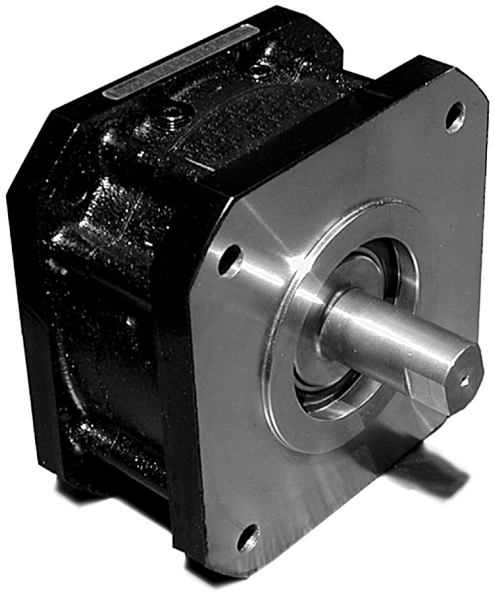
nexen®

ECLIPSE™ PRODUCTS

User Manual



Eclipse Servo Brake

Sizes 7, 9 and 11

FORM NO. L-21059-B-0901

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

www.nexengroup.com

DANGER

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 or cause injury or death.

Comply with all applicable codes.

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

ISO 9001 Certified

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INSTALLATION

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 2).

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 2).

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).

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

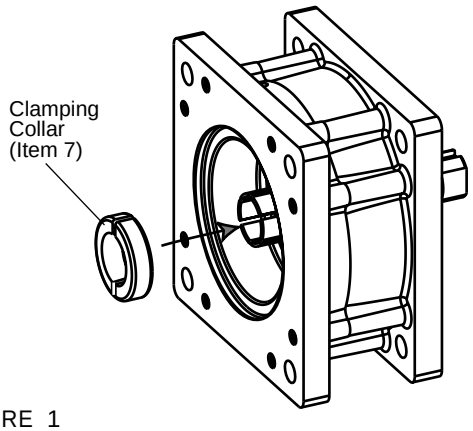

FIGURE 1

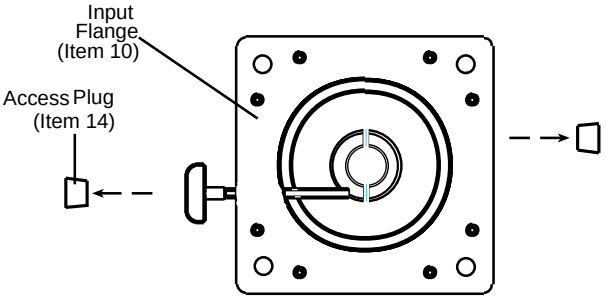

FIGURE 2

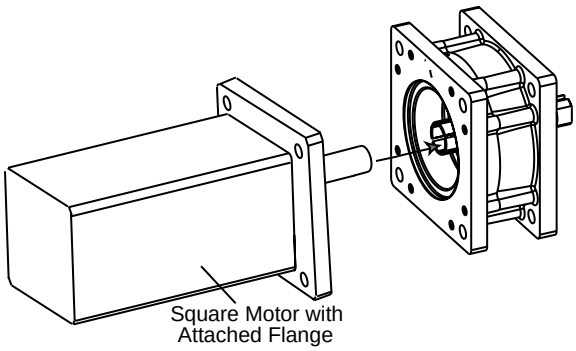

FIGURE 3

DANGER

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

INSTALLATION 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 1-6 on page 1.

2. Insert the Output Shaft into the customer-supplied gear reducer coupling. Use the supplied Rectangular Key (Item 12) 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.

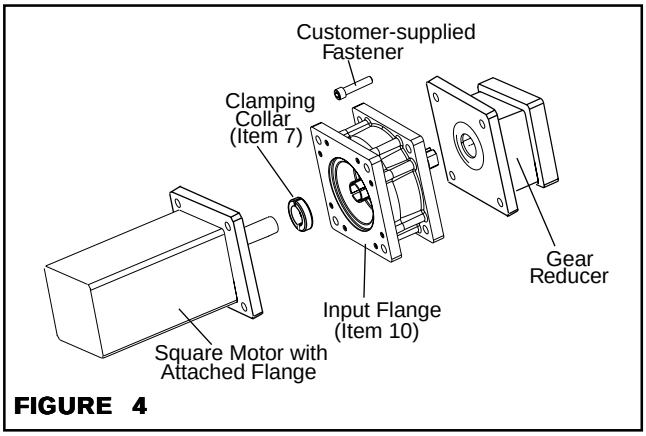

FIGURE 4

TABLE 1

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

TABLE 2

Brake Model	Socket Head Cap Screw (Customer-Supplied)	Recommended Fastening Torque
Size 7	M12	158 Nm (1,400 in/lb)
Size 9	M12	158 Nm (1,400 in/lb)
Size 11	M14	180 Nm (1,600 in/lb)

DANGER

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

FORM NO. L-21059-B-0901

AIR PREPARATION

For long life, the Brake requires clean and pressure regulated air (filtered to five microns or better). Nexen does not recommend lubricated air for this product.

BRAKE ASSEMBLY

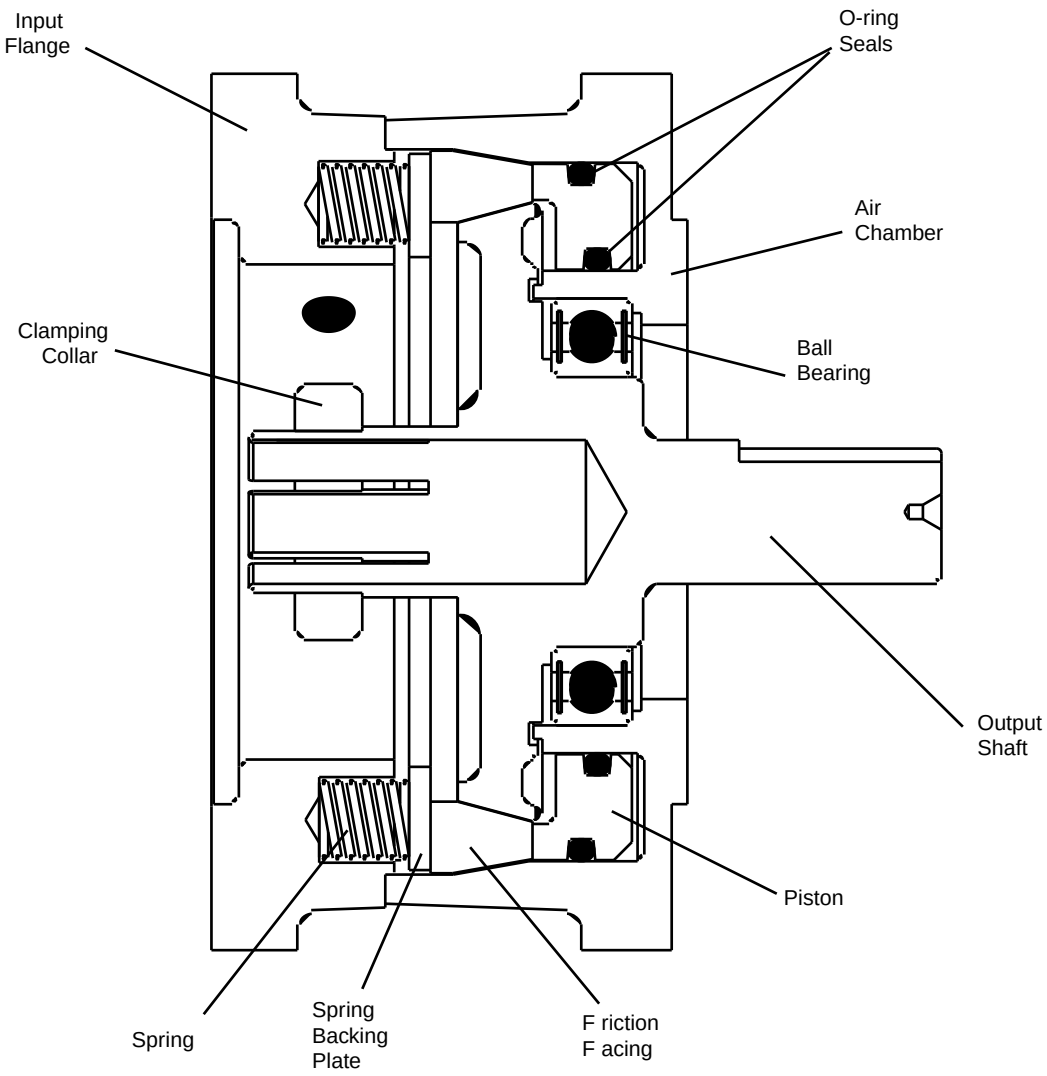

FIGURE 5

SIZES 7, 9, AND 11

NOTE: Refer to Figures 6 & 7.

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.

DANGER

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

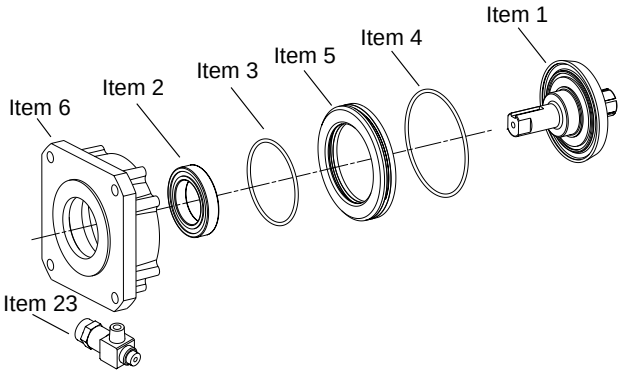

FIGURE 6

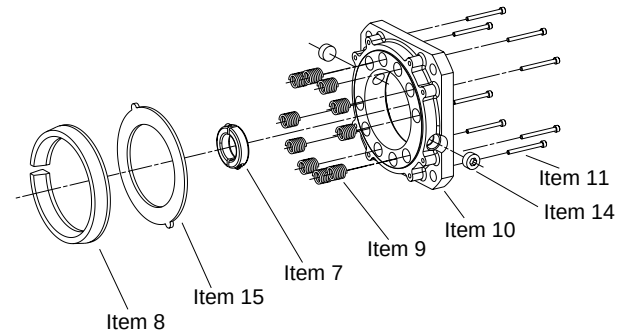

FIGURE 7

(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).

19. 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 3 for the recommended assembly torque.

TABLE 3

Brake Model	Socket Head Cap Screw (Item 11)	Recommended Assembly Torque
Size 7	M5	7.0-9.2 Nm (62-81 in/lb)
Size 8	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 8 and 9.

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 (Items 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 3 (page 5) for the recommended assembly torque.

DANGER

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

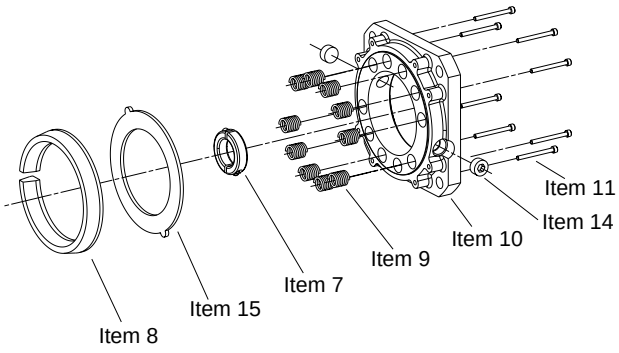

FIGURE 8

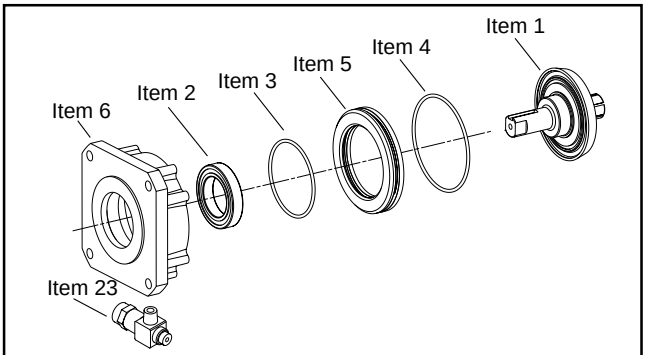

FIGURE 9

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

To order replacement parts, indicate servo brake model size, item number, item description and quantity. Replacement parts are available through your local Nexen Distributor.

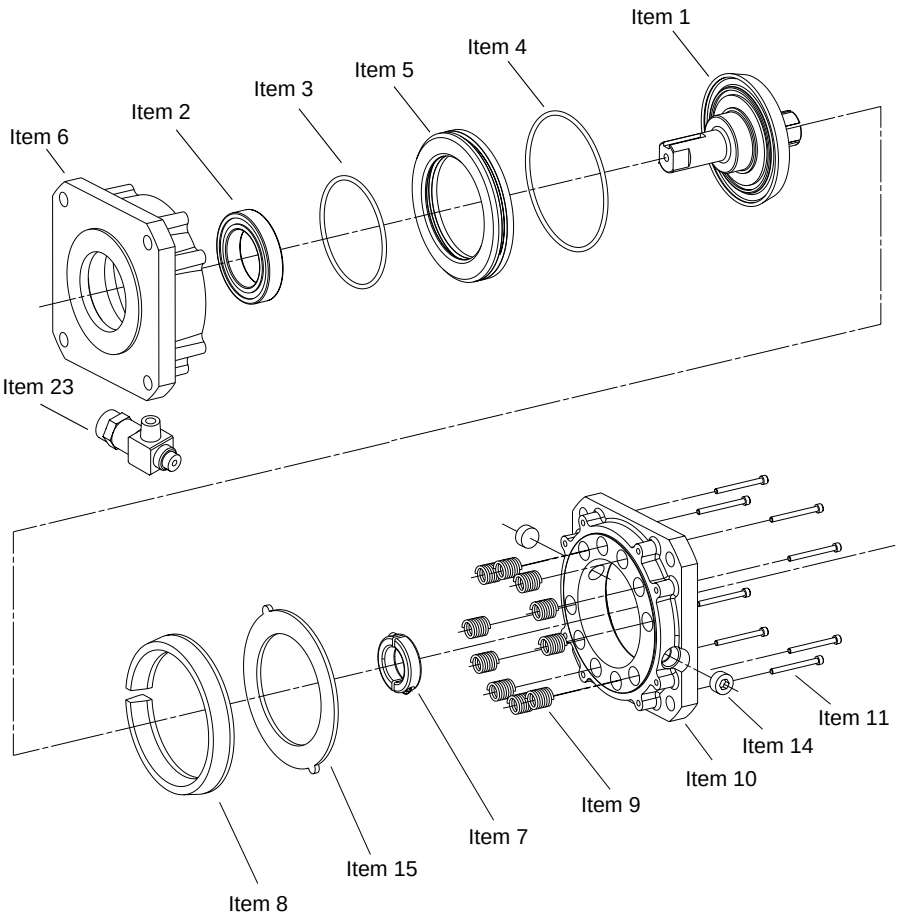

Figure 10

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	

SPECIFICATIONS

Size	Min Holding Torque	Max RPM	Torsional Rigidity	Inertia	Weight
7	125 N-m (1,100 in-lbs)	5000	54,772 N-m/Rad (40,390 ft-lb/Rad)	33.3 kg-cm^2 (0.0295 in-lb-s^2)	13.6 kg (30 lbs)
9	125 N-m (1,100 in-lbs)	5000	102,733 N-m/Rad (75,757 ft-lb/Rad)	34.5 kg-cm^2 (0.0305 in-lb-s^2)	16.1 kg (35.5 lbs)
11	125 N-m (1,100 in-lbs)	5000	211,695 N-m/Rad (15,6108 ft-lb/Rad)	36.5 kg-cm^2 (0.0323 in-lb-s^2)	28.5 kg (63 lbs)

WARRANTY

Warranties

Nexen warrants that the Products will be free from any defects in material or workmanship for a period of 12 months from the date of shipment. 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 of the Buyer for any breach of the warranties set out above will be, at the sole discretion of Nexen, a repair or replacement with new, serviceably used or reconditioned Product, or issuance of credit in the amount of the purchase price paid to Nexen by the Buyer for the Products.

Limitation of 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 images, 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.

Limitation of Damages

In no event shall Nexen be liable for any consequential, indirect, incidental, or special damages of any nature whatsoever, including without limitation, lost profits arising from the sale or use of the Products.

Warranty Claim Procedures

To make a claim under this warranty, the claimant must give written notice of the alleged defect to whom the Product was purchased from and deliver the Product to same within one year of the date on which the alleged defect first became apparent.

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