

Rhino[®] SD2/XD2 Hydraulic Section

Customer Product Manual

Part 1613204-01

Issued 4/18

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

This document is subject to change without notice.
Check <http://emanuals.nordson.com> for the latest version.



NORDSON CORPORATION • AMHERST, OHIO • USA

Table of Contents

<p>Safety 1</p> <p> Qualified Personnel 1</p> <p> Intended Use 1</p> <p> Regulations and Approvals 1</p> <p> Personal Safety 2</p> <p> High-Pressure Fluids 2</p> <p> Fire Safety 3</p> <p> Halogenated Hydrocarbon Solvent Hazards . . . 4</p> <p> Action in the Event of a Malfunction 4</p> <p> Disposal 4</p> <p>Description 5</p> <p> Specifications 6</p> <p> Theory of Operation 7</p> <p>Repair 9</p> <p> Consumable Items 9</p> <p> Disassemble the Pump 10</p> <p> Standard and Temperature-Conditioned Hydraulic Sections 12</p> <p> Disassemble the Hydraulic Section 12</p> <p> Assemble the Hydraulic Section 13</p> <p> Rebuild the Packing Gland 15</p> <p> Stainless Steel Hydraulic Sections 16</p> <p> Disassemble the Hydraulic Section 16</p> <p> Assemble the Hydraulic Section 17</p> <p> Reassemble the Pump 19</p>	<p>Preventative Maintenance 21</p> <p>Parts 22</p> <p> Using the Illustrated Parts List 22</p> <p> Pump Kits 23</p> <p> 5.8-Cu. In. Standard and Temperature-Conditioned Hydraulic Sections 24</p> <p> 8.1-Cu. In. Standard and Temperature-Conditioned Hydraulic Sections 26</p> <p> 8.1-Cu. In. Stainless Steel Hydraulic Section ... 28</p> <p> Mounting Hardware 30</p> <p> Tools 32</p> <p> Kits 32</p>
---	--

Contact Us

Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address:
<http://www.nordson.com>.

Address all correspondence to:

Nordson Corporation
 Attn: Customer Service
 555 Jackson Street
 Amherst, OH 44001

Notice

This is a Nordson Corporation publication which is protected by copyright. Original copyright date 2018. No part of this document may be photocopied, reproduced, or translated to another language without the prior written consent of Nordson Corporation. The information contained in this publication is subject to change without notice.

Trademarks

Rhino, Scoreguard, Nordson, and the Nordson logo are registered trademarks of Nordson Corporation.

All other trademarks are the property of their respective owners.

Rhino® SD2/XD2 Hydraulic Section

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 the doctor this card
- Tell the doctor 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.

Fire Safety *(contd)*

- 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:

<u>Element</u>	<u>Symbol</u>	<u>Prefix</u>
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.

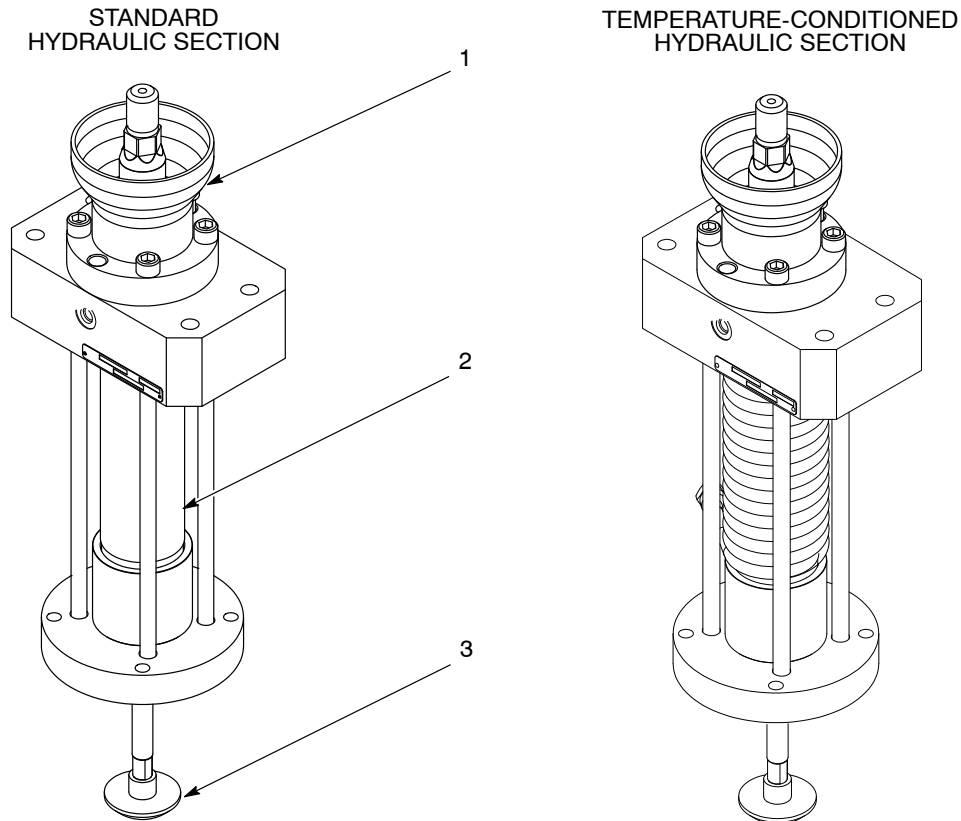
Disposal

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

Description

See Figure 1 and refer to Table 1 for a description of the Rhino® SD2/XD2 hydraulic section assembly components.

NOTE: Installation and operation are dependent upon the unloader and application. Refer to the system documentation for detailed information.



1058792

Figure 1 Rhino SD2/XD2 Hydraulic Section

Table 1 Hydraulic Section Assembly Components

Item	Description	Function
1	Solvent Chamber	Contains fluid to lubricate the plunger and packing gland seals; prevents material from hardening on the plunger rod
2	Hydraulic Section	Pressurizes the material and forces it out of the pump; available in: <ul style="list-style-type: none"> •Standard 5.8 and 8.1 cu-in. •Temperature-conditioned 5.8 and 8.1 cu-in. •Stainless steel 8.1 cu-in.
3	Shovel	Forces material into the hydraulic section

Specifications

Refer to Table 2 for the hydraulic section specifications.

Table 2 Hydraulic Section Specifications

Item	Description
Maximum Output	5.8 cu-in.: 174 cu-in./min (2.85 l/min) 8.1 cu-in.: 243 cu-in./min (3.98 l/min) 8.1 cu-in. stainless steel: 121 cu-in./min (1.98 l/min)
Maximum Stroke Rate	Intermittent: 1 stroke per 2 sec (30 strokes/min) Continuous: 1 stroke per 4 sec (15 strokes/min)
Dynamic Viscosity Range	30,000 – 3 million cps
Wetted Component Materials	<p>SD2 Standard Hydraulic Section: Carbon Steel, Stainless Steel, Brass, Aluminum, Proprietary Ceramic Coating, Chrome Plated Carbon Steel, Viton™, UHMWPE</p> <p>XD2 Standard Hydraulic Section: Carbon Steel, Stainless Steel, Brass, Aluminum, Proprietary Ceramic Coating, Viton, UHMWPE</p> <p>XD2 Stainless Steel Hydraulic Section: Stainless Steel 400- and 300-Series, Proprietary Ceramic Coating, Viton, Polyester</p> <p>XD2H Heated Hydraulic Section: Carbon Steel, Stainless Steel, Brass, Proprietary Ceramic Coating, Viton, Peek</p>

Theory of Operation

See Figure 2.

The hydraulic section has a shovel attached to the end of the hydraulic plunger that projects into the center of the follower plate. The shovel moves up and down with the plunger, helping to force material into the hydraulic section. The hydraulic section pressurizes the material and forces it out of the pump.

When the plunger strokes downward, the piston/upper check opens and the lower check closes. Material between the upper and lower checks is forced upward through the piston. The material above the upper check pressurizes and flows out of the material output port.

During the upward pump stroke, the plunger and shovel are pulled upward and the piston/upper check closes. The lower check 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 material outlet port.

The solvent chamber surrounds the plunger. The chamber contains solvent chamber fluid that lubricates the plunger and packing gland seals. This fluid keeps material from hardening on the plunger and minimizes wear on the packing gland seals. The bleed valve is used to bleed air from the pump.

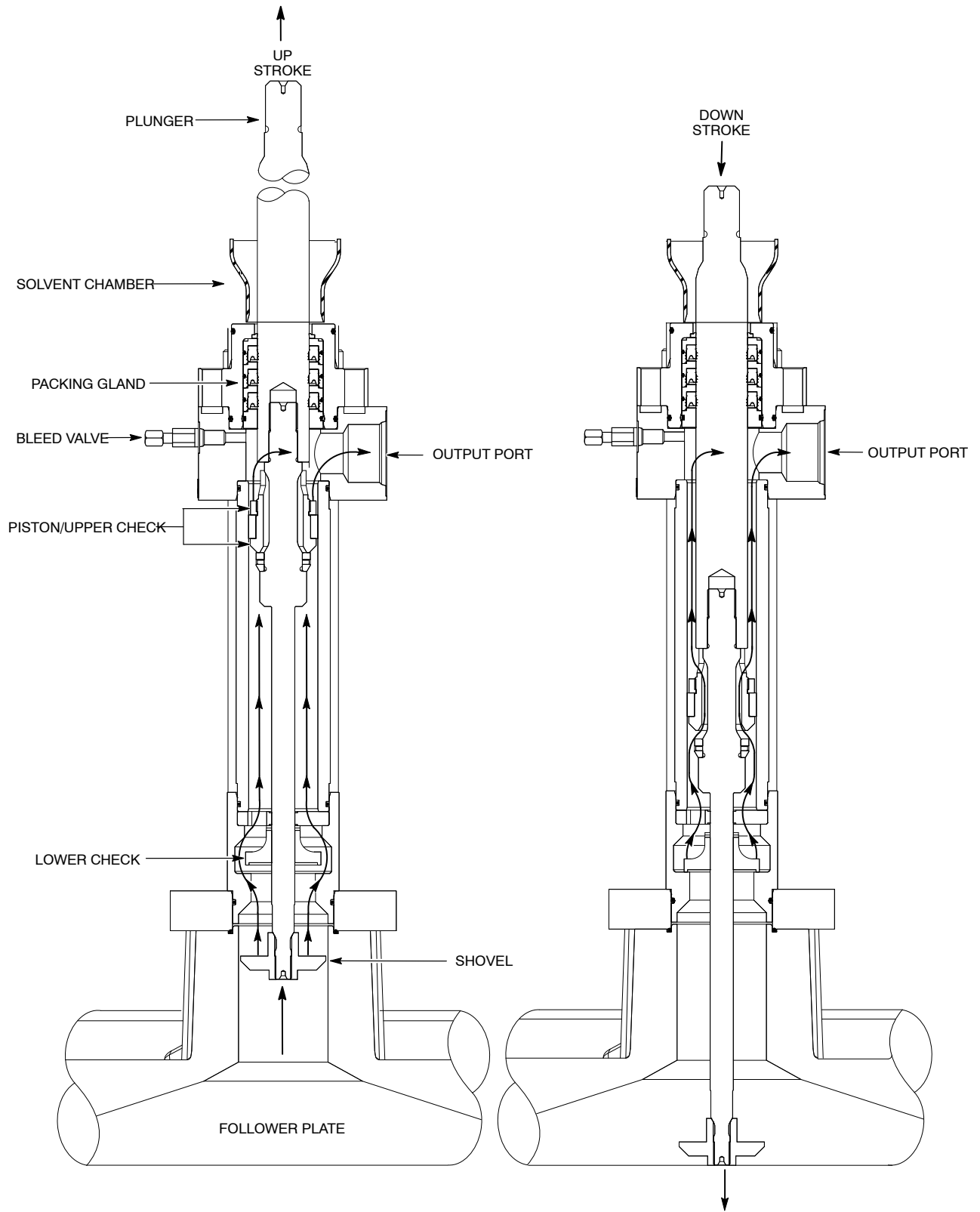


Figure 2 Standard Hydraulic Section

Repair



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

- Read and understand this entire section before repairing this equipment. Some repairs can be made without breaking down the pump.
- Relieve all pressure to the pump before performing repair procedures.
- If necessary, contact a local Nordson representative with questions about these procedures.

This section only covers the procedures necessary to perform shop repairs. Refer to the applicable Rhino unloader manual for procedures on removing the pump from the unloader.

Consumable Items

Refer to Table 3 for a list of consumable items for repair procedures.

Table 3 Consumable Items

Item	Part	Application
Never-Seez®	900344	Apply to threads of applicable parts
Loctite® Threadlocker Blue 242®	900464	
Pipe/Thread Sealant	900481	
Mobil SHC™ 634	156289	Fills the solvent cup and lubricates hydraulic section components

Disassemble the Pump

See Figure 3.

1. Remove the screws (3) securing the coupling halves (2) to the floating coupling shaft (5) and plunger rod (6).
2. Remove the nuts (4) securing the hydraulic section (7) to the connecting rods (1).
3. Remove the hydraulic section from the pump assembly.
4. **Temperature-Conditioned Pumps:** Remove the cover from the hydraulic section.

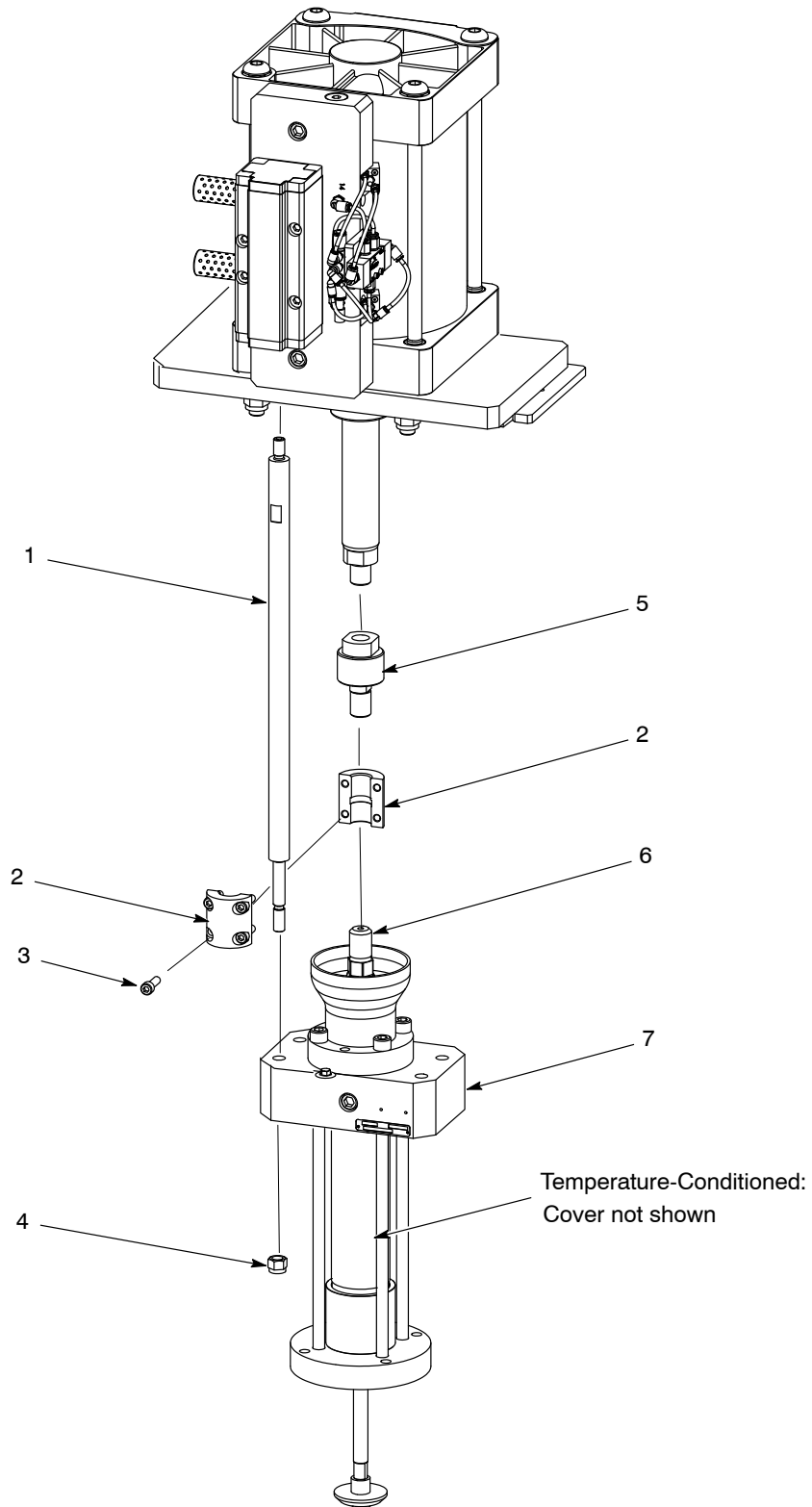


Figure 3 Disassembling the Pump

NOTE: For clarity, some parts are not shown.

Standard and Temperature-Conditioned Hydraulic Sections

Disassemble the Hydraulic Section

See Figure 4.

1. Remove the solvent chamber (1) and the O-ring (2) from the packing gland (4). Discard the O-ring.

NOTE: Packing glands have either four or six screws.

2. Remove the screws (3) from the packing gland (4). Insert two screws into the threaded holes (20) as shown.
3. Alternate tightening the screws to remove the packing gland (4) from the upper pump body (5).
4. Remove the shovel adapter (18) from the rod assembly (10).
5. Remove the screws (19) securing the cylinder assembly and follower plate housing (17) to the upper pump body (5). Remove the follower plate housing.
6. Remove the bottom housing (15), O-ring (16), lower check plate (14), and spacer (13). Discard the O-ring.
7. Remove the cylinder housing (12) from the upper pump body (5). Remove and discard the O-rings (11) from the cylinder housing.

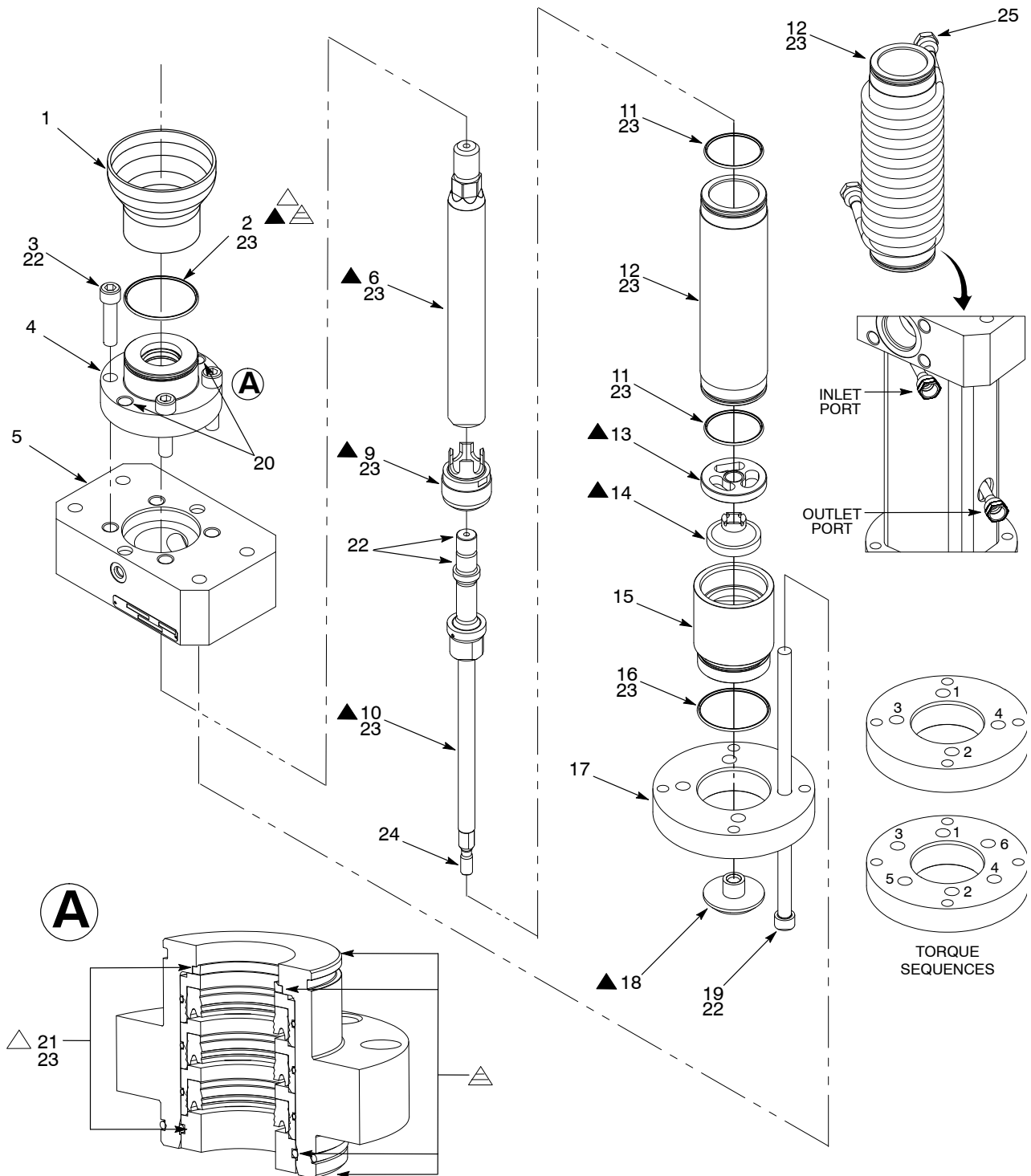
Temperature-Conditioned Sections: It is not necessary to remove the coil (25) unless it or the cylinder housing needs to be replaced.

8. Using either an arbor press or hydraulic press, push the plunger rod (6) out of the cylinder housing (12).
9. Remove the rod assembly from the plunger rod (6). Remove and discard the piston assembly (9).
10. Clean the parts with a compatible solvent. Refer to Table 2 on page 6 for wetted component materials.
11. Inspect parts for nicks, scratches, wear, and damage. Replace parts if necessary.
12. Rebuild the packing gland (4) if necessary. Refer to the *Rebuild the Packing Gland* procedure in this section for procedures.

Assemble the Hydraulic Section

See Figure 4.

1. Apply Mobil SHC 634 (23) to the packing gland O-ring (2) and the packing gland I.D. (21).
 2. Install the packing gland (4) into the upper pump body (5).
 3. Apply Never-Seez (22) to the threads of the screws (3). Install the screws into the packing gland (4) and tighten to 75–80 ft-lb (102–108 N•m).
 4. **Temperature-Conditioned Sections:** Install the coil (25) onto the cylinder housing (12) if necessary.
 5. Apply Mobil SHC 634 (23) to the O-rings (11) and I.D. of the cylinder housing (12). Install the O-rings onto the cylinder housing. Install the cylinder housing onto the upper pump body (5).
 6. Assemble the plunger rod assembly:
 - a. Install the piston assembly (9) onto the rod assembly (10).
 - b. Apply Never-Seez (22) to the upper threads and pilot of the rod assembly. Connect the rod assembly to the plunger rod (6) and tighten to 200–220 ft-lb (272–298 N•m).
 - c. Apply a thin coat of Mobil SHC 634 (23) to the plunger rod, piston assembly, and the rod assembly.
 7. Using either an arbor press or hydraulic press, install the plunger rod assembly through the cylinder housing (12) and packing gland (4).
 8. Install the spacer (13) and lower check plate (14) onto the rod assembly.
 9. Install the bottom housing (15) onto the cylinder housing (12). Apply Mobil SHC 634 (23) to the O-ring (16) and install it onto the bottom housing.
 10. Install the follower plate housing (17) onto the bottom housing (15).
- NOTE:** Hydraulic sections have either four or six screws that secure the cylinder assembly to the upper pump body.
11. Apply Never-Seez (22) to the threads of the screws (19).
 12. Install the screws through the follower plate housing (17) and into the upper pump body (5).
 13. Hand-tighten two opposing screws at the same time until the follower plate housing, bottom housing, and cylinder housing (12) are secured to the upper pump body (5). Hand-tighten the remaining screws as shown.
 14. Simultaneously tighten each screw 1/8 turn at a time in the sequence shown to 75–80 ft-lb (102–108 N•m).
 15. Apply threadlock adhesive (24) to the lower threads of the rod assembly. Install the shovel adapter (18) to the rod assembly and tighten to 55–60 ft-lb (75–81 N•m).
 16. Install the solvent chamber cup (1) onto the packing gland (4).



▲ PARTS ARE INCLUDED IN THESE KITS:
 SD2 5.8-CU IN. DRIVE TRAIN SERVICE KIT 1105066
 XD2 5.8-CU IN. DRIVE TRAIN SERVICE KIT 1105065
 SD2 8.1-CU IN. DRIVE TRAIN SERVICE KIT 1105067
 XD2 8.1-CU IN. DRIVE TRAIN SERVICE KIT 1105068

△ PARTS ARE INCLUDED IN THESE KITS:
 5.8-CU IN. PACKING GLAND SERVICE KIT 1104726
 8.1-CU IN. PACKING GLAND SERVICE KIT 1104731

△ PARTS ARE INCLUDED IN THESE KITS:
 5.8-CU IN. PACKING GLAND INTERNAL PARTS SERVICE KIT 1081134
 8.1-CU IN. PACKING GLAND INTERNAL PARTS SERVICE KIT 1081135

Figure 4 Repairing the Standard and Temperature-Conditioned Hydraulic Section

Rebuild the Packing Gland

NOTE: This procedure requires use of either a hydraulic press or an arbor press to remove the internal parts of the packing gland.

See Figure 5.

1. Place the packing gland housing (2) on a fixture (5) with the solvent cup end facing up.

NOTE: During the removal of the internal parts, the retainer groove will break the O-ring (4).

2. Insert the removal arbor (1) into the packing gland housing. Using the press, push out the internal parts (3).
3. Thoroughly clean the packing gland housing in a compatible solvent to remove all sealant material and O-ring debris.
4. Coat the bore (8) of the packing gland housing with Mobil SHC 634 (9).
5. Insert the scraper or retaining ring (7), sharp edge down, into the packing gland (2).
6. Using the insertion tool (6) and press, insert the new internal parts into the packing gland housing (2). Ensure the brass seal retainer or backup washer (10) is flush with or slightly below the packing gland housing as shown in Figure 5.

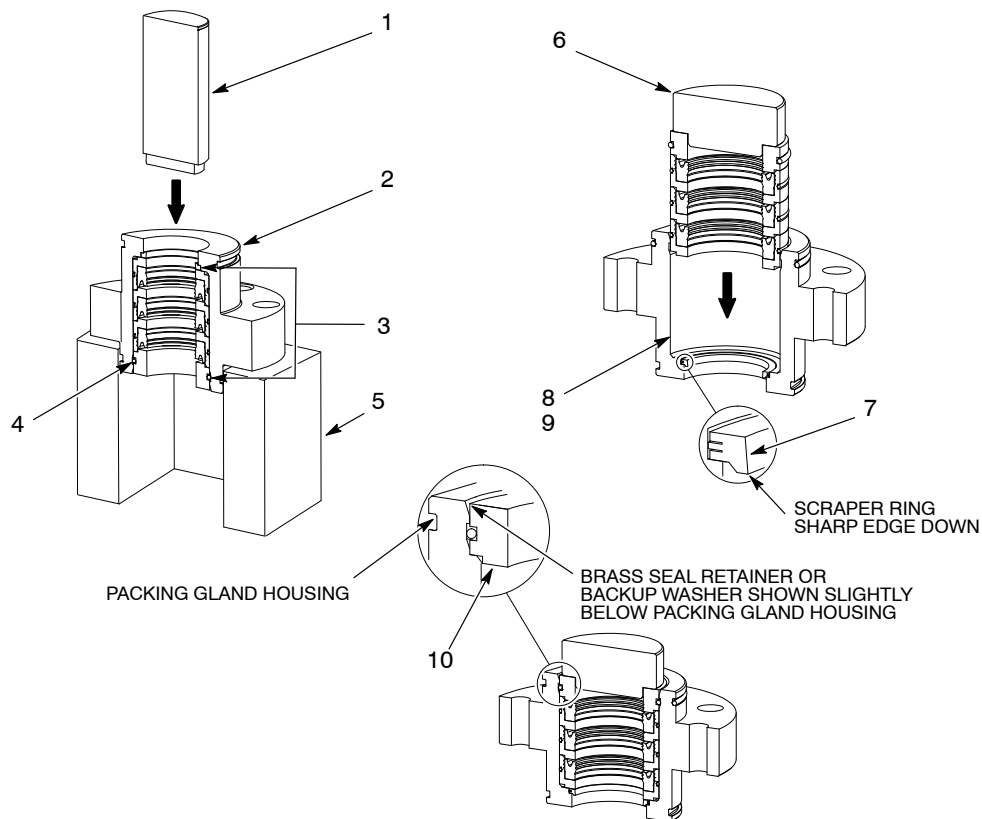


Figure 5 Rebuilding the Packing Gland

Stainless Steel Hydraulic Sections

Disassemble the Hydraulic Section

See Figure 6.

1. Remove the solvent chamber (1) and the O-ring (2) from the packing gland (5). Discard the O-ring.
2. Remove the screws (3) from the collar (4). Insert two screws into the threaded holes (9) as shown.
3. Alternate tightening the screws to remove the packing gland assembly from the upper pump body (8).
4. Loosen the set screws (6) and remove the packing gland (5) from the collar (4).
5. Remove the fittings (7) from the packing gland.
6. Remove the shovel adapter (20) from the rod assembly (12).
7. Remove the screws (21) securing the cylinder assembly and follower plate housing (19) to the upper pump body (8). Remove the follower plate housing.
8. Remove the bottom housing (17), O-ring (18), lower check plate (16), and spacer (15). Discard the O-ring.
9. Remove the cylinder housing (13) from the upper pump body (8). Remove and discard the O-rings (14) from the cylinder housing.
10. Remove the rod assembly (12) from the plunger rod (11).
11. Clean the parts with a compatible solvent. Refer to Table 2 on page 6 for wetted component materials.
12. Inspect parts for nicks, scratches, wear, and damage. Replace parts if necessary.

Assemble the Hydraulic Section

See Figure 6.

1. Apply threadlock adhesive (10) to the threads of the fittings (7). Install the fittings into the packing gland (5) and tighten securely.
2. Apply Mobil SHC 634 (22) to the packing gland O-ring (2) and the I.D. of the packing gland (5).
3. Install the upper collar (4) onto the packing gland (5). Tighten the set screws (6) until they make contact with the packing gland. Do not over tighten the set screws.
4. Install the packing gland assembly onto the upper pump body (8).
5. Apply Never-Seez (23) to the threads of the screws (3). Install the screws into the packing gland assembly and tighten to 75–80 ft-lb (102–108 N•m).
6. Apply Mobil SHC 634 (22) to the cylinder housing O-rings (14). Install the O-rings onto the cylinder housing (13). Install the cylinder housing onto the upper pump body (8).
7. Apply Never-Seez (23) to the upper threads and pilot of the rod assembly (12).
8. Connect the rod assembly to the plunger rod (11) and tighten to 200–220 ft-lb (272–298 N•m).
9. Apply a thin coat of Mobil SHC 634 (22) to the plunger rod (11) and the rod assembly (12).
10. Using either an arbor press or hydraulic press, install the plunger rod assembly into the cylinder housing (13) and packing gland (5).
11. Install the spacer (15) and lower check plate (16) onto the rod assembly.
12. Install the bottom housing (17) onto the cylinder housing (13). Apply Mobil SHC 634 (22) to the O-ring (18) and install it onto the bottom housing.
13. Install the follower plate housing (19) onto the bottom housing (17).
14. Apply Never-Seez (23) to the threads of the screws (21).
15. Install the screws through the follower plate housing (19) and into the upper pump body (8).
16. Hand-tighten two opposing screws at the same time until the follower plate housing, bottom housing (17), and cylinder housing (13) are secured to the upper pump body (8). Hand-tighten the remaining screws as shown.
17. Simultaneously tighten each screw 1/8 turn at a time in the sequence shown to 75–80 ft-lb (102–108 N•m).
18. Apply Never-Seez (23) to the lower threads of the rod assembly. Install the shovel adapter (20) to the rod assembly and tighten to 55–60 ft-lb (75–81 N•m).
19. Install the solvent chamber cup (1) onto the packing gland assembly.

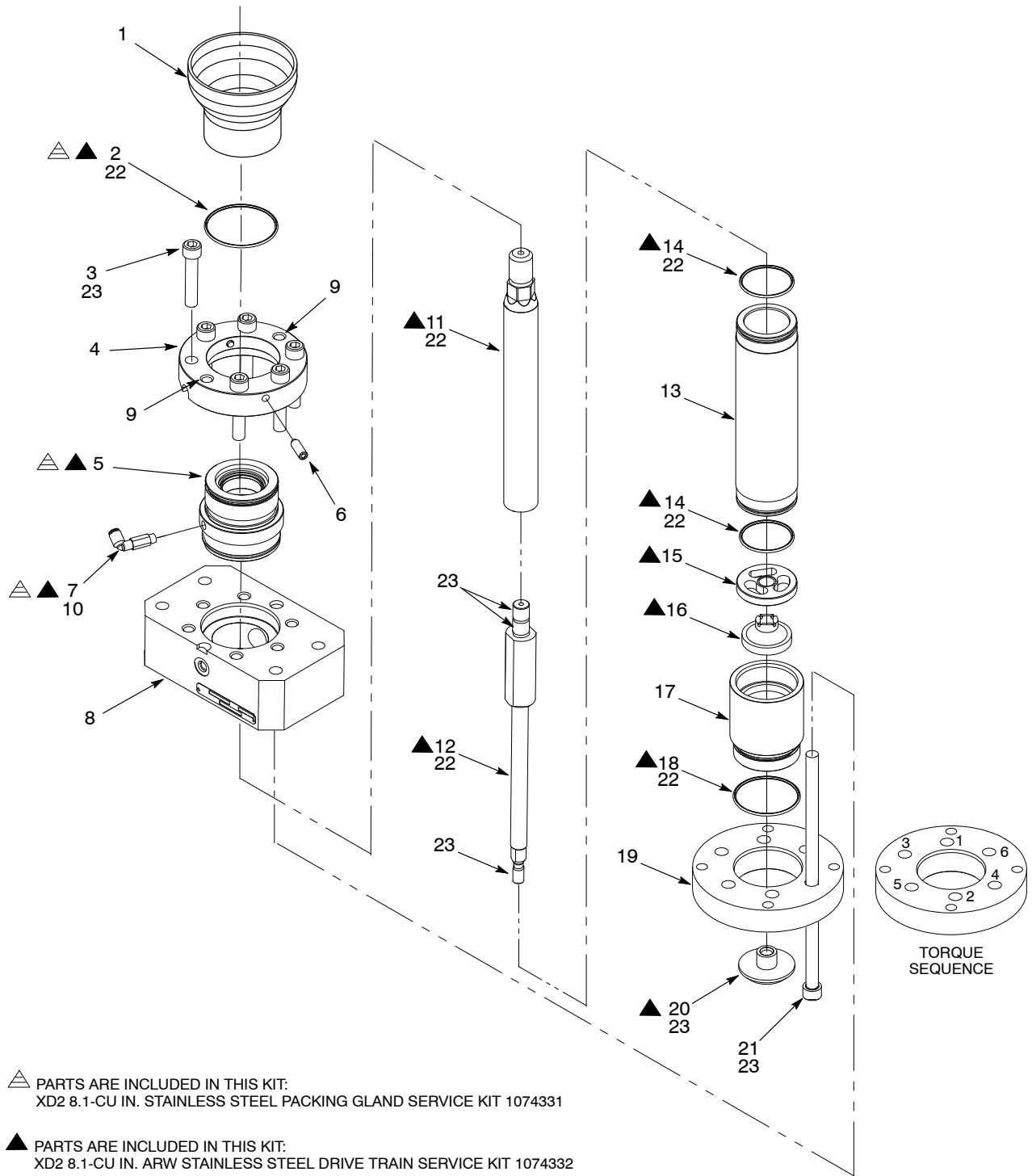


Figure 6 Repairing the Stainless Steel Hydraulic Section

Reassemble the Pump

See Figure 7.

1. Install the connecting rods (2) to the air motor (1) and tighten to 60–65 ft-lb (81.5–88 N•m).
2. Install the hydraulic section (10) onto the connecting rods (2) using the nuts (5). Tighten the nuts to 60–65 ft-lb (81.5–88 N•m).
3. Install the solvent chamber (9) onto the hydraulic section (10).

NOTE: The split coupling halves (3) are a matched set. Each half is stamped with the same serial number. Ensure the grooved end of each half is facing upward.

4. If necessary, move the floating coupling shaft (7) by hand closer to the plunger rod (8)
5. Center the split coupling halves (3) between the hexagonal features of the two mating shafts.
6. Ensure there is a 0.030–0.100-in. gap between the shaft ends as shown when the shaft threads and the split coupling (3) threads mate.
7. For fine adjustment of the gap, hold the split coupling (3) in place and use a $1\frac{5}{16}$ -in. wrench to rotate the floating coupling shaft (7).

NOTE: When performing the next step, ensure the gaps between the split coupling halves (3) are equal.

8. Apply threadlock adhesive to the threads of the split coupling screws (4). Install the coupling screws and tighten to 14–16 ft.-lb (10–21 N•m).
9. Perform one of the following:
 - **Standard Hydraulic Sections:** Using Type-K solvent, fill the solvent chamber (9) to 0.75 in. from the top.
 - **Stainless Steel Hydraulic Sections:** Using Mobil SHC 634, fill the solvent chamber (9) to 0.75 in. from the top.

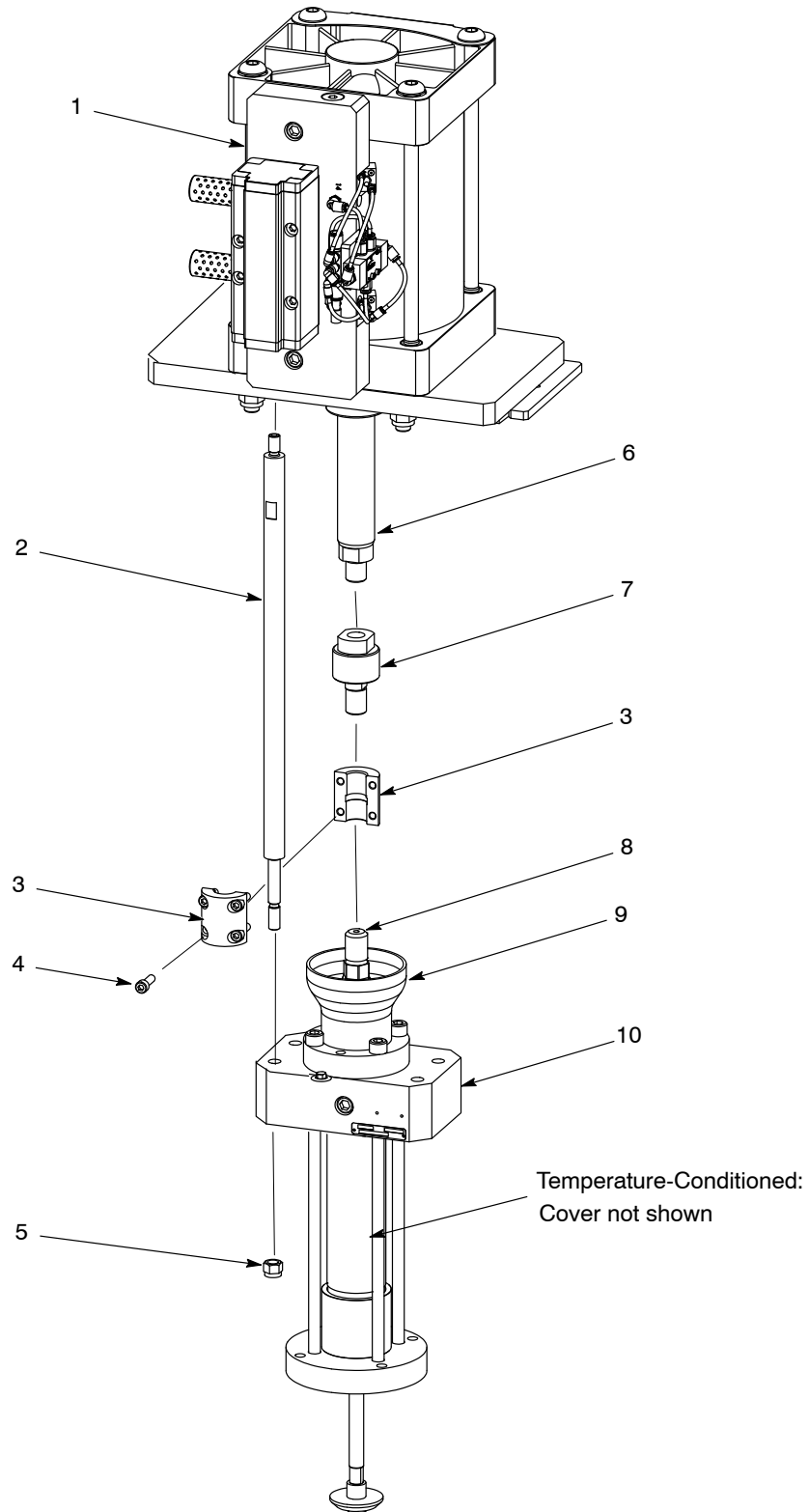


Figure 7 Reassembling the Pump

NOTE: For clarity, some parts are not shown.

Preventative Maintenance



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

NOTE: It may be necessary to adjust frequencies due to the facility environment, process parameters, material being applied, or experience.

NOTE: The frequencies listed in Table 4 are only guidelines. Always perform preventative maintenance procedures according to the facility maintenance schedule.

Table 4 Preventative Maintenance Schedule

Item	Task	Time to Complete	Frequency		
			Daily	Weekly	Pump Strokes
Solvent Chamber	Inspect and refill with fluid if necessary	5 min.	x		
Solvent Chamber Fluid	Replace	5 min.		x	
Packing Gland	Inspect for leaks and replace if necessary	2 min.		x	
	Replace	30 min.			100,000
Plunger Rod (Chrome)	Replace every other packing change or if damaged or scored	2 hr			200,000
Plunger Rod (Scoreguard®)	Replace every other packing change or if damaged or scored	2 hr			400,000
Complete Drive Train Assembly	Replace	2 hr			400,000

Parts

To order parts, call the Nordson Industrial Coating Systems Customer Support Center at (800) 433-9319 or contact your local Nordson representative.

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. Indentations show the relationships between assemblies, subassemblies, and parts.

- 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.

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

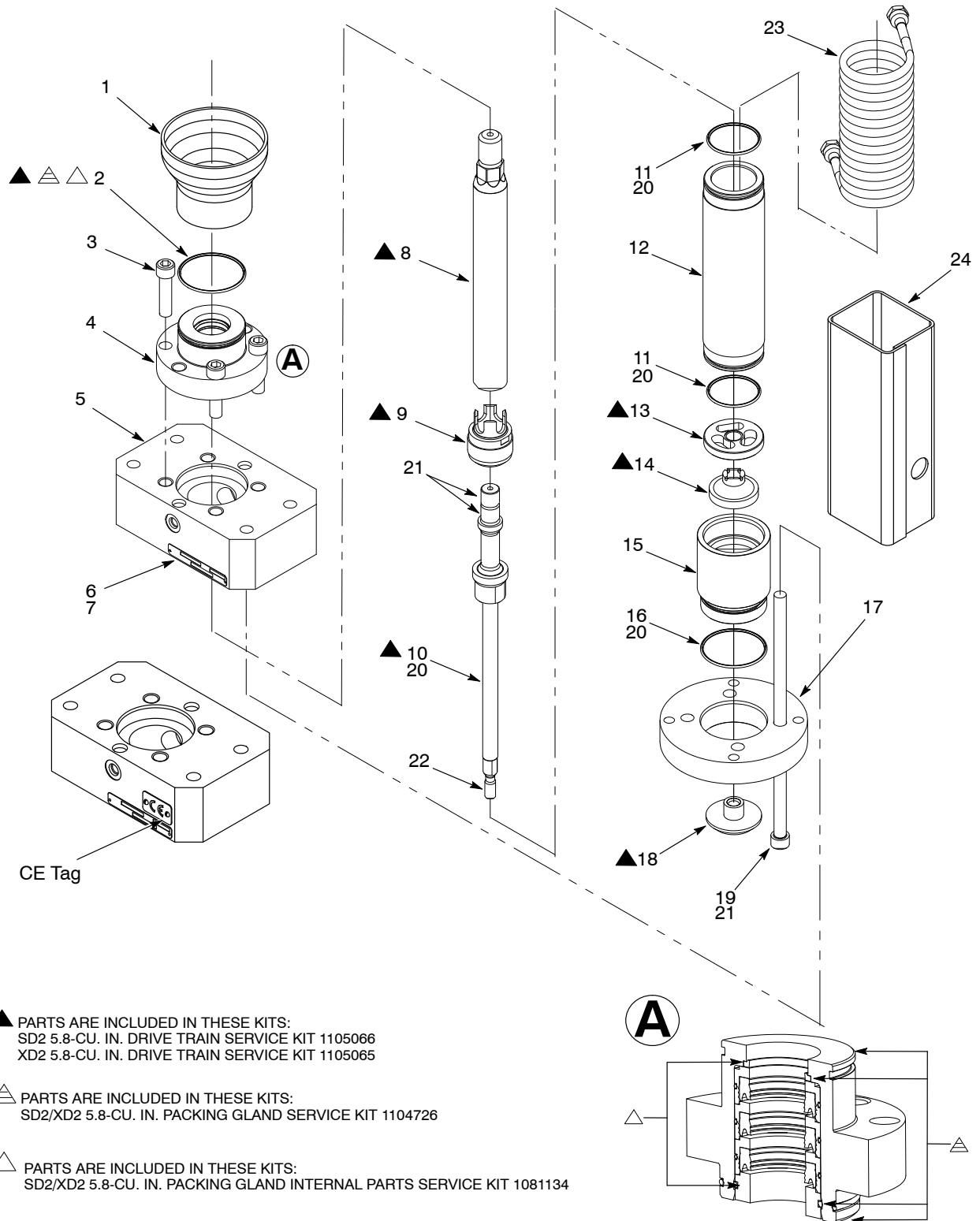
Pump Kits

Refer to the following table for air motor and hydraulic section sizes along with the part numbers for applicable pump ratio.

Pump Ratio	Air Motor Size/ Part Number	Hydraulic Section Size	Kit Part Number	CE Kit Part Number
30:1 SD2	200 mm (1612110)	8.1 cu. in.	1605826	1609631
30:1 SD2 Temp-Conditioned			1605831	1609365
30:1 XD2			1605829	1609364
30:1 XD2 Stainless Steel			1605827	1609362
30:1 XD2 Temp-Conditioned			1605832	1609366
40:1 SD2		5.8 cu. in.	1605825	1609360
40:1 SD2 Temp-Conditioned			1605833	1609367
40:1 XD2			1605828	1609363
40:1 XD2 Temp-Conditioned			1605834	1609368

5.8-Cu. In. Standard and Temperature-Conditioned Hydraulic Sections

See Figure 8 and refer to the following parts list.



▲ PARTS ARE INCLUDED IN THESE KITS:
 SD2 5.8-CU. IN. DRIVE TRAIN SERVICE KIT 1105066
 XD2 5.8-CU. IN. DRIVE TRAIN SERVICE KIT 1105065

△ PARTS ARE INCLUDED IN THESE KITS:
 SD2/XD2 5.8-CU. IN. PACKING GLAND SERVICE KIT 1104726

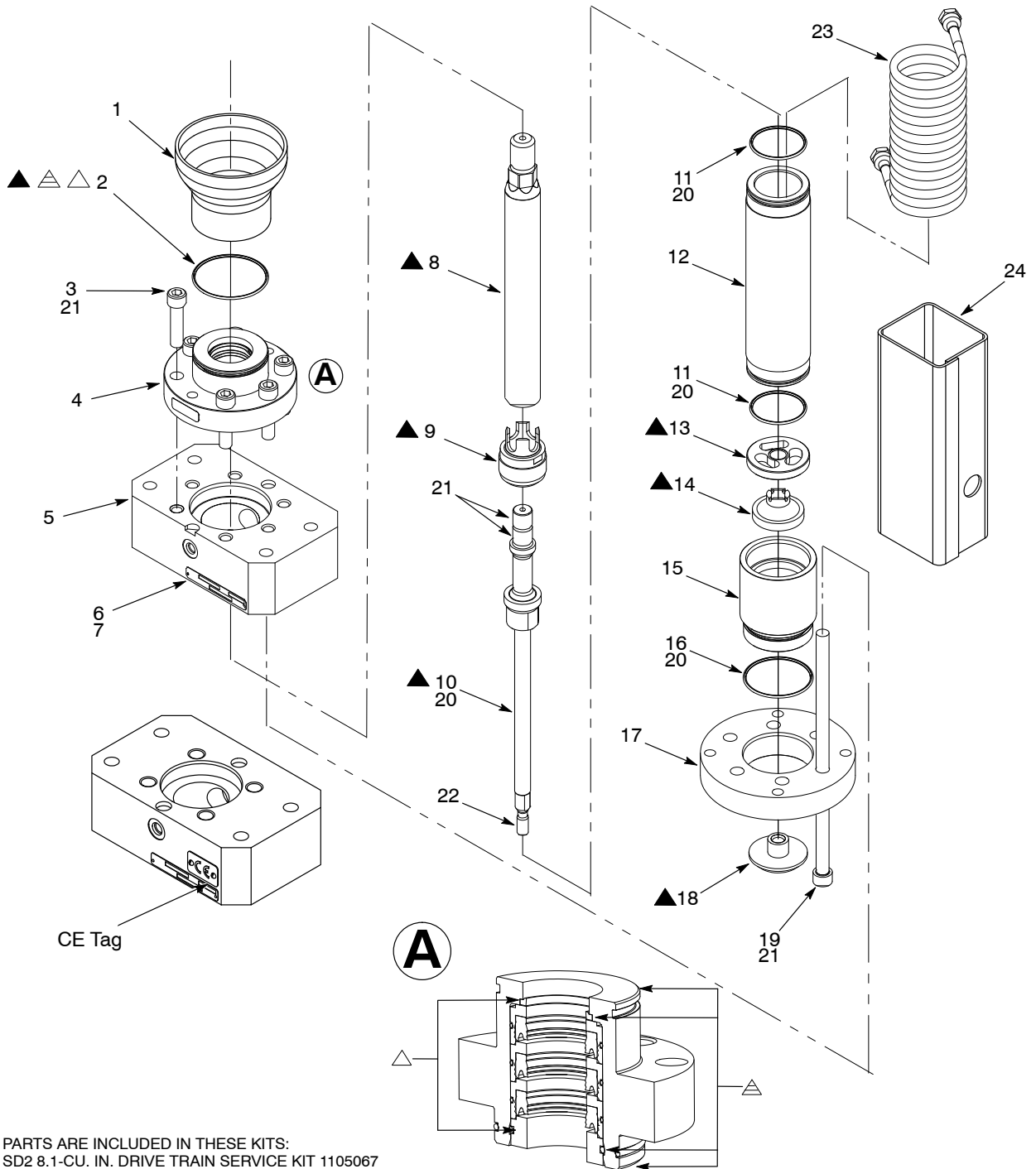
◻ PARTS ARE INCLUDED IN THESE KITS:
 SD2/XD2 5.8-CU. IN. PACKING GLAND INTERNAL PARTS SERVICE KIT 1081134

Figure 8 5.8-Cu. In. Standard and Temperature-Conditioned Hydraulic Section

Item	Part	Part	Part	Part	Description	Qty	Note
—	1605825	—	—	—	PUMP, 1.375 dia, 5.8 cu. in., Rhino SD2	1	
—	1609360	—	—	—	PUMP, 1.375 dia, 5.8 cu. in., Rhino SD2, CE	1	
—	—	1605828	—	—	PUMP, 1.375 dia, 5.8 cu. in., Rhino XD2	1	
—	—	1609363	—	—	PUMP, 1.375 dia, 5.8 cu. in., Rhino XD2, CE	1	
—	—	—	1605833	—	PUMP, 1.375 dia, 5.8 cu. in., Rhino SD2 temperature-conditioned	1	
—	—	—	1609367	—	PUMP, 1.375 dia, 5.8 cu. in., Rhino SD2 temperature-conditioned, CE	1	
—	—	—	—	1605834	PUMP, 1.375 dia, 5.8 cu. in., Rhino XD2 temperature-conditioned	1	
—	—	—	—	1609368	PUMP, 1.375 dia, 5.8 cu. in., Rhino XD2 temperature-conditioned, CE	1	
1	1609301	1609301	1609301	1609301	• CHAMBER, solvent	1	
2	941450	941450	941450	941450	• O-RING, Viton, 2.563 x 2.750 x 0.094, 10545	1	
3	1053264	1053264	1053264	1053264	• SCREW, socket, 1/2-13 x 2	4	
4	-----	-----	-----	-----	• GLAND ASSEMBLY, tri-lip, 1.375 dia	1	
5	1058797	1058797	1013172	1013172	• BODY, pump, upper, 1.375 dia	1	
6	-----	-----	-----	-----	• SCREW, drive, 0.187	2	
7	-----	-----	-----	-----	• PLATE, identification	1	
8	1015823	—	1015823	—	• ROD, plunger, 1.375 dia, chrome	1	
	—	1053015	—	1053015	• ROD, plunger, 1.375 dia, Rhino XD2	1	
9	1015667	1015667	1015667	1015667	• PISTON ASSEMBLY, 1.375 dia	1	
10	1101793	1101793	1101793	1101793	• ROD ASSEMBLY, 1.375 dia	1	
11	1062623	1062623	1062623	1062623	• O-RING, -140 Viton	2	
12	1058798	1058798	1058798	1058798	• CYLINDER, pump housing, 1.375 dia	1	
13	-----	-----	-----	-----	• SPACER, shaft support, 1.375 dia	1	
14	1015648	1095969	1015648	1095969	• PLATE, lower check, 1.375 dia	1	
15	1058799	1058799	1058799	1058799	• HOUSING, bottom pump, 1.375 dia	1	
16	1049516	1049516	1049516	1049516	• O-RING, -144, Viton	1	
17	1058800	1058800	1058800	1058800	• PLATE, housing, follower, 1.375 dia	1	
18	1011361	1011361	1011361	1011361	• PLATE, shovel, follower, 1.375 dia	1	
19	1015990	1015990	1015990	1015990	• SCREW, socket, 1/2-13 x 12	4	
20	156289	156289	156289	156289	• LUBRICANT, Mobil SHC 634	1	
21	900344	900344	900344	900344	• LUBRICANT, Never-Seez, 8-oz	1	
22	900464	900464	900464	900464	• ADHESIVE, Loctite Threadlocker Blue 242, removable, 50 ml	1	
23	—	—	1084904	1084904	• COIL, temperature-conditioned pump	1	
24	—	—	1085225	1085225	• COIL, temperature-conditioned pump	1	

8.1-Cu. In. Standard and Temperature-Conditioned Hydraulic Sections

See Figure 9 and refer to the following parts list.



▲ PARTS ARE INCLUDED IN THESE KITS:
 SD2 8.1-CU. IN. DRIVE TRAIN SERVICE KIT 1105067
 XD2 8.1-CU. IN. DRIVE TRAIN SERVICE KIT 1105068

△ PARTS ARE INCLUDED IN SD2/XD2 8.1-CU. IN. PACKING GLAND SERVICE KIT 1104731.

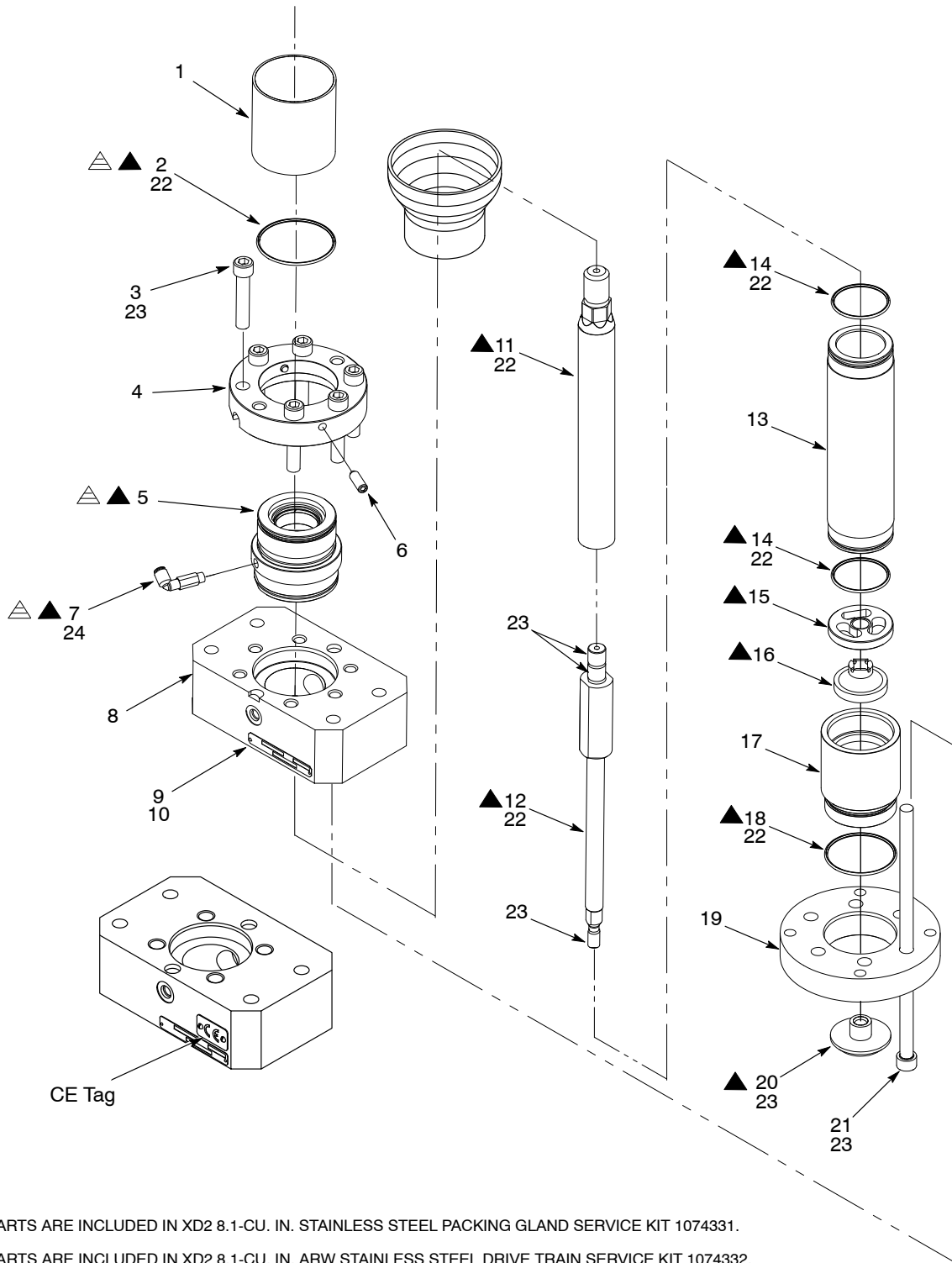
△ PARTS ARE INCLUDED IN SD2/XD2 8.1-CU. IN. PACKING GLAND INTERNAL PARTS SERVICE KIT 1081135.

Figure 9 8.1-Cu. In. Standard and Temperature-Conditioned Hydraulic Section

Item	Part	Part	Part	Part	Description	Qty	Note
—	1605826	—	—	—	PUMP, 1.625 dia, 8.1 cu.in., Rhino SD2	1	
—	1609361	—	—	—	PUMP, 1.625 dia, 8.1 cu.in., Rhino SD2, CE	1	
—	—	1605831	—	—	PUMP, 1.625 dia, 8.1 cu.in., Rhino SD2, temperature-conditioned	1	
—	—	1609365	—	—	PUMP, 1.625 dia, 8.1 cu.in., Rhino SD2, temperature-conditioned, CE	1	
—	—	—	1605829	—	PUMP, 1.625 dia, 8.1 cu.in, Rhino XD2	1	
—	—	—	1609364	—	PUMP, 1.625 dia, 8.1 cu.in, Rhino XD2, CE	1	
—	—	—	—	1605832	PUMP, 1.625 dia, 8.1 cu.in, Rhino XD2, temperature-conditioned	1	
—	—	—	—	1609366	PUMP, 1.625 dia, 8.1 cu.in Rhino XD2, temperature-conditioned, CE	1	
1	1606421	1606421	1606421	1606421	• CHAMBER, solvent	1	
2	1015987	1015987	1015987	1015987	• O-RING, -149, Viton	1	
3	1053264	1053264	1053264	1053264	• SCREW, socket, 1/2-13 x 2	6	
4	-----	-----	-----	-----	• GLAND ASSEMBLY, tri-lip, 1.625 dia, flange mount	1	
5	1013172	1013172	1013172	1013172	• BODY, pump, upper, 1.625/1.375	1	
6	-----	-----	-----	-----	• SCREW, drive, 0.187	2	
7	-----	-----	-----	-----	• PLATE, identification	1	
8	1015822	1015822	—	—	• ROD, plunger, 1.625 dia, chrome	1	
	—	—	1053014	1053014	• ROD, plunger, 1.625 dia, Scoreguard	1	
9	1011340	1011340	1011340	1011340	• PISTON ASSEMBLY, 1.625 dia	1	
10	1101794	1101794	1101794	1101794	• ROD ASSEMBLY, 1.625 dia	1	
11	1015989	1015989	1015989	1015989	• O-RING, -144, Viton	2	
12	1011346	1011346	1011346	1011346	• CYLINDER, pump housing, 1.625 dia	1	
13	1075048	1075048	1075048	1075048	• SPACER, shaft support, 1.625 dia	1	
14	1011349	1011349	—	—	• PLATE, lower check, 1.625 dia	1	
	—	—	1053043	1053043	• PLATE, lower check, 1.625 dia, Score Guard	1	
15	1011347	1011347	1011347	1011347	• HOUSING, bottom, pump, 1.625 dia	1	
16	1015986	1015986	1015986	1015986	• O-RING, -150, Viton	1	
17	1011360	1011360	1011360	1011360	• PLATE, housing, follower, 1.625/1.375	1	
18	1032764	1032764	1032764	1032764	• PLATE, shovel, follower, 1.625 dia	6	
19	1015990	1015990	1015990	1015990	• SCREW, socket, 1/2-13 x 12	6	
20	156289	156289	156289	156289	• LUBRICANT, Mobil SHC 634	1	
21	900344	900344	900344	900344	• LUBRICANT, Never-Seez, 8-oz	1	
22	900464	900464	900464	900464	• ADHESIVE, Loctite Threadlocker Blue 242, removable, 50 ml	1	
23	—	1085380	—	1085380	• COIL, temperature-conditioned pump	1	
24	—	1085225	—	1085225	• COIL, temperature-conditioned pump	1	

8.1-Cu. In. Stainless Steel Hydraulic Section

See Figure 10 and refer to the following parts list.



△ PARTS ARE INCLUDED IN XD2 8.1-CU. IN. STAINLESS STEEL PACKING GLAND SERVICE KIT 1074331.

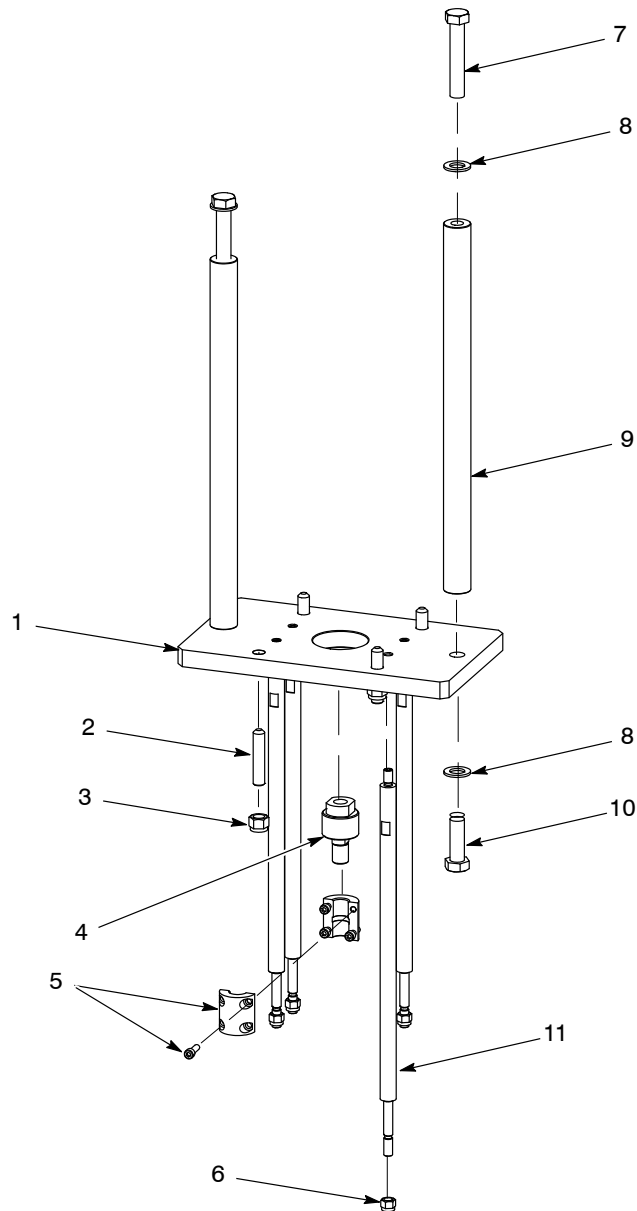
▲ PARTS ARE INCLUDED IN XD2 8.1-CU. IN. ARW STAINLESS STEEL DRIVE TRAIN SERVICE KIT 1074332.

Figure 10 8.1-Cu. In. Stainless Steel Hydraulic Section

Item	Part	Description	Qty	Note
—	1605827	PUMP, Rhino XD2, 1.625 dia, 8.1 cu. in., stainless steel, ARW	1	
—	1609362	PUMP, Rhino XD2, 1.625 dia, 8.1 cu. in., stainless steel, ARW, CE	1	
1	1011324	• CHAMBER, solvent	1	
2	1015987	• O-RING, -149, Viton,	1	
3	1029126	• SCREW, socket, 1/2-13 x 2.5	6	
4	1058473	• COLLAR, ARW gland, Rhino XD2, 1.625 dia	1	
5	-----	• GLAND ASSEMBLY, ARW, stainless steel	1	
6	981628	• SCREW, set, with Nylok®, 3/8-16 x 1	2	
7	972889	• ELBOW, male, ext, 1/4 T x 1/8 NPT	2	
8	1058323	• BODY, pump, upper, stainless steel 1.625/1.375	1	
9	-----	• PLATE, identification	1	
10	-----	• SCREW, drive, 0.187	2	
11	1058330	• ROD, plunger, 1.625 dia, stainless steel, Scoreguard	1	
12	1600419	• ROD, lower check/shovel, 1.625 dia, stainless steel	1	
13	1058325	• CYLINDER, pump housing, 1.625 dia, stainless steel	1	
14	1015989	• O-RING, -144, Viton	2	
15	1058331	• SPACER, shaft support, 1.625 dia, stainless steel	1	
16	1058332	• PLATE, lower check, 1.625 dia, Scoreguard, stainless steel	1	
17	1058326	• HOUSING, bottom, pump, 1.625 dia, stainless steel	1	
18	1015986	• O-RING, -150, Viton,	1	
19	1058328	• PLATE, housing, follower, 1.625/1.375, stainless steel	1	
20	1058327	• PLATE, shovel, follower, 1.625 dia	1	
21	1053045	• SCREW, socket, 1/2-13 x 12	6	
22	156289	• LUBRICANT, Mobil SHC 634	AR	
23	900344	• LUBRICANT, Never-Seez, 8-oz	1	
24	900481	• ADHESIVE, pipe	1	

Mounting Hardware

See Figure 11 and refer to the following parts list.



10016764

Figure 11 Mounting Hardware

Item	Part	Description	Quantity	Note
—	1612131	MODULE, connection, pump and air motor, 200 mm	1	
1	1610771	• PLATE, air motor, Rhino, SD3/XD3, 200 mm	1	
2	1612910	• SCREW, set, socket, M16 x 2 x 80 mm, cup, zinc	4	
3	345649	• NUT, hex, lock, nylon insert, M16 x 2, steel zinc	4	
4	1607574	• COUPLING, shaft, floating joint, 7/8-14 thread	1	
5	1607572	• COUPLER, split, M24 x 3, 7/8-14 threads	2	A
6	1612565	• NUT, lock, M12 x 1.75, nylon insert, zinc	4	
7	1612463	• SCREW, hex, cap, M20 x 2.5 x 110, zinc	2	
8	1041930	• WASHER, flat, M20, zinc-plated steel	4	
9	1610783	• ROD, hanger, Rhino, SD3/XD3, 160-250 mm	2	
10	1612256	• SCREW, hex, cap, M2 x 2.5 x 60, zinc	2	
11	1610782	• ROD, connect, pump/air motor, 160-250 mm	4	
NS	900464	• ADHESIVE, Loctite Threadlocker Blue 242, 50 ml	AR	
NS	900439	• ADHESIVE, Loctite Threadlocker Red 271™, 50 ml	AR	
NOTE A: The split coupler includes four screws.				
AR: As Required				
NS: Not Shown				

Tools

The following tools are available for Rhino SD2/XD2 hydraulic sections.

Item	Kit	Part
5.8-Cu. In. Hydraulic Sections	REMOVAL ARBOR, packing gland internal parts	1073580
	INSERTION TOOL, gland packing internal parts	1081096
	INSERTION TOOL, packing gland replacement	1073589
8.1-Cu. In. Hydraulic Sections	REMOVAL ARBOR, packing gland internal parts	1073582
	INSERTION TOOL, gland packing internal parts	1081097
	INSERTION TOOL, packing gland replacement	1035823
8.1-Cu. In. Stainless Steel Hydraulic Section	INSERTION TOOL, packing gland replacement	1035823
5.8- and 8.1-Cu. In. Hydraulic Sections	INSERTION TOOL, packing gland replacement, flared solvent cup	1609505

Kits

The following kits are available for the Rhino SD2/XD2 hydraulic sections.

Item	Kit	Part	CE Part
5.8-Cu. In. Hydraulic Sections	SD2 PUMP, 1.375 dia	1605825	1609360
	SD2 PUMP, 1.375 dia, temperature-conditioned	1605833	1609367
	XD2 PUMP, 1.375 dia	1605828	1609363
	XD2 PUMP, 1.375 dia, temperature-conditioned	1605834	1609368
	SD2 DRIVE TRAIN	1105066	
	SD2 CE DRIVE TRAIN	1083820	
	XD2 DRIVE TRAIN	1105065	
	XD2H DRIVE TRAIN	1083817	
	SD2/XD2 INTERNAL PACKING GLAND NOTE: This kit only includes the internal packing gland parts.	1081134	
	SD2/XD2 CE INTERNAL PACKING GLAND NOTE: This kit only includes the internal packing gland parts.	1087604	
	SD2/XD2 PACKING GLAND ASSEMBLY NOTE: This kit includes packing gland and the internal packing gland parts. NOTE: Refer to the <i>Rhino SD3/SD2 Packing Gland Replacement</i> operator's card for more data.	1104726	

Item	Kit	Part	CE Part
5.8-Cu. In. Hydraulic Sections	SD2/XD2 CE PACKING GLAND ASSEMBLY NOTE: This kit includes packing gland and the internal packing gland parts. NOTE: Refer to the <i>Rhino SD3/SD2 Packing Gland Replacement</i> operator's card for more data.	1087605	
	XD2H INTERNAL PACKING GLAND NOTE: This kit only includes the internal packing gland parts.	1087535	
	XD2H PACKING GLAND ASSEMBLY NOTE: This kit includes packing gland and the internal packing gland parts. NOTE: Refer to the <i>Rhino SD3/SD2 Packing Gland Replacement</i> operator's card for more data.	1087529	
8.1-Cu. In. Hydraulic Sections	SD2 PUMP, 1.625 dia	1605826	1609361
	SD2 PUMP, 1.625 dia, temperature-conditioned	1605831	1609365
	XD2 PUMP, 1.625 dia	1605829	1609364
	XD2 PUMP, 1.625 dia, temperature-conditioned	1605832	1609366
	SD2 DRIVE TRAIN	1105067	
	XD2 DRIVE TRAIN	1105068	
	INTERNAL PACKING GLAND NOTE: This kit only includes the internal packing gland parts.	1081135	
8.1-Cu. In. Stainless Steel Hydraulic Sections	PACKING GLAND ASSEMBLY NOTE: This kit includes the packing gland and internal packing gland parts. NOTE: Refer to the <i>Rhino SD3/SD2 Packing Gland Replacement</i> operator's card for more data.	1104731	
	XD2 PUMP, 1.625 dia, stainless steel, ARW	1605827	1609362
	XD2 DRIVE TRAIN, stainless steel	1074332	
	XD2 PACKING GLAND ASSEMBLY, stainless steel XD2 INTERNAL PACKING GLAND, stainless steel NOTE: Refer to the <i>Rhino XD2 Stainless Steel Packing Gland Replacement</i> operator's card for more data.	1074331 1603003	

