

LIMITED WARRANTY

Products manufactured by GRUNDFOS 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.

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.

GRUNDFOS®



Leaders in Pump Technology

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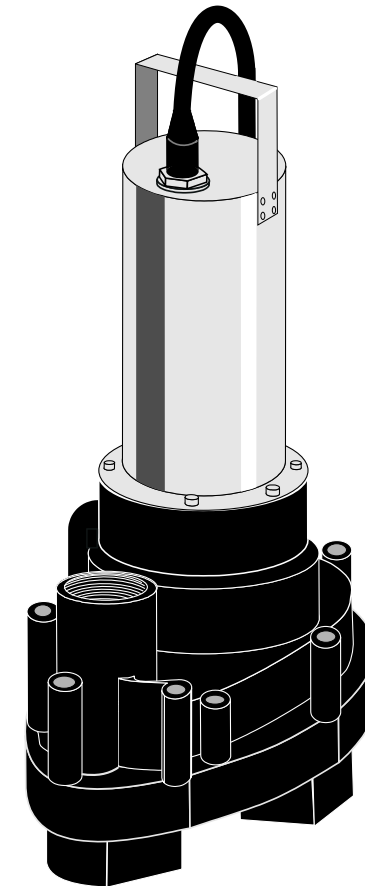
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Models SE 40 · 50 · 75 · 100 · 150 Sewage Pumps

Installation and Operating Instructions



Please leave these instructions with the pump for future reference.

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Spare Parts Kits

Spare Parts Kits

Pos No#	Part Description	# in Kit	KIT NUMBER
6	Mechanical Seal	1	96001572
5	Impeller 4/10 HP	1	96001584
27	Lock Nut	1	
5	Impeller 1/2 HP	1	96001585
27	Lock Nut	1	
5	Impeller 3/4 HP	1	96001586
27	Lock Nut	1	
5	Impeller 1 HP	1	96001587
27	Lock Nut	1	
5	Impeller 1 1/2 HP	1	96001588
27	Lock Nut	1	
10	Lip Seal	1	96001573
9	O-Ring (Motor Housing)	2	
22	Plug (Volute)	1	96001574
23	O-Ring	1	
16	Screw Hi-Lo	6	
2	Screw	8	
25	Nut	8	96001576
3	Washer	8	
9	O-Ring (Motor Housing)	2	
4	O-Ring (Std. Volutes)	1	
8	Spacer Ring	1	
1	Volute Lower	1	96001599
7	Volute Upper	1	96001600
28	Upper Volute Gland	1	
21	Power Cord 115V, 10'	1	96001589
21	Power Cord 115V, 20'	1	96001590
21	Power Cord 230V, 10'	1	96001591
21	Power Cord 230V, 20'	1	96001592
18	O-Ring	1	96001619
19	3-Pin Connector	1	
*	Motor Oil		96001620
24	Float Switch 4/10 & 1/2 HP 115V 10'	1	96001621
24	Float Switch 4/10 & 1/2 HP 230V 10'	1	96001636
24	Float Switch 4/10 & 1/2 HP 115V 20'	1	96001624
24	Float Switch 4/10 & 1/2 HP 230V 20'	1	96001637
24	Float Switch 3/4 & 1 HP 230V 10'	1	96001622
24	Float Switch 3/4 & 1 HP 230V 20'	1	96001625
24	Float Switch 1 1/2 HP 230V 10'	1	96001623
24	Float Switch 1 1/2 HP 230V 20'	1	96001626

Pre-Installation Checklist

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):**

Motor Duty:

Continuous, not to exceed 8 hours per 24 hour period.

Liquid Temperature:

104°F (40°C) continuous operation fully submerged; 140°F (60°C) intermittent operation.

Starts Per Hour: 20, evenly distributed

Solids Handling: 2", maximum

- 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 gases.
- Ensure that the receiver basin is well ventilated.
- Sewage pumps are not designed for use in swimming pools or with hazardous liquids.

Installation Procedures

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 Diaphragm switch (or other types).
- Magnetic Contactor (optional for single-phase pumps).
- Duplex controller if two pumps are installed.

Installation Procedures

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: 115V -Plug the 3-pronged plug into a grounded receptacle. If an extension cord is used it should not exceed 100 feet.
 230V-Choose and connect the correct plug for the receptacle or hard wire into circuit box according to code requirements.
4. **Rotation Check:**
Single-phase units: Not required.

CAUTION: DO NOT PHYSICALLY FEEL FOR THE IMPELLER ROTATION. SERIOUS INJURY COULD RESULT.

Parts Diagram

Parts Listing - Sewage Pump

Pos No#	Part Number	Description	Qty.
1	See Kits	Volute Lower	1
2	See Kits	Screw 1/4" Socket Head	8
3	See Kits	Washer	8
4	See Kits	O-Ring	1
5	See Kits	Impeller	1
6	See Kits	Mechanical Seal	1
7	See Kits	Volute Upper	1
8	See Kits	Spacer Ring	1
9	See Kits	O-Ring (Motor Housing)	2
10	See Kits	Lip Seal	1
11	Not Serviceable	Motor	1
12	Not Serviceable	Capacitor Clip	1
13	Not Serviceable	Capacitor	1
14	Not Serviceable	Wire Harness Green	1
15	Not Serviceable	Wire Harness Black	1
16	See Kits	Screw Hi-Lo Torx	6
17	Not Serviceable	Motor Housing	1
18	See Kits	O-Ring (Pin Connector)	1
19	See Kits	3-Pin Connector	1
20	See Kits	Cable Nut	1
21	See Kits	Power Cord	1
22	See Kits	Volute Plug	1
23	See Kits	O-Ring (Volute Plug)	1
24	See Kits	Float Switch	Optional
25	See Kits	1/4" Nut	8
26	Not Serviceable	Klixon (³ / ₄ , 1 & 1 ¹ / ₂ HP only)	1
27	See Kits	Lock Nut	1
28	See Kits	Upper Volute Gland	1

Recommended Torques

Part Name	Pos. Number	Torque
Socket Head Cap Screw	2	55 in.-lbs. ± 10 in.-lbs.
Impeller	5	100 in.-lbs. ± 10 in.-lbs.
Torx Screws	16	55 in.-lbs. ± 20 in.-lbs.
Volute Plug	22	50 in.-lbs. ± 10 in.-lbs.
Cable Relief Nut	20	90 in.-lbs. Hold for 30 sec.
Lock Nut	27	100 in.-lbs. ± 10 in.-lbs.

SEE KITS ON NEXT PAGE

Maintenance and Service

WARNING

FOR YOUR PROTECTION, ALWAYS DISCONNECT THE PUMP FROM ITS POWER SOURCE BEFORE HANDLING. Single phase 115V 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.

Impeller Replacement: (Refer to page 7, Parts Diagram)

1. Remove the socket head screws (pos.2) from the Lower Volute and remove O-Ring (pos.4). Be careful not to dislodge 1/4" nuts (pos.25) from Upper Volute (pos.7).
2. Hold the impeller from rotating by inserting a long screwdriver and catching the impeller vane.
3. Insert a thinwall 9/16" socket onto locknut (pos.27) and rotate counter clockwise to remove.
4. Insert a 1/4" blade screwdriver or 3/16" hex key into the shaft and rotate the shaft clockwise. If the impeller won't budge, use a rubber hammer to strike the impeller vane in a counter clockwise direction and break it free, then continue with the screwdriver until it is removed.
5. (Reverse these procedures for reassembly.)

Mechanical Seal Replacement:

The mechanical seal used in the Grundfos Sewage pumps is unique in design and construction. The mechanical seal cannot be replaced by an off-the-shelf mechanical seal.

If a problem is determined to be mechanical seal related, replace the entire seal, do not attempt to service.

Replacement instructions are included with the mechanical seal kit. See spare parts kits for part number.

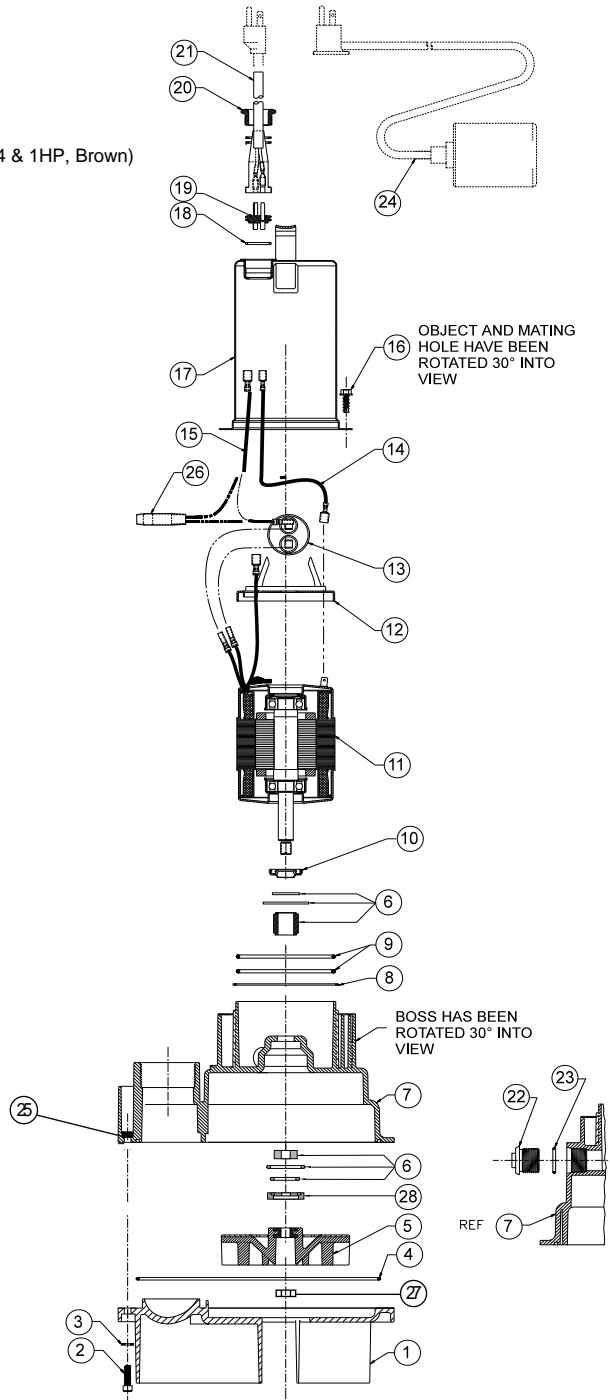
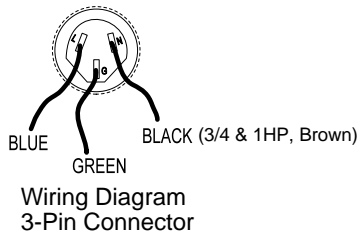
Maintenance and Service

Power Cord Replacement: (Refer to page 7, Parts Diagram)

The pump should be disconnected from any power before any work is started involving the power cord.

1. Unscrew cable nut (pos.20) securing the power cord (pos.21) to the pump and slide it along the power cord.
2. Unplug the cord from the motor by gently rocking the plug from side to side while lifting. Do not allow the 3-pin connector (pos.19) to be removed.
3. In the event pin connector is removed and wires come loose refer to wiring diagram (pg.7).
4. (Reverse the process for reassembly.)

Parts Diagram

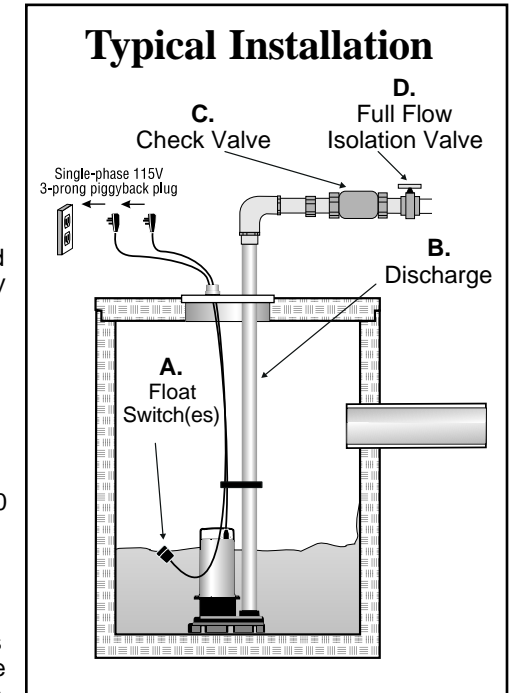


Installation Procedures

Piping

Requirements and Considerations

- Septic tank, receiver basin or wet-well size should allow sufficient room for unimpeded movement of the **float switches (item A at right)**, if used. It must have a solid and uniform bottom and free of any debris.
- The **discharge pipe (item B)** 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" pipe or 50 GPM in 3" pipe) to prevent solids settling.
- Install a **check valve (item C)** 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.
- Install a **full flow isolation valve (item D)** 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.



Procedures

1. Position the pump to one side of the basin or wet-well so there is 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 the septic tank, 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.

SAFETY WARNING

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

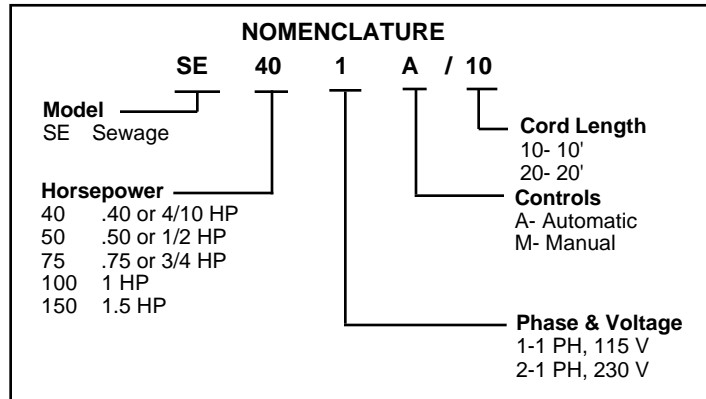
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Pre-Installation Checklist

1. Confirm You Have the Right Pump

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



2. Check the Condition of the Pump

The shipping carton your pump came in is specially designed around your pump during production 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. If damage has occurred handle all claims with shipper.

Troubleshooting

WARNING

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

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. Make sure valve is open. 4. Ensure that the Check valve is installed properly. 5. Check vertical elevation to make sure pump is not set higher than pump can operate (see pump curve). 6. Incorrect voltage (high or low) may be causing motor inefficiencies. Check to make sure it is \pm 10% nameplate voltage.
Pump will not shut off	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.
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 tripping in hot motor. Pump may be clogged or fluid level is too low, exposing the motor.