

DBB 8110



Warning

Forward this manual to the person responsible for Installation, Operation and Maintenance of the product described herein. Without access to this information, faulty Installation, Operation or Maintenance may result in personal injury or equipment damage.

Installation, Operation and Maintenance of Airflex[®] Model DBBS Brake Assemblies



Caution:

Use Only Genuine Airflex[®] Replacement Parts

The Airflex Division of Eaton Corporation recommends the use of genuine Airflex replacement parts. The use of non-genuine Airflex replacement parts could result in substandard product performance, and may void your Eaton warranty. For optimum performance, contact Airflex:

In the U.S.A. and Canada: **(800) 233-5890**
Outside the U.S.A. and Canada: **(216) 281-2211**

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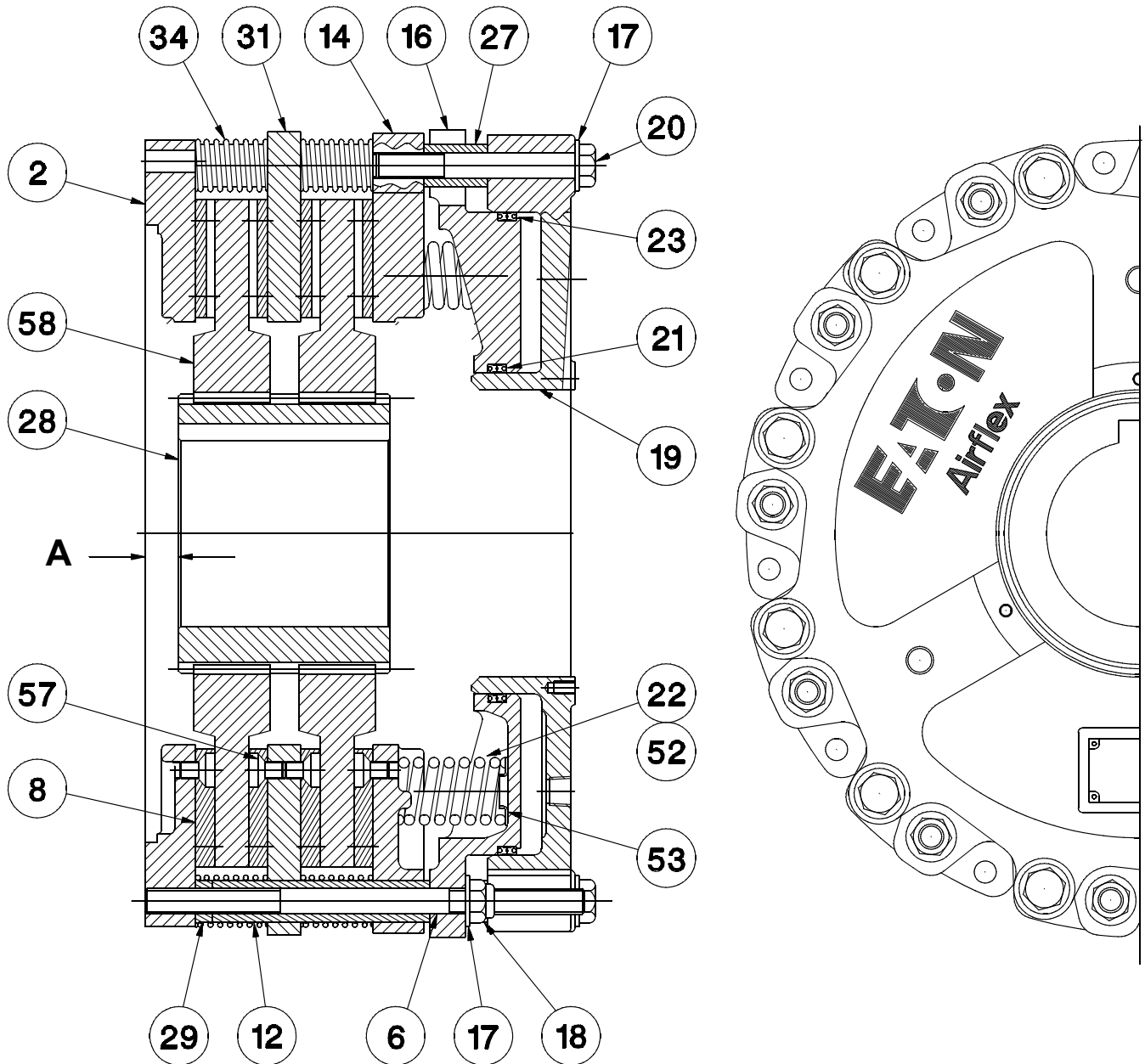



Fig. 1

Item	Description	Item	Description	Item	Description
2	Mounting Flange	19	Cylinder	29	Wear Spacer
6	Stud	20	Hex Head Screw	31	Reaction Plate
8	Friction Disc	21	Inner Polypak Seal	34	Release Spring
12	Clamp Tube	22	Spring	52	Spring
14	Pressure Plate	23	Outer Polypak Seal	53	Spring Retainer
16	Spring Housing	27	Spacer Tube	57	Flat Head Screw
17	Flat Washer	28	Gear	58	Disc
18	Locknut				

1.0 INTRODUCTION

Throughout this manual there are a number of HAZARD WARNINGS that must be read and adhered to in order to prevent possible personal injury and/or damage to the equipment. Three signal words "**DANGER**", "**WARNING**", and "**CAUTION**" are used to indicate the severity of the hazard, and are preceded by the safety alert symbol .

DANGER




Denotes the most serious injury hazard, and is used when serious injury or death WILL result from misuse or failure to follow specific instructions.

WARNING

Used when serious injury or death MAY result from misuse or failure to follow specific instructions.

CAUTION

Used when injury or product/equipment damage may result from misuse or failure to follow specific instructions.

It is the responsibility and the duty of all personnel involved in the installation, operation and maintenance of the equipment on which this device is used to fully understand the  **DANGER**,  **WARNING**, and  **CAUTION** procedures by which hazards are to be avoided.

1.1 Description

- 1.1.1 The Airflex Model DBBS brakes were designed for heavy-duty industrial applications where spring set (power off) braking is required.
- 1.1.2 All Airflex DBBS brakes are supplied with long wearing, NON-ASBESTOS friction material and solid cast, rotating discs.
- 1.1.3 Airflex DBBS brakes are available in three basic sizes and can be supplied as single or dual disc units. The model number identifies the number of discs and the disc diameter. For example, 225DBBS indicates the brake uses two 25 inch diameter discs. When size, such as 25DBBS is referred to in this manual, it means that the information given applies to all DBBS models using 25 inch diameter discs; i.e. 125DBBS, 225DBBS, etc..

- 1.1.4 This manual includes metric equivalents usually shown in parentheses () following the U.S. measurement system value. Be sure to use the correct value.

1.2 How It Works

- 1.2.1 Referring to Figure 1, the gear (28) is mounted on the shaft which is to be stopped. The brake assembly is attached to the machine frame or reaction bracket. As air pressure is applied through the ports in the cylinder (19), the cylinder and pressure plate (14), which are attached to each other with screws (20), flat washers (17) and spacer tubes (27), move away from the mounting flange (2), which is connected to the machine frame or reaction bracket. The pressure plate compresses the springs (22) against the stationary spring housing (16) and the clamp force is removed from the discs (58) which ride on the gear. The shaft is then free to rotate.
- 1.2.2 As air pressure is exhausted, the springs (22) force the pressure plate toward the mounting flange, clamping the discs between the friction discs (8) which are attached to the pressure plate and mounting flange. On dual disc models, a reaction plate (31), to which friction discs are mounted, and an additional disc are clamped between the pressure plate and mounting flange.

2.0 INSTALLATION

Danger:

Prior to installation of the DBBS brake, make sure that the machinery will remain in a secured position. Failure to do so could result in serious personal injury or possibly death.

2.1 Alignment

- 2.1.1 For proper operation and service life, the DBBS brake must be mounted concentric and at right angles to the shaft within the limits shown on Table 1.

Caution:

Proper alignment is necessary to assure that the discs (58) will track properly. Improper alignment will result in excessive wear to the friction discs (8), discs (58) and gear (28). See Figure 2.

TABLE 1 Alignment Requirements, inches (mm)		
Size	Concentricity (Parallel, TIR) of Shaft and Element	Perpendicularity (Angular, TIR) of Mounting Flange to Shaft *
20DBBS	0.010 (0,25)	0.010 (0,25)
25DBBS	0.010 (0,25)	0.012 (0,30)
38DBBS	0.010 (0,25)	0.019 (0,48)

* Perpendicularity measured near the O.D. of the mounting flange.

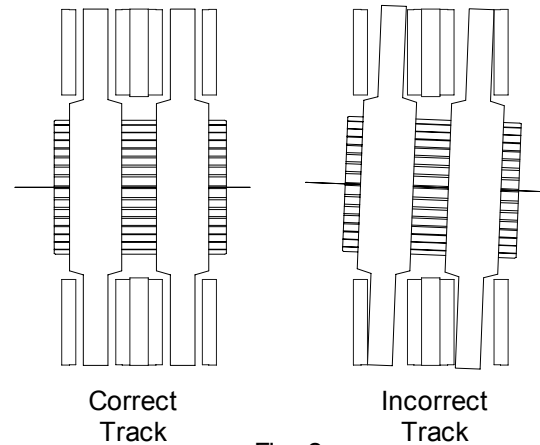


Fig. 2

- 2.1.2 To aid in obtaining accurate readings, a rigid bracket should be fabricated for mounting a dial indicator when checking alignment.
- 2.1.3 Bearing or machinery manufacturers may require different alignment tolerances. Use the tightest of those recommended.

2.2 Mounting

- 2.2.1 Ensure that the shaft is clean and free of nicks or burrs and that the key fits properly in the shaft and gear. Tap the key into the shaft keyway.
- 2.2.2 On dual disc brakes, before installing the gear onto the shaft, slide it into the brake assembly to align the splines on the discs. Air pressure must be applied to the brake to release the discs for alignment. Once the gear passes through both discs, exhaust the air to clamp them into position and remove the gear.



Warning:

Maximum allowable air pressure is 120 psig (8,2 bar). Application of pressure exceeding maximum allowable may result in damage to the brake.

- 2.2.3 Apply a light coat of anti-seizing compound to the shaft.
- 2.2.4 Press the gear onto the shaft, making sure the dimension between the gear and brake mounting surface ("A") is held at 1.00" (25,4). See Figure 1. Heating the gear uniformly to approximately 250°F (121°C) will expand the bore and ease assembly.



Caution:

Do not allow the gear temperature to exceed 350°F (176°C). Overheating the gear will adversely effect the hardness and wear life.

- 2.2.5 Apply a light coat of Molub-Alloy OG Heavy grease to the gear teeth and slide the brake assembly onto the gear.
- 2.2.6 While supporting the brake, connect an air supply and apply enough pressure to release the brake. Attach the mounting flange (2) to the brake mounting surface using the appropriate fasteners. Torque the fasteners to the specified value. See Table 2.



Danger:

Use only the proper number and grade fasteners shown in Table 2. Use of commercial grade fasteners where Grade 8 fasteners are specified may result in failure of the fasteners and a sudden and drastic reduction in brake torque.

2.3 Air Supply System



Warning:

Maximum allowable air pressure is 120 psig (8,2 bar). Application of pressure exceeding maximum allowable may result in damage to the brake components.

- 2.3.1 Cylinder port size is 1/2"-14 NPT for sizes 20 and 25DBBS, and 3/4"-14 NPT for size 38DBBS brakes.

TABLE 2 Fastener Description and Assembly Torque, lubed, ft.-lb (Nm)				
Fastener		20DBBS	25DBBS	38DBBS
Item #18	Description	3/4-10NC-3	1 ¹ / ₈ - 7NC-3	1 ³ / ₈ - 7NC-3
	Torque	150 (203)	500 (677)	750 (1015)
Item #20	Description	3/4-10NC-2 Grade 8	1 ¹ / ₈ - 7NC-2 Grade 8	1 ³ / ₈ - 7NC-2 Grade 8
	Torque	150 (203)	500 (677)	750 (1015)
Mounting Screw	Description	5/8-11NC-2 Grade 8	5/8-11NC-2 Grade 8	1-8NC2 Grade 8
	Torque	138 (187)	138 (187)	750 (1015)

2.3.2 Since the air control arrangement will vary from one application to the next, a specific description cannot be presented here. Following are some general guidelines for installing the air control components.

2.3.2.1 Use full size piping consistent with the control valve size. All piping should be free of metal chips, cutting compound, and any other foreign matter. Pipe ends should be reamed after cutting to eliminate possible restrictions.

2.3.2.2 Keep the number of elbows to a minimum to ensure consistent response.

2.3.2.3 Spool type solenoid valves are not recommended. Use poppet type valves and locate them as close as possible to the brake.



Warning:
If the DBBS brake is being used on a mechanical power press, special valving may be required.

2.3.2.4 If the DBBS is being used on a cyclic application, an air receiver tank should be installed in the air supply line and isolated (check valve) from other air consuming equipment.

2.3.2.5 The final connection to the brake inlet ports must be made with flexible hose.

2.3.2.6 The DBBS brake does not require lubricated air; however the solenoid valve may. Consult the valve manufacturer.

2.3.2.7 A pressure switch should be located in the air supply line to the brake and interlocked with the equipment electrical controls.

3.0 OPERATION

3.1 Pressure and Speed Limits

3.1.1 Maximum applied pressure is 120 psig (8.2 bar). Minimum releasing pressure for low pressure brakes is 60 psig (4.1 bar).



Warning:
Maximum applied pressure is 120 psig (8.2 bar). Operation at pressures exceeding maximum may result in damage to the DBBS components.

3.1.2 Maximum freewheeling disc speeds are shown on Table 3.



Warning:
Operation at disc speeds exceeding the maximum allowable, as shown on Table 3, may result in exposure to personal injury or product/equipment damage.

TABLE 3 Maximum Freewheeling Disc Speed, RPM	
Brake Size	Max. Speed
20 DBBS	2200
25 DBBS	1700
38 DBBS	950

3.2 Initial Operation

- 3.2.1 The non-asbestos friction material used on DBBS brakes may not develop rated torque as a short wear in period is required.
- 3.2.2 If the brake engagement appears harsh, a flow control valve may be installed in the brake air supply line. When using a flow control valve, install so free flow is to the brake and restricted flow is away from the brake.



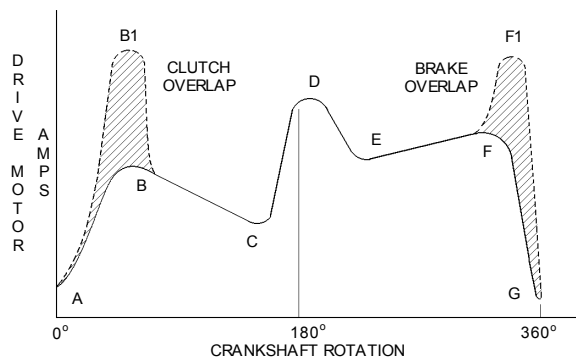
Caution:

Excessive restriction of the brake exhaust air will result in long stopping times and inconsistent stopping position.

- 3.2.3 If the DBBS brake is used in combination with a clutch, clutch/brake overlap may occur which will result in excessive heat generation and motor overload. Overlap may be detected by monitoring the drive motor current at the beginning and end of each machine cycle. A current surge at the beginning of the cycle usually indicates clutch overlap which can be corrected by restricting the air flow to the clutch or increasing the air pressure to the brake. A current surge at the end of the machine cycle usually indicates brake overlap which can be corrected by installing and adjusting a flow control valve in the brake air supply line, as indicated in 3.2.2. See Figure 3.

TYPICAL MOTOR AMPERE CURVE

SOLID LINE - NORMAL CURRENT FLUCTUATIONS DURING COMPLETE CYCLE
 DOTTED LINE - ABNORMAL CURRENT SURGES INDICATING OVERLAP



- A-B Normal Motor Amp Surge - During Acceleration
- A-B1 Abnormal Surge Indicates Clutch Overlap
- B-C Ram on Downstroke - Motor Amps Drop
- C-D Ampere Surge as Dies Make Contact
- E-F Ram Moving up Back Stroke
- F-G Clutch Release, Brake Set - Normal Drop to No Load Amps
- F-F1-G Ampere Surge Indicates Brake Overlap

Fig. 3

3.3 Periodic Inspection

- 3.3.1 As the friction material wears, the brake torque will be reduced somewhat and adjustment of the stopping position controls (flow control or limit switch) will be necessary. See the MAINTENANCE section for the friction material wear limit and replacement procedure.
- 3.3.2 Periodically check for air leakage in the area of the piston seals (21,23). For replacement, refer to the MAINTENANCE section.
- 3.3.3 Periodically observe the discs with the brake released. Causes of dragging discs may include wear or contamination of the gear or disc splines, disc imbalance, warped discs, or excessive shaft float.
- 3.3.4 Pneumatic and electrical control interlocks should be periodically checked for correct settings and operation.

4.0 MAINTENANCE



Warning:

Prior to performing any maintenance on the DBBS brake, make sure the equipment is in, and will remain in, a safe condition.

4.1 Wear Limits

- 4.1.1 Wear limits for the DBBS components are shown on Table 4. If any wear limit has been reached or exceeded, that component must be repaired or replaced.

4.2 Wear Adjustment

On single and dual disc units, the friction material must be replaced when worn to the bottom of the groove on the friction lining. See Figure 4. On dual disc brakes, however, a wear adjustment is required when the friction material is approximately one-half worn. To determine when adjustment is required, measure the gap between the spring housing (16) and the pressure plate (14) with the brake engaged, as shown on Figure 5. If the measured gap exceeds the limits shown on Table 5 AND none of the friction discs are worn to the bottom of the wear groove, adjust the brake per the following procedure.

TABLE 4			
Wear Limits for DBBS Components			
Item	Description	Wear Limit	Remarks
#8 Friction Disc	Friction Material	Fully worn at bottom of dust groove. See Fig 4. Friction material must also be replaced when contaminated with oil or grease.	Dual disc brakes have adjustment provision. See section 4.2.
#14 Pressure Plate and #31 Reaction Plate	Reaction Holes	Maximum wear is .031 in. (.80 mm).	Wear will be in the form of elongation of the holes. Original hole diameters are shown on the table below.
#12 Clamp Tube	Reaction Area	Maximum wear is .015 in. (.38 mm).	Wear will be in the form of a notch or step on the side of the tube.
#19 Cylinder	Seal Area	Maximum wear is .005 in. (.13 mm).	Wear will be in the form of grooves where the seals contact.
#22, 34 & 52 Spring	Spring Free Height	Minimum free height shown on the table below.	Original free height shown on the table below. Springs must be replaced in complete sets.
#28 & 58 Gear and Disc	Gear Backlash	Maximum allowable total backlash is: .060 in (1,5 mm).	Backlash is measured at the pitch diameter. Replace the disc and gear together. If step is worn in gear, gear must be replaced.
#58 Disc	Friction Wear Surfaces	Maximum wear is .045 in (1,12mm) per surface .090 in (2,24mm) total.	Original thickness for sizes 20 and 25 is 1.00" (25,4mm), 1.25" (31,75mm) for size 38. Wear will be in the form of circular grooves on the iron surface.

Item Reference	Description	Element Size		
		20 DBBS	25 DBBS	38 DBBS
14 & 31	Original Reaction Hole Diameters in the Pressure Plate and Reaction Plate	1.343 (34,11)	1.688 (42,87)	2.063 (54,40)
34	Original Free Height	2.84 (72,1)	2.57 (65,3)	3.64 (92,4)
	Minimum Free Height	2.65 (67,3)	2.40 (61,0)	3.40 (86,4)
22	Original Free Height	4.56 (115,8)	5.18 (131,6)	6.65 (168,9)
	Minimum Free Height	4.25 (108,0)	4.90 (124,5)	6.37 (161,8)
52	Original Free Height	-----	5.23 (132,8)	6.78 (172,2)
	Minimum Free Height	-----	4.95 (125,73)	6.50 (165,1)

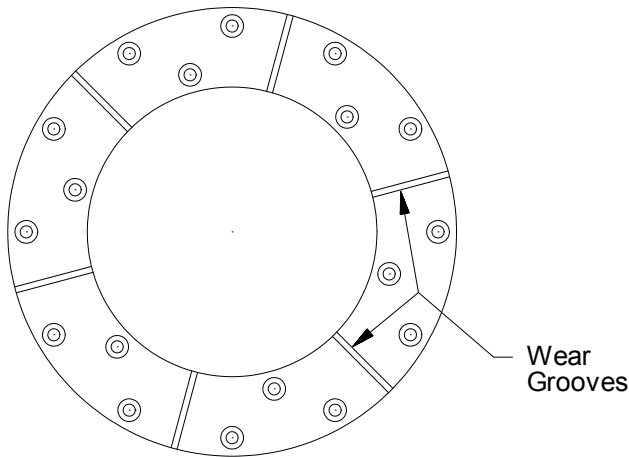


Fig. 4

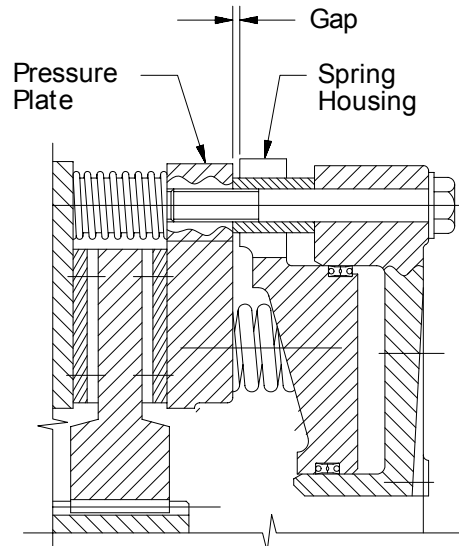


Fig. 5

TABLE 5 Wear Gap Values, Inches (mm)			
Size	220	225	238
New Gap	0.14 (3,6)	0.18 (4,6)	0.31 (7,8)
Gap Required for Adjustment	0.64 (16,3)	0.68 (17,3)	0.81 (20,6)

! Warning:

If a wear adjustment is not made, the brake torque may deteriorate to the point where the equipment will not stop properly.

- 4.2.1 Disconnect the air supply lines from the brake.
- 4.2.2 While supporting the cylinder, loosen the locknuts (18) ONE TURN AT A TIME and in an alternating (crosswise) pattern until the spring force is relieved.

! Caution:

The locknuts (18) must be loosened gradually to prevent damage to the brake components.

- 4.2.3 Remove the locknuts and washers (17) and slide the cylinder, spring housing and pressure plate (14) off of the studs as an assembly. Set aside in a clean area making sure not to damage the friction material on the pressure plate.

Note: If a stud (6) should happen to come loose, remove it completely, clean the threads on the stud and the threads in the mounting flange. Apply Loctite® Loc-Quic® Primer Grade "T" to the stud threads. After the threads have dried, assemble to the mounting flange using Loctite® #262. The end of the stud must not extend past the mounting surface on the mounting flange.

! Caution:

Loctite® #262 must be shaken prior to application.

! Caution:

Loctite® #262 may irritate sensitive skin. Refer to the product label for safety precautions.

- 4.2.4 Remove the outboard disc, the reaction plate (31) and the release springs (34) and set aside.
- 4.2.5 Slide the clamp tubes (12) and wear spacers (29) off of the studs. Reinstall the clamp tubes only.
- 4.2.6 Place a release spring over every other clamp tube and slide the reaction plate onto the clamp tubes.
- 4.2.7 Slide the second disc onto the gear.
- 4.2.8 Place a release spring onto every other clamp tube and slide the pressure plate/cylinder assembly onto the clamp tubes.

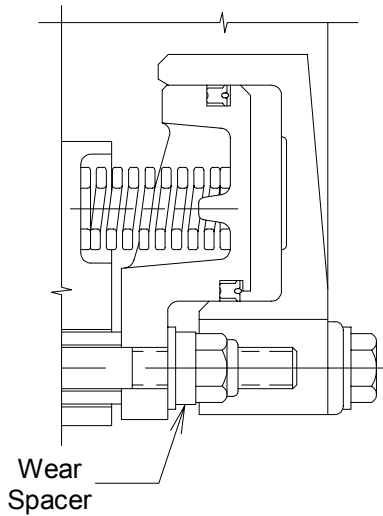


Fig. 6

- 4.2.9 Lubricate the threads on the ends of the studs with 30 wt. oil or anti-seizing compound and install the locknuts (18), washers (17) and the wear spacers removed in 4.2.5. The wear spacers are "stored" under the locknuts for use after replacing friction discs. See Figure 6.
- 4.2.10 While supporting the weight of the cylinder/spring housing/pressure plate assembly, tighten the locknuts, ONE TURN AT A TIME and in a crosswise pattern, until the spring housing is seated against the clamp tubes. Torque the locknuts to the appropriate value. See Table 2.



Caution:
The locknuts (18) must be tightened gradually to prevent damage to the brake components.

4.3 Friction Disc Replacement



Caution:
Use only genuine, Airflex friction material. Use of material not of Airflex origin may result in unpredictable brake performance and/or excessive wear of the brake components.

Friction disc replacement is required when worn to the bottom of the wear groove, as indicated in Figure 4, or if oil or grease have contaminated the surface.

- 4.3.1 Disconnect the air supply lines from the brake.

- 4.3.2 Remove the brake and place it on a level working surface, with the mounting flange facing down.
- 4.3.3 Loosen the locknuts (18) ONE TURN AT A TIME and in an alternating (crosswise) pattern until the spring force is relieved. Remove the locknuts, wear spacers (29) (on dual disc brakes) and washers (17).



Caution:
The locknuts (18) must be loosened gradually to prevent damage to the brake components.

- 4.3.4 Lift the cylinder, spring housing, and pressure plate off of the studs as an assembly. Set the assembly aside on a level working surface, with the cylinder facing down.

Note: If a stud (6) should happen to come loose, remove it completely, clean the threads on the stud and the threads in the mounting flange. Apply Loctite®Primer Grade "T" to the stud threads. After the threads have dried, assemble to the mounting flange using Loctite®#262. The end of the stud must not extend past the mounting surface on the mounting flange.



Caution:
Loctite®#262 must be shaken prior to application.



Caution:
Loctite®#262 may irritate sensitive skin. Refer to the product label for safety precautions.

- 4.3.5 On dual disc brakes, remove the reaction plate (31), release springs (34), clamp tubes (12) and the remaining disc.
- 4.3.6 Inspect the brake components for wear or damage. Replace as required. For wear limits of components, see Table 4.
- 4.3.7 Remove the socket head screws and friction discs and discard.

Note: It may be necessary to use heat to soften the Loctite®to ease screw removal. Use a pinpoint torch, heating only the socket area of the screw.

4.3.8 Smooth the friction disc mounting surfaces of any burrs or raised areas with a course, flat polishing stone, and clean the tapped holes of any residual Loctite® or other contamination.



Caution:

Before installing screws, make sure that the screw threads and threaded holes are clean to ensure that the new screws will lock properly.

4.3.9 Position the new friction discs on the mounting surfaces. Apply Loctite® #262 to the threads of the screws (57), install and torque the screws to 20 ft.-lb.

4.3.10 Position a disc (58) on the mounting flange/friction disc assembly. Center the disc on the friction material.

4.3.11 On dual disc units, install wear spacers (29), clamp tubes (12), release springs (34 - on every other stud), the reaction plate, and remaining reaction springs over the studs. Position the remaining disc (58) on the reaction plate/friction disc assembly. Center the disc on the friction material and align the disc splines with those on the first disc.



Caution:

Release springs are to be assembled on every other stud. The springs on either side of the reaction plate must be assembled on the same stud, over the clamp tubes. Improper assembly will result in cocking of the reaction plate and uneven brake release.

4.3.12 Lubricate the threads on the ends of the studs with 30 wt. oil or Never Seez® anti-seizing compound.

4.3.13 Hoist the cylinder, spring housing and pressure plate assembly into position. Noting the position of the air inlets to the mounting flange, lower the assembly over the studs and clamp tubes.

4.3.14 Assemble the washers (17) and locknuts (18) onto the studs. Tighten the locknuts, ONE TURN AT A TIME and in a crosswise pattern, until the spring housing is seated against the clamp tubes. Torque the locknuts to the appropriate value. See Table 4.



Caution:

The locknuts (18) must be tightened gradually to prevent damage to the brake components.

4.3.15 Re-install the brake per 2.0, INSTALLATION.

4.4 Cylinder Seal Replacement

4.4.1 Disconnect the air supply lines and remove the screws (20), washers (17) and spacer tubes (27) attaching the cylinder (19) to the pressure plate (14).

4.4.2 Carefully slide the cylinder off of the spring housing (16).



Caution:

Do not use compressed air to remove the cylinder from the spring housing.

4.4.3 Remove the cylinder seals (21,23) from the spring housing and thoroughly clean the seal grooves in the spring housing.

4.4.4 Insert new seals into the grooves, noting the orientation of the seals per Figure 7.

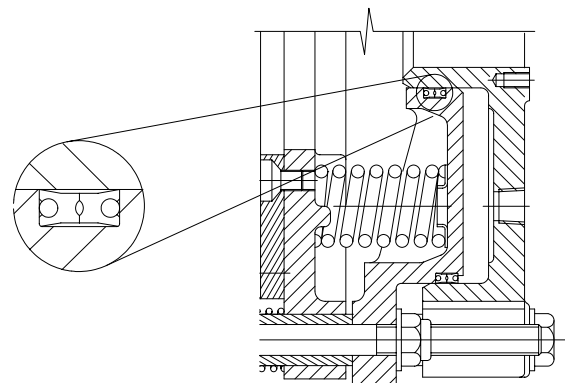


Fig. 7

- 4.4.5 Carefully examine the seal surfaces in the cylinder. If the surfaces have worn to the point as indicated on Table 4, the cylinder must be replaced.
- 4.4.6 Lubricate the seal surfaces in the cylinder with Parker O-Lube® and carefully slide the cylinder onto the spring housing. Take special care to avoid damaging the seal lips.
- 4.4.7 Attach the cylinder to the pressure plate with the screws, washers and spacer tubes removed in 4.4.1. Use Loctite® Loc-Quic® Primer Grade "T" to clean and prepare the screw threads and install with Loctite® #262. Using a crosswise pattern, torque the screws to the value shown on Table 2.

4.5 Spring Replacement

- 4.5.1 Disconnect the air supply lines and loosen the locknuts (18), ONE TURN AT A TIME and in a crosswise pattern, until the spring force has been relieved.
- 4.5.2 Match mark the pressure plate and spring housing to one another.
- 4.5.3 Remove the locknuts (18) and washers (17) and carefully remove the cylinder/spring housing/pressure plate assembly. Transport to a clean work area.
- 4.5.4 Loosen the screws (20) gradually until the remaining spring force is relieved. Remove the screws and washers (17).
- 4.5.5 Carefully lift the cylinder and spring housing off of the pressure plate, exposing the springs (22).



Caution:

Before removing the old springs, make note of the number used and the position that they are in so that the new springs may be installed similarly for proper brake functioning.

- 4.5.6 Noting their orientation, remove the spring retainer plates (53), exposing the springs.
- 4.5.7 Remove the springs and check the free height. If the free height of any spring is less than the value shown on Table 4, or any springs are cracked or broken, the entire complement of springs must be replaced.
- 4.5.8 Re-install the springs into the pockets in the pressure plate in reverse order.



Caution:

No spring retainer plate (53) should cross over the ribs in the spring housing (16).

- 4.5.9 Arrange the spring retainer plates onto the springs in the reverse order removed.
- 4.5.10 Place a spacer tube (27) in position over each tapped hole in the pressure plate, align the match marks and carefully lower the spring housing/cylinder assembly onto the springs, making sure the springs engage the bosses in the spring housing.
- 4.5.11 Clean and prepare the threads on the screws (20) with Loctite Loc-Quic Primer Grade "T" and install with Loctite #262, making sure the washers (17) are in place. Using a crosswise pattern, tighten the screws one turn at a time until the spacer tubes are clamped between the cylinder and pressure plate. Torque the screws to the value shown on Table 2.
- 4.5.12 While supporting the weight of the cylinder/spring housing/pressure plate assembly, tighten the locknuts, ONE TURN AT A TIME and in a crosswise pattern, until the spring housing is seated against the clamp tubes. Torque the locknuts to the appropriate value. See Table 2.



Caution:

The locknuts (18) must be tightened gradually to prevent damage to the brake components.

5.0 ORDERING INFORMATION/ TECHNICAL ASSISTANCE

5.1 Equipment Reference

- 5.1.1 In any correspondence regarding Airflex Equipment, refer to the information on the product nameplate and call or write:

Eaton Corporation
Airflex Division
 9919 Clinton Road
 Cleveland, Ohio 44144
Tel.: (216) 281-2211
Fax: (216) 281-3890

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6.0 PARTS LISTS

6.1 Basic Assemblies

ITEM	DESCRIPTION	120DBBS (146323A)		220DBBS (146322A)	
		Part Number	Qty	Part Number	Qty
2	Mounting Flange	513331	1	513331	1
6	Stud	245 x 0066	12	245 x 0063	12
8	Friction Disc	513326	2	513326	4
12	Clamp Tube	306956-14	12	306956-15	12
14	Pressure Plate	513332	1	513332	1
16	Spring Housing	512639	1	512639	1
17	Flat Washer	153 x 0727	24	153 x 0727	24
18	Locknut	110 x 0030	12	110 x 0030	12
19	Cylinder	512693	1	512693	1
20	Hex Head Screw	197 x 0723	12	197 x 0723	12
21	Inner PolyPak Seal	402 x 0021	2	402 x 0021	2
22	Spring	307947	18	307947	18
23	Outer PolyPak Seal	402 x 0022	2	402 x 0022	2
27	Spacer Tube	308155-06	12	308155-06	12
28	Gear (1)	415900-####	---	416059-####	---
29	Wear Spacer	---	---	308155-02	12
31	Reaction Plate	---	---	513330	1
34	Release Spring	---	---	307629	12
53	Spring Retainer	415823	6	415823	6
57	Flat Head Screw	294 x 0405	36	294 x 0405	72
58	Disc	513328	1	513328	2

(1) Not included with brake assembly.

ITEM	DESCRIPTION	125DBBS (146320A)		225DBBS (146330A)		138DBBS (146328A)		238DBBS (146329A)	
		Part Number	Qty	Part Number	Qty	Part Number	Qty	Part Number	Qty
2	Mounting Flange	513334	1	513334	1	513391	1	513391	1
6	Stud	245 x 0068	12	245 x 0077	12	245 x 0073	16	245 x 0075	16
8	Friction Disc	513307	2	513307	4	513396	2	513396	4
12	Clamp Tube	306542-17	12	306542-18	12	307941-03	16	307941-04	16
14	Pressure Plate	513335	1	513335	1	513392	1	513392	1
16	Spring Housing	513268	1	513268	1	512811	1	512811	1
17	Flat Washer	153 x 0641	24	153 x 0641	24	67 x 0042	32	67 x 0042	32
18	Locknut	110 x 0073	12	110 x 0073	12	110 x 0075	16	110 x 0075	16
19	Cylinder	513264	1	513264	1	513988	1	513988	1
20	Hex Head Screw	197 x 1035	12	197 x 1035	12	197 x 1338	16	197 x 1338	16
21	Inner PolyPak Seal	402 x 0023	2	402 x 0023	2	402 x 0005	2	402 x 0005	2
22	Outer Spring	307970	24	307970	24	308035	48	308035	48
23	Outer PolyPak Seal	402 x 0024	2	402 x 0024	2	402 x 0006	2	402 x 0006	2
27	Spacer Tube	308170-02	12	308170-02	12	308150-01	16	308150-01	16
28	Gear (1)	416073-####	---	416074-####	---	416068-####	---	416069-####	---
29	Wear Spacer	---	---	308170-01	12	---	---	308150-05	16
31	Reaction Plate	---	---	513333	1	---	---	513393	1
34	Release Spring	---	---	306909	12	---	---	307992	8
52	Inner Spring	307969	24	307969	24	308034	48	308034	48
53	Spring Retainer	307971	12	307971	12	415635	16	415635	16
57	Flat Head Screw	294 x 0405	48	294 x 0405	96	294 x 0405	72	294 x 0405	144
58	Disc	513304	1	513304	2	513395	1	513395	2

(1) Not included with brake assembly.

EATON PRODUCT WARRANTY

Subject to the conditions stated herein, Eaton Corporation warrants to the Purchaser that each new Airflex Product manufactured by Eaton will be free from failures caused by defects in material and workmanship, and will deliver its rated capacity, for a period of twelve (12) months from the date of shipment to Purchaser, provided such Product is properly installed, properly maintained, operated under normal conditions and with competent supervision. Warranty claims shall be made in writing and the part or parts shall, if requested by Airflex Division, be returned prepaid to the Airflex Division for inspection. Upon a determination that a defect exists, Eaton shall thereupon correct any defect, at its option either by repairing any defective part or parts or by making available at Eaton's plant a repaired or replacement part. This warranty does not extend to normal wear parts or components of the Product, such as friction material and friction surfaces.

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