

Burke E. Porter 5H50P Multiposition Tooth Clutch With Integral Flexible Coupling

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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WARNING

Read this manual carefully before installation and operation.

Follow Nexen's instructions and integrate this unit into your system with care.

This unit should be installed, operated and maintained by qualified personnel **ONLY**.

Improper installation can damage your system or cause injury or death.

Comply with all applicable codes.

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INTRODUCTION

Read this manual carefully, making full use of its explanations and instructions. The “Know How” of safe, continuous, trouble-free operation depends on the degree of your understanding of the system and your willingness to keep all components in proper operating condition. Pay particular attention to all NOTES, CAUTIONS, and WARNINGS to avoid the risk of personal injury or property damage. It is important to understand that these NOTES, CAUTIONS, and WARNINGS are not exhaustive. Nexen cannot possibly know or evaluate all conceivable methods in which service may be performed, or the possible hazardous consequences of each method. Accordingly, anyone who uses a procedure that is not recommended by Nexen must first satisfy themselves that neither their safety or the safety of the product will be jeopardized by the service method selected.

INSTALLATION

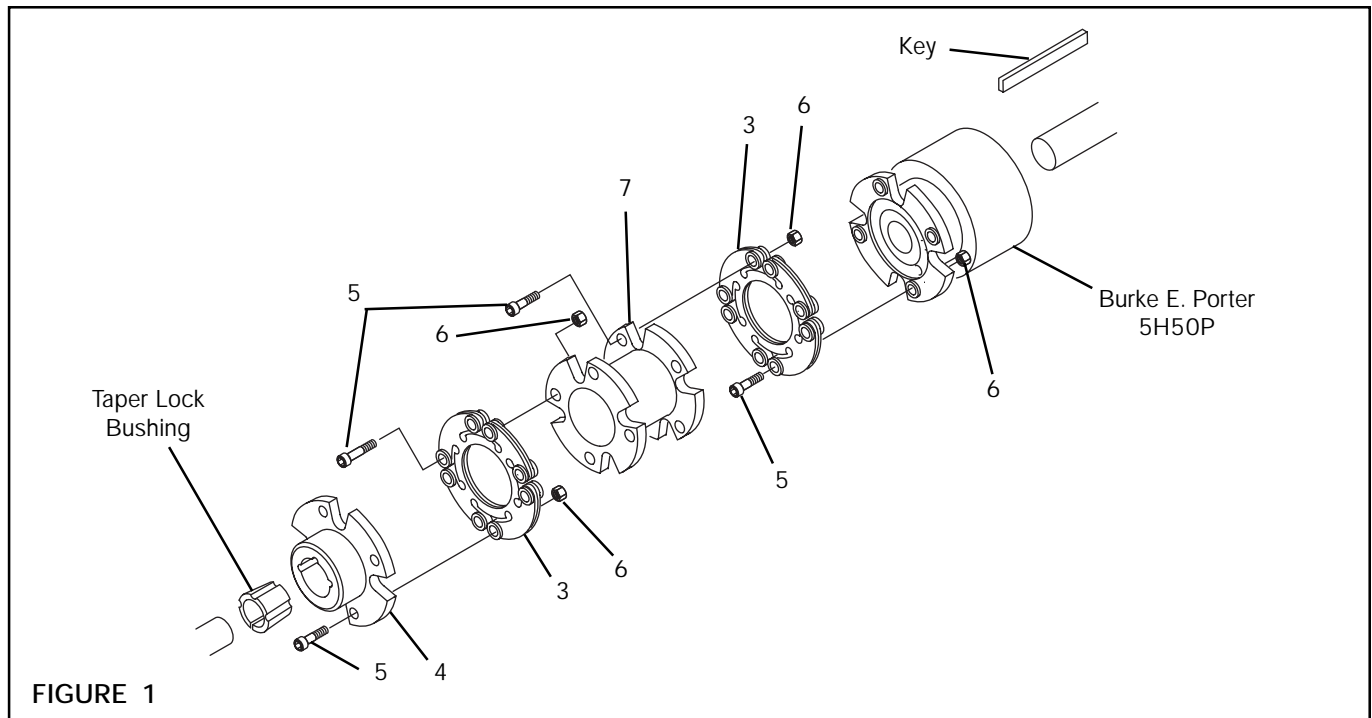


TABLE 1

BURKE E. PORTER 5H50P MULTIPOSITION TOOTH CLUTCH WITH INTEGRAL FLEXIBLE COUPLING			
MISALIGNMENT CAPACITY			HEX HEAD NUT (Item 6) CLAMPING TORQUE
ANGULAR	AXIAL	PARALLEL	
3 degrees	0.18	0.091	336 In. Lbs.
NOTE: If parallel, angular, and axial misalignment are all required, make sure the combined percentage of each does not exceed 100%.			
EXAMPLE: If 100% of the parallel misalignment rating is required, no angular misalignment is allowed. If 50% of the parallel misalignment rating is required, only 1.5 degrees angular misalignment or 50% of the axial rating will be available.			

The 5H50P with Flexible Coupling Series has two bearings and a Special Drive Flange for mounting Nexen's Flexible Coupling.

NOTE: Nexen recommends using a red anaerobic thread locking compound on the Pilot Mounting Bolts.

The 5H50P with the Flexible Coupling mounts on a full shaft using a full length key.

1. Insert the Taper Lock Bushing into the Coupling Hub (Item 4) (See Figure 1).
2. Slide the Coupling Hub (Item 4), with the Taper Lock Bushing, onto one shaft, and install the set screws provided with the Taper Lock Bushing (See Figure 1).

NOTE: Make sure there are no burrs on the shafts or keys.

Do not tighten the set screws provided with the Taper Lock Bushing at this time.

3. Insert the Key onto the key way of the second shaft (See Figure 1).
4. Slide the 5H50P with the Flexible Coupling Adapter onto the shaft and Key (See Figure 1).
5. Tighten the Taper Lock Bushing Set Screws to the recommended torque.
6. Adjust the Hub separation to within the limits for parallel and angular misalignment (See Table 1).

NOTE: For best results, Nexen recommends the use of a dial indicator. Always rotate the Hub on which the dial indicator is mounted.

CAUTION

Coupling and shaft alignment should be checked periodically, due to equipment shifting, etc. Alignment should be rechecked after the first forty hours of operation.

7. Using the Hex Head Cap Screws (Item 5) and Hex Nuts (Item 6), secure the Disc Packs (Item 3) to the Flange (Item 7) (See Figure 1).

NOTE: To prevent galling or seizing, check the Hex Nuts for lubricant. If lubricant is not found on the Hex Nuts, apply Molycote to the Hex Head Cap Screws to ensure proper clamping torque.

Do not rotate Hex Head Cap Screws while applying clamping torque.

8. In a cross pattern, tighten the Hex Head Nuts (Item 6) to 1/2 of the recommended torque (See Table 1).

9. In a cross pattern, tighten the Hex Nuts to the recommended torque (See Table 1).
10. Insert the Disc Pack and Flange Assembly between the 5H50P and the Coupling Hub (Item 4) (See Figure 1).
11. Using Hex Head Cap Screws (Item 5) and Hex Nuts (Item 6), secure the Disc Pack and Flange Assembly to the 5H50P and Coupling Hub (Item 4) (See Figure 1).

NOTE: To prevent galling or seizing, check the Hex Nuts for lubricant. If lubricant is not found on the Hex Nuts, apply Molycote to the Hex Head Cap Screws to ensure proper clamping torque.

Do not rotate Hex Head Cap Screws while applying clamping torque.

12. In a cross pattern, tighten the Hex Head Nuts (Item 6) to 1/2 of the recommended torque (See Table 1).
13. In a cross pattern, tighten the Hex Nuts to the recommended torque (See Table 1).

ANTI-ROTATION CLIP AND ENGAGEMENT INDICATOR SWITCH

NOTE: The Anti-Rotation Clip may be installed in either set of tapped holes located on the front of the Piston (See Figure 2).

1. Install the Anti-Rotation Dowel Pin (See Figure 2).
2. Using Cap Screws, secure the Anti-Rotation Clip to the front of the Piston (See Figure 2).
3. Install the Engagement Indicator Dowel Pin (See Figure 2).
4. Using Cap Screws, secure the Engagement Indicator Switch to the tapped Engagement Indicator Mounting Plate and Engagement Indicator Mounting Bracket (See Figure 2).
5. Using Cap Screws, secure the Engagement Indicator Mounting Bracket (with Engagement Indicator Switch) to the front of the Piston (See Figure 2).
6. Connect the GREEN lead of the Engagement Indicator Switch to ground.
7. Connect the BLACK lead of the Engagement Indicator Switch to the power supply.

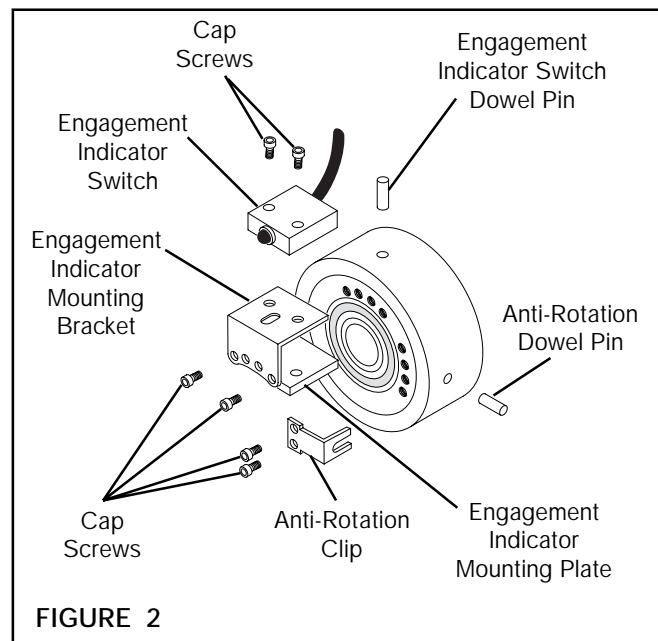


FIGURE 2

8. Connect the WHITE lead of the Engagement Indicator Switch to the engagement light.
9. Connect the RED lead of the Engagement Indicator Switch to the disengagement light.

AIR CONNECTIONS

Although 5H50P Tooth Clutches are air actuated with a maximum operating air pressure of 80 psi, use only enough air pressure to deliver ample torque for the application. Operating air pressures in excess of 80 psi will eventually cause bearing and seal damage.

Although an air hose is supplied, for quick response, locate the control valve as close to the clutch as possible. Air controls having 1/8" ports are recommended, along with a quick exhaust valve to ensure rapid disengagement where long air lines are required.

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

Due to bearing seal drag, the cylinder/piston assembly will rotate, resulting in hose breakage when 5H50P is engaged. Attach an Anti-Rotation strap to the 5H50P, mounting it to the tapped holes provided in the 5H50P Cylinder to prevent the air hose from breaking.

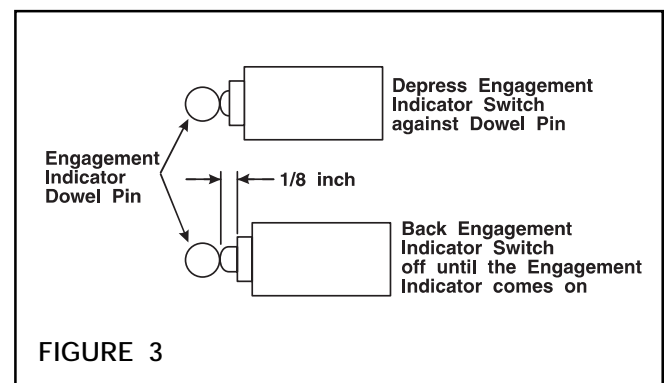


WARNING

Rigid pipe or tubing when connected directly to the clutch will prevent proper actuation of the 5H50P. Use flexible hose or tubing when making air line connections to 5H50P.

ENGAGEMENT INDICATOR SWITCH ADJUSTMENT

1. Apply air pressure to 5H50P.
2. Rotate 5H50P until fully engaged.
3. Slide Engagement Indicator Switch on Bracket until Engagement Indicator Switch is fully depressed against Engagement Indicator Dowel Pin.
4. Slide Engagement Indicator Switch away from Engagement Indicator Switch Pin until the engagement indicator light comes on (See Figure 3).
5. Tighten Cap Screws securing Engagement Indicator Switch to the Engagement Indicator Mounting Bracket.
6. Check Engagement Indicator Switch adjustment to verify lighting of the engagement indicator light when the 5H50P is engaged.



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 Nexen 5H50P 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 5H50P, and use a low viscosity oil such as SAE-10.

Synthetic lubricants are not recommended.

LUBRICATOR DRIP RATE SETTINGS

NOTE: These settings are for Nexen supplied lubricators. If you are not using a Nexen lubricator, calibration must replicate the following procedure.

1. Close and disconnect the air line from the unit.
2. Turn the Lubricator Adjustment Knob counter-clockwise three complete turns.
3. Open the air line.
4. Close the air line to the unit when a drop of oil forms in the Lubricator Sight Gage.
5. Connect the air line to the unit.
6. Turn the Lubricator Adjustment Knob clockwise until closed.
7. Turn the Lubricator Adjustment Knob counter-clockwise one-third turn.
8. Open the air line to the unit.

HUB SPLINE

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

NOTE: The 5H50P must be disassembled in order to lubricate Hub spline.

BEARINGS

All 5H50P bearings are prelubricated and sealed; therefore, lubrication of the bearings is not required.

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
Failure to engage.	Control valve malfunction or low air pressure.	Check system for air leaks or replace control valve.
	Lack of lubrication on Hub spline or in air chamber.	Lubricate Hub spline and check air chamber lubrication.
	Using rigid pipe or tubing for air line connections.	Use flexible air tubing for air line connections.
Failure to disengage.	Lack of lubrication on Hub spline or in air chamber.	Lubricate Hub spline and check air chamber lubrication.
	Unexhausted air, due to control valve malfunction.	Replace control valve.
	Broken Compression Springs.	Replace Compression Springs.
Tooth wear or clicking sound	Excessive engagement RPM or unintentional disengagement due to torque overload.	Contact Nexen for Clutch specifications.
Bearing failure.	Excessive air pressure increases the thrust load on the bearings.	Limit air pressure to 80 psi.
	Excessive speed and engagement RPM.	Stay within the maximum specified speed limits as specified in the "Air Champ®" catalog.
	Do not connect a rigid coupling directly to the Drive Flange.	Use Nexen's Flexible Coupling for in-line applications.
	Wide pulleys or sprockets which extend beyond the end of the clutch will increase the radial load and reduce bearing life.	Avoid applying excessive overhung loads to Pilot Mount 5H50P Clutches.

PARTS REPLACEMENT

DISASSEMBLY

1. Remove Flexible Coupling Assembly from Clutch (See Figure 4).



WARNING

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

2. Remove Retaining Ring (Item 11) (See Figure 5).

NOTE: If a press is not available, use a bearing puller to remove Drive Flange Assembly from Hub.

3. Press Hub (Item 1) out of Drive Flange (See Figure 5).

NOTE: Backing Plate (Item 6) is initially assembled with Loctite® 680. A bearing puller may be required to remove it.

4. Remove Backing Plate (Item 6) (See Figure 6).

5. Remove Compression Springs (Item 7) (See Figure 6).

6. Separate Cylinder (Item 2) and Drive Ring (Item 4) from Hub (Item 1), Piston (Item 3), and Ball Bearing (Item 9) (See Figure 7).

NOTE: At this point the Hub spline (Item 1) can be lubricated with Never-Seez® without further disassembly.

7. Remove the O-ring Seals (Items 12 and 13) and the Backup Ring Seals (Items 21 and 22) from the Piston (Item 3) and Cylinder (Item 2) (See Figure 7).

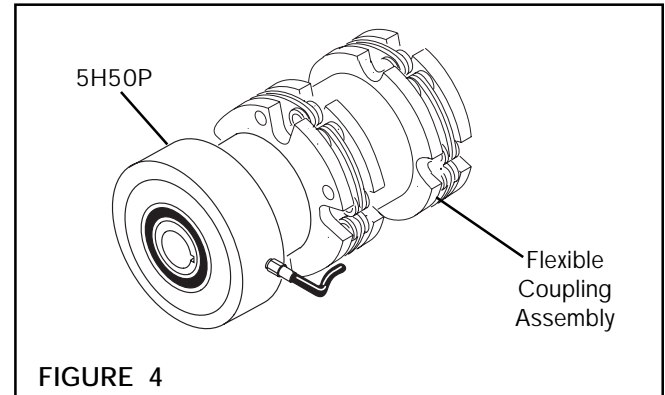


FIGURE 4

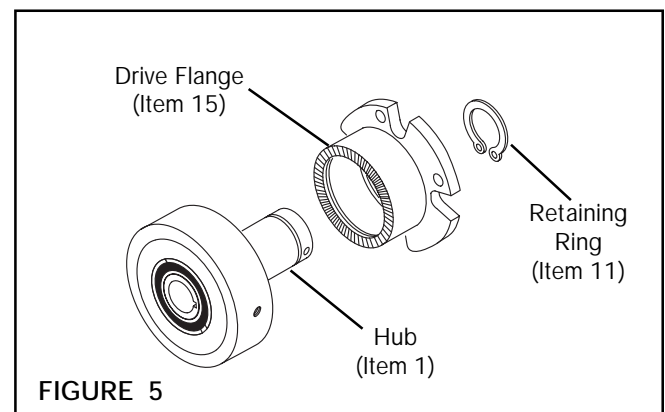


FIGURE 5

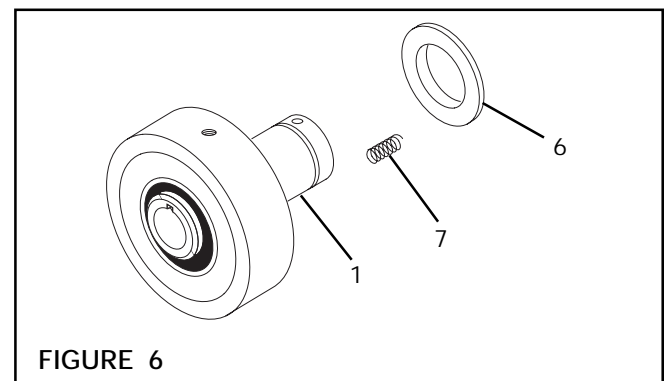


FIGURE 6

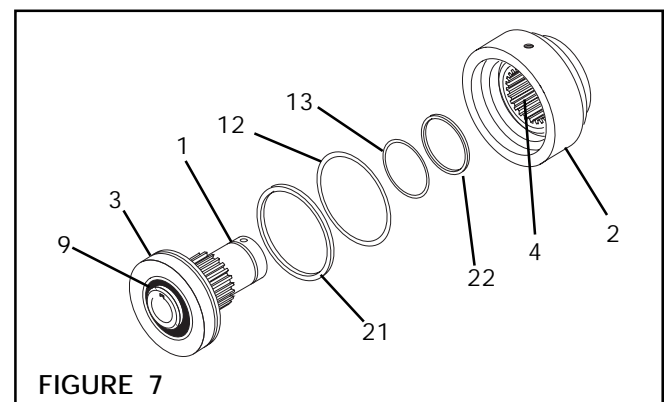


FIGURE 7

DRIVE FLANGE BALL BEARINGS (Item 9)



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 Retaining Ring (Item 10) (See Figure 8).
2. Press Ball Bearings (Item 9) out of Drive Flange (Item 15) (See Figure 8).
3. Clean inside bore of Drive Flange with fresh safety solvent.
4. Apply Loctite® 680 to O.D. of new Ball Bearings and press new bearings into Drive Flange.

NOTE: When installing new Ball Bearings, carefully align Bearing O.D. with Drive Flange bore in order to prevent Bearing misalignment.

5. Install Retaining Ring (Item 10).

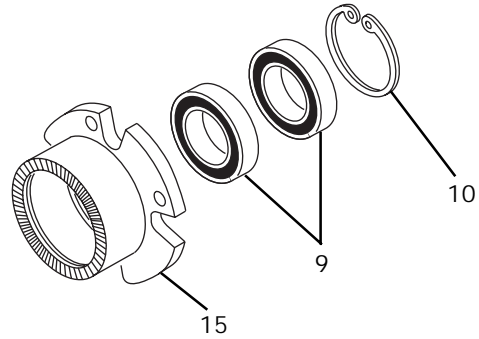


FIGURE 8

CYLINDER BALL BEARING (Item 8)

1. Press Drive Ring (Item 4) out of Ball Bearing (Item 8) (See Figure 9).
2. Remove Ball Bearing (Item 8) from Cylinder (Item 2) (See Figure 9).
3. Clean Cylinder bearing bore with fresh safety solvent.

NOTE: When installing new Ball Bearings into the aluminum Cylinder, carefully align the Ball Bearings in the Cylinder bearing bore to prevent slivers of aluminum from becoming trapped under the Ball Bearings and causing bearing misalignment.

4. Apply Loctite® 680 to O.D. of new Ball Bearing and press new Ball Bearing into Cylinder.

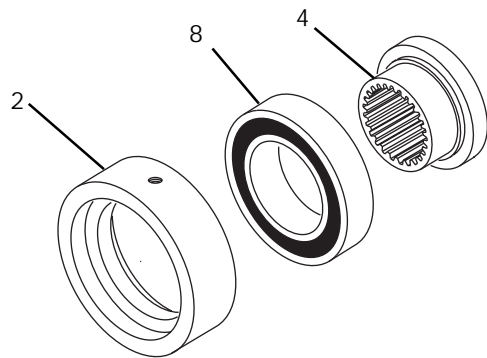


FIGURE 9

CAUTION

Do not press on Drive Ring face teeth. Pressing on Drive Ring face teeth will damage them.

5. Fully supporting inner race of Bearing, press Drive Ring into Ball Bearing.

PISTON BALL BEARING (Item 9)



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 Retaining Ring (Item 11) (See Figure 10).
2. Press Hub (Item 1) out of Piston (Item 3) and Ball Bearing (Item 9) (See Figure 10).
3. Remove Ball Bearing (Item 9) from Piston (Item 3).
4. Clean Piston bearing bore with fresh safety solvent.

NOTE: When installing new Ball Bearing into the aluminum Piston, carefully align the Ball Bearing in the Piston bearing bore to prevent slivers of aluminum from becoming trapped under the Ball Bearing and causing Bearing misalignment.

5. Apply Loctite® 680 to O.D. of new Ball Bearing and press new Ball Bearing into Cylinder.
6. Fully supporting inner race of Bearing, press Hub into Bearing.
7. Install Retaining Ring (Item 11).

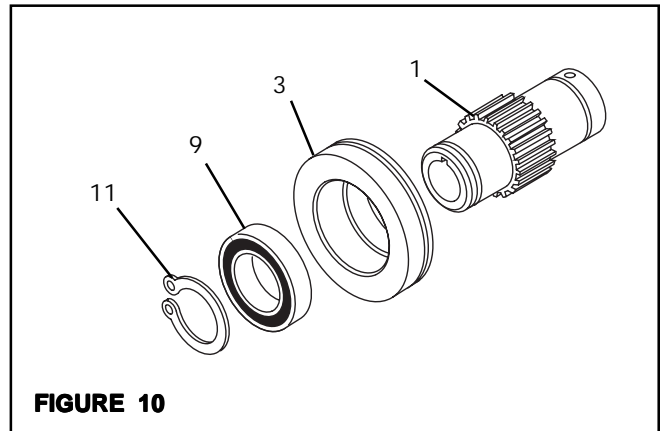


FIGURE 10

5H50P REASSEMBLY

1. Coat O-ring seal contact surfaces of Piston (Item 3) and Cylinder (Item 2) with a thin film of O-ring lubricant (See Figure 11).
2. Coat O-ring Seals (Items 12 and 13) with a thin film of O-ring lubricant (See Figure 11).
3. Install O-ring Seals (Items 12 and 13) and Backup Ring Seals (Items 21 and 22) on Piston (Item 3) and Cylinder (Item 2) (See Figure 11).
4. Coat the Hub spline teeth with Never-Seez® (See Figure 11).
5. Making sure not to damage O-ring Seals (Items 12 and 13), press Piston (Item 3) into Cylinder (Item 2) (See Figure 11).

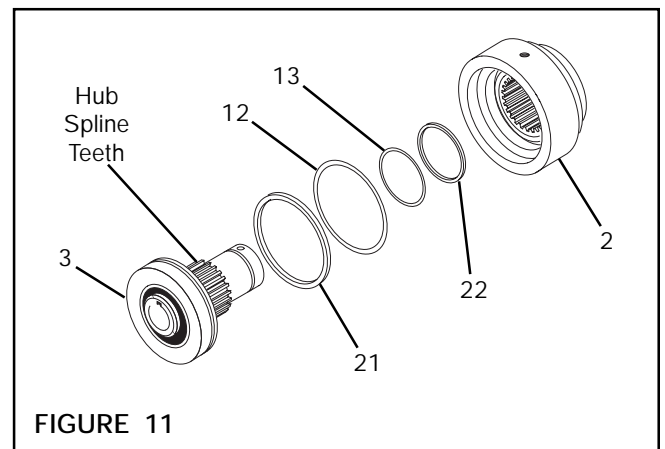


FIGURE 11

6. Install new Compression Springs (Item 7) into Drive Ring spring holes (See Figure 12).
7. Clean Hub bearing surface and inside diameter of Backing Plate (Item 6) with fresh safety solvent.
8. Apply Loctite® 680 to inside diameter of Backing Plate (Item 6) (See Figure 12).
9. Making sure that 1/32" lip is facing away from Compression Springs (Item 7), slide Backing Plate (Item 6) onto Hub (Item 1) (See Figure 12).
10. Lubricate Drive Flange face teeth (Item 5) with Never-Seez® (See Figure 13).
11. Fully supporting inner race of Drive Flange Ball Bearings, press Hub, Piston, Cylinder Assembly into Drive Flange Ball Bearings (See Figure 13).
12. Install Retaining Ring (Item 11) (See Figure 13).
13. Install Flexible Coupling.

NOTE: Refer to INSTALLATION instructions (L-20221) if any Flexible Coupling components require replacement.

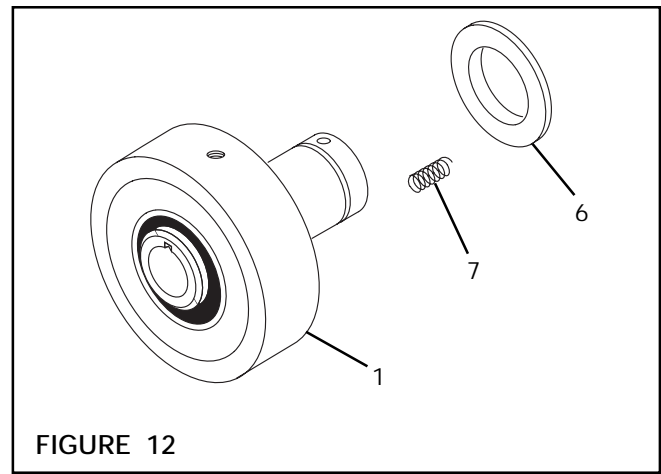


FIGURE 12

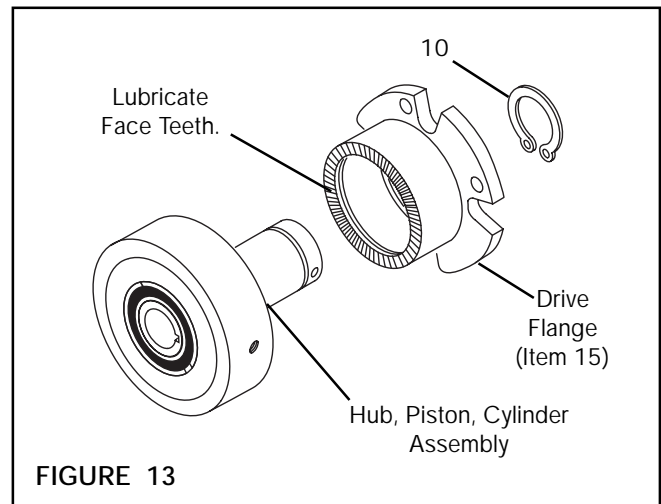


FIGURE 13

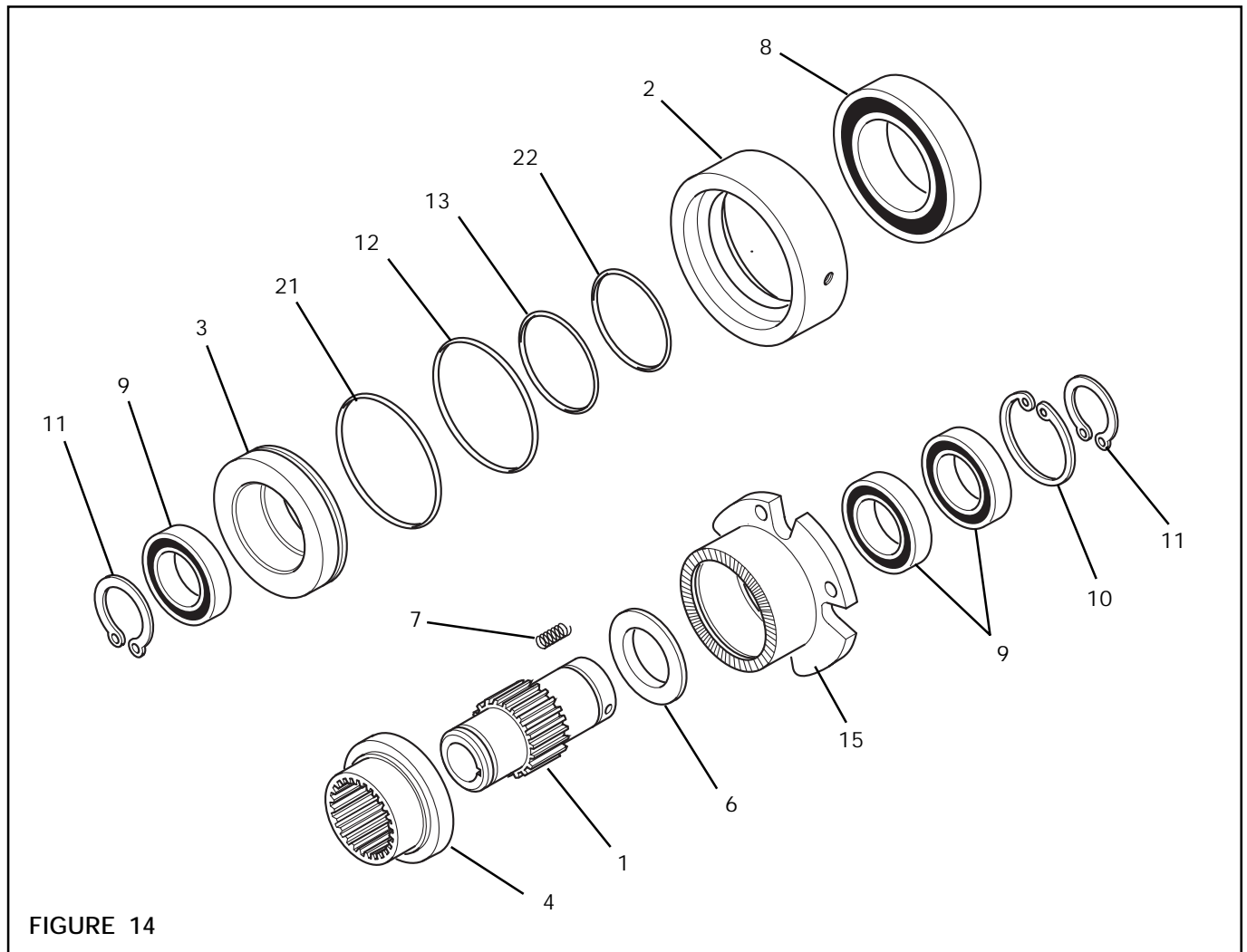
REPLACEMENT PARTS

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

5H50P ASSEMBLY



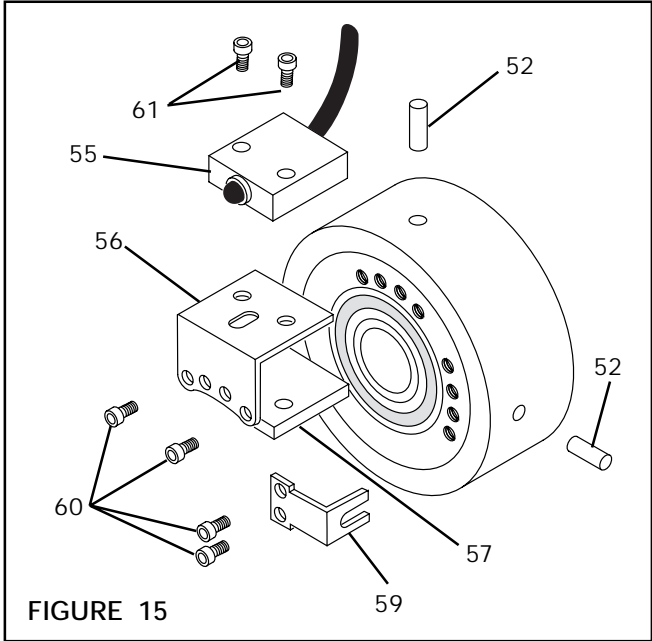
ITEM	DESCRIPTION	QTY
1	Hub	1
2	Cylinder	1
3	Piston	1
4	Drive Ring	1
6	Backing Plate	1
7 ¹	Compression Spring	6
8 ¹	Ball Bearing	1
9 ¹	Ball Bearing	3

ITEM	DESCRIPTION	QTY
10	Retaining Ring (Int.)	1
11	Retaining Ring (Ext.)	2
12 ¹	O-ring Seal	1
13 ¹	O-ring Seal	1
14	Fitting (Not Shown)	1
15	Drive Flange	1
21 ¹	Seal, Backup Ring	1
22 ¹	Seal, Backup Ring	1

¹ Denotes Repair Kit item (Product No. 917391)

ENGAGEMENT INDICATOR SWITCH

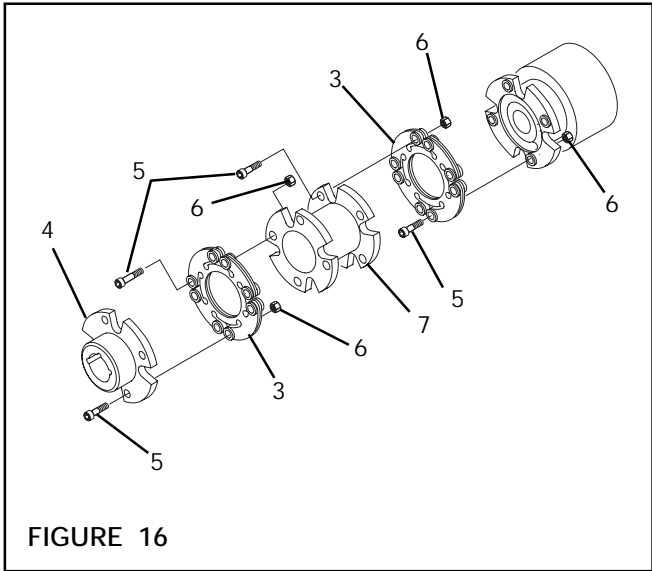
ITEM	DESCRIPTION	QTY
52	Dowel Pin	2
55	Engagement Indicator Switch	1
56	Bracket (Engagement Indicator Switch)	1
57	Mounting Plate (Engagement Indicator Switch)	1
59	Clip (Anti-Rotation)	1
60	Cap Screw	4
61	Cap Screw	2



FLEXIBLE COUPLING DISC PACK

ITEM	DESCRIPTION	QTY
3 ¹	Disc Pack (Flexible)	2
4	Coupling Hub	1
5 ¹	Hex. Head Cap Screw	16
6 ¹	Hex. Nut	16
7	Flange (Double-Flex)	1

¹ Denotes Repair Kit item (Product No. 910338)



WARRANTIES

Warranties

Nexen warrants that the Products will be free from any defects in material or workmanship for a period of 12 months from the date of shipment. NEXEN MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. This warranty applies only if (a) the Product has been installed, used and maintained in accordance with any applicable Nexen installation or maintenance manual for the Product; (b) the alleged defect is not attributable to normal wear and tear; (c) the Product has not been altered, misused or used for purposes other than those for which it was intended; and (d) Buyer has given written notice of the alleged defect to Nexen, and delivered the allegedly defective Product to Nexen, within one year of the date of shipment.

Exclusive Remedy

The exclusive remedy of the Buyer for any breach of the warranties set out above will be, at the sole discretion of Nexen, a repair or replacement with new, serviceably used or reconditioned Product, or issuance of credit in the amount of the purchase price paid to Nexen by the Buyer for the Products.

Limitation of Nexen's Liability

TO THE EXTENT PERMITTED BY LAW NEXEN SHALL HAVE NO LIABILITY TO BUYER OR ANY OTHER PERSON FOR INCIDENTAL DAMAGES, SPECIAL DAMAGES, CONSEQUENTIAL DAMAGES OR OTHER DAMAGES OF ANY KIND OR NATURE WHATSOEVER, WHETHER ARISING OUT OF BREACH OF WARRANTY OR OTHER BREACH OF CONTRACT, NEGLIGENCE OR OTHER TORT, OR OTHERWISE, EVEN IF NEXEN SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OR LIKELIHOOD OF SUCH POTENTIAL LOSS OR DAMAGE. For all of the purposes hereof, the term "consequential damages" shall include lost profits, penalties, delay 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.

Limitation of Damages

In no event shall Nexen be liable for any consequential, indirect, incidental, or special damages of any nature whatsoever, including without limitation, lost profits arising from the sale or use of the Products.

Warranty Claim Procedures

To make a claim under this warranty, the claimant must give written notice of the alleged defect to whom the Product was purchased from and deliver the Product to same within one year of the date on which the alleged defect first became apparent.

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