SAE INTERNATIONAL

SURFACE VEHICLE RECOMMENDED PRACTICE

J1626™-1 MAR2023

Issued 2009-06
Revised 2023-03

Superseding J1626-1 JUN2009

Recommended Practice for Braking, Stability, and Control Performance Test Procedure for Air Brake-Equipped Truck-Tractors

RATIONALE

This document has been revised to correct a couple of grammatical errors (punctuation) and to clarify Mu in 9.2.1.1.

1. SCOPE

This SAE Recommended Practice provides a road test procedure for truck-tractors, to evaluate their compliance with Federal Motor Vehicle Safety Standard (FMVSS) 121. Units of measure are English in lieu of metric to be consistent with FMVSS 121.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J293 Truck and Bus Grade Parking Performance Requirements

SAE J299 Stopping Distance Test Procedure

SAE J360 Truck and Bus Grade Parking Performance Test Procedure

SAE J693 Truck Overall Widths Across Dual Tires

SAE J971 Brake Power Rating Test Code - Commercial Vehicle Inertia Dynamometer

SAE J1626 Braking, Stability, and Control Performance Test Procedures for Air- and Hydraulic Brake-Equipped Trucks, Truck-Tractors, and Buses

SAE J1729 Parking Brake Drawbar Pull Test Procedure - Truck and Bus

SAE J2503 Drawbar Pull Performance Criteria

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: http://www.sae.org

For more information on this standard, visit
https://www.sae.org/standards/content/J1626/1_202303/

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM E1136 Specification for a Radial Standard Reference Test Tire

ASTM E1337 Standard Test Method for Determining Longitudinal Peak Braking Coefficient of Paved Surfaces Using a Standard Reference Test Tire

2.1.3 FMVSS Publications

Available from the United States Government Printing Office, 732 North Capitol Street, NW, Washington, DC 20401, Tel: 202-512-1800, www.gpo.gov.

FMVSS 121 Air Brake Systems

3. DEFINITIONS

3.1 TRUCK TRACTOR

For the purpose of this standard, is a truck designed to tow a semi-trailer through a fifth wheel located over the rear axle(s). This document uses this kind of “towed vehicle” for the truck-tractor’s tests at GVWR.

3.2 SNUB

Means the braking deceleration of a vehicle from a higher speed to a lower speed that is greater than zero.

3.3 STOPPING DISTANCE

Means the distance traveled by a vehicle from the point of application of force to the brake control to the point at which the vehicle reaches a complete stop.

3.4 UNLOADED VEHICLE WEIGHT (UVW)

Is the weight of a motor vehicle with standard equipment, maximum capacity of engine fuel, oil, and coolant.

3.5 VEHICLE COMBINATION WEIGHT

For the purpose of this standard, is the combined weight of a truck-tractor and the semi-trailer it is towing.

3.6 GROSS AXLE WEIGHT RATING (GAWR)

Is the maximum rated capacity of a single axle system (axle with tires, wheels, and suspension) as measured at the tire-road interface as stated on the vehicle certification label.

3.7 GROSS VEHICLE WEIGHT RATING (GVWR)

Is the maximum rated capacity of a single vehicle as stated on the vehicle certification label. Liftable axles shall be down for GVWR tests. Unless otherwise specified, vehicles are loaded to GVWR as follows:

3.7.1 Truck-tractors are to be loaded to GVWR using a single axle unbraked control trailer. The control trailer has a single axle with a gross axle weight rating of 18000 pounds and a length, measured from the transverse centerline of the axle to the centerline of the kingpin, of 258 inches ± 6 inches. All ballast on the control trailer is placed directly above the kingpin. Load distribution is to be in proportion to the tractor's GAWRs, with the trailer axle as close as possible to 4500 pounds. Adjust the load distribution by altering the fifth wheel position, if applicable. The center of gravity height of the ballast should not exceed 24 inches above the top of the tractor fifth wheel. In the case where the tractor fifth wheel cannot be adjusted as specified without exceeding a GAWR, reduce the amount of ballast so that the axle load does not exceed the guidelines of 3.7.2, maintaining the load proportioning as close as possible to the specified proportioning.

3.7.2 Actual vehicle test weight is to be within +2/-0% of the weight specified in 3.7.1. Axle weights are to be within ±2% of their proportional share of the test weight.

3.8 LIGHTLY LOADED VEHICLE WEIGHT (LLVW)

Truck tractor LLVW is the unloaded vehicle weight (UVW) plus up to 500 pounds including driver, observer, and instrumentation. An additional 1000 pounds can be allotted for vehicles that require a rollbar for testing purposes. Liftable axles shall be lifted for LLVW vehicle tests.

3.9 FULL BRAKE APPLICATION

Air full brake application means an application of the brake control (treadle or brake pedal) in which pressure in any of the valve's output circuits reaches 85 psi, or the brake control has reached maximum displacement, within 0.2 second after application is initiated.

3.10 INITIAL BRAKE TEMPERATURE (IBT)

Means the average temperature of the service brakes on the hottest axle of the vehicle 0.2 mile before any brake application.

3.11 MAXIMUM DRIVE - THROUGH SPEED

Means the highest possible constant speed at which the vehicle can be driven through a 200-foot arc of a PFC no greater than 0.5 in a 500-foot radius curve without leaving the 12-foot lane.

3.12 PEAK FRICTION COEFFICIENT (PFC)

Means the ratio of the maximum value of longitudinal force to the simultaneous vertical force occurring prior to wheel lockup, as the braking torque is progressively increased, as measured using the procedure in ASTM E1337.

3.13 UNBRAKED CONTROL TRAILER

Is a single axle semi-trailer with a GAWR of 18000 pounds and a length, measured from the transverse centerline of the axle to the centerline of the kingpin, of 258 inches ± 6 inches and ballast CG height should be not exceed 24 inches above the top of the tractor's fifth wheel with a nominal trailer axle weight of 4500 pounds when loaded (defined in FMVSS 121).

3.14 WHEEL LOCKUP

Means 100% wheel slip.

3.15 ANTILOCK BRAKE SYSTEM (ABS)

Means a portion of a service brake system that automatically controls the degree of rotational wheel slip during braking by: (a) sensing the rate of angular rotation of the wheels; (b) transmitting signals regarding the rate of wheel angular rotation to one or more controlling devices which interpret those signals and generate responsive controlling output signals; and (c) transmitting those controlling signals to one or more modulators which adjust brake actuating forces in response to those signals.

4. INSTRUMENTATION AND EQUIPMENT

4.1 Anemometer or equivalent device to measure wind velocity. Twenty-five mph range with ±1 mph accuracy at 15 mph, maximum non-linearity of ±2 mph over the range and visual output resolution of 1 mph.

4.2 Ambient temperature device to record ambient test temperatures, 32 to 100 °F range with ±0.5 °F accuracy at 70 °F, maximum non-linearity ±1.0 °F over the range, and visual output resolution of 1 °F.

4.3 Tire pressure gauge, ±1.0% of indicated value.

4.4 Brake lining thermocouples, ±10.0 °F at 300 °F, maximum non-linearity of ±20 °F over the range and visual output resolution of 5 °F, installed per SAE J971, and display for brake lining temperature.

4.5 Fifth wheel, optical, or other equivalent device to measure and display (or record) vehicle speed, ±0.5 mph, and stopping distance accuracy of 1% of indicated value, and visual output resolution of 0.1 foot.

4.6 A device to indicate first brake control (treadle or brake pedal) movement, ±1.0% of indicated value, and full brake control displacement, or brake control pressure, ±1% of indicated value, versus time, capable of 0.1 second resolution.

4.7 Wheel lockup detector or equivalent measuring device providing an electrical indication of wheel rotation (or wheel lockup) to a continuous recorder or digital data recorder. The lockup detector or measuring system must provide an indication for wheels that lockup above 10 mph, +1/-0 mph. Measure wheel velocity or identify wheel lockup of 1 second duration or more.

4.8 Decelerometer or equivalent device to measure vehicle deceleration rate, 1G range with ±0.5 fpsps (feet per second per second) accuracy at 32.2 fpsps, maximum non-linearity of ±0.5 fpsps over the range, and visual output resolution of 0.5 fpsps.

4.9 Solenoid valve(s) with a 0.5 (+0.1/-0.0) inch diameter ports and/or with equivalent exhaust capacity to deplete the reservoir with the air compressor charging at engine RPM to attain vehicle test speed.

4.10 Pressure, ±1.0% of the indicated value, for measuring brake control pressure and system pressure.

4.11 For static retardation force (drawbar pull) parking brake test required instrumentation and equipment, refer to SAE J1729.

4.12 For grade holding parking brake test required instrumentation and equipment, refer to SAE J360.

4.13 Weighing scales, ±1.0% of indicated weight.

4.14 A continuous recorder, i.e., an oscillograph or computer utilizing a digital data acquisition system and/or equivalent system, to make a permanent, supplemental record of service brake pedal force, parking brake force, deceleration, lockup, distance, and speed versus time, with the same accuracies as the above direct reading instrumentation or as otherwise indicated.

5. VEHICLE INFORMATION

5.1 The vehicle information will be contained on data sheet 1.

6. TEST CONDITIONS AND FACILITIES

6.1 Ambient air temperature must be between 32 °F and 100 °F.

6.2 Wind velocity should not exceed 15 mph. Stops must not be performed with a tail wind component in excess of 5 mph.

6.3 Unless otherwise specified, the transmission shall be in the highest gear appropriate for a speed of 40 mph during burnish snubs and test stops conditioning.

6.4 All vehicle openings (doors, windows, hood, etc.) must be closed except as required for instrumentation purposes.

6.5 Unless otherwise specified, the brake control can be applied and modulated at any desired rate.

6.6 Service and emergency stopping distance tests are conducted on a straight 12-foot (+0/-2 inch) wide roadway with a PFC no greater than 0.9 (dry Portland cement concrete or equivalent surface). The vehicle shall be aligned with the center of the roadway at the beginning of each stop. The roadway shall be marked on both sides.

6.7 Stability and control tests are performed on a 12-foot (+0/-2 inch) wide lane curved on a 500-foot radius (to lane centerline) on a surface with a PFC no greater than 0.5. The arc length must be at least 300 feet. A 100-foot approach to the arc is recommended to properly align the vehicle to the lane. Lane boundaries are defined by 12 to 18 inches high vertical markers (such as cones) on a 20-foot spacing with the inside edge of the markers placed on the 12-foot wide lane boundaries.

6.8 For truck tractor tests that utilize the control trailer, a 50 in^3 reservoir shall be attached to the tractor's control glad-hand. Tractor protection valve to be in the bobtail position for bobtail tests and the towing position for towing the control trailer.

6.9 Roadway shall be flat with no more than a 1% grade in all directions, including crown.

6.10 Tires must be inflated to the pressure specified by the vehicle manufacturer for the gross vehicle weight rating, measured cold (at the beginning of each test day).

6.11 For initial brake temperature (IBT) definition, see 3.10. The IBT must be between 150 °F and 200 °F for each stability and control, service, emergency stops and parking brake tests. Warm brakes to the required temperature by making 40 to 20 mph snubs at 10 fpsps.

6.12 Automatic adjusters must remain activated for the duration of the test.

6.13 Unless otherwise specified, the brakes may be adjusted up to three times during the burnish procedure, at intervals specified by the vehicle manufacturer, and may be adjusted at the conclusion of the burnishing, in accordance with the vehicle manufacturer's recommendation.

6.14 Individual brake lining temperatures should be less than 200 °F when being adjusted or checked.

6.15 The air system reservoir pressure must be at compressor governor cut out pressure (+0/-10 psi) within 0.2 mile before the beginning of any stability and control and service or emergency brake stop or just prior to any parking brake test.

6.16 Vehicles equipped with an interlocking axle system or front-wheel-drive system capable of being manually engaged by the driver shall be tested with the system disengaged.

6.17 Any auxiliary braking device (driveline retarders) capable of being manually engaged by the driver shall be tested with the auxiliary device(s) both engaged and disengaged for the stability and control, service and emergency tests.

6.18 The driver may steer as necessary to stay within the lane.

6.19 Vehicle speed is to be within +0/-2 mph and stopping distance corrected per SAE J299.

6.20 The static retardation (drawbar pull) tests shall be conducted per SAE J1729 and SAE J2503.

6.21 The grade holding tests shall be conducted per SAE J360 and SAE J293.

7. TEST SEQUENCE - AIR BRAKE TRUCK-TRACTORS

7.1 Burnish (Section 8 and data sheet 2).

7.2 Stability and control test at GVWR (Section 9 and data sheet 3).

7.3 Stability and control test at LLVW (Section 9 and data sheet 3).

7.4 Manual adjustment of the brakes per the manufacturer's recommendations (data sheet 4).

7.5 Service brake GVWR stopping distance test at 60 mph (Section 10 and data sheet 4).

7.6 "Grade holding" parking brake test at GVWR[1] (Section 12 and SAE J360, optional).

7.7 "Static retardation force" (drawbar pull) parking brake test at GVWR[1] (Section 12 and SAE J1729).

7.8 Manual adjustment of the brakes per the manufacturer's recommendations (data sheet 4).

7.9 Service brake LLVW stopping distance test at 60 mph (Section 10 and data sheet 4).

7.10 Emergency brake LLVW stopping distance test at 60 mph (Section 11 and data sheet 5).

7.10.1 Emergency brake LLVW primary system failure stopping distance test at 60 mph.

7.10.2 Emergency brake LLVW secondary system failure stopping distance test at 60 mph.

7.11 "Grade holding" parking brake test at LLVW[1] (Section 12 and SAE J360, optional).

7.12 Final inspection (Section 13 and data sheet 6).

8. BURNISH (DATA SHEET 2)

8.1 Test Preparation

8.1.1 Install brake lining thermocouples per SAE J971.

8.1.2 Install the following instrumentation:

a. Thermocouple readout.

b. Decelerometer.

c. Speed measuring device or calibrate vehicle speedometer.

d. Device to measure brake control line pressure (optional).

e. Device to measure brake application pedal force (optional).

[1] FMVSS 121 allows the option of performing the grade holding test at LLVW and GVWR or the static retardation force parking brake test at GVWR.

8.1.3 Truck tractors shall be loaded by coupling to an unbraked control trailer. The vehicle combination weight shall equal the GVWR of the truck tractor. The ballast on the unbraked control trailer shall be located so that the truck tractor's wheels do not lock during burnish snubs.

8.1.4 The vehicle brakes should be adjusted prior to burnish per the vehicle manufacturer’s recommendation.

8.2 Test Procedure

8.2.1 Burnish the brakes by making 500 snubs between 40 mph and 20 mph at a deceleration rate of 10 fpsps, or at the vehicle's maximum deceleration rate if less than 10 fpsps, with the transmission in the highest gear appropriate for a speed of 40 mph (if provided, switchable retarders should be in off position). Except, where an adjustment is indicated, after each brake application accelerate to 40 mph and maintain that speed until making the next brake application at a point 1 mile from the initial point of the previous brake application. If the vehicle cannot attain a speed of 40 mph in 1 mile, continue to accelerate until the vehicle reaches 40 mph or until the vehicle has traveled 1.5 miles from the initial point of the previous brake application, whichever occurs first.

8.2.2 The vehicle’s brakes may be adjusted as specified by the vehicle manufacturer up to three times during the burnish procedure. Also, brakes should be adjusted at the conclusion of the burnishing, in accordance with the vehicle manufacturer's recommendation. Record adjustment data on data sheets.

8.2.3 Road conditions should be dry. Slightly wet is permissible but discontinue burnish when noticeable splash and spray occurs.

8.2.4 Driver Breaks

a. Driver breaks during the procedure should be minimized and recorded on the data sheets.

b. Driver breaks should not occur within any 25 snub sequence.

c. Each 25th snub can be a complete stop in order to record data.

8.3 Test Data Recording

8.3.1 Brake lining temperatures and brake application pressure to maintain a 10 fpsps decel should be recorded at each 25th brake snub (pressure optional).

9. STABILITY AND CONTROL TEST PROCEDURE (DATA SHEET 3)

9.1 Test Preparation

9.1.1 Stability and control tests are performed on a 12-foot (+0/-2 inch) wide lane curved on a 500-foot radius (to lane centerline) on a surface with a PFC no greater than 0.5. The arc length must be at least 300 feet. A 100-foot approach to the arc is recommended to properly align the vehicle to the lane. Lane boundaries are defined by 12 to 18 inch high vertical markers (such as cones) on a 10 foot spacing with the inside base edge of the markers placed on the 12 foot wide lane boundaries.

9.1.2 Install the following instrumentation and equipment:

a. Fifth wheel or other speed measuring device.

b. Trigger switch to measure (detect) start of braking (first brake control movement).

c. Pressure transducer to measure brake primary control line pressure or device to measure full displacement of brake control.

d. Recording device to record start of braking and primary control line pressure (or full brake control displacement) as a function of time.

9.1.3 Adjust brakes (optional).

9.1.4 Adjust vehicle weight to appropriate load condition as per test sequence.

9.2 Test Procedure

9.2.1 Maximum Drive-Through Speed and Braking Speed Determination

9.2.1.1 With the vehicle centered within the lane, starting at 35 mph, attempt to drive through the curved 500-ft radius low Mu (PFC ≤0.5) test lane at a constant speed. Increase or decrease speed in subsequent runs as necessary until the maximum drive-through speed is determined to the nearest whole mph increment. Do not exceed 40 mph. Verify maximum drive-through speed at least once by repeating runs at 1 mph above the previously determined value. Record maximum drive-through speed on data sheet. Take 75% of the maximum drive-through speed and round this value to the nearest whole mph increment to determine test speed for compliance braking runs. Record on data sheet. Conduct additional brake test runs to determine the maximum achieved braking speed while remaining within the 12 foot lane width. Record on data sheet.

9.2.2 Braking Runs

9.2.2.1 With the vehicle centered within the lane and configured in the highway operational mode, make four full brake application stops as described in 3.9 from the test speed determined in the previous stop. Make the brake applications after the front end of the vehicle has traveled at least 60 feet in the curved lane on the test surface. Vehicle speed at which the brakes are applied should be within -0.5 to +1.0 mph of the target test speed.

9.2.3 Repeat braking runs with manual controlled driveline retarder (a) in other position (on/off).

9.2.4 Repeat braking runs as described in 9.2.2 and 9.2.3 to determine the maximum achieved braking speed.

9.3 Test Data Recording

9.3.1 Maximum drive-through speed.

9.3.2 Initial braking speeds (see data sheet 3).

9.3.3 Initial brake temperature.

9.3.4 Stopping distance.

9.3.5 Brake application pressure or maximum displacement.

9.3.6 Treadle or Pedal application time.

9.3.7 Deviation from lane boundaries.

9.3.8 Lane boundary markers hit.

9.3.9 Ambient temperature.

9.3.10 Wind speed and direction.

10. SERVICE BRAKE STOPPING DISTANCE TEST (DATA SHEET 4)

10.1 Test Preparation

10.1.1 Install the following additional instrumentation and equipment:

a. Method or device to measure or monitor individual wheel lock-up.

b. Pressure gauge/transducer to measure brake control line pressure (optional).

10.1.2 Adjust brakes as specified.

10.1.3 Adjust vehicle weight to appropriate load condition as per test sequence.

10.2 Test Procedure

10.2.1 Conduct six stops from the initial speed listed in the test sequence on the 12 foot wide straight lane high Mu PFC test surface no greater than 0.9 (dry Portland cement concrete or equivalent) while trying to achieve the shortest stopping distance while staying within the lane and with wheel lock-up (100% wheel slip) permitted only as follows:

a. At vehicle speeds above 20 mph, any wheel on a nonsteerable axle other than the two rearmost nonliftable, nonsteerable axles may lock up for any duration. The wheels on the two rearmost nonliftable, nonsteerable axles may lock up according to (b).

b. At vehicle speeds above 20 mph, one wheel on any axle or two wheels on any tandem may lock up for any duration.

c. At vehicle speeds above 20 mph, any wheel not permitted to lock in (a) or (b) may lock up repeatedly, with each lock-up occurring for a duration of 1 second or less.

d. At vehicle speeds of 20 mph or less, any wheels may lock up for any duration.

10.2.2 If the vehicle speed attainable in 2 miles is less than the required initial speed in the test sequence, the vehicle shall stop from a speed which is a multiple of 5 mph between 20 mph and 60 mph that is 4 to 8 mph less than the speed attainable in 2 miles.

10.2.3 Repeat the test with manual controlled driveline retarders in other position (on/off).

10.3 Test Data Recording

10.3.1 Initial braking speed.

10.3.2 Initial brake temperature.

10.3.3 Stopping distance.

10.3.4 Brake application pressure.

10.3.5 Deviation from lane boundary.

10.3.6 Individual wheel lock-up.

10.3.7 Ambient temperature.

10.3.8 Wind speed and direction.

11. AIR BRAKE VEHICLES EMERGENCY BRAKE STOPPING DISTANCE TEST (DATA SHEET 5)

11.1 Test Preparation

11.1.1 Install the following additional instrumentation and equipment:

a. Solenoid valve in largest port in the appropriate air reservoir.

b. Pressure gauge/transducer to measure brake control line pressure (optional).

11.1.2 Adjust brakes as specified.

11.1.3 Adjust vehicle weight to appropriate load condition as per test sequence.

11.2 Test Procedure

11.2.1 Conduct six stops from the initial speed listed in the test sequence on the 12 foot wide straight lane high Mu PFC test surface no greater than 0.9 (dry Portland cement concrete or equivalent) while trying to achieve the shortest stopping distance while staying in the lane under the following conditions:

a. Activate the primary system failure solenoid valve to vent pressure to atmosphere.

b. Initiate the stops within 5 seconds after the low pressure warning is activated.

c. Initiate six additional stops at a fully exhausted reservoir pressure at or near 0 psi (i.e., vent until the reservoir is exhausted in the failed reservoir, optional).

NOTE: Wheel lock-up is permitted.

11.2.2 If the vehicle speed attainable in 2 miles is less than the required initial speed in the test sequence, the vehicle shall stop from a speed which is a multiple 5 mph between 20 mph and 60 mph that is 4 to 8 mph less than the speed attainable in 2 miles.

11.2.3 Repeat the test with manual controlled driveline retarders in other position (on/off).

11.2.4 Repeat 11.2.1 through 11.2.3 for the secondary system failures.

11.3 Test Data Recording

11.3.1 Initial braking speed.

11.3.2 Initial brake temperature.

11.3.3 Stopping distance.

11.3.4 Brake application pressure.

11.3.5 Average deceleration rate.

11.3.6 Deviation from lane boundary.

11.3.7 Individual wheel lock-up.

11.3.8 Ambient temperature.

11.3.9 Wind speed and direction.

12. PARKING BRAKE

NOTE: For air brake vehicles, the following procedures apply only to vehicles equipped with conventional spring-applied, air-release parking brake systems from which air is exhausted after actuation of the parking brake control.

12.1 Static Retardation Force Test (Drawbar Pull Test)

12.1.1 This test will be conducted per the SAE J1729 procedure and verified per SAE J2503 performance requirements.

12.2 Grade Holding Test

12.2.1 This test will be conducted per the SAE J360 procedure and verified per SAE J293 performance requirements.

13. FINAL INSPECTION

13.1 Air Brake Vehicles

13.1.1 Inspect the following and record results in data sheet 6:

a. Brake system for structural integrity.

b. Verify that all brake lines are connected and brakes operate.

c. Verify brake adjustment is within manufacturer limits.

Test No.: _____ Test Date(s) - From: _____ To: _____
Test Organization: _____ Test Location: _____
Make: _____ Type: _____ Model: _____
VIN: _____ D.O.M.: _____ Wheelbase, in: _____ GVWR, lb: _____
CG Ht. (in above ground) – Unloaded Chassis: _____ @ LLVW: _____ @ GVWR: _____
CG Ht. (in above 5th Wheel) Trailer Ballast: _____
Axle Configuration[1]: _____ Retarder(s) Type(s): _____

Foundation Brakes:

Axle	Type[2]	Make	Size (in)	Lining Make	Lining Edge Code
1					
2					
3					
4					
5					
6					
7					

Brake Drum /Rotor

Axle	Type[3]	Make	Weight (lb)	Dust Shields (Y/N)
1				
2				
3				
4				
5				
6				
7				

Air Actuation Details:

	Air Chambers		Slack Adjusters		
Axle	Make	Type[4]	Length or Wedge Angle	Make	Cam Rotation[5]
1					
2					
3					
4					
5					
6					
7					

ABS

Make: _____ Model: _____ Config: _____ Axles Sensed[6]: ____ , ____ , ____

Figure 1A - Data sheet 1: vehicle information

Air System:

Compressor Capacity (cfm): _____ Cut-out (psi): _____ Cut-in (psi): _____
Air Dryer – Make: _____ Model: _____ Type: _____
Regen. Valve Pressure Drop, psi: _____ Valve Location (circuit) : _____
Valve Crack Pressures & Treadle Differential (psi)[7] Axle 1: _____ Axle 2: _____ Axle 3: _____
Axle 4: _____ Axle 5: _____ Axle 6: _____ Axle 7: _____ Treadle: _____
Bobtail Proportioning (Y/N): _____ Front Axle Limiting (Y/N): _____
Spring Brake Inversion Valve Make: _____ Model: _____ Axles Controlled: _____
Specifics Regarding Air Brake System Components: _____

Air Tank Volumes, (cu. in):

Supply: _____ Primary: _____ Secondary: _____
Auxiliary: _____ Isolated From Service? _____

Axles/Suspensions

					Suspension Description		
Axle	Type[8]	O.A. Width[9]	Dist. To Steer Axle	Liftable (Y/N)	Type	Make	Model
1							
2							
3							
4							
5							
6							
7							

Tires:

Axle	No. per Axle	PSI	Size	Make	Model	Data Book SLR (in)
1						
2						
3						
4						
5						
6						
7						

Fifth Wheel:

Fifth Wheel Height Relative to Ground Unladen (in): _____ Fifth Wheel Position(in)[10]: _____

Special Conditions:

Special conditions or equipment which might affect brake performance: _____

Figure 1B - Data sheet 1: vehicle information

Weights (lb):

Axle No(s).	LLVW	Burnish	Fully Loaded	GAWR
Subtotal	N/A			
Trailer	N/A			
Total				

Footnotes for Vehicle Information Sheets (pages 12-14):

[1] 4x2, 6x4, 10x4,etc.
[2] Cam, disc, wedge, etc.
[3] Cast or composite drum, vented or non-vented rotor, etc.
[4] Size; If piston type follow size with “P”; If long stroke diaphragm type follow with “L”
[5] Same or opposite to forward wheel rotation
[6] Number of the axle where sensors are located
[7] Total crack pressures between treadle valve and brake chambers
[8] Steer, drive, pusher, tag
[9] Measured as per SAE J693
[10] Relative to rear drive axle(s) centerline (“+ “= ahead, “-“ = behind)

Figure 1C - Data sheet 1: vehicle information

Vehicle Make/Model: _____ Vehicle # _____

Driver#1		Date		Odo. Start		End	
Driver#2		Date		Odo. Start		End	
Driver#3		Date		Odo. Start		End	
Driver#4		Date		Odo. Start		End	

Test Start		Test Finish	
Date/ Time		Date/ Time	
Odometer		Odometer	

TEST SPECIFICATIONS (Check all that apply)

- ☐ 500 Snubs
- ☐ Snubs are 40 to 20 mph or _____ to _____ mph
- ☐ 10 fps^2 or _____ fps^2 Decel Rate With Transmission in gear for appropriate speed
- ☐ 1 mile interval (1.5 if needed to reach speed)
- ☐ Record IBT Every 25th Snub on the Heaviest Loaded Shoe or Pad
- ☐ Manually Controlled Retarders Off
- ☐ Driver Breaks Only After 25 Snub Sequence
- ☐ Air Brake Vehicles May Be Adjusted up to 3 Times During Burnish
- ☐ Measure Leading and Trailing Shoe and/or Inner and Outer Pad Temperatures – Optional

List alternate or additional specifications.

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

	Brake Adjustment Levels														
	Snub #	1L	1R	2L	2R	3L	3R	4L	4R	5L	5R	6L	6R	7L	7R
Initial															
1st															
2nd															
3rd															
Final															

Figure 2A - Data sheet 2: burnish

Vehicle Make/Model: _____ Vehicle # _____

Snub #	Initial Speed mph	Average Cntr. Pres. (psi)	Decel fps²	Initial Brake Temperatures °F												Amb. Temp °F	Driver Initials	Time	Comments
				1LL or 1LI	1LT or 1LO	1RL or 1RI	1RT or 1RO	2LL or 2LI	2LT or 2LO	2RL or 2RI	2RT or 2RO	3LL or 3LI	3LT or 3LO	3RL or 3RI	3RT or 3RO				
1	40																		
25	40																		
50	40																		
75	40																		
100	40																		
125	40																		
150	40																		
175	40																		
200	40																		
225	40																		
250	40																		
275	40																		
300	40																		
325	40																		
350	40																		
375	40																		
400	40																		
425	40																		
450	40																		
475	40																		
500	40																		

COMMENTS: _____

NOTE: 1LL – Axle 1 Left Leading Shoe 1LT – Axle 1 Left Trailing Shoe
1LI – Axle 1 Left Inner Pad 1LO – Axle 1 Left Outer Pad

Figure 2B - Data sheet 2: burnish

Vehicle: _____ GVWR _____ LLVW _____
Date: _____ Driver: _____ Observer: _____

TEST SPECIFICATIONS:

- Check Brake Adjustment (optional)
- Check Tire Pressure
- Vehicle Configuration in Highway Operational Mode
- Max. Drive-Through Speed (nearest whole mph):
- 75% of Max. Drive-Through Speed (nearest whole mph):
- Braking Runs at 30 mph or 75% Max. Drive-Through Speed and Maximum Braking Speed:
- IBT 150 to 200°F
- Clutch Depress or Transmission in Neutral
- Full Brake Application
- Vehicle in Center of Lane at Start
- Manually Controlled Retarder: ON_____ OFF_____ N/A_____

Stop	IBT (°F)	Initial Speed (mph)	Stopping Distance Actual (ft)	Stopping Distance Corr. Per SAE J299	Application Press. (psi)	Apply Time (sec)	Approx. Dist. Out of Lane (ft)	No. Markers Hit	Comments
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

NOTE: First four stops are at 75% maximum drive through speed and four additional stops to determine maximum braking speed.

Time	Date	AMB °F	Wind Speed, mph	Wind Direction	Odometer
Start:					
Finish:					

Comments:_____

Figure 3 - Data sheet 3: stability and control test