nexen®

AIR CHAMP® PRODUCTS

User Manual

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DAP-625S and DAP-875S

FORM NO. L-20078-B-0501

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

WARNING

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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INTRODUCTION

Read this manual carefully, making full use of its explanations and instructions. The “Know How” of safe, continuous, trouble-free operation depends on the degree of your understanding of the system and your willingness to keep all components in proper operating condition. Pay particular attention to all NOTES, CAUTIONS, and WARNINGS to avoid the risk of personal injury or property damage. It is important to understand that these NOTES, CAUTIONS, and WARNINGS are not exhaustive. Nexen cannot possibly know or evaluate all conceivable methods in which service may be performed, or the possible hazardous consequences of each method. Accordingly, anyone who uses a procedure that is not recommended by Nexen must first satisfy themselves that neither their safety or the safety of the product will be jeopardized by the service method selected.

Nexen’s DAP is a combination air actuated clutch and spring engaged brake. The unit’s brake remains engaged until air is applied to engage the clutch. Because of the internal construction of the DAP, overlap (simultaneous engagement of both clutch and brake) is impossible.

Nexen’s DAP is suited for mounting on standard NEMA "C" flange mounting faces such as reducer units and outputs, and motor flanges. An “L” shaped foot is also available for free standing applications.

INSTALLATION

MOUNTING ON MOTORS AND REDUCER OUTPUT SHAFTS

1. Position motor or reducer output shaft upward and insert Key (Item 31).
2. Rotate DAP keyway upward and slide unit approximately 1.5" [38.1 mm] onto the shaft.
3. Rotate entire unit to line up mounting holes in flanges.

NOTE: Observe location of air inlet and orientate to suit mounting requirements.

4. Push DAP all the way onto shaft until mounting flanges are flush.
5. Install four Cap Screws (Item 26) and Lockwashers (Item 20) and tighten securely.

MOUNTING ON REDUCER INPUT FLANGES

1. Position DAP output shaft upward and insert Key (Item 31) into keyway.
2. With keyway in reducer also pointing up, slide unit up to reducer flange.

NOTE: Observe location of air inlet and rotate unit to suit installation.

3. Install cap screws supplied with reducer and tighten until mounting faces are flush.

FOOT MOUNTING

1. Cradle output flange onto Nexen's "L" shaped foot.
2. Install four cap screws supplied with foot into output flange.
3. Mount DAP Clutch/Brake/Foot combination to machine frame.
4. Install sheaves, sprockets, or couplings onto unit's output shaft as required.

AIR CONNECTIONS

A typical control for the Nexen DAP is a Normally Closed (N.C.) 3-Way valve. When the valve is energized, the air supply engages the clutch portion of the DAP. When the valve is de-energized, air exhaust for the air chamber and engages the brake portion of the DAP.

For quick response, connect the valve as close to the DAP as possible. Use of a Nexen Quick Exhaust Valve, Product Number 9451 is recommended where long air lines are required.

NOTE: Air inlet is tapped 1/4 NPT.

Pneumatically actuated devices require clean, pressure regulated air for maximum performance and long life. Horton recommends the use of a filter, regulator, and lubricator in the air line ahead of the control valve.

NOTE: Check all air line connections for air leaks.

LUBRICATION

Pneumatically actuated devices require clean, pressure regulated, and lubricated air for maximum performance and long life. The most effective and economical way to lubricate the Nexen DAP is with an Air Line Lubricator, which injects oil into the pressurized air, forcing an oil mist into the air chamber.

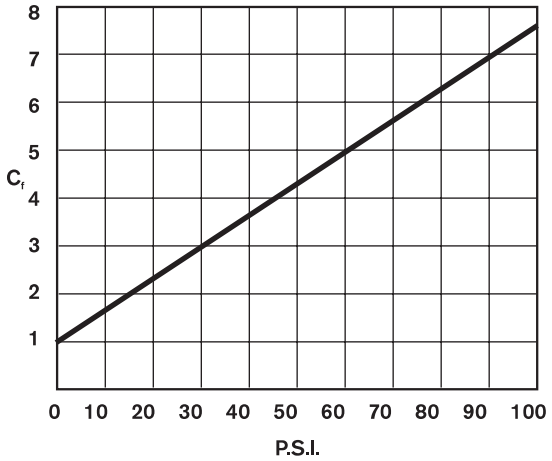
Locate lubricator above and within ten feet of the DAP, and use a low viscosity oil such as SAE-10.

NOTE: Synthetic lubricants are not recommended.

LUBRICATOR DRIP RATE SETTING

1. Determine C_F (See Table 1).

TABLE 1



2. Multiply C_F by the Average Air Chamber Volume to determine cu. in./min. (See Table 2 for Average Air Chamber Volume).

3. Divide cu. in./min. by 1728 to determine cu. ft./min.

   NOTE: Nexen recommends one drop of oil every 20 SCFM.

4. Divide twenty by the result of Step 3 to determine time in minutes between drops of oil formed in the Lubricator Sight Gauge.

TABLE 2

MODEL	V_N	V_O
DAP-625S	2.300	3.100
DAP-875S	2.300	3.100

V_N = Air Chamber Volume, in cubic inches with new facings.
V_O = Air Chamber Volume, in cubic inches with old facings.
Average Air Chamber Volume = $(V_N + V_O) / 2$

NOTE: DAP bearings are prelubricated and sealed and do not require periodic lubrication

OPERATION

Nexen's DAP Spring Engaged Brake remains engaged until air pressure is applied to activate the clutch. The brake releases at approximately 40 psi. The brake may also be released manually by alternately turning Set Screws (Item 24) clockwise until the Output Shaft (Item 1) rotates freely. To re-activate the brake, turn Set Screws (Item 24) counter clockwise until they are flush with the outside diameter of the Output Housing (Item 2).

NOTE: Nexen's DAP clutch begins to deliver torque at approximately 50 psi. Below 50 psi. the spring force of the brake overcomes the air cylinder thrust, therefore it is important to have pressure regulated air to the control valve.

MAINTENANCE

1. Periodically check air line connections and mounting bolts to make sure that they are tightened securely.
2. Inspect Friction Facings (Item 7) and replace when worn down to approximately 5/32 inch [3.9 mm] thick.

PARTS REPLACEMENT

NOTE: For repair convenience, Nexen's DAP separates into three major subassemblies: Output Housing/Shaft Assembly, Disc-Hub/Spring Assembly, and Input Housing/Friction Disc Assembly.

FRICTION FACING REPLACEMENT

1. Remove DAP from it's mounting.
2. Remove Cap Screws (Item 25) and Lockwashers (Item 19).
3. Remove Input Housing (Item 4) and Friction Disc Assembly (Item 11),
4. Remove Clutch Friction Facing (Item 7).
5. Clamp or bolt Spring Housing (Item 5) to Output Housing (Item 3).
   a. Apply a minimum of 50 psi. to disengage brake or turn Set Screws (Item 24) to manually release brake.
   b. Rotate Disc-Hub (Item 2), aligning brake facing screw clearance holes with each Machine Screws (Item 23).
   c. Remove Machine Screws (Item 23) and slide Friction Facing (Item 7) sections out of assembly.
6. Install new Clutch Friction Facing (Item 7).

O-RING REPLACEMENT

1. Slide Disc-Hub (Item 2), Spring Housing (Item 5), Piston (Item 6) and Bearing (Item 15) Assembly of Output Shaft Spline (Item 1).
2. Remove O-rings (Items 21 22).
3. Clean O-ring grooves and O-ring contact surfaces.
4. Lubricate O-ring grooves, O-ring contact surfaces, and new O-rings with O-ring lubricant.
5. Install New O-rings (Items 21 & 22).
6. Turn Set Screws (Item 24) clockwise until Push Rod (Item 30) is exposed.
7. Pull Push Rods out of sockets.
8. Remove O-rings (Item 29).
9. Clean O-ring Grooves and O-ring contact surfaces.
10. Lubricate O-ring grooves, O-ring contact surfaces, and new O-rings with O-ring lubricant.
11. Install new O-rings (Item 29).
12. Push Push Rods (Item 30) back into sockets.

BEARING REPLACEMENT

1. Press Friction Disc (Item 11) out of Bearing (Item 13).
2. Press Bearing (Item 13) out of Input Housing (Item 4).
3. Apply Loctite® to O.D. of new Bearing (Item 13) and press bearing into Input Housing (Item 4).
4. Fully supporting inner race of Bearing (Item 13), press Friction Disc (Item 11) into bearing.
5. Slide Pilot Bearing (Item 15) off Output Shaft (Item 1).
6. Remove Retaining Ring (Items 16 & 18).

WARNING

Special attention should be exercised when working with retaining rings. Always wear safety goggles when working with spring or tension loaded fasteners or devices.

7. Press Disc-Hub (Item 2) out of Bearing (Item 13).
8. Push Bearing (Item 13) out of Piston (Item 8).

   NOTE: At this point of disassembly, inspect Die Springs (Item 27) and replace if the Spring has taken a set. The optimum height for the spring is 1 $^{1}/_{4}$" [31.75 mm] $\pm$ $^{1}/_{16}$" [1.59 mm].

9. Apply Loctite® 601 to O.D. of Bearing (Item 15) and push bearing into Piston (Item 6).
10. Place Back-Up Washer (Item 9) on Piston (Item 6).
11. Install Springs (Item 27) into each socket of Spring Housing (Item 5) and set Back-Up Washer (Item 9) side of Piston (Item 8) on top of Springs (Item 27).
12. Fully supporting inner race of Bearing, press Disc-Hub (Item 2) into Bearing (Item 13).
13. Install Retaining Rings (Items 16 & 18).
14. Remove Retaining Rings (Items 15 & 17).

WARNING

Special attention should be exercised when working with retaining rings. Always wear safety goggles when working with spring or tension loaded fasteners or devices.

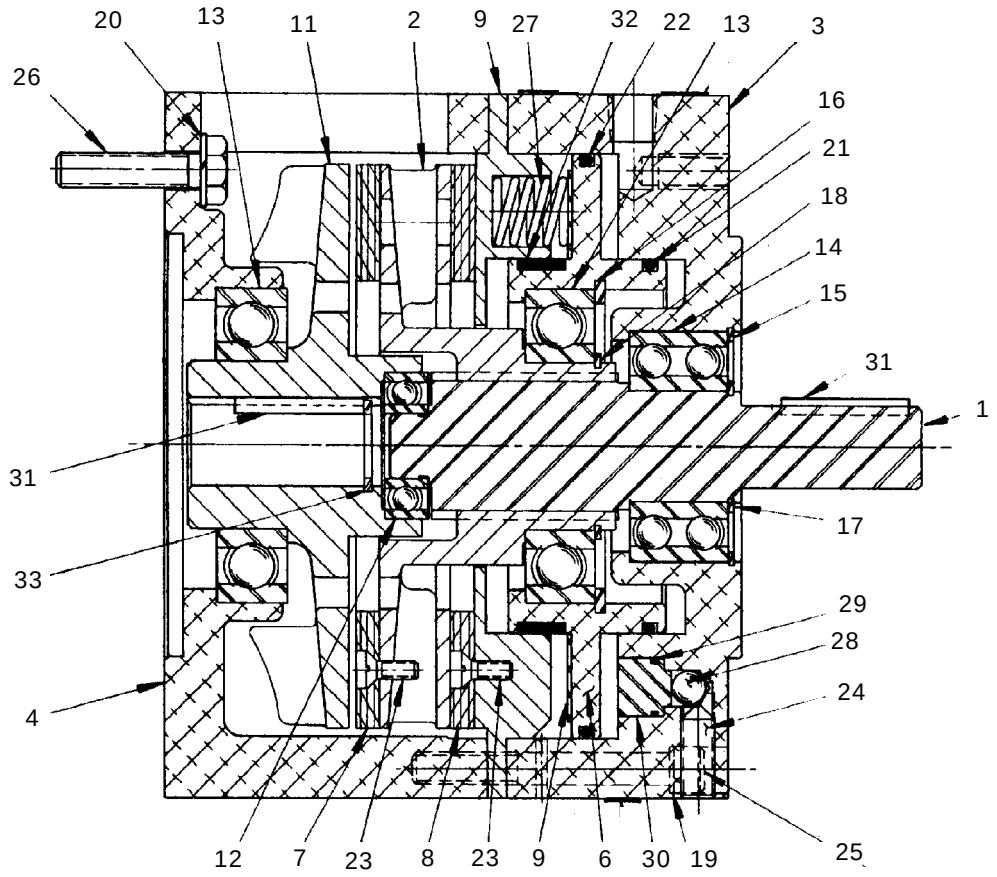
15. Press Output Shaft (Item 1) out of Bearing (Item 14).
16. Push Bearing (Item 14) out of Output Housing (Item 3).
17. Apply Loctite® 601 to O.D. of new Bearing (Item 14) and press bearing into Output Housing (Item 3).
18. Fully supporting inner race of Bearing (Item 14), press Output Shaft (Item 1) into bearing.
19. Install Retaining Rings (Items 15 & 17).
20. Push Disc-Hub/Spring Assembly over Output Shaft splines and into Output Housing (Item 3) of assembly.
21. Apply Loctite®601 to O.D. of Pilot Bearing (Item 12) and place bearing into counterbore of Friction Disc (Item 11).
22. Place Input Housing/Friction Disc Assembly onto Disc-Hub/Spring Housing/Piston Assembly.
23. Replace Cap Screws (Item 19) and Lockwashers (Item 25) and tighten securely.

REPLACEMENT PARTS

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.

PARTS LIST



ITEM	DESCRIPTION	QTY
1	Output Shaft	1
2	Disc-Hub	1
3	Output Housing	1
4	Input Housing	1
5	Spring Housing	1
6	Piston	1
7	Clutch Friction Facing	1
8	Brake Friction Facing	1
9	Spring Back-Up Washer	1
10	Guard Ring (Not Shown)	1
11	Friction Disc Assembly	1
12	Bearing	1
13	Bearing	2
14	Bearing	1
15	Retaining Ring	1
16	Retaining Ring	1
17	Retaining Ring	1

ITEM	DESCRIPTION	QTY
18	Retaining Ring	1
19	Lockwasher	4
20	Lockwasher	4
21	O-Ring (Small)	1
22	O-Ring (Large)	1
23	Machine Screw	12
24	Set Screw	2
25	Cap Screw	4
26	Cap Screw	4
27	Spring	6
28	Ball	2
29	O-Ring	2
30	Push Rod	2
31	Key	2
32	Wear Ring	1
33	Retaining Ring	1

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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Vadnais Heights, MN 55127

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