SINGLE 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 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) premium sump pump shall have a shaded pole motor. Outer switch boot shall be Viton. Mechanical switch shall be 2-pole, integrating advanced switch technology.
- 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.
- 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.

14140 (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.

SPECIFICATIONS

**SEAL** | **SOLIDS** | **DISCHARGE** | **MATERIAL** | **MODELS**
--- | --- | --- | --- | ---
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 | 4145
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 inch NPT. Optional inch NPT or 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 ).
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 bronze. 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 bronze. 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 the switch housing. Impeller shall be of cast bronze. 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 bronze. 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.

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.

10-0229 (115 V/Max. 1 HP) or 10-0230 (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 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, float switches, and UL label. Panel will be sized for Zoeller Model ______, ______ Volt, ______ Cycle, ______ Phase, ______ HP, ______ FLA pump.

THREE PHASE SYSTEM

(FOR USE WITH 130, 160/4160, OR 180/4180 SERIES ZOELLER PUMP)

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 bronze. 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 bronze. 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 the switch housing. Impeller shall be of closed type construction. Motor housing shall be finned for extra cooling capability.

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, float switches, and 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. Unichck 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. Unichock 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. Unichock 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. Unichock 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. Unichock 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.

OPTIONAL ALARM SYSTEM
An audible high water alarm system shall include a Zoeller

10-0015 (115 V) or 10-0016 (230 V) APak® and a 10-0225 float switch. The APak® shall include a six (6) inch steel alarm bell, which shall sound sixty-eight (68) decibels at a distance of ten (10) feet and a dual mount transformer, which shall step down 115 V or 230 V 1 Ph line voltage to 8 V. The 10-0225 float switch shall be constructed of plastic and shall be omnidirectional. Float shall include SJOWA cord and shall be fastened to discharge pipe with plastic tie mounting strap.

10-0412 (115 V/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.

10-0126 (115 V/1 Ph) High level alarm complete with NEMA 4X enclosure, alarm bell, alarm light, silence switch, and sensor float switch with 15’ cord. Entire unit is UL listed and CSA certified.

10-0023 (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.

10-0882 (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.

PIPING & POWER WIRING
All piping shall be rigid and permanent in nature and shall be furnished and installed by the contractor. A unichock 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, 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:

39-0001, 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
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.
SUMP SIMPLEX SYSTEM WITH INTEGRAL SWITCH
(SINGLE PHASE)

- **POWER SUPPLY**: Note: Do not plug APAK alarm system into the same circuit as the pump.
- **USE WATERTIGHT JUNCTION BOX IF INSTALLED IN A DAMP AREA**
- **DIAMETER 18" OR 24" STANDARD**
- **4" OF GRAVEL**
- **22", 24", 30" STANDARD**
- **4" INLET HUB**
- **CENTERLINE OF HUB**
- **FLOOR LEVEL**
- **VALVE**
- **1-1/2" DISCHARGE PIPE**
- **CHECK VALVE**
- **3 PRONG GFCI OUTLET**
- **PUMP CORD**
- **APAK® ALARM**
- **ZOELLER AUTOMATIC PUMP**
- **ALARM ON LEVEL**
- **ON LEVEL**
- **OFF LEVEL**

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

- Enclosure to conform with NEC and/or local electric code requirements
- "A-Pak" alarm (field installed)
- All work in accordance with NEC and any other state or local codes
- Zoeller 24 or 30 inch access riser & lid
- Risers can be epoxied or cast in place
- 3" minimum
- Approximately 5'-0" standard
- 8" minimum
- Standard 4" inlet
- TEE or Baffle
- Zoeller 8 inch access riser & lid
- Slope ground away from risers for drainage
- Zoeller 24 or 30 inch access riser & lid
- Bottom of inlet invert
- Water level
- Approximate 8'-0" standard
- 40% of liquid depth
- Sludge layer
- Clear effluent
- Effluent filter because of septic tank outlet
- Zoeller nonautomatic effluent pump
- To wiring source
- Filtered effluent
- Alarm level
- On level
- Variable level
- Off level
- Vent hole
- Minimum pump tank capacity is three days flow or per state and local codes
- Enclosure to conform with NEC and/or local electric code requirements
- "A-Pak" alarm (field installed)
- All work in accordance with NEC and any other state or local codes
- Zoeller 24 or 30 inch access riser & lid
- Risers can be epoxied or cast in place
- 3" minimum
- Approximately 5'-0" standard
- 8" minimum
- Standard 4" inlet
- TEE or Baffle
- Zoeller 8 inch access riser & lid
- Slope ground away from risers for drainage
- Zoeller 24 or 30 inch access riser & lid
- Bottom of inlet invert
- Water level
- Approximate 8'-0" standard
- 40% of liquid depth
- Sludge layer
- Clear effluent
- Effluent filter because of septic tank outlet
- Zoeller nonautomatic effluent pump
- To wiring source
- Filtered effluent
- Alarm level
- On level
- Variable level
- Off level
- Vent hole
- Minimum pump tank capacity is three days flow or per state and local codes
- Enclosure to conform with NEC and/or local electric code requirements
- "A-Pak" alarm (field installed)
- All work in accordance with NEC and any other state or local codes
- Zoeller 24 or 30 inch access riser & lid
- Risers can be epoxied or cast in place
- 3" minimum
- Approximately 5'-0" standard
- 8" minimum
- Standard 4" inlet
- TEE or Baffle
- Zoeller 8 inch access riser & lid
- Slope ground away from risers for drainage
- Zoeller 24 or 30 inch access riser & lid
- Bottom of inlet invert
- Water level
- Approximate 8'-0" standard
- 40% of liquid depth
- Sludge layer
- Clear effluent
- Effluent filter because of septic tank outlet
- Zoeller nonautomatic effluent pump
- To wiring source
- Filtered effluent
- Alarm level
- On level
- Variable level
- Off level
- Vent hole
- Minimum pump tank capacity is three days flow or per state and local codes
- Enclosure to conform with NEC and/or local electric code requirements
- "A-Pak" alarm (field installed)
- All work in accordance with NEC and any other state or local codes
- Zoeller 24 or 30 inch access riser & lid
- Risers can be epoxied or cast in place
- 3" minimum
- Approximately 5'-0" standard
- 8" minimum
- Standard 4" inlet
- TEE or Baffle
- Zoeller 8 inch access riser & lid
- Slope ground away from risers for drainage
- Zoeller 24 or 30 inch access riser & lid
- Bottom of inlet invert
- Water level
- Approximate 8'-0" standard
- 40% of liquid depth
- Sludge layer
- Clear effluent
- Effluent filter because of septic tank outlet
- Zoeller nonautomatic effluent pump
- To wiring source
- Filtered effluent
- Alarm level
- On level
- Variable level
- Off level
- Vent hole
- Minimum pump tank capacity is three days flow or per state and local codes
EFFLUENT SIMPLEX SYSTEM WITH SINGLE VARIABLE LEVEL FLOAT SWITCH
(SINGLE PHASE)

3/4 INCH ELECTRICAL CONDUIT TO BELOW GRADE

ALL WORK IN ACCORDANCE WITH NEC AND ANY OTHER STATE OR LOCAL CODES.

ZOELLER INLET LEVEL

ZOELLER 24 OR 30 INCH ACCESS RISER & LID

MINIMUM PUMP TANK CAPACITY IS TWICE DAILY FLOW OR PER STATE AND LOCAL CODES.

ZOELLER 12 INCH ACCESS RISER & LID

ZOELLER SCUM LAYER

SLOPE GROUND AWAY FROM RISERS FOR DRAINAGE

ZOELLER 24 OR 30 INCH ACCESS RISER & LID

(40% OF WATER LEVEL BOTTOM OF INLET INVERT)

1/4" MAX.

APPROXIMATELY 11' 9" STANDARD

3" MIN.

MINIMUM PUMP TANK CAPACITY IS TWICE DAILY FLOW OR PER STATE AND LOCAL CODES

SLOUGH LAYER

CLEAR EFFLUENT

SLUDGE LAYER

APPROXIMATELY 8' 0" STANDARD

4" MIN.

3/4" ELECTRICAL CONDUIT (MOUNTED ON HOUSE)

INDOOR/OUTDOOR ALARM

KEEP DRAINAGE CONDUIT CLEAR OF SLUDGE

ZOELLER EFFLUENT FILTER REQUIRED ON SEPTIC TANK OUTLET

4" TEE OR BAFTEL

WEEP HOLE

ALARM

OFF

ON

CHECK VALVE (OPTIONAL)

18" MIN.

PREFIXED CONDUIT

14" MAX.

APPROXIMATELY 0' 11" STANDARD

SPLASHES CLEAR EFFLUENT
Z-RAIL® DISCONNECT SYSTEM

PUMP DISCONNECT WITH RAIL SYSTEM
(Non-Pump Supporting)

PUMP DISCONNECT SYSTEM
(Non-Pump Supporting)