John Deere SprayMaster™ Power Washer

Series PM182401, for Specific Installations on John Deere Model 4700 Field Sprayer with optional Rinse Tank

Form 1469-JD

Operation, Repair, and Parts Manual

01-00

Description

Driving a dirty sprayer on public roads and highways may violate state and county health codes in some states. A clean sprayer drops nothing on the roads and highways. Field cleaning of the sprayer from one job to the next is a good business practice and insures happy customers. Cleaning a sprayer in town requires containment of the spray materials to prevent contamination of local water supplies.

The John Deere SprayMaster Power Washer, complete On-Board Hydraulic Powered High Pressure Wash System is designed to make short work of the cleaning process. With 4 gpm @ 1500 psi, 50 feet of high pressure hose, and a trigger gun with a 36'' lance, you can quickly clean the sprayer before it leaves the field. The generous 120 gallon on board water supply ensures uninterrupted cleaning.

General Safety Information

The following special attention notices are used to notify and advise the user of this product of procedures that may be dangerous to the user or result in damage to the product.

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.

- Do not pump at pressures higher than the maximum recommended pressure.
- Maximum liquid temperature is 140° F. for better packing and valve life when the water temperatures are above 110° F, a pressure feed system of 40 to 60 psi should be incorporated.
- Release all pressure within the system before servicing any component.
- The high-pressure gun and lance should be securely held by hand or in a holding device before the unit is started. Make sure the lance is not pointed toward any person or animal. Failure to do so could result in serious injury.
- Periodically inspect the pump and the system components. Perform routine maintenance as required (see Repair Section).
- Do not use these pumps for pumping water or other liquids for human or animal consumption.

Start-up and Maintenance

Before Starting Up

- Check that the oil is at the correct level using the Dipstick, topping off if necessary (See Figure 1). Use a nondetergent, SAE 30 weight oil.

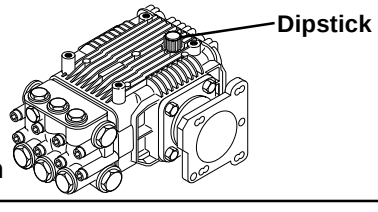


FIGURE 1
Dipstick Location

- Change oil after 40 hours of break-in operation. Thereafter, change the oil every year or 500 hours, whichever comes first.

NOTE: During warm months keep the power Washer Pump filled with water and the Outlet Pressure Hose and Gun Assembly attached. For storage during freezing conditions, flush the Pump with the specified John Deere Winterizing Fluid, N209391-CA (Canada) or N209318-US (U.S.). Leave this fluid in the Pump with the Outlet pressure hose and Gun attached.

During Bypass Operation

- When the water is diverted back to the pump inlet side, a temperature rise occurs. A thermal relief is included to keep the water temperature at a maximum of 145° F.

Unloader Valve Safety Information

- Maximum pressure is set at the factory and cannot be adjusted to a higher pressure.
- Do not tamper with the unloader valve settings or with the locking ring; doing so will void the warranty. Damage to the pressure washer may result.

WARNING: Water discharged from the thermal relief valve is hot (145° F).

Operation

1. Check the water level in the rinse tank. Never operate the Pressure Wash Pump without a water supply.

NOTE: Periodically check the Line Strainer and clean the Line Strainer if it is necessary (See Figure 2).

2. Open the water supply valve.

CAUTION: Do not operate any other hydraulic functions on the 4700 while the Power Washer is in use.

3. Set the engine speed to 1,500 RPM.

4. Activate the Hydraulic Motor by placing the Lever on the Hydraulic Control Valve in the **DOWN** position (See Figure 3).

5. Point the Spray Gun at the target area and squeeze the Spray Gun Trigger (See Figure 4).

6. The standard Power Washer is equipped with an adjustable cleaning angle nozzle. The cleaning angle may be varied throughout its range by rotating the black outer body clockwise (CW) or counterclockwise (CCW).

7. If your Power Washer is equipped with the optional Detergent Injection System. The nozzle must be set in Low Pressure Mode to activate the injector and draw soap. For rinsing, the nozzle should be set in High pressure Mode. Pushing the black nozzle body forward places the nozzle in the Low Pressure Mode. Pulling the black nozzle body back places the nozzle in the High Pressure Mode.

NOTE: When finished using the Power Washer, make sure the Power Washer is shut off (Hydraulic Control Valve lever in the UP position) before operating other hydraulic functions on the 4700 (See Figure 5).

8. Store all the Power Washer components in brackets provided for their storage.

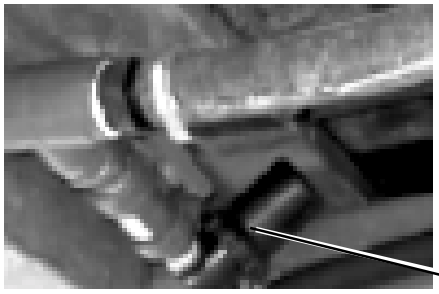


FIGURE 2

FIGURE 3

FIGURE 4

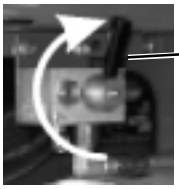


FIGURE 5

Troubleshooting

SYMPTOM	PROBABLE CAUSE(S)	CORRECTIVE ACTION
The pump runs but produces no flow.	Pump is not primed.	Open water supply valve and fill rinse tank.
Pump fails to prime.	Air is trapped in pump.	Squeeze and release trigger several times. If pump still does not prime, disconnect the discharge hose and run until air is evacuated, then reattach the discharge hose.
Low pressure at nozzle.	Pump is partially primed.	Repeat steps from above .
	Air leak in suction hose or pump inlet fittings.	Make sure all the inlet fittings are tight and not leaking.
	Partially clogged strainer.	Unscrew strainer bowl and clean screen.
Pump loses prime, pressure fluctuates, and/ or pump makes chattering noise.	Air leak in suction hose or pump inlet fittings.	Make sure all the inlet fittings are tight and not leaking.
	Partially clogged strainer.	Unscrew strainer bowl and clean screen.
Rapid cycling of pressure when gun trigger is closed.	Water leakage down stream from unloader valve.	Check for leaks in discharge pressure hose, pipe fittings, gun wand, and nozzle assembly.
4700 Sprayer operation is unusually slow.	Lever on Hydraulic Control Valve is in the DOWN position and the Power Washer is running.	Shut Power Washer OFF by returning Control Lever up to the OFF position
Hydraulic Motor Oil Seal leaks.	Backward plumbing of hydraulics.	Verify proper plumbing of hydraulics to Motor; Motor Supply Hose to "PRESS" port and Return Hose to "TANK" port.

If the Power Washer is used and/or not maintained properly, it may be necessary to service the pump and/or Unloader Valve. Refer to the proper Sections in this manual for servicing instructions.

PACKING REPLACEMENT
PMKIT2747 and PMKIT2745

1. Water leakage between the Head and the Crankcase indicates the Plunger Packings require replacement.

2. Use a Hex wrench to remove the Head Bolts; then, remove the Head from the Crankcase by rotating the Crankshaft while using a screwdriver to carefully pry between the Head and the Crankcase (See Figure 6).

3. After the Head has been removed, use an Extractor Pliers to remove the Plunger Seal Retainers, and Packings (See Figure 7).

4. Using a small bladed screwdriver, remove the Low Pressure Packing from the Retainer.

5. Insert a Low Pressure Packing into the Retainer by forming the Seal into a kidney or oval shape; then, work the Seal into place in the Retainer.

6. Apply a thin film of oil the Retainer O-ring; then, replace the Retainer O-ring.

7. Apply a thin film of oil to all Seals; then, place the High Pressure Packing and Cup Spreader into the head bore.

8. Place the Brass Packing Retainer into the Head and push the Retainer in until the Retainer O-ring is sealed in the Head.

9. Check the Plungers for damage or cracking (refer to Plunger Replacement section).

10. Repeat Steps **5** through **8** for the rest of the Cylinders.

11. Lightly oil the Plungers and install the Head onto the Plungers.

12. Push the head against the Crankcase; then, secure the Head to the Crankcase with the Head Bolts.

13. Tighten the Head Bolts to 88 in lbs. torque, in the sequence shown (See Figure 8).

VALVE REPLACEMENT
PM34300424

1. Erratic or low pressure operation may be caused by debris or foreign material in the Valves or worn Poppets or a combination of worn Poppets and/or Seats.

2. Remove the Valve Caps; then, using a needle-nosed plier, pull out the Valve Assembly (See Figure 9).

3. Inspect the Valve for debris or foreign material and signs of wear. If the Valve is worn or damaged, replace the Valves and the valve O-rings.

4. Install the new Valve Assemblies; then, install the Valve Caps and tighten them to 25 ft lbs. torque.

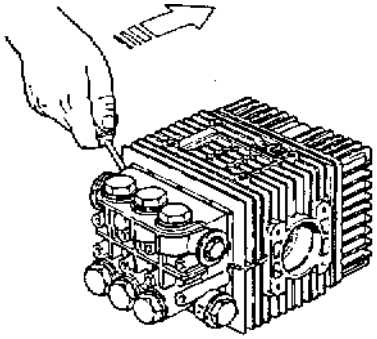


FIGURE 6

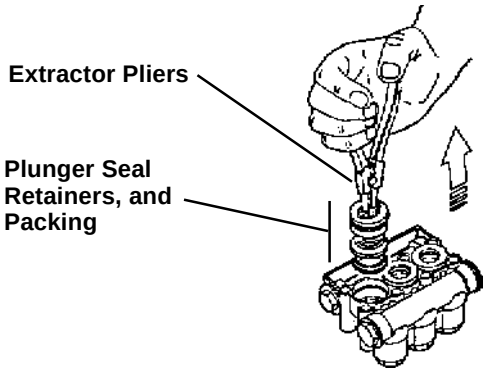


FIGURE 7

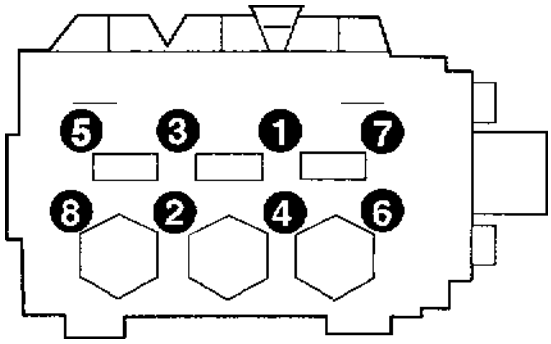


FIGURE 8

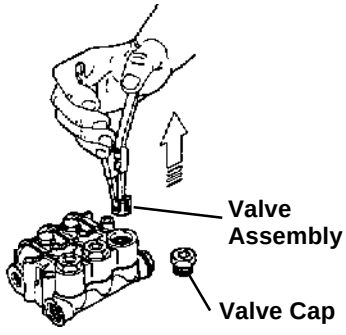


FIGURE 9

PLUNGER REPLACEMENT
PMKIT2746

1. If damage to the Plungers is noted during Packing Replacement, continue with Plunger Replacement.

2. Remove the Pump Head from the Crankcase as described in PACKING REPLACEMENT.

3. Remove the Plunger Retaining Nut and the Plunger Retaining Nut Washer; then, carefully slide the Plunger off the Lower Plunger (See Figure 10).

4. Remove and discard the old O-ring and Slinger Ring from the Lower Plunger (See Figure 10).

5. Install the new Slinger onto the loser Plunger.

6. Apply a thin film of oil to the Lower Plunger; then, install the new O-ring.

7. Slide the Plunger onto the Lower Plunger.

8. Apply a drop of blue anaerobic thread locking compound to the Plunger Retaining Nut; then, install the Plunger Retaining Nut and Washer onto the Lower Plunger.

9. Tighten the Plunger Nut to 88 in lbs.

10. Install the new Plunger Packings as described in PACKING REPLACEMENT.

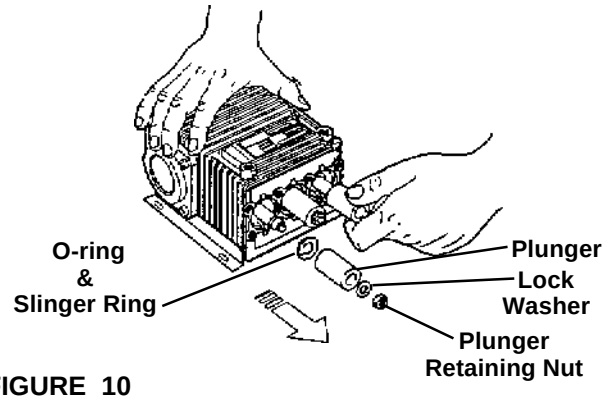


FIGURE 10

Hydraulic Motor Repair Instructions

HYDRAULIC MOTOR DISASSEMBLY

CAUTION: Dirt and other contaminants can damage hydraulic motor components. Always maintain a clean work area when working with hydraulic motors or components.

1. Place the Hydraulic Motor in a vise (See Figure 11).

2. Using a 1-1/16'' Box wrench, remove the Tank Port Adapter and Pressure Port Adapter (See Figure 11).

3. Using a 1/4'' Hex wrench, remove the Socket Head Cap Screws from the Motor End Plate (See Figure 11).

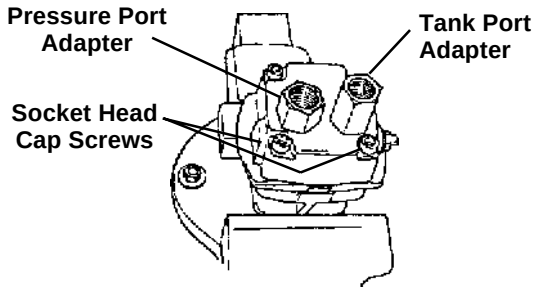


FIGURE 11

NOTE: If the Motor End Plate will not lift off easily, use a small screwdriver to carefully pry apart the boss portion of the End Plate and Gerotor Housing (See Figure 12). If the Gerotor Housing will not easily lift off, carefully pry apart the boss area between the Gerotor Housing and the Motor Body.

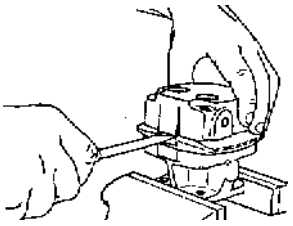


FIGURE 12

4. Remove bottom parts of the Gerotor.

5. Remove and save the Shaft Key.

6. Remove and discard the old O-ring from the Motor End Plate and Body.

7. Inspect the Motor End Plate, Body, and Gerotor Housing for signs of wear or gouging. If wear or gouging has occurred in both the Motor End Plate, and Body, these components must be replaced. If the Gerotor Housing is damaged, the Gerotor parts must also be replaced.

8. While the Motor is disassembled, clean all components in an approved part cleaning solvent.

REMOVING THE SHAFT ASSEMBLY FROM THE MOTOR BODY

1. Remove the Slinger Ring from the Motor Shaft.

WARNING: Always wear safety goggles when working with spring or tension loaded fasteners or devices.

2. Remove the Retaining Ring next to the Ball Bearing in the Front Motor Body.

NOTE: If the Bearing is binding against the Retaining Ring preventing easy removal of the Retaining Ring, slide a 1" diameter section of pipe over the Shaft; then, gently press down with an Arbor Press to relieve the pressure on the Retaining Ring.

3. Place the Motor Body in a Support Fixture with the threaded portion of the Shaft inside the Support Fixture; then, using an Arbor Press, press the Shaft Assembly out of the Motor Body (See Figure 13).

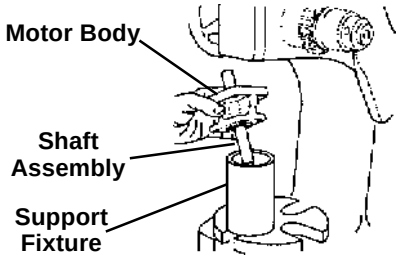


FIGURE 13

HYDRAULIC MOTOR SHAFT DISASSEMBLY

WARNING: Always wear safety goggles when working with spring or tension loaded fasteners or devices.

1. Remove the Large Retaining Ring from the Shaft.

2. Remove the Thrust Bearing Assembly (includes the Thrust Bearing and two Thrust Bearing Races) from the Shaft and the Seal Spacer.

3. Remove the Small Retaining Ring next to the Shaft Ball Bearing.

4. Place the Shaft (threaded end up) in a pipe support fixture; then, place the two Support Bars included in the repair kit opposite each other and between the Seal on the Shaft and the support fixture (See Figure 14).

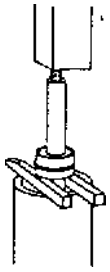


FIGURE 14

5. Thread the Impeller Nut on the end of the Shaft; then, using an Arbor Press; press the Shaft through the Bearing, Seal Spacer, and Seal (See Figure 14).

6. Inspect the sealing area of the Shaft and other components for wear and replace then if necessary.

INSTALLING THE NEW SHAFT SEAL

1. The sealing lips on a new Seal must be expanded to fit on the Shaft. Press the Seal onto the large end of the Shaft with the Seal Lip facing out. Do not push the Seal past the Shaft keyway.

2. Remove the Seal from the Shaft after the seal lip has been expanded.

3. With the seal lip facing the large end of the Shaft, slide the Seal over the threaded end of the Shaft; then, gently push it onto the raised area of the Shaft, stopping approximately 1/4" from the large retaining ring groove.

WARNING: Always wear safety goggles when working with spring or tension loaded fasteners or devices.

4. Install the Seal Spacer, Thrust Bearing Race, Thrust Bearing, second Thrust Bearing Race, and the large Retaining Ring over the threaded end of the Shaft.

INSTALLING THE SHAFT BEARING

1. Install the Spacer Ring, and Ball Bearing over the threaded end of the Shaft.

2. Insert the Shaft (threaded end down) into the Support Fixture.

3. Place the two support bars opposite each other and between the Bearing and the Fixture; then, using an Arbor Press, carefully press the Shaft down, but allowing enough room for the Retaining Ring next to the Bearing to be installed.

CAUTION: The Spacer Ring between the Seal and Bearing must be free floating, not binding.

4. Place the Shaft Assembly into the Motor Body Bearing Bore with the threaded end facing up (See Figure 15).

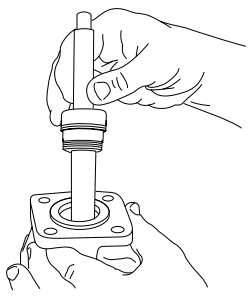


FIGURE 15

NOTE: A fixture is required for the next Step; fabricate this fixture from a 1" diameter by 4" long section of PVC pipe. When using this fixture make sure all surfaces are clean and the support edges are smooth.

5. Place the fixture over the Shaft and using an Arbor Press, press the Shaft Assembly down until the Retaining Rings can be installed in its groove in the bearing bore of the Motor Body.

WARNING: Always wear safety goggles when working with spring or tension loaded fasteners or devices.

6. Install the Retaining Ring into the groove of the Bearing Bore.

HYDRAULIC MOTOR FINAL ASSEMBLY

1. Place the Motor Body in a vise with the large end of the Shaft facing up.

2. Apply a thin film of oil to the O-ring; then, install the O-ring in the Motor Body.

3. Install the Woodruff key or Roll Pin on the Shaft; then, place the Inner Gear onto the Shaft, making sure the Gerotor slot lines up with the Key in the Shaft.

4. Install the outer portion of the Gerotor, making sure the Gerotor is centered within the o-ring groove on the Body.

5. Install the Gerotor housing, making sure the pins in the Gerotor Housing line up with their respective holes in the Body.

6. Apply a thin coating of hydraulic or mineral oil to the area between the Inner and outer Gerotor, the Outer Gerotor, and the Gerotor Housing.

7. Apply a thin film of oil to the O-ring and install it on the Motor End Plate.

8. Place the End Plate on the Gerotor Housing, making sure the holes in the End Plate line up with the Pins in the Gerotor Housing.

10. Apply a drop of blue anaerobic thread locking compound to the threads of the four Socket Head Cap Screws; then, using the four Socket Head Cap Screws, secure the Motor End Plate to the Gerotor Housing.

11. Alternately and evenly, tighten the four Socket Head Cap Screws to 15 ft lbs. torque.

12. Install a new O-ring in both Port Adapters.

13. Install the Pressure Port Adapter onto the Motor; then, install the Tank Port Adapter onto the Motor.

14. Remove the Hydraulic Motor from the vise and rotate the Shaft by hand to check for binding of the Shaft.

15. Install a Slinger ring over the Motor shaft.

16. Apply a drop of blue anaerobic thread locking compound to the threads of the four Hex Head Bolts; then, using the four Hex Head Bolts, secure the Motor into the pump Mounting Flange.

17. Alternately and evenly, tighten the four Hex Head Bolts.

Replacement Parts

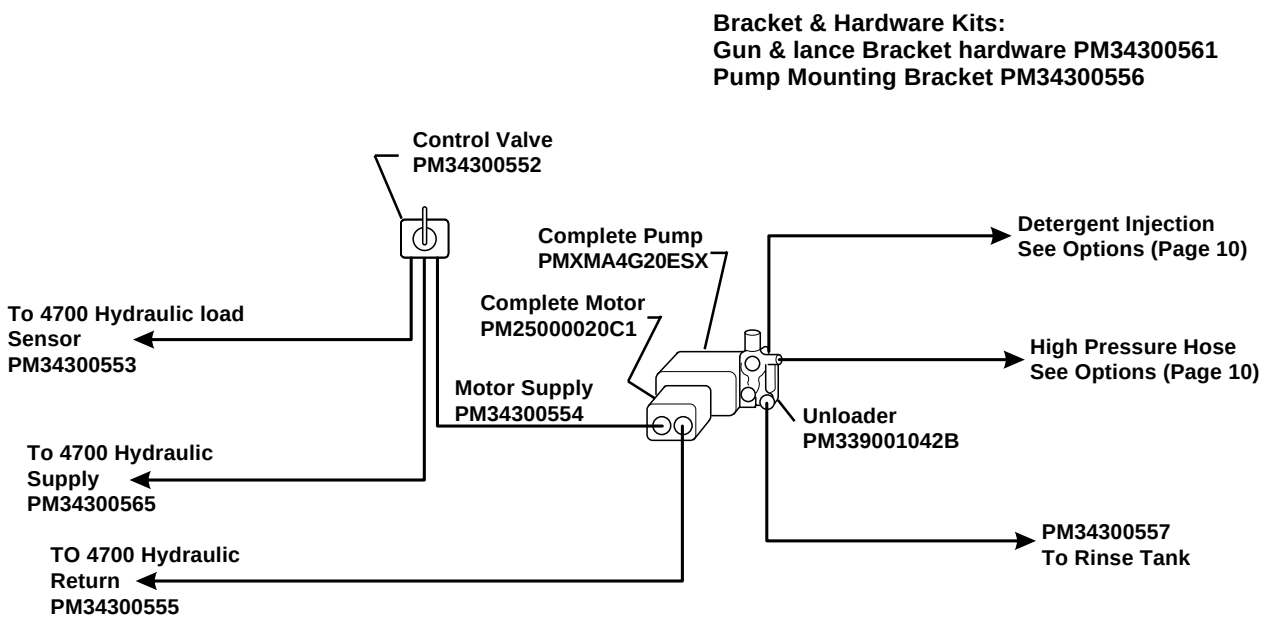
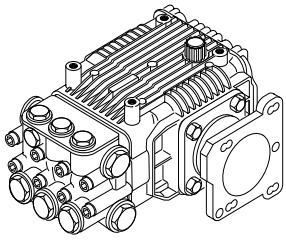


FIGURE 16
Replacement Components



Complete Pump
Part No. PMXMA4G20ESX

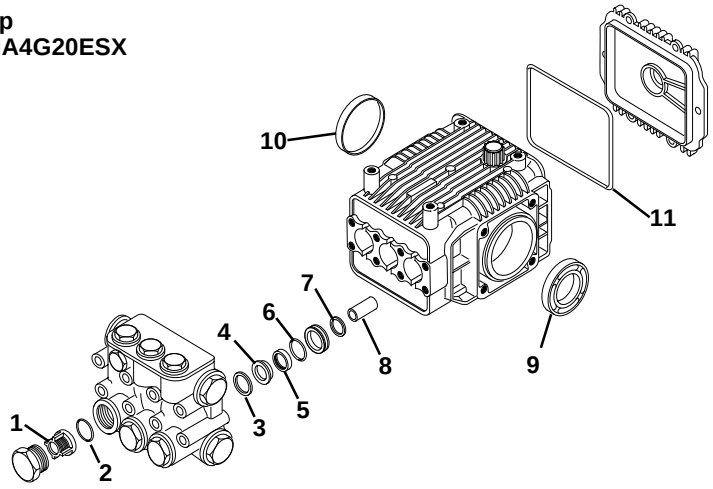


FIGURE 17
Service Parts for Pressure Pump

Piston Kit PMKIT2746		
Ref.	**Description**	**Qty.**
8	Piston	3

Valve Kit PM34300424		
Ref.	**Description**	**Qty.**
1	Complete Valve	6
2	O-ring	6

Water Seal Kit PMKIT2747		
Ref.	**Description**	**Qty.**
4	Gasket	3
6	O-ring	3
5	Gasket	3

Oil Seal Kit PMKIT2787		
Ref.	**Description**	**Qty.**
10	Cap	1
11	O-ring	1
9	Seal	1
7	Seal	3

Cup Spreader Kit PMKIT2745		
Ref.	**Description**	**Qty.**
3	Support Ring	3

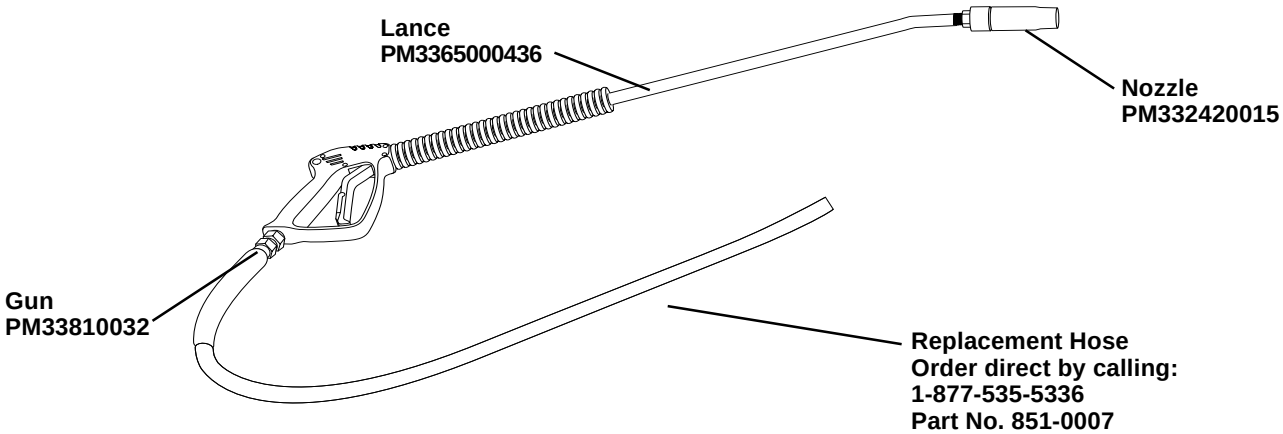


FIGURE 18
Gun, Lance, and Nozzle, Replacement Components

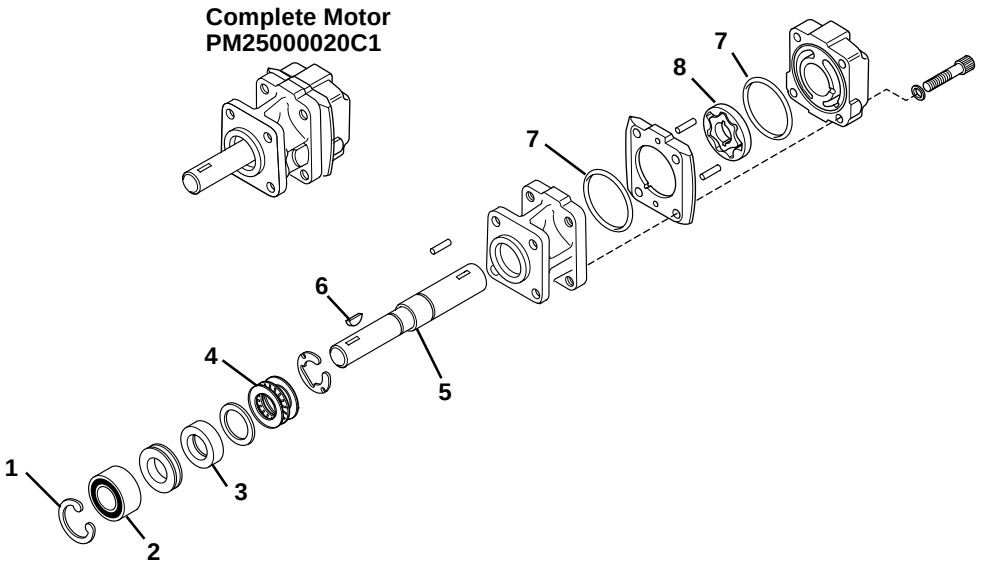
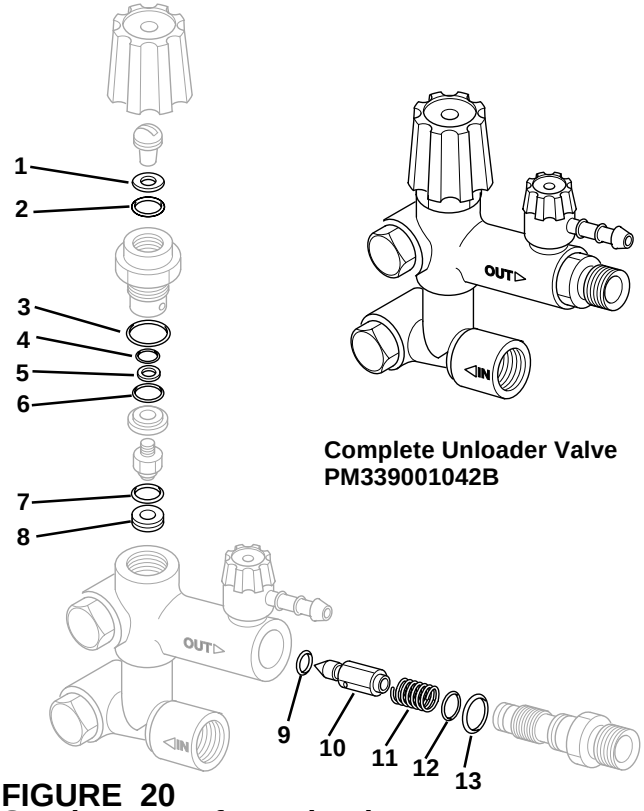


FIGURE 19
Service Parts for Hydraulic Motor

Ref.	Description	Motor Kit PM Part No.	Qty.
1	Retaining Ring	PM18100014	1
2	Ball Bearing	PM20000010	1
3	Shaft Seal	PM21040005	1
4	Thrust Bearing Assembly	PM20290014	1
5	Shaft	PM05132500	1
6	Key	PM16100012	1
7	O-ring	PM17200110	2
8	Gerotor	PM39000024	1

Ref.	Unloader Kit PM34300484 Description	Qty.
1	Washer	1
2	O-ring	1
3	O-ring	1
4	O-ring	1
5	Washer	1
6	O-ring	1
7	O-ring	1
8	Valve Seat	1
9	O-ring	1
10	Piston	1
11	Spring	1
12	O-ring	1
13	O-ring	1



Complete Unloader Valve
PM339001042B

FIGURE 20
Service Parts for Unloader

Optional Equipment

Hose Reel (PM34300560)

Includes:

Reel
Hardware
Jumper Hose

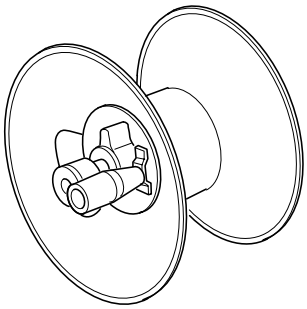


FIGURE 21
Hose Reel (PM34300560)

Hose Wrap (PM34300563)

Includes:

Wrap Bracket
Hardware

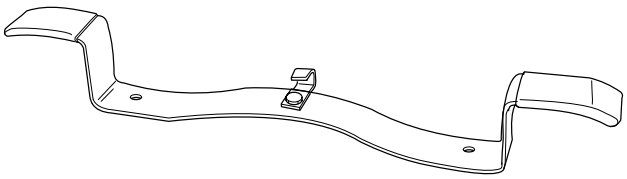


FIGURE 22
Hose Wrap (PM34300563)

Detergent Injection Kit (PM34300562)

Includes: Detergent
Attachment Bracket
Hardware
Tube
Strainer

FIGURE 23
Detergent Injection Kit (PM34300562)

Detergent

One Gallon: U.S. - N209615
Canada - N209616

FIGURE 24
Detergent

NOTES

NOTES

Printed in U.S.A.
01/2000

Deere & Company
One John Deere Place
Moline, Illinois 61265

SAFETY
live with it