

# SPRING APPLY Caliper Disc Brake



## Installation and Service Instructions

TABLE 1

Caliper Model Number	Caliper with Rectangular Bracket Model Number	Caliper with Triangular Bracket Model Number	Lining Kit Number	Seal Kit Number	* Repair Kit Number
n/a	02-530-620 (HO)	03-530-620 (HO)	20-060-096	02-500-034	02-500-175
01-530-621 (BF)	02-530-621 (BF)	03-530-621 (BF)	20-060-095	02-500-151	02-500-173
01-530-622 (HO)	02-530-622 (HO)	03-530-622 (HO)	20-060-096	02-500-034	02-500-175

HO = Mineral Base Hydraulic Oil BF = Brake Fluid

\* Belleville springs are pre-greased. DO NOT remove grease from springs. See Grease Note on page 2, Figure 5.

NOTE: If your product number is not listed, please contact ZF Off-Highway Solutions Minnesota Inc. for information.

BE SURE TO READ GENERAL INSTALLATION GUIDELINES SHEET (81-600-001) BEFORE PROCEEDING

### ⚠ WARNING

ZF Off-Highway Solutions Minnesota Inc. disc brake linings do not contain asbestos. Brake lining compounds do, however, contain elements that may become airborne during the life of the lining. To prevent any health problems associated with lining dust, we suggest ventilators be installed as needed on enclosed or stationary equipment. A Safety Data Sheet is available upon request.

When installing these Spring Brakes, it is of utmost importance that the caliper be centered evenly and squarely over the disc. This will ensure even lining to disc contact. When linings have been worn to a point of replacement, replace with the lining kit specified in TABLE 1. This series of 530 Spring Brakes is designed for use with a disc thickness of 7.9-12.7 mm (0.31-0.50 in).

### MOUNTING PROCEDURE

- Figures 1 and 2 illustrate the two methods of mounting this series of brakes. See mounting bracket shaft grease note. The mounting surface to disc face dimension must be closely held as this provides for the required caliper movement. Use shims as needed to obtain the proper distance.

- Using TABLE 2 and Figures 3 and 4 on page 2, determine "A" dimension and locate mounting bracket assembly holes.
- Loosen lock nut and slightly back off adjusting screw. Push lining assembly back into the brake housing.
- Mount brake and bracket assembly on disc and bolt securely to the machine using SAE grade 8 or better mounting bolts with lock washers.

### NOTE

Dimensions shown in Figures 1 and 2 are typical for all models. Mounting surface to disc face dimension is typical of rectangular and triangular brackets. Mounting bolts not included.

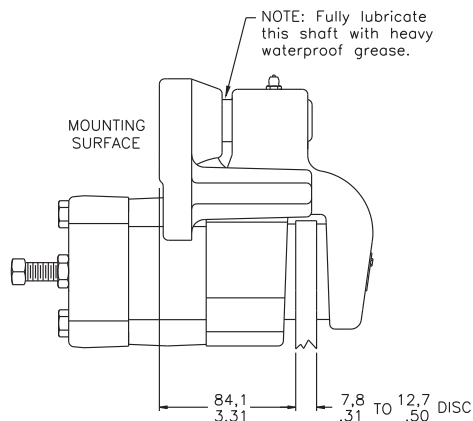


FIGURE 1

millimeters  
inches

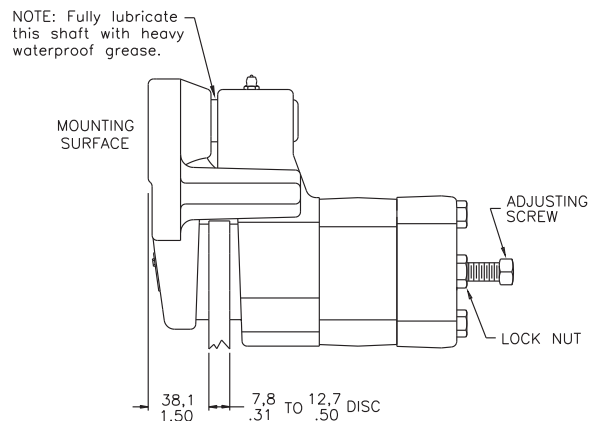
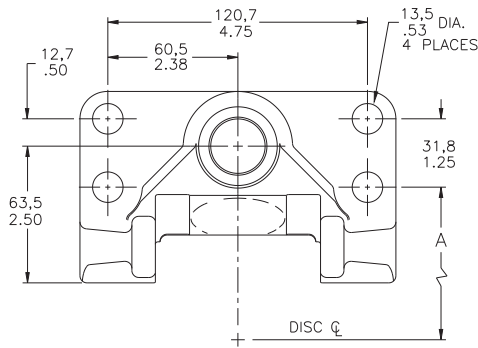


FIGURE 2

## DISC CENTERLINE TO MOUNTING HOLE DIMENSION

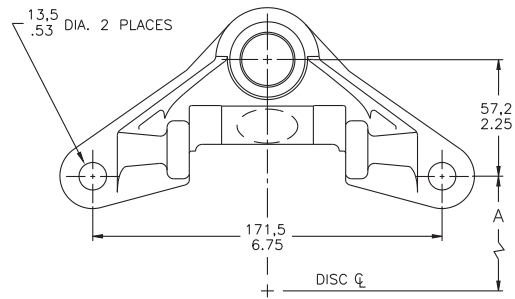
Disc Diameter	Rectangular Mount "A" Dimension	Triangular Mount "A" Dimension
228.6 mm (9 in)	155.6 mm (6.125 in)	117.5 mm (4.625 in)
254.0 mm (10 in)	168.3 mm (6.625 in)	130.2 mm (5.125 in)
304.8 mm (12 in)	193.7 mm (7.625 in)	155.6 mm (6.125 in)
355.6 mm (14 in)	219.1 mm (8.625 in)	181.0 mm (7.125 in)
406.4 mm (16 in)	247.6 mm (9.75 in)	206.4 mm (8.125 in)
457.2 mm (18 in)	273.0 mm (10.75 in)	231.8 mm (9.125 in)
508.0 mm (20 in)	298.4 mm (11.75 in)	257.2 mm (10.125 in)
558.8 mm (22 in)	323.8 mm (12.75 in)	282.6 mm (11.125 in)
609.6 mm (24 in)	349.2 mm (13.75 in)	308.0 mm (12.125 in)

**TABLE 2**



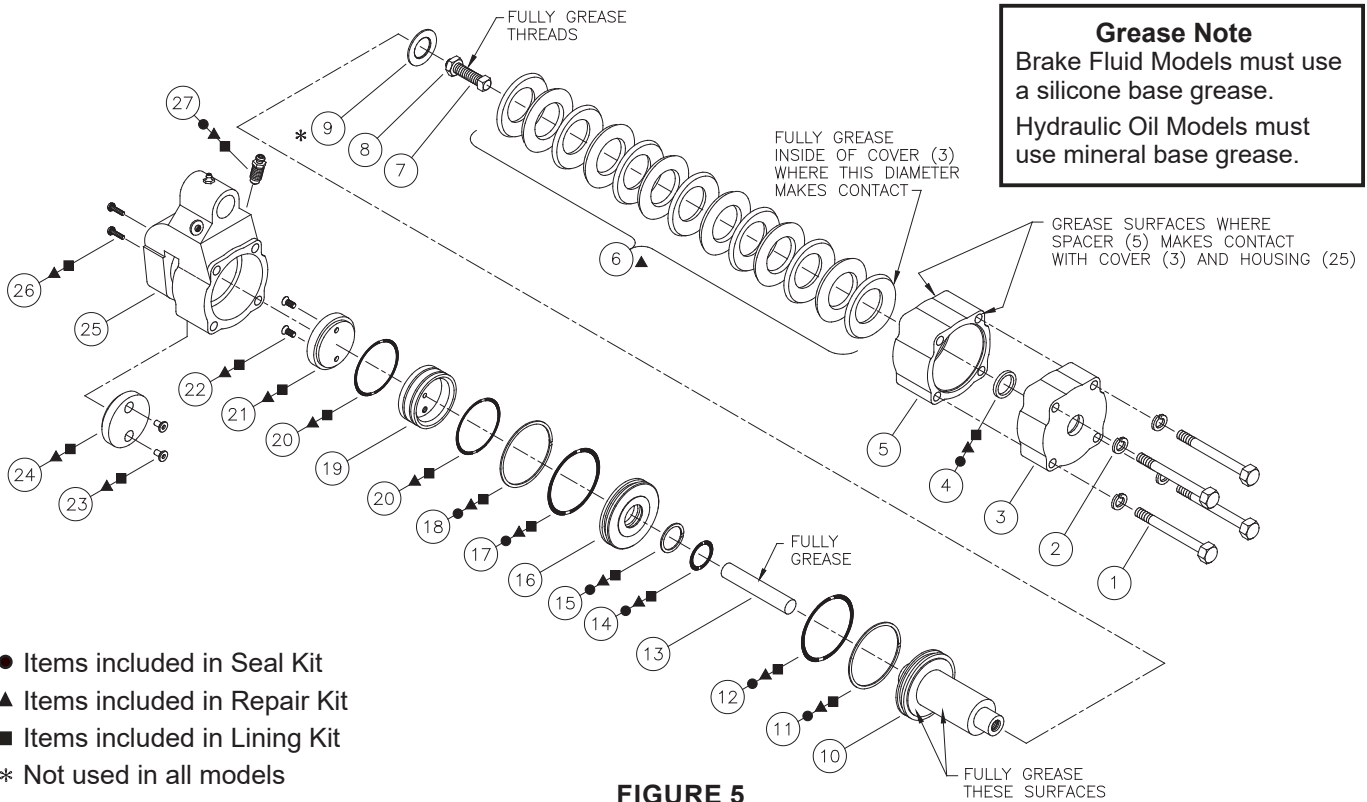
**FIGURE 3**  
(rectangular mount)

**NOTE:** For disc diameters greater than 609.6 mm add 44.4 mm (24 inch add 1.75 in) to disc radius to obtain "A" dimension.



**FIGURE 4**  
(triangular mount)

**NOTE:** For disc diameters greater than 609.6 mm add 3.2 mm (24 inch add 0.125 in) to disc radius to obtain "A" dimension.



**Grease Note**

Brake Fluid Models must use a silicone base grease.

Hydraulic Oil Models must use mineral base grease.

**FIGURE 5**

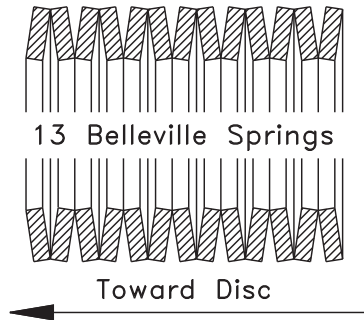


FIGURE 6

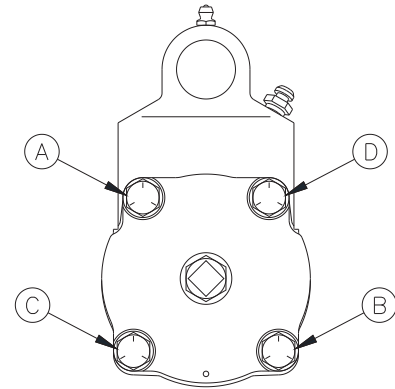


FIGURE 7

## PLUMBING PROCEDURE

1. After the brake is mounted on machine, install bleeder screw (provided with the brake) and hydraulic line.  
**NOTE: All porting is designed for #4 SAE o-ring boss port adapters.**
2. Bleed system making sure all air is eliminated. Apply rated pressure and check for leaks.
3. Torque bleeder screw 12.2-20.3 N·m (9-15 lb·ft).

## BRAKE ADJUSTMENT PROCEDURE

(Refer to Figure 2 on page 1)

1. Apply rated hydraulic pressure.
2. Loosen lock nut and adjusting screw.
3. Place a 0.30 mm (0.012 in) thick shim between the disc and one of the linings.
4. Tighten adjusting screw until it is just possible to remove the shim.
5. Torque lock nut 29.8-36.6 N·m (22-27 lb·ft) while holding adjusting screw with a wrench. Remove shim and release hydraulic pressure.

## CHANGE SEAL KIT, REPAIR KIT, or LINING KIT PROCEDURE

(Refer to Figure 5 on page 2)

If seal kit is being installed, see steps 1 through 10, 13, 14, and 18 through 27.

### NOTE

When removing seals and back-up rings be careful not to scratch or mar pistons. When installing new seals in the brake, make sure the kit used is the proper one for the system fluid used.

New linings must be kept free of oil, grease, etc.

1. Loosen the lock nut (8) and back off adjusting screw (7).
2. Disconnect fluid line from the brake.

### CAUTION

Cap the end of fluid line to prevent entry of dirt into the hydraulic system.

3. Remove bolts used to fasten the mounting bracket assembly to vehicle. Remove brake and mounting bracket assembly from machine and remove mounting bracket assembly from brake.
4. Place the brake in a soft jawed vise with cover (3) in vertical position. **NOTE: Clamping should be done on the sides of the brake on machined surfaces.**

5. Remove bleeder screw (27).
6. To remove cover (3), loosen four cap screws (1).

### CAUTION

Loosen cap screws (1) evenly and in order A, B, C, D until spring preload is released. See Figure 7.

7. Remove cap screws (1), lock washers (2), cover (3) and spacer (5). Using a thin blade tool, remove seal (4) from cover (3).
8. Remove belleville springs (6). Note the stacking sequence of belleville springs (6).
9. Remove piston (10) from housing (25) bore. Remove o-ring (12) and back-up ring (11) from piston. Washer (9) and push rod (13) should also come out with piston. Not all models use washer (9).
10. Remove piston (16) from housing (25) bore. Remove o-rings (14 & 17) and back-up rings (15 & 18) from piston (16).
11. Remove piston (19) and lining (21) assembly from housing (25) bore. Holding assembly on a flat surface, separate lining (21) and piston (19) by removing flat head screws (22). Remove o-rings (20) from piston (19).
12. Loosen vise jaws and rotate brake so that disc clearance slot is facing upward. Remove pan head screws (26), lining (24) and bushings (23) from housing (25).
13. Lubricate all rubber components from kit with clean type fluid used in the system.
14. Clean all parts and housing bore thoroughly with clean type fluid used in the system and keep free of all contaminants, dirt, and debris. **NOTE: Use a heavy, waterproof grease to lubricate surfaces as shown in Figure 5 on page 2. See Grease Note.**
15. Install new lining (24) in housing (25) using new bushings (23) and new pan head screws (26) and torque 2.8-4.0 N·m (25-35 lb·in).
16. Rotate brake to original position in vise.
17. Install new lining (21) on piston (19) using new flat head screws (22) and torque screws 2.7-3.4 N·m (24-30 lb·in). Install new o-rings (20) on piston (19) and insert assembly into housing (25) bore.
18. Install new bleeder screw (27) and finger tighten.
19. Install new o-rings (14 & 17) and new back-up rings (15 & 18) on piston (16). Note order of components. **NOTE: When installing back-up rings it is essential that surfaces of diagonal splice match with each other after o-ring is installed in groove.**

continued...

20. Install piston (16) into housing (25) bore. Note direction of piston. **NOTE: When inserting piston, be sure not to pinch o-ring on inlet ports.**
21. Install new back-up ring (11) and new o-ring (12) on piston (10). Note order of components. Make sure push rod (13) is in bore of piston (10). Then install piston (10) into housing (25) bore.
22. Install washer (9) on piston (10). Not all models use washer (9).
23. Fully lubricate threads of adjusting screw (7) and lock nut (8) and install into piston (10).
24. Install belleville springs (6) over the end of piston (10). Follow the stacking sequence shown in Figure 6 on page 3. **NOTE: If lining kit or seal kit is being installed use existing belleville springs after completely lubricating with a light coat of heavy, water proof grease. See Grease Note, Figure 5 on page 2. If repair kit is being installed use new belleville springs, already greased. Note that the belleville spring nearest the cover must contact the cover on its outside diameter.**
25. Install new seal (4) in cover (3).
26. Install spacer (5), cover (3), lock washers (2), and cap screws (1). Torque cap screws 29.8-36.6 N·m (22-27 lb·ft).

**▲ CAUTION**

Tighten cap screws (1) evenly and in order A, B, C, D. See Figure 7.

27. To continue refer to MOUNTING PROCEDURE Section (steps 3 and 4), PLUMBING PROCEDURE Section, and BRAKE ADJUSTMENT PROCEDURE Section.

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