MECHANICAL
Caliper Disc Brake

Installation and Service Instructions

TABLE 1

Model Number	Lining Kit Number	Model Number	Lining Kit Number	Model Number	Lining Kit Number
02-515-116	20-060-036	02-515-174	20-060-082	†* 02-515-180	20-060-082
†* 02-515-147	20-060-082	†* 02-515-175	20-060-082	02-515-186	20-060-063
02-515-148	20-060-082	02-515-176	20-060-063	02-515-189	20-060-117
†* 02-515-149	20-060-082	02-515-178	20-060-082	†* 20-100-297	20-060-082
02-515-150	20-060-082	†* 02-515-179	20-060-097		

NOTE: Repair Kit 02-500-133 used with all models. If your product number is not listed, contact ZF Off-Highway Solutions Minnesota Inc. for information.

* Drive line parking brake package.

† Use spacer(s) behind lining (dead side).

⚠ 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 515 Series Brakes, it is of utmost importance to maintain parallelism between mounting bolts and that caliper be centered evenly and squarely over disc. This will prevent binding of caliper and ensure even lining to disc contact.

⚠ CAUTION

These 515 Series Brakes are designed to be used with a disc thickness of 12.7 mm (0.50 in). For other disc thicknesses, contact ZF Off-Highway Solutions Minnesota Inc.

MOUNTING PROCEDURE

1. Using Figure 1 and Table 2, determine “A” dimension and locate caliper mounting holes.
2. Mount brake on disc and bolt securely to vehicle or machine using SAE grade 5 or better mounting bolts or pins.

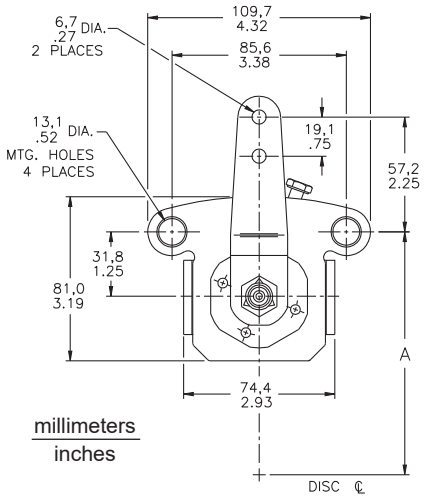

FIGURE 1

DISC CENTERLINE TO MOUNTING HOLE DIMENSION

Disc Diameter	“A” Dimension
152.4 mm (6 in)	85.9 mm (3.38 in)
203.2 mm (8 in)	111.3 mm (4.38 in)
254.0 mm (10 in)	136.7 mm (5.38 in)
304.8 mm (12 in)	162.1 mm (6.38 in)
355.6 mm (14 in)	187.5 mm (7.38 in)
406.4 mm (16 in)	212.9 mm (8.38 in)
457.2 mm (18in)	283.3 mm (9.38 in)
508.0 mm (20 in)	263.7 mm (10.38 in)

TABLE 2

For disc diameters greater than 508.0 mm, add 9.7 mm (20 in, add 0.38 in) to disc radius to obtain "A" dimension.

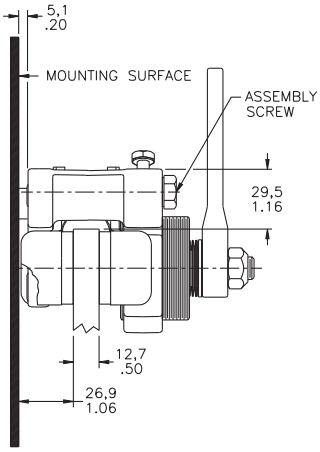

FIGURE 2

ADJUSTMENT PROCEDURE

NOTE
Do not use lever as a means to turn brake module. To do so will cause piston to extend and create false settings.

1. Thread in brake module housing until lining assemblies contact disc completely. Back off brake module until a flat surface lines up with set screw. Tighten set screw securely.
2. Remove lock nut and lever from piston. Position lever in desired location.
3. Install lock nut on piston. Torque 12.2-14.9 N·m (9-12 lb·ft).
4. Attach actuating mechanism to lever.

CHANGE BALL AND CAM PROCEDURE

(Refer to Figures 3 and 4)

NOTE
Do not use the operating lever as a means to turn the brake module.

1. Disconnect actuating mechanism from lever (2) and loosen set screw (11).
2. Remove brake module housing (6) and lever assembly from housing (14).
3. Remove lock nut (1) and lever (2) from piston (9).
4. Depress retainer (4) and remove retaining ring (3) from piston (9).
5. Remove retainer (4) and five belleville springs (5) from piston (9).

NOTE
Note stacking sequence of belleville springs (5) for assembly purposes.

6. Remove piston (9), two cam plates (7) and three balls (8) from brake module housing (6).
7. Lubricate three new balls (8) with heavy, waterproof grease and place between ramps of new cam plates (7).
8. Install new cam plates (7) on piston (9) making sure locking lugs are aligned with holes on piston.
9. Install piston (9) assembly into brake module housing (6) making sure locking lugs of cam plate (7) align with holes in brake module housing. Lightly coat face of piston with heavy, waterproof grease.
10. Install five belleville springs (5) and retainer (4) on piston (9).

NOTE
Note stacking sequence of belleville springs (5).

11. Depress retainer (4) and install retaining ring (3) in groove on piston (9).
12. Thread in brake module housing (6) until lining assemblies (12) contact disc completely. Back off brake module until a flat surface lines up with set screw (11). Torque set screw (11) 9.5-12.2 N·m (7-9 lb·ft).
13. Install lever (2) in desired location on piston (9).
14. Install lock nut (1) on piston (9). Torque lock nut (1) 12.2-14.9 N·m (9-12 lb·ft).
15. Attach actuating mechanism to lever.

CHANGE LINING PROCEDURE

(Refer to Figure 4)

See Table 1 for Lining Kit required for your brake. Lining assemblies (12) can be replaced without removing brake module housing (6).

1. Remove cap screw (10) and spring clip (13); allow lining assemblies (12) to drop out of housing (14). **NOTE: On small diameter discs with large hubs, it may be necessary to remove one mounting bolt and swing housing to free lining assemblies. Earlier models used a compression spring which is not included in the lining kit.**
2. Thread brake module housing (6) out of housing (14) so that piston (9) is flush with housing.
3. Install new lining assemblies (12) in housing (14).
4. Install new spring clip (13) and cap screw (10) and torque 13.6-16.3 N·m (10-12 lb·ft). **NOTE: If the lining kit does not include new spring clip (13), reinstall compression spring.**
5. To continue, refer to ADJUSTMENT PROCEDURE Section.

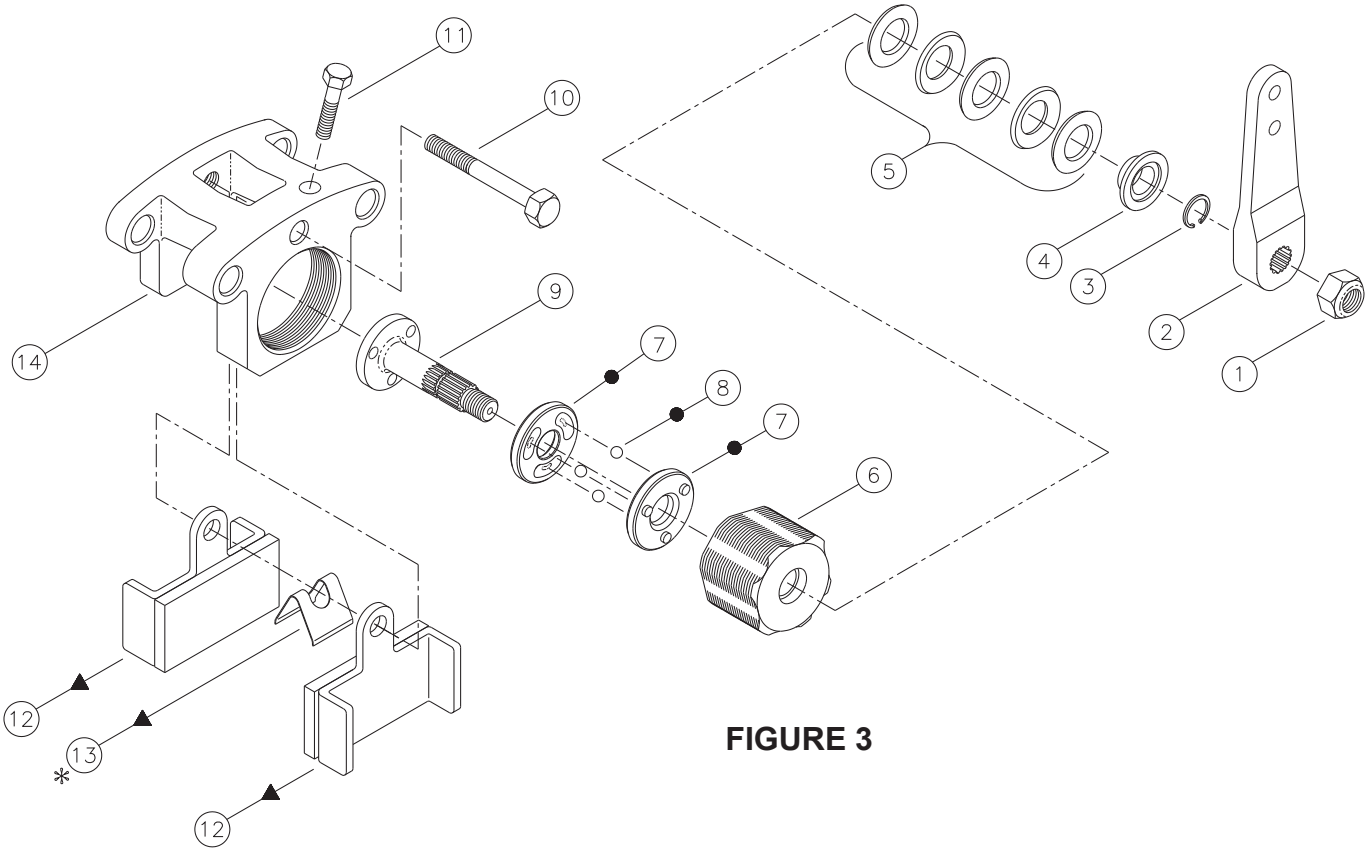

FIGURE 3

▲ Items included in Lining Kit
● Items included in Repair Kit
✻ Not included in all Lining Kits

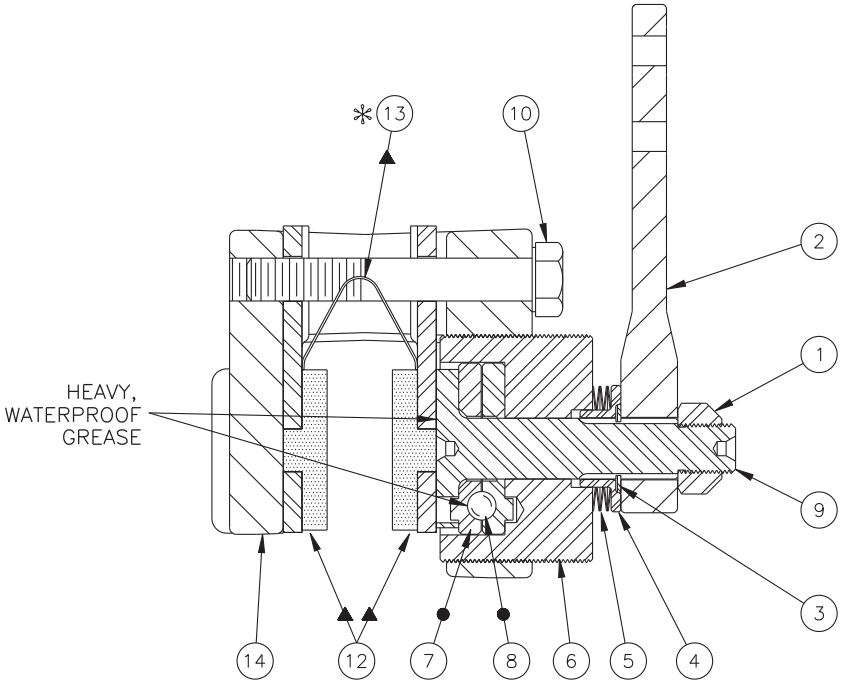

FIGURE 4

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