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**Economic Commission for Europe**

Inland Transport Committee

**World Forum for Harmonization of Vehicle Regulations**

**Working Party on Brakes and Running Gear**

**Eightieth session**

Geneva, 15-18 September 2015

Item 5(a) of the provisional agenda

**Motorcycle Braking - Regulation No. 78**

Proposal of Supplement 3 to the 03 series of amendments to Regulation No. 78 (Uniform provisions concerning the approval of vehicles of category L with regard to braking)

Submitted by the expert from the European Commission[[1]](#footnote-2)\*

The text reproduced below was prepared by the expert from the European Commission to introduce amendments adding the remaining vehicle categories to the provisions for testing of anti-lock braking systems (ABS), based on documentGRRF-79-16, as agreed at the seventy-ninth GRRF session. The modifications to the current text of the Regulation are marked in bold for new or strikethrough for deleted characters.

I. Proposal

*Paragraph 1.*, amend to read:

"1. …

This Regulation applies to vehicles of **category L**.1

…"

*Paragraph 2.6.*, amend to read:

"2.6. "*Combined brake system (CBS)*" means:

For vehicle categories L1 and L3: a service brake system where at least two brakes on different wheels are operated by the actuation of a single control.

For vehicle categories **L2, L5, L6 and L7**: a service brake system where the brakes on all wheels are operated by the actuation of a single control.

…"

*Paragraph 5.1.4.,* amend to read:

"5.1.4. Parking brake system

If a parking brake system is fitted, it shall hold the vehicle stationary on the slope prescribed in paragraph 1.1.4. of Annex 3.

The parking brake system shall:

(a) Have a control which is separate from the service brake system controls; and

(b) Be held in the locked position by solely mechanical means.

Vehicles shall have configurations that enable a rider to be able to actuate the parking brake system while seated in the normal driving position.

For **L2, L4, L5, L6 and L7**, the parking brake system shall be tested in accordance with paragraph 8. of Annex 3."

*Paragraph 5.1.7.*, amend to read:

"5.1.7. Three-wheeled vehicles of category L2 **and four-wheeled vehicles of category L6** shall be equipped with a parking brake system plus one of the following service brake systems:

…"

*Paragraph 5.1.8.*, amend to read:

"5.1.8. Category L5 vehicles **and category L7 vehicles** shall be equipped with:"

*Annex 3,*

*Paragraph 1.1.5.*, amend to read:

"1.1.5. Test lane width:

For two-wheeled vehicles (vehicle categories L1 and L3) the test lane width is 2.5 m.

For three-wheeled **and four-wheeled** vehicles (vehicle categories **L2, L4, L5, L6 and L7**) the test lane width is 2.5 m plus the vehicle width."

*Paragraph 3.2.*, amend to read:

"3.2. Test conditions and procedure:

(a) Initial brake temperature: ≥  55 °C and ≤  100 °C;

(b) Test speed:

(i) Vehicle categories **L1, L2 and L6** : 40 km/h or 0.9 Vmax, whichever is lower;

(ii) Vehicle categories **L3, L4, L5 and L7**: 60 km/h or 0.9 Vmax, whichever is lower;

(c) Brake application:

(i) Each service brake system control actuated separately;

(d) Brake actuation force:

(i) Hand control: ≤  200 N;

(ii) Foot control: ≤  350 N for vehicle categories **L1, L2, L3, L4 and L6**;

≤  500 N for vehicle category **L5 and L7**;

…"

*Paragraph 3.3.,* amend to read:

"3.3. Performance requirements

When the brakes are tested in accordance with the test procedure set out in paragraph 3.2., the stopping distance shall be as specified in column 2 or the MFDD shall be as specified in column 3 of the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| *Column 1* | *Column 2* |  | *Column 3* |
| Vehicle  Category | STOPPING DISTANCE (S)  (Where V is the specified test speed in km/h and S is the required stopping distance in metres) |  | MFDD |
| Single brake system, front wheel(s) braking only: | | | |
| L1 | S ≤  0.1 V + 0.0111 V2 |  | ≥  3.4 m/s2 |
| **L2 and L6** | S ≤  0.1 V + 0.0143 V2 | ≥  2.7 m/s2 |
| L3 | S ≤  0.1 V + 0.0087 V2 | ≥  4.4 m/s2 |
| **L5 and L7** | Not applicable | Not applicable |
| L4 | S ≤  0.1 V + 0.0105 V2 |  | ≥  3.6 m/s2 |
| Single brake system, rear wheel(s) braking only: | | | |
| L1 | S ≤  0.1 V + 0.0143 V2 |  | ≥  2.7 m/s2 |
| **L2 and L6** | S ≤  0.1 V + 0.0143 V2 | ≥  2.7 m/s2 |
| L3 | S ≤  0.1 V + 0.0133 V2 | ≥  2.9 m/s2 |
| **L5 and L7** | Not applicable | Not applicable |
| L4 | S ≤  0.1 V + 0.0105 V2 |  | ≥  3.6 m/s2 |
| Vehicles with CBS or split service brake systems: for laden and lightly loaded conditions: | | | |
| **L1 L2 and L6** | S ≤  0.1 V + 0.0087 V2 |  | ≥  4.4 m/s2 |
| L3 | S ≤  0.1 V + 0.0076 V2 | ≥  5.1 m/s2 |
| **L5 and L7** | S ≤  0.1 V + 0.0077 V2 | ≥  5.0 m/s2 |
| L4 | S ≤  0.1 V + 0.0071 V2 |  | ≥  5.4 m/s2 |
| Vehicles with CBS – secondary service brake systems: | | | |
| ALL | S ≤  0.1 V + 0.0154 V2 |  | ≥  2.5 m/s2 |

*Paragraph 4.1.*, amend to read:

"4.1. Vehicle condition:

(a) The test is applicable to vehicle categories **L3, L4, L5 and L7**;

…"

*Paragraph 4.2.*, amend to read:

"4.2. Test conditions and procedure:

…

(d) Brake actuation force:

Hand control: ≤  250 N;

Foot control: ≤  400 N for vehicle categories L3 and L4;

≤  500 N for vehicle category **L5 and L7**;

…"

*Paragraph 5.1.*, amend to read:

"5.1. Vehicle condition:

(a) The test is applicable to vehicle categories **L3, L4, L5 and L7**;

…"

*Paragraph 5.2.*, amend to read:

"5.2. Test conditions and procedure:

…

(d) Brake actuation force:

Hand control: ≤  200 N;

Foot control: ≤  350 N for vehicle categories L3 and L4;

≤  500 N for vehicle category **L5 and L7** ;

…"

*Paragraph 7.1.*, amend to read:

"7.1. General:

…

(b) The test is applicable to vehicle categories **L3, L4, L5 and L7**;

…"

*Paragraph 7.2.2.*, amend to read:

"7.2.2. Test conditions and procedure:

…

(d) Brake actuation force:

Hand control: ≤  200 N;

Foot control: ≤  350 N for vehicle categories L3 and L4;

≤  500 N for vehicle category **L5 and L7** ;

…"

*Paragraph 8.1.*, amend to read:

"8.1. Vehicle condition:

(a) The test is applicable to vehicle categories **L2, L4, L5 and L7**;

…"

*Paragraph 9.1.*, amend to read:

"9.1. General:

(a) The tests are only applicable to the ABS **if** fitted ~~on vehicle categories~~  ~~L~~~~1~~ ~~and L~~~~3~~

…"

*Paragraph 10.2.*, amend to read:

"10.2. Vehicle condition:

(a) The test is applicable to vehicle categories **L3, L4, L5 and L7**;

…"

*Paragraph 11.3.*, amend to read:

"11.3. Performance requirements

…

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Column 1 | *Column 2* |  | | *Column 3* |
| Vehicle  Category | STOPPING DISTANCE(S)  (Where V is the specified test speed in km/h and S is the required stopping distance in metres) |  | | MFDD |
| Single brake system | | | | |
| L1 | S ≤  0.1 V + 0.0143 V2 |  | ≥  2.7 m/s2 | |
| **L2 and L6** | S ≤  0.1 V + 0.0143 V2 | ≥  2.7 m/s2 | |
| L3 | S ≤  0.1 V + 0.0133 V2 | ≥  2.9 m/s2 | |
| L4 | S ≤  0.1 V + 0.0105 V2 |  | ≥  3.6 m/s2 | |
| Vehicles with CBS or SSBS | | | | |
| ALL | S ≤  0.1 V + 0.0154 V2 |  | ≥  2.5 m/s2 | |

…"

*Paragraph 12.3.*, amend to read:

"12.3. Performance requirements

…

|  |  |  |
| --- | --- | --- |
| *Column 1* | *Column 2* | *Column 3* |
| *Vehicle*  *Category* | *STOPPING DISTANCE (S)*  *(Where V is the specified test speed in km/h and S is the required stopping distance in metres)* | *MFDD* |
| Front wheel(s) braking only | | |
| L1 | S ≤ 0.1 V + 0.0111 V2 | ≥ 3.4 m/s2 |
| L2 and L6 | S ≤ 0.1 V + 0.0143 V2 | ≥ 2.7 m/s2 |
| L3 | S ≤ 0.1 V + 0.0087 V2 | ≥ 4.4 m/s2 |
| L4 | S ≤ 0.1 V + 0.0105 V2 | ≥ 3.6 m/s2 |
| L5 and L7 | S ≤ 0.1 V + 0.0117 V2 | ≥ 3.3 m/s2 |
| Rear wheel(s) braking only | | |
| L1 | S ≤ 0.1 V + 0.0143 V2 | ≥ 2.7 m/s2 |
| L2 and L6 | S ≤ 0.1 V + 0.0143 V2 | ≥ 2.7 m/s2 |
| L3 | S ≤ 0.1 V + 0.0133 V2 | ≥ 2.9 m/s2 |
| L4 | S ≤ 0.1 V + 0.0105 V2 | ≥ 3.6 m/s2 |
| L5 and L7 | S ≤ 0.1 V + 0.0117 V2 | ≥ 3.3 m/s2 |

"

*Appendix 1,*

*Paragraph 1.2.*, amend to read:

"1.2. Vehicle condition:

(a) The test is applicable to **all vehicle categories.**

…"

II. Justification

1. The proposal is aimed to align the level of safety to that currently applicable in the European Union in terms of that offered by ABS on vehicles of category L, other than just on two-wheelers.

2. ABS requirements for tricycles already existed in Directive 93/14/EEC and were applied to quadricycles under the terms of Framework Directives 92/61/EEC and 2002/24/EC.

3. These provisions are currently lacking from UN regulation No. 78 and added in this proposal.

4. Although the requirements in the regulation are somewhat geared towards two-wheeled vehicles, (e.g. no split-mu for four-wheelers) they can and should also be applied vehicle categories L6 and L7 as has been the practise in the EU for many years.

1. \* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate. [↑](#footnote-ref-2)