



HXL400WV
Owner/Operator Manual

MASPORT INCORPORATED

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PRICE: **\$5.00**

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Do Not attempt to install, operate, or service this pump without reading and understanding the corresponding section in this manual.

Masport HXL400WV Owner/ Operator Manual

I. LIMITED WARRANTY

Manufacturer warrants defects in workmanship, materials or parts for a period of twelve months from date of sale. The limited warranty is restricted to repair or replacement of parts or pumps at Masport Incorporated's discretion. Masport Incorporated neither assumes, nor authorizes any person to assume any other obligation or liability in connection with Masport Incorporated's products, parts, or services sold or delivered. Masport Incorporated shall not be liable for injury or damage to property other than the products or parts themselves, nor for incidental, consequential or special damages.

PURCHASER - KEEP FOR RECORD

TERMS OF LIMITED WARRANTY: 12 MONTHS

DATE PURCHASED: _____

SERIAL NUMBER: _____

1. The product must be returned to Masport Incorporated. The limited warranty does not cover the cost of collection or delivery.
2. Any claim under this limited warranty must be made in writing and received within twelve months from date of sale. Claims should be addressed to Masport Incorporated. Masport Vacuum/Pressure Pump Warranty Claims Department, 6140 McCormick Drive, Lincoln, NE 68507-3296.
3. This limited warranty will not apply to any malfunction, defect, or damage of any product resulting from repair or alteration other than by Masport Incorporated.
4. This limited warranty excludes the following: damage during shipment, damage from other than normal or intended use, normal wear, any defects arising from installation or operation of the products other than in accordance with the operating instructions provided, or any product which has been subject to misuse, neglect, or accident.
5. This limited warranty is not transferable and shall extend only to the original purchaser.

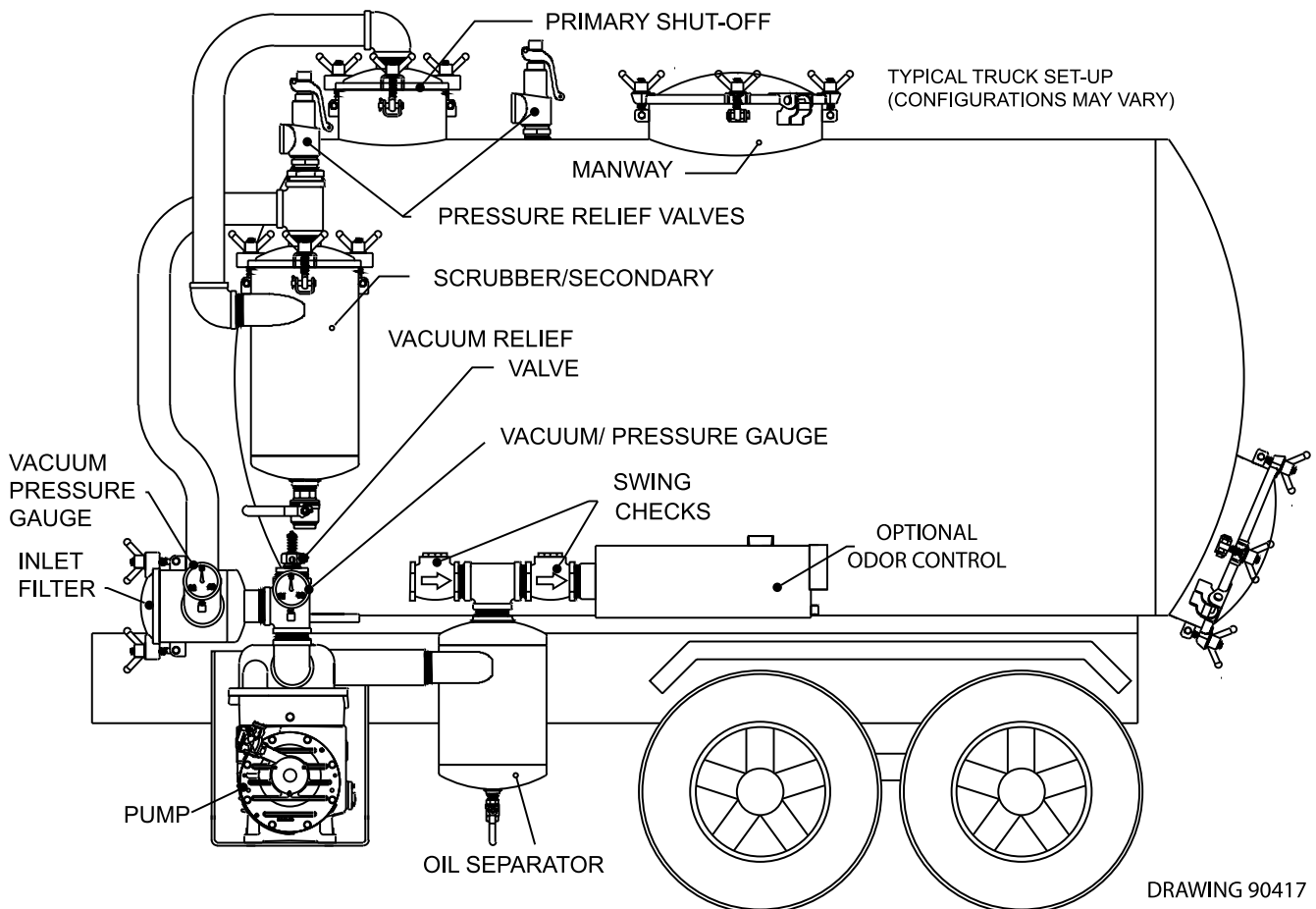
II. PUMP INSTALLATION

A. INSTALLATION

All components and plumbing must be of adequate size or the system will not work properly and damage is possible. The HXL400WV requires a minimum of 3" diameter plumbing and corresponding 3" Masport components. Ensure all pipe work is thoroughly cleaned before fitting as filings, bead blasting media or scale will cause irreparable damage which will result in loss of performance and increased operating noise level.

Pre-lubricate vacuum pump by emptying oil bottle supplied into the vacuum port and rotating by hand.

B. RECOMMENDED SYSTEM COMPONENTS



B. RECOMMENDED SYSTEM COMPONENTS (continued)

Primary Shut-off:

- Very important to prevent a solid column of liquid from entering the pump and damaging or ruining the pump. It is a liquid level shut-off that does not allow the tank to overflow into your vacuum system.

Secondary Moisture Trap/ Scrubber:

- Important liquid separating device. Removes the small amounts of liquid still in the air after the Primary.
- Prevents liquid from entering the vacuum pump, which would severely damage the pump. Drain daily and after every tank load.
- When draining the scrubber, if nothing comes out when ball valve is opened, never assume the scrubber is empty. Check for blockage in the ball valve drain.

Vacuum/Pressure Gauge:

- Required to properly monitor the performance of the system. Placed between the pump and the scrubber, which is the clean side, to prevent gauge failure due to foreign materials.

Vacuum Relief Valve:

- This valve acts to govern the operating vacuum level to avoid overheating the pump. Installed directly at the pump, so if a liquid level trap is activated or hose collapsed, the pump is not allowed to deadhead.

Pressure Relief Valve:

- Essential for regulating the amount of pressure the system is exposed to. Severe damage to the pump or operator could occur if not installed and working properly. Should be mounted between the scrubber and the pump (clean side of system).

Inlet Filter:

- Designed to clean particulates from air. Filter needs to be checked and cleaned regularly. Ensure filter is completely dry before refitting.

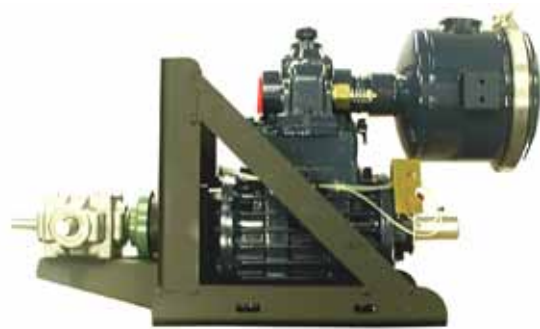
Oil Separator:

- Designed to remove the oil from the exhaust air. A brass ball valve is mounted at the bottom for easy draining. Drain the oil separator daily or after every four hours of continuous use.

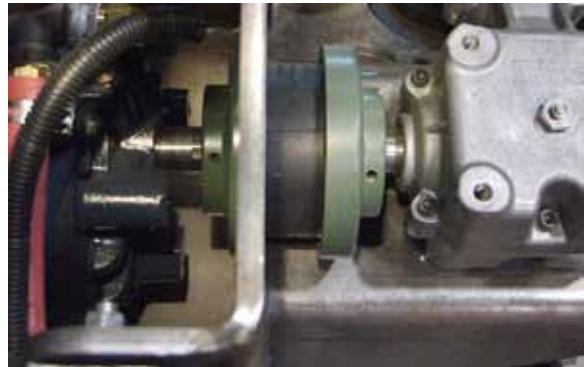
C. MOUNTING REQUIREMENTS

Before mounting the pump, ensure drive direction is correct as running the pump in reverse direction, even for a short period of time, could cause damage due to the internal non-return valves and also could cause damage to the oil pump.

Pre-lubricate vacuum pump by emptying oil bottle supplied into the vacuum port and rotating by hand.



Left: Pictured is a base assembly with a gearbox and Prefilter.



Right: A close look at a properly aligned coupler. Alignment is important. If not aligned properly, it will cause excessive wear on the drive element and pump bearings.

Plumbing:



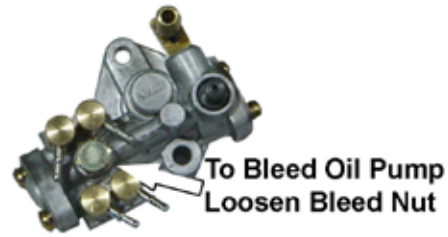
EITHER VALVE PORT CAN BE PLUMBED TO THE INLET OR THE EXHAUST USING 3" N.P.T. PIPE ONLY.

Hydraulic Driven System:

- A quality hydraulic motor specialist should be consulted when using this type of drive system.
- The hydraulic motor needs to satisfy the horsepower and R.P.M. requirements of the pump or you will damage the pump.

D. INITIAL OPERATION PROCEDURE

- **Must** bleed the oil pump before operating pump for the first time.
- The oil pump is automatic; No adjustments are necessary or possible.
- Before operating make sure all of the plumbing and components are of adequate size and will not restrict airflow or create excessive backpressure.



E. ROTATION OF THE PUMP

- The HXL400WV has a double end shaft which will accommodate clockwise or counter clockwise rotation.
- The shaft side with the oil pump is counter clockwise and the opposite shaft is clockwise.
- There is an arrow on the housing of the valve that shows the direction the pump should be turned.
- *Never run the pump in opposite direction.*

III. OPERATION OF THE PUMP

A. PERFORMANCE

Maximum Performance Data – Vacuum

Pump R.P.M.	Displacement C.F.M.	S.C.F.M. and A.C.F.M. @ "Hg VACUUM											Maximum Vacuum - "Hg	
			5	10	15	18	20	22	24	25	26	27	Continuous	Intermittent
1300	400	S.C.F.M.	269	204	150	120	100	80	57	47	35	25	25	27
		A.C.F.M.	323	306	300	300	300	300	300	282	263	250		

Maximum Horsepower Required @ P.S.I.G.

Pump R.P.M.	S.C.F.M. @ P.S.I.G.					
	5	10	15	20	25	30
1300	24	28	33	38	42	50

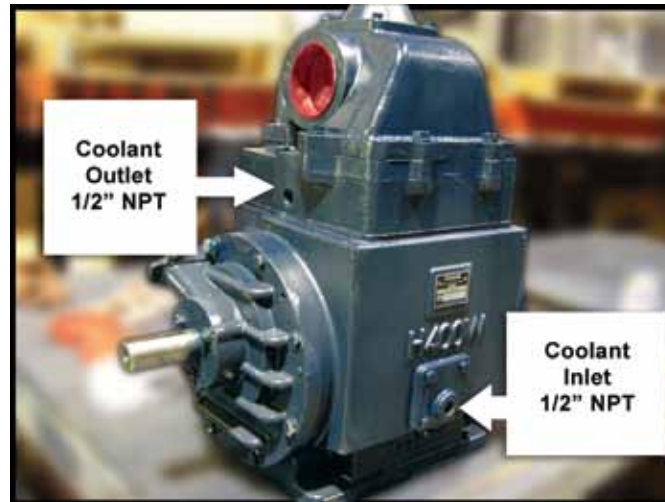
Maximum Horsepower Required @ "Hg

Pump R.P.M.	Vacuum "Hg		
	15	20	27
1300	17.7	19.5	20.1

B. OPERATING SPEED AND VACUUM LEVEL

- **Although the HXL400WV is capable of operating at speeds between 900 and 1300 rpm, optimal speed for extended pump performance and durability is 1100 rpm.**
- The Vacuum Relief Valve is not set from factory.
- Vacuum level for daily operation should be 23" Hg (at sea level), which should be achieved by adjusting the Vacuum Relief Valve against a quality liquid filled gauge. (Subtract one inch of vacuum for every 1,000' of elevation.)

C. WATER COOLING RECOMMENDATIONS



- There is a water jacket partially surrounding the cylinder on the pump. The pump comes with a thermometer kit for the pump so the operator can observe the temperature of the water.
- If the temperature gauge on the pump and the gauge in the truck display a difference of more than 10 degrees then the water lines are connected wrong.
- Contact Masport Inc. or a Masport authorized distributor for help if problems occur.

D. RECOMMENDED OIL

- Masport Vacuum Pump Oil is the **ONLY** recommended lubricant for Masport pumps. A high quality rotary compressor or rotary turbine compressor oil can be used as a substitute for short periods of time. Masport Vacuum Pump Oil is available through any Masport authorized distributor or from Masport Inc. Please, also see page 19 for further details of other recommended oils which can be used as temporary replacements.

IV. MAINTENANCE

NEVER REMOVE SHAFT FROM ROTOR!

Rotor has been machined as an assembly for exact balance. Removing will destroy the factory set clearances and balance.

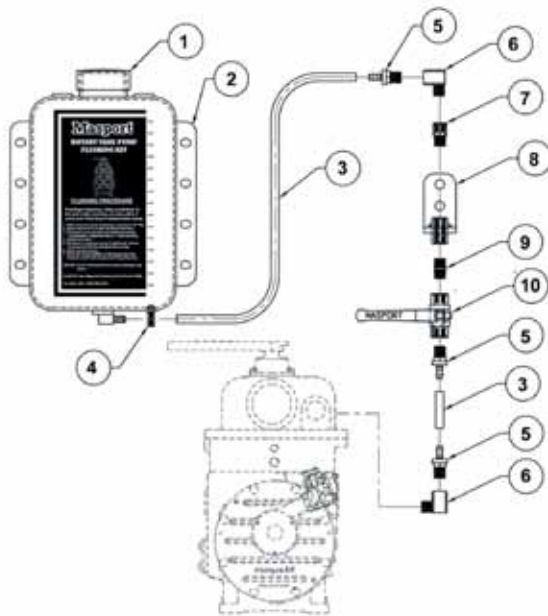
A. REBUILD INFORMATION

- Contact Masport Inc. for an authorized rebuild company.
- Do **NOT** attempt to rebuild without contacting Masport Inc.

B. FLUSHING PROCEDURE

1. Start vacuum pump and bring to 15" Hg.
2. Open ball valve to begin flushing fluid flow.
3. Continue to run pump until field level drops 1 graduation (7 fluid OZ).
4. Close ball valve.
5. Continue to operate pump 1 additional minute to ensure all fluid is purged from the pump.
6. Stop vacuum pump.
7. Drain Oil Separator and dispose used fluid at approved recycling site.

Flushing Kit Assembly



Flush Port on Valve



Flushing Kit for Masport Vacuum Pumps (part # 13027)

1	Cap Lubricator Tank	36002	1
2	Lubricator Tank 4 Quarts	36001	1
3	Hose 1/4"	24299	2
4	Hose Clamp	24310	1
5	Pushlock 1/4" Brass	27001	3
6	Elbow 1/4" Brass	27002	2
7	Flow Restrictor	27032	1
8	Bracket Flushing Kit	33461	1
9	Nipple 1/4"	30000	1
10	Ball Valve	25154	1
*	Label	39013	1

**NEVER REUSE FLUSHING
FLUID OR PUMP DAMAGE
MAY OCCUR. ALWAYS USE
MASPORT FLUSHING FLUID.
DO NOT USE DIESEL FUEL.**

C. STORAGE

- If the vacuum pump is going to be sitting for an extended period of time, then it needs to be flushed prior to storage. Oil should then be poured into bearing lubrication ports to protect the bearing surfaces and rotor lubrication ports on the pump to eliminate rust formation on rotor and cylinder; this can be done through oil injection points. Rotate pump by hand to distribute oil.
- Rotate by hand monthly to recirculate oil.

For further information, call 1-800-228-4510 or visit our website at www.masportpump.com. You may email us at customerservice@masportpump.com.

D. IMPORTANT OPERATING TIPS

DO:

- Regularly check to ensure pump R.P.M. is 1100.
- Flush pump daily.
- Check and clean components regularly.
- Drain Oil Separator daily and after every four hours of continuous use.
- Drain Scrubber daily and after every tank load.
- Check and clean Prefilter regularly.
- Always bleed tank to atmosphere before switching valve from vacuum to pressure or pressure to vacuum.
- Ensure Vacuum Relief Valve and Pressure Relief Valve are installed in system and adjusted to recommended settings.
- Make sure the temperature gauge on the pump reads within 10 degrees of the temperature gauge on the truck.

DON'T:

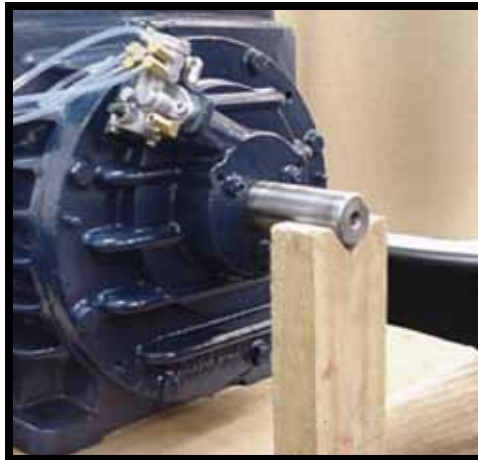
- Do not open ball valve on scrubber with vacuum on truck. This will allow foreign material to enter the pump.
- Do not over-speed or under-speed the pump.
- Do not engage PTO at high R.P.M. Only engage at idle.
- Never run pump without oil.
- Never spin pump backwards.
- Never run pump without circulating water connected.
- When draining scrubber, if nothing comes out when ball valve is opened never assume the scrubber is empty. *Check for blockage in the ball valve drain.*

V. REPLACING THE VANES

NOTE: This procedure should not be undertaken without basic fitting or mechanical experience, or without the availability of adequate tools or handling equipment.

Do not remove vanes from the packing until you are ready to install them.

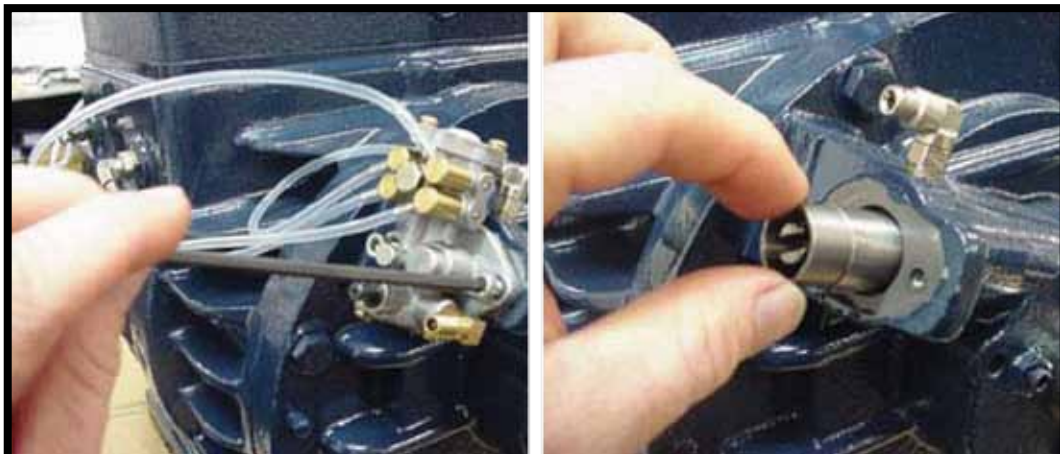
- 1.) Clean exterior of pump.
- 2.) Belt Driven: Remove tension off belts.
Direct Drive: Disengage drive to allow pump to be rotated by hand.
- 3.) Remove shaft guard.
- 4.) Support shaft at outer-most end: either with a strap from above or by wedging a notched piece of wood from below:



- 5.) Remove all endcover bolts.
- 6.) **Note:** If oil pump endcover is being removed, then:

Remove the Oil Pump

and Drive Assembly.



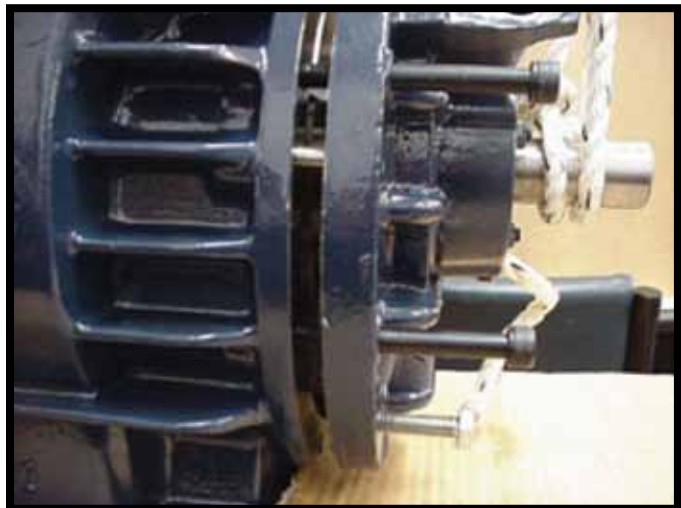
Remove endcover evenly using 2 x 10mm x 50 mm set-screws in jacking screw threads.



(Or M10 threaded rod with 2 nuts locked together).



Extra guide screws (M10 x 100) could be used for support and guidance.

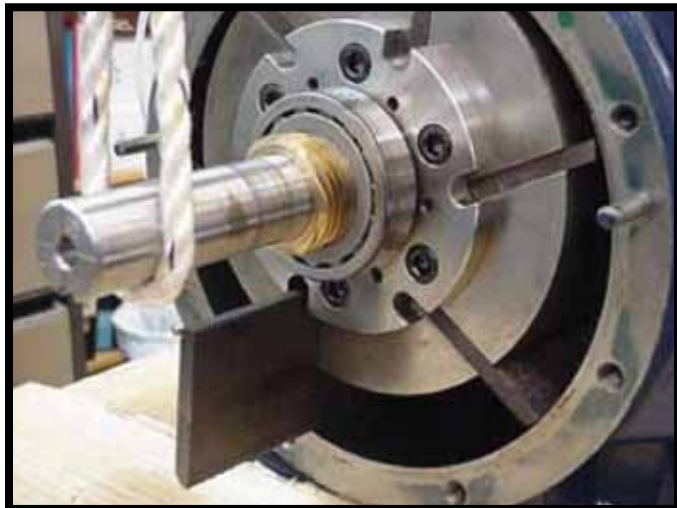


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- 7.) Support rotor behind cover, then remove outer support from shaft to enable complete removal of cover and shims.

Note: All gaskets must be refitted or replaced with OEM gaskets of the same thickness on assembly.



- 8.) Remove and replace vanes by rotating rotor. Slide new vane along cylinder wall. Ensure the longest edge is the leading edge.



- 9.) Check O-ring. Replace as necessary. Also check lip seal. Replace as necessary.

- 10.) Refit O-ring into cover groove; a small amount of grease will hold this in position.



-
- 11.) Fit correct thickness of shim gaskets onto cover, making sure to align the pin and bolt holes. A small amount of grease will hold this in position.

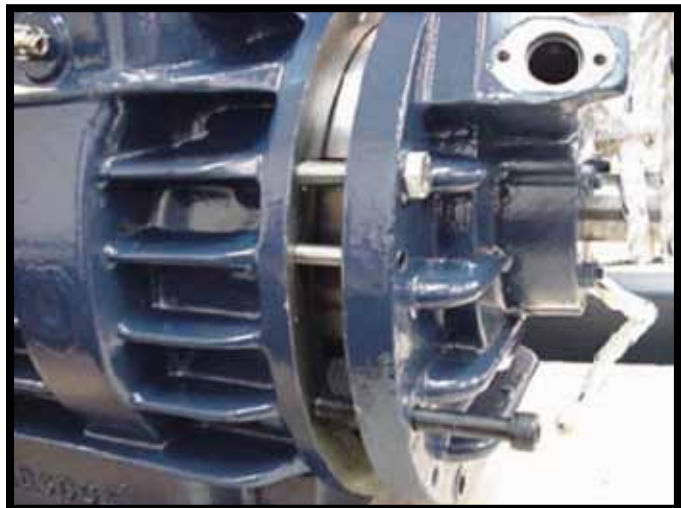


- 12.) Fit cover over shaft. (A little grease on seal will help).

Note: Care should be taken with lip seal over shaft keyway.



- 13.) Re-support outer end of shaft and fit cover onto bearing and dowel pins.



14.) Re-fit cover bolts.

15.) Tighten cover bolts progressively to 28 ft-lb. Rotate rotor to ensure the vanes are not jamming.



16.) If oil pump end was removed, refit driveshaft and oil pump. Align hole in drive unit with oil inlet elbow and push the drive home. Engage drive tang of pump with drive slot of drive assembly.

Refit oil lines.

17.) Re-fit shaft guard.



18.) Ensure pump rotates freely by hand.

19.) Inject 30-40 ml of oil into pump inlet or front oiling points. (See photo right).

20.) Refit drive belts or coupling.

21.) Ensure oil supply is reconnected.

22.) Start-up at normal operating speed.

23.) Check operation.



VI. REPLACING THE BEARINGS

NOTE: This should be done by a Masport authorized service center.

- 1.) Loosen 2 jacking screws in the stub shaft of the rotor. This will raise the bearing and allow enough space under it to use a bearing puller to completely remove the bearing.



- 2.) Do **NOT** undo cap screws that hold the stub shaft to the rotor.
- 3.) Clean complete assembly.

NOTE: Use only Masport supplied bearings (Masport part# 503098 as replacement bearings).

- 4.) Tighten jacking screws.
- 5.) Press on new bearings.
- 6.) Re-assemble the pump.

VII. LIST OF OIL TYPES

MASPORT VACUUM PUMP OIL IS THE ONLY RECOMMENDED OIL FOR MASPORT PUMPS.

MASPORT VACUUM PUMP OIL

Masport Incorporated - Lincoln, NE 800-228-4510

	One Gallon	Case of 6 Gallons
Summer Blend	13996	13997
Winter Blend	13998	13999

OILS OR FLUIDS THAT SHOULD NOT BE USED IN MASPORT VACUUM PUMPS

TRANSMISSION FLUID
USED OIL
HYDRAULIC FLUID

AUTOMOTIVE MOTOR OIL
VEGETABLE OIL
GEAR OIL

POWER STEERING FLUID
BRAKE FLUID
SCENTED OIL

SUBSTITUTE OILS RECOMMENDED FOR TEMPORARY USE IN MASPORT VACUUM / PRESSURE PUMPS

SHELL TURBO T OIL 32, 68, 100 Shell Oil Company - Houston, TX	800-231-6950
MONOLEC COMPRESSOR OIL* Lubrication Engineers - Fort Worth, TX	817-834-6321
MOBIL SHC 525 (Synthesized Hydrocarbon) Mobil Oil Company - Fairfax, VA	800-662-4525
ANDEROL 497 Anderol Inc - East Hanover, NJ	888-263-3765
CHEVRON GST 32, 68 ChevronTexaco Corporation - San Ramon, CA	800-822-5823
PENNZBELL TO OIL 32, 46, 68 Pennzoil Oil Company - Houston, TX	800-332-6457
REGAL OIL R & O 32, 68 ChevronTexaco Corporation - San Ramon, CA	800-822-5823

* Monolec Compressor Oil is colored red and should not be confused with transmission fluid.

These oils have been approved for use in Masport Vacuum/Pressure Pumps. Use of these oils will extend the life of the vacuum pump and ensure proper performance and lubrication.

NOTE: Oils numbered 32 & 46 are for winter use**. Oils numbered 68 & 100 are for summer use.
**Check pour point to determine minimum temperature.

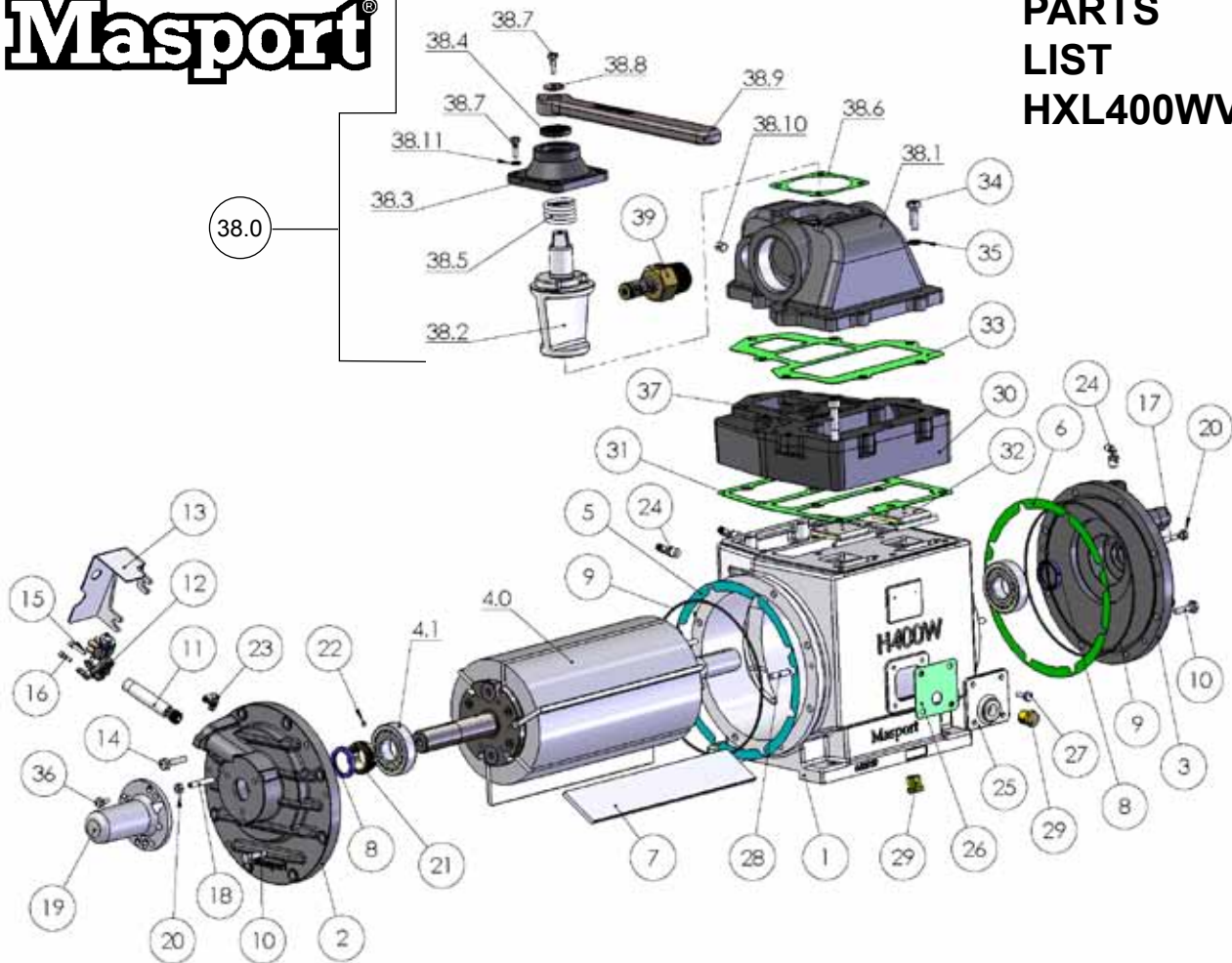
For more information call:

MASPORT INCORPORATED

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Masport®

PARTS LIST HXL400WV



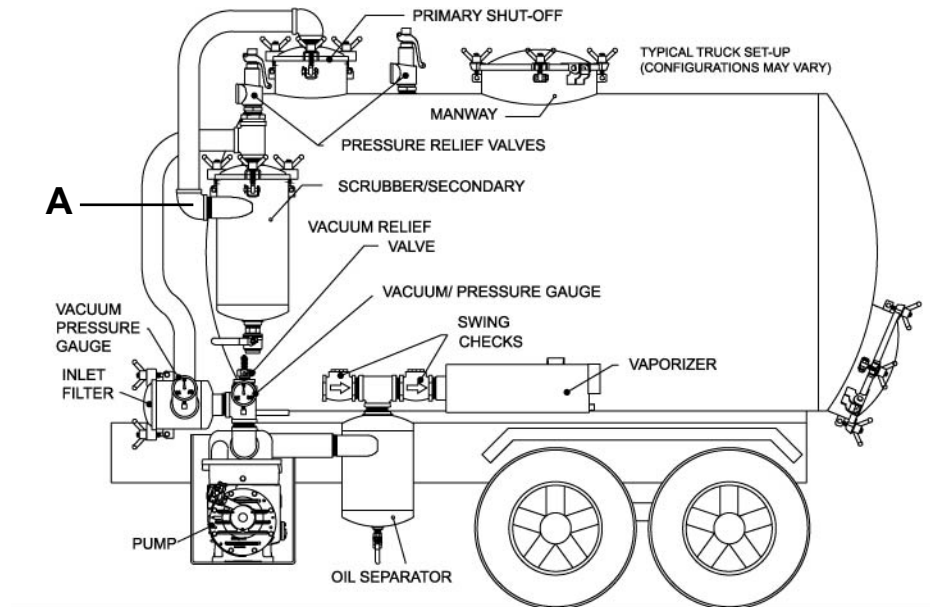
HXL400WV LIQUID COOLED PRESSURE / VACUUM PUMP PARTS LIST (968980)

Ref.	Description	Part No.	Qty.	Ref.	Description	Part No.	Qty.
1.	Cylinder	968959	1	26.	Gasket Side Plate	568232	1
2.	Endcover - Oil Pump End	968976	1	27.	Screw Set Hex M8 x 20	501848	4
3.	Endcover - Hyd. Drive End	968971	1	28.	Dowel Pin	503261	4
4.0	Rotor Assembly w/ bearings	968967	1	29.	Plug 1/2" BSPT Brass	147621	2
4.1	Bearing	503098	2	30.	Manifold	968846	1
5 & 6	Shim - Endcover			31.	Gasket Manifold	568805	1
	.002" Blue (quantity varies)	542011	**	32.	Flap Assembly	968026	2
	.003" Green (quantity varies)	542012	**	33.	Valve Gasket	568884	1
7.	Vane Pack (6)	968918	1	34.	Set Screw Hex M12 x 35	501666	7
8.	Seal	501015	2	35.	Washer Spring	500203	7
9.	End Cover O-Ring	501677	2	36.	Set Screw Hex M8 x 16	501571	3
10.	Set Screw Hex M10 x 35	501878	14	37.	Screw Cap M12 x 80 HT	501965	10
11.	Drive Shaft Assembly	968045	1	38.0	Integral Valve Assembly	968887	1
12.	Pump - Oil	568437	1	38.1	Body Valve 3" NPT	968883	1
13.	Oil Pump Guard	568903	1	38.2	Spool Valve	968804	1
14.	Screw Set Hex M10 x 40	501584	2	38.3	Valve Cap	968035	1
15.	Screw Cap M5 x 25 HT	504261	1	38.4	Seal	501674	1
16.	Screw Cap M5 x 16 HT	504262	1	38.5	Spring Valve	568038	1
17.	Screw Grub M8 x 35	504276	3	38.6	Gasket Cap	568044	1
18.	Screw Grub M8 x 50	504287	3	38.7	Bolt M8 x 1.25" x 25mm	501617	5
19.	Shaft Cap	568622	1	38.8	Washer 5/16" x 1 1/4" x 1/8"	501550	1
20.	Nut M8 Hex Binx Zp	504278	6	38.9	Handle Valve Long	968037	1
21.	Worm Gear	568158	1	38.10	Plug - 1/4"	27300	1
22.	Screw Grub M5 x 6	504264	1	38.11	Washer Spring	501610	4
23.	Elbow Swivel 1/8"	568085	1	39	1 1/2" Relief Valve	25056	1
24.	Elbow Swivel 1/4"	568086	3	*	Oil Line Tube	600293	**
25.	Side Plate	968231	1				

* NOT SHOWN ** QUANTITY VARIES



Vacuum Relief Valve Adjustment Guide



1" Vacuum Relief Valve Parts List (25054)

Ref	Description	Part No.	Qty.	Ref	Description	Part No.	Qty.
1	Plunger	25953	1	4	Spring	25954	1
2	Nut	32019	1	5	Nut	32005	1
3	Brass Nut	25930	1	6	Main Body	25952	1

1 1/2" Vacuum Relief Valve Parts List (25056)

Ref	Description	Part No.	Qty.	Ref	Description	Part No.	Qty.
1	Plunger	25951	1	4	Spring	25931	1
2	Nut	32019	1	5	Nut	32005	1
3	Brass Nut	25930	1	6	Main Body	25950	1

Vacuum Relief Valve Adjustment Instructions

1. Cap suction line to tank at point "A" on drawing to isolate pump, vacuum relief valve, and gauge from tank. Accurate adjustment of the valve is not possible without doing so.
2. Start vacuum pump.
3. Loosen lock nut (ref # 2).
4. Hold top of stem (ref # 1) and rotate knurled nut (ref # 3) clockwise to increase vacuum level, counter clockwise to decrease. Refer to pump manual for proper vacuum level.
5. When desired level is reached tighten lock nut (ref # 2).
6. Uncap suction line and reattach to vacuum tank.

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