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## Economic Commission for Europe

### Inland Transport Committee

### World Forum for Harmonization of Vehicle Regulations

#### 185th session

Geneva, 23-25 November 2021

Item 4.7.3 of the provisional agenda

#### 1958 Agreement:

Consideration of draft amendments to existing

UN Regulations submitted by GRSG

## Proposal for the 01 series of amendments to UN Regulation No. 116 (Anti-theft and alarm systems)

### Submitted by the Working Party on General Safety Provisions \*

The text reproduced below was adopted by the Working Party on General Safety Provisions at its 121st session, held in April 2021 (ECE/TRANS/WP.29/GRSG/100, para. 75). It is based on ECE/TRANS/WP.29/GRSG/2021/11 as amended by GRSG-121-12. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and the Administrative Committee of the 1958 Agreement (AC.1) for consideration and vote at their November 2021 sessions.

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\* In accordance with the programme of work of the Inland Transport Committee for 2021 as outlined in proposed programme budget for 2021 (A/75/6 (part V sect. 20) para 20.51), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.



*Paragraph 5.1.5., amend to read:*

"5.1.5. "Key" means any mechanical and/or electronic solution designed and constructed to provide a method of operating a locking system which is designed and constructed to be operated by that-mechanical and/or electronic solution."

*Insert new paragraphs 5.1.7. to 5.1.9., to read:*

"5.1.7. "Primary user" is a user who is able to authorize digital keys. There can be more than one primary users.

5.1.8. "Digital key" means a key designed to be transferred to multiple devices by the primary user(s) through dedicated processes.

5.1.9. "Close proximity" means a distance of less than 6 m."

*Insert a new paragraph 5.2.16., to read:*

"5.2.16. In addition, digital keys shall comply with the provisions of Annex 11."

*Paragraph 6.1.8., amend to read:*

"6.1.8. "Key" means any mechanical and/or electronic solution designed and constructed to provide a method of operating a locking system which is designed and constructed to be operated by that mechanical and/or electronic solution."

*Insert new paragraphs 6.1.13. and 6.1.14., to read:*

"6.1.13. "Primary user" is a user who is able to authorize digital keys. There can be more than one primary users.

6.1.14. "Digital key" means a key designed to be transferred to multiple devices by the primary user(s) through dedicated processes."

*Insert a new paragraph 6.2.10., to read:*

"6.2.10. In addition, digital keys shall comply with the provisions of Annex 11."

*Insert a new paragraph 7.2.7., to read:*

"7.2.7. In addition, digital keys shall comply with the provisions of Annex 11."

*Paragraph 8.1.6., amend to read:*

"8.1.6. "Key" means any mechanical and/or electronic solution designed and constructed to provide a method of operating a locking system which is designed and constructed to be operated by that mechanical and/or electronic solution."

*Insert new paragraphs 8.1.11. to 8.1.13, to read:*

"8.1.11. "Primary user" is a user who is able to authorize digital keys. There can be more than one primary users.

8.1.12. "Digital key" means a key designed to be transferred to multiple devices by the primary user(s) through dedicated processes.

8.1.13. "Close proximity" means a distance of less than 6 m."

*Add a new paragraph 8.2.11., to read:*

"8.2.11. In addition, digital keys shall comply with the provisions of Annex 11."

*Add a new paragraph 13.3. and 13.4., to read:*

"13.3. Transitional Provisions applicable to the 01 series of amendments:

13.3.1. As from the official date of entry into force of the 01 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept UN type approvals under this Regulation as amended by the 01 series of amendments.

- 13.3.2. As from 1 September 2022, Contracting Parties applying this Regulation shall not be obliged to accept UN type approvals to the preceding series (00) of amendments, first issued after 1 September 2022.
- 13.3.3. Until 1 September 2024, Contracting Parties applying this Regulation shall continue to accept UN type approvals to the preceding series (00) of amendments to this Regulation, first issued before 1 September 2022.
- 13.3.4. As from 1 September 2024, Contracting Parties applying this Regulation shall not be obliged to accept type approval issued to the preceding series of amendments to this Regulation.
- 13.3.5. Notwithstanding paragraph and 13.3.4., Contracting Parties applying this Regulation shall continue to accept UN type approvals issued according to a preceding series of amendments to this Regulation, for vehicles which are not affected by the provisions introduced with the 01 series of amendments.
- 13.4. General transitional provisions
- 13.4.1. Contracting Parties applying this UN Regulation may grant type approvals according to any preceding series of amendments to this Regulation.
- 13.4.2. Contracting Parties applying this UN Regulation shall continue to grant extensions of existing approvals to any preceding series of amendments to this Regulation."

Add a new Annex 11, to read:

## "Annex 11

### Safety provisions for digital keys

1. General
 

The purpose of this annex is to specify the requirements for documentation and verification for digital keys used to operate the 'device to prevent unauthorized use' and/or the 'alarm system' and/or the 'immobilizer' of the vehicle.
2. Definitions
  - 2.1. "Authorization process" means any method to provide the digital key which can operate the 'device to prevent unauthorized use' and/or the 'alarm system' and/or the 'immobilizer' of the vehicle.
  - 2.2. "Revocation process" means any method to prevent the digital key to operate the 'device to prevent unauthorized use' and/or the 'alarm system' and/or the 'immobilizer' of the vehicle.
  - 2.3. "Boundary of functional operation" defines the boundaries of the external physical limits (e.g. distance) within which the digital key is able to operate the 'device to prevent unauthorized use' and/or the 'immobilizer' of the vehicle.
3. Documentation
 

The vehicle manufacturer shall provide the following documentation for type approval:

  - 3.1. A description of the authorization process.
  - 3.2. A description of the revocation process.
  - 3.3. A description of the boundary of functional operation.
  - 3.4. A description of the safety measures designed within the digital key revocation process to ensure safe operation of the vehicle.
4. Requirements for Safe Operation

- 4.1. A digital key shall only be transferred to a device via the authorization process.
- 4.2. There shall be a revocation process.
  - 4.2.1. Revocation of a digital key shall not result in an unsafe condition.

A risk reduction analysis using functional safety standard such as ISO 26262 and safety of the intended functionality standard such as ISO/PAS 21448, which documents the risk to vehicle occupants caused by revocation of a digital key and documents the reduction of risk resulting from implementation of the identified risk mitigation functions or characteristics.
  - 4.2.2. It shall be possible for the primary user(s) to identify the number of authorized registered digital keys.
- 4.3. Boundary of functional operation for the device to prevent unauthorized use and the immobilizer:
  - 4.3.1. Unlocking of the device to prevent unauthorized use shall require that an authorized registered digital key is detected in the interior of the vehicle, or in close proximity of the vehicle.
  - 4.3.2. Unsetting of the immobilizer shall require that an authorized registered digital key is detected in the interior of the vehicle, or that an actuation is triggered by user intent in close proximity of the vehicle.

The limitation of the distance for unsetting of the immobilizer by detection in the interior of the vehicle shall be verified using the following procedure including a tolerance of 2000 mm around the vehicle perimeter:

    - (a) The vehicle shall be parked in a secure condition in unobstructed free field condition, this means engine off and all windows, doors and roof shall be closed.
    - (b) The vehicle manufacturer will provide a typical user device for test in agreement with the technical service. The digital key device battery state of charge shall be at maximum.
    - (c) The technical service will define four test points around the vehicle perimeter at a distance not less than 2000 mm. Distance means the distance between the nearest point of the motor vehicle and the user device.
    - (d) The user device is placed at each of the test points. During the attempt to operate the vehicle under its own power, the vehicle door shall be closed. If at one of the test points the vehicle can be operated under its own power, the requirement is not met.
  - 4.3.3. The requirements in paragraph 4.3.1. and paragraph 4.3.2. shall not apply during a remote-control manoeuvring and remote-control parking as defined in UN Regulation No. 79.
- 4.4. Detailed information shall be contained in the owner's manual of the vehicle, or by any other communication means in the vehicle; as a minimum, this information shall include:
  - (a) The method(s) for authorization of the digital key
  - (b) The method(s) for revocation of the digital key
5. The effectiveness of the system shall not be adversely affected by cyber-attacks, cyber threats and vulnerabilities. The effectiveness of the security measures shall be demonstrated by compliance with UN Regulation No. 155."
6. Verification

Verification of the functionality of the digital key shall be conducted with support of manufacturer's documentation as specified in paragraph 3.

7. Competence of the auditors/assessors

The assessments under this Annex shall only be conducted by auditors/assessors with the technical and administrative knowledge necessary for such purposes. They shall in particular be competent as auditor/assessor for ISO 26262-2018 (Functional Safety - Road Vehicles), and ISO/PAS 21448 (Safety of the Intended Functionality of road vehicles); and shall be able to make the necessary link with cybersecurity aspects in accordance with UN Regulation No 155 and ISO/SAE 21434). This competence should be demonstrated by appropriate qualifications or other equivalent training records."

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