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1958 Agreement – Consideration of draft amendments to existing Regulations submitted by GRRF

Proposal for Supplement 3 to the 03 series of amendments to Regulation No. 78 (Braking (category L vehicles))

Submitted by the Working Party on Brakes and Running Gear*

The text reproduced below was adopted by the Working Party on Brakes and Running Gear (GRRF) at its eightieth session (ECE/TRANS/WP.29/GRRF/80, para. 21) and at its eighty-first session (ECE/TRANS/WP.29/GRRF/81, paras. 21-23). It is based on Annex IV of the report of the eightieth session as well as Annex III of the report of the eighty-first session, ECE/TRANS/WP.29/GRRF/2015/42 and ECE/TRANS/WP.29/GRRF/2016/23 as amended by para. 23 of the corresponding session report. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee AC.1 for consideration at their June 2016 sessions.

* In accordance with the programme of work of the Inland Transport Committee for 2016–2017 (ECE/TRANS/254, para. 159 and ECE/TRANS/2016/28/Add.1, cluster 3.1), 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.

Supplement 3 to the 03 series of amendments to Regulation No. 78 (Braking (category L vehicles))

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 L_1 and L_3: a service brake system where at least two brakes on different wheels are operated by the actuation of a single control.

For vehicle categories L_2, L_5, L_6 and L_7: a service brake system where the brakes on all wheels are operated by the actuation of a single control.

…"

Insert new paragraph 2.30., to read:

"2.30. "*Emergency braking signal*" means logic signal indicating emergency braking specified in paragraphs 5.1.15 to 5.1.15.2. of this Regulation."

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 L_2, L_4, L_5, L_6 and L_7, 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 L_2 and four-wheeled vehicles of category L_6 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 L_5 vehicles and category L_7 vehicles shall be equipped with:"

Insert new paragraph 5.1.14., to read:

"5.1.14. The effectiveness of the braking systems, including the anti-lock system, shall not be adversely affected by magnetic or electrical fields. This shall be demonstrated by fulfilling the technical requirements and respecting the transitional provisions of Regulation No. 10 (EMC) by applying:

(a) The 03 series of amendments for vehicles without a coupling system for charging the Rechargeable Electric Energy Storage System (traction batteries);

(b) The 04 series of amendments for vehicles with a coupling system for charging the Rechargeable Electric Energy Storage System (traction batteries)."

Insert paragraphs 5.1.15. to 5.1.15.2. and footnote, to read:

"5.1.15. When a vehicle is equipped with the means to indicate emergency braking, activation and de-activation of the emergency braking signal shall only be generated by the application of the service braking system when the following conditions are fulfilled:*

5.1.15.1. The signal shall not be activated when the vehicle deceleration is below 6 m/s^2 but it may be generated at any deceleration at or above this value, the actual value being defined by the vehicle manufacturer.

The signal shall be de-activated at the latest when the deceleration has fallen below 2.5 m/s^2.

5.1.15.2. The following conditions may also be used:

(a) The signal may be generated from a prediction of the vehicle deceleration resulting from the braking demand respecting the activation and de-activation thresholds defined in paragraph 5.1.15.1. above;

or

(b) The signal may be activated at a speed above 50 km/h when the antilock system is fully cycling (as defined in paragraph 9.1. of Annex 3) and deceleration is at least 2.5m/s^2. The deceleration may be generated from the prediction described in point (a). The signal shall be deactivated when the antilock system is no longer fully cycling."

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* At the time of type approval, compliance with this requirement shall be confirmed by the vehicle manufacturer.

Insert new paragraph 5.1.16., to read:

"5.1.16. A means to deactivate the antilock brake system is not permitted.

By derogation, vehicles which are suitable for off road driving and fitted with a riding mode selector allowing an “off-road” or “all terrain” mode may be fitted with a single means (e.g. switch, lever, button, menu option) to disable the antilock brake system function, which is only permitted under the following conditions:

(a) The vehicle is stationary; and

(b) The disablement of the antilock brake system function shall be the result of a deliberate action by the rider according to one of the following methods:

(i) Simultaneous actuation of the antilock brake system on/off switch and the front, rear or combined brake system actuator (brake lever or pedal); or

(ii) The actuation of the antilock brake system on/off switch for a minimum of 2 seconds; or

(iii) The progression through at least 2 successive steps or levels of actuation of a rotating knob, a touch panel switch or a menu option selector;

(c) Disabling of the antilock brake system function shall only be allowed when the riding mode selector is in the “off-road” or “all terrain“ mode; and

(d) The antilock brake system function shall be automatically activated after each start-up of the vehicle, except for restarts after unintentional stalling of the engine; and

(e) The disablement of the antilock brake system function shall be indicated by the activation of symbol B.18 as specified in ISO 2575:2010/Amd1:2011 (ISO 7000-2623) or any other equivalent unequivocal indication of the disabled antilock brake system state. Alternatively the warning lamp referred to in paragraph 3.1.13. shall be continuously activated (i.e. lit or flashing); and

(f) Prohibition of any software and/or hardware defeat device compromising or allowing to circumnavigate one or more of the requirements set out in points (a) to (f); and

(g) Instantaneous re-enablement of a functional stage which complies with anti-lock brake system approval requirements of the antilock brake system under all operation modes shall be warranted and shall be demonstrated to the satisfaction of the certification authority (e.g. simple press of a button)."

Paragraph 9., amend to read:

"9. Transitional provisions

9.1. As from the official date of entry into force of the 04 series of amendments to this UN Regulation, no Contracting Party applying this UN Regulation shall refuse to grant or refuse to accept UN type approvals under this UN Regulation as amended by the 04 series of amendments.

9.2. As from 1 September 2018, Contracting Parties applying this UN Regulation shall grant approvals only if the type of vehicle corresponds to the requirements of the UN Regulation as amended by the 04 series of amendments.

9.3. As from 1 September 2021, Contracting Parties applying this Regulation shall not be obliged to accept, for the purpose of national or regional type approval, a vehicle type approved to the preceding series of amendments to this Regulation.

9.4 Notwithstanding the transitional provisions above, Contracting Parties whose application of this UN Regulation comes into force after the date of entry into force of the most recent series of amendments are not obliged to accept UN type approvals which were granted in accordance with any of the preceding series of amendments to this UN Regulation."

Annex 3,

Paragraph 1.1.5., amend to read:

"1.1.5. Test lane width:

For two-wheeled vehicles (vehicle categories L_1 and L_3) the test lane width is 2.5 m.

For three-wheeled and four-wheeled vehicles (vehicle categories L_2, L_4, L_5, L_6 and L_7) 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: $\geq$ 55 °C and $\leq$ 100 °C;

(b) Test speed:

(i) Vehicle categories L_1, L_2 and L_6 : 40 km/h or 0.9 Vmax, whichever is lower;

(ii) Vehicle categories L_3, L_4, L_5 and L_7: 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: $\leq$ 200 N;

(ii) Foot control: $\leq$ 350 N for vehicle categories L_1, L_2, L_3, L_4 and L_6;

$\leq$ 500 N for vehicle category L_5 and L_7;

…"

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:			
L_1	$S \leq 0.1\ V + 0.0111\ V^2$		$\geq$ 3.4 m/s^2
L_2 and L_6	$S \leq 0.1\ V + 0.0143\ V^2$		$\geq$ 2.7 m/s^2
L_3	$S \leq 0.1\ V + 0.0087\ V^2$		$\geq$ 4.4 m/s^2
L_5 and L_7	Not applicable		Not applicable
L_4	$S \leq 0.1\ V + 0.0105\ V^2$		$\geq$ 3.6 m/s^2
Single brake system, rear wheel(s) braking only:			

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*
L_1	$S \leq 0.1\ V + 0.0143\ V^2$		$\geq$ 2.7 m/s^2
L_2 and L_6	$S \leq 0.1\ V + 0.0143\ V^2$		$\geq$ 2.7 m/s^2
L_3	$S \leq 0.1\ V + 0.0133\ V^2$		$\geq$ 2.9 m/s^2
L_5 and L_7	Not applicable		Not applicable
L_4	$S \leq 0.1\ V + 0.0105\ V^2$		$\geq$ 3.6 m/s^2
Vehicles with CBS or split service brake systems: for laden and lightly loaded conditions:			
L_1 L_2 and L_6	$S \leq 0.1\ V + 0.0087\ V^2$		$\geq$ 4.4 m/s^2
L_3	$S \leq 0.1\ V + 0.0076\ V^2$		$\geq$ 5.1 m/s^2
L_5 and L_7	$S \leq 0.1\ V + 0.0077\ V^2$		$\geq$ 5.0 m/s^2
L_4	$S \leq 0.1\ V + 0.0071\ V^2$		$\geq$ 5.4 m/s^2
Vehicles with CBS – secondary service brake systems:			
ALL	$S \leq 0.1\ V + 0.0154\ V^2$		$\geq$ 2.5 m/s^2

Paragraph 4.1., amend to read:

"4.1. Vehicle condition:

(a) The test is applicable to vehicle categories L_3, L_4, L_5 and L_7;

…"

Paragraph 4.2., amend to read:

"4.2. Test conditions and procedure:

…

(d) Brake actuation force:

Hand control: $\leq$ 250 N;

Foot control: $\leq$ 400 N for vehicle categories L3 and L4;

$\leq$ 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 L_3, L_4, L_5 and L_7;

…"

Paragraph 5.2., amend to read:

"5.2. Test conditions and procedure:

…

(d) Brake actuation force:

Hand control: $\leq$ 200 N;

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

≤ 500 N for vehicle category L_5 and L_7 ;

…"

Paragraph 7.1., amend to read:

"7.1. General:

…

(b) The test is applicable to vehicle categories L_3, L_4, L_5 and L_7;

…"

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 L_2, L_4, L_5 and L_7;

…"

Paragraph 9.1., amend to read:

"9.1. General:

(a) The tests are only applicable to the ABS if fitted.

…"

Paragraph 10.2., amend to read:

"10.2. Vehicle condition:

(a) The test is applicable to vehicle categories L_3, L_4, L_5 and L_7;

…"

Paragraph 11.3., amend to read:

"11.3. Performance requirements

…

Column 1	*Column 2*		*Column 3*
Vehicle	*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			
L_1	$S \leq 0.1\ V + 0.0143\ V^2$		$\geq$ 2.7 m/s^2
L_2 and L_6	$S \leq 0.1\ V + 0.0143\ V^2$		$\geq$ 2.7 m/s^2
L_3	$S \leq 0.1\ V + 0.0133\ V^2$		$\geq$ 2.9 m/s^2
L_4	$S \leq 0.1\ V + 0.0105\ V^2$		$\geq$ 3.6 m/s^2
Vehicles with CBS or SSBS			
ALL	$S \leq 0.1\ V + 0.0154\ V^2$		$\geq$ 2.5 m/s^2

…"

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		
L_1	$S \leq 0.1\ V + 0.0111\ V^2$	$\geq$ 3.4 m/s^2
L_2 and L_6	$S \leq 0.1\ V + 0.0143\ V^2$	$\geq$ 2.7 m/s^2
L_3	$S \leq 0.1\ V + 0.0087\ V^2$	$\geq$ 4.4 m/s^2
L_4	$S \leq 0.1\ V + 0.0105\ V^2$	$\geq$ 3.6 m/s^2
L_5 and L_7	$S \leq 0.1\ V + 0.0117\ V^2$	$\geq$ 3.3 m/s^2
Rear wheel(s) braking only		
L_1	$S \leq 0.1\ V + 0.0143\ V^2$	$\geq$ 2.7 m/s^2
L_2 and L_6	$S \leq 0.1\ V + 0.0143\ V^2$	$\geq$ 2.7 m/s^2
L_3	$S \leq 0.1\ V + 0.0133\ V^2$	$\geq$ 2.9 m/s^2
L_4	$S \leq 0.1\ V + 0.0105\ V^2$	$\geq$ 3.6 m/s^2
L_5 and L_7	$S \leq 0.1\ V + 0.0117\ V^2$	$\geq$ 3.3 m/s^2

"

Appendix 1,

Paragraph 1.2., amend to read:

"1.2. Vehicle condition:

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

…"