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Item 5 (a) of the provisional agenda

Proposals for amendments to annexes A and B of ADR: Construction and approval of vehicles

Section 9.7.6 – Rear protection of vehicles

Transmitted by the Government of the United Kingdom*

Summary

- Executive summary:** Proposals to clarify the requirements of ADR 9.7.6. in respect to rear protection of vehicles and the minimum distance required between the rear of a tank and the rear of the bumper to ensure a uniform interpretation.
- Action to be taken:** Amend ADR 9.7.6.
- Related documents:** ECE/TRANS/WP.15/2020/5 and informal document INF.16 (108th session); ECE-TRANS/WP.15/2021/7 and informal document INF.5 (109th session); ECE/TRANS/WP.15/253 paragraphs 19-22; ECE/TRANS/WP.15/AC.1/158/Add.1 (item 9); ECE/TRANS/WP.15/2023/1 and informal document INF.9 (113th session); ECE/TRANS/WP.15/262

* A/77/6 (Sect. 20), table 20.6



Background

1. Proposals submitted to the 108th, 109th and 113th sessions sought to clarify the reference points for measurement of the distance required between the rear of a tank and the rear of the bumper which is set out in ADR 9.7.6. We also note previous attempts at clarification dating back over many years.

2. The report of the 113th session (ECE/TRANS/WP.15/262) (May 2023) includes the following:

“Rear protection of vehicles - Document: ECE/TRANS/WP.15/2023/1 (United Kingdom) Informal document: INF.9 (Netherlands).

Several delegations were in favour of the proposal of the United Kingdom. Several delegations supported the comments of the Netherlands contained in informal document INF.9 and preferred to continue the discussion at the next session on the basis of a revised proposal to take account of those comments. The Working Party invited delegations who so wished to send their comments to the representatives of the United Kingdom and the Netherlands, who would prepare a revised proposal for the next session.”

3. This proposal has therefore been developed jointly by the United Kingdom and the Netherlands.

Justification

4. For more than 20 years advances have occurred in both vehicle and tank technology. Advanced Emergency Braking Systems (AEBS) and Rear Underrun Protection Device (RUPD) regulations have both offered a significant increase in rear protection. Tank materials, design and regulation have also moved on considerably to assist the bumper in ensuring that impact protection is increased, and risk of leakage is reduced.

5. Previous research identified the frequency of rear impacts to tank vehicles. This has resulted in enhancements to improve the overall resistance of certain tanks to rear impact, but whilst these improvements have been made, we believe there remains a need for impact protection to be provided by a rear bumper of sufficient strength.

6. To set a clear requirement for resistance to impact it is proposed that the provisions of revision 3 of UN Regulation No. 58 (Rear Underrun Protection Device) are applied by ADR 9.7.6 to introduce an agreed technical standard.

7. Taking into consideration the progress highlighted above, it would seem a strong case exists for the bumper position to be based on type of tank. To enable consistent interpretation the proposal is for the reference points to be from the rearmost part of the bumper to the rearmost part of the tank (in both cases the rearmost part is the part furthest from the front of the vehicle). The rearmost face of the bumper should be positioned at least [100] mm from the rearmost part of the tank, but for tanks constructed to 6.8.2.1.14.(a) which are aluminium alloy, this distance should be increased to at least [200/150] mm to offer increased protection.

8. For tanks with additional protection by their design the distance may be reduced to at least 50 mm, provided the distance to the shell respects the minimum values given in paragraph 7 above.

9. It should be noted that the proposed amendments use the term ‘Tank’ in describing the reference point. The intention of this is to ensure that the shell and any service equipment are always afforded protection by the rear bumper. We believe the use of this term gives a clear understanding of the requirements.

Proposal 1

10. Amend the text in ADR 9.7.6 to read as follows (heading and notes 1 and 2 unchanged):

“The rear of the tank shall be protected against impacts to the rear by a bumper. The bumper shall meet the technical requirements of at least revision 3 of UN Regulation No. 58³ (Rear Underrun Protection Device) [or most recent revision at the time of registration, or when entered service if registration is not mandatory]. No structures shall be attached to the rear of the shell that could cause rupture to the shell in an impact (e.g., fixings of ladders, camera systems).

The rearmost face of the bumper shall be positioned at least [100] mm from the rearmost part of the tank. For tanks constructed to 6.8.2.1.14.(a) [constructed of aluminium alloy] distance shall be at least [200/150] mm.

In cases where additional tank protection is provided the distance may be reduced to at least [50] mm, provided the distance to the shell respects the minimum values given above. Examples of additional protection are:

- Tanks with double ends,
- Tanks with empty compartments used for service equipment,
- Tanks with thermal insulation.

For tanks so constructed, the additional tank protection shall be constructed in a way that penetration of the shell of the shell in an impact is likely to be prevented or there shall be a distance of at least [100] mm to the shell.

For battery vehicles bumper positioning of 100 mm shall be applied from the rearmost part of any shell of the elements of the battery, or the most rearward part of any valve or its operating mechanism to the rearmost face of the bumper.

Vehicles with a tilting tank for the carriage of powdery or granular substances, and vehicles with a tilting vacuum operated waste tank with rear discharge do not require a bumper if the rear fittings of the tank are provided with protection which provides equivalent protection to that provided by a bumper as described above.

Vehicles with bodywork equivalent protection to that of a bumper (as per Rear Underrun Protection Device technical specifications) need not comply with this provision.”

Footnote 3 reads:

- “³ UN Regulation No. 58 (Uniform provisions concerning the approval of:
- I. Rear underrun protective devices (RUPDs)
 - II. Vehicles with regard to the installation of an RUPD of an approved type
 - III. Vehicles with regard to their rear underrun protection (RUP))”

Proposal 2

11. Provide the following transitional measure in section 1.6.5: “Vehicles registered (or entering into service if registration is not mandatory) before 1 July 2027 which do not meet the rear protection requirements of 9.7.6 applicable from 1 January 2025 may continue to be used.”.

Conclusion

12. These amendments will ensure a uniform interpretation of the measurement that is required between the rear of the tank and the rear bumper. It will also apply revision 3 UN Regulation No. 58 (Rear Underrun Protection Device) technical requirements and therefore ensure that the rear bumper meets specific strength requirements. As new technical specifications are being applied, and likely to have been previous misinterpretations, a transitional measure is proposed to enable existing vehicles to continue to be used.