

**Centre Scientifique et  
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**European Technical  
Assessment**

**ETA-19/0663  
of 28/11/2019**

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

**General Part**

Nom commercial  
*Trade name*

**Topin undercut anchor TP**

Famille de produit  
*Product family*

**Fixation pour bardages extérieurs  
*Fastener for external wall claddings***

Titulaire  
*Manufacturer*

UK TOPIN Company Limited  
*Suite 1, 3rd Floor, 11-12 St. James's Square, London,  
SW1Y 4LB, United Kingdom*

Usine de fabrication  
*Manufacturing plants*

TOPIN Plan

Cette évaluation contient:  
*This Assessment contains*

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

Base de l'ETE  
*Basis of ETA*

EAD 330030-00-0601

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## Specific Part

### 1 Technical description of the product

The UK Topin undercut anchor is a special anchor made of stainless steel, consisting of a slotted anchor sleeve with a M6, M8 or M10 internal thread, at the upper edge of which a hexagon is formed to it and a respective hexagon bolt with an integrated tooth lock washer. The anchor is put into an undercut drill hole and by driving-in the screw it is placed form-fitted and deformation-controlled into the stone panel. The "Sesame white granite" is a natural stone panel with white colour.

The product description is given in Annex A.

### 2 Specification of the intended use

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

The provisions made in this European Technical Approval are based on an assumed working life of the anchor of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

### 3 Performance of the product

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

Essential characteristic	Performance
Characteristic resistance for tension and shear loads	See Annex C 1
Anchor distances	See Annex C1

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

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	No performance assessed

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

According to the Decision 97/161/EC of the European Commission<sup>1</sup>, as amended, the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table apply.

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

1

Official Journal of the European Communities L 254 of 08.10.1996

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

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

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

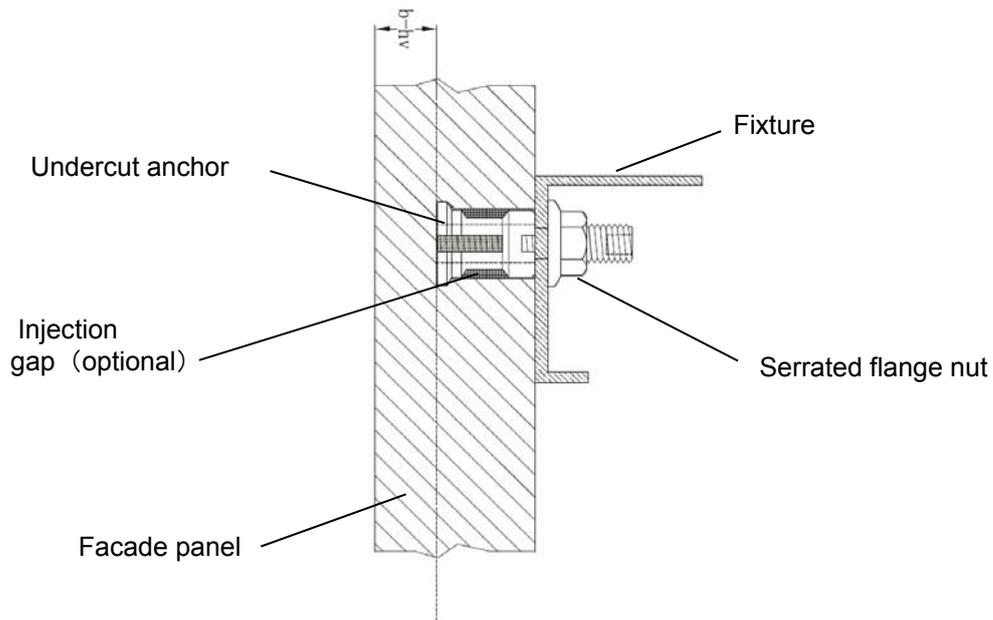
Issued in Marne La Vallée on 28/11/2019 by

*The original French version is signed*

La cheffe de division

Anca CRONOPOL

**Installed fastener**



**Types of TOPIN anchors**

Flush fixing	Embed fixing	Stand-off fixing

**TOPIN undercut anchor component/ Materials for fasteners**

Anchor sleeve	Segmented sleeve	Pitch sleeve	Screw	Serrated flange nut
Materials for fasteners				
Stainless steel 1.4401, 1.4404 or 1.4571 according to EN 10 088:2014	Stainless steel 1.4401, 1.4404 or 1.4571 according to EN 10 088:2014	Stainless steel 1.4401, 1.4404 or 1.4571 according to EN 10 088:2014	Stainless steel 1.4401, 1.4404 or 1.4571 according to EN 10 088:2014	Stainless steel 1.4401, 1.4404 or 1.4571 according to EN 10 088:2014

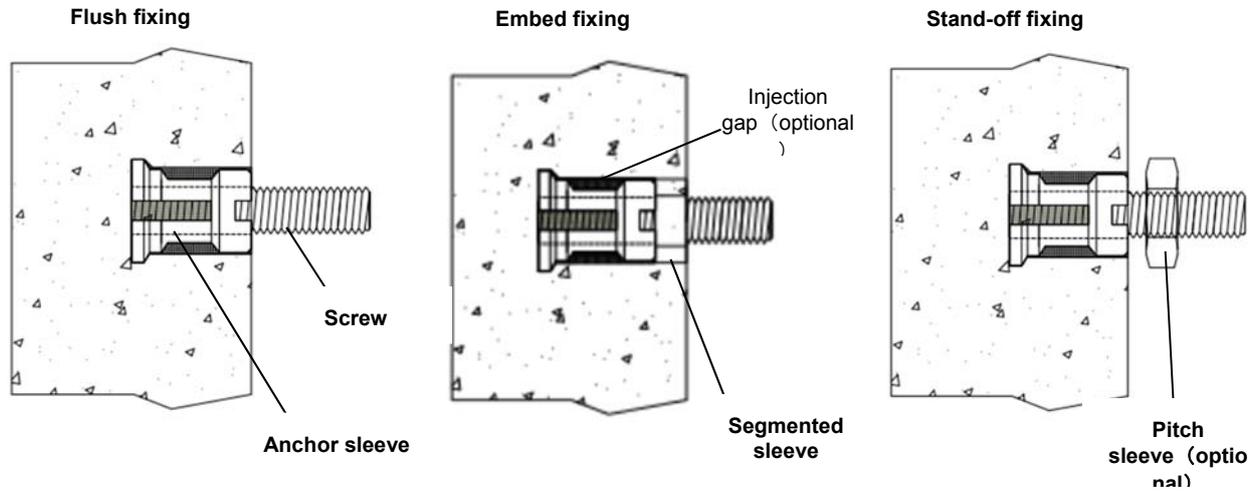
**UK Topin undercut anchor**

**Product description**

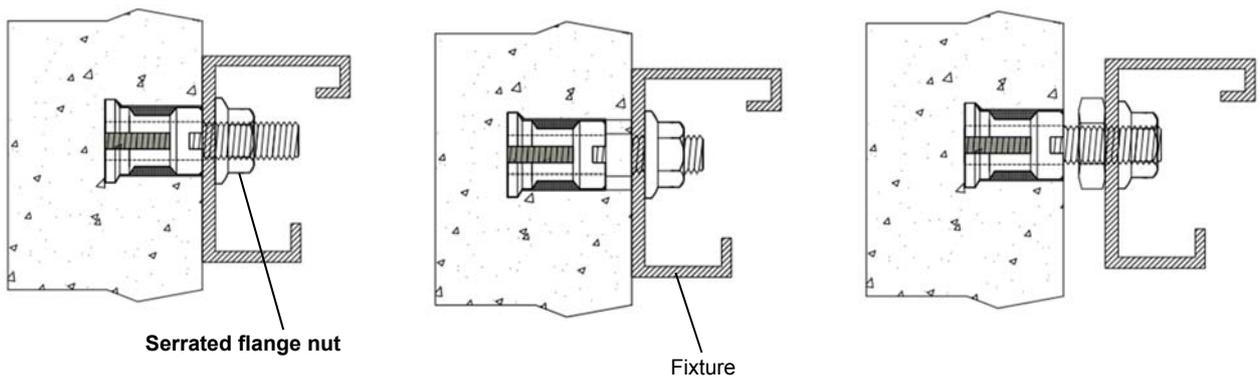
Installed fastener and fixing example

**Annex A1**

**Types of mounting**



**Installation type with Fixture**



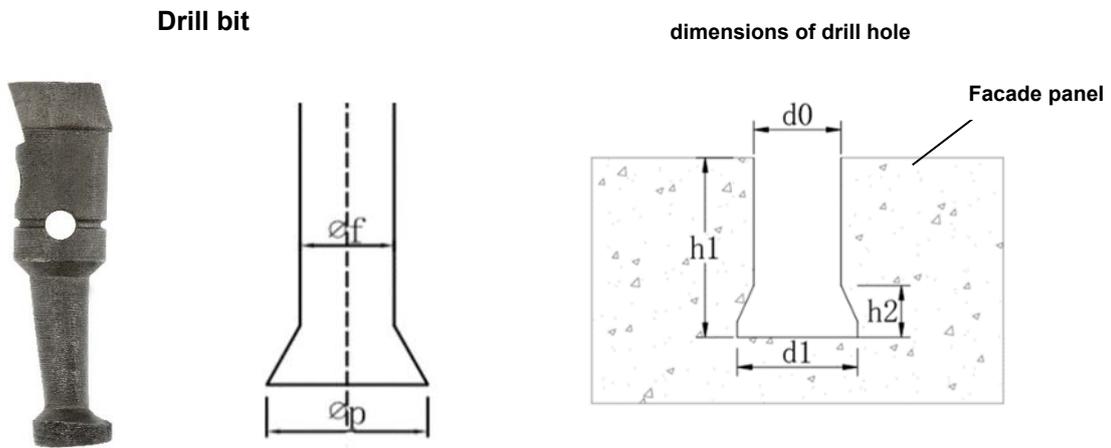
**UK Topin undercut anchor**

**Product description**

Installed fastener and fixing example

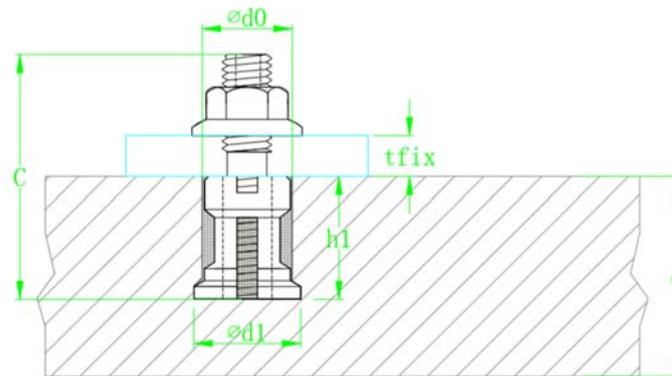
**Annex A2**

**Drill bit/dimensions of drill hole**



**Table A1: Drill bit assignment and dimensions (mm)**

Drill Bits	TOPIN Anchor	Drill Bits		Holes Dimentions			
		$\Phi_p$	$\Phi_f$	$\Phi d_0$	$\Phi d_1$	h2	h1
TOPIN-TSZ 11/13	M6	11	9	11 +0.4(-0.2)	13,5 +0.3(-0.3)	≈ 4	Table A2
TOPIN-TSZ 13/15	M8	13	10	13 +0.4(-0.2)	15,5 +0.3(-0.3)	≈ 5	
TOPIN-TSZ 14/16	M10	14	10	14 +0.4(-0.2)	16,5 +0.3(-0.3)	≈ 6	



**UK Topin undercut anchor**

**Product description**  
 Dimensions

**Annex A3**

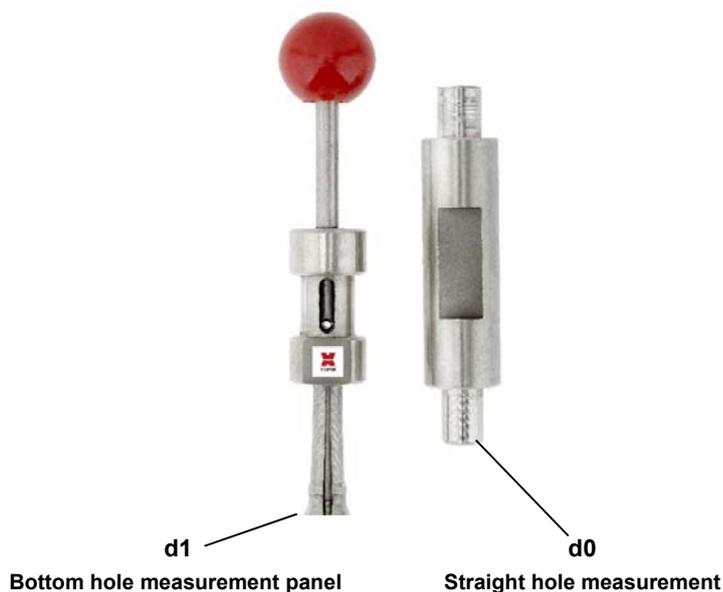
**Table A2: Installation parameters**

Size			Topin M6	Topin M8	Topin M10
Drill hole depth	h <sub>1</sub>	[mm]	17,0-28,0	17,0-28,0	32,0-73,0
Anchorage depth	h <sub>ef</sub>	[mm]	15,0-25,0	15,0-25,0	30,0-70,0
Thickness of fixture	t <sub>fix</sub>	[mm]	2-20	2-20	2-30
Screw length of threaded rod	S	[mm]	20-100	20-100	40-160
<b>Natural stone panel</b>					
Panel thickness	d ≥	[mm]	20-70	20-70	40-200

Stone group	Natural stone type	Boundary conditions
<b>I</b> High-quality intrusive rocks (plutonic rocks)	granite, granitite, tonalite, diorite, monzonite, gabbro, other magmatic plutonic rocks	None
<b>II</b> Metamorphic rocks with „hard stone characteristics“	quarzite, granulite, gneiss, migmatite	None
<b>III</b> High-quality extrusive rocks (volcanic rocks)	basalt and basaltlava without harmful ingredients (e.g. sun burner basalt)	Minimum density ρ: basalt: 2,7 kg/dm <sup>3</sup> basaltic lava: 2,2 kg/dm <sup>3</sup>
<b>IV</b> Sedimentary rocks with „hard stone characteristics“ <sup>1)</sup>	Sandstone and limestone	Minimum density ρ: sandstone: 2,1 kg/dm <sup>3</sup>

<sup>1)</sup> For façade panels made of natural stones with planes of anisotropies, the difference between the flexural strength determined parallel to the planes of anisotropy and perpendicular to the edges of the planes of anisotropy shall not be more than 50 %.

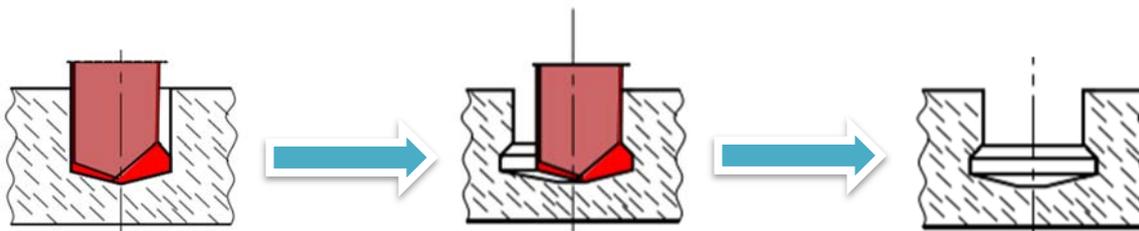
**TOPIN measuring device**



<b>UK Topin undercut anchor</b>	<b>Annex A4</b>
<b>Product description</b> Dimensions and Materials	

**Installation instruction**

**Dilling of the undercut hole**

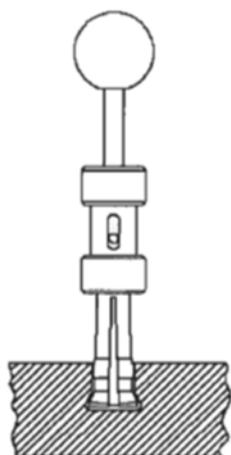


Drill straight hole

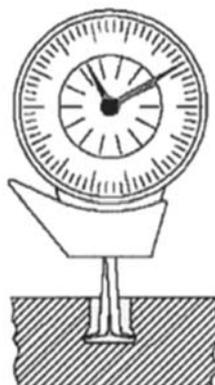
Bottom hole

Cleaning hole

**Checking dimensions of drill hole with gauge**



undercut volume gauge



Dial gauge

**Installation of the undercut anchor**



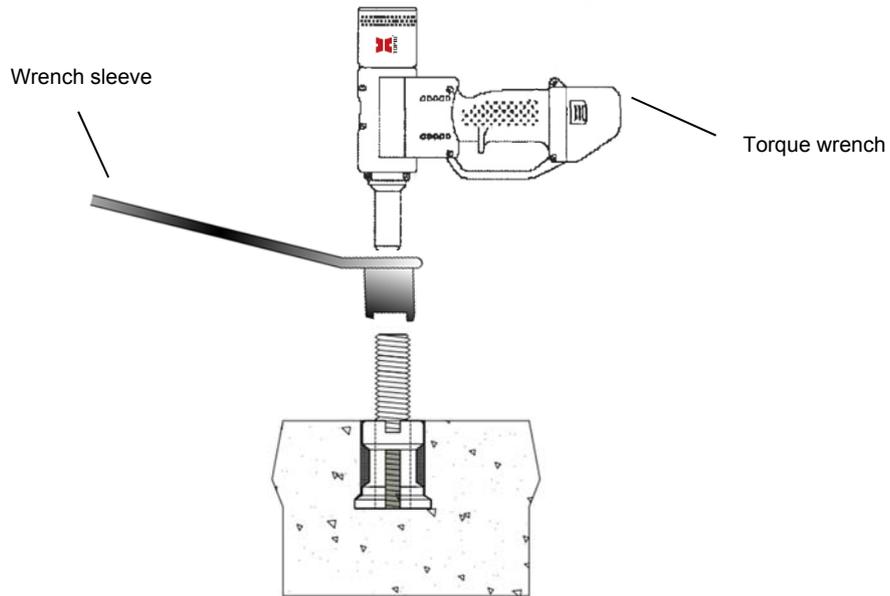
Injection gap (optional)

**UK Topin undercut anchor**

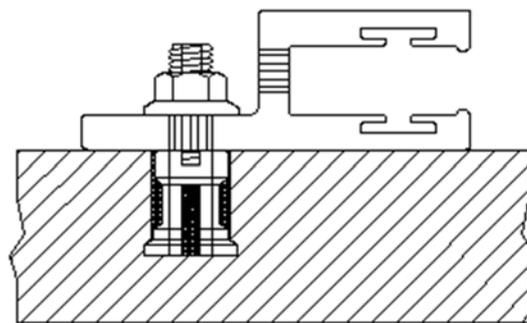
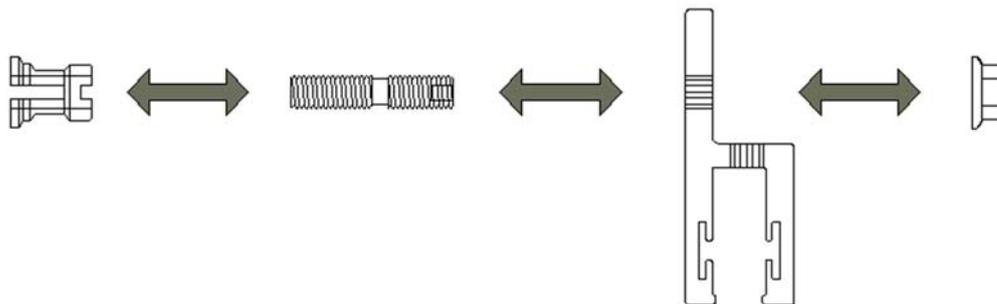
**Product description**  
 Dimensions and Materials

**Annex A5**

Setting tools for installation of the anchor(exemplay)



**Fixture installation**



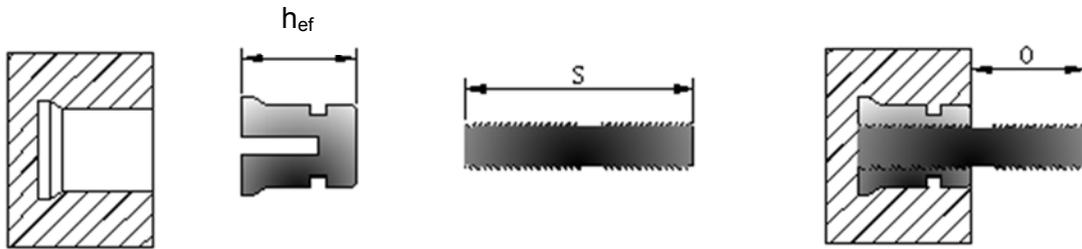
installed

**UK Topin undercut anchor**

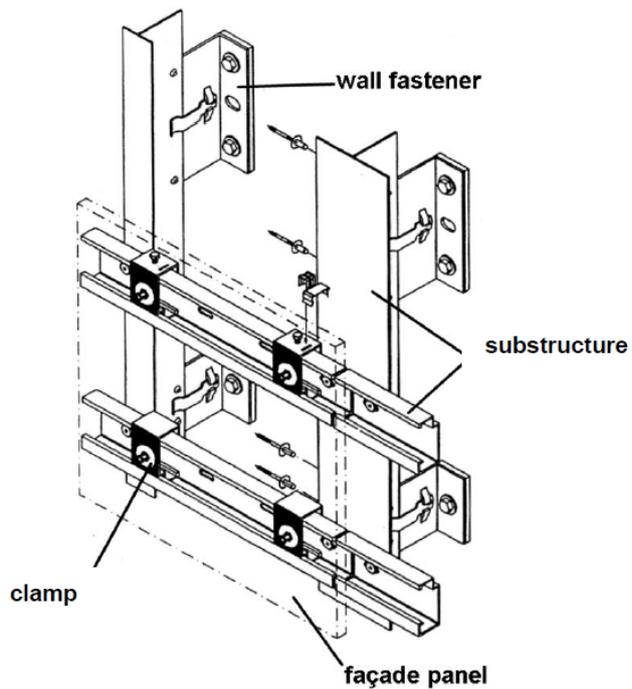
**Product description**  
Dimensions and Materials

**Annex A6**

Screw length selection and calculation



$$O = S - h_{ef}$$



UK Topin undercut anchor

Product description  
Dimensions and Materials

Annex A7

### Specifications of intended use

**Anchorage subject to:**

- Static and quasi-static loads.

**Base materials:**

- “Sesame white Granite” originated for China with a flexural strength of 12.9 N/mm<sup>2</sup> minimum.

**Use conditions (Environmental conditions):**

- Structures subject to dry internal conditions,
- Structures subject to external atmospheric exposure including industrial and marine environment and to permanently damp internal condition, if no particular aggressive conditions exist.

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

**Design:**

- The design of fastener is carried out in compliance with TR062 “Design of fasteners for façade panels made of natural stone (except slate)” dated July 2018.

**Installation:**

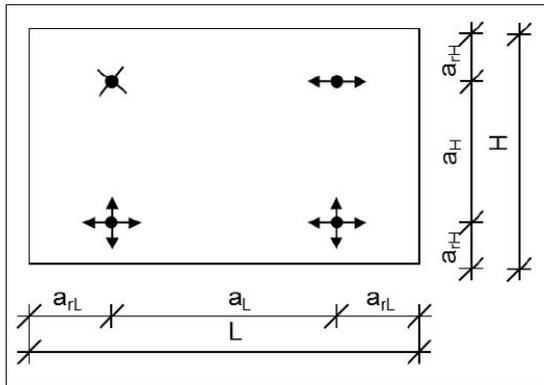
- The drillings are done at the factory or on site under workshop conditions; when making the drillings on site the execution is supervised by the responsible project supervisor or a skilled representative of the project supervisor,

UK Topin undercut anchor

Intended Use  
Specifications

Annex B1

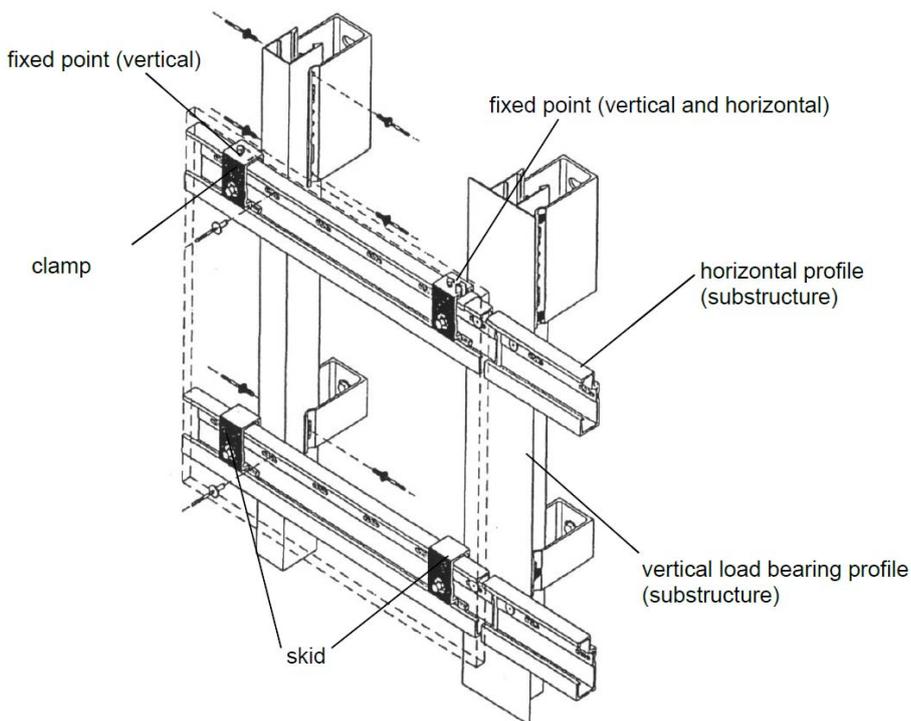
**Definition of edge distance and spacing**



**Legend:**

- $a_{rL}, a_{rH}$  = edge distance – distance of an fastener to the panel edge
- $a_L, a_H$  = spacing – distance between fasteners
- $L$  = greater length of the façade panel
- $H$  = smaller length of the façade panel
-  = fixed point (fixed bearing)
-  = horizontal skid (loose bearing)
-  = horizontal and vertical skid (loose bearing)

**Example for fixed point and loose bearing**



**UK Topin undercut anchor**

**Intended use**

Definition of edge distance and spacing,  
 Example for fixed point and loose bearing

**Annex B2**

**Table C1: Characteristic values of the anchor and façade panel**

Anchor type				Topin M6	Topin M8	Topin M10	
Characteristic values of façade panel	Char. resistance to bending stress	$\sigma_{u,5\%}^{1)}$	[N/mm <sup>2</sup> ]	12.9			
	Mean value of modulus of elasticity	$E_{mean}$	[N/mm <sup>2</sup> ]	12 700			
	Panel thickness	$h \geq$	[mm]	30,0	30,0	50,0	
Characteristic values of anchor	Anchorage depth	$h_s$	[mm]	15,0	15,0	30,0	
	Characteristic resistance to	tension load	$N_{Rk}$	[kN]	5,8	6,8	18,2
		shear load	$V_{Rk}$	[kN]	10,5	9,8	25,5
	Reduction factor in Eq17 of TR062	$\alpha_{TR}$	-	1,0	1,0	1,0	
	Minimum Edge distance	$a_r \geq$	[mm]	100	100	100	
	Minimum Spacing	$a \geq$	[mm]	120	120	240	

<sup>1)</sup> 5%-fractil (using lognormal distribution) by a confidence level of 75 % and unknown standard deviation

**UK Topin undercut anchor**

**Performances**

Characteristic values for the design of the anchor and façade panel

**Annex C1**