

*Remarks to the proposal for draft 01 series of amendments to regulation 66(document  
TRANS/WP.29/GRSG/2003/25)*

*(Transmitted by the expert from Spain)*

**ANNEX 3**

- 1.4. A method for determining  $l_1$ ,  $t$ ,  $h_0$ , using load cells is described here. Alternative methods using lifting equipment and/or tilt tables for example may be proposed by the manufacturer or the technical service. In any case, will be the technical service who will verify that ~~who will decide whether~~ the method is acceptable based on its degree of accuracy.

Justification: It is not absolutely necessary that the manufacturer proposes a method to the technical service. Could be the technical service who based on its experience proposes the method it uses to the manufacturer.

**ANNEX 5**

Figure A5.1 modified in agreement with paragraph 1.3 of this annex:

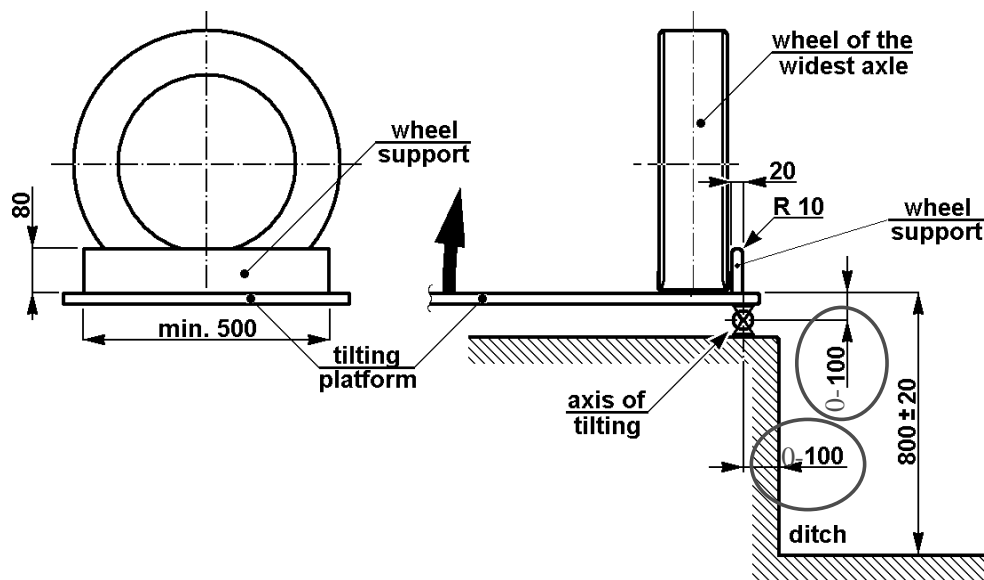


Figure A5.1 - Geometry of the tilting bench

Justification: As it is defined in paragraph 1.3 of this annex, the distance from the axis of rotation to the vertical wall of the ditch is 100 mm maximum (that is 0-100 mm) and the axis of rotation is max 100 mm below the plane of the horizontal tilting platform (that is 0-100 mm). However, in figure A5.1 both distances are fixed as 100 mm.

2.1.5. In the case where occupant restraint devices are part of the vehicle type, a mass shall be attached to each seat fitted with an occupant restraint following one the this two methods:

2.1.5.1 First method:. That mass shall be:

- 2.1.5.1.1 50 per cent of the individual occupant mass ( $M_{mi}$ ) of 68 kg.
- 2.1.5.1.2. placed 100 ~~200~~ mm above and 100 mm forward of the R point of the seat as defined in Regulation No. 21, annex 5.
- 2.1.5.1.3. fixed rigidly and securely so that it does not break away during the test.

2.1.5.2 Second method: that mass shall be an anthropomorphic ballast with a mass of 68 kg and shall be restrained with a 2 point seat belt. The centre of gravity of the ballast should be situated placed 100 mm above of the R point of the seat as defined in Regulation No. 21, annex 5.

Justification: First of all, the first method is extremely difficult to implement. In the other hand, the second method proposed reproduces the real behaviour of the passengers and takes into account the effect of the restrained passengers as well as the first method. The following photograph shows an example of anthropomorphic ballast.

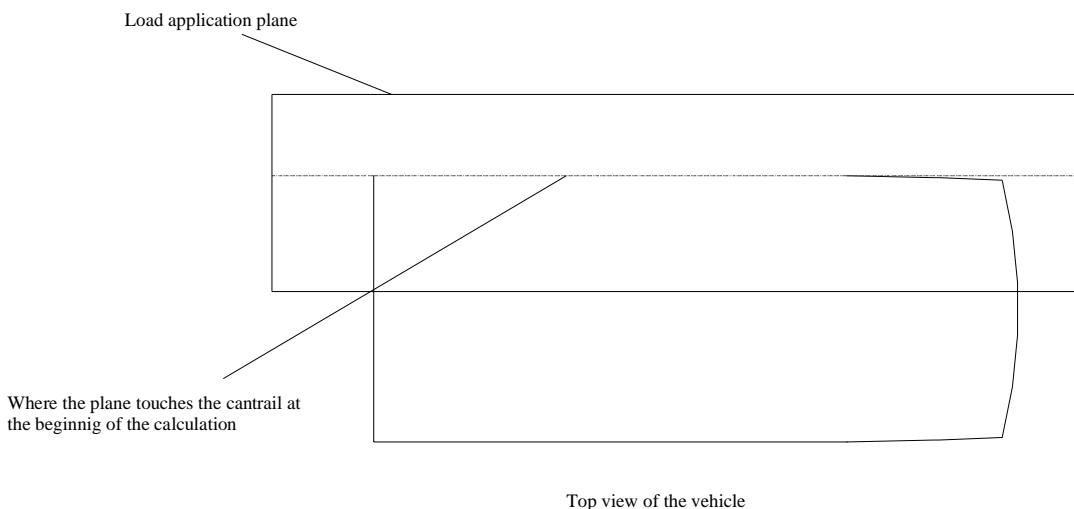


Related to the error in the position of the mass, measures on a finite element model of a Hybrid III dummy show that the vertical distance between the centre of gravity of the passenger and the seat's cushion is around 200 mm. Taking into account the wide variety of characteristics of the cushions, it is not the most adequate reference. It is better to reference to point R, and in this case, the centre of gravity of the passenger is around 100 mm above point R.

## ANNEX 8

- 2.2.2. ~~the load application plane shall touch the cantrail alongside the superstructure even if it is stepped or sloped.~~ At the beginning of the simulation, the load application plane touches the cantrail at its most distant part from the vertical longitudinal central plane. The contact points between the load application plane and the superstructure shall be defined to ensure an exact load transfer.

Justification: The image below treats to explain that due to actual geometry and shape of the vehicles, at the beginning of the calculation the old paragraph 2.2.2 could not be fulfilled.



- 3.4. The vehicle type shall be refused if  $E_a < E_T$   
~~or overall collapse of the superstructure has occurred before the residual space is invaded by any of the rigid structural parts.~~

Justification: The second condition is implicit in the first one. In fact, this condition is not included in annex 7 for the same reason.

## ANNEX 8-APPENDIX 1

- 2.2. The "working range" of the PH characteristic curve is the range covered by the calculation. The working range shall not exceed the measured range, and may contain the fracture, ~~but~~ ~~not~~ and the rapid hardening range.

Justification: The program must be able to reproduce the curve obtained in the test, whatever its form is. Various forms of the curve could be obtained depending on the configuration of joints and so on.