SLOVENSKI PREDSTANDARD

SIST ENV 1090-4

prva izdaja
julij 2001

Izdelava in montaža jeklenih konstrukcij – 4 del: Dopolnilna pravila za konstrukcije z votlimi prerezi (prevzet ENV 1090-4:1997 z metodo platnice)

Execution of steel structures - Part 4: Supplementary rules for hollow section structures

Exécution des structures en acier - Partie 4: Règles supplémentaires pour les structures en profils creux

Ausführung von Tragwerken aus Stahl - Teil 4: Ergänzende Regeln für Tragwerke aus Hohlquerschnitten

Deskriptorji: stavbe, jeklene konstrukcije, konstrukcijska jekla, votli profili, materiali, izdelava, varjenje, stikovanje, geometrijska odstopanja, zaščita, pregledi

ICS 91.080.10

Referenčna številka
SIST ENV 1090-4:2001 ((sl),en)

Nadaljevanje na straneh od II do IV in od 1 do 25

NACIONALNI UVOD

Predstandard SIST ENV 1090-4 ((sl),en), Izdelava in montaža jeklenih konstrukcij - 4. del: Dopolnilna pravila za konstrukcije z votlimi prerezi, prva izdaja, 2001, ima status slovenskega predstandarda in je z metodo platnice prevzet evropski predstandard ENV 1090-4 (en), Execution of steel structures - Part 4: Supplementary rules for hollow section structures, December 1997.

NACIONALNI PREDGOVOR

Evropski predstandard ENV 1090-4:1997 je pripravil tehnični odbor Evropskega komiteja za standardizacijo CEN/TC 135 Izdelava in montaža jeklenih konstrukcij.

Odločitev za prevzem tega predstandarda po metodi platnice je sprejela delovna skupina USM/TC KON/WG 3 Jeklene konstrukcije, ki je pripravila tudi nacionalni dokument za uporabo v Sloveniji, potrdil pa tehnični odbor USM/TC KON Konstrukcije.

Ta slovenski predstandard se lahko uporablja samo v skladu z nacionalnim dokumentom, ki je sestavni del SIST ENV 1090-4:2001.

Ta slovenski predstandard je dne 2000-12-04 odobril direktor USM.

Rok veljavnosti tega predstandarda je do izdaje evropskega standarda EN 1090-4.

ZVEZE S STANDARDI

S prevzemom tega evropskega predstandarda veljajo naslednje zveze:

SIST ENV 1090-1:1999	((sl),en)	Izdelava in montaža jeklenih konstrukcij – 1. del: Splošna pravila in pravila za stavbe
SIST ENV 1992-1-1:1999	((sl),en)	Eurocode 2: Projektiranje betonskih konstrukcij – Del 1-1: Splošna pravila in pravila za stavbe
SIST ENV 1993-1-1:1996	((sl),en)	Eurocode 3: Projektiranje jeklenih konstrukcij - Del 1-1: Splošna pravila in pravila za stavbe
SIST ENV 1994-1-1:1998	((sl),en)	Eurocode 4: Projektiranje sovprežnih konstrukcij – Del 1-1: Splošna pravila in pravila za stavbe

OPOMBI

- Povsod, kjer se v besedilu predstandarda uporablja izraz “evropski predstandard”, v SIST ENV 1090-4:2001 to pomeni “slovenski predstandard”.

- Nacionalni uvod in nacionalni predgovor nista sestavni del predstandarda.

VSEBINA **Stran**

Nacionalni dokument za uporabo v Sloveniji

Pri referenčnih standardih za vijake je potrebno upoštevati določila Nacionalnega dokumenta za uporabo v Sloveniji za SIST ENV 1090-1:1999.

EUROPEAN PRESTANDARD **ENV 1090-4**

PRÉNORME EUROPÉENNE

EUROPÄISCHE VORNORM November 1997

UDC 624. 94. 014.2; 624.07; 693.81

Descriptors: buildings, steel construction, structural steels, materials, manufacturing, welding, fastening, tolerance, protection, inspection

English version

Execution of steel structures
Part 4: Supplementary rules for hollow section structures

Execution des structures en acier
Partie 4: Règles supplémentaires pour les structures en profils creux

Ausführung von Tragwerken aus Stahl
Teil 4: Ergänzende Regeln für Tragwerke aus Hohlquerschnitten

This European Prestandard (ENV) was approved by CEN on 17 July 1997 as a prospective standard for provisional application.

The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into an European Standard.

CEN members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of an ENV into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

CONTENTS 2

This list of contents refer only subclauses where addition to or modification of the corresponding subclauses of ENV 1090-1 are introduced.

FOREWORD

This European Prestandard has been drawn up by Technical Committee CEN/TC 135 "Execution of steel structures", the secretariat of which is held by NSF.

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

INTRODUCTION

Addition:

(104) This European Prestandard ENV 1090-4 is a supplement to the ENV 1090-1: Execution of Steel structures - General rules and rules for buildings.

(105) This European Prestandard presupposes that the work is performed in accordance with the requirements of ENV 1090-1, as amended by this supplement.

(106) In this European Prestandard, the following terms are used thus:

Addition: means that the text applies in addition to the corresponding clause/subclause of ENV 1090-1 without any amendment to the text of ENV 1090-1;

Modification: means that the text shall modify the corresponding text of ENV 1090-1 as appropriate.

(107) An addition is identified by the subsequent number to the last subclause respective paragraph number of ENV 1090-1 added to 100.

(108) Where a subclause of ENV 1090-1 is not mentioned in this ENV 1090-3, it applies as far as deemed appropriate in each case.

1 SCOPE

This clause of ENV 1090-1 is applicable except as follows:

Addition:

(106) This part of ENV 1090 gives supplementary provisions extending the application of ENV 1090-1 to cover requirements for execution of steel structures or components for steel structures that are:

- latticed and assembled into either uni-planar or multi-planar configurations;

and

- composed partly or wholly of circular, square or rectangular hollow sections.

Note 1: The terms *hollow section* or *hollow section component* are intended to include all types of *hollow components*, not only those produced as a standard range of rolled steel shapes but also custom-made fabricated shapes.

Note 2: The requirements of this part of ENV 1090 are only applicable to structures not susceptible to fatigue.

(107) With respect to execution of joints and connections in hollow section lattice girders, this part of ENV 1090 is intended to be consistent with the requirements for design given in Annex K of ENV 1993-1-1.

Note: The scope of this part of ENV 1090 includes welded and bolted lattice structures, although this part of ENV 1090 and Annex K of ENV 1993-1-1 concentrate on requirements for welded lattice structures. Annex J lists some informative references.

2 NORMATIVE REFERENCES

This clause of ENV 1090-1 is applicable.

3 DEFINITIONS

This clause of ENV 1090-1 is applicable except as follows:

Addition:

3.118: **component**: A separate part produced during fabrication, which may itself be an assembly of several smaller components, see also note 1.

3.119: **connection**: Location at which two components are interconnected. See also note 2 and note 3.

3.120: **gap**: The distance, measured along the length of the connecting face of the chord, between the toes of the adjacent brace components. See also note 2.

3.121: **joint**: A nodal zone within which two or more components are connected. See also note 3.

3.122: **member**: A designation used for structural design purpose, usually stating the function of a component.

3.123: **multi-planar joint**: A joint of components in more than a single plane. See also note 1.

3.124: **overlap**: The intersecting distance, measured along the length of the connecting face of the chord, between the toes of the adjacent brace components. See also note 2.

3.125: **structure:** Organized combination of connected components designed to provide some measure of rigidity; *hence* a self-stable framework on site. The term refers to load carrying components. See also note 2.

3.126: **uni-planar joint**: A joint of components in a single plane. See also note 2.

Note 1: In Annex K of ENV 1993-1-1, the term *member* is used for individual components or assemblies of components that are designed to serve a particular purpose. The constructor may not know the design purpose of components.

Note 2: The terms 3.119, 3.120, 3.123, 3.124, 3.125, 3.126 are generally in accordance with the definitions given in ENV 1993-1-1 and its Annex K, with *component* used instead of *member*.

Note 3: The terms *connection* and *joint* are sometimes used synonymously but a distinction is made in this European Prestandard. Annex K of ENV 1993-1-1 uses *connection* in its title, but refers to *joints* in the text and seems to imply that a *joint* is a number of *connections* at or around the same node, where each *connection* is between just two members. Annex J of ENV 1993-1-1 defines the terms and uses them more precisely. Examples of *in-line*, *branch*, and *mitre* joints are given in figures 1, 5 and 6 respectively.

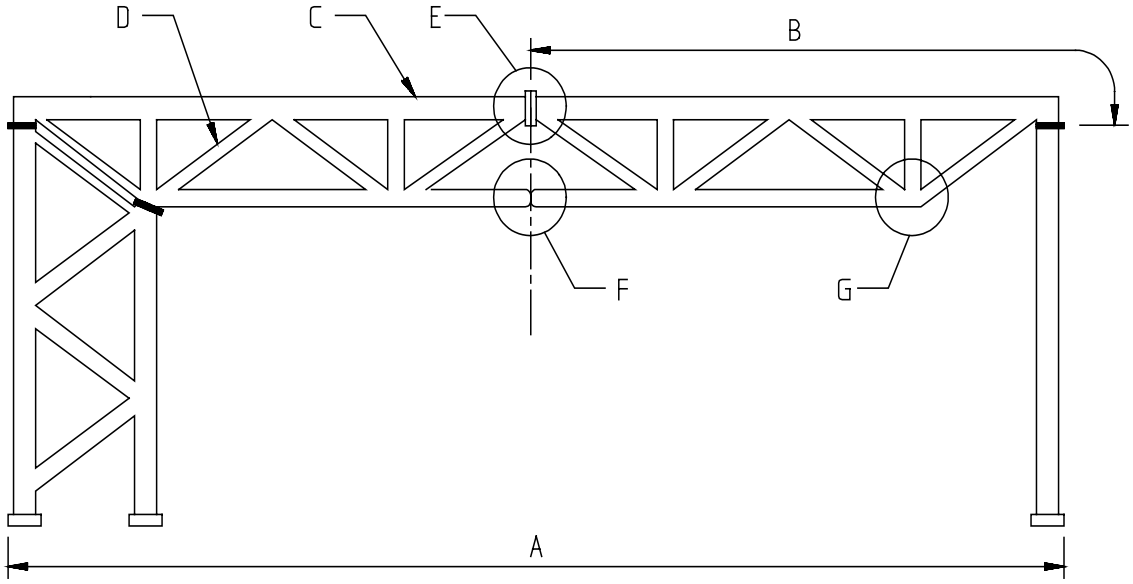


Figure 1: Illustration of defined terms

The symbols used on figure 1 means:

A = Structure

B = Component assembled from several smaller components

C = Chord component

D = Bracing component

E = Site bolted connection

F = Site welded connection

G = Joint

4 DOCUMENTATION

This clause of ENV 1090-1 is applicable.

5 MATERIALS

This clause of ENV 1090-1 is applicable.

6 FABRICATION

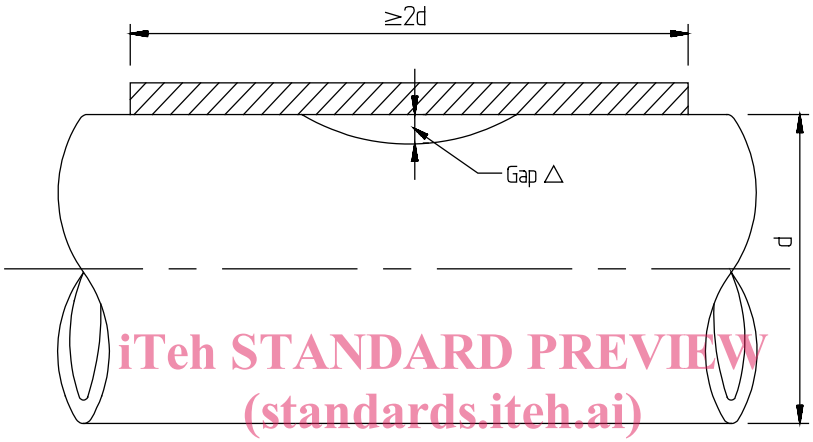
This clause of ENV 1090-1 is applicable except as follows:

6.3 Handling and storage

Addition:

(103) Damage resulting in local dents in the surface of hollow sections shall be assessed in accordance with figure 2. If the gap exceeds the permitted deviation, repairs may be executed by means of fully welding on local cover plates of the same thickness as the original material.

Note: Such repairs are not uncommon, because many hollow sections have relatively thin walls. This procedure should be used in preference to any hot-shaping procedure in accordance with 6.5 of ENV 1090-1.



Characteristic cross-sectional dimension of section is d
Straight edge of length ≥ 2d
Gap Δ ≤ the larger of d/100 or 2 mm

Figure 2: Permitted deviation for surface profile of a dented component

6.4 Cutting

Addition:

(106) Circular hollow sections being used as branch components in fillet welded joints may be cut in straight segments to prepare them for interconnection at saddle joints provided that the fit-up of the joint geometry suits the requirements of the welding procedure specification.

6.5 Shaping

Modification:

(3) Bending of components by cold forming may be used provided that properties of the as-bent material and geometry are checked for consistency with the requirements of the project specification. Bending by cold forming may cause alteration of section properties (eg. concavity, ovality and wall thinning) and increased hardness.

Note: Some background guidance is available as given in Annex J.