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agenda item B.1.4.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 29

(Cabs of commercial vehicles)

Transmitted by the expert from the Russian Federation

Note: The text reproduced below was prepared by the expert from the Russian Federation to insert into the Regulation new test methods for the different categories of vehicles. It is based on a document without a symbol (informal document No. GRSP-38-19), distributed during the thirty-eighth session of GRSP (see report TRANS/WP.29/GRSP/38, para. 20).

The modifications to the current text of the Regulation are marked in **bold** characters.

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

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A. PROPOSAL

Paragraph 5.2., amend to read:

"5.2. **The driver's cabin of cargo vehicles falling into categories N₁, N₂, N₃ must pass all tests described in Annex 3 to this Regulation. The manufacturer can choose how many cabins will be provided for testing: one, two or three. However, a vehicle of category N₁ which is designed on the basis of a vehicle of category ?₁ that has officially been approved in accordance with Regulation No. 94 (or equivalent regulatory documents) needs only the back wall strength testing (test C).**"

Annex 3, amend to read:

"Annex 3

CONDITIONS OF TESTING

1. Doors

Before the test the doors of the cab shall be closed but not locked.

2. Engine

For test A the engine, or a model equivalent thereto in mass, dimensions and mounting, shall be fitted to the vehicle.

3. Anchorage of the Cabin

For test A, the cab shall be mounted on a vehicle. For tests B and C, the cab shall at the manufacturer's choice be mounted either on a vehicle or on a separate frame **or a part of the frame**. The vehicle or frame shall be secured in the manner prescribed in Appendix 1 to this Annex.

4. **Front part strength test** (test ?)

4.1 Description of the swing-bob

4.1.1 The swing-bob shall be made of steel and its mass shall be evenly distributed; its mass shall be **1,000 to 1,500 kg**. Its striking surface, rectangular and flat, shall be **1,000 mm** wide and **600 mm** high. Its edges shall be rounded to a radius of curvature of not less than 1.5 mm.

4.1.2 **The swing-bob must be rigid and hang freely on two chains, so that there will be at least b = 800 mm distance between the chain suspension points. The chain length measured from the axis of suspension to the geometric centre of the swing-bob shall not be less than 3,500 mm.**

4.1.3 The swing-bob shall be so positioned that in the vertical position:

- 4.1.3.1. its striking face is in contact with the foremost part of the vehicle;
- 4.1.3.2. its centre of gravity is located at $c = 50 \pm 5$ mm from the H(R) point;
- 4.1.3.3. The outer side rim of the swing-bob must be placed between two parallel vertical planes separated by $a = 30$ mm space. The inner plane must be parallel with the middle longitudinal plane and tangent to the outer surface of the driver's door.

4.2. Test conditions

- 4.2.1. The swing-bob must strike the cabin while moving from front to back. The strike direction must be horizontal and parallel with the middle longitudinal section of the vehicle (figure 1). The energy of the strike must be equal to 40 kJ for vehicles of category N₃, [30] kJ for vehicles of category N₂, and [25] kJ for vehicles of category N₁.
- 4.2.2. Test ? may be skipped for vehicles of category N₁ if they fulfill the test requirements according to Regulations No.94.

5. Roof strength (test ?)

- 5.1. The driver's cab must be tilted by 25 degrees against its longitudinal axis so that the driver's side would be lifted (figure 2).
- 5.2. The load must be applied through a suitably shaped rigid plate, the down side of which is uniformly greased.
- 5.3. The driver's cabin roof must endure static load P of
 $P = [?] \cdot [?]$

where: $[?]$ is part of the vehicle's full load weight that falls to the front axle ;
 $[?]$ is the dynamic load coefficient.

The maximum load that the upper part of cabin must endure is limited by 10 tons.

- 5.4. Test B may be skipped for vehicles of category N₁ if they fulfill the test requirements according to Regulations No.94 (or equivalent regulatory documents).

6. Rear-wall strength (test ?).

6.1. Description of the swing-bob

- 6.1.1. The swing-bob shall be made of steel. Its weight "m" shall be equally distributed and equal to 1,000 kg. The striking surface must be rectangular and flat. The width "l" of the striking surface shall be 1,600 mm and the height "h" shall be 500 mm. The edges of the pendulum shall be rounded and the radius of the curvature must not be less than 15 mm.

6.1.2. The swing-bob shall be rigid and hang freely on two chains, so that there will be at least $b = 800$ mm distance between the suspension points of the chains. The chain length "L" measured from the suspension axis to the geometric centre of the swing-bob shall be not less than 3,500 mm.

6.1.3. The swing-bob must be placed in a vertical position so that:

6.1.3.1. its front side will touch the most protruding back part of the cabin;

6.1.3.2. its centre is placed in such a way that it will imitate the impact of vehicle's own cargo during front collision.

6.2. Test conditions

The swing-bob shall strike the driver's cab from the back and shall be directed to the front (figure 3). The strike direction shall be horizontal and parallel with the central longitudinal section plane of the vehicle. The centre of the strike shall coincide with the central axial plane of the back wall and be located in the middle point between the floor and the roof of the cabin. The energy of the strike shall be equal to 30 kJ for vehicles of category N₃, [20] kJ for vehicles of category N₂, and [15] kJ for vehicles of category N₁.

Figure 1: Front part strength testing (Test A)

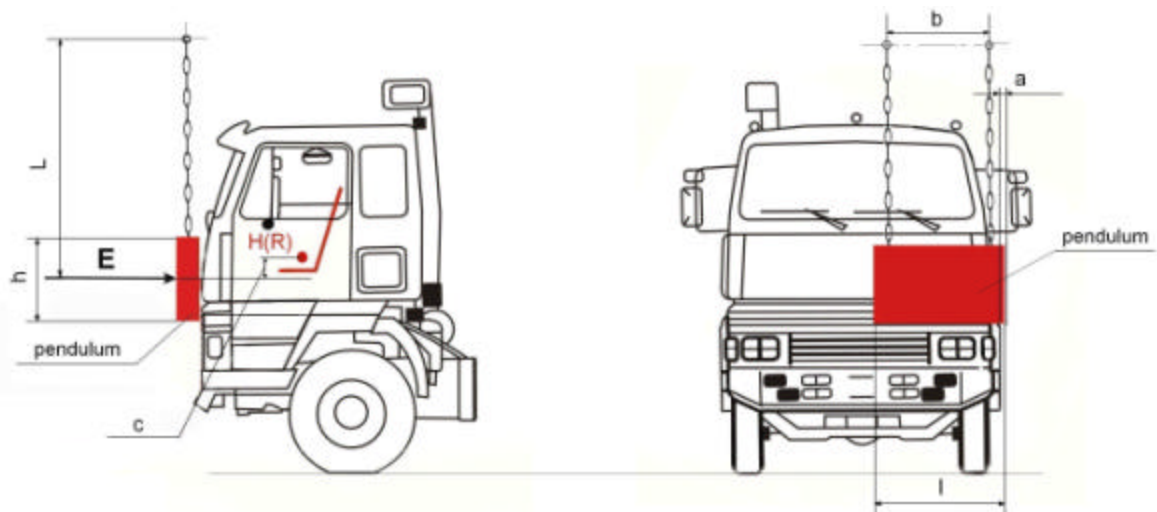


Figure 2: Roof strength testing (Test B)

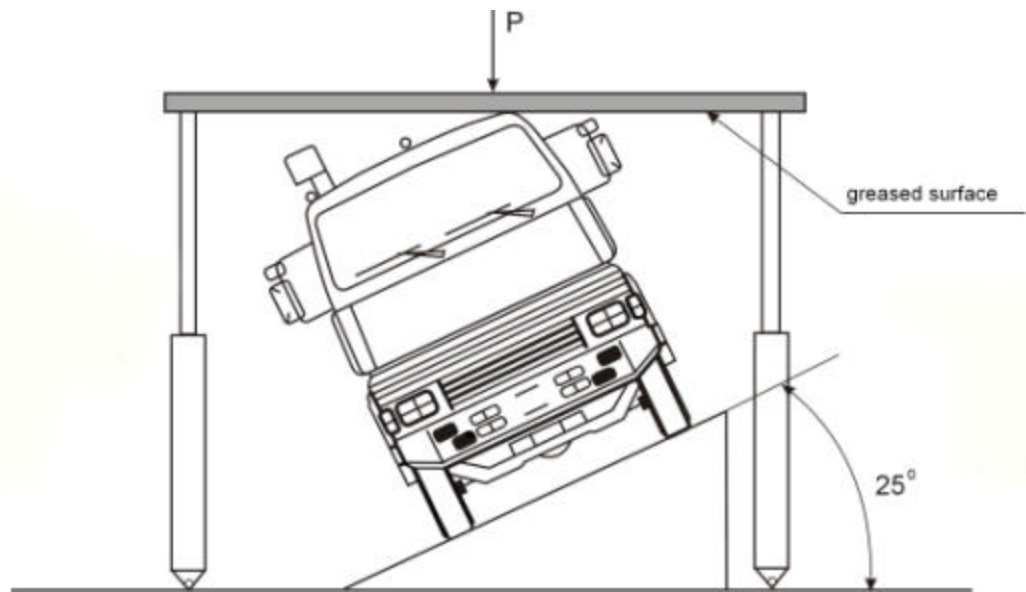
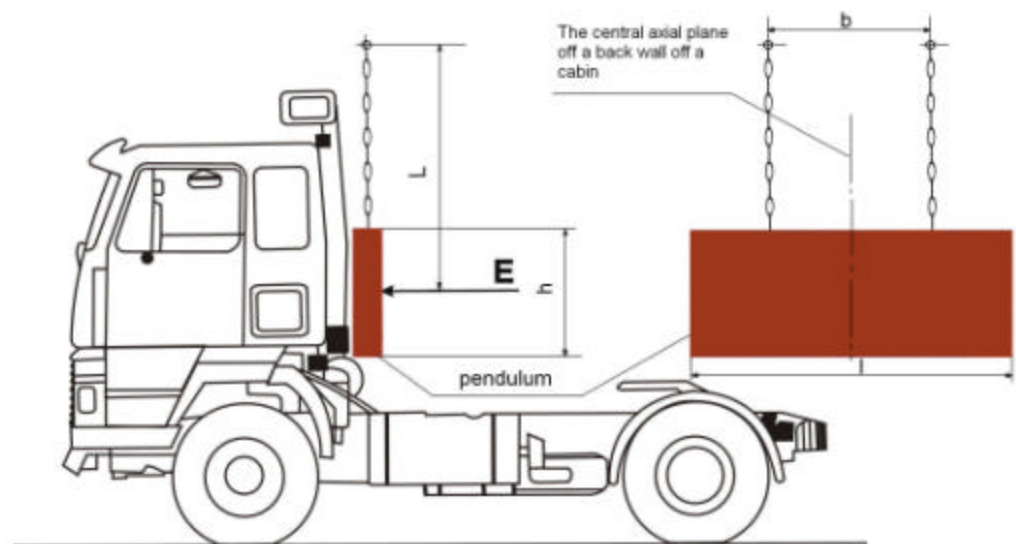


Figure 3: Back part strength testing (Test C)



B. JUSTIFICATION

Following the second informal meeting of the GRSP working group on Regulation No. 29, the expert from the Russian Federation proposes the above mentioned amendments in order to insert into the Regulation new test methods for the different categories of vehicles. This proposal has to be considered as an interim step of the test development and the informal group will continue the further elaboration of the test methods.
