Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment

ETA-20/0886 of 2 August 2021

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	Power actuated drywall fasteners
Product family to which the construction product belongs	Power-actuated fastener for multiple use in concrete for non-structural applications
Manufacturer	Hilti AG Feldkircherstraße 100 9494 Schaan FÜRSTENTUM LIECHTENSTEIN
Manufacturing plant	Hilti Werke
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	EAD 330083-04-0601, Edition 03/2021

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Specific Part

1 Technical description of the product

The Powder actuated drywall fasteners X-P 17 B3 MX and X-P 20 B3 MX are made of galvanized steel. The power-actuated fasteners are driven in the concrete by using a powder-actuated fastening tool BX3. They are anchored in the concrete by sintering and mechanical interlock.

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 fastener 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 fasteners 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
Characteristics resistance of Fastener type 4	
- Characteristic resistance	V_{Rk} see Annex C1
- minimum thickness of concrete member, effective anchorage depth	h_{min}, h_{ef} see Annex B2
- Spacing, edge distances, minimum thickness of fixture	c_{min}, s_{min}, min t_{fix} see Annex C1

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	No performance assessed.

3.3 Aspects of durability linked with the Basic Works Requirements

Essential characteristic	Performance
Durability	See Annex B1

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

In accordance with EAD No. 330084-04-0601, the applicable European legal act is: 1997/463/EC (EU).

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 control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 2 August 2021 by Deutsches Institut für Bautechnik

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Head of Section

beglaubigt:
Baderschneider

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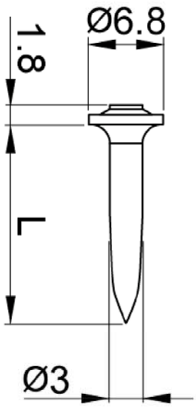
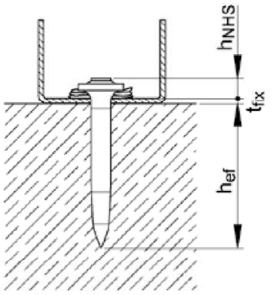
Power-actuated fasteners for fastening drywall tracks

X-P B3 magazined fastener	Dimensions
	
Nail range: X-P 17 B3 MX, X-P 20 B3 MX 	

		X-P 17 B3 MX	X-P 20 B3 MX
Shank length L	[mm]	17	20
Total length	[mm]	18.8	21.8
Shank diameter	[mm]	3	3
Head diameter	[mm]	6.8	6.8
Material of nail	[-]	Hardened carbon steel, Rockwell hardness 57.5 HRC, galvanized > 5 µm	

Installed condition



Power actuated drywall fasteners	Annex A1
Product description: Products, dimensions, materials and installed condition	

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Specification of intended use

Anchorages subject to:

- Shear dead loads of drywalls tracks acting on the fastener.
- Fastenings of metal tracks with a thickness of 0,6 mm ≤ t_{fix} ≤ 1,0 mm and a tensile strength of R_m ≥ 260 N/mm².

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000.
- Strength classes C20/25 to C45/55 according to EN 206-1:2000.
- Cracked and non-cracked concrete.
- Two-dimensional load-bearing structures (slabs and walls).

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions
- Minimum temperature: - 40 °C
- Maximum temperature: + 80 °C

Design:

- Conditions:

  Number of fixing points n_1 ≥ 5,
  Number of fasteners per fixing point n_2 = 1,
  Design shear value of action per fixing point $V_{Ed,lim}$ ≤ 0,6 kN

- Design: $H \cdot s \leq V_{Rk} / (\gamma_M \cdot \gamma_F)$

with

H	=	horizontal load per meter acting on the drywall track
s	=	spacing of the fasteners in meter
V_{Rk}	=	characteristic shear load according to Annex C1
γ_M	=	partial safety factor for fastener resistance
γ_F	=	partial safety factor for acting loads

Installation:

Fastener installation carried out by appropriately qualified personnel

Damages on the concrete surface, caused by setting defects, have to be repaired according to technical rules, e.g. EN 1504-3:2005. A new fastener is set at a minimum distance away of ≥ 150 mm and ≥ 3 h_{ef} of the edge of the damaged surface.

Power actuated drywall fasteners	Annex B1
Intended use: Specification	

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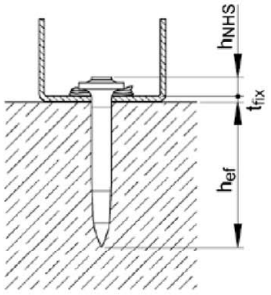
Table 3: Concrete parameters

Power-actuated fastener		X-P 17 B3 MX	X-P 20 B3 MX
Minimum concrete strength class	[-]	C20/25	
Maximum concrete strength class	[-]	C45/55	
Minimum thickness of concrete member h_{min}	[mm]	80	

Table 4: Installation parameters

Power-actuated fastener	Effective anchorage depth h_{ef} [mm]	Fastener standoff h_{NHS} [mm]
X-P 17 B3 MX	≥ 11	≤ 6.0
X-P 20 B3 MX		



Nail length selection

Appropriate nail length to be selected according to Table 4, see Instruction for use, Annex B4.

Power actuated drywall fasteners	Annex B2
Intended use: Concrete strength class and installation parameters	

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Power-actuated fastening tool

Fastening tool BX3 with nails
X-P17 B3 MX, X-P20 B3 MX

Fastening tool BX3:
fully automatic, mechanical driven

collated nails
X-P17 B3 MX, X-P20 B3 MX

Power actuated drywall fasteners	Annex B3
Intended use: Power-actuated fastening tool	

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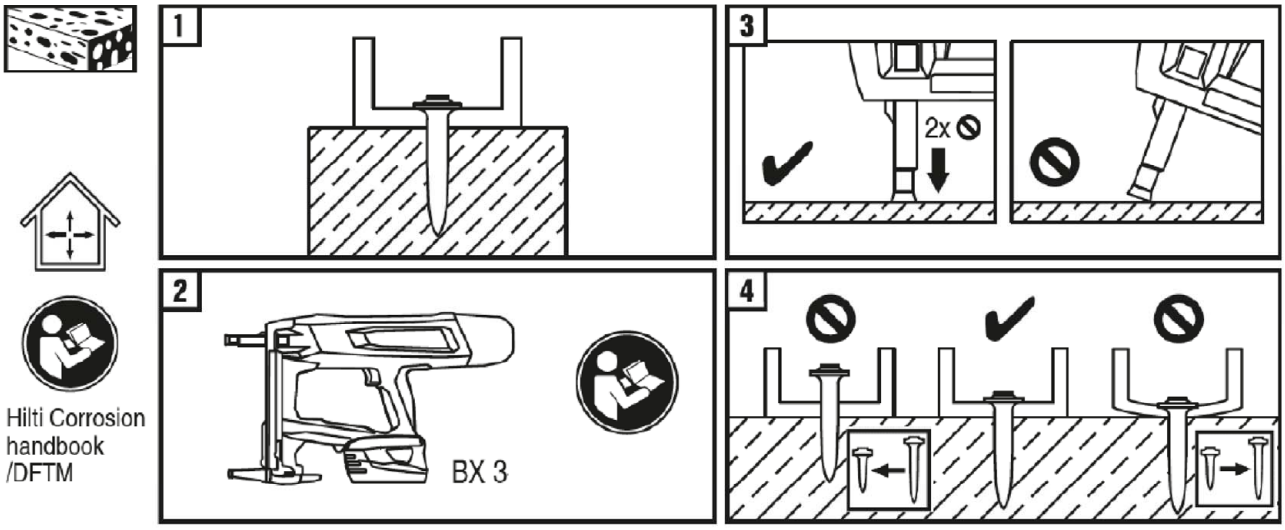
Instructions for use

X-P B3 MX



Fastener inspection – fastener stand-off

For the fastener inspection a measurement of the fastener standoff h_{NHS}, as shown in Table 4, Annex B2 has to be done.

Power actuated drywall fasteners	**Annex B4**
Intended use: Instructions for use	

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Table 5: Performances

Power-actuated fastener			**X-P 17 B3 MX**	**X-P 20 B3 MX**
Characteristic shear strength V_{Rk}		[kN]	0,8	
Partial factor γ_M [1]		[-]	1,5	
Partial factor γ_F [1]		[-]	1,4	
Minimum spacing s_{min}		[mm]	200	
Maximum spacing s_{max}		[mm]	600	
Minimum edge distance c_{min}		[mm]	150	
Thicknes of fixture	Min t_{fix}	[mm]	0,6	
	Max t_{fix}	[mm]	1,0	

[1] In absence of other national regulations