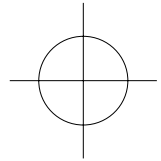


# AIR CHAMP® PRODUCTS

User Manual



## Multiple Disc Clutches Models 4H and 4HP

In accordance with Nexen's established policy of constant product improvement, the specifications contained in this manual are subject to change without notice. Technical data listed in this manual are based on the latest information available at the time of printing and are also subject to change without notice.

Technical Support:  
800-843-7445  
651-484-5900

[www.nexengroup.com](http://www.nexengroup.com)



# WARNING

Read this manual carefully before installation and operation.

Follow Nexen's instructions and integrate this unit into your system with care.

This unit should be installed, operated and maintained by qualified personnel **ONLY**.

Improper installation can damage your system or cause injury or death.

Comply with all applicable codes.

Nexen Group, Inc.  
560 Oak Grove Parkway  
Vadnais Heights, Minnesota 55127

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## INSTALLATION

### 4H

1. Secure the Driving Shell (Item 17) to a bearing supported sheave or flywheel.

NOTE: The Driving Shell (Item 17) must be concentric to the machine shaft within 0.010 T.I.R. to prevent abnormal wear of the outer plate teeth.

2. Slide the Driving Shell and bearing supported sheave or flywheel onto the machine shaft.
3. Insert the customer supplied key into the machine shaft (See Figure 1).

NOTE: When assembling the Driving Shell (Item 17), fit each Outer Plate (Item 5) into the Driving Shell. Forcing the Driving Shell over the Outer Plates will damage the teeth of the Outer Plates.

4. Slide the Multiple Disc Clutch onto the machine shaft (See Figure 1).
5. Install and tighten the two Set Screws (Item 18) securing the Multiple Disc Clutch to the machine shaft (See Figure 1).

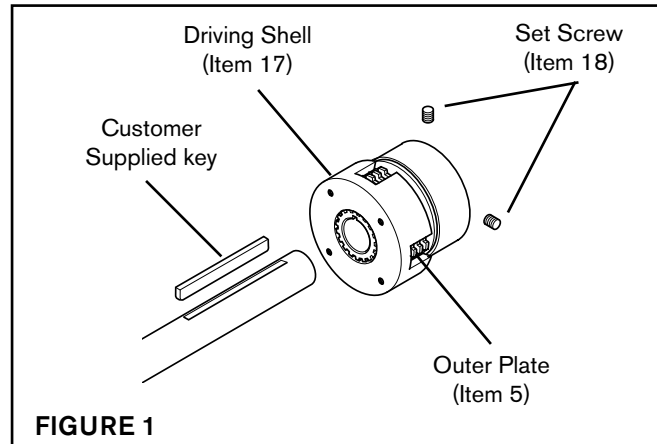


FIGURE 1

### 4HP

1. Secure a sheave or flywheel to the Driving Shell (Item 17) of the Multiple Disc Clutch (See Figure 2).
2. Insert the customer supplied key into the machine shaft (See Figure 2).
3. Slide the Multiple Disc Clutch onto the machine shaft (See Figure 2).
4. Install and tighten the four Set Screws (Item 18) securing the Multiple Disc Clutch to the machine shaft (See Figure 2).

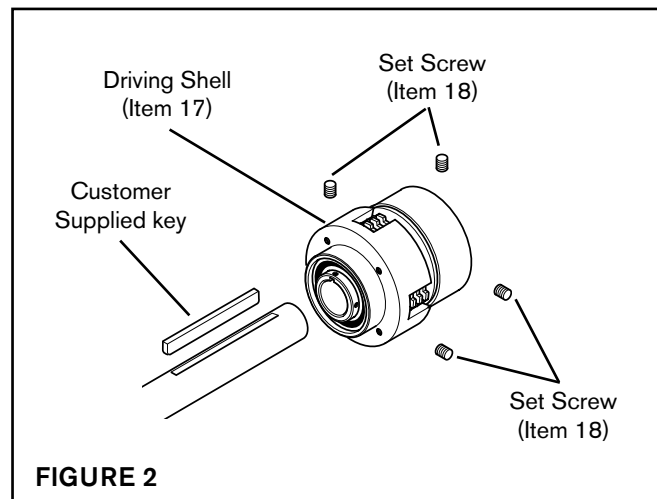


FIGURE 2

## AIR CONNECTIONS

For quick response, it is ideal to locate the control valve one foot or closer to the Multiple Disc Clutch. Nexen recommends air controls having 1/8" ports along with a quick exhaust valve to ensure rapid engagement where long air lines are required.

Align the air inlet to the six o'clock down position to allow condensation in the air chamber to drain out of the exhaust port.

To prevent air line breakage, rest the air line against a support mounted parallel to the Multiple Disc Clutch.

**NOTE:** Rigid pipe or tubing when connected directly to the Multiple Disc Clutch will prevent proper actuation of the Multiple Disc Clutch. Use only flexible hose or tubing when making air line connections.

## LUBRICATION

Nexen 4H and 4HP Clutches are factory lubricated for life and ready to install. However, if you choose to lubricate them, you must follow the instructions below and you must continue to lubricate the clutch throughout its life.

**NOTE: Pneumatically actuated devices require clean, pressure regulated, and lubricated air for maximum performance and long life. The most effective and economical way to lubricate Nexen Clutches and Brakes is with an Air Line Lubricator, which injects oil into the pressurized air, forcing an oil mist into the air chamber.**

Locate the lubricator above and within ten feet of the Clutch, and use a low viscosity oil, such as SAE-10.

Synthetic lubricants are not recommended.

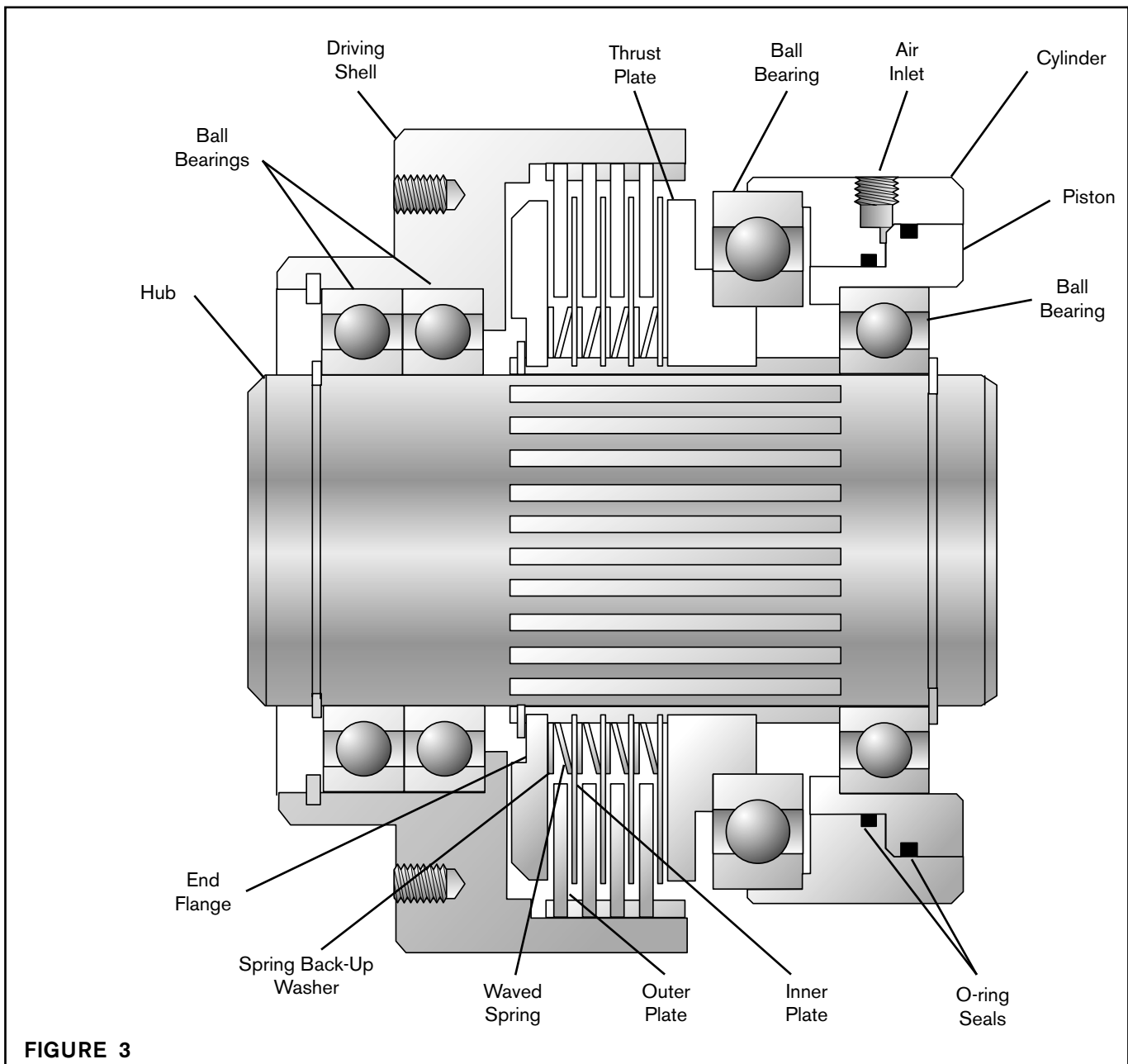
### LUBRICATOR DRIP RATE SETTINGS

**NOTE: These instructions and settings are for Nexen supplied lubricators only. They do not apply to lubricators not supplied by Nexen.**

1. Close and disconnect the air line from the unit.
2. Turn the Lubricator Adjustment Knob counterclockwise three complete turns.
3. Open the air line.
4. Close the air line when a drop of oil forms in the Lubricator Sight Gage.
5. Connect the air line to the unit.
6. Turn the Lubricator Adjustment Knob clockwise until closed.
7. Turn the Lubricator Adjustment Knob counterclockwise one-third turn.
8. Open the air line to the unit

## TROUBLESHOOTING


SYMPTOM	PROBABLE CAUSE	SOLUTION
Failure to engage.	Worn Outer Plates.	Replace Outer Plates.
	Air not getting to the Multiple Disc Clutch.	Check for a control valve malfunction or low air pressure and replace the control valve if necessary.
	Air leaks around the O-ring Seals.	Replace the O-ring Seals.
Failure to disengage.	Broken or weak Waved Springs.	Replace the Waved Springs.
Excessive drag.	Defective Ball Bearings.	Replace the Ball Bearings.



## PARTS REPLACEMENT

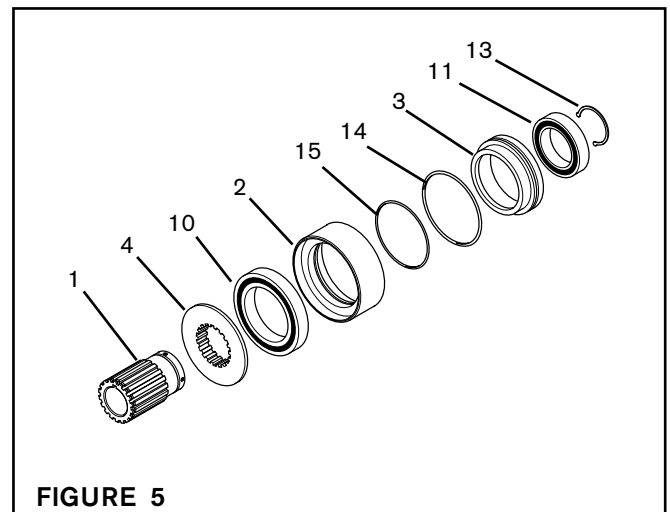
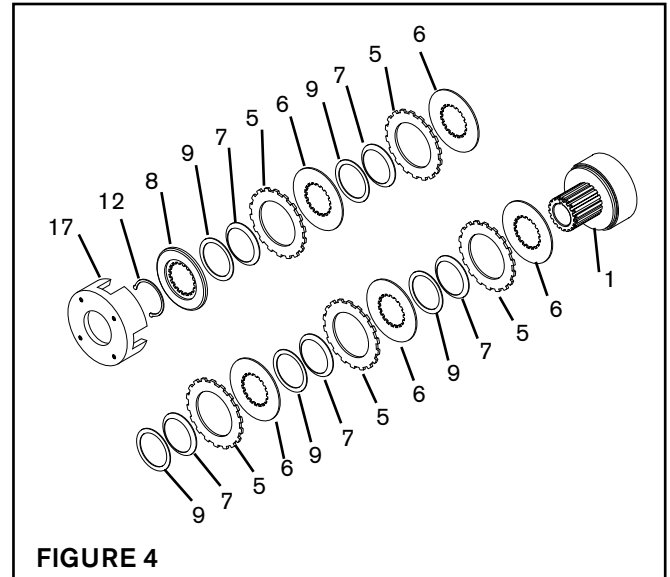
### 4H

- Slide the Driving Shell (Item 17) off the Multiple Disc Clutch (See Figure 4).


WARNING

**Special attention should be exercised when working with retaining rings. Always wear safety goggles when working with spring or tension loaded fasteners or devices.**

- Remove the Retaining Ring (Item 12) from the Hub (Item 1) (See Figure 4).
- Slide the End Flange (Item 8), Spring Back-Up Washers (Item 9), Waved Springs (Item 7), Outer Plates (Item 5), and Inner Plates (Item 6) off the Hub (Item 1) (See Figure 4).
- Remove the Retaining Ring (Item 13) (See Figure 5).
- Press the Hub (Item 1) out of the Ball Bearing (Item 11) and Thrust Plate (Item 4) (See Figure 5).
- Separate the Piston (Item 3) and Ball Bearing (Item 11) from the Cylinder (Item 2) and Ball Bearing (Item 10) (See Figure 5).
- Remove and discard the old O-ring Seals (Items 14 and 15) (See Figure 5).
- Press the Thrust Plate (Item 4) out of the Ball Bearing (Item 10) and Cylinder (Item 2) (See Figure 5).
- Press the old Ball Bearing (Item 11) out of the Piston (Item 3) (See Figure 5).
- Press the old Ball Bearing (Item 10) out of the Cylinder (Item 2) (See Figure 5).
- Clean the bearing bore of both the Piston (Item 3) and Cylinder (Item 2) with fresh solvent, making sure all old Loctite<sup>®</sup> residue is removed (See Figure 5).
- Apply an adequate amount of Loctite<sup>®</sup> 680 to evenly coat the outer race of the new Ball Bearings (Items 10 and 11) (See Figure 5).
- Press the new Ball Bearing (Item 10) into the Cylinder (Item 2) and the new Ball Bearing (Item 11) into the Piston (Item 3) (See Figure 5).
- Press the Thrust Plate (Item 4) into the Ball Bearing (Item 10) and Cylinder (Item 2) (See Figure 5).



15. Coat the new O-ring Seals (Items 14 and 15) and the o-ring contact surfaces of the Piston (Item 3) and Cylinder (Item 2) with a thin film of o-ring lubricant; then, install the new O-ring Seals into the Cylinder and Piston (See Figure 5).
16. Slide the Piston (Item 3) into the Cylinder (Item 2) (See Figure 5).
17. Slide the Hub (Item 1) into the Cylinder (Item 2) and Piston (Item 3) (See Figure 5).
18. Reinstall the Retaining Ring (Item 13) (See Figure 5).

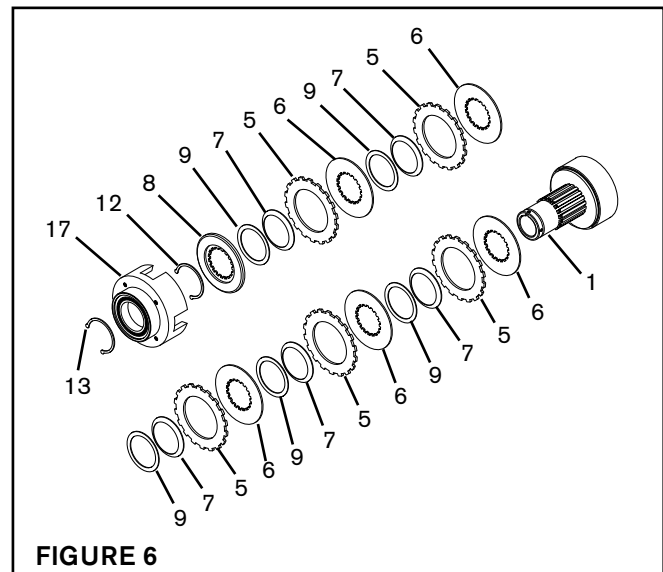
19. Slide the new Spring Back-Up Washers (Item 9), Waved Springs (Item 7), Outer Plates (Item 5), and Inner Plates (Item 6) onto the Hub (Item 1) (See Figure 4).
20. Slide the End Flange (Item 8) onto the Hub (Item 1) (See Figure 4).
21. Reinstall the Retaining Ring (Item 12) (See Figure 4).
22. Slide the Driving Shell (Item 17) onto the Multiple Disc Clutch (See Figure 4).

#### 4HP

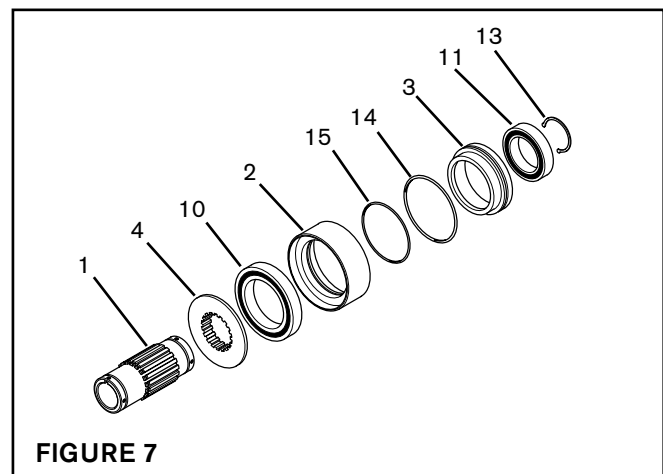
## WARNING

**Special attention should be exercised when working with retaining rings. Always wear safety goggles when working with spring or tension loaded fasteners or devices.**

1. Remove the Retaining Ring (Item 13) (See Figure 6).
2. Slide the Driving Shell (Item 17) off the Multiple Disc Clutch (See Figure 6).
3. Remove the Retaining Ring (Item 12) from the Hub (Item 1) (See Figure 6).
4. Slide the End Flange (Item 8), Spring Back-Up Washers (Item 9), Waved Springs (Item 7), Outer Plates (Item 5), and Inner Plates (Item 6) off the Hub (Item 1) (See Figure 6).
5. Remove the Retaining Ring (Item 13) (See Figure 7).
6. Press the Hub (Item 1) out of the Ball Bearing (Item 11) and Thrust Plate (Item 4) (See Figure 7).
7. Separate the Piston (Item 3) and Ball Bearing (Item 11) from the Cylinder (Item 2) and Ball Bearing (Item 10) (See Figure 7).
8. Remove and discard the old O-ring Seals (Items 14 and 15) (See Figure 7).
9. Press the Thrust Plate (Item 4) out of the Ball Bearing (Item 10) and Cylinder (Item 2) (See Figure 7).
10. Press the old Ball Bearing (Item 11) out of the Piston (Item 3) (See Figure 7).
11. Press the old Ball Bearing (Item 10) out of the Cylinder (Item 2) (See Figure 7).



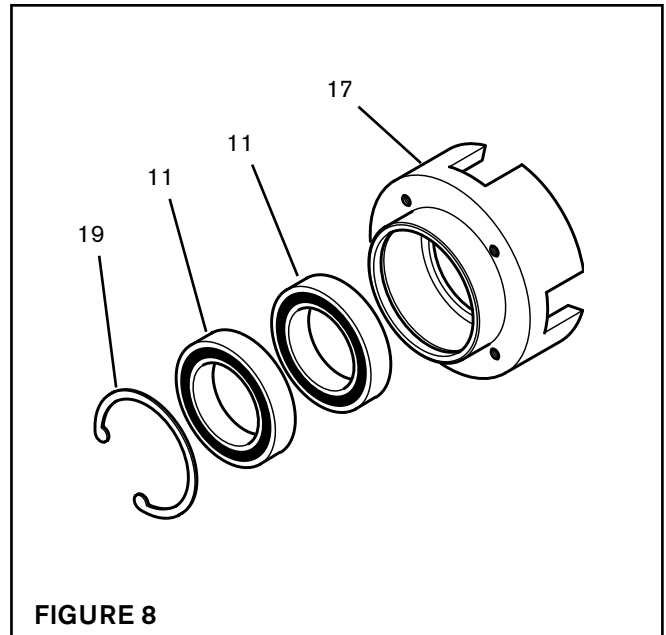
**FIGURE 6**



**FIGURE 7**



12. Clean the bearing bore of both the Piston (Item 3) and Cylinder (Item 2) with fresh solvent, making sure all old Loctite® residue is removed (See Figure 7).
13. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Ball Bearings (Items 10 and 11) (See Figure 7).
14. Press the new Ball Bearing (Item 10) into the Cylinder (Item 2) and the new Ball Bearing (Item 11) into the Piston (Item 3) (See Figure 7).
15. Press the Thrust Plate (Item 4) into the Ball Bearing (Item 10) and Cylinder (Item 2) (See Figure 7).
16. Coat the new O-ring Seals (Items 14 and 15) and the o-ring contact surfaces of the Piston (Item 3) and Cylinder (Item 2) with a thin film of o-ring lubricant; then, install the new O-ring Seals into the Cylinder and Piston (See Figure 7).
17. Slide the Piston (Item 3) into the Cylinder (Item 2) (See Figure 7).
18. Slide the Hub (Item 1) into the Cylinder (Item 2) and Piston (Item 3) (See Figure 7).
19. Reinstall the Retaining Ring (Item 13) (See Figure 7).
20. Slide the new Spring Back-Up Washers (Item 9), Waved Springs (Item 7), Outer Plates (Item 5), and Inner Plates (Item 6) onto the Hub (Item 1) (See Figure 6).
21. Slide the End Flange (Item 8) onto the Hub (Item 1) (See Figure 6).
22. Reinstall the Retaining Ring (Item 12) (See Figure 6).
23. Remove the Retaining Ring (Item 19) (See Figure 8).
24. Press the old Ball Bearings (Item 11) out of the Driving Shell (Item 17) (See Figure 8).
25. Clean the bearing bore of the Driving Shell (Item 17) with fresh solvent, making sure all old Loctite® residue is removed (See Figure 8).
25. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Ball Bearings (Item 11) (See Figure 8).
26. Press the new Ball Bearings (Item 11) into the Driving Shell (Item 17) (See Figure 8).
27. Reinstall the Retaining Ring (Item 19) (See Figure 8).
28. Slide the Driving Shell (Item 17) onto the Multiple Disc Clutch (See Figure 6).
29. Reinstall the Retaining Ring (Item 13) (See Figure 6).



## REPLACEMENT PARTS

The item or balloon number for all Nexen products is used for part identification on all product parts lists, product price lists, unit assembly drawings, bills of materials, and instruction manuals.

When ordering replacement parts, specify model designation, item number, part description, and quantity. Purchase replacement parts through your local Nexen Distributor.

## PARTS LIST

4H

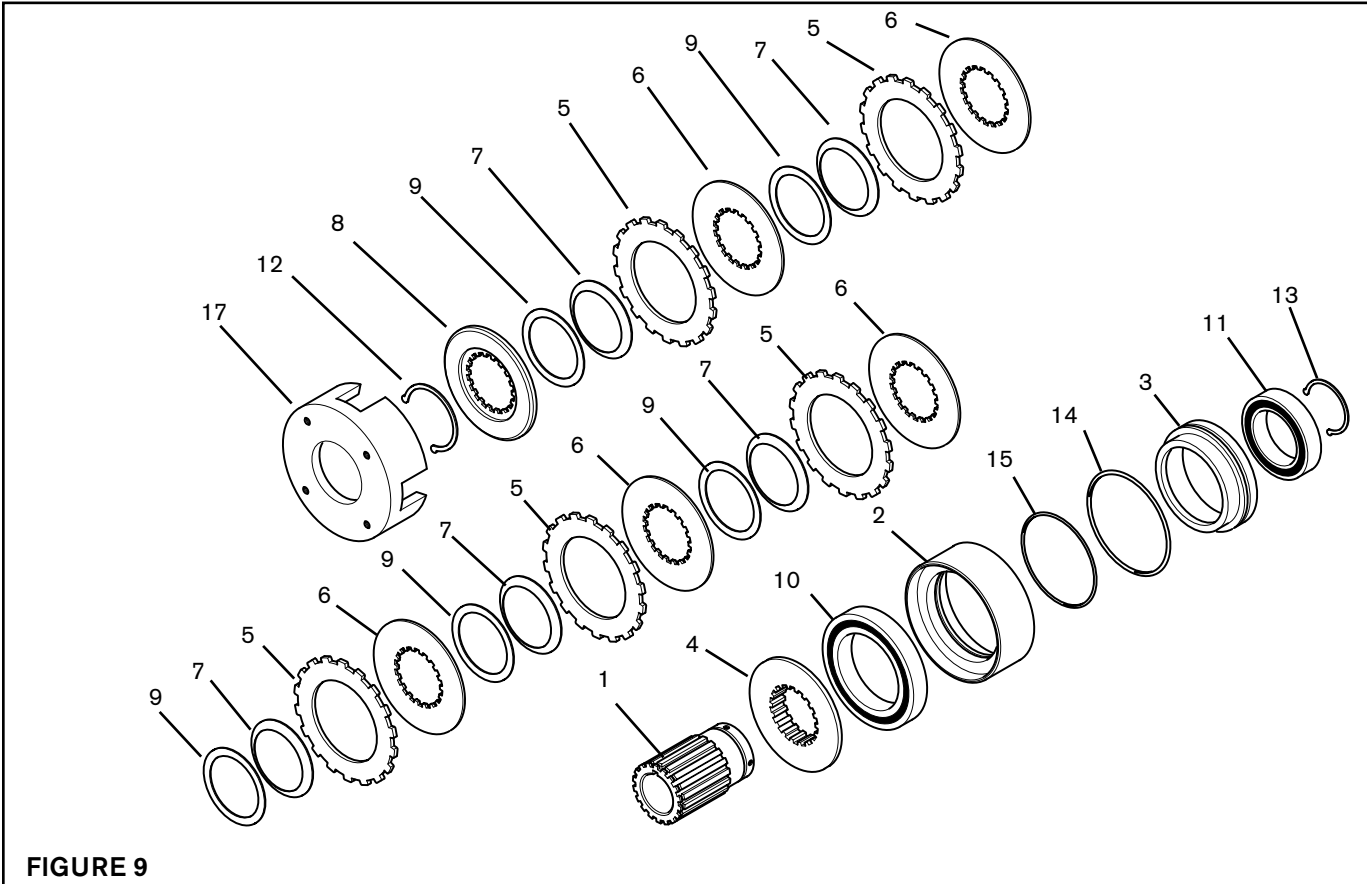


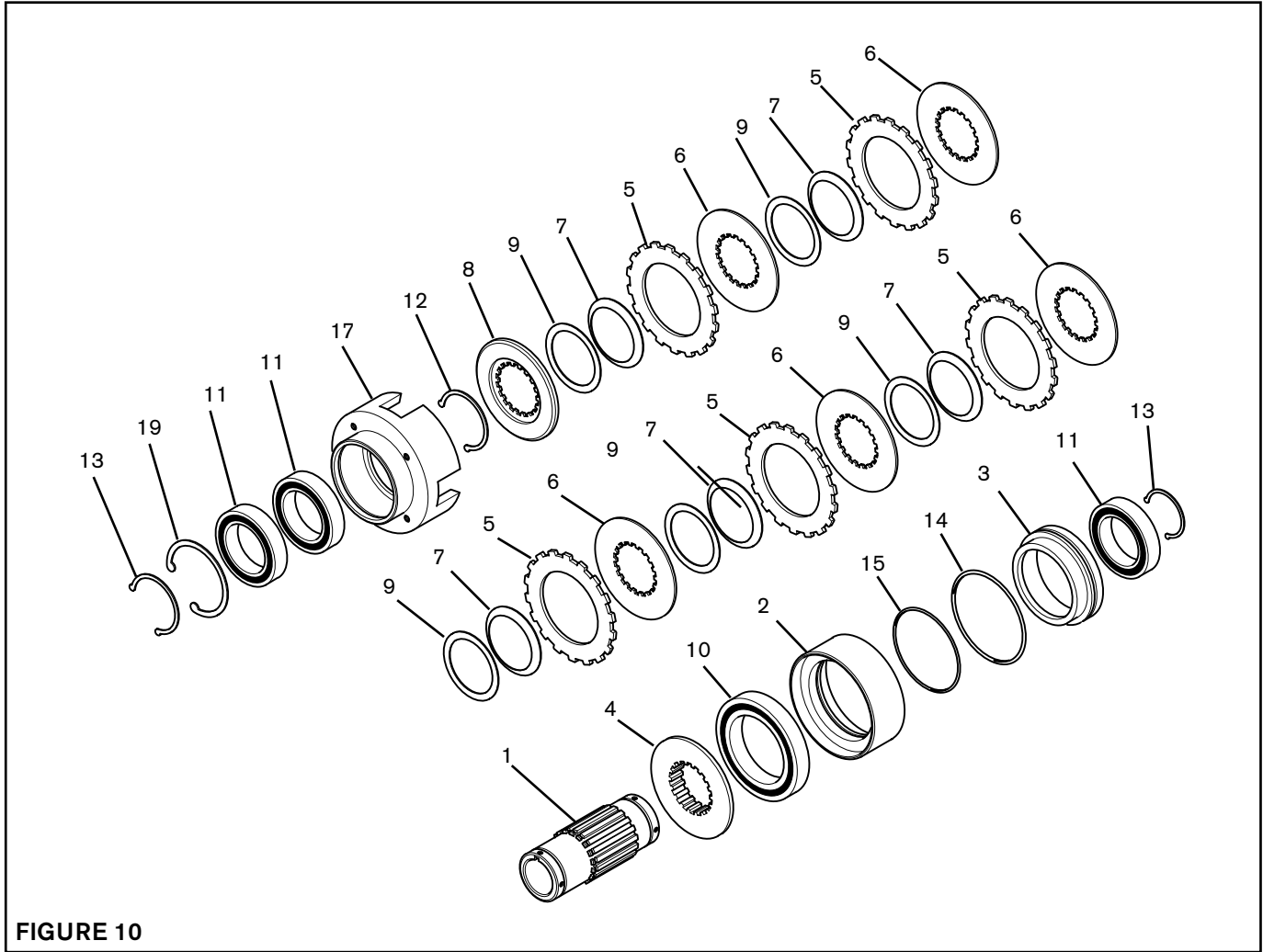
FIGURE 9

ITEM	DESCRIPTION	QUANTITY							
		4H30	4H35	4H40	4H45	4H50	4H60	4H70	
1	Hub	1	1	1	1	1	1	1	
2	Cylinder	1	1	1	1	1	1	1	
3	Piston	1	1	1	1	1	1	1	
4 <sup>1</sup>	Thrust plate	1	1	1	1	1	1	1	
5 <sup>1,2</sup>	Outer plate	4	4	3	3	3	4	4	
6 <sup>1,2</sup>	Inner plate	3	3	2	2	2	3	3	
7 <sup>1,2</sup>	Waved spring	4	4	3	3	3	4	4	
8	End flange	1	1	1	1	1	1	1	
9	Spring back-up washer	4	4	6	6	6	4	8	
10 <sup>1</sup>	Ball bearing	1	1	1	1	1	1	1	
11 <sup>1</sup>	Ball bearing	1	1	1	1	1	1	1	
12	Retaining ring (ext.)	1	1	1	1	1	1	1	
13	Retaining ring (ext.)	1	1	1	1	1	1	1	
14 <sup>1</sup>	O-ring seal	1	1	1	1	1	1	1	
15 <sup>1</sup>	O-ring seal	1	1	1	1	1	1	1	
16	Air line (not shown)	1	1	1	1	1	1	1	
17	Driving shell	1	1	1	1	1	1	1	
18	Set screw (not shown)	2	2	2	2	2	2	2	

<sup>1</sup> Denotes Repair Kit items    <sup>2</sup> Denotes Disc Pack items

**PARTS LIST**

**4HP**



**FIGURE 10**

ITEM	DESCRIPTION	QUANTITY						
		4HP30	4HP35	4HP40	4HP45	4HP50	4HP60	4HP70
1	Hub	1	1	1	1	1	1	1
2	Cylinder	1	1	1	1	1	1	1
3	Piston	1	1	1	1	1	1	1
4 <sup>1</sup>	Thrust plate	1	1	1	1	1	1	1
5 <sup>1,2</sup>	Outer plate	4	4	3	3	3	4	4
6 <sup>1,2</sup>	Inner plate	3	3	2	2	2	3	3
7 <sup>1,2</sup>	Waved spring	4	4	3	3	3	4	4
8	End flange	1	1	1	1	1	1	1
9	Spring back-up washer	4	4	6	6	6	4	8
10 <sup>1</sup>	Ball bearing	1	1	1	1	1	1	1
11 <sup>1</sup>	Ball bearing	1	1	1	1	1	1	3
12	Retaining ring (ext.)	1	1	1	1	1	1	1
13	Retaining ring (ext.)	1	1	1	1	1	1	2
14 <sup>1</sup>	O-ring seal	1	1	1	1	1	1	1
15 <sup>1</sup>	O-ring seal	1	1	1	1	1	1	1
16	Air line (not shown)	1	1	1	1	1	1	1
17	Driving shell	1	1	1	1	1	1	1
18	Set screw (not shown)	2	2	2	2	2	2	4
19	Retaining ring (int.)	1	1	1	1	1	1	1

<sup>1</sup> Denotes Repair Kit items    <sup>2</sup> Denotes Disc Pack items



## REPAIR AND DISC PACK KITS

MODEL NO.	THRUST PLATE O.D.*	REPAIR KIT	DISC PACK KIT
4H30	3"	918300	921100
4H35	3 1/2"	918400	921200
4H40	4"	918500	921300
4H45	4 1/2"	918600	921400
4H50	5"	918700	921500
4H60	6"	918800	921600
4H70	7"	918900	921700
4HP30	3"	919000	921100
4HP35	3 1/2"	919100	921200
4HP40	4"	919200	921300
4HP45	4 1/2"	919300	921400
4HP50	5"	919400	921500
4HP60	6"	919500	921600
4HP70	7"	919600	921700

\* The O.D. of the Thrust Plate (Item 4) determines the size and model of the clutch.

## WARRANTIES

### Warranties

Nexen warrants that the Products will be free from any defects in material or workmanship for a period of 12 months from the date of shipment. NEXEN MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. This warranty applies only if (a) the Product has been installed, used and maintained in accordance with any applicable Nexen installation or maintenance manual for the Product; (b) the alleged defect is not attributable to normal wear and tear; (c) the Product has not been altered, misused or used for purposes other than those for which it was intended; and (d) Buyer has given written notice of the alleged defect to Nexen, and delivered the allegedly defective Product to Nexen, within one year of the date of shipment.

### Exclusive Remedy

The exclusive remedy of the Buyer for any breach of the warranties set out above will be, at the sole discretion of Nexen, a repair or replacement with new, serviceably used or reconditioned Product, or issuance of credit in the amount of the purchase price paid to Nexen by the Buyer for the Products.

### Limitation of Nexen's Liability

TO THE EXTENT PERMITTED BY LAW NEXEN SHALL HAVE NO LIABILITY TO BUYER OR ANY OTHER PERSON FOR INCIDENTAL DAMAGES, SPECIAL DAMAGES, CONSEQUENTIAL DAMAGES OR OTHER DAMAGES OF ANY KIND OR NATURE WHATSOEVER, WHETHER ARISING OUT OF BREACH OF WARRANTY OR OTHER BREACH OF CONTRACT, NEGLIGENCE OR OTHER TORT, OR OTHERWISE, EVEN IF NEXEN SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OR LIKELIHOOD OF SUCH POTENTIAL LOSS OR DAMAGE. For all of the purposes hereof, the term "consequential damages" shall include lost profits, penalties, delay images, liquidated damages or other damages and liabilities which Buyer shall be obligated to pay or which Buyer may incur based upon,

amount of damages in excess of amounts paid by Buyer for Products or services as to which a breach of contract has been determined to exist. The parties expressly agree that the price for the Products and the services was determined in consideration of the limitation on damages set forth herein and such limitation has been specifically bargained for and constitutes an agreed allocation of risk which shall survive the determination of any court of competent jurisdiction that any remedy herein fails of its essential purpose.

### Limitation of Damages

In no event shall Nexen be liable for any consequential, indirect, incidental, or special damages of any nature whatsoever, including without limitation, lost profits arising from the sale or use of the Products.

### Warranty Claim Procedures

To make a claim under this warranty, the claimant must give written notice of the alleged defect to whom the Product was purchased from and deliver the Product to same within one year of the date on which the alleged defect first became apparent.

**nexen**<sup>®</sup>

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