HYDRAULIC
Caliper Disc Brake

Installation and Service Instructions

TABLE 1

Model Number	Repair Kit Number	Lining Kit Number
03-520-200 (HO)	02-500-067	20-060-088
03-520-202 (HO)	02-500-067	20-060-053

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

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 this 520 Series 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

This 520 Series Brake is designed to be used with a disc thickness of 25.4 mm (1.00 in). For other disc thicknesses, contact ZF Off-Highway Solutions Minnesota Inc.

MOUNTING PROCEDURE

1. When planning or designing an installation of this brake on a vehicle, the mounting surface to disc face dimension of 61.2 mm (2.41 in) should be closely held. Use shims as needed to obtain the proper distance. **NOTE: Mounting surface must be parallel with disc.**
2. Using Table 2, determine “A” dimension and locate caliper mounting holes. This brake is designed to be mounted using 7/8 inch diameter heat treated pins. This allows for brake movement when not applied. However, when rigid mounting is desired, 7/8-14 plated SAE grade 8 mounting bolts should be used. **SEE TORQUE NOTE.**

TORQUE NOTE

When using 7/8-14 plated SAE grade 8 mounting bolts instead of pins, torque 664.4-691.6 N·m (490-510 lb·ft).

PLUMBING PROCEDURE

1. After caliper assembly is mounted on vehicle, install hydraulic lines. **NOTE: All Porting is designed for #4 SAE o-ring boss port adapter.**
2. Bleed system making sure all air is eliminated. Apply hydraulic pressure and check for leaks.
3. Torque bleeder screws 12.2-20.0 N·m (9-15 lb·ft).

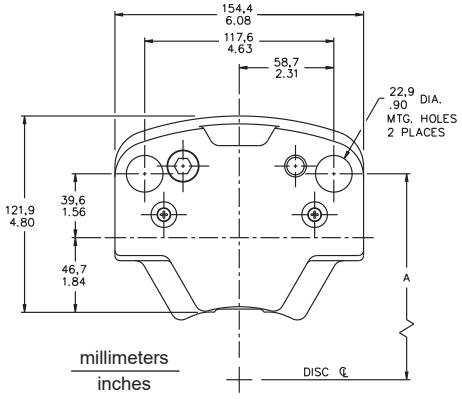


FIGURE 1

DISC CENTERLINE TO MOUNTING HOLE DIMENSION

Disc Diameter	“A” Dimension
254.0 mm (10 in)	127.0 mm (5.00 in)
304.8 mm (12 in)	152.4 mm (6.00 in)
355.6 mm (14 in)	181.1 mm (7.13 in)
406.4 mm (16 in)	206.5 mm (8.13 in)
457.2 mm (18 in)	231.9 mm (9.13 in)
508.0 mm (20 in)	258.8 mm (10.19 in)
609.6 mm (24 in)	312.7 mm (12.31 in)

TABLE 2

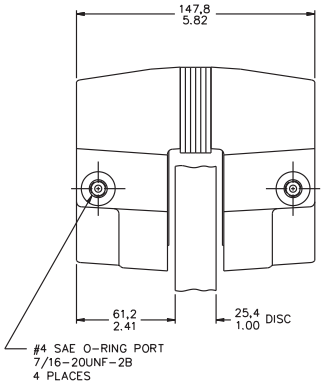


FIGURE 2

REPAIR KIT REPLACEMENT INSTRUCTIONS

Disassembly Procedure

(Refer to Figure 3)

See Table 1 for Repair Kit required for your brake.

1. Remove brake from vehicle by disconnecting necessary fluid lines. Remove mounting bolts if heat treated pins are not used. Drain fluid from assembly.
2. Separate housing (5) halves by removing cap screws (1), washers (2) and spacers (11).
3. Remove screws (3), springs (4) and lining assembly (10) from housing (5) half.
4. Remove piston (9) from housing (5) half by pulling piston (9) from bore. If piston fails to move, place housing half face down on bench. Protect piston face by placing a cloth between piston and bench. Support housing half on bench in such a way that piston can be eased out of its bore. This is accomplished by carefully introducing low pressure air, 0.69-1.03 bar (10-15 PSI), through fluid inlet fittings. While pulling piston (9) out of its bore, work boot (8) from piston (9) groove. **NOTE: Be careful not to scratch piston (9).**

⚠ CAUTION

Do not use high pressure air 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 piston (9) is seized, 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 the piston. Reapply air pressure to remove the piston.

5. Remove boot (8) from housing (5) half. Remove back-up ring (7) and o-ring (6) from inner housing groove. Use a screwdriver or similar tool. **NOTE: Be careful not to scratch housing bore.**
6. Repeat steps 3 through 5 for second housing (5) half.

Assembly Procedure

(Refer to Figure 3)

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

1. Clean housing bore with clean type fluid used in system.
2. Install new o-ring (6) and new back-up ring (7) in groove of one housing (5) half. Note order of o-ring and back-up ring.

⚠ CAUTION

When installing back-up ring (7) be sure it is positioned on the lining side of groove. If the back-up ring is cupped, be sure the cupped side is against o-ring (6).

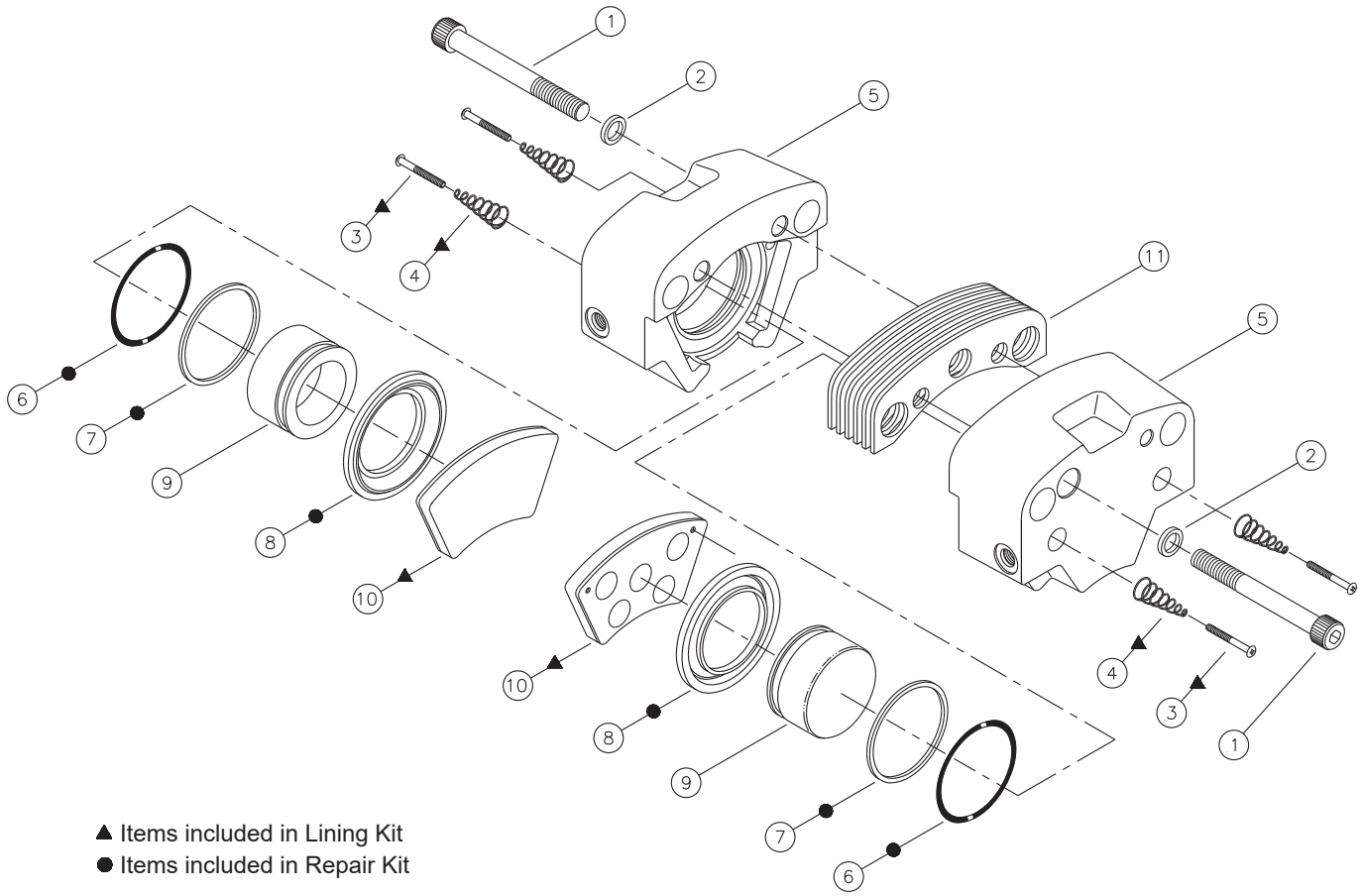
3. Install new boot (8) in housing (5) half.
4. Lubricate piston (9) with clean type fluid used in the system. Carefully insert piston (9) though boot (8). Gently push piston (9) into housing (5) bore using a twisting motion. Piston (9) must bottom in housing (5) to assure lining to disc clearance.
5. Position boot (8) in piston (9) groove so inner diameter of boot (8) is flat and is not twisted. Do not allow air to become trapped behind boot (8) and impede a proper fit of the outer diameter of boot (8) to housing.
6. Install lining assembly (10) in housing (5) pocket. Apply a small amount of Loctite to threads of new screws (3). Insert new screws through springs (4), housing (5) half and into lining assembly (10). Torque screws (3) 0.68-1.81 N·m (6-16 lb·in).
7. Repeat steps 1-6 for second housing (5) half.
8. Assemble housing (5) halves by installing washers (2), cap screws (1), and spacers (11). Torque cap screws 122.0-135.6 N·m (90-100 lb·ft).
9. Install brake on vehicle. Shim as required to center the caliper over disc. **SEE TORQUE NOTE ON PAGE 1.**
10. Connect necessary fluid lines. Bleed the system making sure all air is eliminated. Make several static brake applications. Check fo leaks and bleed again.
11. Check linings to be sure there is no drag. If lining to disc drag occurs, refer to step 4 above to correct.

LINING REPLACEMENT INSTRUCTIONS

(Refer to Figure 3)

See Table 1 for Lining Kit required for your brake.

1. Remove brake from vehicle by disconnecting necessary fluid lines. Remove mounting bolts if heat treated pins are not used. Drain fluid from assembly.
2. Separate housing (5) halves by removing cap screws (1), washers (2) and spacers (11).
3. Remove screws (3), springs (4) and lining assembly (10) from housing (5) half. Repeat for other housing half.
4. Gently press piston (9) back into housing (5) bore. Piston must bottom on housing bore to assure lining to disc clearance on vehicle. Repeat for other housing half.
5. Install new lining assembly (10) into housing (5) pocket. Apply a small amount of Loctite to the threads of new screws (3). Install new screws (3) through new springs (4), housing (5) half and into new lining assembly (10). Torque screws (3) 0.68-1.81 N·m (6-16 lb·in). Repeat for other housing half.
6. Assemble housing (5) halves by installing washers (2), cap screws (1), and spacers (11). Torque cap screws 122.0-135.6 N·m (90-100 lb·ft).
7. Install brake on vehicle. Shim as required to center the caliper over disc. **SEE TORQUE NOTE ON PAGE 1.**
8. Connect necessary fluid lines. Bleed the system making sure all air is eliminated. Make several static brake applications. Check fo leaks and bleed again.
9. Check linings to be sure there is no drag. If lining to disc drag occurs, refer to step 4 above to correct.



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

FIGURE 3

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