




## **Dual and Quad Faced Brakes**

**DFB and QFB Models 1150, 1650, 2200,  
and 2500**

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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**ISO 9001 Certified**

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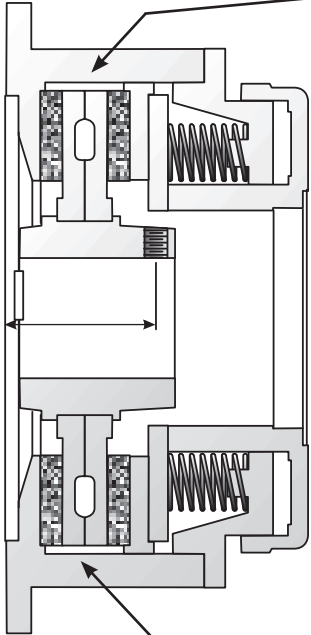
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## GENERAL SPECIFICATIONS

Specifications	
Torque	DFB: Up to 9310 Nm (82400 in-lbs) QFB: Up to 18620 Nm (164800 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 385 kg (850 lbs)


## GENERAL SAFETY PRECAUTIONS

	<b>CAUTION</b> Use lifting aids and proper lifting techniques when installing, removing, or placing this product in service.
	<b>CAUTION</b> Watch for sharp features when interacting with this product. The parts have complex shapes and machined edges.
	<b>WARNING</b> 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".
	<b>CAUTION</b> Use appropriate guarding for moving components. Failure to guard could result in serious bodily injury.
	<b>CAUTION</b> This product has possible pinch points. Care should be taken when interacting with this product.
	<b>WARNING</b> 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).

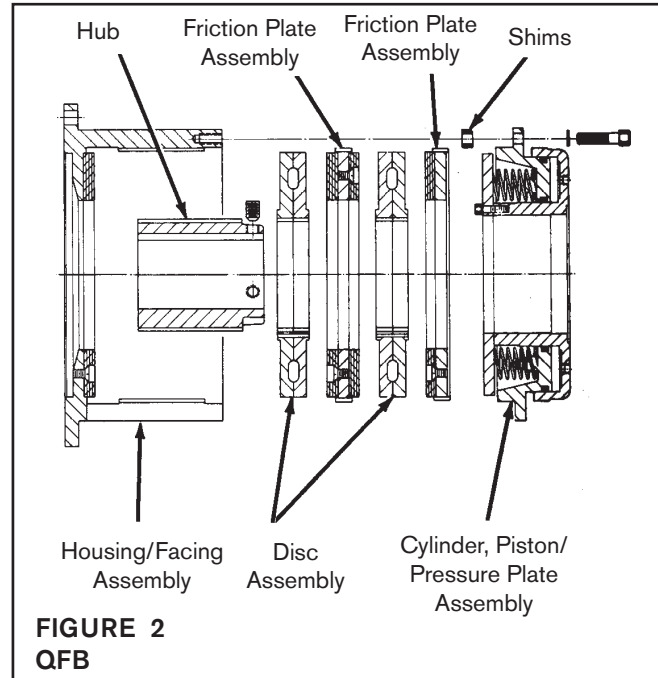
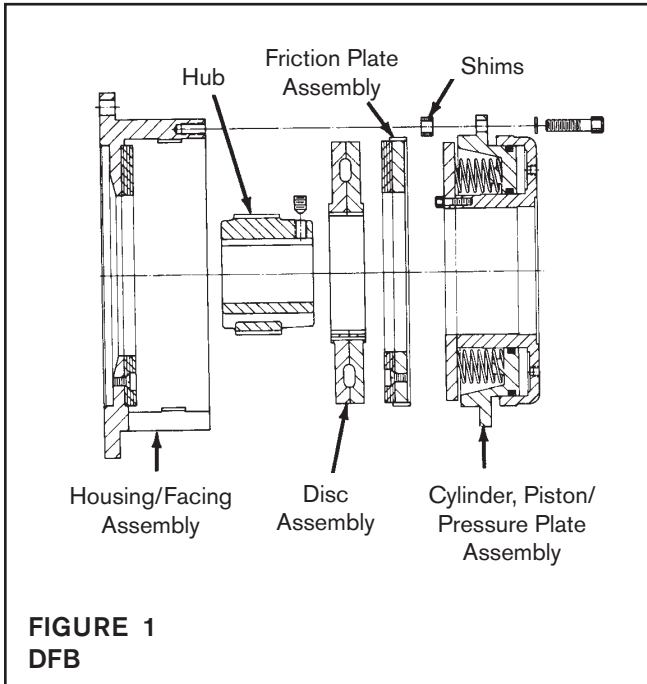


**CAUTION**  
 This product has possible pinch points. Care should be taken when interacting with this product.

## INSTALLATION

**NOTE:** Nexen's spring engaged, air disengaged Dual Faced Brakes (DFB) and Quad Faced Brakes (QFB) are designed for horizontal shaft mounting only.

Nexen's DFB and QFB elements are partially assembled at the factory. Before installation, separate the elements into subassemblies as shown (See Figures 1 and 2).



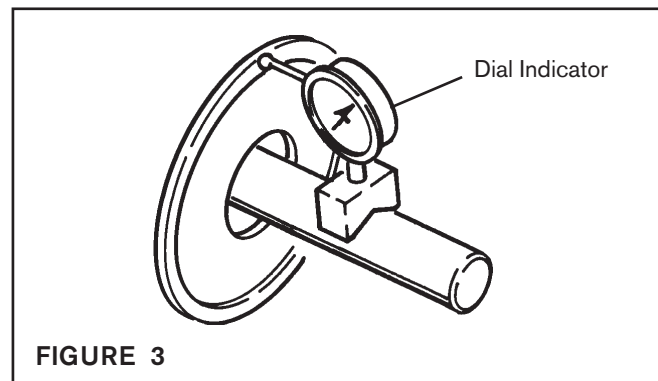
1. Provide a piloting flange and 5/8-11 tapped holes in the bearing supported device or machine component prior to installing the housing (See Table 1 for Pilot Diameter and Bolt Circle).
2. Attach the Housing/Facing Assembly to the bearing supported device or machine frame using customer supplied Grade 8, 5/8-11 Socket Head Cap Screws.

**NOTE:** Control perpendicularity between the shaft and housing mounting surface. Use a Dial Indicator for measurements. Perpendicularity should be less than 0.015 TIR (See Figure 3).

3. Apply Loctite® 242 to the threads and tighten 5/8-11 Socket Head Cap Screws to recommended torque (See Table 2).
4. Install customer supplied key into shaft.
5. Lubricate Hub splines (Item 1) with Never-Seez® or an equivalent high temperature, anti-seize lubricant.
6. Slide Hub (Item 1) over key and onto shaft (See Figures 1 and 2).

**TABLE 1**

MODEL	PILOT DIAMETER	BOLT CIRCLE
DFB-1150 QFB-1150	11.375 In. [288.9 mm]	6 on 14.750 In. [374.7 mm]
DFB-1650 QFB-1650	16.250 In. [418.8 mm]	12 on 20.000 In. [508.0 mm]
DFB-2200 QFB-2200	21.375 In. [542.9 mm]	12 on 25.500 In. [647.7 mm]
DFB-2500 QFB-2500	24.375 In. [619.1 mm]	12 on 28.750 In. [730.3 mm]



## INSTALLATION (continued)

NOTE: Axial location of the Hub is important. Refer to Table 3 and Figure 4 for correct Hub location from the Housing mounting surface to the Set Screw end of the Hub.

7. Install Disc Assembly (See Figures 1 and 2).
    - a. Model DFB— Install Disc Assembly (Item 4) on Hub (Item 1).
    - b. Model QFB— Install one Disc Assembly (Item 4) on Hub (Item 1), Friction Plate (Item 19) with Friction Facing (Item 3) on both sides, then second Disc Assembly, respectively.
  8. Apply a drop of Loctite® 242 to the threads and install customer supplied set screw and tighten to manufacturer's recommended torque.
  9. Install Friction Plate (Item 19) that has Friction Facings (Item 3) on one side only (See Figures 1 and 2).
  10. Apply air pressure and install Cylinder, Piston, and Pressure Plate Assembly (Items 5, 6, and 7) onto Housing (See Figures 1 and 2).
- NOTE: Shims are required to achieve the 1.456 dimension (See Figures 5 and 6 for proper Shim placement.)
11. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 12) (See Figure 6).
  12. Install Lock Washers (Item 15) and Socket Head Cap Screws (Item 12). Tighten to the recommended torque (See Table 2).

TABLE 2

MODEL	ITEM 8	ITEM 11	ITEM 12	5/8-11 CAP SCREWS
DFB-1150 QFB-1150	244 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.
DFB-1650 QFB-1650	435 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.
DFB-2200 QFB-2200	435 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.
DFB-2500 QFB-2500	435 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.

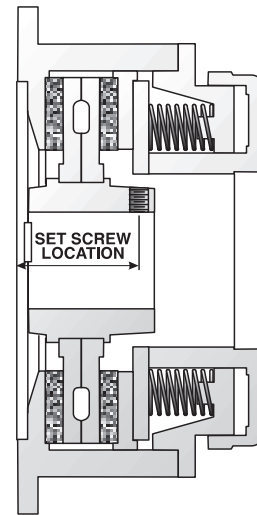


FIGURE 4

TABLE 3

MODEL	HUB LOCATION	MODEL	HUB LOCATION
DFB-1150	4-3/8 In.	QFB-1150	6-25/32 In.
DFB-1650	5-5/64 In.	QFB-1650	6-5/8 In.
DFB-2200	6-5/16 In.	QFB-2200	8-15/16 In.
DFB-2500	6-1/4 In.	QFB-2500	8-31/32 In.

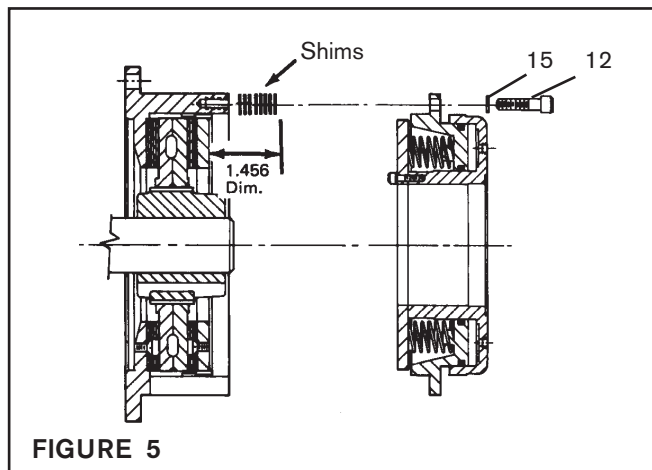


FIGURE 5

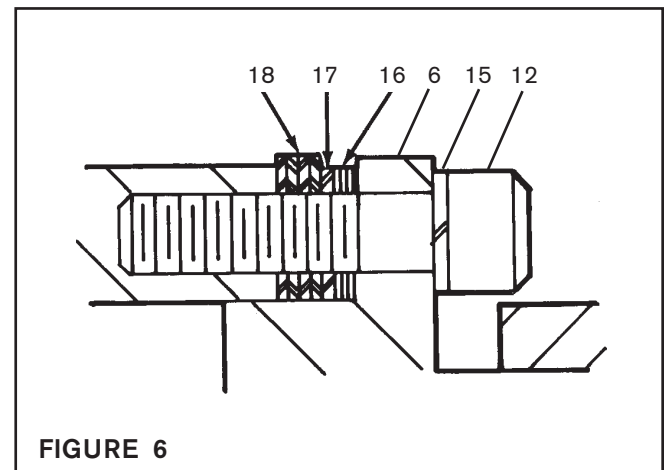


FIGURE 6

## 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

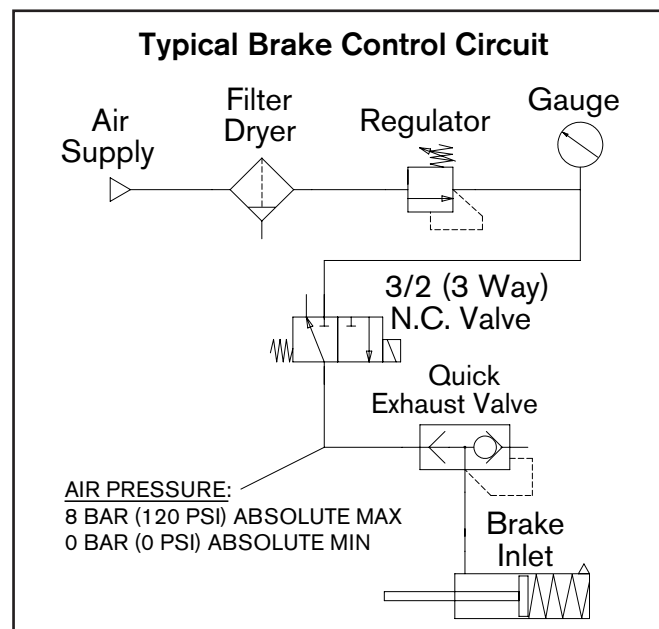
For quick response, Nexen recommends a quick exhaust valve and short air lines between the Control Valves and the product. Align the air inlet ports to a down position to allow condensation to drain out of the air chambers of the product.



### CAUTION

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



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.

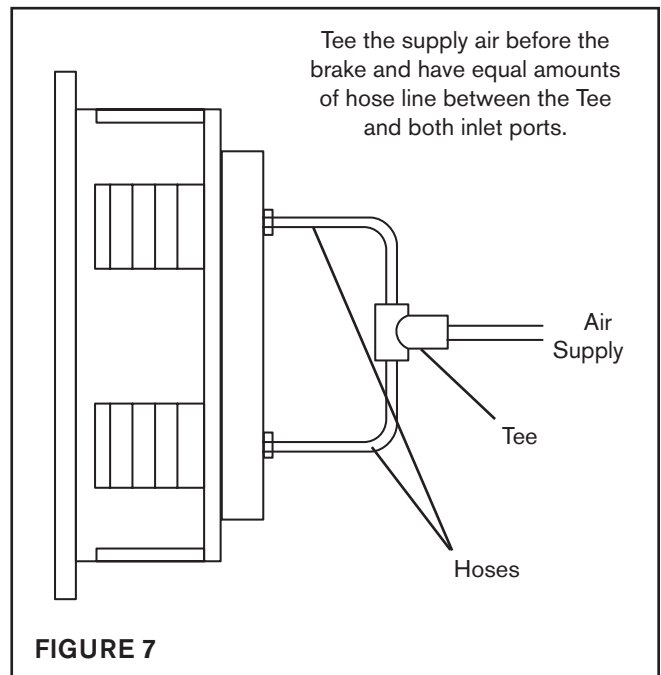


## AIR CONNECTIONS *(continued)*



**NOTE:** When connected directly to the brake, rigid pipe or tubing will prevent proper actuation of the brake. Use only flexible hose or tubing.



Valving, tubing, hose, and fitting I.D. must be a minimum of 1/2".

	 <b>CAUTION</b>
	<p>To avoid damage to the brake, Tee the supply air before the brake and have equal amounts of hose line between the Tee and both inlet ports. Use of both ports is mandatory to ensure proper actuation of the brake (See Figure 7).</p>



## OPERATION

	 <b>WARNING</b>
	<p>Never exceed maximum operating speeds listed for your product. (See Table 4).</p>

	 <b>CAUTION</b>
	<p>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: <math>\text{Time} = \text{Volume} / (\text{Power} * \text{Wear Rate})</math>.</p>





	 <b>WARNING</b>
	<p>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".</p>

TABLE 4

Size	Max RPM
DFB/QFB 1150	2200
DFB/QFB 1650	1500
DFB/QFB 2200	1100
DFB/QFB 2500	1000

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

## TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	SOLUTION
Failure to engage.	Unexhausted air due to control valve malfunction.	Replace control valve.
	Lack of lubrication on Hub Spline or in air chamber.	Lubricate Hub Spline and check air line lubricator.
	Rigid piping or tubing.	Use flexible tubing.
	Hub not captured on shaft.	Be sure Set Screws in hub are installed.
	Weak or broken Compression Springs.	Replace Compression Springs.
Failure to disengage.	Air not getting to Brake due to control valve malfunction.	Replace control valve.
	Hub not captured on shaft.	Be sure Set Screws in hub are installed.
	Friction lock due to lack of lubrication on Hub Spline or in air chamber.	Lubricate Hub Spline, and check air line Lubricator.
Loss of torque.	Weak or broken Compression Springs.	Replace Compression Springs.
	Worn or contaminated Friction Facings.	Replace Friction Facings.
	Incorrect Friction Facing wear adjustment (QFB only).	Perform Friction Facing wear adjustment.

## FRICITION FACING WEAR ADJUSTMENT

NOTE: Friction Facing wear adjustment is not required for DFB Series Brakes.

NOTE: When the QFB Series Brake facings are worn to the point of required adjustment, the gap between the Cylinder and Piston will close, thus preventing brake engagement.

1. Unscrew Socket Head Cap Screws (Item 12) approximately 1/8" and pull Piston (Item 6) loose to free Shims (Items 16, 17, and 18) (See Figure 8).
2. Unscrew Socket Head Cap Screw (Item 12) until it is free; then, remove four Adjustment Shims (Item 18) that extend beyond the other Shims (Item 16 and 17) (See Figure 8).

NOTE: Save the Shims that have been removed for use when new Frictions Facings are installed.

3. Replace the Socket Head Cap Screw and Lock Washer.
4. Repeat Steps 2-3 until the remaining Adjustment Shims have been removed. Apply a drop of Loctite 242 to the threads of the twelve Socket Head Cap Screws (Item 12).
5. Alternately and evenly tighten Socket Head Cap Screws (Item 12) to recommended torque (See Table 5).

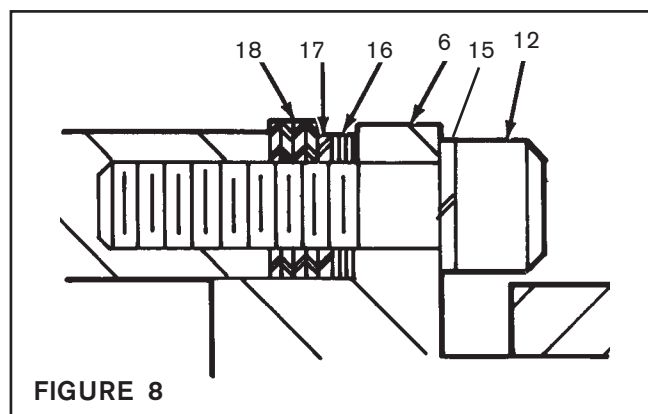


FIGURE 8

TABLE 5

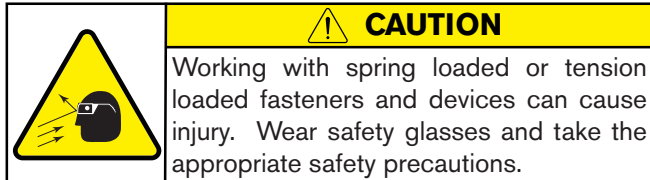
MODEL	ITEM 8	ITEM 11	ITEM 12	5/8-11 CAP SCREWS
DFB-1150 QFB-1150	244 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.
DFB-1650 QFB-1650	435 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.
DFB-2200 QFB-2200	435 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.
DFB-2500 QFB-2500	435 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.

## PARTS REPLACEMENT

Refer to Figures 9 & 10.

**NOTE:** Friction Facings must be replaced when the gap between the Cylinder and Piston is approximately 1/32" after the Friction Facing wear adjustment has been made.

1. Alternately and evenly remove and discard the old Socket Head Cap Screws (Item 12) and Lock Washers (Item 15).
2. Remove the Shims (Items 16, 17, and 18), keeping them in proper sequence for reassembly.



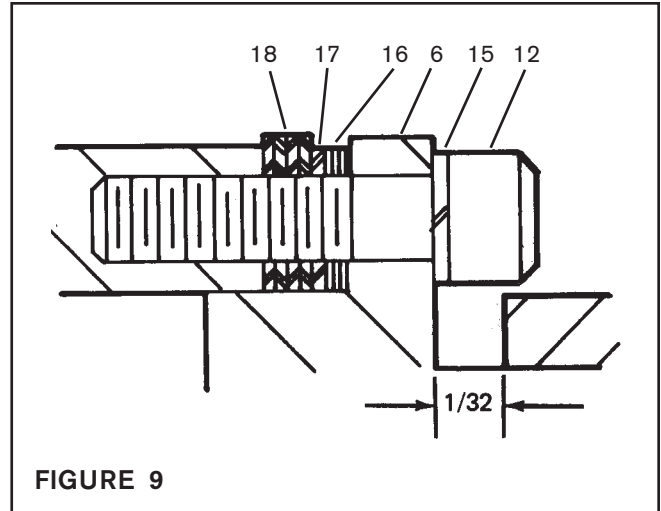
3. Remove spring loaded actuator assembly (Items 5-10, 13, and 14).

**NOTE:** DFB Series Brakes contain one Drive Disc Assembly (Item 4) and one Friction Plate (Item 19). QFB Series Brakes contain two Drive Disc Assemblies (Item 4) and two Friction Plates (Item 19).

4. Remove Friction Plate (Item 19) and Drive Disc Assembly (Item 4).

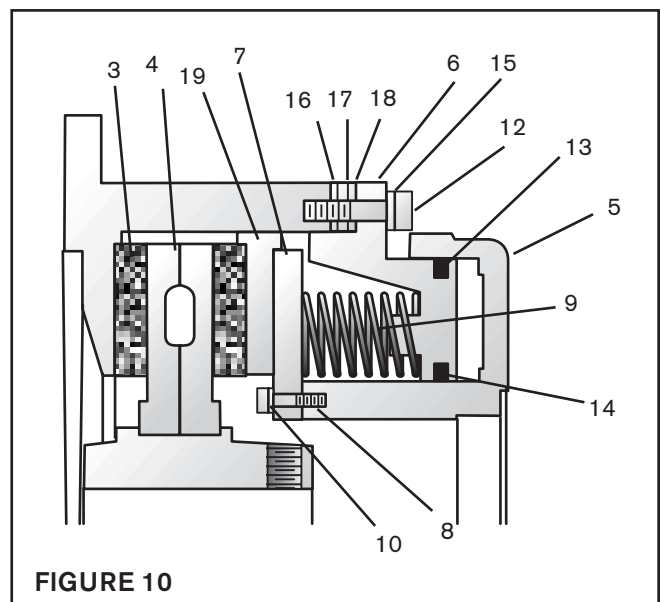
**NOTE:** The Flat Head Screws are assembled with a micro-encapsulated two part epoxy thread locking system. If removal is difficult, strike the end of the screwdriver with a hammer to break the crystalline structure or the compound before attempting to remove the Flat Head Screws.

5. Remove Flat Head Screws (Item 11) securing Friction Facings (Item 3).
6. Install the new Flat Head Screws (Item 11) and new Friction Facing (Item 3) into Housing (Item 2). Tighten Flat Head Screws to recommended torque (See Table 6).
7. Alternately and evenly loosen the old Socket Head Cap Screws (Item 8) to relieve spring tension on Pressure Plate (Item 7).
8. Remove and discard the old Socket Head Cap Screws (Item 8) and Lock Washers (Item 10).

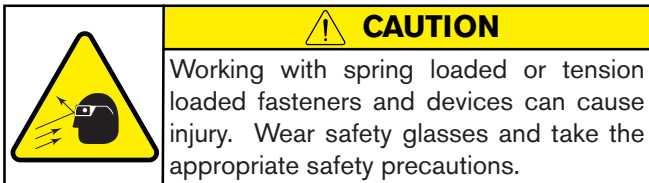


**TABLE 6**

MODEL	ITEM 8	ITEM 11	ITEM 12	5/8-11 CAP SCREWS
DFB-1150 QFB-1150	244 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.
DFB-1650 QFB-1650	435 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.
DFB-2200 QFB-2200	435 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.
DFB-2500 QFB-2500	435 In./Lbs.	20-22 Ft./Lbs.	89 Ft./Lbs.	145 Ft./Lbs.



## PARTS REPLACEMENT *(continued)*



9. Remove the Pressure Plate (Item 7).
10. Remove and discard the old Compression Springs (Item 9) from the Piston (Item 6).
11. Separate the Piston (Item 6) and Cylinder (Item 5).
12. Remove and discard the old O-ring Seals (Items 13 and 14).
13. Clean O-ring contact surfaces with fresh safety solvent.
14. Lubricate new O-ring Seals and O-ring contact surfaces with a thin film of fresh O-ring lubricant.
15. Install new O-ring Seals (Items 13 and 14).
16. Slide the Piston (Item 6) back into the Cylinder (Item 5).
17. Install the new Compression Springs (Item 9).

18. Apply a drop of Loctite® 242 locking compound to the new Socket Head Cap Screws (Item 8).
19. Using the new Socket Head Cap Screws (Item 8) and Lock Washers (Item 10), secure the Pressure Plate (Item 7) to the Cylinder (Item 5).
20. Alternately and evenly install and tighten the new Socket Head Cap Screws (Item 8) and Lock Washers (Item 10) to the recommended torque (See Table 6).
21. Apply a drop of Loctite® 242 to the threads of the Socket Head Cap Screws (Item 12).

**NOTE:** Be certain Shims are reinstalled in the proper sequence. Install new Shims only when performing Friction Facing wear adjustment (QFB only).

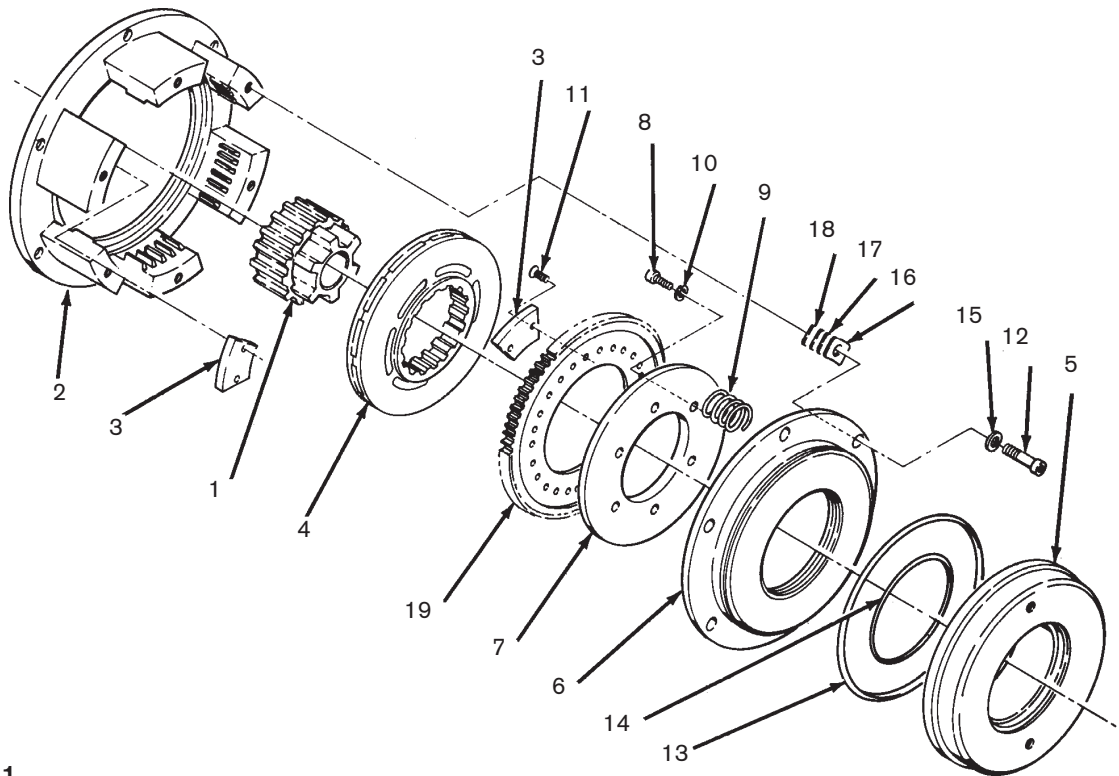
22. Reinstall the spring loaded actuator assembly on Housing (Item 2) with Shims (Items 16, 17, and 18), new Socket Head Cap Screws (Item 12), and new Lock Washers (Item 15).
23. Alternately and evenly tighten the new Socket Head Cap Screws (Item 12) to the recommended torque (See Table 6).

## REPLACEMENT PARTS

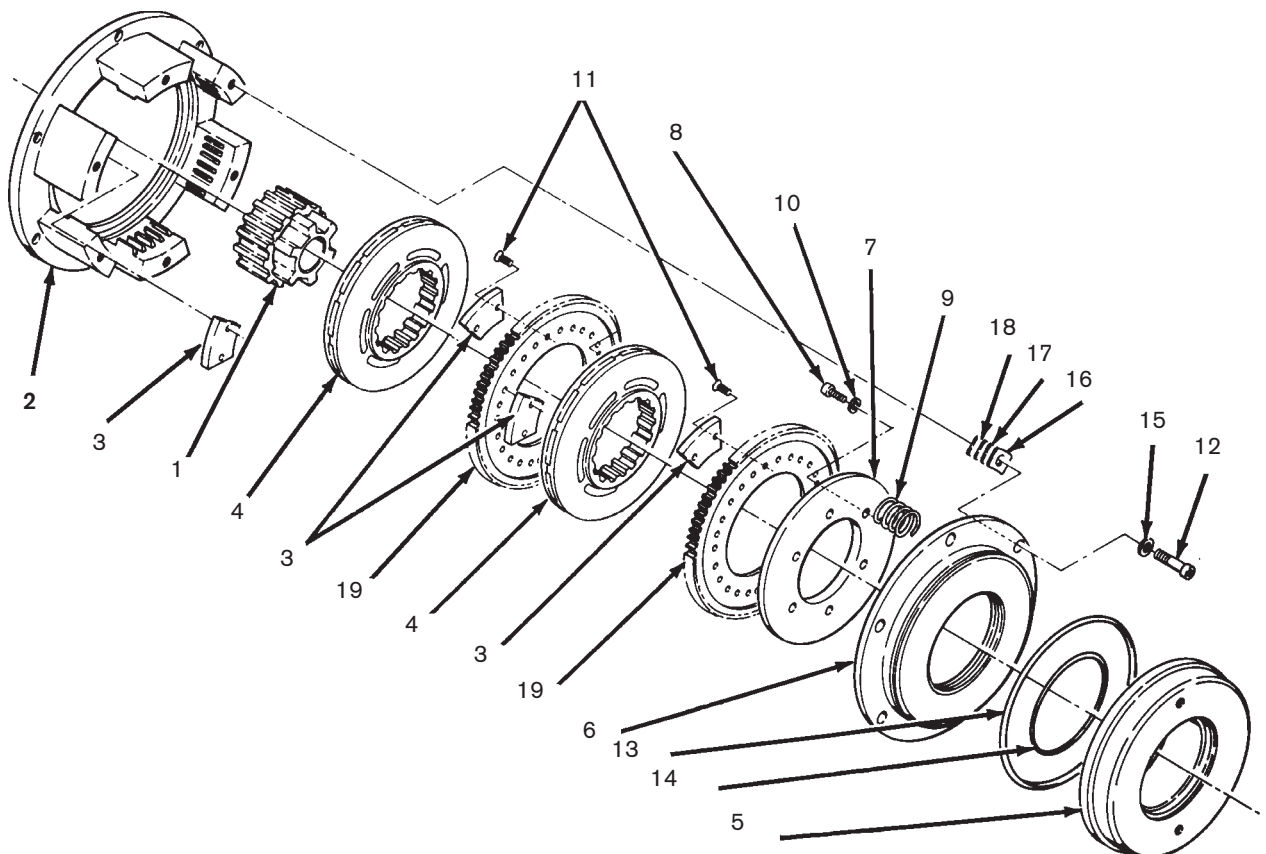
The item or balloon number for all Nexen products is used for part identification on all product parts lists, product price lists, unit assembly drawings, bills of materials, and instruction manuals.

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

## REPLACEMENT PARTS *(continued)*



**FIGURE 11**  
**DFB EXPLODED VIEW**



**FIGURE 12**  
**QFB EXPLODED VIEW**

## REPLACEMENT PARTS *(continued)*

ITEM	DESCRIPTION	1150		1650		2200		2500	
		DFB	QFB	DFB	QFB	DFB	QFB	DFB	QFB
1	Hub	1	1	1	1	1	1	1	1
2	Housing	1	1	1	1	1	1	1	1
3 <sup>1 2</sup>	Friction Facing	12	24	12	24	12	24	12	24
4	Drive Disc Assembly	1	2	1	2	1	2	1	2
5	Cylinder	1	1	1	1	1	1	1	1
6	Piston	1	1	1	1	1	1	1	1
7	Pressure Plate	1	1	1	1	1	1	1	1
8 <sup>2</sup>	Socket Head Cap Screw	6	6	6	6	10	22	10	10
9 <sup>2</sup>	Compression Spring	10	10	8	8	10	10	15	15
10 <sup>2</sup>	Lock Washer	6	6	6	6	10	22	10	10
11 <sup>1 2</sup>	Flat Head Screw	24	48	24	48	24	48	24	48
12 <sup>2</sup>	Socket Head Cap Screw	6	6	12	12	12	12	12	12
13 <sup>2</sup>	O-ring Seal	1	1	1	1	1	1	1	1
14 <sup>2</sup>	O-ring Seal	1	1	1	1	1	1	1	1
15 <sup>2</sup>	Lock Washer	6	6	12	12	12	12	12	12
16	Shim 0.015"	6	12	12	24	12	24	12	24
17	Shim 0.075"	6	12	12	24	12	24	12	24
18	Shim 0.075"	12	24	24	48	24	48	24	48
19	Friction Plate	1	2	1	2	1	2	1	2

## COMPONENT PRODUCT NUMBERS

MODEL DFB/QFB	PRODUCT NUMBER	
	STD	HICO
1150	964028	964029
1650	964031	964032
2200	964118	964119
2500	964037	964038

## 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.

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