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agenda item 1.3.1.)

PROPOSAL FOR DRAFT 05 SERIES OF AMENDMENTS TO REGULATION No. 16
(Safety-belts)

Transmitted by the Experts from Japan and Spain

Note: The text reproduced below was prepared by the experts from Japan and Spain in order to complete the proposal adopted in principle by GRSP during its twenty-ninth session (TRANS/WP.29/GRSP/29, annex 2).

Words changed from the current version of Regulation No. 16 are underlined.

Words changed from adopted texts reported in TRANS/WP.29/GRSP/29 annex 2, are **bold-faced**.

Note: This document is distributed to the Experts on Passive Safety only.

GE.01-

A. PROPOSAL

Insert a new paragraph 2.28., to read:

"2.28. Tension-reducing device:

A device which is incorporated in the retractor and reduces the tension of the strap automatically when the safety belt is fastened. When it is released, such a device shall be switched off automatically."

Insert a new paragraph 5.3.4.2.2.4., to read:

"5.3.4.2.2.4. the letter "t" in the case of a safety belt with a retractor incorporating a tension-reducing device"

Paragraphs 5.3.4.2.2.4. and 5.3.4.2.2.5. (former), renumber as paragraphs 5.3.4.2.2.5. and 5.3.4.2.2.6.

Paragraph 6.2.5.2.2., amend to read:

"6.2.5.2.2. If the retractor is part of a lap belt, ...

If the retractor is part of an upper torso restraint, the retracting force of the strap shall be not less than 0.1 daN and not more than 0.7 daN when similarly measured, except for a belt equipped with a tension-reducing device, the minimum retracting force may be reduced to 0.05 daN only when such a device is in operation mode. If the strap passes through a guide or pulley, the retracting force shall be measured in the free length between dummy and guide or pulley. If the assembly incorporates a device that, upon manual or automatic operation prevents the strap from being completely retracted, such a device shall not be operated when these requirements are assessed. If the assembly incorporates a tension-reducing device, the retraction force of the strap described in the above shall be measured on condition that such a device is in operation mode and non-operation mode when these requirements are assessed before and after durability tests according to paragraph 6.2.5.2.3."

Paragraph 6.2.5.2.3., amend to read:

"6.2.5.2.3. The strap shall be withdrawn from the retractor and allowed to retract repeatedly by the method described in paragraph 7.6.1. until 5,000 cycles have been completed. The retractor shall then be subjected to the corrosion test given in paragraph 7.2. and after that to the dust test given in paragraph 7.6.3. It shall then satisfactorily complete a further 5,000 cycles. If the assembly incorporates a tension-reducing device, the above tests shall be conducted on condition that the tension-reducing device is in operation mode and in non-operation mode. After the above tests the retractor shall operate correctly and still meet the requirements of paragraphs 6.2.5.2.1. and 6.2.5.2.2. above."

Paragraph 6.2.5.3.4., amend to read:

"6.2.5.3.4. If the retractor is part of a lap belt,

If the retractor is part of an upper torso restraint, the retracting force of the strap shall be not less than 0.1 daN and not more than 0.7 daN when similarly measured, except for a belt equipped with a tension-reducing device, the minimum retracting force may be reduced to 0.05 daN only when such a device is in operation mode. If the strap passes through a guide or pulley, the retracting force shall be measured in the free length between the dummy and the guide or pulley.

If the assembly incorporates a device that upon manual or automatic operation prevents the strap from being completely retracted, such a device shall not be operated when these requirements are assessed.

If the assembly incorporates a tension-reducing device, the retracting force of the strap described in the above shall be measured on condition that such a device is in operation mode and non-operation mode when these requirements are assessed before and after durability tests according to paragraph 6.2.5.3.5."

Paragraph 6.2.5.3.5., amend to read:

"6.2.5.3.5. The strap shall be (making 45000 in all).

If the assembly incorporates a tension-reducing device, the above tests shall be conducted on condition that the tension-reducing device is in operation mode and in non-operation mode.

After the above tests, the retractor shall operate correctly and still meet the requirements of paragraphs 6.2.5.3.1., 6.2.5.3.3. and 6.2.5.3.4. above."

Insert new paragraphs 6.2.5.4. to 6.2.5.4.2., to read:

"6.2.5.4. Retractors must fulfil, after durability test according to paragraph, 6.2.5.2.3. or 6.2.5.3.5., and immediately after the retracting force measurement according to 6.2.5.2.2 or 6.2.5.3.4., all next two specifications:

6.2.5.4.1. When retractors except automatically locking retractors are tested according to paragraph 7.6.4.2, the retractors must be able to avoid any slack between torso and belt, and,

6.2.5.4.2. When the buckle is unlatched to release the tongue, the retractor alone must be able to retract strap fully."

Insert a new paragraph 6.4.1.2.5., to read:

"6.4.1.2.5. In the case of a safety-belt with tension-reducing device, it shall be subjected to a durability test with such a device in operation mode according to paragraph 6.2.5.3.5 before a dynamic test. The dynamic test shall then be conducted on condition that the tension-reducing device is in operation mode."

Paragraph 7.6.4.1., amend to read:

"7.6.4.1. The retracting force shall be measured with the safety-belt assembly fitted to a dummy as for the dynamic test prescribed in paragraph 7.7. The strap tension shall be measured at the point of contact with (but just clear of) the dummy while the strap is being retracted at the approximate rate of 0.6 m/min. In the case of a safety-belt with tension-reducing device, the retracting force and strap tension shall be measured on condition that a tension-reducing device is in both operation mode and non-operation mode."

Insert a new paragraph 7.6.4.2., to read.

"7.6.4.2. Before the dynamic test described in paragraph 7.7. the seated dummy shall be tilted frontward until 350 mm of the strap is withdrawn from retractor, and then released to the initial position."

* * *

B. JUSTIFICATION

Re. para. 2.28.:

Slight changes have been introduced for clarification.

Re. para. 5.3.4.2.2.4.:

It was suggested in the twenty-ninth session of GRSP that a marking was necessary for retractors with tension reducing devices.

Re. paras. 6.2.5.2.2. and 6.2.5.2.3.:

During the twenty-ninth session of GRSP, the amendments were discussed only about emergency locking retractors (ELR). However, the same amendment should apply to specifications for automatic locking retractors (ALR), because the same discussion can be applied to the retraction force of ALR.

Re. paras. 6.2.5.3.4. and 6.2.5.3.5.:

Slight changes have been introduced for clarification.

Re. paras. 6.2.5.4.1. and 6.2.5.4.2.:

Slight changes have been introduced for clarification.

ALR should be excluded from the specification in paragraph 6.2.5.4.1., because ALR does not extract its strap when worn by passenger.

Re. para. 6.4.1.2.5.:

A new paragraph is added to introduce specifications for a dynamic test, because the tension reducing device is in operation mode when the safety belt equipped with such a device is fastened.

Re. para. 7.6.4.1.:

This paragraph is amended to notify that the retracting force is to be measured under two different conditions for retractors with tension reducing device.

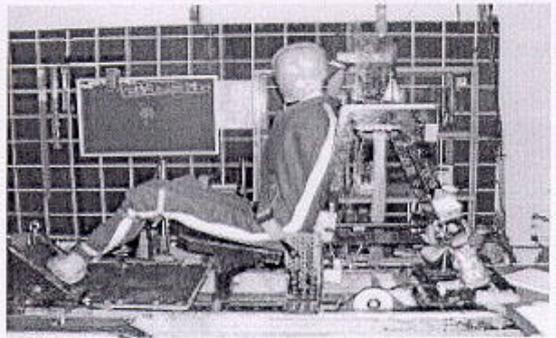
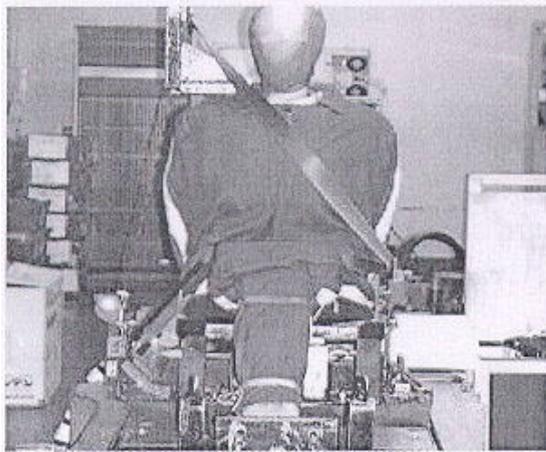
Re. para. 7.6.4.2.:

The Dummy tilt procedure was moved to the test procedure section of the Regulation.

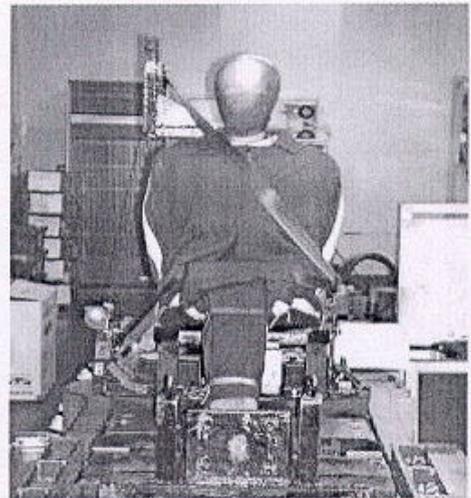
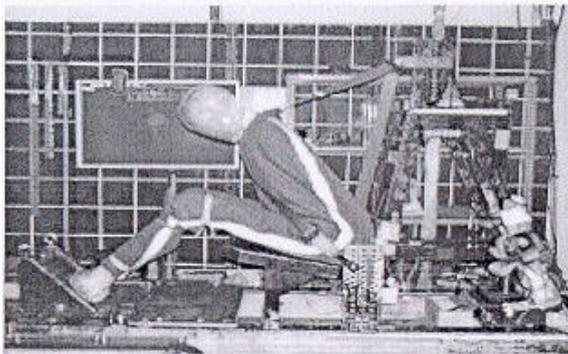
In addition, the adopted procedure was changed from "the dummy is tilted 45° frontward" to "the seated dummy shall be tilted frontward until 350 mm of the strap is withdrawn from the retractor", because the tilt angle is not easy to measure on the dummy. Judging from our test results, the strap-withdrawn length of 350 mm is enough to make the equivalent result as dummy tilt angle of 45° (please see attached reference data).

Annex

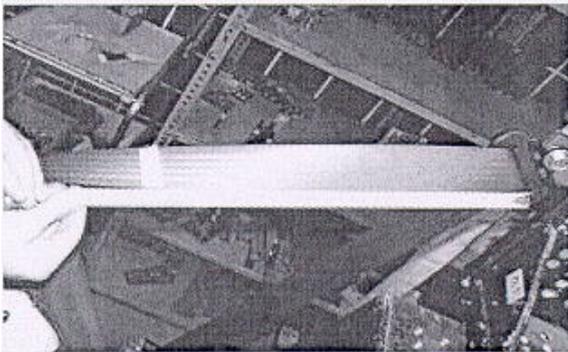
Text data of paragraph 6.2.5.4. in accordance with text procedures of tilting dummy 45° frontward as following table.



Initial position



Tilted 45° frontward



Vehicle type	Vehicle model	Length of strap withdrawn
Coupe/2 doors	A	330 mm
	B	340 mm
Sedan	C	295 mm
	D	300 mm
MPV/mini-van	E	295 mm
	F	265 mm

It is difficult to determine the reference point of the tilt angle for the dummy. This is as the front of the torso has a spherical contour, and the back against the seat prevents attachment of the inclinometers. So the measurement procedure is not stabilized.

Table A shows the length of strap withdrawn is less than 350 mm for all vehicle models. Therefore, 350 mm is the appropriate length to be used.