FEDERAL PUMP CORP

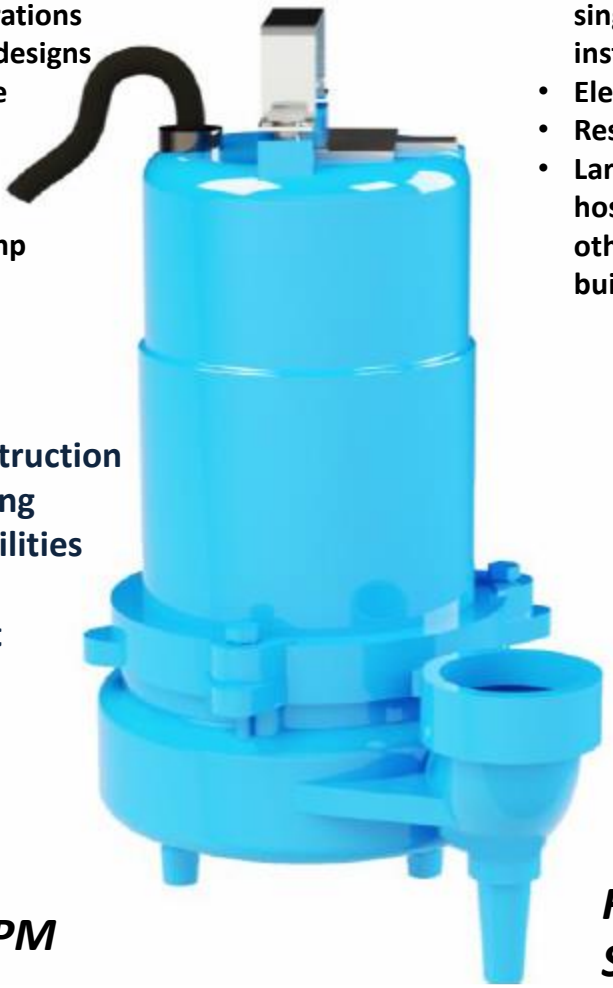
**Type P Submersible Effluent Pumps**
**BULLETIN 206-C1 October 2014**

## Submersible Pump Installations

- Submersible pumps with oil lubricated bearings
- 1750 selections
- 115V/1Phase/60 cycle motors
- 208-230/460V/3Phase/60 Cycle motors
- Solid handling to 2”
- Fiberglass basins available in variety of sizes
- Steel and aluminum covers and frames
- Float controls for automatic operation
- Wall mounted control panels
- Simplex or Duplex Configurations
- Free standing or guide rail designs
- High water alarms available
- Threaded connections
- Power cords to 25 feet
- High water alarms
- Oil sensing for elevator sump
- Internal mechanical seal

## Applications

- Sump and smaller sewage
- Solid handling to 2”
- High temperature available to 190 degree F.
- Storm water basins
- Special high temperature floats and accessories.
- Available in pre-packaged and assembled systems or single or duplex installations.
- Elevator sump
- Residential buildings
- Larger commercial office, hospital, hotel, motel and other non-residential buildings.

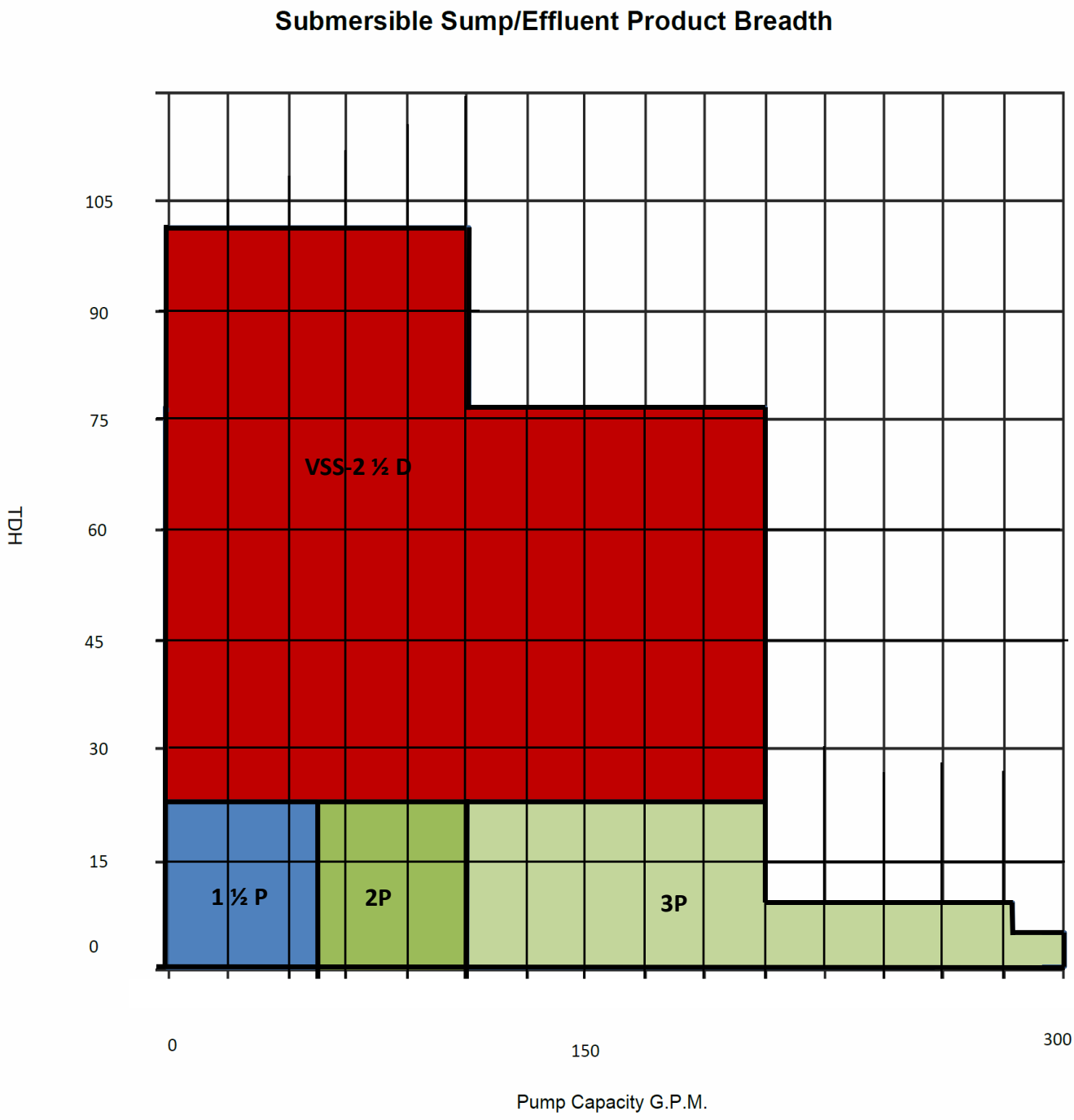


- **Rugged cast iron construction**
- **Cast iron motor housing**
- **Solids handling capabilities**
- **Lifting pump handle**
- **Cast iron foot support**

***Flow rates to 350 GPM***
***TDH to 35 feet***
***High Temperature to 190 degree F***
***Single and Three Phase options***

***Fiberglass Basins***
***Steel Covers***
***Aluminum Covers***
***Float Controls***

# Sump Pump: Range of Operation



# Catalog Sections: P Series

| Catalog Section | Section Number |
|---|---|
| Product Information | P.1-P Series |
| Suggested Specs | S.1-P Series |
| Material of Construction | M.1-P Series |
| Selection Table | ST.1-P Series |
| Dimensions | D.1-P Series |
| Installation | I.1-P Series |
| Submittal | SU.1-P Series |
| O&M | OM.1-P Series |
| Price Sheets | PR.1-P Series |

**Fig 1: Type 1.5P ISO View**

**Fig 2: Type 2P ISO View**

**Fig 2: Type 3P ISO View**

# Product Information: Type P Series P.1-Type P

Fig 1: Type 1.5P Sump/Effluent

Fig 2: Type 2P Sump/Effluent Pump

Fig 3: Type 3P Sump/Effluent Pump

## Cast Iron— Maximum Liquid Temperature Rating 130°F

The Type P series Sump/Effluent Pump are rated to a maximum of 300 GPM and 35 F.T. TDH. Pumps are provided in Cast Iron construction and include: stainless steel shaft, cast iron impeller (vertex nylon impeller), mechanical seals, oil lubricated submersible motors and include 20 F.T. CSA approved submersible water proof power cable and tilt type float switch. Solid handling capabilities range from 5/8" through 2 inch based on the model selected.

### TYPE 1.5P SUMP/EFFLUENT PUMP
### 1 1/2" DISCHARGE
### 5/8" SOLID HANDLING

- **MOTOR:** Single phase rated 115/230V, 1/3HP at 1550 RPM. Oil-filled with built-in overload protection.
- **PUMP:** Cast iron fitted with non-clog vortex impeller and 5/8" solids handling capability.
- **POWER CORD:** Fully sealed water-proof power cord, 20FT in length. Longer cords are available if required.
- **FLOAT SWITCH:** Single automatic operated tilt type float switch mounted on the pump for 115 volt operation. For 230V single phase selections, pump will include a discharge pipe mounted float switch (discharge pipe by others).
- **MODIFICATIONS**: High temperature pumps available to 194°F. (on select sizes only). Pumps available in Quick-Disconnect design.

### TYPE 2P SUMP/EFFLUENT PUMP
### 2" DISCHARGE
### 1.5" SOLID HANDLING

- **MOTOR:** Single phase rated 115/230V, 1/2HP at 1750 RPM. Oil-cooled with built-in overload protection for single phase pumps.
- **PUMP:** Cast iron fitted with non-clog impeller and solids handling capabilities to 1 1/2".
- **POWER CORD:** Fully sealed water-proof power cord, 20FT in length. Longer cords are available if required.
- **FLOAT SWITCH:** Single automatic operated tilt type float switch mounted on the pump for 115 volt operation. For 230V single phase selections, pump will include a discharge pipe mounted float switch (discharge pipe by others).
- **MODIFICATIONS**: High temperature pumps available to 194°F. (on select sizes only). Pumps available in

### TYPE 3P SUMP/EFFLUENT PUMP
### 3" DISCHARGE
### 2" SOLID HANDLING

- **MOTOR:** Single phase rated 115/230V through 3/4HP, three phase rated 208-230/460V for 1 through 3 HP at 1750 RPM. Oil-cooled with built-in overload protection for single phase pumps.
- **PUMP:** Cast iron fitted with non-clog impeller and solids handling capability to 2".
- **POWER CORD:** Fully sealed water-proof power cord, 20FT in length. Longer cords are available if required.
- **FLOAT SWITCH:** Single automatic operated tilt type float switch mounted on the pump for 115 volt operation. For 3 phase selections, pump will include a discharge pipe mounted float switch (discharge pipe by others).
- **MODIFICATIONS**: High temperature pumps available to 194°F. (on select

# Suggested Specifications for Architects, Engineers and Product Users Type P

### (Simplex or Single unit)

Furnish and install as shown in the plans a simplex Federal Pump Corporation Series P Submersible Sump Pump with each pump rated as shown in the pump schedule.

Each pump shall include submersible oil lubricated motor, cast iron casing, standard fitted construction with stainless steel shaft and water proof power cable and float switch assemble. Motor shall be rated 1750 R.P.M. Pump will be provided with submersible float switch for automatic control of the pump.

### Duplex or 2 Pump System

(Duplex or Dual unit) Furnish and install as shown in the plans a duplex Federal Pump Corporation Series P Submersible Sump Pump/Effluent with each pump rated as shown in the pump schedule.

Each pump shall include submersible oil lubricated motor, cast iron casing, standard fitted construction with stainless steel shaft and water proof power cable and float switch assemble. Motor shall be rated 1750 R.P.M. Pump manufacturer will provide a duplex pump control panel in a NEMA-1 enclosure (as shown in drawings) along with an automatic alternator to alternate the lead/lag pump operation. For 3 phase operation, the pump manufacturer will provide a Federal type SBS Duplex Submersible. SBS circuitry will be of solid state design and epoxy encapsulated. Pump manufacturer will supply SBS pilot device-style 1 which includes round suspension plate, NEMA-4 junction box and (4)tilt type submersible liquid level control devices.

Pump(s) shall be installed in a sump basin with diameter and depth are outlined on the plans. Sump basin shall be (fiberglass, concrete, or as shown in the plans). The pump manufacturer shall provide a gas tight cover plate with vent connections.

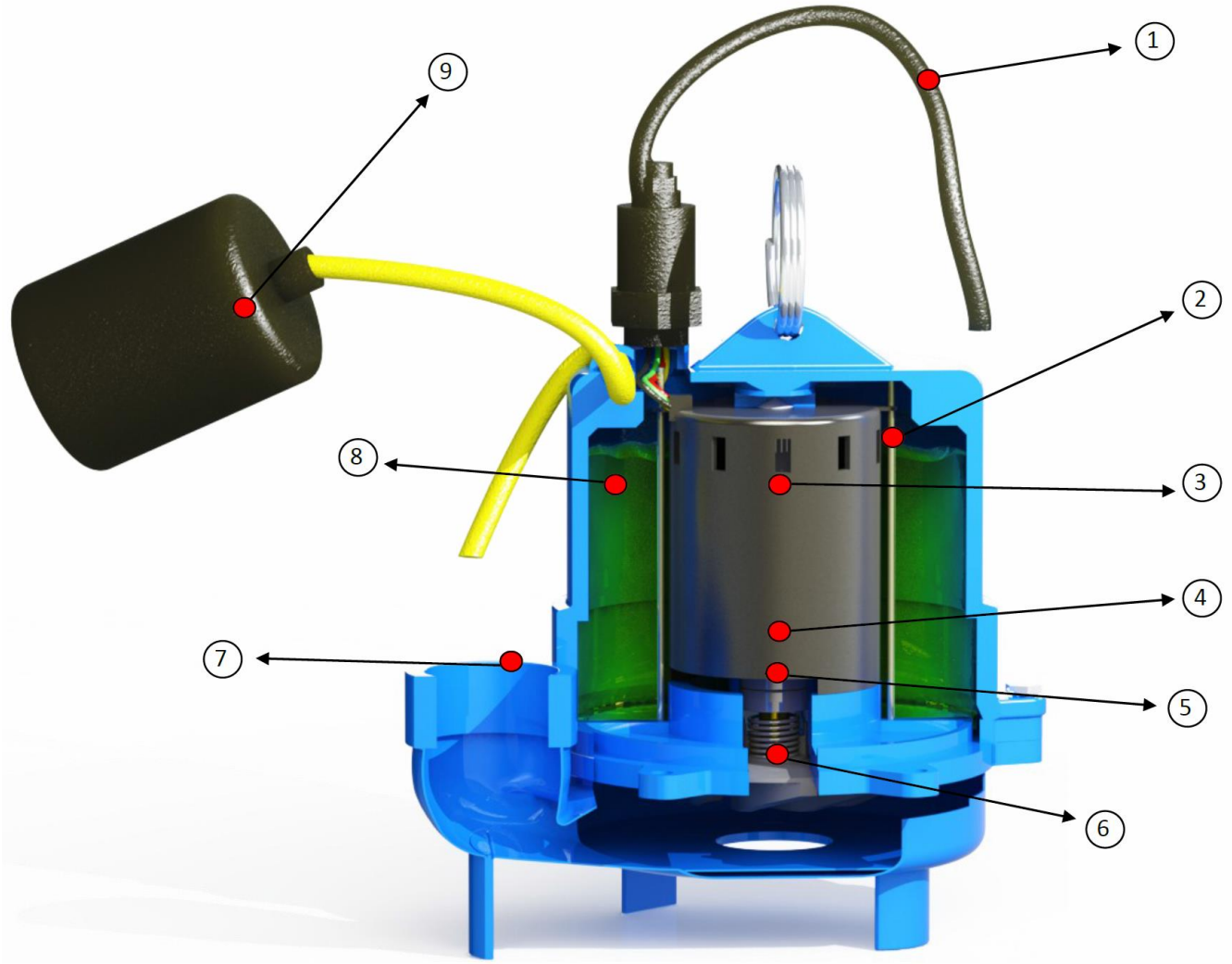
### Option1: Quick Disconnect Fittings

The type P submersible sump pumps will be furnished with quick-disconnect fittings for easy removal from the sump pit. The fittings furnished for each pump include (1) base elbow and QD connection, (1) stainless-steel lifting chain, (1) top guide rail bracket, (1) cable holder assembly, (1) pump discharge pipe, (1) set of pump guide rail pipes (guide pipes are 3/4" schedule 40 galvanized steel) and (1) set of pump check and isolation valves.

### Option2: Pre-packaged System

The pump manufacturer will provide a (simplex) (duplex) packaged submersible sump system including fiber glass basin, pump(s), QD fittings, level control devices all pre-assembled and provided as a single unit. Control panel will be shipped loose for wall mounting by others.

# Material of Construction: Type M.1-Type 1.5P




| Item | Item No | Material | Description | Applications |
|---|---|---|---|---|
| Power Cord | 1 | Various-Water Resistant | 16AWG | Submersible Cable |
| Rotor/Stator Cap screw | 2 | Stainless Steel | Casing/Motor Hold down bolts | Completes Pump Motor Assembly |
| Electric Motor | 3 | Steel | 1750 RPM (Nominal) | 115/230V single phase<br>208-230/460V 3Phase |
| Ball Bearing | 4 | Steel | Enclosed Design | Smooth and Quiet Operation |
| Shaft Seal | 5 | Carbon/Ni-resist | BUNA Elastomer | Eliminates Pump Leaks |
| Impeller | 6 | Varies | (Plastic-semi-open) 1.5P<br>(Cast Iron-enclosed) 2P,3P | Solid Handling from 5/8" to 2" |
| Pump Casing | 7 | Cast Iron | Class 30 | Foot Mounted—Free Standing |
| Lubricant | 8 | Oil | Oil-Fill Plug Provided | Lubricates Electric Motor |
| Float Assembly | 9 | Plastic | Normally Open for Single Phase | Automatic Pump Operation |

# Selection Table: Type P Series

ST.1-Type P

## Range: 10-100 GPM
## 1750 RPM: Series P - Selection Table

| Model No. | GPM | Discharge Head (FT) | Discharge Size (IN) | Motor HP | Max Temp. °F[1] | LBS | Cord Length (FT). | Solid Handling Capability (IN) |
|---|---|---|---|---|---|---|---|---|
| P-1.5P-1/3-4 | 10 | 22 | 1 1/2 | 1/3 | 130 | 25 | 20 | 3/4 |
| P-2P-1/2-4 | | 25 | 2 | 1/2 | 130 | 40 | 20 | 1 1/2 |
| P-1.5P-1/3-4 | 15 | 21 | 1 1/2 | 1/3 | 130 | 25 | 20 | 3/4 |
| P-2P-1/2-4 | | 24 | 2 | 1/2 | 130 | 40 | 20 | 1 1/2 |
| P-1.5P-1/3-4 | 20 | 20 | 1 1/2 | 1/3 | 130 | 25 | 20 | 3/4 |
| P-2P-1/2-4 | | 23 | 2 | 1/2 | 130 | 40 | 20 | 1 1/2 |
| P-1.5P-1/3-4 | 30 | 18 | 1 1/2 | 1/3 | 130 | 25 | 20 | 3/4 |
| P-2P-1/2-4 | | 22 | 2 | 1/2 | 130 | 40 | 20 | 1 1/2 |
| P-1.5P-1/3-4 | 40 | 15 | 1 1/2 | 1/3 | 130 | 25 | 20 | 3/4 |
| P-2P-1/2-4 | | 21 | 2 | 1/2 | 130 | 40 | 20 | 1 1/2 |
| P-1.5P-1/3-4 | 50 | 12 | 1 1/2 | 1/3 | 130 | 25 | 20 | 3/4 |
| P-2P-1/2-4 | | 20 | 2 | 1/2 | 130 | 25 | 20 | 1 1/2 |
| P-3P-3/4-4 | | 25 | 3 | 3/4 | 104 | 60 | 20 | 2 |
| P-2P-1/2-4 | 60 | 10 | 1 1/2 | 1/3 | 130 | 40 | 20 | 3/4 |
| P-2P-1/2-4 | | 19 | 2 | 1/2 | 130 | 40 | 20 | 1 1/2 |
| P-3P-3/4-4 | | 20 | 3 | 3/4 | 104 | 60 | 20 | 2 |
| P-2P-1/2-4 | 70 | 18 | 2 | 1/2 | 130 | 60 | 20 | 1 1/2 |
| P-3P-1-4 | | 20 | 3 | 1 | 104 | 70 | 20 | 2 |
| P-3P-1.5-4 | | 25 | 3 | 1 1/2 | 104 | 75 | 20 | 2 |
| P-3P-2-4 | | 30 | 3 | 2 | 104 | 80 | 20 | 2 |
| P-3P-1/2-4 | 80 | 12 | 3 | 1/2 | 104 | 60 | 20 | 2 |
| P-3P-3/4-4 | | 18 | 3 | 3/4 | 104 | 60 | 20 | 2 |
| P-3P-1.5-4 | | 22 | 3 | 1 1/2 | 104 | 75 | 20 | 2 |
| P-3P-2-4 | | 27 | 3 | 2 | 104 | 80 | 20 | 2 |
| P-3P-1/2-4 | 100 | 12 | 3 | 1/2 | 104 | 60 | 20 | 2 |
| P-3P-3/4-4 | | 18 | 3 | 3/4 | 104 | 65 | 20 | 2 |
| P-3P-1.5-4 | | 22 | 3 | 1 1/2 | 104 | 75 | 20 | 2 |
| P-3P-2-4 | | 24 | 3 | 2 | 104 | 80 | 20 | 2 |

Note [1]: 1/3 HP high temp application (suitable to 190°F). Add "HT" to above selected model.

: 1/2 HP high temp application (suitable to 200°F). Add "HT" to above selected model, and operates at 3450 RPM.

# Selection Table: Type P Series

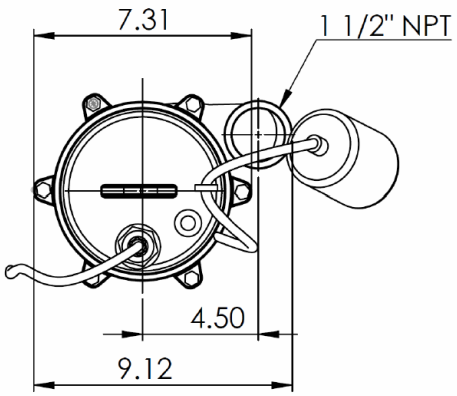


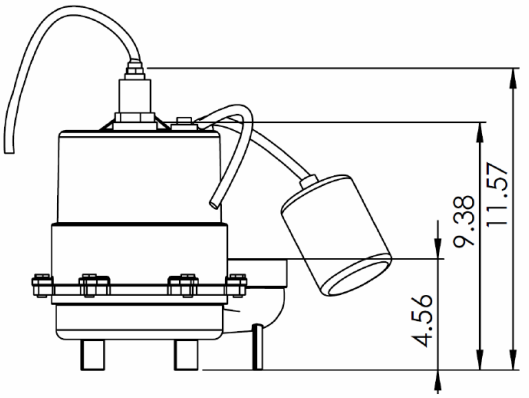
## Range: 125-300 GPM
## 1750 RPM: Series P - Selection Table

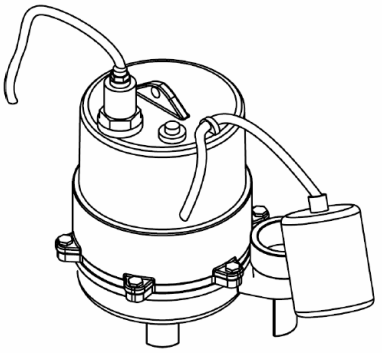
| Model No. | GPM | Discharge Head (FT) | Discharge Size (IN) | Motor HP | Max Temp. °F[1] | LBS | Cord Length (FT). | Solid Handling Capability (IN) |
|---|---|---|---|---|---|---|---|---|
| P-3P-1/2-4 | 125 | 12 | 3 | 1/2 | 104 | 60 | 20 | 2 |
| P-3P-3/4-4 | | 17 | 3 | 3/4 | 104 | 65 | 20 | 2 |
| P-3P-1.5-4 | | 22 | 3 | 1.5 | 104 | 75 | 20 | 2 |
| P-3P-1-4 | 150 | 15 | 3 | 1 | 104 | 70 | 20 | 2 |
| P-3P-1.5-4 | | 17 | 3 | 1.5 | 104 | 75 | 20 | 2 |
| P-3P-2-4 | | 22 | 3 | 2 | 104 | 80 | 20 | 2 |
| P-3P-1/2-4 | 175 | 6 | 3 | 1/2 | 104 | 60 | 20 | 2 |
| P-3P-3/4-4 | | 12 | 3 | 3/4 | 104 | 65 | 20 | 2 |
| P-3P-1.5-4 | | 15 | 3 | 1.5 | 104 | 75 | 20 | 2 |
| P-3P-2-4 | | 18 | 3 | 2 | 104 | 80 | 20 | 2 |
| P-3P-1-4 | 200 | 10 | 3 | 1 | 104 | 70 | 20 | 2 |
| P-3P-1.5-4 | | 12 | 3 | 1.5 | 104 | 75 | 20 | 2 |
| P-3P-2-4 | | 15 | 3 | 2 | 104 | 80 | 20 | 2 |
| P-3P-1-4 | 250 | 6 | 3 | 1 | 104 | 70 | 20 | 2 |
| P-3P-1.5-4 | | 12 | 3 | 1.5 | 104 | 75 | 20 | 2 |
| P-3P-2-4 | 300 | 7 | 3 | 2 | 104 | 80 | 20 | 2 |

# Dimensions: Type 1.5P

## D.1-Type 1.5P

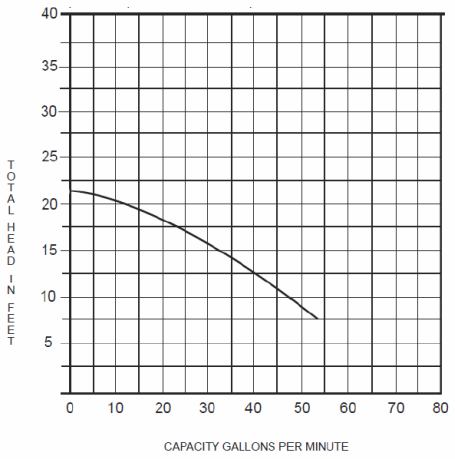


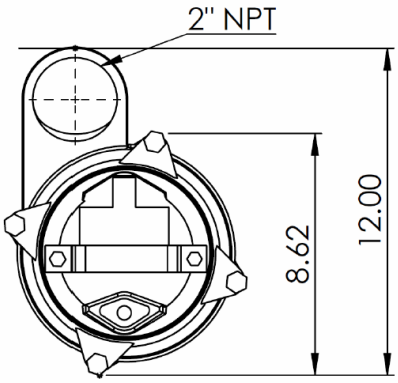
**Electrical Performance Characteristics: Continuous Operation**

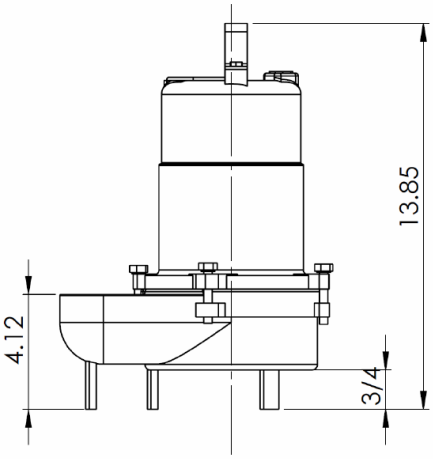
| Model | RPM | Volt | Phase | Amps | HP |
|---|---|---|---|---|---|
| P-1.5P-1/3-4 | 1750 | 115/230 | 1 | 12/6 | 1/3 |

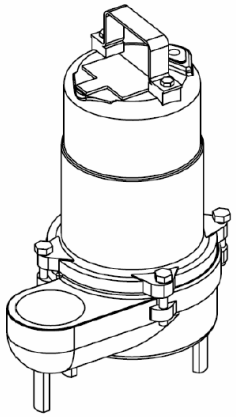


# Dimensions: Type 2P

## D.1-Type 2P

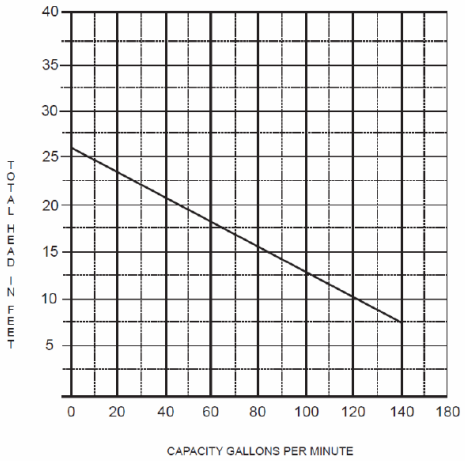


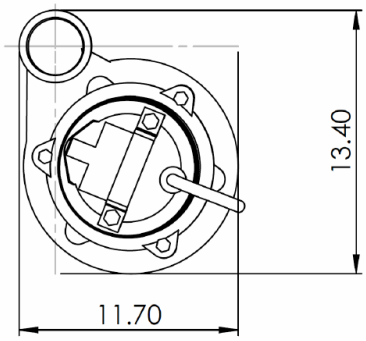
**Electrical Performance Characteristics: Continuous Operation**

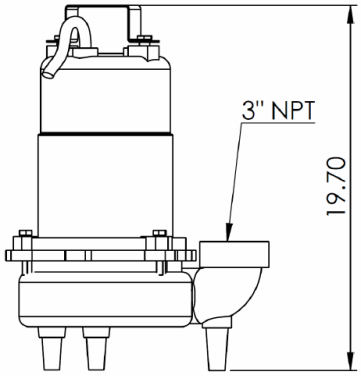
| Model | RPM | Volt | Phase | Amps | HP |
|---|---|---|---|---|---|
| P-2P-1/2-4 | 1750 | 115/230 | 1 | 8.0/4.0 | 1/2 |

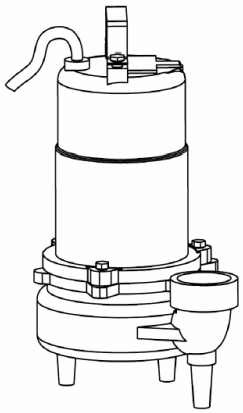


# Dimensions: Type 3P

D.1-Type 3P

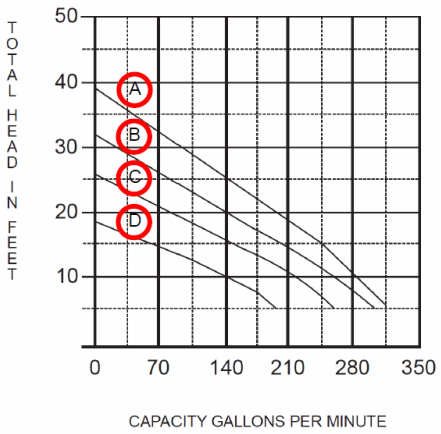


**Electrical Performance Characteristics: Continuous Operation**

| | | | 1 PHASE | | | 3 PHASE | | |
|---|---|---|---|---|---|---|---|---|
| **Model** | **RPM** | **HP** | **Volt** | **Phase** | **Amps** | **Volt** | **Phase** | **Amps** |
| P-3P-3/4-4 | 1750 | 3/4 | 115/230 | 1 | 11.0/5.5 | 208-230/460 | 3 | 2.3/1.2 |
| P-3P-1-4 | 1750 | 1 | 115/230 | 1 | 13.0/6.5 | 208-230/460 | 3 | 3.5/1.8 |
| P-3P-1.5-4 | 1750 | 1 1/2 | 115/230 | 1 | 16.0/8.0 | 208-230/460 | 3 | 4.0/2.0 |
| P-3P-2-4 | 1750 | 2 | 115/230 | 1 | 24.0/12.0 | 208-230/460 | 3 | 6.0/3.0 |

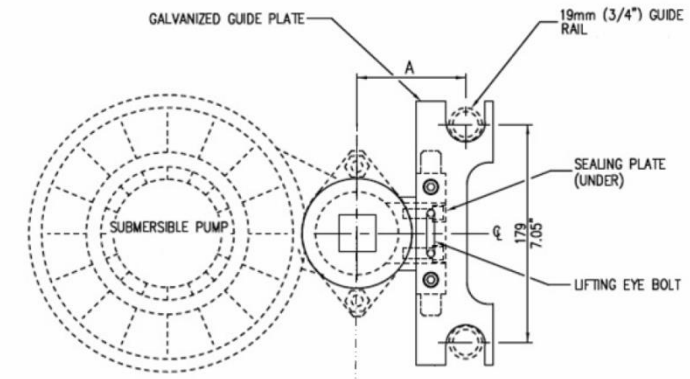



| Impeller Selection | Model No. |
|---|---|
| A | P-3P-2-4 |
| B | P-3P-1.5-4 |
| C | P-3P-1-4 |
| D | P-3P-3/4-4 |

# Dimension: Type P

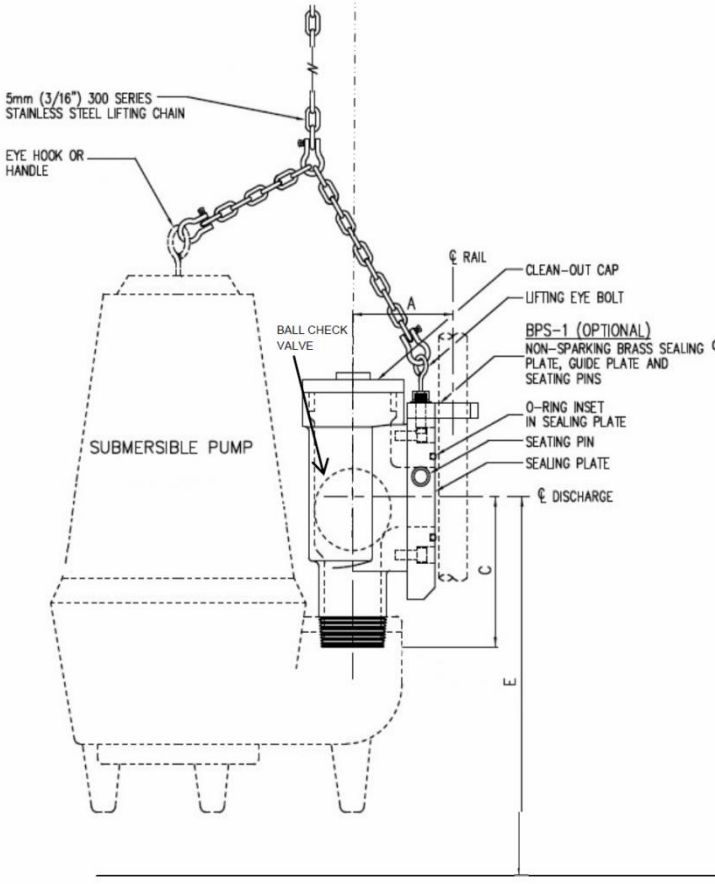
D.1-Type P

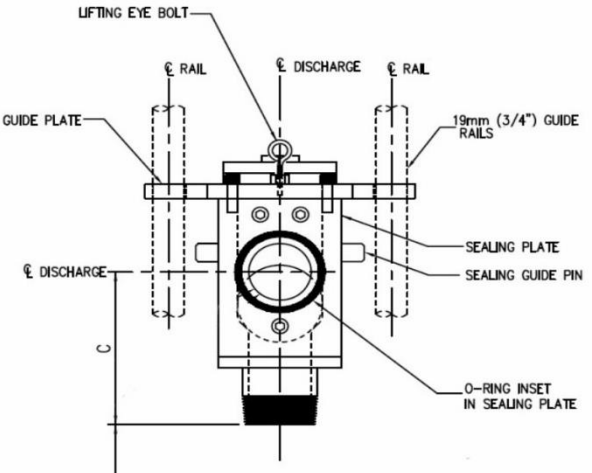
## Quick-Disconnect Assembly with Ball Check Valve
## For 1.5P & 2P Only




All dimensions are in inches

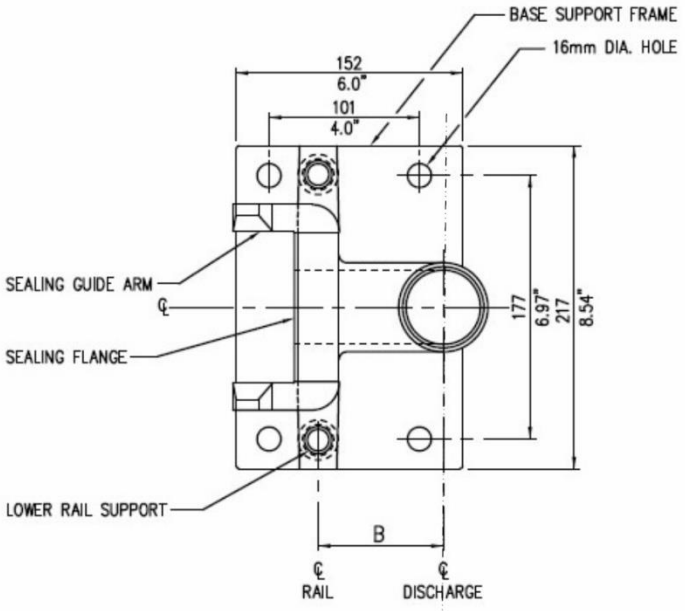
| Model | A | C | D | E |
|---|---|---|---|---|
| 1 1/2 P | 3.50 | 4.875 | 7.20 | 12.07 |
| 2 P | 3.50 | 4.875 | 7.20 | 12.07 |

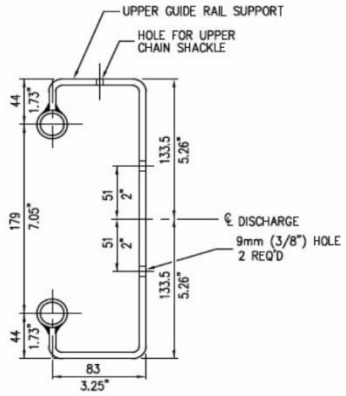


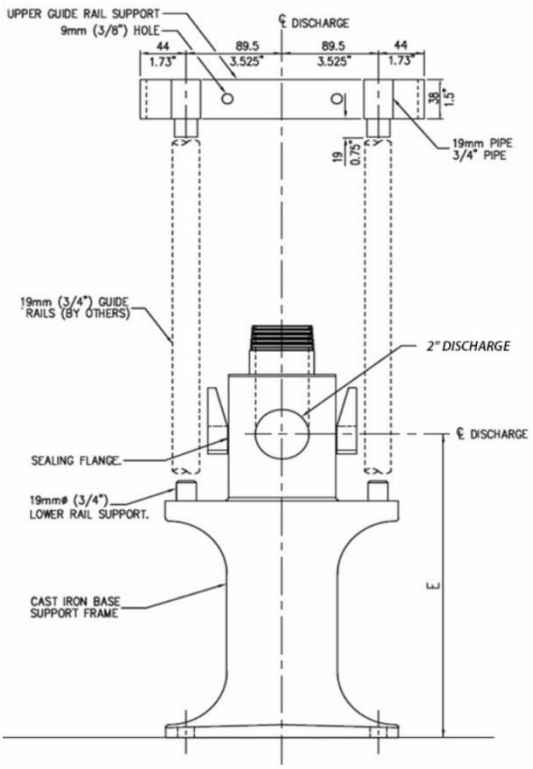



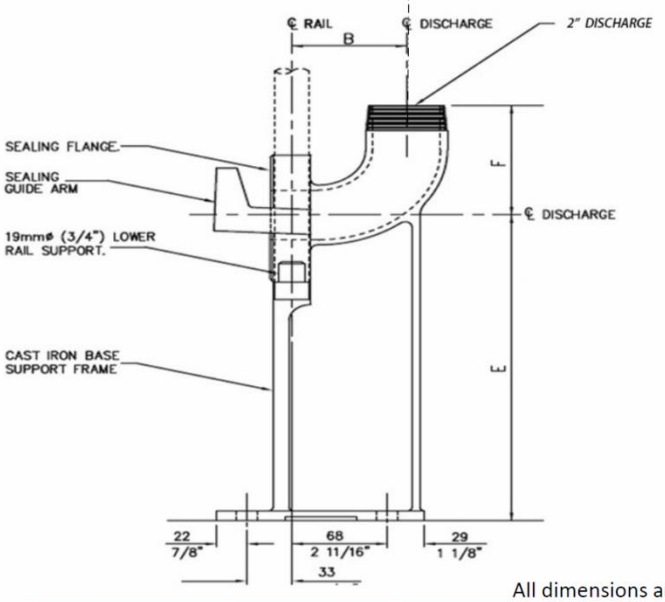
# Dimension: Type P — D.1-Type P

## Quick-Disconnect Assembly (Ball Check Valve Not Included)
## For 1.5P & 2P Only



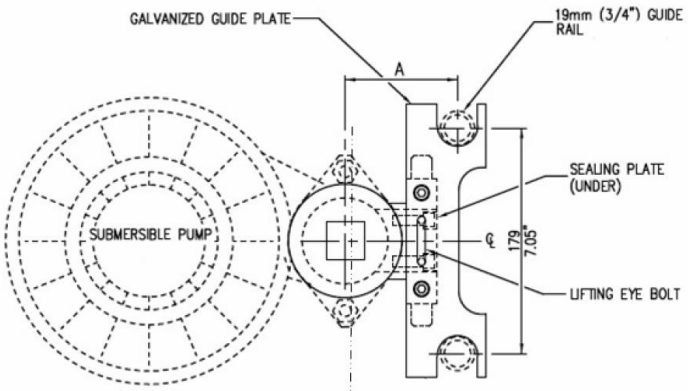

All dimensions are in inches

| Model | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 1/2 P | 3.50 | 3.31 | 4.875 | 7.20 | 12.07 | 4.33 |
| 2 P | 3.50 | 3.31 | 4.875 | 7.20 | 12.07 | 4.33 |

# Dimension: Type P

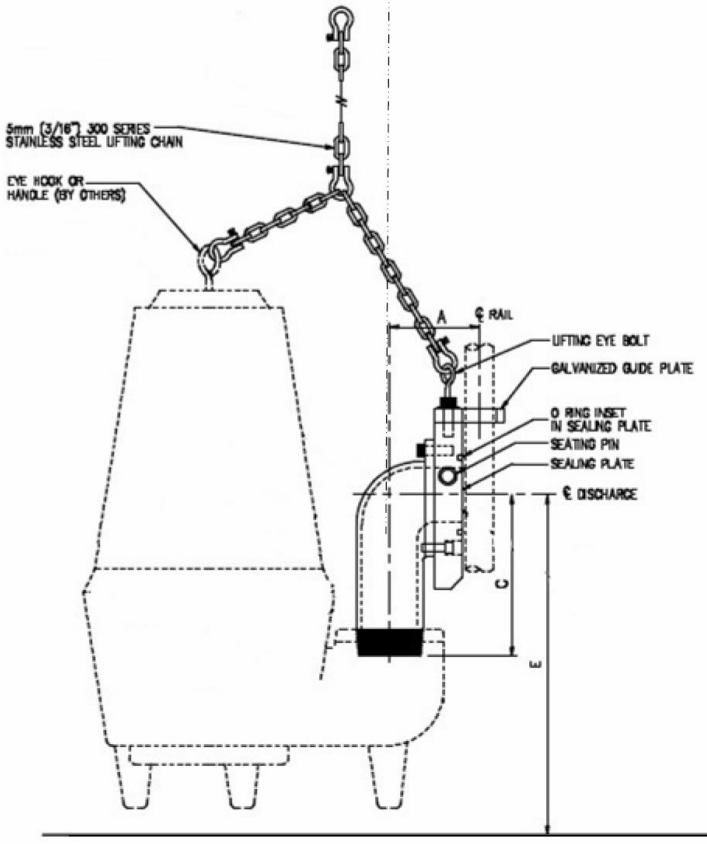
D.1-Type P

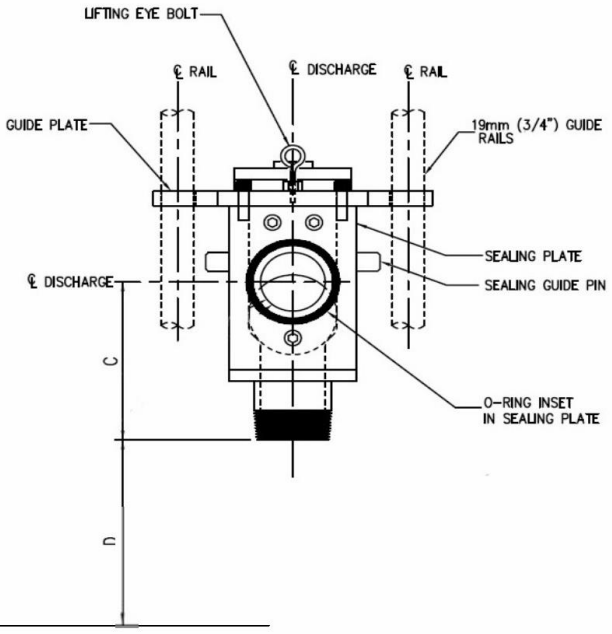
## Quick-Disconnect Assembly (Check Valve Not Included)
## For 3P Only




All dimensions are in inches

| Model | A | C | D | E |
|---|---|---|---|---|
| 3 P | 3.97 | 5.64 | 9.33 | 14.96 |

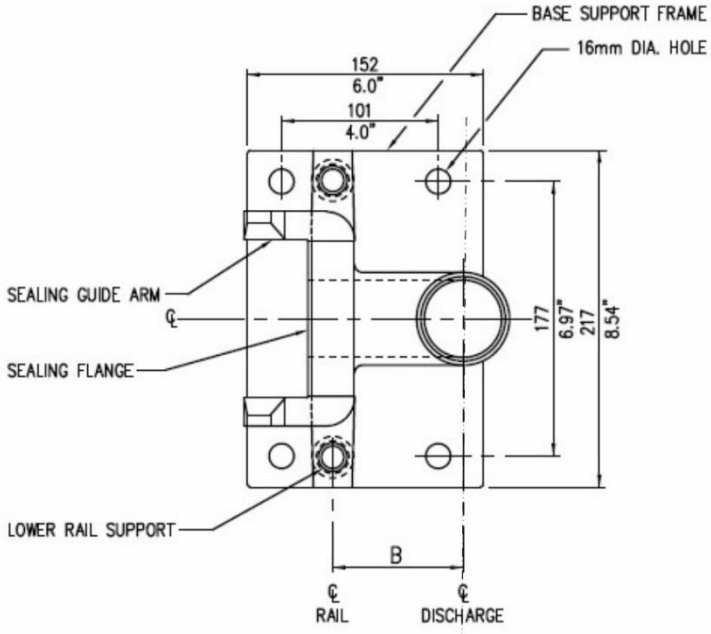


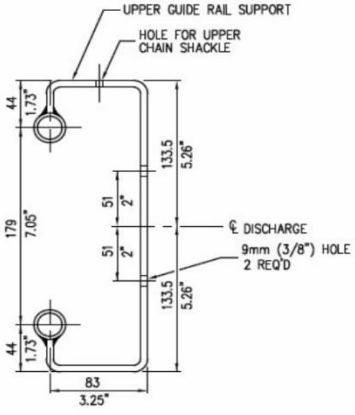



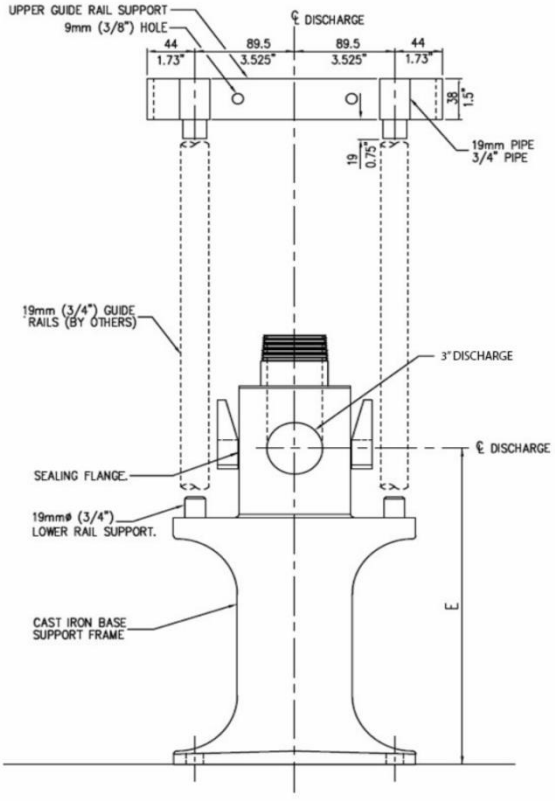
# Dimension: Type P

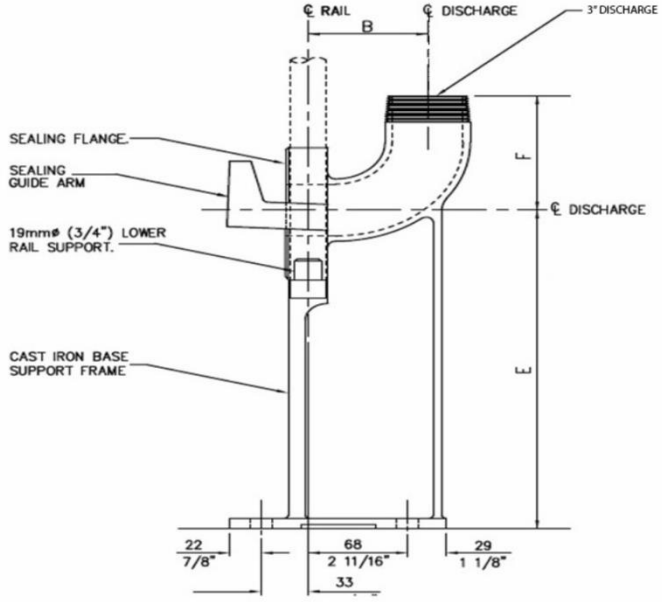
D.1-Type P

## Quick-Disconnect Assembly (Ball Check Valve Not Included)
## For 3P Only



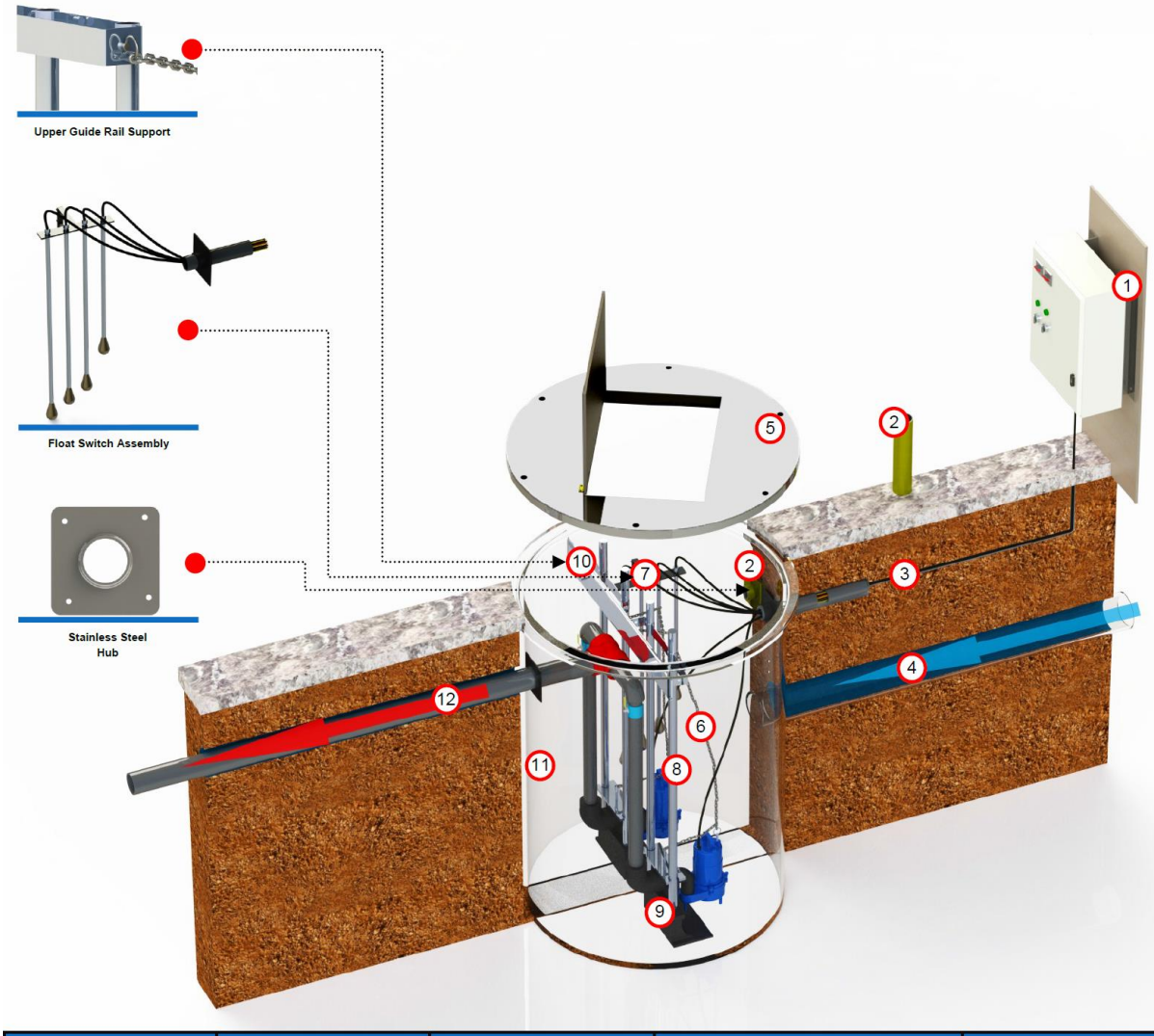

All dimensions are in inches

| Model | B | E | F |
|---|---|---|---|
| 3 P | 4.68 | 14.96 | 4.92 |

# Installation: Type P Duplex

I.1-Type P

## Typical Duplex Pump System
## Single Below Ground Discharge Pipe Installation Drawing




| Item No | Item | Material | Description | Applications |
|---|---|---|---|---|
| 1 | Control Panel | Steel | NEMA-1, 12 or 4 | Automatic Pump System Operation |
| 2 | Vent | Steel | Vent to Atmosphere | Vent thru pit cover or the pit wall |
| 3 | Electrical Conduit | Varies | Enclosed Power Cord | Connects Power Cable & Float Controls to Control Panel |
| 4 | Inlet | Cast Iron | Ship Loose for Contractor Install | Provides Location and Connection for Inlet Piping |
| 5 | Basin Cover | Steel/Aluminum | Hatch Type Cover | Designed for Gas Tight |
| 6 | Lifting Chain | Stainless Steel | Provides for Lifting Pump from Basin | Required for installation & Removal of Pumps |
| 7 | Float Assembly | Polymer | Float Bulb—Duplex (requires quantity 4) | Senses Liquid Level & Controls Pump Operation |
| 8 | 3/4" Guide Rail Pipe | Galvanized Steel | Guides Disconnect Assembly | Guides Pump from Cover to Elbow Connection |
| 9 | Lift-Out Rail Assembly | Cast Iron | Elbow Mounted in Bottom of Basin | Connect to Discharge Piping |
| 10 | Upper Guide Rail Support (Provided by others) | Galvanize Steel | Holds Guide Rail in place | Supports Guide Rails |
| 11 | Pit or Basin | Steel/concrete/CI/Fiberglass | Sized for Proper Settings | Permits proper pumping cycle |
| 12 | Discharge | Steel | Pipe Connections to System Discharge | Piping from Basin to Discharge |

# Installation: Type P Duplex

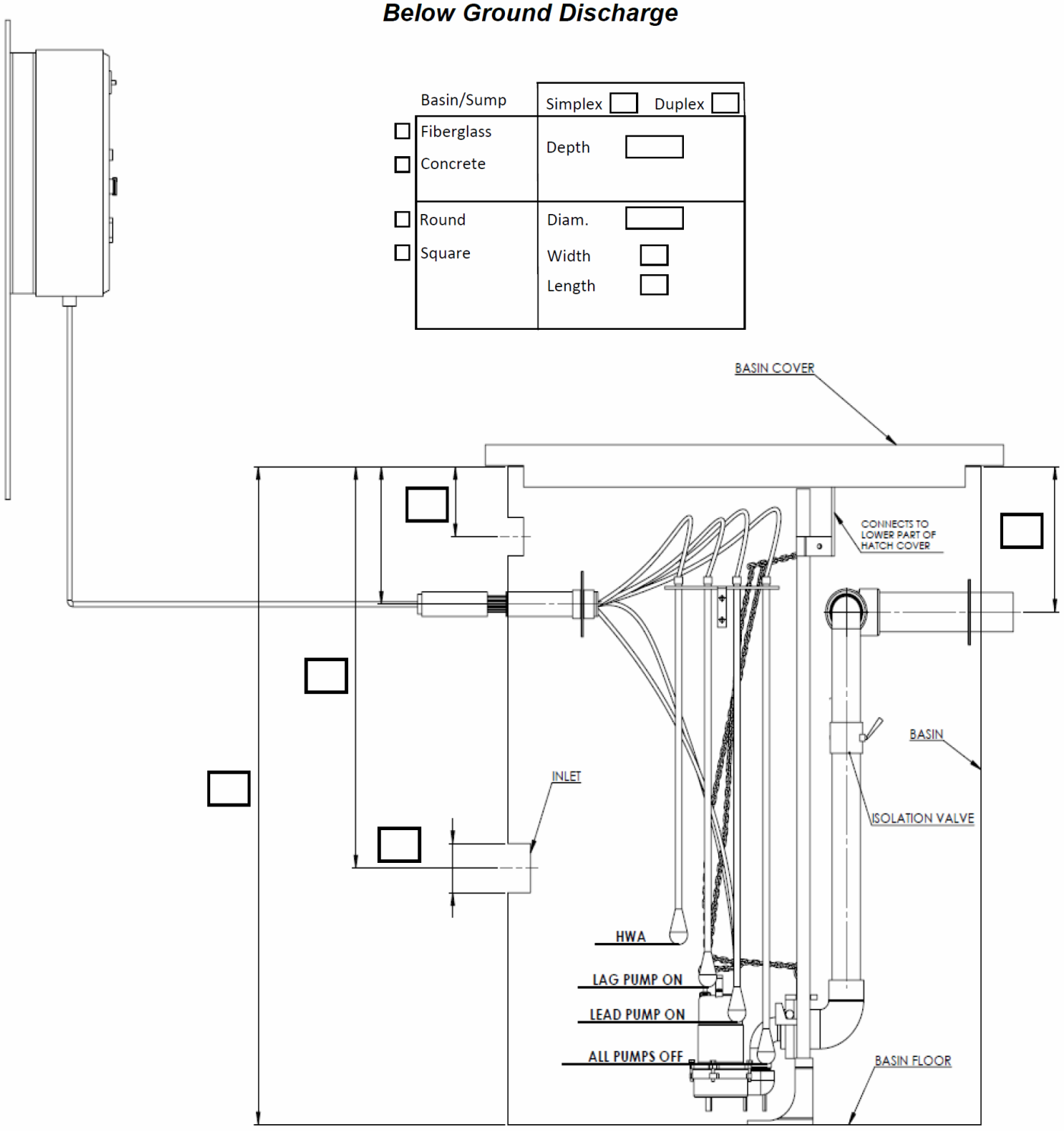


## Type P Quick-Disconnect Submersible Sump/Effluent Pumps

### *Pit Dimensional & Elevation Data*

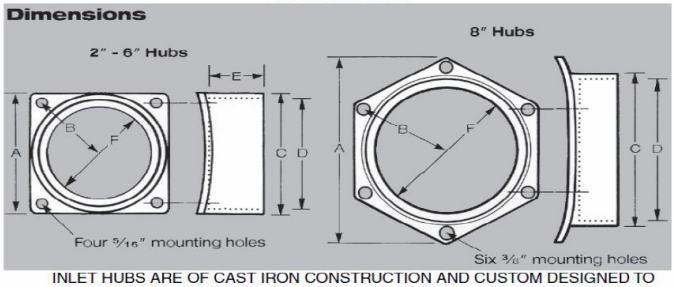
### *Below Ground Discharge*

| Basin/Sump | Simplex ☐ Duplex ☐ |
|---|---|
| ☐ Fiberglass<br>☐ Concrete | Depth ☐ |
| ☐ Round<br>☐ Square | Diam. ☐<br>Width ☐<br>Length ☐ |



# Fiberglass basin dimensional details and inlet hub discharge hub

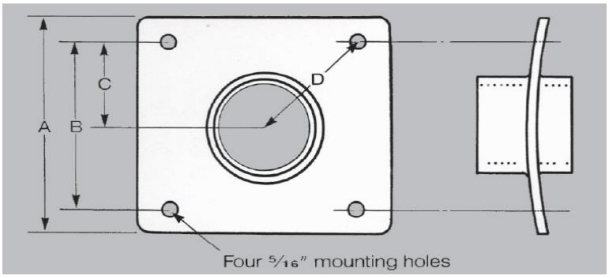
## CAULKING HUB




INLET HUBS ARE OF CAST IRON CONSTRUCTION AND CUSTOM DESIGNED TO FIT CURVATURE OF THE BASIN. THE INLET HUBS INCLUDE GASKET, NUTS, BOLTS, AND WASHERS.

| SIZE | 2" | 3" | 4" | 6" |
|---|---|---|---|---|
| A | 4" | 4 3/4" | 6" | 8" |
| B | 2 1/8" | 2 5/8" | 3 3/8" | 4 5/8" |
| C | 3 3/4" | 4 5/8" | 5 7/8" | 7 3/4" |
| D | 3" | 4" | 5 1/8" | 7 1/8" |
| E | 2" | 2 1/8" | 2 1/4" | 2 1/4" |
| F | 2" | 3" | 4 1/8" | 6 1/8" |

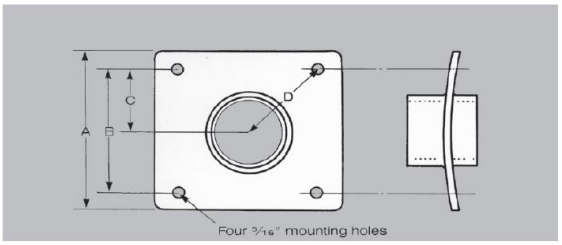
## STAINLESS STEEL FULL COUPLING




CONSTRUCTED FROM STAINLESS STEEL (RECOMMENDED FOR DISCHARGE CONNECTION). COUPLINGS INCLUDE GASKETS, NUTS, BOLTS, AND WASHERS.

| SIZE | 2" | 2 1/2" | 3" | 4" |
|---|---|---|---|---|
| A | 6" | 6" | 10" | 10" |
| B | 4 3/8" | 4 3/8" | 8 1/2" | 8 1/2" |
| C | 2 3/16" | 2 3/16" | 5" | 5" |
| D | 3 1/4" | 3 1/4" | 6" | 6" |

## PLASTIC FULL COUPLING




CONSTRUCTED FROM GLASS FILLED NYLON (RECOMMENDED FOR ELECTRICAL CONNECTION) COUPLINGS INCLUDE GASKETS, NUTS, BOLTS, AND WASHERS.

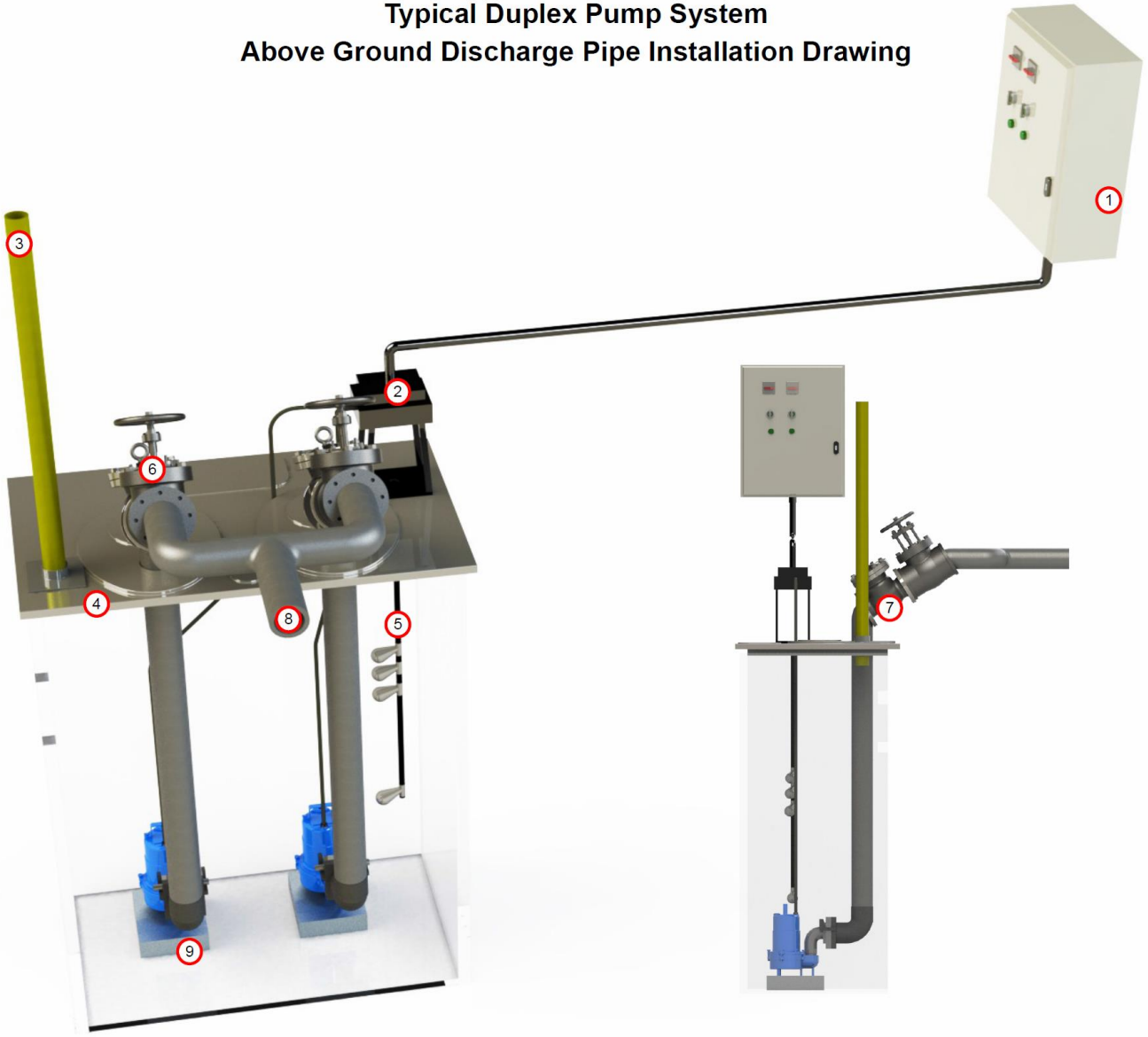
| SIZE | 1 1/4" | 1 1/2" | 2" |
|---|---|---|---|
| A | 6" | 6" | 6" |
| B | 4 3/8" | 4 3/8" | 4 3/8" |
| C | 2 3/16" | 2 3/16" | 2 3/16" |
| D | 3 1/4" | 3 1/4" | 3 1/4" |

| Basin Diam. | Basin Depth | Capacity (Gallons) | Weight | CI Inlet Hub Size (Recommended) | Below Base Discharge Hub Size | Suggested Below Base Electrical Hub Size |
|---|---|---|---|---|---|---|
| 30" | 24 | 59 | 20 | 4 | 3 | 1 1/2 |
| | 30 | 92 | 24 | 4 | 3 | 1 1/2 |
| | 36 | 110 | 29 | 4 | 3 | 1 1/2 |
| 36" | 24 | 106 | 23 | 4 | 3 | 1 1/2 |
| | 30 | 132 | 28 | 4 | 3 | 1 1/2 |
| | 36 | 159 | 34 | 4 | 3 | 1 1/2 |
| | 48 | 212 | 45 | 4 | 3 | 1 1/2 |
| 42" | 30 | 180 | 64 | 4 | 3 | 2 |
| | 36 | 216 | 71 | 4 | 3 | 2 |
| | 48 | 288 | 106 | 4 | 3 | 2 |
| | 60 | 360 | 123 | 4 | 3 | 2 |
| | 72 | 432 | 141 | 4 | 3 | 2 |
| 48" | 30 | 235 | 78 | 6 | 4 | 2 |
| | 36 | 282 | 84 | 6 | 4 | 2 |
| | 48 | 376 | 124 | 6 | 4 | 2 |
| | 60 | 470 | 144 | 6 | 4 | 2 |
| | 72 | 564 | 163 | 6 | 4 | 2 |

# Installation: Type P Duplex

I.1-Type P

## Typical Duplex Pump System
## Above Ground Discharge Pipe Installation Drawing



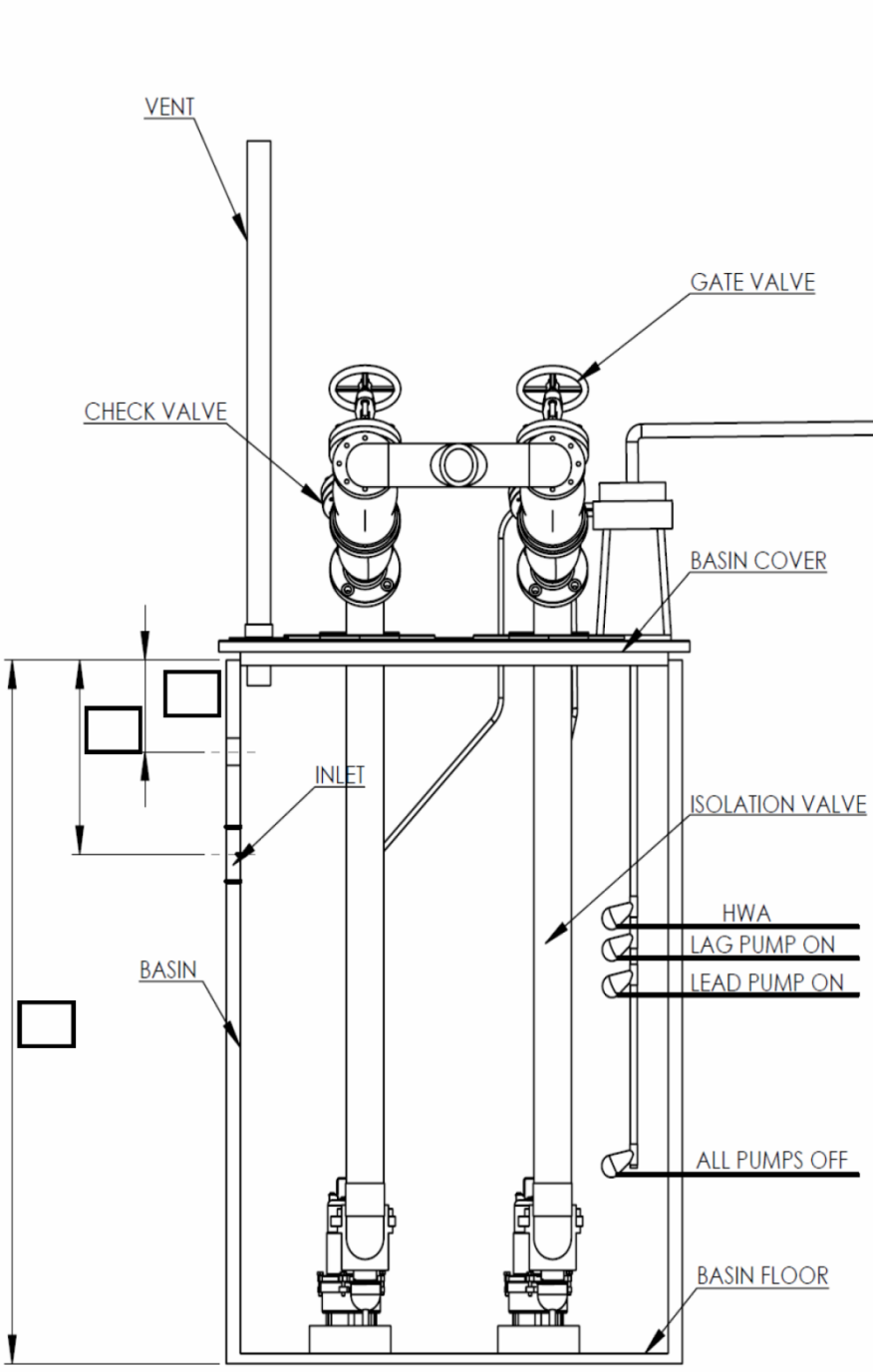

| Item No | Item | Material | Description | Applications |
|---|---|---|---|---|
| 1 | Control Panel | Steel | NEMA-1, 12 or 4 | Automatic Pump System Operation |
| 2 | Junction Box | Steel | 4 | Submersible Cable Junction Box |
| 3 | Vent | Steel | Vent to Atmosphere | Vent thru pit cover or the pit wall |
| 4 | Basin Cover | Steel | Duplex Design | Sump/Effluent Pit Cover |
| 5 | Float Assembly | Polymer | Float Bulb—Duplex (requires quantity 4) | Senses Liquid Level & Controls Pump Operation |
| 6 | Isolation Valve | Cast Iron | 125 lbs. Rated | Isolates Pump from Discharge Connection |
| 7 | Check Valve | Cast Iron | 125 lbs. Rated | Prevents System Back Flow Into Pump |
| 8 | Discharge | Steel | Pipe Connections to System Discharge | Piping from Basin to Discharge |
| 9 | Block | Concrete/Other | Elevates Pump Above Sump Floor | Pump Placement Area |

# Installation: Type P Duplex



## Type P Free-Standing Submersible Sump Pumps

### *Pit Dimensional & Elevation Data*



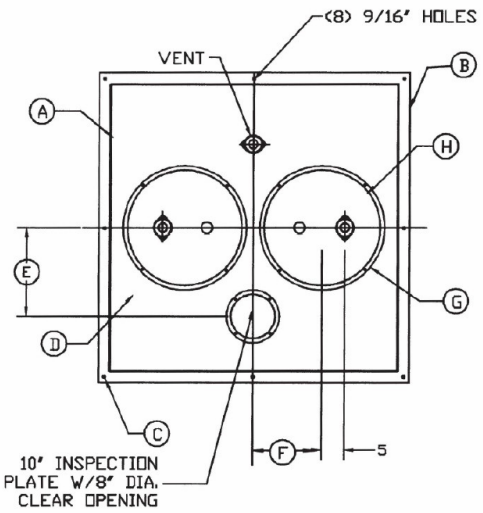

| Basin/Sump | Simplex ☐ Duplex ☐ |
|---|---|
| ☐ Fiberglass | Depth ☐ |
| ☐ Concrete | |
| ☐ Round | Diam. ☐ |
| ☐ Square | Width ☐ |
| | Length ☐ |

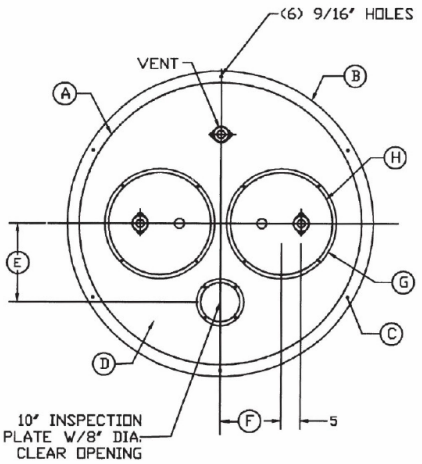
# Installation: Type P

I.1-Type P

## Type P Submersible Sump Pumps
## Duplex Steel Covers

| CONFIGURATION | A BASIN I.D | B COVER O.D | C BOLT CIRLCE | D COVER THICKNESS | E DISTANCE | F DISTANCE | G ACCESS PLATE DIM | H CLEAR ACCESS DIM. |
|---|---|---|---|---|---|---|---|---|
| ROUND | 24 | 28 | 26.5 | 1/4 | N/A | 6 1/2 | 15.75X13 | 11X13.75 |
| SQUARE | 24X24 | 28X28 | 26.5X26.5 | | | | | |
| ROUND | 30 | 34 | 32.5 | 1/4 | 10 1/2 | 8 | 16 | 14 |
| SQUARE | 30X30 | 34X34 | 32.5X32.5 | | | | | |
| ROUND | 36 | 40 | 38.5 | 1/4 | 13 | 10 | 18 | 16 |
| SQUARE | 36X36 | 40X40 | 38.5X38.5 | | | | | |
| ROUND | 42 | 46 | 44.5 | 1/4 | 14 | 11 | 22 | 20 |
| SQUARE | 42X42 | 46X46 | 44.5X44.5 | | | | | |
| ROUND | 48 | 54 | 51 | 1/4 | 18 | 13 | 22 | 20 |
| SQUARE | 48X48 | 54X54 | 51X51 | | | | | |
| ROUND | 60 | 66 | 63 | 3/8 | 20 | 15 1/2 | 28 | 26 |
| SQUARE | 60X60 | 66X66 | 63X63 | | | | | |
| ROUND | 72 | 78 | 75 | 3/8 | 20 | 15 1/2 | 28 | 26 |
| SQUARE | 72X72 | 78X78 | 75X75 | | | | | |



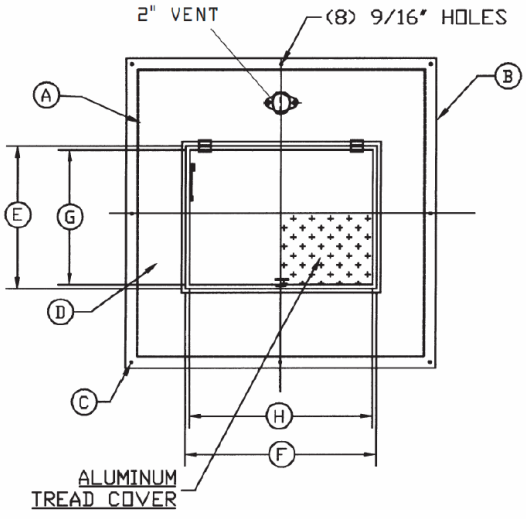



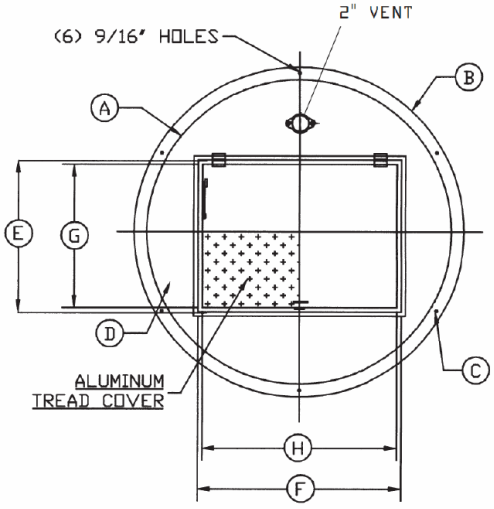
# Installation: Type P

I.1-Type P

## Type P Submersible Sump Pumps
## Duplex Aluminum Hinged *Basin Cover*

| CONFIGURATION | A BASIN I.D | B COVER O.D | C BOLT CIRLCE | D COVER THICKNESS | E DISTANCE | F DISTANCE | G ACCESS PLATE DIM | H CLEAR ACCESS DIM. |
|---|---|---|---|---|---|---|---|---|
| ROUND | 30 | 34 | 32.5 | 1/4 | 16 | 22 | 14 | 20 |
| SQUARE | 30X30 | 34X34 | 32.5X32.5 | | | | | |
| ROUND | 36 | 40 | 38.5 | 1/4 | 18 | 28 | 16 | 23 |
| SQUARE | 36X36 | 40X40 | 38.5X38.5 | | | | | |
| ROUND | 42 | 46 | 44.5 | 1/4 | 20 | 32 | 18 | 30 |
| SQUARE | 42X42 | 46X46 | 44.5X44.5 | | | | | |
| ROUND | 48 | 54 | 51 | 1/4 | 26 | 36 | 24 | 34 |
| SQUARE | 48X48 | 54X54 | 51X51 | | | | | |
| ROUND | 60 | 66 | 63 | 1/4 | 32 | 44 | 30 | 42 |
| SQUARE | 60X60 | 66X66 | 63X63 | | | | | |
| ROUND | 72 | 78 | 75 | 1/4 | 36 | 48 | 34 | 46 |
| SQUARE | 72X72 | 78X78 | 75X75 | | | | | |



## Control Duty Narrow Angle Switch

**Specs**

- The float switch operates under a min/max temperature of 32-170°F. The electric rating is 10 AMPS at 120 VAC, 3 AMPS at 240 VAC.
- Chlorinated polyethylene, leak proof, shock proof power cord

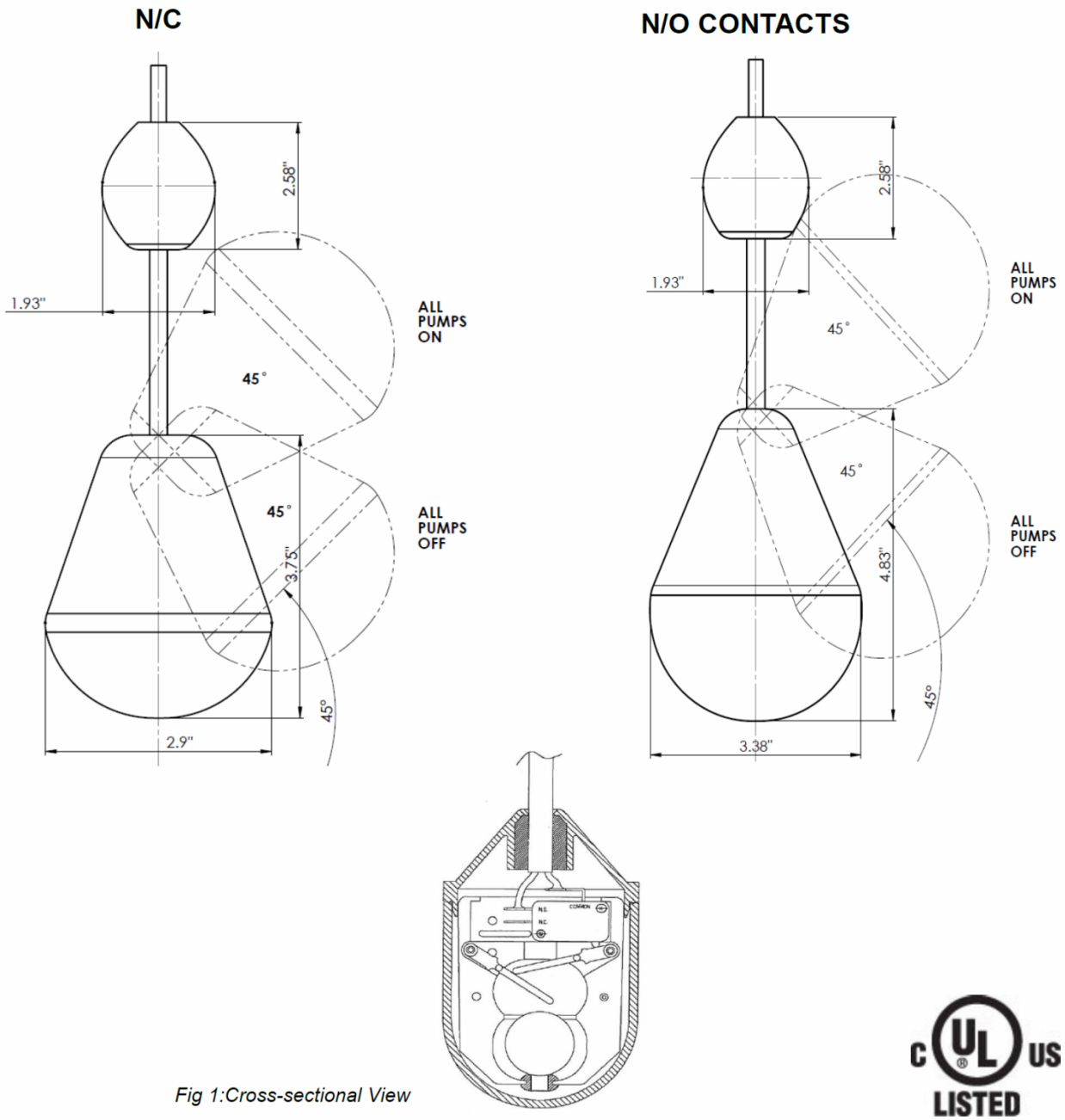



*Fig 1:Cross-sectional View*

c UL us LISTED

# Product Code: 3

## Sump Pump Units-Series Type P

# SUBMITTAL DATA

Customer: _____

Purchase Order Number: _____

Project Name: _____

Project Location: _____

Equipment Number: _____

Tag Number: _____

Pump Rating: _____GPM

Pump Rating: _____TDH

Motor: _____HP, _____RPM, _____Volts, ____ Phase

Basin type: _____ Concrete _____ Fiberglass

System: _____ Simplex _____ Duplex

Cover: _____ Steel _____Aluminum

## Product Code: 3

Sump Pump Units-Series Type P

# Installation, Operation and Maintenance Overview

**Warning Symbol! This symbol used throughout the Operations manual draws the user's attention to safety instructions. When used the safety warning decal advises: ATTENTION! BE ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD!**

**Location of Installation:** _____

**Serial No:** _____

**Model No:** _____

REVISED RELEASE OCTOBER 2014

# Table of Contents



NOTE: SUBSTITUTION OF REPLACEMENT PARTS BY OTHER SUPPLIERS THAN FEDERAL PUMP OR SERVICE PROVIDERS NOT AUTORIZED BY FEDERAL PUMP VOIDS ALL EQUIPMENT WARRANTY AND MAY LEAD TO EQUIPMENT MALFUNCTION. ENSURE ALL REPLACEMENT PARTS ARE FACTORY AUTHORIZED AND SERVICED BY FACTORY DESIGNATED REPRESENTATIVES!

These instructions cover the installation and maintenance of Federal Pump P Series Submersible Pumps. By following the instructions, the life of the pumping unit can be extended.

The Type P pumps are carefully inspected and tested to ensure operating performance and safety. However, failure to follow the instructions and cautions in this manual can lead to pump damage or serious injury. Should questions arise, or start up problems occur, contact your pump distributor or the Federal Pump Corp. factory. This manual must be read and understood before installation and maintenance. All installation, operation and maintenance works must be carried out by qualified personnel in strict accordance with this manual and must comply with all local, state, and national codes. Federal Pump shall not be liable for injury, damage or delays caused by a failure to observe the instructions contained in this manual.

This submersible sump/effluent pump is designed for installation in small lift stations, drainage systems or raw water applications and other light through heavy-duty wastewater services that require solids handling capability to 2" in diameter. Consult selection table guides for proper sizing.

## 1. Mechanical Components and Installation

### (a) Pump Identification

Pump Identification and inspection: Immediately upon receipt of the sump pump unit, inspect and check the unit for any shipment related damages. If damages are noticed, do not put the unit in operation. Report the damage to the transportation's shipping agent or other parties responsible. Each sump pump unit is provided with a stainless steel nameplate that identifies the serial or model number of the unit. Refer to that model number within this manual when requesting service and replacement parts in the future.

### (b) Locating Equipment

Upon receipt of the sump pump unit, ensure the unit is installed in a dry area with ambient temperatures ranging from 60 degree F to 85 degree F and stored above floor level ensuring the condensate unit is not emerged in water due to any potential flooding.

### (c) Recommended Piping Connections

All pipes should be supported independently of the pump to avoid putting undue strain on the pumping unit. A union should be installed in the pump discharge line close to the sump cover that the discharge pipe can be broken and the pump removed from the pit with the discharge pipe intact.

a. Drain connections to a separate drain.
b. Connections from the discharge of the pump to its intended area of service.
c. Vent pipe from the top of the sump pump unit to a predetermined vent connection.
e. These connection should be made by a licensed contractor, certified in mechanical equipment installations, and authorized by local permitting agencies.

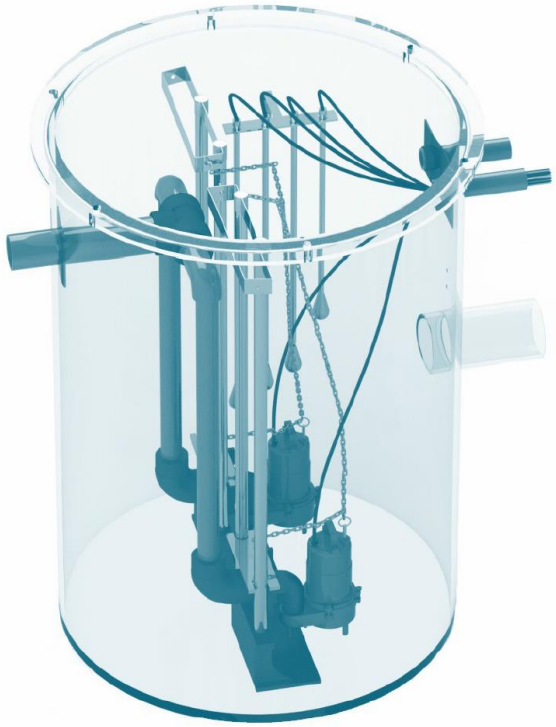
Piping connections should be made in accordance with all local building code requirements. Refer to your local building department inspectors for additional information. Piping provided by the installer should include pipe hangers located and sized accordingly to ensure there is no pipe strain transmitted to the pumps. Connections from each pump to the system piping should include individual isolating valves, check valves and other fittings as shown in the drawings.

**(d) Pump Components**

The Federal Pump sump pump unit includes a number of electromechanical devices that should be identified prior to pressuring the system or prior to providing power to the system. Those devices may include:

- Sump pump motor
- Check valve should be installed in each pump discharge to prevent flow backwards through pump when pump shuts off.
- (Float switch(s) for on/off automatic operation of the sump pumps.
- Control panel wired to the system electric components.

Sample 2P Unit Shown



**Prior to starting the unit, ensure each component is in sound condition and connected appropriately. Prior to any electric or water connections the installer needs to verify the electric power source (voltage and cycles) corresponds to the motor nameplate power requirements. The installer needs to ensure the pump rotates freely when turned by hand prior to any electrical connections.**

Upon inspection of the sump/effluent pump(s) and verification that external connections are adequate for the intended use, the installer should proceed with the electrical inspection

**(a) Electrical Components**

It is important to wire the motors correctly so that the direction of rotation of the pumps in correct. If the motor can be connected temporarily before it is lowered into the sump, a visual check can be made on its side so that the impeller can be viewed from the suction end of the pump. The motor should be started momentarily and the rotation checked. If it is incorrect, interchange any two leads at the starter and the rotation will be correct. The pump can then be installed in the pit. If the pump and motor unit has already been installed in the pit, the rotation can be checked in any of the following ways:

a. Feel the discharge pipe with the hand while the pump is running. The vibration will be substantial if the pump is running in the wrong direction.
b. Check the amperage draw of the pump while operating. Then switch two leads at the starter and check the amperage again. The lower amperage draw will indicate the correct direction of rotation.
c. The pump will have less capacity if rotating in the wrong direction. Check the time it takes to pump the pit down from a high point to a low point. Then switch two leads at the starter and check the time again. The connection that requires the least amount of time to pump the pit down is the correct one.

**Electric connections: A certified electrician or other qualified mechanic will connect the electric power to the control panel disconnect switch and follow the wiring diagram provided in the control panel by the factory prior to shipment. Upon completion of the electric installation, the installer should measure the electric connections with appropriate amp gages or other devices to ensure the connections are appropriate and meet all local building codes.**

**(b) Start –UP Check List**

- ☐ Know the pump application, limitation, and potential hazards
- ☐ Disconnect power before attempting to service the pump.
- ☐ Release all pressure within system before servicing any component.
- ☐ Drain all water from system before servicing.

**Personal safety:**

- ☐ Wear safety glasses at all times when working with pumps.
- ☐ Keep work area clean, uncluttered and properly lighted-replace all unused tools and equipment.
- ☐ Keep visitors at a safe distance from work area.
- ☐ Be sure it is connected only to a properly grounded grounding type receptacle.
- ☐ All wiring should be performed by a qualified electrician.
- ☐ Protect electrical cord from sharp objects, hot surfaces, oil, and chemicals.
- ☐ Do not handle pump or pump motor with wet hands or when standing on wet or damp surface, or in water.
- ☐ Do not lift the pump by the cord.
- ☐ When wiring an electrically driven pump, follow all electrical and safety codes that apply. Refer
- ☐ to the following chart to select the wire size of an extension cord if needed:

| AMP RATING | TOTAL EXTENSION CORD(S) LENGTH IN FEET | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 25 | 50 | 75 | 100 | 123 | 150 | 176 | 200 | AWG |
| 0-10.0 | 18 | 18 | 16 | 16 | 14 | 14 | 12 | 12 | |
| 10.1-13.0 | 16 | 16 | 14 | 14 | 14 | 12 | 12 | 12 | |
| 13.1-15.0 | 14 | 14 | 12 | 12 | 12 | 12 | 12 | - | |
| 15.1-18.0 | 14 | 12 | 12 | 12 | 12 | 12 | - | - | |

**(c) Preparing Unit for Operation**

a. Keep the work area clean, uncluttered and properly lighted and keep visitors at a distance from the work area. Do not attempt to move the pump before disconnecting it from the power supply.
b. For a satisfactory pump performance, users are recommended to choose an appropriate head for the pump according to the real height, to which liquids will be pumped. Too high a head causes delivery to decrease; too low a head could overload the motor. Over the time, if a pump stops abruptly and resumes working after a few minutes, causes should be checked and solved.
c. If abnormal sound or a sudden increased noise is heard from a pump in use, stop to check for causes.
d. According to the specifications of the pumps, filtering equipment is to be provided to prevent the solids larger than allowed from entering the pumps.
e. Provide sufficient cooling to the pumps should they work in shallow water area where the motors may be seen out of water for a long time. This may get the motors burnt down due to over temperature increase.

**PITS AND BASINS**

Sump pits or basins should be inspected regularly and the sediment cleaned out as often as required.

**(d) Pump and Motor Measurements**

The installer should measure the amp draw within the control panel and compare to the electric motor specifications to ensure the unit is operating within the recommended and specified condition. In addition, it is recommend the installer check the discharge pressure of the pump to measure the pump performance to ensure the unit is operating within specified conditions.

## 3. Operation Sequence

**(a) Operation Sequence**

The sump basin and pumps are designed to start pump operation based upon the liquid level within the basin. Upon the liquid level reaching a pre-determined level in the basin/pit, the float switch with activate the lead pump that will pump water from the basin to the discharge pipes to a predetermined location. Once the liquid level drops to a pre-determined level, the float switch will automatically shut down the lead pump and alternate operation to the lag pump that will repeat the pump operation once the level in the basin/pit reaches the predetermined level.

## 4. Maintenance

**(a) Pump Maintenance**

Annual or semi-annual inspection of the sump pump unit should be completed by the maintenance personnel or with a certified Federal Pump repair service or by a certified Federal Pump local representative. Motor amp readings and pump discharge pressure readings should be recorded every 6 months and compared to original specified conditions. The user should manually review the installation and ensure any pipes/valves and connections leading to or from the pump system are cleaned, there is no rust or evidence of leaking from the sump pump unit and all electrical component working.

The Type P units are closed-coupled designed pumps where the bearings are located within the motor housing. These bearings are typically “grease-for-life” type enclosed bearings that do not have external grease connections.

Each sump pump includes a mechanical seal that prevents leaking of the fluid. During inspection should the operator observe leaking from the pump casing the mechanical seal should be changed.

**b) Replacement Parts and Kits**

Federal Pumps and its local sales representative stock repair parts and kits to assist the end user should the sump pump unit require repair parts or overhaul. Many of these repair parts are assembled in kits to provide ease in over all maintenance. Contact your local Federal Pumps representative for additional information.