



SLOVENSKI STANDARD

SIST EN 912:2000

01-april-2000

Vežna sredstva za les - Specifikacije za moznike za les

Timber fasteners - Specifications for connectors for timber

Holzverbindungsmittel - Spezifikationen für Dübel besonderer Bauart für Holz

Organes d'assemblage pour le bois - Spécifications des connecteurs pour bois

Ta slovenski standard je istoveten z: EN 912:1999

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ICS:

| | | |
|-----------|----------------------|-------------------|
| 21.060.99 | Drugi vezni elementi | Other fasteners |
| 91.080.20 | Lesene konstrukcije | Timber structures |

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 912

September 1999

ICS 21.060.99; 91.080.20

English version

Timber fasteners - Specifications for connectors for timber

Organes d'assemblage pour le bois - Spécifications des
connecteurs pour bois

Holzverbindungsmittel - Spezifikationen für Dübel
besonderer Bauart für Holz

This European Standard was approved by CEN on 21 August 1999.

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.

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

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

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 124 "Timber structures", the secretariat of which is held by DS.

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of an identical text or by endorsement, at the latest by March 2000, and conflicting national standards shall be withdrawn at the latest by March 2000.

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, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This standard is one of a series of standards for building materials. It was prepared by a working group under the convenorship of Deutsches Institut für Normung e. V. (DIN).

This standard includes four normative Annexes concerning the specifications for different types of connectors: ring, plate, toothed-plate and other connectors. The standard contains only well-established connectors which are currently covered by existing National Standards.

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1 Scope

This standard defines the dimensions and the materials of certain well-established connectors for use in joints between members in loadbearing timber structures.

For data on strength and deformation properties of joints made with the connectors reference is given to prEN 13271:1998.

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.

| | |
|-----------------|---|
| EN 1561 | Founding – Grey cast irons |
| EN 1562 | Founding – Malleable cast irons |
| EN 1706 | Aluminium and aluminium alloys – Castings – Chemical composition and mechanical properties |
| EN 10025+A1 | Hot rolled products of non-alloy structural steels – Technical delivery conditions (Includes amendment A1:1993) |
| EN 10131 | Cold rolled uncoated low carbon and high yield strength steel flat products for cold forming – Tolerances on dimensions and shape |
| EN 10139 | Cold rolled uncoated mild steel narrow strip for cold forming – Technical delivery conditions |
| EN 10142 +A1 | Continuously hot-dip zinc coated low carbon steel strip and sheet for cold forming – Technical delivery conditions (Includes amendment A1:1995) |
| EN 10147 +A1 | Continuously hot-dip zinc coated structural steel strip and sheet – Technical delivery conditions (Includes amendment A1:1995) |
| EN 10268 | Cold rolled flat products made of high yield strength micro-alloyed steels for cold forming – General delivery conditions |
| prEN 13271:1998 | Timber fasteners - Characteristic load-carrying capacities and slip moduli for connector joints |

3 Definitions

For the purpose of this standard, the following definitions apply:

3.1 Connector: Device generally consisting of a plate, toothed-plate or ring which, when partly embedded in each or in one of the contact faces of two members and held together by a connecting bolt, is capable of transmitting a load from one member to another.

3.2 Double-sided connector: Connector symmetrical in cross-section and embedded into each contact face of two adjacent timber members.

3.3 Single-sided connector: Connector embedded into a timber contact face only on one side.

3.4 Ring connector: Double-sided connector formed as a closed ring or a ring cut at one place on its circumference.

3.5 Plate connector: Single-sided connector made of a circular plate with a flange along the circumference of one side of the plate.

3.6 Toothed-plate connector: Connector made of a plate with triangular teeth along the edges of the plate or with spikes on the plate; a toothed-plate connector may be double-sided or single-sided.

4 Symbols

In this standard, the following symbols are used with suitable subscripts where necessary:

| | |
|-------|--|
| a | Width of cut; distance; offset distance, in millimetre |
| a_1 | Length of tongue; distance between screw holes, in millimetre |
| a_2 | Depth of tongue; depth of countersink, in millimetre |
| a_3 | Depth of slot, in millimetre |
| d_1 | Diameter of centre hole (bolt-hole), in millimetre |
| d_2 | Diameter of screw holes; diameter of nail holes; diameter of inner teeth circle, in millimetre |
| d_3 | Outside diameter of hub; diameter of outer teeth circle, in millimetre |
| d_4 | Diameter of perforations, in millimetre |
| d_c | Diameter, diameter of plate |
| h_1 | Height of straight portion; height of straight portion outside of flange; height of hub above plate, in millimetre |
| h_c | Height; total height, in millimetre |
| r | Radius, in millimeter |
| t | Thickness, thickness of plate; maximum thickness of plate and flange, in millimeter |
| t_1 | Minimum thickness of plate; thickness of plate, in millimetre |
| t_2 | Thickness of notch, in millimetre. |

5 Requirements

5.1 General

Connectors shall be marked in accordance with clause 6.

Depending on the environmental conditions the connectors shall be given an anti-corrosion treatment of a type to be agreed between the purchaser and the manufacturer.

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5.2 Classification of connectors

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The connectors are classified in four groups for which dimensions and specifications for materials are given in the normative Annexes:

- Group A Ring connectors; see Annex A
- Group B Plate connectors; see Annex B
- Group C Toothed-plate connectors; see Annex C
- Group D Other connectors; see Annex D.

6 Marking

Every delivery unit shall be marked by the manufacturer. The marking shall contain the number of this standard and the number of the connector according to the Annex to this standard. Furthermore, the nominal dimension (e. g. the nominal diameter) should be marked.

Annex A (normative)

Specifications for ring connectors

A.1 Type A1

A.1.1 Description

A ring connector of type A1 (see figure A.1) is a closed ring connector with a cross-sectional area like a lens. The dimensions shall comply with table A.1.

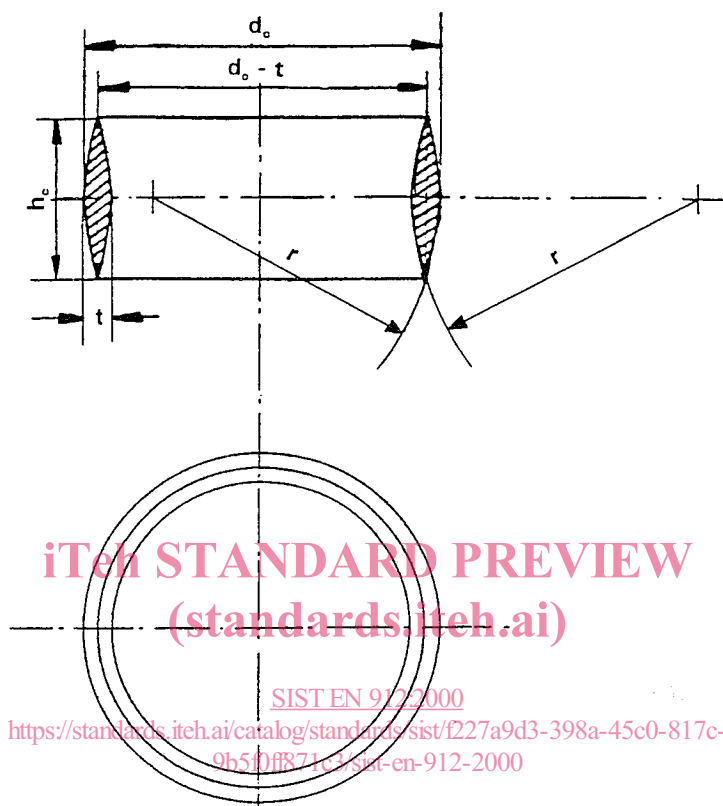


Figure A.1: Connector of type A1

Table A.1: Dimensions of connectors of type A1

Dimensions in millimetres

| Diameter d_c | Height h_c | Thickness t | Radius r |
|-------------------|-----------------|------------------|---------------|
| 65 | 30 | 5 | 50 |
| 80 | 30 | 6 | 50 |
| 95 | 30 | 6 | 60 |
| 126 | 30 | 6 | 60 |
| 128 | 45 | 8 | 60 |
| 160 | 45 | 10 | 60 |
| 190 | 45 | 10 | 60 |

Tolerances on all dimensions: $\pm 0,2$.

A.1.2 Material

Ring connectors of type A1 are made of aluminium casting alloy EN AC-AISi9Cu3(Fe) according to EN 1706.

A.2 Type A2

A.2.1 Description

A ring connector of type A2 (see figure A.2) is a connector with parallel sides cut at one place on its circumference to form a tongue and a slot. The dimensions shall comply with table A.2.

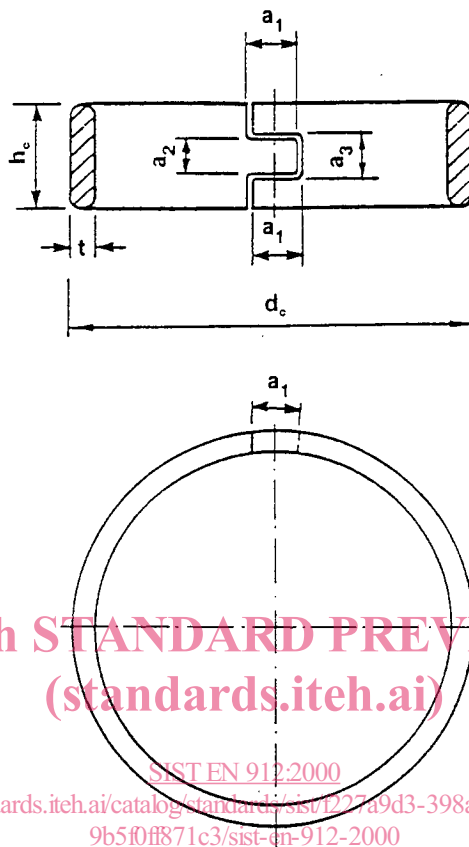


Figure A.2: Connector of type A2

Table A.2: Dimensions of connectors of type A2

Dimensions in millimetres

| Nominal diameter | Diameter d_c | Height h_c | Thickness t | Length of tongue a_1 | Depth of tongue a_2 | Depth of slot a_3 | |
|------------------|-------------------|-----------------|------------------|---------------------------|--------------------------|------------------------|--|
| 64 | 72,0 | 19,0 | 4,1 | 9,0 | 6,5 | 7,0 | |
| Tolerances: | Diameter d_c | $\pm 0,75$ | Thickness t | $\pm 0,10$ | Other dimensions | $\pm 0,25$ | |

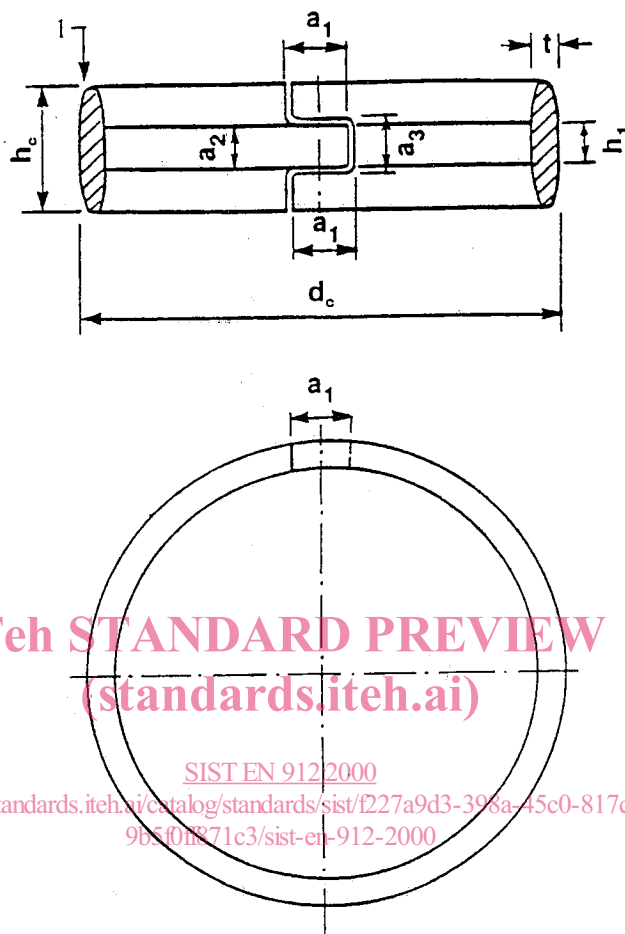
A.2.2 Material

Ring connectors of type A2 are made of hot or temper rolled steel strip of steel alloy HRMS Grade Fe430A according to EN 10025.

A.3 Type A3

A.3.1 Description

A ring connector of type A3 (see figure A.3) is a connector with double bevelled sides cut at one place on its circumference to form a tongue and a slot. The dimensions shall comply with table A.3.



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1 Round milled edge, radius r

Figure A.3: Connector of type A3

Table A.3: Dimensions of connectors of type A3

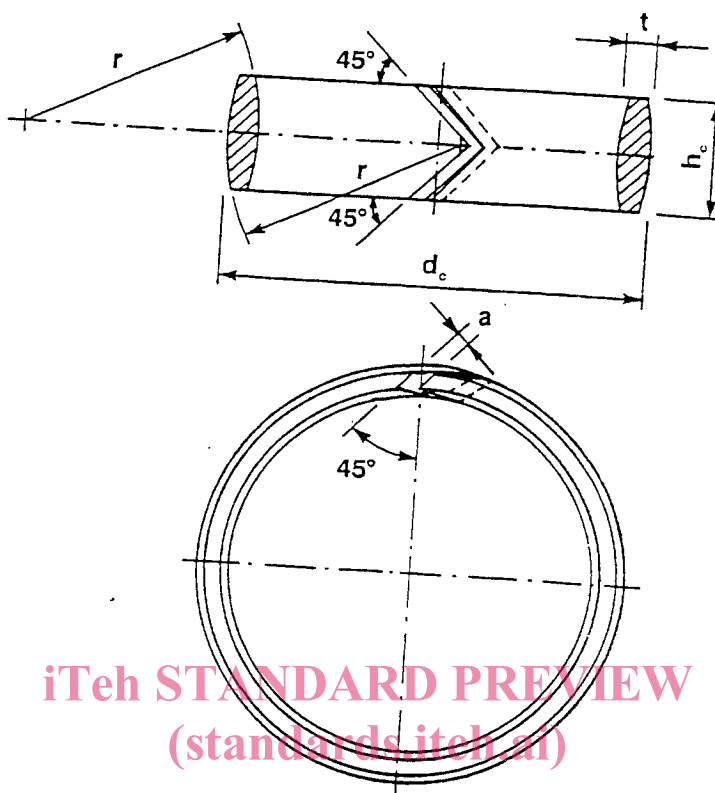
| Dimensions in millimetres | | | | | | | | |
|---------------------------|------------------|------------|-----------|----------------------------|--------|------------------|-----------------|---------------|
| Nominal diameter | Diameter | Height | Thickness | Height of straight portion | Radius | Length of tongue | Depth of tongue | Depth of slot |
| | d_c | h_c | t | h_1 | r | a_1 | a_2 | a_3 |
| 64 | 72,0 | 19,0 | 4,1 | 6,5 | 1,5 | 9,0 | 6,5 | 7,0 |
| 102 | 112,0 | 25,4 | 4,9 | 8,3 | 1,7 | 9,0 | 8,3 | 9,0 |
| Tolerances: | Diameter d_c | $\pm 0,75$ | | | | | | |
| | Thickness t | $\pm 0,10$ | | | | | | |
| | Other dimensions | $\pm 0,25$ | | | | | | |

A.3.2 Material

Ring connectors of type A3 are made of hot or temper rolled steel strip of steel alloy HRMS Grade Fe430A according to EN 10025.

A.4 Type A4**A.4.1 Description**

A ring connector of type A4 (see figure A.4) is a connector with double bevelled sides. In every connector except the smallest, a V-shaped cut is made at one place on its circumference. The angle between the direction of cut and the direction of circumference is 45°. The dimensions shall comply with table A.4.



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Figure A.4: Connector of type A4

Table A.4: Dimensions of connectors of type A4

Dimensions in millimetres

| Diameter d_c | Height h_c | Thickness t | Radius r | Width of cut a |
|--|-----------------|------------------|---------------|---------------------|
| 60 | 18 | 5 | 36 | ¹⁾ |
| 80 | 22 | 6 | 48 | 2 |
| 100 | 26 | 7 | 60 | 2 |
| 120 | 30 | 8 | 72 | 2 |
| 140 | 36 | 9 | 84 | 4 |
| 160 | 40 | 10 | 96 | 4 |
| 180 | 46 | 10 | 108 | 4 |
| 200 | 50 | 11 | 120 | 4 |
| Tolerances: Diameter d_c ²⁾ +1,0 -0,5 Height h_c ±0,5 for $h_c \leq 36$ ±0,7 for $h_c \geq 40$ Thickness t ±0,5 for $t \leq 9$ ±0,7 for $t \geq 10$ Angle 45° ±1° | | | | |
| ¹⁾ Without cut. ²⁾ Tolerances on cast ring before splitting. | | | | |

A.4.2 Material

Ring connectors of type A4 are made of grey cast iron EN-GJL-150 or EN-GJL-200 (Material number: EN-JL 1020 or EN-JL 1030) according to EN 1561.

A.5 Type A5

A.5.1 Description

A ring connector of type A5 (see figure A.5) is a connector with a rectangular cross-section. It is cut at one place on its circumference so that the ends are in a V-shape. The dimensions shall comply with table A.5

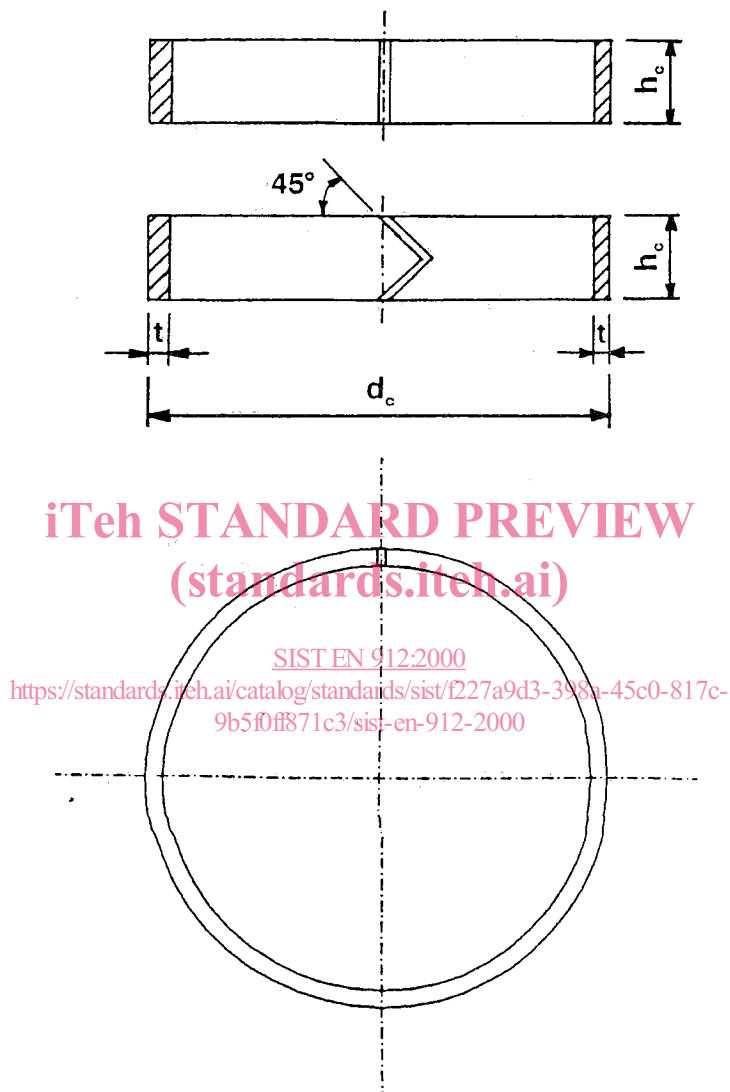


Figure A.5: Connector type of A5