# Rhino Bolt Together 32:1/65:1 Pump

Customer Product Manual
Part 334615-03
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**For parts and technical support, call the Industrial Coating Systems Customer Support Center at (800) 433-9319 or contact your local Nordson representative.**

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# Change Record

| Revision | Date | Change |
|---|---|---|
| 03 | 3/18 | Changed part number 900223 to 1612251. |
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# Rhino Bolt Together 32:1/65:1 Pump

## Safety

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

### *Qualified Personnel*

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

### *Intended Use*

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

### *Regulations and Approvals*

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

## *Personal Safety*

To prevent injury follow, these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- While operating manual spray guns, make sure you are grounded. Wear electrically conductive gloves or a grounding strap connected to the gun handle or other true earth ground. Do not wear or carry metallic objects such as jewelry or tools.
- If you receive even a slight electrical shock, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.
- Obtain and read Safety Data Sheets (SDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- Make sure the spray area is adequately ventilated.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

### High-Pressure Fluids

High-pressure fluids, unless they are safely contained, are extremely hazardous. Always relieve fluid pressure before adjusting or servicing high pressure equipment. A jet of high-pressure fluid can cut like a knife and cause serious bodily injury, amputation, or death. Fluids penetrating the skin can also cause toxic poisoning.

If you suffer a fluid injection injury, seek medical care immediately. If possible, provide a copy of the SDS for the injected fluid to the health care provider.

The National Spray Equipment Manufacturers Association has created a wallet card that you should carry when you are operating high-pressure spray equipment. These cards are supplied with your equipment. The following is the text of this card:

**WARNING:** Any injury caused by high pressure liquid can be serious. If you are injured or even suspect an injury:

- Go to an emergency room immediately.
- Tell the doctor that you suspect an injection injury.
- Show them this card
- Tell them what kind of material you were spraying

MEDICAL ALERT—AIRLESS SPRAY WOUNDS: NOTE TO PHYSICIAN

Injection in the skin is a serious traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the bloodstream.

Consultation with a plastic surgeon or a reconstructive hand surgeon may be advisable.

The seriousness of the wound depends on where the injury is on the body, whether the substance hit something on its way in and deflected causing more damage, and many other variables including skin microflora residing in the paint or gun which are blasted into the wound. If the injected paint contains acrylic latex and titanium dioxide that damage the tissue's resistance to infection, bacterial growth will flourish. The treatment that doctors recommend for an injection injury to the hand includes immediate decompression of the closed vascular compartments of the hand to release the underlying tissue distended by the injected paint, judicious wound debridement, and immediate antibiotic treatment.

## *Fire Safety*

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

### Halogenated Hydrocarbon Solvent Hazards

Do not use halogenated hydrocarbon solvents in a pressurized system that contains aluminum components. Under pressure, these solvents can react with aluminum and explode, causing injury, death, or property damage. Halogenated hydrocarbon solvents contain one or more of the following elements:

| Element | Symbol | Prefix |
|---|---|---|
| Fluorine | F | “Fluoro-” |
| Chlorine | Cl | “Chloro-” |
| Bromine | Br | “Bromo-” |
| Iodine | I | “Iodo-” |

Check your material SDS or contact your material supplier for more information. If you must use halogenated hydrocarbon solvents, contact your Nordson representative for information about compatible Nordson components.

## *Action in the Event of a Malfunction*

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out system electrical power. Close hydraulic and pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the system.

## *Disposal*

Dispose of equipment and materials used in operation and servicing according to local codes.

# Description

This section provides basic operation and specification information about the bolt together pumps.

## *Theory of Operation*

The following paragraphs describe the operation of the pump.

See Figure 1, which shows a cutaway view of a 32:1/65:1 pump.

An air motor, located directly above the pump, drives the hydraulic section. A four-way air valve mounted to the air motor controls the direction of the air motor shaft movement. As the air motor piston moves up and down, it shifts the air valve spool, which exhausts air on one side of the piston and directs air pressure to the opposite side of the piston.

The shovel (15) moves up and down within the adapter (14), forcing material into the hydraulic section. The hydraulic section pressurizes the material and forces it out of the pump.

When the plunger (2) strokes downward (12), the upper check valve (5) opens, and the lower check valve (8) closes. Material between the upper check seat (7) and lower check (9) is forced upward through the piston (6), which pressurizes the material above the upper check and forces it out of the pump.

During the up stroke (1), the plunger and shovel are pulled upward and the upper check valve closes. The lower check raises off the lower check seat (10). The lower check valve opens and allows material to pass into the lower pump chamber, below the upper check. As the plunger and piston move upward, material from the upper pump chamber is forced out of the pump outlet port (11).

The solvent chamber (3) at the top of the pump contains fluid that lubricates the plunger and packing gland (4) seals and prevents material from hardening on the shaft. A bleed valve (13) on the side of the pump body allows the operator to bleed air from the pump.

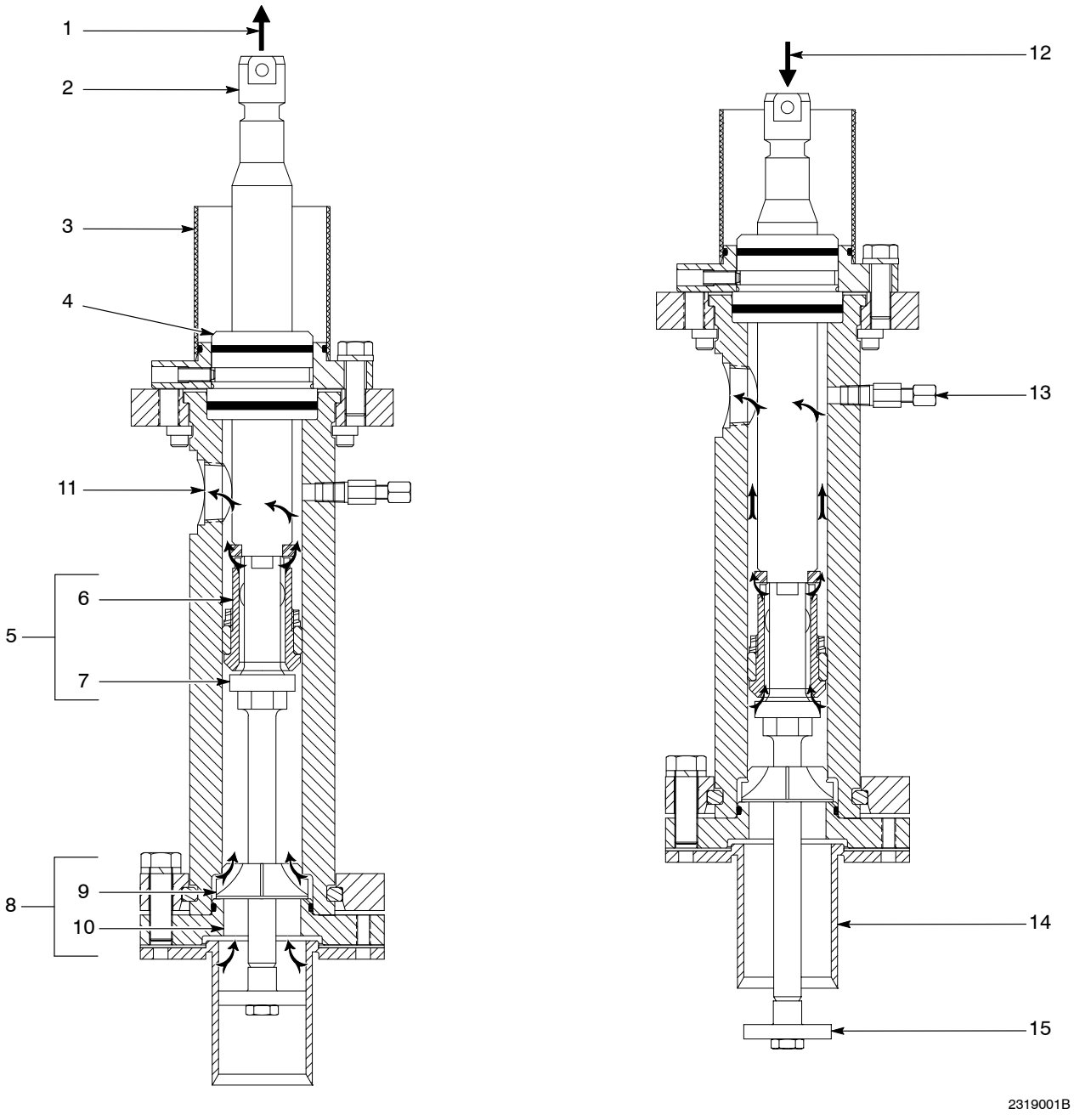


Figure 1 Pump Operation

1. Upstroke
2. Plunger
3. Solvent chamber
4. Packing gland
5. Upper check valve
6. Piston
7. Upper check seat
8. Lower check valve
9. Lower check
10. Lower check seat
11. Outlet port
12. Down stroke
13. Bleed valve
14. Adapter
15. Shovel

### *Maximum Output*

Maximum pump output is expressed in volume per stroke and can depend on material viscosity, temperature, filters, and system configuration.

| Pump Ratios | $in.^3$/stroke | $cm^3$/stroke |
|---|---|---|
| 32:1/65:1 Pump | 5.8 | 95 |

### *Maximum Stroke Rate*

1 stroke per 2 seconds (30 strokes per minute) — intermittent

1 stroke per 4 seconds (15 strokes per minute) — continuous

### *Viscosity Range*

30,000–3 million centipoise

## Installation

The installation of the pump is dependent upon the system and unloader to which it is installed during manufacturing. Refer to your system documentation for complete installation information.

## Operation

**WARNING:** Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

The operation of the pump is primarily determined by the system in which it is installed. Refer to your Rhino unloader controls manual for more information. Refer to the following procedure to bleed the pump.

## *Bleed the Pump*

At low pressure, bleed the pump until all air has been removed from the pump. Once air has been bled, the pump will begin spitting material.

See Figure 1.

Follow these procedures to bleed the pump:

1. Reduce pressure to 0 bar/psi.

**WARNING:** Do not open the bleed valve more than three turns. The bleed valve and material may be forced from the valve body if loosened more than three turns. Personal injury could result.

2. Place a waste container beneath the bleed valve (13). Make sure that the small bleed port is pointed down. Carefully loosen the bleed valve only two or three turns.
3. Initiate a purge from the unloader controller or push the purge button on your unloader. Gradually increase the pressure to an acceptable stroke rate for the pump or acceptable material bleed volume.
4. Leave the bleed valve open until the material flows continuously.
5. Tighten the bleed valve. Remove the waste container. Further bleeding should not be necessary unless the hydraulic section is completely empty or after changing material containers.

# Maintenance

Refer to Table 1 for recommended maintenance procedures:

Table 1 Maintenance Procedures

| Frequency | Component | Maintenance Task |
|---|---|---|
| Daily | Solvent chamber | Check the fluid level in the solvent chamber. Make sure that the fluid level is 38 mm (1.5 in.) from the top of the chamber.<br>Refer to the *Parts* section for solvent chamber fluid ordering information. |
| Weekly | Follower plate seals | Inspect the follower plate seals for damage or signs of excessive material leakage.<br>If you must replace the seals, refer to the *Parts* section for ordering information. |

# Troubleshooting

**WARNING:** Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

This section contains troubleshooting procedures. These procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your local Nordson representative for help.

| Problem | Possible Cause | Corrective Action |
|---|---|---|
| **1. Pump not delivering material** | Insufficient air pressure to pump | Increase air pressure to the pump air motor. |
| | Follower plate not in contact with material | Make sure that the follower plate is lowered and in contact with the material. |
| | Air pocket in pump | Carefully bleed the pump as described in the *Operation* section of this manual. |
| | Blocked hydraulic system or follower plate | Perform the following steps:<br>1. Cycle the pump. Slowly open the bleed valve only two or three turns.<br>If material exits the valve, close valve and go to step 2.<br>If no material exits the valve, close the valve, shut down the system, and relieve system pressure. Remove and rebuild the pump.<br>2. Shut down the pump. Relieve system pressure. Disconnect the hose from the pump. Check the hose for blockage.<br>If the hose is not blocked, go to step 3.<br>If the hose is blocked, clean or replace the hose.<br>3. Remove the gun from the hose. Check the gun for blockage.<br>If the gun is blocked, clean it.<br>If the gun is damaged, rebuild or replace the gun as necessary. |

# Repair

**WARNING:** Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

**NOTE:** To relieve system pressure, shut off the pump, trigger all guns, and open the pump bleed valve (as described in this section). Make sure that the valve is not plugged with material.

## *Replace the Packing Gland*

Operate the air motor until the coupling between the air motor shaft and the pump plunger is accessible.

### Remove the Packing Gland

**WARNING:** Do not open the bleed valve more than three turns. The bleed valve and material may be forced from the valve body if loosened more than three turns. Personal injury could result.

1. Shut off air pressure to the air motor and bleed the hydraulic pressure at the guns and the pump bleed valve. Open the pump bleed valve two turns to relieve pressure.
2. See Figure 2. Remove the coupling (14) from the plunger (13). Drain and remove the solvent chamber (2).
3. Remove the O-ring (11) from the gland retainer (5).

**WARNING:** Before performing the next step, you must make sure that the bulk unloader elevator is in the NEUTRAL position. To avoid injury, you must leave the unloader in this position until noted otherwise in the procedure.

4. See Figure 3. Remove eight hex head screws (7) and lock washers (8) securing the gland retainer (3) to the mounting flange (5).
5. Place the ends of two screwdrivers in the chamfers beneath the gland retainer. Carefully pry upwards to remove the gland retainer and the packing gland (2).
6. Loosen, but do not remove, the two set screws (4). Remove the packing gland from the gland retainer.

## Remove the Packing Gland *(contd)*

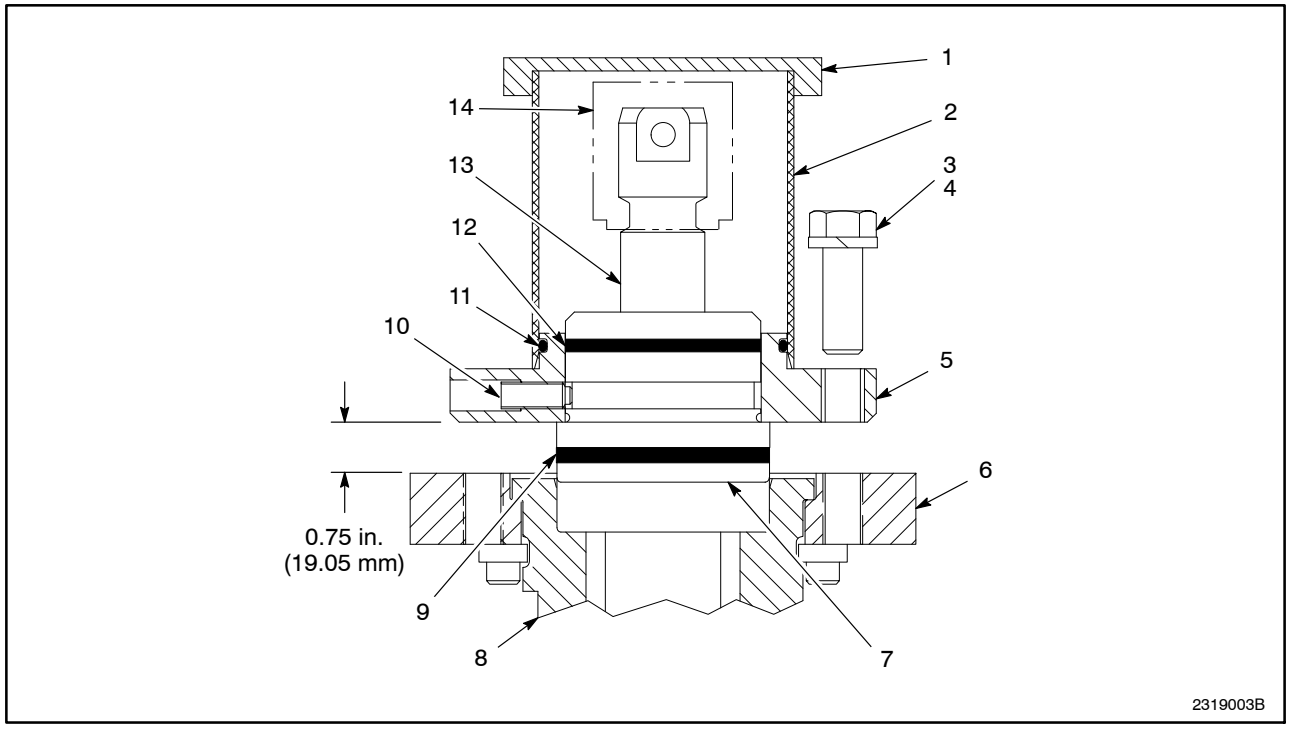


Figure 2 Replace the Packing Gland

1. Gland insertion tool
2. Solvent chamber
3. Lock washers
4. Hex head screws
5. Gland retainer
6. Mounting flange
7. Packing gland
8. Pump body
9. O−ring
10. Set screws (180 degrees apart)
11. O−ring
12. O−ring
13. Plunger
14. Coupling

## Install the Packing Gland

**NOTE:** Some O-ring lubricants may react with your dispensing material. Contact your Nordson Corporation representative to determine the correct O-ring lubricant for your application.

1. See Figure 2. Clean the mating surfaces of the mounting flange (6), packing gland (7), and plunger (13). Lubricate both upper and lower packing gland O-rings (9 and 12) with O-ring lubricant.
2. Install the gland retainer (5) over the packing gland. Turn the two set screws (10) clockwise until they just touch the packing gland. Do not tighten. You must be able to rotate the gland retainer around the packing gland.

3. Carefully install the gland retainer and packing gland over the plunger.

**CAUTION:** Do not allow the end of the plunger to damage the packings.

4. See Figure 3. Orient the gland retainer and packing gland assembly on the mounting flange (5) as shown.
5. See Figure 2. Perform the following steps to press the gland retainer into the mounting flange:

a. Place the solvent chamber (2) on the gland retainer.

b. Place the gland insertion tool (1) on the top of the solvent chamber.

c. Use the air motor (set at low air pressure and a slow stroke) to push the assembly until the bottom of the gland retainer is approximately 19.3 mm (0.75 in.) above the mounting flange.

d. Close the lockout valve to remove air pressure from the air motor.

6. Install the eight lock washers (3) and hex head screws (4) in the gland retainer so they thread into the mounting flange. Tighten the screws evenly to 95 N•m (70 lb-ft) to draw the gland retainer and mounting flange together.
7. Remove the gland insertion tool and solvent chamber.
8. Lubricate and install a new O-ring (11) on the gland retainer. Install the solvent chamber.
9. Slowly operate the air motor to bring the shaft close to the plunger.
10. Install the coupling (14).

**NOTE:** If the plunger is too low in the pump body (8) and you cannot install the coupling, refer to *Raising the Plunger* in this section.

11. Add appropriate solvent to the solvent chamber so the level is approximately 3.8 cm (1.5 in.) from the top.
12. See Figure 1. Close the pump bleed valve (13).

## Install the Packing Gland *(contd)*

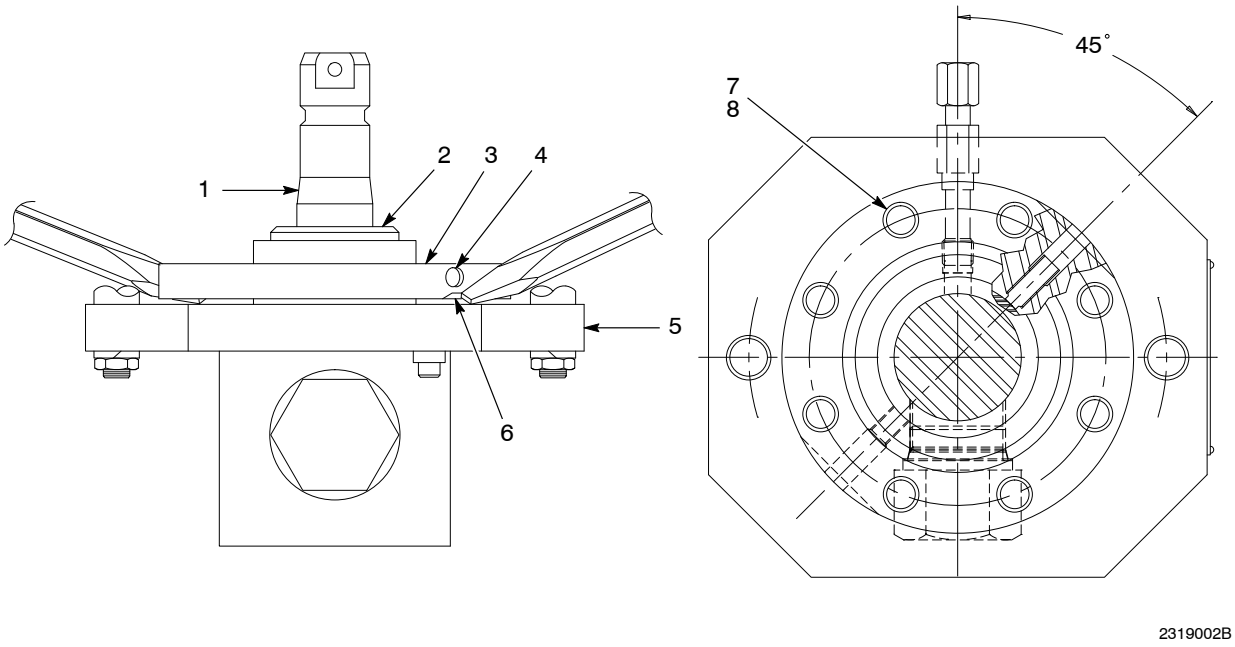


Figure 3 Replace the Packing Gland

1. Plunger
2. Packing gland
3. Gland retainer
4. Set screws (180 degrees apart)
5. Mounting flange
6. Chamter
7. Flex head screws
8. Lock washers

## *Replace the Plunger and Piston*

If the pump is operable, flush the system before disassembly. Refer to your Rhino bulk unloader controls manual.

### Remove the Plunger and Piston

**NOTE:** Depending on your application, you may be able to replace the plunger and piston without removing the hydraulic section (pump) from the unloader.

1. Lower the follower plate to the frame base. Relieve all hydraulic pressure. Remove solvent from the solvent chamber.
2. Operate the pump until the coupling joining the air motor shaft and the plunger is accessible. Shut off the pump air supply. Bleed hydraulic pressure at the guns and pump bleed valve.
3. Remove the coupling. Operate the air motor and shut off the ball valve after the plunger has been pushed to its lowest point. Make sure the shaft and coupling are clear of the plunger.
4. See Figure 4. Loosen, but do not remove the eight hex head screws (14) and lock washers (13).
5. Support the follower plate. Remove the four hex head screws and lock washers that secure the pump body to the follower plate. Remove the follower plate, adapter (11), and gasket (6) from the bottom of the lower check seat plate (12).
6. Raise the pump assembly until it is fully raised and the shovel (9) is exposed. Prop the elevator so it does not drift.
7. Remove the shovel from the upper check rod (10).
8. Remove the hex head screws and lock washers loosened in step 4.
9. Remove the lower check seat plate, split ring (4), and split ring retainer (5). Remove the O-ring (7) and back-up ring (8) from the lower check seat plate. Slide the lower check (15) off the upper check rod.

## Remove the Plunger and Piston *(contd)*

**NOTE:** You have to push from the top of the plunger to remove this assembly from the pump body.

10. Using either an arbor press or a hydraulic press, push the plunger (1), piston assembly (16), and upper check rod out of the pump body (2).
11. Secure the flats (3) of the upper check rod in a vise. Use a wrench to grip the flats on the plunger and unscrew it from the upper check rod.
12. Remove the piston assembly and spacer (17).
13. Thoroughly clean and inspect all components. Replace any of them if they are worn, scored, or distorted. You must replace the piston assembly if you have removed it from the pump.

**CAUTION:** To prevent damage to the pump, always replace the packing gland whenever you remove the plunger and piston from the pump body.

14. Remove the packing gland and discard. Refer to *Packing Gland Removal* in this section.
15. Inspect all parts for signs of damage. Replace all damaged or worn parts before reassembly.

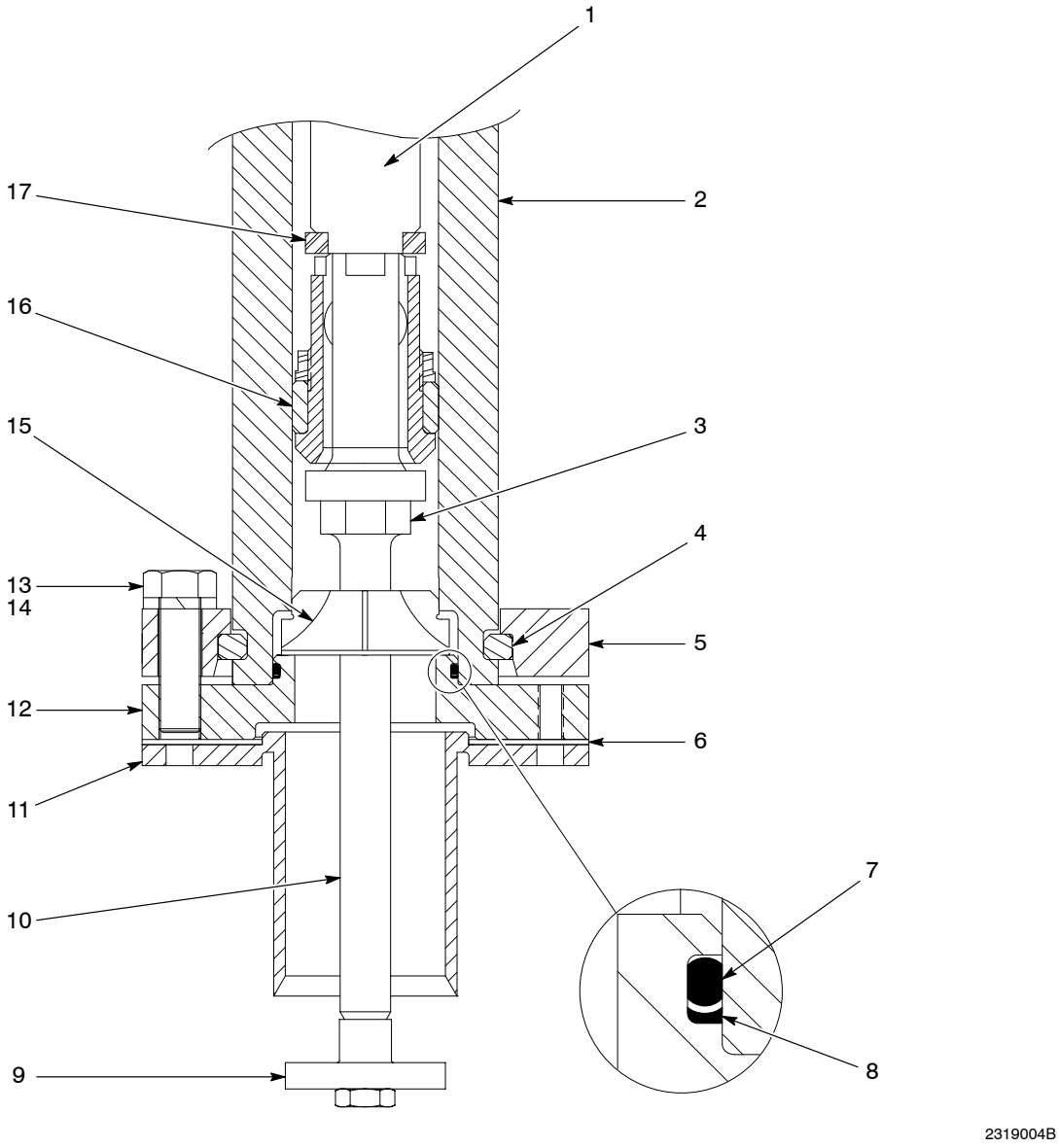


Figure 4 Replace the Plunger and Piston

1. Plunger
2. Pump body
3. Flats
4. Split ring
5. Split ring retainer
6. Gasket
7. O−ring
8. Back−up ring
9. Shovel
10. Upper check rod
11. Adapter
12. Lower check seat plate
13. Lock washers
14. Hex head screws
15. Lower check
16. Piston assembly
17. Spacer

## Install the Plunger and Piston

See Figure 4.

1. Reassemble the piston assembly and plunger using the following steps:

a. Install the piston assembly (16) and spacer (17) on the upper check rod (10). Place thread locking compound on the threads of the upper check rod and install it on the plunger (1). Tighten the upper check rod to 108 N•m (80 ft-lb).

b. Install the back-up ring (8) and the new O-ring (7) on the lower check seat plate (12).

c. Lubricate the pump body bore and the outer diameter of the piston with an O−ring grease that is compatible with the material being dispensed.

d. Using either an arbor press or a hydraulic press, carefully press the plunger, piston, and upper check rod, as an assembly, into the pump body (2).

e. Install the lower check (15) on the upper check rod.

2. Reassemble the pump body using the following steps:

a. Slide the split ring retainer (5) onto the pump body. Install the split ring (4) in the groove of the pump body, and slide the split ring retainer over the split ring.

b. See Figure 5. Orient the split ring retainer (4), the lower check seat plate (5), and the pump body (1) as shown. Loosely install the lock washers (2) and hex head screws (3), but do not tighten the screws at this time.

c. Tighten two hex head screws and lock washers opposite each other, then two others, until all are tightened securely.

3. Install the packing gland as described in *Packing Gland Installation*.

4. See Figure 4. Install the shovel (9) onto the upper check rod (10). Torque the shovel nut to 54 N•m (40 ft-lb).

5. See Figure 5. Check the follower plate O-ring (9) and adapter plate gasket (12) and replace if damaged.
6. Secure the adapter to the follower plate using the flat screws (8).
7. Secure the pump body to the follower plate with four hex head screws (7) and lock washers (6).
8. Reinstall the coupling using the following procedure:

a. See Figure 2. Operate the air motor and see if you have enough room to install the coupling (14). If you can install the coupling, go to the next step. If you must raise the plunger, refer to *Raising the Plunger* in this section.

b. Place thread-locking compound on the threads of the coupling screws. Install and tighten the coupling.

9. Fill the solvent chamber (2) to within 3.8 cm (1.5 in.) of the top with the appropriate solvent.
10. See Figure 1. Close the bleed valve (13) on the side of the pump. Remove the prop from under the elevator.

## Install the Plunger and Piston *(contd)*

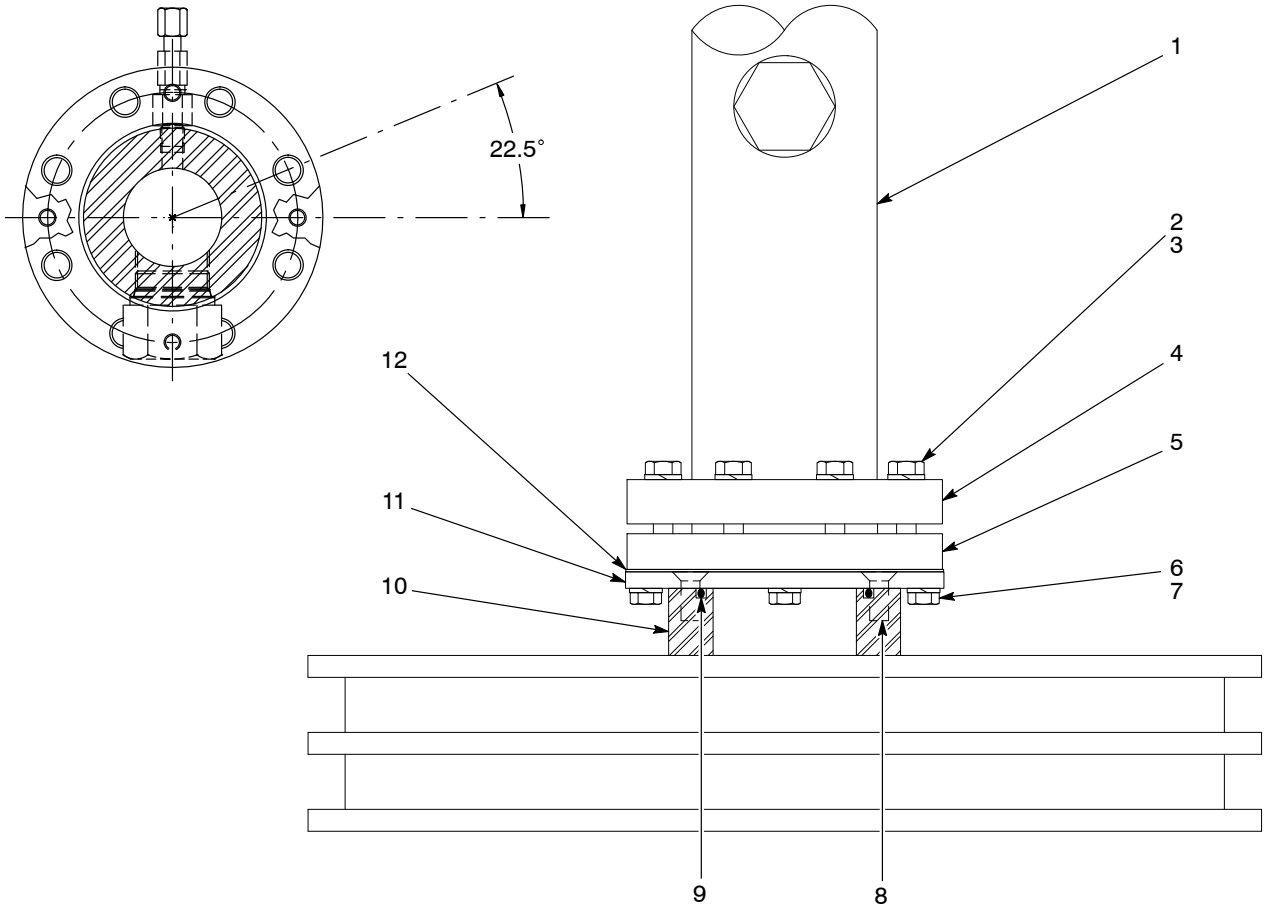


Figure 5 Replace the Plunger and Piston

1. Pump body
2. Lock washers
3. Hex head screws
4. Split ring retainer
5. Lower check seat plate
6. Lock washer
7. Screw
8. Flat screw
9. O−ring
10. Follower plate
11. Adapter
12. Gasket

## Raise the Plunger

Refer to Table 2.

The following procedure is optional and should only be performed if your plunger is stalled in the lower half of the pump body.

Table 2: Raise the Plunger/Air Motor Lockout Valve Positions

| Air Motor Lockout Valve Position | Procedure |
|---|---|
| ON | 1. Adjust the air motor regulator to 0 bar/psi and turn on the air motor lockout valve.<br>2. Using minimal air pressure, cycle the air motor until it is at the beginning of its up stroke. |
| OFF | 3. Turn off the air motor lockout valve.<br>4. See Figure 6.<br>Position both halves of the coupling (3) over the plunger (2) and air motor shaft (1). Align the holes on the side of the coupling with the hole running through the plunger.<br>5. Secure the coupling halves together with the four cap screws (4) and insert a screwdriver (5) through the coupling and plunger.<br>**NOTE:** Make sure that the bleed valve on the pump body is open and not plugged. |
| ON | 6. Turn on the air motor lockout valve.<br>7. Using minimal air pressure at the air motor regulator, apply pressure to the air motor to draw the plunger up from within the pump body. Continue until the plunger has been raised high enough to install the coupling properly. |
| OFF | 8. Turn off the air motor lockout valve and remove the screwdriver and coupling. Install the solvent chamber. |
| ON | 9. Turn on the air motor lockout valve. Using minimal air pressure, cycle the air motor until the air motor shaft just touches the plunger rod. |
| OFF | 10. Turn off the air motor lockout valve and reinstall the coupling using appropriate threadlocking compound on the coupling screws. Tighten evenly.<br>11. See Figure 1.<br>Fill the solvent chamber (3) with appropriate solvent to approximately 3.8 cm (1.5 in.) from the top and close the pump bleed valve. |

## Raise the Plunger *(contd)*

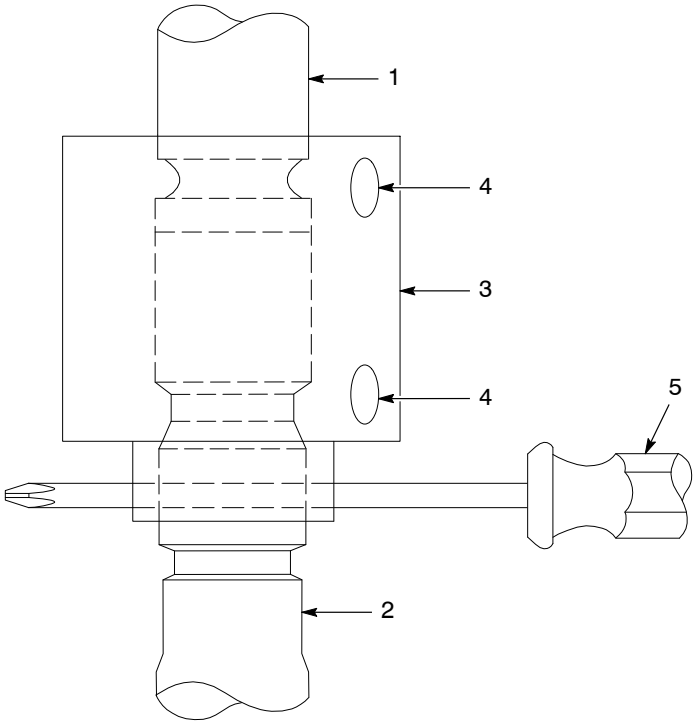


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Figure 6 Raise the Plunger

1. Air motor shaft
2. Plunger
3. Coupling
4. Cap screws
5. Screw driver

## *Replace the Follower Plate Seals*

**NOTE:** You must use an approved Nordson seal or you may experience leaking from around the follower plate.

**CAUTION:** Do not use sharp tools or disfigure the follower plate seal groove. Leakage at the seals may result if either follower plate seal groove is damaged. Replace the follower plate if either groove is damaged.

### Roll−On Seals

If your unloader has replaceable follower seals, perform the following steps to replace the seals:

1. Remove the container of material from the unloader as noted in your Rhino bulk unloader manual.
2. Remove the old seals from the grooves in the follower plate. Clean the follower plate grooves until free of all foreign material.
3. Coat the new seals with an O-ring grease that is compatible both with the material you wish to dispense and with the seals used. Install the new seals.

### Heat Shrink, Adjustable Clamp−Type Seals

This procedure details the follower plate seal replacement procedure for heat shrink, adjustable clamp-type seals.

1. If a container is installed on the unit, remove the follower plate from the container as detailed in the container changing procedures in your Rhino bulk unloader controls manual.
2. Position the follower at a comfortable working height then place the unloader in the NEUTRAL position.
3. See Figure 7. Follow these procedures to remove the seal:

a. Carefully cut the heat shrink tubing (1) at both seal joints.

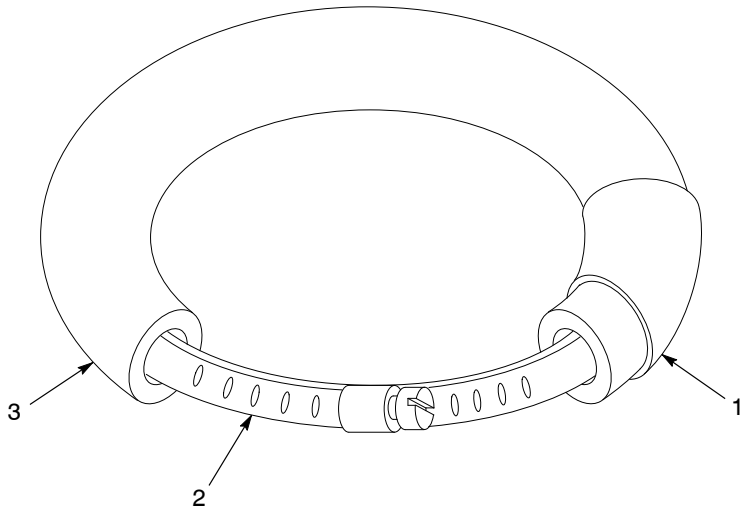
b. Loosen the worm clamp (2) at each seal.

c. Remove the seals (3).

**NOTE:** To adjust the positioning of the worm clamp, flex the end of the seal, then insert a screwdriver into the seal to loosen or tighten the clamp.

4. Clean the follower plate seal groove.

## Heat Shrink, Adjustable Clamp–Type Seals *(contd)*




2319007A

Figure 7 Follower Plate Seals

1. Heat shrink tubing
2. Worm clamp
3. Seals

5. Follow these procedures to install replacement seals:

a. Place the new seal in its groove on the follower plate.

b. Tighten the worm clamps.

c. Center the heat shrink tubing over the seal seams.

**NOTE:** To prevent leakage, make sure that the seal seams are at opposite sides of the follower plate (180-degrees apart) and that the seal gap is no more than 3 mm (0.12 in.).

**NOTE:** Use a rubber mallet, if necessary, to eliminate the gap at the seal seam. Start tapping the seal 180 degrees from the seam. Tap in such a direction as to close the gap at the seal seam.

6. Use a flameless electric heat gun to heat the shrink tubing at the seal seams.

7. Lower the follower plate into the container of material and check for material leakage.

# Parts

To order parts, call the Nordson Customer Service Center or your local Nordson representative. Use the parts list, and the accompanying illustration, to describe and locate parts correctly.

## *Using the Illustrated Parts List*

Numbers in the Item column correspond to numbers that identify parts in illustrations following each parts list. The code NS (not shown) indicates that a listed part is not illustrated. A dash (—) is used when the part number applies to all parts in the illustration.

The number in the Part column is the Nordson Corporation part number. A series of dashes in this column (- - - - - -) means the part cannot be ordered separately.

The Description column gives the part name, as well as its dimensions and other characteristics when appropriate. Indentions show the relationships between assemblies, subassemblies, and parts.

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| — | 0000000 | Assembly | 1 | |
| 1 | 000000 | • Subassembly | 2 | A |
| 2 | 00000 | • • Part | 1 | |

- If you order the assembly, items 1 and 2 will be included.
- If you order item 1, item 2 will be included.
- If you order item 2, you will receive item 2 only.

The number in the Quantity column is the quantity required per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

Letters in the Note column refer to notes at the end of each parts list. Notes contain important information about usage and ordering. Special attention should be given to notes.

## *Pump Assembly*

See Figure 8.

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| — | 340922 | Pump assembly, 65:1 ratio, pump to air motor | 1 | |
| 1 | 249144 | • Muffler, $1^1/_4$ NPT | 2 | |
| 2 | 124701 | • Motor, air, 360D | 1 | A |
| 3 | 124692 | • Shim, under 10 in. air motor | 3 | |
| 4 | - - - - - - | • Plate, mounting, motor | 1 | |
| 5 | 983419 | • Washer, lock, m, split, M16, zinc-plated steel | 3 | |
| 6 | 982269 | • Screw, hex head, cap, M16 x 60, black | 3 | |
| 7 | 124689 | • Rod, support | 2 | |
| 8 | 984229 | • Nut, hex, lock, $^5/_8$-18, unf-2b | 2 | |
| 9 | - - - - - - | • Pump, hydraulic section 65:1 | 1 | B |
| NS | 126896 | • Kit, coupling | 1 | C |
| NS | 900256 | • Fluid, solvent chamber, 1-gal, standard | AR | |
| NS | 900216 | • Fluid, solvent chamber, 1-gal, vitalizer oil | AR | D |

NOTE A: The air motor is detailed in the *7- and 10-Inch Air Motors with Air Valve* manual.

B: The pump is detailed in the *32:1/65:1 Hydraulic Section* parts list, in this manual.

C: Use this part number to order the hydraulic section to air motor coupling kit.

D: Contact your Nordson representative for the proper solvent chamber fluid for your application.

AR: As Required

NS: Not Shown

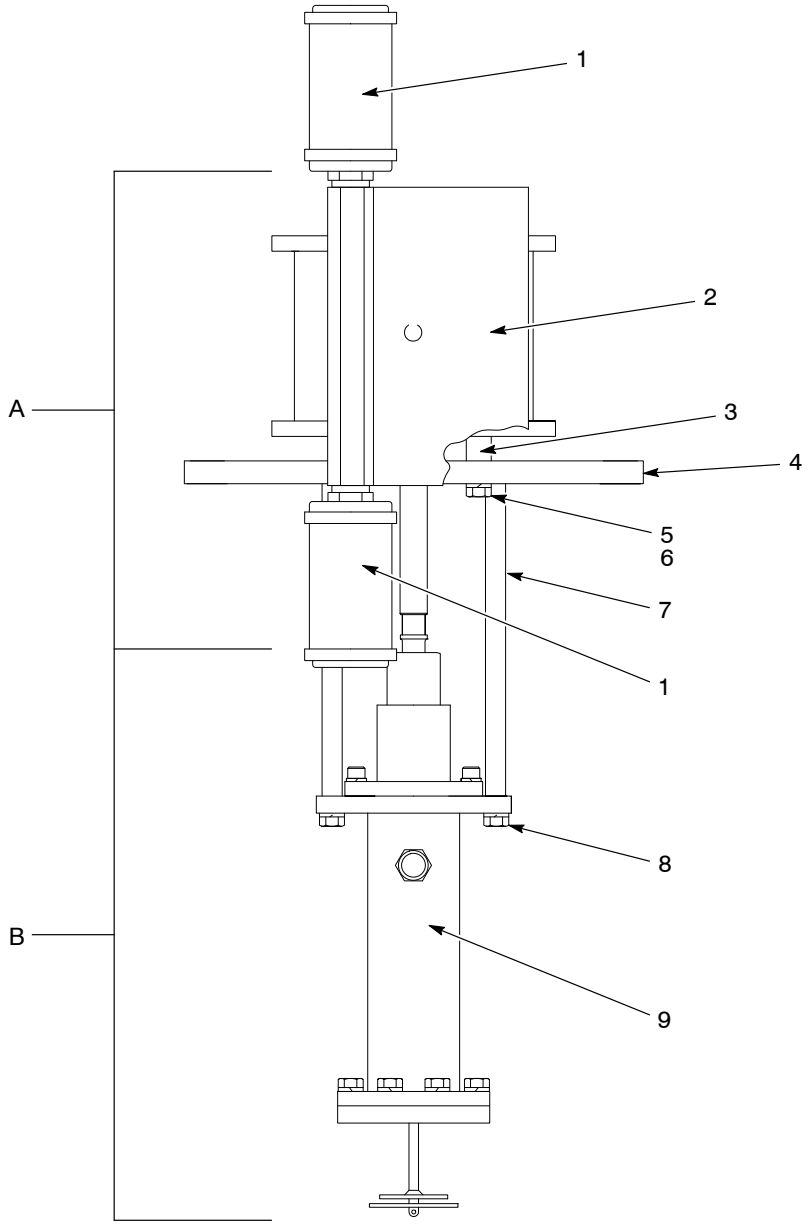



Figure 8 Pump Assembly: A = Air motor, B = Hydraulic section

## *32:1/65:1 Hydraulic Section*

See Figure 9.

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| — | 126870 | Pump, hydraulic, 32:1/65:1 | 1 | |
| 1 | 124734 | • Chamber, solvent | 1 | |
| NS | 282796 | • Chamber, solvent, with pinch guard | 1 | A |
| 2 | 942281 | • O-ring, Viton, black, 2.250 x 2.500 in. | 1 | B, C |
| 3 | 981296 | • Screw, hex head, $^{9}/_{16}$-18 x 1.750, zinc, G8 | 8 | |
| 4 | 983181 | • Lock washer, e, split, $^{9}/_{16}$, zinc-plated steel | 8 | |
| 5 | 126884 | • Retainer, ring, gland | 1 | |
| 6 | 942304 | • O-ring, Viton, 90, 2.484, 2.762 in. | 1 | B, C |
| 7 | 126894 | • Retainer, 0.86 OD x 0.31 ID x 0.25 in. | 2 | |
| 8 | 981435 | • Screw, socket, $^{5}/_{16}$-18 x 0.625 in., black | 2 | D |
| 9 | 124697 | • Poppet, screw, adjust | 1 | |
| 10 | 124698 | • Valve, bleeder | 1 | E |
| 11 | 126886 | • Body, pump | 1 | |
| 12 | 126887 | • Retainer, split ring | 1 | |
| 13 | 126888 | • Ring, split | 2 | |
| 14 | 942272 | • O-ring, Buna-N, 2.109 x 2.387 x 0.139 in. | 1 | C, F |
| 15 | 954051 | • Back-up ring, single, $2^{1}/_{8}$ in. | 1 | F |

NOTE A: This solvent chamber also requires that you order a solvent filler cup with pinch guard, part 282786.

B: These parts are included in the pump gland kit.

C: Apply O-ring lubricant, part 1612251, to this part prior to assembly.

D: Use a drop or two of threadlocking adhesive, part 900464, on the threads of this part prior to assembly.

E: Use PTFE tape, part 902504, on the threads of this part prior to assembly.

F: These items are recommended spare parts. Maintain one of each in stock.

NS: Not Shown

*Continued...*

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| 16 | 295971 | • Plate, shovel, 2.38 in. follower | 1 | |
| 17 | 1101795 | • Rod, upper check, assembly | 1 | |
| 18 | 295970 | • Adapter, follower, 2.38 ID | 1 | |
| 19 | 126873 | • Plate, lower check seat | 1 | |
| 20 | 981629 | • Screw, hex head, $^5/_8$-18 x 2.00, zinc, G8 | 8 | |
| 21 | 703623 | • Lock washer, e, split, 0,625 in., zinc | 8 | |
| 22 | 126874 | • Plate check, lower, 65:1 | 1 | |
| 23 | 126876 | • Piston, assembly, 65:1 | 1 | F |
| 24 | 126877 | • Spacer, 1.50 OD x 0.93 ID x 0.25 in. | 1 | |
| 25 | 126878 | • Rod, plunger, 65:1 | 1 | F |
| 26 | 973099 | • Adapter, $1^5/_8$-12, $1^1/_4$ NPT | 1 | |
| 27 | 124679 | • Plate, mounting, pump-to-motor, 5- and 55-gallon | AR | |
| | 126904 | • Plate, mounting, pump-to-motor, 300-gallon | AR | |
| 28 | 981628 | • Screw, set, w/Nylok®, $^3/_8$-16 x 1.00 in., black | 2 | |
| 29 | 942360 | • O-ring, Buna-N, 3.250 x 3.500 x 0.125 in. | 1 | B, C |
| 30 | 126910 | • Gland, kit, pump, Type N | AR | F, G |
| NS | 973402 | • Plug, pipe, socket, flush, $^1/_8$ in., zinc | 1 | E |
| NS | 900256 | Solvent chamber fluid, Type K | AR | F |

NOTE B: These parts are included in the pump gland kit.

C: Apply O-ring lubricant, part 1612251, to this part prior to assembly.

E: Use PTFE tape, part 902504, on the threads of this part prior to assembly.

F: These items are recommended spare parts. Maintain one of each in stock.

G: The packing gland is not field repairable. Replace the gland as an assembly.

AR: As Required

NS: Not Shown

## *32:1/65:1 Hydraulic Section* *(contd)*

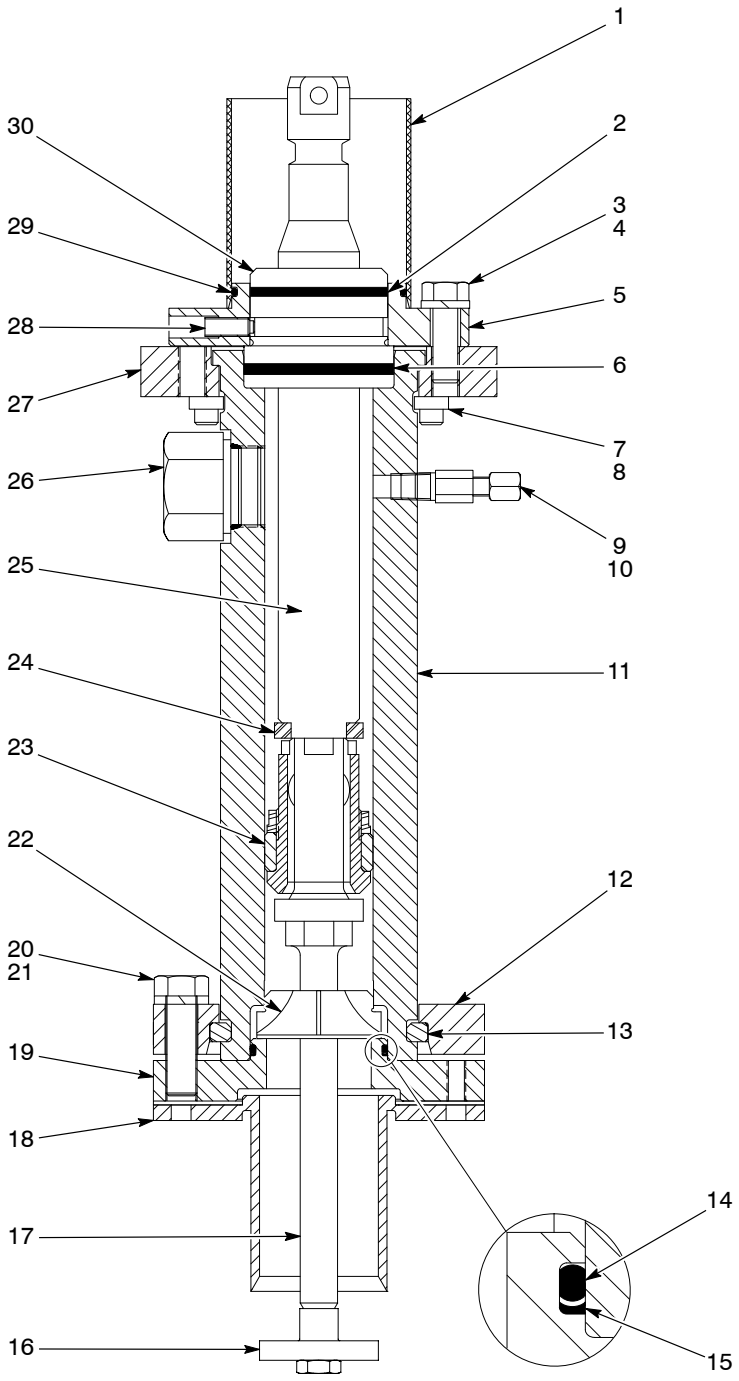



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Figure 9 Hydraulic Section Parts

## *Lower Check and Seat Kit*

See Figure 9.

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| — | 340744 | Kit, check, low and seat, bolt, 65;1 | 1 | |
| NS | 124690 | • Gasket, follower | 1 | A |
| 14 | 942272 | • O-ring, Buna-N, 2.109 x 2.387 x 0.139 in. | 1 | |
| 15 | 954051 | • Back-up ring, single, $2^1/_8$ in. | 1 | |
| 19 | 126873 | • Plate, lower check seat | 1 | |
| 22 | 126874 | • Plate, check, lower, 65;1 | 1 | |
| NS | 940410 | • O-ring, Viton, 3.000 x 3.125 x 0.063 in. | 1 | B |

NOTE A: See Figure 10, item 1.
B: See Figure 10, item 6.
NS: Not Shown

## *Drive Train Kit*

See Figure 9.

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| — | 306236 | Drive train kit, 65:1, bolt type | 1 | |
| 14 | 942272 | • O-ring, Buna-N, 2.109 x 2.387 x 0.139 in. | 1 | |
| 15 | 954051 | • Back-up ring, single, $2^1/_8$ in. | 1 | |
| 17 | 1101795 | • Rod, upper check, assembly | 1 | |
| 22 | 126874 | • Plate, check, lower, 65:1 | 1 | |
| 23 | 126876 | • Piston, assembly, 65:1 | 1 | |
| 24 | 126877 | • Spacer, 1.50 OD x 0.93 ID x 0.25 in. | 1 | |
| 25 | 126878 | • Rod, plunger, 65:1 | 1 | |
| 30 | 126910 | • Gland, kit, pump, type N | 1 | |
| NS | 295976 | • Kit, service shovel/adapter | 1 | |
| NS | 900464 | • Adhesive, threadlocking | AR | |

AR: As Required
NS: Not Shown

## *Optional Hydraulic Check Valve*

This one-way check valve can be installed at the output of the pump.

| Part | Description | Quantity |
|---|---|---|
| 124935 | Valve, check, $1^1/_4$ in. NPT inlet, $1^1/_4$ in. NPT outlet, female | 1 |

## *Optional Gland Insertion Tool*

This tool is recommended for pressing the packing gland and gland retainer into the mounting flange of the pump.

| Part | Description | Quantity |
|---|---|---|
| 124744 | Tool, gland insertion | 1 |

## *Drum Follower Plate Assembly*

See Figure 10.

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| 1 | 124690 | Gasket, follower | 1 | |
| 2 | 981402 | Screw, hex head, $^3/_8$-16 x 1 in. | 4 | |
| 3 | 983160 | Washer, lock, split, $^3/_8$, nickel-plated | 4 | |
| 4 | - - - - - - | Seal, follower | 2 | A |
| 5 | - - - - - - | Ring, neoprene | 2 | A |
| 6 | 940410 | O-ring, 3.00 x 3.125 x 0.063 in. | 1 | |
| 7 | - - - - - - | Plate, follower | 1 | A |
| 8 | 982895 | Screw, flat, socket, M10 x 25 mm | 4 | |
| 9 | 295970 | Adapter, follower, 2.38 ID | 1 | |
| NOTE A: For a list of available drum follower plates and seals, refer to *Drum Follower Plates* and *Drum Follower Plate Seals*. | | | | |

## *Drum Follower Plates*

See Figure 10.

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| 7 | 186126 | Plate, follower, 571-mm drum | 1 | A |
| NOTE A: For more information, contact your Nordson representative. | | | | |

## *Drum Follower Plate Seals*

See Figure 10.

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| 4 | 124706 | Seal, follower plate, 571-mm drum | 2 | A |
| 5 | 308796 | Ring, Neoprene, 571-mm drum | 2 | A |
| NS | 282846 | Ring, follower plate, 571-mm drum | 1 | B |

NOTE A: The follower seal and the Neoprene ring are used together on the 571-mm drum followers (only). For more information, contact your Nordson representative.

B: Follower plate rings are used with urethane material pre-packaged in aluminum or plastic bags. For more information, contact your Nordson representative.

NS: Not Shown

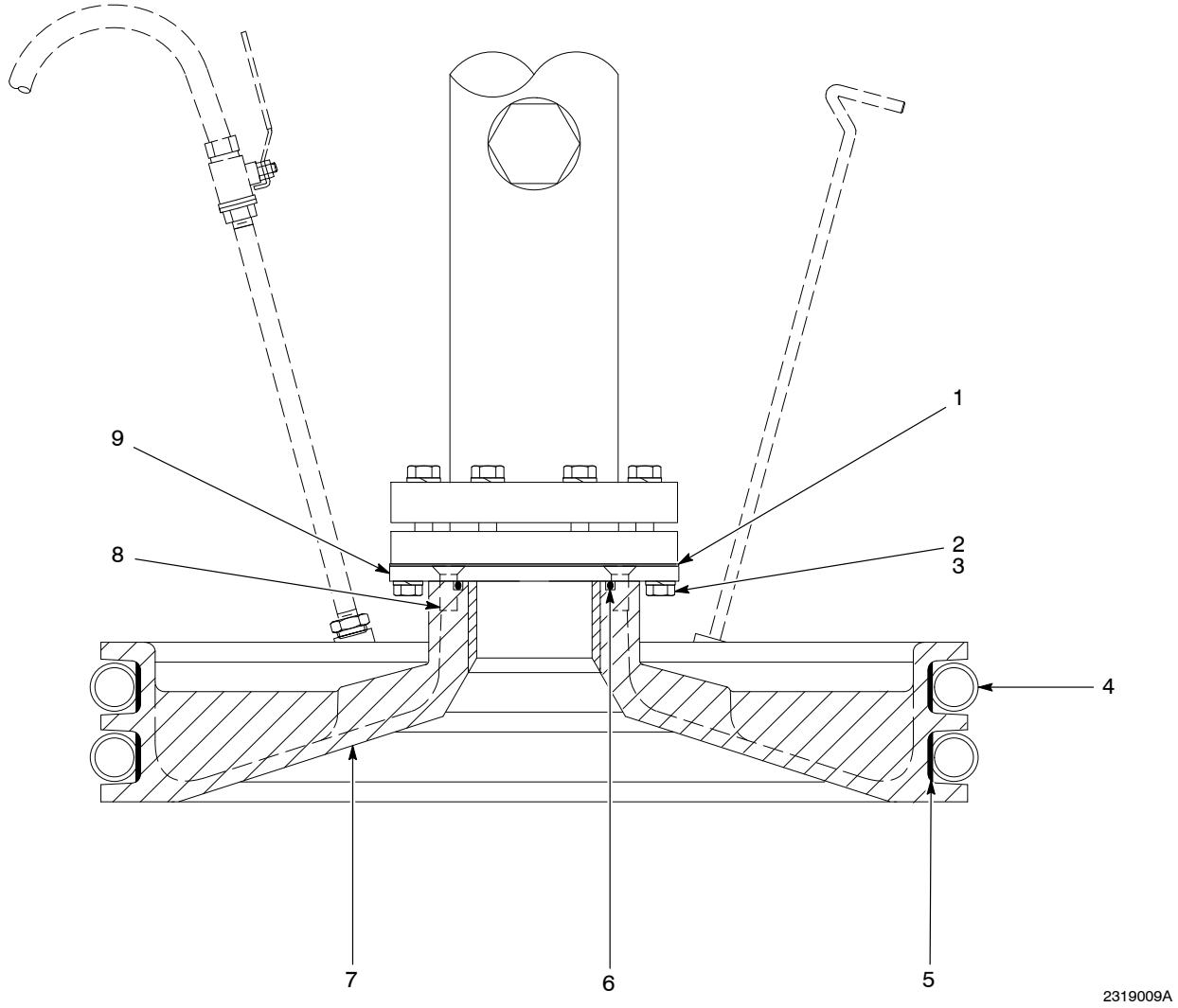


Figure 10 Drum Follower Plate Assembly

## *Pail Follower Plate Assembly*

See Figure 11.

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| 1 | 124690 | Gasket, follower | 2 | |
| 2 | - - - - - - | Seal, follower plate | 1 | A |
| 3 | - - - - - - | Plate, follower, pail | 1 | A |
| 4 | 981410 | Screw, hex head, $^3/_8$-16 x 1.75 long | 4 | |
| 5 | 983160 | Washer, lock, split, $^3/_8$, nickel-plated | 4 | |
| 6 | 295970 | Adapter, follower, 2.38 ID | 1 | |

NOTE A: For a list of available pail follower plates and seals, refer to *Pail Follower Plates* and *Pail Follower Plate Seals*.

## *Pail Follower Plates*

See Figure 11.

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| 3 | 124807 | Plate, follower, 280 mm | 1 | A |
| 3 | 124778 | Plate, follower, 286 mm | 1 | A |
| 3 | 124860 | Plate, follower, 305 mm | 1 | A |

NOTE A: For more information, contact your Nordson representative.

## *Pail Follower Plate Seals*

See Figure 11.

| Item | Part | Description | Quantity | Note |
|---|---|---|---|---|
| 2 | 274379 | Seal, follower, pail, 280 mm (molded silicone, 1 piece) | 1 | A |
| 2 | 274378 | Seal, follower, pail, 286 mm (molded silicone, 1 piece) | 1 | A |
| 2 | 124863 | Seal, follower, pail, 305 mm (hydraulic hose, 3 pieces) | 1 | A |
| NOTE A: For more information, contact your Nordson representative. | | | | |

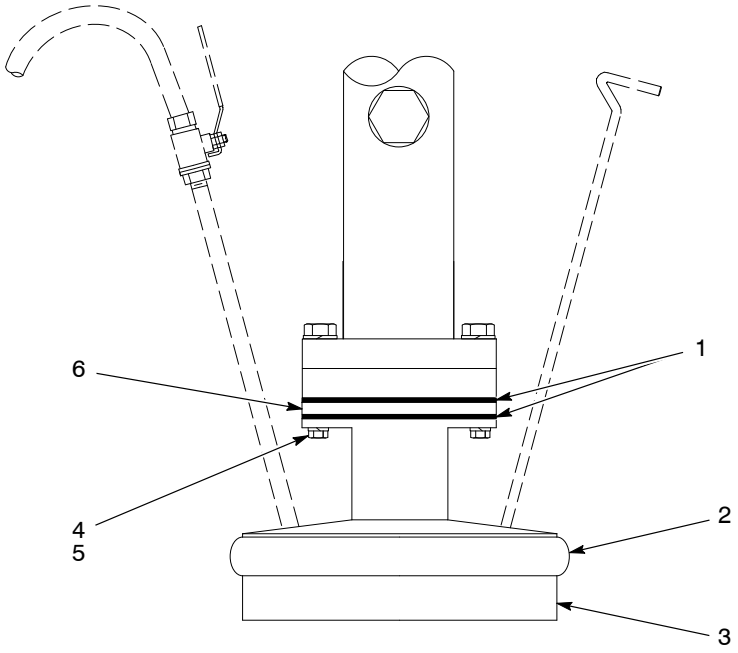


Figure 11 Pail Follower Plate Assembly