

## **Proposal for the 09 series of amendments of UN Regulation No. 16 (Safety-belts)**

### **Submitted by the expert from Japan**

The text reproduced below was prepared by the expert from Japan. It describes the new requirements concerning the safety-belts of seat positions equipped with the lower ISOFIX anchorage. The modifications to the current text of the UN Regulation are marked in bold for new or strikethrough for deleted characters.

## I. Proposal

*Insert new paragraphs 2.47. and 2.48., to read:*

- "2.48. "Effective belt anchorage" means the point used to determine conventionally, as specified in paragraph 5.4 of UN regulation No. 14, the angle of each part of the safety-belt in relation to the wearer, that is, the point to which a strap would need to be attached to provide the same lie as the intended lie of the belt when worn, and which may or may not be the actual belt anchorage depending on the configuration of the safety-belt hardware at its attachment to the belt anchorage."
- "2.49. "BP point for the buckle strap" means the point as specified in paragraph 3.2. of Annex 17 Appendix 1."

*Insert new paragraphs 8.2.3. to 8.2.3.2., to read:*

- "8.2.3. The requirement of the strap between the buckle and effective belt anchorage at seats equipped with ISOFIX lower anchorages."
- "8.2.3.1. The difference between the actual strap length and the straight line distance between the effective belt anchorage and BP point for the buckle strap, according to paragraph 3.2. of Annex 17 Appendix 1, should be [50] mm or less."
- "8.2.3.2. In the case that the path of the strap between the buckle and effective belt anchorage is defined by a rigid part whose shape is not deformed during the dynamic test specified in UN Regulation No. 94 or No. 137, and the manufacturer shows those data and the technical service confirms those data, paragraph 8.2.3.1. does not apply."
- "8.2.3.3. In the case that the path of the strap between the buckle and effective belt anchorage is not straight during the dynamic test specified in UN Regulation No. 94 or No. 137, and the manufacturer shows the length of the strap between the buckle and effective belt anchorage during the dynamic test and technical service confirms that length, the difference between the actual strap length and the path length during the dynamic test between the effective belt anchorage and BP point for the buckle strap, according to paragraph 3.2. of Annex 17 Appendix 1, should be [50] mm or less."

*Insert new paragraphs 15.6. to 15.14., 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 type approvals under this Regulation as amended by the 09 series of amendments.
- 15.7. As from [1 September 2024], Contracting Parties applying this Regulation shall not be obliged to accept type approvals to the preceding series of amendments, first issued after [1 September 2024].
- 15.8. Until [1 September 2026], Contracting Parties applying this Regulation shall accept type approvals to the preceding series of amendments, first issued before [1 September 2024].
- 15.9. As from [1 September 2026], Contracting Parties applying this Regulation shall not be obliged to accept type approvals issued to the preceding series of amendments to this Regulation.
- 15.10. Notwithstanding the transitional provisions above, Contracting Parties who start to apply this Regulation after the date of entry into force of the

most recent series of amendments are not obliged to accept type approvals which were granted in accordance with any of the preceding series of amendments to this Regulation / are only obliged to accept type approvals granted in accordance with the 09 series of amendments.

- 15.11. Notwithstanding paragraph 15.9., Contracting Parties applying this Regulation shall continue to accept type approvals issued according to the preceding series of amendments to this Regulation, for vehicles that are not affected by the changes introduced by the 09 series of amendments.
- 15.12. Notwithstanding paragraph 15.9., Contracting Parties applying this Regulation shall continue to accept type approvals of safety-belts and restraint systems to the preceding series of amendments to the UN Regulation.
- 15.13. Contracting Parties applying this Regulation may grant type approvals according to any preceding series of amendments to this Regulation.
- 15.14. Contracting Parties applying this Regulation shall continue to grant extensions of existing approvals to any preceding series of amendments to this Regulation."

*Annex 17 Appendix 1 paragraph 1.1.*, amend to read:

- "1.1. The test procedure and the requirements in this appendix shall be used to determine the suitability of seating positions for the installation of child restraints of the "universal" category, **and to measure the length of the strap between the effective belt anchorage and BP point for the buckle strap at seat positions equipped with ISOFIX lower anchorages.**"

*Annex 17 Appendix 1 paragraph 2.7.*, amend to read:

- "2.7. Ensure that the fixture is located with its vertical plane of symmetry within  $\pm 25$  mm of the vertical plane of symmetry of the seating position **for determining the suitability of seating positions for the installation of child restraints of the "universal" category. Ensure that the fixture is located with its vertical plane of symmetry within  $\pm 12.5$  mm of the vertical plane of symmetry of the ISOFIX lower anchorages for measuring the length of the strap between the effective belt anchorage and BP point for the buckle strap.**"

*Annex 17 Appendix 1 paragraph 3.2.*, amend to read:

- "3.2. The lap portion of the belt shall touch the fixture on both sides at the rear of the lap belt path (see Figure 3). The seatbelt webbing shall always cover the points BP on the left and right ends of the curved edge; the exact position of point BP on the curved edge is indicated in detail W of Figure 1. **"BP point for the buckle strap" is the point BP on the curved edge is indicated in detail W of Figure 1 when the fixture is located with its vertical plane of symmetry within  $\pm 12.5$  mm of the vertical plane of symmetry of the ISOFIX lower anchorages.**"

## II. Justification

1. The strap's paths between the effective belt anchorage and the buckle are normally straight like the test bench specified in UN Regulation No. 129 (Figure 1). However, the strap's paths between the effective belt anchorage and the buckle of some vehicles in the market are not straight, and are curved along the cushion (Figure 2).

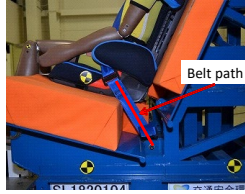


Figure 1. Photo of the buckle strap path of the R129 test bench

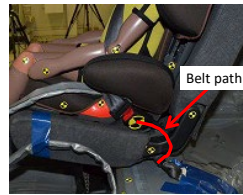


Figure 2. Photo of a case when the buckle strap path is not straight

2. When the strap's paths between the effective belt anchorage and the buckle are not straight, the occupants may move forward largely during a frontal impact accident. If an occupant is seated in the booster seat attached by ISOFIX, there are cases in which the seatbelt slips up to the neck and in which submarining occurs (referred to in GRSP69-XY). These phenomena would increase the risk to the neck and abdomen of a child occupant. In addition, the dummy chest injury measures becomes increasing. Figure 3 shows the relation between the amount of slack of the buckle strap and dummy 3ms chest maximum acceleration for two types of CRS. When the slack of the buckle belt was over [50] mm, the chest maximum acceleration was near the R129 criteria in one CRS. When the slack of the buckle belt was over [80] mm, the chest maximum acceleration exceeded the R129 criteria.

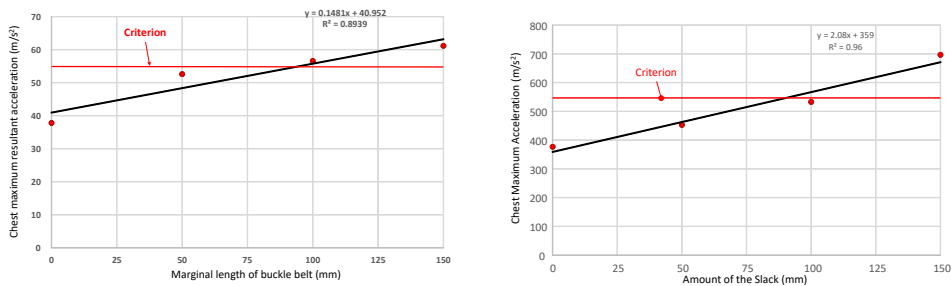


Figure 3. Relation between amount of slack of the buckle strap and dummy 3ms chest maximum acceleration

3. The slack of the buckle belt makes the pedestrian's excursion larger, so it is not good for the safety of the passenger.
4. Therefore, we propose to limit the slack of the buckle belt in seats equipped with ISOFIX lower anchorages.
5. These amendments prevent the phenomena of the seatbelt slipping up to the neck and of submarining.