




## **Dual Friction Plate Brakes**

**Models DPB-9T, DPB-11T, DPB-13T, and  
DPB-15T**

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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	<div data-bbox="623 558 919 611"> <b>DANGER</b></div> <p>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 <b>ONLY</b>. Improper installation can damage your system, cause injury or death. Comply with all applicable codes.</p>	
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This document is the original, non-translated, version.

Conformity Declaration: In accordance with Appendix II B of CE Machinery Directive (2006/42/EC):

A Declaration of Incorporation of Partly Completed Machinery evaluation for the applicable EU directives was carried out for this product in accordance with the Machinery Directive. The declaration of incorporation is set out in writing in a separate document and can be requested if required.

This machinery is incomplete and must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the applicable provisions of the Directive.

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## GENERAL SPECIFICATIONS


Specifications	
Torque	Up to 4067 Nm (36000 in-lbs)
Actuation Pressure	1 - 5.5 bar (14.5 - 80 psi)
Service Temperature	4.5 - 104 C (40 - 220 F)
Approximate Weight	Up to 115 kg (254 lbs)

## GENERAL SAFETY PRECAUTIONS




**CAUTION**

Use lifting aids and proper lifting techniques when installing, removing, or placing this product in service.




**CAUTION**

Use appropriate guarding for moving components. Failure to guard could result in serious bodily injury.




**CAUTION**

Watch for sharp features when interacting with this product. The parts have complex shapes and machined edges.




**CAUTION**

This product has possible pinch points. Care should be taken when interacting with this product.




**WARNING**

Ensure proper guarding of the product is used. Nexen recommends the machine builder design guarding in compliance with OSHA 29 CFR 1910 "Occupational Safety and Health Hazards".



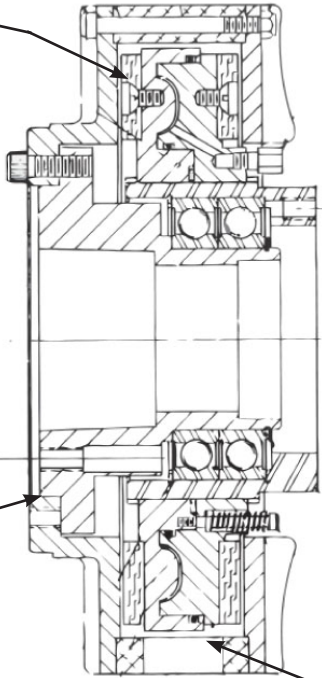
**WARNING**


This product is capable of emitting a spark if misused, therefore it is not recommended for use in any explosive environment.



**CAUTION**


The temperature limits for the product are 4.5-104 degree Celsius (40-220 degree F).





**CAUTION**

Use appropriate guarding for moving components. Failure to guard could result in serious bodily injury.



**CAUTION**

This product has possible pinch points. Care should be taken when interacting with this product.

## INTRODUCTION

Nexen's DPB (Dual Friction Plate) Brakes are designed to mount on shaft ends, or through shafts using a customer supplied Q.D. (Quick Detachable) Bushing. The dual friction plate design eliminates thrust loading of bearings.

## INSTALLATION


NOTE: All DPB Brake installations require a O.D. (Quick Detachable) Bushing. Refer to Table 1 for O.D. Bushing Specifications.

### SUPPORT BUSHING

Refer to Figure 1.

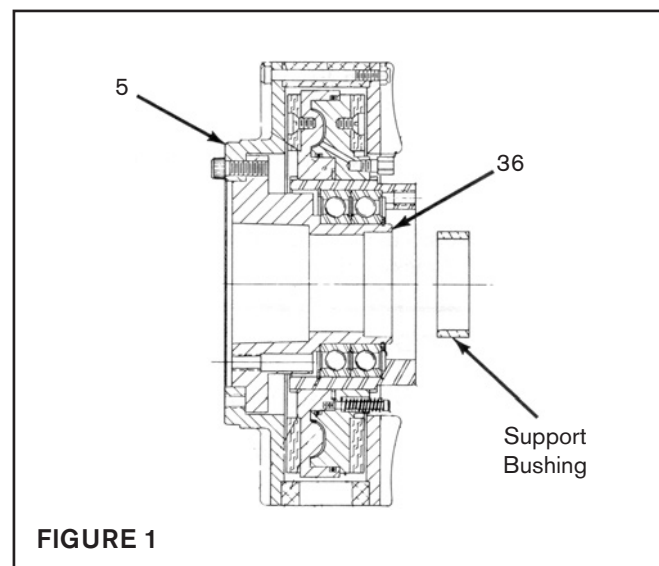
NOTE: The Support Bushing provides radial load support at the shaft, and is used when bore sizes smaller than standard are required.

1. Place DPB Brake, friction disc side up, and fully support Flange Mount Disc (Item 5).
2. Insert Support Bushing into bore of Flanged Hub (Item 36).
3. Apply even pressure around entire diameter of Support Bushing and press Support Bushing into Flanged Hub (Item 36).

	<b>CAUTION</b>
	<b>Do not use a hammer to install Support Bushing. A small arbor press is recommended.</b>

**TABLE 1**  
**Q.D. Bushing Specifications**

MODEL	BUSHING TYPE	MAX BORE	PULL-UP TIGHTENING TORQUE
DPB-9T	SK	2.375	15 ft.lbs.
DPB-11T	SF	2.875	30 ft.lbs.
DPB-13T	F	3.500	75 ft.lbs.
DPB-15T	J	4.000	112 ft.lbs.



## INSTALLATION (continued)

### BRAKE

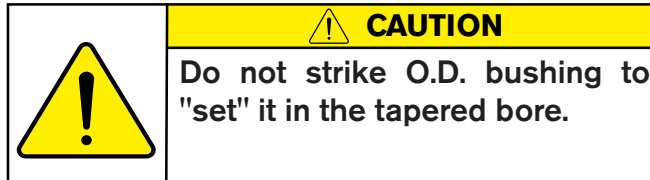
#### NOTE

Flange mounting of the DPB Brake is not recommended. Tapped holes in the DPB Brake's Splined Hub (Item 35) are used to connect the brake to a torque pin or torque arm.

1. Thoroughly inspect tapered bore of Flanged Hub (Item 36) and tapered surface of Q.D. bushing. Remove any dirt, grease, or foreign material.

NOTE: Do not use lubricants when installing O.D. bushing.

2. Install Q.D. bushing into flanged hub, aligning untapped holes in Q.D. bushing flange with tapped holes in flanged hub.



3. Loosely insert pull-up bolts and lockwashers into Q.D. bushing and tapped holes of flanged hub.

NOTE: Do not use lubricants or thread locking compounds on pull-up bolts.

4. Insert customer supplied key into motor shaft.
5. Slide DPB Brake onto motor shaft.

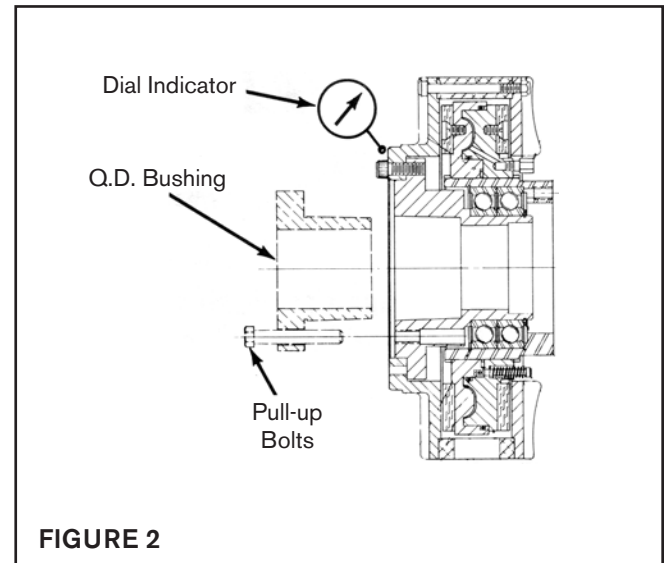
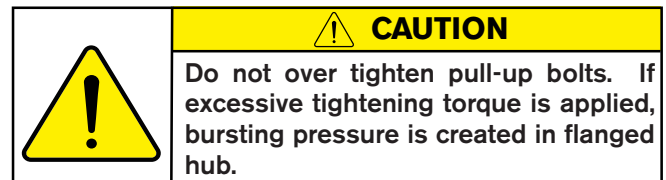


FIGURE 2

6. Alternately and evenly tighten pull-up bolts to recommended torque (See Table 1).



NOTE: Runout is minimized if a dial indicator is used as the Q.D. bushing pull-up bolts are tightened. Place contact tip of dial indicator on smooth surface of Flange Mount Disc (Item 5) to measure runout. Runout on this surface must not exceed 0.003 T.I.R. when pull-up bolts are tightened (See Fig. 2).

### TORQUE ARM

Refer to Figure 3.

1. Using Cap Screws (Item 42) and Lockwashers (Item 43) secure Torque Arm (Item 37) onto Splined Hub (Item 35).
2. Tighten Cap Screws (Item 42) to 119 ft. lbs. torque.
3. Using Cap Screws (Item 40) and Lock Nut (Item 44), secure Extension Arm (Item 37) to Torque Arm (Item 38).
4. Tighten Lock Nut (Item 44) to 70 ft. lbs. torque.
5. Using Cap Screw (Item 41) and Lock Nut (Item 45), attach Extension Arm (Item 38) to Bracket (Item 39).
6. Tighten Lock Nut (Item 45) to 200 ft. lbs. torque.
7. Using four customer supplied 7/16-UNC bolts, secure Bracket (Item 39) to a firm support.

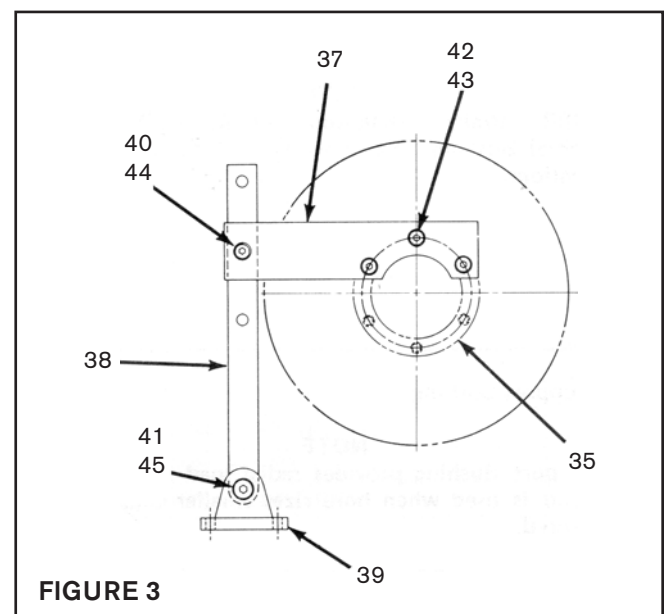


FIGURE 3

## LUBRICATION

### NOTE

Nexen pneumatically actuated devices require clean, pressure regulated air for maximum performance and life. All seals in Nexen Pneumatically operated devices are lubricated for life and do not require additional lubrication.

However, some customers prefer to use an air line lubricator, which injects oil into the pressurized air, forcing an oil mist into the air chamber. This is acceptable, but care must be taken to ensure once an air mist lubrication system is used, it is continually used over the life of the product as the oil mist may wash free the factory installed lubrication.

Locate the lubricator above and within ten feet of the product, and use low viscosity oil such as SAE-10.

Synthetic lubricants are not recommended.

Nexen product's bearings are shielded and pre-lubricated, and require no further lubrication.

## LUBRICATOR DRIP RATE SETTINGS



### CAUTION

These settings are for Nexen supplied lubricators. If you are not using a Nexen lubricator, calibration must follow the manufacturer's suggested 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.

## AIR CONNECTIONS

All Nexen pneumatically actuated devices require clean and dry air, which meet or exceeds ISO 8573.1:2001 Class 4.4.3 quality.

### NOTE

For quick response, Nexen recommends a quick exhaust valve and short air lines between the Control Valves and the product. Align the air inlet ports to a down position to allow condensation to drain out of the air chambers of the product.



### CAUTION

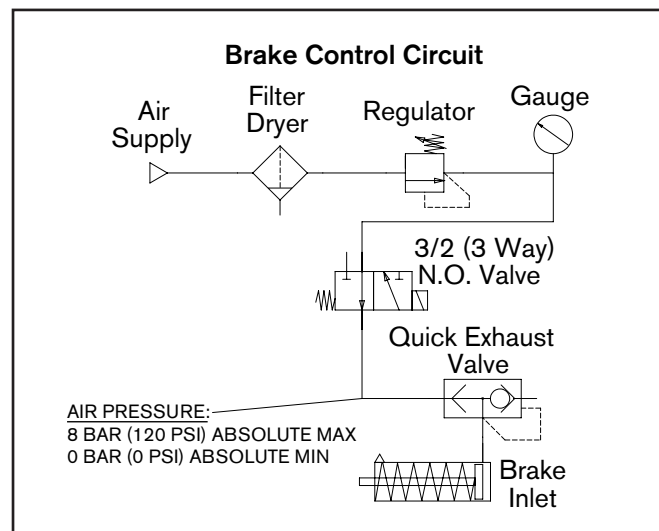
Low air pressure will cause slippage and overheating. Excessive air pressure will cause abrupt starts and stops, reducing product life.



### CAUTION

Do not use rigid pipe or tubing for air line connections.



The following is a common air supply scheme used with this product. This is an example and not an all-inclusive list. All air circuits to be used with this product must be designed following ISO 4414 guidelines.







Connect air supply to Adaptor Fittings (Item 16) located on the Piston/Drive Disc (Item 2).



NOTE: Adaptor Fittings (Item 16) are 1/8 NPT.

## OPERATION

	 <b>CAUTION</b>
	Never exceed life of facing material. Facing life depends on the volume of material and the total energy over the life of the unit. Expected life (in hrs) can be found by: $\text{Time} = \text{Volume} / (\text{Power} * \text{Wear Rate})$ .

	 <b>CAUTION</b>
	The temperature limits for this product line are 4.5-104 Degree Celsius (40-220 Degree F).

	 <b>CAUTION</b>
	Prior to placing DPB Brake into service, verify that all screws are secured to the recommended torque (See Table 2).

	 <b>WARNING</b>
	Never exceed maximum operating speeds listed for your product. (See Table 3).

**TABLE 2**  
Recommended Tightening Torques

DESCRIPTION	DPB-9T	DPB-11T	DPB-13T	DPB-15T
SHOULDER SCREWS (Item 13)	9 ft.lbs.	9 ft.lbs.	9 ft.lbs.	9 ft.lbs.
LOCKNUT (Item 20)	32 ft.lbs.	70 ft.lbs.	70 ft.lbs.	70 ft.lbs.
CAP SCREW (Item 21)	48 ft.lbs.	48 ft.lbs.	119 ft.lbs.	119 ft.lbs.
CAP SCREW (Item 42)	119 ft.lbs.	119 ft.lbs.	119 ft.lbs.	119 ft.lbs.
LOCKNUT (Item 44)	70 ft.lbs.	70 ft.lbs.	129 ft.lbs.	129 ft.lbs.
LOCKNUT (Item 45)	200 ft.lbs.	200 ft.lbs.	200 ft.lbs.	200 ft.lbs.

The DPB Brake engages when air pressure is introduced into the Cylinder/Drive Disc. Air pressure pushes the Cylinder/Drive Disc against the Flange/Mount Disc, and forces the Cylinder/Drive Disc in the opposite direction.

This engages the Friction Facings with the friction surfaces of the Flange Mount Disc and Friction Disc.



Torque is transmitted through the Cylinder/Drive Disc and Piston/Drive Disc to the Splined Hub attached to the Torque Arm.

Heat generated at the friction surfaces is dissipated by windage created by fins on the Flange Mount Disc and Friction Disc.

When air is exhausted from the cylinder, return springs pull the piston to a disengaged position.

**TABLE 3**  
Maximum Recommended Operating Speeds

MODEL	RPMs
DPB-9T	2200
DPB-11T	1800
DPB-13T	1200
DPB15T	900

	 <b>WARNING</b>
	The outer assembly of the DPB Brake rotates. A guard that will not restrict the flow of cooling air around the brake must be installed if the DPB Brake is installed in an area where injury to an operator could occur.



## PARTS REPLACEMENT

	<b>CAUTION</b>
	<p>The Nexen DPB Brake has been balanced at the factory. During disassembly, mark components with chalk alignment marks to insure correct alignment and balance as the DPB Brake is reassembled (See Fig. 4).</p> <p>When reassembling the Nexen DPB Brake, make sure all screws are tightened to the recommended torque (See Table 2).</p>

### FRICITION FACING (Item 4)

Inspect Friction Facings for wear, and replace when they are approximately 9/32" thick. Friction Facings can be replaced without removing DPB Brake from motor shaft.

Refer to Figures 4 & 5.

1. Disconnect air supply lines from Adaptor Fittings (Item 16).
2. Remove Cap Screws (Item 42), Lockwashers (Item 43), and swing Torque Arm (Item 37) clear of DPB Brake.
3. Remove Cap Screws (Item 12) and Locknuts (Item 20).
4. Remove Friction Disc (Item 7).
5. Remove Shoulder Screws (Item 13) and Springs (Item 14).
6. Slide Piston/Drive Disc (Item 2) off Splined Hub (Item 35).

	<b>CAUTION</b>
	<p>Working with spring loaded or tension loaded fasteners and devices can cause injury. Wear safety glasses and take the appropriate safety precautions.</p>

7. Remove Retaining Ring (Item 10).
8. Slide Cylinder/Drive Disc (Item 3) off Splined Hub (Item 35).
9. Remove Machine Screws (Item 11), and replace worn Friction Facings (Item 4).

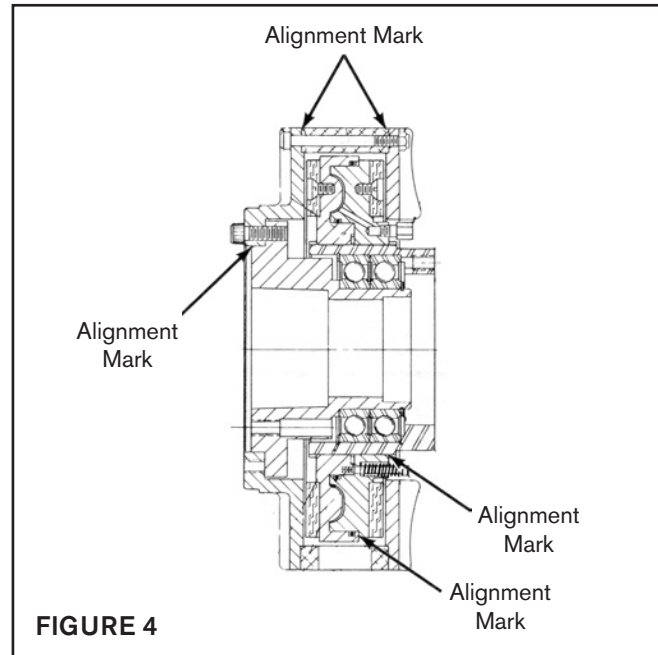


FIGURE 4

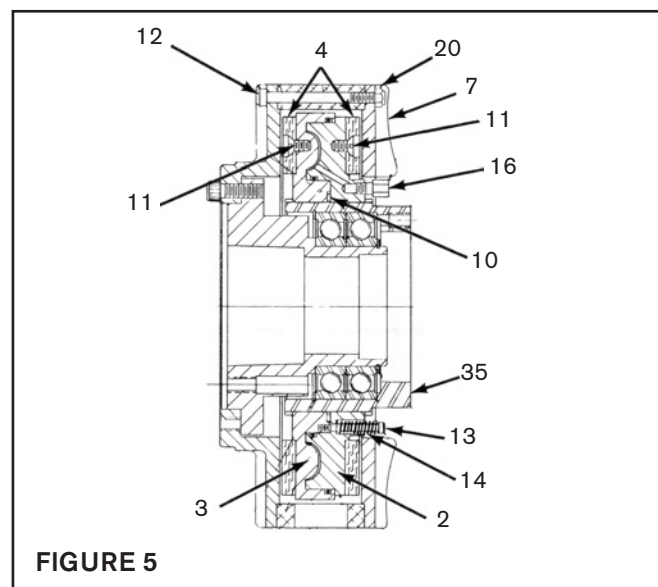


FIGURE 5

**NOTE:** On some models of the DPB Brake, the Machine Screws (Item 11) are assembled with a green anaerobic thread locking compound. If removal is difficult, strike end of screwdriver with a hammer to break crystalline structure of locking compound before attempting to remove screws. Machine Screws (Item 11) furnished with new Friction Facings have a locking patch and do not require the use of a thread locking compound.

10. Reverse Steps 1 through 8 to reassemble the DPB Brake, noting chalk alignment marks, and tighten all screws to recommended torque (See Table 2).

## PARTS REPLACEMENT (continued)

### O-RINGS (Items 8 & 9)

Refer to Figure 6.

Replace O-rings (Items 8 & 9) if there are noticeable air leaks or loss of torque.

1. Proceed with Steps 1 through 8 for Friction Facing replacement.
2. Remove O-rings (Items 8 & 9) and clean o-ring contact surfaces.
3. Lubricate new O-rings (Items 8 & 9) and o-ring contact surfaces with O-ring lubricant.
4. Install new O-rings.
5. Reverse Step 1 to reassemble DPB Brake, noting chalk alignment marks, and tighten all screws to recommended torque (See Table 2).

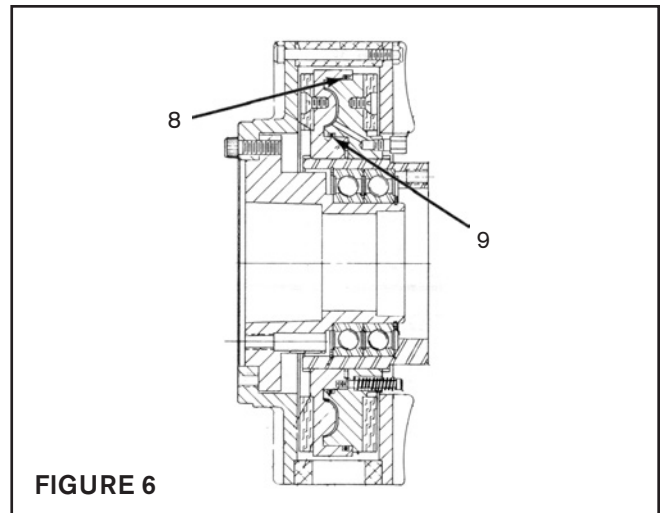


FIGURE 6

### BEARINGS (Item 25)

Refer to Figure 7.

DPB Brake Bearings (Item 25) are prelubricated, sealed, and do not require further lubrication.

1. Disconnect air supply lines from Adaptor Fittings (Item 16).
2. Remove Cap Screws (Item 42), Lockwashers (Item 43), and swing Torque Arm (Item 37) clear of DPB Brake.
3. Loosen Q.D. Bushing.
  - a. Remove Q.D. Bushing pull-up bolts and lockwashers.
  - b. Insert pull-up bolts into tapped Q.D. bushing removal holes and progressively tighten each one until Flanged Hub (Item 36) is loose on Q.D. bushing.
4. Wedge a screwdriver into saw cut in Q.D. bushing to loosen Q.D. bushing from shaft and remove DPB Brake.
5. Proceed with Steps 3 through 8 for Friction Facing replacement.
6. Remove Cap Screws (Item 21) (See Fig. 7).
7. Separate Flange Mount Disc (Item 5) from Flanged Hub (Item 36) and Splined Hub (Item 35).

	<p><b>CAUTION</b></p> <p>Working with spring loaded or tension loaded fasteners and devices can cause injury. Wear safety glasses and take the appropriate safety precautions.</p>
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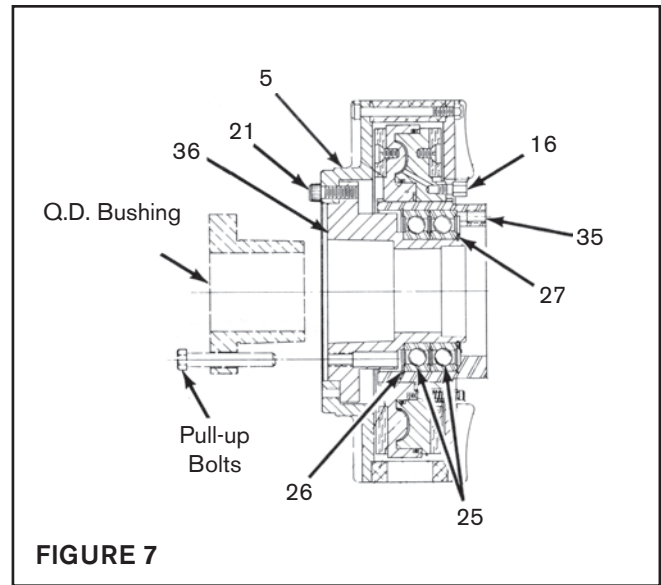
8. Remove Retaining Ring (Item 27).
9. Fully supporting Splined Hub (Item 35), press Flanged Hub (Item 36) out of Bearings (Item 25).
10. Remove Retaining Ring (Item 26) (See Fig. 7).
11. Fully supporting Splined Hub (Item 35), press Bearings (Item 25) out of Splined Hub.
12. Clean bearing contact surfaces of Flanged Hub (Item 36), and Splined Hub (Item 35) with safety solvent.
13. Press new Bearings (Item 25) into Splined Hub (Item 35).

**NOTE:** When installing new bearings, carefully align bearing O.D. with bore of splined hub. Apply Loctite 601 or equivalent to outer race of new bearings.

(continued...)

## PARTS REPLACEMENT (continued)

14. Install Retaining Ring (Item 26).
15. Press Flanged Hub (Item 36) into Bearings (Item 25) and Splined Hub (Item 35).
16. Install Retaining Ring (Item 27).
17. Reverse Steps 1 through 7 to reassemble DPB Brake, noting chalk alignment marks, and tighten all screws to recommended torque (See Table 2).



## REPLACEMENT PARTS

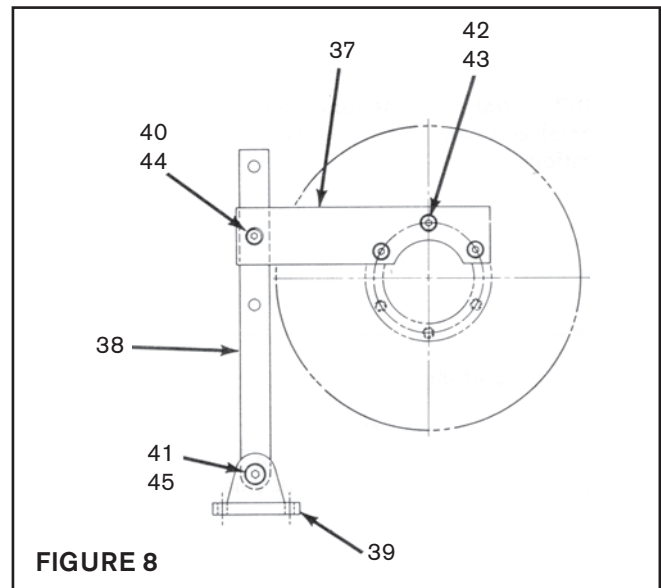
The item or balloon number for all Nexen products is used for part identification on all product parts lists, product price lists, unit assembly drawings, bills of materials, and instruction manuals.

When ordering replacement parts, specify model designation, item number, part description, and quantity. Purchase replacement parts through your local Nexen Distributor.

### TORQUE ARM

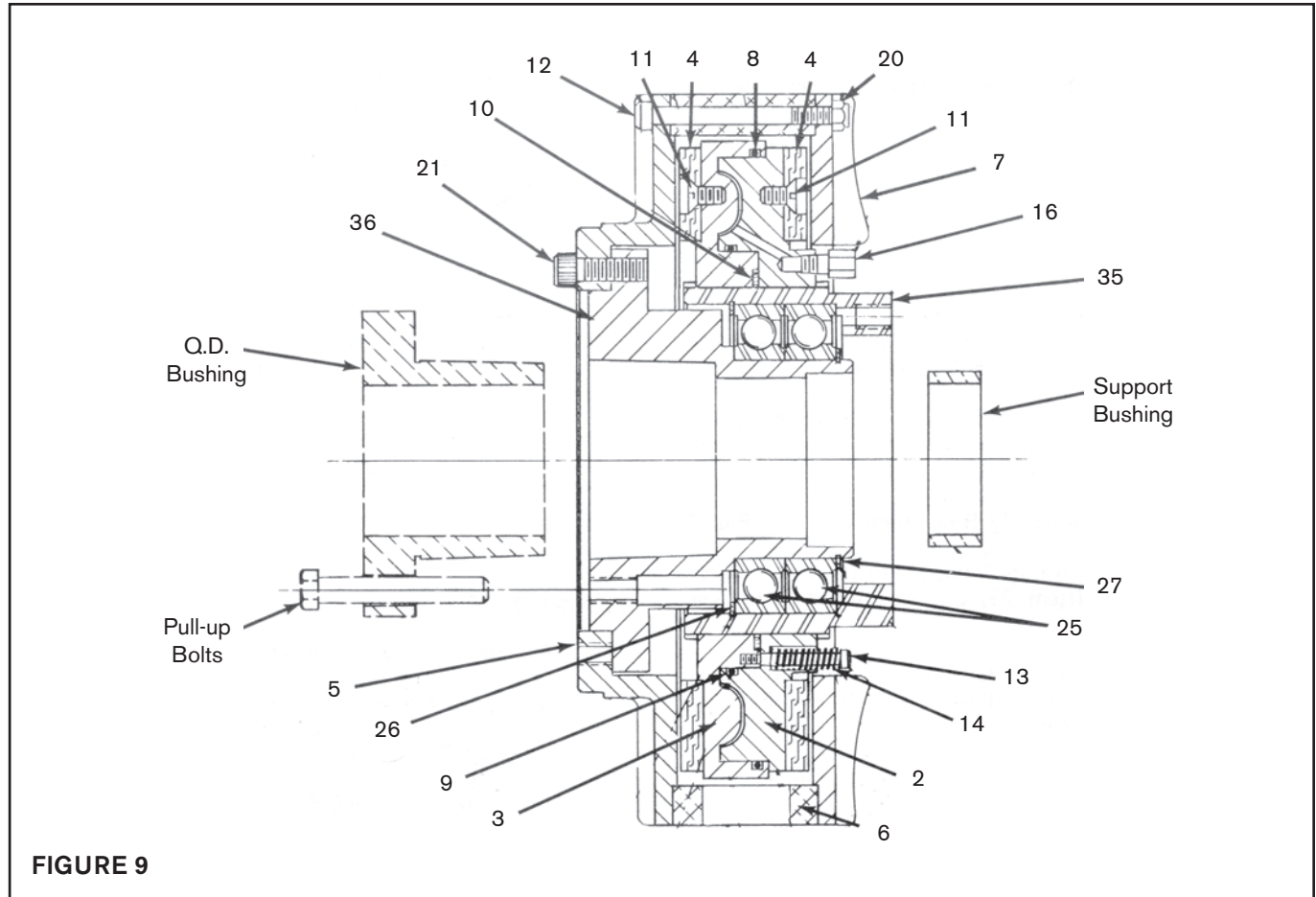
ITEM	DESCRIPTION	QTY.
37	Arm, Torque	1
38	Bar, Extension	1
39	Bracket	1
40	Screw, Cap	1
41	Screw, Cap	1
42	Screw, Cap	3
43 <sup>1</sup>	Lock washer	3
44 <sup>1</sup>	Nut, Lock	1
45	Nut, Lock	1

<sup>1</sup> Qty. 4: DPB-15T



## REPLACEMENT PARTS (continued)

### DPB BRAKE



**FIGURE 9**

ITEM	DESCRIPTION	QTY.
2	Piston/Drive Disc	1
3	Cylinder/Drive Disc	1
4	Facing, Friction	2
5	Disc, Flange Mount	1
6	Housing	1
7	Disc, Friction	1
8	O-ring (Large)	1
9	O-ring (Small)	1
10	Ring, Retaining	1
11	Screw, Machine	16
12	Screw, Cap	*
13	Screw, Shoulder	**
14	Spring	**
15	Fitting, Adapter	2

ITEM	DESCRIPTION	QTY.
20	Nut, Lock	*
21	Screw, Cap	6
25	Bearing	2
26	Ring, Retaining	1
27	Ring, Retaining	1
35	Hub, Splined	1
36	Hub, Flanged	1

MODEL	*QTY.	**QTY.
DPB-9T	6	4
DPB-9T	6	6
DPB-9T	8	8
DPB-9T	10	8

## 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.

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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.

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