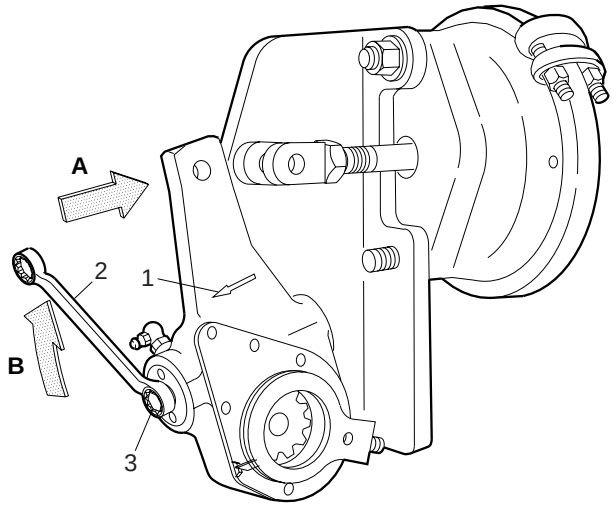
Slack Adjuster Removal and Installation



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A. Use only the adjusting hexnut to align the slack adjuster with the pushrod clevis.
B. Turn the adjusting hexnut clockwise.

1. Direction of Applied Stroke
2. Box Wrench, 7/16 inch
3. Adjusting Hexnut

Fig. 2, Slack Adjuster Installation

6. Apply antiseize compound to the clevis pin, and insert the pin in the clevis hole. Do not install the cotter pin at this time.

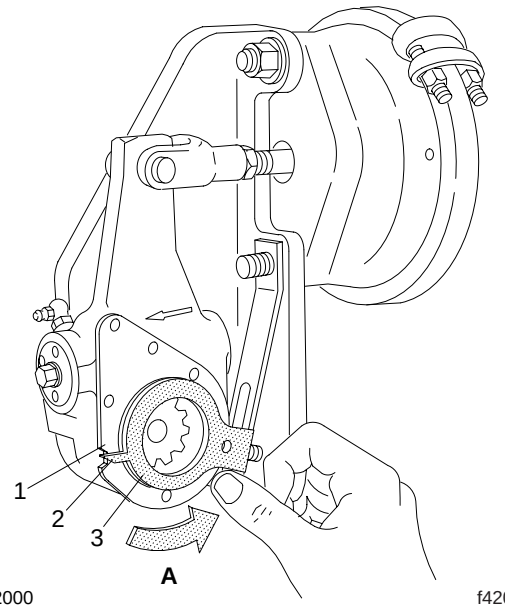
CAUTION

Never hammer the control arm. Hammering may damage the slack adjuster or camshaft splines.

7. Rotate the control arm away from the adjusting hexnut toward the brake chamber until it comes to a definite internal stop. Make sure the installation indicator is in the center of the indicator notch on the slack adjuster. See **Fig. 3**.

IMPORTANT: If the installation indicator is not aligned with the indicator notch, the brakes will be too tight.

NOTE: The anchor bracket and slack adjuster housing design will vary, depending on the axle. The anchor bracket mounting location is determined by the length of the control arm.



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NOTE: The installation indicator must be aligned with the indicator notch.

A. Rotate the control arm counterclockwise until it stops.

1. Indicator Notch
2. Installation Indicator
3. Control Arm

Fig. 3, Aligning the Control Arm

8. Install the control-arm anchor bracket, as follows. See **Fig. 1**.
   - 8.1 Tighten the anchor bracket fastener at the control arm 10 to 15 lbf·ft (14 to 20 N·m), making sure the control arm does not move from its position.
   - 8.2 Tighten the fastener at the brake chamber mounting stud according to the brake chamber manufacturer's specifications.
9. Adjust the brakes. See "Brake Adjustment".

Brake Adjustment

NOTE: A properly working self-adjusting slack adjuster does not require manual adjustment while in service.

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⚠ WARNING

Manually adjusting an automatic slack adjuster to bring the pushrod stroke within legal limits is likely masking a mechanical problem. Adjustment is not repairing. Before adjusting an automatic slack adjuster, troubleshoot the foundation brake system and inspect it for worn or damaged components. Improperly maintaining the vehicle braking system may lead to brake failure, resulting in property damage, personal injury, or death.

1. Adjust the brake lining clearance by manually turning the adjusting hexnut clockwise until the brake lining contacts the brake drum, then back off the hexnut counterclockwise 1/2 turn. You will hear a ratcheting sound.

IMPORTANT: Incorrect installation can cause dragging brakes.

2. Make sure the brakes are still fully released, then check the position of the installation indicator on the control arm. It must be within the indicator notch on the slack adjuster.

   If the indicator is out of position, loosen the control arm fasteners and repeat the control-arm adjustment procedure. Then, tighten the bracket fasteners.

⚠ WARNING

Install and lock a new cotter pin in the clevis pin. Failure to do so could allow the pushrod to disengage from the slack adjuster, causing a loss of braking ability that could result in personal injury and property damage.

3. Install and lock a new cotter pin in the clevis pin.

IMPORTANT: Ensure that the air system has at least 100 psi prior to uncaging the brake chamber. This will aid in the uncaging of the parking brake since the parking brake should be fully released.

4. If a rear-axle slack adjuster was installed, manually uncage the parking brake. For instructions, refer to the applicable brake chamber section in this group.

⚠ WARNING

Do not operate the vehicle until the brakes have been adjusted and checked for proper operation. To do so could result in inadequate or no braking ability, which could cause personal injury or death, and property damage.

IMPORTANT: To check the brake adjustment, measure both the applied and free strokes.

NOTE: The location of the measurements is the same for both strokes but the applied stroke is measured with the brakes applied, while a lever is used to manually move the slack adjuster to measure the free stroke.

5. Measure the free stroke, as follows. The free stroke is the distance the slack adjuster has to travel to move the brake shoes against the drum.

   5.1 With the brakes released, measure the distance from the bottom of the brake chamber to the far side of the clevis-pin hole. Record the exact distance as measurement A.

   5.2 Using a lever, move the slack adjuster until the brake shoes contact the drum. Measure the distance from the bottom of the brake chamber to the far side of the clevis-pin hole. Record the exact distance as measurement B.

   5.3 Subtract measurement A from measurement B to determine the free stroke. For new brake installations, the free stroke should be 5/8 to 3/4 inch (16 to 19 mm). For in-service brakes, the free stroke should be 1/2 to 5/8 inch (13 to 16 mm). If it is not in this range, refer to **Troubleshooting 300**.

6. Measure the applied stroke, as follows.

   6.1 With the brakes released (pushrod fully retracted), measure the distance from the bottom of the brake chamber to the far side of the clevis-pin hole. See **Fig. 4**. Record the exact distance as measurement A.

   6.2 Apply and hold an 80 psi (551 kPa) brake application. Measure the distance from the bottom of the brake chamber to the far

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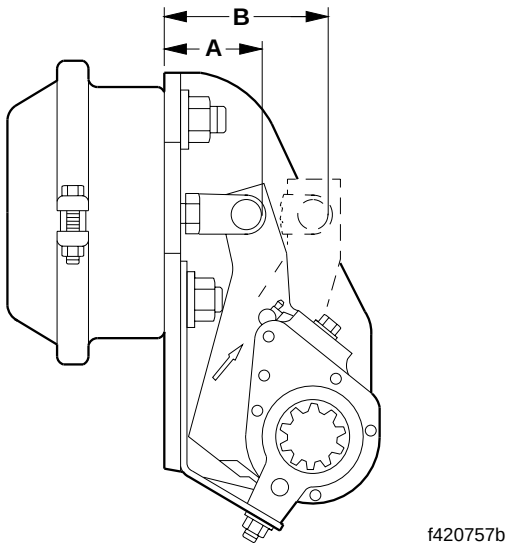


NOTE: Measurements are from the bottom of the brake chamber to the far side of the clevis-pin hole.

A. Measurement with brakes released.
B. Measurement with brakes applied at 80 psi (551 kPa).

Fig. 4, Brake Applied Stroke Check

side of the clevis-pin hole. Record the exact distance as measurement B.

6.3 Subtract measurement A from measurement B to determine the applied stroke. Compare this value to the value in **Table 1**.

6.4 If the stroke varies or is greater than the maximum allowed length, refer to **Section 42.03, Subject 150**.

7. Apply the parking brakes.
8. Remove the chocks from the tires.
9. In a safe area, check for proper brake operation, as follows.

9.1 Apply and release the brakes several times to check for correct operation of the slack adjusters.

9.2 Perform six low-speed stops to ensure correct parts replacement and full vehicle control.

9.3 Immediately after doing the above stops, check the drum temperatures. Any drums that are significantly cooler than the others show a lack of braking effort on those wheels.

Chamber Size	Maximum Applied Stroke: inch (mm)	Free Stroke: inch (mm)	
		New Brake Installation	In-Service Brake Installation
16	1-3/4 (44)	5/8–3/4 (16–19)	1/2–5/8 (13–16)
20			
24	1-7/8 (48)		
30	2 (51)		

Table 1, Brake Chamber Stroke Specifications

Operational Checks and Troubleshooting Tables

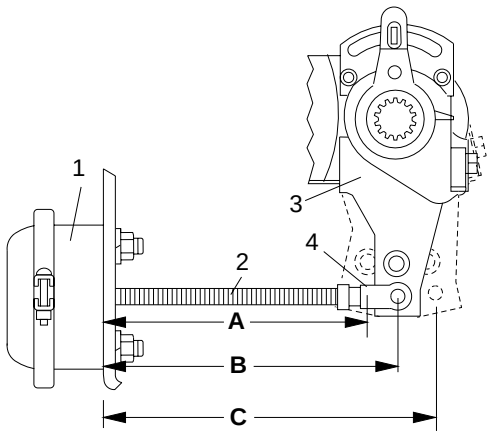
⚠ WARNING

Before working on or around air brake systems and components, see Safety Precautions 100. Failure to do so may result in personal injury.

Before performing any of the following procedures:

- Chock the wheels to prevent the vehicle from rolling.
- Ensure that the air system tank pressure is 90 to 100 psi (620 to 689 kPa).
- Check that the brake chamber pushrod is fully retracted; apply air to the release spring brake.

Refer to **Fig. 1** when making slack adjuster stroke measurements.



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A. Fully retracted
B. Drum contact using a lever
C. Full brake application at 90 to 100 psi (620 to 689 kPa) reservoir pressure

1. Brake Chamber
2. Pushrod
3. Slack Adjuster
4. Clevis

Fig. 1, Slack Adjuster Stroke Measurement

Applied Stroke

The applied stroke (see **Fig. 1**) of the brake should be checked per Commercial Vehicle Safety Alliance (CVSA) guidelines with full brake applicaton at 90 to 100 psi (620 to 689 kPa) reservoir pressure. The applied stroke should be at or less than the specified adjustment limits listed in **Table 2**.

Free Stroke

Free stroke is the amount of movement of the adjuster arm required to move the brake shoes against the drum. With brakes released, measure from the face of the chamber to the center of the clevis pin "A". Use a lever to move the brake adjuster until the brake shoes contact the drum. The difference between the fully retracted and drum contact measurement "B"-"A" is the free stroke. See **Fig. 1**. The free stroke range should fall between 5/8- and 3/4-inch (16 to 20 mm).

Free Stroke Within Range

If the free stroke is good, but the applied stroke is too long, there is probably a problem with the foundation brake. Check the components listed in **Table 1**, and reference CVSA out-of-service criteria.

Free Stroke Above the Range

If the free stroke is above the range and the applied stroke is too long, there is a problem with the foundation brake or the adjuster. Check the components listed in **Table 3**.

Free Stroke Below the Range

If the free stroke is less than 5/8-inch (16 mm), a dragging brake can occur. Check the components listed in **Table 4**.

Automatic Brake Adjuster Checking Procedures

If the brake adjuster is not maintaining the proper applied stroke, before removing the brake adjuster, check the condition of the foundation brakes. See **Table 1**, **Table 3**, and **Table 4** for procedures. If after inspecting the foundation brakes no apparent problems are found, inspect the automatic brake adjuster to determine if it is operating properly. The inspection can be performed on or off the vehicle using the following procedures.

- Chock the wheels to prevent the vehicle from rolling.
- Ensure that the air system tank pressure is 90 to 100 psi (620 to 689 kPa).