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CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



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Member of



English translation prepared by IETcc. Original version in Spanish language

**General Part**

**European Technical  
Assessment**

**ETA 25/0250  
14/04/2025**

**Technical Assessment Body issuing the European Technical Assessment:**  
Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc)

**Trade name of the construction  
product**

**B-Strut bolt**

**Product family to which the  
construction product belongs**

Expanding structural bolting assemblies for blind fastening  
in sizes M6, M8, M10, M12, M16 and M20 in galvanised  
and hot dip galvanised steel

**Manufacturer**

**Bilontec Industrial S.L.**  
Bizkargi 6  
Poligono Industrial Sarrikola  
48195 Larrabetzu (Bizkaia) España

**Manufacturing plant**

Bilontec plant 2

**This European Technical  
Assessment contains**

9 pages with 3 annexes, which form an integral part of this  
assessment.

**This European Technical  
Assessment is issued in accordance  
with Regulation (EU) No 2024/3110,  
on the basis of**

European Technical Assessment EAD 330001-00-0602  
“Expanding structural bolting assemblies for blind  
fastening”, ed. August 2016



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## SPECIFIC PART

### 1. Technical description of the product

The Bilontec B-Strut bolt is a steel bolt assembly that is fastened to steelwork by insertion into a predrilled hole from one face and secured on the far side by the expansion of one part assembled after insertion. The expansion is achieved by tightening operation on the near side only; no access is required to the far side.

Product and installation descriptions are given in annexes A1 y C1.

### 2. Specification of the intended use in accordance with the applicable European Assessment Document.

#### 2.1 Intended use

The product is intended to fasten together two steel structural components, or a structural steel component and a non-structural component, when the far face of the steelwork is inaccessible; such a situation commonly occurs when a bolted connection is required to a structural hollow section. The connection may be required to resist tensile force, shear force or a combination of tensile and shear forces.

The performances given in section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in annex B1.

#### 2.2 Relevant general conditions for the use of the product

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 fastener for the intended use of 50 years when installed in the works (provided that the fastener is subject to appropriate installation). These provisions are based upon the current state of the art and the available knowledge and experience.

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.

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 its 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 mean for expressing the expected economically reasonable working life of the product.

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

The identification tests and the assessment for the intended use of this product according to the Basic Work Requirements (BWR) were carried out in compliance with EAD 330001-00-0602, The characteristics of each system shall correspond to the respective values laid down in following tables of this ETA, checked by IETcc.

Methods of verification and of assessing and judging are listed afterwards.

#### 3.1 Mechanical resistance and stability (BWR 1)



| Essential characteristic                  | Relevant clause in EAD | Performance                                                                                                                                 | Annex                                                                                    |
|-------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Mechanical resistance                     | 2.2.1                  | Tensile strength of bolt<br>Tensile strength of sleeve<br>Shear resistance of assembly<br>Resistance of installed assembly to tensile loads | Class 8.8 ISO 898-1<br>M6÷M16: $f_{uk} > 430$ MPa<br>M20: $f_{uk} > 390$ MPa<br>C2<br>C2 |
| Dimensional stability                     | 2.2.2                  | Pass                                                                                                                                        | --                                                                                       |
| Anchorage and deformation of the fastener | 2.2.3                  | Pass                                                                                                                                        | --                                                                                       |

### 3.2 Safety in case of fire (BWR 2)

| Essential characteristic | Relevant clause in EAD | Performance                                                         | Annex |
|--------------------------|------------------------|---------------------------------------------------------------------|-------|
| Reaction to fire         | ----                   | Anchorage satisfy requirements for class A1 according to EN 13501-1 | --    |

### 3.3 Safety and accessibility in use (BWR 4)

| Essential characteristic | Relevant clause in EAD | Performance | Annex |
|--------------------------|------------------------|-------------|-------|
| Assessed in BWR 1        | 2.2.5                  | --          | --    |

### 3.4 Other characteristics

| Essential characteristic        | Relevant clause in EAD | Performance                       | Annex  |
|---------------------------------|------------------------|-----------------------------------|--------|
| Durability:<br>B-SBZ:<br>B-SBG: | 2.2.6                  | Zinc plated<br>Hot dip galvanised | A1, B1 |

## 4. Assessment and Verification of Constancy of Performance (hereinafter AVCP) system applied, with reference to its legal base

The applicable European legal act for the system of Assessment and Verification of Constancy of Performance (see annex IX to Regulation (EU) No 2024/3110) is 1998/214/EC.

The system to be applied is 2+.



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

Technical details necessary for the implementation of the AVCP system are laid down in the quality plan which is deposited at IETcc<sup>(1)</sup>.

Prepared by: PhD Julián Rivera (Innovative Products Assessment Unit, IETcc-CSIC)

Issued in Madrid on 14<sup>th</sup> of April 2025

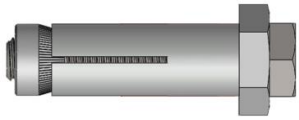
Mr. Ángel Castillo Talavera  
Director

on behalf of Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc – CSIC)

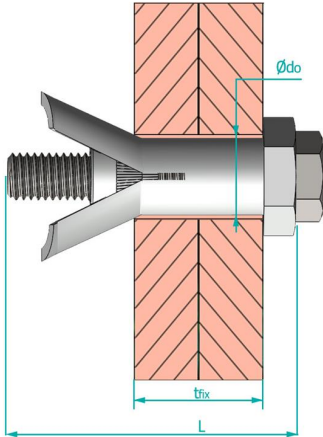
<sup>(1)</sup> The Quality Plan is a confidential part of the ETA and only handled over to the notified certification body involved in the assessment and verification of constancy of performances.



**Product versions**

| Picture                                                                           | Sizes                      | Code  | Coating            |
|-----------------------------------------------------------------------------------|----------------------------|-------|--------------------|
|  | M6, M8, M10, M12, M16, M20 | B-SBZ | Zinc plated        |
|                                                                                   |                            | B-SBG | Hot dip galvanised |

**Installed condition**



L: Anchor length  
do: Hole diameter  
tfix: Clamped length  
Tins: Installation torque

Identification on head of sleeve: "B-SB" + size x length

**Table A1: Materials**

| Item | Designation | Material for B-SBZ                                                        | Material for B-SBG                                           |
|------|-------------|---------------------------------------------------------------------------|--------------------------------------------------------------|
| 1    | Bolt        | DIN 933 class 8.8 ISO 898-1, galvanised $\geq 5 \mu\text{m}$ ISO 4042 Zn5 | DIN 933 class 8.8 ISO 898-1, hot dip galvanised EN-ISO 10684 |
| 2    | Sleeve      | Carbon steel, galvanised $\geq 5 \mu\text{m}$ ISO 4042 Zn5                | Carbon steel, hot dip galvanised EN-ISO 10684                |
| 3    | Cone        | Carbon steel, galvanised $\geq 5 \mu\text{m}$ ISO 4042 Zn5                | Carbon steel, hot dip galvanised EN-ISO 10684                |

**B-Strut-bolt**

**Product description**

Versions, installed condition and materials

**Annex A1**



### Specifications of intended use

#### **Anchorage subjected to:**

- Static or quasi static loads

#### **Base materials:**

- Steel structural components, or a structural steel component and a non-structural component.

#### **Use conditions (environmental conditions):**

- The durability of the product shall be achieved by coating. The durability of the product in environmental conditions corresponding to corrosivity classifications defined in ISO 9223 is given in the following table:

| Corrosivity class | B-SBZ<br>[years] | B-SBG<br>[years] |
|-------------------|------------------|------------------|
| C1                | > 50             | > 50             |
| C2                | 11               | > 50             |
| C3                | 3                | 47               |

#### **Design:**

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and steel works.
- The characteristic values of material resistance given in Annex C2 may be used as characteristic values when verifying structural adequacy in accordance with Eurocode 3 (EN 1993).
- Note that these characteristic values are valid for the assembly itself, but in any connection detail the design resistance of the connection may be limited to a lesser value (than the sum of the resistances of the fasteners) by the structural components that are connected. For example, when the thickness of the connected component is small, pull-out failure may occur before failure of any of the assemblies.
- The characteristic values of resistance under combined tensile and shear loads shall be calculated according to EN 1993-1-8.

#### **Installation:**

- Fastener installation carried out by appropriately qualified personal and under the supervision of the person responsible for technical matters of the site.
- The fastener shall be installed in a hole whose dimensions are within the stated tolerance on hole diameter
- Hole drilling by rotary mode.
- The faces of the components to be fastened together are brought into contact before the assembly is tightened
- The tightening torque is at least the minimum stated value.
- Use of impact screwdrivers is not allowed.

#### **B-Strut-bolt**

#### **Intended use**

#### **Specifications**

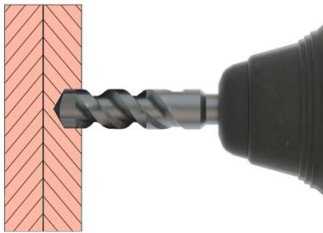
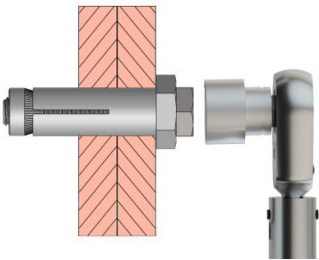
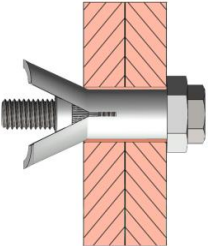
**Annex B1**



**Table C1: Installation parameters**

| Installation parameters |                       |      | Performances |             |    |             |     |    |             |     |    |             |     |     |             |     |     |     |
|-------------------------|-----------------------|------|--------------|-------------|----|-------------|-----|----|-------------|-----|----|-------------|-----|-----|-------------|-----|-----|-----|
|                         |                       |      | M6           |             | M8 |             | M10 |    |             | M12 |    |             | M16 |     |             | M20 |     |     |
| L                       | Bolt length:          | [mm] | 45           | 50          | 70 | 90          | 50  | 70 | 90          | 55  | 80 | 100         | 75  | 100 | 120         | 100 | 120 | 150 |
| d <sub>0</sub>          | Hole diameter:        | [mm] | 10.8÷12.0    | 13.8 ÷ 15.0 |    | 17.8 ÷ 19.0 |     |    | 19.8 ÷ 21.0 |     |    | 25.8 ÷ 28.0 |     |     | 32.8 ÷ 35.0 |     |     |     |
| t <sub>fix</sub>        | Clamped min:          | [mm] | 5            | 5           | 26 | 46          | 5   | 22 | 42          | 5   | 23 | 48          | 8   | 35  | 60          | 12  | 43  | 63  |
|                         | length: max:          | [mm] | 23           | 26          | 46 | 66          | 22  | 42 | 62          | 25  | 50 | 70          | 35  | 60  | 80          | 43  | 63  | 93  |
| T <sub>ins</sub>        | Installation torque ≥ | [Nm] | 13           | 23          |    | 45          |     |    | 80          |     |    | 190         |     |     | 300         |     |     |     |
| SW                      | Sleeve socket:        | [-]  | 17           | 22          |    | 24          |     |    | 26          |     |    | 36          |     |     | 46          |     |     |     |
|                         | Bolt socket:          | [-]  | 10           | 13          |    | 17          |     |    | 19          |     |    | 24          |     |     | 30          |     |     |     |

### Installation procedure

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p>Chose the anchor length considering the minimum / maximum grip lengths of the connection.<br/>Check that the blind inner hollow space is enough to allocate the anchor.<br/>Drill a hole into the steel whose dimensions are within the stated tolerance of hole diameter.<br/>The faces of the components to be fastened together are brought into contact before the assembly is tightened.</p> |
|   | <p>Fix the hexagon head of the sleeve with a spanner.<br/>Select a torque wrench that does exceed the installation torque T<sub>ins</sub>.<br/>Attach an appropriately sized hexagonal socket to the wrench.<br/>Tighten the bolt to at least the minimum stated torque value T<sub>ins</sub><br/>Use of impact screwdrivers is not allowed.</p>                                                     |
|  | <p>Installed anchor</p>                                                                                                                                                                                                                                                                                                                                                                              |

### B-Strut-bolt

### Performances

Installation parameters and installation procedure

**Annex C1**





**Table C2: Characteristic values of tension and shear resistance**

| Characteristic resistance |                                                    |      | Performances |      |      |      |       |       |
|---------------------------|----------------------------------------------------|------|--------------|------|------|------|-------|-------|
|                           |                                                    |      | M6           | M8   | M10  | M12  | M16   | M20   |
| N <sub>RK</sub>           | Resistance of installed assembly to tension loads: | [kN] | 16,1         | 28,9 | 44,7 | 51,4 | 101,5 | 132,7 |
| V <sub>RK</sub>           | Shear resistance of assembly:                      | [kN] | 20,4         | 36,4 | 59,2 | 80,3 | 145,6 | 229,1 |
| γ <sub>Ms</sub>           | Safety factor: <sup>1)</sup>                       | [-]  | 1,33         |      |      |      |       |       |

<sup>1)</sup> In absence of other national regulations

|                                             |          |
|---------------------------------------------|----------|
| B-Strut-bolt                                | Annex C2 |
| Performances                                |          |
| Characteristic values for loads in concrete |          |

