Deutsches Institut für Bautechnik

Public-law institution jointly founded by the federal states and the Federation

European Technical Assessment Body for construction products

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European Technical Assessment ETA-26/0027 of 9 March 2026

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	Wedge Anchor KVK
Product family to which the construction product belongs	Mechanical fastener for use in concrete
Manufacturer	Akalm (Shandong) Building Technology Co., Ltd. No. 3 Shencheng Road, Economic Development-Zone, Sishui Country Jining City SHANDONG VOLKSREPUBLIK CHINA
Manufacturing plant	Akalm Plant 1 & 2
This European Technical Assessment contains	12 pages including 3 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Article 95(4) of Regulation (EU) 2024/3110, on the basis of	EAD 330232-02-0601

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Specific Part

1 Technical description of the product

The Wedge Anchor KVK in the sizes of M8, M10, M12 and M16 is a fastener made of galvanized steel, which is placed into a drilled hole and anchored by torque-controlled expansion.

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 fastener 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 to tension load (static and quasi-static loading)	See Annex C 1
Characteristic resistance to shear load (static and quasi-static loading)	See Annex C 1
Displacements	See Annex C 2
Stiffness	No performance assessed
Characteristic resistance for seismic performance category C1 and C2	No performance assessed

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

Essential characteristic	Performance
Durability	See Annex B 1

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

In accordance with the European Assessment Document EAD 330232-02-0601 the applicable European legal act is: [96/582/EC].

The system to be applied is: 1

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

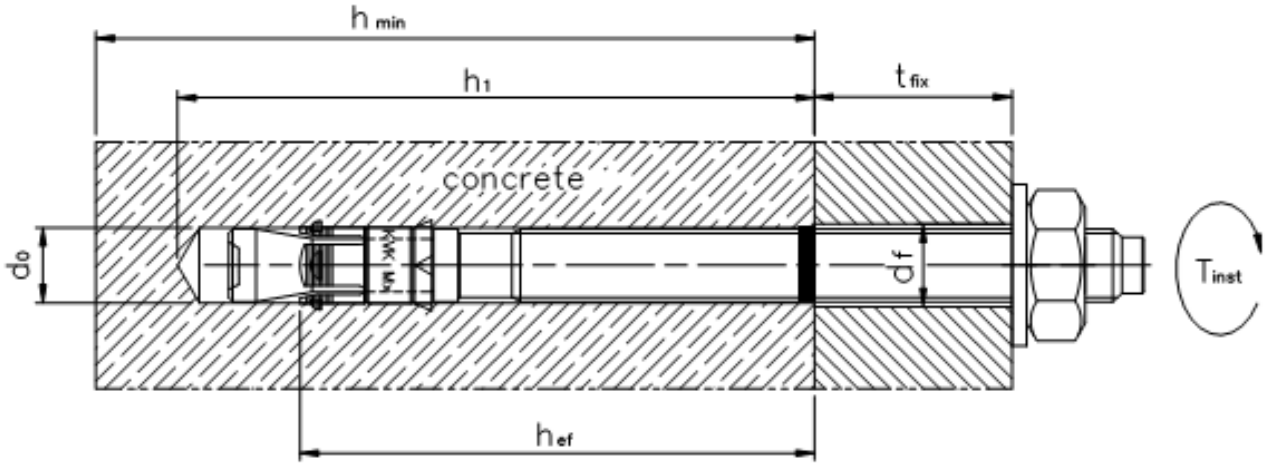
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 9 March 2026 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Ziegler

Installed anchor

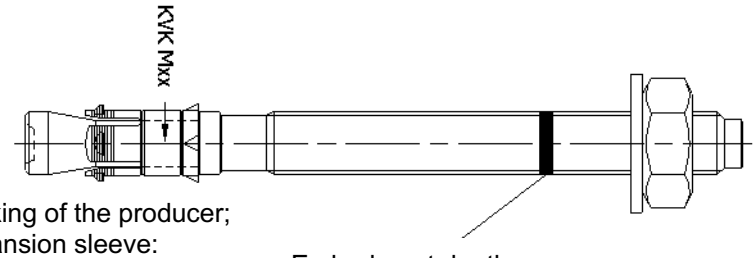


h_{ef} Effective anchorage depth
t_{fix} Thickness of fixtures
h_1 Drill hole depth
h_{min} Minimum thickness of concrete member

Wedge Anchor KVK	**Annex A 1**
Product description Installed condition	

Anchor types

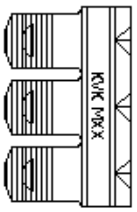
Marking of the wedge anchor KVK



Marking of the producer;
Expansion sleeve:
Anchor type (KVK)
Size of the anchor (Mxx)

Embedment depth
Additional colour marking for M8…M16

Expansion sleeve



Dimensions of wedge anchor KVK

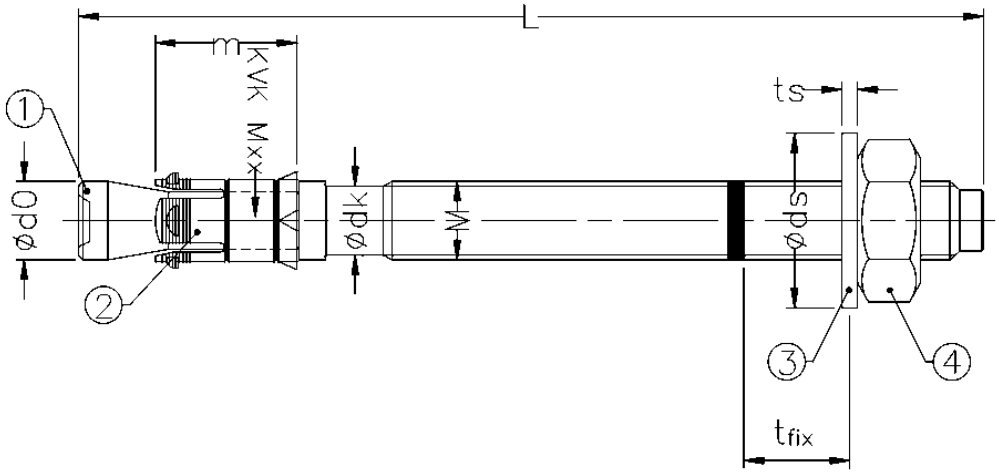


Table A1: Dimensions of the anchor

Type of anchor / size				KVK M8	KVK M10	KVK M12	KVK M16
1	Bolt	M	[-]	M8	M10	M12	M16
		$ød_0$	[mm]	8,0	10,0	12,0	16,0
		$ød_K$	[mm]	7,05	8,90	10,7	14,6
2	Expansion sleeve	M	[mm]	13,3	17,9	21,0	24,0
		s	[mm]	1,0	1,2	1,2	2,0
3	Washer	t_S	[mm]	1,60	2,00	2,50	3,00
		$ød_S$	[mm]	17,0	21,0	24,0	30,0
4	Hexagon nut	SW	[-]	13	17	19	24
	Thickness of fixture	t_{fix} ≥	[mm]	0	0	0	0
		t_{fix} ≤	[mm]	210	260	315	400
	Length of anchor	L_{min}	[mm]	71	89	102	126
		L_{max}	[mm]	285	350	420	530

Wedge Anchor KVK

Annex A 2

Product description
Anchor types - marking, dimensions

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Table A2: Materials

Part	Designation	Material	Coating
1	Conical bolt	Cold formed steel	Zinc plated $\geq 5\ \mu m$ according to EN ISO 4042:2022
2	Expansion sleeve	Carbon steel	
3	Washer	Cold strip	
4	Hexagon nut	Steel, strength class 8 according to EN ISO 898-2:2022	

Table A3: Steel strength of the conical bolt

	M8	M10	M12	M16
nominal characteristic steel ultimate strength f_{uk}	700	620	880	660
nominal characteristic steel yield strength f_{yk}	580	410	750	540

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Specifications of intended use

Anchorages subject to:

- Static and quasi-static loads: sizes M8, M10, M12, M16.

Base materials:

- Compacted reinforced or unreinforced normal weight concrete without fibres according to EN 206:2013+A2:2021.
- Strength classes C20/25 to C50/60 according to EN 206:2013+A2:2021.
- Uncracked concrete: sizes M8, M10, M12, M16.

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions

Design:

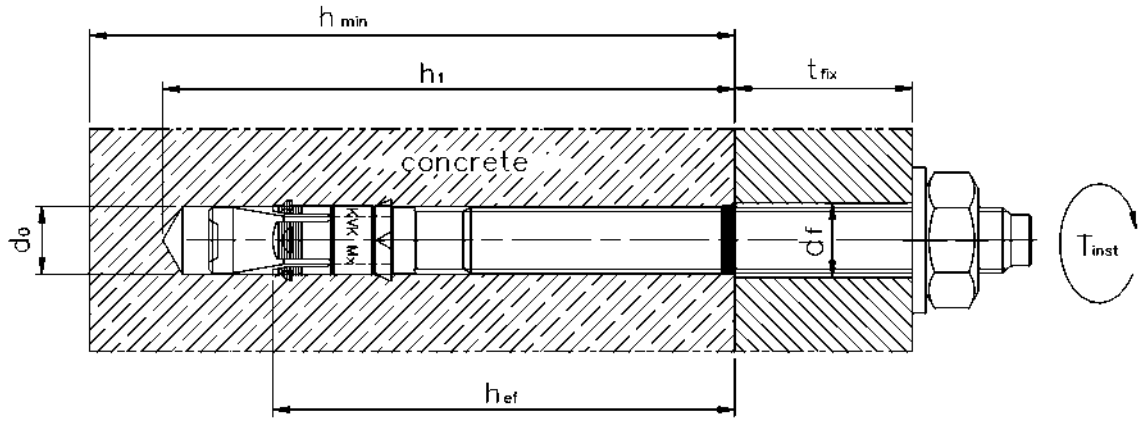
- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e. g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages are designed in accordance with EN 1992-4:2018.

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Check of concrete being well compacted, e.g. without significant voids.
- 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 in the direction of load application,
- Cleaning the hole of drilling dust,
- Anchor installation such that the effective anchorage depth is complied with. This compliance is ensured when the embedment mark of the anchor does no more exceed the concrete surface.

Wedge Anchor KVK	**Annex B 1**
Intended Use Specifications	

Table B1: Installation parameters



Type of anchor / size			KVK M8	KVK M10	KVK M12	KVK M16
Nominal drill hole diameter	d_0	[mm]	8,0	10,0	12,0	16,0
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45	10,45	12,45	16,50
Effective anchorage depth	h_{ef}	[mm]	45	60	70	85
Depth of drill hole	$h_1 \geq$	[mm]	65	80	95	115
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	9,0	12,0	14,0	18,0
Required installation torque	T_{inst}	[Nm]	15	45	80	130
Wrench size	SW	[-]	13	17	19	24

Table B2: Minimum thickness of concrete member, minimum spacing and edge distances

Type of anchor / size			KVK M8	KVK M10	KVK M12	KVK M16
Minimum thickness of concrete member	h_{min}	[mm]	100	120	140	170
Uncracked concrete						
Minimum spacing	s_{min}	[mm]	60	75	100	115
	for c $\geq$	[mm]	100	150	165	225

Wedge Anchor KVK

Intended Use
Installation parameters

Annex B 2

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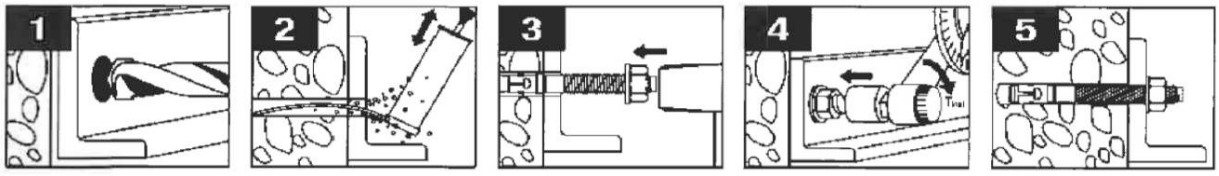
Installation instructions for the Wedge Anchor KVK



1 Drill hole with hammer drill
2 Clean hole of drilling dust
3 Hammer in the anchor
4 Apply the required installation torque by using a torque wrench
5 Fixed anchor after installation

Wedge Anchor KVK	**Annex B 3**
Intended Use Installation instructions	

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Table C1: Characteristic values of resistance under tension loads in uncracked concrete (Design method A)

Type of anchor / size				KVK M8	KVK M10	KVK M12	KVK M16
Installation safety factor		γ_{inst}	[-]	1,2	1,2	1,4	1,4
Steel failure							
Characteristic resistance		$N_{Rk,s}$	[kN]	18,0	25,0	32,0	68,0
Pullout failure							
Characteristic resistance in uncracked concrete		$N_{Rk,p}$	[kN]	9,0	12,0	16,0	30,0
Increasing factor for concrete $N_{Rk,p} = \Psi_c \times N_{Rk,p}$ (C20/25)	C30/37	ψ_C	[-]	1,22			
	C40/50		[-]	1,41			
	C50/60		[-]	1,55			
Splitting failure							
Characteristic resistance in uncracked concrete C20/25		$N^0_{Rk,sp}$	[kN]	Min ($N_{Rk,p}$; $N^0_{Rk,c}$ [1)])			
Edge distance		$c_{cr,sp}$	[mm]	68	140	205	300
Spacing		$s_{cr,sp}$	[mm]	135	280	410	600
Concrete cone failure							
Factor uncracked concrete		$k_{ucr,N}$	[-]	11,0			
Effective embedment depth		h_{ef}	[mm]	45	60	70	85
Edge distance		$c_{cr,N}$	[mm]	68	90	105	128
Spacing		$s_{cr,N}$	[mm]	135	180	210	255

[1)] $N^0_{Rk,c}$ according to EN 1992-4:2018

Table C2: Characteristic values of resistance under shear loads in uncracked concrete (Design method A)

Type of anchor / size			KVK M8	KVK M10	KVK M12	KVK M16
Steel failure without lever arm						
Characteristic resistance	$V^0_{Rk,s}$	[kN]	9,0	13,0	25,0	34,0
Ductility factor	k_7	[-]	1,0			
Steel failure with lever arm						
Characteristic bending moment	$M^0_{Rk,s}$	[Nm]	16,0	29,0	65,0	121,0
Concrete pryout failure						
Pryout factor	k_8	[-]	1,0	2,0	2,0	2,0
Concrete edge failure						
Effective length of anchor in shear loading	l_f	[mm]	45	60	70	85
Effective external diameter of anchor	d_{nom}	[mm]	8,0	10,0	12,0	16,0

Wedge Anchor KVK	**Annex C 1**
Performances Design method A - characteristic values of resistance under tension loads Characteristic values of resistance under shear loads	

Table C3: Displacements under tension load

Type of anchor / size			KVK M8	KVK M10	KVK M12	KVK M16
Effective anchorage depth	h_{ef}	[mm]	45	60	70	85
Tension load C20/25	N	[kN]	4,3	8,0	8,0	16,6
Displacements	δ_{N0}	[mm]	0,03	0,01	0,05	0,15
	$\delta_{N\infty}$	[mm]	0,86			

Table C4: Displacements under shear load

Type of anchor / size			KVK M8	KVK M10	KVK M12	KVK M16
Shear load C20/25	V	[kN]	4,9	9,1	12,5	22,2
Displacements	δ_{V0}	[mm]	1,23	2,77	1,22	2,56
	$\delta_{V\infty}$	[mm]	1,85	4,16	1,83	3,84