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Brake maintenance of commercial motor vehicles or farm vehicles

Automatic brakes are an essential component of any vehicle's braking system. However, they can become defective over time and require periodic adjustment. If you own a commercial account, it is recommended that you have brake mechanic certification training documentation. Defective automatic slack adjusters are usually a sign of another problem that should be corrected. Manually adjusting an automatic brake is masking the issue and can cause further defects.

To ensure that they are properly calibrated, it is recommended that drivers give at least **6 to 12 full brake applications** during pre-trip inspection brake checks with the system remaining at or above **90 psi**. This will help make sure that the automatic slack adjusters are properly adjusted. It is important to note that automatic slack adjusters need full brake applications (full stroke) to help in their calibration.

General requirements:

Brake components must be constructed, installed, and maintained to prevent excessive fading and grabbing. The means of attachment and physical characteristics must provide for safe and reliable stopping of the commercial motor vehicle.

- Service brake chambers and spring brake chambers on each end of axle must be same size.
- The effective length of the slack adjusted on each end of the axle must be the same.

What are the out-of-service (OOS) criteria for brakes?

When 20% or more of a truck and/or trailer brakes (or combination of both) are defective, that unit is placed out of service if it meets the following criteria:

- Air brake is at least 1/4 inch beyond its maximum legal stroke.
- Audible leak detected in air brake chamber.
- Missing brake on any axle required to have brakes.
- Lack of effective braking when service brakes are applied.

It is imperative to know the type and size of your brake chambers to determine the maximum legal stroke. The chart below lists some of common sizes for reference.

Chamber Type	Max Legal Stroke	½ Brake	Full Brake
Type 20	1 ¾ inches	1 ⅞ inches	2 inches
Type 24	1 ¾ inches	1 ⅞ inches	2 inches
Type 30	2 inches	2 ⅛ inches	2 ¼ inches

Follow this step-by-step instruction for measuring the brake stroke:

- Make sure the air pressure is between 90 psi and 100 psi.
- Turn the engine off.
- Chock the wheels.
- Release the parking brake.
- With a yellow crayon marker, mark the brake pushrod at the point where it comes out of the chamber. Mark all brake pushrods before application of the brakes.
- Have the driver apply the brakes with a full brake pedal push. This should be one application of the brakes.
- Measure the distance that the pushrod has moved from the marked point to the chamber for all brakes.
- Determine if the brake stroke is within limits as shown by the chart.
- If it is beyond the limit, get it repaired.
- Law enforcement officials assess whether the pushrod travel should be categorized as a "half brake" (equivalent to 1/8 inch) or a "full brake" (equivalent to 1/4 inch) when calculating OOS violations.

For further guidance, refer to the Federal Motor Carrier Safety Administration 49 CFR Part 393 Subpart C (ecfr.gov/current/title-49/part-393/subpart-C).

For assistance with risk management services or safety resources, contact us at RMSolutions@nationwide.com or 1-800-260-1356.