



YOUR DEVELOPMENT PARTNER

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:

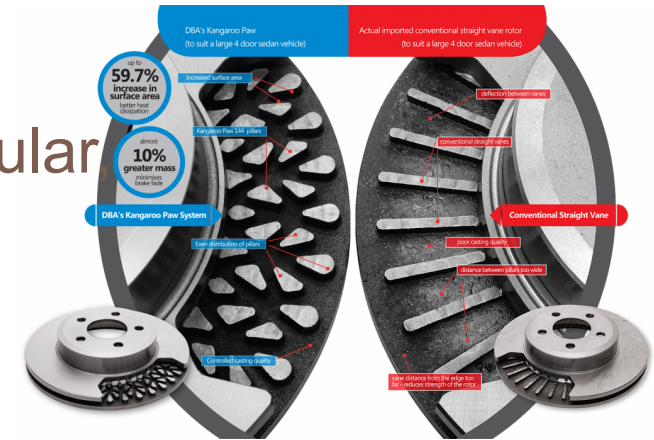
Regarding the current UN Regulation No 90.02

- 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

Concepts of ***Equivalent?***
(Interchangeable)
Does not need table

To be revised/
Deleted?

	<i>Test standard</i>	<i>Sub-group 1 Base cast iron DIN EN 1561 EN-GJL-200</i>	<i>Sub-group 2 Base high carbon EN-GJL-150</i>	<i>Sub-group 3 Alloyed high carbon</i>	<i>Sub-group 4 Unalloyed high carbon</i>
Carbon Content (per cent)		3.20-3.60	3.60-3.90	3.55-3.90	3.60-3.90
Silicon Content (per cent)		1.70-2.30	1.60-2.20	1.60-2.20	1.60-2.20
Manganese Content (per cent)		Min 0.40	Min 0.40	Min 0.40	Min 0.40
Chromium Content (per cent)		Max 0.35	Max 0.35	0.30-0.60	Max 0.25
Copper Content (per cent)		-	0.30-0.70	0.30-0.70	Max 0.40
Hardness HBW	ISO 6506-1:2005	190-248	160-210	180-230	160-200
Tensile strength (N/mm ²)	ISO 6892:1998	Min 220	Min 160	Min 170	Min 150

02_ Items of Discussion

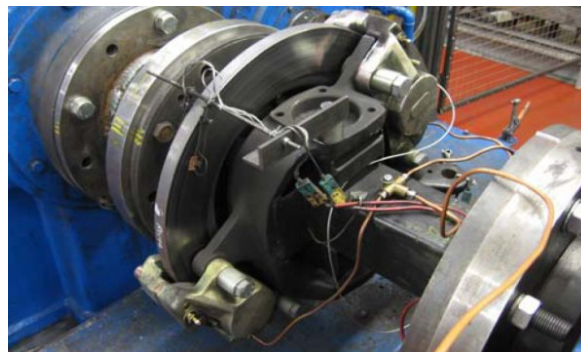
- Consideration of other materials (Carbon fiber...)
- **Carbon ceramic** discs can be approved as AM provided that the original R13H includes carbon ceramic OE
- Carbon C, cannot be the replacement for an classical friction OE material approve to UN R13H
- Same for brake pads specific for these

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

<i>Vehicle category</i>	<i>Percentage by mass m to be taken into account</i>	
	<i>X values (front axle)</i>	<i>Y values (rear axle)</i>
M1	77	32
M ₂	69	44
N ₁	66	39
M ₃ , N ₂ , N ₃	55	55

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... ¿?



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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/calipers)

Thank you very much for your kind attention



Questions?
Ideas?
Proposals?
Guidance???

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