



Disc Brake Units Installation & Service Guide

CONTENTS & SAFETY INFO

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IMPORTANT: Always block/chock the wheels when servicing the brake actuators to prevent rollaway

WARNING: Spring brake actuators are under more than 2,000 pounds of spring force. Mishandling may cause serious injury or death. Do not attempt to service or replace without proper knowledge. Do not work from behind spring brakes; always work from the side or front.

Failure to cage the spring brake during installation may prevent the main spring from fully engaging the foundation brake components. This could result in insufficient braking force, leading to death, severe personal injury, and/or property damage.

DANGER: Do not attempt to mechanically release (cage) the spring on any spring brake if it shows signs of structural damage, significant corrosion, or any other damage that would make the operator or mechanic feel unsafe. Handle damaged spring brakes with extreme caution. Disassembly of the chamber may result in the forceful release of the spring and/or its contents, which could cause death, severe personal injury, and/or property damage.

MECHANICAL RELEASE OF SPRING BRAKE (CAGING)

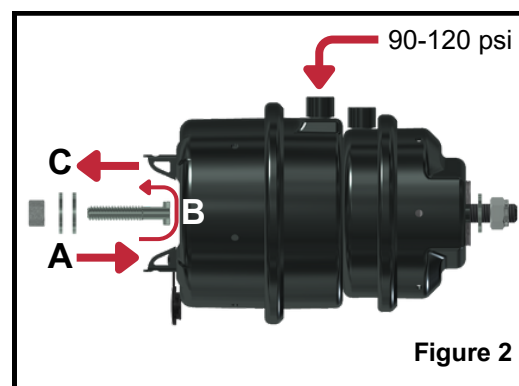
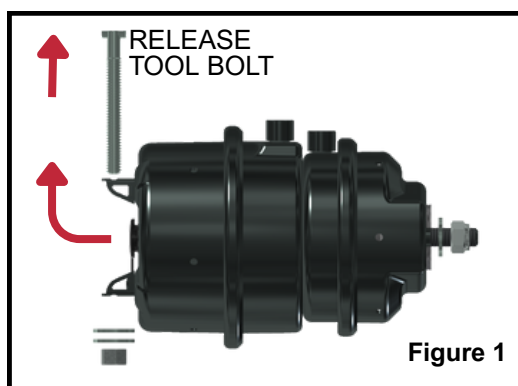
Caging The Spring Brake Using Compressed Air

If the unit you are installing is already caged, proceed to Mounting the Spring Brake. Otherwise, continue on this page.

The preferred method of caging is to use compressed air. An alternative manual method can be used if compressed air is not available. See next page.

- 1 Remove Dust Plug**
Remove the dust plug from the release tool access hole in the center of the spring housing, then remove the release tool bolt, washer, and nut from its holder. (Figure 1)
- 2 Apply Air Pressure**
Apply vehicle or shop air pressure—120 psi (8.3 bar), with a minimum of 90 psi (6.2 bar)—to the emergency side of the brake. Cycle the brake three (3) times. Maintain this air pressure.
- 3 Insert Release Tool Bolt**
Insert the release tool bolt through the access hole, all the way into the pressure plate inside the spring housing. (Figure 2, Arrow A)
- 4 Turn Bolt**
Make sure you engage the release tool bolt in the pressure plate by turning the bolt 1/4 turn clockwise and pulling outward. If the release bolt is engaged properly, it will not turn more than 1/4 turn clockwise and will not pull outward more than 3/4 inch (19 mm). (Figure 2, Arrows B and C)
- 5 Install And Tighten**
Install the release tool washer and tighten the nut finger-tight. The brake is now caged.
- 6 Release The Air Pressure**
Release the air pressure and proceed to *Mounting the Spring Brake*.

WARNING: Over-torquing the nut can cause pressure plate, washer, and/or spring housing damage, resulting in sudden release of the main spring and potentially causing the release tool, washer, nut, and/or fragments to become airborne, which could cause death, severe personal injury, and/or property damage.



MECHANICAL RELEASE OF SPRING BRAKE (CAGING)

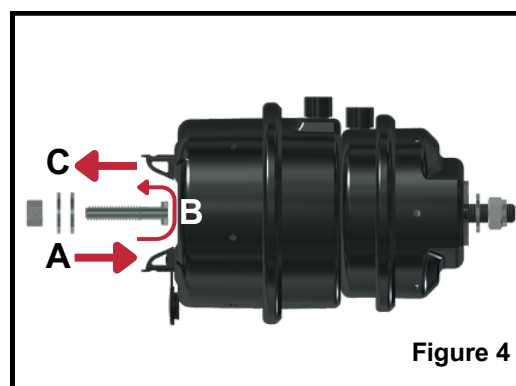
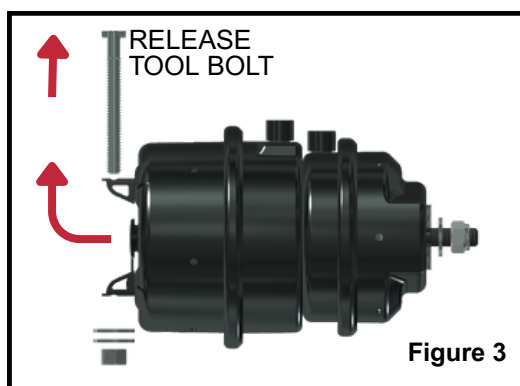
Caging the Spring Brake Using the Manual Method

This manual method should only be used if the spring brake is not already caged and if a compressed air source is not available. The preferred method of caging is to use compressed air.

- 1 Remove Dust Plug**
 Remove the dust plug from the release tool access hole in the center of the spring housing, then remove the release tool bolt, washer, and nut from its holder. (Figure 3)
- 2 Locate Pressure Plate**
 Using a flashlight, look through the access hole and check that the top of the pressure plate is located about 2.5–3.0 inches (63–76 mm) deep.
- 3 Insert Release Tool Bolt**
 Insert the release tool bolt through the access hole, all the way into the pressure plate inside the spring housing. (Figure 4, Arrow A)
- 4 Turn Bolt**
 Make sure you engage the release tool bolt in the pressure plate by turning the bolt 1/4 turn clockwise and pulling outward. If the release bolt is engaged properly, it will not turn more than 1/4 turn clockwise and will not pull outward more than 3/4 inch (19 mm). (Figure 4, Arrows B and C)
- 5 Install And Tighten**
 Install the release tool washer, tighten the nut finger-tight, then cage the main spring by tightening the release tool nut with a hand wrench.

WARNING: Do not use an impact wrench. The maximum release tool nut torque is 50 ft-lbs (65 Nm). Over-torquing the release tool nut can cause pressure plate damage.

- 6 Release Tool Nut**
 Make sure the service pushrod is retracting while you tighten the release tool nut. When the service pushrod stops moving, and/or the release tool bolt torque reaches 35–50 ft-lbs (47–65 Nm), or when the release tool extends beyond the nut by more than 3.25 inches (83 mm), stop tightening the release tool nut. The spring brake is now caged. Proceed to **Mounting the Spring Brake**.



Mounting The Spring Brake

1

Center Pushrod

Visually check that the pushrod is centered on the face of the spring brake. If the pushrod is not centered, correct it in this sequence:

1. Using compressed air, cycle the service side of the unit five times.
2. If the pushrod is still not centered—or if compressed air is not available—use the side of your thumb to rock or move the pushrod into a centered position.

2

Examine Spring Brake Cleanliness

Check the cleanliness of the spring brake. Make sure the rubber boot is well seated, free of debris, and shows no signs of damage. Do not install a spring brake that shows signs of debris or excess flash on the boot.

3

Examine Cleanliness of Caliper

Check the cleanliness of the caliper. Make sure the caliper seal surface and the mounting surface are free of oil, grease, and debris, and show no signs of damage.

4

Research Caliper Manufacturer Guidelines

Follow the instructions of the caliper manufacturer regarding the caliper seal diaphragm. Some manufacturers require the seal to be removed before spring brake installation, while others use a permanent "puncture-in-place" design.

WARNING: Follow the instructions of the caliper manufacturer regarding use of grease or lubricant on the spoon surface that accepts the pushrod.

5

Position Spring Brake

Position the spring brake for insertion into the caliper mating face. Check which of the two possible orientations of the spring brake places the ports in the most favorable position.

6

Confirm Pushrod Positioning

As the spring brake begins to mate with the caliper, visually confirm that the pushrod is nesting in the spoon on the caliper.

7

Assemble Spring Brake & Caliper

Firmly hold the spring brake onto the caliper by hand, then place the two washers onto the mounting studs, followed by the two nuts.

8

Tighten Nuts

Tighten the nuts in a three-step alternating sequence:

1. First, draw up the mating surfaces flush, using minimal torque on the two nuts.
2. Second, tighten each nut with a torque wrench to 59–74 ft-lb (80–100 Nm).
3. Third, tighten each nut with a torque wrench to 133–155 ft-lb (180–210 Nm).

Mounting The Spring Brake (Continued)

9

Remove Breather Plug

If breather plugs are supplied, remove the breather plug from the bottom of the spring brake and leave the breather plug(s) in the upper breather hole(s). (Figure 5 and 6)

WARNING: Failure to remove bottom breather plug will likely result in serious damage to the caliper and will also void TSE warranty

10

Install Air Hoses

Install the air hoses to the spring brake ports. Use non-hardening thread sealant on NPTF fittings to ensure a leak-free connection. (Metric fittings usually incorporate a ring seal.) Torque the fittings to 26–33 ft-lb (35–45 Nm).

11

Check For Leaks

Pressurize the air lines to check for leaks. (Soapy water may help here.)

12

Pressurize Emergency Side

Uncage the main spring by pressurizing the emergency side of the spring brake and removing the nut, washer, and release tool bolt.

13

Tighten

Secure the release tool bolt, washer, and nut in its holder, and tighten with a torque wrench to 5–11 ft-lb (7–15 Nm).

14

Reinsert Dust Plug

Reinsert the dust plug into the release tool access hole in the center of the spring housing.

15

Adjust Caliper

Follow the caliper manufacturer's instructions to adjust the caliper. Most calipers are self-adjusting, but it is critical to follow the manufacturer's specific procedure.

