Deutsches Institut für Bautechnik

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Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment

ETA-23/0659 of 4 September 2023

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	Würth Ceiling Anchor W-DN 2
Product family to which the construction product belongs	Fasteners for use in concrete for redundant non-structural systems
Manufacturer	Adolf Würth GmbH & Co. KG Reinhold-Würth-Straße 12-17 74653 Künzelsau
Manufacturing plant	Werk 1
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	330747-00-0601, Edition 06/2018

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Specific Part

1 Technical description of the product

The Würth Ceiling Anchor W-DN 2 of size 6x40 and 6x70 is an anchor made of galvanized steel which is placed into a drilled hole and anchored by deformation-controlled expansion.

Product and 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 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	See Annex C1

3.2 Safety in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance for all load directions and modes of failure for simplified design	See Annex C1
Durability	See Annex B1

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

In accordance with European Assessment Document EAD No. 330747-00-0601, the applicable European legal act is: [97/161/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 4 September 2023 by Deutsches Institut für Bautechnik

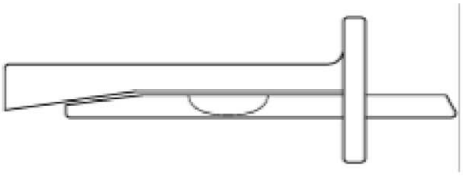
Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Tempel

Deutsches Institut für Bautechnik DIBt

Würth Ceiling Anchor W-DN 2

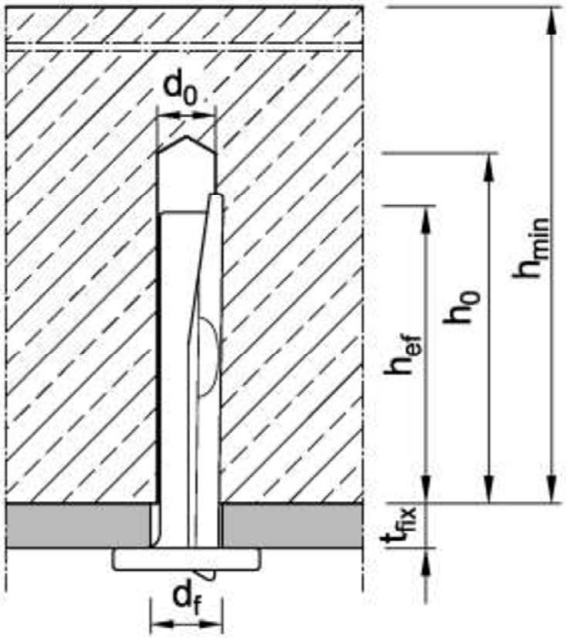
Ceiling Anchor W-DN 2 - 6x40



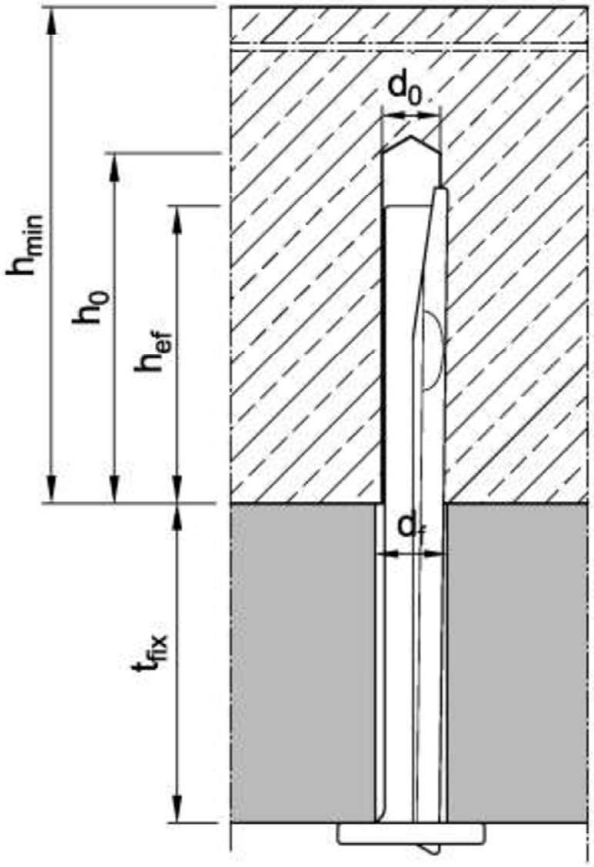
Ceiling Anchor W-DN 2 - 6x70

Installation condition

W-DN 2 - 6x40



W-DN 2 - 6x70



d_0 = nominal drill hole diameter
h_{ef} = effective anchorage depth
h_0 = depth of drill hole
h_{min} = minimum thickness of member
t_{fix} = thickness of fixture
d_f = diameter of clearance hole in the fixture

Würth Ceiling Anchor W-DN 2	**Annex A1**
Product description Product and installation condition	

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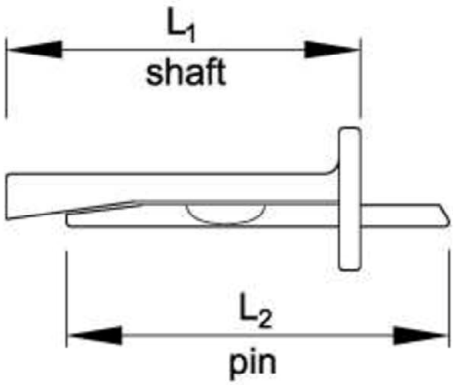
Marking



Marking:
e.g.: ◇ DN 6x40 or ◇ DN 6x70

◇ Identifying mark of manufacturing plant
DN Fastener idendity

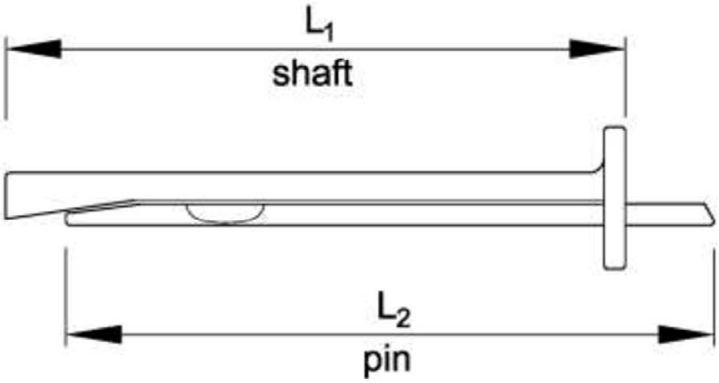


Table A1: Dimensions

Ceiling Anchor size W-DN 2			6x40	6x70
Length of shaft	L1	[mm]	40	70
Length of pin	L2	[mm]	43	73

Table A2: Materials

Part	Designation	Material
1	Shaft	Steel, galvanized ≥ 5 µm
2	Pin	Steel, galvanized ≥ 5 µm

Würth Ceiling Anchor W-DN 2	
Product description Marking, Dimension, Materials	**Annex A2**

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Specifications of intended use

Ceiling Anchor W-DN 2	6x40	6x70
Use only for redundant non-structural systems acc. to EN 1992-4:2018		
Static and quasi-static actions	✓	
Fire exposure	R30 to R120	
Base materials	compacted, reinforced or unreinforced normal weight concrete without fibres acc. to EN 206:2013 + A1:2016	
Strength classes	C20/25 to C50/60 acc. to EN 206:2013 + A1:2016	
Cracked and uncracked concrete	✓	

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 according to EN 1992-4:2018, Annex G, Method C

Installation:

- Hole drilling by hammer drill bit or hollow drill bit
- Anchor installation carried out by appropriately qualified personal and under supervision of the person responsible for technical matters of the site
- Positioning of the drill holes without damaging the reinforcement
- Overhead installation is permitted

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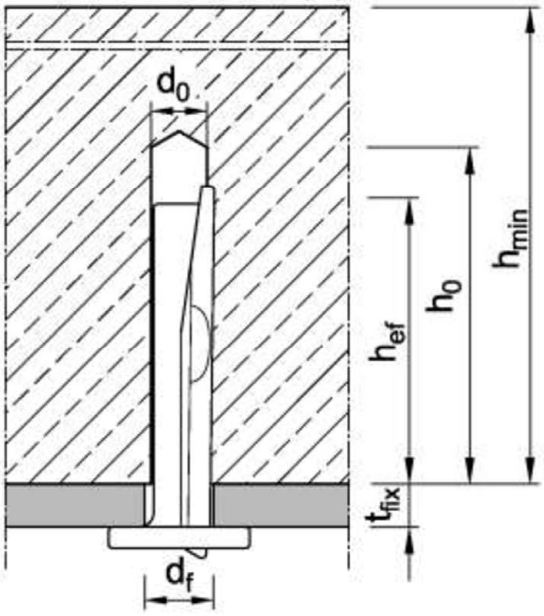
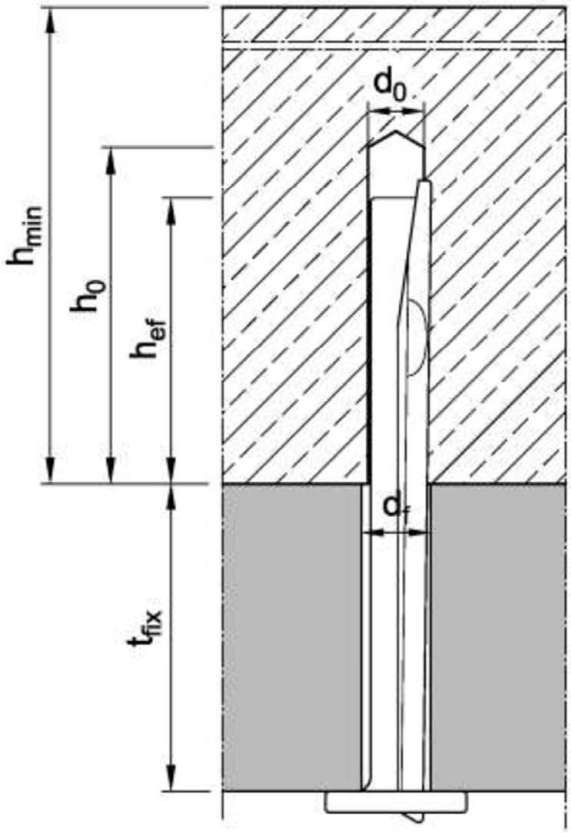
Table B1: Installation parameters

Ceiling Anchor W-DN 2			6x40	6x70
Nominal drill hole diameter	d_0	[mm]	6,0	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	6,4	
Depth of drill hole	$h_0 \geq$	[mm]	40	
Effective anchorage depth	$h_{ef} \geq$	[mm]	32	
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	7	
Thickness of fixture	$t_{fix} \leq$	[mm]	5	35
Minimum thickness of member	h_{min}	[mm]	80	
Minimum edge distance	c_{min}	[mm]	150	
Minimum spacing	s_{min}	[mm]	200	

W-DN 2 - 6x40



W-DN 2 - 6x70



Würth Ceiling Anchor W-DN 2

Intended use
Installation parameters

Annex B2

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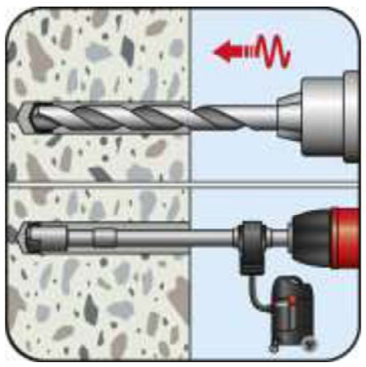
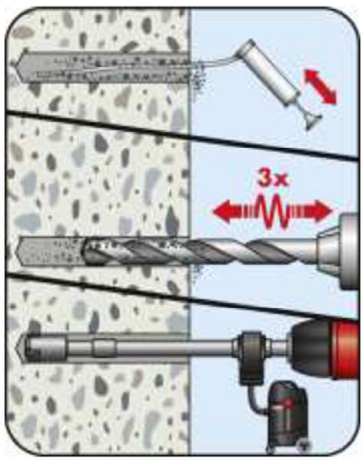
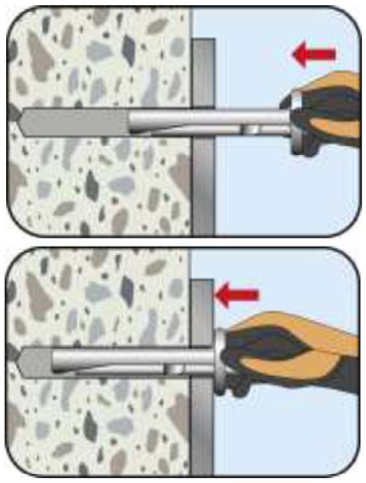
Installation instructions

1		Drill hole perpendicular to concrete surface. If using a vacuum drill bit an additional cleaning of the drill hole is not necessary
2		Blow out dust. Alternatively, vacuum clean down to the bottom of the hole. **or** When the drill hole depth is reached, pull out the drill bit whilst drill bit is rotating. To reduce the drill dust in the drill hole, repeat this step minimum three times, starting from the bottom of the drill hole. **or** Using a vacuum drill bit: an additional cleaning of the drill hole is not necessary.
3		Insert Ceiling Anchor through the fixture, up to fixture contact.

Würth Ceiling Anchor W-DN 2	
Intended use Installation instructions	**Annex B3**

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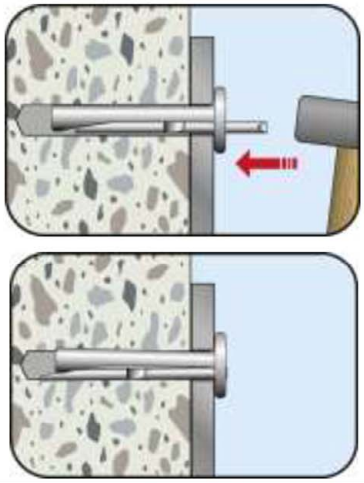
4		Drive in the protruding pin.

Würth Ceiling Anchor W-DN 2

Intended use
Installation instructions

Annex B4

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Table C1: Characteristic values for all load directions and failure modes

Ceiling Anchor W-DN 2			6x40	6x70
Installation factor	γ_{inst}	[-]	1,0	
All load directions and for all failures				
Characteristic resistance in cracked and uncracked concrete C20/25 to C50/60	F_{Rk}	[kN]	5,0	
Partial factor[1)]	γ_M	[-]	1,5	
Minimum edge distance	$c_{cr} = c_{min}$	[mm]	150	
Minimum spacing	$s_{cr} = s_{min}$	[mm]	200	
Steel failure with lever arm				
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	5,1	
Partial factor[1)]	γ_{Ms}	[-]	1,25	

1) In absence of other national regulations

Table C2: Characteristic values under fire exposure

Ceiling Anchor W-DN 2					6x40	6x70
all load directions						
Fire resistance class	R30	Characteristic resistance	$F_{Rk,fi}$	[kN]	0,74	
	R60		$F_{Rk,fi}$	[kN]	0,61	
	R90		$F_{Rk,fi}$	[kN]	0,49	
	R120		$F_{Rk,fi}$	[kN]	0,42	
Steel failure with lever arm						
Fire resistance class	R30	Characteristic bending resistance	$M^0_{Rk,s,fi}$	[Nm]	0,39	
	R60		$M^0_{Rk,s,fi}$	[Nm]	0,33	
	R90		$M^0_{Rk,s,fi}$	[Nm]	0,26	
	R120		$M^0_{Rk,s,fi}$	[Nm]	0,23	
Edge distance and spacing, partial factor						
Fire resistance class	R30 to R120	Partial factor	$\gamma_{M,fi}$	[-]	1,0	
		Spacing	$s_{cr,fi}$	[mm]	200	
		Edge distance	$c_{cr,fi}$	[mm]	150	
			For fire exposure from more than one side c ≥ 300mm.			

Würth Ceiling Anchor W-DN 2

Performance
Characteristic resistance

Annex C1