Closed Output MULTIPLE DISC BRAKE

Service Instructions

NOTE:

This service sheet covers models numbers:

02-550-114
02-550-116
02-550-118
02-550-120
02-550-122
02-550-124
02-550-126
02-550-128
02-550-130
02-550-132
02-550-136
02-550-214

REPAIR KITS

(Refer to page 3 for item numbers)

Number	Description	Includes
02-500-153	O-ring and Back-up Ring Kit for 02-550-114, 02-550-116, 02-550-120, 02-550-122, 02-550-124, 02-550-126, 02-550-136, 02-550-214	Case Gasket (14) O-rings (8 & 10) Back-up Rings (7 & 11) Loctite
02-500-158	O-ring and Back-up Ring Kit for 02-550-118	Case Gasket (14) O-rings (8 & 10) Back-up Rings (7 & 11) Loctite
02-500-249	O-ring and Back-up Ring Kit for 02-550-130	Case Gasket (14) O-rings (8 & 10) Back-up Rings (7 & 11) Loctite
12-501-382	O-ring and Back-up Ring Kit for 02-550-128, 02-550-132	Case Gasket (14) O-rings (8 & 10) Back-up Rings (7 & 11) Loctite
20-060-083	Lining Kit for 02-550-114, 02-550-116, 02-550-120, 02-550-122, 02-550-124, 02-550-128, 02-550-132, 02-550-136, 02-550-214	Case Gasket (14) Friction Plate (4) Rotating Plate (5) Loctite
20-060-085	Lining Kit for 02-550-118, 02-550-130	Case Gasket (14) Friction Plate (4) Rotating Plate (5) Loctite
20-060-110	Lining Kit for 02-550-126	Case Gasket (14) Friction Plate (4) Rotating Plate (5) Loctite
02-500-154	Spring Kit for 02-550-114, 02-550-116, 02-550-120, 02-550-122, 02-550-124, 02-550-132, 02-550-136, 02-550-214	Case Gasket (14) Springs - red (13) Springs - blue (13) Loctite
02-500-157	Spring Kit for 02-550-118	Case Gasket (14) Springs - blue (13) Loctite
02-500-221	Spring Kit for 02-550-126, 02-550-128	Case Gasket (14) Springs - red (13) Loctite
02-500-250	Spring Kit for 02-550-130	Case Gasket (14) Springs - red (13) Springs - blue (13) Loctite

NOTE: All repair kits include mounting face o-rings.

DISASSEMBLY

(Refer to Figures 1 and 2)

1. Remove bleeder screw (2) and any other plugs or fittings from pressure ports in housing (3). Drain oil from brake as thoroughly as possible.
2. Remove four washer head bolts (1) which retain cover (15) to housing (3).

⚠ CAUTION

Cover (15) is under spring tension of approximately 680 kgf (1500 lb), the four bolts (1) should be loosened evenly to relieve this force. If a hydraulic press is available, 2268 kgf (5000 lb) maximum, the cover can be held in position while removing the bolts.

3. Remove case seal (14) from cover (15).
4. Before removing springs (13) and retainer (12) from piston (9) be sure to note pattern and color for reassembly purposes. Remove springs (13) and retainer (12).
5. Remove piston (9) from housing (3) by plugging one pressure port and slowly pressurizing other port with air.
6. Remove o-rings (8 & 10) and back-up rings (7 & 11) from piston (9). **NOTE: Be careful not to scratch or mar piston.**
7. Remove shaft (6) from housing (3). **NOTE: Models 02-550-118 & 02-550-124 contain a bearing in shaft (6). Do not remove this bearing unless it is damaged. Model 02-550-126 does not use shaft (6).**
8. Remove stack assembly consisting of rotating plates (5) and friction plates (4) from housing (3). **NOTE: Be careful to avoid contaminating friction surfaces with oil as this is a dry design brake.**

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 assembly.
2. Starting with one of the friction plates (4) and alternating with rotating plates (5) assemble stack in housing (3).
3. Insert shaft (6) through rotating plates (5) until stack is aligned and shaft bottoms in housing (3). **NOTE: Model 02-550-126 does not use shaft (6).**
4. Install o-rings (8 & 10) and back-up rings (7 & 11) on piston (9). **NOTE: Be careful not to scratch or mar piston.**
5. Carefully push piston (9) into bore of housing (3) until piston bottoms on top of lining stack.
6. Install retainer (12) and springs (13) in piston (9). Be sure to install springs according to pattern and color recorded during disassembly. Contact ZF Off-Highway Solutions Minnesota Inc. if you have questions regarding spring pattern.
7. Affix case seal (14) on cover (15).
8. Position cover (15) on top of springs (13). Insert washer head bolts (1) through housing (3) and into cover (15). Tighten bolts evenly to draw cover (15) to housing (3). Torque bolts (1) 74.6-81.4 N·m (55-60 lb·ft).
   NOTE: Apply two drops of Loctite 242 to threads of bolts (1). A hydraulic press will simplify installation of cover on housing. Clamp cover in position while tightening bolts.
9. Install bleeder screw (2) into housing (3).

⚠ CAUTION

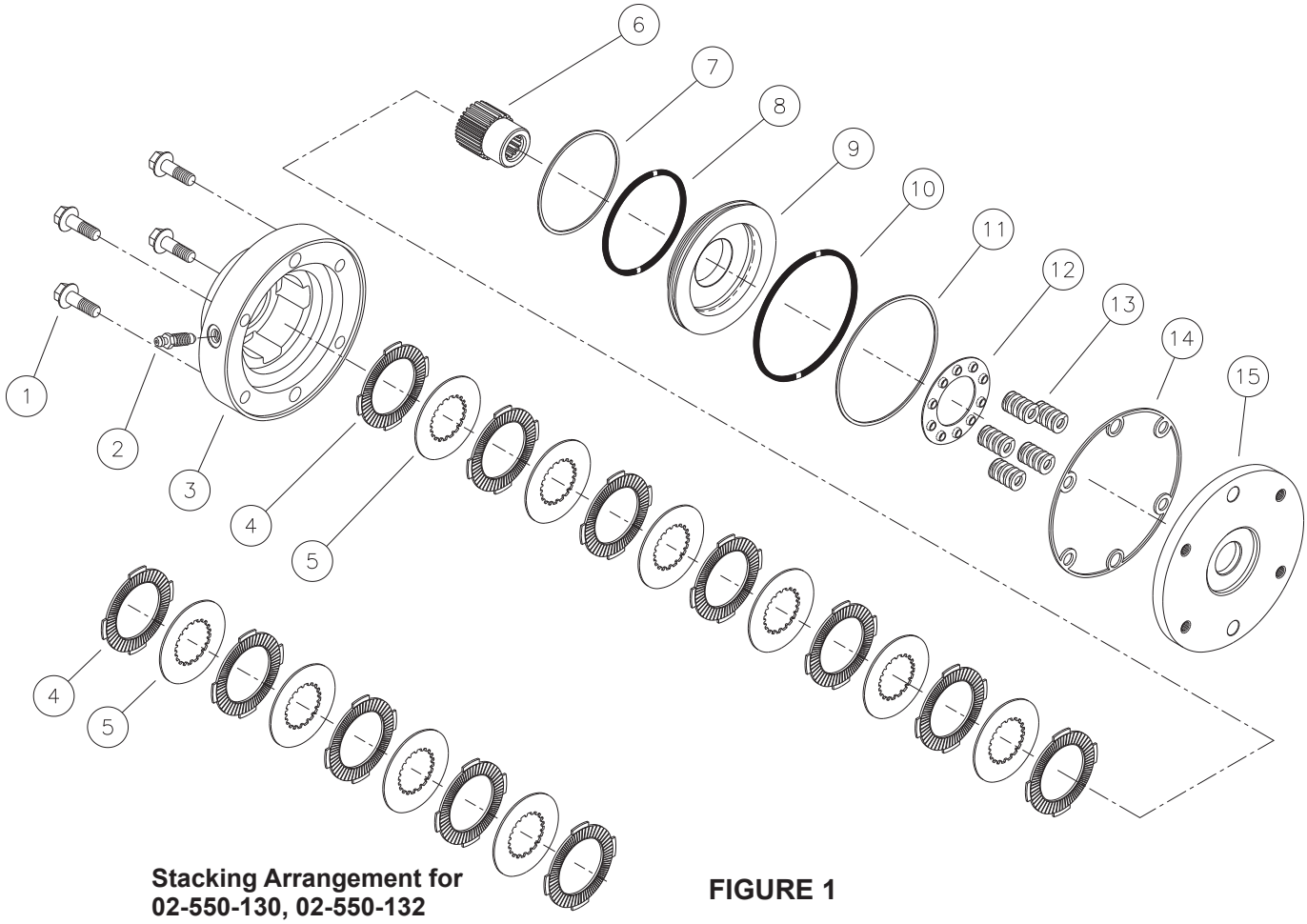
If hydraulic bench testing is performed on the brake assembly, release pressure should not exceed 69 bar (1000 PSI) unless two additional bolts are used for supplemental clamping.

INSTALLATION NOTE

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

SPRING CHART

Model Number	Red Springs (13)	Blue Springs (13)
02-550-114	6	0
02-550-116	6	4
02-550-118	0	8
02-550-120	0	8
02-550-122	4	2
02-550-124	0	8
02-550-126	5	0
02-550-128	5	0
02-550-130	4	2
02-550-132	4	2
02-550-136	0	8
02-550-214	0	5



Stacking Arrangement for 02-550-130, 02-550-132

FIGURE 1

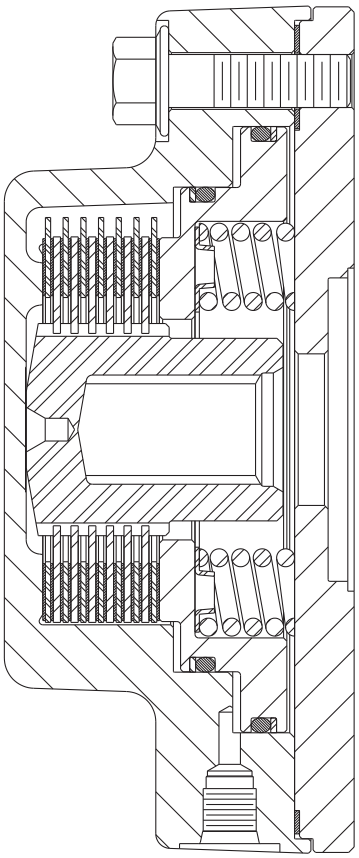


FIGURE 2

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 if 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 broken or haven taken 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 pressure gauge to bleed port and check pressure with system on.
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.

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