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## SPECIFICATIONS

### SEWAGE/SUMP DUPLEX SYSTEM

#### ZOELLER COMPANY SUBMERSIBLE SEWAGE OR DEWATERING PUMPS

<b>SINGLE SEAL</b>	<b>264</b>	<b>266</b>	<b>267</b>	<b>270</b>	<b>282</b>	<b>284</b>	<b>292</b>	<b>293</b>	<b>294</b>	<b>295</b>	<b>404</b>	<b>405</b>
<b>DOUBLE SEAL</b>				<b>4270</b>	<b>4282</b>	<b>4284</b>	<b>4292</b>	<b>4293</b>	<b>4294</b>	<b>4295</b>	<b>4404</b>	<b>4405</b>

### CAST IRON SERIES DUPLEX SYSTEM

Furnish two Zoeller nonautomatic submersible pumps, Model \_\_\_\_\_ Single Seal or Model \_\_\_\_\_ Double Seal, with an \_\_\_\_\_ Electrical or \_\_\_\_\_ Mechanical Alternating System. Pumps shall have a capacity of \_\_\_\_\_ GPM against a Total Dynamic Head of \_\_\_\_\_ feet. Motor specification: \_\_\_\_\_ voltage, \_\_\_\_\_ cycle, \_\_\_\_\_ phase, \_\_\_\_\_ HP. Discharge to be \_\_\_\_\_ 2" or \_\_\_\_\_ 3" NPT or \_\_\_\_\_ 4" flange (404/4404, 405/4405 only). Cord length to be \_\_\_\_\_ feet. Pump shall be mounted on rail system with NPT \_\_\_\_\_ or flange \_\_\_\_\_ discharge. Pumps will pass \_\_\_\_\_ 2" Solids (264, 266, 267, 270/4270, 282/4282, 284/4284, 292/4292, 293/4293, 294/4294, 295, 4295), or \_\_\_\_\_ 3" Solids (404/4404, 405/4405). Pumps shall be \_\_\_\_\_ UL listed, \_\_\_\_\_ CSA approved, \_\_\_\_\_ SSPMA certified, \_\_\_\_\_ State of Wisc. approved, \_\_\_\_\_ other (Specify \_\_\_\_\_).

#### SINGLE PHASE SYSTEM GENERAL

Pump motor shall be hermetically sealed, submersible type, operating in a high quality dielectric oil for cooling the windings and for lubrication of the motor bearings and ceramic-carbon shaft seal. Single phase motor shall have internal automatically resetting, thermal overload protection. Construction shall be of cast iron with 100% baked-on powder coated epoxy finish for corrosion resistance and longer casting durability. All fasteners and external metal parts shall be of stainless steel. Impeller shall be of vortex non-clog design. (Addition noted below.)

#### Check Applicable Series:

- \_\_\_\_\_ 264 (.4 HP) model pump shall have a permanent split capacitor motor with capacitor attached to the motor. Cast iron switch case, pump housing, motor housing with plastic impeller and base.
- \_\_\_\_\_ 266 (1/2 HP) model pump shall have split phase motor with current sensing, starting relay enclosed in switch housing cast iron switch case, motor housing and pump housing with plastic impeller and base.
- \_\_\_\_\_ 267 (1/2 HP) model pump shall have split phase motor with current sensing, starting relay enclosed in switch housing.

- \_\_\_\_\_ 270 (1 HP) model pump shall have a permanent split capacitor motor with capacitor in the switch housing attached to the pump. The impeller shall be cast bronze. Motor housing shall be cast iron. Discharge shall be a 2" female NPT hub.
- \_\_\_\_\_ 4270 (1 HP) model pump with double carbon/ceramic shaft seals shall have a permanent split capacitor motor with capacitor in the switch housing attached to the pump. The impeller shall be cast bronze. Motor housing shall be cast iron. Discharge shall be a 2" female NPT hub. The lower seal cavity shall be oil-filled.
- \_\_\_\_\_ 282 (1/2 HP) \_\_\_\_\_ 284 (1 HP) cast iron series pump shall have a permanent split capacitor motor with run capacitor and magnetic contactor (284 only) enclosed in a switch housing attached to the pump. Impeller and motor housing shall be cast iron. The motor housing shall be finned for extra cooling capability.
- \_\_\_\_\_ 4282 (1/2 HP) \_\_\_\_\_ 4284 (1 HP) cast iron series pump with double carbon/ceramic shaft seals shall have a permanent split capacitor motor with run capacitor and magnetic contactor (4284 only) enclosed in a switch housing attached to the pump. Impeller and motor housing shall be cast iron. The motor housing shall be finned for extra cooling capability. The lower seal cavity shall be oil-filled.

\_\_\_\_\_ 292 (1/2 HP) \_\_\_\_\_ 293 (1 HP) \_\_\_\_\_ 294 (1-1/2 HP) \_\_\_\_\_ 295 (2 HP) cast iron series pump shall have a permanent split capacitor motor with capacitor and magnetic contactor enclosed in a switch housing attached to the pump. The impeller shall be cast iron. Motor housing shall be cast iron and finned for extra cooling capability.

\_\_\_\_\_ 4292 (1/2 HP) \_\_\_\_\_ 4293 (1 HP) \_\_\_\_\_ 4294 (1-1/2 HP) \_\_\_\_\_ 4295 (2 HP) cast iron series pump with double carbon/ceramic shaft seals shall have a permanent split capacitor motor with capacitor and magnetic contactor enclosed in a switch housing attached to the pump. The impeller shall be cast iron. Motor housing shall be cast iron and finned for extra cooling capability. The lower seal cavity shall be oil-filled.

\_\_\_\_\_ 404 (2 HP) \_\_\_\_\_ 405 (3 HP) cast iron series pump shall have a permanent split capacitor motor with capacitor enclosed in a switch housing attached to the pump. Impeller and motor housing shall be cast iron. The motor housing shall be finned for extra cooling capability.

\_\_\_\_\_ 4404 (2 HP) \_\_\_\_\_ 4405 (3 HP) cast iron series pump with double carbon/ceramic shaft seals shall have a permanent split capacitor motor with capacitor enclosed in a switch housing attached to the pump. The impeller and motor housing shall be cast iron. The motor housing shall be finned for extra cooling capability. The lower seal cavity shall be oil-filled.

### THREE PHASE PUMPS

Pump motor shall be hermetically sealed, submersible type, operating in a high quality dielectric oil for cooling the windings and for lubrication of the motor bearings and carbon/ceramic shaft seal. Pump motor shall have external magnetic contactor and overload protection. All fasteners and external metal parts shall be of stainless steel. Impeller shall be of vortex non-clog design.

\_\_\_\_\_ 266 (1/2 HP) \_\_\_\_\_ 267 (1/2 HP) Series shall have a 4-pole squirrel cage induction motor.

\_\_\_\_\_ 282 (1/2 HP) \_\_\_\_\_ 284 (1 HP) Series shall have a 4-pole squirrel cage induction motor. The motor housing shall be finned for extra cooling capability.

\_\_\_\_\_ 4282 (1/2 HP) \_\_\_\_\_ 4284 (1 HP) cast iron series

pump with double carbon/ceramic shaft seals shall have a 4-pole squirrel cage induction motor. Impeller and motor housing shall be cast iron. The motor housing shall be finned for extra cooling capability. The lower seal cavity shall be oil-filled.

\_\_\_\_\_ 292 (1/2 HP) \_\_\_\_\_ 293 (1 HP) \_\_\_\_\_ 294 (1-1/2 HP) \_\_\_\_\_ 295 (2 HP) Series shall have a 2-pole squirrel cage induction motor. Impeller and pump housing shall be cast iron. The motor housing shall be finned for extra cooling capability.

\_\_\_\_\_ 4292 (1/2 HP) \_\_\_\_\_ 4293 (1 HP) \_\_\_\_\_ 4294 (1-1/2 HP) \_\_\_\_\_ 4295 (2 HP) cast iron series pump with double carbon/ceramic shaft seals shall have 2-pole squirrel cage induction motor. The impeller shall be cast iron. Motor housing shall be cast iron and finned for extra cooling capability. The lower seal cavity shall be oil-filled.

\_\_\_\_\_ 404 (2 HP) \_\_\_\_\_ 405 (3 HP) series shall have a 4-pole squirrel cage induction motor. Impeller and motor housing shall be cast iron. The motor housing shall be finned for extra cooling capability.

\_\_\_\_\_ 4404 (2 HP) \_\_\_\_\_ 4405 (3 HP) cast iron series pump with double carbon/ceramic shaft seals shall have 4-pole squirrel cage induction motor. Impeller and motor housing shall be cast iron. The motor housing shall be finned for extra cooling capability. The lower seal cavity shall be oil-filled.

### ALTERNATING SYSTEM ELECTRICAL ALTERNATING SYSTEM

#### Alternator - Single Phase

A Zoeller \_\_\_\_\_ Electrical Alternator Panel with three Variable Level Float controls shall be furnished. Panel shall be \_\_\_\_\_ UL Listed or \_\_\_\_\_ CSA approved and shall include an alternating circuit, separate contact relays, run lights, circuit breakers and H-O-A switches for each pump. Also included shall be a numbered terminal strip and a high-water alarm and light. Overload protection shall be furnished in the pump motor. Panel shall have NEMA \_\_\_\_\_ rating. Electrical components sized for a Zoeller model \_\_\_\_\_, \_\_\_\_\_ volt, \_\_\_\_\_ cycle, \_\_\_\_\_ phase, \_\_\_\_\_ HP pump.

#### Alternator - Three Phase

A Zoeller \_\_\_\_\_ Electrical Alternator Panel with three Variable Level Float controls shall be furnished. Panel shall be \_\_\_\_\_ UL Listed or \_\_\_\_\_ CSA approved and shall include an alternating circuit, separate magnetic starter

with overload protection, run lights, circuit breakers, and H-O-A switches for each pump. The control panel shall include a transformer to reduce control voltage to 115 volts. Also included shall be a numbered terminal strip and a high water alarm and light. Panel shall have a NEMA-4X rating. Electrical components shall be sized for a Zoeller model \_\_\_\_\_, \_\_\_\_\_ volt, \_\_\_\_\_ cycle, \_\_\_\_\_ phase, \_\_\_\_\_ HP pump.

### **Variable Level Float Controls -**

Single Phase or Three Phase

Variable Level Float Controls shall provide automatic operation of pumps and alarm. Two controls shall close circuit for on/off operation at selected levels as required to rotate operation of pumps. The third variable level float switch shall close an override circuit to operate both pumps and to activate the alarm. The variable level float control switch shall be omnidirectional, normally open, and shall include a 20' SJOWA neoprene cord. All controls shall be fastened to a float switch mounting pipe with plastic tie mounting straps. The pipe, attached to the underside of the removable inspection plate on the basin cover, shall be furnished and installed by the contractor.

### **ACCESSORIES/MISCELLANEOUS**

#### **UNICHECK**

\_\_\_\_\_ 30-0021, (Clamp Union Valve) (2 inch) full flow check valve, rated at 4.3 psi pressure (10 feet TDH) at 130 °F shall be furnished to fit 2 inch ABS, PVC, CPVC, steel or copper piping. Unicheck shall have valve body and seat of PVC plastic and shall be assembled with thru bolts. Gasket and flapper shall be neoprene with brass or stainless steel backing plates and stainless steel rivet. Unicheck shall include two (2) neoprene unions and four (4) stainless steel clamps and fasteners.

\_\_\_\_\_ 30-0151 (Clamp Union Valve) 2 inch full flow check valve, shall be cast iron, shall be furnished to fit 2 inch ABS, PVC, CPVC, steel, or copper piping. Unicheck valve body, gasket and flapper shall be neoprene with brass backing plates and stainless steel rivet. Unicheck shall include two (2) neoprene unions and four (4) stainless steel clamps and fasteners.

\_\_\_\_\_ 30-0020 (2 inch) or \_\_\_\_\_ 30-0030 (3 inch) IPS full flow compression union check valve shall be furnished. Unicheck body and compression

end fittings shall be constructed of PVC. Flapper and end seals be Buna-N. Valve shall include no metallic parts. Pressure rated at 25 PSI (57 feet TDH) at 130 °F.

\_\_\_\_\_ 30-0152 (2 inch) or \_\_\_\_\_ 30-0160 (3 inch) cast iron full flow check valve with female NPT Rated 50 PSI (115 feet TDH) at 130°F. Neoprene polyester reinforced flapper with cast iron and brass backing plates and stainless steel fastener.

\_\_\_\_\_ 30-0170 (4 inch) Flanged cast iron check valve. Rated at 125 PSI steam pressure. Cast iron body, cover and case, bronze disc, stainless steel fitted, shall be installed in horizontal position.

\_\_\_\_\_ Tri-Check/Combo, 30-0101 or 30-0103.

### **SUMP BASIN**

A Zoeller IAPMO approved \_\_\_\_\_ polyethylene basin, .230 inch thick, or Zoeller \_\_\_\_\_ fiberglass basin, 3/16 inch minimum thick, \_\_\_\_\_ inches inside diameter by \_\_\_\_\_ inches deep shall be furnished. The basin shall include \_\_\_\_\_ four (4) inch cast iron caulk hub inlets with anticorrosion coating. The center line of the hub(s) shall be located nine (9) inches from the top of the basin. The basin shall also include a .125 inch thick steel sump cover. Cover shall have two (2) pump installation plates and an inspection plate. Optional anti-flotation ring can also be provided. Also included shall be two (2) neoprene seals for pump cords, neoprene seal for vent and discharge flanges, foam cover seal and plated steel fasteners. Cover shall include a \_\_\_\_\_ inch vent and two (2) \_\_\_\_\_ inch discharge flanges with mounting hardware.

### **PIPING & POWER WIRING**

All piping shall be rigid and permanent in nature and shall be furnished and installed by the contractor. A unicheck shall be installed in the discharge pipe. A

3/16" vent hole shall be drilled in the discharge pipe below the check valve and pit cover to purge the system of trapped air. Power wiring shall be supplied by the electrical contractor. Power wiring for pumping system and alarm system shall be connected to separate circuits.

### **EXTRA DUTY**

Where conditions require, specify extra duty for adverse operating conditions.

## HI TEMPERATURE PUMPS

For applications up to 200 °F continuous operation, specify High Temperature Zoeller Co. models. See literature on High Temperature pumps, FM2811, FM1923, and FM0807, for additional information.

## PUMP DISCONNECTS AND RAIL SYSTEMS

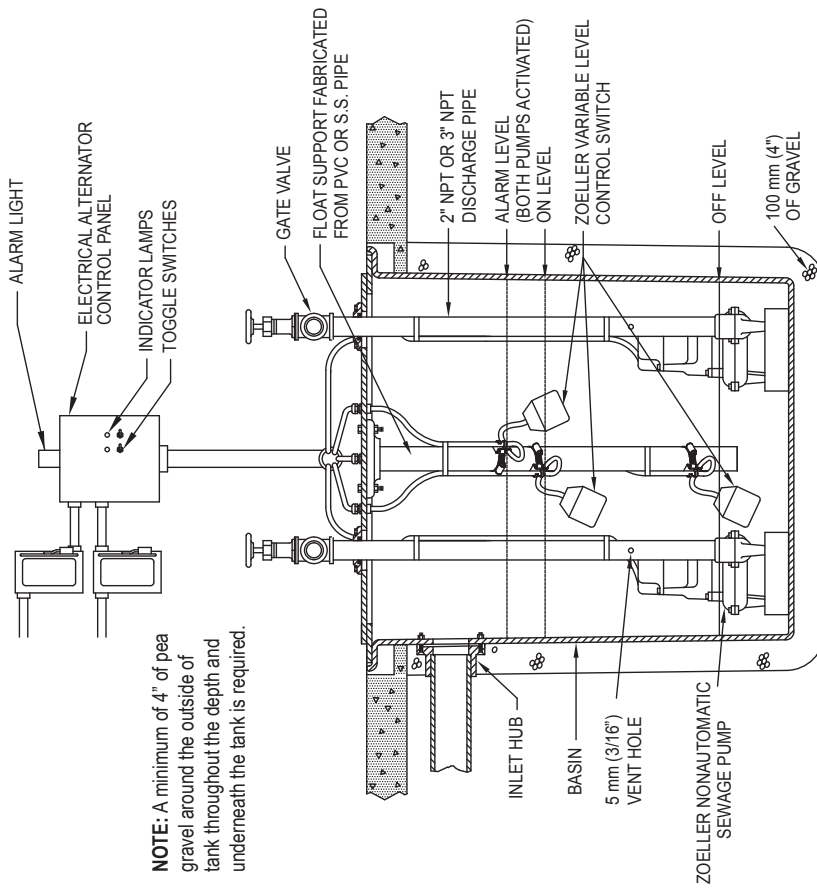
Where conditions, due to safety, health and the economy of maintenance require pump disconnects or rail systems specify:

- \_\_\_\_ 39-0002, 2" NPT Disconnect (Non-pump Supporting)
- \_\_\_\_ 39-0004, 2" NPT Rail System (Non-pump Supporting)
- \_\_\_\_ 39-0128, 2" x 2" Z-Rail Disconnect System, all Ductile Iron Construction
- \_\_\_\_ 39-0129, 2" x 2" Z-Rail Disconnect System, Ductile Iron Construction w/ SS Upper Rail Bracket
- \_\_\_\_ 39-0122, 3" x 3" Z-Rail Disconnect System, all Ductile Iron Construction
- \_\_\_\_ 39-0123, 3" x 3" Z-Rail Disconnect System, Ductile Iron Construction w/ SS Upper Rail Bracket

The Z-Rail® Disconnect System is a pump support assembly consisting of a disconnect fitting, rail plate & guide and utilizes two 3/4" rail pipes that guide the pump into and out of the basin. The assembly components are made of ductile iron with an optional 304 SS upper rail support bracket. Used in concrete, steel or fiberglass basins, it allows for the installation or removal of the pump from the basin at ground level without entering the basin. The disconnect fitting has a machined fit with an O-ring seal that holds up to 160 psi, being able to support pumps weighing up to 300 lbs. The 3/4" rail pipes are provided by the installer, being either galvanized steel or SS pipe.

- \_\_\_\_ 39-0016, 4" x 4" Flanged Rail System, connected horizontally, powder coated cast iron and fitted with SS rail brackets. 2" schedule 40 rail pipes are provided by others.

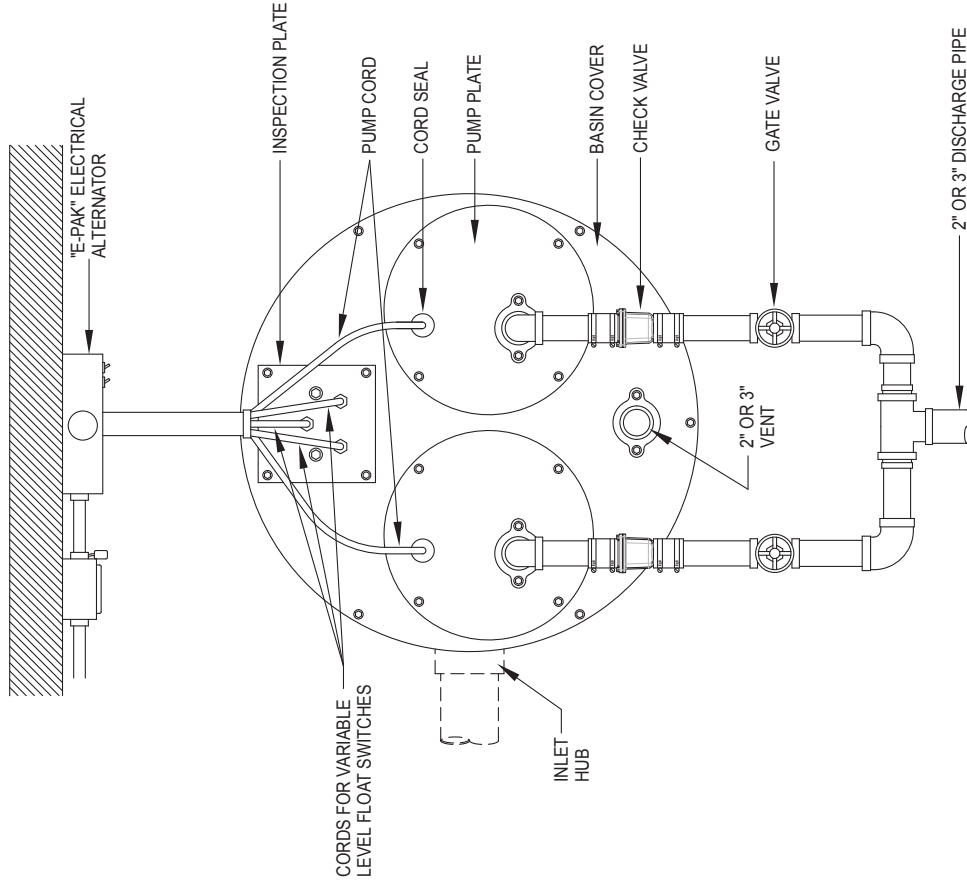
**SEWAGE DUPLEX SYSTEM WITH ELECTRICAL ALTERNATOR  
(SINGLE OR THREE PHASE)**



**NOTE:** A minimum of 4" of pea gravel around the outside of tank throughout the depth and underneath the tank is required.

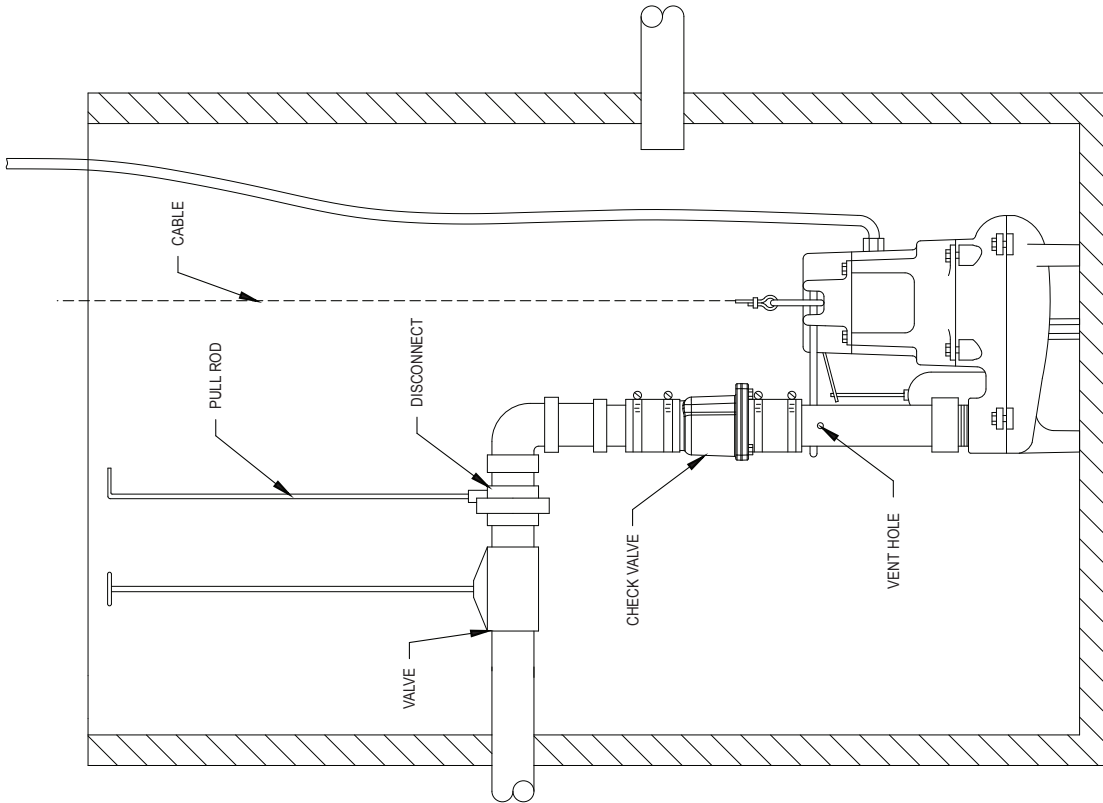
SK484

**SEWAGE DUPLEX SYSTEM WITH ELECTRICAL ALTERNATOR  
(SINGLE OR THREE PHASE) TOP VIEW**



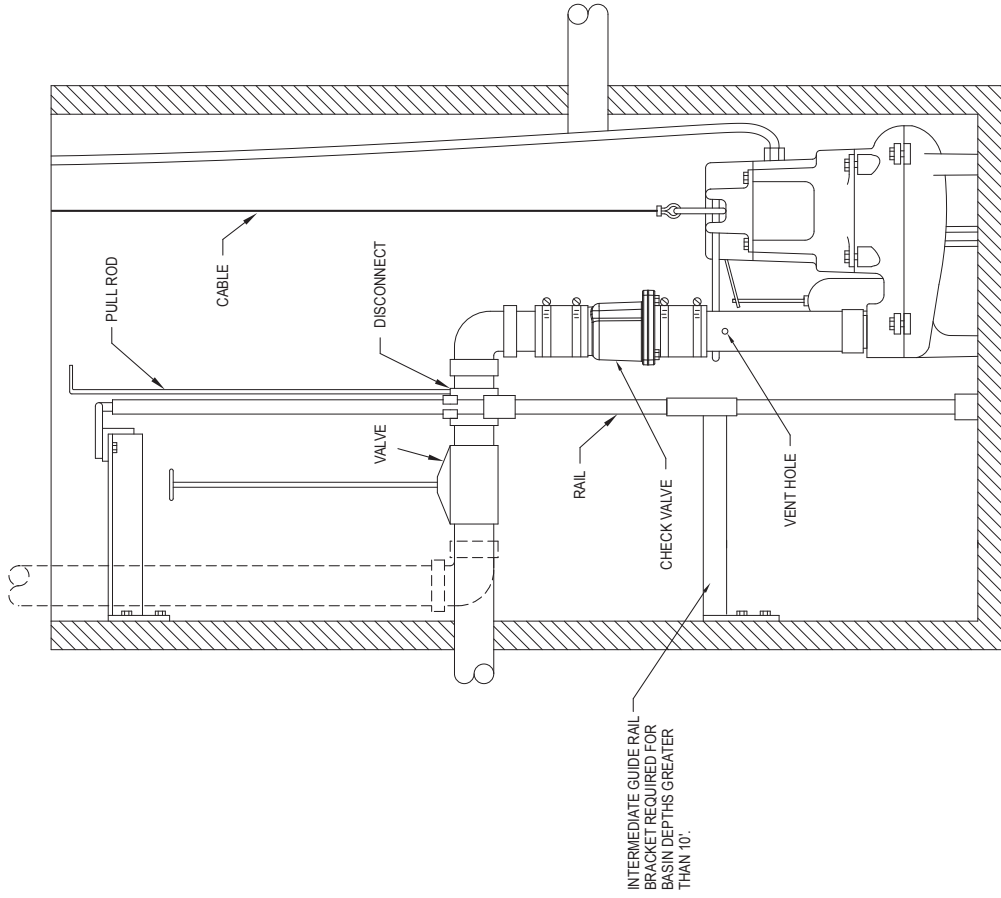
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# PUMP DISCONNECT SYSTEM



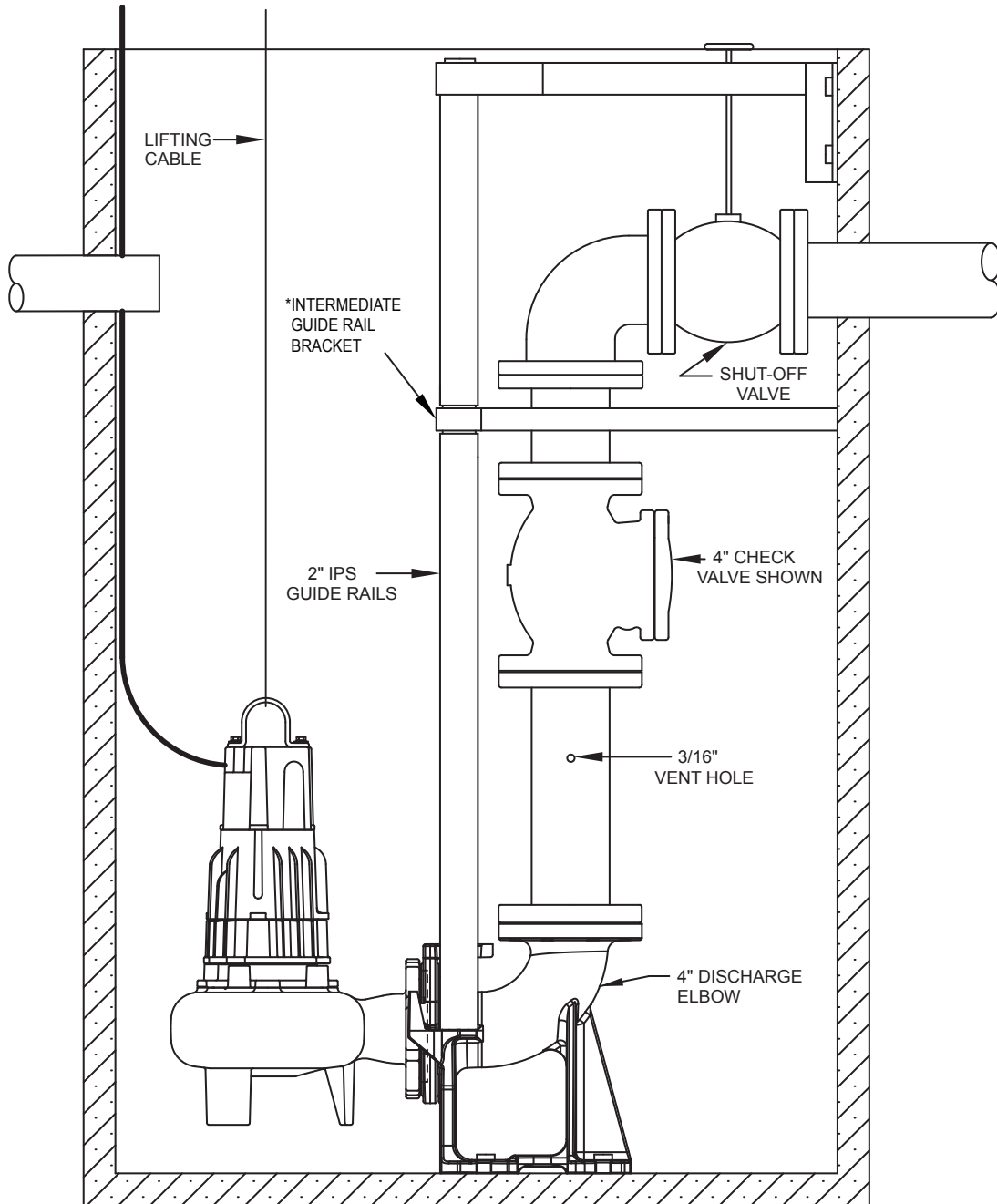
SK1531

# PUMP DISCONNECT WITH RAIL SYSTEM



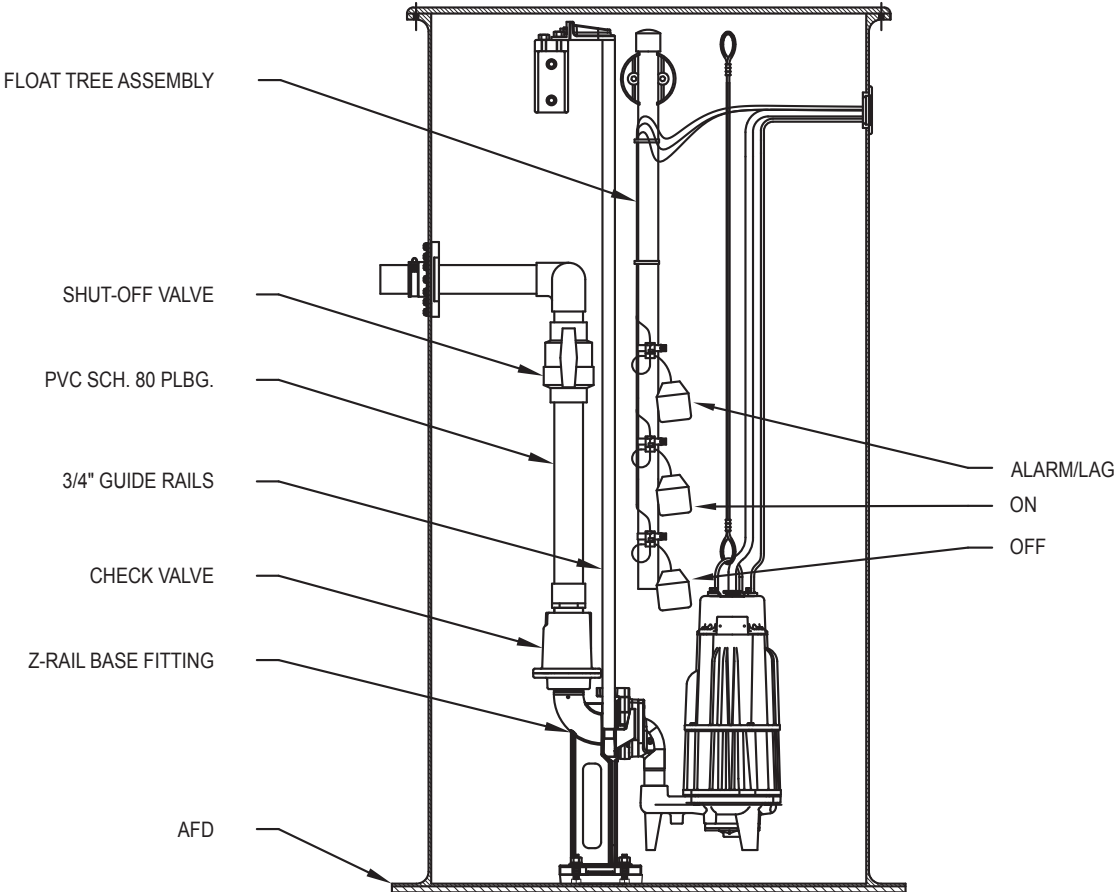
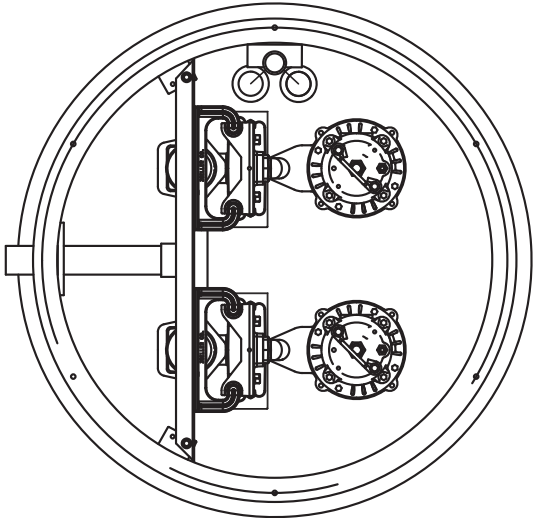
SK1735

# 404/405, 4404/4405 AND SEWAGE/WASTE GUIDE RAIL SYSTEMS



SK1100

**Z-RAIL® DISCONNECT SYSTEM**



SK3111