

Making the railway system  
work better for society.

## Operations and traffic management system TSI

### Acceptable means of compliance on safety of load

|                  | <i>Drafted by</i>               | <i>Verified by</i>                                       | <i>Approved by</i> |
|------------------|---------------------------------|----------------------------------------------------------|--------------------|
| <i>Name</i>      | Roberto Mele<br>Beatrijs Claeys | Roberto Mele<br>Beatrijs Claeys<br>Emanuele Mastrodonato | Pio Guido          |
| <i>Position</i>  | Project Officers                | Project Officers                                         | Head of Department |
| <i>Date</i>      | 02/12/2024                      | 03/12/2024                                               | 03/12/2024         |
| <i>Signature</i> |                                 |                                                          |                    |

The present document is a non-legally binding opinion of the European Union Agency for Railways. The purpose of this document is to define ways of establishing compliance with the essential requirements of the relevant EU legislation. It is without prejudice to the decision-making processes foreseen by the applicable EU legislation. Furthermore, a binding interpretation of EU law is the sole competence of the Court of Justice of the European Union.

© European Union Agency for Railways 2024

Reproduction and reuse are authorised provided the source is acknowledged. Third parties' rights shall be respected.

#### Document History

| <i>Version</i> | <i>Date</i> | <i>Comments</i>                                                                                                                                                                                                                                       |
|----------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1              | 17/12/2021  | First publication                                                                                                                                                                                                                                     |
| 2              | 18/12/2023  | Revision following AMOC CR 1/2023 and CR 4/2023: point 2.2                                                                                                                                                                                            |
| 3              | 02/12/2024  | <ul style="list-style-type: none"> <li>Review of the AMOC after publication of TSI OPE 2023 version;</li> <li>Integration of Annex I "Loading and securing of semi-trailers on pocket-wagons" (v3.0) in the AMOC as a result of CR 2023-5.</li> </ul> |

## Contents

|                                                                                                                                                         |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Part 1 .....                                                                                                                                            | 3  |
| 1.1. Introduction .....                                                                                                                                 | 3  |
| 1.2. Legal basis .....                                                                                                                                  | 3  |
| 1.3. Concept .....                                                                                                                                      | 3  |
| 1.4. Responsibility .....                                                                                                                               | 5  |
| 1.5. List of acronyms used in this text.....                                                                                                            | 5  |
| Part 2 .....                                                                                                                                            | 7  |
| 2.1. Introduction to the relevant part of the TSI OPE .....                                                                                             | 7  |
| 2.2. Information on the scope of the AMOC.....                                                                                                          | 7  |
| 2.3. Links to existing legislation on risk assessment.....                                                                                              | 8  |
| 2.4. Safety requirements.....                                                                                                                           | 9  |
| 2.5. EN Standard 16860 .....                                                                                                                            | 9  |
| 2.6. UIC Loading Guidelines – Code of Practice for Loading and Securing of goods on railway wagons –<br>Volume 1 – Principles and Volume 2 – Goods..... | 10 |
| 2.7. Good practice on “Loading and securing of semi-trailers on pocket wagons” .....                                                                    | 10 |
| Annex I-Loading and securing of semi-trailers on pocket wagons .....                                                                                    | 11 |
| 1      DEFINITION OF SCOPE.....                                                                                                                         | 12 |
| 1.1 Preamble.....                                                                                                                                       | 12 |
| 1.2 Reference documents.....                                                                                                                            | 12 |
| 1.3 Definitions.....                                                                                                                                    | 13 |
| 2      LOADING AND SECURING PROCESS .....                                                                                                               | 14 |
| 2.1 Phase 1: Unloading .....                                                                                                                            | 14 |
| 2.2 Phase 2: After unloading .....                                                                                                                      | 14 |
| 2.3 Phase 3: Preparation for loading .....                                                                                                              | 15 |
| 2.4 Phase 4: Loading and securing of semi-trailer on pocket wagon.....                                                                                  | 16 |
| 2.5 Phase 5: Train departure .....                                                                                                                      | 17 |

# Part 1

## 1.1. Introduction

RUs and IMs shall manage their operations and the traffic among others in accordance with the TSI OPE.

According to Article 2(33) of the Directive on the interoperability of the rail system within the European Union (Directive (EU) 2016/797, as amended), Acceptable Means of Compliance (AMOCs) are “*non-binding opinions issued by the Agency to define ways of establishing compliance with the essential requirements*”. Therefore, AMOCs define good practices also by referring to available standards, which the actors of the railway sector can use in their safety management system as evidence that their operational procedures comply with high-level requirements set out in EU legislation (in this case the TSI OPE and the Common Safety Method on requirements for safety management systems – CSM on SMS (Commission delegated Regulation (EU) 2018/762).

## 1.2. Legal basis

The basis for the development of AMOCs is the TSI OPE, and more precisely section 4.4.3 which gives the Agency the possibility to define AMOCs by means of technical opinions<sup>1</sup>. This AMOC covers the topic “safety of load”.

The AMOC itself constitutes a non-legally binding opinion and its use is strictly voluntary.

## 1.3. Concept

As a general concept, the RUs and/or IMs are responsible to manage their specific operational and traffic management requirements in their SMS.

Article 4(1) (d) of the Railway Safety Directive (Directive (EU) 2016/798) states as follows:

*“With the aim of developing and improving railway safety, Member States, within the limits of their competences shall:*

*d) ensure that the responsibility for the safe operation of the Union rail system and the control of risks associated with it is laid upon the infrastructure managers and railway undertakings, each for its part of the system, obliging them to:*

- (i) implement necessary risk control measures as referred to in point (a) of Article 6(1), where appropriate in cooperation with each other;*
- (ii) apply Union and national rules;*
- (iii) establish safety management systems in accordance with this Directive”.*

Article 4(3) (a) and (b) of the Railway Safety Directive states as follows:

*“Railway undertakings and infrastructure managers shall:*

- a) implement the necessary risk control measures referred to in point (a) of Article 6(1), where appropriate in cooperation with each other and with other actors;*
- b) take account in their safety management systems of the risks associated with the activities of other actors and third parties;”*

---

<sup>1</sup> In accordance with Article 10 of Regulation (EU) 2016/796.  
120 Rue Marc Lefrancq | BP 20392 | FR-59307 Valenciennes Cedex  
Tel. +33 (0)327 09 65 00 | [era.europa.eu](http://era.europa.eu)

Any printed copy is uncontrolled. The version in force is available on Agency's intranet/extranet.

The same concept has been detailed in the CSM on SMS, ANNEX I point 3.1.1.1 (for RUs) and ANNEX II point 3.1.1.1 (for IMs):

According to these provisions:

*“The organisation shall:*

- a) identify and analyse all operational, organisational and technical risks relevant to the type, extent and area of operations carried out by the organisation. Such risks shall include those arising from human and organisational factors such as workload, job design, fatigue or suitability of procedures, and the activities of other interested parties (see Annex I, Section 1. Context of the organisation);*
- b) evaluate the risks referred to in point (a) by applying appropriate risk assessment methods;*
- c) develop and put in place safety measures, with identification of associated responsibilities (see Annex I, Section 2.3. Organisational roles, responsibilities, accountabilities and authorities);*
- d) develop a system to monitor the effectiveness of safety measures (see Annex I, Section 6.1. Monitoring);*
- e) recognise the need to collaborate with other interested parties (such as railway undertakings, infrastructure managers, manufacturer, maintenance supplier, entity in charge of maintenance, railway vehicle keeper, service provider and procurement entity), where appropriate, on shared risks and the putting in place of adequate safety measures;*
- f) communicate risks to staff and involved external parties (see Annex I, Section 4.4. Information and communication).”*

Therefore, it is the responsibility of RUs and/or IMs to identify, assess, eventually mitigate, monitor and review continually their own operational risks.

Based on that, an AMOC is a proposed way addressed to the RUs and/or IMs to demonstrate compliance with the TSI OPE as a mean to manage operational risks, taking into account that the provisions of the TSI OPE cover the entire operational and traffic management subsystem, whilst every single RU or IM manages only part(s) of the subsystem.

RUs and/or IMs should in compliance with the EU and national legal requirements define their operational context and consequently they should identify the risks occurring in their activities. Then, on a voluntary basis, they are free to assess and decide for themselves whether an AMOC is applicable to the part of the subsystem they manage. An AMOC could be entirely or partially applicable to the RU's and/or IM's operational context; for example, an RU could be involved in the freight transport but not in the transport of dangerous goods, whilst an AMOC could deal with both.

If an RU and/or IM evaluates an AMOC as applicable to the operational context and decides to use it, the RU and/or IM should assess the risks the AMOC could cover within the operational activities to be performed. For example, initially and according to the applicable legislation, loading risks should be identified and mitigated – then the relevant part of the good practice in the AMOCs should be cross referenced with the risk in the RU's and/or IM's risk assessment processes. This should regularly be kept up to date as part of the monitoring activities for their operations.

As AMOCs are non-binding opinions issued by the Agency to define ways of establishing compliance with the essential requirements, the RUs and/or IMs are free to decide whether to apply the AMOC/part of the AMOC, or not to apply the AMOC. In any case, the RUs and/or IMs are responsible for managing their operational risks.

AMOCs should be accepted throughout the EU by Member States and National Safety Authorities as examples of good practice.

According to TSI OPE point 4.4.2 and Appendix I, national rules<sup>2</sup> on the defined AMOC topics are generally not permitted. Therefore, if a Member State (MS) and/or an NSA or any other entity requires an RU and/or

---

<sup>2</sup> With the meaning of Article 8 of Directive (EU) 2016/798.  
120 Rue Marc Lefrancq | BP 20392 | FR-59307 Valenciennes Cedex  
Tel. +33 (0)327 09 65 00 | [era.europa.eu](http://era.europa.eu)

Any printed copy is uncontrolled. The version in force is available on Agency's intranet/extranet.

IM to comply with additional national requirements, then that MS or NSA or the other entity will have to provide, in line with Article 8 of Railway Safety Directive, evidence as to why their national requirements provide a higher degree of risk control than that set out in the AMOC. However, AMOCs are not national rules and if an RU and/or IM decides not to apply the AMOC and develop its own processes, it may do this and does not have to prove that its processes are as good or better than the good practice set out in the AMOC but it should ensure that its processes are adequate in controlling/ mitigating the risks it has identified.

As a result, the substantiated use of this AMOC should be taken into consideration by the Agency or the NSAs when an RU and/or IM applies respectively for a safety certificate or authorisation, when the certification body assesses compliance of the applicant with the requirements of the CSM on SMS and the TSI OPE.

The certification body will check the sufficiency of the RU's and/or IM's processes in controlling the risks and will check how the AMOC is used, if it is the case, by assessing the risk assessment process of the RU and/or IM to ensure that the AMOC good practice has been identified as a relevant control measure for the identified risk.

#### 1.4. Responsibility

Each RU and/or IM remains responsible for how the AMOC is used in their SMS. They should ensure that they can identify the risks for which the AMOC provides control. The AMOC should not just be included in the SMS without the RU and/or IM justifying its use through their risk management procedures and their document management system.

Each RU and/or IM should analyse which part of the AMOC is applicable to its operational context and determine, based on a risk analysis, how the AMOC or part of it should be integrated into its own SMS.

The Agency is not responsible for how the AMOC is used. It is particularly important that when the RU and/or IM use this AMOC, return of experience and/or information resulting from accidents and incidents investigations is considered to ensure that the content of the AMOC remains relevant and up to date.

The Agency should be informed of any return of experience which should be used to update the AMOC.

This AMOC is specifically for companies transporting freight, typically RUs, and how they take forward the issue of the safety of loading.

When applying this AMOC the RU should identify the hazards and the responsibilities in relation to the safety of loading. This information should be shared with the contractors, partners and suppliers when they have a role in the loading process. Arrangements with contractors, partners and suppliers are to be managed according to the CSM on SMS, Annex I – requirement 5.3.

There are other areas of responsibility in relation to:

- the design of the wagons;
- the maintenance of the wagons and exchange of information (ECMs);
- the planning of the route (communication between the RU and IM); and to
- the planning of the transport (communication between RU and client (loader/filler));

which may not be part of this AMOC but need to be managed by those having the related responsibilities, as part of their Safety Management System.

#### 1.5. List of acronyms used in this text

- AMOC: Acceptable Means of Compliance
- CSM: Common safety method
- ECM: Entity in Charge of Maintenance
- ERA: European Union Agency for Railways or the Agency
- EU: European Union
- FOP: Fundamental Operational Principles

- IM: Infrastructure Manager
- NSA: National Safety Authority
- RU: Railway Undertaking
- SMS: safety Management System
- TSI: Technical Specification for Interoperability
- TSI OPE: Technical Specification for interoperability relating to the operation and traffic management subsystem (Commission Implementing Regulation (EU) 2019/773)
- UIC: Union Internationale des Chemins de fer

For all other acronyms used in this text, see <https://www.era.europa.eu/content/era-railway-terminology-collection> or on the [ERA website](#) / LIBRARY / ERA Railway Terminology Collection.

## Part 2

### 2.1. Introduction to the relevant part of the TSI OPE

The TSI OPE point 4.2.2.4.1. *Safety of load* states that the RU shall make sure that freight vehicles are safely and securely loaded and remain so throughout the journey.

### 2.2. Information on the scope of the AMOC

This AMOC provides guidance for RUs on preventing the risks of unsafe load of a freight wagon (for train speeds up to and including 120 km/h) before and during the train journey.

Competence and responsibility for undertaking the tasks are not covered in this AMOC, they should be covered as part of the RU's SMS. These topics should also take into account any risks and control measures that are part of the RU's strategy on Human and organisational factors.

The technical inspections carried out prior to the train entering in service is a key part of the safety of load for freight however, this is covered by the AMOC on Checks and tests. Information from this AMOC may be used as an input into the Checks and tests process.

The exceptional transport requirements are not part of this AMOC and should be agreed on with the infrastructure manager.

The RU should consider in the process the following aspects:

#### Planning

Planning of the transportation of the load, includes the type of load and securing, the design and use of the correct wagon, route compatibility checks and if relevant, any contractual arrangements with other RUs who also transport the load.

#### EN<sup>3</sup> line category

The RU shall ensure that the payload does not exceed the limit in the load table<sup>4</sup> marked on the wagon corresponding to the EN line category(ies) of the intended route. In the case where more than one value is to be taken into account, the lowest limit should be respected unless the concerned IM(s) have authorized the movement.

#### Loading of the wagons and weight distribution

The RU should guarantee the appropriate distribution of load over all the axles and the wheels of the wagon when running in operation, as well as satisfying the obligation that the permissible payload, marked on a load table affixed to the wagon, is not exceeded<sup>5</sup>.

The payload limits of the load limit table are only valid if the permissible payload is evenly distributed over the length of the wagon and centrally loaded transversely.

Vehicles should be loaded to ensure the even distribution of the weight of the load over all the axles and the wheels (front-back and left-right equilibrium).

---

<sup>3</sup> EN 15528 Railway applications - Line categories for managing the interface between load limits of vehicles and infrastructure.

<sup>4</sup> If a wagon is not marked with a load table showing the permissible maximum payload for each Line Category, the payload limit or the limit table can be calculated according to EN 15528 section 6.

<sup>5</sup> The RUs shall ensure that vehicles are not loaded beyond the load limit value of the load table imposed by the lowest line category of the concerned sections of line.

Where, due to the size or shape of a particular load this is not possible, the RU should apply special conditions of travel to the load for the entire journey<sup>6</sup>, considering the relevant interface with the concerned IM(s).

In the case of displaced or unevenly distributed loading, the payload (determined from the load-table) should be reduced, so that the value of the permissible axle load is not exceeded by any axle. The reduced payload should comply with the requirements in the UIC Loading Guidelines Volume 1 Principles for distribution of the load for longitudinally and laterally displaced loading and the maximum offset for the centre of gravity of the load across the wagon.

### Load securing

The RUs should ensure by their own SMS, that freight vehicles are safely and securely loaded and remain so during the journey. Therefore, they should implement the appropriate risk control measures, and when necessary, cooperate to this end with other involved actors. Without prejudice to the responsibilities defined for the Entity in Charge of Maintenance, this should include the monitoring of risks arising from the use of load securing equipment and sharing the relevant information with other involved actors to ensure that the load securing equipment is and remains in a safe state and is functioning properly.

### Profile of the vehicle gauge

The vehicle-loading gauge permitted by the infrastructure manager should be within the maximum permissible gauge for routes during the whole train journey.

### Load covering

RUs should ensure that any materials used to provide a cover for a load on a vehicle are safely attached either to the vehicle or to the load. These coverings should be made of materials that are suitable to cover the load in question taking into account the forces that are liable to be experienced during the journey.

In case of a load already equipped with a covering, such as a semi-trailer, the RU should identify the hazards and the responsibilities in relation to the covering. This information should be shared with the contractors, partners and suppliers when they have a role in the loading process.

### Dangerous goods

In case of the transport of dangerous goods the appropriate legislation (the RID, Directive 2008/68/EC and the relevant national law) applies. When transporting dangerous goods, the applicable legal framework applies.

## 2.3. Links to existing legislation on risk assessment

### Fundamental operational principle

The fundamental operational principle most relevant to the activity of safety of loading is FOP 3:

***“Before a train begins or continues its journey, it shall be ensured that passengers, staff and goods are carried safely.”***

This principle concerns the train and its readiness for movement. It includes, as examples: the braking capacity of the train, the speed that the train is permitted to travel, the formation and coupling of the train, identification, loading and securing of freight, the provision of adequate information to train preparation and operational staff. The aim is to prevent collisions, derailments due to a number of risks.

<sup>6</sup> Further information can be found in the Guide for the application of TSI OPE, EN 15528 and the UIC Loading Guidelines



## **Risk assessment**

The Safety management system operational process shall cover how the safety of the load will be ensured.

**Requirement 5.1.3 of Regulation 2018/762 states:**

*“To control risks where relevant for the safety of operational activities (see 3.1.1. Risk assessment), at least the following shall be taken into account:*

- (c) **preparation of trains or vehicles before movement**, including pre-departure checks and train composition;*
- (d) **running trains or movement of vehicles in the different operating conditions (normal, degraded and emergency);**”*

Information from the output of the risk assessment should set out how, when preparing the train, the safety of the load is ensured before it commences its operation and secondly, that it will continue to be safe throughout the journey. It should include information for staff involved in train preparation or other staff including the driver. This information should form the basis of SMS processes, procedures and instructions for staff.

### **2.4. Safety requirements**

- The RU should make sure that vehicles are safely and securely loaded and remain so throughout the journey considering foreseeable operational scenarios (this includes meteorological conditions, etc.). RUs should consider all relevant operational data to identify their own operational scenarios, including data resulting from acquired experience;
- All vehicles that are part of a train including their load — should be compatible with all the requirements applicable on the routes over which the train is planned to operate. This includes respecting the following:
  - the mass limit permitted by the IM for the respective lines as part of the route where the train is intended to run;
  - the mass limit permitted by each vehicle of the train;
  - the vehicle-loading gauge permitted by the IM for the respective lines as part of the route where the train is intended to run;
- All vehicles that are part of a train including their load should be technically operational taking into account the characteristics of the wagon, the load and the infrastructure and remain so throughout the journey;
- The RU should perform the necessary actions, also by the means of contractual arrangements with third parties, in order to ensure that each vehicle and its load (when present), is free from visual damages, that any non-conformity is timely reported to the ECM. In particular, for pocket wagons and their semi-trailers, this includes the proper working of the locking system in all the following operational phases:
  - At train arrival, before removal of the semi-trailer from the pocket wagon;
  - At train arrival, after removing the semi-trailer from the pocket wagon;
  - Before placing the semi-trailer onto the pocket wagon;
  - During and directly after the placement of the semi-trailer onto the pocket wagon;
  - Before train departure, when the pocket wagon is loaded with semi-trailers and secured.

### **2.5. EN Standard 16860**

EN 16860 “Railway applications - Requirements and general principles for securing payload in rail freight transport” describes the principles of cargo securing.

## 2.6. UIC Loading Guidelines – Code of Practice for Loading and Securing of goods on railway wagons – Volume 1 – Principles and Volume 2 – Goods

The UIC Guidelines on the safety of load provides information that can help RUs in managing and controlling the risks by using the guidance.

Whilst this AMOC provides a presumption of conformity, RUs are always required under the applicable legislation to provide evidence in their own SMSs of the hazards that they have identified and how the risks are controlled.

## 2.7. Good practice on “Loading and securing of semi-trailers on pocket wagons”

Article 4 (4) of the Railway Safety Directive states as follows:

*“Without prejudice to the responsibilities of railway undertakings and infrastructure managers referred to in paragraph 3, entities in charge of maintenance and all other actors having a potential impact on the safe operation of the Union rail system, including manufacturers, maintenance suppliers, keepers, service providers, contracting entities, carriers, consignors, consignees, loaders, unloaders, fillers and unfillers, shall:*

- a) implement the necessary risk control measures, where appropriate in cooperation with other actors;*
- b) ensure that subsystems, accessories, equipment and services supplied by them comply with specified requirements and conditions for use so that they can be safely operated by the railway undertaking and/or the infrastructure manager concerned.”*

Therefore, the good practice specified in Annex I provides information that will help the RU in making the necessary arrangements with all parties involved in the transport process. This should include arrangements ensuring:

- the compatibility between kingpin and hitch;
- the locking system is maintained and working properly in order to perform its function;
- there is enough vertical locking force taking into account foreseeable operational scenarios relevant for the RUs operation (e.g. wind gusts, cross wind, etc.).

In the case of transport of semi-trailers on pocket wagons, often many actors are involved, while the responsibility for safe loading and securing of semi-trailers remains with railway undertakings involved. This Annex I on the safe loading and securing of semi-trailers on pocket wagons recommends a loading and securing process to RUs. In case further actors are involved, it helps RUs to conclude contractual agreements for the outsourced steps of the process and the respective monitoring activities.

Therefore, in the Annex, the term “the RU shall ensure” means either ...

- “the RU shall themselves carry out”
- “the RU shall ensure by contractual arrangements followed by monitoring as specified in the Common Safety Methods for Monitoring that another actor carries out”

... the respective actions and checks.

Making the railway system  
work better for society.

## **Annex I**

# **Loading and securing of semi-trailers on pocket wagons**

# 1 DEFINITION OF SCOPE

## 1.1 Preamble

The present Annex I has been drafted with the input of the experts of the subgroup 1 “AMOC” of the JNS Normal Procedure “Crosswind”.

The present Annex I, on the loading and securing of semi-trailers on pocket wagons describes the loading and securing process for semi-trailers that are codified in accordance with IRS 50596-5 and secured by hitches.

In other scenarios where codified semi-trailers are loaded and secured on freight wagons, the involved railway undertaking shall ensure and demonstrate through the application of their risk management process(es) that the loading and securing process achieves at least the same level of safety.

In other scenarios where semi-trailers, that are **not** codified in accordance with IRS 50596-5, are loaded and secured on freight wagons, the involved railway undertaking shall ensure and demonstrate through the application of their risk management process(es) that the loading and securing process achieves at least the same level of safety.

## 1.2 Reference documents

The following table only applies to this document:

| Acronym             | Name                                                                                      | Reference                                                                                                                                                                                                                                                      |
|---------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RSD                 | Railway Safety Directive                                                                  | Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety                                                                                                                                                         |
| OPE TSI             | Technical specification for interoperability relating to operation and traffic management | Commission Implementing Regulation (EU) 2019/773 of 16 May 2019 on the technical specification for interoperability relating to the operation and traffic management subsystem of the rail system within the European Union and repealing Decision 2012/757/EU |
| AMOC Safety of Load | Acceptable means of compliance on safety of load                                          | Version 2 of 18/12/2023 : Revision following AMOC CR 1/2023 and CR 4/2023: point 2.2                                                                                                                                                                           |
| CSM REA             | Common Safety Methods for Risk Evaluation and Assessment                                  | Commission Implementing Regulation (EU) No 402/2013 of 30 April 2013 on the common safety method for risk evaluation and assessment, amended by Regulation 2015/1136                                                                                           |
| CSM MON             | Common Safety Methods for Monitoring                                                      | Commission Regulation (EU) No 1078/2012                                                                                                                                                                                                                        |
| WAG TSI             | Technical specification for interoperability relating to freight wagons                   | Commission Regulation (EU) No 321/2013 of 13 March 2013 concerning the technical specification for interoperability relating to the subsystem rolling stock — freight wagons of the rail system in the European Union and repealing Decision 2006/861/EC       |
| IRS 50596-5         | International Railway Solution                                                            | Transport of road vehicles on wagons – Technical Organisation – Conveyance of semi-trailers with P coding or N coding on recess wagons, 3 <sup>rd</sup> edition, 2020-04                                                                                       |

## 1.3 Definitions

The following definitions are to be considered when reading this annex:

**Combined Transport:** intermodal freight transport of intermodal loading units (e.g. swap bodies, semi-trailers, containers, roller units) that includes rail.

**Combined Transport Train:** as defined in the TSI OPE, Appendix J, a combined transport train is a freight train composed completely or partly of freight wagons loaded with intermodal loading unit(s) (e.g. swap bodies, semi-trailers, containers, roller units).

**Pocket wagon:** Freight wagon designed to transport semi-trailers or containers.

**Semi-trailer:** Road vehicle which can be transported by rail, usually on fixed-recess wagons (pocket wagons). In this document, the semi-trailer is meant to be suitable for handling by crane. It is handled by gantry cranes or mobile transshipment equipment by the grapples using grabs and lifted and loaded on the pocket wagons (vertical transshipment). In this document, the semi-trailers considered are codified and suitable for wagons with a compatibility code P.

**Hitch:** device to hold the semitrailer in a safe position by withstanding the defined forces in all directions in accordance with the designed operating state.

**Hitch manual:** document describing how to operate the hitch.

**Kingpin locking indicator:** technical (e.g. mechanical or electronic) means that reliably indicates if the kingpin of the semi-trailer is locked against upwards directed vertical forces.

**Kingpin in hitch funnel indicator:** technical (e.g. mechanical or electronic) means that reliably indicates if the kingpin of the semi-trailer is correctly positioned in the hitch funnel.

For all other terms and acronyms used in this text, see <https://www.era.europa.eu/content/era-railway-terminology-collection> or on the [ERA website](#) / LIBRARY / ERA Railway Terminology Collection.

## 2 LOADING AND SECURING PROCESS

The loading and securing process is divided in five consecutive phases, starting at the arrival of a pocket wagon in a terminal until the loaded train departs. For each phase, the different steps (actions and checks) are listed and identifiable by the combination of phase number and running letter, but the order of these steps may be changed.

### 2.1 Phase 1: Unloading

(at the arrival, before removal of the semi-trailer from the pocket wagon)

The RUs shall ensure that the following visual checks are carried out:

- 1a) Check if the wagon is free of labels to be taken out of service.
- 1b) Check if the semi-trailer is in the right position, including that the kingpin is in the hitch funnel, in accordance with the hitch manual;
- 1c) Check if the kingpin locking indication/indicator, if applicable, is indicating “locked” (mechanical or electronic indicator), in accordance with the hitch manual.

If checks 1a) to 1c) return all a positive result, the RU can proceed to action 1d)<sup>7</sup>:

- 1d) Unlock the kingpin.

If action 1d) has been performed, the RU shall ensure that the following visual check is carried out:

- 1e) Check if the locking system remains unlocked, in accordance with the hitch manual;
- 1f) Check if the locking indication/indicator, if applicable, (mechanical or electronic), indicates “unlocked”.

If the checks 1e) and 1f) return a positive result, the RU can perform the following action and proceed to Phase 2:

- 1g) Remove the semi-trailer from the pocket wagon.

The RU shall ensure, if any of the checks 1a) to 1c) or checks 1e) or 1f) returns a negative result, that ...

- ... the hitch concerned is not used for the reloading with semi-trailers;
- ... the wagon is labelled accordingly;
- ... the negative results are documented and communicated to relevant parties (e.g. terminal, RU, ECM and keeper);
- ... the ECM decides on the further steps.

### 2.2 Phase 2: After unloading

(at arrival, after removing the semi-trailer from the pocket wagon)

The RUs shall ensure that the following visual checks are carried out for each hitch:

- 2a) Check if the maintenance interval of the hitch is not expired (based on the marking on the pocket wagon, respectively by contacting the RU or ECM);
- 2b) Check if the hitch is free of damages, in accordance with the hitch manual;

---

<sup>7</sup> Note that when only check 1b) returns a negative result, this can be considered as a case of ‘wrong loading’. In this case, the RU can choose to ensure that only the negative results are documented and communicated to the relevant parties (the RU that executed the transport to the terminal, ECM, and keeper) and proceed afterwards to action 1d).

- 2c) Check if the locking system is functioning correctly, in accordance with the hitch manual, and check if the kingpin locking indication/indicator, if applicable, is in working order (mechanical or electronic indicator), and activated (electronic indicator);

If checks 2a) to 2c) are all positive, the RU can proceed to Phase 3.

The RU shall ensure, if any of the checks 2a) to 2c) returns a negative result, that ...

- ... the hitch concerned is not used for the reloading with semi-trailers;
- ... the wagon is labelled accordingly;
- ... the negative results are documented and communicated to relevant parties (e.g. terminal, RU, ECM and keeper);
- ... the ECM decides on the further steps.

## 2.3 Phase 3: Preparation for loading

(before placing the semi-trailer onto the pocket wagon)

The RU shall ensure that the following actions are performed:

Pocket wagon:

- 3a) Fold and secure all intermediate supports and spigots (at both lateral sides);
- 3b) Position, if necessary, the hitch at the right height (as indicated on the codification plate of the semi-trailer) and secure the tools in their holders;
- 3c) Position, if applicable, the wheel wedges (as indicated on the codification plate of the semi-trailer).

Semi-trailer:

- 3d) Fold up and secure the lateral and back underrun protection (if required by the marking on the semi-trailer);
- 3e) Unbrake the trailer;
- 3f) Release the air of the air suspension, if present (presence air suspension indicated by pictograph).

The RU shall ensure that the following checks are carried out:

- 3g) Check if the wagon is not labelled to be taken out of service.
- 3h) Check if the maintenance interval of the hitch is not expired (based on the marking on the pocket wagon, respectively by contacting the RU or ECM);
- 3i) Check if the hitch is free of damages, in accordance with the hitch manual;
- 3j) Check if the tools for the height- and longitudinal adjustment are in their correct position, intact and not missing (based on the hitch manual).
- 3k) Check if the locking system is functioning correctly, in accordance with the hitch manual, and checks if the kingpin locking indication/indicator, if applicable, is in working order (mechanical or electronic indicator), and activated (electronic indicator);
- 3l) Check if the hitch height is compatible with the semi-trailer (based on the physical markings on the pocket wagon and the codification plate on the semi-trailer);
- 3m) Check that there are no damages preventing the semi-trailer to be transported (e.g. if the tarpaulin, if present, is entirely tightened by the fixing mechanism).

If checks 3g) to 3m) are all positive, the RU can proceed to Phase 4.

The RU shall ensure, if any of the actions 3a) to 3c) is not possible and/or any of the checks 3g) to 3m)

returns a negative result, that ...

- ... the hitch concerned is not used for the reloading with semi-trailers;
- ... the wagon is labelled accordingly;
- ... the negative results are documented and communicated to relevant parties (e.g. terminal, RU, ECM and keeper);
- ... the ECM decides on the further steps.

The RU shall ensure, if any of the operations 3d) to 3f) is not possible and/or if the check 3m) returns a negative result, that ...

- ... the semi-trailer is not loaded on the pocket wagon;
- ... the negative results are documented and communicated to relevant parties (e.g. terminal and RU);
- ... the terminal decides on the further steps.

## **2.4 Phase 4: Loading and securing of semi-trailer on pocket wagon**

(During and directly after the placement of the semi-trailer onto the pocket wagon)

The RU shall ensure, that the following action is performed:

- 4a) Lift the semi-trailer and crank up the support legs.

If action 4a) can be performed, the RU can proceed to action 4b). The RU shall ensure, if action 4a) is not possible, that ...

- ... the semi-trailer is not loaded on the pocket wagon;
- ... the negative results are communicated to relevant parties (e.g. terminal and RU);
- ... the terminal decides on the further steps.

The RU shall ensure that the following action is performed:

- 4b) Correctly place the semi-trailer onto the pocket wagon, including correctly inserting the kingpin in the hitch funnel and its locking.

Note: In case of the transfer by crane or reach stacker, the RU shall ensure that the action 4a) is performed by one machine operator with the support of either a dedicated ground staff member, standing next to the pocket wagon or with the support of a technical system(s) (e.g. cameras, sensors) that can clearly be recognized by the machine operator and that delivers at least the same level of safety.

The RU shall ensure that the ground staff member or the machine operator supported by a technical system(s) carries out the following checks:

- 4c) Check if the kingpin is correctly placed into the hitch funnel;
- 4d) Check if the hitch and the wheels are the only connecting points between the pocket wagon and the semi-trailers;
- 4e) Check if the semi-trailer is not tilted in transversal direction and if the loading tolerances are respected;
- 4f) Check if the wheel wedges (if present) are correctly positioned;
- 4g) Check if the semi-trailer is unbraked while placing the semi-trailer onto the pocket wagon ;
- 4h) Check if the air of the air suspension has been released (for semi-trailers equipped with air suspension)



- 4i) Check if the lever of the brake system is in the right position in accordance with its rules (visible markings on the unit);
- 4j) Check if the kingpin locking indication/indicator is indicating “locked” (mechanical or electronic indicator), in accordance with the hitch manual;
- 4k) Check if the hitch longitudinal position is compatible with the semi-trailer (based on the physical position of the kingpin).

If checks 4c) to 4j) are all positive, the RU can proceed to Phase 5.

The RU shall ensure, if any of the checks 4c) and 4j) returns a negative result, that ...

- ...the semi-trailer is moved back to the ground;
- ... the negative results are documented and communicated to relevant parties (e.g. terminal and RU);
- ... the terminal decides on the further steps.

## 2.5 Phase 5: Train departure

(Before train departure when the pocket wagon is loaded with semi-trailers and secured)

The RU shall ensure, that the following checks are carried out:

- 5a) Check if the checks performed during the previous phase of the loading procedure (phase 4) returned no negative results;
- 5b) Check if the loaded semi-trailer is compatible with the pocket wagon it is loaded on (based on the physical markings on both the pocket wagon and the semi-trailer);
- 5c) Check if the hitch is at the right height (as indicated on the codification plate of the semi-trailer);
- 5d) Check if the hitch is in the right longitudinal position (as indicated on the codification plate of the semi-trailer);
- 5e) Check if the hitch and the wheels are the only connecting points between the pocket wagon and the semi-trailers;
- 5f) Check if the kingpin is correctly placed in the hitch funnel, in accordance with the hitch manual;
- 5g) Check if the kingpin locking indication/indicator, if applicable, is indicating “locked” (mechanical or electronic indicator), in accordance with the hitch manual;
- 5h) Check if the moving parts (e.g. spigots) are properly secured;
- 5i) Check if the wheel wedges (if present) are correctly placed at the wheels of the semi-trailer (as indicated on the codification plate of the semi-trailer);
- 5j) Check that there are no damages preventing the semi-trailer to be transported (e.g. if the tarpaulin, if present, is entirely tightened by the fixing mechanism);
- 5k) Check if the crash element (if present) is not isolated (i.e. by checking the lever or cock position);
- 5l) Check if the trailer is braked or unbraked, in accordance with its rules.

If checks 5a) to 5l) are all positive, the RU can release the train for departure as far as the loading and securing of semi-trailers on pocket wagons is concerned.

The RU shall ensure, if any of the checks 5a) to 5l) returns a negative result, that ...

- ... the semi-trailer is not transported on the pocket wagon concerned and is unloaded;

- ... the negative results are documented and communicated to relevant parties (e.g. terminals, ECMs and keepers);
- ... the RU decides on the next steps.