nexen

WEB CONTROL PRODUCTS

User Manual

Tension Control Brakes
STB600 and STB940

FORM NO. L-20300-E-0818

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
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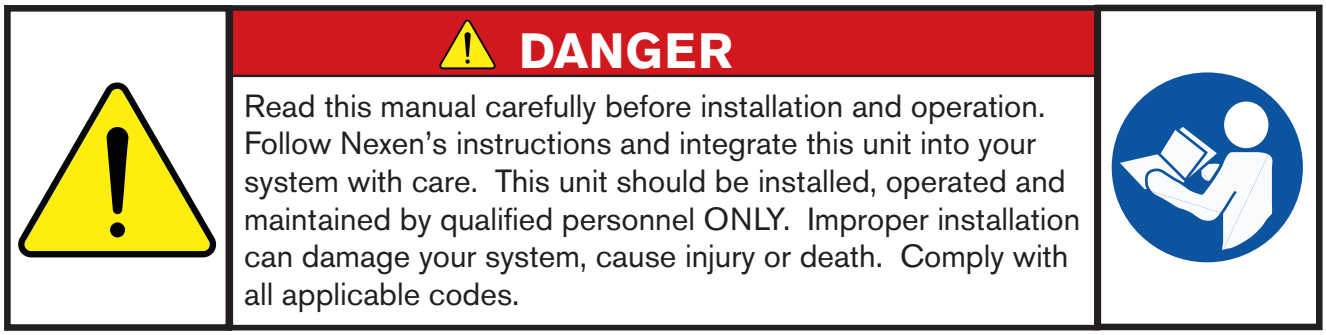
www.nexengroup.com



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

Nexen Group, Inc.
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Vadnais Heights, Minnesota 55127

ISO 9001 Certified

Table of Contents

GENERAL SPECIFICATIONS

Specifications	
Torque	Up to 254 Nm (2250 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 14.2 kg (31 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

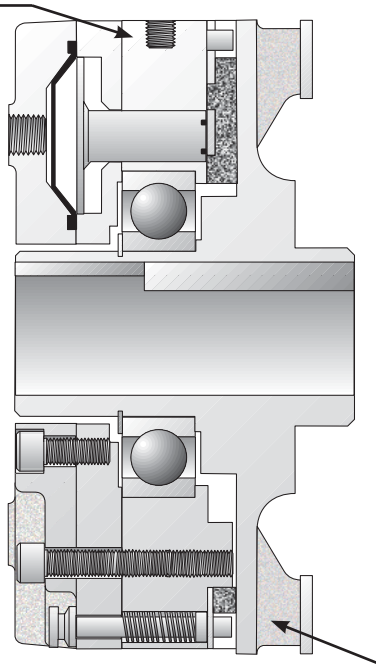
Ensure proper guarding of the product is used. Nexen recommends the machine builder design guarding in compliance with OSHA 29 CFR 1910 “Occupational Safety and Health Hazards”.

⚠ 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.

INSTALLATION

Refer to Figure 1.

1. Insert the Nexen supplied Key (Item 30) into the shaft and slide the STB onto the shaft.

2. Install and tighten the two Nexen supplied Set Screws (Item 29).

NOTE

Two 3/8-16 tapped holes at 180° are provided in the Piston Guide for securing the STB to the machine frame.

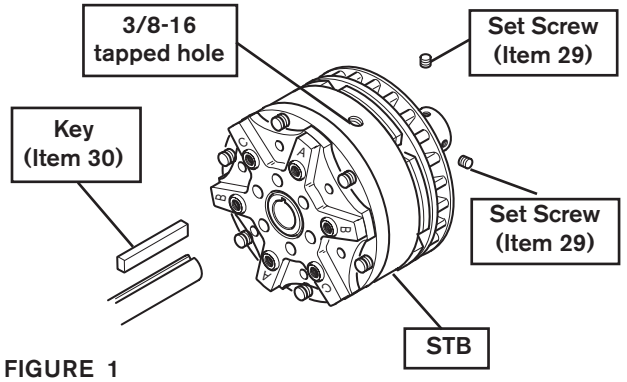


FIGURE 1

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.

Refer to Figures 2 & 3.

The Nexen STB has six air ports. All six air ports accept 1/8" NPT fittings. Air line connections can be made in two ways.

The first method requires three air sources and allows the operator to interrupt or supply air to any combination of the three pairs of ports. The three pairs of ports supply pressure to three different sized pistons. Each port is labeled "A," "B," or "C." The two "A" ports supply the smallest pistons. The two "B" ports supply the intermediate sized pistons. The two "C" ports supply the largest pistons. The torque output is related to a change in air pressure and the number and size of the pistons used.

NOTE

Only <u>pairs</u> of pistons A, B, or C should be used. Do not use only <u>one</u> port.

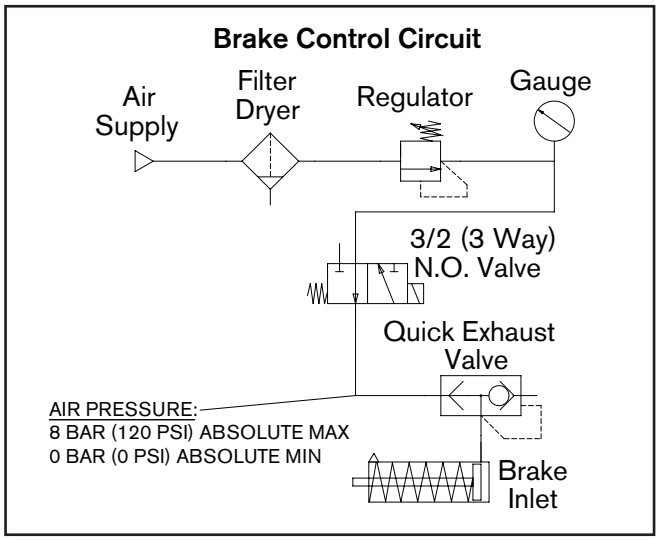
The second method is to plumb all six ports together so they are supplied by one source. This method relates the change in torque performance to change in air pressure only.

RING GUARD INSTALLATION

Refer to Figure 4.

1. Align the mounting holes of the Ring Guard with the six tapped holes on the STB Mounting Flange.
2. Using the six supplied fasteners, secure the Ring Guard to the STB. Tighten to 35 in-lbs.
3. Place the End Cap onto the Ring Guard and secure it in place by bending its tabs around the Ring Guard.
4. Route air lines through fitting on top of guard.

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.



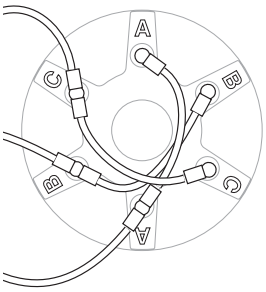


FIGURE 2
THREE SOURCE PLUMBING

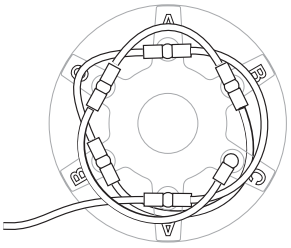


FIGURE 3
ONE SOURCE PLUMBING

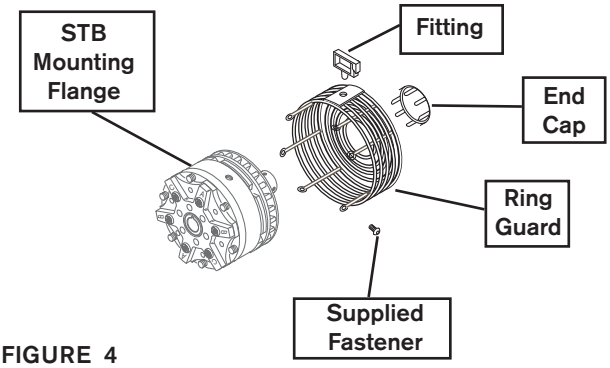


FIGURE 4

OPERATION

⚠ WARNING

Never exceed maximum operating speeds listed for your product. (See Table 1).

TABLE 1

Size	Max RPM
STB 600	3600
STB 940	2400

⚠ 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).

⚠ 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”.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	SOLUTION
Failure to engage.	Air not getting to the STB.	Check for a control valve malfunction or low air pressure.
Failure to disengage.	Unexhausted air.	Check for a control valve malfunction.
Friction Facing squeal or chatter.	Air pressure too high.	Reduce the air pressure.
	Wrong Friction Facings for the application.	Replace the Friction Facing with correct facing for application.
Wobble or vibration.	Shaft misalignment.	Inspect the shaft and realign it if necessary.

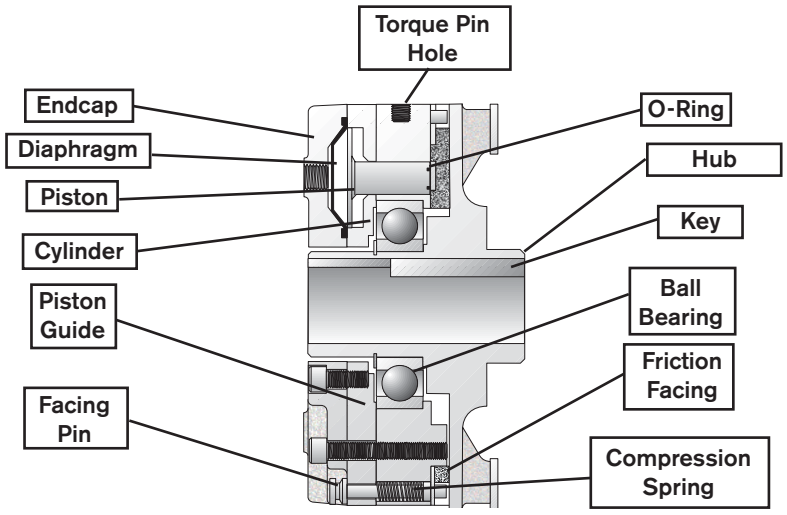


FIGURE 5

FRICTION FACING ASSEMBLY REPLACEMENT

Refer to Figure 6.

1. Pull out on the Finger Nut (Item 32) of the Facing Pin (Item 7) to release the Friction Facing Assembly (Item 4).

2. Slide the old Friction Facing Assembly (Item 4) out of the STB.

3. Slide a new Friction Facing Assembly (Item 4) into the STB.

4. Release the Finger Nut (Item 32) allowing the Facing Pin (Item 7) to lock the new Friction Facing Assembly (Item 4) in place.

5. Repeat Steps **1**-**4** until all six of the Friction Facing Assemblies (Item 4) have been replaced.

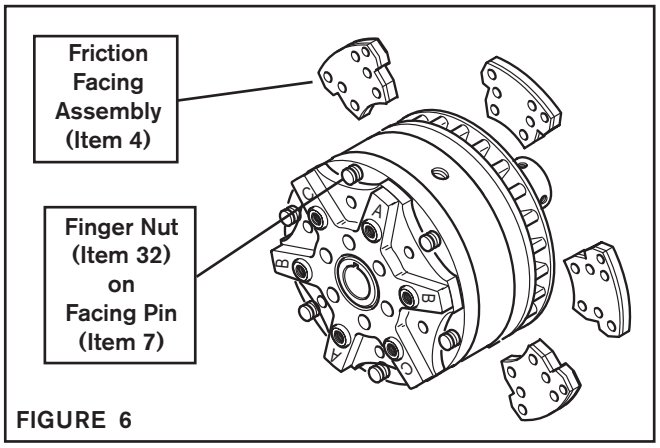


FIGURE 6

PARTS REPLACEMENT

Refer to Figures 7 -12.

1. Pull out on the Finger Nut (Item 32) of the Facing Pin (Item 7) to release the Friction Facing Assembly (Item 4).

2. Slide the old Friction Facing Assembly (Item 4) out of the STB.

3. Repeat Steps **1** and **2** until all six of the Friction Facing Assemblies (Item 4) have been removed.

4. Remove the six Socket Head Cap Screws (Item 25).

5. Remove the Endcap (Item 3) and Cylinder (Item 1).

6. Remove the six Socket Head Cap Screws (Item 26); then, separate the Cylinder (Item 1) from the Endcap (Item 3).

NOTE

There are three sizes of Diaphragms (See Table 2). When replacing the six Diaphragms, make sure the correct size Diaphragm is used for each Diaphragm location.

7. Remove the six old Diaphragms (Items 12, 13, and 14) from the Endcap (Item 3).

8. Remove the six old O-Rings (Item 31) from the ends of the Pistons (Items 8, 9, and 10).

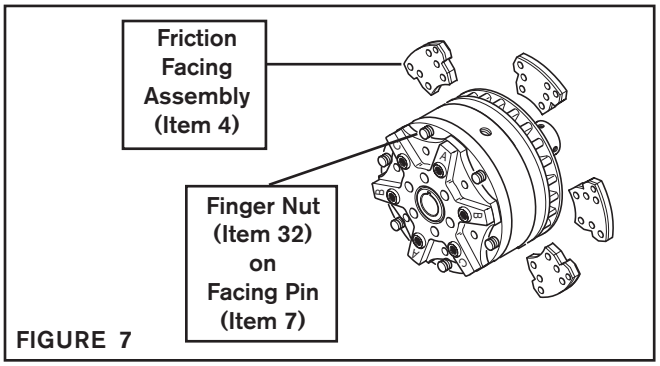


FIGURE 7

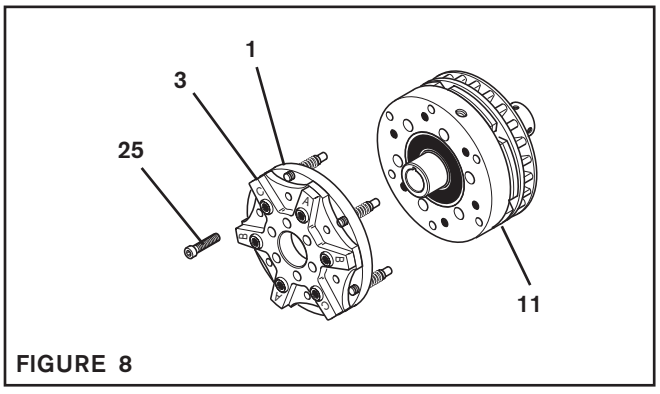


FIGURE 8

PARTS REPLACEMENT (continued)

9. Remove the six Finger Nuts (Item 32) from the six Facing Pins (Item 7) by gently holding the Facing Pin with a pair of pliers: then, slide the Facing Pins and six Compression Springs (Item 19) out of the Cylinder (Item 1).

10. Replace the six old Compression Springs (Item 19) with six new Compression Springs; then, slide the six Facing Pins (Item 7) and new Compression Springs back into the Cylinder (Item 1).

11. Apply a drop of Loctite® 242 to the threads of the six Facing Pins (Item 7); then, gently screw the six Finger Nuts onto the six Facing Pins while holding the Facing Pins with a pair of pliers, securing the six Facing Pins and new Compression Springs (Item 19) into the Cylinder (Item 1).

12. Install the six new Diaphragms (Items 12, 13, and 14) into their respective locations in the Endcap (Item 3).

13. Match the Pistons (Items 8, 9, and 10) in the Cylinder (Item 1) with the Diaphragms (Items 12, 13, and 14) in the Endcap (Item 3).

14. Install new O-Rings (Item 31) onto the ends of the Pistons (Items 8, 9, and 10).

15. Apply a drop of Loctite® 242 to the threads of the six Socket Head Cap Screws (Item 26) and secure the Endcap (Item 3) to the Cylinder (Item 1).

16. Alternately and evenly tighten the six Socket Head Cap Screws (Item 26) to the recommended torque (See Table 3).

⚠ CAUTION

Working with spring loaded or tension loaded fasteners and devices can cause injury. Wear safety glasses and take the appropriate safety precautions.

17. Remove the Retaining Ring (Item 21).

18. Press the Piston Guide (Item 11) and Ball Bearing (Item 22) off the Hub/Rotor (Item 5).

19. Press the old Ball Bearing (Item 22) out of the Piston Guide (Item 11).

20. Clean the bearing bore of the Piston Guide (Item 11) with fresh solvent, making sure all old Loctite® residue is removed.

21. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Ball Bearing (Item 22).

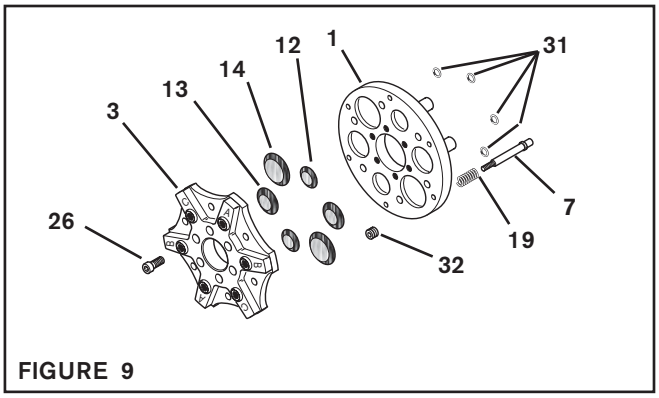


FIGURE 9

DIAPHRAGM O.D.	ITEM 12	ITEM 13	ITEM 14
STB 600	1.25 In. [31.75 mm]	1.50 in. [38.10 mm]	1.75 in. [44.45 mm]
STB 940	2.25 In. [57.15 mm]	2.50 In. [63.50 mm]	2.75 In. [69.85 mm]

TABLE 2

MODEL	RECOMMENDED TORQUE SOCKET HEAD CAP SCREWS (ITEM 26)
STB 600	50 In. Lbs. [5.6 Nm]
STB 940	580 In. Lbs [65.5 Nm]

TABLE 3

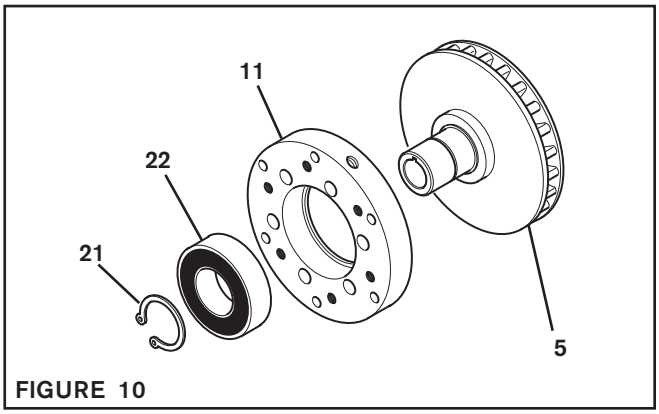


FIGURE 10

22. Align the outer race of the new Ball Bearing (Item 22) with the bearing bore of the Piston Guide (Item 11); then, press the new Ball Bearing (Item 22) into place.

23. Support the inner race of the new Ball Bearing (Item 22); then, press the Hub/Rotor (Item 5) into the new Ball Bearing (Item 22) and Piston Guide (Item 11).

⚠ CAUTION

Working with spring loaded or tension loaded fasteners and devices can cause injury. Wear safety glasses and take the appropriate safety precautions.

24. Reinstall the Retaining Ring (Item 21).

25. Slide the Endcap (Item 3) and Cylinder (Item 1) onto the Hub/Rotor (Item 5) and Piston Guide (Item 11).

26. Apply a drop of Loctite® 242 to the threads of the six Socket Head Cap Screws (Item 25) and secure the Endcap (Item 3) and Cylinder (Item 1) to the Piston Guide (Item 11).

27. Alternately and evenly tighten the six Socket Head Cap Screws (Item 25) to the recommended torque (See Table 4).

28. Pull out the Finger Nut (Item 32) of the Facing Pin (Item 7) and slide a new Friction Facing Assembly (Item 4) into the STB.

29. Release the Finger Nut (Item 32) allowing the Facing Pin (Item 7) to lock the new Friction Facing Assembly (Item 4) into place.

30. Repeat Steps **28** and **29** until all six of the Friction Facing Assemblies (Item 4) have been reinstalled.

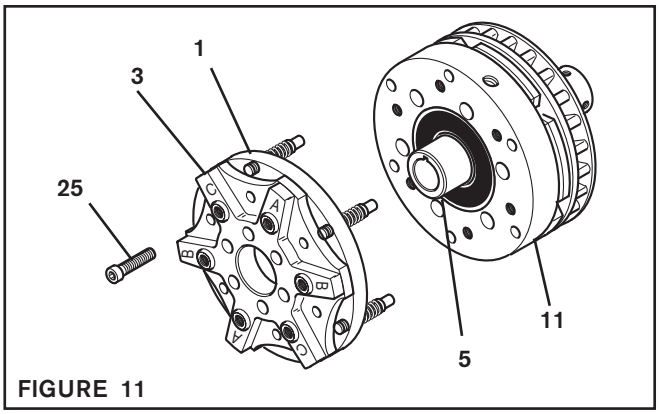


FIGURE 11

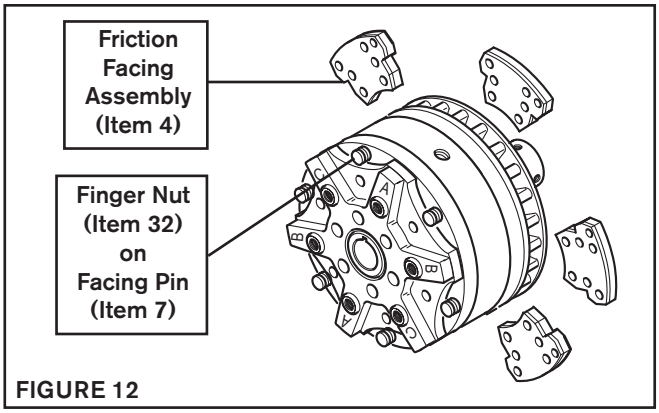


FIGURE 12

MODEL	RECOMMENDED TORQUE SOCKET HEAD CAP SCREWS (ITEM 25)
STB 600	100 In. Lbs. [11.3 Nm]
STB 940	580 In. Lbs [65.5 Nm]

TABLE 4

REPLACEMENT PARTS

The Item or "Balloon" Number for all Nexen Products is used for part identification on all Product Parts List, Product Price List, 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.

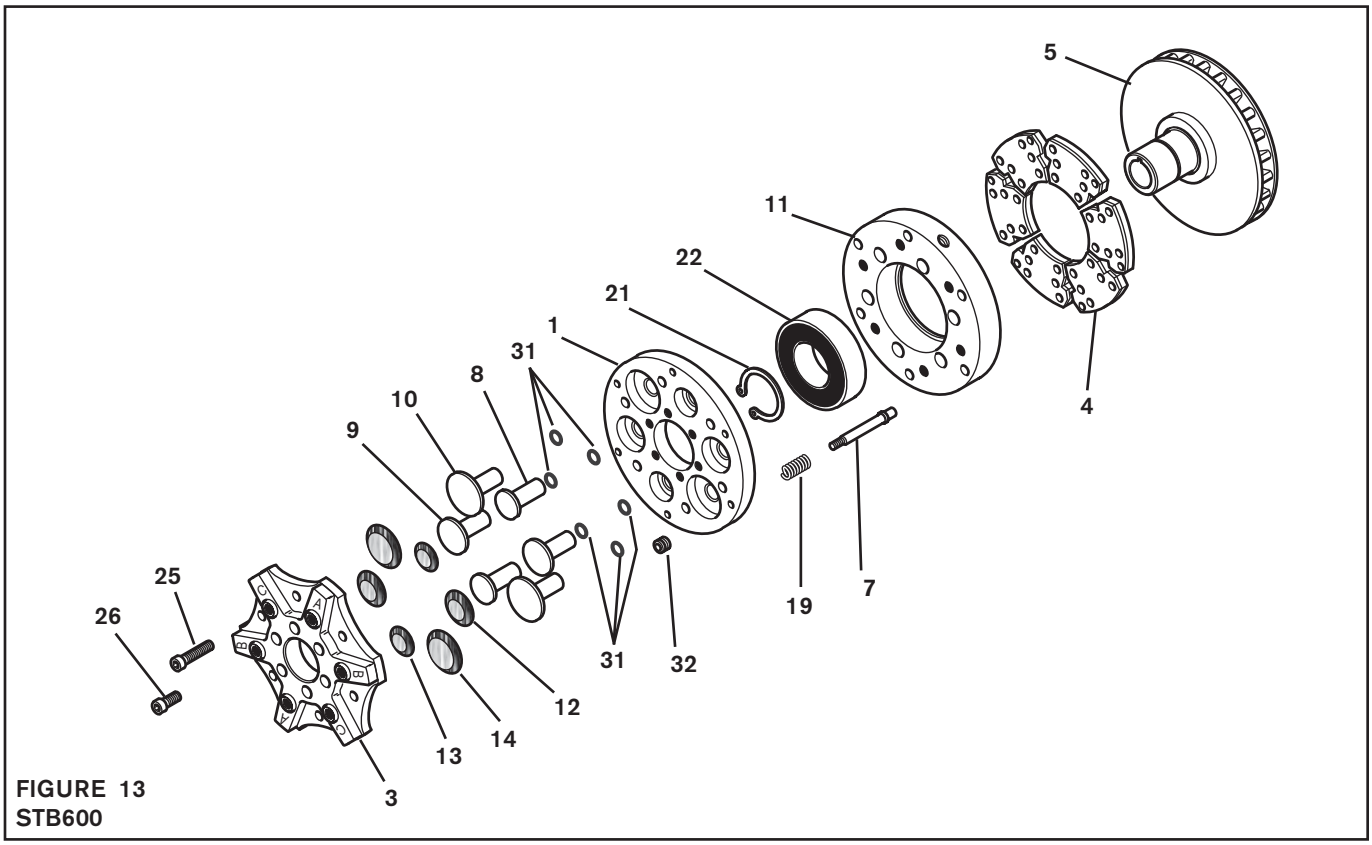


FIGURE 13
STB600

ITEM	DESCRIPTION	QTY
1	Cylinder	1
3	Endcap	1
4[1,2]	Friction Facing Assembly	6
5	Hub/Rotor	1
7	Facing Pin	6
8	Piston (1.00" O.D.)	2
9	Piston (1.25" O.D.)	2
10	Piston (1.50" O.D.)	2
11	Piston Guide	1
12[1]	Diaphragm (1.25" O.D.)	2
13[1]	Diaphragm (1.50" O.D.)	2
14[1]	Diaphragm (1.75" O.D.)	2

ITEM	DESCRIPTION	QTY
19[1]	Compression Spring	6
21[1]	Retaining Ring (Ext.)	1
22[1]	Ball Bearing	1
25	Socket Head Cap Screw	6
26	Socket Head Cap Screw	6
29	Set Screw (Not Shown)	2
30	Key (Not Shown)	1
31[1]	O-Ring	6
32	Finger Nut	6
36	Air Line (Not Shown)	--
37	Elbow Fitting (Not Shown)	3
38	Tee Fitting (Not Shown)	5

[1] Denotes Rebuild Kit item.
STB600 Rebuild Kit No. 927204.

[2] Denotes Facing Kit item.
STB600 Facing Kit No. 927205.

REPLACEMENT PARTS (continued)

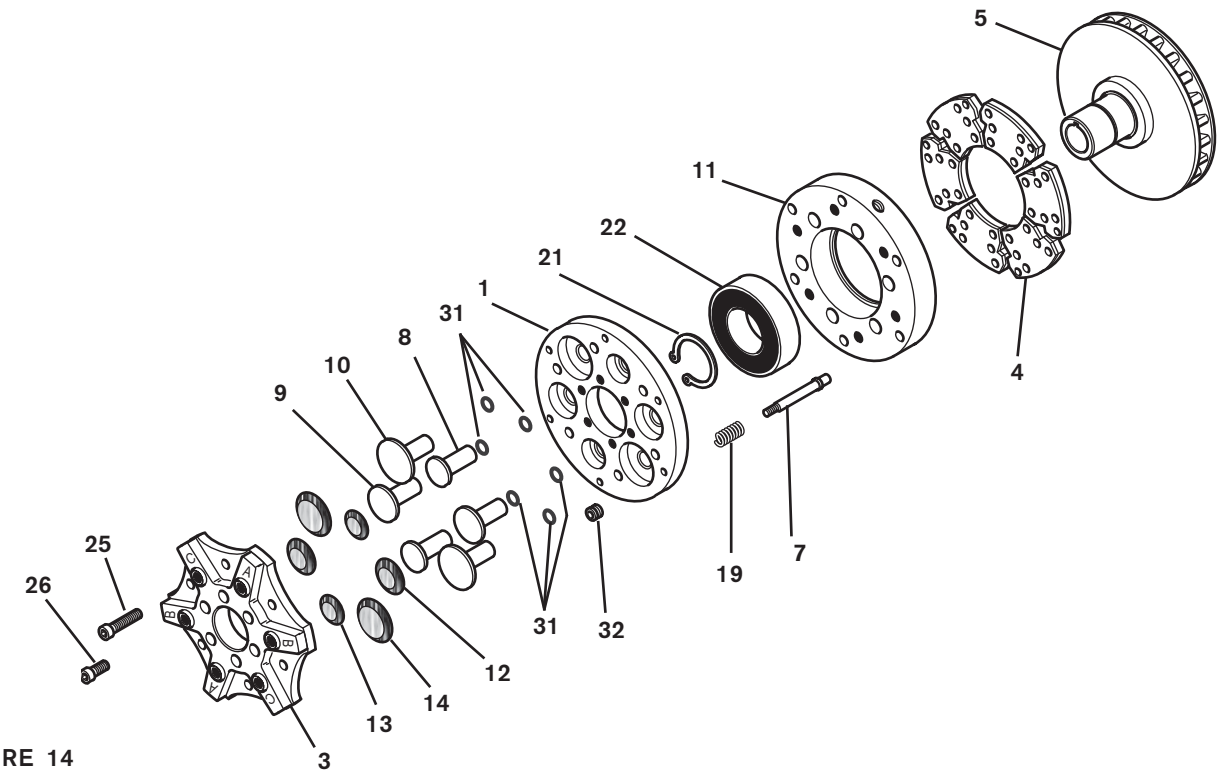


FIGURE 14
STB940

ITEM	DESCRIPTION	QTY
1	Cylinder	1
3	Endcap	1
4[1,2]	Friction Facing Assembly	6
5	Hub/Rotor	1
7	Facing Pin	6
8	Piston (2.00" O.D.)	2
9	Piston (2.25" O.D.)	2
10	Piston (2.50" O.D.)	2
11	Piston Guide	1
12[1]	Diaphragm (2.25" O.D.)	2
13[1]	Diaphragm (2.50" O.D.)	2
14[1]	Diaphragm (2.75" O.D.)	2

ITEM	DESCRIPTION	QTY
19[1]	Compression Spring	6
21[1]	Retaining Ring (Ext.)	1
22[1]	Ball Bearing	1
25	Socket Head Cap Screw	6
26	Socket Head Cap Screw	6
29	Set Screw (Not Shown)	2
30	Key (Not Shown)	1
31[1]	O-Ring	6
32	Finger Nut	6
36	Air Line (Not Shown)	--
37	Elbow Fitting (Not Shown)	3
38	Tee Fitting (Not Shown)	5

[1] Denotes Rebuild Kit item.
STB940 Rebuild Kit No. 927208.

[2] Denotes Facing Kit item.
STB940 Facing Kit No. 927209.

ACCESSORIES

RING GUARDS

MODEL	PRODUCT NO.
STB 600	927206
STB 940	927210

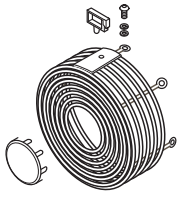


FIGURE 15
RING GUARD

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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