

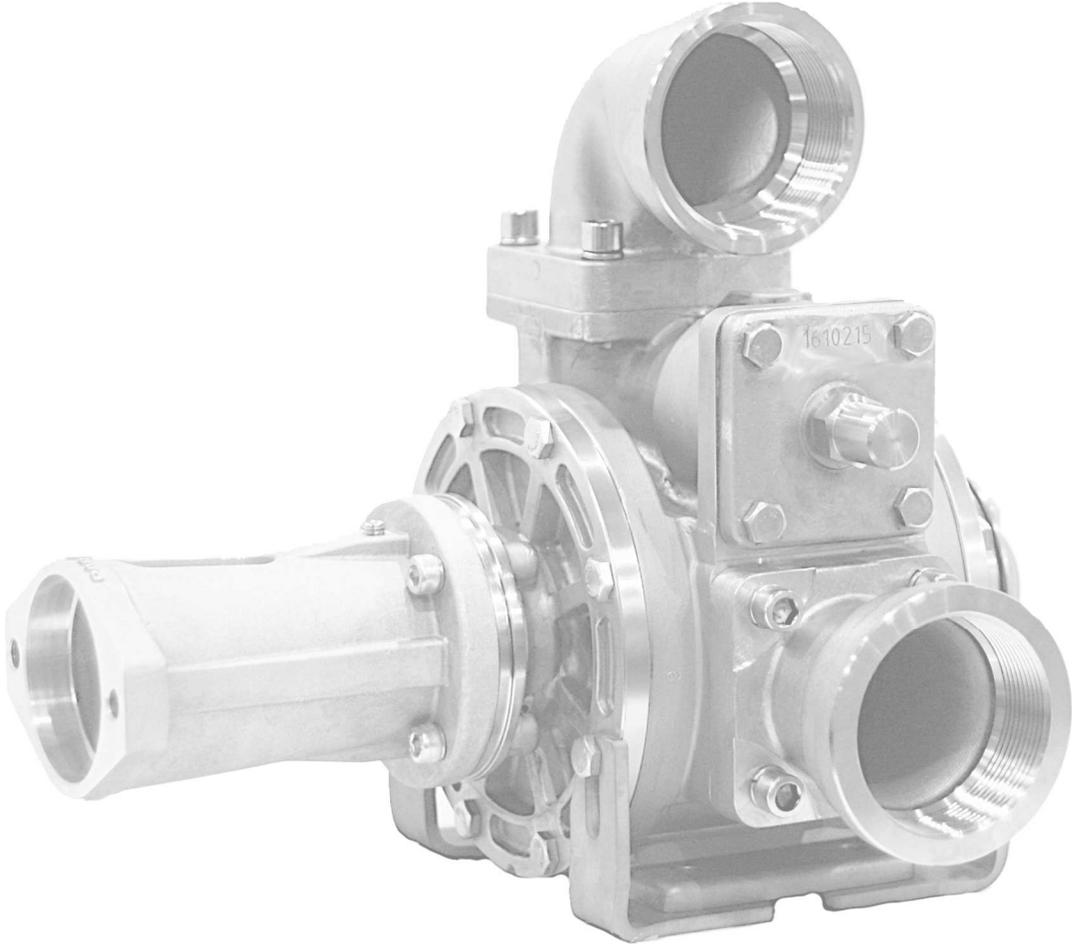
# Installation and Operation Manual



TM

# SVP150

**Stainless Steel  
Vane Pump**



PRGMAN-15  
Version: A  
January 31, 2024

**Congratulations**  
on your new Paragon purchase

Materials of Construction

<b>Part Name</b>	<b>Standard Materials</b>
Cylinder, Heads, Port Flanges, and R/V Cover	304 Stainless Steel Cast
Rotor, Shaft, and Push Rods	304 Stainless Steel
R/V Poppet, Cap, Seat and Spring	304 Stainless Steel
Head, R/V Cap and R/V Cover O-Rings	Buna FKM PTFE encapsulated Silicone
Gaskets	Garlock 700
Vanes	Polymer Compound w/ Stainless Steel wear plates
<b>Mechanical Seal Components</b>	
Stationary and Rotating O-Ring	Buna FKM ChemRaz®
Stationary Seat	304 Stainless Steel Cast
Rotating Seal Face	Carbon
Spring	304 Stainless Steel
Seal Housing	304 Stainless Steel Sheet

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# Safety Notice

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**This manual is designed to be read in its entirety prior to installation or operation of this product.**

**Do NOT install or operate prior to reading this manual completely - injury or property damage can occur.**

**Use adequate protection and safety equipment while performing the steps indicated in this manual.**

**Protect against hazards involved during the installation and operation of this equipment.**

**Failure to read this manual completely or heed these warnings could result in serious bodily injury or loss of life.**

**For equipment covered specifically or indirectly in this operation manual, it is important that all personnel observe the appropriate safety precautions to minimize the chances of injury.**

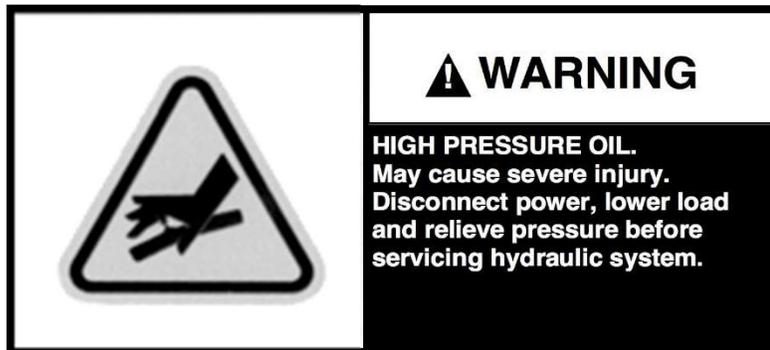
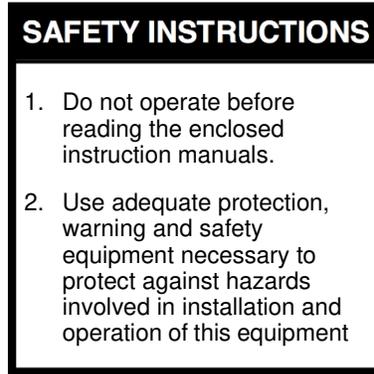
## **DO NOT....**

- Apply a direct heating source to the product pump
- Attempt to install equipment with the truck engine running
- Allow the truck engine to be started while personnel are under the vehicle or working on any equipment
- Place any body part over any pneumatic (or hydraulic) leak or outlet.
- Engage or disengage driven equipment by hand from under the vehicle while the engine is running
- Use tools or equipment that are in poor or non-working condition
- Remove, obscure, cover, or paint over any warning labels

## **DO....**

- Read and Understand all original equipment manufacturers manuals before installation or operation of any equipment.
- Follow all safety rules and regulations as it applies to the equipment provided
- Immobilize truck wheels with suitable chocks before working under the truck
- Block any raised equipment before working on or under the equipment
- Obtain proper training on tools and equipment that are required
- Ensure all tools and components are in good working condition
- Use all tools and equipment for their intended purpose only
- Repair any leaks promptly
- Remain a safe distance away from any moving components during operation
- Ensure all chemicals are compatible with product pumps prior to operation.

# Warnings



## NOTICE

- Safety instruction tags and labels were attached to your unit prior to shipment. **DO NOT** remove, obscure, or cover in any manner
- Failure to heed these warnings could result in serious bodily injury to personnel operating or maintaining this equipment.

# Good Practices

**Note:** These are general guidelines and do not cover all possible situations.  
It is the responsibility of the system integrator to apply this product properly.

## Plumbing

**CAUTION:** The SVP150 can not be used as a line clearing device.

- The inlet pipe should be as short and straight as possible to minimize suction pressure losses. Excessive restrictions at the inlet can cause cavitation resulting in poor performance, noise, vibration, or pump damage.
- Slope the inlet plumbing appropriately to avoid air pockets.
- Plumbing weight, misalignment with the ports, or thermal expansion can exert excessive force on the pump. Plumbing must be properly supported and aligned with expansion joints, if required, to minimize these forces.
- To prevent over pressure situations, install a relief valve as close to the pump outlet as possible. Install the relief valve before any shut-off valves.

## Close Coupled Drives

Benefits are:

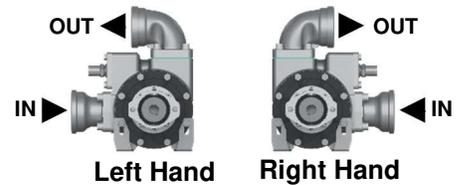
- Driveline is not exposed and does not require guards.
- Alignment between pump and drive line is maintained by the assembly.

## Pump Rotation

- Check pump rotation to confirm the correct rotation direction for desired plumbing connections (Fig. 1)
- Check hydraulic motor rotation to ensure it matches desired SVP Pump rotation.
- The SVP Pump must be disassembled and the shaft rotated 180 degrees to change from Left Hand rotation to Right Hand rotation.

**NOTE:**

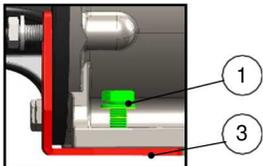
- SVP150 is only offered for hydraulic use.
- Trunk Material is Cast Aluminum (Trunk is included in all pumps).
- See pg. 2 for materials of construction.



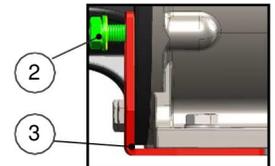
(Fig. 1)

## Mounting Base

### Mounting Feet Installation



1. Hand tighten both end plate bolts(2) and mounting bolts(1) with the mounting feet(3) in place
2. Loosen end plate bolts(2) one full turn
3. Tighten and torque mounting bolts(1)
4. Tighten and torque end plate bolts(2)



- Mount the unit on a rigid, heavy base to provide support and absorb shock. Bases should be designed for high rigidity, not just strength.
- The pump feet were not designed for mounting to concrete and do not have enough area to prevent concrete from failing. When mounting to cement or concrete, use a steel base plate to distribute the mounting stress over an area large enough to prevent the cement from failing.

# Operation

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**CAUTION:** Operating a pump against a closed valve can cause serious injury and property damage.

**CAUTION:** Disconnecting fluid or pressure components during operation can cause serious injury, property damage, or death.

**CAUTION:** Flush system prior to pumping different chemicals.

**CAUTION:** Failure to relieve system pressure prior to pump operation can cause serious injury and property damage.

## Pre-Start Check List

- Check piping alignment to the pump.
- Pipes must be supported so they remain intact when pump flanges or union joints are disconnected.
- Pipe work must not be allowed to hang from the product pump, or create any type of pre-loaded stress on the pump flanges.
- A vacuum gage and pressure gauge must be installed in line to check suction and discharge conditions.
- Secure hose connections.

## Start Up Procedures

**Note:** Liquid must be free from debris to prevent pump damage. A strainer may need to be installed to protect the product pump from debris.

**CAUTION: DO NOT USE SVP150 AS A LINE CLEARING DEVICE.**

**IF A KNOCKING NOISE IS HEARD FROM THE PRODUCT PUMP,  
SLOW THE PUMP TO ELIMINATE NOISE AND CAVITATION**

1. Makes sure appropriate valve(s) in the inlet and discharge lines are open.
2. Start pump. Priming should occur within one minute.
3. To make sure system is operating within expected parameters, check pressure and vacuum gauges. Record gauge readings.
4. Check piping and system equipment for leaks, noise, vibration and overheating.
5. Check flow rate.
6. Momentarily close a valve in the discharge line and check the relief valve pressure setting. Pressure needs to be 15-20 psi (1.0 - 1.4 bar) higher than the maximum system operating pressure. Do not operate the pump against a closed discharge valve for more than 15 seconds.

**Note:** Product pump must never exceed the maximum RPM specifications.

**If the product pump is to operate in reverse, a separate pressure relief valve must be installed.**

# Operation / Continued

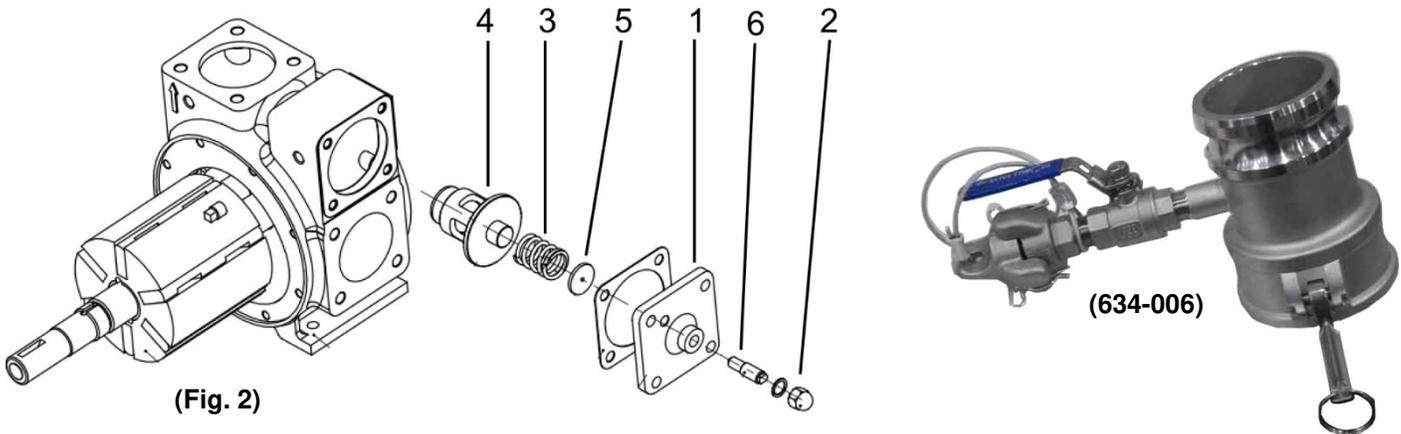
## Flushing the pump

1. Evacuate as much fluid from the pump as possible.
2. Run the cleaning fluid through the pump intake. Do not use cleaning fluid that will solidify within the pump.
3. Operate the pump against a closed discharge for 5 minutes to allow the cleaning fluid to recirculate through the internal relief valve.

**Note: Always verify product and cleaning process before applying compressed air or chemicals for pump clean out. UNDER NO CIRCUMSTANCE should compressed air be use with flammable liquids.**

**Note: Clean out adapter part #634-006 available for air clearing the SVP150 product pump.**

**Note: If a corrosive or non-lubricating fluid is used when flushing the pump, it must be flushed from the pump immediately.**



## Relief Valve

**Note: Relief valve is designed to protect the pump from excessive pressure. It should not be used as a system pressure control valve.**

- Relief Valve should be set at least 15-20 psi (1.0 - 1.4 Bar) higher than the operating pressure (All SVP150's are set for 80 psi from the factory)

### TO ADJUST RELIEF SETTING:

DO NOT remove **Valve Cap (2)**, or adjust the pressure rating, while the pump is in operation.

To increase the pressure setting: Remove **Valve Cap (2)**, loosen locknut, turn **Adjusting Screw (6)** inward (clockwise). Re-tighten locknut and replace **Valve Cap (2)**.

To decrease the pressure setting: Remove **Valve Cap (2)**, loosen locknut, turn **Adjusting Screw (6)** outward (counterclockwise). Re-tighten locknut and replace **Valve Cap (2)**.

### TO REPLACE NEW BYPASS VALVE SPRING:

Remove **Bypass Valve Cover (1)**, and **Valve Cap (2)**.

Replace **Bypass Valve Spring (3)** in-between **Bypass Valve (4)** and **Spring Seat (5)**.

Re-bolt **Bypass Valve Cover (1)** and **Valve Cap (2)**.

**Standard spring (installed)**  
0 - 80 psi rating



# Maintenance

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- CAUTION:** Failure to relieve system pressure prior to performing pump service or maintenance can cause personal injury or property damage.
- CAUTION:** Failure to disconnect and lockout electrical power or engine drive before attempting maintenance can cause severe personal injury or death.
- CAUTION:** If pumping hazardous or toxic fluids, system must be flushed prior to performing service.
- CAUTION:** Do not lubricate pump bearings, hydraulic adapter coupling or any other parts while the pump is running.

- Clean strainers regularly to avoid pump starvation
- Lubricate ball bearings, and hydraulic motor couplings every three months.  
Recommended grease: Mobile - Mobile Grease XHP 222

## Vane Replacement

1. Remove the sideplate assembly from the non-drive side of the pump.
2. Turn the shaft by hand until a vane comes to the top (12 o'clock) of the rotor. Then remove the vane.
3. Install a new vane, ensuring that the rounded edge is pointing up and relief grooves are facing the direction of the rotation.
4. Repeat steps 2 and 3 until all vanes are replaced.

## Pump Disassembly

1. On the drive-end of the pump, clean the pump shaft thoroughly, making sure the shaft is free of burrs.
2. Remove drive bearing cover capscrews and slide the drive bearing cover and gasket off the shaft. Discard the bearing cover gasket. The dirt shield will come off with the bearing cover.
3. Remove the non-drive bearing cover capscrews and slide the non-drive bearing cover and gasket off the shaft. Discard the bearing cover gasket.
4. Remove the sideplate capscrews and carefully ease the sideplate away from the body.
5. Slide the sideplate off of the shaft. The sideplate O-ring, bearing, and mechanical seal will come off with the sideplate assembly. Discard the sideplate O-ring.
  - 5.1. After pulling the bearing from the sideplate, use two screw drivers to gently push the back of the seal jacket pushing the seal from the sideplate.
6. Pull the rotor and the shaft from the body.
7. Remove the remaining components from the non-drive side of the pump, as instructed in steps 4 and 5.

# Maintenance / Continued

## Pump Assembly

**Note:** Inspect all component parts before reassembling the pump.

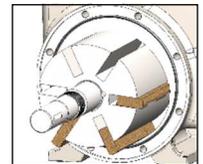
1. Reassemble the non-drive side of the pump first (See Fig. 1 for rotation reference)
  - 1.1. For a **clockwise** (right hand) rotation pump, position the pump body with the **intake** port to the **left**, the **discharge** port on pointing **up**, and **looking into the shaft**
  - 1.2. For a **counterclockwise** (left hand) rotation pump, position the pump body with the **intake** port to the **right** and the **discharge** port on pointing **up**, and **looking into the shaft**
2. Install a new sideplate O-ring in the groove in the sideplate. Lightly grease the outside circumference of the O-ring to facilitate sideplate installation.
3. Install the sideplate on the non-drive side of the body. Install and uniformly tighten four sideplate capscrews 90 degrees apart, torquing to **25 lbs. ft (34 Nm)**.

**Note:** Anti-Seize must be used to prevent galling.

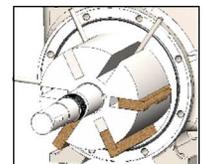
4. Install the Mechanical Seal
  - 4.1. Apply a small amount of motor oil in the sideplate mechanical seal recess.
  - 4.2. Push the mechanical seal assembly into the recess of the sideplate with seal jacket drive tangs inward.
  - 4.3. The pin in the stationary seat must be between the lugs in the back of the sideplate recess.
5. Remove one bearing dirt shield (if required), pack the ball bearing with grease and install the bearing into the sideplate recess. Bearing should be squarely seated against the mechanical seal. The bearing balls should face outward and the grease shield should face inward.
6. Turn pump around and begin working on the drive end.

7. If needed, replace vanes and push rods as follows:

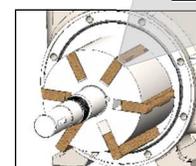
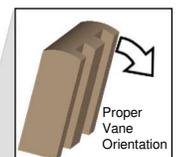
- 7.1. Partially install the non-driven end of the rotor and shaft into the open side of the pump body. Line up the mechanical seal tangs with the rotor notches.
- 7.2. Leave part of the rotor outside of the body so that the bottom vanes can be installed and held in place. (Fig. 3)
- 7.3. Insert the new vanes into the rotor slots with the rounded edges facing outward. The grooves on each vane should facing forward rotation of the pump. (Fig. 5)
- 7.4. Install the push rods in the appropriate holes in the rotor. (Fig. 4)
- 7.5. Once the push rods and vanes are installed, double check the mechanical seal tangs alignment with the rotor notches.
- 7.6. Install the remaining vanes into the top positions of the rotor. Rotate the shaft back and forth while applying pressure to seat the mechanical seal drive tangs into the rotor assembly. (Fig. 5)



(Fig. 3)



(Fig. 4)



(Fig. 5)

8. Install the drive sideplate, mechanical seal, and bearing as instructed in steps 2 through 6. Apply a thin coating of motor oil on the drive shaft to aid installation.
9. Rotate the shaft back and forth while applying pressure to seat the 0mechanical seal drive tangs. Install all of the remaining sideplate capscrews for each sideplate and uniformly torque to **25 lbs. ft. (34 Nm)**

**Note:** Anti-Seize must be used to prevent galling.

10. **Locknut Installation:** Bearing locknuts and lockwashers must be installed and adjusted properly.

**DO NOT** overtighten the locknuts because this will cause bearing failure. If the locknuts are too loose, the rotor will shift against the heads, causing wear and galling.

# Maintenance / Continued

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**Note: Anti-Seize must be used on the threads to prevent galling.**

- 10.1. On both ends of the pump, install a lockwasher with the tangs facing outward, followed by the inner locknut with the tapered end inward.

**Note: Ensure that the inner tang of the lockwasher is located in the slot in the shaft threads.**

- 10.2. Tighten both inner locknuts to ensure that the bearings are bottomed in the sideplate recess. **DO NOT** overtighten or shear the lockwasher tang.
- 10.3. Loosen both inner locknuts one complete turn.
- 10.4. Tighten one inner locknut until a slight rotor drag is felt when turning the shaft by hand.
- 10.5. Back off the nut a 1/4 turn. Secure the nut by bending the closest aligned lockwasher tang into the slot in the locknut.

**Note: The pump should turn freely when rotated by hand.**

- 10.6. Tighten the opposite locknut by hand until it is the bearing is seated and the locknut is tight.
- 10.7. Using a spanner wrench, loosen the nut a 1/4 turn.
- 10.8. Tighten just passed the desired tang, then back off the nut to align the tang with the locknut slot. Secure the nut by bending the aligned lockwasher tang into the slot in the locknut.

**Note: The pump should continue to turn freely when rotated by hand.**

- 10.9. To check the adjustments, try to rotate the lockwashers with fingers.
  - If this **cannot be done**, the locknuts are too tight. Slightly loosen the locknuts one at a time beginning with the locknut that was adjusted last.
  - if this **can be done**, tighten the outer locknuts. **DO NOT** allow the lock washer tangs to hold the torque of the inner locknut while tightening the outer locknut.

11. If needed, replace the grease seal for any wear or damage.

- 11.1. Grease the outside diameter of the grease seal and push it into the bearing cover with the lip of the seal inward. The lip will face outward when the bearing cover is installed on the sideplate.

12. Attach new bearing cover gasket and bearing cover to the sideplate. Install and torque the bearing cover capscrews to **15 lbs. (20nm)**.

**Note: Anti-Seize must be used to prevent galling.**

13. Follow steps 11 and 12 to install the grease seal and bearing cover on the opposite side of the pump.
14. Push the dirt shield over the drive shaft and firmly against the bearing cover.

## **Relief Valve Assembly:** (See Fig. 2 for Reference)

1. Insert the valve (4) into the relief valve bore of the body with the fluted end inward.
2. Install the relief valve spring (3) and spring guide (5) against the valve.
3. Attach a new relief valve gasket and the valve cover (1) on the body.
4. Screw the relief valve adjusting screw (6) into the valve cover until it makes contact with the spring guide.

**Note: The relief valve setting must be tested and adjusted precisely before the pump is placed into service**

5. Install the relief valve cap (2) and gasket once the relief valve has been precisely adjusted.

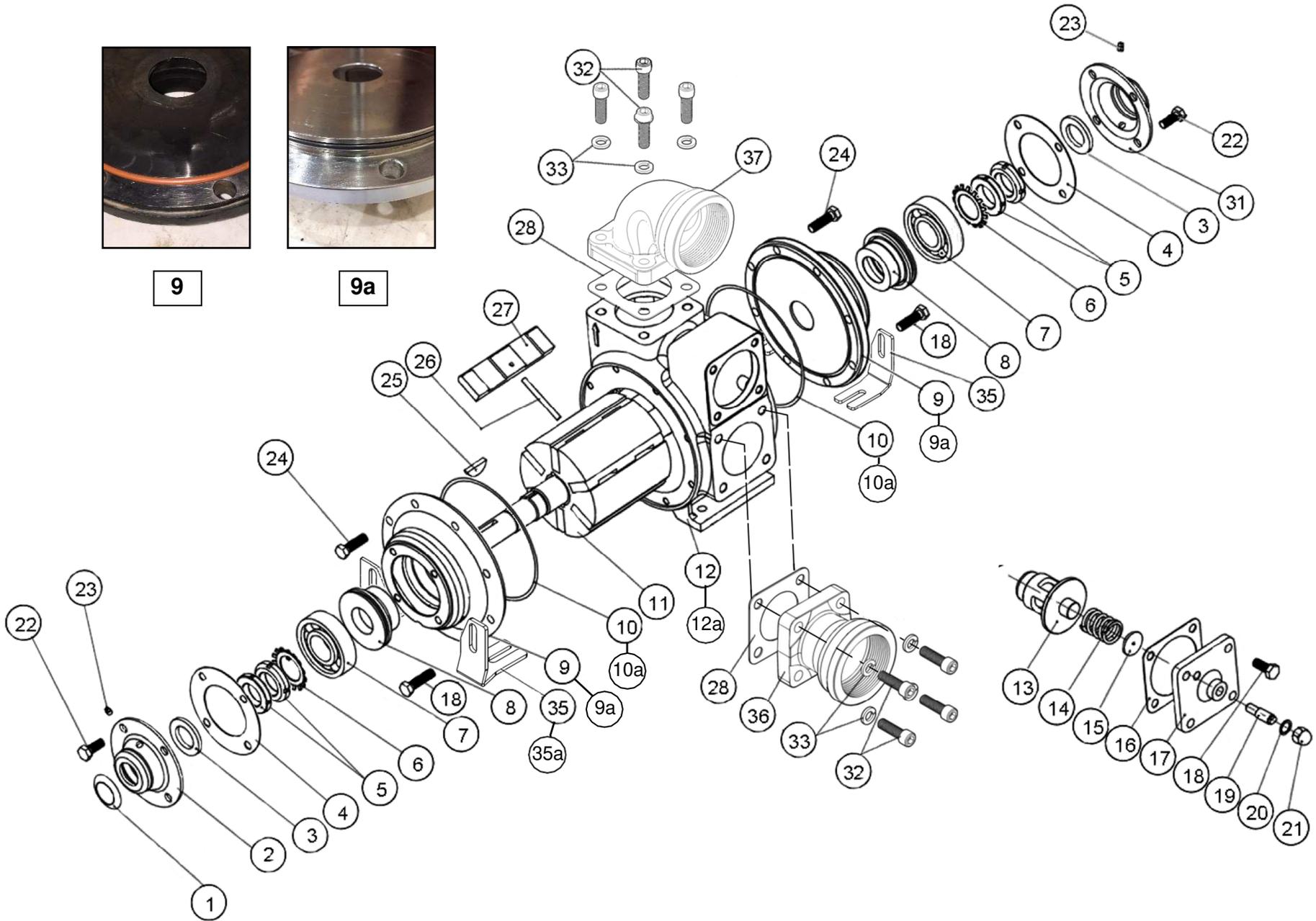
**Note: All maintenance should be performed by qualified technicians only, following the appropriate procedures and warnings as presented in this manual.**



9



9a



# Parts List

## SVP150

Item	Part Number	QTY	Description
1	524-003	1	Bearing Cover Dirt Shield
2	523-016	1	Inboard Bearing Cover, SS
3	555-000	1	Grease Seal
4	526-007	2	Bearing Cover Gasket
5	582-017	4	Bearing Locknut
6	582-004	2	Bearing Lockwasher
7	510-000	2	Ball Bearing
8	556-008	2	Mechanical Seal (Chemraz®)
8	556-004	2	Mechanical Seal (Viton)
8	556-007	2	Mechanical Seal (Buna)
9	501-005	2	Sideplate, SVP150
9a	501-012	2	Sideplate, SVP150 - Piloted Version
10	521-007	2	Sideplate O-Ring (Viton)
10a	521-025	2	Sideplate O-Ring (Viton) - Piloted Version
10	521-010	2	Sideplate O-Ring (PTFE Encapsulated Silicone)
10a	521-024	2	Sideplate O-Ring (PTFE Encapsulated Silicone) - Piloted Version
10	521-006	2	Sideplate O-Ring (Buna)
10a	521-026	2	Sideplate O-Ring (Buna) - Piloted Version
11	502-004	1	Rotor and Shaft Assembly
12	500-030	1	Body
12a	500-036	1	Body - Piloted Version
13	581-003	1	Bypass Valve
14	580-011	1	Bypass Spring (STD)
15	581-009	1	Bypass Valve Adjustment Seat (SS)
16	521-018	1	Bypass Cover O-Ring (PTFE Encapsulated Silicone)
16	521-016	1	Bypass Cover O-Ring (Viton)
16	521-011	1	Bypass Cover O-Ring (Buna)
17	523-017	1	Bypass Valve Cover
18	128-014	4	Bypass Cover Screw M10 X 35mm
19	581-012	1	Adjusting Screw
20	521-020	1	Bypass Valve Cap O-Ring (PTFE Encapsulated Silicone)
20	526-018	1	Bypass Valve Cap O-ring (Viton)
20	521-019	1	Bypass Valve Cap O-Ring (Buna)
21	581-013	1	Bypass Valve Cap
22	128-010	8	Bearing Cover Screws M10 X 20mm SS
23	313-003	2	Grease Fitting M10X1 SS
24	128-012	16	Sideplate Screws M10 X 30 SS
25	298-000	1	Key
26	527-015	3	Push Rod
27	550-003	6	Vane, SVP150
28	526-005	2	Flange Gasket
29	Call	2	Grease Fitting Dust Cover (red)
30	Call	2	Grease Fitting Gasket
31	523-021	1	Outboard Bearing Cover, SS
32	124-018	8	Flange Screws M12X1.75 SS
33	194-008	8	Split Washer, M12 SS
34	509-024	2	Flange 2.5 inch SS
35	508-078	1	Bracket, Support Foot Set
35a	508-106	1	Bracket, Support Foot Set - Piloted Version
36	509-013	2	Flange 3" Straight SS
37	509-014	2	Flange 3" Elbow SS
38*	564-019	2	Tool - VP Locknut Wrench (VP80, VP150, SVP150)

\* Component not shown

# Maintenance Kits

Part#	Description
621-031	Maintenance Kit (all o-ring material is Buna)
621-040	Maintenance Kit (all o-ring material is Buna) - Piloted Version
621-029	Maintenance Kit (all o-ring material is Viton)
621-039	Maintenance Kit (all o-ring material is Viton) - Piloted Version
621-028	Maintenance Kit (all o-ring material is PTFE or Chemraz®)
621-038	Maintenance Kit (all o-ring material is PTFE or Chemraz®) - Piloted Version



## Each SVP150 Maintenance Kit Includes the Following

Item	QTY	Description
1	1	Bearing Cover Dirt Shield
3	1	Grease Seal
4	2	Bearing Cover Gasket
6	2	Bearing Lockwasher
7	2	Ball Bearing
8	2	Mechanical Seal
10	2	Sideplate O-Ring
**10a	2	Sideplate O-Ring - Piloted Version
16	1	Bypass Cover O-ring
20	1	Bypass Valve Cap O-Ring
26	3	Push Rod
27	6	Vane
28	2	Flange Gasket

\*\*select either 10 or 10a

# Trouble Shooting

**Note: All repair work should be performed by qualified technicians following all applicable safety procedures, OEM specifications, and local regulations**

Problem	Probable Cause
<b>Noise</b>	<ol style="list-style-type: none"> <li>1.Excessive pump vacuum resulting from:               <ol style="list-style-type: none"> <li>a.Improper or restricted suction line fittings.</li> <li>b.Excessive pump speed.</li> <li>c.Pump too far from fluid source.</li> </ol> </li> <li>2.Running the pump with a closed discharge line.</li> <li>3.Pump not securely mounted.</li> <li>4.Bearings that are worn or damaged.</li> <li>5.Piping not anchored properly.</li> <li>6.Misaligned drive coupling or bent shaft.</li> <li>7.Excessively worn rotor.</li> <li>8.Malfunctioning valve.</li> <li>9.Low relief valve setting.</li> <li>10.Damaged vane.</li> </ol>
<b>Capacity Reduction</b>	<ol style="list-style-type: none"> <li>1.Low pump speed.</li> <li>2.Suction valves not fully open.</li> <li>3.Suction line air leaks.</li> <li>4.Discharge line restrictions. (i.e.:undersized piping, too many elbows &amp; fittings, clogged strainer, etc.).</li> <li>5.Parts damaged or worn.</li> <li>6.Partial flow through the relief valve.</li> <li>7.Relief valve improperly set up or worn.</li> <li>8.Vanes installed incorrectly</li> </ol>
<b>Broken Shaft</b>	<ol style="list-style-type: none"> <li>1.Foreign objects in the pump.</li> <li>2.High viscosity.</li> <li>3.Non-opening relief valve.</li> <li>4.Pressure spikes (Hydraulic hammer).</li> <li>5.Misaligned pump/driver.</li> <li>6.Excessively worn vanes or vane slots.</li> <li>7.Solidified material in the pump.</li> </ol>
<b>Leak in Mechanical Seal</b>	<ol style="list-style-type: none"> <li>1.Incompatible O-rings.</li> <li>2.Cut, twisted, or nicked O-rings.</li> <li>3.Damaged shafts at seal area.</li> <li>4.Over-greased ball bearing.</li> <li>5.Excessive cavitation.</li> <li>6.Cracked, scratched, or pitted mechanical seal.</li> </ol>
<b>Pump Not Priming</b>	<ol style="list-style-type: none"> <li>1.Non-wetted pump.</li> <li>2.Worn vanes.</li> <li>3.Closed suction valve.</li> <li>4.Suction line leaks.</li> <li>5.Clogged strainer.</li> <li>6.Clogged suction line.</li> <li>7.Broken shaft key.</li> <li>8.Pump vapor-locked.</li> <li>9.Too low pump speed for priming.</li> <li>10.Partially open relief valve - worn or not seating properly.</li> <li>11.Vanes installed incorrectly.</li> </ol>
<b>Vanes Damaged</b>	<ol style="list-style-type: none"> <li>1.Foreign objects in the pump.</li> <li>2.Cavitation</li> <li>3.Viscosity too high for the vanes and/or the pump speed.</li> <li>4.Incompatible with the liquids being pumped.</li> <li>5.Excessive heat.</li> <li>6.Push rods bent or worn.</li> <li>7.Solidified material in the pump.</li> <li>8.Pressure spikes (Hydraulic hammer).</li> <li>9.Incorrectly installed vanes.</li> </ol>

# Warranty

Subject to the terms and conditions hereinafter set forth in General Terms of Sale, Paragon Tank Truck Equipment LLC (the Seller) warrants products and parts of its manufacture, when shipped and its work (including installation and start-up) when performed, will be of good quality and will be free from defects in material and workmanship. This warranty applies only to Seller's equipment, under use and service of products, for a period as stated in the table below. Due to the varying condition of installation and operation, all performance claims are subject to a plus or minus 5% variation. (Non-standard materials are subject to a plus or minus 10% variation)

**THIS WARRANTY EXTENDS ONLY TO BUYER AND/OR ORIGINAL END USER, AND IN NO EVENT SHALL THE SELLER BE LIABLE FOR THE PROPERTY DAMAGE SUSTAINED BY A PERSON DESIGNED BY THE LAW OF ANY JURISDICTION AS A THIRD PARTY BENEFICIARY OF THIS WARRANTY OR ANY OTHER WARRANTY HELD TO SURVIVE SELLER'S DISCLAIMER.**

All accessories furnished by seller but manufactured by others bear only that manufacturer's standard warranty.

All claims for defective products, parts, or work under this warranty must be made in writing immediately upon discovery and, in any event within one year from the date of the shipment of the applicable item and all claims for defective work must be made in writing immediately upon discovery and in any event within one year from date of completion thereof by Seller. Unless done with prior written consent of Seller, any repairs, alterations, or disassembly of Seller's equipment shall void warranty. Installation and transportation costs are not included and defective items must be held for Seller's inspection and returned to Seller's ex works upon request.

**THERE ARE NO WARRANTIES, EXPRESSED, IMPLIED, OR STATUTORY WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS OF PURPOSE.**

After Buyer's submission of claim as provided above and its approval, Seller shall either repair or replace its product, part, or work at the original ex works point of shipment, or refund an equitable portion of the purchase price.

The products and parts sold hereunder are not warranted for operation with erosive or corrosive materials or those which may lead to build up of materials within the product supplied, nor those which are incompatible with the materials of construction. The Buyer shall have no claim whatsoever and no product or part shall be deemed to be defective by reason of failure to resist erosive or corrosive action nor for problems resulting from build-up of material within the unit nor for problems due to incompatibility with the materials of construction.

Product Type	Warranty Duration
New	18 months from date of shipment, or 12 months after initial startup date, whichever occurs first.
Remanufactured	12 months from date of shipment.
Repair	12 month from date of shipment, or remaining warranty period, whichever occurs first.

Any improper use, operation beyond capacity, substitute of parts not approved by Seller, or any alteration or repair by others in such manner as in Seller's judgement affects the product materially and adversely shall void this warranty.

No employee or representative of Seller other than an Officer of the Company is authorized to change this warranty in any way or grant other warranty. Any such change by an Officer of the Company must be in writing.

The foregoing is Seller's only obligation and buyer's only remedy for breach of warranty, and except for gross negligence, willful misconduct and remedies permitted under the General Terms of Sale in the sections on **CONTRACT PERFORMANCE, INSPECTION AND ACCEPTANCE**, and the **PATENTS CLAUSE** hereof, the forgoing is **BUYER'S ONLY REMEDY HEREUNDER BY WAY OF BREACH OF CONTRACT TORT OR OTHERWISE, WITHOUT REGARD TO WORK WHETHER ANY DEFECT WAS DISCOVERED OR LATENT AT THE TIME OF DELIVERY OF THE PRODUCT OR WORK.** In no event shall Buyer be entitled to incidental or consequential damages. Any action for breach of this agreement must commence within one year after the cause of action has occurred.

**Paragon Tank Truck Equipment LLC.**

[www.paragondirect.com](http://www.paragondirect.com)

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