nexen®

AIR CHAMP® PRODUCTS

User Manual

Flange Mounted Spring Engaged Brake

Model FMBS-875

FORM NO. L-20206-A-0601

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

FMBS-875 MOUNTED ON A NEMA C-FACED MOTOR (See Fig. 1)

1. Insert customer supplied key into motor shaft keyway.
2. Slide FMBS-875 onto motor shaft and secure with customer supplied socket head cap screws.
3. Tighten customer supplied socket head cap screws to 12 ft. lbs. [16 N•m] torque.
4. Install Housing Guard.

FMBS-875 MOUNTED BETWEEN GEAR REDUCER AND NEMA C-FACED MOTOR (See Fig. 1)

1 Insert Nexen supplied Key (Item 26) into FMBS-875 output shaft.

2. Slide FMBS-875 output shaft into gear reducer.
3. Secure FMBS-875 to gear reducer, using customer supplied socket head capscrews and lockwashers
4. Tighten customer supplied socket head cap screws and lockwashers to 12 ft. lbs. [16 N•m] torque.
5. Mount NEMA C-Faced motor (See FMBS-875 MOUNTED ON A NEMA C-FACED MOTOR).
6. Install Housing Guard.

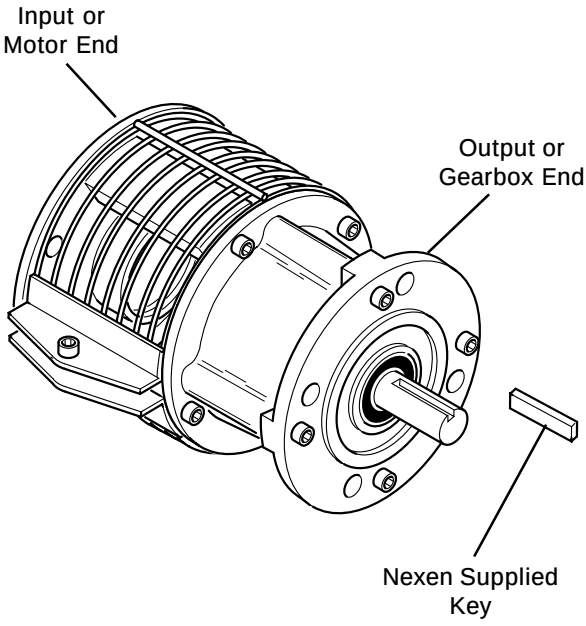


FIGURE 1

AIR CONNECTIONS

Although Nexen’s FMBS-875 is spring engaged and air disengaged with a maximum operating air pressure of 80 PSI, use only enough air pressure to insure proper disengagement for the application. Operating air pressures over 80 PSI will eventually cause bearing and seal damage.

For quick response, locate the control valve as close as possible to the FMBS-875.

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

LUBRICATION

Pneumatically actuated devices require clean, pressure regulated, and lubricated air for maximum performance and long life. The most effective way to lubricate the FMBS-875 is with an air line lubricator, which injects an oil mist into the air chamber.

Locate lubricator above and within ten feet of the FMBS-875, and use a low viscosity oil such as SAE-10.

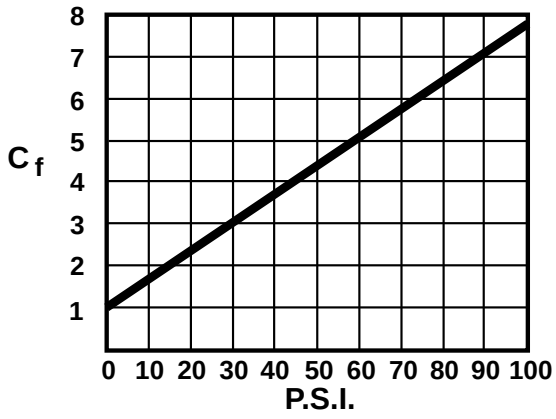
NOTE: Synthetic lubricants are not recommended.

LUBRICATOR DRIP RATE SETTINGS

1. Determine C_F (See Table 1).
2. Multiply C_F by 1.32 (the Average Air Chamber Volume) to determine cu. in. / min..
3. Divide cu. in. / min. by 1728 to determine cu. ft. / min. (SCFM).
4. Multiply cu. ft. / min. (SCFM) by cycles per minute.

   NOTE: Nexen recommends one drop of oil every 20 SCFM.
5. Divide twenty by the result of Step 4 to determine time in minutes between drops of oil formed in the Lubricator Sight Gauge.

TABLE 1



SPLINE

Although the Hub Spline has been lubricated at the factory with a high temperature, anti-seize lubricating compound, Nexen recommends periodic lubrication of this component to insure smooth brake engagement and disengagement.

NOTE: Brake must be disassembled to lubricate Hub Spline.

BEARINGS

All bearings are pre-lubricated and sealed, therefore lubrication of the bearings is not recommended.

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
Failure to Disengage.	Control Valve malfunction or low air pressure	Check system for air leaks or replace Control Valve.
	Lack of lubrication on Hub Spline or in Air Chamber.	Lubricat Hub Spline and check Air Chamber Lubrication.
Failure to Engage.	Weak or broken Compression Springs.	Install new Compression Spings.
	Unexhausted air due to Control Valve malfunction.	Replace Control Valve.
	Lack of lubrication on Hub Spline or in Air Chamber.	Lubricate Hub Spline and check Air Chamber lubrication.
Bearing Failure.	Limit air pressure to 80 PSI. Excessive air pressure increases the thrust load on the Bearings.	

PARTS REPLACEMENT

FRICTION FACINGS

1. Remove Socket Head Cap Screws (Item 14), then separate Air Chamber and Male Pilot Assembly from Housing (See Fig. 2).

2. Align Holes of Splined Disc (Item 9) with Flat Head Machine Screws (Item 12) and remove Machine Screws (See Fig. 3) holding Split Friction Facing (Item 11)

   NOTE: If removal of Machine Screws (Item 12) is difficult, strike end of screwdriver with a hammer to break the crystalline structure of the thread locking compound before attemp-ting to remove Machine Screws (Item 12).

3. Remove Split Friction Facings (Item 11).

4. Install new Friction Facings.

5. Apply Loctite® 222 or equivalent to threads of Machine Screws (Item 12) and tighten Machine Screws to 22 in. lbs. [2.5 N•m] torque.

6. Apply Loctite® 222 or equivalent to threads of Socket Head Cap Screws (Item 14).

7. Using Socket Head Cap Screws (Item 14), Secure Air Chamber and Male Pilot Assembly to Housing.

8. Alternately and evenly tighten Socket Head Cap Screws (Item 14) to 27 ft. lbs. [36.7 N•m] torque.

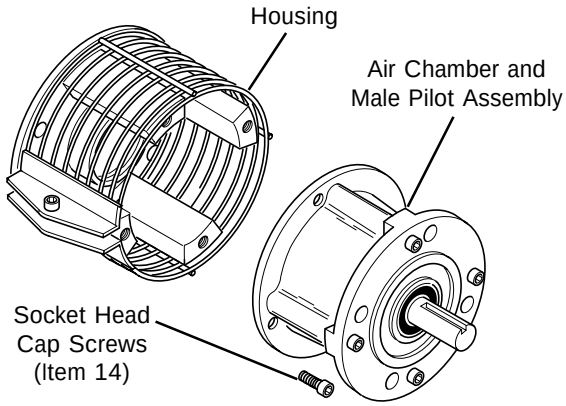


FIGURE 2

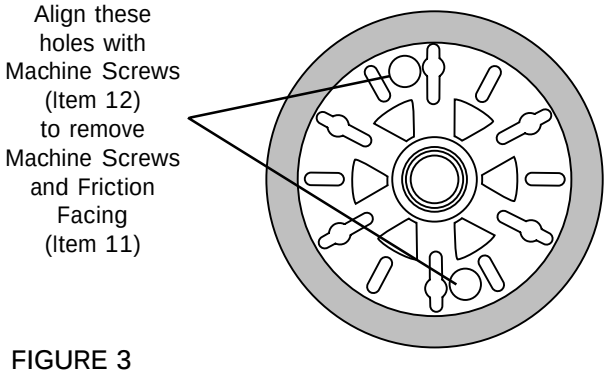


FIGURE 3

HOUSING BEARING REPLACEMENT

1. Remove Socket Head Cap Screws (Item 14), then separate Air Chamber and Male Pilot Assembly from Housing (Item 1) (See Fig. 4).

2. Remove Housing Guard (Item 27) (See Fig. 4).

3. Remove Retaining Ring (Item 3 (See Fig. 4).

WARNING

Special attention should be exercised when working with Retaining Ring. Always wear safety goggles when working with spring or tension loaded fasteners or devices.

4. Fully supporting Housing (Item 1), press Bearing (Item 2) out of Housing (See Fig. 4).

   NOTE: Do not reuse Bearing. Applying force on inner bearing race to remove bearing held by outer race causes damage to bearing.

5. Clean Bearing Bore of Housing with fresh safety solvent.

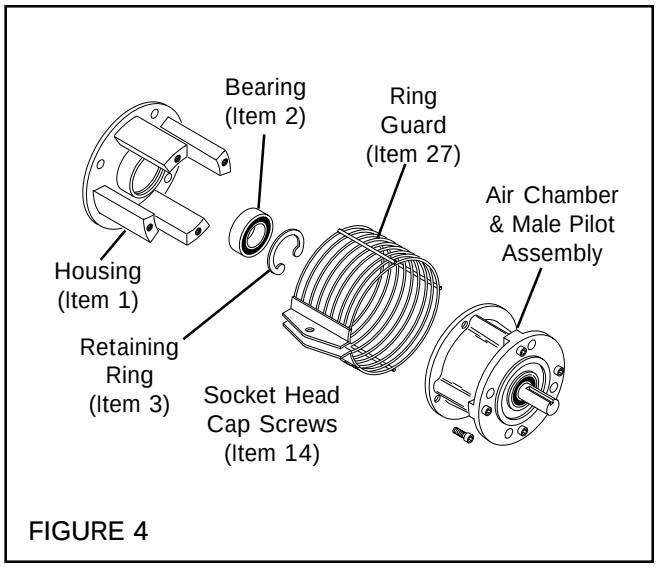


FIGURE 4

6. Apply Loctite® 601 or equivalent to outer race of new Bearing, then press new Bearing into Bore of Housing.

7. Install Retaining Ring (Item 3).

MALE PILOT BEARING REPLACEMENT

1. Remove Socket Head Cap Screws (Item 14), then separate Air Chamber from Male Pilot Assembly (See Fig. 5).

2. Remove Retaining Ring (Item 25) (See Fig. 5).

WARNING

Special attention should be exercised when working with Retaining Ring. Always wear safety goggles when working with spring or tension loaded fasteners or devices.

4. Fully supporting Male Pilot (Item 21), press Shaft (Item 24) out of Male Pilot (See Fig. 5).

5. Using a Bearing Puller, remove Bearings (Item 20) (See Fig. 5)

   NOTE: Do not reuse Bearing. Applying force on inner bearing race to remove bearing held by outer race causes damage to bearing.

6. Clean Bearing Bore of Male Pilot with fresh safety solvent.

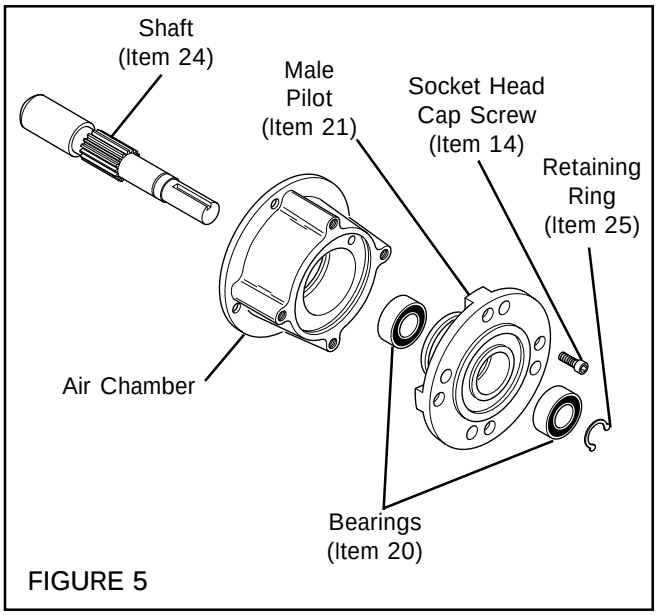


FIGURE 5

7. Apply Loctite® 601 or equivalent to outer race of one new Bearing, then press one new Bearing into Bore of Male Pilot. that faces the Air Chamber (Item 13).

PISTON BEARING, COMPRESSION SPRING, AND O-RING SEAL REPLACEMENT

1. Compress Piston (Item 15) into Air Chamber (Item 13), then remove Retaining Ring (Item 6) securing Splined Disc (Item 9) inside Piston (See Fig. 6).

WARNING

Special attention should be exercised when working with Retaining Ring. Always wear safety goggles when working with spring or tension loaded fasteners or devices.

2. Press Splined Disc (Item 9) out of Piston (Item 15) (See Fig. 6).

3. Slide Piston (Item 15) out of Air Chamber (Item 13) (See Fig. 7).

4. Remove Compression Springs (Item 17) from Piston (Item 15), and inspect Compression Springs for signs of damage.

WARNING

If Compression Springs show any signs of wear or damage, they must be replaced.

5. Remove O-ring Seal (Item 16) from Piston (Item 15) (See Fig. 7).

6. Remove Retaining Ring (Item 3) from Piston (Item 15) (See Fig. 7).

7. Press Bearing (Item 2) out of Piston (Item 15) (See Fig. 7).

   NOTE: Do not reuse Bearing. Applying force to inner bearing race to remove bearing held by the outer race causes damage to the bearing.

8. Clean Bearing Bore of Piston with fresh safety solvent.

9. Apply Loctite® 601 or equivalent to outer race of new Bearing, then press new Bearing into Piston.

10. Install Retaining Ring (Item 6).

11. Clean O-ring groove of Piston, then apply a thin coat or O-ring Lubricant to new O-ring Seal (Item 16) and O-ring contact surfaces of Piston (See Fig. 7).

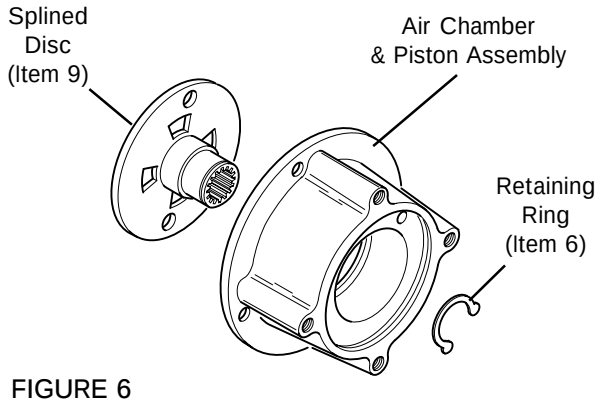


FIGURE 6

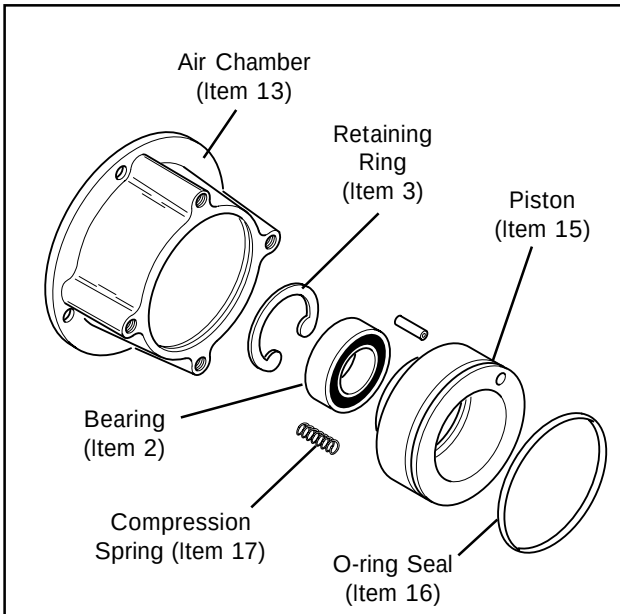


FIGURE 7

12. Install new O-ring Seal (Item 16) (See Fig. 7).

13. Install new Compression Springs (Item 17) (See Fig. 7)

14. Slide Piston (Item 15) into Air Chamber (Item 13) (See Fig. 7).

15. Slide Splined Disc (Item 9) into Piston (See Fig. 6).

16. Compress Piston (Item 15) into Air Chamber (Item 13), then replace Retaining Ring (Item 6) (See Fig. 6).

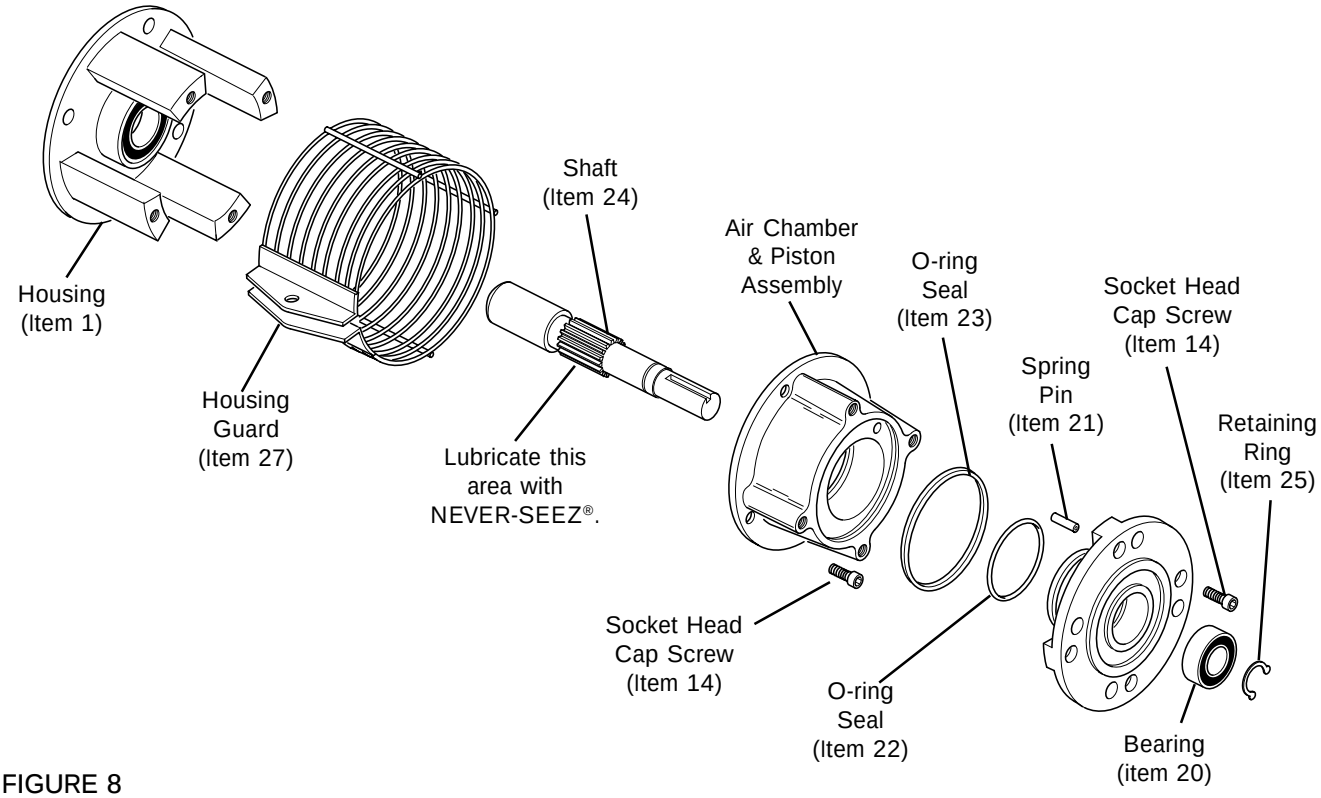


FIGURE 8

1. Remove O-ring Seal (Item 22) from Male Pilot (Item 18) (See Fig. 8)

2. Clean O-ring groove of Male Pilot, then apply a thin coat of O-ring lubricant to new O-ring Seal (Item 22) and O-ring contact surfaces of Male Pilot (See Fig. 8).

3. Install new O-ring Seal (Item 22).

4. Remove O-ring Seal (Item 23) from Air Chamber (Item 13) (See Fig. 8)

5. Clean O-ring groove of Air Chamber, then apply a thin coat of O-ring lubricant to new O-ring Seal (Item 23) and O-ring contact surfaces of Air Chamber (See Fig. 8).

6. Install new O-ring Seal (Item 23).

7. Align Spring Pin (Item 21) with hole in Cylinder, and slide Male Pilot (Item 18) into Air Chamber (Item 13) (See Fig. 8).

8. Apply Loctite® 222 or equivalent to threads of Socket Head Cap Screws (Item 14) securing Male Pilot (Item 18) to Air Chamber (Item 13) (See Fig. 9).

9. Tighten Socket Head Cap Screws (Item 14) to 27 ft. lbs. [36.7 N•m] torque.

10. Lubricate splines of Shaft (Item 24) with NEVER-SEEZ® , then slide into Air Chamber/Male Pilot Assembly ((See Fig. 8).

11. Apply Loctite® 601 or equivalent to outer race of new Bearing (Item 20) and press Bearing into Male Pilot (Item 18).

12. Install Retaining Ring (Item 25) (See Fig. 8).

WARNING

Special attention should be exercised when working with Retaining Ring. Always wear safety goggles when working with spring or tension loaded fasteners or devices.

13. Apply Loctite® 222 or equivalent to threads of Socket Head Cap Screws (Item 14) securing Air Chamber/Male Pilot Assembly to Housing (See Fig. 8).

14. Using Socket Head Cap Screws (Item 14), secure Air Chamber/Male Pilot Assembly to Housing (See Fig. 9).

15. Alternately and evenly tighten Socket Head Cap Screws (Item 14) to 27 ft. lbs. [36.7 N•m] torque.

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

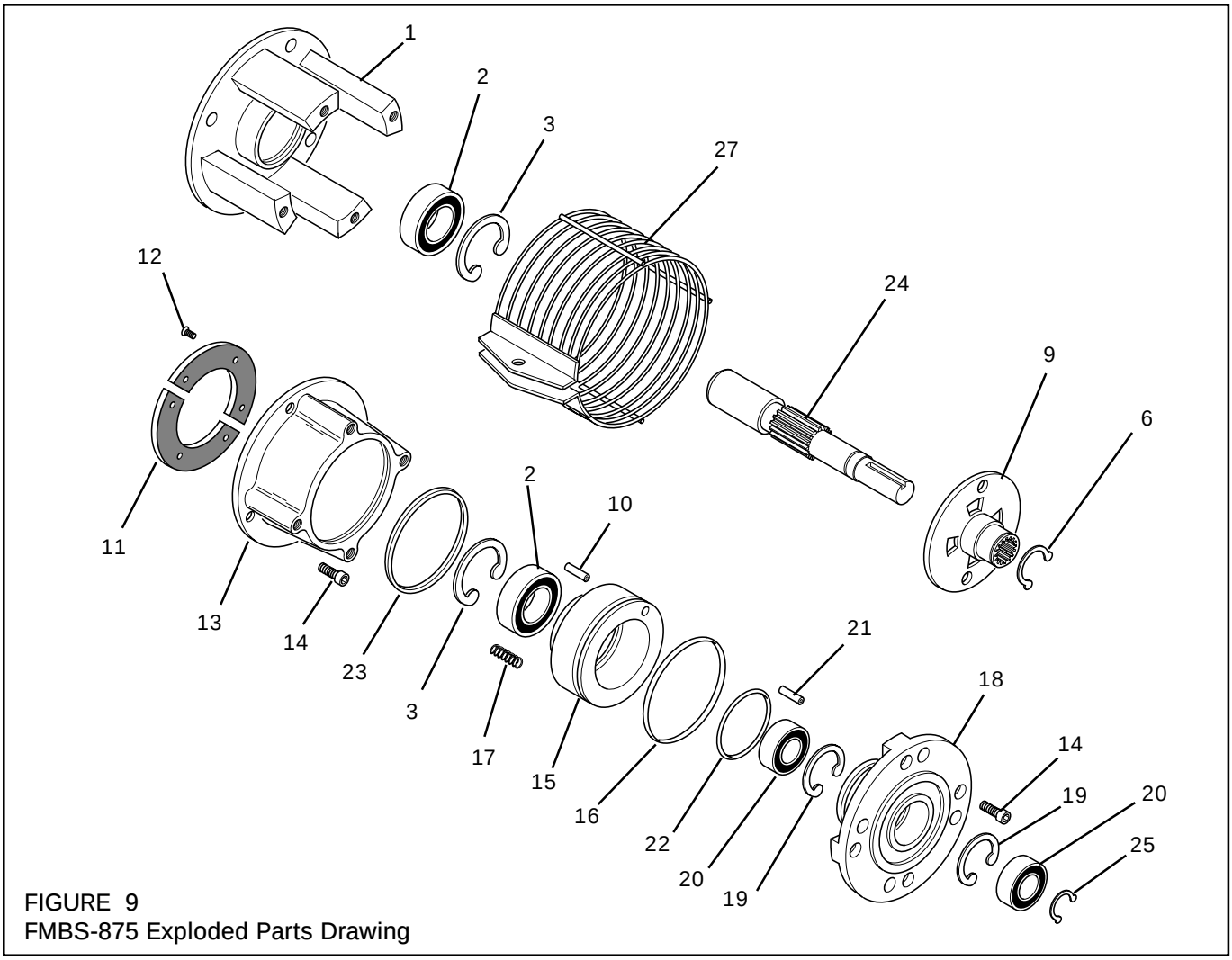


FIGURE 9
FMBS-875 Exploded Parts Drawing

ITEM	DESCRIPTION	QTY
1	Housing	1
2	Ball Bearing	2
3	Retaining Ring (Int)	2
6	Retaining Ring (Ext)	1
9	Splined Disc	1
10	Slotted Spring Pin	3
11	Friction Facing	1
12	Flat Head Screw	6
13	Air Chamber	1
14	Socket Head Cap Screw	8
15	Piston	1
16	O-Ring Seal	1

ITEM	DESCRIPTION	QTY
17	Compression Spring	12
18	Male Pilot	1
19	Retaining Ring (Int)	2
20	Ball Bearing	1
21	Slotted Spring Pin	1
22	O-Ring Seal	1
23	O-Ring Seal	1
24	Shaft	1
25	Retaining Ring (Ext)	1
26	Key (Not Shown)	1
27	Housing Guard	1

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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Vadnais Heights, MN 55127

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