High-strength structural bolting assemblies for preloading - Part 2: Suitability test for preloading

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 14399-2:2005 sisaldab Euroopa standardi EN 14399-2:2005 ingliskeelset teksti. Käesolev dokument on jõustatud 30.05.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 14399-2:2005 consists of the English text of the European standard EN 14399-2:2005. This document is endorsed on 30.05.2005 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This part of this European Standard specifies a tightening test to verify the suitability of high strength bolt/nut/washer assemblies for preloaded bolted connection in metallic structures. The purpose of this test is to check the behaviour of the fastener assembly so as to ensure that the required preload can be reliably obtained by the tightening methods specified in ENV 1090-1 with sufficient margins against over tightening and against failure.	**Scope:** This part of this European Standard specifies a tightening test to verify the suitability of high strength bolt/nut/washer assemblies for preloaded bolted connection in metallic structures. The purpose of this test is to check the behaviour of the fastener assembly so as to ensure that the required preload can be reliably obtained by the tightening methods specified in ENV 1090-1 with sufficient margins against over tightening and against failure.

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Võtmesõnad: acceptance testing, conformity tests, mechanical p, performance tests, ph, physical properties, preloading, prestressed, production, properties, screws, screws (bolts), specification (approval), specifications, steels, structural steel work, test equipment, testing

EUROPEAN STANDARD

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English version

High-strength structural bolting assemblies for preloading - Part 2: Suitability test for preloading

Boulonnerie de construction métallique à haute résistance apte à la précontrainte - Partie 2 : Essai d'aptitude à l'emploi pour la mise en précontrainte

Hochfeste planmäßig vorspannbare Schraubenverbindungen für den Metallbau - Teil 2: Prüfung der Eignung zum Vorspannen

This European Standard was approved by CEN on 30 April 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 14399-2:2005) has been prepared by Technical Committee CEN/TC 185, "Threaded and non-threaded mechanical fasteners and accessories", 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 September 2005, and conflicting national standards shall be withdrawn at the latest by September 2005.

Rules for design and execution of bolted connections with preloaded high-strength structural bolts are respectively defined in ENV 1993-1-1 (Eurocode 3) and ENV 1090-1 for general rules and rules for buildings.

This test, which determines the functional characteristics identified in the relevant product standards, has been developed to confirm the suitability of a high strength bolt/nut/washer assembly for preloaded bolted connections in civil engineering structures.

This document includes a Bibliography.

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

1 Scope

This document specifies a tightening test to verify the suitability of high strength bolt/nut/washer assemblies for preloaded bolted connection in metallic structures.

The purpose of this test is to check the behaviour of the fastener assembly so as to ensure that the required preload can be reliably obtained by the tightening methods specified in ENV 1090-1 with sufficient margins against over tightening and against failure.

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 14399-1:2005, *High-strength structural bolting assemblies for preloading — Part 1: General requirements.*

EN 14399-3*, High-strength structural bolting assemblies for preloading — Part 3: System HR — Hexagon bolt and nut assemblies.*

EN 14399-4 *High-strength structural bolting assemblies for preloading — Part 4: System HV — Hexagon bolt and nut assemblies.*

EN 14399-5, *High-strength structural bolting assemblies for preloading — Part 5: Plain washers.*

EN 14399-6, *High-strength structural bolting assemblies for preloading — Part 6: Plain chamfered washers.*

EN ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs (ISO 898-1:1999).*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14399-1:2005 apply.

4 Symbols and units

A elongation, (mm)

A_s nominal stress area of the bolt, (mm^2) (see EN ISO 898-1)

d nominal thread diameter, (mm)

F_b bolt force during the test, (kN)

F_{bi} individual value of the bolt force related to a given nut rotation, torque or bolt elongation, (kN)

F_{bm} mean value of F_{bi} values, (kN)

$F_{bi,max}$ individual value of the maximum bolt force reached during the test, (kN)

F_p specified preload of $0{,}7\, f_{ub}\, A_s$, (kN)