

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.

Shurflo NSF Commercial-Duty Filter and Rendering Close-Coupled Roller Pumps



COMPONENT

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

Description

Shurflo self-priming, positive displacement, Teflon® roller pumps feature cast-iron construction for high temperature use. This series of pumps is designed for hot oil or frying oil filtration up to 375° F., meeting NSF-listing requirements. The non-clogging Teflon® roller design can pass limited particulates and reduce oil shear, increasing oil life. Pumps are configured with motors specifically for hot oil filtration applications where oil is heated prior to pumping and discharge pressure limitations do not exceed 40 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.

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.
- Pressures to 40 PSI with configured motors.
- Flows to 10.3 GPM.
- Operating temperatures to 375° F.
- Maximum viscosity of 50 SSU and maximum specific gravity of 1.0 with configured motors.
- Suction lift capabilities up to 9.3 feet of head.
- Maximum RPM: 1725.
- Port size: 1/2 - 3/4" (ports can be rotated vertically or horizontally).
- ODP single-phase custom 56C frame motors with 1/3, 1/2, 3/4 and 1 HP.

CAST IRON ROLLER PUMPS (COMMERCIAL-DUTY) – Unlike traditional pumps, roller pumps feature a non-clogging design that passes small non-abrasive particulates without shearing oil. Heavy-duty steel rotor with long life rollers provides strong pumping action from 3.8 to 10.3 GPM. Pumps are direct-coupled to custom 56C frame, ODP single-phase motors. Wet-end parts are constructed from cast iron, steel, 303 stainless steel, carbon, Ni-Resist, Teflon®, and Viton.



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.

Shurflo NSF Commercial-Duty Filter and Rendering Close-Coupled Roller Pumps

Model Ordering Codes and Options



Example Model:

NR5

(1)
NR

(2)
5

(3)

1st	2nd	
Mounting	Pump Size (Ports)/AC Motor	Options
NR: NSF Motor-Mounted Roller Pump	3: 3 GPM (1/2") / 1/3 HP 5: 5 GPM (1/2") / 1/2 HP 8: 8 GPM (3/4") / 3/4 HP 10:10 GPM (3/4") / 1 HP	-PH: Pump Head Only (no motor)

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.

The pump is made out of cast iron with Viton seals and Teflon® rollers.

Maximum motor speed is 1725 RPM.

Cast iron is not for use with water-based fluids.

Models NR3, NR5, NR8, NR10, NR3-PH, NR5-PH, NR8-PH, and NR10-PH

Performance

Models	Port Size*	RPM	Max. Input Torque in.-lbs.	Suction Lift (ft)**	GPM Pumping Cooking Oil at 300° F				
					Free Flow	10 PSI	20 PSI	30 PSI	40 PSI***
Pumps with Motors									
NR3	1/2"	1725	46	5.6	3.80	3.70	3.60	3.50	3.40
NR5	1/2"	1725	64	6.8	5.80	5.65	5.50	5.30	5.15
NR8	3/4"	1725	90	7.5	8.20	8.00	7.80	7.60	7.40
NR10	3/4"	1725	120	8.6	10.30	10.00	9.70	9.50	9.30
Pumps without Motors									
NR3-PH	1/2"	1725	46	5.6	3.80	3.70	3.60	3.50	3.40
NR5-PH	1/2"	1725	64	6.8	5.80	5.65	5.50	5.30	5.15
NR8-PH	3/4"	1725	90	7.5	8.20	8.00	7.80	7.60	7.40
NR10-PH	3/4"	1725	120	8.6	10.30	10.00	9.70	9.50	9.30

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 requires wetted rollers and primed seal chamber.

(***) Max. PSI = 40 based on HP of motors supplied (rating may vary based on application; check motor amps on start-up).

NOTES: Pumps with motors are HP rated to handle up to 50 SSU at 40 PSI and specific gravity of 1.0.

Max. Viscosity = 50 SSU at 1725 RPM with the motor supplied.

Max. Input Torque = See chart above.

Max. RPM = 1725

Max. Specific Gravity = 1.0 at 40 PSI, up to 1.6 at lower PSI & viscosity.

Reverse Rotation = Pumps can be run in reverse rotation. If a separate pressure relief valve is used, it will only function if installed on the discharge side of the pump.

Manufacturer reserves the right to change performance without notification.

Shurflo NSF Commercial-Duty Filter and Rendering Close-Coupled Roller Pumps

Specifications

Model	AC Motor		NEMA Frame	Motor Voltage	Amps	Motor Phase	Thermal***		Motor RPM	Motor Hz	Motor Shaft**	PUMP CONSTRUCTION (Wet End)				Ship Wt. (lbs.)
	HP	Type					Overload Protection	Protection				Inlet & Outlet Port	Body Cover & Rotor	Rollers	Seals & O-rings*	
Models with Motors																
NR3	1/3	ODP	56C	115	6.6	1	Yes		1725	60	303 SS	1/2"	CI	Teflon®	Viton	23.7
NR5	1/2	ODP	56C	115/230	7.6/3.8	1	Yes		1425/1725	50/60	303 SS	1/2"	CI	Teflon®	Viton	28.4
NR8	3/4	ODP	56C	115/230	10.4/5.2	1	Yes		1425/1725	50/60	303 SS	3/4"	CI	Teflon®	Viton	33.0
NR10	1	ODP	56C	115/230	6.5-6.3/12.6	1	Yes		1425/1725	50/60	303 SS	3/4"	CI	Teflon®	Viton	20.0
Pumps without Motors																
NR3-PH	-	-	-	-	-	-	-	-	-	-	-	1/2"	CI	Teflon®	Viton	6.1
NR5-PH	-	NOTE: This series of motors are custom 56C frame type.									-	1/2"	CI	Teflon®	Viton	7.7
NR8-PH	-	Standard NEMA 56C frame motors will not work.									-	3/4"	CI	Teflon®	Viton	9.1
NR10-PH	-	-	-	-	-	-	-	-	-	-	-	3/4"	CI	Teflon®	Viton	6.0

SS = Stainless Steel CI = Cast Iron ODP = Open Drip-Proof

(*) Standard Shaft Seals have carbon on Ni-Resist faces and 18-8 SS components.

(**) Motor Shaft is pump shaft

(***) Manual or Automatic (check motor supplied).

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

All dimensions in inches unless otherwise specified.

Manufacturer reserves the right to change specifications without notification.

Manufacturer does not specify regulatory compliance for UL, UR, CSA or CE; however most models do comply to UL, UR, CSA and CE.

Models NR3, NR5, NR8, NR10, NR3-PH, NR5-PH, NR8-PH, and NR10-PH

Dimensions

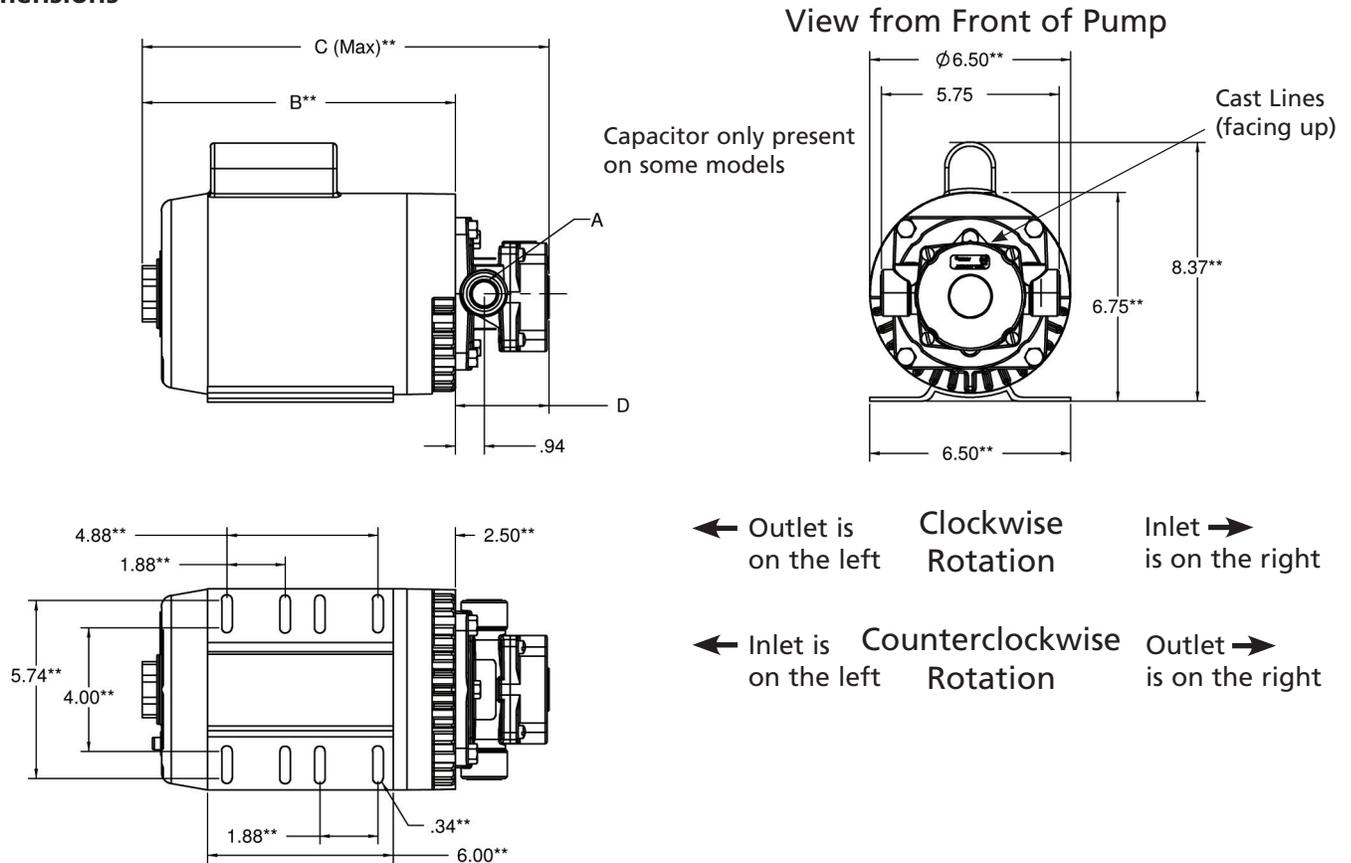


Figure 1 — Dimensions

Dimensions

Model	Port A*	B**	Dimensions (in inches)	
			C**	D
Models with Motors				
NR3	1/2	9	11.57	2.57
NR5	1/2	9	11.69	2.69
NR8	3/4	9	11.88	2.88
NR10	3/4	10.12	13.15	3.03
Models without Motors				
NR3-PH	1/2	-	-	2.57
NR5-PH	1/2	-	-	2.69
NR8-PH	3/4	-	-	2.88
NR10-PH	3/4	-	-	3.03

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

(**) This dimension may vary due to motor manufacturer's specifications and whether or not the motor has a capacitor.

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.

Shurflo NSF Commercial-Duty Filter and Rendering Close-Coupled Roller Pumps

⚠ 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 (over 40 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!

Installation

Rotation: Roller pumps may be run in either direction depending upon the requirements. To identify proper rotation, the casting marks on the pump cover and the pump body must line up with one another and be identified (See Figure 2). The rotation of the motor as viewed from the shaft end [clockwise (CW) or counterclockwise (CCW)] determines the direction of flow from the

Figure 2 - Pump Head Rotation Reference Marks

Cast Lines (pump cover and pump body cast lines must line up)

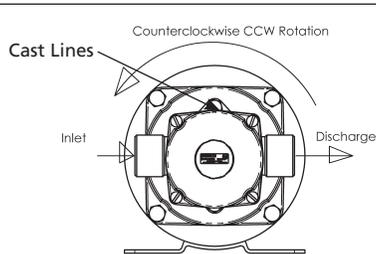
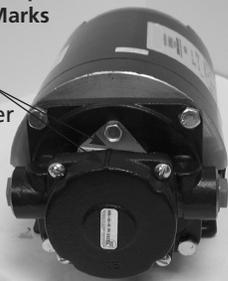


Figure 3 - Rotation

pump. For clockwise (CW) rotation, the flow is from right to left. For counterclockwise (CCW) rotation, the flow is reversed (See Figure 3).

NOTE: Pump can be rotated at 90° increments for a vertical up, vertical down, or rotation horizontal flow direction of 180°. This direction of flow is based on the pump being mounted in the horizontal "up" condition. This can be determined by ensuring the two cast lines are on top and aligned between the pump cover and the pump body (See Figure 2).

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

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 greater than 1.0 or viscosity greater than 50 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.

DISCHARGE

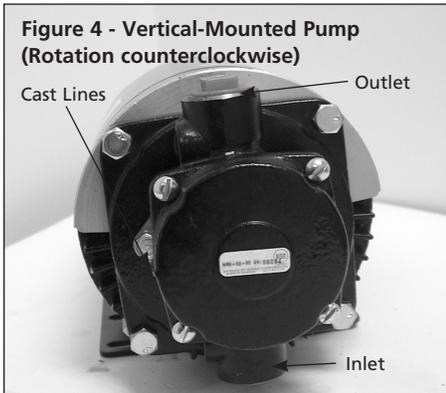
1. Attach discharge piping to the discharge outlet.

⚠ WARNING Support pump and piping during assembly and after installation. Failure to do so may cause piping to

Models NR3, NR5, NR8, NR10, NR3-PH, NR5-PH, NR8-PH, and NR10-PH

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 (See Figure 4).

When pumping high viscosity fluids, the vertical position can be used with the suction port facing up and the pump mounted under the source (See Figure 4, but rotate pump in clockwise direction or rotate pump 180°). Increasing the suction pipe size and eliminating bends and elbows also assists in pumping high viscosity fluids. Max. viscosity is 50 SSU 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 40 PSI pump or system pressure.

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 rollers and seal 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. Roller 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.

3. When pumping a more viscous (beyond 50 SSU) liquid, a slower speed, a larger pipe size pump, and possibly a large motor should be selected.

NOTE: See performance chart for Max. Torque.

4. Recheck motor rotation. (For proper motor/pump rotation, see Figures 2 and 3.)
5. A pressure relief valve on the discharge side of the pump is recommended if the possibility of discharge shutoff or blockage is anticipated.

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.

Roller 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 rollers and the body.

PUMP DISASSEMBLY

Refer to Figure 9 for parts identification during disassembly and assembly.

1. Remove screws (Ref. No. 6) and cover (Ref. No. 1). Refer to INSPECTION procedures below.
2. Remove the rollers (Ref. No. 8), the rotor (Ref. No. 4) and the o-ring (Ref. No. 12).
3. Remove the four bolts (Ref. No. 7) that hold the body (Ref. No. 3) to the motor and remove it. Note that there are two safety shields (Ref. No. 9) on the pump body (Ref. No. 3). It is not necessary to remove these to disassemble the pump. They should be in place as a safety measure should the mechanical seal leak.

▲ WARNING *Failure to have safety shields on this pump can result in a hazardous condition that would result in burns and/or other injuries*

ous condition that would result in burns and/or other injuries

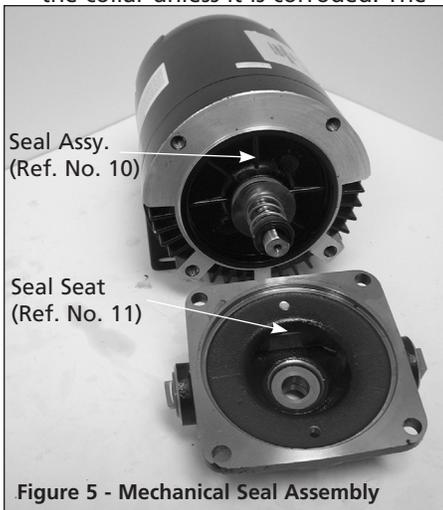
Shurflo NSF Commercial-Duty Filter and Rendering Close-Coupled Roller Pumps

in the event of a seal leak.

4. Carefully pry out Ni-Resist seat (Ref. No. 11) from the body (Ref. No. 3).
5. Remove the seal assembly (Ref. No. 10) from the motor shaft. When removing the seal from the shaft, be careful not to nick, scratch or mark the shaft in any way as damage to the shaft will cause a replacement seal to leak.

NOTE: The mechanical seal (Ref. No. 10) consists of three pieces; the seal head, the spring and the spring retainer. There is another thin washer between the mechanical seal and the collar. It should be cleaned and replaced against the collar.

6. Note the location of the collar (when applicable) (Ref. No. 10 & 11). It is usually not necessary to replace the collar unless it is corroded. The

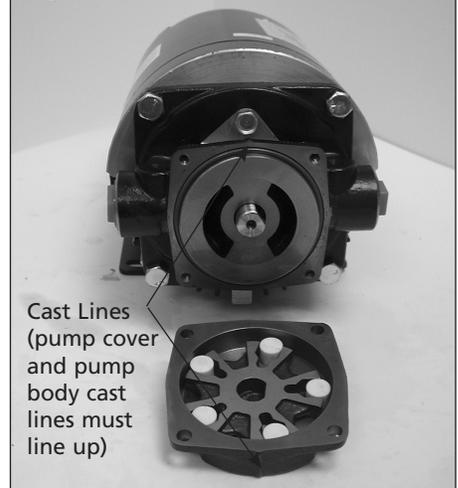


back of the collar should be 1/8" from the face of the motor (See Figure 5). If it needs replacement, loosen set screw (Ref. No. 14) holding the collar (Ref. No. 5), and remove the collar.

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. Roller pump components are precision fit. In normal operation in hot oil, the Teflon® roller will wear more rapidly than the metal components, and replacing the rollers and mechanical seal usually will bring the pump back to an acceptable level of performance. If replacing the rollers does not achieve satisfactory results, the pump head should be replaced. When inspecting a disassembled pump, look for grooving and wear patterns in the pump body and cover, and on the rotor, that would cause degradation in performance. Occasionally the rotor (Ref. No. 4) will be cracked around the center "D" drive hole. This is usually a result of exceeding torque pump limits. Replace worn or cracked parts as required. (See Repair Parts List for

Figure 6 - Roller and Rotor Installation



pump component kits as well as individual parts.)

Models NR3, NR5, NR8, NR10, NR3-PH, NR5-PH, NR8-PH, and NR10-PH

PUMP ASSEMBLY

1. Reinstall new mechanical seal (Ref. No. 10) on drive shaft using water as a lubricant. The seal should be against the collar, or a new collar in the same location as the old.

Note the location of the collar (when applicable) (Ref. No. 10 & 11). It is usually not necessary to replace the collar unless it is corroded. The back of the collar should be 1/8" from the face of the motor (See Figure 5). If it needs replacement, loosen set screw (Ref. No. 14) holding the collar (Ref. No. 5), and remove the collar.

Do not push on carbon face of new mechanical seal. Push with a hollowed out wood dowel or piece of cardboard.

2. Install seal seat (Ref. No. 11) into the pump body (Ref. No. 3), using water as a lubricant, on the O-ring with the Ni-Resist face facing the carbon seal (Ref. No. 10) without touching either of the seal faces. Scratching the seal faces will cause the seal to leak. Using anything other than water as a lubricant, when installing seal and seat, may cause seal to leak.

NOTE: The carbon and Ni-Resist seal faces spin against each other providing for the functional seal. The seal Ni-Resist seat O-ring is not the functional seal, but its purpose is to hold the seal Ni-Resist seat in place.

3. Reassemble the pump in reverse order of disassembly. Note that when reassembling the rollers (Ref. No. 8), place the rotor into the pump cover (Ref. No. 1), the rollers into the slots in the rotor with the flat side of the roller facing up and down (Ref. No. 4), and then insert the unit on the shaft (See Figure 6).

NOTE: The rotor (Ref. No. 4) can be installed in either direction.

Make sure that the shaft does not interfere with the end of the cover. The cover has a cast line which must be aligned with the cast line on the body (See Figure 6). Tighten cover screws (Ref. No. 6) in opposing sequence. Check the pump after reassembly to ensure smooth rotation of the unit.

4. Reinstall pump and motor. All pumps must be primed prior to start up.

Do not run pump

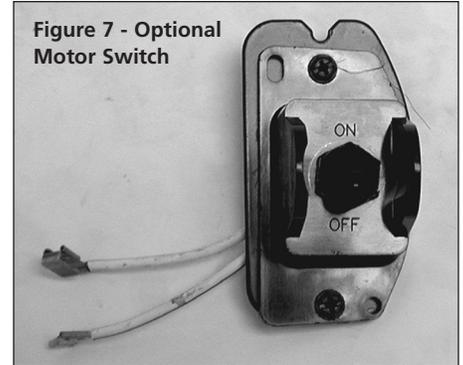


Figure 7 - Optional Motor Switch



Figure 8 - Optional Switch Kit Installed

⚠ CAUTION

dry, as permanent damage to the pump gears, seal, and bearings will result. Suction pressure should never be greater than the discharge pressure.

ACCESSORIES

To order parts, contact a Shurflo Distributor.

Distributors can be found at www.Shurfloindustrial.com.

Please provide following information:

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

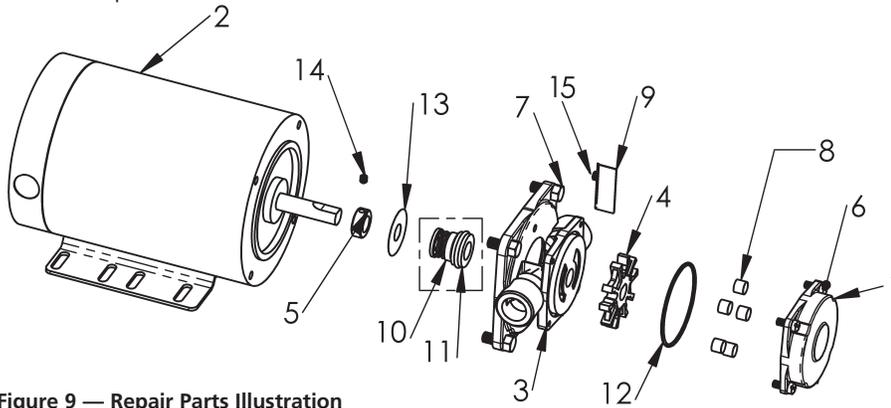


Figure 9 — Repair Parts Illustration

Repair Parts List

Ref. No.	Included In Kit	Description	Part No. For Model:								Qty.
			NR3	NR5	NR8	NR10	NR3-PH	NR5-PH	NR8-PH	NR10-PH	
1	2	Cover (Cast Iron)	NA	NA	NA	NA	NA	NA	NA	NA	1
2		Motor - Electric (303 SS Shaft)**	2561-0025S	2561-0026S	2563-0013S	24901S	NA	NA	NA	NA	1
3	3	Body (Cast Iron)	NA	NA	NA	NA	NA	NA	NA	NA	1
4	2	Rotor (Cast Iron)	NA	NA	NA	NA	NA	NA	NA	NA	1
5	3	Collar	NA	NA	NA	NA	NA	NA	NA	NA	1
6	2	Screw	NA	NA	NA	NA	NA	NA	NA	NA	4
7	3	Screw	NA	NA	NA	NA	NA	NA	NA	NA	4
8	1, 2	Roller - Teflon	1055-0022	1055-0023	1055-0024	1055-0025	1055-0022	1055-0023	1055-0024	1055-0025	5
9	3	Safety Shield	NA	NA	NA	NA	NA	NA	NA	NA	2
10 & 11	1, 3	Mech. Seal/Seat Assy. (Viton-Carbon/Ni-Resist)	22850S	22850S	22850S	22850S	22850S	22850S	22850S	22850S	1
12	1, 2	O-ring (Viton)	1721-0088	1721-0088	1721-0088	1721-0088	1721-0088	1721-0088	1721-0088	1721-0088	1
13		Slinger Washer	NA	NA	NA	NA	NA	NA	NA	NA	1
14	3	Set Screw	NA	NA	NA	NA	NA	NA	NA	NA	1
15	3	Screw	NA	NA	NA	NA	NA	NA	NA	NA	2
8, 10, 11 & 12		Kit 1 - Roller Kit*	3430-0541	3430-0542	3430-0543	25287	3430-0541	3430-0542	3430-0543	3430-0544	
1, 4, 6, 8 & 12		Kit 2 - Cover Kit*	24783	24784	24785	25288	24783	24784	24785	25200	
3, 5***, 7, 9, 10, 11, 14*** & 15		Kit 3 - Body Kit	24786	24786	24787	25289	24786	24786	24787	24787	
		Optional Switch	24087	24087	24087	24087	24087	24087	24087	24087	
		Complete Pump Heads**	NR3-PH	NR5-PH	NR8-PH	NR10-PH	NR3-PH	NR5-PH	NR8-PH	NR10-PH	

(*) Includes a set of rollers.

(**) Motor specifications are found in the pump and motor specifications chart in this manual.

(***) Parts not present when certain motors are used (See Figures 10 and 11 above).

Limited Warranty on Shurflo NSF Commercial-Duty Filter and Rendering Close-Coupled Roller Pumps

Shurflo 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.

"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, 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. Shurflo MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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

IN NO EVENT SHALL Shurflo 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.Shurfloindustrial.com to find a distributor for product support.

Distributors can obtain an RMA # and contact person's name by contacting Shurflo's customer service at 800-854-3218 (Ext. 6788 or Ext. 6651).

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 Shurflo for service or warranty consideration. Shurflo reserves the right to request a Material Safety Data sheet from the Purchaser for any pump or product Shurflo deems necessary. Shurflo 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. Shurflo requests this in order to protect the environment and personnel from the hazards of handling unknown substances.

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

1. Model number, 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.
 - 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.

Shurflo 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]
Shurflo
375 Fifth Avenue NW
New Brighton, Minnesota 55112

*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.

