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Working Party on Passive Safety

**REPORT OF THE WORKING PARTY ON PASSIVE SAFETY
ON ITS FORTY-FIRST SESSION
(Geneva, 7 – 11 May 2007)**

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Addendum

Final report on the development of a global technical regulation concerning pedestrian protection adopted by GRSP at its forty-first session based on GRSP-41-28 Rev.1

I. ATTENDANCE

1. The Working Party on Passive Safety (GRSP) held its forty-first session from 7 (afternoon) to 11 (morning only) May 2007 under the chairmanship of Mrs. S. Meyerson (United States of America). 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): Australia; Canada; China, Czech Republic; France; Germany; Hungary; India; Italy; Japan; Netherlands; Norway; Poland; Republic of Korea; Republic of South Africa; Russian Federation; Spain; Sweden; Switzerland; United Kingdom; United States of America. An expert from the European Commission (EC) participated. Experts from the following non-governmental organizations participated: International Organization of Motor Vehicle Manufacturers (OICA); European Association of Automotive Suppliers (CLEPA); Consumers International (CI) and European Enhanced Vehicle-safety Committee (EEVC).

2. The informal documents distributed during the session are listed in Annex I to this report.

II. PEDESTRIAN PROTECTION (Agenda item 2)

A. Draft global technical regulation (gtr) on pedestrian safety (Agenda item 2.1)

1. Flexible legform impactor (Agenda item 2.1.1)

Documentation: ECE/TRANS/WP.29/GRSP/2006/2; Informal document No. GRSP-41-09 of Annex 1 to this report

3. The expert from Japan gave a presentation (GRSP-41-09) on the progress made by the flexible pedestrian legform impactor technical evaluation group (Flex-TEG). The Chairperson noted that the Flex-TEG group was a subgroup under the informal working group on gtr Pedestrian Protection, and when the gtr had been adopted, Japan would need to seek permission from AC.3 to continue the work of the Flex-TEG subgroup.

2. Proposal for a global technical regulation (gtr) (Agenda item 2.1.2)

Documentation: ECE/TRANS/WP.29/GRSP/2006/2; Informal document GRSP-41-19 of Annex 1 to this report

4. Considering the decisions taken during the May 2006 session, GRSP agreed to resume consideration of the draft gtr on the basis of GRSP-41-19 tabled by Japan.

**3. Proposal for draft amendments to the draft global technical regulation (gtr)
(Agenda item 2.1.3)**

Documentation: ECE/TRANS/WP.29/GRSP/2006/7; Informal documents Nos. GRSP-41-07, GRSP-41-08, GRSP-41-14, GRSP-41-15, GRSP-41-28 and Rev.1, GRSP-41-29, GRSP-41-32, GRSP-41-33, Rev.1 and 2, of Annex I to this report

5. Concerning the applicability of the gtr, the expert from OICA introduced GRSP-41-07. He noted that OICA agreed to enlarge the range to passenger vehicles of 2,500 to 3,500 kg due to the increasing number of such vehicles in the market worldwide, but questioned the extension of the scope from 3,500 kg to 4,500 kg because the number of vehicles in this range is negligible in Europe and Japan. Considering the impossibility to develop a criterion which would distinguish between the various shapes of vehicles, he stated that the commonly retained criterion remains the gross vehicle mass (GVM). He recognized that some specific cases needed to be carefully studied, such as "High Front Vehicles" (HFV) and "Flat Front Vehicles" (FFV). The EC expert introduced GRSP-41-15 proposing the use of additional safety measures, such as brake assistance that might increase the pedestrian protection. Moreover, he referred to GRSP-41-14 proposing a criterion to exempt cargo vehicles with an essentially vertical front face (vehicle category 2). The expert from Japan introduced a similar proposal (GRSP-41-29), but the rearmost H-point of the frontal seat as the reference point.

6. The expert from the United States of America introduced GRSP-41-32. She referred to the same document presented at the last AC.3 session (WP.29-141-25), but complemented with final results of studies conducted in her country on leg testing aimed at justifying an enlarged scope. Accordingly, she endorsed to limit the scope of the gtr to all vehicles with a gross vehicle mass of 4,500 kg or less.

7. Regarding the current Phase II of the corresponding European Union (EU) Directive on pedestrian protection, the EC expert stated that a final decision on this subject would be taken by the European Union awaiting the conclusion of the internal procedure of adoption.

8. Following the discussions, the experts from the EC, Japan and the United States of America tabled GRSP-41-33, Rev.1 and Rev.2 aimed at merging the different proposals on the applicability of the gtr. With respect to the preamble, the expert from OICA expressed the need for a proper lead time for those current vehicles, exempted from existing national or regional requirements, that were now included. France and Italy supported this request and raised concerns that the exemption for flat fronted vehicles could create distortion in the market if vehicles of category 1-1 were not treated in a similar manner.

9. GRSP agreed on GRSP-41-33-Rev. 2 regarding the applicability of the gtr and the reservations from the United Kingdom and the Netherlands concerning the mass and the velocity of the child headform impactor. GRSP also considered the remaining issues of GRSP-41-08. GRSP recommended to incorporate them into GRSP-41-19. The expert from the United States of America clarified that ECE/TRANS/WP.29/GRSP/2006/7 had to be considered solved and she announced that an updated cost benefit analysis would be sent to the secretariat as soon as possible, to be inserted in the gtr preamble.

10. Concluding the discussion, GRSP agreed to recommend ECE/TRANS/WP.29/GRSP/2006/2 as amended by Annex II to this report. GRSP also considered and agreed to recommend the final report (GRSP-41-28-Rev.1) on the development of the gtr as reproduced in the addendum to this report (see ECE/TRANS/WP.29/GRSP/41/Add.1). GRSP agreed to report to WP.29 and AC.3 November 2007 sessions, the result of the agreement received on the gtr.

III. HEAD RESTRAINTS (Agenda item 3)

A. Draft global technical regulation on head restraints (Agenda item 3.1)

1. Proposal for a global technical regulation (gtr) (Agenda item 3.1.1)

Documentation: ECE/TRANS/WP.29/GRSP/2006/14; ECE/TRANS/WP.29/2007/46; ECE/TRANS/WP.29/2007/47; Informal documents Nos. GRSP-41-03, GRSP-41-04, GRSP-41-12, GRSP-41-20, GRSP-41-21, GRSP-41-22, GRSP-41-23, GRSP-41-26, GRSP-41-27 and GRSP-41-35 of Annex I to this report

11. Referring to GRSP-41-12, the expert from the United States of America announced the transmission of ECE/TRANS/WP.29/2007/46, ECE/TRANS/WP.29/2007/47 and ECE/TRANS/WP.29/2007/48 to WP.29 and AC.3 for consideration at their June 2007 sessions. Following the announcement made by the delegate from the United States of America during the March 2007 session of WP.29 (ECE/TRANS/WP.29/1058 para. 89), she introduced ECE/TRANS/WP.29/2007/47 superseding ECE/TRANS/WP.29/GRSP/2006/14.

12. The expert from OICA noticed that the document did not fully reflect the decisions taken or those still pending according to the informal group on head restraints. The expert from the Netherlands reminded GRSP of the high percentage of tall people in his country and believed that head restraints higher than 800 mm are necessary in order to provide benefits on a significant range of their population. It was requested that the height of 800 mm be bracketed and that the height of 850 mm should also be included in brackets in the gtr. This recommendation was supported by the expert from the United Kingdom.

13. GRSP also considered the possibility to include in the gtr a definition of the front contact surface area of the head restraint. The Netherlands proposed a test procedure and provided a rationale for the inclusion of this requirement. GRSP agreed that the informal group should resume consideration of this subject.

14. The expert from OICA gave a presentation (GRSP-41-21) addressing the inclusion of the "discomfort metric" as an evaluation of head restraint non-use positions. The study presented provided measurement criteria and was supported by the results from a human factor study. GRSP welcomed that presentation and agreed that the recognition rate of the study was sufficient to justify the use of the design numbers listed in the gtr.

15. The expert from the United States of America gave a presentation (GRSP-41-22) concerning the backset limit. She underlined the high benefits introduced by a backset limit of 55 mm (using the H-point), and noted the reduction of effectiveness in case of a limit of 70 mm as

proposed by some delegates. She also introduced GRSP-41-20 proposing that Contracting Parties can select either the H-point or R-point method. Some experts opposed the introduction of that option as it was premature to set limits until there was agreement on a measurement method. The expert from Japan introduced GRSP-41-03 regarding a test programme backset measurement with R-point versus H-point method. The expert from OICA also introduced the OICA test programme (GRSP-41-23 and GRSP-41-35). Both surveys noted the low variability from seat to seat using the R-point method.

16. Consensus was not reached on the issue of backset. A request was made to wait for the conclusion of the EEVC Working Group 20 research on these matters, which were expected to be published at the end of June 2007.

17. With regard to the dynamic test, the expert from OICA advised the need for a better determination of all criteria to ensure the deployment of active systems (GRSP-41-27). The expert from Japan proposed setting up a phase 2 of the gtr (GRSP-41-04) in order to establish appropriate methods for testing and evaluating whiplash injuries. In this respect, he proposed to set up an informal working group.

18. No consensus was reached on how to address active systems. Several countries had concerns with the biofidelity of the Hybrid III dummy in a dynamic test and recommended that GRSP wait for the completion of the EEVC research in October 2007. The expert from the United States of America stated the BioRID dummy is not a viable short-term solution for her country because the dummy would need to be incorporated into their national standards and that process could take several years. As a result, she suggested that if an agreement could not be reached on incorporating the Hybrid III in the dynamic test, then the gtr could include the static requirements for head restraints, allow the Contracting Parties to add into their own national legislation the option of a dynamic test or other method of evaluating active/re-active systems, and continue with research into a fully regulated dummy and a dynamic whiplash evaluation as a Phase 2 to the gtr (GRSP-41-26). Several delegates emphasized that strong cooperation among countries outside Europe on this subject was encouraged. As a result of discussion, some experts of GRSP disagreed with the possibility to recommend a gtr including only static requirements for head restraints and allowing the Contracting Parties to add in their national legislation the option of a dynamic or other method of evaluating active/re-active systems in their national legislations (GRSP-41-26).

19. Due to the lack of consensus on the draft gtr on head restraints, GRSP agreed that ECE/TRANS/WP.29/GRSP/2007/47 would be considered by AC.3 for information only. The expert from the EC and the United States of America expressed their regret about the lack of consensus. The expert from the United States of America reminded that her country would likely re-consider the priority of this gtr, taking into account the outcome of petitions for reconsideration to the final rule FMVSS No. 202. The Chairperson clarified that she would seek guidance from AC.3.

2. Progress report (Agenda item 3.1.2)

Documentation: ECE/TRANS/WP.29/2007/48; Informal document No. GRSP-41-34 of Annex 1 to this report

20. GRSP noted the submission of the fourth progress report (ECE/TRANS/WP.29/2007/48) to WP.29 and AC.3. GRSP agreed to resume consideration of the fifth progress report at its next session awaiting the advice of AC.3 and WP.29.

IV. DOOR LOCKS AND DOOR RETENTION COMPONENTS (Agenda item 4)

A. Global technical regulation No. 1 (Agenda item 4.1)

1. Proposal for draft amendments to the global technical regulation No. 1 (Agenda item 4.1.1)

Documentation: TRANS/WP.29/GRSP/2005/11; Informal documents Nos. GRSP-41-13 and GRSP-41-24 of Annex I to this report

21. The expert from the United States of America referred to a new document transmitted by her country to WP.29 and AC.3 at their June 2007 sessions (ECE/TRANS/WP.29/2007/40), incorporating TRANS/WP.29/GRSP/2005/11 and containing the new proposal to develop an amendment to gtr No. 1. She informed GRSP that AC.3 had agreed to transmit this proposal to GRSP for preliminary consideration (ECE/TRANS/WP.29/1058, para. 88.). Accordingly, she introduced GRSP-41-13 requesting the advice of GRSP concerning ECE/TRANS/WP.29/2007/40.

22. The expert from the EC suggested the deletion of the amendments of the proposed para. 5.1.5.4. as it was already included in the definition of "Door Closure Warning system". GRSP also noted the editorial corrections of GRSP-41-24 submitted by Japan.

23. Referring to the finalization of the rulemaking procedure to adopt gtr No. 1, the expert from the United States of America informed GRSP that the outcome of comments, especially from manufacturers, had given a new basis for a further amendment of the gtr. GRSP agreed to resume its consideration at the next session, awaiting the outcome of WP.29 and AC.3 at their June 2007 sessions.

V. SIDE IMPACT (Agenda item 5)

A. Exchange of views on side impact (Agenda item 5.1)

24. The expert from the United States of America informed GRSP that there was no new information on upgrading of their national legislation and on the conclusion of the certification activities regarding the ES-2re dummy. GRSP agreed to keep this item on its agenda to provide information on the progress made on this subject.

VI. HYDROGEN AND FUEL CELL VEHICLES (HFCV) (Agenda item 6)

A. Subgroup on Safety (HFCV-SGS) (Agenda item 6.1)

Documentation: Informal document No. GRSP-41-30 of Annex I to this report

25. The expert from Germany, Mr. Albus, managing the informal group on Hydrogen and Fuel Cells Vehicles (HFCV) gave a presentation (GRSP-41-30) regarding the road map of activities concerning the development of the gtr in two phases. He clarified that the first phase of the gtr would be based on existing regulations, standards and national requirements aiming at harmonizing the hydrogen leakage provisions. Phase 2 would focus on the harmonization of hydrogen and fuel cells vehicles crash tests. He stated that GRSP had been mandated to deal with electric safety issues. GRSP noted WP.29's decision (ECE/TRANS/WP.29/1058, para.30) that GRSP should undertake the further responsibility of Regulation No. 100 (battery electric vehicles). In this respect, GRSP experts were invited to think about the necessary update of Regulation No. 100.

26. GRSP agreed to resume consideration of this subject at its next session on the basis of the results of the first meeting of the HFCV-SGS working group scheduled to be held in September 2007 (to be confirmed).

VII. REGULATION No. 11 (Door latches and hinges) (Agenda item 7)

A. Alignment to gtr No. 1 (Agenda item. 7.1)

27. GRSP welcomed the suggestion by the EC expert to amend Regulation No. 11, together with the proposal of amendments to gtr No.1 to be adopted by AC.3. GRSP agreed to resume consideration on this subject on the basis of a proposal from EC for the next session.

VIII. REGULATION No. 14 (Safety-belt anchorages) (Agenda item 8)

A. ISOFIX anchorages (Agenda item 8.1)

Documentation: Informal documents Nos. GRSP-41-05 and Rev.1, and GRSP-41-18 of Annex I to the report

28. The expert from Japan introduced GRSP-41-05 requesting the harmonization between ISOFIX and safety-belt anchorages on the static test forces. The proposal received some comments (GRSP-41-05-Rev.1). Following the discussion, GRSP agreed to resume consideration on this subject at its next session. The secretariat was requested to distribute GRSP-41-05 Rev.1 with an official symbol.

29. The expert from CI gave a presentation (GRSP-41-18) on the potential lack of safety due to the ISOFIX upper tether. The CI survey underlined that the lack of proper information and different shapes and locations of the upper tether anchorages hamper the proper installation of universal ISOFIX child restraints. The expert from Germany referred to his former proposal (ECE/TRANS/WP.29/GRSP/2006/19) concerning this issue and informed GRSP that a revised proposal was still being prepared together with OICA.

30. GRSP invited the experts from Germany to contact CI and OICA in order to jointly prepare an updated proposal for consideration at the next session. The Chairperson reminded the experts to provide a full examination of the effects and factors as well as a cost-benefit analysis if available. The secretariat was requested to re-insert ECE/TRANS/WP.29/GRSP/2006/19 in the agenda.

B. Mandatory fitting of safety-belt anchorages for Class II buses (Agenda item 8.2)

Documentation: ECE/TRANS/WP.29/GRSP/2007/7; ECE/TRANS/WP.29/GRSP/2007/10

31. The expert from Italy introduced ECE/TRANS/WP.29/GRSP/2007/10 (tabled by Italy and France) proposing the mandatory fitting of safety-belt anchorages for Class II buses and the alignment of the provisions of Regulation No. 14 with those of the corresponding EU Directive 2005/40/EC. He clarified that the proposal was drafted from the point of view of vehicle construction. He urged for a quick adoption of the alignments proposed.

32. The expert from Germany introduced ECE/TRANS/WP.29/GRSP/2007/7 proposing a definition of low-floor buses (belonging to Class I and II) and a subsequent exemption for these vehicles to the mandatory fittings of safety-belt anchorages, because they are mainly designed for the carriage of standing passengers. The expert from EC suggested requesting clarifications from GRSG, outlining the vehicle construction rather than the usage. The expert from EC pointed out that the EU Directive 2005/40/EC actually exempts Class II vehicles from the belt anchorage fitting requirement and suggested to request clarifications from GRSG for the necessary definitions, outlining the vehicle construction rather than the usage. The expert from the Netherlands supported the full installation of anchorages and suggested to leave the choice to Contracting Party to install or not the safety-belts.

33. Following the discussion, GRSP agreed to resume consideration on this issue on the basis of a revised document. The expert from Germany volunteered to submit to GRSG a proposal regarding the definition of all Class II vehicles including low-floor buses. GRSP also agreed to keep ECE/TRANS/WP.29/GRSP/2007/7 and ECE/TRANS/WP.29/GRSP/2007/10 on its agenda.

IX. REGULATION No. 16 (Safety-belts) (Agenda item 9)

A. Proposal for draft amendments (Agenda item 9.1)

34. GRSP noted that no new information was received on the alignment of the Regulation with alternative standards and deferred the discussion to the next session.

B. Mandatory fitting of safety-belts for Class II buses (Agenda item 9.2)

Documentation: ECE/TRANS/WP.29/GRSP/2007/8; ECE/TRANS/WP.29/GRSP/2007/11

35. For the same purpose as mentioned in paragraph 31 (Class II buses), the expert from Italy and Germany presented respectively ECE/TRANS/WP.29/GRSP/2007/11 and ECE/TRANS/WP.29/GRSP/2007/8 proposing a new series of amendments to Regulation No. 16. GRSP agreed to follow the same approach as for Regulation No. 14 (see par. 33).

C. Communication form (Agenda item 9.3)

Documentation: ECE/TRANS/WP.29/GRSP/2007/4

36. The expert from the Netherlands introduced ECE/TRANS/WP.29/GRSP/2007/4 in order to correct the communication form in Annex 1A with regard to the installation of safety-belts. He added that the proposal was deemed to improve the traceability of type approval certificates.

37. GRSP adopted ECE/TRANS/WP.29/GRSP/2007/4, not amended. The secretariat was requested to submit it to WP.29 and AC.1, for consideration at their November 2007 sessions, as a draft Corrigendum 1 to the 05 series of amendments to Regulation No. 16.

X. REGULATION No. 29 (Cabs of commercial vehicles) (Agenda item 10)

A. Proposal for draft 03 series of amendments (Agenda item 10.1)

Documentation: ECE/TRANS/WP.29/GRSP/2006/5; ECE/TRANS/WP.29/GRSP/2007/2; Informal documents Nos. GRSP-41-02 and GRSP-41-11 of Annex I to this report

38. The expert from OICA, as secretariat of the informal working group, informed GRSP about the progress made by the group on truck cab strength during the first session held in Lyon on April 2007. He explained that the work approach was aimed at reviewing a considerable amount of accident data from United States of America, Europe, Japan and Russian Federation. He added that a general agreement was reached on the three accident configurations proposed by OICA. The informal group had agreed that additional meetings were needed in order to consider further proposals. GRSP noted that all working papers of the informal group were available at:
<http://www.unece.org/trans/main/wp29/wp29wgs/wp29grsp/cab_1.html>

39. The expert from the Russian Federation introduced a revised proposal for draft amendments (GRSP-41-02), superseding ECE/TRANS/WP.29/GRSP/2006/5. He clarified that this new proposal was devoted to simulate in test laboratories the accident scenario emerged by real world crash data collection and to give an alternative approach to the OICA proposal.

40. The expert from Sweden briefly introduced GRSP-41-11 focusing mainly on the occupant survival space.

41. The expert from OICA recalled that the agreed approach was to proceed in two steps: first on the general scenario of accident configuration and then on amendments to the regulatory text. He suggested that the informal group should consider in detail all proposals and elaborate a consolidated document for consideration by GRSP.

42. GRSP endorsed this procedure and agreed to submit both informal documents for a detailed consideration to the informal working group. The secretariat was requested to distribute GRSP-41-02 and GRSP-41-11 with an official symbol at the next 2007 December session.

XI. REGULATION No. 44 (Child restraint systems) (Agenda item 11)

A. Proposal for draft amendments (Agenda item 11.1)

Documentation: Informal documents Nos. GRSP-41-10 and GRSP-41-17 of Annex I to this report

43. The expert from France introduced GRSP-41-10 to correct ECE/TRANS/WP.29/2007/21 adopted by WP.29 at its March 2007 session. He clarified that forward facing non-integral child restraints cannot always be assured of a good fit using the ISOFIX anchorages together with adult safety-belts.

44. GRSP adopted the proposal, as reproduced below. The secretariat was requested to submit it to WP.29 and AC.1, for consideration at their November 2007 sessions, as a draft Corrigendum 1 to Supplement 4 the 04 series of amendments to Regulation No. 44.

Paragraph 6.1.3., the table, correct in the fifth column, second row "A" by "N/A"

"Forward facing (non-integral)	NA	NA	NA	NA	NA	NA	NA	NA
Forward facing (non-integral – see point 6.1.12.)	A	NA	A	A N/A	A	NA	A	A"

45. The expert from IC gave a presentation (GRSP-41-17) indicating a large number of wide-ranging issues to be solved. He mentioned amongst others that labelling was an issue in terms of permanence, visibility and wording. He suggested reducing the span of group I in order to avoid overlaps with group 0+. He outlined that a higher test pulse and an earlier peak were needed to match the increased stiffness of cars. The expert from France shared the concerns by CI. He suggested the establishment of a new informal group in order to fully review Regulation No. 44 and to devise a new set of performances. The expert from Germany informed GRSP about the work progress made by EEVC working group 18. He suggested considering the conclusions of EEVC in the future work agenda of the informal group. He added that the major challenge was to find a compromise on age/weight/height to cover the entire child population with a limited number of dummies. The expert from Australia announced the input of a study of the Adelaide University concerning height and mass of children.

46. Thus, GRSP agreed to set up a new informal group on child restraint systems. The Chairperson announced the intention to inform WP.29 and AC.1 at their next session in June 2007. GRSP also agreed to consider the terms of reference of the informal group at the next GRSP session. GRSP invited the experts from USA, France and Australia to prepare presentations on this subject.

47. With regard to the horizontal plane requirements, the expert from CLEPA recalled the purpose of ECE/TRANS/WP.29/GRSP/2006/9. He stated that no new information was yet available to solve the issue of booster cushion users and to allow proper design solution to cope with submarining. He announced an updated proposal for the next session.

48. The expert from Germany informed GRSP about the progress on his proposal ECE/TRANS/WP.29/GRSP/2006/17 concerning the colour code for the webbing route of universal child restraint. He added that Germany had agreed to update his proposal to insert the green colour for lateral facing seats, but CLEPA had expressed concerns on the adoption of a third colour. The expert from the EC recommended clarifying in the proposal that lateral facing child restraints were devoted only to the transport of small children. GRSP agreed to resume consideration on this subject on the basis of a new proposal by Germany jointly prepared with CLEPA. The secretariat was requested to re-insert ECE/TRANS/WP.29/GRSP/2006/17 (paragraph 4.3. only) into the agenda of the next meeting.

XII. DRAFT REGULATION ON SEAT COVERS (Agenda item 12)

A. Proposal for a new Regulation on accessory or replacement seat covers (Agenda item 12.1.)

49. The expert from EC preferred to have, at the present time, no new Regulation on this subject and stated to provide further information for the next GRSP. Nevertheless GRSP agreed to review this issue at its next session.

XIII. CONSIDERATION OF SCOPES AND COMMON DEFINITIONS (Agenda item 13.)

A. Draft amendments to Regulations Nos. 14 and 16 (Agenda item 13.1)

Documentation: ECE/TRANS/WP.29/GRSP/2007/3

50. The expert from France introduced ECE/TRANS/WP.29/GRSP/2007/3 showing a possible way to extend in UNECE Regulations Nos. 14, 16 and 44 the use of child restraint systems on categories of vehicles other than M₁ and N₁. The expert from OICA expressed concerns with regard to installation of ISOFIX anchorages on M₂ and M₃ vehicles. He asked for appropriate test requirements which were different for M₁ categories of vehicles in terms of structure and vehicle deceleration. Following the discussion, the expert from France invited all experts to send him their comments in order to prepare a new consolidated proposal for consideration at the next session.

XIV. REGULATION No. 17 (Strength of seats) (Agenda item 14)

A. Proposal for draft amendments (Agenda item 14.1)

Documentation: ECE/TRANS/WP.29/GRSP/2007/12; Informal document No. GRSP-41-16 of Annex I to this report

51. GRSP considered ECE/TRANS/WP.29/GRSP/2007/12 (tabled by Italy and France) proposing to align the provisions of the Regulation with those of the corresponding EU Directive 2005/39/EC. The EC expert did not support the proposal because it lacks a time limit of five years for the exemption for vehicles having an integrated saloon up to 10 seats (M₃ of class III or B) with side-facing seats grouped in the rear, as in the EU Directive. The expert from the Netherlands questioned the presence of that derogation in the scope which could hamper the basis of reciprocal recognition of type approvals of the 1958 Agreement. GRSP agreed to resume consideration of this

subject at its next session on the basis of a new document taking into account the comments received.

52. The EC expert clarified that the GRSP-41-16 had to be meant as a statement of intention only to align Regulation No. 17 as soon as the gtr on head restraint would be adopted. He invited all experts to send him their comments.

XV. REGULATION No. 80 (Strength of seats) (Agenda item 15)

A. Proposal for draft amendments (Agenda item 15.1)

Documentation: Informal document No. GRSP-41-06 of Annex I to this report

53. GRSP considered a proposal by Japan (GRSP-41-06) concerning editorial corrections and to update the injury criteria in the dynamic tests. The expert from France expressed his reservation to adopt the proposal as a corrigendum due to the change of the thorax acceleration. The expert from the Netherlands questioned the references to some paragraphs. GRSP agreed to resume consideration of this subject at its next session on the basis of a revised document.

XVI. REGULATION No. 94 (Frontal collision) (Agenda item 16)

A. Head acceleration (Agenda item 16.1.)

Documentation: ECE/TRANS/WP.29/GRSP/2007/9

54. The expert from Australia introduced ECE/TRANS/WP.29/GRSP/2007/9 aimed at clarifying the 3 ms head acceleration during the test. GRSP adopted the document not amended. The secretariat was requested to submit the proposal to WP.29 and AC.1, for consideration at their November session as draft Corrigendum 1 to the 01 series of amendments to Regulation No. 94.

B. Proposal for draft corrigendum (Agenda item 16.2)

Documentation: ECE/TRANS/WP.29/GRSP/2007/5

55. The expert from Japan introduced ECE/TRANS/WP.29/GRSP/2007/5 to insert some corrections to the text of the Regulation. The expert from Germany agreed in principle on the proposal but preferred a full alignment with the EU Directive. GRSP agreed to resume consideration of this subject at its next session on the basis of a new document jointly prepared by the experts from the Netherlands, EC and Germany.

56. The expert from France announced that at the next session he will present a proposal for draft amendments to Regulation No. 94 taking into account the outcome of the research on barriers carried out by the EEVC Working Group 15 "Crash compatibility" (for the final report see website: <http://www.eevc.org/wgpages/wg15/wg15index.htm>).

XVII. Regulation No. 95 (Lateral collision) (Agenda item 17)

A. Proposal for draft corrigendum (Agenda item 17.1)

Documentation: ECE/TRANS/WP.29/GRSP/2007/6

57. GRSP considered ECE/TRANS/WP.29/GRSP/2007/6 tabled by Japan regarding the technical description of the dummy. GRSP adopted the document, not amended. The secretariat was requested to submit the proposal to WP.29 and AC.1, for consideration at their November 2007 session as draft Corrigendum 1 to the Supplement 1 to the 02 series of amendments to Regulation No. 95.

XVIII. BUSES AND COACHES (Agenda item 18)

A. Frontal collision of buses and coaches (Agenda item 18.1)

58. GRSP noted that in the April 2006 session of GRSG, the delegate from Spain had been invited to inform GRSP on this issue (ECE/TRANS/WP.29/GRSG/70, para. 21). The Spanish delegation reported that the person appointed to inform GRSP on this subject was Professor F. Aparicio Izquierdo. He added that the results of the working plan, commissioned by EEVC, would be presented to GRSG and GRSP at their next sessions.

B. Restraining of children travelling in buses and coaches (Agenda item 18.2)

59. GRSP recalled the proposal by France (ECE/TRANS/WP.29/GRSP/2007/3) aimed at amending the scope of Regulations Nos. 16 and 14 to allow the transportation of children in vehicles of categories M₂ and M₃ (see para. 50. above). GRSP agreed to resume consideration on this subject at its next session.

C. Safety of wheelchair users in buses and coaches (Agenda item 18.3)

60. GRSP noted that no new information was received and agreed to resume consideration on this subject at its next session.

D. Safety on board of sleeper coaches (Agenda item 18.4)

Documentation: Informal documents Nos. GRSP-41-01 and GRSP-41-31 of Annex I to this report

61. GRSP noted GRSP-41-01 from the secretariat concerning the GRSG request for advice by GRSP experts to improve the safety of passengers in sleeper coaches, which are equipped with berths or seats convertible into berths or seats inclinable into laying position.

62. The expert from Japan gave a presentation (GRSP-41-31) showing the outcome of a test programme aimed at verifying, in the case of deceleration and steering conditions, the behaviour of a dummy lying on a berth.

63. The expert from Germany expressed his concerns about the possibility to provide the same

system of securing seated passengers to those lying. He clarified that the request from GRSG was aimed at devising a solution that would provide safety for sleeping passengers lying in a horizontal position. GRSP agreed to wait for a GRSG closer view of the issue in order to consider more appropriate solutions to the next GRSP session.

XIX. OTHER BUSINESS (Agenda item 19)

A. Exchange of information on national and international requirements on passive safety (Agenda item 19.1)

64. The expert from the United States of America stated that further analysis was needed on the ES-2re dummy in order to resolve the petitions raised for Final Rule FMVSS No. 214.

B. Rear impact assessment (Agenda item 19.2)

65. GRSP agreed that the discussion on this subject was solved during the Head Restraint gtr debate. The expert from EEVC announced to submit some information on the recent work results for consideration of the next GRSP session in December 2007.

C. Crash compatibility (Agenda item 19.3)

Documentation: Informal document No. GRSP-41-25 of Annex I to this report

66. Referring to the decision of AC.3 during its last session in March 2007 (ECE/TRANS/WP.29/1058, para. 99), GRSP agreed to re-insert this agenda item. GRSP welcomed a presentation by EEVC (GRSP-41-25) on the work results of EEVC Working Group 15 (see website: <<http://www.eevc.org>>). GRSP appreciated the positive outcome of the work and the potential improvement of safety for vehicles in case of collision regardless to their masses. GRSP agreed to resume consideration of this subject at its December 2007 session.

XX. PROVISIONAL AGENDA FOR THE NEXT SESSION

67. For its forty-second session, scheduled to be held in Geneva from 11 (14.30h) to 14 (12.30h) December 2007, GRSP agreed that the Chairperson, in collaboration with the secretariat, would prepare the provisional agenda.

Annex I

LIST OF INFORMAL DOCUMENTS DISTRIBUTED DURING THE SESSION (GRSP-41-...)

No.	Transmitted by	Agenda item	Language	Title	Follow-up
01.	Secretariat	18.4.	E	Promotion of safety on board of sleeper coaches	(c)
02.	Russian Federation	10.1.	E	Proposal for draft 03 series of amendment to Regulation No. 29 (Truck cab strength).	(b)
03.	Japan	3.1.1.	E	Japan Test Programme Backset measurement with R-point versus H-point method	(a)
04.	Japan	3.1.1.	E	Proposal to set up the head restraints gtr phase 2 examination WG	(a)
05.- Rev.1	Japan	8.1.	E	Proposal for draft corrigendum to Regulation No. 14 (Safety-belts anchorages)	(b)
06.	Japan	15.1.	E	Proposal for draft corrigendum to Regulation No. 80 (Seat strength M ₂ and M ₃)	(b)
07.	OICA	2.1.2.	E	OICA proposal to amend the draft gtr on Pedestrian Protection ECE/TRANS/WP.29/GRSP/2006/2	(a)
08.	OICA	2.1.2.	E	OICA additional comments to the draft gtr on Pedestrian Protection - ECE/TRANS/WP.29/GRSP/2006/2	(a)
09.	Japan	2.1.1.	E	Status Report on Flexible Pedestrian Legform Impactor - Technical Evaluation Group (Flex - TEG) Activities	(a)
10.	France	11.1.	E	Draft Corrigendum 1 to Supplement 4 to the 04 series of amendments to Regulation No. 44 - France proposal to amend ECE/TRANS/WP.29/2007/21	(a)
11.	Sweden	10.1.	E	Proposal for draft amendments to Regulation No. 29	(b)
12.	United States of America	3.1.	E	Head restraint gtr: Request of comments on ECE/TRANS/WP.29/2007/47 ECE/TRANS/WP.29/2007/48 and ECE/TRANS/WP.29/2007/46	(a)

No.	Transmitted by	Agenda item	Language	Title	Follow-up
13.	United States of America	4.1.1.	E	Door lock gtr No. 1: Request of comments on ECE/TRANS/WP29/2007/40 -	(a)
14.	EC	2.1.3.	E	Proposal for draft amendments to draft global technical regulation (gtr) on pedestrian safety.	(a)
15.	EC	2.1.3.	E	Proposal for draft amendments to draft global technical regulation (gtr) on pedestrian safety.	(a)
16.	EC	14.1.	E	Proposal for draft amendment to Regulation No. 17 vehicle seats, their anchorages and any head-restraints	(a)
17.	IC	11.1.	E	Proposal for improvements of UNECE Regulation No. 44 (child restraint) from a consumer perspective	(a)
18.	IC	8.1.	E	Marking of top tether anchorage locations - Regulation No. 14	(a)
19.	Japan	2.1.3.	E	Changes introduced into ECE/TRANS/WP.29/GRSP/2006/2 at the GRSP 2006 May session – Pedestrian protection	(a)
20.	United States of America	3.1.1.	E	Proposal for draft gtr on Head Restraint	(a)
21.	OICA	3.1.1.	E	Customer study on shingled head restraints	(a)
22.	United States of America	3.1.1.	E	Head restraint gtr - Backset limit	(a)
23.	OICA	3.1.1.	E	Gtr on head restraints: Backset measuring method - Analyses of H-point and R-point method	(a)
24.	Japan	4.1.1.	E	Request for editorial corrections to ECE/TRANS/WP.29/2007/40	(a)
25.	EEVC	19.3.	E	Status of research work of EEVC WG 15 on "Crash Compatibility between cars"	(a)
26.	United States of America	3.1.1.	E	Proposal for draft amendments to draft global technical regulation (gtr) on head restraints	(a)

No.	Transmitted by	Agenda item	Language	Title	Follow-up
27.	OICA	3.1.1.	E	Gtr on head restraints - Triggering of active systems in sled test	(a)
28.- Rev.1	EC	2.1.2.	E	Proposal to develop a global technical regulation (gtr) concerning pedestrian protection: Preamble	(a)
29.	Japan	2.1.2.	E	Japan's proposal for the scope of pedestrian protection gtr	(a)
30.	Germany	6.1.	E	Gtr project on The Hydrogen- and Fuel Cell Vehicles (HFCV)	(a)
31.	Japan	18.4.	E	Passenger's safety in sleeper coaches: a passenger on the berth and seat	(a)
32.	United States of America	2.1.2.	E	Pedestrian protection gtr: Head and leg impact testing	(a)
33.- Rev.2	EC/Japan/United States of America	2.1.3.	E	Proposal for draft amendments to global technical regulation (gtr) on pedestrian protection	(a)
34.	Chairperson	3.1.2.	E	Fifth progress report of the informal group on head restraints	(a)
35.	OICA	3.1.1.	E	OICA test programme on backset measurement	(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 with amendments

Annex II

AMENDMENTS TO DRAFT GTR ON PEDESTRIAN PROTECTION ADOPTED BY GRSP
AT ITS FORTY-FIRST SESSION BASED ON ECE/TRANS/WP.29/GRSP/2006/2
(see paragraph 11. of this report)

A. STATEMENT OF TECHNICAL RATIONALE AND JUSTIFICATION

I. SAFETY NEED

Paragraph (a), amend to read:

"(a) Distribution of the Injuries

.....

The frequency of fatal and serious injuries (Abbreviated Injury Scale: AIS 2-6)..."

Paragraph (c), amend to read:

"(c) Target Population for this gtr

....

...It was found that bonnet/wing contacts..."

II. SUMMARY: DESCRIPTION OF THE PROPOSED REGULATION

Paragraph (a), indent 1, amend to read:

"(a) Introduction

.....

- (i) The group recognized that the A-pillars, windscreen roof and lower frames On the other hand, the entire windscreen frame would need to be softened extremely to pass any HIC (Head Injury Criterion) requirement...."

Paragraph (b),

"(b) Overview

....

The HIC must not exceed 1,000 over one half of a child headform test area and must not exceed 1,000 over two thirds of a combined child and adult headform test areas...."

III. PROCEDURAL BACKGROUND

".....

The group had held the following meetings:

- 4-5 September, 2002, Paris, France
- 10 December, 2002, Geneva, Switzerland
- 15-16 January, 2003, Santa Oliva, Spain

- 15-16 May, 2003, Tokyo, Japan
- 10-12 September, 2003, Ottawa, Canada
- 24-26 February, 2004, Paris, France
- 28-30 September, 2004, Paris, France
- 11-13 July, 2005, Brussels, Belgium
- 5-6 December, 2005, Geneva, Switzerland
- 16-19 January, 2006, Washington DC, USA
-"

IV. EXISTING REGULATIONS, DIRECTIVES, AND INTERNATIONAL VOLUNTARY STANDARDS

Amend to read:

"....

This feasibility review has taken place and may result in amendments to the European requirements in its second phase, starting in 2010.

.....In addition, Canada and the USA are conducting a preliminary investigation of the effects of bumper design on different leg test devices (TRL legform impactor; Polar dummy and flexible pedestrian legform impactor (Flex-PLI)).

....

....for adult and child head protection and for adult leg protection.

The International Organization for Standardization (ISO) created....

....

The ISO standards and draft standards are:

- (a) ISO 11096 2002 Road vehicles - Pedestrian protection - Impact test method for pedestrian thigh, leg and knee,
- (b) ISO/DIS 14513 2006 Road vehicles - Pedestrian protection - Head impact test method,
- (c) [ISO/FDIS 16850] Road vehicles - Pedestrian protection - Child head impact test method."

V. GENERAL ISSUES

Subparagraph (b), amend to read:

"(b) Applicability

The application of the requirements of this gtr refers, to the extent possible, to the revised vehicle classification and definitions outlined in the 1998 Global Agreement Special Resolution No. 1 concerning the common definitions of vehicle categories, masses and dimensions (S.R.1).

Difficulties, due to differing existing regulations and divergent vehicle fleets, were encountered in determining which vehicles would be included in the scope. The Japanese regulation applies to passenger cars for up to nine occupants and commercial vehicles up to a GVM of 2,500 kg. The IHRA recommends tests and procedures for passenger vehicles of GVM 2,500 kg or less. The

European Union (EU) Directive applies to M₁ vehicles up to 2,500 kg and N₁ vehicles up to 2,500 kg, which are derived from M₁. The ISO recommendations are for M₁ and N₁ vehicles that have a GVM of 3,500 kg or less. In addition, some countries, taking into account their current fleet composition, wanted to ensure that larger vehicles, such as light trucks and sport utility vehicles with a GVM of 4,500 kg or less, were not excluded.

The group originally reviewed in detail the IHRA recommendation to take into account the shape of the front of the vehicle, as an important parameter when discussing the types of pedestrian injuries to be mitigated. IHRA specifies three groups of vehicle shape: sedan, SUV, and 1-box. For the adult and child head impacts, IHRA foresees different impact test speeds and different impact angles. The Japanese legislation is based on the IHRA recommended method. The EU requirements, on the contrary, do not differentiate between the various test speeds and impact angles.

The group compared these various considerations and, on the basis of simulations (INF GR/PS/129), concluded that the EU requirements in effect are more severe than the Japanese proposals. For safety reasons, the group therefore uses the EU approach, not taking into account the shape of the vehicle front in defining the requirements. Furthermore, the group also determined that the IHRA recommendations would be difficult to put in place in the context of a regulatory and certification approach.

There was considerable discussion over the mass of the vehicles to which this gtr should apply. Using the categories described in S.R.1, several options were examined. Some delegates wanted to limit application of the gtr to vehicles in Category 1-1 with a vehicle mass of less than 2,500 kg GVM. Other delegates did not agree with a 2,500 kg limit on GVM, believing that since the front-end structure of vehicles with a mass up to 4,500 kg GVM is usually similar to that of lighter vehicles, the application of the gtr should include the heavier vehicles. In addition, some delegates sought to limit application of the gtr to vehicles of a GVM of more than 500 kg, while other delegates expressed concern about having a lower mass limit, believing that a particular jurisdiction might determine there is a need to apply the gtr requirements in that jurisdiction to vehicles with a GVM of less than 500 kg. There was a suggestion that the gtr should also apply to vehicles in Category 2 that had the "same" general structure and shape forward of the A-pillars as vehicles in Category 1-1. However, some were concerned that it would be unfeasible to define objectively what was meant by "same".

After considering these issues, it was recommended that the gtr should be drafted to have a wide application to vehicles, to maximize the ability of jurisdictions to effectively address regional differences in pedestrian accident crash characteristics. The gtr would establish that if a jurisdiction determines that its domestic regulatory scheme is such that full applicability is inappropriate, it may limit domestic regulation to certain vehicle categories or mass limits. The jurisdiction could also decide to phase-in the requirements for certain vehicles. A footnote was added to the gtr text to make it clear that jurisdictions can decide to limit the applicability of the regulation. This approach recognizes that niche vehicles that are unique to a jurisdiction would best be addressed by that jurisdiction, without affecting the ability or need for other jurisdictions to regulate the vehicles. When a contracting party proposes to adopt the gtr into its domestic regulations, it is expected that the Contracting Party will provide reasonable justification concerning the application of the standard.

While this approach maximizes the discretion of jurisdictions to decide whether vehicles should be excluded from the gtr for feasibility or practical reasons, or because there is no safety need to regulate the vehicles, the group also decided to recommend excluding one unique vehicle type from the regulation. The test procedures in the gtr are based largely on the classic vehicle shape with a long bonnet. Certain vehicles, generally cargo vehicles, have a very short bonnet and a front shape that is very close to the vertical. The pedestrian kinematics with these vehicles may be very different, and, in addition, there are difficulties in applying the tests to these vehicles, particularly with regard to determination of test zone reference lines. For these reason, the group recommends that those vehicles of Category 1-2 and Category 2, where the distance, measured longitudinally on a horizontal plane, between the transverse centre line of the front axle and the R-point of the driver's seat is less than 1,000 mm, be exempt from the requirements of the regulation. In addition, some of the group members raised a concern that this exemption could create distortion in the market if Category 1-1 vehicles were not treated in a similar manner and thus consideration should be given to the inclusion of this category of vehicles in the recommended exemption.

For these reasons, with the exception of the exemption discussed above, the gtr is recommended to apply to category 1-1 vehicles with a GVM exceeding 500 kg; and to category 1-2 and category 2 vehicles with a GVM exceeding 500 kg but not exceeding 4,500 kg. In addition, the group recommends that a Contracting Party may restrict application of the requirements in its domestic legislation if it decides that such restriction is appropriate.

Regarding the applicability of this gtr, it should be noted that the requirements of the draft gtr are substantially more severe than any existing legislation at the time of adoption of the gtr. In addition, many countries do not yet have pedestrian safety requirements. It is therefore recommended that Contracting Parties implementing this gtr allow adequate lead time before full mandatory application, considering the necessary vehicle development time and product lifecycle.

Furthermore, during the development phase of this gtr, the main focus was on vehicles of a GVM of 2,500 kg or less, that are also addressed in all existing legislation. The later extension to other vehicles however needs to recognise that some additional lead-time may be necessary, because many current vehicles, exempted from existing national or regional requirements, are now included. In addition, while the test procedures and requirements of this gtr were based on requirements originally developed for "classical" (sedan type) passenger cars, the gtr now also covers vehicles with specific shapes or features (High Front Vehicles, special purpose vehicles, etc.), for which it is recognised that special consideration may be needed."

Insert two new subparagraphs (d) and (e), to read:

"(d) Points Tested

The informal group considered whether to specify both the number of test points and the minimum spacing of such test points. On consideration, the group determined that the specification of such points did not have a place within this proposed gtr for the following reasons:

(i) For governments that use a self-certification regulatory framework, it was not considered

necessary to mention the number of tests required for testing or their spacing, as it would be incumbent on vehicle manufacturers to ensure that vehicles comply with all the impact zone requirements defined within this proposed gtr when tested by the regulating authority.

(ii) For type approval, the number of tests that need to be carried out to satisfy the relevant authority that vehicles meet the requirements is an issue for that authority, which may specify the number of tests and the spacing between the test points.

(iii) The mention of a minimum number of tests or a minimum distance apart between tests could result in manufacturers being burdened with unnecessary tests and/or authorities being unnecessarily restricted in test programs, as it would be difficult to set a target that would encompass both the largest and smallest test zones, and the situation could arise where test zones could be smaller than the minimum number of tests required that could be fitted into that zone.

(e) Vehicle Design Position

As vehicles come in many variants and modifications, the ride height may vary greatly. Taking into account the differences between type approval and self certification, it is recommended that Contracting Parties take this into account upon national implementation of the gtr. As guidance to Contracting Parties, the EU addresses this issue by defining the concept of "primary reference marks". This definition (paragraph 2.2 of EU Commission Decision of 23 December 2003) reads: "Primary reference marks" means holes, surfaces, marks and identification signs on the vehicle body. The type of reference mark used and the vertical (Z) position of each mark relative to the ground shall be specified by the vehicle manufacturer according to the running conditions specified in paragraph 2.3. These marks shall be selected such as to be able to easily check the vehicle front and rear ride heights and vehicle attitude.

If the primary reference marks are found to be within ± 25 mm of the design position in the vertical (Z) axis, then the design position shall be considered to be the normal ride height. If this condition is met, either the vehicle shall be adjusted to the design position, or all further measurements shall be adjusted, and tests performed, to simulate the vehicle being at the design position."

Paragraph (d) (former), read as paragraph (f)

VI. PEDESTRIAN HEAD PROTECTION

Paragraph VI. Subparagraph (a), amend to read:

"(a) Test Areas

....

....and at the rear by a WAD of 1,700 mm line....

...The child and adult headform test zones cover approximately 62 percent of the pedestrian cases (United States of America)...."

Subparagraph (b), to be deleted

Subparagraph (c), renumber as subparagraph (b) and amend to read:

"(b) Head injury criterion

....

...and must not exceed 1,000 over two thirds...

....."

Subparagraph (d), (former), renumber as subparagraph (c)

Paragraph (e), (former), renumber as paragraph (d) and amend to read:

"(d) Headform

.....

2. Headform Mass and Moment of Inertia

.....

This proposed gtr specifies the moment of inertia of the child and adult headforms as analyzed..... Therefore, the informal group slightly adjusted the upper limit for the child head impactor and finally adopted following values for the gtr headform impactors: 0.008 – 0.012 kgm² for the child headform and 0.010 – 0.013 kgm² for the adult headform.

The United Kingdom placed a reservation noting the mass of the child headform impactor (3.5 kg) differs from that specified in the corresponding EU Directive (2.5 kg). The United Kingdom expressed concerns that this may not provide a level of protection equivalent to that specified in the present EU Directive.

3. Headform Accelerometer

....As explained in INF GR/PS/96, ... Once a high resonance, over the Channel Amplitude Class (CAC) setting level, occurs,.... "

Subparagraph (f), read as subparagraph (e) and amend to read:

"(e) Headform test speed and angle

....

.....three types of walking positions, three types of vehicles...

.....

The group thus decided to use the EEVC 50 degrees and 65 degrees impact angle for child and adult head testing while maintaining the higher EEVC impact speed to the bonnet of 35 km/h (compared to the IHRA speed of 32 km/h).

The Netherlands placed a reservation noting that the headform velocity, at the time of impact was lower than specified in the corresponding present EU Directive. The Netherlands feel that this is not expected to provide a level of protection equivalent to that specified in the present EU Directive."

VII, subparagraph (a)., amend to read:

"1. Purpose

....a lower legform impactor or an upper legform impactor,....

2. Rationale for Limiting the Lower Legform Test

.....

....The EEVC WG17 states in its report, paragraph 7.2.1. (see INF GR/PS/159):...

....

....Therefore, the group recommends.....

...."

Paragraph 3., delete ConforTM through all the text of the draft gtr and for INF PS/154/Rev.1 read INF GR PS/154/Rev.1

Paragraph VII, subparagraphs (b) and (c), amend to read:

"1. Impactor

It was agreed to recommend using the legform impactor developed by TRL, However, it was also recommended to consider

2. Injury Criteria

Knee injuries, which are one of the typical leg

....

(c) Upper Legform Test for High Bumpers

....For that reason, the informal working group recommends an upper legform test for vehicles with a lower bumper height of more than 500 mm.

....

1. Impactor

As the majority of victims of upper leg injuries are adults, the informal group generally agreed to recommend a....

....

2. Injury Criteria

...Accordingly, the informal group decided to recommend a...

3. Limits of the Upper Legform Test

...and pelvis injuries. Research is continuing in this area."

Paragraph VIII., amend to read:

"1. Systems or components that change position

...therefore decided to recommend such active...."

....

2. Active devices to protect pedestrians

... standard as its basis.

...."

Paragraph IX., amend to read:

"...of pedestrian regulation globally.

It should not, however, be allowed to impose any restrictions on other measures, either active or passive, which may be utilised by any contracting party to provide additional benefits for the safety of vulnerable road users.

....

2. Leg Protection

.....

The 32 percent target population from INF GR/PS/169 includes both passenger cars and LTVs. The gtr exempts a rather large percentage of LTVs from having to test with a lower legform, therefore the target population should only include passenger cars and LTVs that have bumper heights below the defined cut off.

[New cost benefits analyses are awaited from the expert of the United States of America]...."

B. TEXT OF THE REGULATION

Paragraph 1., amend to read:

"1. PURPOSE"

Paragraph 2., amend to read:

"2. APPLICATION AND SCOPE

This global technical regulation (gtr) shall apply to the frontal surfaces of power driven vehicles of category 1-1 with a gross vehicle mass exceeding 500 kg; and of category 1-2 with a gross vehicle mass exceeding 500 kg but not exceeding 4,500 kg; and of category 2 with a gross vehicle mass exceeding 500 kg but not exceeding 4,500 kg ^{1/}. However, power driven vehicles of category 1-2 and category 2, where the distance, measured longitudinally on a horizontal plane, between the transverse centre line of the front axle and the R-point of the driver's seat is less than 1000 mm, are exempt from the requirements of this regulation. All definitions of Special Resolution No. 1 shall apply as necessary."

Paragraph 3.1., amend to read:

"3.1., by a wrap around distance (WAD) of...."

Paragraph 3.6., amend to read:

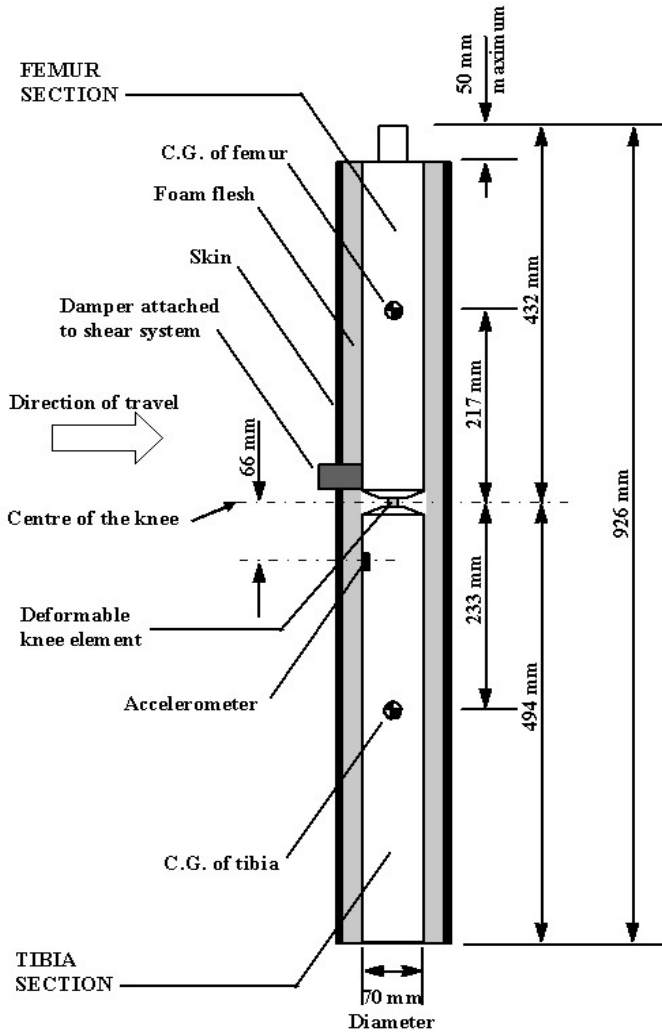
""Bonnet rear reference line" meanswith the windscreen (see Figure 2). The wiper blades and arms are removed during this process."

Paragraph 6.1.1., correct to read:

"6.1.1.stabilized temperature of $20 \pm 4^{\circ}\text{C}$."

^{1/} A contracting party may restrict application of the requirements in its domestic legislation if it decides that such restriction is appropriate.

Figure 12, amend to read:



Paragraph 6.3.1.2.7., amend to read:

"6.3.1.2.7. For each... rubber sheet. The mass of the foam and the rubber skin together shall be 0.6 ± 0.1 kg...."

Paragraph 6.3.1.2.9.1., figure 13, correct the words "Weight as required" to read "Mass as required"

Paragraph 6.3.2.1., amend to read:

"6.3.2.1. Child headform impactor (see Figure 14)

.....The overall diameter shall be 165 ± 1 mm. The mass shall be $[3.5 \pm 0.07$ kg]...."

Paragraph 7.1.1.3. and Figure 17., correct the words "reference level" to read "reference plane" 3 times

Paragraph 7.1.2.2., amend to read:

"7.1.2.2.

At the time of first contact, the impactor horizontal centre line

....with a ± 10 mm tolerance and the impactor vertical centre line shall be positioned laterally with"

Paragraph 7.2.2., correct "to give the velocity" to read "to determine the velocity".

Paragraph 7.3.4., amend to read:

"7.3.4. The headform velocity at the time of impact shall be $[9.7 \pm 0.2$ m/s]."

Paragraph 7.4.4., amend to read:

"7.4.4. The headform velocity at the time of impact shall be $[9.7 \pm 0.2$ m/s]."

Paragraph 7.4.5., correct "in the fore and aft vertical" to read "in the longitudinal vertical".

Paragraph 8.1.1.4., amend to read:

"8.1.1.4. The impactor, without foam covering and skin, shall be mounted with the tibia firmly clamped to a fixed horizontal surface and a metal tube connected firmly to the femur, as shown in Figure 20. The rotational axis of impactor knee joint shall be vertical. To avoid friction errors, no support shall be provided to the femur section or the metal tube. The bending moment applied at the centre of the knee joint, due to the mass of the metal tube and other components (excluding the legform itself), shall not exceed 25 Nm.

A horizontal normal force shall be applied to the metal tube at a distance of 2.0 ± 0.01 m from the centre of the knee joint and the resulting angle of knee deflection shall be recorded. The load shall be increased at a rate between 1.0 and 10°/s until the angle of deflection of the knee is in excess of 22°. Brief excursions from these limits due, for instance, to the use of a hand-pump shall be permitted.

The energy is calculated by integrating the force with respect to the bending angle in radians, and multiplying by the lever length of 2.0 ± 0.01 m."

Paragraph 8.1.1.5., amend to read:

"8.1.1.5. The impactor, without foam covering and skin, shall be mounted with the tibia firmly clamped to a fixed horizontal surface and a metal tube connected firmly to the femur and restrained at 2.0 m from the centre of the knee joint, as shown in Figure 21.

A horizontal normal force shall be applied to the femur at a distance of 50 mm from the centre of the knee joint and the resulting knee shearing displacement shall be recorded. The load shall be increased between 0.1 and 20 mm/s until the shearing displacement of the knee is in excess of 7.0 mm or the load is in excess of 6.0 kN. Brief excursions from these limits due, for instance, to the use of a hand-pump shall be permitted."

Paragraph 8.2.4.3., correct "extra weight" to read "extra masses".

Paragraph 8.3.3.2., correct "over 300 mm square" to read "over 300 x 300 mm square".

Figures 22 and 23. correct the references to paragraphs "8.1.2.5.1." and "8.1.2.5.2." to read "8.1.2.4.1." respectively "8.1.2.4.2.".
