

MODELS EF 302 • 332 • 402
SERIES II EFFLUENT PUMPS



CONTENTS	PAGE
General Description	1
Applications.....	1
Safety Warning.....	2
Pre-Installation Checklist.....	2
Required Accessories	3
Electrical Preparation	4
Piping	4
Receiver Basin Procedures.....	5
Troubleshooting.....	6
Notes and Calculations	7



Before beginning installation procedures, these installation and operating instructions should be studied carefully. The installation and operation should also be in accordance with local regulations and accepted codes of good practice.

GENERAL DESCRIPTION

This manual is designed to assist in the proper installation and operation of Grundfos Effluent pumps. Grundfos Effluent Pump Systems are lightweight, corrosion resistant pump, motor and optional switch units combined into an integral unit.

The pumps offer manual or automatic operation, field replaceable power cords, and are rated for continuous duty when fully submerged.

APPLICATIONS

Typical applications:

- Basement Sumps
- Home Wastewater Systems
- Septic Tanks Effluent
- Water Transfer
- Light Commercial
- Graywater Pumping
- Dewatering
- Sewage Systems
- STEP Systems

ELECTRICAL WORK

All electrical work should be performed by a qualified electrician in accordance with the latest edition of the National Electrical Code, local codes and regulations.



SHOCK HAZARD - WARNING

FOR YOUR PROTECTION, ALWAYS DISCONNECT THE PUMP FROM ITS POWER SOURCE BEFORE HANDLING. Single phase 115 Volt pumps are supplied with a 3-prong grounded plug to help protect you against the possibility of electrical shock. **DO NOT UNDER ANY**

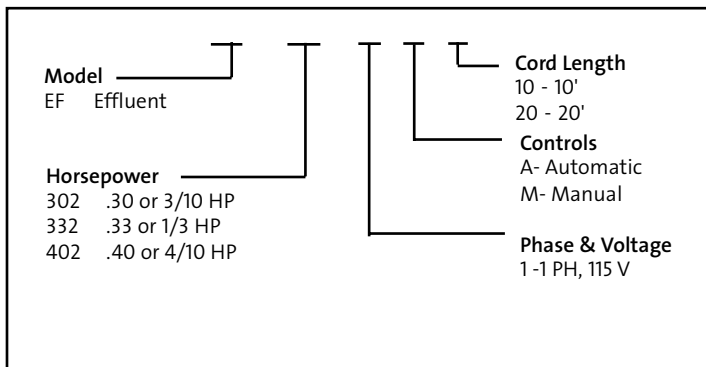
CIRCUMSTANCES REMOVE THE GROUND PIN. The 3-prong plug **MUST** be inserted into a mating 3-prong grounded receptacle. If the installation does not have such a receptacle, it must be changed to the proper type, wired and grounded in accordance with the National Electrical Code and all applicable local codes and ordinances.

PRE-INSTALLATION CHECKLIST

1. CONFIRM YOU HAVE THE RIGHT PUMP

Read the pump nameplate to make sure it is the one you ordered.

NOMENCLATURE



2. CHECK THE CONDITION OF THE PUMP

The shipping carton your pump came in is specially designed around your pump to prevent damage. As a precaution, it should remain in the carton until you are ready to install it. At that point, look at the pump and examine it for any damage that may have occurred during shipping. Report damage to Freight Carriers.

3. ELECTRICAL REQUIREMENTS

The electrical supply must be a separate branch circuit with fuses or circuit breakers for short-circuit protection, wire sizes, etc., per national and local electrical codes.

4. IS THE APPLICATION CORRECT FOR THIS PUMP?

Compare the pump's nameplate data or its performance curve with the application in which you plan to install it. Will it perform the way you want it to perform?

Also, make sure the application falls within the following limits:

- Maximum Operating Limit(s): Pump fully submerged
Motor Duty: Continuous, not to exceed 8 hours per 24 hour period.
Liquid Temperature:
104°F (40°C) normal motor duty, 132°F (55°C) intermittent operation;
(approximately 3-4 minutes).
Starts Per Hour: 20, evenly distributed once every 3 minutes.
- Solids Handling: EF302 1/2" maximum
EF332 3/4" maximum
EF402 3/4" maximum
- Ensure that the receiver basin is well ventilated.
- Flammable gases can be present in a wet well or receiver basin due to bacterial action. Exercise extreme caution when working in and around such areas. Ensure that no sparks are generated that could ignite any gases present.
- Effluent pumps are not designed for use in swimming pools or hazardous liquids.

REQUIRED ACCESSORIES

Accessories required to complete a system other than normal plumbing and electrical items are:

- Receiver basin or wet-well.
- Level control system: Float switch(es) or vertical switch (or other types).
- Magnetic Contactor (optional for single-phase pumps).
- Duplex controller if two pumps are installed.

ELECTRICAL PREPARATION

Requirements and Considerations

The electrical connection should be carried out in accordance with local regulations. The pump **must** be grounded. Other electrical requirements include:

- The motor is already wired correctly from the factory.
- Wire size must limit maximum voltage drop to 10% of nameplate voltage at motor terminals, or motor life and pump performance will be lowered.
- Always use correct horsepower-rated switches, contactors and starters.
- Do not carry or hang pump by the electrical cord. Use the handle for this purpose.
- **Motor Protection:**
Single-phase: Motor has a built in thermal protector which opens the circuit when overload condition is encountered. Protector automatically resets when motor cools.

Electrical Procedures

The installation of automatic pumps with tethered float switches or non-automatic pumps using auxiliary tethered 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.

1. Level control switching can be accomplished using several commercially available systems. If using multiple float switches, the separation must be such that there is no possibility of entanglement. Suggested minimum is 4" between centers.
2. Adjust the switch(es) vertical position so that turn-off occurs slightly above the center of the motorhousing. Higher is better.
3. **Wiring:**
Single-phase units: Plug the 3-pronged plug into a grounded receptacle. If an extension cord is used it should not exceed 100 feet.
4. **Rotation Check:** Not required on single-phase units.

C A U T I O N: DO NOT PHYSICALLY FEEL FOR THE IMPELLER ROTATION. SERIOUS INJURY COULD RESULT.

PIPING

Requirements and Considerations

Receiver basin or wet-well size should allow sufficient room for unimpeded movement of the float switches (**A, Figure 1, pg. 4**), if employed. It should be large enough to stay within the recommended maximum of twenty starts per hour. The basin or wet-well must have a solid and homogeneous bottom and free of any debris.

Typical Effluent Installation

Install a **full flow isolation valve (D, Figure 1)** on the discharge line, after the check valve, to aid in maintenance work. On duplex installations, manifold to a common discharge line after the isolation valves.

Piping

The **discharge pipe (B, Figure 1)** should be sized at least as large as the pump's discharge port. If a larger size is being considered, ensure that the liquid velocity in the pipe does not go below 2 feet/second (30 GPM in 2-1/2 in. pipe or 50 GPM in 3 in. pipe) to prevent solids settling.

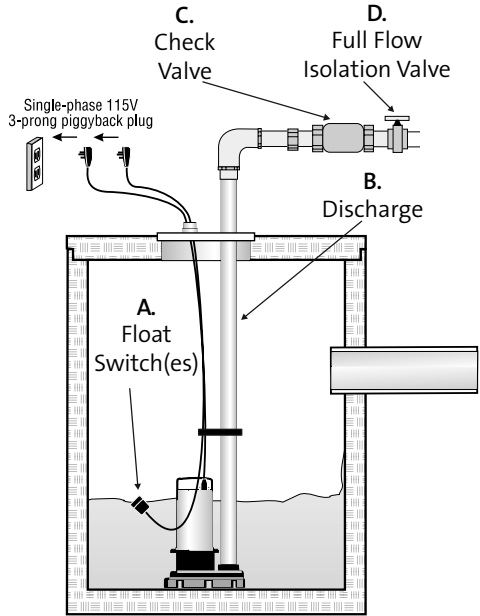


Figure 1

Install a check valve (C, Figure 1) specifically designed for solids handling on the discharge pipe so as to prevent back flow into the receiver. Follow the valve manufacturer's recommendation regarding valve orientation.

Procedures

1. Position the pump to one side of the basin or wet-well so as to allow sufficient room for the float switch(es) to swing unobstructed. Also, ensure that the influence does not cascade directly on the switch(es).
2. If using receiver basin, ensure that the cover is gasketed properly and the discharge and vent lines are sealed against the cover. Failure to do so could mean outside water entering or objectionable odor escaping.

NOTE: INSTALLATION OF COVER SHOULD BE DONE ONLY AFTER SUCCESSFULLY TESTING THE COMPLETE SYSTEM.

Final Installation Adjustments

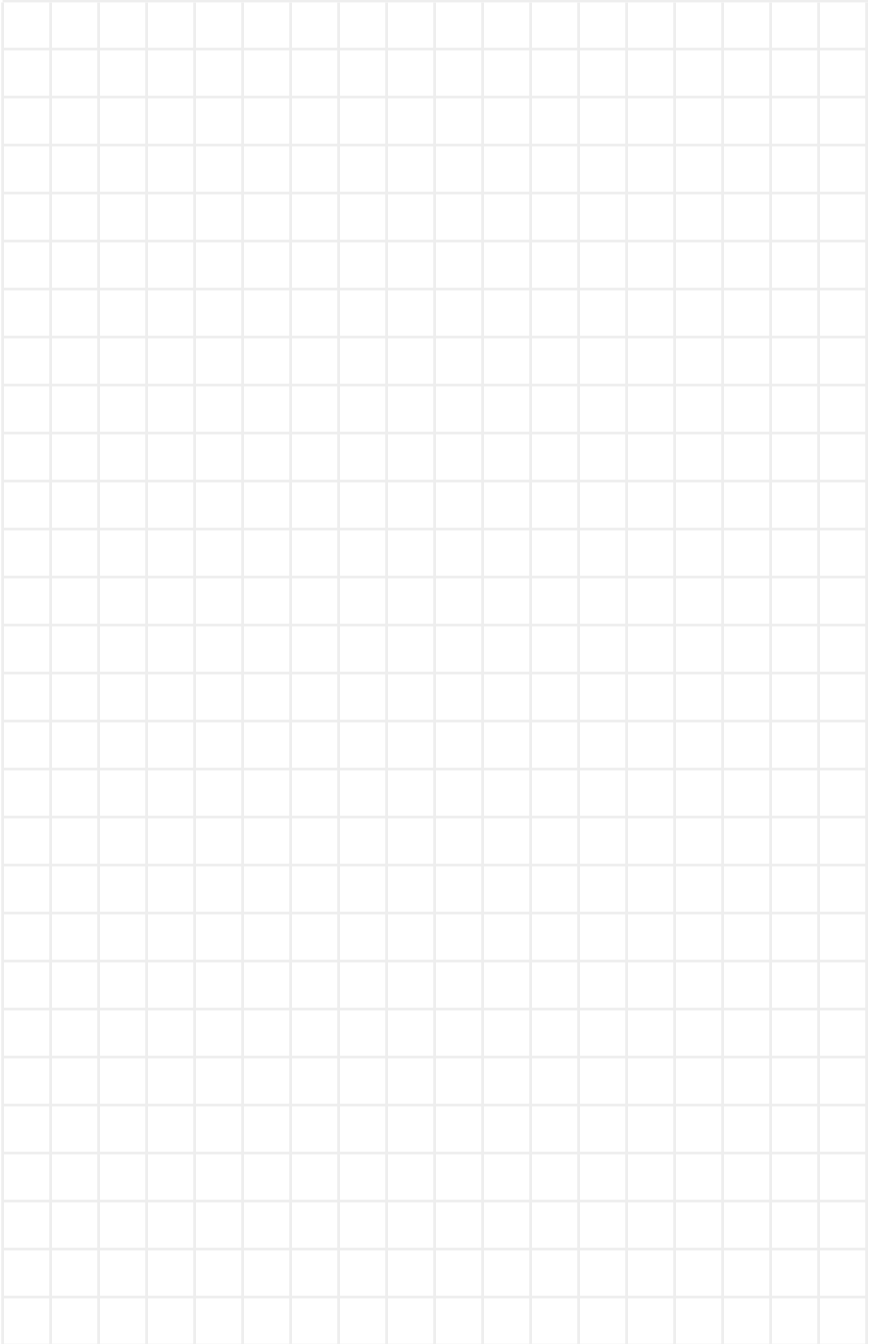
1. Fill basin or wet-well.
2. Energize the pump(s) manually to verify proper operation.
3. Put the system in automatic mode and refill.
4. Observe turn-on and turn-off points. Adjust position of switches as required.
5. Install basin or septic tank cover after system is adjusted properly.

	<p>WARNING</p> <p>FOR YOUR PROTECTION, ALWAYS DISCONNECT THE PUMP FROM ITS POWER SOURCE BEFORE HANDLING.</p>	
--	---	---

DIAGNOSING SPECIFIC PROBLEMS

<i>PROBLEM</i>	<i>POSSIBLE CAUSE AND REMEDY</i>
The pump does not run or start when water is up in tank.	<ol style="list-style-type: none"> 1. Check for blown fuse or tripped circuit breaker. 2. Check for defective level switch. 3. Level or control ball mechanism may be stuck inside basin. Make sure it floats freely. 4. If control panel is used, check to make sure pump is set for automatic start. 5. Check for burned out motor (possible lightning damage). 6. If single-phase and plug-in cords are used, make sure contact blades are clean and making a good connection.
Pump runs but does not deliver expected flow.	<ol style="list-style-type: none"> 1. Check strainer housing and discharge pipe for clog. 2. Check for air lock by stopping and restarting pump several times. 3. Check valve may be installed backwards. 4. Check vertical elevation to make sure pump is not set higher than pump can operate (see pump curve). 5. Incorrect voltage (high or low) may be causing motor inefficiencies. Check to make sure it is $\pm 10\%$ nameplate voltage. 6. Check for defective capacitor.
Pump will not shut off	<p>Defective or stuck float switch. Check first to make sure it isn't mechanically bound to the sides of the basin, etc. Then check for out-of-adjustment.</p>
Pump stops and starts too often.	<ol style="list-style-type: none"> 1. Float switch set too "tight". 2. Check valve is either stuck or one was not installed in a long discharge line that needed one. 3. Sump pit is too small. 4. Overload is open.

NOTES AND CALCULATIONS



LIMITED WARRANTY

Products manufactured by (GRUNDFOS) GRUNDFOS PUMPS CORPORATION are warranted to the original user only to be free of defects in material and workmanship for a period of 18 months from date of installation, but not more than 24 months from date of manufacture. GRUNDFOS' liability under this warranty shall be limited to repairing or replacing at GRUNDFOS' option, without charge, F.O.B. GRUNDFOS' factory or authorized service station, any product of GRUNDFOS' manufacture. GRUNDFOS will not be liable for any costs of removal, installation, transportation, or any other charges which may arise in connection with a warranty claim. Products which are sold but not manufactured by GRUNDFOS are subject to the warranty provided by the manufacturer of said products and not by GRUNDFOS' warranty. GRUNDFOS will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with GRUNDFOS' printed installation and operating instructions.

To obtain service under this warranty, the defective product must be returned to the distributor or dealer of GRUNDFOS' products from which it was purchased together with proof of purchase and installation date, failure date, and supporting installation data. Unless otherwise provided, the distributor or dealer will contact GRUNDFOS or an authorized service station for instructions. Any defective product to be returned to GRUNDFOS or a service station must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Material Authorization must be included if so instructed.

GRUNDFOS WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSSES, OR EXPENSES ARISING FROM INSTALLATION, USE, OR ANY OTHER CAUSES. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH EXTEND BEYOND THOSE WARRANTIES DESCRIBED OR REFERRED TO ABOVE. EXCEPT AS EXPRESSLY HERIN PROVIDED THE GOODS ARE SOLD "AS IS", THE ENTIRE RISK AS TO QUALITY AND FITNESS FOR A PARTICULAR PURPOSE, AND PERFORMANCE OF THE GOODS IS WITH THE BUYER, AND SHOULD THE GOODS PROVE DEFECTIVE FOLLOWING THEIR PURCHASE, THE BUYER AND NOT THE MANUFACTURER, DISTRIBUTOR, OR RETAILER ASSUMES THE ENTIRE RISK OF ALL NECESSARY SERVICING AND REPAIR.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages and some jurisdictions do not allow limitations on how long implied warranties may last. Therefore, the above limitations or exclusions 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.

The telephone number of our service and repair facilities central directory, from which you can obtain the locations of our service and repair facility is, 1-800-333-1366.

Grundfos Pumps Corporation • 17100 W. 118th Terrace • Olathe, KS 66061

Phone: 913.227.3400 • Fax: 913.227.3500

Canada: Oakville, Ontario • Mexico: Apodaca, N.L.



L-SE-TL-007	Rev. 10/01
Printed in the U.S.A.	