Service Brake System Performance Requirements—Light-Duty Truck—SAE J155

SAE Recommended Practice
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LAND SEA AIR SPACE

PREPRINT

SERVICE BRAKE SYSTEM PERFORMANCE REQUIREMENTS—LIGHT-DUTY TRUCK—SAE J155

SAE Recommended Practice

Report of Brake Committee and Automotive Safety Committee approved May 1971. Editorial change March 1978.

1. Introduction—The performance requirements in this SAE Recommended Practice represent the accumulation of the best information available from investigations of the brake system performance of new motor vehicles designed for roadway use.

2. Scope—This SAE Recommended Practice presents performance requirements for the brake systems of light-duty trucks and multipurpose passenger vehicles up to and including 6000 lb (2700 kg) gvw. Acceptable performance requirements are based on data obtained from SAE J843d (March, 1973).

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

3.1 Stopping Ability

3.1.1 Of cold brakes as affected by vehicle speed and load.

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

3.1.3 Of cold brakes during emergency conditions.

3.1.4 Of cold brakes with inoperative power assist.

3.1.5 Of cold brakes as affected by wetting with water.

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

3.3 Brake Stability

4. Instrumentation—See SAE J843d (March, 1973), paragraph 3.

5. Installation Details—See SAE J843d (March, 1973), paragraph 4.

6. Test Procedure—See SAE J843d (March, 1973), paragraph 5.

7. Acceptable Performance Requirements

7.1 Preburnish Check—See SAE J843d (March, 1973), paragraph 5.2.

7.1.1 Pedal force shall be between 10 and 65 lb (44 and 289 N) inclusive, for 10 ft/s^2 (3 m/s^2) stops from 30 mph (48 km/h).

7.2 Effectiveness Test—See SAE J843d (March, 1973), paragraphs 5.3, 5.7, and 5.17.

7.2.1 30 mph (48 km/h)—Pedal force shall be between 15 and 100 lb (67 and 445 N), inclusive, for 18 ft/s^2 (5.5 m/s^2).

7.22 60 mph (97 km/h)—Pedal force shall be between 15 and 120 lb (67 and 534 N), inclusive, for 18 ft/s^2 (5.5 m/s^2).

7.2.3 80 mph (129 km/h) (where applicable)—Pedal force shall be between 20 and 150 lb (89 and 667 N), inclusive, for 18 ft/s^2 (5.5 m/s^2).

7.3 Emergency Brake System Test—See SAE J843d (March, 1973), paragraph 5.5.

7.3.1 Maximum stopping distance of 600 ft (183 m) with a maximum pedal force of 200 lb (890 N) maintaining the vehicle in a 12 ft (3.7 m) lane.

7.3.2 Pedal force to actuate failure warning system shall not be more than 50 lb (222 N) for manually operated brakes, or 30 lb (133 N) for power brakes.

7.4 Inoperative Power Assist System Test—See SAE J843d (March, 1973), paragraph 5.6.

Maximum stopping distance of 600 ft (183 m), with a maximum pedal force of 200 lb (890 N) maintaining the vehicle in a 12 ft (3.7 m) lane.

7.5 Minimum Load Test—See SAE J843d (March, 1973), paragraph 5.8.

Maintain a deceleration of not less than 18 ft/s^2 (5.5 m/s^2), with a pedal force not to exceed 120 lb (534 N).

7.6 High Speed Stop Test—See SAE J843d (March, 1973), paragraph 5.9.

VEHICLE: MAKE _____ MODEL _____ YEAR _____
ENGINE _____ TRANSMISSION _____ AXLE _____
LOADED WEIGHT _____ LB (kg). FRONT _____ LB (kg). REAR _____ LB (kg). TOTAL WEIGHT _____ LB (kg)
EMPTY WEIGHT _____ LB (kg). FRONT _____ LB (kg). REAR _____ LB (kg). TOTAL WEIGHT _____ LB (kg)
TIRES - SIZE _____ MAKE _____ MANUFACTURER'S DESIGNATION _____
GENERAL DATA _____
BRAKES: FRONT SIZE _____ TYPE _____ CYL DIA _____
REAR SIZE _____ TYPE _____ CYL DIA _____
LININGS - FRONT _____ REAR _____
DRUM/ROTOR TYPE - FRONT _____ REAR _____
MASTER CYL DIA _____ PEDAL RATIO _____ POWER BRAKE: YES _____ NO _____ TYPE _____
TEST INFORMATION: SPECIAL EQUIPMENT
TESTED BY _____ LOCATION _____ DATE _____

TEST PHASE	REQUIREMENTS		TEST RESULTS	PASS	FAIL
PREBURNISH CHECK	10-65 LB PF	44-289 N PF	LB (N) PF		
EFFECTIVENESS TESTS			1ST 2ND 3RD		
30 MPH AT 18 FT/S^2 (48 km/h AT 5.5 m/s^2)	15-100 LB PF	67-445 N PF	___ ___ ___ LB (N) PF		
60 MPH AT 18 FT/S^2 (97 km/h AT 5.5 m/s^2)	15-120 LB PF	67-534 N PF	___ ___ ___ LB (N) PF		
80 MPH AT 18 FT/S^2 (129 km/h AT 5.5 m/s^2)	20-150 LB PF	89-667 N PF	___ ___ ___ LB (N) PF		
EMERGENCY BRAKE TEST			TYPE: POWER MANUAL		
WARNING SYSTEM ACTUATION	40 (PWR) 50 (MAN) LB PF MAX	133 (PWR) 222 (MAN) N PF MAX	FRONT___ REAR___ LB (N) PF		
60 MPH (97 km/h) STOPPING DISTANCE	600 FT AND 200 LB PF MAX	183 m AND 890 N PF MAX	FRONT___FT (m)___ LB (N) PF REAR ___ FT (m) ___ LB (N) PF		
INOPERATIVE POWER ASSIST SYSTEM TEST					
60 MPH (97 km/h) STOPPING DISTANCE	600 FT AND 200 LB PF	183 m AND 890 N PF	___ FT (m) ___ LB (N) PF		
MINIMUM LOAD TEST					
60 MPH AT 18 FT/S^2 (97 km/h AT 5.5 m/s^2)	120 LB PF	534 N PF	___ LB (N) PF		
HIGH SPEED STOP TEST					
MAX SPEED AT 18 FT/S^2 (5.5 m/s^2)	200 LB PF	890 N PF	___MPH (km/h) ___ LB (N) PF		
1ST FADE AND RECOVERY					
FADE STOPS 1-4	120, 147, 173, 200 LB PF	534, 654, 770, 890 N PF	___ ___ ___ ___ LB (N) PF		
RECOVERY STOPS 1-5	5 FT/S^2 BY 200 LB PF	1.5 m/s^2 BY 890 N PF	___FT/S^2 (m/s^2) BY ___ LB (N) PF		
RECOVERY STOPS 6-12	150 LB PF	667 N PF	___ LB (N) PF MAX		
2ND FADE AND RECOVERY					
FADE STOPS 1-8	120, 132, 143, 155, 166, 177, 189, 200 LB PF	534, 587, 636, 689, 738, 787, 841, 890 N PF	___ ___ ___ ___ ___ ___ ___ ___		
RECOVERY STOPS 1-5	5 FT/S^2 BY 200 LB PF	1.5 m/s^2 BY 890 N PF	___FT/S^2 (m/s^2) BY___ LB (N) PF		
RECOVERY STOPS 6-12	150 LB PF	667 N PF	___ LB (N) PF MAX		
STABILITY DURING EFFECTIVENESS TESTS	NO UNCONTROLLED BRAKING CAUSING VEHICLE TO LEAVE 12 FT (3.7 m) LANE BELOW 18 FT/S^2 (5.5 m/s^2)		CONTROLLED BRAKING BELOW 18 FT/S^2 (5.5 m/s^2) ___YES ___NO		
FINAL INSPECTION					
LINING INTEGRITY	INTACT AND NO CRACKS		___YES ___NO		
MECHANICAL INTEGRITY	INTACT AND FUNCTIONAL		___YES ___NO		
HYDRAULIC INTEGRITY	LEAK FREE		___YES ___NO		
WATER RECOVERY TEST					
AVERAGE BASELINE PF	_____	_____	AVG BASELINE PF _____		
RECOVERY STOPS 4-6	200 LB PF MAX	890 N PF MAX	___ LB (N) PF MAX		
RECOVERY STOPS 7-14	100 LB PF MAX	445 N PF MAX	___ LB (N) PF MAX		
RECOVERY STOP 15	WITHIN 20 LB OF BASE	WITHIN 84 N OF BASE	___ LB (N) PF FROM BASELINE		

COMMENTS: _____

REPORTED BY: _____ DATE: _____

TIRE SIZE
SIZE: FRONT _____ MAKE: FRONT _____ MANUFACTURER'S DESIGNATION: FRONT _____
REAR _____ REAR _____ REAR _____

FIG. 1—GENERAL DATA AND SUMMARY REPORT FORM

The ϕ symbol is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.