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**ECONOMIC COMMISSION FOR EUROPE**

INLAND TRANSPORT COMMITTEE

World Forum for Harmonization of Vehicle Regulations

Working Party on Passive Safety

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Item 11(a) of the provisional agenda

REGULATION No. 29  
(Cabs of commercial vehicles)

Proposal for draft 03 series of amendments

Submitted by the expert from the Russian Federation<sup>\*/</sup>

The text reproduced below was prepared by the expert from the Russian Federation to introduce a revised proposal for draft amendments superseding ECE/TRANS/WP.29/GRSP/2006/5. It is based on a document without a symbol (informal document No. GRSP-41-02), distributed during the forty-first session of GRSP (see report ECE/TRANS/WP.29/GRSP/41, para. 39). The modifications to the current text of the Regulation are marked in **bold** or ~~strike through~~ characters.

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<sup>\*/</sup> In accordance with the programme of work of the Inland Transport Committee for 2006-2010 (ECE/TRANS/166/Add.1, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance performance of vehicles with respect to passive safety. The present document is submitted in conformity with that mandate.

A. PROPOSAL

Insert a new paragraph 2.5., to read

**"2.5. "Conventional truck" means such a truck in which a cab is situated behind the engine, and the rear end of the engine is in front of the lowest edge of the windscreen."**

Paragraph 4.2., amend to read:

"4.2. An approval number shall be assigned to each type approved. Its first two digits (at present ~~02~~ **03** corresponding to the ~~02~~ **03** series of amendments) .... The same Contracting Party may not assign the same number to another vehicle type within the meaning of paragraph 2.2. above."

Paragraph 4.4.2., amend to read

"4.4.2. the number of this Regulation, followed by the letter "R", a dash and the approval number to the right of the circle prescribed in paragraph 4.4.1~~;~~ **and**"

Paragraph 5.2., amend to read:

**"5.2. The cabs of the vehicles of categories N<sub>1</sub>, N<sub>2</sub> and N<sub>3</sub> shall be subjected to all the tests specified in Annex 3 to this Regulation. One or two cabs, at the manufacturer's choice, shall be used for this purpose. The same cab shall be subjected both to test A and C. However a vehicle of category N<sub>1</sub> built on the base of a vehicle category M<sub>1</sub> which has been approved according to Regulation No. 94 may be considered to have satisfied the requirements on frontal impact (test A) and may be subjected to the test of strength of the rear-wall (test C).**

**The technical service that holds tests estimates that a cab of a conventional truck can be subjected to all the tests described in Annex 3 or only to the tests B and C."**

Paragraph 5.3.1., amend to read:

**"5.3.1. Test A**

**5.3.1.1. For each front seat, as defined by the manufacturer, the distance after impact shall be determined between two transverse planes, one passing through the corresponding "R" point and the other through the rearmost projection of the lines of the instrument panel (switches and controls being disregarded) over a width of 230 mm to each side of the longitudinal plane passing through the centre of the seat. This distance shall be not less than 490 mm.**

**5.3.1.2. Before impact, the straight line formed for each front seat by the intersection of**

the longitudinal plane passing through the centre of the seat with the horizontal plane passing through the centre of the service brake pedal in the position of rest shall be determined. The distance between the point of intersection of the said straight line with the front of the passenger compartment and its point of intersection with the transverse plane passing through the corresponding "R" point shall then be determined. After impact, this distance shall be not less 650 mm.

**5.3.1.3.** The width of the footwell shall be determined as follows:

before impact, the points shall be determined at which a transverse horizontal axis passing through the centre of the service brake pedal in the position of rest meets the side walls of the footwell;

after impact, the distance separating two longitudinal vertical planes passing through the same points shall be measured. This distance shall be not less than 260 mm for each front seat.

**5.3.1.4.** The space so defined shall be verified for every seat provided by the manufacturer.

**5.3.1.5.** During the test the top of the steering column and its shaft shall not move backwards, horizontally and parallel to the longitudinal axis of the vehicle, by more than 100 mm and also not more than 100 mm vertically upwards, both dimensions considered in relation to a point of the vehicle not affected by the impact."

Paragraph 5.3.2., amend to read:

**"5.3.2. Test B**

**5.3.2.1.** The distance from floor to roof shall be determined along the vertical line passing through the "R" point and situated in the longitudinal plane passing through the centre of each front seat. After impact, this distance shall be not less than 1,330 mm."

Insert new paragraphs 5.3.3. and 5.3.3.1., to read:

**"5.3.3. Test C**

**5.3.3.1.** After the vehicle has undergone the test, the lengthwise displacement of the vertical projection on the floor of the "R" point of the vehicle's rearmost seat in relation to a reference point on a non-deformed part of the vehicle structure shall not exceed 75 mm. In case there is a sleeping berth provided by the manufacturer the lengthwise displacement of the projection on the floor of the vertical transverse plane passing through the center of the berth in relation to a reference point on a non-deformed part of the vehicle structure shall not

**exceed 75 mm."**

Paragraph 5.4.2., amend to read:

**"5.4.2. In addition, the side doors of the vehicle shall not open under the effect of the impact."**

Insert a new paragraph 5.4.3., to read:

**"5.4.3. After the impact the opening of a number of doors sufficient to enable all the occupants to emerge shall continue to be possible without the use of tools."**

Insert new paragraphs 10.4. to 10.6., to read:

**"10.4. As from the official date of entry into force of the 03 series of amendments, no Contracting Party applying this Regulation shall refuse to grant ECE approval under this regulation to new types of cabs complying with this Regulation as modified by the 03 series of amendments.**

**10.5. As from 6 years after the date referred to in paragraph 10.4, Contracting Parties applying this Regulation shall grant ECE approvals under this Regulation to new types of cabs only if the requirements of this Regulation, as amended by the 03 series of amendments, are satisfied.**

**10.6. However no Contracting Party applying this Regulation shall refuse to grant extensions of approvals to cabs approved in accordance with the 02 series of amendments to this Regulation."**

Annex 2, amend to read:

## "ARRANGEMENTS OF APPROVAL MARKS

### Model A

(See paragraph 4.4. of this Regulation)

*(Note: marking picture not reproduced here)*

The above approval mark ..... been approved in the Netherlands (E 4), under the number **032439** ~~022439~~ and that the cab of the vehicle meets the requirements of test C. The first two digits of the approval number indicate the Regulation No. 29 already included the **03** ~~02~~ series of amendments when the approval was given.

Model B

(See paragraph 4.5. of this Regulation)

*(Note: marking picture not reproduced here)*

The above approval mark affixed to a vehicle .....The approval numbers indicate that on the dates on which these approvals were granted Regulations Nos. 29 and 24 included the 03 02 series of amendments."

Annex 3

Paragraphs 4.1.1. and 4.1.2., amend to read:

"4.1.1. **distributed; its mass (m) shall be from 1,000 to 1,500 kg. Its striking surface, rectangular and flat, shall be 2,500 mm wide (l) and 800 mm high (h). Its edges shall be rounded to a radius of curvature of not less than 15 mm.**

4.1.2. **The swing-bob shall be of rigid construction. The swing-bob shall be freely suspended by two chains attached to it and spaced not less than  $b = 800$  mm apart. The chains shall be not less than 3,500 mm long (L) from the axis of suspension to the geometric centre of the bob."**

Paragraph 4.1.3.2., amend to read:

"4.1.3.2. **its centre of gravity is  $c = 50 \pm 5$  mm below the H(R) point of a driver's seat;"**

Paragraph 4.1.3.3., to be deleted.

Paragraph 4.1.4., amend to read:

"4.1.4. **Should the pendulum appear in contact with the truck frame at this height then it shall be moved to a height eliminating such contact."**

Insert new paragraphs 4.1.5. to 4.2.3., to read:

"4.1.5. **Outer side border of the swing-bob shall be situated between two parallel vertical planes, the distance between them is  $a = 30$  mm long. The inner plane is tangent to the outer surface of the driver's door and parallel to the middle longitudinal plane.**

4.2. **Test procedures**

4.2.1. **The swing-bob shall strike the cab at the front in the direction towards the rear of the cab. The direction of impact shall be horizontal and shall be parallel to the median longitudinal plane of the vehicle (figure 1). The impact energy shall be 40 kJ for vehicles of the category  $N_2$  with permissible maximum mass**

over 7,500 kg and N<sub>3</sub>, 25 kJ for vehicles of the category N<sub>2</sub> with permissible maximum mass less than 7,500 kg and 15 kJ for vehicles of the category N<sub>1</sub>.

4.2.2. Test A needs not be carried out for vehicles with bottom-end model meeting the requirements of the Regulation No. 94.

4.2.3. Test A needs not be carried out for conventional trucks."

Paragraph 5., amend to read:

**5. Roof strength (test B)**

**5.1. Test procedures**

5.1.1. The cab shall be angled to 25 degrees in relation to its longitudinal axel. A driver's side of the cab shall be higher than the other one (figure 2).

5.1.2. The load shall be applied via a rigid slab with the corresponding configuration. Its lower side shall be evenly covered with a lubricant.

5.1.3. The roof of the cab shall withstand static load (P). The load shall be measured by the following expression:

$$P = [K] P_{CH}$$

in which: P<sub>CH</sub> – weight of a vehicle in running order, on forward axel;  
K - coefficient of dynamic load equal 2,5. The maximum load the roof of the cab shall withstand shall be not more than 10 t.

5.1.4. Test B needs not be carried out for vehicles with bottom-end model meeting the requirements of the Regulation No. 94 or corresponding normative documents."

Paragraph 6., amend to read:

**"6. Rear-wall strength (test C)**

**6.1. Description of the swing-bob**

6.1.1. The swing-bob shall be made of steel and its mass shall be evenly-distributed; its mass (m) shall be 1,000 kg. Its striking surface, rectangular and flat, shall be 1600 mm wide (l) and 500 mm high (h). Its edges shall be rounded to a radius of curvature of not less than 15 mm.

6.1.2. The swing-bob shall be of rigid construction. The swing-bob shall be freely suspended by two chains attached to it and spaced not less than b = 800 mm apart. The chains shall be not less than 3,500 mm long (L) from the axis of suspension to the geometric centre of the bob.

6.1.3. The swing-bob shall be so positioned that in the vertical position

- 6.1.3.1. its front side is in contact with the aftermost part of the rear side of the cab;**
- 6.1.3.2. its centre of gravity is situated to imitate the impact of a load to the rear side of the cab during the front-face collision;**
- 6.2. Test procedures**
  - 6.2.1. The swing-bob shall strike the cab at the rear in the direction towards the front of the cab (figure 3). The direction of impact shall be horizontal and shall be parallel to the median longitudinal plane of the vehicle. The center of the impact shall match the central axial plane of the rear side of the cab and shall be situated in the centre of the rear between the roof and the floor of the cab. The impact energy shall be 40 kJ for vehicles of the category N<sub>2</sub> with permissible maximum mass over 7,500 kg and N<sub>3</sub>, 20 kJ for vehicles of the category N<sub>2</sub> with permissible maximum mass less than 7,500 kg and 10 kJ for vehicles of the category N<sub>1</sub>.**
  - 6.2.2. Vehicles of the category N<sub>1</sub> can be tested by using a static load. The rear wall of the cab shall be capable of withstanding a static load of 4 kN per tone of permissible useful load. This load shall be applied by means of a rigid barrier perpendicular to the longitudinal median axis of the vehicle, covering at least the whole of the cab rear wall situated above the chassis frame, and moving parallel to that axis."**

Figure 1. Front impact test (test A)

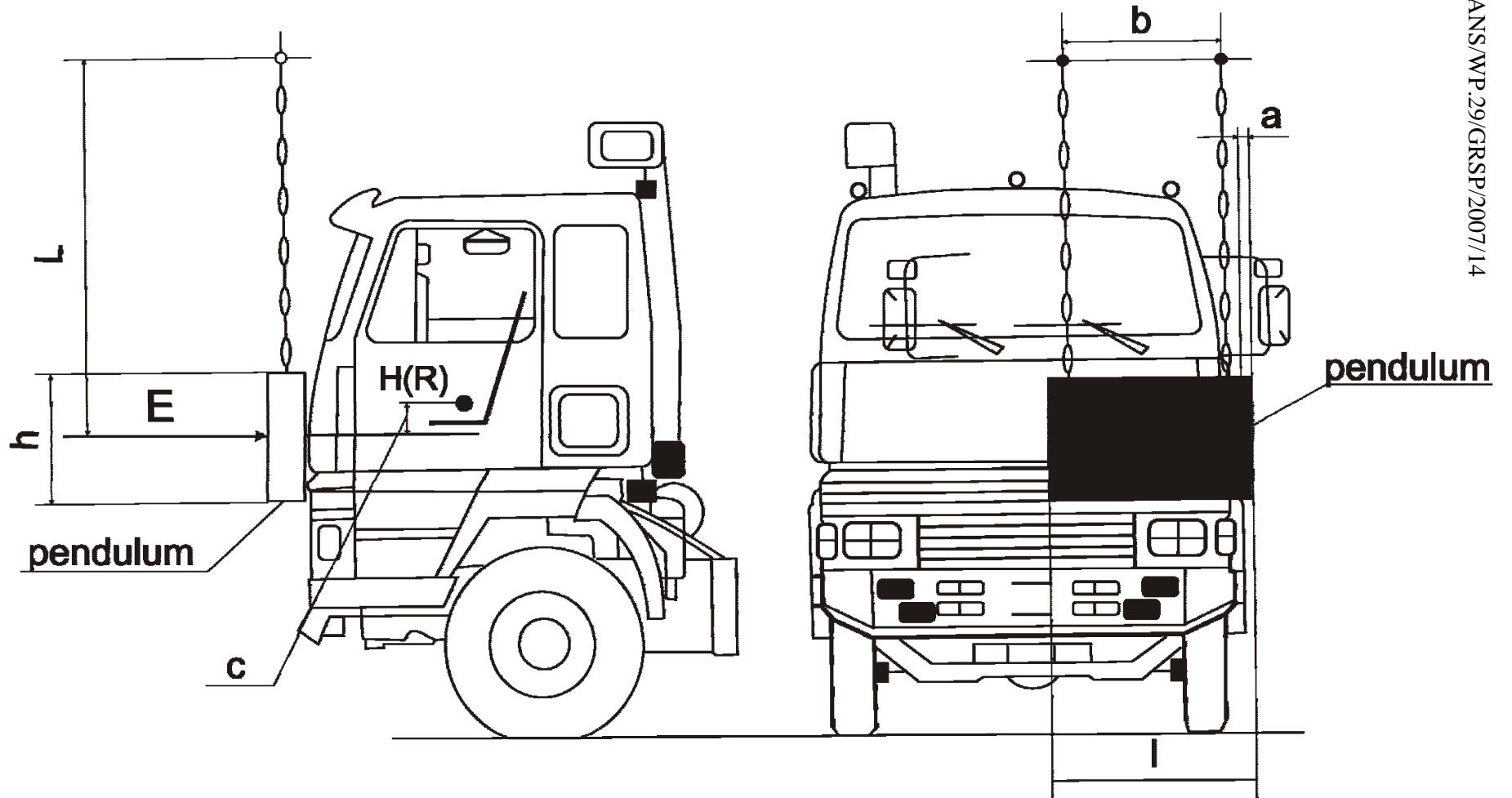




Figure 2. Roof strength (test B)

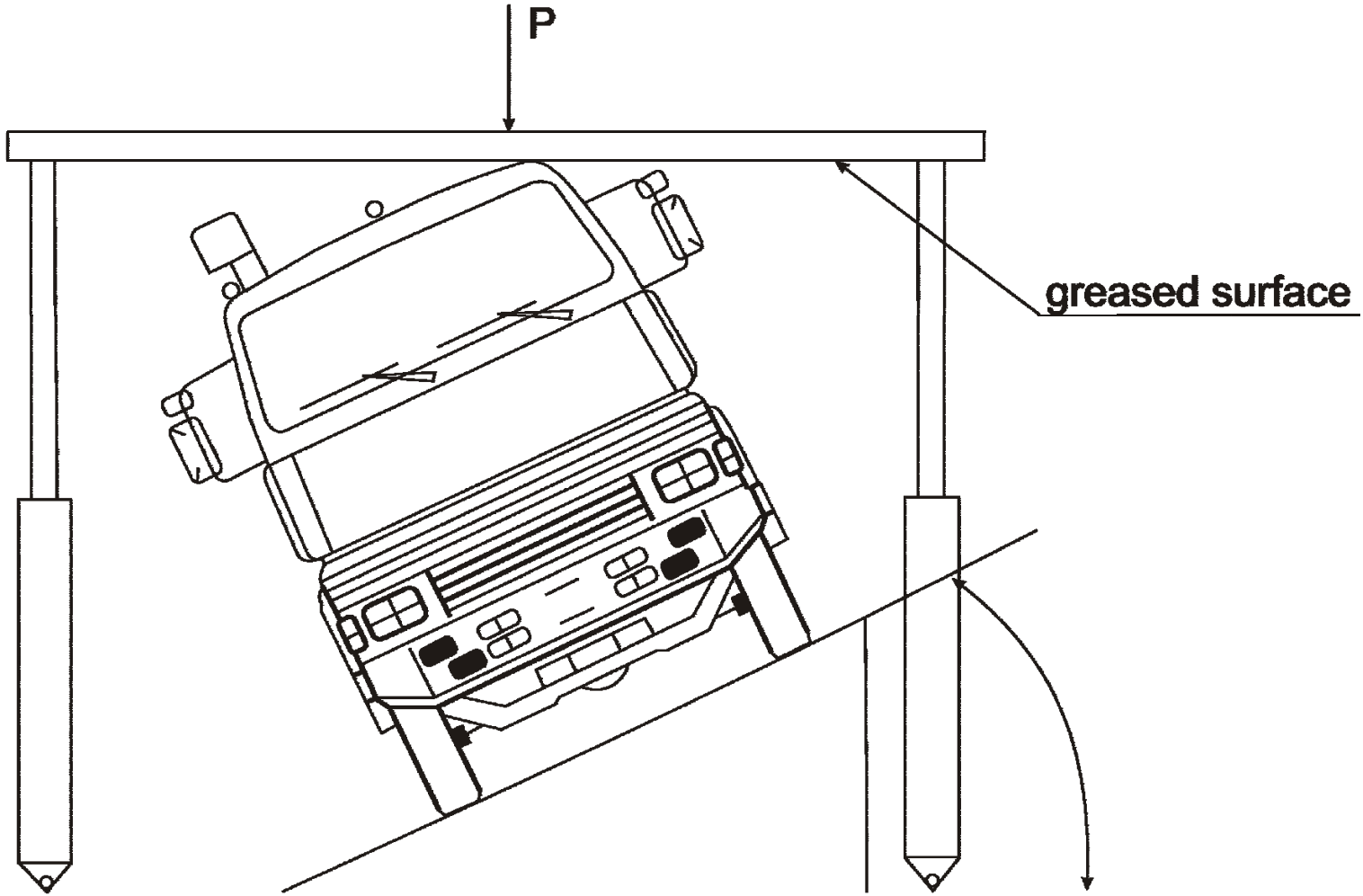
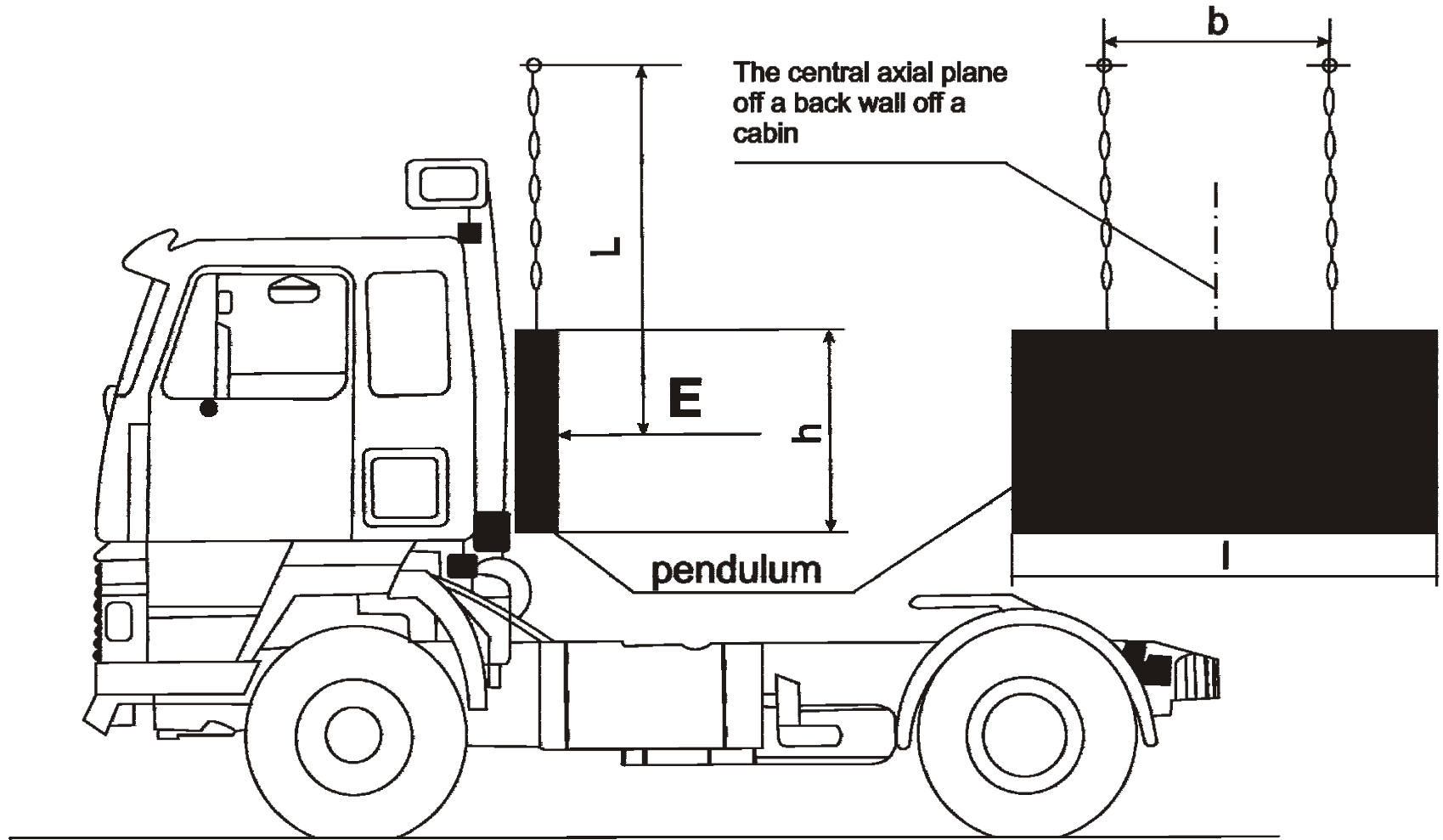


Figure 3. Rear-wall strength (test C)



Annex 3 - Appendix 1

Paragraph 1.5., amend to read:

"1.5. Tensioning of chains or ropes and rear attachment

The chain or rope C shall to begin with be placed under a load of approximately **1 kN** ~~100 kgf~~. All slack in the four chains or ropes A and B shall then be taken up and chain or rope C shall be subjected to a tensile stress of not less than **10 kN** ~~1,000 kgf~~. The angle of chain or rope C with the horizontal shall not exceed 15°. A vertical blocking force of not less than **500 N** ~~50 kgf~~ shall be applied at point D between the chassis frame and the ground."

Annex 3 – appendix 2, to be deleted

B. JUSTIFICATION

During the forty-first GRSP May 2007 session, the expert from the Russian Federation introduced a revised proposal for draft amendments (GRSP-41-02), superseding ECE/TRANS/WP.29/GRSP/2006/5. This new proposal aims to simulate in test laboratories the accident scenario emerged from real world crash data collection and to give an alternative approach to proposal by the International Organization of Vehicle Manufacturers (OICA).

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