

Long-Stroke Air-Brake Actuator Marking

1. **Scope**—This SAE Recommended Practice describes a marking system to distinguish long-stroke from standard stroke for service, parking, and combination air-brake actuators, roto-chambers, and components. Said actuators are used for applying cam and disc-type foundation brakes by slack adjuster means.
- 1.1 **Purpose**—This document establishes a uniform marking system to identify long-stroke actuators and components used in air-brake systems.
2. **References**
- 2.1 **Applicable Publication**—The following publication forms a part of the specification to the extent specified herein. Unless otherwise indicated, the latest revision of SAE publications shall apply.
 - 2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.
SAE J1469—Air-Brake Actuator Test Procedure, Truck, Tractor, Bus, and Trailer
- 2.2 **Related Publication**—The following publication is provided for information purposes only and is not a required part of this document.
 - 2.2.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.
SAE J1953—Brake-Stroke Indicator Design Guideline for Cam or Disc Air-Brake Actuators
3. **Definitions**
- 3.1 **Rated Stroke**—The minimum design stroke of a unit as listed in Table 1.
- 3.2 **Standard Stroke Actuators**—Brake actuators having a rated stroke as listed in Table 1A, Column 1.
- 3.3 **Long-Stroke Actuators**
 - a. Class I—An actuator having a stroke 6.4 to 12.4 mm (0.25 to 0.49 in) greater than standard rated stroke. Refer to Table 1B.
 - b. Class II—An actuator having a stroke 12.7 to 18.8 mm (0.50 to 0.74 in) greater than standard rated stroke. Refer to Table 1B.
 - c. Class III—an actuator having a stroke 19 mm (0.75 in) greater than standard rated stroke. Refer to Table 1B.

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**TABLE 1A—RECOMMENDED AIR-BRAKE ACTUATOR SERVICE STROKE—
CLAMP BAND/SEALED DESIGNS—STANDARD STROKE**

Type (Size)	Standard Rated Stroke mm	Standard Rated Stroke in	Maximum Readjust For Standard Rated Stroke mm	Maximum Readjust For Standard Rated Stroke in
9	44.5	1.75	35.1	1.38
12	44.5	1.75	35.1	1.38
14	57.2	2.25	44.5	1.75
16	57.2	2.25	44.5	1.75
20	57.2	2.25	44.5	1.75
24	57.2	2.25	44.5	1.75
30	63.5	2.50	50.8	2.00
36	76.2	3.00	57.2	2.25

**TABLE 1B—RECOMMENDED AIR-BRAKE ACTUATOR SERVICE STROKE
CLAMP BAND/SEALED DESIGNS—LONG-STROKE BRAKE ACTUATORS**

Type (Size)	Class I Std. + 8.4 mm (0.25 in) Minimum Rated Stroke mm	Class I Std. + 8.4 mm (0.25 in) Minimum Rated Stroke in	Class I Std. + 8.4 mm (0.25 in) Maximum Readjust Stroke mm	Class I Std. + 8.4 mm (0.25 in) Maximum Readjust Stroke in	Class II Std. + 12.7 mm (0.50 in) Minimum Rated Stroke mm	Class II Std. + 12.7 mm (0.50 in) Minimum Rated Stroke in	Class II Std. + 12.7 mm (0.50 in) Maximum Readjust Stroke mm	Class II Std. + 12.7 mm (0.50 in) Maximum Readjust Stroke in	Class III Std. + 19.0 mm (0.75 in) Minimum Rated Stroke mm	Class III Std. + 19.0 mm (0.75 in) Minimum Rated Stroke in	Class III Std. + 19.0 mm (0.75 in) Maximum Readjust Stroke mm	Class III Std. + 19.0 mm (0.75 in) Maximum Readjust Stroke in
	9	50.8	2.00	38.1	1.5	—	—	—	—	—	—	—
12	50.8	2.00	38.1	1.5	—	—	—	—	—	—	—	—
14	63.5	2.50	50.8	2.0	69.9	2.75	57.2	2.25	—	—	—	—
16	63.5	2.50	50.8	2.0	69.9	2.75	57.2	2.25	—	—	—	—
20	63.5	2.50	50.8	2.0	69.9	2.75	57.2	2.25	76.2	3.00	63.5	2.50
24	63.5	2.50	50.8	2.0	69.9	2.75	57.2	2.25	76.2	3.00	63.5	2.50
30	69.9	2.75	57.2	2.25	76.2	3.00	63.5	2.50	—	—	—	—
36	82.6	3.25	66.5	2.62	88.9	3.50	69.9	2.75	—	—	—	—

**TABLE 1C—RECOMMENDED AIR-BRAKE ACTUATOR SERVICE STROKE
ROTO-CHAMBER DESIGNS**

Type (Size)	Rated Stroke mm	Rated Stroke in	Maximum Readjust Stroke mm	Maximum Readjust Stroke in
9	50.8	2.00	38.1	1.50
12	50.8	2.00	38.1	1.50
16	63.5	2.50	47.8	1.88
20	63.5	2.50	47.8	1.88
24	63.5	2.50	47.8	1.88
30	76.2	3.00	57.2	2.25
36	88.9	3.50	66.5	2.62
50	101.6	4.00	76.2	3.00

4. **General**—Long-stroke air-brake actuators have pushrod stroke capabilities in excess of standard stroke actuator designs. As some of these chambers are nearly identical in exterior appearance to the standard chambers, a unique marking system is needed for the purpose of identification by mechanics, inspectors, and others in the field. This marking will help assure both types of actuators are serviced correctly and that brakes are adjusted properly. Unique long-stroke actuator components are not interchangeable between actuator manufacturers nor standard actuator components.

5. **Requirements**

5.1 **Identification—Long-Stroke Actuators**—There are three methods described as follows, for differentiating long-stroke from standard stroke actuators. Long-stroke actuators should incorporate at least two of the three methods and 76.2 mm (3.00 in) long-stroke actuators must use square inlet ports per 5.1.3.

5.1.1 **SERVICING INSTRUCTIONS**—Service instructions embossed or stamped on spring brake center sections, service chamber pressure caps or in the case of the tie rod style chamber (see Figure 1), the markings will be located on the end cap. These instructions will instruct that long-stroke diaphragms are required for replacement. Numerical values shall be in mm and inches. (See Figures 1, 2, and 3).

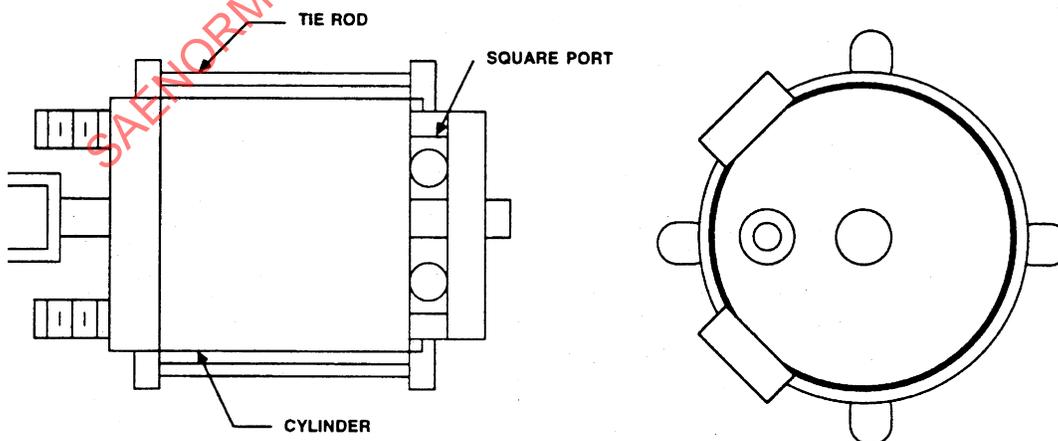


FIGURE 1—TIE ROD STYLE PISTON BRAKE CHAMBER

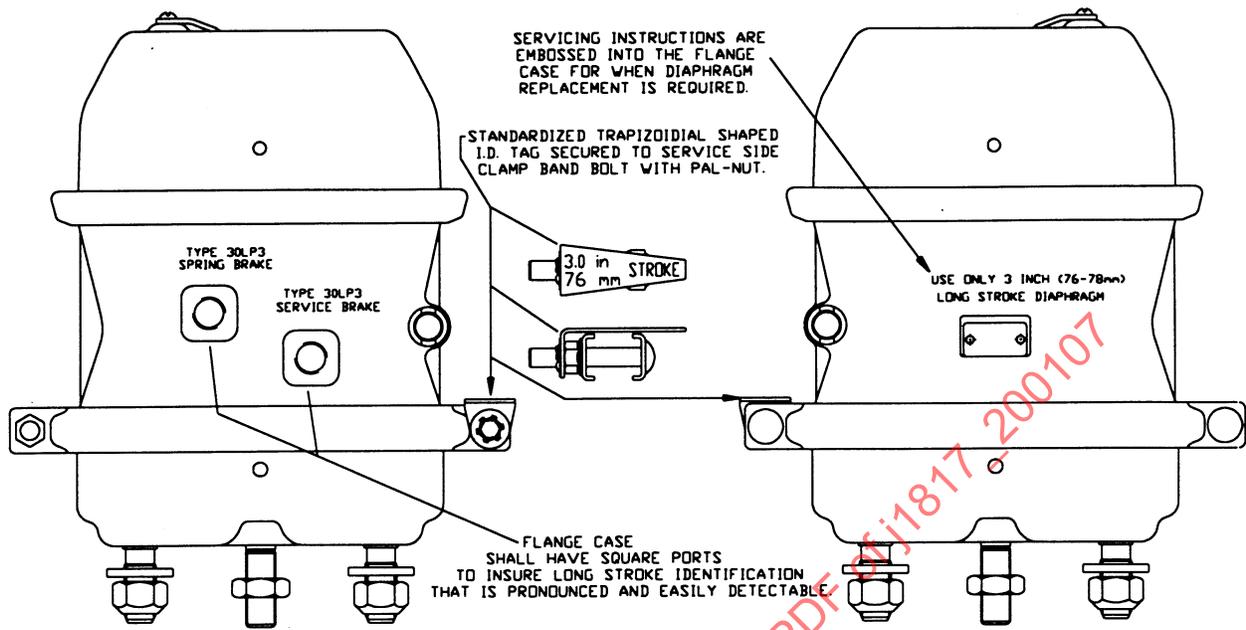


FIGURE 2—76.2 mm (3.00 in) LONG-STROKE SPRING BRAKE CHAMBER IDENTIFICATION

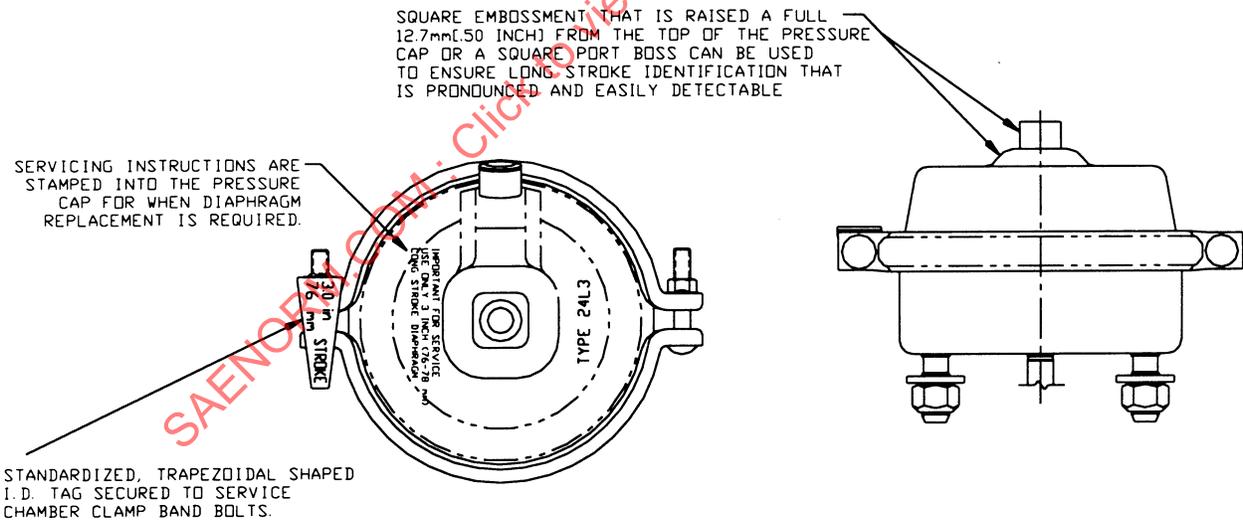


FIGURE 3—76.2 mm (3.00 in) LONG-STROKE SERVICE CHAMBER IDENTIFICATION

- 5.1.2 TAGS—A trapezoidal tag, as shown in Figure 4 shall be secured to the service chamber clamp band bolts or attached/affixed to the service chamber by a suitable means. The actuators rated stroke shall be embossed or otherwise readable within the trapezoidal area with numerical values in millimeters and inches.

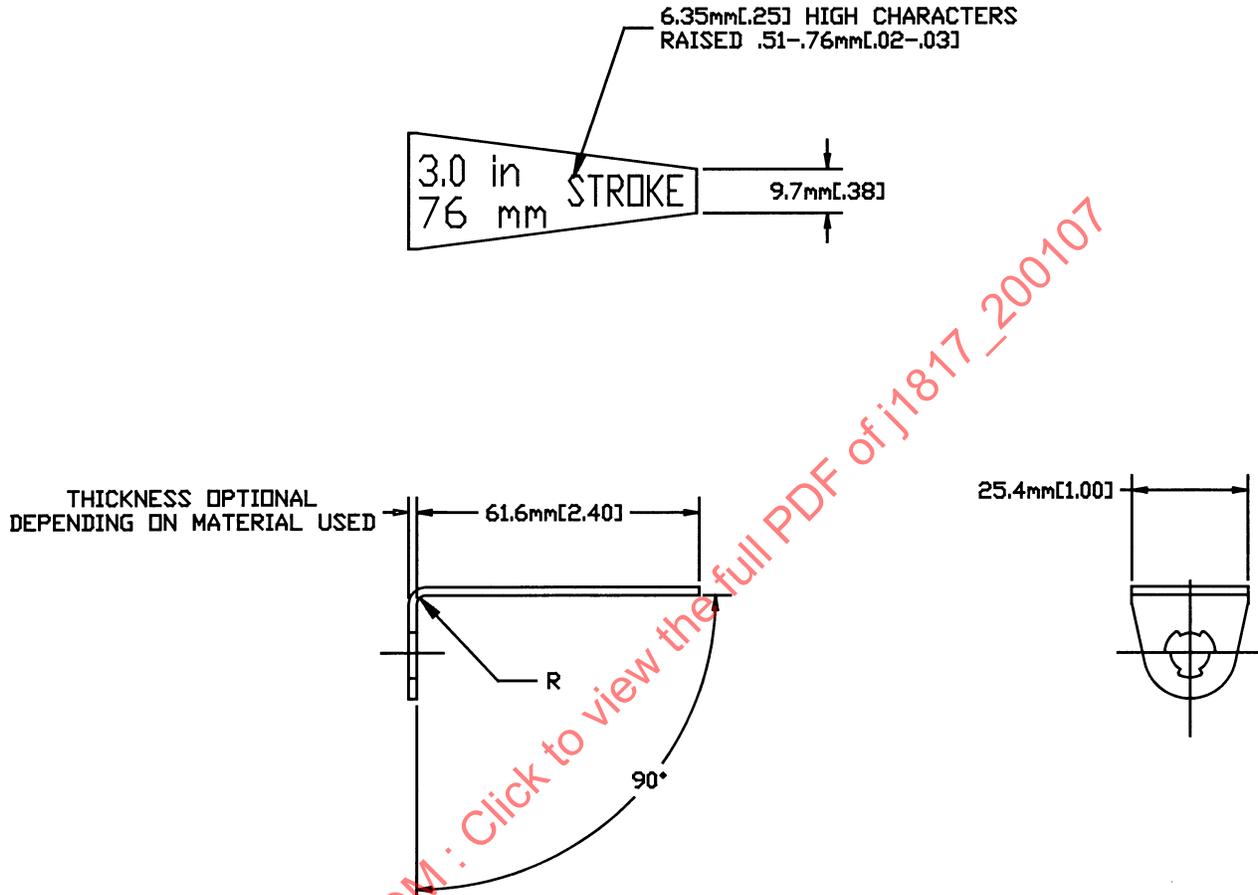


FIGURE 4—LONG-STROKE TRAPEZOIDAL IDENTIFIER TAG

- 5.1.3 SQUARE AIR PORT AND/OR PRESSURE CAP EMBOSSEMENT—All 76.2 mm (3.00 in) long-stroke actuators shall have square inlet ports. The top port of the service chambers shall have a square embossment raised a full 12.7 mm (0.50 in) from the top of the pressure cap. (See Figures 1, 2, and 3).

- 5.2 Components unique to the long-stroke actuator shall have suitable text permanently marked on the components in order to identify them as long-stroke. Typical components might include (refer to Figure 5):

- Diaphragm (service and parking chamber)
- Center section
- Pressure cap service chamber
- End cap combination (service and parking)
- Non-pressure housing
- Service pushrod

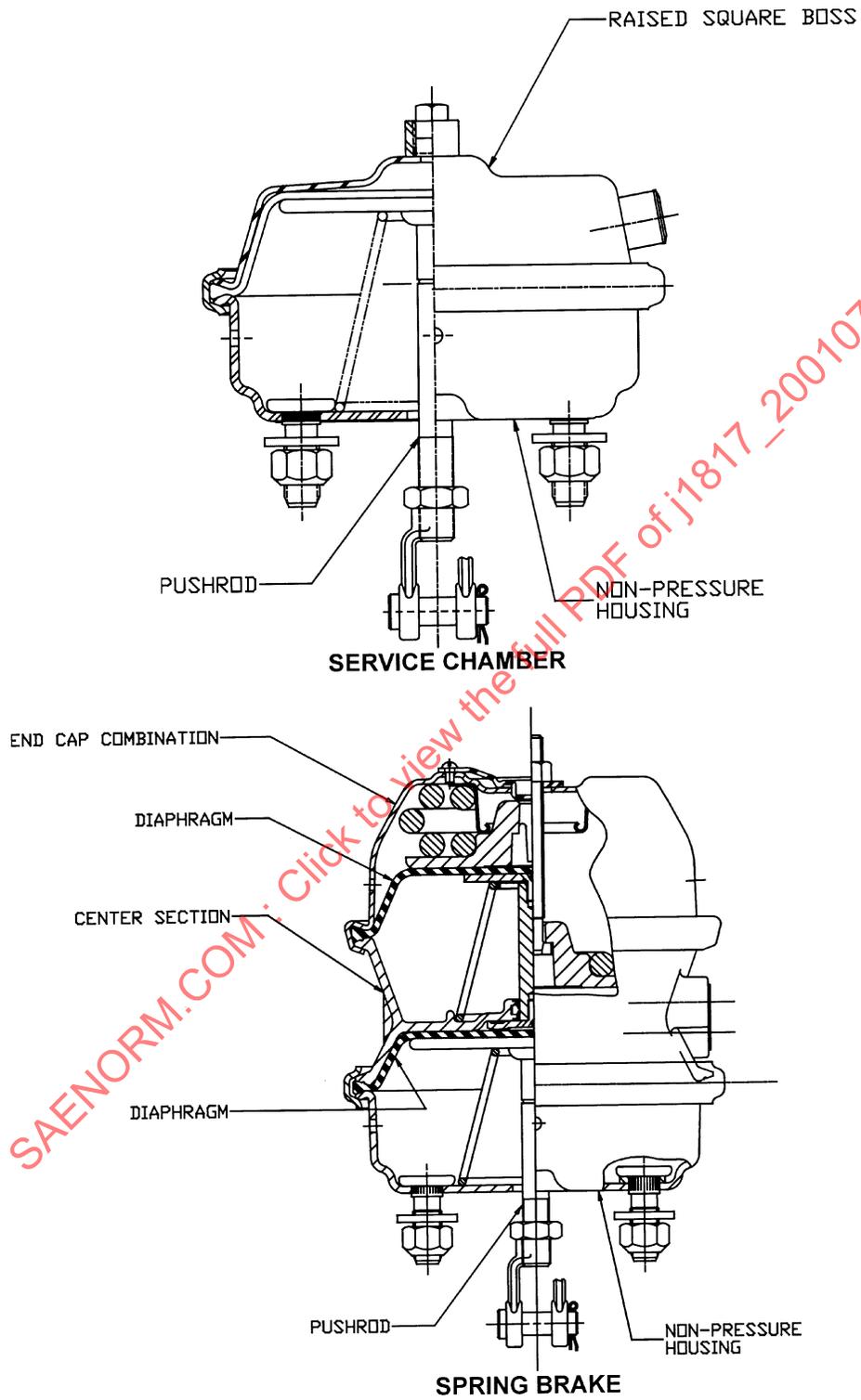


FIGURE 5—UNIQUE COMPONENTS—LONG-STROKE ACTUATORS