Medium Pressure Diaphragm Pumps

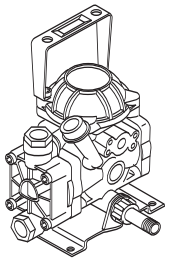
Form L-1382
09/10

Installation, Operation, Repair, and Parts Manual

Description

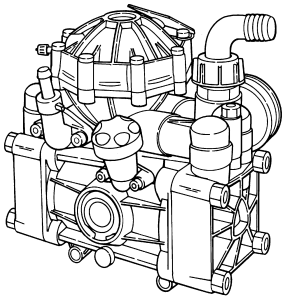
Hypro medium pressure diaphragm pumps are recommended for spraying herbicides, pesticides, liquid fertilizers, and many other hard-to-handle fluids. Low-cost maintenance and almost wear-free operation make these pumps ideal for a wide variety of spraying jobs. Pressure and output are designed for optimum performance of small to medium-sized sprayers.

Hypro medium pressure diaphragm pumps can be adapted for male 1-3/8" splined shaft, female 1-3/8" splined shaft, 1" solid shaft, or gear reduction drive options. See kits on page 2. Pumps include a pulsation dampener except for Models 9910-D303, D403, and D503.



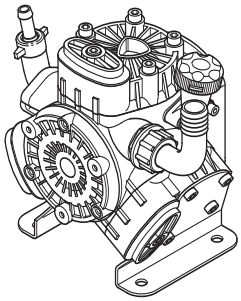
Model 9910-D252
Model 9910-D252GRGI
Model 9910-D252GRGI58
Model 9910-D252GRGIAP

Max flow: 6 gpm
Max pressure: 290 psi
Max speed: 650 rpm (D252)
3600 rpm (D252GRGI)
2 diaphragms



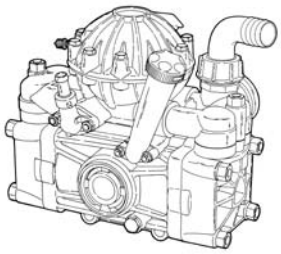
Model 9910-D30
Model 9910-D30AP-A
Model 9910-D30GRGI
Model 9910-D30-B-GRGI

Max flow: 9 gpm
Max pressure: 580 psi
Max speed: 550 rpm (D30)
3600 rpm (D30GRGI)
2 diaphragms



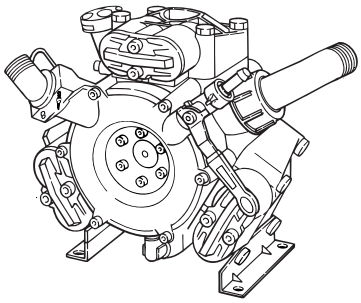
Model 9910-D303
Model 9910-D303GRGI
Model 9910-D403
Model 9910-D403GRGI

Max flow: 7.9 gpm (D303)
10.6 gpm (D403)
Max pressure: 580 psi
Max speed: 550 rpm (D303 & D403)
3600 rpm (D303GRGI & D403GRGI)
3 diaphragms



Model 9910-D50
Model 9910-D50AP-A
Model 9910-D50-B

Max flow: 14 gpm
Max pressure: 580 psi
Max speed: 550 rpm
2 diaphragms



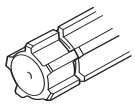
Model 9910-D503
Model 9910-D503GRGI

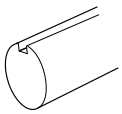
Max flow: 15 gpm
Max pressure: 580 psi
Max speed: 550 rpm (D503)
3600 rpm (D503GRGI)
3 diaphragms

See page 2 for drive options and control units.

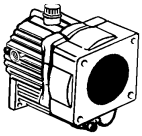
Drive Options:

Order the appropriate shaft adapter kit or gear reduction unit for the drive option requirements. Refer to the adjoining chart for proper selection. For proper installation, refer to pages 4 through 8.











Pump Model	1-3/8" Male Splined PTO Shaft	1" Solid Shaft W/Keyway	1-3/8" Female Splined PTO Coupler	Gear Reduction Units for Gas Engine Drive	Hydraulic Motor Mounting Flange Kit
9910-D503	9910-KIT2200	9910-KIT2202	9910-KIT2204	9910-KIT1642 for 8 hp, or 9910-KIT 1640 for 5 hp	9910-HYD5312
9910-D252	N/A	3/4" Solid Shaft. Std.	N/A	Order gear reduced models	N/A
9910-D303/403	9910-KIT2200	9910-KIT2202	9910-KIT1704	9910-KIT1640 for 5 hp	9910-HYD5312
9910-D30	9910-KIT1702	9910-KIT1703	9910-KIT1704	9910-KIT1640 for 5 hp	9910-HYD5312
9910-D50	9910-KIT1706	9910-KIT1707	9910-KIT1704	9910-KIT1642 for 8 hp, or 9910-KIT 1640 for 5 hp	9910-HYD5312

Control Units:

Control units are available for easy flow and pressure control of your sprayer system. These units include a manual dump valve and adjustable pressure relief valve to control pressure, a liquid-filled pressure gauge to monitor pressure, and shut-off valves to control flow. Control unit GR40 and GS40GI can be remote mounted with kit no. 9910-KIT1741. Refer to the adjoining chart to select the proper control unit for your pump.

Control Unit Model	Max. GPM	Max. PSI	Pump Model
9910-KIT 1990	6	290	D252
9910-GR40	11	580	D303/D403
9910-GS40GI	21	580	D50 & D30
9910-RM40	24	580	D503

General Safety Information

NOTE

Notes are used to notify of installation, operation, or maintenance information that is important but not safety related.

⚠ CAUTION

Caution is used to indicate the presence of a hazard, which will or can cause minor injury or property damage if the notice is ignored.

⚠ WARNING

Warning denotes that a potential hazard exists and indicates procedures that must be followed exactly to either eliminate or reduce the hazard, and to avoid serious personal injury, or prevent future safety problems with the product.

⚠ DANGER

Danger is used to indicate the presence of a hazard that will result in severe personal injury, death, or property damage if the notice is ignored.

⚠ DANGER

- **Do not pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Do not use in explosive atmospheres. Do not pump asphalt sealer, roofing compounds, concrete sealers, or any two-step curing products. The pump should only be used with liquids compatible with the pump materials. Failure to follow this notice can result in severe personal injury and/or property damage and will void the product warranty.**

- **Never use your hand to check the condition of hydraulic lines or hoses. If hydraulic fluid penetrates the skin, get medical attention immediately. Failure to get proper medical attention may result in loss of limb or life. The safest way to check hydraulic lines is by holding a piece of cardboard next to the hydraulic line or hose.**

⚠ WARNING

- **The sound pressure level of the pump may exceed 80dBA. Observe all safety precautions when operating the pump within close proximity for extended periods by wearing hearing protectors. Extended exposure to elevated sound levels will result in permanent loss of hearing acuteness, tinnitus, tiredness, stress, and other effects such as loss of balance and awareness.**

- **Verify that pump shaft rotates freely prior to engaging the pump drive.**

⚠ CAUTION

- **Do not pump at pressures higher than the maximum recommended pressure.**
- **Operate the pump between a temperature range of 45° to 140° F [7° to 60° C].**
- **Make certain that the power source conforms to the requirements of your equipment.**
- **Provide adequate protection in guarding around the moving parts such as shafts and pulleys.**
- **Disconnect the power before servicing.**
- **Release all pressure within the system before servicing any component.**
- **Drain all liquids from the system before servicing.**
- **Secure the discharge line before starting the pump. An unsecured discharge line may whip, resulting in personal injury and/or property damage.**
- **Check all hoses for weak or worn condition before each use. Make certain that all connections are tight and secure.**
- **Periodically inspect the pump and the system components. Perform routine maintenance as required (see maintenance).**
- **When wiring an electrically driven pump, follow all electrical and safety codes, as well as the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA) requirements.**
- **Use only pipe, hose, and hose fittings rated for maximum rated pressure of the pump or the pressure at which the pressure relief valve is set at. Do not use used pipe.**
- **Do not use these pumps for pumping water or other liquids for human or animal consumption.**
- **Do not pressure feed pump inlet.**

Hazardous Substance Alert

⚠ CAUTION

- **Always drain and flush pump before servicing or disassembling for any reason (see instructions).**
- **Always drain and flush pumps prior to returning unit for repair.**
- **Never store pumps containing hazardous chemicals.**
- **Before returning pump for service/repair, drain out all liquids and flush unit with neutralizing liquid. Then, drain the pump. Attach tag or include written notice certifying that this has been done. Please note that it is illegal to ship or transport any hazardous chemicals without United States Environmental Protection Agency Licensing.**

Maintenance Schedule

REGULAR SERVICE PERIOD Performed at every indicated month or operating hour interval, whichever comes first. Item		First Use	Each Use	First month or 40 hours	Every 3 months or 500 hours	Every 6 months or 1000 hours
Crankcase Oil	Check Level	X	X			
	Replace			X	X	
Gearbox Oil	Check Level	X	X			
	Replace			X	X	
Pulsation Dampener Pressure (in models with dampeners)	Set to 20% of working PSI	X				
	Check			X	X	
Diaphragms	Replace				X	
Valves	Check				X	
	Replace					X
O-rings	Check				X	
	Replace					X

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Pump Plumbing

NOTE

Use only pipe, fittings, accessories, hose, etc. rated for the maximum pressure rating of the pump.

1. Always mount pump with oil sight tube in upright position (See Figure 1).

2. The proper selection of hose type and size is vital to optimal performance.

   a. Use good quality inlet hose, compatible with the fluids being pumped and with good elasticity to reduce inlet water hammer or pulsation. Be sure that hose is not too rigid but capable of operating at low vacuums without collapsing. The diameter of the inlet hose should be at least that of the pump inlet port size and preferably one size larger if the inlet line is longer than 6 feet [1.8 meters].

   b. Use only approved high pressure hose on the discharge side of pump.

3. Most ports are provided with hose barb connections. Use good quality hose clamps and tighten them securely.

Diaphragm Pump Connection

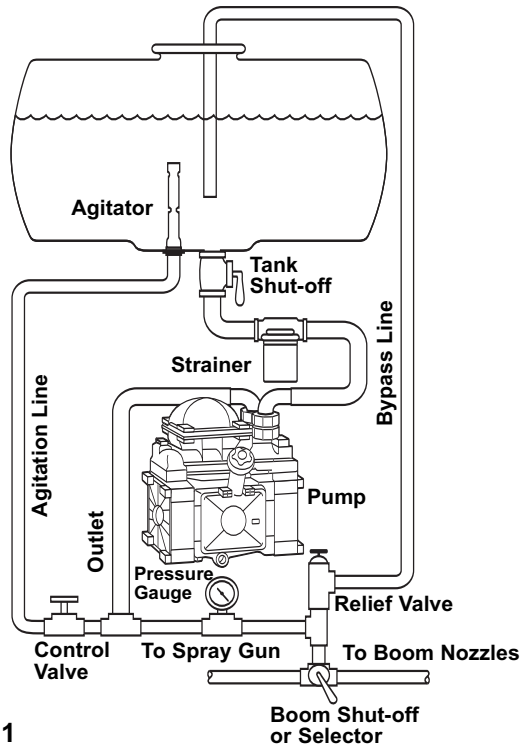


Figure 1

Shaft Adapter Kit Installation

Order the appropriate shaft kit according to the chart on Page 2.

Female Splined Coupler Kits 9910-KIT1704 and 9910-KIT2204 (See Figure 2).

1. Slide the splined shaft adapter (Ref. 57) onto the pump shaft and secure with three hex head bolts (Ref. 60) and three washers (Ref. 61).

2. Position the torque arm bracket over the pump shaft.

3. Align the holes in the torque arm bracket with the two lower holes of the pump; then, secure it to the pump with the two bolts (Ref. 62) and washers (Ref. 61).

4. Position the clamp (Ref. 56) over the groove in the splined shaft adapter; then, install the bolt (Ref. 71) into the clamp.

5. Slide the pump assembly onto PTO shaft and secure it with the bolt (Ref. 71).

6. Position the shield (Ref. 105) over the shaft adapter, lining up the holes with the remaining two holes in the torque bracket. Secure with 2 bolts (Ref. 62) & washers (Ref. 61).

7. Attach chains (Ref. 11) to the bracket and secure to the tractor to prevent rotation of the pump during operation.

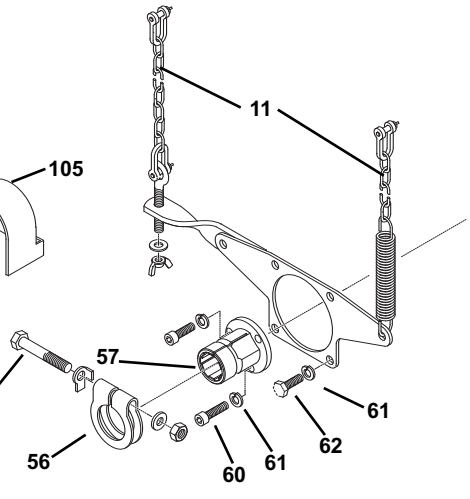


Figure 2

Solid Shaft Kits 9910-KIT1703, 9910-KIT1707, 9910-KIT2202 (See Figures 3 and 4)

Male Splined Shaft Kits 9910-KIT1702, 9910-KIT1706, 9910-KIT2200 (See Figures 3 and 4)

1. Install bases (Ref. 1) onto the pump securing with 2 bolts (Ref. 2), 2 washers (Ref. 4), and 2 nuts (Ref. 3).

NOTE

Models D303 and D403 are shipped with bases. Mount the shaft adapter as shown in Figure 4.

2. Mount shaft adapter (Ref. 5A for KIT1703 & KIT1707, or Ref. 5B for KIT1702 & KIT1706) onto the pump shaft and secure with 3 bolts (Ref. 6) and 3 washers (Ref. 7).

3. Mount pump/base assembly securely to prevent movement.

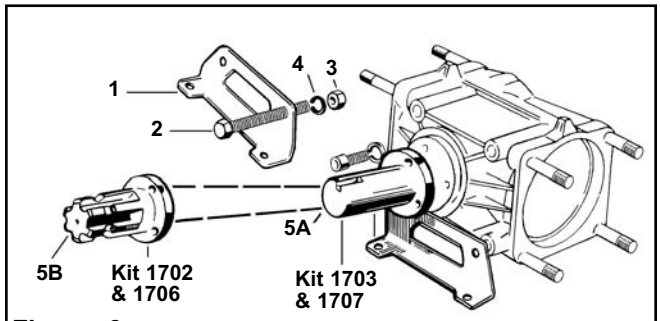


Figure 3

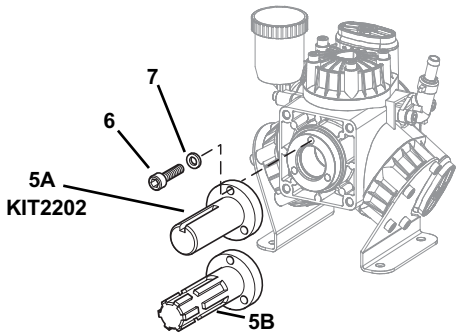


Figure 4

Installation Instructions for Gear Reduction Kit 9910-KIT1640

See Figure 5

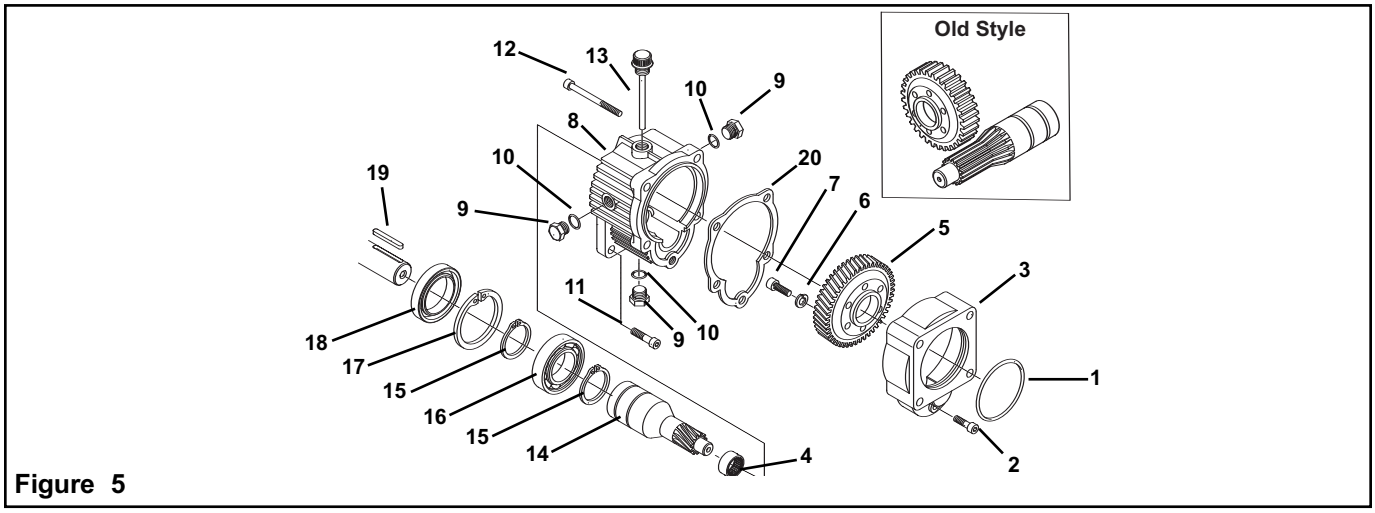


Figure 5

NOTE

Hypro recommends a blue thread locking compound on all threaded fasteners that do not require lock washers. Shaft key needs to be inspected occasionally and replaced if worn.

The 9910-KIT1640 gear reducer is designed for direct mounting the 9910-D30, D303, D403, D50, and D503 diaphragm pump onto a 5 hp gasoline engine with a flange mounting and 3/4" solid shaft.

1. Lubricate the o-ring (Ref. 1) in the pump adapter flange (Ref. 3). Slip the flange over the machined surface of the casting, shaft end of pump.

2. Install the pump gear (Ref. 5) with the pilot diameter of the gear inserted into the inner diameter of the pump shaft. Secure firmly onto the shaft using M10 x 25 socket head cap screws (Ref. 7) and lock washers (Ref. 6).

3. Align the holes in the pump adapter flange (Ref. 3) with threaded holes in the pump body. Lubricate the gasket (Ref. 20) and place it in position on the gearbox body (Ref. 8). Install the gearbox body (Ref. 8) on the pump adapter flange (Ref. 3) and secure firmly with M10 x 75 socket head cap screws (Ref. 12). Install the M8 x 20 socket head cap screw (Ref. 2) and securely tighten.

4. Insert the long key (Ref. 19) into the engine shaft keyway. Align the keyway in the gear reducer Input shaft (Ref. 14) and slide the pump and gear reducer onto the engine shaft.

5. Align the holes in the gearbox body (Ref. 8) with threaded holes in engine boss. Insert 5/16"x1"-24 socket head cap screws through the gearbox body (Ref. 8) and thread them into the threaded holes in the engine boss. Securely tighten with the hex wrench provided.

6. The vent plug (Ref. 13) must always be installed or reinstalled in the uppermost threaded hole of the gearbox body (Ref. 8). Plugs (Ref. 9) and vent plug (Ref. 13) are interchangeable for gear reducer mounting convenience.

7. Fill the gear case with 90W gear lube. To properly fill, first tighten the bottom plug (Ref. 9); then remove one side plug (Ref. 9) and the vent plug (Ref. 13). Fill until the gear lube is no higher than the mark on the dipstick.

8. Replace and tighten the side plug and the vent plug.

9. **Please apply anti-seize to the motor shaft prior to installing the gearbox.**

Installation Instructions for Gear Reduction Kit 9910-KIT1642

See Figure 6

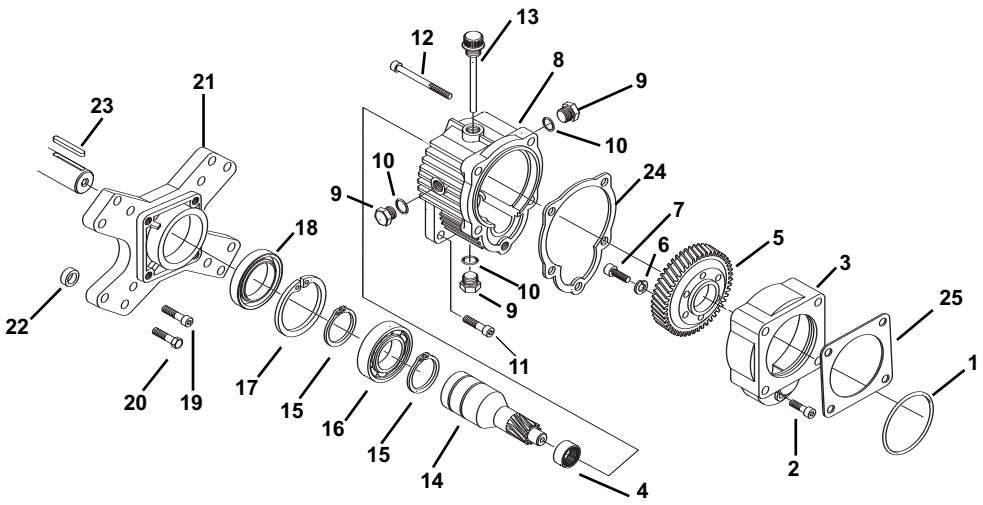


Figure 6

NOTE

Hypro recommends a blue thread locking compound on all threaded fasteners that do not require lock washers. Shaft keys need to be inspected occasionally and replaced if worn.

NOTE

Hypro recommends support for all pumps in excess of 25 lbs [11.3 kg] in weight.

The 9910-KIT1642 gear reducer was designed for direct mounting the 9910-D50 and D503 onto 8 hp gas engines with flange mount and 1" solid shafts.

1. On the 9910-D50, the square metal plate (Ref. 34) must be removed from the shaft side of the pump. Lubricate the o-ring (Ref. 1) in the pump adapter flange (Ref. 3). Slip the flange with gasket (Ref. 25) over machined surface of casting of 9910-D503 or the brass spacer ring installed on the shaft of the 9910-D50.

2. Install the pump gear (Ref. 5) with the pilot diameter of the gear inserted into the inner diameter of the pump shaft. Secure firmly onto the shaft using M10 x 25 socket head cap screws (Ref. 7) and lock washers (Ref. 6).

3. Align the holes in the pump adapter flange (Ref. 3) with the threaded holes in the pump body. Lubricate the gasket (Ref. 24) and place in position on the gearbox body (Ref. 8). Install the gearbox body (Ref. 8) on the pump adapter flange (Ref. 3) and secure firmly with M10 x 75 socket head cap screws (Ref. 12). Install the M8 x 20 socket head cap screw (Ref. 2) and securely tighten.

4. Install the engine flange adapter (Ref. 21) raised side out to the engine boss, using 5/16"x1"- 24 socket head cap screws (Ref. 19).

5. Insert the long key (Ref. 23) into the engine shaft keyway. Align the keyway in gear reducer input shaft (Ref. 14) and slide the pump and gear reducer onto the engine shaft.

6. Align the holes in gearbox body (Ref. 8) with the threaded holes in the engine flange adapter (Ref. 21). Insert M8 x 25 socket head cap screws (Ref. 11) through the gearbox body (Ref. 8) and thread them into the engine flange adapter (Ref. 21). Securely tighten with hex wrench provided.

7. The vent plug (Ref. 13) must always be installed or reinstalled in the uppermost threaded hole of gear

box body (Ref. 8). The plugs (Ref. 9) and vent plug (Ref. 13) are all interchangeable for gear reducer mounting convenience.

8. Fill the gear case with 90W gear lube. To properly fill, first tighten bottom plug (Ref. 9); then remove one side plug (Ref. 9) and vent plug (Ref. 13). Fill until the gear lube is no higher than the mark on the dipstick.

9. Replace and tighten the side plug and the vent plug.

10. **Please apply anti-seize to the motor shaft prior to installing the gearbox.**

Control Unit Kit Installation

Control Unit 9910-KIT1990

The Model 9910-KIT1990 control unit is designed for control of pressures to 290 psi and flows up to 6 gpm. It mounts directly to a D252 pump.

NOTE

Hypro recommends a blue thread locking compound on all threaded fasteners that do not require lock washers.

1. Locate the discharge flange port on the discharge manifold. Using a 13 mm wrench, remove the bolts holding the flange to the manifold.

2. Remove the o-ring from the groove of the flange and install it into the control unit flange.

3. Install the control unit onto the manifold where the discharge port had been previously. Use the bolts provided with the control to secure the control unit.

4. Install the hose barb outlets onto the control unit, making sure the o-ring is in place on the plastic hose barb.

Control Unit 9910-GS40GI

The 9910-GS40GI control unit is designed for convenient control of pressures up to 580 psi and flows up to 15 gpm. It can be mounted directly to the D30 and D50 pump, or it can be mounted remotely with KIT1741.

Direct Mounting Onto Pump

1. Locate the discharge flange port on the discharge manifold. Using a 13 mm wrench, remove the nuts holding the flange manifold.

2. Remove the o-ring from the groove of the flange and install into the control unit flange.

NOTE

Hypro recommends a blue thread locking compound on all threaded fasteners that do not require lock washers.

3. Install the control unit onto the manifold where the discharge port had been previously. Use the nuts previously removed to secure the control unit.

4. Install the hose barb outlets onto the control unit, making sure the o-rings are in place on the hose barbs.

Remote Mounting 9910-GS40GI with Kit No. 9910-KIT1741

NOTE

Hypro recommends a blue thread locking compound on all threaded fasteners that do not require lock washers.

1. Locate and secure the mounting bracket in the desired position.

2. Place o-rings (Ref. 110) into groove of relief valve body (Ref. 105) and discharge flange housing (Ref. 101).

3. Assemble the control unit and discharge flange housing onto the bracket and secure with the bolts and nuts provided.

4. Use the high pressure hose to connect pump discharge port hose barb to the control unit inlet port hose barb

Control Unit 9910-GR40

The Model 9910-GR40 control unit is designed for convenient control of pressure up to 580 psi and flows up to 10.6 gpm. It consists of an adjustable pressure relief valve, a manual pressure release lever, and two individual ball valve-controlled 1/2" hose barb outlets mounted to the 9910-D303 and D403 discharge manifold.

Direct Mounting Onto Pump

1. Locate the discharge flange port on the discharge manifold. Using a 13 mm wrench, remove the bolts holding the flange to the manifold.

2. Remove the o-ring from the groove of the flange and install it into the control unit flange.

3. Install the control unit onto the manifold where the discharge port had been previously. Use the bolts provided with the control to secure the control unit.

4. Install the hose barb outlets onto the control unit, making sure the o-ring is in place on the plastic hose barb.

Remote Mounting 9910-GR40 with Kit No. 9910-KIT893

1. Locate and secure the mounting bracket in the desired position.

2. Place o-rings (Ref. 110) into groove of relief valve body (Ref. 105) and discharge flange housing (Ref. 101).

3. Assemble the control unit and discharge flange housing onto the bracket and secure with the bolts and nuts provided.

4. Use the high pressure hose to connect pump discharge port hose barb to the control unit inlet port hose barb.

Control Unit 9910-RM40

The 9910-RM40 control unit is designed for convenient control of pressures up to 580 psi and flows up to 24 gpm. It consists of an adjustable pressure relief valve, a manual pressure release lever, and two individual ball valve-controlled 1/2" hose barb outlets. It can be direct mounted onto the 9910-D503 discharge manifold.

Direct Mounting

NOTE

Hypro recommends a blue thread locking compound on all threaded fasteners that do not require lock washers.

1. Locate the discharge manifold on the 9910-D503 (Ref. 25). With o-rings (Ref. 4) lubricated and in position on control valve body (Ref. 28), plug into discharge manifold. Lock into place with retainer clip (Ref. 6).

2. Connect bypass hose to bypass hose barb (Ref. 1) and run unrestricted to supply tank.

3. Connect the desired number of high pressure hoses to the outlet hose barbs. Unused hose barbs can be shut off with ball valves provided.

NOTE

For all discharge hoses, use hose with an operating pressure rating equal to or greater than the maximum pressure rating of the pump. High pressure clamping should be used on all outlet hose connections.

Remote Mounting

NOTE

Hypro recommends a blue thread locking compound on all threaded fasteners that do not require lock washers.

1. Install mounting bracket (Ref. 29) in desired location and secure with bolts (Ref. 31) and washers (Ref. 30); then attach the control to the bracket.

⚠ WARNING

Always wear safety goggles when working with spring-loaded fasteners or devices.

2. With o-rings (Ref. 4) lubricated and in position on the control valve body (Ref. 28), plug it into the inlet adapter (Ref. 32); then lock it into place with retaining clip (Ref. 6).

3. With o-rings (Ref. 4) lubricated and in position on the other inlet adapter, plug it into the pump discharge manifold (Ref. 25) and lock it into place with the retaining clip.

4. Connect the NPT fitting on the discharge manifold of the pump with the NPT fitting on the control unit with the high pressure hose.

5. Connect the bypass hose to the bypass hose barb (Ref. 2), then run it unrestricted to the supply tank.

6. Connect the desired number of high pressure hoses to the outlet hose barbs on the control valve. Unused hose barbs can be shut off with ball valves provided.

NOTE

For all discharge hoses, use hose with an operating pressure rating equal to or greater than the maximum pressure rating of the pump. High pressure clamping should be used on all outlet hose connections.

Operating Instructions

1. Be sure oil is halfway up to the clear oil sight tube. If necessary, fill to the correct level with Hypro oil (part number 2160-0038). Hypro oil is a specially formulated, high-grade, non-detergent, SAE 30 weight oil formulated to prolong pump life.

2. Make sure the suction hose barb is tightly screwed onto the suction union and that there are no air leaks on the inlet side of the pump.

3. Check the charge pressure on the pulsation dampener before starting the pump. The pressure is checked with a standard automotive air gauge. The pressure should be at approximately 20% of the maximum pressure that you will be operating the pump at. Exercise caution when checking pressure to avoid losing pre-charge.

D252 Control Unit

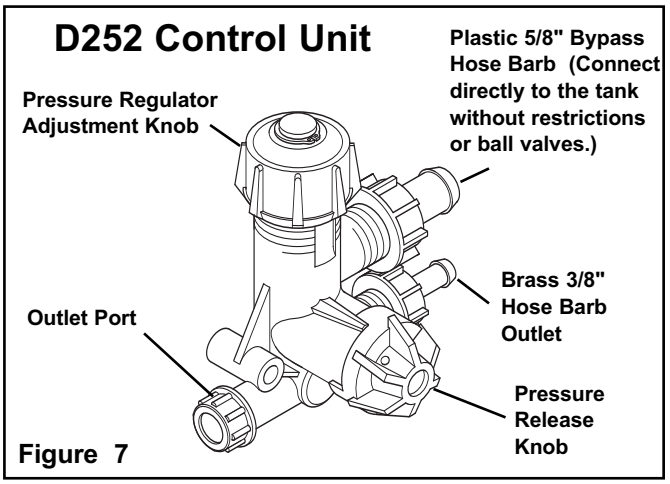


Figure 7

4. The relief valve bypass port should be connected back to the liquid tank without restrictions. Do not hook bypass line back to the inlet port or inlet hose.

5. Allow the pump to start under low pressure by removing restrictions on the outlet of the pump.

6. Start the pump and let it run for approximately one minute at low pressure; then stop the pump and check the oil level in the sight glass. Add Hypro oil if necessary.

7. Adjust the pump to the desired pressure by changing the relief valve setting on the control unit, relief valve or unloader.

On pump D252, (See Figure 7) first back out the relief valve adjustment knob to **zero**. Then rotate the **red** bypass selector knob so that the letter **C** (pressure) is in the 12 o'clock up position. Adjust the pressure by rotating the relief valve adjustment knob to the desired pressure.

On pump D252, the restriction on the pump is removed by rotating the **red** knob on the control unit so that the letter **A** (bypass) on the knob is in the 12 o'clock up position.

On pumps D30 and D50 (See Figure 8), adjust the pressure by clamping the relief valve adjustment lever down. With the bale hook in the number one position, the pressure is about 100 psi [6.9 BAR]; number two is about 250 psi [17.2 BAR]; number three is about 450 psi; number four is about 550 psi [37.9 BAR]. These pressures can be adjusted by using the fine adjustment knob located on top of the relief valve spring. The fine adjustment knob can be rotated when the relief valve lever is in the up position.

On pumps D30 and D50, the restriction is removed by lifting up the relief valve adjustment lever with the bale hook on the number **1** position.

On pumps D303 and D403 (See Figure 9), set the pressure control to the pressure setting; then rotate the pressure regulator to the desired pressure.

On pumps D503 and D503-GRGI (See Figure 10), slide the pressure regulator adjustment knob to the UNLOCK position; then rotate the pressure regulator adjustment knob to the desired pressure.

On pumps D303, D430, and D50, the restriction is removed by lifting up the relief valve adjustment lever with the bale hook on the number **1** position.

9910-GS40GI Control Unit, Models D30 and D50

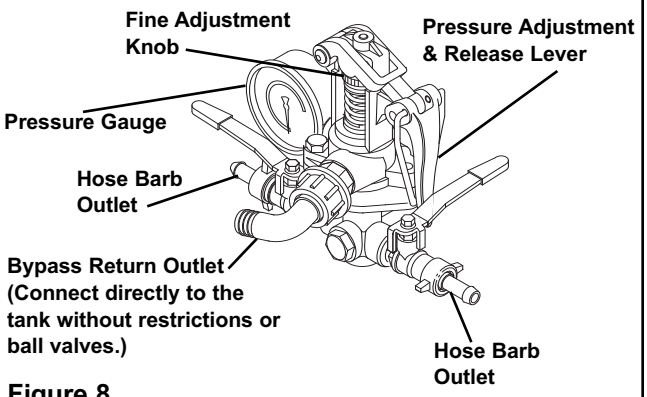


Figure 8

9910-GR40 Control Unit, Models D303 and D403

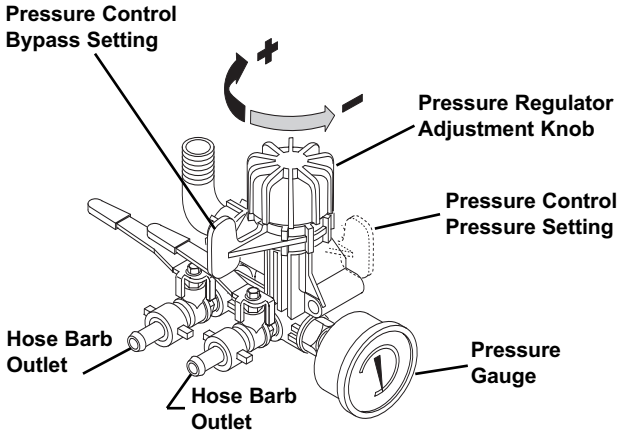


Figure 9

9910-RM40 Control Unit, Model D503

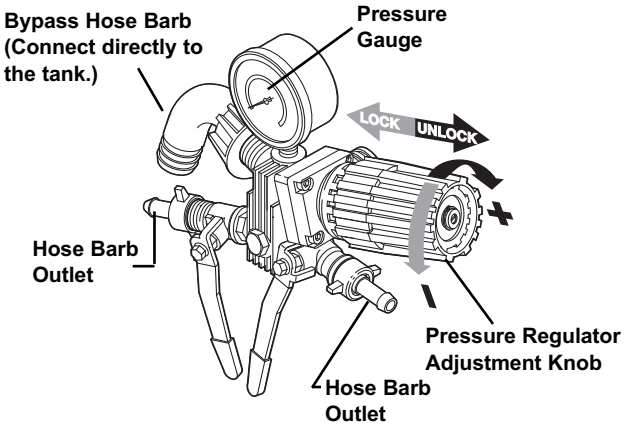


Figure 10

1. After usage, flush the pump with clean water.
2. Hypro diaphragm pumps come with oil in the crankcase. Hypro recommends changing oil after 40 hours of break-in operation and every three months or 500 hours, whichever comes first. Use Hypro oil (part number 2160-0038). Hypro oil is a specially formulated, high-grade, non-detergent, SAE 30 weight oil formulated to prolong pump life.



To drain the oil:

D252

Remove the oil fill cap, turn the pump upside down and rotate the shaft until oil stops flowing out. (D252 gear reduction oil requirements: use 80-90 wt. gear lube and fill to level hole on gear reduction side.)

D30, D50, D303, D403 and D503

Remove the drain plug (2406-0023) (or 9910-770070 on D503) and the oil sight glass covers, and rotate shaft until the oil stops flowing out. Re-install the drain plug.

To fill the pump with oil, slowly pour oil into sight tube while turning the pump shaft. Turning the pump shaft purges all the air out of the crankcase. Always change oil when replacing diaphragms.

3. For winter storage or if a freezing condition will be encountered, flush the pump with a 50/50 mixture of water and antifreeze.

⚠ CAUTION

The bypass return outlet on all control units must be connected directly to the tank without restrictions or ball valves.

CRANKCASE OIL CAPACITIES			
Model	Capacity	Model	Capacity
9910-D252	13 oz.	9910-D403	13 oz.
9910-D30	18 oz.	9910-D50	36 oz.
9910-D303	13 oz.	9910-D503	18 oz.

⚠ CAUTION

Oil crankcase capacities are approximate. Fill oil to proper level in sight glass. Always make sure all the air is purged out of crankcase prior to operating.

Valve Replacement

Occasionally debris may cause improper seating of the valves or damage to the o-rings. To check for this problem, follow these steps.

D252

Remove the head bolts and the head. Remove the valve caps and the valve assemblies. Replace the valve assemblies and o-rings, and reassemble.

D30, D50, D303 and D403

Remove the pump manifolds. With the manifolds removed, the valves can easily be removed and inspected for debris and wear. Replace valves, o-rings and manifolds.

D503

Remove valve retainers. With retainers removed, valves and o-rings can easily be removed and inspected. Replace valves, o-rings and valve retainers.

Diaphragm Replacement: D30, D252, D303, D403 and D503

Change diaphragms every 500 hours or three months, whichever comes first.

1. Drain oil from crankcase as instructed previously.
2. Remove pump head bolts and heads.
3. Remove the bolt securing the diaphragm (See Figure 11).
4. Remove the old diaphragm and the washer (See Figure 11).
5. Install a new diaphragm; then turn the crankshaft to bring the piston to its down-stroke and seat the diaphragm into the sleeve groove.
6. Install the washer and bolts removed in steps 3 and 4.

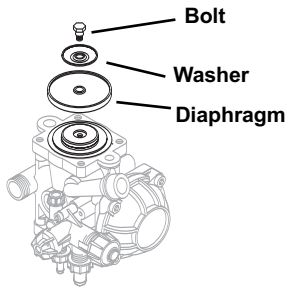


Figure 11

7. Replace the pulsation dampener diaphragm by first bleeding the air from the dampener. Remove the bolts from the dampener cover and replace the diaphragm. Reassemble the cover in place and charge the dampener to 20% of the operating pressure.
8. Refill the crankcase with Hypro oil (part number 2160-0038). Rotate the shaft to distribute the oil, and fill to proper level.

Diaphragm Replacement: D50
Change diaphragms every 500 hours or three months, whichever comes first.

1. Drain oil from crankcase as instructed previously.

2. Remove the pump manifolds and valves.

3. Remove the pump head retaining nuts and heads.

4. Turn the crankshaft to bring the diaphragm to the top of its stroke. Insert a drift pin into the hole in the retaining bolt to hold it in place. Remove the retaining nut, retaining washer and the diaphragm (see Figure 12).

5. Turn the crankshaft to bring the piston to the bottom of its stroke and seat the new diaphragm into the sleeve groove. Install the retaining washer and tighten the retaining nut while holding the retaining stud in place with the drift pin. Clean any excess oil from the area and install the heads, valves and manifolds.

6. Replace the pulsation dampener diaphragm by first bleeding the air from the dampener. Remove the cover retaining bolts from the dampener cover and replace the diaphragm. Reassemble the cover and bolts in place and charge the dampener to 20% of operating pressure.

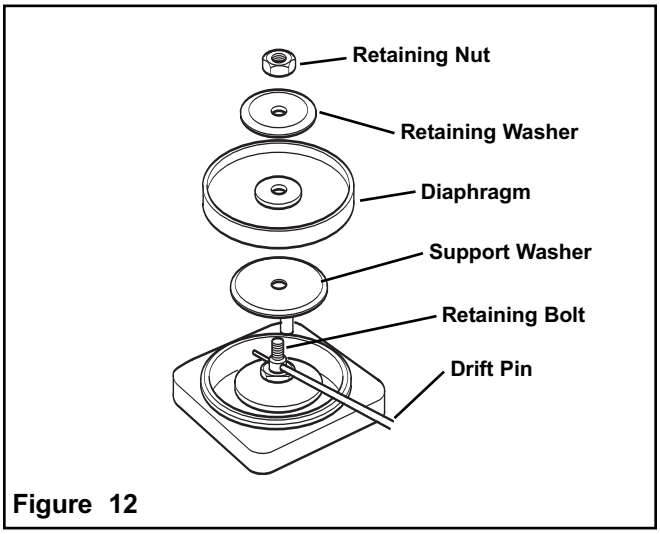


Figure 12

7. Refill the crankcase with Hypro oil (part number 2160-0038). Rotate shaft to distribute oil, and fill to proper level.

Troubleshooting

SYMPTOM	PROBABLE CAUSE(S)	CORRECTIVE ACTION
The pump does not draw water.	One or more valves are seating improperly.	Remove valve and check for debris. Remove any debris found. Examine the valve seatings and clean them.
	Suction line is plugged or collapsed. Clogged strainer.	Examine and clean the suction line. Clean the strainer.
The liquid flow is irregular.	The charge in the pulsation dampener is incorrect.	Check the pressure in the pulsation dampener. (It should be 20% of your spray pressure.)
	One or more valves are seating improperly.	Remove valve and check for debris. Remove any debris found. Examine the valve seatings and clean them.
Output drops and the pump is noisy.	The oil level is too low.	Add oil to the correct level (halfway up the sight tube).
Oil comes out of the discharge port or oil is a milky color.	One or more diaphragms have split.	Remove the manifold and heads. Drain the oil and clean the crankcase of water. Replace the diaphragms, heads, and manifold. Refill with Hypro Oil (part number 2160-0038).

Performance Charts

Model 9910-D252

	350 RPM		450 RPM		500 RPM		550 RPM	
PSI	GPM	HP	GPM	HP	GPM	HP	GPM	HP
0	4.2	0.2	4.8	0.2	5.5	0.3	6.1	0.3
145	4.0	0.4	4.5	0.4	5.3	0.5	5.8	0.6
290	3.7	0.7	4.0	0.8	4.9	1.0	5.3	1.1

	350 RPM		450 RPM		500 RPM		550 RPM	
BAR	L/M	HP	L/M	HP	L/M	HP	L/M	HP
0	16.0	0.2	18.0	0.2	21.0	0.3	23.0	0.3
10	15.0	0.4	17.0	0.4	20.0	0.5	22.0	0.6
20	14.0	0.7	15.0	0.8	18.5	1.0	20.0	1.1

Model 9910-D30

	350 RPM		450 RPM		500 RPM		550 RPM	
PSI	GPM	HP	GPM	HP	GPM	HP	GPM	HP
0	6	0.6	8	0.8	8.5	0.8	9	0.9
290	5.7	1.1	7.4	1.5	8.2	1.6	9	1.8
430	5.6	1.7	7.1	2.1	7.9	2.4	8.7	2.6
580	5.2	2.1	6.7	2.7	7.5	3	8.2	3.2

	350 RPM		450 RPM		500 RPM		550 RPM	
BAR	L/M	HP	L/M	HP	L/M	HP	L/M	HP
0	22	0.6	29	0.8	32	0.8	35	0.9
20	21.5	1.1	28	1.5	31	1.6	34	1.8
30	21	1.7	27	2.1	30	2.4	33	2.6
40	19	2.1	25.5	2.7	28	3	31	3.2

Model 9910-D50

	350 RPM		450 RPM		500 RPM		550 RPM	
PSI	GPM	HP	GPM	HP	GPM	HP	GPM	HP
0	9	0.9	11	1.1	13	1.2	14	1.4
290	8.6	1.7	11	2.2	12.3	2.4	13.5	2.7
435	8.4	2.5	10.8	3.2	12	3.6	12.2	3.9
580	8.1	3.2	10.4	4.1	11.5	4.6	12.7	5

	350 RPM		450 RPM		500 RPM		550 RPM	
BAR	L/M	HP	L/M	HP	L/M	HP	L/M	HP
0	33	0.9	43	1.1	47	1.2	52	1.4
20	32.5	1.7	42	2.2	46	2.4	51	2.7
30	32	2.5	41	3.2	46	3.6	50	3.9
40	31	3.2	39	4.1	44	4.6	48	5

Model 9910-D303

	350 RPM		450 RPM		500 RPM		550 RPM	
PSI	GPM	HP	GPM	HP	GPM	HP	GPM	HP
0	5.0	0.4	6.1	0.5	6.4	0.6	7.9	0.7
290	4.0	0.8	5.3	1.0	5.8	1.2	7.1	1.3
435	3.9	1.2	5.2	1.5	5.7	1.7	6.7	1.9
580	3.9	1.5	5.2	1.9	5.6	2.1	6.6	2.4

	350 RPM		450 RPM		500 RPM		550 RPM	
BAR	L/M	HP	L/M	HP	L/M	HP	L/M	HP
0	18.8	0.4	23.0	0.5	24.3	0.6	30	0.7
20	15.0	0.8	19.9	1.0	21.9	1.2	26.9	1.3
30	14.8	1.2	19.6	1.5	21.4	1.7	25.5	1.9
40	14.7	1.5	19.5	1.9	21.3	2.1	25.1	2.4

Model 9910-D403

	350 RPM		450 RPM		500 RPM		550 RPM	
PSI	GPM	HP	GPM	HP	GPM	HP	GPM	HP
0	6.3	0.7	8.1	1.0	9.0	1.1	10.6	1.2
290	6.1	1.3	7.7	1.7	8.7	1.9	9.8	2.1
435	6.0	1.9	7.7	2.4	8.6	2.7	9.7	2.9
580	5.9	2.3	7.7	2.8	8.6	3.4	9.5	3.8

	350 RPM		450 RPM		500 RPM		550 RPM	
BAR	L/M	HP	L/M	HP	L/M	HP	L/M	HP
0	24.0	0.7	30.8	1.0	33.9	1.1	40	1.2
20	23.0	1.3	29.3	1.7	33.0	1.9	37.2	2.1
30	22.8	1.9	29.1	2.4	32.7	2.7	36.6	2.9
40	22.5	2.3	29.0	2.8	32.4	3.4	36.1	3.8

Model 9910-D503

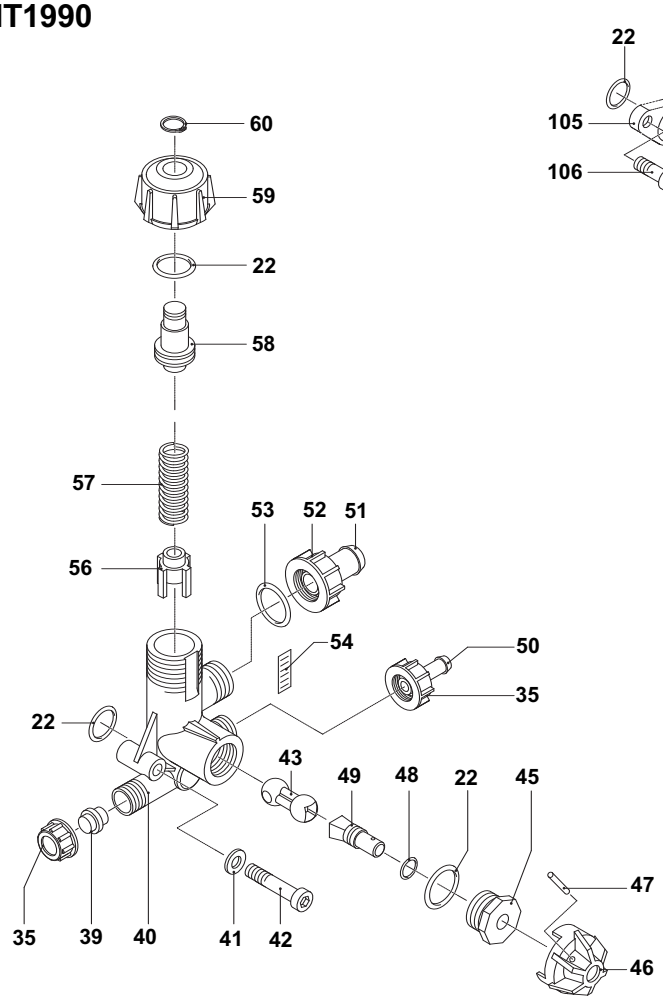
	350 RPM		450 RPM		500 RPM		550 RPM	
PSI	GPM	HP	GPM	HP	GPM	HP	GPM	HP
0	9	0.9	12	1.2	13	1.3	15	1.4
290	8.9	2	11.5	2.3	12.8	2.5	14	2.8
435	8.6	2.6	11	3.3	12.3	3.6	13.5	4
580	8.4	3.3	10.8	4.3	12	4.8	13.2	5.2

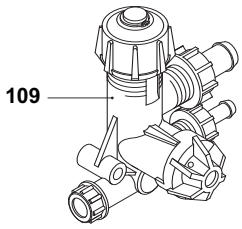
	350 RPM		450 RPM		500 RPM		550 RPM	
BAR	L/M	HP	L/M	HP	L/M	HP	L/M	HP
0	35	0.9	45	1.2	50	1.3	55	1.4
20	34	1.8	43	2.3	48	2.5	53	2.8
30	32.5	2.6	42	3.3	46	3.6	51	4
40	32	3.3	41	4.3	45.5	4.8	50	5.2

NOTE

"HP" is shown in electric horsepower. Please consult your gas engine dealer for engine horsepower requirements.

9910-KIT1990





9910-KIT1990 also includes Ref. Nos. 22, 41 and 42.

Figure 13

Ref. No.	Part Number	Description	Qty.
22	9910-480440	O-Ring	4
35	9910-800520	Ring Nut	2
39	9910-800540	Plug	1
40	9910-800400	Valve Body	1
41	9910-550331	Washer	2
42	9910-800410	M6 x 40 Bolt	2
43	9910-800430	Valve	1
45	9910-800500	Ring Nut	1
46	9910-800510	Knob	1
47	9910-390330	Pin	1
48	9910-800560	O-Ring	1
49	9910-800490	Positioning Rod	1
50	9910-800530	Hose Barb (Outlet) 3/8"	1
51	9910-800670	Hose Barb (Inlet) 1/2" bypass	1
52	9910-800680	Ring Nut	1
53	9910-740290	O-Ring	1

Ref. No.	Part Number	Description	Qty.
54	9910-800480	ATM Scale Adhesive	1
56	9910-800440	Lower Spring Guide	1
57	9910-800450	Spring	1
58	9910-800460	Upper Spring Guide	1
59	9910-800470	Adjustment Knob	1
60	9910-480550	Retaining Ring	2
105	9910-450146	Flange	1
106	9910-880280	M6 x 18 Bolt	2
109	9910-KIT1990	Complete Relief Valve Ass'y.	1

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
42	Bolt	171.4	19.6
106	Bolt	171.4	19.6

Model 9910-GS40GI Control Unit

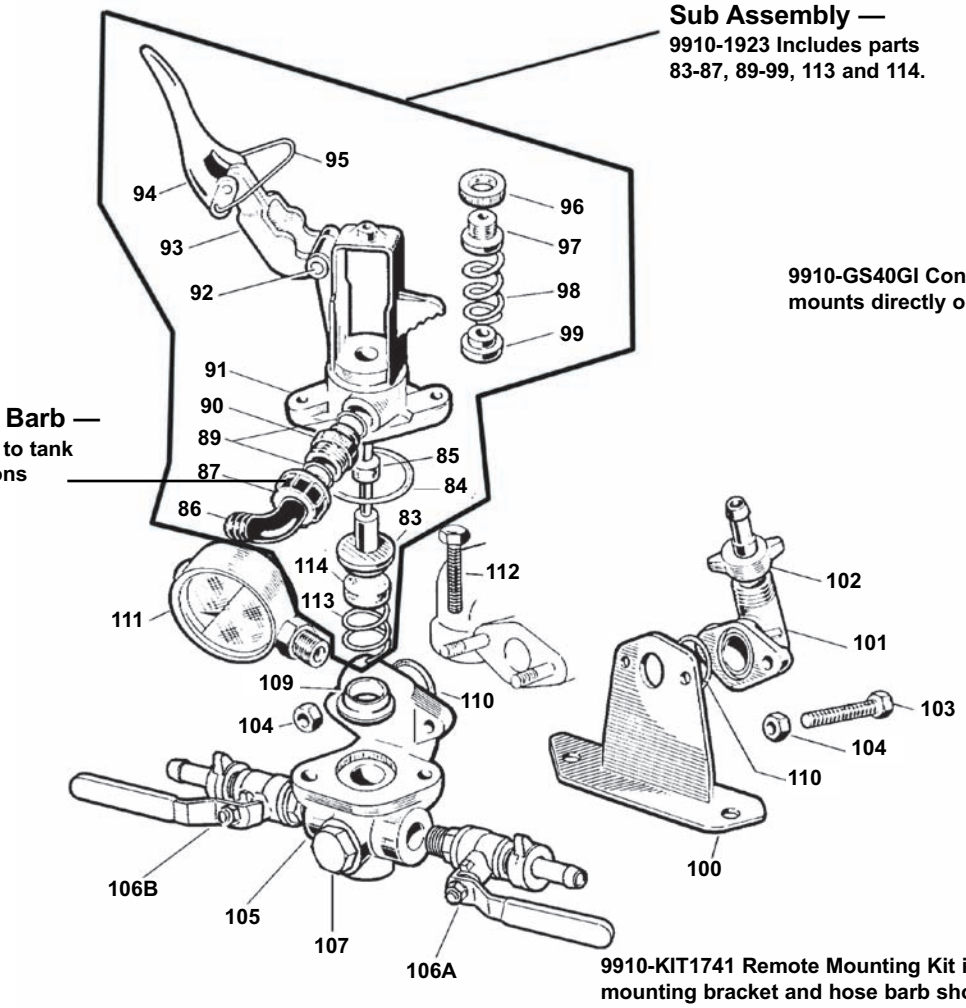


Figure 14

Ref. No.	Part Number	Description	Qty.
83[1]	9910-320433	Relief Valve Poppet Retainer	1
84[1]	9910-320511	Gasket Seal O-Ring	1
85[1]	9910-390140	Tension Spring Guide/Seal	1
86	9910-550460	Hose Barb 1/2"	1
87	9910-550450	Barb Nut	1
89	9910-180101	O-Ring	2
90	9910-550440	Threaded Adapter	1
91	9910-320410	Tension Spring Housing	1
92	9910-320480	Pin	1
93	9910-320460	Lever Guide	1
94	9910-320470	Pressure Release Lever	1
95	9910-320490	Locking Clip	1
96	9910-320450	Pressure Adjustment Nut	1
97	9910-320440	Threaded Guide	1
98	9910-110190	Tension Spring	1
98	9910-620810	Tension Spring (Opt.) (under 100 psi)	1

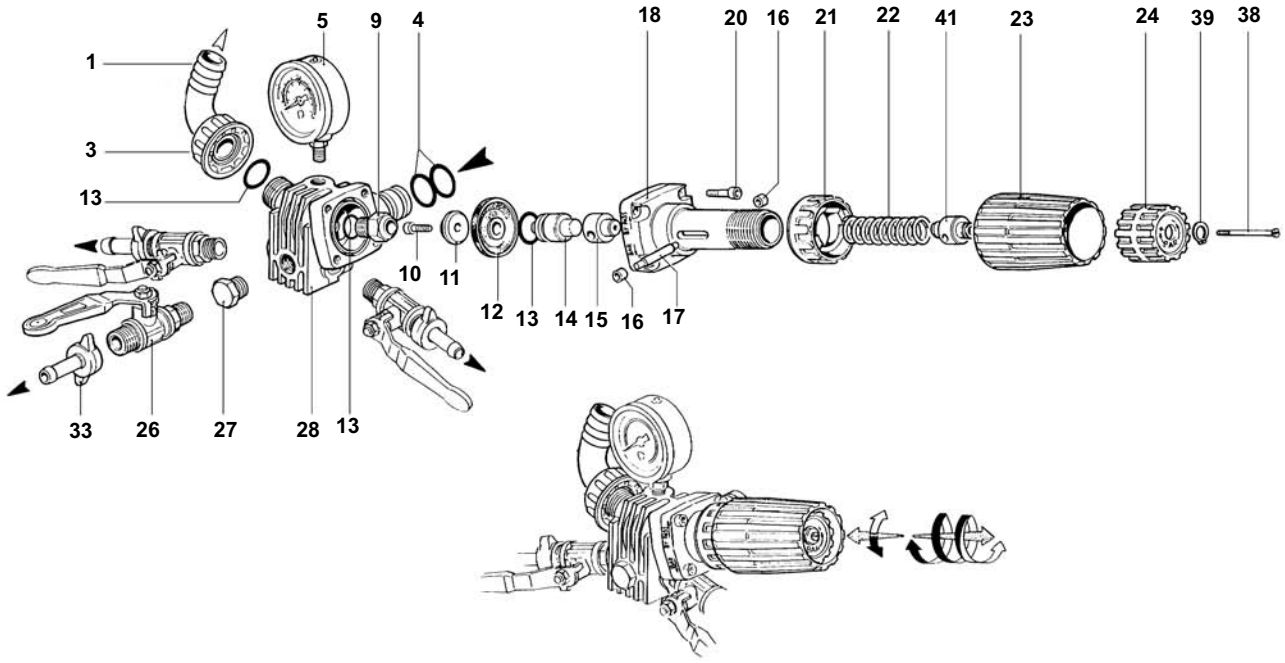
Ref. No.	Part Number	Description	Qty.
99	9910-230120	Tension Spring Retainer	1
100	9910-320406	Remote Discharge Mounting Bracket	1
101	9910-450145	Discharge Flange Housing	1
102	9910-110130	1/2" Hose Barb & Nut--(3/8" 9910-110131)	1
103	9910-160660	M8 x 35 Bolt	2
104	9910-390270	Nut	2
105	9910-620220	Relief Valve Body	1
106A	9910-KIT2497	Ball Valve (left)	1
106B	9910-130491	Ball Valve (right)	1
107	9910-130171	Plug	1
109[1]	9910-450110	Spring Holder	1
110	9910-550350	O-Ring	1
111	9910-550545	Pressure Gauge (Oil-filled)	1
112	9910-180370	M8 x 25 Bolt	2
113[1]	9910-320420	Tension Spring	1
114[1]	9910-110122	Relief Valve Seat (Viton) (Std.)	1
114	9910-110121	Relief Valve Seat (Urethane)	1

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
103	Bolt	171.4	19.6
104	Nut	171.4	19.6
107	Plug	171.4	19.6
112	Bolt	171.4	19.6

REPAIR & MAINTENANCE KIT AVAILABLE

[1] Control Unit Parts Kit No. 9910-KIT1757 consists of one each of: Ref. 83 Relief Valve Poppet Retainer, Ref. 84 Gasket Seal O-Ring, Ref. 85 Tension Spring Guide, Ref. 109 Spring Holder, Ref. 113 Tension Spring and Ref. 114 Relief Valve Seat.

Model 9910-RM40 Control Unit



Repair Kit No. 3430-0605 Consists of: Ref. 4 (4) O-ring, Ref. 9 (1) Valve seat, Ref. 11 (1) Valve poppet, Ref. 12 (1) Diaphragm and Ref. 13 (4) O-ring

9910-KIT1897 Remote Mounting Kit includes a mounting bracket and hose barbs as pictured at right.

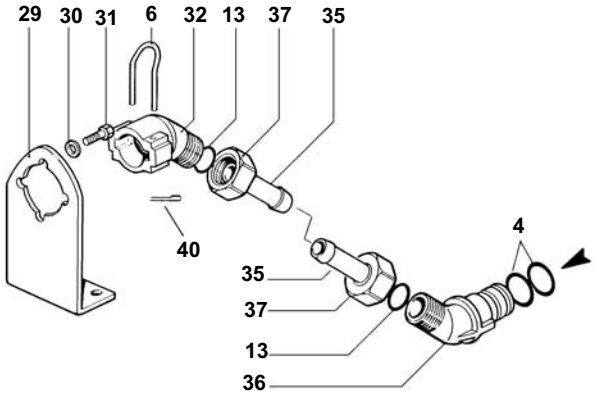
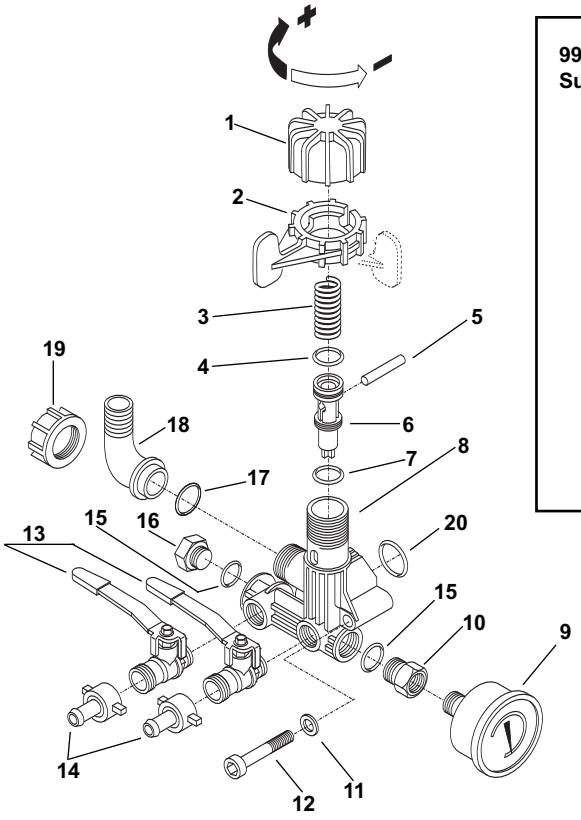


Figure 14-A

Ref. No.	Part Number	Description	Qty.
1	9910-550460	Hose Barb 1/2"	1
3	9910-550450	Hose Barb Nut	1
4	9910-390180	O-Ring	4
5	9910-550545	Gauge	1
6	9910-1040690	Retaining Clip	1
9	9910-1150520	Valve Seat	1
10	9910-680560	M6 x 16 Bolt	1
11	9910-1040640	Valve Poppet	1
12	9910-1040630	Diaphragm	1
13	9910-880830	O-Ring	5
14	9910-1040620	Piston	1
15	9910-1150560	Spacer	1
16	9910-1150600	Retaining Ring	2
17	9910-1150540	Pin	1
18	9910-1150510	Adjustment Body	1
20	9910-780330	M6 x 20 Bolt	4
21	9910-1150530	Bypass Ring	1
22	9910-394760	Spring	1
23	9910-1150550	Adjustment Knob	1

Ref. No.	Part Number	Description	Qty.
24	9910-1150570	Spring Retainer	1
26	9910-KIT2497	Ball Valve Assy. 1/2" Hose Barb	2
27	9910-130171	Plug	1
28	9910-1150500	Body-RM40	1
29	9910-1150590	Mounting Bracket	1
30	9910-390311	Washer	2
31	9910-180431	M8 x 16 Bolt	2
32	9910-1040770	Inlet Adapter	1
33	9910-110130	Hose Barb 1/2"	2
34	9910-1040950	Cotter Pin	1
35	9910-1150580	Barb	2
36	9910-1040760	Outlet Adapter	1
37	9910-1040790	Nut	2
38	9910-1150650	M3 x 60 Bolt	1
39	9910-480550	Retaining Ring	1
40	9910-1040950	Cotter Pin	1
41	9910-1150660	Spacer	1

Model 9910-GR40 Control Unit



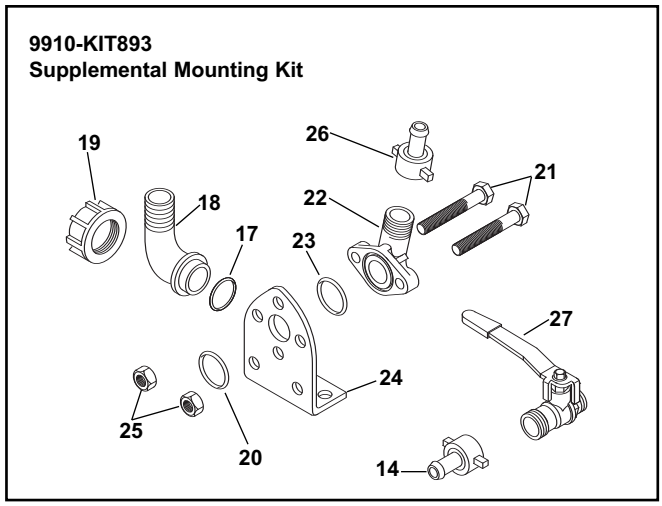


Figure 15

9910-GR40

Ref. No.	Part Number	Description	Qty.
1	9910-1880220	Adjustment Knob	1
2	9910-1880210	Ring Nut	1
3	9910-1880271	Spring	1
4	9910-480440	O-Ring	1
5	9910-1880240	Pin	1
6	9910-1880230	Jet	1
7	9910-1880260	O-Ring	1
8	9910-1880200	Valve Body	1
9	9910-1880290	Pressure Gauge	1
10	9910-1880250	Pipe Reducer	1
11	9910-390311	Washer	2
12	9910-680360	M8 x 50 Bolt	2
13	9910-130491	Ball Valve	2
14[1]	9910-110131	Hose Fitting	2
15	9910-740290	O-Ring	2
16	9910-130171	Plug	4
17[1]	9910-880830	O-Ring	1
18[1]	9910-550460	Elbow	1
19[1]	9910-550450	Ring Nut	1
20[1]	9919-1140450	O-Ring	1

[1] **Denotes 9910-KIT893 Items**

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
12	Bolt	87.5	9.8
16	Plug	87.5	9.8

9910-KIT893

Ref. No.	Part Number	Description	Qty.
14[1]	9910-110131	Hose Fitting	2
17[1]	9910-880830	O-Ring	1
18[1]	9910-550460	Elbow	1
19[1]	9910-550450	Ring Nut	1
20[1]	9919-1140450	O-Ring	1
21[1]	9910-1880310	Bolt	2
22[1]	9910-450145	Flange	1
23[1]	9910-550350	O-Ring	1
24[1]	9910-320406	Bracket	1
25[1]	9910-390270	Nut	2
26	9910-110130	Hose Fitting	1
27	9910-130491	Ball Valve	1

9910-KIT2488 Valve Repair Kit	
Ref. No.	Qty.
3	1
4	1
5	1
6	1
7	1

Gearbox 9910-KIT1640

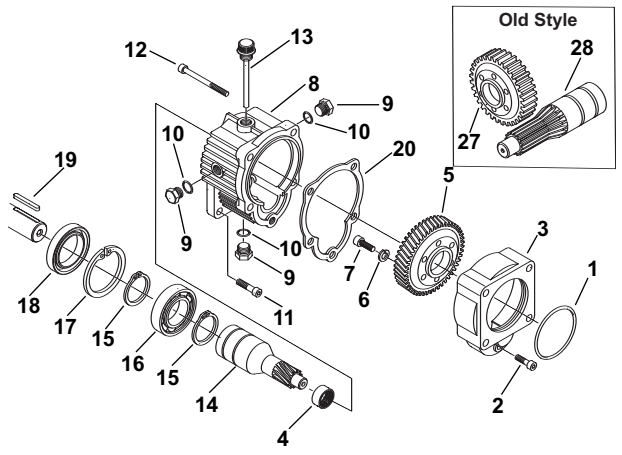


Figure 16

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
2	Bolt	218.7	24.5
7	Bolt	171.4	19.6
9	Plug	171.4	19.6
11	Bolt	218.7	24.5
12	Bolt	218.7	24.5

Ref. No.	Part Number	Description	Qty.
1	9910-620561	O-Ring	1
2	9910-180030	M8 x 20 Bolt	1
3	9910-621000	Pump Adapter Flange	1
4	9910-620990	Bearing	1
5	9910-651620	Gear	1
6	9910-200231	Lock Washer	6
7	9910-620470	M10 x 20 Bolt	3
8	9910-620960	Gearbox Body	1
9	2406-0023	Plug	2
10	9910-740290	O-Ring	2
11	9910-651000	5/16 x 24 UNF x 1 Bolt	4
12	9910-621010	M10 x 75 Bolt	4
13	9910-1140370	Vent Plug	1
14	9910-621660	Pinion Gear	1
15	9910-320240	Retaining Ring (Ext.)	2
16	9910-961780	Bearing	1
17	9910-961790	Retaining Ring (Int.)	1
18	9910-961800	Seal	1
19	9910-881090	Key	1
20	9910-620950	Gasket	1
27	9910-620980	Gear	1
28	9910-620970	Pinion Gear	1

Gearbox 9910-KIT1642

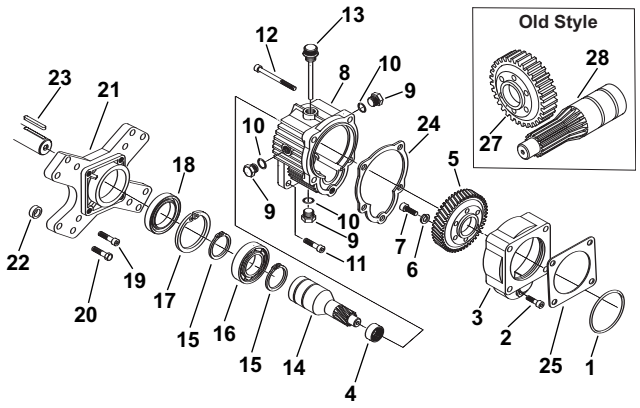


Figure 17

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
2	Bolt	218.7	24.5
7	Bolt	171.4	19.6
9	Plug	171.4	19.6
11	Bolt	218.7	24.5
12	Bolt	218.7	24.5
19	Bolt	218.7	24.5
20	Bolt	218.7	24.5

Ref. No.	Part Number	Description	Qty.
1	9910-620561	O-Ring	1
2	9910-180030	M8 x 20 Bolt	1
3	9910-621000	Pump Adapter Flange	1
4	9910-620990	Bearing	1
5	9910-651620	Gear	1
6	9910-200231	Lock Washer	6
7	9910-160671	M10 x 25 Bolt 1" Long (D50)	3
7	9910-620470	M10 x 20 Bolt 3/4" Long (D30)	3
8	9910-620960	Gearbox Body	1
9	2406-0023	Plug	3
10	9910-740290	O-Ring	3
11	9910-540290	Bolt	4
12	9910-621010	M10 x 75 Bolt	4
13	9910-1140370	Vent Plug	1
14	9910-651610	Pinion Gear	1
15	9910-320240	Retaining Ring (Ext.)	2
16	9910-961780	Bearing	1
17	9910-961790	Retaining Ring (Int.)	1
18	9910-961800	Seal	1
19	9910-651000	5/16 x 24 UNF x 1 Bolt	4
20	9910-961900	3/8 x 16 UNC x 1-1/4 Bolt	4
21	9910-1320940	Engine Adapter Flange	1
22	9910-961770	Spacer	4
23	9910-650990	Key	1
24	9910-620950	Gasket	1
25	9910-650270	Gasket	1
27	9910-620980	Gear	1
28	9910-650400	Pinion Gear	1

9910-KIT2200

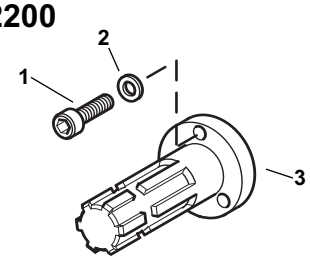


Figure 18

Ref. No.	Part Number	Description	Qty.
1	9910-160671	M10 x 25 Socket Head Cap Screw	3
2	9910-200231	Lock Washer	3
3	9910-620240	Shaft	1

9910-KIT1706

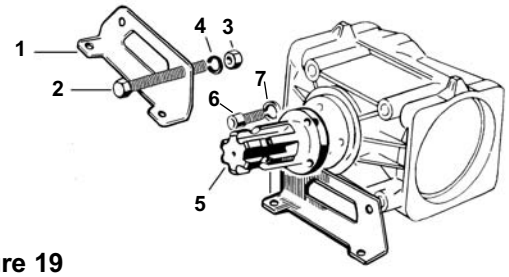


Figure 19

Ref. No.	Part Number	Description	Qty.
1	9910-320392	Pump Base	2
2	9910-750060	M8 x 75 Socket Head Cap Screw	2
3	9910-320130	Nut	2
4	9910-320131	Lock Washer	2
5	9910-620240	Male 6-Spline 1 3/8" PTO Shaft	1
6	9910-540300	M10 x 20 Socket Head Cap Screw	3
7	9910-200231	Lock Washer	3

9910-KIT1703

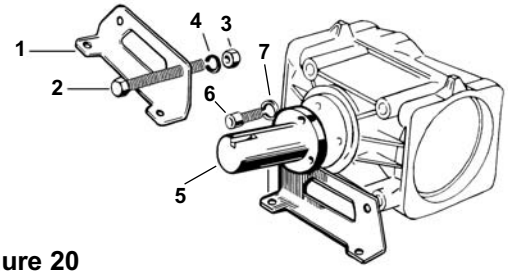


Figure 20

Ref. No.	Part Number	Description	Qty.
1	9910-380200	Pump Base	2
2	9910-380210	M8 x 75 Socket Head Cap Screw	2
3	9910-380240	Nut	2
4	9910-380241	Lock Washer	2
5	9910-621600	1" Solid Keyed PTO Shaft 2 3/8" long	1
6	9910-620470	M10 x 30 Socket Head Cap Screw	3
7	9910-200231	Lock Washer	3

9910-KIT1702

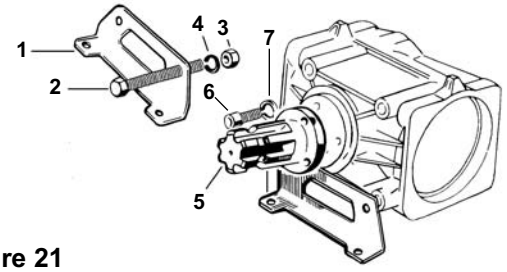


Figure 21

Ref. No.	Part Number	Description	Qty.
1	9910-380200	Pump Base	2
2	9910-380210	M8 x 75 Socket Head Cap Screw	2
3	9910-380240	Nut	2
4	9910-380241	Lock Washer	2
5	9910-620240	Male 6-Spline 1 3/8" PTO Shaft	1
6	9910-620470	M10 x 20 Socket Head Cap Screw	3
7	9910-200231	Lock Washer	3

9910-KIT2202

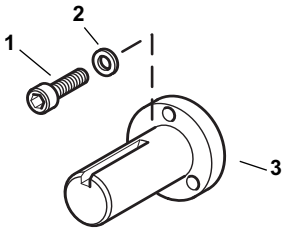


Figure 22

Ref. No.	Part Number	Description	Qty.
1	9910-160671	M10 x 25 Socket Head Cap Screw	3
2	9910-200231	Lock Washer	3
3	9910-621600	1" Solid Keyed Shaft	1

9910-KIT1707

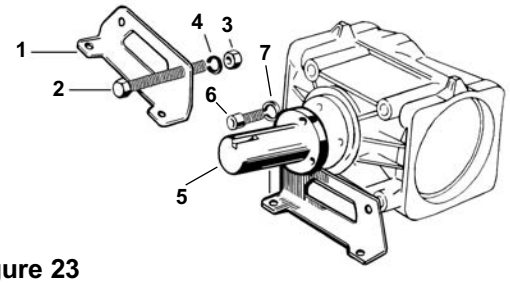


Figure 23

Ref. No.	Part Number	Description	Qty.
1	9910-320392	Pump Base	2
2	9910-750060	M8 x 75 Socket Head Cap Screw	2
3	9910-320130	Nut	2
4	9910-320131	Lock Washer	2
5	9910-621600	1" Solid Keyed PTO Shaft	1
6	9910-540300	M10 x 30 Socket Head Cap Screw	3
7	9910-200231	Lock Washer	3

9910-KIT1704

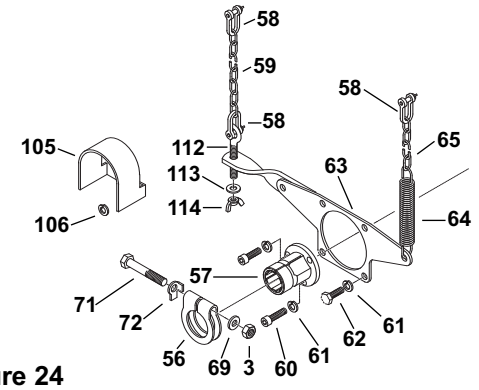


Figure 24

Ref. No.	Part Number	Description	Qty.
3	9910-320130	Nut	2
56	9910-500160	Clamp	1
57	9910-620270	Flanged Female Splined Shaft	1
58	9910-650340	Chain Clip	3
59	9910-650360	Chain (17.7" long)	1
60	9910-540300	M10 x 30 Socket Head Cap Screw	3
61	9910-200231	Lock Washer	7
62	9910-620340	M10 x 20 Hex Head Bolt	4
63	9910-650350	PTO Bracket	1
64	9910-650380	Torsion Spring	1
65	9910-650361	Chain (13" long)	1
71	9910-320170	M12 x 75 Bolt	1
72	9910-500171	Lock Retaining Washer	1
105	2840-0028	Steel Safety Shield (Std.)	1
106	2270-0004	Washer	2
112	9910-320630	Bolt	1
113	9910-320620	Washer	1
114	9910-320610	Wing Nut	1

9910-KIT2204

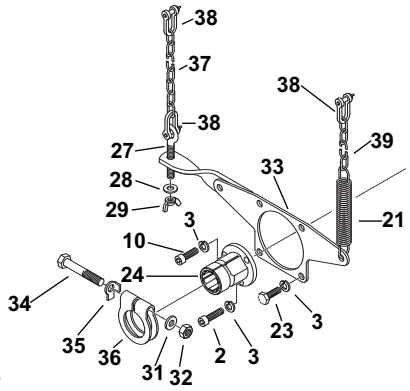


Figure 25

Ref. No.	Part Number	Description	Qty.
2	9910-160671	M10 x 25 Socket Head Cap Screw	3
3	9910-200231	Washer	10
10	9910-620470	M10 x 20 Socket Head Cap Screw	3
21	9910-650380	Spring	1
23	9910-620340	M10 x 20 Hex Head Bolt	4
24	9910-620270	Shaft	1
27	9910-320630	Tie Rod	1
28	9910-320620	Washer	1
29	9910-320610	M10 Wing Nut	1
31	9910-320131	Washer	1
32	9910-320130	M12 Nut	1
33	9910-650350	Pump Bracket	1
34	9910-320170	M12 x 75 Hex Head Bolt	1
35	9910-500171	Washer	1
36	9910-500160	Clamp	1
37	9910-320640	Chain 17.7" long	1
38	9910-650340	Chain Hook	3
39	9910-320641	Chain 12.6" long	1

9910-HYD5312

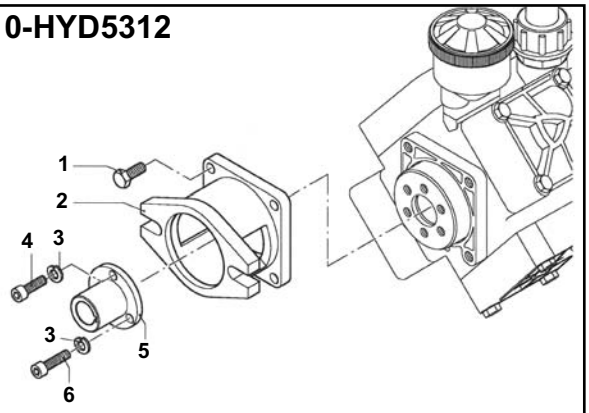
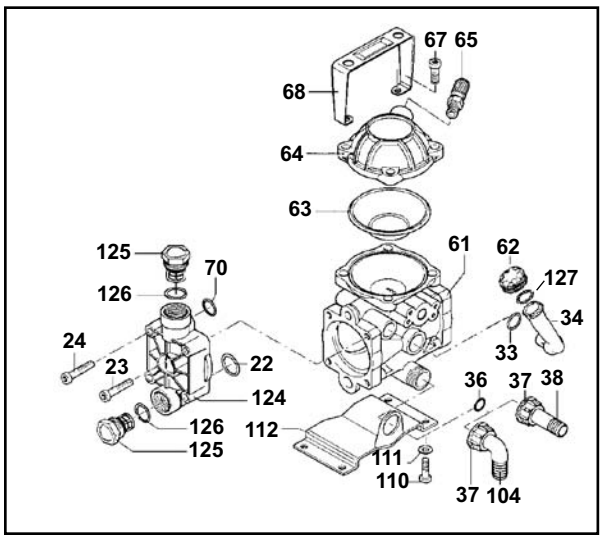
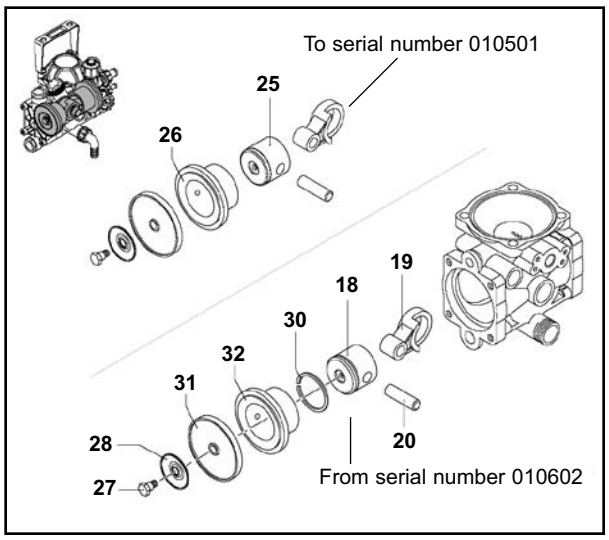
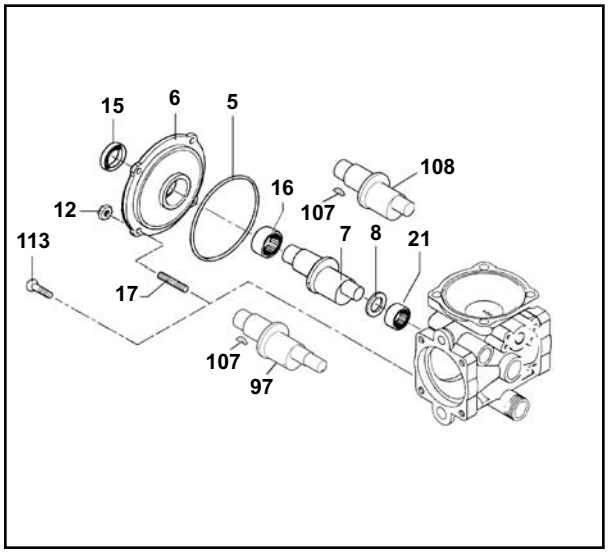


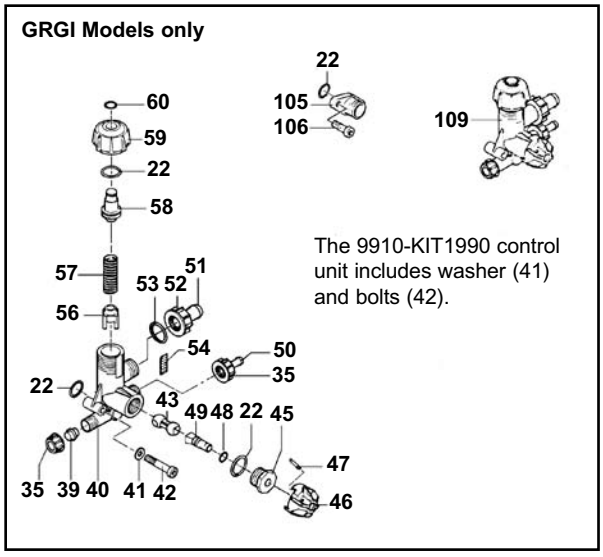
Figure 25.5

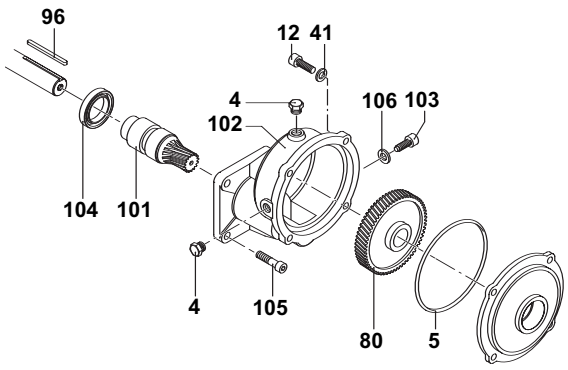
Ref. No.	Part Number	Description	Qty.
1	9910-160670	M10 x 25 Hex Bolt	4
2	9910-6211	Flange	1
3	9910-200231	Lockwasher	3
4	9910-620470	M10 x 20 Bolt	3
5	9910-6682	Coupling	1
6	9910-160671	M10 x 25 Bolt	3











Ref. No.	Part Number	Description	Qty.
4	9910-620301	Plug	2
5	9910-800380	O-Ring	1
12	9910-850850	M6 x 30 Bolt	4
41	9910-550331	Washer	4
80	9910-800280	Gear	1
96	9910-881090	Key	1
101	9910-800810	Driver Gear, 3/4" shaft only	1
101	9910-801230	Driver Gear, 5/8" shaft only	1
102	9910-800820	3/4" Gearbox	1
102	9910-800821	5/8" Gearbox	1
103	9910-800800	M8 x 16 Locating Bolt	1
104	9910-480820	Seal	1
105	9910-620440	5/16 24 UNF x 7/8 Bolt	4
106	9910-820520	Washer	1

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
4	Plug	87.5	9.8
105	Bolt	175.0	19.6

Figure 27

Ref. No.	Part Number	Description	Qty.
5[3]	9910-800380	O-Ring	1
6	9910-800020	Flange	1
7	9910-800172	3/4″ Solid Shaft	1
8	9910-800160	Spacer	1
12	9910-390440	Nut	4
15	9910-800200	Seal	1
16	9910-800180	Roller Bearing	1
17	9910-550330	Stud	4
18	9910-802070	Piston	2
19	9910-800140	Connecting Rod	2
20	9910-800130	Piston Pin	2
21	9910-480370	Roller Bushing	1
22[1,3]	9910-480440	O-Ring	5
23	9910-680360	M8 x 50 Bolt	1
24	9910-800220	M8 x 45 Bolt	7
25	9910-800120	Piston	2
26	9910-800110	Sleeve	2
27	9910-800090	Retaining Bolt	2
28	9910-800350	Plate	2
30	9910-802080	Piston Ring	2
31[1]	9910-800085	Diaphragm Desmopan (Std.)	2
31	9910-80008T	Diaphragm Teflon (Opt.)	1
31	9910-800080	Diaphragm Buna (Opt.)	2
32	9910-802050	Sleeve	2
33[3]	9910-740290	O-Ring	1
34	9910-801960	Oil Sight Glass	1
35	9910-800520	Ring Nut	2
36[3]	9910-390180	O-Ring	1
37	9910-550450	Ring Nut	1
38	9910-800340	Hose Barb (Inlet) 3/4"	1
39	9910-800540	Plug	1
40	9910-800400	Valve Body	1
41	9910-550331	Washer	2
42	9910-801080	M6 x 40 Bolt	2
43	9910-800430	Valve	1
45	9910-800500	Ring Nut	1
46	9910-800510	Knob	1
47	9910-390330	Pin	1
48[3]	9910-800560	O-Ring	1
49	9910-800490	Positioning Rod	1
50	9910-800530	Hose Barb (Outlet) 3/8"	1
51	9910-800670	Hose Barb (Bypass) 5/8"	1
52	9910-800680	Ring Nut	1
53[3]	9910-740290	O-Ring	1

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
23	Bolt	175.0	19.6
24	Bolt	175.0	19.6
27	Retaining Bolt	175.0	19.6
42	Bolt	87.5	9.8
67	Bolt	200.8	22.5
106	Bolt	87.5	9.8
110	Bolt	175.0	19.6
113	Bolt	87.5	9.8
125	Valve Assembly	131.2	14.7

Ref. No.	Part Number	Description	Qty.
54	9910-800480	ATM Scale Adhesive	1
56	9910-800440	Lower Spring Guide	1
57	9910-800450	Spring	1
58	9910-800460	Upper Spring Guide	1
59	9910-800470	Adjustment Knob	1
60	9910-480550	Retaining Ring	1
61	9910-800010	Pump Body	1
62	9910-550057	Cap	1
63[1]	9910-800190	Accumulator Diaphragm (Buna-N)	1
63	9910-80019T	Accumulator Diaphragm (Teflon)	1
64	9910-800230	Upper Air Chamber	1
65	9910-800650	Valve	1
67	9910-540290	M8 x 25 Bolt	4
68	9910-800390	Handle	1
70[1,3]	9910-800210	O-Ring	2
97	9910-800173	Thru-Shaft AP, 5/8"	1
104	9910-550460	Elbow	2
105	9910-800691	Flange, 1/2" NPT	1
106	9910-880280	M6 x 18 Bolt	2
107	9910-800590	Key	1
108	9910-800171	Shaft "GR-Version," 3/4"	1
109	9910-Kit 1990	Control unit	1
110	9910-180431	M8 x 16 Bolt	2
111	9910-380241	Washer	2
112	9910-800311	Pulley Base	1
113	9910-320350	M6 x 12 Bolt	4
124	9910-801940	Head	2
125[2]	9910-809060V	Valve Assembly	4
126[2,3]	9910-880830	O-Ring	4
127[3]	9910-550040	O-Ring	1

[1] Denotes Diaphragm Kit 9910-KIT1723
[2] Denotes Valve Kit 9910-KIT2408
[3] Denotes O-Ring Kit 9910-KIT2409



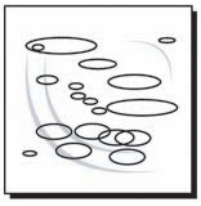
9910-KIT1723 Diaphragm Kit Desmopan

Ref. No.	Qty.
22	2
31[1]	2
63[1]	1
70	2



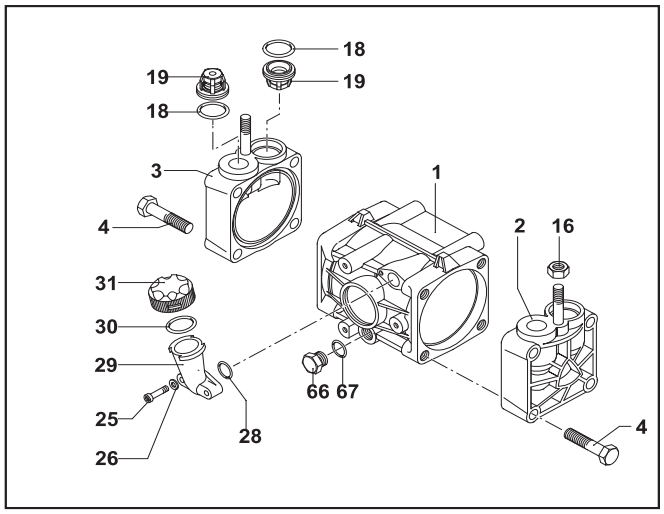
9910-KIT2408 Valve Kit

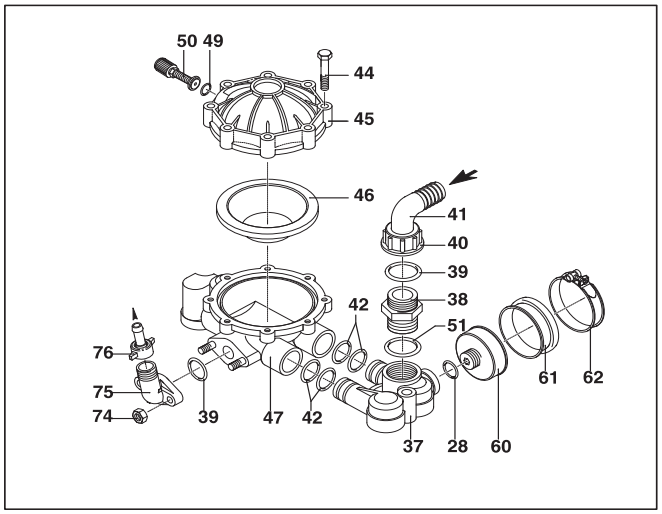
Ref. No.	Qty.
125	4
126	4

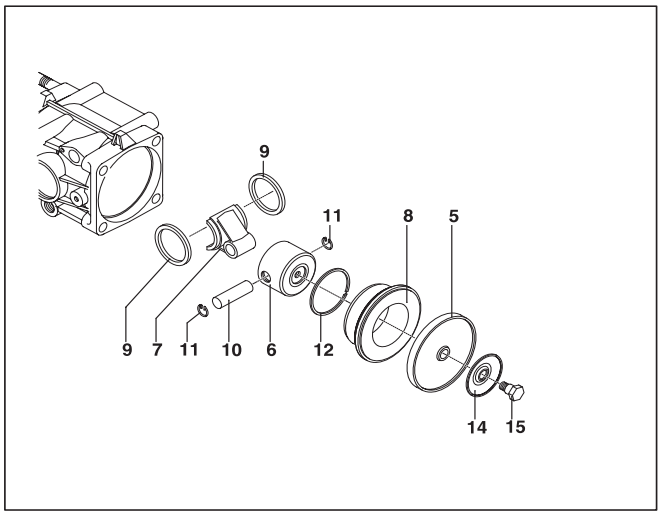


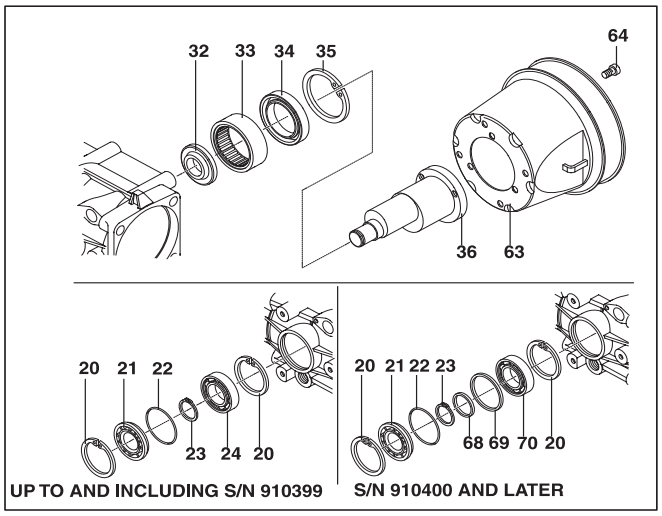
9910-KIT2409 O-Ring Kit

Ref. No.	Qty.
5	1
22	5
33	4
36	1
48	1
53	1
70	1
126	4
127	1









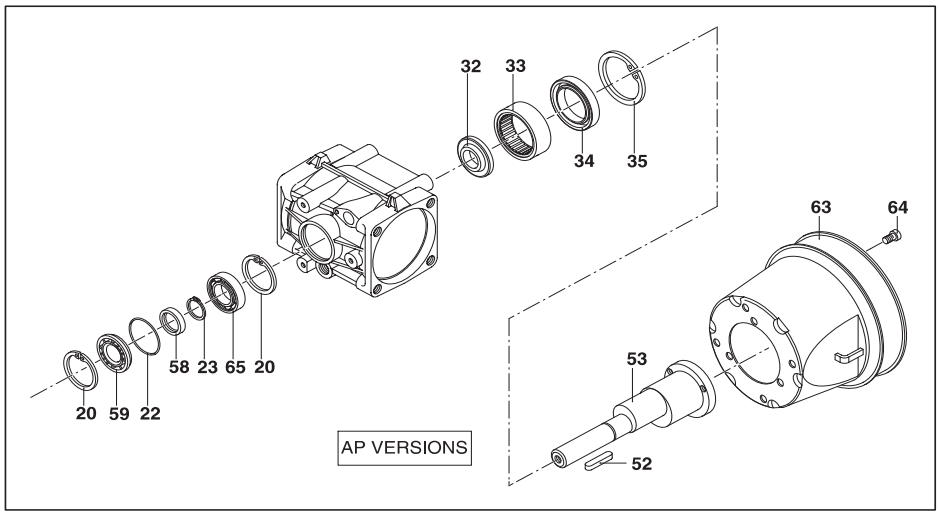


Figure 28

NOTE: When ordering parts, give QUANTITY, PART NUMBER, DESCRIPTION, and COMPLETE MODEL NUMBER. Reference numbers are used ONLY to identify parts in the drawing and are NOT to be used as order numbers.

Model 9910-D30, D30AP-A, D30GRGI, & D30-B-GRGI

Ref. No.	Part Number	Description	Qty.
1	9910-629011	Pump Body w/bolts	1
2	9910-620101	Right Head Assembly (DX)	1
3	9910-620102	Left Head Assembly (SX)	1
4	9910-621430	M12 x 55 Bolt	8
5[1]	9910-620085	Diaphragm, Desmopan (Std.)	2
5	9910-620080	Diaphragm, Buna-N (Opt.)	2
6	9910-620120	Piston	2
7	9910-620140	Connecting Rod	2
8	9910-620110	Sleeve	2
9	9910-580470	Retainer Ring	2
10	9910-380300	Connecting Rod Pin	2
11	9910-380080	Ring Pin	4
12	9910-160230	Piston Ring	2
14	9910-1040180	Retaining Washer	2
15	9910-580360	Diaphragm Bolt	2
16	9910-180150	Nut	2
18[1,2,3]	9910-620030	O-Ring	4
19[2]	9910-1409050	Complete Valve Assembly	4
20	9910-111120	Retaining Ring	2
21	9910-620020	Cover	1
22[3]	9910-620210	O-Ring	1
23	9910-620291	Retaining Ring	1
24	9910-620190	Bearing	1
25	9910-850850	M6 X 30 Bolt	2
26	9910-550331	Washer	2
28[3]	9910-180101	O-Ring	2
29	9910-550030	Oil Sight Glass	1
30[3]	9910-550040	O-Ring	1
31	9910-550056	Oil Sight Glass Cap	1
32	9910-620160	Spacer	1
33	9910-550060	Roller Bearing	1
34	9910-620130	Seal	1
35	9910-620330	Retaining Ring	1
36	9910-620170	Crankshaft	1
37	9910-620150	Suction Manifold	1
38	9910-550340	Threaded Adapter	1
39[3]	9910-550350	O-Ring	2
40	9910-550242	Ring Nut	1
41	9910-550370	Hose Barb 1"	1
42[3]	9910-390060	O-Ring	4
44	9910-621780	M8 X 40 Bolt	8
45	9910-629211	Upper Air Chamber	1
46[1]	9910-550190	Accumulator Diaphragm, Buna-N	1
47	9910-622070	Lower Air Chamber Body	1
49[3]	9910-650542	O-Ring	1
50	9910-180020	Air Valve	1
51[3]	9910-390290	O-Ring	1
52	9910-620680	Key (AP-A Model)	1
53	9910-620172	Thru-Shaft 20 mm Dia. "AP Version"	1
53	9910-620174	Thru-Shaft 3/4" Dia. "AP Version"	1
58	9910-620630	Seal	1
59	9910-620021	Cover	1
60	9910-650660	Diaphragm Holder	1
61	9910-650670	Suction Diaphragm	1
62	9910-650690	Clamp	1
63	9910-1500350	PTO Shield	1
64	9910-820670	M10 X 16 Bolt	4
65	9919-620190	Bearing	1
66	2406-0023	Drain Plug, oil	1
67[3]	9910-740290	O-Ring	1
68	9910-620930	Spacer	1
69	9910-620940	Spacer	1
70	9910-380230	Bearing	1
74	9910-390270	Nut	2
75	9910-450145	Flange	1
76	9910-110130	1/2" Fitting plus Hose Barb	1

[1] Denotes Diaphragm Kit 9910-KIT1724

[2] Denotes Valve Kit 9910-KIT1917

[3] Denotes O-Ring Kit 9910-KIT1916

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
4	Bolt	393.7	44.1
15	Bolt	262.5	29.4
16	Nut	350.0	39.2
25	M6 x 30 Bolt	87.5	9.8
44	M8 x 40 Bolt	175.0	19.6
64	M10 x 16 Bolt	87.5	9.8
74	Nut	175.0	19.6



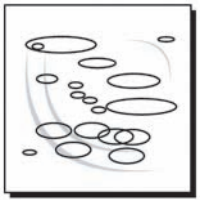
9910-KIT1724 Diaphragm Kit Desmopan

Ref. No.	Qty.
5	2
18	4
46	1



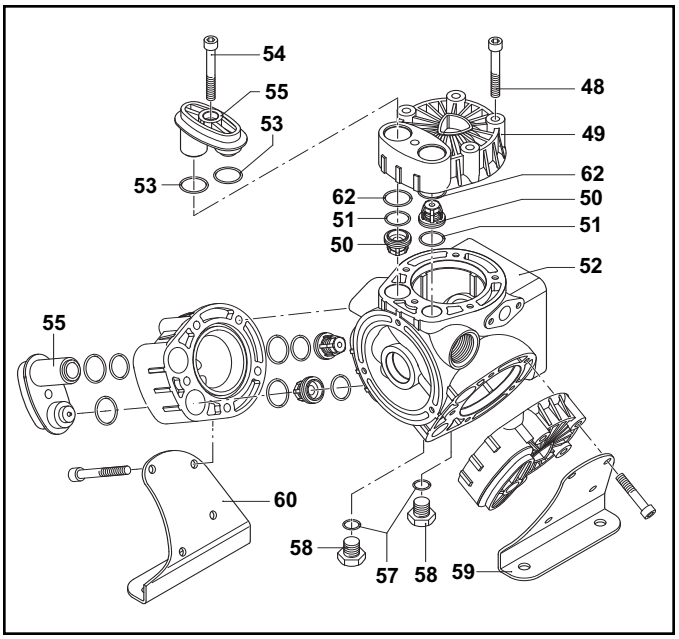
9910-KIT1917 Valve Kit

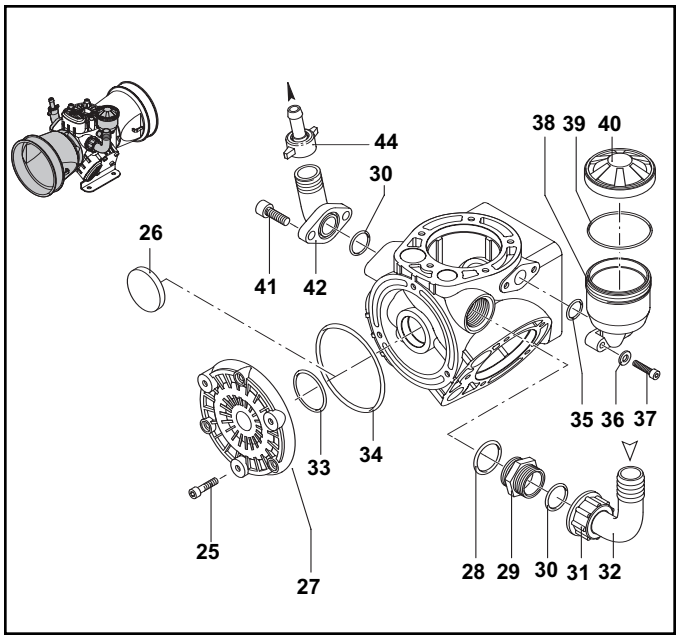
Ref. No.	Qty.
18	4
19	4

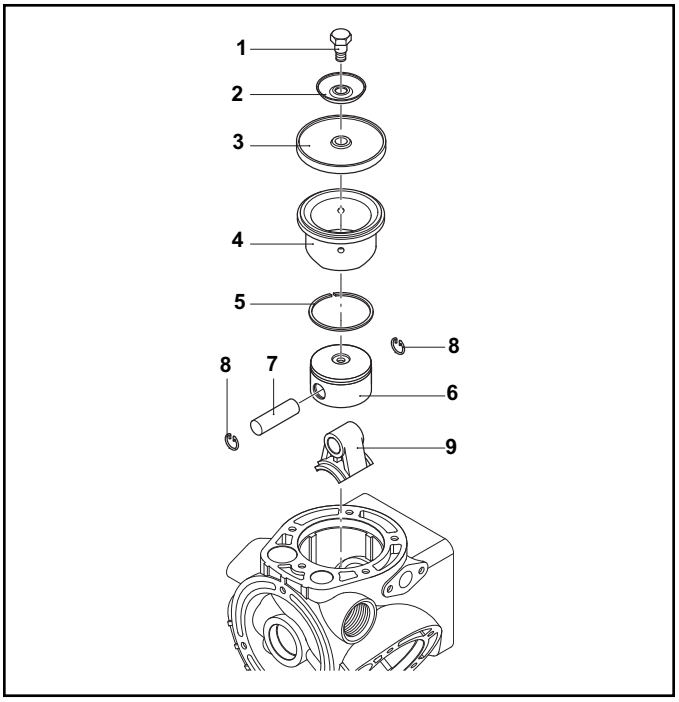


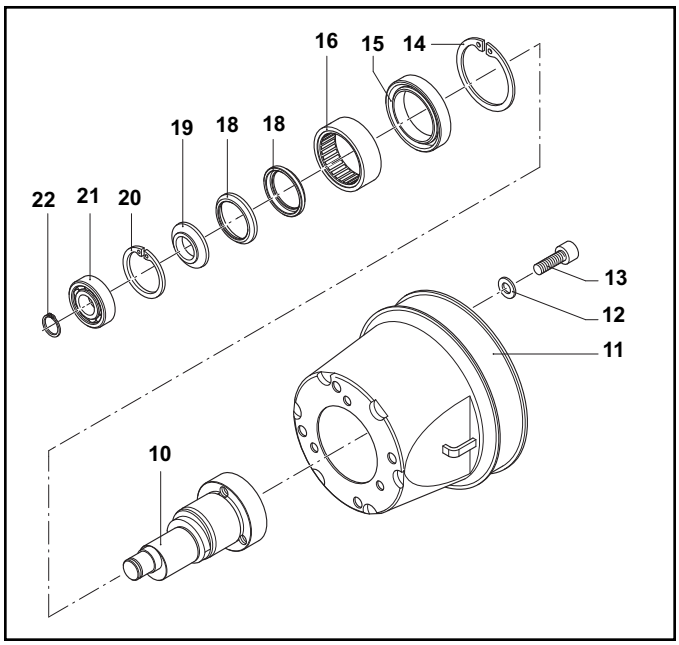
9910-KIT1916 O-Ring Kit

Ref. No.	Qty.
18	4
22	1
28	2
30	1
39	2
42	4
49	1
51	1
67	1









NOTE: When ordering parts, give QUANTITY, PART NUMBER, DESCRIPTION, and COMPLETE MODEL NUMBER. Reference numbers are used ONLY to identify parts in the drawing and are NOT to be used as order numbers.

Figure 29

Ref. No.	Part Number	Description	Qty.
1	9910-800090	Retaining Bolt	3
2	9910-800350	Plate	3
3[1]	9910-800085	Diaphragm Desmopan (Std.)	3
3	9910-800080	Diaphragm Buna-N (Opt.)	3
3	9910-80008T	Diaphragm Buna-N with Teflon Coating (Opt.)	3
4	9910-1880051	Sleeve (D303)	3
4	9910-1880050	Sleeve (D403)	3
5	9910-1880110	Piston Ring	3
6	9910-1880060	Piston	3
7	9910-1880120	Piston Pin	3
8	9910-380080	Pin Ring	6
9	9910-1880070	Connecting Rod	3
10	9910-1880101	Shaft (D303)	1
10	9910-1880100	Shaft (D403)	1
11	9910-1500350	Guard	1
12	9910-900270	Washer	4
13	9910-820670	M10 X 16 Bolt	4
14	9910-620330	Retaining Ring	1
15	9910-620130	Seal Ring	1
16	9910-550060	Roller Bushing	1
17	N/A		
18	9910-1880180	Connecting Rod Ring	2
19	9910-1880170	Spacer	1
20	9910-111120	Retaining Ring	1
21	9910-1461430	Bearing	1
22	9910-620291	Retaining Ring	1
25	9910-780060	M6 X 25 Bolt	3
26	9910-1880380	Seal	1
27	9910-1880020	Suction Manifold	1
28[3]	9910-390290	O-Ring	1
29	9910-550340	Threaded Adapter	1

Ref. No.	Part Number	Description	Qty.
30[3]	9910-550350	O-Ring	2
31	9910-550242	Ring Nut	1
32	9910-550370	Elbow (Hose Barb)	1
33[3]	9910-390201	O-Ring	1
34[3]	9910-1880130	O-Ring	1
35[3]	9910-390180	O-Ring	1
36	9910-550331	Washer	2
37	9910-1200440	M6 X 30 Bolt	2
38	9910-1040310	Oil Sight Glass	1
39	9910-650920	O-Ring	1
40	9910-1040322	Black Oil Tank Cap	1
41	9910-540290	M8 X 25 Bolt	2
42	9910-450145	Flange	1
44	9910-110130	1/2" Fitting and Hose	1
48	9910-800860	M8 X 55 Bolt	12
49	9910-1880030	Head	3
50[2]	9910-1889051	Complete Valve Assembly	6
51[2,3]	9910-1140450	O-Ring	6
52	9910-1880010	Pump Body	1
53[3]	9910-1880480	O-Ring	6
54	9910-280080	M8 X 60 Bolt	3
55	9910-1880040	Right Valve Cover	3
57[3]	9910-740290	O-Ring	2
58	2406-0023	Drain Plug, oil	2
59	9910-1880080	Right Base	1
60	9910-1880090	Left Base	1
61	9910-620680	Key	1
62	9910-780050	O-Ring	6

[1] Denotes Diaphragm Kit 9910-KIT2423
[2] Denotes Valve Kit 9910-KIT2388
[3] Denotes O-Ring Kit 9910-KIT2389

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
1	Bolt	87.5	9.8
13	Bolt	87.5	9.8
25	Bolt	87.5	9.8
37	Bolt	87.5	9.8
41	Bolt	175.0	19.6
48	Bolt	175.0	19.6
54	Bolt	175.0	19.6
58	Plug	175.0	19.6



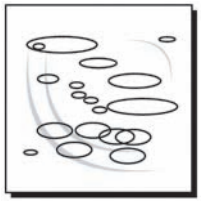
9910-KIT2423 Diaphragm Kit Desmopan

Ref. No.	Qty.
3	3



9910-KIT2388 Valve Kit

Ref. No.	Qty.
50	6
51	6



9910-KIT2389 O-Ring Kit

Ref. No.	Qty.
28	1
30	2
33	1
34	1
35	1
39	1
51	9
53	6
57	2
62	6

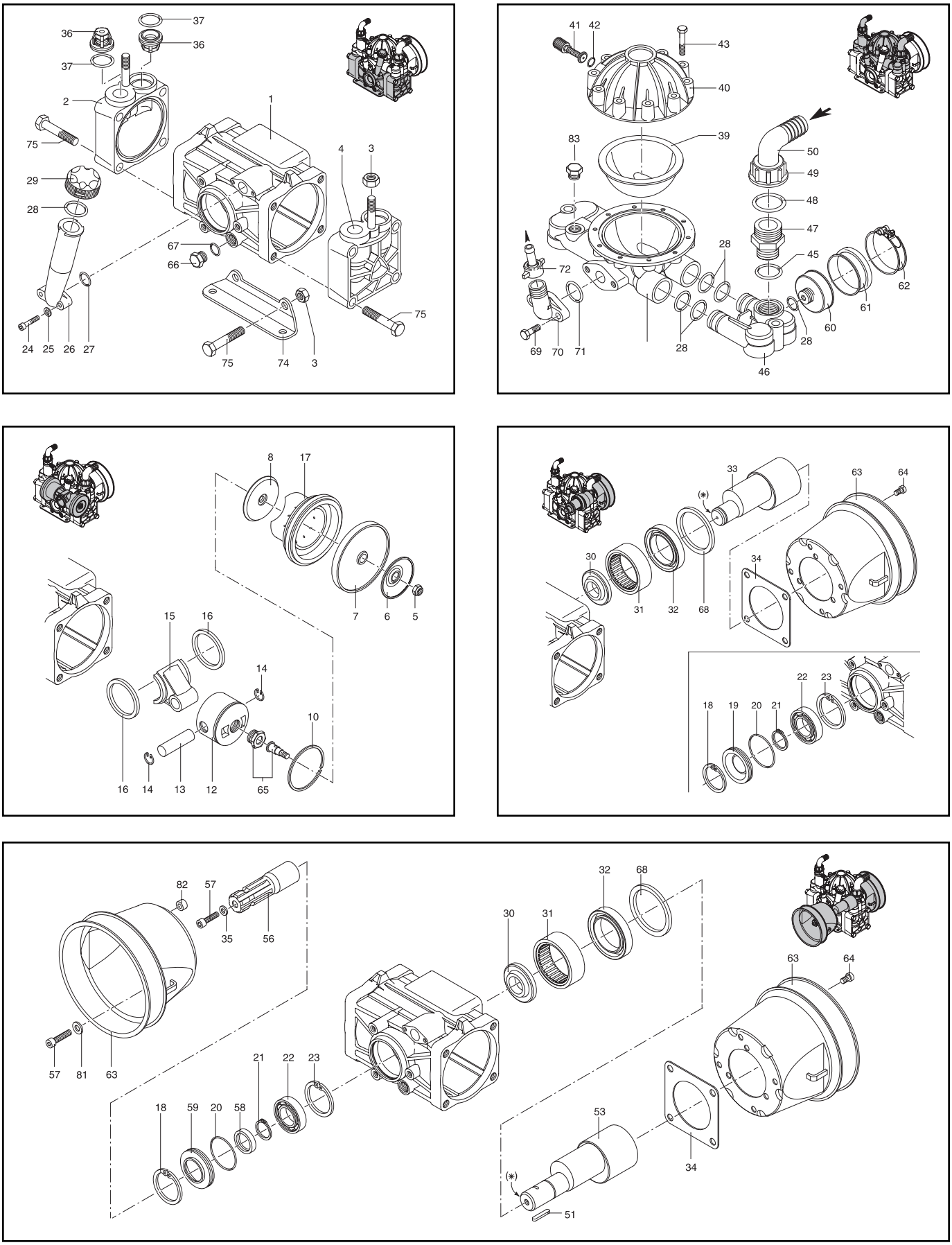


Figure 30

Form L-1382 (09/10)

Ref. No.	Part Number	Description	Qty.
1	9910-659011	Pump body	1
2	9910-650102	Left head SX	1
3	9910-320130	Nut	4
4	9910-650101	Right head DX	1
5	9910-160311	M 8 H 10 Nut	2
6	9910-650390	Retaining washer	2
7[2]	9910-650085	Diaphragm Desmopan (Std.)	2
7	9910-650082	Diaphragm Buna-N (Opt.)	2
7	9910-65008T	Diaphragm Buna-N with Teflon Coating (Opt.)	2
8	9910-650090	Diaphragm support washer	2
10	9910-650190	Piston ring	2
12	9910-650121	Piston	2
13	9910-650071	Piston pin	2
14	9910-160691	Retainer ring	4
15	9910-650142	Connecting rod	2
16	9910-650130	Con rod rings	2
17	9910-650111	Sleeve	2
18	9910-200390	Retainer ring	1
19	9910-650040	Pump body cover	1
20[1]	9910-650920	O-Ring	1
21	9910-650480	Retainer ring	1
22	9910-230330	Bearing	1
23	9910-161050	Retainer ring	1
24	9910-850850	Bolt	2
25	9910-550331	Washer	2
26	9910-650030	Oil Sight Glass	1
27[1]	9910-180101	O-Ring	2
28[1]	9910-550040	O-Ring	5
29	9910-550056	Sight Glass cap	1
30	9910-650160	Bearing spacer	1
31	9910-650200	Roller bearing	1
32	9910-1400150	Shaft seal	1
33	9910-650170	Shaft	1
34	9910-1400140	Flange	1
35	9910-961340	Washer	1
36[3]	9910-659050	Complete valve	4
37[2,3,1]	9910-320030	O-Ring	4
38	9910-659204	Complete lower air chamber	1
39[2]	9910-650520	Air chamber diaphragm	1
39	9910-65052T	Air chamber diaphragm-Teflon(Opt.)	1
40	9910-659206	Upper air chamber	1
41	9910-180020	Air valve (includes #42)	1
42[1]	9910-650542	Gasket	1
43	9910-621780	M8 x 40 Bolt	10
45[1]	9910-390290	O-Ring	1
46	9910-650150	Suction manifold	1
47	9910-450120	Threaded adapter	1
48	9910-390290	O-Ring	1
49	9910-580060	Ring nut	1
50	9910-580040	Hose barb 1-1/4"	1
51	9910-650250	Key	1
53	9910-650171	Through-shaft (AP-A)	1
56	9910-650300	PTO shaft adapter	1
57	9910-680350	Bolt	4
58	9910-650490	Seal (AP-A model)	1
59	9910-650041	Spacer (AP-A model)	1
60	9910-650660	Diaphragm holder	1
61	9910-650670	Dampener diaphragm	1
62	9910-650690	Clamp	1
63	9910-1500350	Plastic shield	2
64	9910-820670	M10 x 16 Bolt	4
65	9910-659080	Complete bushing	2
66	2406-0023	Drain plug, oil	1
67[1]	9910-740290	O-Ring	1
68	9910-1400110	Flange	1
69	9910-540290	M8 x 25 Bolt	2
70	9910-450145	Discharge flange housing	1
71[1]	9910-550350	O-Ring	1
72	9910-110130	Hose barb and Nut 1/2"	1
74	9910-320392	Base	2
75	9910-750060	M12 x 65 Bolt	10
81	9910-380241	Washer	3
82	9910-1200521	Spacer	3
83	9910-820361	Plug	1

[1] Denotes O-Ring Kit 9910-KIT1919

[2] Denotes Diaphragm Kit (Desmopan) 9910-KIT1725

[3] Denotes Valve Kit 9910-KIT1920

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
3	Nut	271.0	29.4
5	Nut	171.4	19.6
43	Bolt	171.4	19.6
57	Bolt	171.4	19.6
64	Bolt	87.5	9.8
66	Plug	171.4	19.6
69	Plug	171.4	19.6
75	Bolt	435.0	49.0



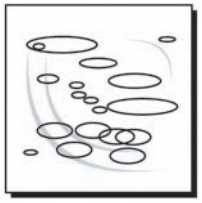
9910-KIT1725 Diaphragm Kit Desmopan

Ref. No.	Qty.
7[2]	2
37	4
39[2]	1



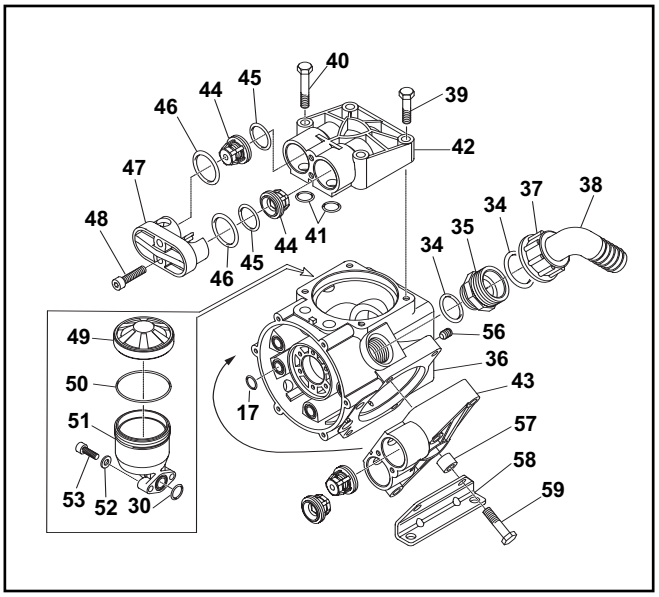
9910-KIT1920 Valve Kit

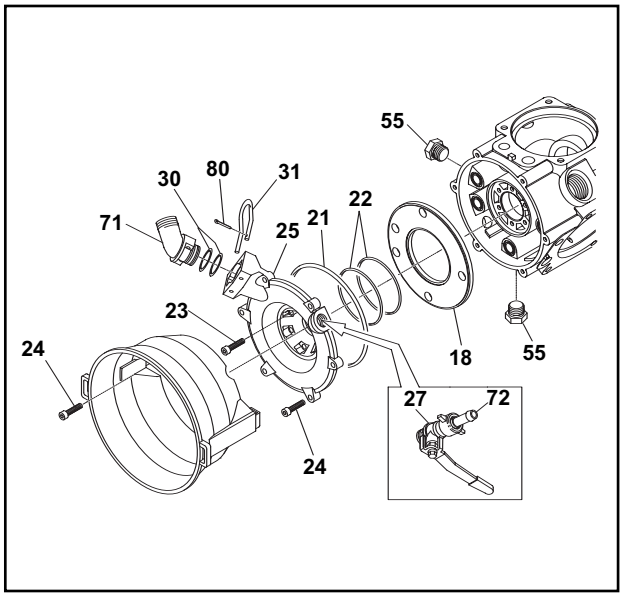
Ref. No.	Qty.
36	4
37	4

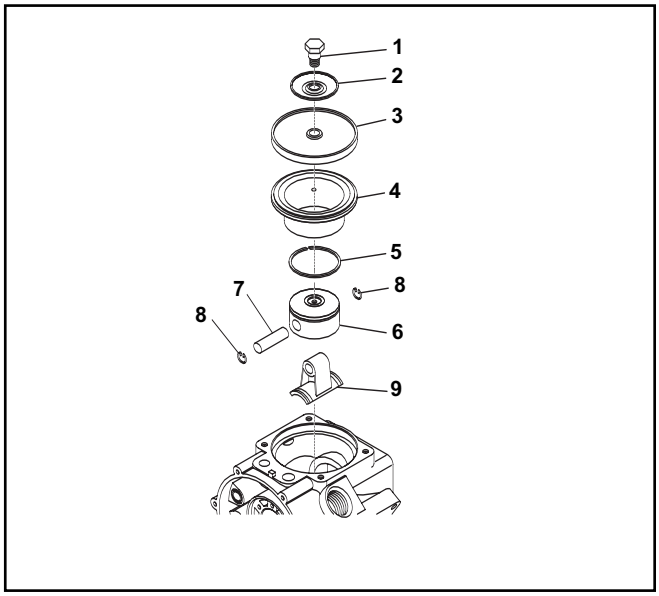


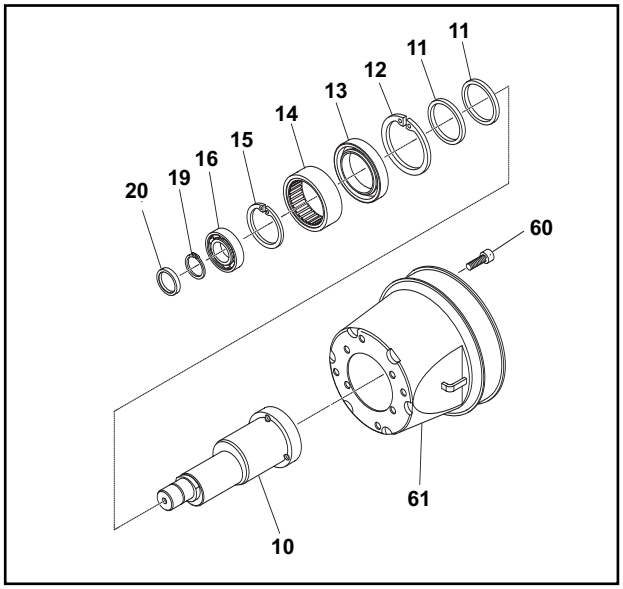
9910-KIT1919 O-Ring Kit

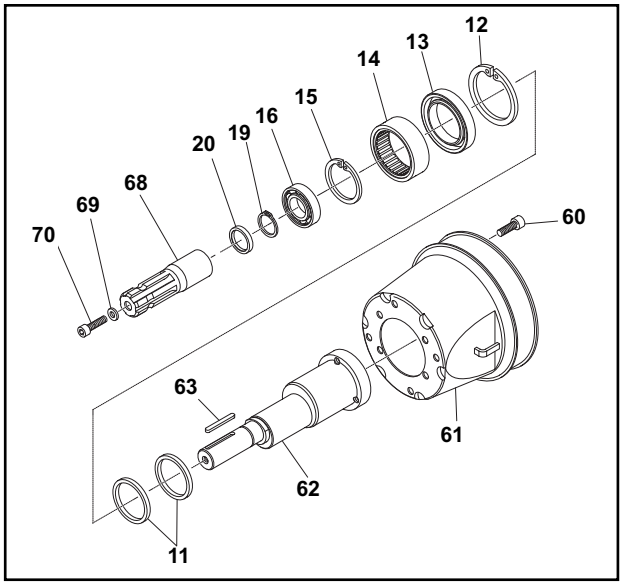
Ref. No.	Qty.
20	1
27	2
28	5
37	4
42	1
45	1
67	1
71	1











NOTE: When ordering parts, give QUANTITY, PART NUMBER, DESCRIPTION, and COMPLETE MODEL NUMBER. Reference numbers are used ONLY to identify parts in the drawing and are NOT to be used as order numbers.

Figure 31

Ref. No.	Part Number	Description	Qty.
1	9910-580360	Retaining Bolt	3
2	9910-1040180	Washer	3
3[1]	9910-620085	Diaphragm, Desmopan (Std.)	3
3	9910-620080	Diaphragm, Buna-N (Opt.)	3
3	9910-62008T	Diaphragm, Buna-N with Teflon Coating (Opt.)	3
4	9910-1300110	Piston Sleeve	3
5	9910-160230	Seal Ring	3
6	9910-620120	Piston	3
7	9910-380300	Connecting Pin	3
8	9910-380080	Retaining Ring	3
9	9910-1300140	Connecting Rod	3
10	9910-1300170	Shaft	1
11	9910-1300120	Retaining Ring	2
12	9910-1300240	Retaining Ring	1
13	9910-1300220	Seal	1
14	9910-1300210	Bearing	1
15	9910-1260790	Retaining Ring	1
16	9910-180400	Bearing	1
17[3]	9910-740290	O-Ring	5
18	9910-1300020	Manifold Plate	1
19	9910-1260770	Retaining Ring	1
20	9910-1300230	Seal	1
21[3]	9910-1300270	O-Ring	1
22[3]	9910-640030	O-Ring	2
23	9910-880280	Bolt	6
24	9910-1040370	Bolt	6
25	9910-1300030	Outlet Manifold	1
26	9910-1040330	Shield (Optional)	1
27	9910-130491	Ball Valve 3/8" Hose Barb Assy.	1
30[3]	9910-390180	O-Ring	2
31	9910-1040690	Clip	2
34[3]	9910-390290	O-Ring	2

[1] **Denotes Diaphragm Kit 9910-KIT1881**

[2] **Denotes Valve Kit 9910-KIT1987**

[3] **Denotes O-Ring Kit 9910-KIT1984**

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
1	Bolt	261.6	29.3
23	Bolt	87.5	9.8
24	Bolt	87.5	9.8
39	Bolt	393.7	44.1
40	Bolt	393.7	44.1
48	Bolt	175.0	19.6
53	Bolt	87.5	9.8
55	Bolt	87.5	9.8
59	Bolt	393.7	44.1
60	Bolt	175.0	19.6
70	Bolt	175.0	19.6

Ref. No.	Part Number	Description	Qty.
35	9910-450120	Port Adapter	1
36	9910-1300010	Body	1
37	9910-580060	Hose Barb Nut	1
38	9910-580040	Hose Barb	1
39	9910-200230	M10 x 45 Bolt	4
40	9910-640230	M10 x 60 Bolt	4
41[3]	9910-480440	O-Ring	6
42	9910-1300101	Head (DX)	2
43	9910-1300102	Head (SX) Bottom Left	1
44[2]	9910-1409050	Valve	6
45[2,3]	9910-620030	O-Ring	6
46[2,3]	9910-540361	O-Ring	6
47	9910-1300190	Valve Retainer	3
48	9910-620610	M8 x 30 Bolt	6
49	9910-1040322	Oil Cap	1
50[3]	9910-650920	O-Ring	1
51	9910-1040310	Oil Sight Glass	1
52	9910-550331	Washer	2
53	9910-850850	M6 x 30 Bolt	2
55	9910-130171	Plug	1
56	9910-770070	Drain Plug, oil	1
57	9910-1300280	Spacer	2
58	9910-1300090	Mounting Base	2
59	9910-1300360	M10 x 65 Bolt	4
60	9910-820670	M10 x 16 Bolt	4
61	9910-1500350	Shield (Opt.)	1
62	9910-1300160	Thru-Shaft (Opt.)	1
63	9910-650250	Key	1
68	9910-650300	1-3/8" 6B Spline Adapter	1
69	9910-961340	Washer	1
70	9910-680350	M8 x 35 Bolt	1
71	9910-1040760	Coupling	1
72	9910-110131	Hose Barb (3/8)	1
80	9910-1040950	Split Pin	1



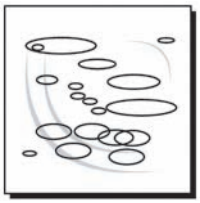
9910-KIT1881 Diaphragm Kit Desmopan

Ref. No.	Qty.
3	3
41	6



9910-KIT1987 Valve Kit

Ref. No.	Qty.
44	6
45	6
46	6



9910-KIT1984 O-Ring Kit

Ref. No.	Qty.
17	6
21	1
22	2
30	3
34	2
41	6
45	6
46	6
50	1

Notes

Notes

Limited Warranty on Hypro/SHURflo Agricultural Pumps & Accessories

Hypro/SHURflo (hereafter, "Hypro") agricultural products are warranted to be free of defects in material and workmanship under normal use for the time periods listed below, with proof of purchase.

- Pumps: one (1) year from the date of manufacture, or one (1) year of use. This limited warranty will not exceed two (2) years, in any event.
- Accessories: ninety (90) days of use.

This limited warranty will not apply to products that were improperly installed, misapplied, damaged, altered, or incompatible with fluids or components not manufactured by Hypro. All warranty considerations are governed by Hypro's written return policy.

Hypro's obligation under this limited warranty policy is limited to the repair or replacement of the product. All returns will be tested per Hypro's factory criteria. Products found not defective (under the terms of this limited warranty) are subject to charges paid by the returnee for the testing and packaging of "tested good" non-warranty returns.

No credit or labor allowances will be given for products returned as defective. Warranty replacement will be shipped on a freight allowed basis. Hypro reserves the right to choose the method of transportation.

This limited warranty is in lieu of all other warranties, expressed or implied, and no other person is authorized to give any other warranty or assume obligation or liability on Hypro's behalf. Hypro shall not be liable for any labor, damage or other expense, nor shall Hypro be liable for any indirect, incidental or consequential damages of any kind incurred by the reason of the use or sale of any defective product. This limited warranty covers agricultural products distributed within the United States of America. Other world market areas should consult with the actual distributor for any deviation from this document.

Return Procedures

All products must be flushed of any chemical (ref. OSHA section 1910.1200 (d) (e) (f) (g) (h)) and hazardous chemicals must be labeled/tagged before being shipped* to Hypro for service or warranty consideration. Hypro reserves the right to request a Material Safety Data Sheet from the returnee for any pump/product it deems necessary. Hypro reserves the right to "disposition as scrap" products returned which contain unknown fluids. Hypro reserves the right to charge the returnee for any and all costs incurred for chemical testing, and proper disposal of components containing unknown fluids. Hypro requests this in order to protect the environment and personnel from the hazards of handling unknown fluids.

Be prepared to give Hypro full details of the problem, including the model number, date of purchase, and from whom you purchased your product. Hypro may request additional information, and may require a sketch to illustrate the problem.

Contact Hypro Service Department at 800-468-3428 to receive a Return Merchandise Authorization number (RMA#). Returns are to be shipped with the RMA number clearly marked on the outside of the package. Hypro shall not be liable for freight damage incurred during shipping. Please package all returns carefully. All products returned for warranty work should be sent **shipping charges prepaid** to:

HYPRO
Attention: Service Department
375 Fifth Avenue NW
New Brighton, MN 55112

For technical or application assistance, call the **Hypro Technical/Application number: 800-445-8360**. To obtain service or warranty assistance, call the **Hypro Service and Warranty number**: **800-468-3428**; or send a fax to the **Hypro Service and Warranty FAX**: **651-766-6618**.

*Carriers, including U.S.P.S., airlines, UPS, ground freight, etc., require specific identification of any hazardous material being shipped. Failure to do so may result in a substantial fine and/or prison term. Check with your shipping company for specific instructions.
instructions.

Pentair
SPRAY & INJECTION TECHNOLOGIES GROUP
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