

SURFACE VEHICLE RECOMMENDED PRACTICE

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Brake Adjustment Limit for Air Brake Actuators

RATIONALE

Field inspections to determine if air brakes on commercial vehicles are in an out-of-service condition are excessively complicated. Current method requires measurement of the air brake actuator diameter to determine the air brake actuator size. A standard rated stroke for the air brake actuator size is then assumed unless a marking is found on the air brake actuator or ID tag that indicates a different rated stroke. Using the determined rated stroke and chamber size, a chart is referenced to provide the brake adjustment limit. The inspector then confirms through measurement that the air brake actuator stroke is less than the determined brake adjustment limit.

This method has many potential sources for error. A given actuator size may have several rated stroke options available. Charts converting air brake actuator diameters are not accurately maintained. Air brake actuator diameters are not accurately measured. Air brake actuator manufacturers do not have standardized ID tag nomenclature making it difficult to read the rated stroke. Air brake actuators can be covered in paint or road debris hiding rated stroke information. Stroke rating clamp tags require clamps to mount to and must be located in a clamp clacking that is accessible to the inspector.

This process can be simplified because the brake adjustment limit is a function of the rated stroke only. By putting a standardized rated stroke marking on the air brake actuator in a known location, the only conversion required is between the rated stroke marking to the brake adjustment limit. This document provides this recommended practice, reducing the likelihood of an inspector passing a vehicle that should be out of service or putting a vehicle out of service that is within acceptable operating conditions.

This new recommended practice also provides air brake actuator outside diameters developed from manufacturer's data for reference to support air brake actuators manufactured prior to this recommended practice. The SAE Truck and Bus Brake Actuator Committee have the largest representation of air brake actuator manufacturers making it the ideal source for such information.

If this document gets adopted, SAE J1817 will be revised to identify long stroke air brake actuator markings only to avoid overlap.

1. SCOPE

This SAE Recommended Practice applies to S-CAM, Wedge, and Disc air brake actuators where the stroke can be measured without disassembly from the brake.

1.1 Purpose

This document defines the air brake actuator rated stroke markings and its conversion to the air brake actuator rated stroke and brake adjustment limit.

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2. DEFINITIONS

References to "Actuator" will mean "Air Brake Actuator" if not specified.

3. REFERENCES

3.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

3.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J1817 Long Stroke Air Brake Actuator Marking

SAE J1953 Brake-Stroke Indicator Design Guideline for Cam or Disc Air Brake Actuators

SAE J1469 Air Brake Actuator Test Procedure, Truck-Tractor, Bus, and Trailers

4. RATED STROKE MARKINGS

Rated stroke markings identify the rated stroke and brake adjustment limit for an air brake actuator in a standardized format.

4.1 Location

Rated stroke markings are to be located on the spring housing base for spring brakes or on the pressure housing base for service chamber brakes as shown in Figure 1, and marked per column "Rated Stroke Marking" as shown in Figure 2

4.2 Visibility

The rated stroke marking is to be permanently stamped or embossed on the housing or on a corrosion resistant tag permanently affixed or bonded to the housing. The font height of the stroke marking is to be at least 3/8" (10mm) tall and at least 3 times the size of any other characters located on the same tag or within a 1/2" (12mm) from the stroke marking if located directly on the housing. The stamped impression/embossed character are to be a minimum of 0.012" (0.31mm) deep/high and visually confirmed it can be located and read if painted over with up to 0.008" (0.2mm) of paint. It must also be readable after completing the SAE J1469, section 14, salt spray test procedure.

4.3 Marking definition

The corresponding rated stroke marking character matching the actuator rated stroke is shown in Figure 2.

If the actuator has a different rated stroke than shown in Figure 2, then the Rated Stroke marking will be a two decimal number representing the brake adjustment limit based on 80% of the rated stroke rounded to the nearest 1/8" (3mm) increment.

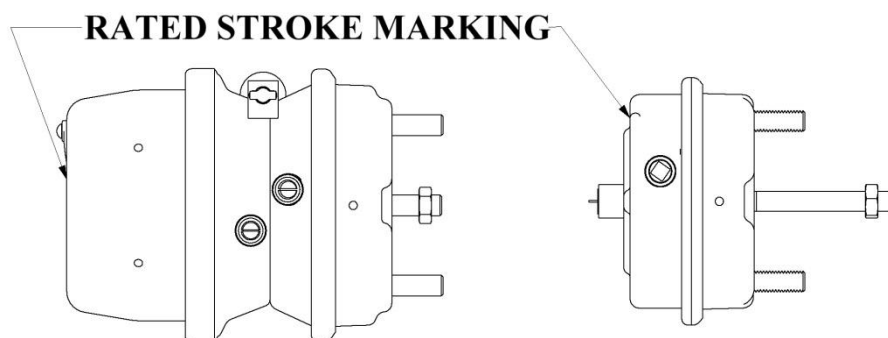


FIGURE 1

Rated Stroke Marking	Actuator Rated Stroke	Brake Adjustment Limit
A	1.50" (38mm)	1.25" (32mm)
B	1.75" (44mm)	1.38" (35mm)
C	2.00" (51mm)	1.50" (38mm)
D	2.25" (57mm)	1.75" (44mm)
E	2.50" (64mm)	2.00" (51mm)
F	3.00" (76mm)	2.50" (64mm)
G	3.25" (83mm)	2.62" (67mm)
H	3.50" (89mm)	2.75" (70mm)
X.XX	Other	X.XX"

FIGURE 2

5. AIR BRAKE ACTUATOR CLAMP BAND DIAMETER

- 5.1 Relationship between actuator clamp band outside diameter to air brake actuator size is shown in Figure 3. Reference Figure 4 for graphical definition of the service clamp band outside diameter. This diameter excludes the clamp fastener and is measured on a surface at least 1" (25mm) away from the clamp fastener. On actuators without clamps, the outside diameter is the maximum diameter on the housing at the location shown in Figure 4.