

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-11/0115
of 24 March 2015

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Würth concrete screw Pointe Bleu PB

Product family
to which the construction product belongs

Concrete screw made for use in concrete

Manufacturer

Würth France S.A.
Z.I. Quest
Rue Georges Bresse
67150 ERSTEIN
FRANKREICH

Manufacturing plant

Plant 1, Plant 2

This European Technical Assessment
contains

10 pages including 3 annexes 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

Guideline for European technical approval of "Metal
anchors for use in concrete", ETAG 001 Part 3: "Undercut
anchors", April 2013,
used as European Assessment Document (EAD)
according to Article 66 Paragraph 3 of Regulation (EU)
No 305/2011.

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Specific Part

1 Technical description of the product

The Würth concrete screw Pointe Bleu PB is an anchor made of zinc plated steel of sizes PB10, PB12 and PB16. The anchor is screwed into a predrilled cylindrical drill hole. The special thread of the anchor cuts an internal thread into the member while setting. The anchorage is characterised by mechanical interlock in the special thread.

The product description is given in Annex A.

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

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means 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

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance under tension and shear loads	See Annex C 1 to C 2
Displacements under tension and shear loads	See Annex C 1 to C 2

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	No performance determined (NPD)

3.3 Hygiene, health and the environment (BWR 3)

Not applicable.

3.4 Safety in use (BWR 4)

The essential characteristics regarding Safety in use are included under the Basic Works Requirement Mechanical resistance and stability.

3.5 Protection against noise (BWR 5)

Not applicable.

3.6 Energy economy and heat retention (BWR 6)

Not applicable.

3.7 Sustainable use of natural resources (BWR 7)

The sustainable use of natural resources was not investigated.

English translation prepared by DIBt

3.8 General aspects

The verification of durability is part of testing the essential characteristics. Durability is only ensured if the specifications of intended use according to Annex B are taken into account.

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

According to Decision of the Commission of 24 June 1996 (96/582/EC) (OJ L 254 of 08.10.96 p. 62-65), the system of assessment and verification of constancy of performance (see Annex V and Article 65 Paragraph 2 to Regulation (EU) No 305/2011) given in the following table applies.

Product	Intended use	Level or class	System
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

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

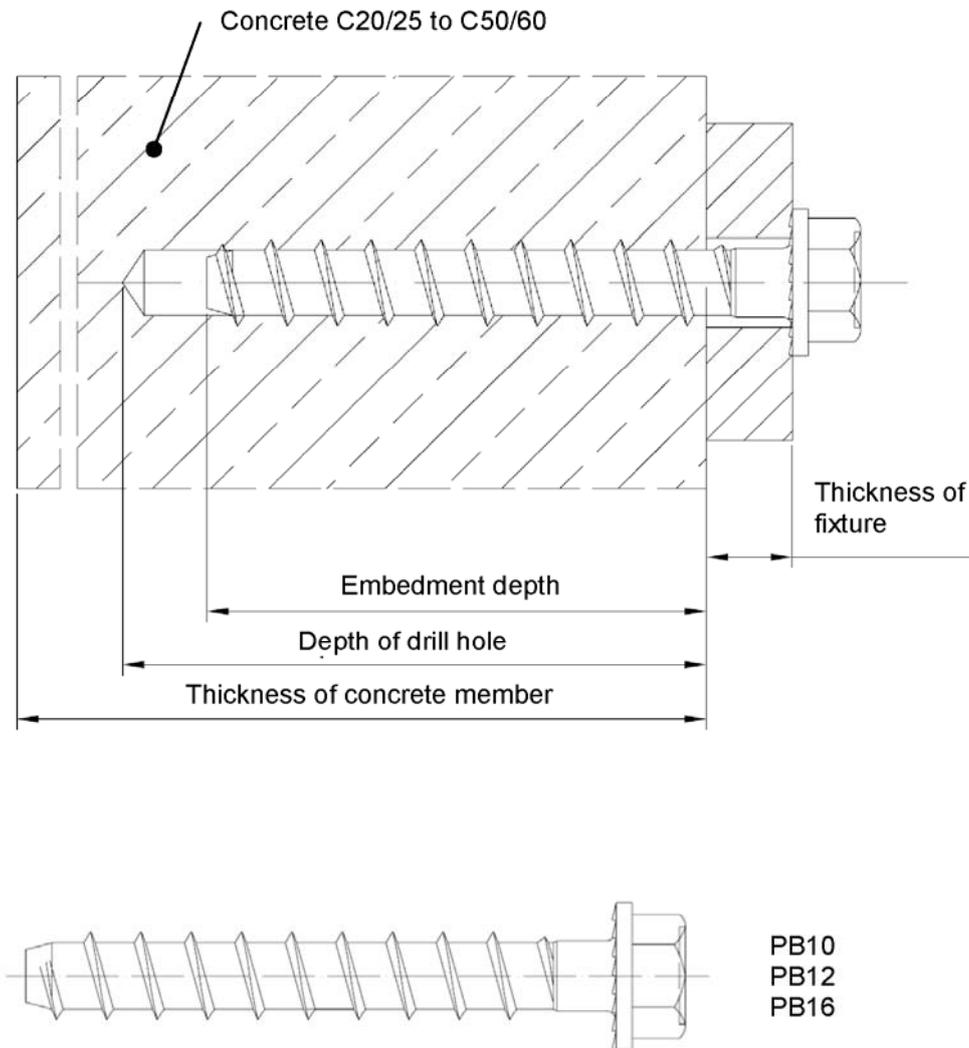
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 24 March 2015 by Deutsches Institut für Bautechnik

Uwe Bender
Head of Department

beglaubigt:
Baderschneider

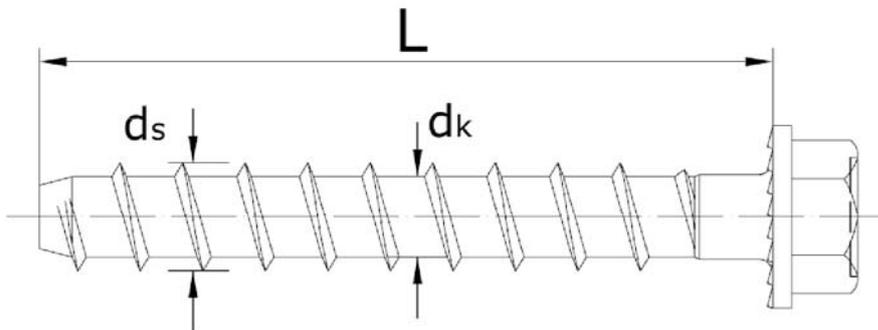
Installed Condition



Würth Concrete Screw Pointe Bleu PB

Product Description
Installed condition
Product

Annex A 1

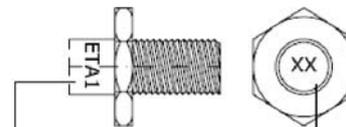
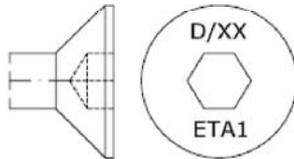
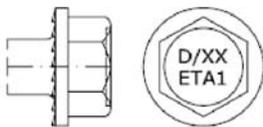


Head Styles

PB HEX

PB CS

PB ET



Head Marking:
Identifying mark: ETA1
Diameter D: e.g. 10
Length XX: e.g. 150

Marking I:
Identifying mark: ETA1
Diameter D: e.g. 10

Marking II:
Length XX: e.g. 150

Marking D/XX where
D= Nominal diameter of the bore hole [mm]
XX= Length of anchor [mm]

Table A1: Dimensions and Material

Anchor size		PB10	PB12	PB16
Length of the anchor	$L \geq$ [mm]	60	75	95
Length of the anchor	$L \leq$ [mm]	320	320	320
Diameter of the shaft	d_k [mm]	9,7	11,6	15,2
Outer diameter of the thread	d_s [mm]	11,2	13,4	17,9
Material		Special hardened C-Steel		

Würth Concrete Screw Pointe Bleu PB

Product description
Head Styles,
Dimensions and Materials

Annex A 2

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loads: all sizes.

Base Materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000.
- Strength classes C20/25 to C50/60 according to EN 206-1:2000.
- Non-cracked and cracked concrete: all sizes.

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions.

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 are designed in accordance with ETAG 001, Annex C, Design Method A, Edition August 2010.

Installation:

- Hole drilling by hammer-drilling only.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- 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 hole is filled with high strength mortar and if under shear or oblique tension load it is not the direction of the load application.
- The anchor may be used only once.
- The fixture is fully pressed on the concrete surface without intermediate layers.
- Further turning of the anchor is not easy.
- The head of the anchor is fully supported on the fixture and is not damaged.

Würth Concrete Screw Pointe Bleu PB

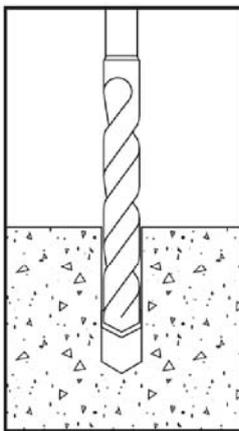
Intended Use
Specifications

Annex B 1

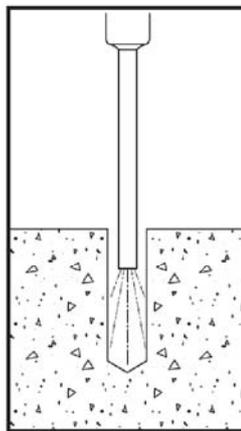
Table B1: Installation parameters

Anchor size		PB10		PB12		PB16	
Nominal drill hole diameter	d_0 [mm]	10		12		16	
Depth of drill hole	$h_1 \geq$ [mm]	65	85	80	95	90	125
Nominal embedment depth	h_{nom} [mm]	55	75	70	85	80	110
Maximum clearance hole in the fixture	d_f [mm]	12		14		19	
Minimum thickness of member	h_{min} [mm]	105	115	125		145	165
Minimum spacing	s_{min} [mm]	60		90		110	
Minimum edge distance	c_{min} [mm]	60		90		110	

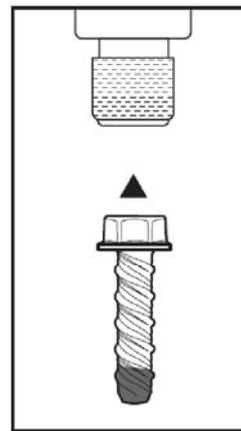
Installation instructions



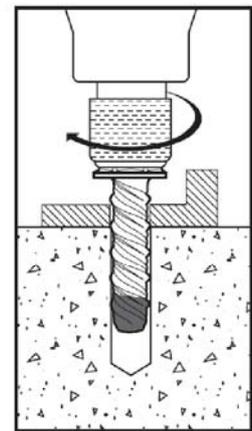
Using the proper drill bit size, drill a hole into the base material to the required depth.



Remove dust and debris from the hole using a hand pump or compressed air.



Select impact wrench and mount the screw anchor head into the hex socket.



Drive the anchor through the fixture into the hole at least to the minimum required embedment depth and until the head of the anchor comes into contact with the fixture.

Würth Concrete Screw Pointe Bleu PB

Intended Use

Installation Parameters, Installation Instruction, minimum spacing and minimum edge distance of anchor

Annex B 2

Table C1: Characteristic Values under tension loads

Anchor Size			PB10		PB12		PB16	
Steel failure								
Characteristic resistance	$N_{Rk,s}$	[kN]	56		78,5		140,4	
Partial safety factor	γ_{Ms}	[-]	1,4					
Pullout failure								
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p}$	[kN]	3	6	4	5	7,5	12
Characteristic resistance in non-cracked concrete C20/25	$N_{Rk,p}$	[kN]	7,5	12	12	16	16	25
Increasing factor for $N_{Rk,p}$ in cracked and non-cracked concrete	Ψ_c	C30/37	1,15					
		C40/50	1,27					
		C50/60	1,36					
Installation safety factor	γ_2	[-]	1,4				1,2	
Concrete cone and splitting failure								
Effective anchorage depth	h_{ef}	[mm]	40	57	51,4	64,1	57,2	82,7
Characteristic spacing	$s_{cr,N} = s_{cr,sp}$	[mm]	3 h_{ef}					
Characteristic edge distance	$c_{cr,N} = c_{cr,sp}$	[mm]	1,5 h_{ef}					
Installation safety factor	γ_2	[-]	1,4				1,2	

Table C2: Displacements under tension loads

Anchor size			PB10		PB12		PB16	
Tension load in cracked concrete	N	[kN]	1,0	2,0	1,4	1,7	3,0	4,8
Displacement	δ_{N0}	[mm]	0,2				0,3	
Displacement	$\delta_{N\infty}$	[mm]	0,9	0,5	0,4	1,0	1,0	1,3
Tension load in non-cracked concrete	N	[kN]	2,6	4,1	3,1	4,1	6,3	9,9
Displacement	δ_{N0}	[mm]	0,2				0,3	
Displacement	$\delta_{N\infty}$	[mm]	0,5		0,4		1,0	1,3

Würth Concrete Screw Pointe Bleu PB

Performances
Characteristic values under tension loads
Displacements under tension loads

Annex C 1

Table C3: Characteristic Values under shear loads

Anchor size		PB10	PB12	PB16			
Steel failure without lever arm							
Characteristic resistance	$V_{Rk,s}$ [kN]	27	35,8	55,1			
Partial safety factor	γ_{Ms} [-]	1,5					
Steel failure with lever arm							
Characteristic bending resistance	$M^0_{Rk,s}$ [Nm]	77	128	306			
Partial safety factor	γ_{Ms} [-]	1,5					
Concrete pryout failure							
Factor in equation (5.6) of ETAG 001, Annex C, section 5.2.3.3	k [-]	1,0	2,0				
Installation safety factor	γ_2 [-]	1,0					
Concrete edge failure							
Effective length of the anchor in shear loading	l_f [mm]	40	57	51,4	64,1	57,2	82,7
Outside diameter of the anchor	d_{nom} [mm]	10	12	16			
Installation safety factor	γ_2 [-]	1,0					

Table C4: Displacements under shear loads

Anchor size		PB10	PB12	PB16
Tension load in cracked and non-cracked concrete	V [kN]	13	17	26
Displacement	δ_{N0} [mm]	1,4	2,0	2,5
Displacement	$\delta_{N\infty}$ [mm]	2,1	3,0	3,8

Information for design of anchorage under shear load:

In general, the conditions given in ETAG 001, Annex C, section 4.2.2.1 a) and section 4.2.2.2 b) are not fulfilled because the diameter of clearance hole in the fixture according to Table B1 is greater than the values given in Annex C Table 4.1 for the corresponding diameter of the anchor.

However for each specific anchor length the manufacturer may specify the thickness of fixture for which these conditions are fulfilled.

Würth Concrete Screw Pointe Bleu PB

Performances
Characteristic values under shear loads
Displacements under shear loads

Annex C 2