

**Notice to installing contractor: Instructions must remain with installation.**

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



**50/60 Hz**

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0818  
Supersedes  
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# INSTALLATION INSTRUCTIONS

**1½" Solids-Handling Pumps**  
**490 Series**

## PREINSTALLATION CHECKLIST - ALL INSTALLATIONS

1. Inspect all materials. Occasionally, products are damaged during shipment. If the unit is damaged, contact your dealer before using. DO NOT remove the test plugs from the pump.
2. Carefully read the literature provided to familiarize yourself with specific details regarding installation and use. These materials should be retained for future reference.

 <b>WARNING</b> SEE BELOW FOR LIST OF WARNINGS	 <b>CAUTION</b> SEE BELOW FOR LIST OF CAUTIONS
<ol style="list-style-type: none"> <li>1. To reduce the risk of electrical shock, a properly grounded receptacle or control box must be installed in accordance with the governing codes. Never remove ground pin from plug.</li> <li>2. Make certain that the ground fault interrupter protected receptacle or control box 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, and they could present a safety hazard if the insulation were to become damaged or the connection end were to fall into a damp or wet area.</li> <li>3. Make sure the pump's electrical supply circuit is equipped with fuses or circuit breakers of proper capacity. A separate branch circuit is recommended, sized according to the governing electrical codes for the current shown on the pump name plate.</li> <li>4. <b>Testing for ground.</b> As a safety measure, each electrical outlet should be checked for ground using an Underwriters Laboratory Listed 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.</li> <li>5. <b>FOR YOUR PROTECTION, ALWAYS DISCONNECT PUMP FROM ITS POWER SOURCE BEFORE HANDLING.</b> If pump is wired direct, de-energize the circuit at the control box. DO NOT, UNDER ANY CIRCUMSTANCES, REMOVE THE GROUND PIN. Wear insulated protective shoes and do not stand in water. Pump is supplied with a 3-prong ground plug to help protect against electrical shock. A properly grounded 3-prong receptacle or control box must be installed in accordance with governing codes. Contact your local electric company to disconnect electric service prior to pump removal.</li> <li>6. Installation and servicing of the pump's electrical circuits and hardware should only be performed by a qualified licensed electrician.</li> <li>7. Installation and maintenance of this appliance is not intended for persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.</li> <li>8. <b>Risk of electrical shock.</b> Do not remove power supply cord and strain relief or connect conduit directly to the pump. If the supply cable is damaged, it must be replaced by an authorized Zoeller Representative.</li> <li>9. Pump contains oil which becomes pressurized and hot when operating. Allow 2½ hours after disconnecting before attempting service.</li> </ol>	<ol style="list-style-type: none"> <li>1. This unit is not designed to handle any material other than human waste and toilet paper. The list of items that should not be used with this system includes, but is not limited to, feminine sanitary products, condoms, cotton balls and swabs, baby wipes, paper towels, etc.</li> <li>2. Check to be sure your power source is capable of handling the voltage requirements of the motor, as indicated on the pump name plate.</li> <li>3. The installation of 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 45 cm (18") or larger in diameter.</li> <li>4. <b>Vent hole.</b> It is necessary that all submersible sump, effluent, 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. 3/16") must be drilled in the discharge pipe below the check valve and pit cover to purge the unit of trapped air. Vent hole should be checked periodically for clogging. The vent hole on a High Head application may cause too much turbulence. 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. <b>NOTE: THE HOLE MUST BE BELOW THE BASIN COVER AND CLEANED PERIODICALLY.</b> Water stream will be visible when pump is operating.</li> <li>5. 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 an authorized Zoeller Company Representative only.</li> <li>6. Maximum operating temperature for standard model pumps must not exceed 54°C (130°F).</li> <li>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.</li> </ol>
<ol style="list-style-type: none"> <li>10. Pump is not intended for potable water due to possible contamination by oil contained in the pump.</li> <li>11. <b>Risk of electric shock.</b> These pumps have not been investigated for use in swimming pools and marine areas.</li> </ol>	<p>REFER TO WARRANTY ON PAGE 2.</p>

## 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 uncontrollable 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, feminine sanitary products, 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 Manufacturer at, 3649 Cane Run Road, Louisville, Kentucky 40211 USA, Attention: Customer Support Department 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 UNIT

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| <ol style="list-style-type: none"> <li>1. <b>DO</b> read all installation material with the unit.</li> <li>2. <b>DO</b> inspect unit for any visible damage caused by shipping. Contact dealer if unit appears to be damaged.</li> <li>3. <b>DO</b> clean all debris from the unit. Be sure that the pump will have a hard, level surface beneath it. <b>DO NOT</b> install on sand, gravel or dirt.</li> <li>4. <b>DO</b> be sure that the area is large enough to allow proper clearance for the level control switch(es) to operate properly.</li> <li>5. <b>DO Always Disconnect Pump From Power Source Before Handling.</b><br/> <b>DO</b> always connect to a separately protected and properly grounded circuit.<br/> <b>DO NOT</b> ever cut, splice, or damage power cord (Only splice in a watertight junction box).<br/> <b>DO NOT</b> carry or lift pump by its power cord.<br/> <b>DO NOT</b> use an extension cord.</li> <li>6. <b>DO</b> install a check valve and a union in the discharge line.<br/> <b>DO NOT</b> use a discharge pipe smaller than the pump discharge.</li> </ol> | <ol style="list-style-type: none"> <li>7. <b>DO NOT</b> utilize this unit for pumping gasoline or other hazardous liquids.</li> <li>8. <b>DO</b> test pump immediately after installation to be sure the system is working properly.</li> <li>9. <b>DO</b> review all applicable governing codes and verify that the installation conforms to each of them.</li> <li>10. <b>DO</b> consult manufacturer for clarifications or questions.</li> <li>11. <b>DO</b> consider a Two Pump System with an alarm where an installation may become overloaded or primary pump failure would result in property damages.</li> <li>12. <b>DO</b> 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.</li> <li>13. <b>DO</b> inspect and test system for proper operations at least every 3 months.</li> </ol> |
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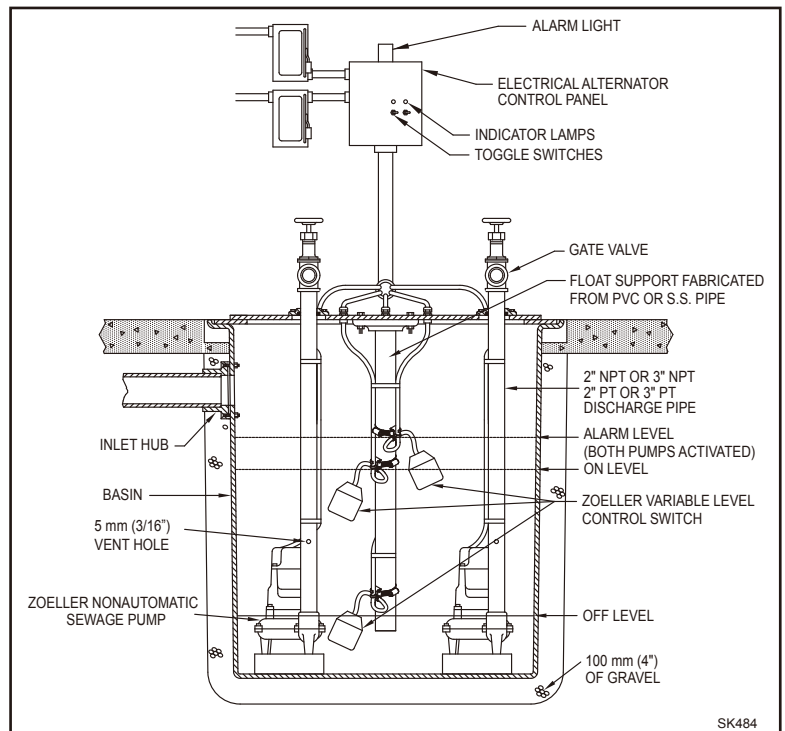
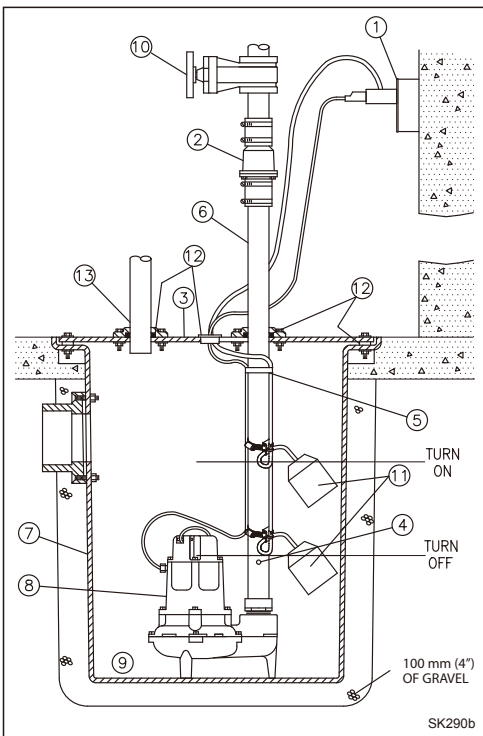
## SERVICE CHECKLIST

CONDITION	COMMON CAUSES
<b>A. Pump will not start or run.</b>	Check fuse, low voltage, overload open, open or incorrect wiring, open switch, impeller or seal bound mechanically, motor or wiring shorted. Float assembly held down. Switch damaged or out of adjustment.
<b>B. Motor overheats and trips overload or blows fuse.</b>	Incorrect voltage, negative head (discharge open lower than normal) impeller or seal bound mechanically, motor shorted.
<b>C. Pump starts and stops too often.</b>	Float tight on rod, check valve stuck or none installed in long distance line, overload open, bidding, sump pit too small.
<b>D. Pump will not shut off.</b>	Debris under float assembly, float or float rod bound by pit sides or other, switch damaged or out of adjustment.
<b>E. Pump operates but delivers little or no water.</b>	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. Incoming water containing air or causing air to enter pumping chamber.
<b>F. Drop in head and/or capacity after a period of use.</b>	Increased pipe friction, clogged line or check valve. Abrasive material and adverse chemicals could possibly deteriorate impeller and pump housing. Check line. Remove base and inspect.

If the above checklist does not reveal the problem, consult the factory. Do not attempt to service or otherwise disassemble pump. Service must be performed by an authorized Zoeller Company representative.

## RECOMMENDED INSTALLATION FOR ALL APPLICATIONS

- (1) Electrical wiring and protection must be in accordance with governing electrical codes.
- (2) All installations require a basin cover to prevent debris from falling into the basin and to prevent injury.
- (3) Install proper Zoeller unichek (combination union and check valve), preferably just above the basin to allow easy removal of the pump for cleaning or repair. If high head or below cover installation is required, use 30-0164 on DN40 (1½") pipe, 30-0152 on DN50 (2") pipe and 30-0160 on DN30 (3") pipe. See (4) below.
- (4) When a Unichek is installed, drill a 5 mm (3/16") diameter hole in the discharge pipe even with the top of the pump. **NOTE: THE HOLE MUST ALSO BE BELOW THE BASIN COVER AND CLEANED PERIODICALLY.** (High Head unit see #4 under "Caution" on front page). Water stream will be visible from this hole when pump is operating.
- (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 governing 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.
- (12) Gas tight seals required to contain gases and odors.
- (13) Vent gases and odors to the atmosphere through vent pipe.

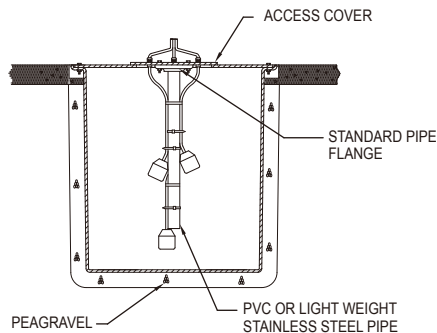


All installations must comply with all applicable electrical and plumbing codes.

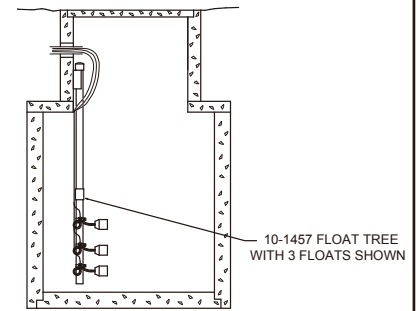
## SUGGESTED METHODS OF FLOAT INSTALLATION

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.

TYPICAL FLOAT HANGER ON STEEL COVER PITS



TYPICAL FLOAT HANGER ON CONCRETE PITS OR SEPTIC TANK RISERS



## THREE PHASE WIRING INSTRUCTIONS



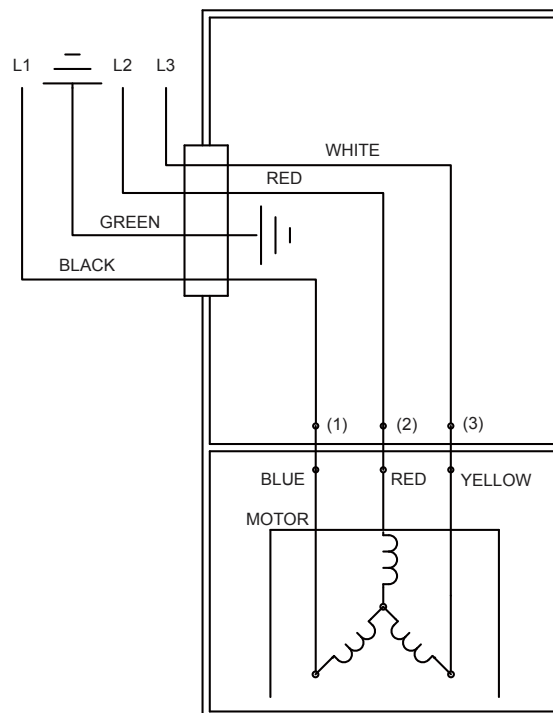
**WARNING** FOR YOUR PROTECTION, ALWAYS DISCONNECT PUMP FROM ITS POWER SOURCE BEFORE HANDLING.

To automatically operate a nonautomatic three phase pump, 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 ensure that wiring has been connected properly to power source, and that the green lead of power cord (see wiring diagram) 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.

All three phase pumps require motor starting devices with motor overload protection. See FM0486 for duplex installations. Pumps **must** be installed in accordance with all governing electric codes and all applicable local codes and ordinances. Pumps are not to be installed in locations classified as hazardous.

### NONAUTOMATIC 3 PHASE



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**IMPORTANT NOTICE:** Some insurance policies, both commercial and residential, extend coverage for damages incurred by product failure. You will need to have possession of the product to support your claim in most cases. Zoeller Company will exchange the unit or refund the original purchase price once the claim is settled with the insurer in the case where you need to retain possession of the product to support a damage claim you submit to your insurance company.



MAIL TO: P.O. BOX 16347 • Louisville, KY 40256-0347 USA  
SHIP TO: 3649 Cane Run Road • Louisville, KY 40211-1961 USA  
+1 (502) 778-2731 • FAX +1 (502) 774-3624

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