

# SVENSK STANDARD

## SS-EN 13232-8:2007+A1:2011



Fastställt/Approved: 2011-11-07  
Publicerad/Published: 2011-11-16  
Utgåva/Edition: 1  
Språk/Language: engelska/English  
ICS: 45.080; 93.100

---

### **Järnvägar – Spårväxlar och -korsningar – Del 8: Dilatationsanordningar**

### **Railway applications – Track – Switches and crossings – Part 8: Expansion devices**

This preview is downloaded from [www.sis.se](http://www.sis.se). Buy the entire standard via <https://www.sis.se/std-82067>

# Standarder får världen att fungera

*SIS (Swedish Standards Institute) är en fristående ideell förening med medlemmar från både privat och offentlig sektor. Vi är en del av det europeiska och globala nätverk som utarbetar internationella standarder. Standarder är dokumenterad kunskap utvecklad av framstående aktörer inom industri, näringsliv och samhälle och befrämjar handel över gränser, bidrar till att processer och produkter blir säkrare samt effektiviserar din verksamhet.*

## Delta och påverka

Som medlem i SIS har du möjlighet att påverka framtida standarder inom ditt område på nationell, europeisk och global nivå. Du får samtidigt tillgång till tidig information om utvecklingen inom din bransch.

## Ta del av det färdiga arbetet

Vi erbjuder våra kunder allt som rör standarder och deras tillämpning. Hos oss kan du köpa alla publikationer du behöver – allt från enskilda standarder, tekniska rapporter och standardpaket till handböcker och onlinetjänster. Genom vår webbtjänst e-nav får du tillgång till ett lättnavigerat bibliotek där alla standarder som är aktuella för ditt företag finns tillgängliga. Standarder och handböcker är källor till kunskap. Vi säljer dem.

## Utveckla din kompetens och lyckas bättre i ditt arbete

Hos SIS kan du gå öppna eller företagsinterna utbildningar kring innehåll och tillämpning av standarder. Genom vår närhet till den internationella utvecklingen och ISO får du rätt kunskap i rätt tid, direkt från källan. Med vår kunskap om standarders möjligheter hjälper vi våra kunder att skapa verklig nytta och lönsamhet i sina verksamheter.

**Vill du veta mer om SIS eller hur standarder kan effektivisera din verksamhet är du välkommen in på [www.sis.se](http://www.sis.se) eller ta kontakt med oss på tel 08-555 523 00.**



# Standards make the world go round

*SIS (Swedish Standards Institute) is an independent non-profit organisation with members from both the private and public sectors. We are part of the European and global network that draws up international standards. Standards consist of documented knowledge developed by prominent actors within the industry, business world and society. They promote cross-border trade, they help to make processes and products safer and they streamline your organisation.*

## Take part and have influence

As a member of SIS you will have the possibility to participate in standardization activities on national, European and global level. The membership in SIS will give you the opportunity to influence future standards and gain access to early stage information about developments within your field.

## Get to know the finished work

We offer our customers everything in connection with standards and their application. You can purchase all the publications you need from us - everything from individual standards, technical reports and standard packages through to manuals and online services. Our web service e-nav gives you access to an easy-to-navigate library where all standards that are relevant to your company are available. Standards and manuals are sources of knowledge. We sell them.

## Increase understanding and improve perception

With SIS you can undergo either shared or in-house training in the content and application of standards. Thanks to our proximity to international development and ISO you receive the right knowledge at the right time, direct from the source. With our knowledge about the potential of standards, we assist our customers in creating tangible benefit and profitability in their organisations.

**If you want to know more about SIS, or how standards can streamline your organisation, please visit [www.sis.se](http://www.sis.se) or contact us on phone +46 (0)8-555 523 00**



Europastandarden EN 13232-8:2007+A1:2011 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 13232-8:2007+A1:2011.

Denna standard ersätter SS-EN 13232-8:2007, utgåva 1.

The European Standard EN 13232-8:2007+A1:2011 has the status of a Swedish Standard. This document contains the official version of EN 13232-8:2007+A1:2011.

This standard supersedes the Swedish Standard SS-EN 13232-8:2007, edition 1.

© Copyright/Upphovsrätten till denna produkt tillhör SIS, Swedish Standards Institute, Stockholm, Sverige. Användningen av denna produkt regleras av slutanvändarlicensen som återfinns i denna produkt, se standardens sista sidor.

© Copyright SIS, Swedish Standards Institute, Stockholm, Sweden. All rights reserved. The use of this product is governed by the end-user licence for this product. You will find the licence in the end of this document.

*Uppllysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna uppllysningar om svensk och utländsk standard.*

*Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.*

Denna standard är framtagen av kommittén för Järnvägar, SIS/TK 254.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på [www.sis.se](http://www.sis.se) - där hittar du mer information.



EUROPEAN STANDARD

**EN 13232-8:2007+A1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2011

ICS 93.100

Supersedes EN 13232-8:2007

English Version

## Railway applications - Track - Switches and crossings - Part 8: Expansion devices

Applications ferroviaires - Voie - Appareils de voie - Partie  
8: Appareils de dilatation

Bahnanwendungen - Oberbau - Weichen und Kreuzungen -  
Teil 8: Auszugsvorrichtungen

This European Standard was approved by CEN on 17 February 2007 and includes Amendment 1 approved by CEN on 13 September 2011.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Contents

Page

Foreword.....	3
Introduction .....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions .....	6
3.1 General definitions .....	6
3.2 Main types of expansion devices.....	8
4 Design .....	13
4.1 Design inputs .....	13
4.2 Design rules .....	14
4.2.1 General rules .....	14
4.2.2 Wheel/rail interaction .....	15
4.2.3 Specific rules.....	15
4.3 Performance requirements .....	16
4.4 Materials .....	16
4.5 Design output.....	17
4.5.1 Detailed component plans .....	17
4.5.2 Assembly documents.....	17
5 Tolerances and inspection .....	17
5.1 General.....	17
5.2 Tools and instruments .....	17
5.3 Critical dimensions.....	17
5.4 Adjustment switch (bayonet type) .....	18
5.5 Expansion switch.....	23
5.6 Certification .....	32
5.7 Methods of examination for structural defects .....	32
5.7.1 Visual .....	32
5.7.2 Dye penetrant and/or magnetic particle .....	32
6 Longitudinal resistance testing.....	33
6.1 Test method.....	33
6.2 Test results.....	33
7 Acceptance testing .....	33
8 Limits and extent of supply .....	34
9 Identification marks .....	34
Annex ZA (informative) <b>Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC</b> .....	35

## Foreword

This document (EN 13232-8:2007+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 13232-8:2007.

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 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 the standard. Parts 2 to 4 contain basic design guides and are applicable to all switch and crossing assemblies. The latter parts, from 5 onwards, 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 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.



## Introduction

An expansion device is a device which permit longitudinal relative rail movement of two adjacent rails, while maintaining correct guidance and support.

These longitudinal movements may be required in:

- a) interrupted CWR (continuously welded rail);
- b) structure movement;
- c) or a combination of both.

## 1 Scope

This part of EN 13232 covers the following subjects: to establish a working terminology for expansion devices, for their constituent parts and for the types; to specify the minimum manufacturing requirements for expansion devices and their constituent parts; to formulate codes of practice for inspection and tolerances; to define the method by which expansion devices and their parts should be identified and traced.

## 2 Normative references

The following referenced documents are indispensable for the application 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 13146-1, *Railway applications — Track — Test methods for fastening systems — Part 1: Determination of longitudinal rail restraint*

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

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

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

EN 13715, *Railway applications — Wheelsets and bogies — Wheels — Wheels tread*

UIC 510-2, *Trailing stock: wheels and wheelsets — Conditions concerning the use of wheels of various diameters*

## 3 Terms and definitions

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

### 3.1 General definitions

#### 3.1.1

##### **hand (of half set) – adjustment switch (bayonet type)**

LH (left hand) half set or RH (right hand) when viewed standing in the track gauge and facing the tips of the inside rails.

With check rails, there may be two LH or two RH half sets, see Figure 6, or opposite hand half sets

#### 3.1.2

##### **hand (of half set) – expansion switch**

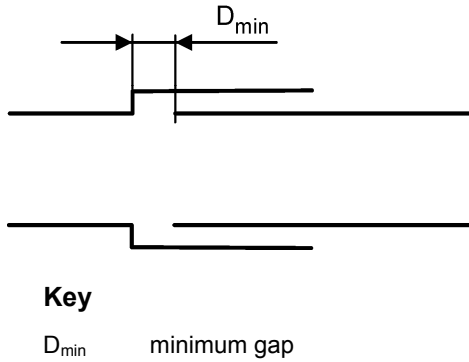
LH half set or a RH half set when viewed standing in the track gauge and facing the toes of the expansion switch

#### 3.1.3

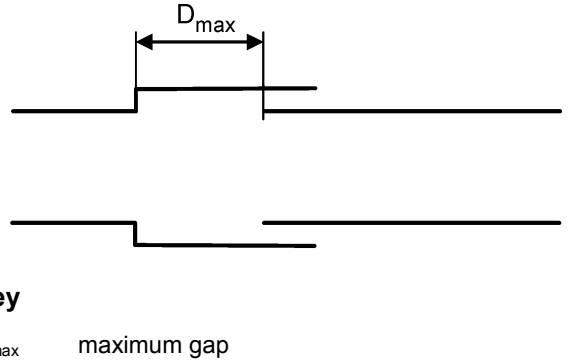
##### **expansion capacity C**

maximum permissible relative longitudinal movement between the two rails, where:

$$C = D_{\max} - D_{\min}$$



**Figure 1 — Closed position**



**Figure 2 — Open position**

**3.1.4**

**relative displacement rail / support**

maximum permissible relative longitudinal movement between the rail (switch or stock rail) and the corresponding support (base plate or bearer)

**3.1.5**

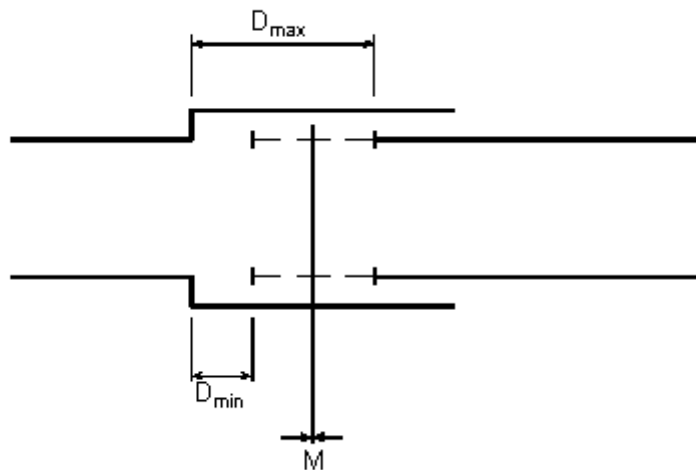
**mean position**

position where the expansion capacity and the relative displacement of rails are half way, and the bearers are in their nominal position

**3.1.6**

**design position**

nominal position where the expansion capacity and the relative displacement of rails are half way, especially where shrinkage of concrete structures, for example, will shift the mean position



$$M = \frac{D_{max} - D_{min}}{2}$$

**Key**

$D_{min}$  minimum gap  
 $D_{max}$  maximum gap  
 M mean position

**Figure 3 — Mean position**