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World Forum for Harmonization of Vehicle Regulations**Working Party on Passive Safety****Seventy-third session**

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Item 6 of the provisional agenda

UN Regulation No. 16 (Safety-belts)**Proposal for the 09 Series of Amendments to UN Regulation
No. 16 (Safety-belts)****Submitted by the expert from France ^{*}, ^{**}**

The text reproduced below was prepared by the expert from France, to clarify: (a) how to assess safety-belt reminder connection, in the case of removable seats and (b) safety-belt reminder systems test procedure (first and second level warning), visual warning and requirements for safety-belt reminder of rear seat row(s). The modifications to the current text of the UN Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2023 as outlined in proposed programme budget for 2023 (A/77/6 (Sect. 20), table 20.6), 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.

** This document has been submitted late for technical reasons.



I. Proposal

Paragraphs 8.4.2.1.1., amend to read (delete the figure at the end of the paragraph):

"8.4.2.1.1. The visual warning shall be so located as to be readily visible and recognisable in the daylight and at night time by the driver and distinguishable from other alerts."

Paragraphs 8.4.4.3., amend to read:

"8.4.4.3. The colour of the visual warning may be other than red and the symbol of the visual warning for safety-belts covered by paragraph 8.4.1.2. may contain different symbols other than defined in Regulation No.121. In addition, the first level warning of seating positions covered by paragraph 8.4.1.2. may be cancellable by the driver. **In that case, the driver shall be aware that he cancels the first level warning.**

Paragraphs 8.4.4.5., amend to read:

"8.4.4.5. The second level warning shall be activated when a safety-belt becomes unfastened while the vehicle is in normal operation, **or at the choice of the manufacturer when the safety-belt is or becomes unfastened while the vehicle is in normal operation,** and while, at the same time, any one condition or any combination of the conditions, at the choice of the manufacturer, set out in paragraphs 8.4.2.4.1.1. to 8.4.2.4.1.3. is satisfied."

Insert new paragraphs 8.4.6. to 8.4.6.4., to read:

"8.4.6. Requirement for the connection of a safety-belt reminder system for removable seats.

8.4.6.1. Removable seats without manual connection.

8.4.6.1.1. The connection shall be automatic when the seat is installed in the vehicle.

8.4.6.2. Removable seats with manual connection.

8.4.6.2.1. The connectors of the removable seats shall be easily visible during the installation process.

8.4.6.2.2. The vehicle shall carry a label indicating the purpose of the connection, and the connection and disconnection methods of the safety-belt reminder system, in the form of a pictogram which may include explanatory text.

8.4.6.2.3. The label shall be permanently attached to the vehicle and located such that it is clearly visible during the installation process.

8.4.6.2.4. In case a connector is misconnected or disconnected for removable seating positions covered by paragraph 8.4.1.1., a warning visible to the driver shall be activated for 30 seconds when the ignition switch or master control switch is activated.

8.4.6.2.5. When a seat is removable for seating positions covered by paragraph 8.4.1.2., the visual warning of paragraph 8.4.4.2. shall indicate at least all rear seating position to allow the driver to identify, while facing forward as seated on the driver seat, any removable seating position in which the connector is misconnected or disconnected and it shall be activated for 60 seconds when the ignition switch or master control switch is activated.

For seats, which can be fixed to different designated seating positions within the vehicle (e.g. floor rail mounted), the visual warning shall at least indicate when any rear removable seating position connector is misconnected or disconnected.

8.4.6.3. The presence or absence of the removable seat shall not adversely affect the functioning of the safety-belt reminder system of other seating position.

- 8.4.6.4.** The safety-belt reminder system of the removable seats shall not give any false indication of belt use, whether the seats are installed in the vehicle or not."

Insert new paragraphs 15.6. to 15.6.7., to read:

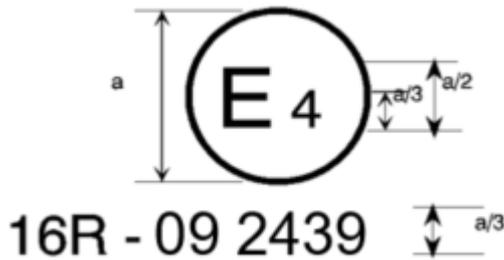
- "15.6.** As from the official date of entry into force of the 09 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept UN type approvals under this Regulation as amended by the 9 series of amendments.
- 15.6.1.** As from 1 September 2025, Contracting Parties applying this Regulation shall not be obliged to accept UN type approvals to the preceding series of amendments that were first issued on or after 1 September 2025.
- 15.6.2.** Until 1 September 2027, Contracting Parties applying this Regulation shall accept UN type approvals to the preceding series of amendments that were first issued before 1 September 2025.
- 15.6.3.** As from 1 September 2027, Contracting Parties applying this Regulation shall not be obliged to accept type approvals issued to the preceding series of amendments to this Regulation.
- 15.6.4.** Notwithstanding paragraph 15.6.3., Contracting Parties applying this Regulation shall continue to accept type approvals of safety-belts and restraint systems issued according to any of the preceding series of amendments to the UN Regulation provided the transitional provisions in these respective previous series of amendments foresee this possibility.
- 15.6.5.** Notwithstanding paragraph 15.6.3., Contracting Parties applying this Regulation shall continue to accept type approvals issued according to any of the preceding series of amendments to this Regulation, for vehicles which are not affected by the changes introduced by the 09 series of amendments provided the transitional provisions in these respective previous series of amendments foresee this possibility.
- 15.6.6.** Notwithstanding paragraphs 15.6.1. and 15.6.3., Contracting Parties applying this Regulation shall continue to accept exemptions according to paragraph 15.4.2. if the vehicle was first approved to the 07 or the 08 series of amendments to this Regulation before 1 September 2022. These exemptions shall remain applicable in the case of extensions of approvals first granted before 1 September 2022.
- 15.6.7.** Contracting Parties applying this Regulation shall not refuse to grant UN type approvals according to any preceding series of amendments to this Regulation or extensions thereof."

Annex 2, amend to read:

Annex 2

Arrangements of the Approval Mark

1. Arrangements of the vehicle approval marks concerning the installation of safety-belts Model A
(See paragraph 5.2.4. of this Regulation)

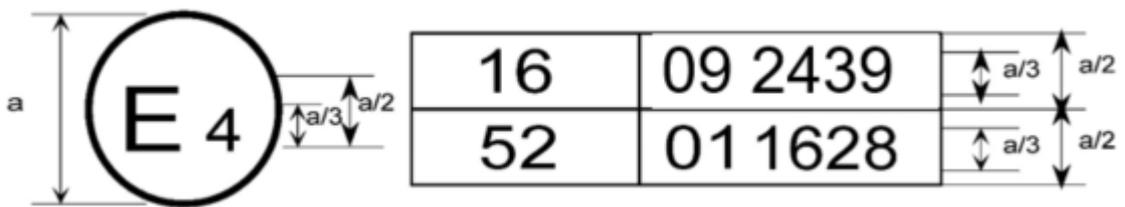


$a = 8 \text{ mm min.}$

The above approval mark affixed to a vehicle shows that the vehicle type concerned has, with regard to safety-belts, been approved in the Netherlands (E 4) pursuant to Regulation No. 16. The approval number indicates that the approval was granted according to the requirements of Regulation No. 16 as amended by the **09** series of amendments.

Model B

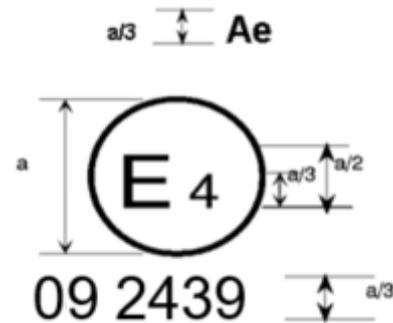
(See paragraph 5.2.5. of this Regulation)



$a = 8 \text{ mm min.}$

The above approval mark affixed to a vehicle shows that the vehicle type concerned has been approved in the Netherlands (E 4) pursuant to Regulations Nos. 16 and 52. ¹ The approval numbers indicate that, at the dates when the respective approvals were given, Regulation No. 16 included the **09** series of amendments and Regulation No. 52 the 01 series of amendments.

2. Arrangements of the safety-belt approval marks (See paragraph 5.3.5. of this Regulation)



$a = 8 \text{ mm min.}$

The belt bearing the above approval mark is a three-point belt ("A"), fitted with an energy absorber ("e") and approved in the Netherlands (E 4) under the number 082439, this Regulation already incorporating the 06, 07, ~~08~~ **08** or **09** series of amendments at the time of approval.

¹ The second number is given merely as an example.

B → 4 m



09 2489

The belt bearing the above approval mark is a lap belt ("B"), fitted with a retractor, type 4, with multiple sensitivity (m) and approved in the Netherlands (E 4) under the number 082489, this Regulation already incorporating the 06, 07, ~~08~~ **08 or 09** series of amendments at the time of approval.

Note: The approval number and additional symbol(s) shall be placed close to the circle and either above or below the "E" or to left or right of that letter. The digits of the approval number shall be on the same side of the "E" and orientated in the same direction. The additional symbol(s) shall be diametrically opposite the approval number. The use of roman numerals as approval numbers should be avoided so as to prevent any confusion with other symbols.

Se



09 22439

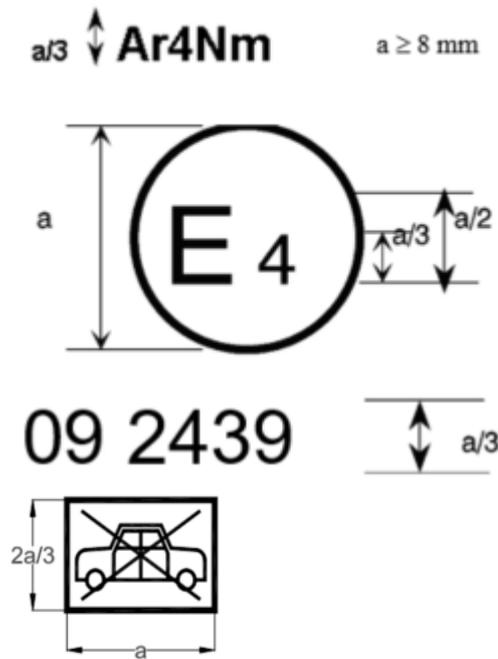
The belt bearing the above approval mark is a special type belt ("S"), fitted with an energy absorber ("e") and approved in the Netherlands (E 4) under the number 0822439, this Regulation already incorporating the 06, 07, ~~08~~ **08 or 09** series of amendments at the time of approval.

ZSe



09 24391

The belt bearing the above approval mark is part of a restraint system ("Z"), it is a special type belt ("S") fitted with an energy absorber ("e"). It has been approved in the Netherlands (E 4) under the number 0824391, this Regulation already incorporating the 06, 07, ~~08~~ **08 or 09** series of amendments at the time of approval.



$a = 8 \text{ mm min.}$

The belt bearing this type approval mark is a three-point belt ("A") with a multiple-sensitivity ("m") type 4N ("r4N") retractor, in respect of which type approval was granted in the Netherlands ("E 4") under number 082439, this Regulation already incorporating the 06, 07, ~~08~~ or 09 series of amendments at the time of approval. This belt shall not be fitted to vehicles of category M1.

Aer4m



092439

AIRBAG

The safety-belt bearing this type approval mark is a three-point belt ("A") fitted with an energy absorber ("e"), approved as meeting the specific requirements of paragraph 6.4.1.3.3. or 6.4.1.3.4. of this Regulation, and with a multiple-sensitivity ("m") type 4 ("r4") retractor, in respect of which type approval was granted in the Netherlands ("E 4") under the approval number 082439. The first two digits indicate that the Regulation already incorporated the 06, 07, ~~08~~ or 09 series of amendments at the time of the approval. This safety-belt has to be fitted to a vehicle equipped with an airbag in the given seating position.

Annex 18,

Paragraph 1., amend to read:

- "1. The first level warning shall be tested according to the following conditions:
- (a) Safety-belt is not fastened;
 - (b) Engine or propulsion system is stopped or idling, and the vehicle is not in forward or reverse motion;
 - (c) Transmission is in neutral position;

- (d) Ignition switch or master control switch is activated.
- (e) A load of 40 kg is placed on each seat cushion in the same row as the driver's seat, or the state in which occupants are on board the vehicle is simulated by an alternative method specified by the vehicle manufacturer, provided an occupant's load does not exceed 40 kg.

This may also be done for the rear seats at the request of the vehicle manufacturer.

Or alternatively (at the choice of the manufacturer):

An object or human representing a 5th percentile adult female ¹ is placed on each seat cushion as specified by the manufacturer in the same row as the driver seat, or

the state in which occupants **representing a 5th percentile adult female** ¹ are on board the vehicle is simulated by an alternative method specified by the vehicle manufacturer as agreed by the technical service and the approval authority.

This may also be done for the rear seats at the request of the vehicle manufacturer.

- (f) The state of the safety-belt reminder is checked for all of the relevant seat(s), in conditions (a) to (e)..."

Paragraphs 2.1.1.2., amend to read:

"2.1.1.2. The test vehicle is driven forward at least 500m **in normal operation** from a halt position."

Paragraphs 2.1.2., amend to read:

"2.1.2. Testing the driver's seat when the safety-belt becomes unbuckled during the journey.

- (a) The safety-belts of the driver's seat and seats other than the driver's seat are fastened;
- (b) **the vehicle is in normal operation;**
- (c) **The safety-belt of the driver's seat is unbuckled;**
- (d) **The test vehicle is driven, at the choice of the manufacturer, under one of the conditions in paragraphs 2.1.2.1. to 2.1.2.3. of this Annex or a combination thereof.**

2.1.2.1. Accelerate the test vehicle to 25 -0/+10 km/h continue on the same speed.

2.1.2.2. The test vehicle is driven forward at least 500m from the safety-belt unbuckling.

2.1.2.3. The test vehicle is driven forward for at least 60 seconds from the safety-belt unbuckling."

Paragraph 2.2.1., amend to read:

"2.2.1. Testing the seat(s) in the same row as the driver's seat when the safety-belt is unfastened before the journey:

¹ The technical specifications and detailed drawings of Hybrid III, corresponding to the principal dimensions of a fifth percentile female of the United States of America, and the specifications for its adjustment for this test are deposited with the Secretary-General of the United Nations and may be consulted on request at the secretariat of the Economic Commission for Europe, Palais des Nations, Geneva, Switzerland. A female who weighs between 46.7 and 51.25 kg, and who is between 139.7 and 150 cm tall may be used.

- (a) The safety-belt(s) of the seat(s) in the same row as the driver's seat is/are not fastened;
- (b) The safety-belts of the seats other than the seat(s) in the same row as the driver's seat are fastened;
- (c) A load of 40 kg is applied to the seat(s) in the same row as the driver's seat, or the state in which occupants are on board the vehicle is simulated by a method specified by the manufacturer, **provided an occupant's load does not exceed 40 kg.**

... "

Paragraph 2.2.2., amend to read:

"2.2.2. Testing the seating position in the same row as the driver's seat when the safety-belt becomes unbuckled during the journey.

- (a) The safety-belts of the driver's seat and seats other than the driver's seat are fastened;
- (b) A load of 40 kg is applied to the seat(s) in the same row as the driver's seat, or the state in which occupants are on board the vehicle is simulated by a method specified by the manufacturer, **provided an occupant's load does not exceed 40 kg;**

Or alternatively (at the choice of the manufacturer):

An object or human representing a 5th percentile adult female is placed on each seat cushion as specified by the manufacturer in the same row as the driver seat, or the state in which occupants **representing a 5th percentile adult female** ¹ are on board the vehicle is simulated by an alternative method specified by the vehicle manufacturer as agreed by the technical service and the approval authority. This may also be done for the rear seats at the request of the vehicle manufacturer;

- (c) **The vehicle is in normal operation;**
- (d) **The safety-belt of seats other than the driver's seat is unbuckled;**
- (e) **The test vehicle is driven, at the choice of the manufacturer, under one of the conditions in paragraphs 2.1.2.1. to 2.1.2.3. of this Annex or a combination thereof;**
- (f) The state of the safety-belt reminder is checked for all of the seat(s) in the same row as the driver's seat, for each condition (a) to ~~(d)~~(e)..."

II. Justification

1. This new series is meant to clarify how to correctly assess the connection of the safety-belt reminder system, in the case of removable seats and to clarify the requirements for safety-belt reminder systems on test procedure (first and second level warning), visual warning and requirements for safety-belt reminder of rear seat row(s).

2. A reference to a removable seat was introduced in the transitional provision of UN Regulation No. 16, 07 series of amendments, but requirements for the connection of a safety-belt reminder system for removable seats were not provided. The proposal is meant to clarify how to assess the connection of a safety-belt reminder system in the case of removable seats.

3. The requirements for seat-belt reminder equipment have been integrated in series 05 of the UN regulation 16. Safety-belt reminder were initially only required for the driver seat. The requirements of the visual warning were detailed in paragraph 8.4.2.1., including the following symbol:



(item K.01 - ISO 2575:2000) or,



4. The UN Regulation was then amended in the 07 series to require that other seats (seating position of the occupants of seats in the same row as the driver and rear seats) shall be equipped with a safety-belt reminder system.

5. For safety-belt reminder of driver and occupants of seats in the same row as the driver, it is required in paragraph 8.4.3.2. that the colour and symbol of the visual warning shall be as defined in item 21 of table 1 in UN Regulation No. 121. The symbol in UN Regulation No. 121 is the same as the symbol shown in paragraph 8.4.2.1. of UN Regulation No. 16. Therefore, the information is redundant.

6. For safety-belt reminder for occupants of rear seat row(s), it is required in paragraph 8.4.4.3. that the colour of the visual warning may be other than red and the symbol of the visual warning for safety-belts covered by paragraph 8.4.1.2. may contain different symbols other than defined in UN Regulation No. 121. In that case, there is no reference to the symbol in paragraph 8.4.2.1.

7. To avoid any misinterpretation and to clarify the text, the symbol presented in paragraph 8.4.2.1. should be removed.

8. The first level warning of seating positions of the rear seat row(s) of M_1 and N_1 category vehicles may be cancelled by the driver. However, it is not clear whether that the cancellation must be done consciously or not. For instance, if the driver wants to check the fuel tank autonomy (by activating a command) and the information covers the Safety-Belt Reminder symbol on the vehicle instrument panel, then he has not consciously covered the safety-belt reminder symbol, yet the information is not present anymore. To clarify the text, paragraph 8.4.4.3. should be amended to specify that the driver is aware of the cancellation.

9. The requirements for the second level warning of the rear seats are specified in paragraph 8.4.4.5.:

"8.4.4.5. The second level warning shall be activated when a safety-belt becomes unfastened while the vehicle is in normal operation and while, at the same time, any one condition or any combination of the conditions, at the choice of the manufacturer, set out in paragraphs 8.4.2.4.1.1. to 8.4.2.4.1.3. is satisfied."

10. The tests procedure (annex 18, paragraph 2.3.) indicates that it is required to test the rear seat when the safety-belt becomes unbuckled during the journey. As an alternative, at the request of the vehicle manufacturer, the test procedures for the seating position(s) in the same row as the driver's seat may be used for any rear seating position instead (annex 18, paragraphs 2.2. to 2.2.2.). These test procedures must be done when the safety-belt is unfastened before the journey and when the safety-belt becomes unbuckled during the journey. However, in paragraph 8.4.4.5., the other testing condition (when the safety-belt is unfastened before the journey) is not specified in the requirement. To clarify the text, paragraph 8.4.4.5. should be amended to consider this alternative.

11. In the first level warning test procedure (annex 18, paragraph 1), four alternatives exist to detect the presence of an occupant:

(a) A load of 40 kg is placed on each seat cushion in the same row as the driver's seat; or

(b) the state in which occupants are on board the vehicle is simulated by an alternative method specified by the vehicle manufacturer, provided an occupant's load does not exceed 40 kg.

Or alternatively (at the choice of the manufacturer):

(c) An object or human representing a 5th percentile adult female ¹ is placed on each seat cushion as specified by the manufacturer in the same row as the driver seat; or

(d) The state in which occupants are onboard the vehicle is simulated by an alternative method specified by the vehicle manufacturer as agreed by the technical service and the approval authority.

12. The fourth alternative is not really clear and could lead to misinterpretation. Indeed, an 80 kg human being would fit this alternative, which is not coherent with the three previous alternatives (corresponding to a 40kg human being or a 5th percentile female). Therefore, this option should be specified.

13. For the driver's seat and for the seat(s) in the same row as the driver's seat, it is required that the second level warning shall be activated when a safety-belt is or becomes unfastened while the vehicle is in normal operation.

14. The test procedure when the safety-belt is unfastened before the journey specifies that the following steps shall be followed (annex 18, paragraphs 2.1.1. and 2.2.1.):

"2.1.1. Testing the driver's seat when the safety-belt is unfastened before the journey

- (a) The safety-belt of the driver's seat is not fastened;
- (b) The safety-belts of seats other than the driver's seat are fastened;
- (c) Test vehicle driven with one or any combination of the conditions of paragraphs 2.1.1.1. to 2.1.1.3. of this annex at the manufacturer's choice.
- (d) The state of the safety-belt reminder is checked for the driver's seat, in conditions (a) to (c).

2.1.1.1. Accelerate the test vehicle to 25 -0/+10 km/h from a halt and continue on the same speed.

2.1.1.2. The test vehicle is driven forward at least 500m from a halt position.

2.1.1.3. The vehicle is tested when the vehicle is in normal operation for at least 60 seconds."

15. However, in paragraph 2.1.1.2., it is not specified that the vehicle has to be in normal operation, whereas it is indicated in paragraph 2.1.1.3. This proposal aims at correcting this point.

16. The testing procedure for the second level warning of the driver's seat are divided between two cases: when the safety belt is unbuckled before the journey or when the safety-belt becomes unbuckled.

17. The text requests that the threshold shall be set out from the point in time at which unfastening occurs:

"8.4.2.4.5. For the condition that a safety belt becomes unfastened pursuant to paragraphs 8.4.3.3. and 8.4.4.5., the thresholds set out in paragraphs 8.4.2.4.1.1. to 8.4.2.4.1.3. shall be measured from the point in time at which unfastening occurs."

18. The testing procedure when the safety-belt becomes unbuckled is detailed in annex 18, paragraph 2.1.2. The driving conditions of the test vehicle, in that case, refer to the three driving conditions when the safety belt is unbuckled before the journey (paragraphs 2.1.1.1. to 2.1.1.3).

"2.1.1.1. Accelerate the test vehicle to 25 -0/+10 km/h from a halt and continue on the same speed.

2.1.1.2. The test vehicle is driven forward at least 500 m from a halt position.

2.1.1.3. The vehicle is tested when the vehicle is in normal operation for at least 60 seconds."

19. The second driving condition indicates that it is driven from halt position. This is not consistent with paragraph 8.4.2.4.5. Therefore, paragraph 2.1.2. of annex 18 has been modified to detail the testing conditions when the safety-belt becomes unbuckled during the journey (paragraphs 2.1.2.1. to 2.1.2.3. have been added). The same modifications are provided to the testing condition of the seat's other than the driver's seats in annex 18, paragraph 2.2.2.

20. In the first level warning test procedure (annex 18, paragraph 1), four alternatives exist to detect the presence of an occupant, including the second alternative:

"(e) A load of 40 kg is placed on each seat cushion in the same row as the driver's seat, or the state in which occupants are on board the vehicle is simulated by an alternative method specified by the vehicle manufacturer, **provided an occupant's load does not exceed 40 kg.**"

21. However, in annex 18, paragraph 2.2.1., when testing the second level warning for the seat(s) in the same row as the driver's seat when the safety-belt is unfastened before the journey, a similar condition is requested, without the mention "provided an occupant's load does not exceed 40 kg".

(c) A load of 40 kg is applied to the seat(s) in the same row as the driver's seat, or the state in which occupants are on board the vehicle is simulated by a method specified by the manufacturer;

22. To avoid any difference of interpretation and to clarify the text, this mention should be added in Annex 18, paragraph 2.2.1.(c) and paragraph 2.2.2.
