

# SHURflo

## POTABLE WATER PUMP

### Installation and Operation Manual

SHURflo has supplied pumps to the manufacturers of RV's for over 30 years. Our patented Tri-a-gram® line of potable water pumps deliver smooth, consistent flow at all ranges of operation, while drawing low current. The balanced diaphragm design incorporates two precision ball bearings for long life. SHURflo pumps are 100% tested for proper operation before they leave the factory. When installed correctly, SHURflo water pumps will provide years of quiet operation.

A SHURflo pump in combination with a low back pressure water system can exceed all expectations. For unmatched reliability and trouble-free performance request SHURflo's complete line of water system products.

### GENERAL INFORMATION

SHURflo realizes that in many instances our pump is being installed as a replacement pump within an existing system. The following guidelines should be considered to achieve optimum pump operation

#### MOUNTING

- The pump can be at the same level or below the water tank. It may be positioned above the water tank if needed, as it is capable of a 6 ft. [1.8M] vertical prime. Horizontal inlet tubing will allow priming to 30 ft. [9M].
- Consider a location that allows easy access if maintenance is required. The pump should not be located in an area less than one cubic foot unless adequate ventilation is provided. Excessive heat may trigger the integral thermal breaker and interrupt operation. When the temperature drops the breaker will automatically reset and start operation.
- The pump may be mounted in any position. If mounting the pump vertically, the pump head should be in the down position so that in the unlikely event of a leak, water will not enter the motor.
- Use #8 hardware to fasten the pump. Choose a **solid** surface (thick plywood) that will not amplify pump operation. The mounting feet are intended to isolate the pump from the mounting surface; over-tightening, flattening, or use of oversized screws will reduce the ability to isolate vibration/noise.

#### ELECTRICAL

- The pump should be on a dedicated (individual) circuit, protected by the specified fuse indicated on the motor label.
- A switch rated at or above 15 amps is recommended, and must interrupt current flow on the positive (+ red) lead. Marine applications should use U/L approved marine duty (ignition protected) switches and pumps.
- The pump must be grounded to a "known ground" (frame). The ground wire must be the same size (gauge/mm<sup>2</sup>) as the positive wire.
- Wire size (gauge/mm<sup>2</sup>) is based on the distance from the power source to the pump. Recommended size wire is #14 gauge [2.5mm<sup>2</sup>]. For lengths of 20-50ft. [6-15M] use #12 gauge [4 mm<sup>2</sup>].
- The total current draw on the circuit **must not** exceed 15 amps. If the pump is used in conjunction with other components, overload current protection (fuse or circuit breaker) and wire size must be for the total amp requirement of all devices on the circuit.

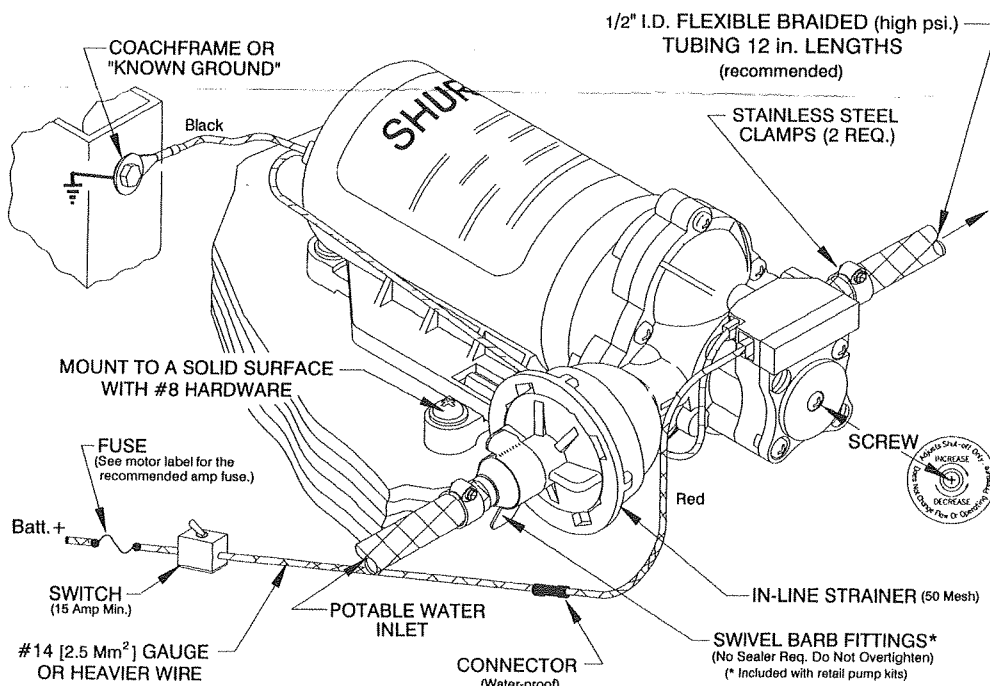
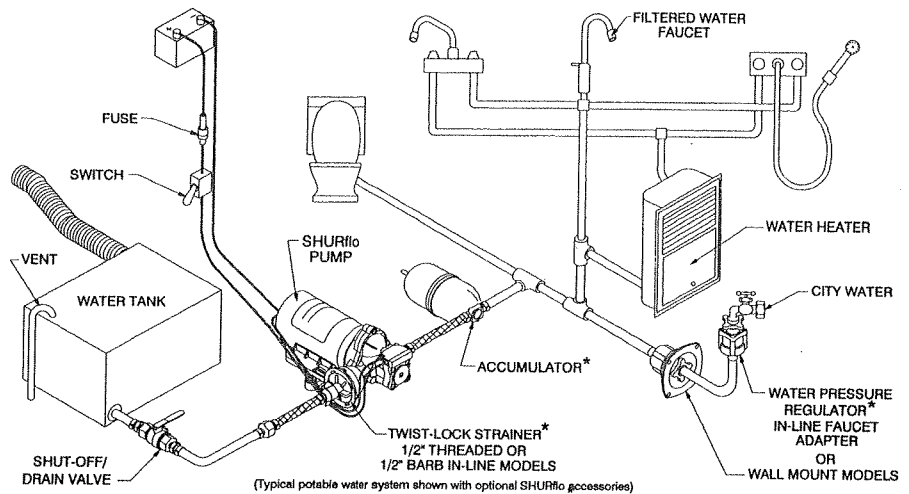
#### PLUMBING

- SHURflo recommends at least 1ft. [.3 M] of 1/2" [13mm] I.D. flexible high pressure tubing to both ports. Ideally the pumps ports/strainer **should not** be connected to plastic or rigid pipe. The pump's normal oscillation may transmit through rigid plumbing causing noise, and possibly loosen or crack components.
- Installation of a 50 mesh strainer is recommended to prevent foreign debris from entering the pump.
- SHURflo swivel barb fittings provide easy removal if maintenance or access is required. The fittings are designed with a "taper-seal", creating a water tight connection when **hand-tightened**. **Never** use Teflon tape or sealing compounds on threads. Sealer may enter the pump causing a failure. **Failure due to foreign debris is not covered under warranty**. Always secure barb tubing connections with properly sized stainless steel clamps to prevent leaks.
- Rapid cycling may be caused by excessive back pressure created by one or more of the following within a plumbing system:
  - Water filters not on separate feed lines.
  - Flow restrictors in faucets and shower heads.
  - Small I.D. lines. Pipe/tubing should be at least 1/2" [13mm] I.D. for main lines.
  - Restrictive fittings and connections (elbows, "T's", feeder lines to faucets, etc.)

#### SWITCH SHUT-OFF

Restrictions in a plumbing system may cause the pump to rapid cycle (ON/OFF within 2 sec.) during low flow demands. Cycling should be minimized to prevent pulsating flow, and to achieve maximum pump life.

To determine if adjustment is necessary, turn a faucet ON to lower than average flow of water. The pump should cycle, but its "OFF time" must be 2 sec. or longer. If the cycling is correct, leave well enough alone. If the pump is cycling rapidly increase the setting by turning the screw clockwise (1 1/2 turn MAX.) until the pump operates for 1 sec. with at least 2 sec. "OFF time". If cycling cannot be minimized consider removing plumbing restrictions or simply install a SHURflo Accumulator.



## SANITIZING

Potable water systems require periodic maintenance to deliver a consistent flow of fresh water. Depending on use and the environment the system is subject to, sanitizing is recommended prior to storing and before using the water system after a period of storage. Systems with new components, or ones that have been subjected to contamination, should also be disinfected as follows:

**NOTE:** The sanitizing procedure is in conformance with the approved procedures of RVIA ANSI A119.2 and the U.S. Public Health Service.

- Use one of the following methods to determine the amount of common household bleach needed to sanitize the tank.
  - Multiply "gallons of tank capacity" by 0.13; the result is the ounces of bleach needed to sanitize the tank.
  - Multiply "Liters of tank capacity" by 1.0; the result is the milliliters of bleach needed to sanitize the tank.
- Mix into solution the proper amount of bleach within a container of water.
- Pour the solution (water/bleach) into the tank and fill the tank with potable water.
- Open **all** faucets (Hot&Cold) allowing the water to run until the distinct odor of chlorine is detected.
- The standard solution must have four (4) hours of contact time to disinfect completely. Doubling the solution concentration allows for contact time of one (1) hour.
- When the contact time is completed, drain the tank. Refill with potable water and purge the plumbing of all sanitizing solution.

## TROUBLESHOOTING

Vibration induced by road condition can cause plumbing or pump hardware to loosen. Check for system components that are loose. Many symptoms be resolved by simply tightening the hardware. Check the following items along with other particulars of your system.

### PUMP WILL NOT START/ BLOWS CIRCUIT:

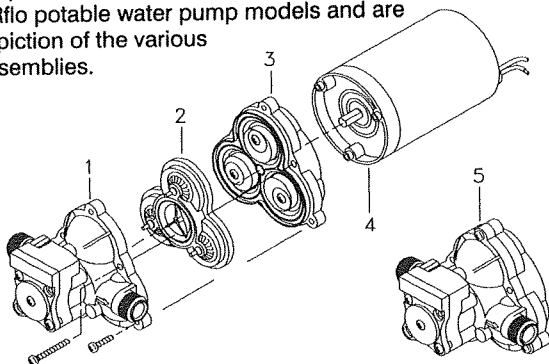
- ✓ Electrical connections, fuse or breaker, main switch, and ground connection.
- ✓ Is the motor hot? Thermal breaker may have triggered; it will reset when cool.
- ✓ Is voltage present at the switch? Bypass the pressure switch. Does the pump operate?
- ✓ Charging System for correct voltage ( $\pm 10\%$ ) and good ground.
- ✓ For an open or grounded circuit, or motor; or improperly sized wire.
- ✓ For seized or locked diaphragm assembly (water frozen?).

### WILL NOT PRIME/SPUTTERS: (No discharge/Motor runs)

- ✓ Is the strainer clogged with debris?
- ✓ Is there water in the tank, or has air collected in the hot water heater?
- ✓ Is the inlet tubing/plumbing sucking in air at plumbing connections (vacuum leak)?
- ✓ Is inlet/outlet plumbing severely restricted or kinked?
- ✓ Proper voltage with the pump operating ( $\pm 10\%$ ).
- ✓ For debris in pump inlet/outlet valves or swollen/dry valves.
- ✓ Pump housing for cracks or loose drive assembly screws.

## SERVICE KITS

To insure the correct service kit, order by the complete model number, date of manufacture and other name plate data. Part kits come with complete repair instructions. Pump illustrations may not be representative of all SHURflo potable water pump models and are only for depiction of the various parts kit assemblies.



1	Switch / Check valve and Upper Housing Kit (Replaces all previous switch designs)
2	Valve plate assembly
3	Diaphragm / Drive assembly
4	Motor
5	Complete Pump Head assembly (includes parts *1, 2, 3) (Replaces all previous switch designs)

## WINTERIZING

If water is allowed to freeze in the system, serious damage to plumbing and the pump may occur. Failures of this type will void warranty. The best guarantee against damage is to completely drain water system.

**NOTE:** When used per the manufacturers recommendations **non-toxic antifreeze for potable water** is safe for use with SHURflo pumps. Refer to the coach manufacturer and other equipment manufactures for their specific winterizing & drainage instructions

**CAUTION:** Do not use Automotive Antifreeze to winterize potable water systems. Such solutions are highly toxic. Ingestion may cause serious injury or death.

To properly drain the system perform the following:

- Drain the water tank. If the tank doesn't have a drain valve, open faucets allowing the pump to operate (15 min. ON / 15 min. OFF) until tank is empty.
- Open all the faucets (including the lowest valve or drain in the plumbing) and allow the pump to purge the water from the plumbing, then turn pump OFF.
- Using a pan to catch the remaining water, remove the plumbing at pump's inlet/outlet ports. Turn the pump ON, allowing it to operate the water is expelled. Turn OFF power to the pump once the plumbing is emptied. Do not reconnect pump plumbing. Make a note at tank fill a reminder: "Plumbing is Disconnected".
- All faucets must be left open to guard against any damage.

### PUMP WILL NOT SHUT-OFF / RUNS WHEN FAUCET IS CLOSED:

- ✓ Output side (pressure) plumbing for leaks, and inspect for leaky valves or toilet
- ✓ For air trapped in outlet side (water heater) or pump head.
- ✓ For correct voltage to pump ( $\pm 10\%$ ).
- ✓ For loose drive assembly or pump head screws.
- ✓ Are the valves or internal check valve held open by debris or is rubber swollen?
- ✓ Pressure switch operation/adjustment, refer to shut-off adjustment for switch.

### NOISY OR ROUGH OPERATION:

- ✓ For plumbing which may have vibrated loose.
- ✓ Is the pump plumbed with rigid pipe causing noise to transmit?
- ✓ Does the mounting surface multiply noise (flexible)?
- ✓ For mounting feet that are loose or are compressed too tight.
- ✓ For loose pump head to motor screws. (3 long screws)
- ✓ The motor with pump head removed. Is noise from motor or pump head?

### RAPID CYCLING:

- ✓ For restrictive plumbing, flow restrictors in faucets/shower heads.
- ✓ Water filter/purifier should be on separate feed line.
- ✓ Pressure switch shut-off adjustment.

### LEAKS FROM PUMP HEAD OR SWITCH:

- ✓ For loose screws at switch or pump head.
- ✓ Switch diaphragm ruptured or pinched.
- ✓ For punctured diaphragm if water is present in the drive assembly.