SLOVENSKI STANDARD
SIST EN 1708-2:2019

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Nadomešča:
SIST EN 1708-2:2001

Varjenje - Opis zvarnih spojev na jeklu - 2. del: Deli tlačnih posod brez tlačne obremenitve

Welding - Basic weld joint details in steel - Part 2: Non internal pressurized components

Schweißen - Verbindungselemente beim Schweißen von Stahl - Teil 2: Nicht innendruckbeanspruchte Bauteile

Soudage - Descriptif de base des assemblages soudés en acier - Partie 2 : Composants non soumis à une pression interne

Ta slovenski standard je istoveten z: **EN 1708-2:2018**

ICS:

25.160.40	Varjeni spoji in vari	Welded joints and welds

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EUROPEAN STANDARD

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Supersedes EN 1708-2:2000

English Version

Welding - Basic weld joint details in steel - Part 2: Non internal pressurized components

Soudage - Descriptif de base des assemblages soudés en acier - Partie 2 : Composants non soumis à une pression interne

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This European Standard was approved by CEN on 28 September 2018.

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

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

Contents

Page

European foreword

This document (EN 1708-2:2018) has been prepared by Technical Committee CEN/TC 121 “Welding and allied processes”, 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of an identical text or by endorsement, at the latest by June 2019 and conflicting national standards shall be withdrawn at the latest by June 2019.

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 1708-2:2000.

The main changes compared to the previous edition are as follows:

a) the normative references and bibliography have been updated;

b) process numbers have been updated according to EN ISO 4063;

c) reference to EN ISO 9692-2 in Tables 2, 3, 4 und 5 has been deleted.

EN 1708, *Welding — Basic welded joint details in steel* is composed of the following parts:

— *Part 1: Pressurized components*;

— *Part 2: Non internal pressurized components*.

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

1 Scope

The purpose of this document is to exemplify sound and accepted welded connections applicable to welded not internal pressurized steel components. It does not promote the standardization of connections that may be regarded as mandatory or restrict development in any way. The requirements of carrying capacity, fitness for purposes, fatigue and corrosion stress will be considered if necessary.

This document contains examples of connections welded by the following processes (process numbers according to EN ISO 4063):

— Manual metal arc welding (111);

— Self-shielded tubular-cored arc welding (114);

— Submerged arc welding (12);

— MIG welding; Metal inert gas welding with solid wire electrode (131);

— MAG welding; Metal active gas welding with solid wire electrode (135);

— Tubular cored metal arc welding with active gas shield (136);

— MAG welding; Metal active gas welding with metal cored electrode (138);

— MIG welding; Metal inert gas welding with flux cored electrode (132);

— MIG welding; Metal inert gas welding with metal cored electrode (133);

— TIG welding; Tungsten inert gas arc welding (14).

Other processes by agreement.

Further requirements will be considered in accordance with existing application standards.

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 1792, *Welding - Multilingual list of terms for welding and related processes*

EN ISO 2553, *Welding and allied processes - Symbolic representation on drawings - Welded joints (ISO 2553)*

EN ISO 9692-1, *Welding and allied processes - Types of joint preparation - Part 1: Manual metal arc welding, gas-shielded metal arc welding, gas welding, TIG welding and beam welding of steels (ISO 9692-1)*

EN ISO 9692-2, *Welding and allied processes - Joint preparation - Part 2: Submerged arc welding of steels (ISO 9692-2)*

EN ISO 15614-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1)*

EN ISO 17659, *Welding - Multilingual terms for welded joints with illustrations (ISO 17659)*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Symbols and abbreviations

For the purposes of this document, the following symbols and abbreviations apply.

WPQR = welding procedure qualification record

a = weld design throat thickness

b = root gap

B = width of profile or plate

c = distance to auxiliary attachment

d = size of bevel or diameter

D = distance of the stiffener and size of opening

F = load strength

g = width of weld in two flange plate

h = difference of thickness

i = distance of the opening and weld to the web

k = penetration depth and corner distance

l = length

m = size of mechanical beveling

R = radius

t = plate thickness

t_R = thickness of stacked flange end

z = leg length of the weld

α = included angle (i.e. angle of the slope)

δ = angle of T-joint

NOTE All dimensions in the following tables are guide values.

5 Requirements

5.1 Selection for detail

The connections recommended are not considered to be equally suitable for all service conditions, nor is the order in which they are shown indicative of their relative characteristics. In selecting the appropriate detail to use from the several alternatives shown for each type of connection, consideration shall be given to the existing fabrication and service conditions that pertain.

5.2 Joint preparation

5.2.1 General

The limitations quoted in weld profiles and sizes are based on commonly accepted sound practice, but they can be subjected to modifications if required by special welding techniques or design conditions.

The terminology and symbolization used in this standard follow EN 1792, EN ISO 17659 and EN ISO 2553.

5.2.2 Joint preparation geometry

The recommended joint preparation geometry (e.g. included angles, root gaps, root radius and depth of root faces) are given in EN ISO 9692-1 and in EN ISO 9692-2.

In cases where full penetration butt joints are indicated, it is intended that they shall be back chipped or gouged and back welded, or alternatively that the welding procedure shall be such as to ensure sound and effective root penetration.

5.2.3 Butt joints with significant difference of thickness

Depending on the type of load (type of action effect) and the difference of thickness, adjustment with the weld or bevelling is necessary (see Table 1 and Figure 1) when the direction of strength is perpendicular to the weld.

Table 1 — Guidelines for weld preparation on butt joints with significant difference of thickness

Type of load (type of action effect)	Difference of thickness, *h*, mm	Adjustment with the weld: suggested	Adjustment with the weld: not permitted	Angle of the slope [a]	Figures
Members with predominantly static loads	≤ 10	X	–	–	1 a) and 1 b)
	> 10	–	X	20° ≤ α ≤ 45°	1 c) and 1 d)
Members significantly susceptible to fatigue or to risk of brittle fracture	≤ 3	X	–	–	1 b)
	> 3	–	X	10° ≤ α ≤ 30° [b]	1 c) and 1 d)

Key: X = permitted; – = not permitted or not necessary

[a] The angle of the slope depends on the actual acceptable notch case.

[b] In case of low loaded components, α can be raised up to 45°.

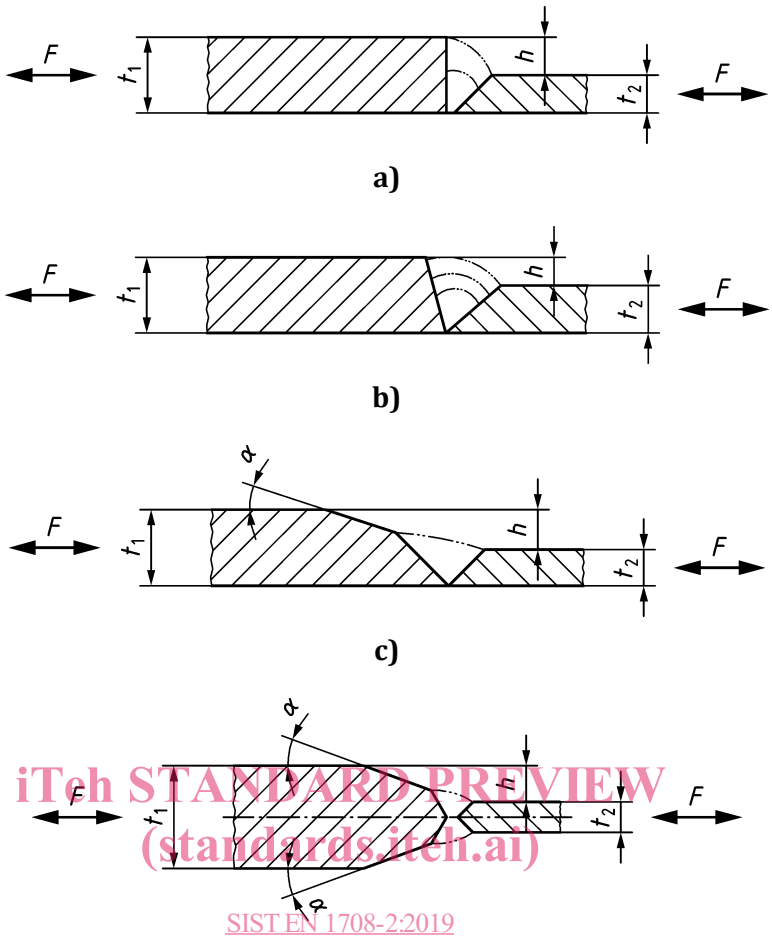


Figure 1 — Sketches of adjustment on difference of thickness

5.2.4 Weld size

The thickness of welds (in particular of fillet welds), which are not determined by their profile, are based on the assumption that the joint need not to be stronger than the connected parts.

Fillet welds for T-joints (see Figure 2) should respect the following condition (see Formulae (1) and (2)):

$$3\,mm \leq a \leq 0,7 \times t_2 \tag{1}$$

NOTE 1 In special cases, the above limit of 0,7 x t_2 can be exceeded.

$$a \geq \sqrt{t_{max.}} - 0,5\,mm \tag{2}$$

NOTE 2 Only up to 30 mm plate thickness except for process 12 (submerged arc welding).

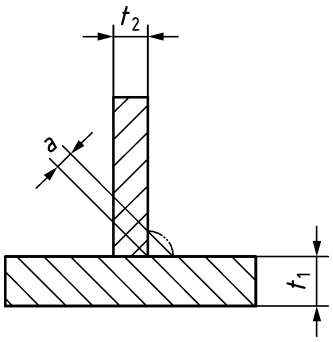
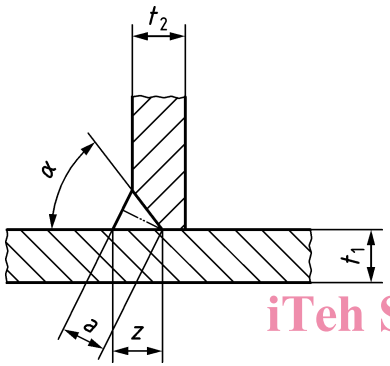
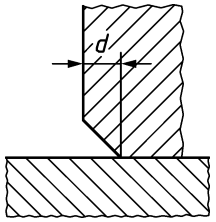
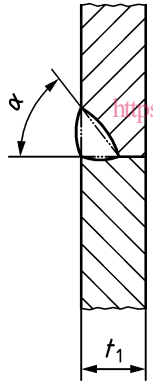
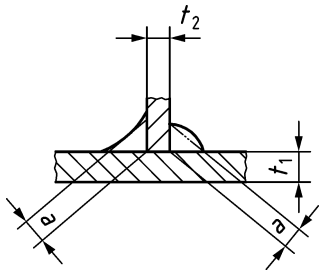


Figure 2 — Sketch of a T-joint

5.3 Typical connections

Typical connections are given in Table 2. For connections that not are mentioned (e.g. full penetration joint), reference shall be made to EN ISO 9692-1 and EN ISO 9692-2.

Table 2 — Typical joint preparation

No.	Figure [a]	Application/Condition	Note
2.1 Weld thickness evaluation			
2.1.1		Partial penetration welds α ≤ 60°	If the leg length of the weld *z* is specified, the weld throat can be assumed equal to *a* without any other indication: *a* = *d* applicable to double side weld, too 
2.1.2			
2.1.3		Design throat of fillet welds	Measured from the theoretical root point