HYPRO

Series 9403C-1000-MTZ
Belt-Driven Centrifugal Pump

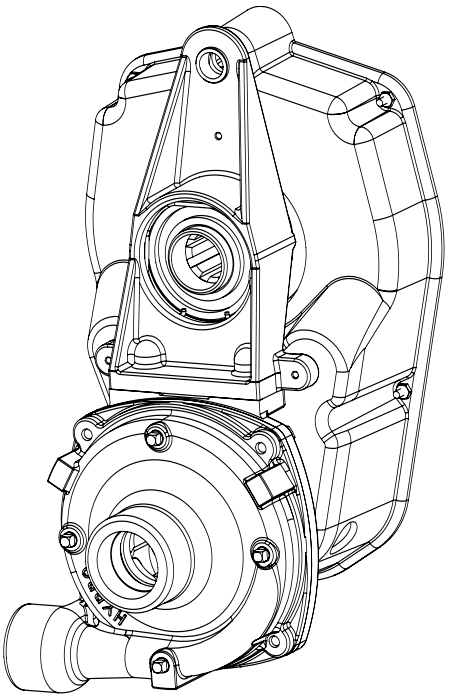
Form L-1534
8/11, Rev. A

Installation, Operation, Repair and Parts Manual

Description

Hypro Centrifugal Pumps handle big, high-capacity farm spraying jobs with ease. Use them for spraying liquid fertilizers and other chemicals, including wettable powder slurries for weed control. Make short work of other farm jobs - filling nurse tanks, watering seed beds, and transferring liquids.

Available in a variety of models, Hypro centrifugal pumps give you the choice of economical, simple belt drive, or sturdy, smooth-running oil-bath gear-driven units. Many models are also available in lightweight polypropylene (pump portion only) for resistance to corrosive liquids such as acid-based fertilizers.



SERIES 9403C-1000-MTZ

Cast Iron, Belt-Driven Centrifugal Pump

Max. Flow Rate:.....620 lpm
.....164 gpm
Max. Pressure: .....7.75 bar
.....113 psi
Max. Speed:.....1000 rpm
Ports: ..... 1-1/2" NPT inlet
1-1/4" NPT outlet

General Safety Information

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 may 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 flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Do not use in explosive atmospheres. Components not rated for use with Anhydrous Ammonia. The pump should only be used with liquids compatible with the pump materials. Failure to follow this notice may result in severe personal injury and/or property damage and will void the product warranty.

Be sure all exposed moving parts, such as PTO shafts and adapters, are properly shielded or guarded and that all coupling devices are securely attached before applying power.

⚠WARNING

The sound pressure level of the pump may exceed 80dBA. Observe all safety precautions when operating the pump within close proximity for extended periods by wearing hearing protectors. Extended exposure to elevated sound levels will result in permanent loss of hearing acuteness, tinnitus, tiredness, stress, and other effects such as loss of balance and awareness.

⚠CAUTION

- **DO NOT EXCEED maximum recommended speed and pressure for pump and eqipment being used.**
- **Operate the pump between a temperature range of 45° to 140° F [7° to 60° C]. Protect pump from freezing conditions by draining liquid and pumping rust-inhibiting antifreeze olution through the system, coating the pump interior.**
- **Make certain that the power source conforms to the requirements of your equipment.**
- **Provide adequate protection in guarding around the moving parts such as shafts and pulleys. Pumps mounted directly onto PTO shaft or other power shaft must be prevented from rotating with the power shaft. Pump must float freely on the power shaft and must not be tied rigidly to equipment on which it is mounted.**
- **Release all pressure within the system before servicing any component.**

Before servicing, disconnect all power. Make sure all pressure in the system is relieved. Drain all liquids from the system and flush.

- **Drain all liquids from the system before servicing.**
- **Secure the discharge line before starting the pump. An unsecured discharge line may whip, resulting in personal injury and/or property damage.**
- **Check all hoses for weak or worn condition before each use. Make certain that all connections are tight and secure.**
- **Periodically inspect the pump and the system components. Perform routine maintenance as required (See Maintenance).**
- **Use only pipe, hose, and hose fittings rated for maximum rated pressure of the pump or the pressure at which the pressure relief valve is set at. Do not use used pipe.**
- **Do not use these pumps for pumping water or other liquids for human or animal consumption.**

Hazardous Substance Alert

1. Always drain and flush pump before servicing or disassembling for any reason (see instructions).
2. Always drain and flush pump prior to returning unit for repair.
3. Never store pumps containing hazardous chemicals.
4. Before returning pump for service/repair, drain out all liquids and flush unit with neutralizing liquid. Then, drain the pump. Attach tag or include written notice certifying that this has been done.

NOTE

It is illegal to ship or transport any hazardous chemicals without United States Environmental Protection Agency Licensing.

Drive Source Installation

This manual will cover the installation of the basic belt-driven Hypro Centrifugal Pump. Consult the manufacturer of your tractor, motor or engine for additional information.

Read all instructions and general safety information before attempting to install or operate the pump.

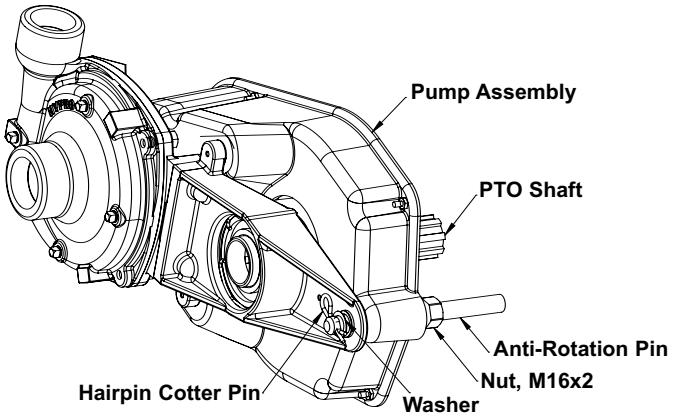
Tractor PTO Installation

Series 9400 Belt-Drive Centrifugal Pumps

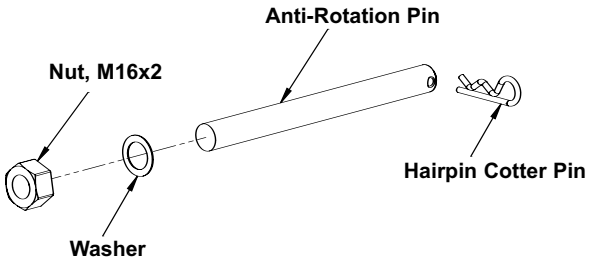
Series 9400 Pumps are designed for ease of installation and removal with tractor-mounted sprayers. Refer to following section for proper installation of the pump. Pump life is increased by reducing both pump driver hub and PTO shaft wear due to vibration.

To prevent pump from turning on PTO shaft, install an anti-rotation pin as follows **(see Anti-Rotation Kit No. 3430-0796)**:

1. Remove any bolt that may be in the lower right hole of the PTO unit mounting cover (looking from end of shaft).
2. Insert the threaded M16 anti-rotation pin (from Anti-Rotation Kit No. 3430-0796 recommended) into the lower right hole of the PTO unit mounting cover (looking from end of shaft) and thread pin in until tightened against nut on pin.
3. Slide 8-spline PTO hub on pump over the PTO shaft on the back of the tractor, making sure to line up the anti-rotation pin to slide through the anti-rotation pin hole on the bearing housing.
4. Slide washer (provided in Anti-Rotation Kit No. 3430-0796) onto anti-rotation pin (also provided in kit).
5. Insert hairpin (provided in Anti-Rotation Kit No. 3430-0796) through the hole at the end of the anti-rotation pin to prevent pump from sliding off PTO shaft.



Anti-Rotation Kit No. 3430-0796 for 9403C-1000-MTZ belt drive with 8-spline hollow shaft (1-3/8")

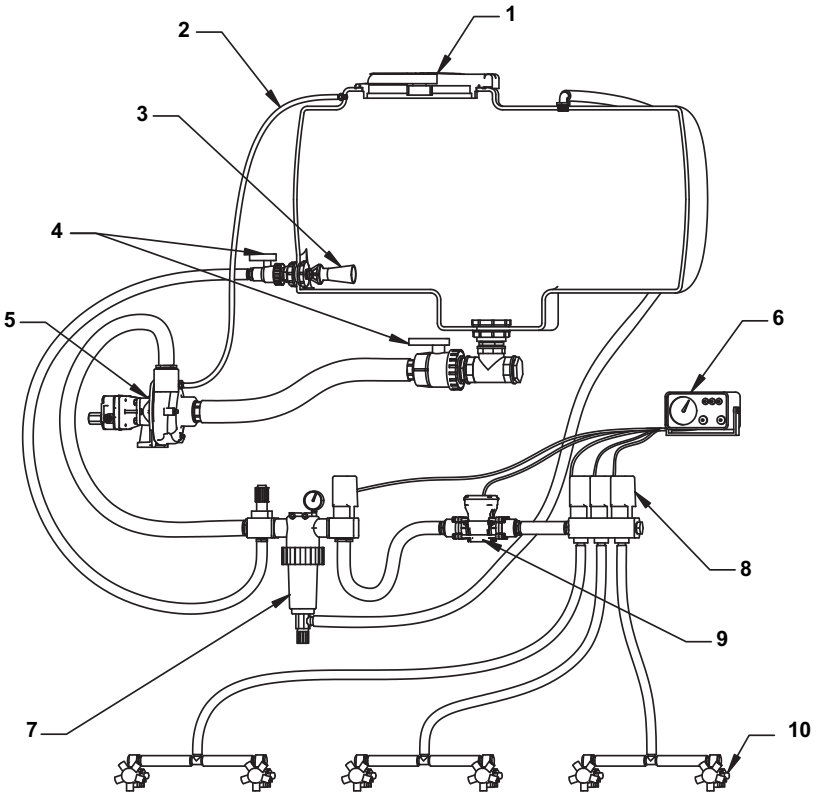


Lubrication

The idler arm is greased at the factory. Re-grease after 250 hours of operation or at the start of each season. Also grease whenever idler arm is removed from pump. To grease, use a grease gun with the installed grease fitting located on the outer edge of the idler arm.

The mechanical seal in the pump is lubricated by liquid being pumped. Do not run the pump dry. Pump bearings are factory lubricated and do not require further lubrication in the field.

Plumbing Installation



Centrifugal Plumbing Hook-up

REF. NO.	DESCRIPTION
1	Tank Lid
2	Vent Line #3430-0456
3	Jet Agitator
4	Shut-off Ball Valves
5	Centrifugal Pump
6	Spray Control Console
7	Centrifugal Pump Control
8	Manifold Boom Valve
9	Electromagnetic Flowmeter
10	Compact Jet Turret Nozzle Body

Installation Instructions

Pump Installation:
The following are recommendations to achieve the optimal performance out of your centrifugal pump and your spraying system.

Pump Inlet Line
To achieve full capacity from the pump, the inlet line should be at least the same size as the inlet port on the pump. Reducing this line size will restrict the capabilities of the pump. The line must also be free of air leaks. Check all fittings and connections in the suction line for tightness. The introduction of air may affect the priming and pumping capabilities of the pump. Use good quality suction hose that will not be collapsed by suction.

For non-self priming models, the centrifugal pump should be mounted below the liquid level and as near to the liquid source as possible to allow for the shortest suction line practical. To achieve optimal performance, the suction line should slope down into the pump. Avoid rises and humps that could trap air in the line to the pump. The suction line and pump should be filled with liquid prior to starting the pump, and all discharge lines should be open.

Pump Outlet Line
The recommended orientation for the outlet port is pointing upwards. This allows liquid to stay in the pump while it is priming. The outlet line should be the same size as the pressure port on the pump to give the optimal flow. The line should have as few restrictions and elbows as possible to optimize the pump performance and reduce pressure drop from the pump to the spray tips.

Priming the Pump:

NOTE:

THE PUMP MUST NOT BE RUN DRY.

In addition to the proper suction plumbing, a vent line should be installed to assist in priming. Use Hypro Vent Line Kit 3430-0456. The vent line will help prevent air locks and allows air to bleed off to the tank. This helps ensure proper priming and helps to prevent dry-run damage to the mechanical seal during priming. The vent line should be installed in the top port of the pump casing and the line routed sloping upward to the tank, where it should be mounted above the liquid line.

Before starting the pump, the inlet line and pump must be filled with liquid and all discharge lines must be open. On self-priming models, only the pump chamber needs to be filled with liquid. The pump must not be run unless it is completely filled with liquid because there is a danger of damaging the mechanical seal, which depends on the liquid for its lubrication.

Non-self-priming models should be mounted below the level of the liquid. The suction line should slope down to the pump and be free of dips and bends. If this cannot be done, a foot valve should be installed in the end of the inlet line so that the line can be completely filled with liquid before starting the pump.

Centrifugal Pump Control
Hypro now offers many different components for spraying systems. The Hypro centrifugal pump control incorporates the electric flow control valve, a self-cleaning line strainer, a visual pressure gauge and a manual agitation control valve.

Flow Control Valve
A high-flow electric proportional valve allows for maximum flow control to the boom valves. It provides smooth, rapid control that can be controlled from either an electronic rate controller or switch box.

Strainers
The recommended placement of the strainer for a centrifugal pump is in the pump outlet line. This will eliminate any possible restriction that the strainer could create if it were installed in the inlet line. Ensure that the proper strainer size and screen mesh are used to limit the pressure drop and achieve the best filtration. Line strainers can also be installed in the tank fill line to filter liquid as it is loaded into the tank as well as in the boom lines to further filter the solution prior to the spray tips. Tank baskets can also be used to filter material added through the tank lid.

Agitation
The centrifugal pump control contains a manual agitation control valve that can be adjusted to provide the right amount of flow to the jet agitators in the tank to ensure proper mixing within the tank.

Flowmeter
To eliminate the mechanical problems of a turbine flowmeter, we recommend that an electromagnetic flowmeter be used. These flowmeters have no moving parts to wear out and will provide a more consistent and accurate flow reading. They can be input into just about any electronic rate controller or switch box.

Boom Section Valves
For rapid response and reliability, we recommend electric plunger valves be used for boom control. The valves should be sized accordingly to minimize the pressure drop and maximize the flow rate. The boom tubing or hose should be sized accordingly to ensure that a pressure drop in the lines does not occur, causing inconsistent pressures at the nozzles.

Nozzle Bodies
Nozzle bodies with shut-off check valves are recommended to eliminate dripping from the spray tips when the boom valves are shut down.

For further information regarding Hypro products, contact your local dealer or Hypro directly at www.hypropumps.com or by calling +1 651 766 6300.

⚠ CAUTION

Engage the PTO clutch slowly and smoothly. Avoid sudden starts and fast clutching that may damage the drive section of the pump.

Controlling the Flow

Two Flow Control Valves are used - one in the agitation line and one in the line leading to the boom or spray gun. This permits controlling agitation flow independently of nozzle flow.

To Adjust For Spraying

To adjust the sprayer (regardless of power source), follow these steps:

1. Prime the pump with all valves open.
2. Close control valve and agitation line valve; then open the boom shut-off valve.
3. With the pump running, open the control valve until the pressure gauge indicates desired spraying pressure.
4. Open the the agitation line valve until sufficient agitation is observed. Then, if spraying pressure drops, readjust the control valve to restore desired pressure.
5. Make sure flow is uniform from all nozzles.

After spraying adjustments are made, it is only necessary to close the boom shut-off valve to discontinue spraying.

On belt drive models, check belt tension daily or before each use.

Flush Pump After Use

One of the most common causes for faulty pump performance is “gumming” or corrosion inside the pump. Flush the pump and entire system with a solution that will chemically neutralize the liquid pumped. Mix according to manufacturer’s directions. This will dissolve most residue remaining in the pump, leaving the inside of the pump clean for the next use.

To Prevent Corrosion

After cleaning the pump as directed above, flush it with a permanent-type automobile antifreeze (Prestone, Zerex, etc.) containing a rust inhibitor. Use a 50/50 solution of antifreeze and water. Plug the ports to keep out air during storage. For short periods of idleness, non-corrosive liquids may be left in the pump, but air must be kept out. Plug the ports or seal port connections.

⚠CAUTION

Always flush the pump with water or neutralizing agent before servicing.

Pump Housing Disassembly

NOTE

In most cases, seal replacement requires disassembly of only the pump half of the unit.

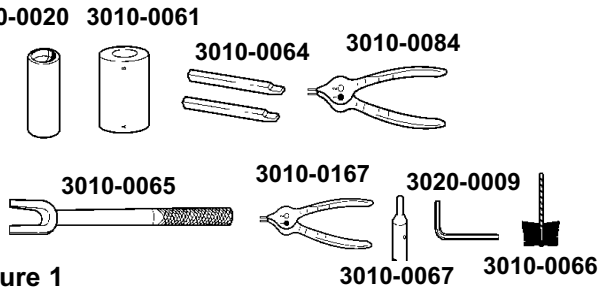


Figure 1
Recommended Repair Tools

1. Remove the safety shield cover. Insert a 15/16" socket onto idler arm bolt head and apply tension in a counterclockwise direction. Slip the belt off of the large pulley. Remove the belt. Remove the retaining ring securing the driver pulley onto the shaft; then slide the driver pulley and key off the 8-spline shaft. Remove the set screw securing the driven pulley to the pump shaft; then slide the driven pulley and key off the pump shaft. Remove the retaining ring securing the idler bracket assembly to the mounting flange (See Figure 6). Slide the idler bracket assembly and torsion spring off the mounting flange (See Figure 6). Remove the safety shield from the assembly by unscrewing the three 1/4-20 screws securing it. Remove the bearing housing bracket from pump (See Figure 2).

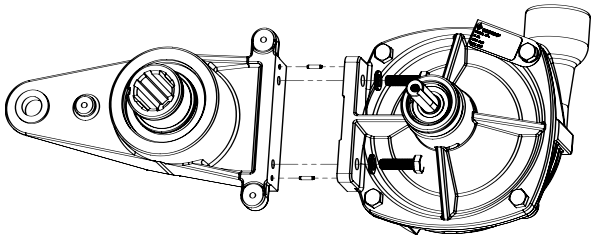


Figure 2
Removing the Bearing Housing

2. Remove the four casing cap screws with a 9/16" box end wrench. Tap the pump casing discharge port with rubber hammer, if necessary, to break it loose from the mounting flange. Check inside of pump casing including the suction port. If it is badly eroded or damaged, the pump casing should be replaced. Remove and dis card the o-ring. The o-ring should always be replaced.

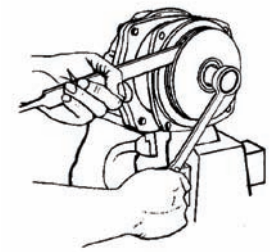


Figure 3
Removing the Impeller Nut

3. To remove the impeller nut, clamp the flange in a vise and insert a large screwdriver or file (at least 10" long) into the impeller vanes to prevent the impeller from turning when loosening the impeller nut. Use a socket wrench to remove the impeller nut by turning it counterclockwise (See Figure 3).

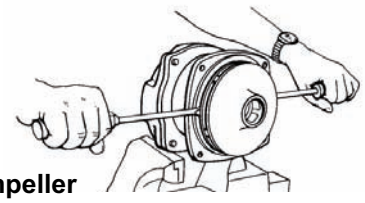


Figure 4
Removing the Impeller

4. Once the nut is removed, place a screwdriver on each side (See Figure 4) behind the impeller and pry away from the mounting flange. Remove o-ring from the mounting flange.

Pump Seal Removal

1. Apply lubricant (WD-40 oil, LPS or detergent) to shaft and rubber boot area of rotary seal for easier removal. Push seal down to allow lubricant to penetrate around shaft.
2. To remove (Rotary Part) of seal, use two screw drivers positioned on each side and pry up the rotary part of the seal (Fig. 5.)

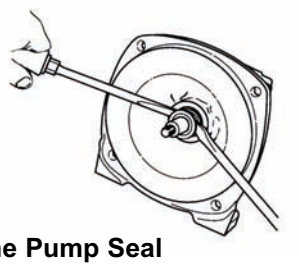


Figure 5
Removing the Pump Seal

3. Remove (Stationary Part) of seal from mounting plate. Knock seal out from back with a hammer and screw driver. It may be necessary to destroy the sta tionary seal seat with a punch or chisel for removal. Silicon carbide material is very brittle and will crack easily.

NOTE

The seal will be damaged from removal. A new seal MUST be used when pump is reassembled.

In the case of a severe pump seal leak, inspect the shaft for possible contamination.

Clean-Up Of Pump Housing

1. Using a circular bottle-type wire brush with air or hand drill, clean the outlet port, inlet port and the sealing areas of the o-ring on the pump casing and mounting flange. Using the port brush, clean the seal cavity in the mounting flange.

2. After wire brush cleaning, it is recommended that the pump casing and mounting flange be further cleaned in a solvent tank to remove rust and corrosion particles.

Pump Shaft and Bearing Assembly Removal and Replacement

NOTE

The pump must be separated from the belt drive prior to removal of the pump shaft and bearing.

1. Remove the set screws securing the driven pulley to the pump shaft; then slide the driven pulley and key off the pump shaft (See Figure 6).

⚠ WARNING

Special attention should be exercised when working with retaining rings. Always wear safety goggles when working with spring or tension-loaded fasteners or devices.

2. Remove the retaining ring securing the idler bracket assembly to the mounting flange (See Figure 6).

3. Slide the idler bracket assembly and torsion spring off the mounting flange (See Figure 6).

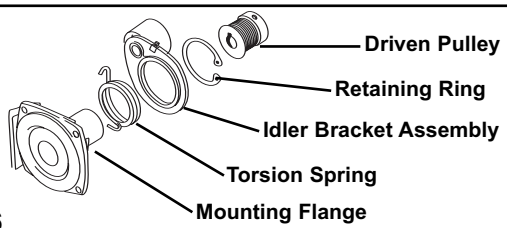


Figure 6

1. Remove the internal retaining ring from the mounting flange.

2. Place the mounting flange on an arbor press with the shaft end facing up: then press the shaft and both bearings out of the mounting flange (See Figure 7).

3. Using an arbor press, press the old bearings off the shaft (See Fig. 8). Because the center portion of the shaft has a thicker diameter than the ends, the bearings must be pressed off each end of the shaft.

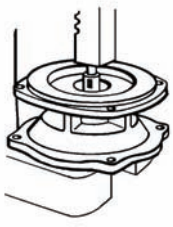


Figure 7
Pressing Shaft and Bearings out of Mounting Flange

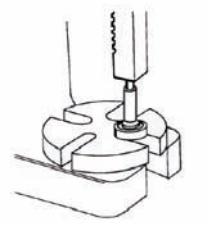


Figure 8
Pressing Bearings off Shaft

4. Support the inner races of the new bearings; then press the shaft into the new bearings.

5. Pressing on the outer race of the new bearings, press the new bearings into the mounting flange.

6. Install the internal retaining ring.

Seal Replacement/Pump Housing Reassembly

NOTE

Be extremely careful with the new seal. Silicon carbide material is very hard, but also very brittle. If the seal is accidentally dropped and hits a hard surface, the seal's primary ring (rotary part) and mating ring (stationary seal seat) can be damaged. Also take precautions not to introduce dirt or grit to the seal surfaces.

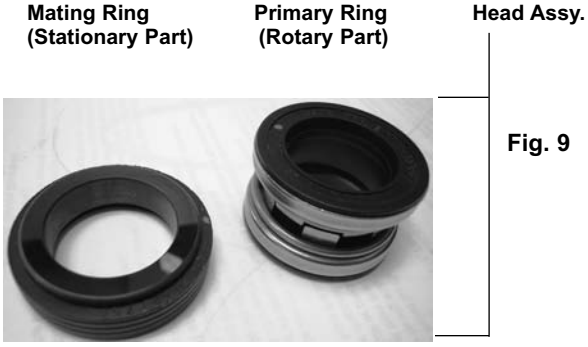


Fig. 9

1. Inspect seal seat cavity to be sure it is clean and without debris. Foreign material at the bottom of the seal seat bore can cause the mating ring to be slightly cocked.

Important: Make sure seal cavity is clean and lubricated with detergent; don't use oil for assembly lubrication.

2. Lubricate outside diameter of (Stationary Part) of the mechanical seal and seal seat cavity in mounting flange with detergent (i.e. soap and water) to aid in smooth installation. (See Fig. 10.)

Fig. 10

3. Press (Stationary Part) of seal into seal cavity bore on pump mounting plate using a rag over the seal face and a 1-3/8" plastic guide, applying uniform force (See Figure 11). Be sure seal is completely seated to the bottom and not cocked.

Fig. 11

Important: Do not rotate or thread (Rotary Part) of seal down on shaft over threaded area. This may cause cuts or damage to inside of (Rotary Part) rubber boot.

4. Insert the key into shaft key slot. Place the Impeller on the shaft. Put the impeller nut on the shaft, and using a large screwdriver or file inserted into the impeller vanes for support, tighten impeller nut securely.

5. Lubricate the o-ring with soap and water, then install o-ring on pump mounting plate. Replace o-ring if worn or damaged.

6. Reassemble pump casing with four hex bolts and medium strength thread locker (torque to 25 ft-lbs.) using a 5/8" box wrench, and tighten bolts evenly to compress o-ring seal.

Belt Replacement

1. Remove the safety shield.
2. Insert a 15/16" socket onto idler arm bolt head and apply tension in a counterclockwise direction.
3. Slip the belt off of the large pulley.
4. Wrap the new belt around the small pulley and on the inside of the idler pulley.
5. Insert a 15/16" socket onto idler arm bolt head and apply tension in a counterclockwise direction.
6. Slip the belt around the large pulley, ensuring that the grooves on the pulleys match the grooves on the belt.

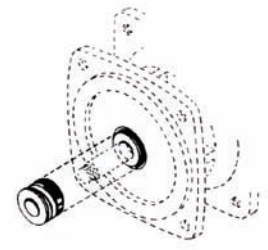


Figure 12
Mechanical Seal Installation

Belt Alignment and Tension

PERIODICALLY CHECK BELT FOR WEAR AND ALIGNMENT.

1. Remove the safety shield. Inspect the belt for wear and alignment. Proper alignment will reduce belt and pulley wear.
2. Refer to Figure 13 to align the belt. Place a straight edge on the outer edge of the large pulley. Measure the distance from the straight edge to the edge of the belt (Point A). This should be the same as the distance between the straight edge and the belt at the small pulley (Point B). Loosen the set screws on the small pulley, and adjust the pulley until both distances are equal. Tighten the set screws.
3. To ensure proper tension, check for free rotation of the tension arm. Grease the provided fitting regularly. If properly lubricated, the tension arm will automatically keep proper tension.

Idler Bearing Replacement

1. Remove the belt.
2. Remove the idler bolt with a 15/16" impact socket.
3. Remove the idler pulley snap ring.
4. Press out the bearing using an arbor press.
5. To reassemble, reverse the procedure.

Pedestal Bearing Replacement

1. Remove the belt.
2. Remove the large pulley retainer ring and pulley. (For quick coupled models, remove the outer keeper ring and keeper balls.)
3. Remove the bearing retainer ring.
4. Using an arbor press, press out the driver hub and bearing assembly from the pedestal bearing bore.
5. Remove first bearing from shaft using an arbor press.
6. Remove both snap rings from shaft, then press second bearing off shaft using an arbor press.
7. Install new bearings and reverse the procedure for reassembly.

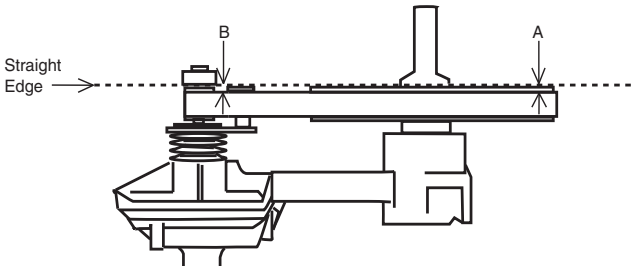


Figure 13

Troubleshooting

Symptom	Probable Cause(s)	Corrective Action(s)
Low Discharge	Pump not primed.	Remove topmost vent plug from face of pump and run pump to expel trapped air (See Installation Instructions).
	Air leaks in suction line.	Check and reseal inlet fittings.
	Blocked or clogged line strainer.	Inspect strainer and clear any debris from screen.
	Impeller plugged.	Inspect and clear obstruction.
	Undersize suction line or collapsed hose.	Suction line should be the same diameter as inlet port of pump or larger.
	Eye of impeller rubbing on volute.	Remove volute (front cover) and inspect the impeller. If wear detected, sand the impeller eye O.D. with emery cloth.

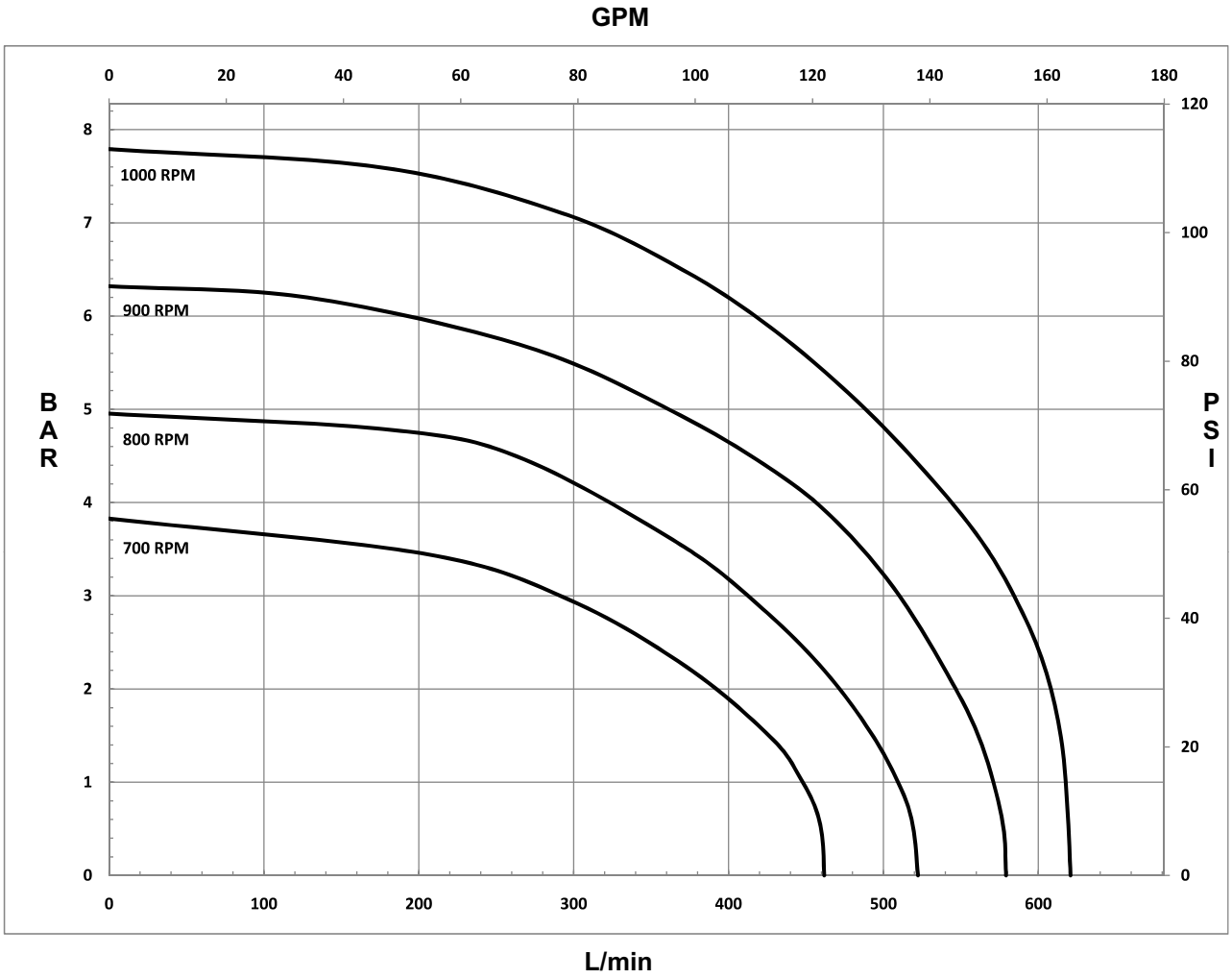
Performance Data

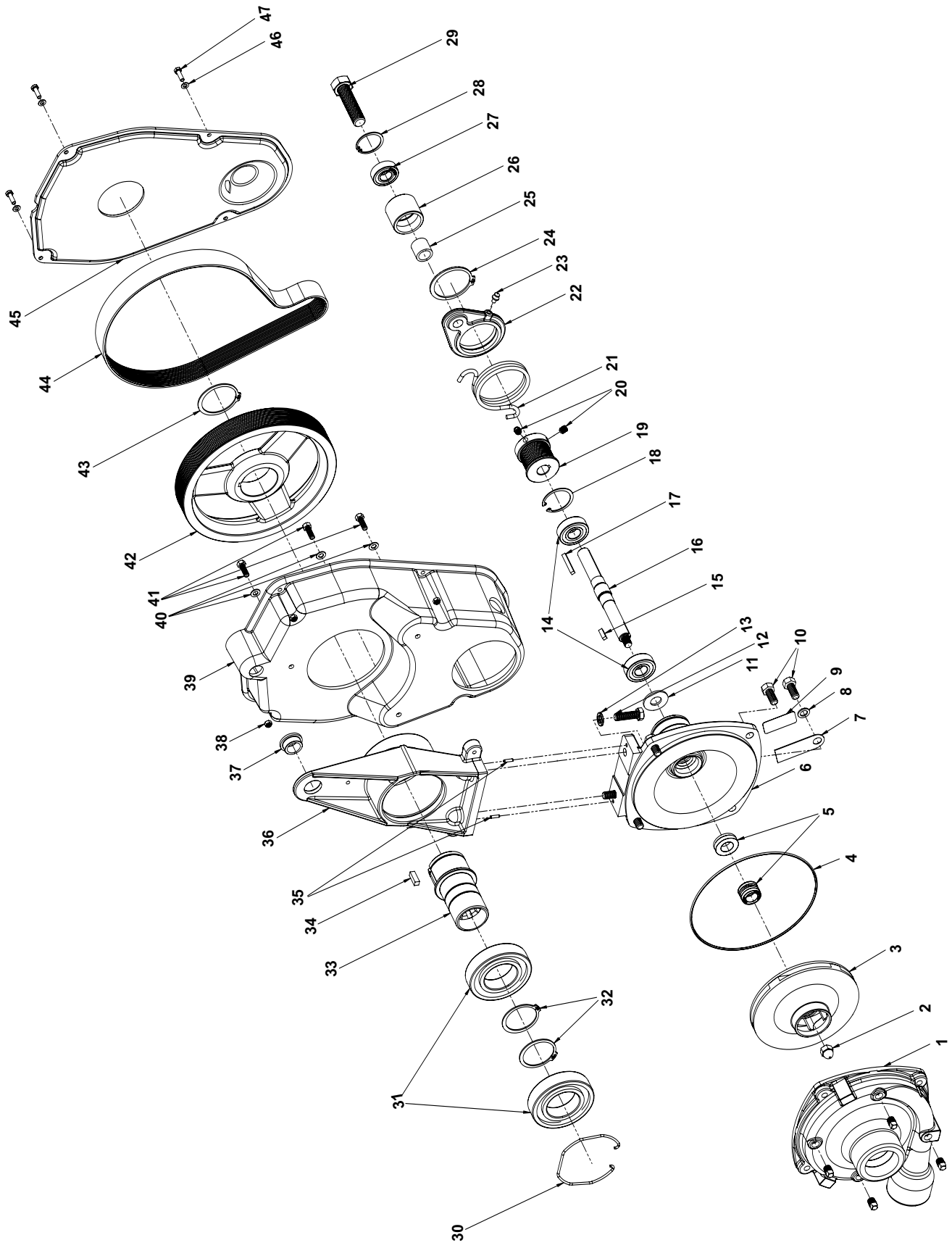
Metric Units

Model 9403C-1000-MTZ	RPM	LPM at 0.7 BAR	LPM at 1.4 BAR	LPM at 2.1 BAR	LPM at 2.8 BAR	LPM at 3.4 BAR	LPM at 4.1 BAR	LPM at 4.8 BAR	LPM at 5.5 BAR	LPM at 6.2 BAR	LPM at 6.9 BAR	LPM at 7.6 BAR
	700	454	424	379	303	204						
	800	515	500	466	424	371	265	170				
	900	568	564	549	511	473	435	367	273	132		
	1000	617	613	606	587	568	530	492	435	360	284	170

U.S. Units

Model 9403C-1000-MTZ	RPM	GPM at 10 PSI	GPM at 20 PSI	GPM at 30 PSI	GPM at 40 PSI	GPM at 50 PSI	GPM at 60 PSI	GPM at 70 PSI	GPM at 80 PSI	GPM at 90 PSI	GPM at 100 PSI	GPM at 110 PSI
	700	120	112	100	80	54						
	800	136	132	123	112	98	70	45				
	900	150	149	145	135	125	115	97	72	35		
	1000	163	162	160	155	150	140	130	115	95	75	45

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Ref. No.	Qty. Req'd.	Part No.	Description
1	1	0150-9000C2	Housing, 1-1/2” x 1-1/4” NPT CI
2	1	2253-0002	Acorn Nut
3	1	0401-9100P	Impeller, Nylaglass KB
4	1	1720-0083	O-ring
5	1	2120-0039	Mechanical Seal (Viton, 5/8”)
6	1	0750-9200C6	Mounting Flange
7	1	2270-0076	Tag
8	1	2270-0041	Washer
9	1	6031-0325	Decal
10	4	2210-0020	Screw, Hex Head Cap
11	1	1410-0056	Slinger Gasket, Shaft
12	2	2210-0055	Screw, Hex Head Cap
13	2	2260-0006	Lockwasher
14	2	2000-0008	Ball Bearing
15	1	1610-0015	Key
16	1	0509-9200	Shaft, Pedestal
17	1	1610-0004	Key
18	1	1820-0012	Snap Ring
19	1	3115-0041	Pulley
20	2	2230-0003	Socket Set Screw
21	1	1900-0156	Spring
22	1	0706-9403C	Idler Arm
23	1	2405-0003	Grease Fitting
24	1	1810-0036	Retaining Ring
25	1	1410-0095	Idler Spacer

Ref. No.	Qty. Req'd.	Part No.	Description
26	1	3115-0036	Idler Pulley
27	1	2000-0010	Ball Bearing
28	1	1820-0013	Retainer Ring
29	1	2210-0111	Hex Head Cap Screw
30	1	1800-0014	Retaining Ring
31	2	2007-0063	Bearing
32	2	1810-0001	Retaining Ring
33	1	0504-9400M	Shaft - 8 spline, broached
34	1	22791-SHW	Key
35	2	1600-0070	Spring Pin
36	1	0708-9400D	Bearing Housing
37	1	2028-0008	Bearing, Bushing
38	4	2250-0110	Bolt, M5 x 0.8 w/nylon insert
39	1	2840-0096	Shroud
40	3	2270-0139	Washer, Flat, 1/4”
41	3	2210-0002	Screw, 1/4-20 UNC
42	1	3115-0040	Pulley
43	1	1810-0031	Retaining Ring
44	1	3100-0005	V-Belt
45	1	2840-0097	Shroud Cover
46	4	2270-0138	Washer, Flat, M5
47	4	25163	M5 Hex Head Cap Screw

Life Guard Seal Kit No. 3430-0589
consists of (1) Ref. 4 O-ring and (1) Ref. 5 Mechanical Seal

NOTE: When ordering parts, give QUANTITY, PART NUMBER, DESCRIPTION, and COMPLETE MODEL NUMBER. Reference numbers are used ONLY to identify parts in the drawing and are NOT to be used as order numbers.

Notes

Notes

Limited Warranty on Hypro/SHURflo Agricultural Pumps & Accessories

Hypro/SHURflo (hereafter, "Hypro") agricultural products are warranted to be free of defects in material and workmanship under normal use for the time periods listed below, with proof of purchase.

- Pumps: one (1) year from the date of manufacture, or one (1) year of use. This limited warranty will not exceed two (2) years, in any event.
- Accessories: ninety (90) days of use.

This limited warranty will not apply to products that were improperly installed, misapplied, damaged, altered, or incompatible with fluids or components not manufactured by Hypro. All warranty considerations are governed by Hypro's written return policy.

Hypro's obligation under this limited warranty policy is limited to the repair or replacement of the product. All returns will be tested per Hypro's factory criteria. Products found not defective (under the terms of this limited warranty) are subject to charges paid by the returnee for the testing and packaging of "tested good" non-warranty returns.

No credit or labor allowances will be given for products returned as defective. Warranty replacement will be shipped on a freight allowed basis. Hypro reserves the right to choose the method of transportation.

This limited warranty is in lieu of all other warranties, expressed or implied, and no other person is authorized to give any other warranty or assume obligation or liability on Hypro's behalf. Hypro shall not be liable for any labor, damage or other expense, nor shall Hypro be liable for any indirect, incidental or consequential damages of any kind incurred by the reason of the use or sale of any defective product. This limited warranty covers agricultural products distributed within the United States of America. Other world market areas should consult with the actual distributor for any deviation from this document.

Return Procedures

All products must be flushed of any chemical (ref. OSHA section 1910.1200 (d) (e) (f) (g) (h)) and hazardous chemicals must be labeled/tagged before being shipped* to Hypro for service or warranty consideration. Hypro reserves the right to request a Material Safety Data Sheet from the returnee for any pump/product it deems necessary. Hypro reserves the right to "disposition as scrap" products returned which contain unknown fluids. Hypro reserves the right to charge the returnee for any and all costs incurred for chemical testing, and proper disposal of components containing unknown fluids. Hypro requests this in order to protect the environment and personnel from the hazards of handling unknown fluids.

Be prepared to give Hypro full details of the problem, including the model number, date of purchase, and from whom you purchased your product. Hypro may request additional information, and may require a sketch to illustrate the problem.

Contact Hypro Service Department at 800-468-3428 to receive a Return Merchandise Authorization number (RMA#). Returns are to be shipped with the RMA number clearly marked on the outside of the package. Hypro shall not be liable for freight damage incurred during shipping. Please package all returns carefully. All products returned for warranty work should be sent **shipping charges prepaid** to:

HYPRO
Attention: Service Department
375 Fifth Avenue NW
New Brighton, MN 55112

For technical or application assistance, call the **Hypro Technical/Application number: 800-445-8360**, or send an email to: **technical@hypropumps.com**. To obtain service or warranty assistance, call the **Hypro Service and Warranty number**: **800-468-3428**; or send a fax to the **Hypro Service and Warranty FAX**: **651-766-6618**.

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

Pentair
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