nexen®

AIR CHAMP® PRODUCTS

User Manual

FCB-450, LCB-600, MCB-800 Clutch-Brakes

CE

RoHS compliant

FORM NO. L-21082-F-0914

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
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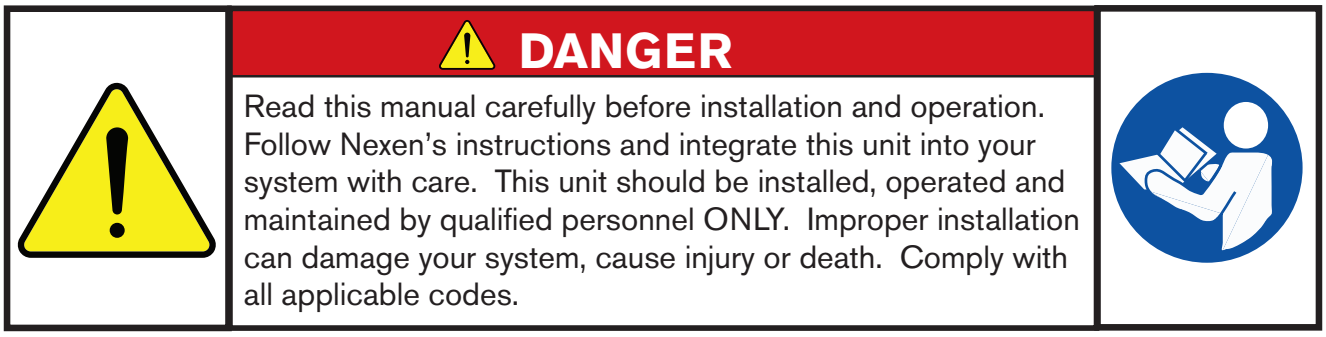
www.nexengroup.com



This document is the original, non-translated, version.

Conformity Declaration: In accordance with Appendix II B of CE Machinery Directive (2006/42/EC):

A Declaration of Incorporation of Partly Completed Machinery evaluation for the applicable EU directives was carried out for this product in accordance with the Machinery Directive. The declaration of incorporation is set out in writing in a separate document and can be requested if required.

This machinery is incomplete and must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the applicable provisions of the Directive.

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

ISO 9001 Certified

Table of Contents

GENERAL SPECIFICATIONS

Specifications	
Torque	Up to 124 Nm (1100 in-lbs)
Actuation Pressure	1 - 5.5 bar (14.5 - 80 psi)
Service Temperature	4.5 - 104 C (40 - 220 F)
Approximate Weight	Up to 18 kg (40 lbs)

GENERAL SAFETY PRECAUTIONS

⚠ CAUTION

Use lifting aids and proper lifting techniques when installing, removing, or placing this product in service.

⚠ CAUTION

Use appropriate guarding for moving components. Failure to guard could result in serious bodily injury.

⚠ CAUTION

Watch for sharp features when interacting with this product. The parts have complex shapes and machined edges.

⚠ CAUTION

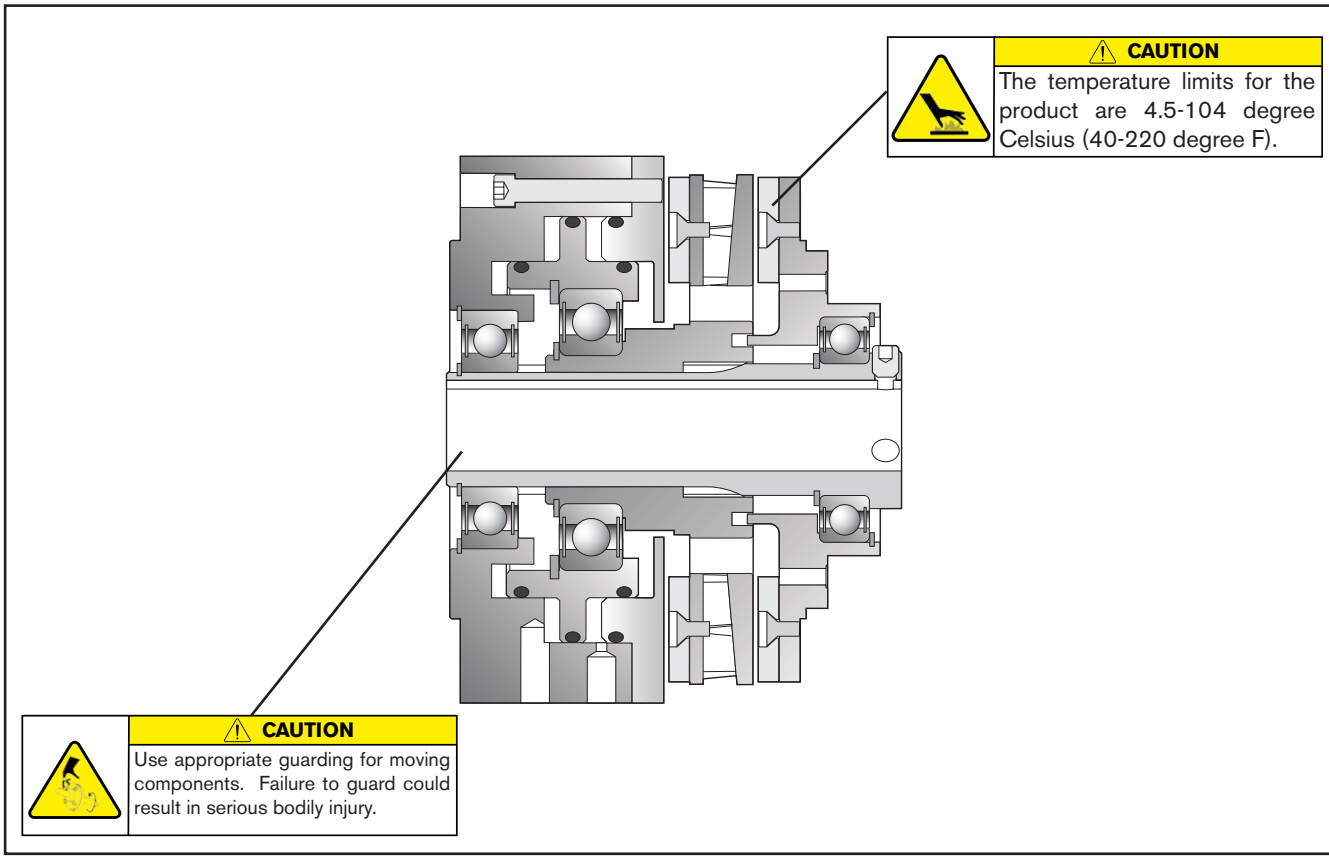
This product has possible pinch points. Care should be taken when interacting with this product.

⚠ WARNING

Ensure proper guarding of the product is used. Nexen recommends the machine builder design guarding in compliance with OSHA 29 CFR 1910 “Occupational Safety and Health Hazards”.

⚠ WARNING

This product is capable of emitting a spark if misused, therefore it is not recommended for use in any explosive environment.



INSTALLATION

NOTE

These are "hub-stop" clutch-brakes. They stop the shaft on which they are mounted. Therefore, they must be mounted on the driven shaft.

SHEAVE MOUNT CLUTCH/BRAKE

NOTE: Refer to Figure 1.

1. Insert the Key (Item 22) into the machine shaft. Align the Keyway on the Clutch/Brake with the Key on the machine shaft. Slide the Clutch/Brake onto the machine shaft and Key.

2. Install and tighten the Set Screws (Item 20).

3. Align the Clutch/Brake air inlet ports to the six o'clock down position to allow condensation to drain out of the ports.

4. Using the tapped holes provided on the back of the Air Chamber (See Figure 2), secure the air chamber housing in the direction of rotation only. Do not rigidly mount the air chamber housing.

TABLE 1

Unit	Anti-Rotation Hole Thread	B.C. Ø	Pilot Ø
FCB-450	0.312-18	4.750	3.750
LCB-600	0.375-16	5.875	4.500
MCB-800	0.375-16	7.500	5.500

PILOT MOUNT CLUTCH/BRAKE

NOTE: Refer to Figure 3.

1. Secure a customer supplied sheave or sprocket to the Clutch/Brake using the threaded holes in the Pilot Mount Drive Disc (Item 7).

2. Insert the Key (Item 22) into the machine shaft; then, slide the Clutch/Brake onto the machine shaft and Key.

3. Install and tighten the Set Screws (Item 20).

4. Align the Clutch/Brake air inlet ports to the six o-clock down position to allow condensation to drain out of the ports.

5. Using the tapped holes provided on the back of the Air Chamber (See Figure 2), secure the air chamber housing in the direction of rotation only. Do not rigidly mount the air chamber housing.

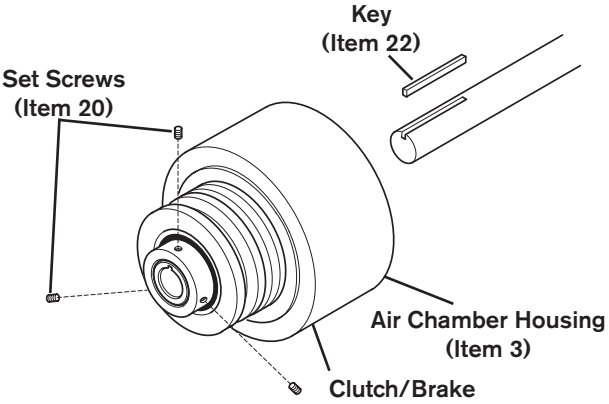


FIGURE 1

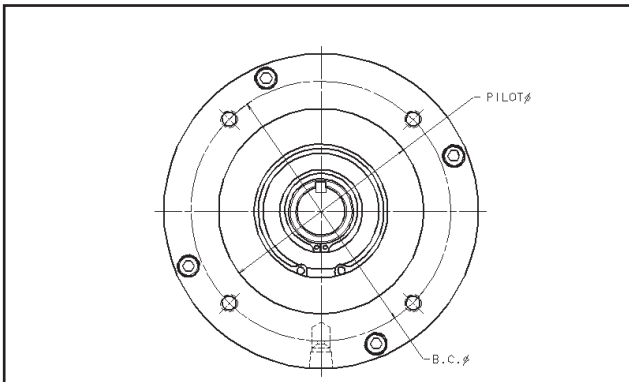


FIGURE 2

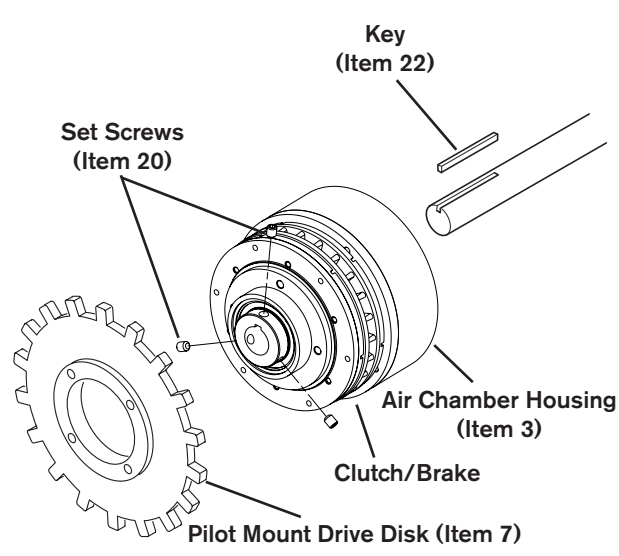


FIGURE 3

LUBRICATION

NOTE

Nexen pneumatically actuated devices require clean, pressure regulated air for maximum performance and life. All seals in Nexen Pneumatically operated devices are lubricated for life and do not require additional lubrication.

However, some customers prefer to use an air line lubricator, which injects oil into the pressurized air, forcing an oil mist into the air chamber. This is acceptable, but care must be taken to ensure once an air mist lubrication system is used, it is continually used over the life of the product as the oil mist may wash free the factory installed lubrication.

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

Synthetic lubricants are not recommended.

Nexen product's bearings are shielded and pre-lubricated, and require no further lubrication.

LUBRICATOR DRIP RATE SETTINGS

⚠ CAUTION

These settings are for Nexen supplied lubricators. If you are not using a Nexen lubricator, calibration must follow the manufacturer's suggested procedure.

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 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 counterclockwise one-third turn.
8. Open the air line to the unit.

AIR CONNECTIONS

All Nexen pneumatically actuated devices require clean and dry air, which meet or exceeds ISO 8573.1:2001 Class 4.4.3 quality.

NOTE

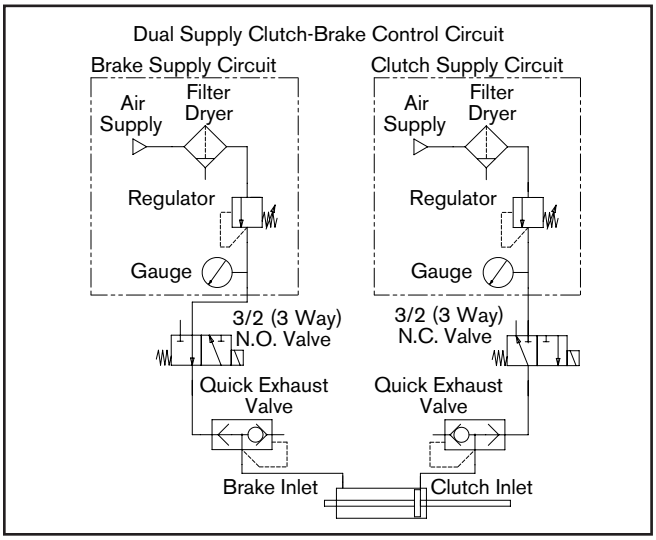
For quick response, Nexen recommends a quick exhaust valve and short air lines between the Control Valves and the product. Align the air inlet ports to a down position to allow condensation to drain out of the air chambers of the product.

The following are common air supply schemes used with this product. These are examples and not an all-inclusive list. All air circuits to be used with this product must be designed following ISO 4414 guidelines.

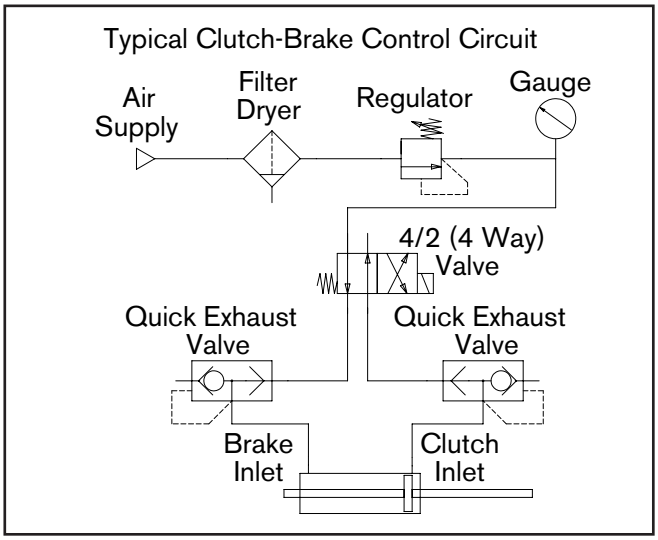
⚠ CAUTION

Low air pressure will cause slippage and overheating. Excessive air pressure will cause abrupt starts and stops, reducing product life.

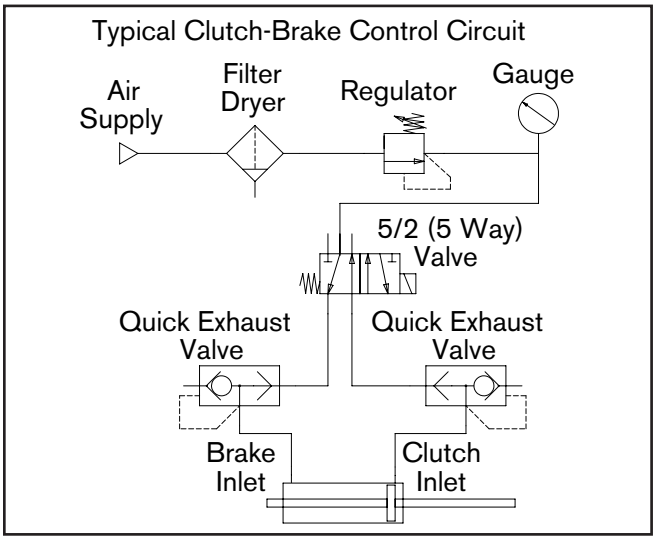
Air Pressure (Gage) Limits
6.9 Bar (120 PSI) Absolute Max.
0 Bar (0 PSI) Absolute Min.



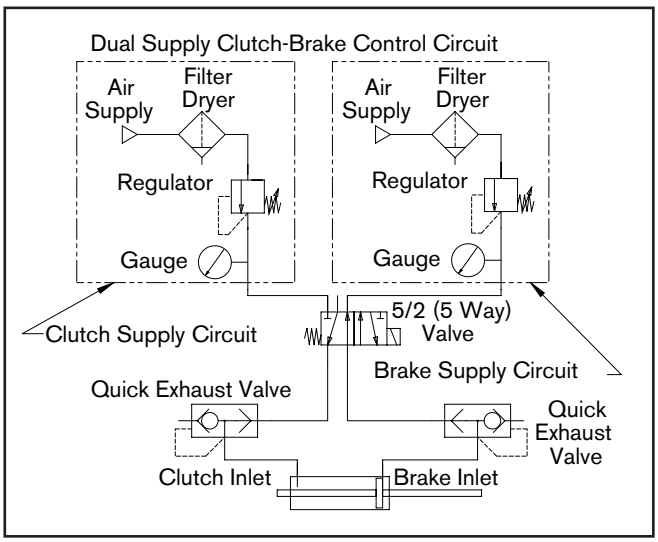
3/2 (3 Way)



4/2 (4 Way)



5/2 (4 Way)



5/2 (5 Way)

OPERATION

⚠ WARNING

Never exceed maximum operating speeds listed for your product. (See Table 2).

⚠ CAUTION

Never exceed life of facing material. Facing life depends on the volume of material and the total energy over the life of the unit. Expected life (in hrs) can be found by: Time=Volume/(Power*Wear Rate).

⚠ WARNING

Ensure proper guarding of the product is used. Nexen recommends the machine builder design guarding in compliance with OSHA 29 CFR 1910 “Occupational Safety and Health Hazards”.

TABLE 2

Size	Max RPM
FCB-450	3,600
LCB-600	2,000
MCB-800	1800

⚠ CAUTION

The temperature limits for this product line are 4.5-104 Degree Celsius (40-220 Degree F).

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
Failure to engage	Air not getting to the Clutch/Brake due to a control valve malfunction	Check for a control valve malfunction and replace the control valve if necessary.
	Air leaks at the air lines or O-ring Seals	Replace the air lines and/or O-ring Seals.
Failure to disengage	Unexhausted air due to a control valve malfunction	Check for a control valve malfunction and replace the control valve if necessary.
	Air leaks at the air lines or O-ring Seals	Replace the air lines and/or O-ring Seals.
Loss of torque	Air leaks at the air lines or O-ring Seals	Replace the air lines and/or O-ring Seals.
	Worn Friction Facing	Replace the Friction Facing.

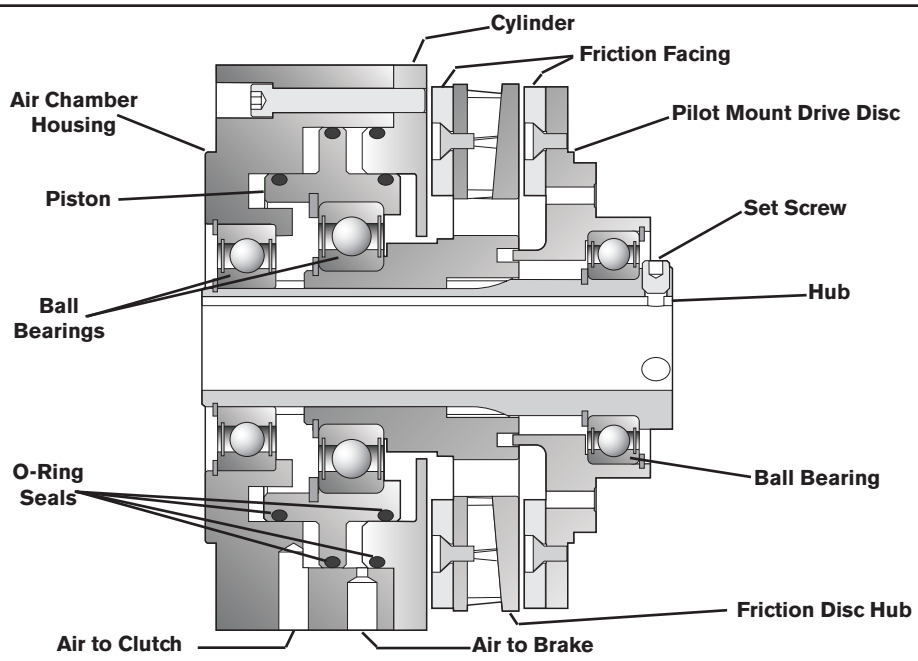


FIGURE 4

PARTS REPLACEMENT

NOTE: Refer to Figures 5 and 6 for steps 1-13.

1. Remove the Retaining Ring (Item 11) and press the Air Chamber Assembly off the Hub (Item 1).

NOTE: Step two refers only to FCB-450 models; for all other models, go directly to step three.

2. Remove the Set Screws (Item 20), Hub Collar (Item 25), and Retaining Ring (Item 11b) from the Hub (Item 1).

3. Press the Pilot Mount Drive Disc (Item 7) or Sheave (Item 30) off the Hub (Item 1).

4. Remove the Retaining Ring (Item 15) from the Pilot Mount Drive Disc (Item 7) or Sheave (Item 30).

5. Press the old Ball Bearing (Item 8) out of the Pilot Mount Drive Disc (Item 7) or Sheave (Item 30).

6. Clean the bearing bore of the Pilot Mount Drive Disc (Item 7) or Sheave (Item 30) with fresh safety solvent, making sure all old Loctite® (or equivalent) residue is removed.

7. Apply an adequate amount of Loctite® 680 (or equivalent) to evenly coat the outer race of the new Ball Bearing (Item 8).

8. Supporting the Pilot Mount Drive Disc (Item 7) or the Sheave (Item 30) and pressing on the outer race of the new Ball Bearing (Item 8), press the new Ball Bearing into the Pilot Mount Drive Disc or Sheave.

9. Reinstall the Retaining Ring (Item 15) into the Pilot Mount Drive Disc (Item 7) or Sheave (Item 30).

10. Remove the six Flat Head Screws (Item 24) and the old Friction Facing (Item 23) from the Pilot Mount Drive Disc (Item 7) or Sheave (Item 30).

11. Using six new Flat Head Screws (Item 24), secure the new Friction Facing (Item 23) to the Pilot Mount Drive Disc (Item 7) or Sheave (Item 30).

12. Alternately and evenly tighten the six flat head screws (Item 24) to the recommended torque. (See Table 3.)

13. Supporting the inner race of the new ball bearing, press the new Ball Bearing (Item 8) and Pilot Mount Drive Disc (Item 7) or Sheave (Item 30) onto the Hub (Item 1).

⚠ CAUTION

Working with spring loaded or tension loaded fasteners and devices can cause injury. Wear safety glasses and take the appropriate safety precautions.

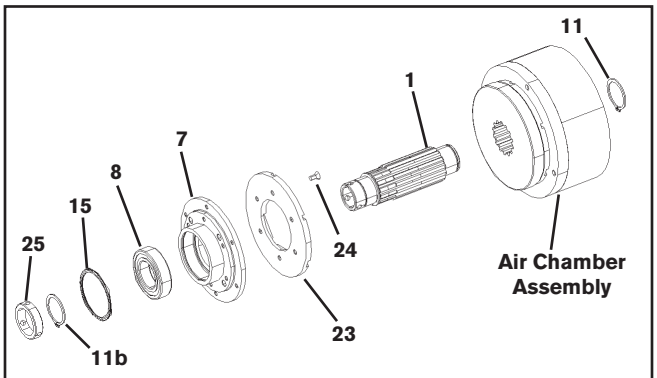


FIGURE 5 FCB-450 Exploded Diagram

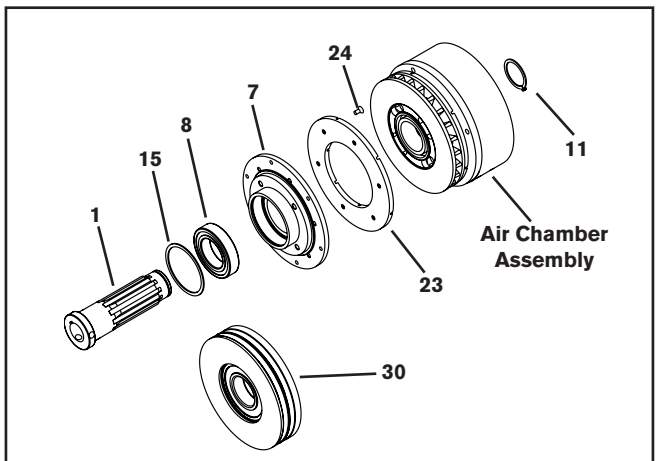


FIGURE 6 LCB-600 & MCB-800 Exploded Diagram

TABLE 3

Model	Item No.	Description	Torque
FCB-450	24	Flat Head Screw	16 - 22 in-lbs [1.8 - 2.5 Nm]
LCB-600	24	Flat Head Screw	16 - 22 in-lb [1.8 - 2.5 Nm]
MCB-800	24	Flat Head Screw	62-81 in-lb [7.0-9.2 Nm]

(continued...)

NOTE: Refer to Figure 7.

14. Remove the four Socket Head Cap Screws (Item 19); then, slide the Friction Disc Hub (Item 5), Cylinder (Item 4), and Piston (Item 2) out of the Air Chamber Housing (Item 3).

NOTE: Refer to Figure 8.

⚠ CAUTION

Working with spring loaded or tension loaded fasteners and devices can cause injury. Wear safety glasses and take the appropriate safety precautions.

15. Remove the Retaining Ring (Item 12) and press the Friction Disc Hub (Item 5) out of the Cylinder (Item 4) and Piston (Item 2).

16. Slide the Piston (Item 2) out of the Cylinder (Item 4); then, remove the old O-ring Seals (Items 17 & 18) from the Piston and Cylinder.

17. Remove the Retaining Ring (Item 14) from the Piston (Item 2); then, press the old Ball Bearing (Item 9) out of the Piston.

18. Clean the bearing bore of the Piston (Item 2) with fresh safety solvent, making sure all old Loctite® (or equivalent) residue is removed.

19. Apply an adequate amount of Loctite® 680 (or equivalent) to evenly coat the outer race of the new Ball Bearing (Item 9).

20. Supporting the Piston (Item 2) and pressing on the outer race of the new Ball Bearing (Item 9), press the new Ball Bearing into the Piston.

21. Reinstall the Retaining Ring (Item 14).

22. Clean the o-ring grooves and o-ring contact surfaces of the Piston (Item 2), Cylinder (Item 4), and Air Chamber with fresh safety solvent and lubricate the o-ring grooves and contact surfaces with fresh o-ring lubricant.

23. Lubricate the new O-ring Seals (Items 17 & 18) and install the new O-ring Seals onto the Piston (Item 2) and Cylinder (Item 4); then, slide the Piston back into the Cylinder.

24. Remove the six Flat Head Screws (Item 24) and the old Friction Facing (Item 23) from the Friction Disc Hub (Item 5).

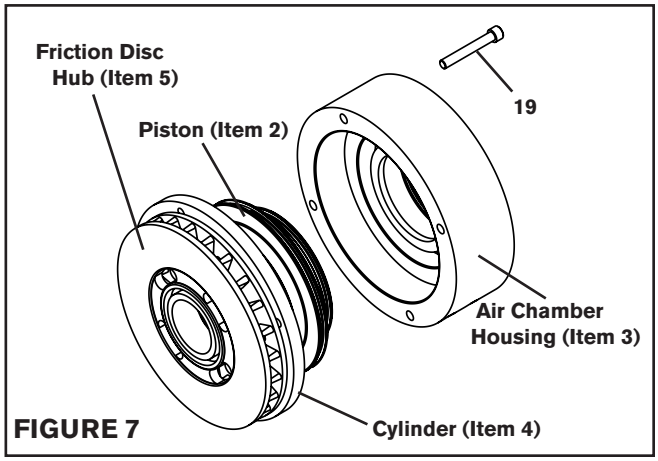


FIGURE 7

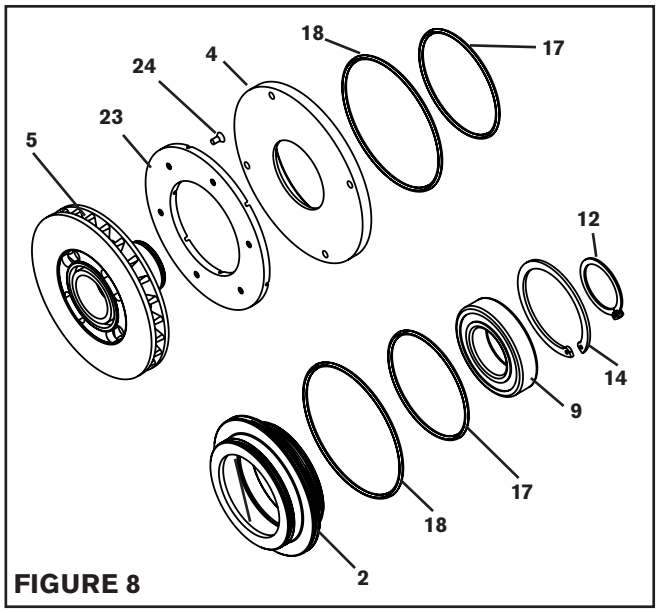


FIGURE 8

25. Using six new Flat Head Screws (Item 24), secure the new Friction Facing (Item 23) to the Friction Disc Hub (Item 5).

26. Alternately and evenly tighten the six flat head screws (Item 24) to the recommended torque. (See Table 3).

27. Support the inner race of the new Ball Bearing (Item 9) and press the Friction Disc Hub (Item 5) into the Cylinder (Item 4), Piston (Item 2), and new Ball Bearing (Item 9).

28. Reinstall the Retaining Ring (Item 12).

(continued...)

NOTE: Refer to Figure 9.

⚠ CAUTION

Working with spring loaded or tension loaded fasteners and devices can cause injury. Wear safety glasses and take the appropriate safety precautions.

29. Remove the Retaining Ring (Item 13) from the Air Chamber Housing (Item 3).

30. Press the old Ball Bearing (Item 10) out of the Air Chamber Housing (Item 3).

31. Clean the bearing bore of the Air Chamber Housing (Item 3) with fresh safety solvent, making sure all old Loctite® (or equivalent) residue is removed.

32. Apply an adequate amount of Loctite® 680 (or equivalent) to evenly coat the outer race of the new Ball Bearing (Item 10).

33. Supporting the Air Chamber Housing (Item 3) and pressing on the outer race of the new Ball Bearing (Item 10), press the new Ball Bearing into the Air Chamber Housing.

34. Reinstall the Retaining Ring (Item 13).

NOTE: Refer to Figure 10.

35. Slide the Friction Disc Hub (Item 5), Cylinder (Item 4), and Piston (Item 2) into the Air Chamber Housing (Item 3).

36. Apply a drop of Loctite® 242 (or equivalent) to the threads of the four Socket Head Cap Screws (Item 19); then, using the four Socket Head Cap Screws, secure the Friction Disc Hub (Item 5), Cylinder (Item 4), and Piston (Item 2) to the Air Chamber Housing (Item 3).

37. Alternately and evenly tighten the four Socket Head Cap Screws (Item 19) to the recommended torque (See Table 4).

NOTE: Refer to Figure 11.

38. Press the Hub (Item 1) and Pilot Mount Drive Disc (Item 7) or Sheave (Item 30) back into the Friction Disc Hub (Item 5), Cylinder (Item 4), Piston (Item 2), and Air Chamber Housing (Item 3).

39. Reinstall the Retaining Ring (Item 11) onto the Hub (Item 1).

NOTE: Step 40 & 41 refers only to the FCB-450; models LCB-600 & MCB-800 are complete after step 39.

40. Reinstall the Retaining Ring (Item 11b) onto the Hub (Item 1).

41. Attach the Hub Collar (Item 25) to the Hub (Item 1) using the three Set Screws (Item 20).

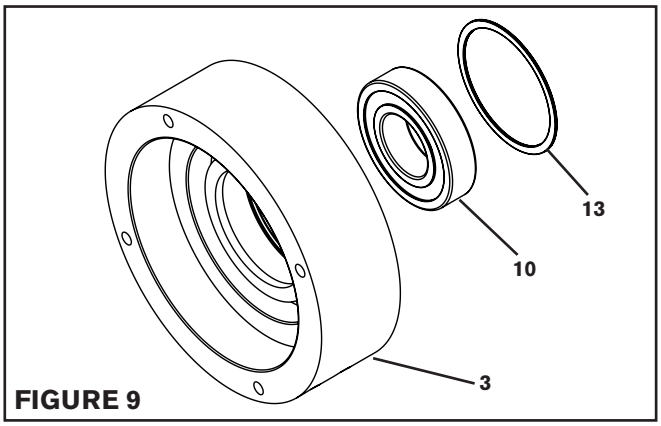


FIGURE 9

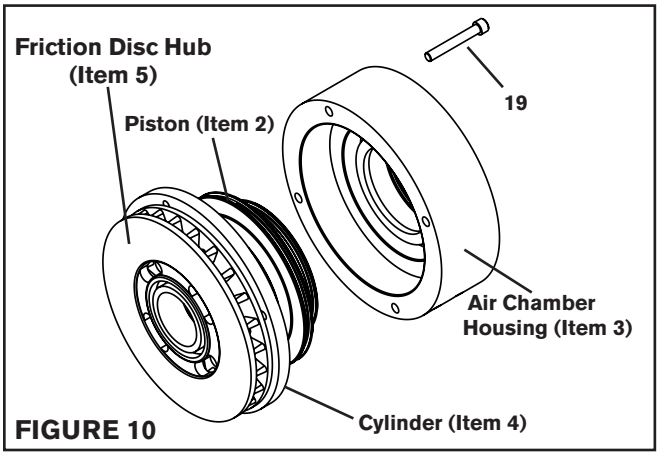


FIGURE 10

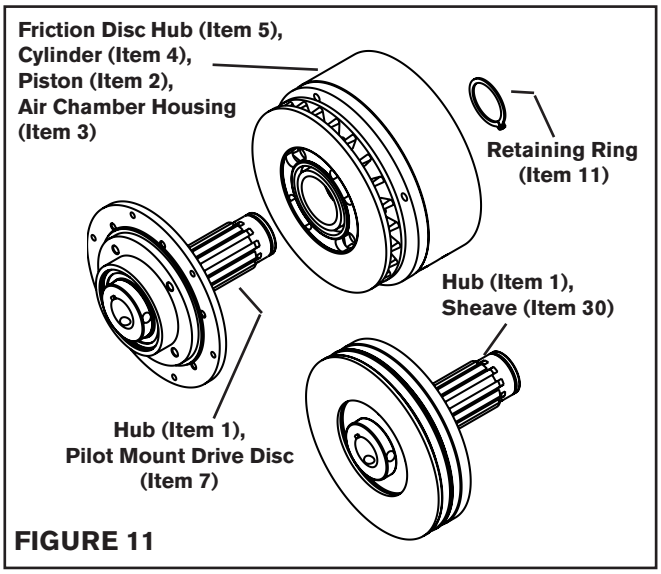


FIGURE 11

TABLE 4

Model	Item No.	Description	Torque
FCB-450	19	cap screw	81 - 105 in-lb [9.2 - 11.8 Nm]
LCB-600	19	cap screw	81 - 105 in-lb [9.2 - 11.8 Nm]
MCB-800	19	cap screw	301-392 in-lb [34.0-44.3 Nm]

REPLACEMENT PARTS LIST

The Item or "Balloon" Number for all Nexen Products is used for part identification on all Product Parts List, Product Price List, 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.

FCB-450

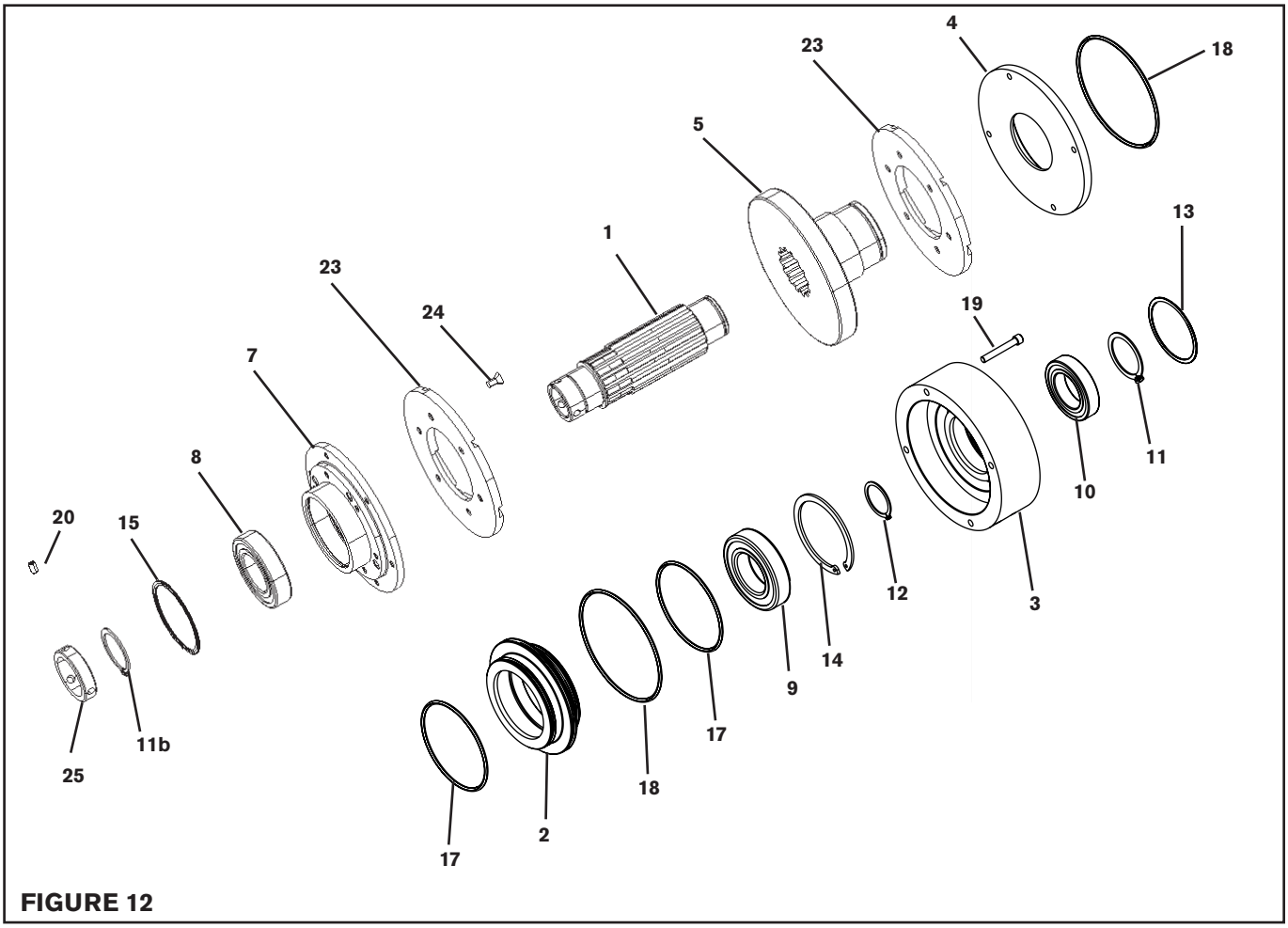


FIGURE 12

ITEM	DESCRIPTION	QTY
1	Hub	1
2	Piston	1
3	Air Chamber Housing	1
4	Cylinder	1
5	Friction Disc Hub	1
7	Pilot Mount Drive Disc (Pilot Mount Only)	1
8[2]	Ball Bearing	1
9[1]	Ball Bearing	1
10[1]	Ball Bearing	1
11	Retaining Ring (Ext.)	1
11b	Retaining Ring (Ext.)	1
12	Retaining Ring (Ext.)	1

ITEM	DESCRIPTION	QTY
13	Retaining Ring (Int.)	1
14	Retaining Ring (Int.)	1
15	Retaining Ring (Int.)	1
17[1]	O-ring Seal (Small)	2
18[1]	O-ring Seal (Large)	2
19	Socket Head Cap Screw	4
20	Set Screw	3
22	Key (Not Shown)	1
23[1]	Facing, Friction	2
24[1]	Screw, Flat Head	12
25	Hub Collar	1
30	Sheave (Sheave Mount Only)	1

[1] Denotes Repair Kit item.
Repair Kit Product Number for FCB-450: 827151
[2] Order Pilot or Sheave Bearings separately.

REPLACEMENT PARTS LIST (continued)

LCB-600 & MCB-800

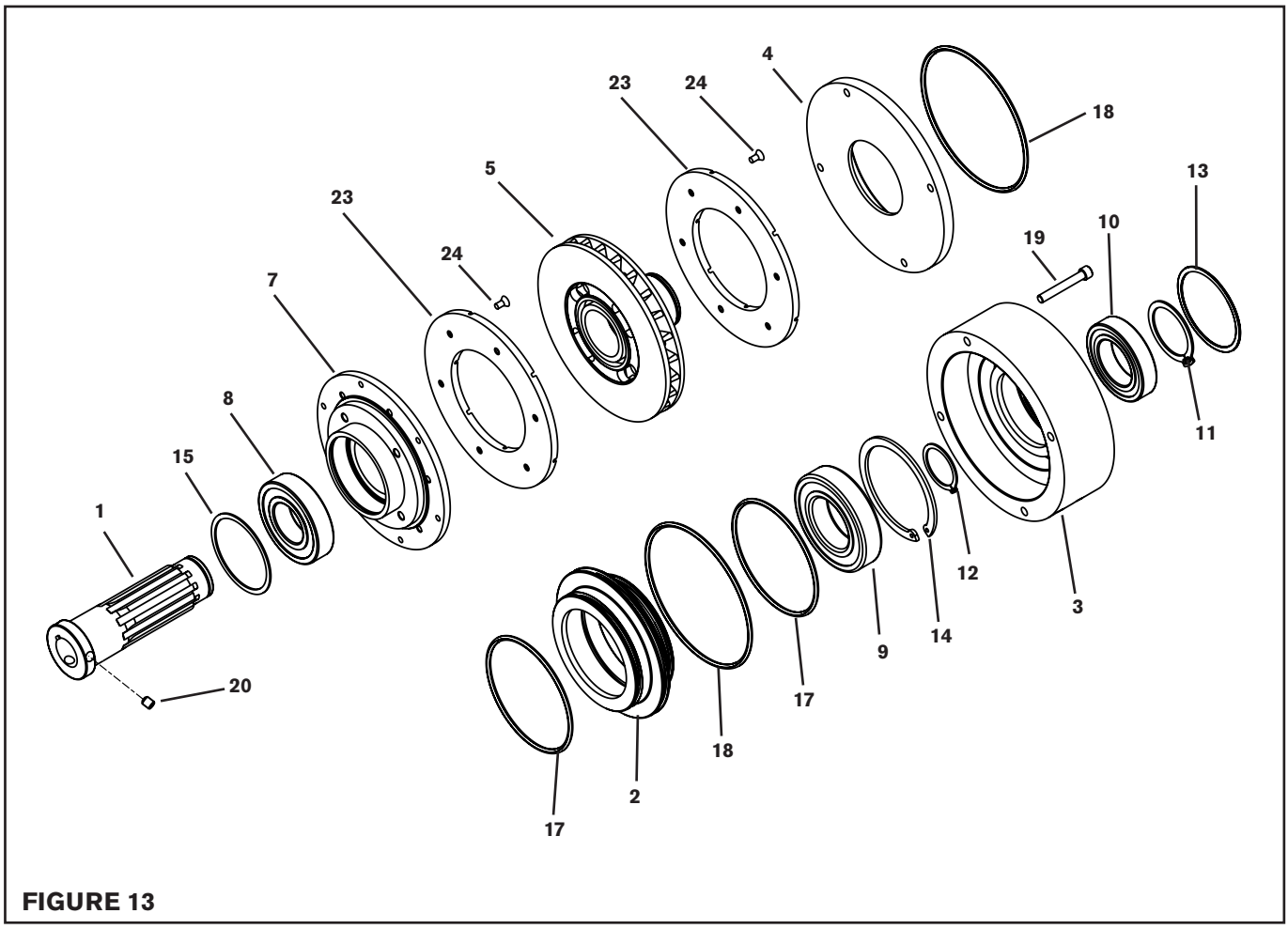


FIGURE 13

ITEM	DESCRIPTION	QTY
1	Hub	1
2	Piston	1
3	Air Chamber Housing	1
4	Cylinder	1
5	Friction Disc Hub	1
7	Pilot Mount Drive Disc (Pilot Mount Only)	1
8[2]	Ball Bearing	1
9[1]	Ball Bearing	1
10[1]	Ball Bearing	1
11	Retaining Ring (Ext.)	1
12	Retaining Ring (Ext.)	1

ITEM	DESCRIPTION	QTY
13	Retaining Ring (Int.)	1
14	Retaining Ring (Int.)	1
15	Retaining Ring (Int.)	1
17[1]	O-ring Seal (Small)	2
18[1]	O-ring Seal (Large)	2
19	Socket Head Cap Screw	4
20	Set Screw	3
22	Key (Not Shown)	1
23[1]	Facing, Friction	2
24[1]	Screw, Flat Head	12
30	Sheave (Sheave Mount Only)	1

[1] Denotes Repair Kit item.
Repair Kit Product Numbers:
LCB-600: 828951
MCB-800: 830851
[2] Order Pilot or Sheave Bearings separately.

WARRANTY

Warranties
Nexen warrants that the Products will (a) be free from any defects in material or workmanship for a period of 12 months from the date of shipment, and (b) will meet and perform in accordance with the specifications in any engineering drawing specifically for the Product that is in Nexen's current product catalogue, or that is accessible at the Nexen website, or that is attached to this Quotation and that specifically refers to this Quotation by its number, subject in all cases to any limitations and exclusions set out in the drawing. 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 for the Buyer for any breach of any warranties provided in connection with this agreement will be, at the election of Nexen: (a) repair or replacement with new, serviceably used, or reconditioned parts or products; or (b) issuance of credit in the amount of the purchase price paid to Nexen by the Buyer for the Products.

Agent's Authority
Buyer agrees that no agent, employee or representative of Nexen has authority to bind Nexen to any affirmation, representation, or warranty concerning the Products other than those warranties expressly set forth herein.

Limitation on 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 damages, 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.

Inspection
Buyer shall inspect all shipments of Products upon arrival and shall notify Nexen in writing, of any shortages or other failures to conform to these terms and conditions which are reasonably discoverable upon arrival without opening any carton or box in which the Products are contained. Such notice shall be sent within 14 days following arrival. All notifications shall be accompanied by packing slips, inspection reports and other documents necessary to support Buyer's claims. In addition to the foregoing obligations, in the event that Buyer receives Products that Buyer did not order, Buyer shall return the erroneously shipped Products to Nexen within thirty (30) days of the date of the invoice for such Products; Nexen will pay reasonable freight charges for the timely return of the erroneously shipped Products, and issue a credit to Buyer for the returned Products at the price Buyer paid for them, including any shipping expenses that Nexen charged Buyer. All shortages, overages and nonconformities not reported to Nexen as required by this section will be deemed waived.

Limitation on Actions
No action, regardless of form, arising out of any transaction to which these terms and conditions are applicable may be brought by the Buyer more than one year after the cause of action has accrued.

nexen

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