Transmitted by the Chair of GRB

Informal document **GRB-54-12**
(54th GRB, 19-21 September 2011,
agenda item 6)

Amending ECE/TRANS/WP.29/GRB/2011/11

I. Proposal

Annex 6

Paragraph 3.5., amend to read:

"3.5. Duration and speed.

When the deceleration method is selected, the following requirements apply:

(a) **The deceleration j shall be determined in exact dω/dt or approximate Δω/Δt form, where ω is angular velocity, t – time**

(b) For duration Δt, the time increments shall not exceed 0.5 s;

(c) Any variation of the test drum speed shall not exceed 1 km/h within one time increment."

Paragraph 4.6.2., amend to read:

"4.6.2. Deceleration method

The deceleration method follows the procedure below:

(a) Remove the tyre from the test surface;

(b) Record the deceleration of the test drum $\mathbf{j_{D0}}$ and that of the unloaded tyre $\mathbf{j_{T0}}$ **in exact or approximate form in accordance with paragraph 3.5.**"

Paragraph 5.1.5., amend to read:

"5.1.5. Deceleration method

Calculate the parasitic losses F_{pl}, in newton.

$$F_{pl} = \frac{I_D}{R}\left(\frac{\Delta\omega_{D0}}{\Delta t_0}\right) + \frac{I_T}{R_r}\left(\frac{\Delta\omega_{T0}}{\Delta t_0}\right)$$

Where:

I_D	is the test drum inertia in rotation, in kilogram meter squared,
R	is the test drum surface radius, in meter,
ω_{D0}	is the test drum angular speed, without tyre, in radians per second,
Δt_0	is the time increment chosen for the measurement of the parasitic losses without tyre, in second,
I_T	is the spindle, tyre and wheel inertia in rotation, in kilogram meter squared,
R	is the tyre rolling radius, in metre,
ω_{T0}	is the tyre angular speed, unloaded tyre, in radian per second.

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Or

$$F_{pl} = \frac{I_D}{R} j_{D0} + \frac{I_T}{R_r} j_{T0}$$

where:

ID	**is the test drum inertia in rotation, in kilogram meter squared;**
R	**is the test drum surface radius, in meter;**
j_{D0}	**is the deceleration of the test drum, without tyre, in radians per second squared;**
IT	**is the spindle, tyre and wheel inertia in rotation, in kilogram meter squared;**
Rr	**is the tyre rolling radius, in metre;**
j_{T0}	**is the deceleration of unloaded tyre, in radians per second squared."**

Paragraph 5.2.5., amend to read:

"5.2.5. Deceleration method

The rolling resistance F_r, in newton, is calculated using the equation:

$$F_r = \frac{I_D}{R}\left(\frac{\Delta\omega_v}{\Delta t_v}\right) + \frac{RI_T}{R_r^2}\left(\frac{\Delta\omega_v}{\Delta t_v}\right) - F_{pl}$$

Where:

ID	is the test drum inertia in rotation, in kilogram metre squared,
R	is the test drum surface radius, in meter,
F_{pl}	represents the parasitic losses as calculated in paragraph 5.1.5.,
Δt_v	is the time increment chosen for measurement, in second,
$\Delta\omega_v$	is the test drum angular speed increment, without tyre, in radian per second,
I_T	is the spindle, tyre and wheel inertia in rotation, in kilogram metre squared,
R_r	is the tyre rolling radius, in metre,
F_r	is the rolling resistance, in newton.

Or

$$Fr = \frac{I_D}{R} j_V + \frac{RI_T}{R_r^2} j_V - F_{pl}$$

where:

Where:

ID	**is the test drum inertia in rotation, in kilogram metre squared,**
R	**is the test drum surface radius, in meter,**
F_{pl}	**represents the parasitic losses as calculated in paragraph 5.1.5.,**
jV	**is the deceleration of the test drum, in radians per second squared,**
I_T	**is the spindle, tyre and wheel inertia in rotation, in kilogram metre squared,**
R_r	**is the tyre rolling radius, in metre,**
F_r	**is the rolling resistance, in newton."**

Annex 6, Appendix 1

Paragraph 4, amend to read:

"4. Control accuracy

…

(d) time: +/- ~~0.02 s~~ **0.5 ms**

…"