

**3M™ Water Filtration Products**

# **TFS450-BP Water Booster Pump Owners Manual**

Installer: Please leave with owner.

Owner: Please retain for operation and future maintenance instructions.

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# Safety Information

**Read, understand and follow all safety information contained in these instructions prior to installation and use of the 3M™ Water Filtration Products TFS450-BP Water Booster Pump. Retain these instructions for future reference.**

**Intended use:**

The TFS450-BP Water Booster Pump is intended for use with the TFS-450 RO Water Filtration System and has not been evaluated for other uses. The system must be installed indoors near the point-of-use and must be installed by qualified professional installers according to these installation instructions.

| <b>EXPLANATION OF SIGNAL WORD CONSEQUENCES</b>                                    |                                                                                                                                                    |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b> Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury and/or property damage. |
|                                                                                   | <b>CAUTION</b> Indicates a potentially hazardous situation, which, if not avoided, may result in property damage.                                  |

|  <b>WARNING</b>                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>To reduce the risk associated with choking:</b></p> <ul style="list-style-type: none"> <li>• Do not allow children under 3 years of age to have access to small parts during the installation of this product.</li> </ul>                                                                                                                                                 |
| <p><b>To reduce the risk associated with hazardous voltage:</b></p> <ul style="list-style-type: none"> <li>• Terminal covers MUST be in place for safe operation. Ground in accordance with local and national electrical codes. Disconnect power sources before touching internal parts.</li> </ul>                                                                            |
| <p><b>To reduce the risk associated with hazardous voltage due to an installer drilling through existing electric wiring or water pipes in the area of installation:</b></p> <ul style="list-style-type: none"> <li>• Do not install near electric wiring or piping which may be in path of a drilling tool when selecting the position to mount the filter bracket.</li> </ul> |
| <p><b>To reduce the risk of physical injury:</b></p> <ul style="list-style-type: none"> <li>• Shut off inlet water supply and depressurize system as shown in manual prior to service.</li> <li>• All hydro-pneumatic pressurized tanks must have an appropriate pressure relief valve installed.</li> </ul>                                                                    |
| <p><b>To reduce the risk associated with back strain:</b></p> <ul style="list-style-type: none"> <li>• Follow safe lifting procedures.</li> </ul>                                                                                                                                                                                                                               |

## CAUTION

### To reduce the risk associated with property damage due to water leakage:

- **Read and follow** Use Instructions before installation and use of this system.
- Installation and use **MUST** comply with all state and local plumbing codes.
- Before installation, shut-off main water supply and depressurize and drain pipes.
- Protect from freezing, depressurize and drain system when temperatures are expected to drop below 33°F (0.6°C).
- **Do not install** on hot water supply lines. The maximum operating water temperature of this filter system is 100°F (37.8°C).
- **Do not install** if water pressure exceeds 80 psi (552 kPa). If your water pressure exceeds 80 psi (552 kPa), you must install a pressure limiting valve. Contact a plumbing professional if you are uncertain how to check your water pressure.
- **Do not install** where water hammer conditions may occur. If water hammer conditions exist you must install a water hammer arrester. Contact a plumbing professional if you are uncertain how to check for this condition.
- Where a backflow prevention device is installed on a water system, a device for controlling pressure due to thermal expansion must be installed.
- **Do not use** a torch or other high temperature sources near plastic fittings or plastic plumbing.
- On plastic fittings, never use pipe sealant or pipe dope. Use PTFE thread tape only, pipe dope properties may deteriorate plastic.
- Take care when using pliers or pipe wrenches to tighten plastic fittings, as damage may occur if over tightening occurs.
- Do not install near water pipes which will be in path of a drilling tool when selecting the position to mount the bracket.
- Mount system in such a position as to prevent it from being struck by other items used in the area of installation.
- Ensure that the location and fasteners will support the weight of the system when installed.
- Ensure all tubing and fittings are secure and free of leaks.
- Do not install unit if collet is missing. Contact 3M Purification Inc. if collets are missing from any fittings.
- All hydro-pneumatic pressurized tanks must have an appropriate pressure relief valve installed.

## IMPORTANT NOTES

- Failure to follow installation, operation and maintenance instructions may result in leakage and will void warranty.
- Install with inlet, outlet, tank and reject ports as labeled. Make sure not to reverse connections.

## Preface

Congratulations on the purchase of the 3M Water Filtration Products TFS450-BP Water Booster Pump Assembly. This pump assembly was specifically designed for use with the TFS450 Reverse Osmosis System. It should be installed when the incoming water pressure does not meet the minimum 70 psi (483 kPa) required by the RO system.

The pump incorporates an internal pressure switch which will cycle the pump motor on and off as needed based on the external water tank pressure.

Never operate the pump without an external storage tank.

## Dimensions

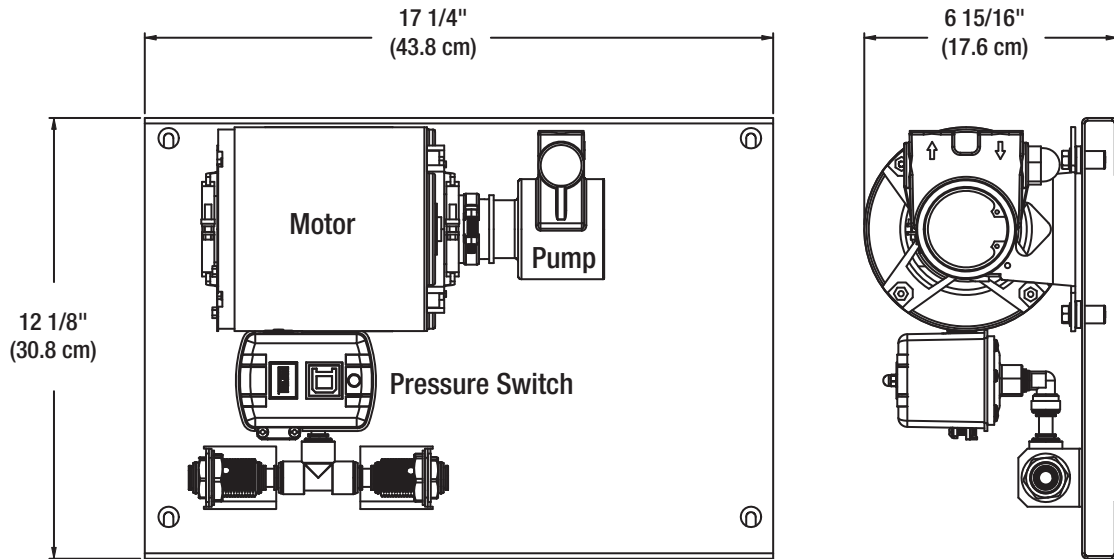


Figure 1

## Installation Plumbing Diagram

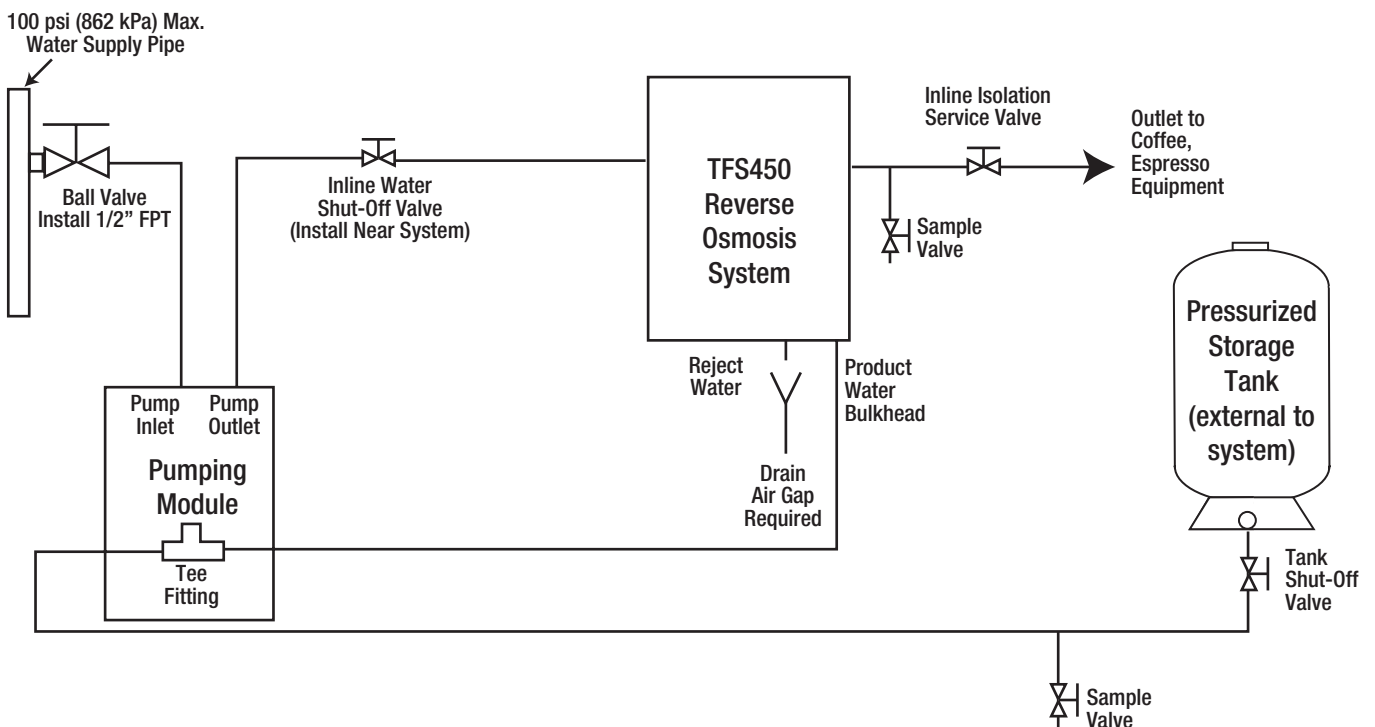


Figure 2

## Equipment Set-Up and Installation

### CAUTION

**To reduce the risk associated with property damage due to water leakage:**

- Do not install near water pipes which will be in path of a drilling tool when selecting the position to mount the bracket.
- Mount pump in such a position as to prevent it from being struck by other items used in the area of installation.
- Ensure that the location and fasteners will support the weight of the system when installed.

### Equipment Location

Prior to installing the TFS450-BP Water Booster Pump, carefully plan the installation location. Obtain additional hardware for mounting and plumbing connections as needed.

1. The TFS450-BP Water Booster Pump should be mounted within 5 ft. (3.05 m) of a 110V/50-60 Hz power outlet.
2. The TFS450-BP Water Booster Pump should be mounted within 15 ft. (4.6 m) of the external water storage tank and within 10 ft. (3.05 m) of the TFS450 Reverse Osmosis Water Filtration System.
3. All components should be accessible and have at least 6" (15 cm) of clearance on all sides to facilitate servicing.

### Mounting the Pump Assembly

1. If wall mounting, install using the orientation shown in Figure 1, with the pump motor and pressure switch above the tank plumbing connections.
  - The two horizontal mounting holes are spaced 16" (40.6 cm) center to-center.
  - The pump head inlet and outlet connections are 3/8" NPT (female), however 3/8" X 1/2" NPT bushings are included for compatibility with the TFS450 Reverse Osmosis Water Filtration System which has a 1/2" NPT inlet connection.
2. Draw a level line on the wall where the bracket is to be mounted. Measure and mark location for mounting screws.
3. Install mounting screws (not included) into each of the hole locations. Be sure to leave 1/4" (0.6 cm) space between the bottom of the screw head and the wall so that the bracket can be hung.
4. Hang the assembly from the mounting screws.
5. Once the bracket is hung, tighten the mounting screws so that the bracket is snug between the screw and the wall.

**IMPORTANT NOTE:** Make sure that the bracket is securely mounted to the wall stud or other appropriate structure. Use all four (4) mounting holes.

### Booster Pump Electrical

The TFS450-BP Water Booster Pump is wired for 110 – 120V 50/60 Hz and includes a power cord and three prong plug. If 200-240V voltage is required, the motor wiring must be reconfigured and a new plug may be required. Refer to Figure 3 for more information.

| Lead  | 100-120V | 200-240V |
|-------|----------|----------|
| Brown | 5        | 4        |
| White | 2        | 5        |
| Red   | 5        | 5        |
| Black | A        | A        |

DO NOT plug in the pump motor until all plumbing connections are made and water is supplied to the pump head inlet plumbing connection.

### WARNING

**To reduce the risk associated with hazardous voltage:**

- Terminal covers MUST be in place for safe operation. Ground in accordance with local and national electrical codes. Disconnect power sources before touching internal parts.

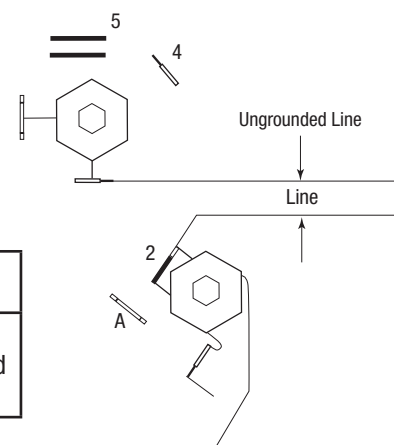


Figure 3

# Plumbing Connections

## How To Use "Push-In" Fittings (Collet)

### CAUTION

To reduce the risk associated with property damage due to water leakage:

- Ensure all tubing and fittings are secure and free of leaks.
- Do not install unit if collet is missing. Contact 3M Purification Inc. if collets are missing from any fittings.

This product is outfitted with user friendly Push In connectors. Proper use of the connectors is shown in Figure 6. It is most important that the tubing selected for use with these connectors be of high quality, exact size and roundness, and with no surface nicks or scratches. If it is necessary to cut the tubing, use a plastic tubing cutter or sharp razor knife. Make a clean square cut. Should a leak occur at a Push-In connector, the cause is usually defective tubing.

**To Fix:** 1. Relieve pressure 2. Release tubing 3. Cut off at least 1/4" from end 4. Reattach tubing 5. Confirm connection is leak free

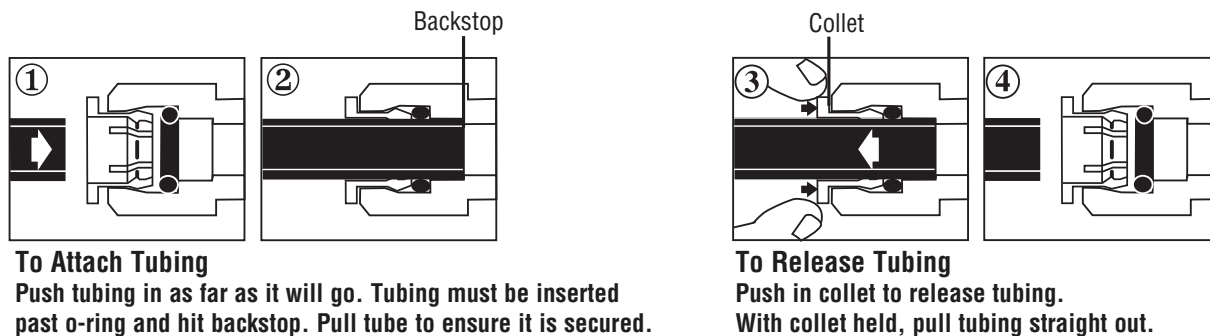


Figure 4

## Storage Tank Connections

1. Run 1/2" O.D. tubing from the external water storage tank to one of the 1/2" quick connect push-in fittings located on the TFS450-BP Water Booster Pump port as shown in Figure 5. Note: It does not matter which fitting the tank plugs in to.
2. Run a 1/2" tube from the other port on the pump assembly to the product water port on the TFS450 RO Filtration System (see Figure 5).

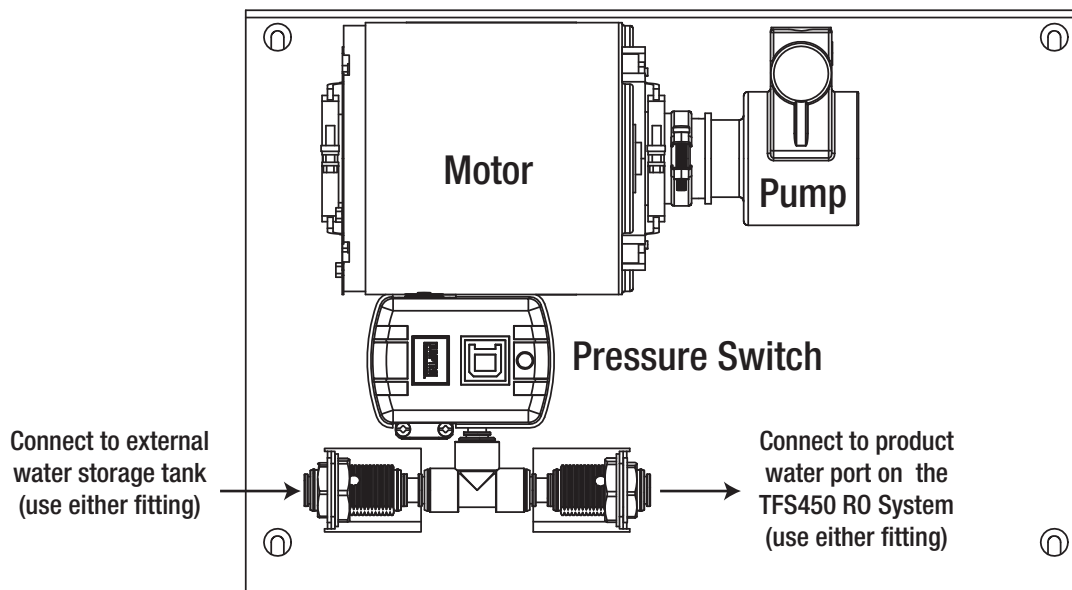


Figure 5

## Pump Head Connections

- 1) Connect water supply to pump head fitting closest to the bracket (see Figure 6). Refer to arrows in pump head casting if in doubt. The pump head comes standard with 3/8" FNPT fittings. 1/2" NPT bushings were supplied with the pump if needed. Use PTFE tape to install the fittings. Do not let any thread tape get into the pump and do not over-tighten the fittings. Please be sure to use a backup wrench on the square port boss to support the pump when installing the fittings (see figure 7). Do not put any strain on the V-band clamp.
- 2) Connect outlet connection from the pump head to the inlet connection of the TFS450 RO Water Filtration System. Use appropriate fittings as required

## Start-up Procedure

- 1) Install the TFS450 RO Water Filtration System per the installation manual.
- 2) After the pump assembly is mounted and the plumbing connections are made, turn on the incoming water supply to the pump. It is important to ensure that you have water flow to the inlet.
- 3) Plug the pump assembly into the wall outlet. Pump should begin to run.

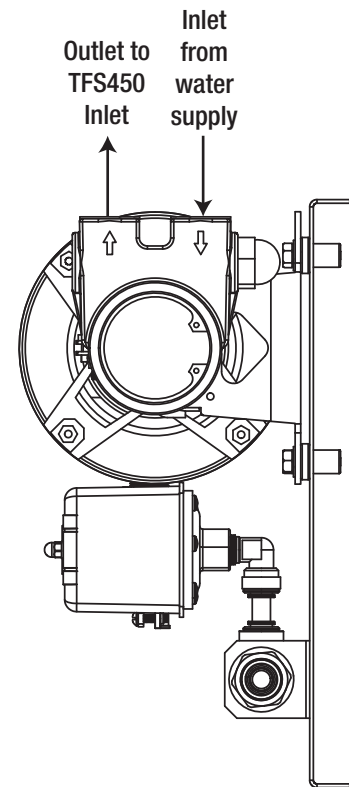
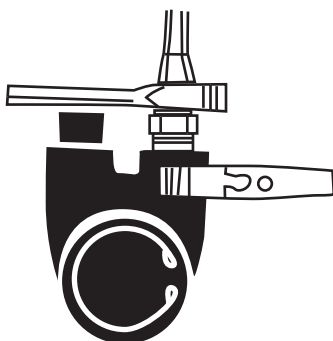


Figure 6



Use a backup wrench on the square port boss to support the pump

Figure 7



## Troubleshooting Guide

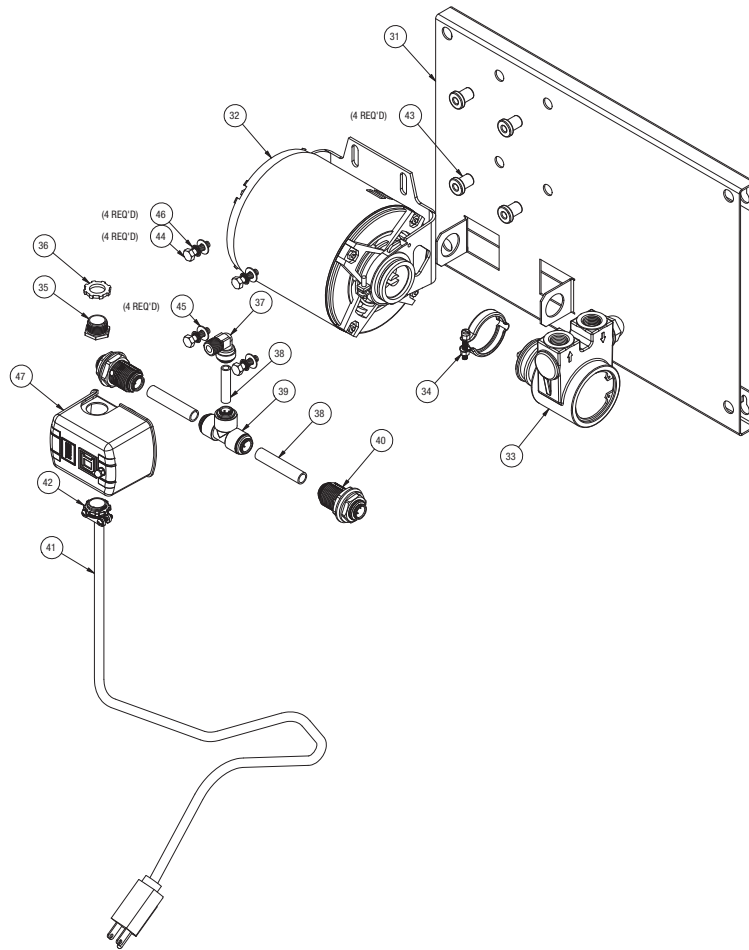
### **WARNING**

**To reduce the risk associated with hazardous voltage:**

- Terminal covers **MUST** be in place for safe operation. Ground in accordance with local and national electrical codes. Disconnect power sources before touching internal parts.

| <b>Problem</b>                                   | <b>Possible Cause</b>                                                                                | <b>Possible Solution</b>                                                                                                                                                                       |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pump is working below its capacity               | Inlet is clogged or restricted Internal strainer is clogged or restricted.                           | Clean out the inlet water line. If you have an inlet filter or strainer, replace or clean it. Do not allow debris to fall into pump.                                                           |
|                                                  | Pump is rotating in the wrong direction.                                                             | Change motor rotation by properly re-wiring the pump.                                                                                                                                          |
|                                                  | Low motor RPM.                                                                                       | Check your motor to make sure it is working properly and that it is wired for the voltage and frequency (50 or 60 Hz) that you are using (See motor specification plate on the motor housing). |
|                                                  | Internal pump parts are wearing out due to foreign or abrasive materials getting into the pump head. | Pump must be rebuilt. To help prevent future problems, make sure you have an adequate water filter on the inlet line.                                                                          |
| Pump is leaking                                  | Mechanical shaft seal or rubber o-ring is damaged.                                                   | The pump may need to be rebuilt.                                                                                                                                                               |
|                                                  | Inlet or outlet port fittings are loose or sealant inadequate.                                       | Apply joint compound or tape and reinstall the fittings. Do not allow sealant to fall into pump.                                                                                               |
| Pump is noisy                                    | Inlet is clogged or restricted Internal strainer is clogged or restricted.                           | Clean out the inlet water line. If you have an inlet filter or strainer, replace or clean it. Do not allow debris to fall into pump.                                                           |
|                                                  | Coupling, mounting bolt or V-band clamp is loose.                                                    | Turn off the motor and disconnect the power to the motor. Then properly align and tighten the loose component.                                                                                 |
|                                                  | The pump and the motor are misaligned.                                                               | Turn off the motor and disconnect the power to the motor. Then properly align and tighten the loose component.                                                                                 |
| Motor is stalling or overloads are tripping out. | The pump and the motor are misaligned.                                                               | Turn off the motor and disconnect the power to the motor. Then properly align and tighten the loose component.                                                                                 |
|                                                  | Lime and mineral deposits in the pump are causing internal binding.                                  | Pump may need to be rebuilt. To help prevent future problems, make sure you have an adequate water treatment on the inlet line.                                                                |
|                                                  | Motor may be damaged.                                                                                | Contact 3M Purification Inc. 1-888-218-2866                                                                                                                                                    |
|                                                  | Motor may be wired for the wrong voltage.                                                            | Check wiring against wiring diagram for the motor.                                                                                                                                             |

## Replacement Parts



| No.       | Part Number | Description                    |
|-----------|-------------|--------------------------------|
| 5         | 6233831     | BRKT-BOOSTER, PUMP             |
| 10        | 89-2302     | MOTOR, GE 1/3 HP ODP, G-5      |
| 15        | 89-3210002  | PUMP-PROCON                    |
| 20        | 89-417295   | MOTOR COUPLING, V BAND CLAMP   |
| 25        | 99-103501   | NIPPLE 1/2", CONDUIT CHASE     |
| 30        | 25-69035    | RING, LOCK 1/2                 |
| 35        | 74-3210604  | ELBOW, MALE, 3/8X1/4, GUEST    |
| 40        | 82-2711     | TUBING-PEX, Ø3/8,GRAY          |
| 40        | 82-2719     | TUBING-PEX, 1/2"               |
| 45        | 74-3410806  | REDUCING TEE-1/2"X3/8" JG      |
| 50        | 74-3150808  | BLKHD UNION 1/2                |
| 55        | 25-9153512  | CORD-PWR 14-3 BLK SYNCRO MOTOR |
| 60 A      | 25-69038    | CORD GRIP, 2-SCREW 7316-DC     |
| 60 B      | 30-24951    | NUT, WELL RUBBER 1/4-20        |
| 70        | 30-4157     | SCREW-SS CAP,1/4"-20X1"        |
| 80        | 30-1215     | WASHER-FLAT,SS,1/4"            |
| 18        | 30-1425     | WASHER, INT. TOOTH LOCK 1/4    |
| 85        | 24-1101     | PRESSURE SWITCH-SQUARED        |
| Not Shown | 99-103401   | 1/2"X3/8" REDUCING ADAPTER     |

**Limited Warranty:** 3M Purification Inc. warrants this Product will be free from defects in material and manufacture for 12 months from the date of purchase. This warranty does not cover failures resulting from abuse, misuse, alteration or damage not caused by 3M or failure to follow installation and use instructions. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOMER OR USAGE OF TRADE. If the Product fails to satisfy this Limited Warranty during the warranty period, 3M will replace the Product or refund your Product purchase price. This warranty does not cover labor. The remedy stated in this paragraph is Customer's sole remedy and 3M's exclusive obligation.

This warranty gives you specific legal rights, and you may have other rights which may vary from state to state, or country to country. For any warranty questions, please call 1-888-218-2866 or mail your request to: Warranty Claims, 3M Purification Inc., 400 Research Parkway, Meriden, CT 06450. Proof of purchase (original sales receipt) must accompany the warranty claim, along with a complete description of the Product, model number and alleged defect.

**Limitation of Liability:** 3M will not be liable for any loss or damage arising from this 3M product, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability. Some states and countries do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.



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