SHERWOOD®

Aqua-Tiger SS™ & AQUA-Tiger™ Centrifugal Pumps

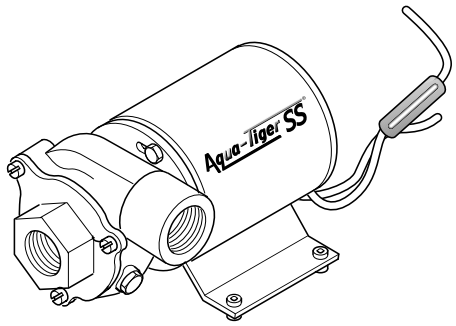
Form 21152

Installation, Operation, Repair, and Parts Manual

07-00

Description

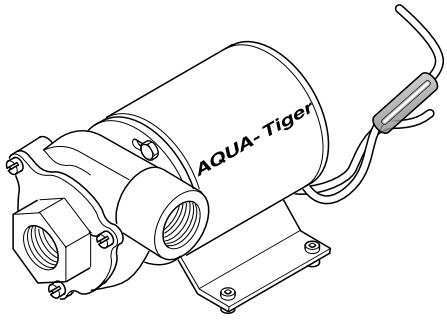
The Aqua-Tiger SS™ & *AQUA*-Tiger™ series are highly corrosion resistant centrifugal pumps, providing up to 25 Feet of Head and 24 GPM. Suitable for general pumping applications where a flooded intake is provided. Typical applications are livewells, and any other application not requiring a self-priming pump.



Aqua-Tiger SS™
316 Stainless Steel Centrifugal Pump with DC Motor

Body & Impeller:	**316 Stainless Steel**
Seal:	**316 Stainless Steel Mechanical Seal with Viton™ Elastomer**
Port Size:	**3/4 NPT, Internal**
Weight:	**5 lb (2.3 kg) approx.**
Motor:	**316 Stainless Steel shaft, permanent magnet, fully enclosed.**

Current	Model
12VDC	CMSVO12D
24VDC	CMSVO24D
36VDC	CMSVO36D



***AQUA*-Tiger™**
Bronze Centrifugal Pump with DC Motor

Body & Impeller:	**Bronze**
Seal:	**Lip Type, Viton™**
Port Size:	**3/4 NPT, Internal**
Weight:	**5 lb (2.3 kg) approx.**
Motor:	**Stainless Steel shaft, permanent magnet, fully enclosed.**

Current	Model
12VDC	AT120
32VDC	AT320

General Safety Information

The following special attention notices are used to notify and advise the user of this product of procedures that may be dangerous to the user or result in damage to the product.

NOTE: Notes are used to notify of installation, operation, or maintenance information that is important but not safety related.

CAUTION: Caution is used to indicate the presence of a hazard, which will or can cause minor injury or property damage if the notice is ignored.

WARNING: Warning denotes that a potential hazard exists and indicates procedures that must be followed exactly to either eliminate or reduce the hazard, and to avoid serious personal injury, or prevent future safety problems with the product.

DANGER: Danger is used to indicate the presence of a hazard that will result in severe personal injury, death, or property damage if the notice is ignored.

DANGER: Do not pump solvents, thinners, or gasoline. Pumping these items may result in an explosion causing personal injury or property damage. These pumps should only be used with liquids that are compatible with the Pump.

Do not operate these Pumps with any of their Mounting Bolts removed from the Motor Case. Doing so may result in an explosion causing personal injury or property damage.

WARNING:
Do not pump liquids at temperature greater than the recommended maximum operating temperature (140° F).

Do not use these Pumps for pumping water or other liquids intended for human or animal consumption.

CAUTION: Motor runs hot; above 180°, avoid touching the Motor Case. Contact during operation may cause a burn.

Hazardous Substance Alert

1. Always drain and flush the Pump before servicing.
2. Always drain and flush the Pump prior to returning the pump to the factory for repair.
3. Never store a Pump containing hazardous materials.
4. Prior to returning a Pump for service or repair, drain all liquids and flush the Pump with a neutralizing liquid; then, drain the Pump again, and attach a tag or written notice certifying that this has been done.

NOTE: It is illegal to ship or transport any hazardous chemical without United States Environmental Protection Agency licensing.

Installation

The Pump must be mounted in a dry location. The Motor is not waterproof. Therefore it must not be submerged. The unit can be operated in any position. Mount the Pump so that water dripping from a loose port connection will not wet the Motor. The Pump Head may be mounted at 90 degree increments on the Motor to allow mounting as needed (See Figure 1).

CAUTION: A seacock must be used between the hull inlet fitting and Pump on below water line installations.

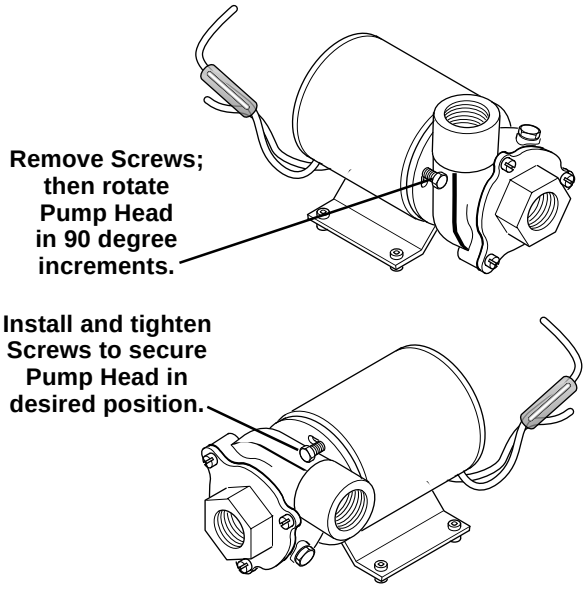


Figure 1

Electrical Connections

DC Aqua-Tiger SS™ & AQUA-Tiger™ Pumps

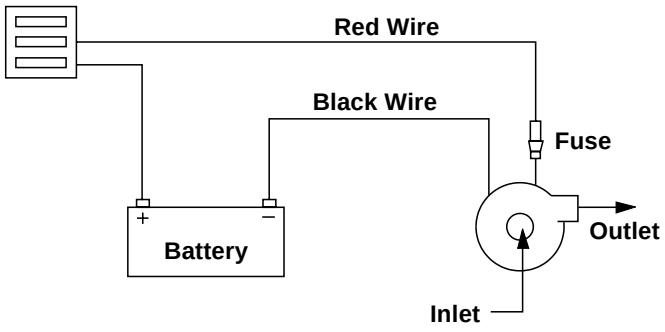
WARNING: If the Pump is operated in an area containing flammable vapors, the wire leads must be joined by insulated mechanical locking connectors. Loose or inadequate wire connections can spark resulting in an explosion resulting in property damage, injury, or death.

Positive terminal of the battery is connected to an overload protected distribution panel (See Figure 2).

The red lead with Fuse Holder is connected to the distribution panel (See Figure 2).

The black wire is connected to the negative (**-**) terminal of the battery (See Figure 2).

NOTE: For proper operation the Motor must rotate clockwise when viewed from the Pump end. The proper sized fuse has been installed in the Fuse Holder. Should this fuse blow, replace with the same size fuse after determining the reason for the blown fuse.



Connection length between battery and motor.	Wire Gauge
1-10 ft.	#12
11-20 ft.	#10
21-30 ft.	#8

Figure 2

Operation

CAUTION: This Pump is not self priming, do not run dry.

The Pump may run against a closed outlet. Avoid long term shut-off conditions to prevent possible seal damage. Small particles will pass through the Pump, but an intake strainer should be fitted if Pump clogging is encountered.

CAUTION: Motor runs hot; above 180°, avoid touching the Motor Case. Contact during operation may cause a burn.

Maintenance

Check all electrical and plumbing connections periodically. In salt water applications, corrosion of the electrical connections can cause a loss of performance or non-operation. The Motor should be protected with a corrosion inhibiting spray. Any rust should be removed and the Motor repainted.

Gumming or corrosion inside the Pump can be prevented by thoroughly flushing the Pump clean with water or a liquid that will neutralize the liquid that has been pumped. For many liquids a solution of one gallon of ammonia mixed with six gallons of water works the best.

To prevent rust or corrosion, first clean the Pump as described for gumming for corrosion prevention; then, flush the Pump with a permanent type automotive radiator antifreeze containing a rust inhibitor. Use a 50-50 solution of antifreeze and water. After this flushing, drain and plug the Pump ports to prevent air from entering the Pump during storage. Cleaning and rust protection should be performed any time the Pump will be stored for periods longer than 2 days.

Disassembly
See Figure 3

1. Remove Cover Screws, Cover, and O-ring; then, discard the old O-ring.

2. Remove Pipe Plug on the side of the Housing and rotate the Impeller so the Set Screw aligns with the plug hole.

CAUTION: The Impeller is spring loaded. Always wear safety goggles when working with spring of tension loaded fasteners or devices.

3. Insert a 3/32" allen wrench through the plug hole and loosen the Impeller Set Screw; then, remove the Impeller.

4. Remove and discard the three components of the Mechanical Seal.

5. Remove screws securing the Housing to the Motor; then, remove the Housing.

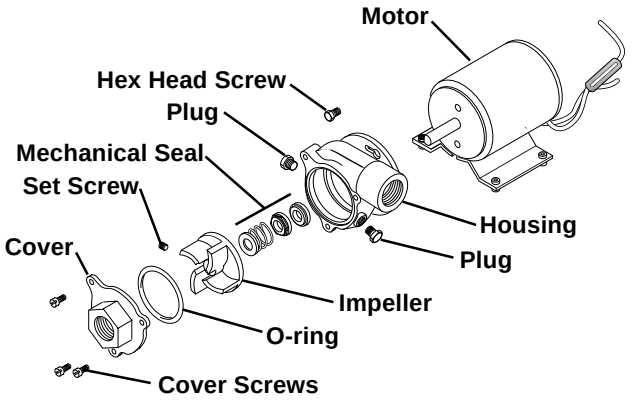


Figure 3

Reassembly

1. Press the new Ceramic Seal into the Housing with the ceramic portion of the Ceramic Seal facing away from the Motor (See Figures 3 and 4).

2. Using the two Hex Head Screws, secure the Housing to the Motor (See Figure 3).

3. Slide the new Mechanical Seal and the new Spring onto the motor shaft (See Figure 4).

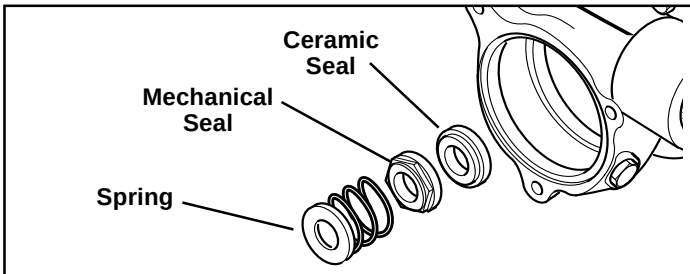


Figure 4

NOTE: Apply a drop of a blue anaerobic thread locking compound to all threaded fasteners that do not require lock washers.

NOTE: Do not tighten the Set Screw.

4. Align the Set Screw in the Impeller with the flat on the Motor Shaft and slide the Impeller onto the shaft until it contacts the rear of the mechanical Seal (See Figure 4).

5. Place the Spacer Tool (provided with the Seal Kit), over the Impeller as shown (See Figure 5).

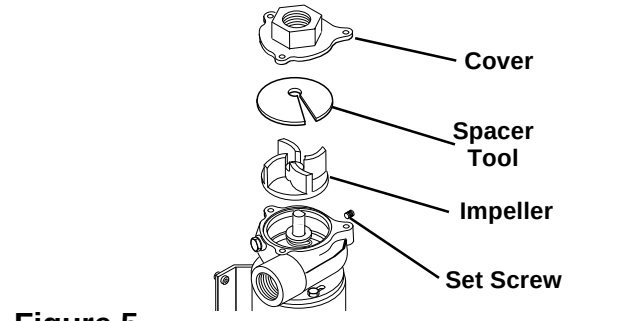


Figure 5

6. Position the Cover in place on the Housing, and while pressing down on the Cover, tighten the Set Screw; then, install the Plug that was removed in Step 2 during disassembly (See Figure 5).

7. Remove the Cover and discard the Spacer Tool.

8. Apply a thin coat of oil to the new O-ring; then, install the new O-ring onto the Cover (See Figure 6).

9. Align the Cover with the Housing and secure it to the Cover using the three Cover Screws (See Figure 6).

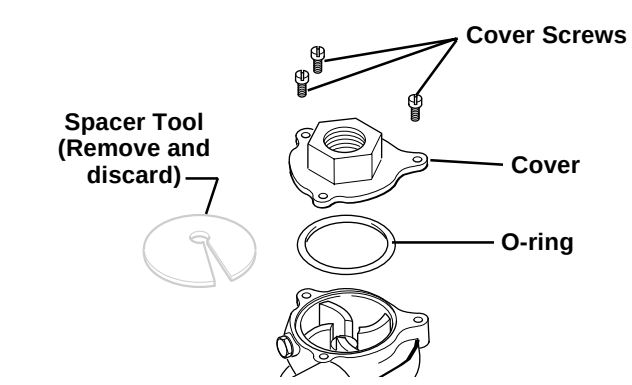


Figure 6

Disassembly
See Figure 7

1. Remove Cover Screws, Cover, and O-ring; then, discard the old O-ring.

2. Remove Pipe Plug on side of housing and rotate the Impeller so the Set Screw aligns with the plug hole.

3. Insert a 3/32" Allen wrench through the plug hole and loosen the Impeller Set Screw; then, remove the impeller.

4 Remove screws securing the Housing to the Motor; then, remove the Housing.

5. From the inside of the Housing, insert a dowel into the seal area and press the Seal out of seal bore; then, discard the Seal and inspect the motor shaft for signs of wear. If the motor shaft is worn the motor must be replaced.

Reassembly
See Figure 7

1. From the rear of the Housing, press the Seal into the seal bore with the lip angled toward pump cavity.

2. Apply a small amount of grease to the motor shaft in the area where the Seal contacts it.

3. Slide the Housing onto the shaft and secure it to the Motor with the two Hex Head Screws.

4. Align the Set Screw with the flat on the motor shaft and slide the Impeller onto the shaft until it contacts the rear of the Housing.

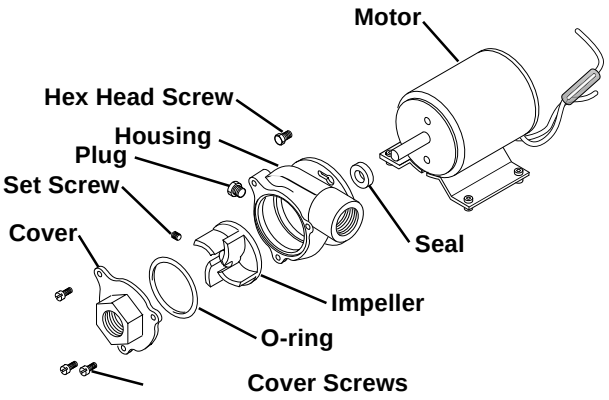


Figure 7

NOTE: Apply a drop of a blue anearobic thread locking compound to all threaded fasteners that do not require lock washers.

5. Slide the Impeller forward 1/32” to 1/16” and secure it with the Set Screw; then, rotate the Impeller by hand to ensure that it does not rub on the Housing.

6. Reinstall the Pipe Plug in the Housing.

7. Clean the contact surfaces of the Cover and Housing.

8. Apply a thin coat of oil to the new O-ring; then, install the new O-ring onto the Cover.

9. Align the Cover with the Housing and secure it to the Cover using the three Cover Screws.

Replacement Parts

Aqua-Tiger SS™ Stainless Steel Centrifugal Pump with DC Motor

Item	Description	Part No.	Qty.
1	Cover Screw	12686	3
2	Cover	23660	1
3	Set Screw	19929	1
4	Hex Head Screw	19927	2
5	Pipe Plug	21059	2
6	Housing	23627	1
7[1]	Mechanical Seal Assembly	23665	1
8[1]	O-ring, Viton™	19898	1
9	Impeller	23659	1
10	Motor		1
	12VDC (CMSV012D)	23697A	
	24VDC (CMSV024D)	N/A	
	36VDC (CMSV036D)	23661A	

[1] **Denotes Seal Kit item.**

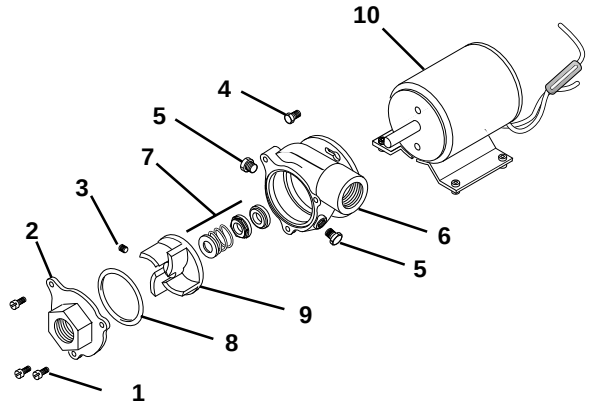


Figure 8

AQUA-Tiger™ Bronze Centrifugal Pump with DC Motor

Item	Description	Part No.	Qty.
1	Cover Screw	12686	3
2	Cover	19893	1
3	Set Screw	19929	1
4	Hex Head Screw	19927	2
5	Pipe Plug	00336	1
6	Housing	19891	1
7[1]	Seal, Viton™	19928	1
8[1]	O-ring, Viton™	19898	1
9	Impeller	19892	1
10	Motor		1
	12VDC (AT120)	19926	
	32VDC (AT320)	21139	

[1] **Denotes Seal Kit item.**

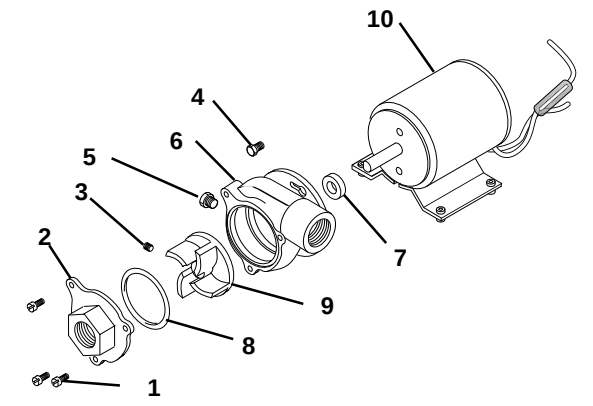


Figure 9

Mounting Dimensions

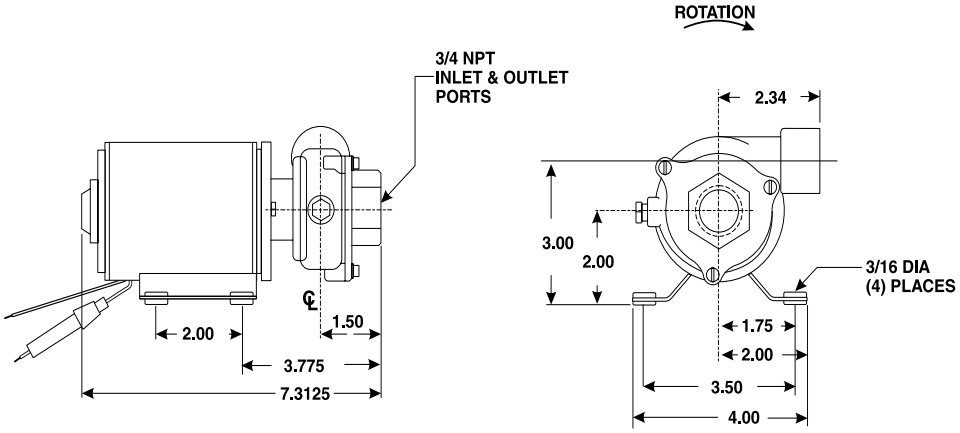


Figure 10
Aqua-Tiger SS™ 316 Stainless Steel Centrifugal Pump with DC Motor (Mounting Dimensions)

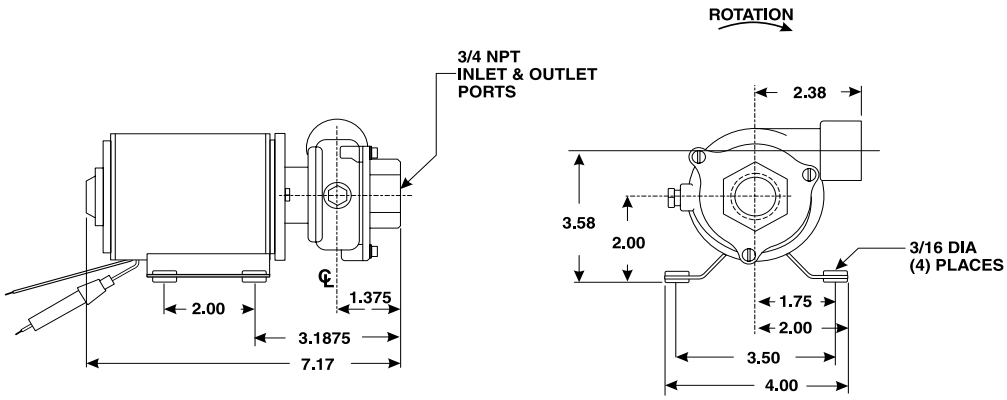


Figure 11
***AQUA*-Tiger™ Bronze Centrifugal Pump with DC Motor (Mounting Dimensions)**

Limited Warranty on Hypro Centrifugal Pumps

Hypro Corporation ("Hypro") warrants to the original purchaser of its products (the "Purchaser") that such products will be free from defects in material and workmanship under normal use for the period of one (1) year for all products except: oil crankcase plunger pumps will be free from defects in material and workmanship under normal use for the period of five (5) years, and accessories will be free from defects in material and workmanship under normal use for the period of ninety (90) days. In addition, Hypro warrants to the purchaser all forged brass pump manifolds will be free from defects in material and workmanship under normal use and from damage resulting from environmental conditions for the life of the pump.

"Normal use" does not include use in excess of recommended maximum speeds, pressures, vacuums and temperatures, or use requiring handling of fluids not compatible with component materials, as noted in Hypro product catalogs, technical literature, and instructions. This warranty does not cover freight damage, freezing damage, normal wear and tear, or damage caused by misapplication, fault, negligence, alterations, or repair that affects the performance or reliability of the product.

THIS WARRANTY IS EXCLUSIVE. HYPRO MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Hypro's obligation under this warranty is, at Hypro's option, to either repair or replace the product upon return of the entire product to the Hypro factory in accordance with the return procedures set forth below. **THIS IS THE EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.**

IN NO EVENT SHALL HYPRO BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, WHETHER FOR BREACH OF ANY WARRANTY, FOR NEGLIGENCE, ON THE BASIS OF STRICT LIABILITY, OR OTHERWISE.

Return Procedures

All pumps or products *must* be flushed of *any* chemical (ref. OSHA Section 0910.1200 (d)(e)(f)(g)(h) and hazardous chemicals *must* be labeled before being shipped* to Hypro for service or warranty consideration. Hypro reserves the right to request a Material Safety Data sheet from the Purchaser for any pump or product Hypro deems necessary. Hypro reserves the right to "disposition as scrap" pumps or products returned which contain unknown substances, or to charge for any and all costs incurred for chemical testing and proper disposal of components containing unknown substances. Hypro requests this in order to protect the environment and personnel from the hazards of handling unknown substances.

For technical or application assistance, call the **Hypro Technical/Application number: 800-445-8360.**
To obtain service or warranty assistance, call the Hypro Service and Warranty number: 800-468-3428;
or call the Hypro Service and Warranty FAX: (651) 766-6618.
Be prepared to give Hypro full details of the problem, including the following information:
1. Model number and the date and from whom you purchased your pump.
2. A brief description of the pump problem, including the following:
   - Liquid pumped. State the pH and any non-soluble materials, and give the generic or trade name.
   - Temperature of the liquid and ambient environment.
   - Suction lift or vacuum (measured at the pump).
   - Discharge pressure.
   - Size, type, and mesh of the suction strainer.
   - Drive type (gas engine/electric motor; direct/belt drive; tractor PTO) and rpm of pump.
   - Viscosity (of oil, or other than water weight liquid).
   - Elevation from the pump to the discharge point.
   - Size and material of suction and discharge line.
   - Type of spray gun, orifice size, unloader/relief valve.

Hypro may request additional information, and may require a sketch to illustrate the problem.
Contact the factory to receive a return material authorization before sending the product. All pumps returned for warranty work should be sent shipping charges prepaid to:

HYPRO CORPORATION
Attention: Service Department
375 Fifth Avenue NW
New Brighton, Minnesota 55112-3288

*Carriers, including U.S.P.S., airlines, UPS, ground freight, etc., require specific identification of any hazardous materials being shipped. Failure to do so may result in a substantial fine and/or prison term. Check with your shipping company for specific instructions.

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