



FIG. 1—TYPICAL SPIKE BRAKE APPLICATION

(890 N) force shall be within this tolerance. See Fig. 1 for a typical spike brake application curve. Maintain pedal force until vehicle has stopped.

5.3.1 A spike brake application for air brake vehicles is accomplished by a full pedal application such that the air pressure build up at all service brake chambers or air to hydraulic converters reaches 60 psi (413 kPa) in no more than 0.25 s from the start of the pedal movement.

5.4 "Spike" brake applications are to be made in neutral or with clutch disengaged.

5.5 Driving speed between "spike" brake applications to be at the subsequent test speed. Acceleration to all test speeds is to be moderate.

5.6 During all phases of this procedure, note and record any unusual

braking or handling characteristics of the vehicle, including excessive pedal travel, brake noise, and wheel slide.

#### 6. Procedure

6.1 Preburnish Check—In order to allow for a general check of instrumentation, brakes, and vehicle function, the following stops are to be run noting pedal force or line pressure for each stop.

No. of Stops—10.

Speed—30–0 mph (48 km/h).

Deceleration—10 ft/s<sup>2</sup> (3 m/s<sup>2</sup>).

Interval—1 mile (1.6 km).

#### 6.2 Preburnish "Spike" Brake Application

6.2.1 Make one "spike" brake application from 20 mph (32 km/h) and immediately drive 1 mile (1.6 km) and make another "spike" brake application from 30 mph (48 km/h).

6.2.2 Check brakes and vehicle function by making a stop from 30 mph (48 km/h) at 10 ft/s<sup>2</sup> (3 m/s<sup>2</sup>). Note pedal force or line pressure.

6.3 Burnish—Make at least 200 brake snubs at intervals of 1.5 miles (2.4 km), not less than 50 in a series, from 40 to 20 mph (64–32 km/h) at 10 ft/s<sup>2</sup> (3 m/s<sup>2</sup>) in normal gear range. Accelerate to 40 mph (64 km/h) at moderate acceleration after each snub and drive 40 mph (64 km/h) between snubs. At every 25th application (minimum), make a full stop from 40 mph (64 km/h), recording all required data on application pressure or pedal force, pedal travel, initial and final brake temperatures.

6.4 Structural Test—This test must be conducted. Make at least 40 20–0 mph (32–0 km/h) forward spike stops, each forward spike stop to be followed by a reverse spike stop from 5–10 mph (8–16 km/h) (estimated). Initial brake temperature for each spike stop should be 200 ± 50 F (93.3 ± 10 C).

6.5 Optional Endurance Test—This test may be conducted after paragraph 6.4. Make a series of complete stops from 50–0 mph (80–0 km/h) at 3 mile (4.8 km) maximum intervals at maximum deceleration not to exceed 18 ft/s<sup>2</sup> (5.5 m/s<sup>2</sup>) (include full rock-back)<sup>1</sup> without sustained wheel lock. (Wheel slip brake control system cycling permitted.) The length of the test series should be based on an evaluation of the most severe intended vehicle usage.

At the first, and at every 25th stop, record line pressure, pedal force (when applicable), and final temperature.

#### 6.6 Inspection

6.6.1 Check and record wheel geometry of all axles.

6.6.2 Check and record torque of all brake fasteners.

6.6.3 Inspect all components of the brake system.

## AIR BRAKE GLADHAND SERVICE (CONTROL) AND EMERGENCY (SUPPLY) LINE COUPLERS—TRUCKS, TRUCK-TRACTORS, AND TRAILERS—SAE J318 SEP80 SAE Recommended Practice

Report of the Brake Committee, approved November 1967, editorial change November 1970, reaffirmed without change September 1980.

1. **Scope**—This SAE Recommended Practice is intended to provide a design, critical dimensions, performance requirements, and identification for gladhand-type air line couplers used to connect the brake systems of trucks, truck-tractors, and trailers when these vehicles are joined to operate as a combination unit.

2. **Purpose**—The purpose is to provide a coupler half for the service (control) and emergency (supply) brake lines on one vehicle that will be identified and compatible with the coupler halves on the service (control) and emergency (supply) brake lines of another vehicle.

3. **Design and Critical Dimensions**—General design and critical dimensions are shown in Figs. 1 and 2. Design is limited only to those parts having critical dimensions that insure interchangeability. Any material may be used, providing the coupler meets performance requirements.

#### 4. Performance Requirements

4.1 **Definition**—The term "operative" means a coupler meets the following torque and leakage requirements at ambient temperature of 70 ± 10 F.

4.1.1 Coupling and uncoupling torque shall be not more than 150 lb-in. or less than 25 lb-in. at 100 psi and 0 psi line pressure.

4.1.2 A pair of coupler halves, when joined properly, shall show no leakage through the body or between packing faces at 150 psi line pressure.

#### 4.2 Tests

4.2.1 A new pair of couplers, properly joined, shall be operative after being subjected for 96 hr to ASTM B117, Standard Method of Salt Spray (Fog) Testing.

4.2.2 A new pair of couplers shall be operative after being coupled and uncoupled in the normal manner for 1000 complete cycles.

4.2.3 A new pair of couplers shall be operative after being pulled apart 100 times when connected to a line having 100 psi pressure under a gradually applied load of not less than 50 lb nor more than 300 lb along the hose axis.

4.2.4 A new coupler shall be operative after being dropped from 6 ft onto a concrete surface immediately after exposure to a temperature of –50 F for 6 hr.

4.2.5 Two new pairs of couplers (one properly coupled and one uncoupled) shall be exposed to a temperature of –50 F for 6 hr. While at this temperature, no leakage shall be permitted on the coupled pair when pressurized to 150 psi and coupling torque on the uncoupled pair shall not be more than 200 lb-in. at zero line pressure.

4.2.6 Two new pairs of couplers (one properly coupled and one uncoupled) shall be exposed to a temperature of 125 F for 24 hr. While at this temperature, no leakage shall be permitted on the coupled pair when pressurized to 150 psi and coupling torque on the uncoupled pair shall not be more than 150 lb-in. at zero line pressure.

5. **Identification**—Service and emergency coupler halves shall be permanently marked for identification by embossed lettering using the words "service" or "emergency" or other suitable abbreviation