Informal document GRRF-83-26
83rd GRRF, 23-27 January 2017
Agenda item 6

UN Regulation No. 90
Special Interest Group, SIG
1st Meeting, UTAC, Paris, 21st July 2016
2nd Meeting, IDIADA Spain 19th October 2016

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Summary

00_ Introduction

01_ Attendance

02_ Items of Discussion

03_ Next steps
00_ Introduction

On February 2016, GRRF, it was proposed the convenience of opening the discussion about the last modifications of ECE R90 in particular, questions of interpretation in the field of DISCS and DRUMS homologation.

An initial meeting was called July 2016 to evaluate discrepancies and ambiguities in the Regulation with the aim to report GRRF the eventual necessity to re-open the AdHoc UNECE/GRRF Working Group on Brake components.

The second meeting in October 2016 had more participants and contributions and more issues open.
01 Attendance UTAC Paris July 2016

15 Delegates from Technical Services, Industry and associations were present:

- UTAC (host)
- IDIADA (secretary)
- TÜV NORD
- TÜV SÜD
- TRW
- EURAC Poole
- Continental
- SMMT
01_ Attendance 2nd Meeting: IDIADA Spain

17 Delegates: More manufacturers/associations represented
- IDIADA (host / secretary)
- UTAC
- TÜV NORD
- TÜV SÜD
- FEMFM
- SMMT
- TRW
- EURAC Poole
- Continental
- Federal Mogul
- Meritor
- MERA Motor & Equipment Remanufacturers Association
02_ Items of Discussion

Consideration was given to the following aspects:

**Regarding the current UN Regulation No 90.02**

- Brake disc type definition (in particular, the effect of ventilation design)
- Concept of equivalent disc
- Consideration of other materials (Carbon fiber…)
- Inertia values and mass (front / rear) distribution
- (OICA help will be requested)
- Testing details. Calculation of inertia used to simulate
- Light trailers: new testing procedure
02_ Items of Discussion

- **Brake disc type definition** (in particular, the effect of ventilation design)
- Pillars / Vains
- Internal / External ventilation

- Agreement (within the group) was made
  → Internal/vanes
  → Internal/pillar
  → External/vanes
  → External/pillar
02_ Items of Discussion

- Material composition
- Table of foreseen materials

The table is not realistic, represents only a particular production and cannot be used as mandatory requirement. This point is to be revised.

<table>
<thead>
<tr>
<th>Test standard</th>
<th>Sub-group 1 Base cast iron DIN EN 1561 EN-GJL-200</th>
<th>Sub-group 2 Base high carbon EN-GJL-150</th>
<th>Sub-group 3 Alloved high carbon</th>
<th>Sub-group 4 Unalloyed high carbon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Content (per cent)</td>
<td>3.20-3.60</td>
<td>3.60-3.90</td>
<td>3.55-3.90</td>
<td>3.60-3.90</td>
</tr>
<tr>
<td>Silicon Content (per cent)</td>
<td>1.70-2.30</td>
<td>1.60-2.20</td>
<td>1.60-2.20</td>
<td>1.60-2.20</td>
</tr>
<tr>
<td>Manganese Content (per cent)</td>
<td>Min 0.40</td>
<td>Min 0.40</td>
<td>Min 0.40</td>
<td>Min 0.40</td>
</tr>
<tr>
<td>Chromium Content (per cent)</td>
<td>Max 0.35</td>
<td>Max 0.35</td>
<td>0.30-0.60</td>
<td>Max 0.25</td>
</tr>
<tr>
<td>Copper Content (per cent)</td>
<td>–</td>
<td>0.30-0.70</td>
<td>0.30-0.70</td>
<td>Max 0.40</td>
</tr>
<tr>
<td>Tensile strength (N/mm²)</td>
<td>ISO 6892:1998</td>
<td>Min 220</td>
<td>Min 160</td>
<td>Min 170</td>
</tr>
</tbody>
</table>

Concepts of Equivalent? (Interchangeable Does not need table)

To be revised/ Deleted?
02_ Items of Discussion

- Consideration of other materials (Carbon fiber…)
- **Carbon ceramic** discs can be approved as AM provided that the original R13H includes carbon ceramic OE
- Carbon C, cannot be the replacement for an classical friction OE material approve to UN R13H
- Same for brake pads specific for these
02_ Items of Discussion

Testing or Approval process details: Discrepancies and ambiguities in the homologation of brake PADS or SHOES - R13H verification in dynamometer test bench? - Selection of OE for old references (not on sale) - Differences between results from vehicle test vs dyno test - Number of tests necessary…. GRANDFATHERING ???

Group recalled this practice is not legal
02. Items of Discussion

Testing or Approval process details: Discrepancies and ambiguities in the homologation of brake pads or discs
Inertia dynamometer test
- Mass distribution between axles for M1
  The current table is considered obsolete or not applicable to all types of cars (eg, supersportive ones)
Seek contribution from OICA to update it

<table>
<thead>
<tr>
<th>Vehicle category</th>
<th>Percentage by mass m to be taken into account</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X values (front axle)</td>
</tr>
<tr>
<td>M1</td>
<td>77</td>
</tr>
<tr>
<td>M2</td>
<td>69</td>
</tr>
<tr>
<td>N1</td>
<td>66</td>
</tr>
<tr>
<td>M3, N2, N3</td>
<td>55</td>
</tr>
</tbody>
</table>
02_ Items of Discussion

Administrative provisions:
labeling and marking
Maximum mass for the reference in the label?
02_ Items of Discussion

- **New vehicle categories: L7!**
- Define prescriptions..
02_ Items of Discussion

**New items to be considered**

- Members highlighted the poor quality and the bad quality consistency of many IAM calipers, in particular CV_CALIPERS

- Proposal was made to include AM calipers in the scope of Reg. 90

- Parallel consideration to remanufactured ones
- (Side discussion)
02_ Items of Discussion

New items to be considered: Harmonized COP

- Industry asks for higher harmonization in the COP audits and periodic verifications

- Proposal for a common COP check list included in the Regulation to guarantee that requirements demanded to applicants are equivalent…

- AND they require the common recognition of audits between different Approval Authorities to avoid repetition of visits… ¿?
02_ Items of Discussion

- **Remanufactured Products**: Members report about remanufactured brake parts flooding the after market.
- Consider remanufactured components within a (separate) ECE Regulation?'
- In particular, remanufactures **calipers**
- WARNING: a recycled part cannot be approved if the original one is not approved.
- Similar approach: Retread tyres, approval of the **process** (same test procedure as per new ones)
03_ Next steps

Compromises still pending:
- Industry to justify the necessity of caliper regulation
- Industry to justify the regulation for remanufacturing
- Industry to propose critical parameters and tests representative for caliper homologation
- All members: to progress and contribute in the open issues
03_ Next steps

Still a number of open issues and new ones are raised each meeting: Final decision by the group to be made:

**to ask or not to ask**

The endorsement for the creation of the AdHoc Group

Virtual communication between members to compile all issues and take a final decision (or several)

- Ask for the creation of the group

- Draft agreements and present informal document to GRRF

- Discriminate matters (pads/discs/callipers)
Thank you very much for your kind attention

Questions?
Ideas?
Proposals?
Guidance???

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