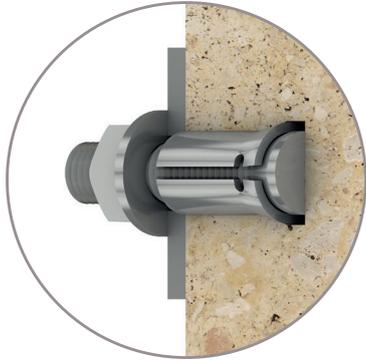


# HB11 Undercut Bolt - Introduction

The HB11 HAZ Undercut bolt was developed to meet the special requirements in stone installation where attachments from the rear surface of stone panels are required without exerting stresses on the stone. The HB11 undercut bolt are fixed mechanically in to undercut holes that are drilled with special drilling machines and drill bits. Stone thicknesses from 20 mm to 50 mm are applicable.



Drilling Hole



Checking Hole



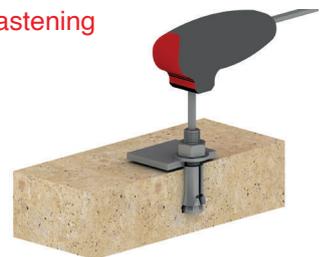
Placing Bolt



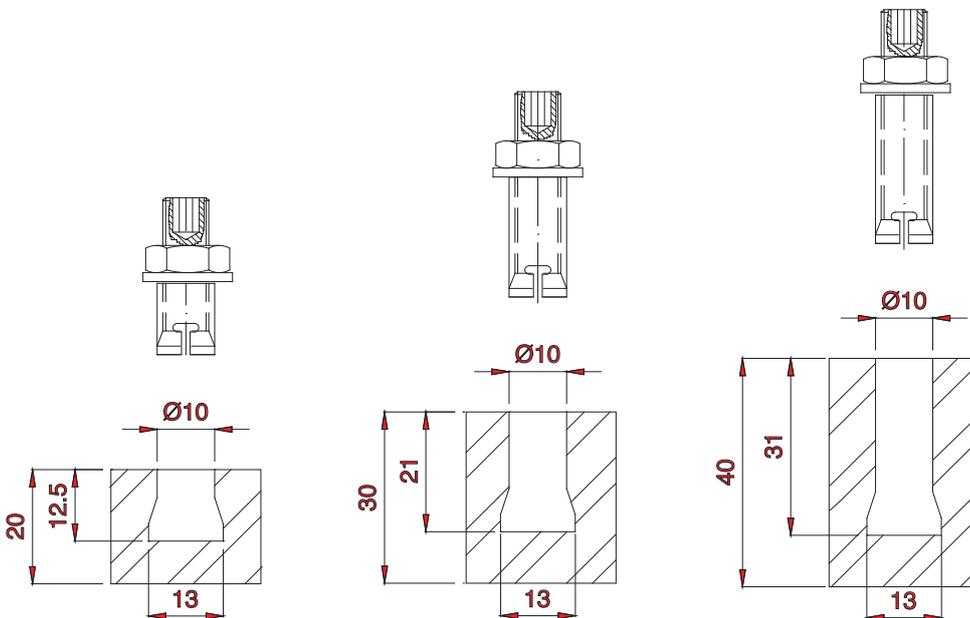
Placing Pipe



Fastening



Final

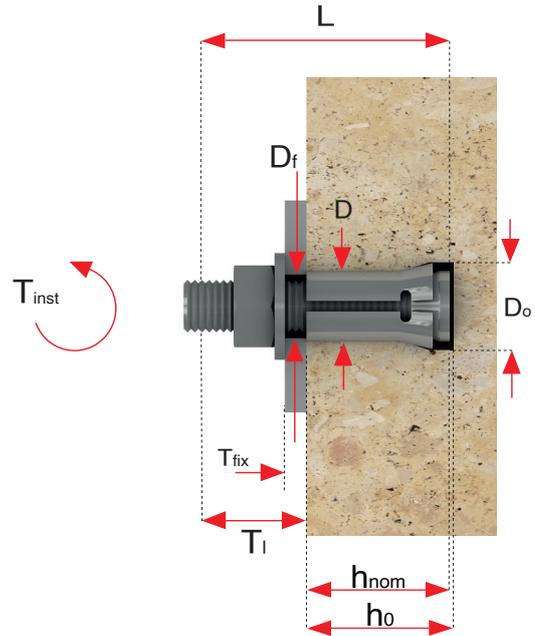


Drilling rear surface of panels using special drilling machine with drilling wet system and non core drill bits.

Minimal tolerances in hole size to be achieved in order for proper and secure attachment.

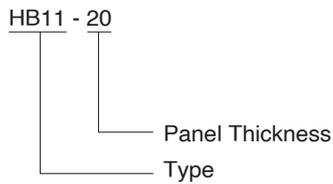


# HB11 Undercut Bolt - Technical Details



Product Code	Technical Details									
	Bolt Size	Bolt Length	Thread Length	Drill Length	Minimum Embedment	Max. Fixture Thickness	Fixture Hole Diameter	Maximum Torque	Stone Thickness	Drill Hole Diameter
	(mm)	(mm)	(mm)	h <sub>o</sub> (mm)	h <sub>nom</sub> (mm)	T <sub>fix</sub> (mm)	d <sub>f</sub> (mm)	T <sub>inst</sub> (Nm)	St (mm)	d <sub>o</sub> (mm)
HB11-20	M6x30	30	23.5	12.50	12.50	5	7	5	20	8/11
HB11-30	M8x40	40	33	21	21	5	9	12	30	10/13
HB11-40	M8x50	50	43	31	31	5	9	12	40	10/13

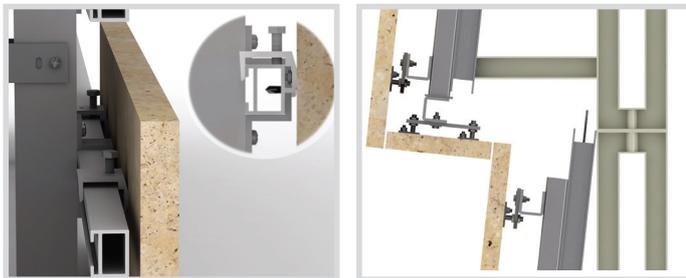
## Product Code



## Hard Granite Based Values

Allowable Loads (kN)				
Load direction	a degree	M6 (20mm Tck.)	M8 (30mm Tck.)	M8 (40mm Tck.)
Pull out	0	1.20	3.00	4.00
Shear	90	1.80	3.50	4.50

## Application Examples:



- Facade applications
- Connections to curtain wall unitized panels
- Corner stone fixing and reveal fixing

## Marble Based Values

Allowable Loads (kN)				
Load direction	a degree	M6 (20mm Tck.)	M8 (30mm Tck.)	M8 (40mm Tck.)
Pull out	0	1.10	2.20	2.50
Shear	90	1.40	2.50	2.70

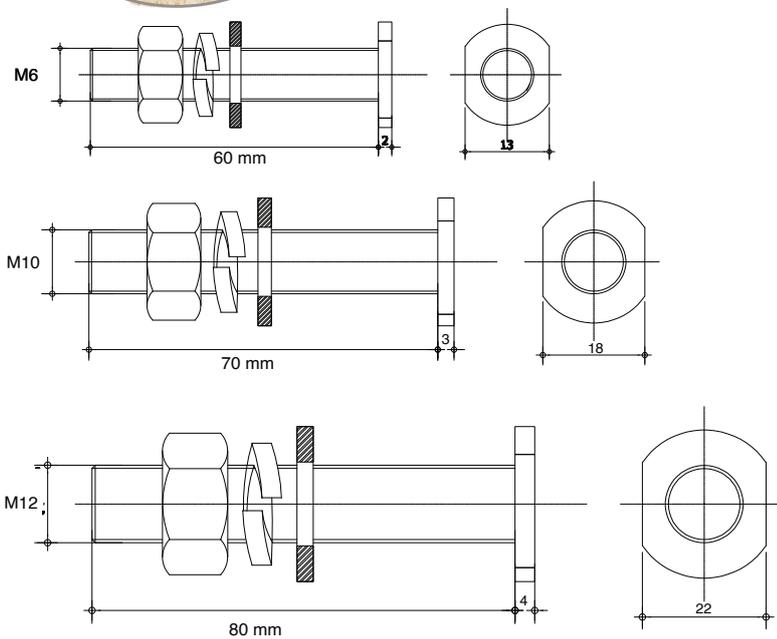
A safety factor of 3.5 is taken for mean ultimate failure loads.

## Fixing Instructions



# T31 Undercut Bolt - Introduction

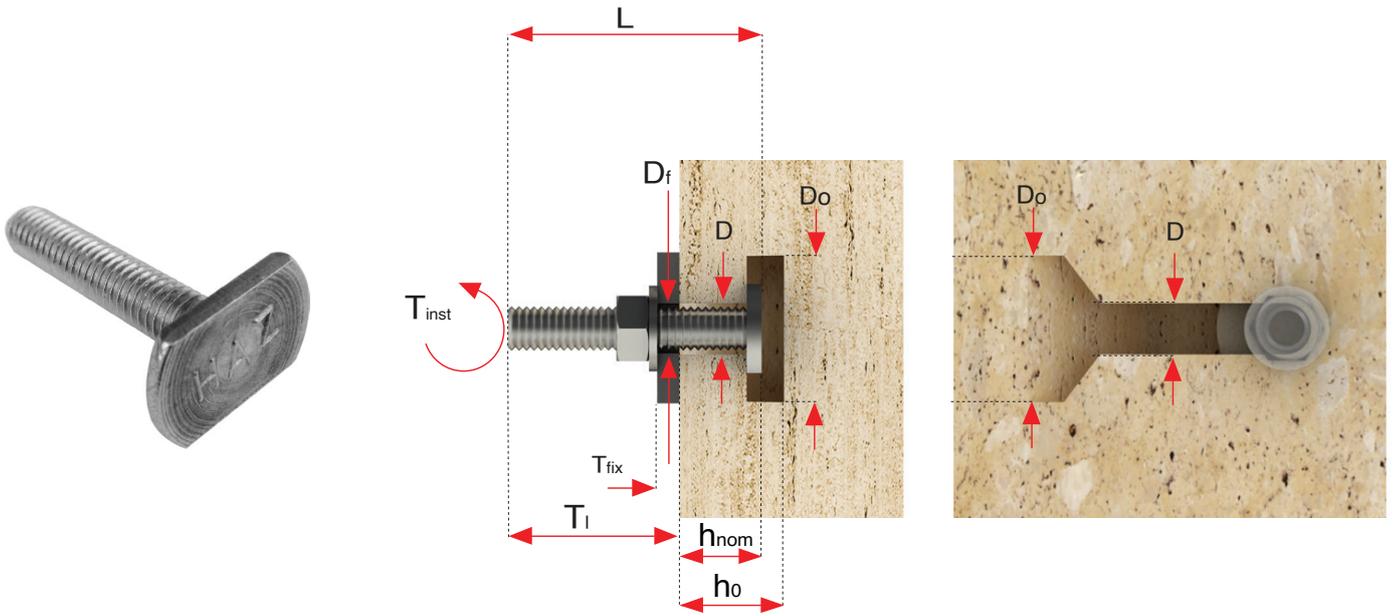
The T31 undercut bolt was developed to meet the special requirements in stone installation where the conventional pin method were not suitable. With the T31 bolts we can achieve attachments to the stone at the back surface. This provides freedom in design and creates an appearance where the joints will be clear of anchor tips. T31 undercut bolt is suitable for stone thicknesses between 20 and 50 mm.



Special drilling is made with suitable equipment to achieve the slot hole for fixing the T31 under cut bolt.

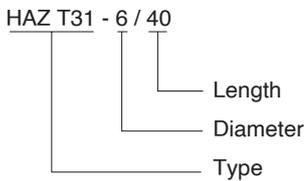


# T31 Undercut Bolt - Technical Details



Product Code	Technical Details									
	Bolt Size	Stone Thickness	Drill Hole Diameter	Drill Length	Minimum Embedment	Max. Fixture Thickness	Fixture Hole Diameter	Maximum Torque	Bolt Length	Thread Length
	(mm)	St (mm)	Do (mm)	ho (mm)	hnom (mm)	T <sub>fix</sub> (mm)	d <sub>f</sub> (mm)	T <sub>inst</sub> (Nm)	(mm)	(mm)
T31-6/40	M6x60	40	7	21	21	5	7	7	40	37
T31-10/50	M10x50	50	11	31	31	6	11	20	50	47
T31-12/70	M12x70	70	13	41	41	8	13	35	70	66

## Product Code



**Application:**  
For fastening fixtures to natural stone

**Available in:**  
Stainless Steel AISI 304 & AISI 316

## Hard Granite Based Values

Load direction	a degree	Allowable Loads (kN)		
		M6	M10	M12
Pull out	0	1.40	2.40	3.20
Shear	90	3.00	3.40	3.80

## Application Examples:

Attachments made on to brackets for stone installation direct on to walls.



Attachments made on to brackets for stone lintels, cornishes or soffits.

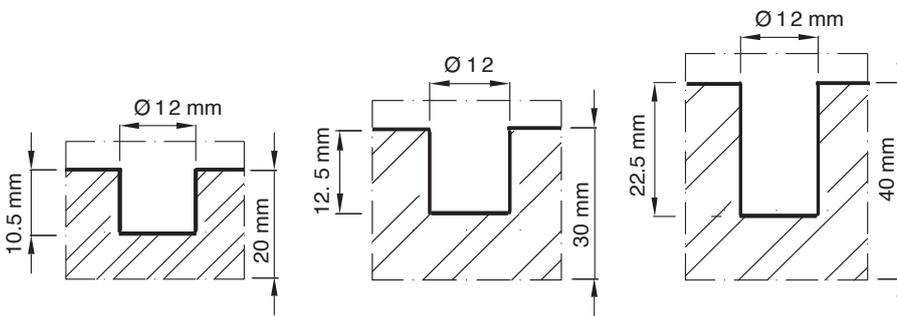
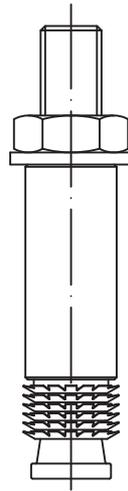
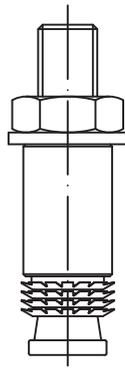
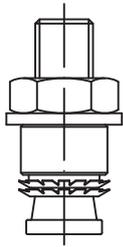


## Fixing Instructions



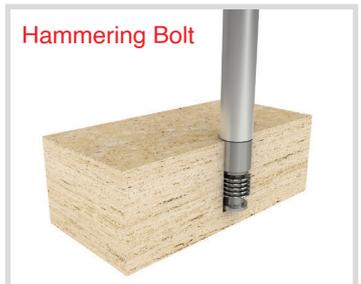
# HB09 Super Undercut Bolt - Introduction

The HB09 HAZ Super bolt was developed to meet the special requirements in stone installation where attachments from the rear surface of stone panels were required. With the use of HB09 HAZ Super bolts and suitable drilling method, this is achieved. HB09 HAZ Super bolt is suitable for stone thicknesses between 20 and 50 mm.

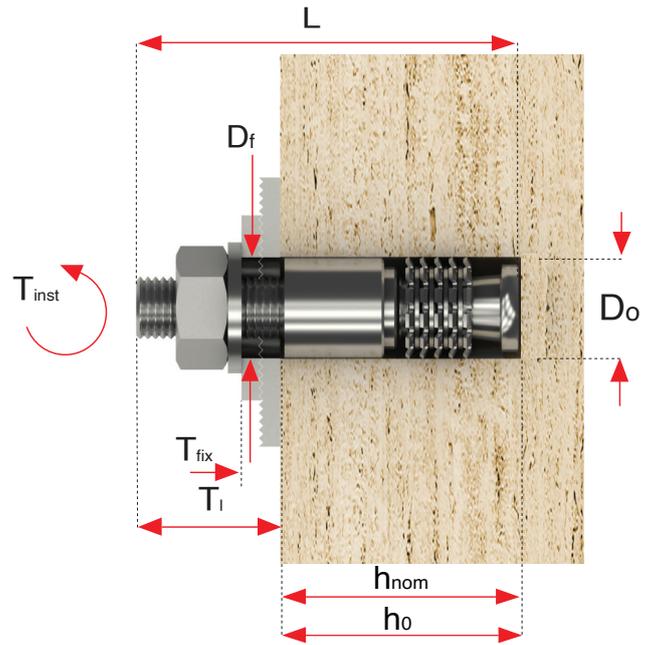


Drilling rear surface of panels using wet system machines and no core drill bits.

Zero tolerance in hole size to be achieved in order for proper and secure attachment.

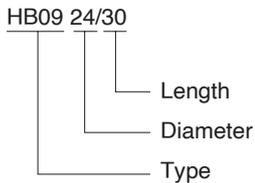


# HB09 Super Undercut Bolt - Technical Details



Product Code	Technical Details									
	Bolt Size	Stone Thickness	Drill Hole Diameter	Drill Length	Minimum Embedment	Max. Fixture Thickness	Fixture Hole Diameter	Maximum Torque	Bolt Length	Thread Length
	(mm)	St (mm)	do (mm)	ho (mm)	h <sub>nom</sub> (mm)	T <sub>fix</sub> (mm)	d <sub>f</sub> (mm)	T <sub>inst</sub> (Nm)	(mm)	(mm)
HB09-24/30	M8x30	20	12	10.5	10	5	9	13	30	20
HB09-48/45	M8x45	30	12	12.5	12	5	9	13	45	40
HB09-72/60	M8x60	40	12	22.5	22	5	9	13	60	55

## Product Code



## Application:

For fastening fixtures to natural stone

## Available in:

Stainless Steel AISI 304 & AISI 316

## Advantages of HB09 Haz Super Bolt

- No use of special and expensive drilling tools.
- No need of expensive drill bits.
- No stone breakage during fixation of bolt

## Hard Granite Based Values

Allowable Loads (kN)		
Load direction	a degree	M8
Pull out	0	1.40
Shear	90	3.00

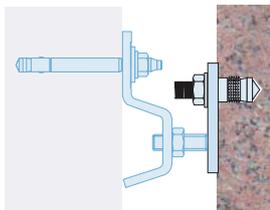
## Marble Based Values

Allowable Loads (kN)		
Load direction	a degree	M8
Pull out	0	1.00
Shear	90	2.10

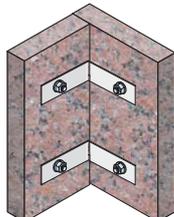
A safety factor of 2.5 is taken for mean ultimate failure loads.

## Application Examples:

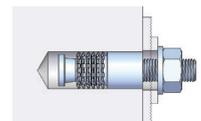
Facade Cladding



Corner Stone Fixing



Vanity Top Fixing



## Fixing Instructions

