

RAUDTEEALASED RAKENDUSED. RÖÖBASTEE.  
PÖÖRMED JA RISTMED LAIATALLALISTELE  
(VIGNOLE'I) RÖÖBASTELE. OSA 4: KÄITAMINE,  
LUKUSTAMINE JA TUVASTAMINE

Railway applications - Track - Switches and crossings  
for Vignole rails - Part 4: Actuation, locking and  
detection

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 13232-4:2023 sisaldab Euroopa standardi EN 13232-4:2023 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 11.10.2023.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN 13232-4:2023 consists of the English text of the European standard EN 13232-4:2023.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 11.10.2023.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
--	---

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 93.100

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele. Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation and Accreditation: Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

EUROPEAN STANDARD

**EN 13232-4**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2023

ICS 93.100

Supersedes EN 13232-4:2005+A1:2011

English Version

## Railway applications - Track - Switches and crossings for Vignole rails - Part 4: Actuation, locking and detection

Applications ferroviaires - Voie - Appareils de voie  
pour rails Vignole - Partie 4 : Manœuvre, blocage et  
contrôle

Bahnanwendungen - Oberbau - Weichen und  
Kreuzungen für Vignolschienen - Teil 4: Umstellung,  
Verriegelung und Lageprüfung

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

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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



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

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

<b>Contents</b>	<b>Page</b>
European foreword.....	3
<b>1 Scope</b> .....	<b>5</b>
<b>2 Normative references</b> .....	<b>5</b>
<b>3 Terms and definitions</b> .....	<b>6</b>
<b>3.1 General</b> .....	<b>6</b>
<b>3.2 Actuation forces</b> .....	<b>7</b>
<b>3.3 Geometrical parameters</b> .....	<b>8</b>
<b>3.4 Movement and retention of switches and crossings with moveable parts</b> .....	<b>12</b>
<b>3.5 Movement of switch rails</b> .....	<b>13</b>
<b>3.6 Dynamics of the wheel</b> .....	<b>14</b>
<b>4 Design criteria</b> .....	<b>15</b>
<b>4.1 Parameters required</b> .....	<b>15</b>
<b>4.2 Calculations and verifications</b> .....	<b>15</b>
<b>4.2.1 Object detection between stock rail and switch rail</b> .....	<b>15</b>
<b>4.2.2 Calculation of minimum flangeway</b> .....	<b>16</b>
<b>4.2.3 Correct closing</b> .....	<b>17</b>
<b>4.2.4 Neutral position</b> .....	<b>17</b>
<b>4.2.5 Negative force</b> .....	<b>17</b>
<b>4.2.6 Mechanical integrity</b> .....	<b>17</b>
<b>5 Test methods</b> .....	<b>17</b>
<b>5.1 Obstacle detection</b> .....	<b>17</b>
<b>5.2 Minimum flangeway / free passage of wheel</b> .....	<b>17</b>
<b>5.3 Correct closing</b> .....	<b>18</b>
<b>5.4 Actuation force, <math>F_a</math></b> .....	<b>18</b>
<b>5.5 Neutral position</b> .....	<b>18</b>
<b>5.6 Negative force</b> .....	<b>18</b>
<b>5.7 Trailability</b> .....	<b>19</b>
<b>5.7.1 General</b> .....	<b>19</b>
<b>5.7.2 Factory testing</b> .....	<b>19</b>
<b>5.7.3 Track testing</b> .....	<b>19</b>
<b>6 Acceptance</b> .....	<b>19</b>
<b>6.1 General</b> .....	<b>19</b>
<b>6.2 Standard testing (no prototypes)</b> .....	<b>19</b>
<b>6.3 Prototype testing</b> .....	<b>20</b>
<b>6.4 Testing requirements for change in flexibility</b> .....	<b>20</b>
<b>Annex A (informative) Commonly used values for obstacle detection</b> .....	<b>21</b>
<b>Annex B (informative) Commonly used values for flangeway</b> .....	<b>22</b>
<b>Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive (EU) 2016/797 aimed to be covered</b> .....	<b>23</b>
<b>Bibliography</b> .....	<b>25</b>

## European foreword

This document (EN 13232-4:2023) 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 13232-4:2005+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-geometrical acceptance criteria for inspection of layouts.

The changes in this document bring some improved clarity to the wording of the requirements and an update to several of the figures. The structure of the document remains similar to 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.

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.

This document is a preview generated by EVS

## 1 Scope

This document determines the interface between moveable parts and the actuation, locking and detection equipment, and defines the basic criteria for switches and crossing with moveable parts in respect of the interface.

It concerns:

- rules, parameters and tolerances for alternative positions of the moveable parts;
- criteria and limits for the forces which move and restrain the moveable parts.

## 2 Normative references

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

EN 13232-5:2023, *Railway applications – Track – Switches and crossings for Vignole rails – Part 5: Switches*

EN 13232-6:2023, *Railway applications – Track – Switches and crossings for Vignole rails – Part 6: Fixed common and obtuse crossings*

EN 13232-7:2023, *Railway applications – Track – Switches and crossings for Vignole rails – Part 7: Crossings with moveable parts*