Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment ETA-12/0371 of 28 June 2018

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	CeraVent SDF 10V and CeraVent SDF 10H
Product family to which the construction product belongs	Plastic anchor for multiple use in concrete and masonry for non-structural applications
Manufacturer	GUTJAHR Systemtechnik GmbH Philipp-Reis-Straße 5-7 64404 Bickenbach/Bergstraße DEUTSCHLAND
Manufacturing plant	Plant 1, 2, 3 and 4
This European Technical Assessment contains	19 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	ETAG 020, March 2012, used as EAD according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011.

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Specific Part

1 Technical description of the product

The CeraVent SDF 10V and CeraVent SDF 10H is a plastic anchor consisting of a plastic sleeve made of polyamide and an accompanying specific screw of galvanised steel or of stainless steel.
The plastic sleeve is expanded by screwing in the specific screw which presses the sleeve against the wall of the drilled hole.

The 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 anchors 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	Anchorages satisfy requirements for Class A 1
Resistance to fire	See Annex C 2

3.3 Safety and accessibility (BWR 4)

Essential characteristic	Performance
Characteristic resistance for tension and shear loads	See Annexes C 1 – C 6
Characteristic resistance for bending moments	See Annex C 1
Displacements under shear and tension loads	See Annex C 2
Anchor distances and dimensions of members	See Annex B 3 – B 5

3.4 General aspects

The verification of durability is part of testing the essential characteristics. Durability is only ensured if the specifications of intended use according to Annex B are taken into account.

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 020, March 2012 used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011 the applicable European legal act is: 97/463/EC.

The system to be applied is: 2+

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

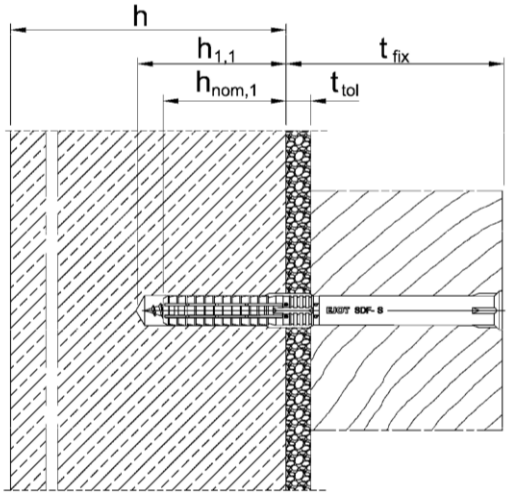
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 28 June 2018 by Deutsches Institut für Bautechnik

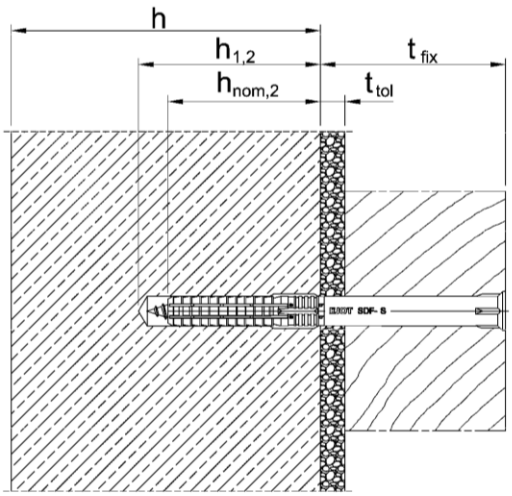
BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Aksünger

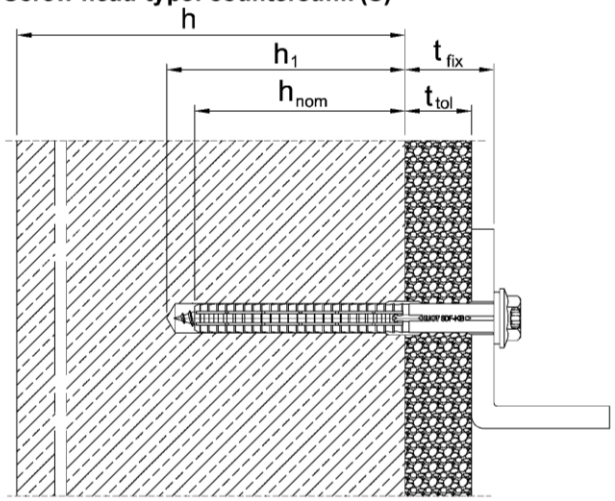
Deutsches Institut für Bautechnik DIBt



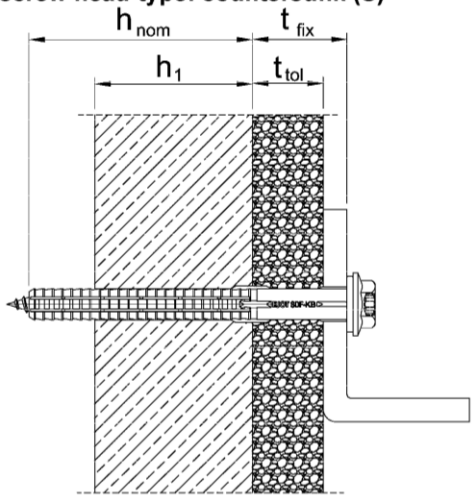
Intended use SDF-10V in concrete (h_{nom1})
Screw head-type: countersunk (S)



Intended use SDF-10V in solid block (h_{nom2})
screw head-type: countersunk (S)



Intended use SDF-10H in concrete/masonry/ autoclaved aerated concrete (h_{nom})
Screw head-type: collar head (KB)



Intended use SDF-10H in a weather shell (h_{nom})

Screw head-type: collar head (KB)

Legend

h	=	Thickness of member
$h_{1,1}$	=	Depth of drilled hole to deepest point (application in concrete)
$h_{1,2}$	=	Depth of drilled hole to deepest point (application in masonry)
h_{nom}	=	Overall plastic anchor embedment depth (setting depth)
$h_{nom,1}$	=	Overall plastic anchor embedment depth (application in concrete)
$h_{nom,2}$	=	Overall plastic anchor embedment depth (application in masonry)
t_{tol}	=	Thickness of equalizing layer or non-load bearing coating
t_{fix}	=	t_{tol} + thickness of fixture

CeraVent SDF 10V and CeraVent SDF 10H

Product description
Installed condition

Annex A 1

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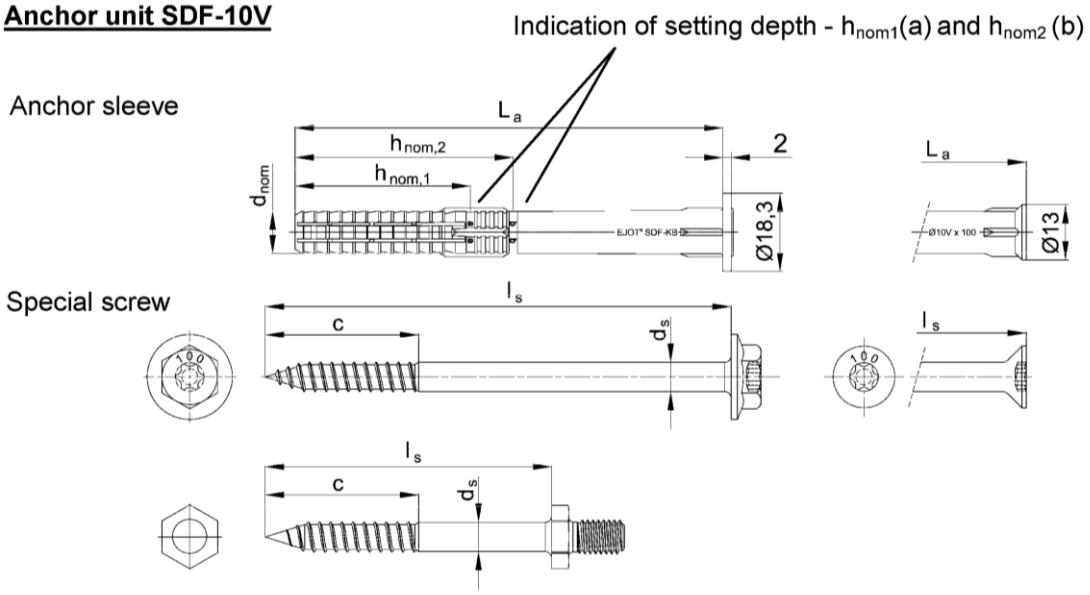
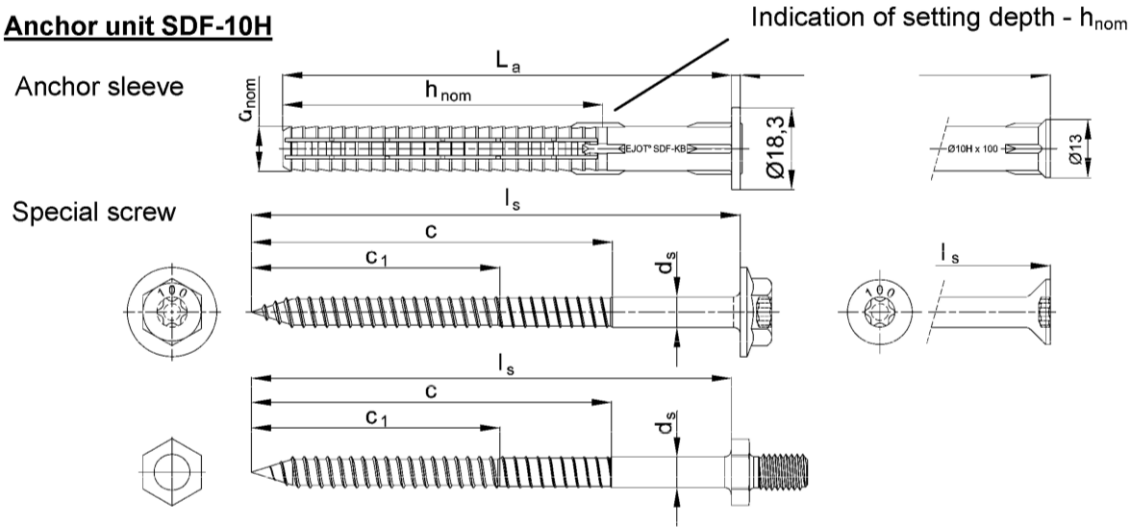
Anchor unit SDF-10V



Marking of anchor sleeve:
Manufacturer, anchor type incl. head type diameter, length
Example: SDF-KB-10V x 100

Marking of special screw:
Anchor length (e.g. 100)

Anchor unit SDF-10H



Marking of anchor sleeve:
Manufacturer, anchor type incl. head type diameter, length
Example: SDF-KB-10H x 100

Marking of special screw:
Anchor length (e.g. 100)

CeraVent SDF 10V and CeraVent SDF 10H	Annex A 2
Product description Anchor types, marking of anchor sleeve and special screw	

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Product designation key

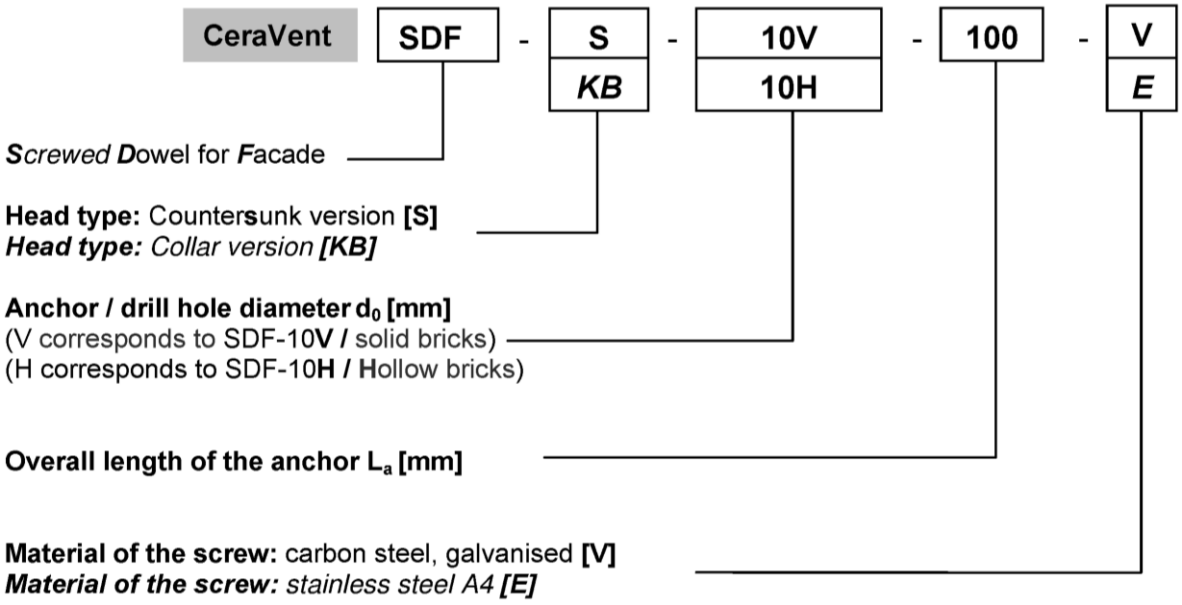

Table A3.1: Dimensions [mm]

Anchor type	Anchor sleeve							Special screw			
	colour	d_{nom}	h_{nom1}	h_{nom2}	min L_{a1}	min L_{a2}	max L_a	L_s	d_s	C_1	C
SDF-S-10V	blue	10	40	50	50	60	220	L_a + 8,0	7,0	--	35
SDF-KB-10V	blue	10	40	50	50	60	220	L_a + 8,0	7,0	--	35
SDF-S-10H	orange	10	70		80		300	L_a + 8,0	7,0	55	80
SDF-KB-10H	orange	10	70		80		220	L_a + 8,0	7,0	55	80

(Designations see annex A 2)

Table A3.2: Material

Element	Material
Anchor sleeve	Polyamide PA6, colour see Table A3.1
Special screw	Carbon steel, galvanized > 5 µm acc. EN ISO 4042:1999
	Stainless steel acc. EN 10088-3:2012, z.B. 1.4401 / 1.4571 / 1.4578 / 1.4362 strength class ≥ A4-70

CeraVent SDF 10V and CeraVent SDF 10H	Annex A 3
Product description Product designation key, dimensions, material	

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Specifications of intended use

Anchorage is subject to:

- Static and quasi-static loads
- Multiple fixing of non-structural applications

Base materials:

- Reinforced or unreinforced normal weight concrete with strength classes ≥ C12/15 (usage category a), according to EN 206-1:2000, Annex C 2
- thin concrete components (weather shell) ≥ 50 mm thickness (only SDF-10H)
- Solid brick masonry (usage category b), according to Annex C 3 and C 4.
  Note: The characteristic resistance is also valid for larger brick sizes and larger compressive strength of the masonry unit.
- Hollow brick masonry (usage category c), according to Annex C 5.
- Autoclaved aerated concrete (usage category d), according to Annex C 6.
- Mortar strength class of the masonry ≥ M2,5 at minimum according to EN 998-2:2010.
- For other base materials of the use categories a, b, c and d the characteristic resistance of the anchor may be determined by job site tests according to ETAG 020, Annex B edition March 2012.

Temperature Range:

- c: -40°C to 50°C (max. short term temperature + 50°C and max. long term temperature +30°C)
- b: -40°C to 80°C (max. short term temperature + 80°C and max. long term temperature +50°C)

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (zinc coated steel, stainless steel).
- The specific screw made of galvanized steel may also be used in structures subject to external atmospheric exposure, if the area of the head of the screw is protected against moisture and driving rain after mounting of the fixing unit in this way, that intrusion of moisture into the anchor shaft is prevented. Therefore there shall be an external cladding or a ventilated rainscreen mounted in front of the head of the screw and the head of the screw itself shall be coated with a soft plastic, permanently elastic bitumen-oil-combination coating (e. g. undercoating or body cavity protection for cars).
- Structures subject to external atmospheric exposure (including industrial and marine environment) and permanently damp internal condition, if no particular aggressive conditions exist (stainless steel).
- 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:

- The anchorages are designed in accordance with the ETAG 020, Annex C Edition March 2012 under the responsibility of an engineer experienced in anchorages and masonry work.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimensions of the anchorage members as well as of the relevant tolerances. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple use for non-structural application, according to ETAG 020 Edition March 2012.

Installation:

- Hole drilling by the drill modes acc. to Annex C for use category a,b,c and d.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation temperature from -10°C to +40°C
- Exposure to UV due to solar radiation of anchor not protected ≤ 6 weeks

CeraVent SDF 10V and CeraVent SDF 10H	Annex B 1
Intended use Specifications	

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Table B2.1: Installation parameters

Anchor type			**SDF-10V**		**SDF-10H**
Use category[1]			a	b	a,b,c,d
drill hole diameter	d_0 [mm]	=	10	10	10
Cutting diameter of drill bit	d_{cut} [mm]	≤	10,45	10,45	10,45
Depth of the drill hole to deepest point	$h_{1,1}$ [mm]	≥	50	----	----
Overall plastic anchor embedment depth	h_{nom1} [mm]	≥	40	----	----
Depth of the drill hole to deepest point	$h_{1,2}$ [mm]	≥	----	60	----
Overall plastic anchor embedment depth	h_{nom2} [mm]	≥	----	50	----
Depth of the drill hole to deepest point	h_1 [mm]	≥	----	----	80
Overall plastic anchor embedment depth[2]	h_{nom} [2] [mm]	=	----	----	70
Diameter of the clearance hole in the fixture	d_f [mm]	≤	10,5	10,5	10,5
Minimum installation temperature	[°C]		-10		
Temperature range (c)	[°C]		30 - 50		
Temperature range (b)	[°C]		50 - 80		

[1] Use category: a = concrete, b = solid masonry, c = hollow or perforated masonry, d = autoclaved aerated concrete

[2] For masonry of hollow or perforated brick the influence h_{nom} > 70 mm has to be determined by job-site tests according to ETAG 020, Annex B.

CeraVent SDF 10V and CeraVent SDF 10H	**Annex B 2**
Intended use Installation parameters use category a, b, c, d	

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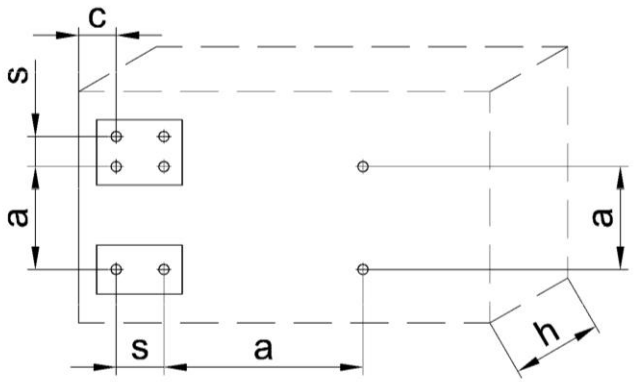
Table B3.1: Minimum member thickness, spacing and edge distance in concrete (use category a)

Anchor type		Min. member thickness h_{min} [mm]	Characteristic edge distance $c_{cr,N}$ [mm]	Minimum spacing and edge distances [mm]
SDF-10V	concrete ≥ C16/20	100	80	s_{min} = 60 für c_{min} ≥ 50
	concrete C12/15		110	s_{min} = 85 für c_{min} ≥ 70
SDF-10H	concrete ≥ C 16/20		80	s_{min} = 60 für c_{min} ≥ 50
	concrete C 12/15		110	s_{min} = 85 für c_{min} ≥ 70
	concrete C20/25 (thin concrete slabs)	50	160	s_{min} = 80 für c_{min} ≥ 160

Fixing points with a spacing a ≤ 80 mm are considered as a group with a maximum characteristic resistance $N_{Rk,p}$ according to Table C2.2. For spacing a > 80 mm the anchors are considered as single anchors, each with a characteristic resistance $N_{Rk,p}$ acc. to Table C2.2.

Scheme of spacing and edge distances in concrete



h = member thickness
c = edge distance
a = spacing
s_{min} = spacing within anchor group

CeraVent SDF 10V and CeraVent SDF 10H

Intended use
Minimum member thickness, spacing and edge distance in concrete

Annex B 3

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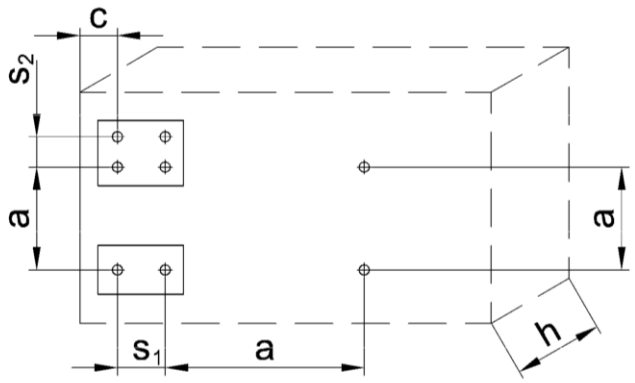
Table B4.1: Minimum member thickness, spacing and edge distance in masonry (use category b and c)

Anchor type		SDF-10V	SDF-10H
Minimum member thickness	h_{min} [mm]	100	100
Single anchor			
Minimum edge distance	c_{min} [mm]	100	100
Minimum spacing	a_{min} [mm]	250	250
Anchor group			
Minimum edge distance	c_{min} [mm]	100	
Minimum spacing perpendicular to free edge	$s_{1,min}$ [mm]	100	
Minimum spacing parallel to free edge	$s_{2,min}$ [mm]	100	

Scheme of spacing and edge distances in masonry



h = member thickness
a = spacing
c = edge distance
s_1 = spacing (perpendicular to the free edge) within an anchor group
s_2 = spacing (parallel to the free edge) within an anchor group

CeraVent SDF 10V and CeraVent SDF 10H

Intended use
Minimum member thickness, spacing and edge distance in masonry

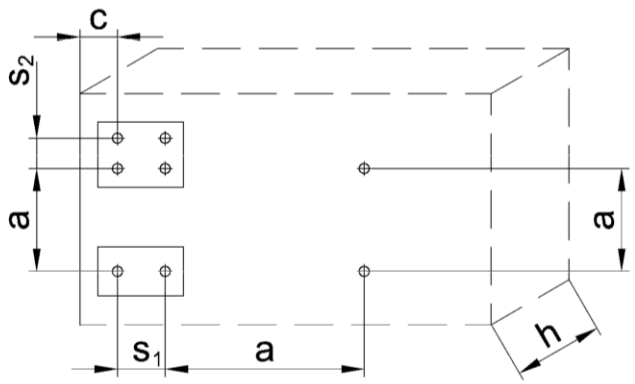
Annex B 4

Deutsches Institut für Bautechnik DIBt

Table B5.1: Minimum member thickness, spacing and edge distance in autoclaved aerated concrete (use category d)

SDF -10H		$f_b \geq 4$ N/mm²	$f_b \geq 6$ N/mm²
Single anchor			
Minimum member thickness	h_{min} [mm]	100	140
Minimum edge distance	c_{min} [mm]	100	
Minimum spacing	a_{min} [mm]	250	
Anchor group			
Minimum member thickness	h_{min} [mm]	140	
Minimum edge distance	$c_{1,min}$ [mm]	100	
Minimum edge distance (perpendicular to $c_{1,min}$)	$c_{2,min}$ [mm]	150	
Minimum spacing perpendicular to free edge	$s_{1,min}$ [mm]	80	
Minimum spacing parallel to free edge	$s_{2,min}$ [mm]	80	

Scheme of spacing and edge distances in autoclaved aerated concrete



h = member thickness
a = spacing
c = edge distance
s_1 = spacing (perpendicular to the free edge) within an anchor group
s_2 = spacing (parallel to the free edge) within an anchor group

CeraVent SDF 10V and CeraVent SDF 10H

Intended use
Minimum member thickness, spacing and edge distance in autoclaved aerated concrete

Annex B 5

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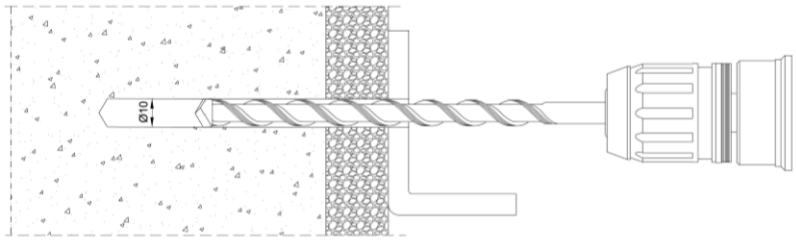
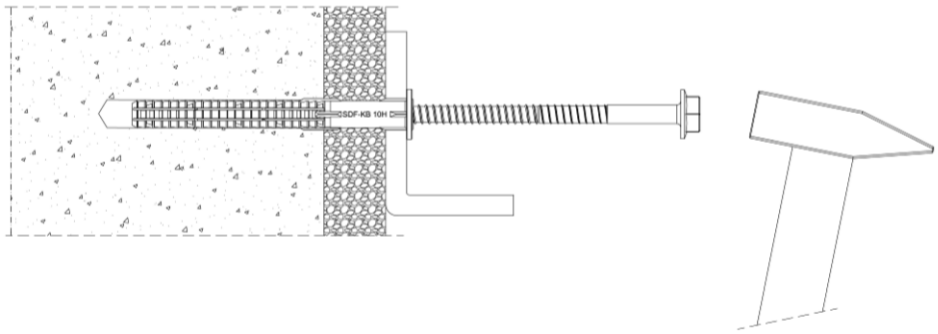
Installation instructions
(exemplary for the fixing of a pre-drilled metal attachment part)

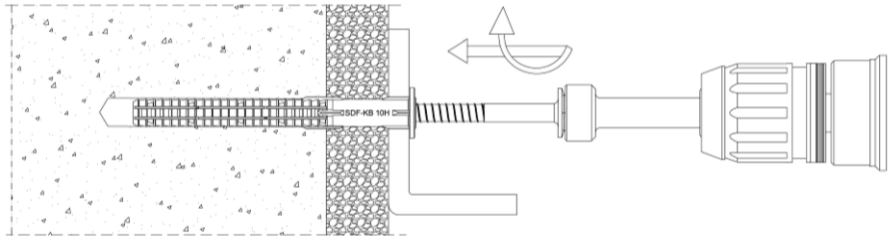
1. Drill the hole ø 10 mm using the drill method described in Annex C



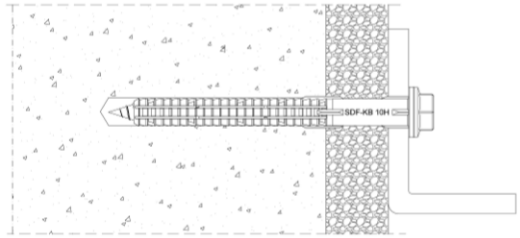
2. Cleaning of the hole
   Insert the assembled anchor (screw and sleeve) using a hammer, until the plastic sleeve is flush with surface of fixture



3. Screw in the screw until the head is rested on the plastic sleeve



4. Correctly installed anchor



CeraVent SDF 10V and CeraVent SDF 10H	Annex B 6
Intended use Installation instructions	

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Table C1.1: Characteristic bending moment of the screw (use category a, b, c and d)

Anchor type	**SDF-10V**				**SDF-10H**	
Material	Steel, galvanized		Stainless steel A4		Steel galvanized	Stainless steel A4
Characteristic bending moment $M_{Rk,s}$ [Nm]	13,80[2)]	23,01[3)]	16,09[2)]	26,62[3)]	17,67	20,62
Partial safety factor γ_{Ms} [1)]	*1,25*		*1,56*		*1,25*	*1,56*

1) in absence of other national regulations
2) at $h_{nom,1}$
3) at $h_{nom,2}$

Table C1.2: Characteristic resistance of the screw (use category a, b, c and d)

Anchor type	**SDF-10V**				**SDF-10H**	
Material	Steel, galvanized		Stainless steel A4		Steel, galvanized	Stainless steel A4
Characteristic tension resistance $N_{Rk,s}$ [kN]	15,85		18,49		18,70	21,82
Partial safety factor γ_{Ms} [1)]	*1,5*		*1,87*		*1,5*	*1,87*
Characteristic shear resistance $V_{Rk,s}$ [kN]	7,93[2)]	11,09[3)]	9,12[2)]	12,94[3)]	9,35	10,91
Partial safety factor γ_{Ms} [1)]	*1,25*		*1,56*		*1,25*	*1,56*

1) In absence of other national regulations
2) at $h_{nom,1}$
3) at $h_{nom,2}$

CeraVent SDF 10V and CeraVent SDF 10H

Performance
Characteristic resistance of the screw

Annex C 1

Deutsches Institut für Bautechnik DIBt

Table C2.1: Displacements [1)2)] under tension and shear loads (use category a, b, c and d)

Anchor type		Displacements under tension			Displacements under shear		
		F [kN]	δ_{N0} [mm]	$\delta_{N\infty}$ [mm]	F [kN]	δ_{V0} [mm]	$\delta_{V\infty}$ [mm]
Concrete, solid and hollow or perforated masonry							
SDF-10V		1,8	0,36	0,72	1,8	0,41	0,82
SDF-10H		1,8	0,37	0,74	1,8	0,41	0,82
Autoclaved aerated concrete							
SDF-10H	$f_b \geq 4$ N/mm²	0,54	0,17	0,34	0,54	1,08	1,62
	$f_b \geq 6$ N/mm²	0,89	0,41	0,82	0,89	1,78	2,67

1) Valid for all temperature ranges
2) Intermediate values can be interpolated

Table C2.2: Characteristic resistance for pull-out failure, use in concrete

Pull-out failure	**SDF-10V**		**SDF-10H**	
Overall plastic anchor embedment depth $h_{nom,1}$ [mm]	**40**		**70**	
Temperature range	30/50 °C	50/80 °C	30/50 °C	50/80 °C
Concrete ≥ C 12/15 Standard concrete slabs				
Characteristic tension resistance $N_{Rk,p}$ [kN]	**4,5**	**4,0**	**4,5**	**4,0**
Partial safety factor γ_{Mc} [1)]	*1,8*			
Concrete ≥ *C12/15* thin concrete slabs *(h= 50mm bis 100 mm)*				
Overall plastic anchor embedment depth $h_{nom,1}$ [mm]	----		**70**	
Temperature range			30/50 °C	50/80 °C
Characteristic tension resistance $N_{Rk,p}$ [kN]			**3,0**	**3,0**
Partial safety factor γ_{Mc} [1)]			*1,8*	
Characteristic resistance under fire exposure in concrete C 20/25 to C50/60 in any load direction, no permanent centric tension load and without lever arm, fastening of facade systems (Fire resistance class R 90)				
F [2)] [kN]	**≤ 0,8**		**≤ 0,8**	

1) In the absence of other national regulations
2) $F = F_{Rk} / (\gamma_m \times \gamma_F)$

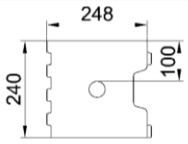
CeraVent SDF 10V and CeraVent SDF 10H

Performances
Displacements under tension and shear loads, Characteristic resistance in concrete and thin concrete slabs, Characteristic resistance in concrete under fire exposure

Annex C 2

Deutsches Institut für Bautechnik DIBt

Table C3.1: SDF-10V Characteristic resistance F_{Rk} [1] in solid masonry (use category b) with $h_{nom,2} \geq 50$ mm

Base material, min DF or min. size (LxWxH) [mm]	Geometry of the brick	Minimum compressive strength f_b [N/mm²]	Bulk density ρ [kg/dm³]	F_{Rk} [1] [kN] 30°C – 50°C	F_{Rk} [1] [kN] 50°C – 80°C
Solid masonry					
Clay brick Mz DIN 105-100:2012 / EN 771-1:2011 e.g. Schlagmann, MZ Format: 2 DF (240x115x113)	-	20	≥ 1,8	**2,5**	**2,5**
		10		**2,0**	**1,5**
Sand-lime solid brick, KS DIN V 106:2005-10 / EN 771-2:2011 e.g. Unika Format: NF(240x115x71)	-	36	≥ 2,0	**4,0**	**4,0**
		20		**2,0**	**2,0**
		10		**1,5**	**1,5**
Sand-lime solid brick, KS DIN V 106:2005-10 / EN 771-2:2011 e.g. Unika Format: 8DF (248x240x238)		20	≥ 1,8	**4,5**	**4,5**
		10		**3,0**	**3,0**
Lightweight concrete solid brick, V DIN V 18152-100:2005-10 / EN 771-3:2011 e.g. Fa. Nütling, Liapor V6 Format: 2 DF (240x115x113)	-	6	≥ 1,2	**0,30**	**0,30**
Partial safety factor γ_{Mm} [2]				*2,5*	

[1] Drilling method = Hammer drilling
[2] In the absence of other national regulations

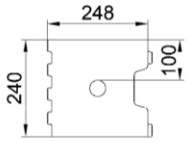
CeraVent SDF 10V and CeraVent SDF 10H

Performances
Characteristic resistance in solid masonry (SDF-10V)

Annex C 3

Deutsches Institut für Bautechnik DIBt

Table C4.1: SDF-10H Characteristic resistance F_{Rk} [1] in solid masonry (use category b) with $h_{nom} \geq 70$ mm

Base material, min DF or min. size (LxWxH) [mm]	Geometry of the brick	Minimum compressive strength f_b [N/mm²]	Bulk density ρ [kg/dm³]	F_{Rk} [1] [kN] 30°C – 50°C	F_{Rk} [1] [kN] 50°C – 80°C
Solid masonry					
Clay brick Mz DIN 105-100:2012 / EN 771-1:2011 e.g. Schlagmann, MZ Format: 2 DF (240x115x113)	-	20	≥ 1,8	**4,0**	**4,0**
		10		**3,0**	**3,0**
Sand-lime solid brick, KS DIN V 106:2005-10 / EN 771-2:2011 e.g. Unika Format: NF (240x115x71)	-	36	≥ 2,0	**4,5**	**4,5**
		20		**2,5**	**2,5**
		10		**1,5**	**1,5**
Sand-lime solid brick, KS DIN V 106:2005-10 / EN 771-2:2011 e.g. Unika Format: 8DF (248x240x238)		20	≥ 1,8	**4,5**	**4,5**
		10		**3,5**	**3,5**
Lightweight concrete solid brick, V DIN V 18152-100:2005-10 / EN 771-3:2011 e.g. Fa. Nüdling, Liapor V6 Format: 2 DF (240x115x113)	-	6	≥ 1,2	**2,0**	**2,0**
		4		**1,2**	**1,2**
Lightweight concrete solid block Vbl DIN V 18152-100:2005-10 / EN 771-3:2011 e.g. Fa. Nüdling, FCN Liapor Format:(1200x800x200)	-	4	≥ 1,0	**2,0**	**2,0**
		2		**0,9**	**0,9**
Partial safety factor γ_{Mm} [2]				*2,5*	

[1] Drilling method = Hammer drilling
[2] In the absence of other national regulations

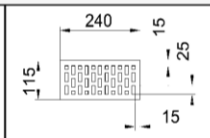
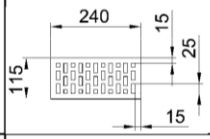
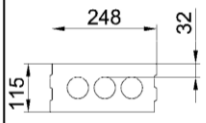
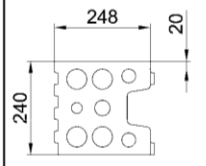
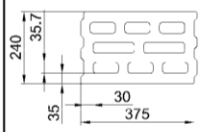
CeraVent SDF 10V and CeraVent SDF 10H

Performances
Characteristic resistance in solid masonry (SDF-10H)

Annex C 4

Deutsches Institut für Bautechnik DIBt

Table C5.1: SDF-10H characteristic resistance F_{Rk} [1] for masonry of hollow or perforated brick (use category c) with h_{nom} = 70 mm
(The influence of h_{nom} > 70 mm has to be detected by job-site tests)

Base material, min DF or min. size (LxWxH) [mm]	Geometry of the brick	Minimum compressive strength f_b [N/mm²]	Bulk density ρ [kg/dm³]	F_{Rk} [1] [kN] 30°C – 50°C	F_{Rk} [1] [kN] 50°C – 80°C
Hollow or perforated masonry					
Vertically perforated clay brick, HLz DIN 105-100:2012 / EN 771-1:2011 e.g. Unipor Format: 2 DF (240x115x113)		20	≥ 1,2	**1,50**	**1,50**
		12		**0,90**	**0,90**
Vertically perforated clay, HLz DIN 105-100:2012 / EN 771-1:2011 e.g. Unipor Format: NF (240x115x71)		12	≥ 0,9	**2,00**	**2,00**
		8		**1,50**	**1,50**
		6		**0,90**	**0,90**
Sand-lime perforated brick, KSL DIN V 106:2005-10 / EN 771-2:2011 e.g. Unika Format: 4DF (248x115x238)		12	≥ 1,6	**2,50**	**2,50**
				2,00	**2,00**
		10		**1,50**	**1,50**
		8			
Sand-lime perforated brick, KSL DIN V 106:2005-10 / EN 771-2:2011 e.g. Unika Format: 8DF (248x240x238)		16	≥ 1,4	**1,50**	**1,50**
		12		**1,20**	**1,20**
		8		**0,90**	**0,90**
		6		**0,60**	**0,60**
Lightweight concrete hollow blocks, Hbl DIN 18151-100:2005-10 / EN 771-3:2011 e.g. Fa. Nüdling Format: 12DF (375x240x238)		10	≥ 1,2	**1,20**	**1,20**
		8		**0,90**	**0,90**
		6		**0,75**	**0,75**
		4		**0,50**	**0,50**
Partial safety factor γ_{Mm} [2]				*2,5*	

[1] Drilling method = Rotary drilling
[2] In the absence of other national regulations

CeraVent SDF 10V and CeraVent SDF 10H

Performances
Characteristic resistance in hollow or perforated masonry (SDF-10H)

Annex C 5

Deutsches Institut für Bautechnik DIBt

Table C6.1: Characteristic load bearing capacity F_{Rk}[1)] for pull-out failure in autoclaved aerated concrete

	Min. compressive strength f_b [N/mm²]	Bulk density ρ [kg/dm³]	F_{Rk}[1)] [kN]	F_{Rk}[1)] [kN]
			30°C – 50°C	50°C – 80°C
Autoclaved aerated concrete according to EN 771-4	4	500	1,5	1,5
	5	500	2,0	2,0
	6	650	2,5	2,0
	7	650	2,5[3)]	2,0[3)]
Partial safety factor γ_{MAAC}[2)]			*2,0*	

1) Drilling method = rotary drilling
2) In the absence of other national regulations
3) Values limited by the characteristic resistance in autoclaved aerated concrete with f_b = 6 N/mm²

CeraVent SDF 10V and CeraVent SDF 10H

Performances
Characteristic resistance in autoclaved aerated concrete (SDF-10H)

Annex C 6