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European Technical Assessment Body
for construction products



European Technical Assessment

ETA-20/0886
of 7 June 2024

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

11 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 10/2022

This version replaces

ETA-20/0886 issued on 2 August 2021

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Specific Part

1 Technical description of the product

The Power actuated drywall fasteners X-P 17 B3 MX, X-P 17 B4 MX, X-P 20 B3 MX and X-P 20 B4 MX are made of galvanized steel. The power-actuated fasteners are driven in the concrete by using a power-actuated fastening tool BX3 or BX4. 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 <ul style="list-style-type: none"> - Characteristic resistance - minimum thickness of concrete member, effective anchorage depth - Spacing, edge distances, minimum thickness of fixture 	V_{Rk} see Annex C1 h_{min} , h_{ef} see Annex B2 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	See Annex C1

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



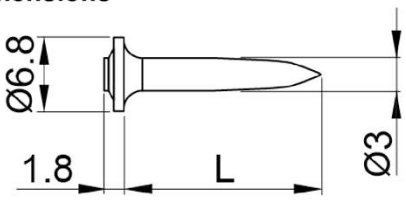

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 7. Juni 2024 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

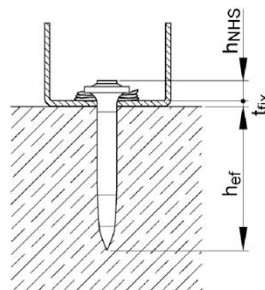
beglaubigt:
Baderschneider

Power-actuated fasteners for fastening drywall tracks

X-P B3/ B4 power actuated fastener	X-P B3/ B4 magazined fastener
	
Dimensions 	
	X-P 17 B3 MX, X-P 20 B3 MX
	X-P 17 B4 MX, X-P 20 B4 MX

		X-P 17 B3 MX X-P 17 B4 MX	X-P 20 B3 MX X-P 20 B4 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

Product description: Products, dimensions, materials and installed condition

Annex A1

Specification of intended use

Anchorage subject to:

- Shear dead loads of drywall tracks acting on the fastener.
- Fastenings of metal tracks with a thickness of $0,6 \text{ mm} \leq t \leq 1,0 \text{ mm}$ and a tensile strength of $R_m \geq 260 \text{ N/mm}^2$.
- Fire exposure

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: $- 40 \text{ °C}$
- Maximum temperature: $+ 80 \text{ °C}$

Design:

- Conditions:
 - Number of fixing points $n_1 \geq 5$,
 - Number of fasteners per fixing point $n_2 = 1$,
 - Design shear value of action per fixing point $V_{Ed,lim} \leq 0,6 \text{ kN}$
- Design: $H \cdot s \leq V_{R,k} / (\gamma_M \cdot \gamma_F)$

with

- H = horizontal load per meter acting on the drywall track
- s = spacing of the fasteners in meter
- $V_{R,k}$ = 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 $\geq 150 \text{ mm}$ and $\geq 3 h_{ef}$ of the edge of the damaged surface.

Power actuated drywall fasteners

Intended use: Specification

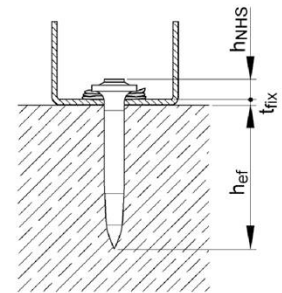
Annex B1

Table 3: Concrete parameters

Power-actuated fastener		X-P 17 B3 MX X-P 17 B4 MX	X-P 20 B3 MX X-P 20 B4 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, X-P 17 B4 MX	≥ 11	≤ 6,0
X-P 20 B3 MX, X-P 20 B4 MX		



Nail length selection

Appropriate nail length to be selected according to Table 4, see Instruction for use, Annex B5.

Power actuated drywall fasteners

Intended use: Concrete strength class and installation parameters

Annex B2

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

Intended use: Power-actuated fastening tool

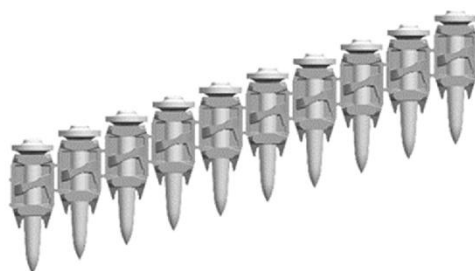
Annex B3

Power-actuated fastening tool

Fastening tool BX4 with nails
X-P17 B4 MX, X-P20 B4 MX



Fastening tool BX4:
fully automatic, mechanical driven



collated nails
X-P17 B4 MX, X-P20 B4 MX

Power actuated drywall fasteners

Intended use: Power-actuated fastening tool

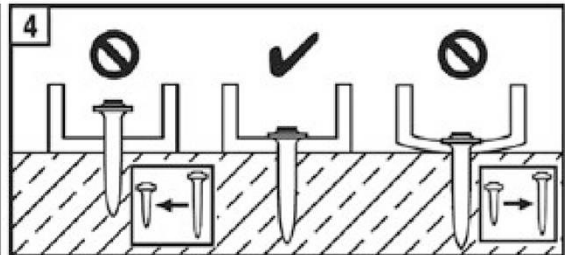
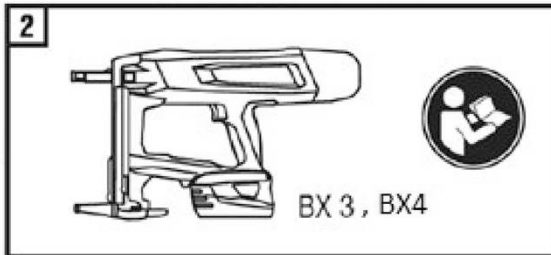
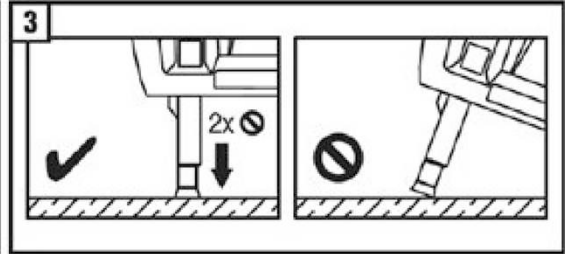
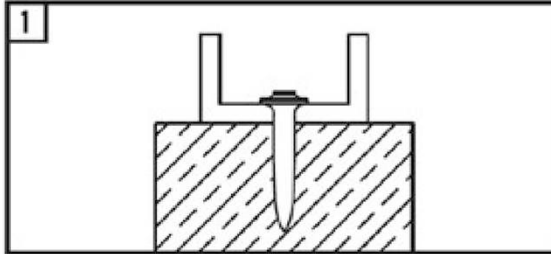
Annex B4

Instructions for use

X-P B3 MX, X-P B4 MX



Hilti Corrosion
handbook
/DFTM



Fastener inspection – fastener stand-off

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

Power actuated drywall fasteners

Intended use: Instructions for use

Annex B5

Table 5: Performances in cracked and non-cracked concrete

Power-actuated fastener		X-P 17 B3 MX	X-P 20 B3 MX
		X-P 17 B4 MX	X-P 20 B4 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	
Thickness of fixture	Min t_{fix}	[mm]	0,6
	Max t_{fix}	[mm]	1,0

¹⁾ In absence of other national regulations

Table 6: Fire resistance in cracked and non-cracked concrete

Power-actuated fastener		Fire duration	X-P 17 B4 MX	X-P 20 B4 MX
Characteristic shear strength $V_{Rk,fi}$	[kN]	30 min.	0,13	
		60 min.	0,12	
		90 min.	0,1	
		120 min.	0,05	
Partial factor γ_M^{-1}	[-]	1,0		
Partial factor γ_F^{-1}	[-]	1,0		
Minimum spacing $s_{min,fi}$	[mm]	200		
Maximum spacing s_{max}	[mm]	600		
Minimum edge distance $c_{min,fi}$	[mm]	150		
Thickness of fixture (incl. PE sealant)	Min t_{fix}	[mm]	0,6	
	Max t_{fix}	[mm]	1,0	

Power actuated drywall fasteners

Performances

Annex C1