



SLOVENSKI STANDARD
SIST EN 13232-7:2023

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**Železniške naprave - Zgornji ustroj proge - Kretnice in križišča za Vignolove tirnice
- 7. del: Kretniška srca s premičnimi deli**

Railway applications - Track - Switches and crossings for Vignole rails - Part 7:
Crossings with moveable parts

Bahnanwendungen - Oberbau - Weichen und Kreuzungen für Vignolschienen - Teil 7:
Herzstücke mit beweglichen Bauteilen

Applications ferroviaires - Infrastructure - Appareils de voie - Partie 7: Curs à parties
mobiles

Ta slovenski standard je istoveten z: EN 13232-7:2023

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ICS:

45.080	Tračnice in železniški deli	Rails and railway components
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English Version

Railway applications - Track - Switches and crossings for Vignole rails - Part 7: Crossings with moveable parts

Applications ferroviaires - Voie - Appareils de voie
pour rails Vignole - Partie 7 : Cœurs à parties mobiles

Bahnanwendungen - Oberbau - Weichen und
Kreuzungen für Vignolschienen - Teil 7: Herzstücke mit
beweglichen Bauteilen

This European Standard was approved by CEN on 23 October 2022.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 13232-7:2023) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2024, and conflicting national standards shall be withdrawn at the latest by April 2024.

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.

This document supersedes EN 13232-7:2006+A1:2011.

This series of standards “*Railway applications – Track – Switches and crossings for Vignole rails*” covers the design and quality of switches and crossings in flat bottomed rail. The list of Parts is as follows:

- *Part 1: Definitions*
- *Part 2: Requirements for geometric design*
- *Part 3: Requirements for wheel/rail interaction*
- *Part 4: Actuation, locking and detection*
- *Part 5: Switches*
- *Part 6: Fixed common and obtuse crossings*
- *Part 7: Crossings with moveable parts*
- *Part 8: Expansion devices*
- *Part 9: Layouts*

Part 1 contains terminology used throughout all parts of this series. Parts 2 to 4 contain basic design guides and are applicable to all switch and crossing assemblies. Parts 5 to 8 deal with particular types of equipment including their tolerances. These use Parts 1 to 4 as a basis. Part 9 defines the geometric and non-geometric acceptance criteria for inspection of layouts.

The changes introduced in this document bring further detail and clarity to the requirements and a number of the figures, the structure of the document is largely unchanged from the previous revision.

This document has been prepared under a standardisation request addressed to [the relevant ESO] by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

EN 13232-7:2023 (E)

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

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Introduction

Crossings with moveable parts allow a vehicle to pass the area where the two rails cross with a continuous running edge, so that the wheels of the vehicle are fully supported and guided in the whole crossing area, either in the facing or trailing direction.

The main criteria for the selection of crossings with moveable parts are:

- improvement of ride comfort;
- reduction of noise and vibration;
- reduction of maintenance;
- mixed traffic conditions (e.g. train/tram);
- security against derailment.

This last point is particularly important (critical) in diamond crossings. Effectively, as the wheel diameter and the obtuse crossing angle decrease, the distance without guidance (EN 13232-3:2023, 4.2.5) increases. Therefore, to ensure the safety of running of the wheel set over the diamond crossing, it is sometimes necessary to design the obtuse crossing as moveable. Rules and recommendations for security against derailment in diamond crossings are set down in EN 13232-3:2023.

Crossings with moveable parts experience a combination of external forces from rolling stock, thermal influences etc. Operating, signalling systems, heater systems, load bearing supports, maintainability and safety are all major factors that affect the design.

The performance will be influenced by axle loads, frequency of traffic and speed.

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EN 13232-7:2023 (E)**1 Scope**

This document:

- establishes a working terminology for crossings with moveable parts, which means crossings with moveable parts to close the gap of the running edge, and their constituent parts, and identify the main types;
- lists the minimum requirements for the manufacture of crossings with moveable parts and/or their constituent parts;
- formulates codes of practice for factory inspection and tolerances for crossings with moveable parts and/or their constituent parts;
- establishes the limits and extent of supply;
- lists the method by which crossings with moveable parts and their constructional parts should be identified;
- lists the different and varying ways by which crossings with moveable parts can be described, using the following parameters:
 - geometry of crossings;
 - types of construction;
 - performance requirements;
 - design criteria;
 - tolerances and inspection.

2 Normative references

[SIST EN 13232-7:2023](https://standards.iteh.ai/catalog/standards/sist/88ead032-7794-4858-8459-a6b691e0c456/sist-en-13232-7-2023)

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 13232-1:2023, *Railway applications – Track – Switches and crossings for Vignole rails – Part 1: Definitions*

EN 13232-2:2023, *Railway applications – Track – Switches and crossings for Vignole rails – Part 2: Requirements for geometric design*

EN 13232-3:2023, *Railway applications – Track – Switches and crossings for Vignole rails – Part 3: Requirements for wheel/rail interaction*

EN 13232-4:2023, *Railway applications – Track – Switches and crossings for Vignole rails – Part 4: Actuation, locking and detection*

EN 13232-9:2023, *Railway applications – Track – Switches and crossings for Vignole rails – Part 9: Layouts*

EN 13674-1:2011+A1:2017, *Railway applications - Track - Rail - Part 1: Vignole railway rails 46 kg/m and above*

EN 13674-2:2019, *Railway applications - Track - Rail - Part 2: Switch and crossing rails used in conjunction with Vignole railway rails 46 kg/m and above*

EN 13674-3:2006+A1:2010, *Railway applications - Track - Rail - Part 3: Check rails*

EN 13674-4:2019, *Railway applications - Track - Rail - Part 4: Vignole railway rails from 27 kg/m to, but excluding 46 kg/m*

EN 13803:2017, *Railway applications - Track - Track alignment design parameters - Track gauges 1 435 mm and wider*

EN 15689:2009, *Railway applications - Track - Switches and crossings - Crossing components made of cast austenitic manganese steel*

EN 16843:2023, *Railway applications - Infrastructure - Mechanical requirements for joints in running rails*

EN 13481-1:2012, *Railway applications - Track - Performance requirements for fastening systems - Part 1: Definitions*

EN 13481-2:2022, *Railway applications - Track - Performance requirements for fastening systems - Part 2: Fastening systems for concrete sleepers*

EN 13481-3:2022, *Railway applications - Track - Performance requirements for fastening systems - Part 3: Fastening systems for wood sleepers*

EN 13481-4:2022, *Railway applications - Track - Performance requirements for fastening systems - Part 4: Fastening systems for steel sleepers*

EN 13481-5:2022, *Railway applications - Track - Performance requirements for fastening systems - Part 5: Fastening systems for slab track with rail on the surface or rail embedded in a channel*

EN 13481-7:2022, *Railway applications - Track - Performance requirements for fastening systems - Part 7: Special fastening systems for switches and crossings and check rails*

EN 13230-1:2016, *Railway applications - Track - Concrete sleepers and bearers - Part 1: General requirements*

EN 13230-2:2016, *Railway applications - Track - Concrete sleepers and bearers - Part 2: Prestressed monoblock sleepers*

EN 13230-3:2016, *Railway applications - Track - Concrete sleepers and bearers - Part 3: Twin-block reinforced sleepers*

EN 13230-4:2016+A1:2020, *Railway applications - Track - Concrete sleepers and bearers - Part 4: Prestressed bearers for switches and crossings*

EN 13230-5:2016, *Railway applications - Track - Concrete sleepers and bearers - Part 5: Special elements*

EN 13230-6:2020, *Railway applications - Track - Concrete sleepers and bearers - Part 6: Design*

EN 13232-7:2023 (E)**3 Terms and definitions**

For the purpose of this document the terms and definitions given in EN 13232-1:2023 and the following apply.

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

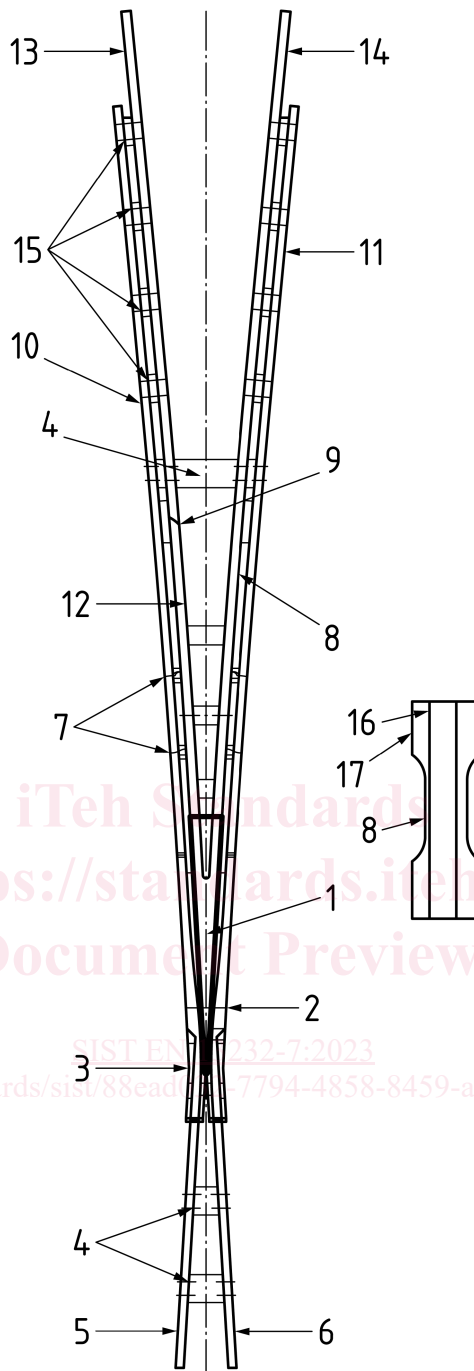
- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

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3.1 Common crossing with moveable point



Key

1 swing nose (moveable vee)	7 spacer blocks (studs)	13 L H extended vee rail
2 saddle (wing rail)	8 foot relief	14 R H vee rail
3 relief ramp	9 longitudinal sliding area	15 flangeway blocks
4 distance block	10 L H wing rail	16 rail head
5 L H front wing rail	11 R H wing rail	17 rail foot
6 R H front wing rail	12 L H vee rail	

Figure 1 — Common crossing with moveable point

EN 13232-7:2023 (E)**3.1.1****swing nose**

part of the crossing which forms the vee that is moved to form a continuous running edge for either the main or branch lines

Note 1 to entry: see Figure 1

3.1.2**saddle**

gives support to the swing nose and forms the housings when the swing nose is thrown

Note 1 to entry: see Figure 1

Note 2 to entry: The saddle (or wing rail) is also used to support the wheel when transferring from the wing rail to the vee.

3.1.3**relief ramp**

ramp for false flange on worn wheels

Note 1 to entry: see Figure 1

3.1.4**distance block**

mechanical device to give strength and support to the crossing

Note 1 to entry: see Figure 1

Note 2 to entry: Depending on the design concept, it is permissible for the distance blocks to transfer track forces.

3.1.5**left hand wing front rail**

rail connected to left hand wing front

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Note 1 to entry: see Figure 1

3.1.6**right hand wing front rail**

rail connected to right hand wing front

Note 1 to entry: see Figure 1

3.1.7**spacer block**

block to give lateral support to the swing nose

Note 1 to entry: see Figure 1

3.1.8**foot relief**

reduction of section of point rail foot at the swing nose heel to facilitate flexing

Note 1 to entry: see Figure 1

3.1.9

longitudinal sliding area

system to permit free movement of the swing nose, it allows for the changes in rail length as the swing nose is operated

Note 1 to entry: see Figure 1

Note 2 to entry: The longitudinal sliding area is normally situated on the branch line of the crossing.

3.1.10

left hand wing rail

wing rail to the left of the vee when viewed from the vee (swing nose)

Note 1 to entry: see Figure 1

3.1.11

right hand wing rail

wing rail to the right of the vee when viewed from the vee (swing nose)

Note 1 to entry: see Figure 1

3.1.12

left hand vee rail

rail connected to the left hand vee leg between the swing nose and the longitudinal sliding area (as shown for a left hand crossing)

Note 1 to entry: see Figure 1

3.1.13

left hand extended vee rail

rail between the longitudinal sliding area and the heel of the crossing (as shown for a left hand crossing)

Note 1 to entry: see Figure 1

3.1.14

right hand vee rail

rail connected to the right hand vee leg of swing nose (as shown for a left hand crossing)

Note 1 to entry: see Figure 1

3.1.15

flangeway block

block used to maintain the correct flangeway gap between the vee rails and wing rails

Note 1 to entry: see Figure 1

Note 2 to entry: Depending on the design concept, it is permissible that the flangeway block to transfer track forces.

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3.1.16

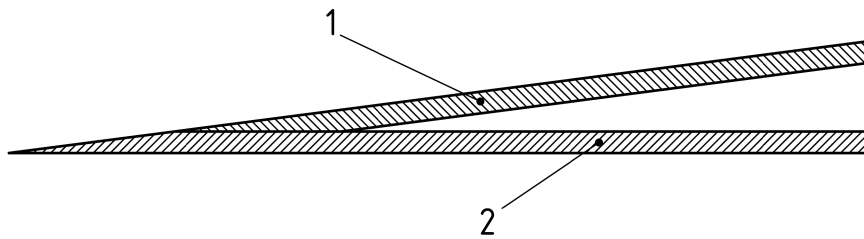
left hand splice rail

rail spliced to point rail forming the vee

Note 1 to entry: for configuration permitting longitudinal movement between point rail and splice rail see Figure 2.

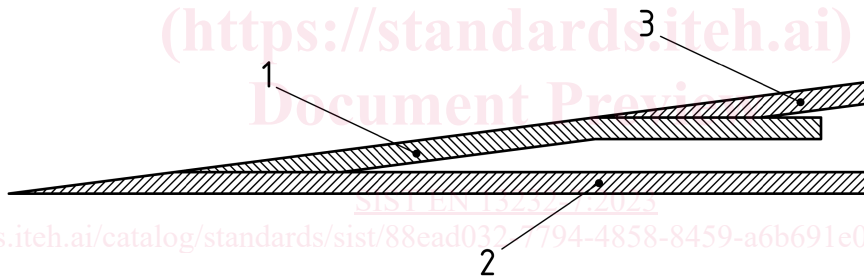
Note 2 to entry: for configuration forming the vee between the point rail and the extended splice rail and permitting longitudinal movement between splice rail and extended splice rail see Figure 3.

Note 3 to entry: for configuration forming without longitudinal movement between point rail and splice rail see Figure 4.

**Key**

- 1 splice rail
- 2 point rail

Figure 2 — Splice rail sliding along the point rail

**Key**

- 1 splice rail
- 2 point rail
- 3 extended splice rail

Figure 3 — Splice joint in the diverging track

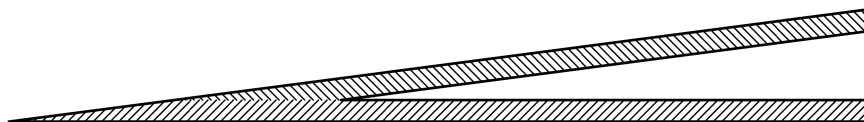


Figure 4 — Moveable point without longitudinal sliding area

3.1.17

left hand extended splice rail

rail between the longitudinal sliding area and the heel of the crossing