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LAND SEA AIR SPACE

TECHNICAL REPORT J937b

SERVICE BRAKE SYSTEM PERFORMANCE REQUIREMENTS—PASSENGER CAR—SAE J937b

SAE Recommended Practice

Report of Brake Committee approved September 1965 and last revised February 1970.

1. Introduction—The performance requirements in this SAE Recommended Practice represent the accumulation of the best information available from investigations of the service brake system performance of new motor vehicles designed for roadway use. They also represent the minimum performance recognized as acceptable by vehicle, brake system, and component manufacturers. Since these specifications are subject to change in order to keep pace with technical advances, their inclusion in state or federal laws, where flexibility of revision is lacking, is discouraged.

2. Scope—This SAE Recommended Practice presents service brake performance requirements for brake systems of new motor vehicles intended for roadway use and falling in Uniform Vehicle Code Classification A (excluding special-purpose passenger vehicles such as ambulances, hearses, etc.).

Acceptable performance requirements are based on data obtained from SAE J843.

3. Purpose—The purpose of this recommended practice is to establish the minimum service brake system performance requirements with regard to:

3.1 Stopping Ability

3.1.1 Of cold brakes as affected by vehicle speed.

3.1.2 Of hot brakes as affected by vehicle speed and duty cycles.

3.1.3 Of cold brakes during emergency or inoperative power assist conditions.

3.1.4 Of cold brakes as affected by wetting with water.

3.2 Pedal Force—Maximum and/or minimum effort allowable.

3.3 Brake Stability

3.4 Brake System Integrity

4. Instrumentation—See SAE J843, paragraph 3.

5. Installation Details—See SAE J843, paragraph 4, except use plug type thermocouple only.

6. Test Procedure—See SAE J843, paragraph 5.

7. Acceptable Performance Requirements

7.1 Preburnish Check—See SAE J843, paragraph 5.2.

7.1.1 Pedal force shall be between 10 and 55 lb for 10 fpsps stops from 30 mph.

7.2 Effectiveness Test—See SAE J843, paragraphs 5.3, 5.7, and 5.17.

7.2.1 30 mph—Pedal force shall be between 15 and 100 lb, inclusive, for 20 fpsps.

7.2.2 60 mph—Pedal force shall be between 15 and 120 lb, inclusive, for 20 fpsps.

7.2.3 80 mph (where applicable)—Pedal force shall be between 20 and 150 lb, inclusive, for 20 fpsps.

7.3 Emergency Brake System Test—See SAE J843, paragraph 5.5.

7.3.1 Maximum stopping distance of 600 ft with a maximum pedal force of 200 lb without leaving a 12 ft lane.

7.3.2 Pedal force to actuate failure warning system shall not be more than 50 lb for manually operated brakes, or 30 lb for power brakes.

7.4 Inoperative Power System Test—See SAE J843, paragraph 5.6.

7.4.1 Maximum stopping distance of 600 ft with a maximum pedal force of 200 lb without leaving a 12 ft lane.

7.5 Minimum Load Test—See SAE J843, paragraph 5.8. Maintain a deceleration of not less than 18 fpsps, without skid, with a pedal force not to exceed 120 lb.

7.6 High Speed Stop Test—See SAE J843, paragraph 5.9. Maintain a deceleration of not less than 15 fpsps, without skid, with a pedal force not to exceed 200 lb.

7.7 First Fade and Recovery Test—See SAE J843, paragraph 5.11.

7.7.1 FADE—Pedal force for first four 15 fpsps stops shall not exceed 120, 147, 173, and 200 lb, respectively.

7.7.2 RECOVERY—A minimum of 5 fpsps shall be maintained at a maximum pedal force of 200 lb for the first five recovery stops, and the pedal force shall not exceed 150 lb at 10 fpsps by stop 6.

7.8 Second Fade and Recovery Test—See SAE J843, paragraph 5.14.

7.8.1 FADE—Pedal force for first eight 15 fpsps stops shall not exceed 120, 132, 143, 155, 166, 177, 189, and 200 lb, respectively.

7.8.2 RECOVERY—Same as First Recovery requirement (paragraph 7.7.2).

7.9 Stability Requirements—See SAE J843, paragraphs 5.3, 5.7, and 5.17.

7.9.1 No uncontrollable braking action causing the vehicle to leave a 12 ft wide roadway lane is permissible below 20 fpsps.

7.10 Final Inspection—See SAE J843, paragraph 5.18.

7.10.1 LINING—Shall be firmly attached and intact on shoes. (Minor cracks that do not impair attachment are acceptable.)

7.10.2 MECHANICAL—All components of the brake system shall be intact and functional.

7.10.3 HYDRAULIC—All hydraulic components of the brake system shall be leakfree.

7.11 Water Recovery—See SAE J843, paragraph 5.19.

7.11.1 Pedal force for 8 fpsps stops shall not exceed 200 lb during stops 4 through 6, 100 lb during stops 7 through 14, and shall be within 20 lb of average baseline check stop force at stop 15.

8. Report Form—General Data and Summary Report Form, Fig. 1.