

SURFACE VEHICLE RECOMMENDED PRACTICE

Submitted for recognition as an American National Standard

SAE J1953

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BRAKE-STROKE INDICATOR DESIGN GUIDELINE FOR CAM OR DISC AIR-BRAKE ACTUATORS

- 1. Scope**—This SAE Recommended Practice shall cover mechanical- and electrical-stroke indicators for air cam or disc brakes.

This device shall indicate the brake system may require adjustment or service when inspected per vehicle manufacturer's procedures. A measurement shall be made to determine actual stroke measurement.

Stroke indication accuracy of an air-brake actuator can be assured only when all of its components are supplied by the original brake actuator manufacturer.

- 1.1 Purpose**—This document establishes design guidelines for air-brake actuator stroke indicators.

2. References

- 2.1 Applicable Documents**—The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

- 2.1.1 SAE PUBLICATIONS**—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J1292—Automobile, Truck, Truck-Tractor, Trailer, and Motor-Coach Wiring

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

3. Requirements

3.1 Stroke Indicator—Mechanical Design Guidelines

- 3.1.1** The stroke indication shall occur at +0 to 3.8 mm (+0.00 to 0.15 in) of the recommended readjustment stroke in Tables 1 and 2.

- 3.1.2** The stroke indication shall be orange. See Figure 1.

- 3.1.3** Actuators shall have a positive identifier near the non-pressure housing to indicate unit has stroke indication (see Figure 1). Application may be required to visually inspect for identifier. Identifier shall not interfere with brake function. Figure 1 illustrates one possible design. Other design concepts could employ an identifier, such as a tag attached to the service-chamber clamp ring, rather than the "identifier" illustrated on the pushrod.

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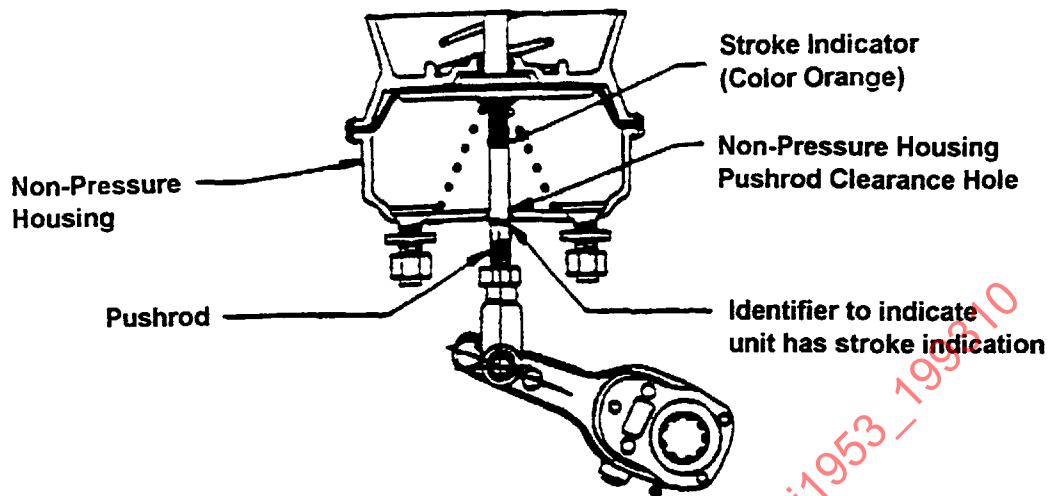
TABLE 1—COMMON LONG-STROKE ACTUATORS—RATED AND READJUST STROKES

Air-Brake Actuator (Size)	Clamp-Type Actuators Rated Stroke mm	Clamp-Type Actuators Readjust Stroke mm	Clamp-Type Actuators Readjust Stroke in	Roto-Chamber Type Actuators Rated Stroke mm	Roto-Chamber Type Actuators Readjust Stroke in	Roto-Chamber Type Actuators Readjust Stroke mm	Roto-Chamber Type Actuators Readjust Stroke in
9				51	2.00	38	1.50
12				51	2.00	38	1.50
14							
16				63.5	2.50	48	1.88
18							
20				63.5	2.50	48	1.88
24				63.5	2.50	48	1.88
30	63.5	2.50	51	76	3.00	57	2.25
36				89	3.50	66.5	2.62
50				101.5	4.00	76	3.00
All						80% of Rated Stroke	80% of Rated Stroke
Others							

TABLE 2—STANDARD ACTUATORS—RATED AND READJUST STROKES

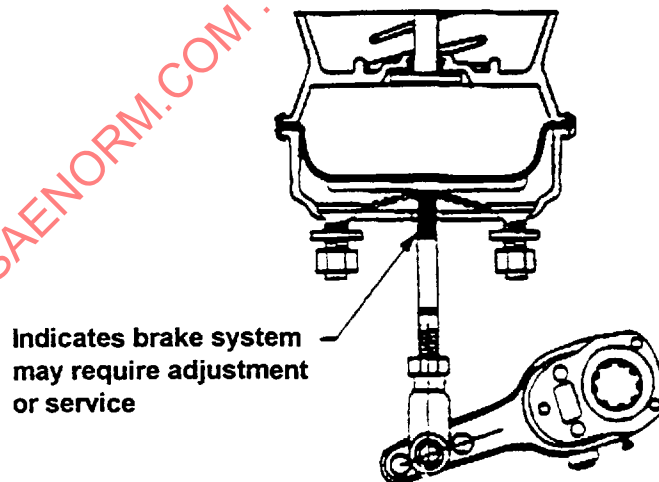
Air-Brake Actuator Type (Size)	Clamp-Type Actuators Rated Stroke mm	Clamp-Type Actuators Readjust Stroke in	Clamp-Type Actuators Readjust Stroke mm	Clamp-Type Actuators Readjust Stroke in
9	44.5	1.75	35	1.38
12	44.5	1.75	35	1.38
14	57	2.25	44.5	1.75
16	57	2.25	44.5	1.75
18	57	2.25	44.5	1.75
20	57	2.25	44.5	1.75
24	57	2.25	44.5	1.75
30	63.5	2.50	51	2.00
36	76	3.00	57	2.25
All Others			80% of Rated Stroke	80% of Rated Stroke

BRAKES "OFF" - NOT APPLIED



PUSHROD AT ZERO STROKE

**IMPROPERLY ADJUSTED BRAKES
"ON" APPLIED**
(Maximum recommended readjustment
stroke has been exceeded)



PUSHROD AT ACTUATED STROKE

FIGURE 1—PUSHROD AT ZERO AND ACTUATED STROKE

3.2 Stroke Indicator—Electrical Design Guidelines

3.2.1 The stroke indication shall occur at +0 to 3.8 mm (+0.00 to 0.15 in) of the recommended readjustment stroke in Tables 1 and 2.

3.2.2 Electrical system installation shall conform to SAE J1292, if applicable.

3.2.3 Electrical systems shall have a system function test capacity.

3.2.4 Any system that provides a driver-warning device in a distracting manner shall be provided with manual override which shall automatically reset each time the vehicle is shutdown or restarted.

3.3 Test Procedure—Stroke indicator shall be tested per SAE J1469.

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