SLOVENSKI STANDARD
SIST-TP CEN/TR 17498:2020

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Železniške naprave - Infrastruktura - Tirna vozila za vzdrževanje železniških tirov in nadzorna vozila ter pripadajoča oprema - Pojasnila o tipu in skladnosti vozila, vključno s prevzemnimi procesi

Railway applications - Infrastructure - Rail mounted railway maintenance and inspection machines and associated equipment - Explanation of machine type and compliance, including acceptance processes

Bahnanwendungen - Infrastruktur - Schienengebundene Instandhaltungs- und Inspektionsmaschinen - Erläuterung des Maschinentyps und der Konformität, einschließlich der Zulassungsverfahren

Applications ferroviaires - Infrastructure - Machines ferroviaires de maintenance et d'inspection - Explication du type de machine et de leur conformité, y compris les processus d'autorisation

Ta slovenski standard je istoveten z: **CEN/TR 17498:2020**

ICS:

45.120	Oprema za gradnjo in vzdrževanje železnic oz. žičnic	Equipment for railway/cableway construction and maintenance

SIST-TP CEN/TR 17498:2020 **en,fr,de**

TECHNICAL REPORT

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English Version

Railway applications - Infrastructure - Rail mounted railway maintenance and inspection machines and associated equipment - Explanation of machine type and compliance, including acceptance processes

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This Technical Report was approved by CEN on 15 June 2020. It has been drawn up by the Technical Committee CEN/TC 256.

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European foreword

This document (CEN/TR 17498:2020) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

Introduction

This document is intended as an explanatory guide to machines that are fitted with rail wheels. It is written to clarify the complex variety of machines that are used for the construction, maintenance, inspection, repair and renewal of railway infrastructure. It is intended to be used as an introduction to, and application guide for, the suite of standards for rail mounted maintenance and infrastructure inspection machines. It is an aid to clarify which standard to use for a particular machine. This document does not introduce any new requirements.

Machines are designed and intended for a specific working purpose and their ability to operate as a railway vehicle is considered as an additional function.

There are various standards which apply to the machines in scope of this document:

— EN 13977;

— EN 14033 series;

— EN 15746 series;

— EN 15955.

1 Scope

This document covers machines fitted with rail wheels that are used for the construction, maintenance, inspection, repair and renewal of railway infrastructure. It is also applicable to machines used for emergency rescue purposes on railway infrastructure.

NOTE Inspection of the infrastructure includes measurement.

This document explains the different modes of operation, classification of machines and which standard covers the technical requirements. There is also guidance on the compliance process provided to explain the design review process of different legislation, how these can be combined into one process (to avoid duplication) and achieve a common understanding of what the design review is achieving.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100)*

EN 13977, *Railway applications — Track — Safety requirements for portable machines and trolleys for construction and maintenance*

EN 14033-1:2017, *Railway applications — Track — Railbound construction and maintenance machines — Part 1: Technical requirements for running*

EN 14033-2, *Railway applications — Track — Railbound construction and maintenance machines — Part 2: Technical requirements for travelling and working*

EN 14033-3, *Railway applications — Track — Railbound construction and maintenance machines — Part 3: General safety requirements*

EN 14033-4, *Railway applications — Track — Railbound construction and maintenance machines — Part 4: Technical requirements for running, travelling and working on urban rail*

EN 15746-1:—[1], *Railway applications — Track — Road-rail machines and associated equipment — Part 1: Technical requirements for travelling and working*

EN 15746-2:—[2], *Railway applications — Track — Road-rail machines and associated equipment — Part 2: General safety requirements*

EN 15746-3:—[3], *Railway applications — Track — Road-rail machines and associated equipment — Part 3: Technical requirements for running*

[1] Under preparation. Stage at the time of publication: FprEN 15746-1.

[2] Under preparation. Stage at the time of publication: FprEN 15746-2.

[3] Under preparation. Stage at the time of publication: FprEN 15746-3.

EN 15746-4:—[4], *Railway applications — Track — Road-rail machines and associated equipment — Part 4: Technical requirements for running, travelling and working on urban rail*

EN 15955:—[5], *Railway applications — Infrastructure — Demountable machines, trailers and associated equipment — General safety and technical requirements for travelling and working*

EN 16704-1, *Railway applications — Track — Safety protection on the track during work — Part 1: Railway risks and common principles for protection of fixed and mobile work sites*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/ui

— IEC Electropedia: available at http://www.electropedia.org/

3.1
rail mounted railway maintenance and infrastructure inspection machine
generic term for the collection of all machines which have wheels suitable for running on rails and are intended for the construction, maintenance, inspection, repair and renewal of railway infrastructure. It is also applicable to machines used for emergency rescue purposes on railway infrastructure

3.2
railbound construction and maintenance machine
collective term for on-track machines and infrastructure inspection machines

3.3
on-track machine
OTM
machine specially designed for construction and maintenance of the track and infrastructure, running on its own rail wheels and designed and intended to operate signalling systems

Note 1 to entry: Signalling systems are defined in CCS TSI Index 77 and/or defined by the urban rail manager.

3.4
infrastructure inspection machine
self-propelled or a hauled machine used to monitor the condition of the infrastructure, running on its own rail wheels, and designed and intended to operate signalling systems

Note 1 to entry: These machines are also referred to in the Loc&Pas TSI as infrastructure inspection vehicles.

Note 2 to entry: These machines are also referred to in EN 13848-2 as Track Recording Vehicles.

[4] Under preparation. Stage at the time of publication: FprEN 15746-4.

[5] Under preparation. Stage at the time of publication: prEN 15955.

3.5
road-rail machine
self-propelled machine that can move on rails and ground

Note 1 to entry: It is normally a road vehicle adapted for moving on rail also, but can be a specially designed rail vehicle for moving on the ground also.

Note 2 to entry: It does not imply that the machine is suitable for use on the public road.

Note 3 to entry: Road-rail machines were historically referred to as road-rail vehicles (RRVs). The term no longer applies, but the abbreviation RRV is commonly still used for a road-rail machine.

3.6
demountable machine
self-propelled machine that can travel and work on rail only and is not intended to operate track signalling and control systems

Note 1 to entry: Such a machine is designed to get on and off track by its own means or with other lifting equipment. In the case of demounting by its own means these are not intended for general movement on the ground.

Note 2 to entry: Such a machine is permitted to work on the railway only under special operating conditions granted by the Infrastructure Manager and travel under special conditions granted by the authorized body and/or the Infrastructure Manager.

3.7
trailer
non-self-propelled machine that can be towed on rail wheels and is not intended to operate track signalling and control systems

Note 1 to entry: Trailers are not designed to have a running mode.

3.8
road-rail trailer
trailer that can be towed on rails and ground

3.9
trolley
equipment moved along track on wheels or runners by human force only, which is designed so that it can be manually placed on or off the track by one or more people; uses include transport of materials, tools and/or various equipment

3.10
portable machine
machine designed or adapted for use on the track which is propelled by manual effort (i.e. no powered drive system), but has a lifting capability and/or incorporates a power system (e.g. internal combustion, electro-mechanical, hydraulic, pneumatic energy sources or from an external supply) for specific work applications

Note 1 to entry: This type of equipment is covered under the definition of 'Machinery' in the Machinery Directive as per Article 2(a)

3.11
associated equipment
device which, after the putting into service of the machine, is connected to that machine

Note 1 to entry: Specific examples of associated equipment are described in 5.1.6 and 5.1.7, but anything plugged into the host machine is considered to be associated.

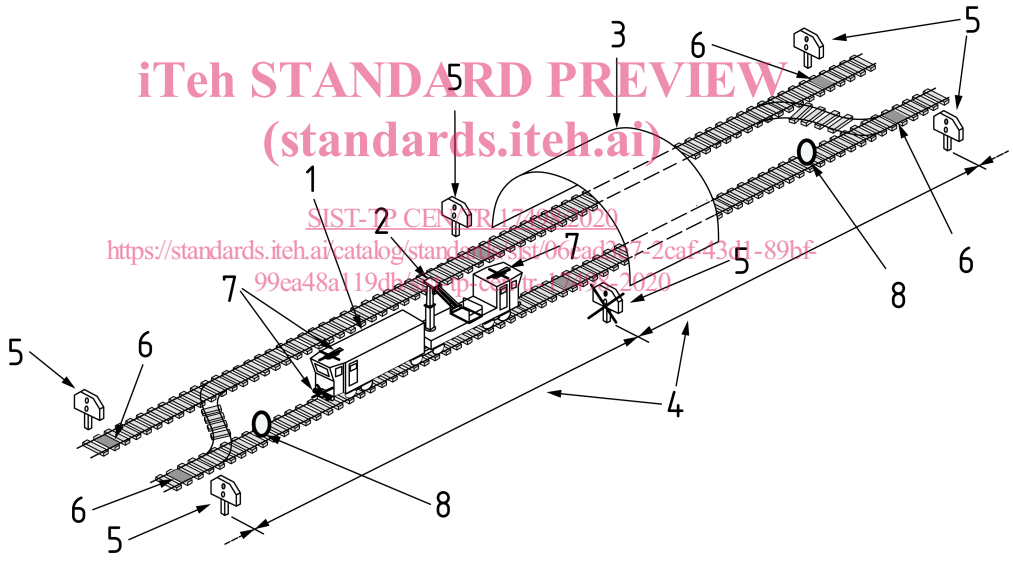
4 Modes of operation

4.1 Introduction

Before explaining the various generic types of machines it is useful for the reader to understand the three basic operating modes of a machine on the railway as described in this report, as they have a significant effect on the type of machine and its compliance process.

4.2 Working mode

When in working mode the machine is protected from interference with all traffic (for example, passenger and freight trains, locomotives) by operational controls applied to the rules of the Infrastructure Manager. It is possible, but not always the case, that signalling systems will not be operational. Safety protection during work is described in more detail in EN 16704-1.



Key

1	machine	5	signal (with a cross means may be isolated)
2	moveable component outside machine gauge	6	track mounted signalling equipment
3	limiting infrastructure gauge (tunnel, etc.)	7	vehicle mounted signalling equipment (off)
4	signalling block sections	8	train stop for passenger and freight trains

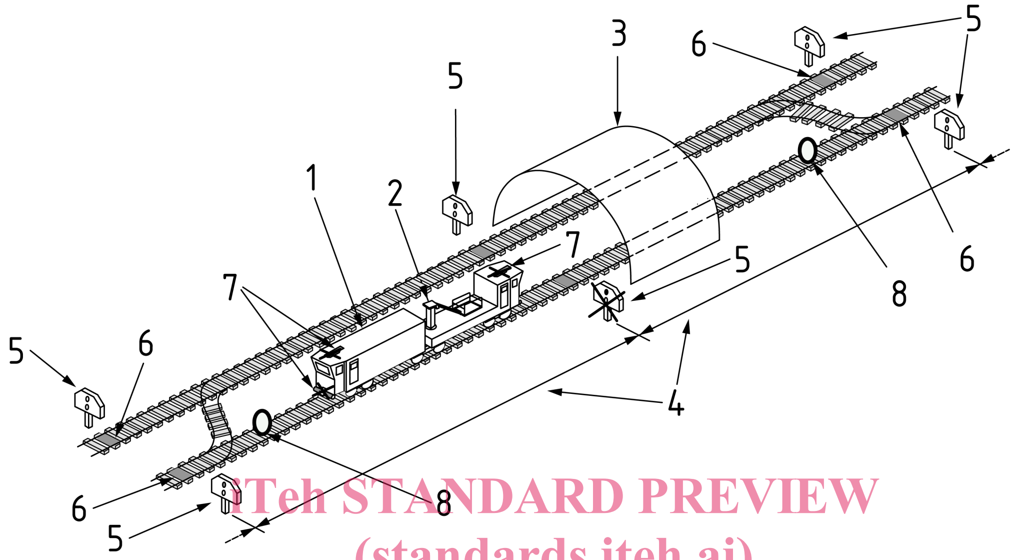
Figure 1 — Schematic representation of working mode

In working mode a machine is permitted to exceed the vehicle gauge of the track it is on. Planning will be undertaken to avoid damage to the infrastructure by the machine which may need devices to limit its movement and/or other operational controls. Another area of planning is whether passenger and freight trains will be allowed to pass the work site on the adjacent track.

When self-propelled a machine will be operated by a driver/operator who has to fulfil the Infrastructure Manager's requirements for the line it is on.

4.3 Travelling mode

Where the machine needs to move from one worksite to another worksite, but only on the sections of track out of service by operational controls applied to the rules of the Infrastructure Manager, then the machine needs to be within gauge for the line but does not necessarily need to react with signals. This is called travelling mode. Where the machine is self-propelled it will be operated by a driver/operator who has to fulfil the Infrastructure Manager's requirements and the driver/operator needs to be able to see far enough ahead of the machine to enable the machine to stop within the sighting distance.



Key

1 machine
2 moveable component within machine gauge
3 limiting infrastructure gauge (tunnel, etc.)
4 signalling block sections
5 signal (with a cross means may be isolated)
6 track mounted signalling equipment
7 vehicle mounted signalling equipment (off)
8 train stop for passenger and freight trains

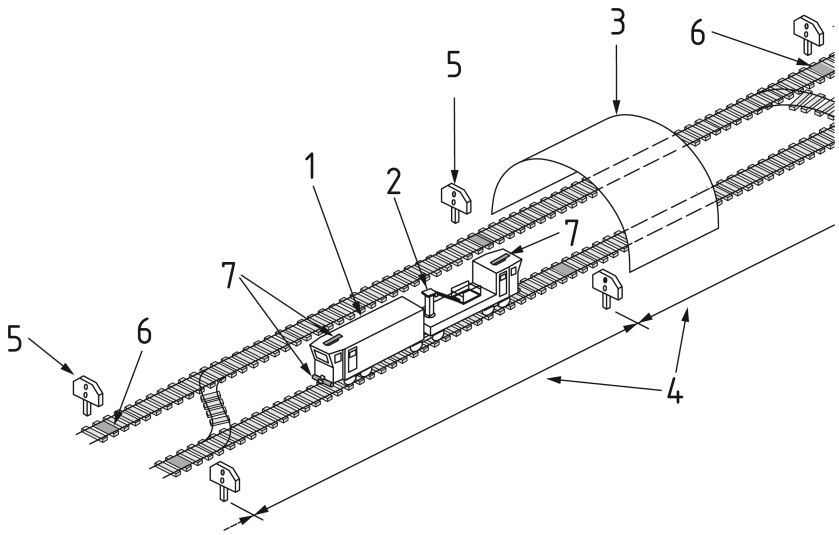
Figure 2 — Schematic representation of travelling mode

4.4 Running mode

This is where the machine is operated under the same rules as a comparable standard railway vehicle.

Not every machine has a running mode. A machine in running mode will be expected to behave and react to the railway signalling and control systems on the track it is running on in the same way that a passenger or freight train would be scheduled for operational service.

In running mode a machine can either be self-propelled or towed. When self-propelled it will be driven by a train driver who has to comply with the signalling systems on the line it is running on, e.g. the driver has to be able to see and react to the signals, machine is fitted with in cab signalling, etc. When a machine is not self-propelled in running mode it will be towed and needs to behave with the signalling system in the same way that is expected for a railway wagon.



Key

1	machine	5	signal
2	moveable component locked in machine gauge	6	track mounted signalling equipment
3	limiting infrastructure gauge (tunnel, etc.)	7	vehicle mounted signalling equipment (active)
4	signalling block sections		

Figure 3 — Schematic representation of running mode

In addition to signalling, machines also need to comply with other infrastructure based control and detection systems. When in running mode, the machine has to be within, and remain within, the gauge of the line it is running on to avoid collision with infrastructure or trains/machines on adjacent tracks.

Machines that have a running mode will have similar features to conventional rolling stock (e.g. locomotives, wagons or multiple units). When a machine is in running mode it will have to be compatible with the interfaces of the railway it is running on. It should always be considered there will be differences between machines and railway vehicles, which are discussed in this technical report. The primary purpose of a machine is the working processes which are different from those for vehicles for the transportation of passengers and freight.

5 Generic types of machine

5.1 Introduction

5.1.1 Classification - general

The range of machines that are used for railway infrastructure work is extremely varied. Some examples are shown in Annex A, but these are a small selection and new models are continually being created. However, there are a few basic principles that can be used to decide what generic type of machine any particular machine falls into. Principally there are four generic types of machine, and each machine will ultimately be one of these:

a) Railbound machines;

b) Road-rail machines;

c) Demountable machines and trailers (including road rail trailers);

d) Trolleys and portable machines.