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Your Fixing Systems Specialist

Stone Fixing Systems
Product Catalogue

HAZ-SF-EN / 08.14





Demir Bank Headquarters, Istanbul

Contents

Natural Stone Fixing System Overview	1		
Design Principles	3		
HZ Z Anchor Fixing System	5		
Introduction	9		
Installation Detail	10		
HZ01 Product Details	11		
HZ02 Product Details	12		
HZ05 Product Details	13		
HRS1 Product Details	14		
HZ07 Product Details	15		
HZ08 Product Details	16		
HZ02-S Product Details	17		
Special Z Anchors	18		
AXO Body Anchor Fixing Systems	19		
Introduction	19		
Installation Detail	20		
BA Product Details	21		
AXO1&2 Product Details	22		
AXO3 Product Details	23		
AXO4 Product Details	24		
HRS3 Product Details	25		
Special Body Anchors	26		
HA L Anchor Fixing Systems	27		
Introduction	27		
Installation Detail	28		
HA01 Product Details	29		
HA02&HA03 Product Details	30		
HA04&HA05 Product Details	31		
Special L Anchors	32		
		HDM Mortar Anchor Fixing Systems	
		Introduction	33
		Installation Detail	34
		BUN & BUG Product Details	35
		BTN & BTG Product Details	36
		MTN & MTG Product Details	37
		HN & HG Product Details	38
		HSD Mortar Anchor Fixing Systems	
		Introduction	39
		HRD01 Product Details	39
		HSD Anchor Product Details	40
		HMP Sub Channel Systems	
		Introduction	41
		Installation Detail	42
		ATS Channel System Introduction	43
		HMP Channel Product Details	44
		HCSP Channel Restraint Product Details	45
		HCRS Channel Restraint Product Details	46
		HMP Sub Channel Systems Examples	47
		Special Sub Channel Systems	48
		Aluminium Channel Systems	49
		Heavy Duty Fixing Systems	51
		HCA Corner Anchors	53
		HAZ Accessories	54
		HB Expansion Bolts	
		HB01, HB03 & HB05 Product Details	55
		HB06, HB07 & HB09 Product Details	56
		References	57

Stone Fixing Systems - Overview

Fixing systems need to accommodate all types of backing walls whether they are concrete walls, block work & masonry walls or steel structures.

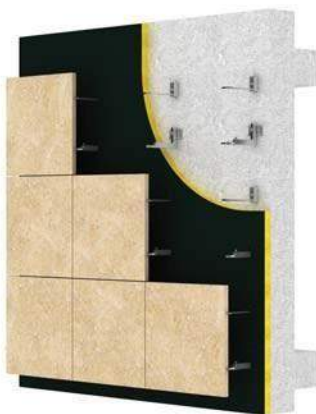
The following points are taken into consideration when designing a fixing system for natural stone installation.

- Stone type and dimensions.
- Cavity structure: projection size and insulation.
- Application type: horizontal or vertical joint installation.
- Joint size.
- Structural wall backing.
- Height of facade.
- Relevant dynamic loads such as wind and seismic loads.
- Design criteria of the project.

HAZ Metal proposes and specially designs fixing systems according to individual projects requirements.

Direct fixing to concrete walls with anchor bolts

Fixing to concrete with bolt anchors using expansion bolts. Insulation is cut at each anchoring point.



Direct fixing to concrete or masonry walls with mortar

Fixing to concrete with mortar anchors using mortar. Insulation is drilled at each anchoring point.



Indirect fixing to load bearing beams with channel system

Fixing to sub channel structure supported to load bearing beams. Insulation is cut at each anchoring point.

HZ Z Anchor Fixing System



- Fixing to concrete with bolts.
- Projection sizes up to 135mm.
- Recommended for loads up to 800N.
- Installation at horizontal or vertical joints.
- Three dimensional adjustability.

AXO Body Anchor Fixing



- Fixing to concrete with bolts.
- Projection sizes up to 260 mm.
- Recommended for loads up to 1300 N.
- Installation at horizontal or vertical joints.
- Optimum static performance.
- Three dimensional adjustability.

HA L Anchor Fixing System



- Fixing to concrete with bolts.
- Can be used for 50 mm and larger stone thicknesses.
- Various types to enable adjustability.
- Installation at horizontal joints only.

HSD Mortar Anchor Fixing System



- Fixing to masonry with mortar.
- Various types to fit a range of loads and projection sizes.
- Installation at horizontal or vertical joints.
- Three dimensional adjustability.

HMP Sub Channel System



- Fixing to sub channel structure which is attached to load bearing beams.
- High load bearing capability to fit projection sizes up to 360 mm.
- Greater projection sizes are achieved with special design.
- Fully adjustable and allows fast installation.

Stone Fixing Systems - Overview

HAZ Metal is known as a high quality and reliable service provider for the design and supply of fixing systems in the construction industry. Major projects have been successfully supplied with HAZ Metal fixing systems. The main advantage of HAZ Metal is the ability to custom design fixing systems and provide fast production to meet the time restraint requirements of projects. The design and supply is done in accordance with international standards and more importantly with our customers' expectations.

Application examples for bolt anchors

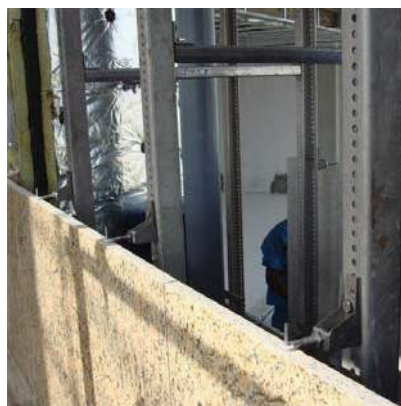
Anchors are fixed on to load bearing walls with expansion bolts.



To fasten anchors on to isolated walls, the isolation must be cut first. After fastening, the cut out isolation piece must be inserted back, and the isolation parts must be sealed in order to reduce cold bridging.

Application examples of profile systems

The channels are fastened to channel supports which are fixed with expansion bolts to floor beams. Natural stone panels are fixed with anchors which are fixed to channels with hex. bolt sets. This system allows installation to be independent from the wall. Low anchoring points allows faster installation and reduces cold bridging.



Design Principles

Design & Calculation Standards

HAZ Metal provides services in the design of fixing systems and the preparation of structural calculations. This service is done in the company technical department using CAD software and SAP and RFEM stress analysis programs.

Our technical department receives the necessary technical information of the project in order to propose the most suitable, secure, easy to use and economical fixing systems in accordance with the project criteria. Custom design is also made in accordance with the architectural drawings of the project.

HAZ Metal provides the necessary technical documentation for submittal to the project officials in order to receive approval for the fixing system elements. The following principles are used in the design and structural calculations for natural stone fixing systems.

Finite element stress analysis is implemented for complex structures where the structural integrity of the fixing systems needs to be maintained. This procedure is especially made for sub channel systems and unitized panel facade units.

HAZ Metal can offer the design and engineering services by referring to any internationally renowned standards. The engineering department will relate to the specifications of the project and conduct its design and dimensioning according to the requested criteria.

Reference is made to the following standards:

British Standards

- BS 8298 • Design and installation of natural stone cladding
- BS EN 10088-2 • Steel plates, sheets and strips stainless and heat resisting
- BS 6105 • Corrosion resistant stainless steel fasteners
- BS 5950 • Structural use of steel work in building
- BS 6399 Part 2 • Code of practice for wind loads
- BS 970 Part 3 • Mechanical properties for stainless steel

German Standards

- DIN 18516 • Cladding for ventilated walls
- DIN 18800 • Steel structures, design and dimensioning
- DIN 18801 • Steel framed structures
- DIN 1045 • Concrete and reinforced concrete, design and dimensioning
- DIN 1053 • Masonry, design and dimensioning
- DIN 1055 • Wind loads design code
- DIN 4114 • Steel construction, stability cases

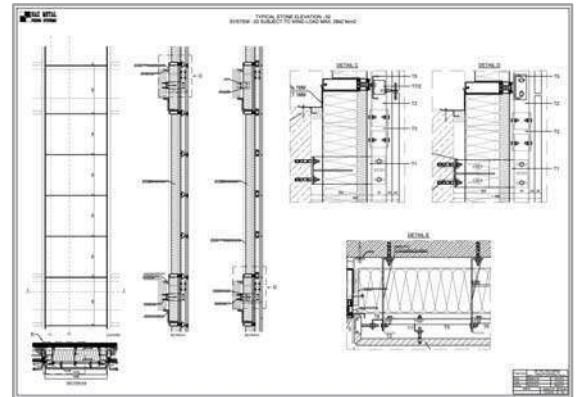
American Standards

- ASTM C1242-12 • Standard guide for stone attachment systems
- ASTM A276 • Specification for stainless steel bars and shapes
- ASTM 666 • Specification for annealed or cold worked austenitic stainless steel sheets
- ASCE • Minimum design loads for buildings

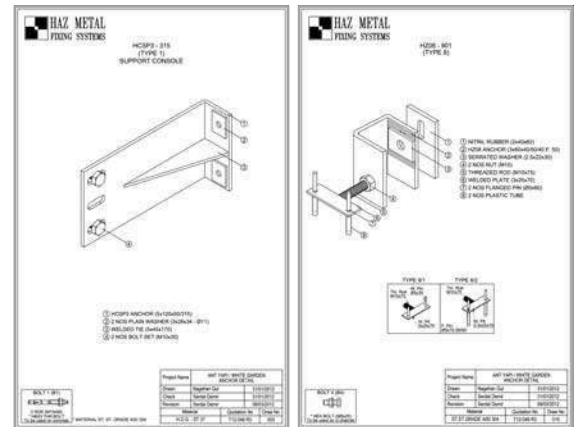
Uniform Building Code & International Building Code

Euro codes

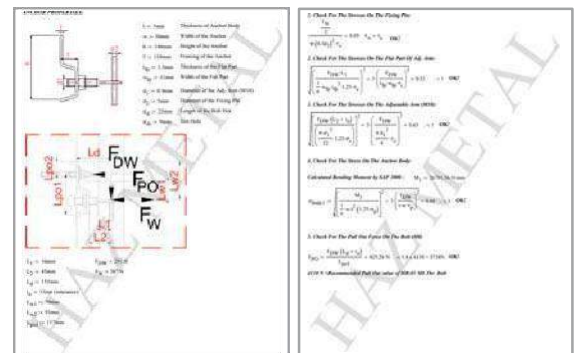
- EN 1990 - 1999 • Basis of Structural Design. Structural Analysis and Design by Testing



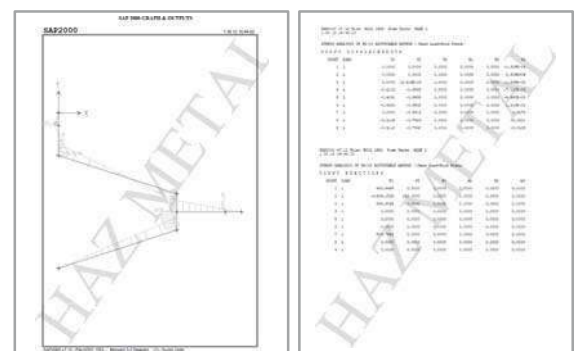
• Shop drawing with application details



• Detailed product drawings



• Structural analysis report



• Finite element method stress analysis

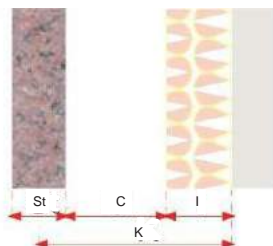
Design Principles

Design Factors

The following design factors are considered

Wall Structure

I : Thickness of insulation
C : Cavity
St: Thickness of stone
K : Projection

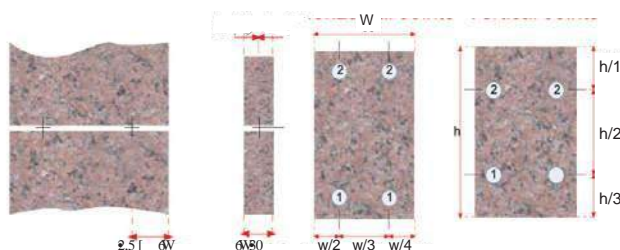


Structure - Edge Spacing

• Minimum distance from the corner of the slab to the pin centre should be 2.5 times the slab thickness.

• The minimum pin centre distance to the edge of slab at the surface should be 15mm.

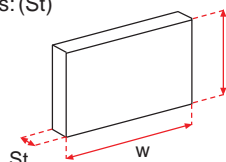
• The most secure method is to arrange the distance of the drilled pin hole centre from the edge of the slab at 1/4 the size of the slab.



Natural Stone Material

Dimensions of natural stone slabs :

- Length: (w)
- Height: (h)
- Thickness: (St)



Design weight for natural stone slabs : (ds)

- Travertine: (24000 N/m³)
- Sandstone: (26000 N/m³)
- Marble & Limestone: (27000 N/m³)
- Granite: (28000 N/m³)

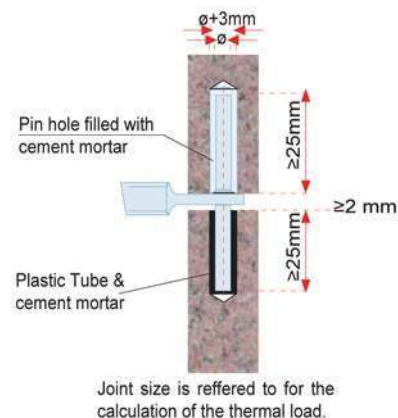
Anchor Pins

• Anchor pins are inserted into the drilled holes on the edge of the slab from four points.

• Drilled holes should be aprox. 3 mm wider than the pin diameter and minimum 25 mm in length.

• Minimum 2 mm space should be left between the slab below and the bottom edge of the adjustable arm.

• A plastic tube is inserted on the slabs below to absorb wind loads.



Applied Loads - (Actions)

The following applied loads are considered;

Dead loads:

Weight of natural stone slabs is determined
 $F_{dw} = h \text{ (m)} \times w \text{ (m)} \times st \text{ (m)} \times ds \text{ (KN/m}^3\text{)}$
 F_{dw} is multiplied with 1.35 safety factor.

Wind loads:

The max. speed is; v_s .

The value of the dynamic pressure of the wind is $q = k \cdot v_s^2$

The max. design pressure is; $w_p = c_p \cdot Q$

The max. design suction is; $w_s = c_s \cdot Q$

$w_s = 0.7 \cdot Q$ (normal)

$w_s = 2.0 \cdot Q$ (edge)

w_p & w_s are multiplied with 1.50 safety factor

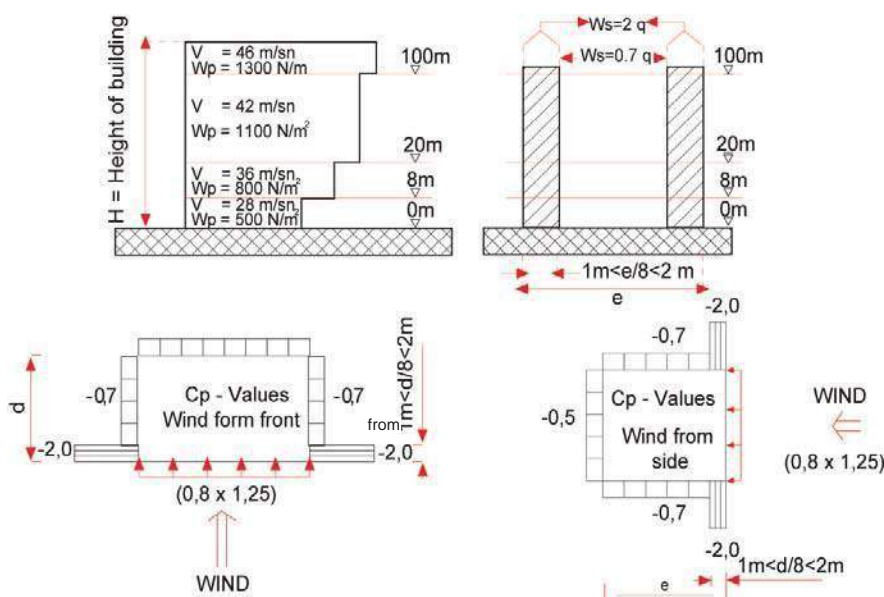
Thermal loading:

The following temperature is considered.

Range on the stone; $T_{min} \text{ } ^\circ\text{C} < t \text{ } ^\circ\text{C} < T_{max} \text{ } ^\circ\text{C}$

The max. thermal loading in the stone is;

$\Delta W = W \cdot \alpha \cdot \Delta T$ The max. thermal expansion for stone slab is; $\Delta W = W \cdot \alpha \cdot \Delta T$



Design Principles

Wall Backing

The anchoring ground can be concrete, brickwork, filled hollow block or steel structure. Different types of bolts are used for backing.

The type of wall backing is taken into consideration to propose suitable bolts for fixing the anchors.



Concrete wall



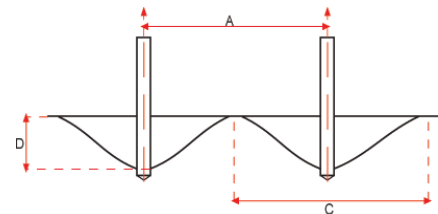
Masonry wall



Block work wall

Group of Bolts

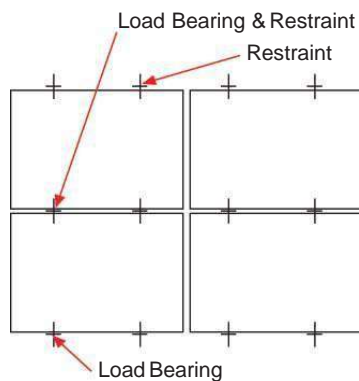
The distance between anchor bolts; A, which is necessary for a full cone of concrete to break away, is given by the crater diameter; C, depending on the type of anchor. This diameter is 1.5 to 2.5 times the depth of embedment, D.



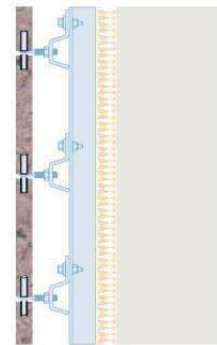
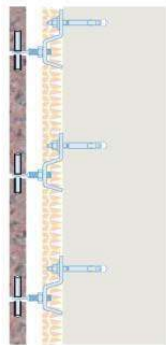
Application Type

Horizontal Joints

The anchors carry half the weight of the natural stone slabs in horizontal installation. Anchors bear half the weight of the slab above and also act as restraint, holding the slabs below and restraining them against wind pressure and suction.



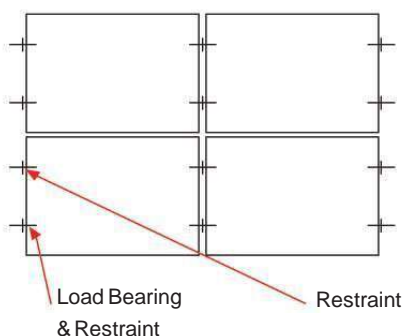
Direct fixing to concrete
Min. Projection size 45 mm



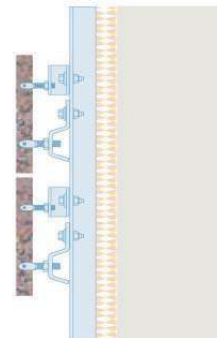
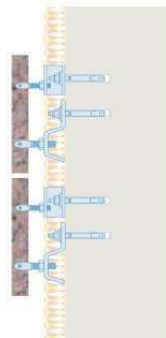
Indirect fixing to channels
Min. Projection size 90 mm.

Vertical Joints

The load bearing anchors carry the full weight of the natural stone slab in vertical installation. Each anchor bears half the weight of the slab on the right and half the weight of the slab on the left. Restraint anchors hold the slabs below and restrain them against wind pressure and suction.



Direct fixing to concrete
Min. Projection size 45 mm



Indirect fixing to channels
Min. Projection size 90 mm.

Design Principles

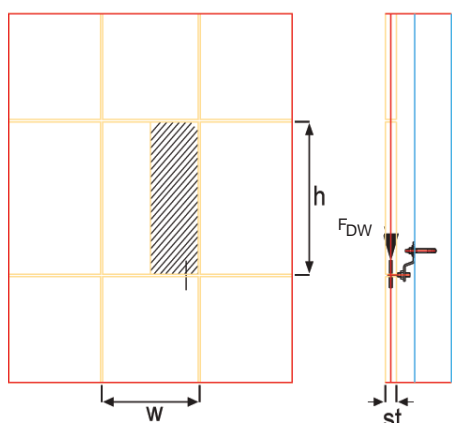
Load Principles

Vertical (Dead Load) and Horizontal (Wind Load) loads are determined according to the following diagram. The following principle is applied before designing a fixing system.

Support anchor in horizontal joint

Vertical load from dead load

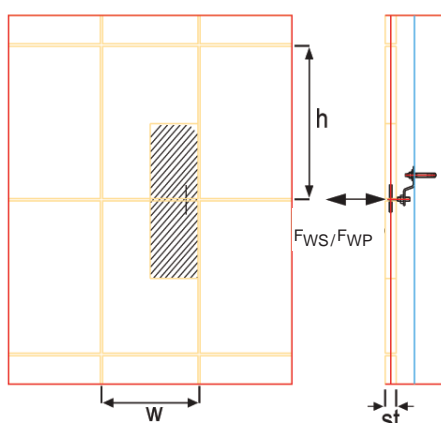
$$FDW = (st \times w \times h \times ds) / 2 \text{ (for each anchor)}$$



Restraint anchor in horizontal joint

$$FWP = (w \times h \times qp) / 2 \text{ (for each anchor)}$$

$$FWS = (w \times h \times qs) / 2 \text{ (for each anchor)}$$



FDW = Deadload

FWP = Wind load at pressure case

FWS = Wind load at suction case

ds = Density of stone

qw = Design wind pressure

qs = Design wind suction

t = Thickness of stone

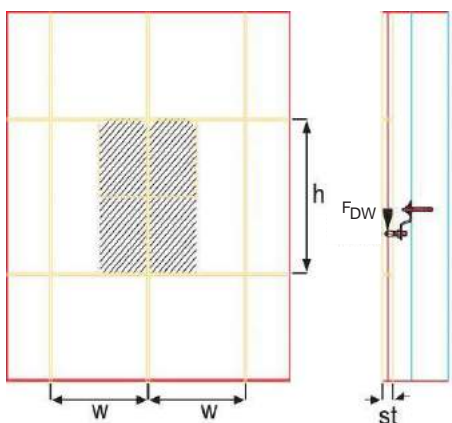
w = Width of stone

h = Height of stone

Support anchor in vertical joint

Vertical load from dead load

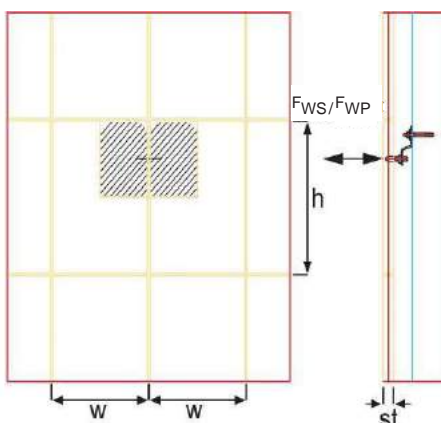
$$FDW = (st \times w \times h \times ds) / 1 \text{ (for each anchor)}$$



Restraint anchor in vertical joint

$$FWP = (w \times h \times qp) / 2 \text{ (for each anchor)}$$

$$FWS = (w \times h \times qs) / 2 \text{ (for each anchor)}$$



Material Grade

Anchors, adjustable arms and pins must be stainless steel grade AISI 304 - 1.4301 (A2) & AISI 316-1.4401 (A4).

Recommended material specifications for fixing systems are shown in the following table.

Product Type	Stainless Steel	Steel
	AISI = W.-Nr.	DIN = W.-Nr.
Anchors	304 = 1.4301 316 = 1.4401 316Ti = 1.4571	Not Advisable
Channels	304 = 1.4301 316 = 1.4401	Hot dip galv. St 37-2 = 1.0037 Hot dip galv. St 44-2 = 1.0044
Bolts	DIN 933 (A2/50-A2/70) A4/50-A4/70)	Electro galv. St 37 Strength class 4.6/8.8
Hexagon Nuts	DIN 934 & DIN 439 (A2/50-A2/70) A4/50-A4/70)	Electro galv. St 37 Strength class 8
Washers	DIN 125	ST DIN 125

HZ Z Anchor Fixing Systems - Introduction

- Direct fixing into concrete walls with expansion bolts. Indirect fixing into sub channel system with hex bolts.
- Three dimensional adjustability - Quick and easy fixing.
- Installation at horizontal and vertical joints.
- Recommended projection sizes up to 135 mm & loads up to 800 N.

HZ01
ZAnchor



HZ02
ZAnchor



HZ05 Z Anchor
With riveted nut



HZ07
SoffitAnchor



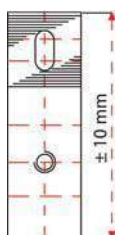
HZ08 ZAnchor
For large projections



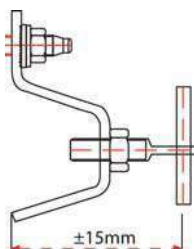
HRS1
RestraintAnchor



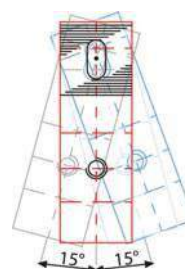
Three dimensional adjustability



1) Vertical adjustment is provided by the slotted hole. The anchor is fixed on to the bolt with the serrated washer at the desired level.

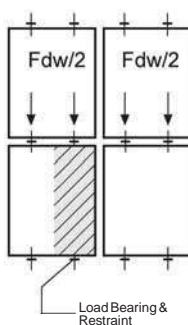


2) Adjustment of the projection size is provided by rotating the adjustable arm. The adjustable arm is locked with the hexagon nut.

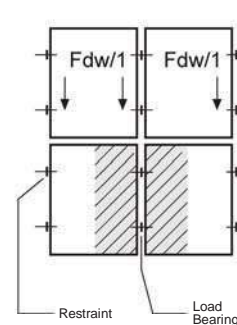


3) Adjustment of the anchor left and right is provided by sliding the body up to 15 degrees side ways.

Installation at horizontal joints

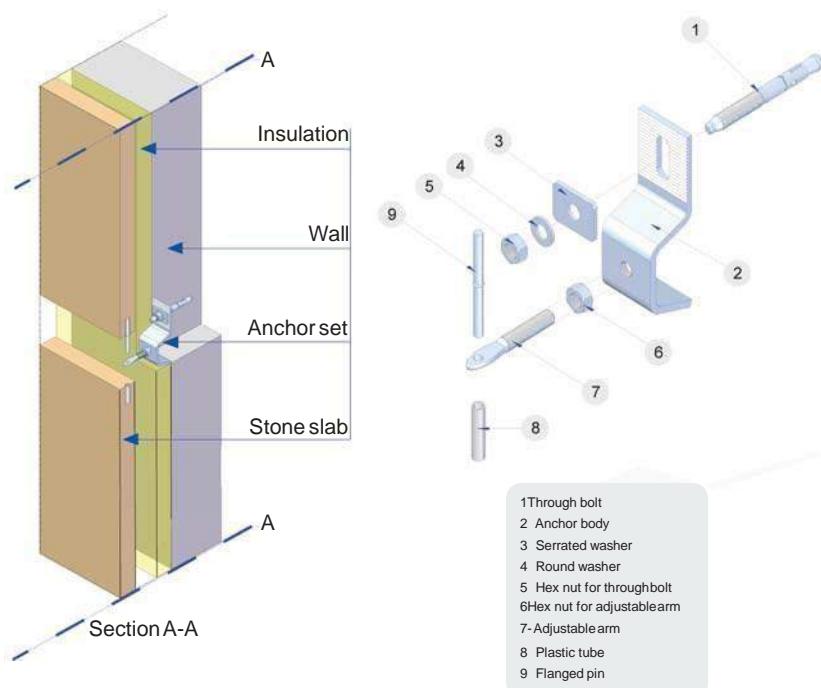


Installation at vertical joints

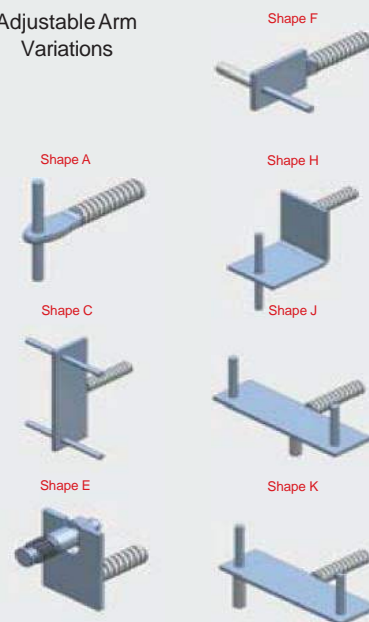


- Suitable for concrete walls. Anchors are fixed directly on to concrete walls with expansion bolts.
- Recommended projection size between 45 mm to 135 mm and loads up to 800 N.
- In horizontal joint installation, slabs are pinned on the bottom and upper sides. Anchors act as load bearing carrying half the weight of the slabs above. Anchors also act as restraints, holding the slabs below and restraining against wind suction and pressure.
- In vertical joint installation slabs are pinned on the left and right sides. Anchors on the bottom are load-bearing anchors carrying the whole weight of the slab. Half the weight of the slab on the left and half the weight of the slab on the right. Anchors on the top are restraint anchors holding the slabs and restraining against wind suction and pressure.
- Three - dimensional adjustability allows quick and easy installation.
- The design and structural calculations of these anchors are made in our technical department. Special design and manufacturing can be made for the requirements of each project.

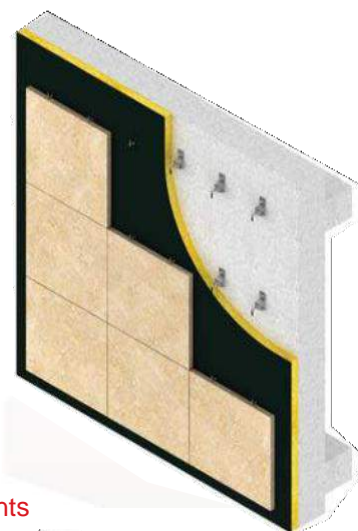
HZ Z Anchor Fixing Systems - Installation Detail



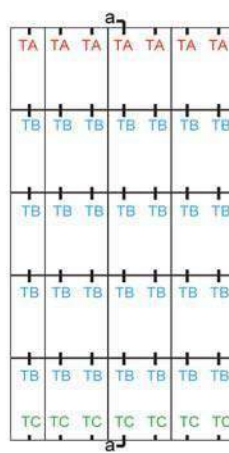
Adjustable Arm Variations



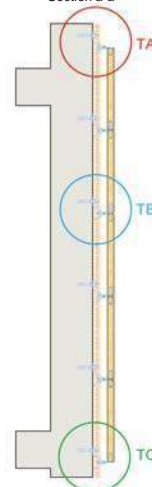
Installation at horizontal joints



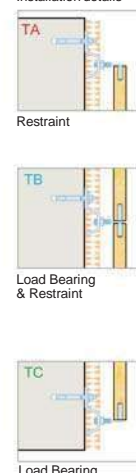
Elevation view



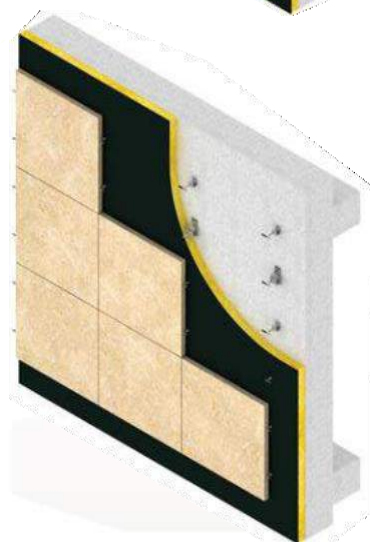
Section a-a



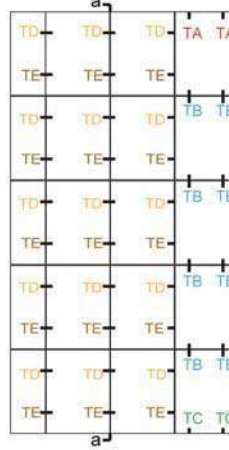
Installation details



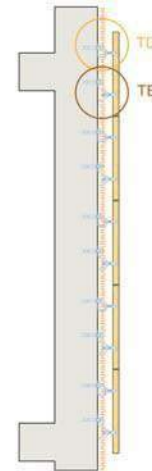
Installation at vertical joints



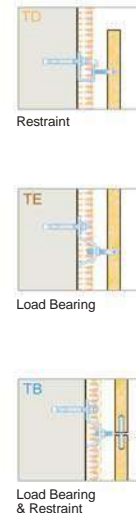
Elevation view



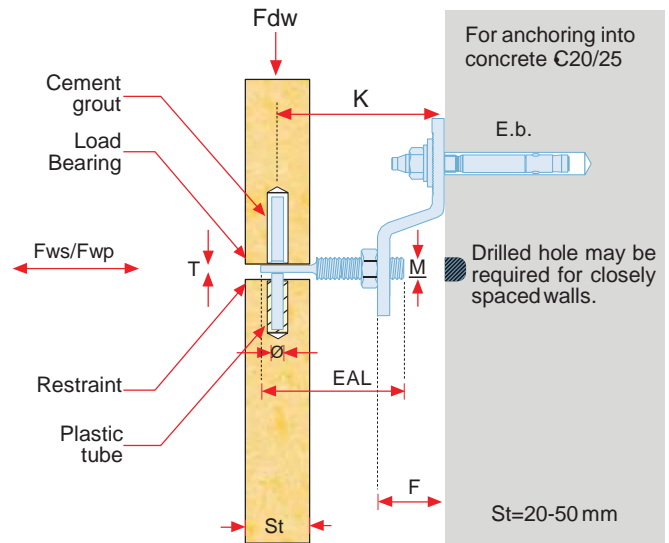
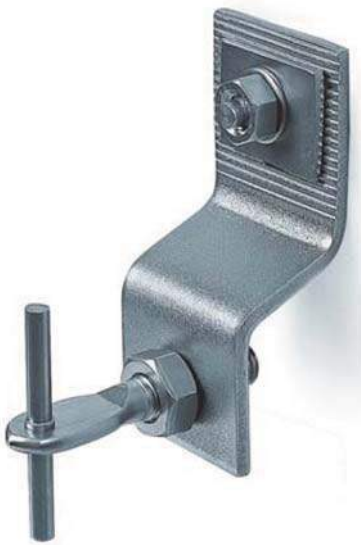
Section a-a



Installation details



HZ01 Z Anchor - Product Details



Product Code	Technical details											
	Projection	Min. Projection	Max. Projection	Dead Load	Forming Size	Wind-Pressure	Wind-Suction	Expansion Bolt Size	Pin Size	Adj. Arm Metric Size	Adj. Arm Flat Thickness	Adj. Arm Length
	K (mm)	K - (mm)	K + (mm)	Fdw (N)	F (mm)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)
HZ01-452	45	40	55	200	10	312	219	M8X80	5	M10	3.5	60
HZ01-552	55	45	70		20							60
HZ01-752	75	60	90		40							60
HZ01-952	95	80	110		60							60
HZ01-553	55	50	70	300	20	468	328	M8X80	5	M10	3.5	60
HZ01-753	75	60	90		40							60
HZ01-953	95	80	110		60							60
HZ01-1153	115	100	130		80							60
HZ01-554	55	50	65	400	10	624	437	M10X90	5	M12	4.5	70
HZ01-754	75	60	90		20							80
HZ01-954	95	80	110		40							80
HZ01-1154	115	100	130		60							80
HZ01-755	75	60	90	500	20	780	546	M10X90	5	M12	4.5	90
HZ01-955	95	80	110		40							90
HZ01-1155	115	100	130		60							90
HZ01-1355	135	120	150		80							90

- Material: Stainless Steel 1.4301 (A2) & 1.4401 (A4).
- Table above is prepared according to Eurocode standards.
- Loads stated are working resistance loads.
- Other sizes are available for production upon request.
- Bolts are provided separately.
- Structural calculation reports are available upon order.

HZ01 Z Anchor

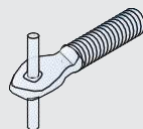
- Load bearing & restraint
- Three dimensional adjustability
- Fastened on to load bearing walls with expansion bolts and on to channels with set screws
- Projection sizes between 45 and 135 mm
- Suitable for horizontal & vertical joints

- Loads up to 500 N
- Stone thicknesses 20-50 mm

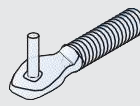
Product Code Description

HZ01 - 45 2 A
 — Shape
 — Dead Load (x10 Kg)
 — Projection (mm)
 — Type

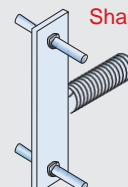
Shape A



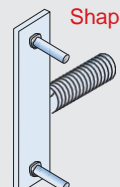
Shape B

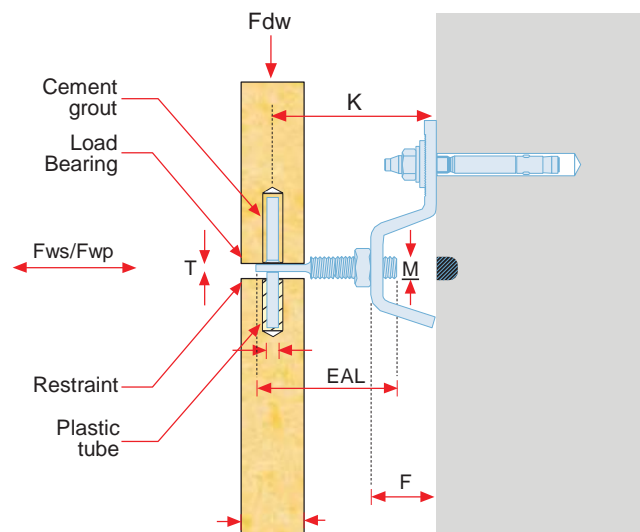


Shape C



Shape D



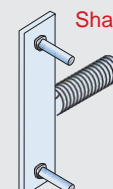
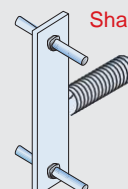
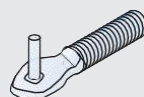


Product Code	Technical Details											
	Projection	Min. Projection	Max. Projection	Dead Load	Forming Size	Wind-Pressure	Wind-Suction	Expansion Bolt Size	Pin Size	Adj. Arm Metric Size	Adj. Arm Flat 7KLFNQHV	Adj. Arm Length
	K (mm)	K - (mm)	K + (mm)	Fdw (N)	F (mm)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)
HZ02-452	45	40	55	200	10	312	219	M8X80	5	M10	3.5	60
HZ02-552	55	45	70		20							60
HZ02-752	75	60	90		40							60
HZ02-952	95	80	110		60							60
HZ02-553	55	45	70	300	20	468	328	M8X80	5	M10	3.5	60
HZ02-753	75	60	90		40							60
HZ02-953	95	80	110		60							60
HZ02-1153	115	100	130		80							60
HZ02-554	55	45	65	400	10	624	437	M8X80	5	M12	4.5	70
HZ02-754	75	60	90		20							80
HZ02-954	95	80	110		40							80
HZ02-1154	115	100	130		60							80
HZ02-755	75	60	90	500	20	780	546	M8X80	5	M12	4.5	90
HZ02-955	95	80	110		40							90
HZ02-1155	115	100	130		60							90
HZ02-1355	135	120	150		80							90
HZ02-756	75	60	90	600	20	936	655	M10X90	6	M14	5.5	90
HZ02-956	95	80	110		40							90
HZ02-1156	115	100	130		60							90
HZ02-1356	135	120	150		80							90
HZ02-758	75	60	90	800	20	1235	865	M10X90	6	M14	5.5	90
HZ02-958	95	80	110		40							90
HZ02-1158	115	100	130		60							90
HZ02-1358	135	120	150		80							90

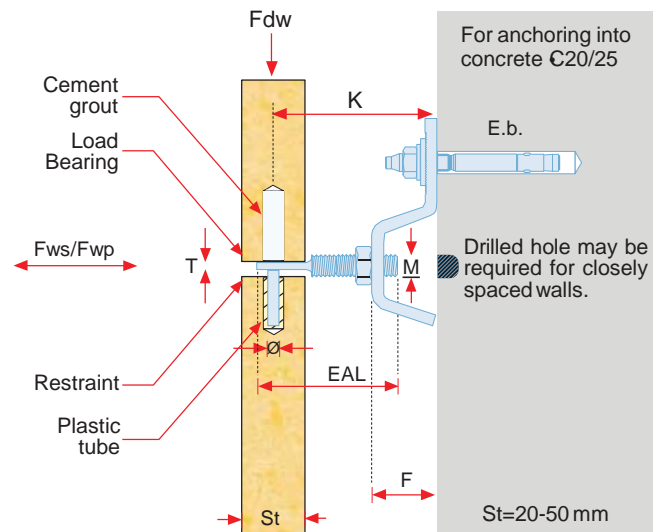
~~1~~DMHLD: 6MDQCHW 6MHD 1.4301 (\$2) & 1.4401 (\$4); ~~2~~DECHDERYHLY SUHSDUHGDFRUGLQJWR XURFRGH WDWQLGR DGV WDWFG
~~3~~DHZRUNLQJ UHMDWDQH ORQGV; ~~4~~ZMKHUMJHVDUHMDCCH RUSRGFWLRQXSRLQHIXHW; ~~5~~QOWDUHSURLGHGVSHUDWHO; ~~6~~WUFWALD
~~7~~FDXDWRO UHRLWW DHDMDQCHXSRO RUCHU

Shane D

A technical drawing of a bolt and nut assembly. The bolt is shown in a vertical orientation, with a hexagonal head at the top and a threaded shank extending downwards. A nut is threaded onto the shank, positioned below the head. The drawing is a simple line illustration with no shading.



HZ05 Z Anchor With Riveted Nut - Product Details



Product Code	Technical Details											
	Projection	Min. Projection	Max. Projection	Dead Load	Forming Size	Wind-Pressure	Wind-Suction	Expansion Bolt Size	Pin Size	Adj. Arm Metric Size	Adj. Arm Flat Thickness	Adj. Arm Length
	K (mm)	K - (mm)	K + (mm)	Fdw (N)	F (mm)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)
HZ05-452	45	40	55	200	10	312	219	M8X80	5	M10	3.5	60
HZ05-552	55	45	70		20							60
HZ05-752	75	60	90		40							60
HZ05-952	95	80	110		60							60
HZ05-553	55	50	70	300	20	468	328	M8X80	5	M10	3.5	70
HZ05-753	75	60	90		40							70
HZ05-953	95	80	110		60							70
HZ05-1153	115	100	130		80							70
HZ05-554	55	50	65	400	10	624	437	M8X80	5	M12	4.5	70
HZ05-754	75	60	90		20							90
HZ05-954	95	80	110		40							90
HZ05-1154	115	100	130		60							90
HZ05-755	75	60	90	500	20	780	546	M8X80	5	M12	4.5	90
HZ05-955	95	80	110		40							90
HZ05-1155	115	100	130		60							90
HZ05-1355	135	120	150		80							90

- Material : Stainless Steel 1.4301 (A2) & 1.4401 (A4).
- Table above is prepared according to Eurocode standard.
- Loads stated are working resistance loads.
- Other sizes are available for production upon request.
- Bolts are provided separately.
- Structural calculation reports are available upon order.

adjustable

HZ05 Z Anchor

- Load bearing & restraint
- Three dimensional adjustability
- Fastened on to load bearing walls with expansion bolts and on to channels with set screws

Product Code Description

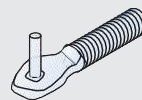
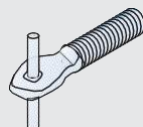
HZ05 - 45 2 A

- Shape
- Dead Load (x10 Kg)
- Projection (mm)
- Type

- Projection sizes between 45 and 135 mm
- Suitable for horizontal & vertical joints

Shape A

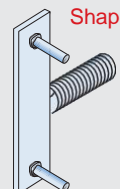
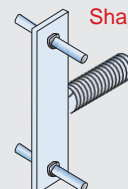
Shape B



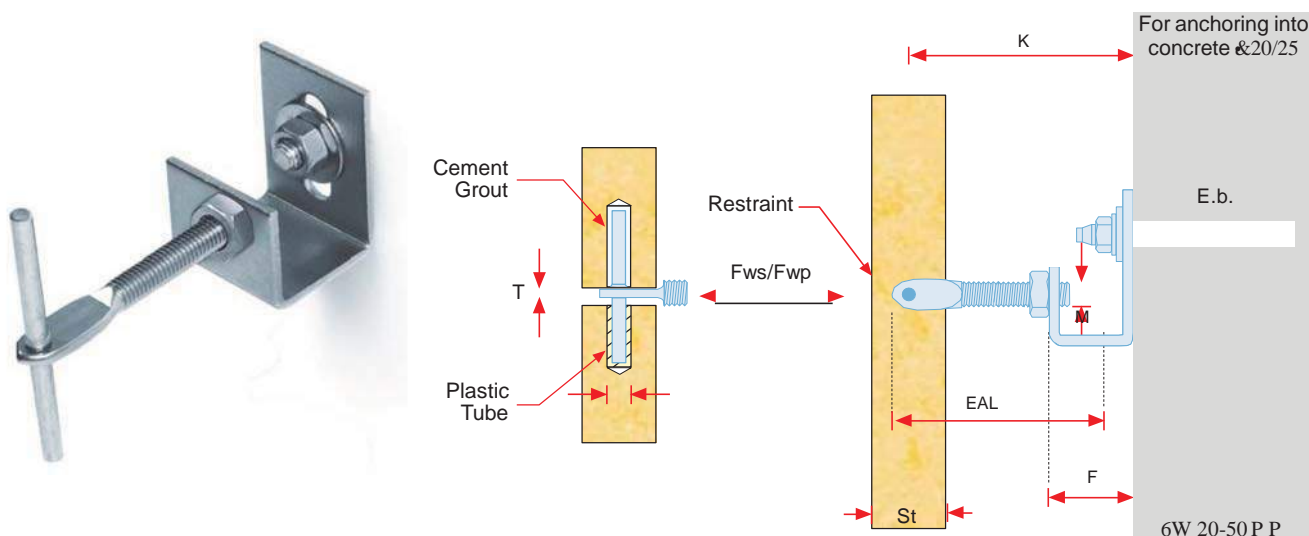
- Loads up to 500 N
- Stone thicknesses 20-50 mm

Shape C

Shape D



HRS1 Restraint Anchor - Product Details



Product Code	Technical Details											
	Projection	Min. Projection	Max. Projection	Forming Size	Wind-Pressure	Wind-Suction	Expansion Bolt Size	Pin Size	Adj. Arm Metric Size	Adj. Arm Flat Thickness	Adj. Arm Length	
	K (mm)	K - (mm)	K + (mm)	F (mm)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)	
HRS1-55 *	55	45	60	20	312	219	08;80	5	M8	3	60	
HRS1-75	75	60	90	40							60	
HRS1-95	95	80	110	60							60	
HRS1-115	115	100	130	60							80	
HRS1-135	135	115	150	60							100	

‡ DWHLD: 6WQCHW 6WHD1.4301 (\$2) & 1.4401 (\$4).
 ‡ TBOHDERYH IV/SUHSUHG DFRUGLQI VR(XURFRGH WQGGUG
 ‡ /RDGV WDWGDUH ZRUNLQI UHMYWDQHORDGV.
 ‡ ZMKHU VJHV DUH DMLODECHRU SURGFWURQ XSRQ UHIXHW.
 ‡ ROWDLH SURYLGHG VSDUDWHO.
 ‡ 6WUWALDDHODMIRQ UHFWW DUH DMLODECHXSRQ RUGHU.
 ‡ \$MLODECH IQVJHV WRBWVHSLRMFWIRQUDQH RI 100+ = DQKRUV.

* In case back adjustment shorter adj. arms should be used.

HRS1 Restraint Anchor

‡ /RDG EHDULQI & UHWQV

‡ 7KHU GLHQMLRQDO DMKWDHGW

‡ DVWHQHG RQ WRORG EHDULQI ZDOV ZWK HSDQVLHQ BOWDQG RQ VRKDDQH VZWK VHVUFHVV

Product Code Description

HRS1 - 45A

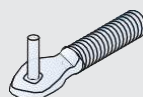
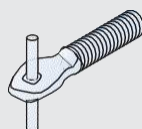
Shape
 Projection (K mm)
 Type

‡ URMFWIRQ VJHV EHWZHHQ 45 DQG 135 P P

‡ 6WUWALDDHODMIRQ UHFWW DUH DMLODECHXSRQ RUGHU

Shape A

Shape B

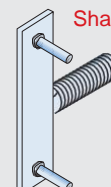
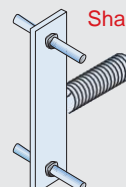


‡ /RDGV XS WR3 12 1

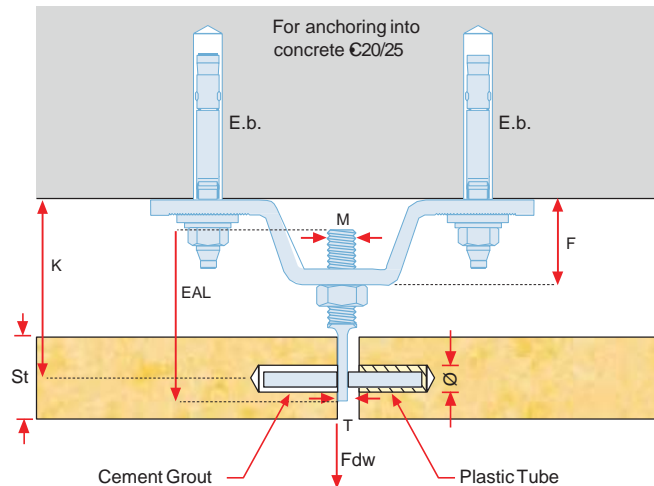
‡ 6WRQH WKLEHQHMHV 20-50 P P

Shape C

Shape D



HZ07 Z Anchor For Soffits - Product Details



Product Code	Technical Details									
	Projection	Min. Projection	Max. Projection	Dead Load	Forming Size	Expansion Bolt Size	Pin Size	Adj. Arm Metric Size	Adj. Arm Flat Thickness	Adj. Arm Length
	K (mm)	K - (mm)	K + (mm)	Fdw (N)	F (mm)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)
HZ07-452	45	40	55	200	10	M8X80	5	M10	3.5	60
HZ07-552	55	45	70		20					60
HZ07-752	75	60	90		40					60
HZ07-952	95	80	110		60					60
HZ07-553	55	50	70	300	20	M8X80	5	M10	3.5	60
HZ07-753	75	60	90		40					60
HZ07-953	95	80	110		60					60
HZ07-1153	115	100	130		80					60
HZ07-554	55	50	65	400	10	M8X80	5	M12	4.5	70
HZ07-754	75	60	90		20					80
HZ07-954	95	80	110		40					80
HZ07-1154	115	100	130		60					80

- Material : Stainless Steel 1.4301 (A2) & 1.4401 (A4).
- Table above is prepared according to Eurocode standard.
- Loads stated are working resistance loads.
- Other sizes are available for production upon request.
- Bolts are provided separately.
- Structural calculation reports are available upon order.

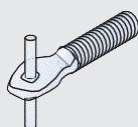
HZ07 Z Anchor - SoffitAnchor

- Load bearing & restraint
- Three dimensional adjustability
- Fastened on to load bearing walls with expansion bolts and on to channels with set screws
- Projection sizes between 45 and 115 mm
- Suitable for horizontal & vertical joints

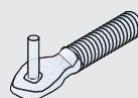
Product Code Description

HZ07 - 45 2 A
 Shape
 Dead Load (x10 Kg)
 Projection (mm)
 Type

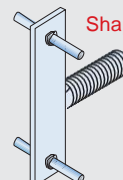
Shape A



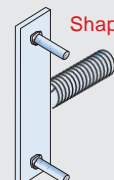
Shape B



Shape C

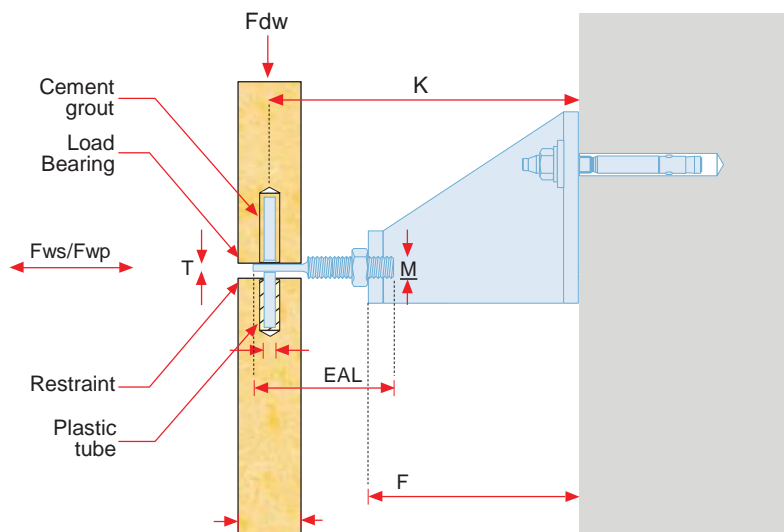


Shape D



- Loads up to 400 N
- Stone thicknesses 20-50 mm

HZ08 Z Anchor - Product Details



Product Code	Technical Details											
	Projection	Min. Projection	Max. Projection	Dead Load	Forming Size	Wind-Pressure	Wind-Suction	Expansion Bolt Size	Pin Size	Adj. Arm Metric Size	Adj. Arm Flat Thickness	Adj. Arm Length
	K (mm)	K - (mm)	K + (mm)	Fdw (N)	F (mm)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)
HZ08-1152	155	85	170	200	80	312	219	M8x80	5	M10	3.5	60
HZ08-1352	175	105	190		100							60
HZ08-1552	195	125	210		120							60
HZ08-1153	115	100	130	300	80	468	328	M8x80	5	M10	3.5	60
HZ08-1353	135	120	150		100							60
HZ08-1553	155	140	170		120							60
HZ08-1154	115	100	130	400	80	624	437	M8x80	5	M12	4.5	80
HZ08-1354	135	120	150		100							80
HZ08-1554	155	140	170		120							80

‡ DWHLDO: 6WIDQH 6WHD 1.4301 (\$2) & 1.4401 (\$4).
 ‡ 7DEOH DERYH IV SUHSDUHG DFRUGLQI WR (XURFRGH WDGGLUG
 ‡ /RDGV WDWFGDLU ZRUNLQI UHMWDDQH RDGV.
 ‡ 2MKHU VLHV DUH DMLDDECH RU SURGXFWLRQ XSRO UHIXHW.
 ‡ 6ROWDUH SURYLGHG VHSUDWHO.
 ‡ 6XUNWLDLDO EDODWRQ UHFRUU DUH DMLDDECH XSRO RUGHU.

HZ08 Z Anchor

‡ /RDGV EHDULQI & UHWDQV

‡ 7KLUH GLHQMRQDO DQWVWHQV

‡ DVWHQHGRQ WRORDG EHDULQI ZDOV ZYK HSDQVLRQ BOWDQGRQ WRKDQQHOV ZYK VHWVUHZV

Product Code Description

HZ08 - 115 2 A

Shape
 Dead Load (x10 Kg)
 Projection (mm)
 Type

‡ 3URFWLRQ VLHV EHWZHHQ 115 DQG 175 P P

‡ 6XWDECH RU KLURQMDO & YHWHDMRQV

‡ 6XWDECH RU KLURQMDO & YHWHDMRQV

Shape A

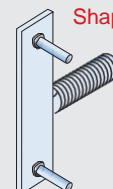
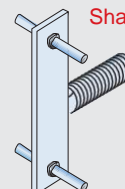
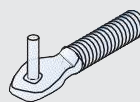
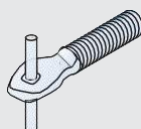
Shape B

‡ /RDGV XS WR500 1

‡ 6WRQH WKLNQHMHV 20-50 P P

Shape C

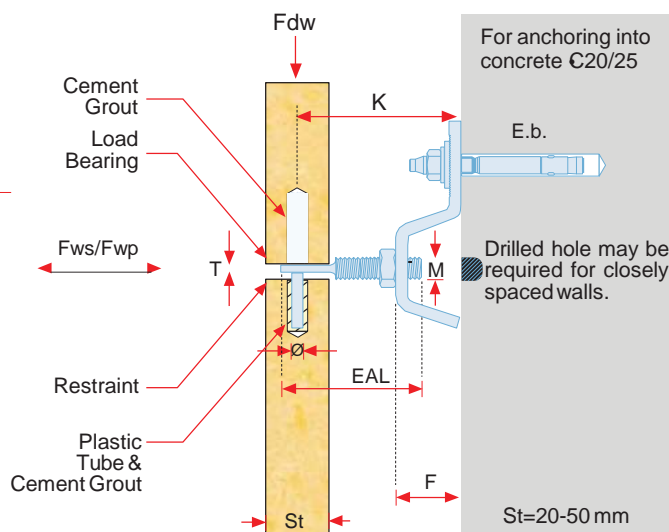
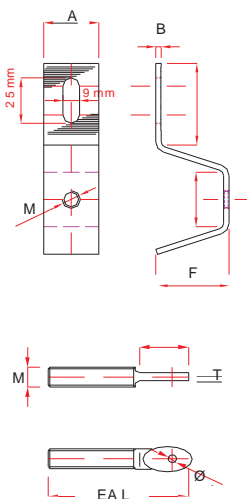
Shape D



HZ02-S Z Anchor - Product Details



LGA TESTREPORT
No : BBW 121 5121
Date : 15.10.2006



Product Code	Technical Details											
	Projection	Min. Projection	Max. Projection	Dead Load	Offset	Wind-Pressure	Wind-Suction	Bolt Size	Pin Diameter	Adj. Arm Metric Size	Adj. Arm Flat Thickness	Adj. Arm Length
	K (mm)	K - (mm)	K + (mm)	Fdw (N)	F (mm)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)
HZ02-S-33010/10	40	40	50	500	10	312	219	M8x80	ø5x70	M10	3.5	50
HZ02-S-33015/10	45	45	55	500	15							50
HZ02-S-33020/10	50	50	60	500	20							50
HZ02-S-33030/10	65	50	80	400	30							60
HZ02-S-33040/10	75	60	90	400	40							60
HZ02-S-33050/10	85	70	100	400	50							60
HZ02-S-33060/10	95	80	110	300	60							60
HZ02-S-33080/10	125	110	140	300	80							70
HZ02-S-330100/10	145	130	160	250	100							70
HZ02-S-330120/10	165	150	180	250	120							70
HZ02-S-43020/12	60	55	70	500	20					M12	4.5	60
HZ02-S-43040/12	90	75	105	500	40							60
HZ02-S-43060/12	110	95	125	400	60							80
HZ02-S-43080/12	130	115	145	400	80							80
HZ02-S-430100/12	150	135	165	300	100							80
HZ02-S-430120/12	170	155	185	300	120							80

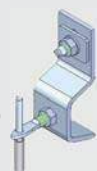
- Material : Stainless Steel 1.4301 (A2) & 1.4401 (A4).
- Table above is prepared according to LGA test results.
- Loads stated are characteristic resistance loads.
- Bolts are provided separately.
- Max Wind pressure: 350 N
- Test results are available upon order.

HZ02-S type Z anchors with standard sizes. Different types available according to desired method of fixation.

Product Code Description

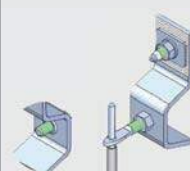
HZ02-S - 330 / 10 A

Shape
Adj. arm M size (mm)
Anchor body size (mm)
Anchor type

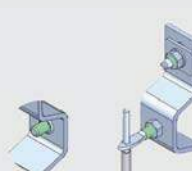


HZ02-2S Type without serration and with plain washer.

HZ05-S Type with riveted nut. Serrated with serrated washer.



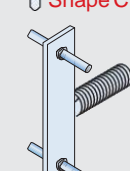
HZ05-2S Type with riveted nut. Without serration and with plain washer.



Shape A



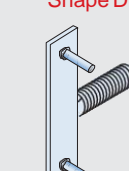
Shape C



Shape B



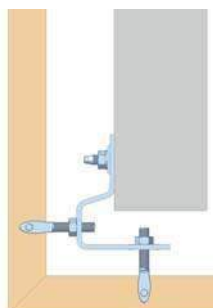
Shape D



HZ Z Anchor - Special Applications Details

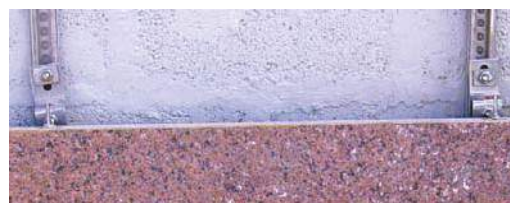
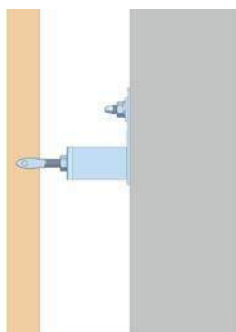
HZ03 Special Z Anchor

Used for installing soffit and facade panels with a single anchor



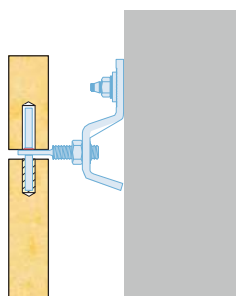
HZ06 Special Z Anchor - for large projection sizes

With optimal static performance
Can be used for projections over 150 mm



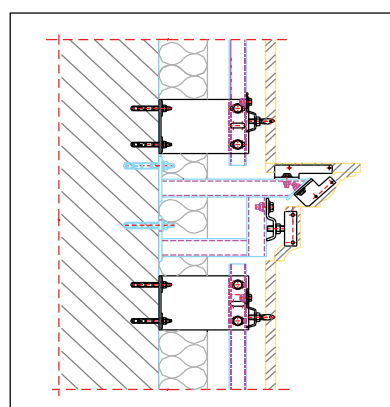
HZ09 Z Anchor - with wedge washer

Can be used for loads that are over 800 N when stronger vertical stabilization is required

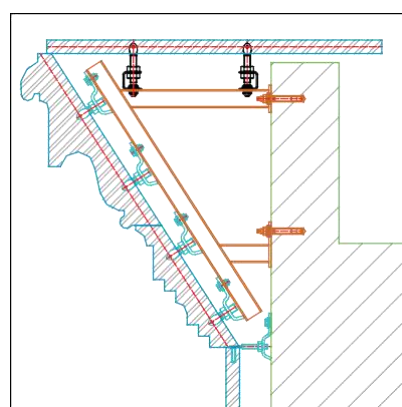


Special Designs

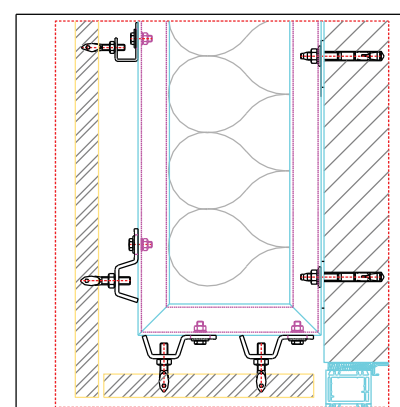
Z Anchors are fixed on sub frame to install cornice lining.



Z Anchors are fixed on to special steel structure for cornice parapet installation.



Z Anchors are fixed on to special steel structure for special area installation.



Portugal - Loures
(+351) 219824133
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Brasil - Rio de Janeiro
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Espana - Madrid
(+34) 91 0831913
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Peru - Lima
(+51) 1 6419222
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Venezuela - Caracas
(+58) 212 7202555
venezuela@cortartec.net

AXO Body Anchor Fixing Systems - Introduction

- Direct fixing in to concrete walls with expansion bolts. Indirect fixing on to sub channel systems with hex bolts.
- Three dimensional adjustability - Quick and easy fixing.
- Installation at horizontal and vertical joints.
- Optimum static performance and low engineering for higher loads and larger projection sizes.
- Recommended projection sizes up to 260 mm and loads up to 1300 N.

AXO1
Body Anchor



AXO2
Body Anchor



AXO3
Body Anchor



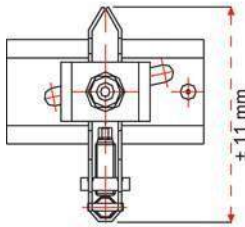
AXO4
Body Anchor



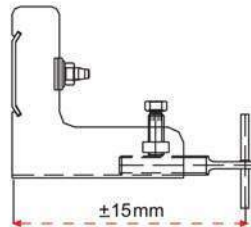
HRS3
Restraint Anchor



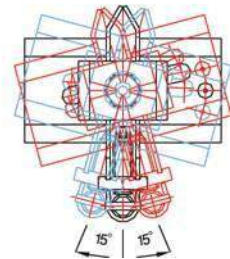
Three dimensional adjustability



1) Vertical adjustment is provided through the body space. The anchor is fixed onto the bolt through the wedge washer and the lock washer at the desired level.

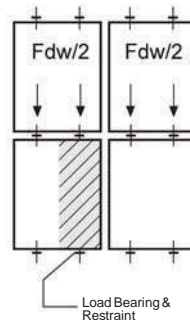
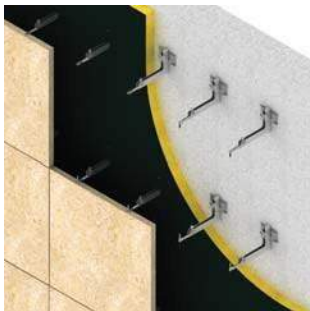


2) Adjusting the projection size by simply moving the adjustable arm without rotating. The adjustable arm is safely fixed to the anchor body with the lock nut and hex bolt.

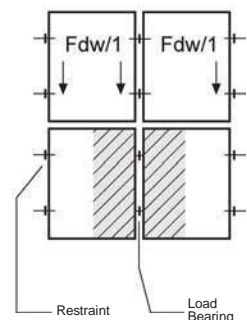
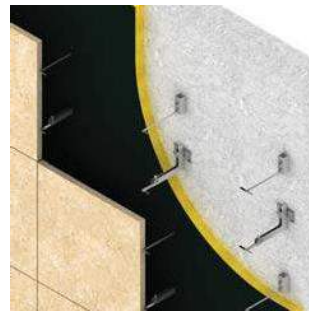


3) Adjusting the anchor left and right is provided by sliding the body up to 15 degrees left or right.

Installation at horizontal joints

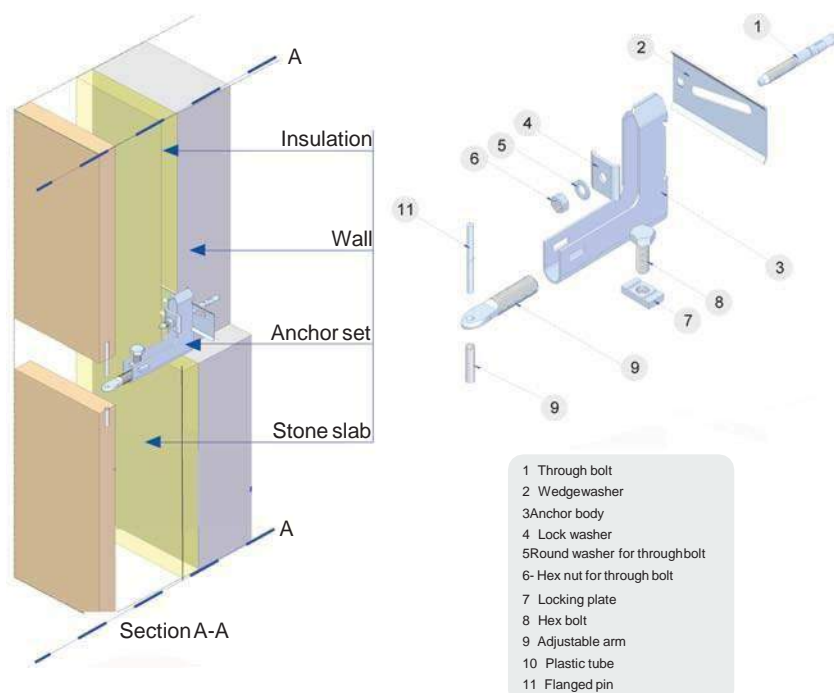


Installation at vertical joints

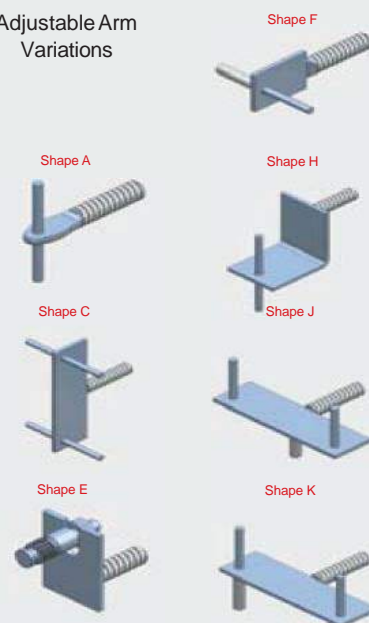


- Suitable for concrete walls. Anchors are fixed on to concrete walls with expansion bolts.
- Projection sizes between 60 and 260 mm and loads up to 1300 N.
- In horizontal installation, slabs are pinned on the bottom and upper sides. The anchors act as load bearing, carrying half the weight of the slabs above. Anchors also act as restraint holding the slabs below and restraining against wind suction and pressure.
- In vertical installation, slabs are pinned at the left and right sides. The anchors on the bottom are load-bearing anchors carrying the whole weight of the slab. Half the weight of the slab on the left and half the weight of the slab on the right. The anchors on the top are restraint anchors holding the slabs and restraining against wind suction and pressure.
- Three dimensional adjustability allows quick and easy installation.
- The design and structural calculations of these anchors are made in our technical department. Special design and manufacturing can be made for the requirements of the project.

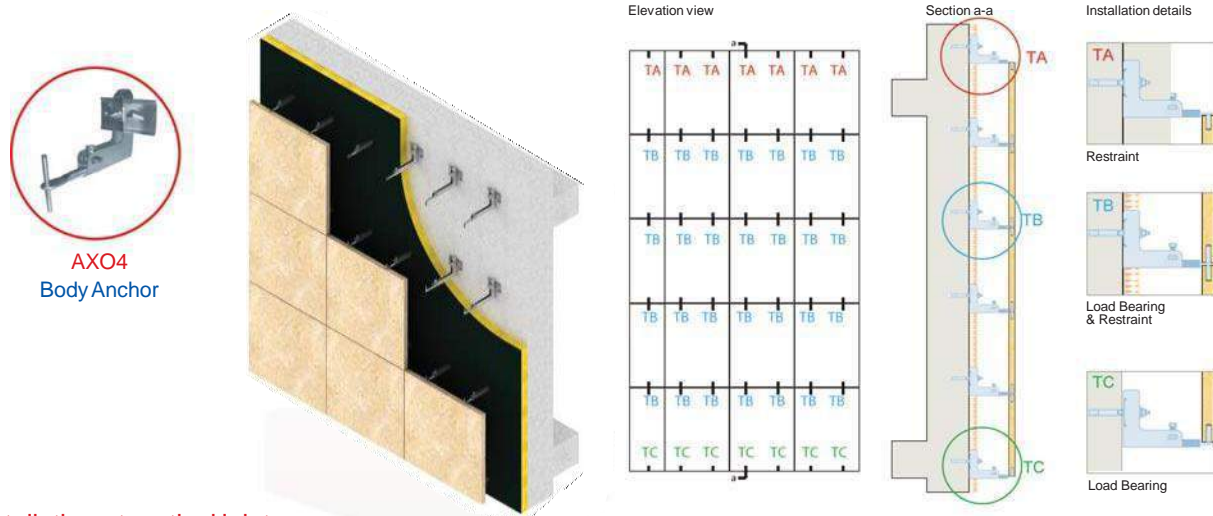
AXO Body Anchor Fixing Systems - Installation Details



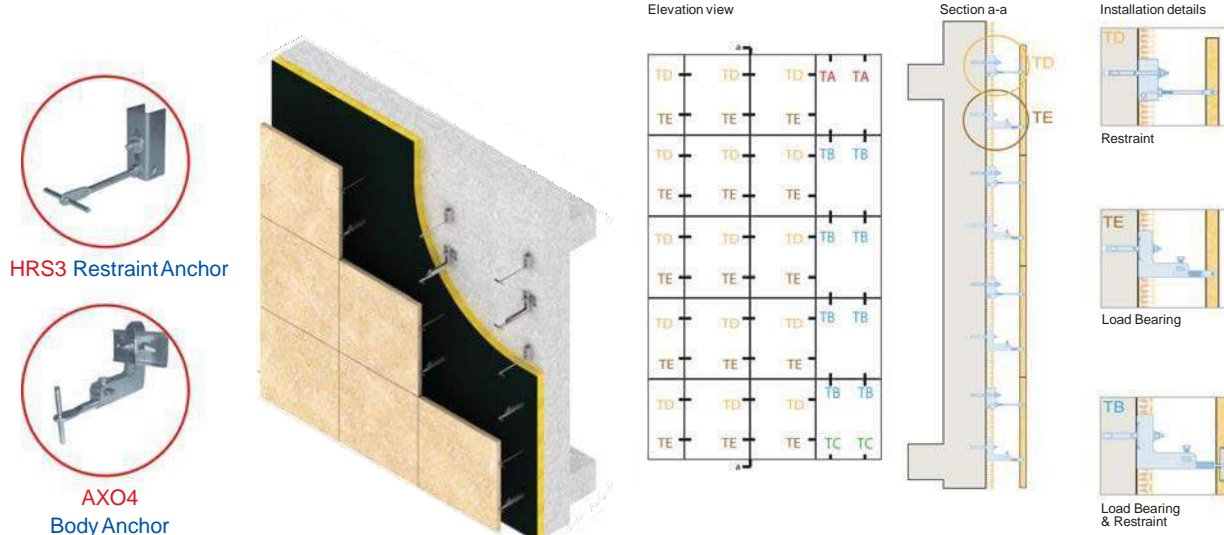
Adjustable Arm Variations



Installation at horizontal joints



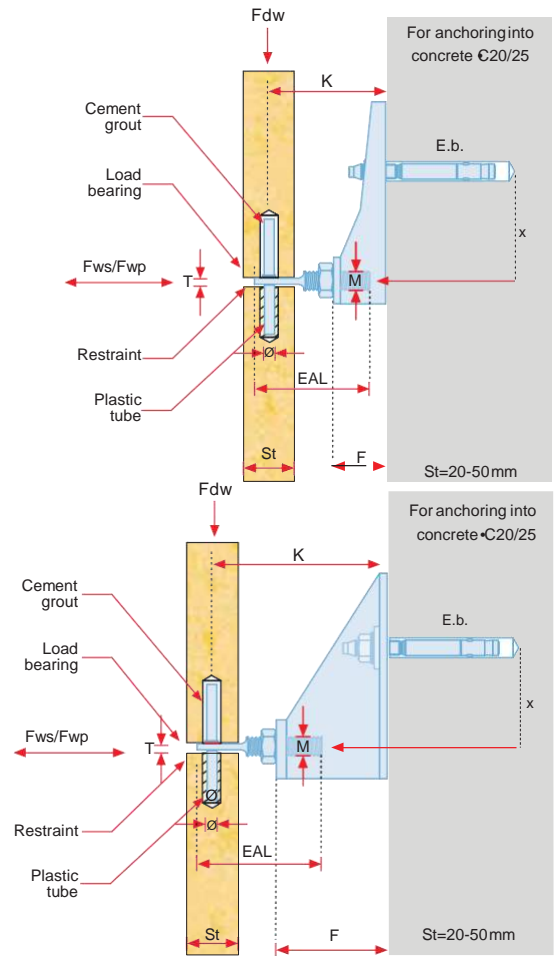
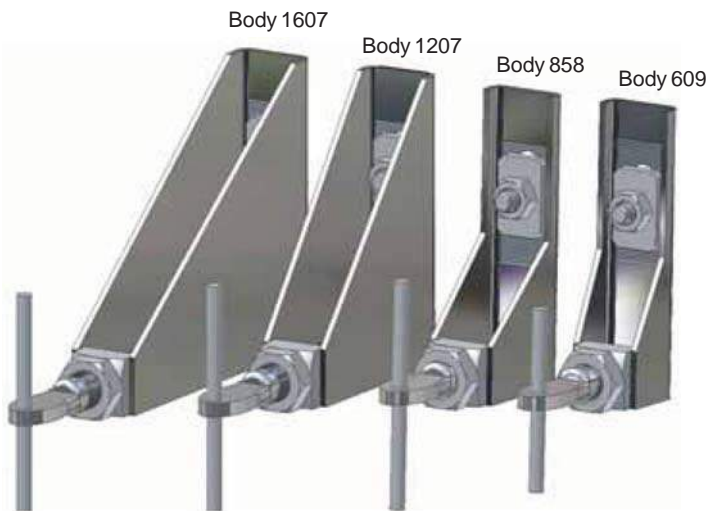
Installation at vertical joints



BA Body Anchor - Product Details



LGA TEST REPORT
No : BBW 0541135-01
Date : 09.05.2005



Product Code		Technical Details												
		Projection	Min. Projection	Max. Projection	Dead Load	Forming Size	Wind-Pressure	Wind-Suction	Expansion Bolt Size	Pin Size	Adj. Arm Metric Size	Adj. Arm Flat Thickness	Adj. Arm Length	X Size
		K (mm)	K - (mm)	K + (mm)	Fdw (N)	F (mm)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)	x (mm)
BA-609	BODY 1	60	50	75	900	28	1100	770	M8X80	5	M12	4.5	60	50
BA-858	BODY 2	85	70	100	800	46	700	700					75	
BA-1207	BODY 3	120	95	135	700	75	650	650					85	
BA-1607	BODY 4	160	145	175	700	115	600	600					85	

- Material : Stainless Steel 1.4301 (A2) & 1.4401 (A4).
- Table above is prepared according to LGA test results.
- Loads stated are characteristic resistance loads.
- Bolts are provided separately.
- Test results are available upon order.

BA Body Anchor

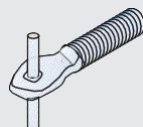
- Load bearing & restraint
- Three dimensional adjustability
- Fastened on to load bearing walls with expansion bolts and on to channels with set screws
- Projection sizes between 60 and 160 mm
- Suitable for horizontal & vertical joints

- Loads up to 900 N
- Stone thicknesses 20-50 mm

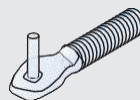
Product Code Description

BA - 60 9 A
Shape
Dead Load (x10 Kg)
Projection (K mm)
Type

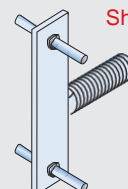
Shape A



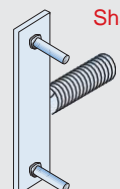
Shape B



Shape C



Shape D

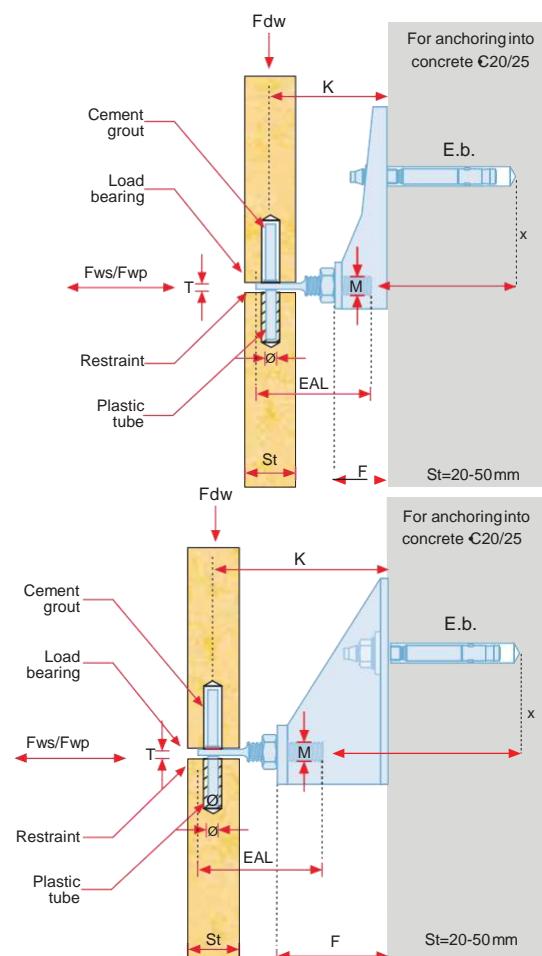


AXO1 & AXO2 Body Anchor - Product Details

AXO1
Body Anchor



AXO2
Body Anchor



Product Code	Technical Details												
	Projection	Min. Projection	Max. Projection	Dead Load	Forming Size	Wind-Pressure	Wind-Suction	Expansion Bolt Size	Pin Size	Adj. Arm Metric Size	Adj. Arm Flat Thickness	Adj. Arm Length	X Size
	K (mm)	K - (mm)	K + (mm)	Fdw (N)	F (mm)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)	x (mm)
AXO1-705	70	55	85	500	20	780	546	M8X80	5	M12	4.5	85	50
AXO1-1105	110	95	125		60								
AXO1-7013	70	55	85	1300	20	2028	1419	M10X90	6	M16	6	85	50
AXO1-11013	110	95	125		60								
AXO2-1505	150	135	165	500	100	780	546	M8X80	5	M12	4.5	85	50
AXO2-15013	150	135	165	1300	100	2028	1419	M10X90	6	M16	6		

‡DWLID: 6WQCHV 6WHD 1.4301 (\$2) & 1.4401 (\$4).
 ‡7BOH DERYH IY SUHSDUG DFRUGLQI WR XURFRGH VWQDUG
 ‡/RDGV VWQGLUH ZRUNLQI UHMWQHQHOGV.
 ‡2WKHU VUHV DUH DDLQDECH RU SURGAWLRQ XSRO UHIXHW.
 ‡%ROWDUH SURYLGHG VSHUDWHO.
 ‡6WFWWLDDEH FODWRQ DUH DDLQDECH XSRO RUGHU.

AXO1 & AXO2 Body Anchor

‡/RDG EHDULQI & UHWQV
 ‡7KHU GLHQWLQDO DQWDEOH
 ‡DVWQHGRQ WRORDG EHDULQI ZDOV ZWK HSDQVLRQ HODWQGRQ WRKDQQHOV ZWK VHVUFHVV

‡3RMFWLRQ VUHV HWWZHQ 70 DQG 150 P P
 ‡6WDECH RU KRURQWO & YHWDMQW

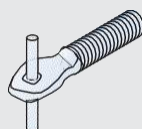
‡/RDGV XS WR 1300 I
 ‡6WRQH WKHQ QHMHV 20-50 P P

Product Code Description

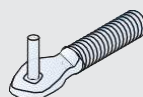
AXO1 - 60 9A

Shape
 Dead Load (x10 Kg)
 Projection (K mm)
 Type

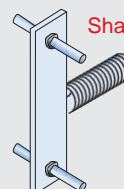
Shape A



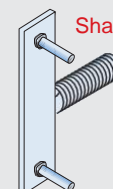
Shape B



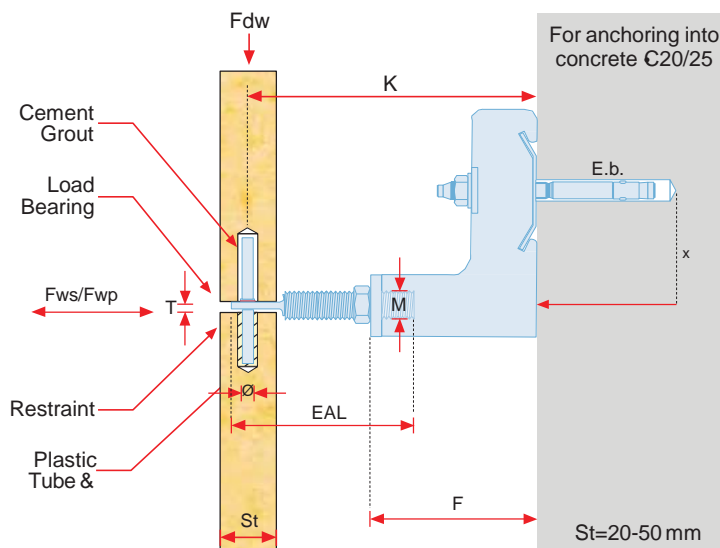
Shape C



Shape D



AXO3 Body Anchor - Product Details



Product Code	Technical Details												
	Projection	Min. Projection	Max. Projection	Dead Load	Forming Size	Wind-Pressure	Wind-Suction	Expansion Bolt Size	Pin Size	Adj. Arm Metric Size	Adj. Arm Flat Thickness	Adj. Arm Length	X Size
	K (mm)	K - (mm)	K + (mm)	Fdw (N)	F (mm)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)	x (mm)
AXO3-2005	200	180	220	500	155	780	546	M8X120	5	M12	4.5	80	75
AXO3-2205	220	200	240		175								
AXO3-2405	240	220	260		195								
AXO3-2605	260	240	280		215								
AXO3-2009	200	180	220	900	155	1430	1000	M10X130	6	M14	5.5	80	75
AXO3-2209	220	200	240		175								
AXO3-2409	240	220	260		195								
AXO3-2609	260	240	280		215								
AXO3-20013	200	180	220	1300	155	2028	1419	M12X145	6	M16	6	80	80
AXO3-22013	220	200	240		175								
AXO3-24013	240	220	260		195								
AXO3-26013	260	240	280		215								

- Material : Stainless Steel 1.4301 (A2) & 1.4401 (A4).
- Table above is prepared according to Eurocode standard
- Loads stated are working resistance loads.
- Bolts are provided separately.
- Structural calculations are available upon order.

AXO3 Body Anchor

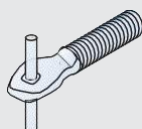
- Load bearing & restraint
- Three dimensional adjustability
- Fastened on to load bearing walls with expansion bolts and on to channels with set screws
- Projection sizes between 200 and 260 mm
- Suitable for horizontal & vertical joints

- Loads up to 1300 N
- Stone thicknesses 20-50 mm

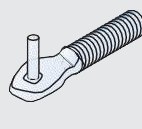
Product Code Description

AXO3 - 200 5 A
 — Shape
 — Dead Load (x10 Kg)
 — Projection (K mm)
 — Type

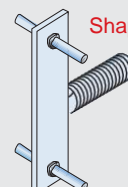
Shape A



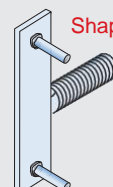
Shape B



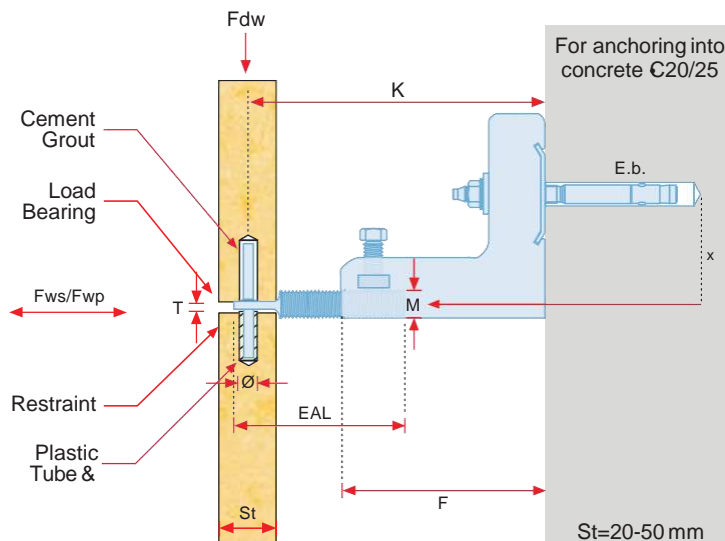
Shape C



Shape D



AXO4 Body Anchor - Product Details



Product Code	Technical Details												
	Projection	Min. Projection	Max. Projection	Dead Load	Forming Size	Wind-Pressure	Wind-Suction	Expansion Bolt Size	Pin Size	Adj. Arm Metric Size	Adj. Arm Flat Thickness	Adj. Arm Length	X Size
	K (mm)	K - (mm)	K + (mm)	Fdw (N)	F (mm)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)	x (mm)
AXO4-1605	160	140	180	500	115	780	546	M8X120	5	M12	4.5	100	75
AXO4-1805	180	160	200		135								
AXO4-2005	200	180	220		155								
AXO4-2205	220	200	240		175								
AXO4-2405	240	220	260		195								
AXO4-2605	260	240	280		215								
AXO4-1609	160	140	180	900	115	1430	1000	M10X130	6	M14	5.5	100	75
AXO4-1809	180	160	200		135								
AXO4-2009	200	180	220		155								
AXO4-2209	220	200	240		175								
AXO4-2409	240	220	260		195								
AXO4-2609	260	240	280		215								
AXO4-16013	160	140	180	1300	115	2028	1419	M12X145	6	M16	6	100	80
AXO4-18013	180	160	200		135								
AXO4-20013	200	180	220		155								
AXO4-22013	220	200	240		175								
AXO4-24013	240	220	260		195								
AXO4-26013	260	240	280		215								

‡ DWHLDO 6WDLQHV 6WHO 1.4301 (\$2) & 1.4401 (\$4).
‡ 7DEOH DERYH LV SUHSDUHG DHRUGLQI VR XURFRGH VWDQGDUG
‡ /RDGV WDWGLUH ZRUNLQI UHMWDLQHORDGV.
‡ 2WKHU VUJHV DUH DMLDCEH RU SURGFWLRQ XSRQ UHIXHW.
‡ %ROWDLU SURYLGHG VHSUDWHO.
‡ 6XUFWLDO HODFDMRQV DUH DMLDCEH XSRQ RULHU.

AXO4 Body Anchor

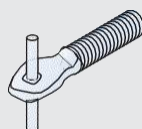
‡ /RDG EHDULQI & UHWDQV ‡ 3URFWLRQ VUJHV HWZHHQ 160 DQG 260 P P
‡ 7KHU GLHQMRQDO DGMWDEOH ‡ 6XWDECH RU KRURQDO & YHWEDMRQV
‡ DWWHQHG RQ WRORQ EHDULQI ZDOV ZWK HSDQVLRQ HODV DQG RQ VRHDOQHOV ZWK VHWVUHZV

‡ /RDGV XS WR 1300 I
‡ 6WRQH WKLV QHMHV 20-50 P P

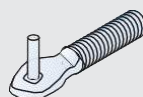
Product Code Description

AXO4 - 160 5 A
Shape
Dead Load (x10 Kg)
Projection (K mm)
Type

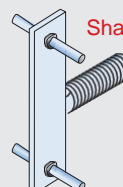
Shape A



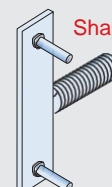
Shape B



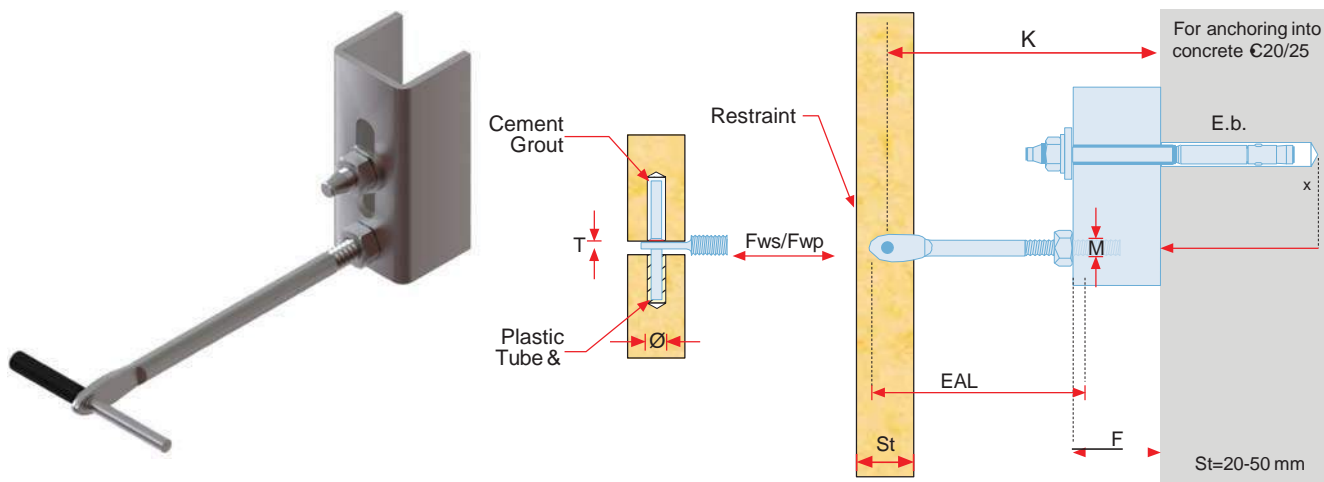
Shape C



Shape D



HRS3 Restraint Anchor - Product Details



- Available in sizes to fit the projection range of all AXO anchors.

Product Code	Technical Details											
	Projection	Min. Projection	Max. Projection	Forming Size	Wind-Pressure	Wind-Suction	Expansion Bolt Size	Pin Size	Adj. Arm Metric Size	Adj. Arm Flat Thickness	Adj. Arm Length	X Size
	K (mm)	K - (mm)	K + (mm)	F (mm)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	M (mm)	T (mm)	EAL (mm)	x (mm)
HRS03-60	60	40	80	25	2028	1419	M8X80	5	M8	3	65	30
HRS03-80	80	60	100								85	
HRS03-100	100	80	120	32							100	
HRS03-120	120	100	140								120	
HRS03-140	140	120	160								140	
HRS03-160	160	140	180	40							160	
HRS03-180	180	160	200								170	
HRS03-200	200	180	220								190	
HRS03-220	220	200	240	50							210	
HRS03-240	240	220	260								220	
HRS03-260	260	240	280								240	

- Material: Stainless Steel 1.4301 (A2) & 1.4401 (A4)
- Table above is prepared according to Eurocode standard
- Loads stated are working resistance loads
- Other sizes are available for production upon request
- Bolts are provided separately
- Structural calculation reports are available upon order

HRS3 Restraint Anchor

- Load bearing & restraint
- Three dimensional adjustability
- Fastened on to load bearing walls with expansion bolts and on to channels with set screws
- Projection sizes between 60 and 260 mm
- Suitable for horizontal & vertical joints

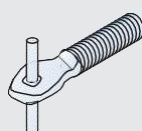
- Loads up to 2028 N
- Stone thicknesses 20-50 mm

Product Code Description

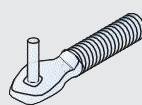
HRS03 - 60 A

Shape
Projection (Kmm)
Type

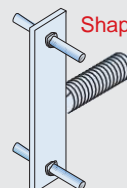
Shape A



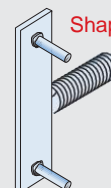
Shape B



Shape C



Shape D



AXO Body Anchor - Special Application Details



Body anchor with welded plate with two pins. Used for stone installation with single anchor. This type used for installation of reveals with maximum width of 25 cm.



Body anchor with welded shims and HB09 execution. With this type of anchor, stone panels are supported from the rear surface using HB09 bolts instead of from the edges using pins.

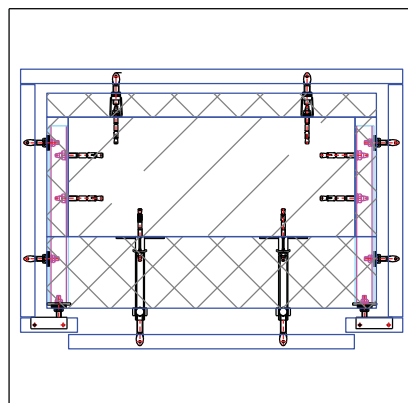


Body anchor with welded plate and riveted nut. A feature of HZ05 which is chosen for the fine adjustment of the projection by spinning or rotating the riveted nut while pins are set on the stone.

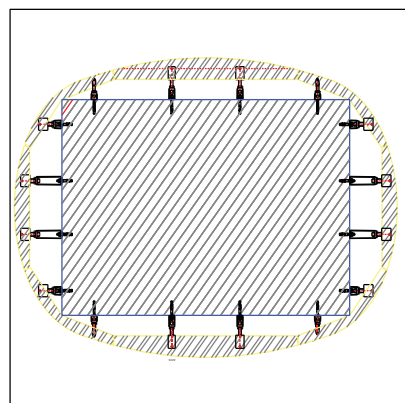


Special Designs

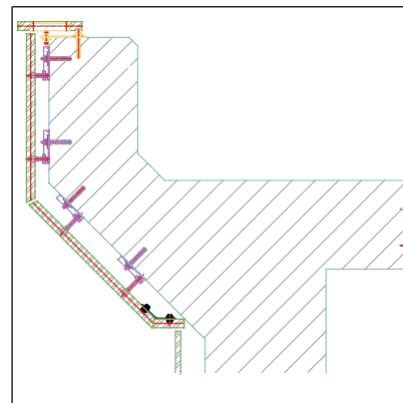
Body anchors are used for stone installation around columns.



Body anchors are used to form an oval column in natural stone.



Body anchors used for installation of parapet area.



HA LAnchor Fixing Systems - Introduction

- Direct fixing into concrete walls with expansion bolts. Indirect fixing onto sub channel system with hex bolts.
- Economical & easy fixing.
- Installation at horizontal joints.
- Adjustability provided through adjustable plates and slot pin holes.

HA01 LAnchor

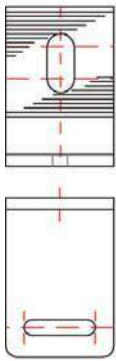

HA02 LAnchor
Double Pin

HA03 LAnchor
With Kerf

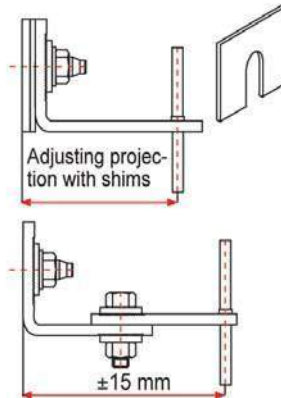
HA04 LAnchor
With Adjustable Plate

HA05 LAnchor With Adj. Plate
& Welded Tie


Adjustability

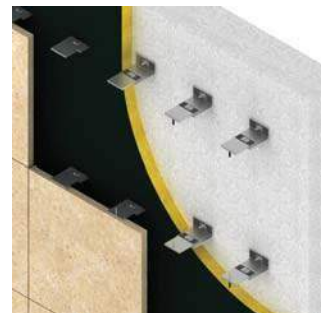
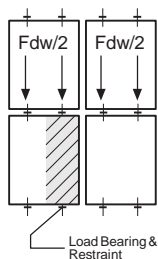


1. Vertical adjustment is made through the slot hole. The anchor is fixed on to the bolt with the serrated washer and nut.
2. A slot pin hole can be provided to enable lateral adjustment of the pin.



3. Greater projection sizes can be achieved by using shims. Shims are placed at the back of the anchor.
4. An adjustment plate is available in HA04 & HA05 type L anchors where adjustment of the projection size can be made.

Installation at horizontal joints



HA01 LAnchors

- Suitable for concrete walls. Recommended projection sizes up to 55 mm.
- Slabs are pinned at the bottom and upper sides.
- Adjustability for projection size can be done by inserting shims between the anchor and the wall.
- Anchors act as load bearing and restraint, carrying the slabs above and restraining the slabs below.

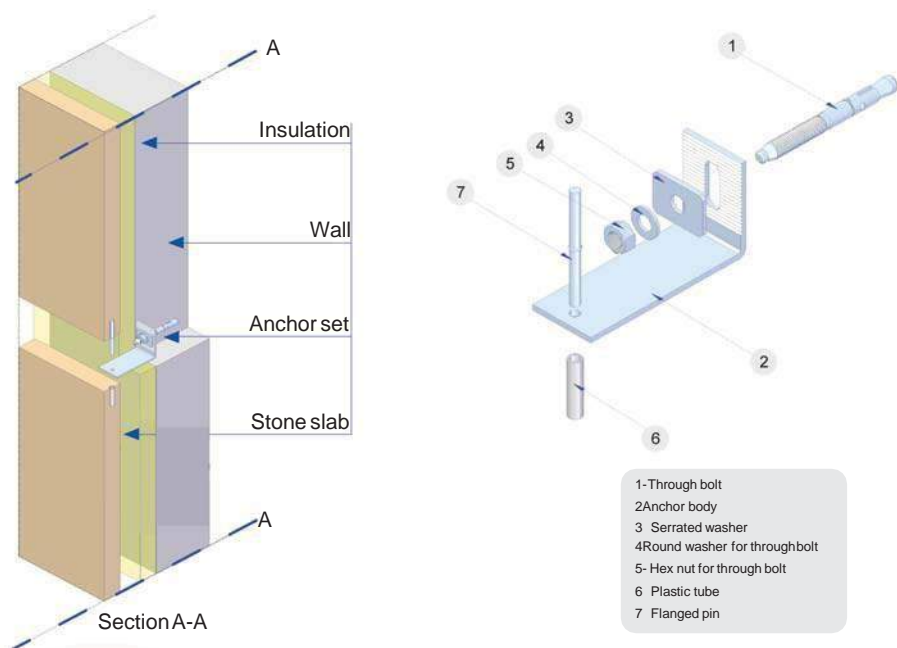
HA03 LAnchors

- Suitable for concrete walls. Recommended projection sizes up to 55 mm.
- Slabs have slits and the kerf parts of the anchors are inserted in to the slit edges of the slabs.
- Adjustability for projection size can be done by inserting shims between the anchor and the wall.
- Anchors act as load bearing and restraint, carrying the slabs above and restraining the slabs below.

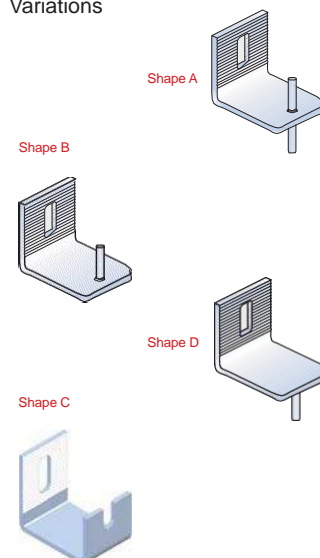
HA04 LAnchors

- Suitable for concrete walls. Recommended projection sizes up to 180 mm.
- Slabs are pinned from the bottom and upper sides.
- Adjustability of the projection size is enabled with the adjustable plate, which is fixed to the body with hex bolts.
- Anchors act as load bearing and restraint, carrying the slabs above and restraining the slabs below.

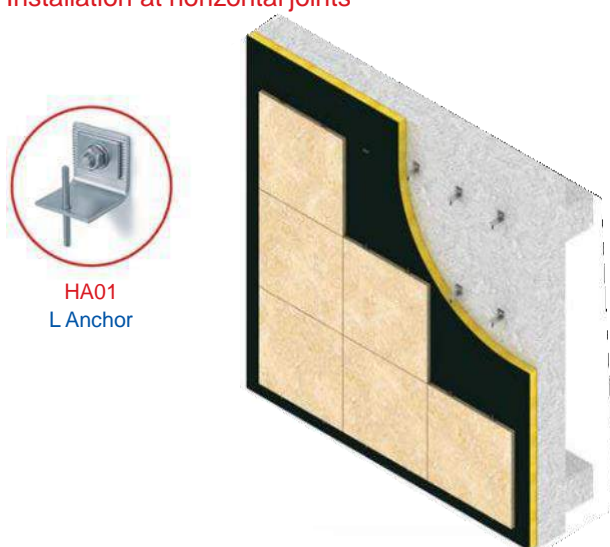
HA L Anchor Fixing Systems - Installation Detail



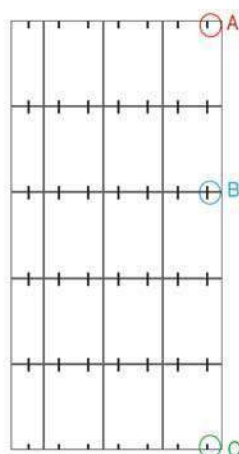
Anchor Variations



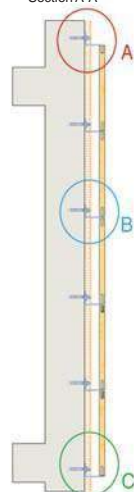
Installation at horizontal joints



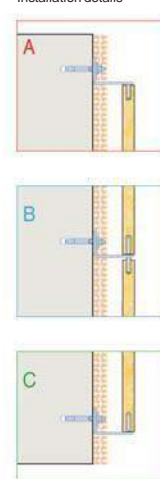
Elevation view



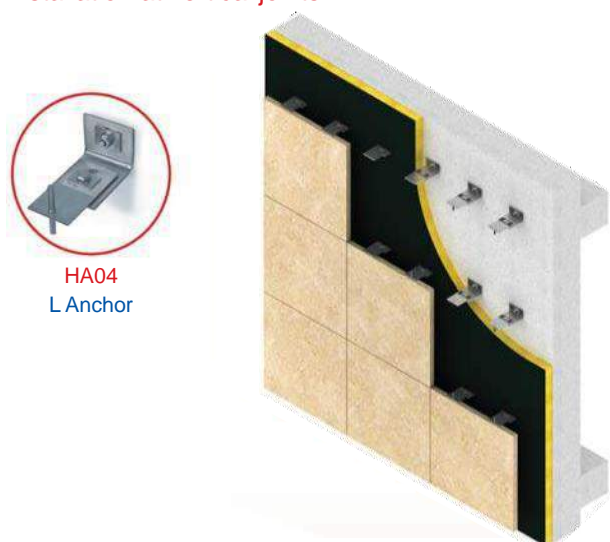
Section A-A



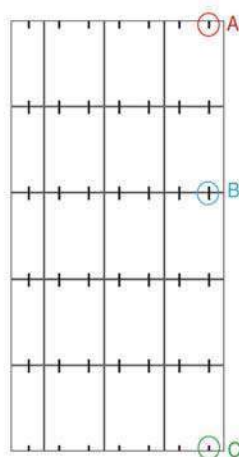
Installation details



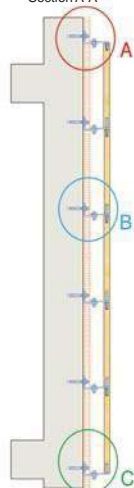
Installation at vertical joints



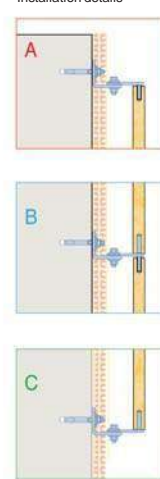
Elevation view



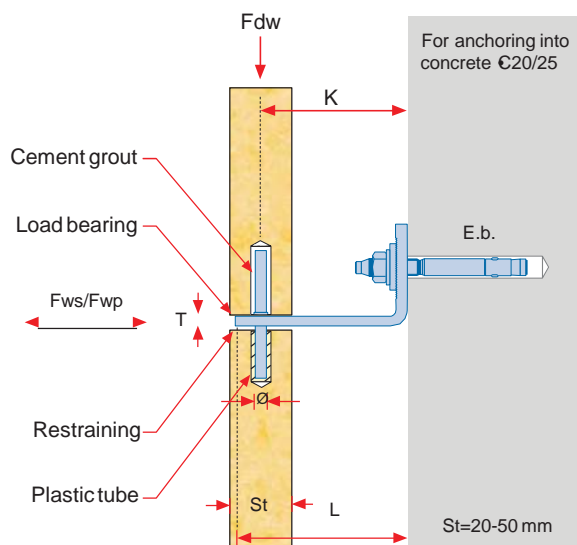
Section A-A



Installation details



HA01 L Anchor - Product Details



Product Code	Technical Details							
	Projection	Dead Load	Wind Pressure	Wind Suction	Bolt Size	Pin Diameter	Anchor Length	Anchor Thickness
	K (mm)	Fdw (N)	Fwp (N)	Fws (N)	E.b. (mm)	Ø (mm)	L (mm)	T (mm)
HA01-301	30	100	156	110	M8X80	4	36	2
HA01-351	35						41	
HA01-401	40						46	
HA01-451	45						51	2.5
HA01-501	50						56	
HA01-551	55	200	312	219	M8X80	4	61	3
HA01-302	30						38	
HA01-352	35						43	
HA01-402	40						48	4
HA01-452	45						53	
HA01-502	50	300	468	328	M8X80	5	58	4
HA01-552	55						63	
HA01-303	30						38	3
HA01-353	35						43	
HA01-403	40						48	4
HA01-453	45	400	624	437	M8X80	5	53	
HA01-503	50						58	
HA01-553	55						63	4
HA01-304	30						38	
HA01-354	35						43	3
HA01-404	40	400	624	437	M8X80	5	48	
HA01-454	45						53	4
HA01-504	50						58	
HA01-554	55						63	

- Material: Stainless Steel 1.4301 (A2) & 1.4401 (A4).
- Table above is prepared according to Eurocode standard.
- Loads stated are working resistance loads.

- Other sizes are available for production upon request.
- Bolts are provided separately.
- Structural calculation reports are available upon order.

HA01 LAnchor

- Load bearing & restraint
- Limited adjustability
- Fastened on to load bearing walls with expansion bolts and on to channels with set screws

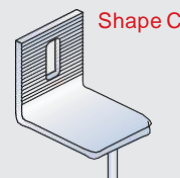
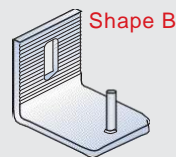
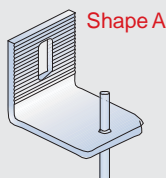
- Projection sizes between 30 and 35 mm
- Suitable for horizontal

- Loads up to 400 N
- Stone thicknesses above 20 mm

Product Code Description

HA01 - 30 1 A

Shape
Dead Load (x10 Kg)
Projection (K mm)
Type

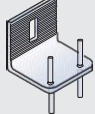


HA02 & HA03 L Anchor - Product Details

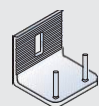
HA02 L Anchor

† /RDG EHDULQI & UHWUQW
† 3RMFWLRQ VJHV EHWZHQ 30
and 55 mm.
† /RDGV XS WR400 I.
† 6LWDECHRU KRLJQWDMRQW
† 6WRQH WKLNQHMVH DERYH
20mm.
† JVVHQHG RQ ZDOOV ZWK
expansion bolts.
† 6WRQH WKLNQHMVH DERYH
with a single anchor on each
side.

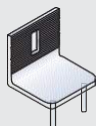
Shape A



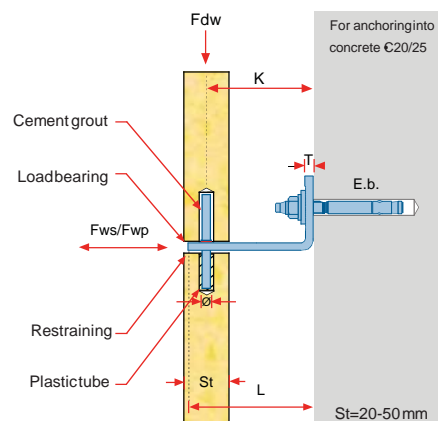
Shape B



Shape C



HA02 - 30 2 A
Shape
Dead Load (x10 Kg)
Projection (K mm)
Type

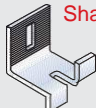


Product Code	Technical Details							
	Projection	Dead Load	Wind Pressure	Wind Suction	Bolt Size	Pin Diameter	Anchor Length	Anchor Thickness
	K (mm)	Fdw(N)	Fwp(N)	Fws(N)	E.b. (mm)	Ø (mm)	L (mm)	T (mm)
HA02-302	30	200	312	219	M8X80	4	38	3
HA02-352	35						43	
HA02-402	40						48	
HA02-452	45						53	
HA02-502	50						58	
HA02-552	55						63	
HA02-304	30	400	624	437	M8X80	6	38	4
HA02-354	35						43	
HA02-404	40						48	
HA02-454	45						53	
HA02-504	50						58	
HA02-554	55						63	

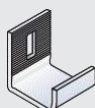
HA03 L Anchor

† /RDG EHDULQI & UHWUQW
† 3RMFWLRQ VJHV EHWZHQ 30
and 55 mm.
† /RDGV XS WR400 I.
† 6LWDECHRU KRLJQWDMRQW
† 6WRQH WKLNQHMVH DERYH
20mm.
† JVVHQHG RQ ZDOOV ZWK
expansion bolts.
† QWDDWRQIY PDGH ZWK NHU
system where there are slit
edges in the slabs.

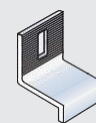
Shape A



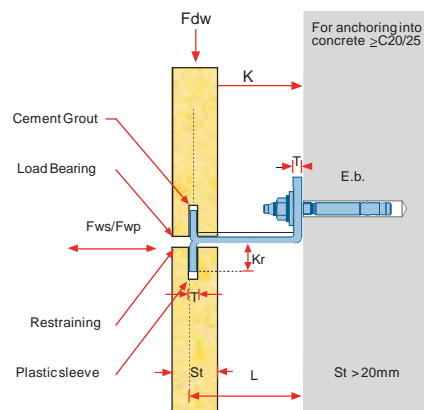
Shape B



Shape C



HA03 - 30 2 A
Shape
Dead Load (x10 Kg)
Projection (K mm)
Type



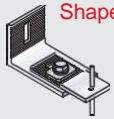
Product Code	Technical Details							
	Projection	Dead Load	Wind Pressure	Wind Suction	Bolt Size	Pin Diameter	Anchor Length	Anchor Thickness
	K (mm)	Fdw(N)	Fwp(N)	Fws(N)	E.b. (mm)	Ø (mm)	L (mm)	T (mm)
HA03-302	30	200	312	219	M8X80	12	32	3
HA03-352	35						37	
HA03-402	40						42	
HA03-452	45						47	4
HA03-502	50						52	
HA03-552	55						57	
HA03-304	30	400	624	437	M8X80	15	32	3
HA03-354	35						37	
HA03-404	40						42	
HA03-454	45						47	4
HA03-504	50						52	
HA03-554	55						57	

HA04 & HA05 L Anchor - Product Details

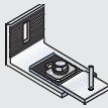
HA04 L Anchor

- Load bearing & restraint.
- Projection sizes between 100 and 180 mm.
- Loads up to 800 N.
- Suitable for horizontal joints.
- Stone thicknesses above 20mm.
- Fastened on walls with expansion bolts.
- Adjustability of the projection size is provided with the adjustable plate.

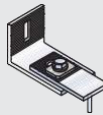
Shape A



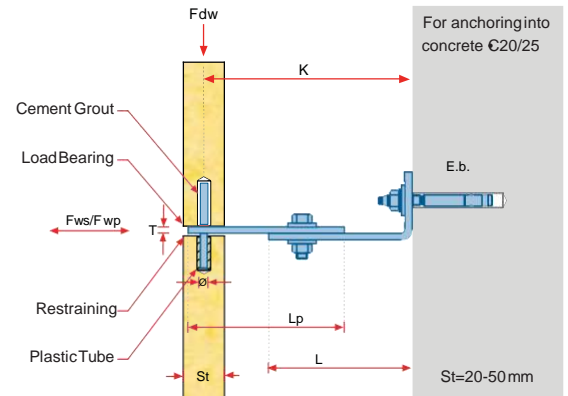
Shape B



Shape C



HA04 - 100 6 A
 Shape
 Dead Load (x10 Kg)
 Projection (K mm)
 Type



Product Code	Technical Details										
	Projection	Min. Projection	Max. Projection	Dead Load	Wind Pressure	Wind Suction	Bolt Size	Pin Diameter	Anchor Length	Adj. Plate Length	Adj. Plate Thickness
	K (mm)	K - (mm)	K + (mm)	Fdw(N)	Fwp(N)	Fws(N)	E.b. (mm)	Ø (mm)	L (mm)	Lp (mm)	T (mm)
HA04-1006	100	85	115	600	936	655	M12X120	6	70	80	6
HA04-1206	120	105	135						90		
HA04-1406	140	125	155						110		
HA04-1606	160	145	175						130		
HA04-1806	180	165	195	800	1235	865	M12X120	6	150	80	6
HA04-1008	100	85	115						70		
HA04-1208	120	105	135						90		
HA04-1408	140	125	155						110		
HA04-1608	160	145	175						130		
HA04-1808	180	165	195						150		

HA05 L Anchor

- Load bearing & restraint.
- Projection sizes between 200 and 280 mm.
- Loads up to 800 N.
- Suitable for horizontal joints.
- Stone thicknesses above 20mm.
- Fastened on walls with expansion bolts.
- Adjustability of the projection size is provided with the adjustable plate.

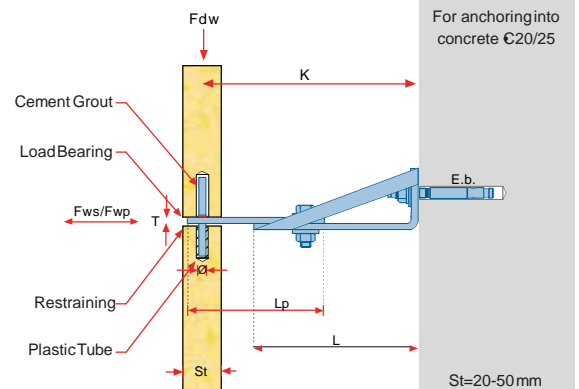
Shape A



Shape B

Shape C

HA05 - 200 6 A
 Shape
 Dead Load (x10 Kg)
 Projection (K mm)
 Type



Product Code	Technical Details										
	Projection	Min. Projection	Max. Projection	Dead Load	Wind Pressure	Wind Suction	Bolt Size	Pin Diameter	Anchor Length	Adj. Plate Length	Adj. Plate Thickness
	K (mm)	K - (mm)	K + (mm)	Fdw(N)	Fwp(N)	Fws(N)	E.b. (mm)	Ø (mm)	L (mm)	Lp (mm)	T (mm)
HA05-2006	200	185	215	600	936	655	M12X120	6	170	80	6
HA05-2206	220	205	235						190		
HA05-2406	240	225	255						210		
HA05-2606	260	245	275						230		
HA05-2806	280	265	295	800	1235	865	M12X120	6	250	80	6
HA05-2008	200	185	215						170		
HA05-2208	220	205	235						190		
HA05-2408	240	225	255						210		
HA05-2608	260	245	275						230		
HA05-2808	280	265	295						250		

HA Anchors - Special Application Details



L anchor with adjustable plate combine with a wedge washer instead of serrated washer. This is chosen in cases where vertical loads are too high for the serrated washer to sustain the no slip feature.



L anchor is produced with three holes in order to accommodate a special requirement. Customized production is made in any case to fulfil the special requirement of the stone application.

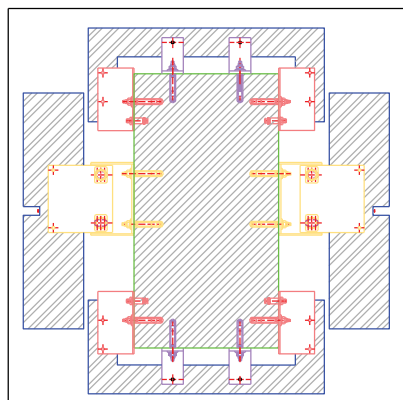


HAZ 21 restraint anchor, designed for the purpose of installing into insulated walls more quickly. Insulation is drilled instead of cut. HAZ 21 anchors are generally used as restraints and are used for corbel facade installations.

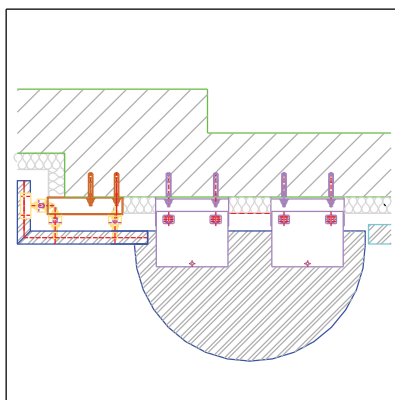


Special Designs

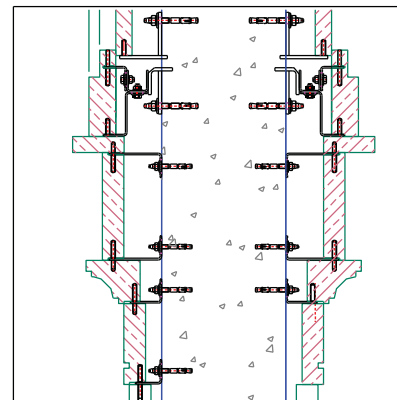
L anchors are used to install thick stone slabs around corners.



L anchors are used to support large semi circular stones to forming a massive column block.



L anchors used for stone installation around column with variations in stone and projection.



- Direct fixing to concrete and masonry walls with mortar
- Economical & easy fixing
- Installation at vertical and horizontal joints
- Special design for installing heavy loads at large projection sizes

Restraint Anchors

HN

HG



Load Bearing Anchors

BUN

BUG

BTN

BTG

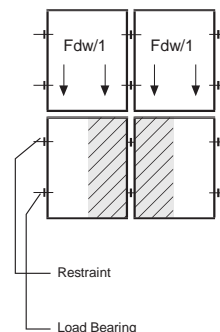
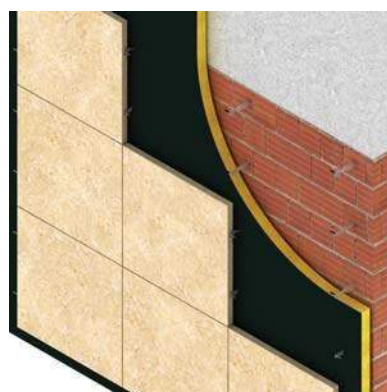
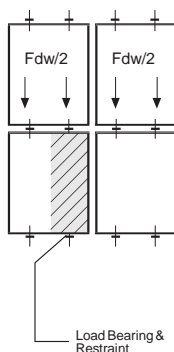
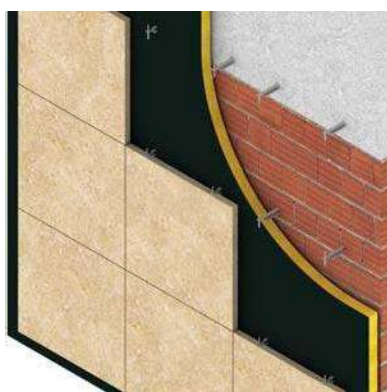
MTN

MTG

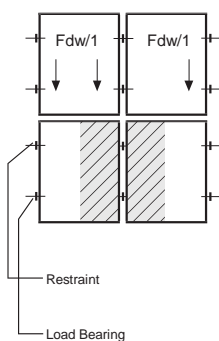


Installation at horizontal joints with BUG anchors

Installation at vertical joints with BTN & HG anchors



Installation at vertical joints with BUN & HG anchors



• Suitable for installing high load natural stone slabs at large projection sizes on to concrete and masonry walls.

• Holes 6mm larger than the anchor width are drilled in the walls.

• The holes are filled with mortar and anchors are set into mortar bed.

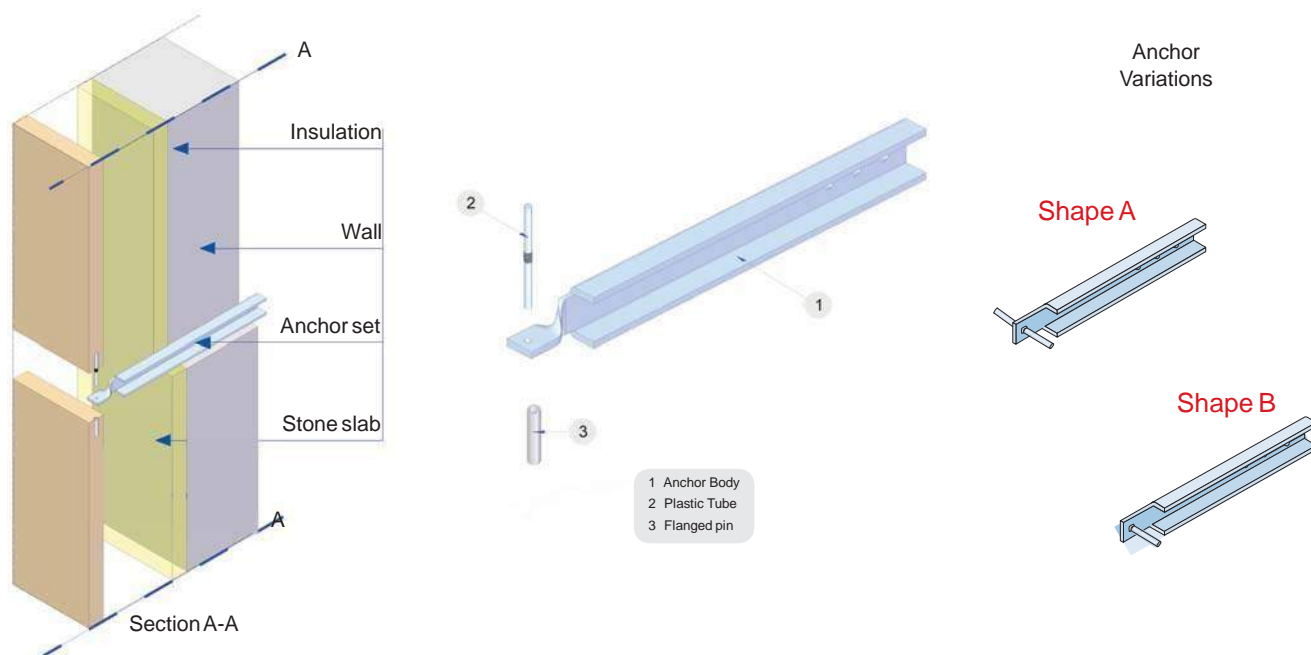
• In horizontal joint installation, slabs are pinned on the bottom and upper sides. Anchors act as load bearing carrying half the weight of the slabs above.

Anchors also act as restraint holding the slabs below and restraining against wind suction and pressure.

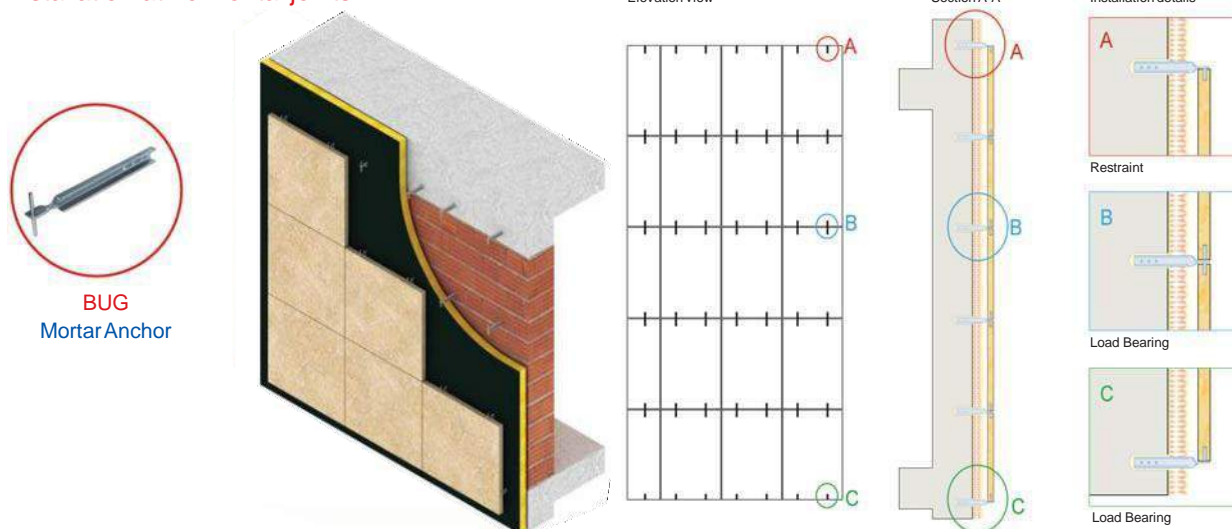
• In vertical joint installation, slabs are pinned at the left and right sides. Anchors on the bottom are load bearing anchors carrying the whole weight of the slab.

Half the weight of the slab on the left and half the weight of the slab on the right. Anchors on the top are restraint anchors holding the slabs and restraining against wind suction and pressure.

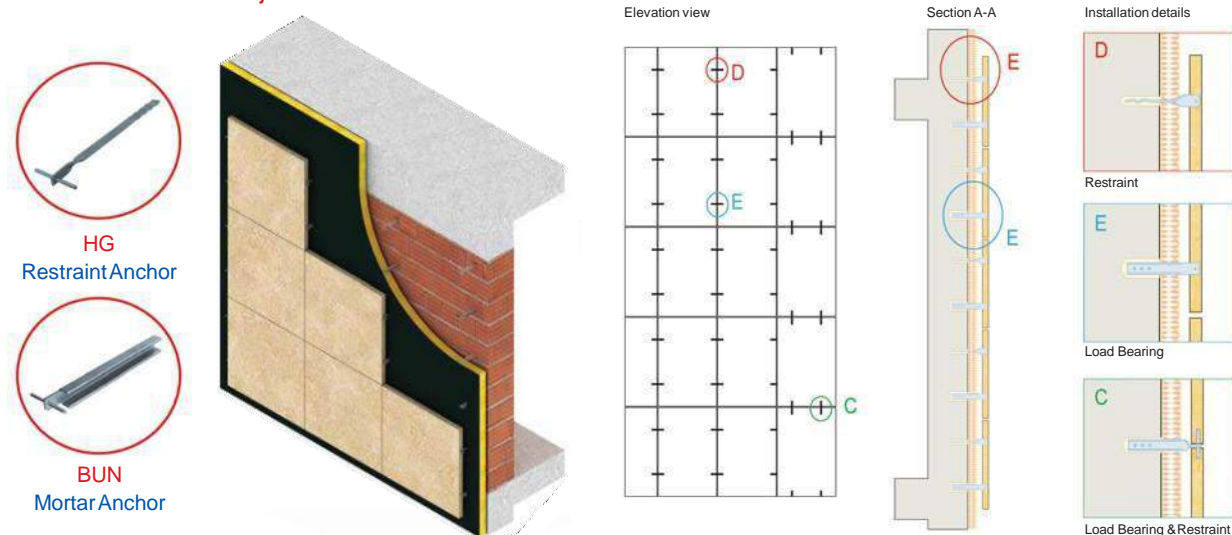
HDM Mortar Anchor Fixing Systems - Installation Details



Installation at horizontal joints



Installation at vertical joints

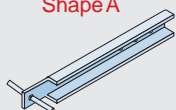


BUN & BUG Mortar Anchor - Product Details

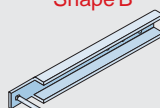
BUN Mortar Anchor

- Load bearing & restraint.
- Projection sizes between 160 and 240 mm.
- Loads up to 1200 N
- Three dimensional adjust ability.
- Suitable for vertical joints.
- Stone thicknesses 20-50mm.
- Fastened into concrete C20/25 and Masonry M12/II.

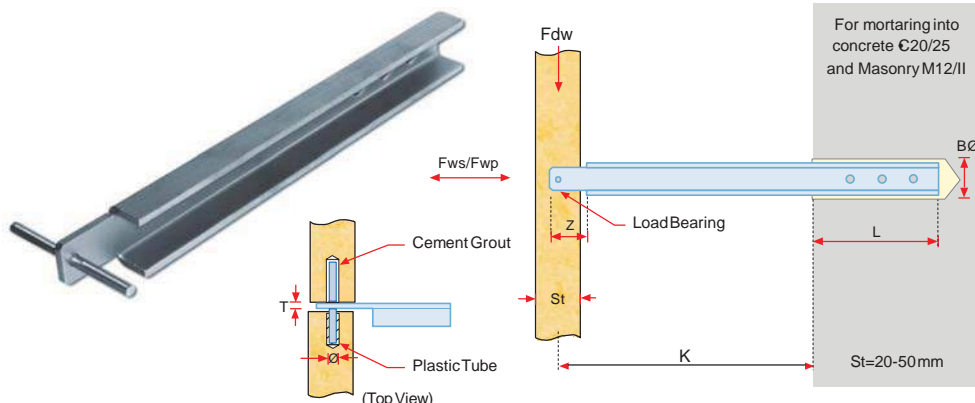
Shape A



Shape B



BUN - 6 22 A
Shape
Projection (x10mm)
Dead Load (x10 Kg)
Type



For mortaring into
concrete C20/25
and Masonry M12/II

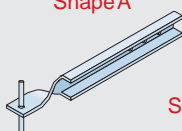
St=20-50mm

Product Code	Projection	Min. Projection	Max. Projection	Dead Load	Wind Pressure	Wind Suction	Z Size	Embedde d Length	Pin Diameter	Bore Diameter	Anchor Thicknes s
	K (mm)	K - (mm)	K + (mm)	Fdw(N)	Fwp(N)	Fws(N)	Z (mm)	L1 (mm)	Ø (mm)	BØ (mm)	T (mm)
BUN-622	220	210	230	600	393	786	22	80	5	34	3
BUN-624	240	230	250							38	
BUN-816	160	150	170							32	
BUN-818	180	170	190							32	
BUN-820	200	190	210	800	524	1048	22	80	5	36	4
BUN-822	220	210	230							36	
BUN-824	240	230	250							36	
BUN-1016	160	150	170							32	
BUN-1018	180	170	190							32	
BUN-1020	200	190	210	1000	655	1310	22	80	5	36	4
BUN-1022	220	210	230							36	
BUN-1024	240	230	250							36	
BUN-1216	160	150	170							36	
BUN-1218	180	170	190							36	
BUN-1220	200	190	210	1200	818	1636	22	80	5	36	4
BUN-1222	220	210	230							36	
BUN-1224	240	230	250							38	

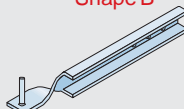
BUG Mortar Anchor

- Load bearing & restraint.
- Projection sizes between 160 and 240 mm.
- Loads up to 600 N.
- Three dimensional adjustability.
- Suitable for horizontal joints.
- Stone thicknesses 20-50mm.
- Fastened into concrete C20/25 and Masonry M12/II.

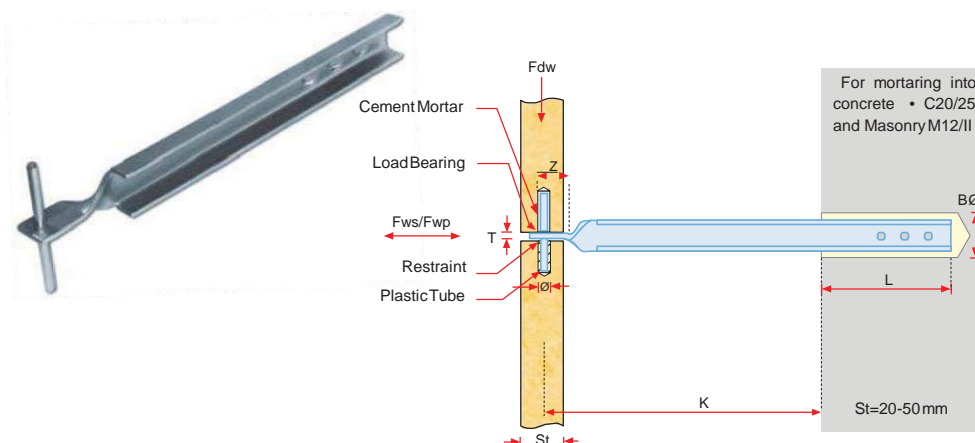
Shape A



Shape B



BUG - 6 22 A
Shape
Projection (x10mm)
Dead Load (x10 Kg)
Type



For mortaring into
concrete • C20/25
and Masonry M12/II

St=20-50mm

Product Code	Projection	Min. Projection	Max. Projection	Dead Load	Wind Pressure	Wind Suction	Z Size	Embedde d Length	Pin Diameter	Bore Diameter	Anchor Thicknes s
	K (mm)	K - (mm)	K + (mm)	Fdw(N)	Fwp(N)	Fws(N)	Z (mm)	L1 (mm)	Ø (mm)	BØ (mm)	T (mm)
BUG-616	160	150	170							32	
BUG-618	180	180	190							34	
BUG-620	200	200	210	600	571	1142	17	80	5	34	4
BUG-622	220	220	230							36	
BUG-624	240	240	250							36	

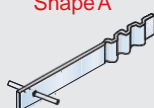
- Material: Stainless Steel 1.4301 (A2) & 1.4401 (A4).
- Table below is prepared according to Eurocode standard.
- Loads stated are working resistance loads.
- Other sizes are available for production upon request.
- Structural calculations are available upon order.

BTN & BTG Mortar Anchor- Product Details

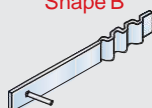
BTN Mortar Anchor

- Load bearing & restraint.
- Projection sizes between 160 and 240 mm.
- Loads up to 600 N.
- Three dimensional adjustability.
- Suitable for vertical joints.
- Stone thicknesses 20-50 mm.
- Fastened into concrete C20/25 and Masonry M12/II.

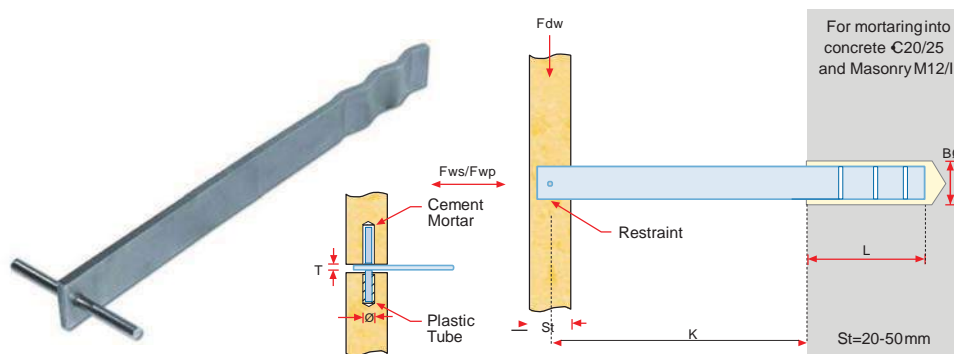
Shape A



Shape B



BTN - 4 16 A
Shape
Projection (x10mm)
Dead Load (x10 Kg)
Type



Product Code	Technical Details									
	Projection K (mm)	Min. Projection K - (mm)	Max. Projection K + (mm)	Dead Load Fdw (N)	Wind Pressure Fwp (N)	Wind Suction Fws (N)	Embedde d Length L1 (mm)	Pin Diameter ø (mm)	Bore Diameter Bø (mm)	Anchor Thicknes s T (mm)
BTN-416	160	150	170	400	260	520	80	5	36	5
BTN-418	180	170	190						38	5
BTN-420	200	190	210						40	5
BTN-422	220	210	230						36	6
BTN-424	240	230	250						36	6
BTN-616	160	150	170	600	393	786	80	5	39	6
BTN-618	180	170	190						41	
BTN-620	200	190	210						42	

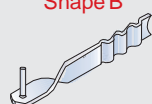
BTG Mortar Anchor

- Load bearing & restraint.
- Projection sizes between 160 and 240 mm.
- Loads up to 500 N.
- Three dimensional adjustability.
- Suitable for horizontal joints.
- Stone thicknesses 20-50 mm.
- Fastened into concrete C20/25 and Masonry M12/II.

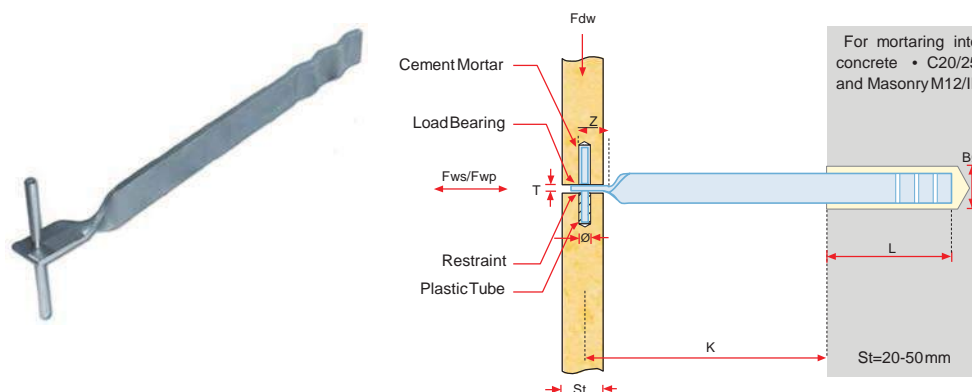
Shape A



Shape B



BTG - 3 16 A
Shape
Projection (x10mm)
Dead Load (x10 Kg)
Type



Product Code	Technical Details											
	Projection	Min. Projection	Max. Projection	Dead Load	Wind Pressure	Wind Suction	Z Size	Embedd Length	Pin Diameter	Bore Diameter	Anchor Thickness	
	K (mm)	K -(mm)	K +(mm)	Fdw(N)	Fwp(N)	Fws(N)	Z (mm)	L1 (mm)	ø (mm)	BØ (mm)	T (mm)	
BTG-316	160	150	170	300	393	786	22	80	5	30	5	
BTG-318	180	170	190							32		
BTG-320	200	190	210							34		
BTG-322	220	210	230									
BTG-324	240	230	250									
BTG-516	160	150	170	500	655	1309	22	80	6	36	6	
BTG-518	180	170	190									38
BTG-520	200	190	210									40
												42

- Material: Stainless Steel 1.4301 (A2) & 1.4401 (A4).
- Table below is prepared according to Eurocode standard.
- Loads stated are working resistance loads.
- Other sizes are available for production upon request.
- Structural calculations are available upon order.

MTN Mortar Anchor

- Load bearing & restraint
- Projection sizes between 80 and 180 mm.
- Loads up to 1000 N.
- Three dimensional adjustability.
- Suitable for vertical joints.
- Stone thicknesses 20-50 mm.
- Fastened into Masonry M12/II walls with mortar.

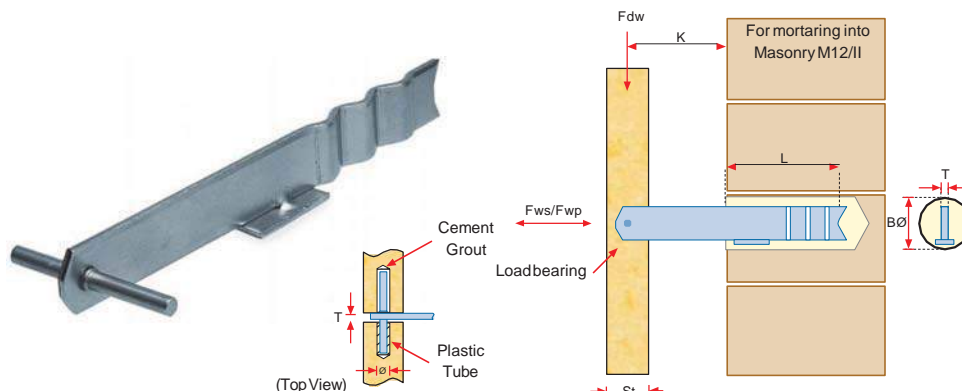
Shape A



Shape B



MTN - 4 8 A
 — Shape
 — Projection (x10mm)
 — Dead Load (x10 Kg)
 — Type



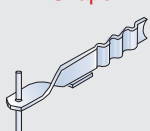
Product Code	Technical Details									
	Projection K (mm)	Min. Projection K - (mm)	Max. Projection K + (mm)	Dead Load Fdw(N)	Wind Pressure Fwp(N)	Wind Suction Fws(N)	Embedde d Length L1 (mm)	Pin Diameter ø (mm)	Bore Diameter Bø (mm)	Anchor Thicknes s T (mm)
MTN-48	80	70	90	400	295	589	120	5	30	5
MTN-414	140	130	140				130		34	5
MTN-418	180	170	180				120		34	6
MTN-66	60	50	70	600	442	884	140	5	38	6
MTN-612	120	110	130				150		38	6
MTN-620	200	190	210				140		40	6
MTN-108	80	70	80	100	737	1473	180	5	42	6
MTN-1024	140	130	140				190		42	6
MTN-1018	180	170	190							

- Material: Stainless Steel 1.4301 (A2) & 1.4401 (A4).
- Table below is prepared according to Eurocode standard.
- Loads stated are working resistance loads.
- Other sizes are available for production upon request.
- Structural calculations are available upon order.

MTG Mortar Anchor

- Load bearing & restraint.
- Projection sizes between 100 and 200 mm.
- Loads up to 800 N.
- Three dimensional adjustability.
- Suitable for horizontal joints.
- Stone thicknesses 20-50 mm.
- Fastened into Masonry M12/II walls with mortar.

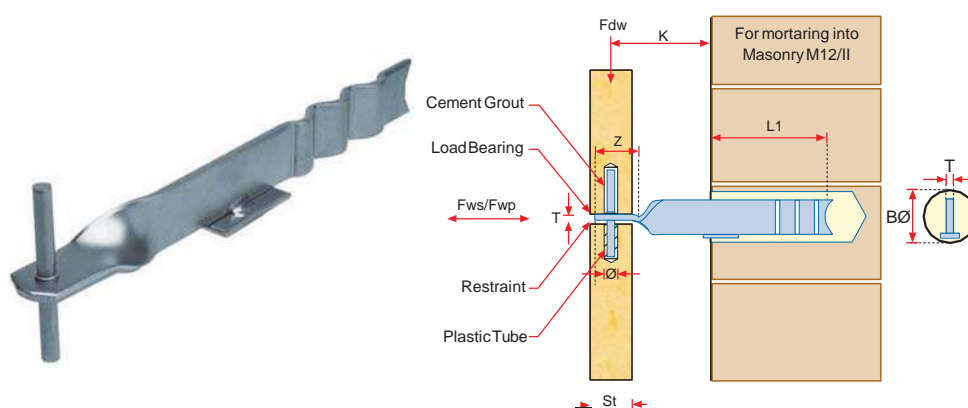
Shape A



Shape B



MTG - 3 16 A
 — Shape
 — Projection (x10mm)
 — Dead Load (x10 Kg)
 — Type



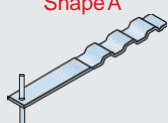
Product Code	Technical Details										
	Projection	Min. Projection	Max. Projection	Dead Load	Wind Pressure	Wind Suction	Z Size	Embedd Length	Pin Diameter	Bore Diameter	Anchor Thickness
	K (mm)	K -(mm)	K +(mm)	Fdw(N)	Fwp(N)	Fws(N)	Z (mm)	L1 (mm)	ø (mm)	BØ (mm)	T (mm)
MTG-310	100	90	110	300	442	884	22	120	5	34	3
MTG-314	140	130	150								4
MTG-316	160	150	170								5
MTG-48	80	70	90	400	589	1179	22	120	5	34	4
MTG-412	120	110	130							36	4
MTG-420	200	190	210							40	6
MTG-66	60	50	70	600	884	1768	22	120	5	38	4
MTG-610	100	90	110					120		38	5
MTG-616	160	150	170					125		40	6
MTG-88	80	70	90	800	1179	2357	22	120	5	40	5
MTG-816	160	150	170					140		44	8
MTG-820	200	190	210					140		46	8

HN & HG Mortar Anchor Restraint - Product Details

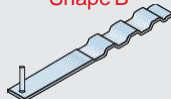
HN Mortar Anchor&Restraint

- Restraint only.
- Projection sizes between 160 and 240 mm.
- Wind loads up to 1000 N.
- Three dimensional adjustability.
- Suitable for horizontal joints.
- Stone thicknesses 20-50 mm.
- Fastened into concrete C20/25 Masonry M12/II walls with mortar.

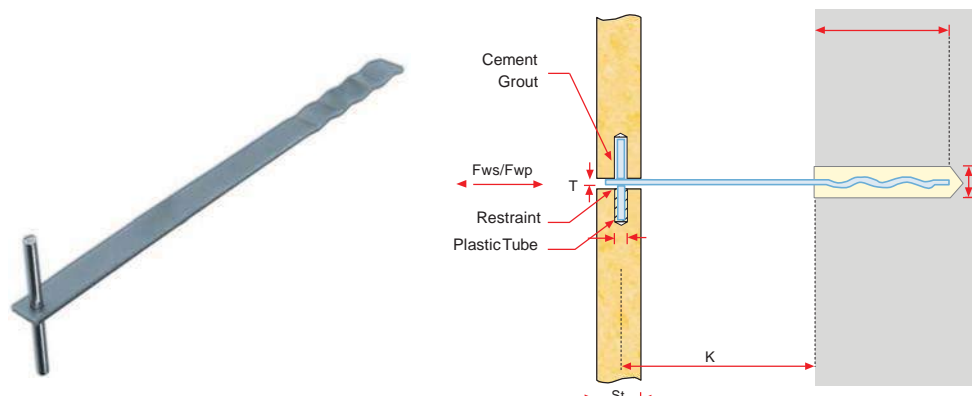
Shape A



Shape B



HN - 10 16 A
 Shape
 Projection (x10mm)
 Dead Load (x10 Kg)
 Type



Product Code	Technical Details								
	Projection K (mm)	Min. Projection K - (mm)	Max. Projection K + (mm)	Wind Pressure Fwp (N)	Wind Suction Fws (N)	Embedd d Length L1 (mm)	Pin Diameter Ø (mm)	Bore Diameter BØ (mm)	Anchor Thicknes s T (mm)
HN-1016	160	150	170	1000	500	80	5	21	3
HN-1018	180	170	190					24	
HN-1020	200	190	210					24	
HN-1022	220	210	230					26	
HN-1024	240	230	250					26	

HG Mortar Anchor

- Restraint only.
- Projection sizes between 100 and 240 mm.
- Wind loads up to 1000 N.
- Three dimensional adjustability.
- Suitable for vertical joints.
- Stone thicknesses 20-50 mm.
- Fastened into concrete C20/25 Masonry M12/II walls with mortar.

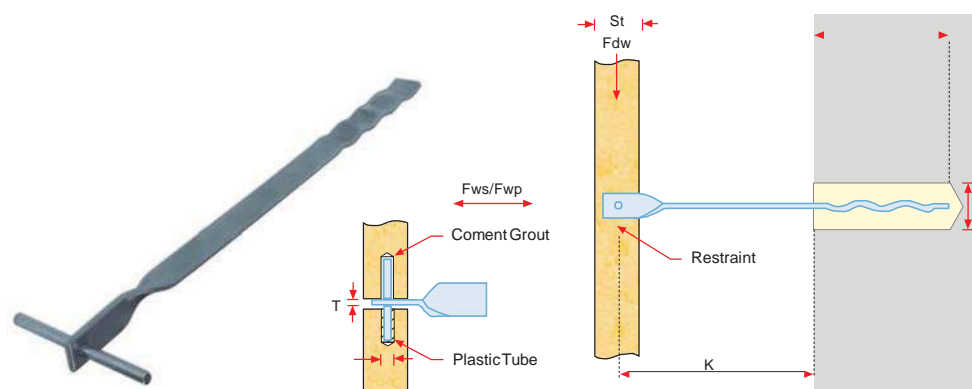
Shape A



Shape B



HG - 10 16 A
 Shape
 Projection (x10mm)
 Dead Load (x10 Kg)
 Type



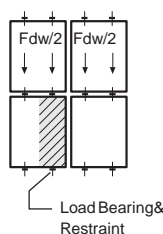
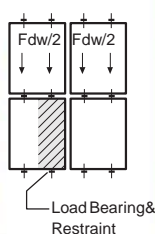
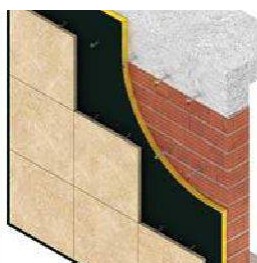
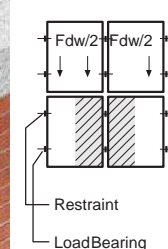
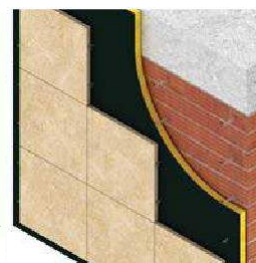
Product Code	Technical Details								
	Projection K (mm)	Min. Projection K - (mm)	Max. Projection K + (mm)	Wind Pressure Fwp (N)	Wind Suction Fws (N)	Embedde d Length L1 (mm)	Pin Diameter Ø (mm)	Bore Diameter BØ (mm)	Anchor Thicknes s T (mm)
HG-1016	160	150	170	1000	500	80	5	21	3
HG-1018	180	170	190					24	
HG-1020	200	190	210					24	
HG-1022	220	210	230					26	
HG-1024	240	230	250					26	

- Material: Stainless Steel 1.4301 (A2) & 1.4401 (A4).
- Table below is prepared according to Eurocode standard.
- Loads stated are working resistance loads.
- Other sizes are available for production upon request.
- Structural calculations are available upon request.

HSD Mortar Anchor Fixing Systems - Introduction

- Direct fixing to concrete and masonry walls with mortar
- Economical & easy fixing
- Installation at vertical and horizontal joints

HSD01 Mortar Anchor
HSD02 Mortar Anchor W. Plate
HSD03 Mortar Anchor Twisted Head
HSD04 Mortar Anchor W. Plate & Twisted
HRD01 Mortar Anchor

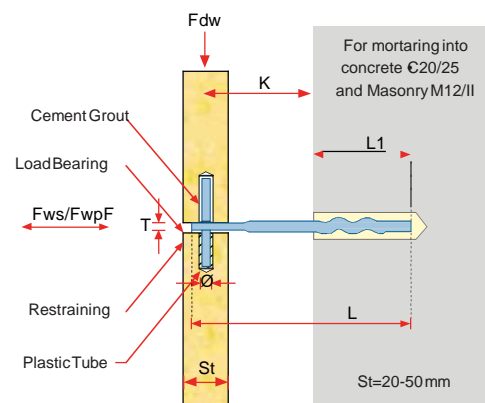
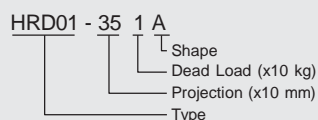
Installation at Horizontal joints with HRD01 Anchor

Installation at Horizontal joints with HSD04

Installation at Vertical joints with HSD02&03


HRD Mortar Anchor Fixing Systems - Product Details

HRD01 Mortar Anchor

- Load bearing & restraint.
- Projection sizes between 35 and 75 mm.
- Loads up to 400 N
- Three dimensional adjustability. Suitable for horizontal joints.
- Stone thicknesses 20-50 mm.
- Fastened into concrete C20/25 and Masonry M12/II.

Shape A

Shape B


Product Code	Technical Details										
	Projection	Min. Projection	Max. Projection	Dead Load	Wind Pressure	Wind Suction	Anchor Length	Dowel Embedd Length	Pin Diameter	Bore Diameter	Flat Thickness
	K (mm)	K - (mm)	K + (mm)	Fdw (N)	Fwp (N)	Fws (N)	L (mm)	L1 (mm)	Ø (mm)	BØ (mm)	T (mm)
HRD01-351	35	20	50	100	156	110	135	90	4	12	2.5
HRD01-451	45	30	60				145				
HRD01-551	55	40	70				155				
HRD01-651	65	50	80				165				
HRD01-751	75	60	90	200	312	219	175	90	4	14	3
HRD01-352	35	20	50				135				
HRD01-452	45	30	60				145				
HRD01-552	55	40	70				155				
HRD01-652	65	50	80	400	624	437	165	90	5	18	4
HRD01-752	75	60	90				175				
HRD01-354	35	20	50				135				
HRD01-454	45	30	60				145				
HRD01-554	55	40	70	400	624	437	155	90	5	18	4
HRD01-654	65	50	80				165				
HRD01-754	75	60	90				175				

• Material: Stainless Steel 1.4301 (A2) & 1.4401 (A4). • Table below is prepared according to Eurocode standard.

• Loads stated are working resistance loads. • Other sizes are available for production upon request.

• Structural calculations are available upon order.

HSD Mortar Anchors - Product Details

HSD01 Mortar Anchor



Product Code	Technical Details										
	Projection	Min. Projection	Max. Projection	Dead Load	Wind Pressure	Wind Suction	Anchor Length	Dowel Embedded Length	Pin Diameter	Bore Diameter	Flat Thickness
	K (mm)	K -(mm)	K +(mm)	Fdw(N)	Fwp(N)	Fws(N)	L (mm)	L1 (mm)	Ø (mm)	BØ (mm)	T (mm)
HSD01-352	35	20	50	200	312	219	135	90	4	21	2.5
HSD01-452	45	30	60				145				
HSD01-552	55	40	70				155				
HSD01-652	65	50	80				165				
HSD01-752	75	60	90				175				
HSD01-354	35	20	50	400	624	437	135	90	5	26	2.5
HSD01-454	45	30	60				145				
HSD01-554	55	40	70				155				
HSD01-654	65	50	80				165				
HSD01-754	75	60	90				175				
HSD01-356	35	20	50	600	936	655	135	90	6	26	4
HSD01-456	45	30	60				145				
HSD01-556	55	40	70				155				
HSD01-656	65	50	80				165				
HSD01-756	75	60	90				175				

HSD02 Mortar Anchor



Product Code	Technical Details										
	Projection	Min. Projection	Max. Projection	Dead Load	Wind Pressure	Wind Suction	Anchor Length	Dowel Embedde d Length	Pin Diameter	Bore Diameter	Flat Thickness
	K (mm)	K -(mm)	K +(mm)	Fdw(N)	Fwp(N)	Fws(N)	L (mm)	L1 (mm)	Ø (mm)	BØ (mm)	T (mm)
HSD02-352	35	20	50	200	312	219	135	100	4	24	2.5
HSD02-452	45	30	60				145				
HSD02-552	55	40	70				155				
HSD02-652	65	50	80				165				
HSD02-752	75	60	90				175				
HSD02-354	35	20	50	400	624	437	135	100	5	30	2.5
HSD02-454	45	30	60				145				
HSD02-554	55	40	70				155				
HSD02-654	65	50	80				165				
HSD02-754	75	60	90				175				
HSD02-356	35	20	50	600	936	655	135	100	6	30	4
HSD02-456	45	30	60				145				
HSD02-556	55	40	70				155				
HSD02-656	65	50	80				165				
HSD02-756	75	60	90				175				

HSD03 Mortar Anchor



Product Code	Technical Details										
	Projection	Min. Projection	Max. Projection	Dead Load	Wind Pressure	Wind Suction	Anchor Length	Dowel Embedded Length	Pin Diameter	Bore Diameter	Flat Thickness
	K (mm)	K -(mm)	K +(mm)	Fdw(N)	Fwp(N)	Fws(N)	L (mm)	L1 (mm)	Ø (mm)	BØ (mm)	T (mm)
HSD03-352	35	20	50	200	312	219	135	90	4	26	3
HSD03-452	45	30	60				145				
HSD03-552	55	40	70				155				
HSD03-652	65	50	80				165				
HSD03-752	75	60	90				175				
HSD03-354	35	20	50	400	624	437	135	90	5	24	4
HSD03-454	45	30	60				145				
HSD03-554	55	40	70				155				
HSD03-654	65	50	80				165			26	
HSD03-754	75	60	90				175				
HSD03-356	35	20	50	600	936	655	135	90	6	34	4
HSD03-456	45	30	60				145				
HSD03-556	55	40	70				155				
HSD03-656	65	50	80				165				
HSD03-756	75	60	90				175				

HSD04 Mortar Anchor



Product Code	Technical Details										
	Projection	Min. Projection	Max. Projection	Dead Load	Wind Pressure	Wind Suction	Anchor Length	Dowel Embedded Length	Pin Diameter	Bore Diameter	Flat Thickness
	K (mm)	K -(mm)	K +(mm)	Fdw(N)	Fwp(N)	Fws(N)	L (mm)	L1 (mm)	Ø (mm)	BØ (mm)	T (mm)
HSD04-352	35	20	50	200	312	219	135	100	4	30	3
HSD04-452	45	30	60				145				
HSD04-552	55	40	70				155				
HSD04-652	65	50	80				165				
HSD04-752	75	60	90				175				
HSD04-354	35	20	50	400	624	437	135	100	5	28	4
HSD04-454	45	30	60				145				
HSD04-554	55	40	70				155			30	
HSD04-654	65	50	80				165				
HSD04-754	75	60	90				175				
HSD04-356	35	20	50	600	936	655	135	100	6	38	4
HSD04-456	45	30	60				145				
HSD04-556	55	40	70				155				
HSD04-656	65	50	80				165				
HSD04-756	75	60	90				175				

HMP Sub Channel Fixing Systems - Introduction

- Indirect fixing on to non-load bearing walls or for large projection sizes
- Lower drilling points enable fast installation
- Installation at vertical and horizontal joints
- Special design is made for sub channel systems to suit various application requirements.

Channels

HMPA



HMPB



HMPC



HMPL



Channel supports

HCSP1



HCSP2



HCSP3



HCSP4



Channel restraints

HCRS1



HCRS2



HCRS3



HCRS4



Sub channel systems

HMPA-HC2



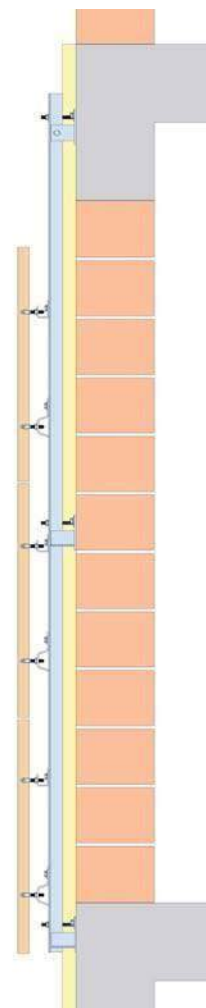
HMPC-HC1



HMPA-HC3



HMPA-HC2 Channel System

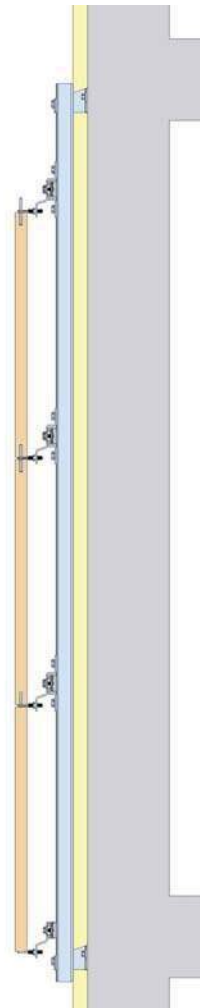


Channels supported on to load bearing concrete beams with **HCSP2** channel supports using anchor bolts

Stone installation is made with **HZ02 & HRS1**
Anchors on to channels with hex bolts

Channels are tied on to walls with **HCRS2**
Channel restraints to eliminate deflection

HMPC-HC1 Channel System

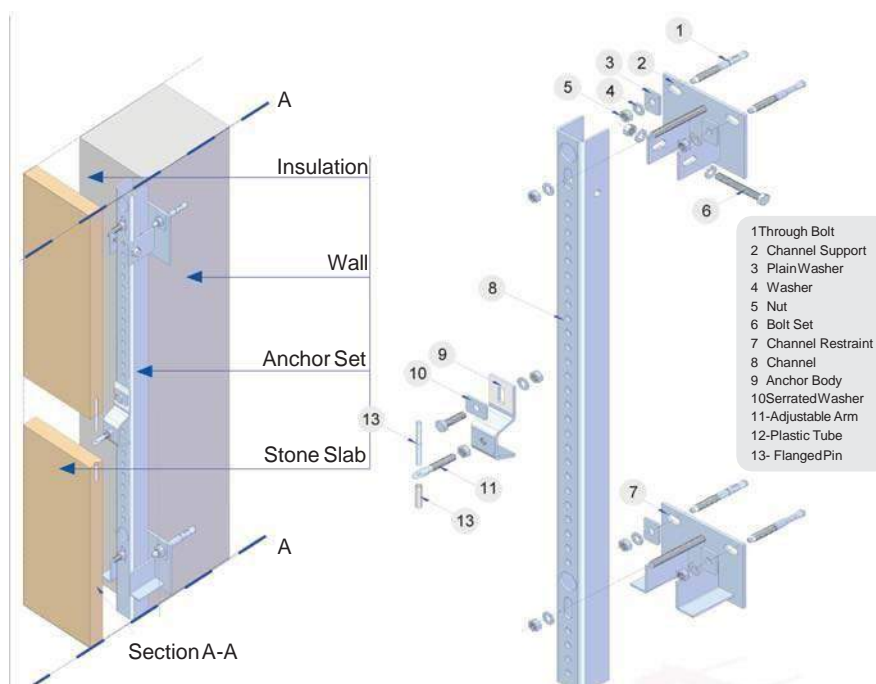


Vertical channels supported on to load bearing beams with **HCSP1** channel supports using expansion bolts

Horizontal C channels are fixed on to the vertical channels with **HCC** channel connections with lock nuts sets

Stone installation is made with **HZ01**
Anchors on to channels with locknuts

HMP Sub Channel Systems - Installation Details



•Sub channel systems are fixed to load bearing beams for support.

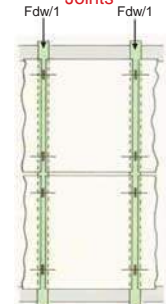
•Channels are fixed on to beams with channels supports.

•Fixing of channels in the middle to the wall with channel restraints are made to reduce deflection.

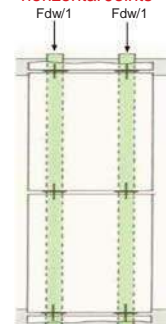
•When installation is at vertical joints, the sub channel system bears the whole load of the slabs installed.

•When installation is at horizontal joints, the sub channel system bears half the load of the slabs installed.

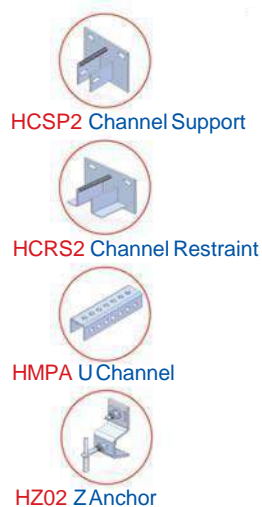
Installation at vertical Joints



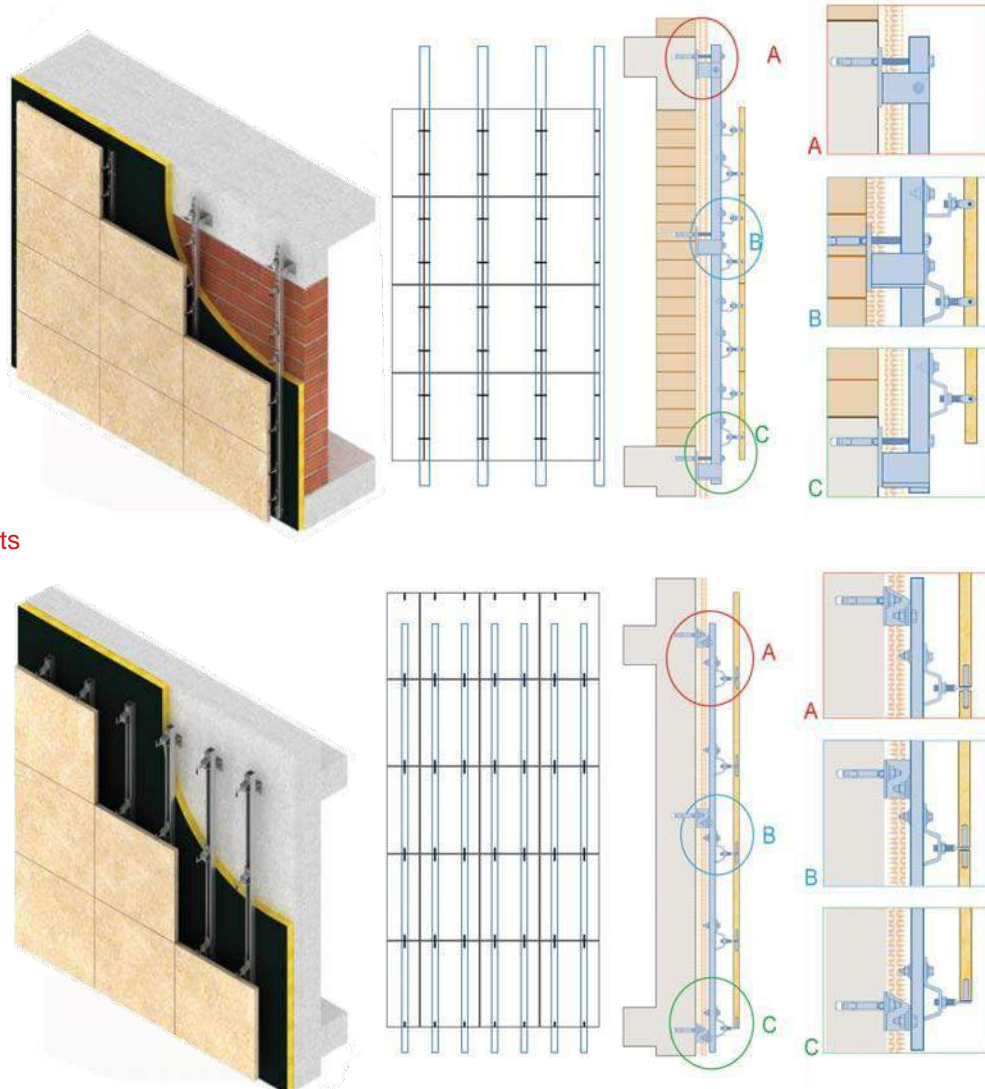
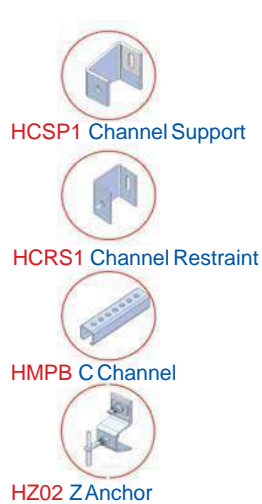
Installation at horizontal Joints



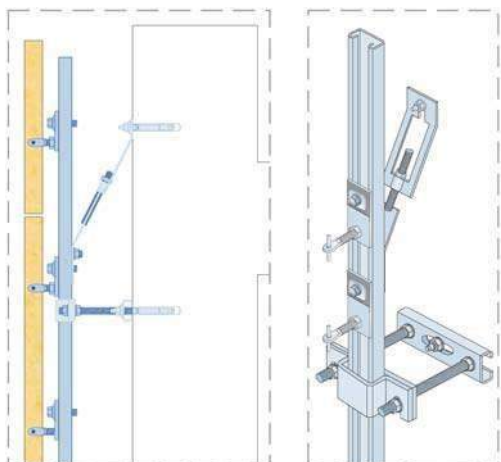
Installation at vertical Joints



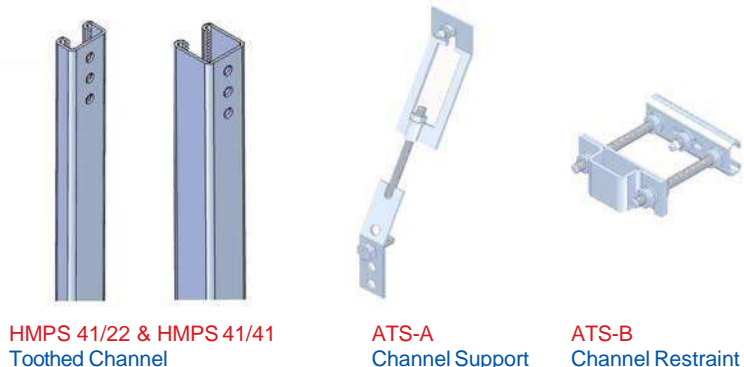
Installation at horizontal Joints



ATS Sub Channel Systems - Product Information



ATS Channel System Elements



The ATS Channel system allows the quick and easy installation of natural stone facades through its adjustable capability and uncomplicated assembly features.

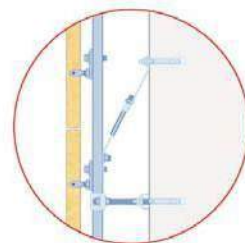
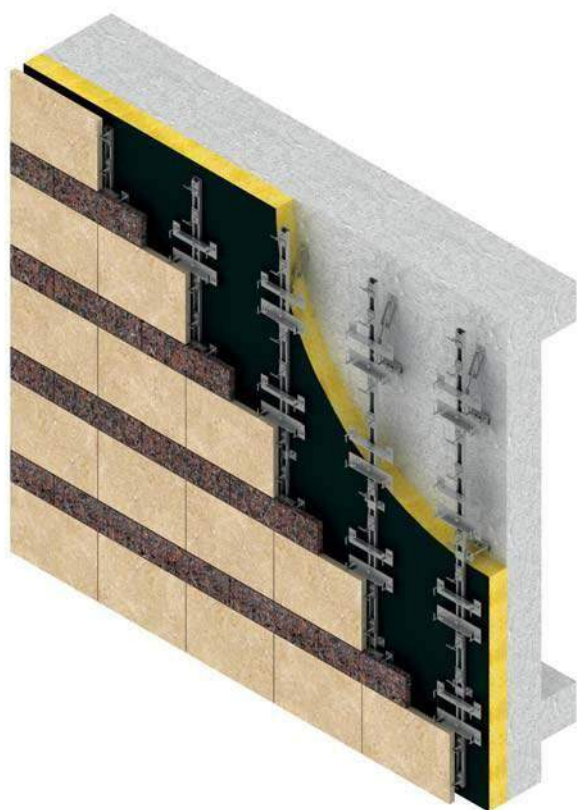
- The channel system is supported by the ATS-A channel support brackets.

- ATS-B channel restraint brackets, restrain the channel system against wind pressure and helps prevent the channel from buckling.

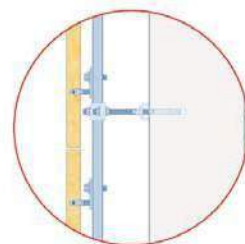
- The HMPS toothed channel enables the fixing of the anchors with hex bolts and lock nuts without the need for drilled holes and the use of nuts and washers.

- Toothed channel and lock nuts provide vertical load support after fixing.

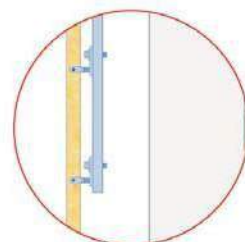
ATS Fixing System Elements



ATS-A Channel Support



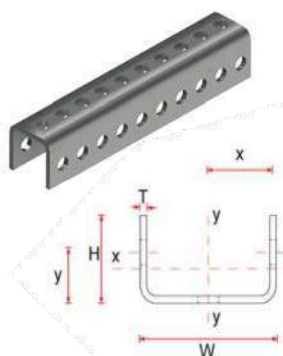
ATS-B Channel Restraint



ATS-HZ Z Anchor

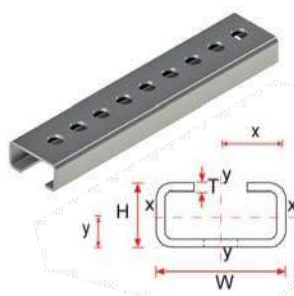
HMP Channels - Product Details

HMPA UChannel



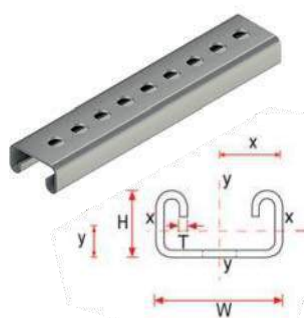
Product Code	Technical Details								
	Dimensions			X-X Axis			Y-Y Axis		
	Thickness T (mm)	Width W (mm)	Height H (mm)	IXX (cm ⁴)	ZX (cm ³)	X (mm)	IYY (cm ⁴)	ZY (cm ³)	Y (mm)
HMPA-2.5-40/30	2.50	40.00	30.00	1.57	0.74	20.00	4.21	2.11	8.80
HMPA-2.5-40/40	2.50	40.00	40.00	3.91	1.50	20.00	5.97	2.99	13.84
HMPA-3-35/35	3.00	35.00	35.00	2.83	1.24	17.50	4.27	2.44	12.14
HMPA-3-40/30	3.00	40.00	30.00	1.79	0.85	20.00	4.86	2.43	8.83
HMPA-3-40/40	3.00	40.00	40.00	4.55	1.74	20.00	6.92	3.46	13.93
HMPA-3-50/50	3.00	50.00	50.00	9.68	2.97	25.00	15.04	6.01	17.42
HMPA-4-40/40	4.00	40.00	40.00	5.67	2.19	20.00	8.60	4.30	14.10
HMPA-4-50/50	4.00	50.00	50.00	12.33	3.81	25.00	18.97	7.60	17.65
HMPA-5-50/50	5.00	50.00	50.00	14.68	4.57	25.00	22.40	8.97	17.87

HMPB CChannel



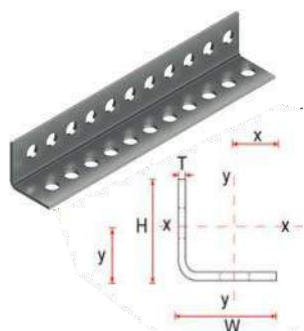
Product Code	Technical Details								
	Dimensions			X-X Axis			Y-Y Axis		
	Thickness T (mm)	Width W (mm)	Height H (mm)	IXX (cm ⁴)	ZX (cm ³)	X (mm)	IYY (cm ⁴)	ZY (cm ³)	Y (mm)
HMPB-2.5-28/15	2.50	28.00	15.00	0.33	0.43	14.00	1.43	1.02	7.38
HMPB-3-38/17	3.00	38.00	17.00	0.76	0.82	19.00	4.59	2.42	7.79
HMPB-2.5-41/21	2.50	41.00	21.00	1.32	1.19	20.50	5.71	2.79	9.85
HMPB-3-41/21	3.00	41.00	21.00	1.48	1.33	20.50	6.55	3.19	9.86

HMPC CChannel



Product Code	Technical Details								
	Dimensions			X-X Axis			Y-Y Axis		
	Thickness T (mm)	Width W (mm)	Height H (mm)	IXX (cm ⁴)	ZX (cm ³)	X (mm)	IYY (cm ⁴)	ZY (cm ³)	Y (mm)
HMPC-2.5-41/22	2.50	41.00	22.00	1.25	0.99	20.50	5.60	2.72	8.16
HMPC-2.5-41/41	2.50	41.00	41.00	7.92	3.62	20.50	9.40	4.58	19.02
HMPC-3-41/22	3.00	41.00	22.00	1.69	1.43	20.50	6.94	3.40	9.16
HMPC-3-41/41	3.00	41.00	41.00	9.40	4.20	20.50	11.30	5.50	18.80

HMPL LChannel

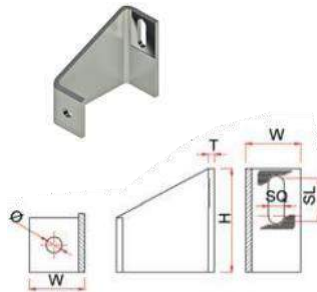


Product Code	Technical Details								
	Dimensions			X-X Axis			Y-Y Axis		
	Thickness T (mm)	Width W (mm)	Height H (mm)	IXX (cm ⁴)	ZX (cm ³)	X (mm)	IYY (cm ⁴)	ZY (cm ³)	Y (mm)
HMPL-2.5-30/30	2.50	30.00	30.00	0.93	0.44	21.22	0.93	0.44	8.78
HMPL-2.5-30/40	2.50	30.00	40.00	1.04	0.39	26.33	2.16	0.39	7.23
HMPL-3-30/30	3.00	30.00	30.00	1.09	0.52	20.79	1.09	0.52	9.21
HMPL-3-40/40	3.00	40.00	40.00	2.88	1.02	28.16	2.88	1.02	11.84
HMPL-3-50/50	3.00	50.00	50.00	6.04	1.69	35.72	6.04	1.69	14.28
HMPL-4-40/40	4.00	40.00	40.00	3.72	1.34	27.79	3.72	1.34	12.21
HMPL-50/50	4.00	50.00	50.00	7.85	2.22	35.40	7.85	2.22	14.60
HMPL-5-50/50	5.00	50.00	50.00	9.57	2.73	35.03	9.57	2.73	14.97

- Material: Stainless Steel 1.4301 (A2) & 1.4401 (A4) and Hot dip galvanized mild steel.
- Tables above is prepared according to values with Ø11 drilled holes.
- Channels can be provided up to 6 metres length.
- Load capacity for wind loads and dead loads needs to be verified with structural calculations.

HCSP Channel Supports - Product Details

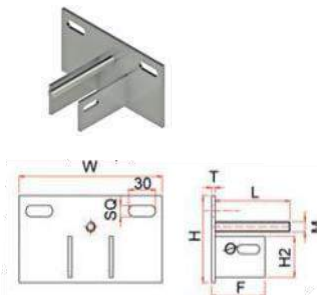
HCSP1 Channel Support



Product Code	Technical Details						
	Thickness	Width	Height	Forming	Slot Hole Dia.	Slot Hole Length	Hole Dia.
	T (mm)	W (mm)	H (mm)	F (mm)	S Ø (mm)	SL (mm)	Ø (mm)
HCSP1-40	4	40	80	40	11	30	11
HCSP1-60	4	40	90	60	11	30	11
HCSP1-80	5	45	100	80	11	30	11
HCSP1-100	5	45	100	100	11	30	11
HCSP1-120	6	50	100	120	11	30	11
HCSP1-140	6	50	100	140	11	30	11
HCSP1-160	6	50	115	160	11	30	11
HCSP1-180	6	55	115	180	11	30	11
HCSP1-200	6	55	120	200	11	30	11

- Suitable for all type of channels
- Max dead load 2.5 kN
- Max wind load 1.2 kN

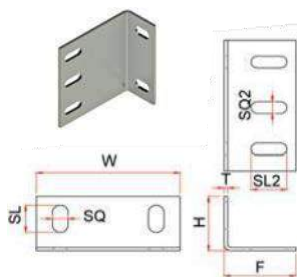
HCSP2 Channel Support



Product Code	Technical Details							
	Thickness	Width	Height	Forming	Slot Hole Dia.	Slot Hole Length	Hole Dia.	Thr. Rod Metric Size
	T (mm)	W (mm)	H (mm)	F (mm)	S Ø (mm)	SL (mm)	Ø (mm)	MxL (mm)
HCSP2-100	4	160	85	100	11	30	11	M10x110
HCSP2-120	4	160	85	120	11	30	11	M10x130
HCSP2-140	5	160	95	140	11	30	11	M10x150
HCSP2-160	5	160	95	160	11	30	11	M10x170
HCSP2-180	5	180	95	180	11	30	11	M10x190
HCSP2-210	5	180	95	210	11	30	11	M10x220
HCSP2-240	5	180	95	240	11	30	11	M10x240
HCSP2-270	5	180	100	270	11	30	11	M10x280
HCSP2-300	5	180	100	300	11	30	11	M10x310

- Suitable only for HMPA type U channels
- Max dead load 3.5 kN
- Max wind load 2.0 kN

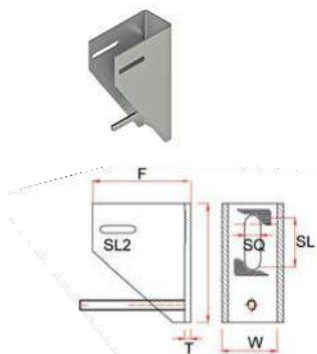
HCSP3 Channel Support



Product Code	Technical Details							
	Thickness	Width	Height	Forming	Slot Hole Dia.	Slot Hole Length	Hole Dia.	Slot hole length
	T (mm)	W (mm)	H (mm)	F (mm)	S Ø (mm)	SL (mm)	Ø (mm)	SL2 (mm)
HCSP3-70	3	120	50	70	11	25	11	30
HCSP3-90	3	120	50	90	11	25	11	30
HCSP3-110	4	120	50	110	11	25	11	30
HCSP3-130	4	120	50	130	11	25	11	30
HCSP3-150	5	120	50	150	11	25	11	30
HCSP3-170	5	120	50	170	11	25	11	30
HCSP3-190	5	120	50	190	11	25	11	30
HCSP3-210	5	120	60	210	11	25	11	30
HCSP3-230	5	120	60	230	11	25	11	30

- Suitable only for HMPA type U channels & HMPL type L channels
- Max dead load 2.5 kN
- Max wind load 1.2 kN

HCSP4 Channel Support

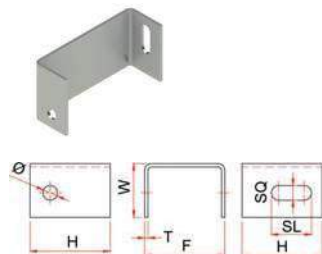


Product Code	Technical Details							
	Thickness	Width	Height	Forming	Slot Hole Dia.	Slot Hole Length	Hole Dia.	Thr. Rod Metric Size
	T (mm)	W (mm)	H (mm)	F (mm)	S Ø (mm)	SL (mm)	Ø (mm)	MxL (mm)
HCSP4-100	3	50	175	100	11	30	11	M10x110
HCSP4-120	3	50	175	120	11	30	11	M10x130
HCSP4-140	4	50	175	140	11	30	11	M10x150
HCSP4-160	4	50	195	160	11	30	11	M10x170
HCSP4-180	4	50	195	180	11	30	11	M10x190
HCSP4-210	5	50	195	210	11	30	11	M10x220
HCSP4-240	5	50	195	240	11	30	11	M10x240
HCSP4-270	5	50	215	270	11	30	11	M10x280
HCSP4-300	5	50	215	300	11	30	11	M10x310

- Suitable only for HMPA type U channels
- Max dead load 3.5 kN
- Max wind load 2.0 kN
- Material: Stainless Steel 1.4301 (A2) & 1.4401 (A4) and Hot dip galvanized ST37 mild steel.

HCRS Channel Restraints - Product Details

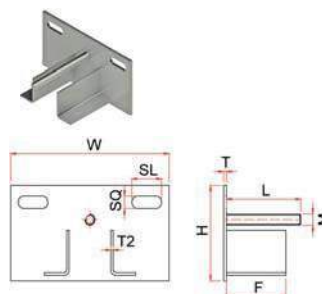
HCRS1 Channel Restraint



Product Code	Technical Details						
	Thickness	Width	Height	Forming	Slot Hole Dia.	Slot Hole Length	Hole Dia.
	T (mm)	W (mm)	H (mm)	F (mm)	SØ (mm)	SL (mm)	Ø (mm)
HCRS1-40	2	40	60	40	9	30	9
HCRS1-60	2	40	60	60	9	30	9
HCRS1-80	3	45	80	80	9	30	9
HCRS1-100	3	45	80	100	9	30	9
HCRS1-120	4	50	100	120	9	30	9
HCRS1-140	4	50	100	140	9	30	9
HCRS1-160	4	50	100	160	9	30	9
HCRS1-180	4	50	100	180	9	30	9
HCRS1-200	4	50	100	200	9	30	9

- Suitable for all type of channels
- Max wind load 1.2 kN

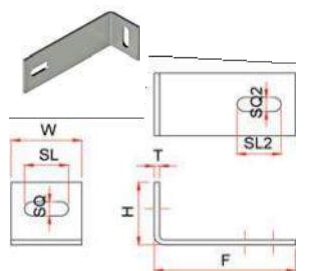
HCRS2 Channel Restraint



Product Code	Technical Details							
	Thickness	Width	Height	Forming	Slot Hole Dia.	Slot Hole Length	Hole Dia.	Thr. Rod Metric Size
	T (mm)	W (mm)	H (mm)	F (mm)	SØ (mm)	SL (mm)	Ø (mm)	MxL (mm)
HCRS2-100	4	160	85	100	11	30	11	M10x110
HCRS2-120	4	160	85	120	11	30	11	M10x130
HCRS2-140	5	160	95	140	11	30	11	M10x150
HCRS2-160	5	160	95	160	11	30	11	M10x170
HCRS2-180	5	180	95	180	11	30	11	M10x190
HCRS2-210	5	180	95	210	11	30	11	M10x220
HCRS2-240	5	180	95	240	11	30	11	M10x240
HCRS2-270	5	180	100	270	11	30	11	M10x280
HCRS2-300	5	180	100	300	11	30	11	M10x310

- Suitable only for HMPA type Uchannels
- Max wind load 2.0 kN

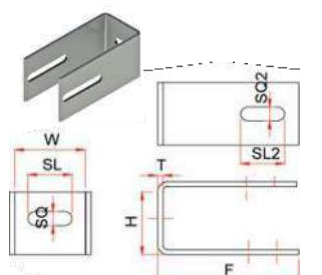
HCRS3 Channel Restraint



Product Code	Technical Details							
	Thickness	Width	Height	Forming	Slot Hole Dia.	Slot Hole Length	Hole Dia.	Slothole length
	T (mm)	W (mm)	H (mm)	F (mm)	SØ (mm)	SL (mm)	Ø (mm)	SL2 (mm)
HCRS3-70	3	120	50	70	11	25	11	30
HCRS3-90	3	120	50	90	11	25	11	30
HCRS3-110	4	120	50	110	11	25	11	30
HCRS3-130	4	120	50	130	11	25	11	30
HCRS3-150	5	120	50	150	11	25	11	30
HCRS3-170	5	120	50	170	11	25	11	30
HCRS3-190	5	120	50	190	11	25	11	30
HCRS3-210	5	120	60	210	11	25	11	30
HCRS3-230	5	120	60	230	11	25	11	30

- Suitable only for HMPA type U channels & HMPL type L channels
- Max wind load 1.2 kN

HCRS4 Channel Restraint



Product Code	Technical Details							
	Thickness	Width	Height	Forming	Slot Hole Dia.	Slot Hole Length	Hole Dia.	Thr. Rod Metric Size
	T (mm)	W (mm)	H (mm)	F (mm)	SØ (mm)	SL (mm)	Ø (mm)	MxL (mm)
HCRS4-100	3	50	175	100	11	30	11	M10x110
HCRS4-120	3	50	175	120	11	30	11	M10x130
HCRS4-140	4	50	175	140	11	30	11	M10x150
HCRS4-160	4	50	195	160	11	30	11	M10x170
HCRS4-180	4	50	195	180	11	30	11	M10x190
HCRS4-210	5	50	195	210	11	30	11	M10x220
HCRS4-240	5	50	195	240	11	30	11	M10x240
HCRS4-270	5	50	215	270	11	30	11	M10x280
HCRS4-300	5	50	215	300	11	30	11	M10x310

- Suitable only for HMPA type Uchannels
- Max wind load 2.0 kN
- Material: Stainless Steel 1.4301 (A2) & 1.4401 (A4) and Hot dip galvanized ST37 mild steel.

HMP Sub Channel Systems - Application Examples

HMPA-HC2 sub channel fixing system :

- High load bearing and adjustable sub channel system.
- Fast and easy fixing of stone slabs.
- Minimum projection size is 90 mm and maximum is 350 mm.
- Ideal for heavy loads and large projection sizes.
- Anchors are fixed to channels with hex bolts and hex nuts.



HCSP2
Channel
Support



HCRS2
Channel
Restraint



HMPA
U Channel



HZ02
Z Anchor



HRS1
Restraint
Anchor

HMPB-HC1 sub channel fixing system :

- Easy to assemble sub channel system.
- Easy to install with uncomplicated elements.
- Minimum projection size is 110 mm and maximum is 250 mm.
- Ideal for restoration of facades.
- Anchors are fixed to channels with hex bolts and hex nuts.



HCSP1
Channel
Support



HCRS1
Channel
Restraint



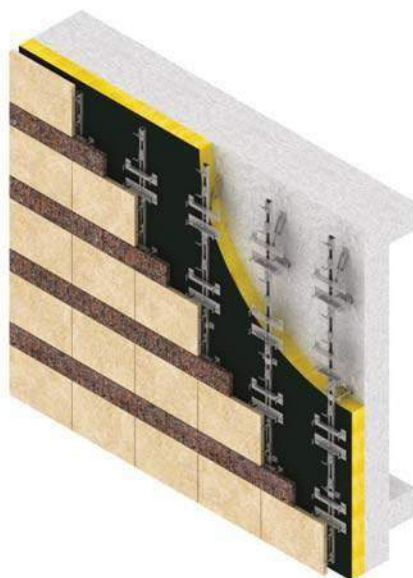
HMPB
Channel



HZ02
Z Anchor

ATS sub channel fixing system :

- Adjustable and easy to use sub channel system.
- Fast and easy fixing of stone slabs.
- Minimum projection size is 160 mm and maximum projection size is 360 mm.
- Ideal for varying projection sizes and slab dimensions.
- Anchors are fixed to toothed channels with lock nuts and hex bolts.



ATS-A
Channel
Support



ATS-B
Channel
Restraint



HMPS
Toothed
Channel



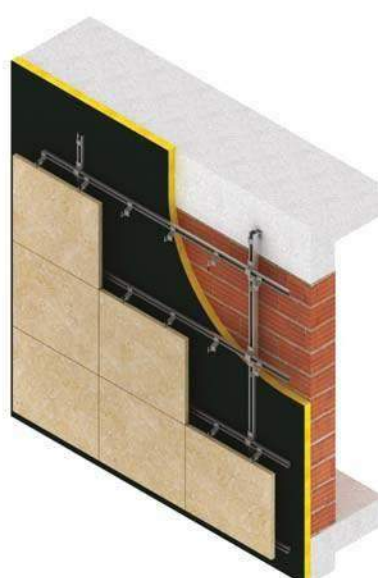
ATS-HA
Special
Anchor



HZ-00
Z Anchor

HMPC-HC1H sub channel system :

- Adjustable sub channel system with horizontal channels.
- Quick adjustability at horizontal axis.
- Minimum projection size is 150 mm and maximum is 240 mm.
- Ideal for staggered patterned facades.
- Anchors are fixed to channels with lock nuts and hex bolts.



HCSP1
Channel
Support



HCRS1
Channel
Restraint



HMPC
C Channel



HMPC
C Channel



HZ01
Z Anchor

HMP Channel Systems - Special Application Details



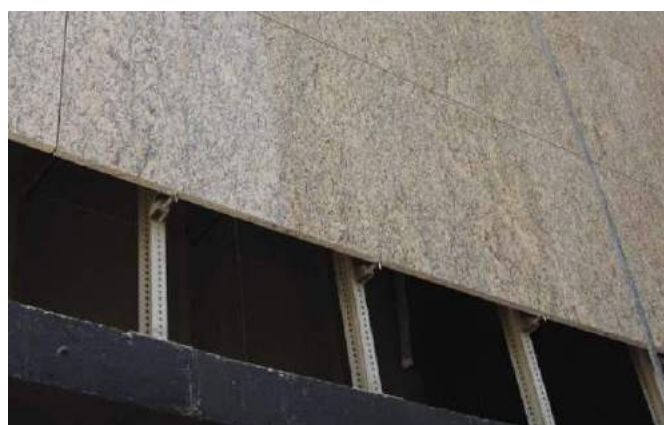
Channel sub frame is designed to accommodate the natural stone angular installation.



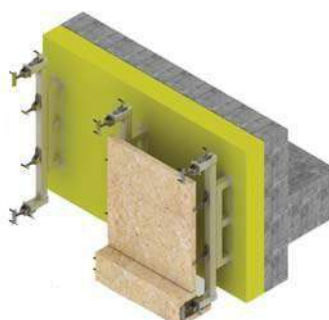
Channel system is supported onto concrete floor and ceiling forming a false wall for stone installation.



Customized panels with stone slabs supported onto channel sub frame.



Stone installation around structural steel column. Channels are used to form a sub frame for fixing with adjustable anchors.



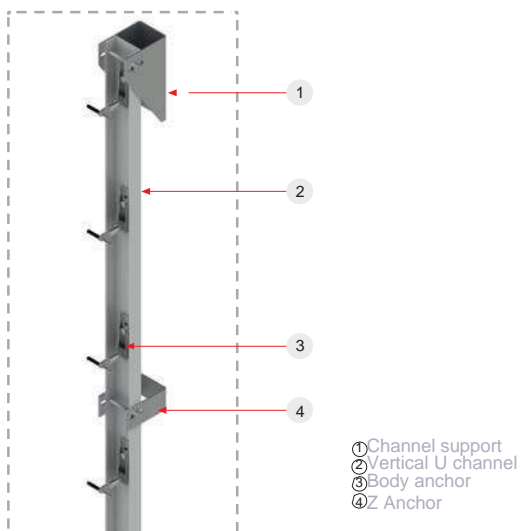
Sub frame is formed to accommodate the facade movement. Channels provide the means of easy and fast installation.

Fixing Systems for Reconstructed Stone - Introduction

Fixing systems with aluminium channels are available for the installation of natural stone, ceramics and fibre cement panels. A variety of systems are available to accommodate the application requirements. Custom designs are also made for special requirements. Three dimensional adjustability is provided and fast installation is possible due to the light weight of aluminium and the ease of cutting and drilling on site.

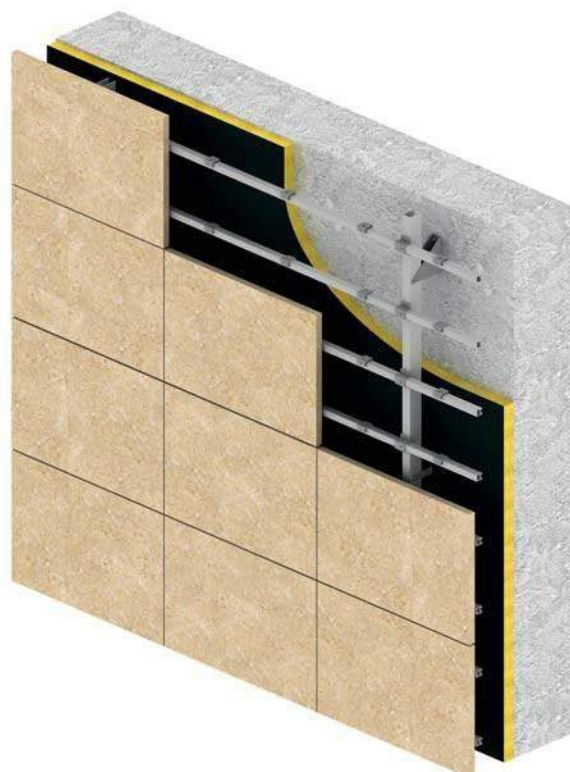
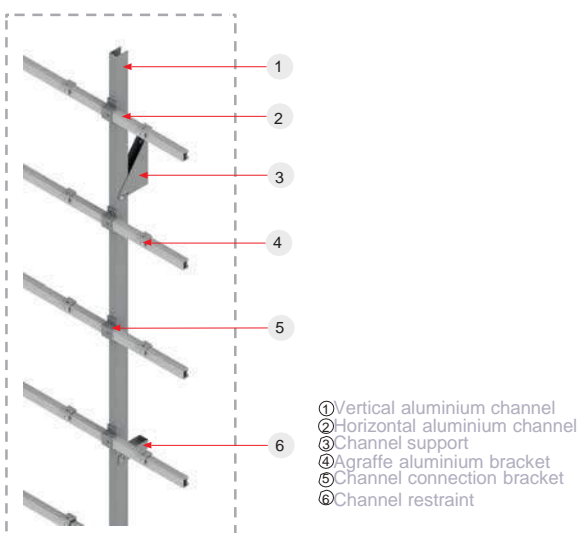
HMP-ALU-U Aluminium Sub Channel System

Aluminium U Channel is supported and restrained with stainless steel brackets on to the walls. Stainless steel body 1 anchors are used for stone installation.



HMP-ALU-AG Aluminium Sub Channel System

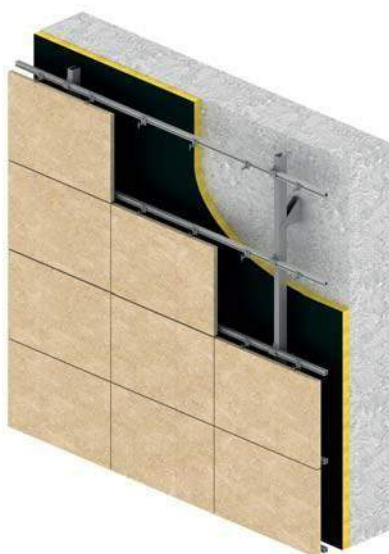
Aluminium sub channel system with vertical and horizontal channels that allow the fixing of panels from the rear surface using undercut bolts.



HMP-ALU Aluminium Sub Channel Systems - Application Examples

HMP-ALU-SP/H Aluminium Sub Channel System

- Adjustable sub channel system with horizontal channels
- Quick adjustability at horizontal axis
- Projection sizes up to 350 mm
- Ideal for staggered patterned facades
- Anchors are fixed to channels with lock nuts and hex bolts
- Suitable for installation at horizontal joints



HMP-ALU-SP Aluminium Sub Channel System

- Easy to assemble sub channel system with special slotted aluminium channels
- Slots on the channels allow easy installation of special type Speed fix anchors.
- Quick and fast installation with self tapping screws.
- Projection sizes of up to 300 mm
- Ideal for restoration of facades



HCSP5
Channel
Support



HCRS5
Channel
Restraint



ALU-BX
Aluminium
Channel



ALU-RL
Aluminium
Channel



HZ-UU-SP
Z Anchor



HCSP-6
Channel
Support



HCSP-6
Channel
Restraint



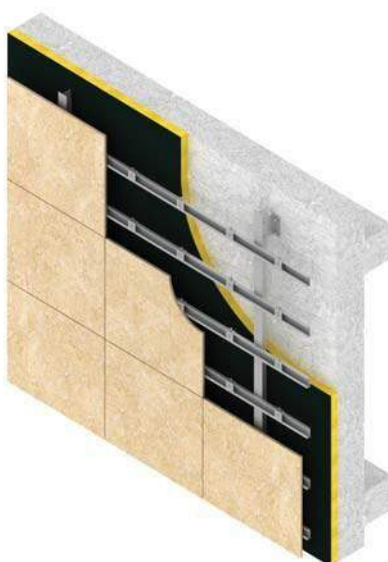
ALU-RL
Channel



HZ-SP
Z Anchor

HMP-ALU-P Aluminium Sub Channel System

- Channel system formed with vertical and horizontal aluminium channel grid
- Used for thin panels such as ceramic, HPL, fibre cement and stone panels
- Projection sizes up to 250 mm
- Panels are installed with undercut bolts and special brackets that are set on the vertical channels using the hang on method



HMP-ALU-AG/K Aluminium Sub Channel System

- Channel system formed with vertical and horizontal aluminium channel grid
- Used stone panels width mm 2 cm thickness that have slotted kerf openings on the edge
- Projection sizes up to 300 mm
- Panels are installed with kerf shaped aluminium brackets that are fixed on to the horizontal aluminium channels with hang on method



HCS-A
Channel
Support



ALU-T
T Vertical
Channel



ALU-V
Horizontal
Channel



ALU-AG
Special
Bracket



HC-SF
Channel
Support



HCRS1
Channel
Restraint



HMPC
C Channel

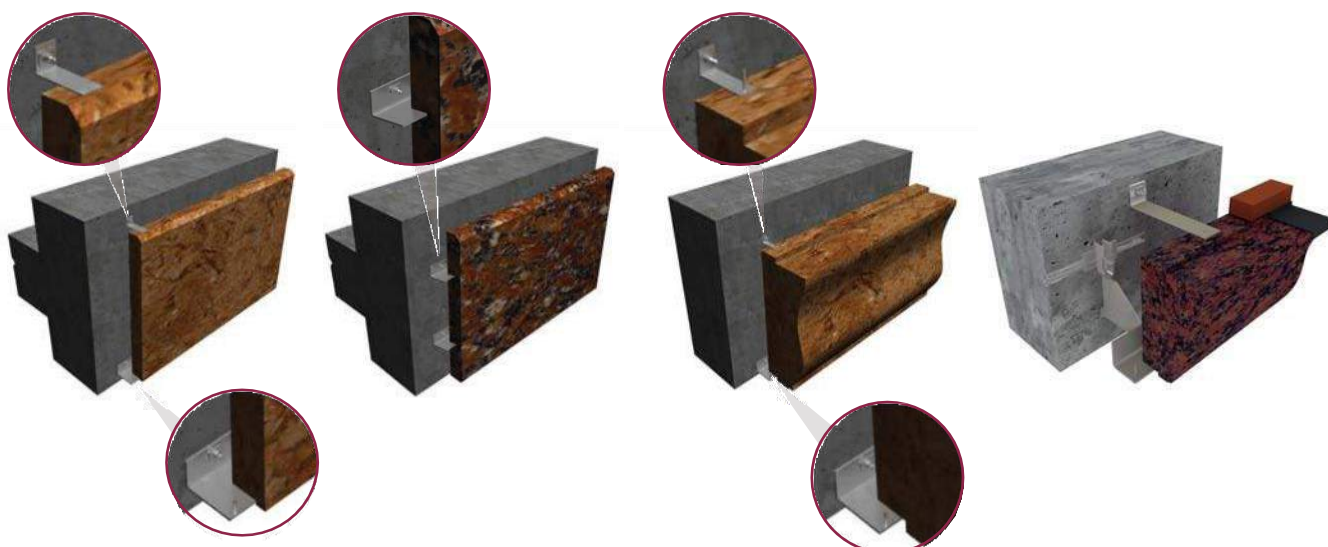


HM-AG-K
Special
Bracket

Fixing Systems For Heavy Corbel Stones - Product Range

Fixing systems for the installation of high load natural stone or reconstructed stone are available in a variety of types and size ranges. The actual system proposal will be made according to the technical requirements of the project. The use of these fixing systems is for high load coping and cornice stones. Load bearing and restraint anchors are used to install the slabs on to different wall backings using a variety of attachment methods.

Application Examples



Heavy Load Bearing Anchors

HMS-UP



HMCS-SB/P



HMCS-DB



HAMF



Restraint Anchors

HA-RST



HA-RST/K



HA-RST/KB



HAZ21



Periscope Anchors

HPC1



HPC2



HPC3



HPC4



Fixing Systems For Heavy Corbel Stones - Introduction

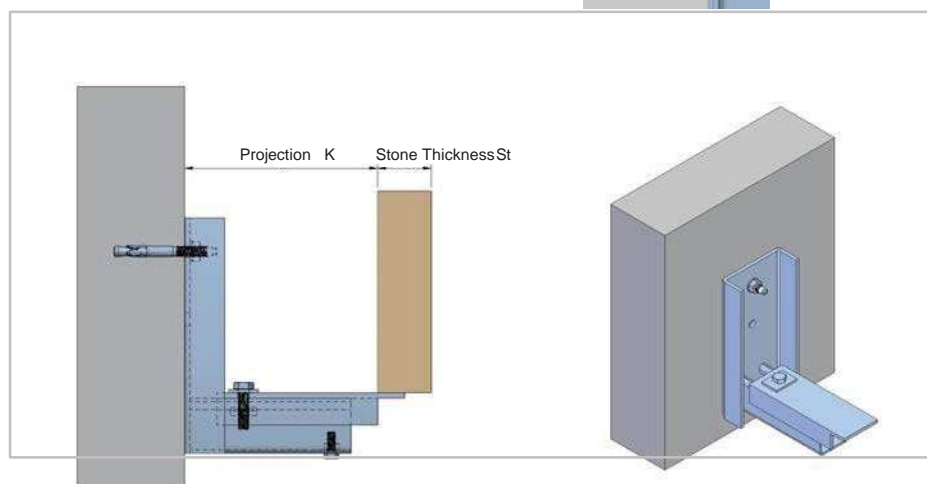
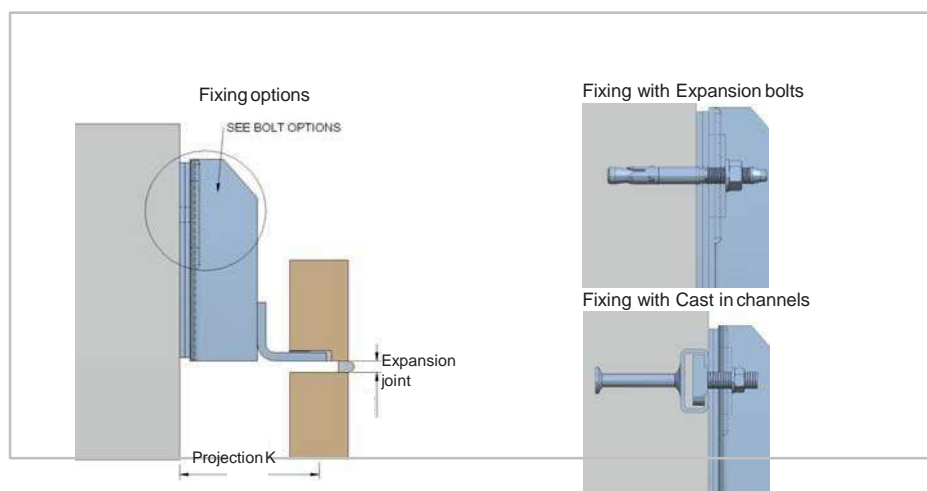
Load Bearing Anchors

Heavy Duty brackets used for load bearing are fixed on to load bearing concrete walls. The two main methods that are usually used for attachments are either by anchor bolts or cast in channels.

Both cast in channels and anchors bolts specified according to the load requirements of the projects and must be structurally verified according to the loads concerned on the project.

Heavy Duty brackets have limited adjustability to take the irregularities of the walls. An accepted method is use of shims to adjust the projection sized by up to 5 mm.

Greater adjustability can be achieved by special design as illustrated on the diagram on the right. An adjustable plate can be adapted to adjust in and out the distance of the projection size.



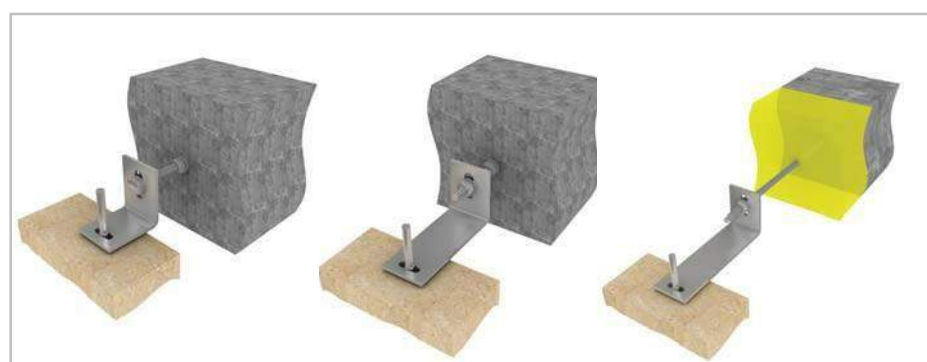
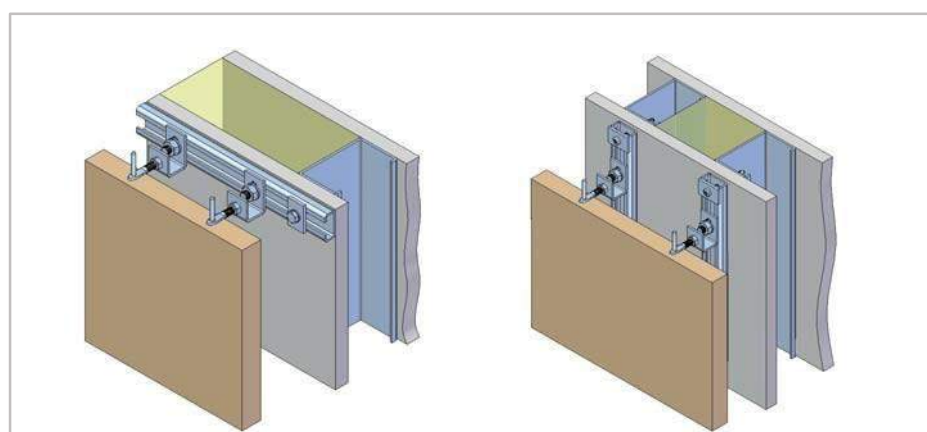
Restraining Brackets

There are many systems to be used for restraining the stone slabs that are supported on a corbel system. Channel systems can be used as they are suitable to be fixed on commonly used steel sections.

Restraint anchors or wall ties can be easily fixed on to the channel at desired position which enables greater flexibility and easiness in installing the slabs.

Restraint brackets are used for restraining stone slabs directly on to wall backings. There are various types of brackets that can be used for quick and easy installation.

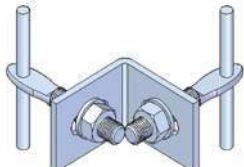
Depending on the cavity and the existence of insulation on the wall, different type of restraint brackets are preferred for installation.



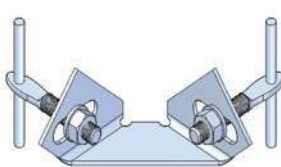
HCA Corner Anchors - Product Details

- For fixing small slabs on to supported facade slabs.
- Used for reveal, column, soffit and sill slabs.
- Slabs can be assembled in the work shop for faster installation on site.
- Special drilling is required on the slabs, details of which are shown at the bottom of the page.

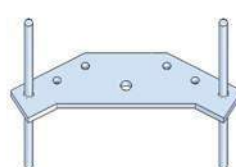
HCA01 Corner Anchor



HCA02 Corner Anchor



HCA03 Corner Anchor



HCA01 Application

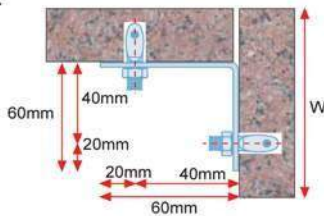
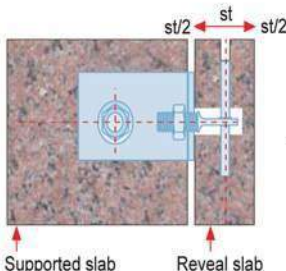
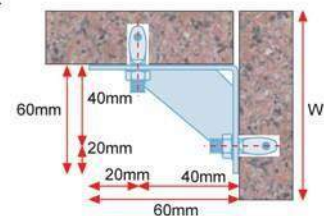
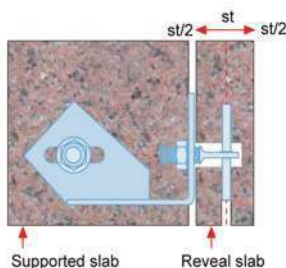
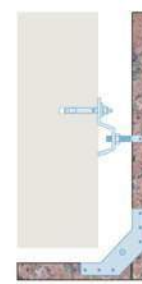
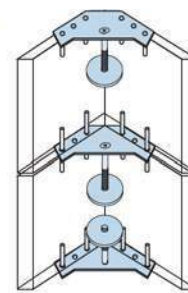
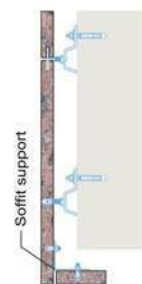
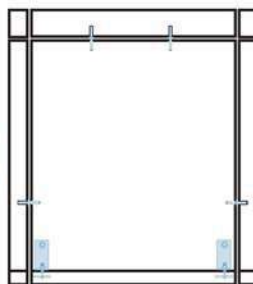
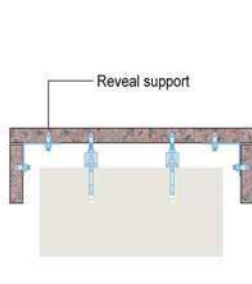
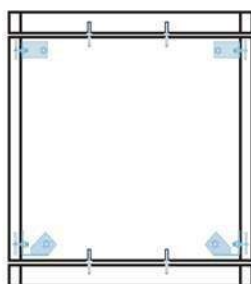
Reveal slabs can be connected to the supported slabs at columns. In this instance HCA01 corner anchors are used as load bearing and HCA02 are used as restraint.

HCA02 Application

Soffit slabs can be connected to the supported slabs at parapets. In this instance only HCA02 corner anchors are used as restraint.

HCA03 Application

This anchor is used to fasten two slabs together at corners. The disk is inserted at a split edge on the slab. A special bolt is fixed between the anchor and the disk which firmly connects the slabs together.



Product Code	Technical Details				
	Reveal Size	Vertical Load	Wind Load	Adjustable Arm	Straight Pin
	StxWxL cm	(N)	(N)	(mm)	(mm)
HCA01	3(4)x10x45	38(50)	40	M8x45	ø5x80
	3(4)x15x60	76(100)	50		
	3(4)x20x75	130(170)	60		

Product Code	Technical Details				
	Reveal Size	Vertical Load	Wind Load	Adjustable Arm	Straight Pin
	StxWxL cm	(N)	(N)	(mm)	(mm)
HCA02	3(4)x10x45	38(50)	40	M8x45	ø5x80
	3(4)x15x60	76(100)	50		
	3(4)x20x75	130(170)	60		

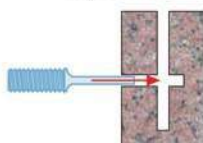
Special Drilling for HCA01 & HCA02 Corner Anchors

Special drilling is done to the slabs at the upper face and at the back. The drilling must be done precisely as shown on the illustration. The adjustable arm inserted from the back of the stone meets the pin which is inserted from the edge surface of the stone.

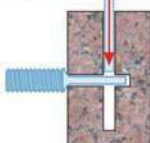
1. Drilling



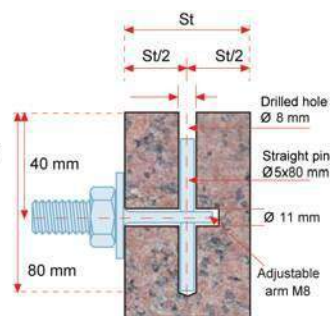
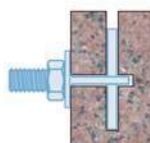
2. Placement of Adjustable arm



3. Placement of straight pin



4. Fixing of anchor

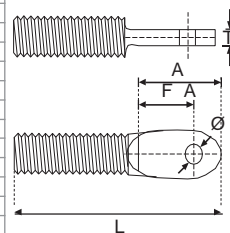


HAZ Accessories - Product Details

HAA Adjustable Arm



Product Code	Technical Detail						Stone Thickness	Distance Between Edge & Hole
	Metric Size	Length	Flat length Size	Flattening Thickness	Pin Diameter			
	M (mm)	L (mm)	AF (mm)	T (mm)	Ø (mm)			
HAA-8/50	8	50	A+6	3	4		20	12-13
HAA-8/60	8	60	A+6	3	4		25	14-16
HAA-8/70	8	70	A+6	3	4		30	16-17
HAA-10/50	10	50	A+8	3.5	5		40	22-24
HAA-10/60	10	60	A+8	3.5	5		50	26-29
HAA-10/70	10	70	A+8	3.5	5			
HAA-10/80	10	80	A+8	3.5	5			
HAA-12/50	12	50	A+8	4.5	5			
HAA-12/60	12	60	A+8	4.5	5			
HAA-12/70	12	70	A+8	4.5	5			
HAA-12/80	12	80	A+8	4.5	5			
HAA-14/50	14	50	A+8	5.5	6			
HAA-14/60	14	60	A+8	5.5	6			
HAA-14/70	14	70	A+8	5.5	6			
HAA-14/80	14	80	A+8	5.5	6			
HAA-16/50	16	50	A+8	6	6			
HAA-16/60	16	60	A+8	6	6			
HAA-16/70	16	70	A+8	6	6			
HAA-16/80	16	80	A+8	6	6			



Type B : With Welded Pin



Type C : With Welded Plate



Type D : With Welded Plate & Pins



Type E : With Welded Shim



HFP Flanged Pin



Product Code	Technical Details		
	Diameter	Length	Flange Diameter
	Ø (mm)	L (mm)	FØ (mm)
HFP-4/50	4	50	5
HFP-5/60	5	60	6
HFP-5/70	5	70	6
HFP-6/70	6	70	7

HSW Serrated Washer



Product Code	Technical Details			
	Thick-ness	Height	Width	Length
	T (mm)	H (mm)	W (mm)	L (mm)
HSW-22307	2.5	22	30	Ø7
HSW-22309	2.5	22	30	Ø9
HSW-263411	3	26	34	Ø11
HSW-263413	3	26	34	Ø13

HTP Traced Pin



Product Code	Technical Details		
	Diameter	Length	Trace Height
	Ø (mm)	L (mm)	TH (mm)
HTP-5/70	5	70	5.2
HTP-6/75	6	75	6.2

HPW Plain Washer



Product Code	Technical Details			
	Thick-ness	Height	Width	Length
	T (mm)	H (mm)	W (mm)	L (mm)
HPW-22307	2.5	22	30	Ø7
HPW-22309	2.5	22	30	Ø9
HPW-263411	3	26	34	Ø11
HPW-263413	3	26	34	Ø13

HSP Straight Pin



Product Code	Technical Details	
	Diameter	Length
	Ø (mm)	L (mm)
HSP-4/60	4	60
HSP-5/60	5	60
HSP-5/70	5	70
HSP-6/70	6	70

HMLN Lock Nut



Product Code	Technical Details			
	Thick-ness	Height	Width	Metric Hole
	T (mm)	H (mm)	W (mm)	M (mm)
HMLN-6	6	20	34	M6
HMLN-8	8	20	34	M8
HMLN-10	9	20	34	M10
HMLN-12	10	20	34	M12

HUP U Shaped Pin



Product Code	Technical Details		
	Diameter	Height	Width
	Ø (mm)	L (mm)	W (mm)
HUP-4/50	4	20	50
HUP-5/50	5	25	50
HUP-6/50	6	30	50

HSM Shim Plate



Product Code	Technical Details			
	Thick-ness	Height	Width	Slot Hole
	T (mm)	H (mm)	W (mm)	Ø x SL
HSM-4030-7	2	40	30	7x20
HSM-4030-9	2	40	30	9x25
HSM-4050-11	3	40	50	11x25
HSM-4050-13	4	40	50	13x30

HCP Capped Pin



Product Code	Technical Details		
	Diameter	Cap Diameter	Length
	Ø (mm)	ØC (mm)	L (mm)
HCP-4/35	4	6	35
HCP-5/40	5	7	40
HCP-6/45	6	8	45

HPT Plastic Tube



Product Code	Technical Details		
	Inner Diameter	Outer Diameter	Length
	In. Ø (mm)	Ou. Ø (mm)	L (mm)
HPT-4	4.5	6	30
HPT-5	5.5	7	40
HPT-6	6.5	8	40

• Material : Stainless Steel 1.4301 (A2) & 1.4401 (A4). Material for Plastic Tube: Polyacetal.

HB Anchor Bolts - Product Details

HB01 Sleeve Bolt

Application

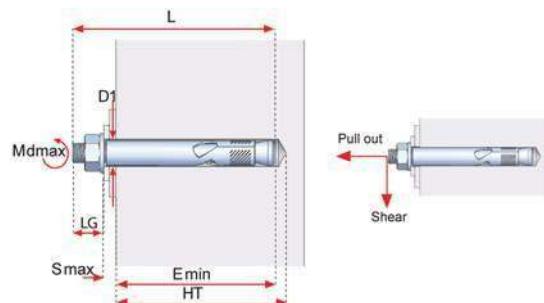
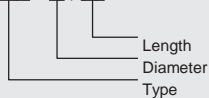
For fastening fixtures to concrete strength class C20/25 & solid concrete block walls.

Available in

Stainless Steel EN 1.4301 & 1.4401 (AISI 304 & AISI 316) and E.galvanized Mild Steel.

Product Code Example

HB01 - 6 / 80



Product Code	Technical Details									Working Resistance (kN)			
	Bolt Size	Sleeve Size	Drill Hole Dia.	Drill Length	Min. Embedment	Max. Fixture Thickness	Fixture Hole Dia.	Max Torque	Bolt Length	Concrete Blockwork Wall		C20/25 Concrete Wall	
	(mm)	(mm)	D (mm)	HT (mm)	E min. (mm)	Smax (mm)	D1 (mm)	Mdmax (Nm)	L (mm)	Pullout	Shear	Pullout	Shear
HB01-6/80	M6X80	Ø8x60	8	55	45	10	9	7	80	2.50	0.84	4.29	5.43
HB01-8/80	M8X80	Ø10x60	10	55	45	10	11	15	80	2.89	1.04	6.85	9.89
HB01-10/80	M10X80	Ø12x60	12	55	45	10	13	30	80	3.00	1.24	7.72	15.60
HB01-12/100	M12X100	Ø16x78	16	75	65	10	17	45	100	3.20	1.40	8.00	16.10

HB03 Through Bolt

Application

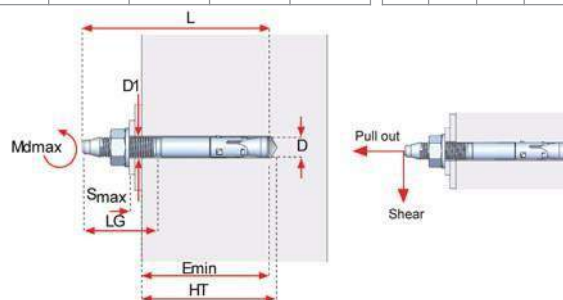
For fastening fixtures to concrete strength class C20/25 & solid concrete block walls.

Available in

Stainless Steel EN 1.4301 & 1.4401 (AISI 304 & AISI 316) and E.galvanized mild steel.

Product Code Example

HB03 - 8 / 80



Product Code	Technical Details									Working Resistance (kN)	
	Bolt Size	Drill Hole Dia.	Drill Length	Min. Embedment	Max. Fixture Thickness	Fixture Hole Dia.	Max Torque	Bolt Length	Thread Length	C 20/25 Concrete Wall	
	(mm)	D (mm)	HT (mm)	E min. (mm)	Smax (mm)	D1 (mm)	Mdmax (Nm)	L (mm)	LG (mm)	Pullout	Shear
HB03-8/80	M8X80	8	65	47	23	9	13	80	30	4.11	6.50
HB03-8/100	M8X100	8	65	47	43	9	13	100	45		
HB03-8/120	M8X120	8	65	47	63	9	13	120	65		
HB03-10/90	M10X90	10	70	65	17	11	25	90	35	6.47	9.70
HB03-10/110	M10X110	10	70	65	37	11	25	110	45		
HB03-10/130	M10X130	10	70	65	57	11	25	130	65		
HB03-12/110	M12X110	12	95	80	15	13	40	110	35	9.64	12.40
HB03-12/135	M12X135	12	95	80	40	13	40	135	40		
HB03-12/145	M12X145	12	95	80	50	13	40	145	40		

HB05 Shell Bolt

Application

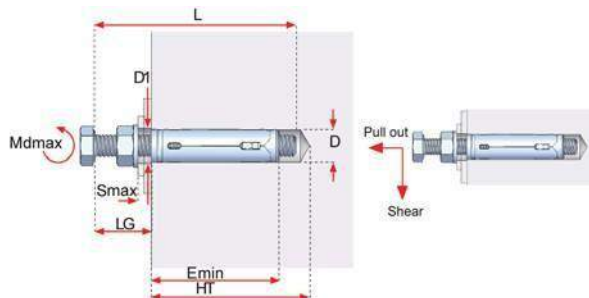
For fastening fixtures to concrete strength class C20/25 & solid concrete block walls.

Available in

Stainless steel EN 1.4301 & 1.4401 (AISI 304 & AISI 316)

Product Code Example

HB05 - 6 / 80



Product Code	Technical Details									Working Resistance (kN)			
	Bolt Size	Shell Size	Drill Hole Dia.	Drill Length	Min. Embedment	Max. Fixture Thickness	Fixture Hole Dia.	Max Torque	Bolt Length	Concrete Blockwork Wall		C20/25 Concrete Wall	
	(mm)	(mm)	D (mm)	HT (mm)	E min. (mm)	Smax (mm)	D1 (mm)	Mdmax (Nm)	L (mm)	Pullout	Shear	Pullout	Shear
HB05-6/80	M6X80	Ø10X59	10	65	40	30	7	7	80	3.50	3.30	4.20	3.30
HB05-8/80	M8X80	Ø12X44	12	80	45	21	9	15	80	4.10	6.70	6.15	6.70
HB05-10/100	M10X100	Ø15X50	15	90	55	30	11	25	100	5.20	11.00	9.50	11.00

HB Expansion Bolts - Product Details

HB06 Drop in Bolt

Application

For fastening fixtures to concrete walls.

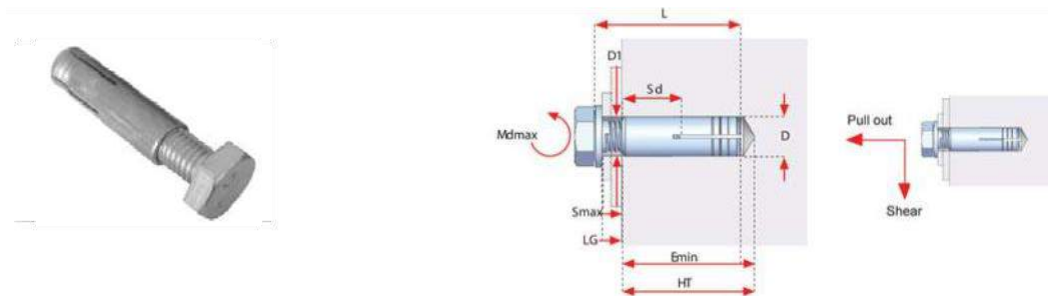
Available in

Stainless Steel EN 1.4301 & 1.4401 (AISI 304 & AISI 316) and E.galvanized mild steel.

Product Code Example

HB06 - 6

M. Size
Type



Setting tool:

Product Code	Technical Details										Working Resistance (kN)	
	Bolt Size	Shell Size	Drill Hole Dia.	Drill Length	Min. Embedment	Max. Fixture Thickness	Fixture Hole Dia.	Max Torque	Screw in Depth Min/Max		C20/25 Concrete Wall	
	(mm)	(mm)	D (mm)	HT (mm)	E min. (mm)	Smax (mm)	D1 (mm)	Mdmax (Nm)	Sd (mm)		Pullout	Shear
HB06-6	M6X20	Ø8x25	8	28	25	11	7	4	6/10		2.00	1.78
HB06-8	M8X25	Ø10x30	10	33	30	13	9	8	11/17		3.20	3.30
HB06-10	M10X30	Ø12x40	12	43	40	17	11	15	13/19		4.35	3.90
HB06-12	M12X35	Ø14x50	14	53	50	18	13	35	15/21		6.00	6.80

HB07 Anchor Stud

Application

For fastening fixtures to concrete walls.

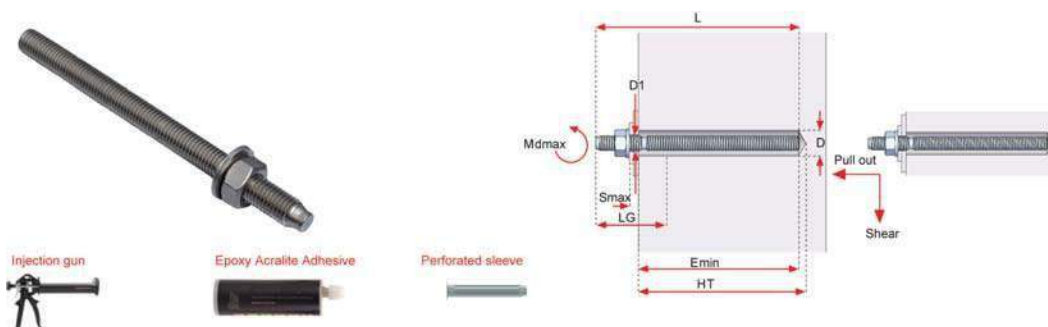
Available in

Stainless Steel EN 1.4301 & 1.4401 (AISI 304 & AISI 316) and E.galvanized Mild Steel.

Product Code Example

HB07 - 8 / 80

Length
Diameter
Type



Product Code	Technical Details								Working Resistance (kN)	
	Bolt Size	Drill Hole Dia.	Drill Length	Min. Embedment	Max. Fixture Thickness	Fixture Hole Dia.	Max Torque	Bolt Length		C20/25 Concrete Wall
	(mm)	D (mm)	HT (mm)	E min. (mm)	Smax (mm)	D1 (mm)	Mdmax (Nm)	L (mm)		Pullout Shear
HB07-8/110	M8X110	10	82	80	14	9	7	110		6.33 4.25
HB07-10/130	M10X130	12	92	90	21	11	15	130		9.15 7.17
HB07-12/160	M12X160	14	115	110	28	13	25	160		13.52 10.00

HB09 HAZ Super

Application

For fastening fixtures to natural stone

Available in

Stainless Steel EN 1.4301 & 1.4401 (AISI 304 & AISI 316)

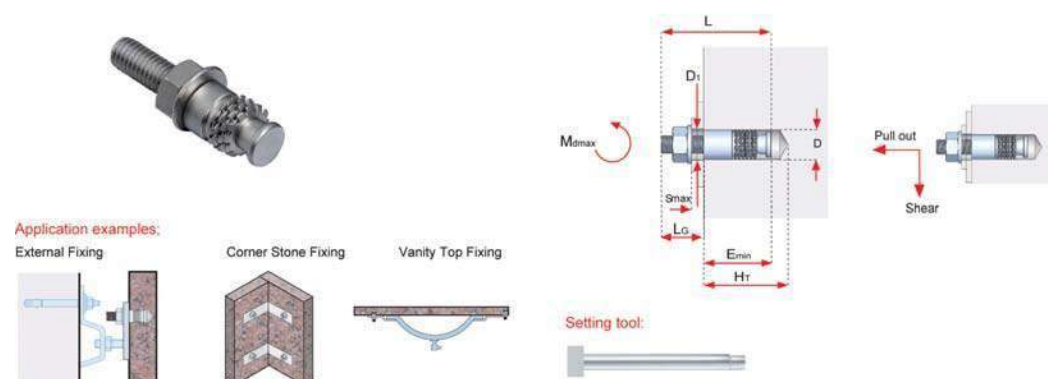
Advantages

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

Product Code Example

HB09 - 24 / 30

Length
Size
Type



Product Code	Technical Details										Working Resistance (kN)			
	Bolt Size	Stone Thickness	Drill Hole Dia.	Drill Length	Min. Embedment	Max. Fixture Thickness	Fixture Hole Dia.	Max Torque	Bolt Length	Thread Length		Hard Granite	Soft Marble	
	(mm)	St (mm)	D (mm)	HT (mm)	E min. (mm)	Smax (mm)	D1 (mm)	Mdmax (Nm)	L (mm)	(mm)		Pullout	Shear	Pullout Shear
HB09-24/30	M8X30	20	12	12	12	5	9	13	30	18		1.40	3.00	1.00 2.10
HB09-48/45	M8X45	30	12	22	22	5	9	13	45	23				
HB09-72/60	M8X60	40	12	32	32	5	9	13	60	28				