

Centre Scientifique et  
Technique du Bâtiment

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**European Technical  
Assessment**

**ETA-13/0056  
of 15/12/2016**

*English translation prepared by CSTB - Original version in French language*

**General Part**

Nom commercial  
*Trade name*

**DM-PRO Drop-in anchor**

Famille de produit  
*Product family*

**Cheville à expansion à déformation contrôlée en acier galvanisé ou inoxydable pour usage multiple et pour applications non structurales dans du béton: dimensions M6, M8, M10 et M12**

***Deformation controlled expansion anchor, made of galvanized or stainless steel for multiple use and for non-structural applications in concrete: sizes M6, M8, M10 and M12.***

Titulaire  
*Manufacturer*

DEWALT/ Powers  
Richard-Klinger-Straße 11  
65510 Idstein  
Germany

Usine de fabrication  
*Manufacturing plant*

Plant 3

Cette évaluation contient:  
*This assessment contains :*

9 pages incluant 6 annexes qui font partie intégrante de cette évaluation  
*9 pages including 6 annexes which form an integral part of this assessment*

Base de l'ETE  
*Basis of ETA*

ETAG 001, Version Avril 2013, utilisée en tant que EAD  
*ETAG 001, Edition April 2013 used as EAD*

Cette évaluation remplace:  
*This assessment replaces:*

*ETA 13/0056 with validity from 01/02/2013 to 31/01/2018*

## Specific Part

### 1 Technical description of the product

The DM-PRO drop-in anchor of sizes M6x25, M8x30, M10x40 and M12x50 is an anchor made of galvanized steel or stainless steel, which is placed into a drilled hole and anchored by deformation-controlled expansion.

The anchor consists of an expansion sleeve and an internal plug.

The illustration and the description of the product are given in Annexes A.

### 2 Specification of the intended use

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annexes B.

The provisions made in this European technical assessment are based on an assumed working life of the anchor of 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

#### 3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic values for all loading directions acc. EN 1992-4	See Annex C1

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

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1

#### 3.3 Hygiene, health and the environment (BWR 3)

Regarding dangerous substances contained in this European technical approval, there may be requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

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

For Basic requirement Safety in use the same criteria are valid as for Basic Requirement Mechanical resistance and stability.

#### 3.5 Protection against noise (BWR 5)

Not relevant.

#### 3.6 Energy economy and heat retention (BWR 6)

Not relevant.

#### 3.7 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was determined for this product.

### 3.8 General aspects relating to fitness for use

Durability and Serviceability are only ensured if the specifications of intended use according to Annex B1 are kept.

## 4 Assessment and verification of constancy of performance (AVCP)

According to Decision of the Commission of 17 February 1997 (97/161/EC) (OJ L 062 of 04.03.97 p. 41-42), the system of assessment and verification of constancy of performance (see Annex V and Article 65 Paragraph 2 to Regulation (EU) No 305/2011) given in the following table applies.

Product	Intended use	Level or class	System
Metal anchors for use in concrete	For use in redundant systems for fixing and/or supporting to concrete elements such as lightweight suspended ceilings, as well as installations	—	2+

## 5 Technical details necessary for the implementation of the AVCP system

Technical details necessary for the implementation of the Assessment and verification of constancy of performance (AVCP) system are laid down in the control plan deposited at Centre Scientifique et Technique du Bâtiment.

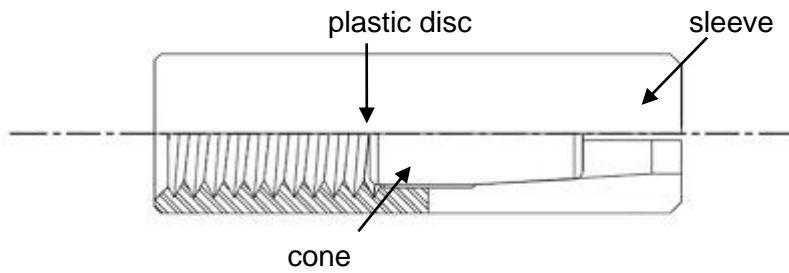
The manufacturer shall, on the basis of a contract, involve a notified body approved in the field of anchors for issuing the certificate of conformity CE based on the control plan.

### The original French version is signed by

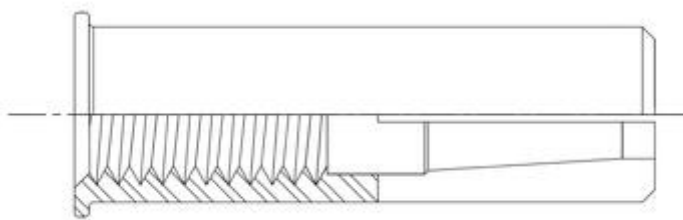
Charles Baloche  
Technical Director

**Drop-in anchor DM-PRO:**

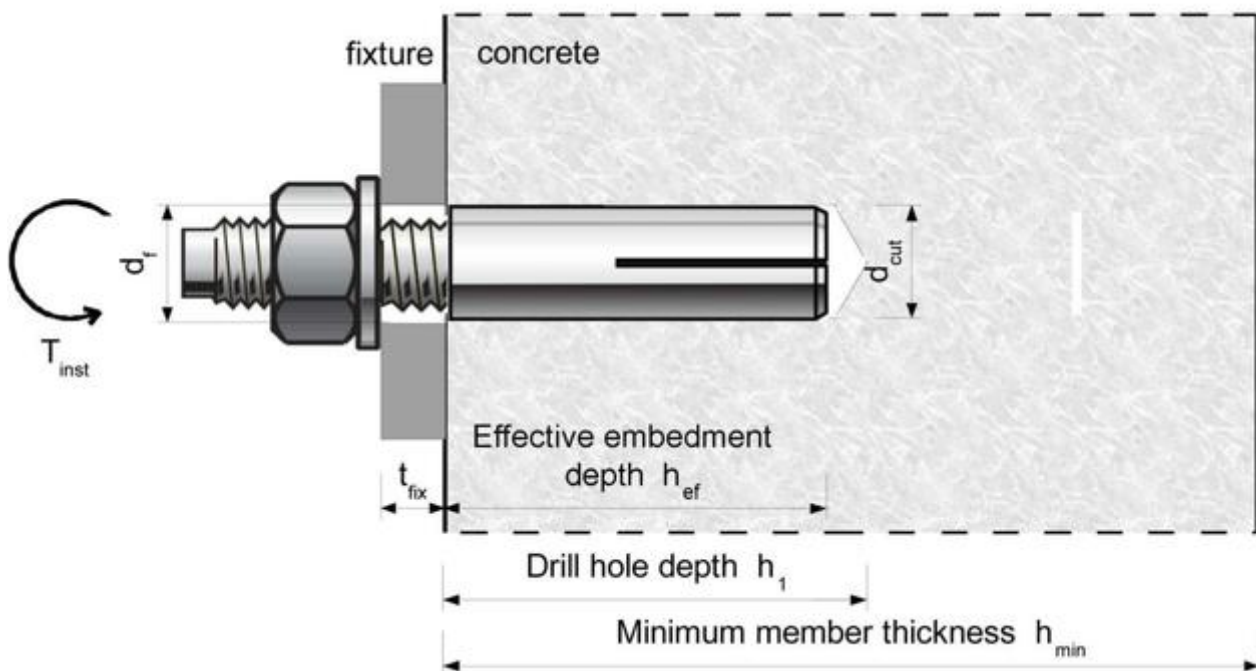
General working principle of a drop in anchor



Marking of the sleeve: e.g. "DM-PRO M8"



**Anchor in use:**



Drop-in anchor DM-PRO

Product description  
Installation condition

Annex A1

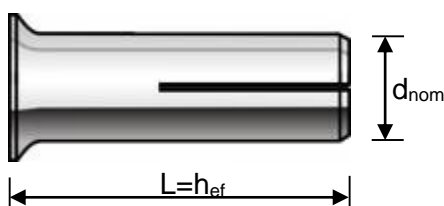
**Different anchor versions and different parts of the anchor:**

**Anchor sleeve**

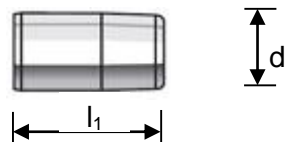
Drop-in anchor



Lipped drop-in anchor



**Expansion cone**



**Table 1: Materials**

Part	Designation	Product	Material	Protection
1	Anchor sleeves	DM-PRO/ DM-Lip-PRO	Cold formed steel, grade SWRCH8A	Zinc plated 5 $\mu$ m
		DM-SS-PRO	Machined steel, grade SS316	-
2	Expansion cones	DM-PRO/ DM-Lip-PRO	Cold formed steel, grade SWRCH8A	Zinc plated 5 $\mu$ m
		DM-SS-PRO	Machined steel, grade SS316 (1.4401, 1.4404, 1.4439, 1.4571, A4 steel)	-
3	Screw or threaded rod for fastening	DM-PRO/ DM-Lip-PRO	Steel strength class 4.6, 5.6, 5.8 or 8.8 according to ISO898-1	Zinc plated 5 $\mu$ m
		DM-SS-PRO	Steel strength class A4-70 (1.4401, 1.4404, 1.4439, 1.4571)	-

**Table 2: Anchor dimensions**

			M6	M8	M10	M12
Length sleeve	$L= h_{ef}$	[mm]	25	30	40	50
Nom. diameter	$d_{nom}$	[mm]	8	10	12	16
Cone diameter	$d_1$	[mm]	4,8	5,7	7,4	9,7
Cone length	$l_1$	[mm]	10	12	16	21

Drop-in anchor DM-PRO

Product description  
Materials

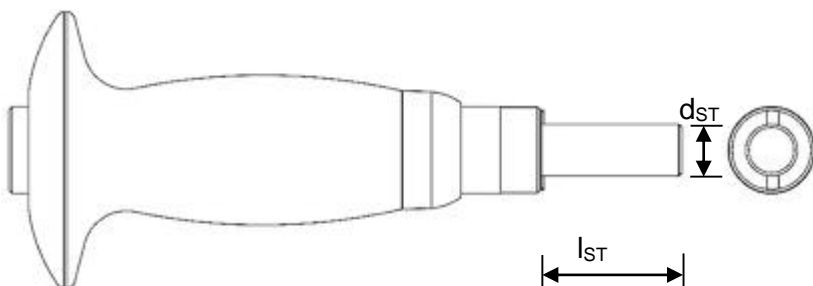
Annex A2

**Drop-in anchor setting tool:**

Basic version without marking function DM-ST



Version with marking function and safety grip DM-ST-G



The setting tool with marking function produces with correct installation a mark on the collar of the drop in anchor. This mark enables to check after installation the correct expansion of the product.

**Table 3: Dimensions setting tool**

			M6	M8	M10	M12
Diameter setting tool	d <sub>ST</sub>	[mm]	4,6	6,4	7,9	9,6
Length setting pin	l <sub>ST</sub>	[mm]	15	18	24	29

Drop-in anchor DM-PRO

Product description

Setting tools

Annex A3

## Specifications of intended use

### Anchorage subject to:

- Static and quasi-static loads.

### Base materials:

- Cracked and non-cracked concrete
- Reinforced or unreinforced normal weight concrete of strength classes C 20/25 at least to C50/60 at most according to EN 206-1: 2000-13.

### Use conditions (Environmental conditions):

- Structures subject to dry internal conditions.
- The stainless steel SS316 version of DM-PRO anchor may be used in concrete subject to dry internal conditions and also in concrete subject to external atmospheric exposure (including industrial and marine environment), or exposure in permanently damp internal conditions, if no particular aggressive conditions exist.

*Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).*

### Design:

- Only for multiple use for non-structural applications
- The anchorages are designed in accordance with the EN 1992-4 "Design of fastenings for use in concrete" or ETAG001 Annex C "Design Method for Anchorages" 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.
- For application with resistance under fire exposure the anchorages are designed in accordance with method given in TR020 "Evaluation of Anchorage in Concrete concerning Resistance to Fire". Remark : the M6 size is not suitable for fire exposure.

### Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Use of the anchor only as supplied by the manufacturer without exchanging the components of an anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools.
- Effective anchorage depth, edge distances and spacing not less than the specified values without minus tolerances.
- Hole drilling by hammer drill.
- Cleaning of the hole of drilling dust.
- Application of specified torque moment using a calibrated torque wrench.
- In case of aborted hole, drilling of new hole at a minimum distance of twice the depth of the aborted hole, or smaller distance provided the aborted drill hole is filled with high strength mortar and no shear or oblique tension loads in the direction of aborted hole.

Drop-in anchor DM-PRO

Intended Use  
Specifications

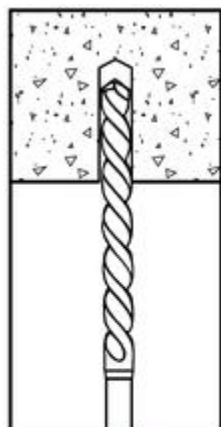
Annex B1

Table 4: Installation data

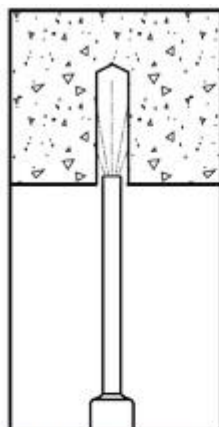
			M6	M8	M10	M12
Drill hole diameter	$d_{cut}$	[mm]	≤ 8,45	≤ 10,45	≤ 12,5	≤ 16,5
Drill hole depth	$h_1$	[mm]	26	32	42	53
Embedment depth	$h_{ef}$	[mm]	25	30	40	50
Installation torque	$T_{inst}$	[Nm]	4	8	15	35
Dia. through hole fixture	$d_f$	[mm]	7	9	12	14
Min. screw in length		[mm]	6	8	10	12
Thread length		[mm]	11	13	17	22
<b>For minimum spacing and edge distance</b>						
Min. member thickness	$h_{min}$	[mm]	80	120	130	160
Minimum edge distance	$c_{min}$	[mm]	150	130	170	200
Minimum spacing	$s_{min}$	[mm]	200	100	120	160
<b>For minimum thickness concrete member</b>						
Min. member thickness	$h_{min}$	[mm]	80	80	80	100
Minimum edge distance	$c_{min}$	[mm]	150	150	150	150
Minimum spacing	$s_{min}$	[mm]	200	200	200	200

The length of the fastening screw shall be determined depending on thickness of fixture  $t_{fix}$ , admissible tolerance and available thread length  $l_{smax}$  as well as minimum screwing length  $l_{smin}$

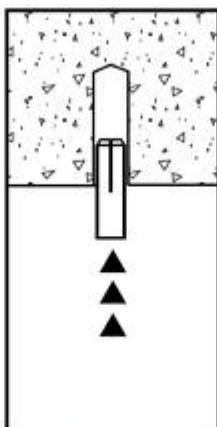
Installation instructions



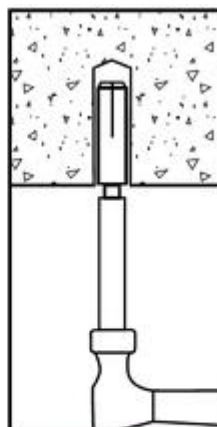
1.) Using the proper drill bit size, drill a hole into the base material to the required depth.



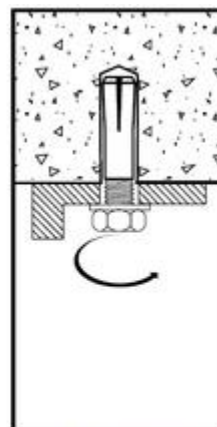
2.) Remove dust and debris from the hole using a hand pump or compressed air.



3.) Insert drop in anchor in to drilled hole.



4.) Expand anchor by hammering on setting tool until the collar of the setting tool touches the fixture.



5.) Insert threaded rod and prestress with defined torque.

Drop-in anchor DM-PRO

Intended Use  
Installation instructions

Annex B2



**Table 5: Product Performance for static and quasi-static actions,  
Characteristic values for all directions, C20/25 to C50/60**

			M6	M8	M10	M12
<b>Design Method C</b>						
Characteristic resistance in non-cracked concrete C20/25 to C50/60	$F_{Rk}^0$	[kN]	2,0	2,0	4,0	5,0
Partial safety factor	$\gamma_M^{1)}$	[-]	2,4 <sup>2)</sup>	2,3 <sup>2)</sup>	2,1 <sup>2)</sup>	2,1 <sup>2)</sup>
Design resistance	$F_{Rd}$	[kN]	0,83	0,87	1,90	2,38

<b>Steel failure, <u>with</u> lever arm</b>						
Characteristic resistance, steel grade 4.6	$M_{Rk,s}^0$	[Nm]	6,1	14,9	29,9	52,4
Partial safety factor	$\gamma_{Ms,V}$	[-]	1,67			
Characteristic resistance steel grade 5.6	$M_{Rk,s}^0$	[Nm]	7,6	18,7	37,3	65,5
Partial safety factor	$\gamma_{Ms,V}$	[-]	1,67			
Characteristic resistance steel grade 8.8	$M_{Rk,s}^0$	[Nm]	12,2	27,3	43,0	104,8
Partial safety factor	$\gamma_{Ms,V}$	[-]	1,25			
Characteristic resistance steel grade A4-70	$M_{Rk,s}^0$	[Nm]	10,7	26,2	52,3	91,6
Partial safety factor	$\gamma_{Ms,V}$	[-]	1,56			

<sup>1)</sup> In absence of other national regulations

<sup>2)</sup> The value includes an installation safety factor  $\gamma_{Inst} = 1,4$

**Drop-in anchor DM-PRO**

**Design**  
Product Performances

**Annex C1**