

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

ETA-13/0517  
of 27 February 2017

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

Apolo MEA ceiling anchor DA

Product family  
to which the construction product belongs

Deformation controlled expansion anchor made of  
galvanised steel for multiple use for non-structural  
applications in concrete

Manufacturer

Apolo MEA Befestigungssysteme GmbH  
Industriestraße 6  
86551 Aichach  
DEUTSCHLAND

Manufacturing plant

Werk 15

This European Technical Assessment  
contains

10 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",  
August 2010,  
used as European Assessment Document (EAD)  
according to Article 66 Paragraph 3 of Regulation (EU)  
No 305/2011.

This version replaces

ETA-13/0517 issued on 20 June 2013

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## Specific Part

### 1 Technical description of the product

The Apolo MEA ceiling anchor DA is an anchor made of zinc-plated 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 Mechanical resistance and stability (BWR 1)

The essential characteristics regarding mechanical resistance and stability are included under the Basic Works Requirement Safety in use.

#### 3.2 Safety in case of fire (BWR 2)

| Essential characteristic | Performance                                 |
|--------------------------|---|
| Reaction to fire         | Anchorage satisfy requirements for Class A1 |
| Resistance to fire       | See Annex C 1                               |

#### 3.3 Safety in use (BWR 4)

| Essential characteristic              | Performance   |
|---------------------------------------|---------------|
| Characteristic resistance in concrete | See Annex C 1 |
| Edge distances and spacing            | See Annex C 1 |

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

In accordance with guideline for European technical approval ETAG 001, April 2013 used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011 the applicable European legal act is: [97/161/EC].

The system to be applied is: 2+

English translation prepared by DIBt

**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 27 February 2017 by Deutsches Institut für Bautechnik

Andreas Kummerow  
p. p. Head of Department

*beglaubigt:*  
Tempel

## Apolo MEA ceiling anchor DA

### Product

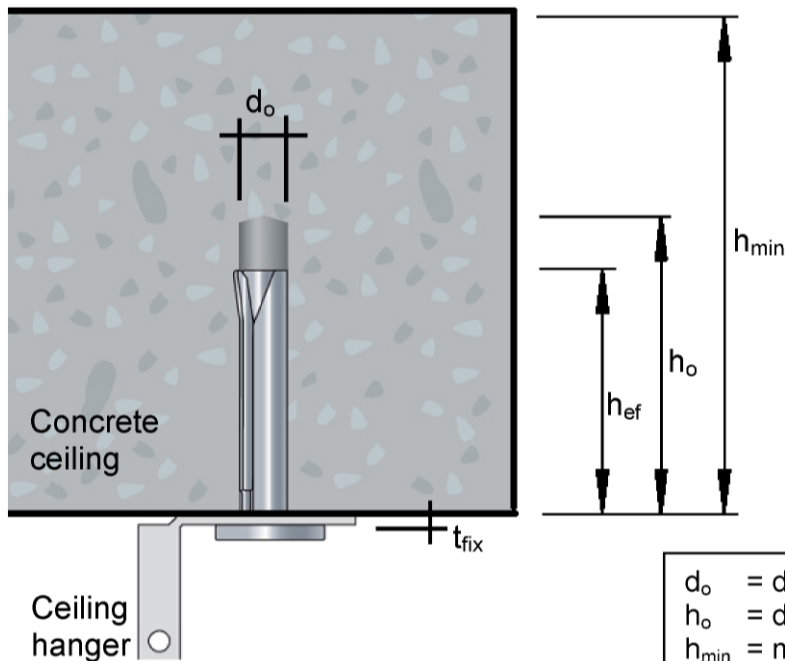
Type  
DA 6-30/5



Type  
DA 6-60/35



### Apolo MEA ceiling anchor DA after installation

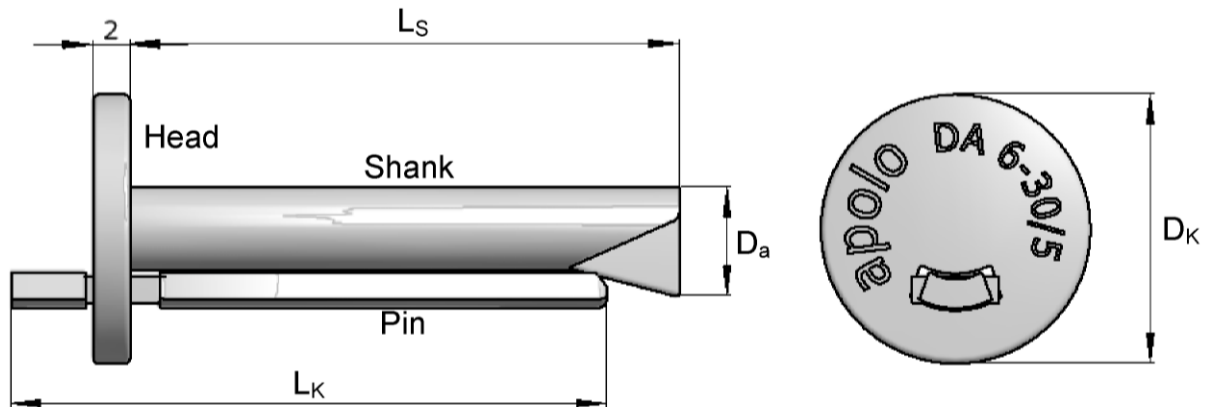


$d_o$  = diameter of drill hole  
 $h_o$  = depth of drill hole (deepest point)  
 $h_{min}$  = min. thickness of concrete member  
 $t_{fix}$  = thickness of fixture  
 $h_{ef}$  = effective anchorage depth

Apolo MEA ceiling anchor DA

**Product description**  
Product and installed condition

Annex A1



|          |                                |                           |
|----------|--------------------------------|---------------------------|
| Marking: | brand marking                  | Logo or company name      |
|          | Type                           | DA                        |
|          | Size/ diameter (mm)            | 6                         |
|          | Length (mm)                    | L (z.B. 30)               |
|          | Max. thickness of fixture (mm) | t <sub>fix</sub> (z.B. 5) |

Example for marking: **apolo DA 6-30/5**

**Table 1: designation and materials**

| designation      | material     | DA 6-30/5      | DA 6-60/35     |
|------------------|--------------|----------------|----------------|
| Pin              | Carbon steel | C1065 or Mn65  | C1065 or Mn65  |
| Shank incl. Head | Carbon steel | C1035 or 10B21 | C1035 or 10B21 |

All parts zinc plated and blue passivated  $\geq 5 \mu\text{m}$  acc. EN ISO 4042

**Table 2: dimensions**

| dimensions      |                |      | DA 6-30/5 | DA 6-60/35 |
|-----------------|----------------|------|-----------|------------|
| Length of wedge | L <sub>k</sub> | [mm] | 32        | 63         |
| Length of shank | L <sub>s</sub> | [mm] | 29,5      | 60         |
| Diameter head   | D <sub>k</sub> | [mm] | 14,5      | 14,5       |
| Diameter cone   | D <sub>a</sub> | [mm] | 5,9       | 5,9        |

Apolo MEA ceiling anchor DA

**Product description**  
Materials, marking and anchor dimensions

Annex A2

**Specification of intended use**

**Anchorage subjected to:**

- Static and quasi-static loads.
- Used only for multiple use for non-structural applications acc. ETAG 001, part 6.
- Used for anchorages with requirements related to resistance to fire.

**Base materials:**

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000.
- Strength classes C20/25 - C50/60 according to EN 206-1:2000.
- Uncracked and cracked concrete.

**Use conditions (Environmental conditions):**

- Structural 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 and quasi-static loads are designed in accordance with ETAG 001, Annex C, design method C, Edition August 2010.
- The design of the anchorage in case fire exposure must be performed acc. EOTA Technical Report TR 020 edition May 2004 (it must be ensured, that local spalling of the concrete cover does not occur).

**Installation:**

- Anchor installation carried out by appropriately qualified personal and under the supervision of the person responsible for technical matters of the site.
- Check concrete being well compacted, e.g. without significant voids.
- Positioning of the drill holes without damaging the reinforcement.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted hole is filled with high strength mortar and if under shear or oblique tension load it is not in the direction of load application.

Apolo MEA ceiling anchor DA

**Intended use**  
Specifications

Annex B1

**Table 3: Installation parameters**

|                               |               |      | DA 6-30/5  | DA 6-60/35 |
|-------------------------------|---------------|------|------------|------------|
| Nominal diameter of drill bit | $d_o$         | [mm] | 6          | 6          |
| Cutting diameter of drill bit | $d_{cut}$     | [mm] | $\leq 6,4$ | $\leq 6,4$ |
| Depth of drill hole           | $h_o \geq$    | [mm] | 30         | 30         |
| Effective anchorage depth     | $h_{ef} \geq$ | [mm] | 25         | 25         |
| Maximal thickness of fixture  | $t_{fix}$     | [mm] | 4,5        | 35         |

**Table 4: Minimum thickness of concrete member, min. spacing and edge distance**

|                             |           |      | DA 6-30/5 | DA 6-60/35 |
|-----------------------------|-----------|------|-----------|------------|
| Minimum thickness of member | $h_{min}$ | [mm] | 80        | 80         |
| Minimum spacing             | $s_{min}$ | [mm] | 200       | 200        |
| Minimum edge distance       | $c_{min}$ | [mm] | 150       | 150        |

Apolo MEA ceiling anchor DA

**Intended use**

Installation parameters, min. thickness, min. spacing and edge distance

Annex B2



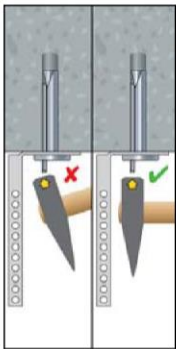
**Installation instruction of Apolo MEA ceiling anchor DA**



1. Drill the hole with a hammer drill, clean the borehole (blowing out).



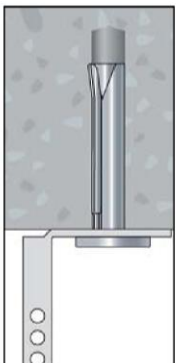
2. Insert the ceiling anchor through the opening of the part to be fixed/ceiling hanger. Afterwards, push the anchor together with the ceiling hanger into the borehole by hand.



3. Move the anchor completely into the borehole by hand or using soft hammer blows until the head of the anchor lays upon the fixing part. Then adjust the fixing part/ceiling hanger.

Now hit in the pin with further hammer blows until it is flush mounted in the head.

Execute the hammer blows vertically to avoid any bending of the pin.



4. The ceiling anchor DA is installed. Little adjustment of the ceiling hanger is possible.

Apolo MEA ceiling anchor DA

**Intended use**  
Installation instruction

Annex B3

**Table 5: Design method C: Characteristic values for all load directions**

| Any load direction   |                            |      | DA 6-30/5 | DA 6-60/35 |
|--|----------------------------|------|-----------|------------|
| Characteristic resistance in concrete<br>(C20/25 to C50/60 ) | $F_{Rk}$                   | [kN] | 2,0       | 2,0        |
| Spacing  | $s_{cr} = s_{min}$         | [mm] | 200       | 200        |
| Edge distance  | $c_{cr} = c_{min}$         | [mm] | 150       | 150        |
| Partial safety factor  | $\gamma_M$ <sup>1)</sup>   | [-]  | 1,5       | 1,5        |
| <b>Shear load with lever arm</b>                             |                            |      |           |            |
| Characteristic bending moment                                | $M^0_{Rk,s}$ <sup>2)</sup> | [Nm] | 8,2       | 8,2        |
| Partial safety factor  | $\gamma_{Ms}$              | [-]  | 1,5       | 1,5        |

1) Installation safety factor  $\gamma_2 = 1,0$  included

2) Characteristic bending moment acc. to ETAG 001, Annex C, 5.2.3.2 b

**Table 6: Characteristic values under fire exposure for use in concrete C20/25 - C50/60 in any load direction**

| Fire resistance class |                           |             | DA 6-30/5 | DA 6-60/35 |      |
|-----------------------|---------------------------|-------------|-----------|------------|------|
| R30                   | Characteristic resistance | $F_{Rk,fi}$ | [kN]      | 0,55       | 0,55 |
| R60                   | Characteristic resistance | $F_{Rk,fi}$ | [kN]      | 0,47       | 0,47 |
| R90                   | Characteristic resistance | $F_{Rk,fi}$ | [kN]      | 0,23       | 0,23 |
| R120                  | Characteristic resistance | $F_{Rk,fi}$ | [kN]      | 0,12       | 0,12 |
| R30 to R120           | Spacing                   | $s_{cr,fi}$ | [mm]      | 200        | 200  |
|                       | Edge distance             | $c_{cr,fi}$ | [mm]      | 150        | 150  |

Apolo MEA ceiling anchor DA

**Performances**

Characteristic values for all load directions and under fire exposure

Annex C1