

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-14/0390
of 21 May 2019

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

WAKAI WDN 6-40 and WDN 6-65

Product family
to which the construction product belongs

Deformation controlled expansion anchor for multiple use
in concrete for non-structural applications

Manufacturer

WAKAI GmbH
Mainzer Landstraße 49
60329 Frankfurt am Main
DEUTSCHLAND

Manufacturing plant

Wakai

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 330747-00-0601

This version replaces

ETA-14/0390 issued on 26 April 2016

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Specific Part

1 Technical description of the product

The Wakai WDN 6-40 and WDN 6-65 is a deformation controlled anchor made of galvanized steel.

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)

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

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	See Annex C 1

3.3 Safety in use (BWR 4)

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

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

In accordance with EAD 330747-00-0601 the applicable European legal act is: [97/161/EC].

The system to be applied is: 2+

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5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

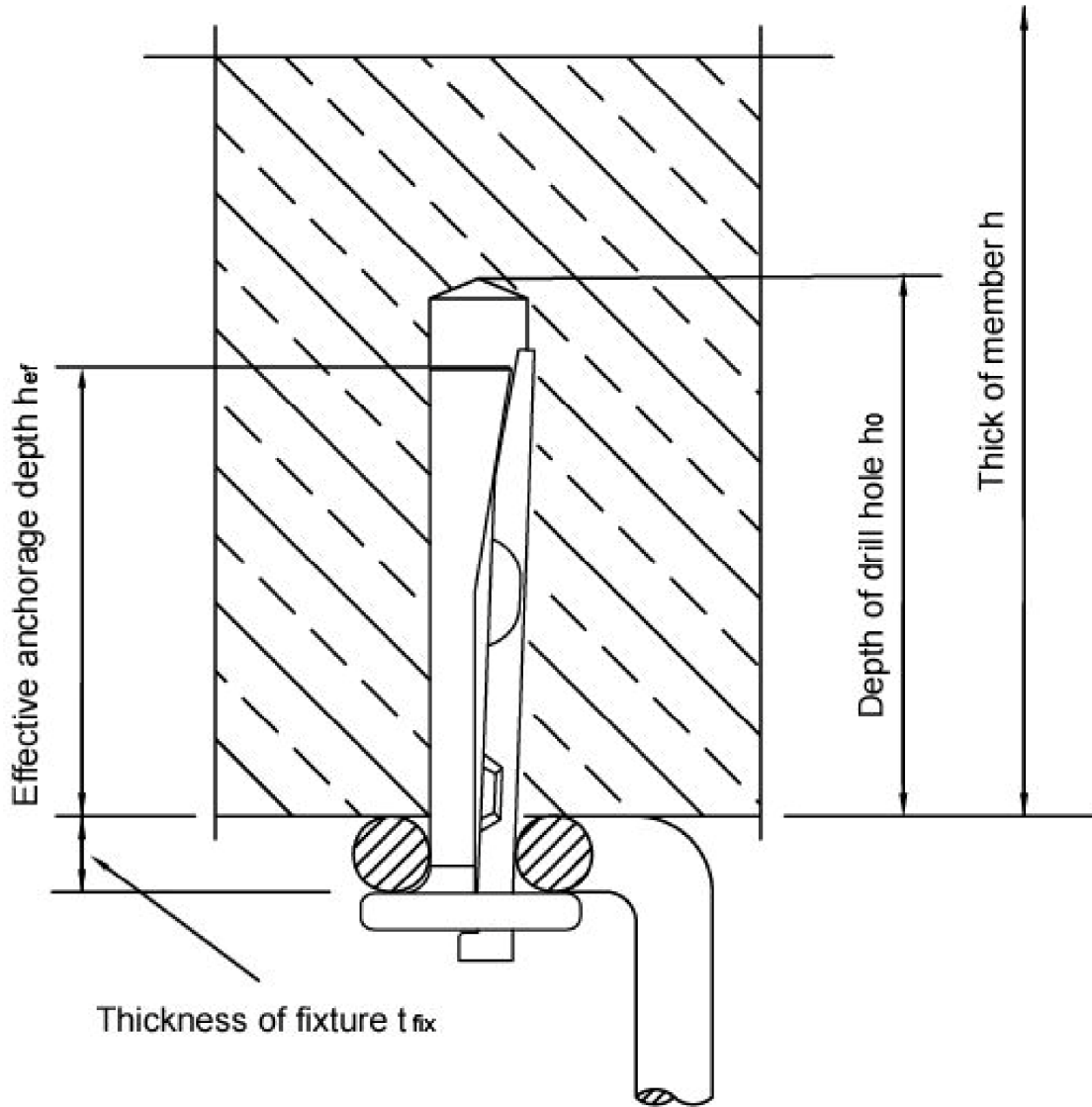
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 21 May 2019 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Lange

Installed anchor



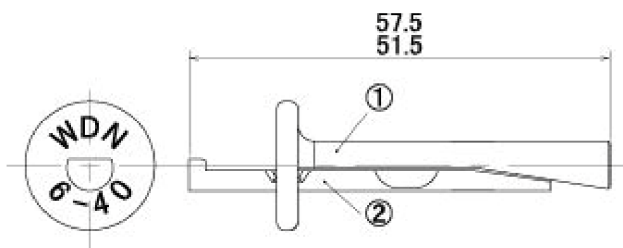
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WAKAI WDN 6-40 and WDN 6-65

Product description
Installed condition

Annex A 1

WAKAI WDN 6-40



WAKAI WDN 6-65

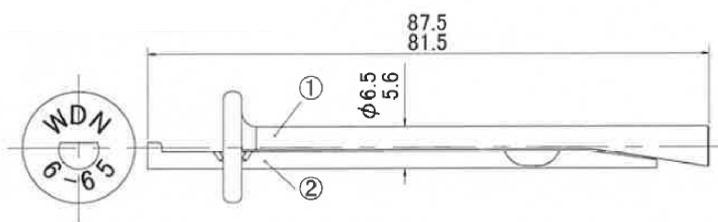


Table A1: Materials

Part	Designation	Material	tensile strength f_{uk} [N/mm ²]
1	Anchor shaft	cold forming steel, ML08AL, zinc coated	394
2	Expansion pin	Galvanized steel, C1045	630

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WAKAI WDN 6-40 and WDN 6-65

Product description
Materials

Annex A 2

Specifications of intended use

Anchorage subject to:

- Use in concrete for redundant non-structural systems only.
- Static and quasi-static action.
- Fire exposure only for strength classes C20/25 to C50/60

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206:2013.
- Strength classes C20/25 to C50/60 according to EN 206:2013.

Use conditions (Environmental conditions):

- Anchorages 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 under static or quasi-static actions are designed in accordance with EN 1992-4:2018, simplified Design method C

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- The anchor may only be set once

WAKAI WDN 6-40 and WDN 6-65

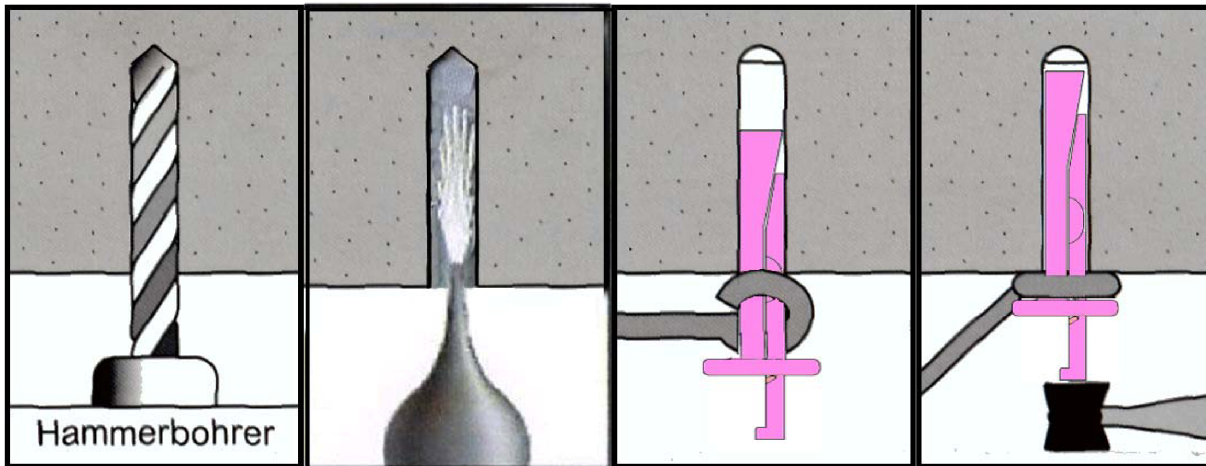
Annex B 1

Intended Use
Specifications

Table B1: Installation parameters

			WDN 6-40	WDN 6-65
Anchor size			6	6
Nominal drill hole diameter	d_0	[mm]	6	6
Maximum cutting diameter of the drill	$d_{cut} \leq$	[mm]	6,4	
Depth of the drill hole to the deepest point	$h_1 \geq$	[mm]	40	40
Effective anchorage depth	h_{ef}	[mm]	32	32
Maximum thickness of fixture	$t_{fix} \leq$	[mm]	5	30
Minimum thickness of base material	h_{min}	[mm]	80	80
Minimum spacing	s_{min}	[mm]	200	200
Minimum edge distance	c_{min}	[mm]	150	150

Installation instructions



Hammer drilling only – keep installation parameters

Blow out dust and fragments

Install the anchor through the fixture into the clean drill hole

Drive-in Expansion Pin fully by impact with hammer blows

WAKAI WDN 6-40 and WDN 6-65

Intended Use
Installation parameters and instructions

Annex B 2

Table C1: Characteristic values for multiple use for non-structural applications design method C

Anchor size			WAKAI WDN 6-40 and WDN 6-65
Installation safety factor	γ_{inst}	[-]	1,0
Characteristic spacing	s_{cr}	[mm]	200
Characteristic edge distance	c_{cr}	[mm]	150
Characteristic resistance for all load directions			
Characteristic resistance	F_{RK}	[kN]	5,0
Characteristic bending moment	$M^0_{RK,s}$	[Nm]	4,8

Table C2: Displacements under tension load and shear load

N [kN]	δ_{N0} [mm]	$\delta_{N\infty}$ [mm]	V [kN]	δ_{V0} [mm]	$\delta_{V\infty}$ [mm]
2,38	1,64	2,46	2,85	0,98	1,47

Table C3: Characteristic values under fire exposure in concrete C20/25 to C50/60 in any load direction without lever arm, design method C

Fire resistance class	WAKAI WDN 6-40 and WDN 6-65			
R30	Characteristic resistance	$F_{RK,fi}^{2)}$	[kN]	0,9
R60	Characteristic resistance	$F_{RK,fi}^{2)}$	[kN]	0,6
R90	Characteristic resistance	$F_{RK,fi}^{2)}$	[kN]	0,4
R120	Characteristic resistance	$F_{RK,fi}^{2)}$	[kN]	0,3
R30 to R120	Spacing	$s_{cr,fi}$	[mm]	200
	Edge distance ¹⁾	$c_{cr,fi}$	[mm]	150
¹⁾ In case of fire attack from more than one side, the edge distance shall be ≥ 300 mm				
²⁾ In absence of other national regulations the partial safety factor for resistance under fire exposure $\gamma_{M,fi}=1.0$ is recommended.				

WAKAI WDN 6-40 and WDN 6-65

Performances
Characteristic values, displacements

Annex C 1