Modular MULTIPLE DISC BRAKE (through shaft)

Service Instructions

NOTE:
This service sheet covers both 575 Series and 577 Series through shaft brakes.

REPAIR KITS

(Refer to page 3 for item numbers)

Number	Description	Includes
12-501-042	O-ring and Back-up Ring Kit	Case Gaskets (10) Back-up Rings (14 & 16) O-rings (15 & 17) Loctite
12-501-046	Spring Kit	Case Gaskets (10) Springs - red (12) Springs - blue (12) Loctite
12-501-180	Lining Kit (3 rotor)	Case Gaskets (10) Primary Disc (6) Stator Discs (8) Rotor Discs (7) Loctite
12-501-044	Lining Kit (4 rotor)	Case Gaskets (10) Primary Disc (6) Stator Discs (8) Rotor Discs (7) Loctite

ZF Off-Highway Solutions Minnesota Inc.
1911 Lee Boulevard / North Mankato, MN U.S.A. 56003
Tel: +1 507 625 6426 **Fax:** +1 507 625 3212

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DISASSEMBLY

(Refer to Figures 1 and 2)

1. Remove two socket head cap screws (1). A suitable holding fixture is useful to keep brake in position.
2. Tap cover (2) with a soft mallet to separate from spring plate (11). It may be necessary to use a screwdriver to carefully pry the sections apart.
3. Remove two thrust washers (3) and spline shaft (4) from brake assembly.
4. Remove four socket head shoulder bolts (5). A suitable holding fixture is useful to keep the brake in position.

⚠ CAUTION

Do not remove shoulder bolts without pressurization of the brake, approximately 20.7 bar (300 PSI), or damage may result.

5. Remove primary disc (6), rotor discs (7), and stator discs (8).
6. Release the pressure to the brake and remove four socket head cap screws (9).
7. Remove spring plate (11).
8. Remove case gasket (10) from spring plate (11).
9. Before removing springs (12), note pattern and color for reassembly purposes.
10. Remove piston (13) by carefully applying hydraulic pressure through the brake release port on pressure plate (18).
11. Remove o-rings (15 & 17) and back-up rings (14 & 16) from piston (13). **NOTE: Be careful not to scratch or mar piston (13).**
12. Remove case gasket (10) from pressure plate (18).

ASSEMBLY

(Refer to Figures 1 and 2)

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

1. Clean all parts thoroughly before assembling.
2. Install back-up rings (14 & 16) on piston (13) on the side of the spring pockets.
3. Install o-rings (15 and 17) on piston (13). Be sure o-rings are flat and all twists are removed. **NOTE: Be careful not to scratch or mar piston (13).**
4. Lubricate piston (13) with clean type fluid used in the system. Carefully press piston (13) into pressure plate (18). Be sure piston (13) is oriented so that the threaded holes in piston (13) are in alignment with through holes in spring plate (11) when installed.
5. Install springs (12) according to the pattern and color noted during disassembly. Diffferent colored springs must be alternated. Contact ZF Off-Highway Solutions Minnesota Inc. if you have questions regarding spring pattern.
6. Affix new case gaskets (10) to pressure plate (18) and spring plate (11). Install spring plate (11) on pressure plate (18).
7. Place the brake unit on a press. Using a fixture, depress and install four socket head cap screws (9). **NOTE: Apply two drops of Loctite #242 to threads.** Torque cap screws (9) 47.5-54.2 N·m (35-40 lb·ft). A suitable holding fixture is useful to hold the brake in position.
8. Install stator discs (8) and rotor discs (7). Begin with a rotor disc (7) and alternate with stator discs (8).
9. Install primary disc (6).
10. Align discs and partially screw in four socket head shoulder bolts (5). **NOTE: Apply two drops of Loctite #242 to threads.** Inspect for free movement of stack. Pressurize the brake release port, approximately 20.7 bar (300 PSI), to release discs. Torque shoulder bolts (5) 20.3-24.4 N·m (15-18 lb·ft). A suitable holding fixture is useful to hold the brake in position.
11. Apply a light coat of grease to one side of thrust washer (3). Then install and secure into the grooved side of spine shaft (4).
12. With the washer facing toward the lining stack, insert spline shaft (4) and align with rotors (7).
13. After spline shaft (4) and washer (3) are properly aligned and seated, release the pressure to the brake.
14. Apply a light coat of grease to second thrust washer (3) then install and secure into the groove of cover (2).
15. Install cover (2) using socket head cap screws (1). **NOTE: Apply two drops of Loctite #242 to threads.** Torque cap screws (1) 12.2-14.9 N·m (9-11 lb·ft).

⚠ CAUTION

If hydraulic bench testing is performed on the brake assembly, release pressure should not exceed 69.0 bar (1000 PSI) unless two additional bolts, SAE grade 5 or better, are used for supplemental clamping.

INSTALLATION NOTE

Pressurizing the brake may be necessary to properly align shafts and pilots when mounting brake to motor.

See page 1 for items included in kits.

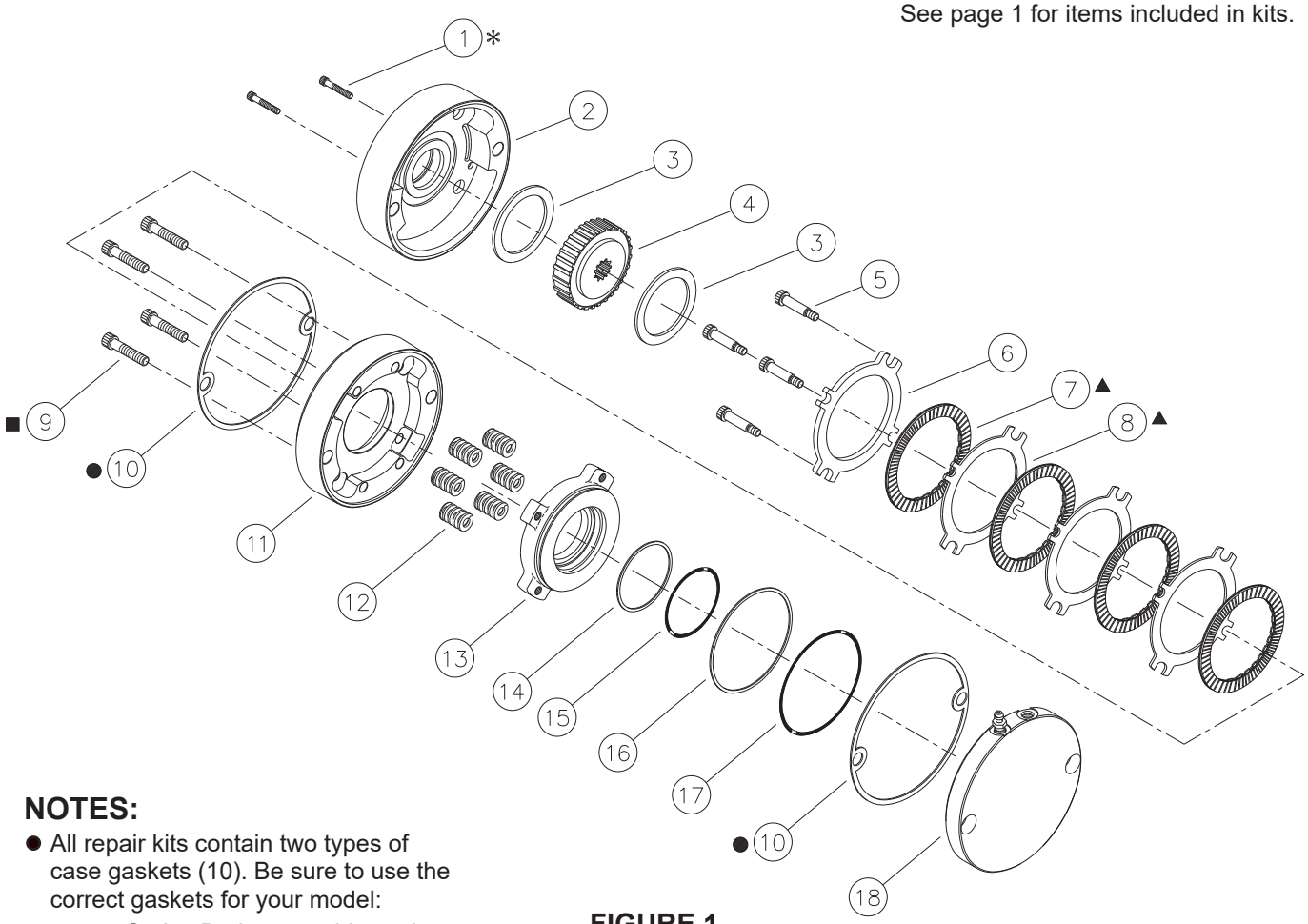

FIGURE 1

NOTES:

- ● All repair kits contain two types of case gaskets (10). Be sure to use the correct gaskets for your model:
  - 577 Series Brakes use this gasket

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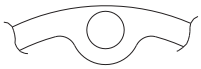

- * 575 Series Brakes require two 3/8-16UNC flat head bolts and o-rings to be torqued to 33.9-40.7 N·m (25-30 lb·ft).
- ■ Some 575 Series Brakes require only two 3/8-16UNC bolts (9).
- ▲ Some 575 Series Brakes require only two stators (8) and three thick rotors (7). (Refer to Repair Kit 12-501-180).

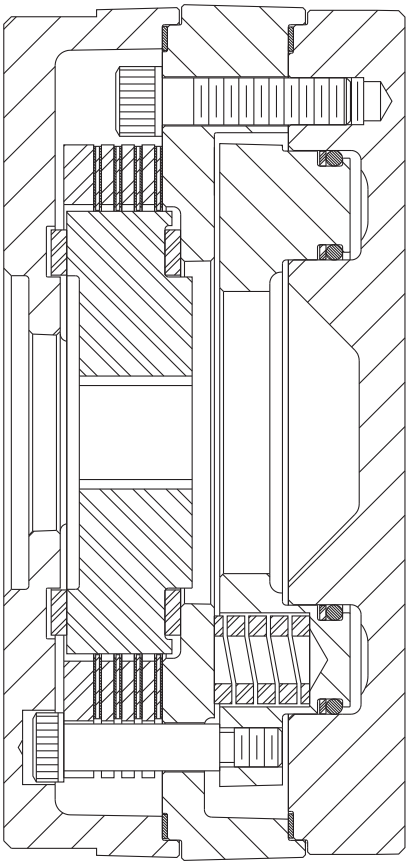

FIGURE 2

BLEEDING

1. Install brake in system and connect pressure lines.
2. Bleed pressure release section of brake by pressurizing side inlet port and allowing air to escape from top port. Pressure should not exceed 6.89 bar (100 PSI) during bleeding.
3. Apply sufficient pressure to release brake and check for proper operation in system.

SERVICE DIAGNOSIS

PROBLEM	CAUSE	EXPLANATION	ACTION
Brake slips	A. Excessive pressure in hydraulic system	If there is back pressure in the actuation line of the brake, holding torque will be reduced.	Check filters, hose size, restrictions in other hydraulic components.
	B. Oil in brake if designed for dry use	Dry linings generate 50% more torque than linings saturated with oil. If the brake has oil in it, check the type of oil. 1. Gearbox oil 2. Hydraulic oil	Replace oil seal in brake. Check motor seal. Check piston seals. **NOTE: Internal components will need to be inspected, cleaned, and replace as required**
	C. Disc plates worn	The thickness of the disc stack sets the torque level. A thin stack reduces torque.	Check disc thickness and contact ZF Off-Highway Solutions Minnesota Inc..
	D. Springs have broken or have taken a permanent set	Broken or set springs can cause reduced torque, a rare occurrence.	Check release pressure and contact ZF Off-Highway Solutions Minnesota Inc.0 (May need servicing with new spring kit).
Brake drags or runs hot	A. Low actuation pressure	The brake should be pressurized to a minimum of 1.38 bar (20 PSI) over the full release pressure under normal operating conditions. Lower pressures will cause the brake to drag thus generating heat.	Attach pressure gauge to bleed port and check pressure with system on.
	B. Bearing failure	If bearing should fail, a large amount of drag can be generated.	Replace the bearing. Refer to kits on page 1.
	C. Oil in brake	Excess fill of oil in sump condition through wet brakes can cause the unit to run hot. Also excessive RPM in sump condition.	Drain oil and refill as specified for brake. Switch to flow through cooling.
Brake will not release	A. Stuck or clogged valve	Brakes are designed to come on when system pressure drops below stated release pressure. If pressure cannot get to the brake, the brake will not release.	Attach pressure gauge to bleed port. Check for adequate pressure. Replace defective line or component.
	B. Bad o-rings	If release piston will not hold pressure, the brake will not release.	Replace o-rings. Refer to kits on page 1.
	C. Discs frozen	These brakes are designed for only limited dynamic braking. A severe emergency stop or prolonged reduced release pressure operation may result in this type of damage.	Replace disc stack. Refer to kits on page 1.