

HPD Aerated concrete anchor

Anchor version	Benefits
 HPD	- anchor for autoclaved aerated concrete - maximum use of base material capacity - setting without drilling



Autoclaved
aerated
concrete



Fire
resistance



Sprinkler
approved

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
Allgemeine bauaufsichtliche Zulassung (national approval in Germany) ^{a)}	DIBt, Berlin	Z-21.1-1729 / 2011-05-31
Fire test report	IBMB, Braunschweig	UB 3077/3602-Nau- / 2002-02-05
Assessment report (fire)	warringtonfire	WF 327804/A / 2013-07-10
Sprinkler	VdS, Cologne	G 4981083 / 2008-01-01

a) All data given in this section according Z-21.1-1729, issue 2011-05-31.

Basic loading data (for a single anchor)

All data in this section applies to

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- Autoclaved aerated concrete (AAC)
- Load data given in the tables is independent of load direction
- Minimum base material thickness

Recommended loads

			Non-cracked AAC ^{a)}			Cracked AAC		
Anchor size			M6	M8	M10	M6	M8	M10
Recommended load for a single anchor								
AAC blocks,	AAC 2	[kN]	0,4	0,4	0,6	-	-	-
	AAC 4, AAC 6	[kN]	0,8	0,8	1,2	-	-	-
AAC wall members	P 3,3	[kN]	0,6	0,6	0,8	-	-	-
	P 4,4	[kN]	0,8	0,8	1,2	-	-	-
AAC ceiling members	P 3,3	[kN]	-	-	-	0,6	0,6	0,8
	P 4,4	[kN]	-	-	-	0,8	0,8	1,2
Recommended load for a group of two anchor with a spacing $100\text{mm} \leq s \leq 200\text{mm}$								
AAC blocks,	AAC 2	[kN]	0,4	0,4	0,6	-	-	-
	AAC 4, AAC 6	[kN]	0,8	0,8	1,2	-	-	-
AAC wall members	P 3,3	[kN]	0,6	0,6	0,8	-	-	-
	P 4,4	[kN]	0,8	0,8	1,2	-	-	-
AAC ceiling members	P 3,3	[kN]	-	-	-	0,6	0,6	0,8
	P 4,4	[kN]	-	-	-	0,8	0,8	1,2
Recommended load for a group of two anchor with a spacing $s \geq 200\text{mm}$								
AAC blocks,	AAC 2	[kN]	0,6	0,6	0,8	-	-	-
	AAC 4, AAC 6	[kN]	1,1	1,1	1,7	-	-	-
AAC wall members	P 3,3	[kN]	0,8	0,8	1,1	-	-	-
	P 4,4	[kN]	1,1	1,1	1,7	-	-	-
AAC ceiling members	P 3,3	[kN]	-	-	-	0,8	0,8	1,1
	P 4,4	[kN]	-	-	-	1,1	1,1	1,7

a) in case of small sized AAC blocks ($\leq 250\text{mm} \times 500\text{mm} \times \text{thickness}$) the recommended load has to be reduced with a factor 0,6.

Materials

Mechanical properties of HPD

Anchor size		M6	M8	M10
Nominal tensile strength f_{uk}	Carbon steel [N/mm ²]	800	500	500
	Stainless steel [N/mm ²]	750	565	565
Yield strength f_{yk}	Carbon steel [N/mm ²]	-	-	-
	Stainless steel [N/mm ²]	-	-	-
Stressed cross-section A_s [mm ²]		20,1	36,6	58
Moment of resistance W [mm ³]		12,7	31,2	62,3
Char. bending resistance $M_{Rk,s}^0$	Carbon steel [Nm]	12	19	37
	Stainless steel [Nm]	11	21	42

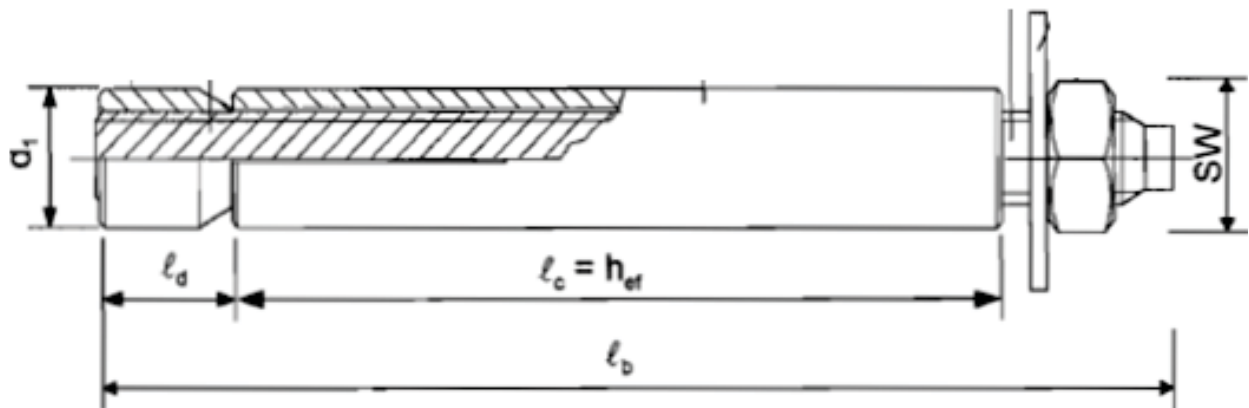
The recommended bending moment shall be calculated by dividing the characteristic bending moment by 1,4 and 1,25

Material quality

Part	Material
All parts	HPD Carbon steel, galvanised to min. 5 µm
	HPD (stainless steel) Stainless steel

Anchor dimensions

Anchor size		M6	M8	M10
Minimum thickness of fixture	$t_{fix,min}$ [mm]	0	0	0
Maximum thickness of fixture*	$t_{fix,max}$ [mm]	30	20	30
Anchor diameter	d_1 [mm]	9,8	11,8	13,8
Length of the expansion sleeve	ℓ_c [mm]	70		
Length of the cone	ℓ_d [mm]	12		

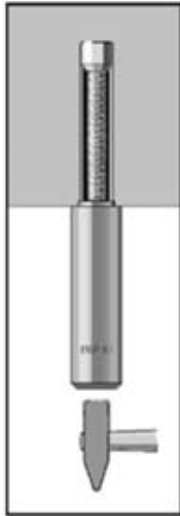


Setting

Installation equipment

Anchor size		M6/10	M6/30	M8/10	M8/20	M10/10	M10/30
Setting tools	Manual setting tool (to be used with a hammer)	HPE-G 6/10	HPE-G 6/30	HPE-G 8/10	HPE-G 8/20	-	-
	Machine setting (to be used with a rotary hammer in pure hammering mode)	-	-	-	-	HPE-M 10/10	HPE-M 10/30

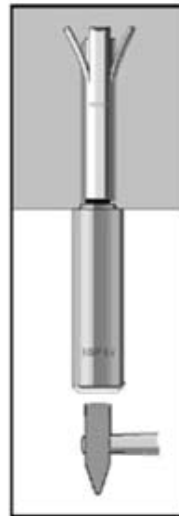
Setting instruction



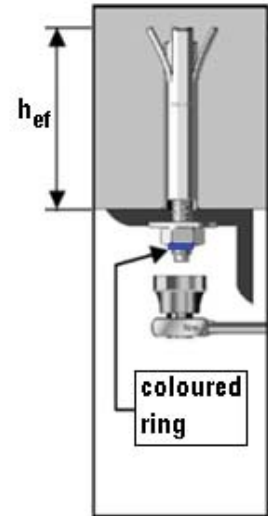
Insert the cone bolt by hammering it in, until setting tool touches surface.



Insert the expansion sleeve over the threaded rod.

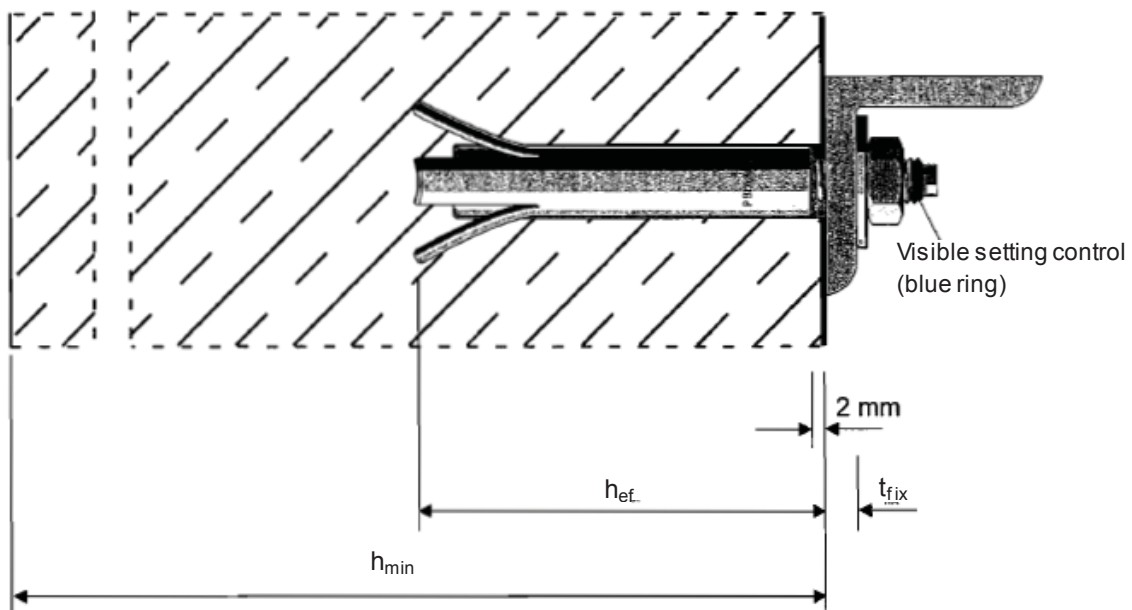


Bash in the sleeve by hammering or with the machine setting tool.



Tighten the nut until the blue ring becomes visible.

Setting details: depth of drill hole h_1 and effective anchorage depth h_{ef}



Setting details HPD

			M6	M8	M10
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	7	9	12
Effective anchorage depth	h_{ef}	[mm]	62	62	62
Torque moment	T_{inst}	[Nm]	3	5	8
Width across	SW	[mm]	10	13	17

Base material thickness, anchor spacing and edge distance

Anchor size				M8	M10	M12
Minimum base material thickness	$h_{\min}$	[mm]		175		
Minimum spacing	Of anchors in a group	$s_{\min, \text{anchor}}$	[mm]	100 / 200		
	Of anchor groups	$s_{\min, \text{group}}$	[mm]	600		
Minimum edge distance	to member edge and to vertical joints	$c_{\min, 1}$	[mm]	150	150	150
	to horizontal joints	$c_{\min, 2}$	[mm]	50	50	50

