

INSTALLATION AND OPERATION MANUAL



SE SERIES

MODELS
SE1 1/2D SE1 1/2E SE2M

THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO

GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA Printed in U.S.A.

www.grpumps.com

©2012 The Gorman-Rupp Company

Register your new
Gorman-Rupp pump online at
www.grpumps.com

Valid serial number and e-mail address required.

RECORD YOUR PUMP MODEL AND SERIAL NUMBER

Please record your pump model and serial number in the spaces provided below. Your Gorman-Rupp distributor needs this information if you have warranty questions.

Pump Model: _____

Serial Number: _____

INTRODUCTION

Thank You for purchasing a Gorman-Rupp pump. **Read this manual** carefully to learn how to safely install and operate your pump. Failure to do so could result in personal injury or damage to the pump.

These pumps are SE Series submersible models. The basic material of construction is cast iron. They are designed to handle most non-volatile, non-flammable liquids that do not contain large entrained solids. Do not attempt to pump volatile or flammable liquids that may damage the pump.

The pumps are powered by integral, thermally-protected electric motors which are not explosion-proof. Do not operate the pumps in hazardous atmospheres.

Because pump installations are seldom identical, this manual cannot possibly provide detailed instructions and precautions for every aspect of each specific application. Therefore, it is the responsibility of the owner/installer of the pump to ensure that applications not addressed in this manual are performed **only** after establishing that neither operator safety nor pump integrity are compromised by the installation. Pumps and related equipment **must** be installed and operated according to all national, local and industry standards.

The following are used to alert maintenance personnel to procedures which require special attention, to those which could damage equipment, and to those which could be dangerous to personnel:



Immediate hazards which WILL result in severe personal injury or death. These instructions describe the procedure required and the injury which will result from failure to follow the procedure.



Hazards or unsafe practices which COULD result in severe personal injury or death. These instructions describe the procedure required and the injury which could result from failure to follow the procedure.



Hazards or unsafe practices which COULD result in minor personal injury or product or property damage. These instructions describe the requirements and the possible damage which could result from failure to follow the procedure.

NOTE

Instructions to aid in installation, operation, and maintenance or which clarify a procedure.

SAFETY

Because pump installations are seldom identical, this manual cannot possibly provide detailed instructions and precautions for each specific application. Therefore, it is the owner/installer's responsibility to ensure that applications not addressed in this manual are performed only after establishing that neither operator safety nor pump integrity are compromised by the installation.



Before attempting to open or service the pump:

1. Familiarize yourself with this manual.
2. Unplug the power cable from its receptacle to ensure that the pump will remain inoperative.
3. Allow the pump to completely cool if overheated.
5. Close the discharge valve (if used).



This pump is designed to handle dirty water that does not contain large entrained solids. This pump is not designed to pump volatile, explosive, or flammable materials. Do not attempt to pump any liquids for which you pump is not approved, or which may damage the pump or endanger personnel as a result of pump failure.



The electrical power used to operate this pump is high enough to cause injury or death. Make certain that the power cable receptacle is properly grounded before installation. Make certain that the plug on the pump power cable is disconnected from its receptacle before servicing.



Never attempt to alter the length or repair any power cable with a splice. The pump motor and cable must be completely waterproof. Injury or death may result from alterations.



All electrical connections must be in accordance with The National Electric Code and all local codes. If there is a conflict between the instructions provided and N.E.C. Specifications, N.E.C. Specifications shall take precedence. All electrical equipment supplied with this pump was in conformance with N.E.C. requirements in effect on the date of manufacture. Failure to follow applicable specifications, or substitution of electrical parts not supplied or approved by the manufacturer, can result in severe injury or death and void warranty.



After the pump has been installed, make certain that the pump and all piping or hose connections are secure before operation.



Do not attempt to lift the pump by the motor power cable or discharge hose. Attach proper lifting equipment to the lifting device fitted to the pump.



Pumps and related equipment must be installed and operated according to all national, local and industry standards.

INSTALLATION

Review all **SAFETY** information in Section A.



Do not operate this pump where explosive vapors or flammable material exist. Death or serious injury will result.



Pumps and related equipment must be installed and operated according to all national, local and industry standards.

PREINSTALLATION INSPECTION

Before installation, inspect the pump for damage which may have occurred during shipment. Check as follows:

- Inspect the pump assembly for cracks, dents, damaged threads, and other obvious damage.
- Check for and tighten loose attaching hardware.
- The pump is furnished with a 50-foot (15 meter) long power cable. Inspect the cable for cuts or damage.
- Carefully read all tags, decals, and markings on the pump assembly, and perform all duties as indicated.

If anything appears to be abnormal, contact your Gorman-Rupp distributor to determine the repair or updating policy. **Do not** put the pump into service until appropriate action has been taken.

PUMP INSTALLATION

Lifting

Pump unit weights will vary depending on the model. Check the shipping tag on the unit packaging for the actual weight. Drain the pump and remove all customer-installed equipment such as dis-

charge hoses or piping before attempting to lift existing, installed units.

If necessary, attach a rope or chain to the lifting handle on the top of the pump. **Do not** lift the unit by the power cable or the discharge piping. Customer-installed equipment such as rigid discharge piping **must** be removed before attempting to lift.

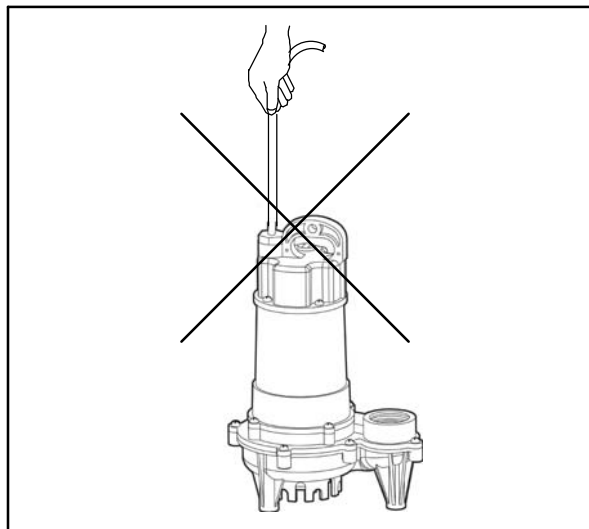


Figure 1. **Do Not** Lift Pump by Power Cable



Do not attempt to lift the pump by the power cable or piping. Attach proper lifting equipment to the handle on the pump.

Installation

Before installing the pump, clear the sump basin of any debris or sediment. See Figure 4 for a typical pump installation.



The sump basin must be vented in accordance with local plumbing codes. Do not operate this pump where explosive vapors or flammable material exist. Death or serious injury will result.

The pump must be installed in a suitable gas-tight, properly vented basin which is at least 24 inches (610 mm) deep and is at least 18 inches (457 mm) wide for pumps fitted with wide angle (ball type) on/off switches, and at least 14 inches (356 mm) wide for pumps fitted with vertical on/off switches.

The pump must be placed on a hard surface in a sump that has been cleared of all debris. Never place the pump on clay, earth or gravel surfaces. It is suggested that the pump be positioned on two bricks approximately 2 inches (51 mm) apart.

Connect the discharge pipe, fittings and check valve (if desired) to the discharge port of the pump. It is recommended that the discharge pipe diameter be equal to or larger than the discharge size of the pump.

The pump will handle 3/8 inch (9,5 mm) diameter spherical solids.

Piping

Either hose or rigid PVC, galvanized steel or copper pipe may be used for the discharge connection.

For maximum pumping capacity, use non-collapsible hose or rigid piping, and keep the discharge as short and straight as possible. If rigid piping is used, minimize the use of elbows and fittings which increase friction losses and reduce pump performance.

All piping must be clean and free of all foreign matter to prevent clogging.

A check valve or throttling valve may be installed in the discharge line to control siphoning or back flow when the pump is shut off.

ELECTRICAL CONNECTIONS



All electrical connections must be in accordance with The National Electric Code and all local codes. If there is a conflict between the instructions provided and N.E.C. Specifications, N.E.C. Specifications shall take

precedence. All electrical equipment supplied with this pump was in conformance with N.E.C. requirements in effect on the date of manufacture. Failure to follow applicable specifications, or substitution of electrical parts not supplied or approved by the manufacturer, can result in severe injury or death and void warranty.



Always use a three-prong grounded receptacle. It is strongly recommended that a Ground Fault Interrupter (GFI) type receptacle (or equivalent) be used.

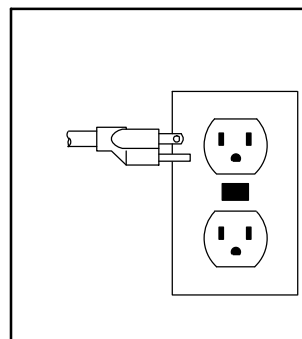


Figure 2. **Always** Use a Grounded Receptacle



Verify that the voltage and frequency shown on the pump name plate corresponds to those available at the receptacle. The installer must make certain that the electrical system is grounded in accordance with code.

The receptacle into which the pump is to be plugged must be connected to a separate 15 amp circuit breaker or fuse block. Plugging into existing outlets may cause low voltage at the motor, which could cause tripped circuit breakers or blown fuses in the service panel, tripping of the motor overload or a burned out motor. When in doubt, call an electrician.

A permanent ground connection from the receptacle to the grounding bar at the service panel is mandatory. These pumps are equipped with a grounding conductor and a grounding-type plug.

Never cut off the ground pin or use an adaptor fitting. Do not use an extension cord. For maximum safety, connect the pump to a circuit equipped with a ground fault interrupter (GFI) type receptacle.

The plug and receptacle should be protected from moisture and flooding. Protect the plug and power cable from heat and sharp edges.

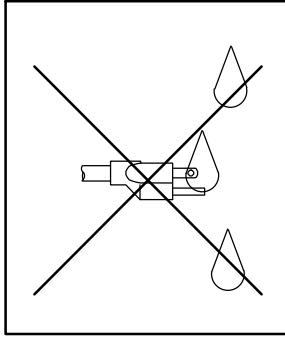


Figure 3. Always Keep Plug End Dry

PRECAUTIONS

The following may cause severe damage to the pump and will void the pump warranty.

1. Using an extension cord.
2. Cutting off the ground pin or using an adaptor fitting.
3. Working on the pump or switch while the pump is plugged into the receptacle.
4. Removing the motor housing, unscrewing the impeller, or removing the pump seal.
5. Running the pump continuously.
6. Pumping chemicals or corrosive liquids.
7. Pumping petroleum products or other flammable liquids.

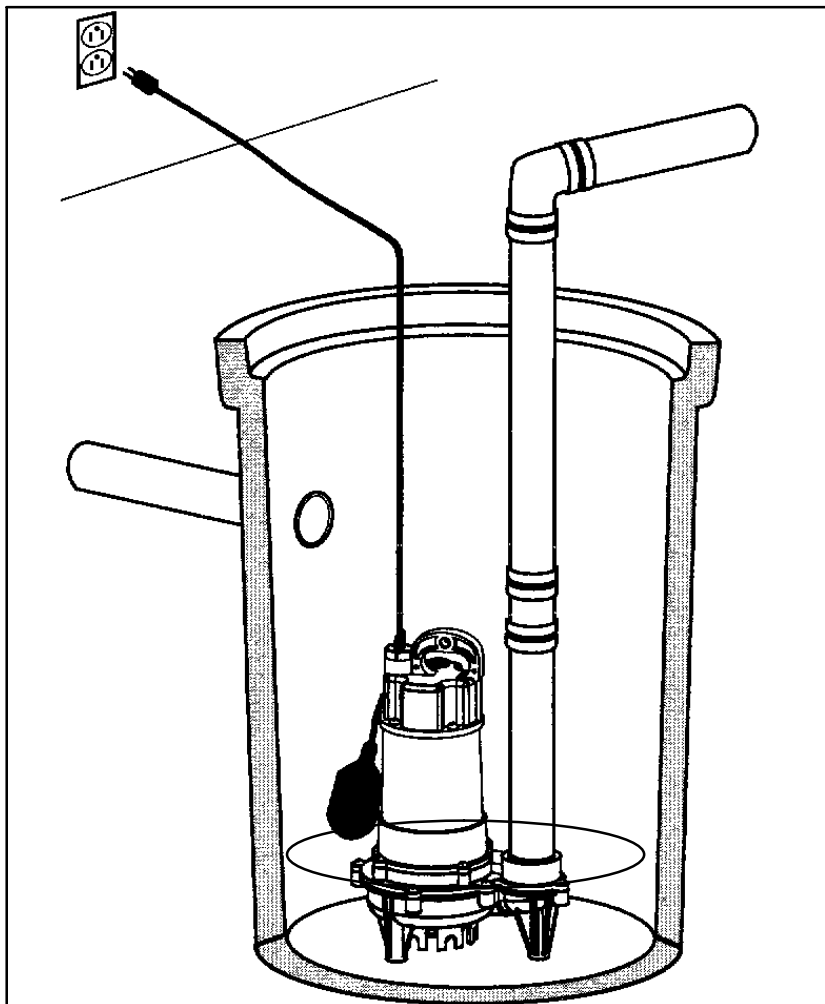


Figure 4. Typical Sump Pump Installation

OPERATION

Review all **SAFETY** information in Section A.

Follow the instructions on all tags, labels and decals attached to the pump.

PUMP OPERATION



Do not operate this pump where explosive vapors or flammable material exist. Death or serious injury will result.



This pump is designed to handle dirty water that does not contain large entrained solids. It is not designed to pump volatile, flammable or corrosive materials. Do not attempt to pump any liquids which may damage the pump or endanger personnel as a result of pump failure.

Install the pump and piping as described in **INSTALLATION**.

Operation of Pumps Without Integral Float System

Each pump is provided with a 50-foot (15 meter) power cable. **Never** splice the power cable due to safety and warranty considerations.



Never attempt to alter the length or repair any power cable with a splice. The pump motor and cable must be completely waterproof. Damage to the pump or personal injury may result from alterations.

Always keep the plug end dry.

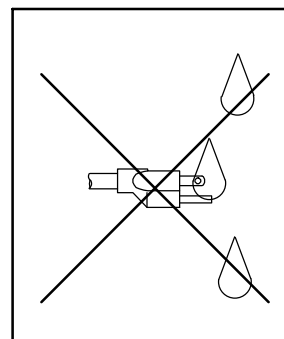


Figure 1. **Always** Keep Plug End Dry

For manual operation, simply plug the power cable into any 115 volt **grounded** receptacle. It is strongly recommended that a Ground Fault Interrupter (GFI) type receptacle (or equivalent) be used (see Figure 2).



Always use a three-prong grounded receptacle. It is strongly recommended that a Ground Fault Interrupter (GFI) type receptacle (or equivalent) be used.

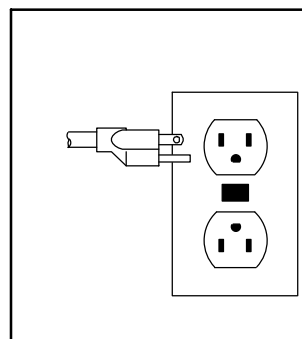


Figure 2. **Always** Use a Grounded Receptacle

Automatic Operation (Ball Type Float System)

Some units are equipped for automatic operation with either a vertical slide or a ball type float system.

For automatic operation with a ball type float, always make sure the float hangs free. It should not come into contact with the bottom or side of the sump.

Plug the pump cable into a **grounded** receptacle. It is **strongly** recommended that a Ground Fault Interrupter (GFI) type receptacle (or equivalent) be used (see Figure 2).

Operational Checks

Check the pump for proper operation when it is first started and periodically thereafter to identify minor problems.

Check the pump for unusual noises or excessive vibration while it is operating. If noise or vibration is excessive, stop the pump and refer to the troubleshooting chart for possible causes.

Check the pump strainer screen for clogging caused by stones, sticks, or other debris. Clean the strainer screen when required. In some cases, stopping the pump momentarily may back flush the strainer screen, purging most of the debris from it. If this fails to clean the screen, unplug the pump, remove it from the sump, and remove the debris manually.

Never introduce air or steam pressure into the pump casing or piping to remove a blockage. This could result in personal injury or damage to the equipment.

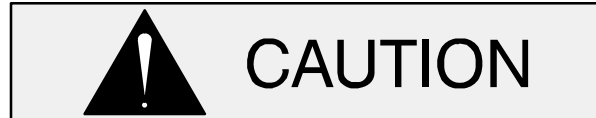
Each of these pumps has a built-in thermal protection switch in the motor. The pump will stop if overheating occurs. The pump will restart automatically after it has cooled down.



The integral thermal overload switch will shut off the motor if the temperature rises above design limits. When the pump cools and the temperature falls below these limits, the motor will restart automatically. To avoid the hazards of an unexpected motor start-up, unplug the power cable from the receptacle before attempting to handle the pump; otherwise, serious personal injury could result.

STOPPING

To stop the pump when in manual mode, simply unplug it from the receptacle. After stopping the pump, be sure to perform all required maintenance and preservation procedures.



This pump is equipped with automatic thermal overload protection which will stop the pump if overheating occurs. Unplug the pump and allow it to cool before attempting to service the pump.

When operated in the automatic mode, the pump will stop and start as the liquid level rises and falls. For service or extended stopping, unplug the pump from the receptacle.

Storage and Cold Weather Preservation

After stopping the pump, use the rope or chain attached to the lifting handle on the pump to remove the pump from the sump. **Do not** lift the unit by the power cable or the discharge piping. Customer installed equipment such as rigid discharge piping **must** be removed before attempting to lift.



Do not attempt to lift the pump by the power cable or piping. Attach proper lifting equipment to the handle on the pump.

Clean the strainer screen before storage. If the application involves a lot of mud or sludge, remove the strainer and clean the impeller before storage.

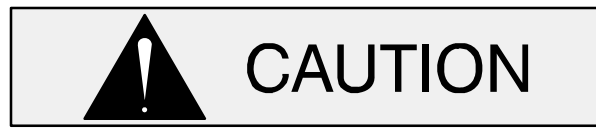
NOTE

The most common cause of failure to run is hardened mud or sludge in the impeller.

In freezing temperatures, the pump will not freeze as long as it is submerged in liquid. If the pump casing is not submerged, or if the liquid begins to freeze, remove the pump from the sump and allow

it to dry thoroughly. Run the pump for two or three minutes to dry the inner walls.

If the pump freezes, move it into a warm area until completely thawed, or submerge it into the liquid. If the liquid is near freezing, the pump must be submerged for an extended period of time. Start the pump and check for shaft rotation. If still frozen, allow additional thawing time before attempting to restart.



Do not attempt to thaw the pump by using a torch or other source of flame. This could damage gaskets, electrical components, or motor windings.

TROUBLESHOOTING

Review all SAFETY information in Section A.

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
PUMP WILL NOT RUN (MANUAL MODE)	Power cable loose in receptacle. GFI or circuit breaker tripped, fuse blown. Hardened mud or sludge in pump. Damaged power cable.	Check. Check and reset GFI or breaker; replace fuse. Check and clean. Inspect and replace as required.
PUMP WILL NOT RUN (AUTOMATIC MODE)	Liquid level device fouled with mud or foreign material. Float type sensing device tangled or obstructed.	Clean liquid level device(s). Check installation for free movement of float.
MOTOR RUNS, BUT PUMP FAILS TO DELIVER WATER	Strainer clogged. Discharge line clogged or restricted; hose kinked. Liquid being pumped too thick. Discharge check valve installed Backward. Pumping entrained air. Pump is air locked. Vertical pumping distance is too high.	Check and clean as required. Check discharge lines; straighten hose. Dilute liquid by heating if possible. Check installation (arrow on valve Should point in direction of flow). Check liquid level in sump; check position of pump. Start and stop pump several times by plugging and unplugging cord. Check for clogged vent hole in pump casing. Reduce distance or change the discharge fittings of the pump.
PUMP RUNS BUT WILL NOT STOP	Float stuck in up position.	Check to ensure float operates freely.
PUMP RUNS BUT ONLY DELIVERS A SMALL AMOUNT OF WATER	Pump is air locked.	Start and stop pump several times by plugging and unplugging cord. Check for clogged vent hole in pump casing.

TROUBLESHOOTING (Cont'd)

Review all SAFETY information in Section A.

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
PUMP RUNS BUT ONLY DELIVERS A SMALL AMOUNT OF WATER	Vertical pumping distance is too high. Strainer clogged. Hardened mud or sludge in pump.	Reduce distance or change the discharge fittings of the pump. Check and clean as required. Check and clean.
CIRCUIT BREAKER TRIPS OR FUSE BLOWS WHEN PUMP STARTS	Damaged power cable. Liquid level device fouled with mud or foreign material. Float type sensing device tangled or obstructed.	Inspect and replace as required. Clean liquid level device(s). Check installation for free movement of float.
MOTOR RUNS, BUT PUMP FAILS TO DELIVER WATER	Strainer or impeller clogged. Circuit breaker or fuse too small.	Check and clean as required. Check (must be 15 amps).
MOTOR RUNS FOR A SHORT TIME, THEN STOPS	Strainer or impeller clogged.	Check and clean as required.

**For U.S. and International Warranty Information,
Please Visit www.grpumps.com/warranty
or call:**

U.S.: 419-755-1280

International: +1-419-755-1352