



OTIF/RID/CE/GTP/2022/6

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RID: 14th Session of the RID Committee of Experts' standing working group
(Berne/hybrid, 23 May 2022)

Subject: Requirements for wagons equipped with digital automatic coupling "DAC"
and requirements for these coupling systems

Proposal from the International Union of Wagon Keepers

Preliminary considerations

1. In the 1990s, several accidents involving the release of dangerous goods occurred, which led to the working group on tank and vehicle technology being set up. An analysis of these accidents revealed that the risks are higher when shunting wagons and that there are repeated incidents due to impact speeds of > 12 km/h in shunting operations. When such incidents occurred, it was often observed that wagons would climb. As a result of such climbing, also referred to as the overriding of buffers, tanks were penetrated, thus leading to the leakage of dangerous goods.
2. To reduce the risks of tank penetration by climbing wagons, special provisions TE 22 and TE 25 were introduced into RID.
3. With regard to central couplings, two decisions were taken at the time. Firstly, special provision TE 22 introduced a requirement for an energy absorption of 130 kJ, which was derived from the construction requirements for Russian wagons. Secondly, special provision TE 25 requires additional protection against damage in the event of the overriding of buffers, which is usually provided by means of protective shields.
4. Following the introduction of tank shields on all dangerous goods wagons in the USA, this measure was assessed with regard to European wagons. However, as side buffers are fitted to European wagons and in view of the requirements of special provisions TE 22 and TE 25, the mandatory fitting of tank shields to tank-wagons in Europe was not considered necessary.

5. Digital automatic coupling "DAC" is now about to be introduced and the sector needs clear, legally secure specifications for equipping wagons.

Functionality of DAC

6. After comparing existing central coupling systems, the "Scharfenberg" system was chosen. One of the reasons this design was chosen was to eliminate or significantly reduce the risk of vertical slippage by safely catching the two coupling halves.
7. The force to be guaranteed in the vertical direction was assumed to be 150 kN in accordance with current special provision TE 25.
8. The requirements in accordance with the last paragraph of current special provision TE 22 for a minimum energy absorption of 130 kJ can be implemented and are part of the technical requirements for these new DAC systems.
9. In light of the described characteristics of the Scharfenberg type of DAC (safe catching and locking even at higher speeds, vertical force of 150 kN, 130 kJ energy absorption capacity), climbing is not to be expected immediately, even in accidents that occur at higher impact speeds > 12 km/h, which could possibly damage the coupling or the stem. The couplings will grip and keep the wagons largely at the same level.
10. This would mean that special provision TE 22 would have to be reworded to take account of central couplings.
11. For particularly dangerous goods, for which special provision TE 25 is currently required, the requirements referred to should basically remain. At a later stage (once DAC has been introduced), consideration would have to be given to whether the catching function can be deleted here, as in principle, this is already performed by DAC itself (see explanations above).

Proposal

12. For the above reasons, UIP proposes that the last paragraph of special provision TE 22 be worded as follows or that agreement be given to the drafting of some new wording.

"The requirements of this special provision are deemed to be met by tank-wagons with an automatic **central coupling device equipped with energy absorption elements capable of absorbing at least 130 kJ at each end of the wagon **and whose coupling device enables the safe catching, locking and securing of wagons in accident scenarios at impacts > 12 km/h. Alternatively, equipment shall be provided on wagons to limit damage caused by the overriding of buffers in accordance with special provision TE 25 (e).**"**

Assessment

13. This proposal introduces into RID the DAC central coupling for use in Europe and promotes greater safety with regard to the risks of overriding buffers, as there is currently no requirement for safe catching or for the vertical forces that have to be absorbed.
14. The lower energy absorption is the existing legal text for such types of couplings.
15. The detailed requirements described above are currently being discussed in various technical working groups and will then also be included in a standard on DAC developed by CEN working group TC 256 WG 33. Once it is complete, this standard should then be referenced.

16. Pressurised gas tank-wagons for gases of Class 2 which operate between the SMGS area and the Baltic States and which are equipped with a different coupling system are already fitted with tank shields at present and thus also meet these requirements. The last sentence of the proposed text in paragraph 12 safeguards the use of these Russian wagons in the Baltic States, as they do not meet the requirement of "safe catching", but they are all equipped with tank shields.
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