Menu

4000 Series 12-Volt Electric-Driven Roller Pumps & 2530-0057 Speed Controller

Form L-0130R
6/11, Rev. B

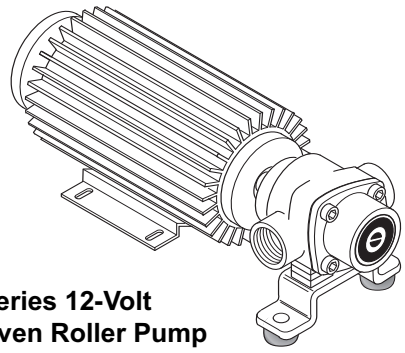
Installation, Operation, Repair, and Parts Manual

Description

Hypro Roller Pumps are designed for agricultural and industrial transfer of a variety of fluids and chemicals. The 4001 Series maximizes flow and the 4101 Series maximizes pressure. Both are coupled to 12-volt DC motors that are driven by a standard 12-volt battery. These systems are ideal for bulk chemical transfer, fertilizer placement, herbicide banding, nitrogen side dressing, and orchard and cattle spraying.

The E2H Models have specially designed motors for situations where higher pressure is desired.

The 2530-0057 Speed Controller allows smooth variable speed operation to accurately set pressures for controlled application rates. Optional switched leads are included for a boom control solenoid valve. Maximum output is 25 amps. Refer to the performance charts for maximum performance at 25 amps.



4000 Series 12-Volt Electric-Driven Roller Pump



2530-0057 Speed Controller

Model 4101N-EH and 4101XL-EH, Model 4101N-E2H and 4101XL-E2H
Model 4001N-EH and 4001XL-EH, Model 4001N-E2H and 4001XL-E2H
12-Volt Roller Pump and Motor Unit

Maximum Flow:

4101N-EH and 4101XL-EH	7.5 gpm [28.4 lpm]
4101N-E2H and 4101XL-E2H	5.9 gpm [22.3 lpm]
4001N-EH and 4001XL-EH	10.4 gpm [39.4 lpm]
4001N-E2H and 4001XL-E2H	9.9 gpm [37.5 lpm]

Maximum PSI:

4101N-EH and 4101XL-EH	50 psi [3.45 BAR] continuous
4101N-E2H and 4101XL-E2H	90 psi [6.20 BAR] continuous
4001N-EH and 4001XL-EH	30 psi [2.07 BAR] continuous
4001N-E2H and 4001XL-E2H	50 psi [3.45 BAR] continuous

Ports: 3/4” NPT inlet
3/4” NPT outlet

Max. Inlet Vacuum 10” Hg [0.7 BAR]

General Safety Information

The following 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 sever 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. The pump should be used only with fluids that are compatible with the pump component materials. Failure to follow this notice can result in severe personal injury, death, and/or property damage and will void the product warranty.

⚠ DANGER

Never use your hand to check the condition of hydraulic lines or hoses. If hydraulic fluid penetrates the skin, get medical attention immediately. Failure to proper medical attention may result in loss of limb or life. The safest way to check hydraulic lines or hoses is by holding a piece of cardboard next to the hydraulic line or hose.

⚠ WARNING

- **Use a pressure relief device on the discharge side of the pump to prevent damage from pressure buildup when the pump discharge is blocked or otherwise closed and the power source is still running.**
- **Do not pump at pressures higher than the maximum recommended pressure.**
- **Do not pump liquids at temperatures higher than the recommended maximum temperature.**
- **Disconnect the power before servicing the pump.**
- **Release all pressure within the system before servicing any component.**
- **Drain all liquids from the system before servicing any component.**
- **Check 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.**
- **Use only pipe, hose, and fittings rated for the maximum pressure rating of the pump.**
- **Do not use these pumps for pumping water or other liquids for human or animal consumption.**
- **The sound pressure level of the pump is 82 dBA. 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.**

PLUMBING HOOK-UP

See Figure 1 for recommended plumbing installation.

INLET LINE

Use a 3/4" 2-braid suction hose or 3/4" pipe to prevent collapsing. Avoid all unnecessary bends, elbows, or kinks in the inlet line. The less restrictions in the inlet line, the better the pump will perform. Avoid loops in the inlet line. Loops in the inlet line will permit air to be trapped in the line, preventing the pump from priming. Make sure all connections are tight and do not leak air.

STRAINER

A strainer should be installed on the inlet side of the pump.

NOTE

Check the strainer periodically to ensure that it is not clogged with debris.

DISCHARGE HOSE AND FITTINGS

Use only hose, pipe, pipe fittings, and accessories that are rated at or above the maximum operating pressure of the pump.

PRIMING

This pump is not designed to "self prime" more than 3 ft. [0.9 m] above liquid level. Ideally, the pump should be located below the tank. If this is not possible, a pipe tee should be installed in the inlet line to allow liquid to be poured into the inlet line to facilitate priming. Installation of a foot valve is also recommended onto the inlet line on the bottom of the tank (See Figure 1).

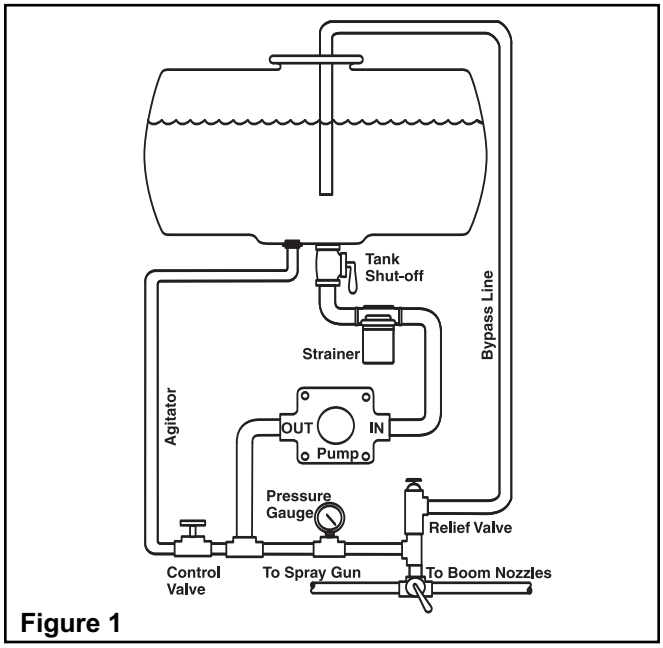


Figure 1

NOTE

Make certain all inlet fittings are tight. Loose or leaking fittings will decrease the pump's ability to prime.

ELECTRICAL HOOK-UP

NOTE

The motor must be fused to protect the electrical system. Use a 30 amp slow-blow fuse or circuit breaker.

The motor lead wires are identified with (**+**) and (**-**) tags on each corresponding lead wire. For proper pump rotation, the connections should be made as follows:

- Positive Motor Lead **(+)** to Positive Power Lead **(Red, +)**.
- Negative Motor Lead **(-)** to Negative Power Lead **(Black, -)**.

ON/OFF TOGGLE SWITCH INSTALLATION

See Figure 2.

1. The **ON/OFF** Switch must be rated at or above 35 amps.

2. If additional lead wire is required, use 10 gauge or larger wire.

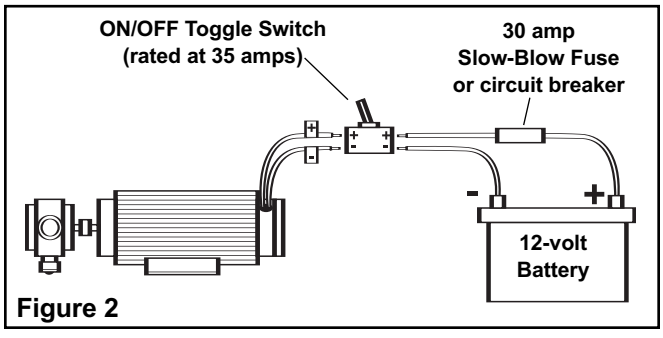


Figure 2

3. Performance may be improved by shortening the motor lead wires. Minimize wire length where possible.

12 VOLT DC SPEED CONTROLLER (2530-0057)
See Figure 3.

NOTE

Shortening the length of the motor leads and speed controller leads to remove excess lead wire will improve performance and lower amp draw. The amount to shorten these leads will vary with each specific installation.

The recommended speed controller to motor lead connection is solder with shrink tube or wire nut wrapped with electrical tape. The use of crimp-type connectors is not recommended.

1. Mount the controller in a remote but safe location, accessible, but protected from the elements.

2. Connect the red (**+**) positive 20 ft. [6.09 m] provided power lead (lead with ring terminals fastened on one end) to the (**+**) positive battery terminal.

3. Connect the black (**-**) negative 20 ft. [6.09 m] provided power lead (lead with ring terminals fastened on one end) to the (**-**) negative battery terminal.

4. Set the controller main power switch to **OFF** (See Figure 4).

5. Connect the controller battery leads to the power leads from the battery, connecting Red (**+**) to Red (**+**) and Black (**-**) to Black (**-**). (See Figures 3 and 4.)

6. Connect the red (**+**) positive 20 ft. [6.09 m] provided power lead (lead without ring terminals fastened on one end) to the (**+**) positive motor lead.

7. Connect the black (**-**) negative 20 ft. [6.09 m] provided power lead (lead without ring terminals fastened on one end) to the (**-**) negative motor lead.

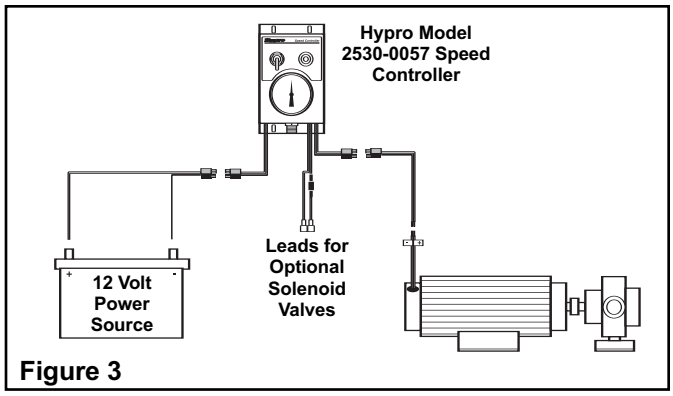


Figure 3

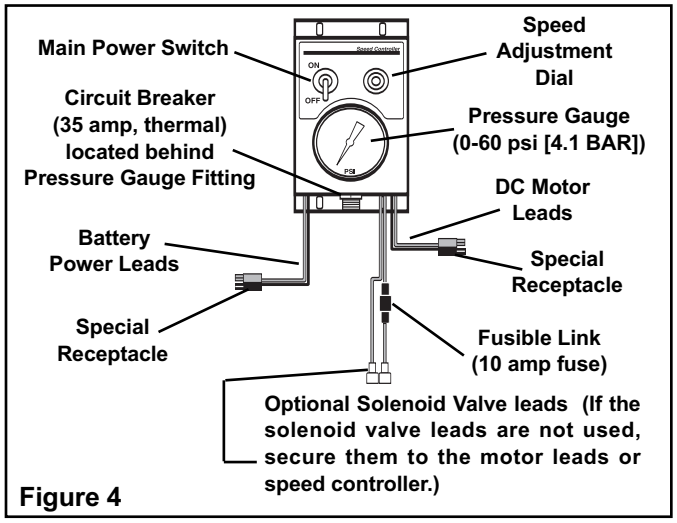


Figure 4

8. Connect the controller motor leads to the power leads from the motor, connecting Red (**+**) to Red (**+**) and Black (**-**) to Black (**-**). (See Figures 3 and 4.)

9. Run a small pressure hose from the pump to the controller. Connect this hose to the pressure gauge using a pipe thread sealant to ensure a positive seal.

Operation with 12 Volt DC Speed Controller

1. Rotate the speed adjustment dial fully counter clockwise (See Figure 5).

2. Set the main power switch to the **ON** position (See Figure 5).

3. Slowly rotate the speed adjustment dial clockwise until the desired pressure is indicated on the pressure gauge (See Figure 5).

4. The solenoid will energize and open the valve the instant the power switch is switched to **ON**.

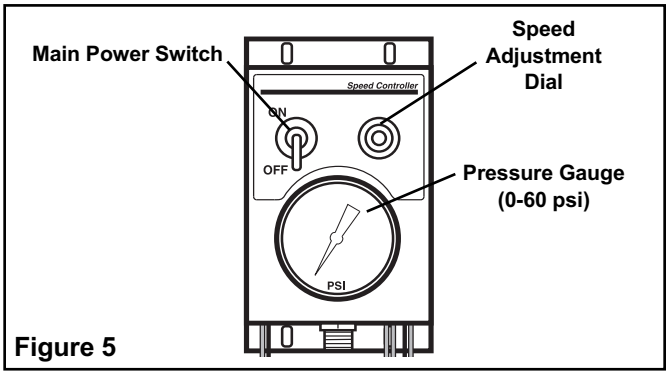


Figure 5

Fertilizer Application (Special Instructions)

Popular uses for the 4101N-E2H include starter fertilizer application for row crop planting. Starter fertilizer is heavier than water per gallon (approx.1.40 specific Gravity) and is also more viscous. These two characteristics will affect the performance as compared to water like herbicide/pesticide applications. Refer to the Performance Chart on page 6 for examples of performance using 10-34-0 fertilizer.

NOTE

Liquid fertilizers also have a tendency to cause gumming if left in the pump. Thoroughly flush the pump after each use as described in Care of the Pump.

Care of the Pump

NOTE

Before starting the pump, make sure it can be freely rotated by hand.

TIGHT PUMP

CORROSION
If the rotor is stuck due to rust or failure to clean the pump after use, the rotor can be freed by loosening each endplate bolt one full turn.

NOTE

A few drops of oil poured into the ports will help free the rotor.

Using an adjustable wrench, turn the shaft to break the rotor loose. Keep turning the shaft as the endplate bolts are alternately and evenly tightened.

FOREIGN OBJECT
If something is lodged in the pump (wire, straw, rust flake, stick, etc.), the pump will have to be partially disassembled to remove the object. Refer to Hypro Form L-0100R for disassembly instructions.

LUBRICATION

This pump is equipped with factory-lubricated ball bearings and requires no further lubrication. Do not allow kerosene or oil to enter into the ball bearings as this will wash the grease out of the ball bearings. The two drain holes under the bearing housings serve to relieve the pressure behind the bearing seals and prevent any liquid which may get behind the bearing seals from being forced into the ball bearings. Do not plug or inject oil into these two drain holes. Excessive dripping from these drain holes indicates seal or shaft wear and these worn parts must be replaced. Refer to Hypro Form L-0100R for repair instructions.

AFTER USE PUMP CARE

GUMMING
Gumming or corrosion inside the pump can be prevented by thoroughly flushing the pump with water or a liquid that will neutralize the liquid pumped. For many liquids, a solution of 1 gallon [3.785 liter] of ammonia mixed with 6 gallons [2.271 liters] of water may be used as a flushing solution. If the pump has been used for liquid fertilizer or similar liquids, it should be flushed after each use.

CORROSION PREVENTION
To prevent corrosion, Hypro recommends:

- Flush the pump as described in Gumming.
- Flush the pump with a 50-50 solution of a permanent-type automotive antifreeze containing a rust inhibitor and water; then plug the pump ports to prevent air from getting into the pump.
- Cleaning and rust protection should be performed whenever the pump with be stored for more than two to three days.

DO NOT:
- Do not use a screwdriver or hammer to force the pump apart. Follow the Repair Instructions in Hypro Form L-0100R.

- Do not run the pump dry. Doing so may damage the roller and seals.
- Do not pump sandy or gritty liquids. Avoid pumping solutions containing abrasive material.
- Do not pump hot liquids (over 140° F. [59.9° C]).
- Do not pump copper sulphate or corrosive acids with cast iron, Ni-Resist or XL Series pumps. Roundup™ type herbicides are only compatible with XL Series pumps.

Performance

In Water						
	Model 4101N-EH and 4101XL-EH			Model 4101N-E2H and 4101XL-E2H		
Volts	psi [BAR]	AMPS	GPM [LPM]	psi [BAR]	AMPS	GPM [LPM]
12.0 (Battery) Engine Off	0 [0.00]	10.0	6.3 [23.8]	0 [0.00]	---	---
	5 [0.34]	11.3	6.0 [22.7]	10 [0.69]	8.4	5.3 [20.0]
	10 [0.68]	12.5	5.8 [21.9]	20 [1.4]	11.8	4.8 [18.2]
	15 [1.03]	13.7	5.6 [21.2]	30 [2.1]	13.7	4.65 [17.60]
	20 [1.38]	15.1	5.4 [20.4]	40 [2.8]	16.4	4.4 [16.6]
	25 [1.72]	16.7	5.2 [19.7]	50 [3.4]	19.6	4.05 [15.33]
	30 [2.07]	18.6	5.0 [18.9]	60 [4.1]	22.8	3.65 [13.82]
	35 [2.41]	20.3	4.8 [18.2]	70 [4.8]	25.8	3.20 [12.11]
	40 [2.76]	22.3	4.6 [17.4]	80 [5.5]	28.9	3.00 [43.50]
	45 [3.10]	24.1	4.4 [16.6]	90 [6.2]	31.5	2.75 [10.41]
	50 [3.45]	25.7	4.2 [15.9]	100 [6.9]	34.2	2.60 [9.84]
13.5 (Alternator) Engine Running	psi [BAR]	AMPS	GPM [LPM]	psi [BAR]	AMPS	GPM [LPM]
	0 [0.00]	10.4	7.5 [28.4]	0 [0.00]	---	---
	5 [0.34]	11.7	7.0 [26.5]	10 [0.69]	9.1	5.9 [22.3[
	10 [0.68]	13.0	6.6 [25.0]	20 [1.4]	11.2	5.8 [21.9]
	15 [1.03]	14.2	6.4 [24.2]	30 [2.1]	13.9	5.25 [19.87]
	20 [1.38]	15.8	6.2 [23.5]	40 [2.8]	16.9	5.0 [18.9]
	25 [1.72]	17.4	6.0 [22.7]	50 [3.4]	19.5	4.7 [17.8]
	30 [2.07]	19.6	5.8 [22.0]	60 [4.1]	22.7	4.35 [16.46]
	35 [2.41]	20.9	5.6 [21.2]	70 [4.8]	25.7	4.0 [15.1]
	40 [2.76]	22.5	5.4 [20.4]	80 [5.5]	29.2	3.6 [13.6]
	45 [3.10]	224.3	5.2 [19.7]	90 [6.2]	31.9	3.4 [12.9]
	50 [3.45]	26.1	5.0 [18.9]	100 [6.9]	34.8	3.2 [12.1]

In Water						
	Model 4001N-EH and 4001XL- EH			Model 4001N-E2H and 4001XL- E2H		
Volts	psi [BAR]	AMPS	GPM [LPM]	psi [BAR]	AMPS	GPM [LPM]
12.0 (Battery) Engine Off	0 [0.00]	12.6	9.0 [34.1]	10 [0.69]	13.9	8.4 [31.8]
	5 [0.34]	14.1	8.3 [31.4]	20 [1.38]	18.0	7.9 [29.9]
	10 [0.68]	15.2	8.1 [30.7]	30 [2.07]	22.2	7.2 [27.3]
	15 [1.03]	17.3	7.8 [29.5]	35 [2.41]	25.0	6.9 [26.1]
	20 [1.38]	19.7	7.2 [27.3]	40 [2.76]	27.0	6.5 [24.6]
	25 [1.72]	22.1	6.7 [25.4]	50 [3.45]	31.6	5.9 [21.2]
	30 [2.07]	24.8	6.2 [23.5]	60 [4.12]	36.2	5.4 [20.4]
13.5 (Alternator) Engine Running	psi [BAR]	AMPS	GPM [LPM]	psi [BAR]	AMPS	GPM [LPM]
	0 [0.00]	13.4	10.4 [39.4]	10 [0.69]	14.4	9.9 [37.5]
	5 [0.34]	14.8	9.9 [37.5]	20 [1.38]	18.3	9.1 [34.4]
	10 [0.68]	16.2	9.4 [35.6]	30 [2.07]	22.3	8.5 [32.2]
	15 [1.03]	18.2	8.9 [33.7]	35 [2.41]	24.5	8.3 [31.4]
	20 [1.38]	20.5	8.5 [32.2]	40 [2.76]	27.0	8.0 [30.3]
	25 [1.72]	22.5	8.2 [31.0]	50 [3.45]	31.0	7.3 [27.6]
	30 [2.07]	24.9	7.7 [29.1]	60 [4.12]	36.1	6.8 [25.7]

In 10-34-0 Fertilizer & Speed Controller (2530-0057)				
	Model 4101N-EH and 4101XL-EH		Model 4101N-E2H and 4101XL-E2H	
12.0 Volt Pressure	GPM [LPM]	AMPS	GPM [LPM]	AMPS
0	5.1 [19.3]	18.8	4.41 [16.7]	15.4
10	4.64 [17.6]	21.1	4.26 [16.1]	17.4
20	4.32 [16.4]	23.4	3.67 [13.9]	19.4
30	4 [15.1]	25.1	3.41 [12.9]	21.1
40	3.46 [13.1]	25.6	3.34 [12.6]	23.1
50	3.04 [11.5]	25.5	3.33 [12.6]	25.2
13.5 Volt Pressure	GPM [LPM]	AMPS	GPM [LPM]	AMPS
0	5.39 [20.4]	20.1	4.98 [18.8]	16.5
10	4.99 [18.9]	21.9	4.44 [16.8]	18.6
20	4.65 [17.6]	24.0	4.27 [16.2]	20.5
30	4.25 [16.1]	25.2	4.1 [15.5]	22.4
40	3.6 [13.6]	24.7	3.77 [14.3]	24.1
50	3.07 [11.6]	24.2	3.7 [14.0]	25.4

Replacement Parts

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.

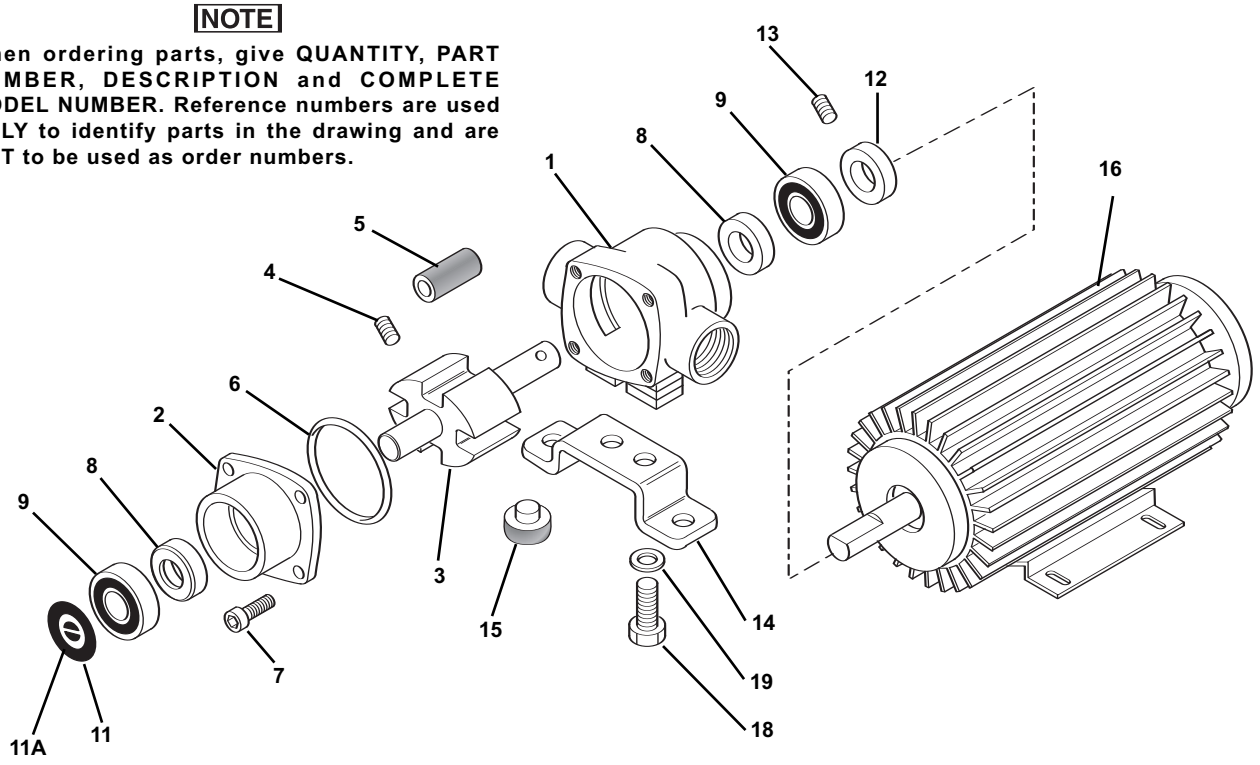


Figure 6

Ref. No.	Qty. Req'd	Part Number	Description
1	1	0100-4001N	Body (Ni-Resist) with Std. Seal (4001)
1	1	0100-4101N	Body (Ni-Resist) with Std. Seal (4101)
1	1	0100-4001X	Body (Silvercast) with Std. Seal (4001)
1	1	0100-4101X	Body (Silvercast) with Std. Seal (4101)
2	1	0200-4001N	Endplate (Ni-Resist) Std. Seal (4001)
2	1	0200-4101N	Endplate (Ni-Resist) Std. Seal (4101)
2	1	0200-4001X	Endplate (Silvercast) Std. Seal (4001)
2	1	0200-4101X	Endplate (Silvercast) Std. Seal (4101)
3	1	3430-0780	Rotor Assembly (Std. 4001 Ni-Resist & XL)
3	1	3430-0781	Rotor Assembly (Std. 4101 Ni-Resist & XL)
4	1	2230-0016	Rotor Set Screw (Silvercast Only)
4	1	2230-0002	Rotor Set Screw
5	4	1005-0002	Super Rollers (Standard)
5	4	1002-0002	Polypropylene Rollers (Optional)
5	4	1055-0002	Teflon Rollers (Optional)
6	1	1720-0104	O-ring Gasket for Endplate
7	4	2220-0018	Endplate Screw

Ref. No.	Qty. Req'd	Part Number	Description
8	2	2107-0002	Viton Seal (Standard)
8	2	2102-0001	Buna-N Seal (Optional)
8	2	2102-0001T	Teflon-Coated Buna-N Seal(Optional)
9	2	2000-0010	Ball Bearing
11	1	2300-0021	Bearing Cover
11A	1	6031-0258	Name Plate (Specify Pump Model No.)
12	1	1420-0001	Locking Collar
13	1	2230-0001	Set Screw
14	1	1510-0054	Base
15	2	1450-0003	Bumper
16	1	2570-0013	Electric Motor (12 vdc, .33 hp) (gold)
16	1	2570-0015	Electric Motor (12 vdc, .39 hp) (black)
17	1	4001N-H	Complete Roller Pump Assy (Not Shown)
17	1	4001XL-H	Complete Roller Pump Assy (Not Shown)
17	1	4101N-H	Complete Roller Pump Assy (Not Shown)
17	1	4101XL-H	Complete Roller Pump Assy (Not Shown)
18	2	2210-0003	Bolt
19	2	2260-0002	Lock Washer

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.

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