Wheel Mount MULTIPLE DISC BRAKE (wet design)

Service Instructions

NOTE:
This service sheet covers models:
13-587-098
13-587-102

REPAIR KITS

(Refer to page 3 for item numbers)

Number	Description	Includes
12-501-464	O-ring and Back-up Ring Kit	Case Seal (22) O-rings (3 & 6) Back-up Rings (4 & 7)
12-501-462	Lining Kit	Case Seal (22) Primary Disc (8) Rotor Discs (9) Stator Discs (10)
12-501-463	Bearing Kit	Case Seal (22) Bearing Cups (14 & 21) Bearing Cones (16 & 20)
12-501-461	Spring Kit	Case Seal (22) Springs (12)

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NOTE

This literature services various models in this brake series. The components shown in Figures 1 and 2 may appear different than what is found in your brake.

DISASSEMBLY

(Refer to Figures 1 and 2)

1. Position brake assembly with pressure plate (2) facing up. A suitable holding fixture is useful to keep the brake in position. Remove two cap screws (1) and carefully separate the pressure plate (2) from cover plate (23).

⚠ CAUTION

Pressure plate is under spring tension of approximately 1292 kgf (2850 lb). The two cap screws should be loosened evenly to relieve this force. If a hydraulic press is available, 1361 kgf (3000 lb) maximum, the pressure plate can be held in position while removing cap screws.

2. Separate shaft assembly (15) from pressure plate (2) and cover plate (23). **NOTE: Cone bearings (16 & 20), washer (19), and outer spline (18) only need to be from shaft (17) if they are damaged or the cone bearings are being replaced. Bearing cups (14 & 21) only need to be removed from pressure plate (2) and cover plate (23) if they are being replaced.**
3. Remove case seal (22) from cover plate (23).
4. Remove stack assembly, consisting of primary disc (8), rotor discs (9), stator discs (10), and return plate (11) from cover plate (23).
5. Remove springs (12), and spring guide (13) from cover plate (23). **NOTE: Record the spring pattern for reassembly purposes.**
6. Remove piston (5) from pressure plate (2).
7. Remove o-rings (3 & 6) and back-up rings (4 & 7) from piston (5). **NOTE: Be careful not to scratch or damage piston.**

ASSEMBLY

(Refer to Figures 1 and 2)

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

1. Clean all parts thoroughly before assembling.
2. Install back-up rings (4 & 7) and o-rings (3 & 6) on piston (5). Back-up rings are on the spring side of piston (5). Be sure o-rings are flat and all twists are removed. **NOTE: Be careful not to scratch or damage piston (5).**
3. Lubricate piston (5) with clean type fluid used in the system. Carefully press piston (5) into pressure plate (2).
4. Position cover plate (23) facing upward and reinstall shaft assembly (15) in cover plate (23).
5. Install spring guide (13) and springs (12) in cover plate (23). Be sure to install springs (12) according to the spring pattern recorded during disassebly. Contact ZF Off-Highway Solutions Minnesota Inc. if you have questions regarding spring pattern.
6. Install return plate (11), rotor discs (9), stator discs (10), and primary disc (8).
7. Install new case seal (22) on cover plate (23).
8. Assemble pressure plate (2) to cover plate (23) using two cap screws (1). A hydraulic press will simplify the installation of pressure plate (2) on cover plate (23). Clamp the pressure plate in position and torque cap screws (1) 75.4-81.4 N·m (55-60 lb·ft). **NOTE: Apply two drops of Loctite #242 to the threads of the cap screws.**

⚠ CAUTION

If hydrostatic bench testing is performed on the brake assembly, release pressure should not exceed 137.9 bar (2000 PSI) unless two additional bolts are used for supplemental clamping.

COOLING OIL RECOMMENDATIONS

Oil Type: Mineral base hydraulic oil such as Mobil DTE 24, Citgo A/W 32 or equivalent.

Flow Through Capacity: 18.9 L/Min. (5.0 GPM)

Maximum Case Pressure: Up to 1.7 bar (25 PSI)

Sump Oil Volume: Horizontal - 162 mL (5.5 fl oz)
Vertical - Contact ZF Off-Highway Solutions Inc.

NOTE: Brakes are shipped dry and customer is responsible for adding proper type and volume of cooling oil.

Spring Chart

Model Number	Red Springs (12)	Blue Springs (12)	Yellow Springs (12)
13-587-098	10	0	0
13-587-102	16	0	0

See page 1 for items included in kits.

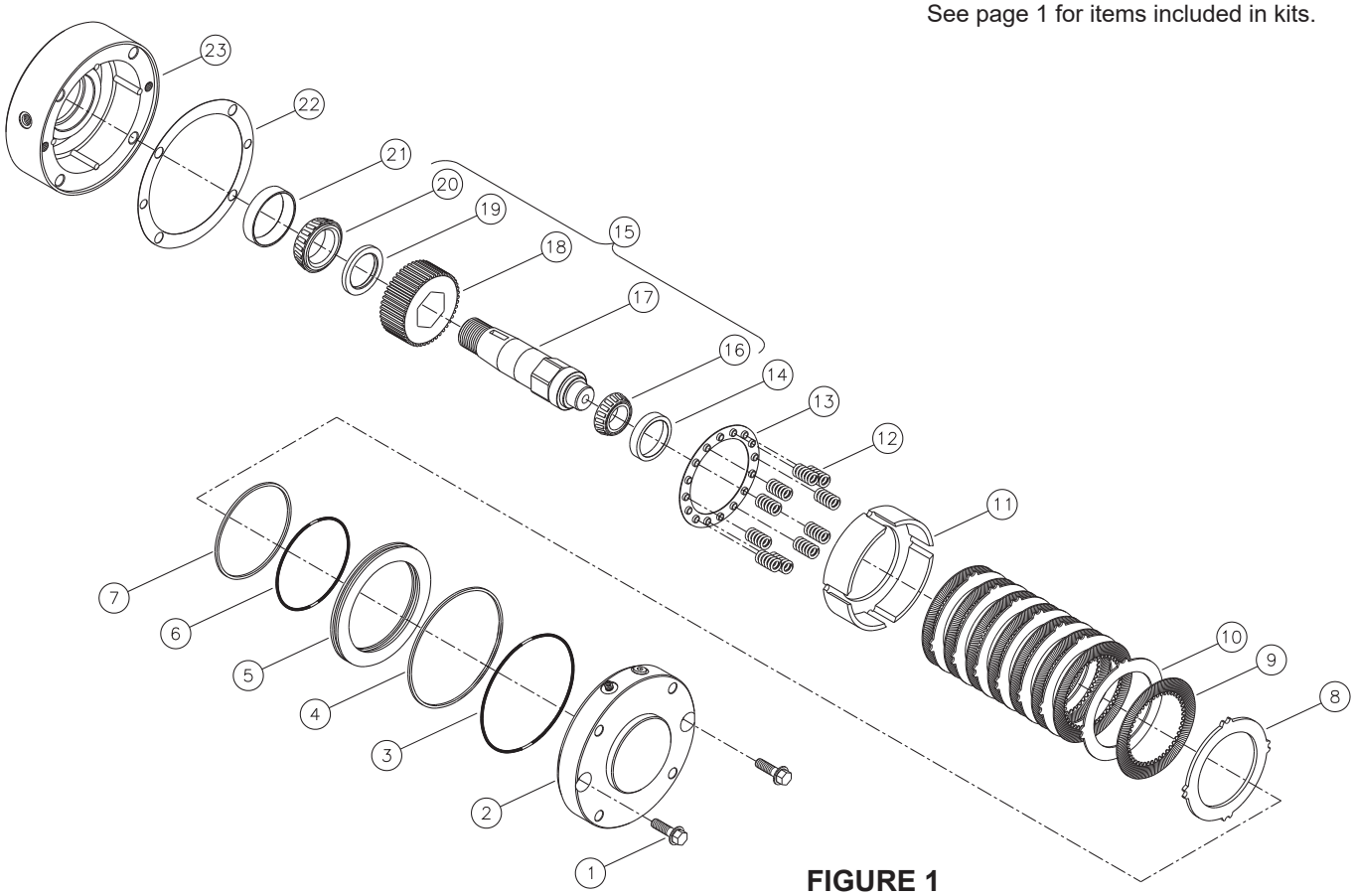

FIGURE 1

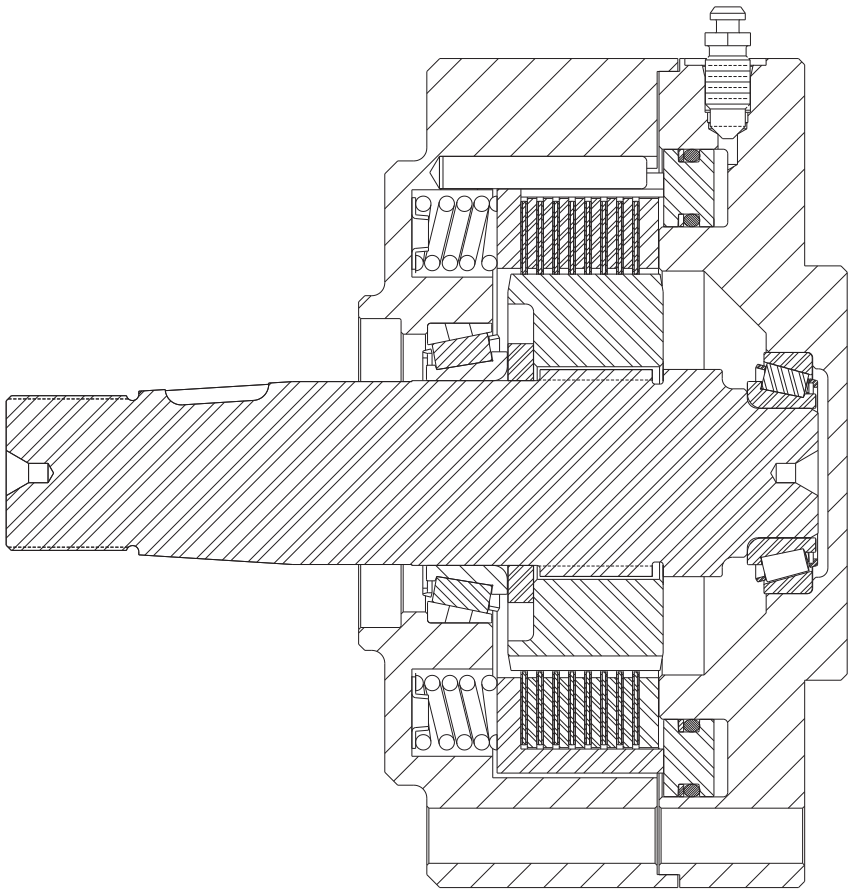

FIGURE 2
(13-587-098 shown)

BLEEDING

1. Install brake in system and connect pressure lines.
2. Bleed the pressure release section of the brake by pressurizing the 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. 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.
	C. 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. 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 a pressure gauge to the 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.
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 a pressure gauge to the 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.