




Tension Control Brakes STC600 and STC940



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="618 562 914 615"> DANGER</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 ONLY. 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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GENERAL SPECIFICATIONS


Specifications	
Torque	Up to 327 Nm (2900 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 25 kg (54 lbs)

GENERAL SAFETY PRECAUTIONS




CAUTION

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




CAUTION

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




CAUTION

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




CAUTION

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



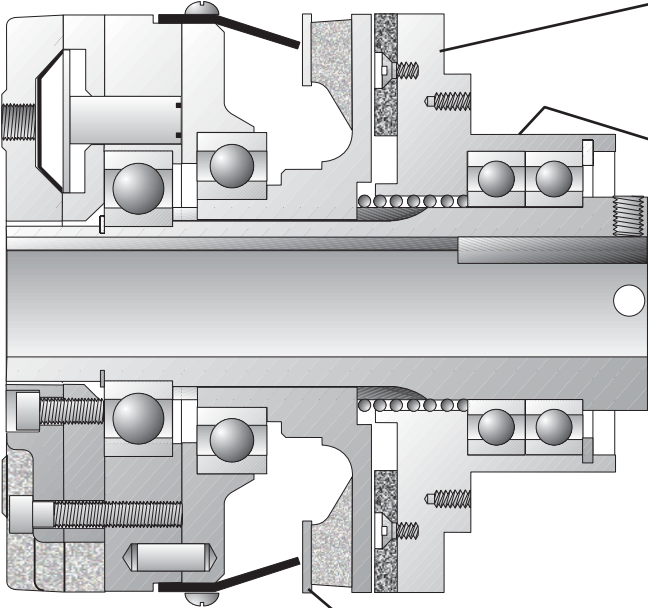
WARNING


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



WARNING


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






CAUTION

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



CAUTION

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



CAUTION

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

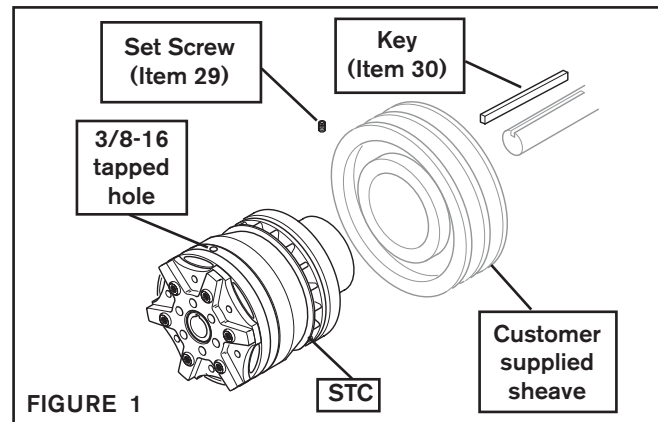
INSTALLATION

Refer to Figure 1.

1. Install the customer supplied sheave onto the Pilot Mount Drive Disc of the STC.
2. Insert the Nexen supplied Key (Item 30) into the shaft and slide the STC onto the shaft.
3. 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 STC to the machine frame (See 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.

	<p>CAUTION</p> <p>Low air pressure will cause slippage and overheating. Excessive air pressure will cause abrupt starts and stops, reducing product life.</p>
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AIR LINE CONNECTIONS

Nexen STCs have six air ports. All six air ports accept 1/8" NPT fittings. Air line connections to the STC can be made in two ways.

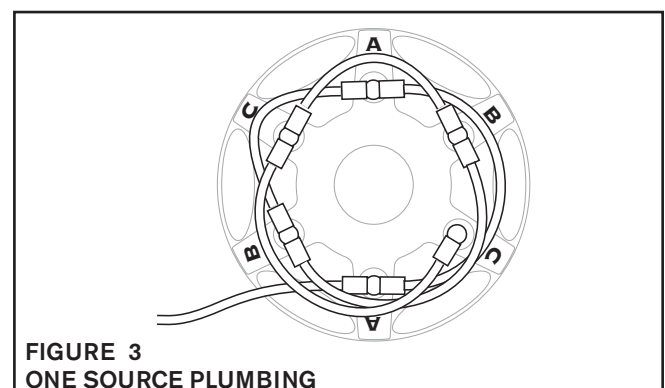
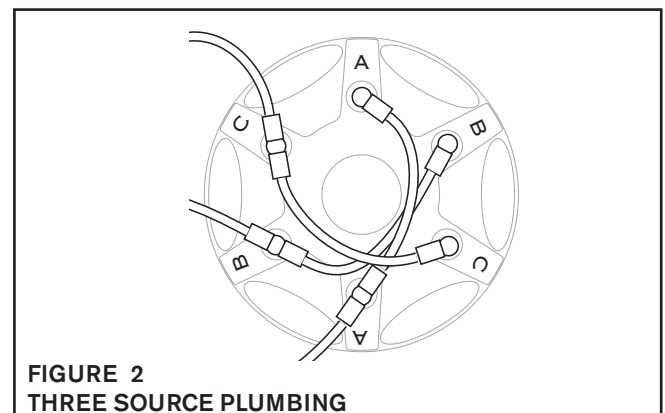
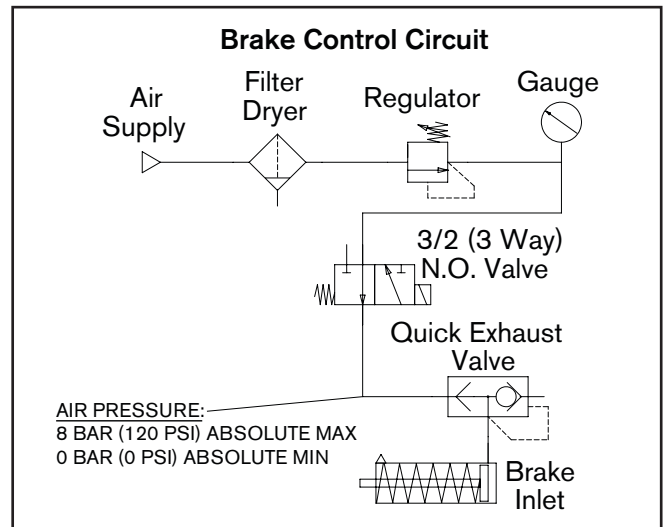
The first method requires three air sources and allows the operator to interrupt or supply air to any combination of the three pairs of ports. The three pairs of ports supply pressure to three different sized pistons. Each port is labeled "A," "B," or "C." The two "A" ports supply the smallest pistons. 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 pairs of pistons A, B, or C should be used. Do not use only one piston.

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.

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.



OPERATION



WARNING

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



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: $\text{Time} = \text{Volume} / (\text{Power} * \text{Wear Rate})$.



CAUTION

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

TABLE 1

Size	Max RPM
STC 600	3600
STC 940	2400

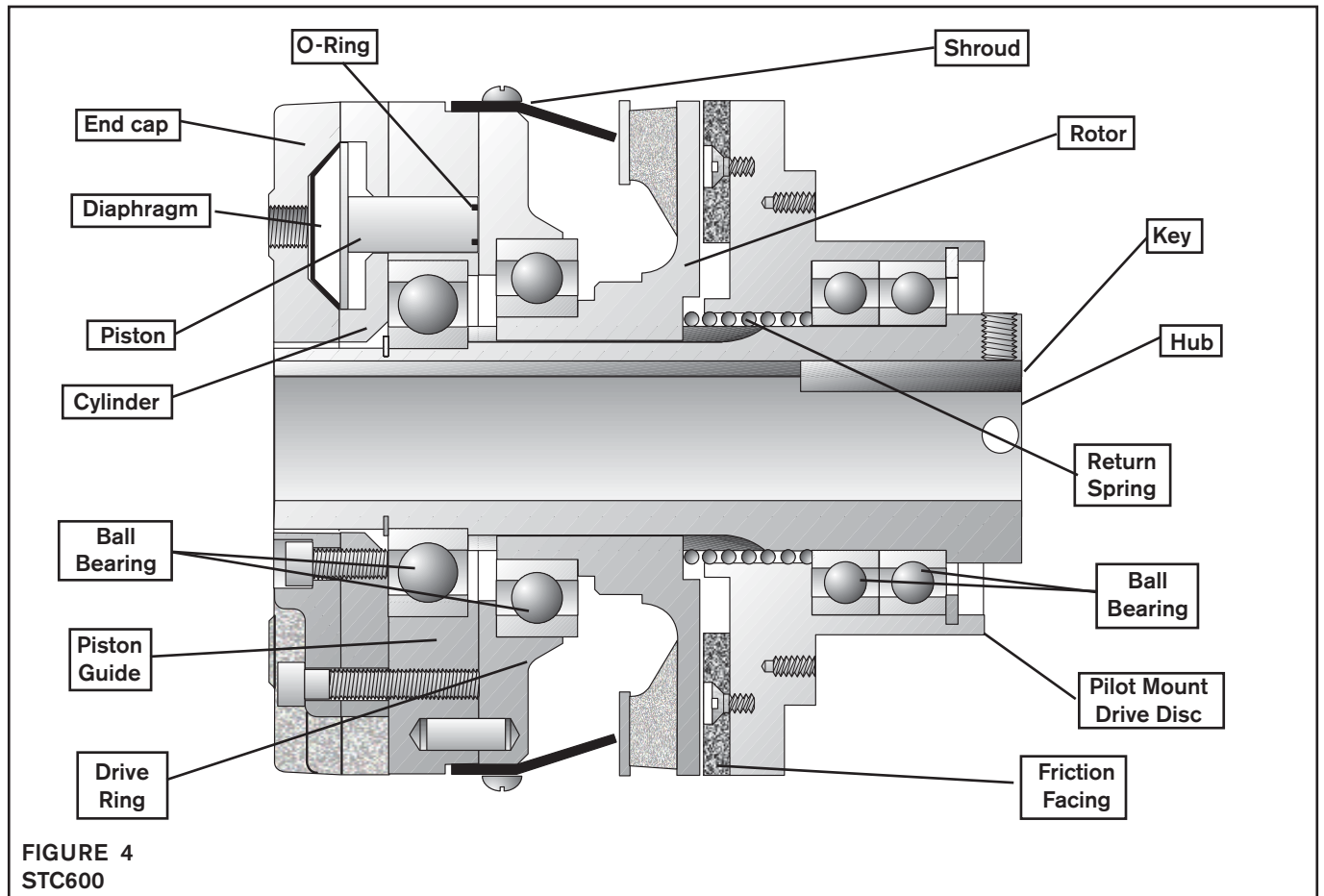


WARNING

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 STC.	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 the application.
Wobble or vibration.	Shaft misalignment.	Inspect the shaft and realign it if necessary.



FRICION FACING REPLACEMENT

Refer to Figures 5 - 7.

NOTE

This section is for **FRICION FACING REPLACEMENT** only. If a **Repair Kit** is to be used, refer to **PARTS REPLACEMENT**.

1. Remove the six Socket Head Cap Screws (Item 25).
2. Remove the End cap (Item 3) and Cylinder (Item 1).



CAUTION

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

3. Remove the Retaining Ring (Item 21).
4. Insert two customer supplied 3/8-16 UNC bolts into the anti-rotation holes located on the O.D. of the Piston Guide (Item 11).
5. Support the STC on the two bolts installed in Step 4; then, press the Piston Guide (Item 11) and Ball Bearing (Item 22) off the Hub (Item 5).
7. Slide the Drive Ring (Item 2), Rotor (Item 17), and Shroud (Item 15) off the Hub (Item 5).

NOTE

The Flat Head Machine Screws (Item 27) securing the Friction Facing (Item 4) on the STC are installed with a anaerobic thread locking compound. If removal is difficult, insert a properly fitting screwdriver into the head of the Flat Head Machine Screw; then, strike the end of the screwdriver with a hammer to break the crystalline structure of this compound and allow removal of the Flat Head Machine Screw. Never use an impact wrench to remove the Flat Head Machine Screws.

8. Remove the six Flat Head Machine Screws (Item 27) that secure the Friction Facing (Item 4) to the Pilot Mount Drive Disc (Item 6).
9. Remove the old Friction Facing (Item 4).
10. Using six new Flat Head Machine Screws (Item 27), secure the new Friction Facing (Item 4) to the Pilot Mount Drive Disc (Item 6).
11. Tighten the six Flat Head Machine Screws (Item 27) to the recommended torque (See Table 2).
12. Slide the Drive Ring (Item 2), Rotor (Item 17), and Shroud (Item 15) onto the Hub (Item 5).
13. Press the Piston Guide (Item 11) and Ball Bearing (Item 22) onto the Hub (Item 5).
14. Remove the two customer supplied 3/8-16 UNC bolts from the anti-rotation holes located on the O.D. of the Piston Guide (Item 11).

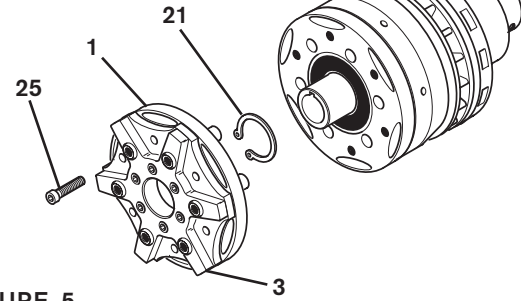


FIGURE 5

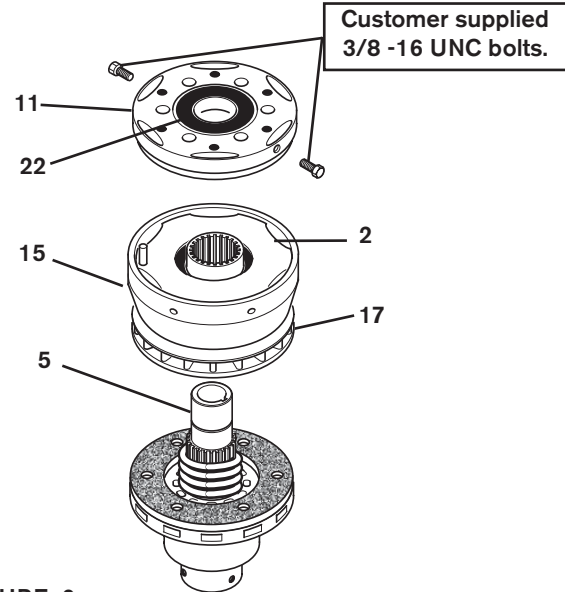


FIGURE 6

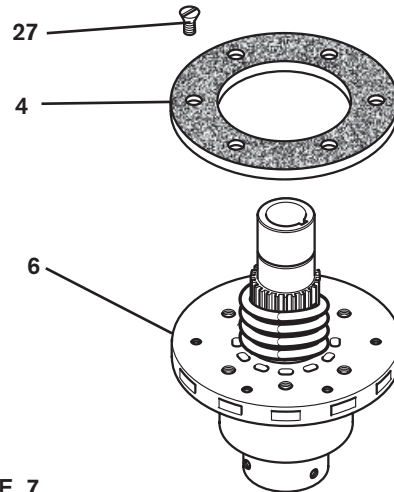


FIGURE 7

TABLE 2

MODEL	RECOMMENDED TORQUE FLAT HEAD MACHINE SCREWS (ITEM 27)
STC600	26 In. Lbs. [2.9 Nm]
STC940	86 In. Lbs. [9.7 Nm]

FRICION FACING REPLACEMENT (continued)

15. Reinstall the Retaining Ring (Item 21).
16. Slide the End cap (Item 3) and Cylinder (Item 1) onto the Hub (Item 5).
17. Apply a drop of Loctite® 242 to the threads of the six Socket Head Cap Screws (Item 25) and secure the End cap (Item 3) and Cylinder (Item 1) to the Piston Guide (Item 11).

NOTE

Ensure the Pistons (Items 8, 9, and 10) do not bind between the Diaphragms (Items 12, 13, and 14) and Piston Guide (Item 11) when the Socket Head Cap Screws (Item 25) are tightened.

18. Alternately and evenly tighten the six Socket Head Cap Screws (Item 25) to the recommended torque (See Table 3).

TABLE 3

MODEL	RECOMMENDED TORQUE SOCKET HEAD CAP SCREWS (ITEM 25)
STC600	100 In. Lbs. [11.3 Nm]
STC940	580 In. Lbs. [65.5 Nm]

PARTS REPLACEMENT

DISASSEMBLY

NOTE

The following sections are arranged by model. Verify that you are in the correct section for your model.

STC600 and STC940

Refer to Figures 8 - 12.

1. Remove the six Socket Head Cap Screws (Item 25).
2. Remove the End cap (Item 3) and Cylinder (Item 1).
3. Remove the six Socket Head Cap Screws (Item 26); then, separate the Cylinder (Item 1) from the End cap (Item 3).

NOTE

There are three sizes of Diaphragms (See Table 4). When replacing the six Diaphragms, make sure the correct size Diaphragm is used for each Diaphragm location.

4. Remove the six old Diaphragms (Items 12, 13, and 14) from the End cap (Item 3).

NOTE

On STC600, the O-Rings are (Item 31). On STC940, the O-Rings are (Item 33).

5. Remove the six old O-Rings (Item 31 or 33) from the ends of the Pistons (Items 8, 9, and 10).
6. Install the six new Diaphragms (Items 12, 13, and 14) into their respective locations in the End cap (Item 3).
7. Match the Pistons (Items 8, 9, and 10) in the Cylinder (Item 1) with the Diaphragms (Items 12, 13, and 14) in the End cap (Item 3).

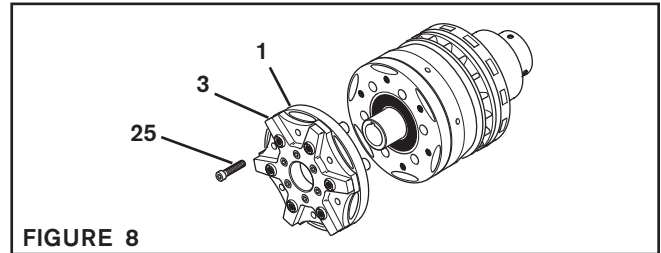


FIGURE 8

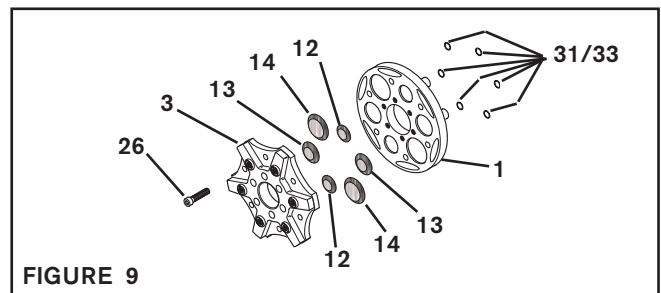
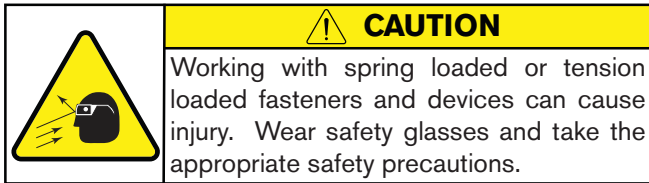


FIGURE 9

8. Install six new O-Rings (Item 31 or 33) onto the ends of the Pistons (Items 8, 9, and 10).
9. Apply a drop of Loctite® 242 to the threads of the six Socket Head Cap Screws (Item 26) and secure the End cap (Item 3) to the Cylinder (Item 1).
10. Alternately and evenly tighten the six Socket Head Cap Screws (Item 26) to the recommended torque (See Table 5).

PARTS REPLACEMENT (continued)



11. Remove the Retaining Ring (Item 21).
12. Press the Piston Guide (Item 11) and Ball Bearing (Item 22) off the Hub (Item 5).
13. Slide the Drive Ring (Item 2), Rotor (Item 17), and Shroud (Item 15) off the Hub (Item 5).
14. Slide the Return Spring (Item 19) off the Hub (Item 5).
15. Press the old Ball Bearing (Item 22) out of the Piston Guide (Item 11).
16. Clean the bearing bore of the Piston Guide (Item 11) with fresh safety solvent, making sure all old Loctite® residue is removed.
17. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Ball Bearing (Item 22).
18. 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.
19. Using customer supplied .250-20 socket head cap screws, thread three screws into tapped holes in Drive Ring (Item 2).
20. Alternately and evenly tighten three screws to press Drive Ring (Item 2) and shroud (Item 15) off Ball Bearing (Item 23).
21. Remove customer supplied screws when press is complete.
22. Pull the old Ball Bearing (Item 23) off the Rotor (Item 17).
23. Clean the bearing bore of the Drive Ring (Item 2) with fresh safety solvent, making sure all old Loctite® residue is removed.
24. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Ball Bearing (Item 23).
25. Align the outer race of the new Ball Bearing (Item 23) with the bearing bore of the Drive Ring (Item 2); then, press the new Ball Bearing (Item 23) into place.
26. Press the Rotor (Item 17) into the Ball Bearing (Item 23) and Drive Ring (Item 2).

NOTE

If you are replacing parts on the STC600, proceed with Step 1 for STC600. If you are replacing parts on the STC940, proceed with Step 1 for STC940.

TABLE 4

DIAPHRAGM O.D.	ITEM 12	ITEM 13	ITEM 14
STC600	1.25 In. [31.75 mm]	1.50 In. [38.10 mm]	1.75 In. [44.45 mm]
STC940	2.25 In. [57.15 mm]	2.50 In. [63.50 mm]	2.75 In. [69.85 mm]

TABLE 5

MODEL	RECOMMENDED TORQUE SOCKET HEAD CAP SCREWS (ITEM 26)
STC600	50 In. Lbs. [5.6 Nm]
STC940	580 In. Lbs. [65.5 Nm]

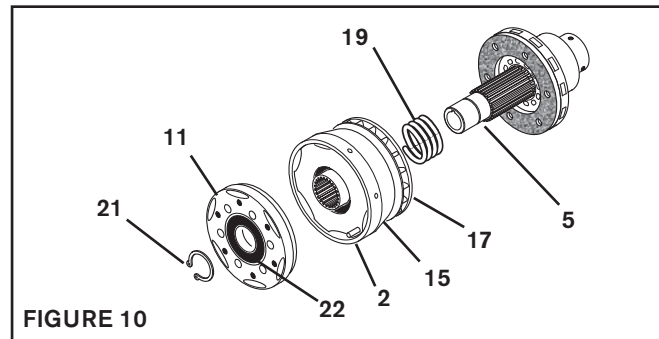


FIGURE 10

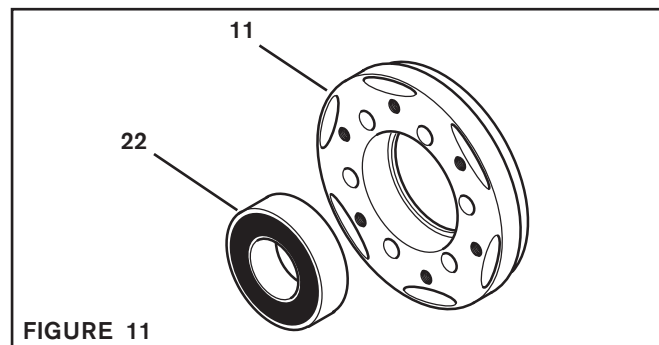


FIGURE 11

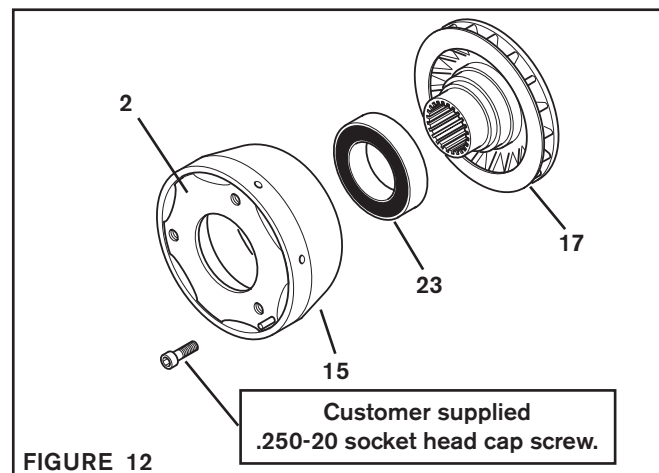


FIGURE 12


PARTS REPLACEMENT (continued)

PILOT BEARING AND FACING REPLACEMENT

STC600

Refer to Figure 13.

1. Press the Hub (Item 5) out of the two Ball Bearings (Item 24) and Pilot Mount Drive Disc (Item 6).

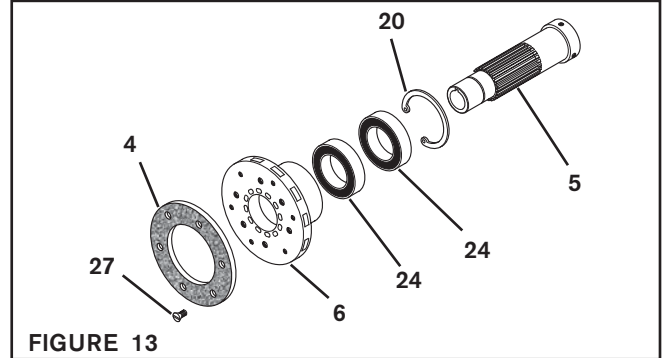
	<p>CAUTION</p> <p>Working with spring loaded or tension loaded fasteners and devices can cause injury. Wear safety glasses and take the appropriate safety precautions.</p>
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2. Remove the Retaining Ring (Item 20) from the Pilot Mount Drive Disc (Item 6).
3. Press the two old Ball Bearings (Item 24) out of the Pilot Mount Drive Disc (Item 6).
4. Clean the bearing bore of the Pilot Mount Drive Disc (Item 6) with fresh safety solvent, making sure all old Loctite® residue is removed.
5. Apply an adequate amount of Loctite® 680 to evenly coat the outer race of the new Ball Bearings (Item 24).
6. Align the outer race of the first new Ball Bearing (Item 24) with the bearing bore of the Pilot Mount Drive Disc (Item 6); then, press the new Ball Bearing (Item 24) into place.
7. Align the outer race of the second new Ball Bearing (Item 24) with the bearing bore of the Pilot Mount Drive Disc (Item 6); then, press the second new Ball Bearing (Item 24) into place.
8. Install the Retaining Ring (Item 20).
9. Supporting the inner race of the two new Ball Bearings, press the Hub (Item 5) into the two new Ball Bearings (Item 24) and Pilot Mount Drive Disc.

NOTE

The Flat Head Machine Screws (Item 27) securing the Friction Facing (Item 4) on the STC are installed with a anaerobic thread locking compound. If removal is difficult, insert a properly fitting screwdriver into the head of the Flat Head Machine Screw; then, strike the end of the screwdriver with a hammer to break the crystalline structure of this compound and allow removal of the Flat Head Machine Screw. Never use an impact wrench to remove the Flat Head Machine Screws.


10. Remove the six old Flat Head Screws (Item 27) that secure the Friction Facing (Item 4) to the Pilot Mount Drive Disc.
11. Remove the old Friction Facing (Item 4).
12. Using six new Flat Head Screws (Item 27), secure the new Friction Facing (Item 4) to the Pilot Mount Drive Disc.
13. Tighten the six Flat Head Screws (Item 27) to 26 In. Lbs. [2.9 Nm] torque.



PARTS REPLACEMENT (continued)

STC940

Refer to Figure 14.

	<p style="text-align: center;">CAUTION</p> <p>Working with spring loaded or tension loaded fasteners and devices can cause injury. Wear safety glasses and take the appropriate safety precautions.</p>
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1. Remove the Retaining Ring (Item 31).
2. Press the Hub (Item 5) out of the two Ball Bearings (Item 24), Spacer (Item 16), and Pilot Mount Drive Disc (Item 6).

NOTE

Do not remove the Backing Plate (Item 39) from the Hub (Item 5).

3. Remove the Retaining Ring (Item 20).
4. Press the two old Ball Bearings (Item 24) and Spacer (Item 16) out of the Pilot Mount Drive Disc (Item 6).
5. Clean the bearing bore of the Pilot Mount Drive Disc (Item 6) with fresh safety solvent, making sure all old Loctite® residue is removed.
6. Apply an adequate amount of Loctite® to evenly coat the outer race of the two new Ball Bearings (Item 24).
7. Align the outer race of the first new Ball Bearing (Item 24) with the bearing bore of the Pilot Mount Drive Disc (Item 6); then, press the first new Ball Bearing (Item 24) into place.
8. Reinstall the Spacer (Item 16).
9. Align the outer race of the second new Ball Bearing (Item 24) with the bearing bore of the Pilot Mount Drive Disc (Item 6); then, supporting the inner race, press the second new Ball Bearing (Item 24) into place.
10. Reinstall the Retaining Ring (Item 20).
11. Supporting the inner race of the second new Ball Bearing, press the Hub (Item 5) into the two new Ball Bearings (Item 24), Spacer (Item 16), and Pilot Mount Drive Disc.
12. Reinstall the Retaining Ring (Item 31).

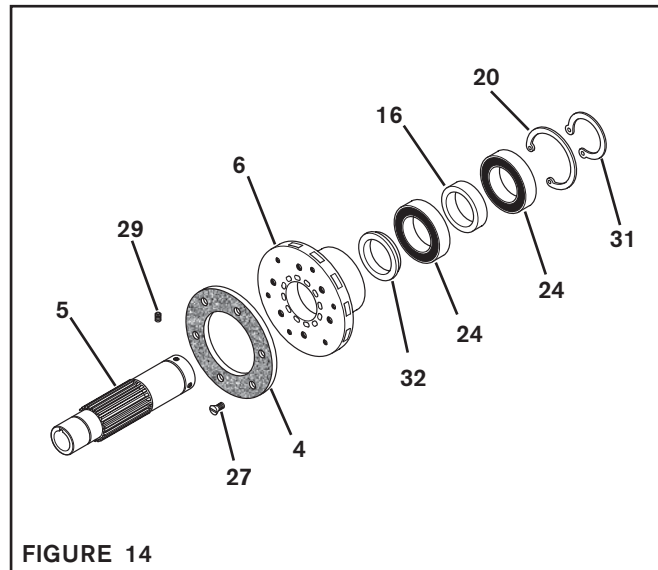


FIGURE 14

NOTE

The Flat Head Machine Screws (Item 27) securing the Friction Facing (Item 4) on the STC are installed with an anaerobic thread locking compound. If removal is difficult, insert a properly fitting screwdriver into the head of the Flat Head Machine Screw; then, strike the end of the screwdriver with a hammer to break the crystalline structure of this compound and allow removal of the Flat Head Machine Screw. Never use an impact wrench to remove the Flat Head Machine Screws.

13. Remove the six old Flat Head Screws (Item 27) that secure the Friction Facing (Item 4) to the Pilot Mount Drive Disc.
14. Remove the old Friction Facing (Item 4).
15. Using six new Flat Head Screws (Item 27), secure the new Friction Facing (Item 4) to the Pilot Mount Drive Disc.
16. Tighten the six Flat Head Screws (Item 27) to 86 In. Lbs. [9.7 Nm] torque.

PARTS REPLACEMENT (continued)

REASSEMBLY

STC600 and STC940

Refer to Figures 15 & 16.

1. Slide the Return Spring (Item 19) onto the Hub (Item 5).
2. Slide the Drive Ring (Item 2), Rotor (Item 17), and Shroud (Item 15) onto the Hub (Item 5).

NOTE

The Dowel Pin (Item 7) must be aligned with the hole in the Piston Guide (Item 11).

3. Press the Ball Bearing (Item 22) and the Piston Guide (Item 11) onto the Hub (Item 5).



CAUTION

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

4. Install the Retaining Ring (Item 21).
5. Slide the End cap (Item 3) and Cylinder (Item 1) onto the Hub (Item 5).
6. Apply a drop of Loctite® 242 to the threads of the six Socket Head Cap Screws (Item 25) and secure the End cap (Item 3) and Cylinder (Item 1) to the Piston Guide (Item 11).

NOTE

Ensure the Pistons (Item 8, 9, and 10) do not bind between the Diaphragms (Items 12, 13, and 14) and Piston Guide (Item 11) when the Socket Head Cap Screws (Item 25) are tightened.

7. Alternately and evenly tighten the six Socket Head Cap Screws (Item 25) to the recommended torque (See Table 6).

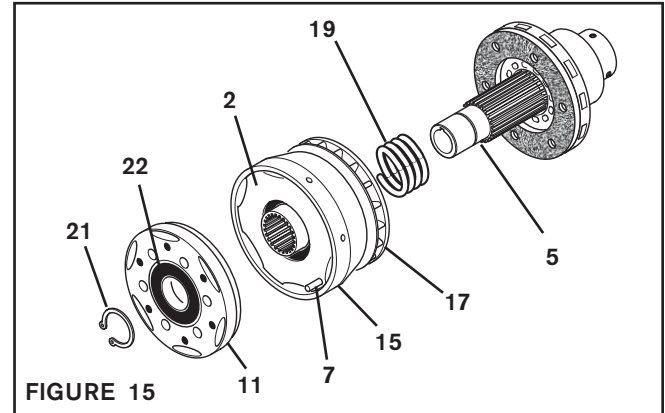


FIGURE 15

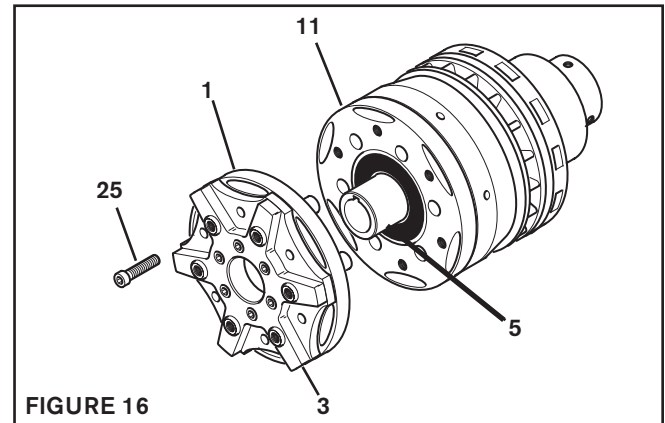


FIGURE 16

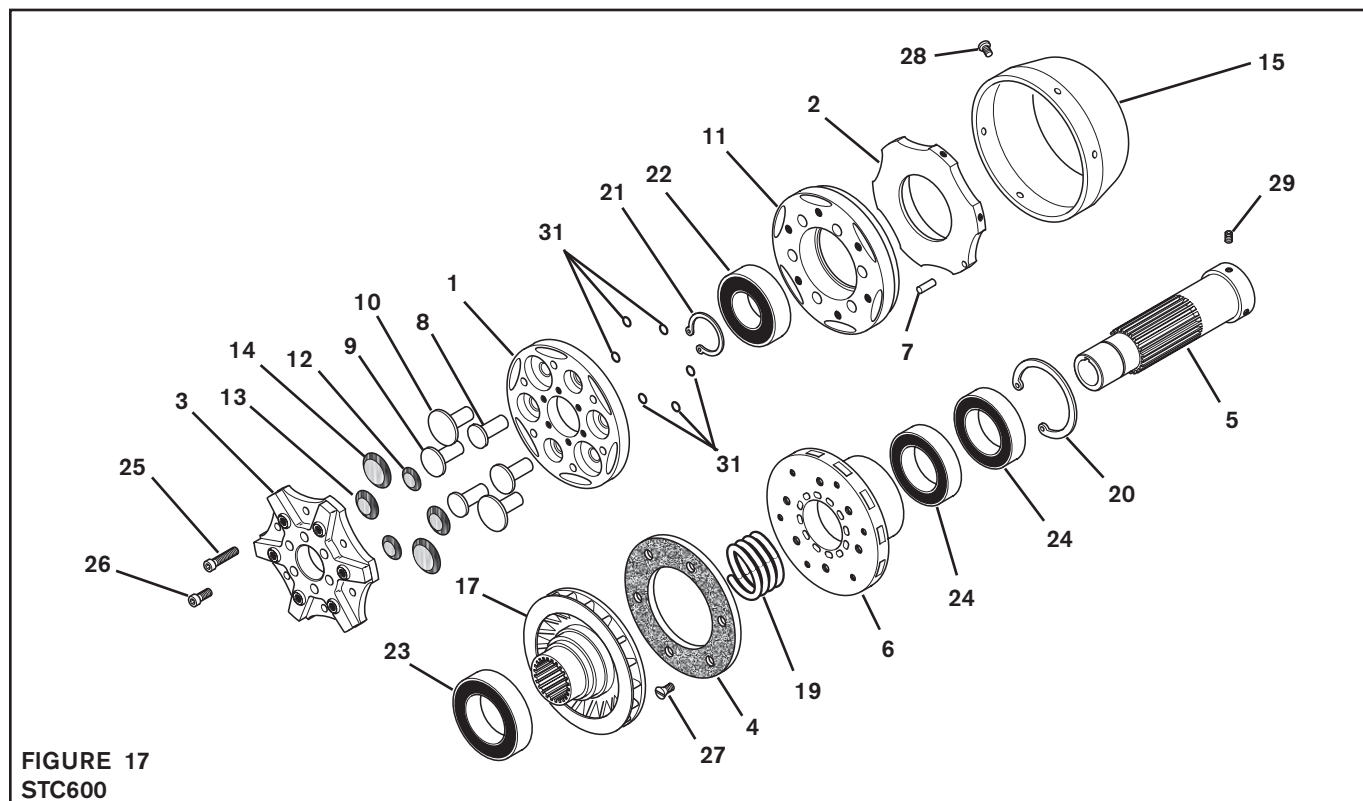
TABLE 6

MODEL	RECOMMENDED TORQUE SOCKET HEAD CAP SCREWS (ITEM 25)
STC600	100 In. Lbs. [11.3 Nm]
STC940	580 In. Lbs. [65.5 Nm]

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.

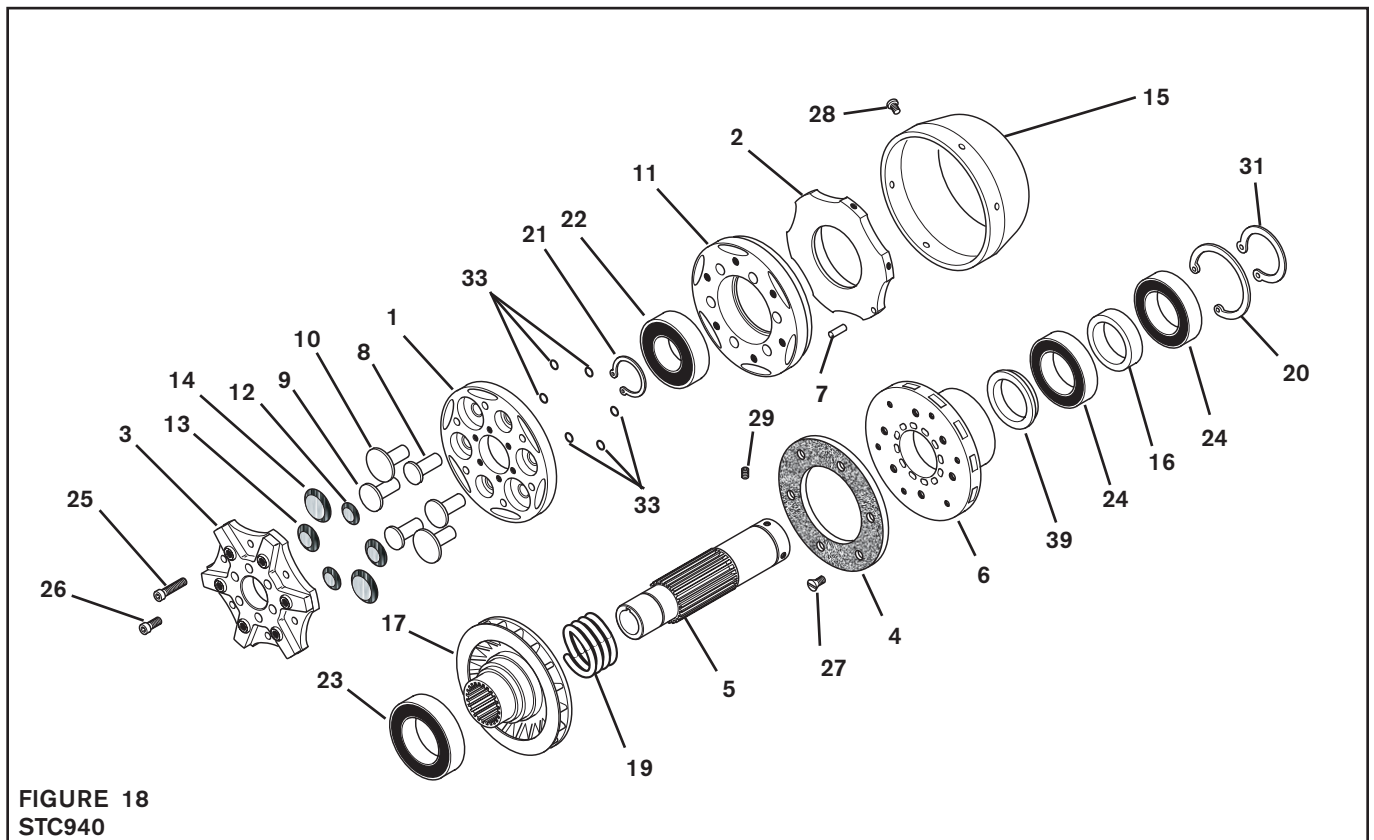


ITEM	DESCRIPTION	QTY
1	Cylinder	1
2	Drive Ring	1
3	End cap	1
4 ^{1,2}	Friction Facing	1
5	Hub	1
6	Pilot Mount Drive Disc	1
7	Dowel Pin	1
8	Piston (1.00" O.D.)	2
9	Piston (1.25" O.D.)	2
10	Piston (1.50" O.D.)	2
11	Piston Guide	1
12 ¹	Diaphragm (1.25" O.D.)	2
13 ¹	Diaphragm (1.50" O.D.)	2
14 ¹	Diaphragm (1.75" O.D.)	2
15	Shroud	1
17	Rotor	1

ITEM	DESCRIPTION	QTY
19	Return Spring	1
20 ^{1,2}	Retaining Ring (Int.)	1
21 ^{1,2}	Retaining Ring (Ext.)	1
22 ¹	Ball Bearing	1
23 ¹	Ball Bearing	1
24 ¹	Ball Bearing	2
25	Socket Head Cap Screw	6
26	Socket Head Cap Screw	6
27 ^{1,2}	Flat Head Screw	6
28	Round Head Screw	6
29	Set Screw	2
30	Key (Not Shown)	1
31 ¹	O-Ring	6
36	Air Line (Not Shown)	--
37	Elbow Fitting (Not Shown)	3
38	Tee Fitting (Not Shown)	5

¹ Denotes Rebuild Kit items.
STC600 Rebuild Kit No. 927201.

² Denotes Facing Kit items.
STC600 Facing Kit No. 927202.



ITEM	DESCRIPTION	QTY
1	Cylinder	1
2	Drive Ring	1
3	End cap	1
4 ^{1,2}	Friction Facing	1
5	Hub	1
6	Pilot Mount Drive Disc	1
7	Dowel Pin	1
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
15	Shroud	1
16	Spacer	1
17	Rotor	1
19	Return Spring	1

¹ Denotes Rebuild Kit items.
STC940 Rebuild Kit No. 927212.

ITEM	DESCRIPTION	QTY
20 ^{1,2}	Retaining Ring (Int.)	1
21 ^{1,2}	Retaining Ring (Ext.)	1
22 ¹	Ball Bearing	1
23 ¹	Ball Bearing	1
24 ¹	Ball Bearing	2
25	Socket Head Cap Screw	6
26	Socket Head Cap Screw	6
27 ^{1,2}	Flat Head Screw	6
28	Round Head Screw	6
29	Set Screw	2
30	Key (Not Shown)	1
31	Retaining Ring (Ext.)	1
33 ¹	O-Ring	6
36	Air Line (Not Shown)	--
37	Elbow Fitting (Not Shown)	3
38	Tee Fitting (Not Shown)	5
39	Backing Plate	1

² Denotes Facing Kit items.
STC940 Facing Kit No. 927213.

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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