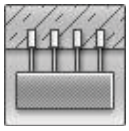
DBZ Wedge anchor

Anchor version	Benefits
 DBZ Carbon steel	- well proven - simple installation - small drill bit diameter - reliable setting thanks to simple visual check - for fixing in cracked concrete, redundant fastening only, e.g. suspended ceilings


Concrete


Tensile zone[a)]


Redundant fastening


Fire resistance


European Technical Approval


CE conformity

a) Redundant fastening only

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European technical approval [a)]	DIBt	ETA-06/0179, 2011-09-14
Fire test report	DIBt	ETA-06/0179, 2011-09-14
Assessment report (fire)	warringtonfire	WF 327804/A / 2013-07-10

a) All data given in this section for DBZ wedge anchor according ETA-06/0179, issue 2011-09-14. The anchor is to be used only for redundant fastening for non-structural applications.

Basic loading data for all load directions according design method C of ETAG 001

All data in this section applies to
- Correct setting (See setting instruction)
- No edge distance and spacing influence
- Concrete C 20/25 $f_{ck,cube}$ = 25 N/mm² to C50/60, $f_{ck,cube}$ = 60 N/mm²
- Anchors in redundant fastening

Mean ultimate resistance, all load directions

Anchor size		DBZ 6/4,5	DBZ 6/35
Load $F_{Ru,m}$	[kN]	*6,0*	*6,0*

Characteristic resistance, all load directions

Anchor size		DBZ 6/4,5	DBZ 6/35
Resistance F_{Rk}	[kN]	4,0	4,0

Design resistance, all load directions

Anchor size		DBZ 6/4,5	DBZ 6/35
Resistance F_{Rd}	[kN]	2,2	2,2

Recommended loads [a], all load directions

Anchor size		DBZ 6/4,5	DBZ 6/35
Resistance F_{Rec}	[kN]	1,6	1,6

a) With overall partial safety factor for action γ = 1,4. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.

Requirements for redundant fastening

The definition of redundant fastening according to Member States is given in the ETAG 001 Part six, Annex 1. In Absence of a definition by a Member State the following default values may be taken

Minimum number of fixing points	Minimum number of anchors per fixing point	Maximum design load of action N_{Sd} per fixing point [a]
3	1	2 kN
4	1	3 kN

a) The value for maximum design load of actions per fastening point N_{Sd} is valid in general that means all fastening points are considered in the design of the redundant structural system. The value N_{Sd} may be increased if the failure of one (= most unfavourable) fixing point is taken into account in the design (serviceability and ultimate limit state) of the structural system e.g. suspended ceiling.

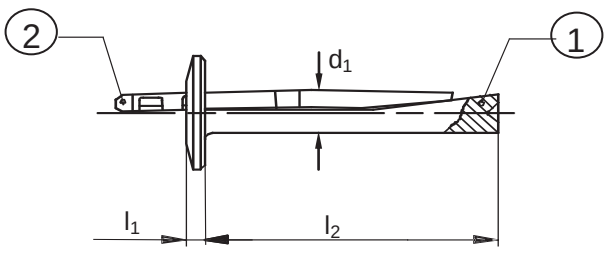
Materials

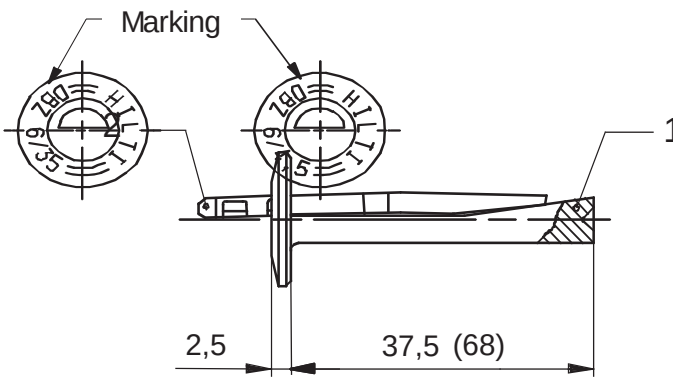
Mechanical properties of DBZ

Anchor size			DBZ 6/4,5	DBZ 6/35
Nominal tensile strength	f_{uk}	[N/mm²]	390	390
Yield strength	f_{yk}	[N/mm²]	310	310
Stressed cross-section	A_s	[mm²]	26	26
Char. bending resistance	$M^0_{Rk,s}$	[Nm]	5,0	5,0

Material quality of DBZ

Part	Material
1 … Anchor shank	Cold-formed steel; galvanized ≥ 5µm
2 … Expansion pin	Cold-formed steel; galvanized ≥ 5µm





Anchor dimensions

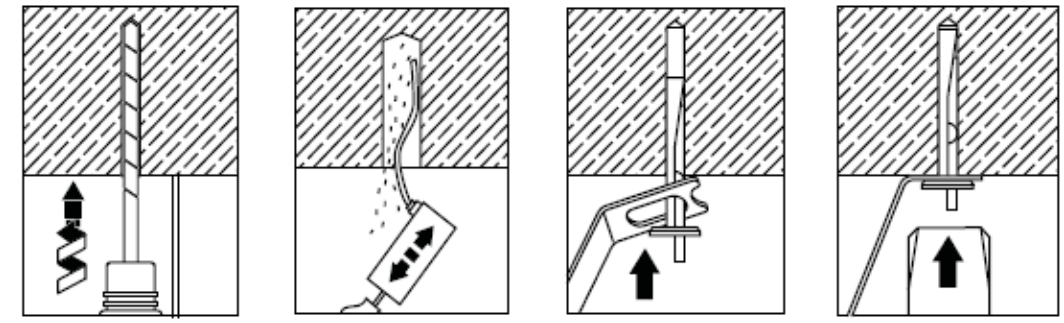
Anchor size			DBZ 6/4,5	DBZ 6/35
Height anchor head	l_1	[mm]	2,5	2,5
Max. distance	d_1	[mm]	6,4	6,4
Length of anchor shaft	l_2	[mm]	37,5	68

Setting

Recommended installation equipment

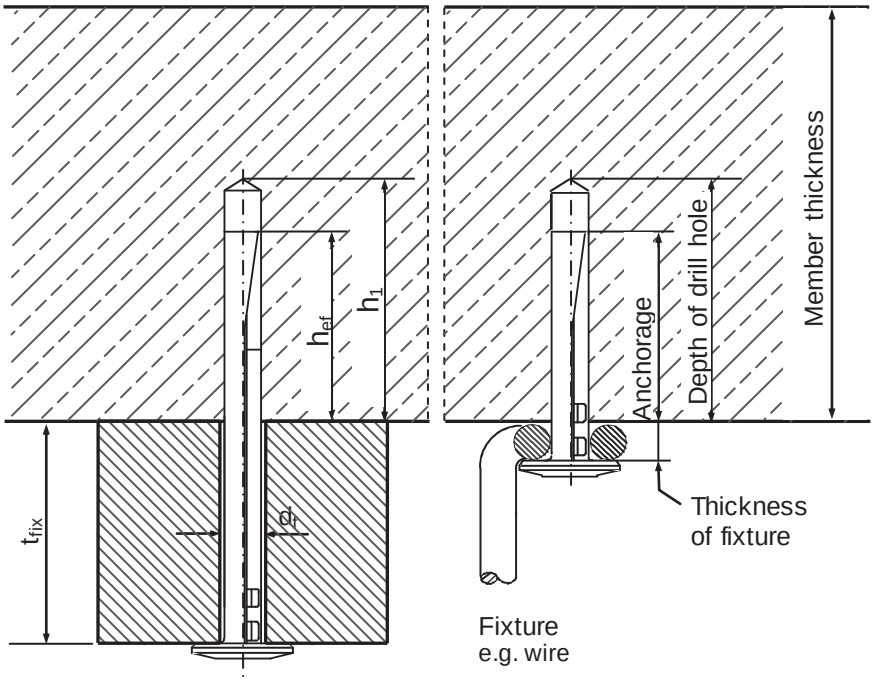
Anchor size	DBZ 6/4,5	DBZ 6/35
Rotary hammer	TE 2 – TE 7	
Other tools	hammer, blow out pump	

Setting instruction



Drill hole with drill bit. | Blow out dust and fragments. | Install anchor with suspended item. | Hammer in anchor.

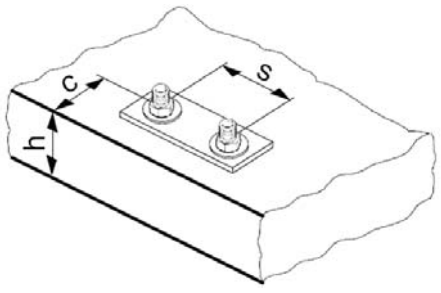
Setting details



Anchor size		DBZ 6/4,5	DBZ 6/35	
Thickness of fixture	t_{fix} [mm]	≤ 4,5	20 ≤ t_{fix} ≤ 35	5 ≤ t_{fix} < 20
Depth of drill hole	h_1 ≥ [mm]	40	55	70
Nominal diameter of drill bit	d_0 [mm]	6	6	
Cutting diameter of drill bit	d_{cut} ≤ [mm]	6,4	6,4	
Clearance hole diameter	d_f ≤ [mm]	7	7	

Base material thickness, anchor spacing and edge distance [a)]

Anchor size		DBZ 6/4,5	DBZ 6/35	
Thickness of fixture	t_{fix} [mm]	≤ 4,5	20 ≤ t_{fix} ≤ 35	5 ≤ t_{fix} < 20
Minimum member thickness	h_{min} ≥ [mm]	80	80	100
Effective anchorage depth	h_{ef} [mm]	32	32	
Critical spacing	s_{cr} [mm]	200	200	
Critical edge distance	c_{cr} [mm]	150	150	



a) The critical spacing (critical edge distance) shall be kept. Smaller spacing (edge distance) than critical spacing (critical edge distance) are not covered by the design method.