SAE International™

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J1450

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Superseded by J1469 FEB2009

Air Brake Actuator Diaphragm Test Procedure

1. ***Scope***—This SAE Recommended Practice is intended for, but not limited to, testing of reinforced air brake diaphragms as they are used in vehicle service or parking brake systems.

1.1 **Purpose**—This document establishes accelerated laboratory test procedures for evaluating air brake actuator diaphragms to determine performance in various functional modes and environmental conditions.

1.2 **Rationale**—The SAE Brake Actuator Committee found that SAE J1450 was mostly redundant to SAE J1469, except for Arctic testing. The decision was to revise SAE J1469 to make SAE J1450 fully redundant and then cancel SAE J1450. SAE 1469 was recently published with the changes making SAE J1450 fully redundant.

2. ***References***—There are no referenced publications specified herein.

3. ***Test Sample Inspection***—Test diaphragm should meet all dimensional, material, and other requirements specified on part drawings.

4. ***Leakage at Room Temperature—Parking and Service Chamber***—Assemble diaphragm test sample into a clean brake actuator in accordance with actuator manufacturer's recommendation. Connect actuator to air supply. Apply 862 kPa ± 34 kPa (125 lbf/in^2 ± 5 lbf/in^2) (gage) to the system. Limit the stroke to 75% ± 5% of the rated stroke and cycle 10 to 15 times. (Rated stroke is defined as the manufacturer's recommended stroke. Therefore, the rated stroke will vary according to manufacturer.) Room temperature to be 27 °C ± 11 °C (80 °F ± 20 °F).

Measurement of leakage may be in either of two ways:

4.1 **Pressure Drop**—Chamber to be connected to a 20 484 cm^3 ± 819 cm^3 (1250 in^3 ± 50 in^3) reservoir. Shut off air supply to the reservoir and allow the system (actuator and reservoir) to stabilize for 1 min. Measure total pressure drop over a 10 min period.

4.2 **Flow Rate**—Leave air supply connected to the actuator. An adequate flow meter must be connected to the air supply. Measure the flow rate after the actuator pressure has stabilized.

5. ***Low Temperature Evaluation***—Place actuator assembly, including specified return spring, into an environmental chamber with temperature maintained at –40 °C ± 1.1 °C (–40 °F ± 2 °F). Connect actuator to a 20 484 cm^3 ± 819 cm^3 (1250 in^3 ± 50 in^3) air reservoir pressurized to test pressure and located in the environmental chamber. Soak for 16 h minimum with actuator at zero pressure prior to performing any tests. If more than one test is to be performed on the same actuator, soak for an additional 1 h between tests.

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