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**Brake System Road Test Code—  
Passenger Car and Light Duty Truck—  
Trailer Combinations—SAE J134b**

SAE Recommended Practice  
Last Revised August 1975

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OF THE SAE HANDBOOK

Society of Automotive Engineers, Inc.  
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096



**PREPRINT**

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# BRAKE SYSTEM ROAD TEST CODE – PASSENGER CAR AND LIGHT DUTY TRUCK – TRAILER COMBINATIONS – SAE J134b

## SAE Recommended Practice

Report of Brake Committee approved December 1970 and last revised August 1975.

1. **INTRODUCTION**—This recommended practice, in conjunction with SAE J135, is intended for use primarily by: (a) tow vehicle manufacturers testing with unbraked trailers to determine the maximum weight unbraked trailer which can be towed, and (b) by interested manufacturers to determine the adequacy of trailer brake systems. This procedure assumes a tow vehicle complying with existing applicable legal requirements.

2. **SCOPE**—This SAE recommended practice establishes a uniform procedure for the level road test of the brake systems of all combinations of new multipurpose 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). For purposes of this test, adherence to each manufacturer's recommendations<sup>1</sup> is mandatory.

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 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 J843, 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 **Towing 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 **Towed Vehicle**—Applicable only when evaluating trailer brake systems. For all other tests trailers should be unbraked. Brakes are to be prepared in accordance with manufacturer's specifications. New springs,

### GENERAL DATA

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 MFG. \_\_\_\_\_ 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 \_\_\_\_\_ NO. \_\_\_\_\_ TYPE \_\_\_\_\_  
HYDRAULIC SYSTEM \_\_\_\_\_ FRONT METERING \_\_\_\_\_ PSI \_\_\_\_\_ REAR PROPORTIONING \_\_\_\_\_ SPLIT \_\_\_\_\_ PSI \_\_\_\_\_ OTHER \_\_\_\_\_ SLOPE \_\_\_\_\_

TEST INFORMATION  
THERMOCOUPLE INSTALLATION METHOD \_\_\_\_\_  
TESTED BY \_\_\_\_\_ LOCATION \_\_\_\_\_  
DATE: TEST STARTED \_\_\_\_\_ TEST COMPLETED \_\_\_\_\_  
AMBIENT TEMPERATURE RANGE: HIGH \_\_\_\_\_ F (C) LOW \_\_\_\_\_ F (C)

FIG. 1—GENERAL DATA SHEET

### SUMMARY SHEET

TEST NO. \_\_\_\_\_  
TEST PHASE \_\_\_\_\_  
PREBURNISH CHECK \_\_\_\_\_  
EFFECTIVENESS TESTS  
30 MPH (48 km/h) AT 16 FT/S<sup>2</sup> (5.2 m/s<sup>2</sup>) \_\_\_\_\_ LB (N) PEDAL FORCE  
60 MPH (97 km/h) AT 16 FT/S<sup>2</sup> (5.2 m/s<sup>2</sup>) \_\_\_\_\_ LB (N) PEDAL FORCE  
EMERGENCY BRAKE TEST  
WARNING SYSTEM ACTUATION  
60 MPH (97 km/h) STOPPING DISTANCE \_\_\_\_\_  
TYPE: POWER \_\_\_\_\_ MANUAL \_\_\_\_\_  
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  
FIRST FADE AND RECOVERY TEST  
FADE STOPS 1-4 \_\_\_\_\_ LB (N) PEDAL FORCE (OR MIN. DECEL.)  
RECOVERY STOPS 1-5 \_\_\_\_\_ FT/S<sup>2</sup> (m/s<sup>2</sup>) 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/S<sup>2</sup> (m/s<sup>2</sup>) AT \_\_\_\_\_ LB (N) MAX PEDAL FORCE  
RECOVERY STOPS 6-12 \_\_\_\_\_ LB (N) MAX PEDAL FORCE  
STABILITY DURING EFFECTIVENESS TESTS  
CONTROLLABLE BRAKING THROUGH 16 FT/S<sup>2</sup> (5.2 m/s<sup>2</sup>)  
YES \_\_\_\_\_ NO \_\_\_\_\_  
FINAL INSPECTION  
LINING INTEGRITY YES \_\_\_\_\_ NO \_\_\_\_\_  
MECHANICAL INTEGRITY YES \_\_\_\_\_ NO \_\_\_\_\_  
HYDRAULIC INTEGRITY YES \_\_\_\_\_ NO \_\_\_\_\_  
COMMENTS \_\_\_\_\_  
REPORTED BY: \_\_\_\_\_ DATE \_\_\_\_\_

FIG. 2—SUMMARY SHEET

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 Towing Vehicle Test Weight

5.5.1 **Passenger Car**—The manufacturer's recommended axle test loading

<sup>1</sup>Tow vehicles shall incorporate that manufacturer's trailering package. Tow vehicle manufacturer's recommendations regarding hitching shall be followed. Hitches shall be set up according to hitch or tow vehicle manufacturer's recommendations, where applicable. Trailer brakes shall be set up according to recommendations of the brake system supplier. 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.

TEST NO. \_\_\_\_\_ ODOMETER FINISH \_\_\_\_\_ WEATHER CONDITION \_\_\_\_\_  
 DATE \_\_\_\_\_ START \_\_\_\_\_ ROAD AND TRACK CONDITION \_\_\_\_\_  
 DRIVER \_\_\_\_\_ TOTAL \_\_\_\_\_ AMBIENT TEMPERATURE: HIGH \_\_\_\_\_ °F (°C)  
 OBSERVER \_\_\_\_\_ LOW \_\_\_\_\_ °F (°C)

## INPUT CORRELATION

ENGINE IDLING IN NEUTRAL \_\_\_\_\_ IN HG (Pa) VACUUM  
 (POWER EQUIPPED TOWING VEHICLE ONLY)

| LINE PRESSURE,<br>PST (Pa) | PEDAL FORCE, LB (N) |                  |                  |  | AVERAGE |
|----------------------------|---------------------|------------------|------------------|--|---------|
|                            | 1st<br>RECORDING    | 2nd<br>RECORDING | 3rd<br>RECORDING |  |         |
|                            |                     |                  |                  |  |         |
|                            |                     |                  |                  |  |         |
|                            |                     |                  |                  |  |         |
|                            |                     |                  |                  |  |         |
|                            |                     |                  |                  |  |         |
|                            |                     |                  |                  |  |         |
|                            |                     |                  |                  |  |         |
|                            |                     |                  |                  |  |         |
|                            |                     |                  |                  |  |         |

## PREBURNISH CHECK

30 MPH (48 km/h) 10 FT/S<sup>2</sup> (3 m/s<sup>2</sup>) IN GEAR - 1 MILE (1.6 km) INTERVAL

| STOP<br>NO. | TOW VEH. INPUT<br>(LINE PRESSURE<br>OR PEDAL FORCE) | TRAILER<br>INPUT | PEDAL TRAVEL,<br>IN (mm) |
|-------------|-----------------------------------------------------|------------------|--------------------------|
| 1           |                                                     |                  |                          |
| 2           |                                                     |                  |                          |
| 3           |                                                     |                  |                          |
| 4           |                                                     |                  |                          |
| 5           |                                                     |                  |                          |
| 6           |                                                     |                  |                          |
| 7           |                                                     |                  |                          |
| 8           |                                                     |                  |                          |
| 9           |                                                     |                  |                          |
| 10          |                                                     |                  |                          |

## FINAL TEMPERATURES AFTER 19th STOP

TOWING VEHICLE  
 L.F. \_\_\_\_\_ °F (°C) R.F. \_\_\_\_\_ °F (°C)  
 L.R. \_\_\_\_\_ °F (°C) R.R. \_\_\_\_\_ °F (°C)  
 TRAILER:  
 L.F. \_\_\_\_\_ °F (°C) R.F. \_\_\_\_\_ °F (°C)  
 L.R. \_\_\_\_\_ °F (°C) R.R. \_\_\_\_\_ °F (°C)

## 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 \_\_\_\_\_ °F (°C)  
 OBSERVER \_\_\_\_\_ LOW \_\_\_\_\_ °F (°C)  
 ODOMETER: FINISH \_\_\_\_\_ START \_\_\_\_\_ TOTAL MILES (km) \_\_\_\_\_

## FIRST (PREBURNISH) EFFECTIVENESS TEST

30 MPH (48 km/h) IN NEUTRAL - 200°F (93.3°C) IBT EACH APPLICATION

| TOW.<br>VEH.<br>INPUT<br>LP OR PF | TRAILER<br>INPUT | DECELER-<br>ATION<br>FT/S <sup>2</sup> (m/s <sup>2</sup> ) | (OPT)<br>PEDAL<br>TRAVEL,<br>IN (mm) | TOW VEH. TEMP.<br>°F (°C) |      |      |      | TRAILER TEMP.<br>°F (°C) |      |      |      | REMARKS |
|-----------------------------------|------------------|------------------------------------------------------------|--------------------------------------|---------------------------|------|------|------|--------------------------|------|------|------|---------|
|                                   |                  |                                                            |                                      | L.F.                      | R.F. | L.R. | R.R. | L.F.                     | R.F. | L.R. | R.R. |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |

60 MPH (97 km/h) IN NEUTRAL - 200°F (93.3°C) IBT EACH APPLICATION

| TOW.<br>VEH.<br>INPUT<br>LP OR PF | TRAILER<br>INPUT | DECELER-<br>ATION<br>FT/S <sup>2</sup> (m/s <sup>2</sup> ) | (OPT)<br>PEDAL<br>TRAVEL,<br>IN (mm) | TOW VEH. TEMP.<br>°F (°C) |      |      |      | TRAILER TEMP.<br>°F (°C) |      |      |      | REMARKS |
|-----------------------------------|------------------|------------------------------------------------------------|--------------------------------------|---------------------------|------|------|------|--------------------------|------|------|------|---------|
|                                   |                  |                                                            |                                      | L.F.                      | R.F. | L.R. | R.R. | L.F.                     | R.F. | L.R. | R.R. |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |
|                                   |                  |                                                            |                                      |                           |      |      |      |                          |      |      |      |         |

## SUMMARY OF PERFORMANCE:

FIG. 4—FIRST (PREBURNISH) EFFECTIVENESS DATA SHEET

shall be maintained and not exceeded throughout the full test procedure on the axle on which the weight is proportionately nearest rated capacity. The axle test load shall be at least curb plus 600 lb (270 kg) for vehicles of four or more passengers including the tongue load. No ballast shall be added to

TEST NO. \_\_\_\_\_ WEATHER CONDITION \_\_\_\_\_  
 DATE \_\_\_\_\_ ROAD AND TRACK CONDITION \_\_\_\_\_  
 DRIVER \_\_\_\_\_ AMBIENT TEMPERATURE: HIGH \_\_\_\_\_ °F (°C)  
 OBSERVER \_\_\_\_\_ LOW \_\_\_\_\_ °F (°C)  
 ODOMETER: FINISH \_\_\_\_\_ START \_\_\_\_\_ TOTAL MILES (km) \_\_\_\_\_

## BURNISH

40-0 MPH (64-0 km/h) 12 FT/S<sup>2</sup> (3.7 m/s<sup>2</sup>) IN GEAR  
 250 F (121 C) IBT EACH STOP BUT 1 MILE (1.6 km) MAX INTERVAL

| STOP<br>NO. | TOW VEH.<br>INPUT<br>LP OR PF | TRAILER<br>INPUT | (OPT)<br>PEDAL<br>TRAVEL<br>IN (mm) | TOW VEH. TEMP.<br>°F (°C) |      |      |      | TRAILER TEMP.<br>°F (°C) |      |      |      | 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

DATE \_\_\_\_\_ WEATHER CONDITION \_\_\_\_\_  
 DRIVER \_\_\_\_\_ ROAD AND TRACK CONDITION \_\_\_\_\_  
 OBSERVER \_\_\_\_\_ AMBIENT TEMPERATURE: HIGH \_\_\_\_\_ °F (°C)  
 ODOMETER: FINISH \_\_\_\_\_ START \_\_\_\_\_ TOTAL MILES (km) \_\_\_\_\_

## INOPERATIVE POWER SYSTEM TEST

60-0 MPH (97-0 km/h) IN GEAR, 150°F (65.6°C) IBT EACH APPLICATION,  
 150 AND 200 LB (667 AND 890 N) PEDAL FORCE

| TOW VEH.<br>INPUT<br>LP OR PF | TRAILER<br>INPUT | STOPPING<br>DISTANCE<br>FT (m) | TOW VEH. TEMP.<br>°F (°C) |      |      |      | TRAILER TEMP.<br>°F (°C) |      |      |      | REMARKS |
|-------------------------------|------------------|--------------------------------|---------------------------|------|------|------|--------------------------|------|------|------|---------|
|                               |                  |                                | L.F.                      | R.F. | L.R. | R.R. | L.F.                     | R.F. | L.R. | R.R. |         |
| (667N)                        |                  |                                |                           |      |      |      |                          |      |      |      |         |
| (890N)                        |                  |                                |                           |      |      |      |                          |      |      |      |         |
| 150 lbs                       |                  |                                |                           |      |      |      |                          |      |      |      |         |
| (667N)                        |                  |                                |                           |      |      |      |                          |      |      |      |         |
| 150 lbs                       |                  |                                |                           |      |      |      |                          |      |      |      |         |
| AVERAGE                       |                  |                                |                           |      |      |      |                          |      |      |      |         |
| (890N)                        |                  |                                |                           |      |      |      |                          |      |      |      |         |
| 200 lbs                       |                  |                                |                           |      |      |      |                          |      |      |      |         |
| (890N)                        |                  |                                |                           |      |      |      |                          |      |      |      |         |
| 200 lbs                       |                  |                                |                           |      |      |      |                          |      |      |      |         |
| AVERAGE                       |                  |                                |                           |      |      |      |                          |      |      |      |         |

## SUMMARY OF PERFORMANCE:

FIG. 5

TEST NO. \_\_\_\_\_ WEATHER CONDITION \_\_\_\_\_  
 DATE \_\_\_\_\_ ROAD AND TRACK CONDITION \_\_\_\_\_  
 DRIVER \_\_\_\_\_ AMBIENT TEMPERATURE: HIGH \_\_\_\_\_ °F (°C)  
 OBSERVER \_\_\_\_\_ LOW \_\_\_\_\_ °F (°C)  
 ODOMETER: FINISH \_\_\_\_\_ START \_\_\_\_\_ TOTAL MILES (km) \_\_\_\_\_

## EMERGENCY SYSTEM TEST

60-0 MPH (97-0 km/h) IN GEAR, 150°F (65.6°C) IBT EACH APPLICATION,  
 150 AND 200 LB (667 AND 890 N) PEDAL FORCE

| SYSTEM<br>OPERATING | TOW VEH.<br>INPUT<br>LP OR PF | TRAILER<br>INPUT | STOPPING<br>DISTANCE<br>FT (m) | WARNING<br>LIGHT ON<br>YES NO | TOW VEH.<br>TEMP.<br>°F (°C) |   | TRAILER TEMP.<br>°F (°C) |      |      |      | REMARKS |
|---------------------|-------------------------------|------------------|--------------------------------|-------------------------------|------------------------------|---|--------------------------|------|------|------|---------|
|                     |                               |                  |                                |                               | L                            | R | L.F.                     | R.F. | L.R. | R.R. |         |
| FRONT               |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| FRONT               |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| FRONT               |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| AVERAGE OF FRONT    |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| FRONT               |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| FRONT               |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| AVERAGE OF FRONT    |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| REAR                |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| REAR                |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| REAR                |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| AVERAGE OF REAR     |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| REAR                |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| REAR                |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| AVERAGE OF REAR     |                               |                  |                                |                               |                              |   |                          |      |      |      |         |

GVWR OR GCWR

MINIMUM TOW VEHICLE WEIGHT

60-0 MPH (97-0 km/h) IN GEAR, 150°F (65.6°C) IBT EACH APPLICATION,  
 150 AND 200 LB (667 AND 890 N) PEDAL FORCE

| SYSTEM<br>OPERATING | TOW VEH.<br>INPUT<br>LP OR PF | TRAILER<br>INPUT | STOPPING<br>DISTANCE<br>FT (m) | WARNING<br>LIGHT ON<br>YES NO | TOW VEH.<br>TEMP.<br>°F (°C) |   | TRAILER TEMP.<br>°F (°C) |      |      |      | REMARKS |
|---------------------|-------------------------------|------------------|--------------------------------|-------------------------------|------------------------------|---|--------------------------|------|------|------|---------|
|                     |                               |                  |                                |                               | L                            | R | L.F.                     | R.F. | L.R. | R.R. |         |
| FRONT               |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| FRONT               |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| FRONT               |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| AVERAGE OF FRONT    |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| FRONT               |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| FRONT               |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| FRONT               |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| AVERAGE OF FRONT    |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| REAR                |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| REAR                |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| REAR                |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| AVERAGE OF REAR     |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| REAR                |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| REAR                |                               |                  |                                |                               |                              |   |                          |      |      |      |         |
| AVERAGE OF REAR     |                               |                  |                                |                               |                              |   |                          |      |      |      |         |

## SUMMARY OF PERFORMANCE:

FIG. 6

TEST NO. \_\_\_\_\_ WEATHER CONDITION \_\_\_\_\_  
 DATE \_\_\_\_\_ ROAD AND TRACK CONDITION \_\_\_\_\_  
 DRIVER \_\_\_\_\_ AMBIENT TEMPERATURE: HIGH \_\_\_\_\_ °F (°C)  
 OBSERVER \_\_\_\_\_ LOW \_\_\_\_\_ °F (°C)  
 METHOD OF APPLICATION \_\_\_\_\_  
 ODOMETER: FINISH \_\_\_\_\_ START \_\_\_\_\_ TOTAL MILES (km) \_\_\_\_\_

#### SECOND EFFECTIVENESS TEST

| 30 MPH (48 km/h) IN NEUTRAL, 200°F (93.3°C) IBT EACH APPLICATION |               |                                            |                            |                        |      |      |      |                       |      |      |      |         |
|------------------------------------------------------------------|---------------|--------------------------------------------|----------------------------|------------------------|------|------|------|-----------------------|------|------|------|---------|
| TOW VEH. INPUT LP OR PF                                          | TRAILER INPUT | DECELERATION, $FT/s^2$ (m/s <sup>2</sup> ) | (OPT) PEDAL TRAVEL IN (mm) | TOW VEH. TEMP. °F (°C) |      |      |      | TRAILER TEMP. °F (°C) |      |      |      | 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                                                               |               |                                            |                            |                        |      |      |      |                       |      |      |      |         |

#### 60 MPH (97 km/h) IN NEUTRAL, 200°F (93.3°C) IBT EACH APPLICATION

| TOW VEH. INPUT LP OR PF | TRAILER INPUT | DECELERATION, $FT/s^2$ (m/s <sup>2</sup> ) | (OPT) PEDAL TRAVEL IN (mm) | TOW VEH. TEMP. °F (°C) |      |      |      | TRAILER TEMP. °F (°C) |      |      |      | 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: \_\_\_\_\_

FIG. 7—SECOND EFFECTIVENESS TEST DATA SHEET

TEST NO. \_\_\_\_\_ WEATHER CONDITION \_\_\_\_\_  
 DATE \_\_\_\_\_ ROAD AND TRACK CONDITION \_\_\_\_\_  
 DRIVER \_\_\_\_\_ AMBIENT TEMPERATURE: HIGH \_\_\_\_\_ °F (°C)  
 OBSERVER \_\_\_\_\_ LOW \_\_\_\_\_ °F (°C)  
 ODOMETER: FINISH \_\_\_\_\_ START \_\_\_\_\_ TOTAL MILES (km) \_\_\_\_\_

#### FIRST BASELINE CHECK

| 30 MPH (48 km/h), 10 FT/S <sup>2</sup> (3 m/s <sup>2</sup> ) IN GEAR, 150°F (65.6°C) IBT FIRST STOP |                         |               |                       |                        |      |      |      |                       |      |      |      |         |
|-----------------------------------------------------------------------------------------------------|-------------------------|---------------|-----------------------|------------------------|------|------|------|-----------------------|------|------|------|---------|
| STOP NO.                                                                                            | TOW VEH. INPUT LP OR PF | TRAILER INPUT | *PEDAL TRAVEL IN (mm) | TOW VEH. TEMP. °F (°C) |      |      |      | TRAILER TEMP. °F (°C) |      |      |      | 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/S <sup>2</sup> (4.6 m/s <sup>2</sup> ) IN GEAR, 0.4 MILE (0.6 km) INTERVAL, 150°F (65.6°C) IBT FIRST STOP |                         |               |                       |                        |      |      |      |                       |      |      |      |         |
|----------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------|-----------------------|------------------------|------|------|------|-----------------------|------|------|------|---------|
| STOP NO.                                                                                                                         | TOW VEH. INPUT LP OR PF | TRAILER INPUT | *PEDAL TRAVEL IN (mm) | TOW VEH. TEMP. °F (°C) |      |      |      | TRAILER TEMP. °F (°C) |      |      |      | 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

passenger cars if curb plus 600 lb (270 kg) loading is achieved by tongue load.

**5.5.2 Light Trucks and Multipurpose Passenger Vehicles**—The vehicle shall be ballasted to within  $\pm 2\%$  of the lesser of manufacturer's gross vehicle weight rating (GVWR) including the tongue load, or the gross combination weight rating (GCWR). When a GCWR restriction limits tow vehicle weight to less than GVWR, add passengers to the cab and then distribute ballast weight in the cargo area 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 to rated capacity. Do not exceed the GAWR on any axle.

TEST NO. \_\_\_\_\_ WEATHER CONDITION \_\_\_\_\_  
 DATE \_\_\_\_\_ ROAD AND TRACK CONDITION \_\_\_\_\_  
 DRIVER \_\_\_\_\_ AMBIENT TEMPERATURE: HIGH \_\_\_\_\_ °F (°C)  
 OBSERVER \_\_\_\_\_ LOW \_\_\_\_\_ °F (°C)  
 ODOMETER FINISH \_\_\_\_\_ START \_\_\_\_\_ TOTAL MILES (km) \_\_\_\_\_

#### FIRST RECOVERY

| 30 MPH (48 km/h), 10 FT/S <sup>2</sup> (3 m/s <sup>2</sup> ) 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. °F (°C) |      |      |      | TRAILER TEMP. °F (°C) |      |      |      | 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/S <sup>2</sup> (4.6 m/s <sup>2</sup> ) IN GEAR 200°F (93.3°C) IBT |                         |               |                       |                        |      |      |      |                       |      |      |      |         |
|-------------------------------------------------------------------------------------------|-------------------------|---------------|-----------------------|------------------------|------|------|------|-----------------------|------|------|------|---------|
| STOP NO.                                                                                  | TOW VEH. INPUT LP OR PF | TRAILER INPUT | *PEDAL TRAVEL IN (mm) | TOW VEH. TEMP. °F (°C) |      |      |      | TRAILER TEMP. °F (°C) |      |      |      | 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/S <sup>2</sup> (3.7 m/s <sup>2</sup> ) IN GEAR, 250 F (121 C) 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. °F (°C) |      |      |      | TRAILER TEMP. °F (°C) |      |      |      | REMARKS |
|                                                                                                                                           |                         |               |                       | L.F.                   | R.F. | L.R. | R.R. | L.F.                  | R.F. | L.R. | R.R. |         |
| 1                                                                                                                                         |                         |               |                       |                        |      |      |      |                       |      |      |      |         |
| 10                                                                                                                                        |                         |               |                       |                        |      |      |      |                       |      |      |      |         |
| 25                                                                                                                                        |                         |               |                       |                        |      |      |      |                       |      |      |      |         |
| 25                                                                                                                                        |                         |               |                       |                        |      |      |      |                       |      |      |      |         |

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 \_\_\_\_\_ °F (°C)  
 OBSERVER \_\_\_\_\_ LOW \_\_\_\_\_ °F (°C)  
 ODOMETER: FINISH \_\_\_\_\_ START \_\_\_\_\_ TOTAL MILES (km) \_\_\_\_\_

#### SECOND BASELINE CHECK

| 30 MPH (48 km/h), 10 FT/S <sup>2</sup> (3 m/s <sup>2</sup> ) IN GEAR, 150°F (65.6°C) IBT |                         |               |                       |                        |      |      |      |                       |      |      |      |         |
|------------------------------------------------------------------------------------------|-------------------------|---------------|-----------------------|------------------------|------|------|------|-----------------------|------|------|------|---------|
| STOP NO.                                                                                 | TOW VEH. INPUT LP OR PF | TRAILER INPUT | *PEDAL TRAVEL IN (mm) | TOW VEH. TEMP. °F (°C) |      |      |      | TRAILER TEMP. °F (°C) |      |      |      | 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/S <sup>2</sup> (4.6 m/s <sup>2</sup> ) IN GEAR, 0.4 MILE (0.6 km) INTERVAL, 150 F (65.6 C) IBT FIRST STOP |                         |               |                       |                        |      |      |      |                       |      |      |      |         |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------|-----------------------|------------------------|------|------|------|-----------------------|------|------|------|---------|
| STOP NO.                                                                                                                          | TOW VEH. INPUT LP OR PF | TRAILER INPUT | *PEDAL TRAVEL IN (mm) | TOW VEH. TEMP. °F (°C) |      |      |      | TRAILER TEMP. °F (°C) |      |      |      | 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

**5.6 Towed Vehicle Test Weight**—Vehicle manufacturer's gross trailer weight rating (GTWR) shall be maintained throughout the full test procedure. For purposes of testing, in order to achieve reproducible results, a static tongue load of 10% GTWR shall be used except for fifth wheel trailers, which shall follow manufacturer's recommendations.

## 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  $\pm 1\%$  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 defined as 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<sup>2</sup>), 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 mph 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<sup>2</sup>) 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<sup>2</sup>) (in normal gear).

Stop Interval—As required to achieve 250°F (121°C) "initial brake temperature"<sup>2</sup> 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:

- Inspect and adjust trailer brakes.
- Inspect and adjust towing vehicle brakes.
- Record any operations performed.

### 6.5 Second Effectiveness Test—Repeat Item 6.3

If tow vehicle additional payload capacity with trailer coupled exceeds 1000 lbs (454 kg), repeat this test at minimum tow vehicle weight (curb weight plus tongue load plus 300 lb (136 kg) maximum).

### 6.6 Emergency Brake System Test

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

TEST NO. \_\_\_\_\_ WEATHER CONDITION \_\_\_\_\_  
DATE \_\_\_\_\_ ROAD AND TRACK CONDITION \_\_\_\_\_  
DRIVER \_\_\_\_\_ AMBIENT TEMPERATURE: HIGH \_\_\_\_\_ °F(°C)  
OBSERVER \_\_\_\_\_ LOW \_\_\_\_\_ °F(°C)  
ODOMETER: FINISH \_\_\_\_\_ START \_\_\_\_\_ TOTAL MILES (km) \_\_\_\_\_

#### SECOND RECOVERY

| 30 MPH (48 km/h), 10 FT/S <sup>2</sup> (3 m/s <sup>2</sup> ), 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. °F(°C) |      |      |      | TRAILER TEMP. °F(°C) |      |      |      | 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: \_\_\_\_\_

#### SECOND EFFECTIVENESS SPOT CHECK

| 60-0 MPH (97.0 km/h), 15 FT/S <sup>2</sup> (4.6 m/s <sup>2</sup> ) IN GEAR, 200°F (93.3°C) IBT |                          |               |                       |                       |      |      |      |                      |      |      |      |         |
|------------------------------------------------------------------------------------------------|--------------------------|---------------|-----------------------|-----------------------|------|------|------|----------------------|------|------|------|---------|
| STOP NO.                                                                                       | TOW VEH. INPUT, LP OR PF | TRAILER INPUT | *PEDAL TRAVEL IN (mm) | TOW VEH. TEMP. °F(°C) |      |      |      | TRAILER TEMP. °F(°C) |      |      |      | REMARKS |
|                                                                                                |                          |               |                       | L.F.                  | R.F. | L.R. | R.R. | L.F.                 | R.F. | L.R. | R.R. |         |
| 1                                                                                              |                          |               |                       |                       |      |      |      |                      |      |      |      |         |
| 2                                                                                              |                          |               |                       |                       |      |      |      |                      |      |      |      |         |

#### SECOND REBURNISH

| 40-0 MPH (64.0 km/h), 12 FT/S <sup>2</sup> (4.6 m/s <sup>2</sup> ) IN GEAR, 250°F (121°C) 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. °F(°C) |      |      |      | TRAILER TEMP. °F(°C) |      |      |      | 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. 11—SECOND RECOVERY, SECOND EFFECTIVENESS SPOT CHECK, SECOND REBURNISH DATA SHEET

TEST NO. \_\_\_\_\_ WEATHER CONDITION \_\_\_\_\_  
DATE \_\_\_\_\_ ROAD AND TRACK CONDITION \_\_\_\_\_  
DRIVER \_\_\_\_\_ AMBIENT TEMPERATURE: HIGH \_\_\_\_\_ °F(°C)  
OBSERVER \_\_\_\_\_ LOW \_\_\_\_\_ °F(°C)  
ODOMETER: FINISH \_\_\_\_\_ START \_\_\_\_\_ METHOD OF APPLICATION \_\_\_\_\_ TOTAL MILES (km) \_\_\_\_\_

#### THIRD EFFECTIVENESS TEST

| 30 MPH (48 km/h) IN NEUTRAL, 200°F (93.3°C) IBT EACH APPLICATION |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|------------------------------------------------------------------|---------------|-----------------------------------------------------|----------------------------|-----------------------|------|------|------|----------------------|------|------|------|---------|
| TOW VEH. INPUT, LP OR PF                                         | TRAILER INPUT | DECCELERATION FT/S <sup>2</sup> (m/s <sup>2</sup> ) | (OPT) PEDAL TRAVEL IN (mm) | TOW VEH. TEMP. °F(°C) |      |      |      | TRAILER TEMP. °F(°C) |      |      |      | REMARKS |
|                                                                  |               |                                                     |                            | L.F.                  | R.F. | L.R. | R.R. | L.F.                 | R.F. | L.R. | R.R. |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |

| 60 MPH (97 km/h) IN NEUTRAL, 200°F (93.3°C) IBT EACH APPLICATION |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|------------------------------------------------------------------|---------------|-----------------------------------------------------|----------------------------|-----------------------|------|------|------|----------------------|------|------|------|---------|
| TOW VEH. INPUT, LP OR PF                                         | TRAILER INPUT | DECCELERATION FT/S <sup>2</sup> (m/s <sup>2</sup> ) | (OPT) PEDAL TRAVEL IN (mm) | TOW VEH. TEMP. °F(°C) |      |      |      | TRAILER TEMP. °F(°C) |      |      |      | REMARKS |
|                                                                  |               |                                                     |                            | L.F.                  | R.F. | L.R. | R.R. | L.F.                 | R.F. | L.R. | R.R. |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |
|                                                                  |               |                                                     |                            |                       |      |      |      |                      |      |      |      |         |

SUMMARY OF PERFORMANCE: \_\_\_\_\_

FIG. 12—THIRD EFFECTIVENESS TEST DATA SHEET

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

<sup>2</sup>See Test Notes, Item 6.1.3