


**Economic Commission for Europe**
**Inland Transport Committee**
**World Forum for Harmonization of Vehicle Regulations**
**Working Party on Brakes and Running Gear**
**Eighty-third session**

Geneva, 23-27 January 2017

**Report of the Working Party on Brakes and Running Gear  
 on its eighty-third session**
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## I. Attendance

1. The Working Party on Brakes and Running Gear (GRRF) held its eighty-third session from 23 to 27 January 2017 in Geneva. The meeting was chaired by the elected Chair of GRRF, Mr. B. Frost (United Kingdom of Great Britain and Northern Ireland). Experts from the following countries participated in the work, following Rule 1(a) of the Rules of Procedure of the World Forum for Harmonization of Vehicle Regulations (WP.29) (TRANS/WP.29/690, ECE/TRANS/WP.29/690/Amend.1 and Amend. 2): Belgium, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Hungary, India, Italy, Japan, the Netherlands, Norway, Poland, Russian Federation, Republic of Korea, Slovakia, South Africa, Spain, Sweden, Switzerland and the United Kingdom of Great Britain and Northern Ireland (UK). An expert from the European Commission (EC) also participated. Experts from the following non-governmental organizations (NGOs) participated: the International Motor Vehicle Inspection Committee (CITA), the European Association of Automotive Suppliers (CLEPA/MEMA/JAPIA), the European Tyre and Rim Technical Organisation (ETRTO), the Federation of European Manufacturers of Friction Materials (FEMFM), the International Motorcycle Manufacturers Association (IMMA), the International Organization for Standardization (ISO) and the International Organization of Motor Vehicle Manufacturers (OICA). Upon the special invitation of the Chair and the secretariat, the following NGOs participated: Imported Tyre Manufacturers Association (ITMA) and the Recreational Vehicle Industry Association (RVIA).

## II. Adoption of the agenda (agenda item 1)

*Documentation:* ECE/TRANS/WP.29/GRRF/2017/1  
Informal documents GRRF-83-01, GRRF-83-02 and GRRF-83-03

2. GRRF considered the agenda prepared for the eighty-third session and adopted it (ECE/TRANS/WP.29/GRRF/2017/1) as updated and reproduced in GRRF-83-02, including all informal documents received until the session's starting date.
3. GRRF also adopted the running order for the session as proposed in GRRF-83-01. The informal documents distributed during the session are listed in Annex I of this report.
4. The secretariat introduced GRRF-83-03, announcing that the next GRRF session would take place on 19-22 September 2017 and recalling that the deadline for the submission of official documents would be 26 June 2017.

## III. Advanced Emergency Braking Systems and Lane Departure Warning Systems (agenda item 2)

*Documentation:* Informal documents GRRF-83-17 and GRRF-83-18

5. The secretariat reminded that *Footnote 5* in the table of Annex 3 in the 01 series of amendments to Regulation No. 131 imposes the review of the target speed in cell H2 before 1 November 2021.
6. The expert from Japan introduced GRRF-83-17 (relevant for agenda item 2 as well as item 11) proposing to extend the scope of Regulation No. 131 (Advanced Emergency Braking Systems (AEBS)) to vehicles of category M<sub>1</sub> and N<sub>1</sub>. He proposed to introduce in a new 02 series of amendments provisions regarding the performance of AEBS for vehicles of category M<sub>1</sub> and N<sub>1</sub> and to introduce in a new 03 series of amendments provisions

addressing the performance of such systems for those vehicle categories and the detection of pedestrians. He introduced GRRF-83-18 proposing terms of reference for the Informal Working Group (IWG) on AEBS. The expert from OICA noted the challenging timeline proposed.

7. GRRF supported the proposal made by the expert from Japan and endorsed the draft Terms of Reference proposed for the IWG on AEBS as reproduced in Annex II.

## **IV. Regulations Nos. 13 and 13-H (agenda item 3)**

### **A. Electronic Stability Control**

*Documentation:* Informal document GRRF-83-22

8. The expert from OICA introduced GRRF-83-22, proposing clarifications to the provisions related to the stability control optical warning in Regulations No. 13, 13-H and 140. He explained that, to date, braking regulations explicitly permitted the use of the Electronic Stability Control (ESC) flashing symbol for the purpose of showing interventions of systems related to the vehicle stability function (e.g. traction control etc.). He added that with the proposed clarification, it would be clarified that the use of the ESC flashing symbol would be permitted for indicating the intervention of individual steering control for vehicle stability such as Corrective Steering Functions, if related to the vehicle stability function.

9. GRRF agreed to resume consideration of this document while reviewing the proposal on Automatically Commanded Steering Function (ACSF) under agenda item 9.

### **B. Modular Vehicle Combinations**

10. GRRF did not receive any new document to be discussed under this agenda item.

### **C. Clarifications**

*Documentation:* (ECE/TRANS/WP.29/GRRF/2013/13)  
ECE/TRANS/WP.29/GRRF/2017/2  
ECE/TRANS/WP.29/GRRF/2016/26  
ECE/TRANS/WP.29/GRRF/2016/27  
Informal documents WP.29-168-16, GRRF-82-03, GRRF-83-07 and GRRF-83-31

11. The Chair of GRRF recalled the purpose of ECE/TRANS/WP.29/GRRF/2013/13, adopted during the seventy-fifth GRRF session. The document remained on the agenda of GRRF, pending submission to the World Forum for Harmonization of Vehicle Regulations (WP.29) and the Administrative Committee of the 1958 Agreement (AC.1) of the adopted text for Regulation No. 89 (Speed limitation devices).

12. The expert from the Netherlands introduced ECE/TRANS/WP.29/GRRF/2017/2 proposing to delete an obsolete provision in Annex 5 to Regulation No. 13. He recalled the context of this proposal, originally suggested by the expert from the Netherlands the ninety-nine session of the Working Party on the Transport of Dangerous Goods (WP.15) and considered at the 168<sup>th</sup> session of WP.29 (WP.29-168-16). He added that this proposal took into consideration the comments received at the previous session of GRRF (see ECE/TRANS/WP29/GRRF/82, para. 11).

13. GRRF adopted the proposal and requested the secretariat to keep it on the agenda for the next session.

14. The expert from CLEPA presented ECE/TRANS/WP.29/GRRF/2016/27, as amended by GRRF-82-03. Following discussions, the experts from the European Commission and from CLEPA presented GRRF-83-31. GRRF agreed to resume consideration of this subject and requested the secretariat to distribute this informal document with an official symbol at its September 2017 session.

15. The expert from Germany presented GRRF-83-07 based on ECE/TRANS/WP.29/GRRF/2016/26, originally tabled by the expert from France. GRRF noted that the proposed amendment to para. 2.2.18. in Annex 12 already existed and the wording proposed could be clarified. GRRF agreed to resume consideration of this proposal on the basis of an official working document that the experts from Germany and France volunteered to prepare.

#### **D. Braking symbols in Regulation No. 121 (Identification of controls, tell-tales and indicators)**

16. GRRF did not receive any new proposal to amend Regulation No. 121 or relevant new information from the Working Party on General Safety provisions (GRSG).

#### **E. Other business**

17. No intervention was made under this agenda item.

### **V. Regulation No. 55 (agenda item 4)**

*Documentation:* ECE/TRANS/WP.29/GRRF/2017/3  
Informal documents GRRF-83-06 and GRRF-83-25-Rev.1

18. The Secretary of the IWG on Regulation No. 55 presented (GRRF-83-06) a consolidated proposal (ECE/TRANS/WP.29/GRRF/2017/3) based on the proposals presented at the previous session of GRRF and addressing the comments received.

19. GRRF adopted the proposal with the correction below and requested the secretariat to submit it as part of the draft Supplement 7 to the 01 series of amendments to Regulation No. 55 (Mechanical coupling) to WP.29 and AC.1 for consideration and vote at their June 2017 sessions.

*Annex 8, para. 3.4., Clevis Coupling D formulae, correct to read:*

"  $Dc = 0.9g \frac{M_1 * M_4}{M_1 + M_4}$  "(D shall read D<sub>c</sub>)

20. The Chair of GRRF recalled the purpose of ECE/TRANS/WP.29/GRRF/2016/32, aimed at imposing a new general constraint for granting component type-approval for mechanical coupling devices dedicated to category M<sub>1</sub> vehicles only if the vehicle type is designed to tow trailers. An ad hoc group of experts proposed an alternative wording, in GRRF-83-25-Rev.1.

21. GRRF adopted the proposal as reproduced in Annex III and requested the secretariat to submit it as part of the Supplement 7 to the 01 series of amendments to Regulation No. 55 (Mechanical coupling) to WP.29 and AC.1 for consideration and vote at their June 2017 sessions.

22. No progress was reported on the activities of the IWG on the Agricultural Coupling Devices and Components (ACDC).

## **VI. Motorcycle braking (agenda item 5)**

### **A. Regulation No. 78**

23. GRRF did not receive any new document to be discussed under this agenda item.

### **B. Global technical regulation No. 3**

*Documentation:* Informal documents GRRF-83-09 and GRRF-83-10

24. The expert from Italy introduced GRRF-83-09 proposing to insert in Global Technical Regulation (GTR) No. 3 (Motorcycle braking) provisions on tri-cycles Anti-lock Braking Systems (ABS), Emergency Stop Signal and means to disable the ABS function ('ABS switch') prepared in collaboration with the expert from IMMA. He informed GRRF on the related discussion at the Executive Committee AC.3 in November 2016 that agreed in principle with the proposal to align GTR No. 3 and Regulation No. 78. The expert from Canada answered to the proposal (GRRF-83-10). The GRRF agreed to resume consideration of these proposals on the basis of an official working document that the experts from Canada and Italy volunteered to prepare.

## **VII. Regulation No. 90 (agenda item 6)**

*Documentation:* Informal document GRRF-83-26

25. The expert from Spain reported on behalf of the Special Interest Group (SIG) on Regulation No. 90 on the outcome of the group following two meetings (GRRF-83-26). He mentioned that the group of experts considered a list of issues for future consideration. He added that the group already reached a common understanding about the type definition interpretation of replacement parts. He concluded that a final report would be delivered at the September 2017 session of GRRF, with a potential recommendation for the establishment of an informal working group on Regulation No. 90 (and corresponding draft terms of reference), if the experts would conclude that it is necessary. He announced that the next meeting of the SIG would be organized in April 2017 and requested that the secretariat circulate an invitation by email.

26. The experts from OICA and CLEPA expressed concerns with elements of the presentation of the expert from Spain. The Chair of GRRF noted the number of items for consideration and advised the group of experts to define priorities and to separate the work that would cause an extension of scope of the Regulation e.g. replacement callipers.

27. The expert from Spain recalled the discussion that took place at the seventy-fifth session of GRRF (ECE/TRANS/WP.29/GRRF/75, para. 49) and that was related to safety issues on proving grounds or on public roads linked to braking tests. He proposed to resume consideration of this issue at the next session of GRRF.

## VIII. Tyres (agenda item 7)

### A. Global technical regulation No. 16

*Documentation:* Informal documents GRRF-83-32 and WP.29-170-12

28. The expert from the Russian Federation, chairing the group briefly reported on the work done by the IWG on Tyres on the development of draft Amendment 2 of the GTR No. 16 (Tyres). He confirmed that no modifications were proposed to the Terms of Reference WP.29-170-12. GRRF adopted the Terms of Reference previously endorsed, as reproduced in Annex IV. He invited the expert from ETRTO as the Secretary of the group to provide to GRRF a detailed progress report (GRRF-83-32). He invited all interested experts to contribute to the work and informed GRRF that the next session of the group would take place in Moscow.

29. The expert from China introduced its working paper of the informal working group (TYREGTR-15-06) with a list of harmonization challenges and also proposals to facilitate the adoption of the Phase 2 by China. The Chair invited the expert from China to present these challenges at the March 2017 session of AC.3.

### B. Regulation No. 30

30. GRRF did not receive any new document to be discussed under this agenda item.

### C. Regulation No. 54

*Documentation:* ECE/TRANS/WP.29/GRRF/2016/35  
ECE/TRANS/WP.29/GRRF/2016/36  
ECE/TRANS/WP.29/GRRF/2017/4  
Informal document GRRF-82-23

31. The Chair recalled that GRRF already supported GRRF-82-23 together with ECE/TRANS/WP.29/GRRF/2016/35 as well as ECE/TRANS/WP.29/GRRF/2016/36 and that these documents were kept on the agenda, awaiting a proposal to be considered at this session.

32. The expert from ETRTO introduced ECE/TRANS/WP.29/GRRF/2017/4 proposing the introduction of new tyre sizes in Annex 5 to Regulation No. 54.

33. GRRF adopted ECE/TRANS/WP.29/GRRF/2016/35 as amended by Annex VII, ECE/TRANS/WP.29/GRRF/2016/36 and ECE/TRANS/WP.29/GRRF/2017/4. GRRF requested the secretariat to submit them as draft Supplement 22 to Regulation No. 54 (Tyres for commercial vehicles and their trailers) to WP.29 and AC.1 for consideration and vote at their June 2017 sessions.

### D. Regulation No. 75

34. GRRF did not receive any new document to be discussed under this agenda item.

### E. Regulation No. 106

*Documentation:* ECE/TRANS/WP.29/GRRF/2016/39  
ECE/TRANS/WP.29/GRRF/2017/5

ECE/TRANS/WP.29/GRRF/2017/6  
ECE/TRANS/WP.29/GRRF/2017/9  
Informal documents GRRF-83-11, GRRF-83-12, GRRF-83-14,  
GRRF-83-15 and GRRF-83-23

35. The Chair recalled that GRRF already supported ECE/TRANS/WP.29/GRRF/2016/39 and that this document was kept on the agenda, awaiting other proposals to be considered at this session.

36. The expert from ETRTO introduced ECE/TRANS/WP.29/GRRF/2017/5 and ECE/TRANS/WP.29/GRRF/2017/6 as amended by GRRF-83-11 and GRRF-83-12, proposing to introduce new tyre sizes usually listed in Annex 5 in a new Resolution, aimed at simplifying the update of this annex as well as reducing the number of amendments. GRRF noted that Annex 5 was containing non-metric tyre sizes not in line with the general formulae contained in the Regulation; therefore, GRRF wondered whether the right approach would be to introduce the appropriate formulae in the Regulation instead of continuously updating Annex 5. The expert from ETRTO agreed to address this proposal and to submit, if suitable, revised proposals for consideration at the next session.

37. The expert from ETRTO presented GRRF-83-15 with new tyre sizes to be included in Annex 5. GRRF adopted the proposal.

38. The expert from ETRTO presented a revised proposal ECE/TRANS/WP.29/GRRF/2017/9 with provisions which were already supported at the last session. He introduced the revised transitional provisions related to new marking requirements. The experts from EC and UK proposed an alternative wording (GRRF-83-14). Both proposals received several comments. Therefore GRRF agreed to adopt the agreed provisions that would not be subject to transitional provisions and to remove the others, as reproduced in GRRF-83-23.

39. GRRF requested the secretariat to submit the adopted proposals ECE/TRANS/WP.29/GRRF/2017/9 amended by Annex VI (based on GRRF-83-23 and GRRF-83-15) as well as ECE/TRANS/WP.29/GRRF/2016/39 as draft Supplement 15 to Regulation No. 106 (Agricultural tyres) to WP.29 and AC.1 for consideration and vote at their June 2017 sessions.

## **F. Regulation No. 109**

40. GRRF did not receive any new document to be discussed under this agenda item.

## **G. Regulation No. 117**

*Documentation:* ECE/TRANS/WP.29/GRRF/2016/42  
ECE/TRANS/WP.29/GRRF/2017/7

41. The expert from ETRTO presented ECE/TRANS/WP.29/GRRF/2017/7 with editorial corrections. The Chair recalled that GRRF already supported ECE/TRANS/WP.29/GRRF/2016/42 with editorial corrections and that this document was kept on the agenda, awaiting substantive proposals to be considered at the coming session.

42. GRRF agreed to keep both documents on the agenda for its September 2017 session.

## **H. Regulation on tyre installation**

*Documentation:* ECE/TRANS/WP.29/GRRF/2016/43



43. The Chair recalled that GRRF already supported ECE/TRANS/WP.29/GRRF/2016/43 with editorial corrections and that this document was kept on the agenda, awaiting substantive proposals to be considered at the coming sessions.

44. GRRF agreed to keep this document on the agenda for its September 2017 session.

## **I. Regulation on Tyre Pressure Monitoring Systems**

*Documentation:* ECE/TRANS/WP.29/GRRF/2016/44  
Informal documents GRRF-83-13 and GRRF-83-16

45. The Chair recalled that GRRF already supported ECE/TRANS/WP.29/GRRF/2016/43 with editorial corrections and that this document was kept on the agenda, awaiting substantive proposals to be considered at the coming session. The expert from EC introduced GRRF-83-13 reporting on testing activities and a report from a European NGO on Tyre Pressure Monitoring Systems (TPMS). The experts reviewed the report. The expert from OICA presented GRRF-83-16 answering to this report. The methodology and the evidences presented in the report were subject to discussion. GRRF noted that a few recommendations (e.g. 1 and 4) concluding the report could be considered.

46. The expert from Denmark invited the GRRF experts to share information on existing road traffic laws and regulations requesting the use of TPMS.

## **J. Other business**

*Documentation:* Informal documents GRRF-83-05 and GRRF-82-21

47. The Chair of GRRF, recalling the purpose of GRRF-82-21 collecting the definitions in UN Regulations on tyres invited the expert from ETRTO to report on derived activities. The expert from ETRTO reported that he didn't receive any feedback on this document. GRRF agreed to keep this document on the agenda of the next session.

48. The expert from Germany introduced GRRF-83-05 looking for guidance on the possibility to develop snow tyre provisions for all tyres and vehicles categories as it was already existing for snow tyres of category C1, C2 and C3 for vehicles categories M and N by amending all relevant Regulations or by amending the scope of Regulation No. 117. The expert from Japan and the Russian Federation volunteered to contribute to the work item proposed by Germany. GRRF requested to add an agenda item dedicated to snow tyres on the agenda.

## **IX. Intelligent Transport Systems (agenda item 8)**

### **A. Vehicle automation**

49. The expert from EC mentioned the activities at the IWG on Intelligent Transport Systems (ITS) / Automated Driving (AD) concerning the extension of regulatory activities related to the SAE automation levels 3 and 4. He also mentioned the current discussion subject on the tasks distributions between the driver and the machine and he highlighted that further discussions with the Working Party on Road Traffic Safety (WP.1) would be useful.

50. GRRF welcomed the idea of its Chair to organize future joint meetings with WP.1. He highlighted the need to prioritize working items on Level 3 and possibly at a later stage on Level 4 given the challenges related to the ambitious timelines set.

51. The Secretary of the WP.1 informal group on automated vehicles reported on the latest discussions within the group *i.e.* the interpretation of the road traffic conventions and the implication for the different levels of automation.

52. Further discussions on vehicle automation took place under items 9 (b) and 11.

## **B. Other ITS issues**

53. The Secretary of the Task Force on Cyber Security and Over-The-Air updates reported on the outcome of the first two meetings of the task force. He mentioned that the Task Force agreed on terms of reference for adoption by the IWG on ITS/AD. He announced that the next meeting would be held on 16-17 February 2017 in Paris.

54. The secretariat informed about the 2017 Future Networked Car Symposium to be held in Geneva during the Geneva Motor Show on 9 March 2017 and kindly invited all delegates to attend the symposium.

## **X. Steering equipment (agenda item 9)**

### **A. Regulation No. 79**

*Documentation:* ECE/TRANS/WP.29/GRRF/2017/8  
Informal documents GRRF-83-20, GRRF-83-24 and GRRF-83-29

55. The expert from the European Commission introduced ECE/TRANS/WP.29/GRRF/2017/8 proposing clarifications in Annex 6, dealing with the Complex Electronic provisions. The proposal received written comments (GRRF-83-20 and GRRF-83-24) from the experts from the Netherlands and from OICA. GRRF combined the comments received as reproduced in GRRF-83-29.

56. GRRF agreed with the Chair's proposal to convene an informal meeting to further develop the document on the basis of the comments received. The expert from UK volunteered to convene a meeting end of April or beginning of May.

### **B. Automatically Commanded Steering Function**

*Documentation:* ECE/TRANS/WP.29/2017/10  
Informal documents GRRF-83-08, GRRF-83-21, GRRF-83-22 and GRRF-83-27

57. The Secretary of the IWG on Automatically Commanded Steering Function (ACSF) presented (GRRF-83-27) the modifications proposed (GRRF-83-08) to the document already adopted by GRRF at its September 2016 session (ECE/TRANS/WP.29/2017/10) and subject to reconfirmation by GRRF.

58. GRRF reviewed the proposal made by the IWG (GRRF-83-08), briefly mentioned GRRF-83-21 and discussed the necessity to submit the document as the draft 02 series amendments to Regulation No. 79.

59. GRRF discussed the proposal made by OICA (GRRF-83-22) under agenda item 3(a) in the context of the definitions for Corrective Steering Function (CSF) and ACSF discussed under this agenda item. GRRF agreed to resume consideration on this item at its next session.

60. At the end of the formal meeting, GRRF adopted the proposal as amended by GRRF-83-08-Rev.2. GRRF also agreed to invite the secretariat to continue, after the closure of the meeting, drafting the transitional provisions (corresponding to the intention

of GRRF expressed during the session) together with the interested experts still presents (GRRF-83-08-Rev.3).

61. GRRF requested the secretariat to submit the adopted amendments (reproduced in Annex V) to ECE/TRANS/WP.29/2017/10 to WP.29 and AC.1 for consideration and vote at their March 2017 sessions. Annex V also contains Transitional Provisions in square brackets. These provisions were not part of adopted amendments but are nevertheless forwarded to WP.29 for consideration.

## **XI. International Whole Vehicle Type Approval (agenda item 10)**

### **A. Report on the IWVTA informal group and subgroup activities**

*Documentation:* Informal document GRRF-83-33

62. The GRRF Ambassador at the IWG on International Whole Vehicle Type Approval (IWVTA) presented a status report (GRRF-83-33) on the activities of the IWG.

### **B. Other business**

63. GRRF did not receive any new document to be discussed under this agenda item.

## **XII. Exchange of views on innovations, automations and self-driving cars (agenda item 11)**

*Documentation:* Informal document GRRF-83-19

64. The expert from EC introduced GRRF-83-19 reporting on the status of the review of the General Safety and Pedestrian Safety Regulations proposing a number of measures that could be implemented and for which some activities could be launched at GRRF. Given the timelines envisaged, the Chair recommended to already start addressing certain measures such as AEBS as discussed under agenda item 2.

## **XIII. Other business (agenda item 12)**

### **A. Highlights of the November 2016 session of WP.29**

*Documentation:* (ECE/TRANS/WP.29/1126)  
Informal document GRRF-83-04

65. The secretariat introduced GRRF-83-04 reporting on the GRRF relevant highlights of the 170<sup>th</sup> session of WP.29. For more information, please refer to the session report (ECE/TRANS/WP.29/1126).

### **B. Any other business**

66. GRRF did not receive any new document to be discussed under this agenda item.

### C. Tributes

67. Learning that Mr. Werner Rothmann (FEMFM) would retire and, therefore, no longer attend the sessions, GRRF acknowledged his considerable contributions to the activities of the group. GRRF wished him a long and happy retirement. GRRF also learned that Mr. Peter Jakobsen (Denmark) would no longer attend GRRF session. GRRF acknowledged his great cooperation and wished him all the best for his new responsibilities.

## XIV. Provisional agenda for the eighty-fourth session

68. The following provisional agenda was endorsed for the eighty-fourth session of GRRF, scheduled to be held in Geneva from 19 (starting at 9.30 a.m.) to 22 (concluding at 12.30 p.m.) September 2017<sup>1</sup>:

1. Adoption of the agenda.
2. Advanced Emergency Braking Systems.
3. Regulations Nos. 13 and 13-H:
  - (a) Electronic Stability Control;
  - (b) Modular Vehicle Combinations;
  - (c) Clarifications;
  - (d) Other business.
4. Regulation No. 55.
5. Motorcycle braking:
  - (a) Global technical regulation No. 3;
  - (b) Regulation No. 78.
6. Regulation No. 90.
7. Tyres:
  - (a) Global technical regulation No. 16;
  - (b) Regulation No. 30;
  - (c) Regulation No. 54;
  - (d) Regulation No. 75;
  - (e) Regulation No. 106;
  - (f) Regulation No. 109;
  - (g) Regulation No. 117;
  - (h) Regulation No. 141;
  - (i) Regulation No. 142;
  - (j) Snow tyres provision;

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<sup>1</sup> GRRF noted that the deadline for submission of official documents to the UNECE secretariat was 26 June 2017, twelve weeks prior to the session.

- (k) Other business.
- 8. Intelligent Transport Systems:
  - (a) Vehicle automation;
  - (b) Other ITS issues.
- 9. Steering equipment:
  - (a) Regulation No. 79;
  - (b) Automatically Controlled Steering Function;
  - (c) Complex Electronic (CEL) control system requirements.
- 10. International Whole Vehicle Type Approval:
  - (a) Report on the IWVTA informal group and subgroup activities;
  - (b) Other business.
- 11. Exchange of views on innovations and relevant national activities.
- 12. Election of officers.
- 13. Other business:
  - (a) Highlights of the March and June 2017 sessions of WP.29;
  - (b) Any other business.

## Annex I

## List of informal documents (GRRF-83-...) considered during the session

[English only]

<i>No.</i>	<i>(Author) Title</i>	<i>Follow-up</i>
1	(Chair) - Running Order	A
2	(Secretariat) - Updated and consolidated agenda (23/01/2017)	A
3	(Secretariat) - General information	F
4	(Secretariat) - Highlights of the November 2016 session of WP.29	F
5	(Germany) - Tyre category definitions and requirements for tyre use on roads under winter conditions	F
6	(IWG on R55) - Comments on IWG R55 proposal to GRRF	F
7	(France and Germany) - Proposal for amendments to Regulation No. 13, Annex 12	F
8	(IWG on ACSF) - Proposal for amendments to ECE/TRANS/WP.29/2017/10 Rev.2	B
9	(Italy) - Proposal for Amend. [3] to GTR No. 3 (Motorcycle braking)	E
10	(Canada) - Proposal for amendments to GRRF-83-09 on amending GTR No. 3	F
11	(ETRTO) - Proposal for amendments to ECE/TRANS/WP.29/GRRF/2017/5	F
12	(ETRTO) - Proposal for amendments to ECE/TRANS/WP.29/GRRF/2017/6	F
13	(EC) - Regulation on Tyre Pressure Monitoring Systems (TPMS)	F
14	(UK and EC) - Proposal for amendments to ECE/TRANS/WP.29/GRRF/2017/9	F
15	(ETRTO) - Proposal for amendments to Regulation No. 106	A
16	(OICA) Comments on GRRF-83-13	F
17	(Japan) Proposal to extend the scope of Regulation No. 131 (AEBS) to vehicles of Category M1 and N1	F
18	(Japan) Proposal for Terms of Reference for the IWG on AEBS	A
19	(EC) Status of the GSR review	F
20	(OICA) Comments to ECE/TRANS/WP.29/GRRF/2017/8	F
21	(OICA) Request for clarification of interpretation on the application of the provisions for CSF, ACSF A and ACSF B1	F
22- Rev.1	(OICA) Proposal for amendments to Regulation No. 13-H Supplement 16 to 00 series of amendments, Regulation No. 13 Supplement 14 to 11 series of amendments and Regulation No. 140 original version.	E
23	(ETRTO) Amendments to ECE/TRANS/WP.29/GRRF/2017/9	F
24	(The Netherlands) Comments on ECE/TRANS/WP.29/GRRF/2017/8	F
25- Rev.1	(R55 experts / ad hoc) - Proposal for amendments to Regulation No. 55	A
26	(R90 SIG) Status report	F
27	(IWG on ACSF) Presentation of GRRF-83-08	F

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<i>No.</i>	<i>(Author) Title</i>	<i>Follow-up</i>
28	(UK) Proposal for amendments to GRRF-83-08	F
29	(Secretariat) Proposed amendments to ECE/TRANS/WP29/GRRF/2017/8	E
30	(ROK) Proposal for amendments to ECE/TRANS/WP.29/2017/10	B
31	(CLEPA/EC) Proposal for amendments to Footnote 12 in Regulation No. 13	C
32	(IWG on Tyres) Progress report	F
33	(IWVTA Ambassador) Status report of the IWVTA informal group.	F

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*Notes:*

- A Endorsed or adopted without amendment.
- B Endorsed or adopted with amendments.
- C Resume consideration on the basis of a document with an official symbol.
- D Kept as reference document/continue consideration.
- E Revised proposal for the next session.
- F Consideration completed or to be superseded.

## Annex II

### Endorsed Terms of Reference and Rules of Procedure for the IWG on AEBS

#### I. Terms of Reference

1. The informal group shall develop a draft regulatory proposal to revise the Regulation No. 131 to establish new requirements on Advanced Emergency Braking Systems (AEBS) for vehicles of categories M<sub>1</sub> and N<sub>1</sub>.
2. The informal group shall address the following issues:
  - a. Define AEBS requirements for moving and stationary obstacles.
  - b. Define AEBS requirements for pedestrian detection.
3. The group will focus on systems for vehicles of categories M<sub>1</sub> and N<sub>1</sub>.
4. The group should take full account of existing data and research in developing its regulatory proposals. It should consider pre-existing standards, regulations from other territories and New Car Assessment Programs (NCAPs) for developing its proposals.
5. Draft regulatory texts of AEBS requirements for both items 2.a and 2.b above should be submitted to the eighty-six session in September 2018.
6. A final decision on regulatory proposals rests with WP.29 and the Contracting Parties.

#### II. Rules of Procedures

7. The informal group is a sub group of GRRF, and is open to all participants of GRRF.
8. Two Co-Chairs and a Secretary will manage the informal group.
9. The working language of the informal group will be English.
10. All documents and/or proposals must be submitted to the Secretary of the group in a suitable electronic format in advance of the meeting. The group may refuse to discuss any item or proposal which has not been circulated ten working days in advance.
11. An agenda and related documents will be circulated to all members of the informal group in advance of all scheduled meetings.
12. Decisions will be reached by consensus. When consensus cannot be reached, the Chair of the group shall present the different points of view to GRRF. The chairman may seek guidance from GRRF as appropriate.
13. The progress of the informal group will be routinely reported to GRRF – wherever possible with an informal document and presented by the Chair or his representative.
14. All documents shall be distributed in digital format. Meeting documents should be made available to the Secretary for publication on the dedicated website.



## Annex III

### Adopted amendment to Regulation No. 55

#### Based on GRRF-83-25-Rev.1

*Regulation No. 55,*

*Paragraph 3.2.3., amend to read:*

"3.2.3. A statement of the values of D, D<sub>c</sub>, S, V and U as applicable and as defined in paragraph 2.11.

**For towing devices intended for M<sub>1</sub> or N<sub>1</sub> vehicle, a statement of the maximum permissible towing vehicle and trailer masses and the maximum permissible static vertical imposed load on the towing device as advised by the manufacturer of the towing vehicle; if the value for the maximum permissible towable mass is zero or no value declared by vehicle manufacturer, the application for approval shall be refused."**

## Annex IV

### **Adopted Terms of Reference and Rules of Procedure of the Informal Working Group for the Phase 2 of development of UN GTR No. 16 (Tyres)**

On the basis of WP.29-170-12

#### **A. Draft Terms of Reference**

1. The Informal Working Group (IWG) shall develop, in the framework of the 1998 Agreement, the Amendment No. 2 to UN Global Technical Regulation (GTR) No. 16 on tyres aimed at further harmonization of its provisions for LT/C tyres and adaptation of UN GTR No. 16 to the technical progress.
2. The Amendment No. 2 to GTR No. 16 (Phase 2 of development) shall address the harmonization of Physical Dimensions Test ("Phase 2A") and High Speed Test ("Phase 2B").
3. The Amendment No. 2 to GTR No. 16 at phase 2A shall also cover the most recent updates of UN Regulations Nos. 30 and 54 [as well as FMVSS of the United States].
4. The IWG also will consider the feasibility of introduction of provisions for tyre global marking within GTR No. 16.
5. The provisions to be developed shall be suitable for the both type approval and self-certification compliance assessment systems.
6. The IWG meetings primarily shall be organized in conjunction with the GRRF regular sessions.

#### **B. Draft Rules of Procedure**

7. The IWG is a sub group of GRRF, and is open to all participants of GRRF.
8. The IWG will be chaired by the GTR No. 16 technical sponsor (Russian Federation). ETRTO will act as a Secretary.
9. The IWG official language will be English.
10. All documents and/or proposals must be submitted to the IWG Secretary in a suitable electronic format at least one week before the meeting.
11. An agenda and related documents will be circulated to all IWG members in advance of all scheduled meetings.
12. All IWG documents will be made available on the dedicated UNECE website.
13. The IWG decisions will be reached by consensus. When consensus cannot be reached, the IWG Chairman shall present the different points of view to GRRF and seek guidance from GRRF as appropriate.
14. The IWG progress will be routinely reported to GRRF by the IWG Chairman or his representative.

## **C. Timeline**

15. The proposed action plan:

(a) January 2017: Introduction and consideration of the proposal for Phase 2A at the eighty-third GRRF session as an informal document;

(b) September 2017: Introduction and consideration of the proposal for Phase 2B at the eighty-fourth GRRF session as an informal document;

(c) February 2018: Submitting of the GRRF working document. Consideration of remaining issues (if any) at the eighty-fifth GRRF session;

(d) June 2018: Adoption of the proposal by AC.3, if no remaining issues had existed;

(e) November 2018: Adoption of the proposal by AC.3, if all remaining issues had been solved.

## Annex V

### Adopted amendments to ECE/TRANS/WP.29/2017/10

Adopted on the basis GRRF-83-08-Rev.2 and Rev.3

*Insert a new paragraph 1.2.3., to read:*

- "1.2.3. Steering systems exhibiting the functionality defined as ACSF of Category B2, C, D or E in paragraphs 2.3.4.1.3., 2.3.4.1.4., 2.3.4.1.5., or 2.3.4.1.6., respectively, until specific provisions would be introduced in this Regulation."

*Paragraph 2.3.4.1., amend to read:*

- "2.3.4.1. *"Automatically commanded steering function (ACSF)"* means a function within an electronic control system where actuation of the steering system can result from automatic evaluation of signals initiated on-board the vehicle, possibly in conjunction with passive infrastructure features, to generate control action in order to assist the driver.
- 2.3.4.1.1. *"ACSF of Category A"* means a function that operates at a speed no greater than 10 km/h to assist the driver, on demand, in low speed or parking manoeuvring.
- 2.3.4.1.2. *"ACSF of Category B1"* means a function which assists the driver in keeping the vehicle within the chosen lane, by influencing the lateral movement of the vehicle.
- 2.3.4.1.3. *"ACSF of Category B2"* means a function which is initiated/activated by the driver and which keeps the vehicle within its lane by influencing the lateral movement of the vehicle for extended periods without further driver command/confirmation.
- 2.3.4.1.4. *"ACSF of Category C"* means a function which is initiated/activated by the driver and which can perform a single lateral manoeuvre (e.g. lane change) when commanded by the driver.
- 2.3.4.1.5. *"ACSF of Category D"* means a function which is initiated/activated by the driver and which can indicate the possibility of a single lateral manoeuvre (e.g. lane change) but performs that function only following a confirmation by the driver.
- 2.3.4.1.6. *"ACSF of Category E"* means a function which is initiated/activated by the driver and which can continuously determine the possibility of a manoeuvre (e.g. lane change) and complete these manoeuvres for extended periods without further driver command/confirmation."

*Paragraph 2.3.4.2., amend to read:*

- "2.3.4.2. *"Corrective Steering Function (CSF)"* means a control function within an electronic control system whereby, for a limited duration, changes to the steering angle of one or more wheels may result from the automatic evaluation of signals initiated on-board the vehicle, in order:
- (a) To compensate a sudden, unexpected change in the side force of the vehicle, or;

- (b) To improve the vehicle stability (e.g. side wind, differing adhesion road conditions " $\mu$ -split"), or;
- (c) To correct lane departure. (e.g. to avoid crossing lane markings, leaving the road)."

*Insert new paragraphs 2.4.8. until 2.4.15., to read:*

- 2.4.8. "*Remote Controlled Parking (RCP)*" means an ACSF of category A, actuated by the driver, providing parking or low speed manoeuvring. The actuation is made by remote control in close proximity to the vehicle.
- 2.4.9. "*Specified maximum RCP operating range ( $S_{RCPmax}$ )*" means the maximum distance between the nearest point of the motor vehicle and the remote control device up to which ACSF is designed to operate.
- 2.4.10. "*Specified maximum speed  $V_{smax}$* " means the maximum speed up to which an ACSF is designed to operate.
- 2.4.11. "*Specified minimum speed  $V_{smin}$* " means the minimum speed down to which an ACSF is designed to operate.
- 2.4.12. "*Specified maximum lateral acceleration  $ay_{smax}$* " means the maximum lateral acceleration of the vehicle up to which an ACSF is designed to operate."
- 2.4.13. An ACSF is in "off mode" (or "switched off") when the function is prevented from generating a steering control action to assist the driver.
- 2.4.14. An ACSF is in "standby mode" when the function is switched on but the conditions (e.g. system operating conditions, deliberate action from driver) for being active are not all met. In this mode, the system is not ready to generate a steering control action to assist the driver.
- 2.4.15. An ACSF is in "active mode" (or "active") when the function is switched on and the conditions for being active are met. In this mode, the system continuously or discontinuously controls the steering system is generating, or is ready to generate, a steering control action to assist the driver."

*Paragraph 5.1.6.1., amend to read:*

- "5.1.6.1. A CSF system shall be subject to the requirements of Annex 6."

*Insert a new paragraph 5.1.6.1.1. to 5.1.6.1.4. to read:*

- 5.1.6.1.1. Every CSF intervention shall immediately be indicated to the driver by an optical warning signal which is displayed for at least 1 s or as long as the intervention exists, whichever is longer.
- 5.1.6.1.2. In the case of a CSF intervention which is based on the evaluation of the presence and location of lane markings or boundaries of the lane the following shall apply additionally:
  - 5.1.6.1.2.1. In the case of an intervention longer than:
    - (a) 10 s for vehicles of category  $M_1$  and  $N_1$ , or
    - (b) 30 s for vehicles of category  $M_2$ ,  $M_3$  and  $N_2$ ,  $N_3$ ,
 an acoustic warning signal shall be provided until the end of the intervention.
  - 5.1.6.1.2.2. In the case of two or more consecutive interventions within a rolling interval of 180 seconds and in the absence of a steering input by the driver during the intervention, an acoustic warning signal shall be provided by the system

during the second and any further intervention within a rolling interval of 180 seconds. Starting with the third intervention (and subsequent interventions) the acoustic warning signal shall continue for at least 10 seconds longer than the previous warning signal.

- 5.1.6.1.3. The steering control effort necessary to override the directional control provided by the system shall not exceed 50 N in the whole range of CSF operations.
- 5.1.6.1.4. The requirements in paragraphs 5.1.6.1.1., 5.1.6.1.2. and 5.1.6.1.3. for CSF, which are reliant on the evaluation of the presence and location of lane markings or boundaries of the lane, shall be tested in accordance with the relevant vehicle test(s) specified in Annex 8 of this Regulation."

*Insert new paragraphs 5.4.1.2. and 5.4.1.3., to read:*

- "5.4.1.2. Optical warning signals shall be visible, even by daylight and distinguishable from other alerts; the satisfactory condition of the signals shall be easily verifiable by the driver from the driver's seat; the failure of a component of the warning devices shall not entail any loss of the steering system's performance.
- 5.4.1.3. Acoustic warning signals shall be by continuous or intermittent sound signal or by vocal information. Where vocal information is employed, the manufacturer shall ensure that the alert uses the language(s) of the market into which the vehicle is sold.

Acoustic warning signals shall be easily recognized by the driver."

*Paragraph 5.4.1.2. (former) shall be renumbered as paragraph 5.4.1.4.*

*Insert a new paragraph 5.6., to read:*

- "5.6. Provisions for ACSF
  - Any ACSF shall be subject to the requirements of Annex 6.
- 5.6.1. Special Provisions for ACSF of Category A
  - Any ACSF of Category A shall fulfil the following requirements.
- 5.6.1.1. General
  - 5.6.1.1.1. The system shall only operate until 10 km/h (+2 km/h tolerance)
  - 5.6.1.1.2. The system shall be active only after a deliberate action of the driver and if the conditions for operation of the system are fulfilled (all associated functions – e.g. brakes, accelerator, steering, camera/radar/lidar. are working properly).
  - 5.6.1.1.3. The system shall be able to be deactivated by the driver at any time.
  - 5.6.1.1.4. In case the system includes accelerator and/or braking control of the vehicle, the vehicle shall be equipped with a means to detect an obstacle (e.g. vehicles, pedestrian) in the manoeuvring area and to bring the vehicle immediately to a stop to avoid a collision.\*

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\* Until uniform test procedures have been agreed, the manufacturer shall provide the Technical Service the documentation and supporting evidence to demonstrate compliance with these provisions. This information shall be subject to discussion and agreement between the Technical Service and vehicle manufacturer.

- 5.6.1.1.5. Whenever the system becomes operational, this shall be indicated to the driver. Any termination of control shall produce a short but distinctive driver warning by an optical warning signal and either an acoustic warning signal or by imposing a haptic warning signal (except for the signal on the steering control in parking manoeuvring).
- For RCP, the requirements for driver warning shown above shall be fulfilled by the provision of an optical warning signal at least at the remote control device.
- 5.6.1.2. Additional provisions for RCP
- 5.6.1.2.1. The parking manoeuvre shall be initiated by the driver but controlled by the system. A direct influence on steering angle, value of acceleration and deceleration via the remote control device shall not be possible.
- 5.6.1.2.2. A continuous actuation of the remote control device by the driver is required during the parking manoeuvre.
- 5.6.1.2.3. If the continuous actuation is interrupted or the distance between vehicle and remote control device exceeds the specified maximum RCP operating range ( $S_{RCPmax}$ ) or the signal between remote control and vehicle is lost, the vehicle shall stop immediately.
- 5.6.1.2.4. If a door or trunk of the vehicle is opened during the parking manoeuvre, the vehicle shall stop immediately.
- 5.6.1.2.5. If the vehicle has reached its final parking position, either automatically or by confirmation from the driver, and the start/run switch is in the off position, the parking braking system shall be automatically engaged.
- 5.6.1.2.6. At any time during a parking manoeuvre that the vehicle becomes stationary, the RCP function shall prevent the vehicle from rolling away.
- 5.6.1.2.7. The specified maximum RCP operating range shall not exceed 6m.
- 5.6.1.2.8. The system shall be designed to be protected against unauthorized activation or operation of the RCP systems and interventions into the system.
- 5.6.1.3. System information data
- 5.6.1.3.1. Following data shall be provided together with the documentation package required in Annex 6 of this Regulation to the Technical Service at the time of type approval :
- 5.6.1.3.1.1. The value for the specified maximum RCP operating range ( $S_{RCPmax}$ );
- 5.6.1.3.1.2. The conditions under which the system can be activated, i. e. when the conditions for operation of the system are fulfilled.
- 5.6.1.3.1.3. For RCP systems the Manufacturer shall provide the technical authorities with an explanation how the system is protected against unauthorized activation.
- 5.6.2. Special Provisions for ACSF of Category B1
- Any ACSF of Category B1 shall fulfil the following requirements.
- 5.6.2.1. General
- 5.6.2.1.1. The activated system shall at any time, within the boundary conditions, ensure that the vehicle does not cross a lane marking for lateral accelerations

below the maximum lateral acceleration specified by the vehicle manufacturer  $a_{y_{smax}}$ .

The system may exceed the specified value  $a_{y_{smax}}$  by not more than  $0.3\text{m/s}^2$ , while not exceeding the maximum value specified in the table in paragraph 5.6.2.1.3. of this Regulation.

- 5.6.2.1.2. The vehicle shall be equipped with a means for the driver to activate (stand by mode) and deactivate (off mode) the system. It shall be possible to deactivate the system at any time by a single action of the driver. Following this action, the system shall only become active again as a result of a deliberate action by the driver.
- 5.6.2.1.3. The system shall be designed so that excessive intervention of steering control is suppressed to ensure the steering operability by the driver and to avoid unexpected vehicle behaviour, during its operation. To ensure this, the following requirements shall be fulfilled:
  - (a) The steering control effort necessary to override the directional control provided by the system shall not exceed 50 N;
  - (b) The specified maximum lateral acceleration  $a_{y_{smax}}$  shall be within the limits as defined in the following table:

For vehicles of category  $M_1, N_1$

<i>Speed range</i>	<i>10-60 km/h</i>	<i>&gt;60-100 km/h</i>	<i>&gt;100-130 km/h</i>	<i>&gt;130 km/h</i>
Maximum value for the specified maximum lateral acceleration	3 m/s <sup>2</sup>	3 m/s <sup>2</sup>	3 m/s <sup>2</sup>	3 m/s <sup>2</sup>
Minimum value for the specified maximum lateral acceleration	0 m/s <sup>2</sup>	0.5 m/s <sup>2</sup>	0.8 m/s <sup>2</sup>	0.3 m/s <sup>2</sup>

For vehicles of category  $M_2, M_3, N_2, N_3$

<i>Speed range</i>	<i>10-30 km/h</i>	<i>&gt;30- 60 km/h</i>	<i>&gt; 60 km/h</i>
Maximum value for the specified maximum lateral acceleration	2.5 m/s <sup>2</sup>	2.5 m/s <sup>2</sup>	2.5 m/s <sup>2</sup>
Minimum value for the specified maximum lateral acceleration	0 m/s <sup>2</sup>	0.3 m/s <sup>2</sup>	0.5 m/s <sup>2</sup>

- (c) The moving average over half a second of the lateral jerk generated by the system shall not exceed  $5\text{m/s}^3$ .
- 5.6.2.1.4. The requirements in paragraphs 5.6.2.1.1. and 5.6.2.1.3. of this Regulation shall be tested in accordance with relevant vehicle test(s) specified in Annex 8 of this Regulation.
- 5.6.2.2. ACSF of Category B1 operation
  - 5.6.2.2.1. If the system is active an optical signal shall be provided to the driver.
  - 5.6.2.2.2. When the system is in standby mode, an optical signal shall be provided to the driver.



- 5.6.2.2.3. When the system reaches its boundary conditions set out in paragraph 5.6.2.3.1.1. of this Regulation (e.g. the specified maximum lateral acceleration  $a_{y_{max}}$ ) and both in the absence of any driver input to the steering control and when any front tyre of the vehicle starts to cross the lane marking, the system shall continue to provide assistance and shall clearly inform the driver about this system status by an optical warning signal and additionally by an acoustic or haptic warning signal.

For vehicles of categories  $M_2$   $M_3$   $N_2$  and  $N_3$ , the warning requirement above is deemed to be fulfilled if the vehicle is equipped with a Lane Departure Warning System (LDWS) fulfilling the technical requirements of Regulation No. 130."

- 5.6.2.2.4. A system failure shall be signaled to the driver by an optical warning signal. However, when the system is manually deactivated by the driver, the indication of the failure may be suppressed.
- 5.6.2.2.5. When the system is active and in the speed range between 10 km/h or  $V_{min}$ , whichever is higher, and  $V_{max}$ , it shall provide a means of detecting that the driver is holding the steering control.

If, after a period of no longer than 15 seconds the driver is not holding the steering control, an optical warning signal shall be provided. This signal may be the same as the signal specified below in this paragraph.

The optical warning signal shall indicate to the driver to place their hands on the steering control. It shall consist of pictorial information showing hands and the steering control and may be accompanied by additional explanatory text or warning symbols - see examples below:



Example 1.

Example 2.

If, after a period of no longer than 30 seconds the driver is not holding the steering control, at least the hands or steering control in the pictorial information provided as optical warning signal shall be shown in red and an acoustic warning signal shall be provided.

The warnings signals shall be active until the driver is holding the steering control, or until the system is deactivated, either manually or automatically.

The system shall be automatically deactivated at the latest 30 s after the acoustic warning signal has started. After deactivation the system shall clearly inform the driver about the system status by an acoustic emergency signal which is different from the previous acoustic warning signal, for at least five seconds or until the driver holds the steering control again.

The above requirements shall be tested in accordance with the relevant vehicle test(s) specified in Annex 8 of this Regulation.

- 5.6.2.2.6. Unless otherwise specified, the optical signals described in 5.6.2.2. shall all be different from each other (e.g. different symbol, colour, blinking, text).

- 5.6.2.3. System information data
- 5.6.2.3.1. Following data shall be provided together with the documentation package required in Annex 6 of this regulation to the Technical Service at the time of type approval;
  - 5.6.2.3.1.1. The conditions under which the system can be activated and the boundaries for operation (boundary conditions). The vehicle manufacturer shall provide values for  $V_{smax}$ ,  $V_{smin}$  and  $ay_{smax}$  for every speed range as mentioned in the table of paragraph 5.6.2.1.3. of this Regulation;
  - 5.6.2.3.1.2. Information about how the system detects that the driver is holding the steering control."

*Insert a new paragraph 12., to read:*

[(Text in GRRF-83-08-Rev.3)

- "12. Transitional provisions
  - 12.1. As from the official date of entry into force of the 02 series of amendments, no Contracting Party applying this UN Regulation shall refuse to grant or refuse to accept UN type approvals under this UN Regulation as amended by the 02 series of amendments.
  - 12.2. As from [1 April 2018] [the date of entry into force of the 02 series of amendments], Contracting Parties applying this UN Regulation shall grant UN type approvals only if the vehicle type to be approved meets the requirements of this UN Regulation as amended by the 02 series of amendments.
  - 12.3. As from 1 April [2021/2024], Contracting Parties applying this Regulation shall not be obliged to accept, for the purpose of national or regional type approval, a vehicle type approved to the preceding series of amendments to this Regulation.
  - 12.4. Contracting Parties applying this UN Regulation shall not refuse to grant extensions of UN type approvals for existing types which have been granted according to the preceding series of amendments to this UN Regulation.
  - 12.5. Notwithstanding paragraph 12.3., UN type approvals to the preceding series of amendments to the UN Regulation which are not affected by the 02 series of amendments shall remain valid and Contracting Parties applying the UN Regulation shall continue to accept them.
  - 12.6. As a derogation to paragraph 12.2., until [**1 April 2020**], Type Approvals may be granted to new vehicle types not complying with the red colour for the hands-off warning signal, mandated in paragraph 5.6.2.2.5., and having multi information displays installed in the instrument cluster not capable of indicating red warning signals or using standalone tell-tales only

"

*Annex 1, amend the marking provisions as necessary to reflect the 02 series of amendments to this Regulation.]*

*Insert a new Annex 8, to read:*

## "Annex 8

### **Test requirements for corrective and automatically commanded steering functions**

1. General Provisions

Vehicles fitted with CSF and/or ACSF systems shall fulfil the appropriate tests requirements of this annex.
2. Testing conditions

The tests shall be performed on a flat, dry asphalt or concrete surface affording good adhesion. The ambient temperature shall be between 0° C and 45° C.

  - 2.1. Lane markings

The lane markings on the road used for the tests shall be in line with one of those described in Annex 3 of Regulation No. 130. The markings shall be in good condition and of a material conforming to the standard for visible lane markings. The lane-marking layout used for the tests shall be recorded in the test report.

The width of the lane shall be minimum 3.5m, for the purpose of the tests of this Annex.

The test shall be performed under visibility conditions that allow safe driving at the required test speed.

The vehicle manufacturer shall demonstrate, through the use of documentation, compliance with all other lane markings identified in Annex 3 of Regulation No. 130. Any of such documentation shall be appended to the test report.
  - 2.2. Tolerances

All vehicle speeds specified for the tests described in this annex shall be met within a tolerance of  $\pm 2$  km/h.
  - 2.3. Vehicle conditions
    - 2.3.1. Test mass

The vehicle shall be tested in a load condition agreed between the manufacturer and the Technical Service. No load alteration shall be made once the test procedure has begun. The vehicle manufacturer shall demonstrate, through the use of documentation, that the system works at all load conditions.
    - 2.3.2. The vehicle shall be tested at the tyre pressures recommended by the vehicle manufacturer.
  - 2.4. Lateral acceleration

The position representing the centre of gravity, at which the lateral acceleration shall be measured, shall be determined in agreement between the vehicle manufacturer and the Technical Service. This position shall be identified in the test report.

The lateral acceleration shall be measured without taking into account the additional effects due to the movements of the vehicle body (e.g. roll of sprung mass).

3. Tests procedures

3.1. Tests for CSF

The following test applies to CSF functions defined in subparagraph (c) of CSF definition in paragraph 2.3.4.2. of this Regulation.

3.1.1. Warning test for CSF

3.1.1.1. The vehicle shall be driven with an activated CSF on a road with lane markings on each side of the lane. In case of a CSF whose interventions are solely based on the evaluation of the presence and location of lane boundaries, the vehicle shall be driven on a road delimited by the boundaries as declared by the manufacturer (e.g. road edge).

The test conditions and the vehicle test speed shall be within the operating range of the system.

During the test, the duration of the CSF interventions and of the optical and acoustic warning signals shall be recorded.

In the case of paragraph 5.1.6.1.2.1. of this Regulation, the vehicle shall be driven such that it attempts to leave the lane and causes CSF intervention to be maintained for a period longer than 10s (for  $M_1$ ,  $N_1$ ) or 30s (for  $M_2$ ,  $M_3$ ,  $N_2$ ,  $N_3$ ). If such a test cannot be practically achieved due to e.g. the limitations of the test facilities, with the consent of the type approval authority this requirement may be fulfilled through the use of documentation.

The test requirements are fulfilled if:

- (a) The acoustic warning is provided no later than 10s (for  $M_1$ ,  $N_1$ ) or 30s (for  $M_2$ ,  $M_3$ ,  $N_2$ ,  $N_3$ ) after the beginning of the intervention.

In the case of paragraph 5.1.6.1.2.2. of this Regulation, the vehicle shall be driven such that it attempts to leave the lane and causes at least three interventions of the system within a rolling interval of 180 s.

The test requirements are fulfilled if:

- (a) an optical warning signal is provided for each intervention, as long as the intervention exists, and
- (b) an acoustic warning signal is provided at the second and third intervention, and
- (c) the acoustic warning signal at the third intervention is at least 10s longer than the one at the second intervention.

3.1.1.2. In addition, the manufacturer shall demonstrate to the satisfaction of the Technical Service that the requirements defined in paragraphs 5.1.6.1.1. and 5.1.6.1.2. are fulfilled in the whole range of CSF operation. This may be achieved on the basis of appropriate documentation appended to the test report.

3.1.2. Overriding force test

3.1.2.1. The vehicle shall be driven with an activated CSF on a road with lane markings on each side of the lane.

The test conditions and the vehicle test speed shall be within the operating range of the system.

The vehicle shall be driven such that it attempts to leave the lane and causes CSF intervention. During the intervention, the driver shall apply a force on the steering control to override the intervention.

The force applied by the driver on the steering control to override the intervention shall be recorded.

3.1.2.2. The test requirements are fulfilled if the force applied by the driver on the steering control to override the intervention does not exceed 50 N.

3.1.2.3. In addition, the manufacturer shall demonstrate to the satisfaction of the Technical Service that the requirements defined in paragraph 5.1.6.1.3. are fulfilled in the whole range of CSF operation. This may be achieved on the basis of appropriate documentation appended to the test report.

3.2. Tests for ACSF Category B1 Systems

3.2.1. Lane keeping functional test

3.2.1.1. The vehicle speed shall remain in the range from  $V_{\min}$  up to  $V_{\max}$ .

The test shall be carried out for each speed range specified in paragraph 5.6.2.1.3. of this Regulation separately or within contiguous speed ranges where the  $a_{y_{\max}}$  is identical.

The vehicle shall be driven without any force applied by the driver on the steering control (e.g. by removing the hands from the steering control) with a constant speed on a curved track with lane markings at each side.

The necessary lateral acceleration to follow the curve shall be between 80 and 90% of the maximum lateral acceleration specified by the vehicle manufacturer  $a_{y_{\max}}$ .

The lateral acceleration and the lateral jerk shall be recorded during the test.

3.2.1.2. The test requirements are fulfilled if:

The vehicle does not cross any lane marking.

The moving average over half a second of the lateral jerk does not exceed 5  $\text{m/s}^3$ .

3.2.1.3. The vehicle manufacturer shall demonstrate to the satisfaction of the Technical Service that the requirements for the whole lateral acceleration and speed range are fulfilled. This may be achieved on the basis of appropriate documentation appended to the test report.

3.2.2. Maximum lateral acceleration test

3.2.2.1. The vehicle speed shall remain in the range from  $V_{\min}$  up to  $V_{\max}$ .

The test shall be carried out for each speed range specified in paragraph 5.6.2.1.3. of this Regulation separately or within contiguous speed ranges where the  $a_{y_{\max}}$  is identical.

The vehicle shall be driven without any force applied by the driver on the steering control (e.g. by removing the hands from the steering control) with a constant speed on a curved track with lane markings at each side.

The technical service defines a test speed and a radius which would provoke a higher acceleration than  $a_{y_{\max}} + 0.3 \text{ m/s}^2$  (e.g. by travelling with a higher speed through a curve with a given radius).

The lateral acceleration and the lateral jerk shall be recorded during the test.

- 3.2.2.2. The test requirements are fulfilled if:
- The recorded acceleration is within the limits specified in paragraph 5.6.2.1.3. of this Regulation.
- The moving average over half a second of the lateral jerk does not exceed 5 m/s<sup>3</sup>.
- 3.2.3. Overriding force test
- 3.2.3.1. The vehicle speed shall remain in the range from  $V_{\text{min}}$  up to  $V_{\text{max}}$ .
- The vehicle shall be driven without any force applied by the driver on the steering control (e.g. by removing the hands from the steering control) with a constant speed on a curved track with lane markings at each side.
- The necessary lateral acceleration to follow the curve shall be between 80 and 90 per cent of the minimum value specified in the table of paragraph 5.6.2.1.3. of this Regulation.
- The driver shall then apply a force on the steering control to override the system intervention and leave the lane.
- The force applied by the driver on the steering control during the overriding manoeuvre shall be recorded.
- 3.2.3.2. The test requirements are fulfilled if the force applied by the driver on the steering control during the overriding manoeuvre is less than 50N.
- The manufacturer shall demonstrate through appropriate documentation that this condition is fulfilled throughout the ACSF operation range.
- 3.2.4. Transition test; hands-on test
- 3.2.4.1. The vehicle shall be driven with activated ACSF with a vehicle test speed between  $V_{\text{min}} + 10$  km/h and  $V_{\text{min}} + 20$  km/h on a track with lane markings at each side of the lane.
- The driver shall release the steering control and continue to drive until the ACSF is deactivated by the system. The track shall be selected such that it allows driving with activated ACSF for at least 65 s without any driver intervention.
- The test shall be repeated with a vehicle test speed between  $V_{\text{max}} - 20$  km/h and  $V_{\text{max}} - 10$  km/h or 130 km/h whichever is lower.
- Additionally, the vehicle manufacturer shall demonstrate to the satisfaction of the Technical Service that the requirements for the whole speed range are fulfilled. This may be achieved on the basis of appropriate documentation appended to the test report.
- 3.2.4.2. The test requirements are fulfilled if:
- The optical warning signal was given at the latest 15 s after the steering control has been released and remains until ACSF is deactivated.
- The acoustic warning signal was given at the latest 30 s after the steering control has been released and remains until ACSF is deactivated.
- The ACSF is deactivated at the latest 30 s after the acoustic warning signal has started, with an acoustic emergency signal of at least 5 s, which is different from the previous acoustic warning signal."

## Annex VI

**Adopted amendments to Regulation No. 106****(Based on GRRF-83-23)**

In ECE/TRANS/WP.29/GRRF/2017/9,

The new proposed paragraph 3.1.13., shall be deleted

Proposed amendments to paragraph 4.1.12., shall be deleted

Proposed amendments to paragraph 4.1.15., shall be deleted

Proposed new paragraph 12., shall be deleted

Proposed amendments to Annex 3., shall be deleted

Proposed amendment to Annex 11., the pictogram, shall be deleted

**(Based on GRRF-83-15)**

In Regulation No. 106,

Paragraph 2.16., amend the table by adding diameter code 'd' 28.5 as follows:

...

"d" symbol expressed by codes	Value to be used for the calculation in paras. 6.2.1. and 6.4 (mm)
...	...
26.5	673
<b>28.5.5</b>	<b>724</b>
30.5	775

...

Annex 5, Table 7, add the following entries:

"

Tyre size designation	Theoretical rim width code (A1)	Nominal section width (S1) (mm)	Overall diameter (D) (mm)	Nominal rim diameter (d) (mm)
...				
<b>24X8.00-12</b>	<b>6.5</b>	<b>204</b>	<b>610</b>	<b>305</b>
<b>24X10.00-12</b>	<b>8</b>	<b>254</b>	<b>610</b>	<b>305</b>
<b>26X8.00-12</b>	<b>6.5</b>	<b>204</b>	<b>660</b>	<b>305</b>
<b>26X8.00-14</b>	<b>6.5</b>	<b>204</b>	<b>660</b>	<b>356</b>
<b>27X10.00-14</b>	<b>8</b>	<b>254</b>	<b>686</b>	<b>356</b>
<b>27X12.00-14</b>	<b>9.5</b>	<b>304</b>	<b>686</b>	<b>356</b>
<b>28X9.00-14</b>	<b>7</b>	<b>227</b>	<b>711</b>	<b>356</b>
<b>28X10.00-12</b>	<b>8</b>	<b>254</b>	<b>711</b>	<b>305</b>
<b>28X10.00-15</b>	<b>8</b>	<b>254</b>	<b>711</b>	<b>381</b>
<b>28X11.00-14</b>	<b>9</b>	<b>281</b>	<b>711</b>	<b>356</b>
<b>28X11.00-15</b>	<b>9</b>	<b>281</b>	<b>711</b>	<b>381</b>
<b>28X12.00-12</b>	<b>9.5</b>	<b>304</b>	<b>711</b>	<b>305</b>
<b>29X9.00-14</b>	<b>7</b>	<b>227</b>	<b>737</b>	<b>356</b>

<i>Tyre size designation</i>	<i>Theoretical rim width code (A1)</i>	<i>Nominal section width (S1) (mm)</i>	<i>Overall diameter (D) (mm)</i>	<i>Nominal rim diameter (d) (mm)</i>
<b>29X9.00-15</b>	<b>7</b>	<b>227</b>	<b>737</b>	<b>381</b>
<b>29X9.00-16</b>	<b>7</b>	<b>227</b>	<b>737</b>	<b>406</b>
<b>29X9.50-15</b>	<b>7.5</b>	<b>240</b>	<b>737</b>	<b>381</b>
<b>29X11.00-14</b>	<b>9</b>	<b>281</b>	<b>737</b>	<b>356</b>
<b>29X11.00-16</b>	<b>9</b>	<b>281</b>	<b>737</b>	<b>406</b>
<b>30X9.00-14</b>	<b>7</b>	<b>227</b>	<b>762</b>	<b>356</b>
<b>30X10.00-14</b>	<b>8</b>	<b>254</b>	<b>762</b>	<b>356</b>
<b>30X10.00-15</b>	<b>8</b>	<b>254</b>	<b>762</b>	<b>381</b>
<b>30X11.00-14</b>	<b>9</b>	<b>281</b>	<b>762</b>	<b>356</b>
<b>31X10.00-17</b>	<b>8</b>	<b>254</b>	<b>787</b>	<b>432</b>
<b>32X10.00-16</b>	<b>8</b>	<b>254</b>	<b>813</b>	<b>406</b>
<b>32X10.00-18</b>	<b>8</b>	<b>254</b>	<b>813</b>	<b>457</b>
...				

"

Annex 5, Table 9, add the following entry:

"

<i>Tyre size designation</i>	<i>Theoretical rim width code (A1)</i>	<i>Nominal section width (S1) (mm)</i>		<i>Overall diameter (D) (mm)</i>		<i>Nominal rim diameter (d) (mm)</i>
		<i>Radial</i>	<i>Diagonal</i>	<i>Radial</i>	<i>Diagonal</i>	
...						
<b>11L-16 IND</b>	<b>8</b>	<b>290</b>		<b>850</b>		<b>406</b>
...						



## Annex VII

### Adopted amendment to ECE/TRANS/WP.29/GRRF/2016/35

Based on GRRF-82-23

In ECE/TRANS/WP.29/GRRF/2016/35,

Paragraph numbers 2.17.1.3.1., correct to read 2.20.1.3.1.

Paragraph 3.1.5., amend to read:

**"3.1.5. The inscription M+S or M.S or M&S if the tyre is classified in the category of use "snow tyre" or if the tyre is classified in the category of use "special use tyre" when declared by the tyre manufacturer at paragraph 4.1.3. as complying also with the definition given in paragraph ~~2.2.2.~~ 2.5.2."**

Paragraph 3.1.10., amend to read (delete the reference to footnote 5):

"3.1.10. An indication, by the "PSI" index, of the inflation pressure to be adopted for the load/speed endurance tests, as explained in Annex 7, Appendix 2. However, this indication, which it is permissible to restrict to one sidewall, shall not be mandatory, on any tyre submitted for approval, until two years after the date of entry into force of this Regulation<sup>5</sup>

Paragraph 6.1.5.3.3., amend to read:

**"6.1.5.3.3. For tyres of the category of use "snow tyre" the outer diameter shall not exceed the following value**

$$D_{\max, \text{snow}} = 1.01 \cdot D_{\max} \quad \text{rounded to the nearest mm}$$

**where  $D_{\max}$  is the maximum outer diameter established in conformity with the above.**

~~For tyres of the category of use "snow tyre" the outer diameter ( $D_{\max}$ ) established in conformity with the above may be exceeded by one per cent."~~

**Headline of paragraph 11., amend to read**

**"11. Names and addresses of technical services responsible for conducting approval tests, of test laboratories, and of Type Approval Authorities."**

Appendix 1 note 1, amend to read:

**"Endurance-test programme**

Load index	Tyre speed category symbol	Test-drum speed		Load placed on the wheel as a percentage of the load corresponding to the load index		
		Radial-ply km/h <sup>-1</sup>	Diagonal (bias-ply) km/h <sup>-1</sup>	7 h.	16 h.	24 h.
122 or more	F	32	32	66 %	84 %	101 %
	G	40	32			
	J	48	40			
	K	56	48			
	L	64	-			
	M	72	-			
121 or less	F	32	32	<u>70 %</u> <u>4 h.</u>	<u>88 %</u> <u>6 h.</u>	106 %
	G	40	40			
	J	48	48			
	K	56	56			
	L	64	56	75 %	97 %	114 %
	M	80	64	75 %	97 %	114 %
	N	88	-	75 %	97 %	114 %
	P	96	-	75 %	97 %	114 %

Notes:

(1) "Special-use" tyres (see paragraph 2.1.3. of this Regulation) should be tested at a speed equal to 85 per cent of the speed prescribed for equivalent normal tyres.

"