FORM NO. L-20069-D-0999

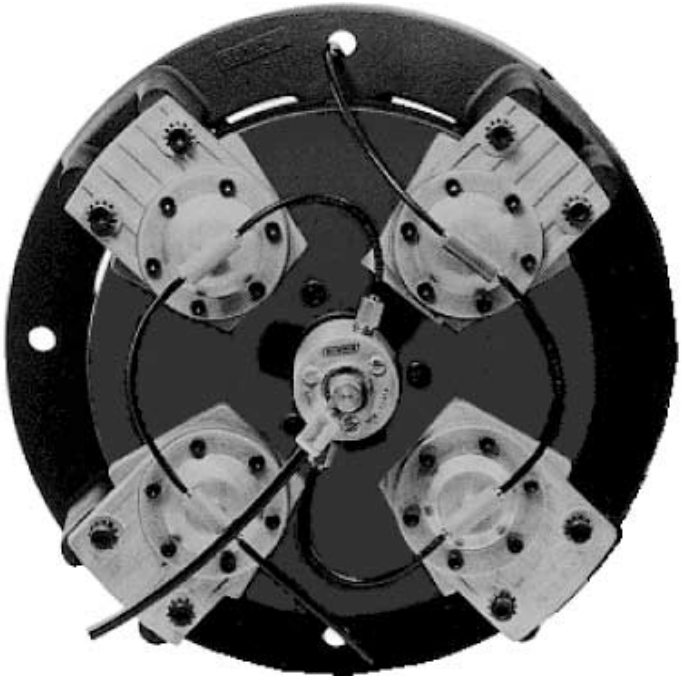
nexen™

formerly Horton Industrial Products

"Air Champ" ®

TENSION CONTROL CLUTCHES
TCC-10, TCC-14 and TCC-20

INSTALLATION, OPERATION AND MAINTENANCE GUIDE



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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ISO 9001 Certified

CAUTION

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 cause an interruption in service.

Comply with all applicable codes.

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-NOTES-

CALIPERS AND HOUSING ASSEMBLY

NOTE: Refer to Figures 1 - 5

1. Drill a 37/64" diameter hole 1" deep and tap 5/8-18 UNF-2A by 25/32" deep into the end of the shaft. Install a Rotary Air Union into the shaft.

NOTE: Nexen recommends using a Nexen Rotary Air Union, part number 835139.

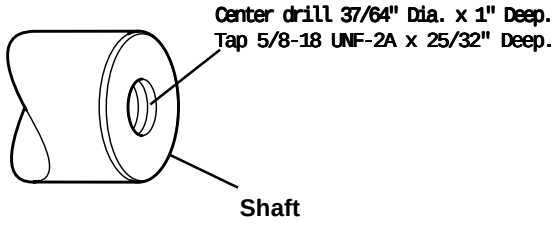

FIGURE 1

2. Use customer supplied cap screws to fasten the customer supplied sheave or sprocket to the pilot diameter of the Housing (Item 8).

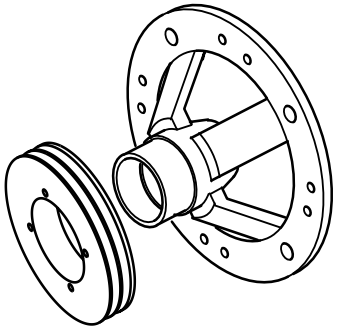
FIGURE 2

3. Install either an Elbow Fitting (Item 15) or a Tee Fitting (Item 16), as required, on each caliper half.

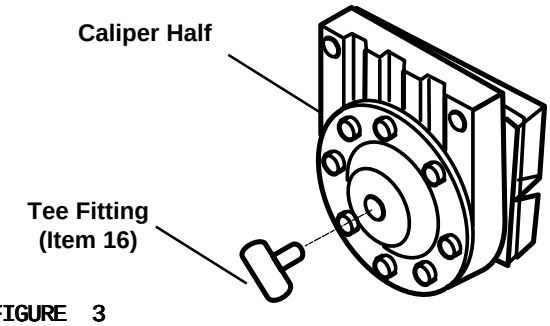

FIGURE 3

4. Install a Friction Facing (Item 9) on each caliper half and secure it with the enclosed Machine Screw (Item 10). Tighten the Machine Screw to 18-19 In. Lbs. [2.0-2.1 N•m].

NOTE: Internal springs return the Caliper piston to the disengaged position to guarantee clearance between Friction Facing and Rotor when no air pressure is applied. The use of this spring is optional; the low air pressure setting is more sensitive without the springs. To remove the spring, refer to the Replacement Parts List, page 9.

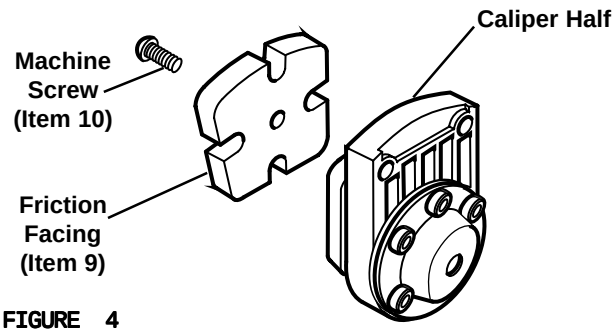

FIGURE 4

5. Mount the Friction Facing and Caliper assembly on the Housing (Item 1) as directed in either the Straight Bore Rotor Hub assembly instructions or the Taper Bore Rotor Hub assembly instructions.

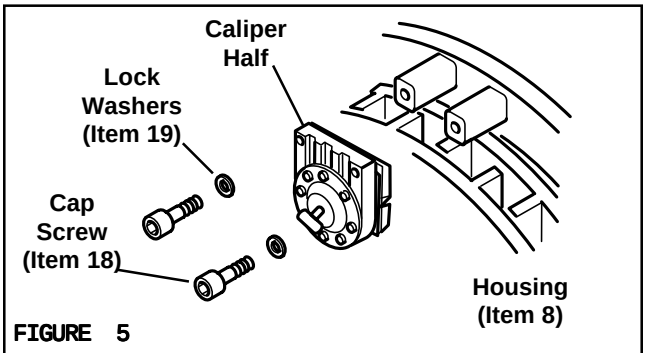

FIGURE 5

STRAIGHT BORE ROTOR HUB ASSEMBLY

Please Verity that you are in the correct rotor section for your model. This is the Straight Bore Rotor Hub instruction section. The instructions for the Taper Bore Rotor Hub are on page 3.

NOTE: Refer to Figure 6

1. Slide the Housing Assembly on to the shaft and tighten the Set Screw (Item 26) to the torque recommended in Table 1.

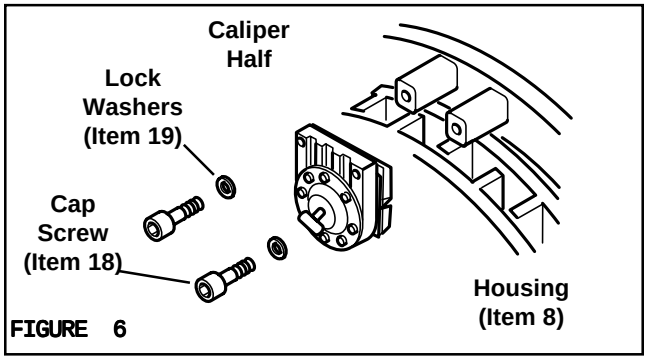

FIGURE 6

2. Align the Key (Item 6) with the Hub keyway and slide the Hub and Rotor assembly (Items 1-5) onto the shaft. Insert the Key (Item 6) into the keyway.

4. Tighten the Set Screw (Item 7) on the Hub (Item 1) to the recommended torque (See Table 1).

DESCRIPTION	TCC-10	TCC-14	TCC-20
Set Screw (Item 7) on Rotor	23 Ft. Lbs. [31.0 N•m]	50 Ft. Lbs 67.5 N•m]	166 Ft. Lbs. [224.0 N•m]
Set Screw (Item 26) on Housing	23 Ft. Lbs. [31 N•m]	50 Ft. Lbs. [67.5 N•m]	166 Ft. Lbs. [224.0 N•m]
Cap Screw (Item 18) on Caliper	27 Ft. Lbs. [36.4 N•m]	27 Ft. Lbs. [36.4 N•m]	27 Ft. Lbs. [36.4 N•m]

TABLE 1
TIGHTENING TORQUES

5. Use the Cap Screws (Item 18) and the Lock Washers (Item 19) to fasten one-half of the Caliper and Friction Facing assembly to the flange side of the Housing (Item 8) at each caliper position. Tighten the Cap Screws to 7 Ft. Lbs. [9.5 N•m]

NOTE: Allow 1/16" [16 mm] clearance between the friction facings and the Rotor Disc (Item 2).

Q.D. (TAPER BORE) ROTOR HUB ASSEMBLY

Please Verity that you are in the correct rotor section for your model. This is the Q.D Taper Bore Rotor Hub instruction section. The instructions for the Straight Bore Rotor Hub are on page 2.

NOTE: Refer to Figures 7 -8

1. Thoroughly inspect the tapered bore of the splined hub and the tapered surface of the Q.D. bushing. Remove any dirt, grease, or foreign particles. Do not use any lubricants for this installation. Align the untapped holes in the bushing with the tapped holes in the hub and assemble the Q.D. bushing into the splined hub.

2. Insert the pull-up bolts with Lock Washers into the Q.D. bushing and hub and then alternate as you tighten them evenly to the recommended torque (See Table 2).

WARNING

Do not use lubricants or thread locking compounds on these bolts or they may tighten beyond the limits noted in Table 2 and the splined hub may burst.

3. Place the Key in the shaft keyway, slide the rotor assembly onto the motor shaft.

4. Alternate as you evenly tighten the pull-up bolts to the recommended torque (See Table 2).

WARNING

The tightening force on the pull-up bolts is multiplied by the wedging action of the tapered surface. Do not tighten beyond the limits noted in Table 2 or the splined hub may burst.

5. Use a Dial Indicator to minimize run-out as you tighten the Q.D. bushing pull-up bolts. To measure run-out, place the contact tip of the Dial Indicator on the machined surface of the Rotor. Maximum run-out must be less than 0.007" [18 mm]. Refer to Figure 2.

6. Use the Cap Screws (Item 18) and the Lock Washers (Item 19) to fasten one-half of the Caliper and Friction Facing assembly to the flange side of the Housing (Item 8) at each caliper position. Tighten the Cap Screws to 7 Ft. Lbs. [9.5 N•m]

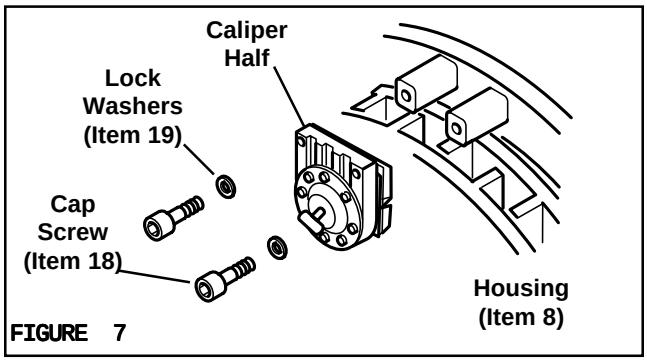

FIGURE 7

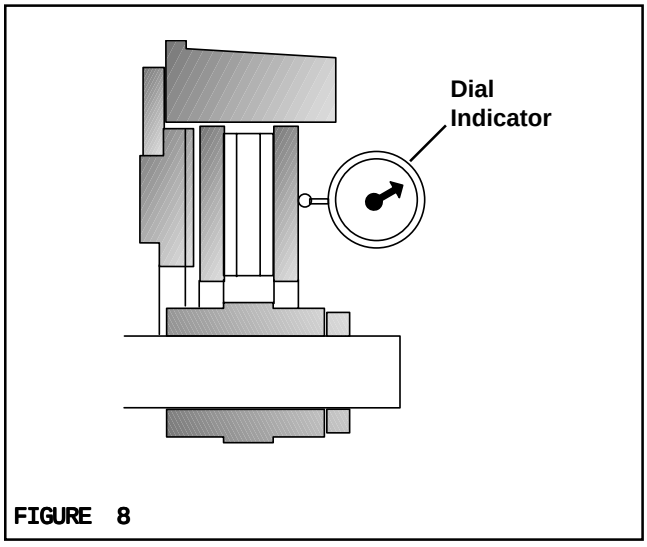

FIGURE 8

MODEL	BUSHING	TIGHTENING TORQUE
TCC-10	JA	5 Ft. Lbs. [6.7 N•m]
TCC-14	SK	15 Ft. Lbs. [20.2 N•m]
TCC-20	J	135 Ft. Lbs. [182.2 N•m]

TABLE 2
Q.D. BUSHING SPECIFICATIONS

FRICTION FACINGS AND CALIPER ASSEMBLY

NOTE: Refer to Figures 9 - 10

1. Place a 1/16" [1.6 mm] shim between the friction facings and the Rotor Disc (Item 2). As you rotate the Rotor Disc past each caliper, check for equal clearance at all positions.

2. Use the Machine Screw (Item 10) to secure the Friction Facing to the caliper and install a Friction Facing (Item 9) onto each remaining caliper half. Tighten the Machine Screw to 18-19 In. Lbs. [2.0-2.1 N•m].

3. Use Lock Washers (Item 19) and Socket Head Cap Screws (Item 18) to attach the caliper halves at each caliper position. Tighten the Socket Head Cap Screws to 7 Ft. Lbs. [9.5 N•m].

4. Install a Tee Fitting (Item 16) or an Elbow Fitting (Item 15) into each remaining caliper half.

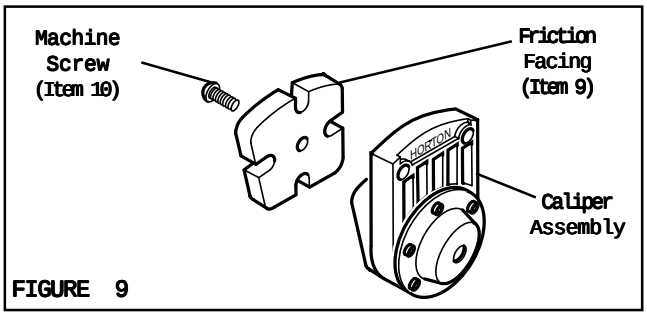

FIGURE 9

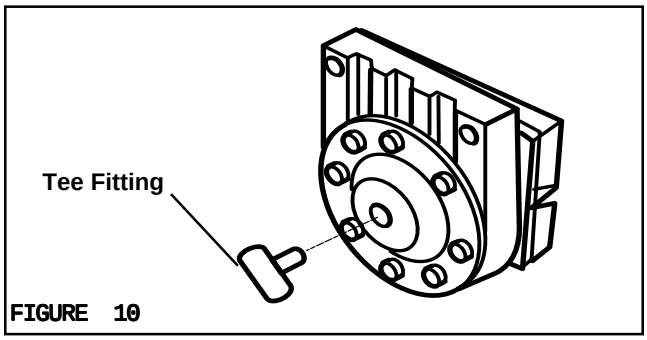

FIGURE 10

AIR CONNECTIONS

Use the length of 5/32" [4 mm] O.D. nylon air line **air line that is supplied to make the connections between the calipers.** (See Table 3 for air line specifications).

NOTE: Refer to Figures 11 - 12

1. Screw the Rotary Air Union assembly into the shaft end (See Figure 4).

2. **Install the air line by pushing it into the fitting until it stops. The Elbow and Tee Fittings (Items 15 and 16) are push-lock fittings for instant connection and disconnection. To disconnect, first push the fitting collar in and then pull the air line out. Make certain that all fittings are properly tightened**. Each caliper comes with one elbow fitting, two tee fittings, and 13.5" [34.3 cm] of air line.

NOTE: Not all of the fittings are used to make caliper connections. Save the extra fittings for replacement parts.

2. Route the air lines from the Rotary Air Union to the individual caliper assemblies (See Figure 4).

WARNING
Air lines must be the same length for the clutch to balance properly.

O.D.	I.D	MINIMUM BEND RADIUS	BURST PRESSURE	MATERIAL
0.1560 [4 mm]	0.106. [2.7 mm]	3/4" [19 mm]	1000 psi @ 75 oF	Nylon-11

TABLE 3
AIRLINE SPECIFICATIONS

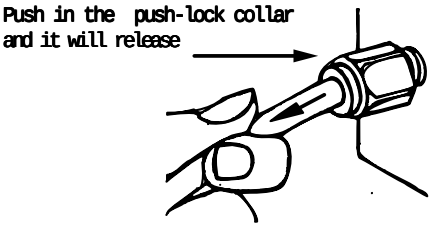

FIGURE 11

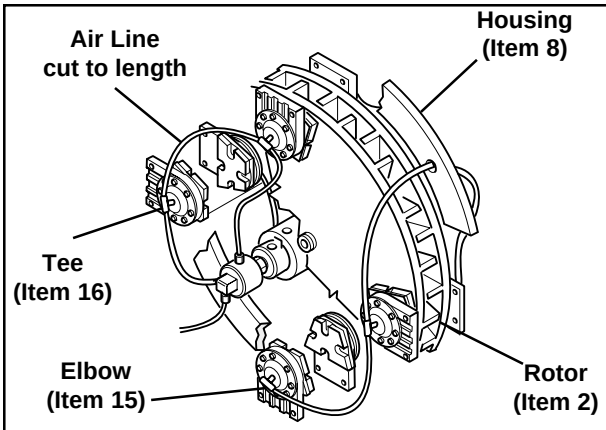

FIGURE 12

OPERATION

WARNING
DO NOT exceed maximum operating speed. (See Table 4). If you exceed the maximum operating speed, you make decrease the performance and the life of the Tension Control Clutch, or damage the Tension Control Clutch

Check all screws and fasteners for proper tightening torque BEFORE operating the unit. (See Table 5). Overtightening tightening can cause the screws and fasteners to fail. Under-tightening can reduce the performance of the Tension Control Clutch.

For optimum clutch action, connect the controls as close to the unit as possible. Nexen recommends the installation of an air line filter in the air line ahead of the controls.

For automatic tension control, use Nexen's Electronic Tension Control System. Contact your local Nexen Web Handling distributor or representative for information concerning this product.

MODEL	RPM
TCC-10	1500
TCC-14	1200
TCC-20	900

TABLE 4
OPERATING SPEED

DESCRIPTION	TIGHTENING TORQUE
Set Screw (Item 7)	23 Ft. Lbs. [35.0 N•m]
Set Screw (Item 26)	23 Ft. Lbs. [35.0 N•m]
Socket Head Cap Screw (Item 18)	27 Ft. Lbs. [36.4 N•m]

TABLE 5
SCREW AND FASTENER TORQUE

LUBRICATION

DO NOT lubricate the caliper diaphragms. If you use a lubricant on the air line for the controls, use a lubricant that is compatible with the silicone diaphragm. The bearings (Item 23) in the housing assembly are factory lubricated and sealed. They do not require any further lubrication.

MAINTENANCE

Inspect all cap screws and set screws on a regular basis and make sure they are tightened to the recommended torque. Inspect the friction facings regularly and replace them when worn to approximately 5/32" [4 mm] thick.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	SOLUTION
Failure to engage.	Air not getting to TCC Clutch. Low air pressure. Control malfunction	Check for control valve malfunction or low air pressure. Check controls.
Failure to disengage.	Unexhausted air. Control malfunction.	Check for control valve malfunction. Check Controls.
Loss of torque.	Air leak.. Friction facing contamination.. Low air pressure. Worn friction facings.	Check for air leaks. Check air pressure. Replace facings.
Friction Facing squeal or chatter.	Air pressure too high. Wrong friction facing for application.	Reduce air pressure. Check friction facing.
Noise (other than facing squeal).	Bearing failure. Loose fasteners.	Replace bearings. Tighten fasteners.
Wobble or vibration.	Improper mounting. Faulty shaft.	Remount unit. Replace shaft.

FRICTION FACING REPLACEMENT

1. Stop the machine and shut off air supply to the unit.
2. Remove the Socket Head Cap Screws (Item 18) and the Lock Washers (Item 19).
3. Remove the Caliper Assembly from the Housing (Item 8).
4. Remove the Machine Screw (Item 10) from back of the Caliper Assembly and remove the Friction Facing (Item 9).
5. Install the new Friction Facing (Item 9) and secure it to the Caliper Assembly with the Machine Screw (Item 10). Tighten the Machine Screw to 18-19 In. Lbs. [2.0-2.1 N•m].
6. Place the Caliper Assembly in position and secure it to the Housing with Socket Head Cap Screws (Item 18) and Lock Washers (Item 19).
7. Tighten the Socket Head Cap Screws to 27 Ft. Lbs. [36.4 N•m] torque.

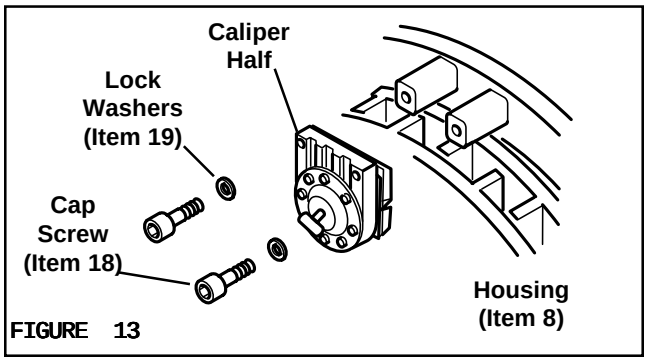

FIGURE 13

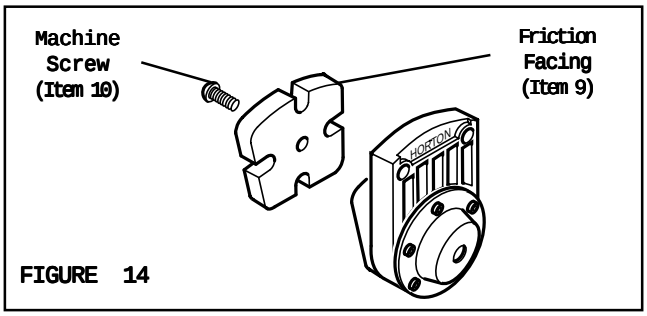

FIGURE 14

AIRLINE REPLACEMENT

1. To disconnect an air line, first push the fitting collar in and then pull the air line out.
2. To install a new air line, push the air line into the fitting until it stops.

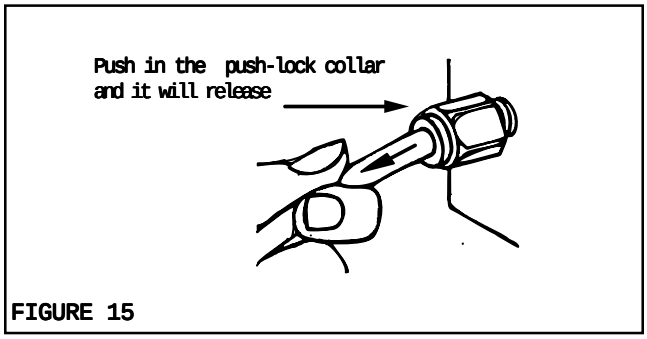

FIGURE 15

DIAPHRAGM REPLACEMENT

1. Disconnect the air line.
2. Remove the Socket Head Cap Screws (Item 18) and Lock Washers (Item 19) (See Figure 5).
3. Remove the Caliper Assembly from the Housing.
4. Remove six Cap Screws (Item 20) and the Cover (Item 13) from the Cylinder (Item 11) (See Figure 8).
5. Remove the Diaphragm (Item 14) (See Figure 8).

NOTE: Internal Compression Springs (Item 41) may also be removed at this time. These springs are optional; the low air pressure setting is more sensitive without the springs (See Figure 8).

6. Reinsert the new Diaphragm (Item 14) and reassemble the Caliper.
7. Tighten the Cap Screw (Item 40) to 22 Ft. Lbs. [29.6 N•m] and the Cap Screw (Item 20) to 5.5 Ft. Lbs. [7.4 N•m] torque.

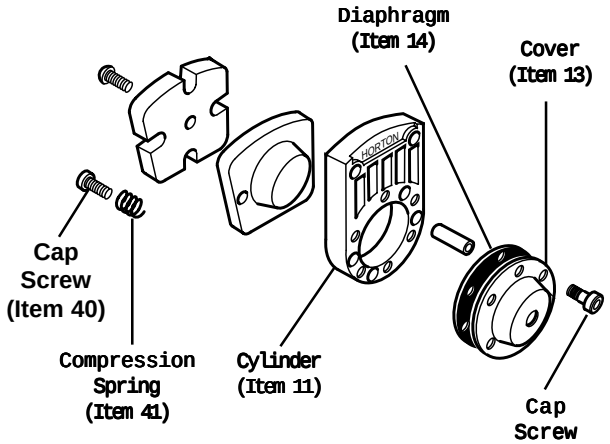

FIGURE 16

BEARINGS REPLACEMENT

1. Stop the machine and shut off the air supply to the Tension Control Clutch.
2. Remove the Tension Control Clutch.

NOTE: To remove the Q.D. bushing, remove the Cap Screws; then, reinsert them into the threaded holes and tighten them to push the Rotor off the Q.D. bushing.

3. Remove all the caliper assemblies and air lines from the housing assembly.
4. Remove the Retaining Ring (Item 24) from the Hub (Item 30).

WARNING
The Retaining Ring is tension loaded. Remove with care. Wear safety goggles

5. Fully support the Housing (Item 8), then press the Hub (Item 30) out of the Bearings (Item 23).
6. Use a bearing puller to remove the Bearings (Item 23) from the Housing (Item 8).
7. Clean the bore of the Housing (Item 8) with fresh safety solvent. Make sure that all of the old Loctite® residue is removed.
8. Apply Loctite® 680, or equivalent, to the outer race of the new bearing and press the bearings into the Housing.

NOTE: Carefully align the bearing O.D. with the Housing bore when you install the bearings .

9. Support the bearing inner race then press the Hub (Item 30) into the Housing (Item 8).
10. Reinsert the Retaining Ring (Item 24).
11. Reinstall the Tension Control Clutch

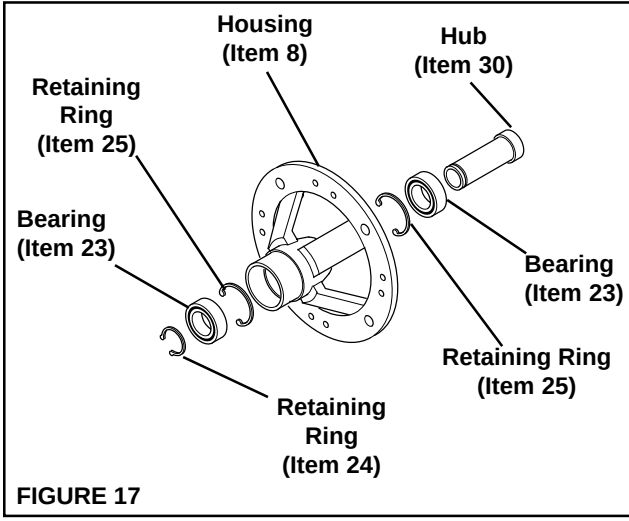

FIGURE 17

REPLACEMENT PARTS LIST

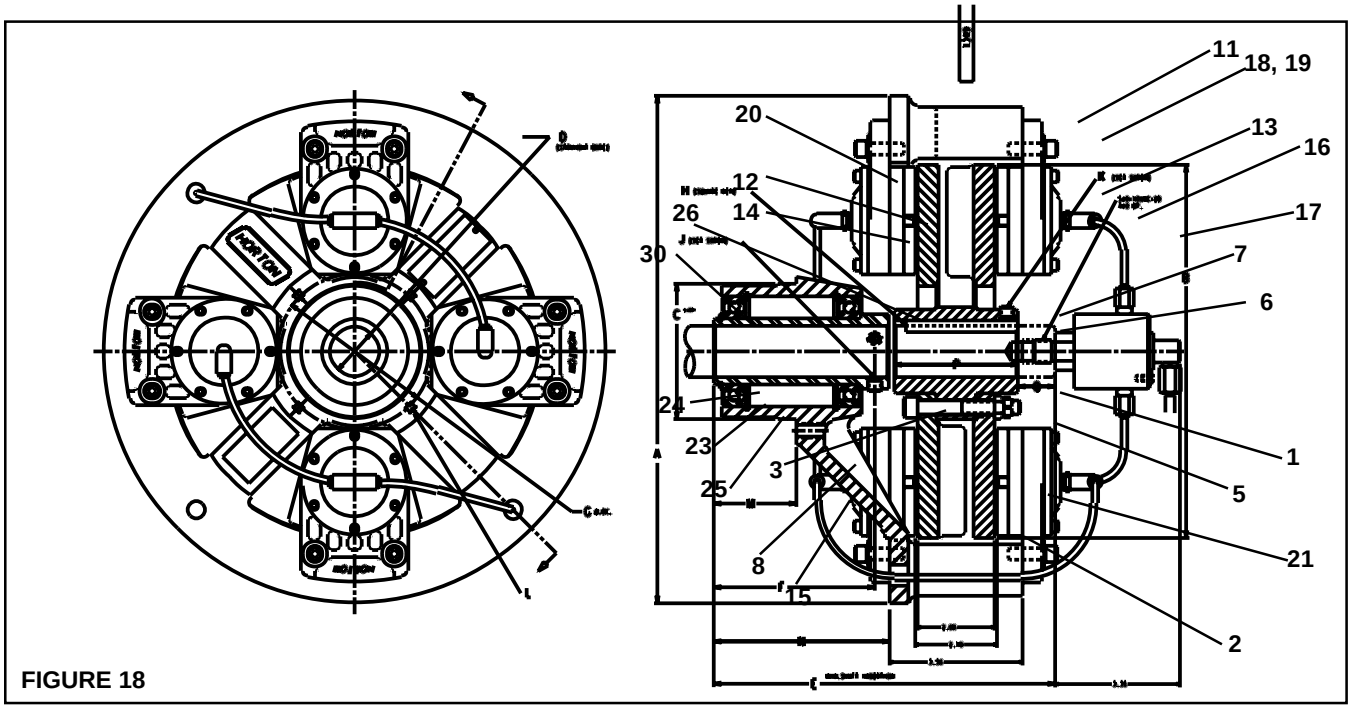

FIGURE 18

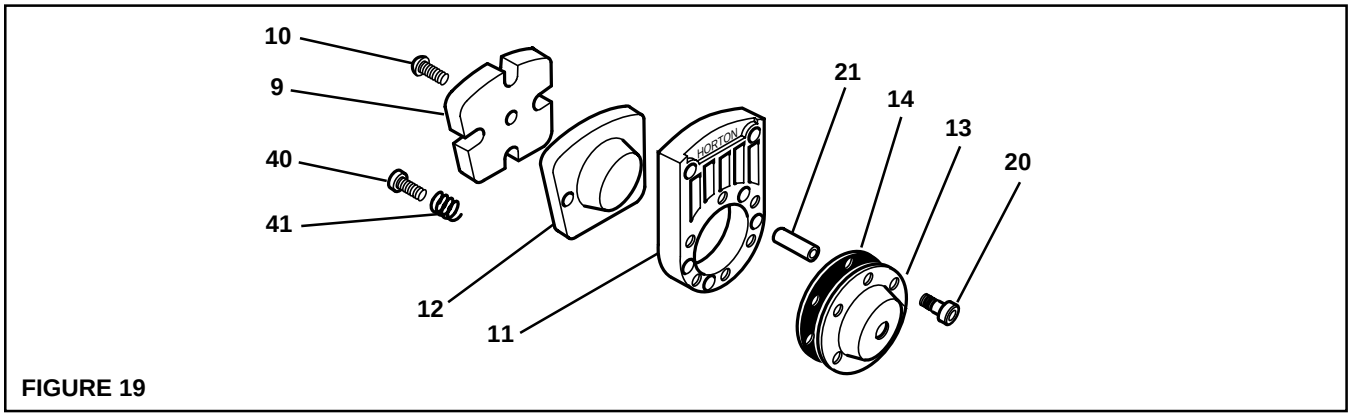

FIGURE 19

HUB

ITEM	DESCRIPTION	QTY
1	Hub[1]	1
2	Rotor Disc	2
3	Cap Screw	3
5	Nut, Hex.	3
6	Key, Square	1
7	Set Screw	2

[1] Specify taper or straight bore. Give diameter of straight bore.

HOUSING

ITEM	DESCRIPTION	QTY
8	Housing	1
23	Bearing	2
24	Retaining Ring	1
25	Retaining Ring	2
26	Set Screw	3
30	Hub	1

CALIPER

ITEM	DESCRIPTION	QTY
9	Friction Facing	1
10	Machine Screw	1
11	Cylinder	2
12	Piston	2
13	Cover	2
14	Diaphragm	2
15	Elbow Fitting, 90 degree	1
16	Tee Fitting	2
17	Air Line	13 1/2"
18	Socket Head Cap Screw	4
19	Lock Washer	4
20	Cap Screw	12
21	Spring Pin	4
40	Cap Screw	4
41	Compression Spring	4

ACCESSORIES

Friction Facing Kits

The Friction Facing kit contains two friction facings of the specific coefficient of friction listed below. One facing kit is required per Caliper Assembly.

COEFFICIENT	DESCRIPTION	PRODUCT NUMBER
.20	LOCO	835113
.35	STD.	835112
.45	HICO	835111

TABLE 6

NOTE: Caliper Assemblies and Friction Facing Kits are common to all Tension Control Clutch models. When ordering replacement kits, specify one Caliper Assembly and Friction Facing Kit for each caliper position.

WARRANTY

Nexen Group, Inc. (Nexen) warrants its product(s) [the Product(s)] will be free from defects in materials and workmanship under normal use and service conditions for a period of 12 months from the date of shipment. NO OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY, OR OF FITNESS FOR A PARTICULAR PURPOSE, ARE GIVEN, AND ALL SUCH OTHER WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED.

Conditions
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) the claimant has complied with the warranty claim procedures set out below in Warranty Claim Procedures.

Exclusive Remedy
The sole and exclusive remedy for a breach of this warrant shall be, at Nexen's sole election, repair or replacement with new, serviceably used or reconditioned Product, or issuance of a credit in the amount of the current Nexen discounted price for the Product.

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 Nexen and deliver the Product to Nexen within one year of the date on which the alleged defect first became apparent.

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