

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 5 December 2014

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

WAKAI WDN 6-40

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

Guideline for European technical approval of "Metal
anchors for use in concrete", ETAG 001 Part 6: "Anchors
for multiple use for non-structural applications", April 2013,
used as European Assessment Document (EAD)
according to Article 66 Paragraph 3 of Regulation (EU)
No 305/2011.

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Specific Part

1 Technical description of the product

The Wakai WDN 6-40 is a deformation controlled anchor made of galvanised steel. An illustration of the product and intended use is given in A.

2 Specification of the intended use in accordance with the applicable EAD

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 4 Safety in use.

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Product performance for resistance to fire	No performance determined

3.3 Hygiene, health and the environment (BWR 3)

Not applicable.

3.4 Safety in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance in concrete for tension and shear loads, bending moments as well as edge distance and spacing	See Annex C 1
Displacements under tension and shear load	See Annex C 1

3.5 Protection against noise (BWR 5)

Not applicable.

3.6 Energy economy and heat retention (BWR 6)

Not applicable.

3.7 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was determined for this product.

3.8 General aspects

The verification of durability is part of testing the essential characteristics. Durability is only ensured if the specifications of intended use according to Annex B are taken into account.

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

According to Decision of the Commission of 17 February 1997 (97/161/EC) (OJ L062 of 04.03.97 p. 41-42), the system of assessment and verification of constancy of performance (see Annex V and Article 65 Paragraph 2 to Regulation (EU) No 305/2011) given in the following table applies.

Product	Intended use	Level or class	System
Metal anchors for use in concrete (heavy-duty type)	For fixing and/or supporting concrete structural elements or heavy units such as cladding and suspended ceilings	—	2+

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

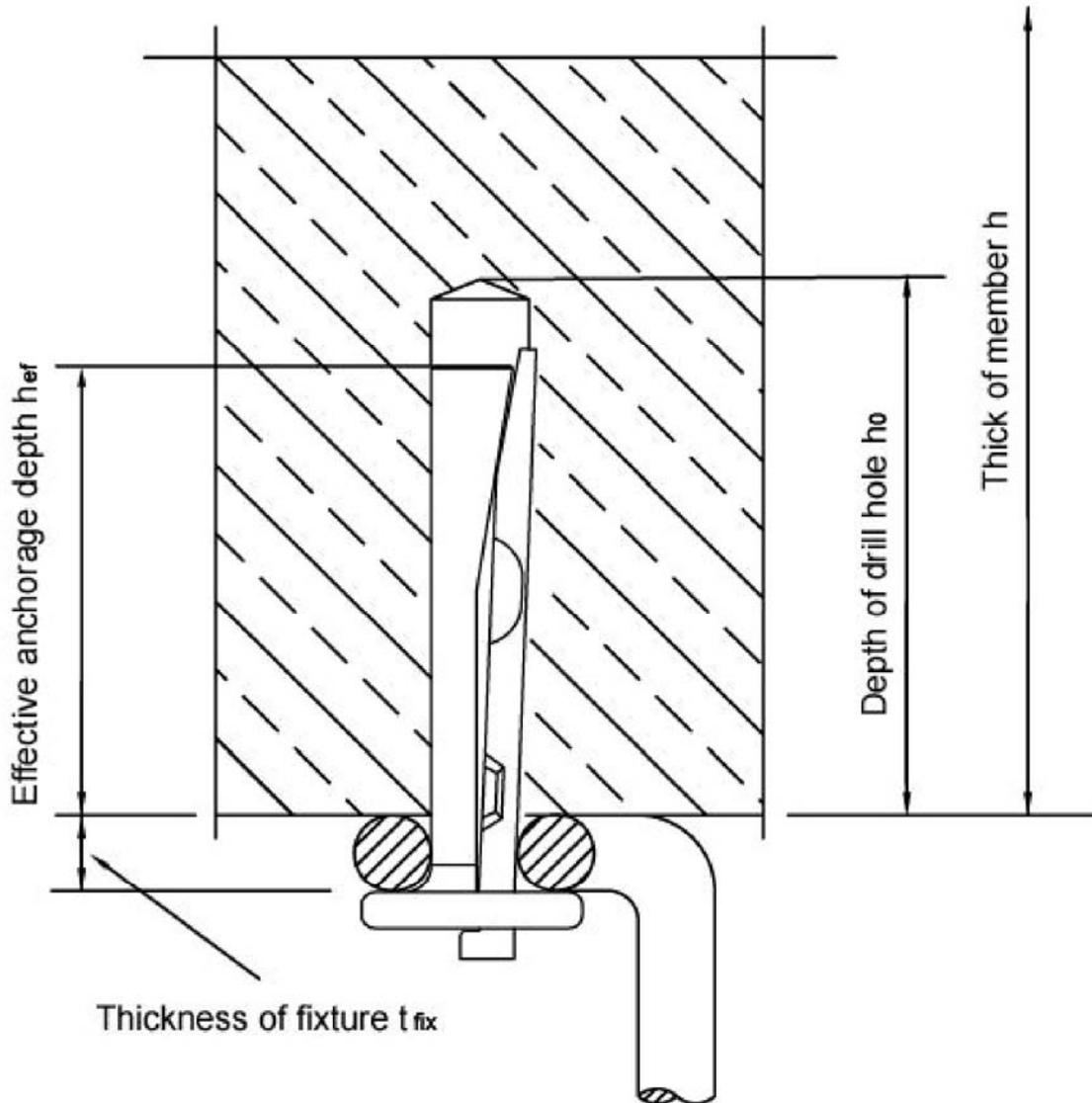
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 5 December 2014 by Deutsches Institut für Bautechnik

Uwe Bender
Head of Department

beglaubigt:
Lange

Installed anchor



WAKAI WDN 6-40

Product description
Installed condition

Annex A 1

WAKAI WDN 6-40

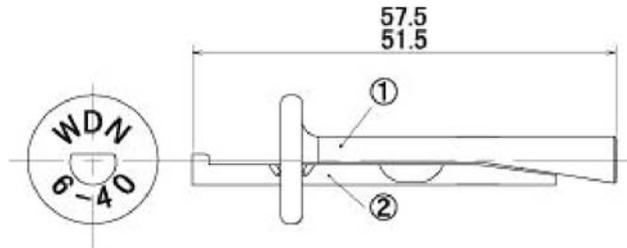


Table A1: Materials

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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Product description
Materials

Annex A 2

Specifications of intended use

Anchorage subject to:

- Static and quasi-static action.

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:
 - ETAG 001, Annex C, design method C, Edition August 2010 or
- Fasteners are only to be used for multiple use for non-structural application, according to ETAG 001 Part 6, Edition August 2010.

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

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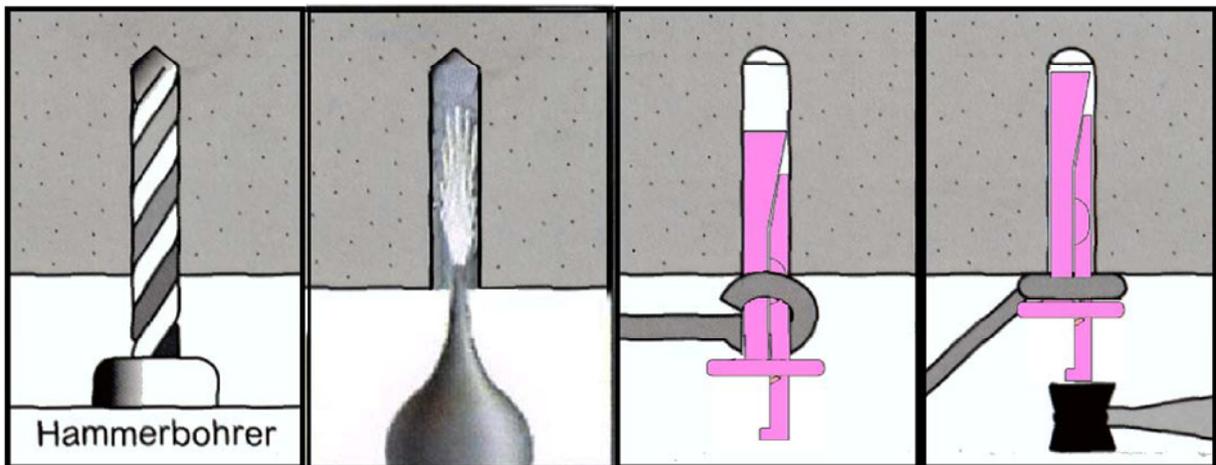
Intended Use
Specifications

Annex B 1

Table B1: Installation parameters

Anchor size			6
Nominal drill hole diameter	d_0	[mm]	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
Effective anchorage depth	h_{ef}	[mm]	32
Maximum thickness of fixture	$t_{fix \leq}$	[mm]	5
Minimum thickness of base material	h_{min}	[mm]	80
Minimum spacing	s_{min}	[mm]	200
Minimum edge distance	c_{min}	[mm]	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

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Intended Use
Installation parameters and instructions

Annex B 2

**Table C1: Characteristic values for multiple use for non-structural applications
(Design according to ETAG 001, Annex C, design method C)**

Anchor size			6
Installation safety factor	γ_2	[-]	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	$M_{Rk,s}^0$	[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

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Performance
for multiple use for non-structural applications
for design method C according to ETAG 001, Annex C

Annex C 1