



# European Technical Assessment **ETA 24/0034** of 12/02/2024

## I General Part

<b>Technical Assessment Body issuing the ETA</b>	Eurofins Expert Services Oy
<b>Trade name of the construction product</b>	BREKAR Joist Hangers
<b>Product family to which the construction product belongs</b>	Three-dimensional nailing plates
<b>Manufacturer</b>	<b>BREKAR SAS</b> 1 Impasse Dorothée Le Maitre 77700 SERRIS FRANCE
<b>Manufacturing plant</b>	BREKAR plant 02
<b>This European Technical Assessment contains</b>	36 pages including 2 Annexes which form an integral part of this assessment
<b>This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of</b>	EAD 130186-00-0603 for Three-dimensional nailing plates

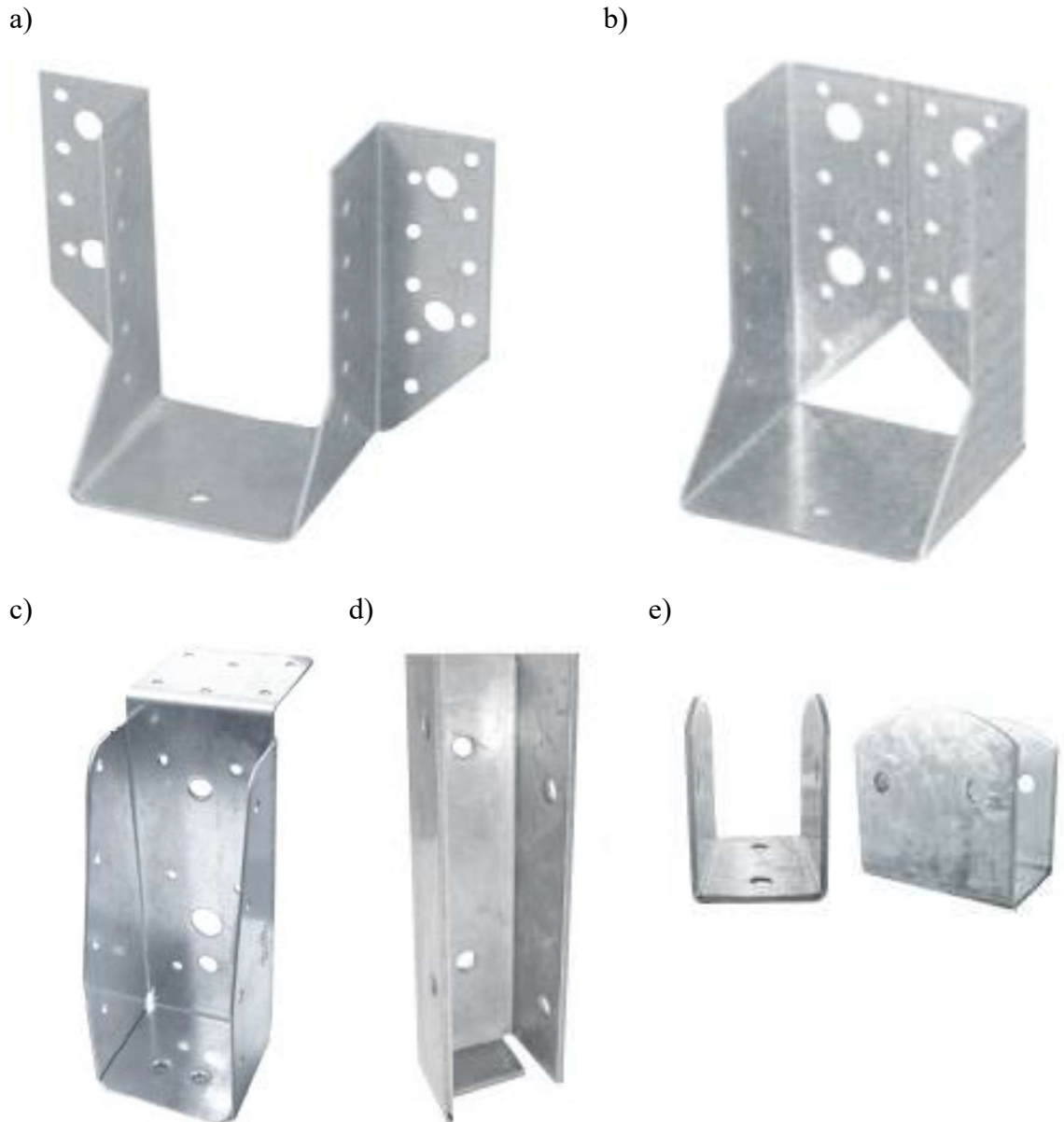
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## II Specific Part

### 1 Technical description of the product

BREKAR Joist Hangers are one-piece non-welded three-dimensional nailing plates manufactured from hot-dip zinc coated steel sheet of grade S250 GD Z 275 MA according to EN 10346 or SS GR340 Z275 according to ASTM A653M or from cold rolled austenitic stainless steel plate of grade 1.4301 according to EN 10088-2 or AISI 304 (SS304) according to ASTM A240/A240M.



**Figure 1.** Different types of BREKAR Joist Hangers: a) Out folded Joist Hanger, b) Inner folded Joist Hanger, c) Dutch Joist Hanger, d) Small Beam Shoe and e) U-Holder.

In the zinc coated connectors, the yield strength  $R_{el}$  or  $R_{02}$  of the steel is at least 250 N/mm<sup>2</sup>, the tensile strength  $R_m$  at least 330 N/mm<sup>2</sup> and elongation at failure  $A_{80}$  at least 19 %. Amount of zinc coating is at least 275 g/m<sup>2</sup>. In stainless steel connectors, the yield strength  $R_{02}$  of the steel is at least 230 N/mm<sup>2</sup>, the tensile strength  $R_m$  at least 520 N/mm<sup>2</sup> and the elongation at failure  $A_{80}$  at least 45 %.

The product drawings are presented in Annex 1 and the sizes of BREKAR Joist Hangers are listed in tables of Annex 2. The steel material thickness of the zinc coated connectors is  $2,00 \pm 0,14$  mm or  $1,50 \pm 0,12$  mm. The material thickness of stainless steel connectors is  $2,00 \pm 0,10$  mm. Tolerance for the position of the holes is within  $\pm 1,00$  mm.

## 2 Specification of the intended uses in accordance with the applicable EAD

### 2.1 Intended uses

Intended use of BREKAR Joist Hangers are timber constructions, where the primary and secondary members are strength graded timber according to EN 14081-1, glulam according to EN 14080, softwood- or laminated logs, laminated veneer lumber (LVL) according to EN 14374, plywood according to EN 13986, cross laminated timber (CLT) with edge glued lamellas, or corresponding timber material. The characteristic density  $\rho_k$  of the timber shall not be greater than  $500 \text{ kg/m}^3$ . This ETA does not cover joist hangers fixed to the end of a timber member or to the edge face of a LVL member.

The joist hanger makes the end support of the secondary beam. The joist hanger is fixed to the both sides of the secondary beam with each many fasteners of similar type and size.

BREKAR Joist Hangers shall be fixed to timber by anchor nails or anchor screws (see Figure 2) according to EN 14592. The diameter of the anchor nails shall be  $d = 4,0$  mm and the profiled length at least 24 mm. The diameter of the smooth part of the anchor screws shall be  $d = 4,5 \dots 5,0$  mm and the inner diameter of the threaded part  $d_1 \geq 3,0$  mm. The length of the threaded part of the screw shall be at least  $6d$ .

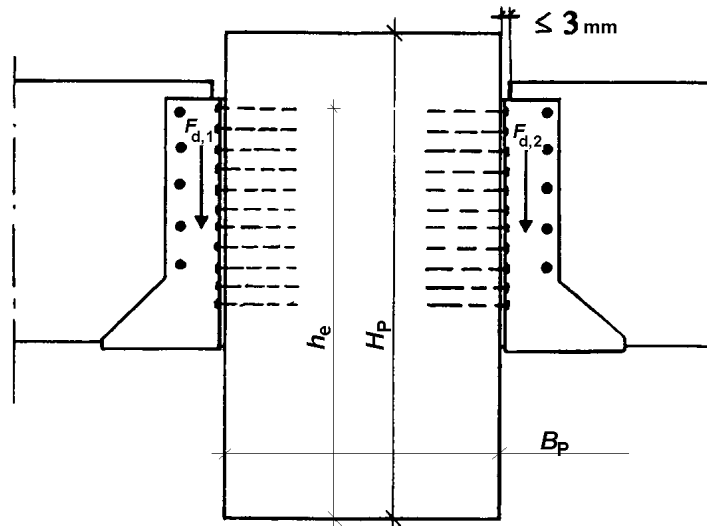


**Figure 2.** Fasteners: a) anchor nail and b) anchor screw.

Connections with BREKAR Joist Hangers shall fulfil the minimum spacing and end and edge distance requirements specified in EN 1995-1-1. Timber parts shall not be pre-drilled for the nails or screws. Fasteners shall be perpendicular to the grain of the timber.

For BREKAR Joist Hangers made of hot-dip zinc coated steel, the intended service classes according to EN 1995-1-1 are classes 1 and 2. Joist Hangers made of stainless steel can also be used in service class 3.

In service class 2, the nails or screws shall have an electroplated zinc coating according to EN ISO 2081 at least of type and thickness Fe/Zn 12c, or they shall be hot dip zinc coated according to EN ISO 1461, thickness at least  $39 \mu\text{m}$ . In service class 3, the nails or screws shall be made of stainless steel.



**Figure 3.** Typical use of BREKAR Joist Hangers.

## 2.2 Working life

The provisions made in this European Technical Assessment are based on an assumed intended working life of BREKAR Joist Hangers of 50 years<sup>1</sup>.

## 2.3 Identification

BREKAR Joist Hangers are identified having "BKR" stamped on each connector.

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<sup>1</sup> This means that it is expected that when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the essential requirements of the works. The indications given as to the working life of a building kit cannot be interpreted as a guarantee given by the producer or the technical assessment body. They should only be regarded as a means for the specifiers to choose the appropriate criteria for building kits 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

Table 1. Basic requirements for construction works and essential characteristics

Basic requirement and essential characteristics	Performance
<b>BWR 1. Mechanical resistance and stability</b>	
Joint strength	Clause 3.1
Joint stiffness	No performance assessed
Joint ductility	No performance assessed
Resistance to corrosion and deterioration	Clause 3.1
Dimensional stability	No performance assessed
<b>BWR 2. Safety in case of fire</b>	
Reaction to fire	Clause 3.2
Resistance to fire	No performance assessed

#### 3.1 Mechanical resistance and stability, BWR 1

##### 3.1.1 Joint strength

Characteristic resistance values of BREKAR Joist Hangers are given in Annex 2.

##### 3.1.2 Resistance to corrosion and deterioration

BREKAR Joist Hangers have been assessed as having satisfactory durability and serviceability when used in timber structures when the timber species (including timbers preserved with organic solvent, boron diffusion and related preservatives) described in Eurocode 5 (EN 1995-1-1:2004) are used and the structures are subject to the dry, internal conditions defined by service classes 1 and 2. Joist Hangers manufactured from stainless steel can also be used in service class 3 provided that also the nails and screws used together with them are made of stainless steel.

#### 3.2 Safety in case of fire, BWR 2

##### 3.2.1 Reaction to fire

BREKAR Joist Hangers are made of materials classified to have reaction to fire class A1 according to EN 13501-1.

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

According to the Decision 97/638/EC of the European Commission<sup>2</sup>, the system of assessment and verification of constancy of performance (see Annex V to the regulation (EU) No 305/2011) is System 2+.

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<sup>2</sup> Official Journal of the European Communities L 268 of 1/10/1997

**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 Eurofins Expert Services Oy.

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by Eurofins Expert Services Oy



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