



**Economic and Social
Council**

Distr.
GENERAL

TRANS/WP.29/GRB/30
25 May 2000

Original: ENGLISH

ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

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

Working Party on Noise (GRB)

REPORT OF THE WORKING PARTY ON NOISE (GRB)
ON ITS THIRTY-SECOND SESSION

(22-25 February 2000)

1. GRB held its thirty-second session from 22 to 24 February 2000 under the chairmanship of Mr. H. Löffelholz (Germany). Experts from the following countries participated in the work: Czech Republic; France; Germany; Hungary; Italy; Netherlands; Norway; Poland; Russian Federation; Slovakia; Spain; Switzerland; United Kingdom; United States of America. Representatives of the European Commission (EC) participated. Representatives of Japan took part in the session under paragraph 11 of the Commission's Terms of Reference. Experts from the following non-governmental organizations took part in the session: International Organization for Standardization (ISO); International Organization of Motor Vehicle Manufacturers (OICA); International Motorcycle Manufacturers Association (IMMA); European Tyre and Rim Technical Organization (ETRTO).
2. The documents without a symbol distributed during the session are listed in annex 1 to this report.

TYRE-ROAD NOISE LIMITATION

Documentation: TRANS/WP.29/GRB/1999/3; TRANS/WP.29/GRB/1999/5/Rev.1; TRANS/WP.29/GRB/1999/7; TRANS/WP.29/GRB/1999/9; TRANS/WP.29/GRB/2000/2; informal documents Nos. 1 and 5 of annex 1 to this report.

3. The expert from the European Commission informed GRB about the results of a discussion within the European Union Council, where a proposal for an EC Directive was being examined. He said that, at the end of 1999, the Working Party on Economic Questions of the EU Council had agreed, with some modifications, a proposal for a Directive amending Council Directive 92/23/EEC, and introducing prescriptions concerning the approval of tyres with regard to rolling sound. He also added that a Common Position should be adopted by the EU Council of Ministers and that afterwards the European Parliament would deliver its opinion on the second reading of the proposal.

4. He mentioned some of the items on which an agreement had been found (e.g. the definition of the type of tyre) and informed GRB that tyre manufacturers would be allowed to carry out type approval tests at their premises until 31 December 2005. He concluded his introduction by inviting GRB to adopt the decision taken in the EC in order to ensure equivalence between the draft Directive and the proposal for a draft Regulation.

5. The expert from the United Kingdom presented a text (informal document No. 5) containing all the amendments necessary to align document TRANS/WP.29/GRB/1999/5/Rev.1 to the text of the draft EC Directive. He said that the above text replaced also his proposal contained in document TRANS/WP.29/GRB/2000/2, which was consequently withdrawn from discussion.

6. GRB agreed to examine in detail the proposal by the expert from the United Kingdom. In the discussion which followed many amendments were proposed, including transitional provisions, and some of them agreed (see annex 2 to this report).

7. The expert from the United States of America recalled the need for a world-wide harmonization of tyre regulations and invited the group to consider possible amendments to the proposal, in order to make it applicable to countries with a self-certification system. He expressed the view that such a proposal should be studied in the framework of the 1998 Global Agreement. He also requested the expert from ETRTO to report at the coming GRB sessions on the status of research and technology on tyres with a reduced rolling noise.

8. With regard to tyres designed as "temporary use spare tyres", GRB did not reach an agreement on their marking. In this respect, the expert from ETRTO was requested to propose a suitable solution at the next Working Party on Brakes and Running Gear (GRRF).

9. GRB also considered some editorial amendments to the technical prescriptions concerning the test method, whose text had been agreed during the previous sessions (TRANS/WP.29/GRB/1999/3). In particular, in order to keep the proposal in line with the Draft Directive, the amendments contained in annex 3 to this report were agreed.

10. The expert from Japan introduced his informal document No. 1 explaining that some tests had been performed in his country on wide-section tyres in order to compare the noise measurement method proposed by France (TRANS/WP.29/GRB/1999/2) and by Japan (TRANS/WP.29/GRB/1999/9). He concluded that the results had shown the validity and the simplicity of the test method proposed by France and said that Japan would have supported it. Therefore, document TRANS/WP.29/GRB/1999/9 was withdrawn from discussion.

11. Consideration was also given to the alternative proposal presented by the expert from ETRTO (TRANS/WP.29/GRB/1999/7), concerning information to be included in the test report. GRB agreed not to amend the original proposal, but to consider again the proposal by ETRTO at its next session.

12. Concluding the consideration of the subject, GRB agreed to resume the question of tyre/road noise limitation at its next session and requested the secretariat to prepare a consolidated text incorporating documents TRANS/WP.29/GRB/1999/5/Rev.1 and TRANS/WP.29/GRB/1999/3, as amended during the session (see annexes 2 and 3 to this report).

AMENDMENTS TO REGULATION No. 51 (Noise of M and N categories of vehicles)

Documentation: Informal documents Nos. 2, 3a, 3b, 4, 6 and 9 of annex 1 to this report.

13. The expert from Germany presented the results of an investigation for improving the method of noise measurement for motor vehicles (informal document No. 6). He said that the report contained a detailed presentation of the driving and operating modes of vehicles examined in real operation, and that tyre/road noise and engine/transmission noise components had been identified. Furthermore, a comparison between modes of operation in the present measuring method and in the reality had been made, with the aim of developing two separate testing procedures for passenger cars, and for commercial vehicles.

14. With regard to passenger cars, the expert from Germany said that the study had shown that the main variables for establishing representative driving conditions for real operation were the power-to-mass ratio, the vehicle acceleration and the final speed. On the basis of the above variables, the operating state of a vehicle should be defined by a target acceleration, to be determined on the basis of power-to-mass ratio, and by a limit for the normalized engine speed at the end of the test area. Therefore, the appropriate gear ratio should be chosen, so that the target acceleration is attained. With regard to commercial vehicles, he said that the new measuring method should require a normalised engine speed of 85 per cent of the rated speed and acceleration ranging from 1 to 1.5 m/s² and that the gear ratio should be chosen in order to attain normalised engine speed.

15. The expert from OICA introduced a proposal for a new noise measurement procedure (informal document No. 4), which had been developed by the Association of European Vehicle Manufacturers (ACEA), on the basis of actual driving pattern, with the aim of reflecting real traffic conditions. He said that the vehicle acceleration should be simulated by a combination of a full throttle test (acceleration from 50 km/h) and a constant speed (50 km/h) test, to be carried out using two consecutive gear ratios, selected in order to attain the required acceleration. Finally he added that a partial torque factor should apply, in order to determine the sound level. He also introduced informal document No. 9, where the reasons for a new test procedure had been explained.

16. The expert from ISO informed GRB about the activities of the ISO working group which was studying a revision of ISO 362 standard, dealing separately with passenger cars, commercial vehicles and motorcycles. He said that a committee draft was expected for the year 2001, while a final procedure should be set by 2002. He recalled that one proposal for a new measurement method under consideration in the ISO working group was based on a fixed end speed of about 55 km/h and concluded by saying that the current test cycles were very aggressive and over-emphasized the tyre/road and powertrain noise.

17. The expert from OICA gave a presentation concerning a comparison between the proposals by Germany and OICA. He said that both proposals had a common background, but that the main differences related to the interpretation of statistics and the additional constant driving test proposed by OICA.

18. The expert from the Netherlands presented the results of an investigation on noise emitted by vehicles currently operated on the roads (informal documents Nos. 3a and 3b). He said that, although the last revision of Regulation No. 51 had a significant effect on most vehicles, the current prescriptions still were not enforcing technology for many vehicles whose noise emissions were below the relevant limits. Therefore, he suggested to lower the noise limits and to retain the present testing procedure which, in his opinion, was still reliable.

19. The expert from the Netherlands also introduced informal document No. 2, concerning the environmental aspects of type approval with respect to noise of vehicles. He said that type approval should control and minimize the environmental effects of vehicle noise with particular regard to quality of life, health and costs. He drew the attention of GRB to some statistics showing that about forty millions of people in Europe were seriously annoyed by noise, some of them having health problems. He concluded by saying that the Dutch Government intended to fund a new research programme on this subject.

20. The expert from the United States of America reiterated that the new testing cycle should be based on the "worst case" and should assess the impact of traffic flow noise on communities. In addition, he invited GRB to aim at improving the quality of life of people. He recalled that, although strict noise limits were established by Regulation No. 51, the reduction of average noise level produced by traffic flow was not satisfactory. He informed GRB about his intention to provide the secretariat with a document concerning the adverse impact of noise on the human body entitled "US information on levels of

environmental noise requisite to protect public health and welfare with an adequate margin of safety. Washington D.C. US Environmental Protection Agency, report EPA 55079-74.004 (1974)".

21. In the discussion which followed, the experts had the opportunity to make comments and receive clarifications concerning the proposals by OICA and Germany. In particular, the expert from Italy said that the OICA method reproduced both tyre and engine noise. He clarified that tyre noise was related to vehicle speed (dominating noise source when the vehicle was coasting) while engine noise was related to the engine speed (dominating noise source when the vehicle was operating in the full throttle test).

22. The Chairman noted that an agreement on test noise method could still not be reached and invited the experts to consider in detail all the documents presented during the session. He wished that GRB could find an agreement and consider an official proposal at its next session.

23. GRB agreed to continue the consideration of this matter at the next session.

AMENDMENTS TO REGULATION No. 59 (Replacement silencing systems)

Documentation: TRANS/WP.29/GRB/1998/10.

24. The expert from Poland informed GRB that he wished to withdraw his proposal (TRANS/WP.29/GRB/1998/10) because its adoption would have required amending some definitions of Regulation No. 83, which at the moment should not be further amended, in order to keep it in line with the corresponding EC Directive.

25. GRB accepted the explanation given by the expert from Poland and agreed to delete this item from the agenda.

EXCHANGE OF INFORMATION ON NATIONAL AND INTERNATIONAL REQUIREMENTS ON NOISE LEVELS

Documentation: Informal documents Nos. 7, 8 and 8a of annex 1 to this report.

26. The expert from the European Commission presented informal document No. 7 concerning the European noise policy programme, and informed GRB that the Commission would set up a Working Group to consider the Noise of Road Traffic. He said that the Commission would take the results and recommendations of the Working Group as a basis for new legislation and actions of the EU in this field. He also added that all the activities of other organizations like the UN/ECE would be taken into account by the working group, so that it could be considered as complementary to the work performed by GRB. He concluded his presentation by expressing the intention to inform GRB on the development of work in this new EC working group.

27. The expert from IMMA gave a presentation (informal documents Nos. 8 and 8a) aimed at establishing a series of measures which should prevent the selling and use of illegal exhaust silencing systems for two-wheeled vehicles. In particular, he illustrated the reasons why these devices were illegal and suggested some measures to be taken, including legislation concerning the road checks and inspection at the selling points. He also mentioned as a real case the measures taken by the Amsterdam municipality where the road-side noise measurement had been introduced.

28. The expert from the United States of America said that similar measures had been introduced in his country, and expressed the opinion that local authorities should enforce them, instead of the police.

29. The Chairman thanked the expert from IMMA for his thorough presentation and invited the Dutch expert to inform GRB about results of the enforcement of the Amsterdam measures in more detail.

OTHER BUSINESS

(a) Traffic noise modelling

30. In the absence of any information, GRB agreed to defer consideration of this item to its next session.

AMENDMENTS TO REGULATION No. 41 (Noise of motorcycles)

Documentation: TRANS/WP.29/GRB/2000/3.

31. GRB considered a proposal to amend Regulation No. 41 presented by the expert from Belarus (TRANS/WP.29/GRB/2000/3), and aimed at introducing clarifications to the present text.

32. The experts from the United Kingdom and Germany did not agree with some of the amendments proposed (paras. 1.4.3.1.1 and 1.4.3.1.2.4) because of a difference from the EC Directive 92/24/EC.

33. Although GRB agreed not to adopt the proposal, it noted that some amendments were of an editorial nature and their consideration should be resumed at the coming GRB sessions.

AGENDA FOR THE NEXT SESSION

34. The following agenda was agreed for the thirty-third session, scheduled to be held in Geneva on 14 (9.30 h) and 15 (17.30 h) September 2000 1/:
1. Tyre-road noise
 2. Amendments to Regulation No. 51 (Noise of M and N categories of vehicles)
 3. Exchange of information on national and international requirements on noise levels 2/
 4. Other business
 - 4.1. Traffic noise modelling

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- 1/ As part of the secretariat's efforts to reduce expenditure, all the official documents distributed prior to the session by mail will not be available in the conference room for distribution to session participants. Delegates are kindly requested to bring their copies of documents to the meeting.
- 2/ Delegations are invited to submit brief statements on the latest status in national requirements (if applicable) and, if necessary, to supplement this information orally.
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Annex 1

LIST OF INFORMAL DOCUMENTS DISTRIBUTED WITHOUT A SYMBOL DURING THE SESSION

No.	Transmitted by	Agenda item	Language	Title
1.	Japan	1.	E	Proposal for Additional Amendments to the Draft Regulation Concerning the Approval of Tyres with Regard to Rolling Sound Emissions
2.	Netherlands	2.	E	Environmental Aspects of Noise Type Approval
3a.	Netherlands	2.	E	Evaluation of European Noise Type Approval Results: 1980-2000 (Summary)
3b.	Netherlands	2.	E	Evaluation of European Noise Type Approval Results: 1980-2000 (Report)
4.	OICA	2.	E	Draft Proposal for a New Exterior Noise Test Procedure for ISO/TC 43/SC 1/WG 42 - Revision of ISO 362 December 1999 - Revised by ACEA in February 2000
5.	United Kingdom	1.	E	Proposal for Additional Amendments to the Draft Regulation Concerning the Approval of Tyres with Regard to Rolling Sound Emissions (TRANS/WP.29/GRB/1999/5/Rev.1)
6.	Germany	2.	E	Investigations on Improving the Method of Noise Measurement for Powered Vehicles
7.	European Commission	4.	E	The European Noise Policy Program - Set-up of a Working Group regarding Noise of Road Transport
8.	IMMA	4.	E	The Amsterdam Noise Measurement Apparatus
8a.	IMMA	4.	E	Proposals for the control of Replacement Exhaust Silencing Systems at the Point of Sale and Powered Two-Wheelers in Service
9.	OICA	2.	E	Draft Proposal for a New Exterior Noise Test Procedure for ISO/TC 43/SC 1/WG 42 - Revision of ISO 362 December 1999 - Revised by ACEA in February 2000 (Addendum)

Annex 2

PROPOSAL FOR A NEW DRAFT REGULATION: UNIFORM PROVISIONS CONCERNING THE APPROVAL
OF TYRES WITH REGARD TO ROLLING SOUND EMISSIONS.

(Amendments to the text of document TRANS/WP/29/GRB/1999/5/Rev.1,
agreed during the session by GRB)

General amendment: throughout the text replace the word "type of tyres" with
the word "type of tyre".

Paragraph 1.1.5., amend to read:

"1.1.5. Tyres fitted with..... ."

Insert a new paragraph 1.1.6., to read:

"1.1.6. Tyres with a speed rating less than 80 km/h (F)."

Paragraph 1.2., renumber as paragraph 1.2., to read:

"[1.2. Tyres intended for sale as replacement only, belonging to a type
the tread pattern of which was originally type approved to either
ECE Regulation No. 30 or No.54 before 1 January 1993 are excluded
from the requirements of this Regulation.]"

Paragraph 2.1., amend to read:

"2.1. "Type of tyres" means, in relation to this Regulation, a range of
tyres consisting of a list of tyre size designations, brand names
and trade descriptions, which do not differ in such essential
characteristics as:

- the manufacturer's name
- the tyre class (see section 2.4)
- the tyre structure
- the category of use
- for Class C1 tyres whether normal or Reinforced (or Extra
Load)
- S the tread pattern (see para. 3.2.1.).

Paragraph 2.2., amend to read:

"2.2. "Brand name" or "Trade Description" means the identification of the
tyre as given by the tyre manufacturer. The Brand Name may be the
same as that of the manufacturer and the Trade Description may
coincide with the trade mark."

Paragraph 3., amend to read:

- "3. Application for approval
- 3.1. The application for approval of a type of tyre with regard to rolling sound emission level shall be submitted by the tyre manufacturer or by his duly accredited representative. It shall specify:
- 3.1.1. Name of manufacturer;
- 3.1.2. Name and address of applicant;
- 3.1.3. Address(es) of manufacturing plants;
- 3.1.4. Brand name(s), trade description(s), trade mark(s);
- 3.1.5. Tyre class (Class C1, C2 or C3) (see paragraph 2.4. of this Regulation);
- 3.1.5.1. Section width range for class C1 tyres (see paragraph 6.2.1 of this Regulation);
- 3.1.6. Tyre structure;
- 3.1.7. for Class C1 tyres, state whether Reinforced (or Extra Load);
- 3.1.8. Category of use (normal, snow, or special);
- 3.1.9. A list of tyre size designations covered by this application.
- 3.2. The application for approval shall be accompanied (in triplicate) by:
- 3.2.1. Details of the major features, with respect to the effects on tyre to road noise emissions, of the tread pattern(s) to be used on the designated range of tyre sizes. This may be by drawing, photograph or description, but must be sufficient to allow the type approval authority or technical service to determine whether any subsequent changes to the major features will adversely affect the tyre to road noise emission. The effects of changes to minor details of tyre construction on tyre to road noise emission will be evident and determined during checks on conformity of production.
- 3.2.2. Drawings or photographs of the tyre sidewall showing the information given in paragraph 3.1.4. above and the approval marking referred to in paragraph 5 shall be submitted once the production has been established, but no later than one year after the date of granting of type approval.

- 3.3. At the request of the type approval authority, the applicant shall submit samples of tyres for test or copies of test reports from the technical services, communicated as given in paragraph 11 of this Regulation.
- 3.4. With regard to the application, testing may be confined to a worst case selection, at the discretion of the type approval authority or designated technical service."

Paragraph 4.2.2., replace the word "designation" with the word "description" (twice).

Insert new paragraphs 4.3., 4.4. and 4.4.1., to read:

- 4.3. Tyres shall provide adequate space for the approval mark as shown in annex 2 to this Regulation.
- 4.4. The approval mark shall be moulded into or onto the sidewall of the tyre, shall be clearly legible and shall be located in the lower area of the tyre on at least one of the sidewalls;
- 4.4.1. However, in the case of tyres identified by the tyre to rim fitment configuration symbol "A", the marking may be located anywhere on the outside sidewall of the tyre.

Paragraph 5.1., replace the word "range" with "type".

Paragraph 5.6., should be deleted.

Paragraph 5.7. (former) renumber as paragraph 5.6.

Paragraph 6.1., should be deleted

Paragraphs 6.2. to 6.2.3 (former), renumber as paragraphs 6.1. to 6.1.3.

Paragraph 6.1., amend to read:

- "6.1. Rolling sound emission limits, as measured by method described in Annex 3 to this Regulation."

Paragraph 6.1.1.1., amend to read:

- "6.1.1.1. In case of "Reinforced" (or Extra-load) Class C1 tyres (see paragraph 3.1.8. of ECE Regulation No. 30), the limits of paragraph 6.1.1. are to be increased by 1 dB(A).

Paragraph 6.1.1.2., correct the reference to "paragraph 6.3.1." to read "paragraph 6.1.1."

Paragraph 7., amend to read:

- "7. MODIFICATIONS OF THE TYPE OF PNEUMATIC TYRE AND EXTENSION OF APPROVAL
- 7.1. Every modification of the type of tyre approved for tyre to road noise emission in accordance with this Regulation shall be notified to the type approval authority which approved the type of tyre. The authority may either:
- 7.1.1. Consider that the modifications are unlikely to have any appreciable adverse effect on the tyre to road emission and that the tyre will continue to comply with the requirements of this Regulation; or
- 7.1.2. Require further samples to be submitted for test or further test reports from the designated technical service.
- 7.1.3. Confirmation or refusal of approval, specifying the modifications, shall be communicated by the procedure given in paragraph 5.3. of this Regulation to the Parties to the Agreement which apply this Regulation.
- 7.1.4. The type approval authority granting the extension of approval shall assign a series number for such an extension which shall be shown on the communication form.

Paragraph 7.2., should be deleted.

Paragraph 8.2., amend to read:

"..... the series production. The normal frequency of verification of conformity of production shall be at least once every two years."

Paragraph 8.3., correct the reference to "paragraph 6.3.", to read "paragraph 6.1."

Paragraphs 11.2. and 11.3., should be deleted.

Paragraph 12., amend to read:

- "12. Transitional provisions"
- 12.1. This Regulation shall only apply to any new tyre designs presented for first approval to Regulation Nos. 30 or 54 after the expiry of the period of 24 months from the date of entry into force of this Regulation.

- 12.2. This Regulation shall not apply to tyres within the scope of this Regulation, other than new designs, as given in paragraph 12.1. above, until 1 October 2005.
- 12.3. Until 31 December 2005 at the latest, the laboratories and test facilities of a tyre manufacturer may be designated as an approved laboratory and the type approval authority shall have the option of being represented during any tests."
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Annex 3

PROPOSAL FOR A NEW DRAFT REGULATION: UNIFORM PROVISIONS CONCERNING THE APPROVAL
OF TYRES WITH REGARD TO ROLLING SOUND EMISSIONS.

(Amendments to the text of document TRANS/WP.29/GRB/1999/3,
agreed during the thirty-first session and further revised by GRB)

Paragraph 2.5.1., amend to read:

"...on the test vehicle. In the case of tyres with a load capacity index in excess of 121 and without any dual fitting indication, two of these tyres of the same type and range must be fitted to the rear axle of the test vehicle; the front axle must be fitted with tyres of size suitable for the axle load and planed down to the minimum depth in order to minimize the influence of tyre/road contact noise while maintaining a sufficient level of safety. Winter tyres that in certain Contracting Parties may be equipped with studs intended to enhance friction shall be tested without this equipment. Tyres with special fitting requirements shall be tested in accordance with these requirements (e.g. rotation direction). The tyres must have full tread depth before being run-in."

Paragraph 2.5.3., amend to read:

".....index marked on the sidewall.
For Class C1 the reference pressure is $P_r = 250$ kPa for "standard" tyres and 290 kPa for "reinforced" tyres; the minimum test pressure shall be $P_t = 150$ kPa."

Paragraph 3.2., amend to read:

".....level expressed in A-weighted decibels (dB(A)) shall be measured to the first decimal place as the vehicle is coasting....."

Paragraph 3.2., (French version only) amend to read:

"3.2. Le niveau sonore maximum exprimé en decibel ponderé A (dB(A))....."

Paragraphs 4.4. and 4.5., remove all square brackets.
