Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment ETA-20/0258 of 6 April 2022

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	Fall Protection Systems "TigaSAFE"
Product family to which the construction product belongs	Anchor devices for fastening personal fall protection systems to timber substructures
Manufacturer	TigaTech GmbH Derndorferberg 2 4501 NEUHOFEN/KREMS ÖSTERREICH
Manufacturing plant	plant 1 plant 2
This European Technical Assessment contains	20 pages including 15 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	EAD 331846-00-0603

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Specific part

1 Technical description of the product

The fall protection systems are made of stainless steel. They are fastened to timber substructure according to EN 300:2006, EN 636: 2012+A1:2015, EN 14080:2013, EN 14081-1:2016+A1:2019.

The fall protection systems are fastened to the timber substructure with the different fasteners which can be seen in the annexes.

This ETA includes the products listed in the following Table 1:

Table 1: Products of this ETA

Annex No.	Trade Name (Product of this ETA)	Fastener	Material
2	TS ESL 300-800 H	Countersunk timber screws SPAX ø 6x60 or Würth ASSY ø 6 x 60	1.4301 / 1.4307
3	TS ESL 300-800 H	Countersunk timber screws SPAX ø 6x60 or Würth ASSY ø 6 x 60	1.4301 / 1.4307
4	TS ZSL 300-800 H	Countersunk timber screws SPAX ø 6x60 or Würth ASSY ø 6 x 60	1.4301 / 1.4307
5	TS ZSL 300-800 H	Countersunk timber screws SPAX ø 6x60 or Würth ASSY ø 6 x 60	1.4301 / 1.4307
6	TS ZSM 300-800 H	Countersunk timber screws SPAX ø 6x60 or Würth ASSY ø 6 x 60	1.4301 / 1.4307
7	TS ESM 300-800 H	Countersunk timber screws SPAX ø 6x60 or Würth ASSY ø 6 x 60	1.4301 / 1.4307
8	TS ESM 300-800 H	Countersunk timber screws SPAX ø 6x60 or Würth ASSY ø 6 x 60	1.4301 / 1.4307

The components and the system setup of the product are given in Annex (1-15).

2 Specification of the intended use in accordance with the applicable EAD 331846-00-0603

The fall protection system is used to protect operators working at height (max. 3 persons at once), by arresting them in a fall. The operators attach themselves to the eye using e.g. ropes and karabiners. In the case of a fall the fall protection system prevents the fall and resulting physical damage assuming the correct usage by the operator. The fall protection system is designed for use in all areas of industry, construction and maintenance.

The fall protection system is intended to be used, fastened or inserted on flat roofs or other flat planes made of timber only. The direction of force therefore shall be perpendicular (90° ±5 %) to the fastening element. Thus use at a (timber-) wall is intended only when the direction of force still applies at a 90 ° angle to the fastening axis.

The performances given in Section 3 are only valid if the products listed in the Table 1 is used in compliance with the specifications and conditions given in Annexes (1-15).

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fall protection system of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, 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

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1

3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Static loading	Annexes 2-15
Dynamic loading	Annexes 2-15
Check of deformation capacity in case of constraining forces	Annexes 2-15
Durability	No performance assessed

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

In accordance with EAD No. 331846-00-0603, the applicable European legal act is: Decision (EU) 2018/771

The system to be applied is: 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 given in EAD Nr. 331846-00-0603 "Table 3.1 Control plan for the manufacturer; cornerstones".

Issued in Berlin on 6 April 2022 by Deutsches Institut für Bautechnik

Dr.-Ing. Ronald Schwuchow
Head of Section

beglaubigt:
Hahn

This ETA includes the product variants listed in Table 1:

Table 1: Product variants included in this ETA

Annex	Tradename (Product in this ETA)	Fastener	Substucture
2	TS-ESL 300-800 H	Countersunk timber screws SPAX ø 6x60[d] or Würth ASSY4 ø 6x60[e]	OSB 3-panels[a] or multi-layer wood panels[b] on timber ≥ C24/GL24[c]
3	TS-ESL 300-800 H	Countersunk timber screws SPAX ø 6x60[d] or Würth ASSY4 ø 6x60[e]	OSB 3-panels[a] or multi-layer wood panels[b] on timber ≥ C24/GL24[c]
4	TS-ZSL 300-800 H	Countersunk timber screws SPAX ø 6x60[d] or Würth ASSY4 ø 6x60[e]	OSB 3-panels[a] or multi-layer wood panels[b] on timber ≥ C24/GL24[c]
5	TS-ZSL 300-800 H	Countersunk timber screws SPAX ø 6x60[d] or Würth ASSY4 ø 6x60[e]	OSB 3-panels[a] or multi-layer wood panels[b] on timber ≥ C24/GL24[c]
6	TS-ZSM 300-800 H	Countersunk timber screws SPAX ø 6x60[d] or Würth ASSY4 ø 6x60[e]	OSB 3-panels[a] or multi-layer wood panels[b] on timber ≥ C24/GL24[c]
7	TS-ESM 300-800 H	Countersunk timber screws SPAX ø 6x60[d] or Würth ASSY4 ø 6x60[e]	multi-layer wood panels[b] on timber ≥ C24/GL24[c]
8	TS-ESM 300-800 H	Countersunk timber screws SPAX ø 6x60[d] or Würth ASSY4 ø 6x60[e]	OSB 3-panels[a] or on timber ≥ C24/GL24[c]

Annexes 2 to 8 show the components and the system structure of the products.

[a] EN 300:2006 Oriented Strand Boards (OSB) – Definitions, classification and specifications
[b] EN 13353:2008+A1:2011 Solid wood panels (SWP) - Requirements;
[c] EN 338:2010-02 Structural timber - Strength classes
[d] ETA-12/0114 SPAX self-tapping screws
[e] ETA-11/0190 Würth self-tapping screws

Design values of actions

$F_{Ed} = F_{Ek} \cdot \gamma_F$

The recommended partial safety factor γ_F is 1.5

The recommended partial safety factor is used in order to determine the corresponding design actions, provided no partial safety factors given in national regulations. That leads to the following values:

Example:

For one user $F_{Ed} = F_{Ek} \cdot \gamma_F = 6\ kN \cdot 1.5 = 9.0\ kN$

For two users $F_{Ed} = F_{Ek} \cdot \gamma_F = (6 + 1)\ kN \cdot 1.5 = 10.5\ kN$

For three users $F_{Ed} = F_{Ek} \cdot \gamma_F = (6 + 2)\ kN \cdot 1.5 = 12.0\ kN$

Fall Protection Systems „TigaSAFE“	Annex 1
Product Variants	

Table 2: Substructure OSB 3-panels or multi-layer wood panels on timber ≥ C24/GL24

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substucture thickness h_{min} [mm]
TS-ESL 300-800 H	300 - 800	Countersunk timber screws SPAX ø 6x60 or Würth ASSY4 ø 6x60	centered	25 mm for OSB 3-panels 27 mm for multi-layer wood panels

The scope of application of the fall protection systems „TigaSAFE“ on OSB 3-panels or multi-layer wood panels is limited to service classes 1 and 2 according to EN 1995-1-1. The fixture of the anchor device (base plate and timber screws as well as the timber panels) shall not be weathered freely. All other components can be used in weathered outdoor areas.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} * k_{mod} = \frac{14.4\ kN}{1.3} * 1.1 = 12.2\ kN$$ for pin height 300 mm to 800 mm

The recommended partial safety factor γ_M is 1.3, provided no partial safety factor is given in national regulations. The recommended modification factor k_{mod} is 1.1 for service classes 1 and 2, provided no modification factor is given in national regulations.

Dynamic loading / design resistance

Three users for pin height 300 mm to 800 mm

Deformation capacity

≤ 10 mm at 0.7 kN

Fall Protection Systems „TigaSAFE“	Annex 2.1
TS-ESL 300-800 H to be installed on OSB 3-panels or multi-layer wood panels	

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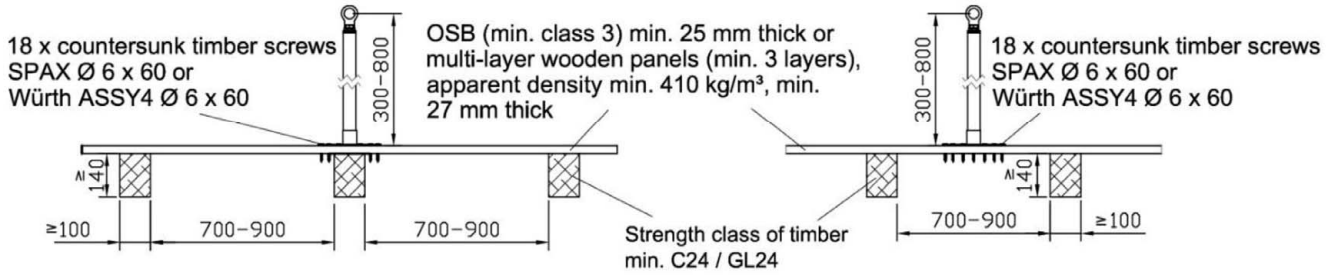
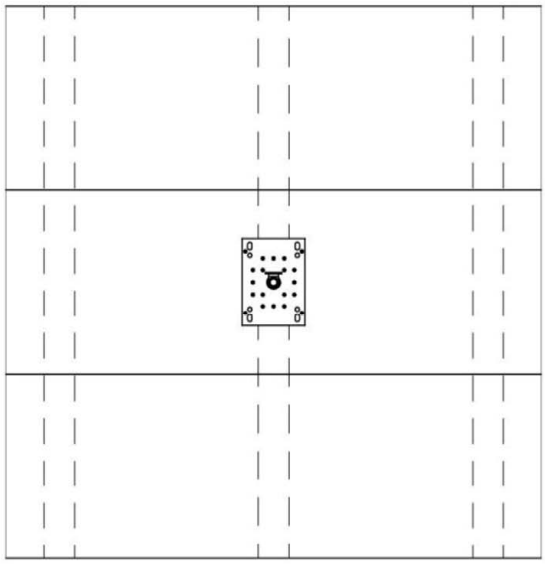
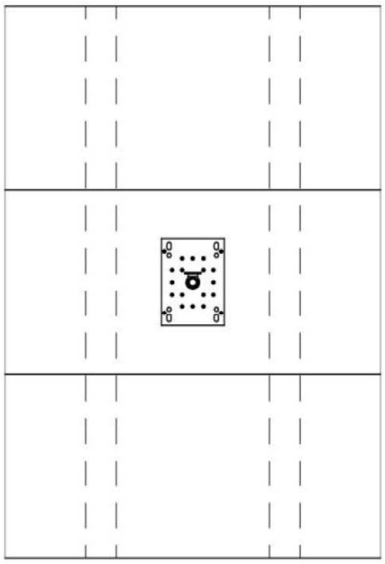
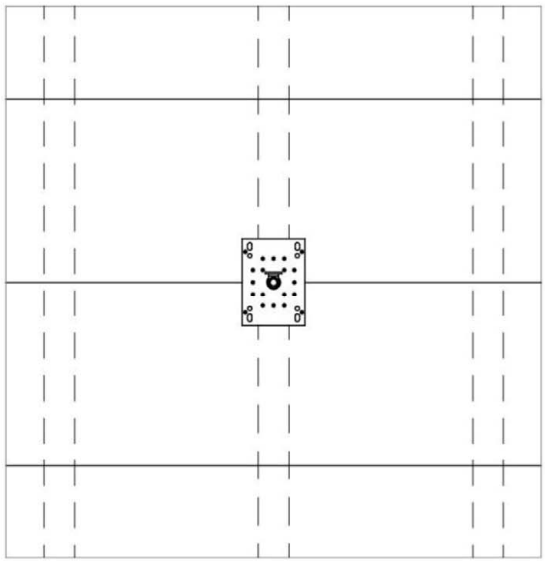




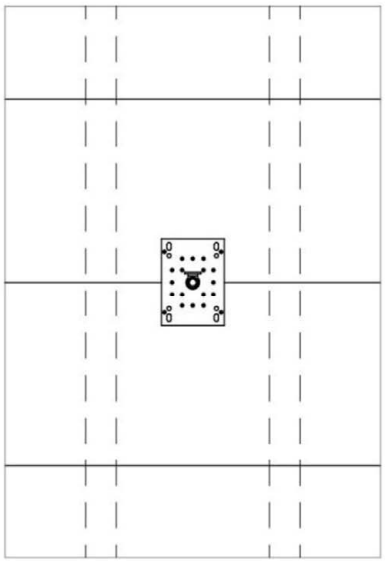
Mounting on a panel above a rafter



Mounting on a panel between two rafters



Mounting on the joint between two panels above a rafter



Mounting on the joint between two panels and between two rafters

All dimensions in mm

Fall Protection Systems „TigaSAFE“	Annex 2.2
TS-ESL 300-800 H to be installed on OSB 3-panels or multi-layer wood panels	

Table 3: Substructure OSB 3-panels or multi-layer wood panels on timber ≥ C24/GL24

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substucture thickness h_{min} [mm]
TS-ESL 300-800 H	300 - 800	Countersunk timber screws SPAX ø 6x60 or Würth ASSY4 ø 6x60	centered	25 mm for OSB 3-panels 27 mm for multi-layer wood panels

The scope of application of the fall protection systems „TigaSAFE“ on OSB 3-panels or multi-layer wood panels is limited to service classes 1 and 2 according to EN 1995-1-1. The fixture of the anchor device (base plate and timber screws as well as the timber panels) shall not be weathered freely. All other components can be used in weathered outdoor areas.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} * k_{mod} = \frac{14.4\ kN}{1.3} * 1.1 = 12.2\ kN$$ for pin height 300 mm to 800 mm

The recommended partial safety factor γ_M is 1.3, provided no partial safety factor is given in national regulations. The recommended modification factor k_{mod} is 1.1 for service classes 1 and 2, provided no modification factor is given in national regulations.

Dynamic loading / design resistance

Three users for pin height 300 mm to 800 mm

Deformation capacity

≤ 10 mm at 0.7 kN

Fall Protection Systems „TigaSAFE“	Annex 3.1
TS-ESL 300-800 H to be installed on OSB 3-panels or multi-layer wood panels	

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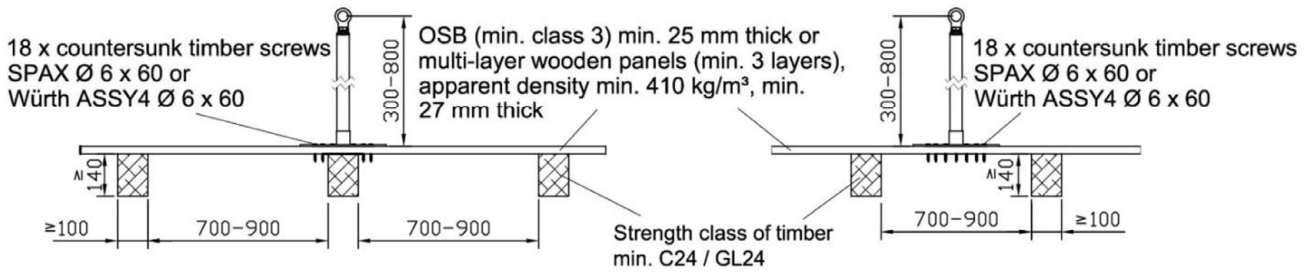
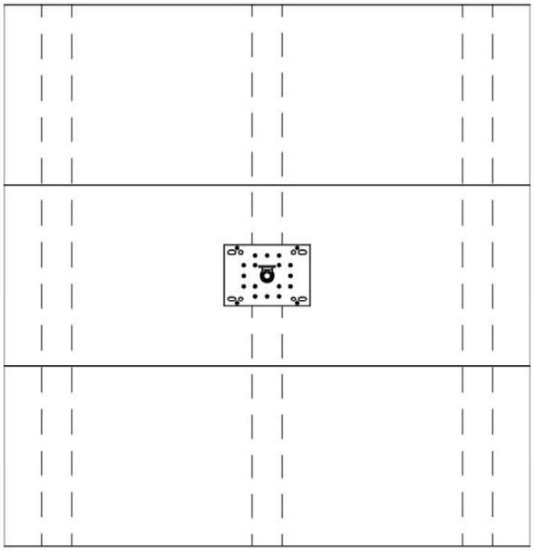
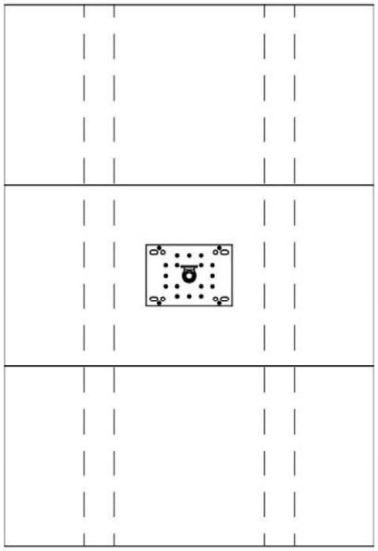
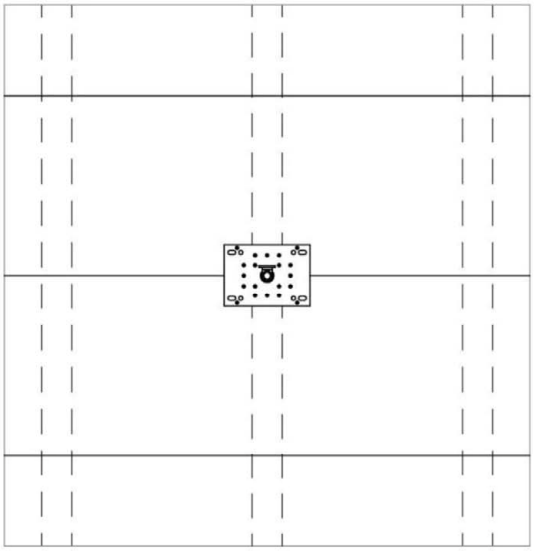




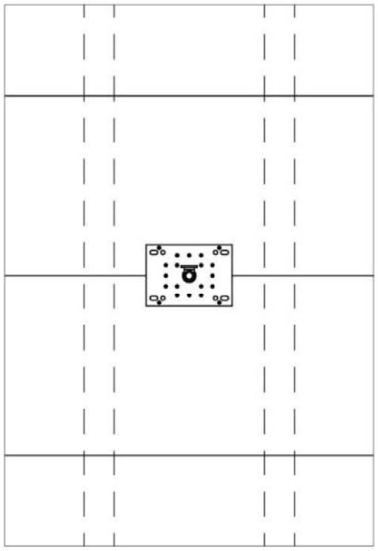
Mounting on a panel above a rafter



Mounting on a panel between two rafters



Mounting on the joint between two panels above a rafter



Mounting on the joint between two panels and between two rafters

All dimensions in mm

Fall Protection Systems „TigaSAFE“	Annex 3.2
TS-ESL 300-800 H to be installed on OSB 3-panels or multi-layer wood panels	

Table 4: Substructure OSB 3-panels or multi-layer wood panels on timber ≥ C24/GL24

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substucture thickness h_{min} [mm]
TS-ZSL 300-800 H	300 - 800	Countersunk timber screws SPAX ø 6x60 or Würth ASSY4 ø 6x60	centered	25 mm for OSB 3-panels 27 mm for multi-layer wood panels

The scope of application of the fall protection systems „TigaSAFE“ on OSB 3-panels or multi-layer wood panels is limited to service classes 1 and 2 according to EN 1995-1-1. The fixture of the anchor device (base plate and timber screws as well as the timber panels) shall not be weathered freely. All other components can be used in weathered outdoor areas.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} * k_{mod} = \frac{14.4\ kN}{1.3} * 1.1 = 12.2\ kN$$ for pin height 300 mm to 800 mm

The recommended partial safety factor γ_M is 1.3, provided no partial safety factor is given in national regulations. The recommended modification factor k_{mod} is 1.1 for service classes 1 and 2, provided no modification factor is given in national regulations.

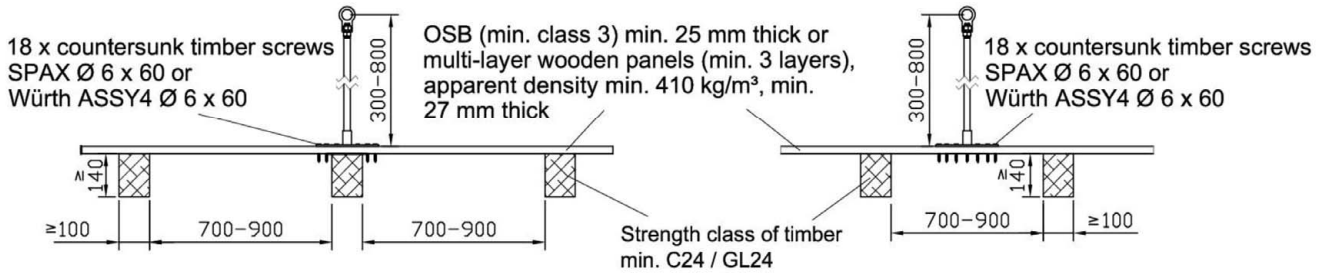
Dynamic loading / design resistance

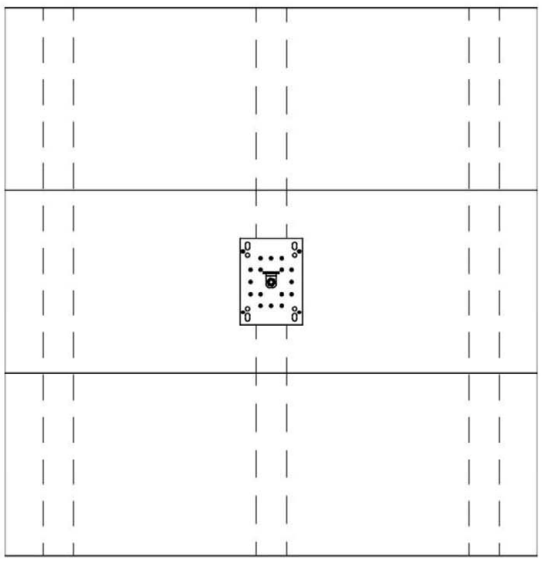
Three users for pin height 300 mm to 800 mm

Deformation capacity

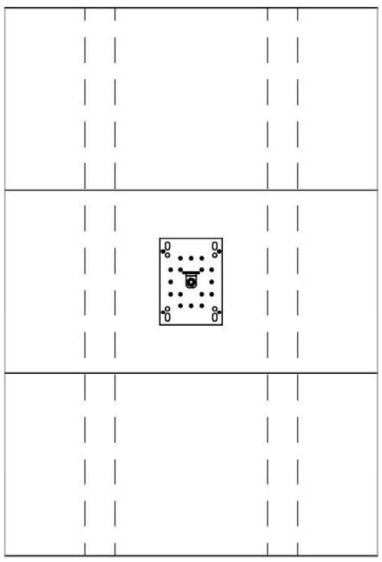
≤ 10 mm at 0.7 kN

Fall Protection Systems „TigaSAFE“	Annex 4.1
TS-ZSL 300-800 H to be installed on OSB 3-panels or multi-layer wood panels	

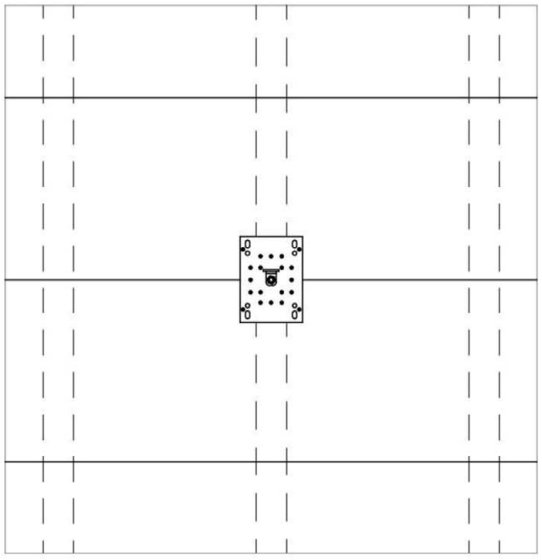




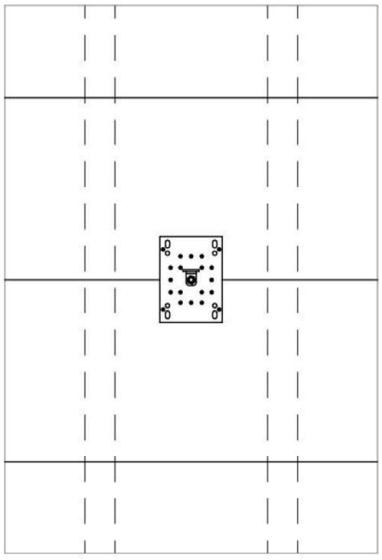
Mounting on a panel above a rafter



Mounting on a panel between two rafters



Mounting on the joint between two panels above a rafter



Mounting on the joint between two panels and between two rafters

All dimensions in mm

Fall Protection Systems „TigaSAFE“	Annex 4.2
TS-ZSL 300-800 H to be installed on OSB 3-panels or multi-layer wood panels	

Table 5: Substructure OSB 3-panels or multi-layer wood panels on timber ≥ C24/GL24

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substucture thickness h_{min} [mm]
TS-ZSL 300-800 H	300 - 800	Countersunk timber screws SPAX ø 6x60 or Würth ASSY4 ø 6x60	centered	25 mm for OSB 3-panels 27 mm for multi-layer wood panels

The scope of application of the fall protection systems „TigaSAFE“ on OSB 3-panels or multi-layer wood panels is limited to service classes 1 and 2 according to EN 1995-1-1. The fixture of the anchor device (base plate and timber screws as well as the timber panels) shall not be weathered freely. All other components can be used in weathered outdoor areas.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} * k_{mod} = \frac{14.4\ kN}{1.3} * 1.1 = 12.2\ kN$$ for pin height 300 mm to 800 mm

The recommended partial safety factor γ_M is 1.3, provided no partial safety factor is given in national regulations. The recommended modification factor k_{mod} is 1.1 for service classes 1 and 2, provided no modification factor is given in national regulations.

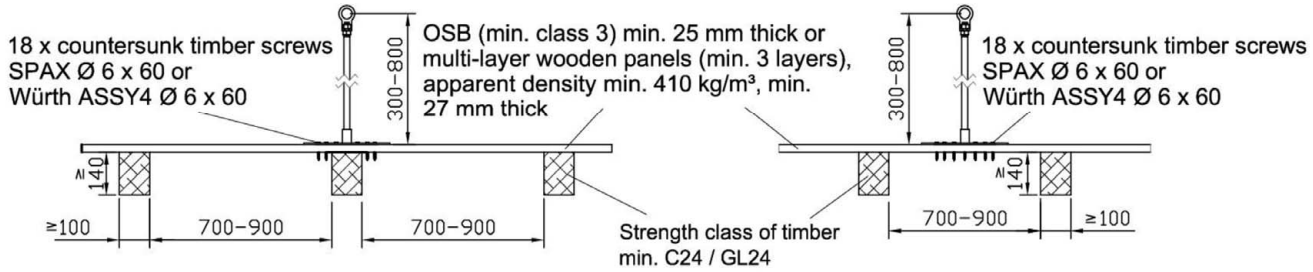
Dynamic loading / design resistance

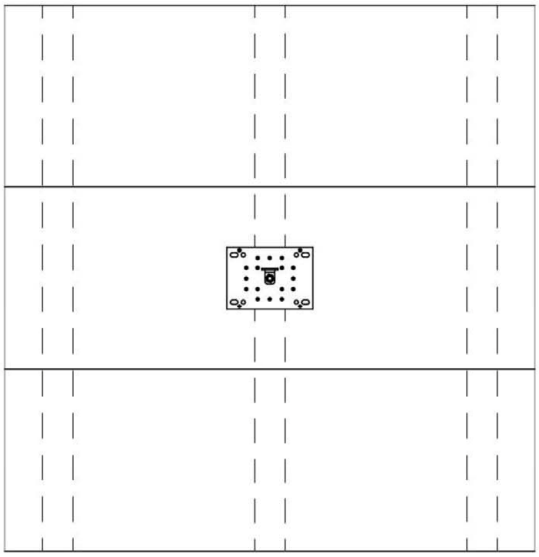
Three users for pin height 300 mm to 800 mm

Deformation capacity

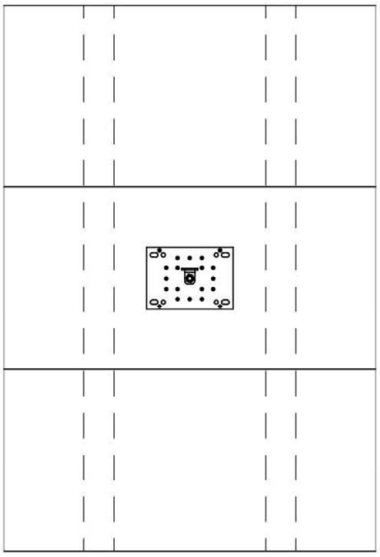
≤ 10 mm at 0.7 kN

Fall Protection Systems „TigaSAFE“	Annex 5.1
TS-ZSL 300-800 H to be installed on OSB 3-panels or multi-layer wood panels	

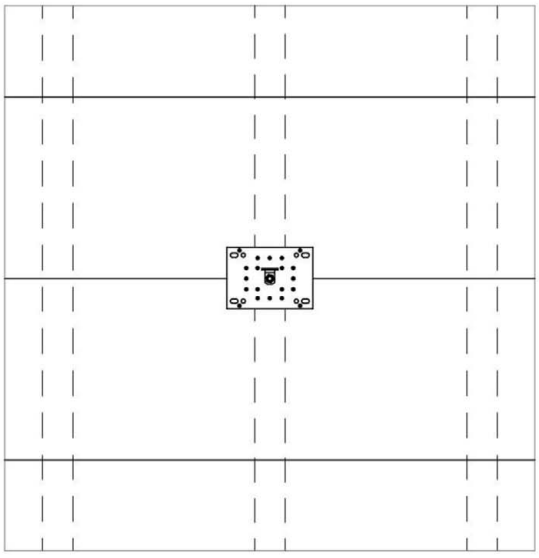




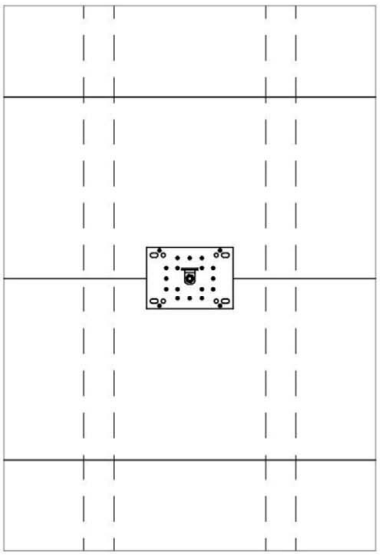
Mounting on a panel above a rafter



Mounting on a panel between two rafters



Mounting on the joint between two panels above a rafter



Mounting on the joint between two panels and between two rafters

All dimensions in mm

Fall Protection Systems „TigaSAFE“	Annex 5.2
TS-ZSL 300-800 H to be installed on OSB 3-panels or multi-layer wood panels	

Table 6: Substructure OSB 3-panels or multi-layer wood panels on timber ≥ C24/GL24

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substucture thickness h_{min} [mm]
TS-ZSM 300-800 H	300 - 800	Countersunk timber screws SPAX ø 6x60 or Würth ASSY4 ø 6x60	centered	25 mm for OSB 3-panels 27 mm for multi-layer wood panels

The scope of application of the fall protection systems „TigaSAFE“ on OSB 3-panels or multi-layer wood panels is limited to service classes 1 and 2 according to EN 1995-1-1. The fixture of the anchor device (base plate and timber screws as well as the timber panels) shall not be weathered freely. All other components can be used in weathered outdoor areas.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} * k_{mod} = \frac{14.4\ kN}{1.3} * 1.1 = 12.2\ kN$$ for pin height 300 mm to 800 mm

The recommended partial safety factor γ_M is 1.3, provided no partial safety factor is given in national regulations. The recommended modification factor k_{mod} is 1.1 for service classes 1 and 2, provided no modification factor is given in national regulations.

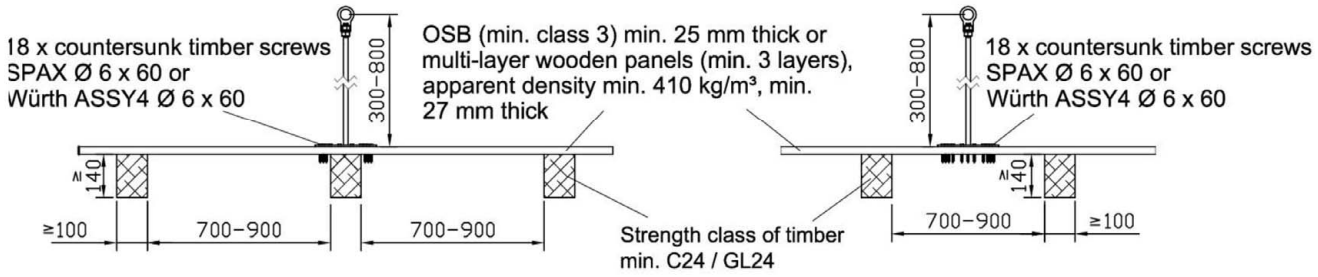
Dynamic loading / design resistance

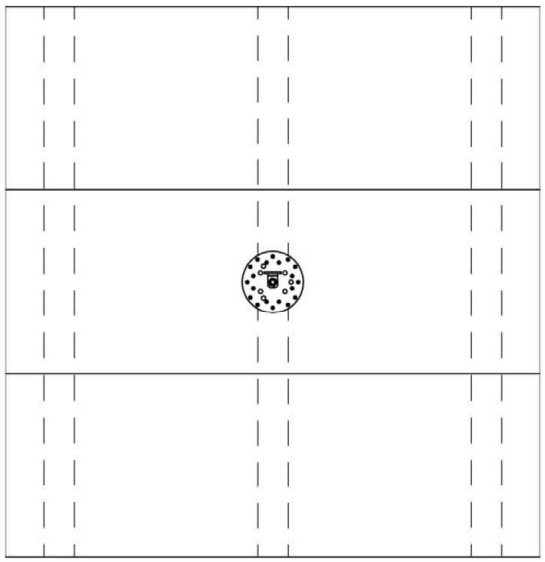
Three users for pin height 300 mm to 800 mm

Deformation capacity

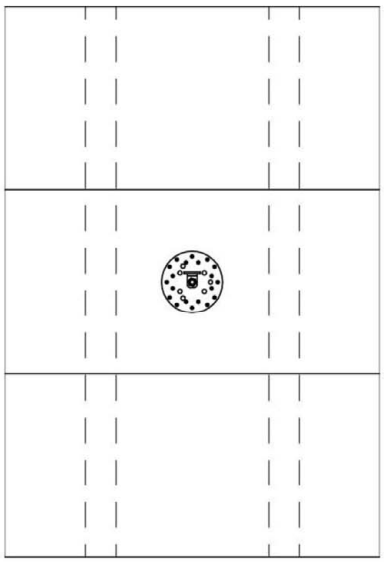
≤ 10 mm at 0.7 kN

Fall Protection Systems „TigaSAFE“	Annex 6.1
TS-ZSM 300-800 H to be installed on OSB 3-panels or multi-layer wood panels	

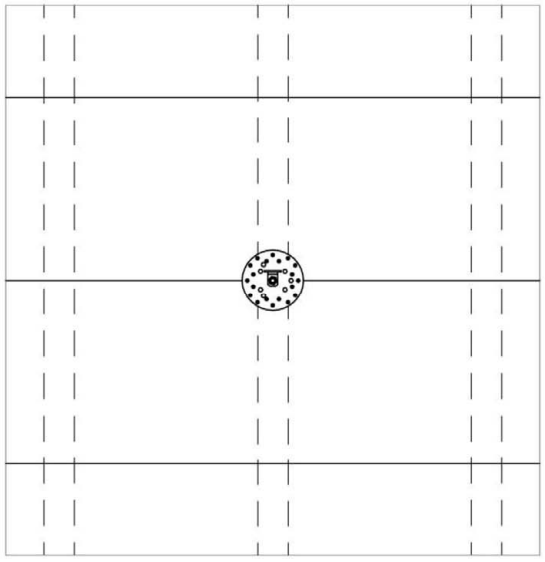




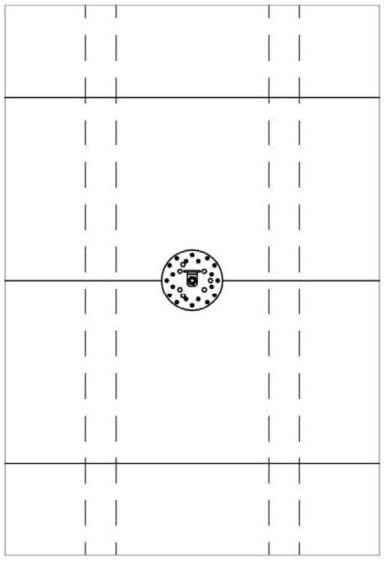
Mounting on a panel above a rafter



Mounting on a panel between two rafters



Mounting on the joint between two panels above a rafter



Mounting on the joint between two panels and between two rafters

All dimensions in mm

Fall Protection Systems „TigaSAFE“	Annex 6.2
TS-ZSM 300-800 H to be installed on OSB 3-panels or multi-layer wood panels	

Table 7: Substructure multi-layer wood panels on timber ≥ C24/GL24

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substucture thickness h_{min} [mm]
TS-ESM 300-800 H	300 - 800	Countersunk timber screws SPAX ø 6x60 or Würth ASSY4 ø 6x60	centered	27 mm for multi-layer wood panels

The scope of application of the fall protection systems „TigaSAFE“ on OSB 3-panels or multi-layer wood panels is limited to service classes 1 and 2 according to EN 1995-1-1. The fixture of the anchor device (base plate and timber screws as well as the timber panels) shall not be weathered freely. All other components can be used in weathered outdoor areas.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} * k_{mod} = \frac{14.4\ kN}{1.3} * 1.1 = 12.2\ kN$$ for pin height 300 mm to 800 mm

The recommended partial safety factor γ_M is 1.3, provided no partial safety factor is given in national regulations. The recommended modification factor k_{mod} is 1.1 for service classes 1 and 2, provided no modification factor is given in national regulations.

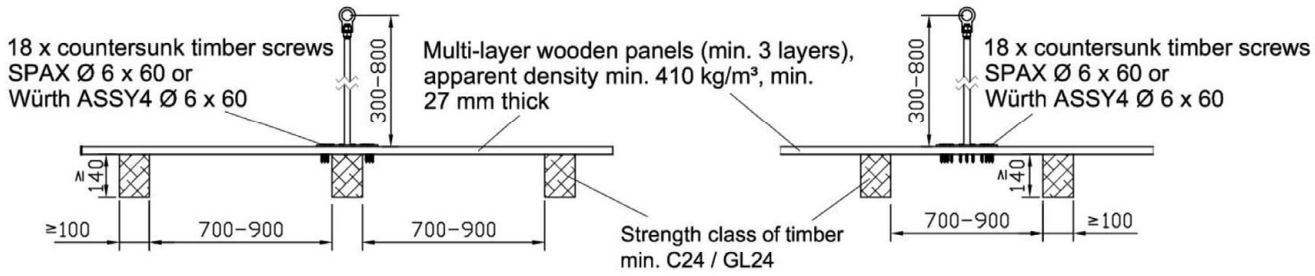
Dynamic loading / design resistance

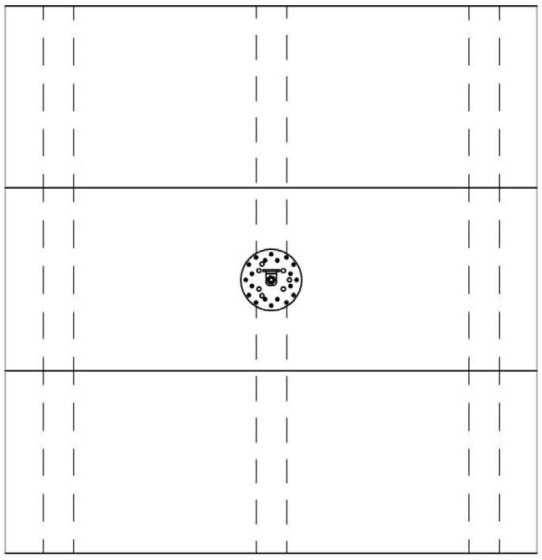
Three users for pin height 300 mm to 800 mm

Deformation capacity

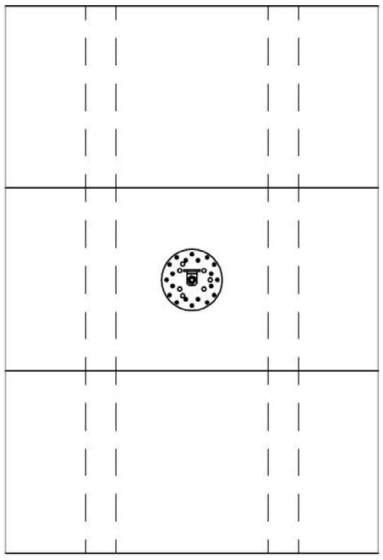
≤ 10 mm at 0.7 kN

Fall Protection Systems „TigaSAFE“	Annex 7.1
TS-ESM 300-800 H to be installed on multi-layer wood panels	

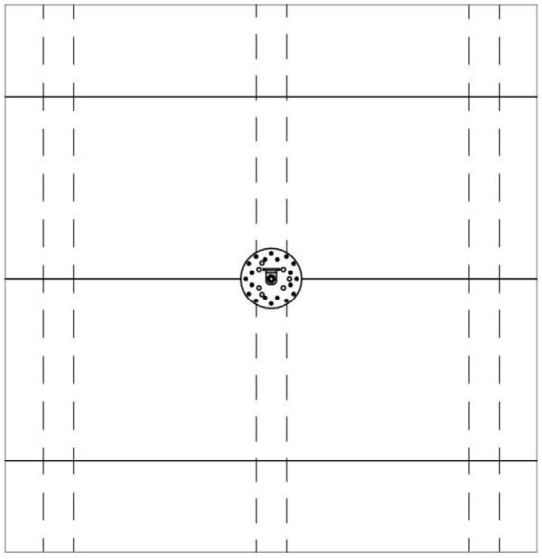




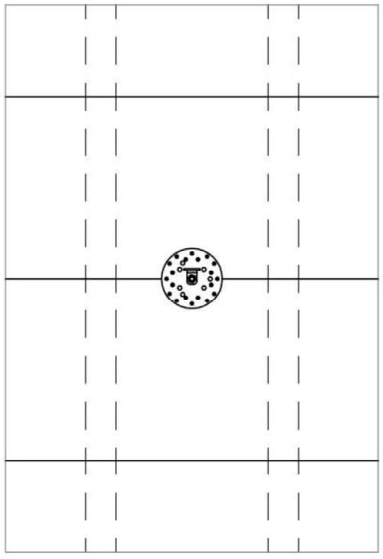
Mounting on a panel above a rafter



Mounting on a panel between two rafters



Mounting on the joint between two panels above a rafter



Mounting on the joint between two panels and between two rafters

All dimensions in mm

Fall Protection Systems „TigaSAFE“	Annex 7.2
TS-ESM 300-800 H to be installed on multi-layer wood panels	

Table 8: Substructure OSB 3-panels on timber ≥ C24/GL24

Anchor device	Pin height [mm]	Fastener	Minimum edge distance C_{min} [mm]	Minimum substucture thickness h_{min} [mm]
TS-ESM 300-800 H	300 - 800	Countersunk timber screws SPAX ø 6x60 or Würth ASSY4 ø 6x60	centered	25 mm for OSB 3-panels

The scope of application of the fall protection systems „TigaSAFE“ on OSB 3-panels or multi-layer wood panels is limited to service classes 1 and 2 according to EN 1995-1-1. The fixture of the anchor device (base plate and timber screws as well as the timber panels) shall not be weathered freely. All other components can be used in weathered outdoor areas.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} * k_{mod} = \frac{14.4\ kN}{1.3} * 1.1 = 12.2\ kN$$ for pin height 300 mm to 800 mm

The recommended partial safety factor γ_M is 1.3, provided no partial safety factor is given in national regulations. The recommended modification factor k_{mod} is 1.1 for service classes 1 and 2, provided no modification factor is given in national regulations.

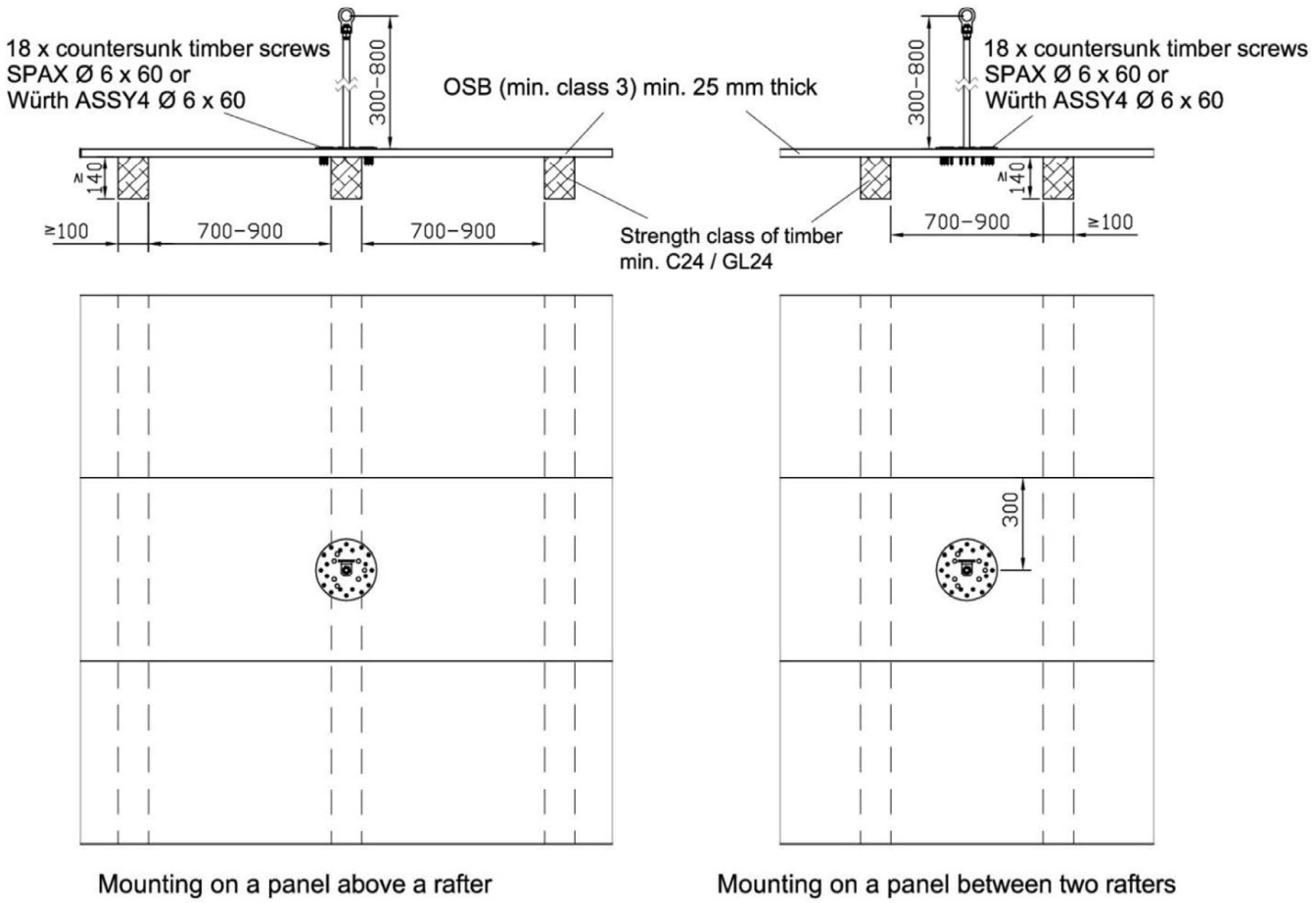
Dynamic loading / design resistance

Three users for pin height 300 mm to 800 mm

Deformation capacity

≤ 10 mm at 0.7 kN

Fall Protection Systems „TigaSAFE“	Annex 8.1
TS-ESM 300-800 H to be installed on OSB 3-panels	



Mounting on a panel above a rafter

Mounting on a panel between two rafters

All dimensions in mm

Fall Protection Systems „TigaSAFE“	Annex 8.2
TS-ESM 300-800 H to be installed on OSB 3-panels	