

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-18/0548
of 28 August 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

frame fixing URDL

Product family
to which the construction product belongs

Plastic anchor for multiple use in concrete and masonry
for non-structural applications

Manufacturer

Upat Vertriebs GmbH
Bebelstraße 11
79108 Freiburg im Breisgau
DEUTSCHLAND

Manufacturing plant

manufacturing plant 1

This European Technical Assessment
contains

15 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.

European Technical Assessment

ETA-18/0548

English translation prepared by DIBt

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Specific Part

1 Technical description of the product

The frame fixing URDL 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	Anchorage satisfy requirements for Class A 1
Resistance to fire	See Annex C 1

3.3 Safety and accessibility (BWR 4)

Essential characteristic	Performance
Characteristic resistance for tension and shear loads	See Annexes C 1, C 3, C 4
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 Annexes B 2, B 3

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

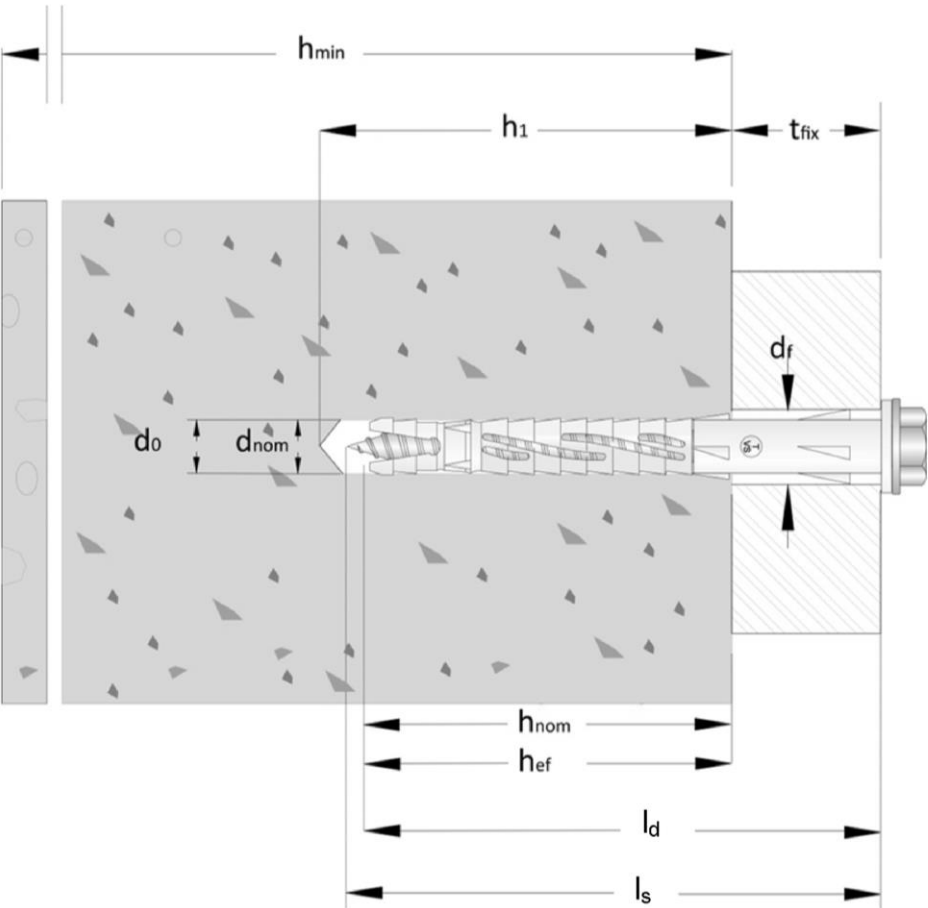
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

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

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Ziegler

URDL



Legend

- $h_{nom} \triangleq h_{ef}$ = overall plastic anchor embedment depth in the base material
 h_1 = depth of drill hole to deepest point
 h_{min} = thickness of member (wall)
 t_{fix} = thickness of fixture and / or non-load bearing layer
 l_d = anchor length
 l_s = screw length
 d_0 = drill hole diameter
 d_f = diameter of clearance hole in the fixture
 d_{nom} = anchor diameter

Figures not to scale

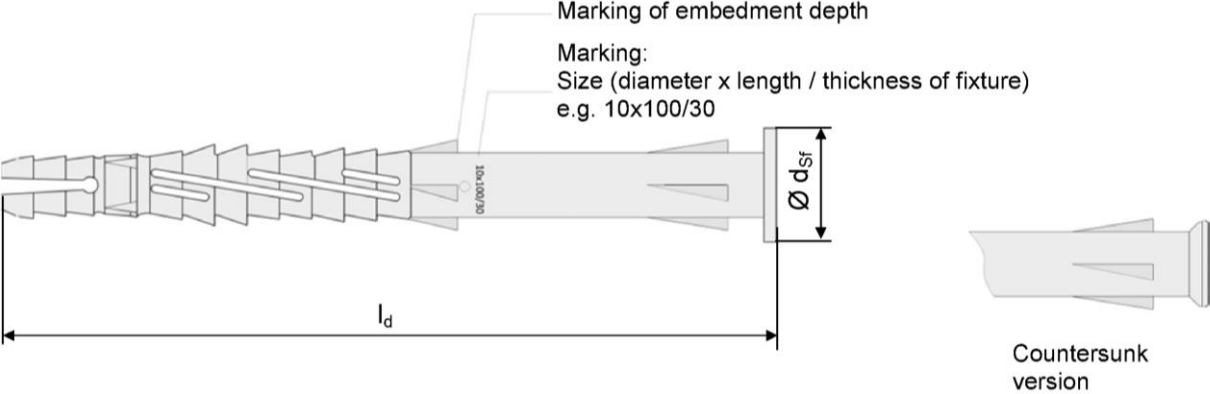
frame fixing URDL

Product description
Installed anchor

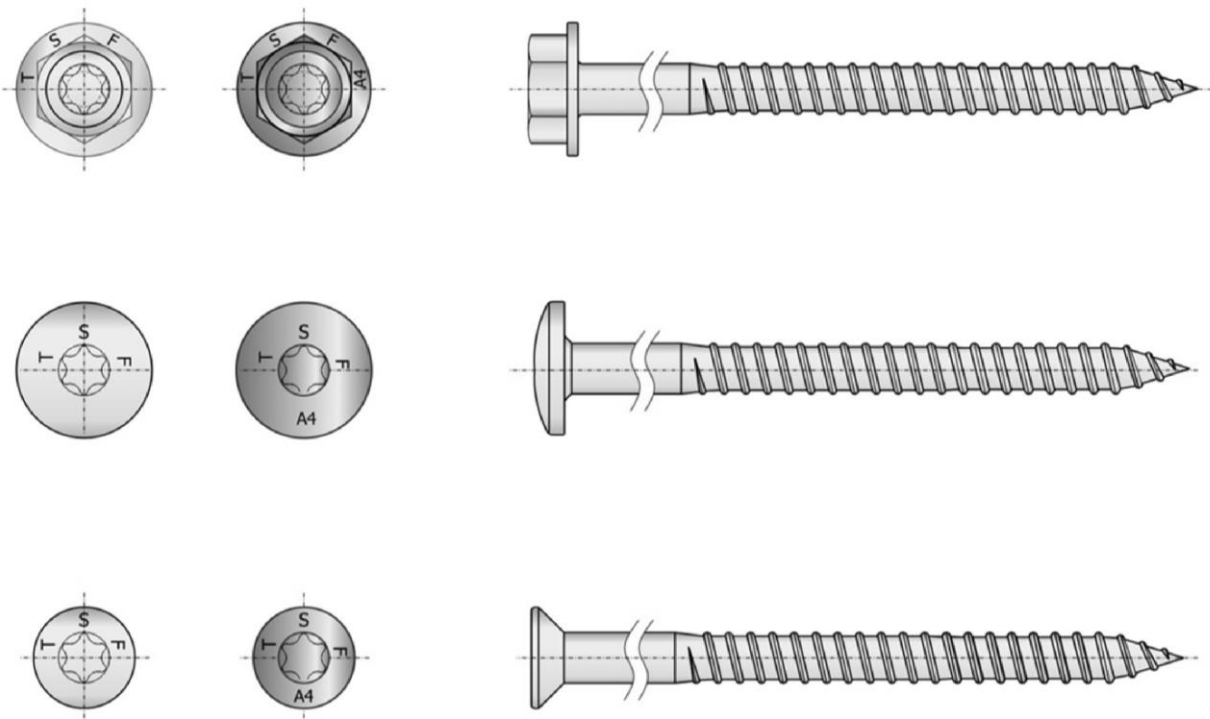
Annex A 1

Anchor sleeves of URDL

Flat collar version



Special Screws



Figures not to scale

frame fixing URDL

Product description
Anchor types and specific screws
Marking

Annex A 2

Table A3.1: Dimensions [mm]

Anchor type	Anchor sleeve						Special screw	
	h_{nom} [mm]	$\varnothing d_{nom}$ [mm]	t_{fix} [mm]	min. l_d [mm]	max. l_d [mm]	$\varnothing d_{sf}$ [mm]	$\varnothing d_s$ [mm]	l_s [mm]
URDL 8	70	8	≥ 10	≥ 80	360	$> 14,5$	6,0	≥ 85
URDL 10		10	≥ 10	≥ 80	360	$> 17,5$	7,0	≥ 85

Table A3.2: Materials

Name	Material
Anchor sleeve	Polyamide, PA6, colour: grey off-white
Special screw	- Steel gvz A2G or A2F acc. to EN ISO 4042:1999 <u>or</u> - Steel gvz 5.8, gvz min. 5 μm acc. to ISO 2081:2008 <u>or</u> - Stainless steel A4/70 (AISI 316) acc. to ISO 3506-1:2009 and EN 10088-3:2014

frame fixing URDL

Product description
Dimensions and materials

Annex A 3

Specifications of intended use

Anchorage subject to:

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

Base materials:

- Reinforced or unreinforced normal weight concrete with strength classes $\geq$ C16/20 (use category "a"), according to EN 206-1:2000, Annex C 1
- Solid brick masonry (use category "b"), according to Annex C 3.
Note: The characteristic resistance is also valid for larger brick sizes and higher compressive strengths of the masonry unit.
- Hollow brick masonry (use category "c"), according to Annex C 3 – C 4.
- Autoclaved aerated concrete (use category "d"), according to Annex C 4.
- Mortar strength class of the masonry $\geq$ M2,5 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:

URDL 8 and 10

- 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 coated steel, stainless steel).
- The specific screw made of galvanised steel or galvanised steel with an additional Duplex-coating 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 (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 to be designed in accordance with the ETAG 020, Annex C 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 drilling method according to Annex C 1, C 3 – C 4 for use categories "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 URDL 8 and URDL 10: ≥ 0 °C
- Exposure to UV due to solar radiation of the not protected anchor ≤ 6 weeks.

frame fixing URDL

Intended use
Specifications

Annex B 1

Table B2.1: Installation parameters

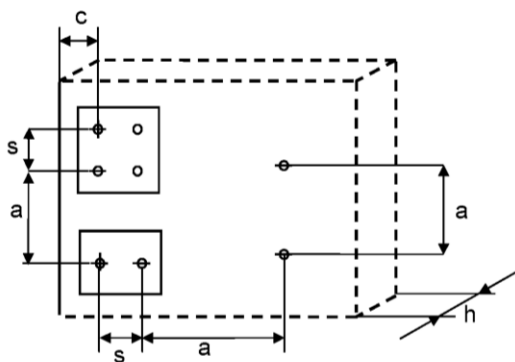
Anchor type		URDL 8	URDL 10
Drill hole diameter	$d_0 = [\text{mm}]$	8	10
Cutting diameter of drill bit	$d_{\text{cut}} \leq [\text{mm}]$	8,45	10,45
Effective anchorage depth	$h_{\text{ef}} \geq [\text{mm}]$	70	70
Depth of drill hole to deepest point	$h_1 \geq [\text{mm}]$	90	90
Diameter of clearance hole in the fixture	$d_f \leq [\text{mm}]$	9	11
Hexalobular socket number (ISO 10664)	T	30	40
Wrench size (for hexagonal head only)	SW = [mm]	10	13

Table B2.2: Minimum thickness of member, edge distance and spacing in concrete

Anchor Type	$h_{\text{nom}} \geq [\text{mm}]$	Concrete Strength class	Min. thickness of member $h_{\text{min}} [\text{mm}]$	Characteristic edge distance $c_{\text{cr},N} [\text{mm}]$	Characteristic spacing $s_{\text{cr},N} [\text{mm}]$	Min. spacing ¹⁾ $s_{\text{min}} [\text{mm}]$	Min. edge distances ¹⁾ $c_{\text{min}} [\text{mm}]$
URDL 8	70	$\geq \text{C16/20}$	140	105	75	90	90
URDL 10	70	$\geq \text{C16/20}$	140	105	90	100	100

¹⁾ Intermediate values by linear interpolation.

Scheme of distance and spacing in concrete



Fixing points with a spacing $a \leq s_{\text{cr},N}$ are considered as a group with a max. characteristic resistance $N_{\text{Rk},p}$ acc. to Table C1.3. For a spacing $a > s_{\text{cr},N}$ the anchors are considered as single anchors, each with a characteristic resistance $N_{\text{Rk},p}$ acc. to Table C1.3.

Figures not to scale

frame fixing URDL

Intended use

Installation parameters

Member thickness, edge distance and spacing in concrete

Annex B 2

Table B3.1: Minimum thickness of member, edge distance and spacing in masonry

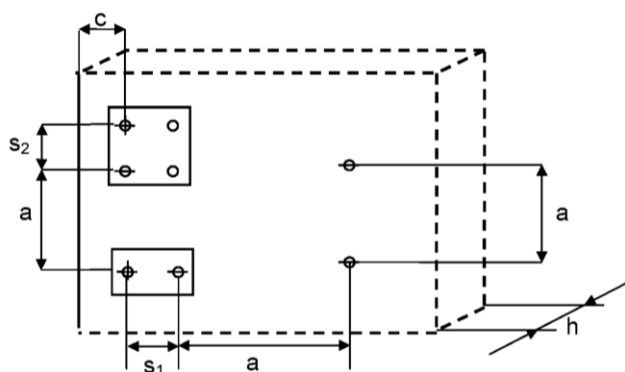
URDL 8 / URDL 10	Min. member thickness	Min. edge distances ¹⁾	Spacing perpendicular to free edge	Spacing parallel to free edge	Minimum edge distance
Base material ¹⁾ acc. to Annex C 3 – C 4	$h_{\min}$ [mm]	$c_{\min}$ [mm]	$s_{1,\min}$ [mm]	$s_{2,\min}$ [mm]	$c_{\min}$ [mm]
		Single anchor	Anchor group		
Masonry TYPE A	110	120	240	480	120
Masonry TYPE B	120	125	250	500	125
Masonry TYPE C	120	125	250	500	125
Masonry TYPE D	120	125	250	500	75
Masonry TYPE E	370	185	370	740	185
Masonry TYPE F	240	120	240	480	120
Masonry TYPE G	240	120	240	480	120
Masonry TYPE H	115	120	240	480	120
Masonry TYPE I	175	120	240	480	120

¹⁾ Type see Table C3.1 and C4.1

Table B3.2: Minimum thickness of member, edge distance, spacing in autoclaved aerated concrete (AAC)

URDL 8 / URDL 10	Min. member thickness	Min. edge distances ¹⁾	Spacing perpendicular to free edge	Spacing parallel to free edge	Minimum edge distance
Type of member	$h_{\min}$ [mm]	$c_{\min}$ [mm]	$s_{1,\min}$ [mm]	$s_{2,\min}$ [mm]	$c_{\min}$ [mm]
		Single anchor	Anchor group		
AAC	240	120	240	480	120

Scheme of distance and spacing in masonry and in AAC



Figures not to scale

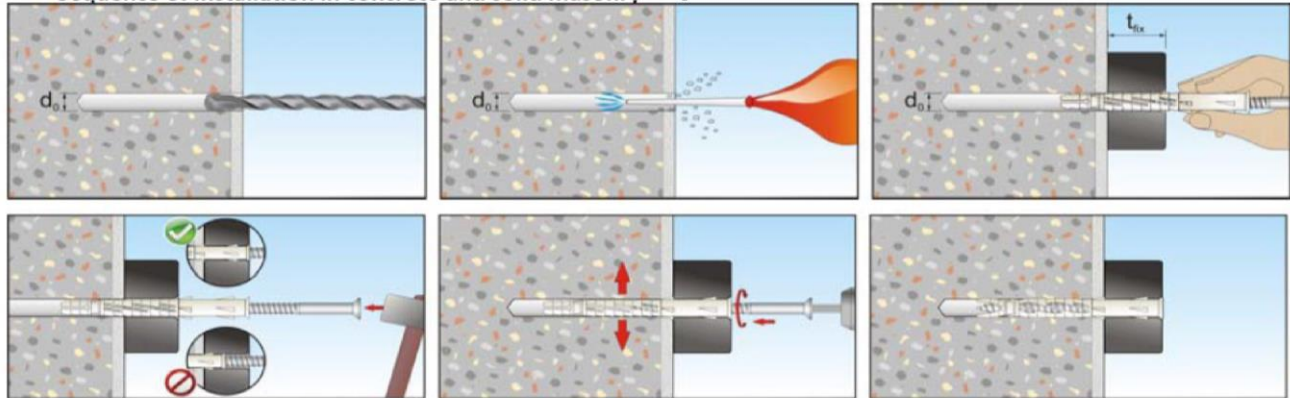
frame fixing URDL

Intended use

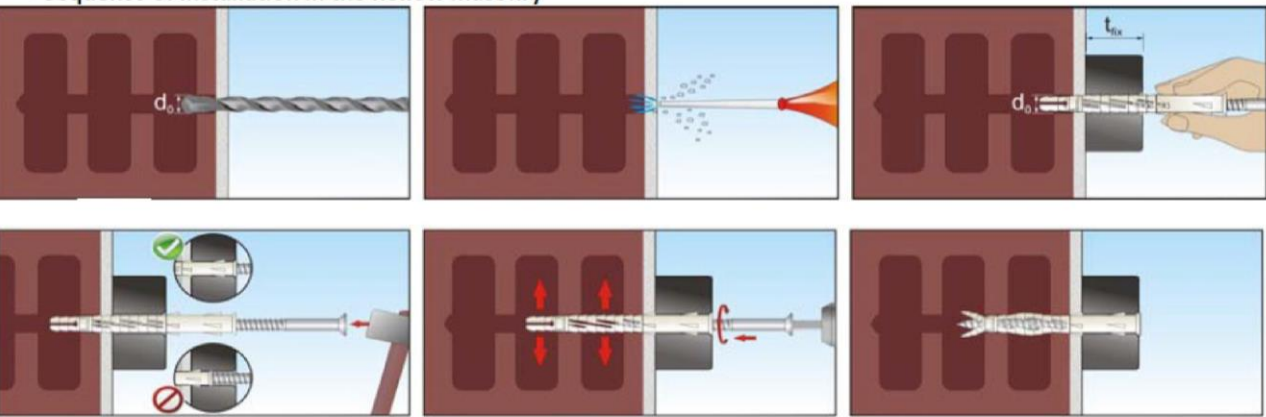
Member thickness, edge distance and spacing in masonry and AAC
Schemes of distance and spacing in masonry and in AAC

Annex B 3

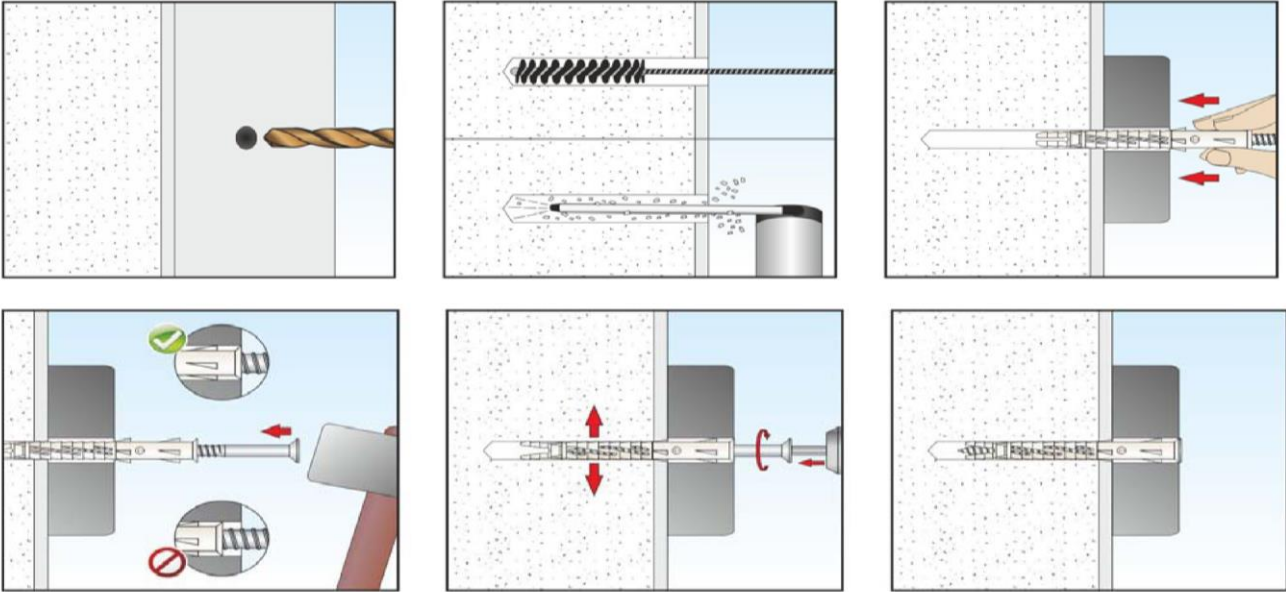
Installation instructions in concrete and solid masonry



Installation instructions in hollow masonry



Installation instructions in aerated autoclaved concrete



Figures not to scale

frame fixing URDL

Intended use
Installation instructions

Annex B 4

Table C1.1: Characteristic bending resistance of the screw

Anchor type	URDL 8		URDL 10	
	galvanised steel	stainless steel	galvanised steel	stainless steel
Characteristic bending resistance $M_{Rk,s}$ [Nm]	12,1	16,9	19,3	27,1
Partial safety factor γ_{Ms} ¹⁾	1,25			

¹⁾ In absence of other national regulations.

Table C1.2: Characteristic resistance of the screw

Failure of expansion element (special screw)	URDL 8		URDL 10	
	galvanised steel	stainless steel	galvanised steel	stainless steel
Characteristic tension resistance $N_{Rk,s}$ [kN]	11,3	15,8	15,4	21,6
Partial safety factor γ_{Ms} ¹⁾	1,5			
Characteristic shear resistance $V_{Rk,s}$ [kN]	5,6	7,9	7,7	10,8
Partial safety factor γ_{Ms} ¹⁾	1,25			

¹⁾ In absence of other national regulations.

Table C1.3: Characteristic resistance for use in concrete (use cat. "a")

Pull-out failure (plastic sleeve)	Drill method ¹⁾	URDL 8	URDL 10
Embedment depth h_{nom} [mm]		70	70
Concrete $f_{ck} \geq C16/20$			
Characteristic resistance 24/40 °C $N_{Rk,p}$ [kN]	H	3,5	4,5
Characteristic resistance 50/80 °C $N_{Rk,p}$ [kN]	H	3,0	4,0
Partial safety factor γ_{Mc} ²⁾		1,8	

¹⁾ Hammer drilling.

²⁾ In absence of other national regulations.

Table C1.4: Values under fire exposure in concrete C20/25 to C50/60 in any load direction, no permanent centric tension load and without lever arm, fastening of façade systems

Anchor type	Fire resistance class	F ¹⁾
URDL 10	R 90	$\leq 0,8$ kN

¹⁾ $F_{Rk} / (\gamma_M \times \gamma_F)$

frame fixing URDL

Performances

Characteristic bending resistance of the screw, characteristic resistance of the screw
Characteristic resistance for use in concrete, values under fire exposure

Annex C 1

Table C2.1: Displacements ²⁾ under tension and shear loading in concrete and masonry

URDL 8	Tension load	Displacement under tension load ³⁾		Shear load	Displacement under shear load ³⁾	
Base material ¹⁾ acc. to Annex C 3 – C 4	N [kN]	δ_{NO} [mm]	$\delta_{N\infty}$ [mm]	V [kN]	δ_{VO} [mm]	$\delta_{V\infty}$ [mm]
Concrete C16/20	1,2	0,24	0,48	3,2	2,00	3,00
Masonry TYPE A	0,9	0,04	0,08	3,2	2,67	4,00
Masonry TYPE B	1,1	0,25	0,50	3,2	2,67	4,00
Masonry TYPE C	-	-	-	3,2	6,40	9,60
Masonry TYPE D	0,09	0,03	0,06	3,2	6,40	9,60
Masonry TYPE E	0,09	0,01	0,02	3,2	2,67	4,00
Masonry TYPE F	1,57	0,14	0,29	1,57	1,31	1,96
Masonry TYPE G	0,26	0,01	0,02	0,26	0,21	0,32
Masonry TYPE H	0,26	0,01	0,02	0,26	0,21	0,32
Masonry TYPE I	1,43	0,11	0,21	1,43	1,19	1,79

¹⁾ Type see Table C3.1 and C4.1.

²⁾ Valid for all ranges of temperatures.

³⁾ Intermediate values by linear interpolation.

Table C2.2: Displacements ²⁾ under tension and shear loading in concrete and masonry

URDL 10	Tension load	Displacement under tension load ³⁾		Shear load	Displacement under shear load ³⁾	
Base material ¹⁾ acc. to Annex C 3 – C 4	N [kN]	δ_{NO} [mm]	$\delta_{N\infty}$ [mm]	V [kN]	δ_{VO} [mm]	$\delta_{V\infty}$ [mm]
Concrete C16/20	1,6	0,29	0,58	4,4	1,67	2,50
Masonry TYPE A	0,6	0,06	0,12	4,4	3,67	5,50
Masonry TYPE B	1,4	0,67	1,34	4,4	3,67	5,50
Masonry TYPE C	0,09	0,12	0,24	4,4	8,80	13,20
Masonry TYPE D	-	-	-	4,4	8,80	13,20
Masonry TYPE E	-	-	-	4,4	3,67	5,50
Masonry TYPE F	1,71	0,07	0,15	1,71	1,43	2,14
Masonry TYPE G	0,26	0,01	0,02	0,26	0,21	0,32
Masonry TYPE H	0,26	0,01	0,02	0,26	0,21	0,32
Masonry TYPE I	1,57	0,08	0,17	1,57	1,31	1,96

¹⁾ Type see Table C3.1 and C4.1.

²⁾ Valid for all ranges of temperatures.

³⁾ Intermediate values by linear interpolation.

Table C2.3: Displacements ¹⁾ under tension and shear loading in autoclaved aerated concrete (AAC)

Anchor type	Min. compressive strength AAC	Load	Displacement under tension load ²⁾		Displacement under shear load ²⁾	
	f_b [N/mm ²]	F [kN]	δ_{NO} [mm]	$\delta_{N\infty}$ [mm]	δ_{VO} [mm]	$\delta_{V\infty}$ [mm]
URDL 8	≥ 3,5	0,18	0,01	0,02	0,36	0,54
URDL 10		0,21			0,43	0,64

¹⁾ Valid for all ranges of temperatures. ²⁾ Intermediate values by linear interpolation.

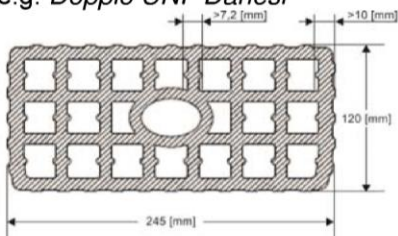
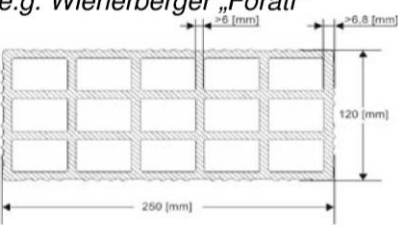
frame fixing URDL

Performances

Displacements in concrete, masonry and autoclaved aerated concrete

Annex C 2

Table C3.1: Characteristic resistance F_{Rk} in [kN] in solid and hollow masonry (use category "b+c")

Base material, TYPE ¹⁾ [Supplier Title] Geometry nom. size (L x W x H) [mm] drilling method	Min. compressive strength f_b [N/mm ²] / bulk density ρ [kg/dm ³]	Characteristic resistance F_{Rk} [kN] Temp. range 24/40 °C and 50/80 °C	
		URDL 8	URDL 10
		h_{nom} 70 mm	
Clay brick Mz, TYPE "A" acc. to EN 771-1:2011, e.g. <i>Mattone pieno</i> "Danesi" (110x60x240) by hammer drilling	39/1,7	3,0	2,0
Clay brick Mz, TYPE "B" acc. to EN 771-1:2011 e.g. <i>Mattone pieno</i> "Terreal Italia" (250x120x55) by hammer drilling	27/1,7	4,0	5,0
Vulcanic tuff brick, TYPE "E" acc. to EN 771-3:2011 e.g. <i>Fior di tufo "Cave riunite"</i> (370x370x110) by hammer drilling	7,5/2,4	-	0,3
Calcium silicate solid brick KS, TYPE "F" acc. to EN 771-2:2011 e.g. <i>"Heidelberger</i> <i>Kalksandstein Planstein"</i> 8DF (240x240x238) by hammer drilling	28,2/1,9	5,5	6,0
Perforated clay brick Hlz, TYPE "C" acc. to EN 771-1:2011, (120x245x250) e.g. <i>Doppio UNI "Danesi"</i> 	13/0,9	-	0,3
Perforated clay brick Hlz, TYPE "D" acc. to EN 771-1:2011 (120x250x250) e.g. <i>Wienerberger „Forati“</i> 	2/0,6	0,3	-

¹⁾ see Table B3.1 and C2.1 and C2.2

Figures not to scale

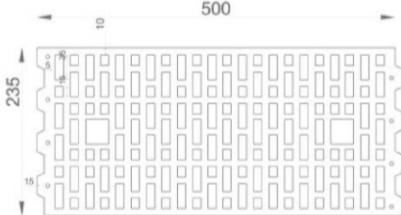
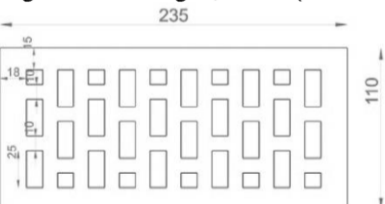
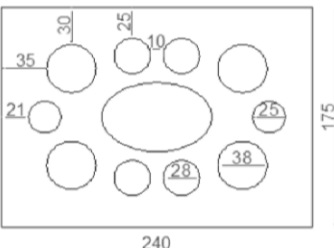
frame fixing URDL

Performances

Characteristic resistance for use in solid and in hollow masonry (use category "b+c")

Annex C 3

Table C4.1: Characteristic resistance F_{Rk} in [kN] in hollow or perforated masonry (use category "c")

Base material, TYPE ¹⁾ [Supplier Title] Geometry nom. size (L x W x H) [mm] drilling method	Min. compressive strength f_b [N/mm ²] / bulk density ρ [kg/dm ³]	Characteristic resistance F_{Rk} [kN] Temp. range 24/40 °C and 50/80 °C	
		URDL 8	URDL 10
		h_{nom} 70 mm	
Perforated clay brick HLz, TYPE "G" acc. to EN 771-1:2011, e.g. Wienerberger T24, (500x235x240)  by rotary drilling	7,0/0,9	0,9	0,9
Perforated clay brick HLz, TYPE "H" acc. to EN 771 -1:2011+A1:2014, e.g. Wienerberger, 2 DF (240x235x110)  by rotary drilling	16,4/0,9	0,9	0,9
Hollow calcium silicate brick KSL, TYPE "I" acc. to EN 771-2:2011, e.g. "Heidelberger Kalksandstein" (240x175x240)  by rotary drilling	16,3/1,5	5,0	5,5
Non-cracked aerated autoclaved concrete AAC, blocks acc. to EN 771-4:2011 by rotary drilling	3,5/0,5	0,5	0,6

¹⁾ see Table B3.1 and C2.1 and C2.2.

Figures not to scale

frame fixing URDL

Performances

Characteristic resistance for use in hollow or perforated masonry and autoclaved aerated concrete
(use cat. "c+d")

Annex C 4