



Technický a skúšobný ústav stavebný, n. o.
Building Testing and Research Institute
Studená 3
821 04 Bratislava
Slovak Republic
Phone: +421 2 49228101
E-mail: sternova@tsus.sk
Website: www.tsus.sk



European Technical Assessment

**ETA 21/0373 – version 01
of 04/05/2021**

General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: **Technický a skúšobný ústav stavebný, n. o.**

Trade name of the construction product

PSB[®] HEAD: PSB[®] SINGLE, PSB[®] DOUBLE, PSB[®] -J, PSB[®] -S

Product family to which the construction product belongs

Product area code: 16
Reinforcing and Prestressing Steel for Concrete (and Ancillaries). Post Tensioning Kits.

Manufacturer

Peikko Group Oy
Voimakatu 3
15170 Lahti
Finland
<http://www.peikko.com>

Manufacturing plant

Peikko production units

This European Technical Assessment contains

7 pages including 1 annex 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 160012-00-0301

This version replaces

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Specific part

1 Technical description of the product

The ETA covers PSB[®] HEAD: PSB[®] SINGLE, PSB[®] DOUBLE, PSB[®] -J, PSB[®] -S headed reinforcement bars for the reinforcement for concrete. PSB[®] HEADS are round mechanical anchors with diameter $\geq 3 \varnothing$, where \varnothing is diameter of rebar, forged at one or both ends of the rebar and used for anchoring rebar in concrete. The head allows anchoring the full tensile strength of the rebar once it is cast in concrete.

The types of PSB[®] HEAD products are summarized in Annex 1. The dimensions of products and geometry of anchoring heads are summarized in Annex 1. The nominal diameter, strength and elongation of parent rebar of material B500B is according to EN 10080 (DIN 488 and NS 3576-3).

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

PSB[®] HEAD: PSB[®] SINGLE, PSB[®] DOUBLE, PSB[®] -J, PSB[®] -S are used to anchor rebar in reinforced concrete structures. The head provides mechanical end anchorage or an alternative to developing reinforcement through the combination of bond and bends/hooks.

The products are to be used in concrete structures with:

- Static and quasi-static loading.

The assumed working life of PSB[®] HEAD: PSB[®] SINGLE, PSB[®] DOUBLE, PSB[®] -J, PSB[®] -S for the intended use is 100 years when installed in the works (provided that the headed reinforcement steel bars are 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 works¹.

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

The performance of the product is summarized in Table 1.

¹ 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 referred to above.

Table 1 – Performance of the assembled system

<p>Product – type: PSB[®] HEAD: PSB[®] SINGLE, PSB[®] DOUBLE, PSB[®] -J, PSB[®] -S</p>		<p>Intended use: PSB[®] HEAD: PSB[®] SINGLE, PSB[®] DOUBLE, PSB[®] -J, PSB[®] -S are used to anchor rebar in reinforced concrete structures. The head provides mechanical end anchorage or an alternative to developing reinforcement through the combination of bond and bends/hooks. The products are to be used in concrete structures with: - Static and quasi-static loading.</p>
Basic requirement for construction work (BWR)	Essential characteristic	Performance
1	Nominal diameter, strength and ductility of parent rebar	Nominal diameters of parent rebars: Ø 10 mm, Ø 12 mm, Ø 14 mm, Ø 16 mm, Ø 20 mm, Ø 25 mm, Ø 28 mm, Ø 32 mm Characteristic yield strength 500 MPa according to EN 10080 Ductility class B or C according to EN 1992-1-1
	Geometry of anchoring head	Annex 1
	Robustness of head-to-bar connection	Category B3: a) The capability of heads for anchoring for each type of product with rebar diameter Ø 32 mm comply with clause 7.3.2 of ISO 15698-1:2012 b) No cracks visible in the heads, the bar or the head-to-bar connection for each type of product with rebar diameter up to and including Ø 28 mm to a person with normal or corrected vision.
	Characteristic resistance under static and quasi-static loading	Category B3: The capability of head for anchoring complies with clause 7.2.2 of ISO 15698-1:2012 for each type of product and each rebar diameter.
	Characteristic resistance under seismic loading	NPA
2	Reaction to fire	Class A1
NOTE 1 BWRs 3, 4, 5, 6 and 7 are not relevant see EAD 160012-00-0301.		

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

4.1 System of assessment and verification of constancy of performance

According to the Decision 97/597/EC the European Commission, the system of assessment and verification of constancy of performance system 1+ applies, see Table 2.

Table 2 – System of assessment and verification of constancy of performance applicable to PSB[®] HEAD: PSB[®] SINGLE, PSB[®] DOUBLE, PSB[®] -J, PSB[®] -S

Product(s)	Intended use(s)	Level(s) or class(es)	System(s) of assessment and verification of constancy of performance
Reinforcing steel products: - bars - rods, coils - welded fabrics - lattice girder - indented strips	used for the reinforcement of concrete	Any	1+

The manufacturer shall draw up the declaration of performance on the basis of the assessments and verifications of constancy of performance carried out under the system 1+ as laid down in the Commission Delegated Regulation (EU) No 568/2014 of 18 February 2014, Annex V, 1.3. This system provides for:

- (a) the manufacturer shall carry out:
 - (i) factory production control;
 - (ii) further testing of samples taken at the manufacturing plant taken by the manufacturer in accordance with the prescribed test plan;
- (b) the notified product certification body shall decide on the issuing, restriction, suspension or withdrawal of the certificate of constancy of performance of the construction product on the basis of the outcome of the following assessments and verifications carried out by that body:
 - (i) an assessment of the performance of the construction product on the basis of testing (including sampling), calculation, tabulated values or descriptive documentation of that product;
 - (ii) initial inspection of the manufacturing plant and of factory production control;
 - (iii) continuing surveillance, assessment and evaluation of factory production control.
 - (iv) audit-testing of samples taken by the notified product certification body at the manufacturing plant or at the manufacturer's storage facilities;

4.2 Construction products for which a European Technical Assessment has been issued

Manufacturers undertaking tasks under system 1+ shall consider the European Technical Assessment issued for the construction product in question as the assessment of the performance of that product. Notified Body shall therefore not undertake the task referred to in point 4.1 (b) (i).

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 in TSÚS.

Technický a skúšobný ústav stavebný, n. o.
Building Testing and Research Institute
Studená 3, 821 04 Bratislava, Slovak Republic

On behalf of the Technický a skúšobný ústav stavebný, n. o.
Bratislava, 04 May 2021

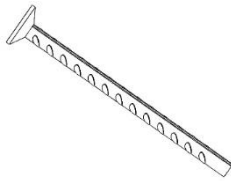
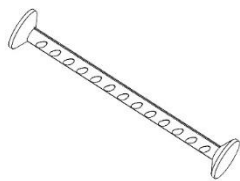
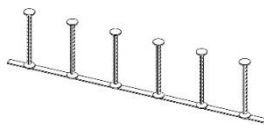
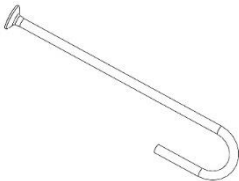


prof. Ing. Zuzana Sternová, PhD.
Head of Technical Assessment Body

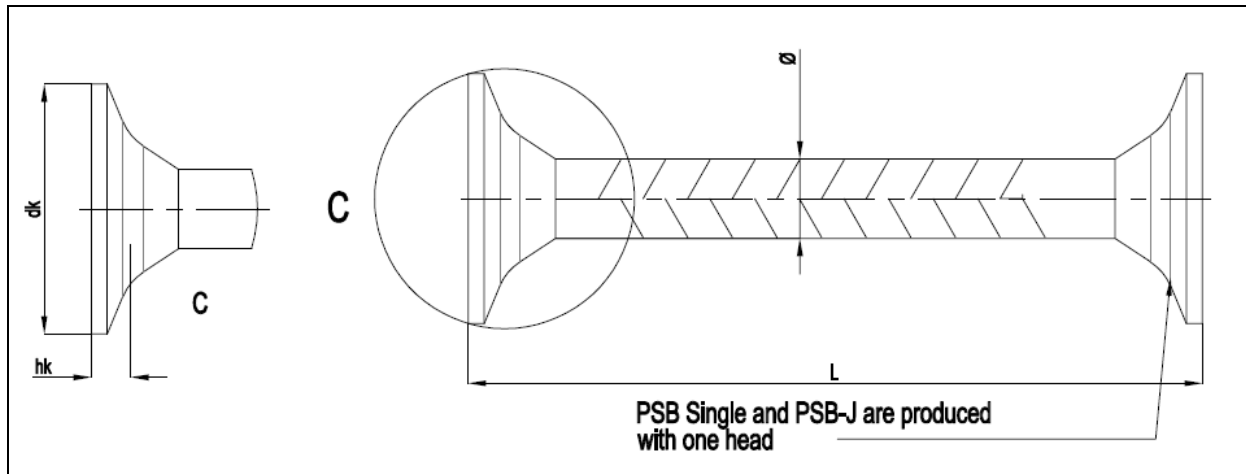
List of annexes

Annex 1 Types, dimensions and geometry of head of PSB® HEAD products

Types of PSB® HEAD products

PSB® SINGLE	PSB® DOUBLE	PSB® -S	PSB® -J
			
Rebar with PSB® HEAD forged at one end	Rebar with PSB® HEAD forged at both ends	Prefabricated assemblies of double-headed studs	Rebar with PSB® HEAD forged at one end and bent hook at the other end

Dimensions and geometry of head of PSB® HEAD products



PSB® HEAD	Parent rebar diameter Ø (mm)	Head diameter dk (mm)	Head thickness hk (mm)	Total length L (mm)
SINGLE/DOUBLE/-J/-S 10	10	31	6	125-11500
SINGLE/DOUBLE/-J/-S 12	12	38	7	125-11500
SINGLE/DOUBLE/-J/-S 14	14	44	8	135-11500
SINGLE/DOUBLE/-J/-S 16	16	50,5	8	135-11500
SINGLE/DOUBLE/-J/-S 20	20	63	10	185-11500
SINGLE/DOUBLE/-J/-S 25	25	79	13	220-11500
SINGLE/DOUBLE/-J/-S 28	28	84	21	220-11500
SINGLE/DOUBLE/-J/-S 32	32	96	23	220-11500

Note - PSB® HEAD products with PSB® heads shall be installed in accordance with detailed technical documentation, such as: drawings, models, specifications etc., established for the individual works. The PSB® head and the head-to-bar connection shall not be machined or otherwise modified. Bending of steel rebar with PSB® heads shall be carried out such that the start of the bend is in a distance at least twice the nominal bar diameter from the head-to-bar connection. Steel rebar with PSB® heads are part of the reinforcement for concrete structure, based on the structural design for the works according to applicable design standards. Necessary bursting and spalling reinforcement, due to partially loaded areas, local crushing and transverse tension forces shall be considered. To ensure the resistance to fire, the structure has to be designed and constructed according to the provisions of an appropriate standard for structural fire design. The products shall be used in structures with minimum concrete class C30/37.

Types, dimensions and geometry of head of PSB® HEAD products

Annex 1
of European Technical Assessment
ETA 21/0373

REFERENCES

- [1] PSB Head, Headed Reinforcement, drawing RD000275, Peikko Group Oy
- [2] Test Report 01/2021, Testing Laboratory of Faculty of Civil Engineering of University of Žilina, Žilina March 2021
- [3] PSB Headed Reinforcement, Test Report – Tensile and robustness tests, Peikko Group Oy, 07/12/2020
- [4] Control Plan for PSB Headed Bars, Peikko Group Oy, 04/11/2020

STANDARDS

Regulation (EU) No. 305/2011	of the European Parliament and of the council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/ECC
EAD 160012-00-0301	Headed Reinforcement Steel Bars
EN 10080:2005	Steel for the reinforcement of concrete. Weldable reinforcing steel. General
EN 10204:2004	Metallic products. Types of inspection documents
EN 1992-1-1:2004/A1:2004	Eurocode 2: Design of concrete structures. Part 1-1: General rules and rules for buildings
EN ISO 6892-1:2019	Metallic materials. Tensile testing. Part 1: Method of test at room temperature (ISO 6892-1:2019)
ISO 15698-1:2012 <i>(reviewed and confirmed in 2018)</i>	Steel for the reinforcement of concrete. Headed bars. Part 1: Requirements
ISO 15698-2:2012 <i>(reviewed and confirmed in 2018)</i>	Steel for the reinforcement of concrete. Headed bars. Part 2: Test methods
ISO 15630-1:2019	Steel for the reinforcement and prestressing of concrete. Test methods. Part 1: Reinforcing bars, rods and wire
96/603/EC	Commission Decision 96/603/EC of 04 October 1996 establishing the list of products belonging to Class A „No contribution to fire “provided for in Decision 94/611/EC implementing Article 20 of Council Directive 89/106/EEC on construction products. Amended by Commission Decision 2000/605/EC of 26 September 2000 and Commission Decision 2003/424/EC of 06 June 2003