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### Inland Transport Committee

### World Forum for Harmonization of Vehicle Regulations

### Working Party on Noise

Sixty-first session

Geneva, 27-29 January 2015

## Report of the Working Party on Noise on its sixty-first session

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## I. Attendance

1. The Working Party on Noise (GRB) held its sixty-first session from 27 to 29 January 2015 in Geneva. The meeting was chaired by Mr. S. Ficheux (France). 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, Amend. 1 and Amend. 2): Austria; Belgium; China; France; Germany; Hungary; India; Italy; Japan; Netherlands; Norway; Poland; Republic of Korea; Russian Federation; Spain; Sweden; Switzerland; United Kingdom of Great Britain and Northern Ireland. Expert from the European Commission (EC) participated. Experts from the following non-governmental organizations also participated: Conference of European Directors of Roads (CEDR); European Association of Automobile Suppliers (CLEPA); European Tyre and Rim Technical Organisation (ETRTO); International Motorcycle Manufacturers Association (IMMA); International Organization for Standardization (ISO); International Organization of Motor Vehicle Manufacturers (OICA) and World Blind Union (WBU).

2. In her opening statement Ms. Eva Molnar, Director, UNECE Transport Division, informed GRB about the recent appointment of Mr. Walter Nissler as Chief, Vehicle Regulations and Transport Innovations Section. She also mentioned the ongoing global negotiations on the Sustainable Developments Goals (SDG), which should replace the Millennium Development Goals (MDG) as of 2016, and argued in favour of including transport related goals into SDG. In this context, she introduced a new edition of the UNECE publication "Transport for Sustainable Development" addressing issues of transport safety, security and environmental performance of vehicles. Finally, she briefed GRB on the highlights of the forthcoming session of the Inland Transport Committee (24-26 February 2015).

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

*Documentation:* ECE/TRANS/WP.29/GRB/2015/1

3. GRB considered and adopted the agenda.

## III. Regulation No. 28 (Audible warning devices) (agenda item 2)

*Documentation:* ECE/TRANS/WP.29/GRB/2014/4, Informal documents GRB-61-07, GRB-61-12

4. GRB resumed discussion on ECE/TRANS/WP.29/GRB/2014/4 by OICA proposing amendments to UN Regulation No. 28, in particular, a reduction in the prescribed sound level of the audible warning device from 93 to 87 dB(A). The expert from IMMA suggested further changes to this proposal (GRB-61-07). GRB adopted the proposal, as amended by Annex II to this report, and mandated the secretariat to submit it to WP.29 and the Administrative Committee of the 1958 Agreement (AC.1) for consideration and vote at their June 2015 sessions as draft Supplement 4 to the original series of amendments to Regulation No. 28. GRB noted that the adopted modification of the prescribed sound level makes this requirement less stringent and, thus, does not need a new series of amendments with transitional provisions.

5. The expert from the Russian Federation pointed out that Regulation No. 28 had not been updated for a long time and proposed a number of editorial modifications (GRB-61-

12). GRB welcomed this initiative and decided to consider it at the next session, based on an official document to be submitted by the expert from the Russian Federation.

#### **IV. Regulation No. 41 (Noise of motorcycles): Development (agenda item 3)**

*Documentation:* ECE/TRANS/WP.29/GRB/2015/2 and Corr.1 and Corr. 2, Informal document GRB-61-11

6. The expert from IMMA proposed to introduce the calculated engine speed for various types of transmission into Regulation No. 41 (ECE/TRANS/WP.29/GRB/2015/2 and Corr. 1, Corr. 2). GRB adopted the proposal and mandated the secretariat to submit it to WP.29 and AC.1 for consideration and vote at their June 2015 sessions as a draft Supplement to Regulation No. 41.

7. The expert from IMMA also proposed to amend paragraph 8.2. of Regulation No. 41 on the conformity of production (GRB-61-11). GRB decided to address this issue at the next session on the basis of an official document by IMMA.

#### **V. Regulation No. 51 (Noise of M and N categories of vehicles) (agenda item 4)**

##### **A. Development**

*Documentation:* ECE/TRANS/WP.29/GRB/2015/3 and Corr.1, Informal documents GRB-61-05, GRB-61-08

8. On behalf of the Informal Working Group (IWG) on UN Regulations Nos. 51 and 59, the expert from OICA introduced further proposals for amendments to the 03 series of amendments to UN Regulation No. 51 (ECE/TRANS/WP.29/GRB/2015/3 and Corr.1). The expert from Japan expressed concerns about a relaxation clause for a specific category of vehicles included in these proposals (GRB-61-05) and proposed an alternative wording. Further corrections were suggested by the experts from the Netherlands (GRB-61-08), Spain, the European Commission and OICA. Finally, GRB adopted the proposals, as amended by Annex III to this report.

9. GRB recalled that, at its previous session, it had adopted the draft 03 series of amendments to Regulation No. 51 (ECE/TRANS/WP.29/GRB/2014/5, ECE/TRANS/WP.29/GRB/58, para. 5 and Annex III) which had subsequently been submitted to WP.29 and AC.1 for consideration and vote at their March 2015 sessions as document ECE/TRANS/WP.29/2015/3. With regard to the additional proposals adopted at this session (para. 8 above and Annex III to this report), GRB noted two options for their processing:

- (i) submit them separately to WP.29 and AC.1 for consideration and vote at their June 2015 session as a draft Supplement 1 to the 03 series of amendments to Regulation No. 51; or
- (ii) combine them with the 03 series of amendments to Regulation No. 51 (ECE/TRANS/WP.29/2015/3) in a single document and submit it to WP.29 and AC.1 for consideration and vote at their June 2015 sessions. In this case, WP.29 and AC.1 would be requested not to consider document ECE/TRANS/WP.29/2015/3 in March 2015.

10. GRB supported option (ii) and mandated its Chair to report about this decision to WP.29, AC.1 and the Administrative Committee for the Coordination of Work (AC.2) at their sessions in March 2015. GRB also noted that IWG on UN Regulations Nos. 51 and 59 had completed its tasks and that the extension of its mandate was not necessary.

## **B. Additional sound emission provisions**

11. No new information was reported under this item.

## **VI. Regulation No. 59 (Replacement silencing systems) (agenda item 5)**

*Documentation:* ECE/TRANS/WP.29/GRB/2015/4

12. GRB considered additional proposals for the 02 series of amendments to Regulation No. 59 prepared by IWG on Regulations Nos. 51 and 59 (ECE/TRANS/WP.29/GRB/2015/4). GRB adopted these proposals, as amended by Annex IV to this report, and mandated the secretariat to submit them to WP.29 and AC.1 for consideration and vote at their June 2015 sessions as a draft Supplement 1 to the 02 series of amendments to Regulation No. 59.

## **VII. Regulation No. 92 (Replacement exhaust silencing systems for motorcycles) (agenda item 6)**

13. No new information was given under this agenda item.

## **VIII. Regulation No. 117 (Tyre rolling resistance, rolling noise and wet grip) (agenda item 7)**

*Documentation:* ECE/TRANS/WP.29/GRB/2014/8,  
ECE/TRANS/WP.29/GRRF/2015/9,  
Informal documents GRB-61-06, GRB-61-09, GRB-61-14

14. GRB continued its consideration of the revised proposal for new time measurement accuracy for the rolling resistance method (ECE/TRANS/WP.29/GRB/2014/8). The expert from Japan introduced several modifications to this proposal (GRB-61-06). GRB adopted the proposal, as contained in Annex V to this report, and mandated the secretariat to submit it to WP.29 and AC.1 for consideration and vote at their June 2015 sessions as a draft Supplement 8 to the 02 series of amendments to Regulation No. 117. GRB also noted that the Working Party on Brakes and Running Gear (GRRF), at its February 2015 session, would consider a corrigendum to Supplement 6 to the 02 series of amendments to Regulation No. 117 (ECE/TRANS/WP.29/GRRF/2015/9).

15. The expert from France presented the results of testing tyres of commercial vehicles (classes C2 and C3) for the deceleration test method using the  $d\omega/dt$  form for measuring rolling resistance (GRB-61-09). The aim of this study was to compare the measurements obtained at a dedicated and non-dedicated rolling resistance machine. The results at the non-dedicated rolling resistance machine demonstrated a poor repeatability of the measurements, thus leaving open the question whether or not such machines are suitable for the proposed deceleration test method. GRB was of the view that further studies would be necessary and encouraged other laboratories to conduct such tests.

16. The expert from ETRTO referred to the ongoing work of updating references to the new version of ISO standard 10844:2014 (see para. 17 below) and proposed similar amendments to Annex 3 of Regulation No. 117 (GRB-61-14). The expert of ISO recalled his presentation on the comparison between the 2014 and 2011 versions of ISO 10844 (GRB-60-17) and confirmed that only editorial modifications had been introduced without any technical changes. Thus, GRB agreed that no transitional provisions were required in this case. GRB adopted the proposal, as contained in Annex VI to this report, and mandated the secretariat to submit it to WP.29 and AC.1 for consideration and vote at their June 2015 sessions as a draft supplement to Regulation No. 117.

## **IX. Collective amendments (agenda item 8): Additional provisions for Regulations Nos. 9, 41 and 63**

*Documentation:* ECE/TRANS/WP.29/GRB/2015/5, Informal document GRB-61-13

17. The expert from IMMA proposed collective amendments to Regulations Nos. 9, 41 and 63 to introduce the recently published standard ISO 10844:2014 and to align the transition provisions for new type approvals and extension to approvals (ECE/TRANS/WP.29/GRB/2015/5 and GRB-61-13). GRB adopted these proposals, as contained in Annexes VII, VIII and IX to this report, and mandated the secretariat to submit them to WP.29 and AC.1 for consideration and vote at their June 2015 sessions.

## **X. Exchange of information on national and international requirements on noise levels (agenda item 9)**

*Documentation:* Informal documents GRB-61-01 and Add.1, GRB-61-03 and Add.1, GRB-61-17, GRB-61-18

18. The expert from the Netherlands recalled the two studies presented at the previous session of GRB and introduced further arguments for tightening tyre noise limits in Regulation No. 117, together with the text of draft amendments (GRB-61-03 and Add.1). The expert from ETRTO questioned if the pool of tyres selected for the Dutch studies had indeed been a representative sample (GRB-61-18). He further pointed out that, for the time being, the tyre industry was busy meeting the requirements of 02 series of amendments to Regulation No. 117 which had recently come into force, in November 2012. According to him, until the completion of this process by 2018-2020, it would be premature to consider further reducing of tyre noise limits. The experts from China, Norway and Switzerland agreed that the proposal by the Netherlands needed further study. The experts from France and Germany pointed out various problems with labelling of tyres. GRB invited experts to provide their comments on the Dutch proposal and decided to revert to this issue at the next session on the basis of a new informal document containing the draft amendment proposals tabled by the expert from the Netherlands in GRB-61-03.

19. The expert from the Russian Federation presented historical developments of health standards and regulations on internal noise in the former Soviet Union and the Russian Federation (GRB-61-17). He also informed GRB that, as from 1 January 2015, a new regional regulation had come into force in the Customs Union establishing obligatory values for internal noise. He further clarified that his presentation was only for information purposes and that any concrete proposals could only be submitted to GRB when standard ISO-5128 on measuring internal noise, dated back to 1980, would be updated. The expert from ISO reported on ISO activities in this respect. The Chair proposed to keep this issue

in the agenda and, as a first step, to consider if the methods for measuring inside noise in the Consolidated Resolution on the Construction of Vehicles (R.E.3) should be updated.

20. The expert from the Netherlands presented a discussion paper (GRB-61-01 and Add.1) exploring the possibility of introducing a noise label system for vehicles and providing an initial model for such labelling. In particular, he suggested that a labelling system for private cars rely on scores for interior noise, powertrain noise (engine and exhaust system), and tyre noise. The experts from Austria, France, Germany and OICA raised practical questions regarding the potential advantages of such a labelling system for customers. The expert from the European Commission pointed out that labelling falls under the competence of the Community and that the EU internal procedures should be followed. GRB decided to come back to this issue at the next session.

## **XI. Influence of road surface on tyre rolling sound emissions (agenda item 10)**

*Documentation:* Informal document GRB-61-16

21. The expert from CEDR presented the experiences of his organization and its members regarding the use of noise reducing pavements (GRB-61-16). Such pavements were found to be more cost-effective than noise barriers and to reduce noise levels with 2 to 3 dB (max. 6 dB). On the other hand, the lifetime of noise reducing pavements is less than the one of non-noise reducing pavements and the investment costs of noise reducing pavements is higher than the costs of non-noise reducing pavements.

22. GRB noted that three factors contribute to the overall noise production: vehicles, tyres and road surfaces. Thus, a holistic approach should be followed to reduce sound emissions. The Chair recalled that, at present, UN Regulations do not address the issue of road surfaces and that GRB has no mandate for regulating pavements. GRB agreed to continue this discussion at its next session and looked forward to new studies and presentations on the issue.

## **XII. Quiet Road Transport Vehicles (agenda item 11)**

*Documentation:* Informal documents GRB-61-02, GRB-61-10, GRB-61-15

23. The expert of WBU presented a position paper (GRB-61-15) with concerns about an Audible Vehicle Alert System (AVAS) of Quiet Road Transport Vehicles (QRTV). He stressed that AVAS must fulfil four criteria, namely presence, direction, location and operation of a hybrid electric or electric vehicle. He further explained that the AVAS sound must be detectable and locatable, AVAS must be on while the vehicle is stationary and that the driver should not be able to switch off (or pause) AVAS.

24. The experts from France and Germany, co-chairing IWG QRTV for a UN Regulation, briefed GRB on the progress in preparing a draft UN Regulation on QRTV under the 1958 Agreement and on its key aspects (GRB-61-02, GRB-61-10). GRB noted that a draft Regulation would be officially submitted to the next session of GRB in September 2015, as foreseen by the IWG mandate. The Chair invited GRB experts to provide IWG with their comments on a draft QRTV regulation as soon as possible and/or to take part in the work of IWG.

25. GRB confirmed that, for the time being, a new QRTV Regulation would cover electric and hybrid electric vehicles of categories M and N only. GRB agreed that stationary noise and the pause-switch function would be optional in stage 1. GRB also

agreed that a maximum AVAS sound level should be introduced into a QRTV Regulation, with a view to protecting environment. The expert of WBU concurred with this view.

26. The Chair recalled that IWG QRTV for a UN Regulation should be working in close cooperation with IWG QRTV for GTR. He also pointed out that IWG QRTV for GTR would ask WP.29 to extend its mandate for one year.

### **XIII. Definitions and acronyms in Regulations under the responsibility of GRB (agenda item 12)**

*Documentation:* Informal documents GRB-57-12, GRB-57-18

27. GRB noted that, in line with the WP.29 decision, the secretariat was preparing a concept of a central register in which acronyms used by WP.29 as well as definitions used in UN Regulations and UN GTRs would be listed. In this context, GRB reiterated its request to OICA and IMMA to update documents GRB-57-12 and GRB-57-18 containing definitions and acronyms in Regulations under the responsibility of GRB.

### **XIV. Proposal for amendments to the Consolidated Resolution on the Construction of Vehicles (agenda item 13)**

*Documentation:* ECE/TRANS/WP.29/2015/35

28. GRB was informed that the Working Party on Lighting and Light-Signalling (GRE) had approved draft definitions for agricultural trailers and towed machinery, to be included into the Consolidated Resolution on the Construction of Vehicles (R.E.3) (ECE/TRANS/WP.29/2015/35). GRB invited experts to transmit their comments and suggestions, if any, to the secretariat.

### **XV. Development of the International Whole Vehicle Type Approval (IWVTA) system and involvement of the Working Parties (GRs) in it (agenda item 14)**

*Documentation:* ECE/TRANS/WP.29/2014/53, ECE/TRANS/WP.29/2014/82

29. The secretariat informed GRB about the current situation in Revision 3 of the 1958 Agreement, development of IWVTA and the Database on Exchange of Type Approval documentation (DETA) and highlighted the recent changes in the draft text of Revision 3 made at the November 2014 session of WP.29 as well as the remaining outstanding issues (ECE/TRANS/WP.29/2014/53, ECE/TRANS/WP.29/2014/82). GRB requested the secretariat to deliver, at its next session, a detailed presentation on Revision 3 of the 1958 Agreement. The Chair pointed out that Regulations Nos. 28, 51 and 117 under the responsibility of GRB had been recently amended and are ready for the inclusion in the IWVTA listing.

### **XVI. Highlights of the November 2014 session of WP.29 (agenda item 15)**

*Documentation:* ECE/TRANS/WP.29/1112, Informal document GRB-61-04



30. The secretariat reported on the highlights of the 164th session of WP.29 (ECE/TRANS/WP.29/1112, GRB-61-04).

## **XVII. Exchange of views regarding the future work of GRB (agenda item 16)**

31. Following the adoption of major amendments to several Regulations, GRB resumed its exchange of views on issues that should be included in the future work. The expert from France was of the view that GRB would be occupied with updating Regulation No. 28 (see para. 5 above). The expert from Germany pointed out that backing alarms for QRTV could cause problems at night and volunteered to prepare an informal document on this issue for the next session.

## **XVIII. Other business (agenda item 17)**

32. GRB was informed that Mr. Pieter Steenackers (CLEPA) would no longer attend its sessions. GRB thanked him for his contributions and wished him success in his new career.

33. The secretariat reported on best practices for using private standards in Regulations managed by WP.29 (WP.29-164-26).

34. The expert from IMMA informed GRB of his intention to submit, to the next session, proposals for amendments to Regulation No. 41 for hybrid vehicles. He invited GRB experts to provide comments, if any, before the next session.

## **XIX. Provisional agenda for the sixty-second session (agenda item 18)**

35. For its sixty-second session, scheduled to be held in Geneva from 1 (starting at 2.30 p.m.) to 3 (concluding at 5.30 p.m.) September 2015, GRB noted that the deadline for the submission of official documents to the secretariat was 5 June 2015, twelve weeks prior to the session. The following provisional agenda was adopted:

1. Adoption of the agenda.
2. Regulation No. 28 (Audible warning devices).
3. Regulation No. 41 (Noise of motorcycles): Development.
4. Regulation No. 51 (Noise of M and N categories of vehicles):
  - (a) Development;
  - (b) Additional sound emission provisions.
5. Regulation No. 59 (Replacement silencing systems).
6. Regulation No. 92 (Replacement exhaust silencing systems for motorcycles).
7. Regulation No. 117 (Tyre rolling noise and wet grip adhesion).
8. Collective amendments.
9. Exchange of information on national and international requirements on noise levels.
10. Influence of road surface on tyre rolling sound emissions.

11. Quiet road transport vehicles.
12. Definitions and acronyms in Regulations under the responsibility of GRB.
13. Proposal for amendments to the Consolidated Resolution on the Construction of Vehicles.
14. Development of the International Whole Vehicle Type Approval (IWVTA) system and involvement of the Working Parties (GRs) in it.
15. Highlights of the March and June 2015 sessions of WP.29.
16. Exchange of views regarding the future work of GRB.
17. Other business.
18. Provisional agenda for the sixty-third session.
19. Election of officers.

## Annex I

### List of informal documents (GRB-61-...) distributed during the session

<i>Symbol</i>	<i>Transmitted by</i>	<i>Agenda item</i>	<i>Language</i>	<i>Title</i>	<i>Follow-up</i>
1	Netherlands	9	E	A noise label for motor vehicles: towards quieter traffic	(c)
1-Add.1	Netherlands	9	E	A noise label for motor vehicles: towards quieter traffic (presentation)	(c)
2	IWG QRTV	11	E	Draft QRTV Regulation	(d)
3	Netherlands	9	E	Possible future tyre noise limits	(c)
3-Add.1	Netherlands	9	E	Possible future tyre noise limits (presentation)	(c)
4	Secretariat	15	E	General information and WP.29 highlights	(a)
5	Japan	4 (a)	E	Comments on ECE/TRANS/WP.29/GRB/2015/3	(d)
6	Japan	7	E	Proposal for amendments to Regulation No. 117	(d)
7	IMMA	2	E	Proposal for amendments to ECE/TRANS/WP.29/GRB/2014/4	(d)
8	Netherlands	4 (a)	E	Proposal for amendments to the 03 series of amendments to Regulation No. 51	(d)
9	France	7	E	Method of deceleration measuring and data processing for tyre rolling resistance determination	(a)
10	IWG QRTV	11	E	QRTV for a UN Regulation	(b)
11	IMMA	3	E	Proposal to amend the 04 series of amendments to Regulation No. 41 to formalize the GRB interpretation of the conformity of production	(d)
12	Russian Federation	2	E	Proposal for draft amendments to UN Regulation No. 28	(b)
13	IMMA	8	E	Revised proposals for amendment to Regulations Nos. 9, 41 and 63 replacing the proposals in document ECE/TRANS/WP.29/GRB/2015/5	(d)
14	ETRTO	7	E	Proposal for amendments to Regulation No. 117	(d)
15	WBU	11	E	Statement on QRTV	(a)
16	CEDR	10	E	Traffic noise and motorway pavements	(a)
17	Russian Federation	9	E	Draft interstate standard on internal noise	(a)
18	ETRTO	9	E	Exchange of information on national and international requirements on noise levels: comments on GRB-60-08, GRB-60-12, GRB-60-14-Rev.1 and GRB-61-03	(a)

*Notes:*

- (a) Consideration completed or superseded
- (b) Continue consideration at the next session with an official symbol
- (c) Continue consideration at the next session as informal document
- (d) Adopted and to be submitted to WP.29

## Annex II

### Adopted amendments to ECE/TRANS/WP.29/GRB/2014/4

*Paragraph 14.4.*, amend to read:

- "14.4. The A-weighted sound pressure level emitted by the device(s) fitted on the vehicle shall be measured at a distance of 7 m in front of the vehicle, the latter being placed on an open site, on ground as smooth as possible, and, in case of devices supplied with direct current, with its engine stopped. **The test voltage as specified in paragraph 6.2.3. shall be supplied by:**
- (a) **the vehicle battery only; or**
  - (b) **the vehicle battery with the vehicle engine warmed-up and at idle;  
or**
  - (c) **with an external power source supply connected to the AWD terminal(s);"**

*Annex 2, after item 5*, insert a new item 6 to read:

- "6. **Power supply used: Vehicle battery only/Battery with vehicle engine at idle/External power supply\*\*/ .....** "

*Annex 2, items 6 (former) to 15*, renumber to become items 7 to 16, respectively.

## Annex III

### Adopted amendments to ECE/TRANS/WP.29/GRB/2015/3 and Corr.1

Paragraph 2.19., replace "noise" with "sound".

New paragraph 2.23., amend to read:

"2.23. **"R-point"** means R-point as defined in paragraph 2.4. of Annex 1 to the Consolidated Resolution on the Construction of Vehicles (R.E.3.)."

New paragraph 2.24., title, amend to read:

"2.24. **Table of Symbols**  
..."

New paragraph 11.8., amend to read:

"11.8. **Until 30 June 2022 for vehicle types of category N<sub>1</sub> or for vehicle types of category M<sub>1</sub> derived from N<sub>1</sub> the limits according to paragraph 6.2.2. of the vehicle types of category N<sub>1</sub> having a technically permissible maximum laden mass above 2.5 tons apply, if all the following specifications are met:**

- **having a technically permissible maximum laden mass of less than or equal to 2.5 tons,**
- **an R-point height greater or equal to 800 mm from the ground,**
- **an engine capacity exceeding 660 cc but less than 1,495 cc,**
- **an engine where the centre point of gravity of the engine is between 300 mm and 1,500 mm behind the front axle,**
- **and having a rear axle drive."**

Annex 3, insert a new paragraph 2.2.7., to read:

"2.2.7. **Calculation procedure to determine extra loading of N<sub>2</sub> and N<sub>3</sub> vehicles only**  
..."

Annex 3, paragraph 3.1.2.1., last sentence, amend to read:

"3.1.2.1. The test speed  $v_{\text{test}}$  is 50 km/h  $\pm$  1 km/h. The test speed shall be reached, when the reference point is at line PP'.

**If the test speed is modified according to paragraph 3.1.2.1.4.1. (e) of Annex 3 to this Regulation, the modified test speed shall be used for both the acceleration and constant speed test."**

Annex 3, paragraph 3.1.2.1.1., amend to read:

"3.1.2.1.1. ...

$PMR = (P_n / m_{t_{ro}}) * 1000 \text{ kg/kW}$ , where  $P_n$  is measured in kW and  $m_{t_{ro}}$  is measured in kg according to paragraph 2.2.1. of this Annex.

**If two or more sources of propulsive power operate at the conditions of test specified in paragraph 3.1.2.1 of Annex 3 to this Regulation, the total engine net power,  $P_n$ , shall be the arithmetic sum of parallel propulsive engines on the vehicle. Applicable parallel propulsive engines are those power sources which provide forward motion to the vehicle in combination at the conditions of test specified in paragraph 3.1.2.1. of Annex 3 to this Regulation. Specified power for non-combustion engines shall be the power stated by the manufacturer."**

*Annex 3, paragraph 3.1.2.1.2.2., amend to read:*

"3.1.2.1.2.2. ...

**If devices or measures described in paragraph 3.1.2.1.4.2. of Annex 3 to this Regulation ~~can be~~ are used to control transmission operation for the purpose of achieving test requirements, calculate  $a_{wor}$  test using the equation:**  
..."

*Annex 3, paragraph 3.1.2.2., second indent, replace "paragraph 2.2.1." with "paragraph 2.2.1. of Annex 3 to this Regulation".*

*Annex 3, paragraph 3.1.2.2.1., amend to read:*

"3.1.2.2.1. Gear ratio selection

**It is the responsibility of the manufacturer to determine the correct manner of testing to achieve the required conditions.**

**The vehicle transmission, gear, or gear ratio, shall be chosen to enable the fulfilment of the target conditions according to paragraph 3.1.2.2.1.1. or 3.1.2.2.1.2. of Annex 3 to this Regulation. The vehicle transmission, gear, or gear ratio may be controlled by electronic or mechanical measures, including the exclusion of the kick-down function.**

**Appendix 3, Figures 4a to 4d, give gear selection criteria and test run criteria for categories  $M_2$  with a technically permissible maximum laden mass exceeding 3,500 kg, and for category  $N_2$ ,  $M_3$  and  $N_3$ , in a flowchart as an aid to test operation."**

*Annex 3, paragraph 3.1.2.2.1.1., fourth indent, replace "3.1.2.2." with "paragraph 3.1.2.2. of Annex 3 to this Regulation".*

*Annex 3, paragraph 3.1.2.2.1.2., sixth indent, replace "3.1.2.2." with "paragraph 3.1.2.2. of Annex 3 to this Regulation".*

*Annex 3, paragraph 3.1.2.2.1.3., third indent, replace "3.1.2.2." with "paragraph 3.1.2.2. of Annex 3 to this Regulation".*

*Annex 3, Appendix 3, figures 3a, 3b, 3c, 3d, 3e, 4a, 4b, 4c, 4d, titles, amend to read respectively:*

**Figure 3a. Flowchart for vehicles tested according to paragraph 3.1.2.1. of Annex 3 to this Regulation –  $L_{urban}$  computation**

**Figure 3b. Flowchart for vehicles tested according to paragraph 3.1.2.1. of Annex 3 to this Regulation – Gear selection using locked gear PART 1**

**Figure 3c. Flowchart for vehicles tested according to paragraph 3.1.2.1. of Annex 3 to this Regulation – Gear selection using locked gear PART 2**

- Figure 3d.** Flowchart for vehicles tested according to paragraph 3.1.2.1. of Annex 3 to this Regulation – Gear selection using locked gear PART 3
- Figure 3e.** Flowchart for vehicles tested according to paragraph 3.1.2.1. of Annex 3 to this Regulation – Gear Selection using non-locked gears
- Figure 4a.** Flowchart for vehicles tested according to paragraph 3.1.2.2. of Annex 3 to this Regulation – Test in locked gears
- Figure 4b.** Flowchart for vehicles tested according to paragraph 3.1.2.2. of Annex 3 to this Regulation – Test in non-locked gears PART 1
- Figure 4c.** Flowchart for vehicles tested according to paragraph 3.1.2.2. of Annex 3 to this Regulation – Test in non-locked gears PART 2
- Figure 4d.** Flowchart for vehicles tested according to paragraph 3.1.2.2. of Annex 3 to this Regulation – Test for no-combustion engine speed available”

*Annex 7, paragraph 3.2.1.*, replace "L<sub>i</sub>" by "L<sub>j</sub>" to read:

"3.2.1. Calculation of the slope of the regression line for each gear

The linear regression line is calculated using the anchor point and the four correlated additional measurements.

$$Slope_k = \frac{\sum_{j=1}^5 (n_j - \bar{n})(L_j - \bar{L})}{\sum_{j=1}^5 (n_j - \bar{n})^2} \quad (\text{in dB/1,000 min}^{-1})$$

$$\text{With } \bar{L} = \frac{1}{5} \sum_{j=1}^5 L_j \quad \text{and} \quad \bar{n} = \frac{1}{5} \sum_{j=1}^5 n_j ;$$

where  $n_j$  = engine speed measured at line BB'.



## **Annex IV**

### **Adopted amendments to ECE/TRANS/WP.29/GRB/2015/4**

*Annex 6, paragraph 2.*, amend to read:

- "2.           **If the document referred to in paragraph 1. consists of more than of one page, all pages shall bear at least a reference to the type-approval number.**"

## Annex V

### Adopted amendments to Regulation No. 117 (based on ECE/TRANS/WP.29/GRB/2014/8)

Annex 6, Appendix 1, paragraph 4, amend to read:

"4. Control accuracy

...

(d) Time: ~~±0.5 ms~~

- (i) **±0.02 s for the time increments specified in Annex 6, paragraph 3.5.(b) for the data acquisition in the deceleration method in  $\Delta\omega/\Delta t$  form;**
- (ii) **±0.2 per cent for the time increments specified in Annex 6, paragraph 3.5.(a) for the data acquisition in the deceleration method in  $d\omega/dt$  form;**
- (iii) **±5 per cent for the other time durations specified in Annex 6."**

Annex 6, Appendix 1, paragraph 5, amend to read:

"5. Instrumentation accuracy

The instrumentation used for readout and recording of test data shall be accurate within the tolerances stated below:

<i>Parameter</i>	<i>Load Index ≤ 121</i>	<i>Load Index &gt; 121</i>
Tyre load	±10 N or ±0.5 % <sup>(a)</sup>	±30 N or ±0.5 % <sup>(a)</sup>
Inflation pressure	±1 kPa	±1.5 kPa
Spindle force	±0.5 N or ±0.5 % <sup>(a)</sup>	±1.0 N or ±0.5 % <sup>(a)</sup>
Torque input	±0.5 Nm or ±0.5 % <sup>(a)</sup>	±1.0 Nm or ±0.5 % <sup>(a)</sup>
Distance	±1 mm	±1 mm
Electrical power	±10 W	±20 W
Temperature	±0.2 °C	
Surface speed	±0.1 km/h	
Time	±0.01 s - ±0.1 % - ±10 s <sup>(b)</sup>	
Angular velocity	±0.1 %	

(a) Whichever is greater.

(b) **±0.01 s for the time increments specified in Annex 6, paragraph 3.5.(b) for the data acquisition in the deceleration method in  $\Delta\omega/\Delta t$  form  
±0.1 per cent for the time increments specified in Annex 6, paragraph 3.5.(a) for the data acquisition in the deceleration method in  $d\omega/dt$  form  
± 10 sec for the other time durations specified in Annex 6."**

## **Annex VI**

### **Adopted amendments to Regulation No. 117 (based on GRB-61-14)**

*Annex 3, paragraph 2.1, third indent, last sentence, replace "ISO 10844:2011" with "ISO 10844:2014".*

*Annex 3, Appendix 1, Part 2, item 3.1., replace "ISO 10844:2011" with "ISO 10844:2014".*

## Annex VII

### Adopted amendments to Regulation No. 9 (based on ECE/TRANS/WP.29/GRB/2015/5)

*Insert new paragraphs 11.7. and 11.8., to read:*

**"11.7. As from the official date of entry into force of Supplement 1 to the 07 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approval according to Supplement 1 to 07 series of amendments to the regulation.**

**11.8. As from 60 months after the date of entry into force of Supplement 1 to the 07 series of amendments to this Regulation, Contracting Parties applying this Regulation shall grant type approvals only if the vehicle type to be approved meets the requirements of this Regulation as amended by Supplement 1 to the 07 series of amendments to this Regulation."**

*Annex 1,*

*Item 19., to be deleted.*

*Items 20 to 29, renumber as 19 to 28, respectively.*

*Annex 3, paragraph 2.2., amend to read:*

"2.2. The test site shall ... noise remains low.

On the test site ... the acceleration section. The surface of the test track shall conform to the requirements of Annex 4 to this Regulation **or in accordance to ISO10844:2014.**

No obstacle likely to ..."

*Annex 4,*

*The title, insert the reference to footnote 1 and footnote 1, to read:*

"<sup>1</sup> **The specifications for the test site reproduced in this Annex are valid until the end of the period indicated in paragraph 11.8.**"

*Paragraph 1, the reference to footnote 1 and footnote 1, renumber as footnote 2.*

## Annex VIII

### Adopted amendments to Regulation No. 41 (based on ECE/TRANS/WP.29/GRB/2015/5)

*Paragraph 12.3.*, amend to read:

"12.3. Contracting Parties applying this Regulation shall not refuse to grant extensions of approval in accordance with the preceding series of amendments to this Regulation **which will be conducted on the test site of Annex 4 or ISO10844:2014.**"

*Insert new paragraphs 12.8. and 12.9.*, to read:

"**12.8. As from the official date of entry into force of Supplement 2 to the 04 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approval according to Supplement 2 to 04 series of amendments to this Regulation.**

**12.9. As from 60 months after the date of entry into force of Supplement 2 to the 04 series of amendments to this Regulation, Contracting Parties applying this Regulation shall grant type approvals only if the vehicles type to be approved meets the requirements of this Regulation as amended by Supplement 2 to the 04 series of amendments to this Regulation.**"

*Annex 1,*

*Item 20.*, to be deleted.

*Items 21 to 29*, renumber as 20 to 28, respectively.

*Annex 3, paragraph 1.2.1.*, amend to read:

"1.2.1. Test site

The test site shall ... noise remains low.

On the test site ... the acceleration section. The road surface covering of the test site shall conform to the requirements of Annex 4 **or in accordance to ISO10844:2014.**

The microphone shall not be obstructed... "

*Annex 4,*

*The title*, insert the reference to footnote<sup>1</sup> and footnote<sup>1</sup>, to read:

"<sup>1</sup> **The specifications for the test site reproduced in this Annex are valid until the end of the period indicated in paragraph 12.9.**"

*Paragraph 1.*, the reference to footnote 1 and footnote 1, renumber as footnote 2.

*Paragraph 2.2.*, the reference to footnote 2 and footnote 2, renumber as footnote 3.

## Annex IX

### **Adopted amendments to Regulation No. 63 (based on ECE/TRANS/WP.29/GRB/2015/5)**

*Insert new paragraphs 10.7. and 10.8., to read:*

**"10.7. As from the official date of entry into force of Supplement 1 to the 02 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approval according to Supplement 1 to 02 series of amendments to this Regulation.**

**10.8. As from 60 months after the date of entry into force of Supplement 1 to the 02 series of amendments to this Regulation, Contracting Parties applying this Regulation shall grant type approvals only if the vehicle type to be approved meets the requirements of this Regulation as amended by Supplement 1 to the 02 series of amendments to this Regulation."**

*Annex 1,*

*Item 20., to be deleted.*

*Items 21 to 30, renumber as 20 to 29, respectively.*

*Annex 3, paragraph 2.1.2., amend to read:*

**"2.1.2. The surface of the test track shall conform to the requirements of Annex 5 to this Regulation or in accordance to ISO10844:2014."**

*Annex 5,*

*The title, insert the reference to footnote 1 and footnote 1, to read:*

**"<sup>1</sup> The specifications for the test site reproduced in this Annex are valid until the end of the period indicated in paragraph 10.8."**

*Paragraph 1., the reference to footnote 1 and footnote 1, renumber as footnote 2.*

## Annex X

### GRB informal groups

<i>Informal group</i>	<i>Chair(s) and Co-chair(s)</i>	<i>Secretary</i>	<i>Expiry date of the mandate</i>
Quiet road transport vehicles (QRTV) for GTR	<p>Mr. Ezana Wondimneh (USA) Tel: +1 202 366 21 17 E-mail: Ezana.wondimneh@dot.gov</p> <p>Mr. Ichiro Sakamoto (Japan) Tel:+81 422 41 66 18 Fax:+81 422 76 86 04 E-mail: i-saka@ntsel.go.jp</p>	<p>Mr. Andreas Vosinis (Directorate General Growth, European Commission) Tel:+ 32 2 2992116 Email: andreas.vosinis@ec.europa.eu</p>	November 2015
QRTV Regulation under 1958 Agreement	<p>Mr. Bernd Schüttler (Germany) Tel: +49 228 99300 4372 Fax: +49 228 99300807 4372 E-mail: bernd.schuetzler@bmvi.bund.de</p> <p>Mr. Louis-Ferdinand Pardo (France) Tel: +33 1 69 80 17 66 Fax: +33 1 69 80 17 09 E-mail: louis-ferdinand.pardo@utaceram.com</p> <p>Mr. Ichiro Sakamoto (Japan) Tel:+81 422 41 66 18 Fax:+81 422 76 86 04 E-mail: i-saka@ntsel.go.jp</p>	<p>Mr. Hanns-Peter Bietenbeck (OICA) Tel: +49 221 903 24 09 Fax: +49 221 903 25 46 E-mail: hbietenb@ford.com</p>	September 2015