EAD **331846-01-0603**

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January 2023

European Assessment Document for

Anchor devices for fastening personal fall protection systems to timber structures

This European Assessment Document (EAD) has been developed taking into account up-to-date technical and scientific knowledge at the time of issue and is published in accordance with the relevant provisions of Regulation (EU) No 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

Contents

1 SCOPE OF THE EAD

1.1 Description of the construction product

This EAD covers anchor devices for fastening personal fall protection systems to be used with fall protection systems to prevent users from falling and arrest falls, both permanently fixed on or into buildings and civil engineering works, (in the following referred to as “anchor device”). Those various devices are specially designed and engineered to be fastened to, or in some cases inserted into, the timber substructure.

The construction product covered by this EAD shall be considered a kit where the anchor device is one component, and fasteners and washers are the other component(s). The membrane collar is an optional component relevant for use scenario II (see Clause 1.2.1).

They feature a metal body (see Figure 1.1.1) that gives the device stability and connection to the timber structure. An anchor point is fastened to its head either by a bolted or welded connection.

The anchor device also comprise the metal plate that is used to fasten the anchor point to the substructure. They are made of non-alloyed steel and stainless steel of at least grade A2 according to EN ISO 3506-4.

The anchor devices are made of non-alloyed steel and stainless steel according to EN ISO 1127, EN 10088-4 or EN 10088-5, EN 10216-5, EN 10296-2 or non-alloy steel according to EN 10025-1, EN 10025-2, EN 10216-1, EN 10296-1.

Anchor devices which are intended for use in external environments with ≥ C2 corrosion in accordance with EN ISO 12944-2 are made of stainless steel, hot-dip galvanized in accordance with EN ISO 1461 or metallic coated with organic coating in accordance with EN 1090-4. The EAD covers only products with an organic coating that constitutes less than 1% by weight or volume (whichever is most onerous).

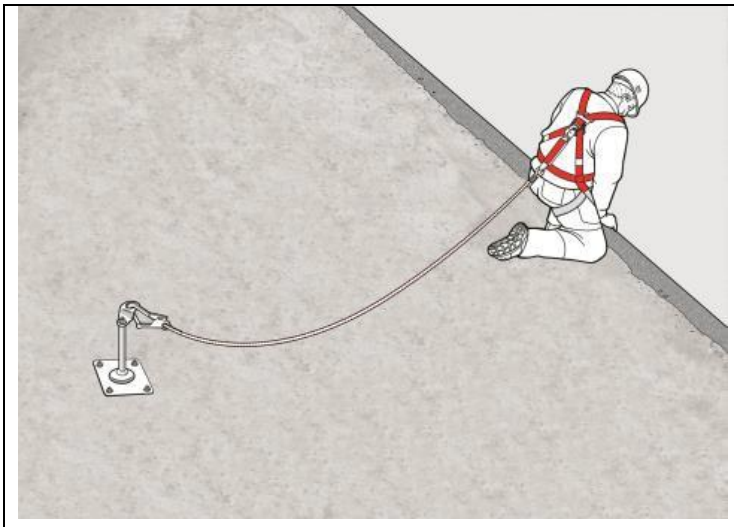
Some types of the anchor devices are provided with a membrane collar in accordance with EN 13707[1] (made of flexible bituminous sheet) to ensure watertightness of the anchorage point, which is the point where the anchor device is fixed to the substructure (Figure 1.1.1, example B). The membrane collar itself doesn't contribute to the stability and connection to the timber or to any part of the roof and thus are not taken in consideration in any assessment method related to safety in use but only in those related to watertightness (Clause 2.2.3).

The fasteners that are used to fasten the anchor point must be made of non-alloyed steel and stainless steel of at least grade A2 in accordance with EN ISO 3506-4.

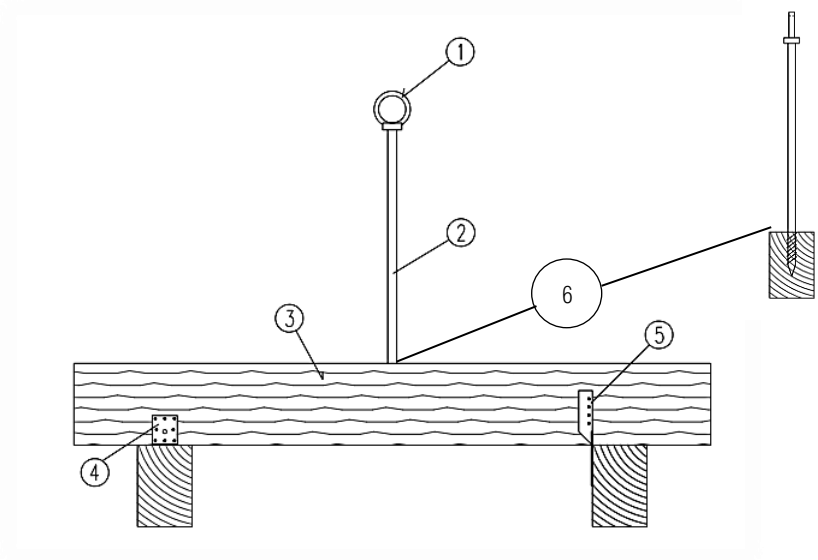
The product is not covered by EN 17235 since the standard does not cover installation in timber substructures The product is not fully covered by EAD 334812-00-0602 or EAD 331846-00-0603 since EAD 334812-00-0602 covers anchor devices for use in trapezoidal sheeting, EAD 331072-00-0601 covers anchor devices for use in concrete substructures, and they do not address the scope of the intended use. This EAD covers anchor devises for use in timber substructures, compared to the previous version of the EAD, the following changes are introduced: Assessment of the watertightness of the system, and a new type of anchor device which is provided with a membrane collar.

Figures 1.1.1 and 1.1.2 show some examples of the anchor devices, Figure 1.1.1 show examples of the fall protection systems fastened to timber structures.

[1] All undated references to standards in this EAD are to be understood as references to the dated versions listed in chapter 4



Example of an anchor device in use



Legend:

1 – Anchor point (eye or fastening ring for the attachment of the personal protective equipment)

2 – Metal structure (body) of the anchor device

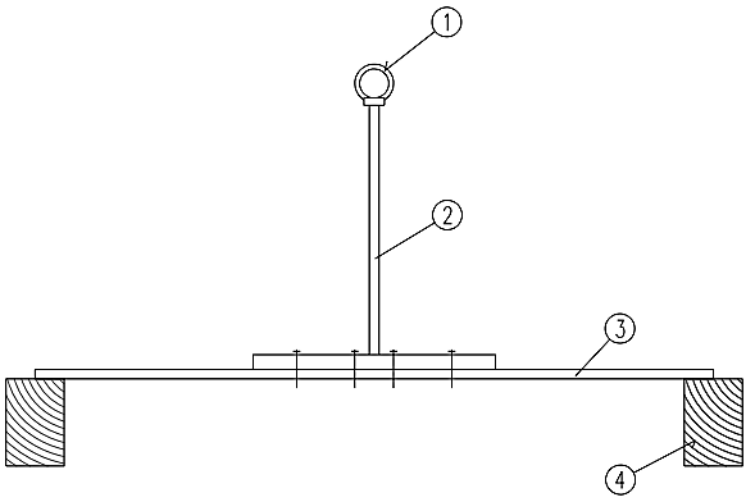
3 – Timber substructure, the anchor device is fixed by a truss plate

4 – Angle bracket

5 – Rafter to purlin connector/elbow connector

6 – Anchorage point, in this case the anchor device is equipped with a thread adapted for wooden substructures

Example of an anchor device which is fixed itself (inserted) to the substructure



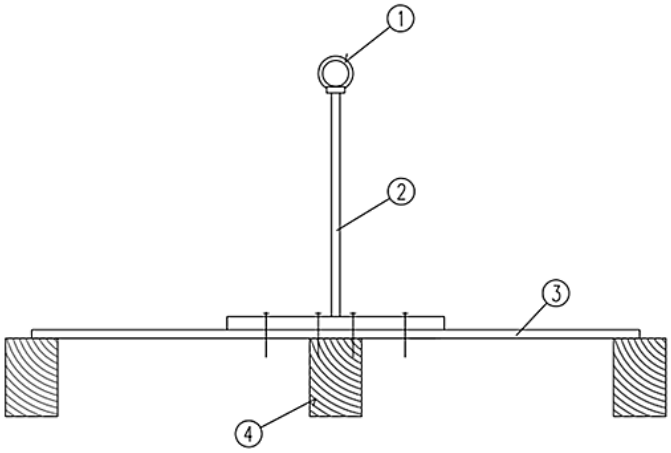
Legend:

1 – Anchor point (eye or fastening ring for the attachment of the personal protective equipment)

2 – Metal structure (body) of the anchor device

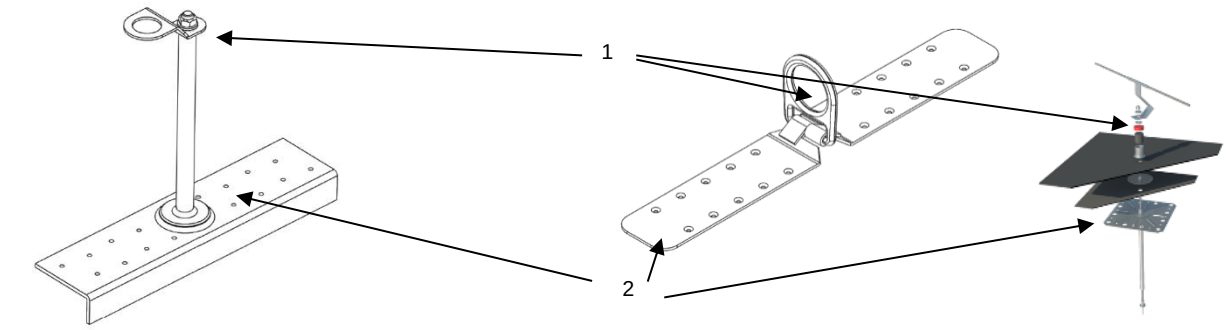
3 – Timber substructure

4 – Supporting timber structure



Example of an anchor device which is fixed to the substructure with fasteners

Figure 1.1.1: Examples of designs for anchor devices



Legend:

1 – Anchor point (eye or fastening ring for the attachment of the personal protective equipment)

2 – Metal structure (body) of the anchor device

Figure 1.1.2: Additional examples of designs for anchor devices (which are fixed to the substructure with fasteners).

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.

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.

Relevant manufacturer's stipulations, e.g., with regard to the intended end use conditions, having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA as long as the details of the assessment methods as laid down in this EAD are respected.

1.2 Information on the intended use(s) of the construction product

1.2.1 Intended use(s)

The purpose of the anchor devices is providing anchor points for fastening personal fall protection systems[2] that arrest users during a fall from heights, the operators attach themselves to the eye or fastening ring using e.g., ropes and carabines suited for the purpose. This EAD covers anchor devices intended for up to two users on each anchor device.

The intended use covers the following use scenarios:

Use scenario I: The anchor devices are intended to be used, fastened or inserted on timber constructions on flat roofs or slightly inclined roofs ($\alpha \leq 10°$).

Use scenario II: Anchor devices which are provided with a membrane collar are intended to be used in accordance with use scenario I and additionally ensure the watertightness of the anchor device in the roofing membrane.

The anchor devices are intended to be loaded only once[3] (see also Clause 1.3.1). The direction of fall can be either parallel to the roof or also in other directions (perpendicular to the roof if falling from the roof surface). The forces which are generated in the fastening element can be in any direction regarding to fastening's axis.

This EAD covers the following specifications of the intended use:

- The performance of the static loading (in accordance with Clause 2.2.3) is the characteristic value of the assessed type of anchor device and shall only be used as input for calculations of the design value, e.g., by applying the applicable partial factors and modification factor of EN 1993-1-3, EN 1993-1-4, EN 1995-1-1 and in the Member States' national annexes to the standards (if any), based on the type of material, failure mode, failed part of the anchor device or its supporting structure and service class (load-duration class: instantaneous action) as well as based on target market.

The resistance of the anchor device is not relevant for permanent load but instead for the ultimate load under instantaneous actions (see Figure 1.3.1.1.).

The direction of fall can be either parallel to the roof or also in other directions (perpendicular to the roof if falling from the roof surface).

The products are intended to be used in all areas of industry, construction and in case of maintenance.

The anchor device is not intended to be used in case of fire, therefore, resistance to fire performance is not relevant for the anchor devices.

1.2.2 Working life / Durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the anchor devices for the intended use of 25 years when installed in the works (provided that the anchor devices are subject to appropriate installation (see Clause 1.1)). These provisions are based upon the current state of the art and the available knowledge and experience.

[2] In the case of a fall, the personal fall protection equipment that is attached to the anchor device prevents physical damage to the operator, assuming the correct usage.

[3] If an anchor device has been loaded once (i.e. someone has fallen/almost fell and loaded the anchor device), it will be taken out of operation or replaced by a new one.

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works[4].

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 when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD but are regarded only as a means for expressing the expected economically reasonable working life of the product.

1.3 Specific terms used in this EAD

1.3.1 Anchor device for personal fall protection

As described in Clause 3.1.1 of EN 17235.

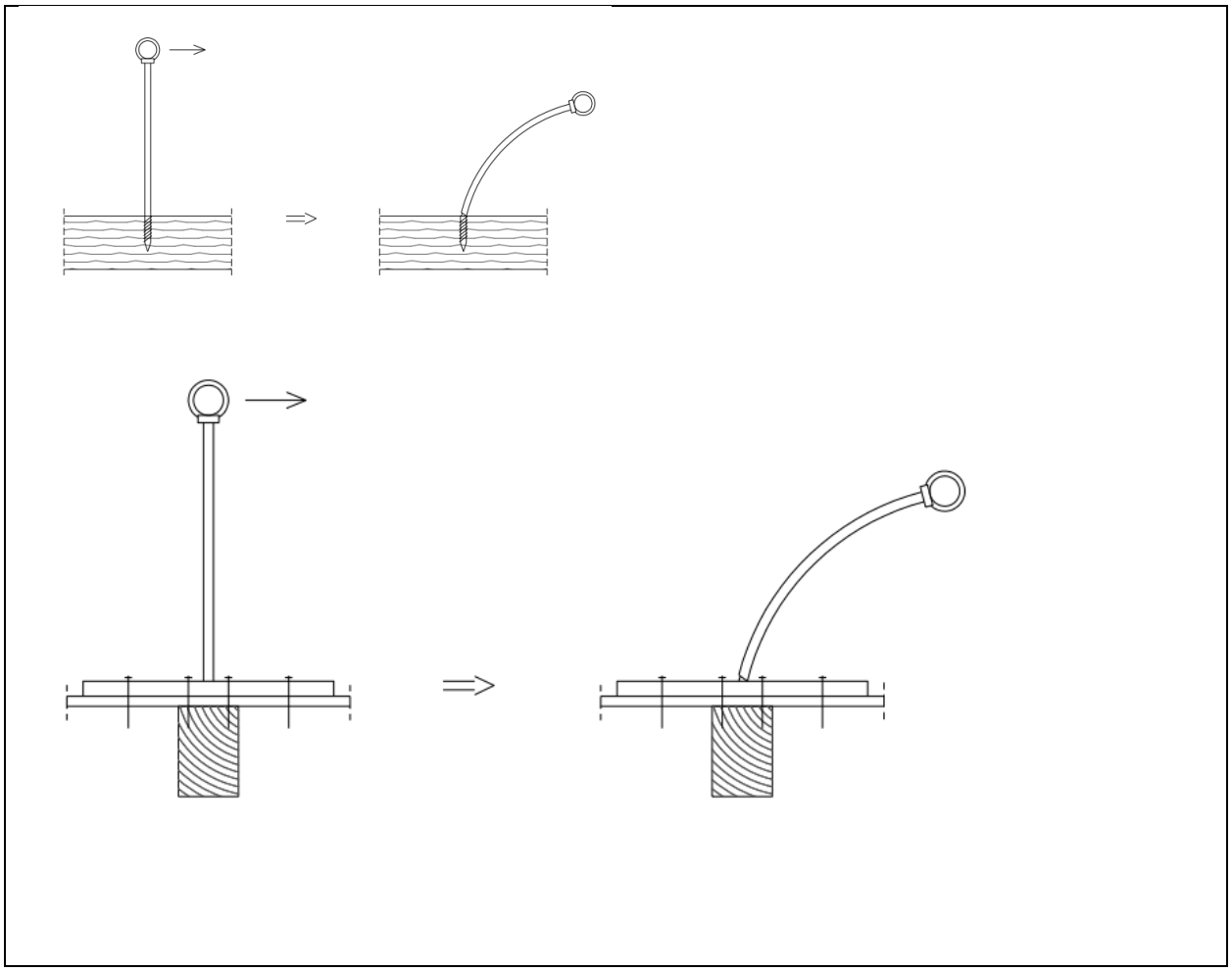


Figure 1.3.1.1: Depiction of an anchor device before and after ultimate load (Fall occurred, example)

As the anchor devices are intended to be loaded only once (see Clause 1.2.1) an assessment under permanent load or application of modification factors for the load duration is, therefore, not expedient.

4 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 may also be shorter than the working life referred to above.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 2.1.1 shows how the performance of the anchor devices is assessed in relation to the essential characteristics.

Table 2.1.1: Essential characteristics of the product and methods and criteria for assessing the performance of the product in relation to those essential characteristics

No	Essential characteristic	Assessment method	Type of expression of product performance
Basic Works Requirement 2: Safety in case of fire			
1	Reaction to fire	2.2.2	Class
Basic Works Requirement 3: Hygiene, health and the environment			
2	Watertightness (only for use scenario II)	2.2.3	Level
Basic Works Requirement 4: Safety and accessibility in use			
3	Mechanical resistance – breaking load, mandatory test	2.2.4	Level $N_{R,k}$ [kN]], with corresponding minimum pull-out strength $F_{R,k,II,min}$ [kN]and a description of the failure mode.
4	Mechanical resistance – dynamic test, mandatory test	2.2.5	Class Threshold value ≥ 9,0 kN
5	Deformation capacity in case of constraining forces	2.2.6	Description
Aspects of durability			
6	Durability Durability of metal parts Durability of membrane	2.2.7 2.2.7.1 2.2.7.2	 Level Level

2.2 Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product

This chapter is intended to provide instructions for TABs. Therefore, the use of wordings such as “shall be stated in the ETA” or “it has to be given in the ETA” shall be understood only as such instructions for TABs on how results of assessments shall be presented in the ETA. Such wordings do not impose any obligations for the manufacturer, and the TAB shall not carry out the assessment of the performance in relation to a given essential characteristic when the manufacturer does not wish to declare this performance in the Declaration of Performance.

If for any components covered by harmonised standards or European Technical Assessments the manufacturer of the component has included the performance regarding the relevant essential characteristic in the Declaration of Performance, retesting of that component for issuing the ETA under the current EAD is not required.

2.2.1 General

Before conducting the tests in accordance with Clauses 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.6 and 2.2.7 the following requirements shall be met:

The test arrangement (that means the structure made of timber beams and/or wood-based panels) shall be customized to the specific substructure the product is intended to be fixed to in compliance with the manufacturer’s product installation instructions, taking the following provisions in consideration: Spans, dimensions, number and spacing of fasteners and reinforcements. The test arrangement considered in the tests shall be given in the ETA as part of the description of the product/intended use. The result of the assessment applies to substructures with smaller spans, larger dimensions of timber, larger number of fasteners, smaller spacings between the fasteners or larger reinforcements.

2.2.1.1 Timber and wood-based panels

Timber and wood-based panels shall comply with the relevant delivery conditions. Dimensions, spans and static system (single span system, multi span system) shall be given in the ETA. For wood-based panels spanning over timber beams, deviations from the tested span of less than 10 cm are allowed.

2.2.1.2 Conditioning

Timber and wood-based panels used in the tests shall be conditioned at 20 °C ± 2° and 65 % ± 5% relative humidity according to ISO 554.

2.2.1.3 Fasteners

The fasteners used to fasten the anchor devices to the timber structure shall be specified in the ETA following EN 14592 or EAD 130118-01-0603, whichever is applicable. Type and number of fasteners and their spacings shall be given in the ETA.

2.2.1.4 Reinforcements

Reinforcements (for e.g., nailing plates according to EAD 130186-00-0603) and corresponding fasteners applied in the tests shall be specified in the ETA. Same applies for fasteners used to fasten wood-based panels to timber beams (supporting structure).

Type and number of reinforcements shall be given in the ETA.

2.2.2 Reaction to fire

The metal parts of anchor devices are considered to satisfy the requirements of class A1 of the characteristic reaction to fire performance according to the Commission Decision 96/603/EC, as amended by Commission Decisions 2000/605/EC and 2003/424/EC, without the need for testing on the basis of it fulfilling the conditions set out in that Decision and its intended use being covered by that Decision.

Therefore, if the conditions referred to above are fulfilled, the performance of the metal parts of anchor devices is class A1 in accordance with Commission Delegated Regulation (EU) No 2016/364.

For anchor device with a membrane collar (use scenario II) applies the following additionally: Reaction to fire of the membrane collar is covered and shall be assessed in accordance with EN 13707, Clause 5.2.5.2 and the resulting class shall be given in the ETA.

2.2.3 Watertightness

This test is only relevant for anchor device with a membrane collar as well as for use scenario II, see general information on the test set up in Clause 2.2.1.

This test shall be performed once: The anchor shall be installed on a 22 mm thick untreated plywood board, min. 20 cm larger than the diameter of the watertight cylinder (see Figure 2.2.3.1), the cylinder shall have a diameter which shall be at least 100 mm larger than the membrane collar (in this example 380 mm) with alternative fasteners (than the metal fasteners following the kit) suitable for a plywood substrate, the cylinder is installed using a waterproof sealant. A dynamic loading test, in accordance with Clause 2.2.5, and a load of 1 kN shall be performed. After the dynamic loading test, the cylinder shall be filled with water mixed with methylene blue, 150 mm for 24 hours.

After 24 hours the water is drained from the cylinder and the anchor device is dismantled without damaging the membrane. The membrane is cut open for visual inspection of humidity in the substrate under the membrane, if no discoloration of the board appears, the kit is considered as watertight.

Depending of the observations indicated above the ETA shall state either „kit is watertight“ or „kit is not watertight“.

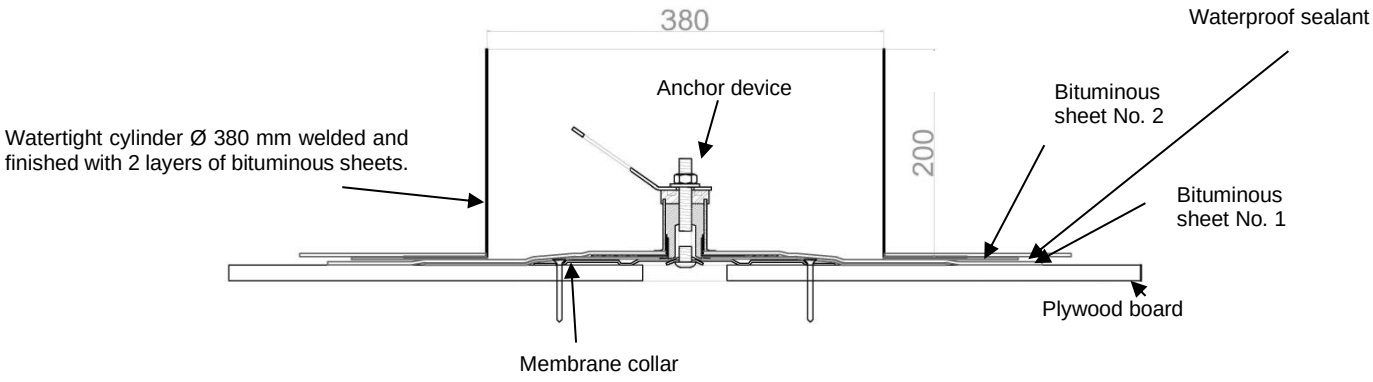


Figure 2.2.3.1: Example of test set-up for the watertightness testing

2.2.4 Mechanical resistance – breaking load

This is a mandatory test. See general information on the test set up in Clause 2.2.1.

The purpose of this test is the assessment of the load-bearing capacity (maximum mechanical resistance) of the anchor devices under intended use conditions (fastened to /inserted into the timber structures), the test setup applies for all load directions.

A centric tension load test shall be performed with load perpendicular to the middle axis of the anchor device (see Figure 2.2.4.1). The tests shall be performed without any propping up (e.g., without insulation material that is laid over the timber substructures). For the supporting structure (timber substructure) see Clause 2.2.1. The supporting structure in the test (see Figure 2.2.4.1) shall correspond with the one in the intended use (type of material, spans, dimensions, number and spacing of fasteners, reinforcements etc.). See Clause 1.2.1 in connection with Clause 2.2.1. The test arrangements shall be adjusted for situations when the directions of falls are not parallel to the roof (e.g., as of Clause 1.3.1) by adjusting the load direction.

The result of the test applies to intended uses as described in Clause 1.2.1 (horizontal roof and slightly inclined roofs ($\alpha \leq 10°$).

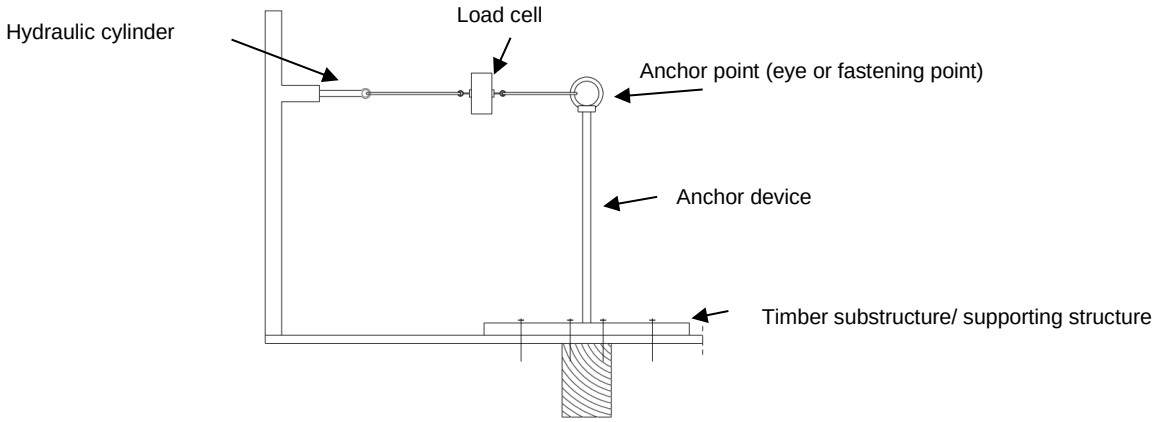


Figure 2.2.4.1: Example of a test arrangement of anchor devices for testing static loading – most unfavorable load direction: Perpendicular to the span (profile lines) of the timber substructure.

Tests with at least 3 specimens per arrangement shall be performed.

The failure loads and failure modes shall be documented. The maximum load shall be reached after 1 minutes but within 3 minutes. If this criterion is not met (time to failure < 1 minute or > 3 minutes) then new test(s) shall be performed with adjusted loading speed(s).

Tests shall be carried out using measuring equipment having calibration traceable to international standards. The load application equipment shall be designed to avoid sudden increases in load, especially at the beginning of the test. The permissible measuring error is 2 % of the maximal measuring value.

Adjustments of results (failure loads) shall be made in respect of the actual measured values of the dimensions and strength properties. The test results shall be multiplied by (A) a correction factor which takes account of the ratio of nominal minimum tensile/yield strength and the actual tensile/yield strength of the building components and by (B) a correction factor which takes account of the ratio of guaranteed minimum thickness to measured thickness of the components made of metal used in the tests.

Tests with different configurations (for example different heights of the anchor point) may be treated as family of test series and evaluated as one sample if justified by mechanical behavior and/or failure mode (have the same failure mode), provided that the test is performed with the most unfavorable configurations (for example with the largest height of the anchor device).

Depending on where the failure occurs, the assessment shall be made according to Clause 2.2.4.1 (failure of the metallic components) or 2.2.4.2 (failure of the timber fastener).

2.2.4.1 Assessment – failure of the metallic components

The test results, as described in 2.2.4 of this EAD (failure loads) shall be evaluated statistically (determination of 5 % fractiles, confidence level of 75 %) according to EN 1990 Annex D, Clause D.7.2, assuming an unknown variance V_x, (failure of the metallic components of the anchor point's metal substructure kit). A normal distribution shall be assumed.

The statistically evaluated results (5% fractiles with a 75% confidence level)) shall be adjusted (corrected) in respect of the actual measured values of the dimensions and strength properties. They shall be multiplied by

- A correction factor (≤ 1,0) which takes into account the ratio of nominal minimum tensile/yield strength and the tensile/yield strength of the building components, and by
- A correction factor (≤ 1,0) which takes into account the ratio of nominal thickness to measured thickness of the components made of metal used in the tests.

The correction factor and adjustment of the test results, is calculated according to EN 1993-1-3, Annex A, Clause A.9.2, for metallic components of the anchor device.

The level ($N_{R,k}$ [kN], with corresponding minimum pull-out strength $F_{R,k,II,min}$ [kN]), corrected and statistically evaluated test results (5 % fractiles) are the characteristic values of the tested types which shall be given in the ETA together with a description of the failure mode.

2.2.4.2 Assessment – Failure of the timber fastener

The test results (failure loads) shall be evaluated statistically (determination of the 5% fractiles, confidence level of 75%) according to EN 1990, Annex D, Clause D.7.2 or EN 1058 Annex A, and EN 14358, Clause 3.2.3, assuming an unknown Variance V_x. The timber used for this test shall be selected and conditioned as described in section 2.2.4.1, performed with a minimum of 3 specimens, the highest anchor point configuration in mm as specified in the Manufacturers Product Installation Instructions (MPII). The test result applies to all lower heights of the anchor points. The height of the anchor point tested shall be given in the ETA.

The test results gathered in the tests shall be normalized to the characteristic density of timber or wood-based panels (whichever applies). The test results (failure loads) shall be multiplied by a correction factor μ_ρ which takes into account the actual density ρ_a to the characteristic value of density ρ_k of the components made of timber or wood-based panels used in the tests, according to formula 2.2.4.2.1:

$$\mu_\rho = \left(\frac{\rho_k}{\rho_a}\right)^{0,8} \leq 1,0 \quad \text{(2.2.4.2.1)}$$

Only in case of anchor device type C, as defined in Figure 1.1.1, additional withdrawal tests are to be performed according to EN 1328 to determine the actual withdrawal parameter with both fasteners and timber or wood-based panels used in the tests (see 2.2.1.4) with test specimens according to EN 1382, clause 6.3. At least 10 withdrawal tests shall be performed for each combination of fastener and timber or wood-based panels. If a declaration of performance has been drawn up for the fasteners (based on EN 14592 clause 5.1.1.3 or EAD 130118-01-0603) and a performance for the characteristics withdrawal parameter has been declared, the statistically evaluated results (5% fractiles) shall also be normalized to the characteristic withdrawal parameter of the individual fastener based on EAD 130118-01-0603, or EN 14592 (whichever applies). They shall be multiplied by a correction factor μ_f which takes account of the ratio of the characteristics withdrawal parameter $f_{ax,a}$ and the actual withdrawal parameter $f_{ax,k}$ of the individual fastener used in the tests (see equation 2.2.4.2.2):

$$\mu_f = \frac{f_{ax,k}}{f_{ax,a}} \leq 1,0 \quad \text{(2.2.4.2.2)}$$

As the actual density of timber or wood-based panel is already considered in the results of the actual withdrawal parameter (test with the actual density), only one of the correction factors (either μ_ρ or μ_f) which leads to the most correction (namely the lowest correction factor)[5] shall be applied in this case.

The corrected test results shall be evaluated statistically (determination of 5 % fractile, confidence level of 75 %) according to EN 1990, Annex D, Clause D7.2. Tests with different configurations (for example different heights of the anchor point) may be treated as a family of test series and evaluated as one sample if justified by mechanical behaviour and/or failure mode. For guidance on statistical evaluation of test results see

5 Example: μ_ρ = 0,97; μ_f = 0,95 → The test results (failure loads) shall be multiplied by μ_f (by 0,95)

- EN 1990 Annex D and
- EN 1058 Annex A.

2.2.5 Mechanical resistance – dynamic test

This is a mandatory test. See general information on the test set up in Clause 2.2.1. The purpose of this test is the assessment of the resistance to dynamic loading of the anchor devices under intended use conditions (fastened to/inserted into the timber structures).

The test method described in this Clause is in analogy to the tests described in Clauses 5.2 and 5.3.3 and 5.3.4 of EN 795, using a test setup in analogy to EN 795, Clause 5.2.4 but with the anchor device fixed on a supporting structure (timber substructure) in accordance with Clause 2.2.1 of this EAD. The supporting structure in the test (see figure 2.2.4.1) shall correspond with the one in the intended use (type of material, spans, dimensions, number and spacing of fasteners etc., as of manufacturer's product installation instructions), see Clause 1.2.1 in connection with Clause 2.2.1. Figure 2.2.5.1 shows schematically the test arrangement to be used. Test arrangement shall be similar with the condition, that load shall be introduced in the direction of fall and without any propping up.

The test arrangement shall be calibrated using the description in EN 795, Clause 5.2.1.4, by connecting the rope to a rigid anchor point and by determining the free fall distance of the rigid test mass (100 ± 1) kg in such way that a fall arrest load of $(9\ ^{+0.5}_{0})$ kN is created. In this case, and for the purpose of calibration, three consecutive tests at a rigid anchor point shall be conducted. The first test shall fit the fall arrest load of $(9\ ^{+0.5}_{0})$ kN for calibration, and the two other tests are for assessing the performance of the anchor device. After successful calibration, the rope shall be connected to the anchor point of the anchor device. If the anchor device is intended to be used at the same time by multiple users in accordance with MPII, each user shall be taken into account by adding a (100 ± 1,5) kg load, as described in EN 17235, table 1, to the rigid test mass. The initial rigid test mass continues to be applied to the anchor device.

The energy released by the fall of the rigid test mass is absorbed by the connection between anchor device and the supporting structure and is recorded by the load cell at the time of the fall. The permissible measuring error of the energy released in the fall of the rigid test mass, is 2 % of the maximal measured value. The test set-up shall ensure sufficient space under the rigid test mass so that it does not touch the ground after fall, otherwise, the test is considered not valid and shall be repeated after adjusting the test arrangement (e.g., by adjusting the height of the upper pulleys) and repeating the calibration/determination of free fall distance.

After the above test, the mass on the anchor device is increased to 300 kg for $3\ ^{+02.5}_{0}$ minutes, it shall be visually assessed if the rigid mass is clear of the ground and that the anchor device remains stabile, to ensure that sufficient residual capacity is still available.

Assessment of test results: The load, after performing the mechanical resistance test including the increased mass of 300 kg, shall be recorded from the load cell and stated in the ETA together with the performance class in accordance with Delegated regulation (EU) C(2025) 2119, that corresponds to the level of performance according to EN 17235, table 1.

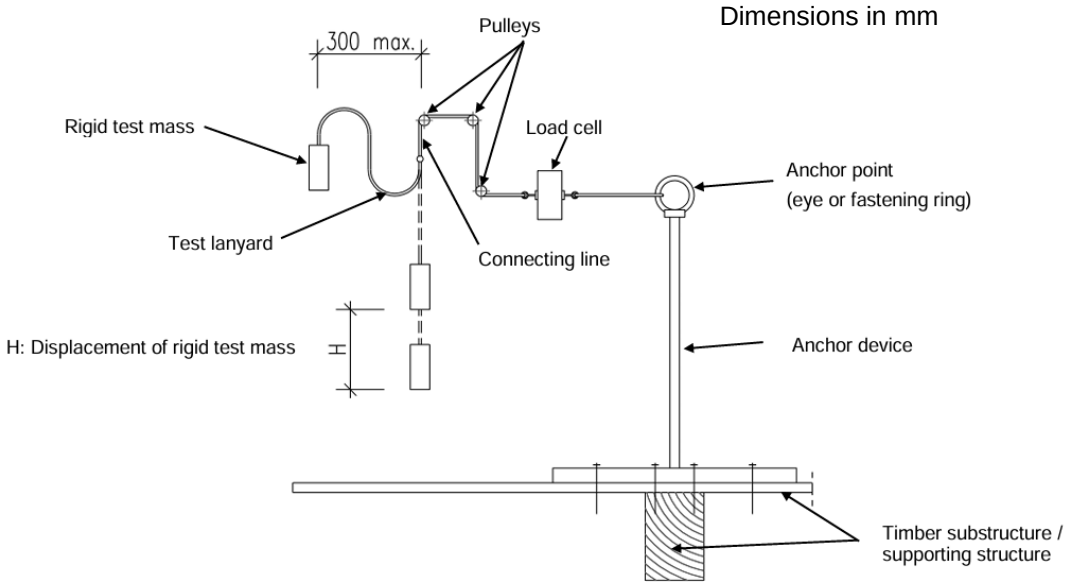


Figure 2.2.5.1: Example of a test arrangement of anchor devices for testing dynamic loads

2.2.6 Deformation capacity in case of constraining forces

The test method described in this Clause is in analogy to the tests described in Clauses 5.3.2 of EN 795, and the purpose is to test the deformation capacity of the anchor device, see general information on the test set up in Clause 2.2.5.

The load shall be increased up to ($0.7\ ^{+0.1}_{0}$) kN and the corresponding displacement perpendicular to the middle axis in direction of the load shall be recorded. If the anchor device is deformable, the displacement after unloading the anchor device shall be determined and it shall be stated in the test report in which direction the permanent deformation is measured. The mean deformation of at least three tests shall be equal to or lower than 10 mm in accordance with Clause 4.4.1.1 of EN 795. The test load shall be removed afterwards, and the permanent deformation is observed and recorded.

If the anchor device is asymmetric, the direction to be tested is the direction in which the biggest deformation forces are to be expected. If this direction cannot be determined, multiple directions shall be tested to be able to determine the direction with the biggest deformation. The anchor device can be considered as rigid if no deformation occurs at a static load of ($0.7\ ^{+0.1}_{0}$) kN for ($1\ ^{+0.25}_{0}$) min.; otherwise, it is considered as flexible. Remove the test load and observe and record the permanent deformation. The tests shall be performed without any propping up (e.g., insulation material that is laid over the timber substructures).

Tests shall be carried out using standardised (for this purpose) measuring equipment having calibration. The load application equipment shall be designed to avoid sudden increases in load, especially at the beginning of the test. The permissible measuring error is 2 % of the maximal measured value.

The mean deformation of at least three tests shall be equal to or lower than 10 mm according to Clause 4.4.1.1 of EN 795. The deformation capacity, together with the direction of the test of the anchor device shall be stated in the ETA.

2.2.7 Durability

2.2.7.1 Durability of the anchor device:

Concerning the corrosion protection of anchor devices, the rules given in EN 1993-1-3 Annex B and EN 1993-1-4 Table A.2 shall be taken into account. see general information on the test set up in Clause 2.2.1. The level, CRC class, based on EN 1993-1-4 table A.3 for stainless steel and EN 1993-1-3 table 5.2 for non-alloy steel shall be given in the ETA.

For the fastener, durability issues as described in EAD 330046-01-0602, Chapter 2.2.5 applies.

2.2.7.2 Durability of the membrane:

For an anchor device with a membrane collar (use scenario II) applies the following additionally:
The assessment shall be performed in accordance with clause 5.2.19.1 of EN 13707, the levels as a result of the test relevant for the membrane shall be given in the ETA.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of assessment and verification of constancy of performance to be applied

For the products covered by this EAD the applicable European legal act is Commission Delegated Decision (EU) 2025/695.

The system is **1+**.

3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the anchor devices for fastening personal fall protection systems in the procedure of verification of constancy of performance are laid down in Table 3.2.1.

The manufacturer (regarding the components he buys from the market with DoP) shall take into account the Declaration of Performance issued by the manufacturer of that component. No retesting is necessary.

Table 3.2.1: Control plan for the manufacturer; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]					
1	Check of initial materials	Inspection document 3.1. according to EN 10204 (to be furnished by the supplier)	According to control plan	1	Every manufacturing batch
2	Geometry and dimensions	Check of geometry, dimensions and tolerances	According to control plan	1	Every manufacturing batch
3	Static loading	See Clause 2.2.4	According to control plan	3	Every manufacturing batch
4	Dynamic loading	See Clause 2.2.5	According to control plan	1	Every manufacturing batch
5	Membrane collar	Check the declared performance (if covered by EN 13707 and CE-marked) otherwise retested in accordance with EN 13707	According to control plan	To be specified in control plan	Every delivery
Fasteners of type 1 as defined in Clause 1.1 (fastening screws)					
6	Check of delivery documents Or FPC in accordance with EAD 130118-01-0603	In accordance with EAD 130118-01-0603	According to control plan	In accordance with EAD 130118-01-0603	In accordance with EAD 130118-01-0603

3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified body of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 3.3.1.

Table 3.3.1 Control plan for the notified body; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control					
1	Ascertain that the factory production control with the staff and equipment are suitable to ensure a continuous and orderly manufacturing of the punching shear reinforcement of the anchor devices	Verification of the complete FPC, to be implemented by the manufacturer	---	---	When starting the production or a new production line
Continuous surveillance, assessment and evaluation of factory production control					
2	Ascertain that the system of factory production control and the specified automated manufacturing process are maintained	Verification of the controls carried out by the manufacturer on the raw materials, on the process and on the product as indicated in Table 3.2.1	According to control plan	---	1 per year
Audit-testing of samples taken by the notified product certification body at the manufacturing plant or at the manufacturer's storage facilities					
3	Static loading	2.2.4	According to control plan	3 tests	1 per year
4	Dynamic loading	2.2.5	According to control plan	1 test	1 per year
5	Check of deformation capacity in case of constraining forces	2.2.6	According to control plan	1 test	1 per year

4 REFERENCE DOCUMENTS

EN 323:1993	Wood-based panels; determination of density
EN 384:2016+A2:2022	Structural timber - Determination of characteristic values of mechanical properties and density
EN 408:2010+A1:2012	Timber structures - Structural timber and glued laminated timber - Determination of some physical and mechanical properties
EN 795:2012	Personal fall protection equipment - Anchor devices
EN 1058:2009	Wood-based panels – Determination of characteristic 5-percentile values and characteristic mean values
EN 1328:1996	Cement bonded particleboards – Determination of frost resistance
EN 1382:2016	Timber structures - Test methods Withdrawal capacity of timber fasteners
EN 1990:2023	Eurocode 1 - Basis of structural design
EN 1993-1-3:2024	Eurocode 3 - Design of steel structures - Part 1-3: General rules - Supplementary rules for cold-formed members and sheeting
EN 1993-1-4:2025	Eurocode 3 - Design of steel structures - Part 1-4: General rules - Supplementary rules for stainless steels
EN 1995-1-1:2004+AC: 2006+A1:2008+A2:2014	Eurocode 5 - Design of timber structures – Part 1-1: General – Common rules and rules for buildings
EN 10025-1:2004	Hot rolled products of structural steels - Part 1: General technical delivery conditions
EN 10025-2:2019	Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels
EN 10088-4:2009	Stainless steels - Part 4: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for construction purposes
EN 10088-5:2009	Stainless steels - Part 5: Technical delivery conditions for bars, rods, wire, sections and bright products of corrosion resisting steels for construction purposes
EN 10204:2004	Metallic products - Types of inspection documents
EN 10216-1:2013	Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 1: Non-alloy steel tubes with specified room temperature properties
EN 10216-5:2021	Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 5: Stainless steel tubes
EN 10296-1:2003	Welded circular steel tubes for mechanical and general engineering purposes - Technical delivery conditions – Part 1: Non-alloy and alloy steel tubes
EN 10296-2:2005/AC:2007	Welded circular steel tubes for mechanical and general engineering purposes - Technical delivery conditions - Part 2: Stainless steel

EN 13707:2004+A2:2009	Flexible sheets for waterproofing – Reinforced bitumen sheets for roof waterproofing – Definitions and characteristics
EN 14358:2016	Timber structures - Calculation and verification of characteristic values
EN 14592: 2008+A1:2012	Timber structures - Dowel-type fasteners - Requirements
EN ISO 1127:1996	Stainless steel tubes - Dimensions, tolerances and conventional masses per unit length
EN ISO 3506-4:2025	Mechanical properties of corrosion-resistant stainless steel fasteners – Part 4: Tapping screws
ISO 554:1976	Standard atmospheres for conditioning and/or testing - specifications
EAD 130118-01-0603	Screws and threaded rods for use in timber constructions
EAD 130186-00-0603	Three dimensional nailing plates
EAD 331846-00-0603	Anchor devices for fastening personal fall protection systems to timber substructures
Delegated regulation (EU) C(2025) 2119	Supplementing Regulation (EU) No 305/2011 of the European Parliament and of the Council by establishing threshold levels and classes of performance for permanent anchor devices and safety hooks
EN ISO 12944-2:2017	Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Part 2: Classification of environments
EN ISO 1461:2022	Hot dip galvanized coatings on fabricated iron and steel articles – Specifications and test methods
EN 1090-4:2018	Execution of steel structures and aluminium structures – Part 4: Technical requirements for cold-formed structural steel elements and cold-formed structures for roof, ceiling, floor and wall applications