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**INSTALLATION, OPERATION,  
AND MAINTENANCE MANUAL**  
WITH PARTS LIST



**UNIT SERIES PUMPS**

<b>MODEL</b>
<b>UNIT 608-A</b> <b>tankleenor™</b>

**THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO**

**GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA** Printed In U.S.A.

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INTRODUCTION

This Installation, Operation, and Maintenance Manual is designed to help you achieve the best performance and longest life from your Gorman-Rupp tankleenor™.

The Unit 608-A tankleenor™ is designed to permit quick efficient cleaning of below-ground petroleum storage tanks, without disturbing the product or disrupting service. The cleaning system is capable of extracting gel precipitates, rust, water, or other contaminants that present problems in fuel storage.

The tankleenor™ incorporates portable, lightweight components allowing one man operation. The system utilizes an O-Series self-priming centrifugal pump, close coupled to a 1 1/2-horsepower, single phase explosion-proof electric motor with 50 feet of grounded power cable.

If there are any questions regarding the unit, pump or its application which are not covered in this manual or in other literature accompanying this unit, please contact your Gorman-Rupp distributor, or write.

The Gorman-Rupp Company	or	Gorman-Rupp of Canada Limited
P.O. Box 1217		70 Burwell Road
Mansfield, Ohio 44901-1217		St. Thomas, Ontario N5P 3R7

For information or technical assistance on the motor, contact the motor manufacturer's local dealer or representative.

The following are used to alert maintenance personnel to procedures which require special attention, to those which could damage equipment, and to those which could be dangerous to personnel:

NOTE

Instructions to aid in installation, operation, and maintenance or which clarify a procedure.

CAUTION

Instructions which must be followed to avoid causing damage to the product or other equipment incidental to the installation. These instructions describe the requirements and the possible damage which could result from failure to follow the procedures.

WARNING

```

////////////////////////////////////
//                               //
// These instructions must be followed to avoid causing in- //
// jury or death to personnel, and describe the procedure //
// required and the injury which could result from failure //
// to follow the procedure. //
//                               //
////////////////////////////////////

```



WARNINGS

WARNINGS - SECTION A

THESE WARNINGS APPLY TO OPERATION AND MAINTENANCE OF THIS UNIT. REFER TO THE MANUAL ACCOMPANYING THE ELECTRIC MOTOR BEFORE ATTEMPTING TO BEGIN OPERATION.

WARNING

```

////////////////////////////////////
//
// Before attempting to open or service the pump:
//
// 1. Familiarize yourself with this manual.
// 2. Disconnect the motor to ensure that the pump will
//    remain inoperative.
// 3. Allow the pump to cool if overheated.
// 4. Vent the pump slowly and cautiously.
// 5. Close the suction and discharge valves.
// 6. Check the temperature before opening any covers,
//    plates, or plugs.
// 7. Drain the pump.
//
////////////////////////////////////

```

WARNING

```

////////////////////////////////////
//
// This pump is designed to handle water, gasoline or other
// petroleum products. Do not attempt to pump corrosive or
// highly volatile liquids which may damage the pump or en-
// danger personnel as a result of pump failure.
//
////////////////////////////////////

```

WARNING

```

////////////////////////////////////
//
// Before operating or servicing the pump, be certain prop-
// er safety practices are followed. Provide adequate ven-
// tilation, prohibit smoking, wear static-resistant
// clothing and shoes. Clean up all fuel spills immediat-
// ly after occurrence.
//
////////////////////////////////////

```

WARNING

```

////////////////////////////////////
//
// Connect ground wire to tank fill pipe or other ground
// connection before operating unit. Static-electric
// build-up could develop during cleaning operation causing
// hazardous sparks.
//
////////////////////////////////////

```

WARNINGS

WARNING

```

////////////////////////////////////
//
// Overheated pumps can cause severe burns and injury. If //
// overheating of the pump occurs: //
//
// 1. Stop the pump immediately. //
// 2. Allow the pump to cool. //
// 3. Refer to instructions in this manual before re- //
// starting the pump. //
//
////////////////////////////////////

```

WARNING

```

////////////////////////////////////
//
// Overheating may produce dangerous fumes. Use extreme //
// caution when venting the pump, or when removing covers, //
// plates, plugs, or fittings. //
//
////////////////////////////////////

```

WARNING

```

////////////////////////////////////
//
// Do not operate the pump against a closed eductor control //
// valve for long periods of time. This could bring the //
// liquid to a boil, build pressure, and cause the pump to //
// rupture or explode. //
//
////////////////////////////////////

```

WARNING

```

////////////////////////////////////
//
// The electrical power applied to this unit is high enough //
// to cause injury or death. Connect electrical plug to a //
// grounded power supply; never use gas piping as an elec- //
// trical ground. be sure the power supply is of the cor- //
// rect phase and voltage. Do not run the motor if the //
// voltage is not within limits. If a circuit breaker or //
// fuse is tripped, examine and correct the problem before //
// restarting the unit. //
//
////////////////////////////////////

```

WARNINGS

---

---

WARNING

```
////////////////////////////////////  
//  
// Inspect the 5/8-inch X 42 foot suction hose for cuts, //  
// punctures, or severe abrasion before pump operation. //  
// Replace the entire hose assembly if there is any possi- //  
// bility of leakage or exposure of integral spring steel //  
// strap. //  
// //  
////////////////////////////////////
```

WARNING

```
////////////////////////////////////  
//  
// Never attempt to change the electrical plug or alter the //  
// length of the power cord with a splice. Equipment fail- //  
// ure or personal injury could result if all connections //  
// are not waterproof and compatible with the electrical //  
// current used. //  
// //  
////////////////////////////////////
```





INSTALLATION - SECTION B

This section is intended only to summarize recommended installation practices for this unit and pump. If there are any questions concerning your specific installation, contact your Gorman-Rupp distributor or The Gorman-Rupp Company.

Pump Dimensions

See Figure 1 for the approximate physical dimensions of this pump.

OUTLINE DRAWING

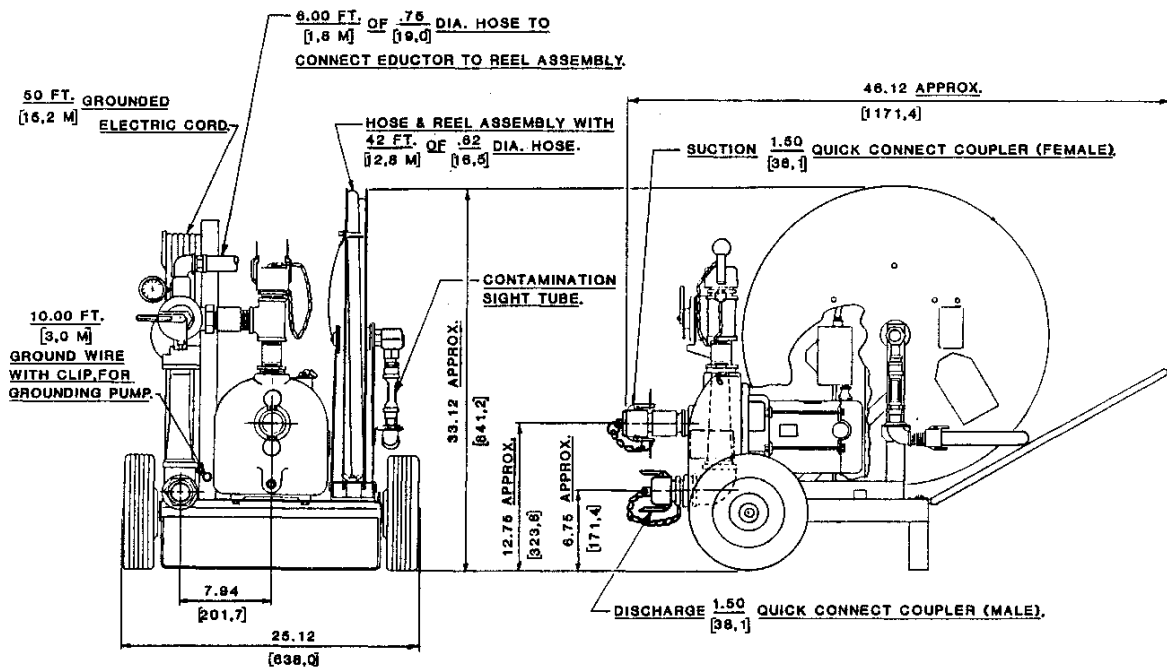


Figure 1. Pump Model Unit 608-A tankleenor

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## PREINSTALLATION INSPECTION

The pump assembly was inspected and tested before shipment from the factory. Before installation, inspect the pump unit for damage which may have occurred during shipment. Check as follows:

- a. Inspect the pump, reel assembly, hose, and motor for cracks, dents, damaged threads and other obvious damage.
- b. Check for and tighten loose bolts, nuts, capscrews, and other attaching hardware. Since gaskets tend to shrink after drying, check for and tighten loose nuts and capscrews securing mating surfaces.
- c. Carefully read all tags, decals, and markings on the pump assembly, and follow the instructions indicated.
- d. If the pump and motor have been stored for more than 12 months, some of the components or lubricants may have exceeded their maximum shelf life. These **must be inspected or replaced** to ensure maximum pump service.
- e. Check to ensure the following standard equipment items are included with the pump assembly:
  - Detachable reel assembly used for storing cleaning hose and controlling direction and travel rate.
  - Hydrocarbon-resistant cleaning hose; 42-feet long by 5/8-inch diameter with integral spring steel strap insert and specially designed nozzle.
  - 8-foot connector hose; 3/4-inch diameter to connect eductor valve to reel assembly sight glass.
  - 15-foot suction and discharge hose fitted with male and female 1 1/2-inch quick-connect couplers to match pump suction and discharge outlets.
  - Stainless steel adjustable standpipe, 12-foot (maximum) length with rollers at bottom to support hose going into tank.
  - Ground wire; 10-feet long with clip for ground unit to tank.

If the maximum shelf life has been exceeded, or if anything appears to be abnormal, contact your Gorman-Rupp distributor or the factory to determine the repair or updating policy. **Do not** put the pump into service until appropriate action has been taken.

## UNIT INSTALLATION

### Lifting

This unit is mounted on a two wheel moveable base. If it is necessary to lift the unit, use lifting equipment with a capacity of at least 1,000 pounds. This unit weights approximately 239 pounds, including suction and discharge hoses and standpipe.

**WARNING**

```

////////////////////////////////////
//
// Use lifting and moving equipment in good repair and with //
// adequate capacity to prevent injuries to personnel or //
// damage to equipment. //
// //
////////////////////////////////////
    
```

**Mounting**

Locate the pump in an accessible place as close as practical to the liquid being pumped. Level mounting is essential for proper operation. The pump may have to be supported or shimmed to provide for level operation or to eliminate vibration.

**SPECIFICATIONS**

See Table 1 for the typical pump specifications.

**Table 1. Pump Specifications**

Pump Model Number	Voltage	Phase	Horse Power	Motor Speed (RPM)	Cycle	Suction Coupler	Discharge Adaptor
02K3	230V	1	1 1/2	2900	50 Hz	1 1/2"	1 1/2"

Table 2 shows typical unit specifications

**Table 2. Unit Specifications**

Power Cord	Reel Assembly	Suction Hose-1 1/2"	Discharge Hose-1 1/2"	Ground Wire	Standpipe Length (Min) - (Max)
50 ft.	42 ft.	15 ft.	15 ft.	10 ft.	7.25 ft. - 12 ft.

**Positioning Unit And Set-Up**

Figure 2 shows a typical installation of the tankleenor™ system.

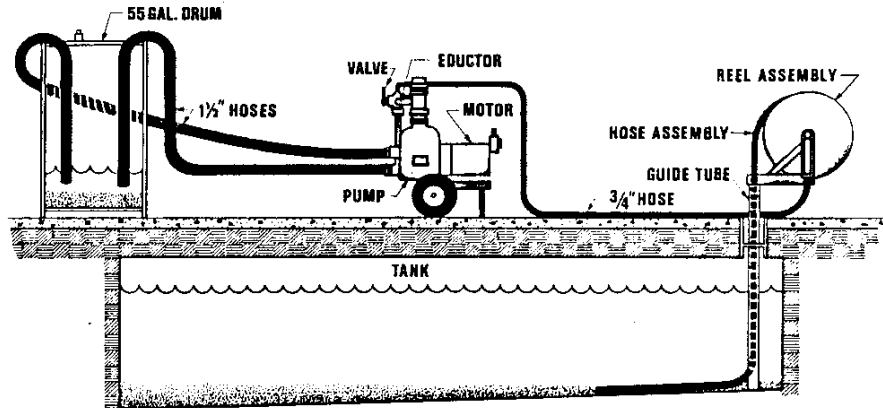


Figure 2. Typical Installation

Perform the following steps, which are illustrated by Figure 3 through 10, to set-up the tankleenor™ Unit for operation.

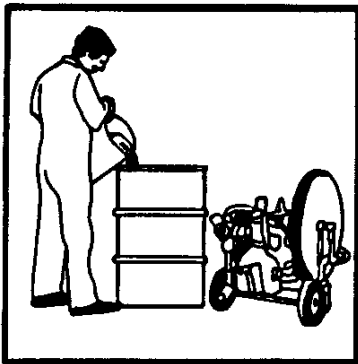


Figure 3.

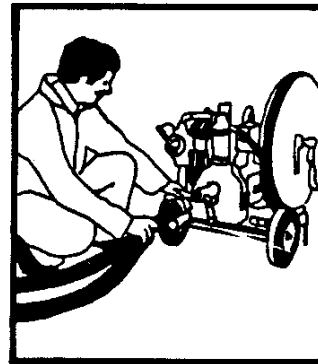


Figure 4.

See Figure 3.

Fill a 55 gallon drum (not supplied) or other **closed ventilated** container with approximately 20 gallons of operating liquid (water). Depending on the size and contamination of the tank being cleaned, more than one drum may be required.

See Figure 4.

Install the quick-connect fittings on suction and discharge hoses to the eductor discharge, and pump suction. Submerge the other ends in the drum, containing the operating liquid (see Figure 2).

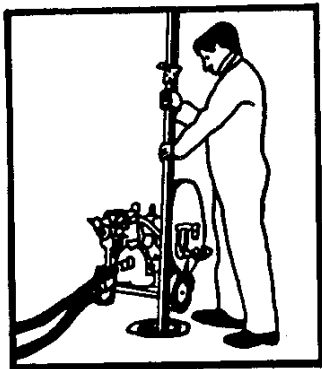


Figure 5.

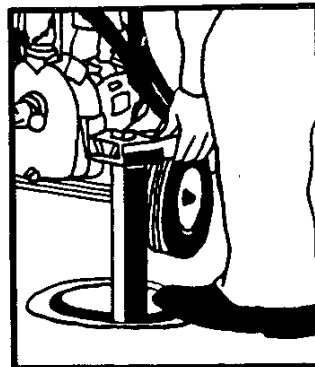


Figure 6.

See Figure 5

Lower the telescopic standpipe through the tank fill pipe until it reaches the bottom of the tank. Adjust the length of standpipe as necessary.

See Figure 6.

Remove the hose reel assembly from the pump base and attach it to the standpipe. Secure it in place with the spring clip on the reel assembly. Align the reel assembly with the direction of the first cleaning path (see **Operation**, Section C).

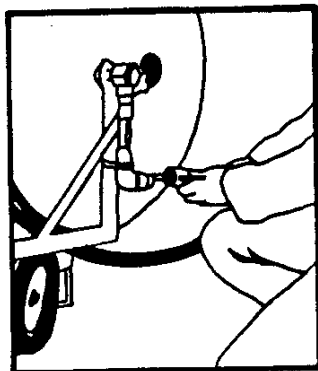


Figure 7.

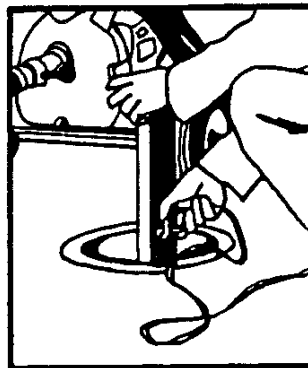


Figure 8.

See Figure 7.

Position the pump fairly close to the reel assembly and attach the 8-foot hose from the top of the eductor to the hose reel.

See Figure 8.

Attach the unit ground wire clip to the tank fill pipe, or other ground connection.

WARNING

```

////////////////////////////////////
//
// Connect ground wire to tank fill pipe or other ground
// connection before operating unit. Static-electric
// build-up could develop during cleaning operation causing
// hazardous sparks.
//
////////////////////////////////////

```

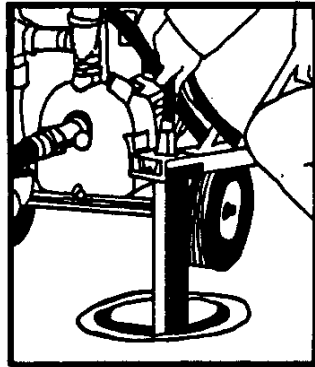


Figure 9.

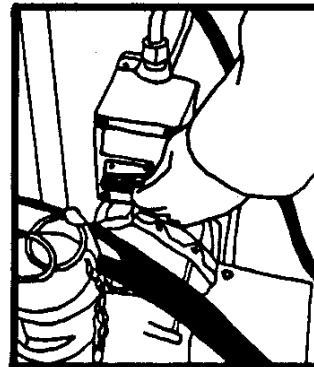


Figure 10.

See Figure 9.

Remove the clip which holds the hose assembly on the reel and insert the nozzle into the standpipe. Push the hose down the standpipe until a slight resistance is felt. This occurs when the suction nozzle travels over the rollers at the end of the standpipe.

See Figure 10.

Make sure the motor switch is OFF, then plug the power cord into a 15 ampere/250 volt grounded outlet. The unit is designed to operate on a 230 volt - 50 hertz power supply, with 15 ampere circuit protection. See Figure 11 for power receptacle and plug details.

WARNING

```

////////////////////////////////////
//
// The electrical power applied to this unit is high enough
// to cause injury or death. Connect electrical plug to a
// grounded power supply; never use gas piping as an elec-
// trical ground. Be sure the power supply is of the cor-
// rect phase and voltage. Do not run the motor if the
// voltage is not within limits. If a circuit breaker or
// fuse is tripped, examine and correct the problem before
// restarting the unit.
//
////////////////////////////////////

```

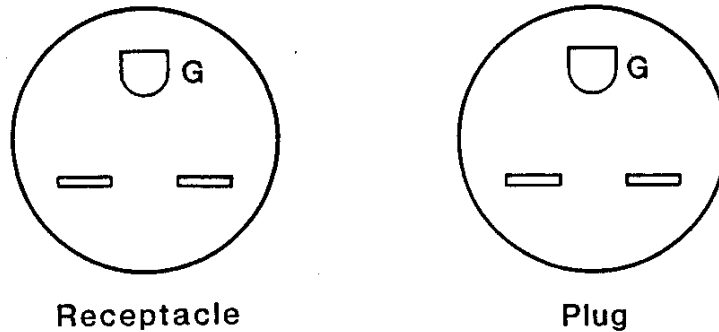


Figure 11. Power Connection

This pump is furnished with a grounded 15 ampere/250 volt electrical plug as required by the National Electric Code. No cord or plug substitution is authorized by the Gorman-Rupp Company.

**WARNING**

```

////////////////////////////////////
//                               //
// Never attempt to change the electrical plug or alter the //
// length of the power cord with a splice. Equipment fail- //
// ure or personal injury could result if all connections //
// are not waterproof and compatible with the electrical //
// current used. //
//                               //
////////////////////////////////////

```

Refer to **OPERATION**, Section C before starting the pump.

**Line Configuration**

Keep suction and discharge lines as straight as possible to minimize friction losses.

**Hose Connections**

Check all hose and pump connections to be sure the quick-connect couplers and joints are completely sealed. Hose lines may have to be supported and secured when filled and operated under pressure.

**SUCTION LINES**

Position the suction hose as far away as possible from the discharge hose. The two hoses must be on opposite sides of the drum.



### Suction Line Positioning

The depth of submergence of the suction line is critical to efficient pump operation. Figure 12 shows recommended minimum submergence vs. velocity.

#### NOTE.

The pipe submergence required may be reduced by installing a standard pipe increaser fitting at the end of the suction line. The larger opening size will reduce the inlet velocity. Calculate the required submergence using the following formula based on the increased opening size (area or diameter).

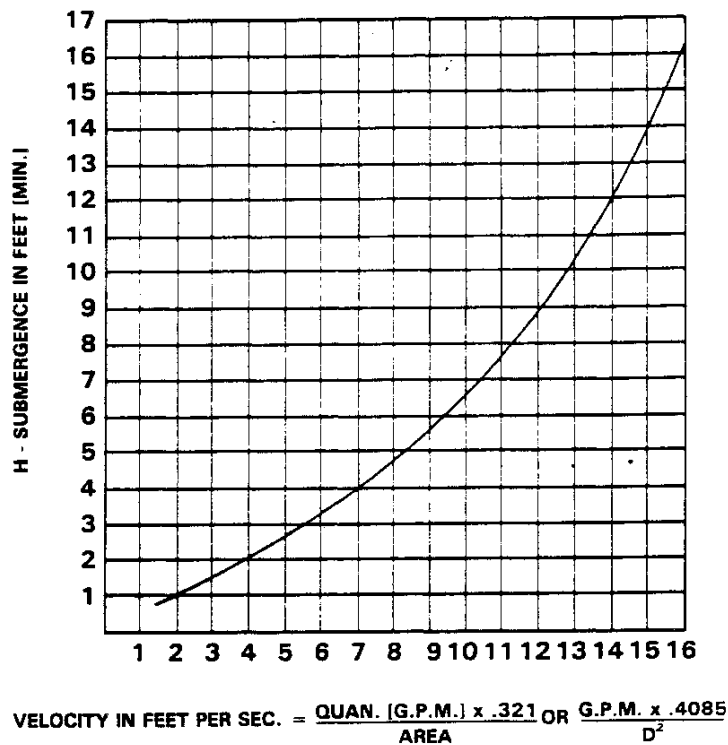


Figure 12. Recommended Minimum Suction Line Submergence Vs. Velocity

### DISCHARGE LINES

#### Siphoning

Do not terminate the discharge line at a level lower than that of the liquid being pumped. Otherwise, a siphoning action causing damage to the pump could result.

---

---

## Valves

This unit is equipped with an eductor control valve on the discharge side of the pump. The eductor has a 3-position valve for vacuum, back flush or shut off of the system. **Make sure** this valve is in the shut-off position after turning the pump off.

### CAUTION

If the eductor valve is not in the shut-off position when turning the pump off, a siphoning action could be created draining the pump casing, suction and discharge lines, and the contaminated liquid in drum back into the tank.



OPERATION

OPERATION - SECTION C

Certain information must be established prior to beginning a cleaning job: the size of the tank to be cleaned, the direction of the tank's longitudinal axis, the diameter of the tank's fill pipe through which the standpipe is inserted, and the location of the fill pipe with respect to the length of the tank. This information is necessary to properly operate and direct the hose assembly within the tank. The hose assembly **must** be directed along the bottom of a horizontal, cylindrical tank, and **centered within an 18 to 24 inch wide cleaning path.**

The hose assembly is designed so that the hose nozzle travels straight out from the standpipe, and along the bottom of the tank. The direction of nozzle travel is adjusted to the tank by rotating the reel and standpipe assembly to align the cleaning path with the longitudinal axis of the tank.

The nozzle will precisely follow any horizontal irregularities of the tank bottom. The hose assembly is **not**, however, capable of climbing the side or endwalls of the tank.

CAUTION

Attempting to climb a side or endwall will cause the hose and nozzle assembly to flip over and create a severe "tangling" situation. Therefore, it is ESSENTIAL to establish the relative size and position of the underground cylindrical tank to properly operate the hose assembly.

WARNING

////////////////////////////////////  
// This pump is designed to handle water, gasoline or other //  
// petroleum products. Do not attempt to pump corrosive or //  
// highly volatile liquids which may damage the pump or en- //  
// danger personnel as a result of pump failure. //  
// //////////////////////////////////////

WARNING

////////////////////////////////////  
// After the and all piping or hose connections are secure //  
// before operation. //  
// //////////////////////////////////////

Priming

Install the pump and hose as described in **INSTALLATION**. Make sure that the hose connections are tight, and that the pump is securely positioned.

OPERATION

Remove the dust cap on top of the discharge port and fill the pump casing with liquid. **Be sure** to reinstall dust cap after filling pump casing.

Once filled, the pump will prime and reprime. Between operations, liquid in the pump may be lost through evaporation, or by spillage if the pump has been moved. Check the priming chamber to see if is full before the pump is started.

Liquid Temperatures And Overheating

The maximum liquid temperature for this unit is 160°F unless otherwise dictated by the liquid being pumped. Do not attempt to use this pump at a higher operating temperature.

Overheating can occur if operated with the eductor valve in the shut-off position for a long period. Operating against a closed discharge could bring the liquid to a boil, build pressure, and cause the pump to rupture or explode. If overheating occurs, stop the pump and allow it to cool before servicing it. Refill the pump casing with cool liquid.

WARNING

////////////////////////////////////  
//  
// Do not operate the pump against a closed eductor control //  
// valve for long periods of time. This could bring the //  
// liquid to a boil, build pressure, and cause the pump to //  
// rupture or explode. //  
// //  
////////////////////////////////////

Cold Weather Preservation

In below freezing conditions, drain the pump to prevent damage from freezing. Also, clean out any solids by flushing with a hose. Operate the pump for approximately one minute; this will remove any remaining liquid that could freeze the pump rotating parts.

Leakage

No leakage should be visible at pump mating surfaces, or at pump connections or fittings. Keep all line connections and fittings tight to maintain maximum pump efficiency.

OPERATION

Refer to Set-up of the cleaning system as described in **INSTALLATION**.

Turn the eductor valve to the shut-off position. See Figure 1 for the three positions of the eductor valve.

---



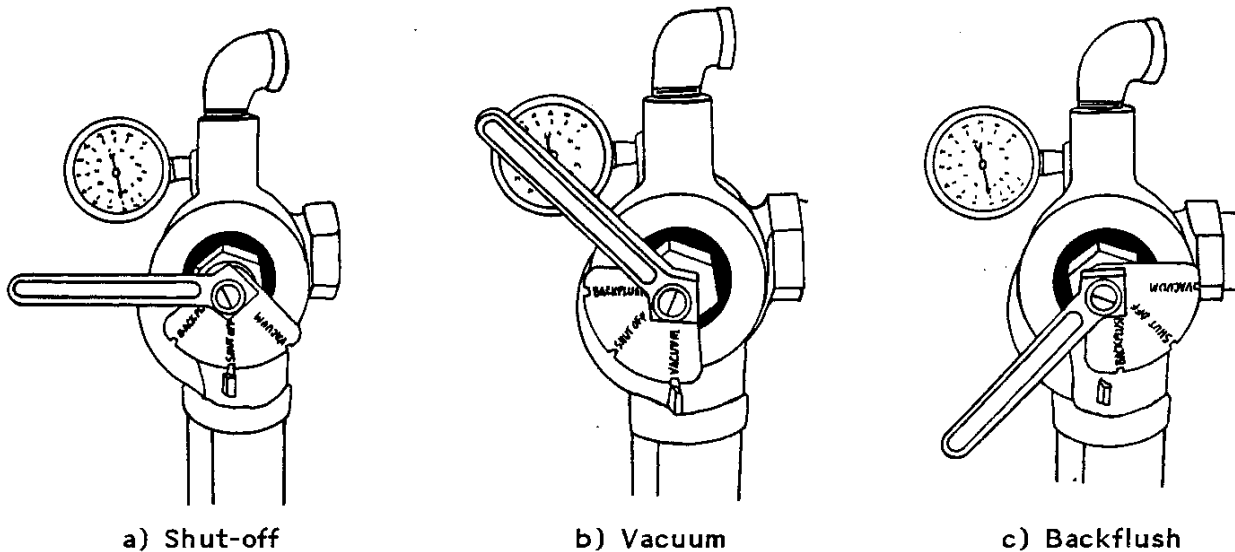
---



---

**WARNING**

//////////////////////////////////////  
 // Do not operate the pump against a closed eductor control //  
 // valve for long periods of time. This could bring the //  
 // liquid to a boil, build pressure, and cause the pump to //  
 // rupture or explode. //  
 //////////////////////////////////////



**Figure 1. Eductor Valve Positioning**

Turn the power switch on and rotate the eductor valve to the vacuum position (Figure 1-b.) Observe the sight glass on the reel assembly. As soon as liquid appears, the tankleenor™ is ready for operation. **Slowly** push the hose along the bottom of the tank. Dirt and contaminants will appear in the sight glass as they are encountered. **Stop** feeding the hose into the tank until the sight glass clears, then continue feeding the nozzle along the bottom of the tank until resistance is felt, indicating that the nozzle has contacted the end of the tank.

**CAUTION**

A very slight movement of the reel and standpipe assembly results in much greater movement of the hose and nozzle when. Use extreme caution when repositioning the reel and standpipe to prevent "tangling" the hose.

With some experience, the operator will learn how to move the hose to achieve thorough cleaning. The nozzle should be run to the end of the tank, then retracted to the standpipe while observing the sight gauge for additional contaminants collected during the return trip of the hose.

---

---

**CAUTION**

Hose and nozzle cleaning path must be centered within an 18 to 24 inch wide strip, running longitudinally (lengthwise) in the bottom of a cylindrical tank. Prior knowledge of the tank size and direction are ESSENTIAL to ensure proper hose travel and direction. If the hose does not traverse the bottom of the tank within the 18 to 24 inch wide strip, the nozzle may run up the tank side wall and cause the hose to flip over and create a severe 'tangling' situation. Tangling the hose will result in great difficulty in retrieving the hose through the standpipe, and probable destruction of the hose. Damage to the hose or nozzle caused by improper use will NOT be covered by the pump warranty. If the hose becomes tangled, see TROUBLESHOOTING.

If the suction nozzle becomes clogged with debris, (this is evident when product is present in sight glass, but no movement is observed), the obstruction can normally be flushed by reversing the fluid flow for a few seconds (see Figure 1-c). After backflushing, return the valve to the vacuum position (Figure 1-b) and resume the cleaning process.

**CAUTION**

When performing the cleaning operation, keep the suction and discharge hoses submerged, and off the bottom of the container, to prevent shut-off of flow.

When the cleaning job is completed or the cleaning drum becomes full, turn the pump off and put the eductor valve in the shut-off position (Figure 1-a). This will prevent the liquid in the drum and pump from siphoning back into the tank.

When the cleaning job is completed, clean the system for storage as follows:

- Wipe the hose assembly as it is reeled up from the tank.
- Place the suction nozzle of the hose assembly in a container of clean water, and pump water until fluid being discharged is clear.
- Coil hose assembly on the reel and anchor it in place with the retaining clip. Rotate the reel several times to drain excess water from hose.
- Disconnect reel assembly from standpipe and secure it on base. Disconnect the electric cord and ground wire. Coil and stow them on cable retaining rack.
- Disconnect and drain the suction and discharge hoses.

If the unit will be stored for an extended period, remove drain plug from pump casing and drain any remaining liquid. Clean and reinstall the plug.

TROUBLESHOOTING - SECTION D

WARNING

```

////////////////////////////////////
//
// Before attempting to open or service the pump:
//
// 1. Familiarize yourself with this manual.
// 2. Disconnect the motor to ensure that the pump will
// remain inoperative.
// 3. Allow the pump to cool if overheated.
// 4. Vent the pump slowly and cautiously.
// 5. Close the suction and discharge valves.
// 6. Check the temperature before opening any covers,
// plates, or plugs.
// 7. Drain the pump.
//
////////////////////////////////////
    
```

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
UNIT FAILS TO PRIME	Pump fails to start. Air leak in suction line. Lining of suction hose collapsed. Leaking or worn seal or pump gasket.	Check electrical connections. Correct leak. Replace suction hose. Check pump vacuum. Replace leaking or worn seal or gasket.
UNIT STOPS OR FAILS TO DELIVER RATED FLOW OR PRES-SURE	Air leak in suction line. Suction intake not submerged at proper level or sump too small. Lining of suction hose collapsed. Impeller or other wearing parts worn or damaged. Impeller clogged. Leak in hose assembly above product level. Clogged nozzle and/or hose assembly.	Correct leak. Check installation and correct submergence as needed. Replace suction hose. Replace worn or damaged parts. Check that impeller is properly centered and rotates freely. Free impeller of debris. Replace hose on reel assembly. Backflush system.



TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
UNIT STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE (cont.)	Discharge head too high. Open circuit in motor windings or power cable.	Install bypass line. Check continuity.
UNIT REQUIRES TOO MUCH POWER	Liquid solution too thick. Low or incorrect voltage.	Dilute if possible. Measure control box voltage, both when pump is running and when shut off.
UNIT CLOGS FREQUENTLY	Liquid solution too thick. Discharge line clogged or restricted; hose kinked. Feeding hose assembly too fast in tank.	Dilute if possible. Check discharge lines; straighten hose. Feed hose assembly slow and watch flow through sight glass.
EXCESSIVE NOISE	Cavitation in pump. Pumping entrained air. Pump or drive not securely mounted. Impeller clogged or damaged.	Reduce suction lift and/or friction losses in suction line. Record vacuum and pressure gauge readings and consult local representative or factory. Locate and eliminate source of air bubble. Secure mounting hardware. Clean out debris; replace damaged parts.

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
<p>HOSE ASSEMBLY WILL NOT REEL BACK UP THE STANDPIPE. HOSE SEEMS "STUCK" IN STANDPIPE</p>	<p>Hose assembly has become "tangled" and the flat spring strap inside the hose will not allow the assembly to easily slide back through the bottom opening of the stand pipe. "Tangling" has been caused by improperly directing the hose inside the tank or by continuing to feed the hose assembly after the nozzle has contacted the end of the tank.</p>	<p>Shut off unit and drain hose assembly back into the tank. Remove reel from the standpipe. DO NOT FORCE THE HOSE ASSEMBLY THROUGH THE STANDPIPE! Carefully raise the standpipe (with the hose assembly still inside) out of the tank fill pipe, then carefully feed the hose assembly back through the standpipe. Roll the hose assembly back onto the reel, making sure the steel strip inside the hose is not "twisted". The steel strip must roll parallel to the axis of the reel (similar to the tape in a measuring tape ruler.) Set up the equipment again, this time being careful to properly feed the hose/tape assembly into the tank.</p>



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**MAINTENANCE AND REPAIR - SECTION E**

**MAINTENANCE AND REPAIR OF THE WEARING PARTS OF THE PUMP WILL MAINTAIN PEAK OPERATING PERFORMANCE.**

**TYPICAL PERFORMANCE FOR Unit 608-A tankleenor™**

LIFT (in feet)	EDUCTOR CAPACITY (in U.S. gallons/min.)	VACUUM (in inches of Hg.)
5	3.25	14.0
10	2.67	16.0
15	1.94	16.0
20	.72	18.0

LIFT (in meters)	EDUCTOR CAPACITY (in liters/minute)	VACUUM (in kilopascals)
1,5	12,3	-47,3
3,0	10,1	-54,1
4,6	7,3	-54,1
6,1	2,7	-60,8

BACKFLUSH = 7.7 GPM (29.1 LPM) @28.5 PSI (196.5 kPa).

TRANSFER FLOW = 88 GPM (333 LPM) THROUGH PUMP WITH 1 1/2 INCH HOSE.

**\*STANDARD PERFORMANCE FOR PUMP MODEL Unit 608-A tankleenor™**

\*Based on 70°F clear water at sea level with minimum suction lift. Since pump installations are seldom identical, your performance may be different due to such factors as viscosity, specific gravity, elevation, temperature, and impeller trim.

If your pump serial number is followed by an "N", your pump is **NOT** a standard production model. Contact the Gorman-Rupp Company to verify performance or part numbers.

SECTIONAL DRAWING

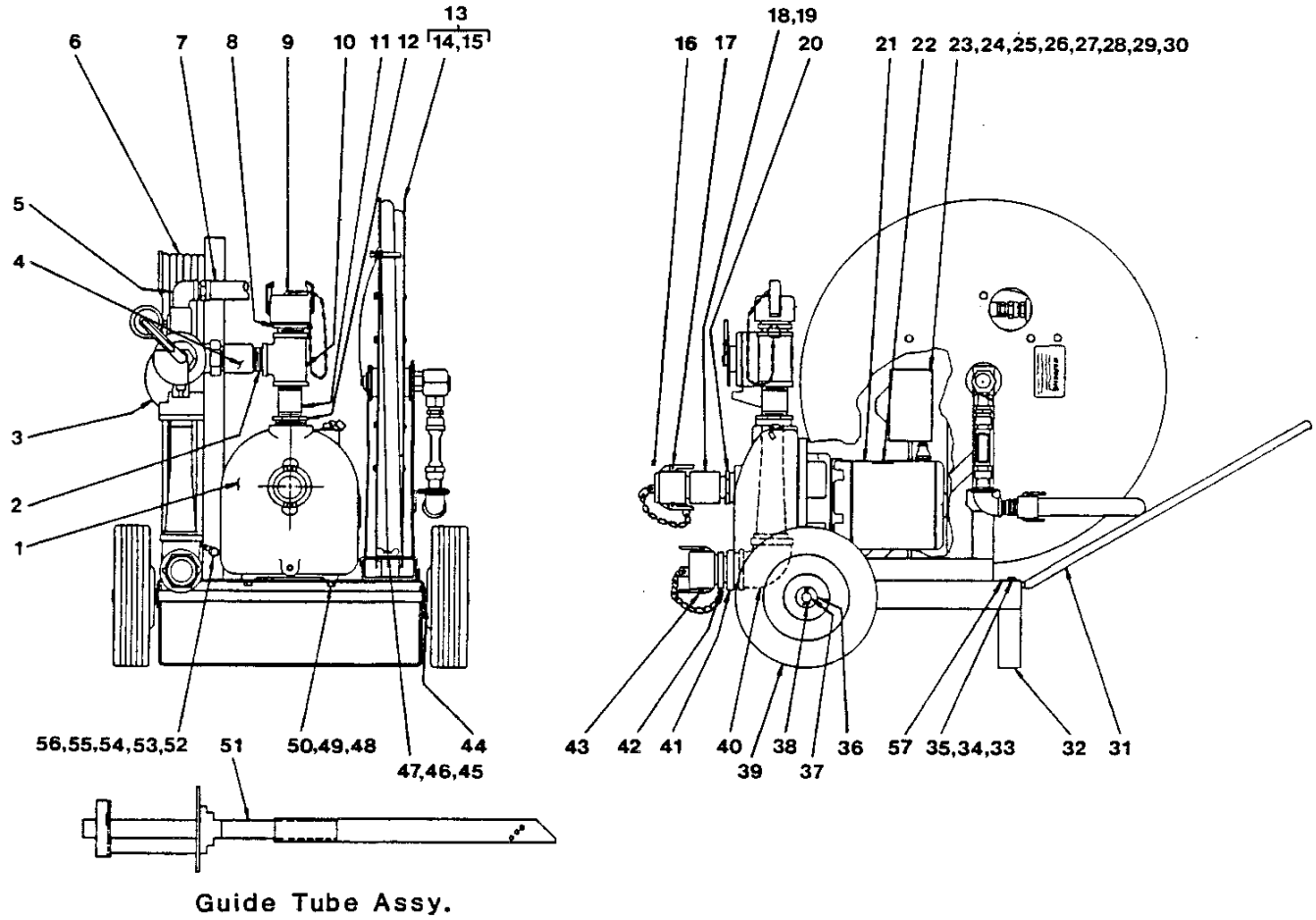


Figure 1. Unit 608-A Tankleenor

**PARTS LIST**  
**Unit 608-A Tankleenor**  
 (From S/N 791085 up)

If your pump serial number is followed by an "N", your pump is **NOT** a standard production model. Contact the Gorman-Rupp Company to verify part numbers.

ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY	ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY
1	PUMP END ASSY	02K3 (SEE FIGURE 2)		1	31	HANDLE	5438-A	15990	1
2	PIPE NIPPLE	T00024	15070	1	32	BASE	13832	24000	1
3	EDUCTOR VALVE ASSY	13559 (SEE FIGURE 3)		1	33	HEX HD CAPSCREW	B00605	15991	2
4	PIPE COUPLING	AE00024	11990	1	34	HEX NUT	D00006	15991	2
5	STREET ELBOW	RS00012	11990	1	35	LOCKWASHER	J00006	15991	2
6	CORD ASSY	47365-012	-----	1	36	SPACER WASHER	5382	15990	4
7	HOSE ASSY	46341-012	-----	1	37	AXLE	6158-D	15990	1
8	ADAPTOR	S01294	-----	1	38	COTTER PIN	M00306	15990	2
9	DUST CAP	S01296-A	-----	1	39	*TIRE	S00752	-----	2
10	PIPE TEE	U00024	11990	1	40	PIPE ELBOW	R00032	11990	1
11	PIPE NIPPLE	T02414	15070	1	41	REDUCING BUSHING	AP03224	11990	1
12	REDUCING BUSHING	AP03224	11990	1	42	ADAPTOR	S01294	-----	1
13	HOSE & REEL ASSY (SEE FIGURE 4)	41331-008	-----	1	43	DUST COVER	S01296-A	-----	1
14	-REEL ASSY	41331-009	-----	1	44	SPACER WASHER	5382	15990	4
15	-HOSE ASSY	46341-414	-----	1	45	*WING NUT	BB00006	15991	1
16	DUST PLUG	S01295	-----	1	46	LOCKWASHER	J00006	15991	1
17	COUPLER	S01293	-----	1	47	WASHER	31131-011	15021	1
18	PIPE COUPLING	AE00024	11990	1	48	HEX HD CAPSCREW	B00606	15991	4
19	PIPE NIPPLE	T00024	15070	1	49	T-TYPE LOCKWASHER	BL00006	15991	8
20	REDUCING BUSHING	AP03224	11990	1	50	HEX NUT	D00006	15991	4
21	1.5HP 1P XP MOTOR	M00047	-----	1	51	STANDPIPE ASSY (SEE FIGURE 5)	46312-009	24150	1
22	WARNING DECAL	2613-FF	-----	1	52	GRND WIRE ASSY	13830	-----	1
23	EXPL PROOF SWITCH	S02219	-----	1	53	HEX HD CAPSCREW	B00403	15991	1
24	TERMINAL SLEEVE	S01023	-----	3	54	T-TYPE LKWASHER	BL00004	15991	2
25	TERMINAL SLEEVE	S01112	-----	2	55	LOCKWASHER	J00004	15991	1
26	TERMINAL SK-B34	S01686	-----	1	56	HEX NUT	D00004	15991	1
27	CABLE GRIP ASSY	27111-622	-----	1	57	NAME PLATE	38818-031	-----	1
28	TERMINAL SK#C115U	S02262	-----	2	NOT SHOWN:				
29	TERMINAL SK-BZ90	S02261	-----	2		SUCT HOSE ASSY	46341-013	-----	1
30	CONNECTOR	27284-003	-----	1		DISCH HOSE ASSY	46341-014	-----	1

\*INDICATES PARTS RECOMMENDED FOR STOCK

Above Serial Numbers Do Not Apply To Pumps Made In Canada.

CANADIAN SERIAL NO ..... AND UP

SECTIONAL DRAWING

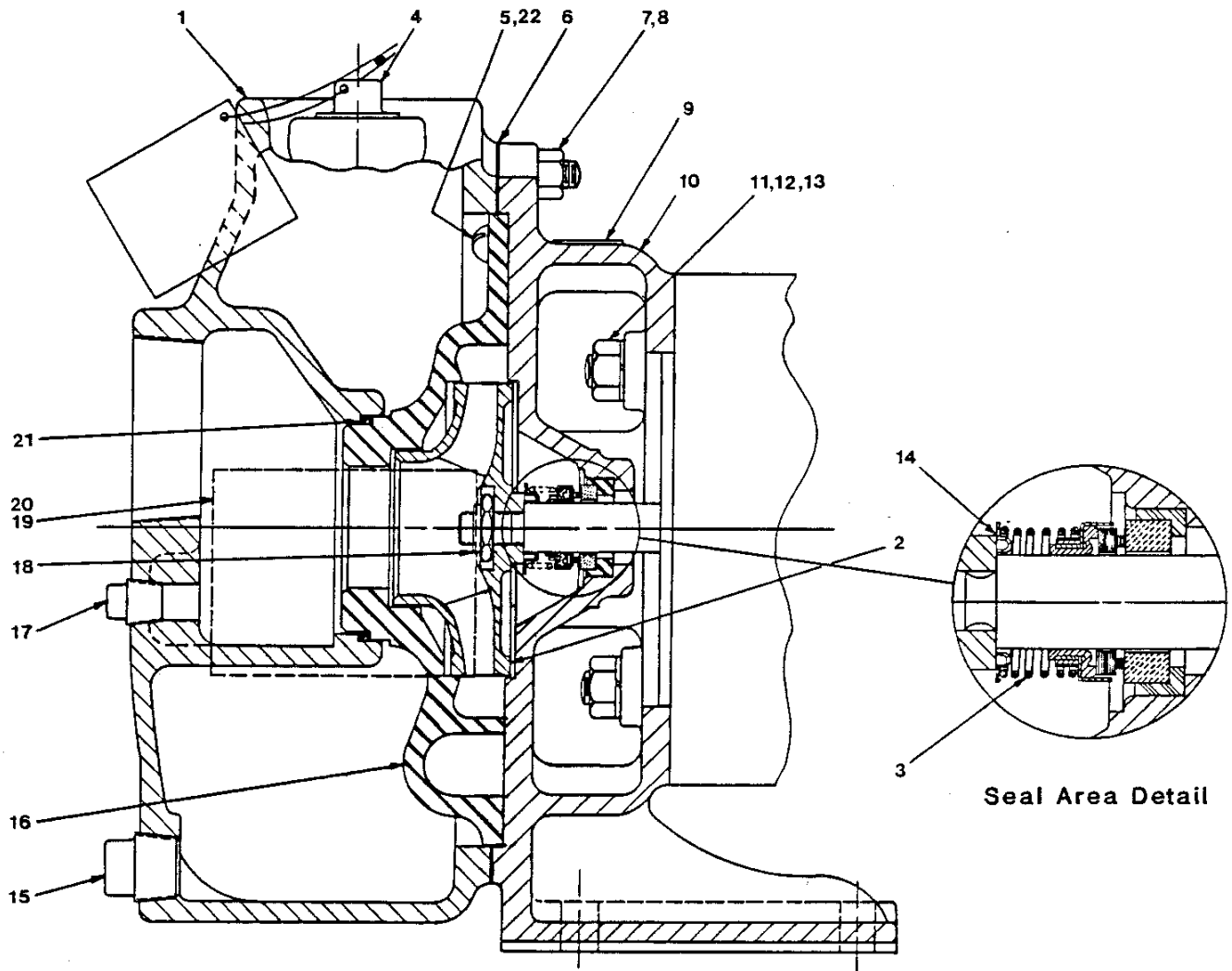


Figure 2. Pump End Assembly For Model 02K3

**PARTS LIST**  
**02K3 Pump End Assembly For Unit 608-A**

ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY
1	PUMP CASING	6366	10010	1
2	* IMPELLER	10205	14000	1
3	* SEAL ASSY	25271-821	-----	1
4	FILL PLUG ASSY	48271-060	-----	1
5	RD HD MACHINE SCREW	X00402	14990	1
6	* PUMP CASING GSKT	2958-GB	20000	1
7	STUD	C00606	15991	8
8	HEX NUT	D00006	15991	8
9	DIRECTION PLATE	2613-BM	00000	1
10	INTERMEDIATE BRACKET	6367-C	10010	1
11	STUD	C00606	15991	4
12	HEX NUT	D00006	15991	4
13	T-TYPE LOCKWASHER	AK00006	15991	4
14	* ADJUSTING SHIM SET	5889	17000	1
15	CASING DRAIN PLUG	P00008	11990	1
16	VANE PLATE	10204	10010	1
17	PIPE PLUG	P00004	11990	1
18	* DEFORM LOCKNUT	DC00007-S	15991	1
19	NAME PLATE	38818-031	13990	1
20	DRIVE SCREW	BM#04-03	15990	4
21	* VANE PLATE O-RING	S01487	-----	1
22	RD HD MACHINE SCREW	X00405	14990	2
NOT SHOWN:				
	REDUCER COUPLING	AE01208	11990	1
	PIPE NIPPLE	T00008	15070	1

\*INDICATES PARTS RECOMMENDED FOR STOCK



SECTIONAL DRAWING

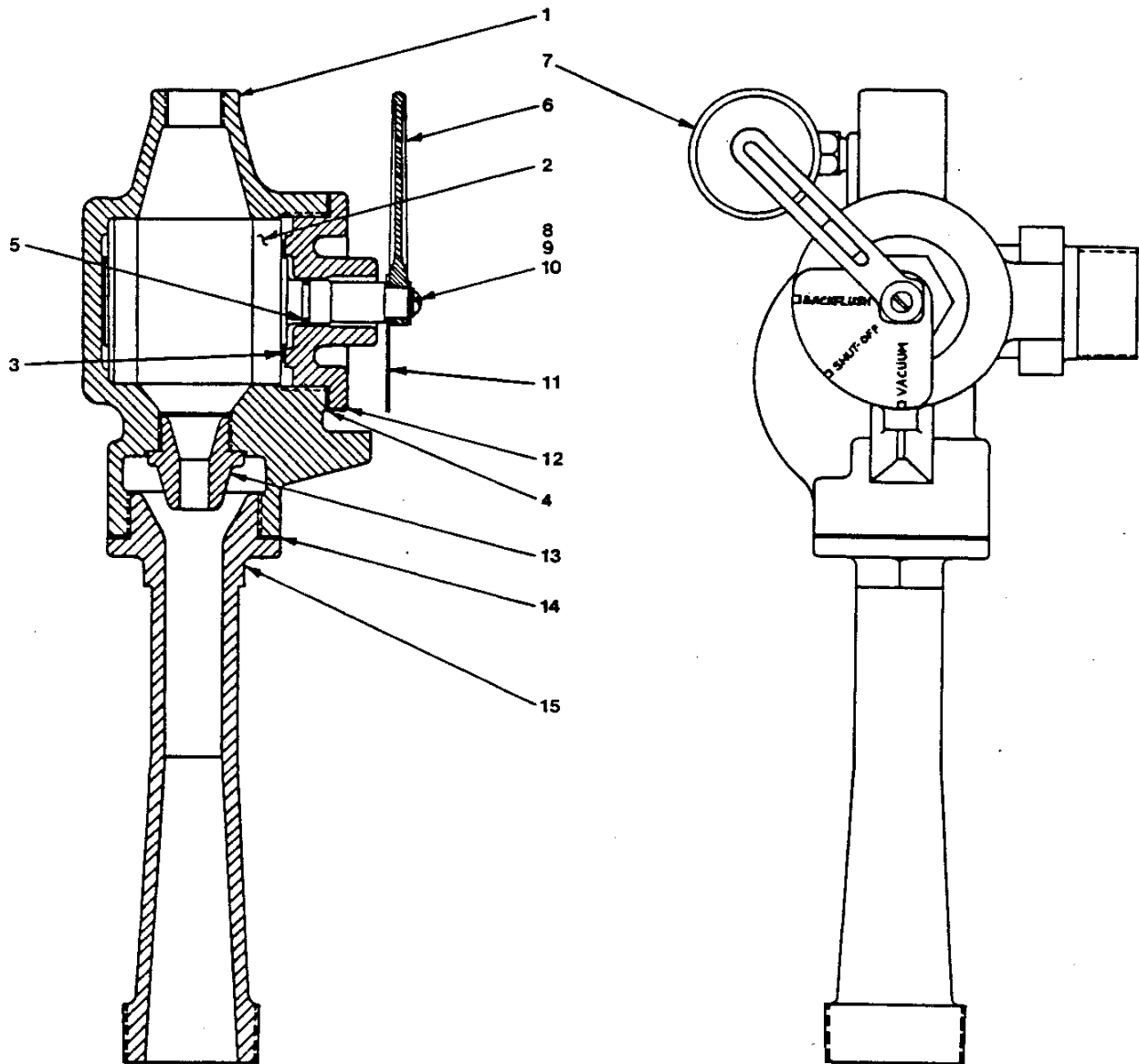


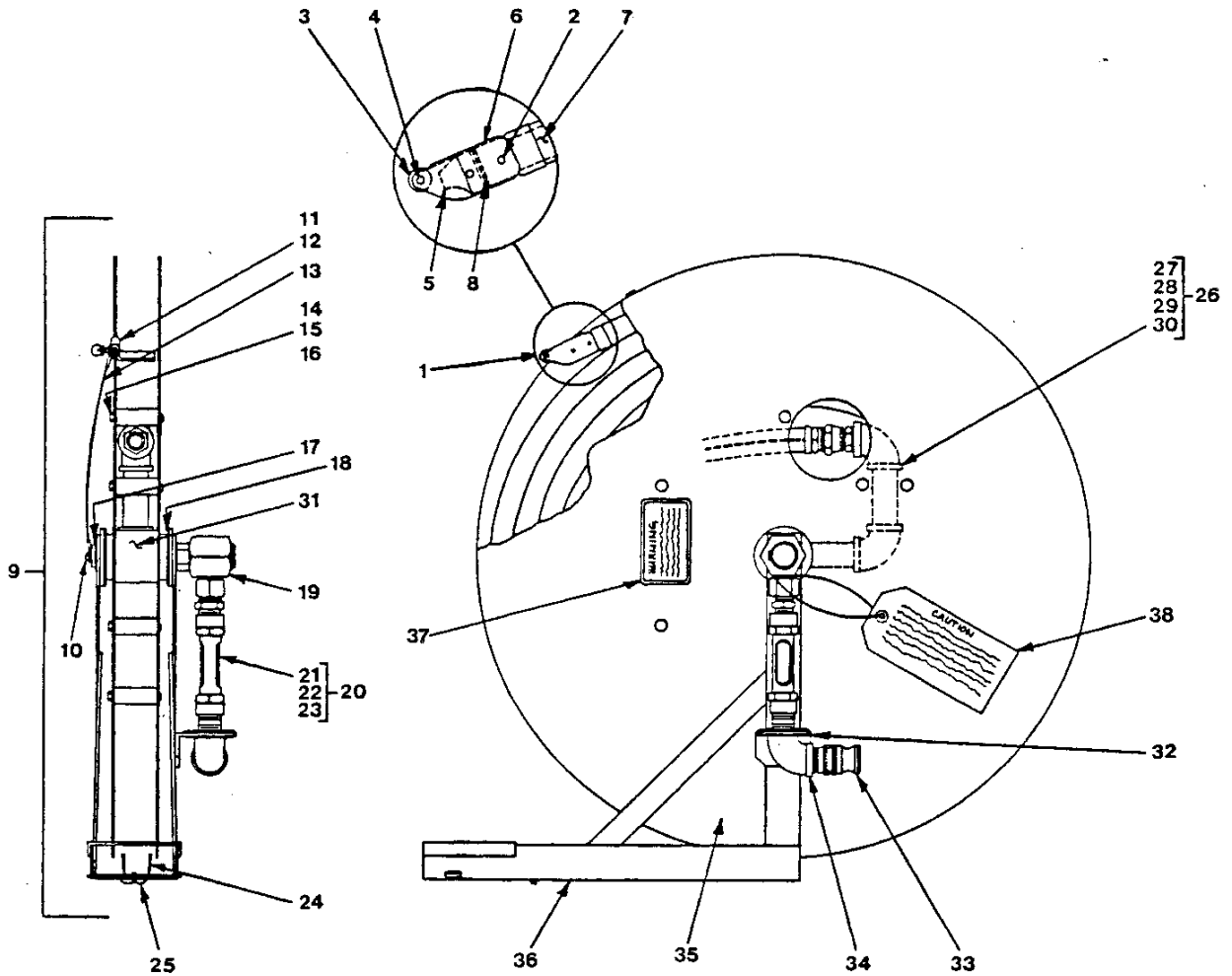
Figure 3. 13559 Eductor Valve Assembly

**PARTS LIST**  
**13559 Eductor Valve Assembly**

ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY
1	VALVE BODY	13560	13047	1
2	VALVE PLUG	13563	14004	1
3	WAVE WASHER	S01592	-----	1
4	* CAP GSKT	13564-G	20000	1
5	* VALVE PLUG O-RING	S02120	-----	1
6	HANDLE	13777	11000	1
7	* PRESSURE GAUGE	S00155	-----	1
8	RD HD MACHINE SCREW	X00402	15991	1
9	LOCKWASHER	J00004	15991	1
10	FLAT WASHER	K00004	15991	1
11	INDEX PLATE	13565	17990	1
12	VALVE CAP	13564	13045	1
13	NOZZLE	13561	13045	1
14	* VENTURI GSKT	13562-G	20000	1
15	VENTURI	13562	13045	1

\*INDICATES PARTS RECOMMENDED FOR STOCK

SECTIONAL DRAWING



Hose Not Shown  
This View

Figure 4. 41331-008 Hose And Reel Assembly

PARTS LIST  
41331-008 Hose And Reel Assembly

ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY
1	HOSE ASSEMBLY	46341-414	-----	1
2	-SELF-TAPPING SCREW	21263-003	-----	4
3	* -ROLLER	31411-086	23050	1
4	* -ROLLER PIN	31312-015	14100	1
5	-HOSE NOZZLE	38634-015	14100	1
6	* -HOSE NOZZLE GUARD	34875-003	17000	1
7	-HOSE AND STRAP	NOT AVAILABLE		1
8	* -ROLL PIN	21154-673	-----	1
9	REEL ASSEMBLY	41331-009	-----	1
10	* -NYLOCK MACHINE SCREW	XA#10-01 1/2	15991	1
11	* -CLAMP	38116-315	15020	1
12	* -THUMBSCREW	BH00401 1/2	15991	1
13	* -WIRE ASSY	41158-804	-----	1
14	-LOCKWASHER	J00005	15991	14
15	-HEX HD CAPSCREW	B00503	15991	14
16	-SPACER	31481-001	13150	7
17	-SNAP RING	24124-134	-----	2
18	-WASHER	31131-061	19210	2
19	-SWIVEL	46381-102	-----	1
20	-SIGHT TUBE ASSY	46311-015	-----	1
21	-PIPE NIPPLE	NOT AVAILABLE		1
22	-MALE ADAPTOR	NOT AVAILABLE		1
23	-SIGHT GAUGE	NOT AVAILABLE		1
24	-SPRING CLIP	31977-002	15091	1
25	-COTTER PIN	M00304	15991	1
26	-PIPE ASSEMBLY	46335-046	-----	1
27	-PIPE ELBOW	R00012	11991	2
28	-PIPE NIPPLE	T01211	15071	1
29	-PIPE NIPPLE	T01215	15071	1
30	-SWIVEL	26571-114	-----	1
31	-REEL SPINDLE	31781-009	14100	1
32	-GROMMET	27135-081	-----	1
33	-ADAPTOR	S002237	-----	1
34	-PIPE ELBOW	R00012	11991	1
35	-REEL DISC	31281-031	-----	2
36	-HOSE BASE ASSY	41583-551	24150	1
37	WARNING DECAL	38816-126	-----	2
38	CAUTION TAG	38816-124	-----	1

\*INDICATES PARTS RECOMMENDED FOR STOCK

SECTIONAL DRAWING

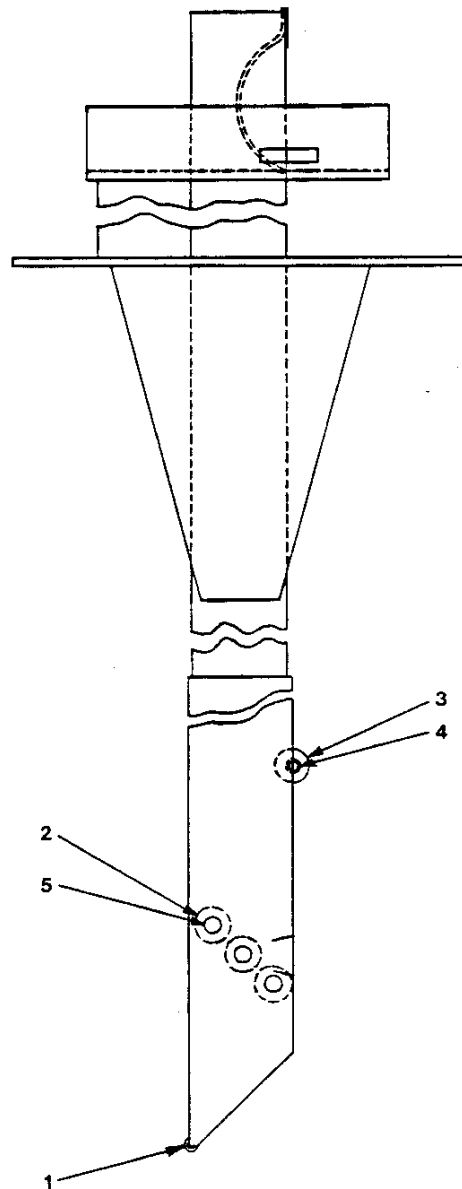


Figure 5. 46312-009 Standpipe Assembly

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PARTS LIST  
46312-009 Standpipe Assembly

ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY
1	* ROLL PIN	S01611	-----	1
2	* NYLON ROLLER	31411-099	23050	3
3	* NYLON ROLLER	31141-022	23050	1
4	* ROLL PIN	S01611	-----	1
5	* ROLLER PIN	31312-014	14100	3

\*INDICATES PARTS RECOMMENDED FOR STOCK

PUMP AND SEAL DISASSEMBLY AND REASSEMBLY

The pump end requires little service due to its rugged minimum-maintenance design. However, if it becomes necessary to inspect or replace the wearing parts, follow these instructions which are keyed to the sectional views (Figures 1 and 2) and accompanying parts lists.

Before attempting to service this pump, close the eductor valve and drain the system. Unplug the power supply cord from the outlet to ensure the motor will remain inoperative while the pump is being serviced.

WARNING

```

////////////////////////////////////
//
// Before operating or servicing the pump, be certain prop- //
// er safety practices are followed. Provide adequate ven- //
// tilation, prohibit smoking, wear static-resistant //
// clothing and shoes. Clean up all fuel spills immediate- //
// ly after occurrence. //
// //
////////////////////////////////////

```

Pump Disassembly

(Figure 2)

WARNING

```

////////////////////////////////////
//
// Before attempting to open or service the pump: //
// //
// 1. Familiarize yourself with this manual. //
// 2. Unplug the power supply cord from the outlet to //
// ensure that the pump will remain inoperative. //
// 3. Allow the pump to cool if overheated. //
// 4. Vent the pump slowly and cautiously. //
// 5. Close the suction and discharge valves. //
// 6. Check the temperature before opening any covers, //
// plates, or plugs. //
// 7. Drain the pump. //
// //
////////////////////////////////////

```

Remove the pump casing drain plug (15) and drain the pump. Clean and reinstall the drain plug.

See Figure 1 and disconnect the suction and discharge hoses from the pump and unscrew the hose assembly (7) from the elbow (5). Install the dust plug (16) and dust cover (43) to protect the suction and discharge ports from contamination.

For access to the impeller (2) and seal assembly (3), the pump casing (1) must be separated from the intermediate (10). Remove the nuts (8) and separate the assemblies. **Be careful** not to damage the eductor valve assembly (3, Figure 1) when removing the pump casing.

Remove the casing gasket (6) and clean the mating surfaces. Remove the O-ring (21) from the vane plate.

Remove the round head machine screws (5 and 22) and separate the vane plate (16) from the intermediate. Clean the vane plate and intermediate mating surfaces.

To remove the impeller (2), immobilize it by inserting a prybar or other suitable device between the vanes, and disengage the impeller deform lock nut (18). Remove the prybar and place a block of wood against one of the vanes and strike it sharply with a hammer. The impeller will unscrew in a counter-clockwise direction (when facing the impeller). **Be careful** not to damage the impeller vane. Use caution when removing the impeller; tension of the seal spring will be released as the impeller is unscrewed.

Remove the impeller adjusting shims (14). For ease of reassembly, tie and tag the shims or measure and record their thickness.

Is not necessary to remove the intermediate (10) unless obvious damage or wear is visible. To remove the intermediate, see **Seal Disassembly**.

Seal Removal

(Figure 2 and 6)

Remove the seal spring seat and the spring. Slide the assembled retainer and bellows and rotating element off the shaft. Use a stiff wire with a hooked end to remove the stationary element and seat from the intermediate.

To separate the intermediate (10) from the motor housing, remove the base mounting (48, 49, and 50, Figure 1) and disengage hardware (12 and 13).

Seal Installation

(Figure 2 and 6)

Clean the seal cavity and shaft with a cloth soaked in fresh cleaning solvent.

WARNING

```

////////////////////////////////////
//
// Most cleaning solvents are toxic and flammable. Use //
// them only in a well-ventilated area free from excessive //
// heat, sparks, and flame. Read and follow all prec- //
// autions printed on solvent containers. //
// //
////////////////////////////////////

```

The seal is not normally reused because wear patterns on the finished faces cannot be realigned during reassembly. This could result in premature failure. If necessary to reuse an old seal in an emergency, **carefully** wash all metallic parts in fresh cleaning solvent and allow to dry thoroughly.

Handle the seal parts with extreme care to prevent damage. Be careful not to contaminate precision finished faces; even fingerprints on the faces can shorten



seal life. If necessary, clean the faces with a non-oil based solvent and a clean lint free tissue. Wipe **lightly** in a concentric pattern to avoid scratching the faces.

Inspect the seal components for wear, scoring, grooves, and other damage that might cause leakage. If any components are worn, replace the complete seal; **never mix old and new seal parts.**

If a replacement seal is being used, remove it from the container and inspect the precision finished faces to ensure that they are free of any foreign matter.

To ease installation of the seal, lubricate the shaft, bellows, and stationary seat with water or a very **small** amount of oil, and apply a drop of light lubricating oil on the finished faces. Assemble the seal as follows, (see Figure 6).

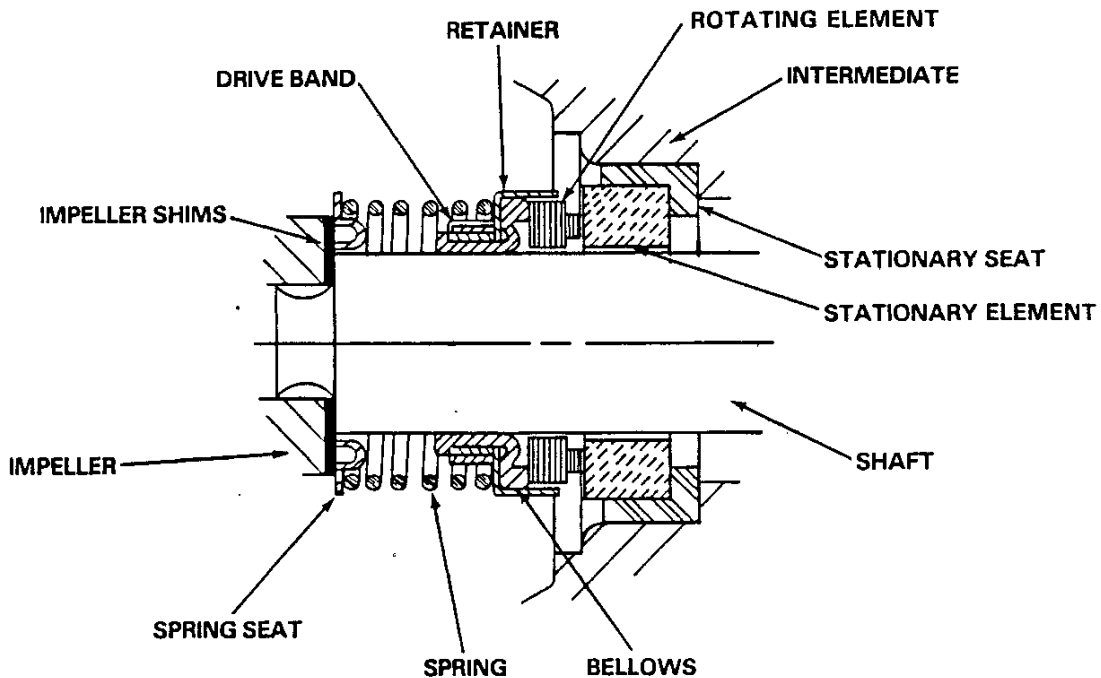


Figure 6. 25271-821 Seal Assembly

#### CAUTION

This seal is not designed for operation at temperatures above 160°F. Do not use at higher operating temperatures.

If removed for replacement, slide the intermediate over the shaft and secure it to the motor housing with the attaching hardware (12 and 13).

---

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**MAINTENANCE AND REPAIR**

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Subassemble the stationary element in the stationary seat. Using thumb pressure, press the subassembly squarely into the intermediate bore until the stationary seat is fully seated against the bore shoulder.

Subassemble the rotating element into the retainer and bellows. Carefully apply even pressure on the back of the retainer until the rotating subassembly slides onto the shaft and the seal faces contact.

**NOTE**

A conical sleeve can be installed over the shaft threads to ease installation of the rotating subassembly. The O.D. of the large end of the sleeve should be the same as the O.D. of the seal seating surface on the shaft.

Install the spring and seal spring seat.

Lubricate the seal assembly as described in LUBRICATION.

**Pump Reassembly****(Figure 2)**

Inspect the impeller, and replace if cracked or badly worn. Install the same thickness of adjusting shims (14) as previously removed and screw the impeller onto the shaft until tight.

For maximum pump efficiency, the impeller vanes must be centered within the volute scroll.

To verify the impeller positioning, measure from the machined face of the intermediate to the center of the impeller vanes. Add or remove impeller adjusting shims until this dimension equals 1/2 the depth of the volute scroll.

After the impeller has been properly positioned, apply a small amount of "3M EC-847" sealant (or equivalent) on the mating surfaces, and secure the vane plate to the intermediate with the round head machine screws (5 and 22).

Replace the pump casing gasket (6) and the vane plate O-ring (21), and secure the pump casing and attached eductor valve assembly to the intermediate with the nuts (8).

**NOTE**

After the pump is reassembled, turn the impeller and motor shaft from the motor end with a screwdriver. If scraping or binding is felt, correct before putting the pump into back service.

**EDUCTOR VALVE DISASSEMBLY AND REASSEMBLY**

All instructions in this section are keyed to the sectional view (Figure 3) and the accompanying parts list.

Valve Disassembly

Disconnect valve assembly from pump and hose assembly (1 and 7, Figure 1). Remove pressure gauge (7).

Use a 1 1/2-inch open end wrench and unscrew the venturi (15) from the valve body (1). Remove the venturi gasket (14) and clean the mating surfaces.

Use a 1 1/2-inch socket wrench to unscrew the eductor nozzle (13) from the valve body.

To service the valve plug (2), remove the valve and index plate (6 and 11) by removing the hardware (8, 9, and 10). Use a 1 1/2-inch open end wrench to unscrew the valve cap (12). Remove the cap gasket (4) and clean the mating surfaces.

Remove the wave washer (3) and pull the valve plug (2) from the valve body.

Remove the O-ring (5) from the valve plug shaft.

Valve Reassembly

Clean the valve plug, valve cap, nozzle, and valve body with a cloth soaked in fresh cleaning solvent.

WARNING

```

////////////////////////////////////
//
// Most cleaning solvents are toxic and flammable. Use //
// them only in a well-ventilated area free from excessive //
// heat, sparks, and flame. Read and follow all prec- //
// autions printed on solvent containers. //
// //
////////////////////////////////////

```

Inspect all eductor valve components, and replace them as necessary.

Apply a small amount of light oil to the O-ring (5) and install it on the valve plug shaft. Slide the valve plug into the valve body.

NOTE

Position the valve plug in a vertical position when assembling it in the valve body.

Install the wave washer (3).

Replace the cap gasket (4) and screw the cap into the valve body.

NOTE

Apply 'Never-Seez' thread sealant, or equivalent, on all threaded parts.

MAINTENANCE AND REPAIR

Position the index plate on the shaft with the words **SHUT-OFF** at the indicator on the valve body. Reassemble the handle at the 9 o'clock position and secure with the attaching hardware (8, 9 and 10).

Install the valve nozzle.

Replace the venturi gasket (14) and thread the venturi into the valve body.

Install the pressure valve and reconnect the valve assembly to the pump.

Check the operation of the valve for free movement in the different positions.

**HOSE AND REEL DISASSEMBLY AND REASSEMBLY**

All instructions in this section are keyed to the sectional view (Figure 4) and the accompanying parts list.

**Hose Disassembly**

Remove the hose and reel assembly from the base of the unit. Loosen the thumbscrew (12). Remove the clamp (11), and unwind the hose assembly (1). Reach through the opening in the side of the reel disc (35) with a wrench and disconnect the hose assembly from the swivel fitting (30).

Inspect the nozzle end of the hose assembly. Disassembly in the field is not recommended; however, if the nozzle should require replacement, individual parts are available. To remove the nozzle, remove the self-tapping screws (2) and separate the nozzle guard (6) from the hose end.

If the roller (3) requires replacement, grind the head off the roller pin (4), tap it out of the nozzle guard and remove the roller.

To remove the nozzle (5) from the hose (7), tap the roll pin (8) out of the nozzle and separate the nozzle from the hose and strap.

**Do not** try to separate the strap from inside the hose. If the hose is damaged or the strap broken, the complete hose assembly must be replaced; individual parts are not sold separately.

**WARNING**

```

////////////////////////////////////
//                               //
// Inspect the 5/8-inch X 42 foot suction hose for cuts, //
// punctures, or severe abrasion before pump operation. //
// Replace the entire hose assembly if there is any possi- //
// bility of leakage or exposure of integral spring steel //
// strap. //
//                               //
////////////////////////////////////

```

---

---

### Reel Disassembly

After removing the hose assembly (1), the reel assembly can be disassembled.

Unscrew the sight tube assembly (20) from the swivel (19). Disengage the machine screw (10) from the reel spindle (31), and remove the thumbscrew, clamp and wire assembly (11, 12 and 13).

To remove the swivel (19), immobilize the reel spindle and unscrew the swivel from the spindle.

To remove the reel discs (35) from the base (39), remove the snap ring (17), spread the top of the base assembly slightly and lift the assembled spindle and discs from the base. Remove the washers (18) from the spindle.

If replacement of the pipe assembly (26) or reel spindle is required, remove the hardware (14 and 15), separate the discs (35) and spacers (31). Remove the internal fittings as required.

If the spring clip (24) requires replacement, remove the cotter pin (25) from the base assembly (36) and pull the clip from the base.

### Reel Reassembly

Position the spring clip into the base and secure it by sliding the cotter pin (25) over the clip, then through the hole in the bottom of the base. Spread the end of the cotter pin.

Clean the sight tube assembly parts, pipe assembly parts, spindle, and swivel fitting with fresh cleaning solvent.

Assemble the pipe assembly to the spindle and attach the two discs (35) and spacers (16) with the hardware (14 and 15).

Position the washers (18) on the spindle. Spread the top of the base assembly and position the reel in the holes in the sides of the base. Screw the swivel (19) into the reel spindle (31).

### NOTE

Use 'Loctite' teflon pipe sealant or equivalent on all pipe thread connections.

Install the snap ring (16) to secure the reel to the base. Secure the clamp, thumbscrew and wire assembly (11, 12 and 13) to the spindle with the machine screw (10).

Connect the sight tube assembly (20) to the swivel. Install the sight tube assembly with the **chamfered fitting**, not the pipe nipple, towards the swivel.

See **Hose Reassembly** when connecting the hose to the reel.

### Hose Reassembly

Clean the nozzle parts in fresh cleaning solvent.

Insert the end of the strap into the bore of the hose nozzle. Push the hose onto the nozzle and install the roll pin (8) through the nozzle and hose strap.

Install the nozzle guard over the nozzle and secure with self-tapping screws (2).

Assemble the roller into the nozzle guard using the roller pin (4). Peen the end of the pin to retain the roller.

Connect the other end of the hose assembly to the reel assembly. Reach through the access hole with two open end wrenches and tighten the fittings.

### NOTE

It is **extremely** important that the steel strap inside the hose be positioned so that it rolls parallel to the axis of the reel. **Also**, the nozzle must be in the upright position as illustrated in Figure 4.

### STANDPIPE DISASSEMBLY AND REASSEMBLY

All instructions in this section are keyed to the sectional view (Figure 5) and the accompanying parts list.

#### Standpipe Disassembly

If the rollers (2) are damaged and require replacement, grind off the ends of the roller pins (5) and tap them from the standpipe.

The roller (3) can be removed by tapping the roll pin (4) off the standpipe wall.

#### Standpipe Reassembly

Slide the roll pin (4) through the roller (3) and tap the pin over the tubing wall. If the roll pin (1) requires replacement, tap the old pin off and a replacement on.

Align the rollers (2) in the holes in the tubing wall and tap the roller pins through the wall and roller. **Peen** the end of the roller pins to prevent them from coming loose.

**LUBRICATION****Seal Assembly**

The seal assembly is lubricated by the medium being pumped, and no additional lubrication is required.

**Motor**

Refer to the literature accompanying the motor, or contact the motor manufacturer's local representative.

**For U.S. and International Warranty Information,  
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