Brake System Road Test Code - Passenger Car and Light Duty Truck-Trailer Combinations - SAE J134 JUN79

SAE Recommended Practice
Completely Revised June 1979

THIS IS A PREPRINT WHICH IS SUBJECT TO REVISIONS AND CORRECTIONS. THE FINAL VERSION WILL APPEAR IN THE 1981 EDITION OF THE SAE HANDBOOK.

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LAND SEA AIR SPACE

PREPRINT

φ BRAKE SYSTEM ROAD TEST CODE—PASSENGER CAR AND LIGHT DUTY TRUCK-TRAILER COMBINATIONS—SAE J134 JUN79

SAE Recommended Practice

Report of Brake Committee approved December 1970 and completely revised June 1979.

1. Introduction—This recommended practice, in conjunction with SAE J135a (June, 1979),[1] is intended for use primarily by:

(a) Tow vehicle manufacturers testing with unbraked trailers to determine the maximum unbraked trailer weight which can be towed;

(b) Tow vehicle manufacturers testing with braked trailers to evaluate tow vehicle braking performance for vehicle combinations;

(c) Trailer or brake system suppliers to evaluate trailer brake and actuation system performance.

This procedure assumes a tow vehicle complying with existing applicable legal requirements. It is recommended that tow vehicles incorporate that manufacturer's trailering package. Tow vehicle manufacturer's recommendations regarding hitch type shall be followed. Trailer loading shall be in accordance with trailer manufacturer's recommendations except as modified in this procedure. Tires shall be inflated to vehicle manufacturer's recommendations.

2. Scope—This SAE Recommended Practice establishes a uniform procedure for the level road test of the brake systems of all combinations of new multi-purpose passenger vehicles, new light-duty trucks up to and including 10 000 lb (4500 kg) GVW and new passenger cars when coupled with new trailers (braked or unbraked).

3. Purpose—The purpose of the test code is to establish a uniform test procedure to determine capabilities with regard to:

3.1 Deceleration versus input, as affected by vehicle speed, brake temperature and usage.

3.2 Brake system integrity within the limits of this test.

3.3 Stopping ability during:

3.3.1 Emergency (partial brake) conditions; and,

3.3.2 Inoperative power assist conditions.

4. Instrumentation

4.1 Tow vehicle line pressure and/or pedal force gage.

4.2 Decelerometer (U-tube or equivalent).

4.3 Direct reading temperature instrument.

4.4 Speedometer (calibrated vehicle unit or fifth wheel type).

4.5 Tire pressure gage.

4.6 Odometer (calibrated).

4.7 Thermometer-ambient (or ambient sensitive thermocouple).

4.8 Stopmeter (fifth wheel, distance only).

4.9 Voltmeter and ammeter (where applicable).

4.10 Stop watch.

4.11 Trailer line pressure gage (where applicable).

4.12 Optional instrumentation.

4.12.1 Pedal travel gage.

4.12.2 Stop counter.

4.12.3 Strain gage ball or equivalent and required equipment to record fore and aft loads imposed on the tow vehicle.

5. Installation Details

5.1 Friction Material Preparation—Attach and finish friction material per vehicle manufacturer's specifications.

5.2 Thermocouples—Install thermocouples in each tow vehicle and trailer brake per current SAE J843d (March, 1973), Brake System Road Test Code—Passenger Car.

5.3 Brake Drum (or Rotor) and Hub Assembly—New drums (or rotors) recommended for each complete test (Section 6). Surface finish and dimensional characteristics including runout of rubbing surface to be in accordance with manufacturer's specifications.

5.4 Brake Assembly

5.4.1 Tow Vehicle—Brakes to be prepared in accordance with manufacturer's specifications. New springs and linings recommended on all brakes for each complete test (Section 6). Adjust brakes to manufacturer's specifications.

5.4.2 Trailer—Applicable only when evaluating trailers or combination brake systems. For all other tests, trailers should be unbraked. Brakes are to be prepared in accordance with manufacturer's specifications. New springs, linings, magnets, and armatures where applicable are recommended on all brakes for each complete test (Section 6). Adjust brakes to manufacturer's specifications.

5.5 Tow Vehicle Test Weight

5.5.1 Passenger Cars

5.5.1.1 *Passenger Car (Rated for less than four passengers)*—Test loading shall be curb weight plus 300 lb (135 kg) min including driver, observer, test equipment, and ballast, if necessary. Tongue load is additional, which may cause vehicle to exceed GVWR and/or GAWR.

5.5.1.2 *Passenger Car (Rated for four or more passengers)*—Test loading shall be curb weight plus 600 lb (270 kg) min including driver, observer, test equipment, and tongue load, which may cause vehicle to exceed GVWR and/or GAWR.

5.5.2 Light Trucks and Multi-Purpose Passenger Vehicles

5.5.2.1 *Light Truck and Multi-Purpose Passenger Vehicles (Ballasted)*—The ballasted condition shall be the tow vehicle including driver, observer, test equipment, tongue weight, and ballast, if required to reach tow vehicle GVWR, plus trailer to equal GCWR; or, if evaluating performance with an unbraked trailer, ballast to reach the lesser of GVWR or GCWR with the maximum weight unbraked trailer recommended by the tow vehicle manufacturer. When adding ballast, distribute to attain, or approach as nearly as possible the gross axle weight rating (GAWR) on the axle on which the weight, prior to the addition of ballast, is proportionately nearest the rated capacity. Do not exceed GAWR on any axle.

5.5.2.2 *Light Truck and Multi-Purpose Passenger Vehicles (Unballasted)*—When the weight of the ballast added to the tow vehicle in paragraph 5.5.2.1 exceeds 1000 lb (450 kg), unballasted checks shall be run per paragraphs 6.5 and 6.6 of this procedure. The unballasted condition shall be the tow vehicle at curb weight plus driver, observer, test equipment, plus tongue load. When the trailer is being evaluated, maintain trailer GVWR.

5.6 Trailer Test Weight—For purpose of testing, trailer manufacturer's gross trailer weight rating (trailer GVWR), shall be maintained throughout the full test procedure. For purpose of testing, in order to achieve reproducible results, a static tongue load of 10% gross trailer weight rating shall be used except for fifth wheel trailers. This may cause trailer axle loading in excess of manufacturer's ratings. Fifth wheel trailers shall follow manufacturer's recommendations.

5.6.1 The tow vehicle manufacturer's maximum recommended gross trailer weight shall be maintained when the tow vehicle is being evaluated except when paragraph 5.5.2.1 is applicable.

5.6.2 The trailer manufacturer's gross trailer weight rating (trailer GVWR) shall be maintained when the trailer is being evaluated.

5.7 Weight Distributing Hitch Adjustment—When a weight distributing hitch is used, the hitch shall be adjusted as follows:

The hitch ball height on the tow vehicle prior to hook-up, at curb weight, shall be set so that the trailer is level. Check the height from hitch to ground on the tow vehicle. Connect trailer and adjust the hitch so that the hitch point checked is as high as but not more than an inch higher than before the trailer was connected.

[1]For passenger cars only. Light truck requirements to be determined.

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.

6. Test Procedure

6.1 Test Notes

6.1.1 Effectiveness, stopping distance, fade, and recovery test stops shall be conducted on a substantially level (not to exceed a ±1% grade), dry, smooth, hard-surfaced roadway of Portland cement concrete (or other surface with equivalent coefficient of surface friction) that is free from loose materials.

6.1.2 During all phases of this procedure, any unusual performance such as wrap-up or noise characteristics are to be noted and recorded. Also note, at the appropriate stops, which wheel or wheels of the tow vehicle or trailer skidded. Note any uncontrollable braking action causing either of the vehicles to pull or swerve out of a 12 ft (3.7 m) wide roadway lane.

6.1.3 *Initial brake temperature* is considered to be the average temperature of brakes on the hottest axle with brakes off 0.2 mile (0.3 km) before stop.

6.1.4 If brakes require warming to a prescribed temperature, use burnish procedure and shorten interval if necessary.

6.1.5 Because variations in ambient temperature have a significant effect on test results, fade and recovery tests must be conducted within a range of ambient temperature of 40–90°F (4.4–32.2°C).

6.1.6 Decelerations used in the various fade, recovery, or warm-up procedures refer to values at which the decelerometer is held approximately constant during the stop by varying the input pressure.

6.1.7 Deceleration and line pressure (pedal force) readings shall not be taken below 5 mph (8 km/h).

6.1.8 Vehicles with manual transmissions should be declutched below 10 mph when stops are made in normal driving gear.

6.2 Preburnish Check—In order to allow for a general check of instrumentation, brakes, and vehicle function, the following stops are to be run: 10 stops, 30–0 mph (48–0 km/h), 10 fpsps (3 m/s^2), 1 mile (1.6 km) interval, 40 mph (64 km/h) cooling speed in normal driving gear. Record tow vehicle line pressure (pedal force) and trailer brake input.

NOTE: Assuming instrumentation, brakes, and vehicle are functioning satisfactorily, proceed immediately with First Effectiveness Test.

6.3 First (Preburnish) Effectiveness Test—Initial brake temperature, 200°F (93.3°C) before each application.

Stop Speed—30 and 60 mph (48 and 97 km/h) (full stops in neutral).

Increments—Curve to be defined to point of loss of lateral control or 16 fpsps (4.9 m/s^2) by adequate number of points (wheel slide permitted).

Record—Deceleration, tow vehicle line pressure (pedal force), trailer brake input, and method of brake application (that is, machine or manual). When using manual method, full stops are to be made at each deceleration level and maximum line pressure (pedal force) recorded. Optional—Record fore and aft load at ball.

6.4 Burnish

Stop Speed—40—0 mph (64–0 km/h).

Stop Deceleration—12 fpsps (3.7 m/s^2) (in normal gear).

Stop Interval—As required to achieve 250°F (121°C) *initial brake temperature*[2] or a maximum of 1 mile (1.6 km).

NOTE: The 1 mile (1.6 km) maximum must be observed even though the initial temperature exceeds 250°F (121°C).

Cooling Speed—40 mph (64 km/h) (moderate acceleration to cooling speed).

Stops Required—200. Record tow vehicle line pressure (pedal force), trailer brake input and brake temperature for stops 1, 20, and each succeeding 20th stop.

Optional—Record fore and aft load at ball.

After burnish cycle:

(a) Inspect and adjust trailer brakes.

(b) Inspect and adjust towing vehicle brakes.

(c) Record any operations performed.

6.5 Second Effectiveness Test—Repeat paragraph 6.3. Also, if tow vehicle additional payload capacity (ballast) with trailer coupled exceeds 1000 lb (450 kg), repeat this test in the unballasted condition. (See paragraph 5.5.2.2.) In this case, leave tow vehicle unballasted for the next test sequence.

6.6 Emergency System Test

6.6.1 INITIAL BRAKE TEMPERATURE—150°F (65.6°C) before each stop.

6.6.2 PROCEDURE—With one subsystem of the tow vehicle brake system open to atmosphere determine the shortest stopping distances, (a) with 150 lb (667 N) maximum allowable pedal force and, if no more than one wheel slides, (b) with 200 lb (890 N) maximum allowable pedal force. Stops are to be made in normal driving gear from 60 mph (97 km/h) without any portion of the vehicles leaving a 12 ft (3.7 m) lane. Repeat the procedure for each other subsystem of the tow vehicle brake system open to atmosphere. Three stops are to be made at each test condition and the average of the three recorded in the summary sheet.

6.6.3 RECORD—Pedal forces (maximum) and stopping for each failure mode. If first portion of this test was run at the unballasted condition (paragraph 5.5.2.2) following paragraph 6.5, reballast to paragraph 5.5.2.1 and repeat this section.

6.7 Inoperative Power System Test

6.7.1 INITIAL BRAKE TEMPERATURE—150°F (65.6°C).

6.7.2 PROCEDURE—With the tow vehicle brake system primary source of power assist inoperative and its reserve depleted, determine the shortest stopping distances, (a) with 150 lb (667 N) maximum allowable pedal force and, if no more than one wheel slides, (b) with 200 lb (890 N) maximum allowable force. Stops are to be made in normal driving gear from 60 mph (97 km/h) without leaving a 12 ft (3.7 m) lane. Three stops are to be made at each test condition and the average of the three recorded in the summary sheet.

6.7.3 RECORD—Pedal forces (maximum) and stopping distances.

6.8 First Fade and Recovery Test

6.8.1 BASELINE CHECK STOPS

Initial Brake Temperature—150°F (65.6°C) before each stop.

Stops Required—3.

Stop Speed—30–0 mph (48.0 km/h).

Stop Deceleration—10 fpsps (3 m/s^2) (in normal driving gear).

Record—Tow vehicle line pressure (pedal force) and trailer brake input.

6.8.2 FADE

Initial Brake Temperature—150°F (65.6°C) before first stop.

Stops Required—10.

Stop Speed—60–0 mph (97–0 km/h).

Stop Deceleration—15 fpsps (4.6 m/s^2) (in normal driving gear) or maximum obtainable at 200 lb (890 N) pedal force (or equivalent line pressure).

Stop Interval—0.8 miles (1.2 km).

Cooling Speed—60 mph (97 km/h).

Acceleration to Cooling Speed—Intermediate at a moderate rate.

Record—Maximum tow vehicle line pressure (pedal force) and deceleration (if 15 fpsps (4.6 m/s^2) cannot be held) and trailer brake input. Brake temperatures 0.2 mile (0.3 km) before every stop, all brakes. Ambient air temperature at beginning of run. Total elapsed time from end of the first fade stop to end of last fade stop—to maintain a check on driver consistency and car performance.

Optional—Record fore and aft load at ball.

NOTE: Drive 1 mile at 40 mph (1.6 km at 64 km/h) immediately after last fade stop and make first recovery stop.

6.8.3 RECOVERY

Stops Required—12.

Stop Speed—30–0 mph (48–0 km/h).

Stop Deceleration—10 fpsps (3 m/s^2) (in normal driving gear), or maximum obtainable at 200 lb (890 N) pedal force (or equivalent line pressure).

Stop Interval—1 mile (1.6 km).

Cooling Speed—40 mph (64 km/h).

Rate of Acceleration to Cooling Speed—Moderate.

Record—Maximum tow vehicle line pressure (pedal force), deceleration (if 10 fpsps (3 m/s^2) cannot be held) and trailer brake input. Initial brake temperatures before every stop, all brakes. Optional—Record fore and aft load at ball.

6.9 First Effectiveness Spot Check

Initial Brake Temperature—200°F (93.3°C) before each stop.

Stops Required—2.

Stop Speed—60–0 mph (97–0 km/h).

Stop Deceleration—15 fpsps (4.6 m/s^2) (in normal driving gear).

Record—Maximum tow vehicle line pressure (pedal force) and trailer brake input. Optional—Record fore and aft load at ball.

6.10 First Reburnish—Repeat paragraph 6.4, except 35 stops required.

6.11 Second Fade and Recovery Test—Repeat paragraph 6.8, except 15 fade stops required.

6.12 Second Effectiveness Spot Check—Repeat paragraph 6.9.

[2]See test notes paragraph 6.1.3.

6.13 Second Reburnish—Repeat paragraph 6.10.

6.14 Third Effectiveness Test—Repeat paragraph 6.3.

6.15 Final Inspection—Disassemble all brakes, inspect and record all pertinent observations.

7. Report Forms—The recommended report forms listed provide space for the data required for this road test code as well as non-mandatory data.

7.1 General Data, Fig. 1.

7.2 Summary Sheet, Fig. 2.

7.3 Input Correlation and Preburnish Check Data Sheet, Fig. 3.

7.4 First (Preburnish) Effectiveness Data Sheet, Fig. 4.

7.5 Burnish and Inoperative Power System Test Data Sheet, Fig. 5.

7.6 Emergency System Test Data Sheet, Fig. 6.

7.7 Second Effectiveness Test Data Sheet, Fig. 7.

7.8 First Baseline Check and First Fade Test Data Sheet, Fig. 8.

7.9 First Recovery, First Effectiveness Spot Check and First Reburnish Data Sheet, Fig. 9.

7.10 Second Baseline Check and Second Fade Test Data Sheet, Fig. 10.

7.11 Second Recovery, Second Effectiveness Spot Check and Second Reburnish Data Sheet, Fig. 11.

7.12 Third Effectiveness Test Data Sheet, Fig. 12.

7.13 Final Inspection Data Sheet, Fig. 13.

TRAILER

Trailer Make _____ Model _____ Year _____

Number of Axles _____ Number of Brakes _____ Tire Size _____

Tire Mfg. and Type _____ Tire Pressure _____

Weight ____ lb (kg) + ____ lb (kg) Ballast = ____ lb (kg) (Uncoupled)

Tongue Load at Coupling _____ Percent of Total _____ %

Type of Hitch _____

Trailer Axle(s) Weight (Coupled):

Front _____ lb (kg) Rear _____ lb (kg) Total _____ lb (kg)

Brakes

Size _____ Type _____ Cyl Dia _____

Lining _____

Type of Actuation _____

TOWING VEHICLE

Make _____ Model _____ Year _____

Engine _____ Transmission _____ Axle Ratio _____

Curb Weight: Front ____ lb (kg) Rear ____ lb (kg) Total ____ lb (kg)

Test Weight: Front ____ lb (kg) Rear ____ lb (kg) Total ____ lb (kg)

(Trailer Coupled)

GVWR or GCWR Weights _____ _____ _____ _____

Minimum Weights _____ _____ _____ _____

Tire Mfgr _____ Size _____ Pressure: F _____ R _____

Brakes

Front Size _____ Description Type _____ Cyl Dia _____

Rear Size _____ Description Type _____ Cyl Dia _____

Lining Front _____ Rear _____

Drum (Disc) Type: Front _____ Rear _____

Master Cyl Dia ____ Stroke ____ Split: Front ____ % Rear ____ %

Pedal: Pedal Ratio _____ Available Travel _____

Power Brake: Yes _____ No _____ Type _____

Hydraulic System Front Metering Rear Proportioning Other

_____ psi (kPa) Split _____ psi (kPa) _____

Slope _____

TEST INFORMATION

Thermocouple Installation Method _____

Tested by _____ Location _____

Date: Test Started _____ Test Completed _____

Ambient Temperature Range: High ____ °C (°F) Low ____ °C (°F)

FIG. 1—GENERAL DATA SHEET

Test No. _____

Test Phase Actual

Preburnish Check ____ Min ____ Max lb (N) Pedal Force

Effectiveness Tests 1st 2nd 3rd

30 mph (48 km/h)

at 16 ft/s² (5.2 m/s²) _____ _____ _____ lb (N) Pedal Force

60 mph (97 km/h)

at 16 ft/s² (5.2 m/s²) _____ _____ _____ lb (N) Pedal Force

Emergency System Test

Warning System Actuation Type: Power _____ Manual _____

60 mph (97 km/h) Stopping Distance

GVWR or GCWR

Front Operating _____ ft (m) _____ lb (N) Pedal Force

Front Operating _____ ft (m) _____ lb (N) Pedal Force

Rear Operating _____ ft (m) _____ lb (N) Pedal Force

Rear Operating _____ ft (m) _____ lb (N) Pedal Force

Minimum Tow Vehicle Weight

Front Operating _____ ft (m) _____ lb (N) Pedal Force

Front Operating _____ ft (m) _____ lb (N) Pedal Force

Rear Operating _____ ft (m) _____ lb (N) Pedal Force

Rear Operating _____ ft (m) _____ lb (N) Pedal Force

Inoperative Power System Test

60 mph (97 km/h) Stopping Distance

_____ ft (m) _____ lb (N) Pedal Force

_____ ft (m) _____ lb (N) Pedal Force

First Fade and Recovery Test

Fade Stops 1–4

_____ _____ _____ _____ lb (N) Pedal Force (or Min Decel)

Recovery Stops 1–5

_____ ft/s² (m/s²) at _____ lb (N) Max Pedal Force

Recovery Stops 6–12

_____ lb (N) Max Pedal Force

Second Fade and Recovery Test

Fade Stops 1–8

_____ _____ _____ _____ _____ _____ _____ _____ lb (N) Pedal Force (or Min Decel)

Recovery Stops 1–5

_____ ft/s² (m/s²) at _____ lb (N) Max Pedal Force

Recovery Stops 6–12

_____ lb (N) Max Pedal Force

Stability During Effectiveness Tests — Controllable Braking Through 16 ft/s² (5.2 m/s²) Yes ____ No ____

Final Inspection

Lining Integrity Yes ____ No ____

Mechanical Integrity Yes ____ No ____

Hydraulic Integrity Yes ____ No ____

Comments _____

Reported By: _____ Date _____

FIG. 2—SUMMARY SHEET

Test No. _____ Odometer Finish _____
Weather Condition _____
Date _____ Start _____
Road Condition _____
Driver _____ Total _____
Observer _____
Ambient Temperature: High _____ °C (°F)
Low _____ °C (°F)

INPUT CORRELATION

Engine Idling in Neutral _____ in Hg (kPa) Vacuum
(Power Equipped Tow Vehicle Only)

		Pedal Force, lb (N)		
Line Pressure, PST (Pa)	1st Recording	2nd Recording	3rd Recording	Average

PREBURNISH CHECK

30 mph (48 km/h) 10 ft/s² (3 m/s²) in Gear, 1 Mile (1.6 km) Interval

Stop No.	Tow Veh. Input (Line Pressure or Pedal Force)	Trailer Input	Pedal Travel, in (mm)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Final Temperatures After 19th Stop:
Tow Vehicle
L.F. _____ °C (°F) R.F. _____ °C (°F)
L.R. _____ °C (°F) R.R. _____ °C (°F)
Trailer:
L.F. _____ °C (°F) R.F. _____ °C (°F)
L.R. _____ °C (°F) R.R. _____ °C (°F)

Summary of Performance: _____

FIG. 3—INPUT CORRELATION AND PREBURNISH CHECK DATA SHEET

Test No. _____ Weather Condition _____
Date _____ Road and Track Condition _____
Driver _____ Ambient Temperature: High _____ °C (°F)
Low _____ °C (°F)
Observer _____ Method of Application _____
Odometer: Finish _____ Start _____ Total Miles (km) _____

FIRST (PREBURNISH) EFFECTIVENESS TEST

30 mph (48 km/h) in Neutral, 93.3°C (200°F) IBT Each Application

Tow. Veh. Input LP or PF	Trailer Input	Deceler-ation ft/s² (m/s²)	*Pedal Travel, in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	

60 mph (97 km/h) in Neutral, 93.3°C (200°F) IBT Each Application

Tow. Veh. Input LP or PF	Trailer Input	Deceler-ation ft/s² (m/s²)	*Pedal Travel, in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	

Summary of Performance: _____

*Optional

FIG. 4—FIRST (PREBURNISH) EFFECTIVENESS DATA SHEET

Test No. _____ Weather Condition _____
Date _____ Road and Track Condition _____
Driver _____ Ambient Temperature: High ____ °C (°F)
Observer _____ Low ____ °C (°F)
Odometer: Finish _____ Start _____ Total Miles (km) _____

BURNISH

40–0 mph (64–0 km/h) 12 ft/s² (3.7 m/s²) in Gear,
121°C (250°F) IBT Each Stop But 1 Mile (1.6 km) Max Interval

Stop No.	Tow Veh. Input LP or PF	Trailer Input	*Pedal Travel in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	
1												
20												
40												
60												
80												
100												
120												
140												
160												
180												
200												

Record Any Operations Performed _____

*Optional

Date _____ Weather Condition _____
Driver _____ Road and Track Condition _____
Observer _____ Ambient Temperature: High ____ °C (°F)
Odometer: Finish _____ Start _____ Total Miles (km) _____ Low ____ °C (°F)

INOPERATIVE POWER SYSTEM TEST

60–0 mph (97–0 km/h) in Gear, 65.6°C (150°F) IBT Each Application,
150 and 200 lb (667 and 890 N) Maximum Pedal Force

Tow Veh. Input LP or PF	Trailer Input	Stopping Distance ft (m)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
			L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	
Average											
Average											

Summary of Performance _____

FIG. 5

Test No. _____ Weather Condition _____
Date _____ Road and Track Condition _____
Driver _____ Ambient Temperature: High ____ °C (°F)
Observer _____ Low ____ °C (°F)
Odometer: Finish _____ Start _____ Total Miles (km) _____

EMERGENCY SYSTEM TEST

60–0 mph (97–0 km/h) in Gear, 65.6°C (150°F) IBT Each Application,
150 and 200 lb (667 and 890 N) Maximum Pedal Force

	System Operating	Tow. Veh. Input LP or PF	Trailer Input	Stopping Distance ft (m)	Warning Light on		Tow Veh. Temp. °C (°F)		Trailer Temp. °C (°F)				Remarks
					Yes	No	L	R	L.F.	R.F.	L.R.	R.R.	
GVWR or GCWR	Front												
	Front												
	Front												
	Average of Front												
	Front												
	Front												
	Front												
	Average of Front												
	Rear												
	Rear												
	Rear												
	Average of Rear												
	Rear												
	Rear												
	Rear												
	Average of Rear												

60–0 mph (97–0 km/h) in Gear, 65.6°C (150°F) IBT Each Application,
150 and 200 lb (667 and 890 N) Maximum Pedal Force

	System Operating	Tow. Veh. Input LP or PF	Trailer Input	Stopping Distance ft (m)	Warning Light on		Tow Veh. Temp. °C (°F)		Trailer Temp. °C (°F)				Remarks
					Yes	No	L	R	L.F.	R.F.	L.R.	R.R.	
Minimum Tow Vehicle Weight	Front												
	Front												
	Front												
	Average of Front												
	Front												
	Front												
	Front												
	Average of Front												
	Rear												
	Rear												
	Rear												
	Average of Rear												
	Rear												
	Rear												
	Rear												
	Average of Rear												

Summary of Performance: _____

FIG. 6

Test No. _____ Weather Condition _____

Date _____ Road and Track Condition _____

Driver _____ Ambient Temperature: High _____ °C (°F)

Low _____ °C (°F)

Observer _____ Method of Application _____

Odometer: Finish _____ Start _____ Total Miles (km) _____

SECOND EFFECTIVENESS TEST

30 mph (48 km/h) in Neutral, 93.3°C (200°F) IBT Each Application

Tow. Veh. Input LP or PF	Trailer Input	Deceler-ation ft/s² (m/s²)	*Pedal Travel, in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	

60 mph (97 km/h) in Neutral, 93.3°C (200°F) IBT Each Application

Tow. Veh. Input LP or PF	Trailer Input	Deceler-ation ft/s² (m/s²)	*Pedal Travel, in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	

Summary of Performance: _____

*Optional

FIG. 7—SECOND EFFECTIVENESS TEST DATA SHEET

Test No. _____ Weather Condition _____

Date _____ Road and Track Condition _____

Driver _____ Ambient Temperature: High _____ °C (°F)

Observer _____ Low _____ °C (°F)

Odometer: Finish _____ Start _____ Total Miles (km) _____

Check if truck tow vehicle unballasted

FIRST BASELINE CHECK

30 mph (43 km/h), 10 ft/s² (3 m/s²) in Gear,
65.6°C (150°F) IBT First Stop

Stop No.	Tow Veh. Input LP or PF	Trailer Input	*Pedal Travel in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	
1												
2												
3												

Start Time _____ Finish Time _____ Lapsed Time _____

FIRST FADE TEST

60 mph (97 km/h) 15 ft/s² (4.6 m/s²) in Gear,
0.4 Mile (0.6 m) Interval, 65.6°C (150°F) IBT First Stop

Stop No.	Tow Veh. Input LP or PF	Trailer Input	*Pedal Travel in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

Summary of Performance: _____

*Optional

FIG. 8—FIRST BASELINE CHECK AND FIRST FADE TEST DATA SHEET

Test No. _____ Weather Condition _____
Date _____ Road and Track Condition _____
Driver _____ Ambient Temperature: High _____ °C (°F)
Observer _____ Low _____ °C (°F)
Odometer: Finish _____ Start _____ Total Miles (km) _____

FIRST RECOVERY

30 mph (48 km/h), 10 ft/s² (3 m/s²), in Gear,
1 Mile (1.6 km) Interval, at 40 mph (64 km/h)

Stop No.	Tow Veh. Input LP or PF	Trailer Input	*Pedal Travel in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

Summary of Performance: _____

FIRST EFFECTIVENESS SPOT CHECK

60 mph (97 km/h), 15 ft/s² (4.6 m/s²) in Gear, 93.3°C (200°F) IBT

Stop No.	Tow Veh. Input LP or PF	Trailer Input	*Pedal Travel in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	
1												
2												

FIRST REBURNISH

40–0 mph (64–0 km/h), 12 ft/s² (3.7 m/s²) in Gear,
121°C (250°F) IBT Each Stop, But 1 Mile (1.6 km) Max Interval

Stop No.	Tow Veh. Input LP or PF	Trailer Input	*Pedal Travel in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	
1												
10												
25												
35												

Summary of Performance: _____

*Optional

FIG. 9—FIRST RECOVERY, FIRST EFFECTIVENESS SPOT CHECK, AND FIRST REBURNISH DATA SHEET

Test No. _____ Weather Condition _____
Date _____ Road and Track Condition _____
Driver _____ Ambient Temperature: High _____ °C (°F)
Observer _____ Low _____ °C (°F)
Odometer: Finish _____ Start _____ Total Miles (km) _____

SECOND BASELINE CHECK

30 mph (48 km/h), 10 ft/s² (3 m/s²), in Gear, 65.6°C (150°F) IBT

Stop No.	Tow Veh. Input LP or PF	Trailer Input	*Pedal Travel in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	
1												
2												
3												

Start Time _____ Finish Time _____ Lapsed Time _____

SECOND FADE TEST

60 mph (97 km/h), 15 ft/s² (4.6 m/s²) in Gear,
0.4 Mile (0.6 km) Interval, 65.6°C (150°F) IBT First Stop

Stop No.	Tow Veh. Input LP or PF	Trailer Input	*Pedal Travel in (mm)	Tow Veh. Temp. °C (°F)				Trailer Temp. °C (°F)				Remarks
				L.F.	R.F.	L.R.	R.R.	L.F.	R.F.	L.R.	R.R.	
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												

Summary of Performance: _____

*Optional

FIG. 10—SECOND BASELINE CHECK AND SECOND FADE TEST DATA SHEET