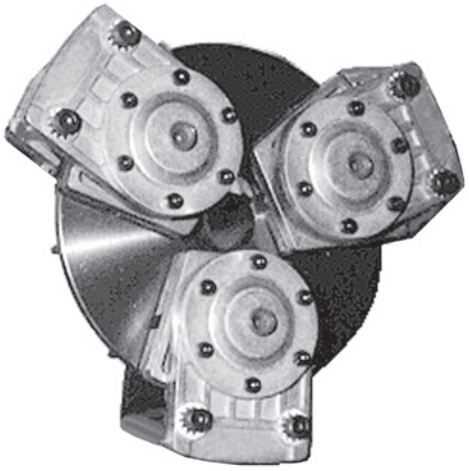
nexen

WEB CONTROL PRODUCTS

User Manual



Tension Control Clutch

Models TCC-7

RoHS compliant 2002/95/EC

FORM NO. L-20176-D-0914

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.

Technical Support: 800-843-7445
(651) 484-5900

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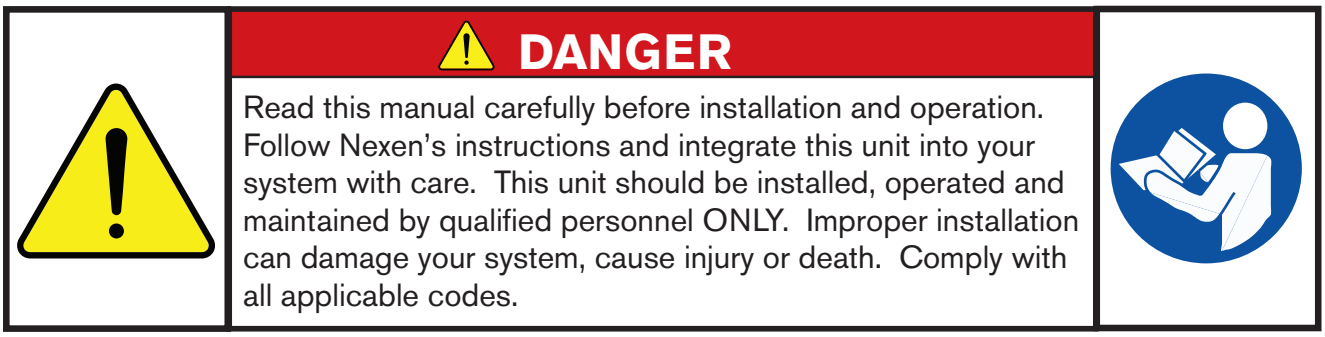

This document is the original, non-translated, version.

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

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GENERAL SPECIFICATIONS

Specifications	
Torque	Up to 47.5 Nm (420 in-lbs)
Actuation Pressure	1 - 5.5 bar (14.5 - 80 psi)
Service Temperature	4.5° - 104° C (40° - 220° F)
Approximate Weight	Components up to 7 kg (15 lbs)

GENERAL SAFETY PRECAUTIONS

⚠ CAUTION

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

⚠ CAUTION

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

⚠ 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.

⚠ CAUTION

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

⚠ WARNING

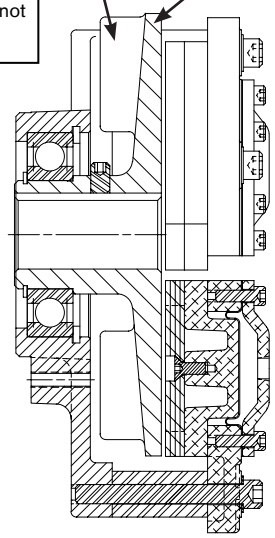
Ensure proper guarding of the product is used. Nexen recommends the machine builder design guarding in compliance with OSHA 29 CFR 1910 “Occupational Safety and Health Hazards.”

⚠ CAUTION

Surface temperature may exceed safe handling limits during operation. Do not touch.

⚠ CAUTION

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



INSTALLATION

REFER TO FIGURES 1-3.

1. Drill a 37/64" diameter hole 1" deep and tap 5/8-18 UNF - 2A X 25/32" deep into the end of the Shaft.

NOTE

Nexen recommends using a Nexen Rotary Air Union product number 835139.

2. Using customer supplied 1/4-20 UNC cap screws, secure customer supplied sheave or sprocket to TCC-7.

3. Insert Nexen supplied Key (Item 6) into machine Shaft.

4. Slide TCC-7 onto machine shaft.

5. Tighten Set Screws (Item 3) to 7 ft-lbs [9.5 Nm torque.

NOTE

Runout of the Friction Disc Hub (Item 2) must be less than 0.015" [0.381 mm] TIR. Runout is minimized if a Dial Indicator is used as Set Screws (Item 3) are tightened. Place contact tip of Dial Indicator on machined surface of Friction Disc Hub to measure runout.

6. Using a Flat Head Screw (Item 10) provided with each Friction Facing (Item 9), secure a Friction Facing to each Caliper Assembly.

7. Using Spacers (Item 5), Lock Washers (Item 18), and Socket Head Cap Screws (Item 19), secure the Caliper Assemblies to Housing (Item 1).

8. Tighten Socket Head Cap Screws (Item 19) to 25 ft-lbs [36.43 Nm] torque.

9. Install the Rotary Air Union into hole tapped into end of shaft.

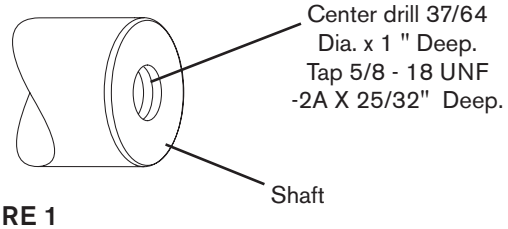


FIGURE 1

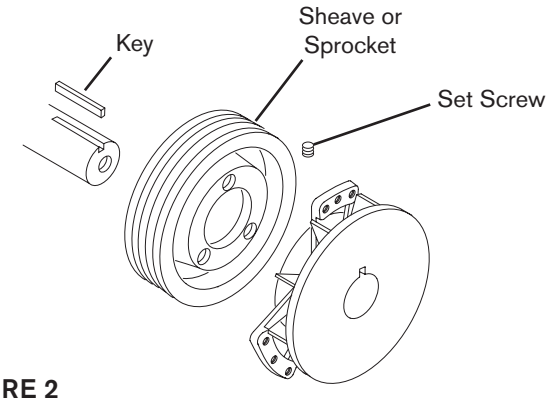


FIGURE 2

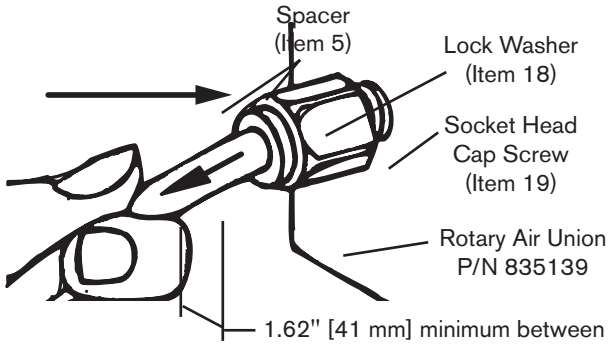


FIGURE 3

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, dry air that meets or exceeds ISO 8573.1:2001 Class 4.4.3 to quality.

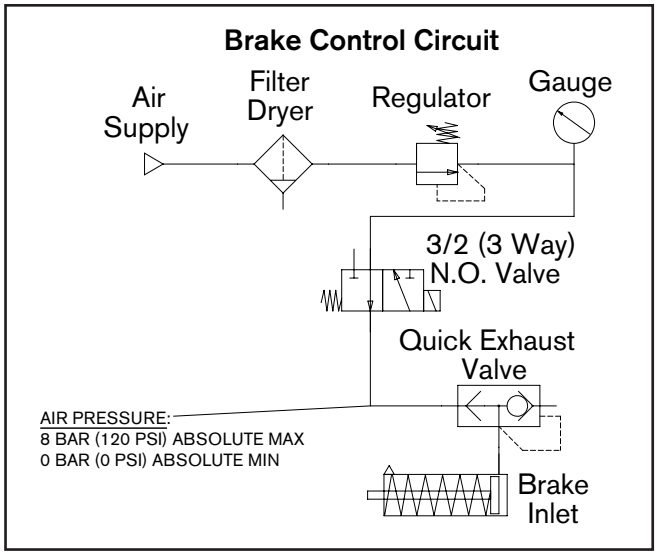
NOTE

For quick response, Nexen recommends a quick exhaust valve and short air lines between the Control Valves and the unit. 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.



REFER TO FIGURE 4.

1. Install Elbow Fittings (Item 15) into two Caliper Assemblies.
2. Install Tee Fitting (Item 16) into the remaining Caliper Assembly.
3. Cut the Air Line (Item 17) to length and push it into the fittings to make connections between the Rotary Air Union, Elbow (Item 15), and Tee Fittings (Item 16).

⚠ CAUTION

In order to ensure proper balancing of the TCC-7, all Air Lines must be cut to the same length.

4. Route the remaining length of Air Line from the Rotary Air Union inlet to the control output port or connection.
5. Connect the air supply to the control input port or connection.

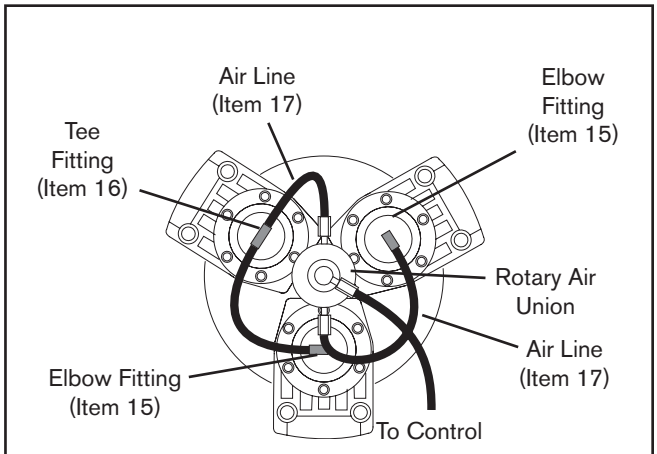


FIGURE 4

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OPERATION

⚠ 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

DO NOT exceed maximum operating speed (See Table 1). If you exceed maximum operating speeds, you may damage or decrease the performance and the life of the Tension Control Clutch.

Inspect friction facings and replace them when worn to approximately 5/32" [4 mm] thick.

For optimum clutch action, connect the controls as close to the TCC-7 as possible. Nexen Manufacturing recommends the installation of a filter in the Air Line ahead of the controls.

For automatic tension control, use Nexen's Electronic Tension Control System. Contact your local Nexen Web Handling distributor or representative for information concerning this product.

⚠ 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:

$$\text{Time} = \frac{\text{Volume}}{(\text{Power} \bullet \text{Wear Rate})}$$

⚠ CAUTION

Inspect all cap screws and set screws on a routine basis to make sure they are tightened to the recommended torque (See Table 2).

⚠ CAUTION

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

TABLE 1 Maximum Operating Speeds

Model	RPM
TCC-7	1800

TABLE 2

Description	Tightening Torque
Set Screw (Item 2)	5.5 ft-lbs [7.45 Nm]
Cap Screw (Item 19)	27 ft-lbs [36.43 Nm]

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	SOLUTION
Failure to engage.	Air not getting to the TCC-7.	Check for control valve malfunction or low air pressure.
Failure to disengage.	Unexhausted air.	Check for control valve malfunction.
Friction Facing squeal or chatter.	Air pressure too high.	Reduce air pressure.
	Wrong Friction Facing for the application.	Check the Friction Facing.
	Runout of the Friction Disc Hub is too great.	Runout of the Friction Disc Hub must be less than 0.015" [0.381 mm] TIR. If the Friction Disc Hub runout is greater than 0.015" [0.381 mm] the Friction Disc Hub must be reinstalled.
Wobble or vibration.	Improper TCC-7 mounting.	Check mounting and reinstall the TCB-7 if necessary.
	Faulty shaft.	Inspect the shaft and replace it if necessary.

FRICTION FACING REPLACEMENT

Inspect friction facings and replace them when worn to approximately 5/32" [4 mm] thick.

REFER TO FIGURES 5-7.

1. Stop machine and shut off the air supply to TCC-7.
2. Disconnect the Air Lines.
   a. To disconnect the Air Line, push in on the collar of the fitting and pull the Air Line out.
   b. To reconnect the Air Line, push it into the fitting until it stops.
3. Remove the Socket Head Cap Screws (Item 19) and Lock Washers (Item 18).
4. Remove the Caliper Assembly from Housing.
5. Remove the Flat Head Screw (Item 10) from back of the Caliper Assembly and remove the old Friction Facing (Item 9).
6. Install a new Friction Facing (Item 9) and secure it to the Caliper Assembly with a Flat Head Screw (Item 10). Tighten the Flat Head Screw to 18-19 in-lbs [2.0-2.1 Nm].
7. Place the Caliper Assembly in position and secure it to the Housing with Socket Head Cap Screws (Item 19) and Lock Washers (Item 18).
8. Tighten the Socket Head Cap Screws (Item 19) to 27 ft-lbs [36.4 Nm] torque.
9. Reconnect the Air Lines.

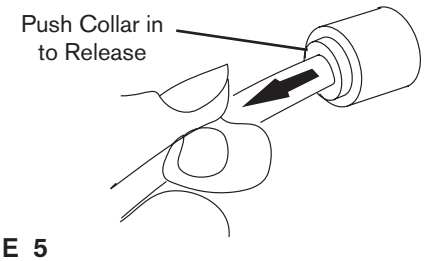

FIGURE 5

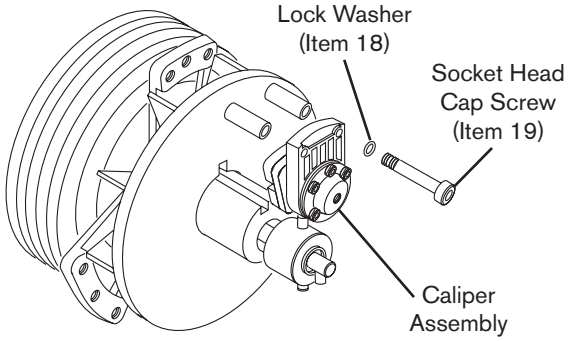

FIGURE 6

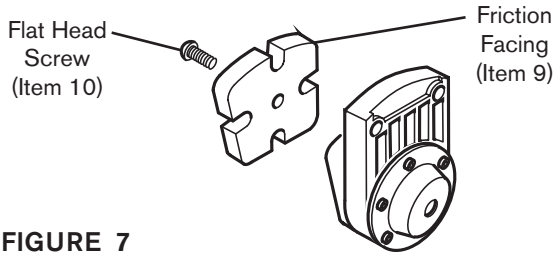

FIGURE 7

DIAPHRAGM REPLACEMENT

REFER TO FIGURE 8.

1. Proceed with Steps **1** - **4** of **PARTS REPLACEMENT-** FRICTION FACINGS.

2. Remove the six Socket Head Cap Screws (Item 20 and Cover (Item 13) from Cylinder (Item 11).

3. Remove Diaphragm (Item 14).

NOTE

Internal Compression Springs (Item 41) may also be removed at this time. These springs are optional; the low air pressure setting is more sensitive without the springs.

4. Install a new Diaphragm with rubber (not fabric) on the air side and reassemble Caliper Assembly.

5. Replace and tighten the Socket Head Cap Screws (Item 20) to 5.5 ft-lbs [7.42 Nm] torque.

6. If the Socket Head Cap Screw (Item 40) has been removed, it must be reinstalled and tightened to 22 ft-lbs [29.6 Nm] torque.

7. Proceed with Steps **7 - 9** of **PARTS REPLACEMENT**- FRICTION FACINGS.

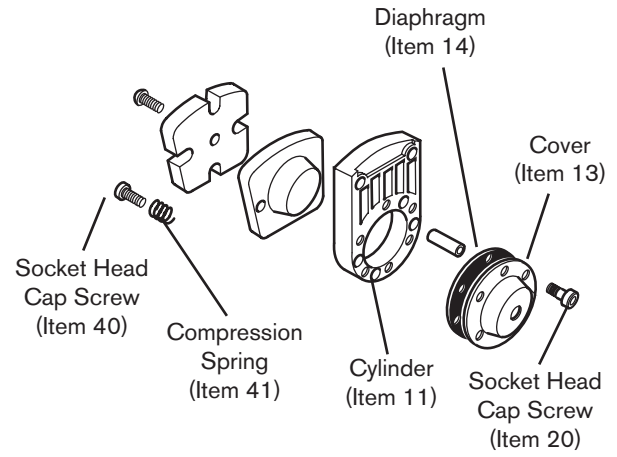

FIGURE 8

BEARINGS REPLACEMENT

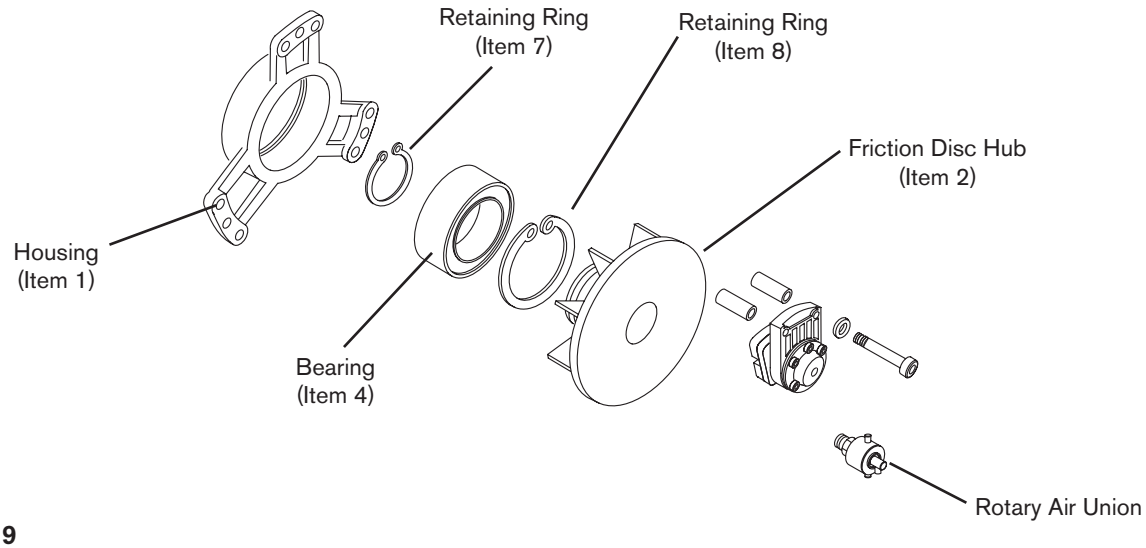

FIGURE 9

REFER TO FIGURE 9.

1. Proceed with Steps **1 - 4** of **PARTS REPLACEMENT**-FRICTION FACINGS.
2. Remove Rotary Air Union.
3. Loosen Set Screws (Item 3) and remove TCC-7 Housing and Rotor from machine shaft.

⚠ CAUTION

4. Remove Retaining Ring (Item 7).
5. Fully supporting Housing (Item 1), press Friction Disc Hub (Item 2) out of Bearing (Item 4) and Housing.
6. Remove Retaining Ring (Item 8).
7. Fully supporting Housing (Item 1), press the old Bearing (Item 4) out of Housing.
8. Clean the bearing bore of the Housing with solvent making sure all Loctite® residue is removed.
9. Apply an adequate amount of Loctite® to evenly coat the outer race of the new Bearing (Item 4); then, align the new Bearing with the bore of the Housing and press the new Bearing into place.
10. Install Retaining Ring (Item 8).
11. Slide Friction Disc Hub (Item 2) into Bearing (Item 8) and Housing (Item 1).
12. Install Retaining Ring (Item 7).
13. Proceed with Steps **7 - 9** of **PARTS REPLACEMENT**-FRICTION FACINGS.
14. Install TCC-7 (See INSTALLATION).

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.

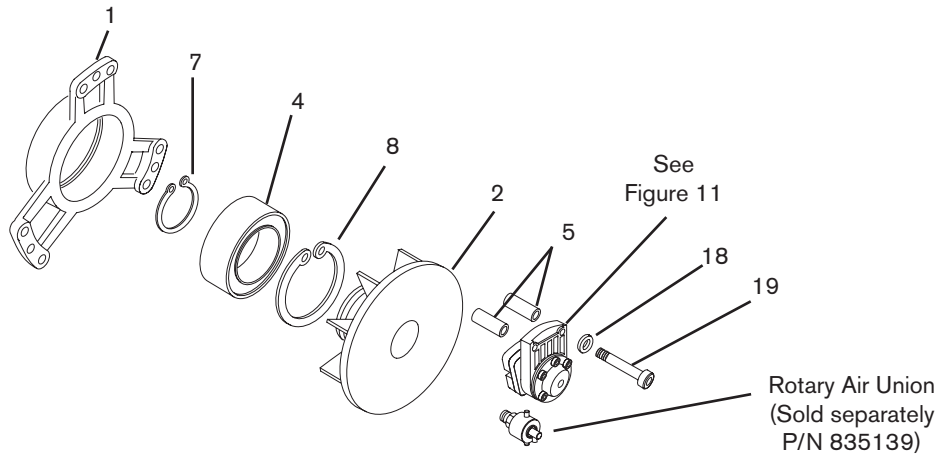

FIGURE 10

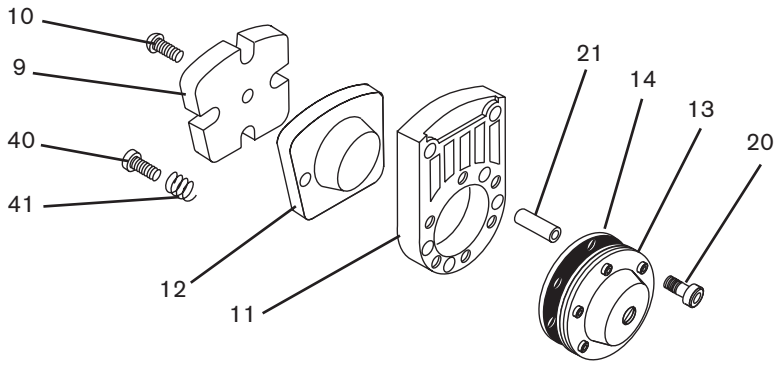

FIGURE 11

ITEM	DESCRIPTION	QTY
1	Housing	1
2	Friction Disc Hub	1
3	Set Screw (not shown)	3
4	Bearing	1
5	Spacer	2
6	Key (not shown)	1
7	Retaining Ring (ext.)	1
8	Retaining Ring (int.)	1
9	Friction Facing	3
10	Flat Head Screw	3
11	Cylinder	1[1]
12	Piston	1[1]

ITEM	DESCRIPTION	QTY
13	Cover	1[1]
14	Diaphragm	1[1]
15	Elbow Fitting	2
16	Tee Fitting (not shown)	1
17	Air Line (not shown)	--
18	Lock Washer (ext. tooth)	6
19	Socket Head Cap Screw	6
20	Socket Head Cap Screw	6
21	Spring Pin	2[1]
40	Socket head Cap Screw	2[1]
41	Compression Spring	2[1]

[1] Quantity shown is for one (1) Caliper Assembly only.

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

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

800.843.7445
Fax: 651.286.1099
www.nexengroup.com

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