

BRAKE MODULE

(SAE C size)



Service Instructions

NOTE:

This service sheet covers
model number:

21-100-036

REPAIR KITS

(Refer to Page 3 for item numbers)

Number	Description	Includes
12-501-289	O-ring and Back-up Ring Kit	Case Seals (5 & 14) O-rings (11 & 13) Back-up Rings (10 & 12) Loctite
12-501-288	Lining Kit	Case Seals (5 & 14) Primary Disc (2) Stator Discs (4) Rotor Discs (3) Loctite
12-501-290	Spring Kit	Case Seals (5 & 14) Springs - Blue (2) Springs - Red (6) Loctite

NOTE: All repair kits include mounting face gaskets.

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DISASSEMBLY

1. Case seal (5) may or may not be attached to spring plate (7). Remove case seal (5).

⚠ CAUTION

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

2. Remove four socket head shoulder bolts (1). A suitable holding fixture is useful to hold brake in position.
3. Remove primary disc (2), rotor discs (3) and stator discs (4). Release pressure to brake.
4. Separate pressure plate (15) from spring plate (7) by removing four socket head cap screws (6). Remove case seal (14).
5. Before removing springs (8), note pattern and color for reassembly purposes.
6. Remove piston (9) by carefully applying hydraulic pressure through brake port on pressure plate (15).
7. Remove o-rings (11 & 13) and back-up rings (10 & 12) from piston (9). **NOTE: Be careful not to scratch or mar piston.**

ASSEMBLY

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

1. Use an alkaline wash to clean the parts before assembling. Refer to page 1 for items included in kits.
2. Place piston (9) on a press with spring pockets facing upward. Install springs (8) in spring pockets in piston (9) according to pattern and color noted during disassembly. Contact ZF Off-Highway Solutions Minnesota Inc. if you have questions regarding the spring pattern.
3. Place spring plate (7) over springs (8) and piston (9) with through holes in spring plate oriented with threaded holes in piston (9). Carefully apply pressure and depress spring plate (7). **NOTE: Be careful not to scratch or damage piston.**
4. Install rotor discs (3), stator discs (4) and primary stator (2) on spring plate (7). Apply two drops of Loctite 242 or equivalent to threads of shoulder bolts (1). Install four shoulder bolts (1) and evenly torque 20.3-24.4 N·m (15-18 lb·ft). Release press pressure.
6. Install back-up rings (10 & 12) on spring side of piston (9). **NOTE: Be careful not to scratch or damage piston.**
7. Install o-rings (11 & 13) on piston (9). Be sure o-rings are flat and all twists are removed. **NOTE: Be careful not to scratch or damage piston.**
8. Lubricate piston (9) with clean type fluid used in the system. Install case seal (14) and carefully press piston (9) into pressure plate (15). Apply two drops of Loctite 242 or equivalent to threads of socket head cap screws (6). Attach spring plate (7) to pressure plate (15) using four socket head cap screw (6). Torque cap screws 47.5-54.2 N·m (35-40 lb·ft).
9. Install new case seal (5) when reinstalling brake module.

SPRING CHART

Model Number	Red Springs (8)	Blue Springs (8)
21-100-036	6	2

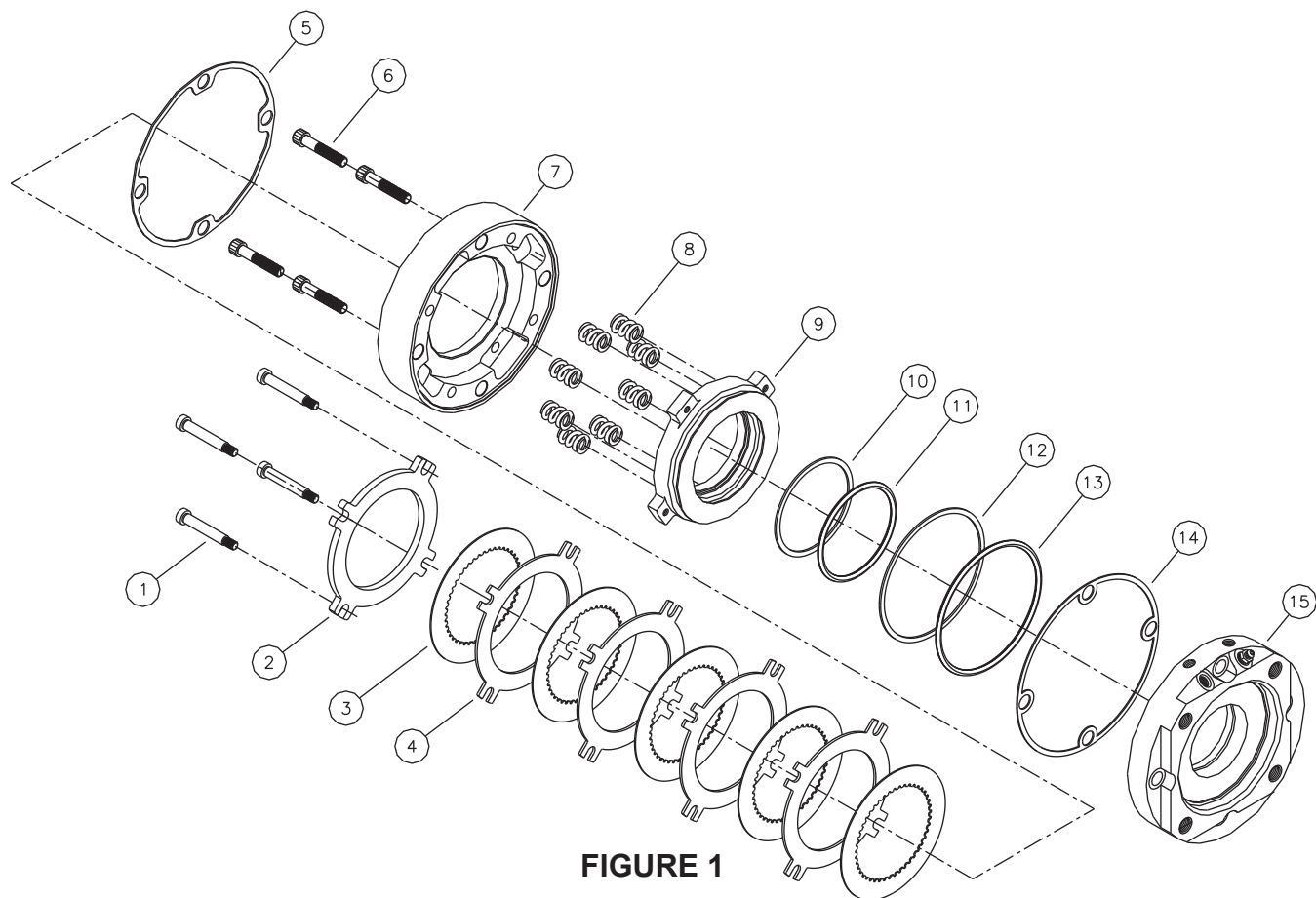


FIGURE 1

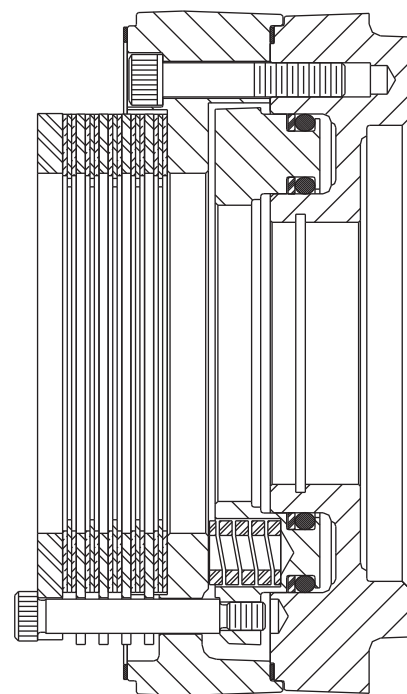


FIGURE 2

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 6.9 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	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.
	Disc plates worn	The thickness of the disc stack sets the torque level. A thin stack reduces torque.	Check disc thickness.
	Springs broken or have taken a permanent set	Broken or set springs can cause reduced torque - a rare occurrence.	Check release pressure. (See spring replacement)
Brake drags or runs hot	Low actuation pressure	The brake should be pressurized to 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.	Place pressure gauge in bleed port and check pressure with system on.
Brake will not release	Stuck or clogged valve	Brakes are designed to come on when system pressure drops below stated release pressure. If pressure cannot get to brake, the brake will not release.	Place pressure gauge in bleed port - check for adequate pressure. Replace inoperative line or component.
	Bad o-ring	If release piston will not hold pressure, brake will not release.	Replace o-rings.
	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.