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World Forum for Harmonization of Vehicle Regulations (WP.29)

Working Party on Brakes and Running Gear (GRRF)
(Fifty-ninth session, 30 January - 3 February 2006,
agenda item 1.2.)

REVISED PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 13 */

(Braking)

Transmitted by the expert from the United Kingdom

Note: The text reproduced below has been prepared by the expert from the United Kingdom to clarify Periodical Technical Inspection (PTI) and wear indicators on service brake linings. It is a revised version of TRANS/WP.29/GRRF/2004/23 and informal document No. GRRF-58-7, taking into consideration comments made on it during the fifty-eighth session of GRRF.

The modifications to the current text of the Regulation are marked in **bold** characters and the modifications to TRANS/WP.29/GRRF/2004/23 are either strikethrough or marked in ***bold-italics*** characters.

Note: This document is distributed to the Experts on Brakes and Running Gear only.
*/ The present document has previously been circulated under the symbol "TRANS/WP.29/GRRF/2004/23".

A. PROPOSAL

Paragraph 5.2.1.11.2.1., amend to read:

"5.2.1.11.2.1. It shall be possible to easily **assess** ~~check~~ this wear on service brake linings from the outside or underside of the vehicle, **without the removal of the wheels, by the provision of appropriate inspection holes or by some other means. This may be achieved by** utilizing ~~only~~ **simple standard workshop tools or common inspection equipment for vehicles**. ~~***e.g. mirror, endoscope etc.*** tools or equipment normally supplied with the vehicle, for instance by the provision of appropriate inspection holes or by some other means.~~ Alternatively, acoustic or optical devices ***fitted to at least one lining per brake per wheel which will*** warn~~*ing*~~ the driver at his driving position when lining replacement is necessary are acceptable. The yellow warning signal specified in paragraph 5.2.1.29.1.2. below may be used as the optical warning signal."

Paragraph 5.2.1.11.2.2., amend to read:

"5.2.1.11.2.2. Assessment of the wear condition of the friction surfaces of brake discs or drums may only be performed by direct measurement of **the** actual component **or examination of** ~~***any***~~ **wear indicators**, which may necessitate some level of disassembly."

Insert new paragraph~~s~~ 5.2.1.11.2.2.1. ~~*and 5.2.1.11.2.2.2.*~~, to read:

"~~***5.2.1.11.2.2.1. At the time of manufacture, the manufacturer shall either:***~~

~~***(a) Mark the disc with the value of the minimum thickness or the drum with the value of the maximum diameter, permissible before replacement is necessary. This should be on a part of the component least likely to suffer from deterioration due to corrosion, or***~~

~~***(b) Permanently mark both friction surfaces of the disc or the friction surface of the drum with a wear indicator. This may be*** **in the form of an indentation, a groove or other appropriate method.**~~

5.2.1.11.2.2.1. **At the time of type approval, the vehicle manufacturer shall define the following:**

(a) The method by which wear of the friction surfaces of drums and discs may be assessed, including the level of disassembly required and the tools and process required to achieve this.

(b) Information defining the maximum acceptable wear limit at the point at which replacement becomes necessary.

This information shall be made freely available, e.g. vehicle handbook or electronic data record."

Paragraphs 5.2.2.8.2.1. and 5.2.2.8.2.2., amend to read:

"5.2.2.8.2.1. It shall be possible to easily ***assess*** ~~*check*~~ this wear on service brake linings from the outside or underside of the vehicle, **without the removal of the wheels, by the provision of appropriate inspection holes or by some other means. This may be achieved by** utilizing ~~only~~ **simple standard workshop tools or common inspection equipment** ***for vehicles*** ~~***e.g. mirror, endoscope, etc.***~~ ***Alternatively, a trailer mounted display providing information when lining replacement is necessary or an optical device fitted to at least one lining per brake per wheel which will warn~~ing~~ the driver at his driving position when lining replacement is necessary are acceptable. The yellow warning signal specified in paragraph 5.2.1.29.2. above may be used as the optical warning signal provided that signal complies with the requirements of paragraph 5.2.1.29.6. above.***"

5.2.2.8.2.2. Assessment of the wear condition of the friction surfaces of brake discs or drums may only be performed by direct measurement of the actual component **or examination of wear indicators**, which may necessitate some level of disassembly."

Insert new paragraph~~s~~ 5.2.2.8.2.2.1. and ~~5.2.2.8.2.2.2.~~, to read:

"~~***5.2.2.8.2.2.1. At the time of manufacture, the manufacturer shall either:***~~

~~***(a) Mark the disc with the value of the minimum thickness or the drum with the value of the maximum diameter, permissible before replacement is necessary. This should be on a part of the component least likely to suffer from deterioration due to corrosion, or***~~

~~***(b) Permanently mark both friction surfaces of the disc or the friction surface of the drum with a wear indicator. This may be in the form of an indentation, a groove or other appropriate method.***~~

5.2.2.8.2.2.1. **At the time of type approval, the vehicle manufacturer shall define the following:**

(a) The method by which wear of the friction surfaces of drums and discs may be assessed, including the level of disassembly required and the tools and process required to achieve this.

(b) Information defining the maximum acceptable wear limit at the point at which replacement becomes necessary.

This information shall be made freely available e.g. vehicle handbook or electronic data record."

B. JUSTIFICATION

At the fifty-fifth session of GRRF, it was agreed that the United Kingdom would amend document TRANS/WP.29/GRRF/2004/5 taking into consideration the CLEPA comments concerning the marking of discs and drums.

Further consideration has been given to the revised documents TRANS/WP.29/GRRF/2004/23, informal document No. GRRF-58-07 and, to make progress, the United Kingdom is proposing to use informal document No. GRRF-56-11 transmitted by CLEPA as a basis to temporarily remove the requirement to permanently mark the disc or drum with the thickness at which the component should be replaced. However, to have a structured discussion on the issue surrounding the marking of drums and discs, the United Kingdom is requesting that GRRF agree to this item being moved to the Replacement Drum and Disc adhoc meeting.

In the case of a motor vehicle, it is possible to provide either acoustical or optical warning when the wear limit of the friction material has reached a level where it should be replaced, although no such provision exists for the trailer. In association with the widespread use of disc brakes, manufacturers have introduced a brake wear monitoring system powered from the ISO 7638 via the ABS or braking system. Therefore, there is the capability to provide a warning of the wear status on the friction material of the trailer brakes. This information can be accessed in three ways:

- Dedicated brake wear monitoring display mounted on the trailer with available information to the driver.
- An information display connected to the braking system which is able to display trailer related information including the status of the friction material to the driver.
- Utilize the yellow trailer warning signal which is signalled via Pin 5 of the ISO 7638 connector.

In the latter case, the use of the yellow trailer warning signal would be controlled by the reference to paragraph 5.2.1.29.6. which would ensure that the indication of prescribed faults by that signal when a braking system fault is present is not compromised, as it is considered that it is adequate that the driver should only be warned that the friction material wear limit has been reached every time the ignition is turned on and no prescribed faults are present.

All of the above options should be accepted as recognition of compliance with the requirement to provide indication of the wear status of the friction material.

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