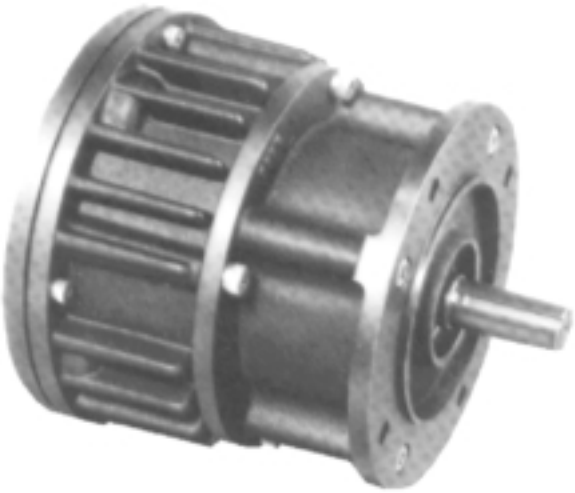
nexen®

AIR CHAMP® PRODUCTS

User Manual



Metric Flange Mounted Enclosed Clutch

FMCE Model 130-19

FORM NO. L-20306-A-0501

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

TABLE OF CONTENTS

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

MOUNTED ON THE SHAFT END OF A MOTOR

1. Insert the customer supplied key into the motor shaft keyway (See Figure 1).
2. Slide the FMCE onto the motor shaft; then, secure it to the motor using Socket Head Cap Screws (Item 29) and Lock Washers (Item 30) (See Figure 1).
3. Align the hole in the FMCE with the Set Screw in the Drive Disc.
4. Tighten the Set Screw (Item 31) and then install the Plug (Item 32) (See Figure 1).

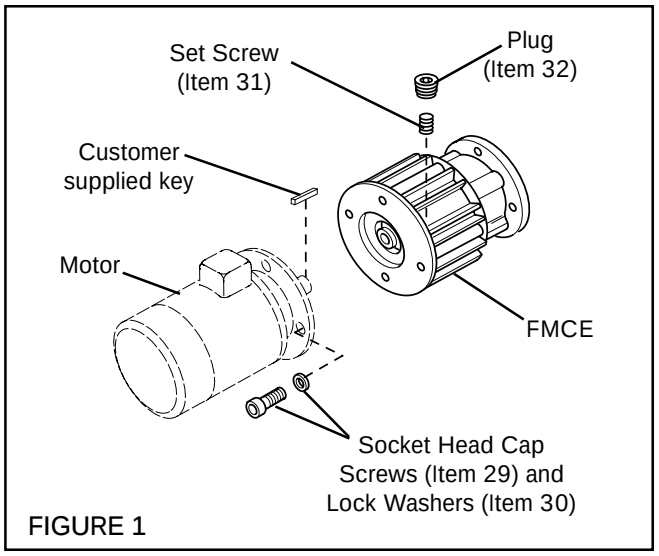


FIGURE 1

MOUNTED BETWEEN A GEAR REDUCER AND A MOTOR

1. Insert the Key (Item 25) into the output shaft of the FMCE (See Figure 2).
2. Slide the FMCE output shaft into the gear reducer (See Figure 2).
3. Secure the FMCE to the gear reducer using customer supplied socket head cap screws, lock washers, and nuts (See Figure 2).
4. Insert the customer supplied key into the motor shaft keyway (See Figure 2).
5. Slide the motor into the FMCE and secure it to the FMCE using Socket Head Cap Screws (Item 29) and Lock Washers (Item 30) (See Figure 2).
6. Align the hole in the FMCE with the Set Screw in the Drive Disc.
7. Tighten the Set Screw (Item 31) and then install the Plug (Item 32) (See Figure 2).

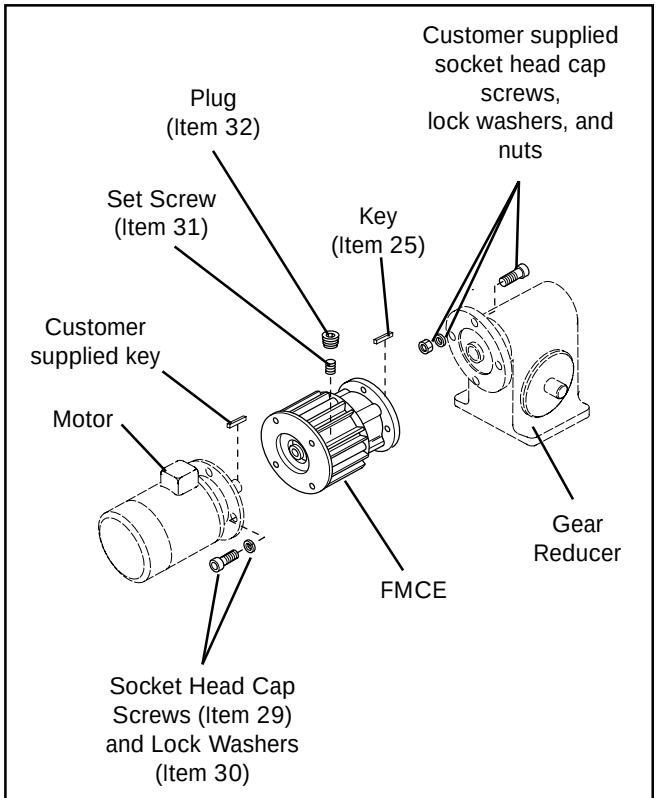


FIGURE 2

AIR CONNECTIONS

NOTE: For quick response, Nexen recommends a quick exhaust valve and air lines ideally one foot or less between the Control Valve and the FMCE. Align the air inlet port to a down position to allow condensation to drain out of the air chamber. The Metric FMCE has an ISO 7/1-Rc 1/8 port.

LUBRICATION

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 the Metric FMCE 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 Metric FMCE, 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 FMCE.	Check for a control valve malfunction or low air pressure and replace the control valve if necessary.
	Lack of lubrication on the Stub Shaft spline.	Lubricate the Stub Shaft spline.
	Air leaks around the O-ring Seals.	Replace the 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.
	Weak or damaged Compression Springs.	Replace the Compression Springs.
	Lack of lubrication on the Stub Shaft spline.	Lubricate the Stub Shaft spline.
Loss of torque.	Air leaks around the O-ring Seals.	Replace the O-ring Seals.
	Worn or dirty Friction Facing.	Replace the Friction Facing.

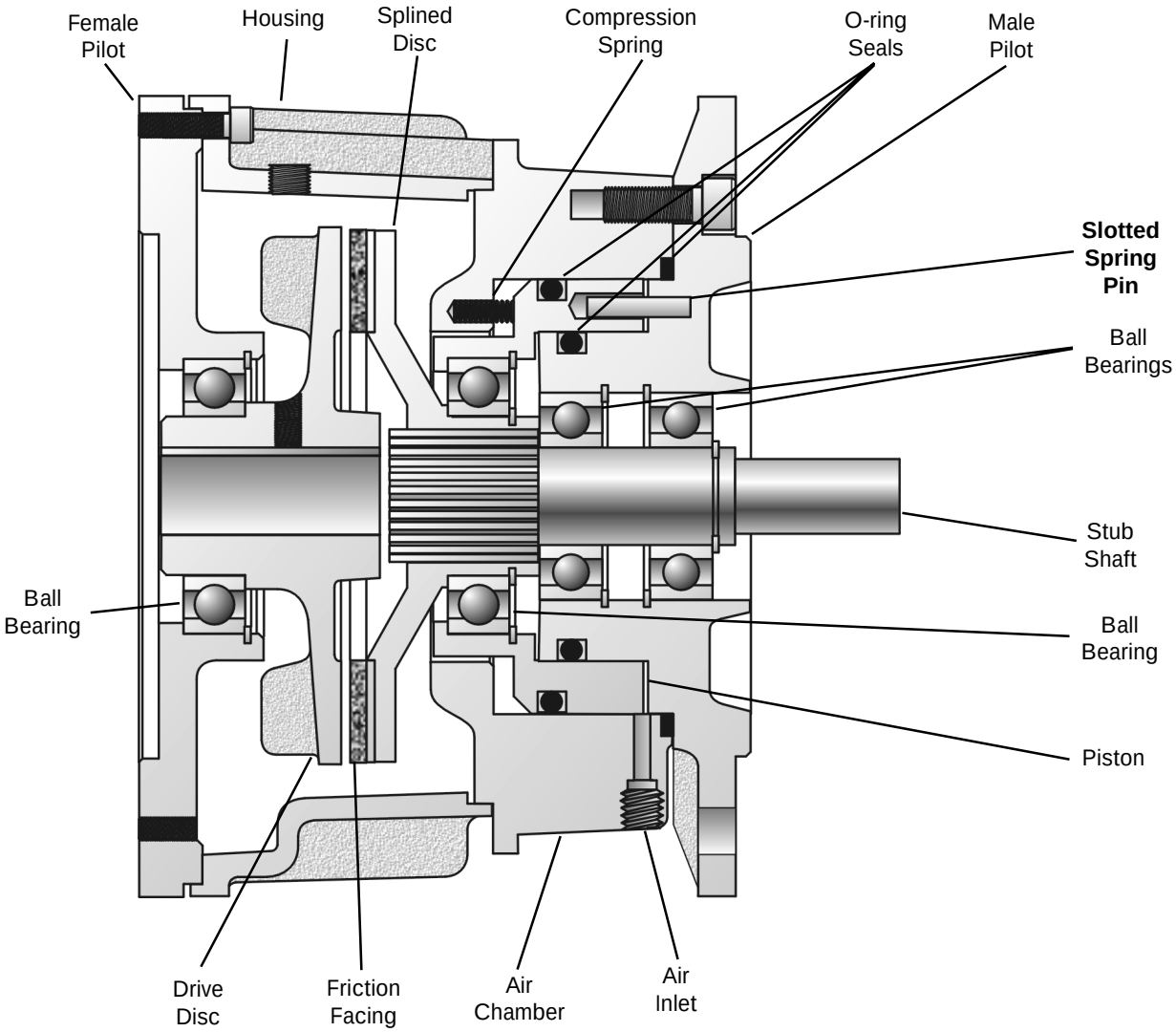


FIGURE 3

PARTS REPLACEMENT

FRICTION FACINGS

NOTE: If an Input Unit is installed on the FMCE, it must be removed before servicing the FMCE. Remove the Plug (Item 32) and loosen the Set Screw (Item 31) to release the FMCE from the Input Unit shaft (See Figure 4).

1. Remove the four Socket Head Cap Screws (Item 13) and separate the two halves of the FMCE (See Figure 4).

   NOTE: The Flat Head Screws are assembled with a anaerobic locking compound. Inserting a properly fitting screwdriver into the head of the Flat Head Screw and striking the screwdriver with a hammer will break the crystalline structure of this locking compound and allow removal of the Flat Head Screws. Never use an impact wrench to remove the Flat Head Screws.

2. Remove the six old Flat Head Screws (Item 7) and the old split Friction Facings (Item 8) (See Figure 4).

3. Install the new split Friction Facings (Item 8) and new Flat Head Screws (Item 7) (See Figure 4).

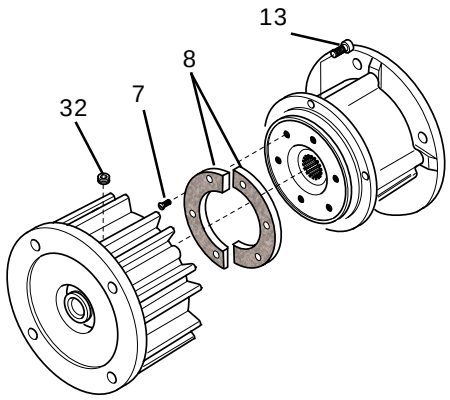


FIGURE 4

4. Tighten the six new Flat Head Screws (Item 7) to 22 In. Lbs. [2.5 N•m] torque.

5. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 13) (See Figure 4).

6. Install and tighten the four Socket Head Cap Screws (Item 13), securing the two halves of the FMCE to 24.5 Ft. Lbs. [32.2 N•m] torque.

FEMALE PILOT BALL BEARING

1. Remove the four Socket Head Cap Screws (Item 27) and slide the Female Pilot (Item 26), Ball Bearing (Item 2), and the Drive Disc (Item 4) out of the FMCE (See Figure 5).

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.

2. Remove the Retaining Ring (Item 6) (See Figure 5).

3. Press the Drive Disc (Item 4) out of the Ball Bearing (Item 2) and the Female Pilot (Item 26) (See Figure 5).

4. Remove the Retaining Ring (Item 3) (See Figure 5).

5. Fully supporting the Female Pilot (Item 26), press the old Ball Bearing (Item 2) out of the Female Pilot (Item 26) (See Figure 5).

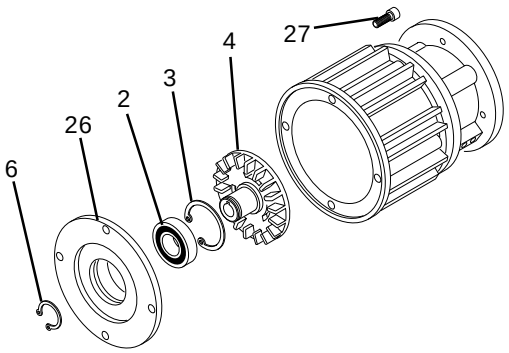


FIGURE 5

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

6. Clean the bearing bore of the Female Pilot (Item 26) with fresh solvent, making sure all old Loctite® residue is removed (See Figure 5).

7. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Ball Bearing (Item 2) (See Figure 5).

8. Carefully align the outer race of the new Ball Bearing (Item 2) with the bore of the Female Pilot (Item 26) (See Figure 5).

9. Supporting the Female Pilot (Item 26) and pressing on the outer race of the new Ball Bearing (Item 2), press the new Ball Bearing into the Female Pilot (See Figure 5).

10. Reinstall the Retaining Ring (Item 3) (See Figure 5).

11. Support the inner race of the new Ball Bearing (Item 2) and press the Drive Disc (Item 4) into the new Ball Bearing and Female Pilot (Item 26) (See Figure 5).

12. Reinstall the Retaining Ring (Item 6) (See Figure 5).

13. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 27) (See Figure 5).

14. Slide the Female Pilot (Item 26), Ball Bearing (Item 2), and Drive Disc (Item 4) into the FMCE and reinstall the four Socket Head Cap Screws (Item 27) (See Figure 5).

15. Tighten the four Socket Head Cap Screws (Item 27).

PISTON BALL BEARING AND O-RING SEALS

1. Remove the four Socket Head Cap Screws (Item 13) and separate the Air Chamber (Item 12) from the Housing (Item 1) (See Figure 6).

WARNING

Special attention should be exercised when working with spring loaded parts. Failure to follow disassembly instructions may result in serious bodily injury.

2. Remove the four Socket Head Cap Screws (Item 13) securing the Male Pilot (Item 20) to the Air Chamber (Item 12) (See Figure 6).

3. Remove the Male Pilot (Item 20) and Stub Shaft (Item 23) from the Air Chamber (Item 12) (See Figure 6).

WARNING

The Piston is spring loaded and under extreme pressure. Special attention should be also exercised when working with retaining rings. Always wear safety goggles when working with spring or tension loaded fasteners or devices. Failure to follow the disassembly instructions may result in serious bodily injury.

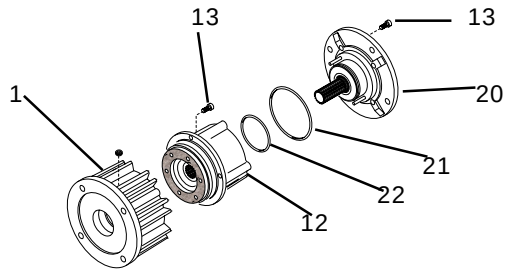


FIGURE 6

4. Using a C-clamp, press the Piston (Item 16) into the Air Chamber (Item 12).

5. Remove the Retaining Ring (Item 6) from the Splined Disc (Item 10) (See Figure 7).

6. Press the Splined Disc (Item 10) from the Ball Bearing (Item 2) (See Figure 7).

7. Slowly remove the C-clamp.

8. Remove the Piston (Item 16) and Compression Springs (Item 11) from the Air Chamber (Item 12) (See Figure 7).

9. Remove the Retaining Ring (Item 3) from the Piston (See Figure 7).

10. Remove the old O-ring Seal (Item 15) from the Piston (See Figure 7).

11. Press the Ball Bearing (Item 2) out of the Piston (Item 16) (See Figure 7).

12. Clean the bearing bore of the Piston with fresh solvent, making sure all old Loctite® residue is removed.

13. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Ball Bearing.

14. Carefully align the outer race of the new Ball Bearing (Item 2) with the bore of the Piston (Item 16) (See Figure 7).

15. Supporting the Piston and pressing on the outer race of the new Ball Bearing, press the new Ball Bearing into the Piston.

16. Reinstall the Retaining Ring (Item 3), securing the Ball Bearing to the Piston.

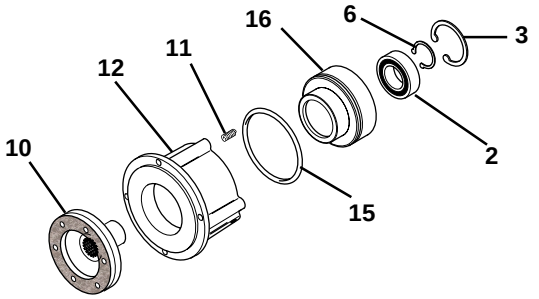


FIGURE 7

17. Coat the O-ring contact surfaces of the Air Chamber, Piston, and the O-ring Seal with a thin film of O-ring lubricant and install the new O-ring Seal (Item 15) (See Figure 7).

18. Reinstall the Compression Springs (Item 11) into the Piston (Item 16) (See Figure 7).

19. Slide the Piston (Item 16) into the Air Chamber (Item 12).

20. Use a C-clamp or arbor press with fixture to compress the Piston (Item 16) into the Air Chamber (Item 12).

21. Support the inner race of the new Ball Bearing and press the Splined Disc (Item 10) into the new Ball Bearing and Piston.

22. Reinstall the Retaining Ring (Item 6) that secures the Splined Disc to the Ball Bearing.

23. Remove the C-clamp or arbor press with fixture.

24. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 13).

25. Reinstall and tighten the four Socket Head Cap Screws, securing the Air Chamber (Item 12) to the Housing (Item 1) to 24.5 Ft. Lbs. [33.2 N•m] torque.

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 24) from the Stub Shaft (Item 23) (See Figure 8).

2. Press the Stub Shaft (Item 23) out of the Male Pilot (Item 20) (See Figure 8).

   NOTE: One old Ball Bearing (Item 19) will remain attached to the Stub Shaft (Item 23) (See Figure 8).

3. Press the old Ball Bearing from the Stub Shaft (Item 23) (See Figure 8).

4. Press the other old Ball Bearing out of the Male Pilot (Item 20) (See Figure 8).

   NOTE: It is not necessary to remove the Retaining Rings (Item 18) from the inside of the Male Pilot.

5. Clean the bearing bore of the Male Pilot with fresh solvent, making sure all old Loctite® residue is removed.

6. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of one new Ball Bearing.

7. Carefully align the outer race of the first new Ball Bearing (Item 19) with the bore of the output side of the Male Pilot. While supporting the Male Pilot and pressing on the outer race, press the new Ball Bearing until it is seated against the Retaining Ring inside the Male Pilot (See Figure 8).

8. Press the second new Ball Bearing onto the Stub Shaft (Item 23) (See Figure 8).

9. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the second new Ball Bearing.

10. Carefully align the outer race of the new Ball Bearing with the bore of the Male Pilot.

11. While pressing on the outer race of this Ball Bearing and supporting the inner race of the new Ball Bearing already in the Male Pilot, press the new Ball Bearing and Stub Shaft into the Male Pilot until it is seated against the Retaining Ring inside Male Pilot (See Figure 8).

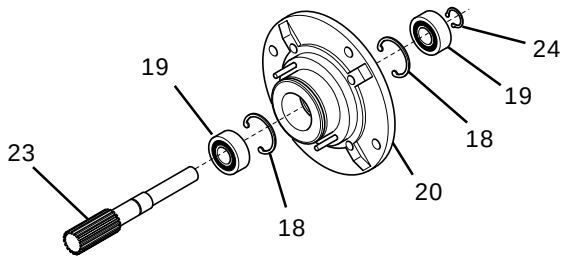


FIGURE 8

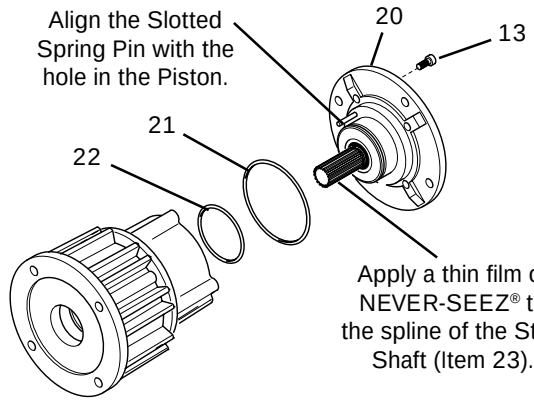


FIGURE 9

12. Reinstall the Retaining Ring (Item 24) (See Figure 8).

13. Coat the O-ring contact surfaces of the Male Pilot, Piston, and the new O-ring Seals (Items 21 and 22) with a thin film of fresh O-ring lubricant.

14. Install the new O-ring Seals onto the Male Pilot (See Figure 9).

15. Apply a thin film of NEVER-SEEZ® to the spline of the Stub Shaft (Item 23) (See Figure 9).

16. Align the Slotted Spring Pin on the Male Pilot with the hole in the Piston.

17. Slide the Male Pilot and Stub Shaft into the FMCE (See Figure 9).

18. Apply a drop of Loctite® 242 to the threads of the four Socket Head Cap Screws (Item 13).

19. Reinstall the four Socket Head Cap Screws (Item 13), securing the Male Pilot (Item 20) to the Air Chamber (Item 12) (See Figure 9).

20. Tighten the four Socket Head Cap Screws (Item 13) to 24.5 Ft. Lbs. [33.2 N•m] torque.

INPUT UNIT

NOTE: Remove the Plug (Item 32) and loosen the Set Screw (Item 31) one full turn to release the Input Unit shaft from the FMCE. The Plug (Item 32) is located on the FMCE Housing and the Set Screw (Item 31) is located in the Drive Disc.

1. Remove the Socket Head Cap Screws (Item 29) and Lock Washers (Item 30); then, remove the Input Unit from the FMCE.

2. Fully supporting the Input Unit, press the Shaft (Item 28) and Ball Bearing (Item 19) out of the Input Unit (See Figure 10).

3. Press the Ball Bearing (Item 19) off the Shaft (Item 28) (See Figure 10).

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

4. Clean the bearing bore of the Flange (Item 27) with fresh solvent, making sure all old Loctite® residue is removed.

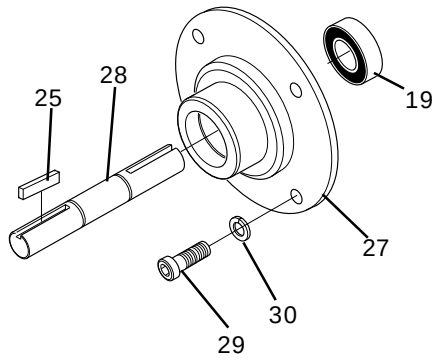


FIGURE 10

5. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Ball Bearing (Item 19) (See Figure 10).

6. Carefully align the outer race of the new Ball Bearing (Item 19) with the bore of the Flange (Item 27) and press the Ball Bearing into the Flange until it is seated (Item 24) (See Figure 10).

7. While supporting the inner race of the Ball Bearing (Item 19), press the Input Shaft (Item 28) into the Ball Bearing and Flange (Item 27).

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

INPUT UNIT

ITEM	DESCRIPTION	QTY
19[1]	Ball Bearing	1
25	Key	2
27	Flange	1
28	Shaft	1
29	Socket Head Cap Screw	4
30	Lock Washer	4
31	Hex. Nut	4

[1] Denotes Input Unit Repair Kit item / Repair Kit No. 801429.

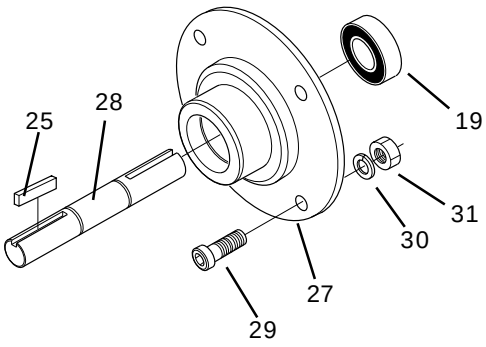


FIGURE 11

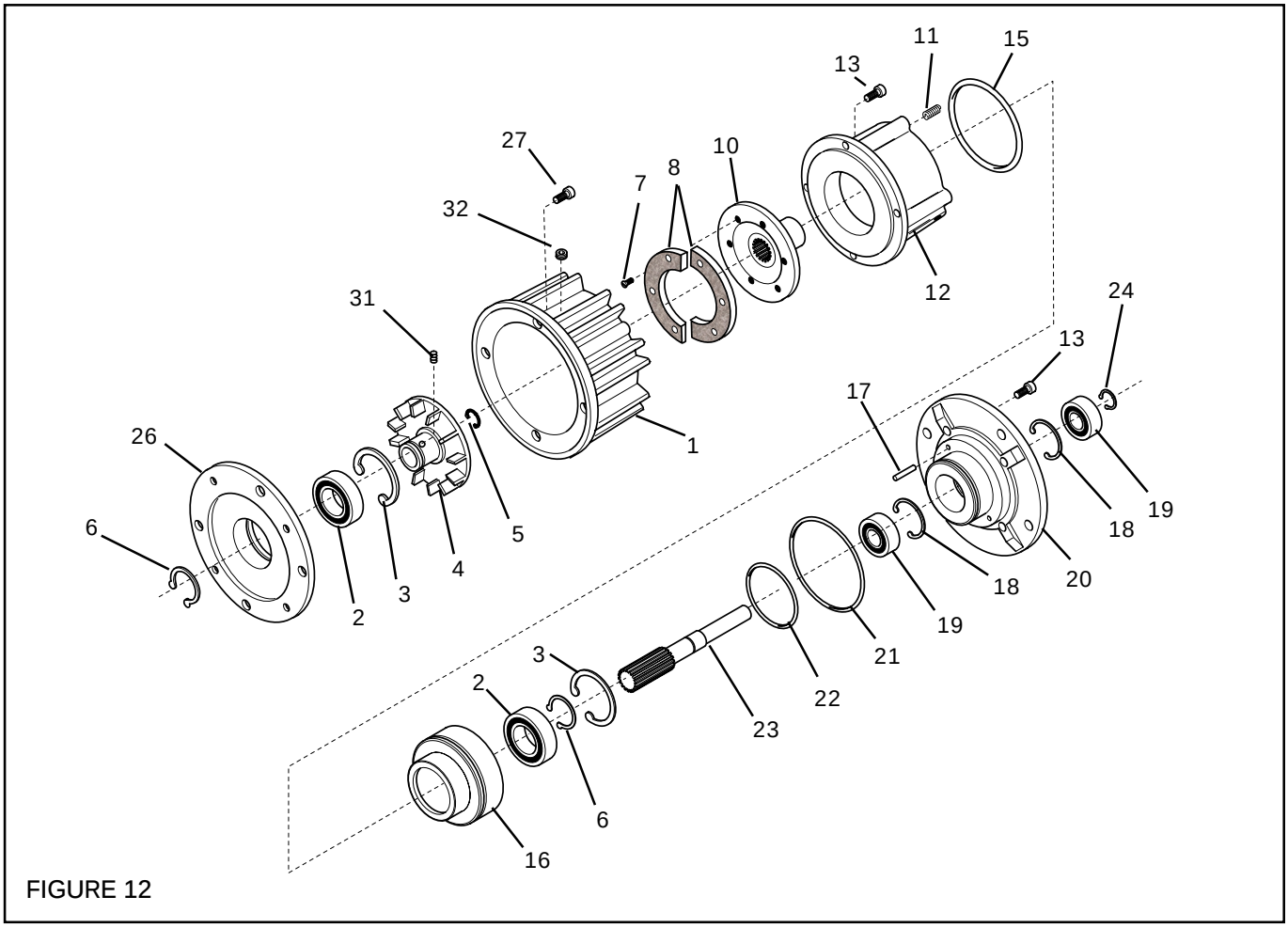


FIGURE 12

ITEM	DESCRIPTION	QTY
1	Housing	1
2[1]	Ball Bearing	2
3	Retaining Ring (Int.)	2
4	Drive Disc	1
5	Retaining Ring (Int.)	1
6	Retaining Ring (Ext.)	2
7[2]	Flat Head Screw	6
8[2]	Friction Facing (Split)	1
10	Splined Disc	1
11	Compression Spring	6
12	Air Chamber	1
13	Socket Head Cap Screw	8
15[1]	O-ring Seal	1
16	Piston	1
17	Slotted Spring Pin	1

ITEM	DESCRIPTION	QTY
18	Retaining Ring (Int.)	2
19[1]	Ball Bearing	2
20	Male Pilot	1
21[1]	O-ring Seal	1
22[1]	O-ring Seal	1
23	Stub Shaft	1
24	Retaining Ring (Ext.)	1
25	Key (Not Shown)	1
26	Female Pilot	1
27	Socket Head Cap Screw	4
28	Air Inlet Adaptor (Not Shown)	1
29	Socket Head Cap Screw (Not Shown)	4
30	Lock Washer (Not Shown)	4
31	Set Screw	1
32	Plug (0.125 NPTF)	1

[1] Denotes Repair Kit items / Repair Kit No. 801487
[2] Denotes Facing Kit items / Facing Kit No. 801477

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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