SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J1953

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Submitted for recognition as an American National Standard

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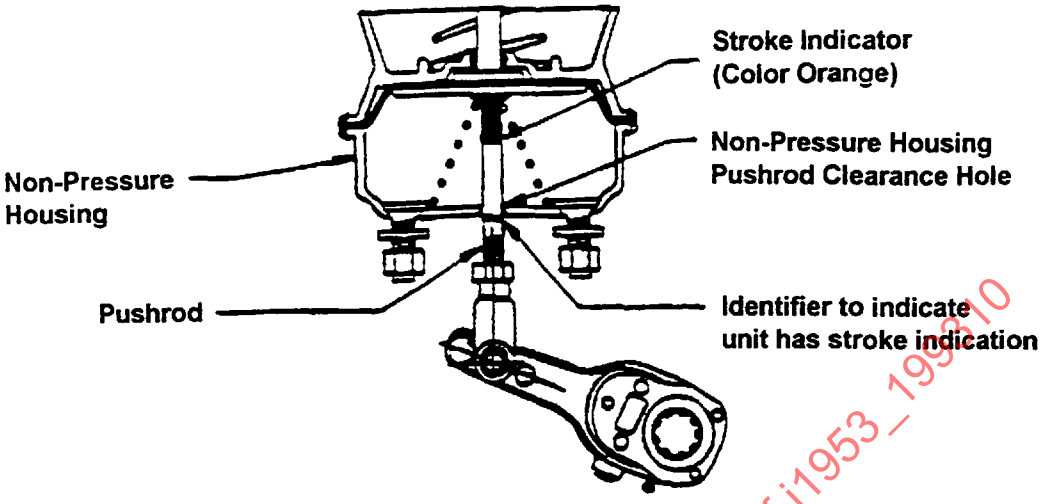
TABLE 1—COMMON LONG-STROKE ACTUATORS—RATED AND READJUST STROKES

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

TABLE 2—STANDARD ACTUATORS—RATED AND READJUST STROKES

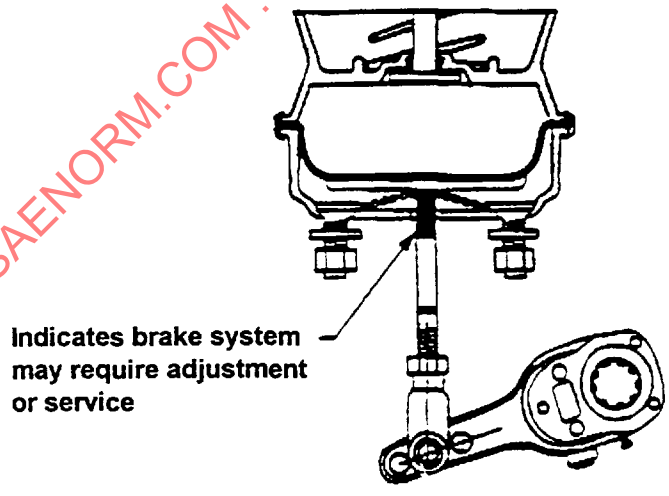
Air-Brake Actuator Type (Size)	Clamp-Type Actuators Rated Stroke mm	Clamp-Type Actuators Rated Stroke in	Clamp-Type Actuators Readjust Stroke mm	Clamp-Type Actuators Readjust Stroke in
9	44.5	1.75	35	1.38
12	44.5	1.75	35	1.38
14	57	2.25	44.5	1.75
16	57	2.25	44.5	1.75
18	57	2.25	44.5	1.75
20	57	2.25	44.5	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.

PREPARED BY THE SAE TRUCK AND BUS BRAKE ACTUATOR SUBCOMMITTEE OF THE SAE TRUCK AND BUS BRAKE COMMITTEE