

OTIF



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**Subject: Fitting RID tank-wagons with a screw brake operable from the wagon gangway
– Interim report**

Information by the International Union of Railways (UIC)

1. Following a request from the RID Committee of Experts (see OTIF/RID/CE/2011-A, paragraphs 11 and 12), UIC conducted a study on the need to equip tank-wagons for the transport of dangerous goods with screw brakes operable from gangways.
2. The interim report for this study is attached. Issues relating to this type of brake are presented through a number of scenarios, in order to facilitate understanding of what is involved and possible developments.
3. The report contains the result of a survey carried out among UIC member railways. The railway companies consulted in the course of this exercise might subsequently make further corrections or additions.
4. As one of the last stages of the report, UIC will submit a series of proposals to be discussed and decided upon with a view to preparing the final report.

For reasons of cost, only a limited number of copies of this document have been made. Delegates are asked to bring their own copies of documents to meetings. OTIF only has a small number of copies available.



INTERNATIONAL UNION
OF RAILWAYS

unity, solidarity, universality

DANGEROUS GOODS POLICY COORDINATION GROUP

Paris, 12 October 2012

Carriage of dangerous goods

Fitting RID tank-wagons with a screw brake operable from the wagon gangway.

Interim report

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 - II. Outlook

During work conducted by the “Tank and Vehicle Technology” Working Group (RID Committee), UIP raised the issue of whether screw brakes operated from the wagon gangway were to be maintained on future RID tank-wagons. UIP’s question is to be seen against the backdrop of anticipated developments in the European legislation governing wagons (Wagons TSI). In this context, UIC has been asked to examine the issue with a view to the decisions potentially to be taken regarding UIC Leaflet 535-3.

The UIC Dangerous Goods Policy Coordination Group (GSMD) examined railway archives and surveyed various technical committees and its members to establish current usage of these brakes on dangerous goods wagons.

The main documents referred to are indicated in sections A (UIC Leaflet 535-3) and B (Other reference documents) hereafter. The results of the survey are given in section C, distinguishing between those usages of these brakes which result by the technology innovation, from regulatory stipulations and those resulting from voluntary decisions by companies. Section D offers a summarised state-of-play on this issue and prospects for further developments.

A – UIC LEAFLET 535-3

UIC Leaflet 535-3, *Equipping of wagons with devices for passing from one to the other and with screw brakes*, has been in force since 1976. It was adopted in 1975 at the UIC seminar (joint meeting of the “Movement” and “Rolling Stock & Traction” committees) held in Edinburgh in June 1975. This leaflet was created in view of the prospects for the application of auto-couplers on wagons and the need to modify wagon structures, strengthen wagon ends and thus also to redefine the various wagon fittings. However, some of the technical provisions laid down in this leaflet were already in use on existing wagons.

The “Automatic coupling” project was managed jointly by the UIC “Movement” and “Rolling Stock & Traction” committees, under the supervision of the UIC Management Committee. Work on the technical aspects was conducted with the support of the UIC Research and Testing Office (ORE). Various groups of experts took part in the work, including a joint sub-committee entitled “Standard wagons”, and OSJD, which was another stakeholder. The latter intergovernmental body, headquartered in Warsaw, represented the railway administrations of Eastern Europe. At the time, railway administrations and manufacturers wished to standardise wagons across Europe.

Besides technical constraints affecting the design and construction of the various types of wagon, other aspects were also considered in producing the leaflet, particularly:

- operational safety (shunting of wagons and running of trains)
- staff safety
- cost (construction, maintenance, etc.),
- requirements of international transport (harmonisation, technical “interoperability”)
- (etc.)

Moreover, UIC Leaflet 535-3 was drawn up to be consistent with Leaflet 535-1, *Standardisation of steps and handrails on wagons*, Leaflet 535-2, *Standardisation and positioning on wagons of steps, end platforms, gangways, handrails (...)*, Leaflet 543, *Brakes - Regulations governing the equipment of trailing stock*, and the UIC 573 series of leaflets on standard wagons accepted for international traffic.

I. Background – Explanations

The fitting of wagons with gangways/platforms and screw brakes was not a new issue. UIC Leaflet 543 was introduced in the late 1940s in order to make the following mandatory (depending on the type of wagon) for operational safety reasons, including the parking of wagons and trains:

- screw brakes operable from the gangway/platform on wagons built or modified for the transport of loads to be handled with caution and on which no alternative existed,
- screw brakes operable from the ground on some other wagons.

The criteria for installation and technical features of the fittings were gradually defined by UIC depending on the type of wagon, though specific national features endured as a result of various “railway traditions” and national supply industries (manufacturers). Wagons intended for international transport nonetheless had to meet interoperability standards (though this term was not used at the time).

Difficulties fitting certain wagons and the requirements of automatic coupling prompted UIC to decide on a revision of the criteria laid down in UIC Leaflet 543 (screw brakes) and Leaflets 535-1/2 and 577 (gangways and steps) and to group them in a unique Leaflet (535-3). To this end, UIC also drew on the “Private Wagons” Working Group, which was asked to define uniform rules for the application of these rules to P-wagons (Private owners) registered by the Railways. At the time, private wagons represented around 10% of the wagons in operation on the European rail network.

In 1974 the UIC “Movement” committee conducted a survey in order to identify the types of wagon requiring such fittings and to establish the percentage of wagons affected in line with three options:

- i) screw brake operable from the platform/gangway,
- ii) possibility of passing from one wagon to another,
- iii) screw brake operable from the ground.

The “Standard wagons” committee stressed that the new regulatory provisions governing the screw brake and those governing the devices for passing from one wagon to another (gangway) needed to be independent from one another. Options ii) and iii) could coexist or not – a wagon with a gangway did not have to have a screw brake.

Concerning the use of brakes in lived of platform/gangway, the 1974 survey recorded the following observations:

- in marshalling yards equipped with beam rail brake or similar track brakes and which generally used skids (stop blocks, brake slipper) to slow or stop wagons:

Most of the Railways used platform-operated screw brakes in sidings more or less frequently. Only SNCB and SNCF answered that they did not use them. Of the Railways using platform-operated screw brakes, only NS thought it possible to avoid using them.

- in marshalling yards not equipped with beam rail brake or similar track brakes and which generally used skids (stop blocks, brake slipper) to slow or stop wagons:

All of the Railways used platform-operated screw brakes more or less frequently, though NS and SNCF thought it possible to avoid using them if shunting times were increased slightly.

- in stations other than marshalling yards during marshalling and train formation operations effected by fly shunting or other techniques:

Most of the Railways used platform-operated screw brakes. Only NS, SNCF and SJ answered that it was possible to avoid using them without increasing shunting times.

- in principal sidings, during shunting operations performed by the owner of the sidings:

The Railways used platform-operated screw brakes. DSB had no cases of their application. Only NS, SJ and SNCF thought it possible to avoid using them.

In view of these responses, the 100% rule (excepted Great Britain) was applied to RID tank-wagons and the following questions from the questionnaire (in particular those asking whether it was possible to do away with platform-operated screw brakes), excluded the wagon types indicated in UIC Leaflet 543, section 2, points a1 and a2, which were in force at the time. These are wagons corresponding to the current Leaflet 535-3, section 1, points a1 and a2, in particular RID tank-wagons (see point A-III, "RID tank-wagons", later in this document).

We can note for the record that the survey also addressed the devices used to pass through trains and rakes of parked wagons by staff, particularly shunting staff or inspectors, but also train crew in the event of an incident. This is a general requirement, but does not mean that all wagons have to be fitted with gangways. The railways said in their responses that there needed to be some way of traversing the wagon on average every 100 m. However, the distances given varied considerably: 50 m (SBB, DR, DSB, NS), from 50 to 100 m (DB, ÖBB, CH, CSD, CFL, DR, DSB), 150 m (MAV and NSB) and 200 m (SNCF). An average train length of 650 m was taken as the starting-point.

II. General issue

The records of UIC work and the results of the survey show that the choice to fit wagons with platforms/gangways and screw brakes needed to take account of the technical options open for each type of wagon and of various operating rules, including rules on staff safety. Archive documents also show the importance of distinguishing between the installation of platforms/gangways on a wagon and that of a screw brake, but it is evident that a handbrake operated from the wagon presupposes that the wagon is equipped with a platform/gangway.

In terms of the technical restrictions, the issues to be resolved vary depending on whether the wagon type in question is a flat wagon, covered or uncovered wagon, car-carrying wagon, hopper wagon (drop load), or a tank-wagon, etc. For instance, for hopper wagons fitted with platforms from which the unloading trapdoors are controlled, it would appear "natural" to install any screw brake's controls on the platform. By contrast other wagons, such as flat wagons, do not lend themselves easily to the installation of gangways and fittings for wagon-operated handbrakes. This is why, where such brakes exist, they are ground-operated from both sides of the wagon.

In terms of the operational restrictions, the archives show that these varied from one country to another, and often determined whether or not wagons would be fitted with platforms/gangways and screw brakes, in particular for wagons intended for international traffic.

The speed limit for shunting operations varied between 25 km/h to 40 km/h depending on the country and on the railway site. Generally speaking, European practice is that wagons should buff at speeds below 6 km/h (not to be confused with the speed at which wagon strength tests are conducted). Complying with the 6 km/h speed limit for buffing protects against damage to fragile or sensitive loads. This goal can be achieved more or less easily, depending on:

- the features of fixed installations (line gradient, in particular that of the hump used for gravity-hump shunting, presence/absence of manual/automatic track brakes, etc.),
- the type of operations performed (fly shunting, accompanied shunting, hump-shunting of wagons or groups of wagons, etc.).

Depending on the situations encountered, risk prevention was managed under a national framework by the various railway administrations, though with decentralised implementation taking into account specific local features and the types of wagons handled. These rules have evolved over time, and have often been simplified as operating practices have developed, but they have also been retained on some production sites, particularly where the transport of dangerous goods or fragile or sensitive loads are involved.

III. RID tank-wagons

At the time, most tank-wagons were privately-owned, with the exception of a relatively small number of wagons belonging to railway companies which they used for their own transport needs, essentially to carry fuel to service stations for diesel locomotives and multiple units.

The tank-wagons in question here, i.e. wagons compliant with the terms of UIC Leaflets 543 and 535-3 are wagons:

- built specifically for the transport of loads to be handled with caution as follows: compressed or liquefied gases; materials which give off inflammable gases when in contact with water causing combustion; acids; corrosive or combustible liquids; loads igniting spontaneously, catching fire or exploding easily,
- whose special fittings for accommodating the load must be treated with caution, i.e. jar or cask wagons; tanks of aluminium; tanks lined with ebonite or enamel.

Remarks: some of the terms used in the UIC leaflet are nowadays rarely used. During the 1960s, the RID regulation, which was then an annex to the CIM (contract of international carriage of goods by rail), and the RIV ("Regolamento Internazionale Veicoli" or international regulation for the use of wagons), still used the French generic term "wagon-réservoir" (German: "Behälterwagen").

This term covered tank-wagons (French: "wagon-citernes" / German: "Kesselwagen"), cask wagons ("wagons-foudres"/"Fasswagen"), wagons with removable tanks ("wagons à citernes amovibles"/"Wagen mit annehmbaren

Behältern"), jar wagons ("wagons-jarres"/"Topfwagen"), and battery-wagons ("wagons-batterie"/"Batteriewagen"). For linguistic reasons, in particular the translation into German, OTIF and UIC later agreed to use, in French, the word "réservoir" only in the generic term "wagon réservoir", and to use the word "tank" (French: "citerne") for the derived forms.

The obligation to handle loads with caution naturally involves complying with the maximum buffing speed of 6 km/h. To reduce the risk of overly-violent buffing, during the operation of wagons, skids (brake slipper, stop blocks) may be used to slow or stop wagons. Equally, some shunting techniques (such as gravity-hump shunting or fly shunting) may be prohibited. Any such decisions must be taken with logical regard for production constraints and for the safety level provided by the installations and other equipment used. If wagons are automatically braked with track brakes, for example, it is easier to control the speed of wagons for shunting and buffing purposes. However, it is also possible to use the handbrakes which have been a feature of wagon platforms for many decades now. The 1974 survey indicates a "broad consensus" (i.e. no opposition) amongst the railways (excepted GB) in favour of fitting 100% of RID tank-wagons with a screw brake operated from the platform/gangway. This consensus was shared with the supply industry and with wagon owners.

This 100% rule, laid down in UIC Leaflet 535-3, facilitated international transport and, paradoxically, enabled the application of specific national or local operating rules without creating operating constraints where such rules did not exist. Indeed, had the 100% rule not been approved, a consist containing wagons not fitted with handbrakes would have to have been notified in advance to any production sites at which certain shunting operations were prohibited on RID tank-wagons not fitted with platform-operated screw brakes. The resultant restrictions are easily imaginable, including for the wagons' home country which was not subject to such rules. IT and train consist data transmission systems would have required modification. For international traffic this would have affected all railway administrations, including those which did not apply shunting restrictions to tank-wagons not fitted with platform-operated handbrakes. Domestic traffic would also have been affected by this issue in countries which did apply restrictions for wagons not fitted with platform-operated screw brakes.

B. OTHER REFERENCE DOCUMENTS

This list is not comprehensive. It includes those texts delimiting the subject of this report. Other than the draft of the new Wagons TSI, it takes no account of other drafts currently being worked on, specifically at European level.

I. UIC documentation

UIC has a particular wealth of documentation and few of its documents restrict their scope to platform-operated screw brakes only. This is not surprising since any single system interacts with others, and an overall logic must be preserved taking account of various aspects (loading gauge, technical compatibility, staff safety, etc.). The issue of gangways, for example, is interdependent with that of steps, but also depends on the need to pass through the wagons in a stopped train. Multiple aspects are considered in the definition of the wagon.

This survey of existing documentation does not go into detail. The UIC archives exist mostly in French and German. English was not at that time an official working language at UIC.

a. UIC leaflets

These leaflets deal directly with the issue of platform-operated screw brakes. Other interdependent leaflets could have been mentioned, but they are of little significance to this paper. The date in brackets is the date of the most recent version of the leaflet.

i. UIC 535-1 (1973)

Standardisation of steps and handrails on wagons (wagons not fitted with auto-couplers). This leaflet follows on from the former UIC Leaflet 535 which was developed in the early 1950s.

ii. UIC 535-2 (2005)

Standardisation and positioning on wagons of steps, end platforms, gangways, handrails, tow hooks, automatic coupler (AC), automatic draw-on coupling and brake valve controls at UIC member RUs and OSJD member RUs. This leaflet was first created in 1973. The current version dates from 2005.

iii. UIC 535-3 (1995)

Equipping of wagons with devices for passing from one to the other and with screw brakes. This leaflet was first created in 1975. It was revised in 1995 with regard to the percentage of screw brakes required for flat wagons used in combined transport.

iv. UIC 543 (2007)

Brakes - Regulations governing the equipment of trailing stock. This leaflet originated in 1948 and is now in its 13th edition. In 2007, it was amended to take account of the RID rules on spark arrestor plate on wagons carrying class 1 dangerous goods.

v. UIC 573 (2007)

Mentioned for the record, this leaflet on the *Technical conditions for the construction of tank-wagons* is referenced in the RID under points 4.3.3.3.2, 6.8.2.2.1 and 6.8.4. It refers to UIC Leaflet 535-3, point 1.1.3, stating that tank-wagons are to be fitted with screw brakes in line with the requirements of said leaflet.

b. Other UIC documents

These are often technical documents issued by specialist committees, but also documents whose scope of application is much broader.

i. Minutes of the “Rolling Stock and Traction” Committee, Edinburgh, 10-13 June 1975. Adoption of UIC Leaflet 535-3.

ii. Minutes of the joint meetings of the “Movement” and “Rolling Stock and Traction” Committees, 1965 - 1975.

iii. Records of the work of the joint sub-committee on “standard wagons”, 1970 - 1975.

- iv. Minutes of the meeting of the sub-committee on “Regulations and signalling”, Paris, 1974. Survey to determine the percentage of wagons to be fitted with a screw brake and/or platform/gangway.

II. COTIF 1999 – GCU

The COTIF and its technical appendices do not deal with this subject.

The RID makes indirect reference to UIC Leaflet 535-3 via UIC Leaflet 573, which it cites in points 4.3.3.3.2, 6.8.2.2.1 and 6.8.4. However, this reference concerns the construction of tanks and service equipment.

In the General Contract for the Use of wagons (GCU), a multilateral contract based on the COTIF international convention, more particularly its appendix CUV which states the mutual rights and obligations of wagon keepers (K) and railway undertakings (RU) when using wagons as a means of transport in Europe and beyond. The handbrakes and gangways form part of the scope of the technical transfer inspection performed on wagons.

Appendix 9 to the GCU describes the conditions for this inspection. It offers a catalogue of the anomalies likely to be observed. The anomalies concerning the handbrake are listed under point 3.5.1 and those regarding gangways and other fittings of the same type under 6.1.7. The R1 label (Annex 11), which is intended to identify wagons on which the handbrake is inoperable, applies to all such scenarios, whether the handbrake platform-operated or not.

The GCU speaks of handbrakes but not of parking brakes.

III. European legislation

EU law is constantly changing. The documents of direct relevance to the subject of this paper are the TSIs (Technical Specifications for Interoperability) on *Wagons and Operations*. It would seem that the *European register of authorised rail vehicle types* also concerns this subject, since it records the features of wagons.

a. Wagons TSI

The current version of the Wagons TSI (Decision 2006/861/EC of 28/7/2006) deals with “parking brakes” and not “screw brakes”. The concept of the handbrake is used several times in Appendix B (B2 – tare weight of wagon) and Appendix H (“Type of handbrake” in the Rolling Stock Register – Wagons – Safety-critical information). This TSI is largely based on UIC Leaflet 535-3 under point 4.2.4.1.2.8, in particular the definition of the percentage of wagons to be fitted with a platform-operated screw brake or ground/gangway-operated screw brake, depending. It also handles the specific cases of Finland, Great Britain and Ireland/Northern Ireland (derogation allowing parking brakes to be operated from the ground) under points 7.7.2.3.1.3, 7.7.2.3.2.1, and 7.7.2.3.2.2 respectively.

The new version of the Wagons TSI currently being adopted no longer uses the criteria of UIC Leaflet 535-3 as regards the types and percentages of wagons to be fitted. The TSI provides for the use of parking brakes under point 4.2.4.3.2.2 and offers the option of operating them from the wagon or from the ground, without specifying either solution as mandatory. It no longer deals with the specific

case of RID tank-wagons as the present TSI does, referring to the regulations governing the carriage of dangerous goods.

Extract from the new version currently being adopted (WAG – TSI Final Draft – Version EN02 – 3/5/2012):

(Extract) “4.2.4.3.2.2 *Parking brake*

A Parking Brake is a brake used to prevent parked rolling stock moving under the specified conditions taking into account the place, wind, gradient and rolling stock loading state, until intentionally released.

If the unit is equipped with a parking brake, the following requirements shall be met:

- *the immobilisation shall remain until intentionally released,*
- *where it is not possible to identify the state of the parking brake directly, an indicator showing the state shall be provided on both sides on the outside of the vehicle,*
- *the minimum parking brake performance, considering no wind, shall be determined by calculations as defined in the standard clause 6 of EN 14531-6:2009,*
- *the minimum performance of the parking brake shall be marked on the unit. The marking shall comply with clause 4.5.25 of prEN 15877-1:20xx. The parking brake of a unit shall be designed considering a wheel/rail (steel/steel) adhesion factor not higher than 0,12.*

(...)

APPENDIX C ADDITIONAL OPTIONAL CONDITIONS

C.10 Location of parking brake handles

If a unit is equipped with a parking brake the location of its operating handle or operating wheel shall be:

- *on both sides of the unit if it is operated from the ground or*
- *on a platform, that can be accessed from both sides of the unit.*

The operation from the ground shall be done by wheel.”

The new version of the TSI (draft as of 11/2011) refers to EN 14531-6 and to draft prEN 15877-1: 20xx. (See IV farther).

- b. European register of authorised types of rail vehicle (2011/665/EU of 4/10/2011 – Commission Implementing Decision).

The register provides various parameters for RID tank-wagons in section 4, “Technical features of vehicles”:

- Under 4.1.9, a parameter is provided specifying the dangerous goods for which the wagon is suitable (tank code).
- Under 4.7.3.1, a “Yes/No” parameter is provided stating whether for all the wagons of this type a parking brake is mandatory.

- Under 4.7.3.2, a parameter is provided specifying the type of parking brake (if the vehicle has one). This parameter is in principle to be completed from a pre-defined list which does not yet exist. It is thus not possible to check whether the platform/gangway-operated screw brake (type of handbrake) is provided for.
- Under 4.7.3.3, a parameter is provided specifying the maximum gradient on which the vehicle can be held by the parking brake alone (if it has one).

For the record, we may also mention parameter 4.8.3 (“Yes/No” format) of the register, which relates to shunting restrictions.

c. "Operation and traffic management" TSI 2006/920/EC and 2011/314/EC

The Operations TSI focuses on trains. It specifies nothing with regard to the use of parking brakes or handbrakes. It does not mention the use of these brakes to brake moving wagons or groups of wagons during shunting. We may note, however, that it does not prohibit such a use. The Operations TSI contains almost no provisions on shunting.

d. TAF TSI- (Technical specifications of interoperability of the telematics applications for Freight).

It is under development. It is suitable to consider the matter of this report for two aspects: the equipment of the wagon and the maintenance of possible “restrictions” of operations.

IV. European/international standards

As well as the two European standards (EN 14531 – 6: 2009 and EN 15877-1: 20xx) mentioned in the new Wagons TSI, we should list EN 14478: 2005 (on the generic vocabulary used in railway braking) and the CEN/TC 296 standards on the design of wagon tanks.

- i. EN 14478: 2005. *Railway applications. Braking. Generic vocabulary*. See in particular points 4.2.4.2 (Braking to immobilise and park a vehicle), 4.9.10 (parking brake), and 4.9.10.1.1 (handbrake). UIC Leaflet 543 is cited in the bibliography of this standard. The vocabulary used in these standards is that used in the Wagons TSI. There is no mention of “screw brakes”.
- ii. EN 14531-1: 2005. *Railway applications - Methods for calculation of stopping distances, slowing distances and immobilisation braking - Part 1: General algorithms*. UIC Leaflet 543 is cited in the bibliography of this standard.
- iii. EN 14531-2. “Single vehicles”. This standard is under preparation.
- iv. EN 14531-6: 2009. *Railway applications - Methods for calculation of stopping and slowing distances and immobilisation braking - Part 6: Step by step calculations for train sets or single vehicles*. UIC Leaflet 543 is cited in the bibliography of this standard. The immobilisation parking brake may be of various types (discs, blocks, etc.). The concept of handbrake used is as a way of controlling the parking brake.
- v. EN 12663-2: 2010. *Railway applications - Structural requirements of railway vehicle bodies - Part 2: Freight wagons*. Platforms, gangways and handbrake controls are not considered as structural elements of freight wagons but as fittings.

The last sentence of the appendix F of UIC leaflet 573 is resumed in paragraph 6.3.

- vi. IN 15551 2009 - *Railway applications – wagons - Buffers*. A big part of appendix F (crash buffer) of UIC leaflet 573 is resumed in this standard in paragraph 7 and in appendices L and M.

Concerning tank-wagons, the CEN/TC 296 standards (both those in force and those at draft stage) deal with tanks and their service equipment. They do not handle handbrakes/screwbrakes.

Concerning the design of the platforms and footbridges and their existence on the RID tank-wagons, which do not constitute the main object of this report, it is nevertheless necessary to announce the existence of the standard EN 12561 and its part 7 “*railway applications – Tank-wagons - Part 1: “Identification plates for tank-wagons for the carriage of dangerous goods”*”. Article 6.3 specifies indeed that the position of the plate of identity must be easily accessible for the inspections and stamping (eg. Stamped, engraved or etched). One can think that this provision was retained in relation to the existence of a footbridge. It can be the same about it for other elements of the tank.

Conclusion: the issue of “platform-operated screw brakes” (or handbrakes) is not dealt with by the standards governing the structural elements of wagons or those on the service equipment of tanks. Perhaps it will be addressed in the forthcoming EN 14531-2, “Single vehicles”.

C. 2012 SURVEY

The survey concerns RID tank-wagons only.

The UIC survey is less broad and less detailed than that conducted in 1974. Five questions were asked:

I. Questionnaire and results

In operating **tank-wagons intended for the carriage of dangerous goods**, it is necessary

- Q1: to impose specific requirements for the configuration of the screw brake (i.e.) different from those applicable to all other wagons)? If YES, why?
- Q2: to operate the screw brake from the traversing gangway, unlike on all other wagons? If YES, why?
- Q3: to require that all tank-wagons (100%) have this screw brake configuration, unlike all other wagons? If YES, why?
- Q4: to require a traversing gangway, unlike on all other wagons? If YES, why?
- Q5: to require for some shunting operations that a member of railway staff be aboard the wagon to operate the screw brake? If YES, why?

Remarks:

The wording of these questions may imply that the provisions of UIC Leaflet 535-3 are ineffective. This is not UIC's a priori opinion. The goal was rather to encourage responders to the survey to describe the current, rather ill-understood situation at their railways, and to explain their reasons why the provisions of UIC Leaflet 535-3 should be maintained or amended.

The results of the survey can be found in the table hereafter.

Key:

A cross (x) in column 1 confirms that the recipient of the questionnaire responded to the survey.

A lower-case letter (a, b, c, etc.) in brackets in the "Comments" column refers to point C-II and the details of the rules currently applied given in that point.

A number (1, 2, 3, etc.) in brackets in the "Comments" column refers to point C-II and the details of the railways' own initiatives given in that point.

Companies contacted	Response received?	Positive responses to questions					
		Q1	Q2	Q3	Q4	Q5	Comments

BLS Cargo (CH)							(a)
Bdz (BG)							
Captrain Italia							
CargoNet (NO)							
CDcargo CZ)	X				?		
CFF/SBB (CH)	X	X	X	X	X	X	(a) (1)
CFLcargo (LU)	X						
Crossrail Italia (IT)							
DBSR (DE)	X						(a)
DBSR (NL)	X						
DBSR (PL)	X	X	X	X	X	X	(2)
DBSR (DK)							
DBSR (GB)	X						(b) (c)
Ferrottramviara (IT)							
Fret-SNCF (FR)	X				?		
Fret-SNCF (BE)	X				?		
Great Britain Rail (*)	X						(b) (c)
Greencargo (SE)	X				?		
HZ Cargo d.o.o. (HR)							
MEG (DE)							(a)
NordCargo (IT)	X	X	X	X	X	X	(c) (3)
ÖBB-RCA (A)	X				?		
PKP Cargo (PL)							
RailCargo-Hungaria (HU)	X				?		
Rail traction Co (IT)							
Railtraction (IT)							
RBH Logistics (DE)							(a)
Renfe Operadora (SP)	X				?		

ROeEE AG (A)							
Slo-zeleznice (SI)							
SNCB-Logistics (BE)							
Trenitalia (IT)	X	X	X	X	X	X	(c) (4)
VC Italia (IT)							
ZSSK Cargo (SK)	X	X			?	X	(c) (5)

(*) combined response of the British (GB) rail dangerous goods group.

II. Rules currently in force

The rules are of various types, and may comprise:

- National rules laid down by public authorities, particularly national safety authorities. This includes the rules laid down by infrastructure managers, which affect all RUs operating on the network concerned,
- Other specific cases or provisions,
- Rules enacted voluntarily by RUs.

a. National rules on the use of platform-operated handbrakes (screw brakes).

As concerns the immobilisation of parking, the investigation shows that the national competent authorities (national agencies of safety in particular) authorize in a general way the use of handbrakes and sometimes very exactly screw brakes, that they are manoeuvrable of the ground or from the platform/gangway. It is about a voluntary implementation and reference documents often send back to the UIC leaflet 543. They also specify the alternatives, as for example the use of stop blocks. Measures to be taken are individually fixed in local instructions taking into account specificities of production sites or crossings.

As concerns the use of these brakes during some shunting operations, there are specific national rules in a number of countries:

- i) On the network it operates in Germany, DB Netz AG requires the use of:
 - a platform-operated handbrake for gravity-hump shunting and fly shunting of gas wagons (identified by an orange strip),
 - two skids (stop blocks, brake slipper) to stop/slow the wagon or a handbrake for gravity-hump shunting and fly shunting of wagons with labels 6.1 (toxic) or 8 (corrosive),
 - two skids (stop blocks, brake slipper) to stop/slow the wagon or a handbrake (if present), to protect the two aforementioned types of tank-wagon against any violent buffing impacts from other vehicles.
- ii) in Switzerland, Ministerial Regulation R.300.4 on “shunting movements” imposes the use of skids (stop blocks, brake slipper) or a platform-operated handbrake in some cases. For dangerous goods, the regulation stipulates the use of the following for loaded or empty gas tank-wagons (lengthways orange stripe on tank):
 - a platform-operated handbrake for gravity-hump shunting operations (“laisser-couler” (“let run”) shunting),
 - a platform-operated handbrake for fly shunting,

- two skids (stop blocks, brake slipper) to stop/slow the wagon or a handbrake (if present), to protect the two aforementioned types of tank-wagon against any violent buffing impacts from other vehicles.

For other countries, the survey identified no prescribed use of platform-operated handbrakes for shunting. This may be because fly shunting is either not practised or prohibited, or because the installations and facilities for gravity-hump shunting are different (gradient of hump, automatic track brakes, etc. These means all contribute to the control the speed of accosting.

Note:

- 1) The national rules concerning the use of the handbrakes/screw brakes of platform for certain operations are implemented by local instructions adapted to the local conditions of the production. This means that these national rules are not applied in a systematic and uniform way. According to these cases the modernization of the equipment and the installations makes it possible to avoid the use of these brakes and also an agent to operate them. On certain railway sites, the prohibition of the operation to the throw also reduces the use of this brake.
- 2) For the countries not quoted in a), the investigation did not make it possible to identify a prescribed use of the handbrake of platform for the operations. This situation can be explained by the absence or the prohibition of the operations to the throw, the existence of installations and equipment for the shunting with gravity (declivity of the hump in a gravity yard, automation of the rail brakes, etc). All these means contribute to the control of the speed of accosting.

b. Other cases – Specific provisions

As indicated higher, in Great Britain (GB) screw brake operable from the wagon gangway are not used. The requirement for wagons is to have handbrakes on both sides that are operated from the ground. There are no special or additional requirements for wagons carrying dangerous goods. Domestic wagons are not fitted with a gangway.

c. Railway-initiated arrangements

The investigation did not make it possible to identify cases where a railway company set up internal rules in order to apply platform-operated handbrakes for shunting in the absence of rules prescribed by public authorities or the infrastructure manager.

Several companies estimate however that these brakes are useful as regards staff safety or incident to stop Tank-wagon or to immobilize them. None indicates however the existence of national or internal rules to the company.

In Great Britain, it is for safety reasons that rules prohibit to staffs the use of the footbridges or the handbrakes of footbridge, possibly existing on the international Tank-wagon (or wagons). But the context is different since the other national wagons do not have which it.

III. Analysis of individual responses to each question

This analysis refers back to the numbers in brackets given in the table previously.

Question 1 (Q1):

1. CFF/SBB say that the shunting of RID tank-wagons of class 2 is governed by ministerial regulations in Switzerland. They consider these rules necessary.
2. DBSR-PL estimates that these brakes are justified for safety reasons of staff, for certain operations (see Q2, Q3 hereafter).
3. Nordcargo S.r.l estimates that these brakes are justified for safety reasons of staff, for certain operations (see Q2, Q3 hereafter).
4. Trenitalia estimates that these brakes are justified for safety reasons of staff, for certain operations (see Q2, Q3 hereafter).
5. ZSSK Cargo estimates that the use of these brakes is important for the safety of the operations and the parking of RID tank-wagons. This opinion is identical for the other wagons.

Question 2 (Q2):

1. CFF/SBB reiterate that the shunting of RID tank-wagons of class 2 is governed by ministerial regulations in Switzerland. They consider these rules necessary.
2. DBSR-PL estimates that the handbrake of platform is useful for safety reasons of staff, in the event of not controlled leak of product, when it is a question of immobilizing the tank-wagon. The most frequent escapes occur on the valves. The operation of hand brakes appears more dangerous.
3. Nordcargo estimates that the screw brake of platform is useful for safety reasons of staff. The brake can be operation in the event of urgency. Contrary to the manoeuvrable screw brake of the ground, the screw brake of platform is far away from the servicing equipment (valves, ...) and operating error of this equipment risks it is reduced. The configuration of the screw brake of platform makes it possible to see whether it is actuated or not.
4. Trenitalia estimates that the screw brake must be manoeuvrable platform because it is possible to use it when the wagon is movement.
5. ZSSK Cargo liner (not positive response).

Question 3 (Q3):

1. SBB reiterate that the shunting of RID tank-wagons of class 2 is governed by ministerial regulations in Switzerland. They consider these rules necessary.
2. DBSR-PL estimates that the handbrake of platform is useful to immobilize the tank-wagon at the time of the intermediate temporary stays. The handbrake of platform is justified in the event of escape (cf Q2).

3. Nordcargo estimates in relation to Q2 that tank-wagons all RID must be equipped with handbrakes/screw brakes of the platform/footbridge.
4. Trenitalia estimates in RID tank-wagons all must be equipped with handbrakes/screw brakes of the platform.
5. ZSSK Cargo liner (not positive response).

Question 4 (Q4):

1. SBB consider that a platform/gangway is necessary for the shunting of goods wagons.
2. DBSR-PL estimates that the presence of a footbridge is justified to facilitate the reading of the inscriptions on the cistern and the passage on other side of the wagon, in the event of incident for example.
3. Nordcargo estimates the presence of a footbridge raises the security level. It makes it possible to move away from a danger zone, in the event of escape of product for example.
4. Trenitalia estimates that the footbridge in full safety allows a fast displacement on other side of the wagon. This possibility is important, in the event of problem, because it makes it possible to staffs to easily act on the two sides of the wagons.
5. ZSSK Cargo liner (not positive response).

Question 5 (Q5):

1. SBB reiterate that the shunting of RID tank-wagons of class 2 is governed by ministerial regulations in Switzerland. They consider these rules necessary.
2. DBSR-PL: No comment
3. Nordcargo estimates that the handbrake/screw brake of platform makes it possible to the operators to quickly act to immobilize a wagon.
4. Trenitalia, estimates that in certain cases, at the time of operations of operation, the presence of an operator on the footbridge can be useful to actuate the handbrake/screw brake of platform to stop a wagon immediately.
5. ZSSK Cargo estimates that the use of these brakes is important for the safety of the operations of operation and the parking of RID tank-wagon. The presence of an agent on tank-wagon is thus required (to be confirmed).

D. SUMMARY AND OUTLOOK

The preceding developments are gathered hereafter in order to organize the continuation of work and to facilitate the possible decisions to be taken.

The study is not finished. This intermediate report will be distributed at the railway companies requested for an ultimate checking and to enable them to make the corrections necessary.

A first synthesis can nevertheless be made and several conclusions can be drawn right now.

I. Summary

The current park (excluded Great Britain) of RID tank-wagons is equipped in theory to 100% with screw brakes with platform, pursuant to UIC Leaflet 535-3 in relation to the current TSI Wagons (2006/861/CE).

a. The equipment of RID tank-wagons of manoeuvrable screw brake starting from the footbridge will not be imposed any more by the future TSI Wagons for tank-wagons to build. When there exists, it could be used as brake of immobilization of parking or immobilization on line. Its possible use for the control the speed of accosting during certain operations is not regulated with the European plan. It is not however prohibited.

i. The project of TSI Wagons treats parking brake and handbrake. It does not treat any more of the rules of equipment of the wagons (standard of wagons, percentages) with handbrakes of platform. It envisages however the possibility that the handbrake is actuated starting from the platform of the coach. Standards CEN relating to braking and the tank-wagons are quiet on the subject. It should be noted that standard EN14531-2 “wagons isolated” is in preparation.

The parking of the wagons and the immobilization on line are organized by national rules which authorize the use of the handbrake/screw brake, without specifying however from where it must be ordered. Particular instructions are installation when local specificities or the characteristics of the railway lines require it. These documents define also the other means usable, shoes, of stop, holds anti-drifts, orders specialized or automatic for the trains. These various means are not exclusive one of the other.

ii. The TSI “Operation and Traffic management“ (2006/920/CE and 2011/314/CE) does not treat a possibility of applying the handbrake of platform to control the speed of the wagon at the time of certain operations. It does not prohibit it explicitly however.

iii. The European register of the railway types of authorized vehicles (2011/665/EU) envisages in 4.7.3.1 a preset list of types of parking brake. This one does not exist yet.

iv. The COTIF and its appendices do not treat, handbrake, screw brakes or parking brake. Regulation RID returns indirectly to UIC Leaflet 535-3 via the UIC Leaflet 573 (Article 1.1.3) which it quotes in 4.3.3.3 .2, 6.8.2.2 .1 and into 6.8.4. However, these articles of the RID relate to the construction of the tanks and the servicing equipment.

b. The investigation 2012 shows at this stage that:

i. The rule to equip all RID tank-wagons (100%) with manoeuvrable screw brake of the footbridge is no longer justified based on the needs of railway companies. These needs clearly decreased since the UIC investigation took place in 1974. Only two countries have national rules concerning their use for operations of wagons.

ii. The use of the handbrake of platform for the operations of operation (tri with gravity, operates with the throw) certain RID tank-wagons is prescribed on several networks by national rules, precisely in Germany and Switzerland, but for certain types of tank-wagons only:

- the RID tank-wagons of class 2 (orange horizontal band) - in Germany, Switzerland,
- the RID tank-wagons provided with labels number 6.1 (poison) and number 8 (corrosive), with however the alternative use of 2 shoes of stop/stopping. – in Germany.

The national regulatory regulations are translated in local instructions taking account of local specificities. The obligation to apply the screw brake of platform is thus not effective on the sites where the operations concerned do not take place or on the sites where the equipment and the installations do not require it.

It remains more precisely to study the practical application of these national measures to measure the importance and to identify the possible upgrading capabilities of it.

iii. The railway companies do not apply the handbrake of platform for operations of operation, when that is not imposed by national rules.

iv. The argument of the staff safety is sometimes advanced. Several railway companies estimate that the use of the screw brake of platform constitutes an advantage in this field when it is a question of immobilizing a RID tank-wagon in the event of escape on a service equipment.

v. In case a company requested by the investigation does not give an opinion, this report considers that it does not apply the handbrake/screw brake of platform for operations and that the evolution of rules in this field does not constitute a challenge for it.

c. Concerning the Q4 question and the equipment of tank RID tank-wagon of footbridges of crossing, the absence of positive response must be analyzed with prudence.

It seems indeed that the RU's answers were made in relation to the use of the screw brake. However, the footbridge has also the function to facilitate to the operators the passage on other side of the coach, when this one stations in a station or in line in a train with the stop. The received opinions of the railway companies show however that there is no consensus on the subject.

To justify the equipment of footbridge, one can also quote the standard INTO 12561-1 (cf B-IV) and the requirements of access to the identification plate of tank-wagons for carriage of dangerous goods. The footbridge can also be used for other servicing equipment of the tank. The extension of the investigation should make it possible to clarify this possible need (Outlook, cf D-II-).

According to certain railway companies, the presence of footbridges on the wagons answers safety requirements of staff. These requirements are however expressed in a different way according to the companies. The investigation did not allow it to collect information on the possible national procedures being in force concerning that subject. The use of the platforms or footbridges by staffs is sometimes prohibited. The arguments of staff safety thus are not the object of a consensus in this report

The information concerning the need for platforms or footbridges must thus be regarded as indicative and provisional. Besides, the definition of this need is not the object of this study.

II. Outlook

They are developed here on a purely provisional basis since they will be able to evolve according to the answers obtained after the diffusion of the intermediate report for opinion. They will be able to also evolve following work of the permanent Working group of the Commission of experts of the RID which will meet in November 2012.

- a) Subject to the results of the examination of this intermediate report and opinions referred to above, one can however identify some facts right now justifying the suppression of the rule of 100% (current TSI Wagons and UIC Leaflet 535-3). That should result in the suppression of reference (1.1.3) in UIC Leaflet 573 to UIC Leaflet 535-3 concerning the brakes or the adaptation of this reference if the brakes must be maintained for certain types of wagons. Another option is to examine the possibility of replacing in the RID, the reference with UIC leaflet 573 by a reference to the standard IN 12561 “railway Applications – tank-wagons”. It is however important to note that this standard does not treat anti-crash elements whereas it is the case of UIC leaflet 573 (Article 1.4 and appendix F) in relation to the 6.8.4 of the RID (see also B-IV-vi : EN 15551:2009).
- b) To continue to observe the existing national rules (Germany and Switzerland), it would be necessary that future RID tank-wagons of class 2 (orange band) continue to be equipped with a handbrake/screw brake with platform.

From the technical point of view, the simplest approach would be to maintain the rule of 100% of equipment for all the future tank-wagons of class 2. A RID tank-wagon has authority to circulate everywhere in Europe (except GB). The validity of this approach however deserves to be checked, in particular from the point of view of the ratio costs/benefit for the various operators, in particular the keeper of wagons.

The application of the existing national rules in these countries would deserve to be better known to evaluate the relevance to maintain or not these rules in force.

In case these national rules are maintained and if in the future, only a part of the tank-wagons of class 2 were equipped, it would be more difficult to observe these rules and the production on the railway sites concerned would be more complex and probably more expensive. Moreover, it would be necessary to integrate characteristic “screw brake operable from the wagon gangway” in the information systems of RUs and certainly also in the system of transmission of the data. The project of TAF TSI (Telematic applied to Freight) envisages headings relative to the “restrictions” related to the types of wagons and with the brakes them equipping but it does not seem the resolution of the problem posed here is currently possible in the headings envisaged.

Perhaps we need to set up a European rule in this field. To maintain these “national rules” should pass by the procedure of notification envisaged respectively by articles 8 and 17 of the directives 2004/49/CE (Safety) and 2008/57/CE (Interoperability).

If necessary, the maintenance of national provisions concerning the use of the handbrake of platform in order to control certain operations could be justified in reference to the 1.9.5 of RID. Item 1.9 of RID indeed relates to restrictions of transport with the competent authorities.

- c) The investigation within the UIC continues in order to deepen or to clarify certain points but it would certainly deserve to be wide to the other operators of the chain of transport, in particular those intervening on the unloading/filling shifts, on the internal beams of ways at the industrial sites and on the junctions connecting them to the rail networks. It acts in particular:
- i. railway companies represented by the ERFA (European Association of the railway freight),
 - ii. industrialists, shippers and chargers, represented by various organizations (CE-FIC, AEGPL, ...). The operations conducted on the industrial sites could justify the equipment of RID tank-wagons of handbrakes of platform and besides also the existence of footbridges.

The knowledge from the points of view of these organizations would usefully supplement the information contained in this intermediate report.

For memory: in case of a discussion concerning the utility of the only footbridge, it is important also to take into account the possible needs of the intervention and rescue services.

- d) The work of the permanent Working group of the Commission of experts of the RID of November 2012 should make it possible to look further into certain aspects of this report and to define the continuations to be given, with regard to in particular:
- i. relative questions at the points outstanding, in particular those concerning the evolution of the European texts (TSI Wagons, TSI Operation and traffic management, Registers of vehicles, Standards, UIC Leaflet 573) and elements of the report which deserve to be specified,
 - ii. aspects to be treated within the framework concerning the RID Committee of Experts,
 - iii. possible extension of the investigation to other operators,
 - iv. modalities of work to be realized and their calendar.
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