

nexen®

AIR CHAMP® PRODUCTS

User Manual



"DPC-9T"

Product No. 960223

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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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.

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ISO 9001 Certified

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INTRODUCTION

Nexen's "DPC-9T" is a dual friction plate clutch designed to mount on the motor shaft with a Browning S.T. (Split Taper) Bushing. The dual friction plate design eliminates thrust loading of bearings.

The inner and outer assemblies of the "DPC-9T" clutch rotate independently. The inner assembly rotates with the motor shaft. When the unit is engaged with air pressure the outer assembly becomes the driven member.

This manual provides necessary information for Installation, Operation, and Maintenance of your "DPC-9T." To obtain optimal performance, familiarize yourself with this manual and the procedures outlined in it. Pay particular attention to all NOTES, CAUTIONS, and WARNINGS to avoid the risk of personal injury or property damage.

WARNING

This unit has rotating parts. A guard that will not restrict the flow of cooling air around the unit must be used if the unit is installed in an area where injury to an operator could occur.

The user(s) of this equipment must comply with operating procedures and training of operating personnel as stated in the Occupation Safety and Health Act (OSHA) Standard (29 CFR 1910) Section 1910, 219-K.

INSTALLATION

1. Thoroughly inspect tapered bore of splined hub and tapered surface of Browning S.T. bushing. Remove any dirt, grease, or foreign material.

NOTE: Do not use lubricants when installing Browning S.T. bushing.

2. Install Browning S.T. bushing into tapered bore of splined hub.
3. Align key of Browning S.T. bushing with keyway of splined hub.

CAUTION: Do not strike Browning S.T. bushing to "SET" it in the tapered bore. An impact in the axial direction can cause brinelling of the radial bearing surfaces.

4. Loosely insert cap screws into Browning S.T. bushing and tapped holes of splined hub.

NOTE: Do not use lubricants or thread locking compounds on cap screws.

5. Measure run-out of motor shaft. Run-out must not exceed 0.002 T.I.R. (Total Indicator Reading).
6. Align key of Browning S.T. bushing with shaft keyway and slide "DPC-9T" onto motor shaft.
7. Alternately and evenly tighten Browning S.T. bushing cap screws to 16 ft-lb torque.

CAUTION: Do not over tighten Browning S.T. bushing cap screws. If excessive tightening torque is applied, bursting pressure is created in the splined hub.

NOTE: Run-out is minimized if a dial indicator is used as the Browning S.T. bushing cap screws are tightened. Place contact tip of dial indicator on back surface of Housing/Sheave Assembly to measure run-out. Run-out on this surface must be within 0.003 T.I.R. when Browning S.T. bushing cap screws are tightened to 8 ft-lb torque. (See Fig. 1).

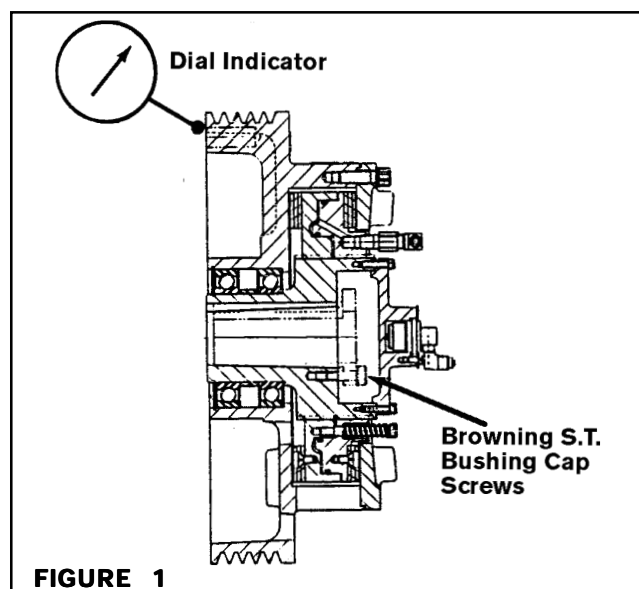


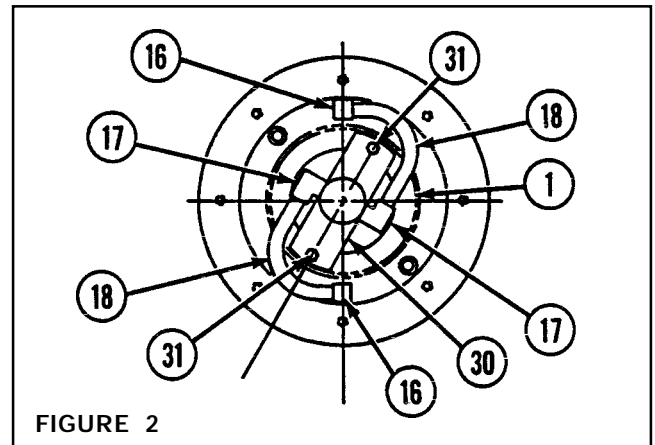
FIGURE 1

AIR CONNECTIONS

NOTE: Refer to Figure 2.

1. Install an Elbow Fitting (Item 17 into each port of the Rotary Air Union Bracket (Item 30).
2. Attach Hose Assembly (Item 18) to each Elbow Fitting (Item 16).
3. Attach Rotary Air Union Bracket (Item 30) to Splined Hub (Item 1), and tighten Cap Screws (Item 31) to 13 ft-lb torque.
4. Install an Adaptor Fitting (Item 18) from Rotary Air Union Bracket to air inlet elbow fittings.
5. Connect air supply to Rotary Air Union.

Do not use rigid pipe or tubing for this connection. For fast engagement and disengagement, connect air controls as close to "DPC-9T" as possible. Where long air lines are required, use a quick exhaust valve.



LUBRICATION

The most effective and economical way to lubricate the "DPC-9T" is with an air line lubricator. Available from Nexen, the lubricator injects oil into the pressurized air forcing a constant oil mist into the air chamber.

Lubricator drip rate is properly set when oil drops form in the sight gauge time the "DPC-9T" has completed approximately twenty cycles.

Locate lubricator above and within ten feet of "DPC-9T".

Use a low viscosity petroleum base oil such as SAE-10. Synthetic lubricants are not recommended.

For a "DPC-9T" that is cycled infrequently, apply two or three drips of oil into the air inlet every two weeks, or cycle unit approximately twenty times per week.

OPERATION

CAUTION: Prior to placing "DPC-9T" into service, verify that all Screws are secured to the proper tightening torque (See Table 1).

"DPC-9T" engages when air pressure is introduced into the Cylinder/Drive Disc. Air pressure pushes the cylinder/Drive Disc against the Flange Mount Disc and forces the Piston/Drive Disc in the opposite direction. This engages the Friction Facing with the friction surfaces of the Flange Mount Disc and Friction Disc. Torque is transmitted through the Cylinder/Drive Disc and Piston/Drive Disc splines to the Splined Hub attached to the shaft with the Browning S.T. bushing.

TABLE 1
Recommended Tightening Torques

Description	Tightening Torque
Shoulder Screw (Item 13)	9 ft-lb
Cap Screw (Item 12)	48 ft-lb
Cap Screw (Item 31)	13 ft-lb
Browning S.T. Bushing Cap Screws	8 ft-lb

Heat generated at the friction surface is dissipated by windage created by fins on the Flange Mount Disc and Friction Disc. When air is exhausted from the cylinder, return springs pull the piston to a disengaged position.

CAUTION: Never exceed recommended operating speeds (See Table 2).

TABLE 2
Maximum Operating Speeds

Maximum Operating Speeds	
Outer Assembly	2000 rpm
Inner Assembly	2500 rpm

WARNING

All parts of the "DPC-9T" rotate. A guard that will not restrict the flow of cooling air around the "DPC-9T" must be installed if the "DPC-9T" is installed in an area where injury to an operator could occur.

PARTS REPLACEMENT

CAUTION: Nexen's "DPC-9T" has been balanced at the factory. During disassembly, mark components with chalk alignment marks to insure correct alignment and balance as that "DPC-9T" is reassembled (See Fig. 3).

Table 3
Recommended Tightening Torques

Description	Tightening Torque
Shoulder Screw (Item 13)	9 ft-lb
Cap Screw (Item 12)	48 ft-lb
Cap Screw (Item 31)	13 ft-lb
Browning S.T. Bushing Cap Screws	8 ft-lb

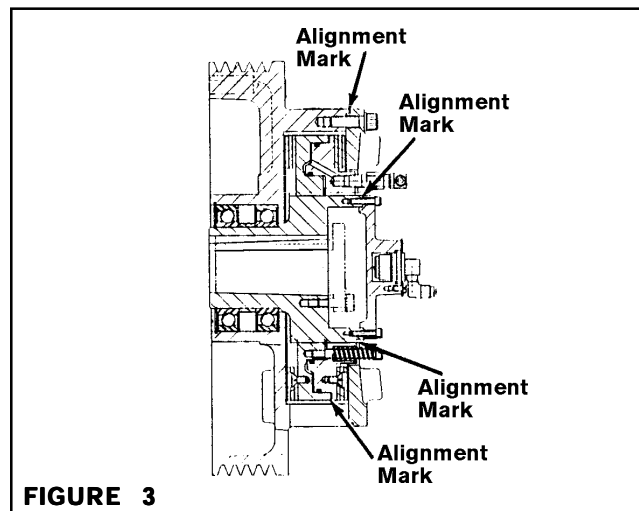


FIGURE 3

FRICION FACING

NOTE: Refer to Figure 4.

NOTE: Inspect Friction Facing for wear, and replace when they are approximately 9/32" thick. Friction Facings can be replaced without removing "DPC-9T" from motor shaft.

1. Disconnect air supply line and Hose Assemblies at Piston/Drive Disc Elbow Fittings.
2. Remove Cap Screws (Item 31) and Rotary Air Union Bracket Assembly (Item 30).
3. Remove Cap Screws (Item 12) and Lockwashers (Item 6) from Friction Disc (Item 7).
4. Remove Friction Disc (Item 7).
5. Remove Shoulder Screws (Item 13) and Springs (Item 14).
6. Slide Piston/Drive Disc (Item 2) off Splined Hub (Item 1).
7. Remove Retaining Ring (Item 10).

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.

8. Slide Cylinder/Drive Disc (Item 3) off Splined Hub (Item 1).

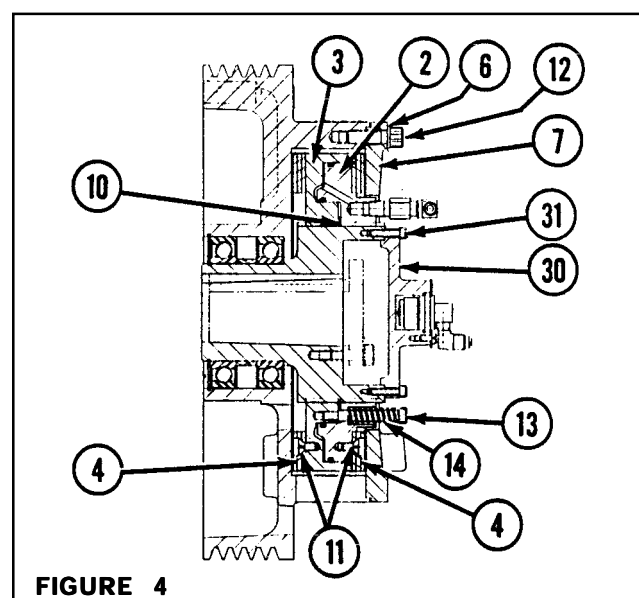


FIGURE 4

9. Remove Machine Screws (Item 11) and replace worn Friction Facings (Item 4).

NOTE: On some models of the "DPC-9T" the Machine Screws (Item 11) are assembled with a green anaerobic thread locking compound. If removal is difficult, strike the end of screwdriver with a hammer to break crystalline structure of locking compound before attempt to remove screws. Machine Screws (Item 11) furnished with new Friction Facings have a locking patch and do not require the use of a thread locking compound.

10. Reverse Steps 1 through 8 to reassemble the "DPC-9T" noting chalk alignment marks, and tighten all screws to torque recommended in Table 3.

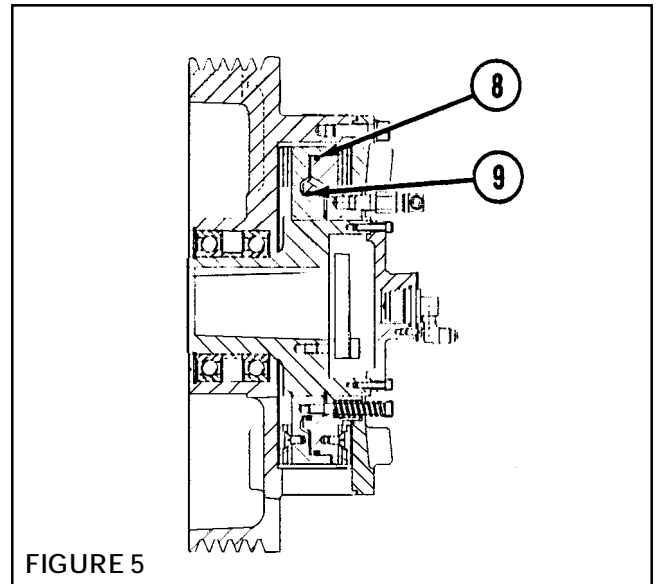
PARTS REPLACEMENT (continued...)

O-RINGS

NOTE: Refer to Figure 5.

NOTE: Replace O-rings (Items 8 & 9) if there are noticeable air leaks, or if there is a loss of torque.

1. Proceed with Steps 1 through 8 for Friction Facing replacement.
2. Remove O-rings (Items 8 & 9) and clean o-ring contact surfaces.
3. Lubricate O-rings (Items 8 & 9) and o-ring contact surfaces with o-ring lubricant.
4. Reverse Step 1 to reassemble the "DPC-9T" noting chalk alignment marks, and tighten all screws to torque recommended in Table 3.



BEARINGS

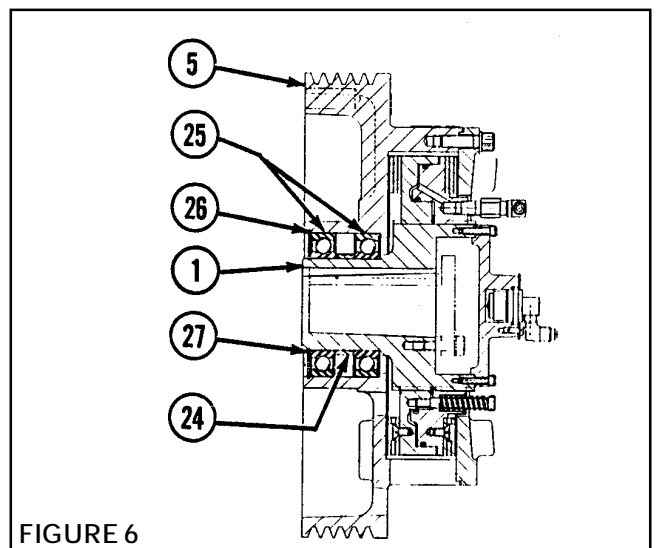
NOTE: Refer to Figure 6.

NOTE: "DPC-9T" bearings are pre-lubricated, sealed, and do not require further lubrication.

1. Proceed with Steps 1 through 8 for Friction Facing replacement.
2. Loosen Browning S.T. bushing.
 - a) Remove Browning S.T. bushing Cap Screws
 - b) Insert Browning S.T. bushing Cap Screws into bushing removal holes and progressively tighten each one until Splined Hub (Item 1) is loose on Browning S.T. bushing.
3. Remove "DPC-9T" from motor shaft.
4. Remove Retaining Ring (Item 27).

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.



8. Clean bearing contact surfaces of Housing/Sheave Assembly (Item 5) and Splined Hub (Item 1) with safety solvent.

9. Push first new bearing into Housing/Sheave Assembly (Item 5).

NOTE: When installing new bearings, carefully align bearing O.D. with Housing/Sheave Assembly bore.

5. Fully supporting Housing/Sheave Assembly (Item 5), press Splined Hub (Item 1) out of Bearings (Item 25).
6. Remove Retaining Ring (Item 26).
7. Using a bearing puller, remove Bearings (Item 25) and Spacer (Item 24) from Housing/Sheave Assembly (Item 5).
10. Install Spacer (Item 24).
11. Push second new Bearing into Housing/Sheave Assembly (Item 5).
12. Reverse Steps 1 through 6 to reassemble the "DPC-9T" noting chalk alignment marks, and tighten all screws to torque recommended in Table 3.

REPLACEMENT PARTS

The Item Number or "Balloon" Number or all Nexen products is used for part identification on all Parts List, Product Price List, and Unit Assembly Drawings, as well as Bills of Materials, and Instruction Manuals.

When ordering replacement parts, specify the model designation, item number, part description, and quantity.

Purchase replacement parts through you local Nexen Distributor

PARTS LIST

Item	Description	Quantity
1	Splined Hub	1
2	Piston Drive Disc	1
3	Cylinder Drive Disc	1
4	Friction Facing	2
5	Sheave/Housing	1
6	Lockwasher	6
7	Friction Disc	1
8	O-ring Seal	1
9	O-ring Seal	1
10	Retaining Ring	1
11	Screw (flat head)	12
12	Cap Screw	6
13	Shoulder Screw	4
14	Compression Spring	4
15	Rotary Air Union Assembly	1
16	Housing (Restrictor Valve)	2
17	Elbow Fitting 90°	4
18	Hose Assembly (not shown)	2
24	Spacer	1
25	Bearing	2
26	Retaining Ring	1
27	Retaining Ring	1
30	Bracket-Air Union	1
31	Cap Screw	2
35	Screw (pan head)	3
36	O-ring Seal	1
37	Washer-Retaining	1

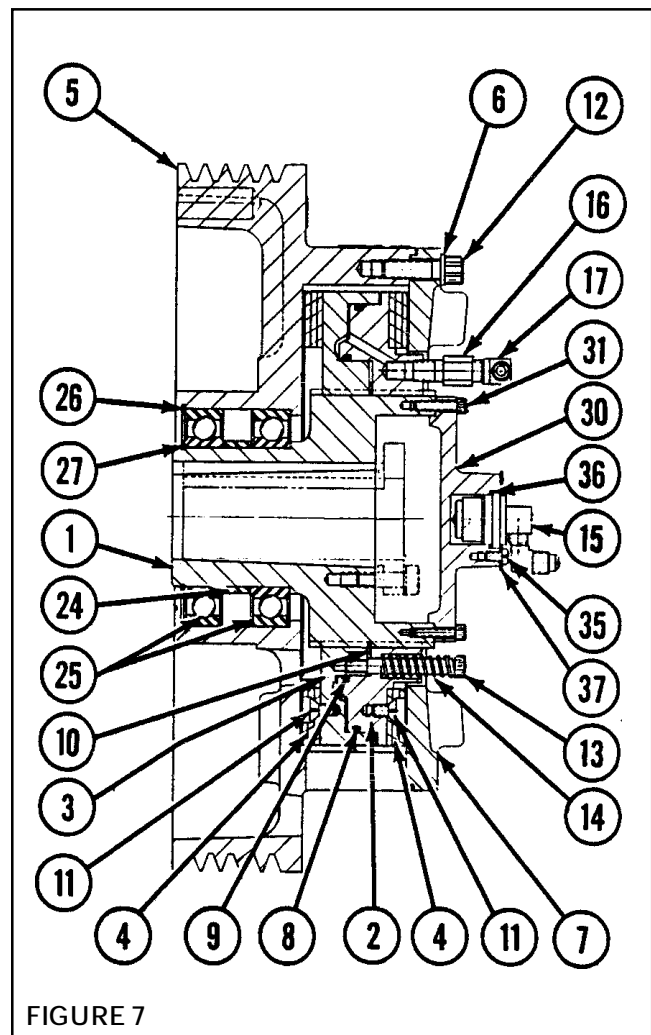


FIGURE 7

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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