

Please read and save this Repair Parts Manual. Read this manual and the General Operating Instructions carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. The Safety Instructions are contained in the General Operating Instructions. Failure to comply with the safety instructions accompanying this product could result in personal injury and/or property damage! Retain instructions for future reference.

SHERTECH® Carbonator-Mount Hot Oil NSF Rotary Gear Pumps (Light Duty)

Refer to form L-4082 for General Operating and Safety Instructions.

Description

Shertech self-priming, positive displacement, external rotary gear hot oil pumps feature cast-iron construction for high temperature use. This series of pumps is designed for hot oil or frying cooking oil filtration up to 375° F. meeting NSF-listing requirements. Pumps are configured with motors specifically for hot oil filtration applications where oil is heated prior to pumping. The discharge pressure limitations of these pumps should not exceed 80 PSI. They provide a nearly pulseless flow in applications where non-particulate and non-abrasive fluids are pumped. Not for use with water-based fluids. AC ODP single-phase motors have thermal overload protection. Complete package is easy to install, or pump heads only can be purchased for custom installations.

Uses: Ideal for a wide range of commercial fat fryer hot oil cooking, filtering, or waste oil rendering applications. This pump can also be used in non-NSF hot oil applications with non-particulate and non-abrasive fluids compatible with pump wet-end construction component materials.

- Pumps meet NSF-listed standards including NSF-accepted paint for hot oil cooking applications.
- Pumps can operate bi-directionally (15 PSI max. in reverse operation).
- Pressures to 80 PSI with pump heads
- Pressures to 60 PSI with configured motors (1/3 HP models have a max. of 40 PSI and 1/2 HP models have a max. of 60 PSI)
- Flows to 5.2 GPM
- Operating temperatures to 375° F with Viton o-ring and silicon lip seal
- Maximum viscosity of 100 SSU and maximum specific gravity of 1.1
- Suction lift capabilities up to 6.2 feet of head
- Maximum RPM: 1725
- Port size: 1/2"
- ODP single-phase motors with 1/3 or 1/2 HP

CARBONATOR-MOUNT CAST IRON PUMPS (LIGHT DUTY) – Pumps feature steel shaft and gears with cast iron bushing support with flows of 4.4 and 5.2 GPM. Direct couple to carbonator mount, ODP single-phase motors. Wet-end parts are constructed from cast iron, steel, 303 stainless steel, Viton and silicone.

PUMP HEADS (NO MOTOR) – Close-coupled gear pump heads are designed to direct couple to carbonator pump motors (See NEMA Spec. MGI-18.739, Dimensions of Carbonator Motor mounting). The face of this gear pump has been machined to match the carbonator motor face. Pump and motor held together with a stainless steel beveled “V” band clamp. Coupling of shafts is done by mating the carbonator motor’s slot with the pump’s slot using the Oldham coupling (See Figure 2). This positive displacement characteristic offers a wide range of applications.

NOTE: Intermittent and commercial models are available for continued use.



WARNING: Do not use to pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Do not use in flammable and/or explosive atmospheres. When pumping hazardous or dangerous materials, use only in room or area designated for that purpose. For your protection, always wear proper clothing, eye protection, etc. in case of any malfunction. For proper handling techniques and cautions, contact your chemical supplier, insurance company and local agencies (fire dept., etc.). Failure to comply with this warning could result in personal injury and/or property damage.

SHERTECH® Carbonator-Mount Hot Oil NSF Rotary Gear Pumps (Light Duty)

Model Ordering Codes and Options



Example Model: GN63

Series	Gear Size: Ports	AC Motor
GN - Gear NSF	6: 1/2" 7: 1/2"	3 - 1/3 HP 1 - 1/2 HP 0 - No motor (pump head only)

NOTE: Not all order code combinations (configurations) are standard models available from the manufacturer. Custom model configurations may require ordering standard components and/or optional parts that will need to be assembled by the customer.

Manufacturer reserves the right to change model order codes, standard models, specifications, and performance without notification.

Maximum motor speed is 1725 RPM.

Cast Iron construction with Viton o-ring and silicon lip seal.

Do not use for water-based fluids.

Cast Iron Models GN60, GN63, GN70 and GN71

Performance

Models	Port Size*	Pump RPM	Max. Input Torque in.-lbs.	Suction Lift**	GPM Pumping Cooking Oil at 300° F									
					Free Flow		20 PSI		40 PSI		60 PSI		80 PSI	
					GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
Models without Motors														
GN60	1/2"	1725	45	5.1	4.4	1/3	4.0	1/3	3.8	1/3	3.5	1/2	3.0	1/2
GN70	1/2"	1725	45	6.2	5.2	1/3	4.7	1/3	4.4	1/2	4.3	1/2	4.1	3/4
Models with Motors														
GN63	1/2"	1725	45	5.1	4.4	1/3	4.0	1/3	3.8	1/3	-	-	-	-
GN71	1/2"	1725	45	6.2	5.2	1/3	4.7	1/3	4.4	1/2	4.3	1/2	-	-

Test data taken on cooking oil at 300° F.

Performance in water will decrease by about 10%, and HP required will also be reduced by 10%. (Don't use water with Cast Iron.)

Pump performance when pump is new. As pump wears, the performance will decrease.

(* Female NPT inlet and outlet (in inches).

(**) Suction lift (in feet) requires wetted gears and primed seal chamber.

NOTES: Pumps with 1/3 HP motors have a max. of 40 PSI, handle up to 100 SSU and specific gravity of 1.1.

Pumps with 1/2 HP motors have a max. of 60 PSI, handle up to 100 SSU and specific gravity of 1.1.

Pumps without motors have a max. of 80 PSI, handle up to 100 SSU and specific gravity of 1.1.

Max. RPM = 1725

Max. Input Torque = See chart above.

Reverse Rotation = Pumps with or without motors are limited to a max. reverse rotation of 15 PSI.

Manufacturer reserves the right to change performance without notification.

Specifications for Pump Heads

Model	NEMA Motor Frame Required	Max. RPM	Pump Shaft Size	Required Motor Shaft Dia.	PUMP CONSTRUCTION (Wet End)								Shipping Wt. (lbs.)
					Port Size NPT*	Body & Cover Castings†	Gears	Bushings	Shaft Keys & Clips	Seal**	O-Rings****		
Models without Motors													
GN60	Carbonator	1725	1/2 slotted	1/2 carbonator	1/2	CI	Steel	CI	303 SS	Silicone	Viton	4.7	
GN70	Carbonator	1725	1/2 slotted	1/2 carbonator	1/2	CI	Steel	CI	303 SS	Silicone	Viton	4.3	
Models with Motors													
GN63***	Carbonator	1725	1/2 slotted	1/2 carbonator	1/2	CI	Steel	CI	303 SS	Silicone	Viton	22.7	
GN71***	Carbonator	1725	1/2 slotted	1/2 carbonator	1/2	CI	Steel	CI	303 SS	Silicone	Viton	26.3	

SS = Stainless Steel CI = Cast Iron

(* Female NPT inlet and outlet (in inches).

(**) NSF-listed lip seal with 300 Series SS case and spring.

(***) Motor specification shown below.

(****) NSF-listed material.

(†) NSF-listed paint.

NOTES: Pump performance when pump is new. As pump wears, the performance will decrease.

Manufacturer reserves the right to change specifications without notification.

Specifications for Pump with Motors

Model	Motor HP	AC Motor Type	NEMA Frame	Motor Voltage	Amps	Phase	Hz	Thermal Overload Protection*	Motor RPM	Motor Shaft
GN63	1/3	ODP	Carbonator	115	5.5	1	60	Yes	1725	1/2 Slotted
GN71	1/2	ODP	Carbonator	115/230	6.8/3.4	1	60	Yes	1725	1/2 Slotted

ODP = Open Drip-Proof

(* Reset may be automatic or manual.

NOTES: Driver data is subject to change without notice; see label on driver for specifications and wiring information.

Motor base may be removable, movable or fixed.

Manufacturer reserves the right to change specifications without notification.

SHERTECH® Carbonator-Mount Hot Oil NSF Rotary Gear Pumps (Light Duty)

Dimensions

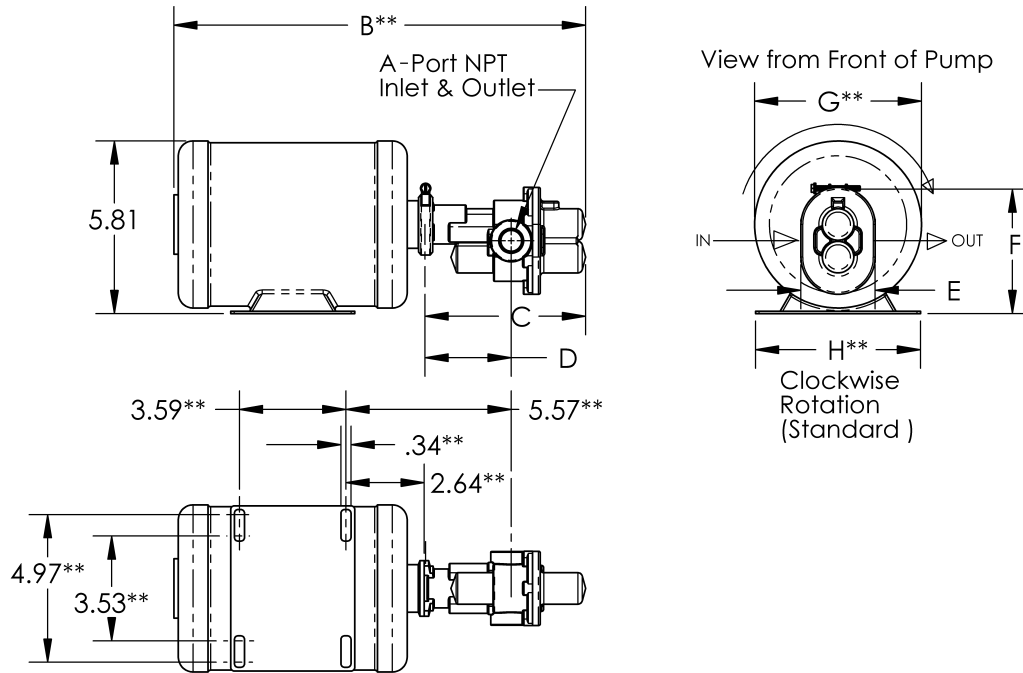


Figure 1 — Dimensions

Dimensions

Model	A*	B**	C	Dimensions (in inches)				
				D	E†	F**	G**	H**
GN60***, GN63	1/2	12.50	2.03	3.88	3.02	4.35	5.63	5.56
GN70***, GN71	1/2	15.63	3.06	5.21	2.50	4.41	5.63	5.56

(*) Female NPT inlet and outlet (in inches).

(**) This dimension may vary due to motor manufacturer's specifications.

(***) Pump head only (no motor).

(†) Port width

NOTE: Dimensions have a tolerance of (+ or -) 1/8".

Manufacturer reserves the right to change dimensions without notification.

All dimensions in inches unless otherwise specified.

Cast Iron Models GN60, GN63, GN70 and GN71

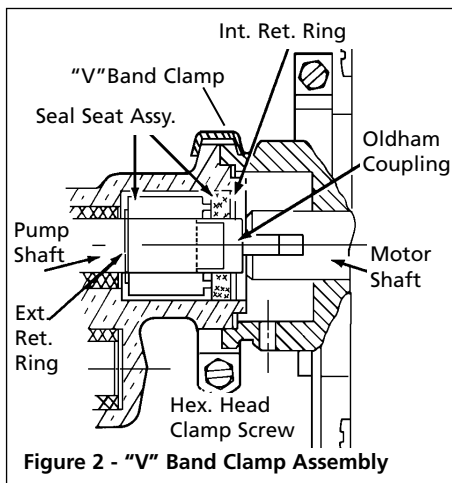
⚠ WARNING Check motor. It may be equipped with an automatic resetting thermal protector and may restart unexpectedly (see specifications chart). Protector tripping is an indication of motor overloading as a result of operating the pump at too high a pressure (do not exceed 80 PSI pump or system pressure, models with motors are limited to 40-60 PSI), too high of viscosity, too high of specific gravity, excessively high or low voltage, inadequate wiring, incorrect motor connections, too small a motor (sized incorrectly, not enough HP), or a defective motor or pump.

Do not handle pump with wet hands or when standing in water. Failure to follow the General Safety Information and all warnings could result in fatal electrical shock!

Assembly

(If pump and motor are pre-assembled, skip assembly.)

1. Refer to Figures 2 and 3.
2. Remove the hex head machine screw from the "V" band clamp.
3. Slide the "V" band clamp away from the mating face (do not remove from the pump).



4. Match the pump mating face and motor mounting hub, while mating shafts and Oldham coupling. (Ref. No. 24, Figure 7)

NOTE: The small end of coupling goes into pump.

Rotation: When looking at the motor shaft end, proper motor pump rotation is clockwise (CW). Flow is left to right (See Figure 3). Reverse the flow by rotating the pump 180°. **NOTE:** Pump can be rotated 360° on motor.

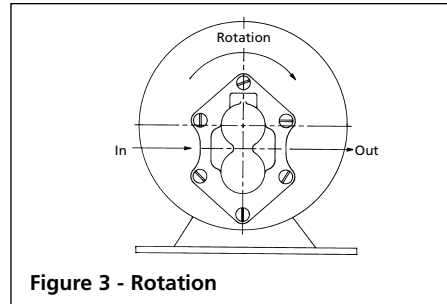


Figure 3 - Rotation

5. Slip the "V" band clamp over the pump and motor halves (See Figure 2) and tighten the hex head clamp screw to hold the assembly together.
6. Retighten the "V" band clamp screw as necessary. Use thread sealant if screw keeps coming loose.

Installation

IMPORTANT: In any installations where property damage and/or personal injury can occur when the pump is not operating due to power outages, discharge line freezing, or any other reason, a back-up system(s) and/or warning system(s) should be used.

In order to safely use this product, familiarize yourself with this pump and also with the liquid (chemical, etc.) that is going to be pumped through the unit. This pump is not suitable for many liquids.

1. Locate the pump as close to the liquid source as possible, making the suction line as short and direct as possible.

⚠ CAUTION Ambient temperature around motor should not exceed 104°F (40°C).

2. Open drip-proof motors are designed to be used in clean, dry locations with access to an adequate supply of cooling air.

3. For outdoor installations, the motor must be protected by a cover that does not block air flow to and around the motor.

4. The motor should be securely fastened to a rigid surface, preferably metallic. For rigidity, use largest bolts that will fit through the base holes.

⚠ WARNING Do not use to pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Do not use in flammable and/or explosive atmospheres. When pumping hazardous or dangerous materials, use only in room or area designated for that purpose.

For your protection, always wear proper clothing, eye protection, etc. in case of any malfunction. For proper handling techniques and cautions, contact your chemical supplier, insurance company and local agencies (fire dept., etc.). Failure to comply with this warning could result in personal injury and/or property damage.

PIPING

SUCTION

⚠ WARNING Operating pump in reverse direction greater than 15 PSI will cause seal failure (not covered under warranty).

1. Avoid excessive lengths or number of fittings and bends in the suction line.
2. Attach suction line to suction inlet.
3. It is recommended that same size pipe as pump ports be used or, in cases requiring lengthy piping, the next larger size pipe be used.
4. If suction lift is greater than what is indicated in the performance chart, attach a foot valve below liquid level at end of suction line to ensure positive priming. Also note: If fluid specific gravity is limited to 1.1 and/or viscosity of 100 SSU, a foot valve is also recommended.
5. If solid contaminants are suspected in a liquid, place a filter in the suction line.
6. Be certain all suction piping connections are airtight.

NOTE: Assure airtight pipe connections with the use of a pipe joint sealant.

SHERTECH® Carbonator-Mount Hot Oil NSF Rotary Gear Pumps (Light Duty)

DISCHARGE

1. Attach discharge piping to the discharge outlet.

▲WARNING *Support pump and piping during assembly and after installation. Failure to do so may cause piping to break, pump to fail, motor bearing failures, etc. all of which can result in property damage and/or personal injury.*

NOTE: Should the pump need to be self-draining, the pump head should be mounted in the vertical position with the suction port facing down. When pumping high viscosity fluids, the vertical position can be used with the suction port facing up and the pump mounted under the source. Increasing the suction pipe size and eliminating bends and elbows also assists in pumping high viscosity fluids. Max. viscosity is 100 SSU (45 in.-lbs. torque) at 1725 RPM.

2. If a shut-off valve or handgun is required in discharge line, provide a pressure relief valve for pump protection.

▲WARNING *Shutting off discharge without providing pressure relief can cause extreme overpressure which can result in pump and/or motor failure. Do not exceed 80 PSI pump or system pressure (models with motors are limited to 40-60 PSI).*

3. Operation under shut-off discharge conditions will overheat and damage pump.

NOTE: Globe valve or other restrictive valves should not be used as shut-off mechanism as they are restrictive in nature and will seriously affect pump performance.

4. After all piping and controls (not supplied with unit) have been installed, unit is ready for operation.

Operation

▲CAUTION *Do not run pump dry, as permanent damage to the pump gears, seal, and bearings will result. Suction pressure should never be greater than the discharge pressure.*

1. All pumps must be primed before

start-up. Never operate a pump unless it is secured to a solid foundation.

2. Gear pumps are built to very close tolerances and this tolerance must not be altered. The liquids must, therefore, be free of all abrasives. Sand, silt, wettable powders, etc. must be avoided.

NOTE: Cast iron pumps are for oil-based fluids only.

▲WARNING *Operating pump in reverse direction greater than 15 PSI will cause seal failure (not covered under warranty).*

3. Recheck motor rotation. Proper motor/pump rotation is clockwise (CW) looking at the motor shaft (See Figure 3).
4. On all models, a separate pressure relief valve (not supplied) is always on discharge side when installed (See Figure 3).

Maintenance

▲WARNING *Make certain that the power source is disconnected before attempting to service or disassemble any components! If the power disconnect is out of sight, lock it in the open position and tag to prevent application of power.*

GENERAL

Check the pump for proper operation daily, weekly, monthly, etc. If anything has changed (pump noise, motor noise, leaks, etc.) since the pump was new, the pump should be removed, examined and repaired if necessary. This is a difficult motor/pump to repair, therefore, only qualified electricians or service technicians should attempt to repair this unit. Improper repair and/or assembly can cause problems with the electric motor used with this unit. See General Safety Information.

Retighten the "V" band clamp screw as necessary. Use thread sealant if screw keeps coming loose.

Rotary gear pumps must be drained completely if subject to freezing

temperature and should not be operated until temperature permits.

To store the pump, place a small quantity of light oil or some other storage preservative compatible with your application in the pump and rotate the shaft very slowly to work the oil throughout the gears and the body.

PUMP DISASSEMBLY

Remove pump from motor (See Figure 2). Then pump is disassembled (See Figure 5) by removing the screws (Ref. No. 8) from the cover (Ref. No. 1). The o-ring (Ref. No. 7), the idler shaft assembly (Ref. No. 3) and drive shaft assembly (Ref. No. 4) are then removed.

PUMP INSPECTION

Inspect components for signs of excessive wear. Excessive wear of the pump will usually show up as degradation of performance. This can be seen by the flow dropping off under pressure, excessive noise and/or excessive wear inside the pump. Gear pump components are precision fit. When the gears are worn, so is the body, shafts, bushings or shaft pockets and housing. At that point, the pump head should be replaced. The drive shaft (Ref. No. 4) should be inspected for grooving in the area of the lip seal. The lip seal (Ref. No. 5) should be inspected for leakage and tears. The lip seal can be replaced if necessary. This is accomplished by prying the lip seal from the bore and pressing in a new lip seal (See Figure 4).

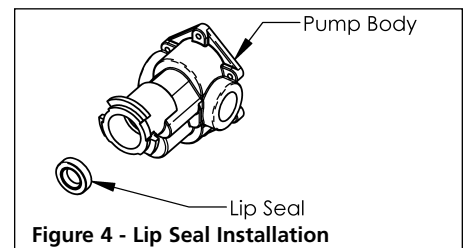


Figure 4 - Lip Seal Installation

PUMP ASSEMBLY

Assembly is in reverse order from disassembly. Reinstall pump to motor (See assembly on page 5). All pumps must be primed before start-up.

Contact a Shertech Distributor

Distributors can be found at www.shertech.com or www.hyproindustrial.com

(The factory only sells pumps and parts to distributors.)

Please provide following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list

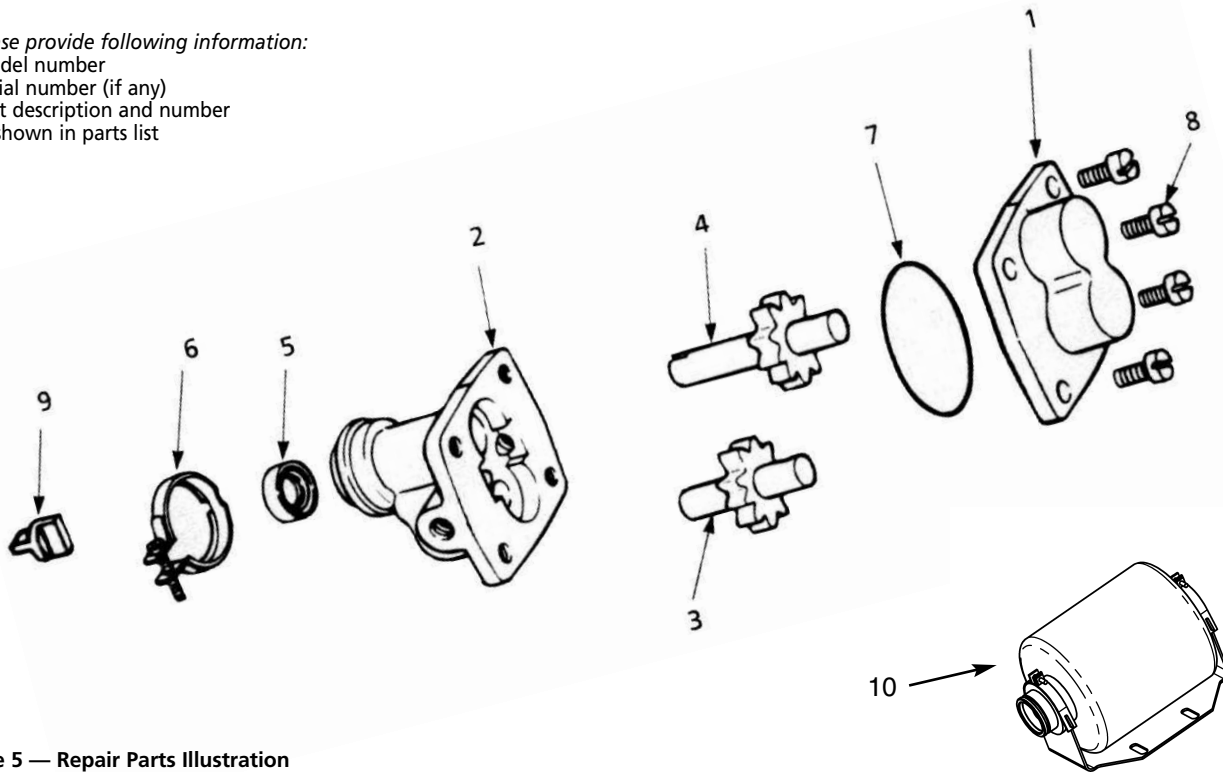


Figure 5 — Repair Parts Illustration

Repair Parts List

Ref. No.	Description	Part No. For Model:				Qty.
		GN60*	GN63	GN70*	GN71	
1	Cover (cast iron)	NA	NA	NA	NA	1
2	Body (cast iron)	NA	NA	NA	NA	1
3	Idler shaft/gear assembly (steel)	NA	NA	NA	NA	1
4	Drive gear/shaft assembly (steel)	NA	NA	NA	NA	1
5	Silicone Lip Seal [†]	18212	18212	18212	18212	1
6	"V" band clamp assembly	14050	14050	14050	14050	1
7	Viton O-ring gasket	18079	18079	21853	21853	1
8	Flat head machine screw	NA	NA	NA	NA	4 or 6
9	Oldham coupling	18260	18260	19564	19564	1
10	Motor ^{**}	-	246495	-	246505	1

(*) Complete pump without motor (suggested as replacement pump when parts are worn).

(**) Motor specifications are found in the motor specifications chart in this manual. Mounted models are indicated for the motor under the motor HP.

(†) NSF-listed lip seal with 300 Series SS case and spring.

Manufacturer reserves the right to change components without notification.

Limited Warranty on **SHERTECH**® Carbonator-Mount Hot Oil NSF Rotary Gear Pumps (Light Duty)

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 six (6) months, and accessories will be free from defects in material and workmanship under normal use for the period of ninety (90) days. Parts carry no warranty.

"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. This warranty does not cover freight damage, freezing damage, pump or motor damage from incorrect wiring (if equipped with motor), normal wear and tear, or damage caused by misapplication, fault, negligence, alterations, dry running pump, 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.

Only authorized distributors can return products for Warranty. Contact your distributor or visit www.shertech.com to find a distributor for product support.

Distributors can obtain an RMA # and contact person's name by contacting Hypro's customer service at 800-471-0460.

Return Procedures for Distributors

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 without authorization and/or 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.

Be prepared to give Hypro full details of the problem, including the following information:

1. Model number, sale record/invoice, purchase 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.
 - Abrasiveness or particulate size in fluids.
 - Drive type (gas engine/electric motor; direct/belt drive; tractor PTO) and rpm of pump.
 - Viscosity of fluid if other than water.
 - Specific gravity of fluid if other than water.
 - Elevation from the pump to the discharge point.
 - Size and material of suction and discharge line.

Hypro may request additional information and may require a sketch to illustrate the problem. Distributors should 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:

[RMA# and Contact Person]
HYPRO
375 Fifth Avenue NW
New Brighton, Minnesota 55112

NOTE: Hypro reserves the right to "disposition as scrap" pumps or products returned without authorization.

*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.

SHERTECH®



**Pentair Water
INDUSTRIAL PRODUCTS GROUP**

375 Fifth Avenue NW • New Brighton, MN 55112
Phone: (651) 766-6300 • 800-471-0460 • Fax: 800-672-7023
www.shertech.com • www.hyproindustrial.com