

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.



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## SPECIFICATIONS

### EFFLUENT/SUMP SIMPLEX SYSTEM

#### ZOELLER SUBMERSIBLE DEWATERING OR EFFLUENT PUMPS

SEAL	SOLIDS	DISCHARGE	MATERIAL	MODELS							
				53®	57	63	95	98	140	151	
Single	1/2"	1-1/2" NPT	Cast Iron	53®	57	63	95	98	140	151	
Single	1/2"	1-1/2" NPT	Cast Bronze	55	59						
Single	5/8"	1-1/2" NPT	Cast Iron	137	191						
Single	5/8"	1-1/2" NPT	Cast Bronze	139							
Single	3/4"	1-1/2" NPT	Cast Iron	145	152	153					
Single	3/4"	1-1/2", 2", or 3" NPT	Cast Iron	161	163	165	185	186	188	189	
Double	1/2"	1-1/2"	Cast Iron	4140							
Double	3/4"	1-1/2", 2", or 3" NPT	Cast Iron	4145	4161	4163	4165	4185	4186	4188	4189

#### SIMPLEX SYSTEM

Furnish a Zoeller Submersible Pump Model \_\_\_\_\_ Single Seal or Model \_\_\_\_\_ Double Seal, with a capacity of \_\_\_\_\_ GPM against a Total Dynamic Head of \_\_\_\_\_ feet. Motor Specification: \_\_\_\_\_ Voltage, \_\_\_\_\_ Cycles, \_\_\_\_\_ Phase, \_\_\_\_\_ HP. Discharge to be \_\_\_\_\_ 1-1/2 inch NPT. Optional \_\_\_\_\_ 2 inch NPT or \_\_\_\_\_ 3 inch NPT (161/4161 - 189/4189). Cord length to be \_\_\_\_\_ feet. Pumps will pass \_\_\_\_\_ 1/2 inch solids (53®, 55, 57, 59, 63, 95, 98, 140/4140 & 151 Series) or \_\_\_\_\_ 5/8 inch solids (137 & 139 Series) or \_\_\_\_\_ 3/4 inch solids (145/4145, 152, 153, 161/4161, 163/4163, 165/4165, 185/4185, 186/4186, 188/4188 & 189/4189 Series.) Pumps shall be \_\_\_\_\_ UL Listed, \_\_\_\_\_ CSA Certified, \_\_\_\_\_ SSPMA certified, \_\_\_\_\_ State of Wisc. approved, \_\_\_\_\_ other (Specify \_\_\_\_\_).

#### SINGLE PHASE PUMPS

##### 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 automatic 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 (or \_\_\_\_\_ cast bronze). 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:

- \_\_\_\_\_ 53® (cast iron) \_\_\_\_\_ 55 (cast bronze) series pump shall have a shaded pole motor. Impeller, with metal insert, and base shall be of glass reinforced molded material. Switch case shall be of cast or molded material. Guard and handle shall be of stainless steel.
- \_\_\_\_\_ 57 (cast iron) \_\_\_\_\_ 59 (cast bronze) series pump shall have a shaded pole motor. Guard and handle shall be of stainless steel.
- \_\_\_\_\_ 63 (cast iron) premium sump pump shall have shaded pole motor. Outer switch boot shall be Viton. Mechanical switch shall be 2-pole, integrating advanced switch technology.
- \_\_\_\_\_ 95 (cast iron) premium sump pump shall have a permanent split capacitor motor. Outer switch boot shall be Viton. Mechanical switch shall be 2-pole, integrating advanced switch technology.

- \_\_\_\_\_ 98 (cast iron) series pump shall have 1/2 HP PSC motor.
- \_\_\_\_\_ 137 (cast iron) \_\_\_\_\_ 139 (cast bronze) series pump shall have 1/2 HP split phase motor with current sensing, starting relay enclosed in switch housing.
- \_\_\_\_\_ 151 (.33 HP) \_\_\_\_\_ 152 (.4 HP) \_\_\_\_\_ 153 (1/2 HP) series pump shall have a permanent split capacitor motor. The impeller shall be "glass reinforced thermoplastic." Motor housing shall be cast iron.
- \_\_\_\_\_ 145 (3/4 HP) \_\_\_\_\_ 140 (1 HP) series pump shall have a permanent split capacitor motor with capacitor in the switch housing attached to the pump. The impeller shall be "glass reinforced thermoplastic." Motor housing shall be cast iron. Discharge shall be a permanently affixed 1-1/2 inch female NPT hub.
- \_\_\_\_\_ 4140 (1 HP cast iron) \_\_\_\_\_ (4145 (3/4 HP cast iron) series pump with double carbon/ceramic shaft seals shall have a 1 HP permanent split capacitor motor with capacitor in the switch housing attached to the pump. The impeller shall be "glass reinforced thermoplastic." Motor housing shall be cast iron. Discharge shall be a permanently affixed 1-1/2 inch female NPT hub. The lower seal cavity shall be oil-filled.
- \_\_\_\_\_ 161 (1/2 HP) \_\_\_\_\_ 163 (1/2 HP) \_\_\_\_\_ 165 (1 HP) cast iron series pump shall have a permanent split capacitor motor with run capacitor and magnetic contactor enclosed in switch housing.

Impeller shall be of cast iron. Motor housing shall be finned for extra cooling capability.

\_\_\_\_\_ 4161 (1/2 HP) \_\_\_\_\_ 4163 (1/2 HP) \_\_\_\_\_ 4165 (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 enclosed in the switch housing. Impeller shall be cast iron. Motor housing shall be finned for extra cooling capability. The lower seal cavity shall be oil-filled.

\_\_\_\_\_ 185 (1 HP) \_\_\_\_\_ 186 (1-1/2 HP) \_\_\_\_\_ 188 (1-1/2 HP) \_\_\_\_\_ 189 (2 HP) cast iron series pump shall have a permanent split capacitor motor with run capacitor and magnetic contactor enclosed in switch housing. Impeller shall be of cast iron. Motor housing shall be finned for extra cooling capability.

\_\_\_\_\_ 4185 (1 HP) \_\_\_\_\_ 4186 (1-1/2 HP) \_\_\_\_\_ 4188 (1-1/2 HP) \_\_\_\_\_ 4189 (2 HP) cast iron series pump with double carbon/ceramic shaft seals shall have a permanent split capacitor motor with run capacitor and magnetic contactor enclosed in the switch housing. Impeller shall be cast iron. Motor housing shall be finned for extra cooling capability. The lower seal cavity shall be oil-filled.

\_\_\_\_\_ 191 (2 HP) cast iron series pump with carbon/ceramic shaft seals shall have a permanent split capacitor motor with run capacitor enclosed in the switch housing. Impeller shall be cast bronze and the housing shall be epoxy coated. Impeller shall be of a closed type construction. Motor housing shall be finned for extra cooling capability.

### THREE PHASE PUMPS

#### 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. 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.

\_\_\_\_\_ 137 (cast iron) model \_\_\_\_\_ 139 (cast bronze) model shall have a 4-pole squirrel cage induction motor.

\_\_\_\_\_ 161 (1/2 HP) \_\_\_\_\_ 163 (1/2 HP) \_\_\_\_\_ 165 (1 HP) cast iron series shall have a 2-pole squirrel cage induction motor. Impeller shall be cast iron. Motor housing shall be finned for extra cooling capability.

\_\_\_\_\_ 4161 (1/2 HP) \_\_\_\_\_ 4163 (1/2 HP) \_\_\_\_\_ 4165 (1 HP) cast iron series pump with double carbon/ceramic shaft seals shall have a 2-pole squirrel cage induction motor. Impeller shall be cast iron. Motor housing shall be finned for extra cooling capability. The lower seal cavity shall be oil-filled.

\_\_\_\_\_ 185 (1 HP) \_\_\_\_\_ 186 (1-1/2 HP) \_\_\_\_\_ 188 (1-1/2 HP) \_\_\_\_\_ 189 (2 HP) cast iron series shall have 2-pole squirrel cage induction motor. Impeller shall be cast iron. Motor housing shall be finned for extra cooling capability.

\_\_\_\_\_ 4185 (1 HP) \_\_\_\_\_ 4186 (1-1/2 HP) \_\_\_\_\_ 4188 (1-1/2 HP) \_\_\_\_\_ 4189 (2 HP) cast iron series pump with double carbon/ceramic shaft seals shall have 2-pole squirrel cage induction motor. Impeller shall be cast iron. Motor housing shall be finned for extra cooling capability. The lower seal cavity shall be oil-filled.

#### AUTOMATIC CONTROL - INTEGRAL FLOAT TYPE

Single phase pump shall have an integral mechanical float switch, which shall require no adjustment, nor require additional equipment for operation.

#### AUTOMATIC CONTROL PIGGYBACK FLOAT SWITCH

A Zoeller \_\_\_\_\_ piggyback float switch with a SJOWA cord and molded plug shall be furnished to control a nonautomatic pump. Control shall be constructed of durable plastic and be omnidirectional. Control shall be fastened to discharge pipe with plastic tie mounting strap and shall require no extra wiring. (Addition Noted Below.)

Check applicable control:

\_\_\_\_\_ 10-0034 (115 V/Max. 1/2 HP) or \_\_\_\_\_ 10-0035 (230 V/Max. 2 HP) (For use on 115 V or 230 V, 1 Phase, nonautomatic Zoeller pump). Designed for automatic pump operation with the appropriate voltage and horsepower, single phase Zoeller pump.

\_\_\_\_\_ 10-1964 (115 V/Max. 1 HP) or \_\_\_\_\_ 10-1965 (230 V/Max. 2 HP) (For use on 115 V or 230 V, 1 Phase, nonautomatic Zoeller pump.) Double float system shall have an adjustable pumping range. Pumping range shall be a minimum of one (1) inch to a maximum of forty-eight (48) inches.

#### SIMPLEX CONTROL PANEL

A Zoeller \_\_\_\_\_ simplex control panel with three float switches shall be furnished to control a nonautomatic pump. The panel shall have a NEMA 4X enclosure, pump run indicator light, high water alarm, selector switches, and a UL label. Panel will be sized for Zoeller Model \_\_\_\_\_, \_\_\_\_\_ Volt, \_\_\_\_\_ Cycle, \_\_\_\_\_ Phase, \_\_\_\_\_ HP, \_\_\_\_\_ FLA pump.

Panels used with double seal pumps with optional moisture sensors will require a seal leak detector light.

#### CONTROL SWITCHES

A Zoeller Float Switch shall be furnished to operate control circuit. Float shall be omnidirectional and include a SJOWA cord and plastic tie mounting strap.

#### ACCESSORIES/MISCELLANEOUS UNICHECK

\_\_\_\_\_ 30-0200 (Clamp Union Valve)(1-1/4, 1-1/2 inch) full flow check valve, rated at 4.3 psi (10 feet TDH) at 130 °F shall be furnished to fit 1-1/4 inch 1-1/2 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 backing plates and stainless steel rivet. Unicheck shall include two (2) neoprene unions and four (4) stainless steel clamps and fasteners.

\_\_\_\_\_ 30-0021 (Clamp Union Valve) (2 inch) full flow check valve, rated at 4.3 psi (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 backing plates and stainless steel rivet. Unicheck shall include two (2) neoprene unions and four (4) stainless steel clamps and fasteners.

\_\_\_\_\_ 30-0015 (Compression Union Valve) 1-1/2 inch IPS full flow check valve shall be furnished to fit 1-1/2 inch IPS pipe. Unicheck body and compression and fittings shall be constructed of PVC. Flapper and end seals shall be Buna-N. Valve shall include no metallic parts. Pressure rated at 25 PSI (57 feet TDH) at 130 °F.

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

\_\_\_\_\_ 30-0160 (3 inch) cast iron full flow check valve with 3 inch female NPT Rated at 50 PSI (115 feet TDH) at 130 °F. Neoprene polyester

reinforced flapper with cast iron and brass backing plates and stainless steel fastener.

- \_\_\_\_\_ 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

### OPTIONAL ALARM SYSTEM

- \_\_\_\_\_ 10-4012 (115V/1 Ph) APak® complete with tethered float and NEMA 1 enclosure. Warning light and horn, which can be manually turned off. cCSAus certified on complete alarm system.
- \_\_\_\_\_ 10-0623 (115 V/1 Ph) High Level Alarm rated for indoor/outdoor use per UL 864. The alarm will include an alarm horn, alarm light, silence and test buttons, and a float switch.
- \_\_\_\_\_ 10-0682 (115 V/1 Ph) deluxe high level alarm rated for indoor/outdoor use per UL 864. The alarm will include an alarm horn, alarm light, silence and test buttons, a float switch, power cord, and watertight connectors.

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.

### SUMP BASIN

A Zoeller \_\_\_\_\_ polyethylene basin, .200 inch thick, .949 G/CC dense, or Zoeller \_\_\_\_\_ fiberglass basin, 3/16 inch thick, .058 pounds/cubic feet dense, \_\_\_\_\_ inches inside diameter by \_\_\_\_\_ inches deep shall be furnished. The basin shall include \_\_\_\_\_ four (4) inch cast iron caulk inlet hubs with anticorrosion coating, combo hub or pipe seal. The centerline of the hub(s) shall be located nine (9) inches from the top of the basin. The basin shall also include a .115 inch thick steel sump cover. An optional pump installation plate can be provided on covers twenty four (24) inches in diameter or larger. Optional anti-flotation ring can also be provided. Also included shall be a neoprene seal for pump cord, neoprene seal for vent and discharge flange, foam cover seal and plated steel fasteners. Cover shall include a \_\_\_\_\_ inch vent a \_\_\_\_\_ inch discharge flange 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 unichuck valve shall be installed in the discharge pipe. A 3/16 inch 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 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 conditions.

### HIGH TEMPERATURE PUMPS

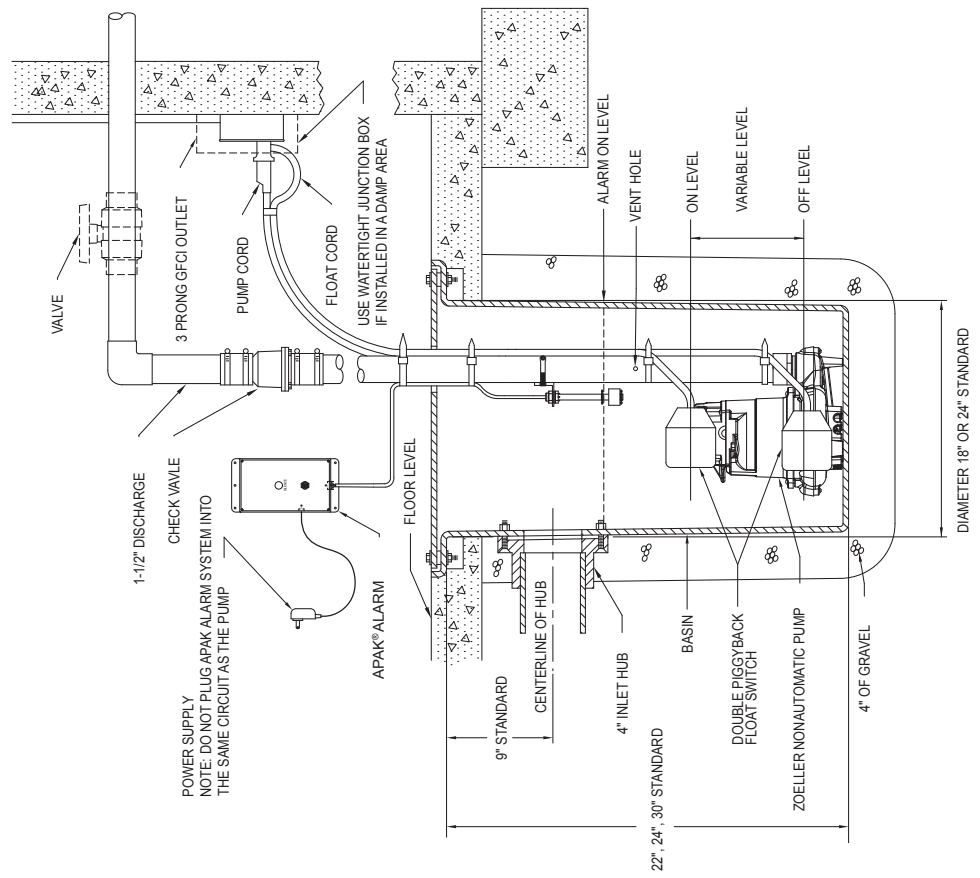
For applications up to 200°F continuous operation, specify High Temperature Zoeller Pump Co. models. See literature on High Temperature pumps, FM2811 for additional information.

### PUMP DISCONNECTS AND RAIL SYSTEMS

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

- \_\_\_\_\_ 39-0001, 1-1/2" NPT Disconnect (Non-pump Supporting)
- \_\_\_\_\_ 39-0002, 2" Disconnect (Non-pump Supporting)
- \_\_\_\_\_ 39-0003, 1-1/2" NPT Rail System (Non-pump Supporting)
- \_\_\_\_\_ 39-0004, 2" NPT Rail System (Non-pump Supporting)
- \_\_\_\_\_ 39-0131, 1.5" x 2" Z-Rail Disconnect System, all Ductile Iron Construction
- \_\_\_\_\_ 39-0132, 1.5" x 2" Z-Rail Disconnect System, Ductile Iron Construction w/ SS Upper Rail Bracket
- \_\_\_\_\_ 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

**SUMP SIMPLEX SYSTEM WITH DOUBLE VARIABLE LEVEL FLOAT SWITCH (SINGLE PHASE)**



POWER SUPPLY  
NOTE: DO NOT PLUG APAK ALARM SYSTEM INTO THE SAME CIRCUIT AS THE PUMP

3 PHASE SYSTEM REQUIRES A SIMPLEX PANEL

NOTE: DO NOT PLUG APAK ALARM SYSTEM INTO THE SAME CIRCUIT AS THE PUMP

APAK® ALARM

3 PRONG GFCI OUTLET

USE WATERTIGHT JUNCTION BOX IF INSTALLED IN A DAMP AREA

3 PHASE SYSTEM REQUIRES A SIMPLEX PANEL

VALVE

9" STANDARD

CENTERLINE OF HUB

4" INLET HUB

22", 24", 30" STANDARD

BASIN

ZOELLER NONAUTOMATIC PUMP

DOUBLE PIGGYBACK FLOAT SWITCH

FLOOR LEVEL

APAK® ALARM

1-1/2" DISCHARGE PIPE

CHECK VAVLE

3 PRONG GFCI OUTLET

PUMP CORD

FLOAT CORD

USE WATERTIGHT JUNCTION BOX IF INSTALLED IN A DAMP AREA

ALARM ON LEVEL

VENT HOLE

ON LEVEL

VARIABLE LEVEL

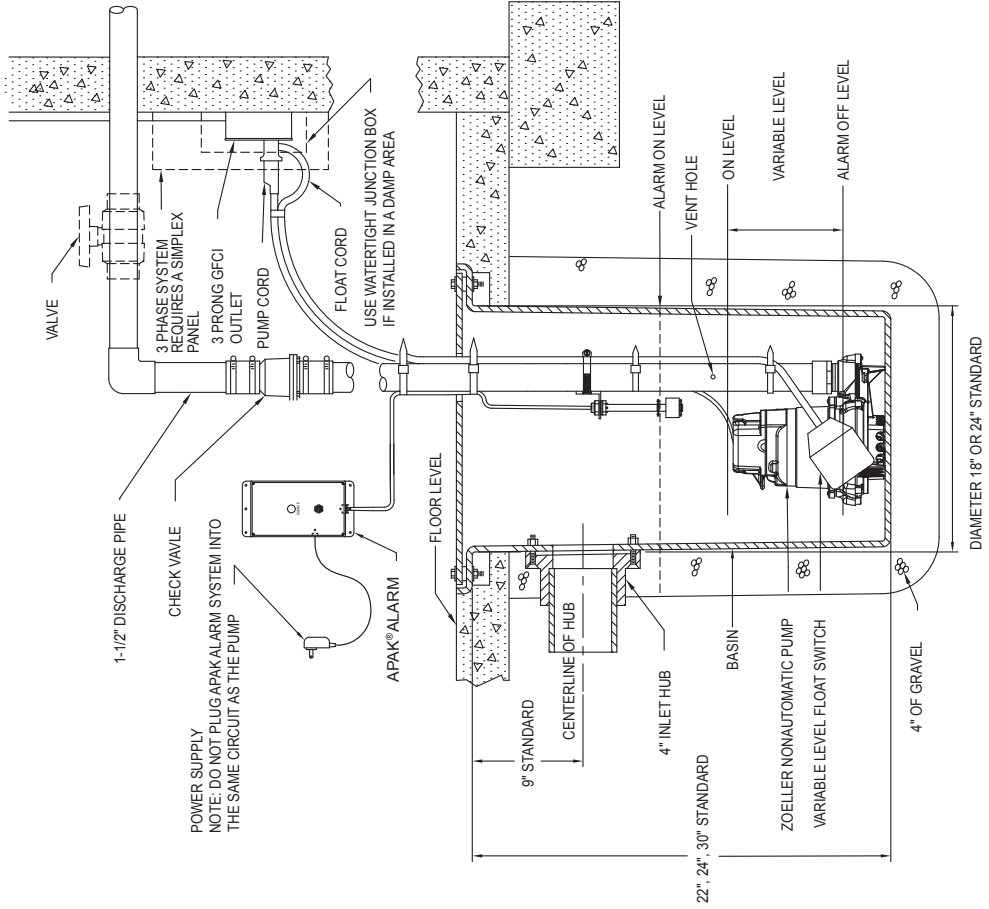
ALARM OFF LEVEL

4" OF GRAVEL

DIAMETER 18" OR 24" STANDARD

SK454

**SUMP SIMPLEX SYSTEM WITH SINGLE VARIABLE LEVEL FLOAT SWITCH (SINGLE OR THREE PHASE)**



NOTE: DO NOT PLUG APAK ALARM SYSTEM INTO THE SAME CIRCUIT AS THE PUMP

APAK® ALARM

3 PRONG GFCI OUTLET

USE WATERTIGHT JUNCTION BOX IF INSTALLED IN A DAMP AREA

3 PHASE SYSTEM REQUIRES A SIMPLEX PANEL

VALVE

9" STANDARD

CENTERLINE OF HUB

4" INLET HUB

22", 24", 30" STANDARD

BASIN

ZOELLER NONAUTOMATIC PUMP

VARIABLE LEVEL FLOAT SWITCH

FLOOR LEVEL

APAK® ALARM

1-1/2" DISCHARGE PIPE

CHECK VAVLE

3 PRONG GFCI OUTLET

PUMP CORD

FLOAT CORD

USE WATERTIGHT JUNCTION BOX IF INSTALLED IN A DAMP AREA

ALARM ON LEVEL

VENT HOLE

ON LEVEL

VARIABLE LEVEL

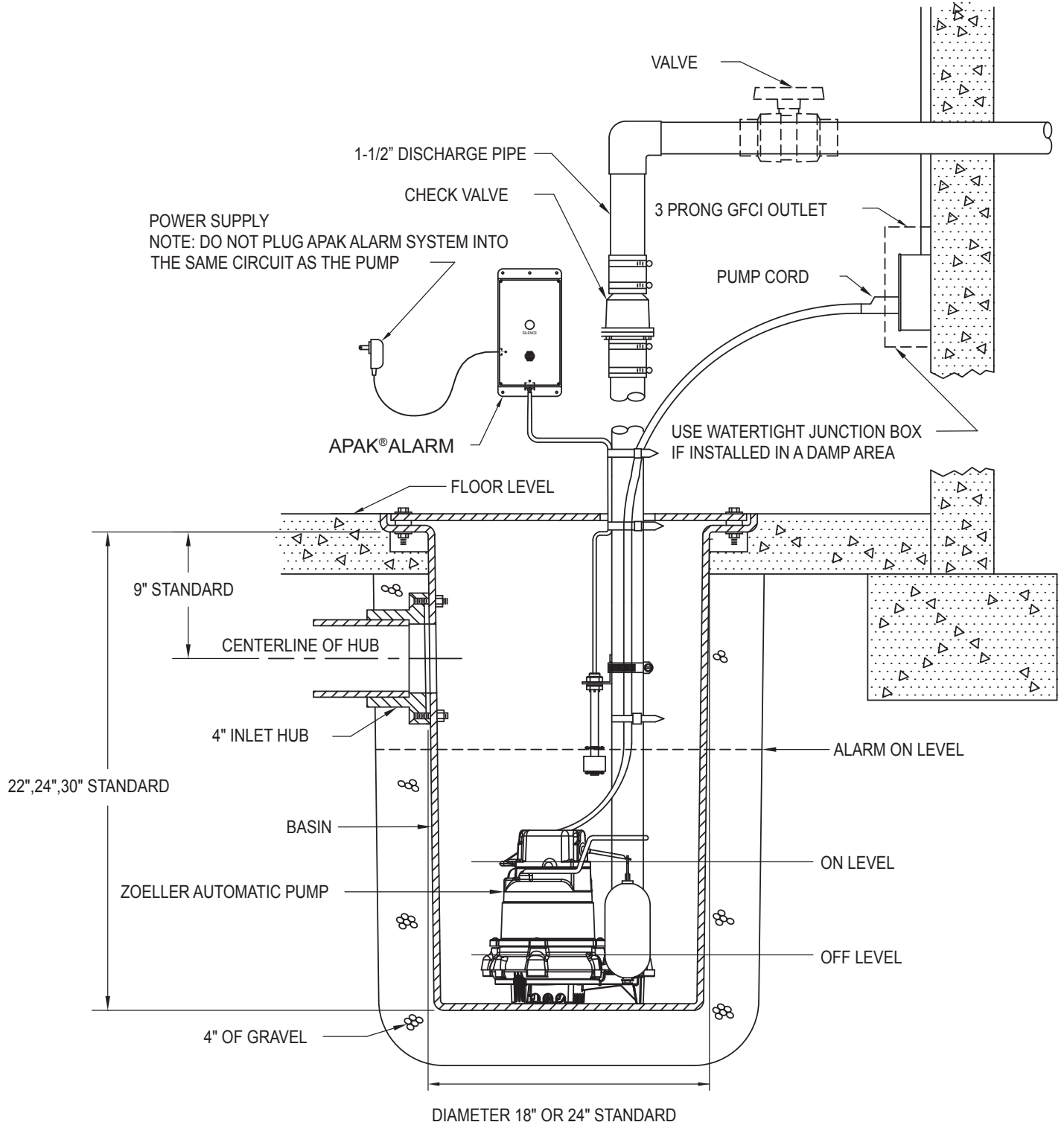
ALARM OFF LEVEL

4" OF GRAVEL

DIAMETER 18" OR 24" STANDARD

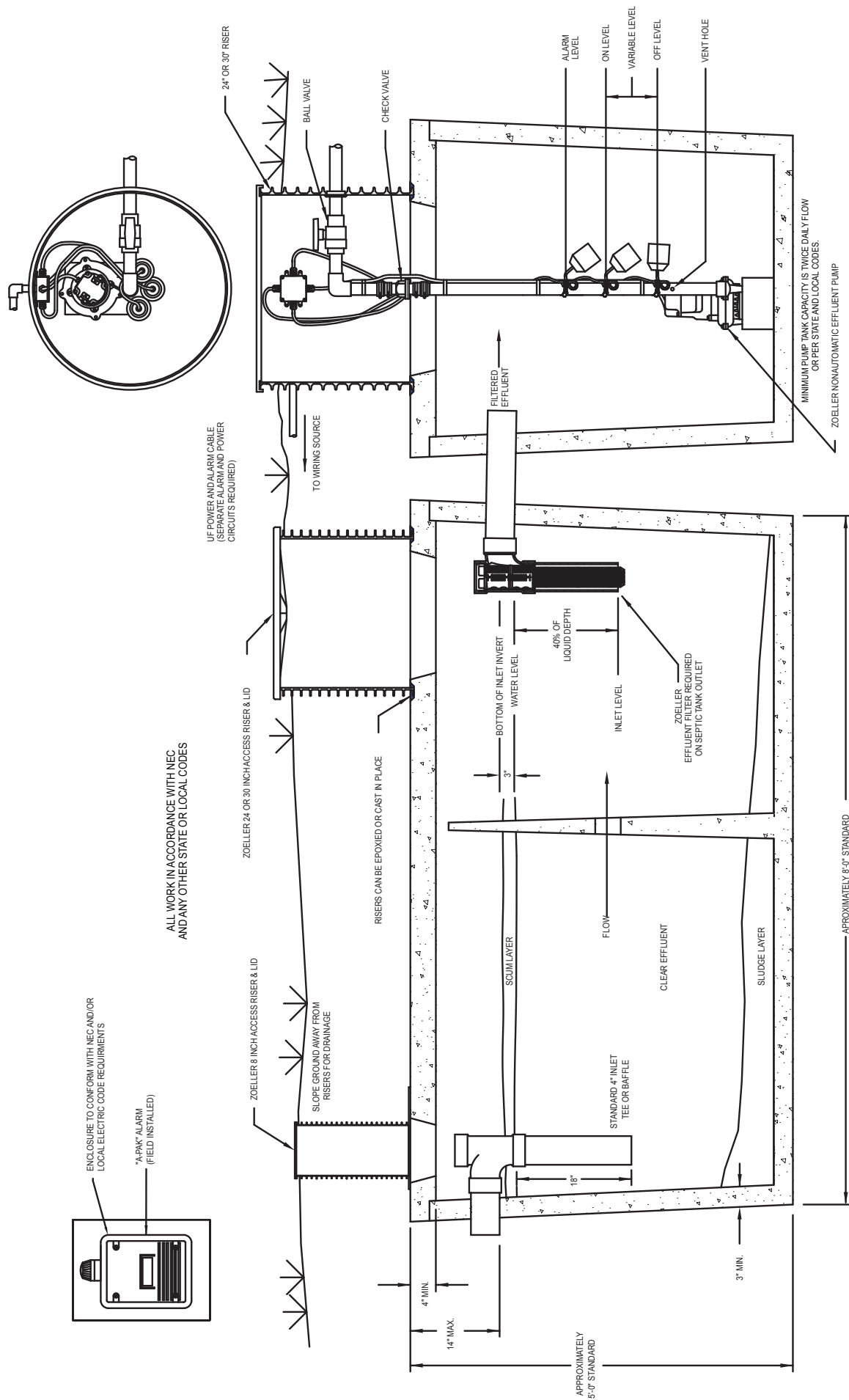
SK453

**SUMP SIMPLEX SYSTEM WITH INTEGRAL SWITCH  
(SINGLE PHASE)**

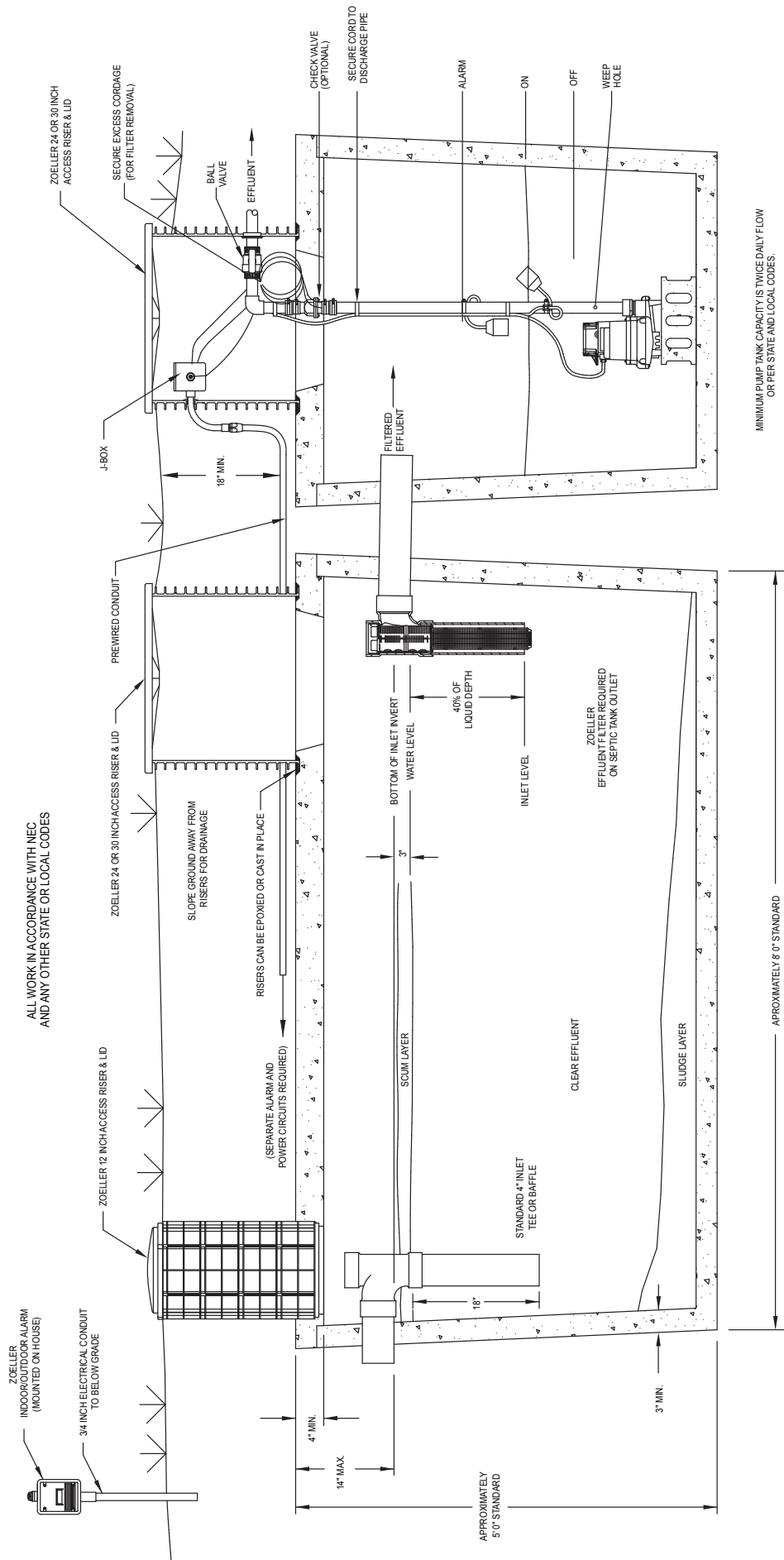


SK452

# EFFLUENT SIMPLEX SYSTEM WITH DOUBLE VARIABLE LEVEL FLOAT SWITCH (SINGLE PHASE)

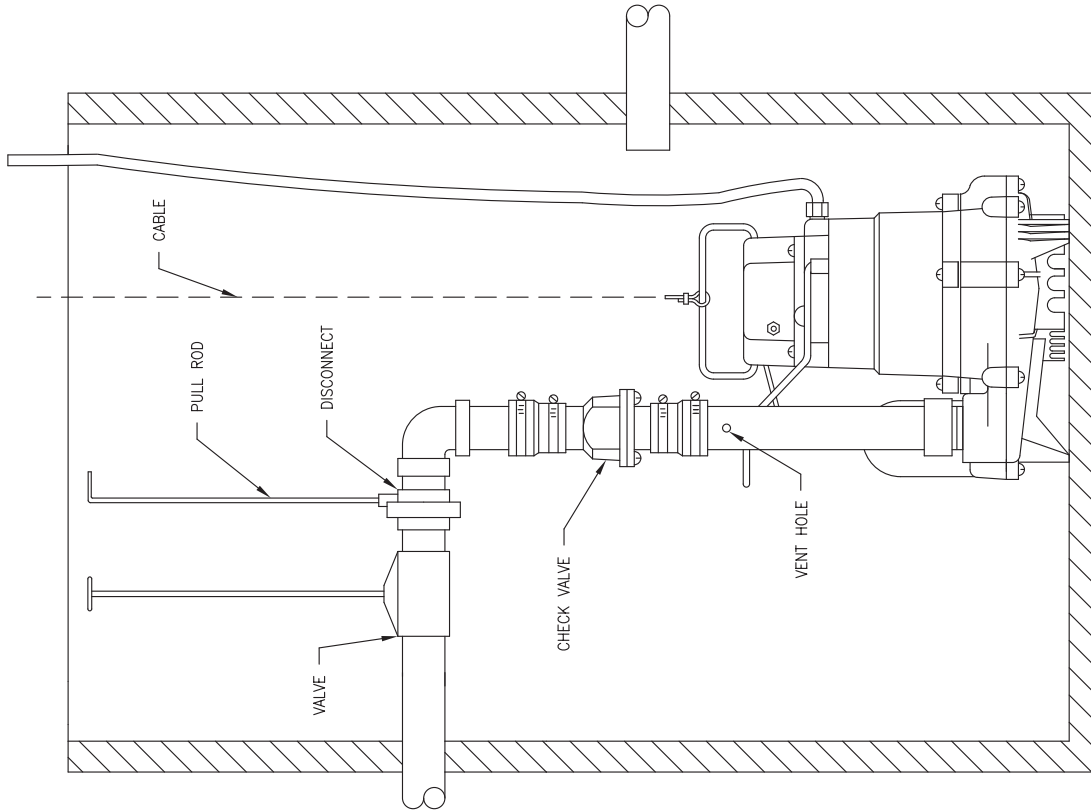


# EFFLUENT SIMPLEX SYSTEM WITH SINGLE VARIABLE LEVEL FLOAT SWITCH (SINGLE PHASE)



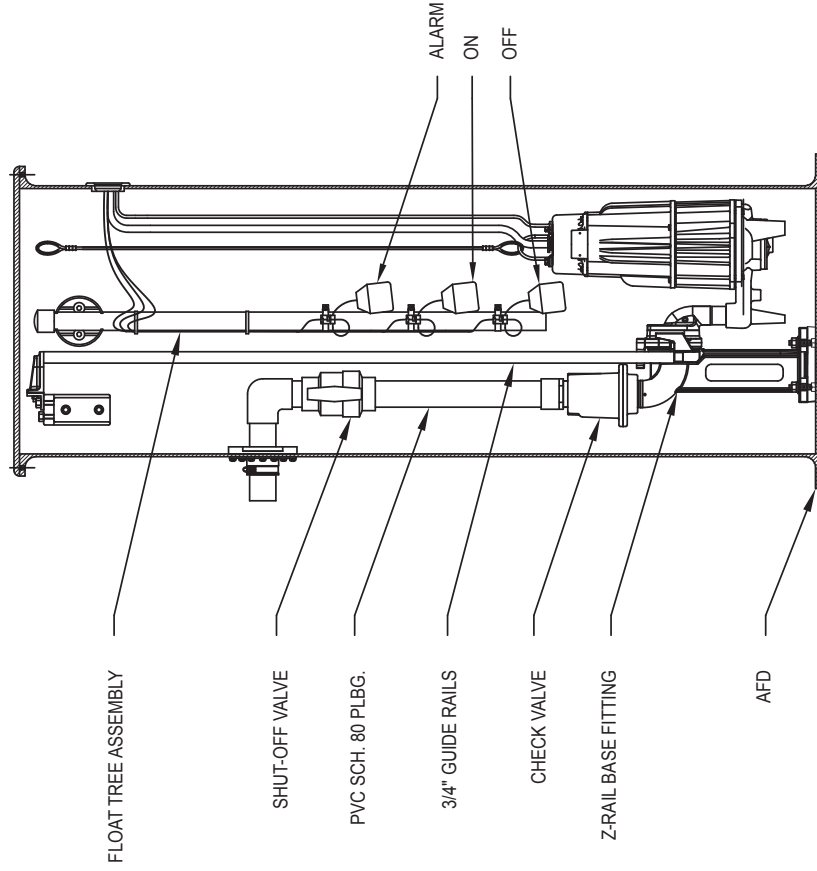
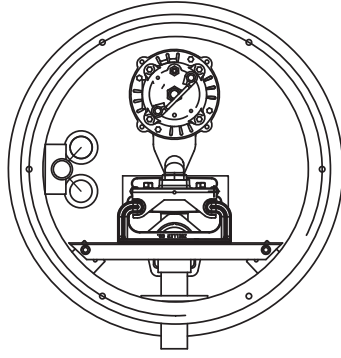


# PUMP DISCONNECT SYSTEM ( Non- Pump Supporting )



SK1283

# Z-RAIL® DISCONNECT SYSTEM



SK3110\_fm0600