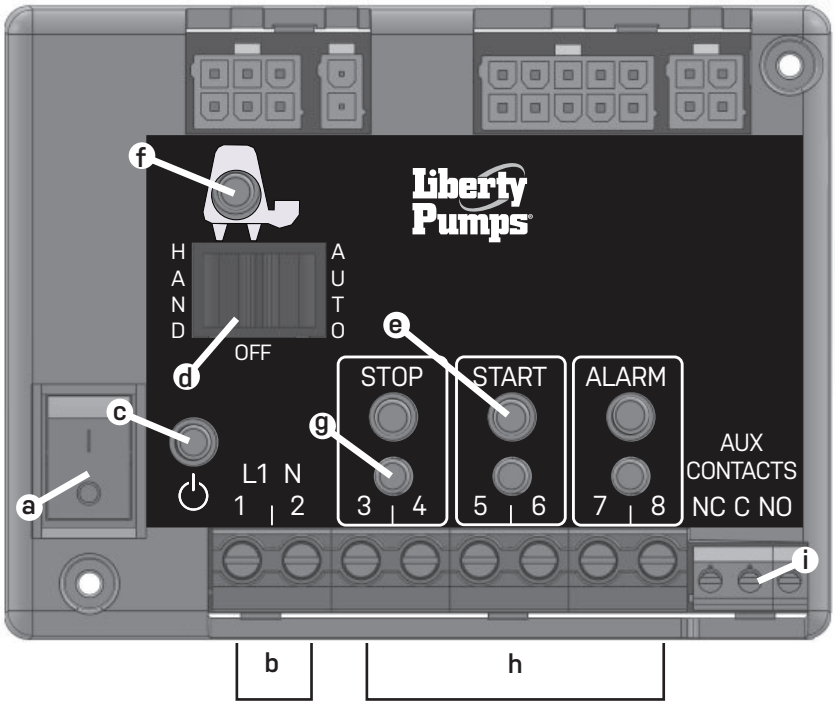
Fuses
Check the continuity of the fuse. With power OFF, pull the fuse out of the fuse block. With the ohmmeter on the RX1 scale, measure resistance. A reading of infinity indicates a blown fuse and must be replaced. Replace fuse with same type, voltage and amp rating.

Indicator Lights
If defective, replace all indicator pilot lights with same type.

Magnetic Contactor
Contacts - Check the contacts for severely burnt or welded contacts. The contactor arm should move freely.
Coil - Measure the coil by disconnecting one of the coil leads. Measure the coil resistance by setting the ohmmeter on the RX1 scale. A defective coil will read zero or infinity, indicating a short or opened coil respectively. Replace defective contactor with same type.

NOTE: Readings may vary depending on accuracy of the measuring device.

Motor Protective Switch
Test by inserting a paper clip or other small device into the test hole and push to the left. The relay should trip.



COMPONENTS

a. ON/OFF Switch - Control/Alarm Power
b. 120V Incoming Power Terminals (Supplied by Control Transformer)
c. Power LED - (Green)
d. Pump HOA Switch
e. Float LEDs - (Red) x3
f. Pump LED
Pump Run - (Green)
Pump Fail - (Red)
g. Simulate Float Buttons x3
h. Float Terminals x6
i. Auxiliary Alarm Terminals

PROGRAMMING INSTRUCTIONS			
WITH POWER ON, HOA OFF, FLOATS OFF OR DISCONNECTED, PRESS DESIRED FLOAT BUTTON RAPIDLY 4 TIMES AND HOLD			
PUMP LED WILL FLASH UPON SUCCESSFUL PROGRAMMING			
OPTIONS	**FLOAT BUTTON**	**DEFAULT**	**OPERATION**
MANUAL ALARM RESET	STOP	OFF	LATCHES HIGH ALARM: CLEAR WITH EXTERNAL TEST SWITCH
ALARM FLASHER	ALARM	OFF	FLASHES BEACON UPON HIGH ALARM

ALARM CONDITIONS			
ALARM	**BEACON**	**CONTROLLER LED**	**HORN**
PUMP POWER FAIL	FLASHING	RED PUMP LIGHT	NO
FLOAT FAIL	FLASHING	BAD FLOAT NOT LIT	NO
HIGH ALARM	SOLID	ALARM FLOAT	YES

Standard Field Wiring Diagram

Identify panel configuration before wiring.
Use wiring diagram in conjunction with schematic for panel installation.
NOTE: It is the recommendation of the factory to use separate pump and control/alarm power sources.

⚠ WARNING!

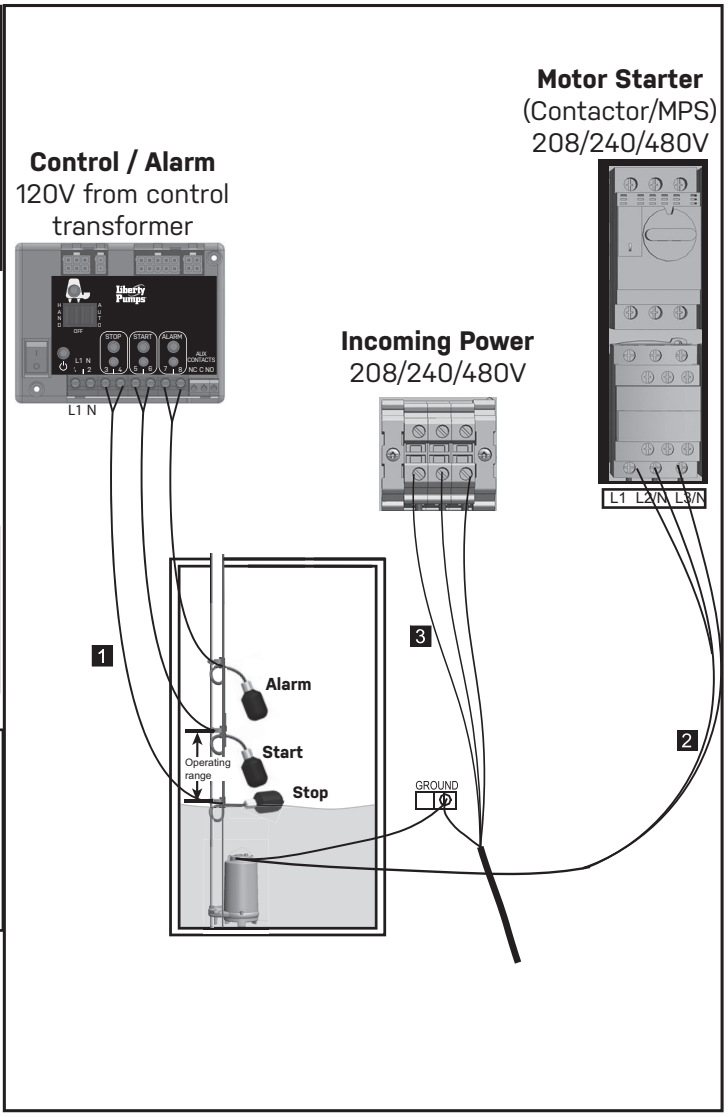
ELECTRICAL SHOCK HAZARD
Disconnect all power sources before servicing. Failure to do so could result in serious injury or death. Must be installed by a licensed electrician and in accordance with the National Electric Code NFPA-70, state and local electrical codes.

1 **Wire Floats**
a. Connect float switches to TB1 (on circuit board) as shown. (Pump down application is shown)

2 **Wire pump power cable**
a. Connect pump power cable to motor contactor.
b. Connect pump ground wire to ground lug.

3 **Wiring incoming power 208/240/480V**
a. Connect L1, L2, and L3 to incoming power terminal blocks.
b. Connect ground line to ground lug.

4 **Field wire options according to schematic** (if applicable)



Liberty Pumps®

7000 Apple Tree Avenue
Bergen, New York 14416
Phone: 1-800-543-2550
Email: liberty@libertypumps.com
www.libertypumps.com