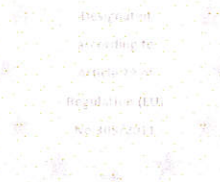




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## European Technical Assessment

**ETA 21/0811  
of 15/02/2023**

### General Part

**Technical Assessment Body issuing the European Technical Assessment**  
Technický a zkušební ústav stavební Praha, s.p.

<b>Trade name of the construction product</b>	PBK
<b>Product family to which the construction product belongs</b>	Product area code: 33 Torque-controlled expansion anchor of size M6, M8, M10, M12, M16
<b>Manufacturer</b>	DOMAX Sp. z o.o. Aleja Parku Krajobrazowego 109 Łężyce 84-207 Koleczkowo Republic of Poland
<b>Manufacturing plants</b>	Plant 1
<b>This European Technical Assessment contains</b>	11 pages including 5 Annexes, which form an integral part of this European Technical Assessment
<b>This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of</b>	EAD 330232-01-0601 Mechanical fasteners for use in concrete

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex(es) referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

Specific Parts

## **1 Technical description of the product**

The PBK anchors are torque-controlled expansion anchors made of galvanized steel installed in a drilled hole and are anchored with controlled tightening torque. Each type consists of a hexagonal nut, a washer, a special shank with a made cone and an expansion sleeve.

Anchors are made in size M6, M8, M10, M12 and M16.

An illustration of the product is given in Annex A.

Installation instructions are given in Annex D.

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

Specification of the intended use of the PBK anchors is described in Annex B. The performances given in Chapter 3 are only valid if the anchors are used in compliance with the specifications and conditions given in Annex B.

The provisions made in this European Technical Assessment are based on an assumed working life of 50 years.

The indications given as to the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body but are regarded only as a mean 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**

The assessment of the fitness for use of the PBK anchors according to the basic work requirements (BWR) were carried out in compliance with EAD 330232-01-0601.

The European Technical Assessment is issued for the PBK anchors on the basis of agreed data and information, deposited at Technický a zkušební ústav stavební Praha, s.p., which identifies the PBK anchors that has been assessed and judged. Changes to the PBK anchors or production process which could result in this deposited data and information being incorrect should be notified to Technický a zkušební ústav stavební Praha, s.p. before the changes are introduced. Technický a zkušební ústav stavební Praha, s.p. will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alternations to the ETA shall be necessary.

### **3.1 Mechanical resistance and stability**

The basic work requirements for mechanical resistance and stability are listed in Annex C.

### 3.2 Safety in case of fire

#### 3.2.1 Reaction to fire

Reaction to fire classification of PBK anchors satisfies for class A1.

#### 3.2.2 Resistance to fire

No performance assessed.

### 3.3 Durability

Durability and serviceability are only ensured if specifications of intended use according to Annex B are kept.

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

According to the decision 96/582/EC<sup>1</sup>, of the European Commission the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table applies:

Product(s)	Intended use(s)	Level(s) or class(es)	Attestation of conformity system(s)
Metal anchors for use in concrete (heavy-duty type)	For fixing and/or supporting concrete structural elements or heavy units such as cladding and suspended ceilings		1

<sup>1</sup> 96/582/EC – Commission Decision of 24 June 1996, published in the Official Journal of the European Union (OJEU), L 254/62 of 08/10/1996  
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070-062190

## 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 the Technický a zkušební ústav stavební Praha, s.p.

Issued in Prague on 15/02/2023



By

Ing. Jiří Studnička, Ph.D.  
Head of the TAB



### Annexes:

Annex A Product description	2 pages
Annex B Intended use – Specification	1 page
Annex C Performances	2 pages
Annex D Installation instructions	1 pages
Annex E Reference documents	1 page

## Annex A Product description

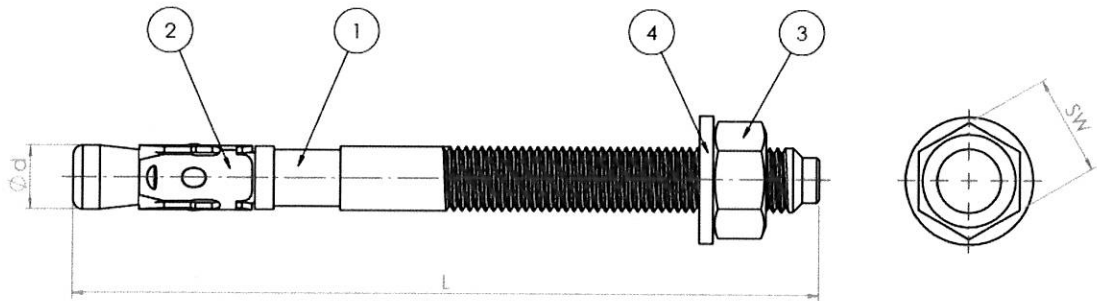


Figure 1: PBK anchor  
(1 – Bolt, 2 – Sleeve, 3 – Hexagonal nut, 4 – Washer)

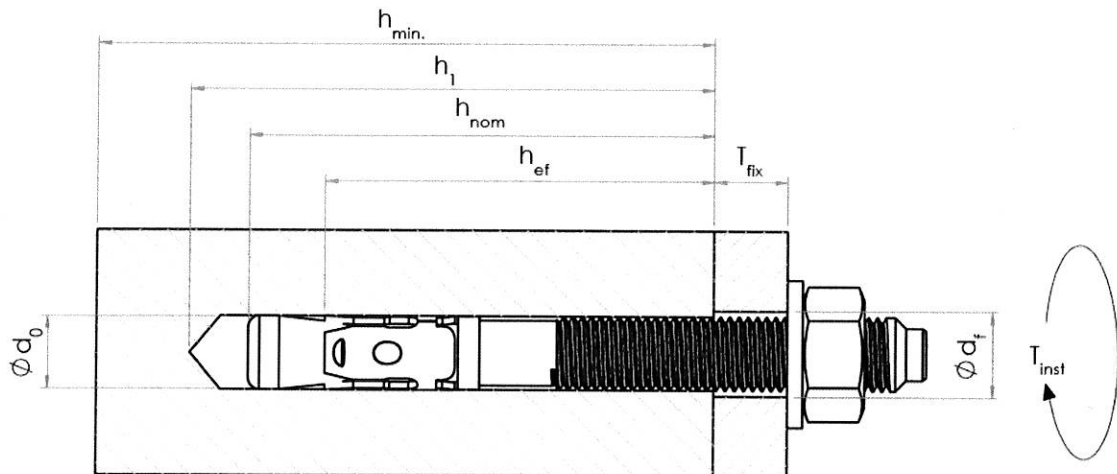


Figure 2: PBK anchor after installation

	Size	M6 <sup>1)</sup>	M8	M10	M12	M16
<b>Length</b>	<b>L<sub>max</sub> [mm]</b>	180	200	220	300	300
<b>Drill hole diameter</b>	<b>d<sub>0</sub> [mm]</b>	6	8	10	12	16
<b>Effective embedment depth</b>	<b>h<sub>ef</sub> [mm]</b>	30	40	55	65	80
<b>Overall embedment depth in the concrete</b>	<b>h<sub>nom</sub> [mm]</b>	35	48	65	77	95
<b>Depth of drilled hole to deepest point</b>	<b>h<sub>1</sub> [mm]</b>	45	60	70	85	105
<b>Minimum thickness of concrete member</b>	<b>h<sub>min</sub> [mm]</b>	100	100	110	130	160
<b>Maximal thickness of the fixture</b>	<b>t<sub>fix,max</sub> [mm]</b>	135	140	150	215	195
<b>Maximal installation torque</b>	<b>T<sub>inst</sub> [Nm]</b>	7.5	15	30	50	100
<b>Minimal spacing</b>	<b>s [mm]</b>	35	40	50	60	80
<b>Minimal edge distance</b>	<b>c [mm]</b>	35	40	50	60	80
<b>Edge distance</b>	<b>c<sub>cr,sp</sub> [mm]</b>	80	110	140	190	210
1) Structural elements that are statically indeterminate and subjected only to internal exposure conditions						

		Material	Coating
<b>Component</b>	<b>Anchor body</b>	Carbon steel, class ≥ 4.8 according to EN ISO 898-1:2013	Galvanized ≥ 5 μm according to ISO 4042
	<b>Expansion sleeve</b>	Carbon steel	
	<b>Hexagonal nut</b>	Carbon steel according to DIN 934 (EN ISO 4032)	
	<b>Washer</b>	Carbon steel according to DIN 125 (EN ISO 7089)	

Parameters			M6	M8	M10	M12	M16
<b>Bolt length</b>	<b>L</b>	mm	50 - 180	65 - 200	75 - 220	90 - 300	120 - 300
<b>Diameter</b>	<b>d<sub>nom</sub></b>	mm	6	8	10	12	16
<b>Width torque wrench</b>	<b>SW</b>	mm	10	13	17	19	24

## **Annex B Intended use - Specification**

### **Anchorage subjected to:**

- Static and quasi static load.

### **Base material:**

- Uncracked concrete
- Reinforced and unreinforced normal weight concrete of strength class C20/25 at minimum and C50/60 at maximum according to EN 206:2013+A2:2021.

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

- Structures subject to dry internal conditions.
- Galvanized steel.

### **Design:**

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e.g., position of the anchor relative to reinforcement or to supports etc.).
- Anchorages under static or quasi-static loading are designed in accordance with EN 1992-4.
- Anchorages shall be positioned outside of critical regions (e.g., plastic hinges) of the concrete structure. Fastenings in stand-off installation or with a grout layer under seismic action are not covered in this European Technical Assessment (ETA).
- In case of requirements to resistance to fire local spalling of the concrete cover must be avoided.

### **Installation:**

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on the site.
- Use of the anchor only as supplied by the manufacturer without exchanging the components of an anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings using the appropriate tools.
- Thickness of the fixture corresponding to the range of required thickness values for the type of anchor.
- Checks before placing the anchor to ensure that the strength class of the concrete in which the anchor is to be placed is in the range given and is not lower than that of the concrete to which the characteristic loads apply for.
- Check of concrete being well compacted, e.g., without significant voids.
- Cleaning of the hole of drilling dust.
- Anchor installation ensuring the specified embedment depth.
- Keeping of the edge distance and spacing to the specified values without minus tolerances.
- Positioning of the drill holes without damaging the reinforcement
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not to the anchor in the direction of load application.
- Application of the torque moment given in Annex A or C using a calibrated torque wrench.

## Annex C1 Performances– Characteristic resistance under tension load

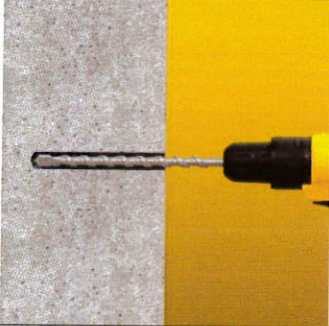

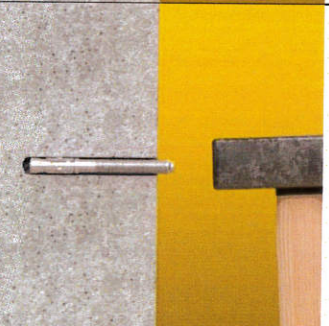
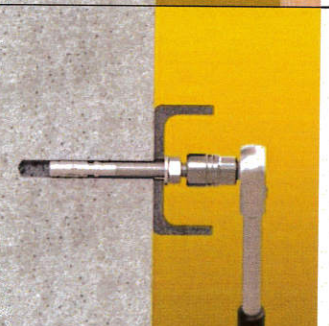
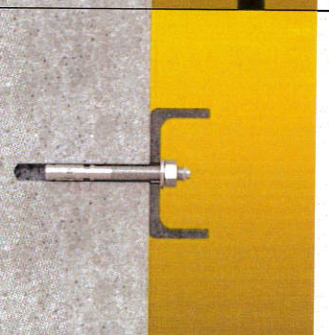
			Anchor size				
			M6	M8	M10	M12	M16
<b>Steel failure</b>							
Characteristic resistance	$N_{Rk,s}$	kN	5.5	10.6	17.2	28.4	51.5
Partial safety factor	$\gamma_{M,s}$	-	1.5	1.5	1.5	1.5	1.5
<b>Pull-out failure</b>							
Characteristic resistance	$N_{Rk,p}$	kN	4.5	10.0	19.0	Not decisive	Not decisive
Installation safety factor	$\gamma_{inst}$	-	1.2	1.2	1.0	1.0	1.0
Increasing factor for $N^0_{Rk,c}$	$\psi_c$	C30/37	1.04	1.04	1.04	1.17	1.17
		C40/50	1.07	1.07	1.07	1.32	1.32
		C50/60	1.09	1.09	1.09	1.42	1.42
<b>Concrete cone failure and splitting failure</b>							
Effective anchorage depth	$h_{ef}$	mm	30	40	55	65	80
Factor for uncracked concrete	$k_{ucr}$	-	11	11	11	11	11
Spacing	$s_{cr,N}$	mm	$3 \cdot h_{ef}$	$3 \cdot h_{ef}$	$3 \cdot h_{ef}$	$3 \cdot h_{ef}$	$3 \cdot h_{ef}$
Edge distance	$c_{cr,N}$	mm	$1.5 \cdot h_{ef}$	$1.5 \cdot h_{ef}$	$1.5 \cdot h_{ef}$	$1.5 \cdot h_{ef}$	$1.5 \cdot h_{ef}$
Spacing (splitting)	$s_{cr,sp}$	mm	160	220	280	380	420
Edge distance (splitting)	$c_{cr,sp}$	mm	80	110	140	190	210
Installation safety factor	$\gamma_{inst}$	-	1.2	1.2	1.0	1.0	1.0
<b>Displacement under tension load</b>							
Tension service load in concrete	$N$	kN	1.8	4.0	9.0	12.4	18.1
Displacement	$\delta_{N0}$	mm	0.3	0.1	0.8	1.0	1.7
	$\delta_{N\infty}$	mm	1.1	1.1	1.1	2.1	2.1



## Annex C2 Performances– Characteristic resistance under shear load

			Anchor size				
			M6	M8	M10	M12	M16
Steel failure without lever arm							
Characteristic resistance	$V_{Rk,s}$	kN	4.0	7.3	11.6	16.9	31.4
Partial safety factor	$\gamma_{Ms,V}$	-	1.25	1.25	1.25	1.25	1.25
Steel failure with lever arm							
Characteristic resistance	$M_{Rk,s}$	Nm	6	15	30	52	133
Partial safety factor	$\gamma_{M,s}$	-	1.25	1.25	1.25	1.25	1.25
Concrete pryout failure							
Pryout factor	$k_8$	-	1.0	1.0	1.0	2.0	2.0
Installation safety factor	$\gamma_{inst}$	-	1.2	1.2	1.0	1.0	1.0
Concrete edge failure							
Effective length of anchor	$l_f$	mm	30	40	55	65	80
Outside diameter of anchor	$d_{nom}$	mm	6	8	10	12	16
Installation safety factor	$\gamma_{M,c}$	mm	1.2	1.2	1.0	1.0	1.0
Displacement under shear load							
Shear service load in concrete	$V$	kN	2.3	4.2	6.6	9.6	17.9
Displacement	$\delta_{V0}$	mm	1.2	0.5	0.9	1.2	1.6
	$\delta_{V\infty}$	mm	1.8	0.8	1.3	1.8	2.4

## Annex D Installation instruction

	<p>Drill hole with a hammer drill.</p>
	<p>Clean drill hole from dust and dirt (use a pump or brush).</p>
	<p>Place the anchor in the hole made.</p>
	<p>Place the fixture and tighten to the required torque <math>T_{inst}</math>.</p>
	<p>Finished installation.</p>

## **Annex E Reference documents**

- [1] European Assessment Document EAD 330232-01-0601 Mechanical fasteners for use in concrete, edition December 2019
- [2] EN 1992-4 Eurocode: Design of concrete structures - Part 4: Design of fastenings for use in concrete