

**Raudteealased rakendused. Rööpad.
Riströöpad ja pöörangud. Osa 7: Liikuvate
osadega pöörangud**

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 13232-7:2006 sisaldab Euroopa standardi EN 13232-7:2006 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 28.04.2006 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 13232-7:2006 consists of the English text of the European standard EN 13232-7:2006.</p> <p>This document is endorsed on 28.04.2006 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>The scope of this part is:- to establish 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;- to list the minimum informative requirements for the manufacture of crossings with moveable parts and/or their constituent parts;</p>	<p>Scope:</p> <p>The scope of this part is:- to establish 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;- to list the minimum informative requirements for the manufacture of crossings with moveable parts and/or their constituent parts;</p>
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ICS 45.080

Võtmesõnad:

ICS 45.080

English Version

**Railway applications - Track - Switches and crossings - Part 7:
Crossings with moveable parts**

Applications ferroviaires - Voie - Appareils de voie - Partie
7: Coeurs à parties mobiles

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

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Foreword

This European Standard (EN 13232-7:2006) 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 September 2006, and conflicting national standards shall be withdrawn at the latest by September 2006.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to support Essential Requirements of EU Directive 96/48/EC of 23 July 1996 on the interoperability of the trans-European high-speed rail system amended by the Directive 2004/50/EC of the European Parliament and of the Council of 29 April 2004.

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this European Standard.

This series of standards "Railway applications – Track – Switches and crossings" covers the design and quality of switches and crossings in flat bottom rails. 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 the standard.

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 functional and geometrical dimensions and tolerances for layout assembly.

The following terms are used within to define the parties involved in using the EN 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 EN 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

The requirements of crossings with moveable parts are that they are capable of performing their intended purpose, which is to allow a vehicle to pass the area where the two rails cross with a continuous running edge.

That means 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 13232-3:2003, 4.2.5) increases.

Therefore, to assure 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 part 9 of this standard.

The crossings with moveable parts shall be designed to withstand all external forces from rolling stock, thermal influences etc.

The customer shall specify the maximum strains or stresses due to external thermal forces that the crossing with moveable parts has to withstand.

Operating, signalling systems, heater systems, load bearing supports, maintainability and safety are all major factors which should be taken into account during the design.

The performance criteria shall be based on information given by the customer.

The design and selection of types of crossings with moveable parts will be influenced by axle loads, frequency of traffic and speed.

1 Scope

The scope of this part is:

- to establish 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;
- to list the minimum informative requirements for the manufacture of crossings with moveable parts and/or their constituent parts;
- to formulate codes of practice for inspection and tolerances for crossings with moveable parts and/or their constituent parts;
- to establish the limits and extent of supply;
- to list the method by which crossings with moveable parts and their constructional parts should be identified and traced;
- to list 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

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13145, *Railway applications — Track — Wood sleepers and bearers*

EN 13146 (all parts), *Railway applications — Track — Test methods for fastening systems*

EN 13230 (all parts), *Railway applications — Track — Concrete sleepers and bearers*

EN 13232-1, *Railway applications — Track — Switches and crossings — Part 1: Definitions*

EN 13232-2, *Railway applications — Track — Switches and crossings — Part 2: Requirements for geometric design*

EN 13232-4, *Railway applications — Track — Switches and crossings — Part 4: Actuation, locking and detection*

prEN 13232-9, *Railway applications — Track — Switches and crossings — Part 9: Layouts*

EN 13481 (all parts), *Railway applications — Track — Performance requirements for fastening systems*

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

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

prEN 13674-3, *Railway applications — Track — Rail — Part 3: Check rails*

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

UIC 866, *Technical specification for the supply of cast manganese steel crossings for switch and crossing work*

3 Types of crossing with moveable parts

3.1 Common crossings with moveable parts

There are two major types of common crossing with moveable parts. These are crossing with moveable point (see Figure 1) and crossing with moveable wing rails (see Figure 2).

In both cases:

The wings and vee support can be:

- saddle (cast, welded, machined);
- assembled (made of different rail profiles, e.g. standard rail, asymmetric low section, symmetric thick web section etc.).

The vee can be:

- monobloc (cast, welded, machined);
- assembled (made of different rail profiles, e.g. standard rail, asymmetric low section, symmetric thick web section etc.).

Rail profiles shall be according to EN 13674-1 and EN 13674-2.

In the case of a crossing with moveable point:

- point may or may not contain a longitudinal sliding area;
- vee of point and splice rail may be coupled by bolting, welding or fabricated out of a monobloc and welded to their respective adjacent legs.

For example see Figures 3, 4 and 5.

In the case of a crossing with moveable wing rails a longitudinal sliding area is not required.

Other types of construction and their requirements shall be agreed between customer and supplier.

3.2 Obtuse crossings with moveable parts

The main type of obtuse crossing with moveable parts is the switch diamond crossing (see Figure 6).

The wing and switches rails support can be: