

ANALYSIS OF THE BASIC PARAMETERS FOR MAINTAINING THE TECHNICAL AND OPERATIONAL COMPATIBILITY OF THE 1520 mm AND 1435 mm GAUGE RAIL SYSTEMS AT THE COMMONWEALTH OF INDEPENDENT STATES (CIS)/EUROPEAN UNION (EU) BORDER.

SUBSYSTEM: OPERATION AND TRAFFIC MANAGEMENT

The document drawn up by the OSJD-ERA Contact Group

(English translation included with aim to use while drafting TSI)

2015

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1. SCOPE OF THE DOCUMENT

This document was drawn up by the joint Contact Working Group of Experts of the ORGANISATION FOR CO-OPERATION BETWEEN RAILWAYS (hereinafter referred to as OSJD) and the EUROPEAN RAILWAY AGENCY (hereinafter referred to as ERA) (hereinafter referred to as the CONTACT GROUP) within the co-operation of the above organisations to analyse the relations between the railway systems both within and outside the EU, with 1520 mm track gauge (1524 mm for Finland) in accordance with their signed Memorandum of Understanding of 2008 and subsequent years.

OSJD has carried out this work based on the Programme of Actions for 2008 and subsequent years.

ERA carried out this work based on Section 4.10 (Interoperability with 1520/1524 mm railway system) of the Mandate issued to the Agency for the development of Group 3 of the Technical Specifications for Interoperability (TSIs) and ERA Recommendations (ERA/REC/03-2008/INT of 31/10/2008) related to the 1520/1524 mm gauge rail systems.

The Contact Group performed an analysis of the existing technical specifications for interoperability for the subsystem “Operation and traffic management” (hereinafter referred to as OPE TSI) of the 1520 mm gauge rail system and identified the parameters that in the opinion of the Contact Group are essential for maintaining the compatibility of the 1520 mm gauge rail system at the CIS-EU border. The analysis is limited to the technical and operational aspects of the railway system.

This document reflects the requirements for the above parameters established by the current statutory acts within the 1520 mm track gauge area and provides a comparison of those requirements with the target values set forth in the OPE TSI for the “basic parameters” of the 1435 mm track gauge rail system pursuant to the Directive on the Interoperability of the European Rail System of the Union.

The language of this document is intended not only to reflect but also to generalise, insofar as possible, the technical requirements currently in effect in different countries. The terms used in this document shall not serve as regulatory references. The documents provided in the reference document tables for each of the parameters in question should be used for the precise statements of the requirements.

The materials (technical information) in this document may serve as the basis for reflecting the “basic parameters” of the 1520 mm gauge system in the EU TSI for the purpose of preserving the existing technical compatibility of the 1520 mm gauge system at the CIS-EU border.

2. DEFINITIONS AND ABBREVIATIONS

Abbreviation	Definition
AO NK KTZH	Joint Stock Company State Company “Kazakhstan temir zholy” (Republic of Kazakhstan)
GOST	Interstate standard
DSTU	National Standardisation System of Ukraine
ERA	European Railway Agency
LDz	State Joint Stock Company “Latvijas dzelzceļš” (Latvian Railways)
LG	Joint Stock Company “Lietuvos geležinkeliai” (Lithuanian Railways)
Legislation Journal	Legislation Journal, an official periodical of the statutory documents of the Republic of Poland
SI	Signalling Instructions
OSJD	Organisation for Co-Operation Between Railways
TOR	Technical operational regulations
STP	Company Standards (Republic of Belarus)
IM	Infrastructure Manager
UZ	Ukraine State Railway Transport Administration (Ukrzaliznytsia)
RU	Railway Undertaking
TSI	Technical specifications for interoperability
TSI OPE	Technical specifications for interoperability for subsystem “operation and traffic management”
UIC	International Union of Railways

3. LIST OF BASIC PARAMETERS

The list presents the basic parameters for maintaining the technical and operational compatibility of the subsystem “Operation and traffic management” of the 1520 mm and 1435 mm gauge rail systems at the border of the CIS and EU. This list has been developed on the basis of TSI “Operation and traffic management”, and supplemented and adapted with regard to the specific features of the 1520 mm gauge system.

Title in Russian	Английское наименование (согласно проекту ТСИ) Title in English (according to draft TSI)	Номер главы проекта ТСИ (draft TSI chapter’s number)
Технические требования к поездам	Specifications relating to trains	4.2.2.
Видимость поезда	Train visibility	4.2.2.1.
Общие требования	General requirement	4.2.2.1.1.
Передняя часть	Front end	4.2.2.1.2.
Хвост поезда	Rear end	4.2.2.1.3.
Пассажирские поезда	Passenger trains	4.2.2.1.3.1.
Грузовые поезда в международном сообщении	Freight trains in international traffic	4.2.2.1.3.2.
Грузовые поезда, не пересекающие границу между государствами-членами	Freight trains not crossing a border between member states	4.2.2.1.3.3.
Слышимость поезда	Train audibility	4.2.2.2.
Общее требование	General requirement	4.2.2.2.1.
Управление	Control	4.2.2.2.2.
Идентификация подвижного состава	Vehicle identification	4.2.2.3.
Безопасность пассажиров и сохранность груза	Safety of passengers and load	4.2.2.4.
Сохранность груза	Safety of load	4.2.2.4.1.
Безопасность пассажиров	Safety of passengers	4.2.2.4.2.
Состав поезда	Train composition	4.2.2.5.
Торможение поезда	Train braking	4.2.2.6.
Минимальные требования к тормозной системе	Minimum requirements of the braking system	4.2.2.6.1.
Тормозная эффективность	Braking performance	4.2.2.6.2.
Обеспечение рабочего состояния поезда	Ensuring that the train is in running order	4.2. 2.7.
Общее требование	General requirement	4.2.2.7.1.
Необходимые данные	Data required	4.2.2.7.2.
Требования по размещению сигналов и указателей вдоль железнодорожных линий	Requirements for Signal and lineside marker siting	4.2.2.8.
Бдительность машиниста	Driver vigilance	4.2.2.9.
Тормозная эффективность	Braking Performance	Appendix T Приложение T

Title in Russian	Английское наименование (согласно проекту ТСИ) Title in English (according to draft TSI)	Номер главы проекта ТСИ (draft TSI chapter's number)
Роль управляющего инфраструктурой	Role of the Infrastructure Manager	A.
Роль железнодорожного предприятия	Role of the Railway Undertaking	B.
Не достигнутая тормозная эффективность	Braking Performance Not Achieved	C.

4. ANALYSIS OF THE BASIC PARAMETERS

4.2.2. Specifications relating to trains

4.2.2.1. Train visibility

4.2.2.1.1. General requirement

The railway undertaking must ensure that trains are fitted with means of indicating the front and rear of the train.

Belarus, Russia

Locomotives, multiple unit and special self-propelled rolling stock with faulty headlight, buffer-beam light or lighting cannot be allowed into operation.

Technical maintenance of the train's signalling devices indicating the rear end of freight and freight and passenger trains, installation and removal of the signalling devices on those trains shall be the responsibility of the employees of the vehicle technical maintenance points.

When the trains depart the stations where they have been formed, the stations where vehicles have been added to or removed from the train or the stations where the signal discs indicating the rear end of the train are supposed to be changed, before giving the exit signal or giving the locomotive, special self-propelled rolling stock driver a clearance card, the station duty officer also must ensure that the last vehicle is equipped with the train signal as set out in the procedures established by a technical executive certificate (or TOR in Russia).

Latvia

Train, traction unit and other rolling stock shall be indicated in accordance with the TOR requirements coordinated with the TSI requirements.

Lithuania

Train, traction unit and other rolling stock shall be indicated in accordance with the requirements of the Railway Signalling Regulations.

Ukraine

SI on the Ukrainian railways is mandatory for the Ukrainian railway transport companies and organisations. For the indication of the front and rear ends of the train, visible signals divided into the following categories shall be used:

- day, which are used during daylight hours; discs, boards and flags are used to give such signals;
- night, which are used during night time; lights with a particular colour are used to give such signals;

Night signals shall be used during daylight hours in case of fog, blizzard or any other unfavourable conditions where the visibility is less than 1000 m for daytime stop signals, less than 400 m for deceleration signals and less than 200 m for shunting signals.

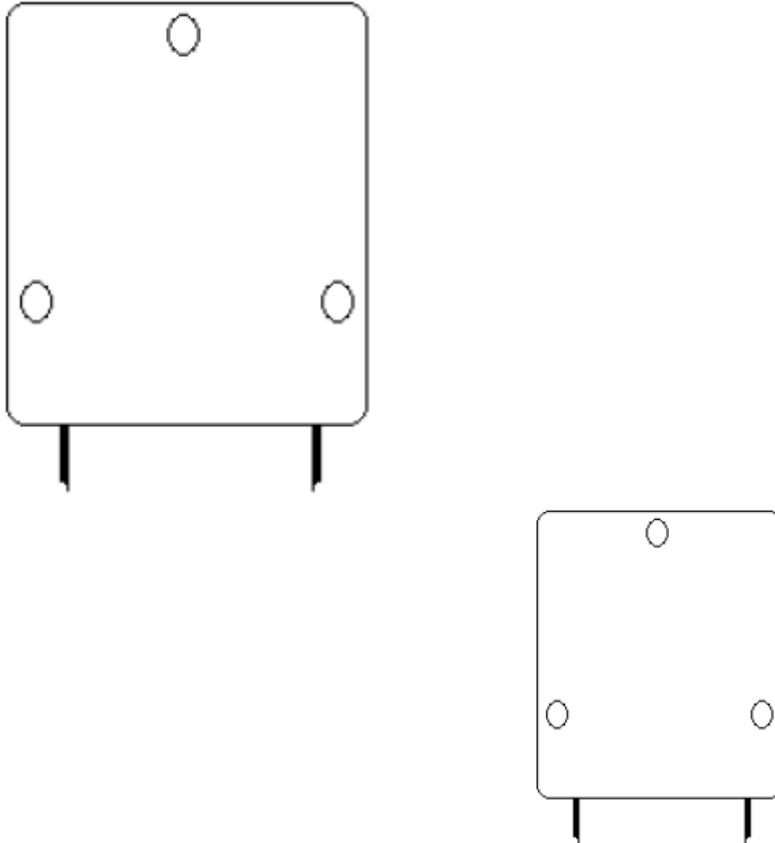
The aforementioned requirements are approved by the following documents:

Belarus	<p>TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002</p> <p>SI of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 293H of 04/12/2002</p>
Kazakhstan	<p>Paragraphs 279, 307 and 311 of the Instructions on running and shunting of trains approved by order of the Ministry for Transport and Communications of Kazakhstan No. 291 of 19/05/2011.</p> <p>Instructions on running and shunting of trains</p>
Latvia	Latvian TOR
Lithuania	<p>Regulations for railway signalling (approved by order of the Minister for Transport of the Republic of Lithuania No. 3-156 of 15/03/2011)</p> <p>Signalling Rules (Lithuania)</p>
Poland	<p>Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Ministry for Transport and Marine Economy of 18 September 2007 on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p>
Russia	<p>Paragraph 24 of Appendix 5, paragraphs 77 and 82 of Appendix 6, Chapter VIII of Appendix 7 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation</p>
Slovakia	
Ukraine	SI on the Ukrainian railways TsSh-0001, 2008

4.2.2.1.2. Front end

The railway undertaking must ensure that an approaching train is clearly visible and recognisable as such, by the presence and layout of its lit white front-end lights.

The forward facing front-end of the leading vehicle of a train must be fitted with three lights in an isosceles triangle, as shown below. These lights must always be lit when the train is being driven from that end.



The front lights must optimise train detectability (for example, to track workers and those using public crossings) (marker lights), provide sufficient visibility for the train driver (illumination of the line ahead, lineside information markers/boards, etc.) (head lights) by night and during low light conditions and must not dazzle the drivers of oncoming trains.

The spacing, the height above rails, the diameter, the intensity of the lights, the dimensions and shape of the emitted beam in both day and night time operation are defined in 'rolling stock - locomotives and passenger rolling stock' TSI (LOC&PAS TSI).

Belarus

When running on a single track or the normal track of the double track, the front of the train is not indicated by any signals during the day, and at night it is indicated by two transparent-white lights of lights by the buffer beam (Fig. 1).

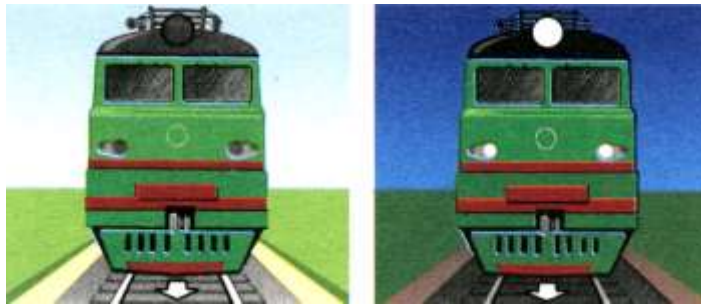


Fig. 1:

Russia

When running on a single track or the normal track of double track sections, the front of the train is indicated by one transparent-white light headlight during the day, and at night it is indicated by transparent-white lights of lights by the buffer beam (Fig. 2).

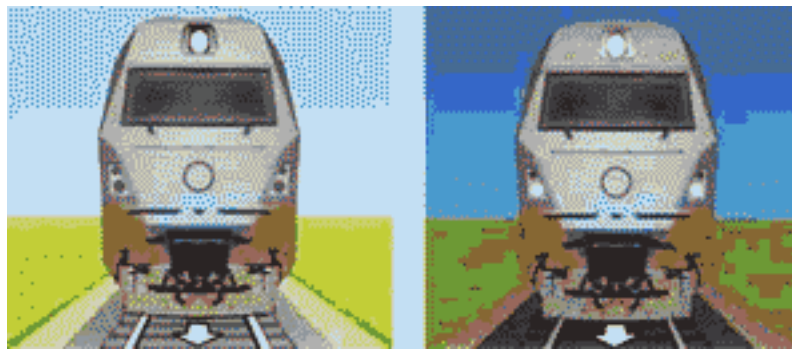


Fig. 2.

Belarus, Russia

When running on the reverse track, the front of the train is indicated during the day and the night by a red light on the left side and a transparent-white light on the right side (Fig. 3).

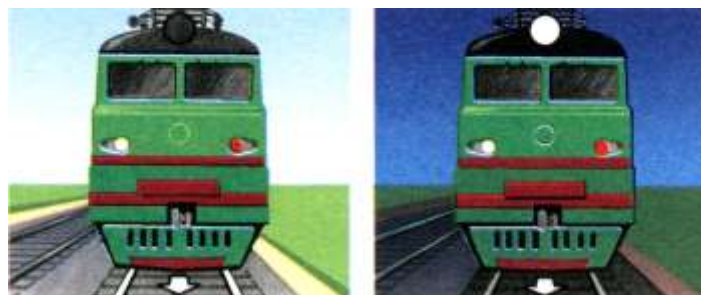


Fig. 3.

On the locomotive at the head of a train or without any vehicles running on a single track or the normal or reverse track of two-track sections at night, a signalling transparent-white headlight is added. At night, the front of a multiple-unit train can be also indicated by one transparent-white headlight.

Belarus, Russia, Lithuania

When running on a single track or the normal track of double-track sections, the front of the freight train is not indicated by any signals during the day, and at night it is indicated by the transparent-white light of lights by the buffer beam (Fig. 4).

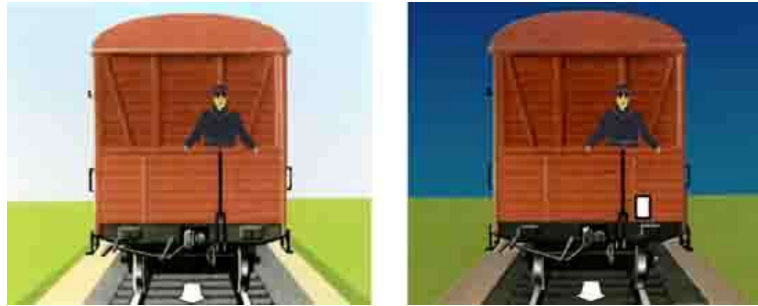


Fig. 4

When running with wagons in front, the front of the freight train is indicated:

during the day by an unfurled red flag shown on the left side by the employee accompanying the train who is standing on the front end platform;

at night by the transparent-white light of the light by the buffer-beam and red light of a hand light shown on the left side by the employee accompanying the train (Fig. 5).

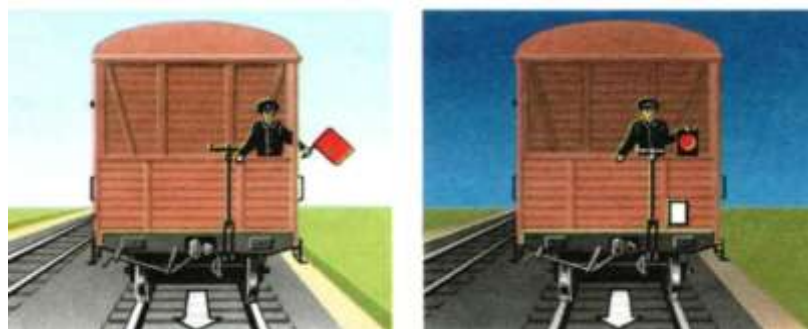


Fig. 5.

Latvia

Train, traction unit and other rolling stock shall be indicated in accordance with the following requirements:

- When running on a single track or the normal track of double-track sections, during the day and at night the front of the train is indicated by two white lights of signal lights by the buffer-beam (Fig. 6).

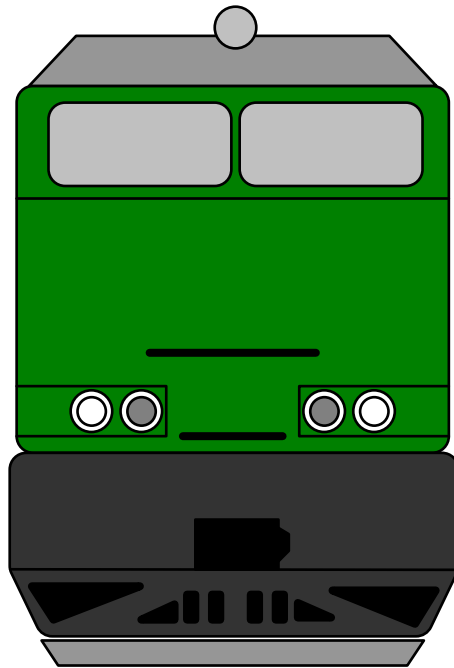


Fig. 6.

At night and during the day in poor visibility conditions, as well as in cases stipulated by the railway infrastructure manager, the driver of the traction unit switches on the headlight of the traction unit.

Lithuania

Train, traction unit and other rolling stock shall be identified in accordance with the requirements of the Railway Signalling Regulations.

<p><u>Rolling stock front end</u></p>	<p>Fig. 7.</p>	<p>When a traction rolling stock is running on the normal track, during the day and at night the head of the train is identified by three white lights of the signal lights.</p>
<p><u>Rolling stock front end</u></p>	<p>Fig. 8.</p>	<p>When a traction rolling stock or multiple-unit rolling stock is running on the reverse track, during the day and at night the head of the train is indicated as follows: on top – white light of a signal light; on the right – white light of a signal light; on the left – red light of a signal light.</p>

Ukraine:

When running at night, the head of the train is indicated by two transparent-white lights of the lights by the buffer-beam and the signal transparent-white headlight light in the upper head part of the locomotive, which form an isosceles triangle.

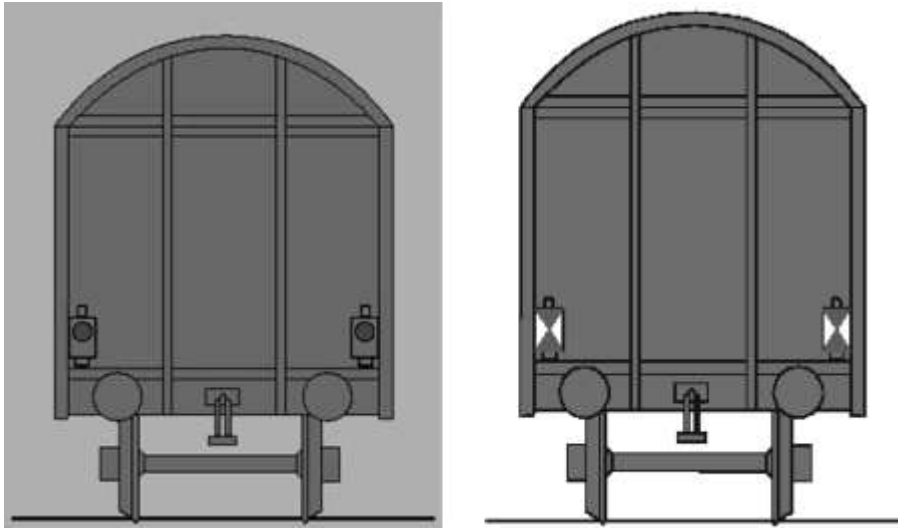
The aforementioned requirements are approved by the following documents:

Belarus	SI of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 293H of 04/12/2002 GOST 12.2.056-81 "1520 mm gauge electric locomotives and diesel locomotives. Safety requirements."
Kazakhstan	Paragraphs 103,104 of the Kazakhstan SI on railway transport, approved by the order of 18/04/2011 No. 209 Signalling instructions (Kazakhstan)
Latvia	TOR (Latvia)
Lithuania	Regulations for railway signalling (approved by order of the Minister for Transport of the Republic of Lithuania No. 3-156 of 15/03/2011) Signalling rules (Lithuania)
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Signalling instructions Ie-1 PKP of the Polish Railways SA of 2007 with amendments.
Russia	Chapter VIII of Appendix 7 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation
Slovakia	
Ukraine	SI on the Ukrainian railways TsSh-0001, 2008

	GOST 12.2.056-81 "1520 mm gauge electric locomotives and diesel locomotives. Safety requirements"
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4.2.2.1.3. Rear end

The railway undertaking must provide the required means of indicating the rear of a train. The rear end signal must only be exhibited on the rear of the last vehicle of the train. It must be displayed as shown below.



Belarus, Latvia, Lithuania, Russia, Ukraine

When running on a single track or the normal or reverse track on two-track sections, the rear end of the train is indicated as follows:

freight or freight and passenger during the day and at night – by a red signal disc with light reflector by the buffer-beam on the right side (Fig. 9, a);

passenger and mail and luggage train during the day and at night – by three red lights (Fig. 9, b).

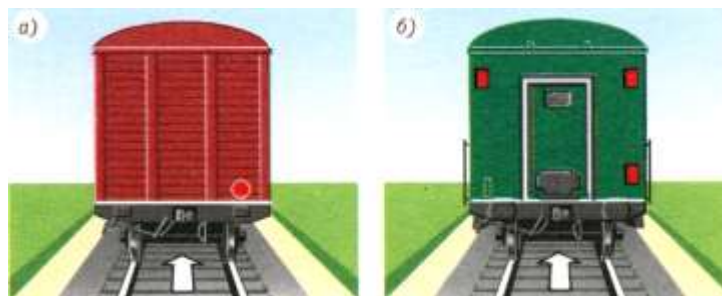


Fig. 9.

Belarus

When attaching a freight wagon that is not fitted with permanent signalling lights, the rear end of the passenger and mail and luggage train shall be indicated as follows:

during the day – by a red disc or unfurled red flag by the buffer-beam on the right side;

at night – by the red light of the buffer-beam light on the right side (Fig. 10, *a*).

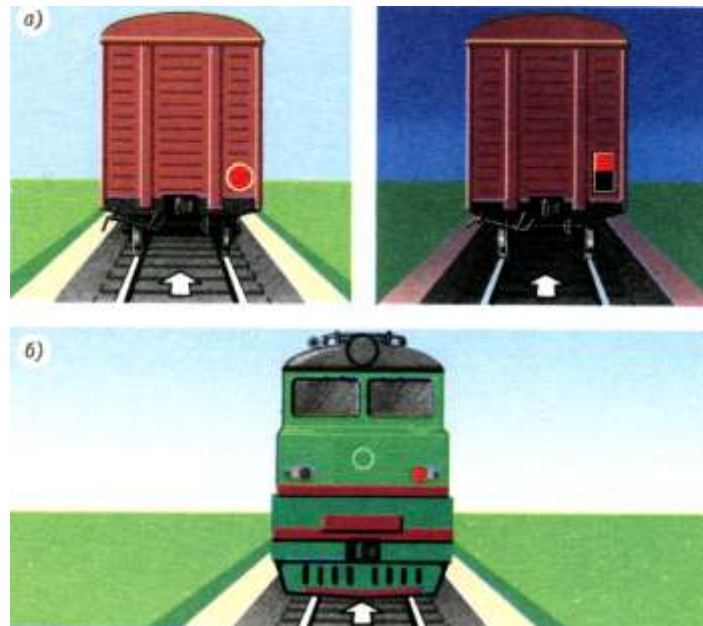


Fig. 10

Belarus, Russia

Rear end end of a locomotive running at the rear end of a freight train or a locomotive running without vehicles attached shall be indicated as follows: during the day and at night – by the red light of a light by the buffer-beam on the right side (Fig. 10, *a*).

A bank locomotive or special self-propelled rolling stock is indicated the same way as a locomotive without any vehicles attached.

When returning from a two-track section on the reverse track back to the station of departure, a bank locomotive or service train is indicated with signals for running on an reverse track.

In case of a breakaway of a freight train on a section, the rear end end of the train directed to the station is indicated as follows:

- during the day – by an unfurled yellow flag by the buffer-beam on the right side;
- at night – by yellow light of a light (Fig. 11).

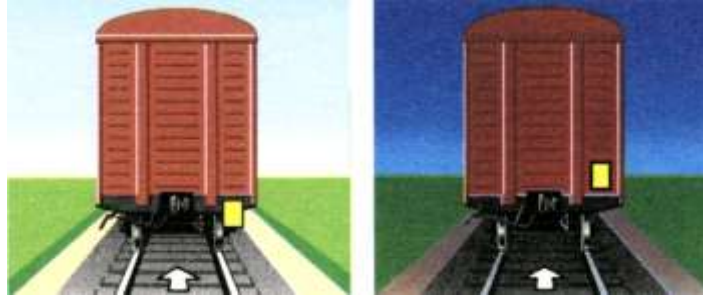


Fig. 11.

The last removable part of the train is being identified the same way as rear part of the freight train.

The aforementioned requirements are approved by the following documents:

Belarus	SI of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 293H of 04/12/2002
Kazakhstan	Paragraph 105 of the Kazakhstan SI on railway transport, approved by the order of 18/04/2011 No. 209
Latvia	TOR (Latvia) OPE TSI para. 7.3.2.1
Lithuania	Regulations for railway signalling (approved by order of the Minister for Transport of the Republic of Lithuania No. 3-156 of 15/03/2011) OPE TSI para. 7.3.2.1
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Signalling instructions Ie-1 PKP of the Polish Railways SA of 2007 with amendments,

Russia	Chapter VIII of Appendix 7 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation
Slovakia	
Ukraine	SI on the Ukrainian railways TsSh-0001, 2008

4.2.2.1.3.1. Passenger trains

The rear end indication of a passenger train must consist of 2 steady red lights at the same height above buffer on the transversal axis.

Belarus, Latvia, Lithuania, Russia, Ukraine

See para. 4.2.2.1.3

Kazakhstan

Passenger train formed of cars made by Patentes Talgo S.A. – during the day and at night are indicated by two red lights on both sides of the automatic coupler

The aforementioned requirements are approved by the following documents:

Belarus	SI of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 293H of 04/12/2002
Kazakhstan	Paragraph 105 of the SI on railway transport, approved by the order of 18/04/2011 No. 209
Latvia	TOR OPE TSI para. 7.3.2.1
Lithuania	Regulations for railway signalling (approved by order of the Minister for Transport of the Republic of Lithuania No. 3-156 of 15/03/2011) OPE TSI para. 7.3.2.1
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments

	to the order on the general provisions and conditions for railway traffic and signalling Signalling instructions Ie-1 PKP of the Polish Railways SA of 2007 with amendments,
Russia	Paragraph 77 of Appendix 6 and Chapter VIII of Appendix 7 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation
Slovakia	
Ukraine	SI on the Ukrainian railways TsSh-0001, 2008

4.2.2.1.3.2. Freight trains in international traffic

The Member State must notify which of the following requirements will apply on the network of its Member State for trains that cross a border between Member States:

Either

- 2 steady red lights, or
- 2 reflective plates of the following shape with white side triangles and red top and bottom triangle:



Lights



The lamps or plates must be on the same height above buffer on the transversal axis. Member States that require 2 reflective plates must also accept 2 steady red lights as train rear end indication.

Belarus, Latvia, Lithuania, Russia, Ukraine

See para. 4.2.2.1.3

The aforementioned requirements are approved by the following documents:

Belarus	SI of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 293H of 04/12/2002
Kazakhstan	
Latvia	TOR OPE TSI para. 7.3.2.1
Lithuania	Regulations for railway signalling (approved by order of the Minister for Transport of the Republic of Lithuania No. 3-156 of 15/03/2011) OPE TSI para. 7.3.2.1
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Signalling instructions Ie-1 PKP of the Polish Railways SA of 2007 with amendments,
Russia	Paragraph 77 of Appendix 6 and Chapter VIII of Appendix 7 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation
Slovakia	
Ukraine	SI on the Ukrainian railways TsSh-0001, 2008 "Regulations for use of freight wagons in cross-border service (PGV)" Appendix to the PGV Agreement of 01/01/2009 as amended and supplemented on 01/07/2012.

4.2.2.1.3.3. Freight trains not crossing a border between member states

For freight trains not crossing a border between Member States the train rear end indication is an open point (see Appendix U).

Belarus, Latvia, Lithuania, Russia, Ukraine

See para. 4.2.2.1.3

The aforementioned requirements are approved by the following documents:

Belarus	SI of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 293H of 04/12/2002
Kazakhstan	
Latvia	TOR OPE TSI para. 7.3.2.1
Lithuania	Regulations for railway signalling (approved by order of the Minister for Transport of the Republic of Lithuania No. 3-156 of 15/03/2011) OPE TSI para. 7.3.2.1
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Signalling instructions Ie-1 PKP of the Polish Railways SA of 2007 with amendments,
Russia	Paragraph 77 of Appendix 6 and Chapter VIII of Appendix 7 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation
Slovakia	
Ukraine	SI on the Ukrainian railways TsSh-0001, 2008

4.2.2.2. Train audibility

4.2.2.2.1. General requirement

The railway undertaking must ensure that trains are fitted with an audible warning device to indicate the approach of a train.

Belarus, Russia

For producing audible signals by locomotive, multiple-unit and special self-propelled rolling stock, whistles, manual whistles, horns, sirens and detonators are used.

Locomotives, multiple-unit and special self-propelled rolling stock with a faulty audible signalling device cannot be allowed into operation.

Latvia

According to Latvian TOR, the traction units are fitted with audio devices. Audible signals on the railway are given using the following devices: whistles of traction units, multiple-unit trains and rail cars.

Lithuania, Russia

Audible signals are expressed by a number and combination of sounds of different length. They have the same meaning during the day and at night.

For producing audible signals by locomotive, multiple-unit and special self-propelled rolling stock whistles, manual whistles, horns, sirens and detonators are used.

Lithuania, Russia

Squib explosion requires the immediate stopping of the train.

Ukraine

Locomotives and multiple-unit trains are fitted with audio signalling devices (horn, whistle). Audible signals are given as a combination of a different number and length of the sounds. At the supplied air pressure of 0.8 MPa, the warning horns must generate an audible signal of 360-380 Hz frequency and sound level of (120 ± 5) dB. Whistles must generate an audible signal with the principal tone frequency of 600–700 Hz.

The aforementioned requirements are approved by the following documents:

Belarus	TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002
Kazakhstan	SI on railway transport, approved by the order of 18/04/2011 No. 209 (hereinafter referred to as Kazakhstan SI)
Latvia	TOR
Lithuania	Regulations for railway signalling (approved by order of the Minister for Transport of the Republic of Lithuania No. 3-156 of 15/03/2011)
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling

	<p>Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p>
Russia	Paragraph 2 of Appendix 2 and paragraph 5 of Appendix 7 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation
Slovakia	
Ukraine	SI on the Ukrainian railways TsSh-0001, 2008 GOST 12.2.056-81 "1520 mm gauge electric locomotives and diesel locomotives. Safety requirements"

4.2.2.2.2. Control

The activation of the audible warning device must be possible from all driving positions.

Belarus, Latvia, Lithuania, Russia, Ukraine

Activation of the warning horns and whistles must be duplicated in the workplaces of both the driver and assistant driver. The activation of the warning horns of both frontal parts of each driver's cab can be ensured pneumatically or electrically.

The aforementioned requirements are approved by the following documents:

Belarus	GOST 12.2.056-81 "1520 mm gauge electric locomotives and diesel locomotives. Safety Requirements" para. 1.3.4
Kazakhstan	
Latvia	TOR
Lithuania	TOR of Lithuanian Railways (approved by order of the Minister for

	Transport of the Republic of Lithuania No. 297 of 20/09/1996)
Poland	<p>Order of the Minister for Infrastructure of 18 July 2005 (Legislation Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p>
Russia	GOST 12.2.056-81 "1520 mm gauge electric locomotives and diesel locomotives. Safety Requirements" para. 1.3.4
Slovakia	
Ukraine	GOST 12.2.056-81 "1520 mm gauge electric locomotives and diesel locomotives. Safety Requirements" para. 1.3.4

4.2.2.3. Vehicle identification

Each vehicle must have a number to uniquely identify it from any other rail vehicle. This number must be prominently displayed at least on each longitudinal side of the vehicle.

It must also be possible to identify operational restrictions applicable to the vehicle.

Further requirements are specified in Appendix P [to OPE TSI].

Belarus

Each unit of the rolling stock and special self-propelled rolling stock must have the following clear identification signs and inscriptions: technical mark of the Belarusian Railway, railway initials, number (for passenger cars includes code of the home railway), manufacturer's plate with date and place of manufacture, date and place of repairs, tare weight (except locomotives and special self-propelled rolling stock). The railway locomotive tenders must carry series, number and railway initials.

The main number shall be placed on the longitudinal sides of flat wagons, car body, tank shell, and the duplicate number shall be placed on the frame. On general purpose platforms, the numbers are placed on the exterior and interior of the sides. On flat wagons without sides, the main and the duplicate numbers shall be placed on the

frame. On covered wagons with corrugated body and dump wagons for transporting apatite concentrate, the marks are placed on metal plates welded to the body. On wagons for the transportation of hot loads (agglomerate, coke, pellets), as well as tanks for oil products, cement and acids, and cars for transporting bitumen, the numbers, codes of railway administrations and tank vessel calibration mark must be placed using attachable figures on metal panels in accordance with the manual “Signs and inscriptions on 1520 mm track gauge freight fleet wagons” 632-2011 PKB TsV.

Russia

Rolling stock is allowed into the infrastructure of the Parties (hereinafter referred to as the infrastructure) after it has been assigned an identification number in the order set forth by the Council for Rail Transport of the CIS States.

The main number shall be placed on the longitudinal sides of open wagons, car body, tank shell, and the duplicate number shall be placed on the frame. On flat wagons without sides, the main and the duplicate numbers shall be placed on the frame.

More information is provided in the manual “Signs and inscriptions on 1520 mm track gauge freight fleet wagons”.

Each railway rolling stock unit must have the following clear identification signs and inscriptions:

- Russian Federation railway transport identification sign;
- name of the owner of rolling stock;
- number, nameplate with the date and place of manufacture;
- identification numbers and acceptance seals on components in places stipulated in standards and regulations;
- date and place of the types of repairs;
- tare weight (except locomotives and special self-propelled rolling stock).

In addition, the following inscriptions must be made:

- on locomotives, multiple-unit rolling stock and special self-propelled rolling stock – design speed, series and number, name of home depot, records of inspections of tanks, control devices and boiler;
- on passenger cars, multiple-unit rolling stock and special self-propelled rolling stock intended for the transportation of employees to the site of work and back – number of seats;
- on freight, mail and luggage cars – carrying capacity.

Railway locomotive tenders must carry series, number and owner's name.

Other signs and inscriptions are placed on the railway rolling stock in accordance with the requirements of the rules and regulations.

In addition to the plates confirming acceptance for operation in the domestic and international traffic, each heavy-haulage container must carry marking inscriptions identifying container owner, type and specialisation.

Freight wagons can be used without the manufacturer's nameplate stating the date and place and manufacture, provided the manufacturing facility code and the date of manufacture is stencilled on the wagon.

Latvia, Lithuania

On rolling stock units, there are the following clearly legible marks and inscriptions:

- logo of the carrier (user) or the owner of the rolling stock;
- number of rolling unit;

- manufacturer's logo with date and place of manufacture;
- type, date and place of repair (except traction unit);
- tare weight (except traction unit);
- on freight wagons – carrying capacity;
- on passenger cars – number of seats/berths;
- on rail locomotive transport – transportation speed.

The aforementioned requirements are approved by the following documents:

Belarus	<p>TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002.</p> <p>The attachable numbers for freight wagons (Manual “Signs and inscriptions on 1520 mm track gauge freight fleet wagons” approved by decision No. 57 of the Council for Rail Transport of the CIS States (16–17 October 2012, Ashgabat);</p> <p>Article 2 of the Agreement on Access to the Rolling Stock Infrastructure in the International Traffic approved at the 54th session of the Council for Rail Transport of the CIS States (18–19 May 2011, Helsinki).</p>
Kazakhstan	<p>Kazakhstan TOR,</p> <p>Rules for placing the eight-digit identification number on traction and multiple-unit rolling stock (TsT/593-11);</p> <p>Rules for placing of the owner-state seals on the main elements of freight wagons (KZhDT-TsV/358-07)</p>
Latvia	TOR
Lithuania	<p>TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996) – Technical Operation Rules (LT)</p> <p>Rules of use of passenger carriages in international traffic (PPV)</p> <p>Reference Manual “Signs and inscriptions on 1520 mm track gauge freight fleet wagons” 632-2011 PKB TsV approved by decision No. 57 of the Council for Rail Transport of the CIS States (16–17 October 2012, Ashgabat) – for freight wagons</p>
Poland	<p>Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on</p>

	<p>the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p>
Russia	<p>Article 2 of the Agreement on Access to the Rolling Stock Infrastructure in the International Traffic approved at the 54th session of the Council for Rail Transport of the CIS States (18–19 May 2011, Helsinki).</p> <p>Reference Manual “Signs and inscriptions on 1520 mm track gauge freight fleet wagons” 632-2011 PKB TsV approved by decision No. 57 of the Council for Rail Transport of the CIS States (16–17 October 2012, Ashgabat) – <i>in effect from 1 January 2013</i></p>
Slovakia	
Ukraine	<p>TsL-0072. Guidelines for approval, location and method of application of signs and inscriptions on 1520 mm track gauge passenger cars of Ukrainian railways.</p> <p>On the introduction of new numbering of rolling stock of the Ministry of Railways, approved by Ministry of Railways of the USSR No. 22Ts of 15 May 1984</p> <p>OSJD Instructions O 582-3 “Regulations on the identification of traction rolling stock”</p> <p>"Regulations for the use of freight wagons in cross-border service (PGV)" Appendix to the PGV Agreement of 01/01/2009 as amended and supplemented on 01/07/2012.</p> <p>Reference Manual “Signs and inscriptions on 1520 mm track gauge freight fleet wagons” 632-2011 PKB TsV approved by decision No. 57 of the Council for Rail Transport of the CIS States (16–17 October 2012, Ashgabat). Effective from 1 January 2013. Currently Manual “Signs and inscriptions on 1520 mm track gauge freight fleet wagons” 632-2000 PKB TsV is in effect. The requirements are the same.</p>

4.2.2.4. Safety of passengers and load

4.2.2.4.1. Safety of load

The railway undertaking must make sure that freight vehicles are safely and securely loaded and remain so throughout the journey.

Belarus, Russia

Rolling stock and special self-propelled rolling stock with faults presenting a danger to traffic safety cannot be allowed into operation or inclusion in any trains neither can any freight wagons whose condition does not ensure safety of the transported freight be included in the trains.

Locomotives whose set lifetime has expired cannot be assigned for any trains.

Belarus

Public railway transport enterprises are financially liable for loss, deficiency or damage of any freight or luggage occurred after the acceptance of the freight or luggage for transportation and before their release to the consignee or its authorised person, unless it was proved that failure to keep the freight or luggage safe had been caused by a circumstance that the public railway transport enterprises could neither prevent nor eliminate.

Russia:

The procedure for presenting vehicles and trains for technical maintenance and notification of fitness of the vehicles is set by an appropriate infrastructure owner or private railway track owner.

Mandatory safety measures for accepting and releasing trains with out-of-gauge and Class 1 dangerous loads are set by the Regulations for carrying dangerous loads by railways of the CIS states, meeting No. 15 of 05/04/1996 (as amended and supplemented), and the Guidelines for carrying out-of-gauge and heavy loads by railways of the CIS states, Republic of Latvia, Republic of Lithuania and Republic of Estonia approved by the Railway Transport Council of the Commonwealth, meeting No. 30 of 19/10/2001 (as amended), but on private railway tracks also by the guidelines for working with wagons loaded with dangerous loads approved by the owners of the private railway tracks (head of division of the owner of the private railway tracks).

The aforementioned requirements are approved by the following documents:

Belarus	Law of the Republic of Belarus No. 237-3 of 06/01/1999 "On railway transport" TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002.
Kazakhstan	Chapter 5, paragraph 130, §7 Kazakhstan TOR Regulations for transportation of freights by railway transport (Resolution of the Government of the Republic of Kazakhstan No. 682 of 21/06/2011); Regulations for carrying passengers, luggage and freight luggage by rail (Resolution of the Government of the Republic of Kazakhstan No. 799 of 14/07/2011).
Latvia	TOR, SMGS
Lithuania	Agreement on international railway freight transportation (SMGS) Regulations for transportation of goods by railway transport (approved by order of the Minister for Transport of the Republic of Lithuania No. 174 of 20/06/2000) – Rules on railway freight transportation
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway

	<p>traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p>
Russia	Paragraph 7 of Appendix 5 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation
Slovakia	
Ukraine	TsRB-0004 “TOR of the of Ukrainian railways”, 2003 “Regulations for carrying passengers, luggage, freight luggage and mail by railway transport of Ukraine” Order of the Ministry for Transport and Communications of Ukraine No. 1196 of 27/12/2006, amended

4.2.2.4.2. Safety of passengers

The railway undertaking must ensure that passenger transport is undertaken safely at the departure and during the journey.

Belarus, Russia

Staff of the technical maintenance points for the freight and passenger vehicles must ensure timely technical servicing and repairs of the vehicles in accordance with the process requirements and train schedule. The staff of the said points are responsible for traffic safety and movement of the vehicles in the proper technical condition as part of a train within the limits of the guarantee section.

Buildings, platforms and other structures and devices for providing services to the passengers must also ensure safe performance of the operations related to the carriage of passengers.

Where necessary, pedestrian tunnels or bridges must be provided for access to the passenger platforms. Where the crossings at the stations are on the same level as railway tracks, such crossings must be equipped with pedestrian paving, indicators and warning signs and, if necessary, automatic alarm.

Passenger stopping points must be provided with passenger platforms with shelters or pavilions and, depending on the number of passengers serviced, ticket offices. Staff rooms for the employees servicing the passengers, consignors and consignees must have easy access for quick performance of work. Rooms for passenger service cannot be used for any other purposes.

Belarus

Belarusian Railway and its organisations must satisfy the requirements of the people travelling by rail, passenger safety when using railway transport, necessary conveniences and polite service at the stations and on the trains, timely arrival and luggage safety. Passenger cars, stations and other structures designed for use by passengers must comply with all applicable sanitary and hygiene standards and regulations, be kept in good technical condition, ensure they fulfil their designed passenger carriage functions.

Russia:

The warranted section for passenger trains is the route from the train formation point to the turnaround point and back to the splitting point (destination) of the train.

At passenger stops, the places of passenger boarding and egress areas must be lit.

The aforementioned requirements are approved by the following documents:

Belarus	Public Railway Transport Statute approved by order of the Cabinet of Ministers of the Republic of Belarus No. 1196 of 02/08/1999. TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002.
Kazakhstan	Paragraph 147 of Kazakhstan TOR Regulations for carrying passengers, luggage and freight luggage by rail (Resolution of the Government of the Republic of Kazakhstan No. 799 of 14/07/2011).
Latvia	TOR, SMPS
Lithuania	TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996) – Technical Operation Rules (LT) Rules of establishing and application of requirements TEN network interoperability (LT) (approved by order of the Minister for Transport of Lithuania No 3-586 of 23/12/2004)
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and

	signalling
Russia	Paragraph 32 of Appendix 5 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation
Slovakia	
Ukraine	TsRB-0004 “TOR of the of Ukrainian railways”, 2003 Regulations for carrying passengers, luggage, freight luggage and mail by railway transport of Ukraine” Order of the Ministry for Transport and Communications of Ukraine No. 1196 of 27/12/2006, amended

4.2.2.5. Train composition

The railway undertaking must define the rules and procedures to be followed by his staff so as to ensure that the train is in compliance with the allocated path.

Train composition requirements must take into account the following elements:

(a) the vehicles

— all vehicles in the train must be in compliance with all the requirements applicable on the routes over which the train will run;

— all vehicles on the train must be fit to run at the maximum speed at which the train is scheduled to run;

— all vehicles on the train must be currently within their specified maintenance interval and will remain so for the duration (in terms of both time and distance) of the journey being undertaken;

(b) the train

— the combination of vehicles forming a train must comply with the technical constraints of the route concerned and be within the maximum length permissible for forwarding and receiving terminals.

— the railway undertaking is responsible for ensuring that the train is technically fit for the journey to be undertaken and remains so throughout the journey

(c) the weight and axle load

— the weight of the train must be within the maximum permissible for the section of route, the strength of the couplings, the traction power and other relevant characteristics of the train. Axle load limitations must be respected.

(d) the maximum speed of the train

— the maximum speed at which the train can run must take into account any restrictions on the route(s) concerned, braking performance, axle load and vehicle type.

(e) the kinematic envelope

— the kinematic gauge of each vehicle (inclusive of any load) in the train must be within the maximum permissible for the section of route.

Additional constraints may be required or imposed due to the type of braking regime or traction type on a particular train.

Belarus, Latvia

TORs set forth the main provisions for the technical operation of the railway and the order of action of the railway transport staff during its operation, the main dimensions and maintenance standards of the key structures, devices and rolling stock and requirements related to those, train traffic organisation and signalling principles.

TORs are mandatory for all railway transport divisions and employees. Compliance with the regulations ensures coordination of all the railway transport links, precise and continuous railway operation and traffic safety.

a) – rolling stock and special self-propelled rolling stock must have timely scheduled preventive repairs, maintenance and be kept in operation in good operational condition ensuring their uninterrupted operation and safety of travel and compliance with the requirements of occupational safety. Strength, stability and technical condition of all vehicle elements shall ensure safe and smooth movement of the trains at the highest speed allowed on the track.

Employees directly involved in the technical maintenance and repair, foremen and heads of the relevant plants, depots, including special rolling stock depots, track maintenance trains, workshops and technical maintenance stations are responsible for the quality of the performed technical maintenance and safety of the rolling stock and special rolling stock.

e) – rolling stock must satisfy the requirements of the rolling stock clearance gauge.

Rolling stock clearance gauge – transverse (perpendicular to the track axis) limit outline, inside which both loaded and empty rolling stock set on a straight horizontal track must fit.

Belarus

d) – railway structures and devices must comply with the requirements ensuring the passage of trains at their highest set speed: passenger – 140 km/h, refrigerator – 120 km/h, freight – 90 km/h. On particular sections of track in accordance with a list approved by the management of the Belarusian Railway, a differentiated speed is set.

Latvia

Requirements of subparagraphs b), c), d), e) of paragraph 4.2.2.5. OPE TSI are applicable to Latvia.

Russia, Latvia

Railway rolling stock shall have timely scheduled preventive repairs, maintenance and be kept in operation in good operational condition ensuring safety of travel and operation of railway transport and compliance with the requirements of occupational safety and fire safety.

Russia

Owners of railway rolling stock and railway transport staff directly servicing it are responsible for its proper technical condition, maintenance, repairs and compliance with the established terms of service of railway rolling stock.

The use of the railway rolling stock, its components and other technical means not complying with the requirements of the norms and regulations in the infrastructure or on private railway tracks is not allowed.

Compliance with the said requirements must be monitored by the infrastructure owner or private railway track owner.

Maximum length limit for the departure and arrival terminals is not regulated by the statutory documents of JSC RZD.

e) – Rolling stock must satisfy the requirements of the rolling stock clearance gauge set forth in the norms and regulations.

Rolling stock clearance gauge – transverse (perpendicular to the track axis) limit outline, inside which rolling stock set on a straight horizontal track must fit (in the most favourable position on the track and without lateral tilting on springs or dynamic vibrations) in both empty and loaded state, including rolling stock with maximum permissible wear.

Infrastructure structures and devices must ensure the passage of trains at their highest set speed: passenger – 140 km/h, refrigerator – 120 km/h, freight – 90 km/h, unless otherwise stipulated in the regulations.

Ukraine

Train acceptance into a station is determined by the rules on the use of the technical resources of the station and is set by a technical executive certificate regulating safe train acceptance, departure and transit through the station.

Train composition must be formed from rolling stock units passing the set clearance and must comply with the DSTU UIC requirements 518:2009 “Rail rolling stock. Running tests and acceptance tests of the dynamic parameters. Requirements of safety, impact on tracks and running performance.”

The aforementioned requirements are approved by the following documents:

Belarus	Guidelines for carrying out-of-gauge and heavy loads by railways of the CIS states, Republic of Latvia, Republic of Lithuania and Republic of Estonia approved by the Railway Transport Council of the Commonwealth, meeting No. 30 of 19/10/2001; GOST 9238-2013 “Construction and Rolling Stock Clearance Diagrams”.
Kazakhstan	Kazakhstan TOR Guideline for the technical maintenance and operation of structures, devices and rolling stock and the organisation of traffic of passenger trains formed from Talgo, Tulpar-Talgo cars (No. 942-TsZ 15/10/2012).
Latvia	TOR Regulations on public network (Network Statement)
Lithuania	TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996) Regulations on the public network (approved annually) – Network statement
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on

	the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling
Russia	Paragraphs 10 and 17, Appendices 5 and 6 of the TOR of the railways of the Russian Federation (approved by order of the Ministry of Transport of the Russian Federation No. 286 of 21/12/2010) Guidelines for carrying out-of-gauge and heavy loads by railways of the CIS states, Republic of Latvia, Republic of Lithuania and Republic of Estonia approved by the Railway Transport Council of the Commonwealth, meeting No. 30 of 19/10/2001. GOST 9238-2013 “Construction and Rolling Stock Clearance Diagrams”.
Slovakia	
Ukraine	TsRB-0004 “TOR of the of Ukrainian railways”, 2003 DSTU UIC 518:2009 “Rail rolling stock. Running tests and acceptance tests of dynamic parameters. Requirements for safety, impact on tracks and running performance.”

4.2.2.6. Train braking

4.2.2.6.1. Minimum requirements of the braking system

All vehicles in a train must be connected to the continuous automatic braking system as defined in the RST TSI.

The first and last vehicles (including any traction units) in any train must have the automatic brake operative.

In the case of a train becoming accidentally divided into two parts, both sets of detached vehicles must come automatically to a stand as a result of a maximum application of the brake

Belarus, Latvia, Lithuania, Russia, Ukraine

Rolling stock and special rolling stock must be equipped with automatic brakes, and passenger cars [cars of multiple-unit railway rolling stock - Russia] and locomotives also with electropneumatic brakes.

Belarus, Russia

On passenger trains, the automatic brake line must include all passenger cars with automatic brakes, but in freight and service trains [also “human trains” - Russia] – all freight wagons and special rolling stock with automatic brakes.

Freight and service trains can include rolling stock and special rolling stock with the main line, but no more than 8 axles in one group, and no more than 4 axles in the rear end of the train before the last two wagons. The last two wagons must have properly working activated brakes.

Belarus

On all trains, automatic brakes of all locomotives and tenders (except tenders running in non-operating state without empty brake mode) and special self-propelled rolling stock must be included in the automatic brake line.

Latvia

Automatic brakes of the train ensure braking effort guaranteeing stopping the train in case of emergency braking without exceeding the stopping distance approved by the railway infrastructure manager.

Ukraine

The brakes must ensure smooth braking and train stopping in case of disconnection or break of the air line and in case of emergency braking.

The aforementioned requirements are approved by the following documents:

Belarus	TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002
Kazakhstan	Kazakhstan TOR Technical Operation Rules Guidelines for the operation of rolling stock brakes ZAO NK KTZH (No. 120-TsZ, 17/10/2002) Instructions on Rolling Stock Brakes Operation
Latvia	TOR Network statement (Обзор сети)
Lithuania	TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996)
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling
Russia	Appendix 6 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation”.
Slovakia	

Ukraine	TsRB-0004 “TOR of the of Ukrainian railways”, 2003 TsT-TsV-TsL-0015. Guidelines for the rolling stock brakes operation on the Ukrainian railways, 2004
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4.2.2.6.2. Braking performance

The IM must provide the railway undertaking with the actual performance required. This data shall include, if necessary, conditions of use of braking systems possibly affecting the infrastructure such as magnetic, regenerative and eddy-current brake.

The railway undertaking is responsible for ensuring that the train has sufficient braking performance by providing braking rules for its staff to be followed.

The rules concerning braking performance have to be managed within the IM’s and railway undertaking’s safety management system.

Further requirements are specified in Appendix T [to OPE TSI].

Belarus

Depending on the equipping of the rolling stock or special rolling stock with braking devices, the Head of Belarusian Railway sets forth:

- single smallest braking effort for each 100 tonnes of train weight for freight and passenger trains and maximum ruling gradient, on which movement of the trains at the set maximum speed is allowed;
- dependence between the running speed, gradient, braking effort and stopping distance;
- estimated norms of brake pad effort on the axle of rolling stock and special rolling stock, standards of equipping the trains with hand brakes and other data required for braking calculations.

The said norms and data are recorded in the train schedule books and appropriate manuals.

Belarus, Russia, Latvia, Lithuania

In all cases, in railway stations, shunting loops and passing places on a gradient, the conditions for starting the trains within the set weight norm and condition of holding the trains with the auxiliary locomotive brakes must be ensured.

Automatic pneumatic and electro-pneumatic brakes of rolling stock and special rolling stock must be maintained in accordance with the norms and regulations and have operation and reliability under different conditions of use and ensure smooth braking, and automatic brakes also shall ensure stopping of the train in case of disengagement or break of the braking line or opening of the emergency brake valve.

Russia, Latvia, Lithuania

Passenger locomotives must be equipped with electropneumatic braking control devices, and freight train locomotives must be equipped with a brake line integrity control device.

Rolling stock must be equipped with automatic brakes, and passenger cars and locomotives and cars of multiple-unit railway rolling stock must also be equipped with electropneumatic brakes. The order and timeline for equipping the railway rolling stock not in operation and not allowed to go out on the public railway track with automatic brakes are established by their owner.

Russia

Depending on the equipment of the rolling stock with braking devices, the following are set:

- single smallest braking effort for each 100 tonnes of train weight for freight and passenger trains and the maximum ruling gradient, on which the movement of the trains at the set maximum speed is allowed;
- dependence between the running speed, gradient, braking effort and stopping distance;
- estimated norms of brake pad effort on the axle of railway rolling stock and special rolling stock, standards of equipping the trains with hand brakes and other data required for braking calculations.

The said norms and regulations are provided in the norms and regulations.

Belarus, Latvia, Lithuania, Kazakhstan, Russia, Ukraine

Automatic and electropneumatic brakes of rolling stock and special rolling stock must ensure braking effort guaranteeing stopping the train in case of emergency braking not exceeding the stopping distance calculated using the data set forth in the norms and regulations.

Automatic pneumatic and electro-pneumatic brakes of rolling stock and special rolling stock must be maintained in accordance with the norms and regulations and have handling and reliability under different conditions of use and ensure smooth braking, and automatic brakes also shall ensure stopping of the train in case of disengagement or break of the braking line or opening of the emergency brake valve.

Ukraine

Automatic brakes of rolling stock must be maintained compliant, be controllable and reliable in different operational conditions. Automatic brakes must ensure possibility of using different modes of braking depending on the load of the vehicles, train length and track profile. Vehicles that have not undergone technical maintenance cannot be included in the train without an appropriate recording in a special log (form VU-14) and signature of the responsible employee.

The aforementioned requirements are approved by the following documents:

Belarus	TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002).
Kazakhstan	Kazakhstan TOR; Guidelines for the operation of rolling stock brakes ZAO NK KTZH (No. 120-TsZ, 17/10/2002)
Latvia	TOR No. 19/2000 LDz move to abbreviations) "Guidelines for the operation of rolling stock brakes"
Lithuania	TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996) "Guidelines for the operation of rolling stock brakes" (approved by order of the LG Director General No. 297 of 21/10/1997)

Poland	<p>Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p>
Russia	<p>Appendices 5 and 6 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation</p>
Slovakia	
Ukraine	<p>TsRB-0004 “TOR of the of Ukrainian railways”, 2003</p> <p>TsT-TsV-TsL-0015. Guidelines for the rolling stock brakes operation on the Ukrainian railways, 2004</p>

4.2.2.7. Ensuring that the train is in running order

4.2.2.7.1. General requirement

The railway undertaking must define the process to ensure that all safety-related on-train equipment is in a fully functional state and that the train is safe to run.

The railway undertaking must inform the IM of any modification to the characteristics of the train affecting its performance or any modification that might affect the ability to accommodate the train in its allocated path.

The IM and the railway undertaking must define and keep up to date conditions and procedures for train running in degraded mode.

Belarus, Latvia, Lithuania, Russia

Rolling stock and special self-propelled rolling stock must have timely scheduled preventive repairs, maintenance and be kept in operation in good operational condition ensuring their uninterrupted operation and safety of travel. Strength, stability and technical condition of all vehicle elements shall ensure safe and smooth movement of the

trains at the highest speed allowed on the track. Newly built vehicles must ensure safe and smooth movement at the design speed of prospective locomotives designed for use with the train categories in question.

Ukraine

Rolling stock maintenance and repair system, mileage between repairs and order for directing to repair are set by individual orders of UZ. Technical instructions and typical technical processes related to maintenance and repair of rolling stock are approved by the appropriate chief directorates of UZ. Heads of the undertakings that have directly performed the maintenance and repair are responsible for the quality of the maintenance and repair of rolling stock. The requirements for repair and technical maintenance are set forth in the Repair regulations and Guidelines for maintenance and preparation for a journey.

In international traffic, the requirements for the technical conditions of rolling stock, frequency of repair and maintenance are set forth in the Regulations for the use of passenger cars (PPPV) and Rules for the use of cars (PPV).

The aforementioned requirements are approved by the following documents:

Belarus	TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002
Kazakhstan	Kazakhstan TOR
Latvia	Law on railway TOR Cabinet of Ministers regulations No. 57 of 18/01/2011 “Regulations for issue, procedure for suspension of operation and cancellation criteria for safety certificates” Cabinet of Ministers regulations No. 168 of 26/03/2008. “Regulations for issue and procedure for suspension of operations and cancellation criteria for part A and B safety certificates”
Lithuania	TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996) Regulations for establishing and application of the trans-European railway system compatibility requirements (approved by order of the Minister for Transport of Lithuania No. 3-586 of 23/12/2004.
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on

	the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling
Russia	Appendices 5 and 6 to TOR
Slovakia	
Ukraine	TsRB-0004 “TOR of the of Ukrainian railways”, 2003

4.2.2.7.2. Data required

The data required for safe and efficient operation and the process by which this data must be forwarded must comprise:

- the train identification
- the identity of the railway undertaking responsible for the train
- the actual length of the train
- if a train carries passengers or animals when it is not scheduled to do so
- any operational restrictions with an indication of the vehicle(s) concerned (gauge, speed restrictions, etc.)
- information the IM requires for the transport of dangerous goods.

The railway undertaking must ensure that this data is made available to the IM(s) prior to the departure of the train.

The railway undertaking must advise the IM(s) if a train will not occupy its allocated path or is cancelled.

Belarus

Before the departure of a train, the station staff must strictly follow the station operational process, the technical executive certificate, traffic schedule and train formation plan and must verify the correctness of the train formation, correctness and strength of freight fastening on open rolling stock and make sure that the safety of the load has been properly ensured, the signals are installed on the train and the train has all the necessary equipment (inventory).

Trains that have vehicles without any transport documents cannot be allowed to leave. When coupling and uncoupling vehicles on route, station staff must record the changes in the corresponding wheel report.

Russia

Before the departure of a train, the staff of the station of the infrastructure owner or private railway track owner (if the station is situated on a private track) must strictly follow the railway station operational process, technical executive certificate, traffic schedule and train formation plan and must verify the correctness of the train formation, correctness and strength of freight fastening on open rolling stock and make sure that the safety of the load has been properly ensured, the signals are installed on the train and the train has all the necessary equipment (inventory).

Belarus, Latvia, Lithuania, Russia, Ukraine

Wheel report and transport documents must be provided for all freight and freight and passenger trains at the train formation stations. The driver must be familiarised with the train composition in accordance with the wheel report.

Latvia, Lithuania, Russia, Ukraine

The station duty officer must record the time of actual departure or passing of each train and other data characterising the train composition as may be necessary in the traffic log and immediately inform the duty officer of the next station to which the train is heading and the traffic controller. In addition, the duty station officer must ensure the transfer of the necessary information about the train into the automated control system.

The aforementioned requirements are approved by the following documents:

Belarus	TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002
Kazakhstan	Kazakhstan TOR, Regulations for transportation of freights by railway transport (Resolution of the Government of the Republic of Kazakhstan No. 682 of 21/06/2011).
Latvia	TOR CMTC/RID
Lithuania	TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996) Regulations for transportation of goods by railway transport (approved by order of the Minister for Transport of the Republic of Lithuania No. 174 of 20/06/2000) CMTC/RID
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling

Russia	TOR Appendix No. 7 “SI on the railway transport of the Russian Federation”, Regulations on transportation of freights by railway transport, Regulations for carriage of dangerous goods on railway, Federal Law No. 18-FZ “Railway Transport Statute of the Russian Federation” TOR Appendix 6, paragraph 77
Slovakia	
Ukraine	TsRB-0004 “TOR of the of Ukrainian railways”, 2003

4.2.2.8. Requirements for signal and lineside marker siting

The driver must be able to observe signals and lineside markers, and they must be observable by the driver. The same applies for other types of lineside signs if they are safety related.

Therefore, signals, lineside markers, signs and information boards must be designed and positioned in such a consistent way to facilitate this. Issues that must be taken into account include:

- that they are suitably sited so that train headlights allow the driver to read the information,
- suitability and intensity of lighting, where required to illuminate the information,
- where retro-reflectivity is employed, the reflective properties of the material used are in compliance with appropriate specifications and the signs are fabricated so that train headlights easily allow the driver to read the information.

Driving cabs must be designed in such a consistent way that the driver is able to easily see the information displayed to him.

Belarus

Only signals approved by the Head of the Belarusian Railway must be used. Signalling devices must be of an approved type. The colour of the coloured glass and lenses must comply with the applicable standards. On the railway, traffic lights are used as permanent signalling devices.

Belarus, Latvia, Lithuania, Russia, Ukraine

The red, yellow and green signal lights of the entry, warning, main, stop and level crossing traffic lights on straight sections of the public railways must be clearly distinguishable from the multiple-unit driver's cab during the day and at night from a distance of at least 1000 m. On curved sections of railway tracks, the signals of the aforementioned traffic lights and signal stripes on the traffic lights must be clearly distinguishable from the distance of at least 400 m. On extremely rough terrain (mountains, deep cuttings) the visibility distance may be shorter, but at least 200 m.

Russia, Ukraine

Traffic lights are installed on the right side in the direction of movement or above the centreline of the track being restricted by them. Stop traffic lights and their warning traffic lights installed at the blocks before railway crossings for trains running on the reverse track can be placed on the left side in the direction of the train movement.

Traffic lights must be installed so that their signals cannot be mistaken from the train for any signals intended for any adjacent tracks.

The lighting must comply with the requirements of the standards and regulations, ensure traffic and shunting safety, passenger safety when embarking and disembarking the trains, continuous and safe work of the service staff, freight, luggage and freight-luggage security.

External lighting must not affect the clear visibility of the signal lights.

Latvia, Russia

Any obstacle to the movement (a place requiring stopping) on a block or at a station, as well as any place of performance of work that presents a danger to traffic, requires stopping or deceleration, must be indicated by signals on both sides, regardless of whether a train (shunting unit) is expected or not.

Signalling on railway transport is intended for ensuring traffic safety and proper organisation of train movement and shunting operations.

By their way of perception, the signals are divided into visible and audible.

Visible signals are expressed by colour, form, position and number of signal indications. Such signalling devices, as traffic lights, semaphores, discs, boards, lights, flags, signal indicators and signal signs, are used for giving visual signals.

Visible signals are divided into the following types by time of their use:

1) 24-hour, which are given in the same way during the day and at night; such signals are traffic lights with particular colours, route and other light indicators, permanent deceleration discs, yellow square boards (reverse side is green), red discs with light reflector to indicate rear end of the freight train, signal pointers and signs;

2) day, which are given during daylight hours; such signals are given by discs, boards, flags, semaphore hands and signal pointers (switch, track obstruction, dumping devices and water filling stations);

2) night, which are given during the hours of darkness; such signals are the lights of particular colours in manual and train lights, lights on poles, semaphore hands and signal pointers.

In case of absence of clearance for the traffic light installation on the right side, the traffic light may be installed on the left side based on a decision of the infrastructure owner or the private railway track owner:

entry signals used for allowing the trains running on the reverse track into a railway station, as well as bank locomotives and service trains returning from a block on an reverse track;

Russia

In railway tunnels, only night or 24-hour signals are used.

Night signals must also be used during the day in case of fog, blizzard or other unfavourable conditions.

The requirements for the driver's cab are governed by applicable standards (GOST).

Ukraine

Alongside the main tracks, signal and route signs are installed. By switches, limit poles are installed.

Signal signs are installed on the right side in the direction of movement and route signs are installed on the right side by kilometre count at least 3100 mm away from the outermost track centreline.

The driver's cab in a locomotive must be positioned in such a way as to ensure visibility for the driver and driver's assistant, sitting and standing, of the route, ground signals, contact wire, as well as visibility for the driver and

driver's assistant in standing position when approaching the train and working area of the staff involved in shunting.

The aforementioned requirements are approved by the following documents:

Belarus	<p>TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002.</p> <p>SI of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 293H of 04/12/2002;</p> <p>GOST 31428-2011 “Shunting Diesel Locomotives. General technical requirements”;</p> <p>GOST 31187-2011 “Main-line Diesel Locomotives. General technical requirements”;</p> <p>GOST 12.2.056-81 "1520 mm gauge electric locomotives and diesel locomotives. Safety requirements."</p>
Kazakhstan	Kazakhstan TOR, Kazakhstan SI
Latvia	TOR
Lithuania	<p>TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996)</p> <p>Regulations for railway signalling (approved by order of the Minister for Transport of the Republic of Lithuania No. 3-156 of 15/03/2011)</p>
Poland	<p>Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p>
Russia	<p>TOR of the railways of the Russian Federation (approved by order of the Ministry of Transport of the Russian Federation No. 286 of 21/12/2010):</p> <p>- Appendix No. 3 “Technical operation of the railway transport signalling,</p>

	<p>centralisation and blocking devices”</p> <p>- Appendix No. 7 “SI on the railway transport of the Russian Federation”</p> <p>GOST 31428-2011 “Shunting diesel electric locomotives. General technical requirements</p> <p>GOST 31187-2011 Main-line diesel locomotives. General technical requirements</p> <p>GOST P 55364-2012 Electric locomotives. General technical requirements</p> <p>GOST P 55434-2013 Electric trains. General technical requirements</p> <p>GOST P 54750-2011 Railbuses. General technical requirements</p>
Slovakia	
Ukraine	<p>TsRB-0004 “TOR of the of Ukrainian railways”, 2003</p> <p>SI on the Ukrainian railways TsSh-0001, 2008</p> <p>GOST 12.2.056-81 “1520 mm gauge electric locomotives and diesel locomotives. Safety requirements”</p>

4.2.2.9. Driver vigilance

A means of onboard monitoring of driver vigilance is necessary. This shall intervene to bring the train to a stand if the driver does not react within a certain time; the time range is specified in the rolling stock TSI.

Belarus

Automated signalling on locomotives, multiple-unit and special self-propelled rolling stock must be supplemented by safety devices ensuring the control of: the set running speed, spontaneous train drift and regular driver's vigilance verification. In case of the driver's loss of ability to drive a locomotive, multiple-unit, special self-propelled rolling stock or railtrolley, the said units must ensure the automatic stopping of the train before a prohibiting route signal.

Latvia, Lithuania

The traction unit is equipped with traction unit driver's vigilance control devices, which automatically stop the train in case of loss of vigilance (working capacity) of the driver or in case of exceeding the running speed controlled by the devices.

The control cabs of locomotives or multiple-unit rolling stock designed to be operated by one driver (without driver's assistant) are equipped with automatic train stopping devices that ensure train stopping in case the driver suddenly loses the ability to drive the train.

Russia

Automatic locomotive signalling devices on locomotives, multiple-unit or special self-propelled rolling stock must be supplemented by safety devices ensuring control of the set running speed, spontaneous train drift and regular driver's vigilance (wakefulness) verification. In case of the driver's loss of ability to drive the locomotive, multiple-unit, special self-propelled rolling stock or railtrolley, the said units must ensure the automatic stopping of the train before a prohibiting route signal or by the boundary of the block occupied by the railway rolling stock when moving in accordance with the signals of the locomotive traffic lights.

Ukraine

Each control panel of a passenger locomotive, locomotive driven by a single driver and multiple-unit train must be equipped with an automatic train stopping device in case the driver suddenly loses the ability to drive the train.

The aforementioned requirements are approved by the following documents:

Belarus	TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002
Kazakhstan	
Latvia	TOR
Lithuania	TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996)
Poland	<p>Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p>
Russia	Appendix 5 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation
Slovakia	
Ukraine	<p>TsRB-0004 “TOR of the of Ukrainian railways”, 2003</p> <p>GOST 12.2.056-81 “1520 mm gauge electric locomotives and diesel locomotives. Safety requirements”</p>

Appendix T - BRAKING PERFORMANCE

A. ROLE OF THE INFRASTRUCTURE MANAGER

The IM shall inform the RU about the braking performance required for each route and has to provide information about the route characteristics. The IM has to ensure that the impact of the route characteristics and trackside-related margins are included in the required braking performance.

The required braking performance shall in principle be expressed in brake weight percentage unless the IM and RU have agreed on another unit to express the braking performance (e.g. braked tonnes, brake forces, deceleration values, deceleration profiles).

For train sets and fixed train compositions the IM shall deliver the braking performance requirements in deceleration values if so requested by the RU.

Belarus

The braking performance requirements are provided in paragraph 4.2.2.6.2 of this document in accordance with the TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002. In addition, the requirements are set forth in STP 09150.17.038-2006. Regulations for the rolling stock brakes operation on Belarusian Railway approved by order of the Head of the Belarusian Railways No. 113H of 12/03/2007.

Latvia, Lithuania

Depending on the equipping of the rolling stock with braking devices, the SI of the railway sets forth:

- single smallest braking effort for each 100 tonnes of train weight;
- the largest ruling gradient (exceeding stopping distance) depending on the maximum running speed set in the train schedule;
- dependence between the running speed of the trains, gradient, braking effort and stopping distance;
- calculation standards and other data required for braking calculation and determining weight per axle;
- braking systems, procedure for their activation on trains and calculation standards determining weight per axle.

Russia

The braking performance standards set forth by the infrastructure owner are given in paragraph 4.2.2.6.2. of this document in accordance with paragraph 49 of Appendix 6 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation

Ukraine:

Before allowing the train on route, brake inspection is performed – a complete test, the results of which are recorded in VU-45 form and handed to the driver. At the same time, the technical condition, integrity of the brakes and brake line and other parameters of the braking system of the train are checked. Braking parameters of the train under different operation conditions, estimated braking effort values and stopping distance calculations are set forth in the “Instruction manual for rolling stock brakes on Ukrainian railways” 2004.

The speed at which the train must travel through particular sections of the route is displayed by the automatic signalling.

The aforementioned requirements are approved by the following documents:

Belarus	<p>TOR of the Belarusian Railways approved by order of the Head of the Belarusian Railways No. 292H of 04/12/2002.</p> <p>STP 09150.17.038-2006. Regulations for the rolling stock brakes operation on Belarusian Railway approved by order of the Head of the Belarusian Railways No. 113H of 12/03/2007</p>
Kazakhstan	<p>Kazakhstan TOR</p> <p>Guidelines for the operation of rolling stock brakes AO NK KTZH (No. 120-TsZ, 17/10/2002)</p>
Latvia	<p>TOR</p> <p>No. 19/2000 LDz (infrastructure manager) “Guidelines for the operation of rolling stock brakes”</p>
Lithuania	<p>TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996)</p> <p>“Guidelines for the operation of rolling stock brakes” (approved by order of the LG Director General No. 297 of 21/10/1997)</p>
Poland	<p>Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p>
Russia	<p>Chapter VIII of Appendix 6 to the Regulations for technical operation of the railways of the Russian Federation approved by order of the Ministry of Transport of Russia No. 286 of 21 December 2010 on Approval of the Regulations for technical operation of the railways of the Russian Federation</p>
Slovakia	
Ukraine	<p>TsRB-0004 “TOR of the of Ukrainian railways”, 2003</p> <p>TsT-TsV-TsL-0015. “Guidelines for the operation of rolling stock brakes on the Ukrainian railways”, 2004</p> <p>SI on the Ukrainian railways TsSh-0001, 2008</p>

B. ROLE OF THE RAILWAY UNDERTAKING

The RU shall ensure that each train satisfies or exceeds the braking performance required by the IM. Therefore, the RU shall calculate the braking performance of a train taking into account the train composition.

The RU must take into account the vehicle or train set braking performance determined when placed in service. Rolling stock-related margins like reliability and availability of the brakes have to be considered. The RU must also take into account the information about route characteristics which affect the train behaviour when tuning the braking performance for stopping and securing a train.

The braking performance resulting from the checking of the actual train (like train composition, brake availability, brake settings) will be used as an input value for any operational rule to be subsequently applied to the train.

Latvia, Lithuania

The carrier sets a procedure for the use of the rolling stock braking equipment that ensures safe train operation, sufficient braking performance and smoothness taking into account special features of the involved routes, plan and longitudinal track elevation, as well as the equipment of the railway infrastructure. The carrier agrees the said procedure with the railway infrastructure manager.

Ukraine

Types and main parameters of new rolling stock are approved by UZ, while the drawings of units and parts and terms of reference are approved by the appropriate chief directorates of UZ. All rolling stock elements must guarantee safe and smooth movement of the train at maximum set speed and comply with the effective standards. Before putting into operation, all newly built or rebuilt (upgraded) rolling stock must undergo maximum tests and be accepted in accordance with the existing procedure.

The aforementioned requirements are approved by the following documents:

Belarus	STP 09150.17.038-2006. Regulations for rolling stock brakes operation on Belarusian Railway approved by order of the Head of the Belarusian Railways No. 113H of 12/03/2007
Kazakhstan	
Latvia	TOR No. 19/2000 LDz (infrastructure manager) "Guidelines for the operation of rolling stock brakes"
Lithuania	TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996) "Guidelines for the operation of rolling stock brakes" (approved by order of the LG Director General No. 297 of 21/10/1997)
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for railway traffic and signalling Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling

	<p>Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p>
Russia	TsT-TsV-TsL-VNIIZhT/277 “Guidelines for the operation of rolling stock brakes”
Slovakia	
Ukraine	<p>TsRB-0004 “TOR of the of Ukrainian railways”, 2003</p> <p>TsT-TsV-TsL-0015. “Guidelines for the operation of rolling stock brakes on the Ukrainian railways”, 2004</p>

C. BRAKING PERFORMANCE NOT ACHIEVED

The IM has to set up rules to be used if a train does not reach the required braking performance and has to make these rules available to the RUs.

If a train does not reach the braking performance required for the routes the train shall run, the RU has to respect the resulting constraints like speed restriction.

Latvia, Ukraine

Every section of the track has its speed limit for a running train set for the route and reflected in the signals on the tracks and in the driver's cab. A speed restriction, if it is not set for a particular track section, can be due to a technical fault.

The aforementioned requirements are approved by the following documents:

Belarus	STP 09150.17.038-2006. Regulations for rolling stock brakes operation on Belarusian Railway approved by order of the Head of the Belarusian Railways No. 113H of 12/03/2007
Kazakhstan	
Latvia	No. 19/2000 LDz (infrastructure manager) “Guidelines for the operation of rolling stock brakes”
Lithuania	<p>TOR of Lithuanian Railways (approved by order of the Minister for Transport of the Republic of Lithuania No. 297 of 20/09/1996)</p> <p>“Guidelines for the operation of rolling stock brakes” (approved by order of the LG Director General No. 297 of 21/10/1997)</p>
Poland	Order of the Minister for Infrastructure No. 1444 of 18 July 2005 (Legislation Journal, issue 172, item 1444) on the general provisions and conditions for

	<p>railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1198 of 18 September 2006 (Legislation Journal, issue 168, item 1198) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy of 18 September 2007 (Legislation Journal, issue 173, item 1220) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 303 of 27 February 2009 (Legislation Journal, issue 38, item 303) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Infrastructure No. 325 of 18 February 2009 (Legislation Journal, issue 63, item 325) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p> <p>Order of the Minister for Transport and Marine Economy No. 1042 of 06 September 2012 (Legislation Journal, issue 0, item 1042) on the amendments to the order on the general provisions and conditions for railway traffic and signalling</p>
Russia	TsT-TsV-TsL-VNIIZhT/277 “Guidelines for the operation of rolling stock brakes”
Slovakia	
Ukraine	<p>TsRB-0004 “TOR of the of Ukrainian railways”, 2003</p> <p>TsT-TsV-TsL-0015. Guidelines for rolling stock brakes operation on the Ukrainian railways, 2004</p>

5. COMPARISON WITH TARGET PARAMETERS FOR 1435 MM SYSTEM

5.2.2. Specifications relating to trains

5.2.2.1. Train visibility

5.2.2.1.1. General requirement

The requirements applied to the 1520 mm track gauge system are similar to the OPE TSI requirements; however, the 1520 mm track gauge requirements provide a more detailed description of the procedures and responsibility of railway staff for the equipment of the train with front and rear end indication devices.

5.2.2.1.2. Front end

In the 1520 mm track gauge system, the requirements are more detailed in comparison with the OPE TSI provisions and include rules of operation in different situations.

As with the OPE TSI requirements, the 1520 mm system norms set forth particular light signals for to indicate the front of the train depending on different conditions of use.

In the EU states using the 1520 track gauge network, the means of indication of the front end is either the same or is coordinated with the EU laws.

5.2.2.1.3. Rear end

The requirements applied in the 1520 mm track gauge system are more detailed in comparison with the OPE TSI provisions and include rules of operation in different situations.

As with the OPE TSI requirements, the 1520 mm system norms set forth particular light signals to indicate the rear end of the train depending on different conditions of use. However, the use of the OPE TSI requirements is possible in 1520 mm track gauge networks in case of use of the rolling stock built in accordance with the laws and standards of the EU.

5.2.2.2. Train audibility

5.2.2.2.1. General requirement

The OPE TSI requirements are aimed at setting the responsibility of a railway undertaking to equip trains with audible signalling devices. More detailed requirements are provided in the TSI for the locomotive and passenger rolling stock subsystem. Similar norms of the 1520 mm track gauge system normally regulate the equipping of particular types of rolling stock (locomotives, multiple-unit, etc.) with audible signalling devices or address a particular type of rolling stock (traction unit).

It can be assumed that the technical requirements regarding the frequency and level of sound in the 1520 mm track gauge system are within the permissible limits set forth in the TSI 'locomotives and passenger cars' subsystem.

5.2.2.2.2. Control

The OPE TSI requirements for the control of audible signalling devices are similar to the 1520 mm track gauge system requirements.

5.2.2.3. Vehicle identification

The OPE TSI requirements for the rolling stock identification are similar in their purpose to the 1520 mm track gauge system requirements. At the same time, rolling stock of the 1520 mm track gauge system normally is identified in accordance with the requirements independently developed in the context of OSJD and TsSJD activities (see 4.2.2.3.).

5.2.2.4. Safety of passengers and load

5.2.2.4.1. Safety of load

In the aggregate, the requirements of national and international laws in respect of the 1520 mm track gauge system are essentially almost the same as the general requirement set forth in the OPE TSI.

In some 1520 mm track gauge system networks, the rules of operation concerning the safety of freight carriage also set appropriate responsibilities on the infrastructure manager (or owner).

5.2.2.4.2. Safety of passengers

In the aggregate, the requirements of national and international laws in respect of the 1520 mm track gauge system are essentially almost the same as the general requirement set forth in the OPE TSI.

In some 1520 mm track gauge system networks, the rules of operation concerning the safety of passenger carriage also include the requirements for the infrastructure objects used in passenger carriage.

5.2.2.5. Train composition

It can be assumed that the national rules of operation applied in the 1520 mm track gauge system coincide with the most of the requirements in the OPE TSI.

In certain 1520 mm system networks, the length of the departure and arrival terminals is not regulated due to the transportation technologies used.

5.2.2.6. Train braking

5.2.2.6.1. Minimum requirements of the braking system

The rules of operation applied in the 1520 mm track gauge system contain minimum requirements for the braking system, which in some way differ from those in the OPE TSI.

It can be assumed that the minimum requirements for the braking system are harmonised within the 1520 mm system.

5.2.2.6.2. Braking performance

The OPE TSI requirements set forth general responsibilities of a railway undertaking and IM; the operational requirements of the 1520 mm track gauge system in respect of braking performance, being focused on its functional and technical aspects, do not provide a clear attribution of the responsibilities of the subjects.

5.2.2.7. Ensuring that the train is in running order

5.2.2.7.1. General requirement

The general requirements contained in the OPE TSI and 1520 mm track gauge systems standards are similar in their purpose and approach to regulation. The requirements applied in the 1520 mm system include better harmonised detailed restrictions and responsibilities in ensuring the technical condition of trains for running on a particular railway line.

5.2.2.7.2. Data required

In comparison with the OPE TSI requirements in respect of particular data used, the requirements in the 1520 mm system regulate a set of documents, the aggregate of which provides all data required for safe and efficient operation. The high level of harmonisation of the national requirements within the 1520 mm system is noted.

5.2.2.8. Requirements for Signal and lineside marker siting

The OPE TSI requirements and the 1520 mm gauge track system standards are essentially the same. The regulations used in the 1520 mm system also set forth particular technical requirements and values for positioning signals and indicators along the railway lines.

The high level of harmonisation of the national requirements within the 1520 mm system is noted.

In the 1520 mm gauge track system, the design of the driver's cab is a subject of standardisation (GOST).

5.2.2.9. Driver vigilance

The functional requirements provided in the OPE TSI to a great extent coincide with the regulations used in the 1520 mm gauge track system.

Appendix T - BRAKING PERFORMANCE

A. Role of the infrastructure manager

The functional requirements provided in the OPE TSI and the 1520 mm gauge track system standards are essentially the same. Nonetheless, due to the differences in the structure of the railway sector in the countries using the 1520 mm track gauge, the distribution of the responsibilities related to ensuring the braking performance between a railway company and IM may differ.

In comparison with the OPE TSI requirements, the 1520 mm gauge track system standards provide more detailed regulation of the procedures to be followed before releasing the train.

B. Role of the railway undertaking

The functional requirements of OPE TSI coincide with the requirements of the 1520 mm gauge track system standards. Nonetheless, due to the differences in the structure of the railway sector in the countries using the 1520 mm track gauge, the distribution of the responsibilities related to ensuring the braking performance between a railway company and IM may differ.

C. Braking performance not achieved

The content of the OPE TSI requirements and 1520 mm track gauge standards coincide in the part regarding the presence of restrictions in case of non-compliance with the operational standards applicable to a particular railway line.

6. LIST OF THE PARTICIPANTS OF THE CONTACT GROUP:

The following delegations have contributed to drafting of the document:

- Republic of Belarus
- Republic of Kazakhstan
- Republic of Latvia
- Republic of Lithuania
- Republic of Poland
- Russian Federation
- Slovak Republic
- Ukraine
- Organisation for Co-Operation Between Railways (OSJD)
- European Railway Agency (ERA)