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Authorised and notified according to Article 10 of the Council Directive (89/106/EEC) of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products.

BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Designated by Government to issue European Technical Approvals

Member of EOTA

European Technical Approval ETA-04/0042

*Sixth issue**

Trade name:	Simpson Strong-Tie, IT, ITT, MIT, LBV, B, BI, HB, ITSE, IU, IUT, IUS, MIU, HU, U, LUS, HUS, IUSE, ITB, HITB, ITBS, IUB, HIUB, IUBS, IUQ, HIUQ, IUC, THM and ZS Connectors for use with engineered timbers
Holder of approval:	Simpson Strong-Tie Winchester Road Cardinal Point Tamworth Staffordshire B78 4HG United Kingdom Tel: + 44(0)1827 255600 Fax: + 44(0)1827 255616 website: www.stongtie.eu (e-mail link in website)
Generic type and use of construction product:	Three-dimensional nailing plate (timber-to-timber joist Connector)
Valid from: **to:**	16 July 2012 15 July 2017
This version replaces	ETA-04/0042 valid from 6 October 2009 to 31 October 2014 and includes ETA-06/0034 and ETA-08/0084
Manufacturing plant:	Simpson Strong-Tie Winchester Road Cardinal Point Tamworth Staffordshire B78 3HG United Kingdom Simpson Strong-Tie ZAC des Quatre Chemins 85400 Sainte Gemme La Plaine France Simpson Strong-Tie A/S Boulstrup DK-8300 Odder Denmark Simpson Strong-Tie 5151 South Airport Way Stockton CA 95206 USA Simpson Strong-Tie North East USA Division 2600 International Street Columbus OH 43228 USA
This European Technical Approval contains:	38 pages plus four Annexes which form an integral part of the document

I LEGAL BASES AND GENERAL CONDITIONS

1 This European Technical Approval is issued by the British Board of Agrément in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 [Construction Products Directive (CPD)] on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by the Council Directive 93/68/EEC of 22 July 1993[2]
- UK implementation of CPD Statutory Instruments 1991, No 1620. The Building and Building Construction Products Regulations 1991 — made 15 July 1991, laid before Parliament 22 July 1991, coming into force 27 December 1991, and amended by the Construction Products (Amendment) Regulations 1994 (Statutory Instruments 1994, No 3051)
- Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC[3]
- EOTA Guideline ETAG 015 *Three-dimensional Nailing Plates*, September 2002 edition.

2 The British Board of Agrément is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.

3 This European Technical Approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European Technical Approval.

4 This European Technical Approval may be withdrawn by the British Board of Agrément, in particular after information by the Commission on the basis of Article 5(1) of Council Directive 89/106/EEC.

5 Reproduction of this European Technical Approval, including transmission by electronic means, shall be in full. However, partial reproduction can be made with the written consent of the British Board of Agrément. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European Technical Approval.

6 The European Technical Approval is issued by the approval body in its official language. This version should correspond to the version circulated within EOTA. Translations into other languages have to be designated as such.

(1) Official Journal of the European Communities No L40, 11.2.1989, p12.

(2) Official Journal of the European Communities No L220, 30.8.1993, p1.

(3) Official Journal of the European Communities No L17, 20.1.1994, p34.

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

1.1 Definition of product

Simpson Strong-Tie, IT, ITT, MIT, LBV, B, BI, HB, ITSE, Top Flange Connectors are one-piece non-welded three-dimensional nailing plates, top-flange supported timber-to-timber connectors. Additionally, the connectors can be welded to a steel header.

Simpson Strong-Tie IU, IUT, IUS, MIU, HU, U, IUSE and IUC Face Fix Connectors are one-piece, non-welded three dimensional nailing plates, face-fix timber-to-timber connectors.

Simpson Strong-Tie LUS, HUS and THM Face Fix Connectors are one-piece, non-welded three dimensional nailing plates, face-fix timber-to-timber joist to truss connectors.

Simpson Strong-Tie ITB, ITBS, HITB, HIUB and IUBS Connectors are non-welded three dimensional nailing plates for timber-to-timber connectors, including I-joists, metal web floor trusses and solid timber joists. The ITB, HITB, IUB and HIUB Connectors are one-piece, and the ITBS and IUBS Connectors are two-piece adjustable angle joist connectors.

Simpson Strong-Tie IUQ and HIUQ Face Fix Connectors are non-welded three dimensional nailing plates, face-fix timber-to-timber joist to SIP panel connectors.

Simpson Strong-Tie ZS Clips are non welded three dimensional nailing plates for use with I-joists or solid sawn timbers used as noggins between joists to support floor decks or partitions.

The timber elements are fixed together with a range of fasteners. Typical examples are shown in Annexes and typical installations shown in Annex 2, Figure 1

The connectors are made from zinc-coated steel in accordance with EN 10346 : 2009 or ASTM A653 and stainless steel in accordance with EN 10088-2 : 2005, grade 1.4401 or 1.4404 with a minimum characteristic 0.2% yield stress of 240 MPa, a minimum 1.0% yield stress of 270 MPa and a minimum ultimate strength of 530 MPa, and are available in a range of sizes.

They are intended for use in making structural end grain to side-grain joints in timber structures, as a connection between a wood-based joist and a solid-timber or wood-based header, (type IT, ITT, MIT, LBV, B, BI, HB, ITSE can also be used with a steel header), where Essential Requirement 1 Mechanical resistance and stability (CPD, Annex 1) applies.

The connectors are for use in timber structures subject to the dry, internal conditions defined by service classes 1 and 2 of EN 1995-1-1 : 2004 + A1 : 2008 (Eurocode 5) and for joints subject to static or quasi-static loading.

The provisions made in this ETA are based on an assumed intended working life for the three-dimensional nailing plate of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be used as a means for selecting the appropriate product in relation to the expected economically reasonable working life of the works.

2 Characteristics of product and methods of verification

The assessment of fitness for the intended use (see part II, section 1) has been made in accordance with ETAG 015 : 2002.

The characteristic load-carrying capacities or design model calculation method for the products are given in the Tables in Annex 2 which have been derived in accordance with ETAG 015 : 2002. They should be used for designs in accordance with Eurocode 5. These values are based on the assumption that there is a maximum gap of 3 mm between the timber members (see Annex 2, Figure 2), the members are laterally restrained and wane is not present in the timber at the joint. In some cases, capacities for intermediate widths can be interpolated. Connector capacity is independent of the connector height.

The connectors shall only be used with the fasteners specified in Annex 4. The performance of the fasteners has been determined in accordance with either ETA 04/0013 or Eurocode 5 (See also Annex 3 for further details).

In relation to reaction to fire, the connectors are classified as class A1, in accordance with EN 13501-1 : 2007 + A1 : 2009 and EC Decision 96/603/EC, amended by EC Decision 2000/605/EC.

Performance in relation to fire resistance would be determined for the complete structural element with any associated finishes; therefore, there are no aspects of performance relevant to this aspect of this Essential Requirement for joist connectors (three-dimensional nailing plates).

According to the manufacturer's declaration, the product specification has been compared with the dangerous substances detailed in Council Directive 76/769/EEC (as amended) and listed on the database established on the EC construction website to verify that it does not contain such substances above the acceptable limits.

The connectors have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species (including timbers preserved with organic solvent, boron diffusion and related preservatives) described in Eurocode 5 and subject to the dry, internal conditions defined by service classes 1 and 2.

Each connector bears the manufacturer's identification mark and the product type. The CE Marking appears on the packaging.

No performance has been determined (NPD) in relation to ductility of a joint under cyclic testing. The contribution to the performance of structures in seismic zones, therefore, has not been assessed.

NPD in relation to the joint's stiffness properties — is to be used for the analysis of the serviceability limit state.

3 Evaluation of Conformity and CE marking

3.1 Attestation of Conformity system

The system of Attestation of Conformity applied to this product shall be that laid down in the CPD, Annex III, 2(ii), first possibility (referred to as System 2+).

3.2 Responsibilities

3.2.1 Tasks for the manufacturer — factory production control

The manufacturer shall continue to operate a factory production control system. All elements, requirements and provisions adopted by the manufacturer are to be documented to ensure that the product conforms to this ETA.

The manufacturer shall only use raw materials supplied with the relevant inspection documents as laid down in the prescribed test plan[4]. The raw materials shall be subject to agreed controls by the manufacturer before acceptance. Checks on incoming materials, such as sheet metal, shall include control of the certificates of conformity presented by suppliers (comparison with nominal values) by verifying dimensions and determining material properties, eg chemical composition, mechanical properties and zinc coating thickness.

The manufactured components are checked visually and for dimensions.

The frequency of controls and tests conducted during production and on the finished connector is laid down in the prescribed test plan, taking account of the manufacturing process.

The results of factory production control are recorded and evaluated. The records include at least:

- designation of the product
- basic material and components
- type of control or testing
- date of manufacture of the product and date of testing of the product or basic material and components
- result of control and testing and, if appropriate, comparison with requirements
- signature of person responsible for factory production control.

The records shall be presented to the inspection body involved in the continuous surveillance.

Details of the extent, nature and frequency of testing and controls to be performed within the factory production control shall correspond to the prescribed test plan included in the technical documentation of this European Technical Approval.

3.2.2 Tasks for approved bodies — initial type-testing of the product

For initial type-testing[5] the results of the assessments, calculations and tests performed as part of the verification for the European Technical Approval shall be used unless there are changes in the production line or plant. In such cases the necessary type-testing has to be agreed between the British Board of Agrément and the approved body involved.

(4) The prescribed test plan is deposited with the British Board of Agrément and is made available to the approved bodies involved in the conformity attestation process.

(5) In the context of ETAG 015, initial type-testing may be by testing and/or by calculation.

3.2.3 Tasks for approved bodies

3.2.3.1 Initial inspection of factory and of factory production control

The approved body should ascertain that, in accordance with the prescribed test plan, the factory, in particular the staff and equipment, and the factory production control, are suitable to ensure a continuous and orderly manufacturing of the Connector with the specifications given in part II, section 2.

3.2.3.2 Continuous surveillance

The approved body shall visit the factory at least twice a year for routine inspections. It shall be verified that the system of factory production control and the specified manufacturing processes are maintained, taking account of the prescribed test plan.

The results of product certification and continuous surveillance shall be made available on demand by the certification body to the British Board of Agrément. Where the provisions of the European Technical Approval and the prescribed test plan are no longer fulfilled, the certificate of conformity shall be withdrawn by the certification body.

3.2.3.3 Declaration of conformity

The manufacturer shall make a declaration of conformity in accordance with the requirements of this European Technical Approval.

3.3 CE Marking

The CE Marking may be affixed to the packaging of the connectors. The CE symbol shall be accompanied by the following information:

- identification number of the notified body
- name/identification mark of the manufacturer
- last two digits of the year in which the marking was affixed
- identification of the product
- number of the European Technical Approval
- number of the EC certificate of conformity.

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Manufacturing

Simpson Strong-Tie, IT, ITT, MIT, LBV, B, BI, HB, ITSE, IU, IUT, IUS, MIU, HU, U, LUS, HUS, IUSE, ITB, HITB, ITBS, IUB, HIUB, IUBS, IUQ, HIUQ, IUC, THM and ZS Connectors for engineered timbers are manufactured in accordance with the provisions of this European Technical Approval using the manufacturing processes as identified in the inspection of the plant by the British Board of Agrément and laid down in the technical documentation.

4.2 Installation

4.2.1 Joints

A connector (three-dimensional nailing plate) is deemed fit for its intended use provided:

- the connector capacity is calculated in accordance with the manufacturer's literature
- joints are designed in accordance with Eurocode 5 or an appropriate national code, under the responsibility of an engineer experienced in timber structures
- verifiable calculation, notes and drawings are prepared taking account of the loads to be resisted
- the requirements detailed in part II, section 1, of this ETA, relating to the timber members being joined are taken into account, for example, lateral restraint and wane
- joints are designed for the specified fasteners and grade or type of joist and header
- the actual end bearing capacity of the joist (end grain member) to be used with the connector is checked by the designer of the joist to ensure it is not less than the connector capacity and, if necessary, a connector with a larger end bearing capacity substituted to suit. The end bearing capacity of I-joists with solid sawn timber flanges shall be based on the full connector seat bearing area and the appropriate characteristic stress perpendicular to grain for the particular grade of timber. For I-joists with LVL flanges, the joist bearing area shall be taken as 80% of the full connector seat bearing area.

4.2.2 Criteria

The fitness for use of the joint can be assumed if the connector is installed correctly in accordance with the following requirements:

- installation is carried out by personnel under the direction of supervisors, all of whom are appropriately qualified for this work
- installation is in accordance with the manufacturer's specifications and drawings prepared for that purpose, and the appropriate tools are used
- the specified fasteners and grade or type of joist and header are used
- the requirements relating to the timber members being joined are taken into account, eg lateral restraint and wane
- the maximum gap of 3 mm (see Annex 2 Figure 2) between the joist and the header assumed in the assessment is not exceeded.

4.2.3 Responsibility of the manufacturer

It is the responsibility of the manufacturer to ensure that the information on the specific conditions given in part II, sections 1, 2, 4.2.1 and 4.2.2 of this ETA, is given to those concerned. This information may be made by replicating the respective parts of this European Technical Approval. In addition, all installation data shall be shown clearly on the package and/or on an instruction sheet, preferably using illustration(s).

The minimum information[6] required is:

- fastener specification
- requirements for timber members
- identification of the manufacturing batch.

(6) All data shall be presented in a clear and explicit form.

5 Recommendations

5.1 Recommendations on packaging, transport and storage

The connectors are packed in boxes bearing the manufacturer's name, product type, dimensions, quantity, date of fabrication and batch reference details.

In relation to transportation and storage, the connectors should be treated as conventional metallic building products.

5.2 Recommendations on use, maintenance and repair

The assessment of the fitness for use is based on the assumption that maintenance is not required during the assumed intended working life.

Should repair prove necessary, it is normal for the connector to be replaced.

BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

On behalf of the British Board of Agrément

Brian Chamberlain
Head of Approvals — Engineering

Greg Cooper
Chief Executive

Date of Sixth issue: 16 July 2012

**Original ETA issued 15th October 2004. This version includes the merger of ETAs 06/0034 and 08/0084, and the addition of ZS, IUQ, HIUQ, IUC and MUS products.*

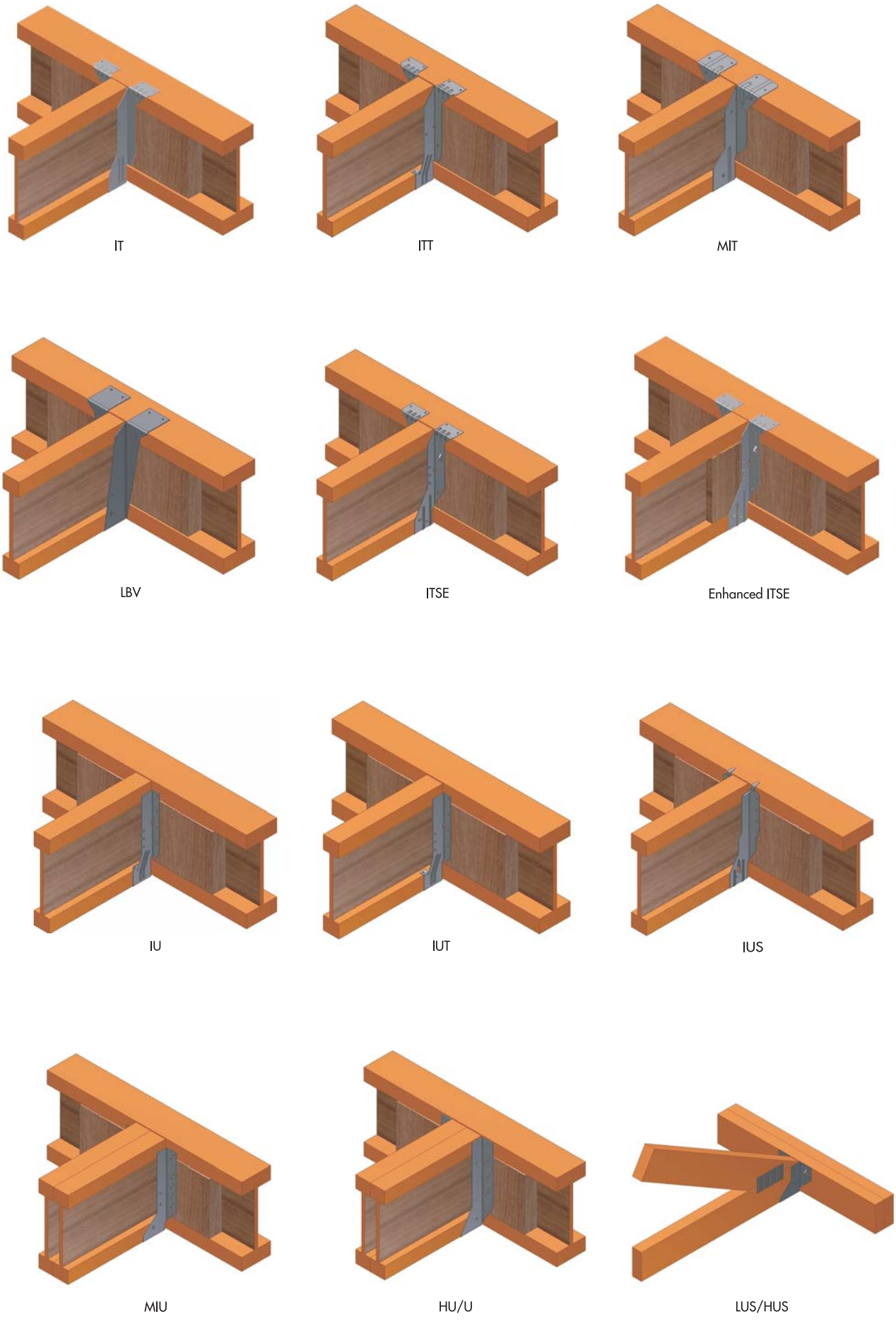
ANNEX 1 HISTORY OF AMENDMENTS

Amendments made in derivation of ETA-04/0042, Sixth issue

This ETA has been amended to incorporate details of ETA-08/0084 *Simpson Strong-Tie ITB, HITB, ITBS, IUB, HIUB and IUBS Hangers for Joists* and ETA-06/0034 *Simpson Strong-Tie IU, IUT, IUS, MIU, HU, U, LUS, HUS, IUSE Face-Fix Hangers*. In addition, IU, IUQ, HIUQ, IUC, THM and ZS Connectors have been included.

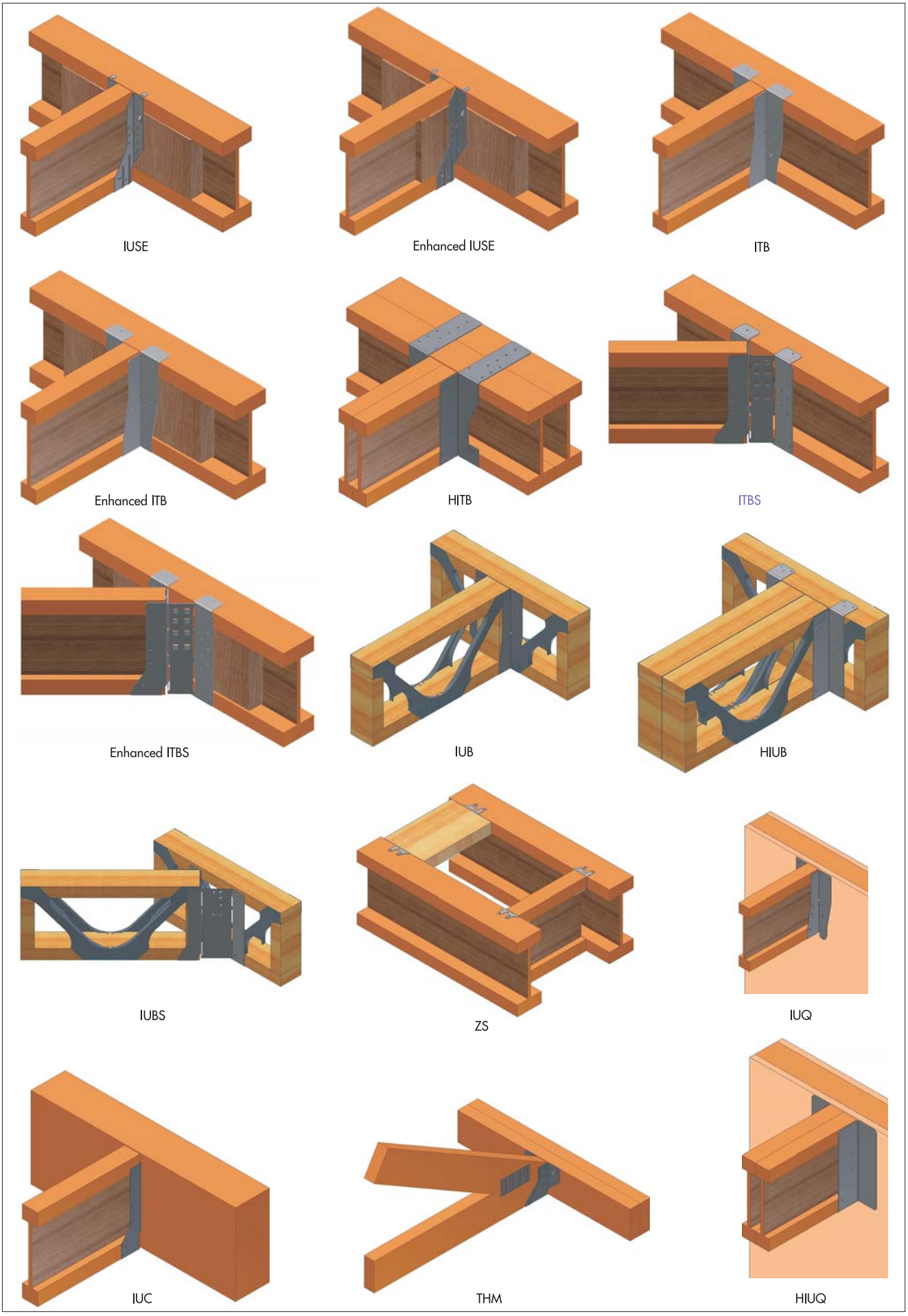
ANNEX 2 INSTALLATION DETAIL

Figure 1 Typical installation



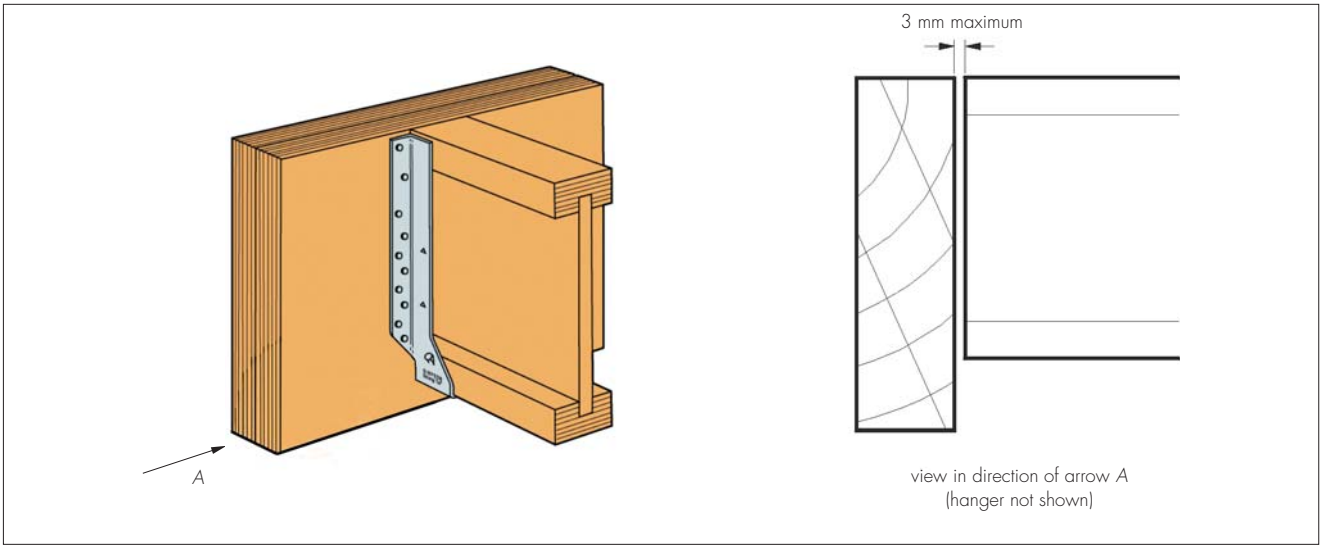
ANNEX 2 INSTALLATION DETAIL (continued)

Figure 1 Typical installation



ANNEX 2 INSTALLATION DETAIL (continued)

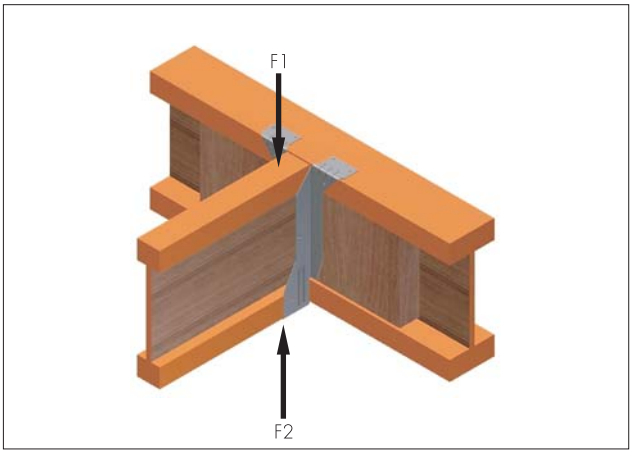
Figure 2 End gapt



ANNEX 3 BASIS OF DESIGN

To determine the characteristic capacities for the timber-to-timber connectors, the load has been applied in F1 and F2 directions as shown in Figure 3.

Figure 3 Definition of force directions



F1 – Vertical down load capacity

F2 – Vertical up load capacity

Nail capacities

The nail capacities are calculated as follows, and have been validated against connector test data:

- smooth nails (plain or square twisted) — as specified in relevant tables given in Annex 4. These may have an efficiency factor applied as part of the design method validation and are only for use in conjunction with the connectors described in this ETA
- CNA ring-shank nails — calculated as described in ETA-04/0013
- other ring-shank nails — calculated as described in Eurocode 5.

Top fix connectors (Design Model and performance tables)

The characteristic load-carrying capacities for the IT, ITT, MIT, LBV, B, BI, HB and ITSE connectors are given in the tables in Annex 4 which have been derived in accordance with ETAG 015 : 2002. They should be used for designs in accordance with Eurocode 5.

These values are based on the assumption that there is a maximum gap of 3 mm between the timber members, the members are laterally restrained and wane is not present in the timber at the joint. Capacities for intermediate widths can be interpolated. Connector capacity is independent of the connector height.

The connectors shall only be used with the fasteners specified in the relevant table in Annex 4. The performance of the fasteners have been determined in accordance with either ETA04/0013 or Eurocode 5 (see also Annex 4), using an ultimate tensile strength for the wire used for the production of the nails of 600 MPa.

Face fix connector (Design model and listed variables)

The design method used to determine the characteristic load-carrying capacities for the connectors has been validated by the 'calculation assisted by testing' method as defined in ETAG 015 and is detailed in the technical report entitled 'Approval for IU, IUT, IUS, MIU, HU, U, LUS, HUS and IUSE', which has been substantiated by BBA as part of the ETA approval process.

Summary of design model, to be used in conjunction with the values listed in Annex 4:

Design — Vertical down load capacity (F1)

The load is transferred from the supported member to the supporting member by:

1. Tension in the lower part of the connector.
2. Load transfer from the connector to the supporting member.

ANNEX 3 BASIS OF DESIGN (continued)

The capacity of the system is the minimum of the above two mechanisms.

Capacity = Min. (F_t, F_h)

Tension in the lower part of the connector (F_t):

F_t = 2. S. t. fu

Load transfer from the connector to the supporting member (F_h):

$$F_h = \left[1/\left[\left(\frac{1}{n_h F_{v,Rk,h}} \right) n + \left(\frac{e}{a n_h F_{ax,Rk,h}} \right) n \right] \right] 1/n$$

Design — Vertical up load capacity (F2)

F_{uplift} = minimum of (nj $F_{v,Rk,j}$) and (n_h $F_{v,Rk,h}$)

Definition of symbols

Where:

n_j = number of effective joist nails

n_h = number of effective header nails

$F_{v,Rk,j}$ = lateral load-carying capacity of the side/joist nails

$F_{v,Rk,h}$[(1)] = lateral load-carrying capacity of the header nails

$F_{ax,Rk,h}$[(1)] = axial load-carrying capacity of the header nails

S = minimum width of connector side flanges

t = thickness of side flanges

f_u = tensile strength of hanger steel

a = lever arm between centre of compression zone and centre of the header nails effective in tension

n = factor dependent on nail type:

n = 2 for ring shank nails (ARS)

n = 100 for smooth (plain or square twisted nails)

e = eccentricity of load, equals distance from centre of seat to face of header. For HU and HUS connectors the eccentricity can be reduced by calculating the minimum bearing areas D_{eff} required to achieve the joist capacity and using half this value as the eccentricity.

The connectors shall only be used with the fasteners specified in the relevant table in Annex 4. The performance of the fasteners have been determined in accordance with either ETA04/0013 or Eurocode 5 (see also Annex 4), using an ultimate tensile strength for the wire used for the production of the nails of 600 MPa.

(1) Refer to Table 3.1

Other hangers determined by test method (performance tables)

The characteristic load-carrying capacities for the connectors IUQ, HIUQ, IUC, IUBS, THM, ZS, IUB, HIUB, ITBS, ITB and HITB are given in the tables in Annex D which have been derived in accordance with 'Test Only' method in accordance with ETAG 015 : 2002. They should be used for designs in accordance with Eurocode 5.

These values are based on the assumption that there is a maximum gap of 3 mm between the timber members, the members are laterally restrained and wane is not present in the timber at the joint. Capacities for intermediate widths can be interpolated. Connector capacity is independent of the connector height.

The connectors shall only be used with the fasteners specified in the relevant table in Annex 4. The performance of the fasteners have been determined in accordance with either ETA04/0013 or Eurocode 5 (see also Annex 4), using an ultimate tensile strength for the wire used for the production of the nails of 600 MPa.

ANNEX 3 BASIS OF DESIGN (continued)

Table 3.1 Nail Capacities

Nail type	Nail shape	Nail dia/ side length	Nail length (mm)	Wire tensile strength (mm)	Timber grade (MPa)	Characteristic timber density	Plate *t* (mm)	Axial $F_{ax,Rk,h}$ (kN)	Lateral $F_{v,Rk,h}$ (kN)
3.75x30 ST	square	3.40	30.0	600.0	C16	310	1.2	0.188	0.90
					C18	320		0.201	0.93
					C20	330		0.213	0.95
					C22	340		0.226	0.98
					C24	350		0.240	1.00
					C27	370		0.268	1.06
					C30	380		0.283	1.08
					SCL	480		0.451	1.35
3.8x38 SR	round	3.80	38.0	600.0	C16	310	1.2	0.269	1.14
					C18	320		0.286	1.18
					C20	330		0.305	1.22
					C22	340		0.323	1.25
					C24	350		0.343	1.28
					C27	370		0.383	1.34
					C30	380		0.404	1.37
					SCL	480		0.644	1.65
3.75x75 SR	round	3.75	75.0	600.0	C16	310	1.2	0.532	1.31
					C18	320		0.567	1.34
					C20	330		0.603	1.36
					C22	340		0.640	1.39
					C24	350		0.678	1.42
					C27	370		0.758	1.47
					C30	380		0.799	1.50
					SCL	480		1.275	1.78
4.0x90 SR	round	4.00	90.0	600.0	C16	310	1.2	0.683	1.48
					C18	320		0.727	1.51
					C20	330		0.774	1.54
					C22	340		0.821	1.58
					C24	350		0.870	1.61
					C27	370		0.973	1.67
					C30	380		1.026	1.70
					SCL	480		1.637	2.04
3.75x30 ST	square	3.40	30.0	600.0	C16	310	1.5	0.186	0.89
					C18	320		0.198	0.92
					C20	330		0.211	0.94
					C22	340		0.224	0.97
					C24	350		0.237	1.00
					C27	370		0.265	1.05
					C30	380		0.280	1.07
					SCL	480		0.447	1.34
3.8x38 SR	round	3.80	38.0	600.0	C16	310	1.5	0.267	1.14
					C18	320		0.284	1.17
					C20	330		0.302	1.21
					C22	340		0.321	1.24
					C24	350		0.340	1.28
					C27	370		0.380	1.33
					C30	380		0.401	1.36
					SCL	480		0.639	1.65
3.75x75 SR	round	3.75	75.0	600.0	C16	310	1.5	0.530	1.31
					C18	320		0.564	1.34
					C20	330		0.600	1.36
					C22	340		0.637	1.39
					C24	350		0.675	1.42
					C27	370		0.755	1.47
					C30	380		0.796	1.50
					SCL	480		1.270	1.78
4.0x90 SR	round	4.00	90.0	600.0	C16	310	1.5	0.680	1.48
					C18	320		0.725	1.51
					C20	330		0.771	1.54
					C22	340		0.818	1.57
					C24	350		0.867	1.61
					C27	370		0.969	1.67
					C30	380		1.022	1.70
					SCL	480		1.631	2.04

ANNEX 3 BASIS OF DESIGN (continued)

Table 3.1 Nail Capacities (continued)

Nail type	Nail shape	Nail dia/ side length	Nail length (mm)	Wire tensile strength (mm)	Timber grade (MPa)	Characteristic timber density	Plate t (mm)	Axial $F_{ax,Rk,h}$ (kN)	Lateral $F_{v,Rk,h}$ (kN)
3.75x30 ST	square	3.40	30.0	600.0	C16	310	2.0	0.183	0.88
					C18	320		0.195	0.91
					C20	330		0.207	0.93
					C22	340		0.220	0.96
					C24	350		0.233	0.98
					C27	370		0.261	1.04
					C30	380		0.275	1.06
					SCL	480		0.439	1.32
3.8x38 SR	round	3.80	38.0	600.0	C16	310	2.0	0.263	1.12
					C18	320		0.280	1.16
					C20	330		0.298	1.19
					C22	340		0.316	1.23
					C24	350		0.335	1.27
					C27	370		0.375	1.32
					C30	380		0.395	1.35
					SCL	480		0.630	1.64
3.75x75 SR	round	3.75	75.0	600.0	C16	310	2.0	0.526	1.31
					C18	320		0.561	1.33
					C20	330		0.596	1.36
					C22	340		0.633	1.39
					C24	350		0.671	1.42
					C27	370		0.750	1.47
					C30	380		0.791	1.50
					SCL	480		1.261	1.78
4.0x90 SR	round	4.00	90.0	600.0	C16	310	2.0	0.677	1.48
					C18	320		0.721	1.51
					C20	330		0.767	1.54
					C22	340		0.814	1.57
					C24	350		0.862	1.61
					C27	370		0.964	1.67
					C30	380		1.017	1.70
					SCL	480		1.622	2.03

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES

Annex 4.1 Connector type IT

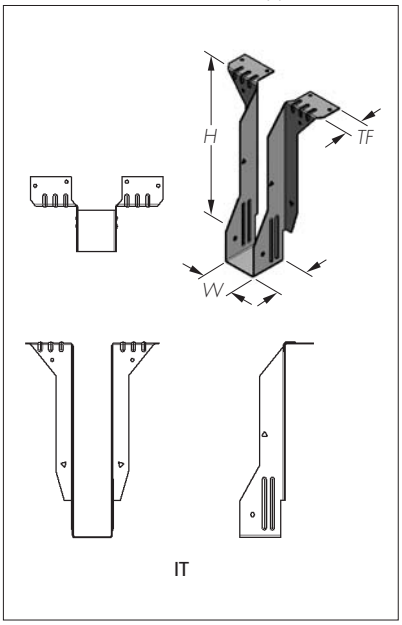


Table 4.1a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)		Seat depth *B*	Top flange *TF*
	Min	Max	Min	Max	(mm)	(mm)
IT	140	600	40	91	51	35

Table 4.1b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
IT	1.2	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.1c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
IT	Square twist(ST)	3.75	30	Hot-dip galvanized/Sheradized /Electroplated
	Round wire(SR)	3.80	38	Hot-dip galvanized
	Round wire(SR)	3.75	75	Hot-dip galvanized
	Ring shank(CNA)(1)	3.70	50	Electroplated zinc
	Ring shank(CNA)(1)	4.00	50	Electroplated zinc

(1) Characteristics in accordance with ETA 04/0013.

Table 4.1d Performance values — capacity under vertical downward load

Nail specification				Connector width	Characteristic capacity of Connector (kN)								
					Header specification								
Type	Size (mm)	No in top	No in face	(mm)	C16	C18	C20	C24 C22	GL24c	C27	C30 GL24h GL28c	LVL	LVL flanged I-beam
IT													
ST	3.75 x 30	4	2	40–91	5.82	5.94	6.11	6.29	6.47	6.76	6.93	8.36	8.36
SR	3.80 x 38	4	2	40–91	7.19	7.34	7.57	7.79	8.01	8.34	8.49	9.60	9.60
SR	3.75 x 75	4	2	40–91	7.99	8.11	8.31	8.49	8.68	9.00	9.18	10.77	N/A
ARS	3.70 x 50	4	2	40–91	10.28	10.53	10.84	11.17	11.49	12.08	12.41	15.64	N/A
ARS	4.00 x 50	4	2	40–91	11.20	11.47	11.81	12.15	12.49	13.13	13.48	16.95	N/A
IT(1)													
ST	3.75 x 30	4	4	40–91	7.20	7.36	7.58	7.80	8.03	8.40	8.62	10.50	10.50
SR	3.80 x 38	4	4	40–91	9.09	9.31	9.60	9.88	10.16	10.60	10.78	12.22	12.22
SR	3.75 x 75	4	4	40–91	10.20	10.38	10.62	10.85	11.09	11.50	11.73	13.83	N/A
ARS	3.70 x 50	4	4	40–91	13.37	13.72	14.13	14.55	14.97	15.77	16.21	20.57	N/A
ARS	4.00 x 50	4	4	40–91	14.65	15.02	15.46	15.91	16.37	17.23	17.70	22.39	N/A

(1) With additional face nails in triangular holes.

Notes
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- When I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- Connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 and SR 3.8 x 38 nails
- The values in the tables are Connector capacities and do not take account of the joist (end grain member) capacity which shall be checked by the joist designer.

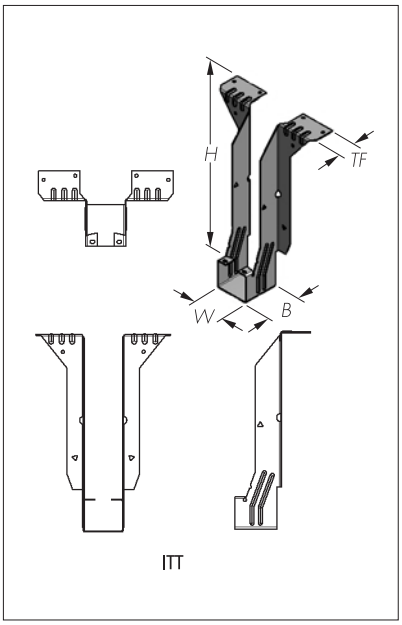
Table 4.1e Performance values — capacity under vertical upward load

Joist nail specification			Capacity of Connector (kN)		
			Header specification		
Type	Size (mm)	No in joist	C16-30	LVL	LVL flanged I-beam
ST	3.75 x 30	2	2.38	2.38	2.38
SR	3.8 x 38	2	2.48	2.48	2.48

Notes
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- When I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- Connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 and SR 3.8 x 38 nails.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.2 Connector type ITT



ITT

Table 4.2a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)		Seat depth *B*	Top flange *TF*
	Min	Max	Min	Max	(mm)	(mm)
ITT	140	600	40	91	51	35

Table 4.2b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
ITT	1.2	S250 or DX51D to EN 10346 : 2009 or SS Grade 33 to ASTM A653	Z275 or G90

Table 4.2c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
ITT	Square twist(ST)	3.75	30	Hot-dip galvanized/Sheradized /Electroplated
	Round wire(SR)	3.80	38	Hot-dip galvanized
	Round wire(SR)	3.75	75	Hot-dip galvanized
	Ring shank(CNA)[1]	3.70	50	Electroplated zinc
	Ring shank(CNA)[1]	4.00	50	Electroplated zinc

(1) Characteristics in accordance with ETA 04/0013.

Table 4.2d Performance values — capacity under vertical downward load

Nail specification				Connector width	Characteristic capacity of Connector (kN)								
					Header specification								
Type	Size	No in top	No in face										LVL flanged I-beam
	(mm)			(mm)	C16	C18	C20	C22	C24	C27	C30	LVL	
ITT													
ST	3.75 x 30	4	2	40–91	5.94	6.05	6.24	6.42	6.60	6.89	7.07	8.52	8.52
SR	3.80 x 38	4	2	40–91	7.31	7.46	7.69	7.92	8.14	8.48	8.63	9.76	9.76
SR	3.75 x 75	4	2	40–91	8.11	8.23	8.43	8.62	8.81	9.17	9.32	10.93	N/A
ARS	3.70 x 50	4	2	40–91	10.40	10.65	10.97	11.29	11.62	12.22	12.55	15.79	N/A
ARS	4.00 x 50	4	2	40–91	11.32	11.59	11.93	12.28	12.63	13.27	13.62	17.11	N/A
ITT(1)													
ST	3.75 x 30	4	4	40–91	7.32	7.48	7.70	7.93	8.16	8.54	8.76	10.66	10.66
SR	3.80 x 38	4	4	40–91	9.21	9.43	9.72	10.01	10.30	10.73	10.92	12.38	12.38
SR	3.75 x 75	4	4	40–91	10.32	10.49	10.74	10.98	11.22	11.64	11.87	13.99	N/A
ARS	3.70 x 50	4	4	40–91	13.49	13.84	14.26	14.68	15.11	15.91	16.35	20.73	N/A
ARS	4.00 x 50	4	4	40–91	14.76	15.14	15.59	16.04	16.50	17.36	17.84	22.55	N/A

(1) With additional face nails in triangular holes.

Notes
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- When I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- Connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 and SR 3.8 x 38 nails
- The values in the tables are Connector capacities and do not take account of the joist (end grain member) capacity which shall be checked by the joist designer.

Table 4.2e Performance values — capacity under vertical upward load

Joist nail specification			Capacity of Connector (kN)		
			Header specification		
Type	Size (mm)	No in joist	C16-30	LVL	LVL flanged I-beam
ST	3.75 x 30	2	1.01	1.01	1.01
SR	3.8 x 38	2	1.01	1.01	1.01

Notes
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- When I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- Connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 and SR 3.8 x 38 nails.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.3 Connector type ITSE

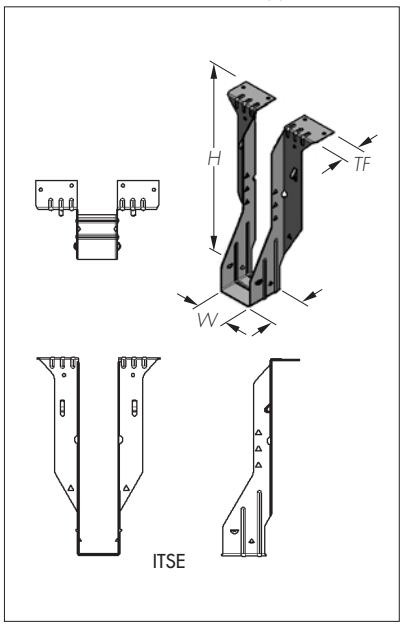


Table 4.3a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)		Seat depth *B*	Top flange *TF*
	Min	Max	Min	Max	(mm)	(mm)
ITSE	140	600	40	100	54	34

Table 4.3b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
ITSE	1.2	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.3c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
ITSE	Square twist(ST)	3.75	30	Hot-dip galvanized/Sheradized /Electroplated
	Round wire(SR)	3.75	75	Hot-dip galvanized
	Round wire(SR)	3.70	50	Hot-dip galvanized
	Ring shank(CNA)[1]	4.00	40	Electroplated zinc
	Ring shank(CNA)[1]	4.00	50	Electroplated zinc

(1) Characteristics in accordance with ETA 04/0013.

Table 4.3d Performance values — capacity under vertical downward load

Header nail specification				Connector width	Capacity of Connector (kN)								
					Header specification								
Type	Size	No in top	No in face		C16	C18	C20	C22	CL24 GL24c	C27	C30 GL24h GL28c	LVL	LVL flanged I-beam
	(mm)			(mm)									
ITSE													
ST	3.75 x 30	4	2	40–100	5.94	6.05	6.24	6.42	6.60	6.89	7.07	8.52	8.52
SR	3.75 x 75	4	2	40–100	8.11	8.23	8.43	8.62	8.81	9.13	9.32	10.93	10.93
SR	3.75 x 50	4	2	40–100	11.86	12.05	12.31	12.57	12.82	13.26	13.50	15.57	15.57
ARS	4.00 x 40	4	2	40–100	7.77	7.94	8.18	8.42	8.66	9.80	9.31	11.35	11.35
ARS	4.00 x 50	4	2	40–100	9.16	9.38	9.67	9.95	10.24	11.89	11.02	12.72	12.72
ITSE(1)													
ST	3.75 x 30	4	4	40–100	7.32	7.48	7.70	7.93	8.16	8.54	8.76	10.66	10.66
SR	3.75 x 75	4	4	40–100	10.32	10.49	10.74	10.98	11.22	11.64	11.87	13.99	13.99
SR	3.70 x 50	4	4	40–100	15.52	15.79	16.12	16.45	16.78	17.35	17.66	20.41	20.41
ARS	4.00 x 40	4	4	40–100	9.85	10.09	10.40	10.71	11.01	12.29	11.86	14.57	14.57
ARS	4.00 x 50	4	4	40–100	11.78	12.08	12.45	12.82	13.19	15.02	14.23	16.47	16.47

(1) With additional face nails in triangular holes.

Notes

- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only

Table 4.3e Performance values — capacity under vertical upward load

Joist nail specification			Capacity of Connector (kN)		
			Header specification		
Type	Size (mm)	No in joist	C16-30	LVL	LVL flanged I-beam
ST	3.75 x 30	2	2.38	2.38	2.38
ST	3.75 x 30	8	9.52	9.52	9.52
SR	3.80 x 38	2	2.48	2.48	2.48
SR	3.75 x 30	8	9.92	9.92	9.92

Notes;

- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- when I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 and SR 3.8 x 38
- ITSE Connectors can be used without joint nails. but uplift loads cannot be applied.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.4 Connector type MIT

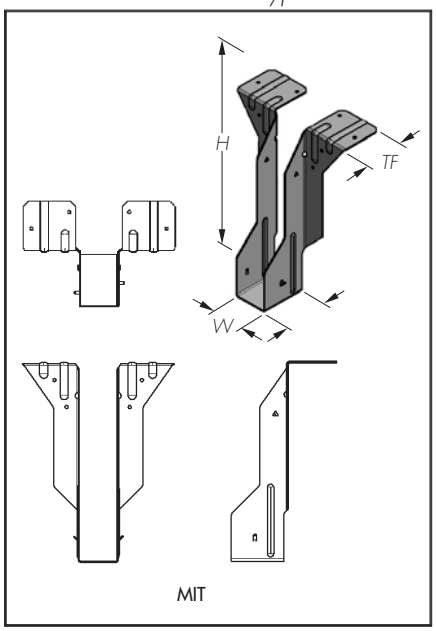


Table 4.4a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)		Seat depth *B*	Top flange *TF*
	Min	Max	Min	Max	(mm)	(mm)
MIT	140	600	40	125	64	59

Table 4.4b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
MIT	1.5	SS Grade 33 to ASTM A653	G90

Table 4.4c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
MIT	Square twist(ST)	3.75	30	Hot-dip galvanized/Sheradized /Electroplated
	Round wire(SR)	3.80	38	Hot-dip galvanized
	Round wire(SR)	3.75	75	Hot-dip galvanized
	Round wire(SR)	4.00	90	Hot-dip galvanized
	Ring shank(CNA)[1]	3.70	50	Electroplated zinc
	Ring shank(CNA)[1]	4.00	50	Electroplated zinc

(1) Characteristics in accordance with ETA 04/0013.

Table 4.4d Performance values — capacity under vertical downward load

Header nail specification				Connector width	Characteristic capacity of Connector (kN)								
					Header specification								
Type	Size	No in top	No in face										LVL flanged I-beam
	(mm)			(mm)	C16	C18	C20	C22	C24	C27	C30	LVL	
ST	3.75 x 30	4	2	40–125	7.70	7.81	8.04	8.27	8.50	8.83	9.05	10.70	10.70
SR	3.80 x 38	4	2	40–125	9.06	9.22	9.50	9.77	10.04	10.45	10.64	11.98	11.98
SR	3.75 x 75	4	2	40–125	9.90	10.03	10.27	10.51	10.75	11.11	11.35	13.16	N/A
SR	4.00 x 90	4	2	40–125	10.67	10.82	11.08	11.34	11.60	12.01	12.27	14.34	N/A
ARS	3.70 x 50	4	2	40–125	12.19	12.45	12.81	13.19	13.56	14.20	14.58	18.04	N/A
ARS	4.00 x 50	4	2	40–125	13.11	13.39	13.78	14.17	14.57	15.25	15.65	19.35	N/A

Notes:
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- when I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 and SR 3.8 x 38 nails
- the values in the tables are Connector capacities and do not take account of the joist (end grain member) capacity which shall be checked by the joist designer.

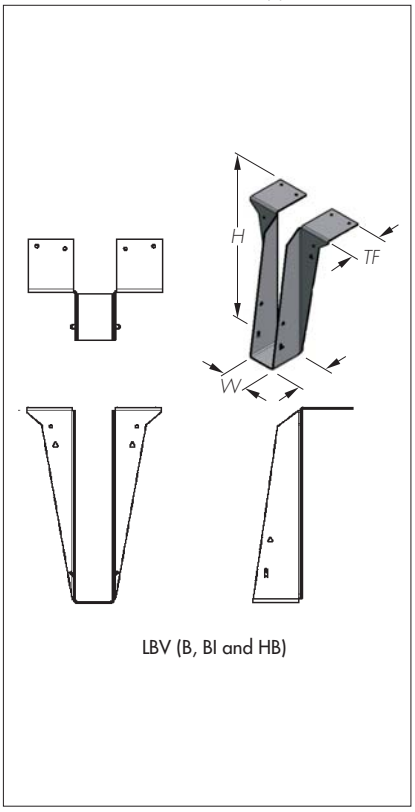
Table 4.4e Performance values – capacity under vertical upward load

Joist nail specification			Capacity of Connector
Type	Size (mm)	No in joist	(kN)
ST	3.75 x 30	2	2.38
SR	3.80 x 38	2	2.48

Notes:
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- when I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 and SR 3.8 x 38.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.5 Connector type LBV, B, BI and HB



LBV (B, BI and HB)

Table 4.5a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)		Seat depth *B*	Top flange *TF*
	Min	Max	Min	Max	(mm)	(mm)
LBV	140	450	38	125	64	64
B	130	450	40	190	64	64
BI	130	450	40	190	64	64
HB	90	450	40	225	89	89

Table 4.5b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
LBV	2.0	S250 or DX51D to EN 10346:2009 or SS Grade 33 to ASTM A653	Z275 or G90
B	2.5	S250 or DX51D to EN 10346:2009 or SS Grade 33 to ASTM A653	Z275 or G90
BI	2.5	S250 or DX51D to EN 10346:2009 or SS Grade 33 to ASTM A653	Z275 or G90
HB	3.5	S250 or DX51D to EN 10346:2009 or SS Grade 33 to ASTM A653	Z275 or G90

Table 4.5c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
LBV, B, BI, HB	Square twist(ST)	3.75	30	Hot-dip galvanized/Sheradized /Electroplated
	Round wire(SR)	3.80	38	Hot-dip galvanized
	Round wire(SR)	3.75	75	Hot-dip galvanized
	Round wire(SR)	4.00	90	Hot-dip galvanized
	Ring shank(CNA)(1)	3.70	50	Electroplated zinc
	Ring shank(CNA)(1)	4.00	50	Electroplated zinc

(1) Characteristics in accordance with ETA 04/0013.

Table 4.5d Performance values – capacity under vertical downward load

Connector/ header type	Header nail specification			Connector width	Characteristic capacity of Connector (kN)								
	Size	No in top	No in face		Header specification								
					C16	C18	C20	C22	C24	C27	C30	LVL	LVL flanged I-beam
	(mm)			(mm)									
LBV													
ST	3.75 x 30	6	4	38–125	9.15	9.34	9.63	9.92	10.20	10.68	10.96	13.30	13.30
SR	3.80 x 38	6	4	38–125	11.45	11.71	12.08	12.44	12.80	13.42	13.78	16.86	16.86
ARS	3.70 x 50	6	4	38–125	13.98	14.33	14.77	15.10	15.41	15.92	16.22	18.74	18.74
ARS	4.00 x 50	6	4	38–125	14.58	14.95	15.41	15.88	16.34	17.16	17.62	20.64	20.64
SR	3.75 x 75	6	4	38–125	14.90	15.15	15.49	15.83	16.17	16.75	17.09	20.00	20.00
SR	4.00 x 90	6	4	38–125	16.42	16.70	17.08	17.47	17.85	18.51	18.89	22.26	22.26
B/BI													
ST	3.75 x 30	6	8	40-190	12.05	12.32	12.72	13.11	13.50	14.16	14.54	17.78	17.78
SR	3.80 x 38	6	8	40-190	15.36	15.74	16.24	16.74	17.23	18.10	18.60	22.90	22.90
ARS	3.70 x 50	6	8	40-190	19.02	19.51	20.13	20.75	21.17	21.89	22.31	25.84	25.84
ARS	4.00 x 50	6	8	40-190	19.88	20.40	21.05	21.69	22.33	23.49	24.13	28.50	28.50
SR	3.75 x 75	6	8	40-190	20.63	20.85	21.33	21.80	22.27	23.09	23.56	27.66	27.66
SR	4.0 x 90	6	8	40-190	22.68	23.09	23.62	24.16	24.69	25.63	26.16	30.92	30.92
HB													
ST	3.75 x 30	6	16	40–225	16.82	17.23	17.82	18.40	18.97	19.95	20.52	25.38	25.38
SR	3.80 x 38	6	16	40–225	21.99	22.57	23.32	24.07	24.81	26.12	26.86	33.39	33.39
ARS	3.70 x 50	6	16	40–225	27.76	28.52	29.46	30.39	31.32	32.66	33.29	38.73	38.73
ARS	4.00 x 50	6	16	40–225	29.08	29.89	30.87	31.84	32.82	34.59	35.56	42.64	42.64
SR	3.75 x 75	6	16	40–225	30.57	31.12	31.84	32.56	33.28	34.54	35.25	41.60	41.60
SR	4.00 x 90	6	16	40–225	34.00	34.64	35.46	36.27	37.08	38.54	39.35	46.73	46.73

Notes:

- web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations
- when I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 and SR 3.8 x 38 nails
- the values in the tables are Connector capacities and do not take account of the joist (end grain member) capacity which shall be checked by the joist designer.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Table 4.5e Performance values – capacity under vertical upward load

Header nail specification			Connector width	Connector type	Characteristic capacity of Connector (kN)								
					Header specification								
Type	Size (mm)	No in joist	(mm)		C16	C18	C20	C22	C24	C27	C30	LVL	LVL flanged I-beam
ST	3.75 x 30	2	40–125	LBV	1.34	1.38	1.43	1.47	1.51	1.60	1.64	2.08	2.08
SR	3.80 x 38	2	40–125	LBV	1.86	1.92	1.98	2.04	2.10	2.18	2.21	2.48	2.48
ST	3.75 x 30	6	150–181	B/BI	3.12	3.22	3.32	3.42	3.52	3.73	3.83	4.83	4.83
SR	3.80 x 38	6	150–181	B/BI	4.36	4.50	4.64	4.78	4.92	5.16	5.22	5.87	5.87
ST	3.75 x 30	10	40–225	HB	4.98	5.14	5.30	5.46	5.62	5.94	6.10	7.70	7.70
SR	3.80 x 38	10	40–225	HB	7.00	7.23	7.45	7.68	7.91	8.36	8.58	9.71	9.71

Notes:

- web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations
- when I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 and SR 3.8 x 38.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.6 Connector type IUS

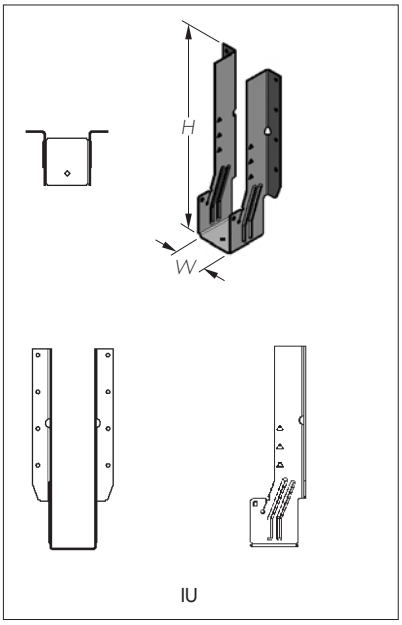


Table 4.6a Connector dimensions

Connector type	Model No	Connector height *H* (mm)		Connector width *W* (mm)	
		Min	Max	Min	Max
IU	IU (H)/(W)	90	550	40	91

Table 4.6b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
IU	1.2	S250 or DX51D to EN 10346 : 2009 or 1.4401 or 1.4404 to EN 10088-2	Z275

Table 4.6c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
IU	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	Round wire (SR)	3.80	38	Hot-dip galvanized
	Round wire (SR)	3.70	50	Hot-dip galvanized
	Round wire (SR)	3.75	75	Hot-dip galvanized
	Ring shank (ARS)[1]	3.70	40	Electroplated zinc
	Ring shank (CNA)[1]	3.70	50	Electroplated zinc
	Ring shank (CNA)[1]	4.00	35	Electroplated zinc
	Ring shank (CNA)[1]	4.00	40	Electroplated zinc
	Ring shank (CNA)[1]	4.00	50	Electroplated zinc
	Ring shank (CNA)[1]	4.20	35	Electroplated zinc
	Ring shank (CNA)[1]	4.20	50	Electroplated zinc
	Connector nail (CNA)[1]	4.00	40	Stainless steel
	Connector nail (CNA)[1]	4.00	50	Stainless steel
	Connector nail (CNA)[1]	4.00	60	Stainless steel

(1) Characteristics in accordance with ETA 04/0013.

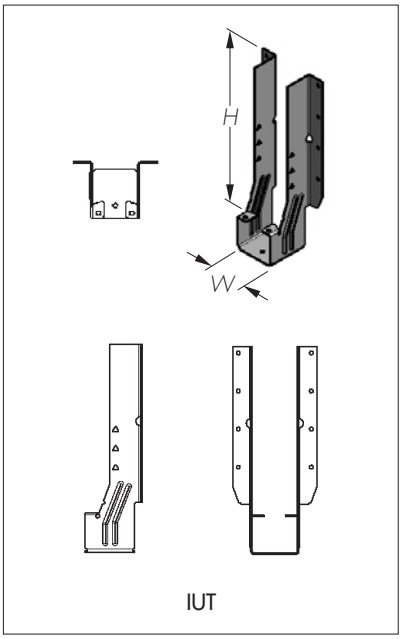
Table 4.6d Hanger characteristic to determine capacities under vertically downward load (F1)

Connector size			Model No	Lever arm *a*	Ecc *e*	No of header nails	No of joist nails	Side flange *S*	Steel thickness *t*	Steel strength
Width *W* (mm)	Seat *B* (mm)	Height *H* (mm)		(mm)	(mm)	n_h	n_j	(mm)	(mm)	f_u
40 to 91	51	142	IU142/(W)	105	31.5	6	2	32	1.2	270
40 to 91	51	192	IU192/(W)	125	31.5	10	2	32	1.2	270
40 to 91	51	217	IU217/(W)	138.3	31.5	12	2	32	1.2	270
40 to 91	51	280	IU280/(W)	150.7	31.5	14	2	32	1.2	270
40 to 91	51	330	IU330/(W)	165	31.5	16	2	32	1.2	270
40 to 91	51	380	IU380/(W)	181.7	31.5	18	2	32	1.2	270

Note:
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- For nail capacities refer to Annex 3 Table 3.1.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.7 Connector type IUT



IUT

Table 4.7a Connector dimensions

Connector type	Model No	Connector height *H* (mm)		Connector width *W* (mm)	
		Min	Max	Min	Max
IUT	IUT (W)/(H)	90	550	40	91

Table 4.7b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
IUT	1.2	S250 or DX51D to EN 10346 : 2009 SS Grade 33 to ASTM A653 or 1.4401 or 1.4404 to EN 10088-2	Z275 or G90

Table 4.7c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
IUT	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	Round wire (SR)	3.80	38	Hot-dip galvanized
	Round wire (SR)	3.70	50	Hot-dip galvanized
	Round wire(SR)	3.75	75	Hot-dip galvanized
	Ring shank (ARS)[1]	3.70	40	Electroplated zinc
	Ring shank (CNA)[1]	3.70	50	Electroplated zinc
	Ring shank (CNA)[1]	4.00	35	Electroplated zinc
	Ring shank (CNA)[1]	4.00	40	Electroplated zinc
	Ring shank (CNA)[1]	4.00	50	Electroplated zinc
	Ring shank (CNA)[1]	4.20	35	Electroplated zinc
	Ring shank (CNA)[1]	4.20	50	Electroplated zinc
	Connector nail (CNAS)[1]	4.00	40	Stainless steel
	Connector nail (CNAS)[1]	4.00	50	Stainless steel
	Connector nail (CNAS)[1]	4.00	60	Stainless steel

(1) Characteristics in accordance with ETA 04/0013.

Table 4.7d Hanger characteristic to determine capacities under vertically downward load (F1)

Connector size			Model No	Lever arm *a*	Ecc *e*	No of header nails	No of joist nails	Side flange *S*	Steel thickness t	Steel strength
Width *W* (mm)	Seat *B* (mm)	Height *H* (mm)		(mm)	(mm)	n_h	n_j	(mm)	(mm)	f_u
40 to 91	51	192	IUT192/(W)	125	31.5	10	2	32	1.2	270
40 to 91	51	217	IUT217/(W)	138.3	31.5	12	2	32	1.2	270
40	51	235	IUT29	138	31.5	8	2	32	1.2	262
46	51	235	IUT9	138	31.5	8	2	32	1.2	262
52	51	235	IUT2.06/9	138	31.5	8	2	32	1.2	262
60	51	235	IUT3510	138	31.5	8	2	32	1.2	262
90	51	235	IUT410	138	31.5	8	2	32	1.2	262
40 to 91	51	280	IUT280/(W)	150.7	31.5	14	2	32	1.2	270
40	51	285	IUT211	160.2	31.5	10	2	32	1.2	262
46	51	285	IUT11	160.2	31.5	10	2	32	1.2	262
52	51	285	IUT2.06/11	160.2	31.5	10	2	32	1.2	262
60	51	285	IUT3512	160.2	31.5	10	2	32	1.2	262
90	51	285	IUT412	160.2	31.5	10	2	32	1.2	262
40 to 91	51	330	IUT330/(W)	165	31.5	16	2	32	1.2	270
40	51	350	IUT214	204.7	31.5	14	2	32	1.2	262
46	51	350	IUT14	204.7	31.5	14	2	32	1.2	262
52	51	350	IUT2.06/14	204.7	31.5	14	2	32	1.2	262
60	51	350	IUT3514	204.7	31.5	14	2	32	1.2	262
90	51	350	IUT414	204.7	31.5	14	2	32	1.2	262
40 to 91	51	380	IUT380/(W)	181.7	31.5	18	2	32	1.2	270

Note:

- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- For nail capacities refer to Annex 3 Table 3.1.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.8 Connector type IUS

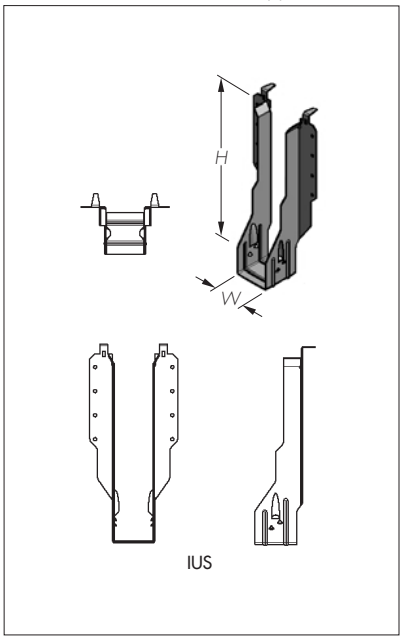


Table 4.8a Connector dimensions

Connector type	Model No	Connector height *H* (mm)		Connector width *W* (mm)	
		Min	Max	Min	Max
IUS	IUS (W)/(H)	241	406	40	92

Table 4.8b Material specification

Connector type	Thickness mm)	Steel specification	Coating specification
IUS	1.2	SS Grade 33 to ASTM A653	G90

Table 4.8c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
IUS	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	Round wire (SR)	3.80	38	Hot-dip galvanized
	Round wire (SR)	3.70	50	Hot-dip galvanized
	Round wire (SR)	3.75	75	Hot-dip galvanized
	Ring shank (ARS)[1]	3.70	40	Electroplated zinc
	Ring shank (CNA)[1]	3.70	50	Electroplated zinc
	Ring shank (CNA)[1]	4.00	35	Electroplated zinc
	Ring shank (CNA)[1]	4.00	40	Electroplated zinc
	Ring shank (CNA)[1]	4.00	50	Electroplated zinc
	Ring shank (CNA)[1]	4.20	35	Electroplated zinc
	Ring shank (CNA)[1]	4.20	50	Electroplated zinc
	Connector nail (CNA)[1]	4.00	40	Stainless steel
	Connector nail (CNA)[1]	4.00	50	Stainless steel
	Connector nail (CNA)[1]	4.00	60	Stainless steel

(1) Characteristics in accordance with ETA 04/0013.

Table 4.8d Hanger characteristic to determine capacities under vertically downward load (F1)

Connector size			Model No	Lever arm *a*	Ecc *e*	No of header nails	No of joist nails	Side flange *S*	Steel thickness *t*	Steel strength
Width *W* (mm)	Seat *B* (mm)	Height *H* (mm)		(mm)	(mm)	n_h	n_j	(mm)	(mm)	f_u
40	51	241	IUS1.56/9.5	164.5	31.5	8	0	30	1.2	262
45	51	241	IUS1.81/9.5	164.5	31.5	8	0	30	1.2	262
62	51	241	IUS2.37/9.5	164.5	31.5	8	0	30	1.2	262
40	51	302	IUS1.56/11.88	202.8	31.5	10	0	30	1.2	262
45	51	302	IUS1.81/11.88	202.8	31.5	10	0	30	1.2	262
62	51	302	IUS2.37/11.88	202.8	31.5	10	0	30	1.2	262
92	51	302	IUS3.56/11.88	194.7	31.5	12	0	30	1.2	262

Note:

- For nail capacities refer to Annex 3 Table 3.1.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.9 Connector type IUSE

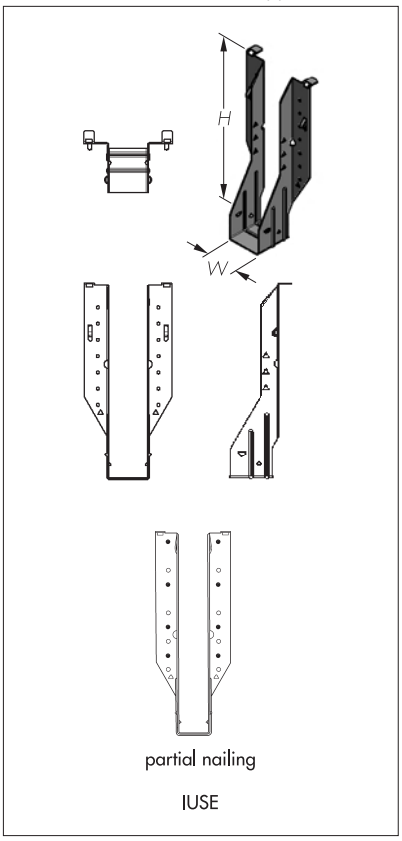


Table 4.9a Connector dimensions

Connector type	Model No	Connector height *H* (mm)		Connector width *W* (mm)	
		Min	Max	Min	Max
IUSE	IUSE (H)/(W)	145	550	40	100

Table 4.9b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
IUSE	1.2	S250 or DX51D to EN 10346 : 2009 or 1.4401 or 1.4404 to EN 10088-2	Z275

Table 4.9c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
IUSE	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized /Electroplated
	Round wire (SR)	3.75	75	Hot-dip galvanized
	Ring shank (CNA)[1]	4.00	40	Electroplated zinc
	Ring shank (CNA)[1]	4.00	50	Electroplated zinc
	Connector nail (CNA)[1]	3.70	50	Electroplated zinc
	Connector nail (CNAS)[1]	4.00	40	Stainless steel
	Connector nail (CNAS)[1]	4.00	50	Stainless steel
	Connector nail (CNA)[1]	4.00	30	Electroplated zinc

(1) Characteristics in accordance with ETA 04/0013.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Table 4.9d Hanger characteristic to determine capacities under vertically downward load (F1)

Connector size			Model No	Lever arm a	Ecc e	No of header nails n_h	No of joist nails n_j	Side flange S	Steel thickness t	Steel strength f_u	Width factor
Width W (mm)	Seat B (mm)	Height H (mm)		(mm)	(mm)			(mm)	(mm)		(k_w)
40 to 91	51	144	IUSE144/(W)	110	31.5	6	2 or 8	49	1.2	262	1.0
40 to 91	51	179	IUSE179/(W)	120	31.5	8	2 or 8	49	1.2	262	1.0
40 to 91	51	194	IUSE194/(W)	130	31.5	10	2 or 8	49	1.2	262	1.0
40 to 91	51	199	IUSE199/(W)	130	31.5	10	2 or 8	49	1.2	262	1.0
40 to 91	51	219	IUSE219/(W)	143	31.5	12	2 or 8	49	1.2	262	1.0
40 to 91	51	224	IUSE224/(W)	143	31.5	12	2 or 8	49	1.2	262	1.0
40 to 91	51	234	IUSE234/(W)	143	31.5	12	2 or 8	49	1.2	262	1.0
40 to 91	51	237	IUSE237/(W)	143	31.5	12	2 or 8	49	1.2	262	1.0
40 to 91	51	239	IUSE239/(W)	156	31.5	14	2 or 8	49	1.2	262	1.0
40 to 91	51	244	IUSE244/(W)	156	31.5	14	2 or 8	49	1.2	262	1.0
40 to 91	51	249	IUSE249/(W)	156	31.5	14	2 or 8	49	1.2	262	1.0
40 to 91	51	254	IUSE254/(W)	156	31.5	14	2 or 8	49	1.2	262	1.0
40 to 91	51	269	IUSE269/(W)	156	31.5	14	2 or 8	49	1.2	262	1.0
40 to 91	51	284	IUSE284/(W)	170	31.5	16	2 or 8	49	1.2	262	1.0
40 to 91	51	289	IUSE289/(W)	170	31.5	16	2 or 8	49	1.2	262	1.0
40 to 91	51	294	IUSE294/(W)	170	31.5	16	2 or 8	49	1.2	262	1.0
40 to 91	51	299	IUSE299/(W)	170	31.5	16	2 or 8	49	1.2	262	1.0
40 to 91	51	319	IUSE319/(W)	186	31.5	18	2 or 8	49	1.2	262	1.0
40 to 91	51	324	IUSE324/(W)	186	31.5	18	2 or 8	49	1.2	262	1.0
40 to 91	51	329	IUSE329/(W)	186	31.5	18	2 or 8	49	1.2	262	1.0
40 to 91	51	349	IUSE349/(W)	186	31.5	18	2 or 8	49	1.2	262	1.0
40 to 91	51	355	IUSE355/(W)	186	31.5	18	2 or 8	49	1.2	262	1.0
40 to 91	51	359	IUSE359/(W)	186	31.5	18	2 or 8	49	1.2	262	1.0
40 to 91	51	379	IUSE379/(W)	186	31.5	18	2 or 8	49	1.2	262	1.0
40 to 91	51	389	IUSE389/(W)	186	31.5	18	2 or 8	49	1.2	262	1.0
40 to 91	51	399	IUSE399/(W)	186	31.5	18	2 or 8	49	1.2	262	1.0
40 to 91	51	405	IUSE405/(W)	186	31.5	18	2 or 8	49	1.2	262	1.0
92 to 100	51	144	IUSE144/(W)	110	31.5	6	2 or 8	49	1.2	262	0.7
92 to 100	51	179	IUSE179/(W)	120	31.5	8	2 or 8	49	1.2	262	0.7
92 to 100	51	194	IUSE194/(W)	130	31.5	10	2 or 8	49	1.2	262	0.7
92 to 100	51	199	IUSE199/(W)	130	31.5	10	2 or 8	49	1.2	262	0.7
92 to 100	51	219	IUSE219/(W)	143	31.5	12	2 or 8	49	1.2	262	0.7
92 to 100	51	224	IUSE224/(W)	143	31.5	12	2 or 8	49	1.2	262	0.7
92 to 100	51	234	IUSE234/(W)	143	31.5	12	2 or 8	49	1.2	262	0.7
92 to 100	51	237	IUSE237/(W)	143	31.5	12	2 or 8	49	1.2	262	0.7
92 to 100	51	239	IUSE239/(W)	156	31.5	14	2 or 8	49	1.2	262	0.7
92 to 100	51	244	IUSE244/(W)	156	31.5	14	2 or 8	49	1.2	262	0.7
92 to 100	51	249	IUSE249/(W)	156	31.5	14	2 or 8	49	1.2	262	0.7
92 to 100	51	254	IUSE254/(W)	156	31.5	14	2 or 8	49	1.2	262	0.7
92 to 100	51	269	IUSE269/(W)	156	31.5	14	2 or 8	49	1.2	262	0.7
92 to 100	51	284	IUSE284/(W)	170	31.5	16	2 or 8	49	1.2	262	0.7
92 to 100	51	289	IUSE289/(W)	170	31.5	16	2 or 8	49	1.2	262	0.7
92 to 100	51	294	IUSE294/(W)	170	31.5	16	2 or 8	49	1.2	262	0.7
92 to 100	51	299	IUSE299/(W)	170	31.5	16	2 or 8	49	1.2	262	0.7
92 to 100	51	319	IUSE319/(W)	186	31.5	18	2 or 8	49	1.2	262	0.7
92 to 100	51	324	IUSE324/(W)	186	31.5	18	2 or 8	49	1.2	262	0.7
92 to 100	51	329	IUSE329/(W)	186	31.5	18	2 or 8	49	1.2	262	0.7
92 to 100	51	349	IUSE349/(W)	186	31.5	18	2 or 8	49	1.2	262	0.7
92 to 100	51	355	IUSE355/(W)	186	31.5	18	2 or 8	49	1.2	262	0.7
92 to 100	51	359	IUSE359/(W)	186	31.5	18	2 or 8	49	1.2	262	0.7
92 to 100	51	379	IUSE379/(W)	186	31.5	18	2 or 8	49	1.2	262	0.7
92 to 100	51	389	IUSE389/(W)	186	31.5	18	2 or 8	49	1.2	262	0.7
92 to 100	51	399	IUSE399/(W)	186	31.5	18	2 or 8	49	1.2	262	0.7
92 to 100	51	405	IUSE405/(W)	186	31.5	18	2 or 8	49	1.2	262	0.7

Note:

- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- For nail capacities refer to Annex 3 Table 3.1.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.10 Connector type MIU

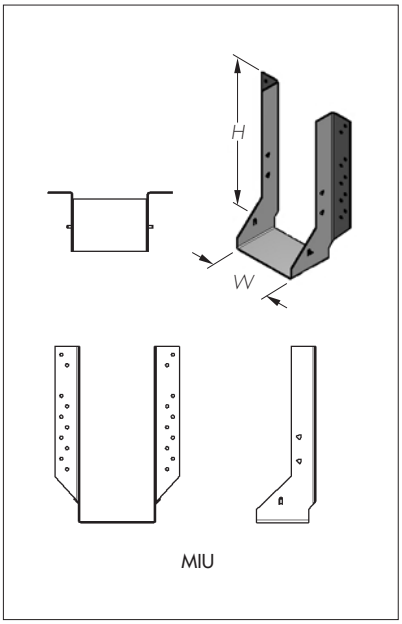


Table 4.10a Connector dimensions

Connector type	Model No	Connector height *H* (mm)		Connector width *W* (mm)	
		Min	Max	Min	Max
MIU	MIU (H)/(W)	140	550	40	200

Table 4.10b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
MIU	1.5	S250 or DX51D to EN 10346 : 2009 SS Grade 33 to ASTM A653 1.4401 or 1.4404 to EN 10088-2	Z275 or G90

Table 4.10c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
MIU	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	Round wire (SR)	3.80	38	Hot-dip galvanized
	Round wire (SR)	3.70	50	Hot-dip galvanized
	Round wire (SR)	3.75	75	Hot-dip galvanized
	Ring shank (ARS)(1)	3.70	40	Electroplated zinc
	Ring shank (CNA)(1)	3.70	50	Electroplated zinc
	Ring shank (CNA)(1)	4.00	35	Electroplated zinc
	Ring shank (CNA)(1)	4.00	40	Electroplated zinc
	Ring shank (CNA)(1)	4.00	50	Electroplated zinc
	Ring shank (CNA)(1)	4.20	35	Electroplated zinc
	Ring shank (CNA)(1)	4.20	50	Electroplated zinc
	Connector nail (CNAS)(1)	4.00	40	Stainless steel
	Connector nail (CNAS)(1)	4.00	50	Stainless steel
	Connector nail (CNAS)(1)	4.00	60	Stainless steel

(1) Characteristics in accordance with ETA 04/0013.

Table 4.10d Hanger characteristic to determine capacities under vertically downward load (F1)

Connector size			Model No	Lever *a*	Ecc arm *e*	No of header nails	No of joist nails	Side flange *S*	Steel thickness *t*	Steel strength	Width factor
Width *W* (mm)	Seat *B* (mm)	Height *H* (mm)		(mm)	(mm)	n_h	n_j	(mm)	(mm)	f_u	(k_w)
40 to 130	64	142	MIU142/(W)	82.0	38	8	2	48	1.5	270	1.0
40 to 130	64	192	MIU192/(W)	112.0	38	16	2	48	1.5	270	1.0
40 to 130	64	217	MIU217/(W)	126.8	38	22	2	48	1.5	270	1.0
40 to 130	64	280	MIU280/(W)	145.0	38	22	2	48	1.5	270	1.0
40 to 130	64	330	MIU330/(W)	156.3	38	24	2	48	1.5	270	1.0
40 to 130	64	380	MIU380/(W)	174.0	38	28	2	48	1.5	270	1.0
40 to 130	64	430	MIU430/(W)	184.6	38	28	2	48	1.5	270	1.0
131 to 200	64	142	MIU142/(W)	82.0	38	8	2	48	1.5	270	0.72
131 to 200	64	192	MIU192/(W)	112.0	38	16	2	48	1.5	270	0.72
131 to 200	64	217	MIU217/(W)	126.8	38	22	2	48	1.5	270	0.72
131 to 200	64	280	MIU280/(W)	145.0	38	22	2	48	1.5	270	0.72
131 to 200	64	330	MIU330/(W)	156.3	38	24	2	48	1.5	270	0.72
131 to 200	64	380	MIU380/(W)	174.0	38	28	2	48	1.5	270	0.72
131 to 200	64	430	MIU430/(W)	184.6	38	28	2	48	1.5	270	0.72

Note:
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- For nail capacities refer to Annex 3 Table 3.1.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.11 Connector type HU

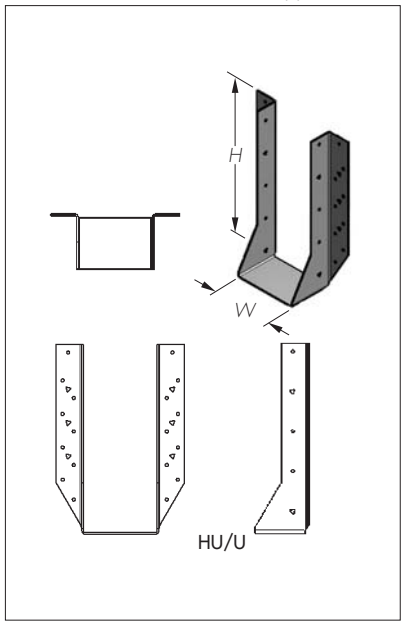


Table 4.11a Connector dimensions

Connector type	Model No	Connector height *H* (mm)		Connector width *W* (mm)	
		Min	Max	Min	Max
HU	HU (W)(H)	75	406	40	200

Table 4.11b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
HU	2.0	S250 or DX51D to EN 10346 : 2009 SS Grade 33 to ASTM A653 1.4401 or 1.4404 to EN 10088-2	Z275 or G90

Table 4.11c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
HU	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	Round wire (SR)	3.80	38	Hot-dip galvanized
	Round wire (SR)	3.70	50	Hot-dip galvanized
	Round wire (SR)	3.75	75	Hot-dip galvanized
	Ring shank (ARS)[1]	3.70	40	Electroplated zinc
	Ring shank (CNA)[1]	3.70	50	Electroplated zinc
	Ring shank (CNA)[1]	4.00	35	Electroplated zinc
	Ring shank (CNA)[1]	4.00	40	Electroplated zinc
	Ring shank (CNA)[1]	4.00	50	Electroplated zinc
	Ring shank (CNA)[1]	4.20	35	Electroplated zinc
	Ring shank (CNA)[1]	4.20	50	Electroplated zinc
	Connector nail (CNAS)[1]	4.00	40	Stainless steel
	Connector nail (CNAS)[1]	4.00	50	Stainless steel
	Connector nail (CNAS)[1]	4.00	60	Stainless steel

(1) Characteristics in accordance with ETA 04/0013.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Table 4.11d Hanger characteristic to determine capacities under vertically downward load (F1)

Connector size			Model No	Lever arm	Ecc	No of	No of	Side	Steel	Steel
				a	*e*	header nails	joist nails	flange *S*	thickness *t*	strength
Width *W* (mm)	Seat *B* (mm)	Height *H* (mm)		(mm)	(mm)	n_h	n_j	(mm)	(mm)	f_u
40	57	78	HU26	43	28	4	2	49	2.0	262
79	63	78	HU24-2	43	32	4	2	49	2.0	262
79	63	137	HU26-2	72	32	8	4	49	2.0	262
79	63	137	HU26-2	72	32	12	6	49	2.0	262
180	63	150	HU480/180	78	32	10	4	49	2.0	270
180	63	150	HU480/180	78	32	14	6	49	2.0	270
90	63	173	HU48	90	32	10	4	49	2.0	262
90	63	173	HU48	90	32	14	6	49	2.0	262
180	63	175	HU530/180	93	32	14	6	49	2.0	270
79	63	178	HU28-2	93	32	10	4	49	2.0	262
79	63	178	HU28-2	93	32	14	6	49	2.0	262
38	57	198	HU210	95	28	8	4	49	2.0	262
46	63	170	HU7	100	32	12	4	49	2.0	262
46	63	170	HU7	100	32	16	8	49	2.0	262
135	63	196	HU5.31/9	115	32	14	6	49	2.0	262
135	63	196	HU5.31/9	115	32	18	8	49	2.0	262
90	63	219	HU410	115	32	14	6	49	2.0	262
90	63	219	HU410	115	32	18	10	49	2.0	262
79	63	224	HU210-2	115	32	14	6	49	2.0	262
79	63	224	HU210-2	115	32	18	10	49	2.0	262
181	63	231	HU410-2	120	32	14	6	49	2.0	262
181	63	231	HU410-2	120	32	18	8	49	2.0	262
70	63	229	HU2.75/10	129	32	14	6	49	2.0	262
70	63	229	HU2.75/10	134	32	18	10	49	2.0	262
46	63	235	HU9	135	32	18	6	49	2.0	262
46	63	235	HU9	135	32	24	10	49	2.0	262
135	63	240	HU5.31/11	135	32	16	6	49	2.0	262
135	63	240	HU5.31/11	135	32	22	8	49	2.0	262
90	63	262	HU412	135	32	16	6	49	2.0	262
90	63	262	HU412	135	32	22	10	49	2.0	262
79	63	268	HU212-2	138	32	16	6	49	2.0	262
79	63	268	HU212-2	138	32	22	10	49	2.0	262
181	63	282	HU412-2	145	32	16	6	49	2.0	262
181	63	282	HU412-2	145	32	22	8	49	2.0	262
70	63	273	HU2.75/12	151	32	16	6	49	2.0	262
70	63	273	HU2.75/12	151	32	22	10	49	2.0	262
46	63	279	HU11	155	32	22	6	49	2.0	262
46	63	279	HU11	155	32	30	10	49	2.0	262
135	63	297	HU5.31/14	163	32	18	8	49	2.0	262
135	63	297	HU5.31/14	163	32	24	12	49	2.0	262
135	63	324	HU5.31/16	177	32	20	8	49	2.0	262
135	63	324	HU5.31/16	177	32	26	12	49	2.0	262
70	63	330	HU2.75/14	169	32	18	8	49	2.0	262
70	63	330	HU2.75/14	169	32	24	14	49	2.0	262
90	63	346	HU416	177	32	20	8	49	2.0	262
90	63	346	HU416	177	32	26	12	49	2.0	262
181	63	352	HU414-2	180	32	20	8	49	2.0	262
181	63	352	HU414-2	180	32	26	12	49	2.0	262
70	63	357	HU2.75/16	182	32	20	8	49	2.0	262
70	63	357	HU2.75/16	182	32	26	14	49	2.0	262
46	63	346	HU14	189	32	28	8	49	2.0	262
46	63	346	HU14	189	32	36	14	49	2.0	262

Note:

- web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations
- For nail capacities refer to Annex 3 Table 3.1.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.12 Connector type U

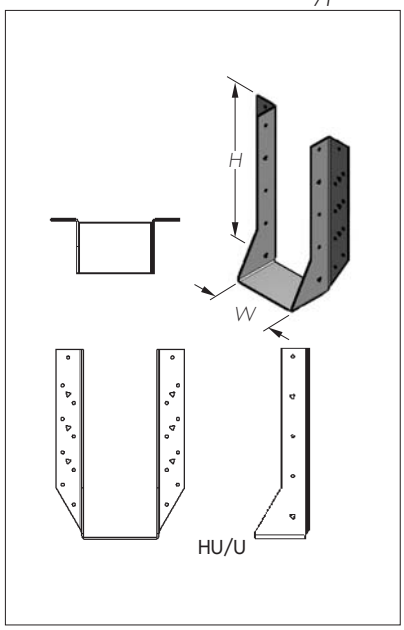


Table 4.12a Connector dimensions

Connector type	Model No	Connector height *H* (mm)		Connector width *W* (mm)	
		Min	Max	Min	Max
U	U (W)(H)	75	406	40	200

Table 4.12b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
U	1.5	SS Grade 33 to ASTM A653	G90

Table 4.12c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
U	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	Round wire (SR)	3.80	38	Hot-dip galvanized
	Round wire (SR)	3.70	50	Hot-dip galvanized
	Round wire (SR)	3.75	75	Hot-dip galvanized
	Ring shank (ARS)(1)	3.70	40	Electroplated zinc
	Ring shank (CNA)(1)	3.70	50	Electroplated zinc
	Ring shank (CNA)(1)	4.00	35	Electroplated zinc
	Ring shank (CNA)(1)	4.00	40	Electroplated zinc
	Ring shank (CNA)(1)	4.00	50	Electroplated zinc
	Ring shank (CNA)(1)	4.20	35	Electroplated zinc
	Ring shank (CNA)(1)	4.20	50	Electroplated zinc
	Connector nail (CNAS)(1)	4.00	40	Stainless steel
	Connector nail (CNAS)(1)	4.00	50	Stainless steel
	Connector nail (CNAS)(1)	4.00	60	Stainless steel

(1) Characteristics in accordance with ETA 04/0013.

Table 4.12d Hanger characteristic to determine capacities under vertically downward load (F1)

Connector size			Model No	Lever arm *a*	Ecc *e*	No of header nails	No of joist nails	Side flange *S*	Steel thickness *t*	Steel strength
Width *W* (mm)	Seat *B* (mm)	Height *H* (mm)		(mm)	(mm)	n_h	n_j	(mm)	(mm)	f_u
59	51	228	U3510/14	116	25.4	14	6	32	1.5	262
79	51	216	U210-2	116	25.4	14	6	32	1.5	262
90	51	213	U410	116	25.4	14	6	32	1.5	262
62	51	268	U3516/20	128	25.4	16	6	32	1.5	262
90	51	254	U414	128	25.4	16	6	32	1.5	262
120	51	286	U3512-2	128	25.4	16	6	32	1.5	262

Note:
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- For nail capacities refer to Annex 3 Table 3.1.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.13 Connector type LUS. HUS

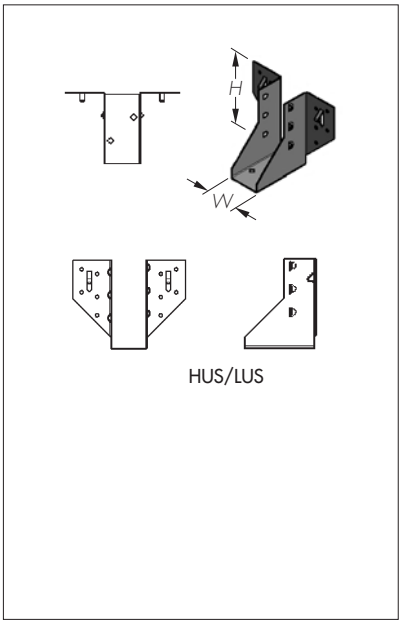


Table 4.13a Connector dimensions

Connector type	Model No	Connector height *H* (mm)		Connector width *W* (mm)	
		Min	Max	Min	Max
LUS	LUS (W)(H)	90	96	38	50
HUS	HUS (W)(H)	90	100	38	50

Table 4.13b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
LUS	1.0	S250 or DX51D to EN 10346 : 2009 or 1.4401 or 1.4404 to EN 10088-2	Z275
HUS	1.2	S250 or DX51D to EN 10346 : 2009 or 1.4401 or 1.4404 to EN 10088-2	Z275

Table 4.13c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
LUS. HUS	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	Round wire (SR)	3.80	38	Hot-dip galvanized
	Round wire (SR)	3.70	50	Hot-dip galvanized
	Round wire (SR)	3.75	75	Hot-dip galvanized
	Ring shank (ARS)(1)	3.70	40	Electroplated zinc
	Ring shank (CNA)(1)	3.70	50	Electroplated zinc
	Ring shank (CNA)(1)	4.00	35	Electroplated zinc
	Ring shank (CNA)(1)	4.00	40	Electroplated zinc
	Ring shank (CNA)(1)	4.00	50	Electroplated zinc
	Ring shank (CNA)(1)	4.20	35	Electroplated zinc
	Ring shank (CNA)(1)	4.20	50	Electroplated zinc
	Connector nail (CNAS)(1)	4.00	40	Stainless steel
	Connector nail (CNAS)(1)	4.00	50	Stainless steel
	Connector nail (CNAS)(1)	4.00	60	Stainless steel

(1) Characteristics in accordance with ETA 04/0013.

Table 4.13d Hanger characteristic to determine capacities under vertically downward load (F1)

Connector size			Model No	Lever arm *a*	Ecc *e*	No of header nails	No of joist nails	Side flange *S*	Steel thickness *t*	Steel strength
Width *W* (mm)	Seat *B* (mm)	Height *H* (mm)		(mm)	(mm)	n_h	n_j	(mm)	(mm)	f_u
38	30	241	LUS230/38	66	15	10	6	33	1.0	270
44	30	302	LUS230/44	63	15	10	6	33	1.0	270
50	30	302	LUS230/50	60	15	10	6	33	1.0	270
38	30	241	HUS230/38	66	15	10	6	33	1.2	270
44	30	302	HUS230/44	63	15	10	6	33	1.2	270
50	30	302	HUS230/50	60	15	10	6	33	1.2	270

Note:
- For nail capacities refer to Annex 3 Table 3.1.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.14 Connector type ITB

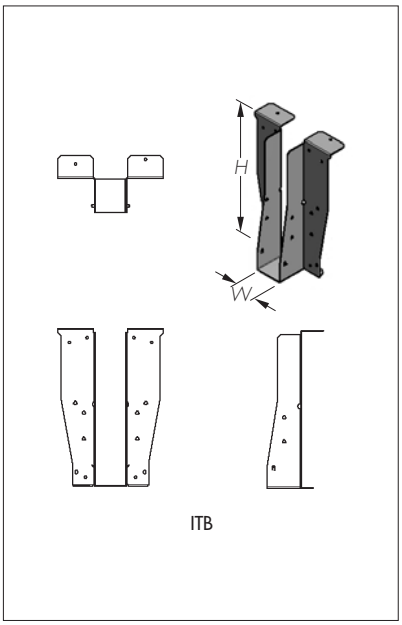


Table 4.14a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)	
	Min	Max	Min	Max
ITB	195	302	40	100

Table 4.14b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
ITB	1.2	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.14c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
ITB	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc

Table 4.14d Fastener schedule

Connector type	Fasteners							
	Header				Joist			
	Type	Quantity	Diameter (mm)	Length (mm)	Type	Quantity	Diameter (mm)	Length (mm)
standard installation								
ITB(H)/(W)	ST	12	3.75	30	ST	2	3.75	30
enhanced installation								
ITB(H)/(W)	ST	18	3.75	30	ST	6	3.75	30

Table 4.14e Performance values — capacity under vertical loads

Item code	Installation type	Type	Supporting timber Fasteners[1]		Supported timber Fasteners[1]		Characteristic load capacity (kN)	
			Qty	Type	Qty	Type	Down	Uplift
ITB(H)/(W)	Standard	<35 mm LVL flange	12	3.75 x 30	2	3.75 x 30	10.83	1.06
		≥35 mm LVL flange	12	3.75 x 30	2	3.75 x 30	9.15	1.20
		≥45 mm C24 flange	12	3.75 x 30	2	3.75 x 30	6.73	1.14
ITB(H)/(W)	Enhanced[2]	<35 mm LVL flange	18	3.75 x 30	6	3.75 x 30	17.44	9.33
		≥35 mm LVL flange	18	3.75 x 30	6	3.75 x 30	17.36	7.61
		≥45 mm C24 flange	18	3.75 x 30	6	3.75 x 30	17.92	7.96

(1) 3.75 x 30 refers to a galvanized square twist rail.
(2) Enhanced installation refers to I-joists headers with backer blocks.
Note:
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.15 Connector type ITBS

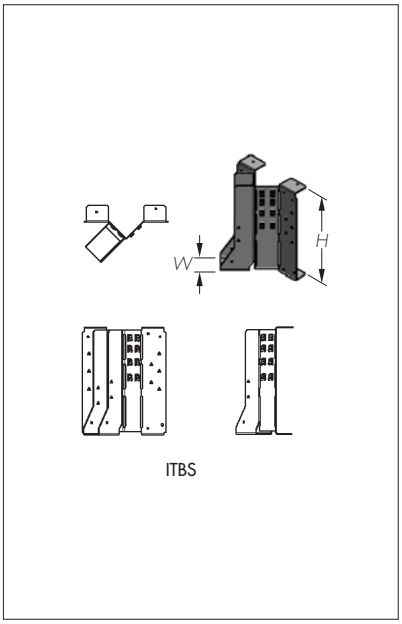


Table 4.15a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)	
	Min	Max	Min	Max
ITBS	195	302	40	100

Table 4.15b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
ITBS	1.5	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.15c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
ITBS	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc

Table 4.15d Fastener schedule

Connector type	Fasteners							
	Header				Joist			
	Type	Quantity	Diameter (mm)	Length (mm)	Type	Quantity	Diameter (mm)	Length (mm)
standard installation								
ITBS(H)/(W)	ST	12	3.75	30	ST	2	3.75	30
enhanced installation								
ITBS(H)/(W)	ST	18	3.75	30	ST	2	3.75	30

Table 4.15e Performance values — capacity under vertical loads

Item code	Installation type	Type	Supporting timber Fasteners[1]		Supported timber Fasteners[1]		Characteristic load capacity (kN)	
			Qty	Type	Qty	Type	Down	Uplift
ITB(H)/(W)	Standard	<35 mm LVL flange	12	3.75 x 30	2	3.75 x 30	7.50	1.48
		≥35 mm LVL flange	12	3.75 x 30	2	3.75 x 30	10.22	1.48
		≥45 mm C24 flange	12	3.75 x 30	2	3.75 x 30	7.41	1.48
ITB(H)/(W)	Enhanced[2]	<35 mm LVL flange	18	3.75 x 30	6	3.75 x 30	13.49	1.48
		≥35 mm LVL flange	18	3.75 x 30	6	3.75 x 30	14.97	1.48
		≥45 mm C24 flange	18	3.75 x 30	6	3.75 x 30	12.76	1.48

(1) 3.75 x 30 refers to a galvanized square twist rail.
(2) Enhanced installation refers to I-joists headers with backer blocks.
Note:
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.16 Connector type HITB

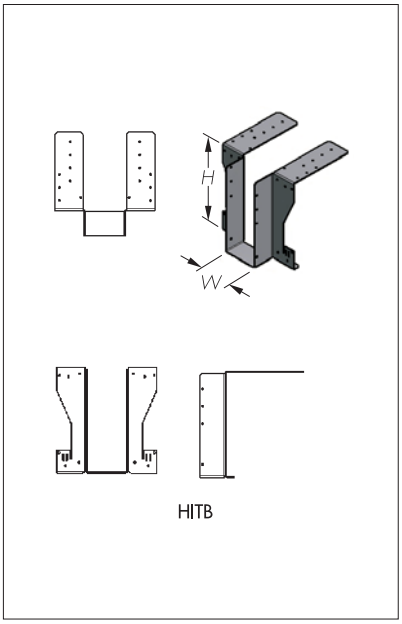


Table 4.16a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)	
	Min	Max	Min	Max
HITB	195	302	40	100

Table 4.16b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
HITB	20	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.16c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
HITB	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc

Table 4.16d Fastener schedule

Connector type	Fasteners							
	Header				Joist			
	Type	Quantity	Diameter (mm)	Length (mm)	Type	Quantity	Diameter (mm)	Length (mm)
standard installation								
HITB (H)/(W)	ST	22	3.75	30	ST	8	3.75	30

Table 4.16e Performance values — capacity under vertical loads

Item code	Installation type	Type	Supporting timber Fasteners[1]		Supported timber Fasteners[1]		Characteristic load capacity (kN)	
			Qty	Type	Qty	Type	Down	Uplift
HITB(H)/(W)	Standard	<35 mm LVL flange	22	3.75 x 30	8	3.75 x 30	15.60	11.43
		≥35 mm LVL flange	22	3.75 x 30	8	3.75 x 30	17.50	11.43
		≥45 mm C24 flange	22	3.75 x 30	8	3.75 x 30	19.10	11.07

Note:
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations.

(1) 3.75 x 30 refers to a galvanized square twist rail.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.17 Connector type IUB

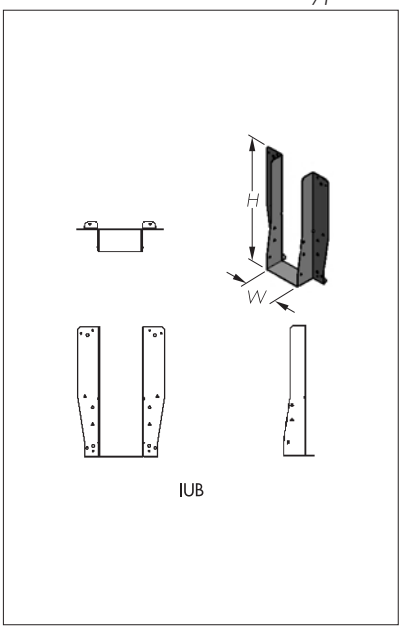


Table 4.17a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)	
	Min	Max	Min	Max
IUB	190	420	75	150

Table 4.17b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
IUB	1.2 1.5	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.17c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
IUB	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	SDS screw (SDS)	6.2	63	Electroplated

Table 4.17d Fastener schedule

Connector type	Fasteners							
	Header				Joist			
	Type	Quantity	Diameter (mm)	Length (mm)	Type	Quantity	Diameter (mm)	Length (mm)
standard installation								
IUB(H)/(W)	ST	10	3.75	30	ST	2	3.75	30
enhanced installation								
IUB(H)/(W)	ST	10	3.75	30	ST	6	3.75	30
SDS installation								
IUB(H)/(W)	SDS	4	6.2	63	ST	2	3.75	30

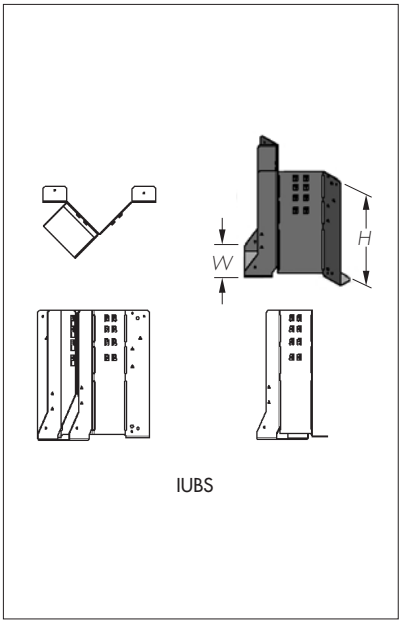
Table 4.17e Performance values — capacity under vertical loads

Item code	Dimensions (mm)		Installation type	Supporting timber Fasteners[1][2]		Supported timber Fasteners[1]		Characteristic load capacity (kN)	
	Height (*H*) (min-max)	Width (*W*) (min-max)		Type	Qty	Type	Qty	Down	Uplift
IUB(H)/(W)	190–420	75—150	standard	ST	10	ST	2	8.10	2.00
			SDS	SDS	4	ST	2	13.60	2.00
			enhanced	SDS	4	ST	6	13.60	6.00

(1) ST refers to a 3.75 x 30 mm square twist nail.
(2) SDS refers to a 6.2 x 6.3 mm SDS screw.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.18 Connector type IUBS



IUBS

Table 4.18a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)	
	Min	Max	Min	Max
IUBS	190	295	75	100

Table 4.18b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
IUBS	1.5	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.18c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
IUBS	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	SDS screw (SDS)	6.2	63	Electroplated

(1) Characteristics in accordance with ETA 04/0013.

Table 4.18d Fastener schedule

Connector type	Fasteners							
	Header				Joist			
	Type	Quantity	Diameter (mm)	Length (mm)	Type	Quantity	Diameter (mm)	Length (mm)
	standard installation							
IUBS(H)/(W)	ST	10	3.75	30	ST	2	3.75	30
	SDS installation							
IUBS(H)/(W)	SDS	4	6.2	63	ST	2	3.75	30

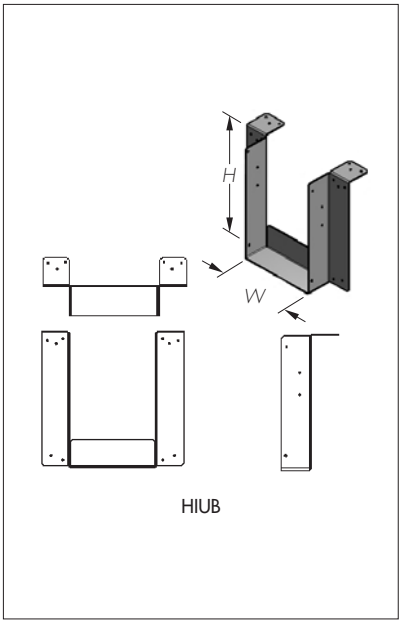
Table 4.18e Performance values — capacity under vertical loads

Item code	Dimensions (mm)		Installation type	Supporting timber Fasteners[1][2]		Supported timber Fasteners[1]		Characteristic load capacity (kN)	
	Height (*H*) (min-max)	Width (*W*) (min-max)		Type	Qty	Type	Qty	Down	Uplift
IUBS	195–295	75—100	standard	ST	10	ST	2	12.72	1.3
			SDS	SDS	4	ST	2	17.18	1.3

(1) ST refers to a 3.75 x 30 mm square twist nail.
(2) SDS refers to a 6.2 x 6.3 mm SDS screw.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.19 Connector type HIUB



HIUB

Table 4.19a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)	
	Min	Max	Min	Max
HIUB	190	420	75	300

Table 4.19b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
HIUB	2.0	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.19c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
IUBS	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc

Table 4.19d Fastener schedule

Connector type	Fasteners							
	Header				Joist			
	Type	Quantity	Diameter (mm)	Length (mm)	Type	Quantity	Diameter (mm)	Length (mm)
Metal web floor truss header – standard nailed installation								
HIUB(H)/(W)	ST	16	3.75	30	ST	8	3.75	30

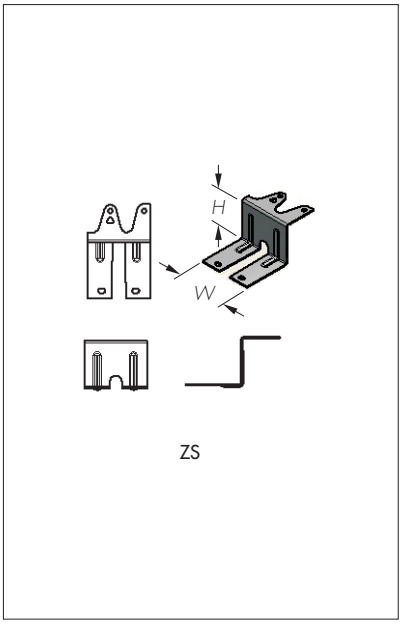
Table 4.19e Performance values — capacity under vertical loads

Item code	Dimensions (mm)		Installation type[1]	Supporting timber Fasteners[2]		Supported timber Fasteners		Characteristic load capacity (kN)	
	Height (*H*) (min-max)	Width (*W*) (min-max)		Type	Qty	Type	Qty	Down	Uplift
HIUB	190–420	75—300	standard	ST	16	ST	8	12.86	8.00
			Enhanced[2]	ST	16	ST	8	22.10	8.00

1) Metal web floor truss.
(2) Timber blocking piece fixed between top and bottom flanges of Metal Web Floor Truss.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.20 Connector type ZS



ZS

Table 4.20a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)	
	Min	Max	Min	Max
ZS	35	45	35	150

Table 4.20b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
ZS	1.0	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.20c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
ZS	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc

Table 4.20d Fastener schedule

Connector type	Fasteners							
	Header				Joist			
	Type	Quantity	Diameter (mm)	Length (mm)	Type	Quantity	Diameter (mm)	Length (mm)
	I Joist – standard installation							
ZS	ST	2	3.75	30	ST	8	3.75	30

Table 4.20e Performance values – capacity under vertical downward loads (F1)

Nail specification				Connector height	Capacity of Connector (kN)	
					Header specification	
Type	Size (mm)	Qty in supporting member	Qty in supported member	(mm)	C24	LVL flanged I-beam
ST	3.75 x 30	2	2	35-45	2.40	3.00

Notes

- when I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 nails
- the values in the tables are Connector capacities and do not take account of the joist (end grain member) capacity which shall be checked by the joist designer.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.21 Connector type IUQ

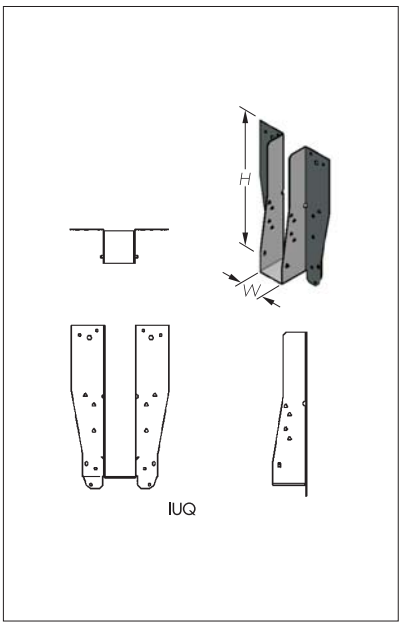


Table 4.21a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)	
	Min	Max	Min	Max
IUQ	190	420	40	150

Table 4.21b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
IUQ	0.9	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.21c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
IUQ	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	SDS screw (SDS)	6.2	63	Electroplated

Table 4.21d Performance values – capacity under vertical downward load (F1)

Header nail specification				Connector width	Capacity of Connector
Type	Size (mm)	Qty in supporting member	Qty in supported member	(mm)	(kN)
SDS	6.20 x 63	2	–	40–150	9.90
ST	3.75 x 30	–	2	40–150	9.90

Note:
- web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only.

Table 4.21e Performance values – capacity under vertical upward load (F2)

Header nail specification				Connector width	Capacity of Connector
Type	Size (mm)	Qty in supporting member	Qty in supported member	(mm)	(kN)
SDS	6.20 x 63	2	–	40–150	2.00
ST	3.75 x 30	–	2	40–150	2.00

Note:
- web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.22 Connector type HIUQ

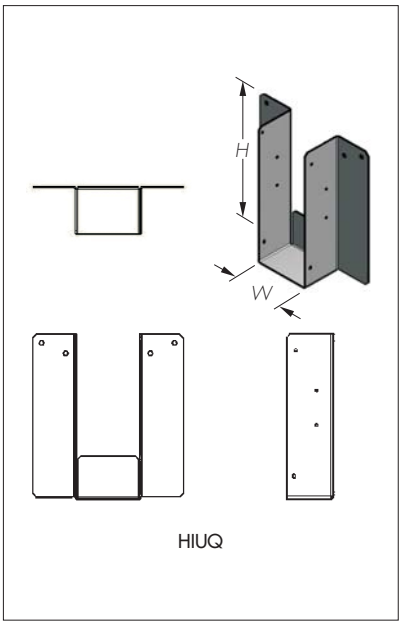


Table 4.22a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)	
	Min	Max	Min	Max
HIUQ	190	420	40	150

Table 4.22b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
HIUQ	2.0	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.22c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
IUQ	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	SDS screw (SDS)	6.2	63	Electroplated

Table 4.22d Performance values – capacity under vertical downward load (F1)

Header nail specification				Connector width	Capacity of Connector
Type	Size (mm)	Qty in supporting member	Qty in supported member	(mm)	(kN)
SDS	6.20 x 63	4	–	40–150	19.50
ST	3.75 x 30	–	8	40–150	19.50

Note:
- web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only.

Table 4.22e Performance values – capacity under vertical upward load (F2)

Header nail specification				Connector width	Capacity of Connector
Type	Size (mm)	Qty in supporting member	Qty in supported member	(mm)	(kN)
SDS	6.20 x 63	4	–	40–150	2.00
ST	3.75 x 30	–	8	40–150	2.00

Note:
- web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.23 Connector type IUC

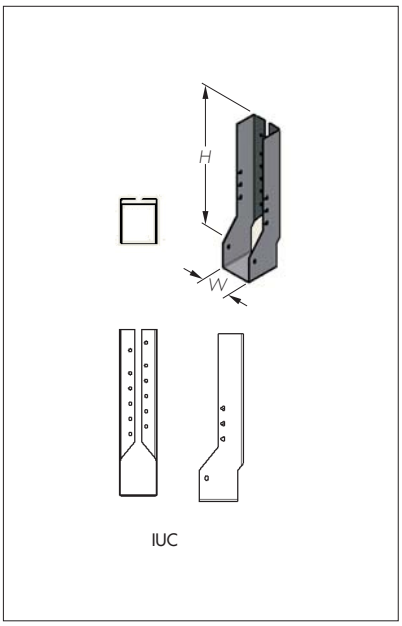


Table 4.23a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)	
	Min	Max	Min	Max
IUC	140	300	40	100

Table 4.23b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
IUC	1.2	S250 or DX51D to EN 10346 : 2009	Z275

Table 4.23c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
IUC	Square twist (ST)	3.75	30	Zinc coated or sheradized
	Square twist (ST)	3.75	30	Electroplated zinc

Table 4.23d Performance values – capacity under vertical downward load (F1)

Header nail specification				Connector width	Capacity of Connector (kN)		
					Header specification		
Type	Size (mm)	No in top	No in face	(mm)	C16	C24	LVL flanged I-beam
ST	3.75 x 30	2	6	40–91	3.80	4.80	3.80
ST	3.75 x 30	2	10	40–91	7.54	9.52	7.54
ST	3.75 x 30	2	12	40–91	10.00	12.00	10.00
ST	3.75 x 30	2	14	40–91	12.56	14.00	12.56
ST	3.75 x 30	2	6	92–100	3.50	4.40	3.50
ST	3.75 x 30	2	10	92–100	6.90	8.75	6.90
ST	3.75 x 30	2	12	92–100	9.20	11.00	9.20
ST	3.75 x 30	2	14	92–100	11.55	12.90	11.55

Notes:
- Web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- when I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 nails
- the values in the tables are Connector capacities and do not take account of the joist (end grain member) capacity which shall be checked by the joist designer.

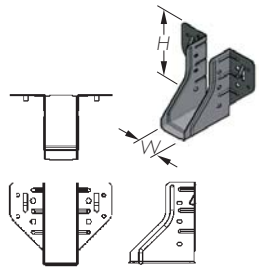
Table 4.23e Performance values — capacity under vertical upward load (F2)

Nail specification			Connector width	Connector type	Capacity of Connector
Type	Size (mm)	No in joist	(mm)		(kN)
ST	3.75 x 30	6	40–100	IUC	2.38
ST	3.75 x 30	10	40–100	IUC	2.38
ST	3.75 x 30	12	40–100	IUC	2.38
ST	3.75 x 30	14	40–100	IUC	2.38

Notes:
- web stiffeners are to be fitted in accordance with the I-Joist manufacturer's recommendations – for enhanced installation only
- when I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges.
- connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 nails.

ANNEX 4 PRODUCT DEFINITION AND CAPACITIES (continued)

Annex 4.24 Connector type THM



THM

Table 4.24a Connector dimensions

Connector type	Connector height *H* (mm)		Connector width *W* (mm)	
	Min	Max	Min	Max
THM	90	96	38	50

Table 4.24b Material specification

Connector type	Thickness (mm)	Steel specification	Coating specification
THM	0.9	EN 10346 : 2009. Grade S250GD or DX51D.	Z275

Table 4.24c Fastener specification

Connector type	Nail type	Nail size (mm)		Finish
		Diameter	Length	
THM	Smooth shank (SS)	3.75	75	Hot-dip galvanized
	Square twist (ST)	3.75	30	Hot-dip galvanized/Sheradized
	Square twist (ST)	3.75	30	Electroplated zinc
	SDS screw (SDS)	6.2	63	Electroplated

Table 4.24d Performance values — capacity under vertical downward load (F1) — square twist nail

Header nail specification				Connector width	Capacity of Connector
Type	Size (mm)	Supporting member	Supported member	(mm)	(kN)
ST	3.75 x 30	10	6	38–50	7.30

Table 4.24e Performance values — capacity under vertical downward load (F1) — Double shear nail

Header nail specification				Connector width	Capacity of Connector
Type	Size (mm)	Supporting member	Supported member	(mm)	(kN)
ST	3.75 x 30	10	–	38–50	9.80
SS	3.75 x 75	–	6	38–50	9.80

Table 4.24f Performance values — capacity under vertical downward load (F1) — SDS Screws

Header nail specification				Connector width	Capacity of Connector
Type	Size (mm)	Supporting member	Supported member	(mm)	(kN)
SDS	6.35 x 63	4	–	38–50	7.40
ST	3.75 x 30	–	6	38–50	7.40

Notes:

- when I-joists with solid timber flanges are used as headers. the capacity of the Connector is the same as the capacity when connected to a solid timber header of the same grade as the I-joist flanges
- connectors can only be used on I-joist headers in conjunction with Type ST 3.75 x 30 nails
- the values in the tables are Connector capacities and do not take account of the joist (end grain member) capacity which shall be checked by the joist designer.

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