Submitted by the experts
of CLEPA and OICA

Informal document **GRVA-21-10/Rev.1**
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Provisional agenda item 8(d)

Park lock device approval

The text reproduced below was prepared by the experts of CLEPA and OICA, addressing the type approval of a park lock device as an alternative to or in combination with the friction parking braking to hold the vehicle.

The modifications to the existing text of the Regulations are marked in **bold** for new characters and **bold blue** for changed characters and shall amend working documents:

- ECE-TRANS-WP.29-GRVA-2025-13 based on GRVA-20-06 Rev1
- ECE-TRANS-WP.29-GRVA-2025-14e based on GRVA-20-07 Rev1

As CLEPA and OICA received comments by NL and UK, a revision 1 of this document has been produced. The comments reflecting GRVA 21-10 /Rev.1 are marked **bold blue underlined**.

1. UN R13 - amending ECE/TRANS/WP.29/GRVA/2025/13

Paragraph 5.2.1.10., amend to read:

"5.2.1.10. The service, secondary and parking braking systems shall act on braking surfaces connected to the wheels through components of adequate strength.

The parking braking system may use a park lock device as an alternative to or in ~~combination~~ addition ~~with~~ to the means acting on the braking surfaces for the purpose of fulfilling the static parking brake requirements as defined in Annex 4, paragraph 2.3.1 and 2.3.2. This park lock device shall consist of components of an adequate strength and shall provide equal effectiveness compared to layouts purely acting on the braking surfaces to fulfil the requirements set out in Annex 4, paragraphs 2.3.1. and 2.3.2. of this Regulation.
When the vehicle is held stationary by the use of the service brake, it shall be ensured that after the full activation of the parking braking control the braked wheels do not move by more than [150] mm following the release of the service brake. This shall be ensured up to a slope as defined in Annex 4, paragraph 2.3.1. and 2.3.2. as applicable.

Where braking torque for a particular axle or axles is provided by both a friction braking system and an electrical regenerative braking system of category B, disconnection of the latter source is permitted, providing that the friction braking source remains permanently connected and able to provide the compensation referred to in paragraph 5.2.7.1.2.1. above.

However, in the case of short disconnection transients, incomplete compensation is accepted, but within 1s, this compensation shall have attained at least 75 per cent of its final value.

Nevertheless, in all cases, the permanently connected friction braking source shall ensure that both the service and secondary braking systems continue to operate with the prescribed degree of effectiveness.

Disconnection of the braking surfaces **or of the park lock device, as relevant,** of the parking braking system shall be permitted only on condition that the disconnection is controlled by the driver from his driving seat or from a remote-control device, by a system incapable of being brought into action by a leak.

The remote-control device mentioned above shall be part of a system fulfilling the technical requirements of an ACSF of Category A as specified in the 02 series of amendments to UN Regulation No. 79 or later series of amendments."

new para. 5.2.1.26.5 amended to read …
Special requirements for a Park Lock Device

"5.2.1.26.5. When the parking braking system, containing a park lock device, has at standstill detected a request to apply the parking braking system, a red warning signal shall flash until the park lock device is in a locked position, unless the parking braking system is preventing further movement of the braked wheels.

Where actuation of the parking brake lock device is normally indicated by a separate red warning signal, satisfying all the requirements of 5.2.1.29.3., this signal shall be used to satisfy the above requirement for a red signal."

2. UN R13-H - amending ECE/TRANS/WP.29/GRVA/2025/14

Paragraph 5.2.10., amend to read:

"5.2.10. The service, secondary and parking braking systems shall act on braking surfaces connected to the wheels through components of adequate strength.

The parking braking system may use a park lock device as an alternative to or in ~~combination~~ addition ~~with~~ to the means acting on the braking surfaces for the purpose of fulfilling the static parking brake requirements as defined in Annex 3, paragraph 2.3.1 and 2.3.2. This park lock device shall consist of components of an adequate strength and shall provide equal effectiveness compared to layouts purely acting on the braking surfaces to fulfil the requirements set out in Annex 3, paragraphs 2.3.1. and 2.3.2. of this Regulation.
When the vehicle is held stationary by the use of the service brake, it shall be ensured that after the full activation of the parking braking control the braked wheels do not move by more than [150] mm following the release of the service brake. This shall be ensured up to a slope as defined in Annex 3, paragraph 2.3.1. and 2.3.2. as applicable.

Where braking torque for a particular axle or axles is provided by both a friction braking system and an electrical regenerative braking system of category B, disconnection of the latter source is permitted, providing that the friction braking source remains permanently connected and able to provide the compensation referred to in paragraph 5.2.7.1.2.1. above.

However, in the case of short disconnection transients, incomplete compensation is accepted, but within 1s, this compensation shall have attained at least 75 per cent of its final value.

Nevertheless, in all cases, the permanently connected friction braking source shall ensure that both the service and secondary braking systems continue to operate with the prescribed degree of effectiveness.

Disconnection of the braking surfaces **or of the park lock device, as relevant,** of the parking braking system shall be permitted only on condition that the disconnection is controlled by the driver from his driving seat or from a remote-control device, by a system incapable of being brought into action by a leak.

The remote-control device mentioned above shall be part of a system fulfilling the technical requirements of an ACSF of Category A as specified in the 02 series of amendments to UN Regulation No. 79 or later series of amendments."

new para. 5.2.19.5. amended to read …
Special requirements for a Park Lock Device

"5.2.19.5. When the parking braking system, containing a park lock device, has at standstill detected a request to apply the parking braking system, a red warning signal shall flash until the park lock device is in a locked position, unless the parking braking system is preventing further movement of the braked wheels.

Where actuation of the parking brake lock device is normally indicated by a separate red warning signal, satisfying all the requirements of 5.2.21.2., this signal shall be used to satisfy the above requirement for a red signal."

Justification

1. The introduction of a Park Lock Device into UN R13 and UN R13-H enables to fulfil the static requirements of the parking system:
   - either by the friction brake (as today)
   - or by the Park Lock Device
   - or by a combination of both

2. The dynamic requirements of the parking braking system are fulfilled by the service braking system of the vehicle (as todays passenger cars are operating such since many years) as required by 5.2.1.2.4. of UN R13 and 5.2.2.4. of UN R13-H:
   "The parking braking system shall be so designed that it can be actuated when the vehicle is in motion. This requirement may be met by the actuation of the vehicle's service braking system, even partially, by means of an auxiliary control;"

3. UN R13, para. 5.2.1.10
   a. For UN R13 and UN R13-H the same rollaway distance of 150 mm is applied.
   b. To fulfill the static requirements of a Parking Braking System, a Park Lock Device can be used in alternative or in addition to a friction type. Thus, the wording *"… **in addition** …"* explains this approach more appropriate than the wording *"… ~~**in combination**~~ …~~**with**~~ …".*
   c. "Park Lock Device" and for the "Electrical Parking Brake" my use the same control. Thus, the text changed to "… activation of the parking braking ~~***system***~~ control … "

4. UN R13-H, para. 5.2.10
   a. "Park Lock Device" and for the "Electrical Parking Brake" my use the same control. Thus, the text changed to *"… activation of the parking braking ~~**system**~~ control … "*

b. To fulfill the static requirements of a Parking Braking System, a Park Lock Device can be used in alternative or in addition to a friction type. Thus, the wording *"… **in addition** …"* explains this approach more appropriate than the wording *" … **~~in combination~~** …**~~with~~** …"*.

5. Example for a Park Lock Device

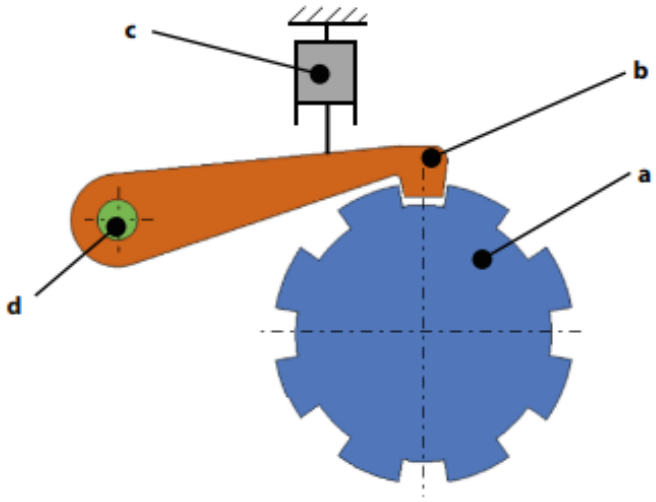

Fig. 2 Schematic illustration of a parking lock; *a)* parking lock wheel, *b)* pawl, *c)* actuator, *d)* pivot connecting the pawl to the gearbox housing

Source

Parking lock integration for electric axle drives by multi-objective design optimization

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