SAE International™

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J2378

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Test Procedure for Trailer Air Reservoir Fill and Parking Brake Release Times

1. ***Scope***—This SAE Recommended Practice provides instructions and test procedures for air braked trailers and dollies used in single and multiple trailer combinations on highway. This document is not intended for off-highway application.

1.1 Purpose—This document provides a method of determining the efficiency of trailer and dolly air supply systems in filling reservoirs and, for those with spring applied parking brakes, in releasing parking brakes.

2. ***References***

2.1 Applicable Publications—The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest version of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J318—Automotive Air Brake Line Couplers (Gladhands)

2.1.2 FMVSS PUBLICATION—Available from the Superintendent of Documents, U. S. Government Printing Office, Mail Stop: SSOP, Washington, DC 20402-9320.

Federal Motor Vehicles Safety Standard 121, Air Brake Systems

3. ***Instrumentation and Equipment***

3.1 Instrumentation

3.1.1 Timing device accurate to within 1% of elapsed time.

3.1.2 At least three pressure gages accurate to within 2% of the pressure readings.

3.1.3 (Optional) electronic pressure measuring system accurate to within 2% of the pressure readings (i.e., pressure transducers).

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3.2 Equipment

3.2.1 Trailer Test Rig (TTR), as specified in Figure 1 FMVSS 121, which has the capacity to deliver 20 SCFM of air at a regulated 690 kPa (100 psi) when supplied with 20 SCFM of air at 827 kPa (120 psi).

NOTE— Also known as mini-tractor.

3.2.2 A source of air which is capable of supplying compressed air at a rate of .57 m^3/min (20 SCFM) and a pressure of 827 kPa (120 psi) to the TTR.

3.2.3 A 820 cm^3 (50 cubic inch) test reservoir (as specified in FMVSS 121) which consists of a reservoir, coupler (SAE J318) and short piece of 13 mm (1/2 inch) ID pipe/tubing.

4. Vehicle Condition

4.1 All air connections shall be secured so that the air leakage rate of the test vehicle is not more than 6.89 kPa (1 psi) per minute (13.78 kPa (2 psi) per minute if the vehicle is in service) when the vehicle is coupled to the TTR through its front supply line coupler - TTR reservoir(s) is pressurized to 115 psi, TTR shut-off valve is closed and service and parking brakes are released. Towing vehicles shall meet this leakage rate requirement with the 820 cm^3 (50 cubic inch) test reservoir coupled to the rear supply line coupler.

4.2 Record vehicle information on the data sheet.

5. Test procedure

5.1 Park the test vehicle on a level surface and chock the wheels. Drain all air tanks of moisture to obtain maximum air tank capacity.

5.2 Install pressure gages (or transducers) in the trailer reservoir, TTR reservoir(s) and in one parking brake chamber of all chamber sets having a common pressure.

5.3 Couple the TTR to the front supply line coupler of the test vehicle. If it is a towing vehicle, connect the 50 cubic inch test reservoir to its rear supply line coupler.

5.4 Connect the TTR to the source of air supply.

5.5 Open the TTR shut-off valve and set the TTR regulator valve to maintain a TTR reservoir pressure of 690 kPa (100 psi) when supplying compressed air to the test vehicle.

5.6 Close the TTR shut-off valve, bleed the air pressure from the test vehicle reservoir(s), 820 cm^3 (50 cubic inch) test reservoir and supply line(s) by opening drain valve(s) and separating supply line couplers.

5.7 Close all of the drain valves and reconnect the couplers.

5.8 Adjust the TTR reservoir pressure to 690 kPa (100 psi).

5.9 (Optional) start the pressure recording equipment.

5.10 Open the TTR shut-off valve to let air flow to the test vehicle.

5.11 Record time required to pressurize test vehicle reservoir(s) and parking brake actuators, if any, to 620 kPa (90 psi) and, for towing vehicles, the time to pressurize the 820 cm^3 (50 cubic inch) coupling test reservoir to 620 kPa (90 psi). Time measurement is to start with the opening of the shut-off valve.

5.12 Repeat steps 5.6 through 5.11 two additional times.

5.13 Close the TTR shut-off valve. Disconnect the test vehicle from the TTR, remove test instrumentation/equipment and restore the test vehicle to its original condition.

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