



<input type="checkbox"/>	520-00-3050 PR17 & PR30 Accessories Bag
<input type="checkbox"/>	520-00-3055 PR40 & D250 Accessories Bag
<input type="checkbox"/>	520-00-3060 PR80 - 2" Inlet Accessories Bag
<input type="checkbox"/>	520-00-3065 PR80 - 3" Inlet Accessories Bag

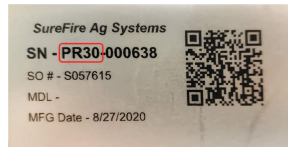
## PumpRight Diaphragm Pumps

### *Installation & Parts Guide*

## Abstract

This document contains information specific to Model Year 2025 PumpRight Diaphragm Pumps, models: PR17, PR30, PR40, D250, and PR80. Instructions including installation, maintenance, and parts breakdowns can be found in this manual.

Thank you for purchasing a PumpRight Diaphragm Pump from SurePoint Ag Systems. Locate your pump model number, sales order, and serial number from the ID tag located on the pump base.



Serial No.: SN - \_\_\_\_\_

Sales Order No.: \_\_\_\_\_

PumpRight Model: \_\_\_\_\_

## Service Contact Information

If a problem occurs with your PumpRight that cannot be corrected with the information included in this manual, please contact your supporting dealer for service and technical assistance. If further assistance is needed, contact SurePoint Ag Systems.

Date Purchased: \_\_\_\_\_

Dealer: \_\_\_\_\_

Dealer Contact: \_\_\_\_\_

Dealer Phone: \_\_\_\_\_

## Factory Service/Support

SurePoint Ag Systems

9904 Highway 25, Atwood, KS

Call: 866-626-3670 or Text: 785-626-8561



[surepointag.com/support](https://surepointag.com/support)

[store.surepointag.com](https://store.surepointag.com)

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# Table of Contents

1. Introduction .....	1
1.1. Warranty - SPA Standard .....	1
1.1.1. Warranty Claims .....	1
1.2. Safety - General .....	3
1.2.1. Recognize Safety Information .....	3
1.2.2. Signal Words .....	3
1.2.3. Personal Protective Equipment (PPE) .....	4
1.2.4. A Word to the Operator .....	4
1.2.5. Battery Safety .....	4
1.2.6. Chemical Safety .....	4
1.2.7. Replace Safety Signs .....	4
1.3. Safety - Hydraulic Fluid .....	5
2. Components .....	7
2.1. Accessory Bags .....	7
2.2. Gen2 PumpRight Specifications .....	10
2.3. Electromagnetic Flowmeters .....	11
2.4. Pump Priming & Air Bleed Valve .....	14
2.5. Recirculation & Agitation .....	16
3. Installation .....	17
3.1. PumpRight Installation .....	17
3.2. Hydraulic .....	18
3.2.1. Hydraulic Flow Requirements .....	18
3.2.2. Hydraulic Connections .....	19
3.2.3. PWM Valve and Motor Parts .....	24
4. Maintenance .....	25
4.1. Diaphragm Replacement .....	27
5. PR17 .....	31
5.1. PR17 Flowmeter Kit .....	31
5.2. PR17 Liquid Plumbing .....	32
5.3. PR17 Assemblies .....	33
5.4. PR17 Parts Breakdown .....	36
6. PR30 .....	39
6.1. PR30 Flowmeter Kit .....	39
6.2. PR30 Liquid Plumbing .....	40
6.3. PR30 Assemblies .....	41
6.4. PR30 Parts Breakdown .....	44
7. PR40 .....	47
7.1. PR40 Flowmeter Kit .....	47
7.2. PR40 Liquid Plumbing .....	48
7.3. PR40 Assemblies .....	49
7.4. PR40 Parts Breakdown .....	52
8. D250 .....	57
8.1. D250 Flowmeter Kit .....	57
8.2. D250 Liquid Plumbing .....	58
8.3. AR D250 Assemblies .....	59
8.4. D250 Parts Breakdown .....	62
9. PR80 .....	67
9.1. PR80 Flowmeter Kit .....	67
9.2. PR80 Liquid Plumbing .....	69

9.3. PR80 Assemblies .....	70
9.4. PR80 Parts Breakdown .....	73

SurePoint Ag Systems



# 1. Introduction

## 1.1. Warranty - SPA Standard

### Warranty Policy

SurePoint Ag Systems, Inc. (hereinafter referred to as "SurePoint") warrants the whole goods products it sells to be free from defects in material or workmanship for a period of one (1) year from the date of sale of the product(s) to the original user.

SurePoint warrants the parts it sells to be free from defects in material or workmanship for a period of ninety (90) days from the date of delivery of the product(s) to the original user. This shall include replacement parts installed by SurePoint.

Warranty of SurePoint whole goods and/or parts applies only to material and workmanship. Misuse, misapplication, neglect, alteration, accident, normal wear, or acts of God affecting SurePoint products are not eligible for warranty. Warranty shall apply only to the smallest reasonably serviced component (e.g. if a PWM solenoid fails on a hydraulic pump assembly, only the solenoid will be covered under warranty, not the entire pump assembly). In the event that multiple components are replaced, component warranty eligibility will be assessed once the parts are returned to SurePoint for determination of failure (parts determined to still be in working order will be returned to the dealer and warranty will not apply to those components).

### 1.1.1. Warranty Claims

A warranty claim and request to return defective product(s) must be presented to the SurePoint Support Department, describing the defect in material or workmanship of the product(s). This claim may be made via phone, e-mail, fax, or written request. Claims for warranty of whole goods or parts must also include proof of date of sale of the product(s) to the original user.

The SurePoint Support Department will proceed in making a preliminary decision as to the eligibility of the claim for warranty consideration. After the SurePoint Support Department deems it necessary to proceed with warranty consideration, a determination will be made as to whether or not the original product needs to be returned to SurePoint. In the event a return is deemed necessary, a Return Materials Authorization (RMA) will be generated by the SurePoint Support Department. The defective product(s) in question must be sent, freight prepaid, within fourteen (14) days of the discovery of the product failure and initial warranty claim. Replacement product(s) may be sent to the selling dealer, directly to the customer, or picked up at the SurePoint facility. At the discretion of the SurePoint Support Department, replacement product(s) may be sent prior to, or after, the SurePoint Returns Department receives the defective product(s).



#### NOTE

Any variation in the above procedure is at the sole discretion of the SurePoint Support Department.

SurePoint agrees to handle all warranty claims in a timely manner and will inform dealers of any revisions or modifications to the SurePoint Warranty Policy. Eligible warranty claims will be processed by SurePoint within sixty (60) days of receiving failed product(s).

If a warranty claim is found to be ineligible for warranty coverage, the SurePoint Support Department will be responsible to inform the dealer or end user in order to determine the course of action to be taken. SurePoint reserves the right to make changes in specification and design without notice and without incurring any obligations to owners of products previously sold.

## 1.2. Safety - General

Safety alert symbols found throughout this manual are used to call your attention to instructions involving your personal safety and the safety of others. Failure to follow these instructions can result in injury or death.

### 1.2.1. Recognize Safety Information



This is a safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

### 1.2.2. Signal Words

Note the use of signal words, DANGER, WARNING, CAUTION, and NOTICE with safety messages. The appropriate signal word for each has been selected using the following guidelines:



#### **DANGER**

DANGER indicates imminently hazardous situation that, if not avoided, can result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

**WARNING**

WARNING indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

**CAUTION**

CAUTION indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

**NOTICE**

NOTICE is used to address safety practices not related to personal safety.

### 1.2.3. Personal Protective Equipment (PPE)

Wear clothing and personal protective equipment appropriate for the job. Wear steel-toed shoes when operating. Wear hearing protection when exposed to loud noises. Do not wear additional hearing impairment devices such as radio headphones, etc.

### 1.2.4. A Word to the Operator

It is your responsibility to read and understand the safety messages in this manual. You are the key to safety. Safety is your responsibility.

### 1.2.5. Battery Safety

Use caution when connecting, disconnecting, charging, and jumpstarting the machine's battery.

Keep sparks and flames away from the battery. Battery gas can explode and cause serious injury.

Remove jewelry that can make electrical contact and create sparks.

### 1.2.6. Chemical Safety

Chemicals used in agricultural applications can be harmful to personal health and/or the environment if not used correctly. Always follow all label directions for effective, safe, and legal use of any chemicals.

### 1.2.7. Replace Safety Signs

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

## 1.3. Safety - Hydraulic Fluid



### **DANGER**

This system uses hydraulic equipment with hydraulic fluid under extremely high pressure.

Hydraulic fluid escaping under pressure can have sufficient force to penetrate the skin causing serious injury. Keep all hoses and connections in good serviceable condition. Failure to heed may result in serious personal injury or death. Avoid the hazard by relieving pressure before disconnecting lines or performing work on the system.

Make sure hydraulic fluid connections are tight and all hydraulic hoses and line are in good condition before applying pressure to the system. Use paper or cardboard to check for suspected leaks. Wear protective gloves and safety glasses or goggles when working on hydraulic systems.

Check hydraulic hoses and fitting frequently. Loose, broken, and missing hardware can cause equipment to not perform properly and can result in injury. Hydraulic systems can be hot and cause burns. Before working on any system, wait until the fluid has cooled.

If an accident occurs, see a doctor immediately.



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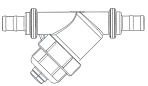
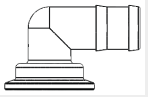


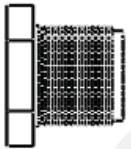
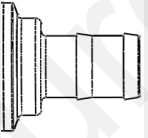
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## 2. Components

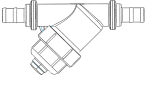
### 2.1. Accessory Bags

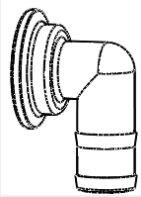

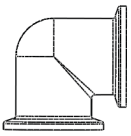
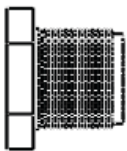
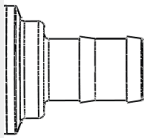
Each Pump comes with a bag of accessories depending on which pump configuration is ordered. See the tables below for breakdown of those bag.

**Table 1. 520-00-3050 PR17 & PR30 Accessories Bag**

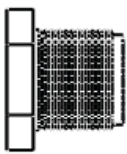



	Part No.	Description	Quantity	Notes
	109-200MLS-20M	2" Manifold Y Strainer - 20 Mesh	1	Install on pump inlet
	105-FC200	2" Manifold Clamp	2	
	105-150G-H	2" Manifold Gasket	2	
	105-200150BRB90	2" Manifold x 1-1/2" HB - 90 Degree	3	Optional pump inlet in place of straight barb
	350-PS238	HD Hose Clamp	3	
	350-120B	Size 12 - 1-1/4" Hose Clamp	1	Flowmeter outlet hose
	350-160B	Size 16 - 1-1/2" Hose Clamp	1	
	101-075075-H	3/4" MPT x 3/4" HB	1	Optional replacement on recirc valve if running agitation
	100-038PLUG	3/8" Pipe Plug	1	Plug inlet tee if recirculating back to tank or agitating.
	105-100075BRB	1" Manifold x 3/4" HB	1	Flowmeter outlet for 3/4" hose

**Table 2. 520-00-3055 PR40 & D250 Accessories Bag**

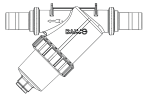

	Part No.	Description	Quantity	Notes
	109-200MLS-20M	2" Manifold Y Strainer - 20 Mesh	1	Install on pump inlet
	105-FC200	2" Manifold Clamp	4	
	105-150G-H	2" Manifold Gasket	4	

	Part No.	Description	Quantity	Notes
	105-200BRB90	2" Manifold x " HB - 90 Degree	1	Optional pump inlet in place of straight barb
	350-PS238	HD Hose Clamp	3	Strainer and pump inlet connections
	105-200CPG90SH	2" Manifold Coupling - 90 deg - Short	1	Optional to mount strainer directly to pump plumbing
	100-038PLUG	3/8" Pipe Plug	1	Plug inlet tee if recirculating back to tank or agitating.
	105-200BRB	2" Manifold x 2" HB	2	

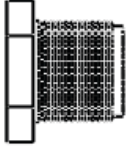

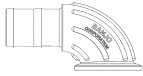


**Table 3. 520-00-3060 PR80 - 2" Inlet Accessories Bag**

	Part No.	Description	Quantity	Notes
	100-038PLUG	3/8" Pipe Plug	1	
	101-075075-H	3/4" MPT x 3/4" HB	1	
	105-220BRBSWP90	2" Full Port Manifold x 2" HB - 90 Degree Sweep	1	
	105-220SWP90	2" Full Port Manifold Sweep - 90 Degree	1	



	Part No.	Description	Quantity	Notes
	105-200G-H	(FOR FC220s) 2" EPDM Manifold Gasket for 220 Series Manifold Fittings	4	
	105-220BRB	2" Full Port Manifold x 2" HB	3	
	105-FC220	2" Full Port Manifold Clamp	4	
	109-222IMLS-16V	2" Full Port Manifold Y Strainer -16 Mesh FKM	1	
	109-222IMLS-16V	Pressure Seal HD Clamp, Size 288 - 2.125" - 2.625"	3	

**Table 4. 520-00-3065 PR80 - 3" Inlet Accessory Bag**

	Part No.	Description	Quantity	Notes
	100-038PLUG	3/8" Pipe Plug	1	
	101-075075-H	3/4" MPT x 3/4" HB	1	
	105-300220CPG	3" Manifold x 2" Full Port Manifold - Reducer Coupling	1	
	105-300BRB	3" Manifold x 3" HB	3	
	105-300BRBSWP90	3" Manifold x 3" HB - 90 Degree Sweep	1	
	105-200G-H	(FOR FC220s) 2" EPDM Manifold Gasket for 220 Series Manifold Fittings	1	
	105-FC220	2" Full Port Manifold Clamp	1	
	105-300SWP90	3" Manifold Sweep - 90 Degree	1	
	105-300G-H	3" EPDM Manifold Gasket	4	
	105-FC300	3" Manifold Clamp	4	
	350-TC343	Hose Clamp - 3" Diameter (fits 3" Enforcer)	3	

## 2.2. Gen2 PumpRight Specifications


PumpRight Pumps are hydraulically driven diaphragm pumps, controlled by a PWM valve. Pumps are available in 5 different models to fit your implement size and application rates. At maximum flow, all pumps use 8-9 GPM of hydraulic fluid with the standard 4.0 CID motor. To minimize hydraulic flow requirements, consider using the next model size larger.

**Table 5. Gen2 PumpRight Specifications**

PumpRight Model	Diaphragms	Max Flow (GPM)	Max GPA on 40' at 6 MPH	Max GPA on 60' at 6 MPH
PR17	3	17	35	23.5
PR30	3	30	62	41
PR40	4	40	82	55
D250	6	55	100	75
PR80	4	80	150	100

### PumpRight Oil

PumpRight pumps use an internal oil lubricated crankshaft and connecting rod design. There is an external reservoir with level indicators with a fill cap. These pumps require [SurePoint PumpRight Oil \(P/N: 291-02-2160-0038\)](#) OR SAE30 weight non-detergent oil. Annual oil changes are recommended. Check Oil level daily.



Crankcase Oil Capacities (SAE30 Non-detergent)

Model	Capacity
PR17	13 oz
PR30	28 Oz
PR40	56 oz
D250	98 oz
PR80	148 oz

**Figure 1. SurePoint PumpRight Oil (P/N: 291-02-2160-0038)**



Scan QR Code to purchase components from SurePointAg Webstore.

## 2.3. Electromagnetic Flowmeters

Electromagnetic flowmeters are superior to traditional turbine flowmeter in two basic ways. They have no moving parts and therefore have no wear items or potential for contaminants to lodge a spinning turbine. Second, electromagnetic flowmeters detect flow by electrically measuring velocity of the liquid, which makes them less sensitive to viscosity or density of the fluid being measured.

SurePoint recommends a catch test to verify the system is properly installed and configured. Adjust the flow cal as needed based on accurate catch tests with the actual product, or observation of gallons applied and acres covered.

Previous SurePoint flowmeters have different calibration numbers. To verify proper calibration numbers, check the sticker on the side of the flowmeter.



### NOTICE

Do NOT power wash the flowmeter. High pressure spray directed at the flowmeter may cause damage.

### DN10 Orion 3 (0.2 - 24 GPM)

Figure 2. P/N: 204-01-462032A-DN10

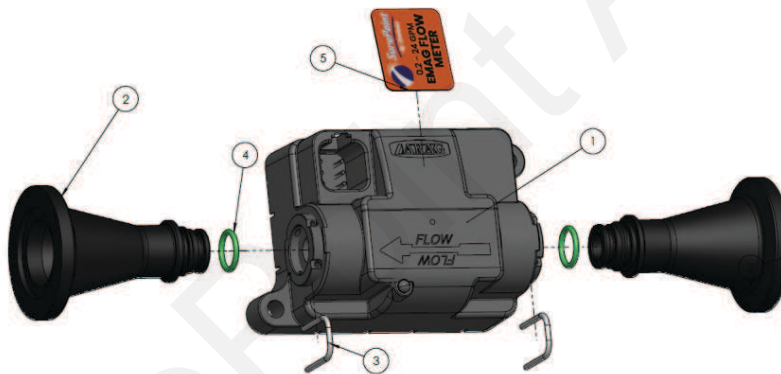


Table 6. DN10 Orion 3 Flowmeter

Item No.	Part No.	Description	Qty
1	204-01-462032	Flowmeter, Orion 3, 0.2-24GPM, T1F Conneciton	1
2	120-M100T1M	Fitting, M100 x T1M	2
3	124-02-010001	T1 Fork	2
4	124-01-G11056-V	Viton O-Ring for T1 Fitting	2
5	398-20-6313Y1	Decal, EMag (Orion 3) Flowmeter 0.2-24 GPM	1

**Table 7. DN10 Orion 3 Calibration Settings (0.2 - 24 GPM)**

Controller	Flow Cal (Pulses per Gallon)	Flow Cal with Divide by 8 Cable
Sentinel	4542	568
Commander	Requires Divide by 8	1136
Commander II	9084	1136
John Deere	4542	568
AgLeader	4542	568
Trimble	4542	568
Raven	4542	568
Topcon	4542	568
Case ECU (pulses per 10L)	Requires Divide by 8	1499
Case UCM (pulses per L)	1199	150

### DN17 Orion 3 (1.45 - 58 GPM)

**Figure 3. P/N: 204-01-462034-DN17**


*Intended for PR30, PR40, & D250*

**Table 8. DN17 Orion 3 Flowmeter**

Item No.	Part No.	Description	Qty
1	204-01-462034	Flowmeter, Orion 3, 1.45-58 GPM, T3F Connection	1
2	120-M100T3M	Fitting, M100 to T3M	2
3	124-01-G11058-V	Viton O-Ring for T3 Fitting	2
4	124-02-010003	T3 Fork	2
5	398-20-6856Y1	Decal, Emag (Orion 3) Flowmeter 1.5-58 GPM	1

**Table 9. DN17 Orion 3 Calibration Settings (1.45 - 58 GPM)**

Controller	Flow Cal (Pulses per Gallon)	Flow Cal with Divide by 8 Cable
Sentinel	2063	258
Commander	Requires Divide by 8	516
Commander II	4126	516
John Deere	2063	258
AgLeader	2063	258
Trimble	2063	258
Raven	2063	258

Controller	Flow Cal (Pulses per Gallon)	Flow Cal with Divide by 8 Cable
Topcon	2063	258
Case ECU (pulses per 10L)	Requires Divide by 8	681
Case UCM (pulses per L)	545	68

**Figure 4. Orion 3 Connection**



The Orion 3 Flowmeter uses a 6 pin Deutsch DT connector. If upgrading from an older flowmeter, the following adapter cables will be needed: P/N: 201-5954Y1 to connect 3-pin AMP Superseal to Orion 3, or P/N: 201-6647Y1 to connect 3-pin MetriPack to Orion 3.

For more adapter cable options, see [396-6696Y1 Flowmeter Update Info Sheet](#)



## NOTICE

Prior to welding on the implement, unplug the flowmeter cable to prevent damage.

## 2.4. Pump Priming & Air Bleed Valve

An air bleed valve kit (P/N: 521-00-100250) is included with each pump to aid with system priming. It is shipped in the pump accessories bag and must be installed during initial setup.

**Figure 5.**



### Why use an air bleed valve:

Most fertilizer systems are equipped with a 4-10 lb check valve on the end of each hose delivering fertilizer to the ground. These valves do not let air escape from the system, unless it is pressurized. PumpRight liquid pumps are not good air compressors. Therefore, the pump can struggle to prime due to air trapped on the outlet side of the pump.

The air bleed valve is a small 1/4" valve that when opened lets air escape from the pump outlet at zero pressure. Open until liquid comes out and then close the valve.



#### TIP

For best results, close the recirculation valve and open the air bleed valve when priming the pump.

### How to Install the Air Bleed Valve:

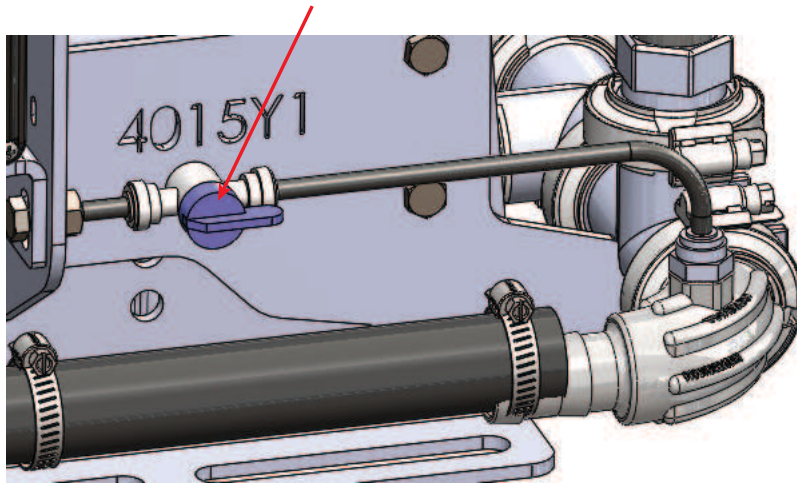
Remove the 1/4" plug from the quick connect fitting on the pump outlet side (*see pictures below*). Next, insert the 1/4" tubing in the quick connect fitting. Run the 1/4" tubing to an easily accessible spot on your equipment. Next, cut the tubing and push the 1/4" valve onto the tubing. Finally, run the tubing to a low location where any fertilizer that escapes will run on the ground.



#### TIP

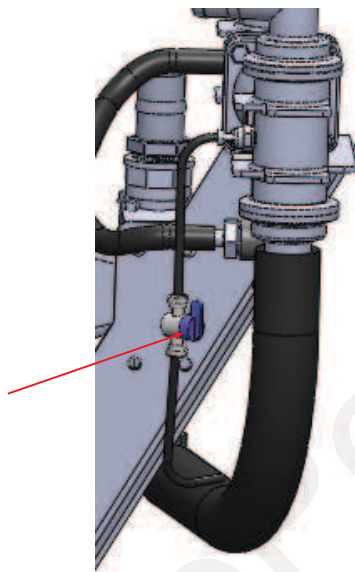
Use Cable Ties to secure the air bleed valve and tubing to nearby hoses, fittings, or brackets to prevent damage or loose connections.

**Figure 6. Air Bleed Valve on PR17 & PR30**



*Attach 1/4" tubing to 1/4" Quick Connect on the 90 deg elbow gauge port*

**Figure 7. Air Bleed Valve on PR40, D250 & PR80**



*Attach 1/4" tubing to 1/4" Quick Connect on back side of 1" x 2" Tee located on outlet side of the pump.*

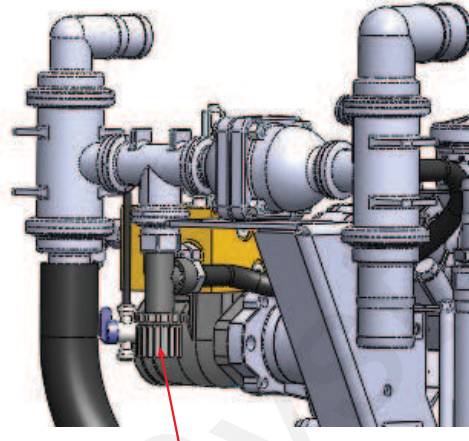
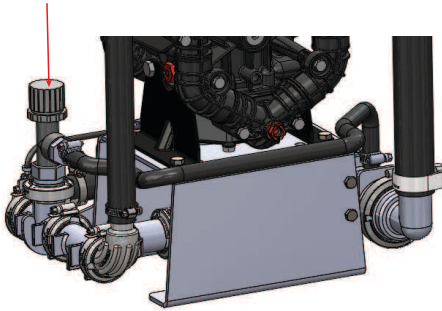


**IMPORTANT**

Be sure the air bleed valve & tube do not become plugged with dirt to ensure proper functionality.



## 2.5. Recirculation & Agitation



*Left: Recirculation Valve on PR17 & PR30. Right: Recirculation Valve on PR40, D250, & PR80.*

### Recirculation

A recirculation valve (P/N: 102-23520-3/4) is standard on all PumpRight models' outlet plumbing assemblies.

When running a PumpRight pump at less than 20% of its maximum flow, it can improve the system's stability to allow the pump to run faster. Opening the recirculation valve diverts some pump flow before the flowmeter, causing the pump to run faster. The application rate is still measured by the flowmeter and everything that passes through the flowmeter is applied to the ground. If the pump is surging at a low flow rate, open the recirculation regulation valve until the pump runs smoothly. Initially, open the valve 1/4 turn. If more recirculation is needed, it may be best to plumb back to the tank.



#### TIP

Open Recirculation valve slightly if implement uses LiquiShift or when your implement is configured to shut off each row individually. This will allow pump to react more precisely when section valves are cycling.

Increasing Recirculation (opening the valve) decreases maximum rate that can be applied. Close recirculation valve if higher rate is required.

### Agitation

If tank agitation is required, the recirculation valve plumbing can be modified to divert flow to the tank. Remove the 1/2" recirculation hose from the pump and replace the hose barb with a 3/8" plug (included in accessory bag), then install a longer 1/2" hose from the recirculation valve back to the tank.

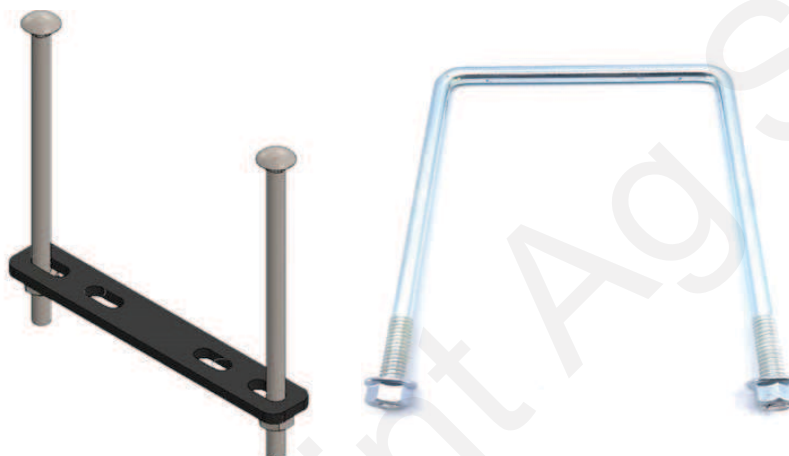


## 3. Installation

### 3.1. PumpRight Installation

- Mount the pump in your preferred location. The PumpRight pump has excellent suction and priming ability, therefore it can be mounted away from or above supply tanks.
- If not using implement specific mounting kits, SurePoint has universal U-bolt kits available to mount the pump directly to multiple toolbar sizes shown below. Each U-bolt kit includes one U-bolt and two flange nuts.
- SurePoint has U-Bolts available to mount the pump directly to multiple bar sizes shown below. If the U-Bolts will not work, order the universal backer plate (P/N: 515-03-203000) which allows use of 1/2" bolts to clamp to any size tube from 4" - 8" wide and up to 8" tall.

**Figure 8. Universal Mounting Kits**



Left: Backer Plate Kit (P/N: 515-03-203000). Right: U-Bolt kit (see table below)

Mounting Bar Size	Item Number	Item Description
3" x 3"	380-1022	1/2" U-bolt Kit - 1/2", fits 3" x 3" tube - (3" opening )
4" x 4"	380-1023	1/2" U-bolt Kit - 1/2", fits 4" x 4" tube - (4" opening )
4" x 6"	380-1015	1/2" U-bolt Kit - 1/2", fits 4" x 6" tube - (4" opening)
4" x 7"	380-1039	1/2" U-bolt Kit - 1/2", fits 4" x 7" tube - (4" opening)
5" x 7"	380-1014	1/2" U-bolt Kit - 1/2", fits 5" x 7" tube - (5" opening)
6" x 4"	380-1017	1/2" U-bolt Kit - 1/2", fits 6" x 4" tube - (6" opening)
6" x 7"	380-1018	1/2" U-bolt Kit - 1/2", fits 7" x 6" tube - (7" opening)
7" x 5"	380-1016	1/2" U-bolt Kit - 1/2", fits 7" x 5" tube - (7" opening)
7" x 7"	380-1001	1/2" U-bolt Kit - 1/2", fits 7" x 7" tube - (7" opening )
6" x 10"	380-1021	1/2" U-bolt Kit - 1/2", fits 6" x 10" tube - (6" opening)
8" x 12"	380-1019	1/2" U-bolt Kit - 1/2", fits 8" x 12" tube - (8" opening)
8" x 16"	380-1020	1/2" U-bolt Kit - 1/2", fits 8" x 16" tube - (8" opening)

## 3.2. Hydraulic

### 3.2.1. Hydraulic Flow Requirements

PumpRight pumps require constant hydraulic oil flow from the tractor. The amount of oil needed varies with pump size and speed. The chart below shows the necessary oil flow for each pump model at varying fertilizer flows.

<b>Model PR17 - 3 Diaphragms (0.036 gal/rev)</b>		
Fertilizer Flow (GPM)	Pump Speed (RPM)	Hydraulic Oil Flow (GPM)
5	137	2.4
10	275	4.8
15	412	7.1
17	467	8.1
<b>Model PR30 - 3 Diaphragms (0.059 gal/rev)</b>		
Fertilizer Flow (GPM)	Pump Speed (RPM)	Hydraulic Oil Flow (GPM)
5	85	1.5
10	170	2.9
15	255	4.4
20	340	5.9
25	425	7.4
30	510	8.8
<b>Model PR40 - 4 Diaphragms (0.087 gal/rev)</b>		
Fertilizer Flow (GPM)	Pump Speed (RPM)	Hydraulic Oil Flow (GPM)
10	115	2.0
20	229	4.0
30	344	6.0
40	458	7.9
<b>Model D250 - 6 Diaphragms (0.117 gal/rev)</b>		
Fertilizer Flow (GPM)	Pump Speed (RPM)	Hydraulic Oil Flow (GPM)
10	86	1.6
20	172	3.2
30	258	4.8
40	343	6.4
50	429	8.0
55	472	8.6
<b>Model PR80 - 4 Diaphragms (0.176 gal/rev)</b>		
Fertilizer Flow (GPM)	Pump Speed (RPM)	Hydraulic Oil Flow (GPM)
10	57	1.0
20	114	2.0
30	170	2.9
40	227	3.9
50	284	4.9
60	340	5.9
70	397	6.9
80	454	7.9

## Use this procedure to determine the correct setting on your tractor hydraulic flow:

1. Run the fertilizer system in the field at the maximum rate and ground speed.
2. Turn down the hydraulic flow slowly while watching the pump flow (Volume / Minute).
3. Observe when the Volume / Minute begins to drop.
4. Turn the hydraulic flow back up slightly.

If running with the bypass open (only recommended when 2 motors are operated in series) this process will minimize the oil circulated in the bypass loop, leaving more oil flow for other hydraulic functions.



### NOTICE

The pump is rated at a maximum of 550 RPM. Spinning the pump over 550 RPM may cause pump failure.

The system will spin the pump faster if precautions are not taken to limit the speed. This could happen if the strainer becomes plugged or blocked, and the controller attempts to speed the pump up to achieve the desired Rate.

It could also happen if a high-pressure situation occurs that opens the Pressure Relief Valve (PRV) and the pump speeds up to try to achieve the Rate.

Monitor the pump RPM. If the pump begins to speed up, check for a blocked strainer or other issue.

Set the Pump RPM High Limit and Maximum Pressure Alarm.

## 3.2.2. Hydraulic Connections

### Hydraulic Hose

SurePoint recommends 1/2" (-8) hydraulic hose for both supply and return. The hoses will need -8 JIC Female swivel fittings to connect directly to hydraulic block.

### Hydraulic Source

1. Dedicated PumpRight Circuit - Preferred Option. If a tractor remote valve is available, connect PumpRight supply and return hoses directly here. Operating PumpRight on its own hydraulic circuit is preferred and won't negatively affect other hydraulic components on your implement.
2. In Series with seed distribution fan (John Deere CCS Fan or Bulk Fill Seed Fan) - Alternate Option. If a dedicated tractor remote valve is not available, the PumpRight can be connected in series directly after the seed distribution fan.

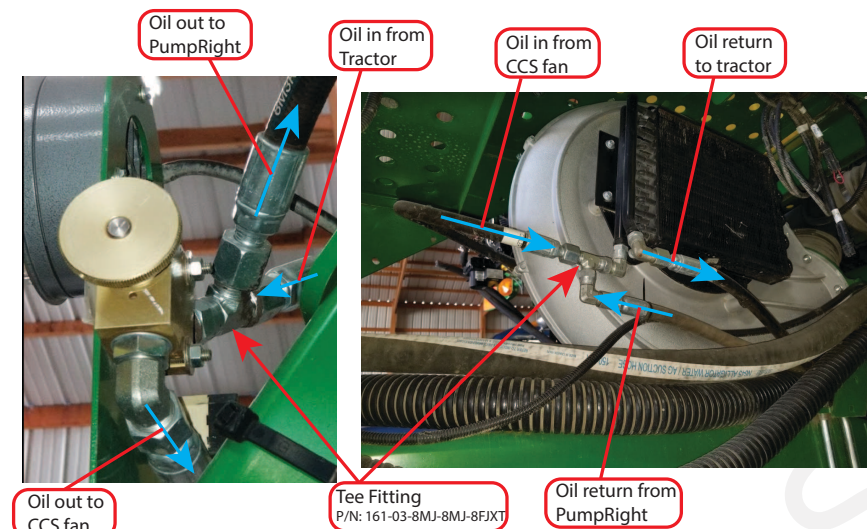


### IMPORTANT

If using this method, ensure the PumpRight PWM bypass valve is open to prevent limiting the seed distribution fan hydraulic flow.

3. In Parallel with seed distribution fan (John Deere CCS Fan or Bulk Fill Seed Fan) - Alternate Option.

**Figure 9. Alternate Option - In Parallel with John Deere CCS Fan**



*Left: Hydraulic block near front hitch. Right: CCS Fan near rear of implement.*

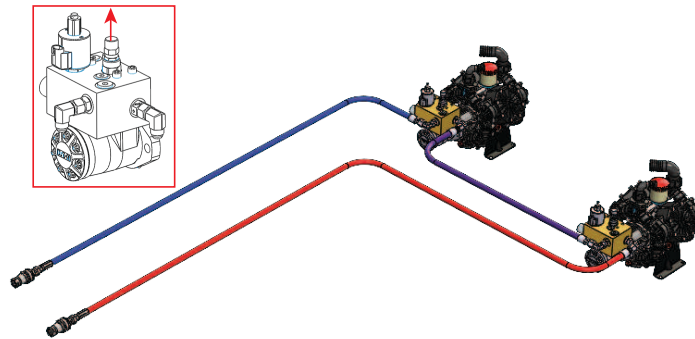


### **IMPORTANT**

Do NOT connect PumpRight hydraulic hose into the implements Vacuum fan. Excessive pressure and other problems can occur.

## Connecting Two PumpRights

**Figure 10. Connect two Pumps in Series - Preferred Option**



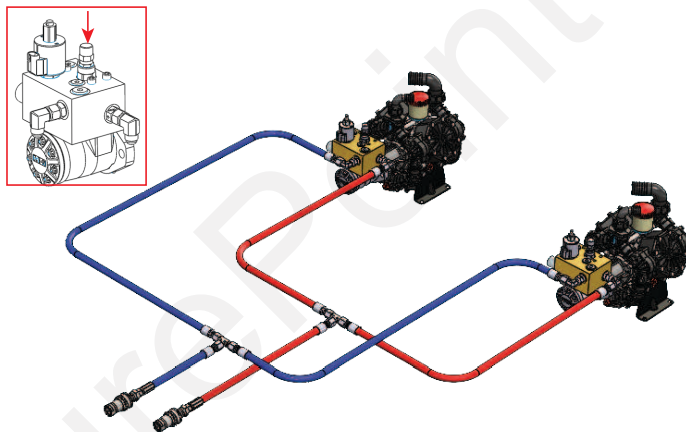
Connect supply from tractor to Pump #1 inlet, labeled "P". Connect Pump #1 outlet, labeled "T", to Pump #2 inlet (P). Connect Pump #2 Outlet (T) to tractor return. Open bypass needle valve (UP) on both pumps. It does not matter which pump is plumbed first in the series.



### IMPORTANT

Do NOT connect two pumps in series with seed distribution fan.

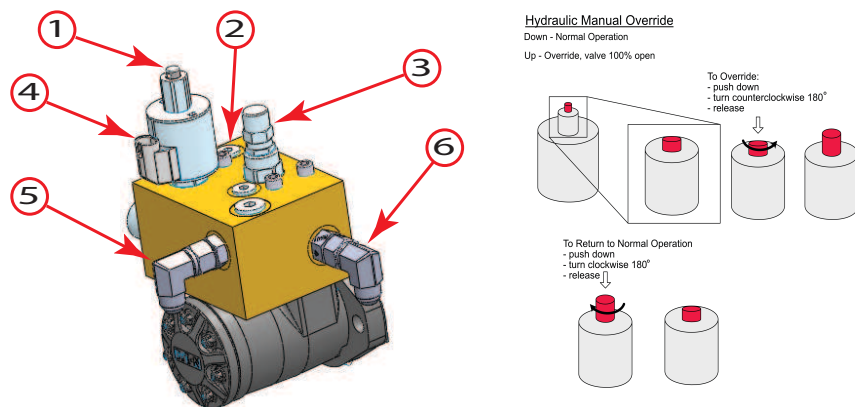
**Figure 11. Connect two Pumps in Parallel - Alternative Option**



Connect a Tee fitting to both supply and return hoses. Connect supply hoses to Pump Inlets (P) and return hoses to Outlets (T). Close bypass needle valve (DOWN) on both pumps.

## PWM Valve & Motor

**Figure 12. PumpRight Hydraulic Motor**



### 4.0 CC Hydraulic PWM Motor

1. Manual Override - Turn Counterclockwise and lift the valve knob to engage. By overriding the valve, full hydraulic flow is present. Be sure to limit hydraulic supply flow. Push down and turn 1/2 turn clockwise to return to operating position.



#### IMPORTANT

May need to clean packed dirt to allow movement of knob. Do not force with tools or could risk breaking.

2. Load Sense Port - Use for Power Beyond Hydraulic source only.
3. Bypass Valve - Remove cap to access bypass needle valve. Shipped from factory closed. This valve should only be open when plumbing hydraulics in series with other hydraulic motors. In some scenarios, the motor may continue turning slowly when in the off position. To completely stop the pump, open the bypass valve slightly.



#### IMPORTANT

Always loosen the lock nut before adjusting needle valve. Do NOT overtighten needle valve.

4. PWM Valve Connector - 2-pin MetriPack Shroud.



#### TIP

To test coil, resistance across both pins should read 7-9 ohms.

5. Hydraulic Supply (pressure) - from tractor. Labeled "P"
6. Hydraulic Return - to tank. Check valve included on return. Labeled "T"

**DANGER**

Hydraulic Oil under extremely high pressure. Do not use hand or any other skin to check for or to stop hydraulic leaks. Be sure pressure is relieved before loosening hydraulic fittings. Replace worn hoses immediately. Seek medical care immediately if hydraulic oil is shot into the eye or onto the skin.

**Pump Rotation Check Valve**

A check valve is included on the outlet port of the hydraulic valve. This prevents the pump from running in the wrong direction. If ran in the wrong direction, liquid will be pumped, however the hydraulic valve will not be able to control the flow. The check valve can be identified by the part number 1108R stamped on it and a flow direction arrow.

**Power Beyond Hydraulics**

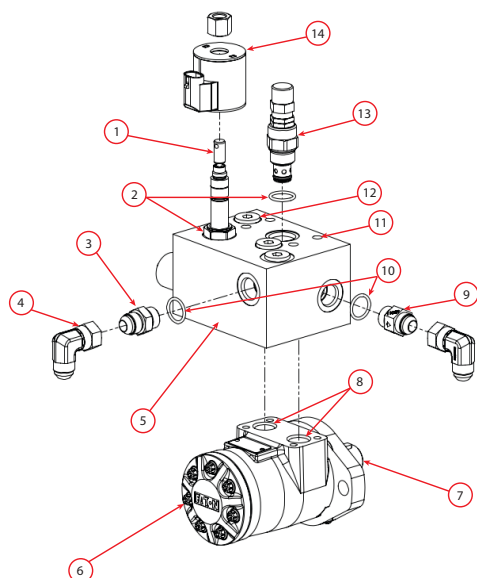
This valve is designed to work with power beyond hydraulics. This configuration will not require a standard tractor remote hydraulic valve. The load sense port and hose described next will typically not be needed if other hydraulic ports are in use. If the load sense is needed, do this:

1. First, remove the load sense plug and install a #6 male boss x #6 JIC adapter fitting, SurePoint PN 161-01-6MB-6MJ.
2. Then run a 3/8" or 1/4" hydraulic hose back to the tractor.

This hose will connect to the load sense port on the tractor. The load sense line will signal the tractor hydraulic system to supply the flow needed by the pump to meet your application rate. The SurePoint valve has an internal load sense check valve, which is required for power beyond hydraulics. The bypass valve must be closed to use Power Beyond.

## 3.2.3. PWM Valve and Motor Parts

**Figure 13. 4.0 CID Hyd Motor with PWM and Bypass, CW Rotation (P/N: 164-FTA0994)**



*Alternate - P/N: 164-FTA1609 same as above but includes RPM speed sensor.*

Item No.	Part No.	Description
1	166-SP10-20M-0-N-00	Hydraulic Prop. Solenoid Valve W/Red Override Knob for PumpRight & Stand-Alone Valves (Valve Only)
2	166-ORING-10	910 Buna 90 Duro O-Ring (10 SAE) (15/16" OD x 3/4" ID) #10 Male Boss
3	161-01-8MB-8MJ	#8 Male O-Ring Boss x #8 Male JIC
4	161-02-8MJ-8FJX-90	#8 Female JIC x #8 Male JIC - Elbow
5	165-P15648-2	PWM Hydraulic Valve With Bypass Manifold Only for Mounting to Eaton T Series Motor - Includes 4 Bolts & Check Valve
6	166-158-4265-001 (FTA1609)	Eaton T-Series Motor, 1" Shaft, 4.0 CID, Manifold Parts W/ Speed Sensor
7	164-60564	Hydraulic Motor Seal Kit for Eaton T-Series Hydraulic Motor With 1" Shaft
8	166-ORING-112	112 Buna 70 Durameter O-Ring (1/2" OD x 3/8" ID), Between Eaton motor 7 Hydraulic Block (2 Per Motor)
9	161-07-1108R	Hydraulic Check Valve - #8 Male O-Ring Boss Inlet x #8 Male JIC Outlet
10	166-ORING-08	908 Buna 90 Duro o-Ring (8 SAE) (13/16" OD x 5/8" ID) #8 Male Boss
11	166-050308-SS / 166-05LW-SS	5/16" x 3 1/2" SS Bolts / 5/16" SS Lock Washer
12		#6 Male Boss Load Sense Port (Power Beyond)
13	166-NV10-22C-0-N	Needle Valve for Hydraulic PWM Motor
14	166-4303512	12 Volt DC Coil for PumpRight & Stand Alone Hydraulic Valves (Coil Only)



## 4. Maintenance

### PumpRight Oil

PumpRight pumps use an internal oil lubricated crankshaft and connecting rod design. There is an external reservoir with level indicators with a fill cap. These pumps require [SurePoint PumpRight Oil](#) (P/N: 291-02-2160-0038) OR SAE30 weight non-detergent oil. Annual oil changes are recommended. Check Oil level daily.



Crankcase Oil Capacities (SAE30 Non-detergent)

Model	Capacity
PR17	13 oz
PR30	28 Oz
PR40	56 oz
D250	98 oz
PR80	148 oz

**Figure 14. PumpRight Oil Fill & Sight Glass**



*Fill oil to a level between the MIN and MAX lines on the sight glass.*

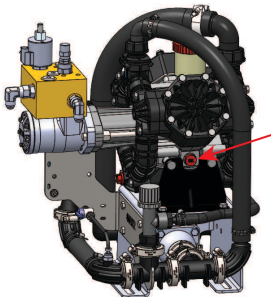
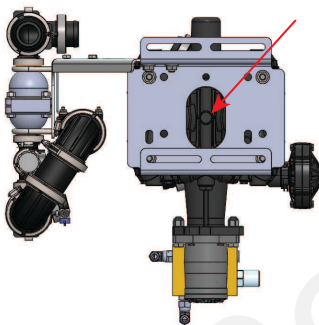
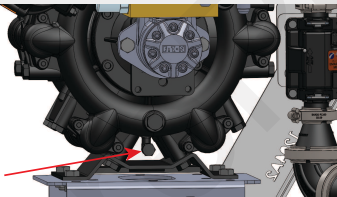
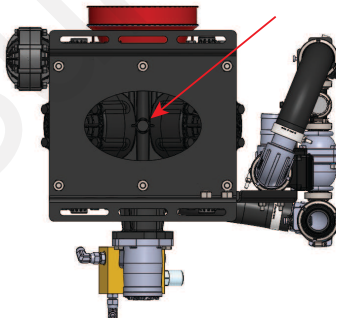


#### TIP

If oil sight glass is repeatedly low, overfilled, and/or milky in color, check for damaged diaphragm.

To access drain plug, it may be required to remove the pump from mounting bracket and lifted slightly. To drain or refill the pump completely, the pump shaft must be turned slowly by hand. The hydraulic motor must be removed to do this.

## Table 10. PumpRight Oil Drain Plugs

Torque all drain plugs to 180 in-lbs				
Pump	Drain Plug	O-Ring	Wrench Size	
PR17	291-02-2406-0023	291-02-9910-740290	21mm	
	PR30	291-02-2406-0023	291-02-9910-740290	21mm
	PR40	291-02-2406-0023	291-02-9910-740290	21mm
	D250	291-13-880581	291-13-880820	24mm
	PR80	291-13-820361	291-02-9910-180101	17mm
				

**Figure 15. SurePoint PumpRight Oil (P/N: 291-02-2160-0038)**



*Scan QR Code to purchase components from SurePointAg Webstore.*

## Winterization

SurePoint recommends flushing your fertilizer pump and complete system with adequate amounts of water first. Next, use RV antifreeze to winterize your system by pumping an adequate amount through all components. At the beginning of the next season, begin with water to verify the system is in working order with no leaks.

## Air Bladder

Some PumpRight pumps (PR40, D250, & PR80) have an air bladder to smooth the pump output flow. It is recommended to operate with this bladder greater than 15 psi, or 25% of working pressure. Due to the small size of this bladder, very little air is needed. SurePoint recommends charging a portable air tank to the correct pressure, then attach the bladder valve to charge the air bladder to the same pressure as the air tank.

### 4.1. Diaphragm Replacement

PumpRight pumps are designed to allow very simple replacement of the two main components; diaphragms and inlet/outlet valves. It is recommended to replace these components every 3-4 seasons, or 1,000 hours. It's a small job that ensures reliable operation during busy season.

**Figure 16. Diaphragm Service Kit**



*Each kit comes with one diaphragm, two valves, and two valve gaskets*



#### NOTE

Be sure to purchase one service kit per number of diaphragms of the pump. (Ex. PR17 requires three kits)

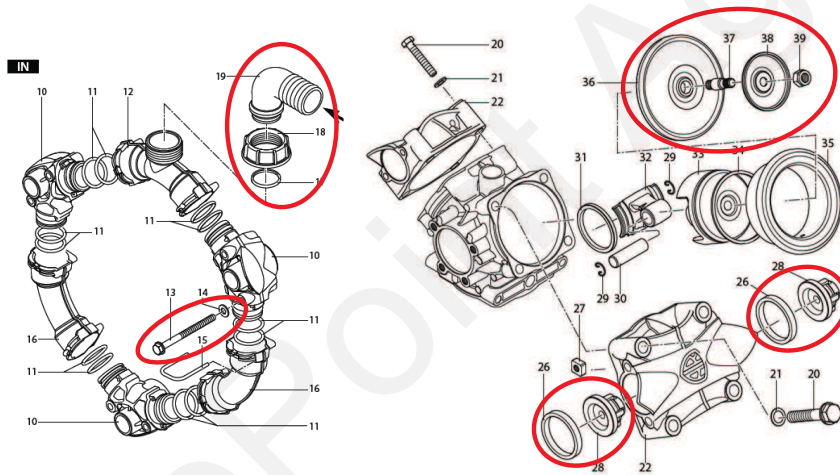
To purchase parts, contact your SurePoint dealer or shop the SurePoint Ag Webstore here. [store.surepointag.com](http://store.surepointag.com)



**Table 11. PumpRight Diaphragm Service Kits**

PumpRight Model	Number of Diaphragms	Service Kit
PR17	3	<a href="#">291-13-100100</a>
PR30	3	<a href="#">291-13-100150</a>
PR40	4	<a href="#">291-13-100150</a>
D250	6	<a href="#">291-02-100500</a>
PR80	4	<a href="#">291-13-100250</a>

**Figure 17.**



1. Remove inlet and outlet plumbing connections by unscrewing ring nut on inlet and outlet fittings. (Item 18)
2. Drain all oil by removing oil drain plug from bottom of pump. Rotate pump shaft by hand to drain the remaining oil. Once empty, ensure drain plug o-ring is in place and not damaged. Replace drain plug and tighten to 180 in-lbs.



## IMPORTANT

Use caution when removing and replacing drain plug so threads and o-ring are not damaged.

3. Remove pump manifold(s) using 13 mm wrench. (Item 13)

4. Remove and replace complete valve assemblies. (Items 26 & 28)
5. Remove pump head. (Item 22)
6. Remove diaphragm bolt, support washer, and diaphragm. (Items 36-39) Turn pump shaft to the up position to replace diaphragm.
7. Install new diaphragm, LIQUID side up, then replace washer and bolt. Apply multipurpose grease (such as PG54) between diaphragm and washer plate.
8. Turn pump shaft to the down position to seat new diaphragm into the sleeve groove.
9. Reinstall pump head and manifold(s).
10. Refill crankcase with SAE30 non detergent oil. Be sure to turn pump shaft and fill reservoir to the full line.



### NOTE

See individual parts breakdown charts for specific Bolt/Nut Torque Specification.

For other pump service information and parts breakdowns, navigate to the specific pump model at the rear of this manual.

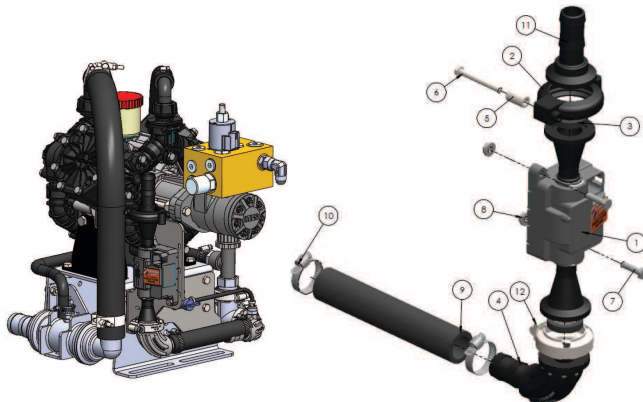
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## 5. PR17

### 5.1. PR17 Flowmeter Kit

**Figure 18. PR17 Pump with DN10 Orion 3 Flowmeter**



*P/N: 500-02-2310 with 1" Hose Inlet Barb & 1" M100 Manifold Flange*

The Orion 3 Flowmeter uses a 6 pin Deutsch DT connector. If upgrading from an older flowmeter, the following adapter cables will be needed: P/N: 201-5954Y1 to connect 3-pin AMP Superseal to Orion 3, or P/N: 201-6647Y1 to connect 3-pin MetriPack to Orion 3.



#### NOTE

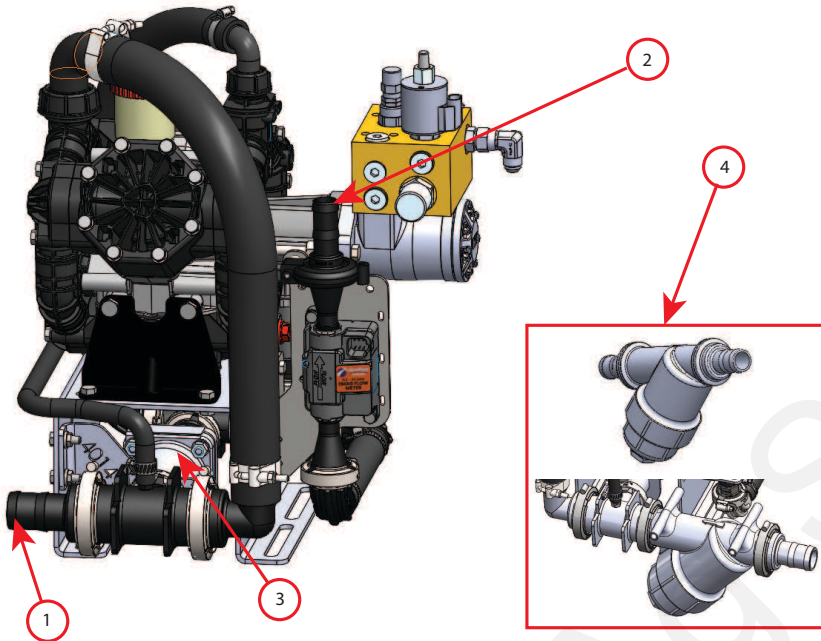
At flowrates greater than 17 GPM, there will be in excess of 15 psi of pressure loss through this flowmeter. 24 GPM of Water = 30 psi pressure loss.

**Table 12. PR17 Flowmeter Kits**

Item No.	Part No.	Description	Qty
1	204-01-462032A	Flowmeter Assy, Orion 3, 0.2-24 GPM, M100 Flange	1
2	105-UFC100	1" UF Clamp	1
3	105-100G	1" EPDM Manifold Gasket	2
4	105-100BRBSWP90	1" Flange x 90 sweep HB	1
5	400-663Y1	Spacer Bushing	1
6	300-M655MM-SS	Bolt, M6 x 55mm	2
7	300-040100-SS	Bolt, 1/4-20 x 1"	2
8	323-04-SS	Nut, 1/4-20 Serrated	2
9	280-100-AG200	1" AG200 Hose x 8"L	1
10	350-1608	1" Hose Clamp	2
11	105-100BRB	1" Manifold x 1" HB	1
12	105-FC100	1" Manifold Clamp	1

## 5.2. PR17 Liquid Plumbing

Figure 19.



1. Inlet - Attach hose from supply tank and strainer
2. Outlet - 1" hose barb outlet is straight from the flowmeter. The outlet hose should be a minimum of 24" in length with no tight turns or kinks to maintain optimum flowmeter performance. Attach this hose to your manifolds or section valves. 3/4" hose barb can be substituted.
3. Pressure Relief Valve (PRV) - Set to 100 psi. If a restriction increases system pressure over 100 psi, the PRV will open to allow excess flow back to the inlet side and reduce pressure. This protects the pump and other plumbing component from damage.
4. Strainer - 20 mesh strainer. The manifold strainer includes two hose barbs so it can be mounted anywhere in the inlet line. If preferred, the strainer can be mounted directly to the inlet plumbing as shown.



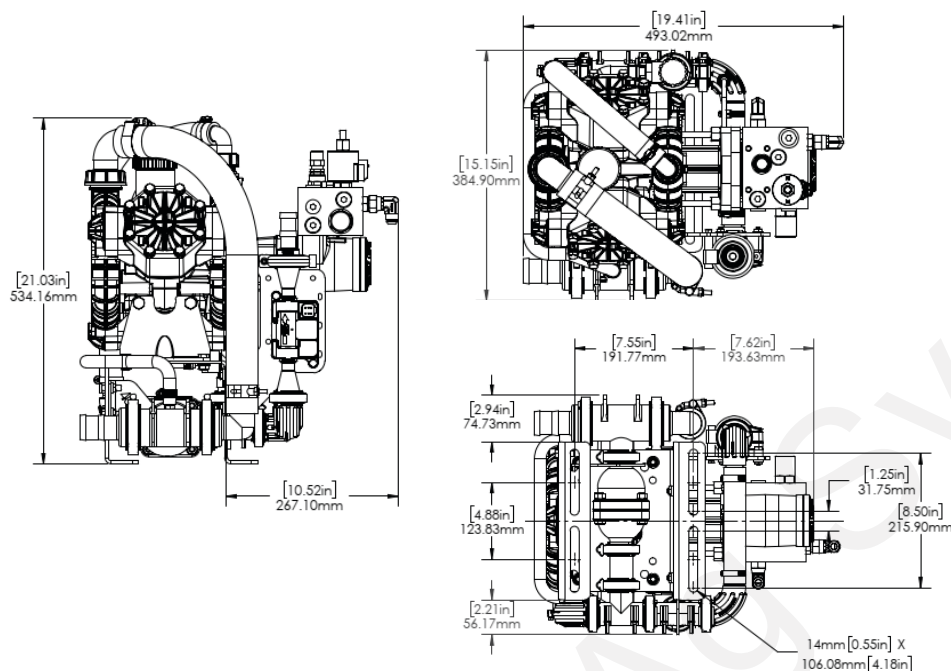
### CAUTION

These pumps can deliver liquid at high pressure (290 PSI). Be sure the 100 PSI Pressure Release Valve (PRV) is installed and functioning so system pressure will be kept under 100 PSI. Check hoses, hose clamps, and liquid fittings regularly and repair or replace loose connections.



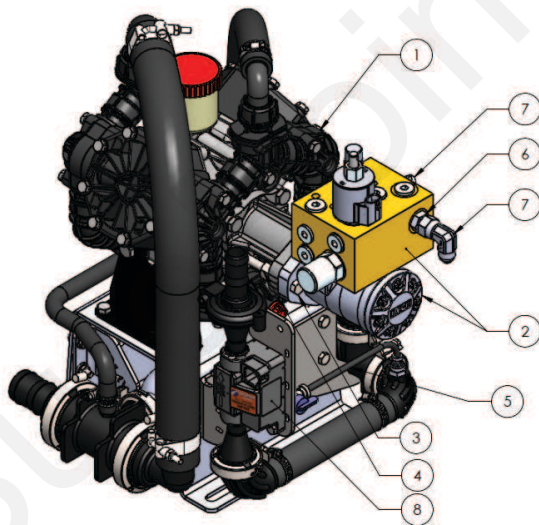
5.3. PR17 Assemblies

Figure 20. PR17 Dimensions



Assembled Weight: 80 lbs (with Gen3 LiquiShift: 95 lbs)

Figure 21. Complete PR17 Pump Assembly (P/N: 500-01-4701)



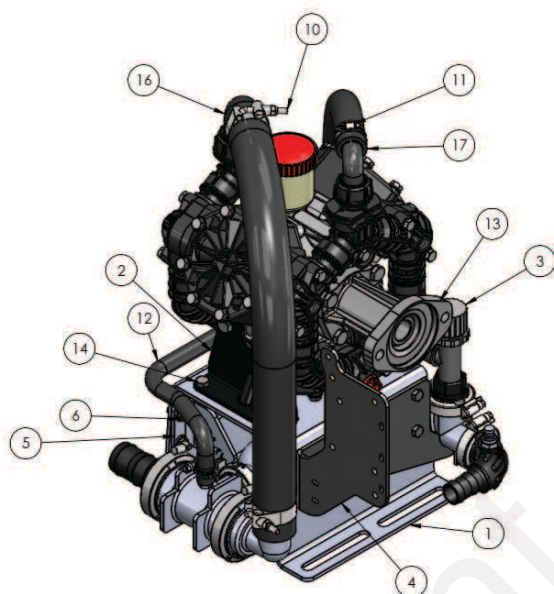
PR17 Pump Only P/N: 290-02-PR17

Table 13. P/N: 500-01-4700

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	500-40-200017	PR17 Pre-Build Assembly (Minus Flowmeter and Hydraulics)	1

2	164-FTA1609	4.0 CID Hydr Motor with PWM Valve, Speed Sensor, & Bypass Valve, CW Rotation	1
3	300-060400-5	Bolt, 3/8" x 4"	2
4	321-08	1/2" Nylock Nut	2
5	521-00-100250	Pump Priming & Air Bleed Assy	1
6	161-01-8MB-8MJ	Adapter - #8 male O-Ring Boss to #8 male JIC	1
7	161-02-8MJ-8FJX-90	Elbow - #8 female JIC to #8 male JIC - 90	2
8	500-02-02310	Orion 3 DN 10 Flowmeter Assy	1

**Figure 22. PR17 Pump Pre-Build Assembly (P/N: 500-40-200017)**



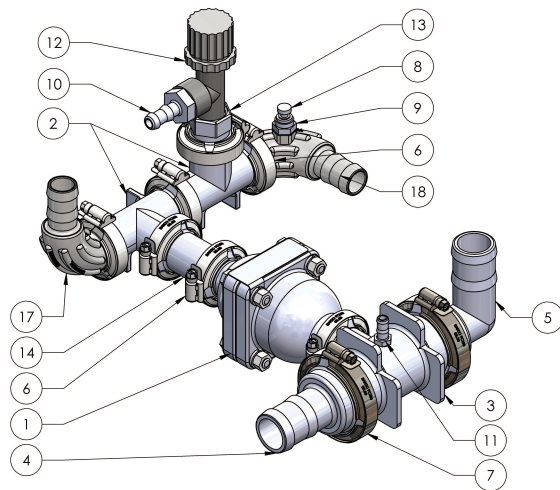
*Flowmeter and hydraulics not included*

**Table 14. P/N: 500-40-200017**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	400-1117A4	Diaphragm Pump Bracket	1
2	290-02-PR17	PR17 Poly BlueFlex Diaphragm Pump - 17 GPM - 290 PSI	1
3	520-00-3013	Plumbing Assembly - PR17/30 Hydraulic Diaphragm Pumps	1
4	410-4015Y2	PR17/30 - Flow Meter Support Bracket	1
5	410-4014Y1	PRV Support Bracket - PR17/30	1
6	323-05-SS	5/16" Flange Nut SS	6
7	300-050012-SS	5/16" x 3/4" HCS SS	6
8	300-060012-SS	3/8" x 3/4" HCS SS	4
9	350-0605	SS Hose Clamp - Size 6 - 7/8" Diameter	2
10	350-TC181	T-Bolt Hose Clamp - 1.81 - 2.06" Diameter (fits 1 1/2" Enforcer or AG200)	2
11	350-1608	1" Hose Clamp	2
12	280-05-AG200-25L	1/2" AG200 - PR17/30 - 25" L	1
13	291-02-AR55375	Flange Adapter Kit - PR17	1
14	300-060012-SS	3/8" x 3/4" HHCS	4

15	323-06-SS	3/8" Flange Nut SS	4
16	280-150-ENF-25L	1-1/2" Enforcer Hose - PR17	1
17	280-100-AG200-25L	1" AG200 Hose - PR17 - 25 inches	1

**Figure 23. PR17/PR30 Pump Plumbing Assembly (P/N: 520-00-3013)**

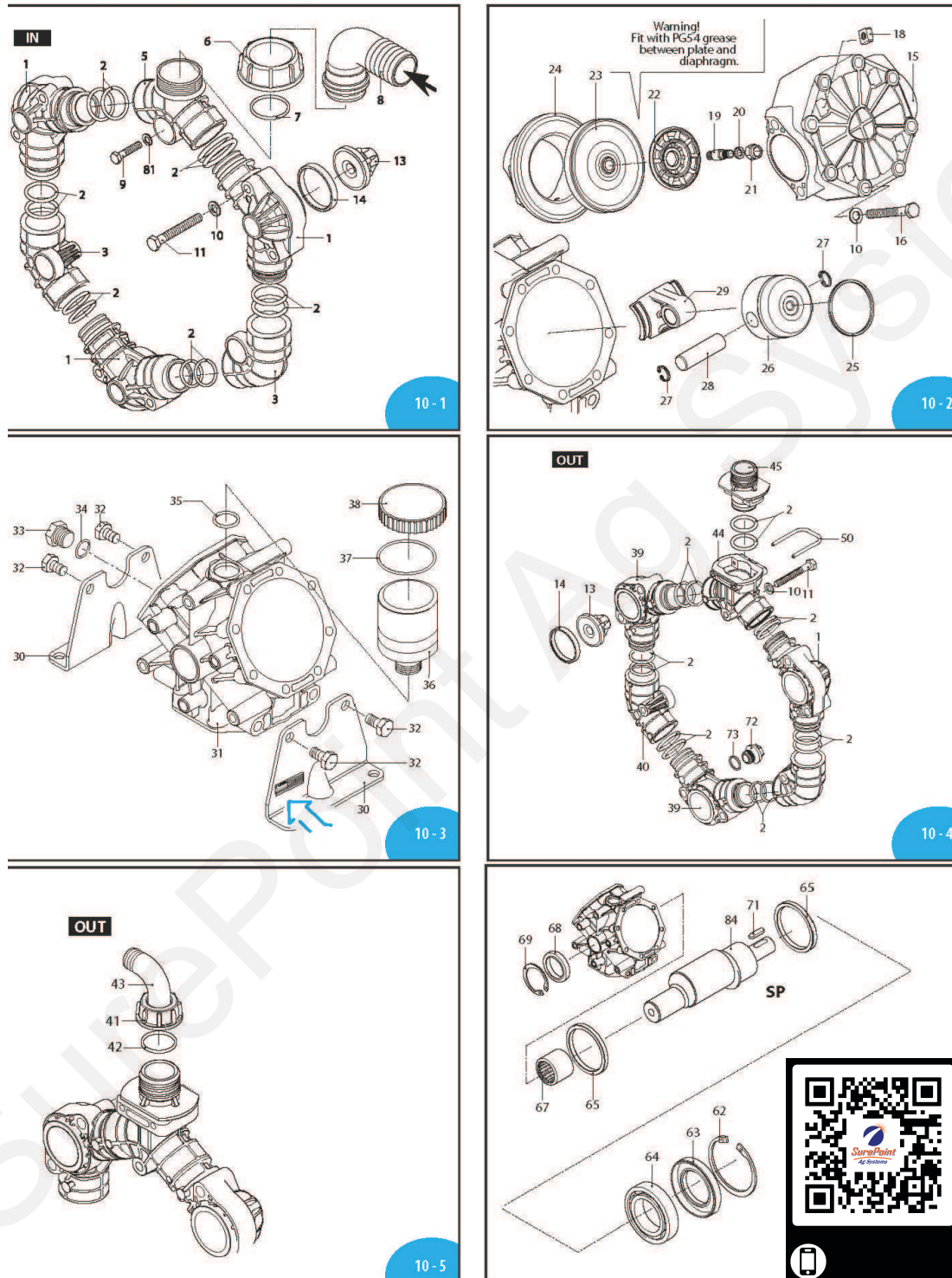


**Table 15. P/N: 520-00-3013**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	102-MPRV100-100	Pressure Relief Valve - 100 PSI	1
2	105-100TEE	1" Manifold Tee	2
3	105-200100TEE038	2" Standard Port Manifold x 1" Flanged Tee	1
4	105-200150BRB	2" Manifold x 1-1/2" Hose Barb	1
5	105-200150BRB90	2" Manifold x 1-1/2" Hose Barb - 90°	1
6	105-FC100	1" Manifold Clamp	7
7	105-FC200	2" Manifold Clamp	2
8	113-05-025	Plug - 1/4" QC	1
9	113-06-025025	QC to MPT - 1/4" QC x 1/4" MPT	1
10	101-075050	3/4" MPT x 1/2" HB	1
11	101-038050	3/8" MPT x 1/2" HB	1
12	102-23520-3-4	3/4" Throttling Valve with out spring - 150 PSI	1
13	105-100075FPT	1" Manifold x 3/4" FPT	1
14	105-100CPG	1" Manifold Coupling	1
15	105-100G	1" EPDM Manifold Gasket	7
16	105-150G	1 1/2" EPDM Gasket	2
17	105-100BRBSWP90	1" Flange X 90° Sweep Hose Barb	1
18	105-100BRBSWPG90	1" Manifold x 1" Hose Barb - 1/4" Gauge Port - 90 Degree Sweep	1

## 5.4. PR17 Parts Breakdown

**Figure 24. PR17 Parts Breakdown**



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**Table 16. PR17 Parts Breakdown**

Item No.	Part No.	Description	Quantity
1	291-13-3240030	PR17 Inlet & Outlet Male Manifold	5
2	291-13-390292	PR17 Manifold O-Ring - Inlet & Outlet	24
3	291-13-3240040	PR17 Inlet & Outlet Female Manifold	4
5	291-13-3240050	PR17 Inlet Manifold - Threaded	1
6	291-02-9910-750670	Ring Nut for 1 1/2" Outlet	1
7	291-13-1880460	O-Ring 29 x 3Viton	1
8	291-13-50267	Poly Elbow 1 1/2" - Outlet	1
9	291-13-3240280	PR17 Metric Bolt for Female Manifolds M8 x 55 (Torque: 106 in-lbs)	6
10	291-13-3120760	PR17 SS Washer for M8 x 75 & M8 x 80 Bolts	36
11	291-13-270211	PR17 Metric Bolt for Male Manifolds M8 x 75 (Torque: 88 in-lbs)	12
13	291-13-2429051	Valve for PR17, PR30, & PR40	6
14	291-13-3460380	Valve Gasket for PR17, PR30, & PR40	6
15	291-13-3240020	PR17 Pump Head	3
16	291-13-621771	PR17 Metric Bolt for Pump Head M8 x 80 (Torque: 124 in-lbs)	24
18	291-13-3120510	Square Nut for M8 Bolts	12
19	291-13-3240101	PR17 Hub Pin (Torque: 265 in-lbs)	3
20	291-13-320622	PR17 Hub Pin Washer	3
21	291-13-2240670	PR17, PR30, & PR40 Hub Pin Nut (Torque: 221 in-lbs)	3
22	291-13-3240110	PR17 Diaphragm Plate	3
23	291-13-1040083	PR17 Blueflex Diaphragm	3
24	291-13-3240130	PR17 Diaphragm Sleeve	3
25	291-13-650190	PR17 Piston Ring	3
26	291-13-1040120	PR17 Piston	3
27	291-13-1040270	PR17 Piston Pin Snap Ring	6
28	291-13-1040070	PR17 Piston Pin	3
29	291-13-3240120	PR17 Piston Connecting Rod	3
30	291-13-3240090	PR17 Black Metal Mounting Foot	2
31	291-13-3240010	PR17 Pump Housing	1
32	291-13-320342	PR17 Metric Bolt for Mounting Foot to Housing M10 x 20 (Torque: 265 in-lbs)	4
33	291-02-2406-0023	PR17 Oil Drain Plug (Torque: 177 in-lbs)	1
34	291-02-9910-740290	Oil Drain Plug O-Ring	1
35	291-13-720030	PR17 & PR30 Sight Glass to Pump O-Ring	1
36	291-13-3120240	PR17 & PR30 Sight Glass	1
37	291-02-9910-650920	PR17, PR30, & D115 Sight Glass Cap O-Ring	1
38	291-13-1040324	PR17 & PR30 Sight Glass Cap	1
39	291-13-3240031	PR17 Outlet Male Manifold With Plug Port	1
41	291-13-3120440	1" Ring Nut - PR17 Outlet	1
42	291-13-1140451	PR17 Outlet 1" Ring Nut O-Ring & PR30 & PR40 Manifold Plug O-Ring	1
43	291-13-3120460	PR17 1" Outlet Elbow	1



44	291-13-3240080	PR17 Outlet Female Manifold With Threaded Adapter Port	1
50	291-13-3460210	PR17 & PR30 Manifold Connecting Fork & PR40 Accumulator Connecting Fork	1
62	291-13-961790	PR17 & PR30 Motor Side Snap Ring	1
63	291-13-3120160	PR17 & PR30 Motor Side Seal Ring	1
64	291-13-961780	PR17 Roller Bearing	1
65	291-13-3240320	PR17 Piston Connecting Rod Ring	2
67	291-13-3460110	PR17 & PR30 Needle Bearing	1
68	291-13-1300230	PR17 & PR30 Non Motor Side Seal Ring	1
69	291-13-480900	PR17 & PR30 Non Motor Side Snap Ring	1
71	291-13-2280950	PR17 Pump Shaft Key Way	1
72	291-13-3120690	PR17 Outlet Male Manifold Plug	1
73	291-13-2840891	PR17 Outlet Male Manifold Plug O-Ring	1
81	291-13-390315	Washer - SS for M8	6
84	291-13-3240190	PR17 Pump Shaft	1
85	291-02-9910-3240460	PR17 Threaded Adapter	1
86	291-13-550351	PR17 Threaded Adapter to Outlet Manifold O-Ring	2

**Table 17. PR17 Diaphragm Service Kit (P/N: 291-13-100100)**

	Description	QTY
13	Valve	2
14	Valve Gasket	2
23	Diaphragm	1

**Table 18. PR17 O-Ring Kit (P/N: 291-13-100700)**

Item No.	Description	QTY	Item No.	Description	QTY
<b>2</b>	Manifold O-Ring	24	<b>37</b>	Sight Glass Cap O-Ring	1
<b>7</b>	O-Ring 29x3 Viton	2	<b>42</b>	Outlet 1" Ring Nut O-Ring	1
<b>34</b>	Oil Drain Plug O-Ring	1	<b>73</b>	Outlet Male Manifold Plug O-Ring	1
<b>35</b>	Sight Glass to Pump O-Ring	1			

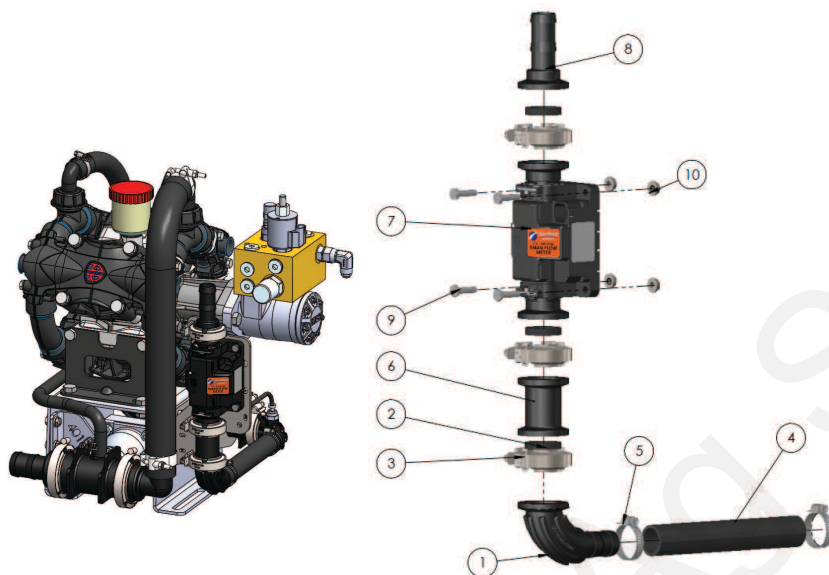
**Figure 25. SurePoint PumpRight Oil (P/N: 291-02-2160-0038)**


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## 6. PR30

### 6.1. PR30 Flowmeter Kit

**Figure 26. PR30 Pump with DN17 Orion 3 Flowmeter**



*P/N: 502-02-2320 with 1" Inlet Hose Barb, 1" M100 Manifold Flange*

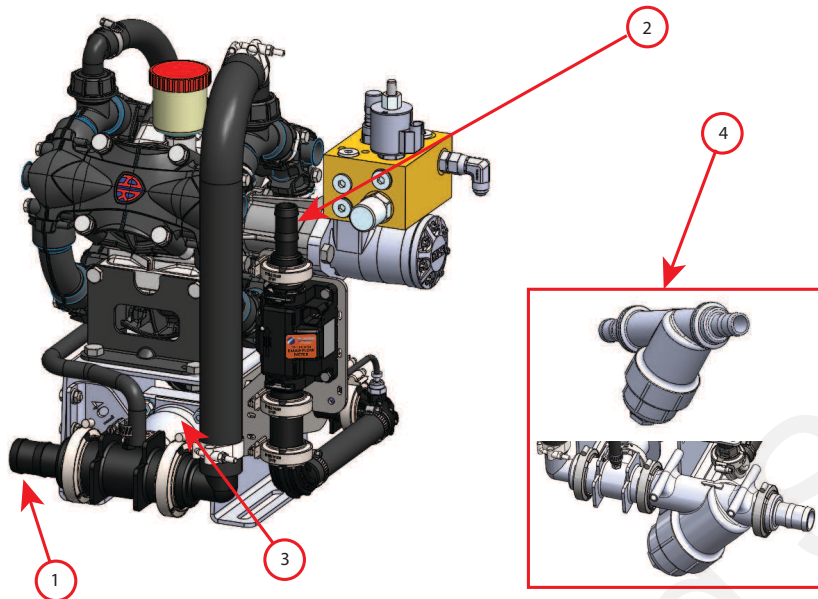
The Orion 3 Flowmeter uses a 6 pin Deutsch DT connector. If upgrading from an older flowmeter, the following adapter cables will be needed: P/N: 201-5954Y1 to connect 3-pin AMP Superseal to Orion 3, or P/N: 201-6647Y1 to connect 3-pin MetriPack to Orion 3.

**Table 19. PR30 Flowmeter Kit, P/N: 500-02-2320**

Item No.	Part No.	Description	Qty
1	105-100BRBSWP90	1" Flange x 90 Sweep HB	1
2	105-100G	1" Manifold Gasket	3
3	105-FC100	1" Manifold Clamp	3
4	280-100-AG200-8L	1" Hose, 8"L	1
5	350-1608	1" Hose Clamp	2
6	105-100CPG	1" Manifold Coupling	1
7	204-01-462034A-DN17	Flowmeter Assy, Orion 3, 1.45-58 GPM, M100 Flange	1
8	105-100BRB	1" Manifold x 1" HB	1
9	300-040100-SS	Bolt, 1/4-20 x 1"	4
10	323-04-SS	Nut, 1/4-20 Serrated	4

## 6.2. PR30 Liquid Plumbing

**Figure 27.**



1. Inlet - Attach hose from supply tank and strainer
2. Outlet - 1" hose barb outlet is straight from the flowmeter. The outlet hose should be a minimum of 24" in length with no tight turns or kinks to maintain optimum flowmeter performance. Attach this hose to your manifolds or section valves. 3/4" hose barb can be substituted.
3. Pressure Relief Valve (PRV) - Set to 100 psi. If a restriction increases system pressure over 100 psi, the PRV will open to allow excess flow back to the inlet side and reduce pressure. This protects the pump and other plumbing component from damage.
4. Strainer - 20 mesh strainer. The manifold strainer includes two hose barbs so it can be mounted anywhere in the inlet line. If preferred, the strainer can be mounted directly to the inlet plumbing as shown.



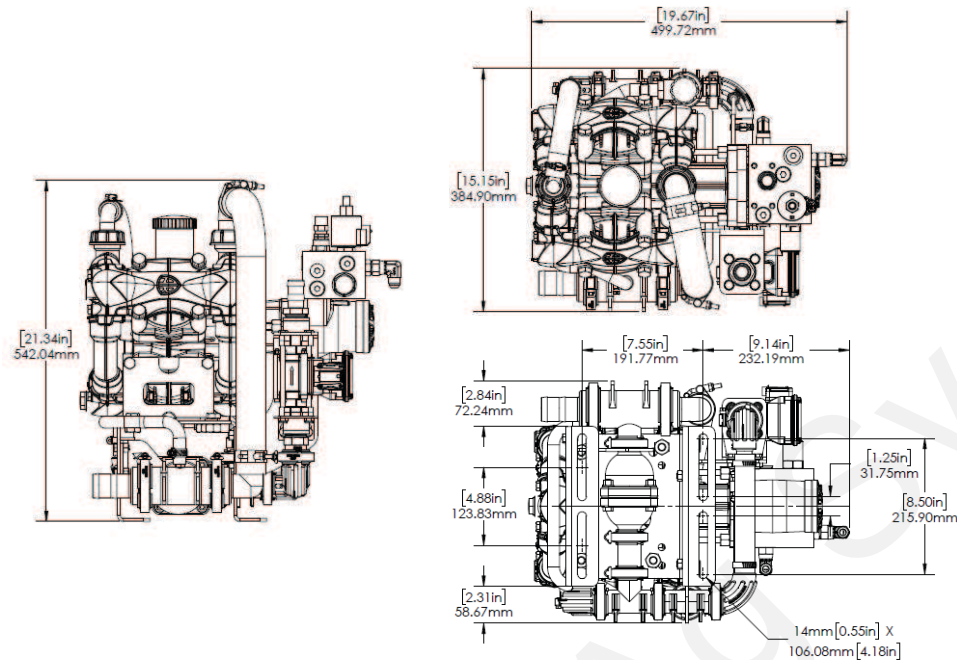
### **CAUTION**

These pumps can deliver liquid at high pressure (290 PSI). Be sure the 100 PSI Pressure Release Valve (PRV) is installed and functioning so system pressure will be kept under 100 PSI. Check hoses, hose clamps, and liquid fittings regularly and repair or replace loose connections.



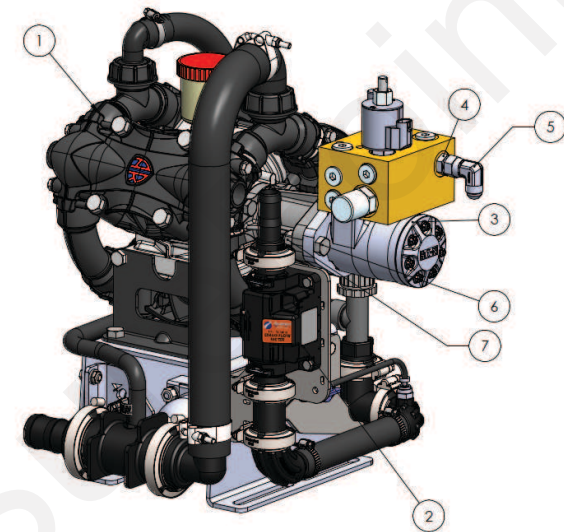
6.3. PR30 Assemblies

Figure 28. PR30 Dimensions



Assembled Weight: 85 lbs (with Gen3 LiquiShift: 100 lbs)

Figure 29. Complete PR30 Pump Assembly (P/N: 500-01-5701)

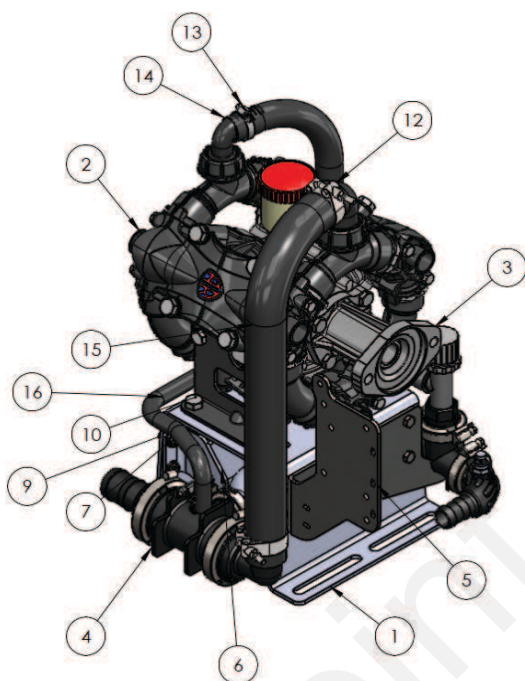


Pump Only P/N: 290-02-PR30

Table 20. P/N: 500-01-5701

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	500-40-200030	PR30 Poly Pre-Build Assembly (Minus Flowmeter and Hydraulics)	1

2	500-02-2320	Orion 3 DN17 Flowmeter Assy	1
3	164-FTA1609	4.0 CID Hydraulic Motor with PWM Valve, Speed Sensor, and Bypass Valve, CW Rotation	1
4	161-01-8MB-8MJ	Adapter - #8 male O-Ring Boss to #8 male JIC	1
5	161-02-8MJ-8FJX-90	Elbow - #8 female JIC to #8 male JIC - 90	2
6	300-080200-5	1/2" x 2" Hex Head Bolt - G5	2
7	321-08	1/2" Nylock Nut	2
8	521-00-100250	Pump Priming and Air Bleed Assembly	1

**Figure 30. PR30 Pump Pre-Build Assembly (P/N: 500-40-200030)**


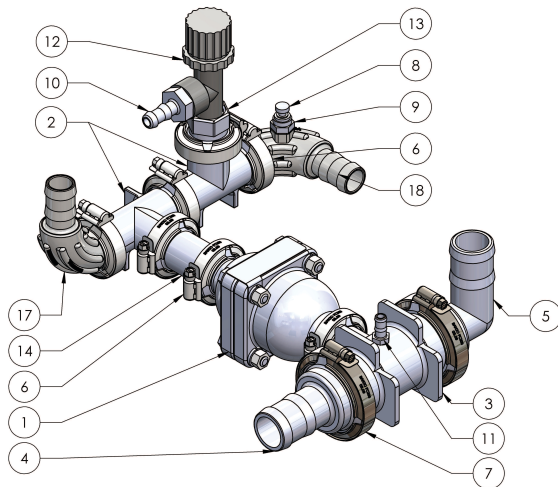
*Flowmeter and hydraulics not included*

**Table 21. P/N: 500-40-200030**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	400-1117A4	Diaphragm Pump Bracket	1
2	290-02-PR30	PR30 Poly BlueFlex Diaphragm Pump - 30GPM	1
3	291-02-AR55376	Flange Adapter Kit - PR30	1
4	520-00-3013	Plumbing Assembly - PR17/30 Hydraulic Diaphragm Pumps	1
5	410-4015Y2	PR17/30 - Flow Meter Support Bracket	1
6	410-4014Y1	PRV Support Bracket - PR17/30	1
7	323-05-SS	5/16" Flange Nut SS	6
8	323-08-SS	1/2" Flange Nut SS	4
9	300-050012-SS	5/16" x 3/4" Hex Head Bolt - SS	6
10	300-080012-SS	1/2" x 3/4" Hex Head Bolt - SS	
11	350-0605	SS Hose Clamp - Size 6 - 7/8" Diameter	2

12	350-TC181	T-Bolt Hose Clamp - 1.81 - 2.06" Diameter (fits 1 1/2" Enforcer or AG200)	2
13	350-1608	1" Hose Clamp	2
14	280-100-AG200-25L-PR30	1" Hose, 25"L	1
15	280-150-ENF-25L-PR30	1-1/2" Hose, 25"L	1
16	280-05-AG200-25L	1/2" Hose, 25"L	1

**Figure 31. PR17/PR30 Pump Plumbing Assembly (P/N: 520-00-3013)**

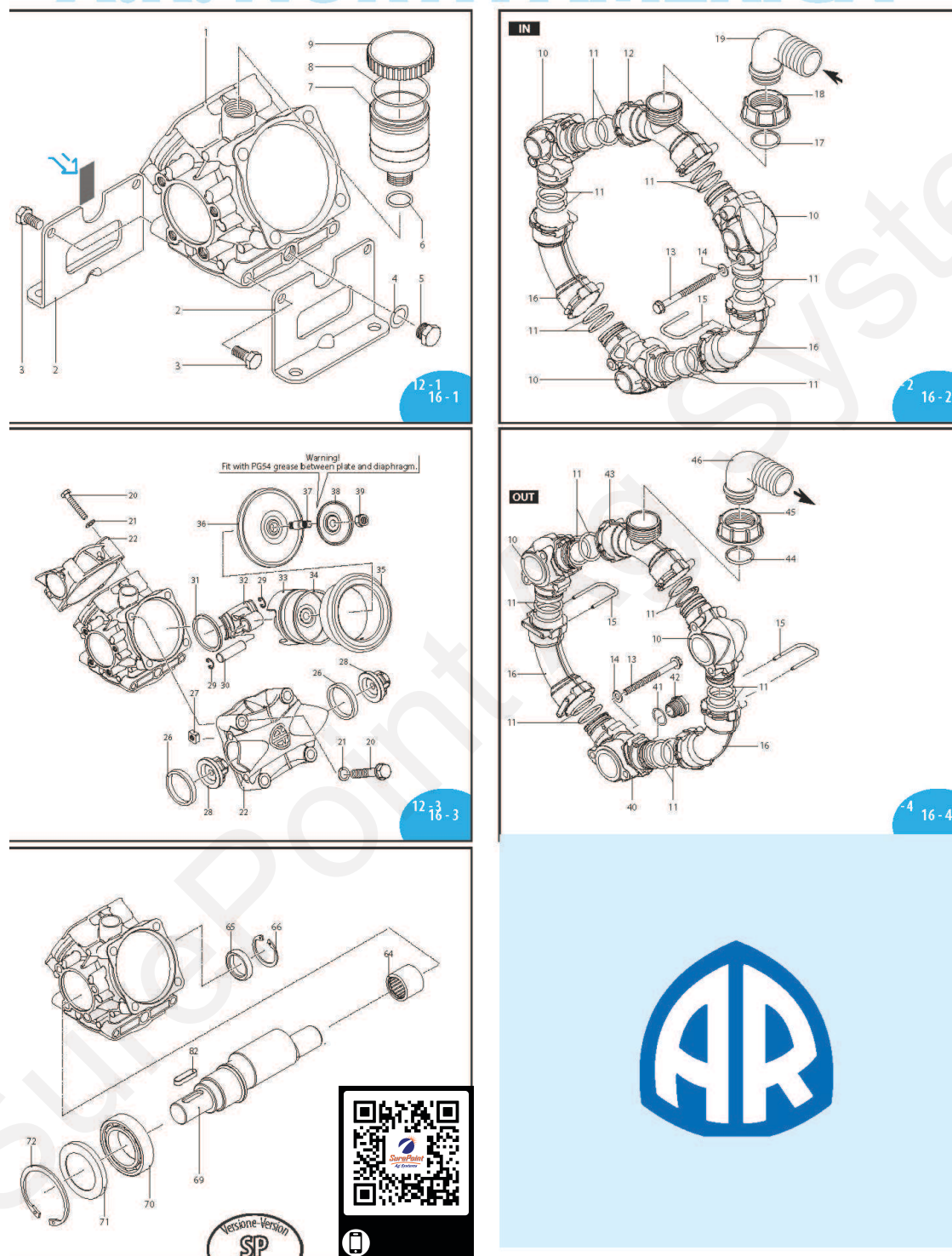


**Table 22. P/N: 520-00-3013**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	102-MPRV100-100	Pressure Relief Valve - 100 PSI	1
2	105-100TEE	1" Manifold Tee	2
3	105-200100TEE038	2" Standard Port Manifold x 1" Flanged Tee	1
4	105-200150BRB	2" Manifold x 1-1/2" Hose Barb	1
5	105-200150BRB90	2" Manifold x 1-1/2" Hose Barb - 90°	1
6	105-FC100	1" Manifold Clamp	7
7	105-FC200	2" Manifold Clamp	2
8	113-05-025	Plug - 1/4" QC	1
9	113-06-025025	QC to MPT - 1/4" QC x 1/4" MPT	1
10	101-075050	3/4" MPT x 1/2" HB	1
11	101-038050	3/8" MPT x 1/2" HB	1
12	102-23520-3-4	3/4" Throttling Valve with out spring - 150 PSI	1
13	105-100075FPT	1" Manifold x 3/4" FPT	1
14	105-100CPG	1" Manifold Coupling	1
15	105-100G	1" EPDM Manifold Gasket	7
16	105-150G	1 1/2" EPDM Gasket	2
17	105-100BRBSWP90	1" Flange X 90° Sweep Hose Barb	1
18	105-100BRBSWPG90	1" Manifold x 1" Hose Barb - 1/4" Gauge Port - 90 Degree Sweep	1

## 6.4. PR30 Parts Breakdown

**Figure 32. PR30 Parts Breakdown**



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**Table 23. PR30 Parts Breakdown**

Item No.	Part No.	Description	Quantity
1	291-13-3460010	PR30 Pump Housing	1
2	291-13-3460100	PR30 Black Metal Mounting Foot	2
3	291-13-160673	PR30 & PR40 Metric Bolt for Mounting Foot to Housing M10 x 25 (Torque: 265 in-lbs)	4
4	291-02-9910-740290	PR17, PR30, PR40 Pump Oil Drain Plug O-Ring	1
5	291-02-2406-0023	PR17, PR30, PR40, D70, D115, & D160 Pump Oil Drain Plug (Torque: 177 in-lbs)	1
6	291-13-720030	PR17, & PR30 Sight Glass to Pump O-Ring	1
7	291-13-3120240	PR17 & PR30 Sight Glass (Torque: 177 in-lbs)	1
8	291-02-9910-650920	PR17, PR30, & D115 Sight Glass Cap O-Ring	1
9	291-13-1040324	PR17 & PR30 Sight Glass Cap	1
10	291-13-3460030	PR30 Inlet & Outlet Male Manifold	5
11	291-13-2680141	PR30 Manifold O-Ring - Inlet & Outlet	24
12	291-13-3460050	PR30 Inlet Manifold - Threaded	1
13	291-13-3460201	PR30 & PR40 Metric Bolt for Male Manifolds M8 x 100 (Torque: 106 in-lbs)	12
14	291-13-390315	Washer - SS for M8	12
15	291-13-3460210	PR17 & PR30 Manifold Connecting Fork & PR40 Accumulator Connecting Fork	12
16	291-13-3460040	PR30 Inlet & Outlet Female Manifold	4
17	291-13-1880460	O-Ring - 29 x 3 Viton	1
18	291-02-9910-750670	Ring Nut for 1 1/2" Outlet	1
19	291-13-50267	Poly Elbow - 1 1/2" Outlet HB	1
20	291-13-750072	PR30 & PR40 Metric Bolt for Pump Head M12 x 70 Bolt	12
21	291-13-390092	PR30 & PR40 SS Washer for M12 x 70 Bolt	12
22	291-13-3460020	PR30 & PR40 Pump Head	3
26	291-13-3460380	Valve Gasket for PR17, PR30, & PR40	6
27	291-13-3120510	Nut for all M8 Bolts	12
28	291-13-2429051	Valve for PR17, PR30, & PR40	6
29	291-02-9910-380080	PR30 & D115 Piston Pin Snap Ring	6
30	291-02-9910-380300	PR30 & D115 Piston Pin	3
31	291-13-3460090	PR30 Piston Connecting Rod Ring	2
32	291-13-3460080	PR30 Piston Connecting Rod	3
33	291-13-580120	PR30 & D115 Piston	3
34	291-02-9910-500260	PR30, PR40, D115, D160, & AR & HD250 Piston Ring	3
35	291-13-750110	PR30, D160, & D250 Diaphragm Sleeve	3
36	291-13-550081	BlueFlex Diaphragm for D70, D115, D160, AR & HD250, PR30, & PR40	3
37	291-13-2240101	PR30 & PR40 Hub Pin (Torque: 265 in-lbs)	3
38	291-13-580090	PR30 Diaphragm Plate	3
39	291-13-2240670	PR17, PR30, & PR40 Hub Pin Nut	3
40	291-13-3460031	PR30 Outlet Male Manifold With Plug Port	1
41 (a)	291-13-1150641	O-Ring - PR30 & PR40 Manifold Plug (New Style Plug)	1



41 (b)	291-13-1140451	PR30 & PR40 Manifold Plug O-Ring (Old Style Plug)	1
42	291-13-346090	PR30 & PR40 Manifold Plug (New Style) (Torque: 88 in-lbs)	1
43	291-13-3460060	PR30 Outlet Manifold - Threaded	1
44	291-13-880311	PR30 Outlet 1" Ring Nut O-Ring & PR40 Accumulator O-Ring	1
45	291-13-651100	Ring Nut 1 1/4"	1
46	291-13-651460	PR30 1" Outlet Elbow	1
64	291-13-3460110	PR17 & PR30 Needle Bearing	1
65	291-13-1300230	PR17 & PR30 Non Motor Side Seal Ring	1
66	291-13-480900	PR17 & PR30 Non Motor Side Snap Ring	1
69	291-13-3460260	PR30 Pump Shaft	1
70	291-13-961781	PR30 Roller Bearing	1
71	291-13-3120160	PR17 & PR30 Motor Side Seal Ring	1
72	291-13-961790	PR17 & PR30 Motor Side Snap Ring	1
82	291-13-2460480	PR30 Pump Shaft Key Way	1

**Table 24. PR30/PR40 Diaphragm Service Kit (P/N: 291-13-100150)**

Item No.	Description	QTY
26	Valve Gasket	2
28	Valve	2
36	Diaphragm	1

**Table 25. PR30 O-Ring Kit (P/N: 291-13-100710)**

Item No.	Description	QTY	Item No.	Description	QTY
4	Oil Drain Plug O-Ring	1	17	O-Ring 29x3 Viton	1
6	Sight Glass to Pump O-Ring	1	41	Outlet Male Manifold Plug O-Ring	1
8	Sight Glass Cap O-Ring	1	44	Outlet 1" Ring Nut O-Ring	1
11	Manifold O-Ring	24			

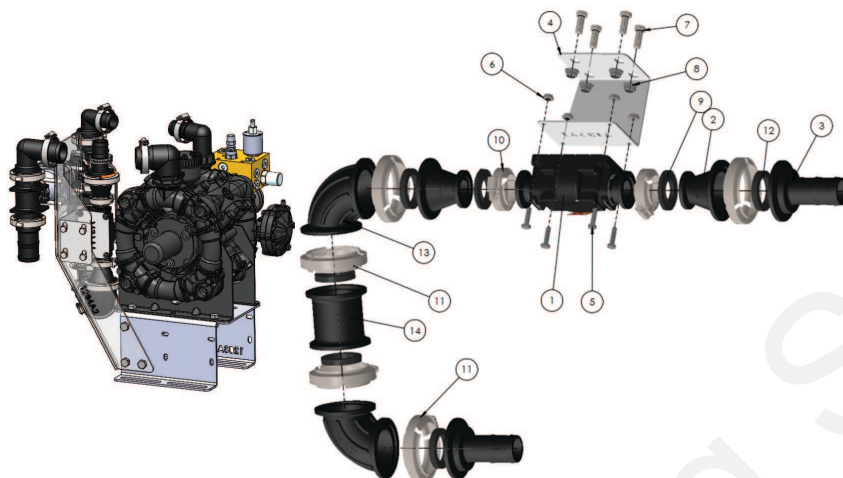
**Figure 33. SurePoint PumpRight Oil (P/N: 291-02-2160-0038)**


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## 7. PR40

### 7.1. PR40 Flowmeter Kit

**Figure 34. PR40/D250 Pump with DN17 Orion 3 Flowmeter**



*P/N: 502-02-2320 with 1-1/2" Inlet Hose Barb, 2" Manifold Flange*

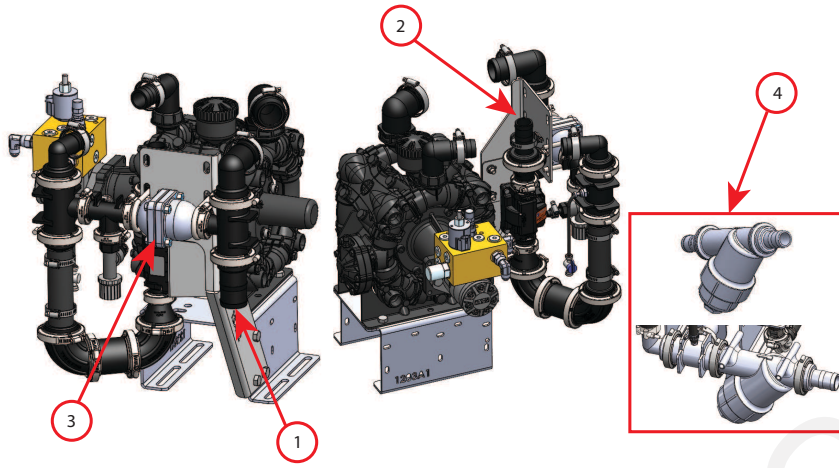
The Orion 3 Flowmeter uses a 6 pin Deutsch DT connector. If upgrading from an older flowmeter, the following adapter cables will be needed: P/N: 201-5954Y1 to connect 3-pin AMP Superseal to Orion 3, or P/N: 201-6647Y1 to connect 3-pin MetriPack to Orion 3.

**Table 26. PR40/D250 Flowmeter Kit**

ITEM NO.	PART NUMBER	Description	QTY
1	204-01-462034A-DN17	EMag Flowmeter, Orion 3, 1.45 - 58 GPM, M100 Flange	1
2	105-220100CPG	2" Full PortX 1" Reducer Flange	2
3	105-220150BRB	2" Full Port Manifold x 1 1/2" HB	2
4	400-7137Y1	PR60/D250 Orion 3 Mounting Plate	1
5	300-040100-SS	BOLT, HEX HEAD, 1/4-20 x 1, STAINLESS STEEL	4
6	323-04-SS	NUT, SERRATED FLANGE, 1/4-20, STAINLESS STEEL	4
7	300-060100-SS	BOLT, HEX HEAD, 3/8-16 x 1, STAINLESS STEEL	4
8	323-06-SS	NUT, SERRATED FLANGE, 3/8-16, STAINLESS STEEL	4
9	105-100G-H	1" EPDM Manifold Gasket	2
10	105-FC100	1" Manifold Clamp	2
11	105-FC220	2" Full Port Manifold Clamp	5
12	105-150G-H	1 1/2" EPDM Gasket	5
13	105-220SWP90	2" Full Port 90° Sweep	2
14	105-220CPG	2" X 2" Full Port Flange X 2 31/32" Long	1

## 7.2. PR40 Liquid Plumbing

Figure 35.



1. Inlet - Attach hose from supply tank and strainer
2. Outlet - 1" hose barb outlet is straight from the flowmeter. The outlet hose should be a minimum of 24" in length with no tight turns or kinks to maintain optimum flowmeter performance. Attach this hose to your manifolds or section valves. 3/4" hose barb can be substituted.
3. Pressure Relief Valve (PRV) - Set to 100 psi. If a restriction increases system pressure over 100 psi, the PRV will open to allow excess flow back to the inlet side and reduce pressure. This protects the pump and other plumbing component from damage.
4. Strainer - 20 mesh strainer. The manifold strainer includes two hose barbs so it can be mounted anywhere in the inlet line. If preferred, the strainer can be mounted directly to the inlet plumbing as shown.



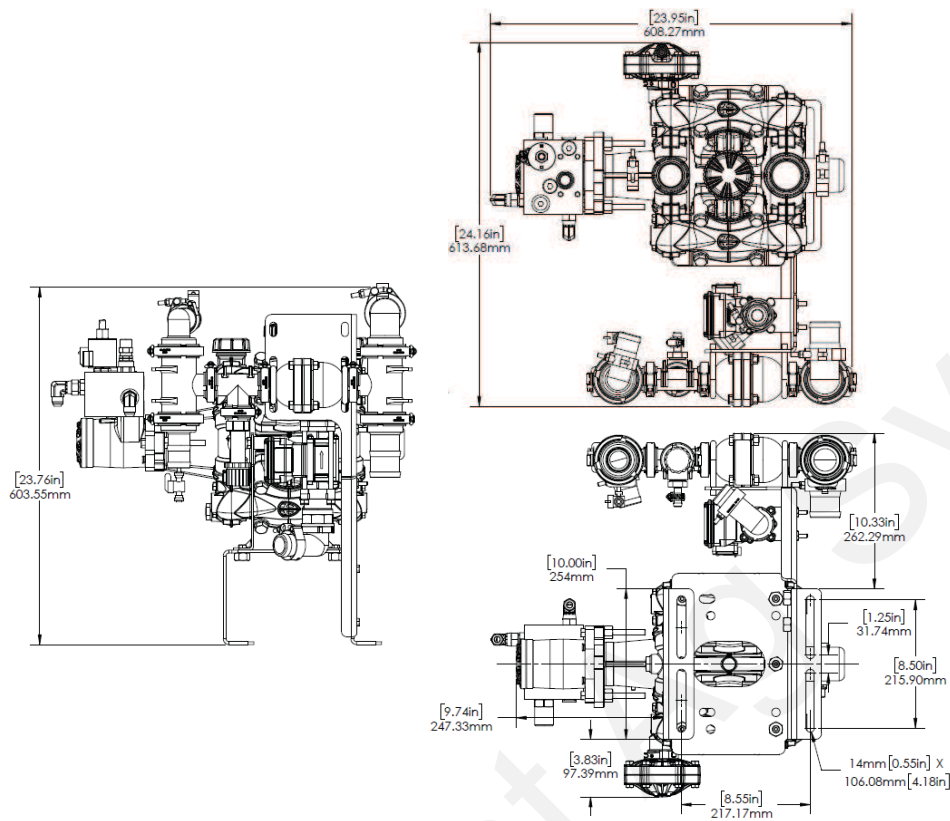
### CAUTION

These pumps can deliver liquid at high pressure (290 PSI). Be sure the 100 PSI Pressure Release Valve (PRV) is installed and functioning so system pressure will be kept under 100 PSI. Check hoses, hose clamps, and liquid fittings regularly and repair or replace loose connections.



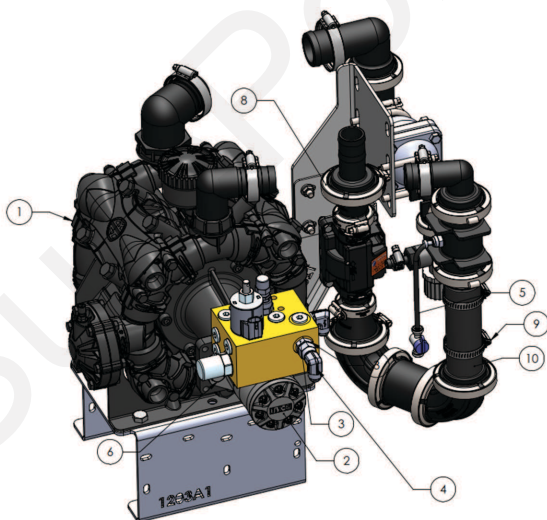
## 7.3. PR40 Assemblies

**Figure 36. PR40 Dimensions**



Assembled Weight: 125 lbs (with Gen3 LiquiShift: 145 lbs)

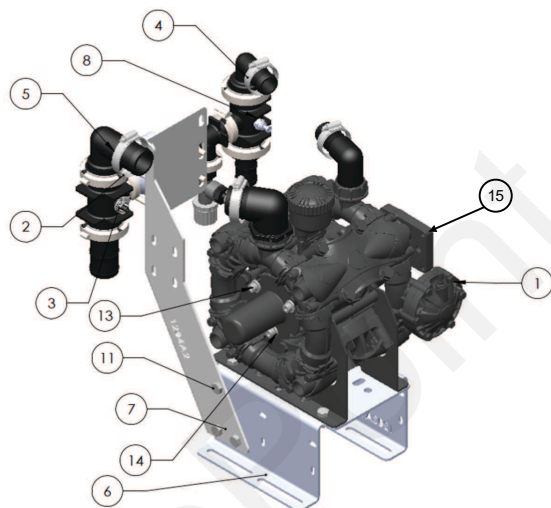
**Figure 37. Complete PR40 Pump Assembly (P/N: 500-01-6700)**



PR40 Pump Only P/N: 290-02-PR40

**Table 27. P/N: 500-01-6700**

ITEM NO.	PART NUMBER	Description	QTY.
1	500-40-200040	PR40 Pre-Build Assembly (Minus Flowmeter and Hydraulics)	1
2	164-FTA0994	4.0 CID Hydraulic Motor with PWM Valve and Bypass Valve, CW Rotation	1
3	161-01-8MB-8MJ	Adapter - #8 male O-Ring Boss to #8 male JIC	2
4	161-02-8MJ-8FJX-90	Elbow - #8 Female JIC x #8 Male JIC - 90	2
5	521-00-100250	Pump Priming and Air Bleed Assembly	1
6	300-080200-5	BOLT, HEX HEAD, 1/2-13 X 2, GRADE 5	2
7	321-08	NUT, NYLOCK, 1/2-13, GRADE 5	2
8	500-02-2330	EMag PR40/D250 DN17 Orion 3 Flowmeter Kit (1.45 - 58 GPM)	1
9	350-2808	SS Hose Clamp - Size 28 - 2-1/4" Diameter (fits 1 1/2" AG200)	2
10	280-150-3000S 6"L	1 1/2" 3000 Series Bulk 6"L	1

**Figure 38. PR40 Pump Pre-Build Assembly (P/N: 500-40-200040)**


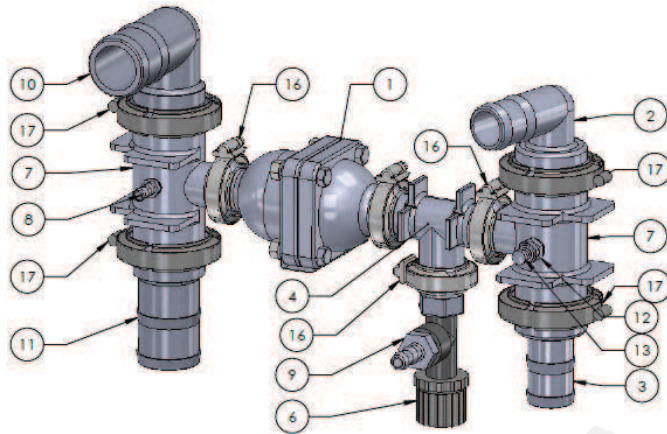
*Flowmeter and hydraulics not included*

**Table 28. P/N: 500-40-200040**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	290-02-PR40	PR40 Poly BlueFlex Diaphragm Pump	1
2	302-UB101	M100 U-Bolt Assembly	2
3	350-0605	SS Hose Clamp - Size 6 - 7/8"	2
4	350-PS238	Pressure Seal HD Clamp, Size 238 - 1.625" - 2.125"	2
5	350-PS288	Pressure Seal HD Clamp, Size 288 - 2.125" - 2.625" (2" ENF or WBS hose)	2
6	400-1203A1	D160 - D250 Diaphragm Pump Bracket	1
7	400-1204A2	PR40 - D250 MPRV Support	1

8	520-00-3015	Plumbing Assembly - D160 & D250	1
11	300-080100-SS	BOLT, HEX HEAD, 1/2-13 x 1, SS	7
12	323-08-SS	1/2" Flange Nut - SS	7
13	305-10020	Socket Head Bolt - 10mm x 20 mm	3
14	330-06-SS	WASHER, FLAT, 3/8", STAINLESS STEEL	9
15	291-02-9910-HYD1570	PR40, D160, & D250 Hydraulic Flange Kit	1

**Figure 39. PR40/D250 Pump Plumbing Assembly Kit (P/N: 520-00-3015)**

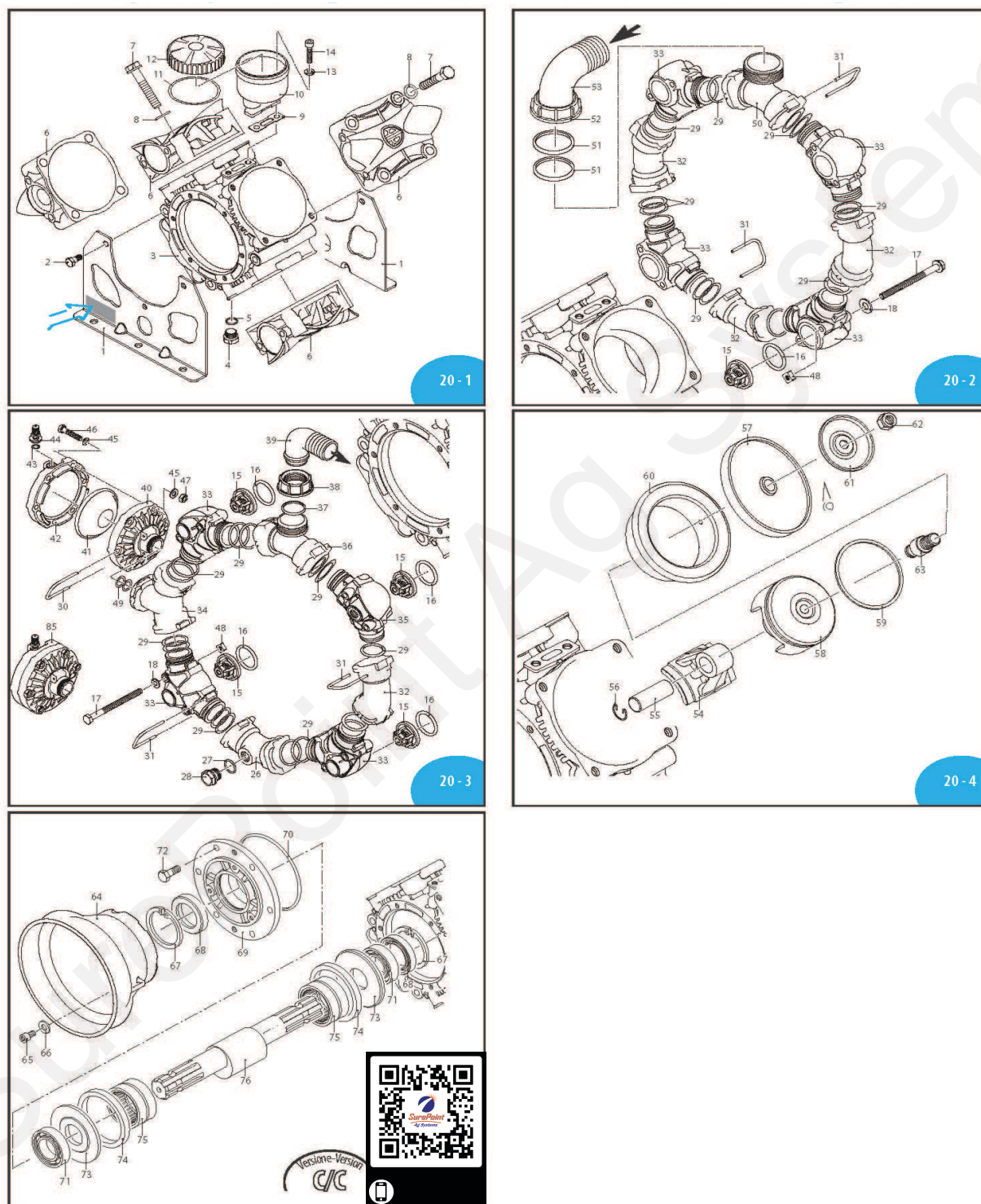


**Table 29. P/N: 520-00-3015**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	102-MPRV100-100	Pressure Relief Valve - 100 PSI	1
2	105-200150BRB90	2" Manifold Flng 1-1/2 Barb 90	1
3	105-200150BRB	2" Manifold X 1-1/2" Barb	1
4	105-100TEE	1" Manifold Tee	1
5	105-100075FPT	1" Manifold x 3/4" FPT	1
6	102-23520-3-4	3/4" Throttling Valve with out spring - 150 PSI	1
7	105-200100TEE038	2"Std Port x 1" Flanged Tee	2
8	101-038050	3/8" MPT x 1/2" HB	1
9	101-075050	3/4" MPT x 1/2" HB	1
10	105-200BRB90	2" Manifold x 2" HB - 90 Degree	1
11	105-200BRB	2" Manifold x 2" HB	1
12	113-06-025038	QC to MPT - 1/4" QC x 3/8" MPT	1
13	113-05-025	Plug - 1/4" QC	1
14	105-100G	1" EPDM Manifold Gasket	4
15	105-150G	1 1/2" EPDM Gasket	4
16	105-FC100	1" Manifold Clamp	4
17	105-FC200	2" Manifold Clamp	4

## 7.4. PR40 Parts Breakdown

**Figure 40. PR40 Parts Breakdown**



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**Table 30. PR40 Parts Breakdown**

Item No.	Part No.	Description	Quantity
1	291-13-761031	PR40 Black Metal Mounting Foot	2
2	291-13-160673	PR30 & PR40 Metric Bolt for Mounting	6
3	291-13-761010	PR40 Pump Housing	1
4	291-02-2406-0023	PR17, PR30, PR40, D70, D115, & D160 Pump Oil Drain Plug (Torque: 177 in-lbs)	1
5	291-02-9910-740290	PR17, PR30, PR40, D70, D115, & D160 Pump Oil Drain Plug O-Ring	1
6	291-13-3460020	PR30 & PR40 Pump Head	4
7	291-13-750072	PR30 & PR40 Metric Bolt for Pump	16
8	291-13-390092	PR30 & PR40 SS Washer for M12 x 70 Bolt	16
9	291-02-9910-750040	Oil Sight Glass Gasket for PR40, D160 & D250	1
10	291-13-751170	PR40 & ARD250 Sight Glass	1
11	291-13-1980340	PR40 & ARD250 Sight Glass Cap O-Ring	1
12	291-13-751183	PR40 & ARD250 Sight Glass Cap	1
13	291-13-380243	PR40 & D250 SS Washer for M8 x 35 Bolt & D160 & D250 Bolt Off of the Pump Head	2
14	291-13-680350	PR40, D160, & D250 Metric Bolt for Sight Glass M8 x 35	2
15	291-13-2429051	Valve for PR17, PR30, & PR40	8
16	291-13-3460380	Valve Gasket for PR17, PR30, & PR40 - Viton	8
17	291-13-3460201	PR30 & PR40 Metric Bolt for Male Manifolds M8 x 100	16
18	291-13-390315	PR17, PR30, & PR40 SS Washer for M8 x 12, M8 x 40, M8 x 55, & M8 x 100	16
26	291-13-761240	PR40 Outlet Female Manifold With Plug Port	1
27 (a)	291-13-1150641	O-Ring PR30 & PR40 Manifold Plug - Viton (New Style)	2
27 (b)	291-13-1140451	PR17 Outlet 1" Ring Nut O-Ring & PR30 & PR40 Manifold Plug O-Ring (Old Style)	2
28	291-13-3460490	PR30 & PR40 Manifold Plug (New Style)	2
29	291-13-230061	PR40 Manifold O-Ring - Inlet & Outlet - Viton	32
30	291-13-3460210	PR17 & PR30 Manifold Connecting Fork & PR40 Accumulator Connecting Fork	1
31	291-13-761250	PR40 Manifold Connecting Fork	16
32	291-13-761200	PR40 Inlet & Outlet Female Manifold	4
33	291-13-761190	PR40 Inlet & Outlet Male Manifold	7
34	291-13-761230	PR40 Outlet Female Manifold - Connects to Accumulator	1
35	291-13-761191	PR40 Outlet Male Manifold With Plug Port	1
36	291-13-761220	PR40 Outlet Manifold - Threaded	1
37	291-13-1880460	O-Ring - 29 x 3 Viton - PR17, PR30, PR40	1
38	291-02-9910-750670	Ring-Nut for 1 1/2" Inlet/Outlet - PR17, PR30, PR40, D160, & D250 Pump	1
39	291-13-50267	1 1/2" HB Elbow - PR17 & PR30 Inlet, PR40 & D250 Outlet	1
40	291-13-3460180	PR40 Accumulator Manifold	1
41	291-13-800192	PR40 Accumulator Diaphragm	1

42	291-13-3460190	PR40 Accumulator Head	1
43	291-02-9910-650542	PR40, D70, D115, D160, & AR&HD250 Accumulator Head Valve Stem Gasket	1
44	291-02-9910-180020	PR40, D160, & AR&HD250 Accumulator Head Valve Stem (Torque: 22 in-lbs)	1
45	291-13-390315	PR17, PR30, & PR40 SS Washer for M8 x 12, M8 x 40, M8 x 55, & M8 x 100	12
46	291-13-621782	PR40 Metric Bolt for Accumulator M8 x 40 (Torque: 177 in-lbs)	6
47	291-13-3120260	PR40 Accumulator Hex Nut M8 (Torque: 177 in-lbs)	6
48	291-13-3120510	Square Nut for M8 Bolts	16
49	291-13-880311	PR30 Outlet 1" Ring Nut O-Ring & PR40 Accumulator O-Ring	2
50	291-13-761210	PR40 Inlet Manifold - Threaded	1
51	291-13-3040471	PR40 Inlet 2" Ring Nut O-Ring - Viton	2
52	291-13-3040450	PR40 Inlet 2" Ring Nut	1
53	291-13-3040440	PR40 2" Inlet Elbow	1
54	291-02-9910-760140	PR40 & D160 Piston Connecting Rod	4
55	291-13-160700	PR40 Piston Pin	4
56	291-02-9910-160691	PR40, D160, & AR&HD250 Piston Pin Snap Ring	8
57	291-13-550081	BlueFlex Diaphragm for D70, D115, D160, AR&HD250, PR30, & PR40 Pump	4
58	291-02-9910-750122	PR40, D160, & AR&HD250 Piston	4
59	291-02-9910-500260	PR30, PR40, D115, D160, & AR&HD250 Piston Ring	4
60	291-13-750115	PR40 Diaphragm Sleeve	4
61	291-13-751251	PR40 Diaphragm Plate	4
62	291-13-2240670	PR16, PR30, & PR40 Hub Pin Nut (Torque: 221 in-lbs)	4
63	291-13-2240101	PR30 & PR40 Hub Pin (Torque: 265 in-lbs)	4
64	291-13-1500470	PR40 & ARD250 Shaft Protector	1
65	305-10020	Socket Head Bolt - 10mm x 20mm	3
66	330-06-SS	3/8" Flat Washer - SS	3
67	291-02-9910-200390	PR40, D160, & AR&HD250 Snap Ring	2
68	291-02-9910-160740	PR40, D160, & AR&HD250 Seal Ring	2
69	291-13-680020	PR40 & ARD250 Inspection Plate	1
70	291-02-9910-850360	PR40, D160, & AR&HD250 Seal/Bearing Housing O-Ring	1
71	291-02-9910-851360	PR40, D160, & AR&HD250 Roller Bearing	1
72	291-13-160673	PR30 & PR40 Metric Bolt for Mounting Foot to Housing M10 x 25 (Torque: 309 in-lbs)	6
73	291-02-9910-540040	PR40, D160, & AR&HD250 Shaft Spacer Plate	2
74	291-02-9910-950130	PR40, D160, & AR&HD250 Shaft Ring	2
75	291-02-9910-750090	PR40, D160, & AR&HD250 Needle Bearing	2
76	291-13-750174	PR40 Pump Shaft	1

**Table 31. PR30/PR40 Diaphragm Service Kit (P/N: 291-13-100150)**

Item No.	Description	QTY
26	Valve Gasket	2

28	Valve	2
36	Diaphragm	1

**Table 32. PR40 O-Ring Kit (P/N: 291-13-100720)**

Item No.	Description	QTY	Item No.	Description	QTY
5	Oil Drain Plug O-Ring	1	37	O-Ring 29x3 Viton	1
9	Sight Glass to Pump O-Ring	1	27	Outlet Male Manifold Plug O-Ring	1
11	Sight Glass Cap O-Ring	1	49	Outlet 1" Ring Nut O-Ring	1
29	Manifold O-Ring	32			

**Figure 41. SurePoint PumpRight Oil (P/N: 291-02-2160-0038)**


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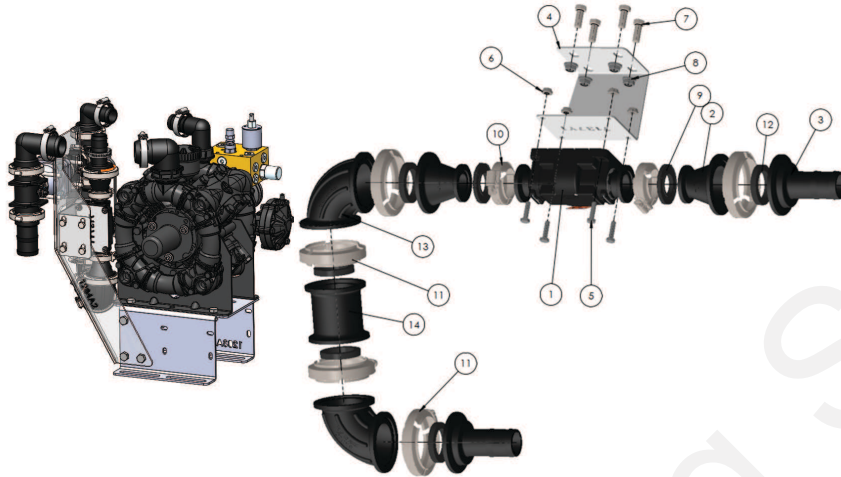
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## 8. D250

### 8.1. D250 Flowmeter Kit

**Figure 42. PR40/D250 Pump with DN17 Orion 3 Flowmeter**



*P/N: 502-02-2320 with 1-1/2" Inlet Hose Barb, 2" Manifold Flange*

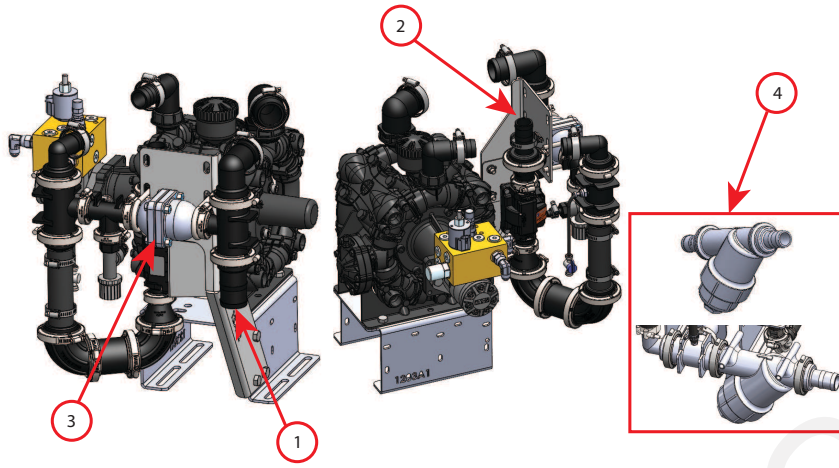
The Orion 3 Flowmeter uses a 6 pin Deutsch DT connector. If upgrading from an older flowmeter, the following adapter cables will be needed: P/N: 201-5954Y1 to connect 3-pin AMP Superseal to Orion 3, or P/N: 201-6647Y1 to connect 3-pin MetriPack to Orion 3.

**Table 33. PR40/D250 Flowmeter Kit**

ITEM NO.	PART NUMBER	Description	QTY
1	204-01-462034A-DN17	EMag Flowmeter, Orion 3, 1.45 - 58 GPM, M100 Flange	1
2	105-220100CPG	2" Full PortX 1" Reducer Flange	2
3	105-220150BRB	2" Full Port Manifold x 1 1/2" HB	2
4	400-7137Y1	PR60/D250 Orion 3 Mounting Plate	1
5	300-040100-SS	BOLT, HEX HEAD, 1/4-20 x 1, STAINLESS STEEL	4
6	323-04-SS	NUT, SERRATED FLANGE, 1/4-20, STAINLESS STEEL	4
7	300-060100-SS	BOLT, HEX HEAD, 3/8-16 x 1, STAINLESS STEEL	4
8	323-06-SS	NUT, SERRATED FLANGE, 3/8-16, STAINLESS STEEL	4
9	105-100G-H	1" EPDM Manifold Gasket	2
10	105-FC100	1" Manifold Clamp	2
11	105-FC220	2" Full Port Manifold Clamp	5
12	105-150G-H	1 1/2" EPDM Gasket	5
13	105-220SWP90	2" Full Port 90° Sweep	2
14	105-220CPG	2" X 2" Full Port Flange X 2 31/32" Long	1

## 8.2. D250 Liquid Plumbing

Figure 43.



1. Inlet - Attach hose from supply tank and strainer
2. Outlet - 1" hose barb outlet is straight from the flowmeter. The outlet hose should be a minimum of 24" in length with no tight turns or kinks to maintain optimum flowmeter performance. Attach this hose to your manifolds or section valves. 3/4" hose barb can be substituted.
3. Pressure Relief Valve (PRV) - Set to 100 psi. If a restriction increases system pressure over 100 psi, the PRV will open to allow excess flow back to the inlet side and reduce pressure. This protects the pump and other plumbing component from damage.
4. Strainer - 20 mesh strainer. The manifold strainer includes two hose barbs so it can be mounted anywhere in the inlet line. If preferred, the strainer can be mounted directly to the inlet plumbing as shown.

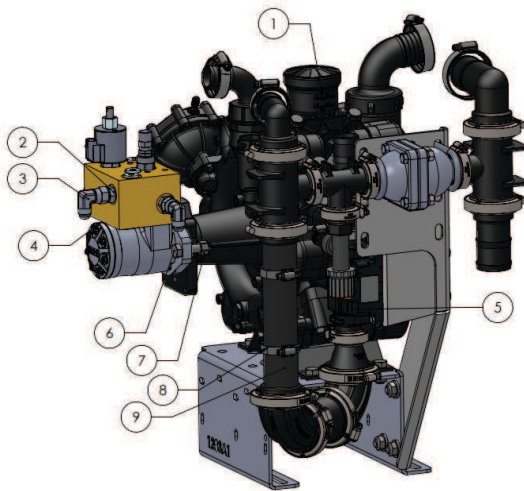


### CAUTION

These pumps can deliver liquid at high pressure (290 PSI). Be sure the 100 PSI Pressure Release Valve (PRV) is installed and functioning so system pressure will be kept under 100 PSI. Check hoses, hose clamps, and liquid fittings regularly and repair or replace loose connections.

### 8.3. AR D250 Assemblies

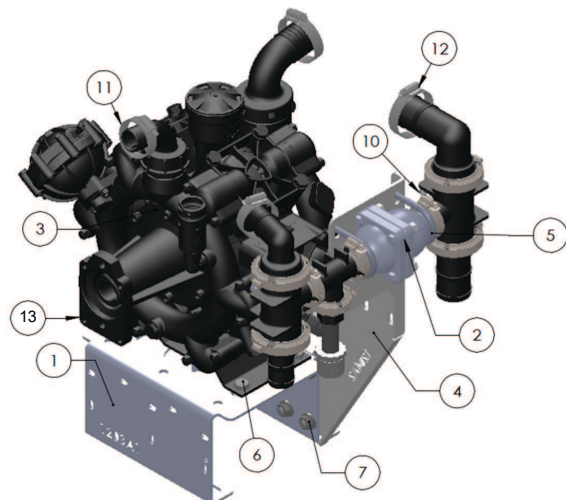
**Figure 44. Complete D250 Pump Assembly (P/N: 500-01-2700)**



*D250 Pump Only P/N: 290-02-9910-D250*

ITEM NO.	PART NUMBER	Description	QTY.
1	500-40-100250	D160 Pre-Build Assembly	1
2	161-01-8MB-8MJ	Adapter - #8 male O-Ring Boss to #8 male JIC	2
3	161-02-8MJ-8FJX-90	Elbow - #8 Female JIC x #8 Male JIC - 90	2
4	164-FTA1609	4.0 CID Hydraulic Motor with PWM Valve, Speed Sensor, and Bypass Valve, CW Rotation	1
5	500-02-2330	EMag PR40/D250 DN17 Orion 3 Flowmeter Kit (1.45-58 GPM)	1
6	300-080200-5	BOLT, HEX HEAD, 1/2-13 X 2, GRADE 5	2
7	321-08	NUT, NYLOCK, 1/2-13, GRADE 5	2
8	350-2808	SS Hose Clamp - Size 28 - 2-1/4" Diameter	2
9	280-150-3000S 8.5"L	1 1/2" 3000 Series Bulk 8.5"L	1

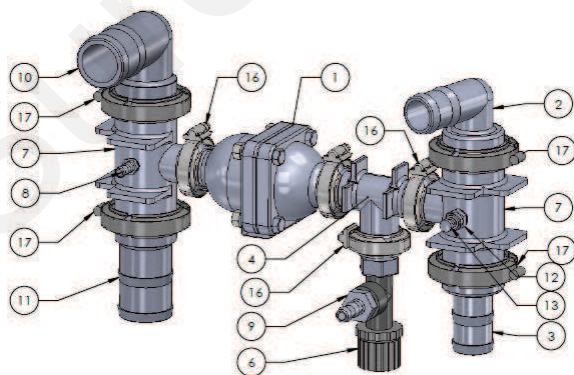
**Figure 45. D250 Pump Pre-Build Assembly (P/N: 500-40-100250)**



*Flowmeter and hydraulics not included*

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	400-1203A1	D160 - D250 Diaphragm Pump Bracket	1
2	520-00-3015	Plumbing Assembly - D160 & D250	1
3	290-02-9910-D250	D250-6 Chamber Diaphragm Pump	1
4	400-1204A2	PR40 - D250 MPRV Support	1
5	302-UB101	M100 U-Bolt Assembly	2
6	300-080100-SS	BOLT, HEX HEAD, 1/2-13 x 1, SS	7
7	323-08-SS	1/2" Flange Nut - SS	7
8	305-10020	Socket Head Bolt - 10mm x 20 mm	3
9	330-06-SS	WASHER, FLAT, 3/8", STAINLESS STEEL	6
10	350-0605	SS Hose Clamp - Size 6 - 7/8"	2
11	350-PS238	Pressure Seal HD Clamp, Size 238 - 1.625" - 2.125"	2
12	350-PS288	Pressure Seal HD Clamp, Size 288 - 2.125" - 2.625"	2
13	291-02-9910-HYD1570	PR40, D160, & D250 Hydraulic Flange Kit	1

**Figure 46. PR40/D250 Pump Plumbing Assembly Kit (P/N: 520-00-3015)**



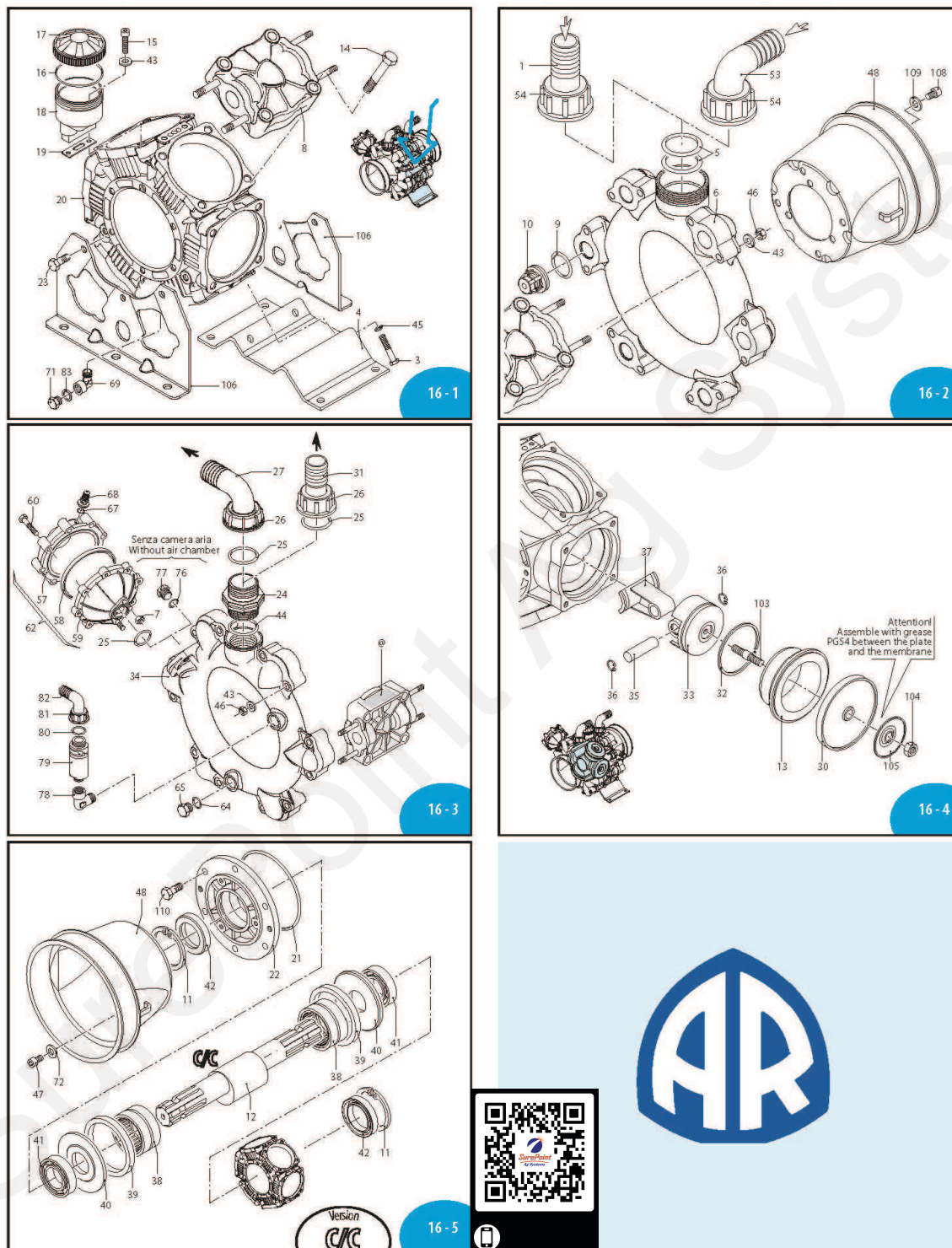
**Table 34. P/N: 520-00-3015**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	102-MPRV100-100	Pressure Relief Valve - 100 PSI	1
2	105-200150BRB90	2" Manifold Flng 1-1/2 Barb 90	1
3	105-200150BRB	2" Manifold X 1-1/2" Barb	1
4	105-100TEE	1" Manifold Tee	1
5	105-100075FPT	1" Manifold x 3/4" FPT	1
6	102-23520-3-4	3/4" Throttling Valve with out spring - 150 PSI	1
7	105-200100TEE038	2"Std Port x 1" Flanged Tee	2
8	101-038050	3/8" MPT x 1/2" HB	1
9	101-075050	3/4" MPT x 1/2" HB	1
10	105-200BRB90	2" Manifold x 2" HB - 90 Degree	1
11	105-200BRB	2" Manifold x 2" HB	1
12	113-06-025038	QC to MPT - 1/4" QC x 3/8" MPT	1
13	113-05-025	Plug - 1/4" QC	1
14	105-100G	1" EPDM Manifold Gasket	4
15	105-150G	1 1/2" EPDM Gasket	4
16	105-FC100	1" Manifold Clamp	4
17	105-FC200	2" Manifold Clamp	4



## 8.4. D250 Parts Breakdown

**Figure 47. D250 Parts Breakdown**



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**Table 35. D250 Parts Breakdown**

Item No.	Part No.	Description	Quantity
5	291-02-9910-750740	PR40 & D250 2" Inlet Ring Nut O-Ring	2
6	291-02-9910-751070	D250 Suction Manifold	1
8	291-02-9910-750100	D160 & D250 Pump Head	6
9	291-02-680070	D70, D115, D160, & AR&HD250 Pump Valve O-Ring (Was 320030)	12
10	291-02-9910-759054	Pump Valve for D70, D115, D160, & D250	12
11	291-02-9910-200390	PR40, D160, & D250 Snap Ring	2
12	291-13-750170	D160 & D250 Pump Shaft	1
13	291-13-750110	PR30, D160, & D250 Diaphragm Sleeve	6
14	291-02-9910-750061	D160 & D250 Metric Bolt for Pump Head M12 x 65 (Torque: 445 in-lbs)	24
15	291-13-680350	PR40, D160, & D250 Metric Bolt for Sight Glass M8 x 35 (Torque: 90 in-lbs)	2
16	291-13-1980340	PR40 & D250 Sight Glass Cap O-Ring	1
17	291-13-751183	PR40 & ARD250 Sight Glass Cap	1
18	291-13-751170	Oil Sight Glass PR40 & D250	1
19	291-02-9910-750040	Oil Sight Glass Gasket for PR40, D160 & D250	1
20	291-13-751300	ARD250 Pump Housing	1
21	291-02-9910-851360	PR40, D160, & D250 Seal/Bearing Housing O-Ring	1
22	291-13-680020	PR40 & ARD250 Inspection Plate	1
23	291-13-160673	PR30, PR40, & D250 Metric Bolt for Mounting Foot to Housing M10 x 25	6
24	291-02-9910-751130	D250 Outlet 1 1/2" Threaded Adapter (Torque: 90 in-lbs)	1
25	291-13-1880460	O-Ring - 29 x 3 Viton - PR17 & PR30 Inlet, PR40 & D250 Outlet	2
26	291-02-9910-750670	Ring Nut for 1 1/2" Outlet - PR40, D160 & D250 Pump	1
27	291-13-50267	Poly Elbow 1 1/2" - PR17 & PR30 Inlet, PR40 & D250 Outlet	1
30	291-13-550081	BlueFlex Diaphragm for D70, D115, D160, & D250, PR30, PR40	6
32	291-02-9910-500260	PR30, PR40, D115, D160, & D250 Piston Ring	6
33	291-02-9910-750122	PR40, D160, & D250 Piston	6
34	291-02-9910-750122	D250 Outlet Manifold	1
35	291-13-160700	PR40 & D250 Piston Pin	6
36	291-02-9910-160691	PR40, D160, & D250 Piston Pin Snap Ring	12
37	291-02-9910-750140	D250 Piston Connecting Rod	6
38	291-02-9910-750090	PR40, D160, & D250 Needle Bearing	2
39	291-02-9910-750130	PR40, D160 & D250 Shaft Ring	2
40	291-02-9910-540040	PR40, D160, & D250 Shaft Spacer Plate	2
41	291-13-751280	ARD250 Roller Bearing	2
42	291-02-9910-160740	PR40, D160, & D250 Seal Ring	2
43	291-16-380243	PR40 & D250 SS Washer for M8 x 35 Bolt & D160 & D250 Bolt off of the Pump Head	26

44	291-02-9910-751140	D250 Threaded Adapter to Outlet Manifold O-Ring	1
46	291-13-3120260	PR40 & D250 Hex Nut M8	24
48	291-13-1500470	PR40 & D250 Red Shaft Protector	1
53	291-02-9910-750850	Inlet Elbow for D250 - 2"	1
54	291-02-9910-750710	D250 2" Inlet Ring Nut	1
57	291-13-620232	D160 & D250 Accumulator Head	1
58	291-13-550194	D70, D115, D160, & D250 Accumulator Diaphragm	1
59	291-13-680180	D160 & D250 Accumulator Manifold	1
60	291-13-621782	PR40, D160, & D250 Metric Bolt for Accumulator M8 x 40 (Torque: 220 in-lbs)	8
64	291-02-9910-180101	D160 & D250 Outlet Manifold Plug O-Ring & D70 Sight Glass to Pump O-Ring	1
65	291-02-9910-330173	D160 & D250 Outlet Manifold Plug & D70 Accumulator Manifold Plug & D1155 DX Rt. Valv. Ret. Plug	1
67	291-02-9910-650542	PR40, D70, D115, D160, & D250 Accumulator Head Valve Stem Gasket	1
68	291-02-9910-180020	PR40, D160, & D250 Accumulator Head Valve Stem (Torque: 25 in-lbs)	1
69	291-13-750370	D250 Oil Drain Elbow Fitting	1
71	291-13-880581	D250 Oil Drain Plug	1
83	291-13-880820	D250 Oil Drain Plug Washer	1
103	291-02-2240100	D250 Hub Pin (Torque: 265 in-lbs)	6
104	291-02-2240110	D250 Hub Pin Nut (Torque: 220 in-lbs)	6
105	291-13-751250	D250 Diaphragm Plate	6
106	291-13-751291	D250 Black Metal Mounting Foot	2
108	305-10020	Socket Head Bolt - 10mm x 20mm (Torque: 90 in-lbs)	3
109	330-06-SS	3/8" Flat Washer - SS	3
110	291-13-160673	PR30, PR40, 7 D250 Metric Bolt for Mounting Foot to Housing M10 x 25 (Torque: 310 in-lbs)	6

**Table 36. D250 Diaphragm Service Kit (P/N: 291-02-100500)**

Item No.	Description	QTY
9	Valve Gasket	2
10	Valve	2
30	Diaphragm	1

D250 O-Ring Kit (P/N: 291-02-9910-KIT1904)



**Figure 48. SurePoint PumpRight Oil (P/N: 291-02-2160-0038)**



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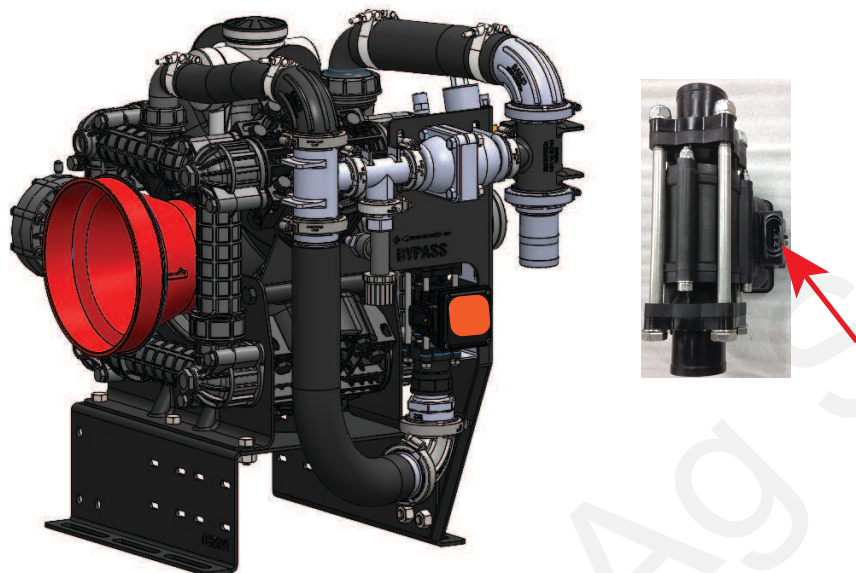
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## 9. PR80

### 9.1. PR80 Flowmeter Kit

Figure 49. PR80 Pump with Orion 2 Flowmeter, 5 - 106 GPM



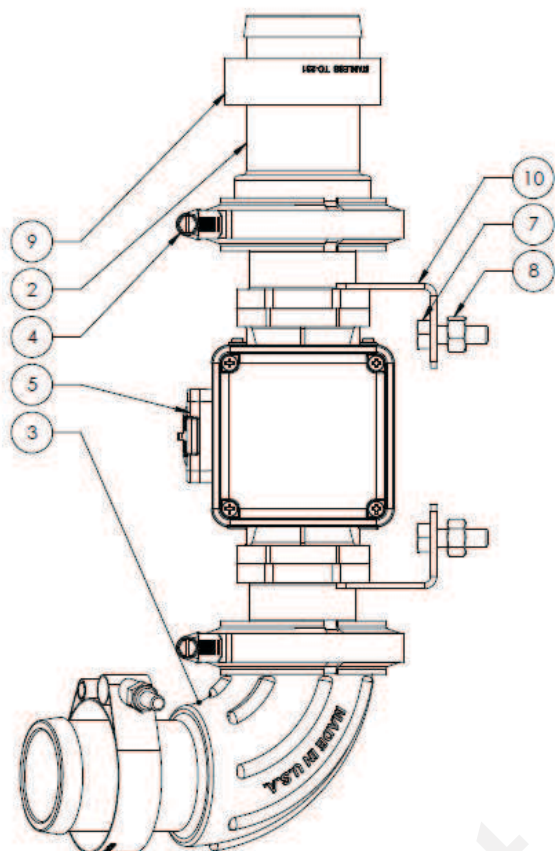
P/N: 200-02-2100 with 2" full port flange

This flowmeter has 3-pin Amp SuperSeal connector, shown above. Use adapter P/N: 201-178-2 to connect to 3-pin MetriPack harness



#### NOTE

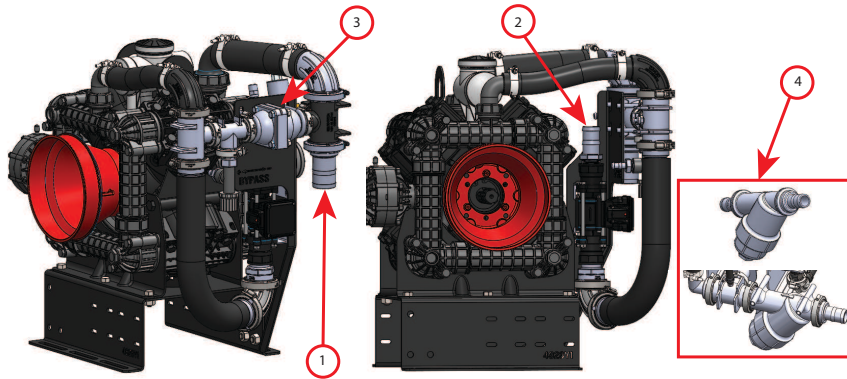
This flowmeter has different connection and cal number than other SurePoint flowmeters. Cal number = **568** pulse per gallon.

**Figure 50. PR80 Flowmeter Kit (P/N: 500-02-2100)**

**Table 37. 500-02-2100**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	105-200G-H	2" EPDM Manifold Gasket for 220 Series Manifold Fittings	2
2	105-220BRB	2" Full Port Manifold x 2" HB	1
3	105-220BRBSWP90	2" Full Port Manifold x 2" HB - 90 Degree Sweep	2
4	105-FC220	2" Full Port Manifold Clamp	2
5	204-01-46221A58787	Electro Magnetic Flow meter 5 - 106 GPM Non-visual - 2" FP Flange	1
6	280-200-WBS	2" Wire Braided Suction Hose	18in
7	300-050100-SS	5/16" x 1" HCS SS	4
8	323-05-SS	5/16" Flange Nut SS	4
9	350-TC231	T-Bolt Hose Clamp - 1.81 - 2.06" Diameter	2
10	400-3335Y1	SS Flowmeter Mounting Bracket	2

## 9.2. PR80 Liquid Plumbing

Figure 51.



1. Inlet - Attach hose from supply tank and strainer
2. Outlet - 1" hose barb outlet is straight from the flowmeter. The outlet hose should be a minimum of 24" in length with no tight turns or kinks to maintain optimum flowmeter performance. Attach this hose to your manifolds or section valves. 3/4" hose barb can be substituted.
3. Pressure Relief Valve (PRV) - Set to 100 psi. If a restriction increases system pressure over 100 psi, the PRV will open to allow excess flow back to the inlet side and reduce pressure. This protects the pump and other plumbing component from damage.
4. Strainer - 20 mesh strainer. The manifold strainer includes two hose barbs so it can be mounted anywhere in the inlet line. If preferred, the strainer can be mounted directly to the inlet plumbing as shown.

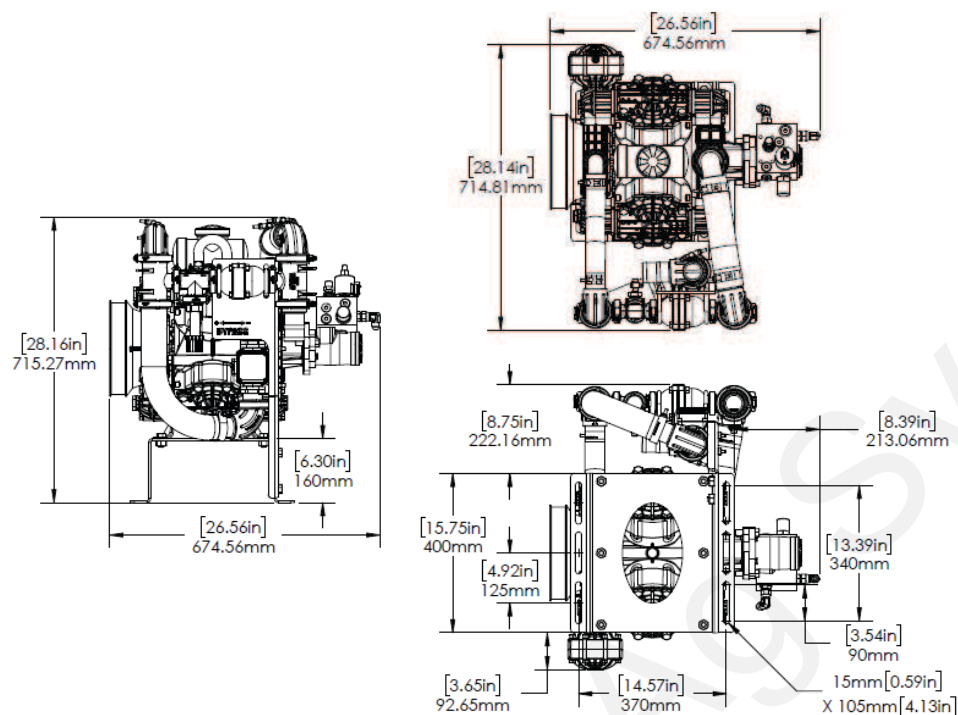


### CAUTION

These pumps can deliver liquid at high pressure (290 PSI). Be sure the 100 PSI Pressure Relief Valve (PRV) is installed and functioning so system pressure will be kept under 100 PSI. Check hoses, hose clamps, and liquid fittings regularly and repair or replace loose connections.

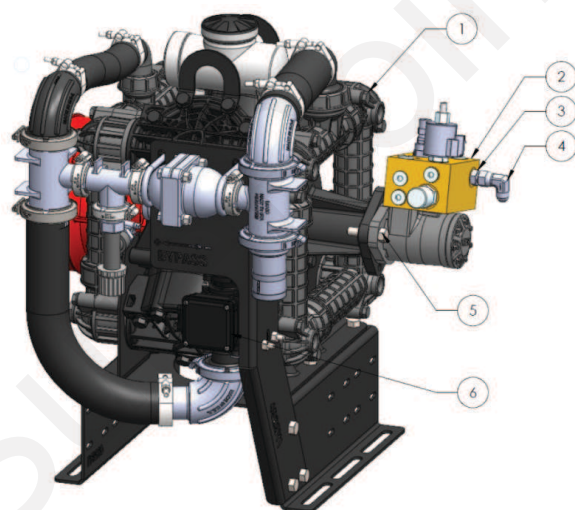
## 9.3. PR80 Assemblies

**Figure 52. PR80 Dimensions**



Assembled Weight: 205lbs (with Gen3 LiquiShift: 225lbs)

**Figure 53. Complete PR80 Pump Assembly (P/N: 500-01-8701)**



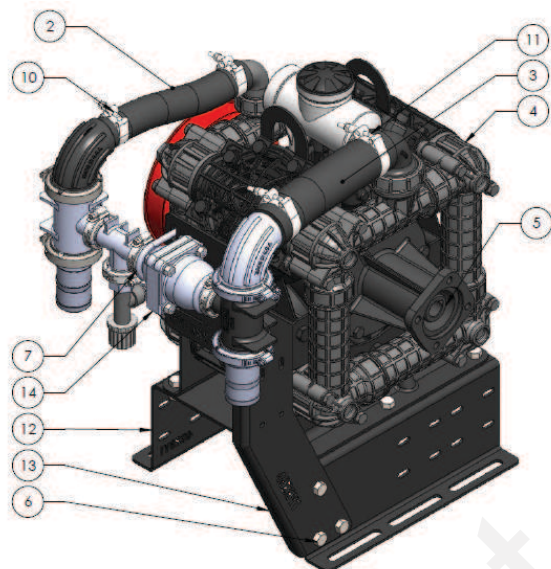
PR80 Pump Only P/N: 290-02-PR80

**Table 38. P/N:500-01-8701**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
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1	500-40-100080	PR80 Pre-Build Assembly ( minus flowmeter and hydraulics)	1
2	164-FTA1609	4.0 CID Hydraulic Motor with PWM Valve and Bypass Valve, SPEED Sens	1
	164-FTA0994	4.0 CID Hydraulic Motor with PWM Valve and Bypass Valve, CW Rotation	
3	161-01-8MB-8MJ	Adapter - #8 male O-Ring Boss to #8 male JIC	1
4	161-02-8MJ-8FJX-90	Elbow - #8 female JIC to #8 male JIC - 90	2
5	300-M120030-8.8	Metric Bolt - M12 x 30 mm - G8.8	2
6	500-02-2100	Emag PR80 Flowmeter Kit (5-106 GPM) - 2" Full Port Flange	1

**Figure 54. PR80 Pump Pre-Build Assembly (P/N: 500-40-200080)**

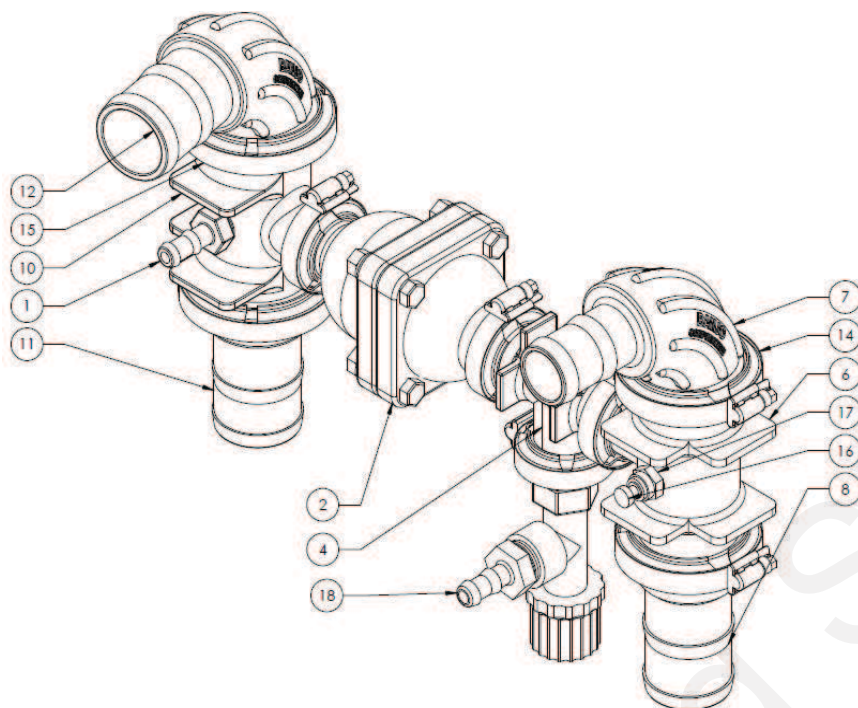


*Flowmeter and hydraulics not included*

**Table 39. P/N: 500-40-200080**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	280-050-AG200	1/2" AG200 Hose	18in
2	280-150-3000S	1 1/2" 3000 Series Bulk	12in
3	280-200-ENF	2" Enforcer Fertilizer Solution Hose	12in
4	290-02-PR80	PR80 Polypropylene BlueFlex Diaphragm Pump (Pump only)	1
5	291-02-AR55384	PR80 Hydraulic Flange Kit	1
6	300-080100-SS	1/2" x 1" Hex Head Bolt - SS	9
7	302-UB101	M100 U-Bolt Assembly	2
8	323-08-SS	1/2" Flange Nut - SS	9
9	350-0605	SS Hose Clamp - Size 6 - 7/8" Diameter	2
10	350-TC181	Pressure Seal HD Clamp, Size 238 (fits 1 1/4" - 1 1/2" Enforcer, Wire Braided or AG200)	2
11	350-TC231	Pressure Seal HD Clamp, Size 288 (fits 2" Enforcer and Wire Braided)	2
12	400-4928Y1	PR80 Diaphragm Pump Base	1
13	400-4929Y1	PR80 MPRV Support	1
14	520-00-3016	PR80 Plumbing Assembly - BOM	1



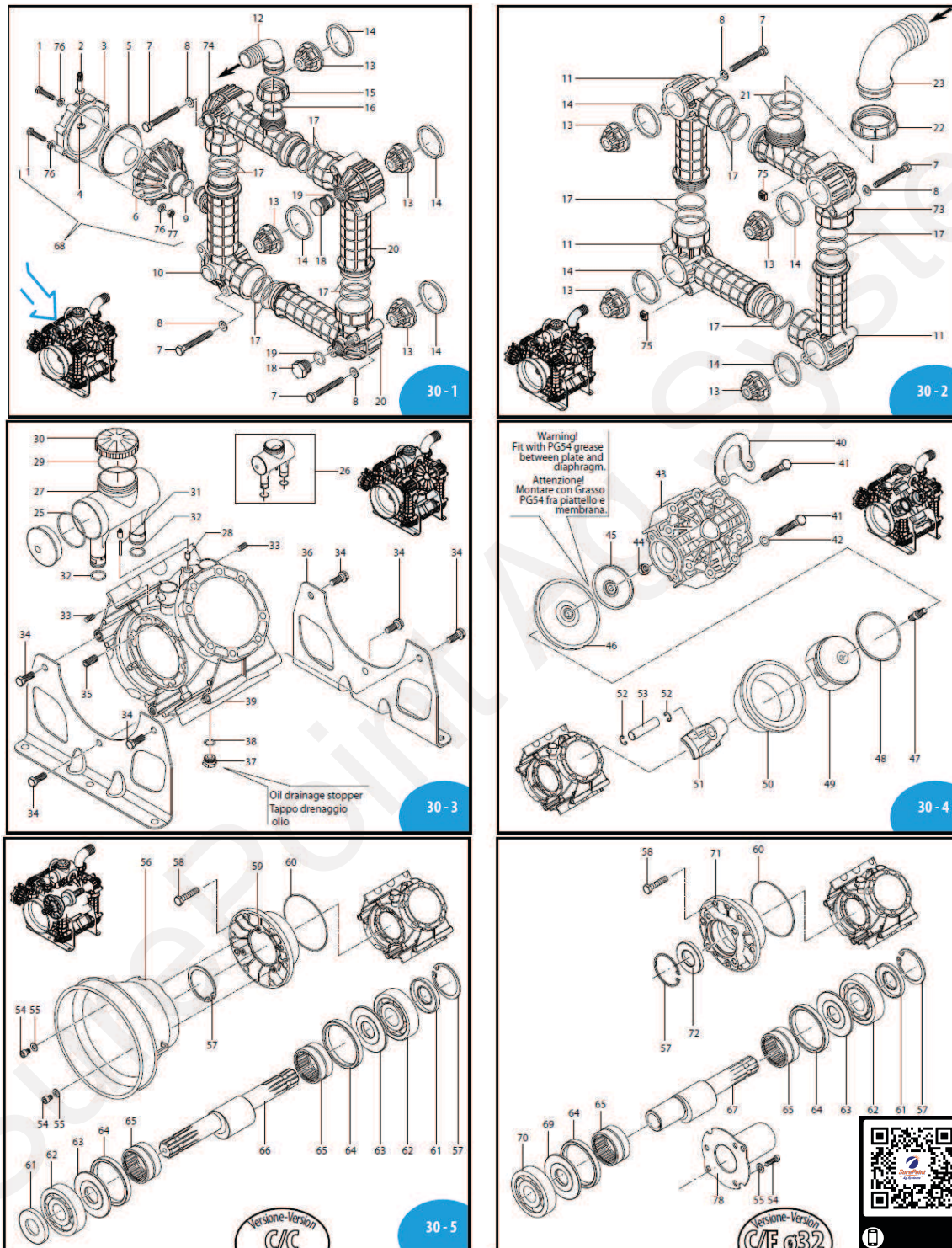
**Figure 55. PR80 Pump Plumbing Assembly (P/N: 520-00-3016)**

**Table 40. 520-00-30106**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	101-050050-H	1/2" MPT x 1/2" HB	1
2	102-MPRV100-100	Pressure Relief Valve - 100 PSI	1
3	105-100G	1" EPDM Manifold Gasket	4
4	105-100TEE	1" Manifold Tee	1
5	105-150G	1 1/2" EPDM Gasket	2
6	105-200100TEE-038	2" Manifold x 1" Tee with 3/8" Tap	1
7	105-200150BRBSWP90	2" Manifold x 1-1/2" HB Sweep 90 Degree	1
8	105-200BRB	2" Manifold x 2" HB	1
9	105-200G-H	2" EPDM Manifold Gasket for 220 Series Manifold Fittings	2
10	105-220100TEE-050	2" Full Port Manifold x 1" Tee with 1/2" Tap	1
11	105-220BRB	2" Manifold x 2" HB	1
12	105-220BRBSWP90	2" Full Port Manifold x 2" HB - 90 Degree Sweep	1
13	105-FC100	1" Manifold Clamp	4
14	105-FC200	2" Manifold Clamp	2
15	105-FC220	2" Full Port Manifold Clamp	2
16	113-05-025	Plug - 1/4" QC	1
17	113-06-025038	QC to MPT - 1/4" QC x 3/8" MPT	1
18	521-02-3013A	PumpRight Sub-Assembly - Throttling Valve	1



## 9.4. PR80 Parts Breakdown

Figure 56. PR80 Parts Breakdown



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**Table 41. PR80 Parts Breakdown**

Item No.	Part No.	Description	Quantity
1	291-13-3120270	PR80 Accumulator Bolt - M8 x 40 (Torque: 180 in-lbs)	8
2	291-02-9910-180020	PR80 Accumulator Valve Stem (Torque: 25 in-lbs)	1
3	291-13-3300120	PR80 Accumulator Head	1
4	291-02-9910-650542	PR80 Head Valve Stem Gasket	1
5	291-13-550194	D70, D115, D160, D250 - PR80 BlueFlex Accumulator Diaphragm	1
6	291-13-3300110	PR80 Accumulator Manifold	1
7	291-13-3040611	PR80 Manifold Metric Bolt - M10 x 85 (Torque: 240 in-lbs)	16
8	291-13-3040520	SS M10 Washer for PR Pumps	16
9	291-13-280221	PR80 Accumulator O-Ring (29.75 x 3.53)	1
10	291-13-3280070	PR80 Outlet Plumbing Manifold	1
11	291-13-3280040	PR80 Inlet Plumbing Manifold	3
12	291-02-9910-540550	1 1/2" HB Elbow - D115 Inlet, D160 Outlet, PR80 Outlet	1
13	291-13-3049051	Valve for PR80	8
14	291-13-3040650	Valve Gasket for PR80	8
15	291-02-9910-750670	Ring Nut for 1 1/2" Inlet/Outlet - PR17 & PR30 Inlet, PR40 & D250 Outlet	1
16	291-13-1880460	O-Ring - 1 1/4" Inlet on D70 or 1 1/2" Discharge on D250	1
17	291-13-100321	PR80 Manifold O-Ring (52.39 x 3.53)	16
18	291-13-3040370	PR80 Manifold Plug (3/4 G)(Torque: 90 in-lbs)	2
19	291-13-1540631	PR80 Manifold Plug O-Ring (23.47 x 2.62)	2
20	291-13-3280041	PR80 Manifold With Threaded Drain	2
21	291-13-750741	PR80 Inlet Fitting O-Ring	2
22	291-02-9910-750710	AR&HD250 2" Inlet Ring Nut	1
23	291-02-9910-760020	D160/PR80 2" Inlet Elbow	1
24	291-13-3040260	PR80 Oil Sight Glass Plug	1
25	291-13-3040510	PR80 Oil Sight Glass Plug O-Ring (70 x 3)	1
26	291-13-3049001	PR80 Oil Sight Glass Assembly	1
27	291-13-3040250	PR80 Oil Sight Glass (Tank Only)	1
28	291-13-3040490	PR80 Oil Sight Glass Connection Fitting	2
29	291-02-9910-1040060	D160/D250, PR80 Sight Glass Cap O-Ring	1
30	291-13-750050	PR80 Oil Sight Glass Cap	1
31	291-13-3040500	PR80 Oil Sight Glass Pipe 34mm	1
32	291-13-3040590	PR80 Oil Sight Glass O-Ring (22 x 3)	2
33	291-13-394172	PR80 Oil Sight Glass Mounting Set Screw (M8 x 16) (Torque: 90 in-lbs)	2
34	291-13-3040291	PR80 Bolt Mounting Bracket to Pump Housing - TE M14 x 40 (Torque: 445 in-lbs)	6
35	291-13-3280090	PR80 Set Screw (M10 x 14) (Torque: 180 in-lbs)	2
36	291-13-3280030	PR80 Black Metal Mounting Foot	2
37	291-13-280361	PR80 Oil Drain Plug Brass	1

38	291-02-9910-180101	D160 & AR&HD250 Outlet Manifold Plug O-Ring & D70 Sight Glass to Pump O-Ring	1
39	291-13-3280010	PR80 Pump Body	1
40	291-13-3280080	PR80 Lift Rings	2
41	291-13-3040301	PR80 Pump head Mounting Bolt TE M12 x 85 (Torque: 445 in-lbs)	32
42	291-13-390092	PR80 Pump Head Washer M12 Narrow	28
43	291-13-3040600	PR80 Pump Head	4
44	291-13-3040830	PR80 M12 Nut (Torque: 265 in-lbs)	4
45	291-13-3040820	PR80 Diaphragm Plate	4
46	291-13-3040083	PR80 BlueFlex Diaphragm	4
47	291-13-3040810	PR80 Hub Pin (Torque: 265 in-lbs)	4
49	291-13-3040100	PR80 Piston	4
50	291-13-3280160	PR80 Diaphragm Sleeve	4
51	291-13-3280020	PR80 Piston Connecting Rod	4
52	291-02-9910-160691	PR40, D160, D250 - PR80 Piston Pin Snap Ring	8
53	291-13-540070	PR80 Piston Pin	4
54	291-13-850252	PR80 Shield Mount Socket Head Screw M8 x 12 (Torque: 90 in-lbs)	3
55	291-13-390315	PR80 Shield Mount Washer M8	3
56	291-02-9910-1500470	PR40, ARD250, PR80 Red Shaft Protector	1
57	291-13-161050	PR80 Pump Shaft E-clip 72Ø	2
58	291-13-450262	PR80 Inspection Flange Mounting Bolt M6 x 35 (Torque: 180 in-lbs)	6
59	291-13-6040021	PR80 Inspection Flange	1
60	291-13-1800160	PR80 Seal/Bearing Housing O-Ring	1
61	291-13-2680120	PR80 Pump Shaft Ring Seal	2
62	291-13-160751	PR80 Pump Shaft Roller Bearing	2
63	291-13-540040	PR80 Pump Shaft Spacer Plate	2
64	291-13-850130	PR80 Pump Shaft Ring	2
65	291-13-850320	PR80 Pump Shaft Needle Bearing	2
66	291-13-3280150	PR80 Pump Shaft	1
68	291-13-42991	PR80 Complete Air Accumulator Assembly	1
69	291-13-3280190	PR80 Pump Shaft Spacer Plate	1
70	291-13-2240380	PR80 Pump Shaft Bearing	1
71	291-13-304321	PR80 Flange	1
72	291-13-2680130	PR80 Pump Shaft Ring	1
73	291-13-3280050	PR80 Threaded Inlet Manifold	1
74	291-13-3280060	PR80 Threaded Outlet Manifold	1
75	291-13-3040620	M10 Nut	16
76	291-13-390315	M8 Washer - Stainless Steel	16
77	291-13-380244	M8 Nut	8

**Table 42. PR80 Diaphragm Service Kit (P/N: 291-13-100250)**

Item No.	Description	QTY
13	Valve Gasket	2

14	Valve	2
46	Diaphragm	1

**Figure 57. SurePoint PumpRight Oil (P/N: 291-02-2160-0038)**



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