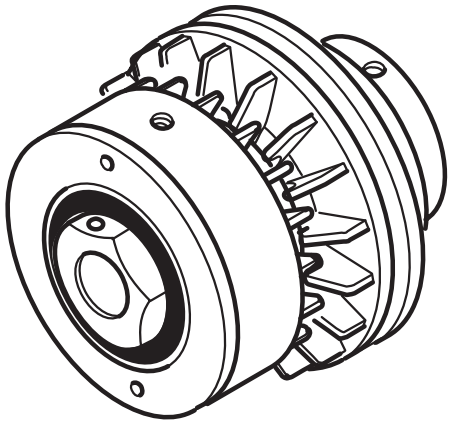
nexen®

AIR CHAMP® PRODUCTS

User Manual



Air Champ II
F-450, L-600, M-800 and H-1000

FORM NO. L-20143-H-0506

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

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

ISO 9001 Certified

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INTRODUCTION

Read this manual carefully, making full use of its explanations and instructions. The "Know How" of safe, continuous, trouble-free operation depends on the degree of your understanding of the system and your willingness to keep all components in proper operating condition. Pay particular attention to all NOTES, CAUTIONS, and WARNINGS to avoid the risk of personal injury or property damage. It is important to understand that these NOTES, CAUTIONS, and WARNINGS are not exhaustive. Nexen cannot possibly know or evaluate all conceivable methods in which service may be performed, or the possible hazardous consequences of each method. Accordingly, anyone who uses a procedure that is not recommended by Nexen must first satisfy themselves that neither their safety or the safety of the product will be jeopardized by the service method selected.

INSTALLATION

SHEAVE MOUNT AND PILOT MOUNT

NOTE: If mounting a customer supplied sheave to the Air Champ II, the sheave must be mounted to the Air Champ II first, using bolts that will not bottom out against the friction material.

1. Insert the Key (Item 19) in the shaft keyway (See Figure 1).
2. Slide the Air Champ II onto the shaft as far as possible with the Key fully seated into the Hub (See Figure 1).
   NOTE: Refer to Table 1 for minimum shaft insertion.
3. Tighten the Set Screws (Item 18) to the torque specified in Table 2.

CALIPER DISC MOUNT

1. Air Champ II clutches have brake disc-mounting features on the face of the drive disc or sheave. Select disc sizes are offered for each of the four clutch models. The combination of a disc, DB Caliper Brake / T-Bracket and clutch create a clutch-disc-caliper brake

2. Each disc comes with six flat head cap screws to assemble the disc to the drive disc or sheave. Place the disc on the larger pilot and secure with flat head cap screws. Tighten cap screws with appropriate tightening torque. It is recommended the disc run out be within 0.010 inch (0.25mm) or optimum performance.

Disc	Screws	Torque
10"	#10 Flat head	65 in-lbs
12", 14", 16"	.250-20 Flat head	105 in-lbs

COUPLING MOUNT

1. Determine the parallel misalignment of the shafts to be coupled.
   NOTE: Before installation, the Driving Shaft can be fixed but the Driven Shaft must be allowed to float.

   a. Place a straight edge across the shafts and measure the maximum offset of various points around the outside of the shafts.
   b. Make the necessary corrections to keep within the parallel misalignment limits of the coupling (See Table 3).

2. Attach the Adapter Plate (Item 24) to the Air Champ II, using Cap Screws (Item 33) and Lock Washers (Item 34) (See Figure 2).

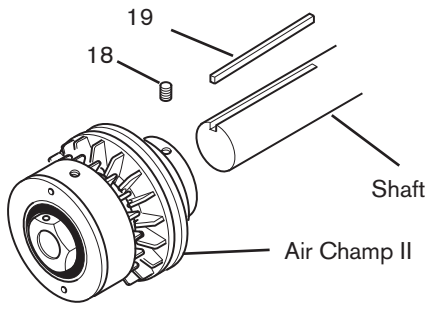

FIGURE 1

TABLE 1

MODEL	MINIMUM SHAFT INSERTION	
F-450	2.000 In.	50.80 mm
L-600	2.500 In.	63.50 mm
M-800	3.750 In.	95.25 mm
H-1000	4.375 In.	111.12 mm

TABLE 2

MODEL	ITEM NO.	DESCRIPTION	TORQUE
F-450	18 STD 18 MTR	.250-20 M6-1.0	34.08 In. Lbs. [3.85 Nm]
L-600	18 STD 18 MTR	.312-24 M6-1.0	34.08 In. Lbs. [3.85 Nm]
M-800	18 STD 18 MTR	.375-16 M10-1.5	136.31 In. Lbs. [15.4 Nm]
H-1000	18 STD 18 MTR	.375-16 M10-1.5	136.31 In. Lbs. [15.4 Nm]

TABLE 3

MODEL	COUPLING SIZE	MEASURED VARIATION AT POINTS 180 DEGREES APART		AXIAL FLOAT (MAXIMUM VALUE FROM RECOMMENDED INITIAL SPACING)
		PARALLEL MAXIMUM	ANGULAR MAXIMUM	
F-450	2-5/8 In. [66.75 mm]	0.015 In. [0.381 mm]	0.04 In. [1.016 mm]	+1/8 In. [+1.375 mm]
L-600	4 In. [101.6 mm]	0.015 In. [0.381 mm]	0.064 In. [1.625 mm]	+1/8 In. [+1.375 mm]
M-800	7 In. [177.8 mm]	0.015 In. [0.381 mm]	0.112 In. [2.845 mm]	+1/8 In. [+1.375 mm]
H-1000	8 In. [203.2 mm]	0.015 In. [0.381 mm]	0.128 In. [3.251 mm]	+1/8 In. [+1.375 mm]

3. Tighten the Cap Screws (Item 33) to the recommended torque (See Figure 2 and Table 4).

4. Slide the Air Champ II complete with the Coupling Adapter Plate onto the Driving Shaft until the Coupling Adapter Plate is flush with the end of the Driving Shaft (See Figures 2 and 3).

5. Insert the Key (Item 19) into the Driving Shaft keyway (See Figure 2).

6. Tighten the Set Screws (Item 18) to the recommended torque (See Figure 2 and Table 2).

7. Place the Flexible Ring (Item 25) over the pins of the Adapter Plate (Item 24) (See Figure 2).

8. Insert the customer supplied Dodge Taper-Lock® bushing into the Coupling Hub (Item 26) (See Figure 2).

9. Align the holes, not the threads, and slide the Dodge Taper-Lock® bushing onto the Driven Shaft until it is flush with the shaft (See Figures 2 and 3).

10. Thread the screws supplied with the Dodge Taper-Lock® bushing into the threaded holes of the Coupling Hub (Item 26) (See Figure 2); then, alternately and evenly tighten the screws to the bushing manufacturer's specifications.

11. Align the pins in the Coupling Hub (Item 26) with the holes in the Flexible Ring (Item 25) and push the entire assembly together (See Figure 2).

NOTE: Automatic spacing is accomplished by a spacer molded into the Flexible Ring (Item 25).

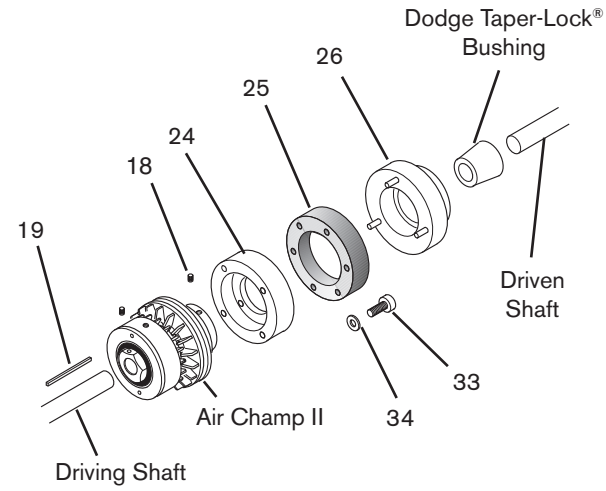

FIGURE 2

MODEL	ITEM NO.	DESCRIPTION	TORQUE
F-450	25	.250-20	21 Ft. Lbs. [28.50 Nm]
L-600	25	.250-20	21 Ft. Lbs. [28.50 Nm]
M-800	25	.312-18	23 Ft. Lbs. [31.18 Nm]
H-1000	25	.375-16	78 Ft. Lbs. [105.75 Nm]

TABLE 4

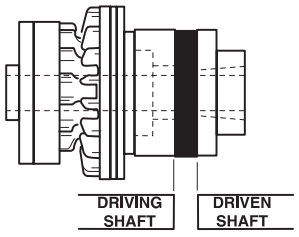

FIGURE 3

AIR CONNECTIONS

For quick response, a short air line between the control valve and the Air Champ II is recommended. An Air Line (Item 20) is furnished and air controls with 1/8 NPT ports are recommended. Where long air lines are required, a Quick Exhaust Valve (Product No. 945100) is recommended to ensure rapid disengagement.

NOTE: Because of the necessary movement of the air chamber and Air Line upon engagement, flexible tubing or air lines must be used on the Air Champ II.

Align the air inlet to a down position to allow condensation in the air chamber to drain out of the exhaust port.

Due to bearings seal drag, the outer portion or the Air Champ II will rotate when it is engaged. Rest the air line against a support that is parallel to the centerline of the Air Champ II to stop this rotation.

NOTE: Pressure should be regulated to the minimum required for sufficient torque to maximize bearing life. Maximum air pressure is 80 psi [55.17 bar] and minimum air pressure is 15 psi [1.03 bar].

FRICTION FACING ADJUSTMENT

1. Ensure the Set Screw (Item 17) that locks the Adjustment Nut (Item 16) is released to allow the Adjustment Nut to be rotated on the Hub (See Figure 4).

2. Using a 0.020 In. [0.508 mm] and a 0.060 In. [1.514 mm] feeler gauge, check the gap between the Friction Disc and the Friction Facing (See Figure 4).

   a. If the gap is less than 0.020 In. [0.508 mm], rotate the Adjustment Nut counterclockwise until one set screw hole is over the flat on the Hub and the 0.020 In. [0.508 mm] feeler gauge can be inserted (See Figure 4).

   b. If the gap is greater than 0.060 In. [1.514 mm], rotate the Adjustment Nut clockwise until one set screw hole is over the flat on the Hub and the 0.060 In. [1.514 mm] feeler gauge can not be inserted (See Figure 4).

3. Tighten the Set Screw to the recommended torque (See Table 5).

   NOTE: Do not adjust the gap to less than 0.020 In. [0.508 mm]. The Air Champ II will not disengage if the gap is closed.

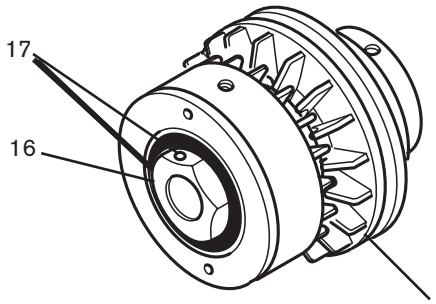

FIGURE 4

MODEL	ITEM NO.	DESCRIPTION	TORQUE
F-450	17 STD 17 MTR	.190-32 M4-0.7	6.82 In. Lbs. .77 Nm
L-600	17 STD 17 MTR	.190-32 M4-0.7	6.82 In. Lbs. .77 Nm
M-800	17 STD 17 MTR	.250-28 M6-1.0	34.08 In. Lbs. 3.85 Nm
H-1000	17 STD 17 MTR	.250-28 M6-1.0	34.08 In. Lbs. 3.85 Nm

TABLE 5

LUBRICATION

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 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 settings are for Nexen supplied lubricators. If you are not using a Nexen lubricator, calibration must replicate the following procedure.

1. Close and disconnect the air line from the unit.

2. Turn the Lubricator Adjustment Knob counter-clockwise three complete turns.

3. Open the air line.

4. Close the air line to the unit 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 counter-clockwise one-third turn.

8. Open the air line to the unit.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	SOLUTION
Failure to engage.	Air not getting to the Air Champ II due to a control valve malfunction or low air pressure.	Check control valve and air pressure setting.
	Defective O-ring Seals, causing air leaks.	Replace O-ring Seals.
	Lack of lubrication on the Hub spline or in the air chamber.	Lubricate the Hub spline with a thin film of Never Seez® or check air line lubricator settings.
	Rigid pipe or tubing for air line connections.	Use flexible pipe or tubing for all air line connections.
Failure to disengage.	Friction lock due to a lack of lubrication on the Hub spline or in the air chamber.	Lubricate the Hub spline with a thin film of Never Seez® or check air line lubricator settings.
	Broken Compression Spring.	Install new Compression Spring.
	Unexhausted air due to a control valve malfunction.	Check or replace control valve.
Excessive drag on the air line.	Defective Bearings.	Replace Bearings.
	Air line not properly supported.	Rest the air line against a support that is parallel to the centerline of the Air Champ II.

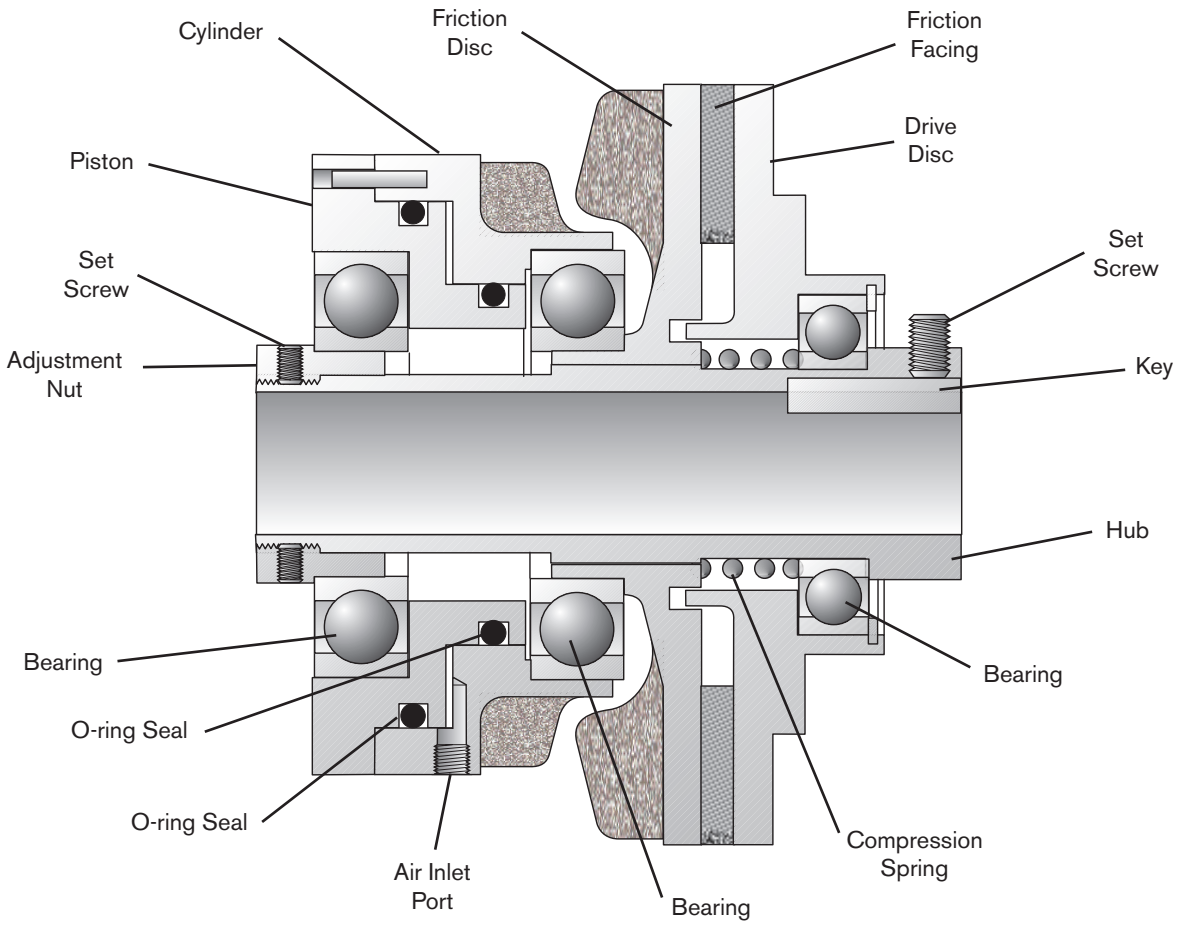

FIGURE 5

PARTS REPLACEMENT

1. Loosen the Set Screw (Item 17) and unscrew the Adjustment Nut (Item 16) (See Figure 6).

2. Slide the Cylinder, Piston, Compression Spring, Friction Disc, and Adjustment Nut (Item 16) off the Hub (See Figure 6).

3. Apply low air pressure to separate the Piston (Item 13) from the Cylinder (Item 11) and Friction Disc (Item 9) (See Figure 7).

4. Remove the two old O-ring Seals (Items 14 and 15) from the Piston (Item 13) (See Figure 7).

5. Press the Adjustment Nut (Item 16) out of the Ball Bearing (Item 10) (See Figure 8).

6. Press the old Ball Bearing (Item 10) out of the Piston (Item 13) (See Figure 8).

7. Clean the bearing bore of the Piston with fresh safety solvent, making sure all old Loctite® residue has been removed.

8. Apply Loctite® 680 to evenly coat the outer race of the new Ball Bearing (Item 10) and align it with the bore of the Piston (Item 13); then, pressing on the outer bearing race, press the new Ball Bearing into the Piston (See Figure 8).

9. Press the Adjustment Nut (Item 16) into the new Ball Bearing (Item 10) (See Figure 8).

10. Using a bearing puller, remove the Cylinder (Item 11) from the Ball Bearing (Item 10) and Friction Disc (Item 9) (See Figure 8).

11. Using a bearing puller, remove the old Ball Bearing (Item 10) from the Friction Disc (Item 9) (See Figure 8).

12. Clean the bearing bore of the Cylinder (Item 11) with fresh safety solvent, making sure all old Loctite® residue has been removed.

13. Apply an adequate amount of Loctite® 680 to the outer race of the new Ball Bearing (Item 10) and align it with the bore of the Cylinder (Item 11); then, press the new Ball Bearing (Item 10) into the Cylinder (Item 11) (See Figure 8).

14. Supporting the inner bearing race, press the Friction Disc (Item 9) into the Ball Bearing (Item 10) (See Figure 8).

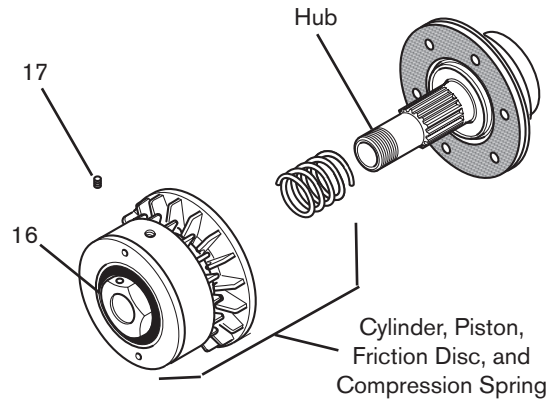

FIGURE 6

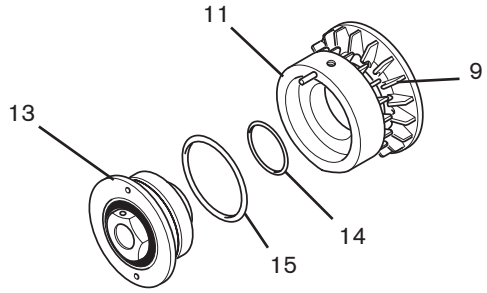

FIGURE 7

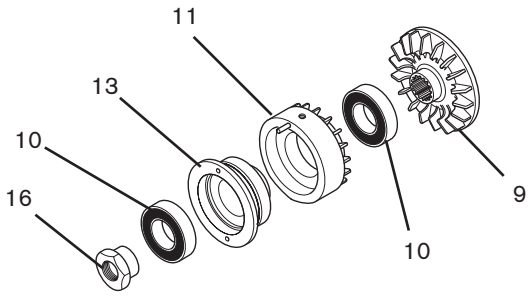

FIGURE 8

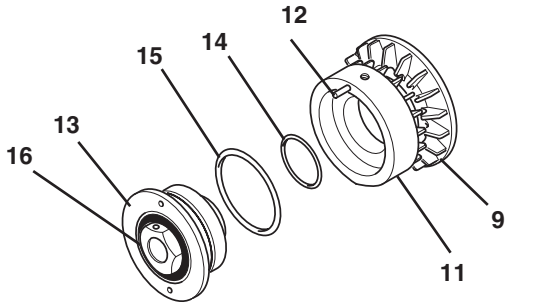

FIGURE 9

15. Clean the O-ring Seal contact surfaces of the Piston (Item 13) and Cylinder (Item 11) with fresh safety solvent (See Figure 9).

16. Coat the new O-ring Seals (Items 14 and 15) and the O-ring Seal contact surfaces of the Piston (Item 13) and Cylinder (Item 11) with a thin film of fresh O-ring lubricant (See Figure 9).

17. Install the new O-ring Seals (Items 14 and 15) onto the Piston (Item 13) (See Figure 9).

    NOTE: Realign the Slotted Spring Pin (Item 12) on the Cylinder (Item 11) with the hole in the Piston (Item13) (See Figure 9).

18. Slide the Piston (Item 13) into the Cylinder (Item 11) (See Figure 9).

19. Press the Hub (Item 6) out of the Ball Bearing(s) (Item 2) and Sheave or Drive Disc (Item 1) (See Figure 10).

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.

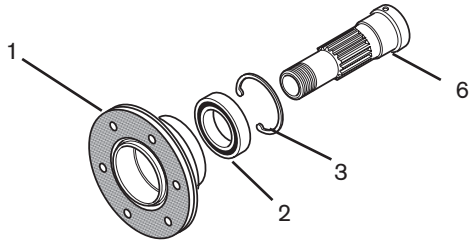

FIGURE 10

20. Remove the Retaining Ring (Item 3) from the Sheave or Drive Disc (Item 1) (See Figure 10).

21. Press the old Ball Bearing(s) (Item 2) out of the Sheave or Drive Disc (Item 1) (See Figure 10).

22. Clean the bearing bore of the Sheave or Drive Disc (Item 1) with fresh safety solvent, making sure all old Loctite® residue has been removed.

23. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Ball Bearing (Item 2) and align it with the bore of the Sheave or Drive Disc (Item 1); then, press the new Ball Bearing (Item 2) into the Sheave or Drive Disc (Item 1) (See Figure 10).

24. Reinstall the Retaining Ring (Item 3) (See Figure 10).

25. Fully support the inner race of the new Ball Bearing (Item 2) and press the Hub (Item 6) into the new Ball Bearing (See Figure 10).

26. Remove the six Flat Head Screws (Item 5) and the old Friction Facing (Item 4) from the Sheave or Drive Disc (Item 1) (See Figure 11).

27. Using six new Flat Head Screws (Item 5), secure the new Friction Facing (Item 4) to the Sheave or Drive Disc (Item 1) (See Figure 11).

28. Alternately and evenly tighten the six Flat Head Screws (Item 5) to the recommended torque (See Table 6).

29. Apply a thin film of Never-Seez® to evenly coat the splines of the Hub (See Figure 12).

30. Slide the Compression Spring (Item 7) onto the Hub (See Figure 12).

31. Slide the Cylinder, Piston, and Friction Disc, and Adjustment Nut (Item 16) onto the Hub (See Figure 12).

32. Screw the Adjustment Nut (Item 16) onto the Hub (See Figure 12).

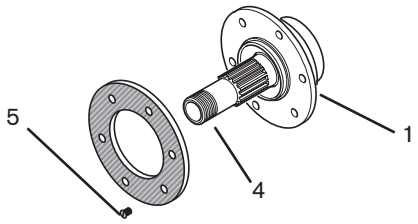

FIGURE 11

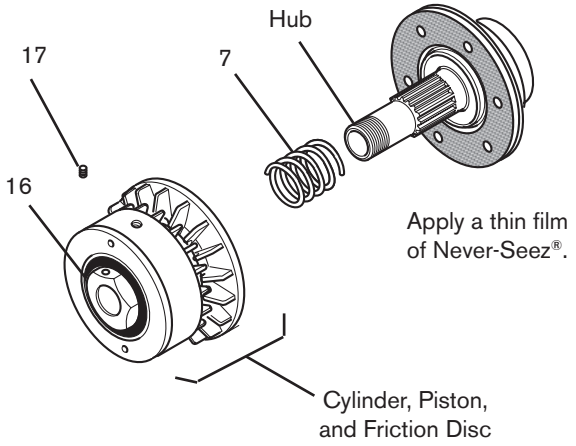

FIGURE 12

TABLE 6

MODEL	ITEM NO.	DESCRIPTION	TORQUE
F-450	5 STD 5 MTR	.190-24 M5-0.8	26 In. Lbs. 2.9 Nm
L-600	5 STD 5 MTR	.190-24 M5-0.8	26 In. Lbs. 2.9 Nm
M-800	5 STD 5 MTR	.250-20 M6-1.0	86 In. Lbs. 9.7 Nm
H-1000	5 STD 5 MTR	.250-20 M6-1.0	86 In. Lbs. 9.7 Nm

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

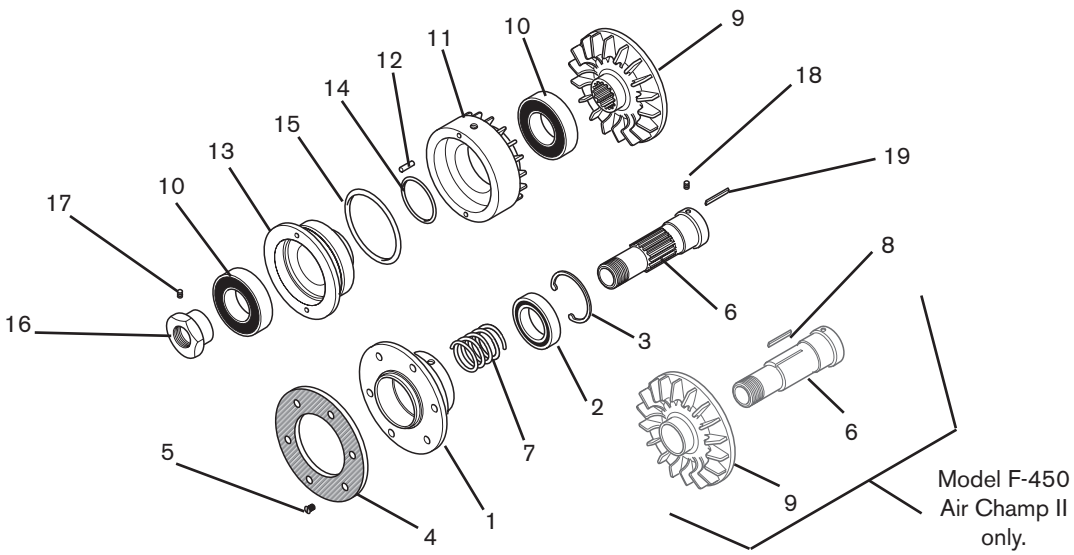

FIGURE 13

ITEM	DESCRIPTION	QTY
1	Sheave or Drive Disc	1
2[3]	Ball Bearing	1
3	Retaining Ring	1
4[4]	Friction Facing	1
5[4]	Flat Head Screw	6
6	Hub	1
7[1]	Compression Spring	1
8[2]	Key	1
9	Friction Disc	1
10[1]	Ball Bearing	2

[1] Denotes Repair Kit items.
[2] Used on F-450 only.

ITEM	DESCRIPTION	QTY
11	Cylinder	1
12	Slotted Spring Pin	1
13	Piston	1
14[1]	O-ring Seal (Small)	1
15[1]	O-ring Seal (Large)	1
16	Adjustment Nut	1
17	Set Screw	1
18	Set Screw	2
19	Key	1
20	Air Line (Not Shown)	1

[3] H-1000 (QTY 2).
[4] Denotes Friction Facing Kit item.

COUPLING

ITEM	DESCRIPTION	QTY
24	Adapter Plate	1
25	Flexible Ring	1
26	Coupling Hub	1
33	Cap Screw	4
34	Lock Washer	4

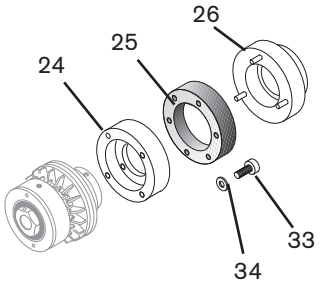

FIGURE 14

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, related to or arising out of its contracts with its customers or other third parties. In no event shall Nexen be liable for any 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.

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

800.843.7445
Fax: 651.286.1099
www.nexengroup.com

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