nexen®

AIR CHAMP® PRODUCTS

User Manual

FMCE FLANGE MOUNTED CLUTCH WITH ELECTRONIC SLIP DETECTOR

MODELS 625, 875, AND 1375

FORM NO. L-20318-E-1112

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

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INSTALLATION

FMCE 625 MOUNTED ON THE SHAFT END OF A MOTOR

NOTE
Align the Solenoid Valve, located on the FMCE, to a down position to allow condensation to drain out of the air chamber

CAUTION
Use caution not to bump or damage the Sensors during assembly or disassembly.

1. Insert the customer supplied key into the motor shaft keyway (See Figure 1).
2. Slide the FMCE onto the motor shaft and secure it to the motor using customer supplied socket head cap screws and lock washers (See Figure 1).
3. Align the Set Screw (Item 26) in the Drive Disc (Item 4) with the hole in the FMCE Housing (See Figure 1).
4. Tighten the Set Screw (Item 26); then, install the Plug (Item 27) (See Figure 1).

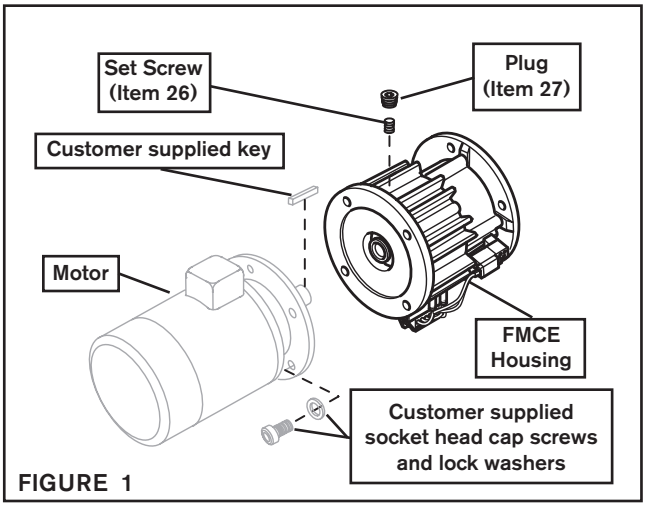

FIGURE 1

FMCE 875, 1125, AND 1375 MOUNTED ON THE SHAFT END OF A MOTOR

NOTE
Align the Solenoid Valve, located on the FMCE, to a down position to allow condensation to drain out of the air chamber

CAUTION
Use caution not to bump or damage the Sensors during assembly or disassembly.

1. Insert the customer supplied key into the motor shaft keyway (See Figure 2).
2. Remove the Socket Head Cap Screws (Item 24) and the Female Pilot (Item 13); then, secure the Female Pilot to the motor face using customer supplied socket head cap screws (See Figure 2).
3. Slide the FMCE Housing (Item 1) onto the motor shaft (See Figure 2).
4. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 24) (See Figure 2).
5. Secure the FMCE Housing (Item 1) to the Female Pilot (Item 13) using Socket Head Cap Screws (Item 24); then, alternately and evenly tighten the Socket Head Cap Screws to the recommended torque (See Figure 2 and Table 1).
6. Align the Set Screw (Item 26) in the Drive Disc (Item 4) with the hole in the FMCE Housing (See Figure 2).
7. Tighten the Set Screw (Item 26); then, install the Plug (Item 27) (See Figure 2).

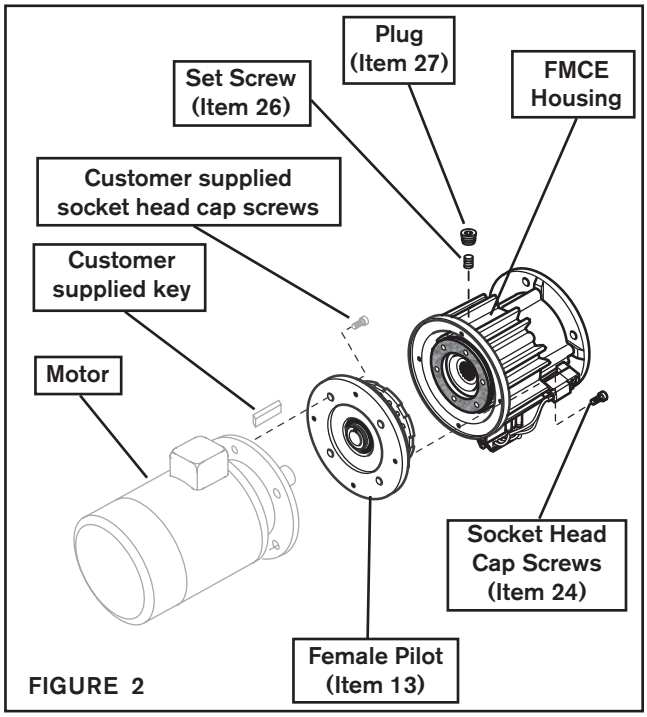

FIGURE 2

RECOMMENDED TIGHTENING TORQUE	
MODEL	**TIGHTENING TORQUE**
FMCE 875 (Item 24)	157 In. Lbs. [17.7 N•m]
FMCE 1125 (Item 24)	267 In. Lbs. [30.2 N•m]
FMCE 1375 (Item 24)	580 In. Lbs. [65.0 N•m]

TABLE 1

FMCE 625 MOUNTED BETWEEN A GEAR REDUCER AND A MOTOR

NOTE
Align the Solenoid Valve, located on the FMCE, to a down position to allow condensation to drain out of the air chamber

CAUTION
Use caution not to bump or damage the Sensors during assembly or disassembly.

1. Insert the Key (Item 25) into the output shaft of the FMCE (See Figure 3).
2. Slide the FMCE output shaft into the gear reducer (See Figure 3).
3. Secure the FMCE to the gear reducer using customer supplied socket head cap screws, lock washers, and nuts (See Figure 3).
4. Insert the customer supplied key into the motor shaft keyway (See Figure 3).
5. Slide the motor into the FMCE and secure it to the FMCE using customer supplied socket head cap screws and lock washers (See Figure 3).
6. Align the Set Screw (Item 26) in the Drive Disc (Item 4) with the hole in the FMCE Housing (See Figure 3).
7. Tighten the Set Screw (Item 26); then, install the Plug (Item 27) (See Figure 3).

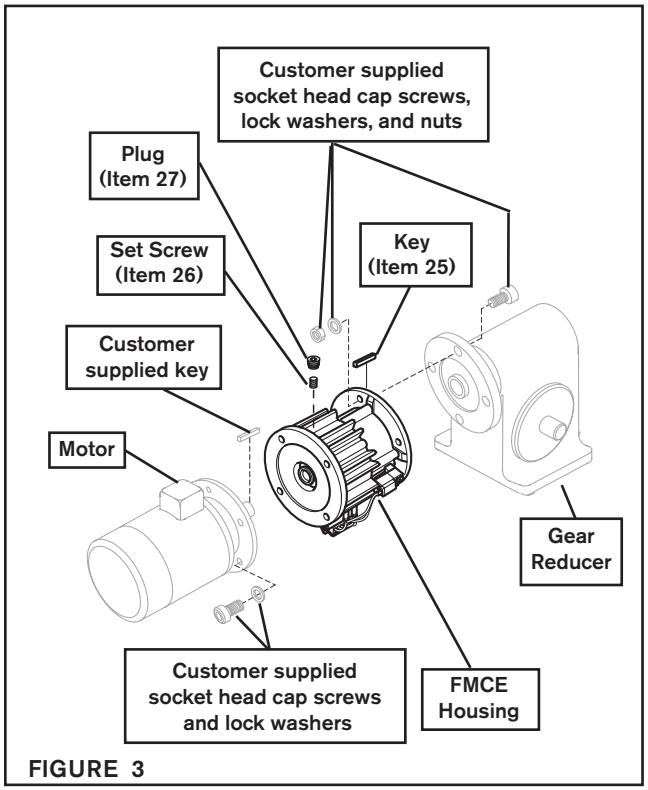

FIGURE 3

FMCE 875, 1125, AND 1375 MOUNTED BETWEEN A GEAR REDUCER AND A MOTOR

NOTE
Align the Solenoid Valve, located on the FMCE, to a down position to allow condensation to drain out of the air chamber

CAUTION
Use caution not to bump or damage the Sensors during assembly or disassembly.

1. Insert the Key (Item 25) into the output shaft of the FMCE (See Figure 4).
2. Slide the FMCE output shaft into the gear reducer (See Figure 4).
3. Secure the FMCE to the gear reducer using customer supplied socket head cap screws, lock washers, and nuts (See Figure 4).
4. Insert the customer supplied key into the motor shaft keyway (See Figure 4).
5. Remove the Socket Head Cap Screws (Item 24) and the Female Pilot (Item 13); then, secure the Female Pilot to the motor face using customer supplied socket head cap screws (See Figure 4).
6. Slide the FMCE Housing (Item 1) onto the motor shaft (See Figure 4).

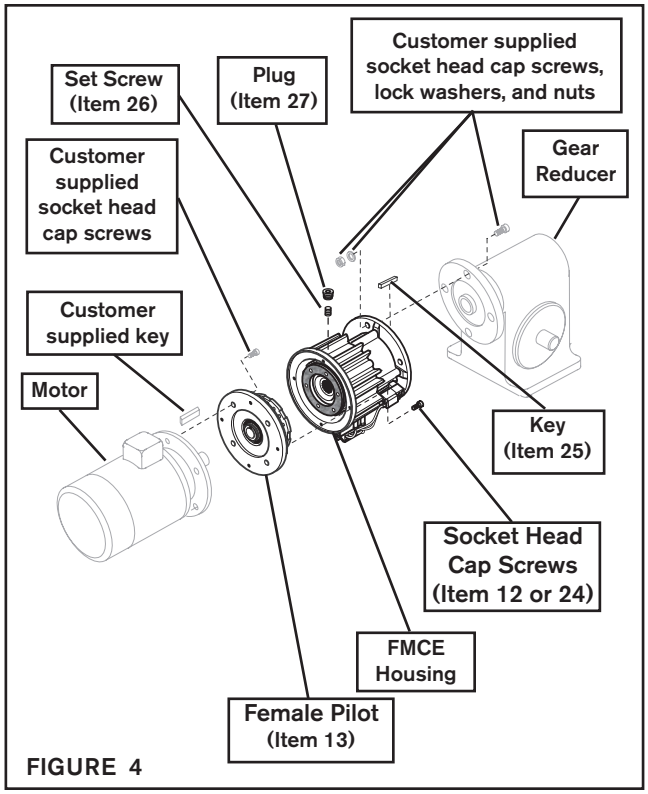

FIGURE 4

7. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 24) (See Figure 4).

8. Secure the FMCE Housing (Item 1) to the Female Pilot (Item 13) using Socket Head Caps Screws (Item 24); then, alternately and evenly tighten the Socket Head Cap Screws to the recommended torque (See Figure 4 and Table 2).

9. Align the Set Screw (Item 26) in the Drive Disc (Item 4) with the hole in the FMCE Housing (See Figure 4).

10. Tighten the Set Screw (Item 26); then, install the Plug (Item 27) (See Figure 4).

RECOMMENDED TIGHTENING TORQUE	
MODEL	**TIGHTENING TORQUE**
FMCE 875 (Item 24)	157 In. Lbs. [17.7 N•m]
FMCE 1125 (Item 24)	267 In. Lbs. [30.2 N•m]
FMCE 1375 (Item 24)	580 In. Lbs. [65.0 N•m]

TABLE 2

AIR CONNECTIONS

1. Connect the air line to the air inlet port of the Solenoid Valve (See Figure 5).

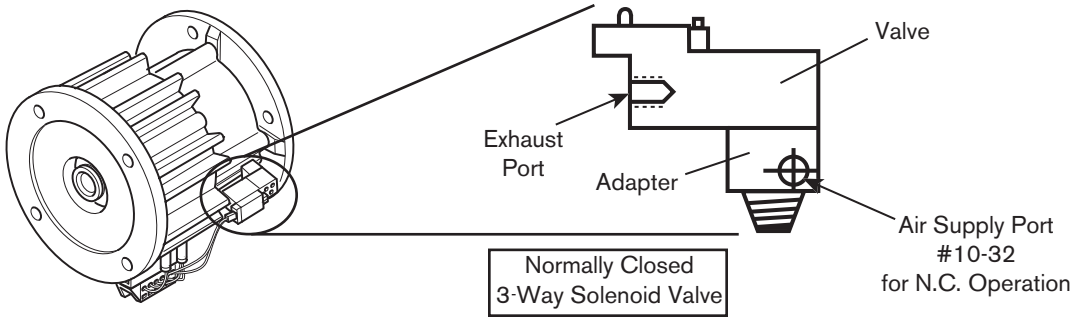

FIGURE 5

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 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 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 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 turn.

8. Open the air line to the unit.

ELECTRICAL CONNECTIONS

CAUTION
Use caution not to bump or damage the Sensors during assembly or disassembly.

1. Connect the Red and Black leads from the Connector (Item 30), located on the Solenoid Valve, to Terminals **5** and **6** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector and then inserting the Red and Black leads (See Figures 6 and 7).

2. Connect the Brown and Blue leads from the Input Sensor (Item 31) to Terminals **1** and **2** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector and then inserting the Brown and Blue leads (See Figures 6 and 7).

3. Connect the Brown and Blue leads from the Output Sensor (Item 31) to Terminals **3** and **4** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector and then inserting the Brown and Blue leads (See Figures 6 and 7).

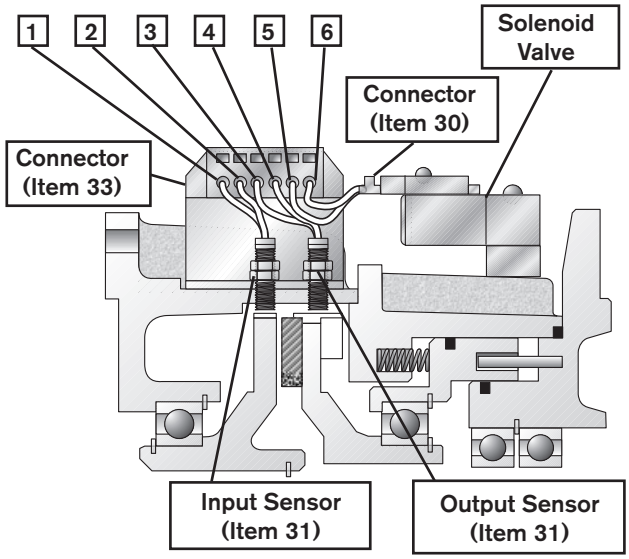

FIGURE 6

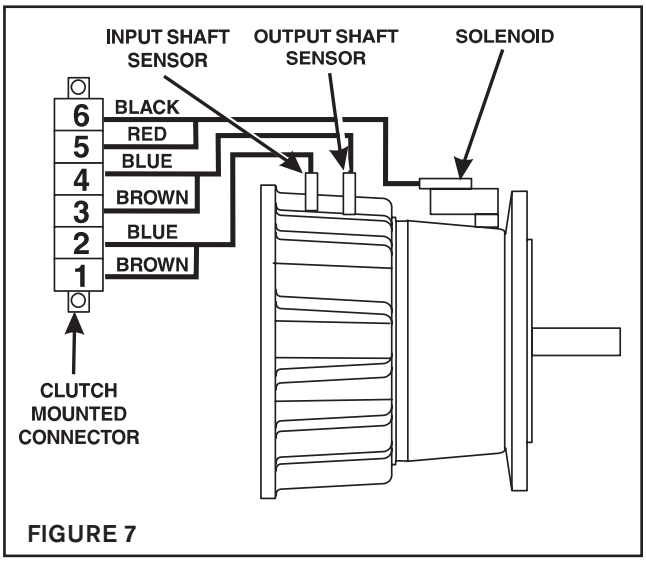

FIGURE 7

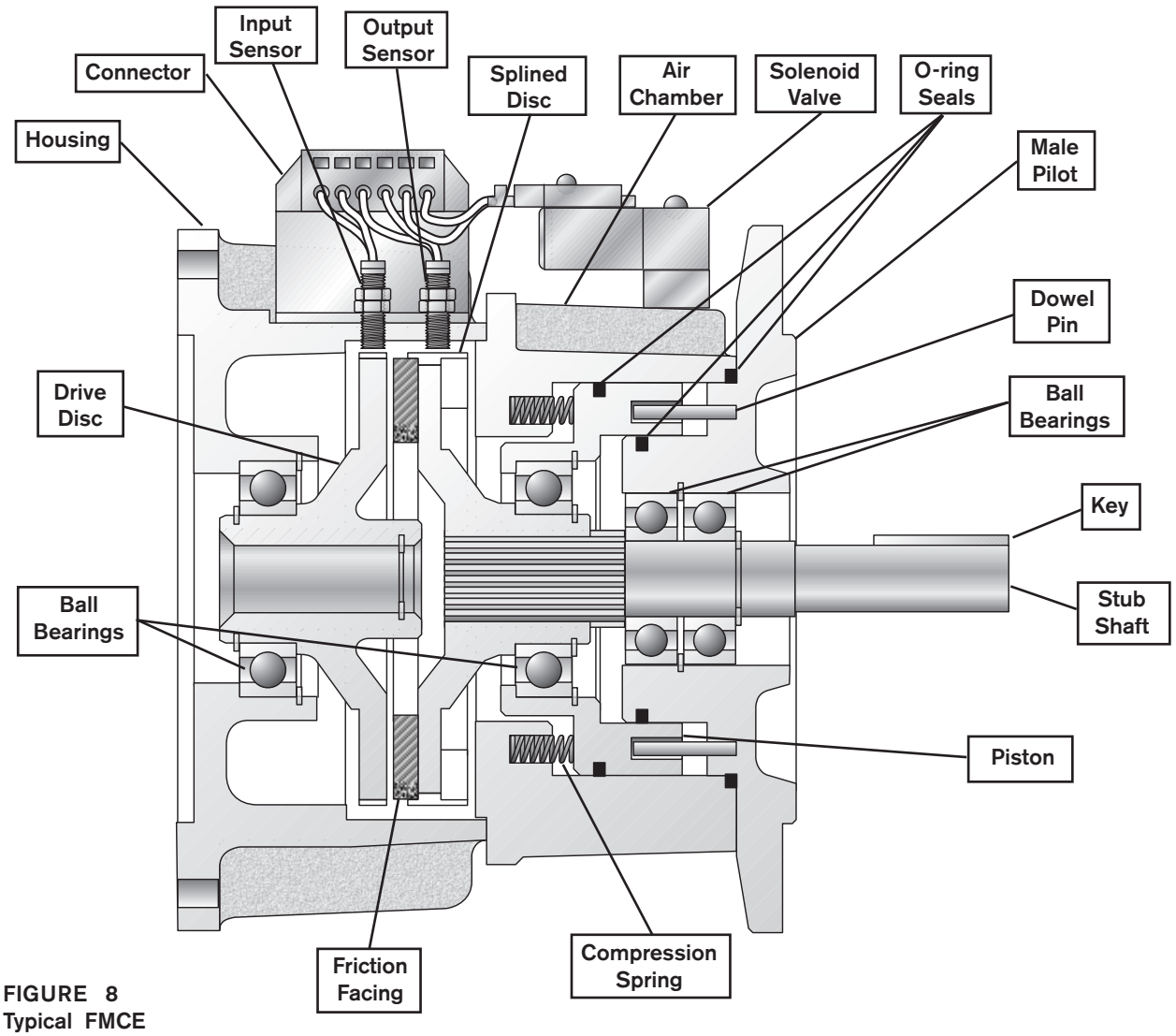

FIGURE 8
Typical FMCE

SYMPTOM	PROBABLE CAUSE	SOLUTION
Failure to engage.	Air not getting to the FMCE with Electronic Slip Detector due to a Solenoid Valve malfunction.	Check for a Solenoid 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.
	Sensors not properly adjusted or faulty Sensors	Adjust or replace the Sensors.
Failure to disengage.	Unexhausted air due to Solenoid Valve malfunction.	Check for a Solenoid 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.
	Sensors not properly adjusted or faulty Sensor	Adjust or replace the Sensors.
Loss of Torque.	Air leaks around the O-ring Seals.	Replace the O-ring Seals.
	Worn or dirty Fiction Facing.	Replace the Friction Facing.

PARTS REPLACEMENT - FRICTION FACING (ALL MODELS)

CAUTION
Use caution not to bump or damage the Sensors during assembly or disassembly.

1. Disconnect the Red and Black leads from the Connector (Item 30), located on the Solenoid Valve, from Terminals **5** and **6** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector; then, pull the two leads from the Solenoid Valve out of the Connector (See Figure 9).

2. Remove the four Socket Head Cap Screws (Item 12) and separate the two halves of the FMCE (See Figure 9).

NOTE
The Flat Head Screws are installed with an 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.

3. Remove the six old Flat Head Screws (Item 7) and the old Friction Facing (Item 8) (See Figure 9).

4. Install the new Friction Facing (Item 8) and new Flat Head Screws (Item 7) (See Figure 9).

5. Tighten the six new Flat Head Screws to the recommended torque (See Table 3).

6. Apply a drop of Loctite 242 to the threads of the Socket Head Cap Screws (Item 12) (See Figure 9).

7. Reinstall and tighten the four Socket Head Cap Screws (Item 12) to the recommended torque (See Table 4).

8. Reconnect the Red and Black leads from the Connector (Item 30), located on the Solenoid Valve, to Terminals **5** and **6** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector; then, push the two leads from the Solenoid Valve into the Connector (See ELECTRICAL CONNECTIONS).

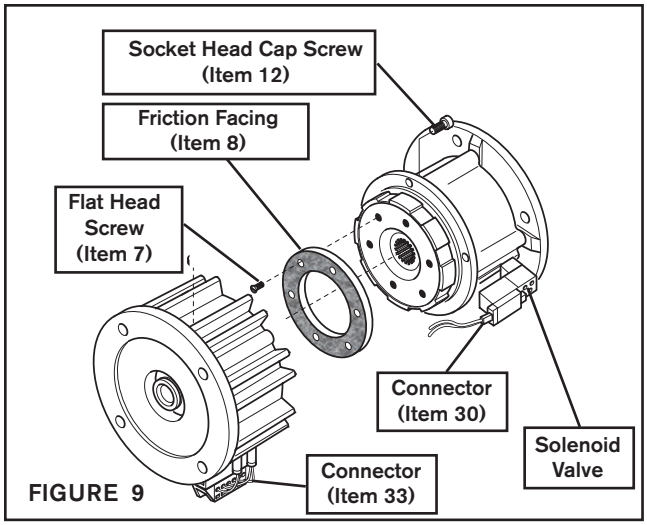

FIGURE 9

RECOMMENDED TIGHTENING TORQUE (Item 7)	
MODEL	**TIGHTENING TORQUE**
FMCE 625	22 In. Lbs. [2.5 N•m]
FMCE 875	22 In. Lbs. [2.5 N•m]
FMCE 1125	71 In. Lbs. [8.0 N•m]
FMCE 1375	71 In. Lbs. [8.0 N•m]

TABLE 3

RECOMMENDED TIGHTENING TORQUE (Item 12)	
MODEL	**TIGHTENING TORQUE**
FMCE 625	157 In. Lbs. [17.7 N•m]
FMCE 875	267 In. Lbs. [30.2 N•m]
FMCE 1125	267 In. Lbs. [30.2 N•m]
FMCE 1375	594 In. Lbs. [55.5 N•m]

TABLE 4

PARTS REPLACEMENT - SENSORS (ALL MODELS)

CAUTION
Use caution not to bump or damage the Sensors during assembly or disassembly.

1. Disconnect the Red and Black leads from the Connector (Item 30), located on the Solenoid Valve, from Terminals **5** and **6** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector; then, pull the two leads from the Solenoid Valve out of the Connector (See Figure 10).

2. Remove the four Socket Head Cap Screws (Item 12) and separate the two halves of the FMCE (See Figure 10).

3. Disconnect the Brown and Blue leads from each of the Sensors (Item 31) from Terminals **1, 2, 3,** and **4** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector; then, pull the two leads from the Sensors out of the Connector.

4. Remove the two old Input and Output Sensors (Item 31) from the Housing (Item 1) (See Figure 10).

5. Install the first new Input Sensor (Item 31) into the Housing (Item 1) directly over a high spot on the Drive Disc (Item 4) (See Figure 11).

6. Adjust the first new Input Sensor probe until it is approximately 0.03149 In. [0.8 mm] from the high spot on the Drive Disc (Item 4) and lock the new Input Sensor in place (See Figure 11).

7. Install the new Output Sensor (Item 31) into the Housing (Item 1) until it is exactly flush with the probe of the installed Input Sensor and lock the Output Sensor in place (See Figure 11).

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

9. Reinstall and tighten the four Socket Head Cap Screws (Item 12) to the recommended torque (See Table 5).

10. Reconnect the Brown and Blue leads from the Sensors (Item 31) to Terminals **1**, **2**, **3**, and **4** of the Connector (Item 33) (See ELECTRICAL CONNECTIONS).

11. Reconnect the Red and Black leads from the Connector (Item 30), located on the Solenoid Valve, to Terminals **5** and **6** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector (Item 33); then, push the two leads from the Solenoid Valve into the Connector (See ELECTRICAL CONNECTIONS).

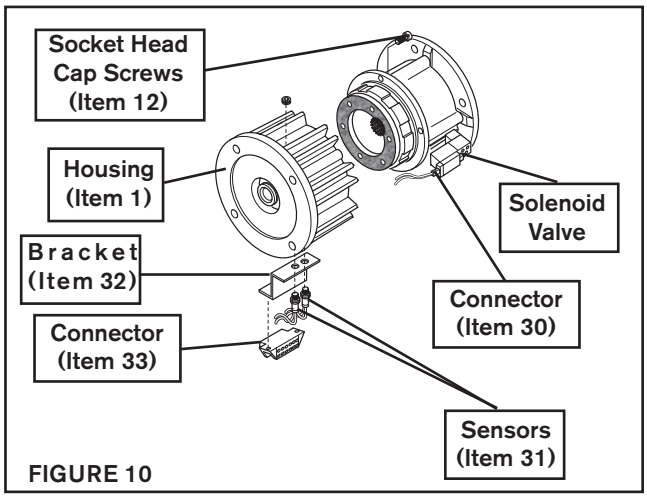

FIGURE 10

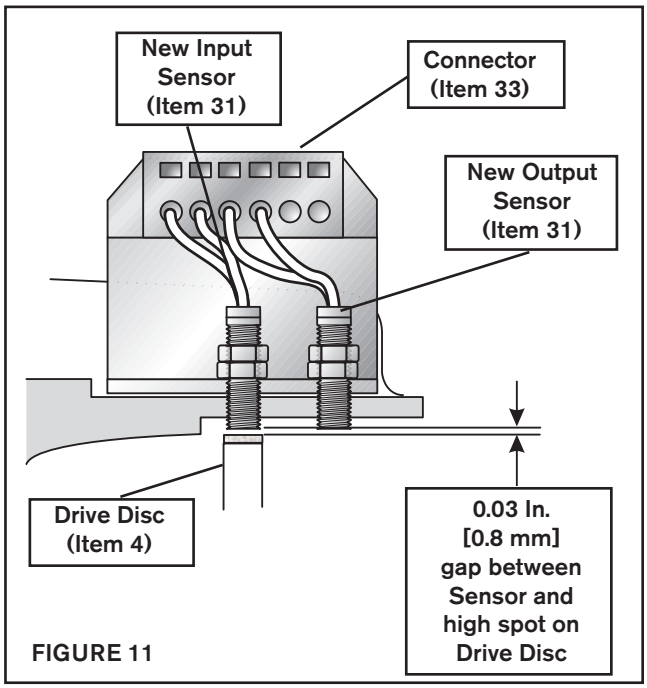

FIGURE 11

RECOMMENDED TIGHTENING TORQUE (Item 12)	
MODEL	**TIGHTENING TORQUE**
FMCE 625	157 In. Lbs. [17.7 N•m]
FMCE 875	267 In. Lbs. [30.2 N•m]
FMCE 1125	267 In. Lbs. [30.2 N•m]
FMCE 1375	594 In. Lbs. [55.5 N•m]

TABLE 5

PARTS REPLACEMENT - HOUSING BEARING, MODEL FMCE 625

CAUTION
Use caution not to bump or damage the Sensors during assembly or disassembly.

NOTE
If an Input Unit is installed on the FMCE, it must be removed before servicing the FMCE. Remove the Plug (Item 27) and loosen the Set Screw (Item 26) to release the FMCE from the Input Unit (See Figure 12).

1. Disconnect the Red and Black leads from the Connector (Item 30), located on the Solenoid Valve, from Terminals **5** and **6** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector; then, pull the two leads from the Solenoid Valve out of the Connector (See Figure 12).

2. Remove the four Socket Head Cap Screws (Item 12) and separate the two halves of the FMCE (See Figure 12).

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.

3. Remove the Retaining Ring (Item 6) (See Figure 12).

4. Press the Drive Disc (Item 4) out of the Bearing (Item 2) and the Housing (Item 1) (See Figure 12).

5. Remove the Retaining Ring (Item 3) (See Figure 12).

6. Fully supporting the Housing (Item 1), press the old Bearing (Item 2) out of the Housing (Item 1) (See Figure 12).
7. Clean the bearing bore of the Housing (Item 1) with fresh

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.

safety solvent, making sure all old Loctite® residue is removed (See Figure 10).

8. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Bearing (Item 2) (See Figure 12).

9. Carefully align the outer race of the new Bearing (Item 2) with the bore of the Housing (Item 1) (See Figure 12).

10. Supporting the Housing (Item 1) and pressing on the outer race of the new Bearing (Item 2), press the new Bearing into the Housing (See Figure 12).

11. Reinstall the Retaining Ring (Item 3) (See Figure 12).

12. 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 12).

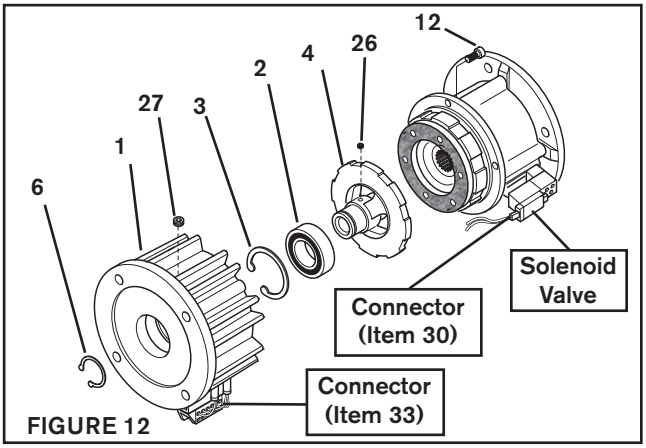

FIGURE 12

13. Reinstall the Retaining Ring (Item 6) (See Figure 12).
14. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 12) (See Figure 12).

NOTE
If you are replacing all the Bearings and O-ring Seals in the FMCE, proceed to PARTS REPLACEMENT–BEARINGS AND O-RING SEALS; otherwise, proceed with the next step.

15. Slide the Housing (Item 1), Bearing (Item 2), and Drive Disc (Item 4) into the FMCE and reinstall the four Socket Head Cap Screws (Item 12) (See Figure 12).

16. Tighten the four Socket Head Cap Screws (Item 12) to 157 In. Lbs. [17.7 N•m] torque.

17. Reconnect the Red and Black leads from the Connector (Item 30), located on the Solenoid Valve, to Terminals **5** and **6** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector; then, push the two leads from the Solenoid Valve into the Connector (See ELECTRICAL CONNECTIONS).

PARTS REPLACEMENT - FEMALE PILOT BEARING, MODEL FMCE 875, 1125 AND 1375

CAUTION
Use caution not to bump or damage the Sensors during assembly or disassembly.

NOTE
If an Input Unit is installed on the FMCE, it must be removed before servicing the FMCE. Remove the Plug (Item 27) and loosen the Set Screw (Item 26) to release the FMCE from the Input Unit (See Figure 13).

1. Disconnect the Red and Black leads from the Connector (Item 30), located on the Solenoid Valve, from Terminals **5** and **6** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector; then, pull the two leads from the Solenoid Valve out of the Connector (See Figure 13).

2. Remove the four Socket Head Cap Screws (Item 24) and remove the Female Pilot (Item 13) from the FMCE Housing (Item 1) (See Figure 13).

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.

3. Remove the Retaining Ring (Item 6) (See Figure 13).

4. Press the Drive Disc (Item 4) out of the Bearing (Item 2) and the Female Pilot (Item 13) (See Figure 13).

5. Remove the Retaining Ring (Item 3) (See Figure 13).

6. Fully supporting the Female Pilot (Item 13), press the old Bearing (Item 2) out of the Female Pilot (Item 13) (See Figure 13).

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.

7. Clean the bearing bore of the Female Pilot (Item 13) with fresh safety solvent, making sure all old Loctite® residue is removed (See Figure 13).

8. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Bearing (Item 2) (See Figure 13).

9. Carefully align the outer race of the new Bearing (Item 2) with the bore of the Female Pilot (Item 13) (See Figure 13).

10. Supporting the Female Pilot (Item 13) and pressing on the outer race of the new Bearing (Item 2), press the new Bearing into the Female Pilot (See Figure 13).

11. Reinstall the Retaining Ring (Item 3) (See Figure 13).

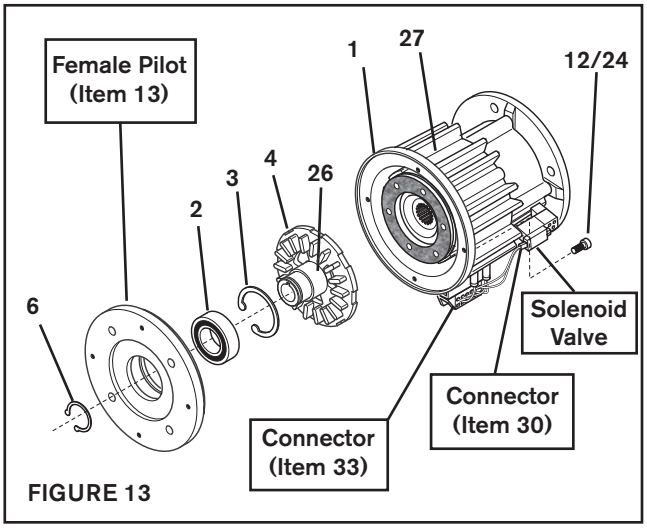

FIGURE 13

Model	Recommended Tightening Torque for (Item24)
FMCE 875	100 In. Lbs. [11.2 N•m]
FMCE 1125	325 In. Lbs. [36.4 N•m]
FMCE 1375	580 In. Lbs. [65.0 N•m]

TABLE 6

12. Support the inner race of the new Bearing (Item 2) and press the Drive Disc (Item 4) into the new Bearing and Female Pilot (Item 13) (See Figure 13).

13. Reinstall the Retaining Ring (Item 6) (See Figure 13).

NOTE
If you are replacing all the Bearings and O-ring Seals in the FMCE, proceed to PARTS REPLACEMENT–BEARINGS AND O-RING SEALS; otherwise, proceed with the next step.

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

15. Slide the Female Pilot (Item 13), Bearing (Item 2), and Drive Disc (Item 4) into the FMCE and reinstall the four Socket Head Cap Screws (Item 24) (See Figure 13).

16. Alternately and evenly tighten the four Socket Head Cap Screws (Item 24) to the recommended torque (See Figure 13 and Table 6).

17. Reconnect the Red and Black leads from the Connector (Item 30), located on the Solenoid Valve, to Terminals **5** and **6** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector; then, push the two leads from the Solenoid Valve into the Connector (See ELECTRICAL CONNECTIONS).

PARTS REPLACEMENT - BEARINGS AND O-RING SEALS (ALL MODELS)

CAUTION
Use caution not to bump or damage the Sensors during assembly or disassembly.

1. Disconnect the Red and Black leads from the Connector (Item 30), located on the Solenoid Valve, from Terminals **5** and **6** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector; then, pull the two leads from the Solenoid Valve out of the Connector (See Figure 14).

2. Remove the four Socket Head Cap Screws (Item 12) and separate the two halves of the FMCE (See Figure 14).

3. Remove the four Socket Head Cap Screws (Item 12) securing the Male Pilot (Item 19) to the Air Chamber (Item 11) (See Figure 14).

4. Remove the Male Pilot (Item 19) and Stub Shaft (Item 22) from the Air Chamber (Item 11) (See Figure 14).

5. Remove and discard the old O-ring Seals (Items 20 and 21) (See Figure 14).

WARNING
The Piston (Item 15) is spring loaded. Always wear safety goggles when working with spring or tension loaded fasteners or devices.

6. Using a "C" clamp, compress the Piston (Item 15) into the Air Chamber (Item 11) (See Figure 15).

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.

7. Remove the Retaining Ring (Item 6) from the Splined Disc (Item 9) (See Figure 15).

8. Press the Splined Disc (Item 9) from the Bearing (Item 2) (See Figure 15).

9. Slowly release the "C" clamp holding the Piston (Item 15) in the Air Chamber (Item 11); then, remove the Piston (Item 15) from the Air Chamber (Item 11) (See Figure 15).

10. Remove the six Compression Springs (Item 10) (See Figure 15).

11. Remove the Retaining Ring (Item 3) from the Piston (Item 15) (See Figure 15).

12. Remove and discard the old O-ring Seal (Item 14) from the Piston (Item 15) (See Figure 15).

13. Press the Bearing (Item 2) out of the Piston (Item 15) (See Figure 15).

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

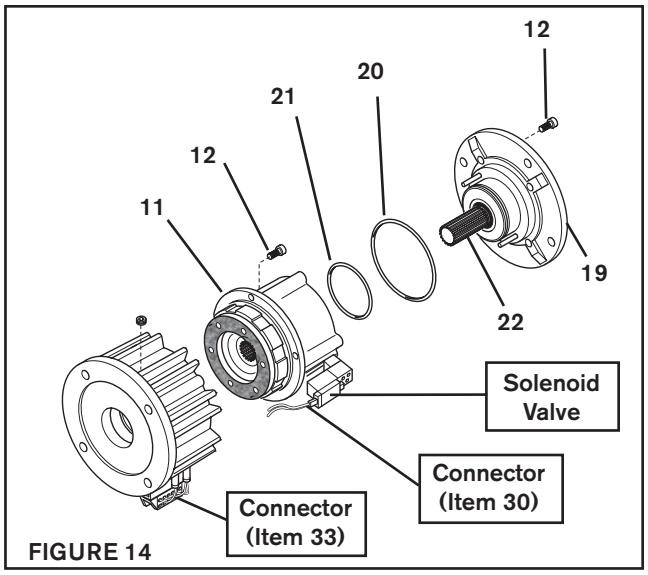

FIGURE 14

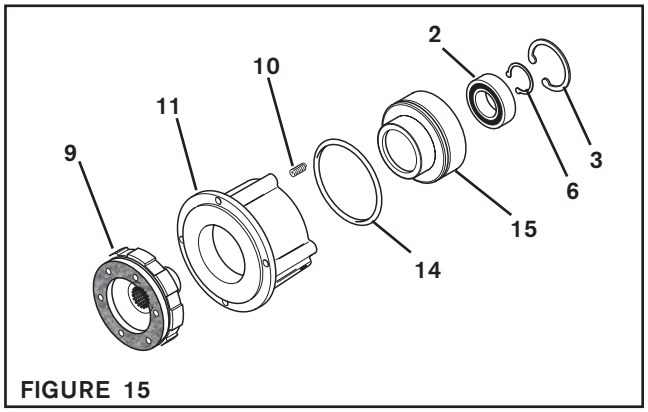

FIGURE 15

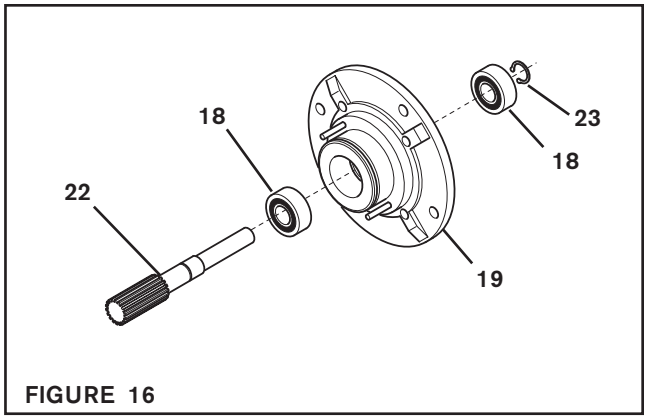

FIGURE 16

RECOMMENDED TIGHTENING TORQUE (Item 12)	
MODEL	**TIGHTENING TORQUE**
FMCE 625	157 In. Lbs. [17.7 N•m]
FMCE 875	267 In. Lbs. [30.2 N•m]
FMCE 1125	267 In. Lbs. [30.2 N•m]
FMCE 1375	594 In. Lbs. [55.5 N•m]

TABLE 7

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

16. Carefully align the outer race of the new Bearing (Item 2) with the bore of the Piston (Item 15) (See Figure 15).

17. Supporting the Piston (Item 15) and pressing on the outer race of the new Bearing (Item 2), press the new Bearing into the Piston (See Figure 15).

18. Reinstall the Retaining Ring (Item 3), securing the Bearing to the Piston (Item 15) (See Figure 15).

19. Coat the O-ring contact surfaces of the Air Chamber (Item 11), Piston (Item 15), and the O-ring Seal (Item 14) with a thin film of O-ring lubricant and install the new O-ring Seal (See Figure 15).

20. Reinstall the six Compression Springs (Item 10) into the Air Chamber (Item 11) (See Figure 15).

21. Slide the Piston (Item 15) into the Air Chamber (Item 11) (See Figure 15).

22. Using a "C" clamp, compress the Piston (Item 15) into the Air Chamber (Item 11) (See Figure 15).

23. Support the inner race of the Bearing (Item 2) and press the Splined Disc (Item 9) into the Bearing and Piston (Item 15) (See Figure 15).

24. Reinstall the Retaining Ring (Item 6) that secures the Splined Disc (Item 9) to the Bearing (Item 2) (See Figure 15).

25. Remove the "C" clamp.

26. Remove the Retaining Ring (Item 23) from the Stub Shaft (Item 22) (See Figure 16).

27. Press the Stub Shaft (Item 22) out the Male Pilot (Item 19) (See Figure 16).

NOTE
One Bearing (Item 18) will remain attached to the Stub Shaft (Item 22).

28. Press the old Bearing (Item 18) off the Stub Shaft (Item 22) (See Figure 16).

29. Press the old Bearing (Item 18) out of the Male Pilot (Item 19) (See Figure 16).

NOTE
It is not necessary to remove the Retaining Ring (Item 17) from the inside of the Male Pilot (Item 19).

30. Clean the bearing bore of the Male Pilot (Item 19) with fresh safety solvent, making sure all old Loctite® residue is removed (See Figure 16).

31. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the first new Bearing (Item 18) and press it into the output side of the Male Pilot until it is seated against the Retaining Ring (Item 17) inside the Male Pilot (See Figure 16).

32. Press the second new Bearing (Item 18) onto the Stub Shaft (Item 22) (See Figure 16).

33. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the second new Bearing (Item 18).

34. Carefully align the outer race of the second new Bearing (Item 18) with the bore of the Male Pilot (Item 19) (See Figure 16).

35. While supporting the Male Pilot (Item 19) and the inner race of the first new Bearing (Item 18) and pressing on the outer race of the second new Bearing (Item 18), press the second new Bearing and Stub Shaft (Item 22) into the Male Pilot (See Figure 16).

36. Reinstall the Retaining Ring (Item 23) (See Figure 16).

37. Apply a thin film of NEVER-SEEZ® to the splines of the Stub Shaft (Item 22) (See Figure 16).

38. Coat the O-ring contact surfaces of the Male Pilot (Item 19), Piston (Item 15), and the O-ring Seals (Items 20 and 21) with a thin film of O-ring lubricant.

39. Install the new O-ring Seals (Items 20 and 21) (See Figure 14).

40. Align the Dowel Pins (Item 16) in the Male Pilot (Item 19) with the holes in the Piston (Item 15) (See Figure 14).

41. Slide the Male Pilot (Item 19) and Stub Shaft (Item 22) into the FMCE.

42. Apply a drop of Loctite® 242 to the threads of four Socket Head Cap Screws (Item 12) (See Figure 14).

43. Tighten the four Socket Head Cap Screws (Item 12) that secure the Male Pilot (Item 19) to the Air Chamber (Item 11) to the recommended torque (See Table 7).

44. Apply a drop of Loctite® 242 to the threads of the remaining four Socket Head Cap Screws (Item 12) (See Figure 14).

45. Slide the Air Chamber (Item 11) into the Housing (Item 1) and install the four remaining Socket Head Cap Screws (Item 12) that secure the Air Chamber to the Housing (See Figure 14).

46. Tighten the four Socket Head Cap Screws (Item 12) that secure the Air Chamber (Item 11) to the Housing (Item 1) to the recommended torque (See Figure 14 and Table 7).

47. Reconnect the Red and Black leads from the Connector (Item 30) located on the Solenoid Valve, to Terminals **5** and **6** of the Connector (Item 33) by pushing a screwdriver into the slot on the top of the Connector; then, push the two leads from the Solenoid Valve into the Connector (See ELECTRICAL CONNECTIONS).

PARTS REPLACEMENT - INPUT UNIT

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 35) from the output end of the Input Unit (See Figure 17).

2. Press the Stub Shaft (Item 11) out of the Bearing Flange (Item 20) (See Figure 17).

NOTE
One old Ball Bearing (Item 30) will come out of the Bearing Flange (Item 20) with the Stub Shaft (Item 11).

3. Press the first old Ball Bearing (Item 30) off the Stub Shaft (Item 11) (See Figure 17).

4. Press the first new Ball Bearing (Item 30) onto the Stub Shaft (Item 11) until it is seated against the Retaining Ring (Item 35) (See Figure 17).

5. Press the second old Ball Bearing (Item 30) out of the Bearing Flange (Item 20) (See Figure 17).

6. Clean the bearing bore of the Bearing Flange with fresh safety solvent, making sure all old Loctite® residue is removed (See Figure 17).

7. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the first new Ball Bearing (Item 30) on the Stub Shaft (Item 11) and press the first new Ball Bearing and Stub Shaft into the Bearing Flange (Item 20) until the Ball Bearing is seated against the Retaining Ring (Item 58) (See Figure 17).

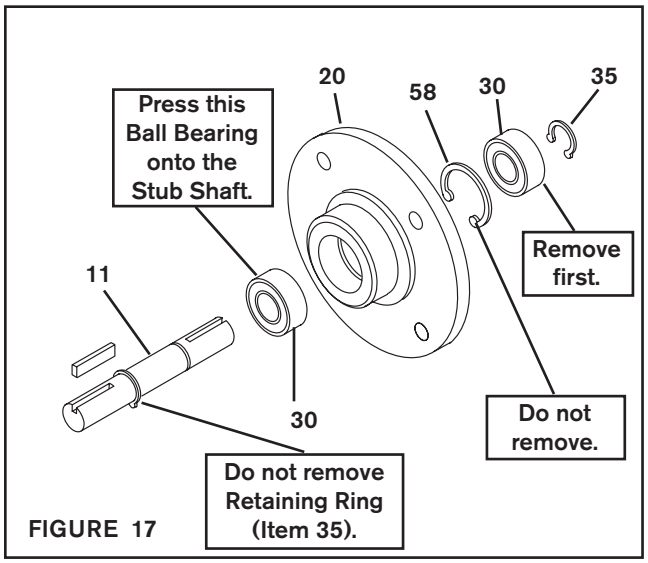

FIGURE 17

8. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the second new Ball Bearing (Item 30) and press the second new Ball Bearing onto the Stub Shaft and into the Bearing Flange (Item 20) until the Ball Bearing is seated against the Retaining Ring (Item 58) (See Figure 17).

9. Reinstall the Retaining Ring (Item 35) (See Figure 17).

PARTS REPLACEMENT

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

FMCE 625 WITH ELECTRONIC SLIP DETECTOR

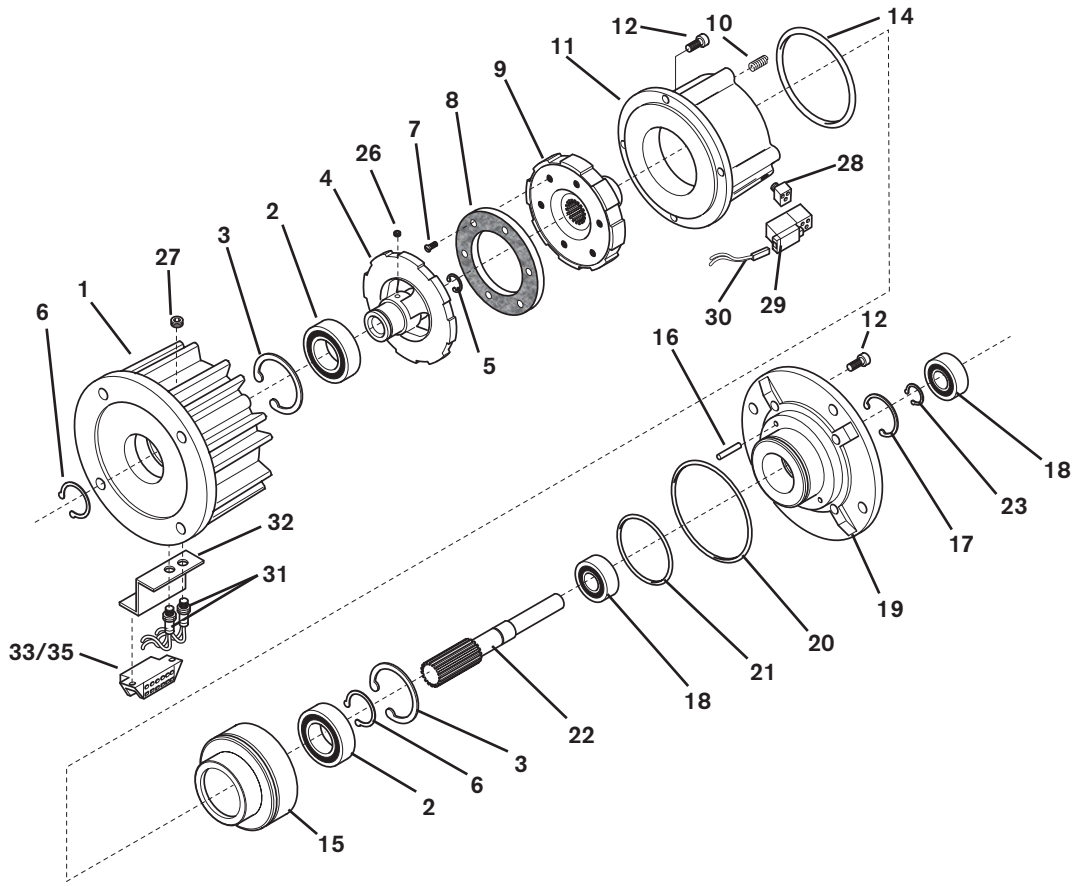

FIGURE 18

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]	Flat Head Screw	6
8[2]	Friction Facing	1
9	Splined Disc	1
10	Compression Spring	6
11	Air Chamber	1
12	Socket Head Cap Screw	8
14[1]	O-ring Seal	1
15	Piston	1
16	Dowel Pin	2
17	Retaining Ring (Int.)	1
18[1]	Bearing	2

ITEM	DESCRIPTION	QTY
19	Male Pilot	1
20[1]	O-ring Seal	1
21[1]	O-ring Seal	1
22	Stub Shaft	1
23	Retaining Ring (Ext.)	1
25	Key (Not Shown)	1
26	Set Screw	1
27	Plug	1
28	Adapter Base	1
29	Solenoid Valve (Includes Gasket and Screws)	1
30	Connector (Electronic)	1
31	Sensor	2
32	Bracket	1
33	Connector	1
35	Pan Head Screw (Not Shown)	2
37	Lock Washer (Not Shown)	2

[1] Denotes Repair Kit item.
Repair Kit No. 801487.

[2] Denotes Facing Kit item.
Facing Kit No. 801488.

FMCE 875 WITH ELECTRONIC SLIP DETECTOR

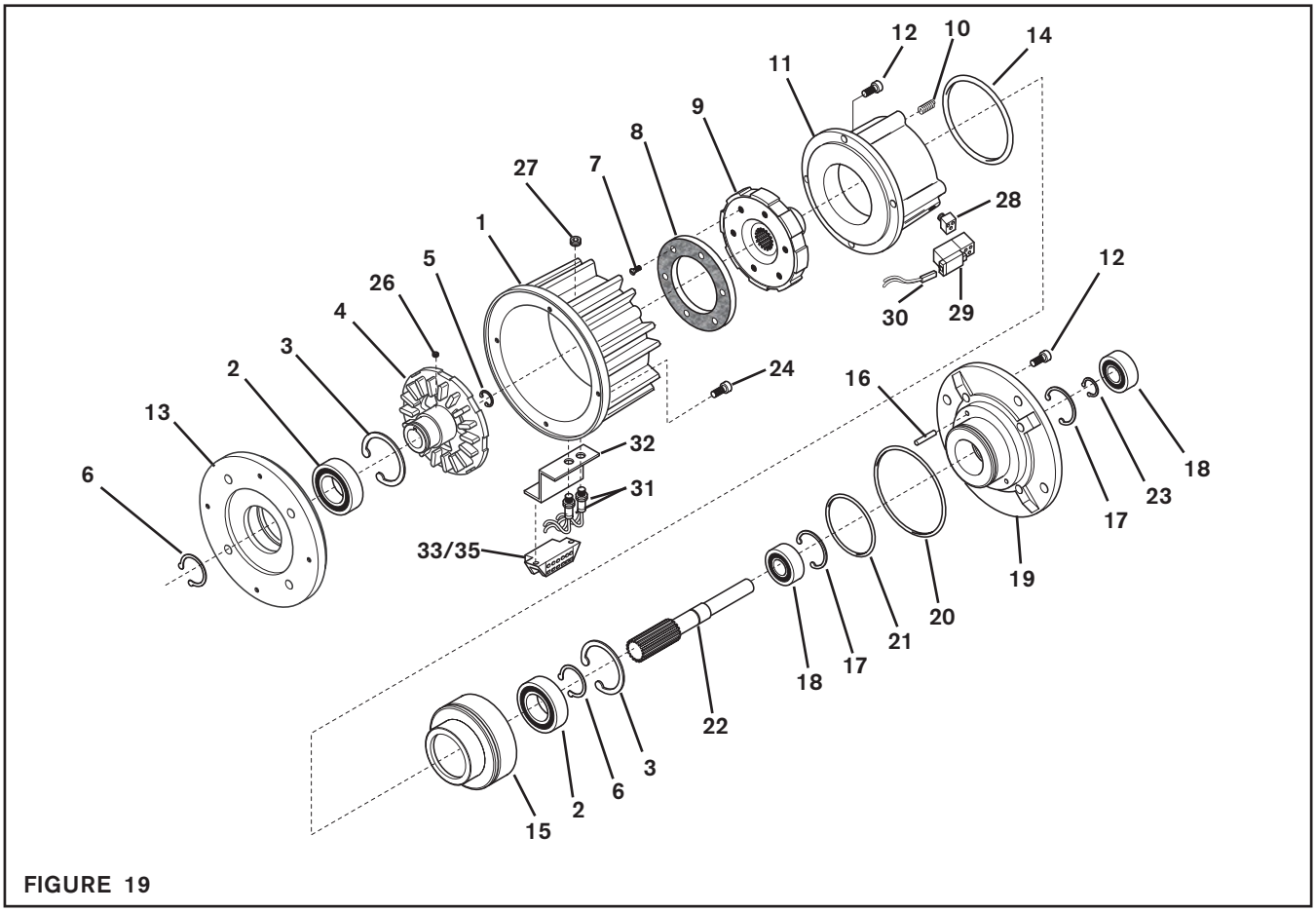

FIGURE 19

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]	Flat Head Screw	6
8[2]	Friction Facing	1
9	Splined Disc	1
10	Compression Spring	6
11	Air Chamber	1
12	Socket Head Cap Screw	8
13	Female Pilot	1
14[1]	O-ring Seal	1
15	Piston	1
16	Slotted Spring Pin	1
17	Retaining Ring (Int.)	1
18[1]	Bearing	2

ITEM	DESCRIPTION	QTY
19	Male Pilot	1
20[1]	O-ring Seal	1
21[1]	O-ring Seal	1
22	Stub Shaft	1
23	Retaining Ring (Ext.)	1
24	Socket Head Cap Screw	4
25	Key (Not Shown)	1
26	Set Screw	1
27	Plug	1
28	Adapter Base	1
29	Solenoid Valve (Includes Gasket and Screws)	1
30	Connector (Electronic)	1
31	Sensor	2
32	Bracket	1
33	Connector	1
35	Pan Head Screw (Not Shown)	2
37	Lock Washer (Not Shown)	2

[1] Denotes Repair Kit item.
Repair Kit No. 801474.

[2] Denotes Facing Kit item.
Facing Kit No. 801477.

FMCE 1125 WITH ELECTRONIC SLIP DETECTOR

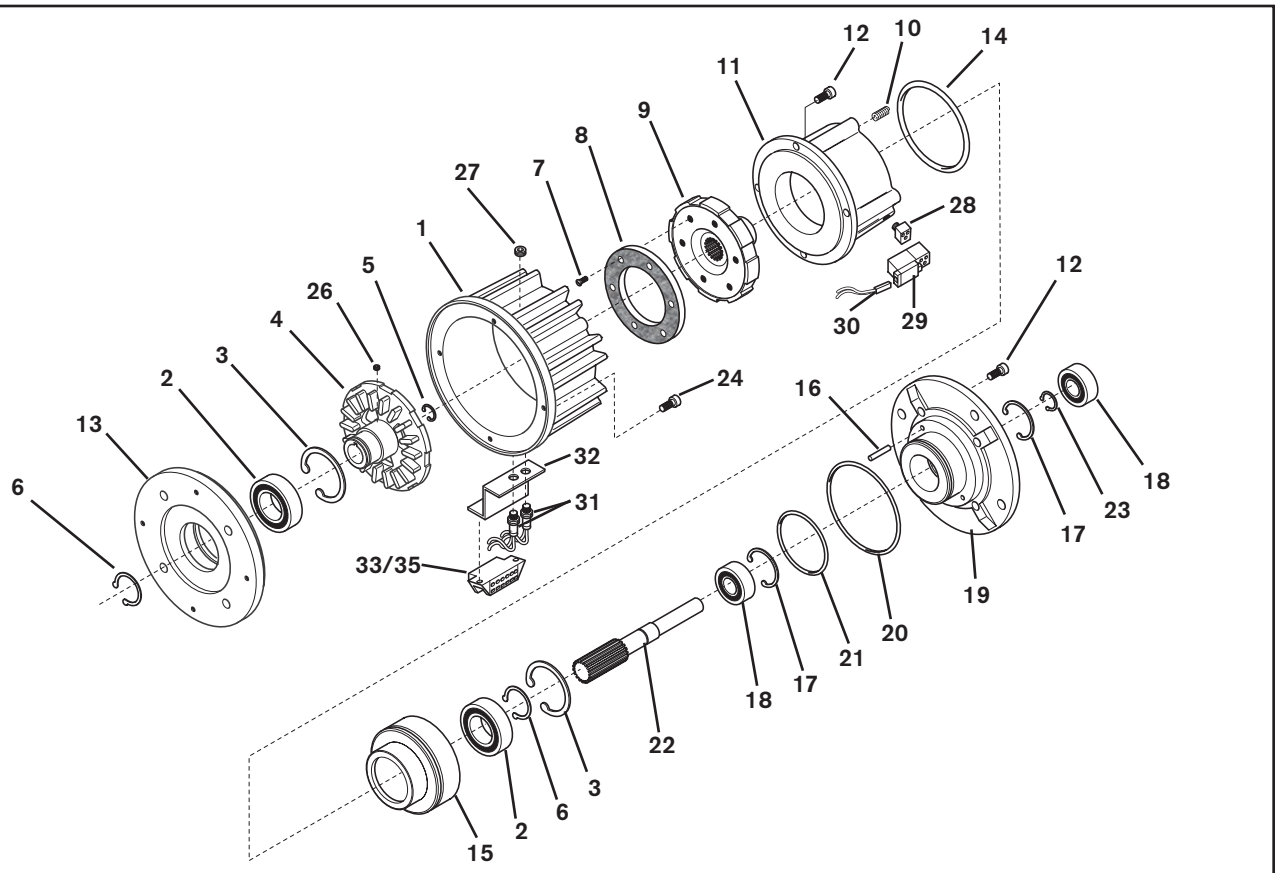

FIGURE 20

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]	Flat Head Screw	6
8[2]	Friction Facing	1
9	Splined Disc	1
10	Compression Spring	6
11	Air Chamber	1
12	Socket Head Cap Screw	8
13	Female Pilot	1
14[1]	O-ring Seal	1
15	Piston	1
16	Dowel Pin	2
17	Retaining Ring (Int.)	1
18[1]	Bearing	2

ITEM	DESCRIPTION	QTY
19	Male Pilot	1
20[1]	O-ring Seal	1
21[1]	O-ring Seal	1
22	Stub Shaft	1
23	Retaining Ring (Ext.)	1
24	Socket Head Cap Screw	4
25	Key (Not Shown)	1
26	Set Screw	1
27	Plug	1
28	Adapter Base	1
29	Solenoid Valve (Includes Gasket and Screws)	1
30	Connector (Electronic)	1
31	Sensor	2
32	Bracket	1
33	Connector	1
35	Pan Head Screw (Not Shown)	2
37	Lock Washer (Not Shown)	2

[1] Denotes Repair Kit item.
Repair Kit No. 918378.

[2] Denotes Facing Kit item.
Facing Kit No. 801605.

FMCE 1375 WITH ELECTRONIC SLIP DETECTOR

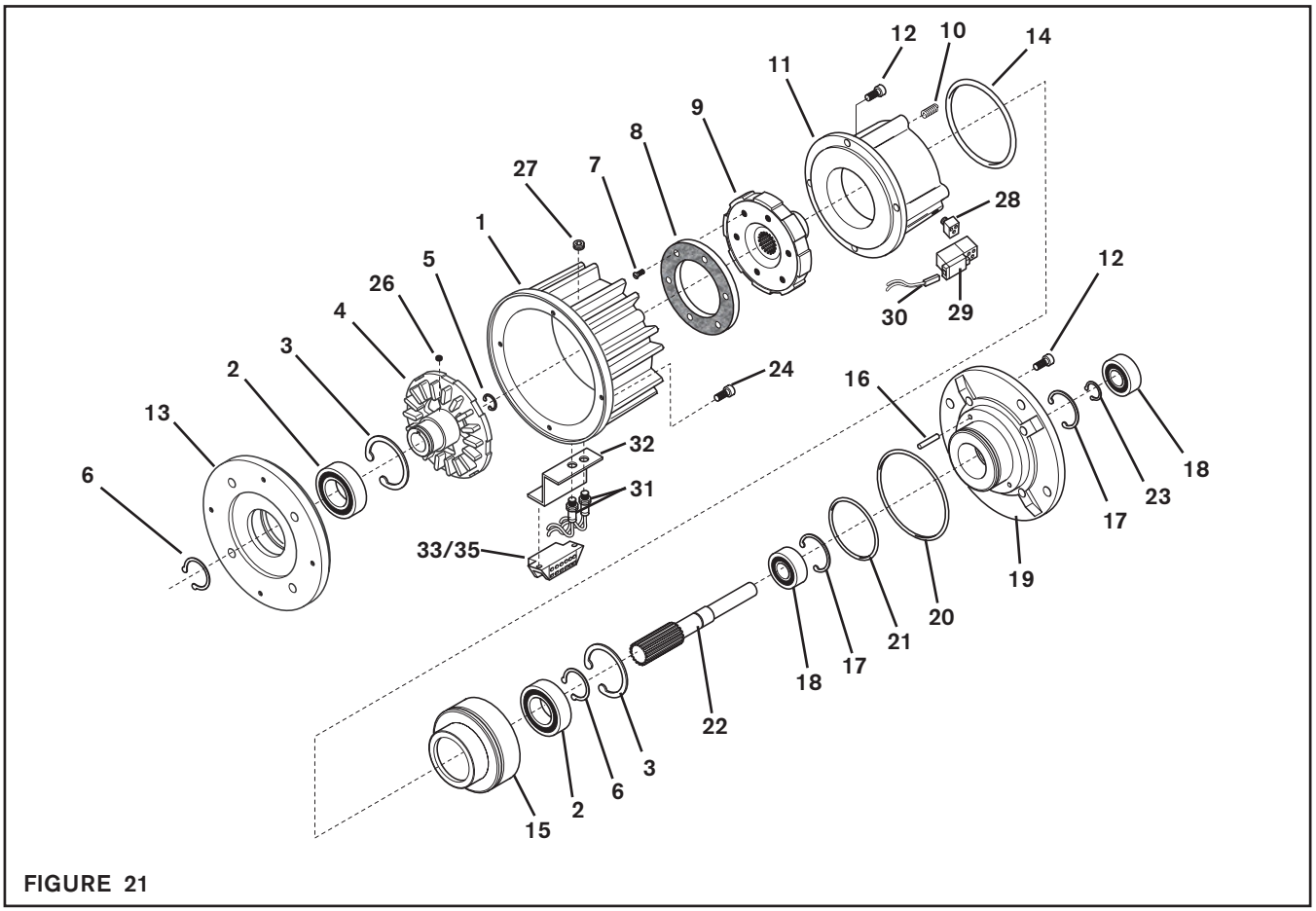

FIGURE 21

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]	Flat Head Screw	6
8[2]	Friction Facing	1
9	Splined Disc	1
10	Compression Spring	6
11	Air Chamber	1
12	Socket Head Cap Screw	8
13	Female Pilot	1
14[1]	O-ring Seal	1
15	Piston	1
16	Dowel Pin	2
17	Retaining Ring (Int.)	1
18[1]	Bearing	2

ITEM	DESCRIPTION	QTY
19	Male Pilot	1
20[1]	O-ring Seal	1
21[1]	O-ring Seal	1
22	Stub Shaft	1
23	Retaining Ring (Ext.)	1
24	Socket Head Cap Screw	4
25	Key (Not Shown)	1
26	Set Screw	1
27	Plug	1
28	Adapter Base	1
29	Solenoid Valve (Includes Gasket and Screws)	1
30	Connector (Electronic)	1
31	Sensor	2
32	Bracket	1
33	Connector	1
35	Pan Head Screw (Not Shown)	2
37	Lock Washer (Not Shown)	2

[1] Denotes Repair Kit item.
Repair Kit No. 918379.

[2] Denotes Facing Kit item.
Facing Kit No. 801647.

PARTS LIST - INPUT UNIT

ITEM	DESCRIPTION	QTY
11	Stub Shaft	1
19	Key	2
20	Bearing Flange	1
30	Ball Bearing	2
35	Retaining Ring	2
45	Hex. Head Jam Nut (Not Shown)	4
58	Retaining Ring	1

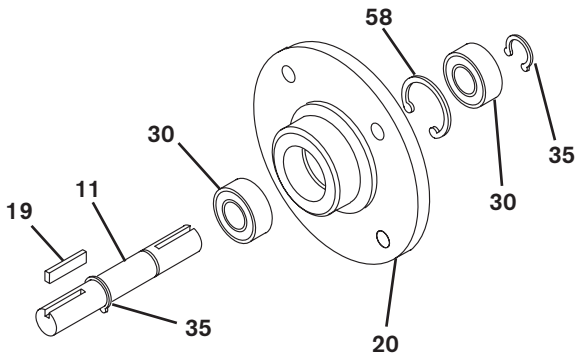

FIGURE 22

WARRANTY

Warranties
Nexen warrants that the Products will (a) be free from any defects in material or workmanship for a period of 12 months from the date of shipment, and (b) will meet and perform in accordance with the specifications in any engineering drawing specifically for the Product that is in Nexen's current product catalogue, or that is accessible at the Nexen website, or that is attached to this Quotation and that specifically refers to this Quotation by its number, subject in all cases to any limitations and exclusions set out in the drawing. NEXEN MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. This warranty applies only if: (a) the Product has been installed, used and maintained in accordance with any applicable Nexen installation or maintenance manual for the Product; (b) the alleged defect is not attributable to normal wear and tear; (c) the Product has not been altered, misused or used for purposes other than those for which it was intended; and (d) Buyer has given written notice of the alleged defect to Nexen, and delivered the allegedly defective Product to Nexen, within one year of the date of shipment.

Exclusive Remedy
The exclusive remedy for the Buyer for any breach of any warranties provided in connection with this agreement will be, at the election of Nexen: (a) repair or replacement with new, serviceably used, or reconditioned parts or products; or (b) issuance of credit in the amount of the purchase price paid to Nexen by the Buyer for the Products.

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

Limitation on Nexen's Liability
TO THE EXTENT PERMITTED BY LAW NEXEN SHALL HAVE NO LIABILITY TO BUYER OR ANY OTHER PERSON FOR INCIDENTAL DAMAGES, SPECIAL DAMAGES, CONSEQUENTIAL DAMAGES OR OTHER DAMAGES OF ANY KIND OR NATURE WHATSOEVER, WHETHER ARISING OUT OF BREACH OF WARRANTY OR OTHER BREACH OF CONTRACT, NEGLIGENCE OR OTHER TORT, OR OTHERWISE, EVEN IF NEXEN SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OR LIKELIHOOD OF SUCH POTENTIAL LOSS OR DAMAGE. For all of the purposes hereof, the term "consequential damages" shall include lost profits, penalties, delay damages, liquidated damages or other damages and liabilities which Buyer shall be obligated to pay or which Buyer may incur based upon, related to or arising out of its contracts with its customers or other third parties. In no event shall Nexen be liable for any amount of damages in excess of amounts paid by Buyer for Products or services as to which a breach of contract has been determined to exist. The parties expressly agree that the price for the Products and the services was determined in consideration of the limitation on damages set forth herein and such limitation has been specifically bargained for and constitutes an agreed allocation of risk which shall survive the determination of any court of competent jurisdiction that any remedy herein fails of its essential purpose.

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

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

nexen

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