nexen®

AIR CHAMP® PRODUCTS

User Manual

Metric Flange Mounted Clutch-Brake

FMCB: 130-19, 130-24, 7-28, 7-38, 8-38, and 8-42

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FORM NO. L-20179-F-1002

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

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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.

Nexen Group, Inc.
560 Oak Grove Parkway
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ISO 9001 Certified

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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 FMCB onto the motor shaft, then secure it to the motor using customer supplied socket head cap screws and lock washers (See Figure 1).
3. Tighten the Set Screw (See Figure 1).

NOTE: On Models 130-19 and 130-24, the Set Screw is Item 27. On all other models, the Set Screw is Item 35.

4. Install the Housing Guard over the open areas of the FMCB and secure it using the fasteners provided with the Housing Guard (See Figure 1).

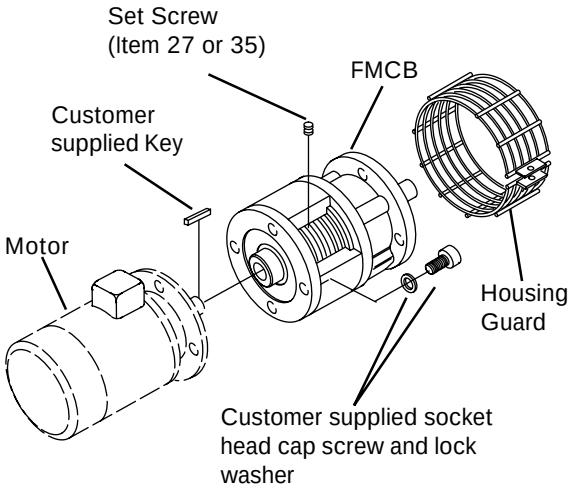


Figure 1

MOUNTED BETWEEN A GEAR REDUCER AND A MOTOR

1. Insert the Key (Item 25 or 33) into the output shaft of the FMCB (See Figure 2).

NOTE:On Models 130-19 and 130-24, the Key is Item 25. On all other models, the Key is Item 33.

2. Slide the FMCB output shaft into the gear reducer (See Figure 2).
3. Secure the FMCB 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 FMCB and secure it to the FMCB using customer supplied socket head cap screws, lock washers, and nuts (See Figure 2).
6. Tighten the Set Screw (See Figure 2).

NOTE:On Models 130-19 and 130-24, the Set Screw is Item 27. On all other models, the Set Screw is Item 35.

7. Install the Housing Guard over the open areas of the FMCB and secure it using the fasteners provided with the Housing Guard (See Figure 2).

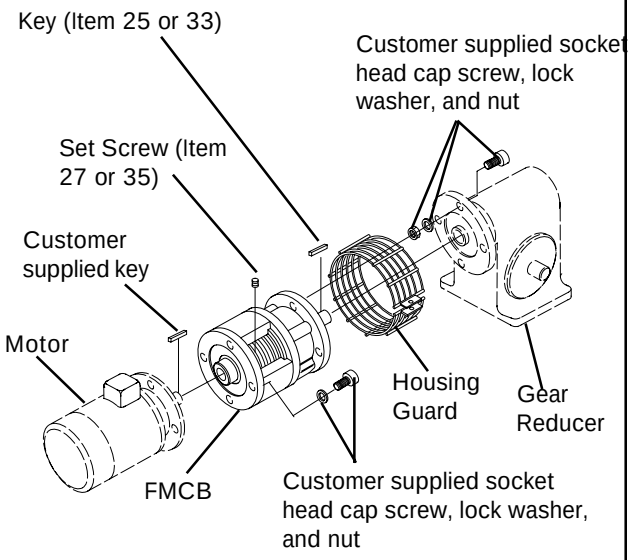


Figure 2

AIR CONNECTIONS

NOTE: For quick 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 metric FMCB has ISO 7/1-Rc 1/8 ports.

4-WAY CONTROL VALVE

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 (See Figure 3).
2. Connect the air supply line to the inlet port (marked 1) (See Figure 3).

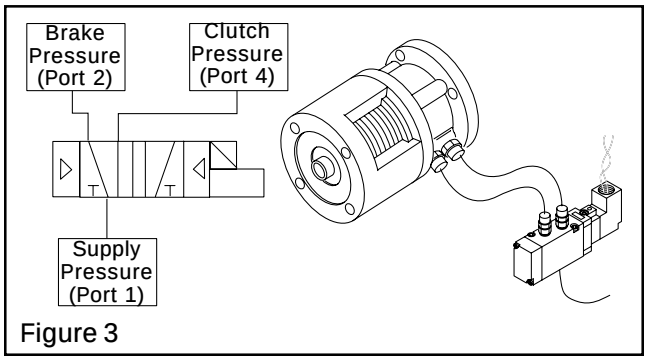


Figure 3

5-WAY CONTROL VALVE

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 (See Figure 4).
2. Connect the brake air supply line to the port marked 5 and the clutch air supply line to the port marked 3 (See Figure 4).

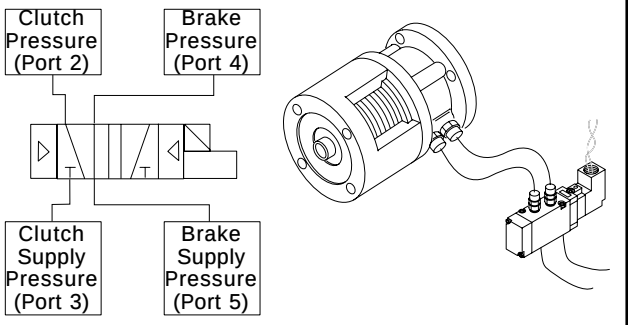


Figure 4

3-WAY CONTROL VALVES

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 (See Figure 5).
2. Connect the 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 (See Figure 5).

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.

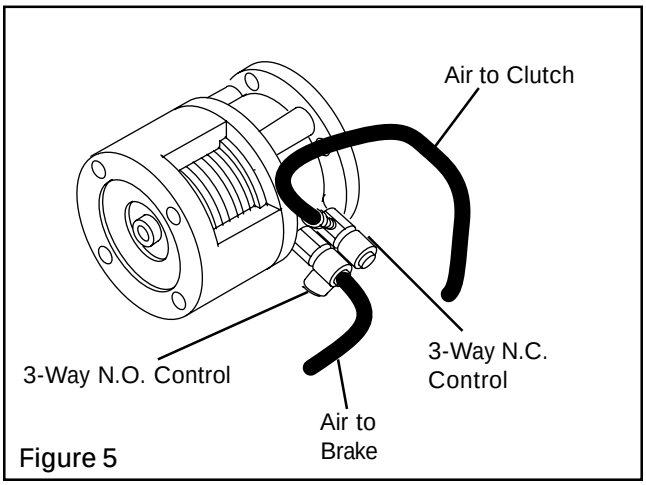


Figure 5

LUBRICATION

NOTE: Pneumatically actuated decived requre clean, pressure regulated, and lubricated air for maximum performance and long life. The most effective and economical way to lubricate the Metric FMCB is with an Air Line Lubricator, which injects oil into the pressurized air, forcing an oil mist into the air chamber.

Located the lubricator above and within ten feet of the Metric FMCB, 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 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.

TROUBLESHOOTING

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	Replase 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.

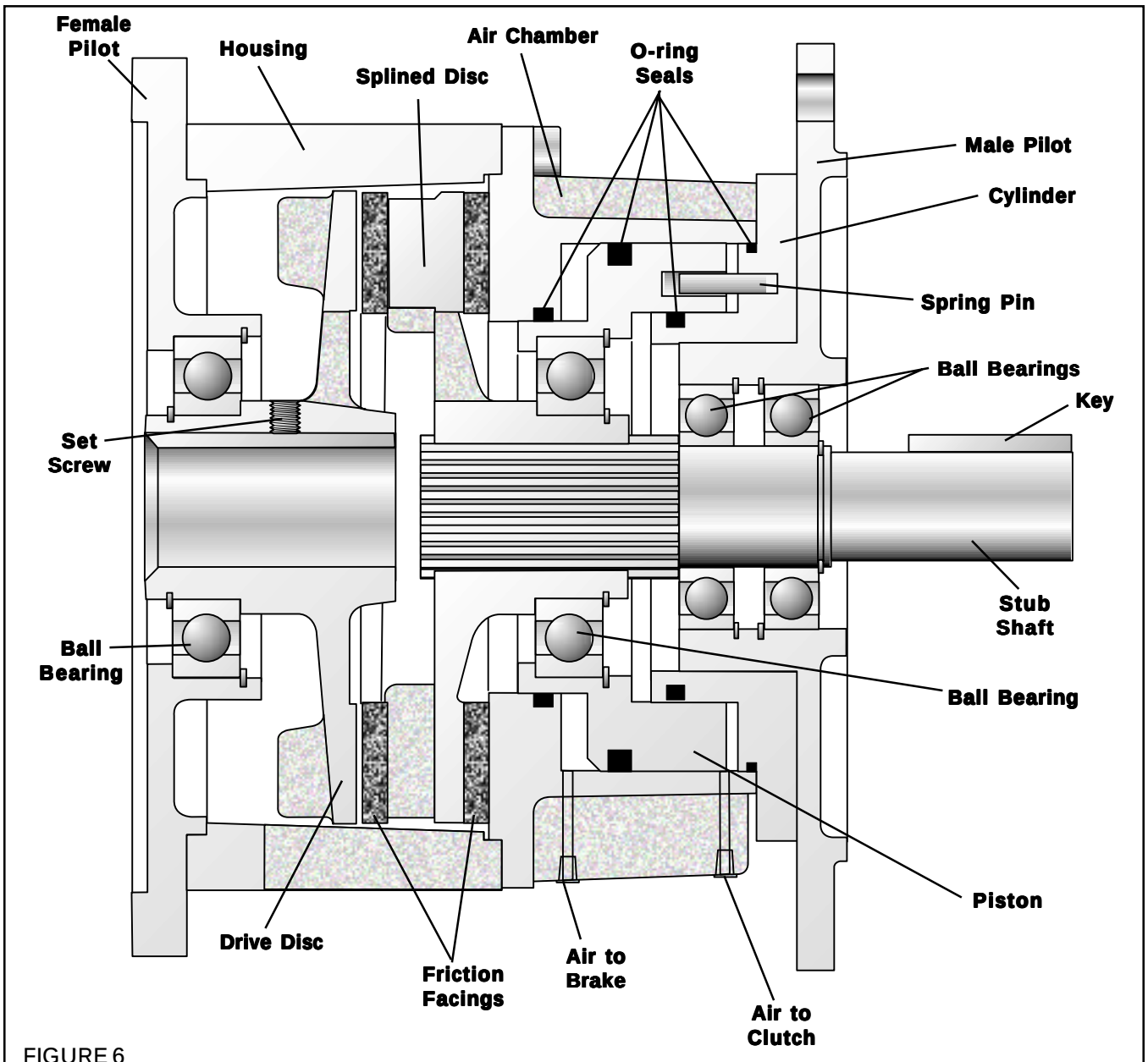


FIGURE 6

NOTE: The following sections are arranged by model. Verify that you are in the correct section for your model.

FRICTION FACINGS

FMCB 130-19 AND 130-24

NOTE: If an Input Unit is installed on the FMCB, it must be removed before servicing the FMCB. Loosen the Set Screw (Item 27) to release the FMCB from the Input Unit shaft (See Figure 7).

1. Remove the four Socket Head Cap Screws (Item 13) and separate the two halves of the FMCB (See Figure 7).
2. Remove the six old Flat Head Screws (Item 7) and the first old Friction Facing (Item 8) (See Figure 8).
3. Align the holes in the Splined Disc (Item 9) with the Flat Head Screws (Item 7) that secure the second split Friction Facing (Item 11) (See Figure 8).
4. Remove the six old Flat Head Screws (Item 7) and the second old Friction Facing (Item 11) (See Figure 8).
5. Install the first new split Friction Facing (Item 11) and six new Flat Head Screws (Item 7).
6. Tighten the six new Flat Head Screws (Item 7) to 2.5 Nm [22 in-lb] torque.
7. Install the second new Friction Facing (Item 8) and six new Flat Head Screws (Item 7) (See Figure 8).
8. Tighten the six new Flat Head Screws (Item 7) to 2.5 Nm [22 in-lb] torque.
9. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 13) (See Figure 7).
10. Install and tighten the four Socket Head Cap Screws (Item 13) securing the two halves of the FMCB to 33.2 Nm [24.5 ft-lb] torque.

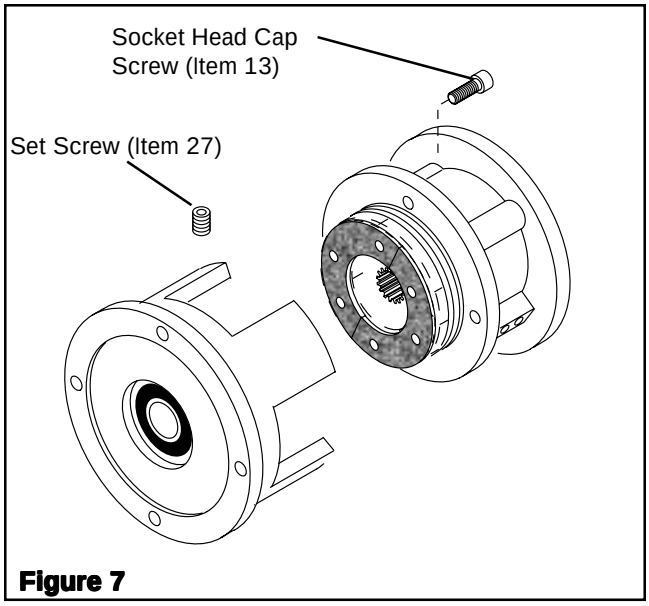


Figure 7

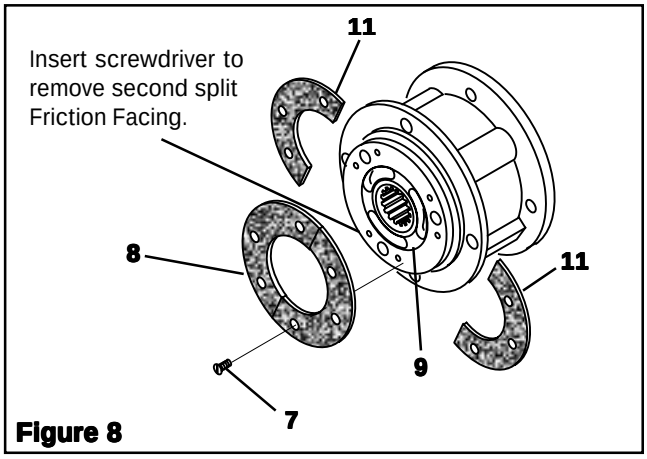


Figure 8

FMCB 7-28, 7-38, 8-38, AND 8-42

NOTE: If an Input Unit is installed on the FMCB, it must be removed before servicing the FMCB. Loosen the Set Screw (Item 35) to release the FMCB from the Input Unit shaft (See Figure 9).

On Models 7-28 and 7-38, the Socket Head Cap Screws are Item 8. On Models 8-38 and 8-42, the Socket Head Cap Screws are Item 15.

1. Remove the four Socket Head Cap Screws and separate the two halves of the FMCB (See Figure 9).
2. Remove the six old Flat Head Screws (Item 12) and the first old Friction Facing (Item 11) (See Figure 10).
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 10).
4. Remove the six old Flat Head Screws (Item 12) and the second old Friction Facing (Item 13) (See Figure 10).
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 4.0 Nm [36 in-lb] torque.
7. Install the second new Friction Facing (Item 11), new Flat Head Screws (Item 12), and Backing Plate (Item 10) (See Figure 10).
8. Tighten the six new Flat Head Screws (Item 12) to 4.0 Nm [36 in-lb] torque.
9. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 8 or 15) (See Figure 9).
10. Install and tighten the four Socket Head Cap Screws securing the two halves of the FMCB to the recommended torque (See Table 1).

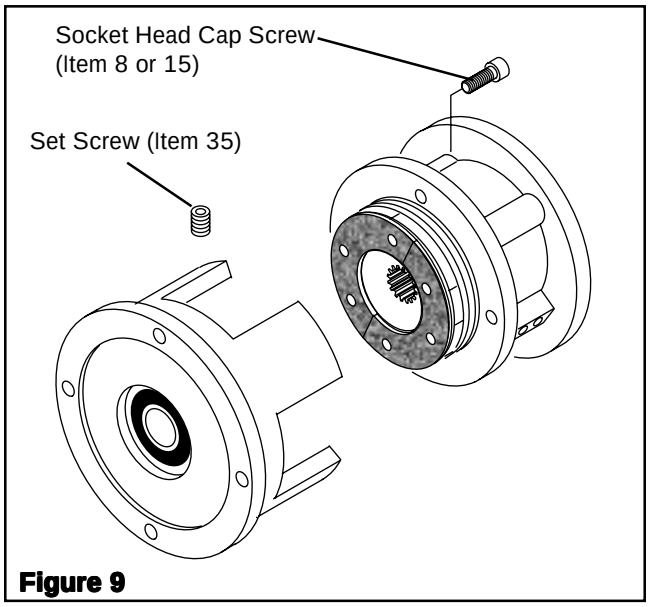


Figure 9

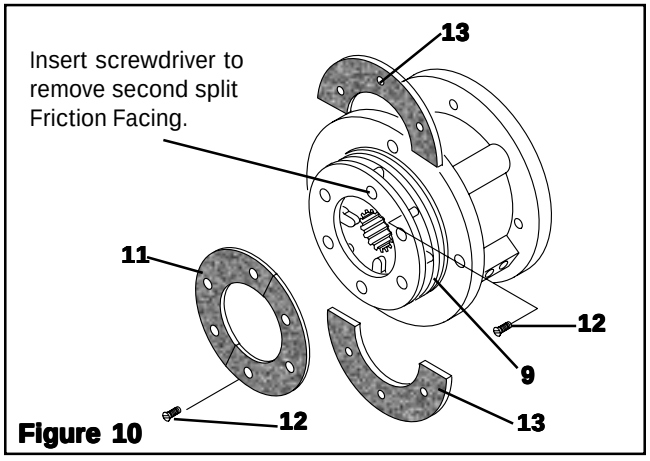


Figure 10

Table 1

FMCB Model	Socket Head Cap Screw Recommended Tightening Torque	
	Item 8	Item 15
7-28	33.2 Nm [24.5 ft-lb]	---
7-38	33.2 Nm [24.5 ft-lb]	---
8-38	---	67.1 Nm [49.5 ft-lb]
8-42	---	67.1 Nm [49.5 ft-lb]

PARTS REPLACEMENT (HOUSING BEARING)

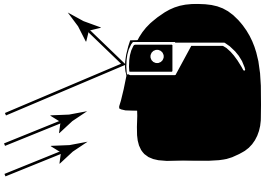
NOTE: The following sections are arranged by model. Verify that you are in the correct section for your model.

FMCB 130-19 AND 130-24

1. Remove the four Socket Head Cap Screws (Item 13) and slide the Housing (Item 1), Bearing (Item 2), and the Drive Disc (Item 4) out of the FMCB (See Figure 11).

WARNING

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



2. Remove Retaining Ring (Item 6) (See Figure 11).
3. Press the Drive Disc (Item 4) out of the Bearing (Item 2) and the Housing (Item 1) (See Figure 11).
4. Remove Retaining Ring (Item 3) (See Figure 11).
5. Fully supporting the Housing (Item 1), press the old Bearing (Item 2) out of the Housing (See Figure 11).

   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 Housing (Item 1) with fresh safety solvent, making sure all old Loctite® residue is removed (See Figure 11).
7. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Bearing (Item 2) (See Figure 11).
8. Carefully align the outer race of the new Bearing (Item 2) with the bore of the Housing (Item 1) (See Figure 11).
9. Supporting the Housing (Item 1) and pressing on the outer race of the new Bearing (Item 2), press the new Bearing into the Housing.
10. Reinstall Retaining Ring (Item 3) (See Figure 11).
11. Support the inner race of the new Bearing (Item 2) and press the Drive Disc (Item 4) into the new Bearing and Housing (Item 1) (See Figure 11).
12. Reinstall Retaining Ring (Item 6) (See Figure 11).
13. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 13) (See Figure 11).
14. Slide the Housing (Item 1), Bearing (Item 2), and Drive Disc (Item 4) into the FMCB and reinstall the four Socket Head Cap Screws (Item 13) (See Figure 11).
15. Tighten the four Socket Head Cap Screws (Item 13) to 24.5 Ft. Lbs. [33.2 N•m] torque.

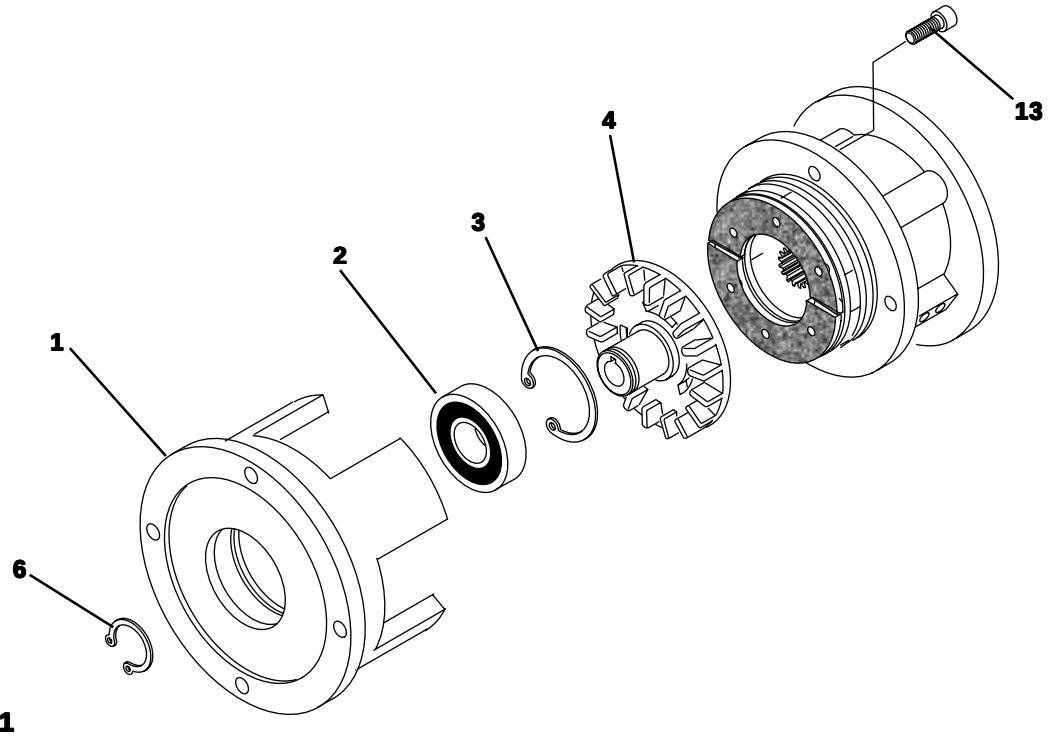


Figure 11

FMCB 7-28, 7-38, 8-38, AND 8-42

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 (See Figure 12).

WARNING

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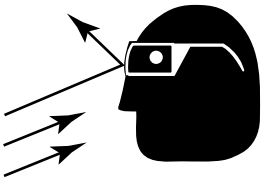


2. Remove Retaining Ring (Item 6) (See Figure 12).
3. Press the Drive Disc (Item 4) out of the Bearing (Item 2) and Female Pilot (Item 1) (See Figure 12).
4. Remove Retaining Ring (Item 3) (See Figure 12).
5. Fully supporting the Female Pilot (Item 1), press the old Bearing (Item 2) out of the Female Pilot (Item 1) (See Figure 12).

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 (See Figure 12).
7. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Bearing (Item 2) (See Figure 12).
8. Carefully align the outer race of the new Bearing (Item 2) with the bore of the Female Pilot (Item 1) (See Figure 12).
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 Retaining Ring (Item 3) (See Figure 12).
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 Female Pilot (Item 1) (See Figure 12).
12. Reinstall Retaining Ring (Item 6) (See Figure 12).
13. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 8) (See Figure 12).
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) (See Figure 12).
15. Tighten the four Socket Head Cap Screws (Item 8) to 33.2 Nm [24.5 ft-lb] torque.

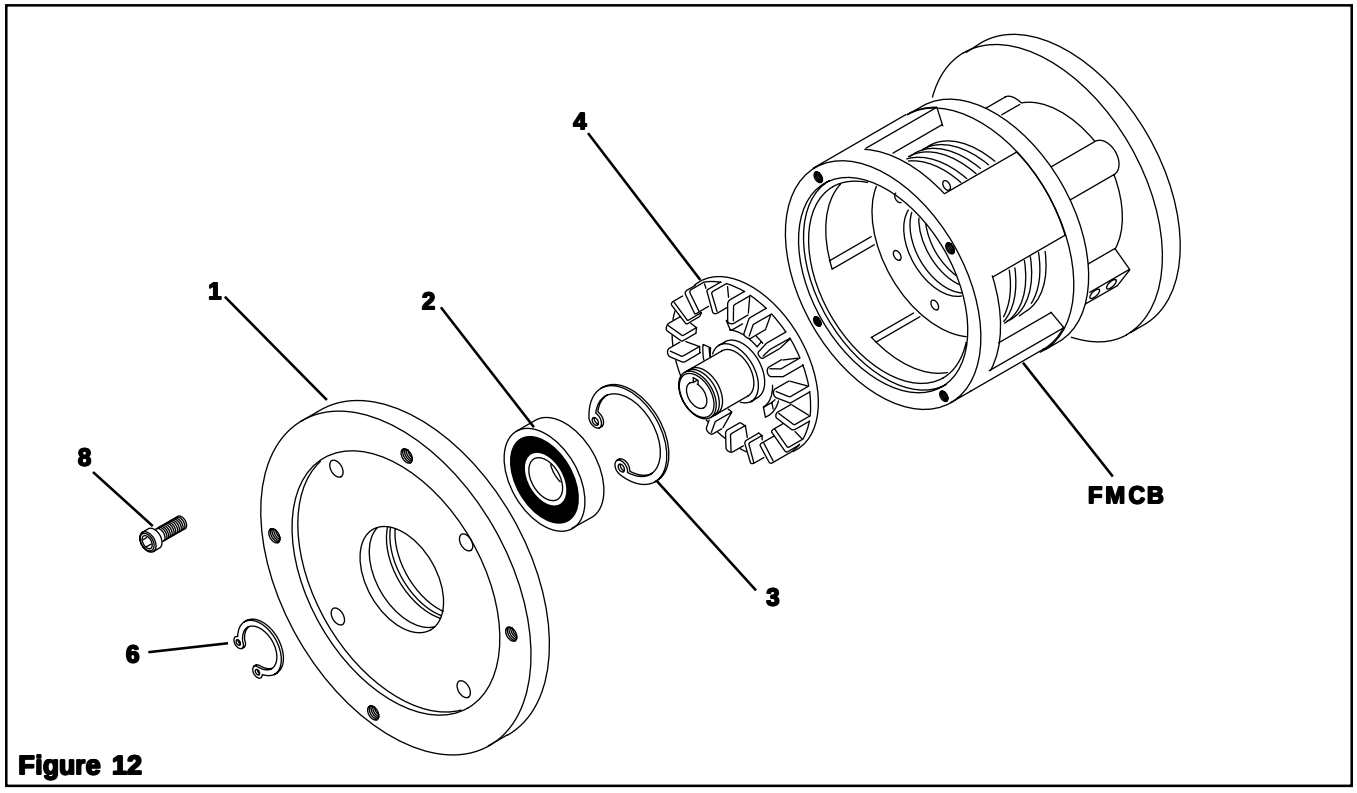


Figure 12

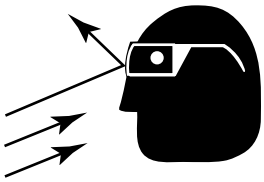
NOTE: The following sections are arranged by model. Verify that you are in the correct section for your model.

FMCB 130-19 AND 130-24

1. Remove the four Socket Head Cap Screws (Item 13) and separate the Air Chamber (Item 12) from the Housing (Item 1) (See Figure 13).
2. Remove the four Socket Head Cap Screws (Item 13) securing the Male Pilot (Item 20) to the Air Chamber (Item 12) (See Figure 13).
3. Remove the Male Pilot (Item 20) and Stub Shaft (Item 23) from Air Chamber (Item 12) (See Figure 13).

WARNING

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



4. Remove the Retaining Ring (Item 6) from the Splined Disc (Item 10) (See Figure 14).
5. Press the Splined Disc (Item 9) from the Bearing (Item 2) (See Figure 14).
6. Remove the Piston (Item 16) from the Air Chamber (Item 12) (See Figure 14).
7. Remove the Retaining Ring (Item 3) from the Piston (See Figure 14).
8. Remove the O-ring Seals (Items 14 and 15) from the Piston and Air Chamber (See Figure 14).
9. Press the Bearing (Item 2) out of the Piston (Item 16) (See Figure 14).
10. Clean the bearing bore of the Piston with fresh safety solvent, making sure that 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.
13. Supporting the Piston (Item 16) and pressing on the outer race of the new Bearing (Item 2), press the new Bearing into the Piston (See Figure 14).
14. Reinstall the Retaining Ring (Item 3), securing the Bearing to the Piston (See Figure 14).
15. Coat the o-ring contact surfaces of the Air Chamber, Piston, and the O-ring Seals with a thin film of o-ring lubricant and install the new O-ring Seals (Items 14 and 15) (See Figure 14).

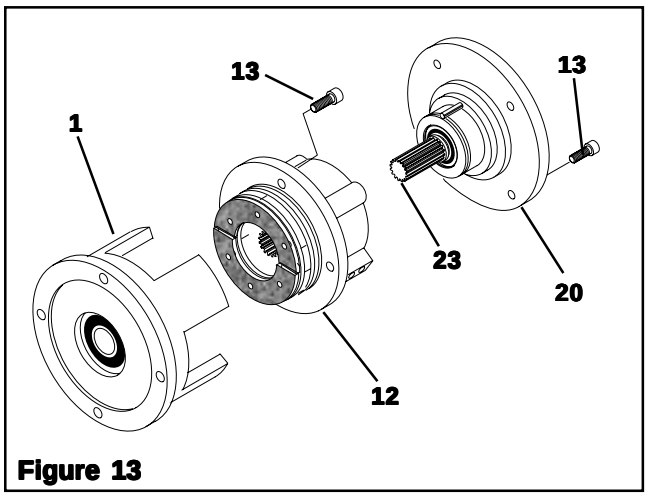


Figure 13

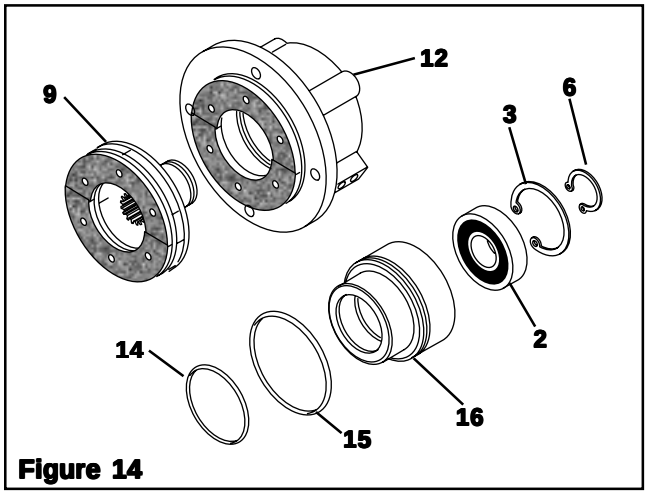


Figure 14

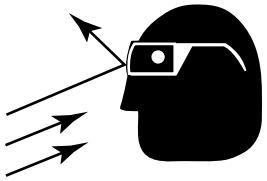
16. Slide the Piston (Item 16) into the Air Chamber (Item 12).
17. Support the inner race of the Bearing (Item 2) and press the Splined Disc (Item 9) into the Bearing and Piston (See Figure 14).
18. Reinstall the Retaining Ring (Item 6) that secures the Splined Disc to the Bearing (See Figure 14).
19. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 13).
20. Reinstall and tighten the four Socket Head Cap Screws (Item 13) securing the Air Chamber (Item 12) to the Housing (Item 1) to 33.2 Nm 24.5 ft-lb torque.

FMCB 130-19 AND 130-24

1. Remove the old O-ring Seals (Items 21 and 22) from the Male Pilot (Item 20) (See Figure 15).

WARNING

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



2. Remove the Retaining Ring (Item 24) from the Stub Shaft (Item 23) (See Figure 15).
3. Press the Stub Shaft (Item 23) out of the Male Pilot (Item 20) (See Figure 15).

NOTE: One Bearing (Item 19) will come out of the Male Pilot (Item 20) attached to the Stub Shaft (Item 23).

4. Remove the Bearing (Item 19) from the Stub Shaft (Item 23) (See Figure 15).
5. Press the second Bearing (Item 19) out of the Male Pilot (Item 20) (See Figure 15).
6. Clean the bearing bore of the Male Pilot (Item 20) with fresh safety solvent, making sure all old Loctite® residue is removed (See Figure 15).
7. Press the first new Bearing (Item 19) onto the Stub Shaft (Item 23) (See Figure 15).
8. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Bearing (Item 17).
9. Carefully align the outer race of the new Bearing (Item 19) with the bore of the Male Pilot (Item 20) (See Figure 15).
10. Supporting the Male Pilot (Item 20) and pressing on the outer race of the new Bearing (Item 19), press the new Bearing and Stub Shaft into the Male Pilot (See Figure 15).
11. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the second new Bearing (Item 19) (See Figure 15).
12. While supporting both the Stub Shaft and Male Pilot and pressing on both the inner and outer races of the new Bearing, press the second new Bearing into the Male Pilot and onto the Stub Shaft.
13. Reinstall Retaining Ring (Item 24) (See Figure 15).
14. Coat the o-ring contact surfaces of the Male Pilot, Piston, and the O-ring Seals with a thin film of o-ring lubricant and install the new O-ring Seals (Items 21 and 22) (See Figure 15).
15. Apply a thin film of NEVER-SEEZ® to the spline of the Stub Shaft (Item 23) (See Figure 15).
16. Align the Slotted Spring Pin (Item 17) in the Male Pilot with the hole in the Piston.
17. Slide the Male Pilot and Stub Shaft into the FMCB.
18. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 13) (See Figure 15).
19. Reinstall the four Socket Head Cap Screws (Item 13) securing the Male Pilot to the Air Chamber (Item 12).
20. Tighten the four Socket Head Cap Screws (Item 13) to 33.2 Nm 24.5 ft-lb torque.

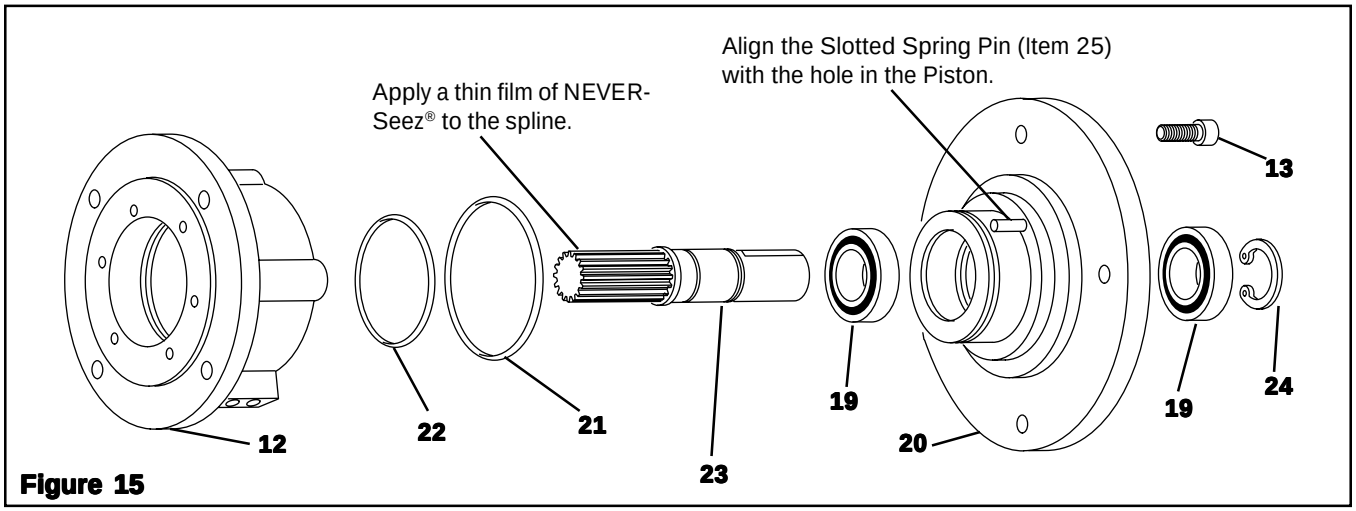


Figure 15

FMCB 7-28, 8-38, AND 8-42

NOTE: On Model 7-28, the Socket Head Cap Screws are Item 8. On Models 8-38 and 8-42, the Socket Head Cap Screws are Item 15.

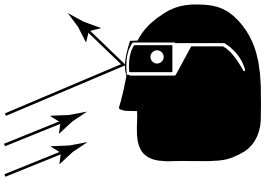
1. Remove the four Socket Head Cap Screws and separate the Air Chamber (Item 14) from the Housing (Item 7) (See Figure 16).
2. Remove the four Socket Head Cap Screws securing the Male Pilot (Item 27) to the Cylinder (Item 22) (See Figure 16).
3. Remove the Male Pilot (Item 27) and Stub Shaft (Item 31) from the Cylinder (See Figure 16).

NOTE: On Models 7-28 and 8-42, the Socket Head Cap Screws are Item 26. On Model 8-38, the Socket Head Cap Screws are Item 8.

4. Remove the four Socket Head Cap Screws securing the Cylinder (Item 22) to the Air Chamber (Item 14) (See Figure 17).
5. Remove the Cylinder (Item 22) from the Air Chamber (Item 14) (See Figure 17).
6. Remove the Retaining Ring (Item 6 or 20) from the Splined Disc (Item 9) (See Figure 17).

WARNING

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



7. Press the Splined Disc (Item 9) out of the Bearing (Item 2 or 18) and Piston (Item 17) (See Figure 17).
8. Remove the Piston (Item 17) from the Air Chamber (Item 14) (See Figure 17).
9. Remove the old O-ring Seals (Items 16 and 21) from the Piston and Air Chamber (See Figure 17).
10. Remove the Retaining Ring (Item 3 or 19) from the Piston (Item 17) (See Figure 17).
11. Press the Bearing (Item 2 or 18) out of the Piston (Item 17) (See Figure 17).
12. Clean the bearing bore of the Piston with fresh safety 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 Bearing (Item 2 or 18).

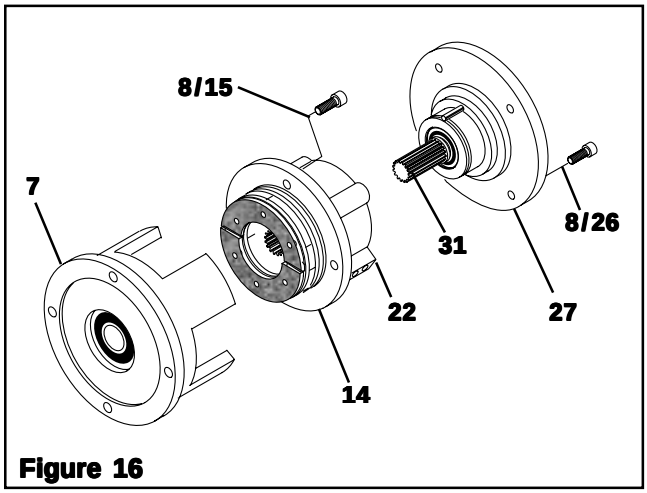


Figure 16

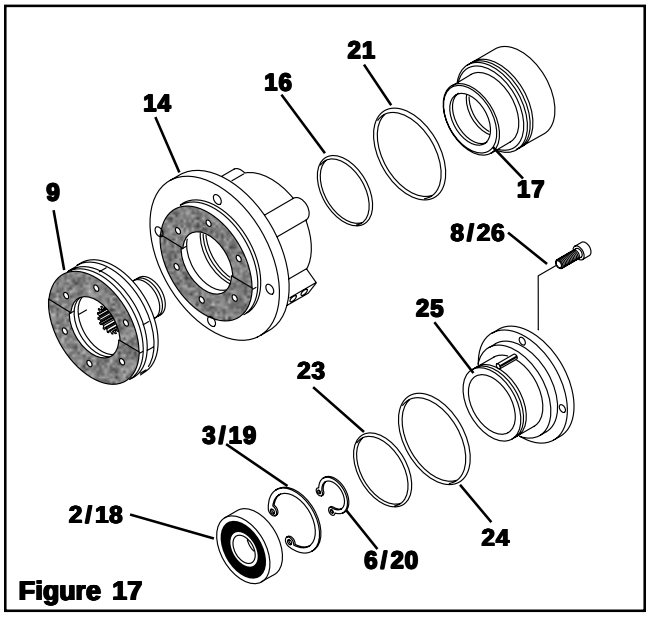


Figure 17

14. Carefully align the outer race of the new Bearing (Item 2 or 18) with the bore of the Piston (Item 17).
15. Supporting the Piston (Item 17) and pressing on the outer race of the new Bearing, press the new Bearing into the Piston (See Figure 17).
16. Reinstall the Retaining Ring (Item 3 or 19), securing the Bearing to the Piston.
17. Coat the o-ring contact surfaces of the Air Chamber (Item 14), Piston (Item 17), and the new O-ring Seals (Items 16 and 21) with a thin film of o-ring lubricant and install the new O-ring Seals (See Figure 17).
18. Slide the Piston (Item 17) into the Air Chamber (Item 14).

19. Support the inner race of the Bearing (Item 2 or 18) and press the Splined Disc (Item 9) into the Bearing and Piston (Item 17).
20. Reinstall the Retaining Ring (Item 6 or 20) that secures the Splined Disc to the Bearing (Item 2 or 18).
21. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 8 or 15) (See Figure 16).
22. Reinstall and tighten the four Socket Head Cap Screws (Item 8 or 15) securing the Air Chamber (Item 14) to the Housing (Item 7) to the recommended torque (See Table 2) .
23. Remove the old O-ring Seals (Items 23 and 24) from the cylinder (Item 22) (See Figure 17).
24. Coat the o-ring contact surfaces of the Cylinder (Item 22) and the new O-ring Seals (Items 23 and 24) with a thin film of o-ring lubricant and install the new O-ring Seals (See Figure 17).
25. Align the Spring Pin (Item 25) in the Cylinder (Item 22) with the hole in the Piston (Item 17); then, slide the Cylinder into the Piston (See Figure 17).
26. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 8 or 26) (See Figure 17).
27. Reinstall and tighten the four Socket Head Cap Screws securing the Cylinder (Item 22) to the Air Chamber (Item 14) to the recommended torque (See Table 2).

Table 2

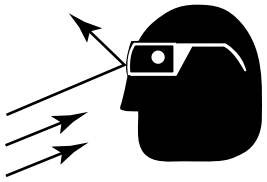
FMCB Model	Socket Head Cap Screw Recommended Tightening Torque		
	Item 8	Item 15	Item 26
7-28	19.6 Nm [14.5 ft-lb]	---	16.7 Nm [12.3 ft-lb]
8-38	33.2 Nm [24.5 ft-lb]	67.1 Nm [49.5 ft-lb]	---
8-42	---	67.1 Nm [49.5 ft-lb]	33.2 Nm [24.5 ft-lb]

PARTS REPLACEMENT (MALE PILOT BEARING)

FMCB 7-28, 8-38, AND 8-42

WARNING

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



1. Remove the Retaining Ring (Item 32) from the Stub Shaft (Item 31) (See Figure 18).
2. Press the Stub Shaft (Item 31) out of the Male Pilot (Item 27) (See Figure 18).

NOTE: One Bearing (Item 29) will come out of the Male Pilot (Item 27) attached to the Stub Shaft (Item 31).

3. Remove the old Bearing (Item 29) from the Stub Shaft (Item 31) (See Figure 18).
4. Press the second old Bearing (Item 29) out of the Male Pilot (Item 27) (See Figure 18).
5. Clean the bearing bore of the Male Pilot (Item 27) with fresh safety solvent, making sure all old Loctite® residue is removed (See Figure 18).
6. Press the first new Bearing (Item 29) onto the Stub Shaft (Item 31) (See Figure 18).
7. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Bearing (Item 29).
8. Carefully align the outer race of the new Bearing (Item 29) with the bore of the Male Pilot (Item 27) (See Figure 18).
9. Supporting the Male Pilot (Item 27) and pressing on the outer race of the new Bearing (Item 29), press the first new Bearing and Stub Shaft into the Male Pilot.
10. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the second new Bearing (Item 29).

11. While supporting both the Stub Shaft and Male Pilot and pressing on both the inner and outer races of the new Bearing, press the second new Bearing into the Male Pilot and onto the Stub Shaft.
12. Reinstall Retaining Ring (Item 32) (See Figure 18).
13. Apply a thin film of NEVER-SEEZ® to evenly coat the spline of the Stub Shaft (Item 31) (See Figure 18).
14. Slide the Male Pilot (Item 27) and Stub Shaft (Item 31) into the Air Chamber (Item 14).
15. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 8 or 15) (See Figure 18).
16. Reinstall the four Socket Head Cap Screws (Item 8 or 15) securing the Male Pilot (Item 27) to the Air Chamber (Item 14).
17. Tighten the four Socket Head Cap Screws to the recommended torque (See Table 3).

Table 3

FMCB Model	Socket Head Cap Screw Recommended Tightening Torque		
	Item 8	Item 15	Item 26
7-28	19.6 Nm [14.5 ft-lb]	---	16.7 Nm [12.3 ft-lb]
8-38	33.2 Nm [24.5 ft-lb]	67.1 Nm [49.5 ft-lb]	---
8-42	---	67.1 Nm [49.5 ft-lb]	33.2 Nm [24.5 ft-lb]

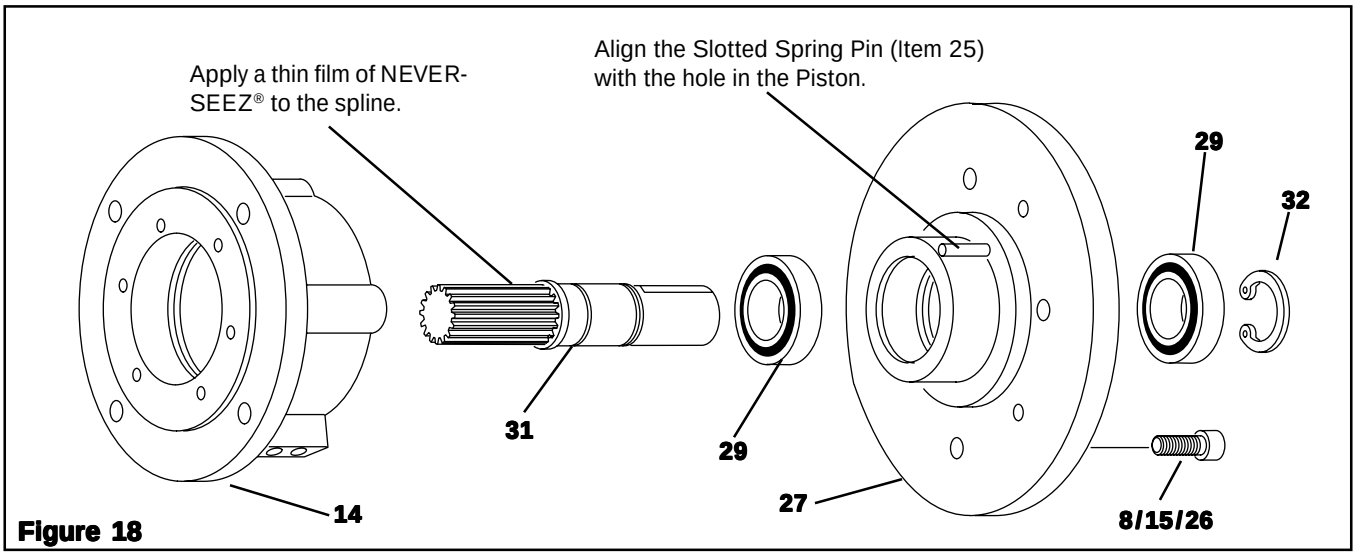


Figure 18

PARTS REPLACEMENT (PISTON BEARING AND O-RING SEALS)

FMCB 7-38

1. Remove the four Socket Head Cap Screws (Item 8) and separate the Air Chamber (Item 14) from the Housing (Item 7) (See Figure 19).
2. Remove the four Socket Head Cap Screws (Item 8) securing the Male Pilot (Item 27) to the Cylinder (Item 22) (See Figure 19).
3. Remove the Male Pilot (Item 27) and Stub Shaft (Item 31) from the Cylinder (Item 22) (See Figure 19).
4. Remove the four Socket Head Cap Screws (Item 8) securing the Cylinder (Item 22) to the Air Chamber (Item 14) (See Figure 20).

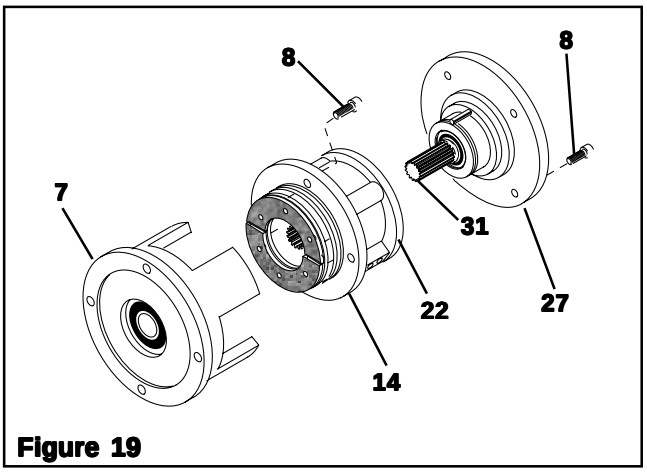
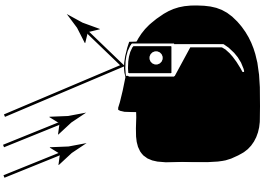


Figure 19

5. Remove the Cylinder (Item 22) from the Air Chamber (Item 14) (See Figure 20).

WARNING

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



6. Remove the Retaining Ring (Item 20) from the Splined Disc (Item 9) (See Figure 20).
7. Press the Splined Disc (Item 9) out of the Bearing (Item 18) and Piston (Item 17) (See Figure 20).
8. Remove the Piston (Item 17) from the Air Chamber (Item 14) (See Figure 20).
9. Remove the Retaining Ring (Item 19) from the Piston (Item 17) (See Figure 20).
10. Remove the old O-ring Seals (Items 16 and 21) from the Piston and Air Chamber (See Figure 20).
11. Press the Bearing (Item 18) out of the Piston (Item 17) (See Figure 20).
12. Clean the bearing bore of the Piston with fresh safety 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 Bearing (Item 18).
14. Carefully align the outer race of the new Bearing (Item 18) with the bore of the Piston (Item 20).
15. Supporting the Piston (Item 17) and pressing on the outer race of the new Bearing, press the new Bearing into the Piston (See Figure 20).
16. Reinstall the Retaining Ring (Item 19), securing the Bearing to the Piston.
17. Coat the o-ring contact surfaces of the Air Chamber (Item 14), Piston (Item 17), and the new O-ring Seals (Items 16 and 21) with a thin film of o-ring lubricant and install the new O-ring Seals (See Figure 20).
18. Slide the Piston (Item 17) into the Air Chamber (Item 14).
19. Support the inner race of the Bearing (Item 18) and press the Splined Disc (Item 9) into the Bearing and Piston (Item 17).

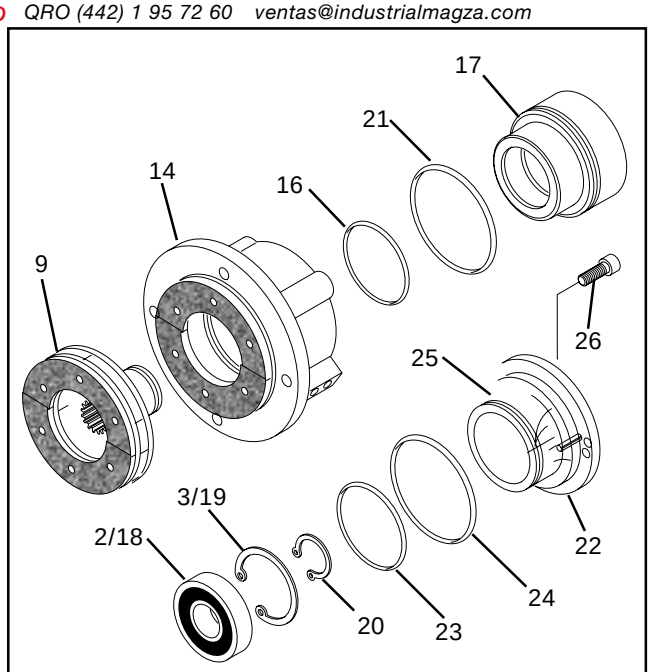


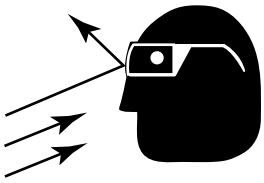
Figure 20

20. Reinstall the Retaining Ring (Item 20) that secures the Splined Disc to the Bearing (Item 18).
21. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 8) (See Figure 19).
22. Reinstall and tighten the four Socket Head Cap Screws (Item 8) securing the Air Chamber (Item 14) to the Housing (Item 7) to 33.2 Nm [24.5 ft-lb] torque.
23. Remove the old O-ring Seals (Items 23 and 24) from the Cylinder (Item 22) (See Figure 20).
24. Coat the o-ring contact surfaces of the Cylinder (Item 22) and the new O-ring Seals (Items 23 and 24) with a thin film of o-ring lubricant and install the new O-ring Seals (See Figure 20).
25. Align the Spring Pin (Item 25) in the Cylinder (Item 22) with the hole in the Piston (Item 17); then, slide the Cylinder into the Piston (See Figure 20).
26. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 26) (See Figure 20).
27. Reinstall and tighten the four Socket Head Cap Screws (Item 26) securing the Cylinder (Item 22) to the Air Chamber (Item 14) to 16.7 Nm [12.3 ft-lb] torque.

FMCB 7-38

WARNING

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



1. Remove the first Retaining Ring (Item 32) from the Stub Shaft (Item 31) (See Figure 21).
2. Press the Stub Shaft (Item 31) out of the Male Pilot (Item 27) (See Figure 21).

NOTE: Bearing (Item 30) will come out of the Male Pilot (Item 27) attached to the Stub Shaft (Item 31).

3. Remove the second Retaining Ring (Item 32) from the Stub Shaft (Item 31) (See Figure 21).
4. Remove the old Bearing (Item 30) from the Stub Shaft (Item 31) (See Figure 21).
5. Remove Retaining Ring (Item 28) from the Male Pilot (Item 27) (See Figure 21).
6. Press the second old Bearing (Item 29) out of the Male Pilot (Item 27) (See Figure 21).
7. Clean the bearing bore of the Male Pilot (Item 27) with fresh safety solvent, making sure all old Loctite® residue is removed (See Figure 21).
8. Press the new Bearing (Item 30) onto the Stub Shaft (Item 31) (See Figure 21).
9. Reinstall the first Retaining Ring (Item 32) onto the Stub Shaft (Item 31) (See Figure 21).
10. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of new Bearing (Item 29).
11. Carefully align the outer race of the new Bearing (Item 29) with the bore of the Male Pilot (Item 27) (See Figure 21).
12. Supporting the Male Pilot (Item 27) and pressing on the outer race of the new Bearing (Item 29), press the new Bearing into the Male Pilot (See Figure 21).
13. Reinstall Retaining Ring (Item 28) (See Figure 21).
14. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Bearing (Item 30).
15. While supporting the inner race of Bearing (Item 29) and pressing on the outer race of the Bearing (Item 30), press the new Bearing and Stub Shaft into the Male Pilot and Bearing (See Figure 21).
16. Reinstall the second Retaining Ring (Item 32).
17. Apply a thin film of NEVER-SEEZ® to evenly coat the splines of the Stub Shaft (Item 31) (See Figure 21).
18. Slide the Male Pilot and Stub Shaft into the FMCB.
19. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 8) (See Figure 21).
20. Reinstall the four Socket Head Cap Screws (Item 8) securing the Male Pilot to the FMCB.
21. Tighten the four Socket Head Cap Screws (Item 8) to 33.2 Nm [24.5 ft-lb] torque.

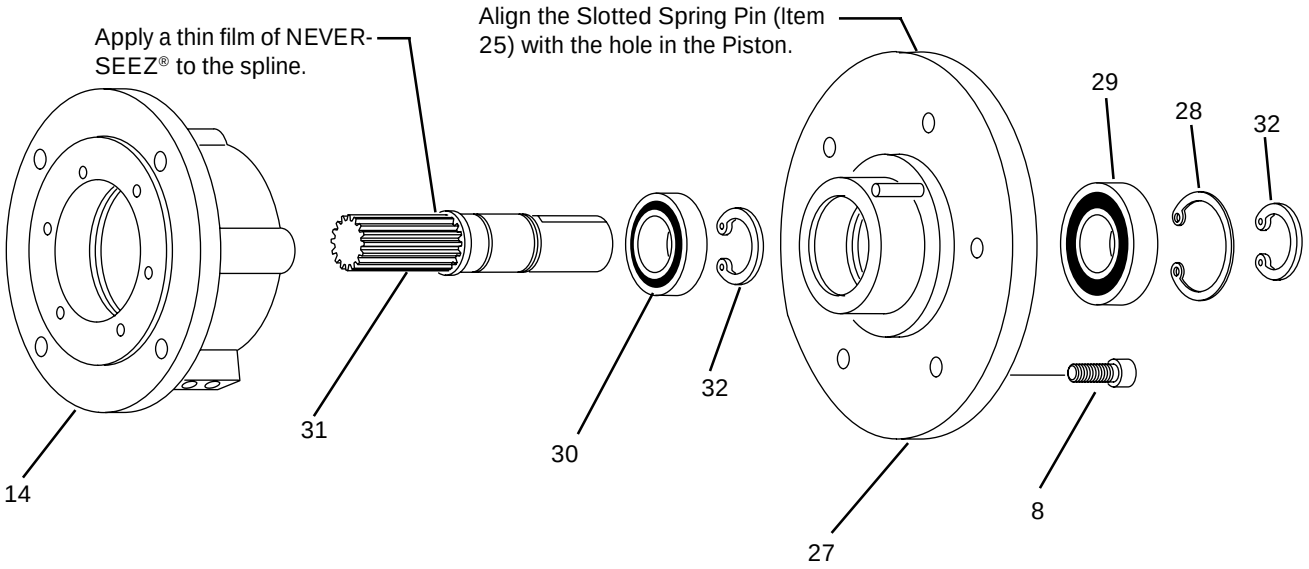


Figure 21

NOTE: The following sections are arranged by model. Verify that you are in teh correct section for your model.

FMCB130-19 AND 130-24

NOTE: Loosen the Set Screw (Item 27) one full turn to release the Input Unit Shaft from the FMCB. The Set Screw (Item 27) is located in the FMCB Drive Disc (See Figure 7).

1. Remove the Socket Head Cap Screws (Item 29), Lock Washers (Item 30), and Hex Nuts (Item 31); then, remove the Input Unit from the FMCB.
2. Fully supporting the Input Unit, press the Shaft (Item 28) out of the Input Unit (See Figure 22).
3. Using a bearing puller, remove the Bearing (Item 19) from the Flange (Item 27) (See Figure 22).

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.

4. Clean the bearing bore of the Flange (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 the new Bearing (Item 19) (See Figure 22).
6. Carefully align the outer race of the new Bearing (Item 19) with the bore of the Flange (Item 27) and press the new Bearing into place (See Figure 22).
7. Press the Shaft (Item 28) into the Input Unit (See Figure 22).

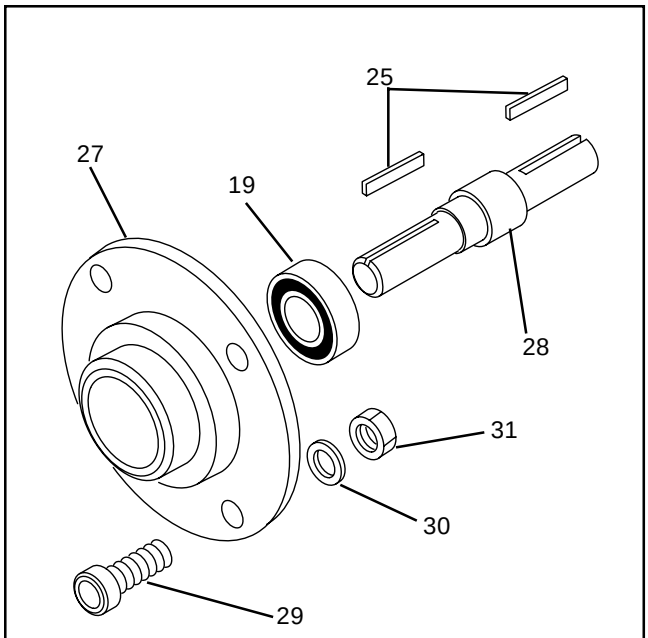


Figure 22

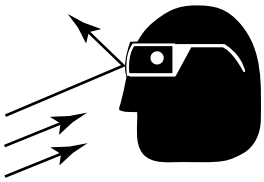
FMCB 7-28, 7-38, 8-38, AND 8-42

NOTE: Loosen the Set Screw (Item 35) one full turn to release the Input Unit Shaft from the FMCB. The Set Screw (Item 35) is located in the FMCB Drive Disc (See Figure 9).

1. Remove the Socket Head Cap Screws (Item 37) and Lock Washers (Item 38); then, remove the Input Unit from the FMCB.

WARNING

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



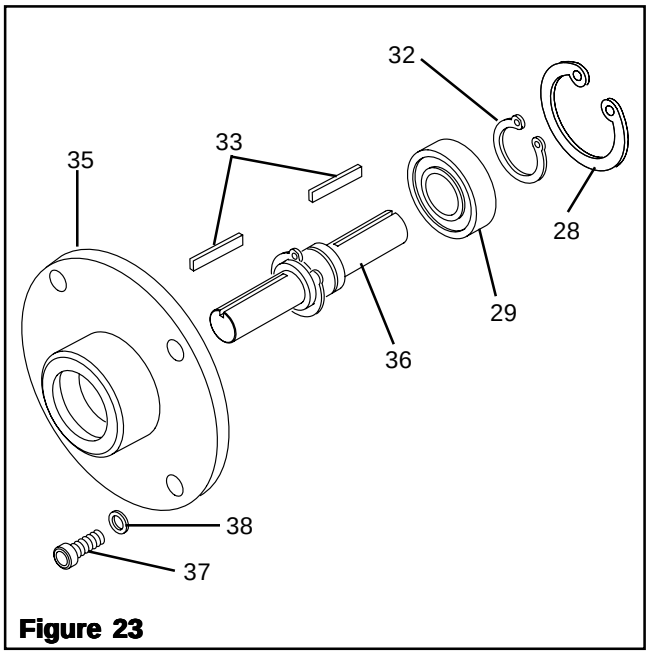


Figure 23

2. Remove the Retaining Ring (Item 28) from the Flange (Item 35) (See Figure 23).
3. Fully supporting the Flange (Item 35), press the Shaft (Item 36) out of the Input Unit (See Figure 23).

NOTE: Bearing (Item 29) will come out of the Flange (Item 35) with the Shaft (Item 36) (See Figure 23).

4. Remove the Retaining Ring (Item 32) from the Shaft (Item 36) (See Figure 23).
5. Press the old Bearing (Item 29) off the Shaft (Item 36) (See Figure 23).

NOTE: Do not reuse the Bearing (Item 29). 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 Flange (Item 35) 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 29).
8. Carefully align the outer race of the new Bearing (Item 29) with the bore of the Flange (Item 35) and press the new Bearing into place (See Figure 23).
9. Reinstall the Retaining Ring (Item 28) (See Figure 23).
10. Fully supporting the inner race of the Bearing (Item 29), press the Shaft (Item 36) into the Bearing until the Retaining Ring (Item 32) is seated against the Bearing (See Figure 23).
11. Reinstall the second Retaining Ring (Item 32) (See Figure 23).

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)

MODELS 130-19 AND 130-24

ITEM	DESCRIPTION	QTY
19[1]	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 repair kit item in repair kit #801429.

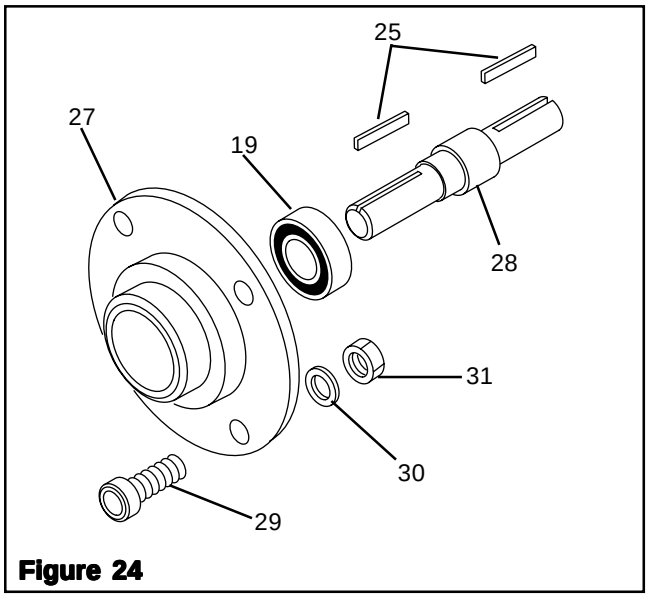


Figure 24

MODELS 7-28, 7-38, 8-38, AND 8-42

ITEM	DESCRIPTION	QTY
28	Retaining Ring (Int.)	*
29[1]	Bearing	1
32	Retaining Ring (Ext.)	2
33	Key	2
35	Flange	1
36	Shaft	1
37	Socket Head Cap Screw	4
38	Lock Washer	4

[1]Denotes repair kit item:

Model	Repair Kit Number
7-28	801641
7-38	801642
8-38	801642
8-42	801643

*FMCB 7-28, 8-38, and 8-42 have two Retaining Rings. FMCB 7-38 has one Retaining Ring.

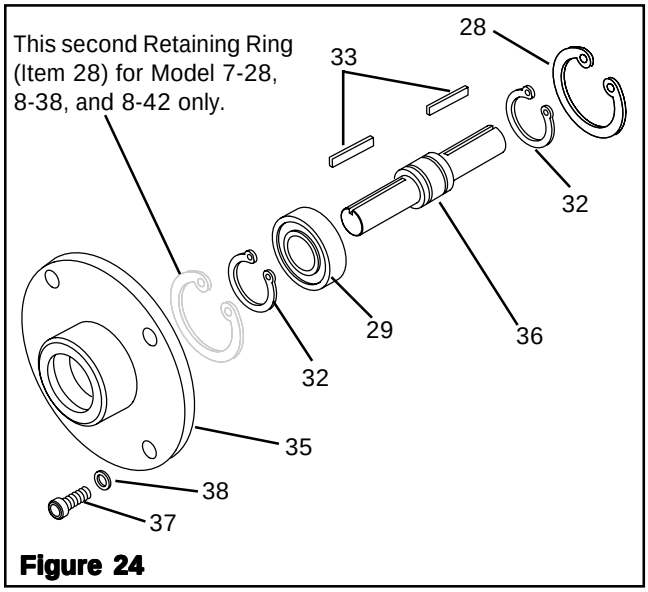


Figure 24

FMCB 130-19 AND 130-24

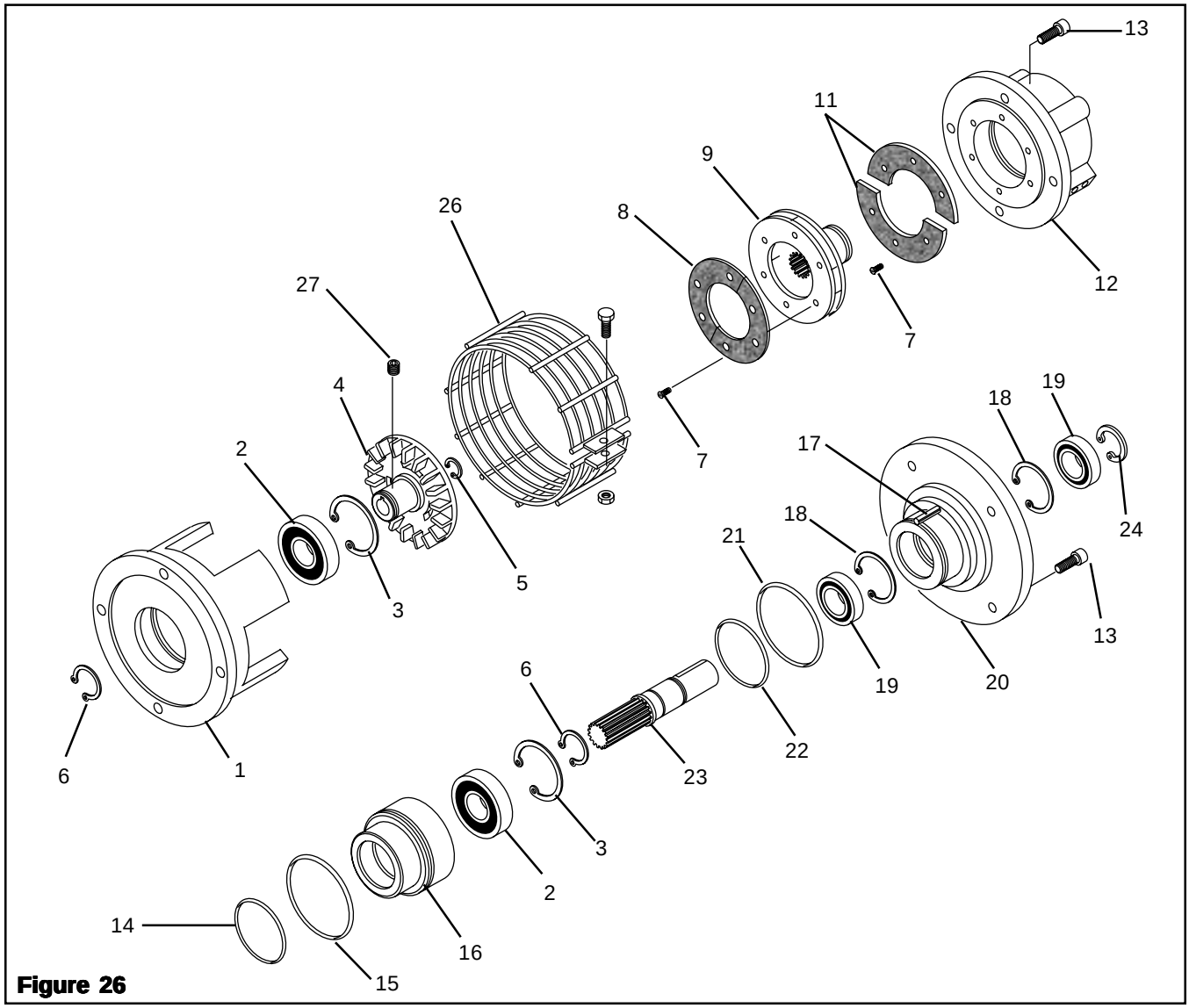


Figure 26

ITEM	DESCRIPTION	QTY
1	Housing	1
2[1]	Bearing	2
3	Retaining Ring (Int.)	2
4	Drive Disc	1
5	Retaining Ring (Int.)	1
6	Retaining Ring (Ext.)	2
7[2,3]	Flat Head Screw (M5-0.8)	12
8[2]	Friction Facing (Clutch)	1
9	Splined Disc	1
11[3]	Split Friction Facing (Brake)	1
12	Air Chamber	1
13	Socket Head Cap screw (M8-1.25)	8
14[1]	O-ring Seal	1

ITEM	DESCRIPTION	QTY
15[1]	O-ring Seal	1
16	Piston	1
17	Slotted Spring Pin	1
18	Retaining Ring (Int.)	2
19[1]	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	Housing Guard	1
27	Set Screw	1

[1] Denotes repair kit items included in repair kit 801428.

[2] Denotes clutch facing kit items included in facing kit 801477.

[3] Denotes brake facing kit items included in facing kit 801430.

FMCB 7-28

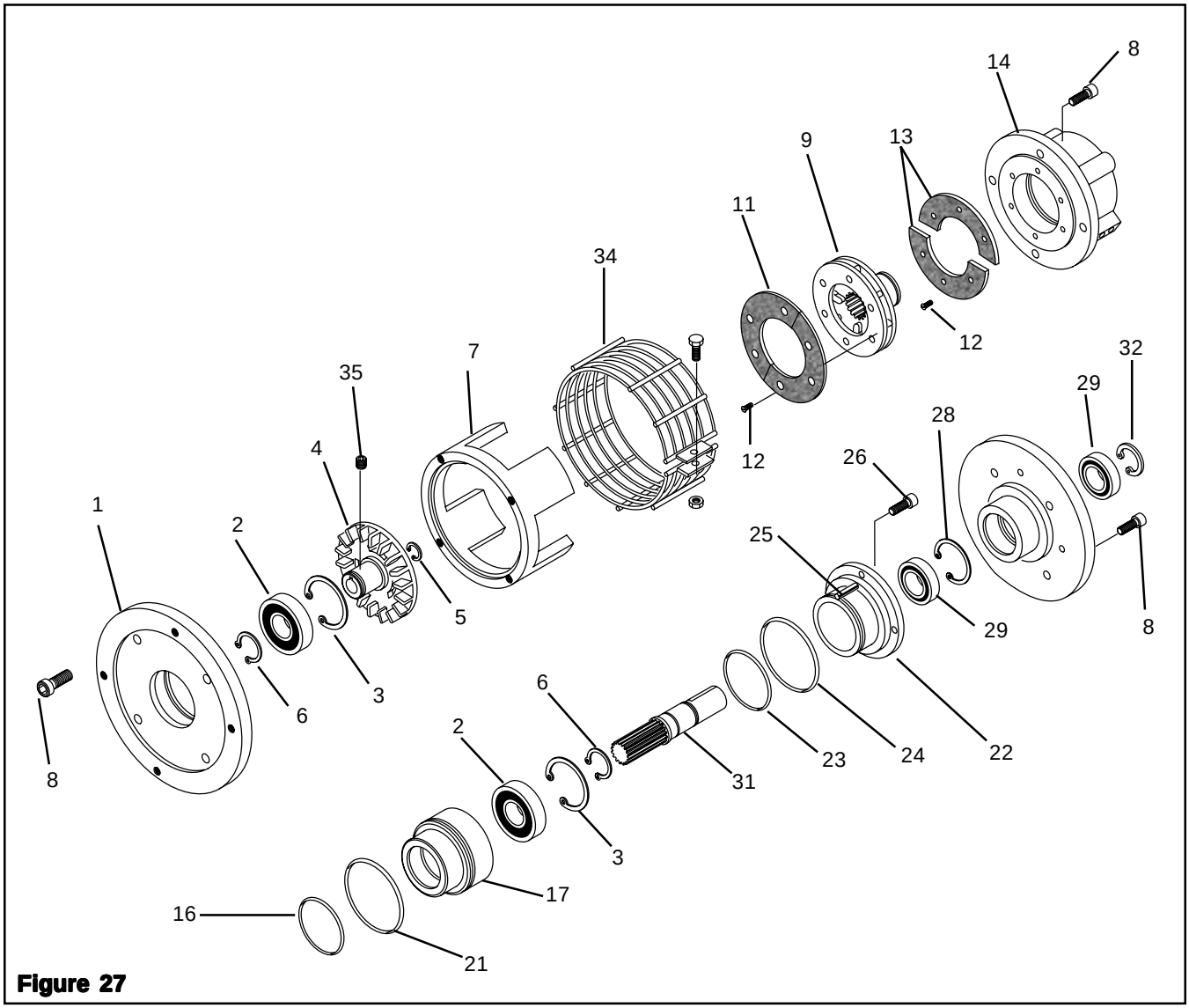


Figure 27

ITEM	DESCRIPTION	QTY
1	Female Pilot	1
2[1]	Bearing	2
3	Retaining Ring (Int.)	2
4	Drive Disc	1
5	Retaining Ring (Int.)	1
6	Retaining Ring (Ext.)	2
7	Housing	1
8	Socket Head Cap screw (M8-1.25)	12
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
16[1]	O-ring Seal	1

ITEM	DESCRIPTION	QTY
17	Piston	1
21[1]	O-ring Seal	1
22	Cylinder	1
23[1]	O-ring Seal	1
24[1]	O-ring Seal	1
25	Slotted Spring Pin	1
26	Socket Head Cap screw (M8-1.25)	4
27	Male Pilot	1
28	Retaining Ring (Int.)	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 (M8-1.25)	1

[1] Denotes repair kit items included in repair kit 801637.
[2] Denotes clutch facing kit items included in facing kit 801644.
[3] Denotes brake facing kit items included in facing kit 801605.

FMCB 7-38

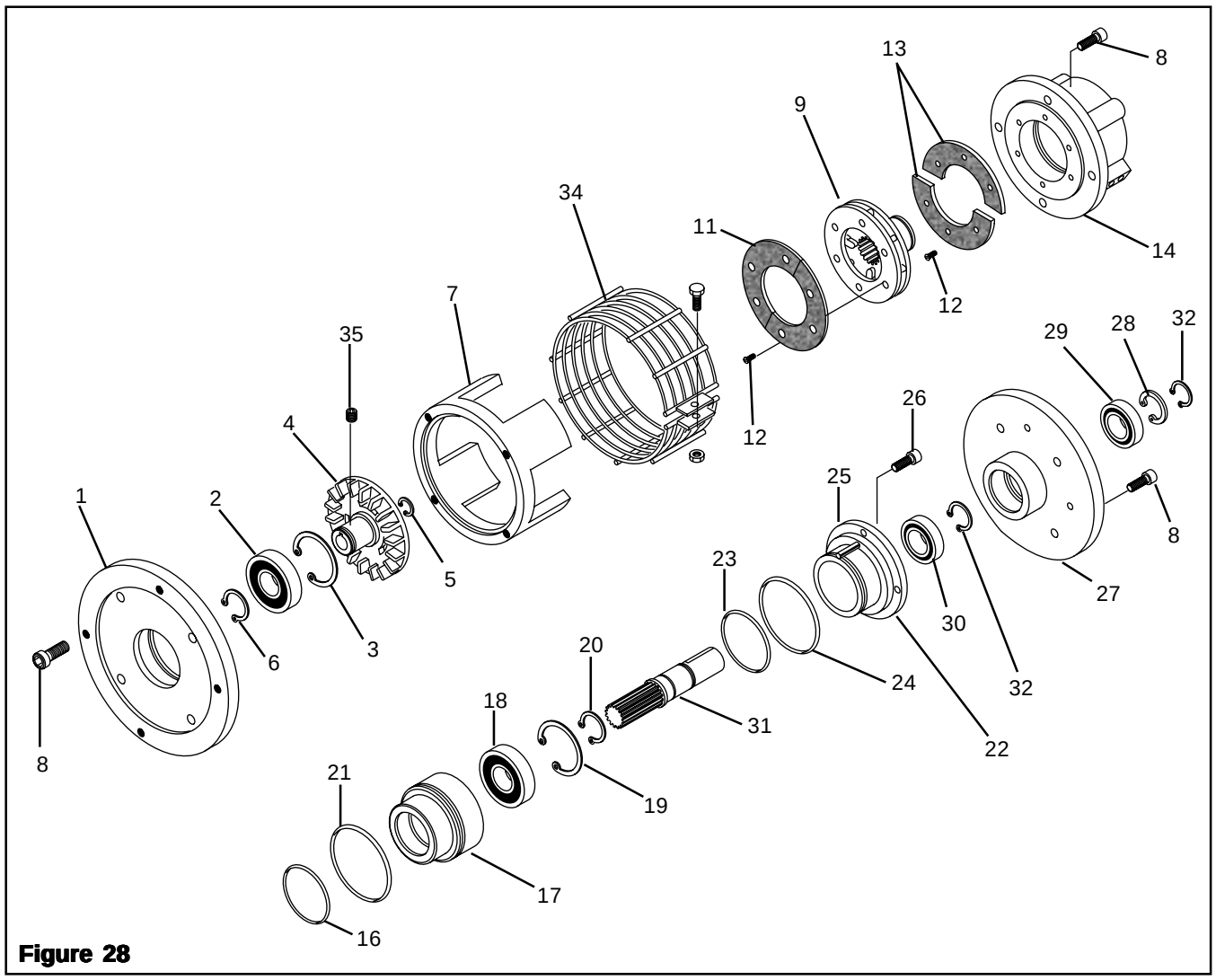


Figure 28

ITEM	DESCRIPTION	QTY
1	Female Pilot	1
2[1]	Bearing	1
3	Retaining Ring (Int.)	1
4	Drive Disc	1
5	Retaining Ring (Int.)	1
6	Retaining Ring (Ext.)	1
7	Housing	1
8	Socket Head Cap screw (M8-1.25)	12
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
16[1]	O-ring Seal	1
17	Piston	1
18[1]	Bearing	1

ITEM	DESCRIPTION	QTY
19	Retaining Ring (Int.)	1
20	Retaining Ring (Ext.)	1
21[1]	O-ring Seal	1
22	Cylinder	1
23[1]	O-ring Seal	1
24[1]	O-ring Seal	1
25	Slotted Spring Pin	1
26	Socket Head Cap screw (M8-1.25)	4
27	Male Pilot	1
28	Retaining Ring (Int.)	1
29[1]	Bearing	1
30[1]	Bearing	1
31	Stub Shaft	1
32	Retaining Ring (Ext.)	2
33	Key (Not Shown)	1
34	Housing Guard	1
35	Set Screw (M10-1.5)	1

[1] Denotes repair kit items included in repair kit 801638.
[2] Denotes clutch facing kit items included in facing kit 801646.
[3] Denotes brake facing kit items included in facing kit 801645.

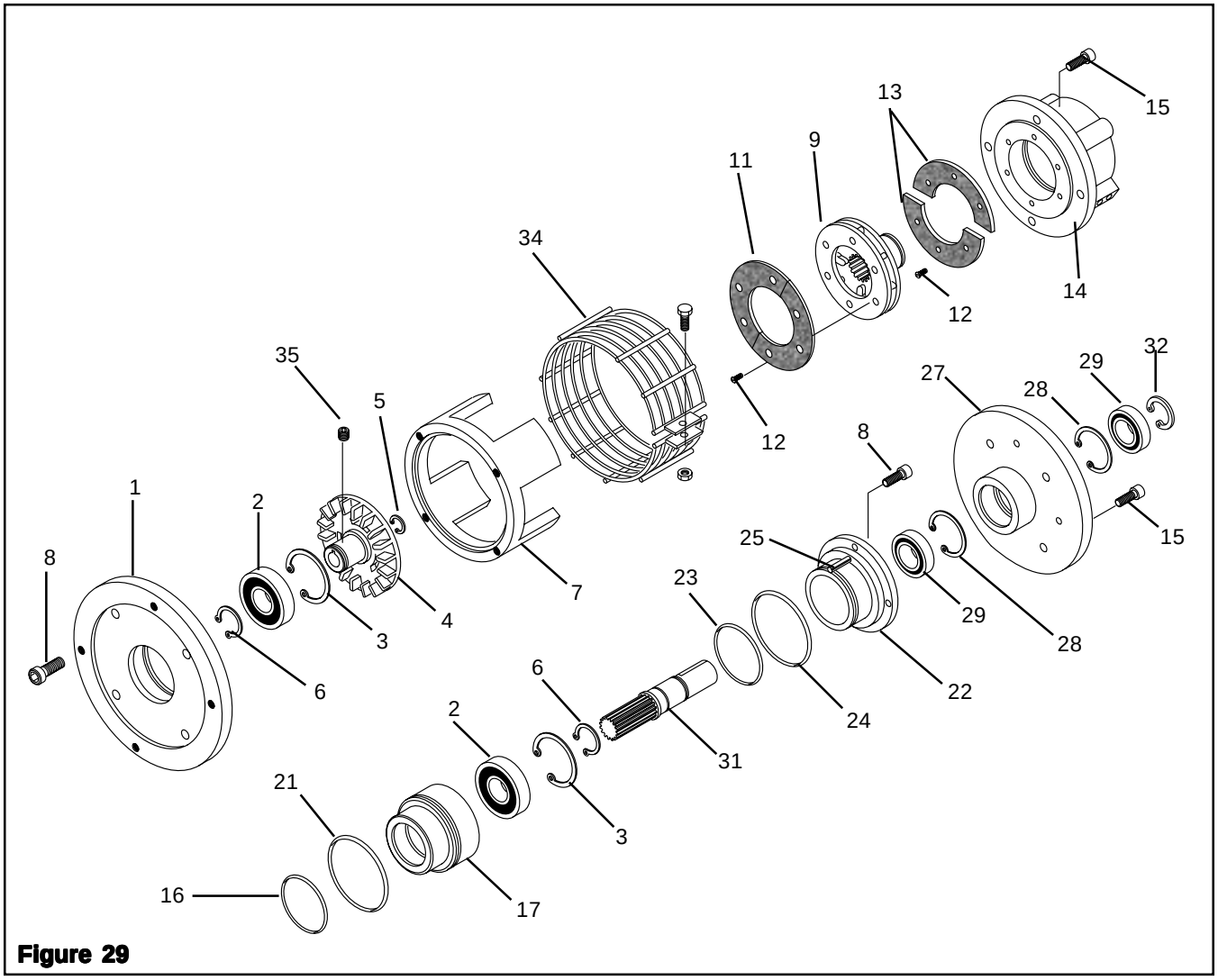


Figure 29

ITEM	DESCRIPTION	QTY
1	Female Pilot	1
2[1]	Bearing	1
3	Retaining Ring (Int.)	1
4	Drive Disc	1
5	Retaining Ring (Int.)	1
6	Retaining Ring (Ext.)	2
7	Housing	1
8	Socket Head Cap screw (M10-1.5)	12
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
22	Cylinder	1
23[1]	O-ring Seal	1
24[1]	O-ring Seal	1
25	Slotted Spring Pin	1
27	Male Pilot	1
28	Retaining Ring (Int.)	2
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 (M10-1.5)	1

[1] Denotes repair kit items included in repair kit 801639.
[2] Denotes clutch facing kit items included in facing kit 801648.
[3] Denotes brake facing kit items included in facing kit 801647.

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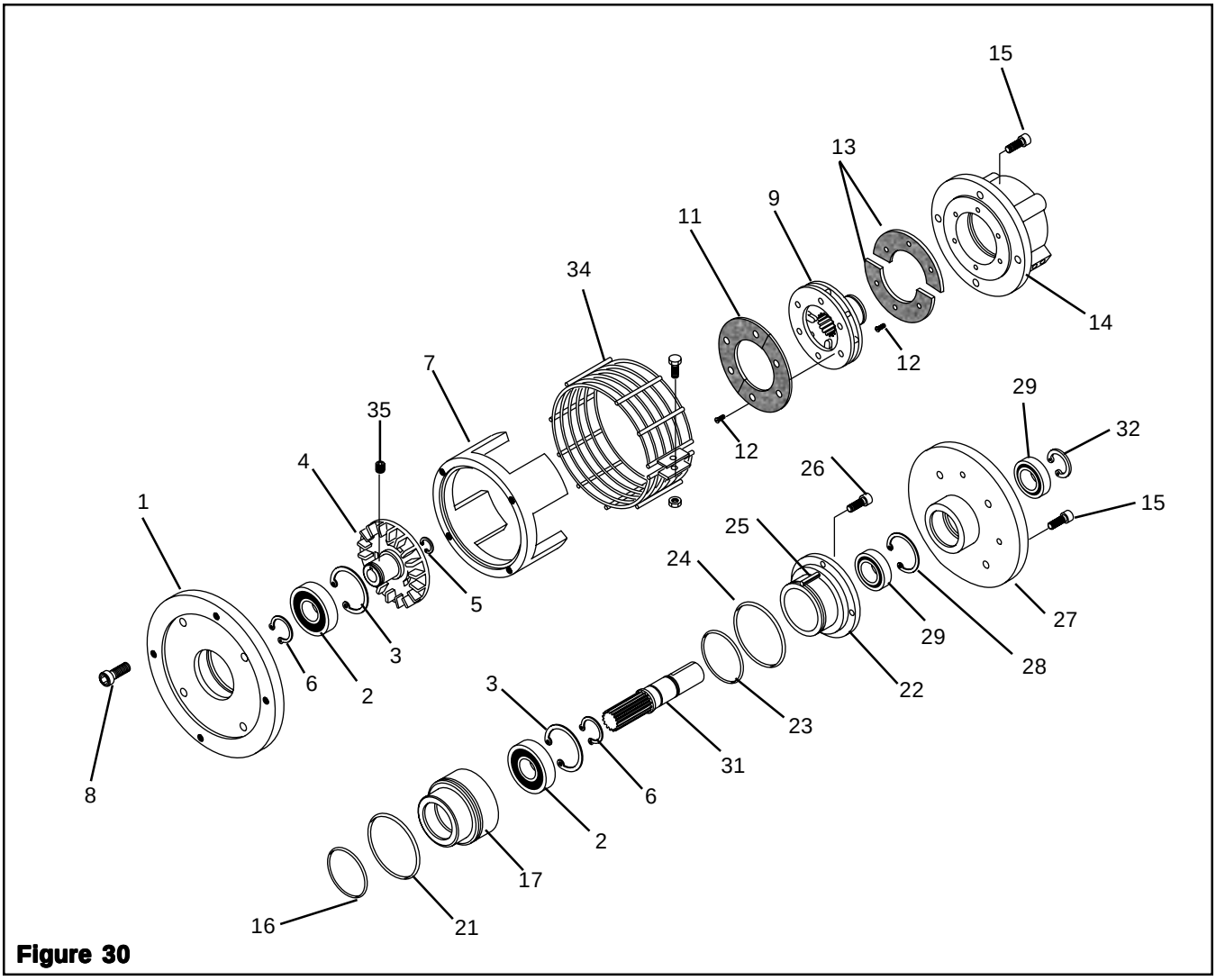

Figure 30

ITEM	DESCRIPTION	QTY
1	Female Pilot	1
2[1]	Bearing	2
3	Retaining Ring (Int.)	2
4	Drive Disc	1
5	Retaining Ring (Int.)	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
16[1]	O-ring Seal	1

ITEM	DESCRIPTION	QTY
17	Piston	1
21[1]	O-ring Seal	1
22	Cylinder	1
23[1]	O-ring Seal	1
24[1]	O-ring Seal	1
25	Slotted Spring Pin	1
26	Socket Head Cap screw (M10-1.5)	4
27	Male Pilot	1
28	Retaining Ring (Int.)	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 (M12-1.75)	1

[1] Denotes repair kit items included in repair kit 801640.
[2] Denotes clutch facing kit items included in facing kit 801650.
[3] Denotes brake facing kit items included in facing kit 801649.

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