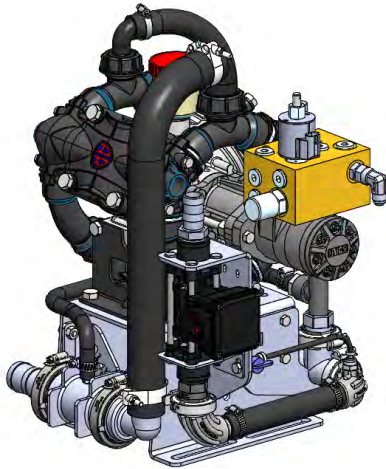




396-4034Y1



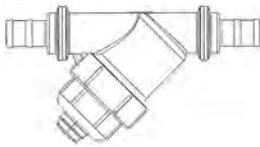

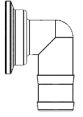
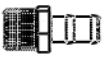



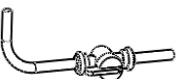
General Instructions for Gen2 PumpRight Pumps & PWM Hydraulic Valve



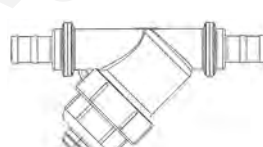

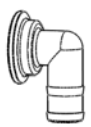


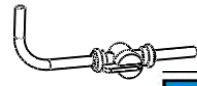
	Number of Diaphragms	Max Flow	Max GPA on 40' at	Max GPA on 60' at
PR17	3	17	35	23.5
PR30	3	30	62	41
PR40	4	40	82	55
D250	6	55		75

PumpRight pumps are available in 4 models to fit your implement size and application rate. At maximum flow, all pumps use 8-9 GPM of hydraulic oil with our standard 4.0 CID motor. To minimize the oil requirement consider using the next larger size pump.

520-00-3050 PR17 & PR30 Accessories Bag

-  2" Strainer with 1 1/2" Hose Barbs, Gaskets and Clamps
Install in Pump Inlet Line
-  1 1/2" T-Bolt Hose Clamp - Qty 3 - Strainer and Pump Inlet Connections
-  2" Manifold x 1 1/2" Hose Barb 90 - Optional substitute for Straight Barb on pump inlet
-  1" MPT x 3/4" Hose Barb - Optional substitute on flowmeter outlet to use 3/4" hose
-  3/4" MPT x 3/4" Hose Barb
Optional substitute on recirculation valve to use 3/4" agitation hose back to tank
-  1 1/2" and 1 1/4" Hose Clamp—Use one on flowmeter outlet hose
-  3/8" MPT plug - Plug threaded hole in bottom of M200100 Tee if Agitating back to tank.
-  Priming Air Bleed Valve Kit - Install on pump per instructions in kit

520-00-3055 PR40 & D250 Accessories Bag

-  2" Strainer with 2" Hose Barbs, Gaskets and Clamps
Install in Pump Inlet Line
Standard 20 mesh screen
-  2" T-Bolt Hose Clamp - Qty 3 - Strainer and Pump Inlet Connections
-  2" Manifold x 2" Hose Barb, 90° - Optional substitute for straight hose barb on pump inlet
-  2" Manifold, 90° Elbow- Optional, use to mount strainer directly to pump plumbing
-  3/8" MPT plug - Plug threaded hole in bottom of M200100 Tee if Agitating back to tank.
-  Priming Air Bleed Valve Kit - Install on pump per instructions in kit

NOTICE

Operator should read this manual before operating the system.



SureFire Ag Systems



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C

Maintenance
& Parts



Safety

TAKE NOTE! THIS SAFETY ALERT SYMBOL FOUND THROUGHOUT THIS MANUAL IS 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.



**THIS SYMBOL MEANS
ATTENTION!**

BECOME ALERT!

YOUR SAFETY IS INVOLVED!

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



DANGER: Indicates an imminently hazardous situation that, if not avoided, will 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: 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: 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 is used to address safety practices not related to personal safety.





Hydraulic Fluid and Equipment Safety

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 the pressure before disconnecting lines or performing work on the system.

Make sure hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system. Use a piece of paper or cardboard, NOT BODY PARTS, to check for suspected leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. DO NOT DELAY!

Check hydraulic hoses and fittings frequently. Loose, broken, and missing hardware can cause equipment to not perform properly and can result in serious injury or death. 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 familiar with this type of injury immediately. Any fluid injected into the skin or eyes must be treated within a few hours or gangrene may result.



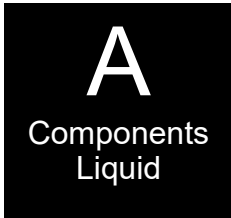
A Word to the Operator

It is YOUR responsibility to read and understand the safety messages in this manual. YOU are the key to safety.

SAFETY IS YOUR RESPONSIBILITY.

PR17 & PR30 Electromagnetic Flowmeter Kits

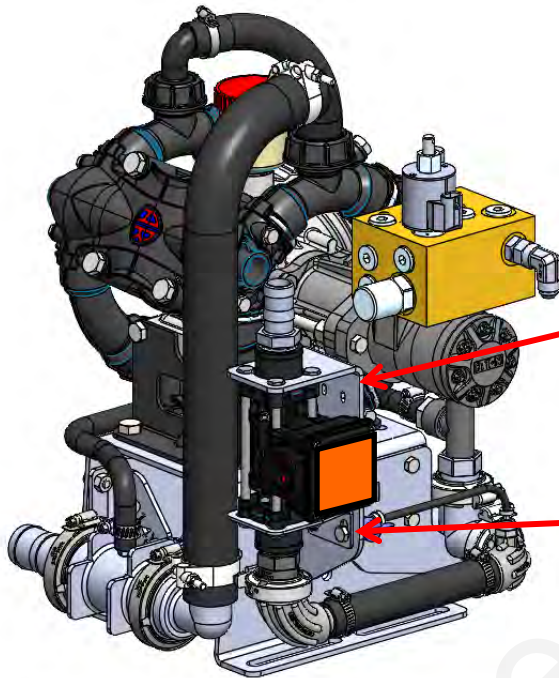
0.13 - 2.6 GPM	Item Number 500-02-2082 (PR17)
0.3 - 5 GPM	Item Number 500-02-2085 (PR17)
0.6 - 13 GPM	Item Number 500-02-2090 (PR17 & PR30)
1.3 - 26 GPM	Item Number 500-02-2095 (PR30)



Kits include flowmeter, adapter harness, mounting bracket, hose barb fittings & hose clamps.

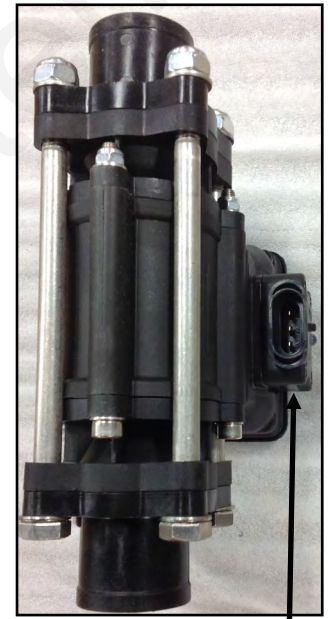
-Before doing any arc welding on the implement, unplug the cable to the flowmeter, or damage to the flowmeter may result.

-Do not power wash the flowmeter. High pressure spray directed at the back edge of the face plate or at the wire connector may allow water into the flowmeter electronics.



Mounting Bracket,
410-4015Y1 (QTY 1)
(not used for PR40 and
D250 Pump)

Mounting Bracket,
400-3826Y1 (QTY 1)
(not used for PR40 and
D250 Pump)



Amp SuperSeal 3-pin connector
Use adapter 201-17842
to connect to 3-pin MP harness

The current version of the SureFire Electromagnetic flowmeter has a black molded body and an orange sticker. The meter has a molded in 3-pin Superseal connector for improved sealing.

SureFire has adapter harnesses available to adapt to other flow meter connections.

Electromagnetic flowmeters are superior to traditional turbine flowmeters in two basic ways. First, they have no moving parts. This translates into no wear items or potential for contaminants to jam a spinning turbine.

Second, electromagnetic flowmeters detect the flow by electrically measuring the velocity of the liquid, which makes them independent of viscosity or density of the fluid measured. They are extremely accurate using the standard calibration number. **SureFire still recommends you perform a catch test to verify the system is properly installed and configured.**

Flowmeter Model	Pulses per gallon	FPT Size	Hose Barb In kit
0.13 - 2.6 GPM	3000	3/4"	1"
0.3 - 5 GPM	3000	3/4"	1"
0.6 - 13 GPM	2000	3/4"	1"
1.3 - 26 GPM	2000	1"	1"

The flowmeters will accurately read higher than the rated range.

Earlier model flowmeters (meters with white labels with black text) have different calibration numbers. The flow cal number (pulses per gallon) is printed on the serial number sticker on the side of the flowmeter.



PR40 & D250 Electromagnetic Flowmeter Kit

2.6 - 53 GPM

Item Number 500-02-2080

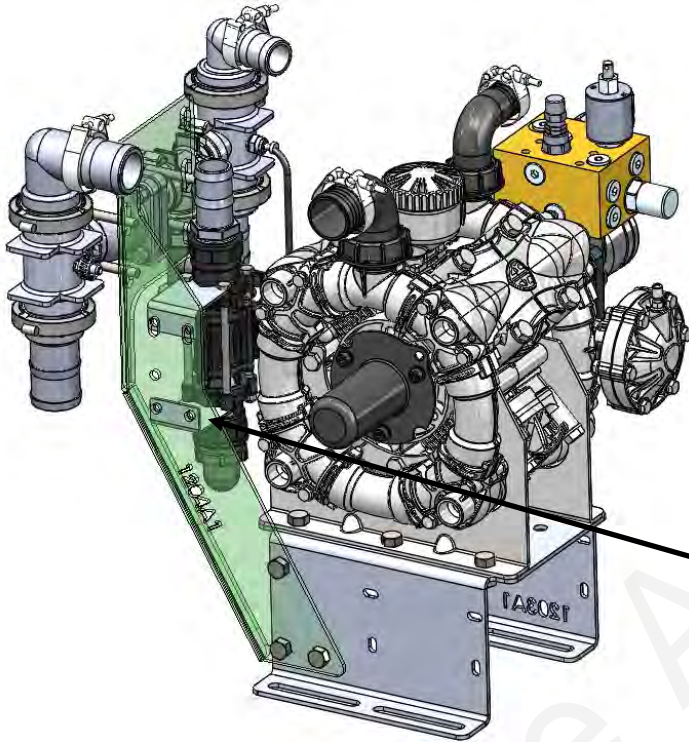
A

Components
Liquid

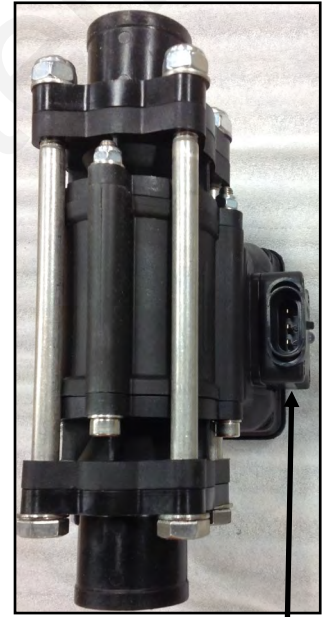
Kits include flowmeter, adapter harness, mounting bracket, hose barb fittings & hose clamps.

-Before doing any arc welding on the implement, unplug the cable to the flowmeter, or damage to the flowmeter may result.

-Do not power wash the flowmeter. High pressure spray directed at the back edge of the face plate or at the wire connector may allow water into the flowmeter electronics.



Mounting Bracket,
400-3335Y1 (QTY 2)
(used for PR40 and D250
Pump only)



Amp SuperSeal 3-pin connector
Use adapter 201-17842
to connect to 3-pin MP harness

The current version of the SureFire Electromagnetic flowmeter has a black molded body and an orange sticker. The meter has a molded in 3-pin Superseal connector for improved sealing.

SureFire has adapter harnesses available to adapt to other flow meter connections.

Electromagnetic flowmeters are superior to traditional turbine flowmeters in two basic ways. First, they have no moving parts. This translates into no wear items or potential for contaminants to jam a spinning turbine.

Second, electromagnetic flowmeters detect the flow by electrically measuring the velocity of the liquid, which makes them independent of viscosity or density of the fluid measured. They are extremely accurate using the standard calibration number. **SureFire still recommends you perform a catch test to verify the system is properly installed and configured.**

Flowmeter Model	Pulses per Gallon	FPT Size	Hose Barb In kit
2.6—53 GPM	2000	1-1/4"	1-1/2"
1.3—26 GPM	2000	1"	1"

The flowmeters will accurately read higher than the rated range.

Earlier model flowmeters (meters with white labels with black text) have different calibration numbers. The flow cal number (pulses per gallon) is printed on the serial number sticker on the side of the flowmeter.

Pump Priming and Air Bleed Valve

An air bleed valve is included with each pump to aid in system priming. It is shipped in the pump accessories bag and must be installed during system installation.

A

Components
Liquid

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

Why use an air bleed valve:

Most fertilizer systems are equipped with a 4 or 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.

Be sure the air bleed valve tube does not become plugged with dirt or it will not allow air to bleed.

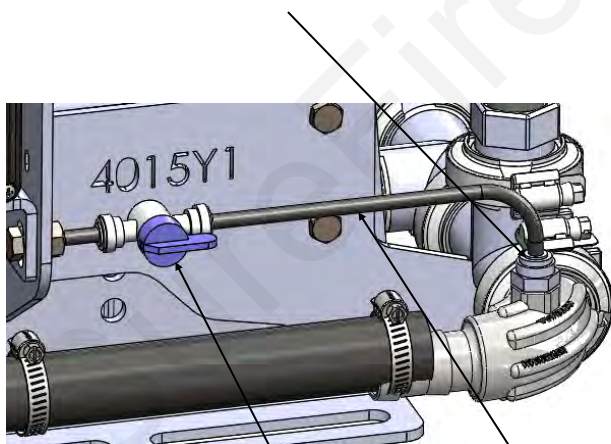
How to install the air bleed valve:

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.

Be sure the air bleed valve tube does not become plugged with dirt or it will not allow air to bleed.

PR17 & PR30

Attach 1/4" tubing to 1/4" QC on the 90 deg HB sweep gauge port

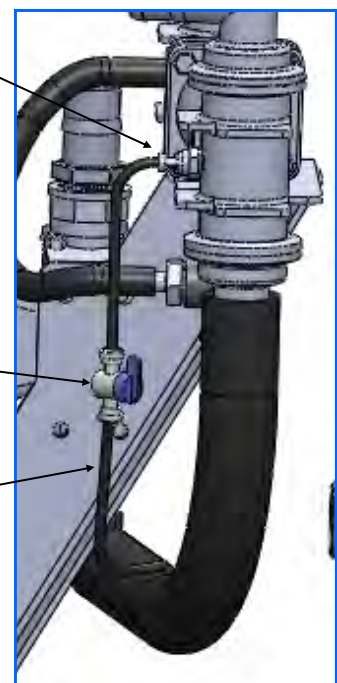


1/4" air bleed valve

1/4" Tubing

PR40 & D250

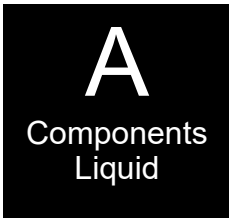
Attach 1/4" tubing to 1/4" QC on back side of 1" x 2" tee on outlet side of pump



1/4" air bleed valve

Recirculation & Agitation

A recirculation valve is standard on all 4 PumpRight models outlet plumbing assemblies.



For best results, close the recirculation knob when priming the pump.

Opening the Recirculation valve will NOT lower the pressure required to push the product to the rows.

How Recirculation Works:

When running a PumpRight pump at less than 20% of its maximum flow, it sometimes improves system 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. **Start with a quarter to a half turn.**

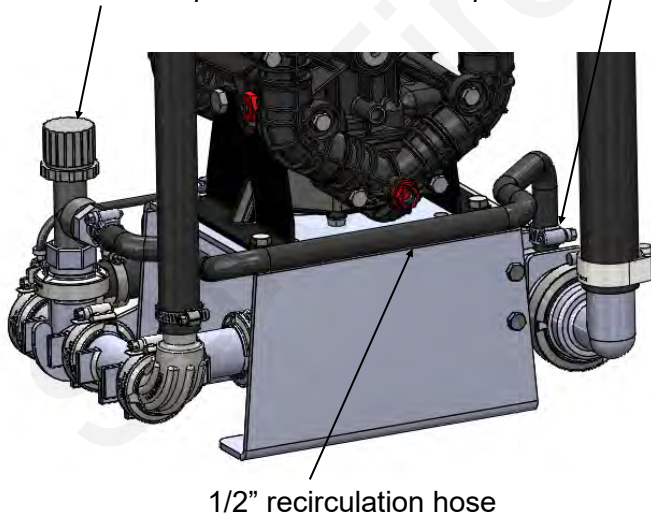
OPENING THE VALVE LOWERS THE MAXIMUM RATE THAT CAN BE APPLIED TO THE GROUND. Close the valve if a higher rate is required.

How to modify for tank agitation:

If tank agitation is required, the recirculation valve can be re-plumbed to divert flow to the tank. All that is required is to remove the 1/2" recirculation hose from the pump. Then replace the 3/8" MPT x 1/2" HB on the inlet side of the pump with a 3/8" plug which is included in your PumpRight accessories bag. Finally, install a longer 1/2" hose from the recirculation valve back to the tank.

PR17 & PR30

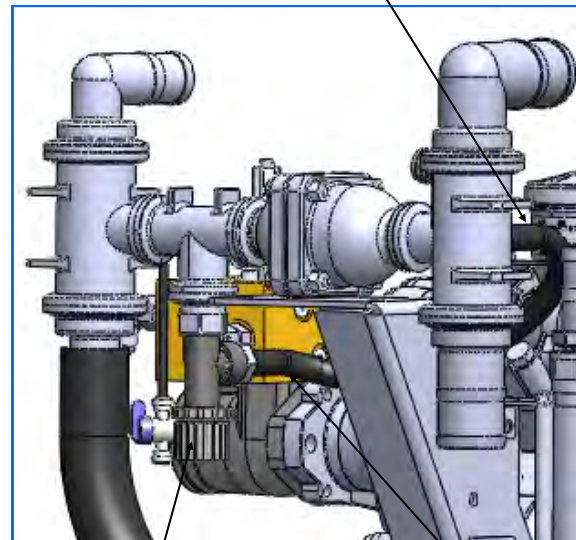
Recirculation Regulation Valve
102-23520-3/4
Start with a quarter to a half turn open.



1/2" recirculation hose

PR40 & D250

Recirculation hose attaches to back of 2" x 1" tee
on pump inlet



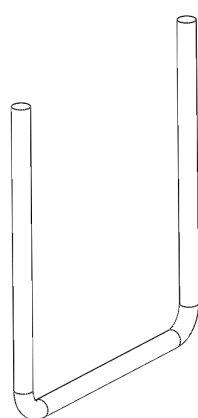
Recirculation Regulation Valve
102-23520-3/4
Start with a quarter to a half turn open.

1/2" recirculation hose

PumpRight Pump Installation

Mounting

1. Mount pump in your preferred location. The PumpRight pump has excellent suction and priming ability, so it can be mounted away from or above fertilizer tanks.
2. SureFire has U-Bolts available to mount the pump directly to multiple bar sizes shown below. Each U-bolt kit includes 1 bolt and 2 flange nuts.
3. If the U-Bolts will not work, order the universal backer plate kit, number 515-203000 which will clamp to any size tube from 4" - 8" wide.



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)
5" x 7"	380-1017	1/2" U-bolt Kit - 1/2", fits 6" x 4" tube - (6" opening)
5" x 7"	380-1014	1/2" U-bolt Kit - 1/2", fits 5" x 7" tube - (5" opening)
6" x 7"	380-1016	1/2" U-bolt Kit - 1/2", fits 7" x 5" tube - (7" opening)
6" x 7"	380-1018	1/2" U-bolt Kit - 1/2", fits 7" x 6" 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)



PumpRight Hydraulic Connections PWM Valve

B

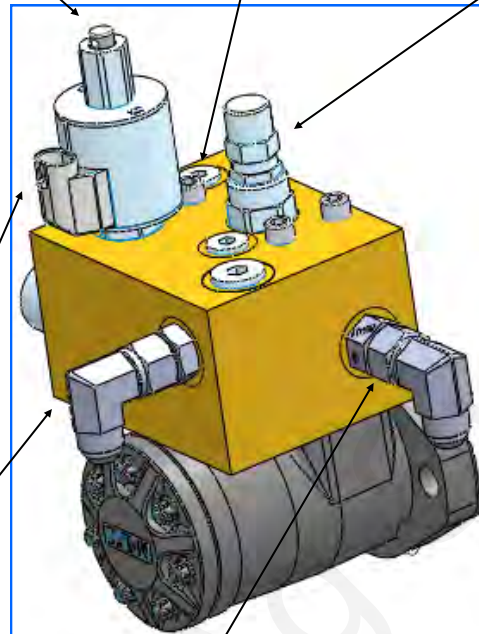
Installation Overview

Manual Override - Turn and lift the manual override to check for proper hydraulic connections. Override will completely open valve, so limit tractor hydraulic flow to valve. (May need to clean packed dirt to allow movement of override knob.) Push down and turn 1/2 turn CW to return to operating position.

PWM Valve Connector - 2-Pin MP Shroud
Troubleshooting Tip:
To check coil, an ohmmeter placed on the two pins should show 7-9 ohms.

Pressure line from Tractor

Load Sense Port—For power beyond hydraulic use only.



Return oil to Tank - Check valve included on return port

Bypass Valve—Remove the cap to access a bypass needle valve. This valve is shipped from the factory closed. The only case when valve should be open is when running in series with other hydraulic motors.

Depending on your tractor and exact hydraulic plumbing scenario your pump may turn very slowly when it should stop. To stop the pump completely, open the bypass valve slightly. (Always loosen the lock nut before adjusting the needle valve. Do not overtighten needle valve.)



▲ 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 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 run 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.

How it Works with 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: First, remove the load sense plug and install a #6 male boss x #6 JIC adapter fitting, SureFire PN 161-01-6MB-6MJ. 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 SureFire valve has an internal load sense check valve, which is required for power beyond hydraulics.. The bypass valve (see above) must be closed to use power beyond hydraulics or else an unlimited amount of oil will be continuously circulated.

PumpRight Hydraulic Connections

B

Installation
Overview

Hydraulic Hose

SureFire recommends 1/2" hydraulic hose for both pump inlet and outlet. The hoses will need #8 JIC female swivel fittings.

See the manual for your system for additional hydraulic plumbing information.

Where do I get hydraulic flow for my PumpRight?

This question is often asked as many implements use up all the hydraulic connections on a tractor. SureFire has some recommendations as to what works best.

Preferred

Best Option - Dedicated PumpRight Circuit

If you have a tractor remote available, attach the tractor remote valve directly to the PumpRight pressure and return ports. DO NOT try to avoid this method simply to save another set of hydraulic hoses running to the tractor. Operating the PumpRight on it's own circuit is the simplest for installation and operation. It guarantees the PumpRight won't negatively affect any other hydraulic components on your equipment.

Alternate Option - In Series with John Deere CCS Fan or Bulk Fill Seed Fan

If you do not have a tractor remote valve available, this may be your best method. You can plumb the PumpRight after the seed distribution fan. If using this method, the SureFire PWM bypass valve must be open (see previous page for instruction & picture). If bypass is left closed, the SureFire valve will limit the speed of the seed distribution fan.

For example, the John Deere CCS fan uses around 7 GPM of oil. This will limit the PumpRight maximum flow (8-9 GPM oil necessary for maximum flow). See the charts on the next page for adjusted maximum pump flow. See section G for flow charts to determine your necessary flow rate.

DO NOT plumb the PumpRight in series with a vacuum fan. The vacuum fan uses just a few GPM of oil. Also, problems will be caused by excessive pressure at the vacuum fan motor.

Two PumpRights

The preferred method is to plumb the two pumps in series. DO NOT plumb two pumps after the CCS fan. Excessive pressures may damage the CCS fan motor. Run the pressure line from tractor to first pump inlet. Plumb from the outlet of Pump 1 to the Inlet of Pump 2, then from Pump 2 outlet back to the tractor. Open the bypass needle valve on both pumps so each valve controls motor speed independently. Run the flow setting procedure on the next page to minimize the hydraulic flow based on the pump that requires more hydraulic motor flow.



⚠ 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 the skin.

PumpRight Hydraulic Oil Flow Requirements

(Requirements for 4.0 CID Motor—standard SureFire motor beginning in 2016—
Earlier motor was 4.9 CID which uses 20% more oil)

B

Installation
Overview

Setting Tractor Hydraulic Remote Speed

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

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.

This setting will provide the Pump Right pump just enough oil for your application rate.

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.



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 than that 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 as shown in Section F of the system manual.

Another way to limit the maximum pump speed is to set the High PWM Limit just above what is needed for regular operation. If the pump tries to speed up above that, check for blocked strainer or other issue.

Model PR17 - 3 Diaphragms		
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

Model PR30 - 3 Diaphragms		
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

Model PR40 - 4 Diaphragms		
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

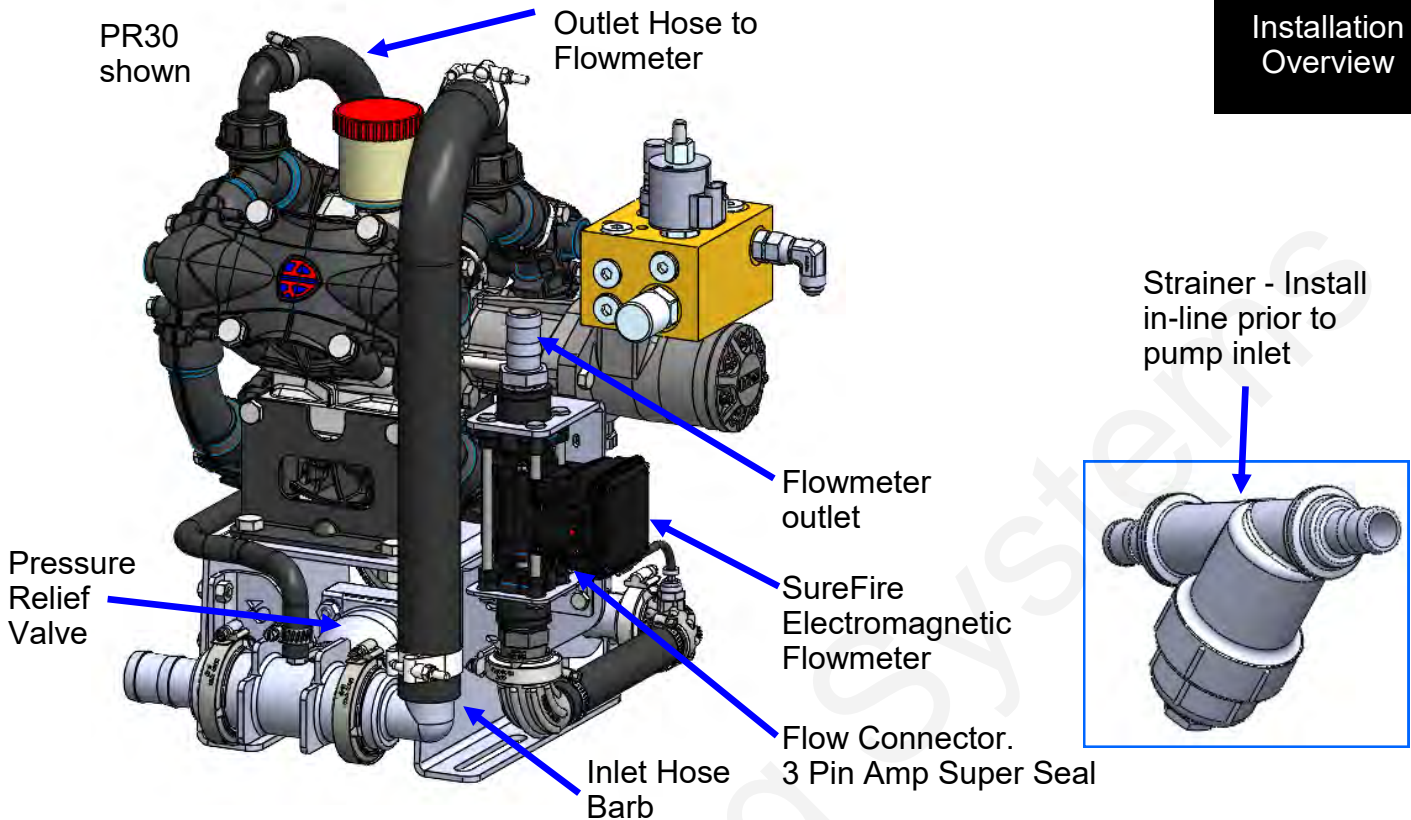
Model D250 - 6 Diaphragms		
Fertilizer Flow (GPM)	Pump Speed (RPM)	Hydraulic Oil Flow (GPM)
10	86	1.6
20	172	3.2
30	258	4.8
40	343	6.4
50	429	8.0
55	472	8.6



PR17 & PR30 Liquid Plumbing Connections

B

Installation
Overview

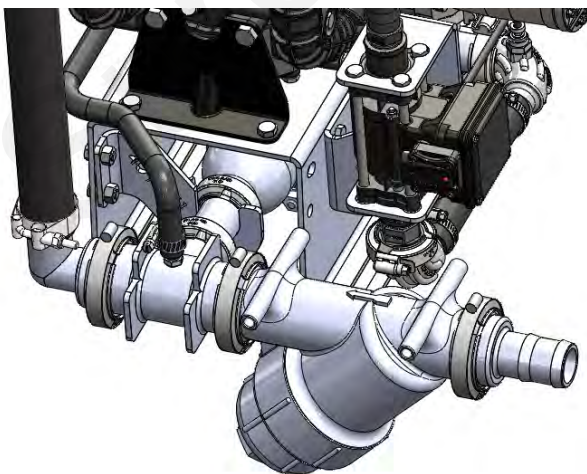


Inlet: The PR17 and PR30 PumpRight are shipped with a 1 1/2" inlet hose barb. Attach this to the hose from your supply tank and strainer. A 1 1/2" 90 degree hose barb is included and can be substituted.

Inlet Strainer: A 20 mesh strainer is included in the pump kit. The manifold strainer includes two hose barbs so it can be mounted anywhere in the inlet line. If space allows, the strainer can be mounted directly to the inlet plumbing assembly as shown below.

Outlet: The outlet is plumbed directly to the flowmeter with 1" hose. As shown above, the flowmeter may be mounted directly to the PumpRight pump. The flowmeter outlet is a 1" hose barb. The outlet hose should be a minimum of 24" long with a gentle curve prior to any fittings for optimum flowmeter performance. The flowmeter outlet will attach to your manifold(s) or section valves. A 3/4" hose barb is included in the bag of parts and can be substituted on the flowmeter outlet.

Pressure Relief Valve (PRV): The PRV is a 100 psi relief. If there is a restriction that creates over 100 psi in the system, the PRV will open allowing the excess flow to pass back to the inlet side of the pump. This protects the pump and fertilizer system from damage.



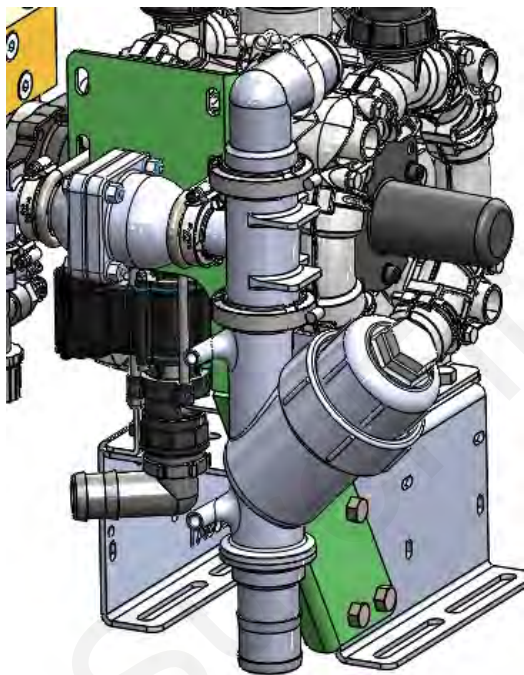
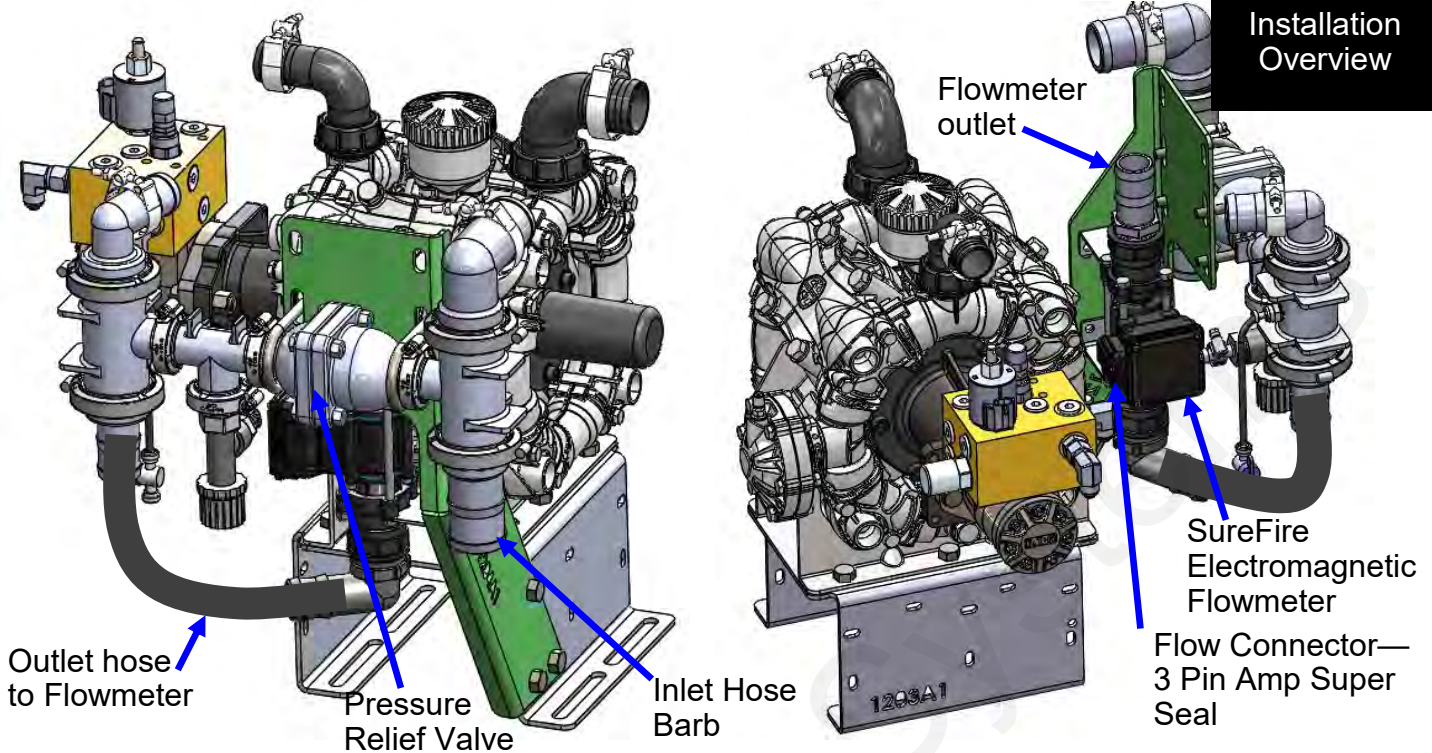
CAUTION

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.

PR40 & D250 Liquid Plumbing Connections

B

Installation Overview



Inlet: The PR40 and D250 PumpRight are shipped with a 2" inlet hose barb. Attach this to the hose from your supply tank and strainer. A 2" 90 degree hose barb is included and can be substituted.

Inlet Strainer: A 20 mesh strainer is included in the pump kit. The manifold strainer includes two hose barbs so it can be mounted anywhere in the inlet line. If space allows, the strainer can be mounted directly to the inlet plumbing assembly as shown in image to the left.

Outlet: The outlet is plumbed directly to the flowmeter with 1 1/2" hose. As shown above, the flowmeter may be mounted directly to the PumpRight pump. The flowmeter outlet is a 1 1/2" hose barb. The outlet hose should be a minimum of 24" long with a gentle curve prior to any fittings for optimum flowmeter performance. The flowmeter outlet will attach to your manifold(s) or section valves.

Pressure Relief Valve (PRV): The PRV is a 100 psi relief. If there is a restriction that creates over 100 psi in the system, the PRV will open allowing the excess flow to pass back to the inlet side of the pump. This protects the pump and fertilizer system from damage.



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.

Recommended Care and Maintenance

C

Maintenance
& Parts

Air Bladder

PumpRight pumps (PR 40 and D250) have an air bladder to smooth the pump output flow. It is recommended to run this bladder at the greater of 15 PSI or 25% of working pressure. Due to the small size of the air bladder, **very little air is needed**. SureFire recommends charging a portable air tank to the correct pressure, then attach to the bladder valve to charge the air bladder to the same pressure as your air tank.

Winterization

SureFire 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.

Change Pump Oil Annually

PumpRight pumps use an internal oil lubricated crankshaft and connecting rod design. The oil is held in an external reservoir with level indicators. SFA Part #: 291-02-2160-0038 oil is recommended for the pump, supplied by SureFire Ag. This is a non-detergent SAE30 weight oil. If not available, hydraulic jack oils are a similar non-detergent formulation. Annual oil changes are recommended.

To fill or drain the pump completely, the pump shaft must be turned slowly by hand. The hydraulic motor will have to be removed to do this.

On some pump models, the pump will have to be removed from the mounting bracket and lifted slightly to allow access to the oil plug.

When refilling the pump with oil, the shaft will again have to be rotated to fill the pump to its required oil volume.

CRANKCASE OIL CAPACITIES				
Model	Capacity		Model	Capacity
PR17	13 oz		PR40	56 oz
PR30	28 Oz		D250	98 oz

Diaphragm & Valve Replacement

PumpRight pumps are designed to allow very simple replacement of the two main pumping components; the diaphragms and the inlet & outlet valves. It is a good practice to replace these every 3 or 4 years (or every 1000 hours). It is a small job that helps ensure reliable operation during the busy season.

PumpRight Valves & Diaphragms



Diaphragm Pump Service Kits

1 Kit contains 1 diaphragm and 2 valves to service a single pumping diaphragm.

Order multiple kits to service all the diaphragms in your specific pump per chart below...

QTY in Kit	Part Number	Description
PR17 Pump Service Kit - 3 Diaphragm		
KIT #: 291-13-100100 (pump requires 3 kits)		
1	291-13-1040083	BlueFlex Diaphragm (PR17)
2	291-13-2429051	Valve
2	291-13-3460380	Gasket/O-ring

PR30 Pump Service Kit - 3 Diaphragm		
KIT #: 291-13-100150 (pump requires 3 kits)		
1	291-13-550081	BlueFlex Diaphragm
2	291-13-2429051	Valve
2	291-13-3460380	Gasket/O-ring

PR40 Pump Service Kit - 4 Diaphragm		
KIT #: 291-13-100150 (pump requires 4 kits)		
1	291-13-550081	BlueFlex Diaphragm
2	291-13-2429051	Valve
2	291-13-3460380	Gasket/O-ring

D250 Pump Service Kit - 6 Diaphragm		
KIT #: 291-13-100200 (pump requires 6 kits)		
1	291-13-550081	BlueFlex Diaphragm
2	291-02-9910-759051	Valve
2	291-02-680070	Gasket/O-ring

For other service parts, see individual Pump Part Breakout Diagrams

PumpRight Valves & Diaphragms

Diaphragm Pump Service Kit Replacement Instructions



Visit www.surefireag.com or www.support.surefireag.com for PumpRight Diaphragm Pump Repair and Maintenance Video

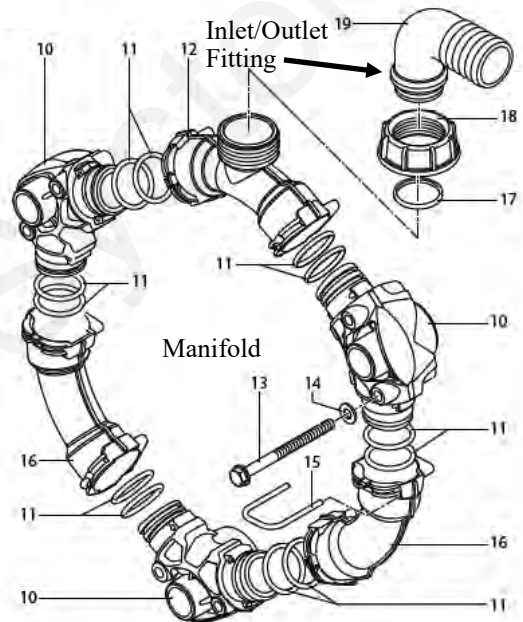
Diaphragm & Valve Service Steps:

1. Remove inlet and outlet plumbing connections by unscrewing ring nut on inlet and outlet fitting.
2. Use extreme caution when removing and replacing drain plug, so that threads are not stripped and o-ring is not damaged. Remove drain plug from bottom of pump to drain oil from pump. Rotate pump shaft to remove all oil. Replace drain plug making sure o-ring is in place. Tighten plug to 180 In.Lbs.
3. Remove pump manifold(s) using a 13 mm wrench.
4. Remove and replace complete valve assembly.
5. Remove the pump head.
6. Remove the diaphragm bolt, support washer and diaphragm. Turn the pump shaft to up stroke to replace diaphragm.
7. Install new diaphragm (LIQUID side up), then replace washer and bolt.
8. Turn pump to downstroke to seat new diaphragm into the sleeve groove.
9. Replace pump head and manifold(s).
10. Refill crankcase with SAE30 non detergent oil (PumpRight Oil or hydraulic jack oil). Turn the pump shaft and top off sight glass.

NOTE: See individual Part Breakout Charts for Bolt/Nut Torque Specs.

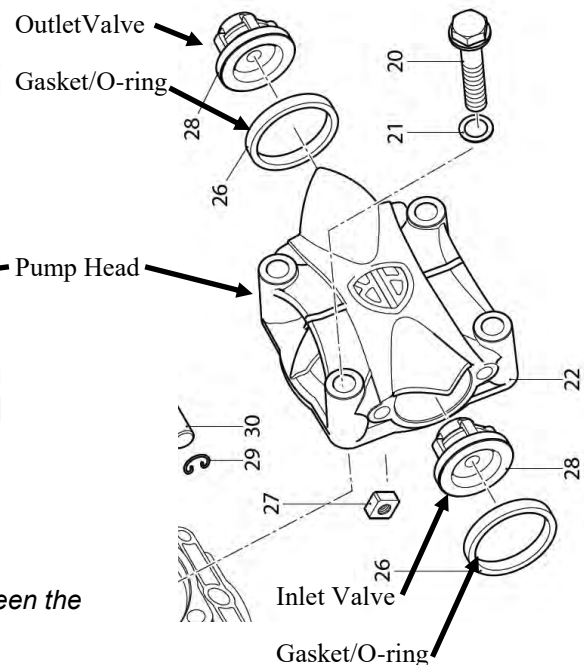
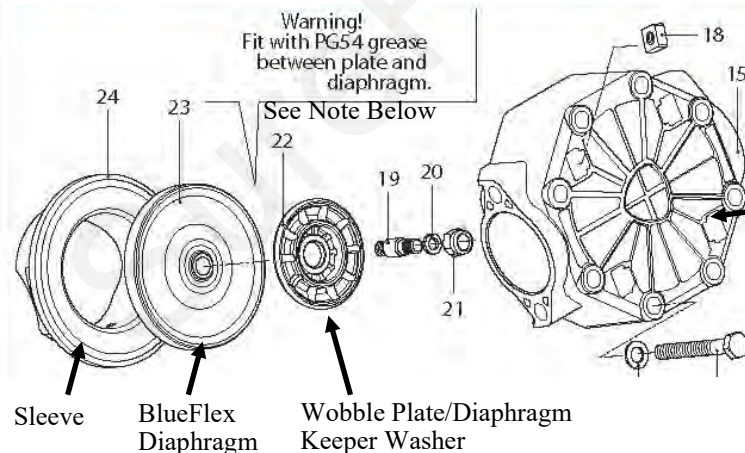
	Number of Diaphragms
PR17	3
PR30	3
PR40	4
D250	6

Typical Manifold—2 per pump—inlet and outlet



Typical Valve Assembly

Typical Diaphragm Assembly



NOTE: A multipurpose grease is fine to use for applying in between the Diaphragm and Wobble Plate/Washer

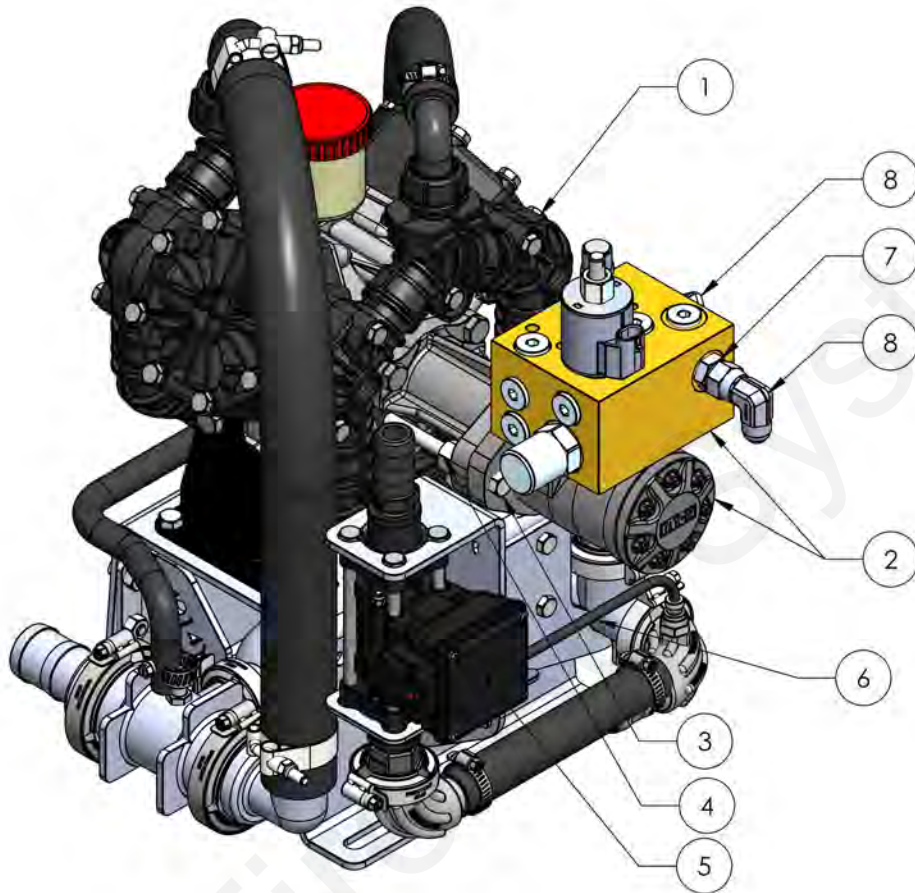


SureFire Ag Systems



PR17 Assembly and Part Breakdowns

Complete PR17 Pump Assembly w/ Hydraulic Motor and PWM Valve
Kit: 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, and Bypass Valve, CW Rotation	1
	164-FTA0994	4.0 CID Hydraulic Motor with PWM Valve and Bypass Valve, CW Rotation	
3	300-080200-5	1/2" x 2" G5 Bolt	2
4	321-08	1/2" Nylock Nut	2
5	500-02-2082	EMag PR17 Flowmeter Kit (.13 - 2.6 GPM) - 1" HB	1
	500-02-2085	EMag PR17 Flowmeter Kit (.3 - 5 GPM) - 1" HB	
	500-02-2090	EMag PR17/PR30 Flowmeter Kit (.6 - 13 GPM) - 1" HB	
6	521-00-100250	Pump Priming and Air Bleed Assembly	1
7	161-01-8MB-8MJ	Adapter - #8 male O-Ring Boss to #8 male JIC	1
8	161-02-8MJ-8FJX-90	Elbow - #8 female JIC to #8 male JIC - 90	2

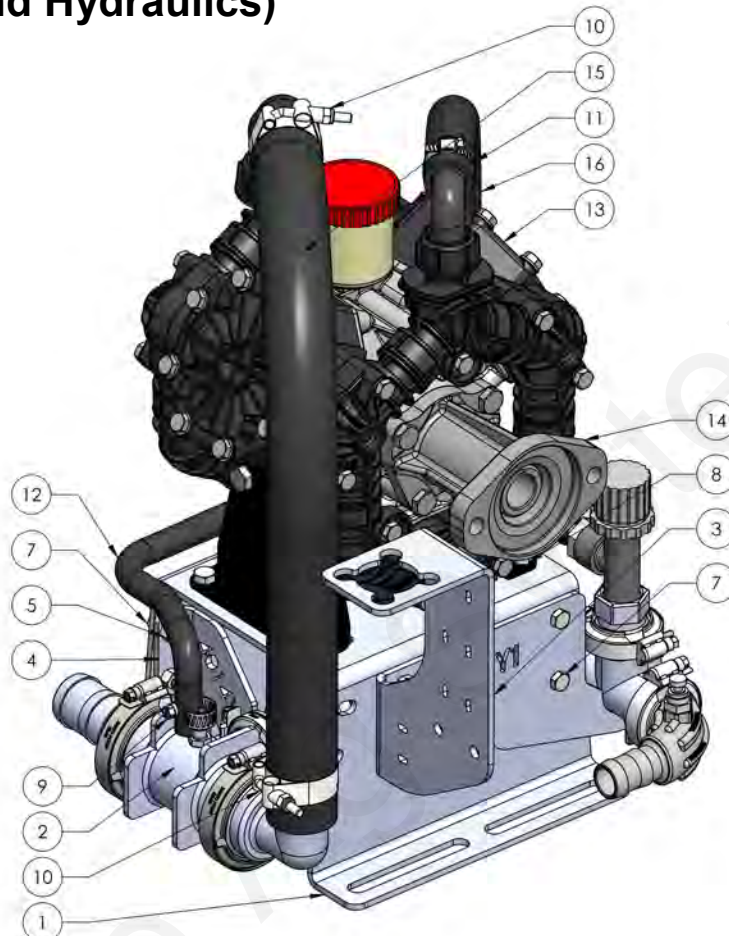
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PR17 Assembly and Part Breakdowns

PR17 Pump Pre-Build Assembly
(Minus Flowmeter and Hydraulics)
Kit: 500-40-200017



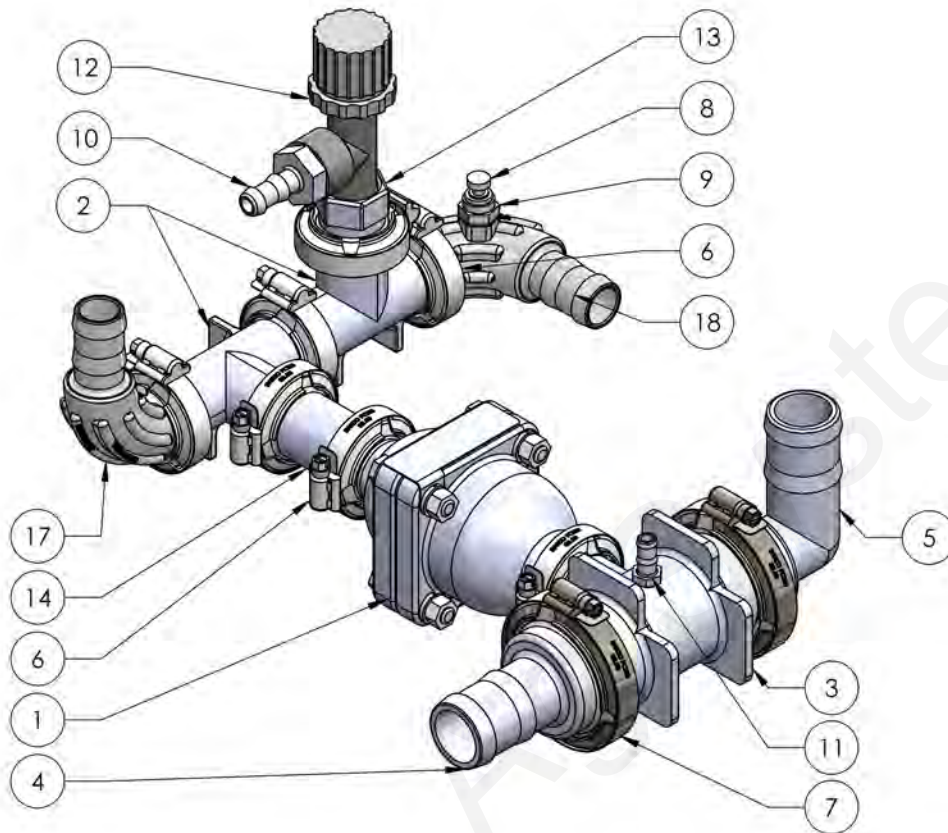
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	400-1117A4	Diaphragm Pump Bracket	1
2	520-00-3013	Plumbing Assembly - PR17/30 Hydraulic Diaphragm Pumps	1
3	410-4015Y1	PR17/30 - Flow Meter Support Bracket	1
4	410-4014Y1	PRV Support Bracket - PR17/30	1
5	323-05-SS	5/16" Flange Nut SS	6
6	323-06-SS	3/8" Flange Nut SS	4
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	290-02-PR17	PR17 Poly BlueFlex Diaphragm Pump - 17 GPM - 290 PSI	1
14	291-02-AR55375	Flange Adapter Kit - PR17	1
15	280-150-ENF-25L	1-1/2" Enforcer Hose - PR17	1
16	280-100-AG200-25L	1" AG200 Hose - PR17 - 25 inches	1

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PR17 Assembly and Part Breakdowns

PR17 & PR30 Pump Plumbing Assembly
Kit: 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

PR17 Assembly and Part Breakdowns

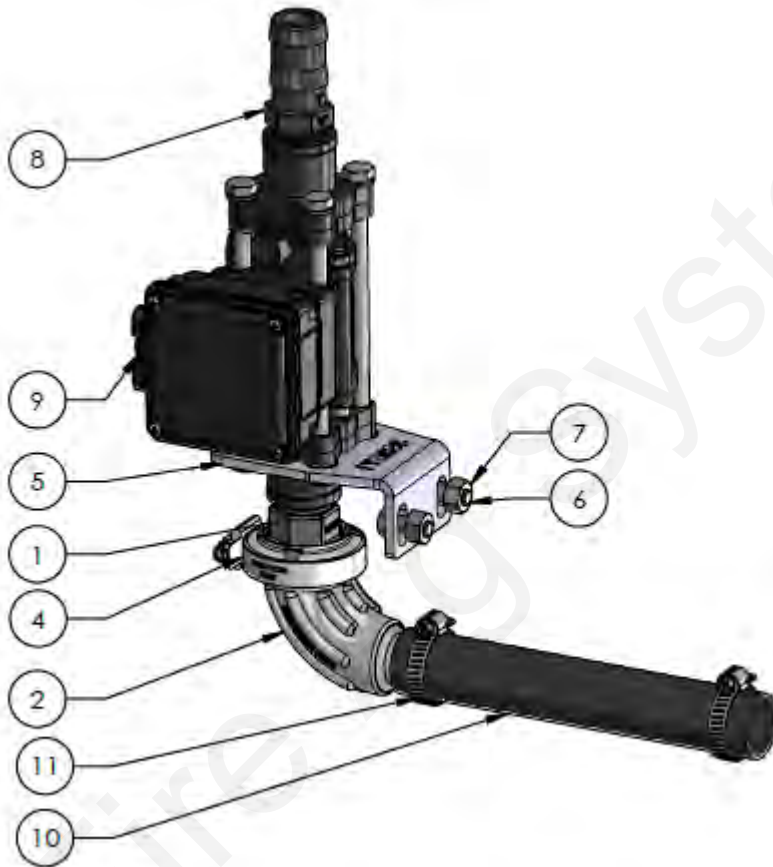


PR17 Flowmeter Kits

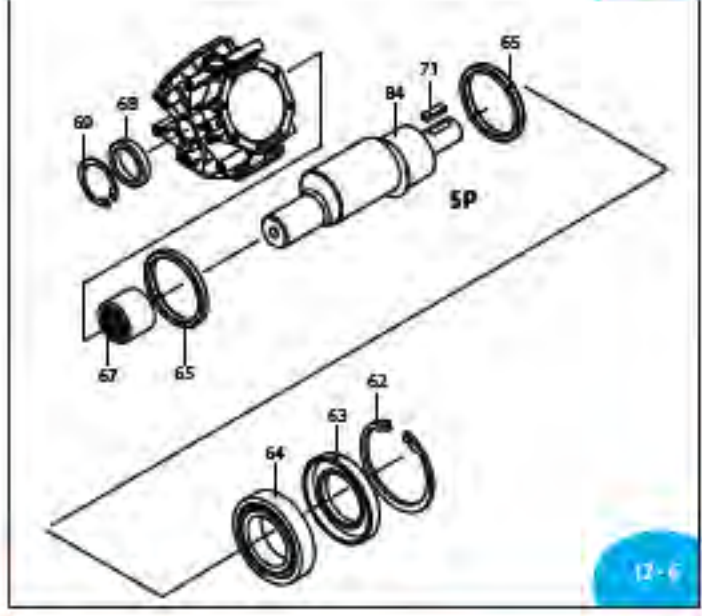
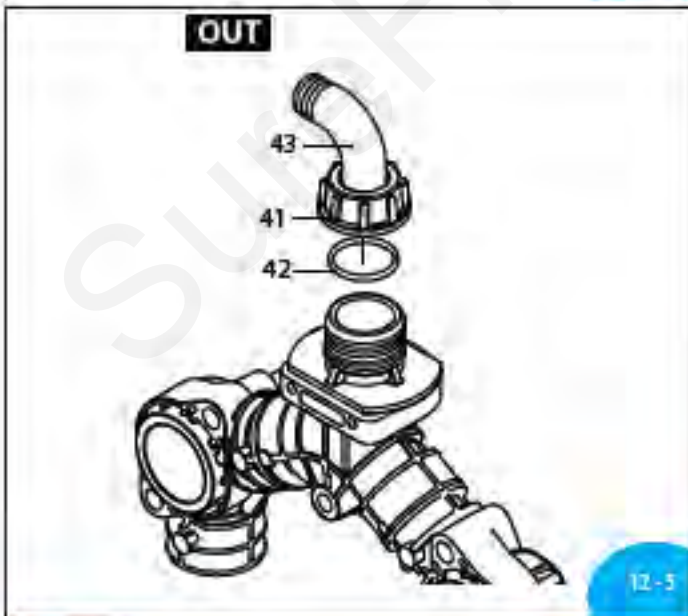
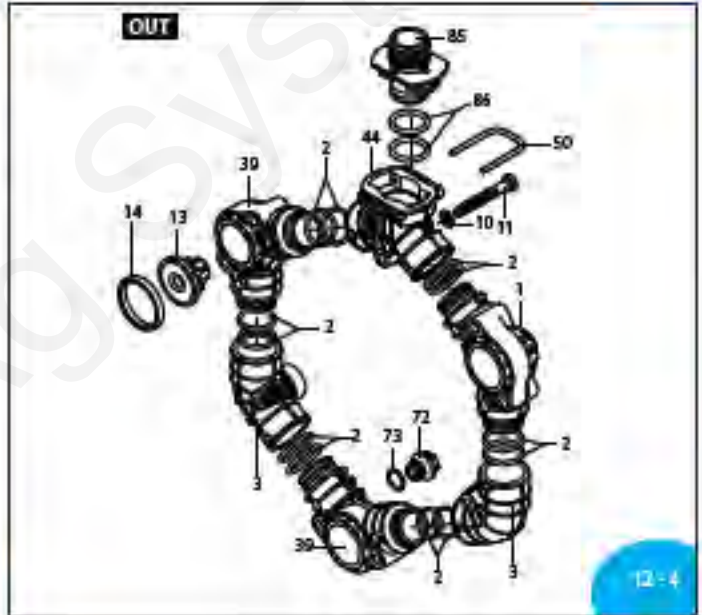
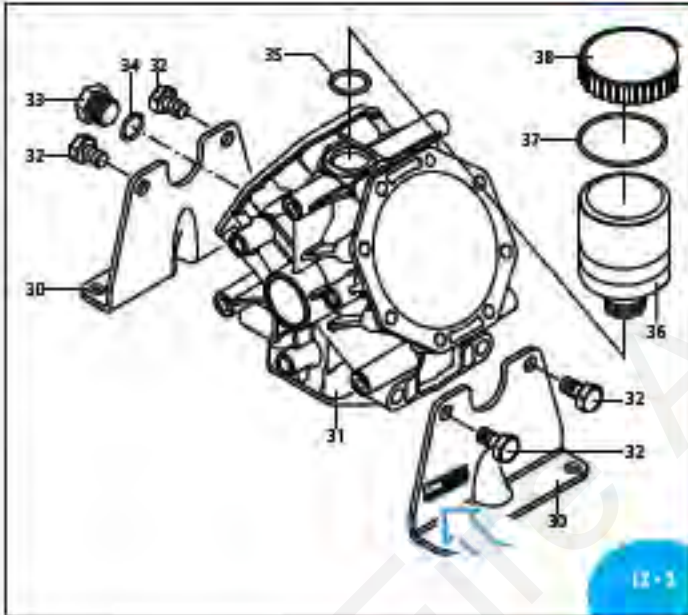
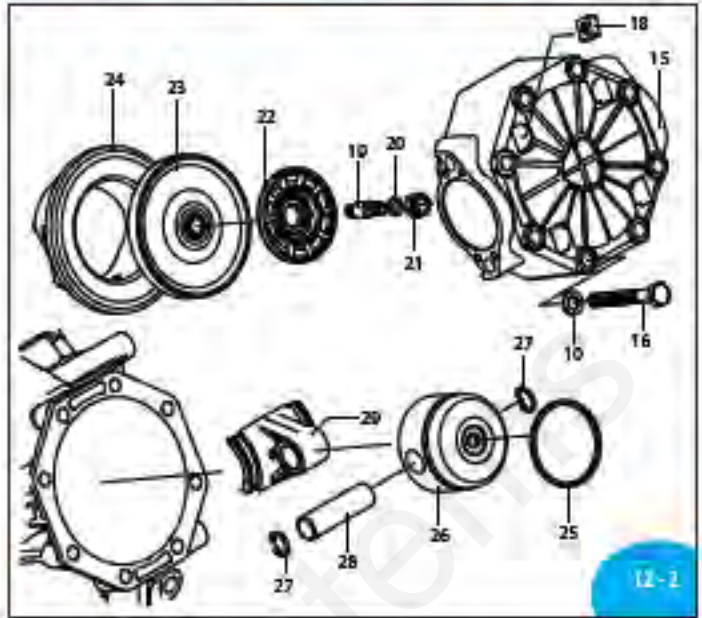
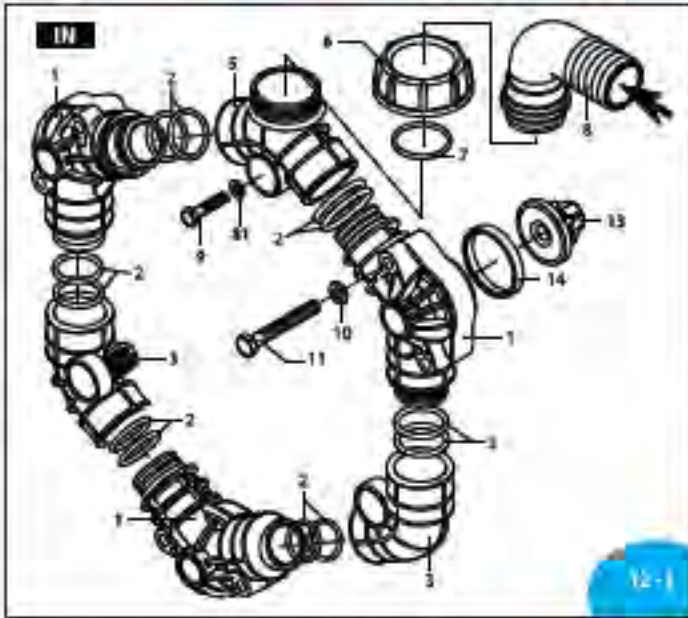
Kit: 500-02-2082 EMag PR17 Flowmeter Kit (.13 - 2.6 GPM)

Kit: 500-02-2085 EMag PR17 Flowmeter Kit (.3 - 5 GPM)

Kit: 500-02-2090 EMag PR17/PR30 Flowmeter Kit (.6 - 13 GPM)



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	105-100075MPT	1" Flange X 3/4" Male Thread	1
2	105-100BRBSWP90	1" Flange X 90° Sweep Hose Barb	1
3	105-100G	1" EPDM Manifold Gasket	1
4	105-FC100	1" Manifold Clamp	1
5	400-3826Y1	SS Flowmeter Mounting Bracket	1
6	300-050012-SS	5/16" x 3/4" HCS SS	2
7	323-05-SS	5/16" Flange Nut SS	2
8	101-075100	3/4" MPT x 1" HB	1
9	204-01-46211CUF00	Electro Magnetic Flow meter 0.13-2.6 GPM	1
	204-01-46211CUF01	Electro Magnetic Flow meter 0.3-5 GPM	
	204-01-46211CUF02	Electro Magnetic Flow meter 0.6-13 GPM	
10	280-100-AG200-8L	1" AG200 Hose	1
11	350-1608	1" Hose Clamp	2



PR17 Diaphragm Pump Parts

#	Item Number	Item Description	QTY
1	291-13-3240030	PR17 Inlet & Outlet Male Manifold	5
2	291-13-390292	PR17 Manifold O-Ring - Inlet and 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 3 Viton	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 T106*	6
10	291-13-3120760	PR17 SS Washer For M8 x 75 & M8 x 80 Bolts	36
11	291-13-380211	PR17 Metric Bolt For Male Manifolds M8 x 75 T88*	12
13	291-13-2429051	Valve For PR17, PR30, and PR40	6
14	291-13-3460380	Valve Gasket For PR17, PR30, and PR40	6
15	291-13-3240020	PR17 Pump Head	3
16	291-13-621771	PR17 Metric Bolt For Pump Head M8 x 80 T124*	24
18	291-13-3120510	Square Nut for M8 Bolts	12
19	291-13-3240101	PR17 Hub Pin T265*	3
20	291-13-320622	PR17 Hub Pin Washer	3
21	291-13-2240670	PR17, PR30, & PR40 Hub Pin Nut T221*	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

291-13-100100 PR17 Diaphragm Service Kit

#	Description	QTY	#	Description	QTY
13	Valve	2	23	Diaphragm	1
14	Valve Gasket	2	(pump requires 3 kits)		

#	Item Number	Item Description	QTY
31	291-13-3240010	PR17 Pump Housing	1
32	291-13-620342	PR17 Metric Bolt for Mounting Foot to Housing M10x20 T265*	4
33	291-02-2406-0023	PR17 Oil Drain Plug T177*	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 and 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

* Torque: in-lbs +/- 10%

291-13-100700 PR17 O-Ring Kit

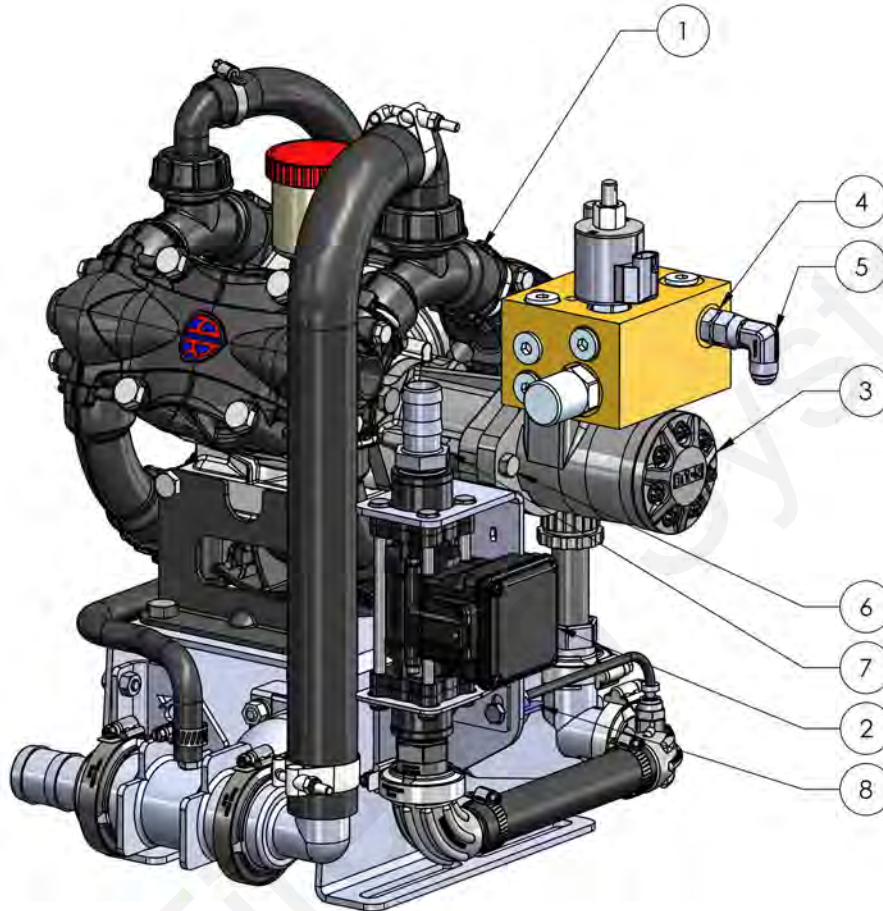
#	Description	QTY	#	Description	QTY
2	Manifold O-Ring	24	37	Sight Glass Cap O-Ring	1
7	O-Ring 29x3 Viton	2	42	Outlet 1" Ring Nut O-Ring	1
34	Oil Drain Plug O-Ring	1	73	Outlet Male Manifold Plug O-Ring	1
35	Sight Glass to Pump O-Ring	1			

Specially-Formulated PumpRight Oil 291-02-2160-		
-0038	1 Quart	<i>PR17 uses 13 oz. of oil</i>
-0047	1 Gallon	
-0048	2 1/2 Gallons	



PR30 Assembly and Part Breakdowns

Complete PR30 Pump Assembly w/ Hydraulic Motor and PWM Valve
Kit: 500-01-5700



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	500-40-200030	PR30 Poly Pre-Build Assembly (Minus Flowmeter and Hydraulics)	1
2	500-02-2090	EMag PR30 Flowmeter Kit (.6 - 13 GPM) - 1" HB	1
	500-02-2095	EMag PR30 Flowmeter Kit (1.3 - 26 GPM) - 1" HB	
3	164-FTA1609	4.0 CID Hydraulic Motor with PWM Valve, Speed Sensor, and Bypass Valve, CW Rotation	1
	164-FTA0994	4.0 CID Hydraulic Motor with PWM Valve and Bypass Valve, CW Rotation	
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

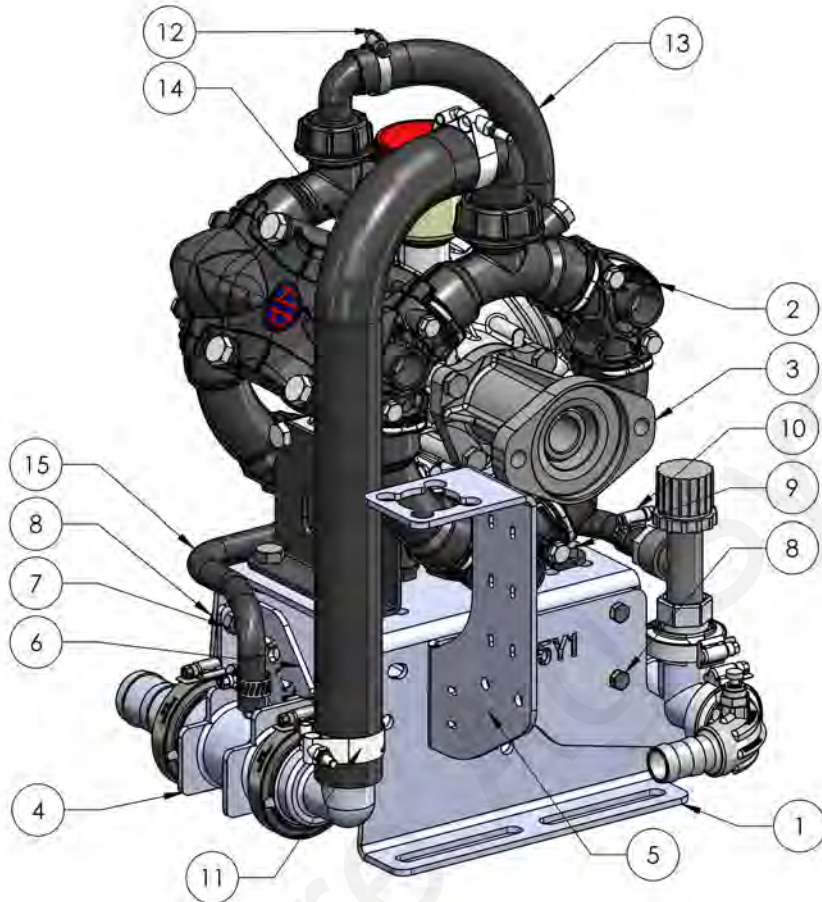
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PR30 Assembly and Part Breakdowns

**PR30 Pump Pre-Build Assembly
(Minus Flowmeter and Hydraulics)
Kit: 500-40-200030**



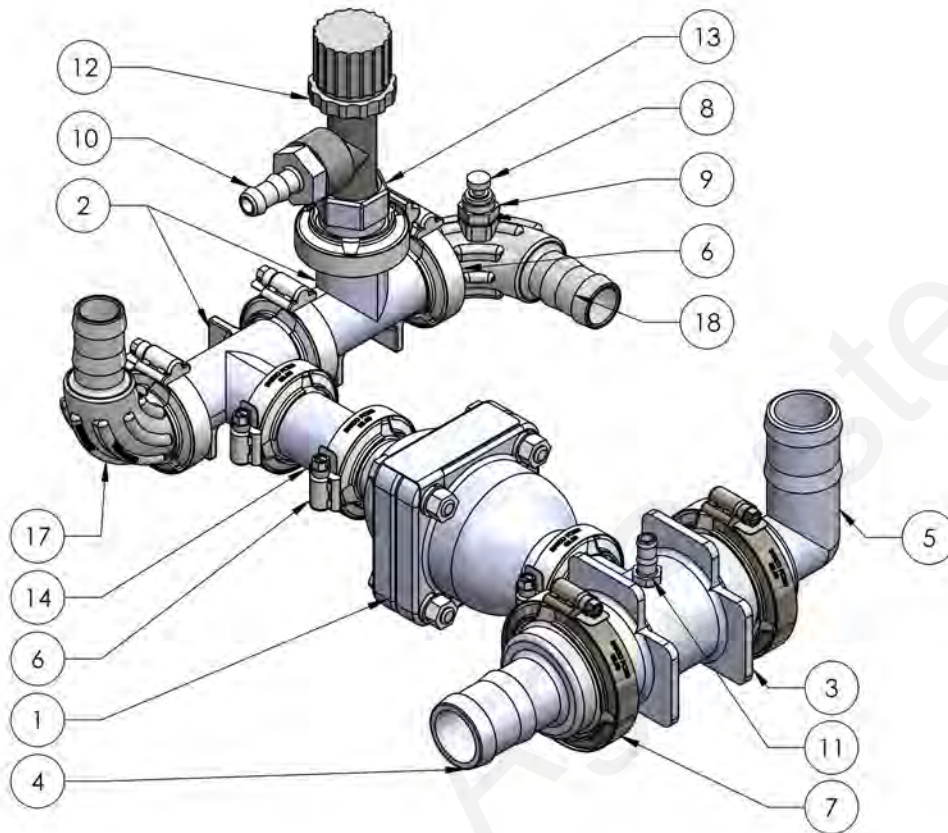
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	400-1117A4	Diaphragm Pump Bracket	1
2	290-02-PR30	PR30 Poly BlueFlex Diaphragm Pump - 30GPM	1
3	291-02-AR55376	Flange Adapter Kit - PR30	1
4	520-00-3013	Plumbing Assembly - PR17/30 Hydraulic Diaphragm Pumps	1
5	410-4015Y1	PR17/30 - Flow Meter Support Bracket	1
6	410-4014Y1	PRV Support Bracket - PR17/30	1
7	323-05-SS	5/16" Flange Nut SS	6
8	300-050012-SS	5/16" x 3/4" Hex Head Bolt - SS	6
9	300-080012-SS	1/2" x 3/4" Hex Head Bolt - SS	
10	350-0605	SS Hose Clamp - Size 6 - 7/8" Diameter	2
11	350-TC181	T-Bolt Hose Clamp - 1.81 - 2.06" Diameter (fits 1 1/2" Enforcer or AG200)	2
12	350-1608	1" Hose Clamp	2
13	280-100-AG200	1" AG200 Hose	19
14	280-150-ENF	1-1/2" Enforcer Hose	22
15	280-05-AG200	1/2" AG200	23

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PR30 Assembly and Part Breakdowns

PR17 & PR30 Pump Plumbing Assembly
Kit: 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

PR30 Assembly and Part Breakdowns

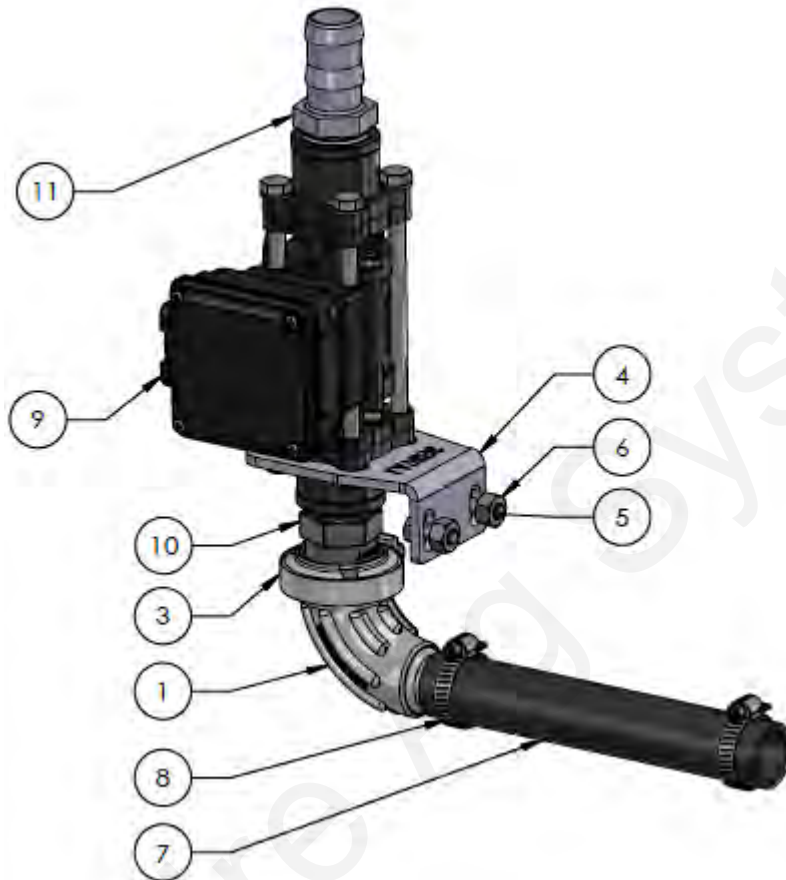
PR30 Flowmeter Kits

Kit: 500-02-2090 EMag PR17/PR30 Flowmeter Kit (.6 - 13 GP

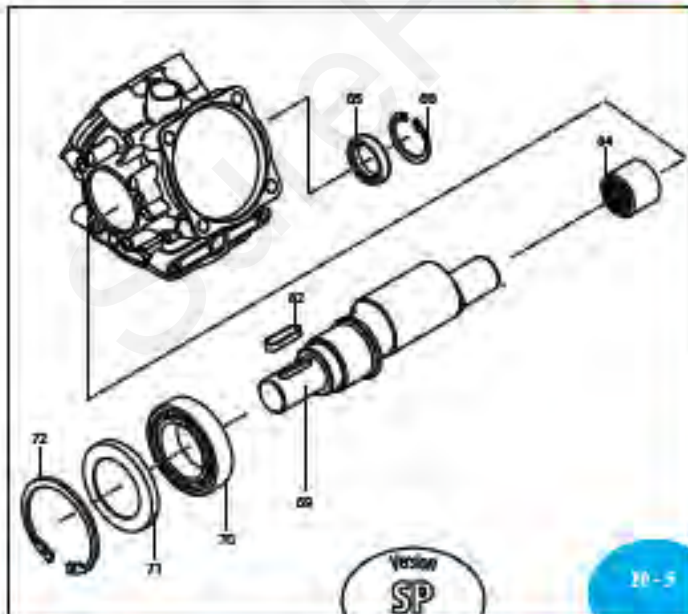
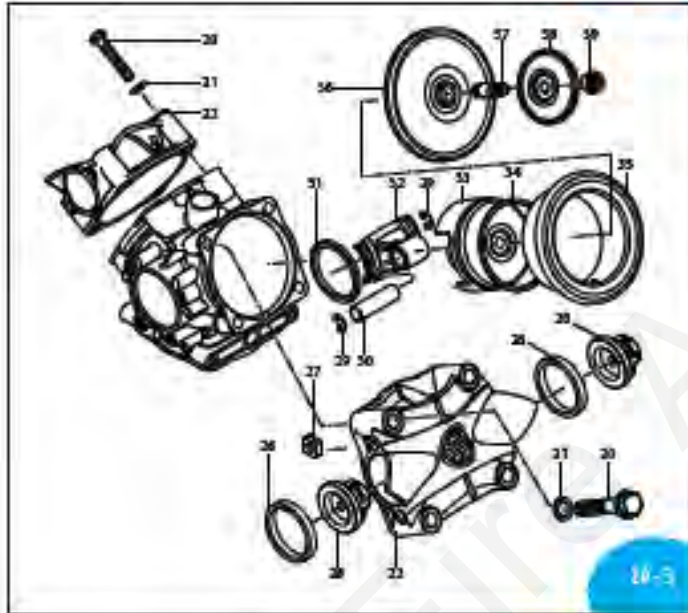
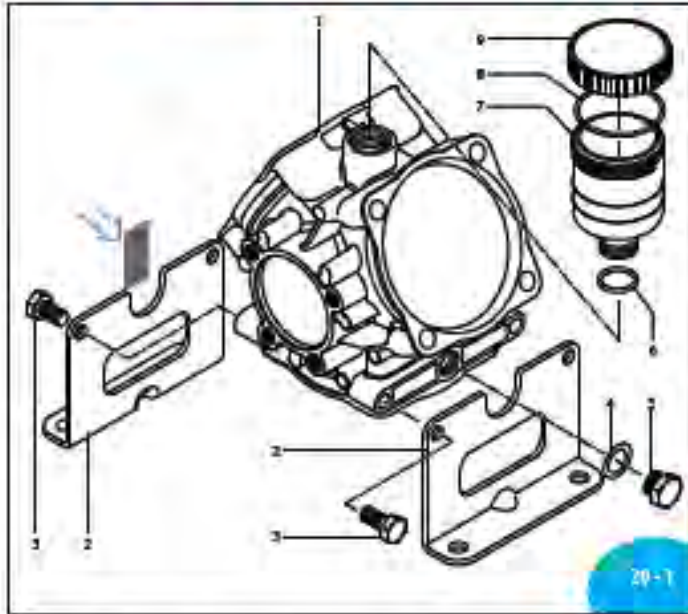
Kit: 500-02-2095 EMag PR30 Flowmeter Kit (1.3 - 26 GPM)

C

Maintenance
& Parts



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	105-100BRBSWP90	1" Flange X 90° Sweep Hose Barb	1
2	105-100G	1" EPDM Manifold Gasket	1
3	105-FC100	1" Manifold Clamp	1
4	400-3826Y1	SS Flowmeter Mounting Bracket	1
5	300-050012-SS	5/16" x 3/4" HCS SS	2
6	323-05-SS	5/16" Flange Nut SS	2
7	280-100-AG200-8L	1" AG200 Hose - 8" L	1
8	350-1608	1" Hose Clamp	2
9	204-01-46211CUF02	Electro Magnetic Flow meter .6 - 13 GPM Non-visual	1
	204-01-46211CUF03	Electro Magnetic Flow meter 1.3 - 26 GPM Non-visual	
10	105-100MPT	1" Flange X 1" Male Thread	1
11	101-100100	1" MPT x 1" HB	1



PR30 Diaphragm Pump Parts

#	Item Number	Item Description	QTY	#	Item Number	Item Description	QTY
1	291-13-3460010	PR30 Pump Housing	1	30	291-02-9910-380300	PR30 & D115 Piston Pin	3
2	291-13-3460100	PR30 Black Metal Mounting Foot	2	31	291-13-3460090	PR30 Piston Connecting Rod Ring	2
3	291-13-160673	PR30 & PR40 Metric Bolt for Mounting Foot to Housing M10 x 25 T265*	4	32	291-13-3460080	PR30 Piston Connecting Rod	3
4	291-02-9910-740290	PR17, PR30, PR40 Pump Oil Drain Plug O-Ring	1	33	291-13-580120	PR30 & D115 Piston	3
5	291-02-2406-0023	PR17, PR30, PR40, D70, D115, & D160 Pump Oil Drain Plug T177*	1	34	291-02-9910-500260	PR30, PR40, D115, D160, & AR&HD250 Piston Ring	3
6	291-13-720030	PR17 & PR30 Sight Glass to Pump O-Ring	1	35	291-13-750110	PR30, D160, & D250 Diaphragm Sleeve	3
7	291-13-3120240	PR17 & PR30 Sight Glass T177*	1	36	291-13-550081	BlueFlex Diaphragm for D70/ 115/ 160/ AR&H250/ PR30/ PR40	3
8	291-02-9910-650920	PR17, PR30, & D115 Sight Glass Cap O-Ring	1	37	291-13-2240101	PR30 & PR40 Hub Pin T265*	3
9	291-13-1040324	PR17 & PR30 Sight Glass Cap	1	38	291-13-580090	PR30 Diaphragm Plate	3
10	291-13-3460030	PR30 Inlet & Outlet Male Manifold	5	39	291-13-2240670	PR17, PR30, & PR40 Hub Pin Nut	3
11	291-13-2680141	PR30 Manifold O-Ring - Inlet and Outlet	24	40	291-13-3460031	PR30 Outlet Male Manifold With Plug Port	1
12	291-13-3460050	PR30 Inlet Manifold - Threaded	1	41 (a)	291-13-1150641	O-Ring - PR30 & PR40 Manifold Plug (new style plug)	1
13	291-13-3460201	PR30 & PR40 Metric Bolt For Male Manifolds M8 x 100 T106*	12	41 (b)	291-13-1140451	PR30 & PR40 Manifold Plug O-Ring (old style plug)	1
14	291-13-390315	Washer - SS for M8	12	42	291-13-346090	PR30 & PR40 Manifold Plug (new style) T88*	1
15	291-13-3460210	PR17 & PR30 Manifold Connecting Fork & PR40 Accumulator Connecting Fork	12	43	291-13-3460060	PR30 Outlet Manifold - Threaded	1
16	291-13-3460040	PR30 Inlet & Outlet Female Manifold	4	44	291-13-880311	PR30 Outlet 1" Ring Nut O-Ring & PR40 Accumulator O-Ring	1
17	291-13-1880460	O-Ring - 29 x 3 Viton	1	45	291-13-651100	Ring Nut 1 1/4"	1
18	291-02-9910-750670	Ring Nut for 1 1/2" Outlet	1	46	291-13-651460	PR30 1" Outlet Elbow	1
19	291-13-50267	Poly Elbow- 1 1/2" Outlet HB	1	64	291-13-3460110	PR17 & PR30 Needle Bearing	1
20	291-13-750072	PR30 & PR40 Metric Bolt For Pump Head M12 x 70 T309*	12	65	291-13-1300230	PR17 & PR30 Non Motor Side Seal Ring	1
21	291-13-390092	PR30 & PR40 SS Washer For M12 x 70 Bolt	12	66	291-13-480900	PR17 & PR30 Non Motor Side Snap Ring	1
22	291-13-3460020	PR30 & PR40 Pump Head	3	69	291-13-3460260	PR30 Pump Shaft	1
26	291-13-3460380	Valve Gasket For PR17, PR30, and PR40	6	70	291-13-961781	PR30 Roller Bearing	1
27	291-13-3120510	Nut for all M8 Bolts	12	71	291-13-3120160	PR17 & PR30 Motor Side Seal Ring	1
28	291-13-2429051	Valve For PR17, PR30, and PR40	6	72	291-13-961790	PR17 & PR30 Motor Side Snap Ring	1
29	291-02-9910-380080	PR30 & D115 Piston Pin Snap Ring	6	82	291-13-2460480	PR30 Pump Shaft Key Way	1

* Torque: in-lbs +/- 10%

291-13-100150 PR30 & PR40 Diaphragm Service Kit

#	Description	QTY	#	Description	QTY
26	Valve Gasket	2	36	Diaphragm	1
28	Valve	2	(pump requires 3 kits)		

291-13-100710 PR30 O-Ring Kit

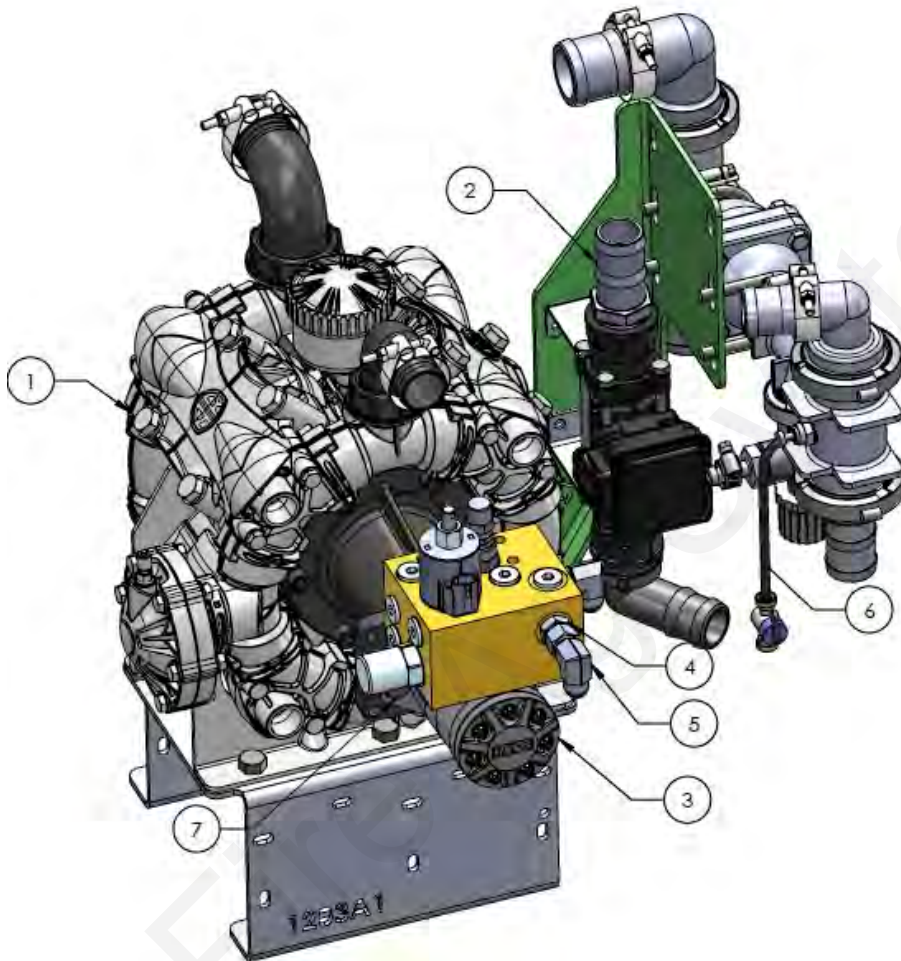
#	Description	QTY	#	Description	QTY
4	Oil Drain Plug O-Ring	1	17	O-Ring 29x3 Viton	1
6	Sight Glass to Pump O-Ring	1	41	Outlet Male Manifold Plug O-Ring	1
8	Sight Glass Cap O-Ring	1	44	Outlet 1" Ring Nut O-Ring	1
11	Manifold O-Ring	24			

Specially-Formulated PumpRight Oil 291-02-2160-		
-0038	1 Quart	PR30 uses 28 oz. of oil
-0047	1 Gallon	
-0048	2 1/2 Gallons	



PR40 Assembly and Part Breakdowns

Complete PR40 Pump Assembly w/ Hydraulic Motor and PWM Valve
Kit: 500-01-6700

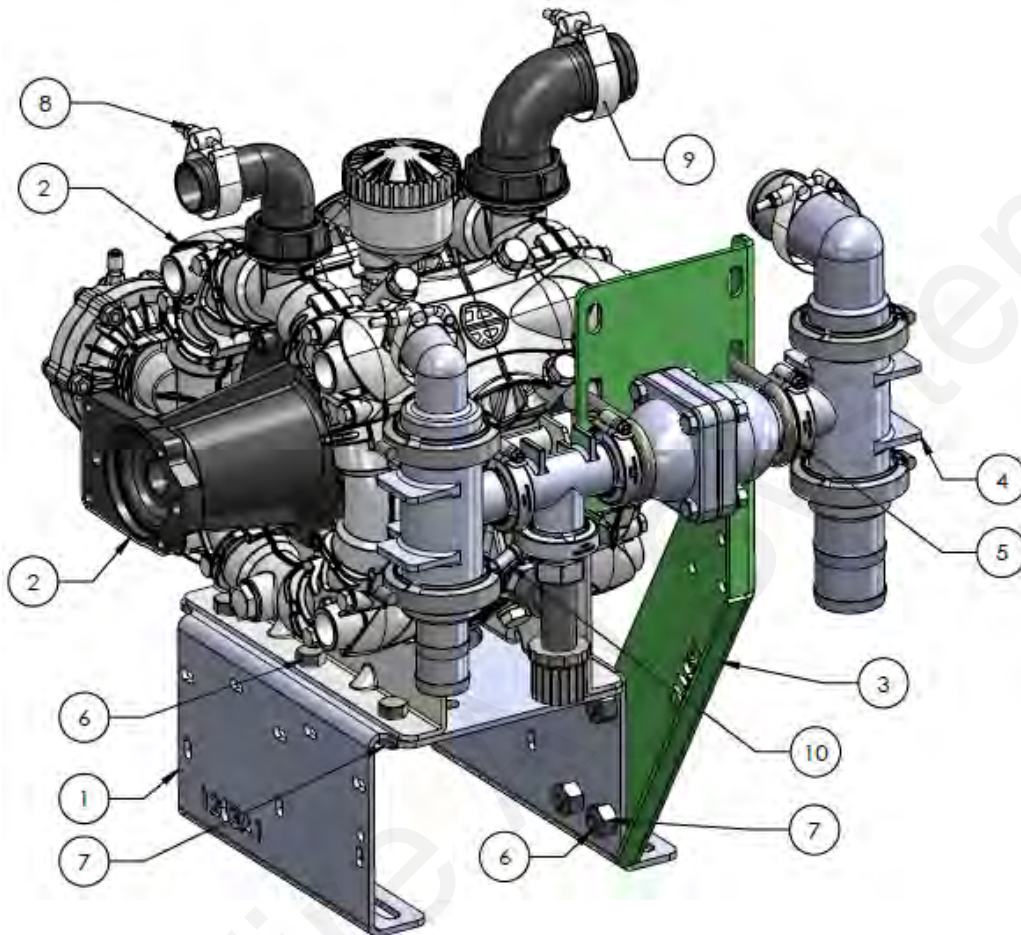


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	500-40-200040	PR40 Pre-Build Assembly (Minus Flowmeter and Hydraulics)	1
2	500-02-2080	Arag Ion Flowmeter Kit (2.6 - 53 GPM) with adapter cable - 1 1/2" HB	1
3	164-FTA1609	4.0 CID Hydraulic Motor with PWM Valve and Bypass Valve, SPEED Sens	1
	164-FTA0994	4.0 CID Hydraulic Motor with PWM Valve and Bypass Valve, CW Rotation	
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	521-00-100250	Pump Priming and Air Bleed Assembly	1
7	300-080200-5	1/2" x 2" G5	2
8	321-08-SS	1/2" Nylock Nut-SS	2

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PR40 Assembly and Part Breakdowns

**PR40 Pump Pre-Build Assembly
(Minus Flowmeter and Hydraulics)
Kit: 500-40-200040**



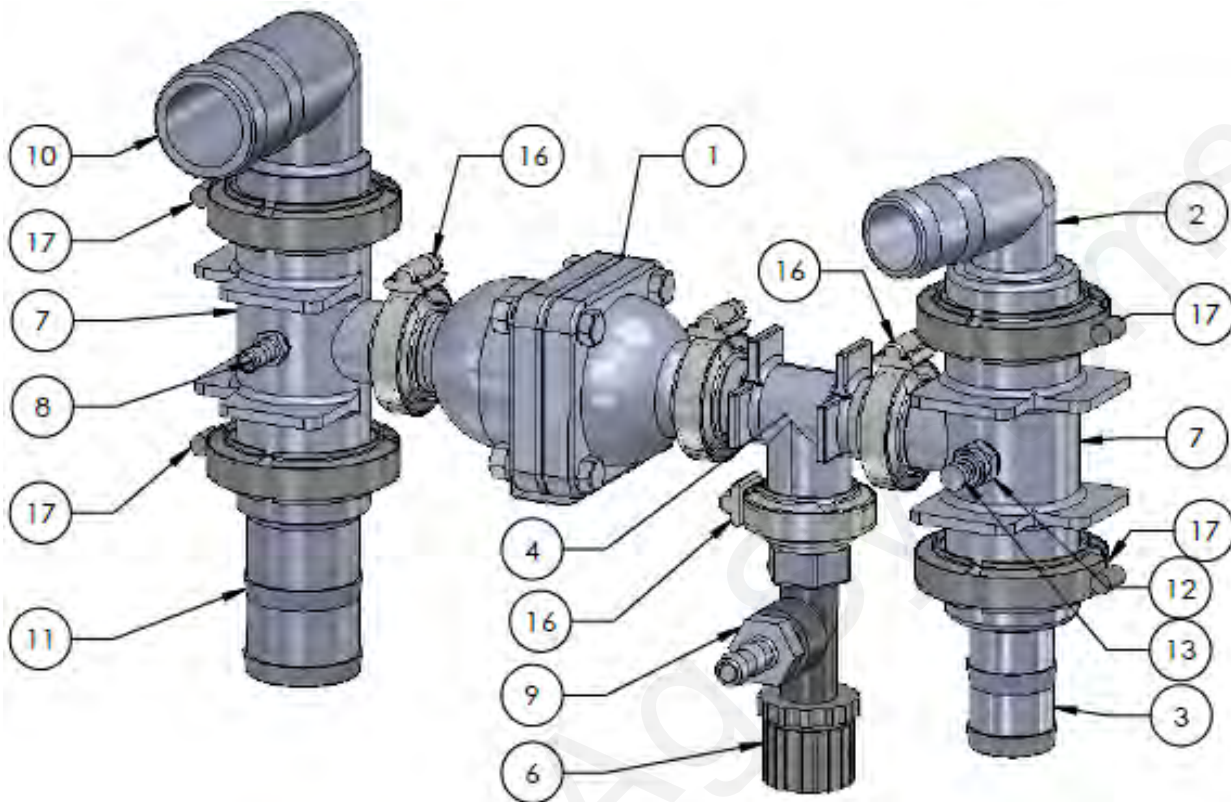
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	400-1203A1	D160 - D250 Diaphragm Pump Bracket	1
2	290-02-PR40	PR40 Poly BlueFlex Diaphragm Pump - 40GPM - 290 PSI	1
3	400-1204A1	D160 - D250 MPRV Support	1
4	520-00-3015	Plumbing Assembly - D160 & D250 Hydraulic Diaphragm Pump	1
5	302-UB101	M100 U-Bolt Assembly - 1 SS Ubolt, 2 SS lock washers, 2 SS nuts	2
6	300-080100-5	1/2" x 1" HCS G5	9
7	323-08	1/2" Flange Nut	9
8	350-TC181	T-Bolt Hose Clamp - 1.81 - 2.06" Diameter (fits 1 1/2" Enforcer or AG200)	2
9	350-TC231	T-Bolt Hose Clamp - 2.31 - 2.62" Diameter (fits 2" Enforcer)	2
10	350-0605	SS Hose Clamp - Size 6 - 7/8" Diameter	2
11	291-02-9910-HYD1570	Hydraulic Flange Kit - D160, D250, PR40 & AR330	1

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PR40 Assembly and Part Breakdowns

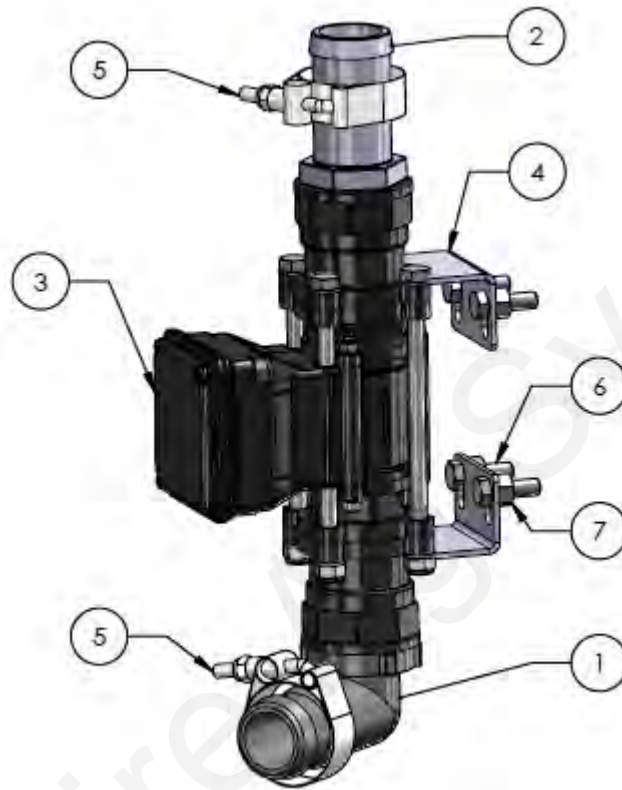
PR40 & D250 Pump Plumbing Assembly
Kit: 520-00-3015



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

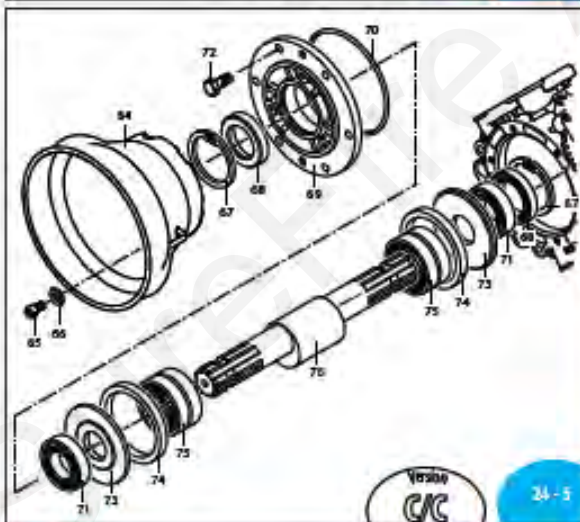
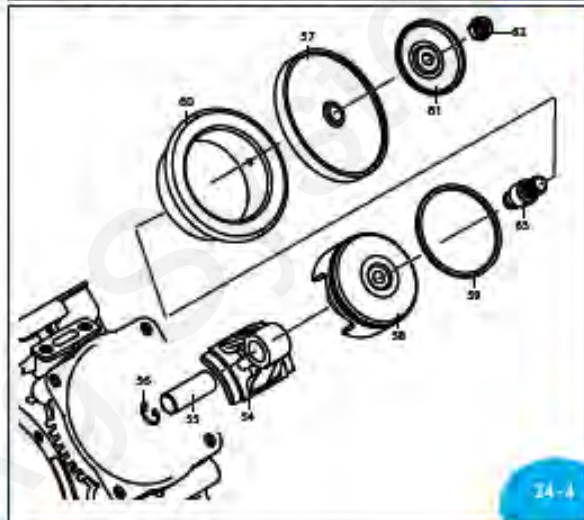
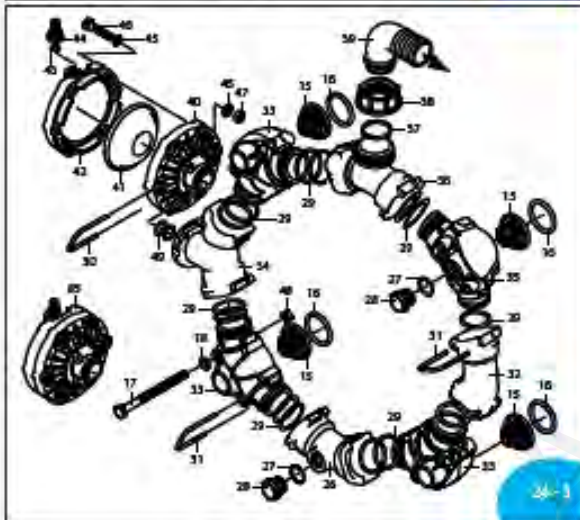
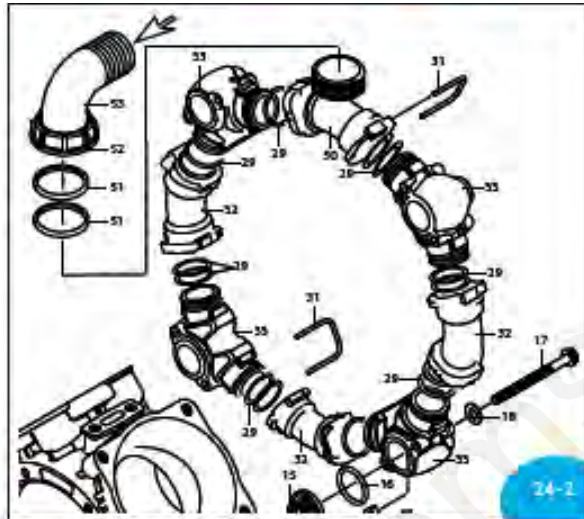
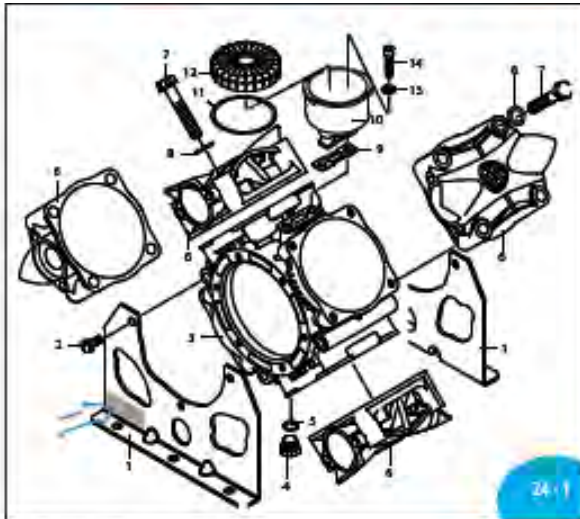
PR40 Assembly and Part Breakdowns

PR40/D250 EMag Flowmeter Kit (2.6-53 GPM)
Kit: 500-02-2080



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	101-125150-90	1-1/4"MPT X 1-1/2"Hse Shnk-90D	1
2	101-125150	1-1/4" MPT x 1-1/2" HB	1
3	204-01-46211CUF04	Electro Magnetic Flow meter 2.6 - 53 GPM Non-visual	1
4	400-3335Y1	SS Flowmeter Mounting Bracket	2
5	350-TC181	T-Bolt Hose Clamp - 1.81 - 2.06" Diameter	2
6	300-050100-SS	5/16" x 1" HCS SS	4
7	323-05-SS	5/16" Flange Nut SS	4
-	280-150-AG200	1 1/2" AG200 Hose - 2 feet	
-	201-17842	Adapter Cable - AMP Superseal to MT Controller	

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291-13-100150 PR30 & PR40 Diaphragm Service Kit

#	Description	QTY
16	Valve Gasket	2
15	Valve	2
57	Diaphragm	1

(pump requires 4 kits)

291-13-100720 PR40 O-Ring Kit

#	Description	QTY	#	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			

PR40 Diaphragm Pump Parts

#	Item Number	Item Description	QTY	#	Item Number	Item Description	QTY
1	291-13-761031	PR40 Black Metal Mounting Foot	2	38	291-02-9910-750670	Ring-nut for 1 1/2" Inlet/Outlet - PR17, PR30, PR40, D160 & D250 Pump	1
2	291-13-160673	PR30 & PR40 Metric Bolt for Mounting Foot to Housing M10 x 25 T354*	6	39	291-13-50267	1-1/2" HB Elbow - PR17 & PR30 Inlet, PR40 & D250 Outlet	1
3	291-13-761010	PR40 Pump Housing	1	40	291-13-3460180	PR40 Accumulator Manifold	1
4	291-02-2406-0023	PR17, PR30, PR40, D70, D115, & D160 Pump Oil Drain Plug T177*	1	41	291-13-800192	PR40 Accumulator Diaphragm	1
5	291-02-9910-740290	PR17, PR30, PR40, D70, D115, & D160 Pump Oil Drain Plug O-Ring	1	42	291-13-3460190	PR40 Accumulator Head	1
6	291-13-3460020	PR30 & PR40 Pump Head	4	43	291-02-9910-650542	PR40, D70, D115, D160, & AR&HD250 Accumulator Head Valve Stem Gasket	1
7	291-13-750072	PR30 & PR40 Metric Bolt For Pump Head M12 x 70 T309*	16	44	291-02-9910-180020	PR40, D160, & AR&HD250 Accumulator Head Valve Stem T22*	1
8	291-13-390092	PR30 & PR40 SS Washer For M12 x 70 Bolt	16	45	291-13-390315	PR17, PR30, & PR40 SS Washer for M8 x 12, M8 x 40, M8 x 55, & M8 x 100	12
9	291-02-9910-750040	Oil Sight Glass Gasket for PR40, D160 & D250	1	46	291-13-621782	PR40 Metric Bolt for Accumulator M8 x 40 T177*	6
10	291-13-751170	PR40 & ARD250 Sight Glass	1	47	291-13-3120260	PR40 Accumulator Hex Nut M8 T177*	6
11	291-13-1980340	PR40 & ARD250 Sight Glass Cap O-Ring	1	48	291-13-3120510	Square Nut for M8 Bolts	16
12	291-13-751183	PR40 & ARD250 Sight Glass Cap	1	49	291-13-880311	PR30 Outlet 1" Ring Nut O-Ring & PR40 Accumulator O-Ring	2
13	291-13-380243	PR40 & D250 SS Washer for M8 x 35 Bolt & D160 & D250 Bolt Off of the Pump Head	2	50	291-13-761210	PR40 Inlet Manifold - Threaded	1
14	291-13-680350	PR40, D160, & D250 Metric Bolt For Sight Glass M8 x 35 T88*	2	51	291-13-3040471	PR40 Inlet 2" Ring Nut O-Ring - Viton	2
15	291-13-2429051	Valve For PR17, PR30, and PR40	8	52	291-13-3040450	PR40 Inlet 2" Ring Nut	1
16	291-13-3460380	Valve Gasket For PR17, PR30, and PR40 - Viton	8	53	291-13-3040440	PR40 2" Inlet Elbow	1
17	291-13-3460201	PR30 & PR40 Metric Bolt For Male Manifolds M8 x 100 T88*	16	54	291-02-9910-760140	PR40 & D160 Piston Connecting Rod	4
18	291-13-390315	PR17, PR30, & PR40 SS Washer for M8 x 12, M8 x 40, M8 x 55, & M8 x 100	16	55	291-13-160700	PR40 Piston Pin	4
26	291-13-761240	PR40 Outlet Female Manifold With Plug Port	1	56	291-02-9910-160691	PR40, D160, & AR&HD250 Piston Pin Snap Ring	8
27(a)	291-13-1150641	O-Ring - PR30 & PR40 Manifold Plug (new style)	2	57	291-13-550081	BlueFlex Diaphragm for D70/ 115/ 160/ AR&H250/ PR30/ PR40 Pump	4
27(b)	291-13-1140451	PR17 Outlet 1" Ring Nut O-Ring and PR30 & PR40 Manifold Plug O-Ring (old style)	2	58	291-02-9910-750122	PR40, D160, & AR&HD250 Piston	4
28	291-13-346090	PR30 & PR40 Manifold Plug (new style plug) T88*	2	59	291-02-9910-500260	PR30, PR40, D115, D160, & AR&HD250 Piston Ring	4
29	291-13-230061	PR40 Manifold O-Ring - Inlet and Outlet - Viton	32	60	291-13-750115	PR40 Diaphragm Sleeve	4
30	291-13-3460210	PR17 & PR30 Manifold Connecting Fork & PR40 Accumulator Connecting Fork	1	61	291-13-751251	PR40 Diaphragm Plate	4
31	291-13-761250	PR40 Manifold Connecting Fork	16	62	291-13-2240670	PR17, PR30, & PR40 Hub Pin Nut T221*	4
32	291-13-761200	PR40 Inlet & Outlet Female Manifold	4	63	291-13-2240101	PR30 & PR40 Hub Pin T265*	4
33	291-13-761190	PR40 Inlet & Outlet Male Manifold	7	64	291-13-1500470	PR40 & ARD250 Shaft Protector	1
34	291-13-761230	PR40 Outlet Female Manifold - Connects to Accumulator	1	65	305-10020	Socket Head Bolt - 10 mm x 20 mm	3
35	291-13-761191	PR40 Outlet Male Manifold With Plug Port	1	66	330-06-SS	3/8" Flat Washer - SS	3
36	291-13-761220	PR40 Outlet Manifold - Threaded	1	67	291-02-9910-200390	PR40, D160, & AR&HD250 Snap Ring	2
37	291-13-1880460	O-Ring - 29 x 3 Viton - PR17, PR30, PR40, D250 Outlet	1	68	291-02-9910-160740	PR40, D160, & AR&HD250 Seal Ring	2
				69	291-13-680020	PR40 & ARD250 Inspection Plate	1
				70	291-02-9910-851360	PR40, D160, & AR&HD250 Seal/Bearing Housing O-Ring	1
				71	291-02-9910-230350	PR40, D160, & HD250 Roller Bearing	1
				72	291-13-160673	PR30 & PR40 Metric Bolt for Mounting Foot to Housing M10 x 25 T309*	6
				73	291-02-9910-540040	PR40, D160, & AR&HD250 Shaft Spacer Plate	2
				74	291-02-9910-750130	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

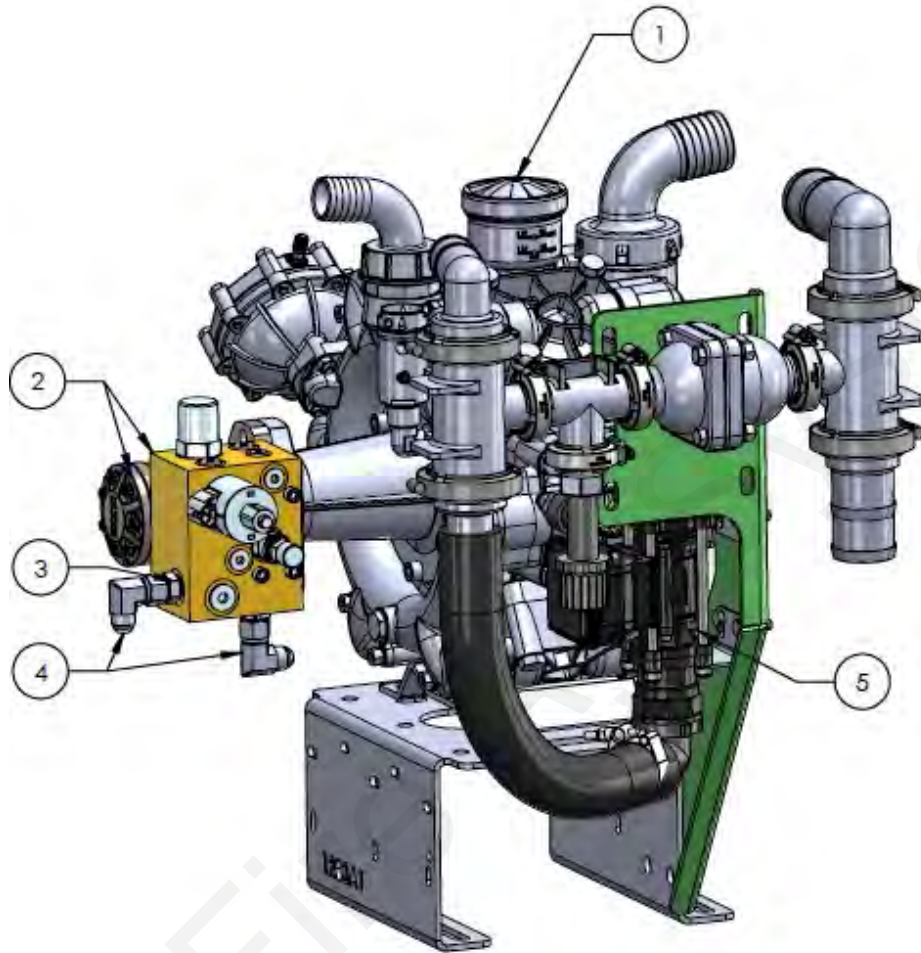
Specially-Formulated PumpRight Oil 291-02-2160-		
-0038	1 Quart	PR40 uses 56 oz. of oil
-0047	1 Gallon	

* Torque: in-lbs +/- 10%



AR D250 Assembly and Part Breakdowns

Complete D250 Pump Assembly w/ Hydraulic Motor and PWM Valve
Kit: 500-01-2700



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	500-40-100250	D250 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	500-02-2080	Arag Ion Flowmeter Kit (2.6 - 53 GPM) with adapter cable - 1 1/2" HB	1
6	280-150-AG200	1 1/2" AG200 Hose	1

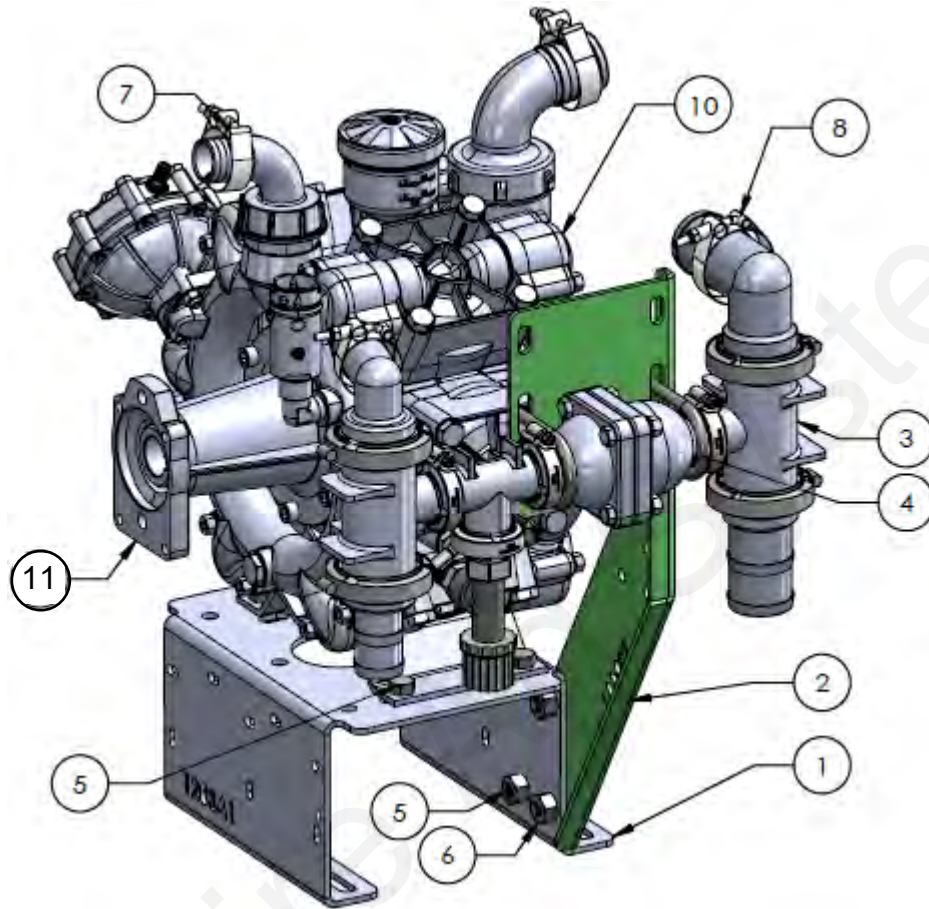
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AR D250 Assembly and Part Breakdowns

**D250 Pump Pre-Build Assembly
(Minus Flowmeter and Hydraulics)
Kit: 500-40-100250**



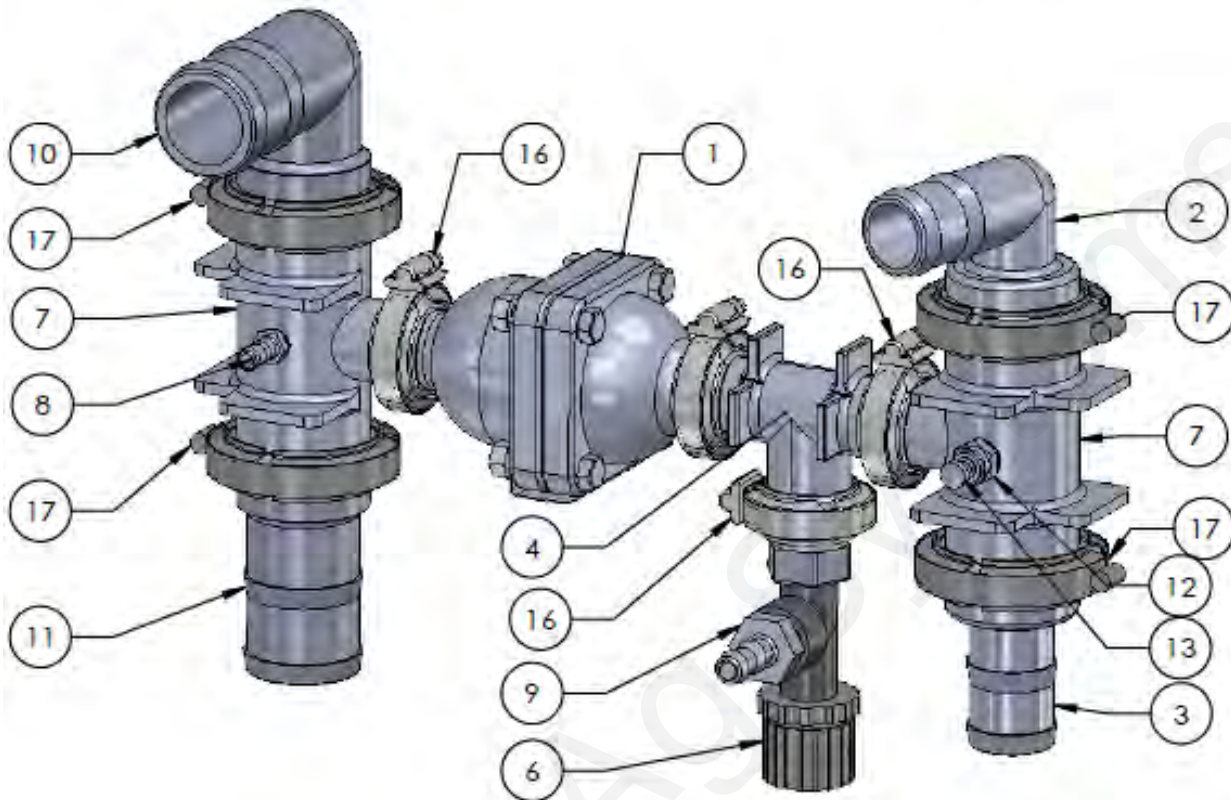
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	400-1203A1	D160 - D250 Diaphragm Pump Bracket	1
2	400-1204A1	D160 - D250 MPRV Support	1
3	520-00-3015	Plumbing Assembly - D160 & D250 Hydraulic Diaphragm Pump	1
4	302-UB101	M100 U-Bolt Assembly - 1 SS Ubolt, 2 SS lock washers, 2 SS nuts	2
5	300-080100-5	1/2" x 1" HCS G5	7
6	323-08	1/2" Flange Nut	7
7	350-TC181	T-Bolt Hose Clamp - 1.81 - 2.06" Diameter (fits 1 1/2" Enforcer or AG200)	2
8	350-TC231	T-Bolt Hose Clamp - 2.31 - 2.62" Diameter (fits 2" Enforcer)	2
9	350-0605	SS Hose Clamp - Size 6 - 7/8" Diameter	2
10	290-02-9910-D250	D250-6 Chamber Diaphragm Pump 55 GPM-Pump Only	1
11	291-02-9910-HYD1570	Hydraulic Flange Kit - D160, D250, PR40 & AR330	1

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D250 Assembly and Part Breakdowns

D250 & PR40 Pump Plumbing Assembly
Kit: 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

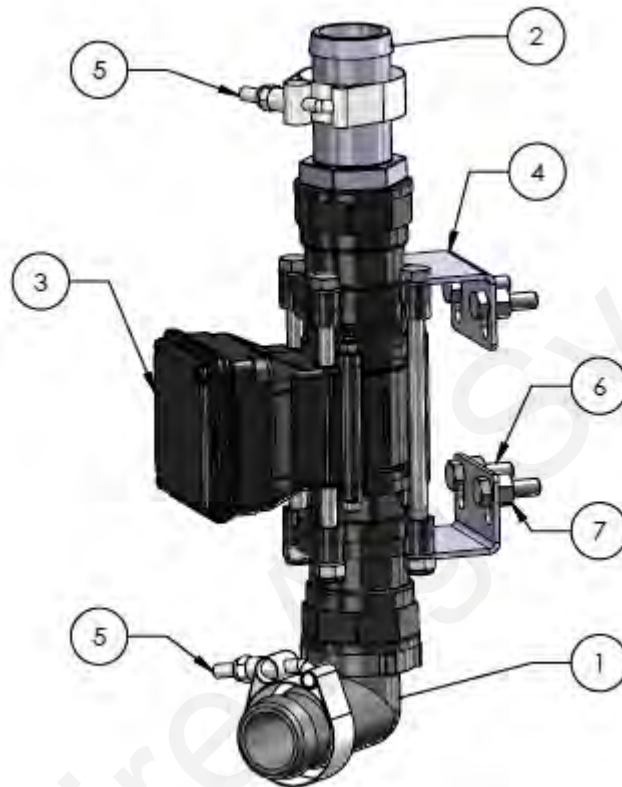
D250 Assembly and Part Breakdowns

D250/PR40 EMag Flowmeter Kit (2.6-53 GPM)

Kit: 500-02-2080

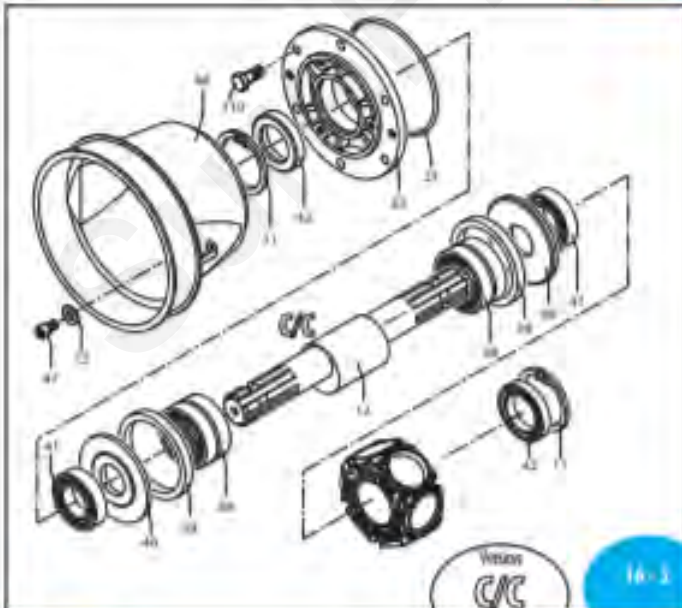
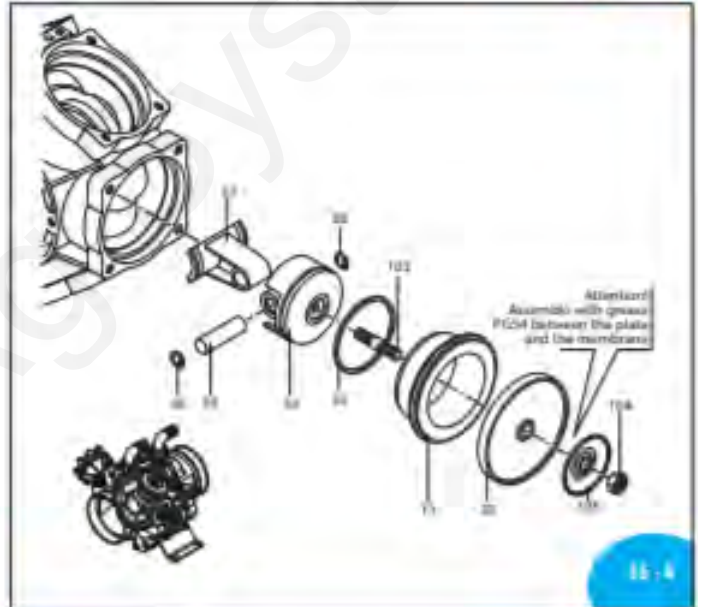
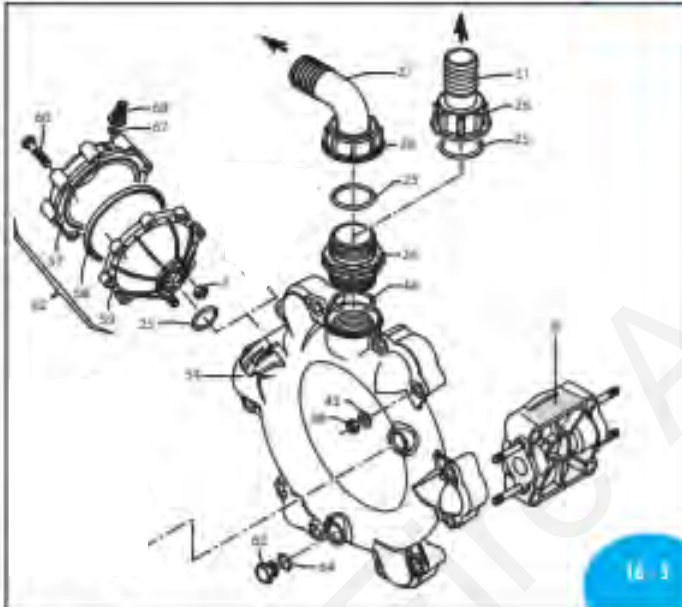
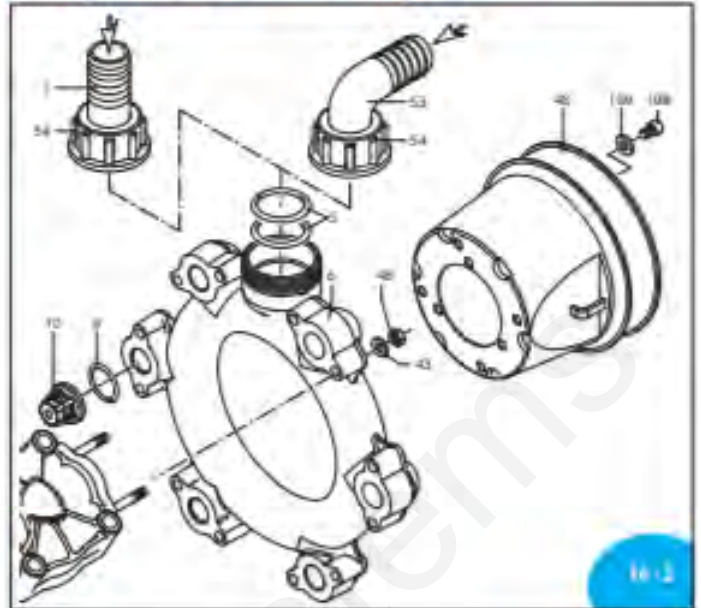
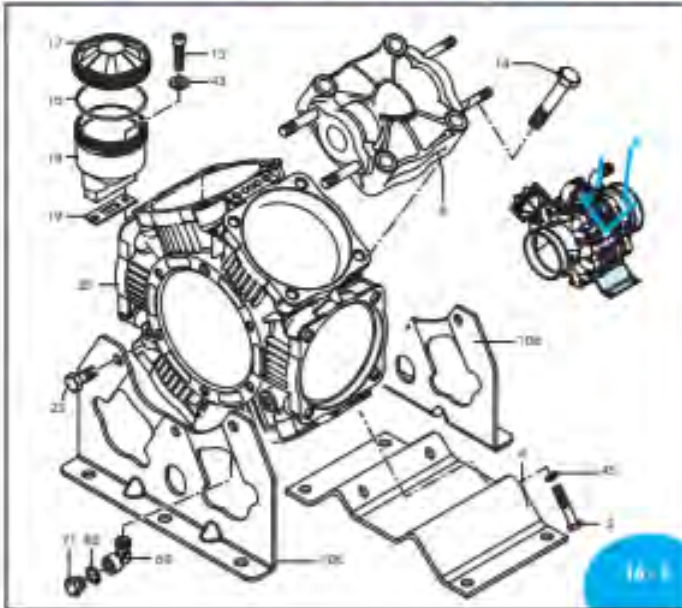
C

Maintenance
& Parts



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	101-125150-90	1-1/4"MPT X 1-1/2"Hse Shnk-90D	1
2	101-125150	1-1/4" MPT x 1-1/2" HB	1
3	204-01-46211CUF04	Electro Magnetic Flow meter 2.6 - 53 GPM Non-visual	1
4	400-3335Y1	SS Flowmeter Mounting Bracket	2
5	350-TC181	T-Bolt Hose Clamp - 1.81 - 2.06" Diameter	2
6	300-050100-SS	5/16" x 1" HCS SS	4
7	323-05-SS	5/16" Flange Nut SS	4
-	280-150-AG200	1 1/2" AG200 Hose - 2 feet	
-	201-17842	Adapter Cable - AMP Superseal to MT Controller	

D250



AR-D250 Diaphragm Pump Parts

#	Item Number	Item Description	QTY
5	291-02-9910-750740	PR40 & AR&HD250 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	291-02-9910-759051	Pump Valve for D70, D115, D160, & AR&HD250	12
11	291-02-9910-200390	PR40, D160, & AR&HD250 Snap Ring	2
12	291-13-750170	D160 & AR&HD250 Pump Shaft	1
13	291-13-750110	PR30, D160, & D250 Diaphragm Sleeve	6
14	291-02-9910-750061	D160 & AR&HD250 Metric Bolt For Pump Head M12 x 65 T445*	24
15	291-13-680350	PR40, D160, & D250 Metric Bolt For Sight Glass M8 x 35 T90*	2
16	291-13-1980340	PR40 & ARD250 Sight Glass Cap O-Ring	1
17	291-13-751183	PR40 & ARD250 Sight Glass Cap	1
18	291-13-751170	Oil Sight Glass PR40 & ARD250	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, & AR&HD250 Seal/Bearing Housing O-Ring	1
22	291-13-680020	PR40 & ARD250 Inspection Plate	1
23	291-13-160673	PR30 PR40, & ARD250 Metric Bolt for Mounting Foot to Housing and other things M10 x 25	6
24	291-02-9910-751130	AR&HD250 Outlet 1 1/2" Threaded Adapter T90*	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, & AR&HD250, PR30, PR40	6
32	291-02-9910-500260	PR30, PR40, D115, D160, & AR&HD250 Piston Ring	6
33	291-02-9910-750122	PR40, D160, & AR&HD250 Piston	6
34	291-02-9910-751080	AR&HD250 Outlet Manifold	1
35	291-13-160700	PR40 & ARD250 Piston Pin	6
36	291-02-9910-160691	PR40, D160, & AR&HD250 Piston Pin Snap Ring	12
37	291-02-9910-750140	AR&HD250 Piston Connecting Rod	6
38	291-02-9910-750090	PR40, D160, & AR&HD250 Needle Bearing	2
39	291-02-9910-750130	PR40, D160, & AR&HD250 Shaft Ring	2
40	291-02-9910-540040	PR40, D160, & AR&HD250 Shaft Spacer Plate	2
41	291-13-751280	ARD250 Roller Bearing	2
42	291-02-9910-160740	PR40, D160, & AR&HD250 Seal Ring	2
43	291-16-380243	PR40 & D250 SS Washer for M8 x 35 Bolt and D160 & D250 Bolt off of the Pump Head	26
44	291-02-9910-751140	AR&HD250 Threaded Adapter to Outlet Manifold O-Ring	1

#	Item Number	Item Description	QTY
46	291-13-3120260	PR40 & AR&HD250 Hex Nut M8	24
48	291-13-1500470	PR40 & ARD250 Red Shaft Protector	1
53	291-02-9910-750850	Inlet Elbow for D250 - 2"	1
54	291-02-9910-750710	AR&HD250 2" Inlet Ring Nut	1
57	291-13-620232	D160 & AR&HD250 Accumulator Head	1
58	291-13-550194	D70, D115, D160 & AR&HD250 Accumulator Diaphragm	1
59	291-13-680180	D160 & AR&HD250 Accumulator Manifold	1
60	291-13-621782	PR40, D160, & AR&HD250 Metric Bolt for Accumulator M8 x 40 T220*	8
64	291-02-9910-180101	D160 & AR&HD250 Outlet Manifold Plug O-Ring & D70 Sight Glass to Pump O-Ring	1
65	291-02-9910-330173	D160 & AR&HD250 Outlet Manifold Plug & D70 Accumulator Manifold Plug & D115 DX Rt. valv. ret. plug	1
67	291-02-9910-650542	PR40, D70, D115, D160, & AR&HD250 Accumulator Head Valve Stem Gasket	1
68	291-02-9910-180020	PR40, D160, & AR&HD250 Accumulator Head Valve Stem T25*	1
69	291-13-750370	AR&HD250 Oil Drain Elbow Fitting	1
71	291-13-880581	AR&HD250 Oil Drain Plug	1
83	291-13-880820	AR&HD 250 Oil Drain Plug Washer	1
103	291-02-2240100	D250 Hub Pin T265*	6
104	291-02-2240110	ARD250 Hub Pin Nut T220*	6
105	291-13-751250	ARD250 Diaphragm Plate	6
106	291-13-751291	ARD250 Black Metal Mounting Foot	2
108	305-10020	Socket Head Bolt—10 mm x 20 mm T90*	3
109	330-06-SS	3/8" Flat Washer - SS	3
110	291-13-160673	PR30, PR40, & ARD250 Metric Bolt for Mounting Foot to Housing and other things M10 x 25 T310*	6

* Torque: in-lbs +/- 10%

291-13-100200 D250 Diaphragm Service Kit

#	Description	QTY	#	Description	QTY
9	Valve Gasket	2	30	Diaphragm	1
10	Valve	2	(pump requires 6 kits)		

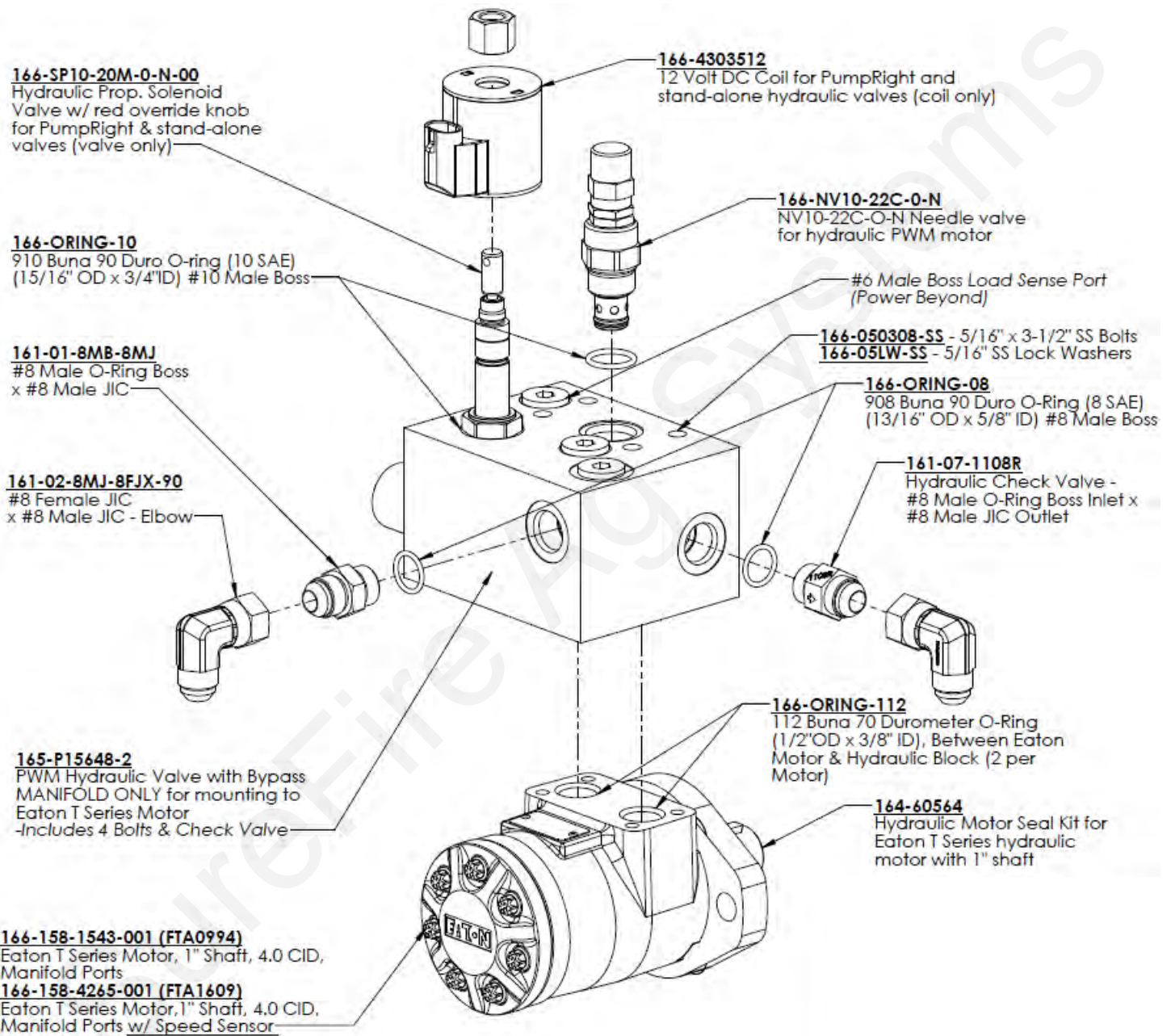
291-02-9910-KIT1904 D250 O-Ring Kit



PWM Valve and Motor Parts



- 164-FTA0994 4.0 CID motor (this is the standard motor beginning in 2016)
- 164-FTA1609 Same as 164-FTA0994, but with RPM Speed Sensor



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