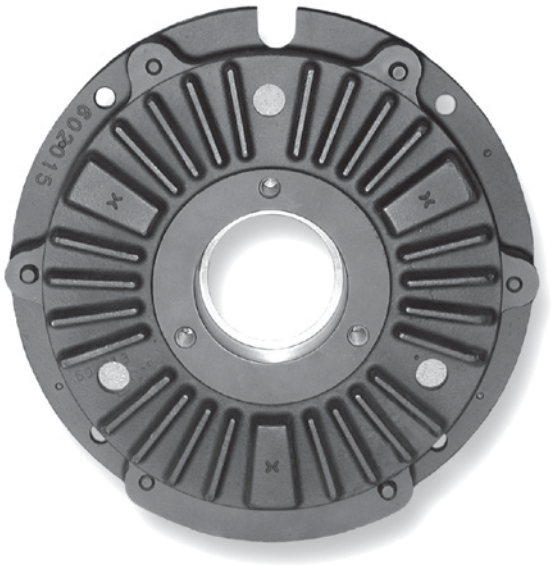
nexen®

AIR CHAMP® PRODUCTS

User Manual



Models TSE 1200 & TSE 1400

CE

RoHS compliant

FORM NO. L-21089-D-1018

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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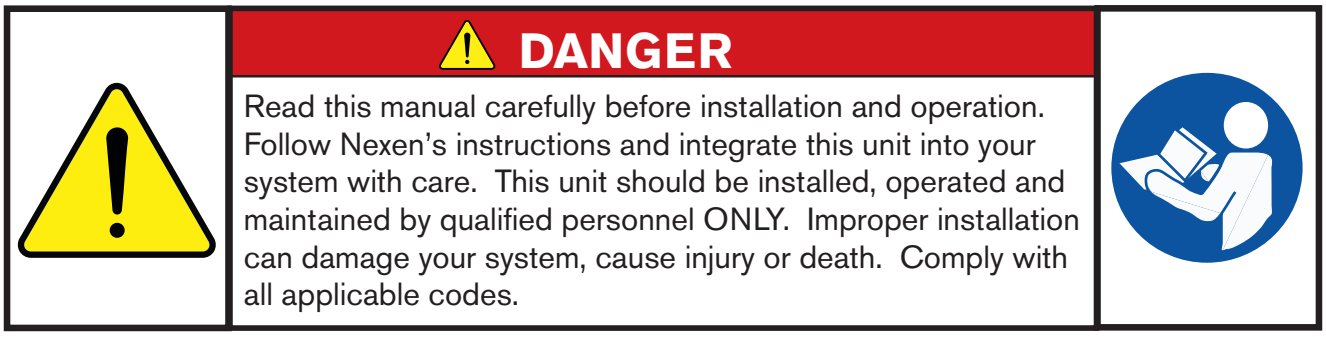


This document is the original, non-translated, version.

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.

Nexen Group, Inc.
560 Oak Grove Parkway
Vadnais Heights, Minnesota 55127

ISO 9001 Certified

Table of Contents

GENERAL SPECIFICATIONS

Specifications:	
Torque	Up to 900 Nm (8000 in-lbs)
Actuation Pressure	1 - 5.5 bar (14.5 - 90 psi)
Service Temperature	4.5 - 104 C (40 - 220 F)
Approximate Weight	Up to 59 kg (130 lbs)

GENERAL SAFETY PRECAUTIONS

⚠ CAUTION

Some product assemblies can exceed 130 lbs. Use lifting aids and proper lifting techniques when installing, removing, or placing 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.

⚠ WARNING

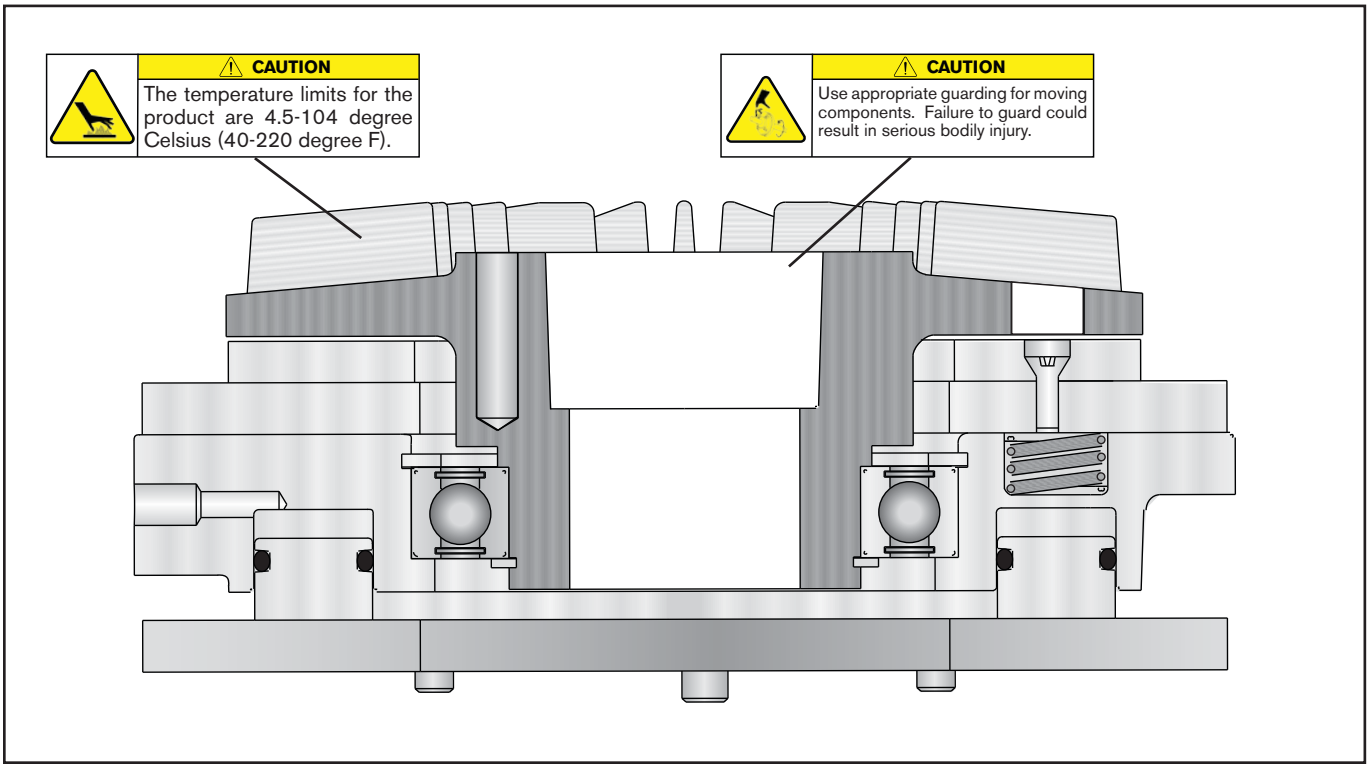
This product is capable of emitting a spark if misused therefore is not recommended for use in any explosive environment.

⚠ 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”.

⚠ CAUTION

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



INSTALLATION

⚠ CAUTION

Do not flange mount TSE Brakes. Bearing preload will result after bushing is installed and premature bearing failure will ensue.

1. Before mounting, ensure Rear Piston Plate (Item 3) has adequate clearance to move freely (See Figure 1 & Table 1).

2. Remove any dirt, grease, or foreign material from the Friction Disc Hub (Item 1) bore and the tapered surfaces of the Q.D. Bushing.

   NOTE: Do not use lubricants when installing Q.D. Bushing.

   Do not strike Q.D. Bushing to "set" it in the bore of the Friction Disc Hub.

3. Slide Q.D. Bushing into the bore of the Friction Disc Hub (Item 1) (See Figure 2).

⚠ CAUTION

Do not install Cap Screws into the threaded holes of the Q.D. Bushing. The threaded holes in the Q.D. Bushing are only used for removal of the Q.D. Bushing.

4. Insert cap screws into Q.D. Bushing, aligning them with the tapped holes in the Friction Disc Hub (Item 1) (See Figure 2).

5. Position TSE Brake on the shaft (See Figure 2).

6. Alternately and evenly tighten Q.D. Bushing cap screws to the recommended torque (See Table 1).

   NOTE: There should be a 1/4" - 1/2" [6.4 - 12.7 mm] gap between the Q.D. Bushing flange and the Friction Disc Hub after the cap screws have been tightened to the recommended torque.

   Runout is minimized if a Dial Indicator is used as the Q.D. Bushing cap screws are tightened. Place contact tip of Dial Indicator on smooth surface of the Friction Disc Hub (Item 1) to measure runout. Runout on this surface must not exceed 0.005" [0.13 mm] TIR when cap screws are tightened (See Figure 2).

7. Secure brake Air Chamber (Item 4) to prevent rotation and take up brake torque. A torque pin slot is provided in the Air Chamber flange (See Figure 2).

   NOTE: Keep torque pin as short as possible.

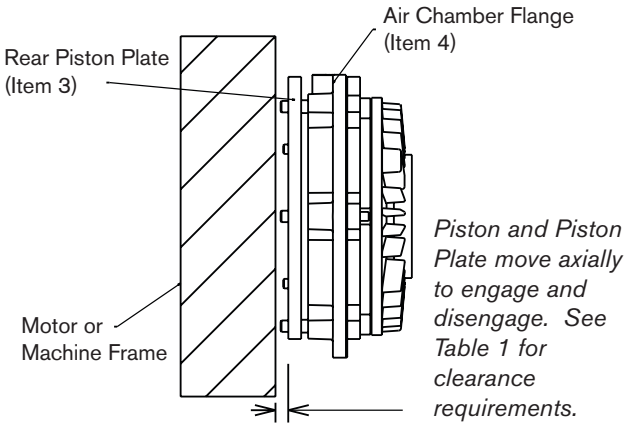


FIGURE 1

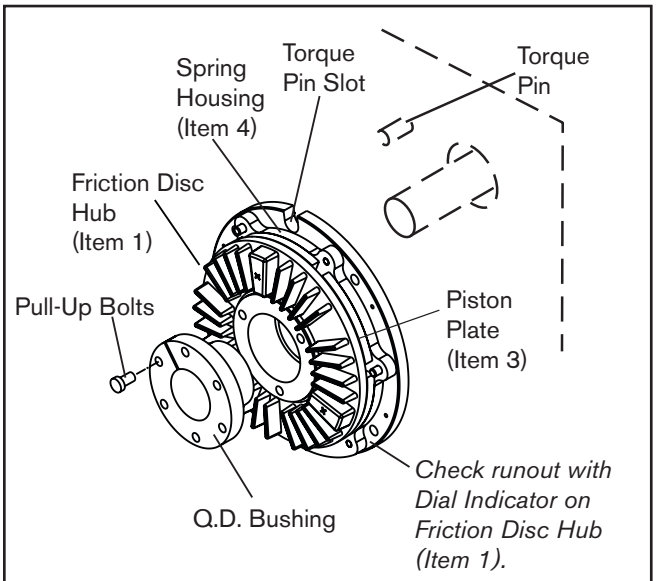


FIGURE 2

TABLE 1

Model	Minimum Shaft Length	Maximum Shaft Diameter (Full KW)	Minimum Clearance at the Rear of the Brake	QD Bushing Size	Pull-up Bolt Tightening Torque	Torque Pin Slot Width	Torque Pin Diameter
TSE-1200	6.83	2.875	.375	E	60 ft.-lbs.	1.003	1.000
TSE-1400	7.68	3.250	.375	F	75 ft.-lbs.	1.128	1.125

All dimensions are inches.

Measure the minimum shaft length from the bulkhead to the outer edge of the QD Bushing Flange. Embed a torque pin into the bulkhead to prevent brake housing rotation.

BRAKE GUARD INSTALLATION

NOTE: Refer to Figure 3.

1. Align the mounting holes of the Brake Guard with the four tapped holes in the TSE Mounting Flange.

2. Using the four 10-24 Phillips Head Pan Screws, secure the Brake Guard to the TSE. Tighten to 35 in-lbs [4 Nm].

3. If the Brake Guard is not through shaft mounting, place the End Cap over the front of the Brake Guard and bend the tabs around the Brake Guard to hold the End Cap in place.

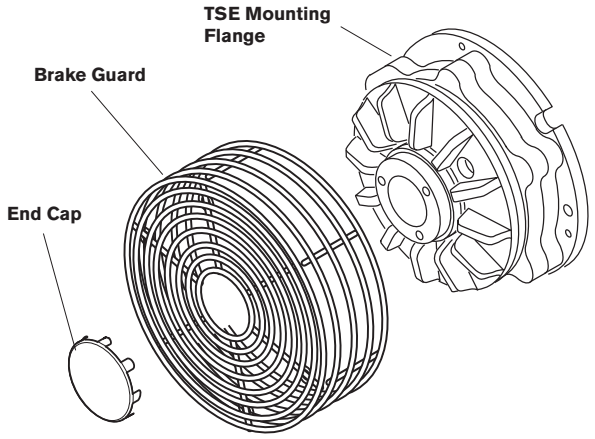


FIGURE 3

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

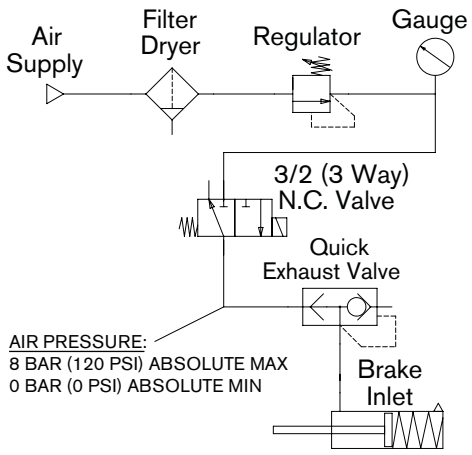
For quick response, Nexen recommends a quick exhaust valve and short air lines between the Control Valves and the product. Align the air inlet ports to a down position to allow condensation to drain out of the air chambers of the product.

⚠ CAUTION

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

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.

Typical Brake Control Circuit



OPERATION

⚠ WARNING

Never exceed maximum operating speeds listed for your product. (See Table 3).

TABLE 3

Sizes:	Max RPM
TSE 1200-1400	*1800

*Consult Nexen for high speed applications.

⚠ CAUTION

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: Time=Volume/(Power*Wear Rate).

⚠ CAUTION

The temperature limits for this product line are 4.5-104 Degree Celsius (40-220 Degree F).

The TSE Brake will remain engaged until sufficient air pressure is applied to release it. The amount of release air pressure may vary depending upon the length of the air lines, amount of springs, and the type of controls used.

⚠ 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”.

⚠ CAUTION

To avoid unnecessary loading of components, Nexen recommends not exceeding the air pressure required to release the brake. The brake seals, however, have been designed to tolerate up to 7.6 bar (110 PSI) of continuous pressure.

Apply increasing amounts of air pressure to the brake until the Friction Disc Hub turns freely.

MANUAL DISENGAGEMENT

1. To manually release the TSE Brake, first the air pressure supply must be removed. (See CAUTION)

2. Remove the Flange Head Hex Screws (Item 16) from the Piston (Item 2) and the Socket Head Cap Screws (Item 6) from the opposing Piston Plate (Item 3).

3. Remove the Piston Plate (Item 3) and all three Spacers (Item 15).

4. Replace Piston Plate (Item 3) and Socket Head Cap Screws (Item 6) with longer customer supplied fasteners (SAE Grade 8, 3/8-16) at least 4" long (TSE 1200) and 5" long (TSE 1400). Cap screws must be long enough, with sufficient thread length, to allow full removal of spring force. Spring travel has been designed to engage over entire area of friction material. Tighten Cap Screws alternately and evenly to draw the Piston Plate (Item 3) and Friction Facing (Item 5) away from the Friction Disc-Hub (Item 1).

⚠ CAUTION

To avoid the possibility of an explosion, disconnect all air supply lines and valves from the brake. Before any operations are performed, air pressure **must** be removed from the air chamber.

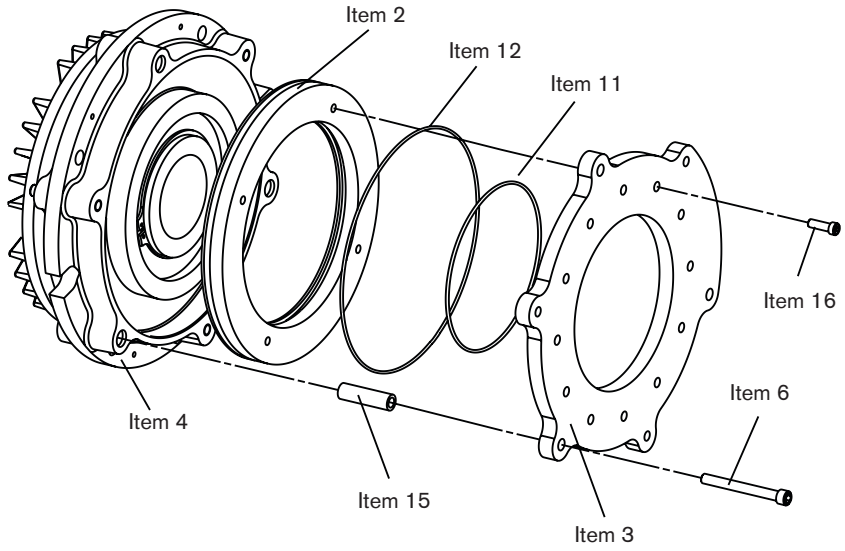


FIGURE 4

MAINTENANCE

NOTE: Periodically inspect all mounting bolts and air line fittings to make sure they are securely tightened. Pay particular attention to the Flange Head Hex Screws (Item 6 or 16). If these screws are loose, the Piston Plate (Item 3) travel will increase, causing the O-ring Seals to leak air. Tighten the Flange Head Hex Screws (Item 6 and16) to the recommended torque (See Table 4).

Inspect Friction Facings (Item 5) for signs of wear and replace if worn down to where the Machine Screws (Item 14) may score the Friction Disc Hub.

TABLE 4

Model	Tightening Torques	Item
TSE 1200	575.0 in-lb [68.0 Nm]	6
TSE 1200	354.0 in-lb [40.0 Nm]	16
TSE 1400	575.0 in-lb [68.0 Nm]	6
TSE 1400	354.0 in-lb [40.0 Nm]	16

TROUBLESHOOTING

Symptom	Probable Cause	Solution
Failure to engage.	Broken Compression Springs.	Send to facotry to replace the Compression Springs.
	Internal contamination or corrosion.	Align the exhaust port to the six o'clock down position to allow condensation to drain out of the exhaust port.
Failure to disengage.	Low or lack of air pressure.	Check supply line air pressure.
		Check for air leaks in the air lines and around the O-rings Seals. Replace the air lines or O-ring Seals if necessary.
	Internal contamination or corrosion.	Align the exhaust port to the six o'clock down position to allow condensation to drain out of the exhaust port.
Loss of torque.	Worn or dirty Friction Facings.	Replace the Friction Facings.

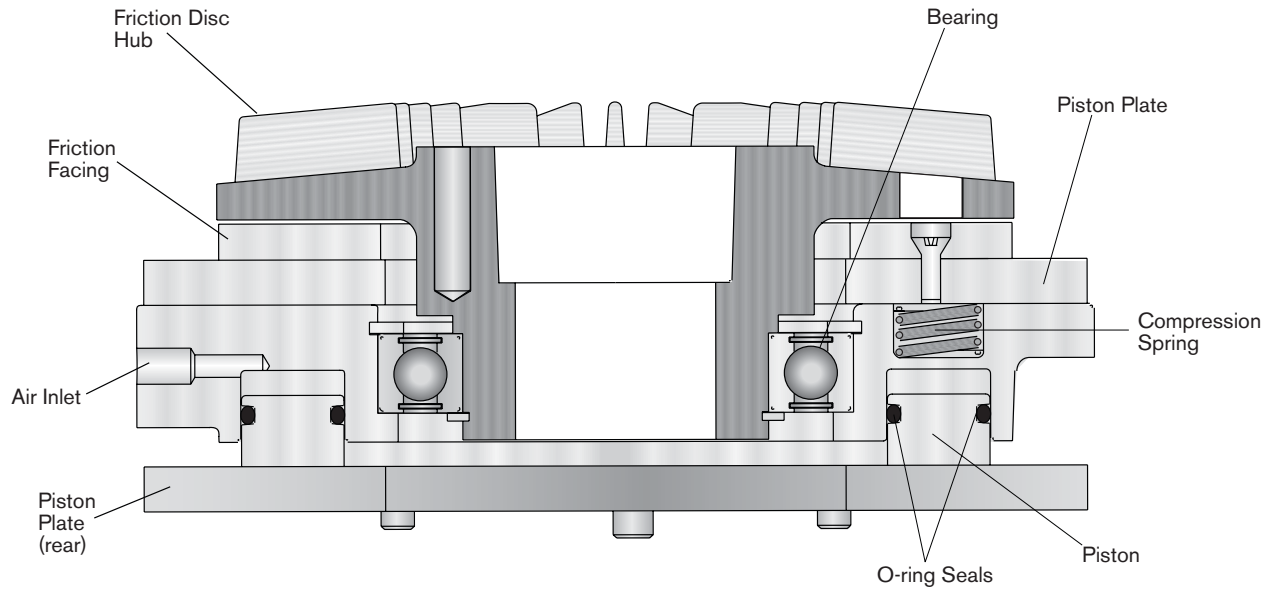


FIGURE 5

FRICTION FACINGS

NOTE: Refer to Figure 6.

1. Align the holes in the Friction Disc Hub (Item 1) with the Machine Screws (Item 14) holding the split Friction Facing (Item 5).
2. Remove the old Machine Screws (Item 14).
3. Remove the old split Friction Facings (Item 5).
4. Install the new split Friction Facings (Item 5).
5. Secure the new split Friction Facings (Item 5) using the new Machine Screws (with locking patch) (Item 14).
6. Tighten the new Machine Screws to the recommended torque (See Table 5).

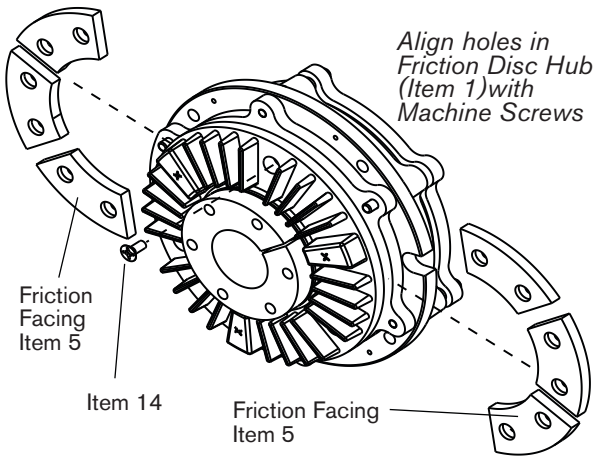


FIGURE 6

TABLE 5

Model	Tightening Torques
TSE 1200	81 in-lb [9.2 Nm]
TSE 1400	81 in-lb [9.2 Nm]

(continued...)

O-RING SEALS

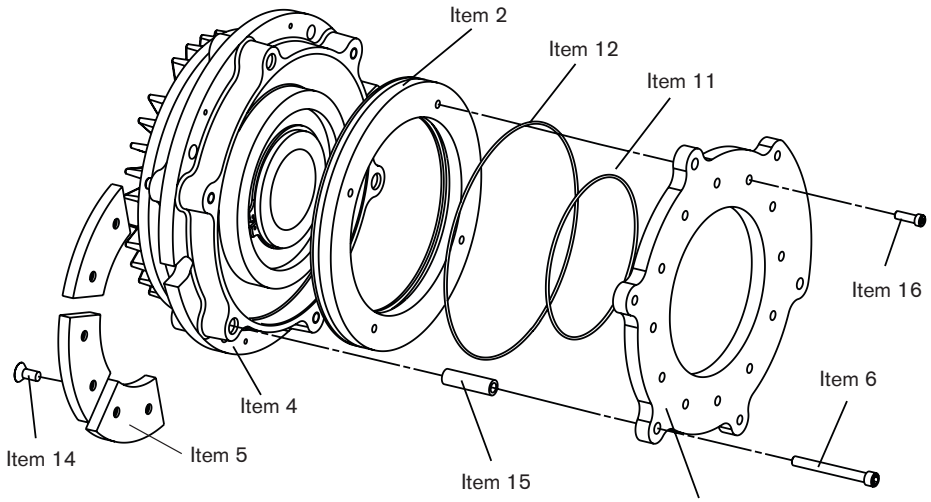


FIGURE 7

⚠ CAUTION

TSE units are spring loaded. Never remove Snap Ring on Hub-Disc when removing Rear Piston Plate and Piston Assembly. Always wear safety goggles when working with spring or tension loaded fasteners or devices.

NOTE: Refer to Figure 7.

1. Alternately and evenly remove the Socket Head Cap Screws (Item 6).
2. Remove the Rear Piston Plate (Item 3) and the Piston Assembly together by pulling the piston out of the Air Chamber.
3. Remove the Piston (Item 2) from the Piston Plate by removing the Flange Head Hex Screws (Item 16).
4. Remove the O-ring Seals (Items 11 and 12).
5. Clean the O-Ring grooves of the Piston (Item 2). Then, lubricate the new O-Ring and contact surfaces with a thin film of fresh O-Ring lubricant.
6. Install the new O-Ring Seals (Items 11 & 12).
7. Apply Loctite® 242 to the threads of the Flange Head Hex Screws (Item 16) and reattach the rear Piston Plate (Item 3) to the Piston (Item 2). Alternately and evenly tighten them to a recommended torque of 345 in-lb [39.0 Nm].
8. Insert and position the Spacers (Item 15) into their correct locations inside the air chamber holes.

NOTE: Avoid pinching of O-Ring Seals when assembling Piston and Air Chamber.

9. Slowly reinsert the Piston (Item 2) and the Piston Plate Assembly into the Air Chamber, taking care not to pinch the O-rings.
10. Apply Loctite® 242 to the threads of the Socket Head Cap Screws (Item 6) and install. Alternately and evenly tighten to a recommended torque of 585 in-lb [66.0 Nm].

FURTHER DISASSEMBLY IS NOT RECOMMENDED

Due to complicated assembly and the large amount of spring force, Nexen recommends that all further disassembly or reassembly be completed by a factory professional. Units should be sent directly to the factory for repairs or service.

REPLACEMENT PARTS LIST

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.

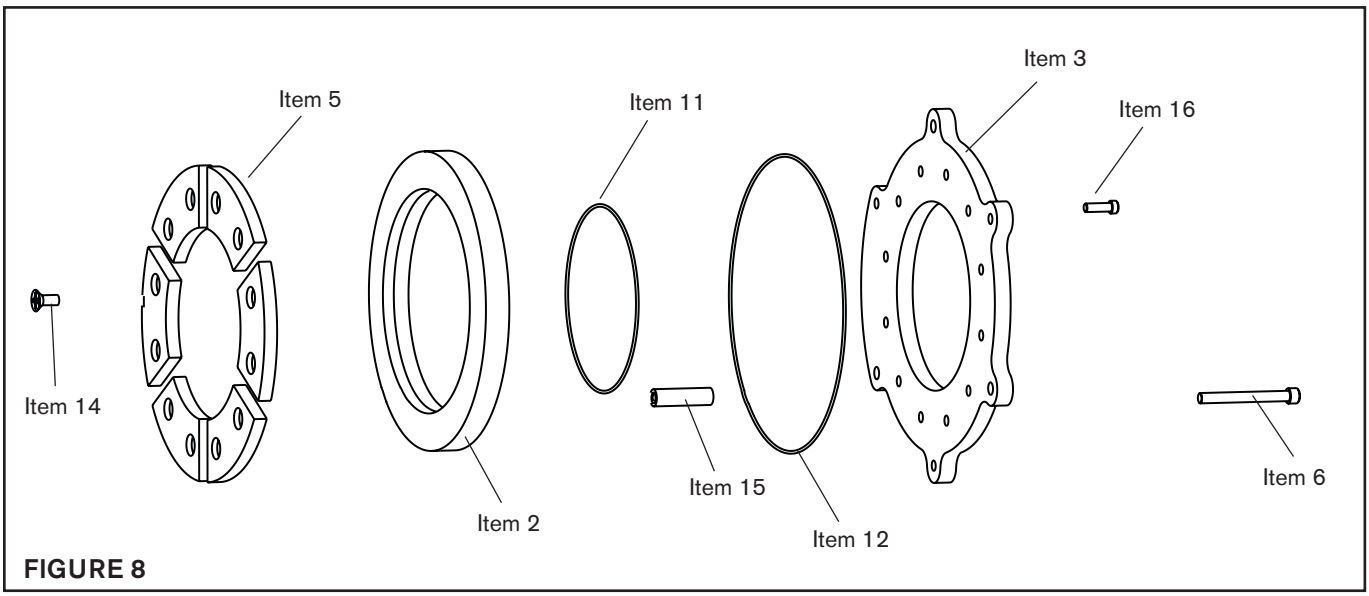


FIGURE 8

ITEM	DESCRIPTION	QTY
2	Piston	1
3	Piston Plate	1
5	Friction Facing	6 or 2[1]
6	Socket Head Cap Screw	3
11	O-ring Seal (Small)	1
12	O-ring Seal (Large)	1
15	Spacer	3
16	Cap Screw	4

[1] TSE 1200: uses 6 facing
TSE 1400: uses 2 facings

ACCESSORIES

TABLE 6
Brake Guards

Model	Torque Pin Bracket	Brake Guard
TSE-1200	822515	822516
TSE-1400	822525	822526

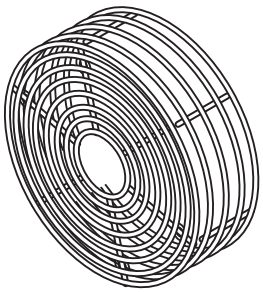


FIGURE 9
Brake Guard

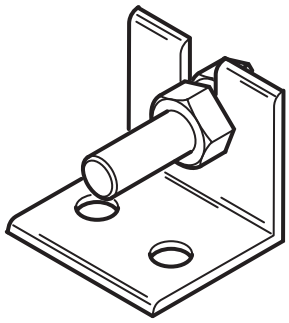


FIGURE 10
Torque Pin Bracket

FACING AND SEAL KITS

Table 7
Product Numbers

Model	Facing Kit	Seal Kit
TSE 1200	822711	822712
TSE 1400	822722	822721

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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