SOCIETY OF AUTOMOTIVE ENGINEERS, INC. • TWO PENNSYLVANIA PLAZA • NEW YORK, NEW YORK 10001

LAND SEA AIR SPACE

TECHNICAL REPORT J135

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SERVICE BRAKE SYSTEM PERFORMANCE REQUIREMENTS—PASSENGER CAR—TRAILER COMBINATIONS—SAE J135

SAE Recommended Practice

Report of Brake Committee approved March 1973.

1. Introduction—The performance requirements in this SAE Recommended Practice are a modification of SAE J937b and represent the accumulation of the best information available from investigations of the service brake system performance of combinations of new passenger cars and new trailers (braked or unbraked) designed for roadway use. They also represent the minimum performance recognized as acceptable by vehicle, brake system, and component manufacturers. The towing vehicles must comply with SAE J937 (latest published version). This recommended practice may be used to determine the maximum weight of unbraked trailers the towing vehicle is recommended to pull.

2. Scope—This SAE Recommended Practice presents service brake performance requirements for brake systems of all combinations of new passenger cars and new trailers (braked or unbraked) intended for roadway use (excluding special-purpose passenger vehicles such as ambulances, hearses, etc.).

Acceptable performance requirements are based on data obtained from SAE J134.

3. Purpose—The purpose of this 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.

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

3.3 Brake Stability

3.4 Brake System Integrity

4. Instrumentation—See SAE J134a, paragraph 4.

5. Installation Details—See SAE J134a, paragraph 5.

6. Test Procedure—See SAE J134a, paragraph 6.

7. Acceptable Performance Requirements

7.1 Preburnish Check—See SAE J134a, paragraph 6.2.

7.1.1 Pedal force shall be between 10 and 55 lb (45 and 245 N) inclusive, for 10 ft/s² (3 m/s²) stops from 30 mph (48 km/h).

7.2 Effectiveness Test—See SAE J134a, paragraphs 6.3, 6.7, and 6.14.

7.2.1 30 mph—Pedal force shall be between 15 and 100 lb (67 and 445 N) inclusive, for 16 ft/s² (5.2 m/s²).

7.2.2 60 mph—Pedal force shall be between 15 and 120 lb (67 and 534 N) inclusive, for 16 ft/s² (5.2 m/s²).

7.3 Emergency Brake System Test—See SAE J134a, paragraph 6.5.

7.3.1 Maximum stopping distance of 1000 ft (305 m) with a maximum pedal force of 200 lb (890 N) without leaving a 12 ft (3.7 m) lane.

7.4 Inoperative Power System Test—See SAE J134a, paragraph 6.6.

7.4.1 Maximum stopping distance of 600 ft (183 m) with a maximum pedal force of 200 lb (890 N) without leaving a 12 ft (3.7 m) lane.

7.5 First Fade and Recovery Test—See SAE J134a, paragraph 6.8.

7.5.1 FADE—Pedal force for first four 15 ft/s² (4.6 m/s²) stops shall not exceed 120, 147, 173, and 200 lb (534, 654, 770, and 890 N), respectively.

7.5.2 RECOVERY—A minimum of 5 ft/s² (1.5 m/s²) shall be maintained at a maximum pedal force of 200 lb (890 N) for the first five recovery stops, and the pedal force shall be below 150 lb (667 N) at 10 ft/s² (3 m/s²) by stop 6.

GENERAL DATA AND SUMMARY REPORT FORM

SERVICE BRAKE SYSTEM PERFORMANCE REQUIREMENTS: PASSENGER CAR-TRAILER COMBINATIONS

TEST PHASE	REQUIRED		ACTUAL	
PREBURNISH CHECK	10-55 LB PF	44-245 N PF	MIN	MAX LB (N) PF
EFFECTIVENESS TESTS			1ST	2ND FINAL
30 MPH AT 16 FT/S² (48 km/h AT 5.2 m/s²)	15-100 LB PF	67-445 N PF	_____	_____ _____ LB (N) PF
60 MPH AT 16 FT/S² (97 km/h AT 5.2 m/s²)	15-120 LB PF	67-534 N PF	_____	_____ _____ LB (N) PF
EMERGENCY BRAKE TEST 60 MPH (97 km/h) STOPPING DISTANCE	1000 FT AND 200 LB MAX	305 m AND 890 N MAX PF	FRONT _____ FT (m) _____ LB (N) PF REAR _____ FT (m) _____ LB (N) PF	
INOPERATIVE POWER SYSTEM TEST 60 MPH (97 km/h) STOPPING DISTANCE	MANUAL _____ POWER _____ 600 FT AND 200 LB MAX PF	183 m AND 890 N MAX PF	_____ FT (m) _____ LB (N) PF	
FIRST FADE AND RECOVERY TEST				
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/S² AT 200 LB MAX PF	1.5 m/s² AT 890 N MAX PF	___ FT/S² (m/s²) AT ___ LB (N) MAX PF	
RECOVERY STOPS 6-12	10 FT/S² AT 150 LB MAX PF	3 m/s² AT 667 N MAX PF	_____ LB (N) MAX PF	
SECOND FADE AND RECOVERY TEST				
FADE STOPS 1-8	120, 132, 143, 155, 166, 177, 189, 200 LB PF	534, 587, 636, 689, 738, 787, 841, 890 N	___, ___, ___, ___, ___, ___, ___, ___, LB (N) PF	
RECOVERY STOPS 1-5	5 FT/S² AT 200 LB MAX PF	1.5 m/s² AT 890 N MAX PF	___ FT/S² (m/s²) AT ___ LB (N) MAX PF	
RECOVERY STOPS 6-12	10 FT/S² AT 150 LB MAX PF	3 m/s² AT 667 N MAX PF	___ LB (N) MAX PF	
STABILITY DURING EFFECTIVENESS TESTS	NO UNCONTROLLABLE BRAKING CAUSING CAR TO LEAVE 12 FT LANE BELOW 16 FT/S²	NO UNCONTROLLABLE BRAKING CAUSING CAR TO LEAVE 3.7 m LANE BELOW 5.2 m/s²	CONTROLLABLE BRAKING BELOW 16 FT/S² (5.2 m/s²) YES _____ NO _____	
FINAL INSPECTION				
LINING INTEGRITY	INTACT AND NO CRACKS	INTACT AND NO CRACKS	YES _____	NO _____
MECHANICAL INTEGRITY	INTACT AND FUNCTIONAL	INTACT AND FUNCTIONAL	YES _____	NO _____
HYDRAULIC INTEGRITY	LEAKFREE	LEAKFREE	YES _____	NO _____
ELECTRICAL INTEGRITY	INTACT AND FUNCTIONAL	INTACT AND FUNCTIONAL	YES _____	NO _____

COMMENTS: _____

REPORTED BY: _____ DATE: _____

FIG. 1—GENERAL DATA AND SUMMARY REPORT FORM

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