

Railway applications - Track - Switches and crossings - Part 3: Requirements for wheel/rail interaction

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 13232-3:2003 sisaldab Euroopa standardi EN 13232-3:2003 ingliskeelset teksti.	This Estonian standard EVS-EN 13232-3:2003 consists of the English text of the European standard EN 13232-3:2003.
Käesolev dokument on jõustatud 17.09.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.	This document is endorsed on 17.09.2003 with the notification being published in the official publication of the Estonian national standardisation organisation.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

Käsitlusala: This part of this European Standard specifies:- characterisation of wheel and track dimensions;- geometric design principles for wheel guidance;- design principles for wheel load transfer;- deciding whether movable crossings are needed. These are illustrated by their application to turnout components:- switches;- crossings; - check rails. But the principles apply equally to more complex layouts	Scope: This part of this European Standard specifies:- characterisation of wheel and track dimensions;- geometric design principles for wheel guidance;- design principles for wheel load transfer;- deciding whether movable crossings are needed. These are illustrated by their application to turnout components:- switches;- crossings; - check rails. But the principles apply equally to more complex layouts
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Võtmesõnad: acceptance, acceptance testing, management, materials handling equipment, railroad vehicles, railway fixed equipment, railway points, specifications, swi, testing, tracks, tracks (materials handling equipment), turnouts, wheel guidance, wheel load, wheels, wheelsets

ICS 45.080

English version

**Railway applications - Track - Switches and crossings - Part 3:
Requirements for wheel/rail interaction**

Applications ferroviaires - Voie - Appareils de voie - Partie
3: Exigences pour l'interaction Roue/Rail

Bahnanwendungen - Oberbau - Weichen und Kreuzungen -
Teil 3: Anforderungen an das Zusammenspiel Rad/Schiene

This European Standard was approved by CEN on 13 February 2003.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 13232-3:2003) 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 February 2004, and conflicting national standards shall be withdrawn at the latest by February 2004.

This series of European Standards "Railway Applications – Track – Switches and Crossings" 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 movable 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. Part 9 defines the functional and geometric dimensions and tolerances for layout assemblies. These use Parts 1 to 4 as a basis.

The following terms are used within to define the parties involved in using the European Standard as the technical basis for a transaction:

- **Customer** the Operator or User of the equipment, or the Purchaser of the equipment on the User's behalf;
- **Supplier** the body responsible for the use of the European Standard in response to the Customer's requirements.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This part of this European Standard specifies:

- characterisation of wheel and track dimensions;
- geometric design principles for wheel guidance;
- design principles for wheel load transfer;
- deciding whether movable crossings are needed.

These are illustrated by their application to turnout components:

- switches;
- crossings;
- check rails.

but the principles apply equally to more complex layouts.

2 Normative references

Not applicable.

3 Presentation

3.1 General

The motion of wheels and transfer of wheel loads is a complex subject, involving the accumulation of extensive data and an understanding of dynamic effects.

By making certain assumptions it is feasible to define rules which are simple yet rigorous enough for design of all types of switches and crossings. Some of these rules assume a 2-axle bogie or vehicle. The need for other special requirements such as those posed by 3-axle or other vehicles must be stated by the Customer.

3.2 Wheel and track dimensions

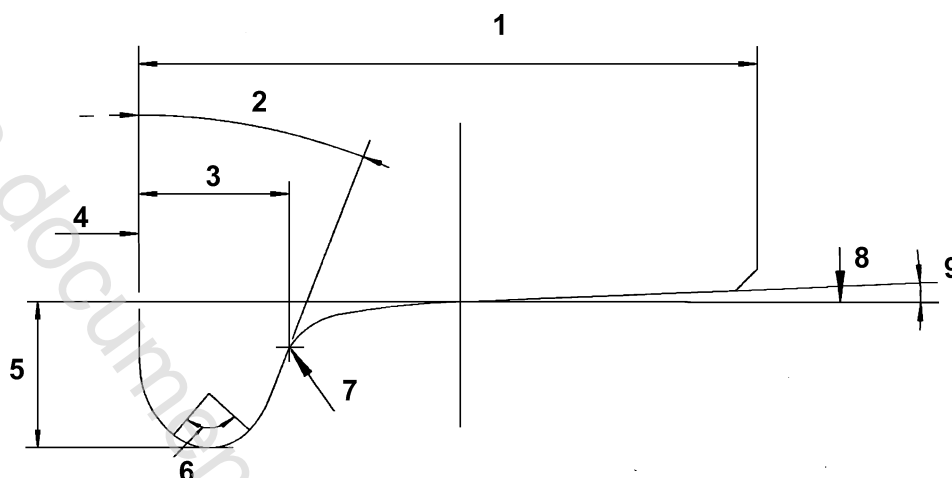
This clause deals with the key dimensions needed for the analysis of the interaction between wheels and the track, either for guidance calculations or load transfer calculations.

Wheel and track dimensions are defined below.

3.3 Wheel profiles

Sufficient dimensions of the cross-section or profile of a wheel are required for switch and crossing design. As a minimum, a dimensioned profile drawing shall be provided by the customer, with the following key dimensions as defined in Figure 1:

- flange width, height and flange angle;
- tyre width and tread angle;
- wheel diameter or radius.



Key

- | | |
|----------------------|------------------|
| 1 Tyre width | 6 Danger zone |
| 2 Flange angle | 7 Contact point |
| 3 Flange width | 8 Wheel diameter |
| 4 Wheel back to back | 9 Tread angle |
| 5 Flange depth | |

Figure 1 — Key wheel dimensions (in addition to profile details)

3.4 Wheelsets

Additional parameters related to the wheelsets are required for calculations for wheelset guidance. The Customer shall provide the following parameter values:

- wheel back-to-back (see Figure 1);
- axle spacing;
- number of axles;
- clearance of middle axles, if applicable;
- bogie spacing and minimum curve radius for vehicles.

3.5 Rail and track

The key parameters related to the track geometry which are used in calculations for wheelset guidance are shown in Figure 2 and listed below:

- centreline radius (R);
- track gauge (G);
- dimension for nose protection (check gauge) (F);
- wing flangeway (D).