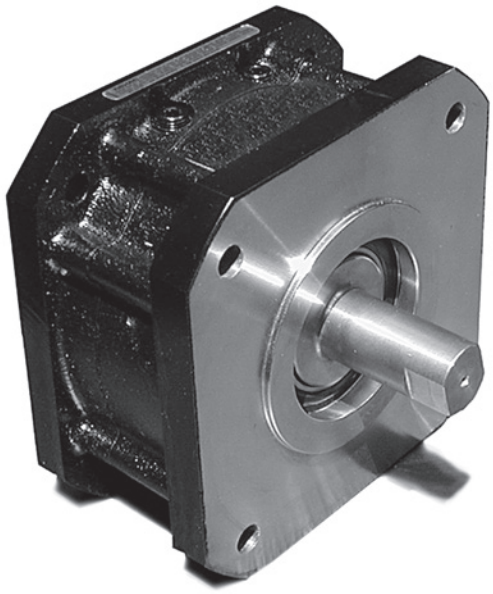
nexen®

ECLIPSE™ PRODUCTS

User Manual



Eclipse Servo Brake

Sizes 7, 9 and 11

CE

RoHS compliant

FORM NO. L-21059-E-0813

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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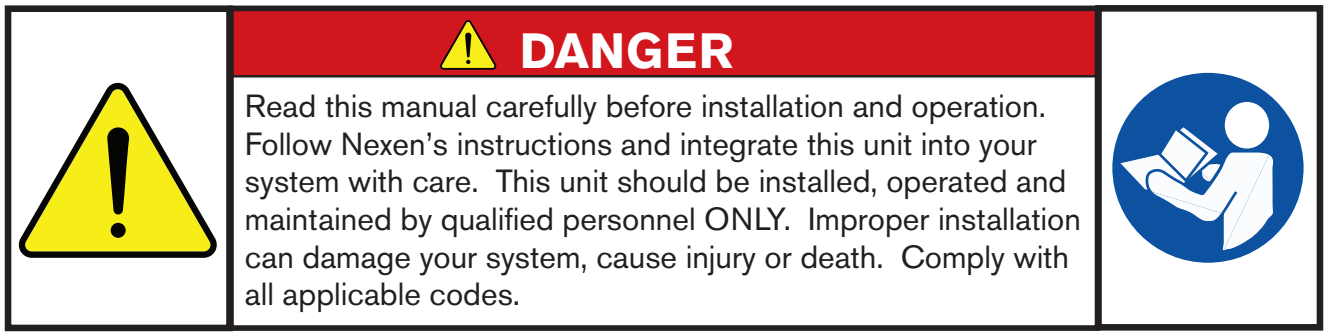

This document is the original, non-translated, version.

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.
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Vadnais Heights, Minnesota 55127

ISO 9001 Certified

Table of Contents

GENERAL SPECIFICATIONS

Size	Min Holding Torque	Torsional Rigidity (Estimated)	Inertia (Calculated)	Weight	Min. Disengagement Air Pressure
Size 7	125 Nm [92 ft*lb]	54772 Nm/RAD [40390 ft*lb/RAD]	0.00344 kg*m^2 [0.0816 lb*ft^2]	13.6 kg [30 lbs]	5.5 bar [80 psi]
Size 9	125 Nm [92 ft*lb]	102733 Nm/RAD [75757 ft*lb/RAD]	0.00344 kg*m^2 [0.0816 lb*ft^2]	16.1 kg [35.5 lbs]	5.5 bar [80 psi]
Size 11	125 Nm [92 ft*lb]	211695 Nm/RAD [156110 ft*lb/RAD]	0.00344 kg*m^2 [0.0816 lb*ft^2]	28.5 kg [63 lbs]	5.5 bar [80 psi]

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

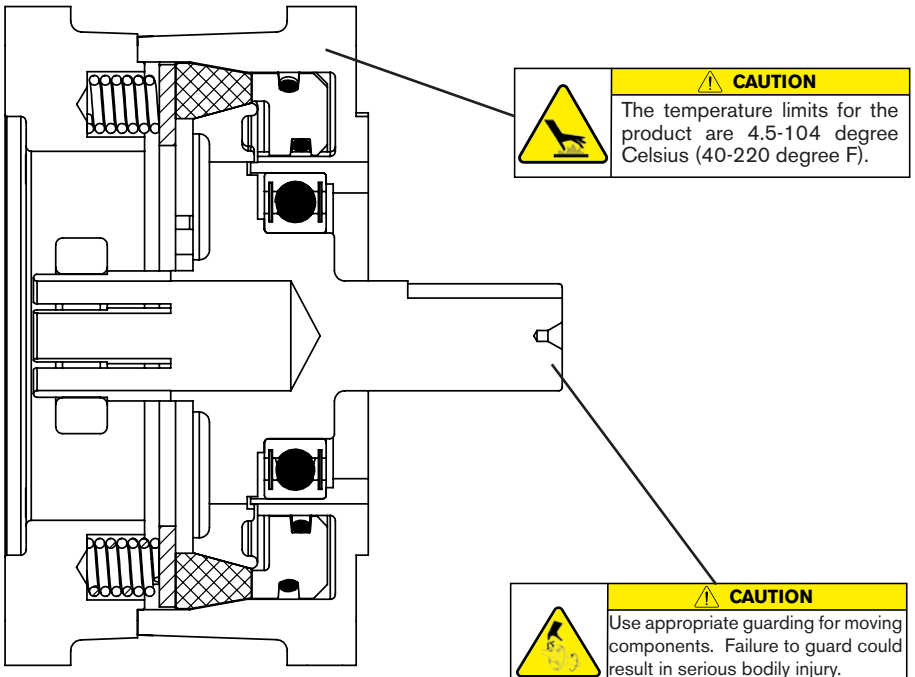
Watch for sharp features when interacting with this product. The parts have complex shapes and machined edges.

⚠ WARNING

This product is capable of emitting a spark if misused, therefore it 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

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 ONTO MOTOR SHAFT

NOTE: Refer to Figures 1, 2 & 3.

1. Place the Clamping Collar (Item 7) on the input (female) end of the servo brake shaft. Finger tighten the cap screw until the Collar is nearly snug, then slide the Collar down the Shaft until it is firmly against the shaft step.

2. Remove the Access Plugs (Item 14) from the Input Flange (Item 10). Rotate the Clamping Collar (Item 7) until the cap screw is lined up with the access hole; then insert an Allen driver or a T-handle wrench through and engage the head of the cap screw. Leave this driver or wrench in place while you perform the next two steps.

CAUTION: Do not lubricate either the Clamping Collar or the Shaft. Any lubricant on the contact surfaces could result in torque transfer failure. If necessary, clean the Shaft with a non-petroleum based solvent, such as isopropyl alcohol, and wipe dry before assembly.

3. Slide the Motor Shaft into the input (female) end of the Output Shaft (Item 1) until the Flanges of the Motor and Brake come together.

4. Using four customer-supplied Socket Head Cap Screws (M12 or M14, see Table 2), bolt the Flanges together. Tighten the cap screws evenly to the recommended torques listed in Table 2 (Page 6).

5. Using the Allen driver or wrench used in Step 2 (or two of them if available), tighten the cap screws in the Clamping Collar (Item 7) to the recommended torque listed in Table 1 (Page 6).

CAUTION: Under tightening the Collar may cause slippage between the motor and the Brake. This can cause damage to the System, Motor and/or Brake.

6. Reinstall the Access Plugs (Item 14) into the access holes on the Input Flange (Item 10).

7. Assemble the Gear Reducer or lead to the output end of the Brake Shaft.

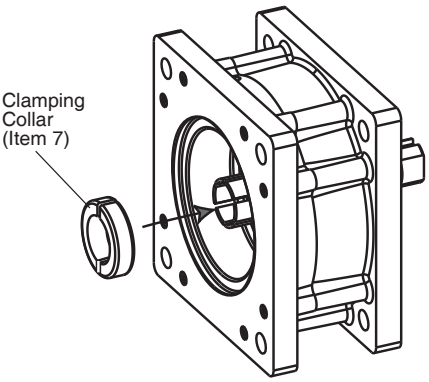


FIGURE 1

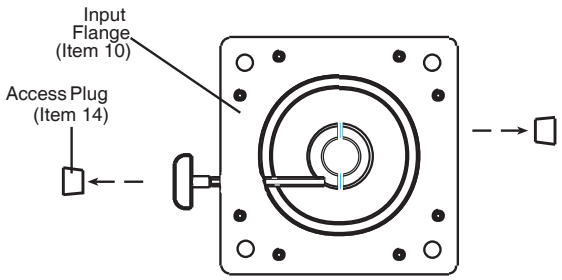


FIGURE 2

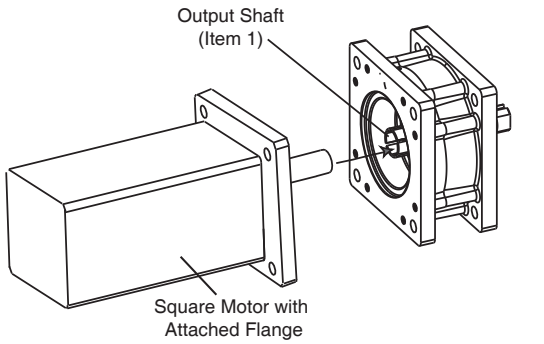


FIGURE 3

⚠ DANGER

Support the load before disengaging the brake. Failure to support the load could result in serious bodily injury.

MOUNTED BETWEEN A MOTOR SHAFT AND A GEAR REDUCER

NOTE: Refer to Figure 4.

1. Mount the Servo Brake to the Motor Shaft by performing steps 1-7 on page 5.

2. Insert the Output Shaft into the customer-supplied gear reducer coupling. Use the supplied Rectangular Key if required.

3. Bolt the flanges together using customer-supplied M12 or M14 cap screws, washers and nuts. Before assembly, apply a drop of Loctite® 242 (blue) to the threads of each cap screw. Torque these cap screws evenly (ie, those in opposite corners) to the recommended torques listed in Table 2 (below).

4. Tighten the Coupling according to the instructions supplied with the Gear Reducer.

5. Install any plugs or related items that are detailed in the Gear Reducer instructions.

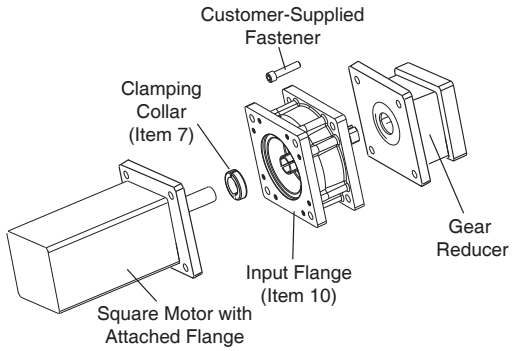


FIGURE 4

TABLE 1

Brake Model	Shaft Size	Cap Screw	Recommended Collar Screw Torque
Size 7	28mm-35mm	M6	16.00 Nm (142.0 in-lbs)
Size 7	35mm-48mm	M8 or 5/16-24	39.00 Nm (345.0 in-lbs)
Size 9	28mm-35mm	M6	16.00 Nm (142.0 in-lbs)
Size 9	35mm-48mm	M8 or 5/16-24	39.00 Nm (345.0 in-lbs)
Size 11	28mm-35mm	M6	16.00 Nm (142.0 in-lbs)
Size 11	35mm-48mm	M8 or 5/16-24	39.00 Nm (345.0 in-lbs)

TABLE 2

Brake Model	Socket Head Cap Screw (Customer Supplied)	Recommended Fastening Torque
Size 7	M12	158 Nm (117 ft-lbs)
Size 9	M12	158 Nm (117 ft-lbs)
Size 11	M14	180 Nm (133 ft-lbs)

⚠ DANGER

Support the load before disengaging the brake. Failure to support the load could result in serious bodily injury.

LUBRICATION

NOTE

Nexen pneumatically actuated devices require clean, pressure regulated air for maximum performance and life. Nexen pneumatically operated devices pneumatic seals are lubricated 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

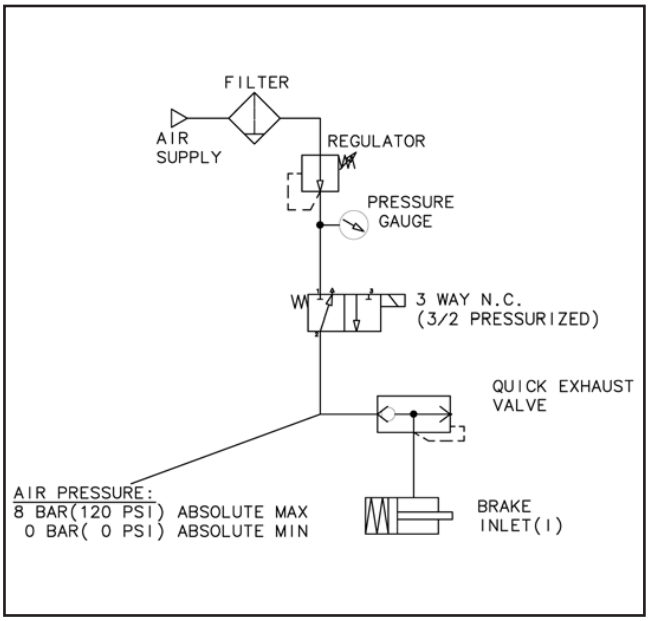
All Nexen pneumatically actuated devices require clean and dry air, which meet or exceeds ISO 8573.1:2001 Class 4.4.3 quality.

NOTE

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



⚠ DANGER

Support the load before disengaging the brake. Failure to support the load could result in serious bodily injury.

1. **Standard Configuration:**

   Attach the Quick Exhaust Valve (Item 23) to the brake. Use Teflon tape and/or pipe sealant on the threads.

   With Optional Solenoid:

   If you are using the optional Solenoid Valve (Nexen Part #964650), the Quick Exhaust Valve is unnecessary. Assemble the optional Solenoid Valve directly to the brake using the supplied fittings. Use Teflon tape and/or pipe sealant on the threads. Refer to Figure 5.

⚠ CAUTION

The brake will disengage if you depress the domed button at the top of the Solenoid Valve (if air pressure is applied). The LED will illuminate when the Solenoid Valve is actuated and the brake is disengaged. Pressure needed to disengage should NOT exceed 80 psi.

NOTE: Align the air inlet ports in the down position to allow condensation to drain out of the air chamber.

2. Attach the air supply line to the valve.

3. If using optional solenoid valve, attach DIN Connector cable to valve by pressing DIN Connector onto valve power pins and tightening DIN Connector fastener. Then connect DIN Connector cable wires, using the following chart, to the appropriate power supply, see Table 3.

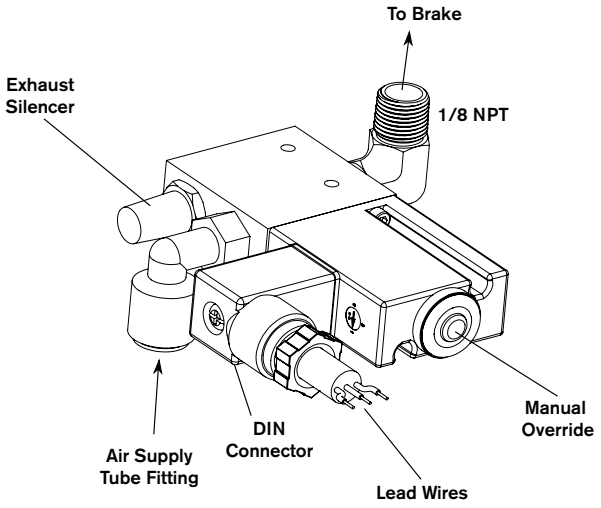


FIGURE 5 Optional Solenoid Valve Part #964650.

DIN Connector Cable Wire Color	Valve	
	24 VDC	Valve Pin
Brown	+	1
White	-	2
Green	Ground	Ground

Table 3

Optional Solenoid Valve Specifications				
Voltage	**Power**	**Resistance**	**Current**	**Cv**
24 VDC	4 W	145 ohms	.17 A	.25

⚠ CAUTION

24 VDC valve connector has a suppression diode installed across the coil. Observe proper voltage polarity or connector damage will result.

OPERATION

⚠ WARNING

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

TABLE 4

Sizes	Max RPM
Size 7-11	5,000

⚠ 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).

BRAKE ASSEMBLY

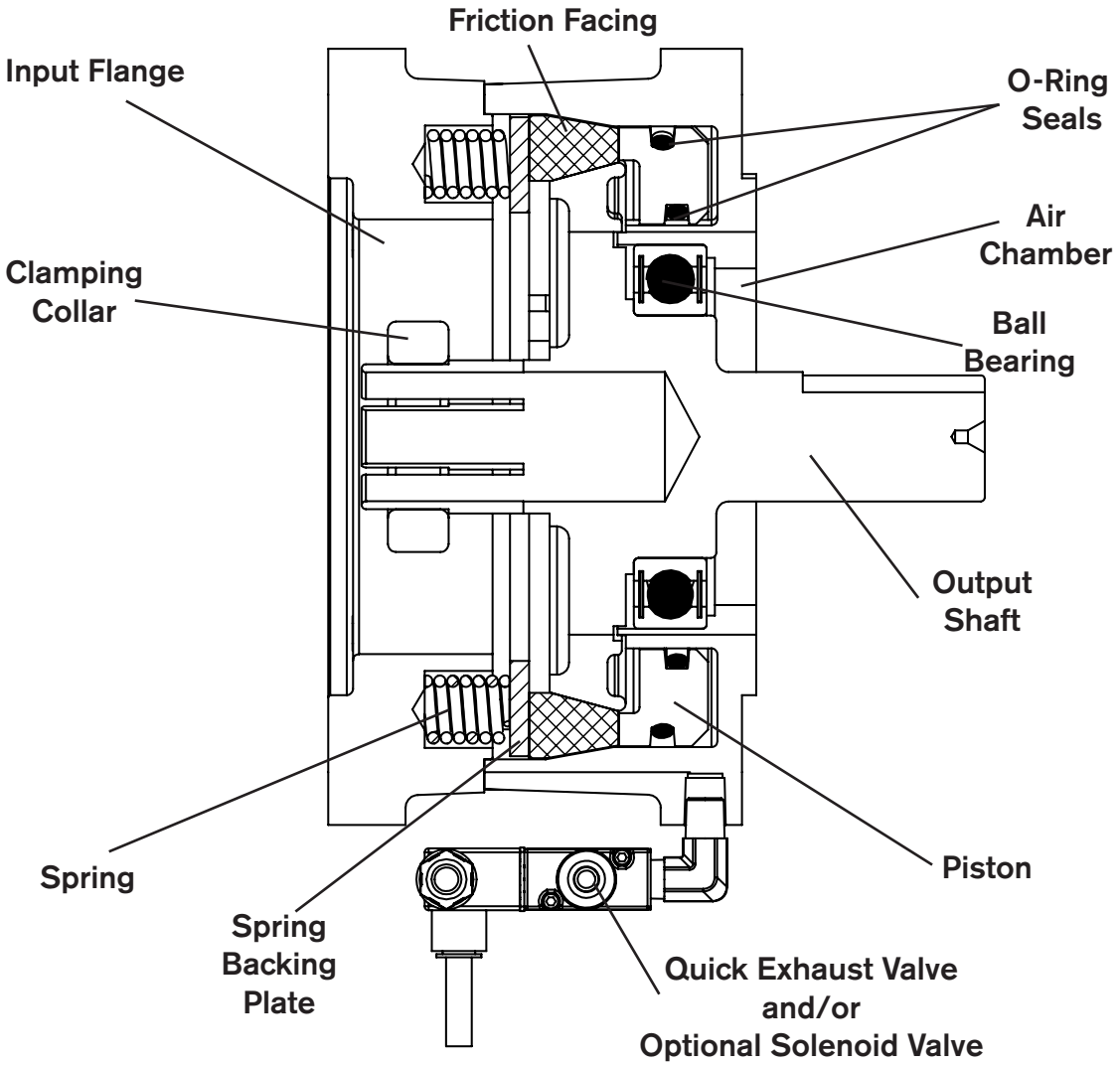


FIGURE 6

SIZES 7, 9, AND 11

NOTE: Refer to Figures 7 & 8.

1. Alternately and evenly, remove the eight Socket Head Cap Screws (Item 11) and separate the Air Chamber (Item 6) from the Input Flange (Item 10).

2. Remove the Spring Backing Plate (Item 15), Piston (Item 5) and 10 Springs (Item 9) from the Air Chamber (Item 6). You may need to apply compressed air to the air inlet to remove the Piston.

3. Press in on the Output Shaft (Item 1) to separate it from the Ball Bearing (Item 2).

4. Remove the old O-ring Seals (Items 3, 4) from the Piston (Item 5).

5. Press the Ball Bearing (Item 2) out of the Air Chamber (Item 6).

6. Clean the bearing bore of the Air Chamber (Item 6) with fresh solvent, removing old Loctite®.

7. Apply a continuous bead of Loctite® 680 (green) around the inner circumference of the bearing bore of the Air Chamber (Item 6).

8. Carefully align the outer race of the new Bearing (Item 2) with the bore of the Air Chamber (Item 6).

9. Supporting the Air Chamber (Item 6) and pressing on the outer race of the new Bearing (Item 2), press the new Bearing into the Air Chamber.

10. Visually inspect the inner diameter grooves and the outer diameter grooves of the Piston (Item 5) for debris. Clean as necessary.

11. Coat the O-ring contact surfaces of the Air Chamber (Item 6), the Piston (Item 5), and the O-ring Seals (Items 3, 4) with a thin film of O-ring lubricant and install the new O-ring Seals.

12. Slide the Piston (Item 5) into the Air Chamber (Item 6).

13. Clean the friction surface of the Output Shaft (Item 1) and the Air Chamber (Item 6) with solvent. Ensure that it is clean and dry before installing the Friction Facing (Item 8) in Step 15.

⚠ CAUTION

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

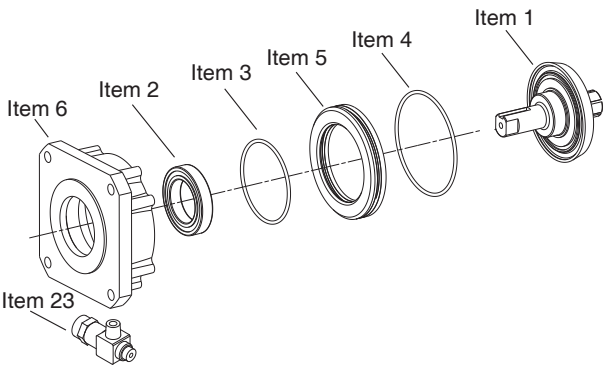


FIGURE 7

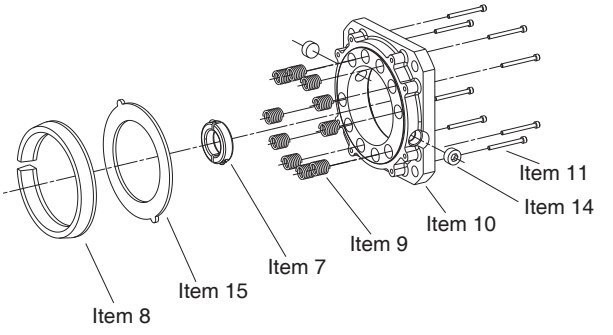


FIGURE 8

(continued)

BEARING, O-RING SEALS AND SPRINGS ASSEMBLY (continued...)

14. While supporting the inner race of the new Ball Bearing (Item 2), press the Output Shaft (Item 1) into the new Bearing (Item 2) and Air Chamber (Item 6).

15. Position Friction Facing (Item 8) in the Air Chamber (Item 6) so the angled surfaces match up with the wall of the Air Chamber and the tapered disc of the Output Shaft (Item 1).

16. Replace the Backing Plate (Item 15), Springs (Item 9) and Input Flange (Item 10).

17. Apply a drop of Loctite® 242 (blue) to the threads of the eight Socket Head Cap Screws (Item 11).

18. Reinstall and tighten the eight Socket Head Cap Screws (Item 11), securing the Air Chamber (Item 6) to the Input Flange (Item 10). Alternately tighten the eight Cap Screws to keep the input flange parallel to the Air Chamber. Refer to Table 5 for the recommended assembly torque.

TABLE 5

Brake Model	Socket Head Cap Screw (Item 11)	Recommended Assembly Torque
Size 7	M5	7.0-9.2 Nm (62-81 in/lb)
Size 9	M5	7.0-9.2 Nm (62-81 in/lb)
Size 11	M5	7.0-9.2 Nm (62-81 in/lb)

FRICTION FACING ASSEMBLY

NOTE: Refer to Figures 9 & 10.

1. Alternately and evenly, remove the eight Socket Head Cap Screws (Item 11) and separate the Air Chamber (Item 6) from the Input Flange (Item 10).

2. Remove the Input Flange (Item 10), Backing Plate (Item 15) and eight Springs (Item 9).

3. Remove and replace the Friction Facing (Item 8) in the Air Chamber (Item 6). Make certain that the angled sides mate with the wall of the Air Chamber and the tapered disc of the Output Shaft (Item 1).

4. Replace the 10 Springs (Item 9) and Input Flange (Item 10).

5. Apply a drop of Loctite® 242 (blue) to the threads of each of the eight Socket Head Cap Screws (Item 11).

6. Reinstall and tighten the eight Socket Head Cap Screws (Item 11), securing the Air Chamber (Item 6) to the Input Flange (Item 10). Alternately tighten the eight Cap Screws so the Input Flange stays parallel to the Air chamber (Item 6) and does not pinch any of the Springs (Item 9). Refer to Table 5 (page 11) for the recommended assembly torque.

⚠ CAUTION

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

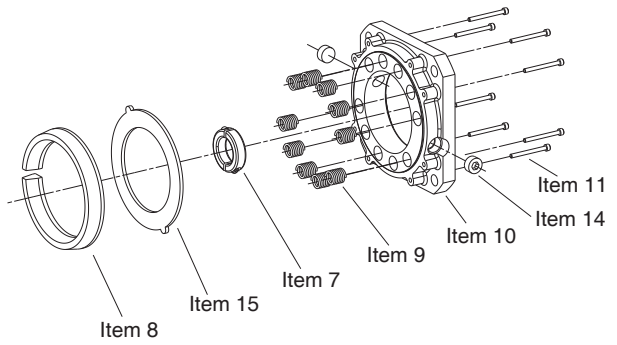


FIGURE 9

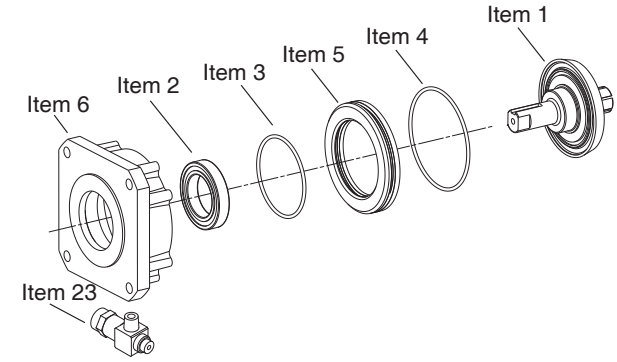


FIGURE 10

TROUBLESHOOTING

Problem	Probable Cause	Solution
Failure to engage (brake).	Weak or broken springs.	Replace broken springs.
Failure to disengage (1).	Control valve malfunction - air not getting to the brake.	Check for low air pressure or replace the control valve. **NOTE:** Unit has been designed to release before (at or below) 5.5 bar [80 psi]. Required disengagement pressure higher than 5.5 bar [80 psi] may indicate improper assembly.
Failure to disengage (2).	Air is leaking around the O-ring seals.	Replace the O-rings.
Loss of torque.	Friction Facing is worn or dirty.	Replace the Friction Facing.

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.

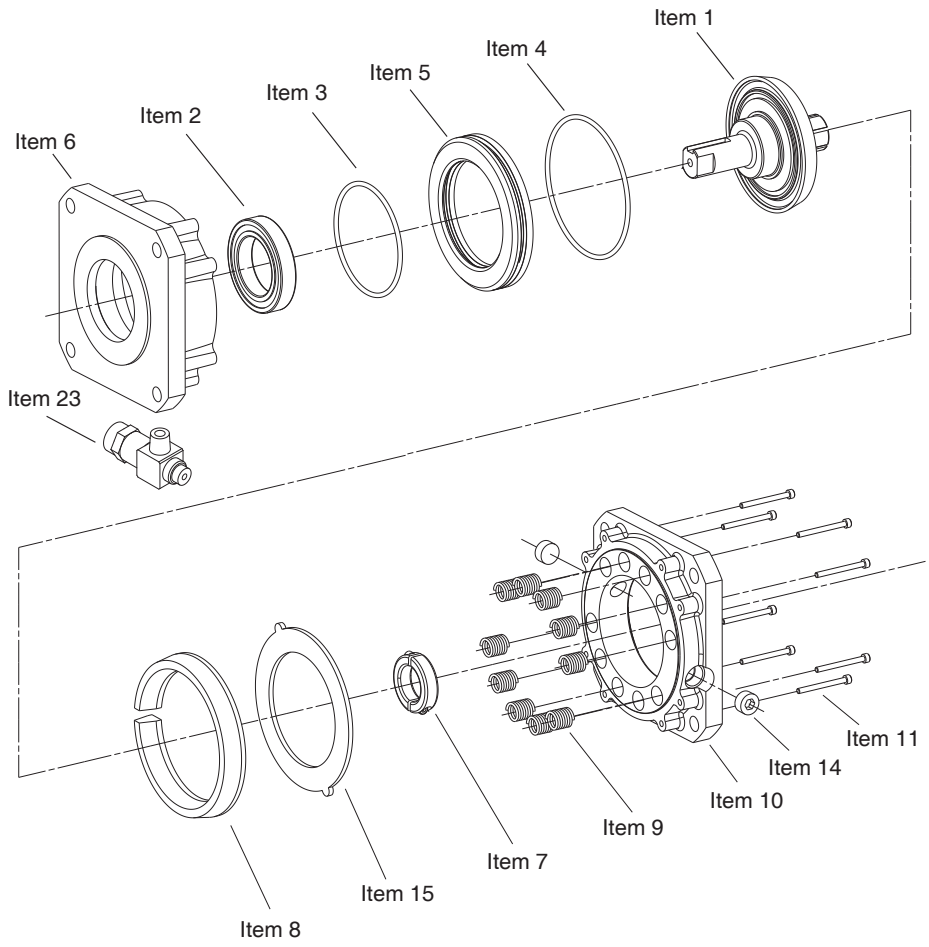


FIGURE 11

ITEM	DESCRIPTION	QTY
1	Output Shaft	1
2	Ball Bearing	1
3	O-ring Seal	1
4	O-ring Seal	1
5	Piston	1
6	Air Chamber*	1
7	Clamping Collar	1
8	Friction Facing	1
9	Springs	10
10	Input Flange*	1
11	Socket Head Cap Screw	8
12	Rectangular Key	1
14	Access Plug	2
15	Backing Plate, Spring	1
23	Quick Exhaust Valve	1
	*Unpainted if Ordered Separately	

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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