S7.4.5. *Performance requirements.* For all braking ratios between 0.15 and 0.60, each adhesion utilization curve for a rear axle shall be situated below a line defined by z = 0.9k where z is the braking ratio and k is the PFC.

S7.5. Cold effectiveness.

S7.5.1. Vehicle conditions.

(a) Vehicle load: GVWR and LLVW.

(b) Transmission position: In neutral.

S7.5.2. Test conditions and

procedures.

(a) IBT: > 50°C (122°F), < 100°C (212°F).

(b) Test speed: 100 km/h (62.1 mph).
(c) Pedal force: > 65N (14.6 lbs), < 500

N (112.4 lbs).

(d) Wheel lockup: No lockup of any wheel for longer than 0.1 seconds allowed at speeds greater than 15 km/ h (9.3 mph).

(e) Number of runs: 6 stops.

(f) Test surface: PFC of 0.9.

(g) For each stop, bring the vehicle to test speed and then stop the vehicle in the shortest possible distance under the specified conditions.

S7.5.3. Performance requirements.

(a) Stopping distance for 100 km/h test speed: < 70 m (230 ft).

(b) Stopping distance for reduced test speed: $S < 0.10V + 0.0060V^2$.

S7.6. *High speed effectiveness.* This test is not run if vehicle maximum speed is less than or equal to 125 km/ h (77.7 mph).

S7.6.1. Vehicle conditions.

(a) Vehicle load: GVWR and LLVW.

(b) Transmission position: In gear. S7.6.2. *Test conditions and*

procedures.

(a) IBT: > 50°C (122°F), < 100°C (212°F).

(b) Test speed: 80% of vehicle maximum speed if 125 km/h (77.7 mph) < vehicle maximum speed < 200 km/h (124.3 mph), or 160 km/h (99.4 mph) if vehicle maximum speed \ge 200 km/h (124.3 mph).

(c) Pedal force: > 65 N (14.6 lbs), < 500 N (112.4 lbs).

(d) Wheel lockup: No lockup of any wheel for longer than 0.1 seconds allowed at speeds greater than 15 km/ h (9.3 mph).

(e) Number of runs: 6 stops.

(f) Test surface: PFC of 0.9.

S7.6.3. *Performance requirements.* Stopping distance: S < 0.10V + 0.0067V².

S7.7. Stops with Engine Off.

S7.7.1. *General information.* This test is for vehicles equipped with one or more brake power units or brake power assist units.

S7.7.2. Vehicle conditions.

(a) Vehicle load: GVWR only.

(b) Transmission position: In neutral.

(c) Vehicle engine: Off (not running).

(d) Ignition key position: May be returned to "on" position after turning engine off, or a device may be used to "kill" the engine while leaving the ignition key in the "on" position.

S7.7.3. *Ťest conditions and*

procedures.

(a) IBT: $\geq 50^{\circ}$ C (122°F), $\leq 100^{\circ}$ C (212°F).

- (b) Test speed: 100 km/h (62.1 mph).
 (c) Pedal force: ≥ 65 N (14.6 lbs), ≤ 500 N (122.4 lbs).
- (d) Wheel lockup: No lockup of any wheel allowed for longer than 0.1 seconds at speeds greater than 15 km/ h (9.3 mph).

(e) Number of runs: 6 stops.

(f) Test surface: PFC of 0.9.

(g) All system reservoirs (brake power and/or assist units) are fully charged and the vehicle's engine is off (not running) at the beginning of each stop.

S7.7.4. Performance requirements.

(a) Stopping distance for 100 km/h test speed: ≤70m (230 ft.)

(b) Stopping distance for reduced test speed: $S \le 0.10V + 0.0060V^2$.

S7.8. Antilock functional failure.

S7.8.1. Vehicle conditions.

(a) Vehicle loading: LLVW and

GVWR.

(b) Transmission position: In neutral. S7.8.2. *Test conditions and procedures.*

- (a) IBT: $\geq 50^{\circ}$ C (122°F), $\leq 100^{\circ}$ C (212°F).
- (b) Test speed: 100 km/h (62.1 mph). (c) Pedal force: ≥ 65 N (14.6 lbs), ≤ 500 N (112.4 lbs).
- (d) Wheel lockup: No lockup of any
- wheel for more than 0.1 seconds allowed at speeds greater than 15 km/ h (9.3 mph).

(e) Number of runs: 6 stops.

(f) Test surface: PFC of 0.9.

(g) Functional failure simulation:

(1) Disconnect the functional power source, or any other electrical connector that creates a functional failure.

(2) Determine whether the brake system indicator is activated when any electrical functional failure of the antilock system is created.

(3) Restore the system to normal at the completion of this test.

(h) If more than one antilock brake subsystem is provided, repeat test for each subsystem.

S7.8.3. *Performance requirements.* For service brakes on a vehicle equipped with one or more antilock systems, in the event of any single functional failure in any such system, the service brake system shall continue to operate and shall stop the vehicle as specified in S7.8.3(a) or S7.8.3(b).

(a) Stopping distance for 100 km/h test speed: ≤ 85 m (279 ft).

(b) Stopping distance for reduced test speed: $S \le 0.10V + 0.0075V^2$.

S7.9. Variable brake proportioning system functional failure.

- S7.9.1. Vehicle conditions.
- (a) Vehicle load: LLVW and GVWR.
- (b) Transmission position: In neutral.

\$7.9.2. Test conditions and

procedures. (a) IBT: \geq 50°C (122°F), \leq 100°C

(212°F).

(b) Test speed: 100 km/h (62.1 mph). (c) Pedal force: ≥ 65 N (14.6 lbs), ≤ 500

N (112.4 lbs).

(d) Wheel lockup: No lockup of any wheel for longer than 0.1 seconds allowed at speeds greater than 15 km/ h (9.3 mph).

(e) Number of runs: 6 stops.

(f) Test surface: PFC of 0.9.

(g) Functional failure simulation:

(1) Disconnect the functional power source or mechanical linkage to render the variable brake proportioning system inoperative.

(2) If the system utilizes electrical components, determine whether the brake system indicator is activated when any electrical functional failure of the variable proportioning system is created.

(3) Restore the system to normal at the completion of this test.

(h) If more than one variable brake proportioning subsystem is provided, repeat the test for each subsystem.

S7.9.3. *Performance requirements.* The service brakes on a vehicle equipped with one or more variable brake proportioning systems, in the event of any single function failure in any such system, shall continue to operate and shall stop the vehicle as specified in S7.9.3(a) and S7.9.3(b).

(a) Stopping distance for 100 km/h test speed: \leq 110 m (361 ft).

(b) Stopping distance for reduced test speed: $S \le 0.10V + 0.0100V^2$.

S7.10. Hydraulic circuit failure.

S7.10.1. *General information*. This test is for vehicles manufactured with

our without a split service brake system. S7.10.2. *Vehicle conditions.*

(a) Vehicle load: LLVW and GVWR.

(b) Transmission position: In neutral.

S7.10.3. Test conditions and

procedures.

(a) IBT: ≥ 50 °C (122 °F), ≤ 100 °C (212°F).

(b) Test speed: 100 km/h (62.1 mph). (c) Pedal force: ≥ 65 N (14.6 lbs), ≤ 500 N (122.4 lbs).

(d) Wheel lockup: No lockup of any wheel for longer than 0.1 seconds allowed at speeds greater than 15 km/ h (9.3 mph).

(e) Test surface: PFC of 0.9.

(f) Alter the service brake system to produce any one rupture or leakage type of failure other than structural failure of a housing that is common to two or more subsystems.