

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 Commission¹, 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.

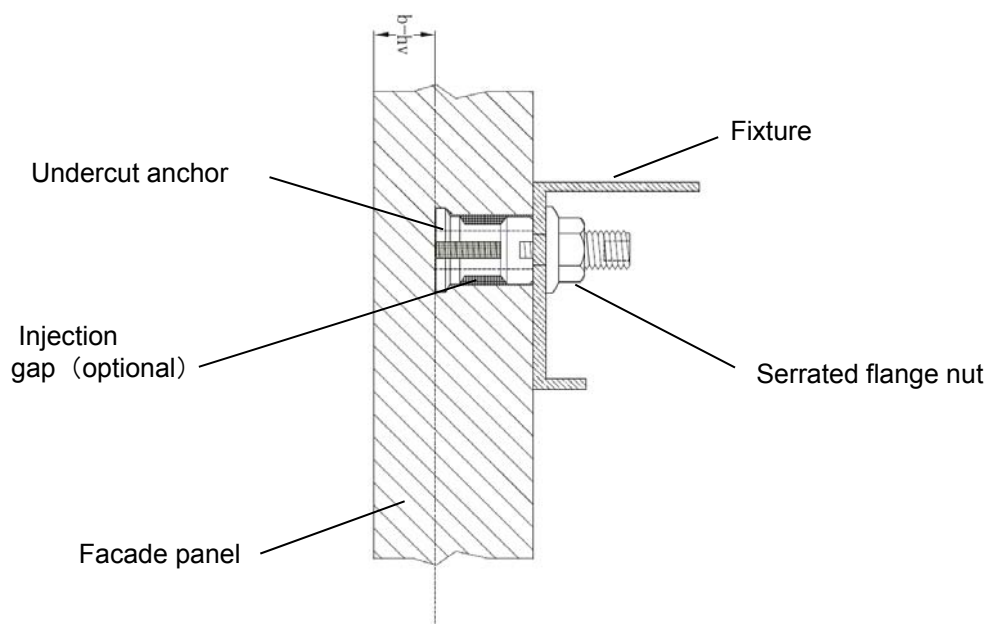
Issued in Marne La Vallée on 28/11/2019 by

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

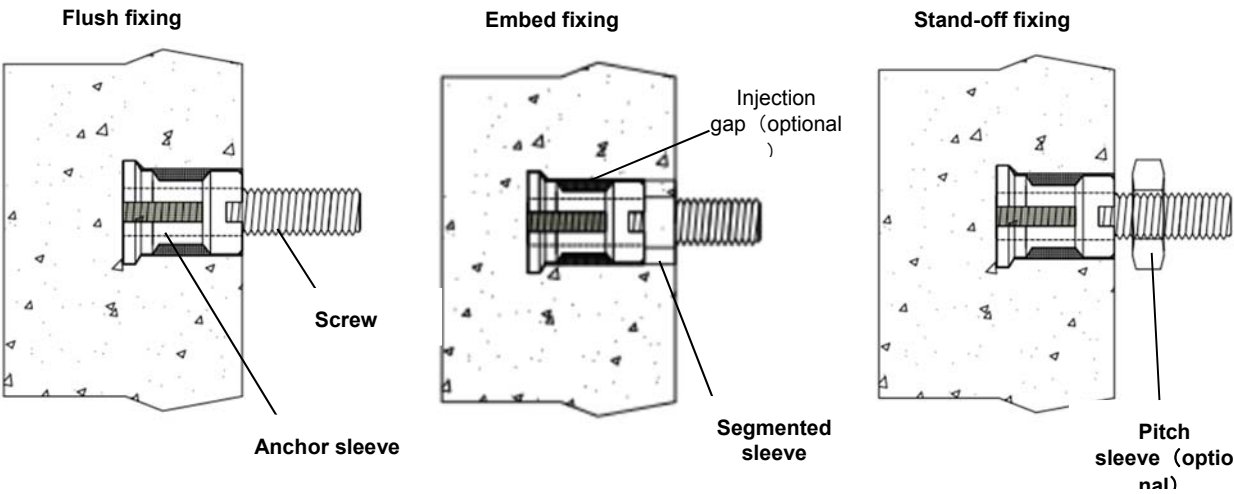
UK Topin undercut anchor

Product description

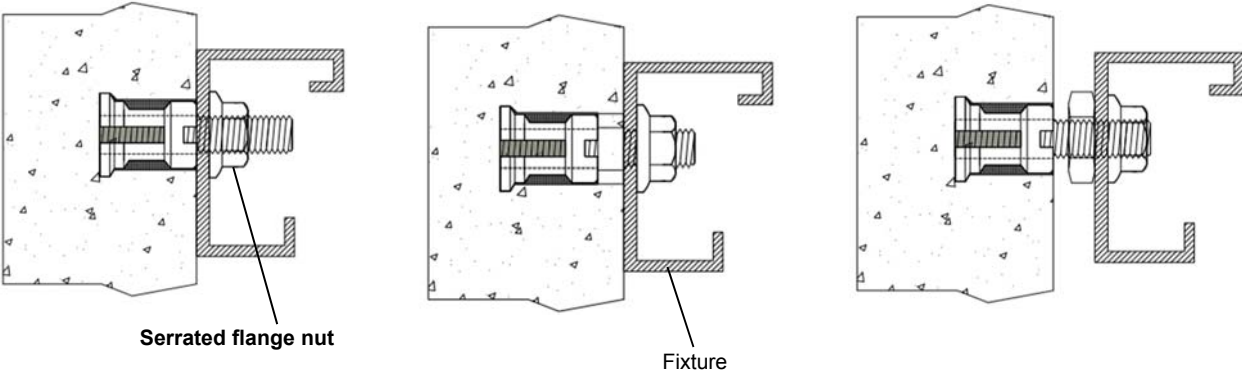
Installed fastener and fixing example

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

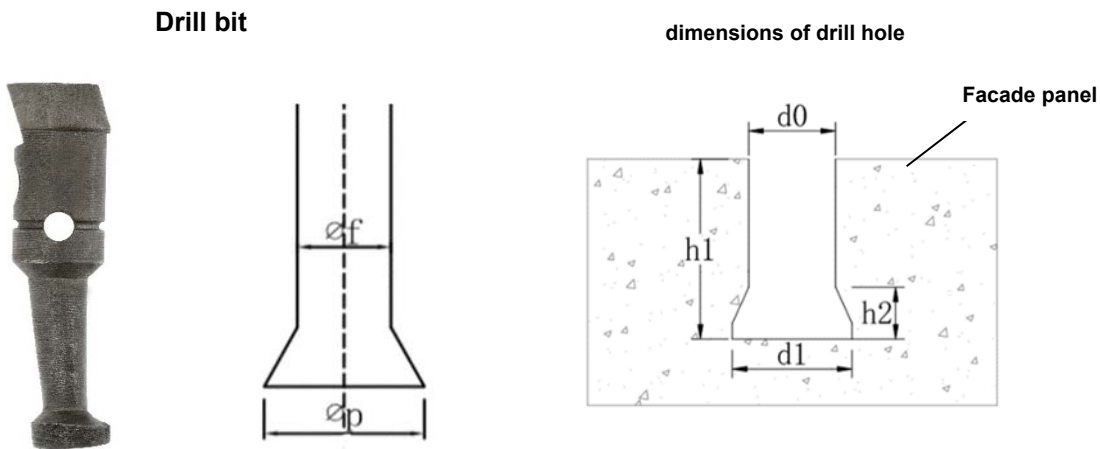
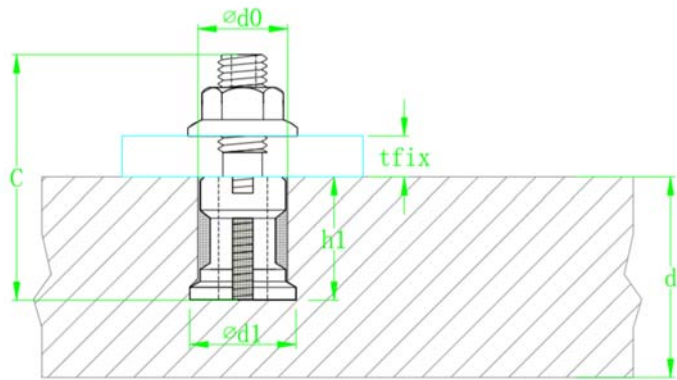


Table A1: Drill bit assignment and dimensions (mm)

Drill Bits	TOPIN Anchor	Drill Bits		Holes Dimentions			
		Φp	Φf	$\Phi d0$	$\Phi d1$	$h2$	$h1$
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

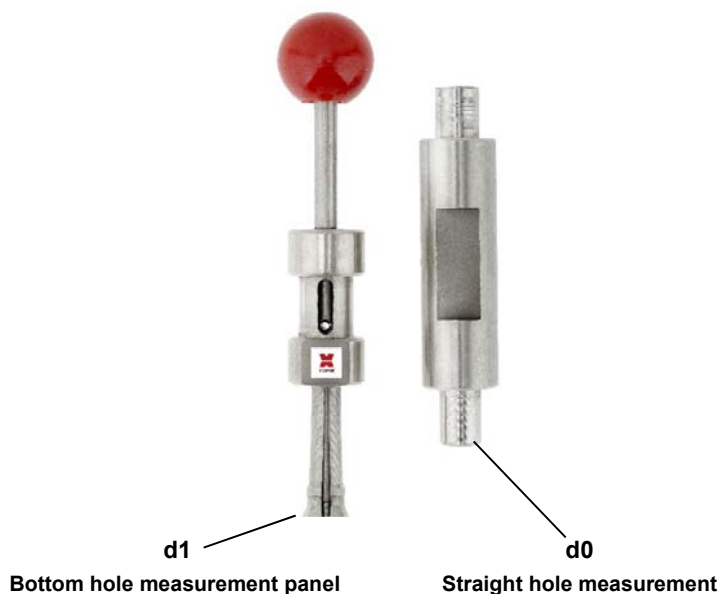
Table A2: Installation parameters

Size			Topin M6	Topin M8	Topin M10
Drill hole depth	h_1	[mm]	17,0-28,0	17,0-28,0	32,0-73,0
Anchorage depth	h_{ef}	[mm]	15,0-25,0	15,0-25,0	30,0-70,0
Thickness of fixture	t_{fix}	[mm]	2-20	2-20	2-30
Screw length of threaded rod	S	[mm]	20-100	20-100	40-160
Natural stone panel					
Panel thickness	$d \geq$	[mm]	20-70	20-70	40-200

Stone group		Natural stone type	Boundary conditions
I	High-quality intrusive rocks (plutonic rocks)	granite, granitite, tonalite, diorite, monzonite, gabbro, other magmatic plutonic rocks	None
II	Metamorphic rocks with „hard stone characteristics“	quartzite, granulite, gneiss, migmatite	None
III	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 ³ basaltic lava: 2,2 kg/dm ³
IV	Sedimentary rocks with „hard stone characteristics“ ¹⁾	Sandstone and limestone	Minimum density ρ : sandstone: 2,1 kg/dm ³

¹⁾ 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



UK Topin undercut anchor

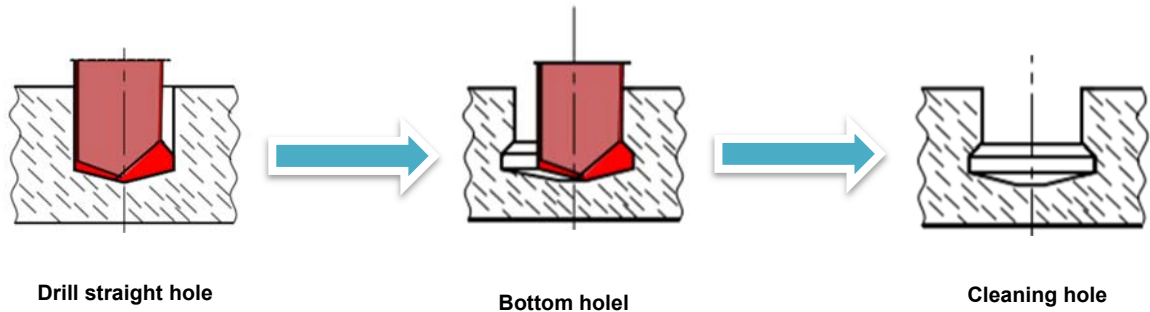
Product description

Dimensions and Materials

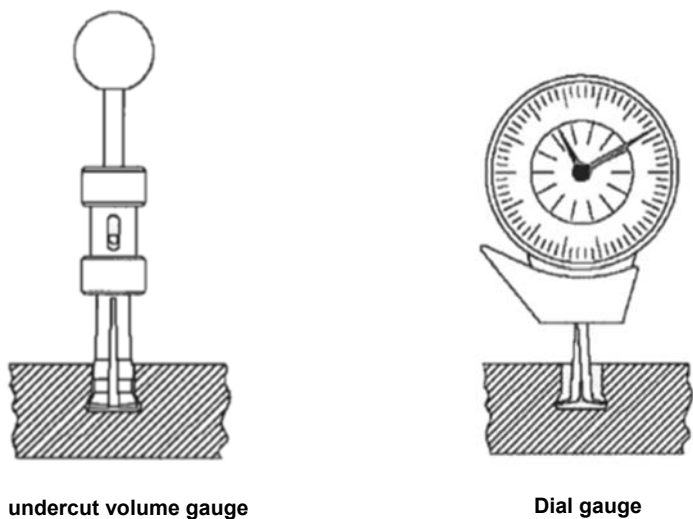
Annex A4

Installation instruction

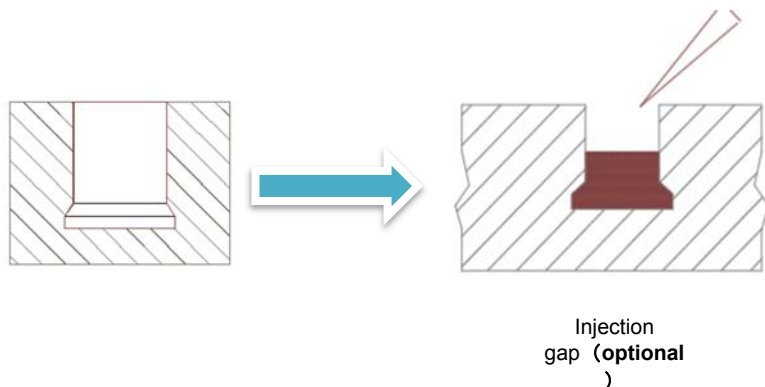
Dilling of the undercut hole



Checking dimensions of drill hole with gauge

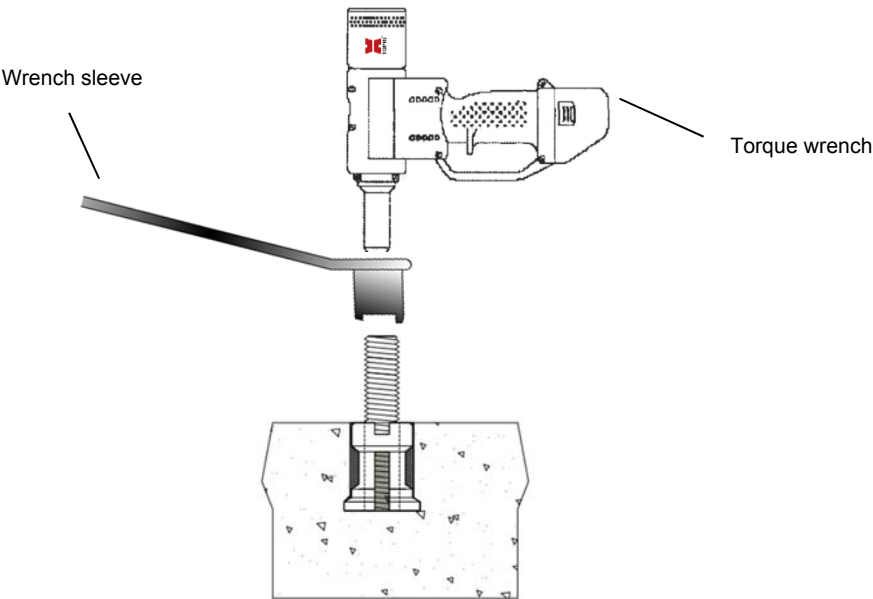


Installation of the undercut anchor

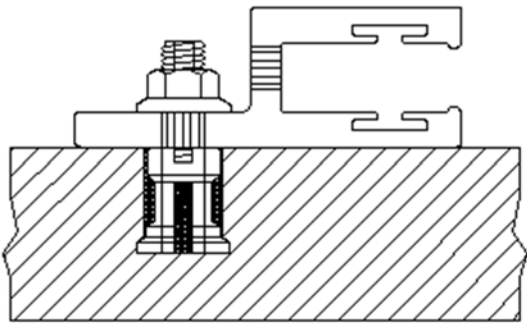
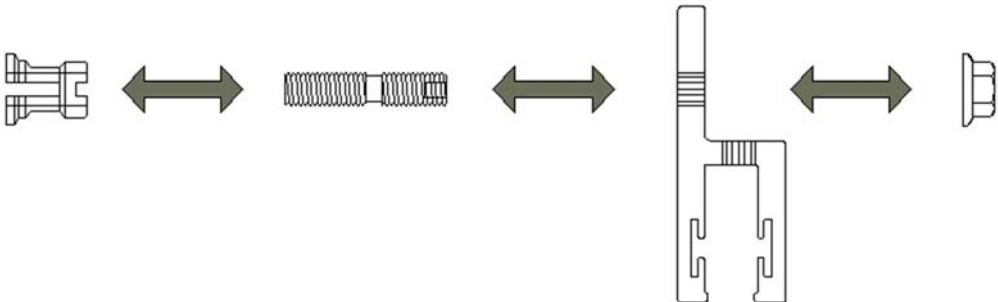


UK Topin undercut anchor	Annex A5
Product description Dimensions and Materials	

Setting tools for installation of the anchor(exemplay)



Fixture installation



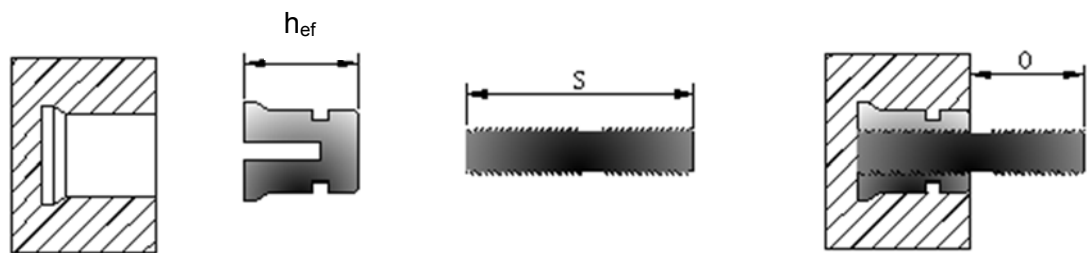
installed

UK Topin undercut anchor

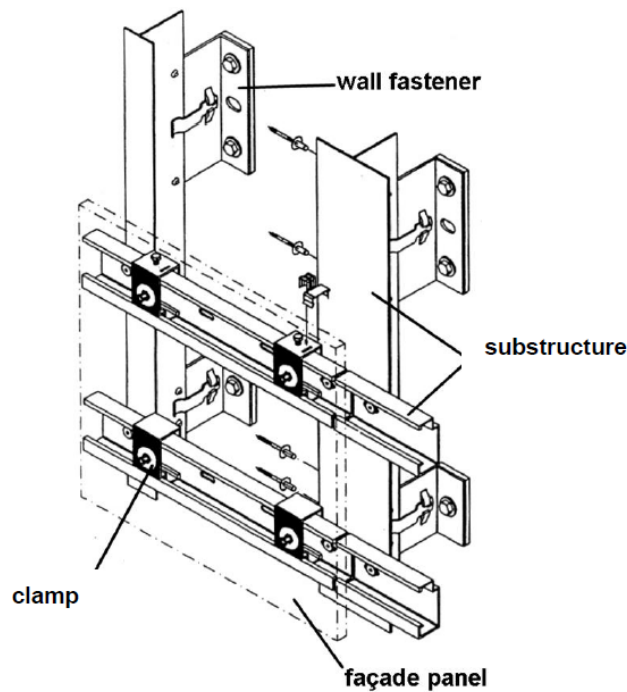
Product description
Dimensions and Materials

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/mm² 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:

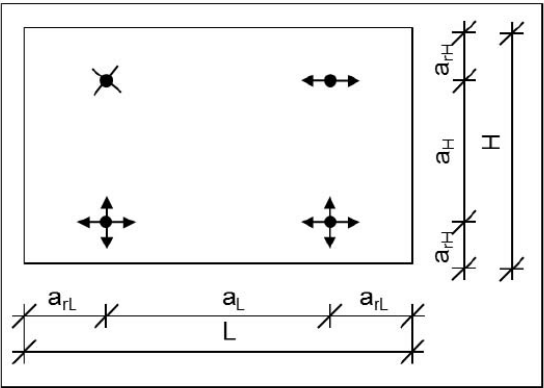
- The drillings are done at the factory or on site under workshop conditions; when making the drillings on site the execution is supervised by the responsible project supervisor or a skilled representative of the project supervisor,

UK Topin undercut anchor




Intended Use
Specifications

Annex B1

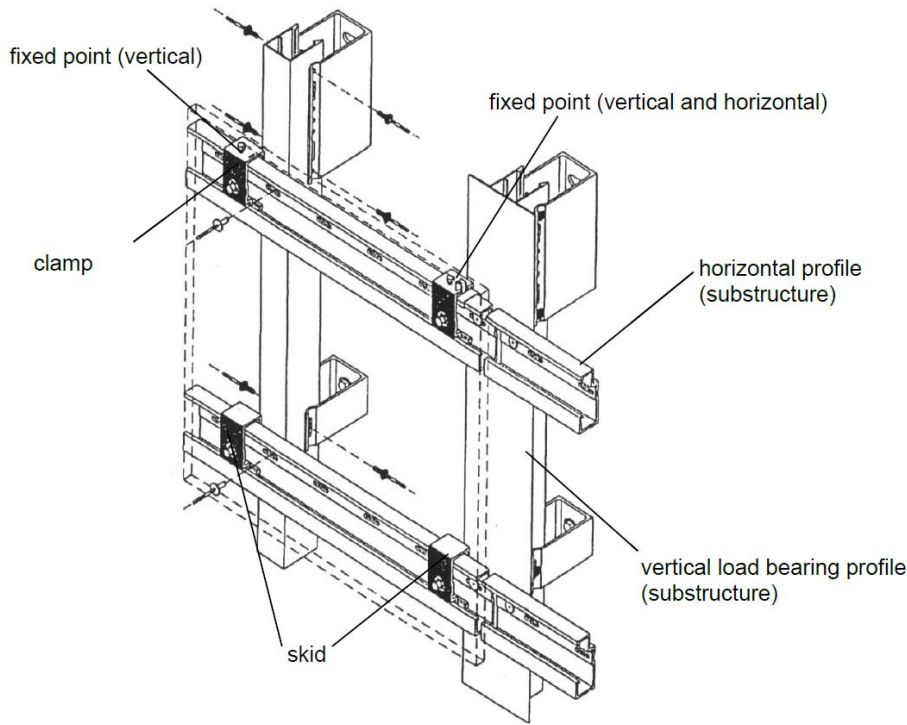
Definition of edge distance and spacing



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/mm²]	12.9			
	Mean value of modulus of elasticity	E_{mean}	[N/mm²]	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		α_{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

¹⁾ 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