



**SLOVENSKI STANDARD**  
**SIST EN 13232-5:2005+A1:2012**  
**01-januar-2012**

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**Železniške naprave - Zgornji ustroj - Kretnice in križišča - 5. del: Kretniška menjala**

Railway applications - Track - Switches and crossings - Part 5: Switches

Bahnanwendungen - Oberbau - Weichen und Kreuzungen - Teil 5: Zungenvorrichtungen

Applications ferroviaires - Voie - Appareils de voie - Partie 5: Aiguillages

**Ta slovenski standard je istoveten z: EN 13232-5:2005+A1:2011**

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**ICS:**

45.080	Tračnice in železniški deli	Rails and railway components
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**SIST EN 13232-5:2005+A1:2012**      **en,fr,de**

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EUROPEAN STANDARD  
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## Railway applications - Track - Switches and crossings - Part 5: Switches

Applications ferroviaires - Voie - Appareils de voie - Partie  
5: Aiguillages

Bahnanwendungen - Oberbau - Weichen und Kreuzungen -  
Teil 5: Zungenvorrichtungen

This European Standard was approved by CEN on 8 August 2005 and includes Amendment 1 approved by CEN on 13 September 2011.

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## Foreword

This document (EN 13232-5:2005+A1:2011) 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of an identical text or by endorsement, at the latest by April 2012, and conflicting national standards shall be withdrawn at the latest by April 2012.

**A1** This document has been prepared under a mandate given to CEN/CENELEC/ETSI by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2008/57/EC.

For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document. **A1**

This document includes Amendment 1, approved by CEN on 2011-09-13.

This document supersedes EN 13232-5:2005.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**.

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

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 this European 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.

**EN 13232-5:2005+A1:2011 (E)**

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, Bulgaria, Croatia, 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.

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## Introduction

The requirements of switches are that they are capable of performing their intended purpose, which is to cause a vehicle to transfer from one track to the other track of a turnout, either in the facing or trailing direction. The switches are designed to withstand all external forces from rolling stock, thermal influences etc. Switches are manufactured to give safe (and acceptable) motion of the vehicle based on conditions in the specification.

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**EN 13232-5:2005+A1:2011 (E)****1 Scope**

The scope of this European Standard is:

- establish a working definition for switches and their constituent parts and identify the main types;
- specify the minimum requirements for the manufacture of the switches and/or constituent parts;
- specify codes of practice for inspection and tolerances of both full and half sets of switches and their constituent parts;
- establish the limits and scope of supply;
- list the methods by which switches and their parts should be identified and traced;
- list the different and varying ways by which switches can be described using the following parameters:
  - geometry of the switches;
  - types of construction;
  - performance requirements;
  - design criteria;
  - tolerances and inspection.

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**2 Normative references**

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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 13232-1:2003, *Railway applications – Track – Switches and crossings – Part 1: Definitions*

EN 13232-2:2003, *Railway applications – Track – Switches and crossings – Part 2: Requirements for geometric design*

EN 13232-3:2003, *Railway applications – Track – Switches and crossings – Part 3: Requirements for wheel/rail interaction*

EN 13232-4:2005, *Railway applications – Track – Switches and crossings – Part 4: Actuation, locking and detection*

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

EN 13674 (all parts), *Railway applications – Track – Rail*



prEN 13803-2, *Railway applications – Track alignment design parameters – Track gauges 1 435 mm and wider – Part 2: Switches and crossings and comparable alignment design situations with abrupt changes of curvature*

### 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 13232-1:2003, 6.2 and 7.1, and the following apply.

#### 3.1 Parts of switches

##### 3.1.1

##### **left hand half set of switches**

consists of one stock rail and its switch rail complete with small fittings

NOTE It is right or left hand as seen by an observer in the centre of the track facing the switch heel from the switch toe.

##### 3.1.2

##### **right hand half set of switches**

see left hand half set of switches

##### 3.1.3

##### **set of switches**

arrangement of two half sets of switches, one right hand, the other left hand. The requirement of any other fittings other than stud/distance block (Figure 1, item 11) and block or heel blocks (Figure 1, item 9) are specified, e.g. baseplates, fishplates, drive bar, stretcher bar brackets, stretcher bars, anti creep device

##### 3.1.4

##### **left hand switch rail**

movable machined rail, often of special section, but fixed and/or joined at the heel end to a rail to provide continuity of wheel support. Details of movement are described in EN 13232-1:2003, 9.1. The two switch rails in a set of switches are the two inside rails

NOTE A switch rail is described as right or left hand according to whether it is part of a right hand or left hand half-set of switches.

##### 3.1.5

##### **right hand switch rail**

see left hand switch rail

##### 3.1.6

##### **left hand stock rail**

fixed machined rail, ensuring the continuity on the main or diverging track with the switch in the open position. The machined part of the stock rail supports the switch rail in the closed positions, giving continuity of line through this switch rail. The two stock rails in a set of switches are the two outside rails

NOTE A switch rail is described as right or left hand according to whether it is part of a right hand or left hand half-set of switches.

##### 3.1.7

##### **right hand stock rail**

see left hand stock rail

##### 3.1.8

##### **heel baseplate**

first baseplate at the heel end of the movable part of the switch. This baseplate with or without the aid of a heel block forms the first part of the rigid part of the switch

**EN 13232-5:2005+A1:2011 (E)****3.1.9****block**

see EN 13232-1:2003, 6.2.10.1

**3.1.10****heel block**

see EN 13232-1:2003, 6.2.10.2

**3.1.11****fishplate block**

see EN 13232-1:2003, 6.2.10.3

**3.1.12****stud/distance block**

see EN 13232-1:2003, 6.2.10.4

**3.1.13****slide baseplate**

see EN 13232-1:2003, 6.2.10.5

NOTE It may be inclined or vertical and suit any switch rail section.

**3.1.14****stretcher bar bracket**

see EN 13232-1:2003, 6.2.10.7

**3.1.15****stretcher bar**

see EN 13232-1:2003, 6.2.10.6

**3.1.16****anti creep device**

device to stop or limit relative longitudinal movement between switch and stock rails, or between rails and bearers/ baseplates

**3.1.17****switch toe/tip**

see EN 13232-1:2003, 6.2.7

**3.1.18****switch heel**

see EN 13232-1:2003, 6.2.8

**3.1.19****switch rail joint**

see EN 13232-1:2003, 6.2.4.1

**3.1.20****stock rail joint**

see EN 13232-1:2003, 6.2.4.2

**3.1.21****stock front joint**

see EN 13232-1:2003, 6.2.4.3

**3.1.22****soleplate**

fabricated plate for use with switch operating device

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**3.1.23****gauge plate**

plate used to hold the gauge of the stock rails may or may not assist in the location of the switch operating device

**3.1.24****special stop**

device used to hold the gauge of the stock rails in the drive areas

**3.1.25****bearers**

load carrying supports on which the switches are mounted

**3.1.26****baseplate**

device used to support the switch and stock rails, stop them from twisting and moving laterally and also connect the switch and stock rail to the supports in the heel end region of a set of switches

**3.1.27****fishplate (joint bars)**

device used for bolting two pieces of rail together

**3.1.28****drive rod**

rod connecting the switch rails to the switch drive. This may be integrated into the bearer

**3.1.29****transition section**

part of the switch rail which has been formed to give a transition between two different rail sections (not shown)

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**3.1.30****switch fronts**

part of the stock rail in front of the switch toes

**3.1.31****planing length**

length of the machined portion of a switch rail head at the gauge side (this may or may not be the same length as the contact length)

**3.1.32****contact length**

length of the machined portion of the switch rail in contact with the stock rail

**3.1.33****switch radius**

radius between the planing radius and the turnout radius (measured at the high side running edge)

**3.1.34****turnout radius**

theoretical radius of the turnout from the heel of a switch (measured at the centre line radius unless stated otherwise)

**3.1.35****movable length**

part of the switch which moves in front of the first fixed position on the switch rails

**3.1.36****planing radius**

radius of the machined planing length (measured at the high side running edge)

**EN 13232-5:2005+A1:2011 (E)****3.1.37****mathematical switch toe MP (mathematical point)**

see EN 13232-1:2003, 7.3.3

**3.1.38****origin of switch curve (not shown)**

see EN 13232-1:2003, 7.3.1. The origin of switch curve depends upon the type of switch geometry. See 3.2

**3.1.39****entry angle**

see EN 13232-1:2003, 7.3.6

**3.1.40****extension of the switches**

see EN 13232-1:2003, 7.3.4

**3.1.41****relief machining of the switch**

see EN 13232-1:2003, 7.3.10

**3.1.42****"set" of the stock rail**

see EN 13232-1:2003, 7.3.7

**3.1.43****switch flangeway**

see EN 13232-1:2003, 7.4.6

**3.1.44****opening at the drive position**

distance between the running edge of the stock rail and the contact side of the switch rail with the switch in the open position at the drive position

**3.1.45****opening at switch toe**

same as above at the switch toe

**3.1.46****switch toe undercutting offset**

see Figure 8, dimension *B*

**3.2 Types of switches****3.2.1 Geometry**

For the design of switch panel, various basic geometrical forms are in use. Variations from these basic forms may be used. See EN 13232-1.

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