

Proposal for amendments to the Consolidated Resolution on the Construction of Vehicles (R.E.3)

I. Proposal

Insert a new paragraph 1.11., to read:

"1.11. **"Twinned wheels"** means two wheels positioned on the same axle, which are considered to be one wheel, whereby the distance between the centres of the areas of contact with the ground is equal to, or less than 460 mm. Twinned wheels can be applied on vehicles of category L."

Paragraph 2.1.1., amend to read:

"2.1.1. **"Category L1"**: A two-wheeled vehicle with an engine cylinder capacity in the case of a thermic engine not exceeding 50 cm³ and whatever the means of propulsion a maximum design speed not exceeding 50 km/h. **In the case the vehicle is equipped with a "twinned wheels", the full vehicle structure or part of the vehicle structure shall tilt when turning.**"

Paragraph 2.1.3., amend to read:

"2.1.3. **"Category L3"**: A two-wheeled vehicle with an engine cylinder capacity in the case of a thermic engine exceeding 50 cm³ or whatever the means of propulsion a maximum design speed exceeding 50 km/h.. **In the case the vehicle is equipped with a "twinned wheels"-configuration, the full vehicle structure or part of the vehicle structure shall tilt when turning.**"

II. Justification

1. This informal document includes a new approach to the concept of Twinned Wheels introduced by IMMA in ECE/TRANS/WP.29/GRSG/2015/30, not concluded by GRSG, to allow application of 'twinned wheels' on all vehicles of category L.



2. The proposal aims at harmonising the definitions in R.E.3 with those used in

- Europe (Whole Vehicle Type Approval, Regulation (EU) No.168/2013 article 3 – 72),
- Australia (ADR - PART B) and

c. Japan (Road Transport Vehicle Act 2009.10.24).

Note: In the United States, the Piaggio MP3 meets the definition of "motorcycle" under U.S. DoT regulation (motorcycle means a motor vehicle with motive power having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground (49 CFR Part 571) and under nearly every state law)

3. In certain countries applying UN Regulations and not applying the 'twin wheel' definitions under the regional or national frameworks referenced under point 2, where 3-wheeled vehicles as the Piaggio MP 3 and Yamaha Tricity are on sale, such vehicles may be classified only as an L5 (three-wheeler). This would result in major changes in vehicle requirements and specification (e.g. parking brake) hence it is necessary to update R.E.3 with the definition of *Twin Wheel* from a harmonisation perspective.

4. As a result of this proposal, "Twin wheels" can apply to all L-vehicle categories. If "Twin wheels" are applied on L1 and L3 vehicles, it is specified that the vehicles shall incline when turning. For other L category vehicles, there is no tilting requirement.

5. Supporting information:

a. 2008-32-0061 (SAE) / 20084761 (JSAE) *Comparison Between Experimental and Numerical Handling Tests for a Three-Wheeled Motorcycle*. In this paper the handling behaviour of the three-wheeled motor scooter (Piaggio MP3) was investigated on the basis of experimental tests and simulation. The analyses of the results and previous experience confirmed that the analysed vehicle is driven very much like an ordinary two-wheeler.

b. *Public comments regarding the Amendment of the Road Transport Regulation in Japan*: A total of 19 proficiency test officers and motorcycle police riders had tested a vehicle equipped with "twin wheels". They concluded that it is the same or close to two-wheeled motor vehicles.

c. Piaggio introduced the MP3 in 2006 in the United States of America. This motor vehicle has two independently suspended front wheels with the centre of the tire contact patches of 420 mm (16.5 inches) apart and one rear wheel. In the United States, the Piaggio MP3 meets the definition of "motorcycle" under U.S. DoT regulation (motorcycle means a motor vehicle with motive power having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground (49 CFR Part 571) and under nearly every state law). The Motorcycle Safety Foundation (MSF) concluded from its testing of the vehicle that the MP3 should be treated as a two-wheeled motorcycle for purposes of training and
