Deutsches Institut für Bautechnik

DIBt

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European Technical Assessment Body for construction products

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European Technical Assessment

ETA-19/0633 of 11 February 2025

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	EJOT SDF-DS 10 H
Product family to which the construction product belongs	Plastic anchor for redundant non-structural systems in concrete and masonry
Manufacturer	EJOT SE & Co. KG Astenbergstraße 21 57319 Bad Berleburg GERMANY
Manufacturing plant	manufacturing plant EJOT 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	EAD 330284-00-0604 edition 12/2020
This version replaces	ETA-19/0633 issued on 19 March 2020

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Specific part

1 Technical description of the product

The EJOT SDF-DS 10H is a plastic anchor consisting of a plastic sleeve made of polyamide and an accompanying specific screw of carbon steel with zinc flake coating with a shaft coating of polyamide.

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 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	see Annex C 2

3.2 Mechanical resistance and stability (BWR 4)

Essential characteristic	Performance
Resistance to steel failure under tension loading	see Annex C 1
Resistance to steel failure under shear loading	see Annex C 1
Resistance to pull-out or concrete failure under tension loading (base material group a)	see Annex C 2
Resistance in any load direction without lever arm (base material group b, c, d)	see Annexes C 3 – C 6
Edge distance and spacing (base material group a)	see Annex B 3
Edge distance and spacing (base material group b, c, d)	see Annex B 4 and B 5
Displacements under short-term and long-term loading	see Annex C 2
Durability	see Annex B 1

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

In accordance with European Assessment Document EAD 330284-00-0604 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 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 11 February 2025 by Deutsches Institut für Bautechnik

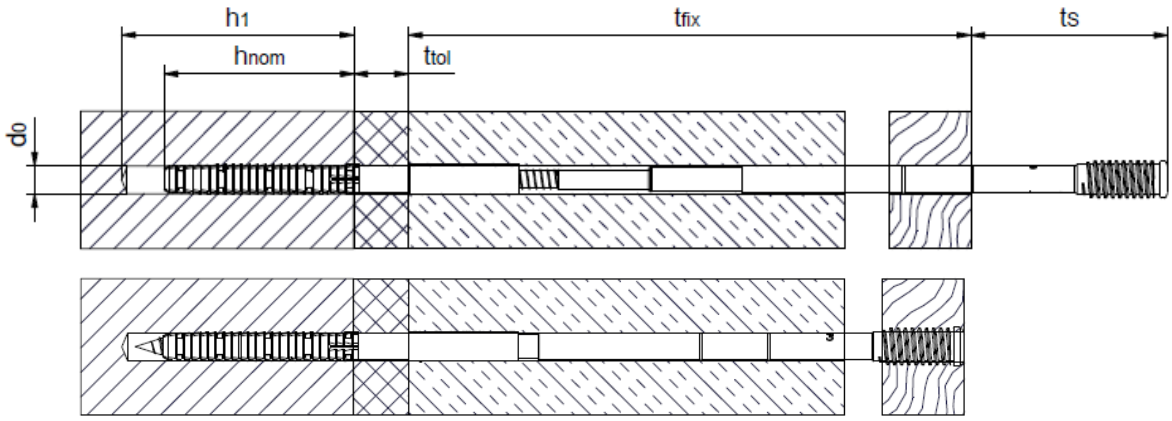
Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Ziegler

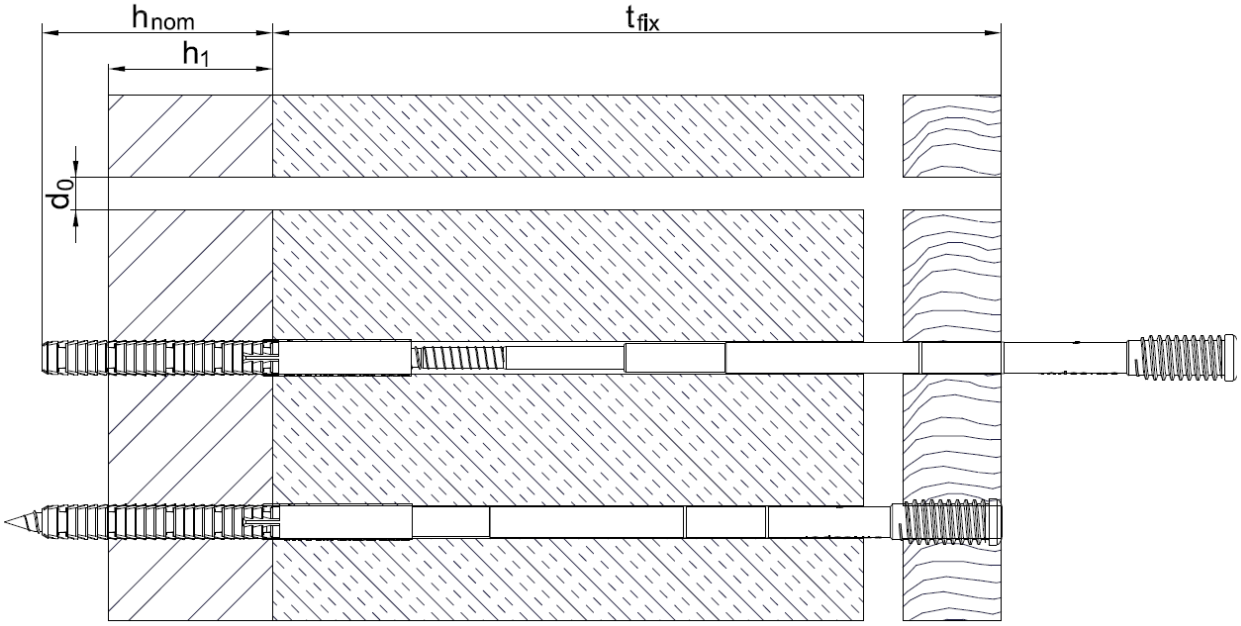
Deutsches Institut für Bautechnik DIBt

Intended use
Anchorage in concrete, solid bricks, hollow or perforated bricks, autoclaved aerated concrete and thin concrete components (weather shell)

SDF-DS 10H in concrete and masonry



SDF-DS 10H in thin concrete components (weather shell)



Legend

h_1	=	Depth of drilled hole to deepest point
h_{nom}	=	Overall plastic anchor embedment depth
t_{tol}	=	Thickness of equalizing layer or non-load bearing coating
t_{fix}	=	thickness of old render / tolerance area
t_s	=	control measurement from screw head to wooden frame
d_1	=	diameter of drilled hole in the wooden frame

EJOT SDF-DS 10 H

Product description
Installed condition

Annex A 1

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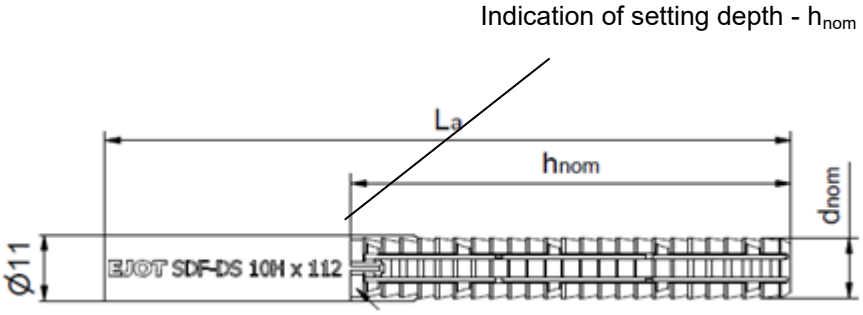
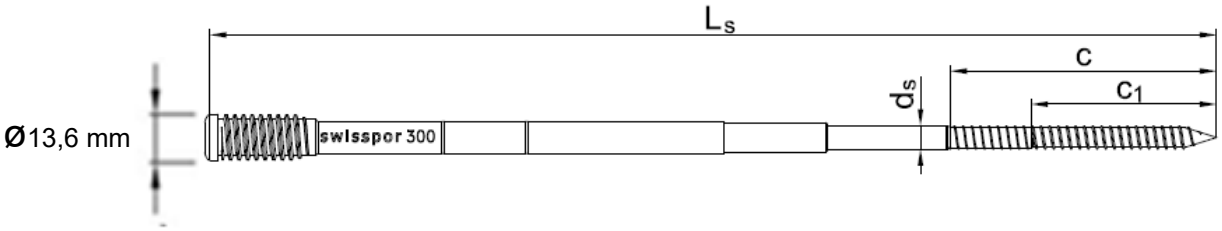
Anchor sleeve SDF-DS 10H

Anchor sleeve



Marking of anchor sleeve:
Manufacturer, anchor type incl. head type
diameter, length
Example: EJOT SDF-DS 10H x 112

Special screw



Marking of special screw:
Manufacturer, length
Example: swisspor 300

EJOT SDF-DS 10 H	**Annex A 2**
Product description Anchor types, marking of anchor sleeve and special screw	

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Product designation key

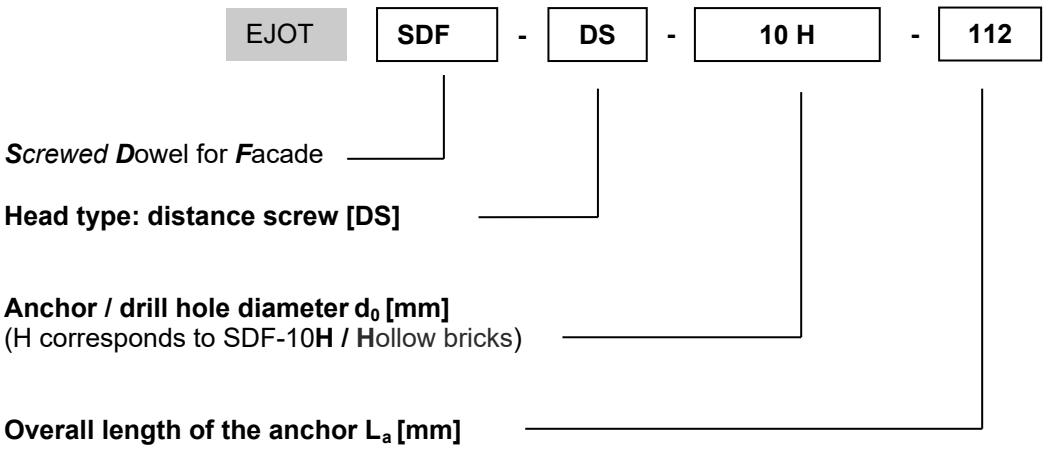

Table A3.1: Dimensions [mm]

Anchor type	Anchor sleeve						Special screw					
	colour	d_{nom}	h_{nom}	t_{tol}	min L_a	max L_a	min L_s	max L_s	d_g	d_s	C_1	C
SDF-DS 10H	nature	10	70	0-40	112	152	200	450	13,6	7,0	55	80

Table A3.2: Material

Element	Material
Anchor sleeve	Polyamide PA6, colour see Table A3.1
Moulded screw	Polyamide PA6, GF 50, colour: anthracite (RAL 7016)
Special screw	Carbon steel with zinc flake coating

EJOT SDF-DS 10 H	**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
- Redundant non-structural systems

Base materials:
- Reinforced or unreinforced compacted normal weight concrete without fibres with strength classes ≥ C12/15 (base material group a), according to EN 206:2013 + A1:2016, Annex C 2
- thin concrete components (weather shell) ≥ 50 mm thickness
- Solid brick masonry (base material group 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 (base material group c), according to Annex C 5.
- Autoclaved aerated concrete (base material group 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 base material groups a, b, c and d the characteristic resistance of the anchor may be determined by job site tests according to TR 051:2018-04.

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
- 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).

Design:
- The anchorages are designed in accordance with TR 064:2018-05 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.

Installation:
- Hole drilling by the drill modes according to Annex C for base material group 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
- No ingress of water in the bore hole < 0°C

EJOT SDF-DS 10 H	**Annex B 1**
Intended use Specifications	

Table B2.1: Installation parameters

Anchor type			**SDF-DS 10H**
Base material group[1)]			a,b,c,d
drill hole diameter	d_0 [mm]	=	10
Cutting diameter of drill bit	d_{cut} [mm]	≤	10,45
Depth of the drill hole to deepest point	h_1 [mm]	≥	80
Overall plastic anchor embedment depth[2)]	h_{nom} [mm]	=	70
Length of the screw	L_s	≥	t_{fix} - h_{ef}
Diameter of clearance hole in the fixture	d_1 [mm]	≤	11,5
Minimum installation temperature	[°C]		-10
Temperature range (c)	[°C]		30 - 50
Temperature range (b)	[°C]		50 - 80

[1)] base material group: 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 TR 051:2018-04.

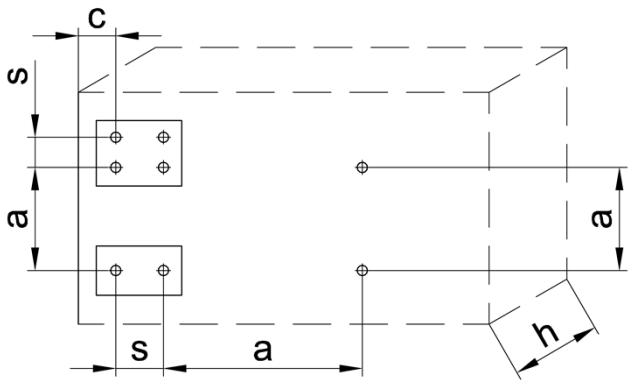
EJOT SDF-DS 10 H	**Annex B 2**
Intended use Installation parameters base material group a, b, c, d	

Table B3.1: Minimum member thickness, spacing and edge distance in concrete (base material group a)

Anchor type		Minimum member thickness h_{min} [mm]	Characteristic edge distance $c_{cr,N}$ [mm]	Characteristic spacing $s_{cr,N}$ [mm]	Minimum spacing and edge distances [mm]
SDF-DS 10H	**concrete ≥ C 16/20**	100	80	80	s_{min} = 60 for c_{min} ≥ 50
	concrete C 12/15		110	90	s_{min} = 85 for c_{min} ≥ 70
	concrete C20/25 (thin concrete slabs)	50	160	80	s_{min} = 80 for c_{min} ≥ 160

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

Scheme of spacing and edge distances in concrete



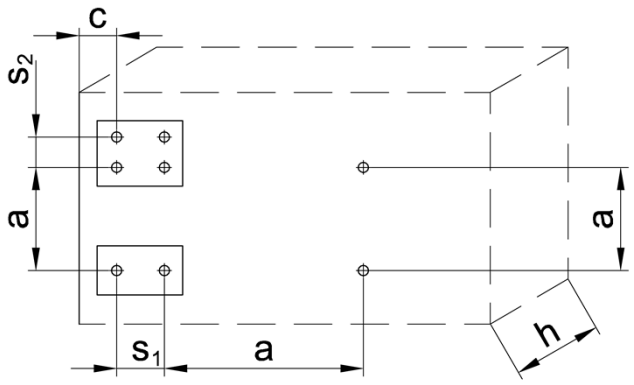
h = member thickness
c = edge distance
a = spacing
s_{min} = spacing within anchor group

EJOT SDF-DS 10 H	**Annex B 3**
Intended use Minimum member thickness, spacing and edge distance in concrete	

Table B4.1: Minimum member thickness, spacing and edge distance in masonry (base material group b and c)

Anchor type		SDF-DS 10H
Minimum member thickness	h_{min} [mm]	100
Single anchor		
Minimum edge distance	c_{min} [mm]	100
Minimum spacing	a_{min} [mm]	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



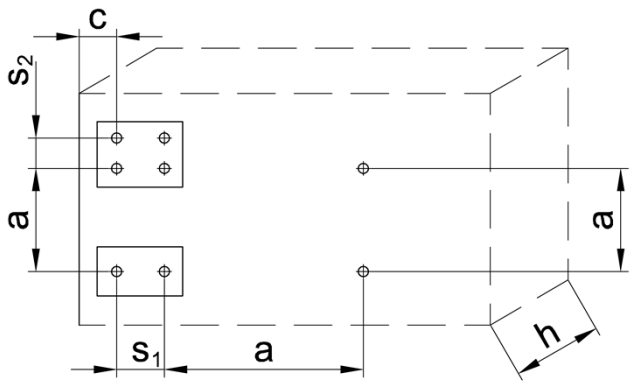
h = member thickness
a = spacing
c = edge distance
s_1 = spacing (perpendicular to the free edge) within an anchor group
s_2 = spacing (parallel to the free edge) within an anchor group

EJOT SDF-DS 10 H	**Annex B 4**
Intended use Minimum member thickness, spacing and edge distance in masonry	

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

SDF-DS 10H		$f_{cm,decl}$ ≥ 4 N/mm²	$f_{cm,decl}$ ≥ 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

EJOT SDF-DS 10 H	**Annex B 5**
Intended use Minimum member thickness, spacing and edge distance in autoclaved aerated concrete	

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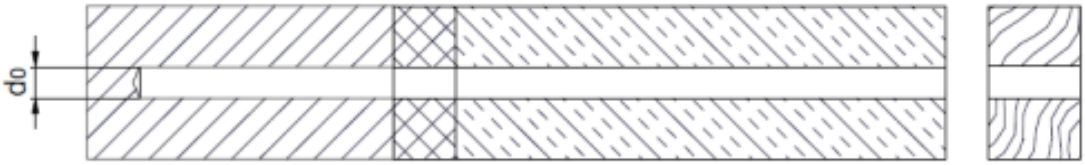
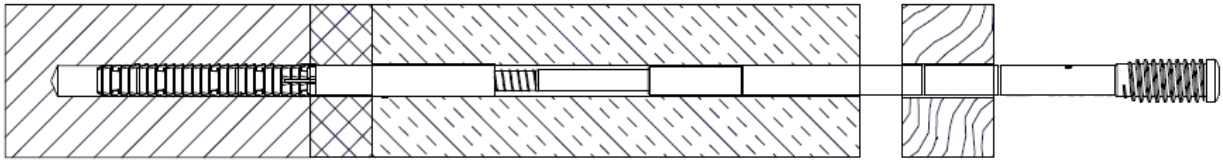
Installation instructions
(exemplary for the fixing of a pre-drilled metal attachment part)

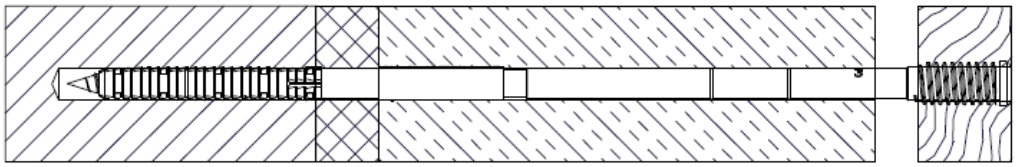
- Determination of thickness of plaster
- Definition of the length of the anchor sleeve
- Positioning the wooden frame
- Drill a hole in the wooden frame by using a ø 11.5 mm wood driller
- Drill a 10 mm diameter hole using the drilling method given in Annex C.
- Cleaning the borehole



- Assembly of the pre-assembled dowels / screw combination up to upper marking (acc. to Annex A1, installation condition)



- Screw in the specific screw into the anchor sleeve and into the wooden batten until the screw head is flush with the wooden surface.



EJOT SDF-DS 10 H	**Annex B 6**
Intended use Installation instructions	

Table C1.1: Characteristic bending moment of the screw (base material group a, b, c, d)

Anchor type	**SDF-DS 10H**
Material	Steel with zinc flake coating
Characteristic bending moment $M_{Rk,s}$ [Nm]	29,46
Partial safety factor γ_{Ms} 1)	*1,5*

1) in absence of other national regulations

Table C1.2: Characteristic resistance of the screw (base material group a, b, c and d)

Anchor type	**SDF-DS 10H**
Material	Steel with zinc flake coating
Characteristic tension resistance $N_{Rk,s}$ [kN]	31,17
Partial safety factor γ_{Ms} 1)	*1,4*
Characteristic shear resistance $V_{Rk,s}$ [kN]	15,59
Partial safety factor γ_{Ms} 1)	*1,5*

1) in absence of other national regulations

Table C2.1: Displacements [1)2)] under tension and shear loads (base material group a, b, c, 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-DS 10H		1,8	0,37	0,74	1,8	0,41	0,82
Autoclaved aerated concrete							
SDF-DS 10H	**$f_{cm,decl}$ ≥ 4 N/mm²**	0,54	0,17	0,34	0,54	1,08	1,62
	$f_{cm,decl}$ ≥ 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

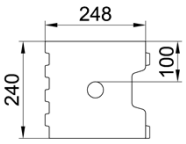
Table C2.2: Characteristic resistance for pull-out failure, use in concrete

Pull-out failure	**SDF-DS 10H**	
Overall plastic anchor embedment depth h_{nom} [mm]	**70**	
Temperature range	30/50 °C	50/80 °C
Concrete ≥ C 12/15 Standard concrete slabs		
Characteristic tension resistance $N_{Rk,p}$ [kN]	**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} [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)		
Characteristic tension resistance $F_{Rk,fi,90}$ [kN]	**≤ 0,8**	
Partial safety factor $\gamma_{M,fi}$ 1)	*1,0*	

1) in the absence of other national regulations

EJOT SDF-DS 10 H	**Annex C 2**
Performances Displacements under tension and shear loads, Characteristic resistance in concrete and thin concrete slabs, Characteristic resistance in concrete under fire exposure	

Table C3.1: SDF-DS 10H Characteristic resistance F_{Rk}[1)] in solid masonry (base material group b) with $h_{nom} \geq 70$ mm

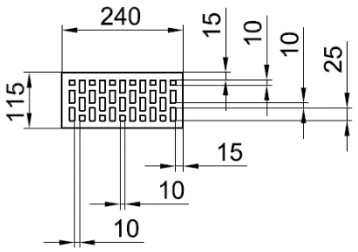
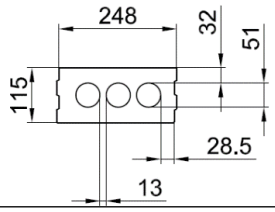
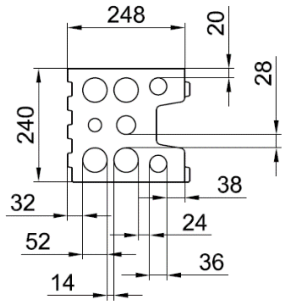
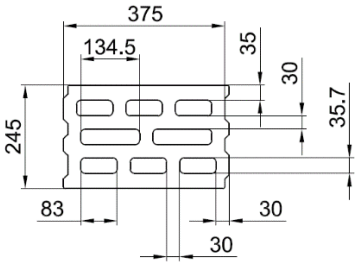
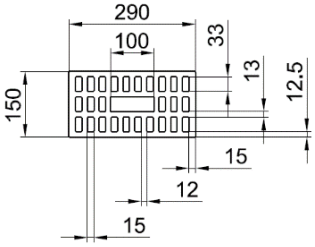
Base material, minimum format or minimum size (LxWxH) [mm]	Geometry of the brick	Mean compressive strength according EN 771 [N/mm²]	Bulk density ρ [kg/dm³]	F_{Rk}[1)] [kN] 30°C – 50°C	F_{Rk}[1)] [kN] 50°C – 80°C
Solid masonry					
Clay brick Mz EN 771-1:2011+A1:2015 e.g. Schlagmann, MZ dimensions: 2 DF (240x115x113)	-	26,1	≥ 1,8	**4,5**	**4,5**
		20		**3,5**	**3,0**
		10		**2,5**	**2,0**
Sand-lime solid brick, KS EN 771-2:2011+A1:2015 e.g. Unika dimensions: NF (240x115x71)	-	56,8	≥ 2,0	**6,0**	**6,0**
		45		**5,0**	**4,5**
		35		**4,0**	**3,5**
		20		**2,0**	**2,0**
		10		**1,5**	**1,5**
Sand-lime solid brick, KS EN 771-2:2011+A1:2015 e.g. Unika dimensions: 8DF (248x240x238)		20	≥ 1,8	**4,5**	**4,5**
		15		**4,0**	**4,0**
		10		**3,5**	**3,5**
Lightweight concrete solid brick, V EN 771-3:2011+A1:2015 e.g. Fa. Nüdling, Liapor V6 dimensions: 2 DF (240x115x113)	-	7,9	≥ 1,2	**2,0**	**2,0**
		5		**1,2**	**1,2**
		2,5		**0,6**	**0,6**
Lightweight concrete solid block Vbl EN 771-3:2011+A1:2015 e.g. Fa. Nüdling, FCN Liapor dimensions:(1200x800x200)	-	5,9	≥ 1,0	**2,0**	**2,0**
		5		**1,5**	**1,5**
		2,5		**0,9**	**0,9**
Partial safety factor γ_{Mm}[2)]				*2,5*	

[1)] Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single anchors or for a group of two or four anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table B4.1
Drilling method = Hammer drilling

[2)] in the absence of other national regulations

EJOT SDF-DS 10 H	**Annex C 3**
Performances Characteristic resistance in solid masonry	

Table C 4.1: Summary of hollow or perforated bricks, base material group c

Base material	Format / dimensions (L x B x H) [mm]	Picture of the brick [mm]	Mean compressive strength according to EN 771 [N/mm²] / Bulk density ρ [kg/dm³]	See Annex
Vertically perforated clay brick, HLz EN 771-1:2011+A1:2015 e.g. Unipor	2 DF 240 x 115 x 113		31,5 / 1,2	C 5
Vertically perforated clay brick, HLz EN 771-1:2011+A1:2015 e.g. Unipor	NF 240 x 115 x 71		22,3 / 0,9	C 5
Sand-lime perforated brick, KSL EN 771-2:2011+A1:2015 e.g. Unika	4 DF 248 x 115 x 238		13,0 / 1,6	C 5
Sand-lime perforated brick, KSL EN 771-2:2011+A1:2015 e.g. Unika	8 DF 248 x 240 x 238		18,4 / 1,4	C 5
Lightweight concrete hollow blocks, Hbl EN 771-3: 2011+A1:2015 Fa. Nüdling	12 DF 375 x 240 x 238		10,5 / 1,2	C 5
Vertically perforated clay brick, HLz EN 771-1:2011+A1:2015 Swissmodul SM B 17,5/19 Fa. zzwancor	NF 290 x 150 x 190		12,5 / 0,9	C 5

EJOT SDF-DS 10 H

Performances
Summary of hollow or perforated masonry

Annex C 4

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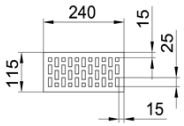
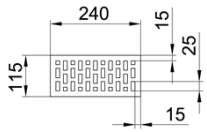
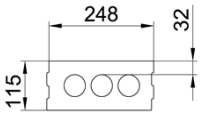
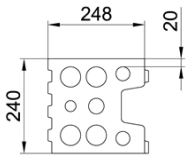
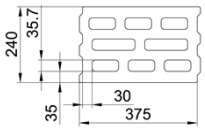
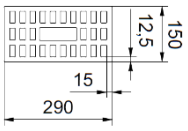
Table C5.1: SDF-DS 10H characteristic resistance F_{Rk} [1)] for masonry of hollow or perforated brick (base material group c) with h_{nom} = 70 mm

(The influence of h_{nom} > 70 mm has to be detected by job-site tests)

Base material, minimum format or minimum size (LxWxH) [mm]	Geometry of the brick	Mean compressive strength according EN 771 [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 EN 771-1:2011+A1:2015 e.g. Unipor dimensions: 2 DF (240x115x113)		31,5	≥ 1,2	**1,50**	**1,50**
		25		**1,20**	**1,20**
		15		**0,75**	**0,75**
		10		**0,50**	**0,50**
Vertically perforated clay, HLz EN 771-1:2011+A1:2015 e.g. Unipor dimensions: NF (240x115x71)		22,3	≥ 0,9	**2,00**	**2,00**
		12,5		**1,20**	**1,20**
		10		**0,90**	**0,90**
		7,5		**0,75**	**0,75**
Sand-lime perforated brick, KSL EN 771-2:2011+A1:2015 e.g. Unika dimensions: 4DF (248x115x238)		13,0	≥ 1,6	**2,50**	**2,50**
		10		**2,00**	**2,00**
		7,5		**1,50**	**1,50**
Sand-lime perforated brick, KSL EN 771-2:2011+A1:2015 e.g. Unika dimensions: 8DF (248x240x238)		18,4	≥ 1,4	**2,00**	**1,50**
		12,5		**1,20**	**1,20**
		7,5		**0,75**	**0,75**
		5		**0,50**	**0,50**
Lightweight concrete hollow blocks, Hbl EN 771-3:2011+A1:2015 e.g. Fa. Nüdling dimensions: 12DF (375x240x238)		10,5	≥ 1,2	**1,20**	**1,20**
		7,5		**0,90**	**0,90**
		5		**0,60**	**0,60**
		2,5		**0,30**	**0,30**
Vertically perforated clay brick, HLz EN 771-1:2011+A1:2015 Swissmodul SM B 17,5/19 Fa. zzwancor dimensions: 290x150x190		12,5	≥ 0,9	**2,00**	**2,00**
		10		**1,50**	**1,50**
		7,5		**1,20**	**1,20**
		5		**0,75**	**0,75**
Partial safety factor γ_{Mm} [2)]				*2,5*	

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single anchors or for a group of two or four anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table B4.1, Drilling method = Rotary drilling

2) in the absence of other national regulations

EJOT SDF-DS 10 H

Performances
Characteristic resistance in hollow or perforated masonry

Annex C 5

Table C6.1: SDF-DS 10 characteristic load bearing capacity F_{Rk}[1)] for pull-out failure in autoclaved aerated concrete

	Mean compressive strength $f_{cm,decl}$ [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 771-4:2011+A1:2015	≥ 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) Characteristic load-bearing capacity for tension, shear or combined tension and shear loading. Drilling method = rotary drilling
2) In the absence of other national regulations
3) Values limited by the characteristic resistance in autoclaved aerated concrete with $f_{cm,decl}$ = 6 N/mm²