Notice to Installer: Instructions must remain with installation.

Trusted. Tested. Tough ®

ZT0040_Eb
0622
Supersedes
0818

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

Register your Zoeller Pump Company Product on our website: http://reg.zoellerpumps.com/

NOTICE: VENT HOLE FOR CHECK VALVE SEE #3 IN CAUTION SECTION BELOW AND #4 ON PAGE 3

ZOELLER® PUMP COMPANY

50 Hz

Visit our website: www.zoellerpumps.com

INSTALLATION INSTRUCTIONS

RECOMMENDED MODELS

SEWAGE	SUMP/DEWATERING
222, 223, 422	49, 70, 86, 87, 88

PREINSTALLATION CHECKLIST - ALL INSTALLATIONS

1. **Inspect your pump.** Occasionally, products are damaged during shipment. If the unit is damaged, contact your dealer before using. **DO NOT** remove the test plugs in the cover nor the motor housing.
2. **Carefully read the literature** provided to familiarize yourself with specific details regarding installation and use. These materials should be retained for future reference.
3. **Before installation and operation, see relative local rules and standards.**

⚠ WARNING

SEE BELOW FOR LIST OF WARNINGS

1. **Make sure there is a properly grounded receptacle available.** All pumps are furnished with provisions for proper grounding to protect you against the possibility of electrical shock. **(SEE WARNING BELOW)**
2. Make certain that the receptacle is within the reach of the pump's power supply cord. DO NOT USE AN EXTENSION CORD. Extension cords that are too long or too light do not deliver sufficient voltage to the pump motor. But, more important, they could present a safety hazard if the insulation were to become damaged or the connection end were to fall into the sump.
3. **Make sure the pump electrical supply circuit is equipped with fuses or circuit breakers of proper capacity.** A separate branch circuit is recommended, sized according to governing electrical code for the current shown on the pump nameplate.
4. **Testing for ground.** As a safety measure, each electrical outlet should be checked for ground using a circuit analyzer which will indicate if the power, neutral and ground wires are correctly connected to your outlet. If they are not, call a qualified licensed electrician.
5. **For Added Safety.** Use of a residual current device with an operating current not higher than 30 mA is recommended.
6. **FOR YOUR PROTECTION, ALWAYS DISCONNECT PUMP FROM ITS POWER SOURCE BEFORE HANDLING. DO NOT UNDER ANY CIRCUMSTANCES REMOVE THE GROUND PIN.** The 3-prong plug **must** be inserted into a mating 3-prong grounded receptacle. **If** the installation does not have such a receptacle, it must be changed to the proper type, wired and grounded in accordance with the governing electrical code and all applicable local codes and ordinances.
7. **"Risk of electrical shock"** Do not remove power supply cord and strain relief or connect conduit directly to the pump.
8. Installation and servicing of electrical circuits and hardware should be performed by a qualified licensed electrician.
9. Pump installation and servicing should be performed by a qualified person.
10. Risk of electric shock - These pumps have not been investigated for use in swimming pool and marine areas.
11. If the supply cable is damaged, it must be replaced by the manufacturer or its technical service or similarly qualified persons in order to avoid a hazard.
12. The appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction to concerning use of the appliance by a person responsible for their safety.
13. Pump is not intended for potable water due to possible contamination by oil contained in the pump.

⚠ CAUTION

SEE BELOW FOR LIST OF CAUTIONS

1. Check to be sure your power source is capable of handling the voltage requirements of the motor, as indicated on the pump nameplate.
2. The installation of automatic pumps with variable level float switches or nonautomatic pumps using auxiliary variable level float switches is the responsibility of the installing party and care should be taken that the tethered float switch will not hang up on the pump apparatus or pit peculiarities and is secured so that the pump will shut off. It is recommended to use rigid piping and fittings and the pit be 457 mm (18") or larger in diamete.
3. **Information - vent hole purpose.** It is necessary that all submersible sump, and sewage pumps capable of handling various sizes of solid waste be of the bottom intake design to reduce clogging and seal failures. If a check valve is incorporated in the installation, a vent hole (approx. 5 mm) must be drilled in the discharge pipe below the check valve and pit cover to purge the unit of trapped air. Trapped air is caused by agitation and/or a dry basin. Vent hole should be checked periodically for clogging. You may not want to drill one. If you choose not to drill a vent hole, be sure the pump case and impeller is covered with liquid before connecting the pipe to the check valve and no inlet carries air to the pump intake. NOTE: THE HOLE MUST ALSO BE BELOW THE BASIN COVER AND CLEANED PERIODICALLY. Water stream will be visible from this hole during pump run periods.
4. Pump should be checked frequently for debris and/or build up which may interfere with the float "on" or "off" position. Repair and service should be performed by Zoeller Pump Company Authorized Service Station only.
5. Dewatering and sump pumps are not designed for use in pits handling raw sewage.
6. Maximum operating temperature for standard model pumps must not exceed 40 °C (104 °F).
7. Do not operate a pump in an application where the Total Dynamic Head is less than the minimum Total Dynamic Head listed on the Pump Performance Curves.
8. Intended for indoor use only.

REFER TO WARRANTY ON PAGE 2.

P/N 081127

Limited Warranty

Manufacturer warrants, to the purchaser and subsequent owner during the warranty period, every new product to be free from defects in material and workmanship under normal use and service, when properly used and maintained, for a period of one year from date of purchase by the end user, or 18 months from date of original manufacture of the product, whichever comes first. Parts that fail within the warranty period, one year from date of purchase by the end user, or 18 months from the date of original manufacture of the product, whichever comes first, that inspections determine to be defective in material or workmanship, will be repaired, replaced or remanufactured at Manufacturer's option, provided however, that by so doing we will not be obligated to replace an entire assembly, the entire mechanism or the complete unit. No allowance will be made for shipping charges, damages, labor or other charges that may occur due to product failure, repair or replacement.

This warranty does not apply to and there shall be no warranty for any material or product that has been disassembled without prior approval of Manufacturer, subjected to misuse, misapplication, neglect, alteration, accident or uncontrolled act of nature; that has not been installed, operated or maintained in accordance with Manufacturer's installation instructions; that has been exposed to outside substances including but not limited to the following: sand, gravel, cement, mud, tar, hydrocarbons, hydrocarbon derivatives (oil, gasoline, solvents, etc.), or other abrasive or corrosive substances,wash towels or any other abusive entity, etc. in all pumping applications. The warranty set out in the paragraph above is in lieu of all other warranties expressed or implied; and we do not authorize any representative or other person to assume for us any other liability in connection with our products. Contact authorized distributors to obtain any needed repair or replacement of part(s) or additional information pertaining to our warranty.

MANUFACTURER EXPRESSLY DISCLAIMS LIABILITY FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES OR BREACH OF EXPRESSED OR IMPLIED WARRANTY; AND ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND OF MERCHANTABILITY SHALL BE LIMITED TO THE DURATION OF THE EXPRESSED WARRANTY.

Some jurisdictions do not allow limitations on the duration of an implied warranty, so the above limitation may not apply to you. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

In those instances where damages are incurred as a result of an alleged pump failure, the Homeowner must retain possession of the pump for investigation purposes.

EASY DO'S & DON'T'S FOR INSTALLING A SUMP PUMP

1. **DO** read thoroughly all installation material provided with the pump.
2. **DO** inspect pump for any visible damage caused by shipping. Contact dealer if pump appears to be damaged.
3. **DO** clean all debris from the sump. Be sure that the pump will have a hard, flat surface beneath it. **DO NOT** install on sand, gravel or dirt.
4. **DO** be sure that the sump is large enough to allow proper clearance for the level control switch(es) to operate properly.
5. **DO Always Disconnect Pump From Power Source Before Handling**.
   DO always connect to a separately protected and properly grounded circuit.
   DO NOT ever cut, splice, or damage power cord (Only splice in a watertight junction box).
   DO NOT carry or lift pump by its power cord.
   DO NOT use an extension cord with a sump pump.
6. **DO** install a check valve and a union in the discharge line.
   DO NOT use a discharge pipe smaller than the pump discharge.
7. **DO NOT** use a sump pump as a trench or excavation pump, or for pumping sewage, gasoline, or other hazardous liquids.
8. **DO** test pump immediately after installation to be sure that the system is working properly.
9. **DO** cover sump with an adequate sump cover.
10. **DO** review all applicable local and national codes and verify that the installation conforms to each of them.
11. **DO** consult manufacturer for clarifications or questions.
12. **DO** consider a Two Pump System with an alarm (Page 4) where an installation may become overloaded or primary pump failure would result in property damages.
13. **DO** consider a D.C. Backup System where a sump or dewatering pump is necessary for the prevention of property damages from flooding due to A.C. Power disruptions, mechanical or electrical problems or system overloading.
14. **DO** inspect and test system for proper operations at least every 3 months.

SERVICE CHECKLIST

⚠WARNING

ELECTRICAL PRECAUTIONS - Before servicing a pump, always shut off the main power breaker and then unplug the pump - making sure you are wearing insulated protective sole shoes and not standing in water. Under flooded conditions, contact your local electric company or a qualified licensed electrician for disconnecting electrical service prior to pump removal.

Submersible pumps contain oils which becomes pressurized and hot under operating conditions - **allow 2½ hours after disconnecting before attempting service.**

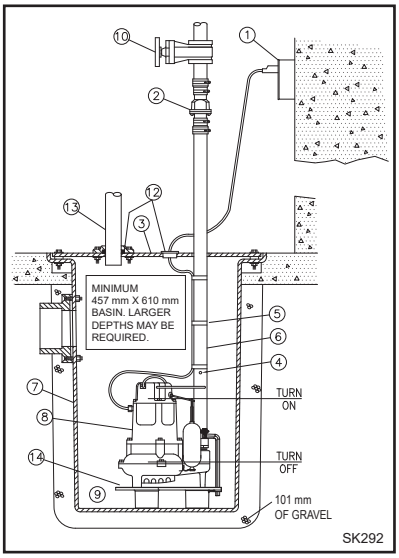
CONDITION	COMMON CAUSES
A. Pump will not start or run.	Check fuse, low voltage, overload open, open or incorrect wiring, open switch, impeller or seal bound mechanically, defective capacitor or relay when used, motor or wiring shorted. Float assembly held down. Switch defective, damaged, or out of adjustment.
B. Motor overheats and trips overload or blows fuse.	Incorrect voltage, negative head (discharge open lower than normal) impeller or seal bound mechanically, defective capacitor or relay, motor shorted.
C. Pump starts and stops too often.	Float tight on rod, check valve stuck or none installed in long distance line, overl oad open, level switch(s) defective, sump pit too small.
D. Pump will not shut off.	Debris under float assembly, float or float rod bound by pit sides or other, switch defective, damaged or out of adjustment.
E. Pump operates but delivers little or no water.	Check strainer housing, discharge pipe, or if check valve is used vent hole must be clear. Discharge head exceeds pump capacity. Low or incorrect voltage. Incorrect motor rotation. Capacitor defective. Incoming water containing air or causing air to enter pumping chamber.
F. Drop in head and/or capacity after a period of use.	Increased pipe friction, clogged line or check valve. Abrasive material and ad verse chemi cals could possibly deteriorate impeller and pump housing. Check line. Remove base and inspect.

If the above checklist does not uncover the problem, consult the factory - Do not attempt to service or otherwise disassemble pump. Service must be by Zoeller Authorized Service Stations.

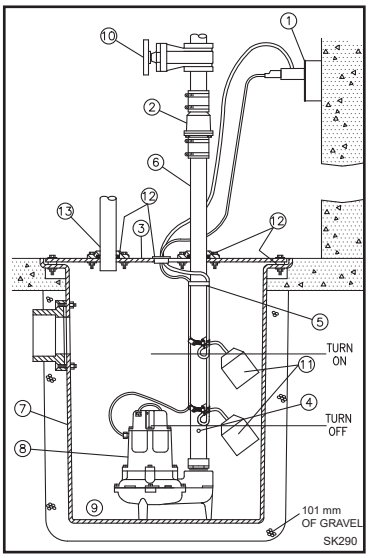
RECOMMENDED INSTALLATION FOR ALL APPLICATIONS

(1) Electrical wiring and protection must be in accordance with governing electrical code and any other applicable local electrical requirements.
(2) Install proper Zoeller unicheck (combination union and check valve), preferably just above the basin to allow easy removal of the pump for cleaning or repair. On sewage or dewatering, if high head or below cover installation is required use 30-0164 on 1 1/2" pipe, 30-0152 on 2" pipe and 30-0160 on 3" pipe. See (4) below.
(3) All installations require a basin cover to prevent debris from falling into the basin and to prevent accidental injury.
(4) When a Unicheck is installed, drill a 5 mm dia. hole in the discharge pipe even with the top of the pump. (High Head unit see #3 under "Caution" on front page). Water stream will be visible from this hole during pump run periods.
(5) Securely tape or clamp power cord to discharge pipe, clear of the float mechanism(s).
(6) Use full-size discharge pipe.
(7) Basin must be in accordance with applicable codes and specifications.
(8) Pump must be level and float mechanism(s) clear of sides of basin before starting pump.
(9) Basin must be clean and free of debris after installation.
(10) Gate Valve or Ball Valve to be supplied by installer and installed according to any and all codes.
(11) Locate float switches as shown in sketches. The best place for the "off" point is above the motor housing and positioned 180° from the inlet. Never put "off" point below discharge on pump (Sewage only). ***NOTE: FOR AUTOMATIC PUMPS, USE DEWATERING INSTALLATION SKETCH.***
(12) Gas tight seals required to contain gases and odors.
(13) Vent gases and odors to the atmosphere through vent pipe (Sewage & Dewatering only).
(14) Install Zoeller Pump Stand (Model 10-2213) under pump to provide a settling basin. (Dewatering only).

NOTE: *Double seal pumps offer extra protection from damage caused by seal failure.*



TYPICAL DEWATERING INSTALLATION



TYPICAL SEWAGE INSTALLATION

All installations must comply with all applicable electrical and plumbing codes, including, but not limited to, governing electrical code, local, regional, and/or governing plumbing codes, etc. Not intended for use in hazardous locations.

SINGLE PHASE WIRING INSTRUCTIONS

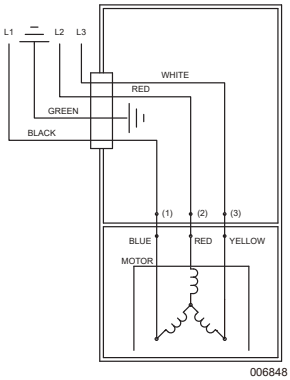
⚠ WARNING

FOR YOUR PROTECTION, ALWAYS DISCONNECT PUMP FROM ITS POWER SOURCE BEFORE HANDLING.
"Risk of electrical shock" Do not remove power supply cord and strain relief or connect conduit directly to the pump. Installation and checking of electrical circuits and hardware should be performed by a qualified licensed electrician.

THREE PHASE WIRING INSTRUCTIONS

Three phase pumps are nonautomatic. To operate automatically, a control panel is required. Follow the instructions provided with the panel to wire the system.

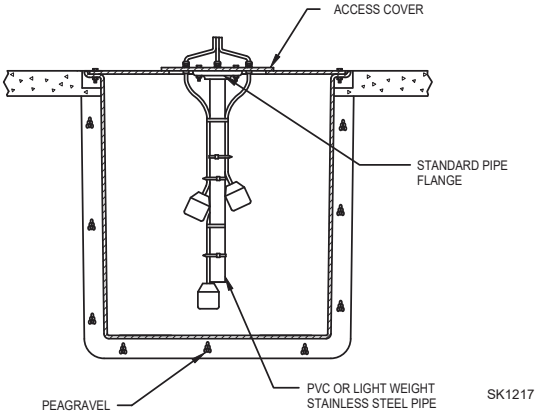
Before installing a pump, check the pump rotation to insure that wiring has been connected properly to power source, and that the green lead of power cord, is connected to a valid ground, momentarily energize the pump, observing the directions of kick back due to starting torque. Rotation is correct if kick back is in the opposite direction of rotation arrow on the pump casing. If rotation is not correct, switching of any two power leads other than ground, should provide the proper rotation.



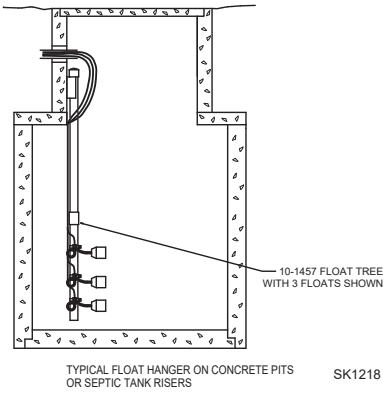
NONAUTOMATIC

SUGGESTED METHODS OF FLOAT INSTALLATION

On some installations it may be desirable to install an independent hanger for the level control switches to avoid possible hang ups on the pumps, piping, valves, etc. Float hangers are available from Zoeller Company on Catalog Sheet FM0526 or can be fabricated from standard pipe and fittings.



TYPICAL FLOAT HANGER ON STEEL COVER PITS



TYPICAL FLOAT HANGER ON CONCRETE PITS OR SEPTIC TANK RISERS

"EXTRA PROTECTION SYSTEMS"

TWO PUMP SYSTEM

The "Extra Protection" Two Pump system is an economical solution to the costly duplex alternating pump system and it's easy to install.

The "Extra Protection" Two Pump Systems consists of:

a. The two nonautomatic pumps with float switch of your choice

b. Two Unicheck

c. One Alarm System Valves as required

ADVANTAGES

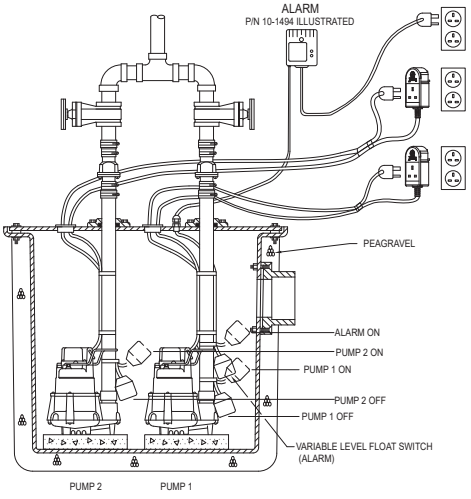
(1) The Two pump systems offers high pump per for mance without the high price. It is a system that fits your needs and your budget.

(2) Delivers more dependability than a single pump system and greatly reduces the chance of costly and time consuming problems as sociated with wear out or damages and the resulting system failures.

(3) Affords greater satisfaction and peace of mind to all concerned by providing state of the art protection for costly and expensive surroundings.

(4) Ability to change lead and lag positions by changing pump plug connection.

(5) Easy and economical to install.



*MINIMUM DISTANCE 2" BETWEEN PUMPS EA0112

DECLARATION OF CONFORMITY

We, Zoeller, declare under our sole responsibility that the models 49,70,86,87,88,222,223,422 to which this declaration relates, are in conformity with the Council Directives on the approximation of the laws of the EC Member States relating to:

- Electromagnetic Compatibility (2014/30/EU)
  Standards used: EN 55014-1,EN 61000-3-2, EN 61000-3-3, BS EN IEC 55014-1, BS EN IEC 61000-3-2, BS EN IEC 61000-3-3
-- Electrical equipment designed for use within certain voltage limits (2014/35/EU)
  Standards used: EN 60335-1 and EN 60335-2-41
-- Restrictive and Hazardous Substances RoHS (2011/65/EU)
-- Waste Electrical and Electronic Equipment WEEE (2012/19/EU)
  For RCM compliance models 86, 88, 222, 223, 422
  Standards used: AS/NZS CISPR 14.1, AS/NZS 60335.1 and AS/NZS 60335.2.41

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