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European Technical Assessment Body  
for construction products



## European Technical Assessment

ETA-25/0966  
of 10 December 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

Rotho Blaas frame anchor NDC

Product family to which the construction product belongs

Plastic anchor for redundant non-structural systems in concrete and masonry

Manufacturer

Rotho Blaas s.r.l  
Via dell'Adige 2/1  
39040 CORTACCIA (BZ)  
ITALIEN

Manufacturing plant

Rotho Blaas Srl Plant C1

This European Technical Assessment contains

22 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

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## Specific Part

### 1 Technical description of the product

The Rotho Blaas frame anchor NDC 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 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	See Annex C 1

#### 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 1
Resistance in any load direction without lever arm (base material group b, c, d)	See Annexes C 2 - C 4 and C 9
Edge distance and spacing (base material group a)	See Annex B 2
Edge distance and spacing (base material group b, c, d)	See Annex B 3 - B 5
Displacements under short-term and long-term loading	See Annex C 5 - C 9
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+

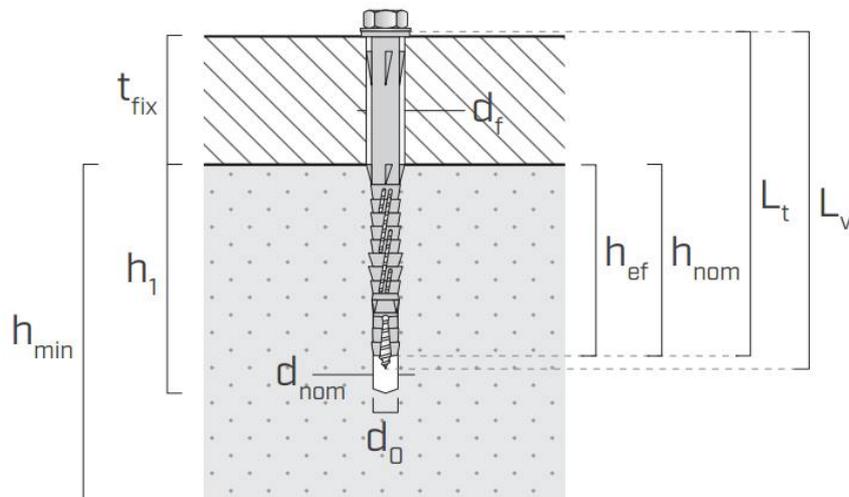
**5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD**

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 10 December 2025 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock  
Head of Section

*beglaubigt:*  
Ziegler



**Intended use:**

Fixing in concrete and different types of masonry.

**Legend:**

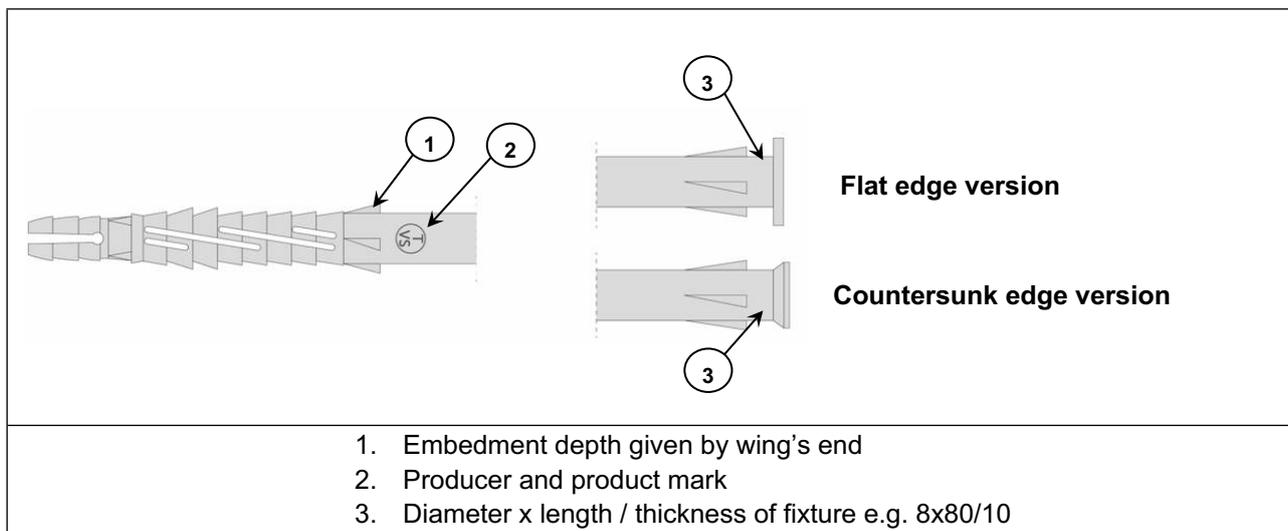
$h_{min}$	minimum thickness of concrete member
$h_{nom}$	minimum overall embedment depth
$h_{ef}$	minimum effective embedment depth
$d_{nom}$	anchor diameter
$L_t$	anchor length
$L_v$	screw length
$d_0$	drill hole diameter
$h_1$	minimum depth of drill hole
$t_{fix}$	maximum thickness of fixture
$d_f$	diameter of clearance hole in the fixture

Rotho Blaas frame anchor NDC

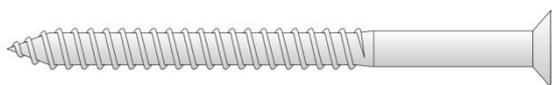
Product description  
Installed condition

Annex A 1

### Anchor sleeve



### Special screw (Carbon steel version and stainless steel A4 version)



### Different available head types

	Anchor code		
	head types	Nylon plug edge	
		Countersunk	Flat
<p>Screw thread</p>		NDC-C	NDC-F

Rotho Blaas frame anchor NDC

**Product description**  
Anchor types / specific screw – marking and dimensions

Annex A 2

**Table 1: Dimensions**

Parameter / Size		NDC Ø 8	NDC Ø 10
Outside diameter of anchor	$d_{nom} = [mm]$	8	10
Length of the anchor	$l_t = [mm]$	≥80	
Screw diameter	$d_v = [mm]$	6	7
Screw length	$l_v = [mm]$	≥85	≥85

**Table 2: Materials**

<b>Anchor sleeve</b>	Polyamide PA 6, colour: light grey
<b>Carbon steel screw</b>	Carbon Steel grade 5.8, Electroplated coating of zinc minimum 5 µm according to ISO 4042:2022 (hereinafter designated "zinc plated carbon steel")
<b>Stainless steel screw</b>	SS A4/70 according to ISO 3506-1:2020 and EN 10088-3:2014 Corrosion Resistance Class CRC III according to EN 1993-1-4:2006+A1:2015

**Rotho Blaas frame anchor NDC**

**Product description**  
Dimensions and materials

**Annex A 3**

### Specifications of intended use

#### Anchorage 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  $\geq$  C16/20 (base material group a), according to EN 206:2013 + A1:2016. See Annex C 1.
- Solid brick masonry (base material group b). See Annex C 2.  
Note: The characteristic resistance is also valid for larger brick sizes and larger compressive strength of the masonry unit.
- Hollow or perforated brick masonry (base material group c). See Annexes C 3 and C 4.
- Autoclaved aerated concrete (base material group d). See Annex C 9
- Mortar strength class of the masonry  $\geq$  M2,5 at minimum according to EN 998-2:2016.
- For other base materials of the base material group a, b, c or d the characteristic resistance of the anchor may be determined by job site tests according to EOTA TR 051:2018-04.

#### Temperature Range:

- a: - 40 °C to 40 °C (max. short term temperature + 40 °C and max long term temperature + 24 °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 plated carbon steel screws, A4 stainless steel screws.
- The specific screw made of zinc plated carbon 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 to permanently damp internal condition, if no particular aggressive conditions exist: A4 stainless steel screws.  
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 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 1, C 2, C 3, C 4, C 9.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site
- Installation temperature  $\geq$  0°C
- Exposure to UV due to solar radiation of the anchor not protected  $\leq$  6 weeks
- No ingress of water in the core hole  $<$  0°C

Rotho Blaas frame anchor NDC

Intended use  
Specifications

Annex B 1

**Table 3: Installation parameters**

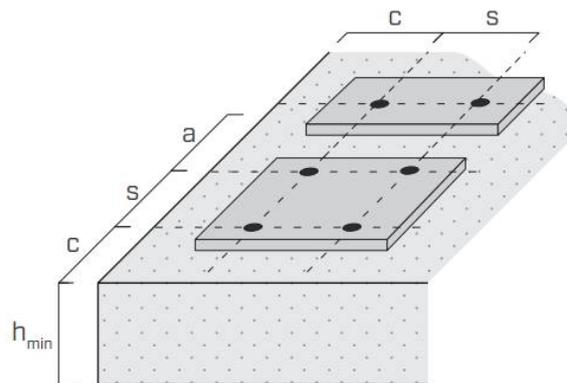
Parameter / Size		NDC Ø 8	NDC Ø 10
Nominal drill hole diameter	$d_o$ [mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$ [mm]	8,45	10,45
Depth of drill hole	$h_1 =$ [mm]	90	90
Effective anchorage depth	$h_{ef} =$ [mm]	70	70
Diameter of clearance hole in the fixture	$d_f =$ [mm]	9	11
Thickness of fixture	$t_{fix} =$ [mm]	≥10	
Hexalobular socket number (ISO 10664)	T [-]	30	40
Wrench size (for hexagonal head only)	SW = [mm]	10	13

**Table 4: Minimum thickness of the member, edge distance and spacing in concrete**

Parameter / Size		NDC Ø 8	NDC Ø 10
Concrete strength class		≥ C16/20	
Minimum thickness of the member	$h_{min}$ [mm]	140	
Characteristic edge distance	$c_{cr,N}^{1)}$ [mm]	105	105
Characteristic spacing	$s_{cr,N}^{1)}$ [mm]	75	90
Minimum spacing and edge distance <sup>1)</sup>	$s_{min}$ [mm]	90	100
	$c_{min}$ [mm]	90	100

<sup>1)</sup> Intermediate value by linear interpolation

**Scheme of edge distance and spacing in concrete and masonry**



Fixing points with a spacing  $a \leq s_{cr,N}$  are considered as a group with a maximum characteristic resistance  $N_{Rk,p}$  according to Table 17. For a spacing  $a > s_{cr,N}$  the anchors are considered as single anchors, each with a characteristic resistance  $N_{Rk,p}$  according to Table 17.

**Rotho Blaas frame anchor NDC**

**Intended use**

Installation parameters, edge distances and spacing for use in concrete

**Annex B 2**

**Table 5: Minimum distances and dimensions in solid brick masonry - Type "A"**

Minimum thickness of the member	$h_{\min}$ [mm]	110
<b>Single anchor</b>		
Minimum edge distance	$c_{\min}$ [mm]	120
<b>Anchor Group</b>		
Spacing perpendicular to free edge	$S_{1,\min}$ [mm]	240
Spacing parallel to free edge	$S_{2,\min}$ [mm]	480
Minimum edge distance	$c_{\min}$ [mm]	120

**Table 6: Minimum distances and dimensions in solid brick masonry - Type "B"**

Minimum thickness of the member	$h_{\min}$ [mm]	120
<b>Single anchor</b>		
Minimum edge distance	$c_{\min}$ [mm]	125
<b>Anchor Group</b>		
Spacing perpendicular to free edge	$S_{1,\min}$ [mm]	250
Spacing parallel to free edge	$S_{2,\min}$ [mm]	500
Minimum edge distance	$c_{\min}$ [mm]	125

**Table 7: Minimum distances and dimensions in solid brick masonry - Type "E"**

Minimum thickness of the member	$h_{\min}$ [mm]	370
<b>Single anchor</b>		
Minimum edge distance	$c_{\min}$ [mm]	185
<b>Anchor Group</b>		
Spacing perpendicular to free edge	$S_{1,\min}$ [mm]	370
Spacing parallel to free edge	$S_{2,\min}$ [mm]	740
Minimum edge distance	$c_{\min}$ [mm]	185

**Table 8: Minimum distances and dimensions in solid brick masonry - Type "F"**

Minimum thickness of the member	$h_{\min}$ [mm]	240
<b>Single anchor</b>		
Minimum edge distance	$c_{\min}$ [mm]	120
<b>Anchor Group</b>		
Spacing perpendicular to free edge	$S_{1,\min}$ [mm]	240
Spacing parallel to free edge	$S_{2,\min}$ [mm]	480
Minimum edge distance	$c_{\min}$ [mm]	120

**Rotho Blaas frame anchor NDC**

**Intended use**

Edge distances and spacing for use in solid brick masonry

**Annex B 3**

**Table 9: Minimum distances and dimensions in perforated brick masonry – Type "C"**

Minimum thickness of the member	$h_{\min}$ [mm]	120
<b>Single anchor</b>		
Minimum edge distance	$c_{\min}$ [mm]	125
<b>Anchor Group</b>		
Spacing perpendicular to free edge	$S_{1,\min}$ [mm]	250
Spacing parallel to free edge	$S_{2,\min}$ [mm]	500
Minimum edge distance	$c_{\min}$ [mm]	125

**Table 10: Minimum distances and dimensions in perforated brick masonry – Type "D"**

Minimum thickness of the member	$h_{\min}$ [mm]	120
<b>Single anchor</b>		
Minimum edge distance	$c_{\min}$ [mm]	125
<b>Anchor Group</b>		
Spacing perpendicular to free edge	$S_{1,\min}$ [mm]	250
Spacing parallel to free edge	$S_{2,\min}$ [mm]	500
Minimum edge distance	$c_{\min}$ [mm]	75

**Table 11: Minimum distances and dimensions in perforated brick masonry – Type "G"**

Minimum thickness of the member	$h_{\min}$ [mm]	240
<b>Single anchor</b>		
Minimum edge distance	$c_{\min}$ [mm]	120
<b>Anchor Group</b>		
Spacing perpendicular to free edge	$S_{1,\min}$ [mm]	240
Spacing parallel to free edge	$S_{2,\min}$ [mm]	480
Minimum edge distance	$c_{\min}$ [mm]	120

**Table 12: Minimum distances and dimensions in perforated brick masonry – Type "H"**

Minimum thickness of the member	$h_{\min}$ [mm]	115
<b>Single anchor</b>		
Minimum edge distance	$c_{\min}$ [mm]	120
<b>Anchor Group</b>		
Spacing perpendicular to free edge	$S_{1,\min}$ [mm]	240
Spacing parallel to free edge	$S_{2,\min}$ [mm]	480
Minimum edge distance	$c_{\min}$ [mm]	120

**Rotho Blaas frame anchor NDC**

**Intended use**

Edge distances and spacing for use in perforated brick masonry

**Annex B 4**

**Table 13: Minimum distances and dimensions in hollow brick masonry – Type “I”**

Minimum thickness of the member	$h_{\min}$ [mm]	175
<b>Single anchor</b>		
Minimum edge distance	$c_{\min}$ [mm]	120
<b>Anchor Group</b>		
Spacing perpendicular to free edge	$S_{1,\min}$ [mm]	240
Spacing parallel to free edge	$S_{2,\min}$ [mm]	480
Minimum edge distance	$c_{\min}$ [mm]	120

**Table 14: Minimum distances and dimensions in autoclaved aerated concrete**

Minimum thickness of the member	$h_{\min}$ [mm]	240
<b>Single anchor</b>		
Minimum edge distance	$c_{\min}$ [mm]	120
<b>Anchor Group</b>		
Spacing perpendicular to free edge	$S_{1,\min}$ [mm]	240
Spacing parallel to free edge	$S_{2,\min}$ [mm]	480
Minimum edge distance	$c_{\min}$ [mm]	120

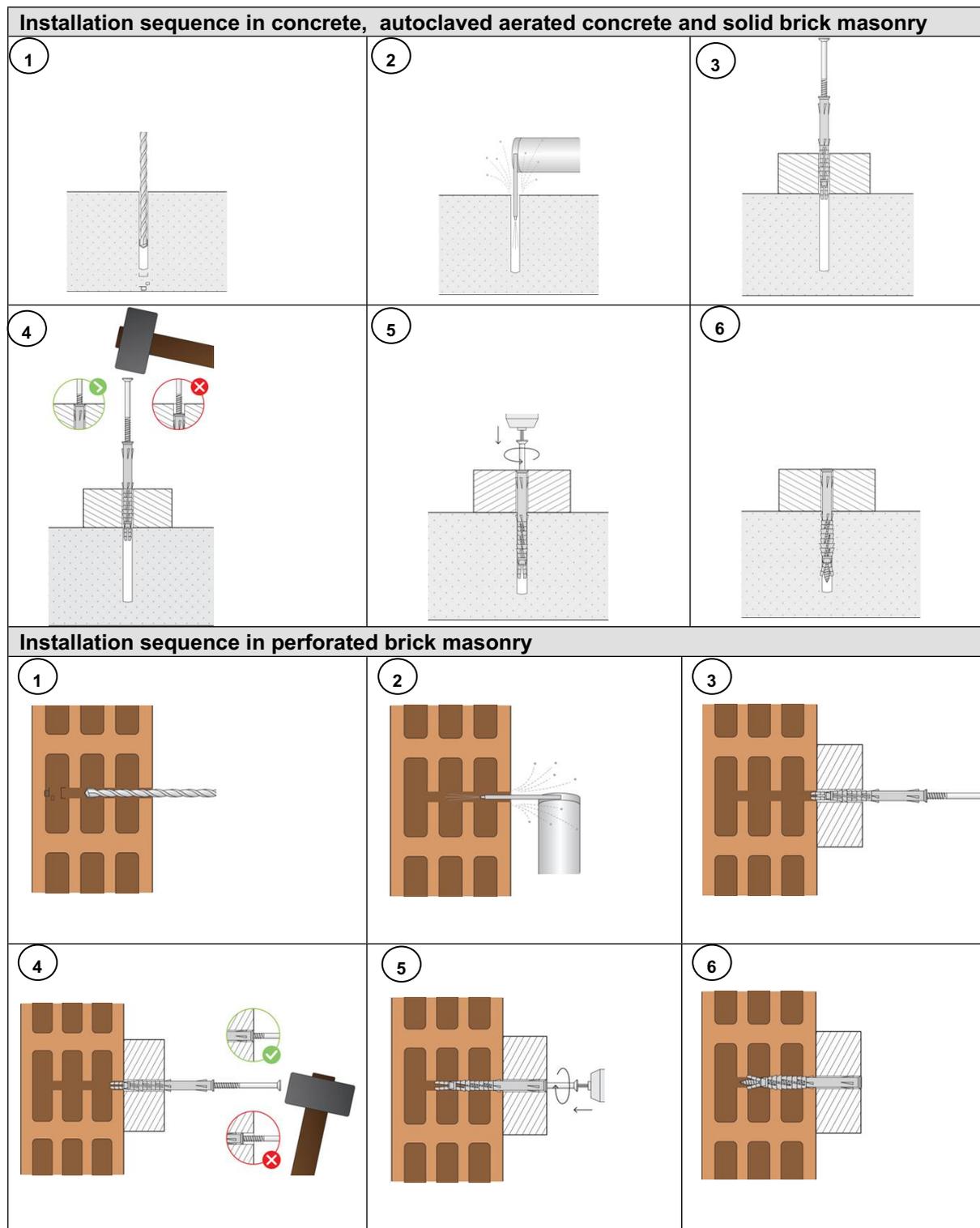
**Rotho Blaas frame anchor NDC**

**Intended use**

Edge distances and spacing for use in hollow brick masonry and autoclaved aerated concrete

**Annex B 5**

### Setting instructions



**Rotho Blaas frame anchor NDC**

**Intended use**  
Setting instructions

**Annex B 6**

**Table 15: Characteristic bending resistance of the screw**

Parameter / Size			NDC Ø 8		NDC Ø 10	
			Galvanized steel	Stainless steel	Galvanized steel	Stainless steel
Characteristic bending resistance	$M_{Rk,s}$	[Nm]	12,1	16,9	19,3	27,1
Partial safety factor	$\gamma_{Ms}$	[-]	1,25			

**Table 16: Characteristic resistance of the screw**

Parameter / Size			NDC Ø 8		NDC Ø 10	
			Galvanized steel	Stainless steel	Galvanized steel	Stainless steel
Characteristic tension resistance	$N_{Rk,s}$	[kN]	11,3	15,8	15,4	21,6
Partial safety factor	$\gamma_{Ms}$	[-]	1,5			
Characteristic shear resistance	$V_{Rk,s}$	[kN]	5,6	7,9	7,7	10,8
Partial safety factor	$\gamma_{Ms}$	[-]	1,25			

**Table 17: Characteristic resistance for use in concrete<sup>1)</sup>**

Plastic sleeve pull-out failure			NDC Ø 8		NDC Ø 10	
Temperature range			24/40 °C	50/80 °C	24/40 °C	50/80 °C
Characteristic tension resistance	$N_{Rk,p}$	[kN]	3,5	3,0	4,5	4,0
Partial safety factor	$\gamma_{Mc}^{2)}$	[-]	1,8			

<sup>1)</sup> Concrete strength  $f_{ck} \geq 16$  N/mm<sup>2</sup> (strength class C16/20 according to EN 206:2013 + A1:2016)

Drill method: hammer drilling

<sup>2)</sup> In absence of other national regulations

**Table 18: Characteristic resistance under fire exposure in concrete<sup>1)</sup> in any load direction, no permanent centric tension load and without lever arm, fastening of façade systems**

Anchor type	Fire resistance class	$F_{Rk,fi,90}$ [kN]	$\gamma_{M,fi}^{2)}$ [-]
NDC plug	R 90	0,8	1,0

<sup>1)</sup> Concrete strength  $f_{ck} \geq 16$  N/mm<sup>2</sup> (strength class C16/20 according to EN 206:2013 + A1:2016)

Drill method: hammer drilling

<sup>2)</sup> In absence of other national regulations

**Rotho Blaas frame anchor NDC**

**Performances**

Characteristic resistance of the screw, characteristic resistance for use in concrete

**Annex C 1**

**Table 19: Characteristic resistance – Solid brick masonry type "A" (base material group "b")**

Base material	Drill method	Bulk density $\rho$	Mean compressive strength as per EN 771	NDC $\varnothing 8$ $F_{Rk}$	NDC $\varnothing 10$ $F_{Rk}$
description	-	[kg/dm <sup>3</sup> ]	[N/mm <sup>2</sup> ]	[kN]	[kN]
Solid clay brick according to EN 771-1:2011+A1:2015 Mattone pieno 110x60x240 "Danesi"	Rotary + hammer	1,7	20,0	3,0 <sup>1)</sup>	2,0 <sup>1)</sup>

**Table 20: Characteristic resistance – Solid brick masonry type "B" (base material group "b")**

Base material	Drill method	Bulk density $\rho$	Mean compressive strength as per EN 771	NDC $\varnothing 8$ $F_{Rk}$	NDC $\varnothing 10$ $F_{Rk}$
description	-	[kg/dm <sup>3</sup> ]	[N/mm <sup>2</sup> ]	[kN]	[kN]
Solid clay brick according to EN 771-1:2011+A1:2015 Mattone pieno 250x120x55 "Terreal Italia"	Rotary + hammer	1,7	20,0	4,0 <sup>1)</sup>	5,0 <sup>1)</sup>

**Table 21: Characteristic resistance – Solid brick masonry type "E" (base material group "b")**

Base material	Drill method	Bulk density $\rho$	Mean compressive strength as per EN 771	NDC $\varnothing 8$ $F_{Rk}$	NDC $\varnothing 10$ $F_{Rk}$
description	-	[kg/dm <sup>3</sup> ]	[N/mm <sup>2</sup> ]	[kN]	[kN]
Vulcanic tuff brick according to EN 771-3:2011+A1:2015 Fior di tufo 370x370x110 "Cave reunite"	Rotary + hammer	2,4	7,5	-	0,3

**Table 22: Characteristic resistance – Solid brick masonry type "F" (base material group "b")**

Base material	Drill method	Bulk density $\rho$	Mean compressive strength as per EN 771	NDC $\varnothing 8$ $F_{Rk}$	NDC $\varnothing 10$ $F_{Rk}$
description	-	[kg/dm <sup>3</sup> ]	[N/mm <sup>2</sup> ]	[kN]	[kN]
Calcium silicate solid brick according to EN 771-2:2011+A1:2015 Kalksandsteine KS-Plansteine KS-R(P)-20-2,0-8DF (240) "Heidelberger-Kalksandstein"	Rotary + hammer	1,9	20,0	5,5 <sup>1)</sup>	6,0 <sup>1)</sup>

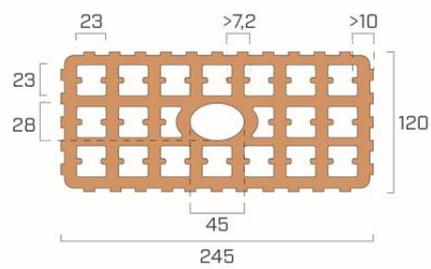
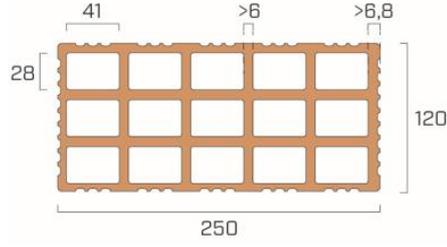
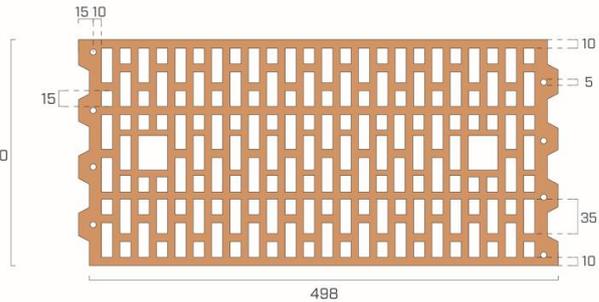
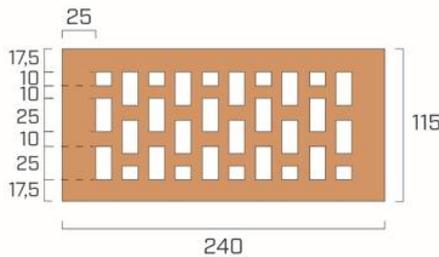
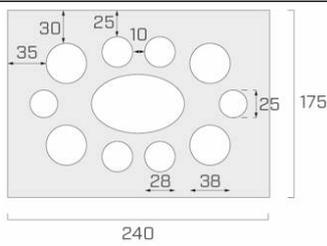
<sup>1)</sup> For brick with mean compressive strength in the range 10 - 20 N/mm<sup>2</sup>:  $F_{Rk,low} = 0,7 \times F_{Rk}$  (with  $F_{Rk}$  for 20 N/mm<sup>2</sup>)

**Rotho Blaas frame anchor NDC**

**Performances**  
Characteristic resistance for use in solid brick masonry

**Annex C 2**

**Table 23: Hollow and perforated brick masonry (base material group "c") dimensional details**

Brick type	Base material description	Dimensions [mm]	Dimensional details
"C"	Perforated clay brick Doppio doppio UNI "Danesi"	120x245x250	
"D"	Perforated clay brick according to EN-771-1:2011+A1:2015 Forati "Wienerberger"	120x250x250	
"G"	Perforated clay brick, according to EN 771- 1:2011+A1:2015 Poroton-Hochlochziegel- Block-T-24,0-0,9 L "Wienerberger"	240x500x238	
"H"	Perforated clay brick, according to EN 771-1:2011+A1:2015 Poroton-Kleinformat HzB- 2DF -0,9 "Wienerberger"	115x240x113	
"I"	Hollow calcium silicate brick according to EN 771-2:2011+A1:2015 "Heidelberger- Kalksandstein" KS-L	175x240x113	

Rotho Blaas frame anchor NDC

**Performances**  
Hollow and perforated brick masonry dimensional details

**Annex C 3**

**Table 24: Characteristic resistance - perforated and hollow brick masonry (base material group "c")**

Base material	Drill method	Bulk density $\rho$	Mean compressive strength as per EN 771	NDC $\varnothing 8$ $F_{Rk}$	NDC $\varnothing 10$ $F_{Rk}$
description	-	[kg/dm <sup>3</sup> ]	[N/mm <sup>2</sup> ]	[kN]	[kN]
<b>Masonry type "C"</b>					
Perforated clay brick according to EN 771-1:2011+A1:2015 Doppio doppio UNI 120x245x250 "Danesi"	Rotary	0,9	13,0	-	0,3
<b>Masonry type "D"</b>					
Perforated clay brick according to EN 771-1:2011+A1:2015 Forati 120x250x250 "Wienerberger"	Rotary	0,6	2,0	0,3	-
<b>Masonry type "G"</b>					
Perforated clay brick, according to EN 771-1:2011+A1:2015 Poroton-Hochlochziegel-Block-T-24,0-0,9 L "Wienerberger"	Rotary	0,9	7,0	0,9	0,9
<b>Masonry type "H"</b>					
Perforated clay brick, according to EN 771-1:2011+A1:2015 Poroton-Kleinformat HlzB- 2DF -0,9 "Wienerberger"	Rotary	0,9	15,0	0,9	0,9
<b>Masonry type "I"</b>					
Hollow calcium silicate brick according to EN 771-2:2011+A1:2015 "Heidelberger-Kalksandstein" KS-L	Rotary	1,5	15,0	5,0	5,5

**Rotho Blaas frame anchor NDC**

**Performances**

Characteristic resistance for use in hollow or perforated masonry

**Annex C 4**

**Table 25: Displacements under tension load in concrete**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service tension load concrete	N	[kN]	1,2	1,6
	Displacements	$\delta_{N0}$	0,24	0,29
		$\delta_{N\infty}$	0,48	0,58

**Table 26: Displacements under shear load in concrete**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service shear load in concrete	V	[kN]	3,2	4,4
	Displacements	$\delta_{V0}$	2,00	1,67
		$\delta_{V\infty}$	3,00	2,50

**Table 27: Displacements under tension load in solid brick masonry - type "A"**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service tension load in solid masonry	N	[kN]	0,9	0,6
	Displacements	$\delta_{N0}$	0,04	0,06
		$\delta_{N\infty}$	0,08	0,12

**Table 28: Displacements under tension load in solid brick masonry - type "B"**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service tension load in solid masonry	N	[kN]	1,1	1,4
	Displacements	$\delta_{N0}$	0,25	0,67
		$\delta_{N\infty}$	0,50	1,34

**Rotho Blaas frame anchor NDC**

**Performances**  
Displacements in concrete and solid masonry

**Annex C 5**

**Table 29: Displacements under tension load in solid brick masonry - type "E"**

Parameter / Size			NDC Ø 8
Service tension load in solid masonry	N	[kN]	0,09
	$\delta_{N0}$	[mm]	0,01
Displacements	$\delta_{N\infty}$	[mm]	0,02

**Table 30: Displacements under tension load in solid brick masonry - type "F"**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service tension load in solid masonry	N	[kN]	1,57	1,71
	$\delta_{N0}$	[mm]	0,14	0,07
Displacements	$\delta_{N\infty}$	[mm]	0,29	0,15

**Table 31: Displacements under shear load in solid brick masonry - type "A", "B" and "E"**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service shear load in solid masonry	V	[kN]	3,2	4,4
	$\delta_{V0}$	[mm]	2,67	3,67
Displacements	$\delta_{V\infty}$	[mm]	4,00	5,50

**Table 32: Displacements under shear load in solid brick masonry - type "F"**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service shear load in solid masonry	V	[kN]	1,57	1,71
	$\delta_{V0}$	[mm]	1,31	1,43
Displacements	$\delta_{V\infty}$	[mm]	1,96	2,14

**Rotho Blaas frame anchor NDC**

**Performances**  
Displacements in solid masonry

**Annex C 6**

**Table 33: Displacements under tension load in perforated brick masonry - type "C"**

Parameter / Size			NDC Ø 10
Service tension load in hollow masonry	N	[kN]	0,09
Displacements	$\delta_{N0}$	[mm]	0,12
	$\delta_{N\infty}$	[mm]	0,24

**Table 34: Displacements under tension load in perforated brick masonry - type "D"**

Parameter / Size			NDC Ø 8
Service tension load in hollow masonry	N	[kN]	0,09
Displacements	$\delta_{N0}$	[mm]	0,03
	$\delta_{N\infty}$	[mm]	0,06

**Table 35: Displacements under tension load in perforated brick masonry - type "G"**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service tension load in hollow masonry	N	[kN]	0,26	0,26
Displacements	$\delta_{N0}$	[mm]	0,01	0,01
	$\delta_{N\infty}$	[mm]	0,02	0,02

**Table 36: Displacements under tension load in perforated brick masonry - type "H"**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service tension load in hollow masonry	N	[kN]	0,26	0,26
Displacements	$\delta_{N0}$	[mm]	0,01	0,01
	$\delta_{N\infty}$	[mm]	0,02	0,02

**Table 37: Displacements under tension load in hollow brick masonry - type "I"**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service tension load in hollow masonry	N	[kN]	1,43	1,57
Displacements	$\delta_{N0}$	[mm]	0,11	0,08
	$\delta_{N\infty}$	[mm]	0,21	0,17

**Rotho Blaas frame anchor NDC**

**Performances**

Displacements under tension load in perforated and hollow brick masonry

**Annex C 7**

**Table 38: Displacements under shear load in perforated brick masonry type "C" and "D"**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service shear load in hollow masonry	V	[kN]	3,2	4,4
Displacements	$\delta_{V0}$	[mm]	6,40	8,80
	$\delta_{V\infty}$	[mm]	9,60	13,20

**Table 39: Displacements under shear load in perforated brick masonry type "G" and "H"**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service shear load in hollow masonry	V	[kN]	0,26	0,26
Displacements	$\delta_{V0}$	[mm]	0,21	0,21
	$\delta_{V\infty}$	[mm]	0,32	0,32

**Table 40: Displacements under shear load in hollow brick masonry type "I"**

Parameter / Size			NDC Ø 8	NDC Ø 10
Service shear load in hollow masonry	V	[kN]	1,43	1,57
Displacements	$\delta_{V0}$	[mm]	1,19	1,31
	$\delta_{V\infty}$	[mm]	1,79	1,96

**Rotho Blaas frame anchor NDC**

**Performances**

Displacements under shear load in perforated and hollow brick masonry

**Annex C 8**

**Table 41: Characteristic resistance in autoclaved aerated concrete (base material group "d")**

Base material	Drill method	Bulk density $\rho$	Mean compressive strength as per EN 771 $f_{cm,decl}$	NDC $\varnothing 8$ $F_{Rk}$	NDC $\varnothing 10$ $F_{Rk}$
description	-	[kg/dm <sup>3</sup> ]	[N/mm <sup>2</sup> ]	[kN]	[kN]
Uncracked autoclaved aerated concrete blocks EN 771-4:2011+A1:2015	Rotary only	0,5	3,5	0,5	0,6

**Table 42: Displacements under tension load in autoclaved aerated concrete**

Parameter / Size			NDC $\varnothing 8$	NDC $\varnothing 10$
Service tension load	N	[kN]	0,18	0,21
Displacements	$\delta_{N0}$	[mm]	0,01	0,01
	$\delta_{N\infty}$	[mm]	0,02	0,02

**Table 43: Displacements under shear load in autoclaved aerated concrete**

Parameter / Size			NDC $\varnothing 8$	NDC $\varnothing 10$
Service shear load	V	[kN]	0,18	0,21
Displacements	$\delta_{V0}$	[mm]	0,36	0,43
	$\delta_{V\infty}$	[mm]	0,54	0,64

**Rotho Blaas frame anchor NDC**

**Performances**

Characteristic resistance and displacements for use in autoclaved aerated concrete

**Annex C 9**