

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-19/0439
of 21 July 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

KlebeAnker X1

Product family
to which the construction product belongs

Powder-actuated fastener for fixing of ETICS in concrete

Manufacturer

Austrotherm GmbH
Friedrich-Schmid-Straße 165
2754 Waldegg/Wopfing
ÖSTERREICH

Manufacturing plant

Plant 1

This European Technical Assessment
contains

9 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 330965-01-0601, edition 02/2020

This version replaces

ETA-19/0439 issued on 18 February 2020

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Specific Part

1 Technical description of the product

The KlebeAnker X1 (referred to in the following only as fixing element) consists of a plastic plate made of high-density polyethylene and a powder-actuated fastener which is driven into the concrete using a powder-actuated fastening tool with a cartridge as propelling charge. The powder actuated fasteners X-X1 32 P8 and X-X1 32 MX are made of tempered carbon steel with zinc plating. The components and the system setup of the product are 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 fixing element 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 fixing element of at least 25 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 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Resistance to pull-out failure of the nail	See Annex C1
Resistance to failure of the plastic part	See Annex C1
Minimum edge distance and spacing	See Annex C1
Displacement	See Annex C1
Durability of the plastic parts	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. 330965-01-0601 the applicable European legal act is: [97/463/EC]. The system to be applied is: 2+

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 with Deutsches Institut für Bautechnik.

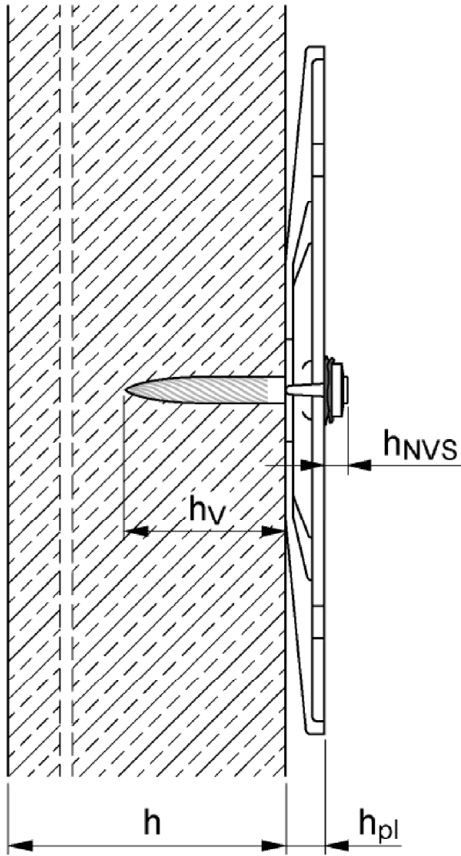
Issued in Berlin on 21 July 2021 by Deutsches Institut für Bautechnik

LBD Dipl.-Ing. Andreas Kummerow
 Head of Department

beglaubigt:
 Ziegler

Electronic copy of the ETA by DIBt: ETA-19/0439

Installed condition



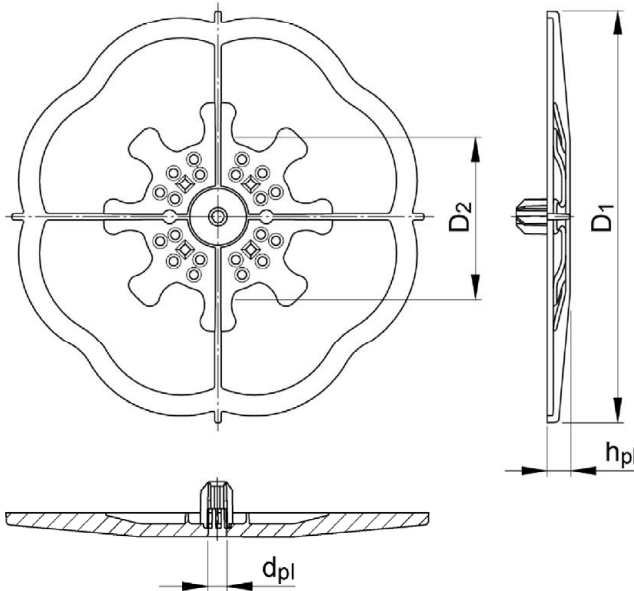
- h ... thickness of member (wall)
- h_v ... anchorage depth in concrete
- h_{NVS} ... nail head stand-off to the surface of the plastic plate ($h_{NVS} = 0$ to 4 mm)
- h_{pl} ... total height of plastic part

KlebeAnker X1

Product description
Installed condition

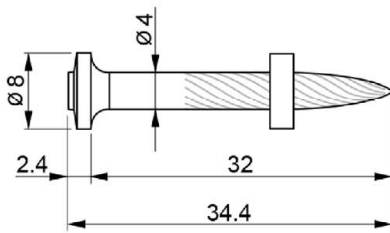
Annex A1

KlebeAnker X1 – Plastic plate

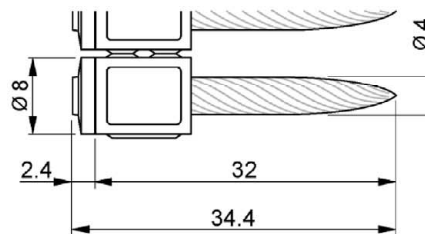


$D_1 = 105 \text{ mm}$
 $D_2 = 39 \text{ mm}$
 $h_{pl} = 6 \text{ mm}$
 $d_{pl} = 4.5 \text{ mm}$

KlebeAnker X1 – Powder-actuated fastener



Single fastener
 Hilti X-X1 32 P8
 with plastic guidance washer



Collated fastener
 Hilti X-X1 32 MX in plastic
 magazine strip

Table 1: Material

Description	Material
Plastic plate	Polyethylene PE-HD (High-Density), colour: black
Powder-actuated fastener X-X1 32 P8, X-X1 32 MX	Tempered carbon steel with a core hardness of 58 HRC Coating: zinc plating $\geq 5 \mu\text{m}$

KlebeAnker X1

Product description
 Dimensions and materials

Annex A2

Specification of intended use

Anchorage subject to:

- The fixing element may only be used for transmission of wind suction loads and shall not be used for the transmission of dead loads of the thermal insulation composite system (ETICS).

Base materials:

- Compacted reinforced or unreinforced normal weight concrete without fibres of strength classes C20/25 – C50/60 according to EN 206-1:2013+A1:2016.
- Uncoated concrete of new construction.

Temperature range:

- 0 °C to + 40 °C.

Use conditions (environmental conditions):

- Structures subject to dry conditions.
- Structures subject to external atmospheric exposure for insulation material thickness ≥ 50 mm.

Design:

- The anchorages are designed under the responsibility of an engineer experienced in anchorages.

- Design: $N_{Ed} \leq N_{Rd}$

with:

N_{Ed} ... design value of wind action

N_{Rd} ... design value of resistance of the fixing element,
either controlled by pull-out of the fastener ($N_{Rd,p} = N_{Rk,p} / \gamma_M$) or
failure of the plastic part ($N_{Rd,PI} = N_{Rk,PI} / \gamma_{MPI}$);

$N_{Rk,p}$ and $N_{Rk,PI}$ see Annex C1

$N_{Rd} = \min(N_{Rd,p}; N_{Rd,PI})$

- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the fixing elements is indicated on the design drawings.
- The fixing elements are only to be used for multiple fixings of thermal insulation composite systems.









Installation:

- The installation is only carried out according to the manufacturer's instructions, Annex B3.
- Fixing element installation is carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- The minimum setting temperature of the fixing element is 0 °C.
- Exposure to UV due to solar radiation of the fixing element not protected by rendering ≤ 6 weeks.

KlebeAnker X1

Intended use
Specification

Annex B1

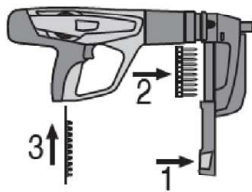
Powder-actuated fastening tools für Hilti powder-actuated fastener X-X1 32 P8	
Hilti DX 5 F8, DX 460 F8	Hilti DX 6 F8
	
<p>Fastener guide: X-5-460-F8 Piston: X-5-460-P8 or X-6-5-P8 Cartridges: 6.8/11 M10 Red (Yellow or Black)</p> 	<p>Fastener guide: X-6-F8 Piston: X-6-5-P8 Cartridges: DX 6 cartridge 6.8/11 M10 Red collated in Titanium plastic strip (or Black)</p> 
Powder-actuated fastening tools für Hilti powder-actuated fastener X-X1 32 MX	
Hilti DX 5 MX, DX 460 MX	Hilti DX 6 MX
	
<p>Fastener magazine: MX 72 Piston: X-5-460-P8 or X-6-5-P8 Cartridges: 6.8/11 M10 Red (Yellow or Black)</p> 	<p>Fastener magazine: MX 72-6 Piston: X-6-5-P8 Cartridges: DX 6 cartridge 6.8/11 M10 Red collated in Titanium plastic strip (or Black)</p> 
<p>Cartridge selection: DX 5 and DX 460: C20/25 – C50/60: Red (energy scale 6) DX 6: C20/25 – C50/60: DX 6 cartridge Titanium (Red, energy scale 6)</p> <p>The fixing elements are to be installed according to Annex B3. The driving energy can be fine adjusted at the fastening tool by means of a power regulation wheel. The following graph shows the energy overlap of the cartridges Yellow, Red and Black used for the fastening tools DX 5 and DX 460. Therefore, in case of lower strength concrete the Yellow Cartridge (energy scale 4) and in case of higher strength concrete the Black Cartridge (energy scale 7) may also be used. It further shows the energy overlap with the DX 6 cartridges. In general the DX 6 cartridge in the Titanium strip will provide sufficient driving energy to cover all concretes.</p>	
<div style="border: 1px solid black; padding: 2px; width: 40px; margin: 0 auto;">DX 5 DX 460</div>	<p>Yellow 1 Yellow 4 Red 1 Red 4 Black 1 Black 4</p>
<div style="border: 1px solid black; padding: 2px; width: 40px; margin: 0 auto;">DX 6</div>	<p>Titanium 3 Titanium 8 Black 6 Black 8</p>
<p>KlebeAnker X1</p>	
<p>Intended use Powder-actuated fastening tools and cartridge selection</p>	
<p>Annex B2</p>	

Instructions for use

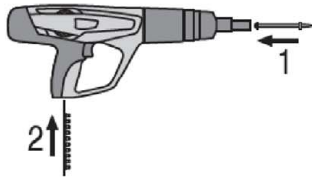
- The powder-actuated fastener Hilti X-X1 32 P8 is driven in the concrete by using the powder-actuated fastening tool Hilti DX 5 F8, Hilti DX 460 F8 or Hilti DX 6 F8 and a cartridge 6.8/11 M10 as propellant charge. The powder-actuated fastener Hilti X-X1 32 MX is driven in the concrete by using the powder-actuated fastening tool Hilti DX 5 MX, Hilti DX 460 MX or Hilti DX 6 MX and a cartridge 6.8/11 M10 as propellant charge.
- The Hilti powder-actuated fastening tools are used with the fastener guides and pistons as shown in Annex B2. The manufacturer provisions given in the operating instructions of the tools are observed. After feeding of the powder-actuated fasteners X-X1 32 MX and X-X1 32 P8 the plastic plate is plugged on the fastening tool before the fastener is driven.

DX 5 MX / DX 6 MX / DX 460 MX + X-X1 32 MX

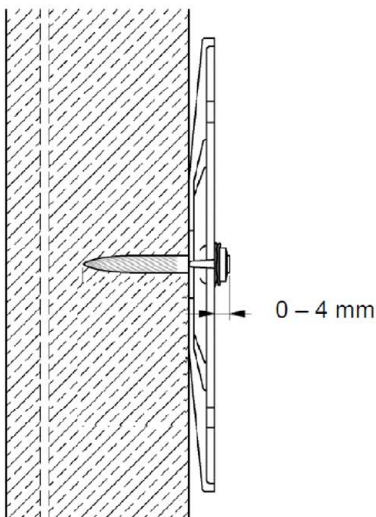
KlebeAnker X1



DX 5 F8 / DX 6 F8 / DX 460 F8 + X-X1 32 P8



- The driving energy shall be determined by means of control tests in order to achieve the required anchorage depth in the concrete. Correct anchorage depth is given by observation of the nail head stand-off $h_{NVS} = 0$ to 4 mm (Annex A1).



- Setting failures which can be immediately recognized after driving in the fastener (e.g. falling parts not anchored in the concrete) shall be replaced by a new fixing element.

KlebeAnker X1

Intended use
Instructions for use

Annex B3

Table 2: Characteristic resistance, spacing and edge distance

KlebeAnker X1			
Characteristic resistance – fastener pull-out	$N_{Rk,p}$	[kN]	0.6
Partial safety factor – fastener pull-out ¹⁾	γ_M	[-]	2.0
Characteristic resistance – plastic plate	$N_{Rk,PI}$	[kN]	0.6
Partial safety factor – plastic plate ¹⁾	γ_{MPI}	[-]	2.0
Minimum spacing	s_{min}	[mm]	100
Minimum edge distance	c_{min}	[mm]	100
Minimum thickness of concrete member	h_{min}	[mm]	100

¹⁾ In the absence of national regulations

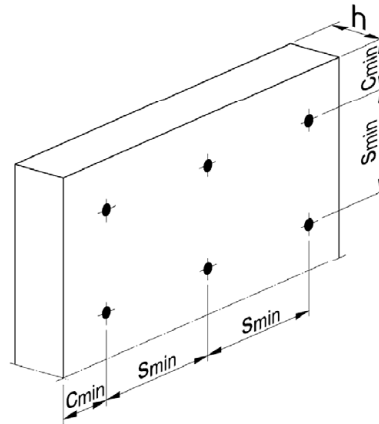


Table 3: Displacements

Fixing element	Base material	Tension load N [kN]	Displacement $\delta_0(N)$ ²⁾ [mm]
KlebeAnker X1	Concrete C20/25 – C50/60	0.20	0.5

²⁾ Linear interpolation between $\delta_0(N)$ and $\delta_0(0) = 0$ is possible

KlebeAnker X1

Performances
Characteristic resistance, displacements

Annex C1