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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

European Technical Assessment ETA-26/0108 of 2026/03/20

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:	Peetri Puit Rib Elements and Box Elements
Product family to which the above construction product belongs:	Prefabricated wood-based loadbearing stressed skin panels
Manufacturer:	Peetri Puit OÜ Pärnaõie 32 EE-63308 Põlva Internet www.arcwood.ee
Manufacturing plant:	Peetri Puit OÜ Pärnaõie 32 EE-63308 Põlva
This European Technical Assessment contains:	16 pages including 4 annexes which form an integral part of the document
This European Technical Assessment is issued in accordance with Article 95(4) of Regulation (EU) 2024/3110, on the basis of :	EAD 140022-00-0304 for Pre-fabricated wood-based loadbearing stressed Skin Panels
This version replaces:	

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product

Peetri Puit Rib Elements and Box Elements (hereinafter referred to as “Rib Elements and Box Elements”) are glued stressed skin panels made of glulam ribs and CLT panels. The adhesive is a gap-filling adhesive of type I according to EN 301. Rib Elements and Box Elements may contain additional fire protective gypsum plaster-boards and roofing. Rib Elements and Box Elements may have a top or bottom CLT panel or both, a top and bottom CLT panel. The materials, dimensions and tolerances are given in Annex 1.

Rib Elements and Box Elements are intended to be used as structural or non-structural elements in buildings and bridges. Rib Elements and Box Elements may function as directly load bearing as well as bracing members e.g. as wall, floor and roof elements.

The products are shaped according to the customer's specification. The maximum length of the elements is 15,1 m and the height varies from 240 to 900 mm. Typical widths are from 600 mm to 3600 mm.

For gluing the ribs and panels to form a Rib Element or a Box Element an adhesive type I according to EN 301 is to be used. Specifications are deposited with ETA-Danmark A/S.

Chemically treated elements are not covered by this ETA.

Manufacturing
The Rib Elements and Box Elements are manufactured in accordance with the provisions of this European technical assessment using the automated manufacturing process in accordance with the technical documentation. Gluing of ribs to panels shall be performed according to the ETA holder's instructions assessed by ETA-Danmark A/S. Gluing pressure is achieved by screw press gluing and gap-filling adhesives are used.

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

Rib Elements and Box Elements are intended to be used as directly load bearing parts of building constructions. They may also be used as diaphragms for bracing. Rib Elements and Box Elements are supported below the lower CLT panel or below the ribs for elements without lower CLT panel. Reinforced notched beam supports are also permitted. The Rib Elements and Box Elements shall be subjected to static and quasi static actions only. This includes seismic actions according to EN 1998-1.

Regarding moisture behaviour of the product, the use is limited to service classes 1 and 2 as defined in EN 1995-1-1. The product shall not be used in service class 3 / use class 3 (3.1 exterior, above ground, protected; occasionally wet). If Rib Elements and Box Elements are intended to be a part of the external envelope of the building, they shall be protected adequately, e.g. by a roof or by cladding.

If the elements are intended to be covered by flooring, it is recommended that the moisture content of the top panel is checked by a moisture meter; moisture content of the top panel should not exceed the value recommended by the manufacturer of the flooring material.

Rib Elements and Box Elements with reinforced or unreinforced holes in ribs to provide openings for ducts, pipes etc. are not covered by this ETA. Rib Elements and Box Elements with modification or repair of the construction are not covered by this ETA.

The provisions made in this European Technical Assessment are based on an assumed intended working life of Rib Elements and Box Elements of 50 years.

The real working life may be, in normal conditions, considerably longer without major degradation affecting the essential requirements of the works.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

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

Characteristic	Assessment of characteristic
3.1 Mechanical resistance and stability (BWR1)	
Bending strength perpendicular to the skin	See clause 3.1.1 and annex 1
Compression strength parallel to the skin	See clause 3.1.1 and annex 1
Compression strength perpendicular to the skin	See clause 3.1.1 and annex 1
Shear strength	See clause 3.1.1 and annex 1
Racking resistance	See clause 3.1.1 and annex 1
Resistance to concentrated loads	No performance assessed
Density	See clause 3.1.1 and annex 1
Creep and duration of load	See clause 3.1.1
Dimensional stability	No performance assessed
3.2 Safety in case of fire (BWR2)	
Reaction to fire	Clause 3.2.1
Resistance to fire	Clause 3.2.2
3.3 Hygiene, health and the environment (BWR 3)	
Water vapor permeability and moisture resistance	No performance assessed
Content, emission and/or release of dangerous substances	No performance assessed
3.4 Safety and accessibility in use (BWR 4)	
Impact resistance	No performance assessed
3.5 Protection against noise (BWR 5)	
Airborne sound insulation	No performance assessed
Impact sound insulation	No performance assessed
Sound absorption	No performance assessed
3.6 Energy economy and heat retention (BWR 6)	
Thermal resistance	Clause 3.3.1
Air permeability	No performance assessed
Thermal inertia - specific heat capacity	No performance assessed
Aspects of durability	
Natural Durability	Clause 3.1.2

3.1 Mechanical resistance and stability

3.1.1 Mechanical resistance and stiffness as well as serviceability

Mechanical resistance and deformations of Rib Elements and Box Elements are determined by one of the following methods:

Method 3a: Reference to design documents of the purchaser
Method 3b: Reference to design documents produced and held by the manufacturer according to the order for the works

The structural performance of Rib Elements and Box Elements is considered in accordance with the limit state design principles specified in Eurocodes and is described in detail in the manufacturer's instructions for design. Both ultimate limit state and serviceability limit state (comprising vibrations when relevant) are considered. Calculation methods comply with EN 1995-1-1.

Rib Elements and Box Elements may be used in seismic areas if designed adequately. The use is limited to non-dissipative or low-dissipative structures ($q \leq 1.5$), defined according to Eurocode 8 (EN 1998-1:2004) clauses 1.5.2 and 8.1.3 b), and applicable national rules on works.

Structural design shall be documented. Strength values of timber, glulam and CLT to be used in design together with information of the dimensions of the components are given in Annex 1.

For structural timber used for Rib Elements and Box Elements the influence of creep and duration of load are considered for according to EN 1995-1-1 clauses 2.2.3, equations (2.3) – (2.5) by parameter k_{def} and 2.4.1, equation (2.14) by the parameter k_{mod}.
Their values are given in EN 1995-1-1, tables 3.1 for k_{mod} and 3.2 for k_{def}.

3.1.2 Durability
Rib Elements and Box Elements may only be used in service classes 1 and 2 according to EN 1995-1-1, and hazard classes 1 and 2 as specified in EN 335. The designer shall pay attention to the construction details and prevent any water accumulation by structural detailing. During the erection of the building, Rib Elements and Box Elements have good resistance to temporary exposure to water without decay, if they are allowed to dry afterwards. Integrity of the bond is maintained in the assigned service classes throughout the expected life of the structure.

3.2 Safety in case of fire

3.2.1 Reaction to fire

Untreated products are classified to have reaction to fire class D-s2, d0 in accordance with EN 13501-1 and Commission Delegated Regulation 2016/364.

3.2.2 Resistance to fire

Fire design of Rib Elements and Box Elements shall be performed according to standards EN 1995-1-2:2004/AC:2009 and EN 1995-1-1:2004. Nationally determined parameters valid in the relevant Member State shall be used.

Charring rate for CLT panels shall be applied as per ETA-22/0107.

Charring rate for the glued laminated ribs shall be taken from EN1995-1-2, table 3.1.

The charring rates shall be used in the simplified bilinear model of clause 3.4.3 of EN 1995-1-2 to determine the charring depth according to time requirements, considering clause 4.2.2 (Residual cross section method) of EN 1995-1-2. For the application of the simplified bilinear method, the fire exposed lamella shall be considered as a protective cladding of the subsequent lamella. Analogously, this procedure also applies to walls and floors/roofs made with CLT

Passage of fire to the end of the element must be prevented. In addition, the lower CLT panel may not have such holes that can act as passages for fire to the cavity inside the Rib Elements and Box Elements.

3.3 Energy economy and heat retention

3.3.1 Thermal resistance
The thermal conductivity λ for the rib material is 0.13 W/(m K) and 0.12 W/(m K) for the timber and CLT panel material according to EN ISO 10456.

The natural density variation of the materials is taken into account in this value.

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

4.1 AVCP system

According to the Decision 2000/447/EC of the European Commission, the system of assessment and verification of constancy of performance (see Annex V to the regulation (EU) No 305/2011) is System 1.

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

Issued in Copenhagen on 2026-03-20 by

Thomas Bruun
Managing Director, ETA-Danmark

Annex 1	General and tolerances of dimensions
	Peetri Puit Rib Elements and Box Elements

The different cross-section types of Rib Elements and Box Elements and typical cross sections and symbols used are shown in Annex 1. The products are individually designed based on the specification of the customer. The maximum length of the Rib Elements and Box Elements is 15,1 m and the height varies from 240 to 900 mm. Top or bottom CLT panels are one-piece CLT panels.

Typical dimensions of the members to be glued together are:

b_{rib} = 60 to 180 mm
h_1 = 120 to 500 mm
t_1 = 60 to 200 mm
t_2 = 60 to 200 mm

1. Tolerances of dimensions

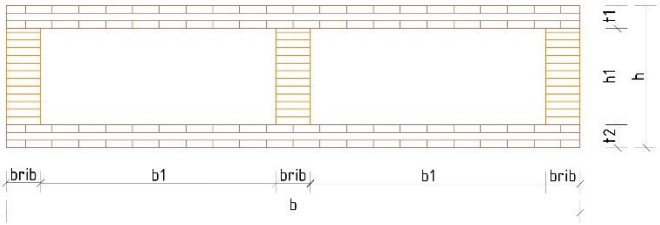
Tolerances of dimensions at the reference moisture content of 12 % are presented in Table 1- 1.

Table 1-1. Tolerances of Rib Elements and Box Elements

Dimension	Tolerance, mm or %
Height of the Rib Elements and Box Elements	± 3,0 mm or 1,5 %**
Width of the Rib Elements and Box Elements	± 0,5 %
Length of the Rib Elements and Box Elements	± 5,0 mm

** whichever is the smaller

Annex 1	Product description
	Peetri Puit Box Element



Total height	h	≤ 900 mm
Rib height	h1	120 – 500 mm
Element width	b	≤ 3600 mm
Rib spacing	b1	≤ 1200 mm
Rib width	brib	60 – 180 mm
Upper panel thickness	t1	≤ 200 mm
Lower panel thickness	t2	≤ 200 mm
Element length	l	≤ 15,1 m

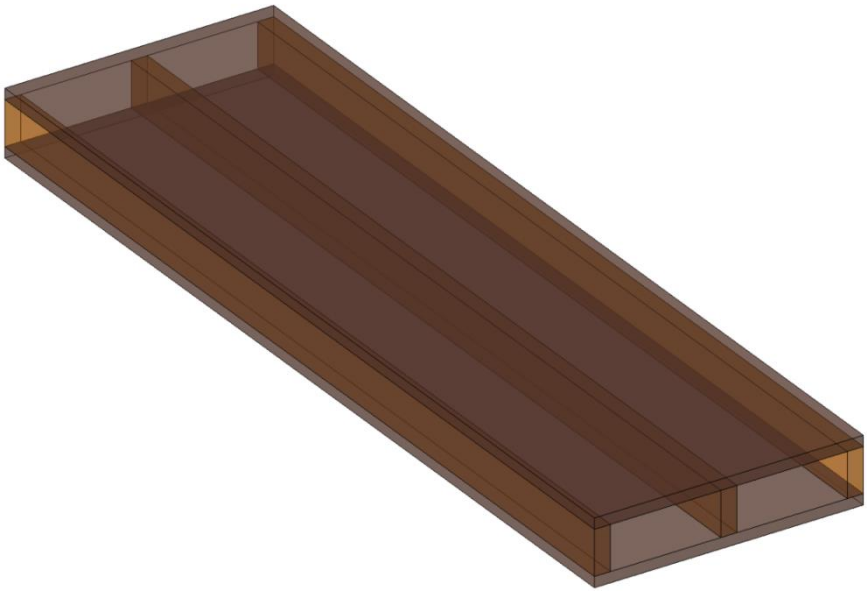
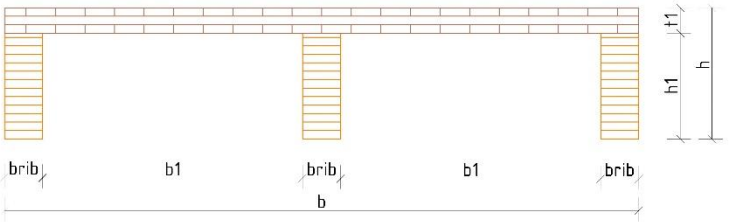


Figure 1-1: Closed type

Annex 1	Product description
	Peetri Puit Rib Element



Total height	h	≤ 700 mm
Rib height	h1	120 – 500 mm
Element width	b	≤ 3600 mm
Rib spacing	b1	≤ 1200 mm
Rib width	brib	60 – 180 mm
Panel thickness	t	≤ 200 mm
Element length	l	≤ 15,1 m

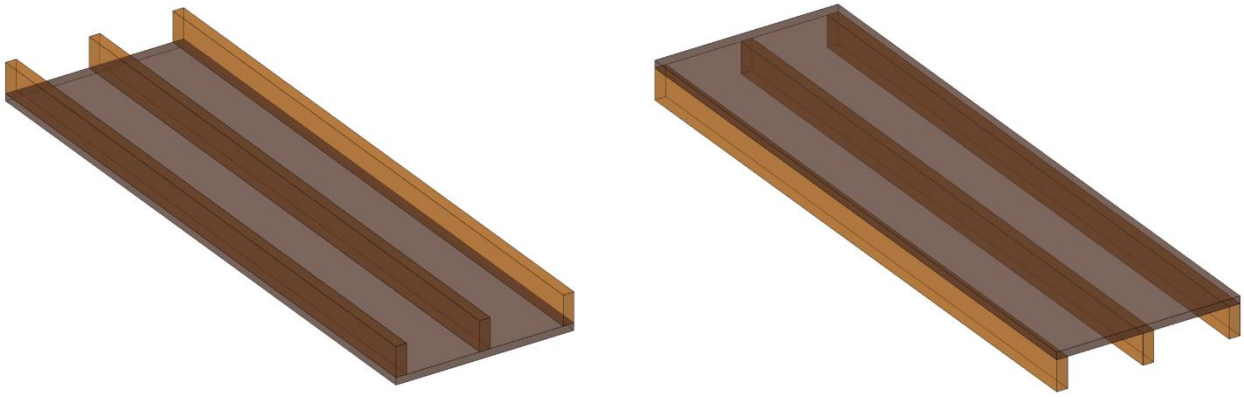
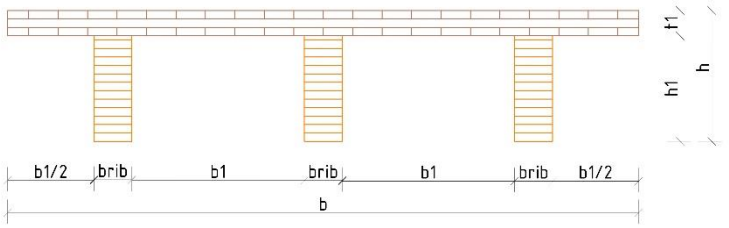


Figure 1-2: Open box with outer webs flush with flange



Total height	h	≤ 700 mm
Rib height	h1	120 – 500 mm
Element width	b	≤ 3600 mm
Rib spacing	b1	≤ 1200 mm
Rib width	brib	60 – 180 mm
Panel thickness	t	≤ 200 mm
Element length	l	≤ 15,1 m

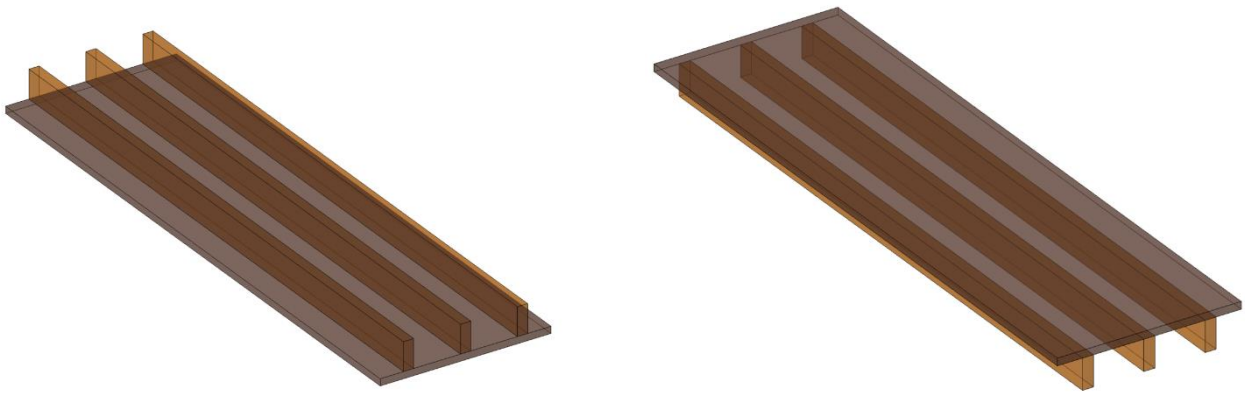


Figure 1-3: Open box with three webs and protruding flange

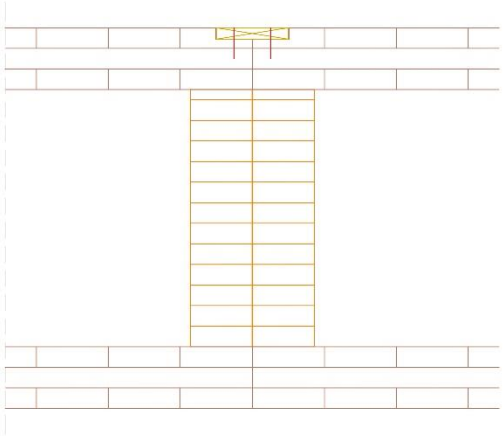
Annex 1	Exemplary butt joint
	Peetri Puit Box Elements

2. Typical connections between Box Elements

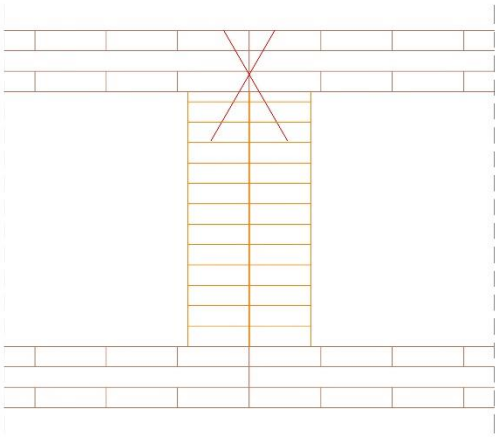
Box Elements are normally connected to each other with mechanical fasteners (see Annex 1). Diagonal screwing is recommended. Rib Elements and Box Elements shall be designed in such a way that width and thickness changes due to moisture content variation do not cause harmful stresses in the structures. Special attention shall be paid to the design of joints.

The selection, number, and arrangement of the mechanical fasteners as well as the thickness of the connecting board must be based on static requirements.

butt joint with insert board



butt joint with crossed screws



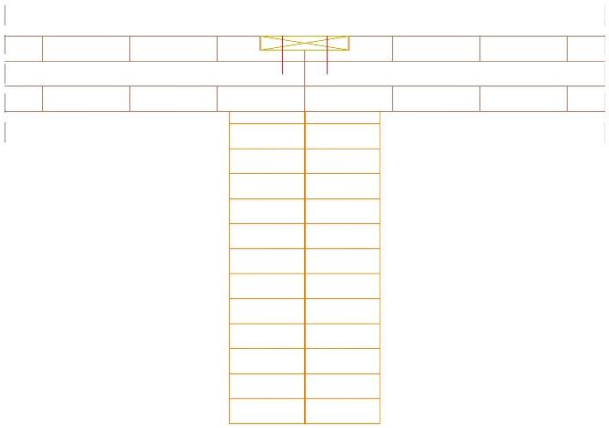
Annex 1	Exemplary butt joint
	Peetri Puit Rib Elements

2. Typical connections between Rib Elements

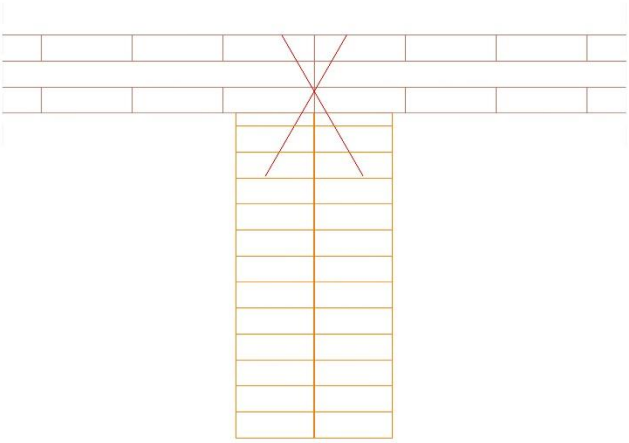
Rib Elements are normally connected to each other with mechanical fasteners (see Annex 1). Diagonal screwing is recommended. Rib Elements and Box Elements shall be designed in such a way that width and thickness changes due to moisture content variation do not cause harmful stresses in the structures. Special attention shall be paid to the design of joints.

The selection, number, and arrangement of the mechanical fasteners as well as the thickness of the connecting board must be based on static requirements.

butt joint with insert board



butt joint with screw cross



Annex 1	Specifications of components
	Peetri Puit Rib Elements and Box Elements

3. Specifications of components

The components are made of glulam according to EN 14080 and CLT according to ETA-22/0107 produced by Peetri Puit OÜ. Orientation of the CLT panel material is parallel to span. The characteristic strength and stiffness values comply with EN 14080 and ETA-22/0107, respectively.

The phenolic or aminoplastic adhesives used in manufacturing Rib Elements and Box Elements with screw press gluing are of type I as defined in EN 301.
The modification factors k_{mod} and k_{def} for glulam and CLT, as defined in Eurocode 5, shall be used in the design of Rib Elements and Box Elements. Partial safety factors γ_m are defined in the National annex of 1995-1-1.

Product characteristics of ribs made of glulam

	GL 24h	GL28h
Bending strength $f_{m,k}$	24,0 N/mm²	28,0 N/mm²
Compression strength $f_{c,0,k}$	24,0 N/mm²	28,0 N/mm²
Tension strength $f_{t,0,k}$	19,2 N/mm²	22,3 N/mm²
Compression strength $f_{c,90,k}$	2,5 N/mm²	2,5 N/mm²
Tension strength $f_{t,90,k}$	0,5 N/mm²	0,5 N/mm²
Rolling shear strength $f_{R,k}$	1,2 N/mm²	1,2 N/mm²
Shear strength parallel to the grain $f_{v,k}$	3,5 N/mm²	3,5 N/mm²
Modulus of elasticity parallel to the grain $E_{0,mean}$	11500 N/mm²	12600 N/mm²
Modulus of elasticity perpendicular to the grain $E_{90,mean}$	300 N/mm²	300 N/mm²
Shear modulus parallel to the grain G_{mean}	650 N/mm²	650 N/mm²
Rolling shear modulus $G_{R,mean}$	65 N/mm²	65 N/mm²
Density ρ_k	385 kg/m³	425 kg/m³

Product characteristics of flanges made of CLT

	C16/T10	C24/T14
Bending strength $f_{m,k}$	$k_{sys} \cdot 16{,}0$ N/mm²	$k_{sys} \cdot 24{,}0$ N/mm²
Compression strength $f_{c,0,k}$	20,0 N/mm²	24,0 N/mm²
Tension strength $f_{t,0,k}$	16,0 N/mm²	19,0 N/mm²
Compression strength $f_{c,90,k}$	2,5 N/mm²	3,0 N/mm²
Tension strength $f_{t,90,k}$	0,4 N/mm²	0,4 N/mm²
Rolling shear strength $f_{R,k}$	1,1 N/mm² ≤ $f_{R,k}$ ≤ 1,4 N/mm²	
Shear strength parallel to the grain $f_{v,k}$	3,2 N/mm²	4,0 N/mm²
Modulus of elasticity parallel to the grain $E_{0,mean}$	10000 N/mm²	12000 N/mm²
Modulus of elasticity perpendicular to the grain $E_{90,mean}$	270 N/mm²	370 N/mm²
Shear modulus parallel to the grain G_{mean}	500 N/mm²	690 N/mm²
Rolling shear modulus $G_{R,mean}$	50 N/mm²	50 N/mm²
Density ρ_k	341 kg/m³	385 kg/m³

Informative Annex 2	Notched supports
	Peetri Puit Rib Elements and Box Elements with notched supports

For Peetri Puit Rib Elements, and Box Elements with a rectangular notch on the same side as the support, see Figure 2-1, the reinforcement may be designed for the design tensile force $F_{t,90,Ed}$:

$$F_{t,90,Ed} = k_\alpha \cdot k_\beta \cdot \left(1 - \frac{EI_1 + 0{,}5 \cdot ES_{ef} \cdot h_1}{EI_{ef}}\right) \cdot V_d$$

Where:

k_α $= 0{,}9 + 0{,}5 \cdot (2\alpha - 1)^2$

k_β $= 1 + 2\beta$

α is the ratio h_{ef}/h see Figure 2-1.

β is the ratio a/h see Figure 2-1.

a is the distance parallel to the grain from the line of action of the support reaction V_d to the corner of the notch.

EI_1 Bending stiffness of the CLT plate above the intersecting line at the notch.

EI_{ef} Effective bending stiffness of the full cross-section.

E Modulus of elasticity parallel to the grain.

S_{ef} Effective first moment of area of the CLT plate above the intersecting line at the notch.

h_1 Upper CLT plate thickness.

V_d Support reaction.

For $\alpha \leq 0{,}6$ and $\beta \leq 0{,}2$, the product $k_\alpha \cdot k_\beta$ may be taken as $k_\alpha \cdot k_\beta = 1{,}3$.

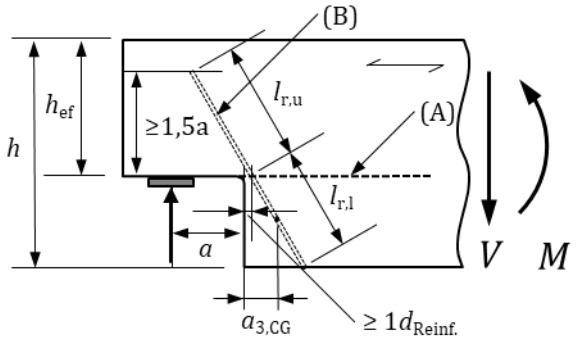


Figure 2-1: Reinforced notched beam support in the ribs of a Peetri Puit Rib Element or Box Element
(A) Possible crack line
(B) Internal reinforcement by self-tapping fully threaded screws arranged under 60° to the grain

Informative Annex 3	**Screw press gluing** **Rib Elements and Box Elements**

Self-drilling screws with partial thread according to EN 14592 or European Technical Assessment according to EAD 130118-00-0603 or EAD 130118-01-0603 are to be used.

Screws with diameters of 4 mm to 10 mm and head or washer diameters of up to a maximum of 35 mm shall be used. If washers are used, then the washers provided by the screw manufacturer must be used. Countersunk head screws with a ratio of head diameter d_h and nominal diameter d of $d_h/d \geq 1.8$ or washer head screws with $d_h/d \geq 2.5$ shall be used.

There must be no screw thread in the CLT parts. There must be no thread in the glulam ribs over a length of 2 d, starting from the adhesive joint, where d is the nominal diameter of the screw.

The glue line pressure must be applied by screws at right angles to the adhesive joint. The upper edge of the screw heads must be countersunk between 2 mm and 5 mm in the CLT.

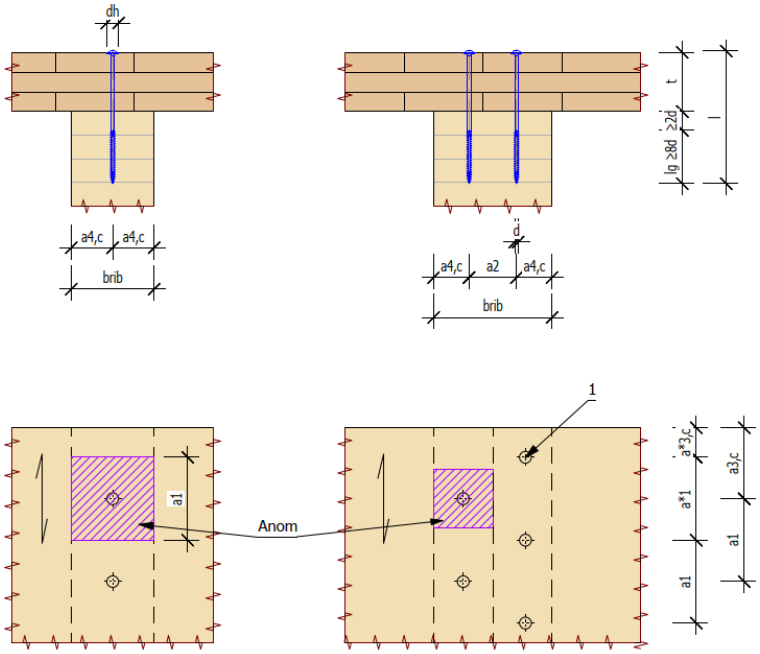


Figure 3-1: Spacing, end and edge distances of screws for screw press gluing

Table 3-1: Requirements for screw press gluing for Peetri Puit Rib Elements and Box Elements

t_1 [mm]	d [mm]	a_1 [mm]	a_2 [mm]	p_{req} [MPa]	$k_{p,min}$
28 - 60	6	≤ 150	≤ 12 d	0,20	1
61 - 100	8	≤ 175	≤ 13 d	0,20	See equation (3-3)
100 - 160	8	≤ 200	≤ 14 d	0,25	
161 - 200	10	≤ 225	≤ 15 d	0,25	

Where:

t CLT plate thickness
1 Additional end grain screw
a_1, a^*_1, a_2, $a_{3,c}$, $a^*_{3,c}$, $a_{4,c}$ [mm]: spacing, end and edge distances
A_{nom} Nominal screw press area [mm²]
b_{rib} Rib width [mm]
d Nominal screw diameter [mm]
d_h Head or washer diameter [mm]
ℓ Screw length [mm]
ℓ_g Thread length [mm]

Annex 3	**Screw press gluing**
	Rib Elements and Box Elements

The pressing force per screw with countersunk or washer head is:

$$F_{pr} = (0{,}314 \cdot d_h - 1{,}32) \cdot 1000 \text{ N} \quad (3\text{-}1)$$

The required pressure p_{ef} is:

$$p_{ef} = \frac{0{,}8 \cdot F_{pr} \cdot k_{p,min}}{A_{nom}} \geq p_{req} \text{ MPa} \quad (3\text{-}2)$$

$$k_{p,min} = \min\left(1; \left(\frac{100}{a_1}\right)^{\sqrt{\frac{230}{EI_1}}}\right) \quad (3\text{-}3)$$

Where:

p_{ef}	Calculated effective bond line pressure
F_{pr}	Pressing force per screw
EI_1	Bending stiffness of the CLT plate in the longitudinal direction of the ribs for 1 mm width, in MN·mm²
p_{req}	Required pressure, see Table 3-1