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English Version

Railway applications - Track - Switches and crossings for Vignole rails - Part 2: Requirements for geometric design

Applications ferroviaires - Voie - Appareils de voie
pour rails Vignole - Partie 2 : Exigences pour la
conception géométrique

Bahnanwendungen - Oberbau - Weichen und
Kreuzungen für Vignolschienen - Teil 2: Anforderungen
an den geometrischen Entwurf

This draft European Standard is submitted to CEN members for formal vote. It has been drawn up by the Technical Committee CEN/TC 256.

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European foreword

This document (FprEN 13232-2:2022) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This document is currently submitted to the Formal Vote.

This document will supersede EN 13232-2:2003+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-geometric acceptance criteria for inspection of layouts.

The changes introduced in this document set the geometric parameters for switch and crossing design in the context of the design process, providing more detail to the user of the standard. A number of figures have been also updated to improve clarity.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association.

1 Scope

This document:

- establishes the design process for switches and crossings (S&C), and the use of the other parts of this standard;
- specifies the geometric design principles for wheel guidance;
- establishes the basic limits of supply;
- establishes the applied forces and their adequate support;
- specifies tolerance levels.

These are illustrated herein by application to a turnout. The main switch and crossing components are represented in turnouts and the principles used in turnouts apply equally to more complex layouts.

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.

FprEN 13232-1:2022, *Railway applications – Track – Switches and crossings for Vignole rails – Part 1: Definitions*

FprEN 13232-3:2022, *Railway applications – Track – Switches and crossings for Vignole rails – Part 3: Requirements for wheel/rail interaction*

FprEN 13232-4:2022, *Railway applications – Track – Switches and crossings for Vignole rails – Part 4: Actuation, locking and detection*

FprEN 13232-5:2022, *Railway applications – Track – Switches and crossings for Vignole rails – Part 5: Switches*

FprEN 13232-6:2022, *Railway applications – Track – Switches and crossings for Vignole rails – Part 6: Fixed common and obtuse crossings*

FprEN 13232-7:2022, *Railway applications – Track – Switches and crossings for Vignole rails – Part 7: Crossings with moveable parts*

FprEN 13232-9:2022, *Railway applications – Track – Switches and crossings for Vignole rails – Part 9: Layouts*

EN 15273-3:2013+A1:2016, *Railway applications - Gauges - Part 3: Structure gauges*

3 Terms and definitions

For the purpose of this document the terms and definitions given in FprEN 13232-1:2022 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

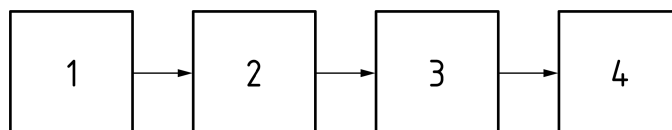
- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Design process

4.1 General process

The process for designing switches and crossings is complex owing to the many requirements that apply and the different situations that may occur. Figure 1 gives a schematic representation of the general design process. It separates the whole process into four main steps:

- step 1 contains the general design of the S&C. It consists of the geometrical design, the design of the wheel-rail interaction and the design requirements for compliance with the actuation, locking and detection system. It leads to the definition of the main aspects of the S&C, respecting the main design requirements. Geometric design is defined in this part; other aspects are dealt with in parts 3 and 4;
- step 2 is the main constructional design process, which specifies the main construction of the S&C. It is based on the technology used by the supplier. It is based mainly on the suppliers' experience and expertise;
- step 3 consists of the detailed design of the individual components. It is dealt with in different standards. The design of the main components shall respect the requirements laid down in parts 5 to 8. Other components, such as fastenings, bearers, etc, are dealt with in respective ENs;
- step 4 is the product acceptance, which is described in Part 9.



Key

- 1 Step 1: General design
- 2 Step 2: Main constructional design
- 3 Step 3: Detailed component design
- 4 Step 4: Acceptance

Figure 1 — General design process