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## **Proposal for Supplement 7 to the 06 series of amendments to Regulation No. 16 (Safety-belts)**

### **Submitted by the expert from the European Association of Automotive Suppliers \***

The text reproduced below was prepared by the expert of the European Association of Automotive Suppliers (CLEPA) in cooperation with the experts from France, Japan, the Netherlands, and OICA aimed at clarifying the provisions for dynamic testing of rear seat system, advanced restraint system approval and transitional provisions. It is based on document without symbol (GRSP-57-28) distributed at the seventy-seventh session of the Working Party on Passive Safety (GRSP). The modifications to the current text of UN Regulation No. 16 are marked in bold for new or strikethrough for deleted characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

## I. Proposal

Content, insert new Annex 19, to read:

"...

Annex 18 Safety-belt reminder tests.....112

**Annex 19 Rear seats restraint system setup for dynamic test....."**

Paragraph 2.8, amend to read:

"2.8. *"Airbag assembly"* means a device ... of the passenger compartment. **Any as such described deployed structure shall not be considered as rigid part."**

Paragraph 5.3.4.2.2.6., amend to read:

"5.3.4.2.2.6. If the safety-belt is approved following the provisions of paragraph 6.4.1.3.3. **and 6.4.1.3.4.** of this Regulation, it shall be marked with the word "AIRBAG" in a rectangle 6."

Insert new paragraph 6.4.1.3.4., to read:

**"6.4.1.3.4. In case of a seating position, other than the outboard front seating positions, which is protected with an airbag in front of it, the displacement of the chest reference point may exceed that specified in paragraph 6.4.1.3.2. above if its speed at this value does not exceed 24 km/h in tests performed with the airbag in a vehicle related environment, reflecting the vehicle coordinates of the airbag mounting and attachment points."**

Paragraph 6.4.1.4.1., amend to read:

"6.4.1.4.1. The movement of the chest reference point may exceed that specified in Paragraph 6.4.1.3.2. above if it can be shown either by calculation or a further test that no part of the torso or the head of the manikin used in the dynamic test would have come into contact with any forward rigid part of the vehicle other than: ~~the chest with the steering assembly, if the latter meets the requirements of Regulation No. 12 and provided contact does not occur at a speed higher than 24 km/h. For this assessment the seat shall be considered to be in the position specified in paragraph 7.7.1.5. below.~~

Insert new paragraphs 6.4.1.4.1.1. and 6.4.1.4.1.2., to read:

**"6.4.1.4.1.1. In the case of the driver, contact of the chest with the steering assembly would be allowed, if the latter meets the requirements of Regulation No. 12 and provided contact does not occur at a speed higher than 24 km/h. For this assessment the seat shall be considered to be in the positions specified in paragraph 7.7.1.5. below.**

**6.4.1.4.1.2. In case of any other occupant a contact of the head or of the chest with any rigid part of the vehicle in front of the manikin would be allowed, provided contact with vehicle interior does not occur at a speed higher than 24 km/h and no contact of the manikins head with its knees takes place.**

**For this assessment the seat of the tested manikin and, if applicable, the seat in front of the manikin shall be considered to be in the positions specified in paragraph 7.7.1.6. below."**

Paragraph 7.7.1.5., amend to read:

"7.7.1.5. For the assessment of the requirements in paragraphs 6.4.1.4.1. and 6.4.1.4.1.1. the seat shall be **positioned** in its most forward driving or travelling position appropriate to the dimensions of the manikin."

Insert new paragraphs 7.7.1.6. to 7.7.1.7., to read:

"7.7.1.6. For the assessment of the requirements in paragraphs 6.4.1.4.1. and 6.4.1.4.1.2. the seat adjustment shall be:

7.7.1.6.1. For front passenger seats: the occupant in the front shall be in its most forward travelling position according to the dimensions of the manikin. The positions of the seats shall be stated in the report.

7.7.1.6.2. For rear seats: For any testing position of rear seated occupants, the position of the tested seat, shall be considered as positioned to the seats R-Point position and its seat back angle, **if adjustable, positioned as close as possible to 10° by using 3-D H point machine and its torso angle**

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 The seat in front of a tested seat shall be adjusted to the most rearward and lowest position appropriate for any contact with the manikin installed on the rear seat, then shifted forward to ensure the minimal pelvis displacement of 80 mm or respective of 40 mm according to paragraph 6.4.1.3.2. and with a seat back angle, **if adjustable, positioned as close as possible to 10°, by using 3-D H point machine and its torso angle, (Annex 19, Figure 1).**

**This may be proved, with a contour on CAD or drawing, using the manikin described in Annex 7 to this Regulation."**

7.7.1.7. Alternatively to paragraphs 7.7.1.5. and 7.7.1.6., in the case where those devices cannot be tested on the test trolley, the manufacturer may demonstrate by a conventional frontal impact test at 50 km/h in conformity with the procedure ISO 3560:2013 that the device complies with the requirements of the Regulation."

Paragraphs 7.7.1.6. and 7.7.1.7.(former), renumber as paragraphs 7.7.1.8. and 7.7.1.9.

Paragraph 7.10.1., amend to read:

"7.10.1. The test report shall record the results of all the tests in paragraph 7. above and in particular:

(a) ...

...

(i) **The data of the speed as a function of the displacement of the most forward point of the head and the chest reference point necessary for the judgment that no interior part will be in the zone where the speed is higher than 24 km/h.**

If by virtue ..."

Deleted: as close as possible to 10° if adjustable

Deleted: derived from the 3-D H point machine

Deleted: at

Deleted: as close as possible to 10°

Deleted: as derived from the 3-D H Point machine

Deleted: can be

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Deleted: .

Deleted: This measurement should be done with manikin to this regulation (Annex 7).

Insert new paragraphs 8.1.6.1. and 8.1.6.2. to read :

**"8.1.6.1. For the rear seat positions, if the restraint system has been tested according to the requirements of paragraph 6.4.1.4.1.2. and 6.4.1.3.4. without the vehicle environment as defined in paragraph 7.7.1., the installation conditions in the vehicle shall still be verified for its compatibility with the dimensional conditions as defined in par. 12.1. of the Communication form for the approval of the restraint system [Annex 1B].**

**8.1.6.2. The contact of the upper part of the manikin with the interior of the passenger compartment is only allowed if the energy absorption requirements defined in Regulations Nos. 21 and 17, in their latest series of amendments are fulfilled."**

Annex 1B, item 12, foot note 4, amend to read:

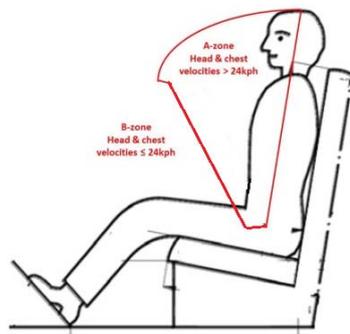
<sup>4</sup> "If a safety-belt is approved following the provisions of paragraph 6.4.1.3.3. of this Regulation, this safety-belt shall only be installed in an outboard front seating position protected by an airbag in front of it, under the condition that the vehicle concerned is approved to Regulation No. 94, 01 series of amendments or its later version in force.

**If a safety-belt is approved following the provisions of paragraph 6.4.1.3.4. of this Regulation, this safety-belt shall only be installed in a seating position protected by an airbag in front of it."**

Annex 1B, insert new item 12.1., to read :

**"12.1. In case a restraint system has been granted/refused/extended/withdrawn<sup>2</sup>, those can be used for all vehicles compatible with the following dimensional conditions: no interior part in a quoted A-zone as shown below (figure 2):**

Figure 2



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Annex 2, last example, amend to read:

" 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

<sup>2</sup> Strike out what does not apply.

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 062439. The first two digits indicate that the Regulation already incorporated the 06 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 14, paragraph 2.2.3., amend to read:*

"2.2.3. Results

Test results shall meet the requirements set out in paragraph 6.4.1.3.1. of this Regulation.

The forward displacement of the manikin may be controlled with regard to paragraph 6.4.1.3.2. of this Regulation (or 6.4.1.4. where applicable) during a test performed ~~with conditioning according to paragraph 1.6.1. of this annex~~ by means of a simplified adapted method.

**A simplified, adapted method could be, e.g., the use of a reference chest speed measured at 300 mm forward displacement carried out in a physical test without an airbag or additional restraint system components, to be considered in the conformity control plan."**

*Annex 14, paragraph 2.2.3.1., amend to read:*

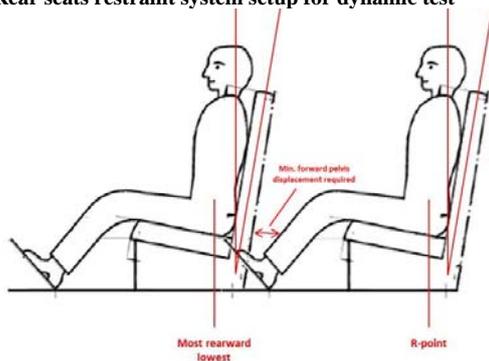
"2.2.3.1. In the case of approval following paragraph 6.4.1.3.3. **or 6.4.1.3.4.** of this Regulation and paragraph 1.6.1. of this annex, it is only specified that no part of the belt shall be destructed or disengaged, and that a speed of 24 km/h of the chest reference point at 300 mm displacement shall not be exceeded."

*Insert a new Annex 19, to read:*

## "Annex 19

### Rear seats restraint system setup for dynamic test

Figure 1  
Rear seats restraint system setup for dynamic test



## II. Justification

The proposed amendments to UN Regulation No. 16 are based on the following arguments:

1. Alignment of requirements for front and rear seatbelt type component approval;
  2. Specify the setup of dynamic testing in case of belt assembly or restraint system;
  3. Enable the installation of advanced restraint systems through a clear type approval process also for rear seated occupants;
  4. Define a minimum technical standard for limiting manikin movement in the component type approval process and conformity of production process;
  5. Indicate a simplified adapted method to provide a common understanding for all parties involved such as technical services or manufacturers;
  6. Clarify the role of inflatable protective structures, without rigid parts, as part of the restraint system. Discussions to clarify this aspect were held with technical services;
  7. Define the effect that a component type approval for restraints system might have on the vehicle type approval.
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