

MASTER CYLINDER (Air Actuated)



Service Instructions

TABLE 1

Model Number	Repair Kit Number	Spring Kit Number	Air Chamber Replacement Kit Number
03-460-147 (BF)	02-400-106	02-400-110	02-001-313
03-460-148 (HO)	02-400-105	02-400-110	02-001-313
* 03-460-151 (BF)	02-400-106	02-400-110	n/a
* 03-460-152 (HO)	02-400-105	02-400-110	n/a
03-460-153 (HO)	02-400-105	02-400-110	02-001-313
03-460-338 (HO)	02-400-105	02-400-110	02-001-303

NOTE: If your product number is not listed, contact ZF Off-Highway Solutions Minnesota Inc. for information.

(BF) = Brake Fluid (HO) = Mineral Base Hydraulic Oil

* Actuator only, no air chamber section.

REMOVING ACTUATOR FROM VEHICLE AND SEPARATING SECTIONS

(Refer to Figures 1 and 2)

1. Remove Air/Hydraulic Actuator from vehicle by disconnecting necessary air and fluid lines and removing mounting bolts. Drain fluid from assembly
2. Separate air chamber section from mounting bracket by removing two nuts and two spacers (Figure 1). **NOTE: Earlier models use lock washers in place of spacers.**
3. Separate actuator section from mounting bracket by removing four socket screws, nuts, and lock washers (Figure 2).

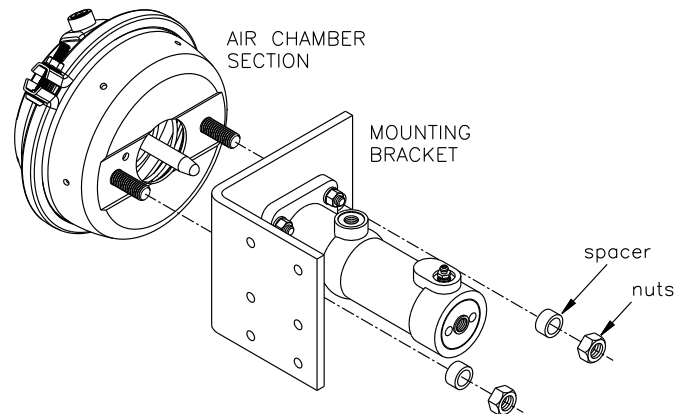


FIGURE 1

CONNECTING SECTIONS AND MOUNTING BRAKE ACTUATOR ON VEHICLE

(Refer to Figures 1, 2, and 3)

1. Attach actuator section to mounting bracket using four socket screws, lock washers, and nuts (Figure 2). Torque nuts 27.1-33.9 N·m (20-25 lb·ft).
2. Completely lubricate inside diameter of guide (10) (Figure 3) and air chamber push rod with moly impregnated grease.
3. Attach air chamber section to mounting bracket using two spacers and two nuts (Figure 1). Torque nuts 97.6-105.8 N·m (72-78 lb·ft). **NOTE: Earlier models use lock washers in place of spacers.**
4. Install the unit on the vehicle. Connect the air and fluid lines. Bleed the fluid system of air. Tighten the fittings if leaks occur. Make several applications to be sure the actuator is working properly. **NOTE: All fittings must be inspected for leaks and tightened if leaks occur.**

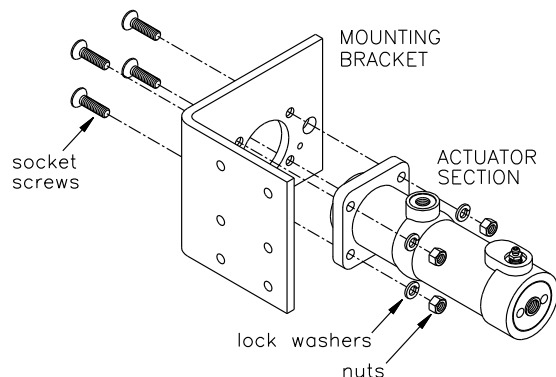


FIGURE 2

- Items included in Repair Kit
- ▲ Items included in Spring Kit

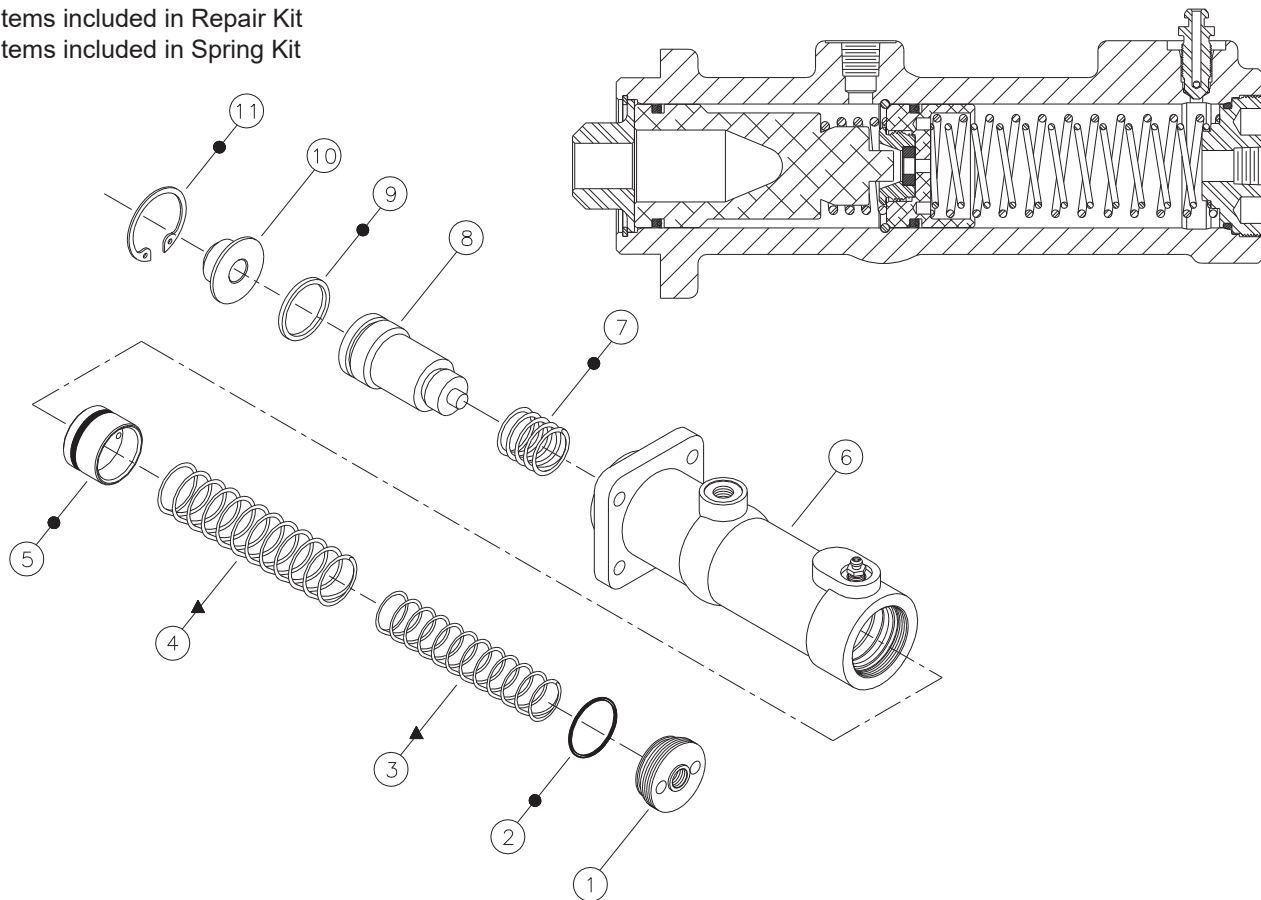


FIGURE 3

DISASSEMBLY

(Refer to Figure 3)

1. Drain fluid from unit before disassembly.
2. Remove end plug (1) from housing (6). Remove o-ring (2) from end plug (1).

▲ CAUTION

End plug (1) is under spring tension.

3. Remove springs (3 & 4) and piston assembly (5) from housing (6). **NOTE: Be careful not to damage housing bore.**
4. Remove retaining ring (11), bearing (10), and piston (8) from housing. **NOTE: Be careful not to damage piston (8) or housing bore.**
5. Gently twist spring (7) from piston (8). Remove cup (9) from piston (8). Note direction of cup (9). **NOTE: Be careful not to damage piston (8).**

ASSEMBLY

(Refer to Figure 3)

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

1. Clean all parts thoroughly before assembling.
2. Gently twist new spring (7) onto piston (8). Install new cup (9) on piston (8). Note direction of cup (9).
3. Install piston (8), bearing (10), and new retaining ring (11) in housing (6).
4. Lubricate new piston assembly (5) with clean system fluid and install in housing (6). Note direction of piston assembly (5).
5. Install new o-ring (2) on end plug (1).
6. Install springs (3 & 4) and end plug (1) in housing (6). Torque end plug (1) 67.8-108.5 N·m (50-80 lb·ft). **NOTE: If spring kit is being installed use new springs (3 & 4).**

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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