**PRODUCT USE**

Polylok STEP systems are designed for septic and effluent tank pumping. They can either be used in an advanced wastewater treatment system or in a STEP collection system. The STEP system has a unique structural design to ensure long life and performance.

**PRODUCT DESCRIPTION**

Polylok STEP systems include a molded LDPE housing, polypropylene and PVC filter, Schedule 40 PVC discharge kit, Schedule 80 PVC support pipes, float level controls, submersible high head effluent pump, and control panel. The filter and float tree are designed to allow removal for cleaning without removal of the pump or housing. Standard models are available in Simplex or Duplex pumping configurations.

### STEP SYSTEM SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>PL-STEP49</th>
<th>PL-STEP57</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - Vault Height</td>
<td>49”</td>
<td>57”</td>
</tr>
<tr>
<td>Filter Diameter</td>
<td>9-3/4”</td>
<td>9-3/4”</td>
</tr>
<tr>
<td>B - Filter Height</td>
<td>40-11/16”</td>
<td>48-11/16”</td>
</tr>
<tr>
<td>Filter Screen Opening</td>
<td>1/8”</td>
<td>1/8”</td>
</tr>
<tr>
<td>Filter Surface Area</td>
<td>12.83 sq. ft.</td>
<td>15.33 sq. ft.</td>
</tr>
<tr>
<td>Filter Open Area</td>
<td>5.65 sq. ft.</td>
<td>6.76 sq. ft.</td>
</tr>
<tr>
<td>Housing Inlet Height</td>
<td>14”</td>
<td>14”</td>
</tr>
<tr>
<td>Pump Off/On/Alarm Level (From Top Of Vault)</td>
<td>14” / 10” / 6.25”</td>
<td>22.5” / 17.5” / 12.5”</td>
</tr>
</tbody>
</table>

### CONSTRUCTION MATERIALS

- **Housing**: 100% Recycled Low Density Polyethylene
- **Filter**: Polypropylene / PVC
- **Float Tree**: Schedule 40 PVC
- **Support Pipe**: Schedule 80 PVC
- **Float Control**: Mechanical Level Control
- **Discharge Kit**: Schedule 40 PVC
STEP PACKAGE - SEPTIC TANK EFFLUENT PUMP SPECIFICATIONS

PUMP SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Standard</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Flow Rate (GPM)</td>
<td>20</td>
<td>10, 30</td>
</tr>
<tr>
<td>RPM</td>
<td>3450</td>
<td></td>
</tr>
<tr>
<td>Hp</td>
<td>1/2</td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>Phase</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>60 Hz</td>
<td></td>
</tr>
<tr>
<td>Full Load Amps</td>
<td>10 Amps</td>
<td></td>
</tr>
<tr>
<td>Discharge Size</td>
<td>1-1/4&quot;</td>
<td></td>
</tr>
<tr>
<td>Cable Length</td>
<td>10'</td>
<td></td>
</tr>
<tr>
<td>Motor Protection</td>
<td>Thermal Overload</td>
<td></td>
</tr>
<tr>
<td>Backflow Protection</td>
<td>Removable Built-In</td>
<td></td>
</tr>
<tr>
<td>Cable Type</td>
<td>Sjow300V</td>
<td></td>
</tr>
<tr>
<td>Standard Polylok Control Panel Model</td>
<td>PI-112 Simplex Step Panel</td>
<td></td>
</tr>
<tr>
<td>Enclosure Dimensions</td>
<td>8&quot;x8&quot;x4&quot;</td>
<td></td>
</tr>
<tr>
<td>Enclosure Type</td>
<td>UL Type 4x With Removable Molded Mounting Feet</td>
<td></td>
</tr>
<tr>
<td>Audible Alarm</td>
<td>Includes Normal – Silence Switch 83-85 Db</td>
<td></td>
</tr>
<tr>
<td>Alarm Light</td>
<td>Flashing Red</td>
<td></td>
</tr>
<tr>
<td>Voltage To Control</td>
<td>120 VAC</td>
<td></td>
</tr>
<tr>
<td>Voltage To Pump Relays</td>
<td>120 VAC</td>
<td></td>
</tr>
<tr>
<td>Complete With Step By Step Installation Instructions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PUMP CONSTRUCTION MATERIALS

- Motor Housing: Stainless Steel
- Impeller Material: Celcon
- Diffuser: Glass Filled Polypropylene
- Fasteners: Stainless Steel
- Shaft: Stainless Steel
- Bearings: PEEK
- Discharge: Glass Filled Polypropylene

PERFORMANCE DATA

- Flow: 0 to 300 L/min (0 to 80 gpm)
- Head: 0 to 22.5 m (0 to 75 ft)

CONTROL PANEL FEATURES

Standard Features
- Standard Control Devices
- Pump On/Off
- Alarm Light And Horn
- Lockable Latch
- Hoa Switch
- Normal-Silence Switch
- Pump And Controls Circuit Breakers
- Motor Magnetic Contactor
- 3 Float Operation (Installed In Basin)

Available Options
- Elapsed Time Meter
- Cycle Counter
- Run Indication Light
- Power Indication Light
- Programmable Timer
- Plc Smart Panel
- Lightning Arrestor
- Remote Monitoring
- Alarm & Remote Mounting
- Auto Dialers
- Custom – Call Factory

Polylok, Inc. 3 Fairfield Blvd. Wallingford, CT 06492 Tel: 1-877-765-9565 Fax: (203) 284-8514 www.polylok.com
1. Polyethylene Basin
2. Discharge Pipe
3. Float Switch Assembly
4. Light Weight ECO FILTER Cartridge
5. High-head Effluent Submersible Pump(s)
6. Filters
High Head Filtered Effluent Pumps

Applications:
- Filtered effluent service
- Aeration
- Ornamental fountains/waterfalls

Features:
- Ideal for filtered effluent pumping
- Thermoplastic discharge and motor brackets are tough and non-corrosive
- Heavy duty, 300 volt, 10' SJOW Jacketed cord with stripped leads
- 1-1/4" FNPT discharge
- High quality top bearing for maximum durability and years of reliable service
- Proven Noryl® staging allows close tolerances and increased performance
- Stainless steel up thrust washer prevents excessive wear in services applications
- Removable built-in check valve
- Powered by Franklin Electric super stainless submersible motor
- Built-in lightning protection

Noryl® is a registered trademark of G.E. Plastics.
MODEL 112 Control Panel

Single phase, simplex motor contactor control.
The Model 112 control panel provides a reliable means of controlling one 120, 208, or 240 VAC single phase pump in pump chambers, sump pump basins, irrigation systems and lift stations. Two control switches activate a magnetic motor contactor to turn the pump on and off. If an alarm condition occurs, an additional alarm switch activates the audio/visual alarm system.

PANEL COMPONENTS

1. Enclosure measures 8 x 8 x 4 inches (20.32 X 20.32 X 10.16 cm). Choice of NEMA 1 (steel for indoor use), or NEMA 4X (ultraviolet stabilized thermoplastic with removable mounting feet for outdoor or indoor use).
   * Options selected may increase enclosure size and change component layout.

2. Magnetic Motor Contactor controls pump by switching electrical lines.
3. HOA Switch for manual pump control (mounted on circuit board).
4. Green Pump Run Indicator Light (mounted on circuit board).
5. Float Switch Terminal Block (mounted on circuit board).
6. Alarm and Control Fuses (mounted on circuit board).
8. Ground Lug
9. Circuit Breaker (optional) provides pump disconnect and branch circuit protection.

STANDARD ALARM PACKAGE

10. Red Alarm Beacon provides 360° visual check of alarm condition.
    Note: NEMA 1 style utilizes a door mounted indicator in lieu of a beacon.
11. Alarm Horn provides audio warning of alarm condition (83 to 85 decibel rating).
    Note: NEMA 1 style utilizes an internally mounted buzzer in lieu of horn.

12. Exterior Alarm Test/Normal/Silence Switch allows horn and light to be tested and horn to be silenced in an alarm condition. Alarm automatically resets once alarm condition has been cleared.
13. Horn Silence Relay (mounted on circuit board).

NOTE: other options available.

FEATURES

- Entire control system (panel and switches) is UL Listed to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Standard package includes three 20' SJIE SignalMaster control switches
- Complete with step-by-step installation instructions
- Three-year limited warranty
MODEL 112

ALARM PACKAGE
- 0 = select options or no alarm package
- 1 = alarm package (includes test/normal/silence switch, fuse, red light, horn & float)

ENCLOSURE RATING
- I = Indoor, NEMA 1 (metal)
- W = Weatherproof, NEMA 4X (engineered thermoplastic)

STARTING DEVICE
- 1 = magnetic motor contactor 120/208/240V
- 9 = magnetic motor contactor 120V only

PUMP FULL LOAD AMPS
- 0 = 0-7 FLA
- 1 = 7-15 FLA
- 2 = 15-20 FLA
- 3 = 20-30 FLA

PUMP DISCONNECT
- 0 = no pump disconnect
- 4 = circuit breaker 120V (select STARTING DEVICE option 9 above)
- 120/208/240V (select STARTING DEVICE option 1 above)

FLOAT SWITCH APPLICATION
- H or L = pump down or pump up (select 17 option)
- X = no floats
- WITH alarm package
- WITHOUT alarm package

OPTIONS Listed below

ENCLOSURE UPSIZE - If you selected 3 or more of the ★ options, or one ★★ option, add a one-time enclosure upsize fee would apply.

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>Red beacon only / no audio</td>
</tr>
<tr>
<td>1C</td>
<td>Horn only / no visual</td>
</tr>
<tr>
<td>1E</td>
<td>Alarm float</td>
</tr>
<tr>
<td>3A</td>
<td>Alarm flasher</td>
</tr>
<tr>
<td>★ 3B</td>
<td>Manual alarm reset</td>
</tr>
<tr>
<td>★ 4A</td>
<td>Redundant off</td>
</tr>
<tr>
<td>★ 4B</td>
<td>Red redundant off indicator &amp; alarm</td>
</tr>
<tr>
<td>4D</td>
<td>Redundant off float</td>
</tr>
<tr>
<td>★ 5A</td>
<td>Thermal cutout/heat sensor auto</td>
</tr>
<tr>
<td>★★5E</td>
<td>Seal failure circuit &amp; red indicator (2 wire)</td>
</tr>
<tr>
<td>6A</td>
<td>Auxiliary alarm contact, form C</td>
</tr>
<tr>
<td>★ 8A</td>
<td>Elapsed time meter</td>
</tr>
<tr>
<td>★ 8C</td>
<td>Event (cycle) counter</td>
</tr>
<tr>
<td>★★A</td>
<td>Pump overload</td>
</tr>
</tbody>
</table>

Circuit breaker:
- 0-20 FLA
- 20-30 FLA
- 10A Control / alarm circuit breaker
- 16A 10' cord in lieu of 20' (per float)
- 16B 15' cord in lieu of 20' (per float)
- 16C 20' cord in lieu of 20' (per float)
- 16D 40' cord in lieu of 20' (per float)
- 17A Signal Master® / mounting strap \ (per float)
- 17B Signal Master® / externally weighted \ (per float)
- 17C Sensor Float® / internally weighted \ (per float)
- 17D Sensor Float® / externally weighted \ (per float)
- 17E Sensor Float® Mini / pipe clamp \ (per float)
- 17F Sensor Float® Mini / externally weighted \ (per float)
- 17G Sensor Float® / pipe clamp \ (per float)
- 19T TOA (Test/Off/Automatic) switch and pump run light through door mounted |
- 1U HOA (Hand/Off/Automatic) switch and pump run light through door mounted |
- 18X Door mounted pump run indicator |
- 21A SJEPumpMaster® in lieu of on/off switches |
- 21B SJEPumpMaster® Plus in lieu of on/off switches |
- 21C Super Single® in lieu of on/off switches |
- 21D Double Float® in lieu of on/off switches

If additional features are required, call the factory for a quote on an Engineered Custom control panel.
### Dimensional Outline

![Diagram with dimensions: A = 7.00, B = 9.38, C = 21.91, D = 83.75.]

### Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Item No.</th>
<th>HP</th>
<th>Voltage/Hz</th>
<th>Discharge (gpm, in)</th>
<th>50'</th>
<th>100'</th>
<th>150'</th>
<th>200'</th>
<th>250'</th>
<th>Wire</th>
<th>Cord</th>
</tr>
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<tbody>
<tr>
<td>WE1000HP4-21...</td>
<td>558221</td>
<td>1/2</td>
<td>115/60</td>
<td>1-1/4</td>
<td>15</td>
<td>13</td>
<td>10</td>
<td>7</td>
<td>2</td>
<td>2 Wire</td>
<td>SJOW/300V/10 Stripped Leads</td>
</tr>
<tr>
<td>WE1000HP4-22</td>
<td>558222</td>
<td>1/2</td>
<td>230/60</td>
<td>1-1/4</td>
<td>19</td>
<td>13</td>
<td>10</td>
<td>7</td>
<td>2</td>
<td>2 Wire</td>
<td>SJOW/300V/10 Stripped Leads</td>
</tr>
<tr>
<td>WE2000HP4-21</td>
<td>558223</td>
<td>1/2</td>
<td>115/60</td>
<td>1-1/4</td>
<td>28</td>
<td>20</td>
<td>8</td>
<td>—</td>
<td>—</td>
<td>2 Wire</td>
<td>SJOW/300V/10 Stripped Leads</td>
</tr>
<tr>
<td>WE2000HP4-22</td>
<td>558224</td>
<td>1/2</td>
<td>230/60</td>
<td>1-1/4</td>
<td>28</td>
<td>20</td>
<td>8</td>
<td>—</td>
<td>—</td>
<td>2 Wire</td>
<td>SJOW/300V/10 Stripped Leads</td>
</tr>
<tr>
<td>WE3000HP4-21</td>
<td>558225</td>
<td>1/2</td>
<td>115/60</td>
<td>1-1/4</td>
<td>32</td>
<td>14</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2 Wire</td>
<td>SJOW/300V/10 Stripped Leads</td>
</tr>
<tr>
<td>WE3000HP4-22</td>
<td>558226</td>
<td>1/2</td>
<td>230/60</td>
<td>1-1/4</td>
<td>32</td>
<td>14</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2 Wire</td>
<td>SJOW/300V/10 Stripped Leads</td>
</tr>
</tbody>
</table>

### Construction

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor housing</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>Impeller material</td>
<td>Celcon</td>
</tr>
<tr>
<td>Diffuser</td>
<td>Glass Filled PPO (Noryl)</td>
</tr>
<tr>
<td>Power cord</td>
<td>10' SJOW</td>
</tr>
<tr>
<td>Check Valve</td>
<td>Celcon</td>
</tr>
<tr>
<td>Fasteners</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Shaft</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Bearings</td>
<td>PEEK</td>
</tr>
<tr>
<td>Discharge</td>
<td>Glass Filled Polypropylene</td>
</tr>
</tbody>
</table>
Model 112 Control Panel Specifications

Single Phase Simplex Control Panel

1.01 GENERAL

A. Contractor shall furnish all labor, materials, equipment and incidentals required to provide a simplex motor control panel as specified herein.

B. The motor control panel shall be assembled and tested by a controls system manufacturer (SJE-Rhombus or pre-approved equal) meeting the Standards of UL 508A for industrial controls and be UL labeled and serialized accordingly. The motor control panel shall be assembled and tested by the manufacturer so as to insure suitability in matching controls to motors and to insure single source responsibility for the equipment.

C. The panel shall contain all components required by the pump manufacturer for starting and protecting the motor as well as features required by the pump manufacturer for warranty of the pumps. Items such as thermal overload detection or seal failure detection shall be included when required.

D. Incoming pump power shall be single-phase, 60 Hz, 120/208/240 volts AC.

E. Incoming control/alarm power shall be single-phase, 60 Hz, 120 volts AC.

F. The control panel shall incorporate three (3) normally open, mercury or mechanically-activated control switches with pipe clamps. Floats shall be labeled in the panel as stop, start, and alarm. Floats shall be SJE-Rhombus control switches or approved equal.

2.01 CONSTRUCTION

A. The controls for the pump shall be housed in an engineered thermoplastic
enclosure meeting NEMA 4X requirements with a hinged door and neoprene gasket. The enclosure shall have provisions for a padlock.

B. A nameplate shall be permanently affixed to the panel. A ratings label shall include the model number, voltage, phase, frequency, ampere rating and horsepower rating and shall be affixed to the inside of the enclosure. A warning label against electric shock shall be permanently affixed to the outer door. The interior of the enclosure shall have a clear envelope with "as built" schematics located within.

C. A removable aluminum back plate shall be provided for mounting all circuit breakers, motor starters, etc. All components mounted to the back plate shall be secured by type 25, self-tapping screws in extruded holes. Rivets shall not be acceptable for securing any component to the backplate.

D. A simplex pump controller shall be provided for control logic. The controller shall utilize a printed circuit board to avoid conventional wiring. The printed circuit board of the pump controller shall be manufactured using UL listed materials. There shall be separately fused control and alarm circuit protection. A run light and hand-off-auto switch shall be provided for the pump circuit. The run light and hand-off-auto switch shall be mounted on the printed circuit board. The run light shall be green.

E. A circuit breaker shall be used as branch circuit protection for the pump. The circuit breaker shall be thermal magnetic and sized to meet NEC requirements for interrupt capacity and amp rating.

F. The magnetic motor starter shall be general purpose type rated for the pump horsepower and include a contactor with a minimum mechanical life of 500,000 operations and a minimum contact life of 100,000 operations. Pump overloads, if not included in the pump, shall provide overload protection for the pump circuit and shall be sized to meet NEC requirements for the pump
full load ampere rating specified.

G. A high-level alarm condition shall activate the main alarm light (red, mounted on the top of the panel) and alarm horn. The alarm light shall remain illuminated until the problem is corrected. The alarm horn shall be rated 83-85 dB minimum. A Test-Normal-Silence toggle switch labeled and placed adjacent to the horn, shall be included.

H. Wire ties shall be used to maintain panel wiring in neat bundles for maintenance and to prevent interference with operating devices. All grounding conductors shall be securely connected to assure a proper ground.

I. The control panel shall be a 112 series panel as manufactured by SJE-Rhombus or approved equal.