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**Economic Commission for Europe**

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations

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Geneva, 22 – 25 June 2010

Item 4.2.12 of the provisional agenda

**1958 Agreement - Consideration of draft  
amendments to existing Regulations****Proposal for Supplement 1 to Regulation No. 124  
(Replacement wheels)****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 sixty-seventh session in order to extend the scope of the regulation, to facilitate the application by manufacturers of light alloy wheels and to avoid misunderstandings at the required wheel tests. It is based on ECE/TRANS/WP.29/GRRF/2009/30 and GRRF-67-09-Rev. 1, as reproduced in Annex VI to the report (ECE/TRANS/WP.29/GRRF/67, para. 31). It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee (AC.1) for consideration.

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\* 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 the performance of vehicles. The present document is submitted in conformity with that mandate.

*The list of Contents*, amend to read:

“ ...

Annex 9 – Reserved

... ”

*The text of the Regulation*

*Paragraph 1.*, amend to read (including the existing footnote 1/):

“1. This Regulation covers new replacement wheels designed for vehicles of categories M<sub>1</sub>, M<sub>1</sub>G, N<sub>1</sub>, N<sub>1</sub>G, O<sub>1</sub> and O<sub>2</sub> 1/

It does not apply...

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1/ Categories M, N, and O as defined in Annex 7 to the Consolidated Resolution on the Construction of Vehicles (R.E.3) (document TRANS/WP.29/78/Rev.1/Amend.2).”

*Insert a new paragraph 2.1.5.*, to read:

“2.1.5. “PCD”, means the pitch circle diameter of bolt holes.”

*Insert a new paragraph 2.2.8.*, to read:

“2.2.8. “Styling”, the wheel’s geometric shape, including basic contour and ratio between voids and material.”

*Paragraphs 2.4.3. and 2.4.4.*, amend to read:

“2.4.3. “Replica ... contour, dimensions, inset/outset, material...wheels;

2.4.4. “Pattern ... the design, inset/outset, rim designation...different.”

*Paragraphs 2.6.*, amend to read:

“2.6. “Inset/outset /zeroset” means the distance from the attachment face of the disc to the centre line of the rim (positive for inset as shown in Figure 1 below; negative for outset ; zero for zeroset).”

*Insert a new paragraph 2.12.*, to read:

“2.12. “Wheel family”, are in case of light alloy, wheels of the same type; however, with different inset/outset values, PCD and centre bore.”

*Paragraph 3.1.2.2.*, amend to read:

“3.1.2.2. rim contour designation - wheel inset/outset - wheel attachment details;”

*Paragraph 3.1.2.9.*, amend to read:

“3.1.2.9. maximum load capacity at rolling circumference;”

*Paragraph 4.5.*, amend to read:

“4.5. The approval mark shall be permanent, visible, and clearly legible on the outward facing side of the wheel, when the wheel is fitted on the vehicle.”

*Paragraph 5.1.3.*, amend to read:

“5.1.3. the wheel inset/outset (positive for inset; negative for outset);”

*Paragraph 5.1.5.*, amend to read:

“5.1.5. part number of the wheel / rim (optional wheel type).”

Paragraph 6.5.2.2.(e), should be deleted.

Paragraph 6.5.3.2.(e), should be deleted.

Paragraph 6.6., amend to read:

“6.6. Where a wheel manufacturer submits an application for type approval for a wheel family, it is not necessary to carry out tests for each wheel version. Worst case selection ...”

Paragraph 6.7.1, amend to read:

“6.7.1. The nominal rim diameter, nominal rim width and nominal inset/outset of ECE-approved ...”

Insert a new paragraph 6.8., to read:

“6.8. When the replacement wheel is mounted on the vehicle, the requirements of paragraphs 5.2.1.11.2.1. or 5.2.2.8.2.1. of Regulation No. 13 or paragraph 5.2.11.2.1. of Regulation No. 13-H shall be fulfilled.”

Annex 1

Item 2.5., amend to read:

“2.5. Wheel inset/outset:.....”

Item 2.7., amend to read:

“2.7. Maximum wheel load and respective theoretical rolling circumference.....”

Annex 3, amend the last sentence, to read:

“The marking shall be at a position selected by the manufacturer. It shall be easily visible and clearly legible after the tyre has been mounted to the wheel.”

Annex 4

The table, amend to read:

“

Material	Tests
Aluminium alloy	a, b, c, e
Magnesium alloy	a, b, c, e
Steel	a, b, d

”

Paragraphs (c) to (e), amend to read:

- “(c) Check of the material characteristics (Rp0,2 , Rm and A) of specimen taken from critical zones (such as the spoke, for example) as well as the inner and the outer rim flange. The take-off points and position of the samples must be depicted in the drawing.
- (d) Analysis of the defects and of the new material structure.
- (e) Analysis of the metallurgic defects and structure taken from the transition zone of the wheel disc and rim or from the fracture zone, if applicable.”

Annex 5, paragraph 1.1., amend to read:

“1.1. Sample preparation

A surface treated sample, taken from the production, shall be damaged by cross engraving (ISO 2409:2007) and stone impact (ISO 20567-1:2005) to represent ...”

*Annex 6*

*Paragraph 2.*, amend to read:

“2. Formula for the bending moment calculation

.....

$d$  = inset/outset (positive for inset ; negative for outset) [m]

....”

*Paragraph 3.*, *the table*, replace “ $M_1$  and  $M_1 G$ ” by “ $M_1$ ,  $M_1 G$ ,  $N_1$ , and  $N_1 G$ ”

*Paragraph 4.*, amend to read:

“4. Test schedule for wheel families

Wheels of a wheel type with the same number of wheel attachment holes, same styling, different PCD and/or different inset/outset values can be grouped at the same or at a lower value of test bending moment taking into account the test schedule to follow. Wheels with the largest centre hole diameter shall be included in the test.

In the case of a negative test, due to material failures, it can be compensated by two positive tests of the same wheel version. If either or both of the final two samples fail, then the application for approval of the replacement wheel shall be rejected.

Necessary tests: ...”

*Annex 7*

*Paragraph 1.*, amend to read:

“1. Test description

In the rolling test ...shall be tested.

In the case of a negative test, due to material failures, it can be compensated by two positive tests of the same wheel version. If either or both of the final two samples fail, then the application for approval of the replacement wheel shall be rejected.”

*Paragraph 3*

*The table*, replace “ $M_1$  and  $M_1 G$ ” by “ $M_1$ ,  $M_1 G$ ,  $N_1$  and  $N_1 G$ .”

*Footnote 1/*, amend to read:

“1/ Only for steel disc wheels.”

*Annex 8*

*Paragraph 1.*, amend to read:

“1. Test description

The fracture behaviour of the wheel striking an object at the outer rim flange shall be checked at critical positions. For proof of adequate fracture behaviour, an impact test according to ISO 7141:2005 shall be carried out.

In the case of a negative test, due to material failures, it can be compensated by two positive tests of the same wheel version. If either or both of the final two samples fail, then the application for approval of the replacement wheel shall be rejected.”

Paragraph 3, amend line 1 and line 2 of the table, to read:

“

	M <sub>1</sub> , N <sub>1</sub> , M <sub>1</sub> G and N <sub>1</sub> G
Procedure and requirements	ISO 7141: 2005

.....”

Paragraph 4., amend to read:

“4. Tests schedule for wheel families

Wheels to be tested	Impact test
Smallest pitch test diameter	One for each impact position
Largest pitch circle diameter	One for each impact position
deviation of inset value up to -15 mm	--
more than -15 mm and larger than +2 mm	one for each impact position

“

Insert a new paragraph 5., to read:

“5. Failure criteria

The wheel will not pass the test if one of the following criteria applies:

- (a) visible incipient crack in a zone of the wheel disc of wheel assembly;
- (b) the centre member separates from the rim;
- (c) total loss of pressure within one minute.

The wheel is not considered to have failed the test by deformation of the wheel assembly or by fractures in the area of a rim section struck by the face plate of the striker.”

Annex 8 – Appendix, should be deleted.

Annex 9, amend to read:

“Annex 9

Reserved”

*Annex 10*

*Paragraph 1.1.*, amend to read:

“1.1. Wheel characteristics  
ECE approval number, ... and inset/outset.”

*Paragraph 1.2.*, amend to read:

“1.2. Vehicle characteristics  
Those vehicle characteristics should be listed that distinctly describe the vehicle type and version for which the wheel will be used. Thereby, depending on the restriction of the range of application of various markets with respect to certain vehicle versions and variants, various specification characteristics are possible.

Absolutely required are the data of:

- (a) Vehicle manufacturer;
- (b) Vehicle type:

Additional optional data, e.g.:

- (c) Vehicle approval number; (if applicable variant/ version)
- (d) Engine performance (also possible range of performance).

Other specification characteristics / restrictions may also be used.”

*Paragraph 1.5.*, amend to read (including a new footnote 2):

“1.5. Example of possible structures of the application and fitting information table  
Wheel characteristics (mandatory fields in bold characters)

Approval Number	
Wheel Type	

Size	Fixing holes / pcd (mm)		Inset/outset <sup>2</sup> (mm)	Max. wheel load (N)
6 Jx15 H2				
Wheel marking (Variant/Version)	centering marking	Centering (mm)	date of manufacture (week/year)	at circumference (mm)

Vehicles' characteristics as well as additional conditions and advice

Vehicle manufacturer: .....

<sup>2</sup> positive for inset; negative for outset

Fitting parts e.g. special bolts delivered by the wheel manufacturer  
M14x1.5, conical angle 60°, length of piston skirt xx mm

Vehicle Type			
Approval No.			
Performance ( kW from – to)	Vehicle Model name	Permissible tyre size front and rear axle	Additional conditions and advice
			A01)A02)A03) E01)

Conditions and Advice

A01) e.g. kind of balancing weights and their place of fitting;

A02) e.g. kind of possible valves;

A03) e.g. for using manufacturer's replacement wheels only the standard fitting parts are allowed;

E01) e.g. not allowed on 4x4 vehicles.”