nexen®

# AIR CHAMP® PRODUCTS

User Manual

## FLANGE MOUNTED CLUTCH BRAKE

Model 1625

FORM NO. L-21070-C-0702

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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www.nexengroup.com

# 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**

# Table of Contents

## SECTION A: MOUNTING ON THE SHAFT END OF A MOTOR

**NOTE:** Refer to Figure 1.

1. Insert the customer supplied key into the motor shaft keyway.
2. Remove the four Socket Head Cap Screws, (Item 8), to separate the Female Pilot, (Item 1), from the Housing (Item 7).
3. Secure the Female Pilot (Item 7) to the motor face using Nexen supplied socket head cap screws. Tighten customer supplied cap screws to 1425 in-lbs (161 N-m).
4. Tighten the Set Screw (Item 35) to 275 in-lbs (31 N-m).
5. Secure Housing (Item 7) to the Female Pilot (Item 1) using Socket Head Cap Screws (Item 8). Apply Loctite® 242 to the threads of Item 8.
6. Tighten Socket Head Cap Screws to 509-662 in-lbs (57.5-74.8 N-m).
7. Install the Housing Guard (Item 34) over the open areas of the FMCB, and secure it using the provided fasteners.

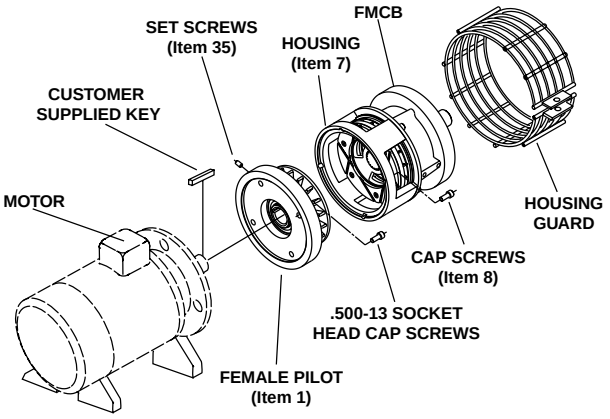


**FIGURE 1**

## SECTION B: MOUNTING BETWEEN A GEAR REDUCER AND MOTOR

**NOTE:** Refer to Figure 2.

1. Insert the Key (Item 33) into the output shaft of the FMCB-1625.
2. Slide the FMCB output shaft into the gear reducer.
3. Secure the FMCB to the gear reducer using customer supplied cap screws and lock washers.
4. Complete steps 1-7 from Section A.

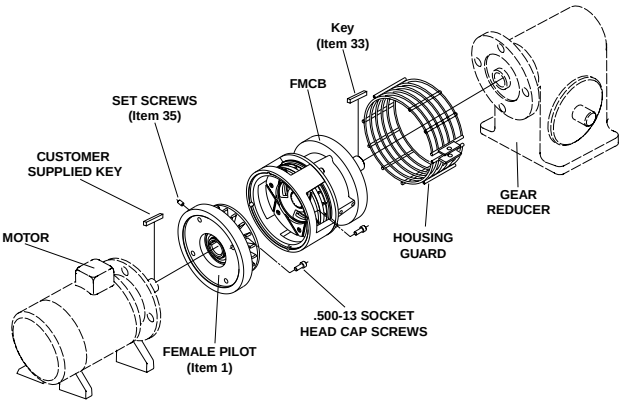


**FIGURE 2**

**(continued...)**

## SECTION C: OPTIONAL INPUT UNIT AND FEET

**NOTE:** Refer to Figures 1 and 3.

**NOTE:** Use Loctite® 242 on all Socket Head Cap Screws.

1. Remove the four Socket Head Cap Screws (Item 8) and separate the Female Pilot (Item 1) from the Housing (Item 7).
2. Place Key (Item 19) into the keyway of the Input Unit.
3. Slide the Female Pilot (Item 1) onto the Input Unit. Secure the Input Unit and the Mounting Foot to the Female Pilot (Item 1) using four Socket Head Cap Screws (Items 39 and 40). Tighten the Socket Head Cap Screws to 1425 in-lbs (161 N-m).
4. Tighten the Set Screw (Item 35) to 275 in-lbs (31 N-m).
5. Secure the second Mounting Foot (Item 38) to the FMCB Assembly.
6. Secure the Female Pilot (Item 1) assembly to the FMCB Assembly (Item 7) with the Socket Head Cap Screws (Item 8). Tighten to 509-662 in-lbs (57.5-74.8 N-m).

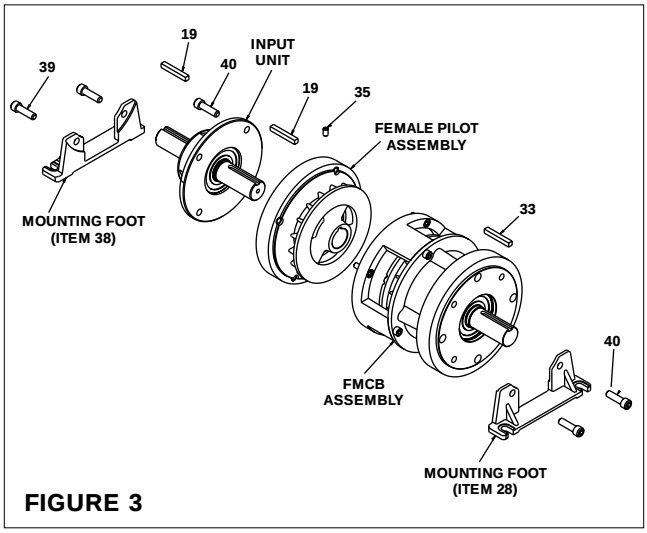


**FIGURE 3**

# AIR CONNECTIONS

For a faster response, Nexen recommends a quick exhaust valve and short air lines between the Control Valves and the FMCB. Align the air inlet ports to a down position to allow condensation to drain out of the air chambers. The FMCB has 1/8 - 27 NPT ports.

## 4-WAY CONTROL VALVE

**NOTE:** Refer to Figure 4

1. If the brake is to be set when the solenoid is de-energized, connect the port marked **2** to the brake and the port marked **4** to the clutch**.**
2. Connect the air supply line to the inlet port (marked **1**).

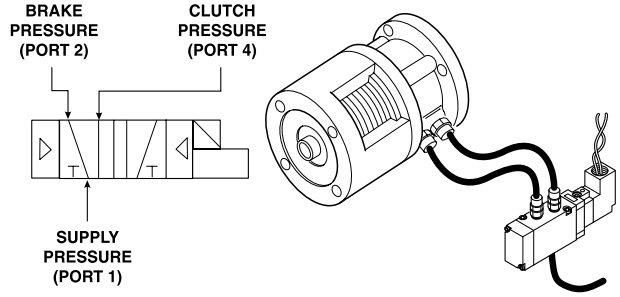


**FIGURE 4**

## 5-WAY CONTROL VALVE

**NOTE:** Refer to Figure 5

1. If the brake is to be set and the clutch is to be **OFF** when the solenoid is de-energized, connect the port marked **4** to the brake and the port marked **2** to the clutch.
2. Connect the brake air supply line to the port marked **5** and the clutch air supply line to the port marked **3**.

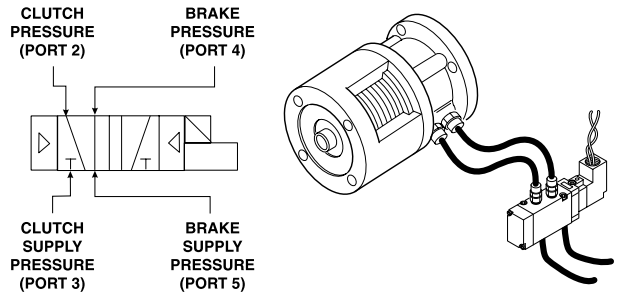


**FIGURE 5**

## 3-WAY CONTROL VALVES

**NOTE**: Refer to Figure 6

1. Install a 3-Way N.O. Control into the brake inlet port and a 3-Way N.C. Control into the clutch inlet port.
2. Connect an air supply line to the inlet port (marked **IN**) on top of the 3-Way N.O. Control and an air supply line to the inlet port (marked **IN**) on the side of the 3-Way N.C. Control.

**NOTE**

When a 3-Way N.O. Control is de-energized, air flows directly to the brake. When a 3-Way N.O. Control is energized, air exhausts from the brake.

When a 3-Way N.C. Control is de-energized, air exhausts from the clutch. When a 3-Way Control is energized, air flows to the clutch.

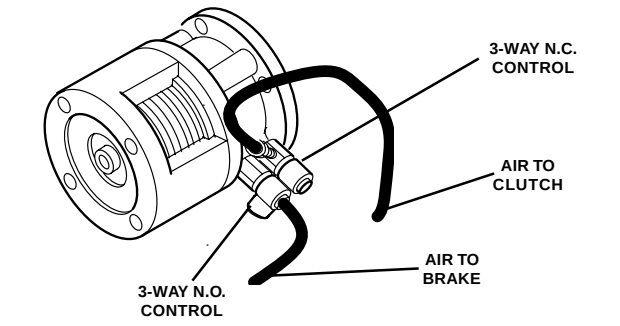


**FIGURE 6**

# 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 the FMCB is with an Air Line Lubricator, which injects oil into the pressurized air, forcing an oil mist into the air chamber.**

**Place the lubricator above and within ten feet of the FMCB. 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 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 counterclockwise until closed.
7. Turn the Lubricator Adjustment Knob clockwise one-third of a turn.
8. Open the air line to the unit.

| SYMPTOM | PROBABLE CAUSE | SOLUTION |
|---|---|---|
| Failure to engage. | Air not getting to the FMCB due to a control valve malfunction. | Check for a control valve malfunction or low air pressure, and replace the control valve if necessary. |
| | Lack of lubrication on Stub Shaft spline. | Lubricate 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. |
| | Lack of lubrication on Stub Shaft spline. | Lubricate Stub Shaft spline. |
| Loss of torque. | Air leaks around the O-ring Seals. | Replace the O-ring Seals. |
| | Worn or dirty Friction Facings. | Replace the Friction Facings. |

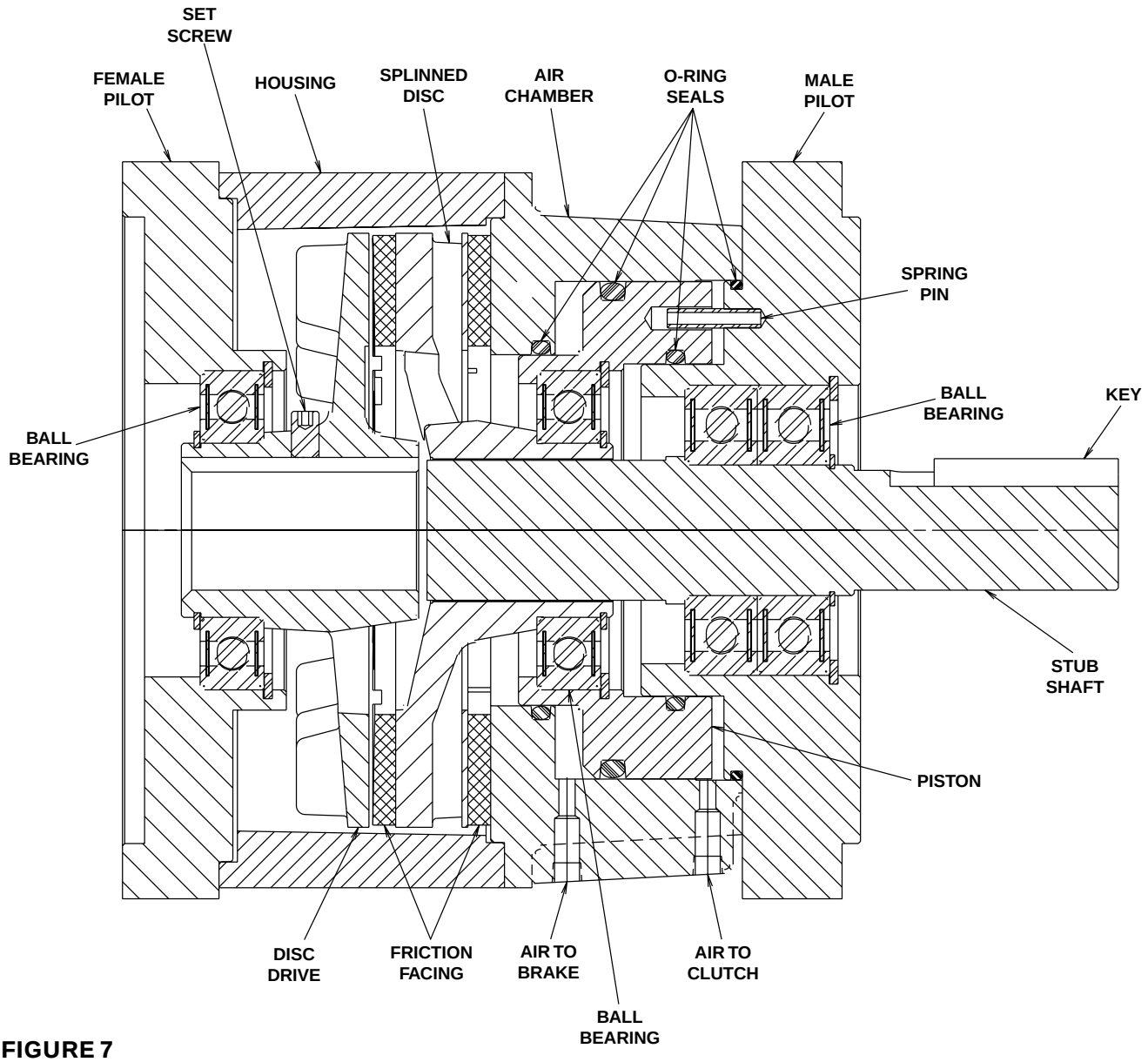


FIGURE 7

## REPLACEMENT PROCEDURE–FRICTION FACINGS

1. Remove the four Socket Head Cap Screws (Item 15) and separate the two halves of the FMCB (See Figure 8).
2. Remove the six old Flat Head Screws (Item 12) and the first old Friction Facing (Item 11) (See Figure 9).
3. Align the holes in the Splined Disc (Item 9) with the Flat Head Screws (Item 12) that secure the second split Friction Facing (Item 13) (See Figure 9).
4. Remove the six old Flat Head Screws (Item 12) and the second old Friction Facing (Item 13) (See Figure 9).
5. Install the first new split Friction Facing (Item 13) and new Flat Head Screws (Item 12).
6. Tighten the six new Flat Head Screws (Item 12) to 36 in-lbs (4.0 N-m) torque.
7. Install the second new Friction Facing (Item 11) and new Flat Head Screws (Item 12) (See Figure 9).
8. Tighten the six new Flat Head Screws (Item 12) to 36 in-lbs (4.0 N-m) torque.
9. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 15) (See Figure 8).
10. Install and tighten the four Socket Head Cap Screws securing the two halves of the FMCB to 509 in-lbs (57.5 N-m) torque.

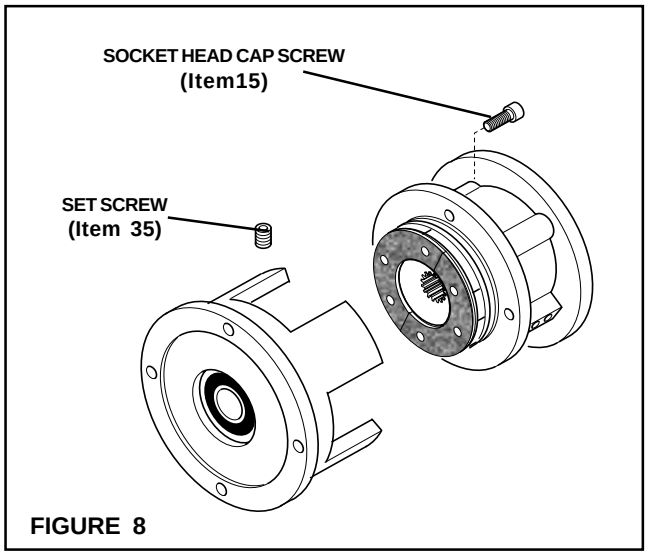

FIGURE 8

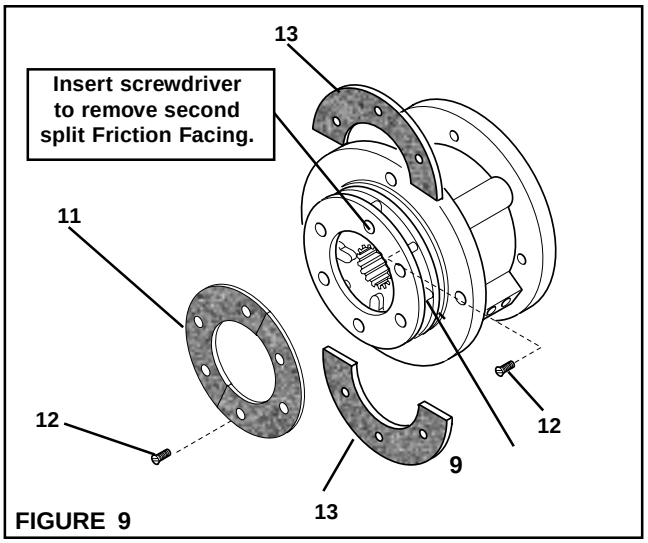

FIGURE 9

# REPLACEMENT PROCEDURE–FEMALE PILOT BEARING

FMCB 1625

**NOTE:** Refer to Figure 10.

1. Remove the four Socket Head Cap Screws (Item 8) and slide the Female Pilot (Item 1), Bearing (Item 2), and the Drive Disc (Item 4) out of the FMCB.

**WARNING**

**Always wear safety goggles when working with spring or tension loaded fasteners or devices, such as the retaining rings.**

2. Remove the Retaining Ring (Item 6).

3. Press the Drive Disc (Item 4) out of the Bearing (Item 2) and the Female Pilot (Item 1).

4. Remove the Retaining Ring (Item 3).

5. Fully supporting the Female Pilot (Item 1), press the old Bearing (Item 2) out of the Female Pilot (Item 1) .

**NOTE**

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

6. Clean the bearing bore of the Female Pilot (Item 1) with fresh safety solvent, making sure all old Loctite® residue is removed.

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

8. Carefully align the outer race of the new Bearing (Item 2) with the bore of the Female Pilot (Item 1).

9. Supporting the Female Pilot (Item 1) and pressing on the outer race of the new Bearing (Item 2), press the new Bearing into the Female Pilot.

10. Reinstall the Retaining Ring (Item 3).

11. Support the inner race of the new Bearing (Item 2) and press the Drive Disc (Item 4) into the new Bearing (Item 2) and the Female Pilot (Item 1).

12. Reinstall the Retaining Ring (Item 6).

13. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 8).

14. Slide the Female Pilot (Item 1), Bearing (Item 2), and Drive Disc (Item 4) into the FMCB and reinstall the four Socket Head Cap Screws (Item 8).

15. Tighten the four Socket Head Cap Screws (Item 8) to 509 in-lbs (57.5 N-m).

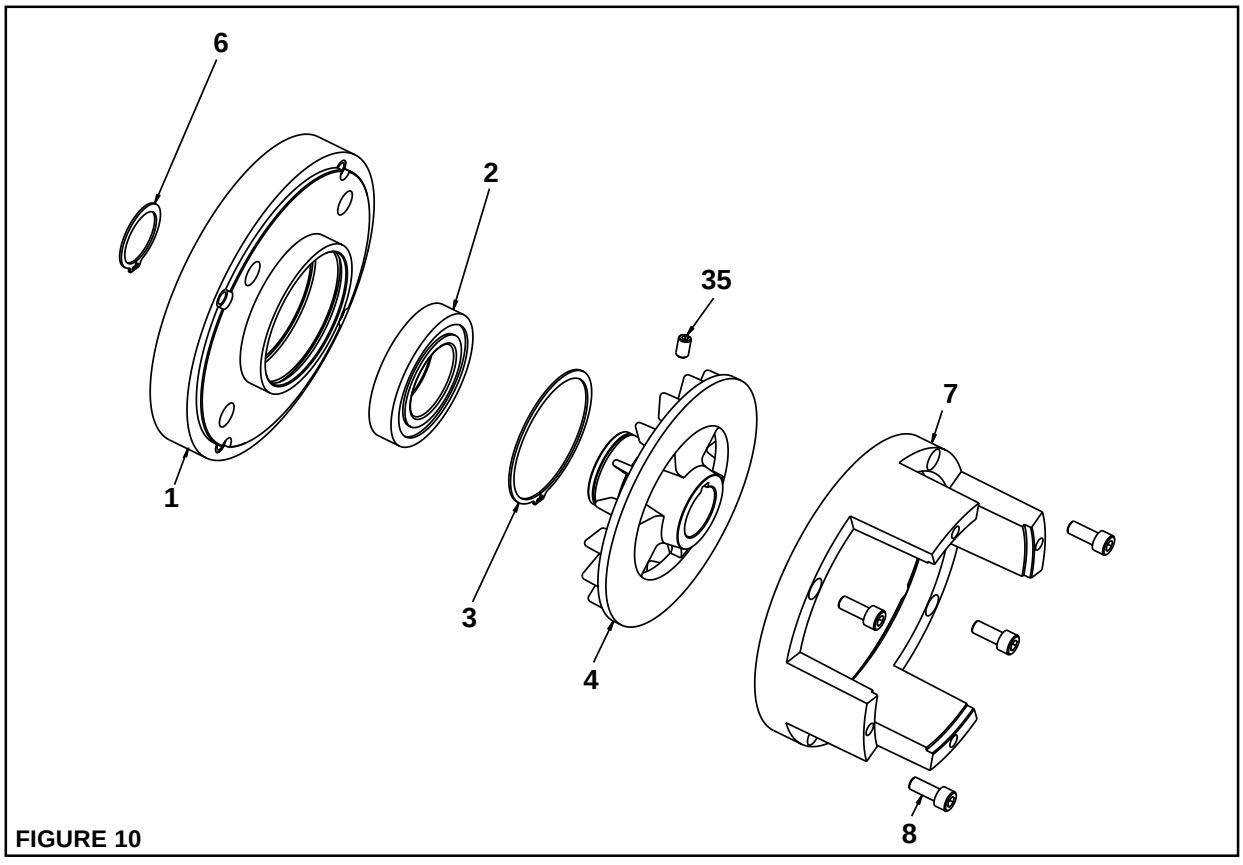


**FIGURE 10**

# REPLACEMENT PROCEDURE–PISTON BEARING AND O-RING SEALS

FMCB 1625

1. Remove the four Socket Head Cap Screws (Item 15) that secure the Air Chamber (Item 14) to the Housing (Item 7) (See Figure 11).

2. Remove the four Socket Head Cap Screws (Item 15) that secure the Male Pilot (Item 27) to the Air Chamber (Item 14) (See Figure 11).

3. Remove the Male Pilot (Item 27) and Stub Shaft (Item 31) from the Air Chamber (See Figure 11).

**WARNING**

**Always wear safety goggles when working with spring or tension loaded fasteners or devices, such as the retaining rings.**

4. Remove the Retaining Ring (Item 6) from the Splined Disc (Item 9) (See Figure 12).

5. Press the Splined Disc (Item 9) out of the Bearing (Item 2) and Piston (Item 17) (See Figure 12).

6. Remove the Piston (Item 17) from the Air Chamber (Item 14) (See Figure 12).

7. Remove the old O-ring Seals (Items 16, 21 & 23) from the Piston and Air Chamber (See Figure 12).

8. Remove the Retaining Ring (Item 3) from the Piston (Item 17) (See Figure 12).

9. Press the Bearing (Item 2) out of the Piston (Item 17) (See Figure 12).

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

11. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Bearing (Item 2).

12. Carefully align the outer race of the new Bearing (Item 2) with the bore of the Piston (Item 17).

13. Supporting the Piston (Item 17) and pressing on the outer race of the new Bearing, press the new Bearing into the Piston (See Figure 12).

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

15. Coat the o-ring contact surfaces of the Air Chamber (Item 14), Piston (Item 17), Male Pilot (Item 27) and the new O-ring Seals (Items 16, 21, 23, and 24) with a thin film of o-ring lubricant and install the new O-ring Seals (See Figure 11 and 12).

16. Slide the Piston (Item 17) into the Air Chamber (Item 14).

17. Support the inner race of the Bearing (Item 2) and press the Splined Disc (Item 9) into the Bearing and Piston (Item 17).

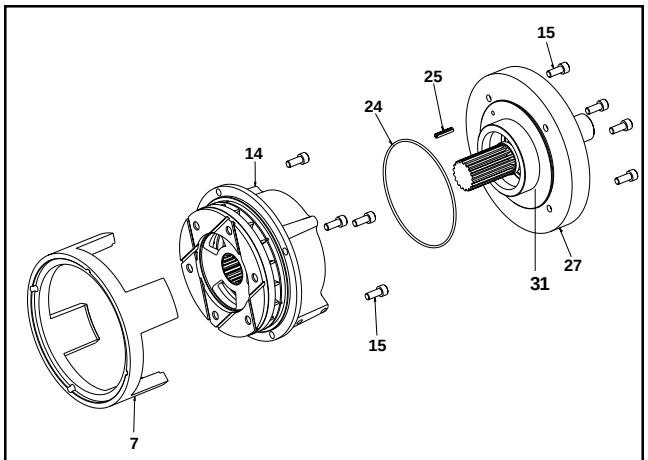


**FIGURE 11**

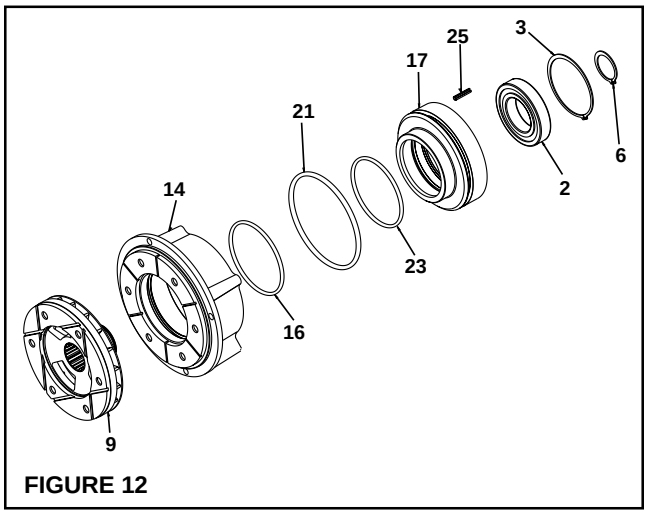


**FIGURE 12**

18. Reinstall the Retaining Ring (Item 6) that secures the Splined Disc to the Bearing (Item 2).

19. Align the Spring Pin (Item 25) in the Male Pilot (Item 27) with the hole in the Piston (Item 17); then, slide the Male Pilot into the Piston (See Figure 11 and 12).

20. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 8) (See Figure 12).

21. Reinstall and tighten the four Socket Head Cap Screws securing the Male Pilot (Item 27) to the Air Chamber (Item 14) to 509 in-lbs (57.5 N-m).

22. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 8 ) (See Figure 11).

23. Reinstall and tighten the four Socket Head Cap Screws (Item 15) securing the Air Chamber (Item 14) to the Housing (Item 7) to 509 in-lbs (57.5 N-m).

# REPLACEMENT PROCEDURE–MALE PILOT BEARINGS

FMCB 1625

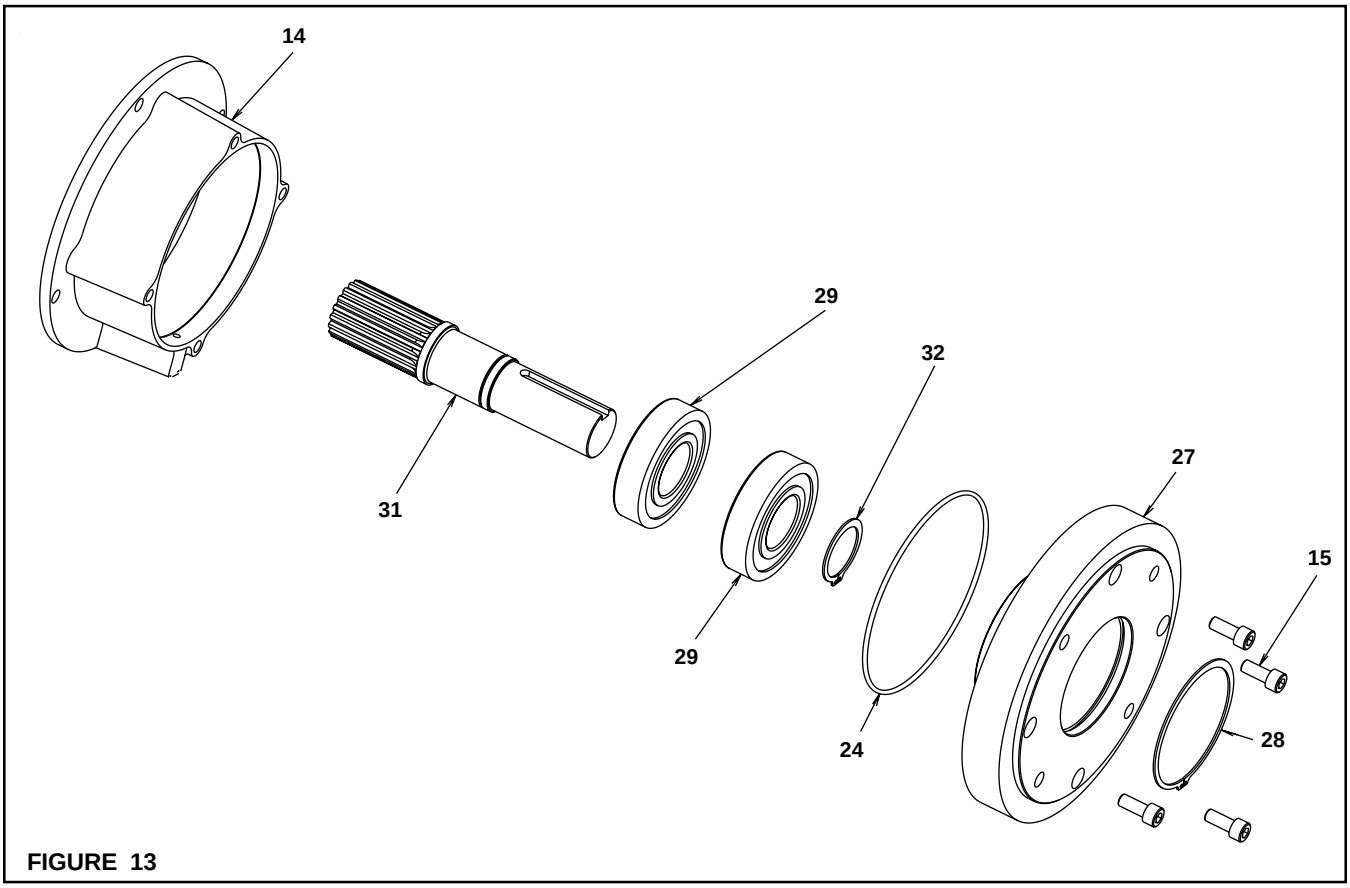


**FIGURE 13**

**WARNING**

**Always wear safety goggles when working with spring or tension loaded fasteners or devices, such as the Retaining Rings.**

Refer to Figure 13

1. Remove the Retaining Ring (Item 32) from the Stub Shaft (Item 31).
2. Press the Stub Shaft (Item 31) out of the Male Pilot (Item 27).
3. Remove the Retaining Ring (Item 28) from the Male Pilot (Item 27) and press the old Bearings (Item 29) out of the Male Pilot (Item 27).
4. Clean the bearing bore of the Male Pilot (Item 27) with fresh safety solvent, making sure all old Loctite® residue is removed.
5. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of new Bearings (Item 29).
6. Carefully align the outer race of the new Bearings (Item 29) with the bore of the Male Pilot (Item 27).
7. Press the new Bearings (Item 29) into the Male Pilot (Item 27).
8. Reinstall the Retaining Rings (Item 28 and 32).
9. Apply a thin film of NEVER-SEEZ® to evenly coat the spline of the Stub Shaft (Item 31).
10. Slide the Male Pilot (Item 27) and the Stub Shaft (Item 31) into the Air Chamber (Item 14), aligning the Spring Pin (Item 25) in the Male Pilot (Item 27) with a hole in the Piston (Item 17). (See Figures 10 & 11)
11. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 8).
12. Reinstall the four Socket Head Cap Screws (Item 8) securing the Male Pilot (Item 27) to the Air Chamber (Item 14).
13. Tighten the four Socket Head Cap Screws to 509 in-lbs (57.5 N-m).

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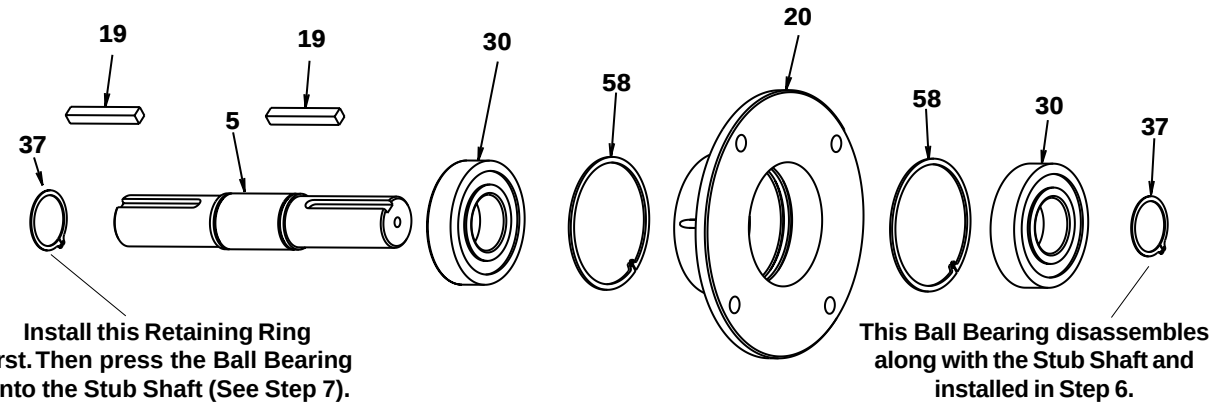


**FIGURE 14**

WARNING

Always wear safety goggles when working with spring or tension loaded fasteners or devices, such as the retaining rings.

Refer to Figure 14

1. Remove both Retaining Rings (Item 37).

2. With face of Bearing Flange (the side without ribs) (Item 20) facing downward and fully supported, press Stub Shaft (Item 5) down and out of the Bearing Flange.

NOTE

One Ball Bearing (Item 30) will come out with the Stub Shaft (Item 5).

3. Remove the first old Ball Bearing (Item 30) from the Stub Shaft (Item 5).

NOTE

Do not remove the two Retaining Rings (Item 58) from the Bearing Flange (Item 20).

4. Press the second old Ball Bearing (Item 30) out of the Bearing Flange (Item 20).

5. Clean the bore of the Bearing Flange (Item 20) 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 the first new Ball Bearing (Item 30). Then press this Ball Bearing into the Bearing Flange (Item 20) until it is seated against the Retaining Ring (Item 58).

7. Reinstall the first Retaining Ring (Item 37) on Stub Shaft (Item 5) (See Figure 13).

8. Fully support the inner bearing race of the second new Ball Bearing (Item 30), and press it onto the Stub Shaft (Item 5) until it is seated against the Retaining Ring (Item 37).

9. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the second new Ball Bearing (Item 30).

10. Supporting the inner race of the Ball Bearing located in the Bearing Flange (Item 20), press the second new Ball Bearing (Item 30) and Stub Shaft (Item 5) into the Bearing Flange and Ball Bearing until the second new Ball Bearing is seated against the Retaining Ring (Item 58).

11. Reinstall the second Retaining Ring (Item 37).

FMCB 1625

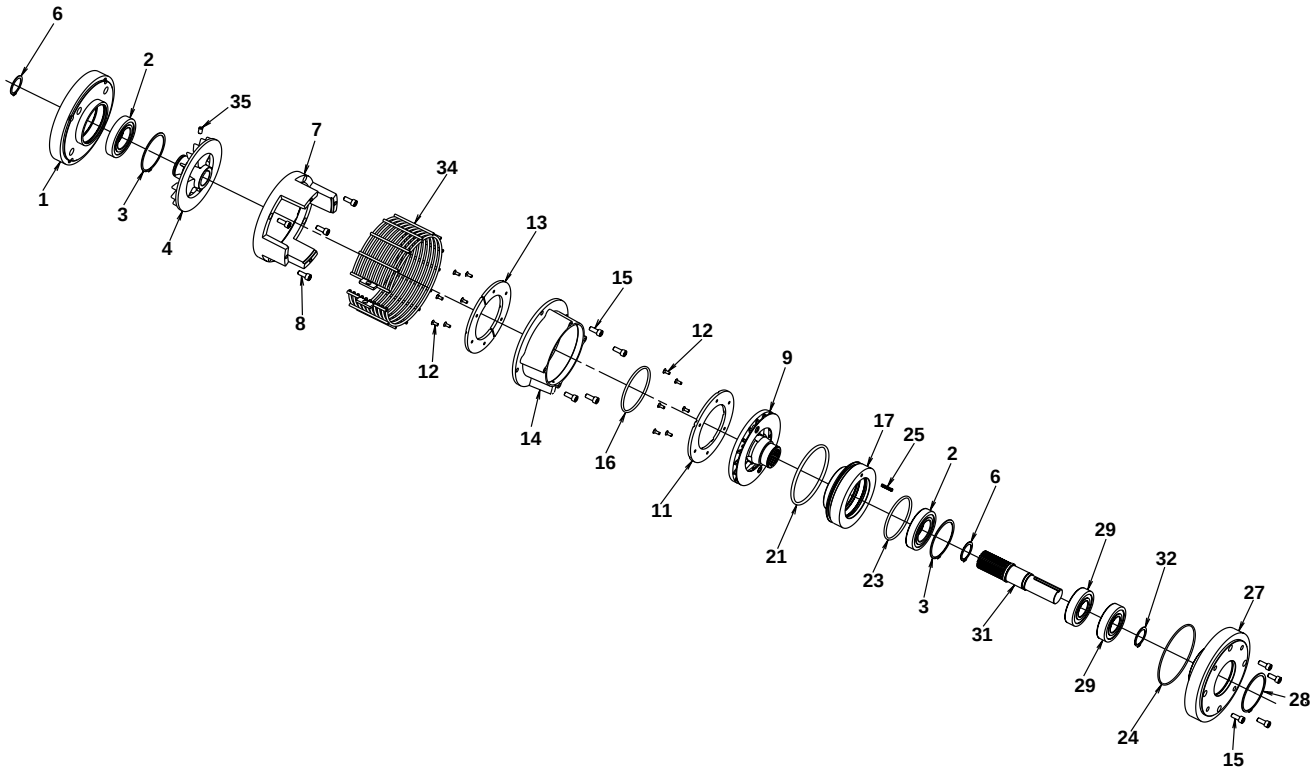


**FIGURE 15**

| ITEM | DESCRIPTION | QTY |
|---|---|---|
| 1 | Female Pilot | 1 |
| 2[1] | Bearing | 2 |
| 3 | Retaining Ring (Int.) | 2 |
| 4 | Drive Disc | 1 |
| 6 | Retaining Ring (Ext.) | 2 |
| 7 | Housing | 1 |
| 8 | Socket Head Cap Screw (M10-1.5) | 4 |
| 9 | Splined Disc | 1 |
| 11[2] | Friction Facing (Clutch) | 1 |
| 12[2,3] | Flat Head Screw (M6-1.0) | 12 |
| 13[3] | Split Friction Facing (Brake) | 1 |
| 14 | Air Chamber | 1 |
| 15 | Socket Head Cap Screw (M10-1.5) | 8 |

| ITEM | DESCRIPTION | QTY |
|---|---|---|
| 16[1] | O-ring Seal | 1 |
| 17 | Piston | 1 |
| 21[1] | O-ring Seal | 1 |
| 23[1] | O-ring Seal | 1 |
| 24[1] | O-ring Seal | 1 |
| 25 | Slotted Spring Pin | 1 |
| 27 | Male Pilot | 1 |
| 29[1] | Bearing | 2 |
| 31 | Stub Shaft | 1 |
| 32 | Retaining Ring (Ext.) | 1 |
| 33 | Key (Not Shown) | 1 |
| 34 | Housing Guard | 1 |
| 35 | Set Screw (.375-16) | 1 |

[1] Denotes Repair Kit items:
Repair Kit No. 801742
[2] Denotes Clutch Facing Kit items:
Clutch facing Kit No. 801650
[3] Denotes Brake Facing Kit items:
Brake facing Kit. No. 801649

(Reference Lit. # 20179, page 24)

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INPUT UNIT

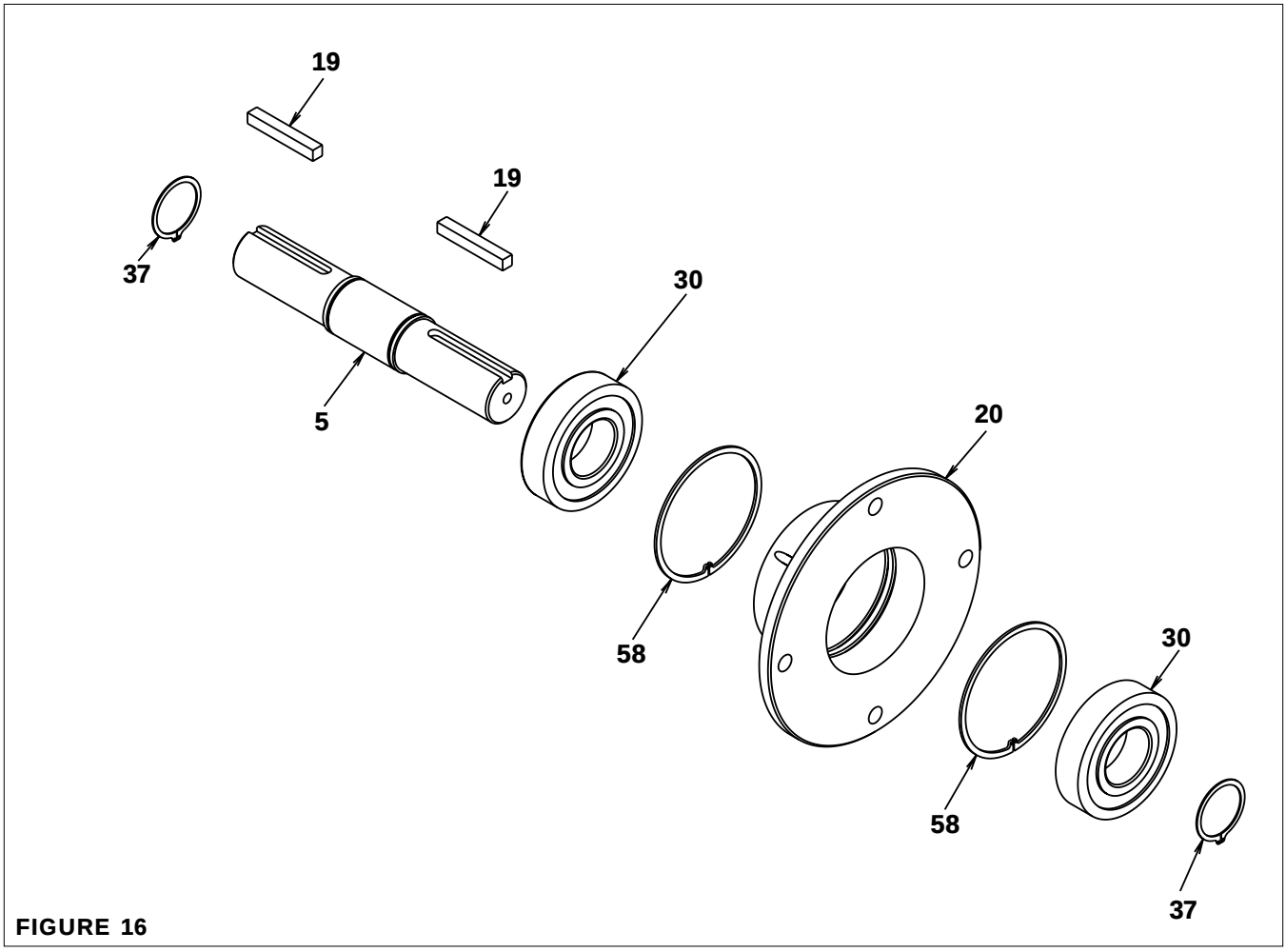


**FIGURE 16**

| ITEM | DESCRIPTION | QTY |
|---|---|---|
| 5 | Shaft | 1 |
| 19 | Key | 2 |
| 20 | Bearing Flange | 1 |
| 30 | Bearing | 2 |
| 37 | Retaining Ring (exterior) | 2 |
| 58 | Retaining Ring (interior) | 2 |

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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.

nexen

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