HYDRAULIC
Caliper Disc Brake

Installation and Service Instructions

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

⚠ WARNING

ZF Off-Highway Solutions Moinnesota 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.

TABLE 1

Model Number	Lining Kit Number	Repair Kit Number
02-520-304 (HO)	20-060-125	02-500-251

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

When installing this disc brake, it is of utmost importance that the caliper be centered evenly and squarely over the disc. This will ensure even and equal piston travel and lining to disc contact.

⚠ CAUTION

The minimum allowable disc thickness for this brake is 38.1 mm (1.50 in). For use with a thinner disc, disassemble the caliper and reduce spacer thickness accordingly. Spacer thickness = disc thickness + 4.5 mm (0.178 in). A loss of fluid may occur at the time of complete lining wear if the above procedure is not followed.

Uneven lining wear may occur if the caliper is not mounted squarely over the disc, or if the lining assemblies are not parallel to the disc surface. Reduced o-ring seal life may also be evident. When the linings have worn to the point of replacement, replace with the lining kit specified in TABLE 1.

MOUNTING PROCEDURE

(Refer to Figures 1 and 2)

1. When planning or designing an installation of this brake on a machine, the mounting surface to disc face dimension should be closely held. Use shims as needed to obtain the proper distance.
2. Using Table 2, determine “A” dimension and locate the caliper mounting holes. Bolt the caliper disc brake assembly securely to machine. See Torque Note.

Torque Note

It is recommended to use using 5/8-18UNC SAE grade 8 plated bolts and heat treated flat washers. Torque the bolts 257.6-271.2 N·m (190-200 lb·ft).

PLUMBING PROCEDURE

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

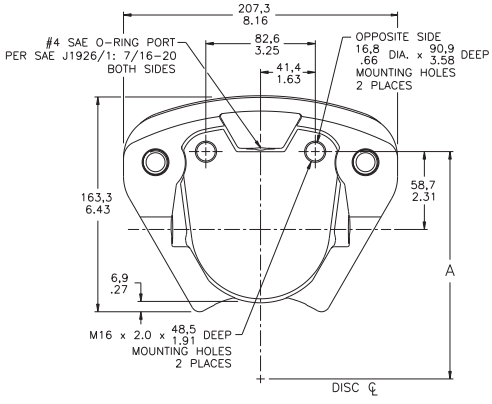

FIGURE 1

DISC CENTERLINE TO MOUNTING HOLE DIMENSION

Disc Diameter	“A” dimension (see Figure 1)
304.8 mm (12 in)	168.2 mm (6.62 in)
355.6 mm (14 in)	193.6 mm (7.62 in)
406.4 mm (16 in)	219.0 mm (8.62 in)
457.2 mm (18 in)	244.4 mm (9.62 in)
508.0 mm (20 in)	269.8 mm (10.62 in)

TABLE 2

NOTE: For disc diameters between 508 to 914 mm, add 15 mm (20 to 36 inches, add 0.62 inch) to disc radius to obtain “A” dimension.

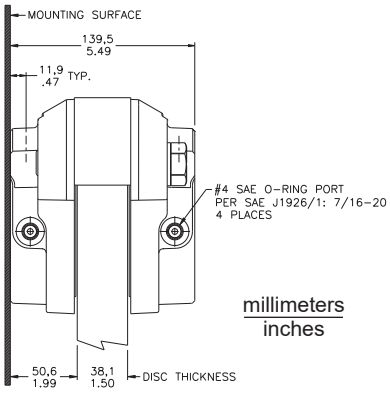

FIGURE 2

NOTE

When installing new linings or servicing the brake, examine the disc for excessive wear. As a guide, the following limits are suggested for refinishing the disc.

a. Surface finish 1.0-1.5 micron (40-60 micro inch).
b. Surfaces to be parallel within 0.051 mm (0.002 in).
c. Do not reduce thickness by more than 0.762 mm (0.030 in) when refinishing.

CHANGE LINING PROCEDURE

(Refer to Figure 3)

1. Remove brake from machine by disconnecting necessary fluid lines and removing bolts. Drain fluid from brake assembly.
2. It is not necessary to separate housing halves, however, if you must separate housing (3) halves remove cap screws (1), washers (2), and spacer (4). Use a bench vise.
3. Remove lining assemblies (8) from housings (3). Be sure to keep new lining assembies (8) free of oil, grease, etc.
4. Gently press piston (7) into housing (3) bore. Piston (7) must bottom in housing bore to assure proper lining to disc clearence. Install new lining assembly (8) into the housing pocket. Repeat this process for the other housing half.
5. Position spacer (4) between housing (3) halves. Install cap screws (1) and washers (2). Lubricate cap screws (1) and torque 413.6-454.3 N·m (285-315 lb·ft).
6. Install brake on machine. Shim as required to center the caliper over the disc. **See Torque Note on page 1.**
7. Connect necessary fluid lines.
8. Bleed the system making sure all air is eliminated.
9. Make several static brake applications. Check for leaks and bleed once more.
10. Check linings to be sure there is no drag. If lining to disc drag occurs, refer to step 4 above to correct.

⚠ CAUTION

Do not move machine until a firm brake is obtained.

CHANGE REPAIR KIT PROCEDURE

(Refer to Figure 3)

LUBRICATE ALL RUBBER COMPONENTS FROM REPAIR KIT WITH CLEAN TYPE FLUID USED IN THE SYSTEM.

1. Remove brake from machine by disconnecting necessary fluid lines and removing mounting bolts. Drain fluid from brake assembly.
2. Separate housing (3) halves by removing cap screws (1), washers (2), and spacer (4). Use a bench vise.
3. Remove lining assembly (8) from housing (3). Be sure to keep lining assembly (8) free of oil, grease, etc.
4. Remove piston (7) from one housing (3) half by pulling piston (7) from housing bore. If piston fails to move, place housing half face down on a bench. Protect the piston face by placing a cloth between piston and bench. Support the housing half on the bench in such a way that piston (7) can be eased out of the bore. This is accomplished by carefully introducing low air pressure 0.7-1.0 bar (10-15 PSI) through the fluid inlet ports.

⚠ CAUTION

Do not use high air pressure as it is dangerous and unnecessary. Use just enough air pressure to ease the piston out of the bore. Do not blow the piston out of the bore. If the piston is seized or cocked, or does not come out readily, release the air pressure and use a soft (brass) hammer to rap sharply on and around the end of piston. Reapply air pressure to remove the piston.

5. Remove o-ring (5) and back-up ring (6) from housing (3) half. **NOTE: Be careful not to scratch or mar housing bore.**
6. Repeat steps 3 through 5 for the other housing half.
7. Clean housing (3) bores with clean type fluid used in the system.
8. Install new o-ring (5) and new back-up ring (6) in the groove in housing (3) bore. Note to order of components. **NOTE: Be careful not to scratch or mar housing bore.**
9. Gently press piston (7) into housng (3) bore. Piston (7) must bottom in housing bore to assure proper lining to disc clearence. Install lining assembly (8) into housing pocket. Note the order of the components.
10. Repeat steps 8 and 9 for the other housing half.
11. Position spacer (4) between housing (3) halves. Install cap screws (1) and washers (2). Lubricate cap screws (1) and torque 413.6-454.3 N·m (285-315 lb·ft).
12. Install brake on machine. Shim as required to center the caliper over the disc. **See Torque Note on page 1.**
13. Connect necessary fluid lines.
14. Bleed the system making sure all air is eliminated.
15. Make several static brake applications. Check for leaks and bleed once more.
16. Check linings to be sure there is no drag. If lining to disc drag occurs, refer to step 9 above to correct.

⚠ CAUTION

Do not move machine until a firm brake is obtained.

● Items included in Repair Kit
▲ Items included in Lining Kit

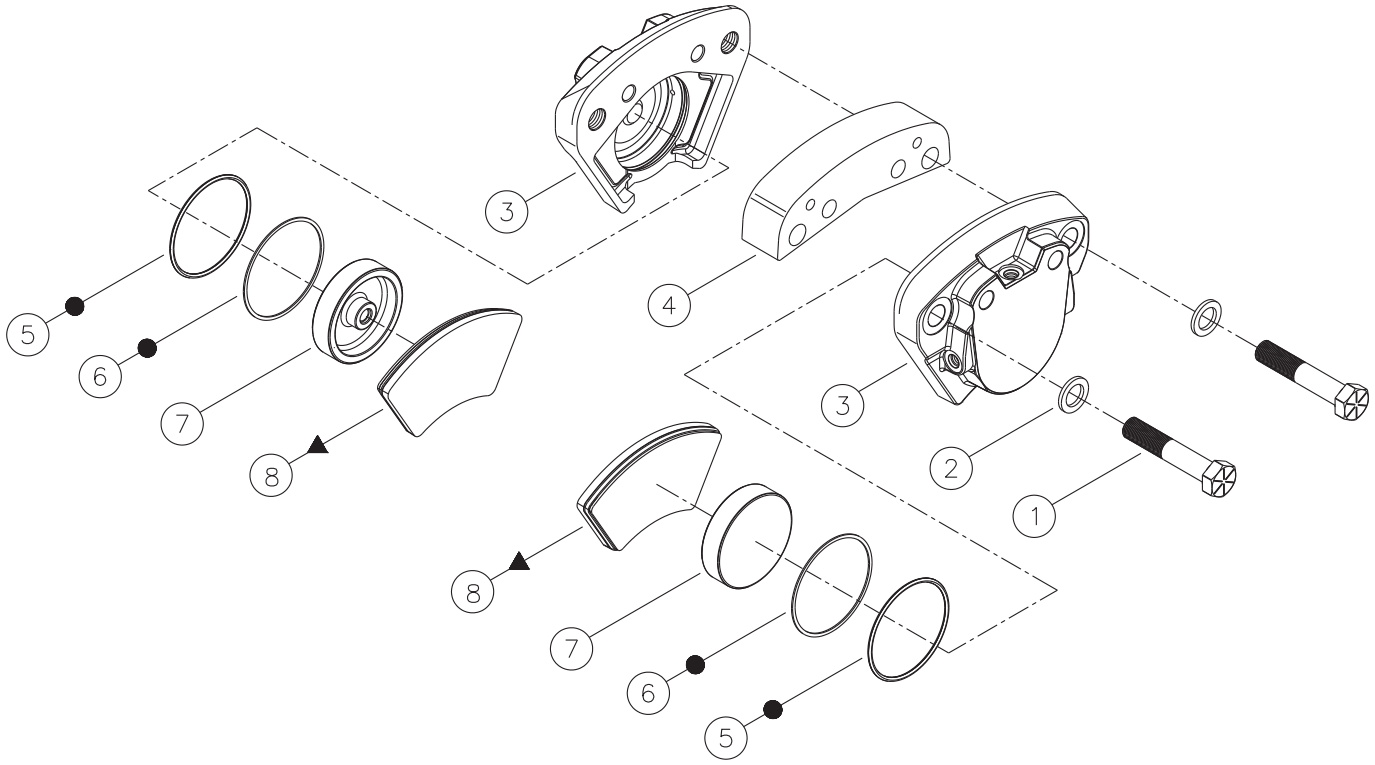

FIGURE 3

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