SURFACE VEHICLE RECOMMENDED PRACTICE

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Parking Brake Control Identification - Vehicles with Hydraulic Brake Systems and Automatic Transmissions

RATIONALE

This technical report is being stabilized because it covers technology, products, or processes which are mature and not likely to change in the foreseeable future.

STABILIZED NOTICE

This document has been declared “Stabilized” by the SAE Truck and Bus Hydraulic Brake Committee and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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For more information on this standard, visit
https://www.sae.org/standards/content/J2688_202007

1. SCOPE

The scope and purpose of the SAE Recommended Practice is to provide standards for the control and indication of parking brakes in hydraulic braked vehicles over 4540 kg (10000 lb) GVWR. This recommended practice pertains to automatic transmission applications and supplements the SAE J915 recommended practice. This recommended practice does not address parking brake system performance. Parking brake system performance, both static and dynamic conditions, is the responsibility of the OEM vehicle manufacturer or manufacturers that modify the vehicle by adding special vocational required equipment (such as but not limited to outriggers, cranes, etc.).

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 J915 Automatic Transmissions - Manual Control Sequence

SAE J2208 Park Standard for Automatic Transmissions

2.1.2 United States Government Federal Safety Standards

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, http://assist.daps.dla.mil/quicksearch/.

Motor Vehicle Safety Standard (FMVSS) No. 101 Controls and Displays

Motor Vehicle Safety Standard (FMVSS) No. 102 Transmission Shift Position Sequence, Starter Interlock, and Transmission Braking Effect

Motor Vehicle Safety Standard (FMVSS) No. 105 Hydraulic and Electric Brake Systems

Motor Vehicle Safety Standard (FMVSS) No. 135 Light Vehicle Brake Systems

2.1.3 European Economic Community (EEC) / United Nations Economic Commission for Europe (ECE) Regulations

ECE Regulations available from United Nations Economic Commission for Europe, Palais des nations, CH-1211, Geneva 10 Switzerland. Tel:41-0-22-917-12-34. www.unece.org

EEC Regulations available from Automotive Industry, European Commission, B-1049 Brussels Belgium, Tel: 32-2-299-96-96. www.ec.europa.eu.

78/316/EEC Interior Fittings of Motor Vehicles (identification of controls, tell-tales and indicators)

2.1.4 Government of Canada Motor Vehicle Safety Regulations

Available from Transport Canada, 330 Sparks Street, Ottawa, ON K1A ON5, Tel: 613-990-2309, www.tc.gc.ca.

Motor Vehicle Safety Standard (CMVSS) No. 101 Controls and Displays

3. DEFINITIONS

3.1 TRANSMISSION PARKING PAWL

A mechanical device incorporated in the transmission that when engaged locks the transmission from moving resulting in the parking function. This device functions only when the vehicle is stopped (not moving) and does not provide dynamic braking performance.

3.2 MECHANICAL FRICTION PARKING BRAKE

A dry friction drum or disc brake assembly commonly called the “parking brake” that is actuated to provide the holding forces to park the vehicle. These parking brakes can be utilized to meet special requirements for dynamic (vehicle moving) vehicle braking performance.

3.3 KEYPAD

A keypad is a set of buttons or a pre-printed film surface arranged in a block or "pad" which usually bear digits, symbols and alphabetical letters that represent the various transmission shift positions

3.4 SAAR

Spring Applied and Air pressure Release actuator utilizing air pressure from the air brake system or a separate compressed air pressure source on the vehicle to release the parking brake. The parking brake is applied by releasing the pressure allowing the actuator spring to apply.

3.5 SAHR

Spring Applied and Hydraulic pressure Release actuator utilizing hydraulic pressure from the hydraulic braking system or a separate hydraulic pressure source on the vehicle to release the parking brake. The parking brake is applied by releasing the pressure allowing the actuator spring to apply.

3.6 SAER

Spring Applied and direct Electrical power Release actuator utilizing the vehicle electrical system or a separate electrical system on the vehicle to release the parking brake. The parking brake is applied by releasing the electrical power allowing the actuator to apply.

3.7 PARKING BRAKE LEVER OR PARKING BRAKE PEDAL

A hand or foot operated lever or pedal, which is located within reach of the operator, which transmits force to apply or release the parking brake.

3.8 LEVER LOCK

A latch that must be released by the operator before the parking brake lever can be moved to release the parking brake application.

3.9 POWER ASSISTED PARKING BRAKE

Actuation of the parking brake is done with the use of an alternate source of mechanical force to apply and release the brake, such as the SAAR, SAHR, and SAER.

4. CONTROL AND INDICATION

There are various types of parking brake mechanisms that are utilized on the vehicles outlined in this document scope. Each requires specific controls to apply and release the parking function. A transmission parking pawl and a mechanical friction parking brake should not be actuated with the same or single actuation device or method. Besides the operator not knowing which parking brake function is actually holding the vehicle, there can be binding and brake release sequence issues with having a single parking actuation function. The following indication designations are for the parking function only. Refer to SAE J915 for indication details for the other transmission (R N D L, etc.) functions.

a. Automatic application and release of a transmission or axle mounted mechanical friction parking brake.

   i. For transmissions with a parking pawl, the designation on the transmission lever, decal or key pad shall be:
      P R N D …. L (Refer to SAE J915 for “R N D,,L” definitions)
      Note: Indication same as with manual parking brake.
      Note: Application and release of park brake is not controlled by the transmission shifter (for transmissions with parking pawl).Automatic park brake application and release must be done by means other than the transmission shifter (for transmissions with a parking pawl)

   ii. For transmissions without a parking pawl, the designation on the transmission lever, decal or key pad shall be:
      PB R N D …. L (Refer to SAE J915 for “RND,,L” definitions)
      Note: Indication shall be “PB” and not “P”
      a. Optionally, the PARK BRAKE symbol (ISO 2575: B02) may be used instead of “PB”, but the symbol must not be RED in color.

   iii. Automatic application occurs through the automatic transmission control lever or key pad.

   iv. The transmission shifter is a secondary method to apply the parking brake.

b. Manual application and release of a transmission or axle mounted mechanical friction parking brake using a hand or foot operated lever.

   i. For transmissions without a parking pawl, the designation on the transmission control lever, decal or key pad shall be:

      R N D …. L (Refer to SAE J915 for “R N D,,L” definitions)

   ii. For transmissions with a parking pawl, the designation on the transmission lever, decal or key pad shall be:

      P R N D …. L (Refer to SAE J915 for R N D,,L” definitions)

   iii. For a hand operated parking brake lever:

      1. To apply parking brake - pull lever to its designed stroke (not all hand levers are designed to be applied at full stroke).

         a. Over-center levers operate at full stroke every time.

         b. Ratchet and pawl levers do not operate at full stroke every time.

      2. To release parking brake - disengage optional lever lock and push (return) lever to the released position

   iv. For a foot operated parking brake pedal:

      1. To apply parking brake - push foot pedal towards cab floor

         a. Repeat pushing foot pedal as required to engage parking brake

      2. To release parking brake – push the foot pedal.

c. Power assisted application and release of a transmission or axle mounted mechanical friction parking brake using a hand operated mechanical or electrical control device

   i. For transmissions without a parking pawl, the designation on the transmission lever, decal or key pad shall be:

      R N D …. L (Refer to SAE J915 for other “R N D,,L” options)

   ii. For transmissions with a parking pawl, the designation on the transmission lever, decal or key pad shall be:P R N D …. L (Refer to SAE J915 for other “R N D,,L” options)

   iii. Hand operated control device is used in conjunction with a mechanical spring apply and either air pressure (SAAR), hydraulic pressure (SAHR) or direct electrical power release (SAER) systems:

      1. To apply parking brake - pull device handle or button out

      2. To release parking brake - push device handle or button in

iv. The control device handle or button to be comprised of:

1. Diamond in shape
2. Yellow in color
3. Markings of
   a. Parking brake
   b. Push to release
   c. Pull to apply

d. Optional and automatic application devices

i. For specific vehicle vocational applications, the vehicle manufacturer can provide other devices or systems to apply and release the parking brake (example: school bus door interlock system).

5. LOCATION OF CONTROLS

Are to be located per the referenced federal and international regulations and practices.

6. CONTROL SYMBOLS

Are to be as defined per the referenced federal and international regulations and practices, unless defined in this document.

7. ILLUMINATION AND COLOR OF TELLTALE SYMBOLS

Are to be mounted as defined per the referenced federal and international regulations and practices.

i. Park Brake Warning Light Telltale

1. Symbol
   a. If the same light is used for all brake related warnings (except ABS related warnings), the light must read “BRAKE”.
   b. If a separate light is used for the park brake warnings the light must read “PARK” as a minimum (additional words may be used).
   c. Park Brake Warning Light Telltale will be RED in color.
2. Function
   a. Illuminate as a check of lamp function upon ignition on.
   b. Illuminate when ignition is on and park brake is applied.
   c. Optionally, Flash when ignition is on and park brake requested to be applied, but failed to apply. {This is per ECE and FMVSS does not state lamp cannot flash}