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European Technical Assessment

ETA-18/0083
of 23.03.2018

General part

Technical Assessment Body issuing the European Technical Assessment

Österreichisches Institut für Bautechnik (OIB)
Austrian Institute of Construction Engineering

Trade name of the construction product

SHERPA CLT-Connector

Product family to which the construction product belongs

Three-dimensional nailing plate

Manufacturer

Vinzenz Harrer GmbH
Badl 31
8130 Frohnleiten
Austria

Manufacturing plant

Manufacturing plant 1

This European Technical Assessment contains

15 pages including 5 Annexes which form an integral part of this assessment.

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of

Guideline for European Technical Approval ETAG 015 "Three-dimensional nailing plates", Edition November 2012, used as European Assessment Document

Remarks

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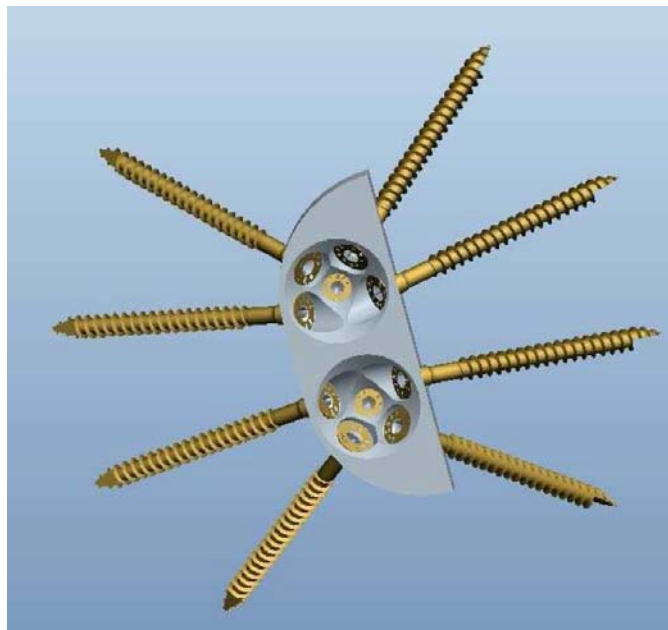
Specific parts

1 Technical description of the product

1.1 General

This European Technical Assessment (ETA) applies to the SHERPA CLT-Connector which is used in load-bearing connections between members of wood or wood-based materials. The SHERPA CLT-Connector is installed with eight inclined SHERPA special screws of diameter 8 mm. In addition, two SHERPA special screws with diameter 6.5 mm are arranged perpendicular to the base material.

Interlayers such as compriband or sound insulation layer may be added between the SHERPA CLT-Connector and the members of wood or wood-based materials.



CLT-Connectors corresponds to the specifications given in the Annexes 1, 2 and 4. The material characteristics, dimensions and tolerances of SHERPA CLT-Connector, not indicated in these Annexes, are given in the technical file¹ of the European Technical Assessment.

1.2 CLT-Connector

SHERPA CLT-Connector is produced of aluminium EN AW - 6082 according to EN 755-2².

The SHERPA CLT-Connector together with its most important dimensions is shown in Annex 2.

¹ The technical file of the European Technical Assessment is deposited at Österreichisches Institut für Bautechnik and, in so far as is relevant to the tasks of the notified factory production control certification body involved in the assessment and verification of constancy of performance procedure, is handed over to the notified factory production control certification body.

² Reference documents are listed in Annex 5.

1.3 Screws

The screws for installation of the SHERPA CLT-Connector are described in Annex 1. They are made of carbon steel.

1.4 Interlayers

Interlayers such as compriband or sound insulation layer conform to a harmonised European standard or a European Technical Assessment and do not contribute to the load bearing characteristics of the SHERPA CLT-Connector. For interlayers the compression hardness is at least 0.2 N/mm² and the static modulus of elasticity is at least 1 N/mm²

The maximum thickness of a compriband is 2 mm, the maximum thickness of a sound insulation layer is 12 mm. Hereby the effective length of the screws must be adapted accordingly.

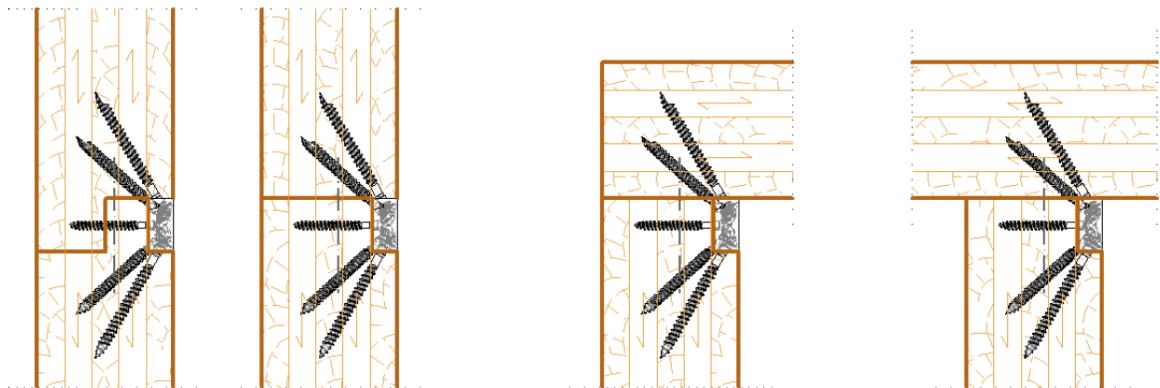
Interlayers are not subject to the European Technical Assessment.

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document

2.1 Intended use

The SHERPA CLT-Connector is installed at the lateral surfaces of wood or wood-based members and intended to be used in the following load bearing connections:

- longitudinal connections with possible rabbet joint or
- edge- and T-joints.



The following wood or wood-based materials may be used:

- Cross laminated timber according to European Technical Assessments or national standards and regulations in force at the place of use. Minimum strength class of lamellas for cross laminated timber is C16, average strength class of lamellas is C24 according to EN 338.
- Glued laminated timber or glued solid timber of minimum strength class GL 24c according to EN 14080.
- Solid structural timber according to EN 14081-1 of minimum strength class C24 according to EN 338.

The SHERPA CLT-Connector shall be subjected to static and quasi static actions only.

The SHERPA CLT-Connector is intended to be used in service classes 1 and 2 according to EN 1995-1-1.

2.2 General assumptions

The SHERPA CLT-Connector is manufactured in accordance with the provisions of the European Technical Assessment using the manufacturing process as identified in the inspection of the manufacturing plant by Österreichisches Institut für Bautechnik and laid down in the technical file.

The manufacturer shall ensure that the requirements in accordance with the Clauses 1, 2 and 3 as well as with the Annexes of the European Technical Assessment are made known to those who are concerned with design and execution of the works.

Design

The European Technical Assessment only applies to the manufacture and use of the SHERPA CLT-Connector. Verification of stability of the works including application of loads on the product is not subject to the European Technical Assessment.

The following conditions shall be observed:

- Design of connections with the SHERPA CLT-Connector is carried out under the responsibility of an engineer experienced in timber structures.
- Design of the works shall account for the protection of the connection to maintain service class 1 or 2 according to EN 1995-1-1.
- The SHERPA CLT-Connector is installed correctly.
- It shall be checked in accordance with EN 1995-1-1 that splitting will not occur.

Design of connections with the SHERPA CLT-Connector may be according to EN 1995-1-1 and EN 1995-1-2 taking into account the Annexes of the European Technical Assessment.

Standards and regulations in force at the place of use shall be considered.

Packaging, transport, storage, maintenance, replacement and repair

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

Installation

It is assumed that the product will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals.

The SHERPA CLT-Connector shall be screwed as specified in Annex 2 and Annex 3.

The wood or wood-based members which are connected with the SHERPA CLT-Connector shall

- consider the minimum spacing and edge distances in accordance with EN 1995 1 1; minimum end and edge distances is 80 mm; maximum spacing between the SHERPA CLT-Connectors (4 screws each) is $e_{\max} \leq 2$ m;
- be intended for installation of the connector plain with the surface or milled into the surface;
- be of minimum member thickness 100/120/140 mm for screw length $l = 100/120/140$ mm and installation plain with the surface;
- be of maximum member thickness 120/140/160 mm for screw length $l = 100/120/140$ mm and installation plain with the surface; for member thickness exceeding 120/140/160 mm the connector must be milled into the surface;
- have plane surfaces against the SHERPA CLT-Connector;
- be without virtually gap between the elements.

2.3 Working life/Durability

The provisions made in the European Technical Assessment (ETA) are based on an assumed intended working life of the SHERPA CLT-Connector of 50 years, when installed in the works, provided that the product is subject to appropriate installation, use and maintenance (see Clause 2.2). These provisions are based upon the current state of the art and the available knowledge and experience³.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA nor by the Technical Assessment Body, but are regarded only as a means for choosing the appropriate products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and reference to the methods used for its assessment

3.1 Essential characteristics of the product

Table 1: Essential characteristics of the product and product performance

No	Essential characteristic	Product performance
Basic requirement for construction works 1: Mechanical resistance and stability ¹⁾		
1	Characteristic load bearing capacity	3.1.1
2	Stiffness	3.1.2
3	Ductility in cyclic testing	No performance assessed.
Basic Requirement 2: Safety in case of fire		
4	Reaction to fire	3.1.3
5	Resistance to fire	No performance assessed.
Basic requirement for construction works 3: Hygiene, health and the environment		
6	Content, emission and/or release of dangerous substances	3.1.4
Basic requirement for construction works 4: Safety and accessibility in use		
7	Same as basic requirement for construction works 1	
Basic requirement for construction works 5: Protection against noise		
–	Not relevant. No characteristic assessed.	
Basic requirement for construction works 6: Energy economy and heat retention		
–	Not relevant. No characteristic assessed.	

³ The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product can also be shorter than the assumed working life.

Basic requirement for construction works 7: Sustainable use of natural resources		
–	No characteristic assessed.	
General aspects		
8	Resistance to corrosion and deterioration	3.1.5
9	Dimensional stability	3.1.6
1) These characteristics also relate to basic requirement for construction works 4.		

3.1.1 Characteristic load bearing capacity

The characteristic load bearing capacities of the SHERPA CLT-Connector are determined by testing. The SHERPA CLT-Connector is installed with the defined number of screws with respective nominal diameter as specified in Annex 1 and Annex 2.

The values of the characteristic load bearing capacities for the loading directions defined in Annex 3, are given in Annex 4.

3.1.2 Stiffness

The stiffness of the SHERPA CLT-Connector was determined by testing. The SHERPA CLT-Connector is installed with the defined number of screws with respective nominal diameter as specified in Annex 1 and Annex 2. The stiffness values are given in Annex 4.

3.1.3 Reaction to fire

The SHERPA CLT-Connector is made of aluminium and the screws are made of carbon steel, both classified as Euroclass A1 in accordance with Commission Decision 96/603/EC as amended.

3.1.4 Content, emission and/or release of dangerous substances

The release of dangerous substances is determined according to ETAG 015. No dangerous substances is the performance of the product in this respect.

NOTE In addition to the specific clauses relating to dangerous substances contained in the European Technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

3.1.5 Resistance to corrosion and deterioration

The product is intended to be used in service classes 1 and 2 according to EN 1995-1-1. The product and each member of the connection should at least be suitable for service classes 1 and 2, but not for service class 1 only.

In accordance with ETAG 015 and EN 1995-1-1 the SHERPA CLT-Connector is made of aluminium EN AW – 6082 according to EN 755-2. The screws for installation are made of carbon steel and galvanised.

3.1.6 Dimensional stability

The effects of dimensional changes on the wood or wood-based members being jointed due to varying moisture content was considered by the determination of the strength and the stiffness of the joints. Moisture content during service shall not change to such an extent that adverse deformation will occur. The conditions of Clause 2.2 shall be observed.

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3.2 Assessment methods

3.2.1 General

The assessment of the essential characteristics in Clause 3.1 of the SHERPA CLT-Connector for the intended use, and in relation to the requirements for mechanical resistance and stability, for safety in case of fire, for hygiene, health and the environment and for safety and accessibility in use in the sense of the basic requirements for construction works № 1, 2, 3 and 4 of Regulation (EU) № 305/2011 has been made in accordance with Guideline for European Technical Approval ETAG № 015 “Three-dimensional nailing plates”, edition November 2012, used as European Assessment Document.

3.2.2 Identification

The European Technical Assessment for the SHERPA CLT-Connector is issued on the basis of agreed data that identify the assessed product. Changes to materials, to composition, to characteristics of the product, or to the production process could result in these deposited data being incorrect. Österreichisches Institut für Bautechnik should be notified before the changes are implemented, as an amendment of the European Technical Assessment is possibly necessary.

4 Assessment and verification of constancy of performance (thereafter AVCP) system applied, with reference to its legal base

4.1 System of assessment and verification of constancy of performance

According to Commission Decision 97/638/EC the system of assessment and verification of constancy of performance to be applied to the SHERPA CLT-Connector is System 2+. System 2+ is detailed in Commission Delegated Regulation (EU) № 568/2014 of 18 February 2014, Annex, 1.3, and provides for the following items

(a) The manufacturer shall carry out:

- (i) an assessment of the performance of the construction product carried out on the basis of testing (including sampling), calculation, tabulated values or descriptive documentation of that product;
- (ii) factory production control;
- (iii) testing of samples taken at the manufacturing plant by the manufacturer in accordance with a prescribed test plan⁴.

(b) The notified factory production control certification body shall decide on the issuing, restriction, suspension or withdrawal of the certificate of conformity of the factory production control on the basis of the outcome of the following assessments and verifications carried out by that body:

- (i) initial inspection of the manufacturing plant and of factory production control;
- (ii) continuing surveillance, assessment and evaluation of factory production control.

4.2 AVCP for construction products for which a European Technical Assessment has been issued

Manufacturers undertaking tasks under Systems 2+ shall consider the European Technical Assessment issued for the construction product in question as the assessment of the performance of that product. Manufacturers shall therefore not undertake the tasks referred to in point 4.1 (a)(i).

⁴ The prescribed test plan has been deposited with Österreichisches Institut für Bautechnik and is handed over only to the notified factory production control certification body involved in the procedure for the assessment and verification of constancy of performance. The prescribed test plan is also referred to as control plan.

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

5.1 Tasks for the manufacturer

5.1.1 Factory production control

In the manufacturing plant the manufacturer shall establish and continuously maintain a factory production control. All procedures and specification adopted by the manufacturer shall be documented in a systematic manner. The factory production control shall ensure the constancy of performances of the product with regard to the essential characteristics.

The manufacturer shall only use raw materials supplied with the relevant inspection documents as laid down in the control plan. The incoming raw materials shall be subject to controls by the manufacturer before acceptance. Check of incoming materials shall include control of inspection documents presented by the manufacturer of the raw materials.

The frequencies of controls and tests conducted during manufacturing and on the assembled product are defined by taking account of the manufacturing process of the product and are laid down in the control plan.

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

- Designation of the product, basic materials and components
- Type of control or test
- Date of manufacture of the product and date of testing of the product or basic materials or components
- Results of controls and tests and, if appropriate, comparison with requirements
- Name and signature of person responsible for factory production control

The records shall be presented to the notified factory production control certification body involved in continuous surveillance. On request the records shall be presented to Österreichisches Institut für Bautechnik.

5.1.2 Declaration of performance

The manufacturer is responsible for preparing the declaration of performance. When all the criteria of the assessment and verification of constancy of performance are met, including the certificate of conformity of the factory production control issued by the notified factory production control certification body, the manufacturer shall draw up a declaration of performance.

5.2 Tasks for the notified factory production control certification body

5.2.1 Initial inspection of the manufacturing plant and of factory production control

The notified factory production control certification body shall verify the ability of the manufacturer for a continuous and orderly manufacturing of the SHERPA CLT-Connector according to the European Technical Assessment. In particular the following items shall be appropriately considered.

- Personnel and equipment
- The suitability of the factory production control established by the manufacturer
- Full implementation of the control plan

5.2.2 Continuous surveillance, assessment and evaluation of factory production control

The notified factory production control certification body shall visit the factory at least once a year for routine inspection. In particular the following items shall be appropriately considered.

- The manufacturing process including personnel and equipment
- The factory production control
- The implementation of the control plan

The results of continuous surveillance shall be made available on demand by the notified factory production control certification body to Österreichisches Institut für Bautechnik. When the provisions of the European Technical Assessment and the control plan are no longer fulfilled, the certificate of conformity of the factory production control shall be withdrawn.

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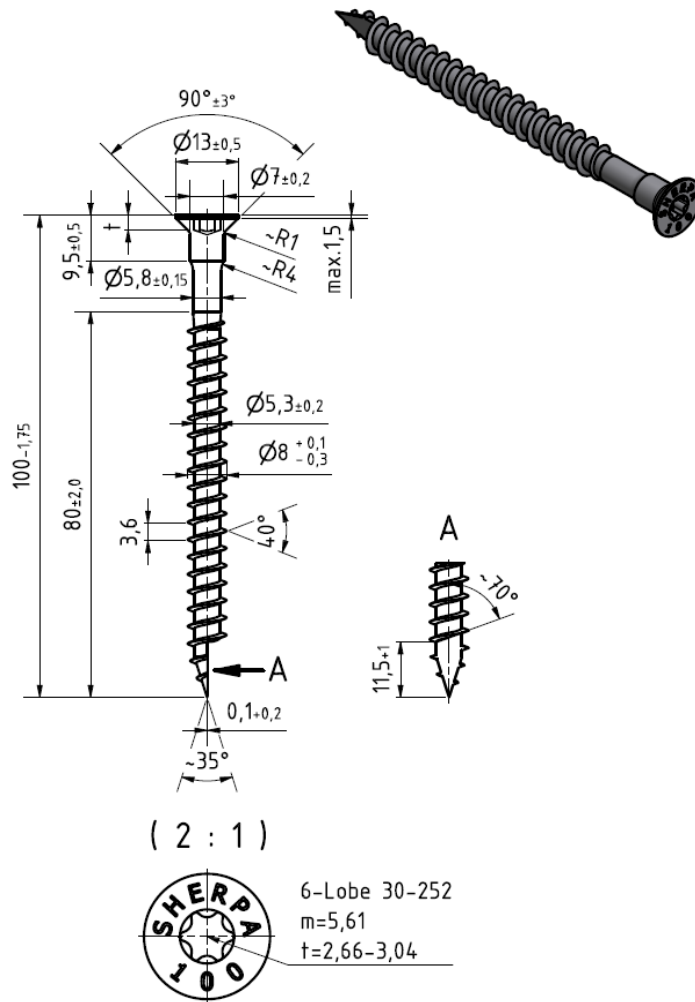
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Rainer Mikulits
Managing Director

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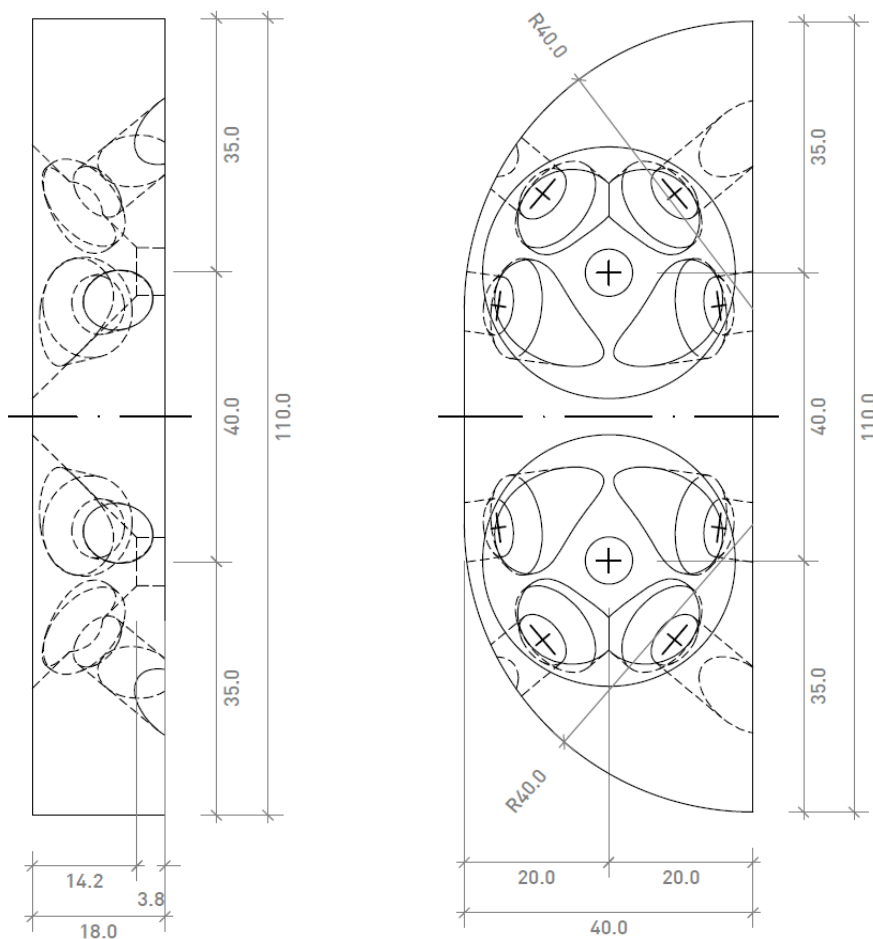
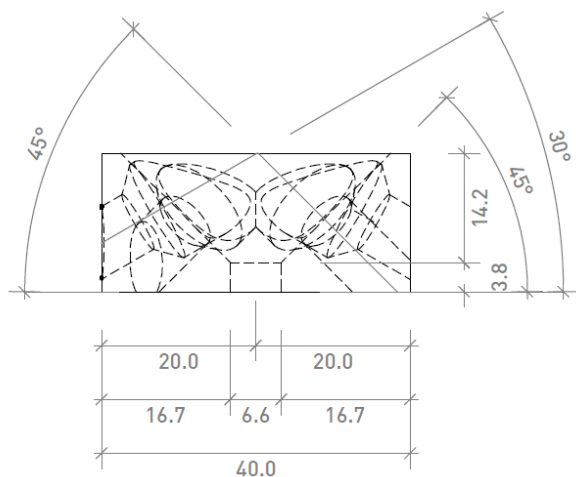
SHERPA special screw 8.0 x 100 mm	
Tensile strength	≥ 600 N/mm ²
E-Modulus	210 000 N/mm ²
Head diameter d _k	13 mm
Outer thread diameter d ₁	8 mm
Inner thread diameter d ₂	5.3 mm
Flange diameter d ₃	7 mm
Length L	100/120/140 mm
Pitch P	3.6 mm
Milling length A	11.5 mm
Center distance B	0.1 mm



Dimensions in mm

SHERPA CLT-Connector	Annex 1
Fastener specification – special screws	of European Technical Assessment ETA-18/0083 of 23.03.2018

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Dimensions in mm

SHERPA CLT-Connector	Annex 2
Product details definitions	of European Technical Assessment ETA-18/0083 of 23.03.2018

Type	Loading	Joint	Char. load-bearing capacity	Stiffness k_{ser}
			kN	N/mm
SHERPA CLT-Connector	axial force, longitudinal joint	Compriband ≤ 2 mm	18.80 ¹⁾	9 750
	lateral force, longitudinal joint		10.00 ¹⁾	3 300
	lateral force, out of plane, "pos"		16.50 ¹⁾	3 600
	lateral force, out of plane, "neg"		7.00	1 000
	lateral force, out of plane, "pos"	Sound insulation layer ≤ 12 mm	16.00 ¹⁾	3 600
	lateral force, out of plane, "neg"		5.30	870

1) Characteristic load bearing capacities for screw length $l = 100$ mm. The char. load bearing capacity can be multiplied by the screw length factor $n_s = 1.22$ for screw lengths $l = 120$ mm or by the screw length factor $n_s = 1.44$ for screw lengths $l = 140$ mm.

SHERPA CLT-Connector

Characteristic load bearing capacities

Annex 4

 of European Technical Assessment
ETA-18/0083 of 23.03.2018

