

HPD Aerated concrete anchor

| | Anchor version | Benefits |
|---|----------------|---|
|  | HPD | <ul style="list-style-type: none"> - anchor for autoclaved aerated concrete - maximum use of base material capacity - setting without drilling |



Autoclaved
aerated
concrete



Sprinkler
approved



Fire
resistance

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 166402 / 2007-10-26 |
| 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

| Anchor size | | | Non-cracked AAC ^{a)} | | | Cracked AAC | | |
|---|--------------|------|-------------------------------|-----|-----|-------------|-----|-----|
| | | | 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 |

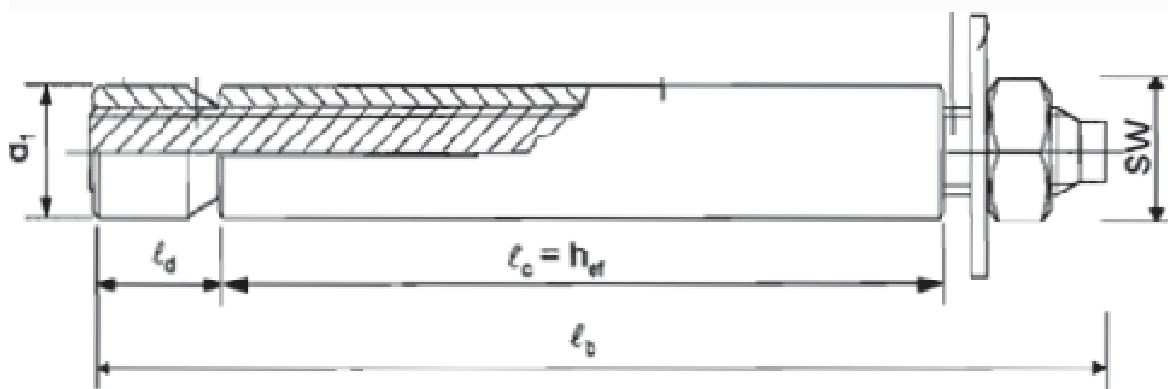
The recommended bending moment shall be calculated by dividing the characteristic bending moment by 1,4 and 1,25

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 | $t_{\text{fix,min}}$ | [mm] | 0 | 0 | 0 |
| Maximum thickness of fixture* | $t_{\text{fix,max}}$ | [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



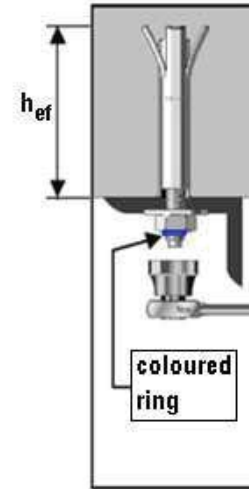
Insert the cone bolt by hammering it in, until setting tool touches surface.



Insert the expansion sleeve over the threaded rod.

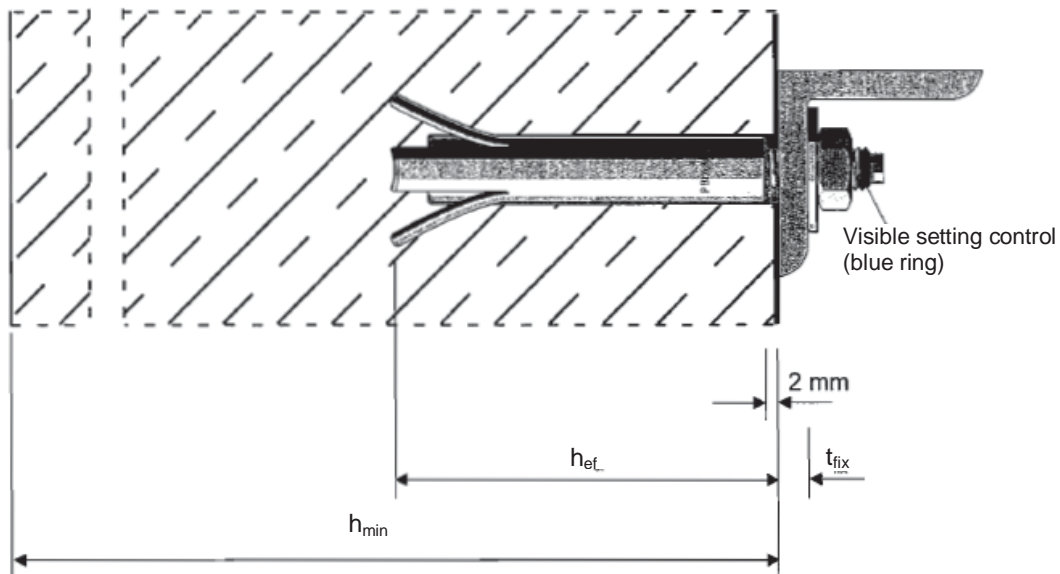


Bash in the sleeve by hammering or with the machine setting tool.



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 | $S_{min,anchor}$ | 100 / 200 | | |
| | Of anchor groups | $S_{min,group}$ | 600 | | |
| Minimum edge distance | to member edge and to vertical joints | $C_{min,1}$ | 150 | 150 | 150 |
| | to horizontal joints | $C_{min,2}$ | 50 | 50 | 50 |

