Järnvägsanläggningar – Spår – Provningsmetoder för befästningssystem –
Del 7: Bestämning av klämkraft

Railway applications – Track – Test methods for fastening systems –
Part 7: Determination of clamping force

The European Standard EN 13146-7:2002 has the status of a Swedish Standard. This document contains the official English version of EN 13146-7:2002.
Railway applications - Track - Test methods for fastening systems - Part 7: Determination of clamping force

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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 Management Centre has the same status as the official versions.

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Foreword

This document (EN 13146-7:2002) 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of an identical text or by endorsement, at the latest by April 2003, and conflicting national standards shall be withdrawn at the latest by April 2003.

This document has been prepared under mandates (M/0241), M/2752) given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

This series of European Standards EN 13146 "Railway applications — Track — Test methods for fastening systems" consists of the following Parts:

— Part 1 : Determination of longitudinal rail restraint.
— Part 2 : Determination of torsional resistance.
— Part 3 : Determination of attenuation of impact loads.
— Part 4 : Effect of repeated loading.
— Part 5 : Determination of electrical resistance.
— Part 6 : Effect of severe environmental conditions.
— Part 7 : Determination of clamping force.
— Part 8 : In service testing.

These support the requirements in the series EN 13481 Railway applications — Track — Performance requirements for fastening systems — Parts 1 to 7.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1) Railway equipment.

2) Standardization in the field of Railway Equipment on the Interoperability of the Trans-European High-Speed Rail System.
1 Scope

This Part of this European Standard specifies laboratory test procedures for measuring the clamping force exerted by the fastening system on the foot of a rail. It is applicable to systems with and without baseplates on all types of sleepers, bearers and elements of slab track.

These test procedures apply to a complete fastening assembly.

A reference procedure and an alternative procedure are included.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).


3 Terms and definitions, symbols and abbreviations

3.1 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 13481-1:2002 apply.

3.2 Symbols and abbreviations

For the purposes of this European Standard, the following symbols apply.

\[ \begin{align*}
    d & \quad \text{vertical displacement of the sleeper relative to the rail, in mm;} \\
    m_s & \quad \text{mass of sleeper or part sleeper and fastening components fixed to it, used in the test, in kg;} \\
    m_l & \quad \text{mass of loading frame supported by the sleeper, in kg;} \\
    P & \quad \text{vertical load applied to the sleeper, in kN;} \\
    P_0 & \quad \text{vertical load at zero rail displacement which just counteracts the clamping force, in kN.}
\end{align*} \]

4 Principle

The clamping force for a complete rail fastening assembly is determined by measuring the force necessary to separate the rail from the surface on which it is supported.

5 Apparatus

5.1 Rail

A short length (approximately 0,5 m) of rail, of the section for which the fastening assembly under test is designed. The rail shall be un laminated and have no loose rust on the surface nor be polished on the foot by repeated testing.