

AIR CHAMP[®] PRODUCTS

User Manual



Through-Shaft Clutch-Brake LSCB-32HT, LSCB-32HT, LSCB-44, LSCB-44HT, LSCB-54HT

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.

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DANGER

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.

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ISO 9001 Certified

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Table of Contents

Installation	4
Maintenance	4
Facing Kit Replacement.....	4
Repair Kit Replacement.....	6
Troubleshooting	8
Repair Kits	9
Parts List.....	9
Warranty	10

INSTALLATION

1. Secure a sheave or sprocket onto the pilot end of the clutch/brake (See bolt sizes in Table 1).
2. Insert the Key (Item 18) onto the machine shaft.
3. Slide the LSCB onto the machine shaft (See Figure 1).
4. Secure the clutch/brake to the machine shaft using the three Set Screws (Item 16) (See Figure 1).
5. Attach the airline in the six o'clock position to avoid water from accumulating inside the air chamber.

Table 1

Model Size	LSCB-32HT	LSCB-44	LSCB-54
Bolt Size	1/4 - 20	1/4 - 20	5/16 - 20

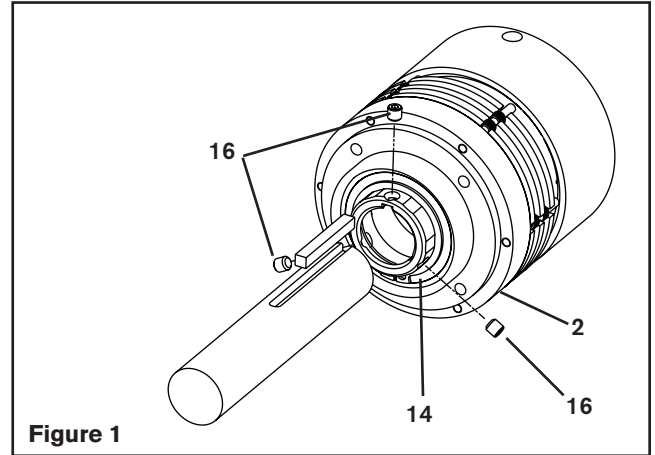


Figure 1

MAINTENANCE

Nexen offers facing and repair kits to aid in the maintenance of the LSCB and LSCB-HT (See REPAIR KIT section for P/N). The facing kit contains friction facings, steel friction plates, and springs. The LSCB-32 facing kit contains an additional bearing. The repair kit includes friction facings, steel friction plates, springs, o-rings, and bearings.

FACING KIT

NOTE: The following tools are needed to press the unit apart: a shaft, two sections of I-beam, and standard retaining ring pliers.

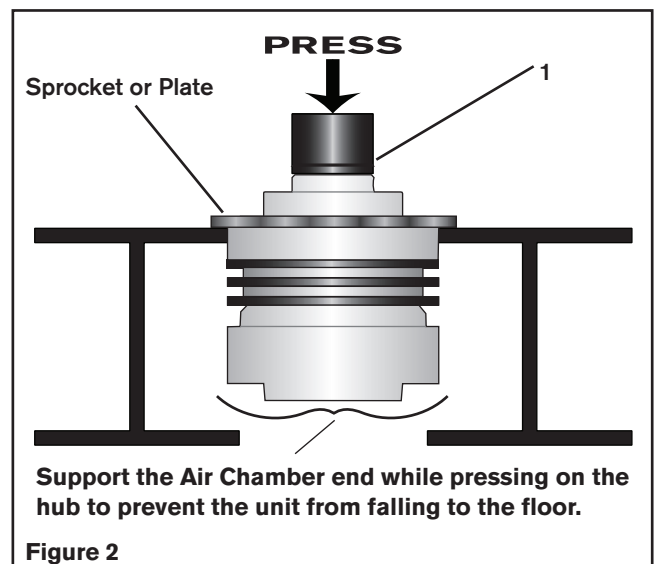
To press the unit together, use a hollow shaft fixture, making sure there is contact with the inner race of the bearing while pressing (See Table 2 & Figure 2).

Table 2

Model	Shaft Ø	Hollow Shaft Ø		Web Thickness
LSCB-32	25.4 - 34.8mm [1.00 - 1.37"]	ID	35.5mm [1.4"]	6.6mm [0.25"]
		OD	53.3mm [2.10"]	
LSCB-44	41.3 - 43.1mm [1.625 - 1.70"]	ID	45.7mm [1.80"]	10.2mm [0.40"]
		OD	66.0mm [2.60"]	
LSCB-54	41.1 - 50.8 [1.62 - 2.00"]	ID	57.2mm [2.25"]	8.6mm [0.34"]
		OD	88.9mm [3.50"]	

DISASSEMBLY

1. Remove the three Set Screws (Item 16) from the Hub (Item 1) (Figure 1).
2. Remove the Retaining Ring (Item 14) from the Hub (Item 2) at the Pilot end of the unit.
3. Fasten a sprocket or a pair of plates to the pilot mounting holes (See Table 1).
4. Set the sprocket on the two pieces of I-beam (as shown in Figure 2) with the pilot end of the unit resting on the I-beams.



NOTE: Nexen recommends placing the assembly in a box or bag to avoid loss of any small components (i.e. springs).

5. Using an Arbor Press, align proper sized shaft (See Table 2) with the Hub (Item 1) and apply pressure with the Arbor Press to separate the pilot assembly from the Hub (Item 1) (Figure 2).
6. Remove Friction Facings (Item 4) and Friction Plates (Item 5) along with the springs (Item 17) from the drive pins (Item 15) (Figure 2a).
7. Remove the Retaining Ring (Item 14) from the Air Chamber (Item 3). (Figure 2b)

HT Models only: Remove the shoulder bolts (Item 21) and springs (Item 22) from the Air Chamber (Item 3). (Figure 2b)

8. Flip unit over (Hub facing down) and rest the edges of the Air Chamber (Item 3) on the I-beam and press Hub-Piston assembly from the Air Chamber. (Figure 2c)

LSCB-54HT only: Remove the Retaining Ring (Item 25) that secures the conical Friction Facing (Item 20) inside the piston. The worn facing can then be removed. (See Figure 9)

LSCB-44HT only: While supporting the piston assembly, drive the splines of the hub through the conical friction facing (this will destroy the facing).

LSCB-32HT only: Remove Bearing (Item 10) from Thrust Plate (Item 26). Remove pan head screws (Item 8) from the piston assembly. Discard the damaged Bearing (Item 10). (See Figure 9)

9. Remove and discard the worn conical Friction Facing (Item 20).

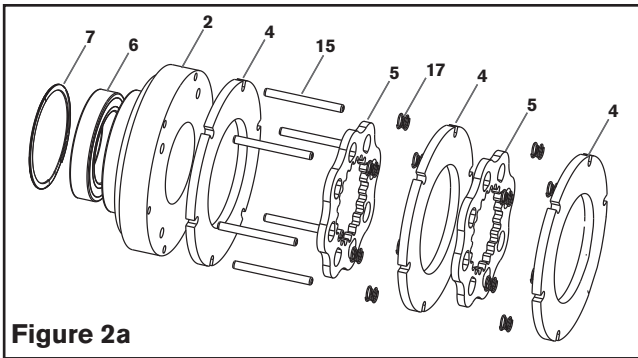


Figure 2a

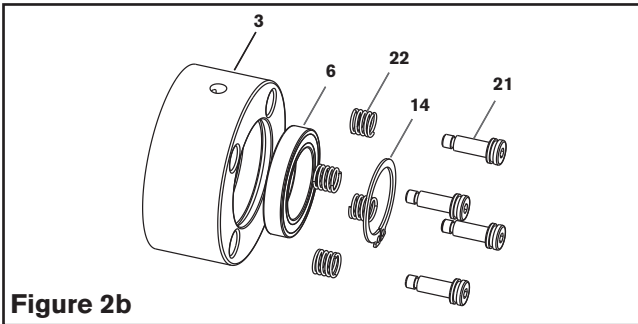


Figure 2b

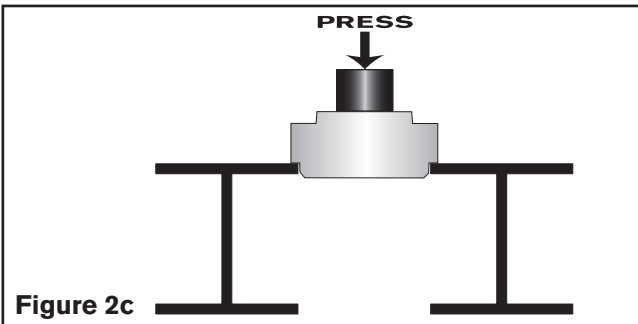


Figure 2c

REASSEMBLY (Refer to Figure 9.)

11. Using a degreaser, clean all metal components of the unit, removing all facing dust and grease before reassembly.
12. Apply NEVER-SEEZ® to the splines of the Hub (Item 1).
- LSCB-32HT only:** Insert two piece facing (Item 20) into the piston (Item 11). Attach the Thrust Plate (Item 20) to the Piston (Item 11) using four pan head screws (Item 8). Torque the screws to 4.2 - 5.4 N-m [37 - 48 In-lbs]. Press the new bearing (Item 10) into the Thrust Plate (Item 26). **[Note: Skip step 15 for LSCB-32HT]**
13. Reassemble the unit: Start on the air chamber side by pressing the Hub (Item 1) into the air chamber Bearing (Item 6).
14. Next insert the piston-bearing assembly into the air chamber cavity. Use care to ensure proper alignment with the pins or shoulder bolt holes.
15. Insert the conical Friction Facing (Item 20) into the Piston (Item 11) by using small retaining pliers. Carefully position the facing and move the Piston (if necessary) to ensure positive engagement.

NOTE: Once in position, it may be helpful to spread the conical Friction Facing (Item 20) open by using retaining ring pliers.

LSCB-54HT only: Insert Retaining Ring (Item 25) to secure conical Friction Facing (Item 20).

16. Reassemble the pilot by replacing (in order) the Friction Facings (Item 4), Friction Plates (Item 5), and Springs (Item 17) on the Drive Pins (Item 15).
17. Position the Air Chamber/Hub combination down on the Arbor Press.
18. While keeping pressure on the Facings, Springs, and Facing Plates, and aligning the Facing Plates to the spline on the way down, carefully position and press the Pilot-Facing assembly onto the Hub.

Skip steps 18 & 19 if using LSCB-44.

19. Clean and reapply lubricant to the Shoulder Bolt O-rings (Item 23) and install on the Shoulder Bolts.
20. After aligning the Piston (Item 11) to the Air Chamber (Item 3), insert and reinstall Shoulder Bolts (Item 21) by torquing them to 40.0 Nm [350 in-lb].
21. Insert the Retaining Ring (Item 14) onto the Hub (Item 1).
22. Verify that the unit is functional by applying air to the unit and watching it engage and disengage.

REPAIR KIT

The repair kit replaces bearings, o-rings, friction facings, friction plates, and springs.

NOTE: The following tools are needed to press the unit apart: a shaft, two sections of I-beam, and standard retaining ring pliers.

To press the unit together, use a hollow shaft fixture, making sure there is contact with the inner race of the bearing while pressing (See Table 2 & Figure 2).

1. Remove the three Set Screws (Item 16) from the Hub (Item 1).
2. Remove the Retaining Ring (Item 14) from the Hub (Item 2) at the Pilot end of the unit.
3. Fasten a sprocket or a pair of plates to the Pilot mounting holes (See Table 1).
4. Set the sprocket on the two pieces of I-beam (as shown in Figure 2) with the pilot end of the unit resting on the I-beams.

NOTE: Support the Air Chamber end of the unit as the Hub is pressed out to prevent the unit from falling to the floor. Nexen also recommends placing the assembly in a box or bag to avoid loss of any small components (i.e. springs).

5. Using an Arbor Press, align the proper diameter shaft with the Hub (Item 1) and apply pressure with the Arbor Press to separate the Pilot assembly from the Hub (Item 1) (See Table 2).
6. Remove Friction Facings (Item 4) and Friction Plates (Item 5) along with the springs from the drive pins.
7. Remove the Retaining Ring (Item 14) from the Air Chamber (Item 3).

HT Models only: Remove the shoulder bolts and springs (Item 22) from the Air Chamber (Item 3).

8. Flip unit over (Hub facing down) and rest the edges of the Air Chamber (Item 3) on I-beam and press the Hub-Piston assembly from the Air Chamber.

LSCB-54HT only: Remove the Retaining Ring (Item 25) that secures the brake facing in the piston. The worn facing can then be removed.

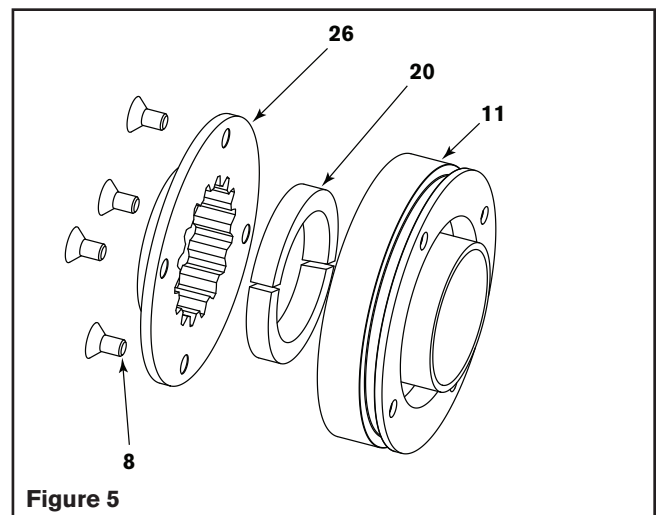
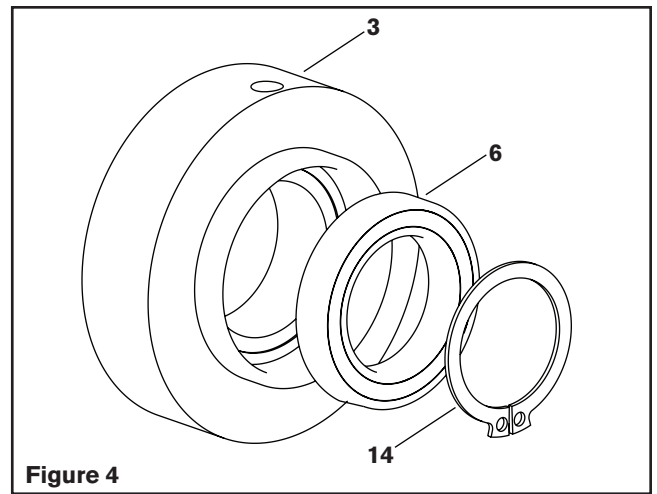
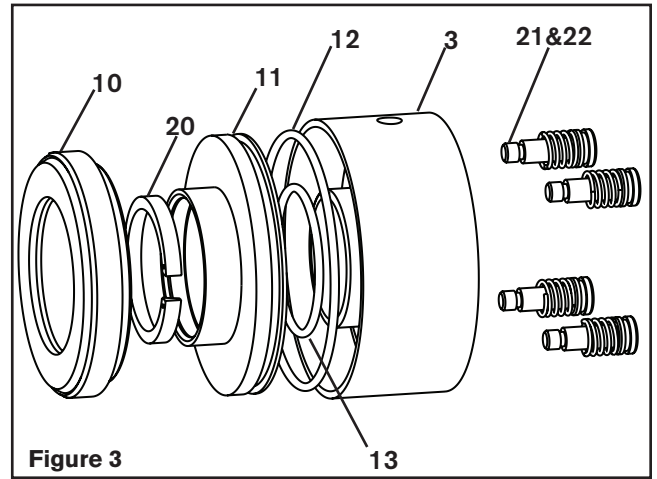
LSCB-44HT only: While supporting the piston assembly, drive the splines of the hub through the conical Friction Facing (this will destroy the facing) (Item 20).

LSCB-32HT only: Remove Bearing (Item 10) from Thrust Plate (Item 26). Remove pan head screw (Item 8) from the piston assembly. Discard the damaged Bearing (Item 10). **[Note: Skip step 10]**

9. Remove discard the worn conical Friction Facing (Item 20).

Refer to Figures 3 & 4.

10. Remove Bearing (Item 10) from the Piston (Item 11).
11. Clean the new Bearing (Item 10) and Piston (Item 11) surfaces.



12. Press the new Bearing (Item 10) onto the Piston.

NOTE: Do not install the new bearing into LSCB-32 until the facings (Item 20) have been installed.

13. Press the Bearing (Item 6) out of the Air Chamber (Item 3).

14. Clean the new Bearing (Item 6) and Air Chamber (Item 3) surfaces and apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new bearing.

16. Install the new bearing (Item 6) into the Air Chamber (Item 3), taking care to press on the outer diameter of the bearing to prevent brinelling of the bearing races.

17. Remove the O-rings (Items 12 & 13) from the Piston (Item 11) and clean the piston so it is free of any contaminants.

18. Install new O-rings (Items 12 & 13) and apply a generous amount of lubrication to the O-rings and the Air Chamber (Item 3) wall where they will be placed.

19. Remove the Retaining Rings (Item 7 & 14) from the Pilot (Item 2) end of the unit.

20. Remove the Hub (Item 1) from the Pilot (Item 2).

21. Using the proper fixtures, press the old bearing (Item 6) out of the Pilot (Item 2).

NOTE: Be sure to use a fixture that will support the Pilot (Item 3), keeping the pins from being damaged.

22. Clean the new Bearing (Item 6) and Pilot (Item 2) surfaces and apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new bearing.

23. Press the new Bearing (Item 6) into the Pilot (Item 2).

REASSEMBLY

24. Apply NEVER-SEEZ® to the splines of the Hub (Item 1).

25. Support the outer race of the Air Chamber Bearing (Item 6) and press the Hub into the Air Chamber.

26. Reinstall the Retaining Ring (Item 7).

27. Next insert the Piston-Bearing assembly into the Air Chamber cavity. Use care to ensure proper alignment with the pin or shoulder bolts.

LSCB-32HT only: Insert two piece facing (Item 20) into the piston (Item 11). Attach the Thrust Plate (Item 20) to the Piston (Item 11) using four pan head screws (Item 8). Torque the screws to 4.2 - 5.4 N-m [37 - 48 In-lbs]. Press the new bearing (Item 10) into the Thrust Plate (Item 26).

[Note: Skip step 28 for LSCB-32]

28. Insert the conical Friction Facing (Item 20) into the Piston by using small retaining pliers. Carefully position the facing and move the Piston (if necessary) to ensure positive engagement.

LSCB-54HT only: Insert Retaining Ring (Item 25) to secure conical Friction Facing (Item 20).

NOTE: Once in position, it may be helpful to spread the conical Friction Facing (Item 20) open by using retaining ring pliers.

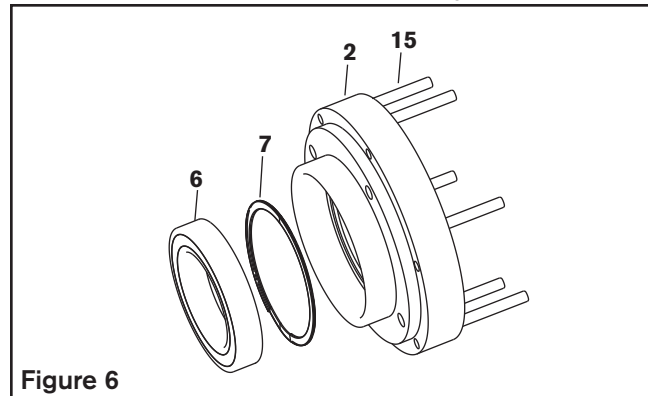


Figure 6

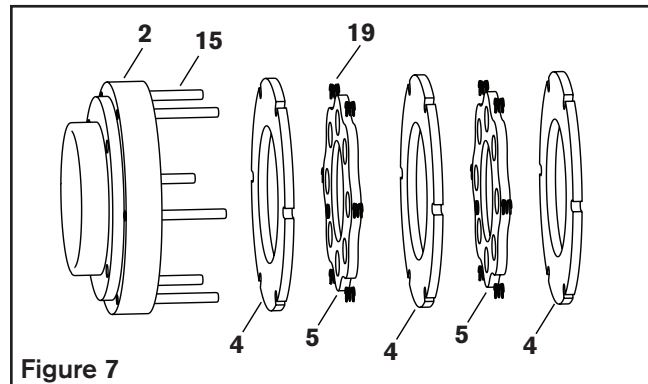


Figure 7

29. Reassemble the pilot by replacing (in order) the Facings (Item 4), Friction Plates (Item 5), and Springs (Item 17) on the Drive Pins (Item 15).

30. Position the Air Chamber/Hub combination down on the Arbor Press.

31. While keeping pressure on the Facings, Springs, and Facing Plates, and aligning the Facing Plates to the spline on the way down, carefully position and press the assembly on the Hub.

Skip steps 31 & 32 if using LSCB-44.

32. Clean and reapply lubricant to the Shoulder Bolt O-rings (Item 23) and install on the Shoulder Bolts.

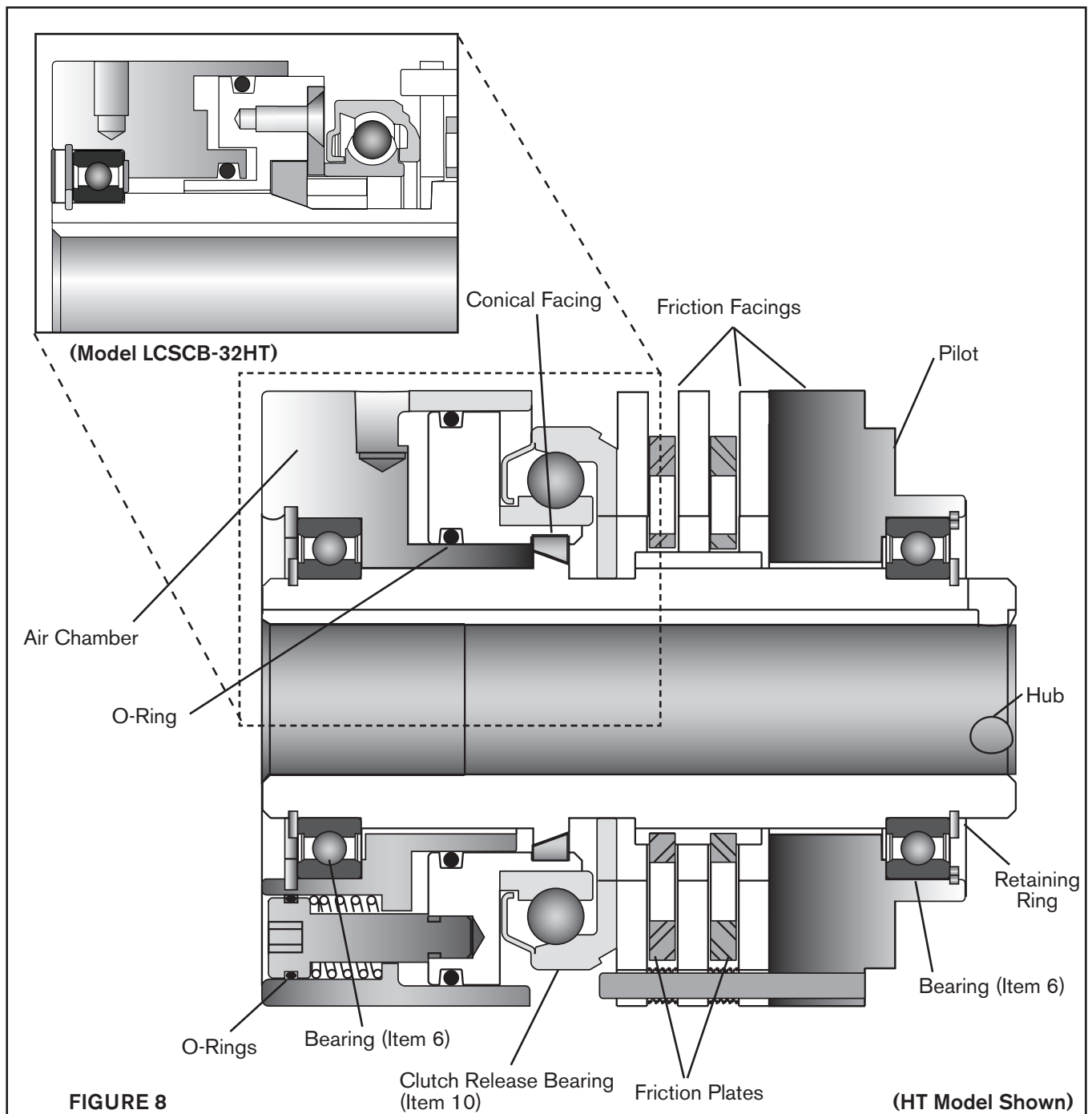
33. After aligning the Piston (Item 11) to the Air Chamber (Item 3), insert and reinstall Shoulder Bolts (Item 21) by torquing them to 40.0 Nm [350 in-lb].

34. Insert the Retaining Ring (Item 14) onto the Hub (Item 1).

35. Verify the unit is functional by applying air to the unit and watching it engage and disengage.

TROUBLESHOOTING

Symptom	Probable Cause	Solution
Failure to engage/Disengage	Worn Friction Facings	Replace the Friction Facings.
	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 Springs	Replace the Springs.
Excessive drag	Defective Ball Bearings	Replace the Ball Bearings.



REPAIR KITS

Model	Facing Kit	Repair Kit
LSCB-44	923573	923575
LSCB-44HT	923572	923574
LSCB-54HT	923593	923592
LSCB-32HT	923522	923521

PARTS LIST

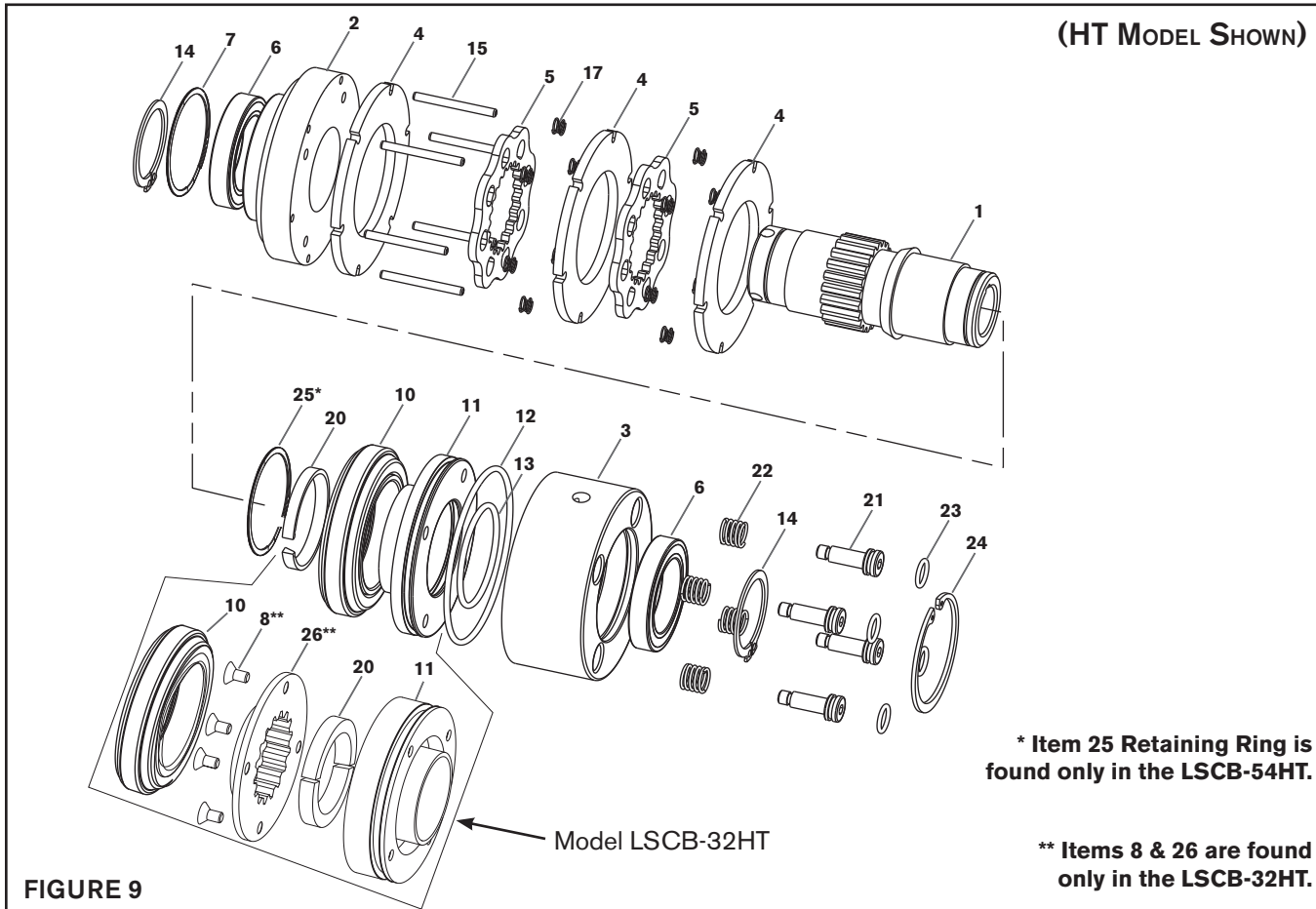


FIGURE 9

ITEM	DESCRIPTION	QTY.
1	Hub	1
2	Pilot Drive Flange	1
3	Air Chamber	1
4 ²	Friction Facing (Clutch)	3
5 ²	Friction Plate	2
6 ¹	Ball Bearing (6909)	2
7 ¹	Retaining Ring	1
8 ⁴	Screw, Pan Head	4
10 ³	Clutch Release Ball Bearing	1
11	Piston	1
12 ¹	O-Ring Seal	1
13 ¹	O-Ring Seal	1
14	Retaining Ring	2

ITEM	DESCRIPTION	QTY.
15	Dowel Pin	6
16	Set Screw	1
17 ²	Compression Spring	12
18	Square Key	1
19	Pin (Standard Model Only)	1
20	Conical Friction Facing (Brake)	1
21	Shoulder Bolt	4
22	Compression Spring	4
23	O-Ring Seal	4
24	Retaining Ring	4
25*	Retaining Ring	1
26 ⁴	Thrust Plate	1

¹ Denotes repair kit items.

² Denotes facing kit items.

³ In LSCB-32 Facing kit only.

⁴ LSCB-32 only.

WARRANTY

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.

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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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