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Sistemas y conexiones para el prefabricado de hormigón >

Depending on the microns of the zinc protection, the properties of the stainless steel and referring to the **Table 5** of **ISO 14713-1** and **Table A.1** of **EN1993-1-4**, two different tables have been made.
The first one, relates the surface tratment with the service life depending on the exposure class.
The second one, gives guidance for selecting suitable grades from a corrosion point of view.

DURABILITY DEPENDING ON SURFACE TREATMENTS

ENVIRONMENTAL DESIGNTATION	CORROSIVITY	SURFACE TREATMENT	SERVICE LIFE OF THE ELEMENTS (IN YEARS)					
			0-10	10-20	20-30	30-40	40-50	> 50
C1	Very low	Electrolytic zinc plated						80 years
		Sendzimir galvanized						200 years
		Hot-dip galvanized						650 years
C2	Low	Electrolytic zinc plated		12 years				
		Sendzimir galvanized			30 years			
		Hot-dip galvanized						93 years
C3	Medium	Electrolytic zinc plated	4 years					
		Sendzimir galvanized	10 years					
		Hot-dip galvanized			30 years			
C4	High	Electrolytic zinc plated	2 years					
		Sendzimir galvanized	5 years					
		Hot-dip galvanized		15 years				
C5	Very High	Electrolytic zinc plated						
		Sendzimir galvanized	2 years					
		Hot-dip galvanized	8 years					

DURABILITY DEPENDING ON STAINLESS STEELS

STEEL GRADE	TYPE OF ENVIRONMENT AND CORROSION CATEGORY											
	RURAL			URBAN			INDUSTRIAL			MARINE		
	LOW	MID	HIGH	LOW	MID	HIGH	LOW	MID	HIGH	LOW	MID	HIGH
AISI 304	Y	Y	Y	Y	Y	(Y)	(Y)	(Y)	X	Y	(Y)	X
AISI 316	O	O	O	O	Y	Y	Y	Y	(Y)	Y	Y	(Y)

Corrosion conditions
Low: Least corrosive conditions for that type of environment. For example cases tempered by low humidity or low temperatures .
Mid: Fairly typical for that type of environment .
High: Corrosion likely to be higher than typical for that type of environment. For example, increased by persistent high humidity, high ambient temperatures or particularly aggressive air pollutants.

Key
O: Potential over-specification from a corrosion point of view.
Y: Probably the best choice for corrosion resistance and cost.
X: Likely to suffer excessive corrosion.
(Y): Worth considering provided that suitable precautions are taken (i.e. specify a relatively smooth surface and then cany out regular washing).

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SURFACE TREATMENTS

Depending on the exposure class, it is necessary to apply a specific type of steel and surface treatment suitables for each scenario
The different options that Noxifer offers in its catalogue are specified below:

- Without surface treatment
- Electrolytic zinc plate according to UNE EN ISO 2081
- Sendzimir galvanized steel DX51D+Z275 according to UNE-EN 10346
- Hot-dip galvanized according to UNE-EN ISO 1461
- Stainless Steel AISI 304
- Stainless Steel AISI 316

In the next table, there are defined the different surface treatments availables for each product

KEY		- = Non available treatment		X = Standard treatment		O = Non-standard treatment	
ARTICLE CODE		SURFACE TREATMENT OR STEEL GRADE					
		Without surface treatment (SP)	Electrolytic zinc plate (ZE)	Sendzimir galvanized (GS)	Hot-dip galvanized (GC)	Stainless Steel AISI 304 (I304)	Stainless Steel AISI 316 (I316)
FACADE ANTI-ROLL ATTACHMENTS	Profile NOXI C	-	-	X	-	O	-
	Profile NOXIR	-	-	-	X	X	-
	Profile NOXI S	-	-	-	X	O	-
	UPA	-	X	-	O	-	-
	UPA-TL	-	X	-	O	O	O
	UPA-C	-	X	-	O	-	-
	UPA-CTL	-	X	-	O	O	O
	COFI	-	X	-	O	-	-
	COFI-TL	-	X	-	O	O	O
	OCULFIX10	-	X	-	O	O	O
	OCULFIX20	-	X	-	O	O	O
	OCULFIX30	-	X	-	O	-	-
	OCULFIX40	-	X	-	O	-	-
	GRAP	-	X	-	O	O	O
FACADE SUPPORT BRACKETS	MA	-	-	-	X	O	O
	VR-MA	-	X	-	X	X	-
	CMA	-	X	-	O	O	-
	MI-SOL	-	X	-	O	-	-
	MI-ST	-	X	-	O	-	-
	CMI	-	X	-	O	-	-
PURLIN ATTACHMENTS	C100	-	-	X	-	X	O
	C200	-	-	X	-	X	O
	CTI	-	X	-	O	O	O
	CTE	-	X	-	O	O	O
	BIG-80	-	-	X	O	X	O
	BIG-80CR	-	-	X	O	X	O
	BIG-200	-	-	X	O	X	O
	PCC	-	-	X	-	-	-
S.E.C	PBA	O	O	-	O	-	-
H.S.S	SOPRA	O	O	-	O	O	-
SCREWS	TF	-	X	-	O	X	-
	AF	-	X	-	X	-	-
	Standard screws	-	X	-	O	O	-

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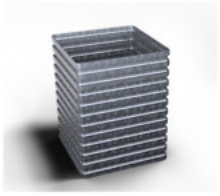
FOUNDATIONS

SLEEVED FOUNDATIONS

SLEEVE RIBBED SLEEVES
TAP-BEINA SLEEVE CAPS

EMBEDDED FOUNDATIONS

CUBIX POCKETS USED AS NON-RECOVERABLE FORMWORK



BOLTED FOUNDATIONS

TN ANCHOR BOLTS USED FOR BOLTED FOUNDATIONS
AR COLUMN SHOE USED FOR BOLTED FOUNDATIONS
PPR WALL SHOE USED FOR BOLTED FOUNDATIONS

FACADE ANTI-ROLL ATTACHMENTS

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PROFILE **NOXI R**
PROFILE **NOXI S**

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ANCHOR **COFI-TL**

ANCHOR **UPA**
ANCHOR **UPA-TL**
ANCHOR **UPA-C**
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ANCHOR **GRAP**

OCULFIX 10
OCULFIX 20
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SANDWICH PANEL

LATTICEWORK **CEL**

CONNECTOR **PIN**

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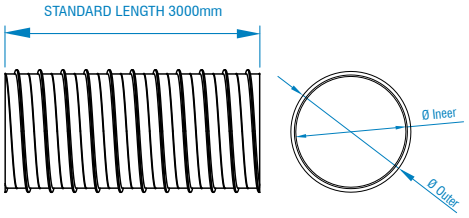
SLEEVE

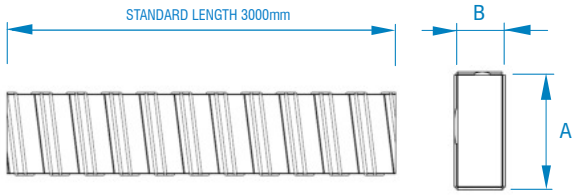
Metal ribbed tube used in concrete connections.

SLEEVE

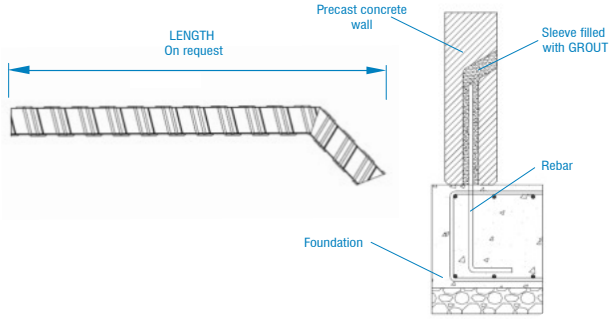


Code		Diameter Inner/Outer
BEINA51	Steel sleeve	51/57
BEINA63	Steel sleeve	63/69
BEINA75	Steel sleeve	75/81
BEINA81	Steel sleeve	81/87
BEINA90	Steel sleeve	90/99
BEINA100	Steel sleeve	100/109
BEINA120	Steel sleeve	120/129
BEINA130	Steel sleeve	130/139
BEINA140	Steel sleeve	140/149
BEINA160	Steel sleeve	140/149

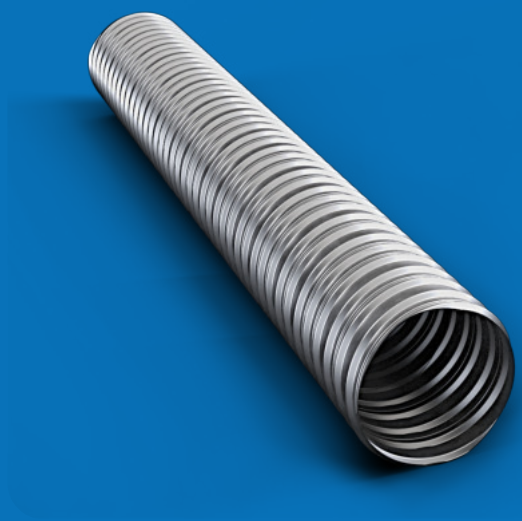
* Possibility of manufacturing in different lengths on request



Código		Side A/B
BEINA60-40	Rectangular steel sleeve	60/40
BEINA80-40	Rectangular steel sleeve	80/40
BEINA80-50	Rectangular steel sleeve	80/50
BEINA90-40	Rectangular steel sleeve	90/40
BEINA100-60	Rectangular steel sleeve	100/60
BEINA120-80	Rectangular steel sleeve	120/80
BEINA140-70	Rectangular steel sleeve	140/70
BEINA130-80	Rectangular steel sleeve	130/80
BEINA140-90	Rectangular steel sleeve	140/90
BEINA150-80	Rectangular steel sleeve	150/80
BEINA160-100	Rectangular steel sleeve	160/100
BEINA170-100	Rectangular steel sleeve	170/100



* Possibility of manufacturing in different lengths on request



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SLEEVE

INSTRUCTIONS FOR USE

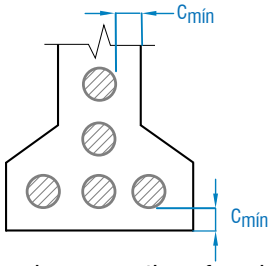
1. Selecting the diameter anf length of the sleeve on their use:

1.1.Placement in concrete element for prestressing steel housing (mainly post-tensioning).

1.1.1. Length of the sleeve according to the desing development of post -tensioned reinforcement in the concrete member, be concreted on site or prefabricated.

1.1.2. Diameter of the sleeve depending on the equivalent diameter of the post-tensioned reinforcement assembly.

1.1.3. Coverings for post-tensioned active reinforcements. According to Article 4.4.1 of the standard EN1992-1-1.



Value of minimum cover $C_{mín.}$:
minimum 40 mm and maximum 80 mm..

1.2. Placement structural connections, as they can be connections foundation columns, columns splicing,rigid joints column / girder, ...

1.2.1. Calculation of the **anchor length** of the ribbed bar (or groups of bars) should / must be anchored within the sleeve. To define the length of the anchor must follow the requirements of section 8.4 of the standard EN1992-1-1. **It is recommended that the length of the sleeve is longer than a length of 100mm anchor calculated.**

1.2.2. Selecting the diameter of the sleeve depending on the diameter of the ribbed bar or group of bars which will be housed within the sleeve. If groups of bars, the equivalent diameter is defined by Article 8.9.1 of the standard EN1992-1-1.

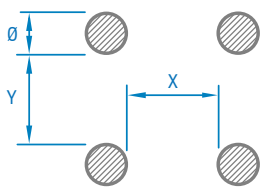
1.2.2.1. According criteria, it is recommended that a minimum coating over filling mortar,as well as defining a tolerance of execution on site. In general cases can be considered a **sleeve diameter 50/60 mm more than the bar diameter or equivalent diameter of the group of bars**

($Ø_{sleeve\ mín.} = Ø_{bar} + 50mm$; $Ø_{sleeve\ mín.} = Ø_{equivalent\ bars} + 50mm$).

As a first estimate, it is considered the direct relation relevant subsequent verification must be performed.The length and actual diameter of the sleeve should be checked according to each case loads, it involves determining the adhesion tension between corrugated sleeve and outer concrete surrounding it (inside is supposed with high strength mortar).

2. 2.1. Separation between sleeves:

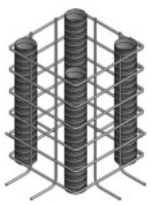
2.1.1 As defined in Article 70.2.2.3 and 70.2.2.4 of the EHE-08 standard must comply with specific minimum distances between the sleeves (or between adjacent sleeve and armor) for proper placement and compaction of the concrete.



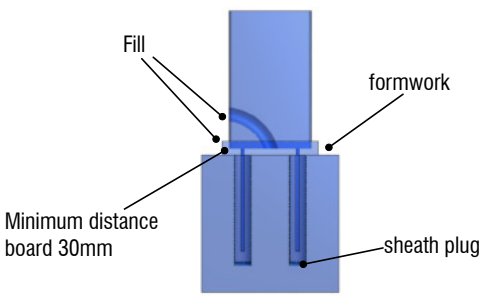
Separation X and Y:
If sleeve diameter is less than 60 mm, the distance minimum therebetween will be 60mm, in other cases, the distance between sleeves will be equal to or greater than the diameter of the largest of them.

3. 3.1. Execution in site (or factory):

Placing sleeves by placing templates.



Setting the sleeves by spacers and / or reinforcement / (stirrups, bars, ...) to prevent movement during concreting.



Is recommended filling the sleeves mortar without retraction GROUT

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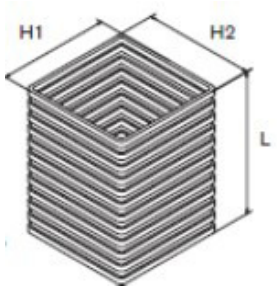
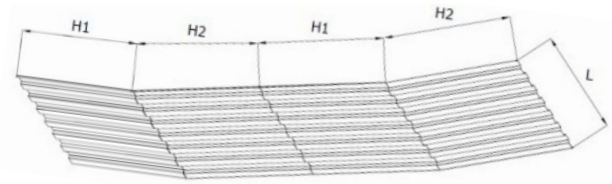
CUBIX

Cubix is a system of non-recoverable formwork for embedding prefabricated concrete structures.
The geometry of the CUBIX allows to obtain a monolithic connection between the column and the foundation.

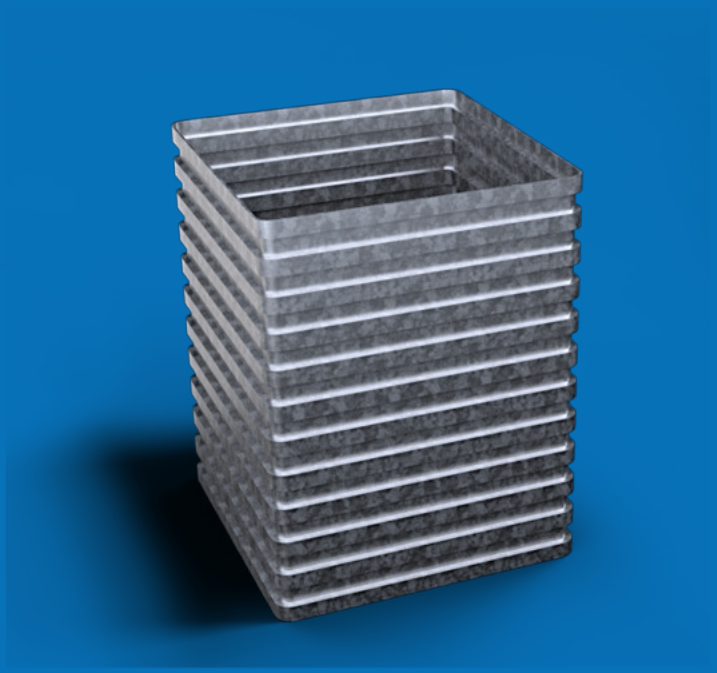
CUBIX



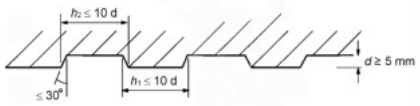
Code	Description
CUBIX	Non-recoverable formwork for the assembly of prefabricated concrete structures.



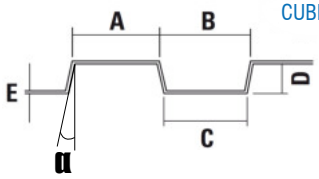
Code	Description
CUBIX-D	Non-recoverable disassembled formwork for the assembly of prefabricated concrete



Technical characteristics according to E.C.2 UNE-EN 1992-1-1: 2010



CUBIX section



LEVEL	CUBIX	EC-2
A	32,8 mm	-
B	34,1 mm	≤10*d=120 mm
C	31,1 mm	-
D	12,0 mm	≥5 mm
E	1,0 mm	-
α	7,13 º	≤30º

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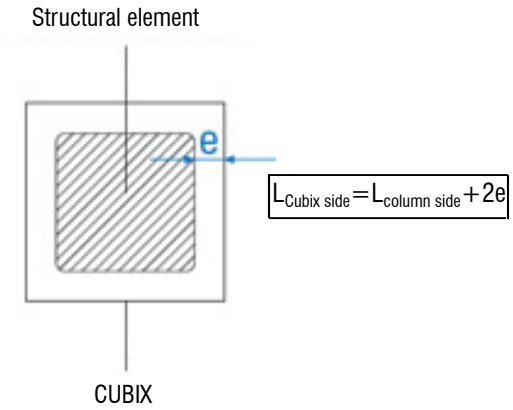
CUBIX

INSTRUCTIONS FOR USE

1. Selection of the CUBIX section based on:
   1.1. Dimensions of the column.
   1.2.

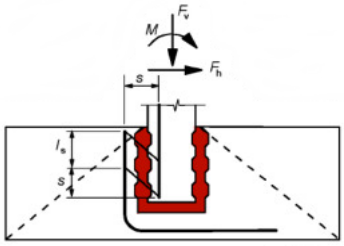
	GROUT	HA-25 or higher
Clearance (e)*	5cm	7,5 cm

*Standard concrete (HA-25 or higher) needs a clearance of 7.5 cm in order to insert a vibrator.



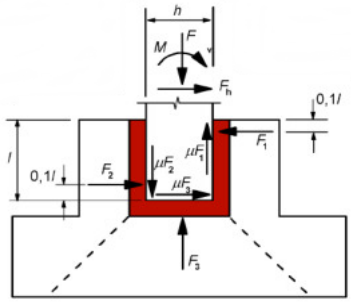
$L_{Cubix\ side} = L_{column\ side} + 2e$

2. Select the "L" edge of the CUBIX according to EHE-08 and / or EC-2.
To be able to consider that a framework works with keys, it is essential to verify that the tension of adherence to work grade does not exceed that of the regulations:
-Article 47.2.1 of the EHE-08
-Article 6.2.5 of EC-2 EN 1992-1-1: 2010
The factors to consider when sizing the CUBIX side based on its behavior are:
2.1. FRAMEWORK WITH TEETH:
2.1.1. Overlap length according to articles 69.5.2.2 of EHE-08 and 8.7.3 of EC-2 UNE-EN 1992-1-1: 2010.
2.2. SMOOTH FRAMEWORK (*):
2.2.1. Column width "h". According to article 59.1.4.3 of EHE-08 and article 10.9.6.3 EC-2 UNE-EN 1992-1-1: 2010 the embedment of the column must be greater than or equal to 1.2 times the longest side of the column section. Recommended 1.5 times the side of the column.
(*) According to article 59.1.4.3 of EHE-08, the friction coefficient "μ" shall not be greater than 0.3



FRAMEWORK WITH TEETH

$L_{CUBIX} = L_{overlap} + S_{reinforced\ concrete\ separation} + clearance$



SMOOTH FRAMEWORK

$L_{CUBIX} \geq 1{,}2 * h$

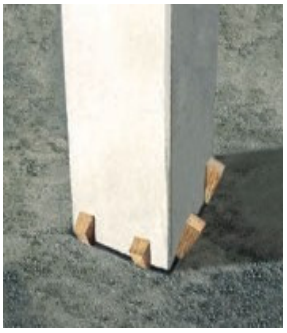
$L_{CUBIX} \geq 1{,}5 * h$

Recomendable

3. CUBIX operation on site.

1. Placement of the CUBIX into the reinforcement.

2. Pour the concrete untill the top of the CUBIX.



3. Place the column in the foundation and fill in the clearance of the filling material.

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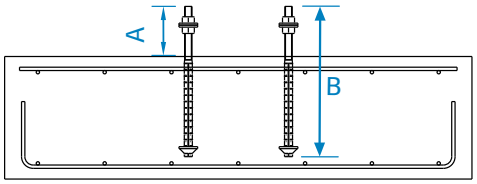
Anchor bolts for the column or beam foundation or other concrete element. For precast concrete structures, metallic structures and machine fastening.

Anchor bolt **TN**

Anchor bolt

TN

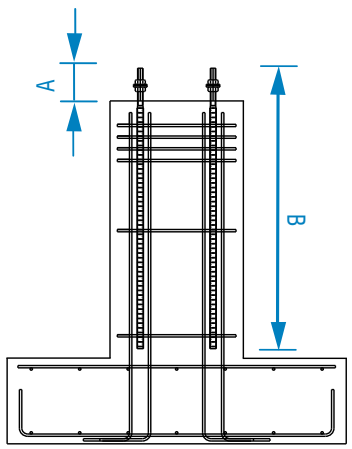
Reduced edge foundations, slab foundation, coronation beams, etc.



Code	A value total length	B value
TN20C	115mm	365mm
TN24C	130mm	450mm
TN30C	150mm	530mm
TN39C	180mm	750mm

* Possibility of manufacturing another "B" value.
* All anchors include two nuts and two washers.

Foundation pilasters, anchor over wall, column connections, etc.



Code	A value	B value
TN20L	115mm	1000mm
TN24L	130mm	1200mm
TN30L	150mm	1500mm
TN39L	180mm	2000mm

* Possibility of manufacturing another "B" value.
* All anchorages include two nuts and two washers.

Washer material: S275JR
Nut material: 8 series
Anchor base material: B500S

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Anchor bolt **TN**

INSTRUCTIONS FOR USE

1 1.1. Anchor selection depending on its capacity (either-or if it is short anchor or long anchor):

	TN20 anchor	TN24 anchor	TN30 anchor	TN39 anchor
Metric (screwed zone)	M20x2.5	M24x3	M30x3.5	M39x4
Efective section screw /Ø sp.	245mm^2/17.66mm	352mm^2/21.17mm	561mm^2/26.72mm	976mm^2/35.25mm
Maximum axial load(1)	96.3 kN	138.7 kN	220.4 kN	383.40 kN
Maximum axial load(2)	31.26 kN	45.04 kN	71.58 kN	124.54 kN
Maximum axial load(3)	6.9 kN	10.8kN	19.21 kN	36.87 kN
Equivalence (4)	Ø 16 / 201mm^2	Ø 20 / 314mm^2	Ø 25 / 491mm^2	Ø 32 / 804mm^2
Wrench	30mm	36mm	46mm	60mm

1) Screwed zone maximum compresion and traction capacity depending on EC3 rule (EN1993-1-8: 2005)
2) Screwed zone maximum cutting capacity to situate a junction with a made stuffing depending on EC3 (EN-1993-1-8: 2005; 6.2.2)
3) Screwed zone maximum cutting capacity without putting stuffing, depending on CEN/TS 1992-1-4-1: 2009: 5.2.3.4 (with lever arm)
4) Direct relation between capacities of screwed anchor and corrugated bar B-500s/sd. Pre-dimensioning.

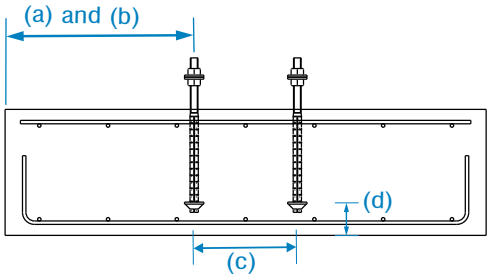
2 2.1. Type of anchor to be used. Short and long version:

2.1.1. **Short anchor version TNC:** ONLY for anchor in concrete, **DO NOT OVERLAP** with reinforcemented bars where anchor will be situated. Ideal for connections on reduced edge foundations (slab foundation,coronation beams, etc.).

2.1.2. **Long anchor version TNL:** Lets the element anchoring and depending on conditions OVERLAP with reinforcement of the zone where anchor will be situated. Ideal for connections as column connections, wall pilasters in situ, big edge foundations, etc.

3 3.1. General application considerations:

3.1.1. **Short anchor version TNC:** Its geometry and functioning, required to accomplish distance conditions from the screw to the foundation edge and between them (when they form a grup, for instance, a column)



	TNC anchor
Axis to edge distance (a)	10xM (Metric)
Minimun distance to edge (b)	3.1xM (Metric)
Minimum distance between anchors (c)	6xM (Metric)
Minimum lower distance (d)	5xM (Metric)

a) Distance defined by concrete cone. If the real distance is lower than 10xM (being M the metric), the cone must be reforced with reinforcement.
b) The real distance between concrete edge and screw axis NEVER CAN BE LOWER than the defined value in the table.
c) Minimum distance between anchors. If the real distance is lower it must be reforced with reinforcement.
d) Anchor inferior distance and foundation inferior face, limitated by puncturing, if the value is inferior you must put a reinforcement.

For more details about the use of the short anchors, contact with the technical department of NOXIFER

3.1.2. **Long anchor version TNL:** In this case, the long bolt is regulated by the habitual conditions of a ribbed bar in a concrete element, so you must follow the prescriptions of the rule EN19921-1-1. Depending on the type of concrete, put the bar in the concreting (good or bad adhesion) concrete recovering (α_2), confinement reinforcement (α_3) and percentage of overlaped bars in the section of study (α_6), the necessary anchor distance is defined for the capacity showed in the table of maximum axial charges and/or the resultant of the calculation in particular.

4 4.1. Placement of the anchors in site (or in factory):

For short anchors and also for long anchors, is necessary a placement template to assegurate that the anchors in the foundations, walls, columns, etc. are well located. The template must guarantee the distance between them and being sufficiently rigid.

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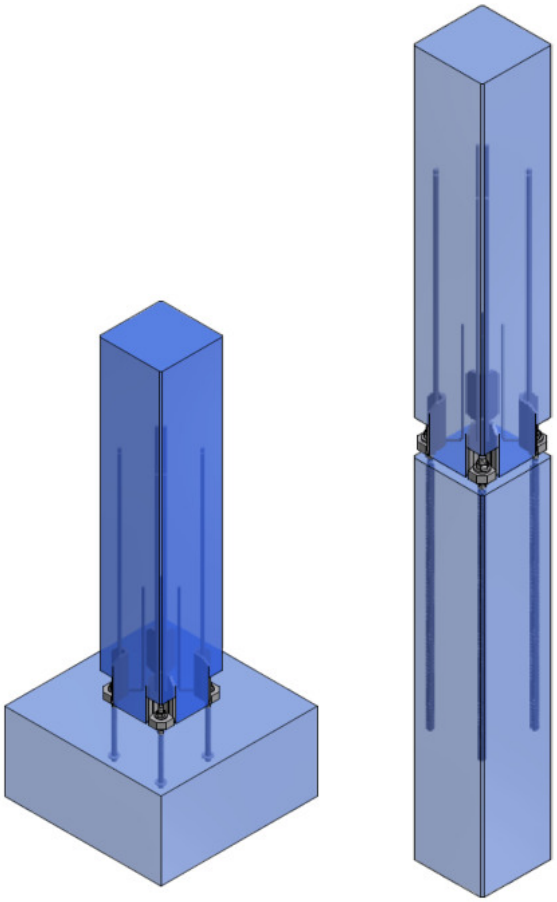
Column shoe **AR**

Examples of use Column shoe:



Code	Description	Color
AR-20	Column shoe 20	Yellow
AR-24	Column shoe 24	Green
AR-30	Column shoe 30	Blue
AR-39	Column shoe 39	Red

* Condition: anchorage and overlap in good condition with HA-30.

For more demanding conditions (concrete HA-25, dynamic loads, etc.), consult technical department NOXIFER.

Rebars material: B500S

Steel sheet material : S355 J2+N

Column shoe capacities on back side.

Column shoe element for bolted connection between the precast concrete column and the foundation or other concrete element (column, wall, main beam, etc.).

Column shoe **AR**

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Column shoe **AR**

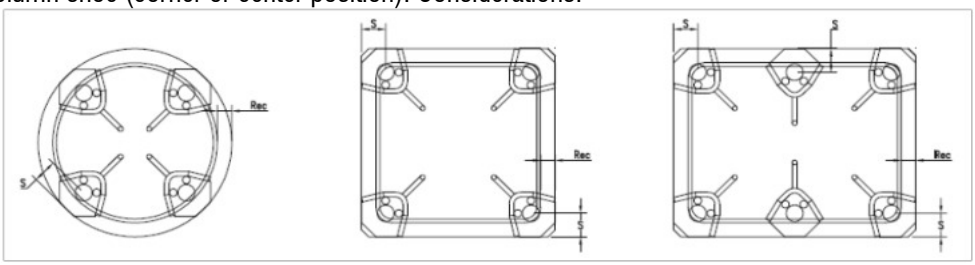
INSTRUCTIONS FOR USE

1 1.1. Column shoe selection by type of capacity, screw anchor or equivalence with armor :

	AR20	AR24	AR30	AR39
Associated screw anchor	TN 20	TN 24	TN 30	TN 39
Foot corrugated bars	2xØ16 / 401 mm^2	2xØ16 / 401 mm^2	2xØ20 / 628 mm^2	2xØ20 / 628 mm^2
Maximum axial load (1)	96.3 kN	138.7 kN	220.4 kN	383.40 kN
Maximum axial load (2)	31.26 kN	45.04 kN	71.58 kN	124.54 kN
Equivalence (3)	Ø 16 / 201mm^2	Ø 20 / 314mm^2	Ø 25 / 491mm^2	Ø 32 / 804mm^2

1) Maximum capacity defined by associated threaded anchor. Standard compression and trancción according to EC3 (EN1993-1-8: 2005)
2) Maximum cutting capacity governed by threaded anchor (filled joint situation made) according to EC3 (EN-1993-1-8: 2005 3.6.1 Tb 3.4).
3) Direct relationship between foot capacity pillar (= screw anchors) and rebar B-500s / sd. Pre-sized.

2 2.1. Using Column shoe (corner or center position). Considerations:



AR Column shoe is designed to be placed in corner and central position; Its geometry can be used even in circular column:

	AR20	AR24	AR30	AR39
Minimum value S. (a)	50 mm	50 mm	50 mm	60 mm
Covering Rec. (b)	15 to 30 mm	15 to 30 mm	15 to 30 mm	15 to 30 mm

a) The minimum distance between Column shoe center hole and outer side of the column. This distance can be increased according to project conditions.
b) Depending on the project requirements (fire resistance or durability according EHE-08 environment or EC2, the coating stirrup weave column could be higher than 30mm. In these cases, the Column shoes must be moved inwards column and increase the value of S. should also be moved to the same extent threaded anchors TN to be coupled with the Column shoe AR.

3 3.1. Application Considerations:

Once you have selected the type and number of Column shoe / anchors according to the project design, the Column shoes should be placed in abutment in the correct position. The Column shoe must be assembled with the column main reinforcement (following the requirements defined in EHE-08 and EC-2), to properly transmit efforts from column to foundation by Column shoes and threaded anchors.

Armor technical details specific document supplement to this prospectus.

For more details about the use of short anchors, consult NOXIFER technical department .

4 4.1. Placing Column shoe in mold (factory):

End tape or template of mold to set Column shoe in the correct position. Column shoe bars are also fixed to the main reinforcement of the column.

Installation boxes Column shoe. With these elements is avoided filling Column shoe areas for later assembly screw anchors TN. These installation boxes must be removed once the column out of the mold and recovering for producing the next column (if boxes are metallic).

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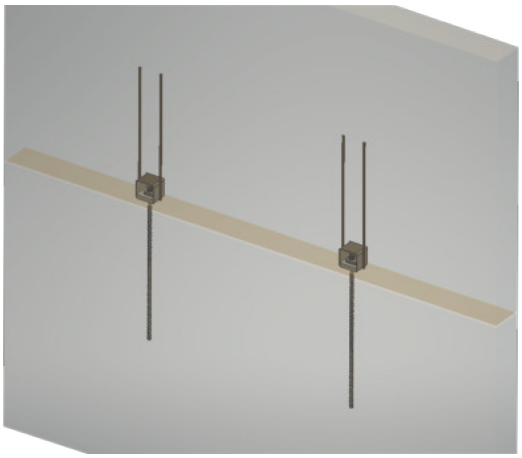
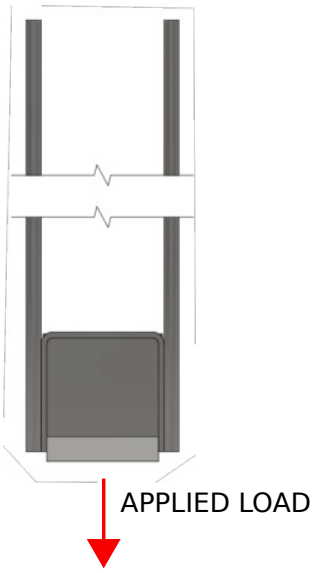
Wall shoe for bolted connections between the precast wall with the foundation or between precast walls.

Wall shoe
PPR





Code	Description	ULS LOAD
PPR-T20	Wall shoe for TN20	96kN
PPR-T24	Wall shoe for TN24	138kN
PPR-T30	Wall shoe for TN30	220kN

ULS Load Depending on the model

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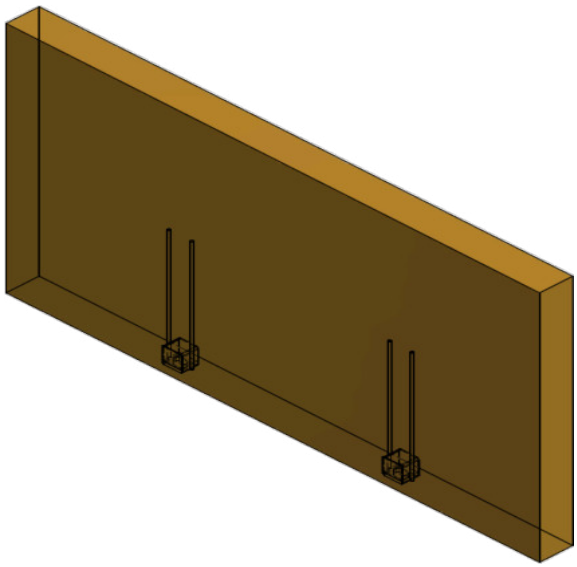
Wall shoe **PPR**

INSTRUCTIONS FOR USE

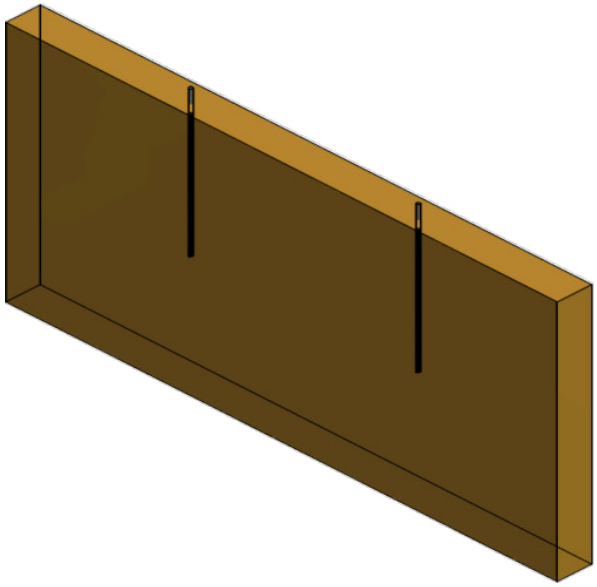
1



1.1.- Place the wall shoe inside the mould and pour concrete making sure that it does not enter in the wall shoe.

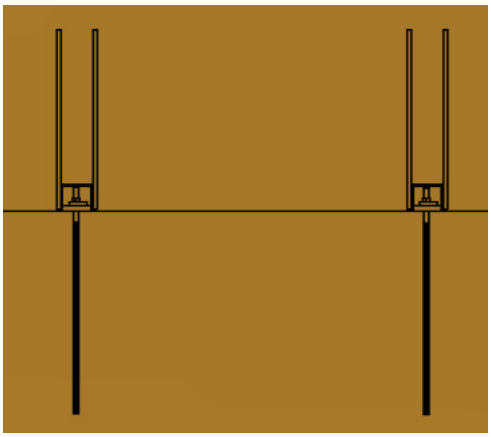
It is possible that, in the same concrete panel, there are placed column shoes AR and anchor bolts TN simultaneosly in the case of having an intermediate facade wall.

2



2.1.- Place the anchor bolts inside the mould and pour concrete.

3



3.1.- Bring the panel closer to the foundation or to another panel and insert the wall shoe PPR into the anchor bolt TN. Once inserted, fix the conection with the squared washer and the screw

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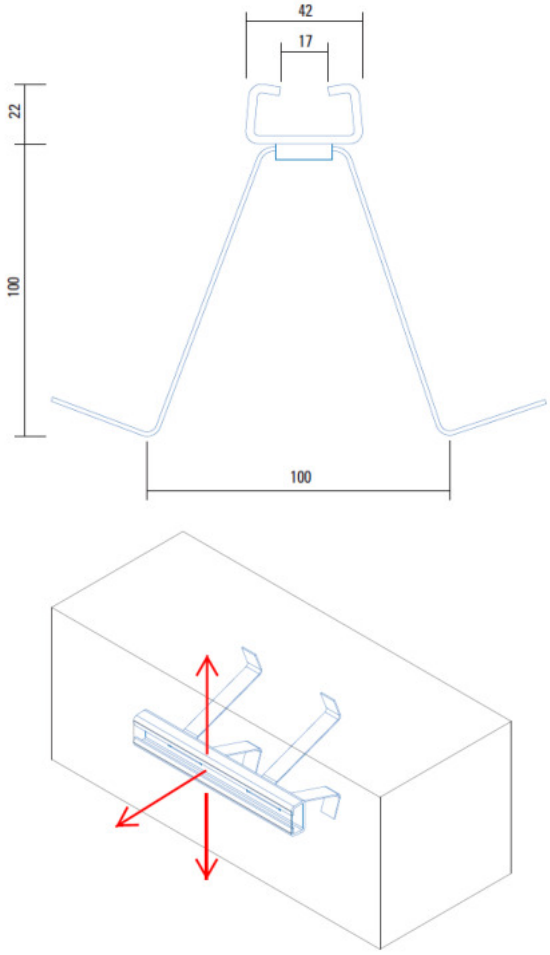
Profile embedded into precast concrete modules through steel sheets.

Profile NOXI C

Profile
NOXI C



Code	Description	Sheets distance
PN240C	Profile NOXI C length 24 cm	120 mm
PN360C	Profile NOXI C length 36 cm	120 mm
PN3000C1	Profile NOXI C length 300 cm	125 mm
PN3000C2	Profile NOXI C length 300 cm	240 mm

* Other lengths available under request.

(1)	**Surface treatment**	Sendzimir galvanized
	Useful load	700 Kg (tension) 1000 Kg (shear)
	Concrete	≥ HA-35

1. Other surface treatment avaible under request.

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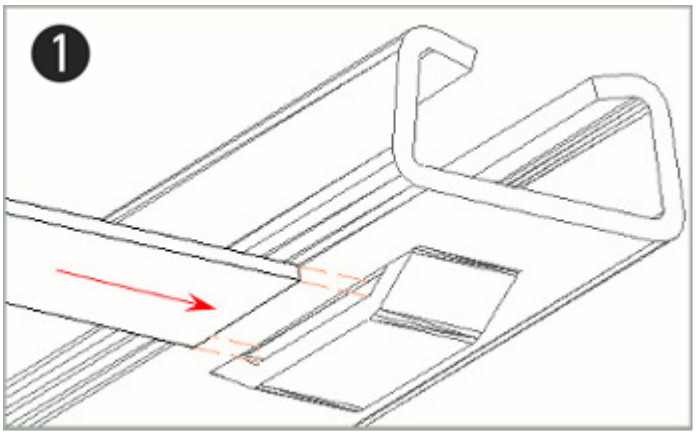
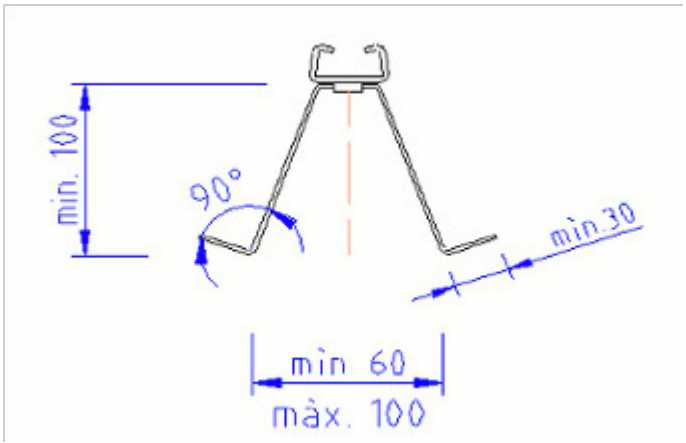
Profile **NOXI C**

INSTRUCTIONS FOR USE

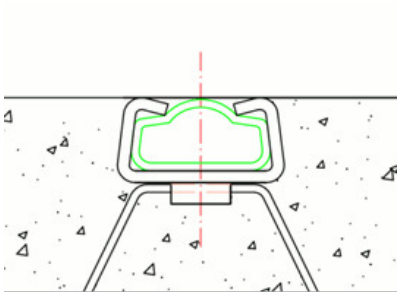


1.1.- Insert the half part of the metal sheet.

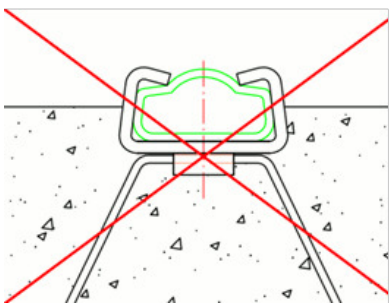


1.2.- Double the sheets according to the measures indicated by NOXIFER, SL.

2



Correct



Incorrect

2.1.- Place the profile according to the instructions provided by the Technical Department.
2.2.- Leave the profile entirely embedded in the concrete and aligned with the upper surface.

3

3.1.- Remove the polystyrene protection, if desired.
(Accessories can be inserted without removing polystyrene)

To continue the assembly sequence all the steps described must be successfully completed

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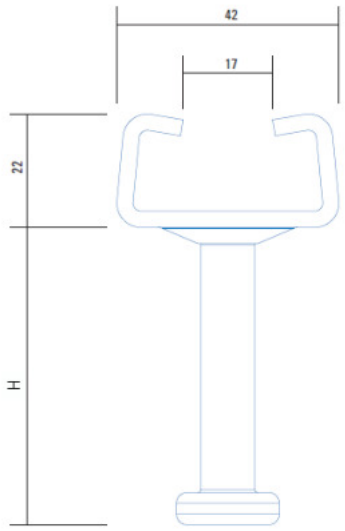
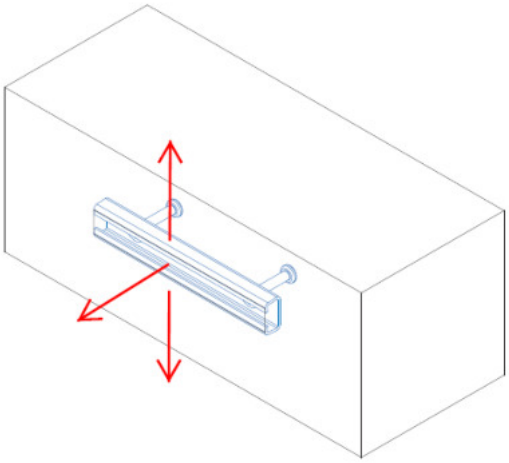
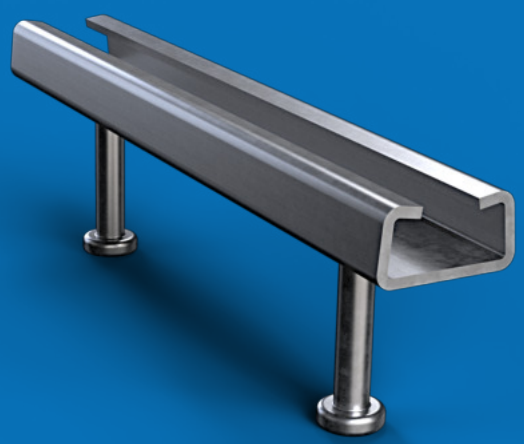
Profile to insert in precast concrete modules using rigid connectors.

Profile NOXI R

Profile NOXI R







Code	Description	Distance between connectors	H
PN240R	Profile NOXI R length 24 cm	160 mm	55 mm
PN240R-P35	Profile NOXI R length 24 cm with 35 cm connectors	160 mm	35 mm

*Other lengths available under request.

(1) Surface treatment Hot-dip galvanized
Service load 1000 Kg (tension) 1000 Kg (shear)
Global Security Coefficient 1.86
Concrete ≥ HA-35

1. Other surface treatment available under request.

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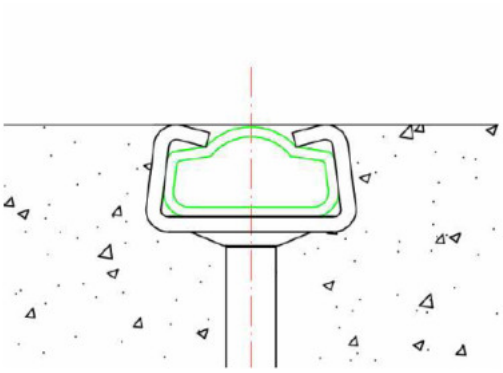
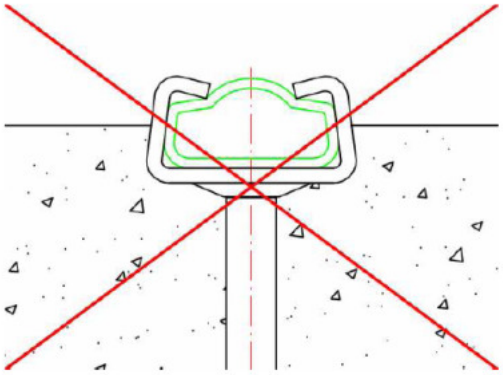
❶



Correct



Incorrect

1.1.- Place the profile according to the instructions provided by the technical department.
1.2.- Leave the profile entirely embedded in the concrete and aligned with the upper surface.

❷

2.1.- Remove the polystyrene protection, if desired.
(Accessories can be inserted without removing polystyrene)

To continue the assembly sequence, all the steps described must be successfully completed..

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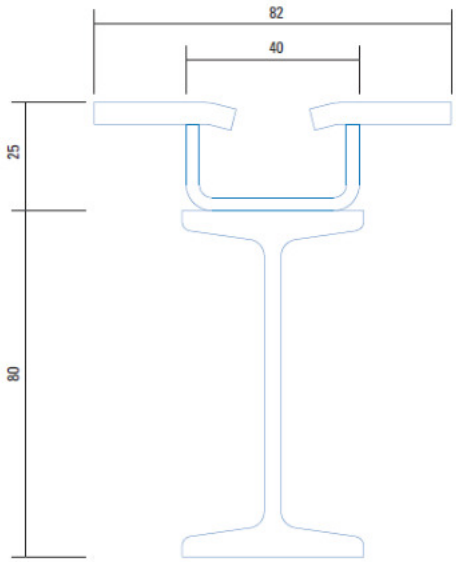

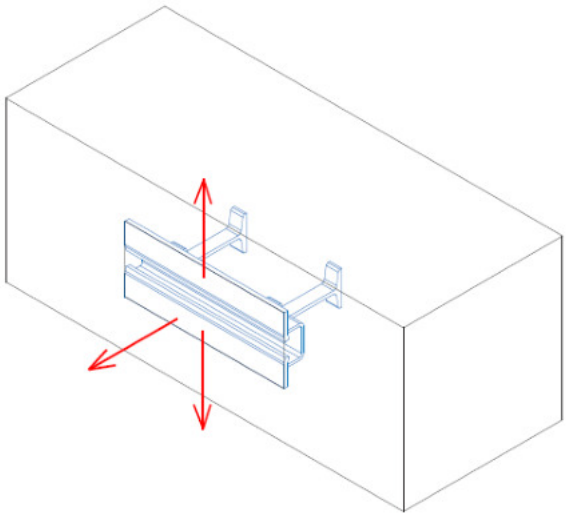

Code	Description	Distance between connectors
PN200S	Profile NOXI S length 20 cm	120 mm

*Possibility of manufacture in different lengths on request.

Surface treatment Hot-dip galvanized
Service load 1800 Kg (tension) 1800 Kg (shear)
Global Security Coefficient 2.22
Concrete ≥ HA-35

Profile to insert into concrete modules using rigid connectors.

Profile NOXI S

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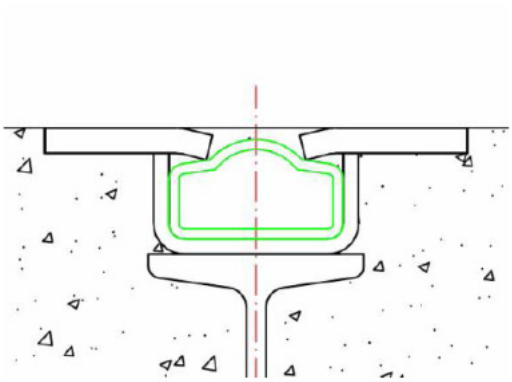
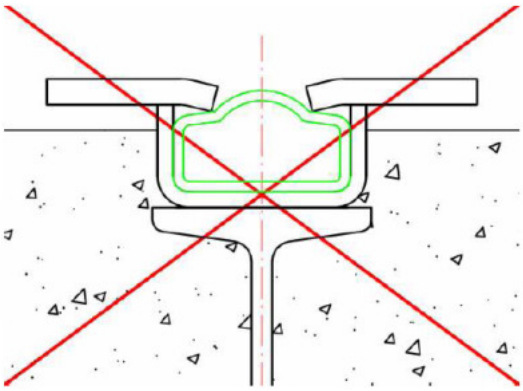
Profile **NOXI S**

1



Correct



Incorrect

1.1.- Position the profile according to the instructions provided by the Technical Department.
1.2.- Leave the profile completely embedded in the concrete and flush with the upper surface.

2

2.1.- Remove the polystyrene protection, if desired.
(Accessories can be inserted without removing polystyrene)

To continue the assembly sequence, all the steps described must be successfully completed.

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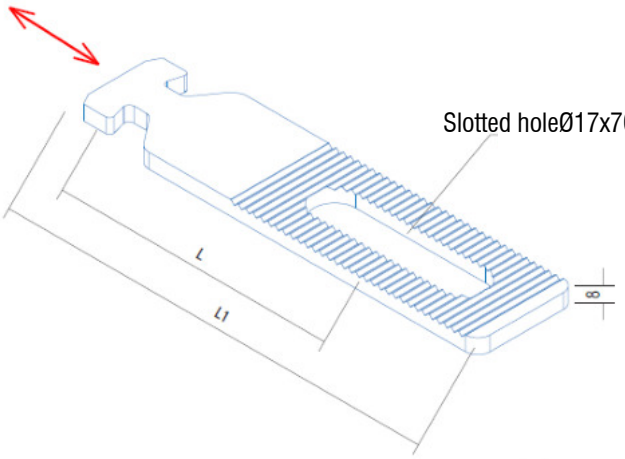
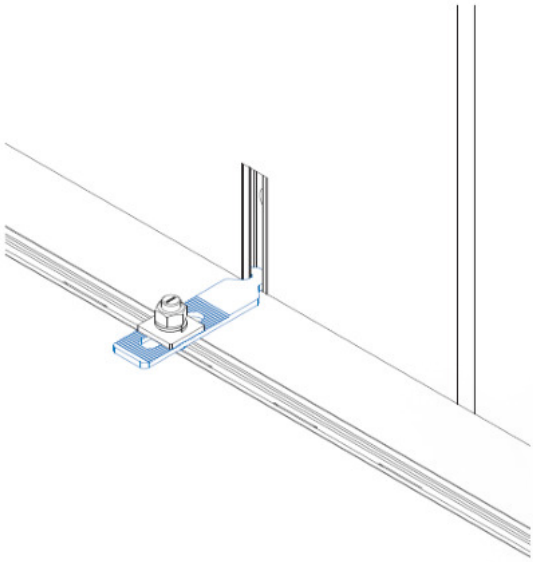
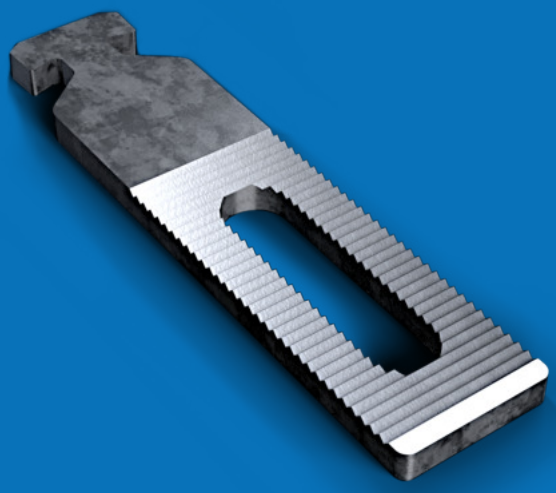
Anchor **COFI**

Accessory for retaining precast concrete elements. Mounting with NOXI profiles, FER screw TF16-40, FER washer AF6 / 16, Glower AG16 washer and T16 nut.
With this system, assembly regulation is achieved in the 3 main axes.





Anchor **COFI**



Code	Description	L	Total length (L1)
COFI120	Anchor COFI length 120 mm	55 mm	120 mm
COFI168	Anchor COFI length 168 mm	100 mm	168 mm
COFI210	Anchor COFI length 210 mm	140 mm	210 mm
COFI243	Anchor COFI length 243 mm	175 mm	243 mm

* Other lengths available under request.

(1) Surface treatment	Electroplated zinc coating
Service load	1000 Kg
Global Security Coefficient	4.7

1. Possibility of supplying in different surface treatments.

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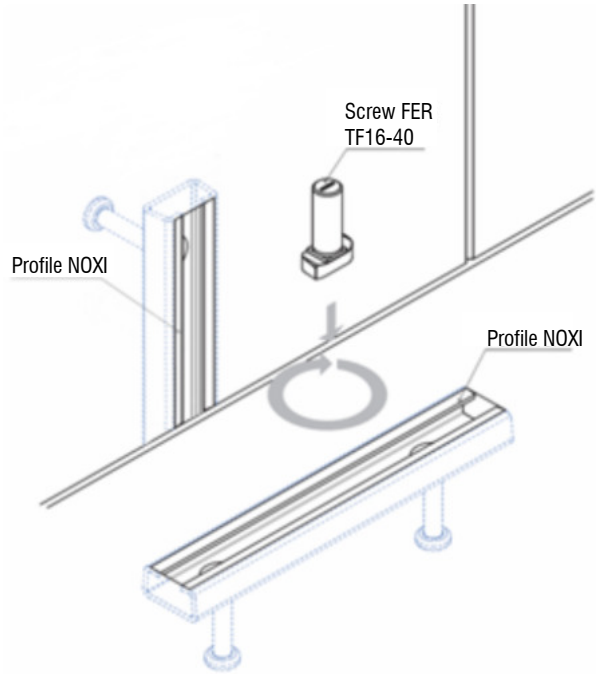
Anchor **COFI**

INSTRUCTIONS FOR USE

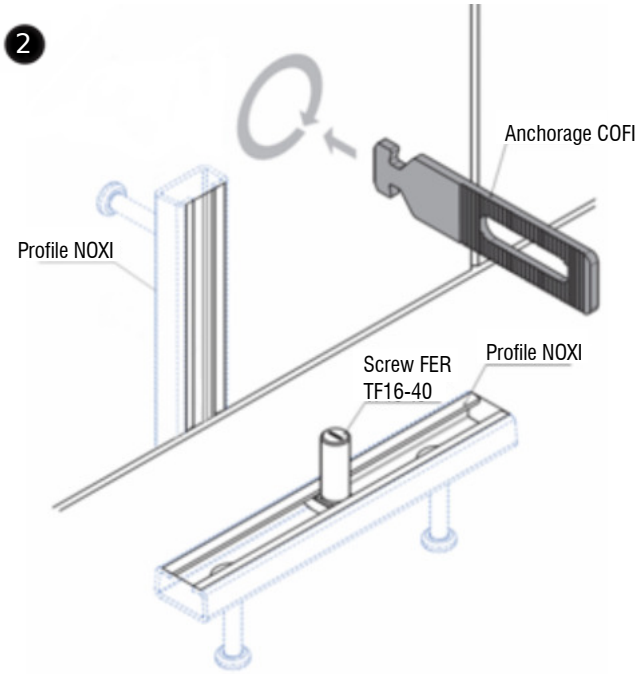
1



1.1.- Placement of the screw FER inside profile NOXI* and 90º turn.

**The profile can be: NOXI C, R o S; depending on the applied load*.

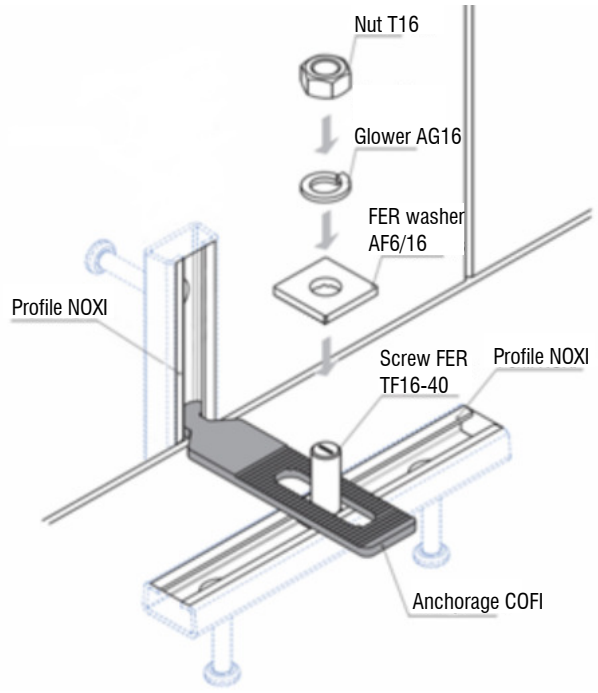
2



2.1.- Placement of the anchorage COFI inside profile NOXI and 90º turn.

2.2.- Assembly of the screw and the anchorage, keeping the serrated part upwards.

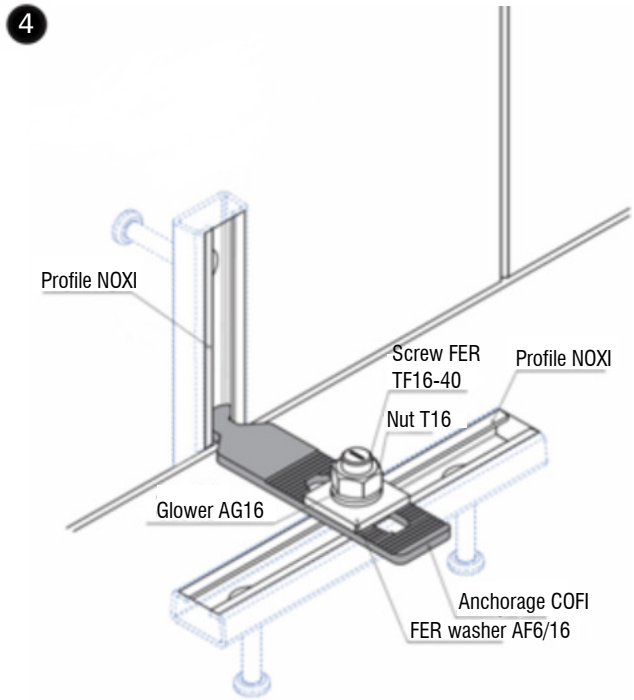
3



3.1.- Fixing og the system using the FER whasher AF6/16, Glower washer AG16 and nut T16.

3.2.- The FER washer must coincide with the COFI's serrated part.

4



4.1.- Tight the nut until to finish the assembly. The Glower washer must be completely flat when finishing the assembly.

4.2.- Checking the correct fixing of all the elements.

To continue the assembly sequence, all the steps described must be successfully completed.

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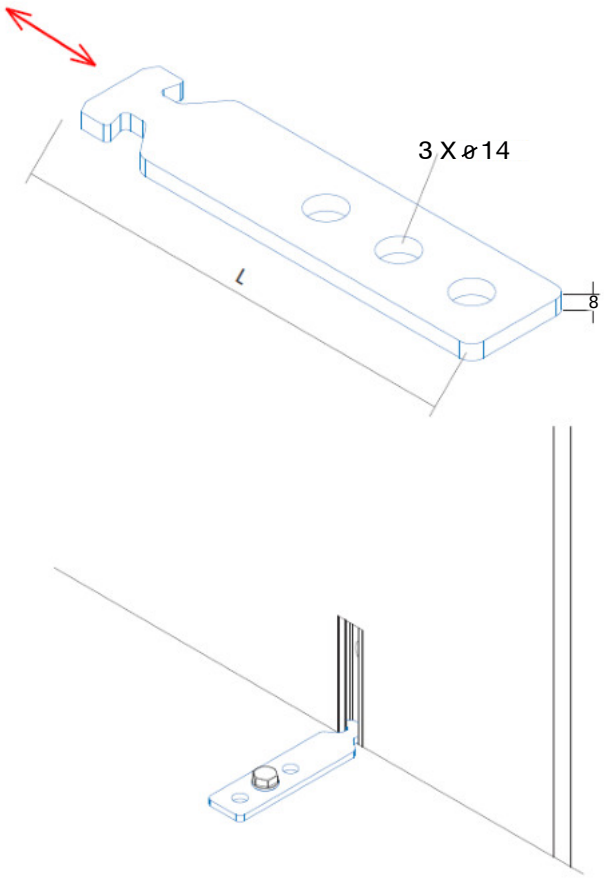


Code	Description	Total Length *L*
COFI-TL120	Anchor COFI-TL length 120 mm	120 mm
COFI-TL168	Anchor COFI-TL length 168 mm	168 mm
COFI-TL210	Anchor COFI-TL length 210 mm	210 mm
COFI-TL243	Anchor COFI-TL length 243 mm	243 mm

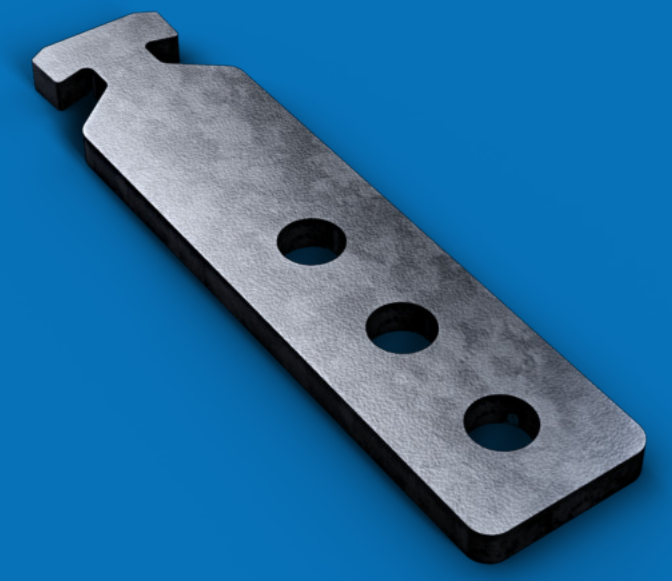
(*) Other lengths available under request
For lengths L> 330 mm, check loads.

(1) Surface treatment	Electroplated zinc coating
Service load	1000 Kg
Global Security Coefficient	4.7

1. Possibility to supply in different surface treatments.

Accessory for retaining precast concrete elements.
Assembly with NOXI profile and expansion anchor.
With this system, assembly regulation is achieved in 2 of the 3 main axes.

Anchor COFI-TL



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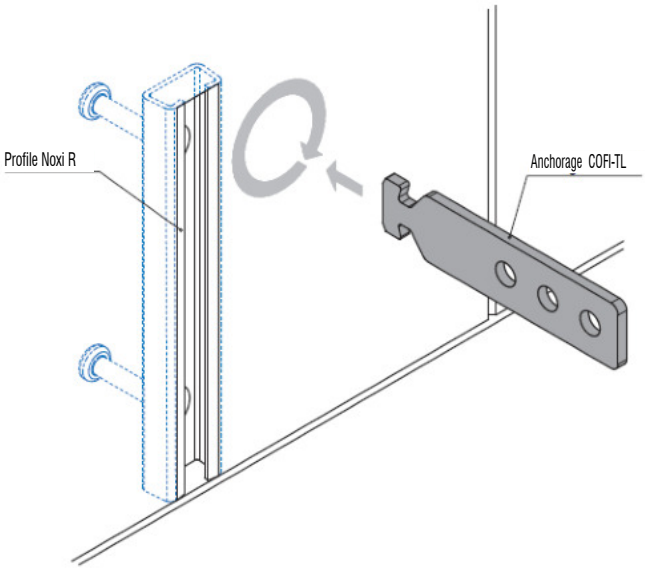
Anchor **COFI-TL**

INSTRUCCTIONS FOR USE

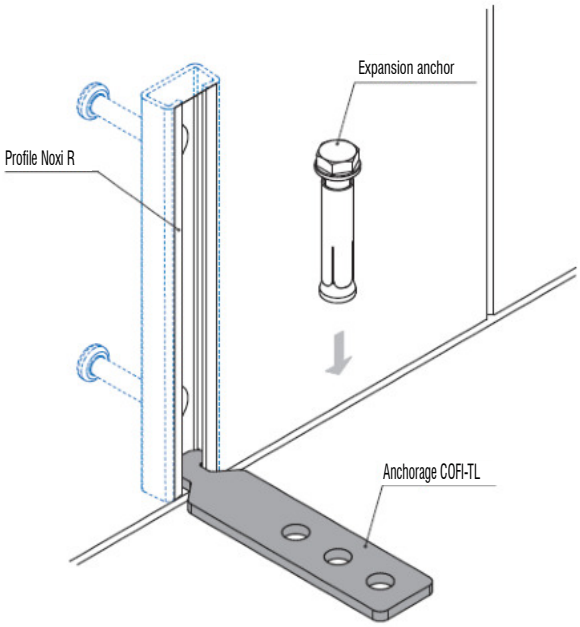
1



1.1.- Place the COFI-TL item into profile and turn it 90 degrees.

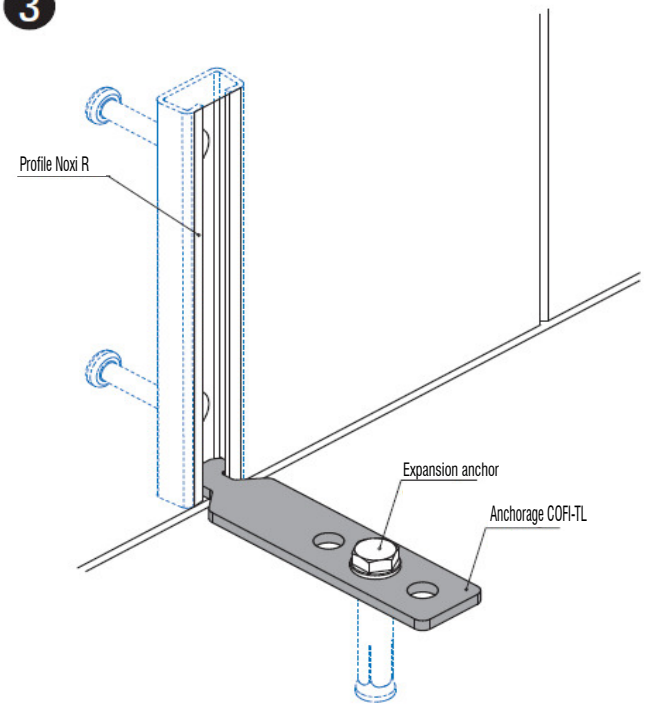
* The profile can be: NOXI C, R or S; depending on the load.

2



2.1.- Drill in order to put the expansion anchor in any of the three holes.
2.2.-Insert the expansive plug through the holes of anchorage and concrete.

3



3.1.- Press the expansion anchor (according to the manufacturer's instructions) to finish the assembly.
3.2.- Final check and assurance of the installation of the expansion anchor.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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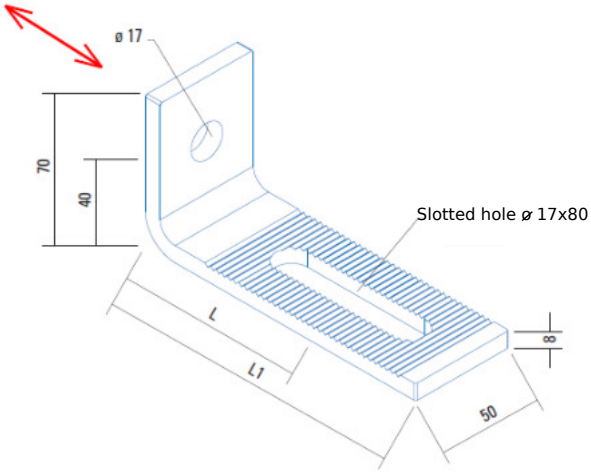
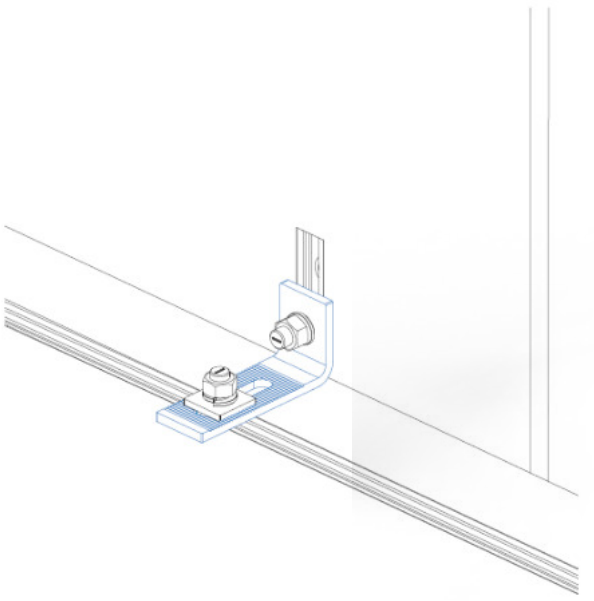




Code	Description	L	Total length (L1)
UPA115	Anchor UPA length 115 mm	70 mm	115 mm
UPA145	Anchor UPA length 145 mm	85 mm	145 mm
UPA320	Anchor UPA length 320 mm	260 mm	320 mm

(*) Other lengths available under request.
For length L1 > 600 mm, ask us for the charge

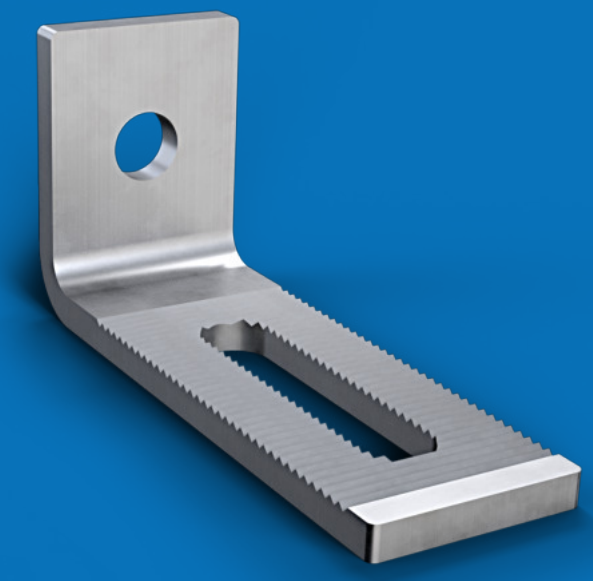
(1) Surface treatment	Electroplated zinc coating
Service load	500 Kg
Global Security Coefficient	1.78

1. Other surface treatment available under request

Accessory for retaining precast concrete elements. Mounting with NOXI profiles, FER screws TF16-40, FER washer AF6 / 16, Glower AG16 washers, A16 washer and T16 nut. With this system, assembly regulation is achieved in the 3 main axes.

Anchor **UPA**

Anchor
UPA



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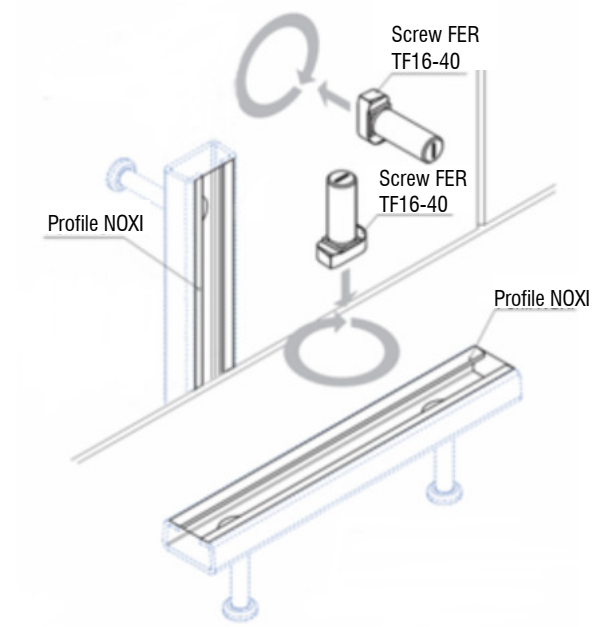
Anchor **UPA**

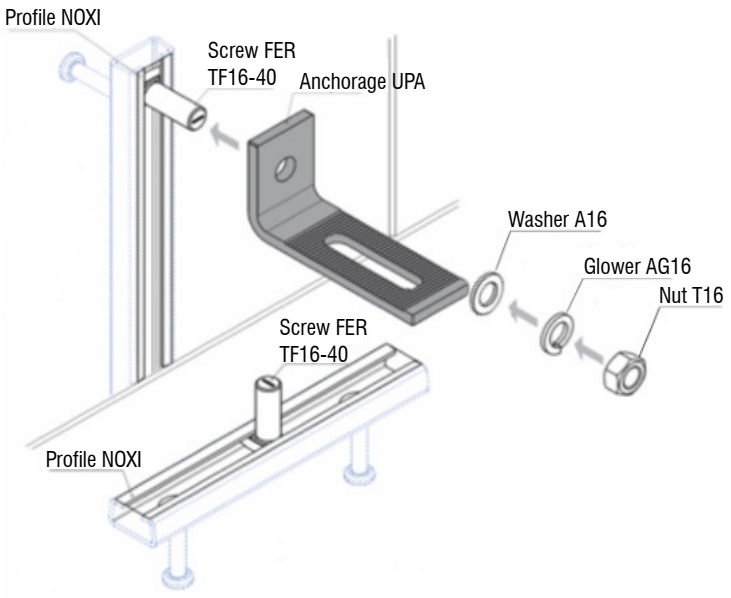
INSTRUCCTIONS FOR USE

1



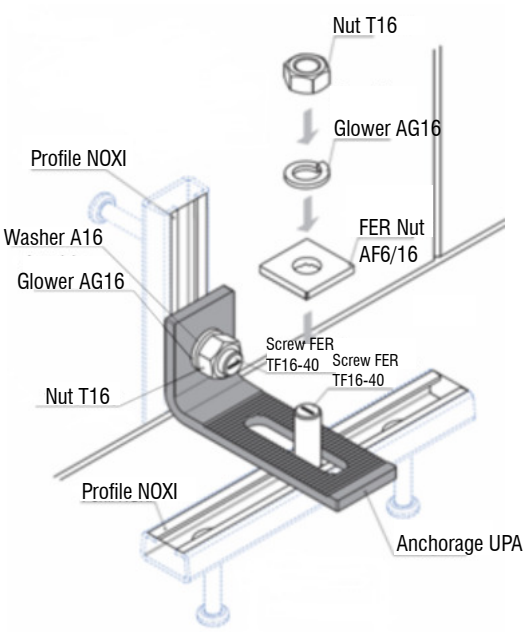
1.1.- Place the FER TF16-40 screws into the profiles* and turn it 90 degrees.
**The profiles can be: NOXI C, R or S; depending on the loads.*

2



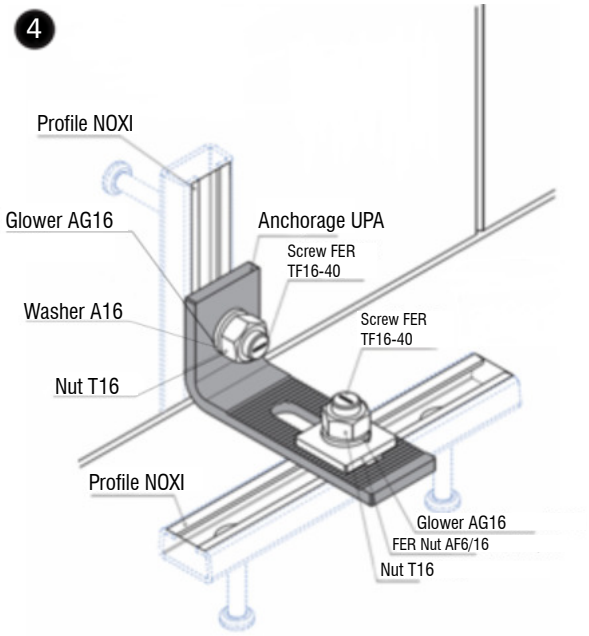
2.1.- Place the UPA accessory into screw through hole Ø17, leaving the grooved size up.
2.2.- Fixing by Glower AG16 washer and T16 nut. The Glower washer should be completely flat.

3



3.1.- Screw and anchor assembly through slotted hole Ø17.
3.2.- Fixing by FER AF6 / 16 washer, AG16 Glower washer and T16 nut.
3.3.- The FER washer must match with the UPA's grooved zone.

4



4.1.- Tighten the nut to finish the assembly. The Glower washer should be completely flat.
4.2.- Final check and assurance of nut tightening.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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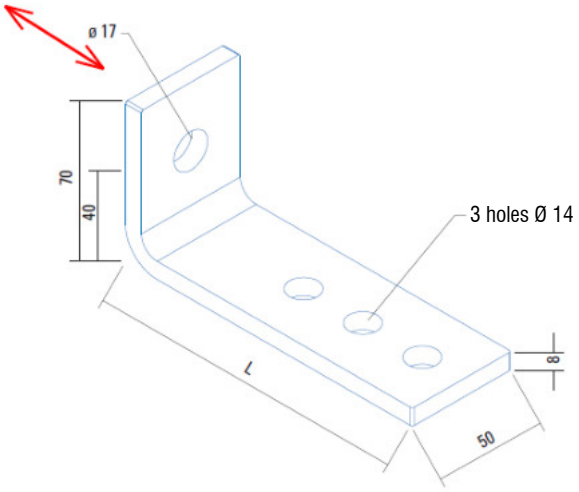

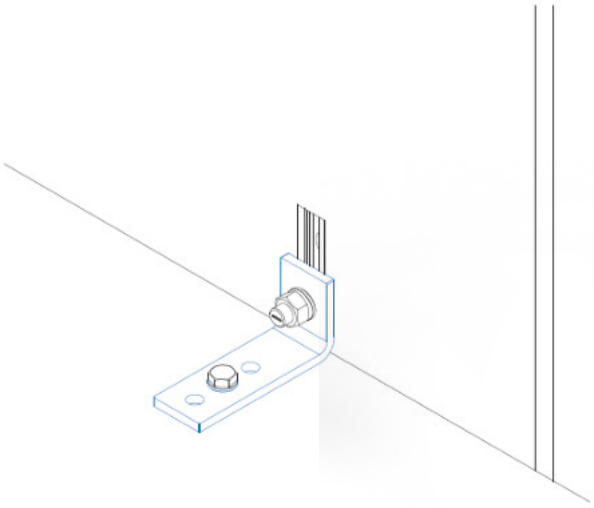

Code	Description
UPA-TL115	Anchor UPA-TL length 115 mm
UPA-TL145	Anchor UPA-TL length 145 mm
UPA-TL320	Anchor UPA-TL length 320 mm

(*) Other lengths avaible under request.
For length L > 600 mm, ask us for the charge.

(1) Surface treatment	Electroplated zinc coating
Service load	500 Kg
Global Security Coefficient	4.7

1. Other surface treatment available under request.

Accessory for retaining precast concrete elements. Assembly with NOXI profile, FER TF16-40 screw, A16 washer, AG16 Glower washer, T16 nut and expansion shell. With this system, assembly regulation is achieved in 2 of the 3 main axes.

Anchor
UPA-TL

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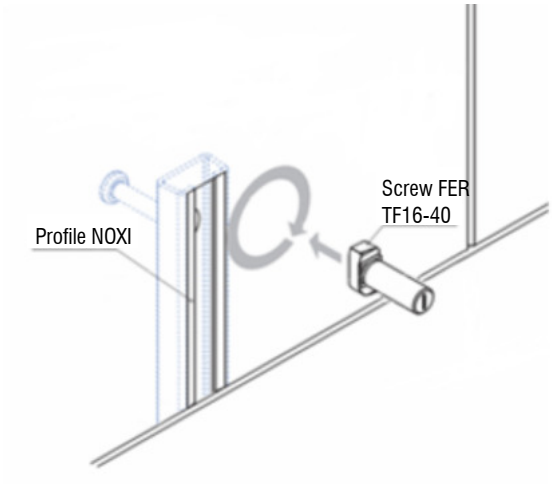
Anchor **UPA-TL**

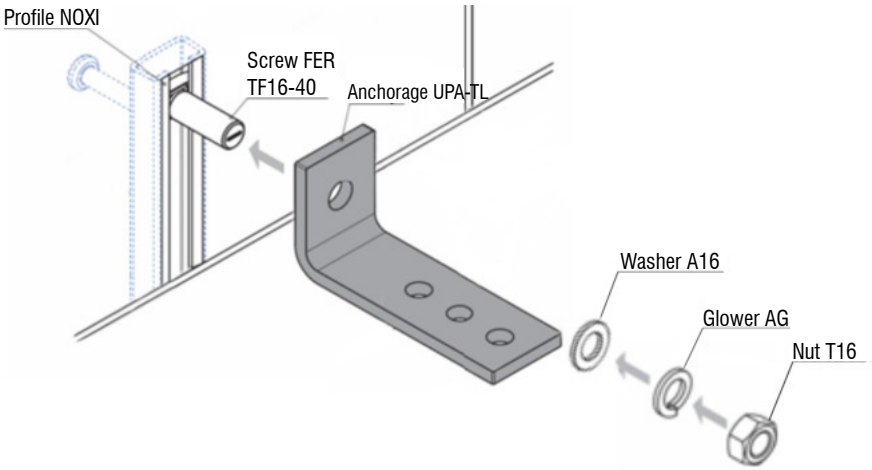
INSTRUCTIONS FOR USE

1



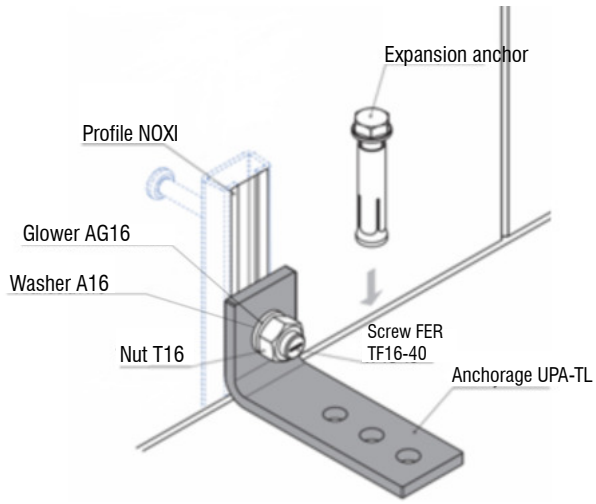
1.1.- Place the FER TF 16-40 screw into the profile* and turn it 90 degrees.
**The profile can be: NOXI C, R or S; depending of loads.*

2



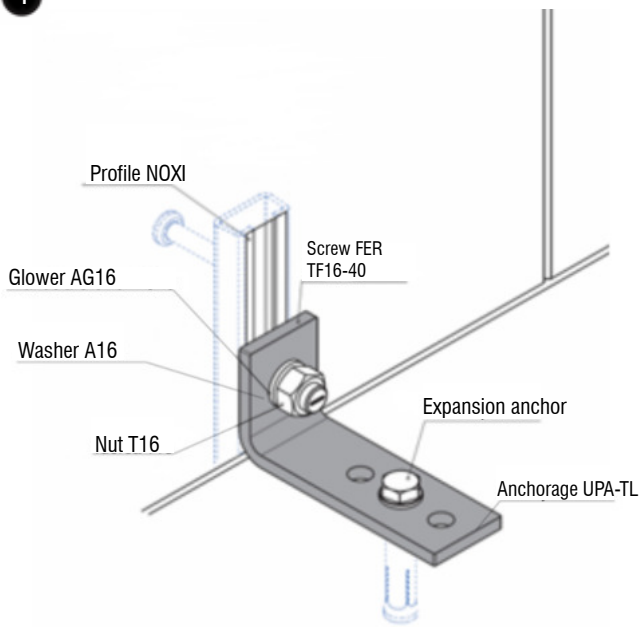
2.1.- Place UPA-TL accessory with FER screw through Ø17 hole .
2.2.- Fixing by A16 washer , AG16 Glower washer and T16 nut. The Glower washer should be completely flat.

3



3.1.- Making the hole to accommodate the expansion shell in any of the three holes Ø14.
3.2.- Insert the expansion shell through the holes of anchorage and concrete.

4



4.1.- Tighten the expansion shell (as directed by the manufacturer) to finish the assembly.
4.2.- Final check and assurance of the tightening of the nut and the installation of the expansion shell.

In order to continue the assembly sequence all the steps above described must be successfully overcome

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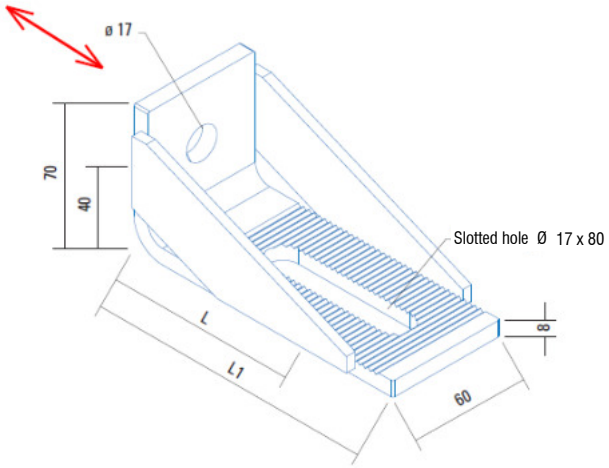
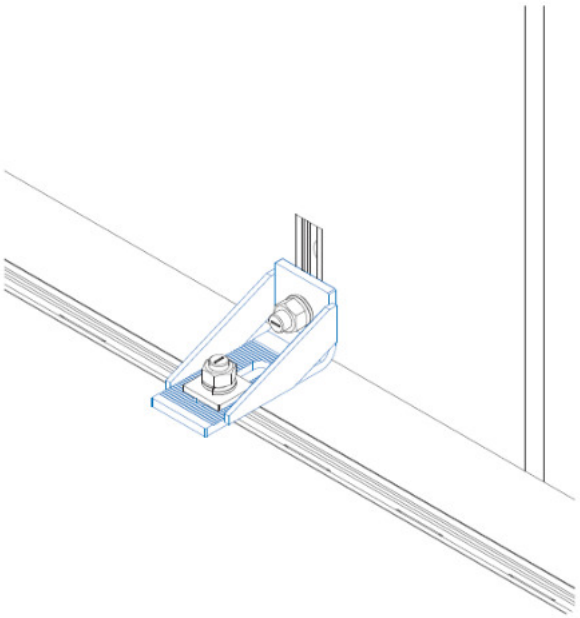
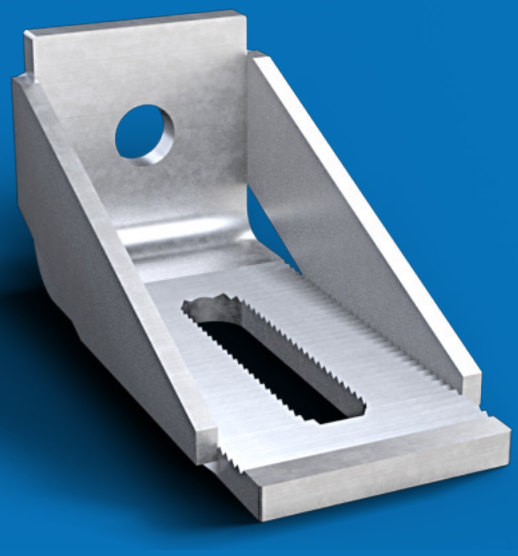
Anchor **UPA-C**



Accessory for retaining precast concrete elements. Mounting with NOXI profiles, FER screws TF16-40, FER washer AF8 / 16, Glower AG16 washers, A16 washer and T16 nut. With this system, assembly regulation is achieved in the 3 main axes.

Anchor
UPA-C





Code	Description	L	Total length (L1)
UPA-C115	Anchor UPA-C length 115 mm	70 mm	115 mm
UPA-C145	Anchor UPA-C length 145 mm	100 mm	145 mm
UPA-C320	Anchor UPA-C length 320 mm	275 mm	320 mm

(*) Other lengths avaible under request..
For length L1 > 600 mm, ask us for the load

(1) Surface treatment Electroplated zinc coating
Service load 1300 Kg

1. Other suface treatment available under request.

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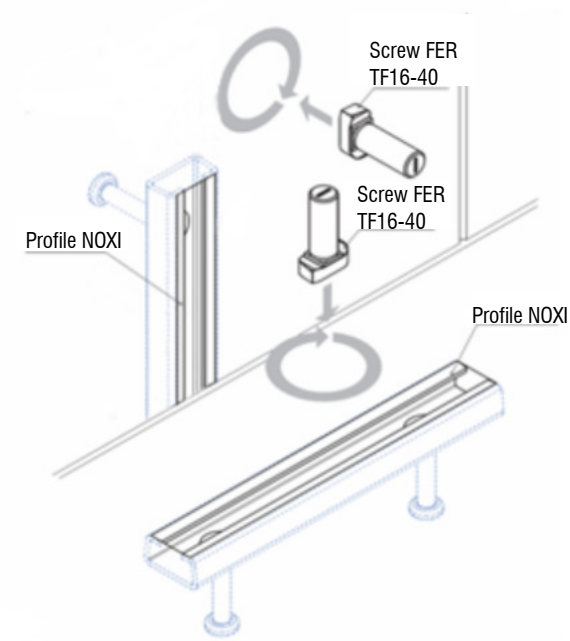
Anchor **UPA-C**

INSTRUCTIONS FOR USE

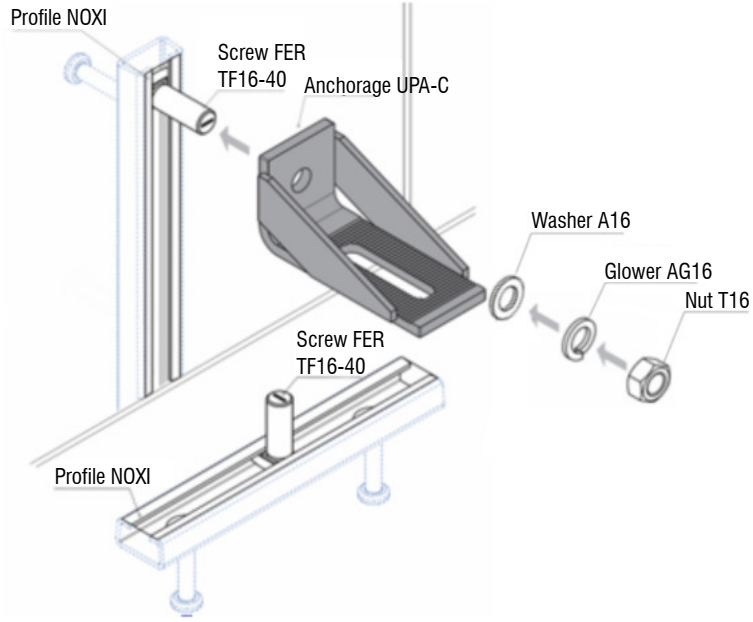
1



1.1.- Place the FER screws into the profiles* and turn it 90 degrees.

**The profile can be: NOXI C, R or S; depending on the load.*

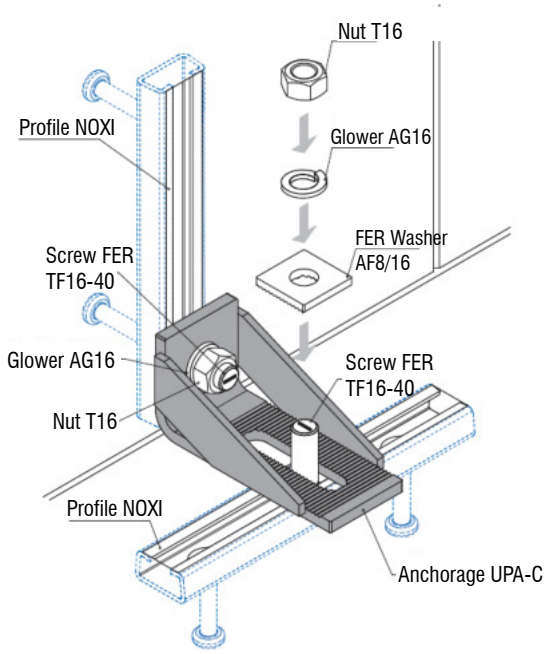
2



2.1.- Place the UPA-C accessory into screw through hole Ø17, leaving the grooved size up.

2.2.- Fixing by A16 washer, AG16 Glower washer and T16 nut. The Glower washer should be completely flat.

3

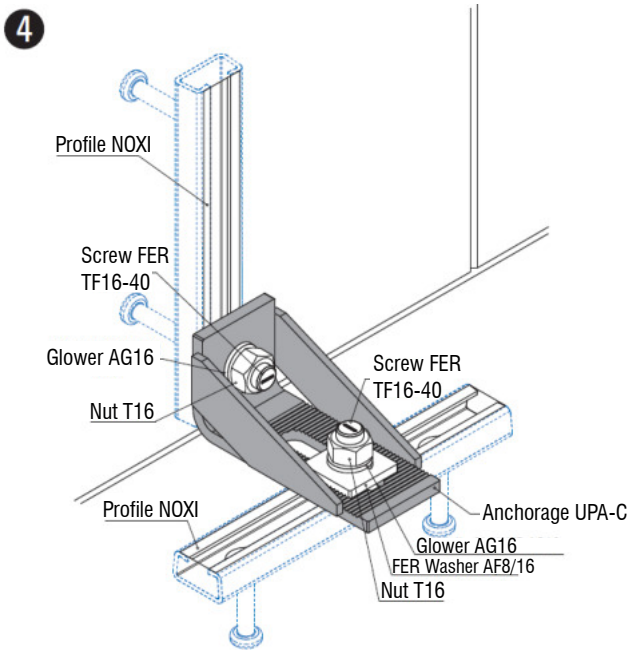


3.1.- Screw and anchor assembly through the Ø17 slotted hole.

3.2.- Fixing by FER AF8 washer / 16, AG16 Glower washer and T16 nut.

3.3.- The FER washer must match with the UPAC's grooved zone.

4



4.1.- Tighten the nut to finish the assembly. The Glower washer should be completely flat.

4.2.-Final check and assurance of the tightening of the nuts.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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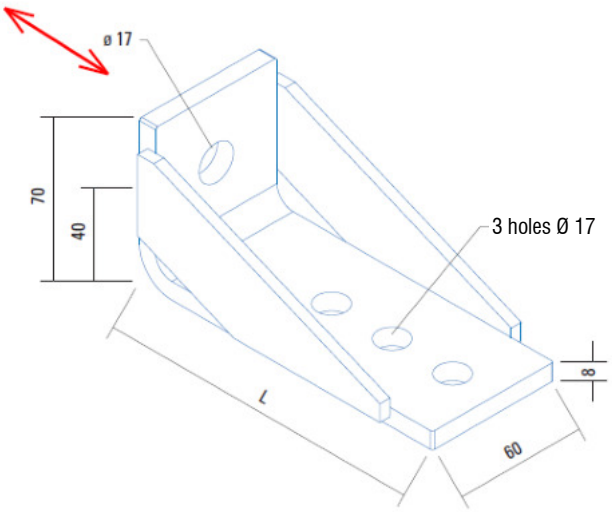
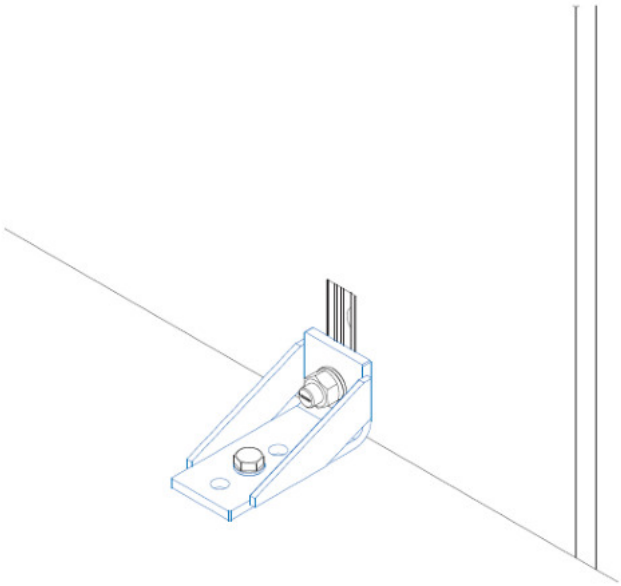
Anchor **UPA-CTL**



Accessory for retaining precast concrete elements. Mounting with NOXI profile, FER TF16-40 screw, A16 washer, Glower AG16 washer, T16 nut and expansion plug. With this system, assembly regulation is achieved in 2 of the 3 main axes.

Anchor
UPA-CTL



Code	Description
UPA-CTL115	Anchor UPA-TL length 115 mm
UPA-CTL145	Anchor UPA-TL length 145 mm
UPA-CTL320	Anchor UPA-TL length 320 mm

(*) Other lengths avaible under request..
For length L > 600 mm, ask us for the service load

(1)**Surface treatment:** Electroplated zinc coating
Service load: 1300 Kg

1. Other surface treatment avaiable under request.

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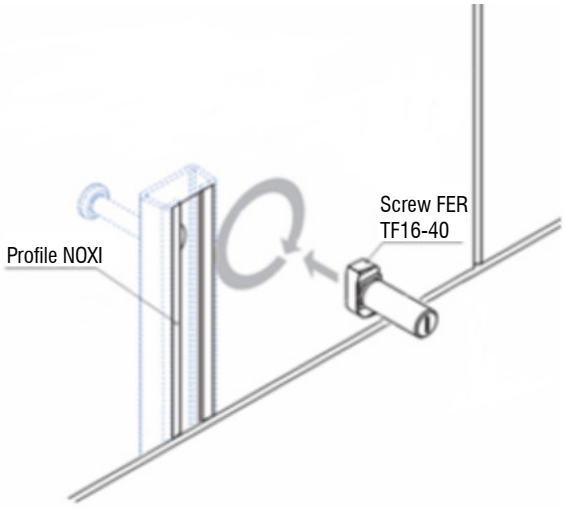
Anchor **UPA-CTL**

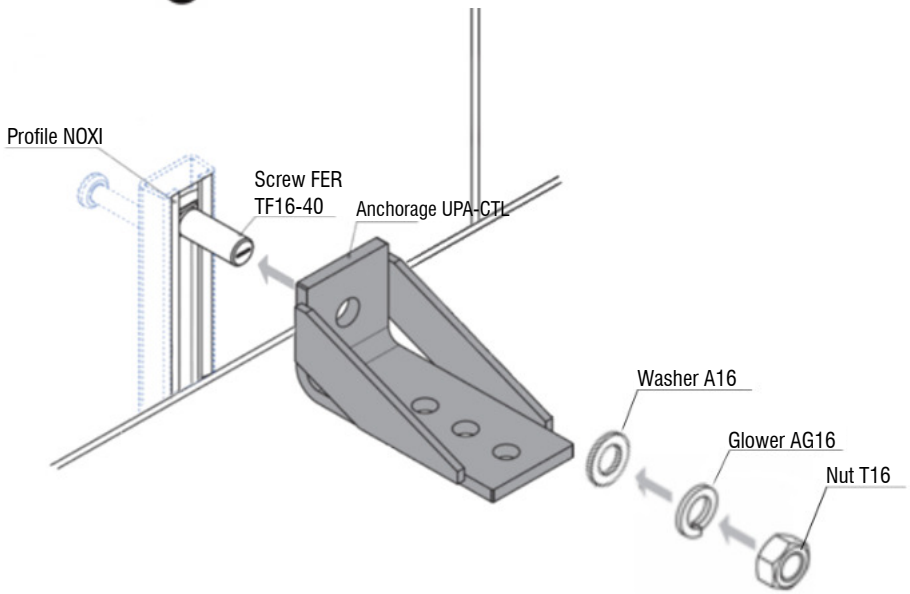
INSTRUCTIONS FOR USE

1



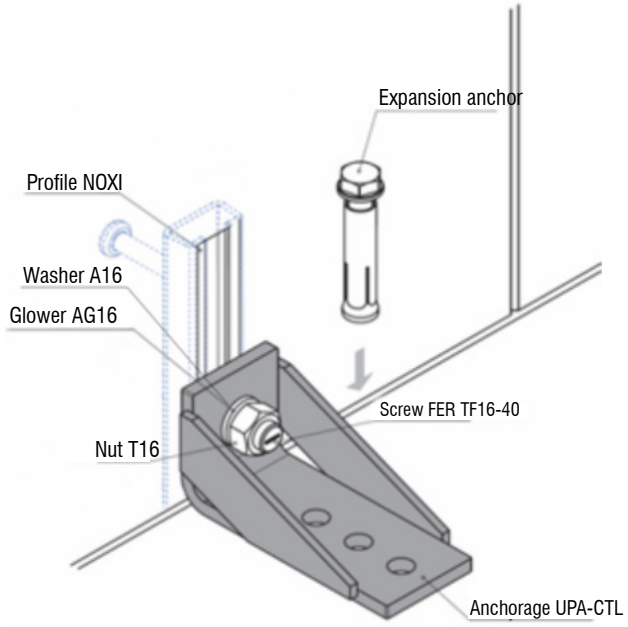
1.1.- Place the FER screw into the profile* and turn it 90 degrees.
* The profile can be: NOXI C, R or S; depending of loads.

2



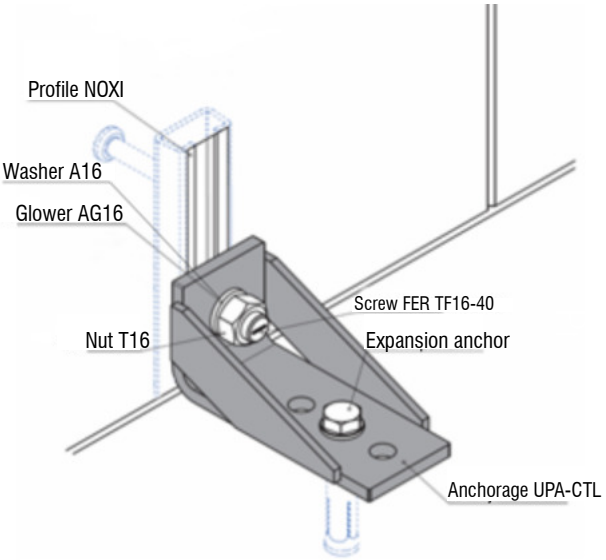
2.1.- Screw and anchor assembly through hole Ø17.
2.2.- Fixation by washer A16, Glower washer AG16 and nut T16. The Glower washer should be completely flat.

3



3.1 Making the hole to accommodate the expansion shell in any of the three Ø14.
3.2.- Insert the expansion shell through the anchorage holes and the concrete.

4



4.1.- Press the expansion shell (according to the manufacturer's instructions) to finish the assembly.
4.2.- Final check and assurance of the tightening of the nut and the installation of the fixing screw.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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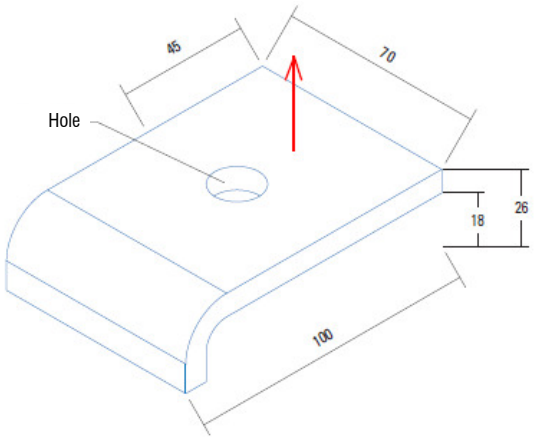
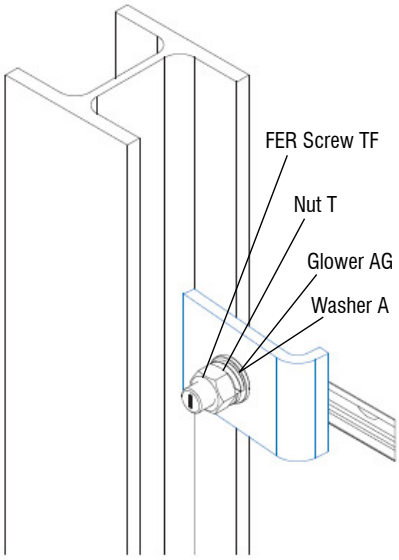
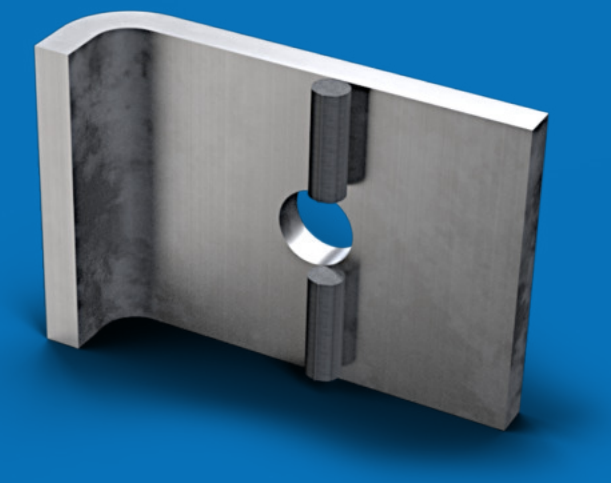
Anchor **GRAP**





Accessory for retaining precast concrete elements when having steel structure. Mounting with NOXI profiles, FER screws TF, Glower AG16 washers, A16 washer and T16 nut. With this system, assembly regulation is achieved in 2 of the 3 main axes.

Anchor **GRAP**



Code	Description	Ø Hole
GRAP17	Anchor for retaining concrete panels with the steel structure using screws M16.	17mm
GRAP13	Anchor for retaining concrete panels with the steel structure using screws M12.	13mm

(1) Surface Treatment Electroplated zinc coating
Service Load 1000 Kg

1. Possibility to supply in different surface treatment

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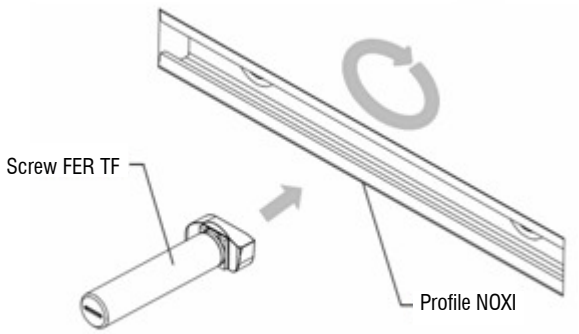
Anchor **GRAP**

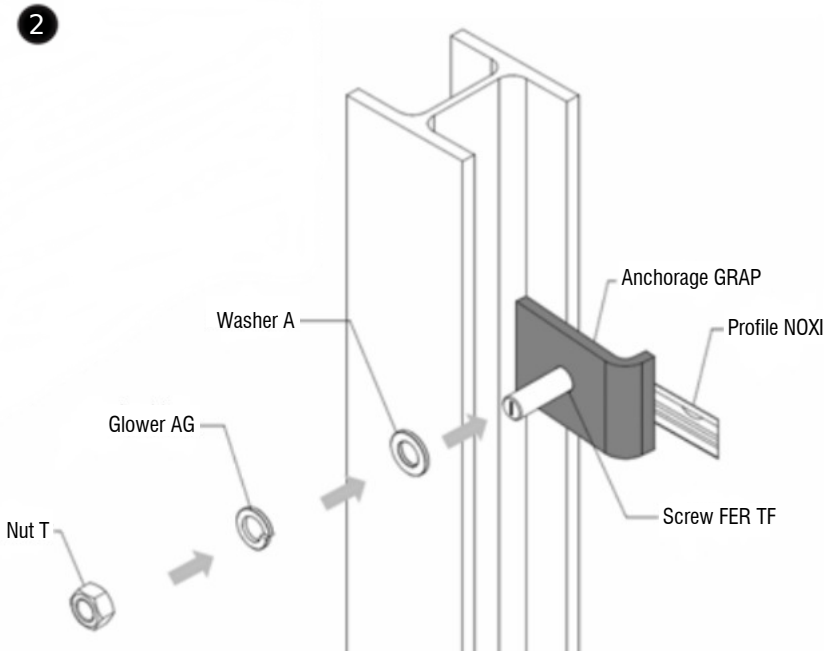
INSTRUCTIONS FOR USE

1



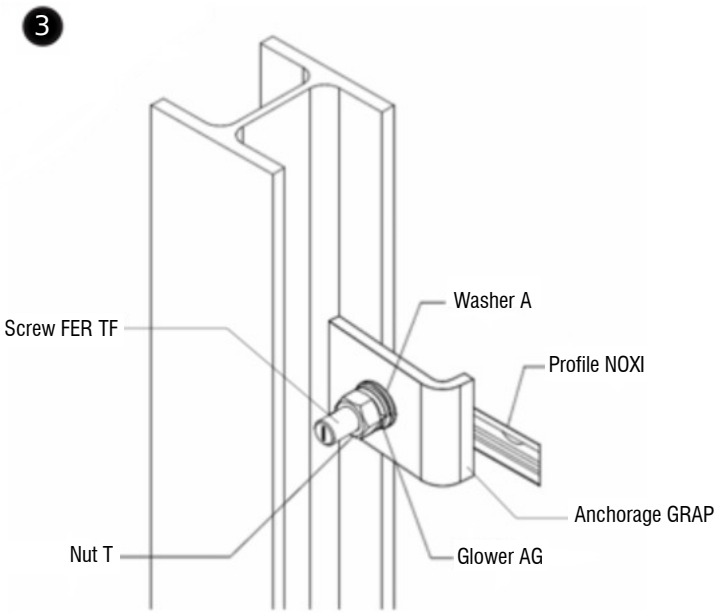
1.1.- Place the FER TF screws into the profiles* and turn it 90 degrees.
**The profiles can be: NOXI C, R or S; depending on the loads.*

2



2.1.- Assembly of the screw and the GRAP anchorage through the hole. It is needed to keep the fold part of the GRAP in contact with surface where the NOXI profile is embedded while the flange of the anchorage retains the steel profile.
2.2 .- Set a 5mm neopren between the steel profile and the concrete panel.
2.3 .- Place the FER screw as close as possible to the steel profile.
2.4.- Fixing using Glower AG and nut T.

3



3.1.- Tighten the nut to finish the assembly. The Glower washer should be completely flat.
3.2.- Final check and assurance of nut tightening.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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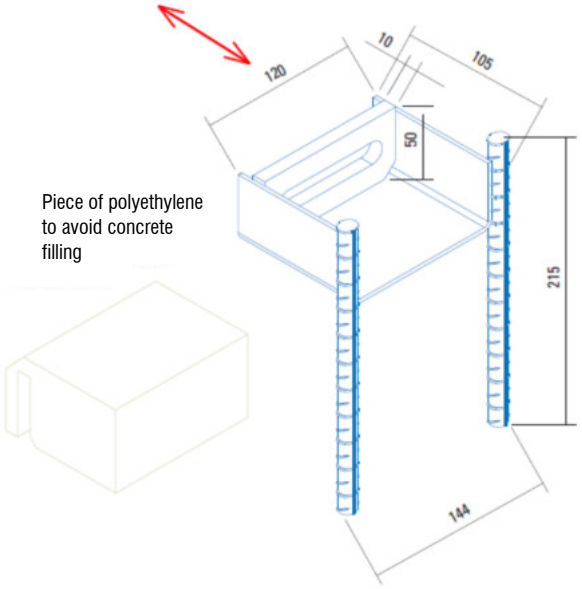
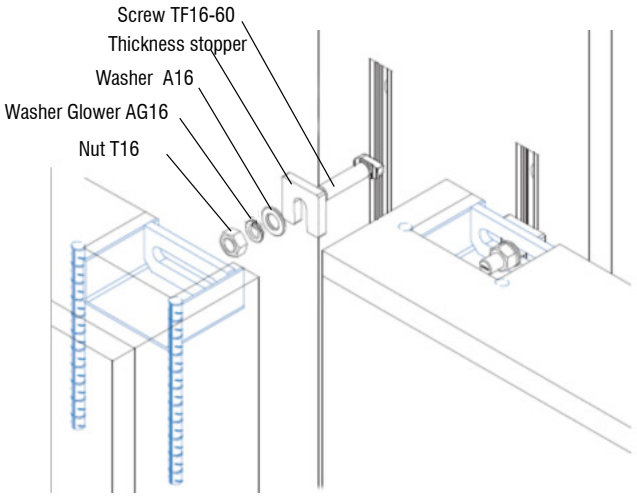
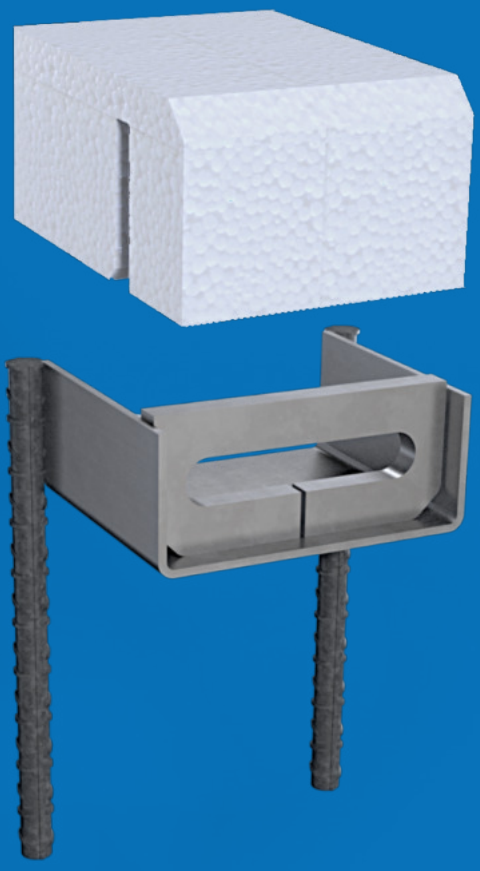
OCULFIX 10

Hidden accessory for retaining horizontal elements of precast concrete. Mounting with FER TF16-60 screw, NOXI profile, A16 washer, Glower AG16 washer, T16 nut and 3, 5, 10 and 15 mm thickness stoppers.
With this system, assembly regulation is achieved in the 3 main axes.

OCULFIX 10







Code	Description
OCULFIX10	Hidden connection for panels

(1) **Surface treatment:** Electroplated zinc coating
Service load: 1800 Kg
Concrete ≥ HA-35

1. Other surface treatment available under request.

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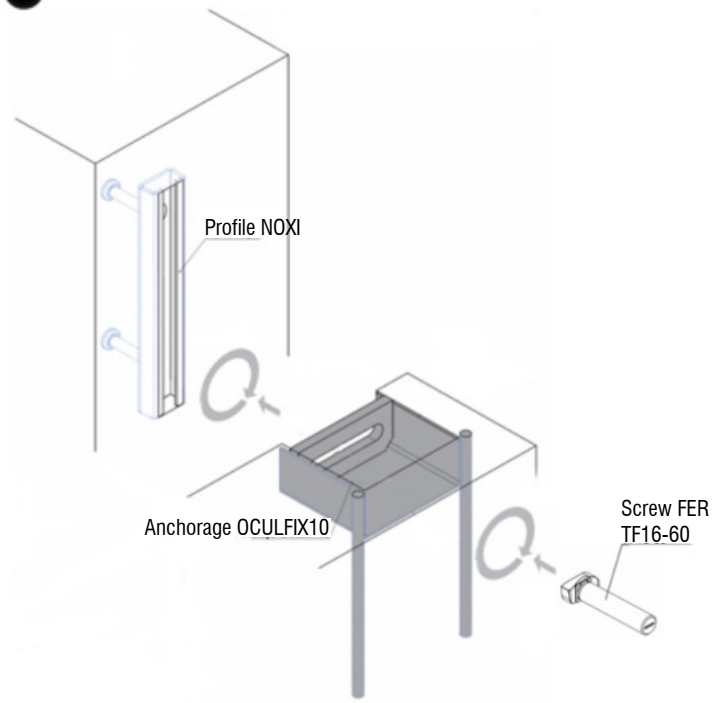
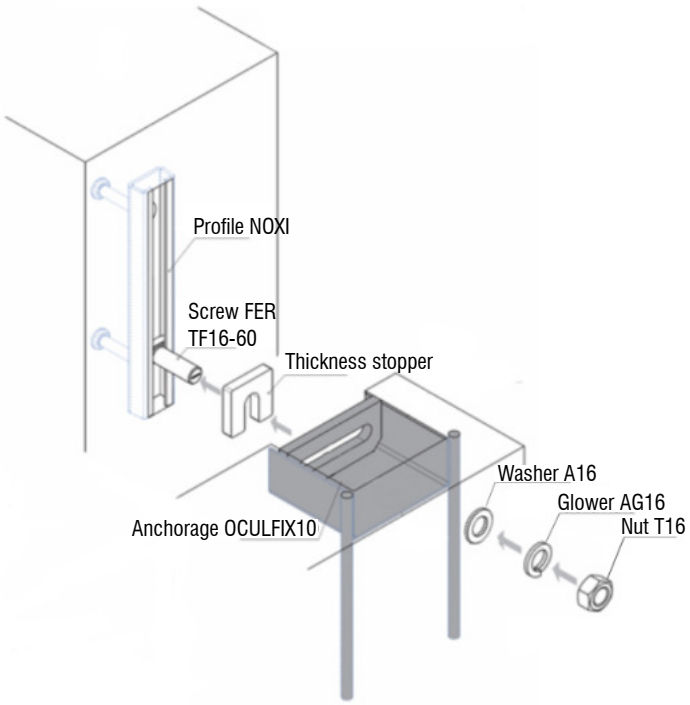
1



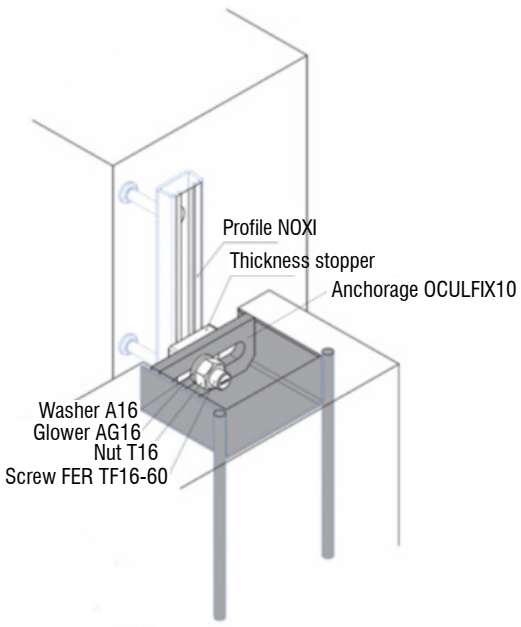
1.1.- Position the retaining element relative to the structural element.
1.2.- Inserting the FER screw into profile NOXI through slotted hole.
**The profile can be: NOXI C, R or S; depending of loads.*

2



2.1.- Insert as many thickness stops as necessary to prevent the element to be retained from moving.
2.2.- Insert a washer A16, a Glower washer AG16 and a nut T16.

3



3.1.- Tighten the nut to finish the assembly. The Glower washer should be completely flat.
3.2.- Check that all the elements are in the correct position.

In order to continue the assembly sequence all the steps above described must be successfully overcome

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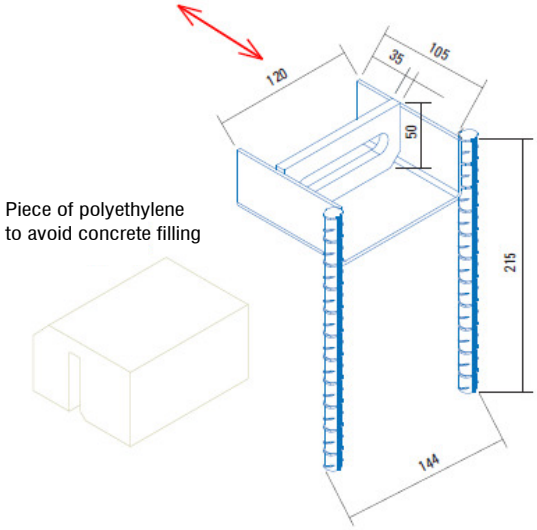
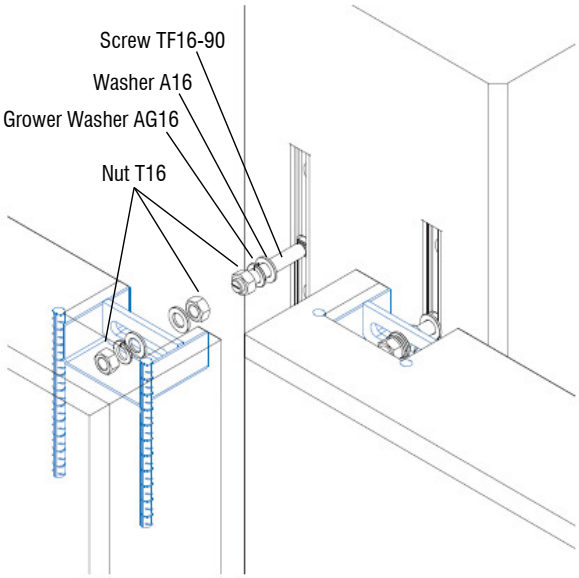
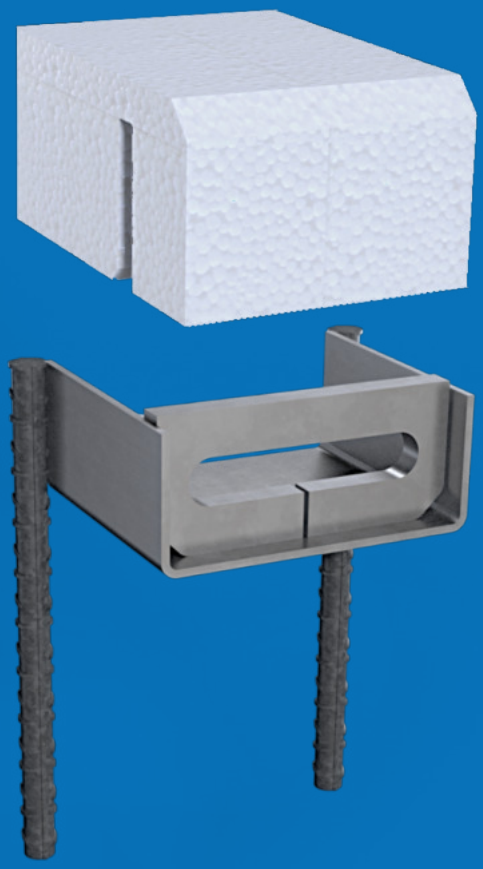
Hidden accessory for retaining horizontal precast concrete elements.
Mounting with FER TF16-90 screw, NOXI profile, A16 washers, Glower AG16 washers and T16 nuts.
With this system, assembly regulation is achieved in the 3 main axes.





OCULFIX 20



Code	Description
OCULFIX20	Hidden connection for panels

(1) Surface treatment: Electroplated zinc coating
Service load: 1800 Kg
Concrete ≥ HA-35

1. Other surface treatment available under request.

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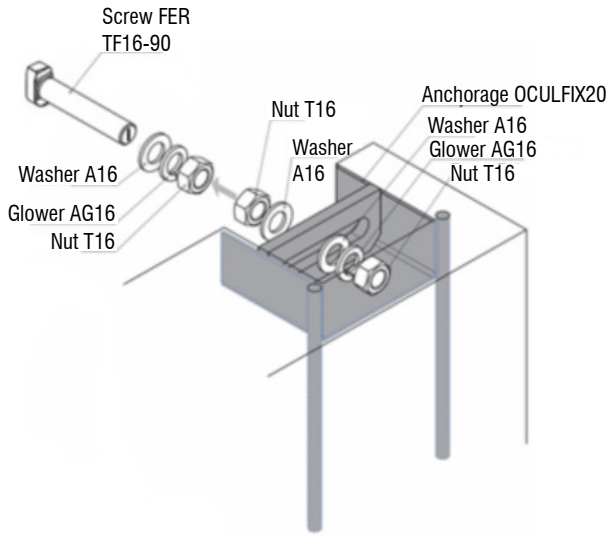
OCULFIX 20

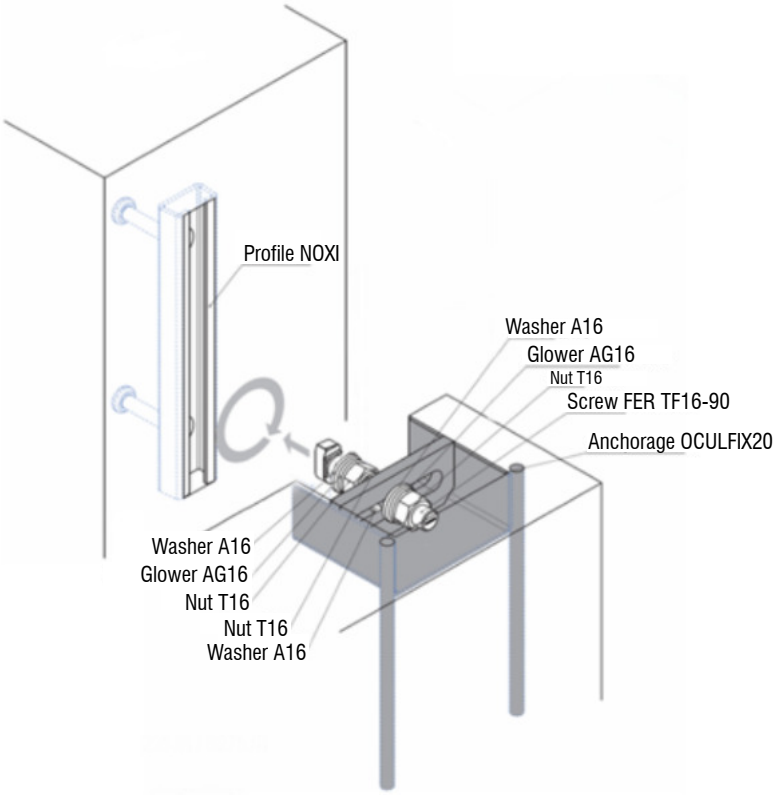
INSTRUCTIONS FOR USE

1



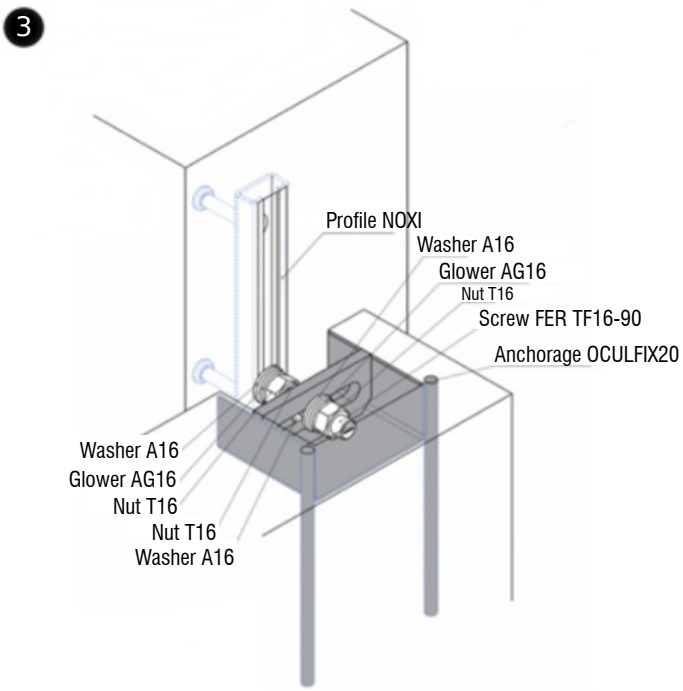
1.1.- Assembly the FER screw TF16-90 along with the nuts T16, the Glower washers AG16 and washers A16 through the slotted hole of the OCULFIX20, as shown in the figure.

2



2.1.- Place the element to retain in its correct position.
2.2.- Loosen the exterior nuts T16 in order to release the FER screw TF16-90.
2.3.- Insert FER screw TF16-90 inside the NOXI profile*and turn it 90º.
2.4.- Tight the nearest nut T16 from the NOXI profile.
2.5.- Tight the intermediate and exterior nuts T16 in order to fix the position of the element to retain.
The Glower washers should be completely flat.
**The profile can be: NOXI C, R or S depending on the loads*.

3



3.1.- Check that all the elements are in the correct position

In order to continue the assembly sequence all the steps above described must be successfully overcome

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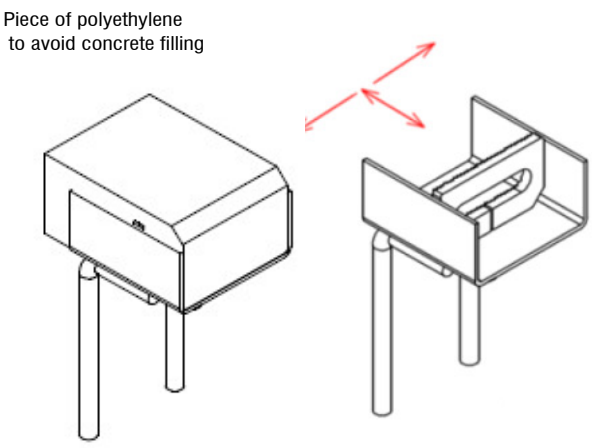
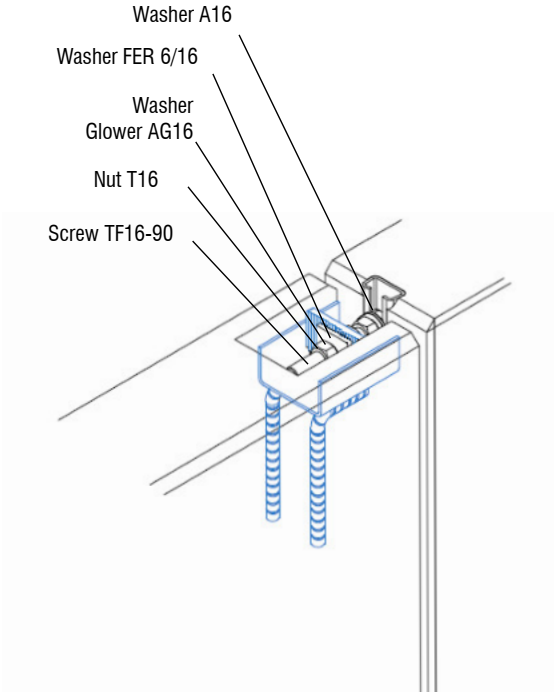
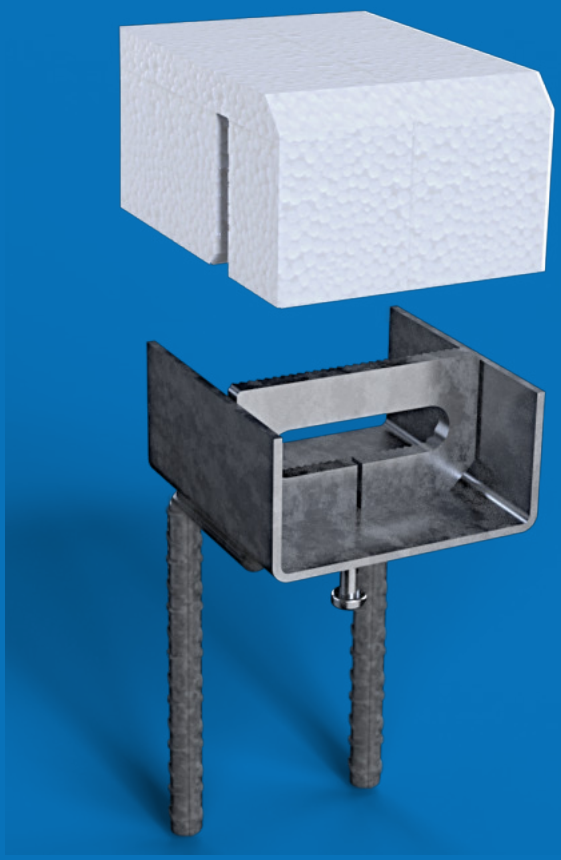
OCULFIX 30

Accessory for the retention of precast concrete panels in frontal position from 160 mm thick. Mounting with FER TF16-90 screw, NOXI profile, A16 washers, Glower AG16 washers, T16 nuts and FER AF6 / 16 washer. With this system, assembly regulation is achieved in the 3 main axes.

OCULFIX 30







Code	Description
OCULFIX30	Hidden connection of panels. Panel thickness from 160 mm.

(1) Surface treatment: Electroplated zinc coating
Service load: 1800 Kg (tension), 700 Kg (shear)
Concrete: ≥ HA-35

1. Other surface treatment available under request.

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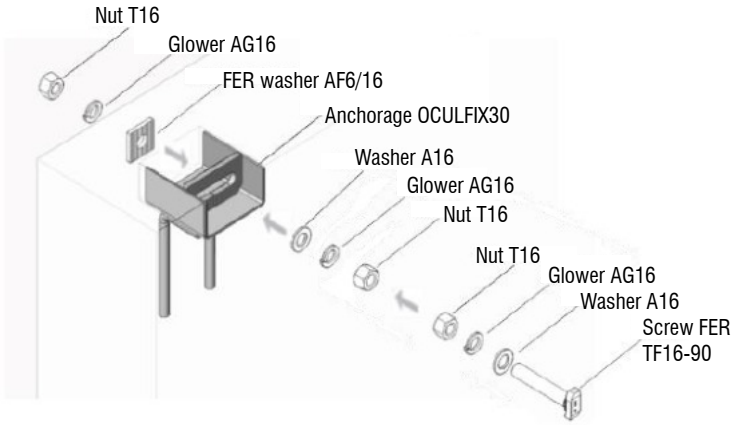
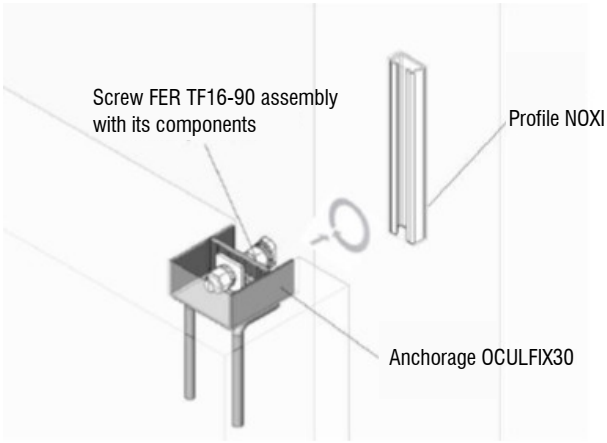
1



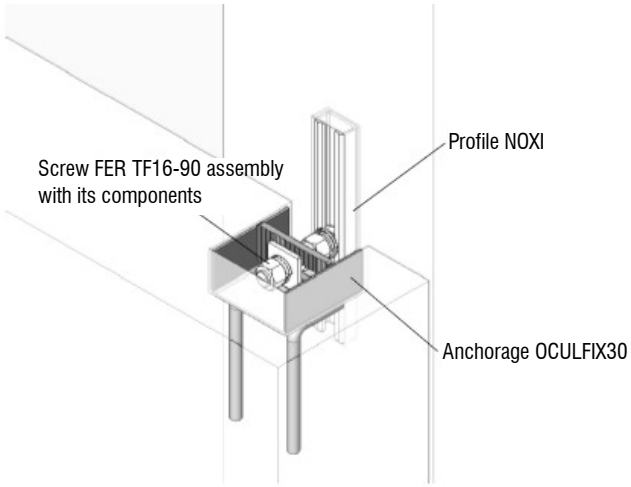
1.1.- Assembly the FER screw TF16-90 along with the nuts T16, the Glower washers AG16, washers A16 and washer FER AF6/16 through the slotted hole of the OCULFIX30, as shown in the figure.

2



2.1.- Position the element to be retained relative to the structural element.
2.2.- Loosen the outer T16 nut to free the FER TF16-90 screw.
2.3.- Insert the FER TF16-90 screw to the NOXI profile *. Make a 90º turn.
2.4.- Tighten the T16 nut closest to the NOXI profile.
2.5.- Tighten the intermediate and outer T16 nuts to fix the position of the element to be retained. The teeth of the FER washer and the anchorage must match to obtain a non-slip joint.
Glower washers should be completely flat.
* The profile can be NOXI C, R or S; according to loads.

3



3.1.- Check that all the elements are in the correct position

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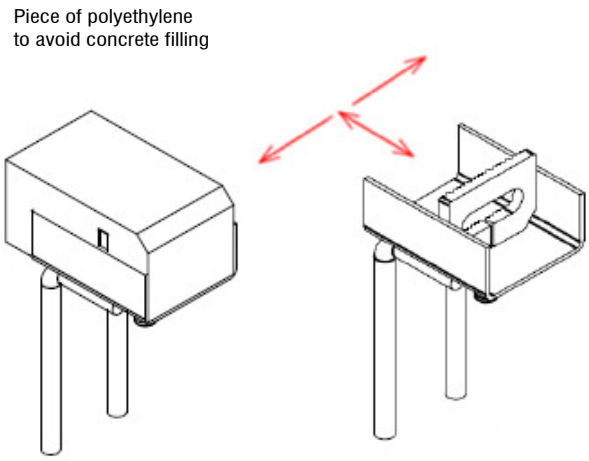
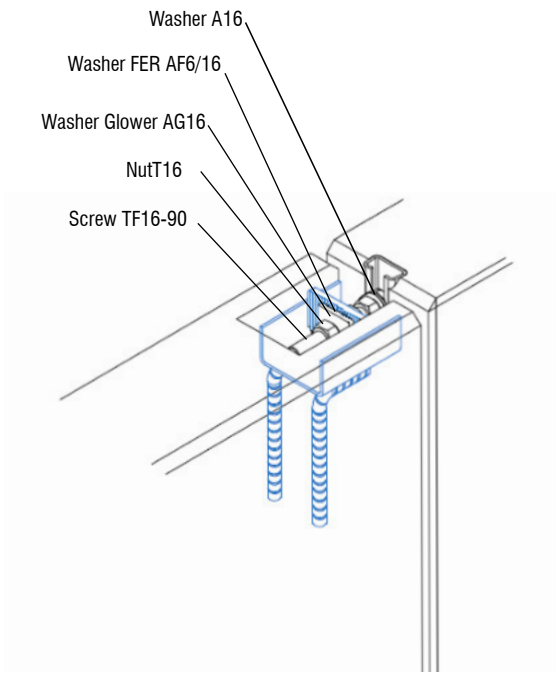
OCULFIX 40

Hidden accessory for the retention of precast concrete panels in frontal position from 140 mm thick. Mounting with FER TF16-90 screw, NOXI profile, A16 washers, Grower AG16 washers, T16 nuts and FER AF6 / 16 washer. With this system, assembly regulation is achieved in the 3 main axes.

OCULFIX 40





Code	Description
OCULFIX40	Hidden connection of panels in frontal position, from 140 mm

(1) Surface treatment: Electroplated zinc coating
Service load: 1800 Kg (tension) y 700 Kg (shear)
Concrete: ≥ HA-35

1. Other surface treatment available under request.

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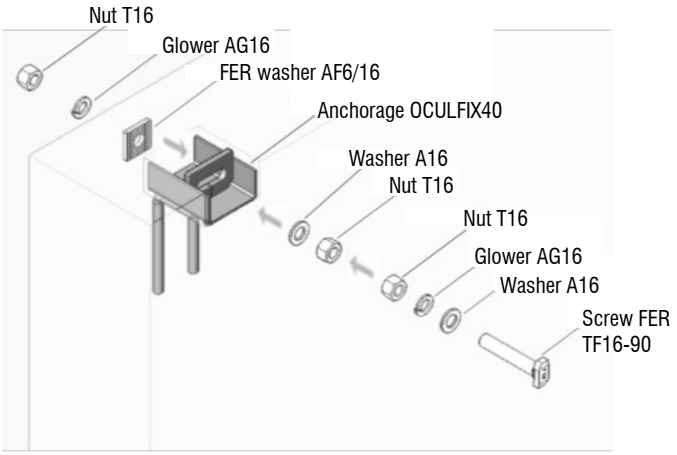
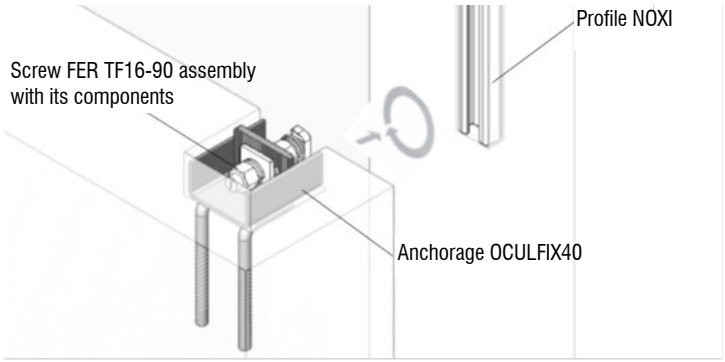
1



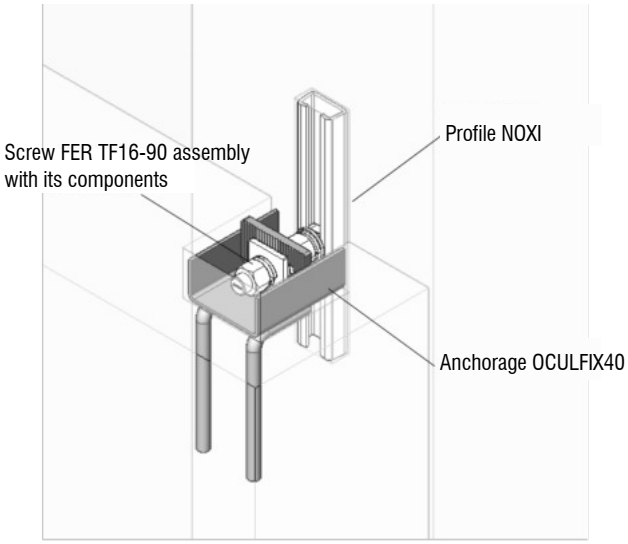
1.1.- Assembly the FER screw TF16-90 along with the nuts T16, the Glower washers AG16, washers A16 and washer FER AF6/16 through the slotted hole of the OCULFIX40, as shown in the figure.

2



2.1.- Position the element to be retained relative to the structural element.
2.2.- Loosen the outer T16 nut to free the FER TF16-90 screw.
2.3.- Insert the FER TF16-90 screw to the NOXI profile *. Make a 90º turn.
2.4.- Tighten the T16 nut closest to the NOXI profile.
2.5.- Tighten the intermediate and outer T16 nuts to fix the position of the element to be retained. The teeth of the FER washer and the anchorage must match to obtain a non-slip joint.
Glower washers should be completely flat.
* The profile can be NOXI C, R or S; according to loads.

3



3.1.- Check that all the elements are in the correct position

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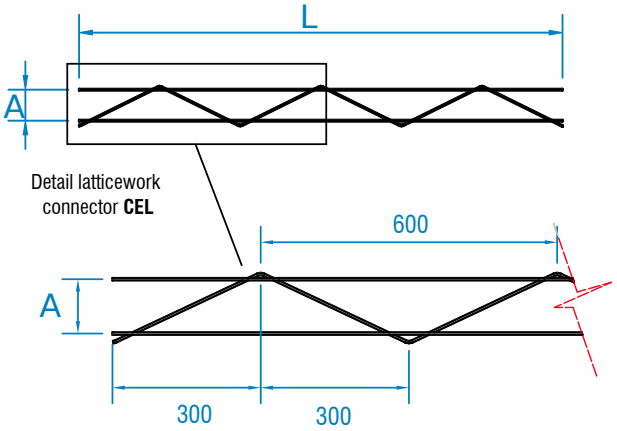
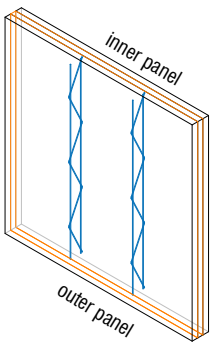
Latticework connection between concrete layers, for sandwich walls without thermal bridge.

Latticework CEL

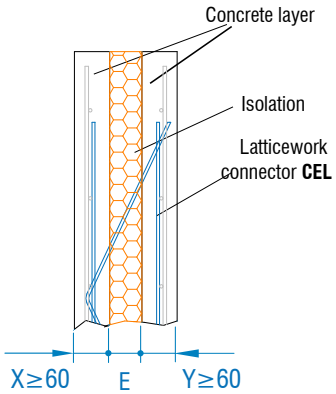
Latticework
CEL



PERSPECTIVE PLACEMENT



DETAIL PLACEMENT



Code	Description	A(1) Distance Between axis
CEL-90_L	Lattice of 90mm	90 mm
CEL-120_L	Lattice of 120mm	120 mm
CEL-130_L	Lattice of 130mm	130 mm
CEL-150_L	Lattice of 150mm	150 mm
CEL-160_L	Lattice of 160mm	160 mm
CEL-170_L	Lattice of 170mm	170 mm
CEL-180_L	Lattice of 180mm	180 mm
CEL-200_L	Lattice of 200mm	200 mm
CEL-220_L	Lattice of 220mm	220 mm
CEL-240_L	Lattice of 240mm	240 mm

Length Options L: 1200mm, 1800mm, 2400mm.
(1) Possibility of manufacturing different "A" heights.

Vertical bars material	B500S
Diagonal bars material	Stainless steel AISI304
Service Load $F_{d,weld}$**	5,6kN

** Capacity value considering 25mm of concrete cover. In case of less concrete cover, ask the technical department

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Latticework **CEL**

INSTRUCTIONS FOR USE

1 1.1.-Latticework connector selection geometry according to the prefabricated panel to execute. General cases:

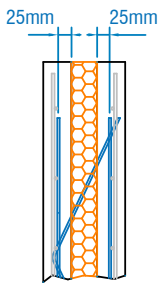
		SYMMETRICAL PANEL Horizontal position	SYMMETRICAL PANEL Vertical position	ASYMMETRICAL PANEL Horizontal position	ASYMMETRICAL PANEL Vertical position
TOTAL thickness Precast Panel	16 cm	CEL 90/L	Consult	CEL 90/L	Consult
	20 cm	CEL 130/L	Consult	CEL 120/L	CEL 120/L
	24 cm	CEL 170/L	Consult	CEL 160/L	CEL 160/L
	28 cm	CEL 210/L	Consult	CEL 200/L	CEL 200/L

Length of latticework connector, depending on the width of precast panel and the position of windows, doors, ...
Symmetrical panel: Panel concrete layers that compose it, are of equal thickness. Minimum thickness of layer is 60 mm..
Asymmetrical panel: Panel concrete layers that compose it, are of diferent thickness. Minimum thickness of layer is 60 mm.

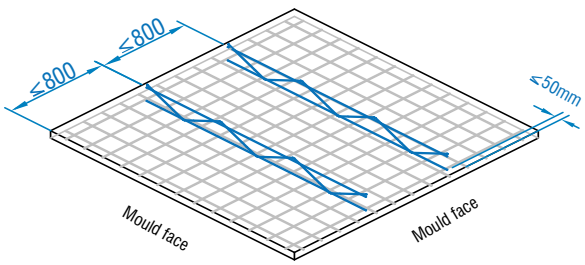
2 2.1.- Basic placement process:

2.1.1. Filling reinforcement and subsequent placement of the concrete layer on mould (minimum thickness 60mm).
2.1.2. Placement, according to payroll production, of latticework connectors CEL **(must be done before hardened concrete already poured),** his process is simultaneous to the placement of the insulation panels have been defined (alternate placement latticework-panel insulation) Recommended sealing joints between insulation panels if there is space between them.
2.1.3. Placing armor top layer of the sandwich panel, placing the pin connectors (as sheet production) and subsequent filling of this layer.

3 3.1.- Application Considerations:

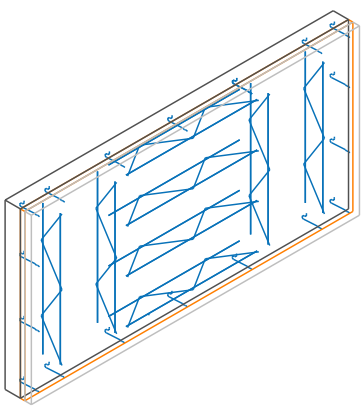


-Recommended coating /anchor latticework within each concrete 25 mm layer.
-Minimum value of 15 mm..

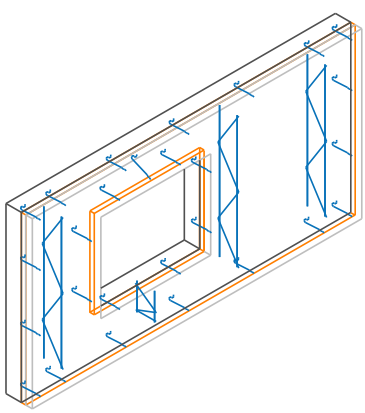


- Maximum recommended distance between lattices of 800 mm.
- Minimum vertical distance to edge panel 50 mm.
- Minimum horizontal distance to panel edge 100 mm..

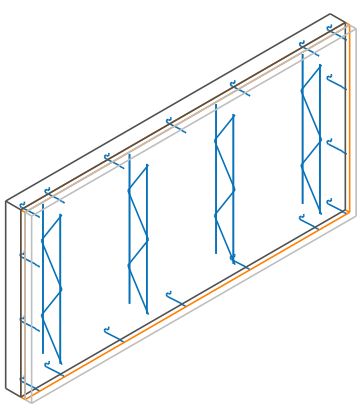
4 4.1.- Examples of use:



- Asymmetrical prefabricated panel. Final position: vertical.



- Asymmetrical prefabricated panel end position horizontally.



- Asymmetrical prefabricated panel end position horizontally.

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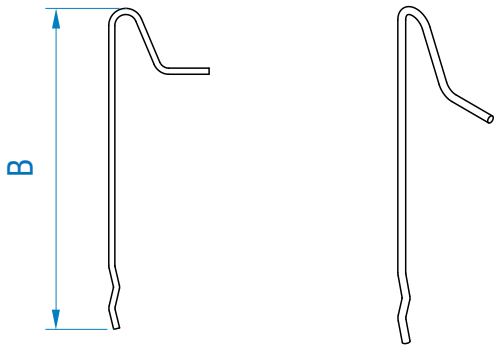
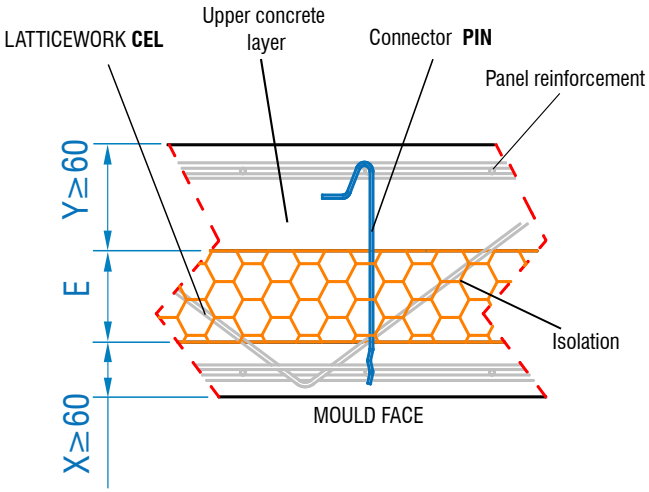
Connector **PIN**

Stainless steel connector for the manufacturing of precast concrete panels without thermal bridge (Sandwich panel). It is used as a complement of the Latticework CEL.



DETAIL PLACEMENT



Connector **PIN**

Code	Description	B(1) Total Length
PIN-110	Connector 110mm	110 mm
PIN-130	Connector 130mm	130 mm
PIN-160	Connector 160mm	160 mm
PIN-170	Connector 170mm	170 mm
PIN-200	Connector 200mm	200 mm
PIN-210	Connector 210mm	210 mm
PIN-250	Connector 250mm	250 mm

(1) Possibility of manufacturing different "B" lengths.

Material Stainless steel AISI304

Connector capacity N_{rd} 3,35 kN

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Connector **PIN**

INSTRUCTIONS FOR USE

1 1.1.-PIN connector selection geometry according to the prefabricated panel to execute and isolation thickness (E). General cases:

		SYMMETRICAL PANEL 40mm Isolation	SYMMETRICAL PANEL 80mm Isolation	ASYMMETRICAL PANEL 120mm Isolation	ASYMMETRICAL PANEL 160mm Isolation
TOTAL thickness Precast Panel	16 cm	PIN 130	--	--	--
	20 cm	PIN 160	PIN 170	--	--
	24 cm	PIN 200	PIN 200	PIN 210	--
	28 cm	PIN 240	PIN 240	PIN 240	PIN 250

It is considered a minimum concrete layer thickness of 60 mm.

The symmetrical panel is considered the worst case. In consequence, the PIN connector selection is valid for the asymmetrical

The options shown in the table, define the maximum length of the connector, being possible having shorter connectors in some cases.

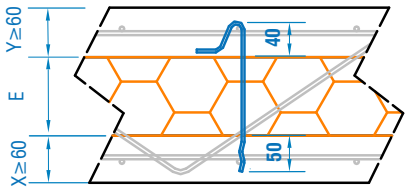
2 2.1.- Basic placement process:

2.1.1. Filling reinforcement and subsequent placement of the concrete layer on mould (minimum thickness 60mm).

2.1.2. Placement, according to payroll production, of latticework connectors CEL **(must be done before hardened concrete already poured),** his process is simultaneous to the placement of the insulation panels have been defined (alternate placement latticework-panel insulation) Recommended sealing joints between insulation panels if there is space between them.

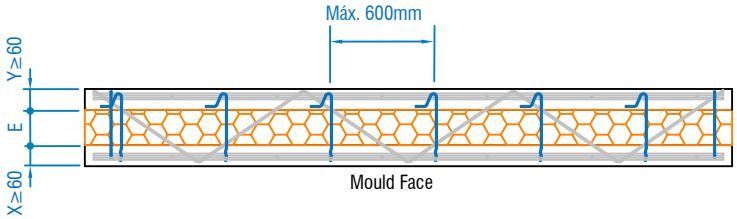
2.1.3. Placing armor top layer of the sandwich panel, placing the pin connectors (as sheet production) and subsequent filling of this layer.

3 3.1.- Application considerations



Mould Face

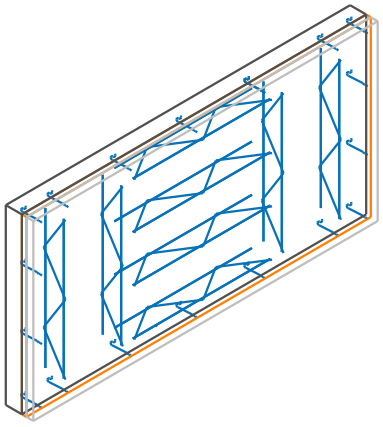
Necessary anchorage length for the PIN connector



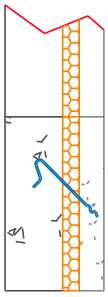
Mould Face

Maximum recomended distance between connectors: 600 mm

4 4.1.- Examples of use:

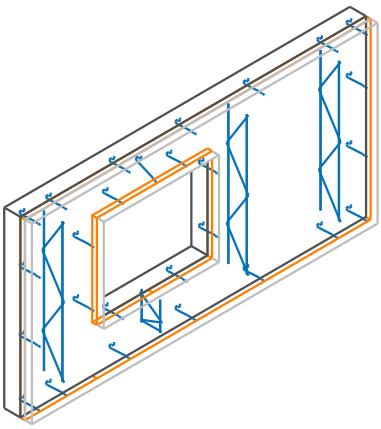


- Asymmetrical prefabricated panel. Final position: vertical.



PIN inclinado.

- Inclined position of the PIN in zones where it is not possible to place the latticework CEL since there is no space available*.



- Asymmetrical prefabricated panel. Final position: horizontal.

* It is allowed to use the connector PIN in zones where there is limited space in order to generate a similar connection as the latticework CEL

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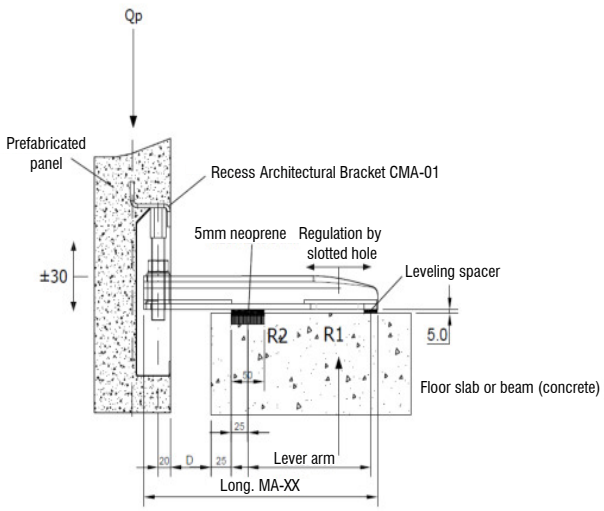
System for supporting panels in architectural permisive.
Capacities from 830 to 1.540 Kg.
Compact design with regulation in the three main directions.

Architectural bracket **MA-01**



Surface treatment: Hot-dip galvanized
Service load: See table on backside
Cantilever (D): Up to 80 mm

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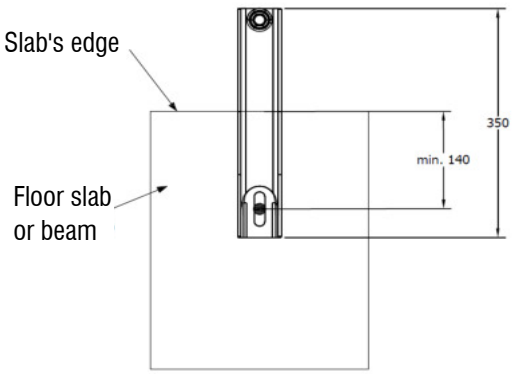
Architectural bracket **MA-01**

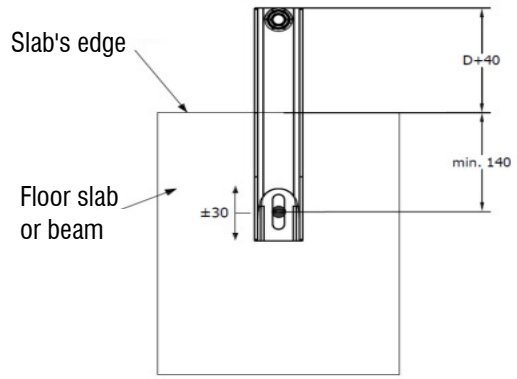
INSTRUCTIONS FOR USE

❶



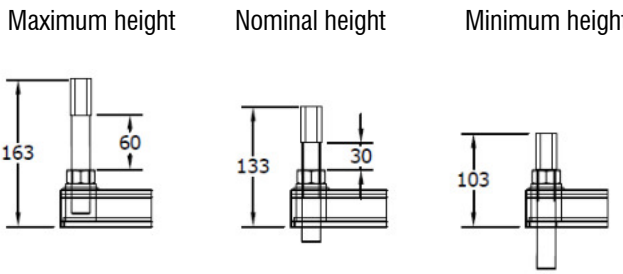
1.1.- Check surface concrete slab where corbel will be placed (plain and clean).
1.2.- Placing the expansion bolt at minimum 140 mm from the slab's edge.

❷



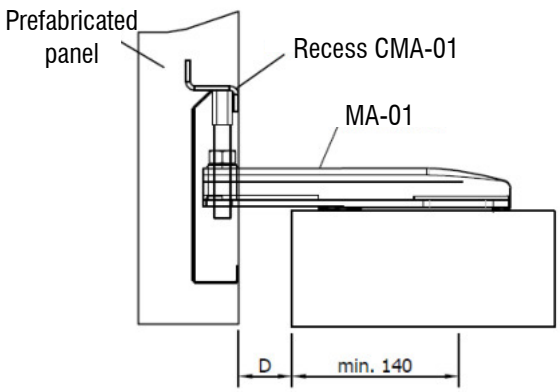
2.1.- Fixing the corbel on concrete slab in order to fulfil nominal position (cantilever measure).
2.2.- Expansion bolt strongly tightened according to manufacturer's instrucions.

❸



3.1.- Height adjustment through the screw's head. **MAXIMUM HEIGHT WILL NOT NEVER EXCEEDED AT ANY CASE.**
3.2.- Once finished regulation, lower nut must be strongly tightened in order to fix thread bar.

❹



4.1.- Assembly of precast concrete panel.

MA-01 with C25/30									
Distance D	10 mm	15 mm	20 mm	30 mm	40 mm	50 mm	60 mm	70 mm	80 mm
Charge value Qp	15,42 kN	14,55 kN	13,77 kN	12,44 kN	11,34 kN	10,42 kN	9,63 kN	8,96 kN	8,37 kN
Reactions R1	7,71 kN	7,98 kN	8,26 kN	8,89 kN	9,60 kN	10,42 kN	11,38 kN	12,54 kN	13,95 kN

D: Gap between panel and concrete slab.
Qp: Maximum Load (Panel weight).
R1: Reaction force on concrete slab.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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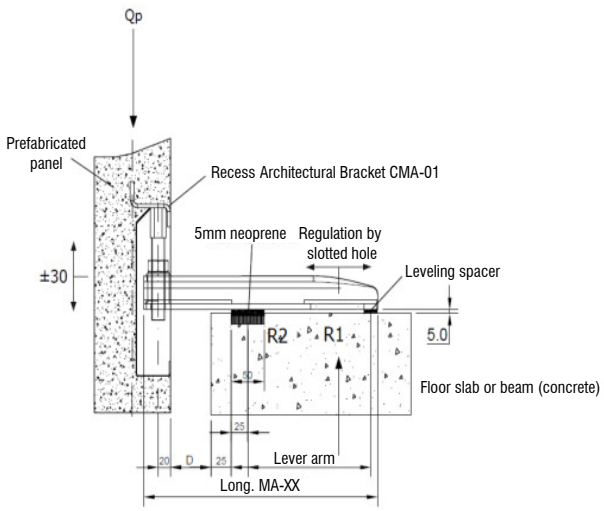
Architectural bracket **MA-02**



Surface treatment: Hot-dip galvanized
Service load: See table on backside
Cantilever (D): Up to 80 mm

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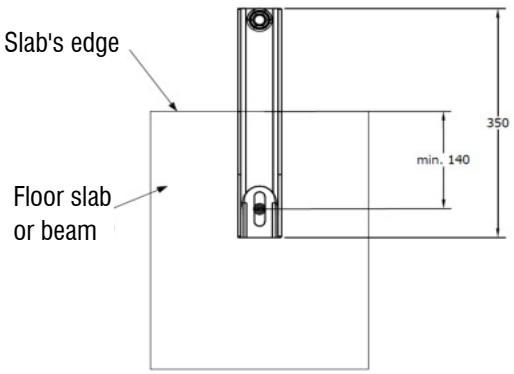
Architectural bracket **MA-02**

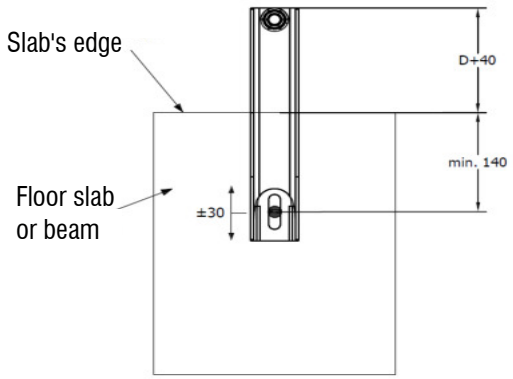
INSTRUCTIONS FOR USE

❶



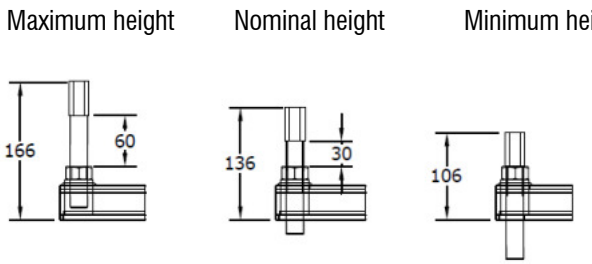
1.1.- Check surface concrete slab where corbel will be placed (plain and clean).
1.2.- Placing the expansion bolt at minimum 140 mm from the slab's edge.

❷



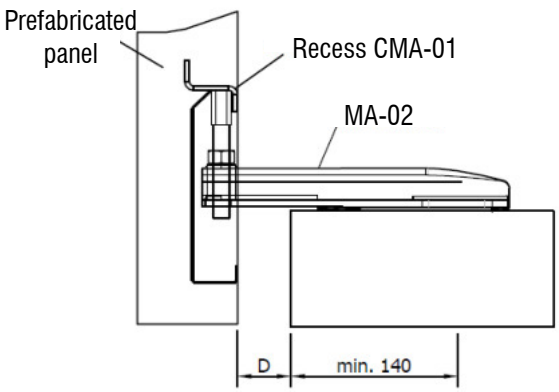
2.1.- Fixing the corbel on concrete slab in order to fulfil nominal position (cantilever measure).
2.2.- Expansion bolt strongly tightened according to manufacturer's instrucions.

❸



3.1.- Height adjustment through the screw's head. **MAXIMUM HEIGHT WILL NOT NEVER EXCEEDED AT ANY CASE.**
3.2.- Once finished regulation, lower nut must be strongly tightened in order to fix thread bar.

❹



4.1.- Assembly of precast concrete panel.

MA-02 with C25/30									
Distance D	10 mm	15 mm	20 mm	30 mm	40 mm	50 mm	60 mm	70 mm	80 mm
Charge value Qp	27,90 kN	26,79 kN	25,93 kN	24,20 kN	22,47 kN	20,74 kN	17,52 kN	14,79 kN	12,42 kN
Reactions R1	13,95 kN	14,69 kN	15,56 kN	17,28 kN	19,01 kN	20,70 kN	20,70 kN	20,70 kN	20,70 kN

D: Gap between panel and concrete slab.
Qp: Maximum Load (Panel weight).
R1: Reaction force on concrete slab.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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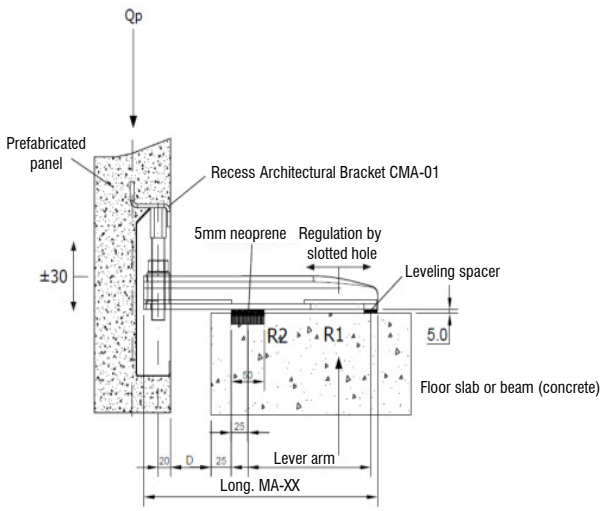
Compact design with regulation in the three main directions.

Architectural bracket **MA-03**



Surface treatment: Hot-dip galvanized
Service load: See table on backside
Cantilever (D): Up to 150 mm

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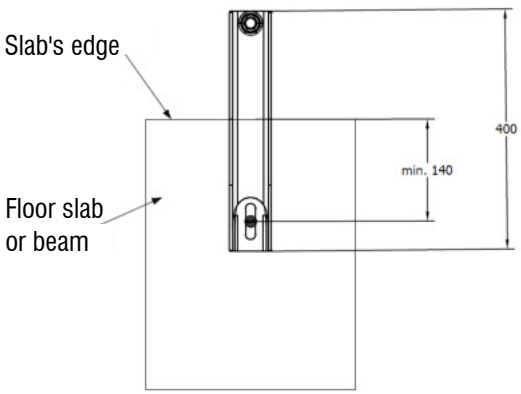
Architectural bracket **MA-03**

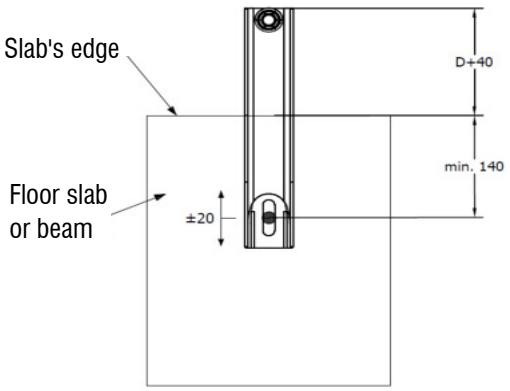
INSTRUCTIONS FOR USE

❶



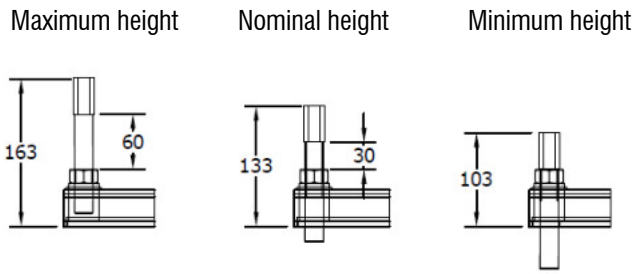
1.1.- Check surface concrete slab where corbel will be placed (plain and clean).
1.2.- Placing the expansion bolt at minimum 140 mm from the slab's edge.

❷



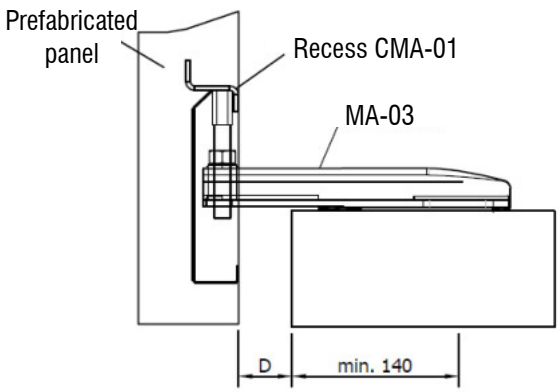
2.1.- Fixing the corbel on concrete slab in order to fulfil nominal position (cantilever measure).
2.2.- Expansion bolt strongly tightened according to manufacturer's instrucions.

❸



3.1.- Height adjustment through the screw's head. **MAXIMUM HEIGHT WILL NOT NEVER EXCEEDED AT ANY CASE.**
3.2.- Once finished regulation, lower nut must be strongly tightened in order to fix thread bar.

❹



4.1.- Assembly of precast concrete panel.

MA-03 with C25/30												
Distance D	10 mm	20 mm	30 mm	50 mm	60 mm	70 mm	80 mm	100 mm	110 mm	130 mm	140 mm	150 mm
Charge value Qp	15,42 kN	13,77 kN	12,44 kN	10,42 kN	9,63 kN	8,96 kN	8,37 kN	7,39 kN	6,99 kN	6,30 kN	6,00 kN	5,73 kN
Reactions R1	5,36 kN	5,63 kN	5,92 kN	6,58 kN	6,96 kN	7,38 kN	7,84 kN	8,98 kN	9,68 kN	11,45 kN	12,59 kN	14,00 kN

D: Gap between panel and concrete slab.
Qp: Maximum Load (Panel weight).
R1: Reaction force on concrete slab.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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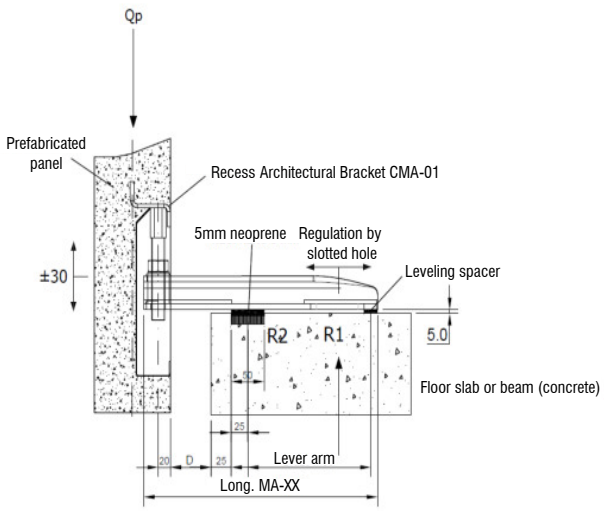
Architectural bracket **MA-04**



Surface treatment: Hot-dip galvanized
Service load: See table on backside
Cantilever (D): Up to 150 mm

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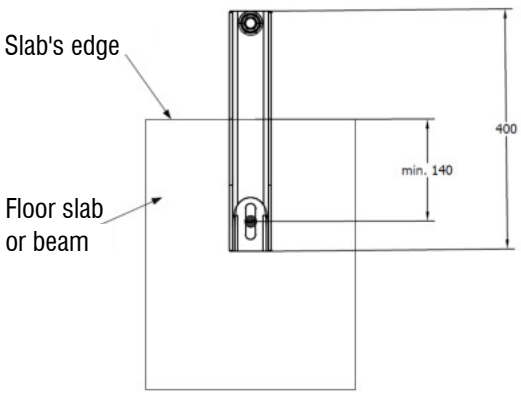
Architectural bracket **MA-04**

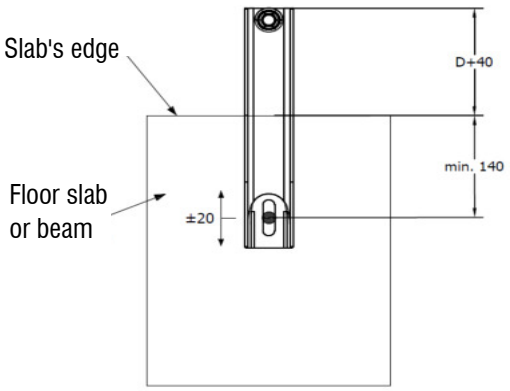
INSTRUCTIONS FOR USE

❶



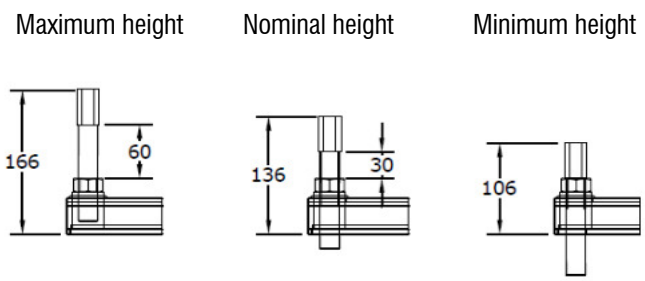
1.1.- Check surface concrete slab where corbel will be placed (plain and clean).
1.2.- Placing the expansion bolt at minimum 140 mm from the slab's edge.

❷



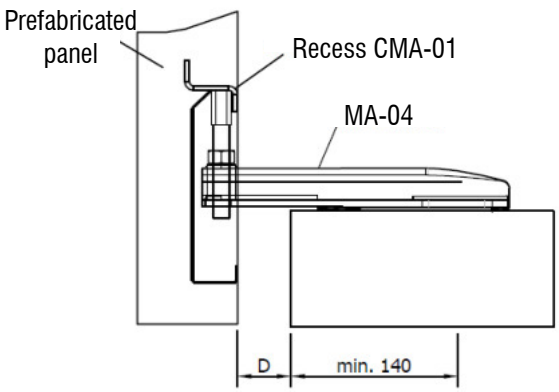
2.1.- Fixing the corbel on concrete slab in order to fulfil nominal position (cantilever measure).
2.2.- Expansion bolt strongly tightened according to manufacturer's instrucions.

❸



3.1.- Height adjustment through the screw's head. **MAXIMUM HEIGHT WILL NOT NEVER EXCEEDED AT ANY CASE.**
3.2.- Once finished regulation, lower nut must be strongly tightened in order to fix thread bar.

❹



4.1.- Assembly of precast concrete panel.

MA-04 with C25/30												
Distance D	10 mm	20 mm	30 mm	50 mm	60 mm	70 mm	80 mm	100 mm	110 mm	130 mm	140 mm	150 mm
Charge value Qp	30,11 kN	29,44 kN	28,10 kN	24,29 kN	22,46 kN	20,88 kN	19,51 kN	17,05 kN	14,95 kN	11,39 kN	9,86 kN	8,47 kN
Reactions R1	10,47 kN	12,04 kN	13,38 kN	15,34 kN	16,22 kN	17,20 kN	18,29 kN	20,70 kN	20,70 kN	20,70 kN	20,70 kN	20,70 kN

D: Gap between panel and concrete slab.
Qp: Maximum Load (Panel weight).
R1: Reaction force on concrete slab.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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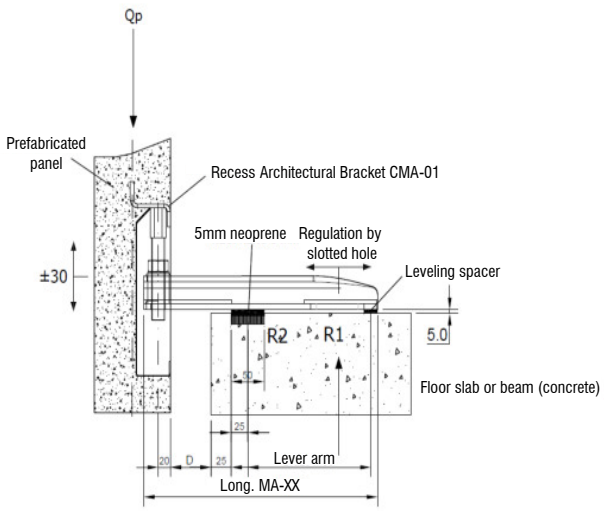
Architectural bracket **MA-05**



Surface treatment: Hot-dip galvanized
Service load: See table on backside
Cantilever (D): Up to 80 mm

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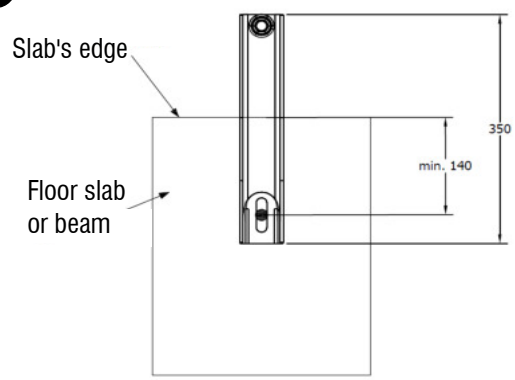
Architectural bracket **MA-05**

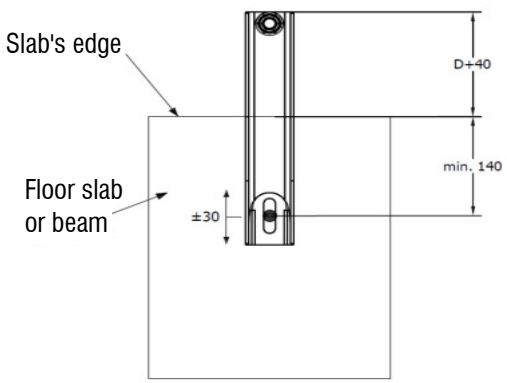
INSTRUCTIONS FOR USE

❶



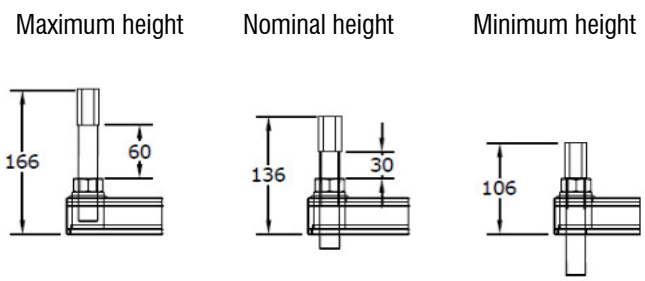
1.1.- Check surface concrete slab where corbel will be placed (plain and clean).
1.2.- Placing the expansion bolt at minimum 140 mm from the slab's edge.

❷



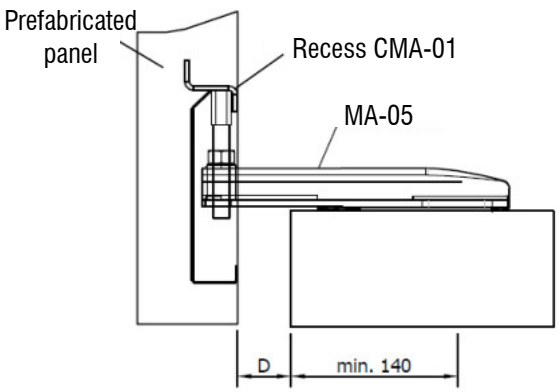
2.1.- Fixing the corbel on concrete slab in order to fulfil nominal position (cantilever measure).
2.2.- Expansion bolt strongly tightened according to manufacturer's instrucions.

❸



3.1.- Height adjustment through the screw's head. **MAXIMUM HEIGHT WILL NOT NEVER EXCEEDED AT ANY CASE.**
3.2.- Once finished regulation, lower nut must be strongly tightened in order to fix thread bar.

❹



4.1.- Assembly of precast concrete panel.

MA-05 with C25/30									
Distance D	10 mm	15 mm	20 mm	30 mm	40 mm	50 mm	60 mm	70 mm	80 mm
Charge value Qp	34,57 kN	33,49 kN	32,50 kN	28,98 kN	24,46 kN	20,70 kN	17,52 kN	14,79 kN	12,42 kN
Reactions R1	17,28 kN	18,36 kN	19,50 kN	20,70 kN	20,70 kN	20,70 kN	20,70 kN	20,70 kN	20,70 kN

D: Gap between panel and concrete slab.
Qp: Maximum Load (Panel weight).
R1: Reaction force on concrete slab.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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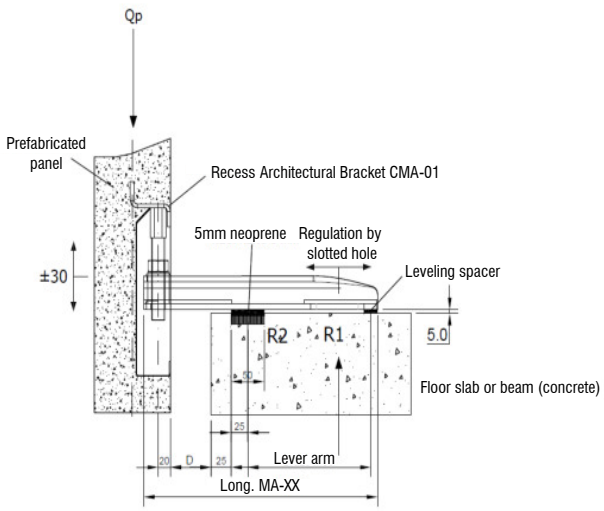
Architectural bracket **MA-06**



Surface treatment: Hot-dip galvanized
Service load: See table on backside
Cantilever (D): Up to 130 mm

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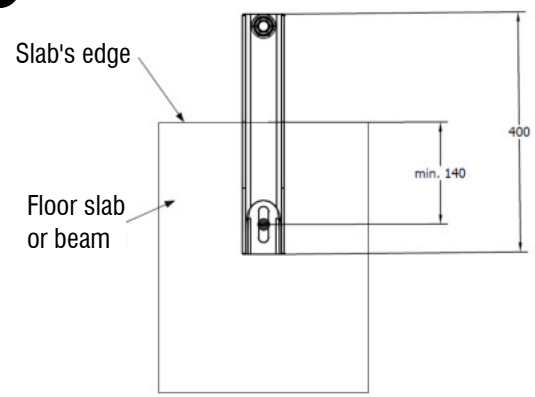
Architectural bracket **MA-06**

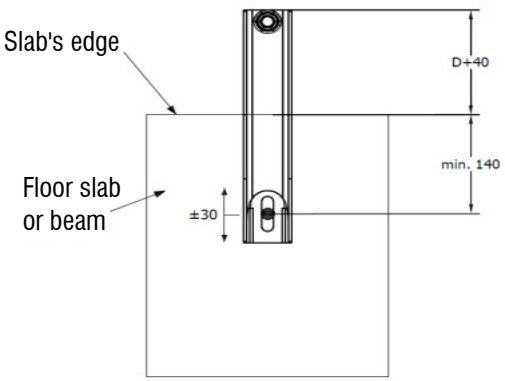
INSTRUCTIONS FOR USE

❶



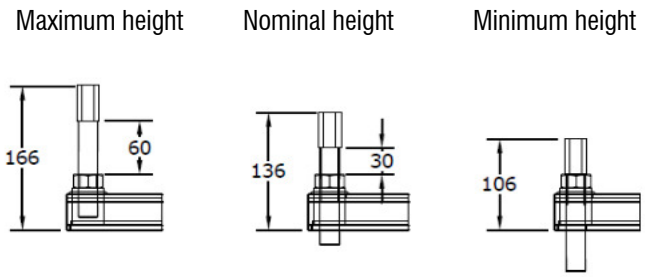
1.1.- Check surface concrete slab where corbel will be placed (plain and clean).
1.2.- Placing the expansion bolt at minimum 140 mm from the slab's edge.

❷



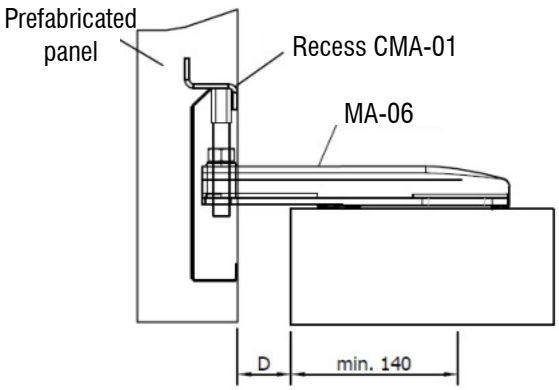
2.1.- Fixing the corbel on concrete slab in order to fulfil nominal position (cantilever measure).
2.2.- Expansion bolt strongly tightened according to manufacturer's instrucions.

❸



3.1.- Height adjustment through the screw's head. **MAXIMUM HEIGHT WILL NOT NEVER EXCEEDED AT ANY CASE.**
3.2.- Once finished regulation, lower nut must be strongly tightened in order to fix thread bar.

❹



4.1.- Assembly of precast concrete panel.

MA-06 with C25/30												
Distance D	10 mm	15 mm	20 mm	30 mm	40 mm	50 mm	70 mm	80 mm	100 mm	110 mm	120 mm	130 mm
Charge value Qp	37,55 kN	36,65 kN	35,76 kN	33,97 kN	32,18 kN	29,33 kN	22,18 kN	19,32 kN	14,61 kN	12,65 kN	10,89 kN	9,32 kN
Reactions R1	14,30 kN	15,20 kN	16,09 kN	17,88 kN	19,67 kN	20,70 kN	20,70 kN	20,70 kN	20,70 kN	20,70 kN	20,70 kN	20,70 kN

D: Gap between panel and concrete slab.
Qp: Maximum Load (Panel weight).
R1: Reaction force on concrete slab.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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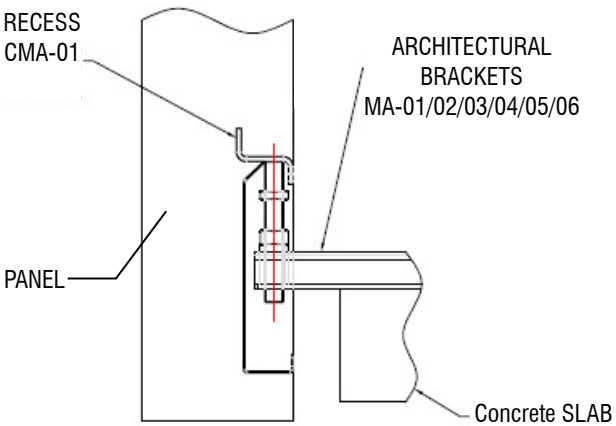
System for supporting panels with the architectural bracket.
Compatibility with the MA-01,MA-02, MA-03,MA-04,MA-05 and MA-06.
Versatile design and easy to place in the mould

Recess Architectural bracket **CMA-01**



(1)Surface treatment:	Electroplated zinc coating
Service loads:	Those allowed in the MA-01/02/03/04/05 & 06 models

1. Other surface treatment available under request.

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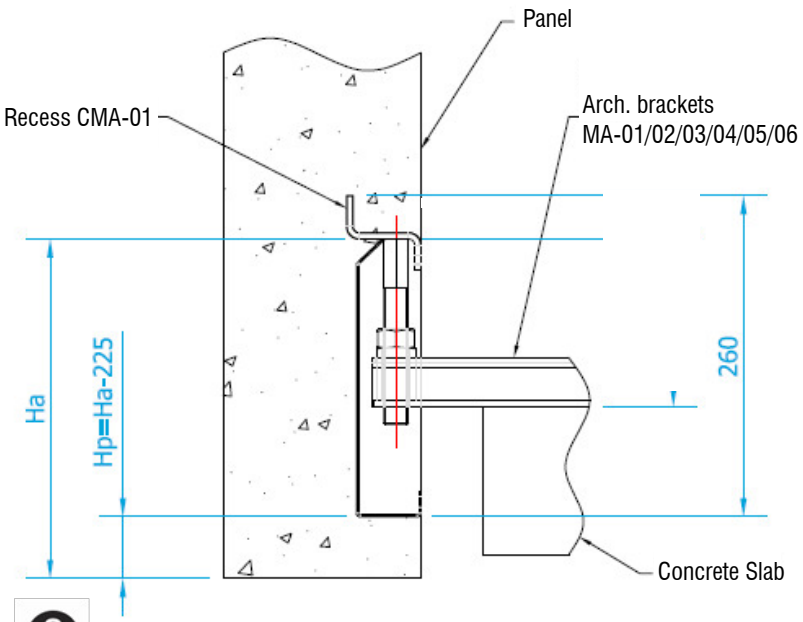
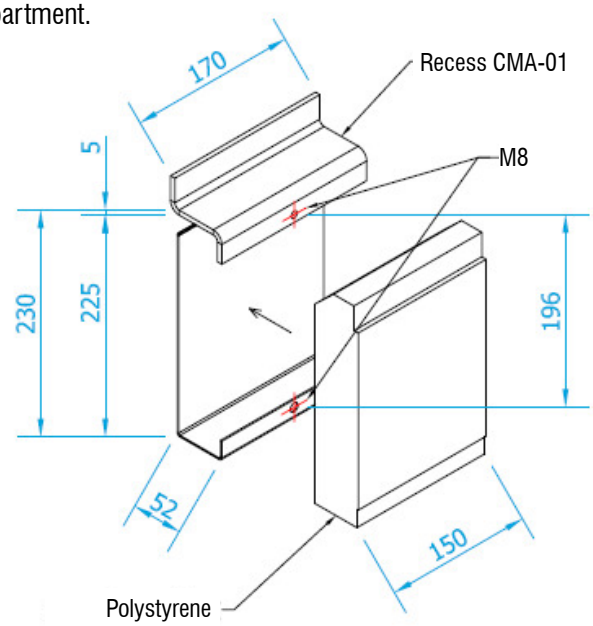
Recess architectural bracket **CMA-01**

INSTRUCTIONS FOR USE

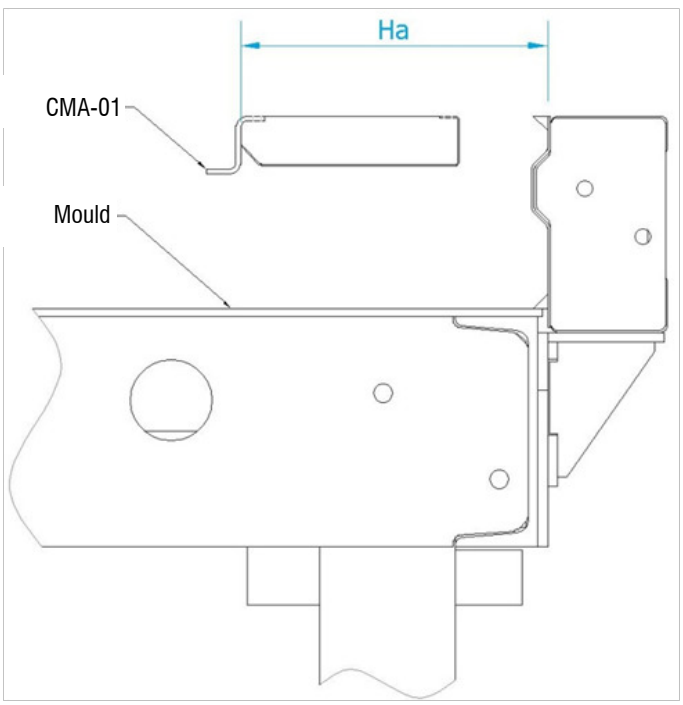
1 1.1 .- Definition of the support dimension “Ha” by the Technical Department.





2 2.1 .- Placing recess item in the mould according to specifications (Technical department).

Recess's location in the mould can be made in two different ways:
a) By welding item to the panel's reinforcement.
b) By screwing item to support using threads M8.



In order to continue the assembly sequence all the steps above described must be successfully overcome.

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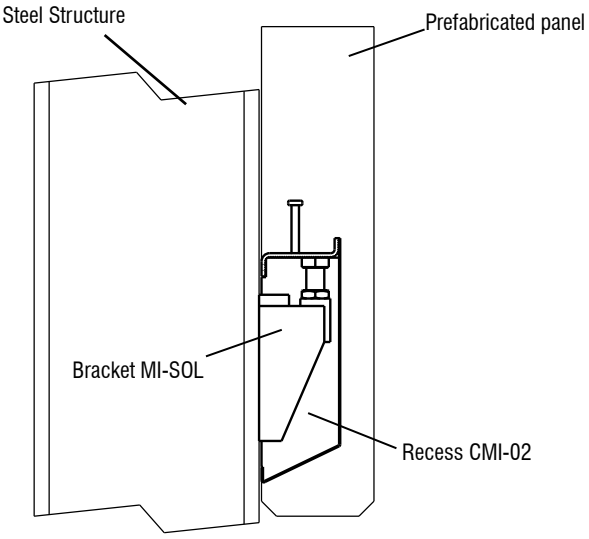
Welded bracket on the column and/or steel structure for supporting prefabricated elements (walls, beams....)

Industrial bracket
MI-SOL



Code	Description	Service load SLS
MI-10-SOL	Industrial Bracket type 10	10Tn(100KN)

Material	S275JR
Regulation Screw	8.8
Security Coeficient	1,5 over the yield stress

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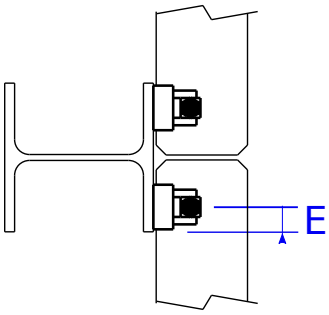
Industrial bracket **MI-SOL**

INSTRUCTIONS FOR USE

1. DESIGN PRINCIPLES:

1.1. Distances to take into account:

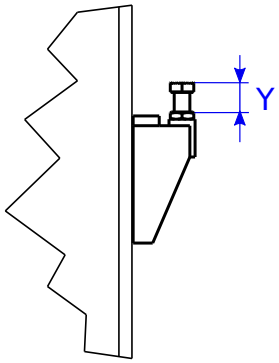


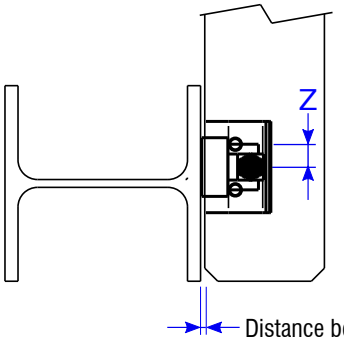
	MI-10-SOL
Minimum distance E	60 mm

E distance depends on the CMI recess that is used.
As a general rule, a minimum distance of 5cm is left between the exterior part of the panel and the exterior part of the CMI.

2. BRACKET REGULATION:

2.1. The bracket regulation is defined on the three main axes



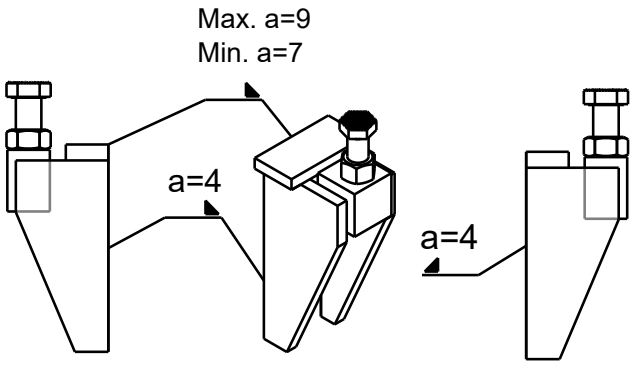


DO NOT EXCEED UNDER ANY CONCEPT THAT THE VALUE OF Y IS GREATER THAN 60MM.

		MI-10-SOL
	Y Axis Regulation	50 mm
CMI-02-120	Z1 Axis Regulation	± 15 mm
CMI-02-145	Z2 Axis Regulation	± 22.5 mm
CMI-02-170	Z3 Axis Regulation	± 40 mm

Distance between the panel and the steel profile
20<D<49 mm (with CMI-01)
0<D<49 mm (with CMI-02)

3. BRACKET PLACEMENT: **(Welding)**



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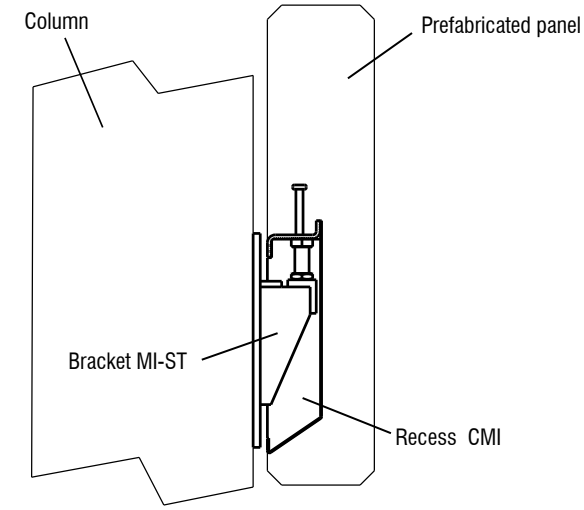
Industrial bracket **MI-ST**

Welded or anchored bracket on the column and/or steel structure for supporting prefabricated elements (walls, beams....)

Industrial bracket
MI-ST



Code	Description	Service load SLS
MI-2.5-ST	Industrial Bracket type 2.5	2.5Tn(25KN)
MI-5.0-ST	Industrial Bracket type 5	5Tn(50KN)

Material	S275JR
Regulation Screw	8.8
Security Coeficient	1,6 over the yield stress

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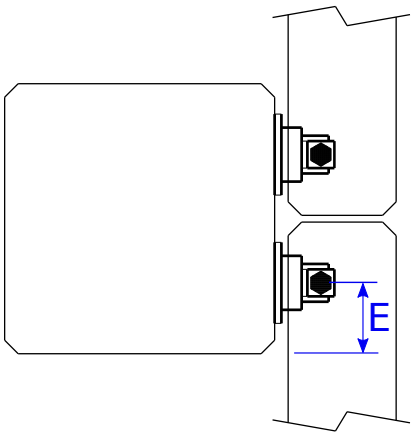
Industrial bracket **MI-ST**

INSTRUCTIONS FOR USE

1. DESIGN PRINCIPLES:

1.1. Distances to take into account:



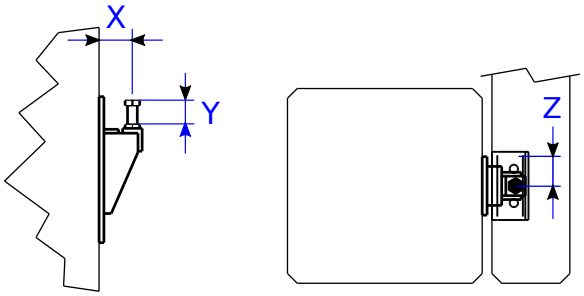
	MI-2.5-ST	MI-05-ST
Minimum distance E	130 mm	130 mm

·Distance E is defined in order to guarantee that there is suficient space for the reinforcement and the concrete cover.

The bracket MI-ST is connected to the facade panels with the recess CMI which is located, at least, 5cm away from the exterior part of the panel.

2. BRACKET REGULATION:

2.1. The bracket regulation is defined on the three main axes: **(X value of the MI-2.5-ST is 68,5 mm and for MI-05-ST is 70,5 mm.)**



DO NOT EXCEED UNDER ANY CONCEPT THAT THE VALUE OF Y IS GREATER THAN 60MM.

	MI-2.5-ST	MI-05-ST
Y axis regulation	55 mm	50 mm

*Regulation depending on the geometry of the recess CMI for MI-2.5-ST and MI-5.0-ST.

Z axis regulation	MI-2.5-ST	MI-5.0-ST
CMI-01-120	± 20mm	± 20mm
CMI-01-145	± 22.5mm	± 22.5mm
CMI-01-170	± 35mm	± 35mm
CMI-02-120	± 20mm	± 20mm
CMI-02-145	± 22.5mm	± 22.5mm
CMI-02-170	± 35mm	± 35mm

Column-panel distance	MI-2.5-ST	MI-5.0-ST
CMI-01-120	14-44mm	16-46mm
CMI-01-145	14-44mm	16-46mm
CMI-01-170	14-44mm	16-46mm
CMI-02-120	10-41mm	12-43mm
CMI-02-145	10-41mm	12-43mm
CMI-02-170	10-41mm	12-43mm

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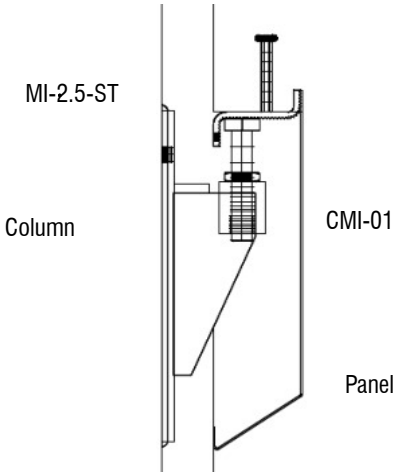
System for supporting prefabricated concrete facade panels or beams.
Compatible with Industrial brackets such as MI-ST and MI-SOL.

Recess Industrial bracket **CMI**

Assembly of the CMI-01 with MI-2.5-ST



Code	Description
CMI-01	Recess for Industrial Brackets
CMI-02	Recess for Industrial Brackets

Surface treatment* Electroplated zinc coating
Service loads The ones defined on MI catalog

**Possibility of other surface treatment under request*

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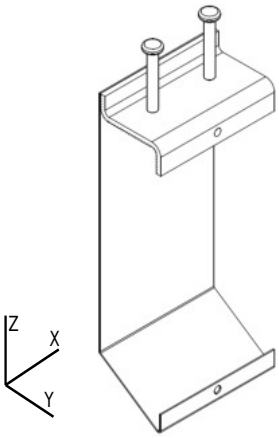
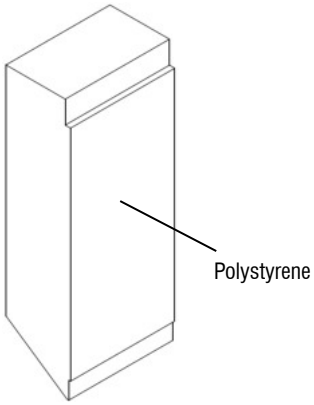
Recess Industrial bracket **CMI**

INSTRUCTIONS FOR USE

1 1.1.- Definition of the element





The recess CMI is supplied with the polystyrene already inserted

2 The regulation values depend on the CMI models 01 or 02.

In the Y direction, offer a 30mm regulation when combined with Industrial Brackets MI.

In the Y direction, offer a regulation depending on the CMI model:

	X Regulation	
	MI-ST	MI-SOL
CMI 01-120/CMI-02-120	40mm	30mm
CMI 01-145/CMI-02-145	65mm	55mm
CMI 01-170/CMI-02-170	90mm	80mm

Regulation is understood as the difference between the highest and the lowest position

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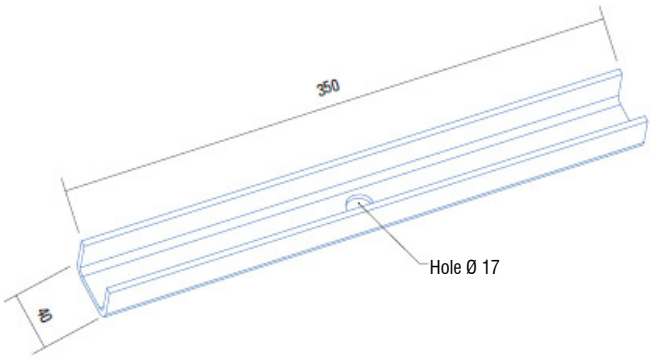
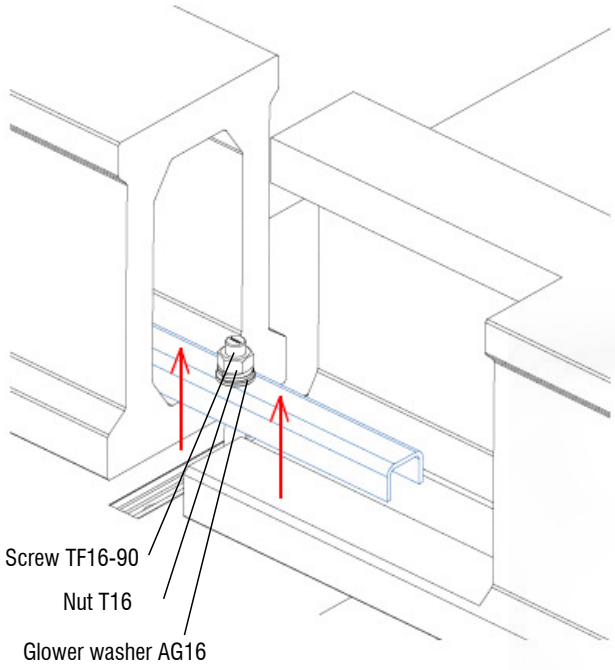
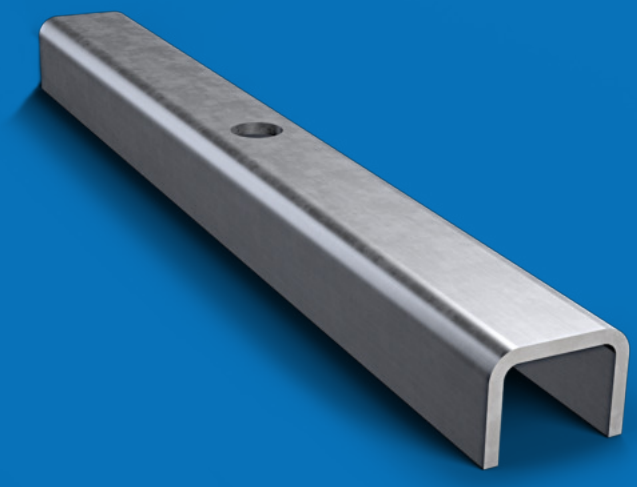


Accessories for the anti-roll of continuous concrete tubular joists. Assembly with NOXI profile, screw FER16-90, washer A16, washer Grower AG16 and nut T16.With this system, regulation is achieved in 2 of the 3 main axes.

Anchor **CTI**





Code	Description
CTI	Inner anchor for tubular joists.

(1) **Surface treatment:** Electroplated zinc coating
(2) **Service load:** 250 kg per support point

1. Other suface treatment available under request.
2. Separation between joists: 5 cm.

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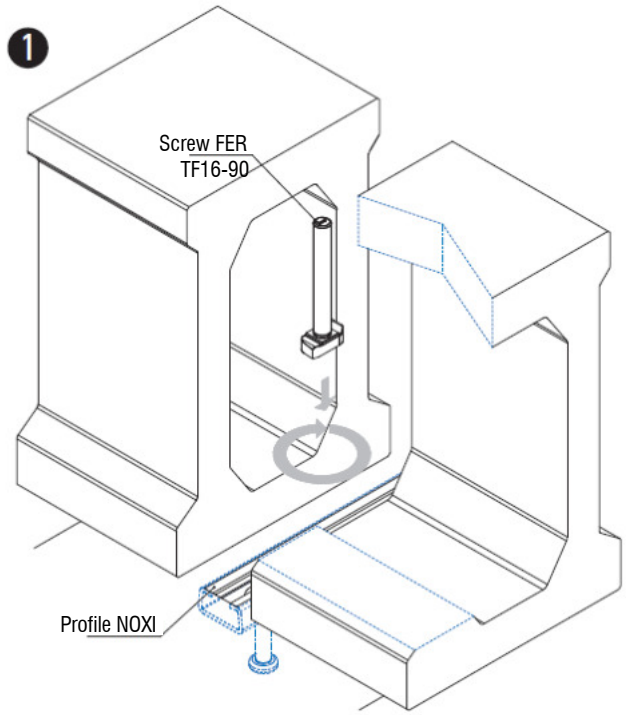
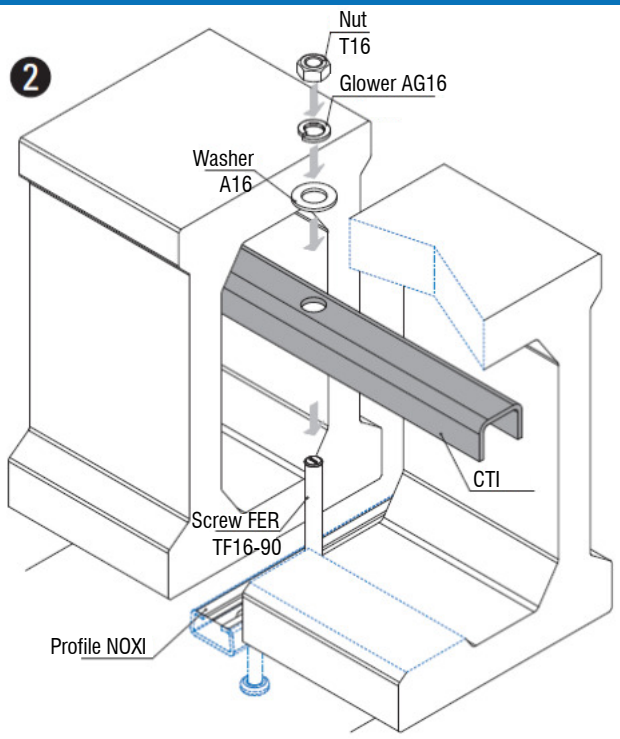
Anchor **CTI**

INSTRUCTIONS FOR USE

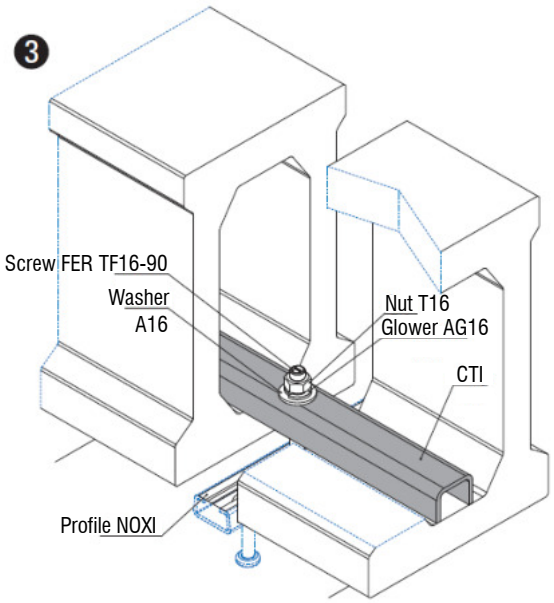


1.1.- Place the FER screw into profile and turn it 90 degrees.

** The profile can be: NOXI C, R or S; depending of loads*



2.1.- Assembly of the screw and the CTE anchor through the Ø17 hole.
2.2.- Fixing the system by washer A16, washer Grower AG16 and nut T16.



3.1.-Tighten the nut to finish the assembly. The Grower washer should be left completely flat.
3.2.- Final check and assurance of nut tightening.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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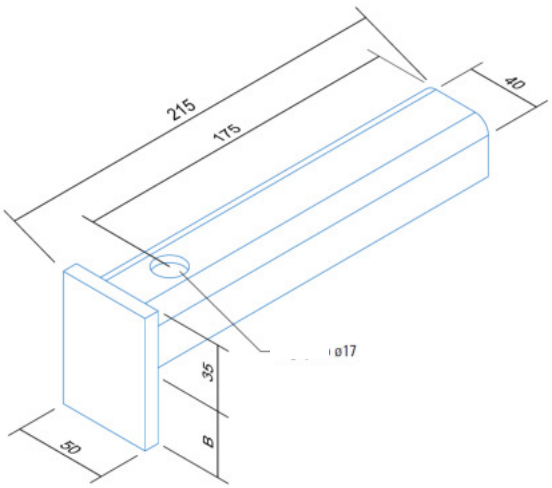
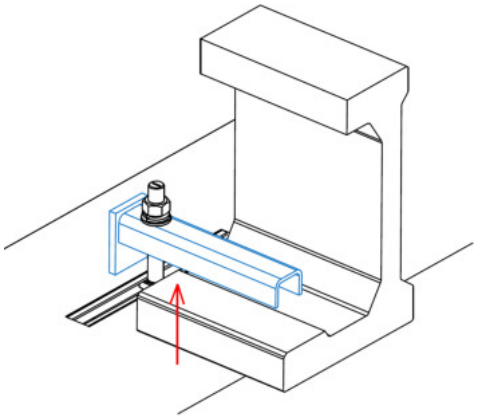
Anchor **CTE**

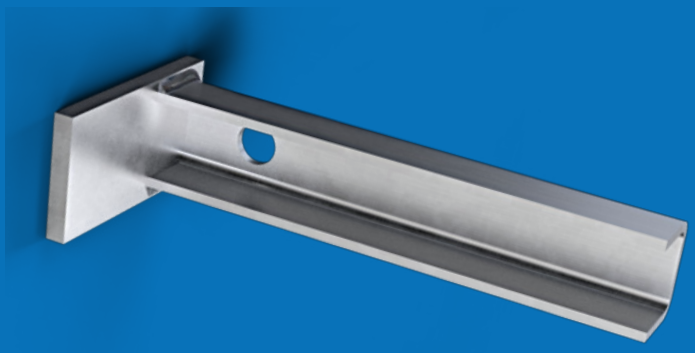
Accessory for fixing concrete tubular joists (end position). Assembled with NOXI profile, FER TF16 screw, A16 washer, AG16 Grower washer and T16 nut.

With this system, assembly regulation is achieved in 2 of the 3 main axes.

Anchor CTE







Code	Description	B
CTE40	CTE for tubular joist, 40mm base	40mm
CTE50	CTE for tubular joist, 50mm base	50mm
CTE60	CTE for tubular joist, 60mm base	60mm
CTE70	CTE for tubular joist, 70mm base	70mm

*Possibility of manufacturing in different base "B"

(1) Surface treatment: Electroplated zinc coating
(2) Service load: 180 kg

1. Other suface treatment availabe under request.
2. Maximum separation of 5 cm between the screw and the tubular joist.

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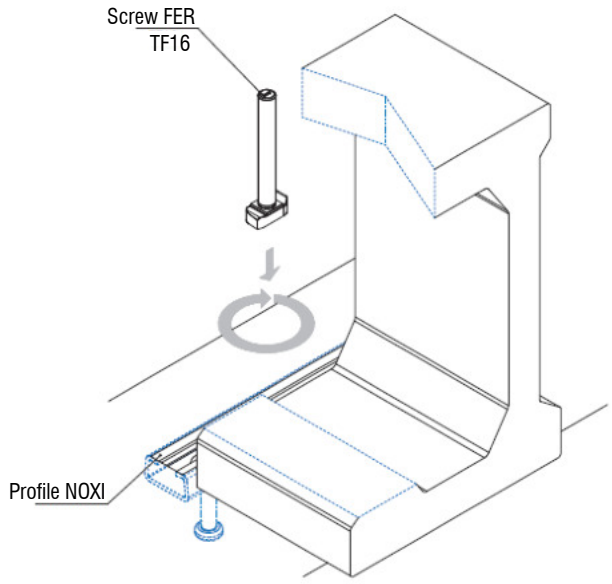
Anchor **CTE**

INSTRUCTIONS FOR USE

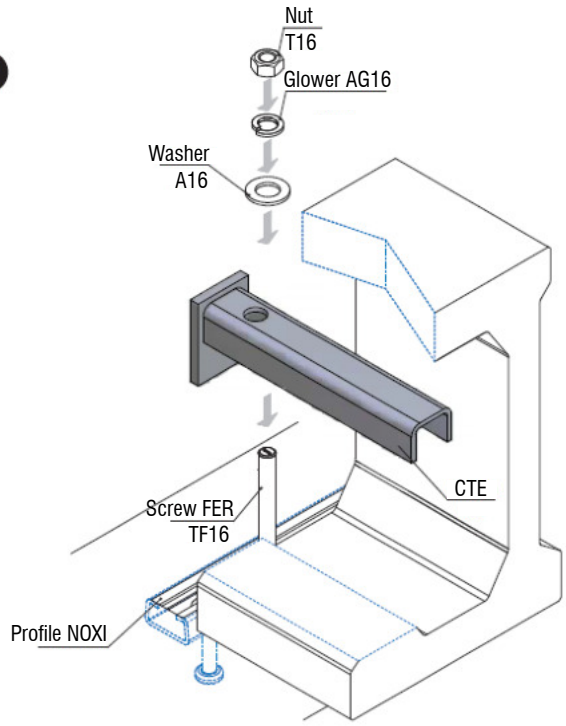
1



1.1.- Place the FER screw into profile and turn it 90 degrees.

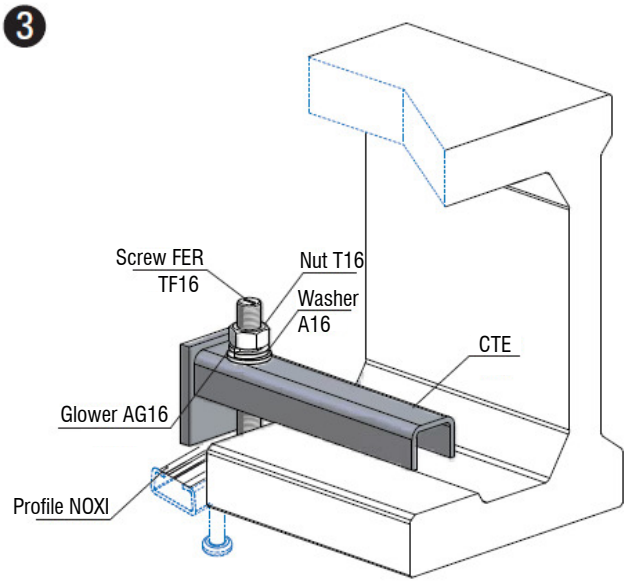
** The profile can be: NOXI C, R or S; depending of loads.*

2



2.1.- Assembly of the screw and the CTE anchorage through the Ø17 hole.
2.2.- Fixing the system by washer A16, washer Glower AG16 and nut T16.

3



3.1.-Tighten the nut to finish the assembly. The Glower washer should be completely flat.
3.2.- Final check and assurance of nut tightening.

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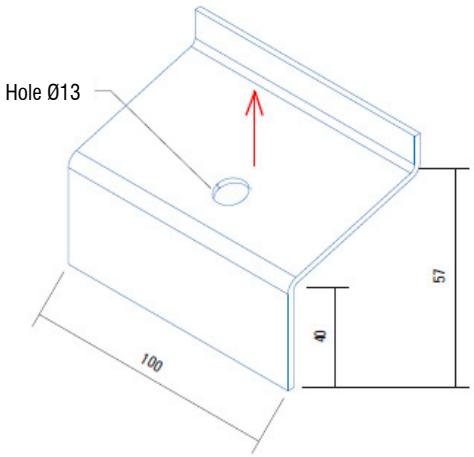
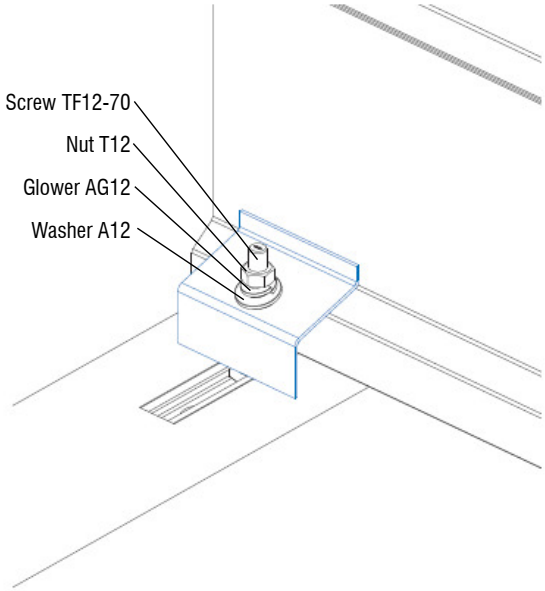




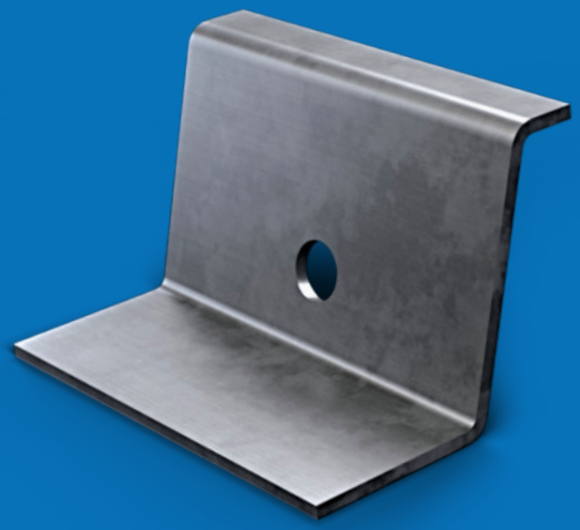
Code	Description
C100	Accessory for fixing concrete joists

(1) **Suface treatment** Sendzimir Galvanized
Service load: 120 Kg

1. Other surface treatment available under request.

Accessory for anti-rolling concrete joists at its end.
Assembled with NOXI profile, FER screw TF12-70, washer A12, Glower washer A12 and nut T12. With this system, assembly regulation is achieved in 2 of the 3 main axes.

Anchor C100



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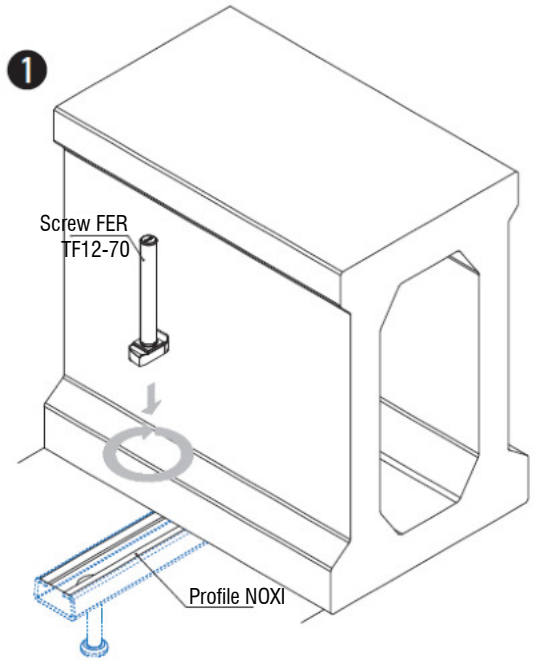
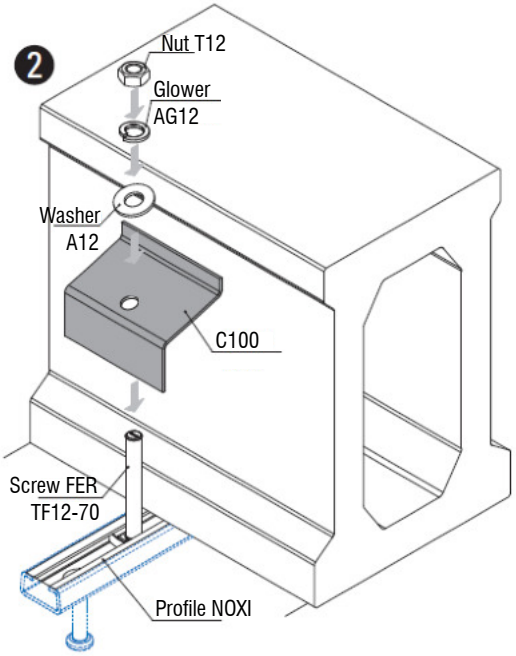
Anchor **C100**

INSTRUCTIONS FOR USE

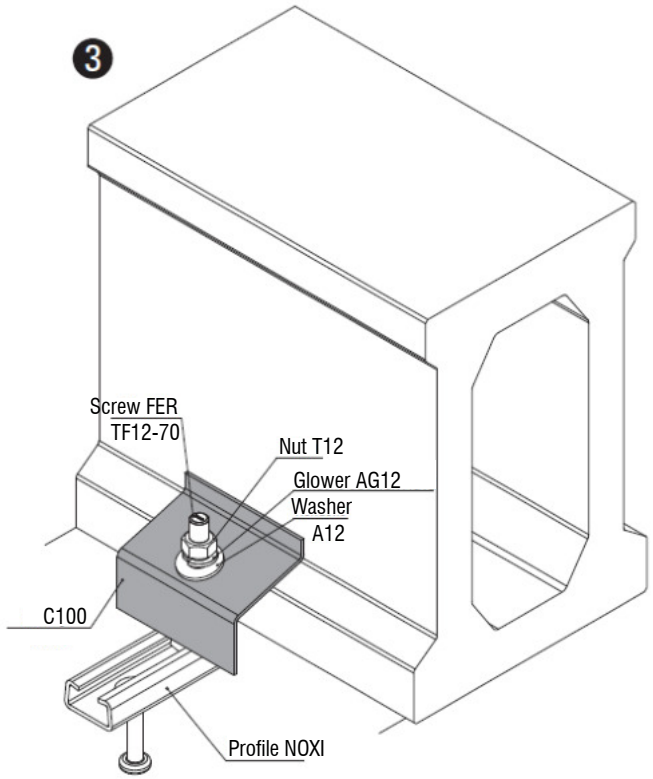


1.1.- Place the FER screw into profile and turn it 90 degrees.

**The profile can be: NOXI C, R or S*



2.1.- assembly and anchoring screw through the hole ø13, leaving the shorter wing of the anchor in contact with the beam.
2.2.- The screw must be touching the beam.
2.3.- Fixation by washer A12, washer Grower AG12 and nut T12.



3.1.- Tighten the nut to finish the assembly. The Grower washer should be completely flat.
3.2.- Final check and assurance of nut tightening.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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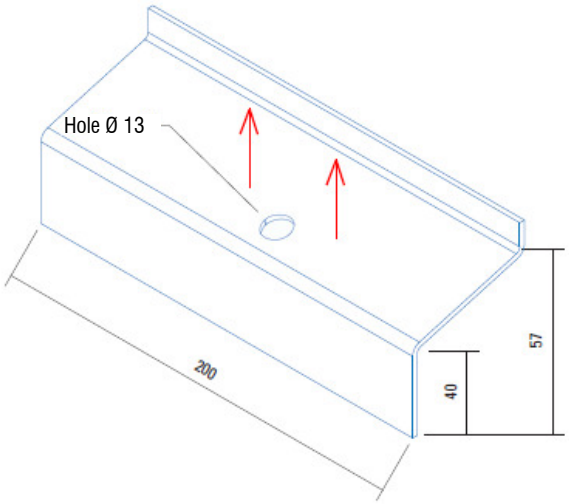

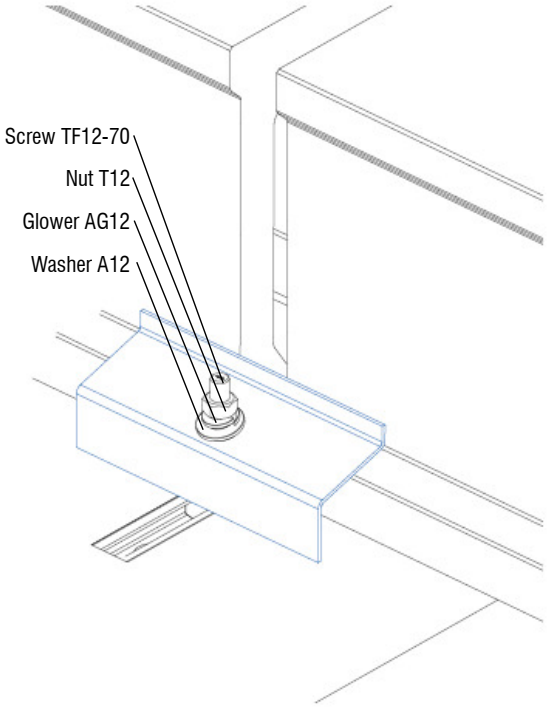

Code	Description
C200	Accessory for fixing continuous concrete joists

(1) Surface treatment: Sendzimir Galvanized
Service load: 100 Kg per support point

1. Other surface treatment available under request.

Accessory for anti-rolling continuous concrete beams. Assembled with NOXI profile, FER screw TF12-70, washer A12, Grower washer A12 and nut T12. With this system, assembly regulation is achieved in 2 of the 3 main axes.

Anchor **C200**

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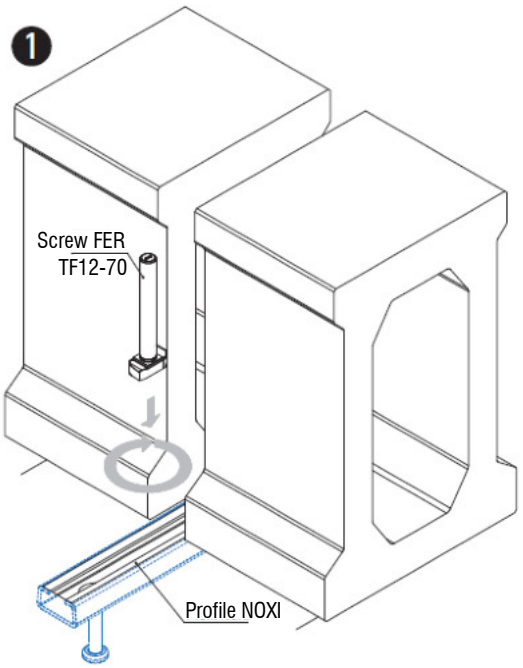
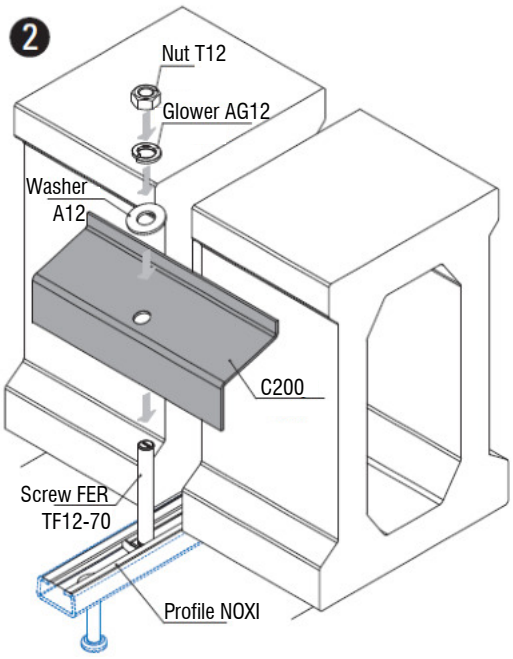
Anchor **C200**

INSTRUCTIONS FOR USE

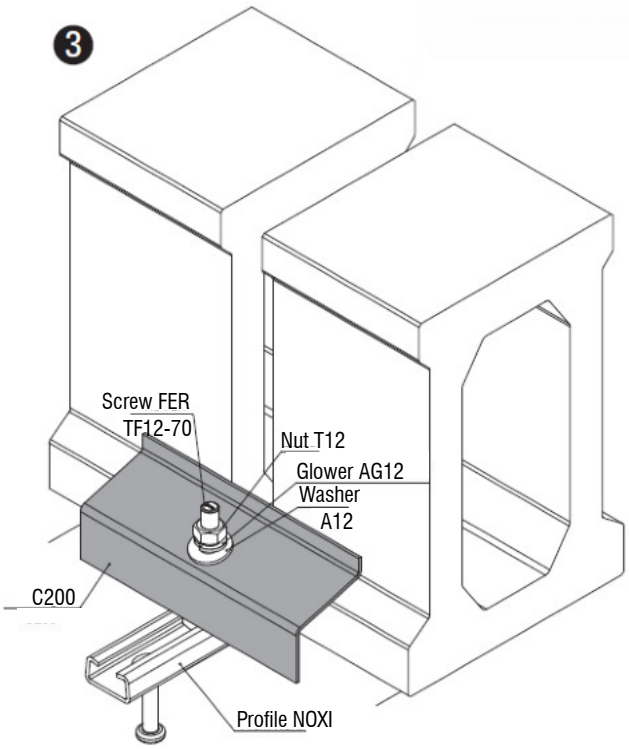


1.1.- Place the FER screw into profile and turn it 90 degrees.

*The profile can be: NOXI C, R or S; depending on the loads.



2.1.- Assembly of the screw and the anchor through the hole ø13, leaving the shorter wing of the anchor in contact with the beam.
2.2.- The FER screw must be in contact with the concrete beam to be fixed.
2.3.- Fixing by washer A12, Grower washer AG12 and nut T12.



3.1.- Tighten the nut to finish the assembly. The Grower washer should be left completely flat.
3.2.- Final check and assurance of nut tightening.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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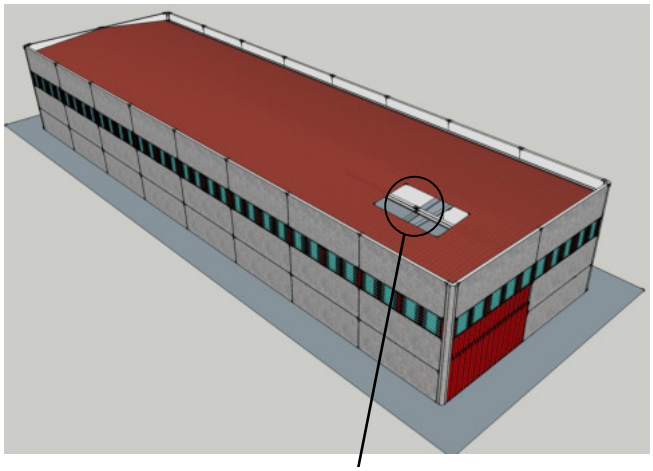
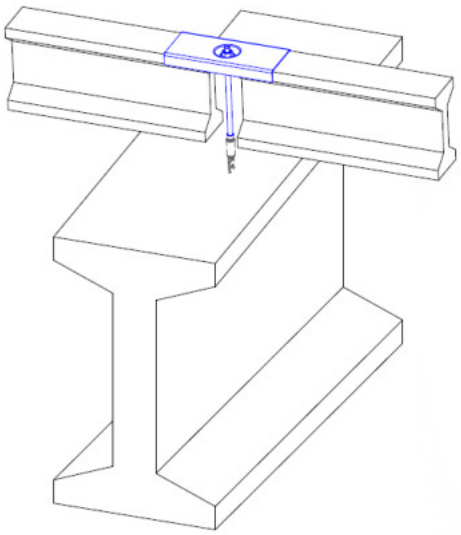
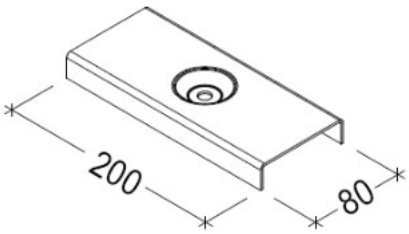
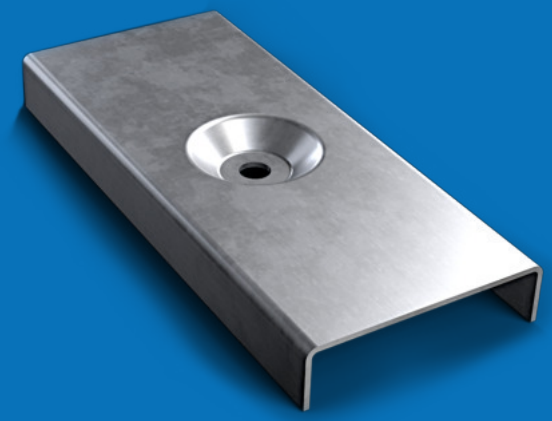






Anchorage for anti-rolling continuous concrete joists placed on a prefabricated concrete structural element. Assembled with C10-60 threaded coupler, VR10 threaded bar, M10 washer, M10 Glower washer and M10 nut.

Anchor **BIG-80**



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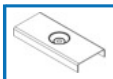
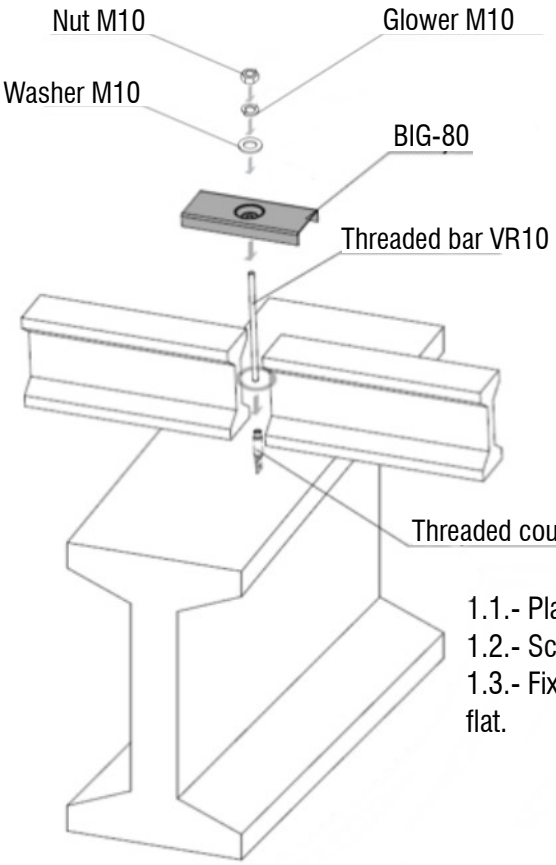
Material: DX51D+Z
Surface treatment: Sendzimir Galvanized
Service load: 190 kg per support point
Concrete: ≥HA-35

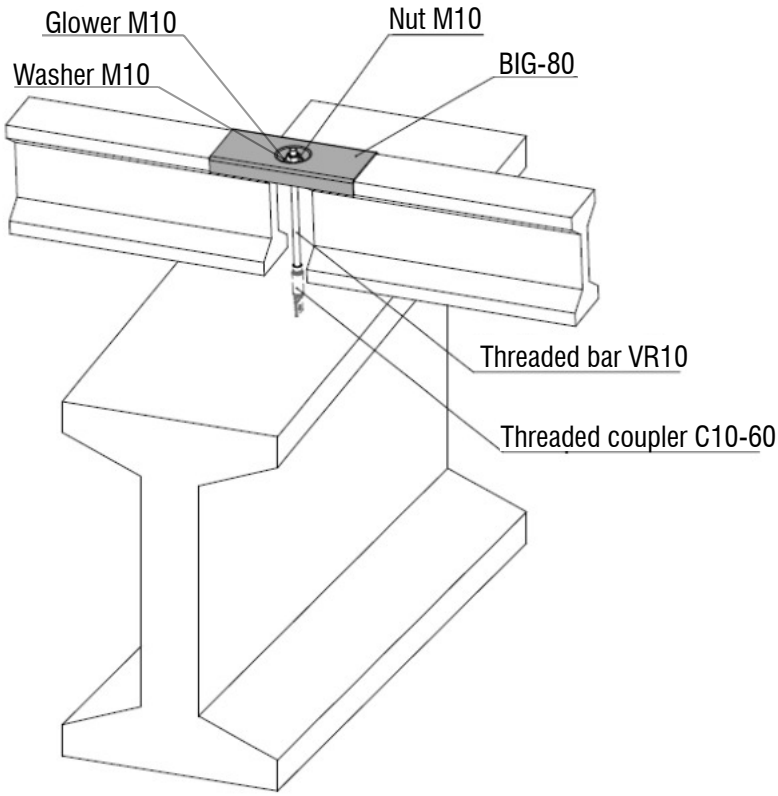
	Anchorage for joist	BIG-80
	Threaded bar length 200 mm Threaded bar length 220 mm	VR10-200 VR10-220
	Threaded coupler M10	C10-60
	Nut M10	M10

1



1.1.- Place threaded coupler into precast concrete element (precast factory).
1.2.- Screw threaded bar length 200/220 into coupler.
1.3.- Fixing of BIG-80 item through nut. Grower washer must be completely flat.

2



2.1.- Final checking of process. Nut strongly tightened.

In order to continue the assembly sequence all the steps above described must be successfully overcome

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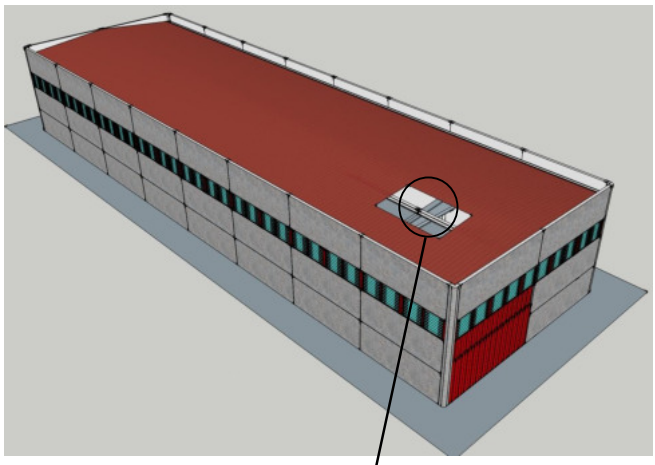
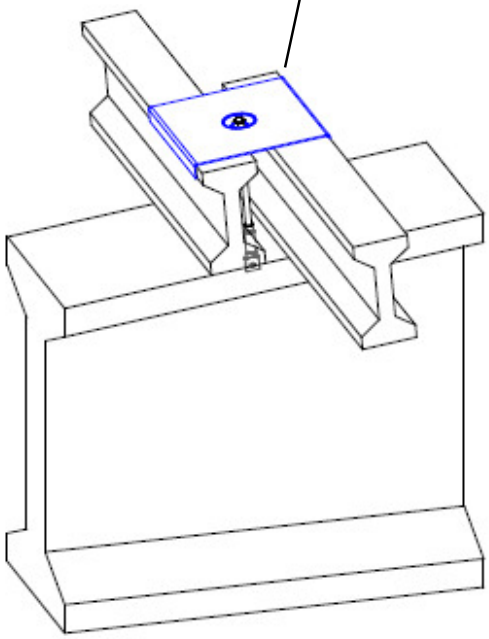
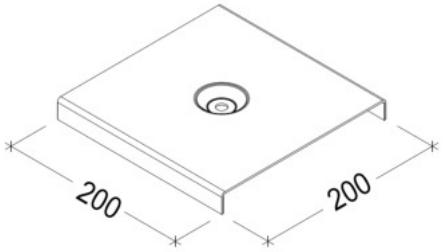
Anchor **BIG-200**

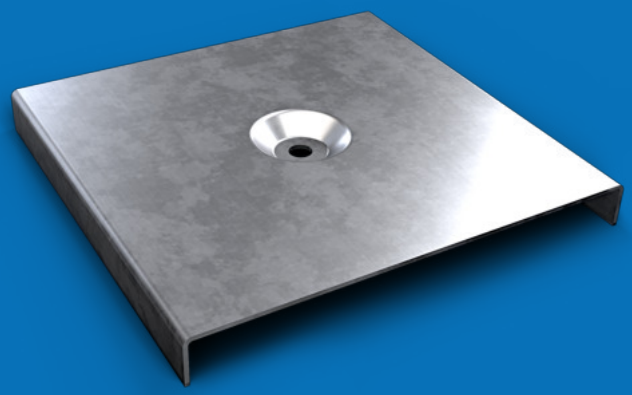






Anchorage for anti-rolling continuous concrete joists placed on a prefabricated concrete structural element. Assembled with threaded coupler C10-60, threaded bar VR10, washer M10, washer Grower M10 and nut M10.

Anchor
BIG-200



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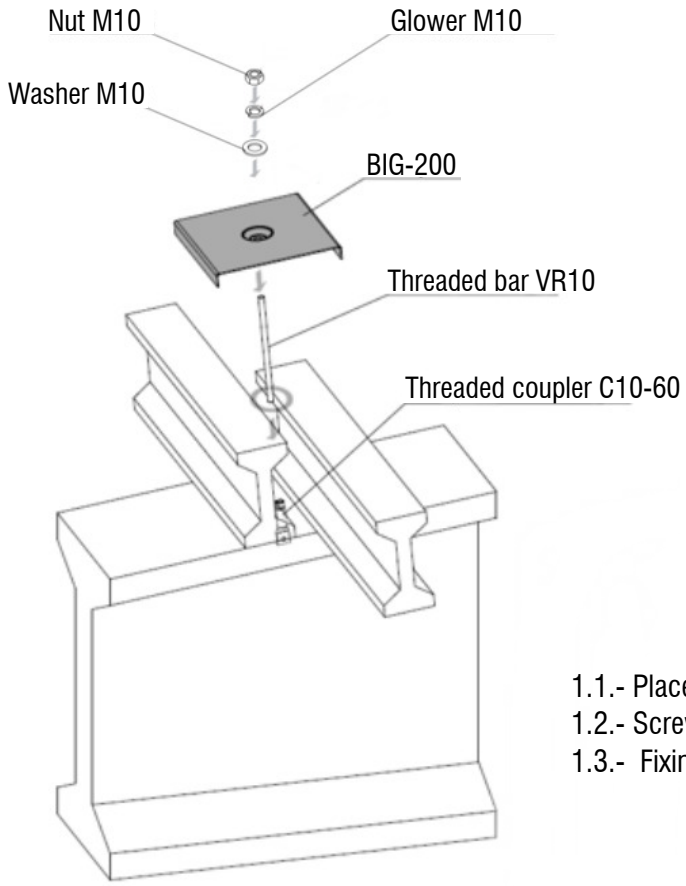
Material: DX51D+Z
Surface treatment: Sendzimir Galvanized
Useful load: 190 kg per support point
Concrete: ≥HA-35

	Anchorage for joist	BIG-200
	Threaded bar length 200 mm Threaded bar length 220 mm	VR10-200 VR10-220
	Threaded coupler M10	C10-60
	Nut M10	M10

Anchor **BIG-200**

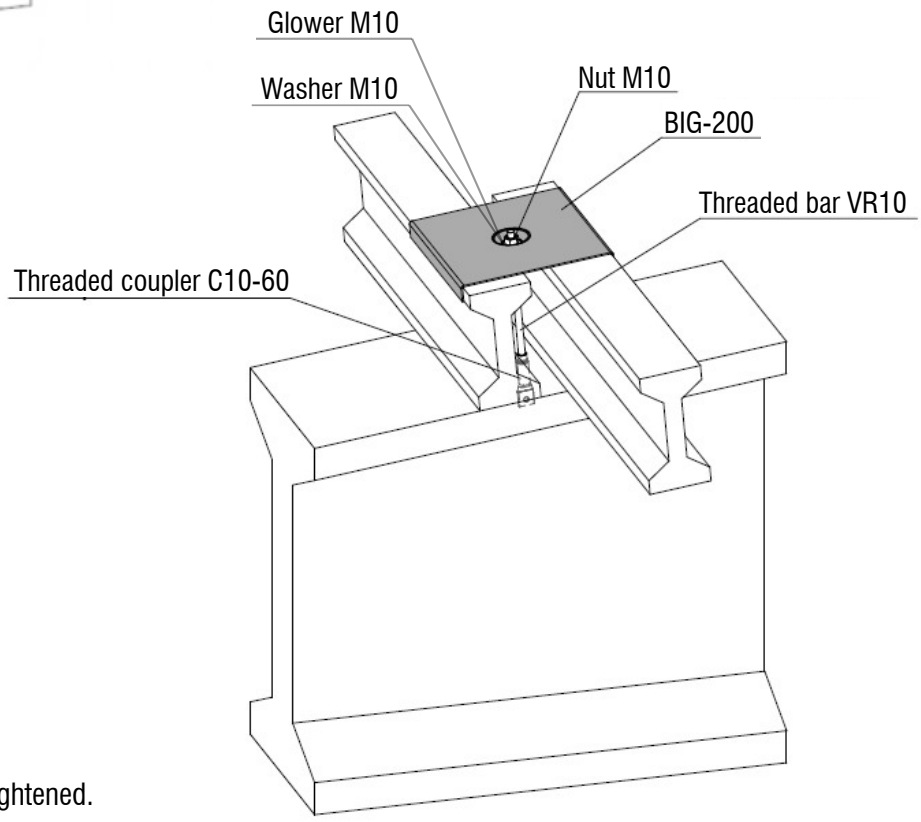
INSTRUCTIONS FOR USE

1



1.1.- Place threaded coupler into precast concrete element (precast factory)
1.2.- Screw threaded bar length 200/220 into coupler.
1.3.- Fixing of BIG-200 item through nut.

2



2.1.- Final checking of process. Nut strongly tightened.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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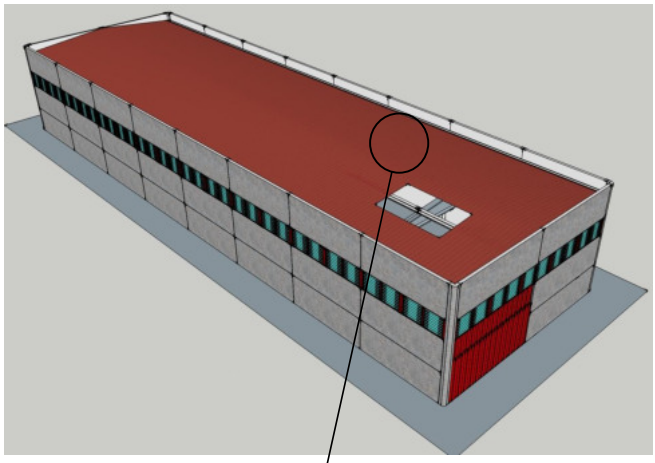
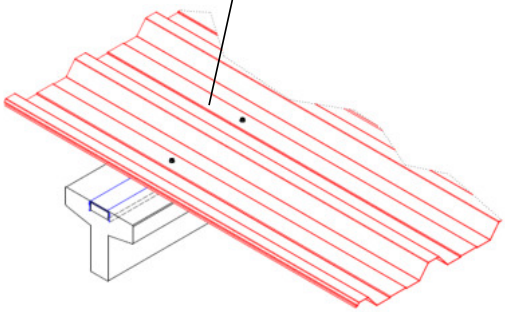
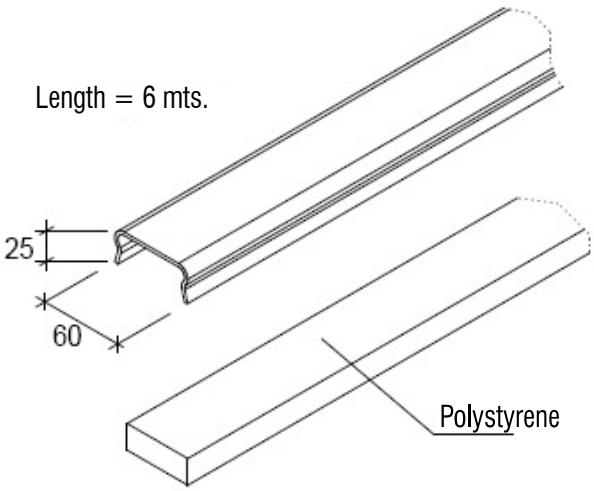
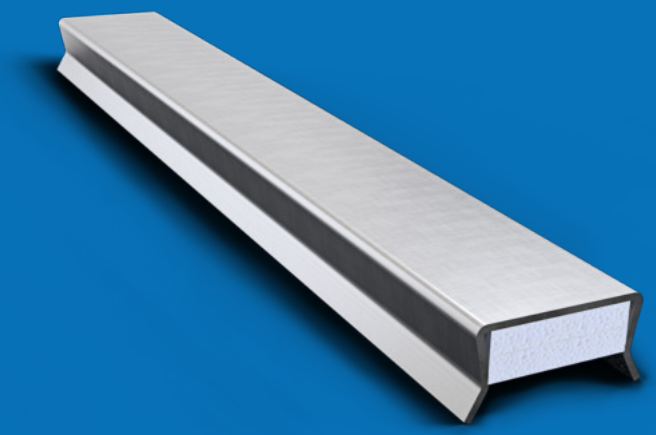


Anchorage for fixing sheet metal roofs on a prefabricated concrete element. Assembly using self-tapping screws.

Profile **PCC-60**







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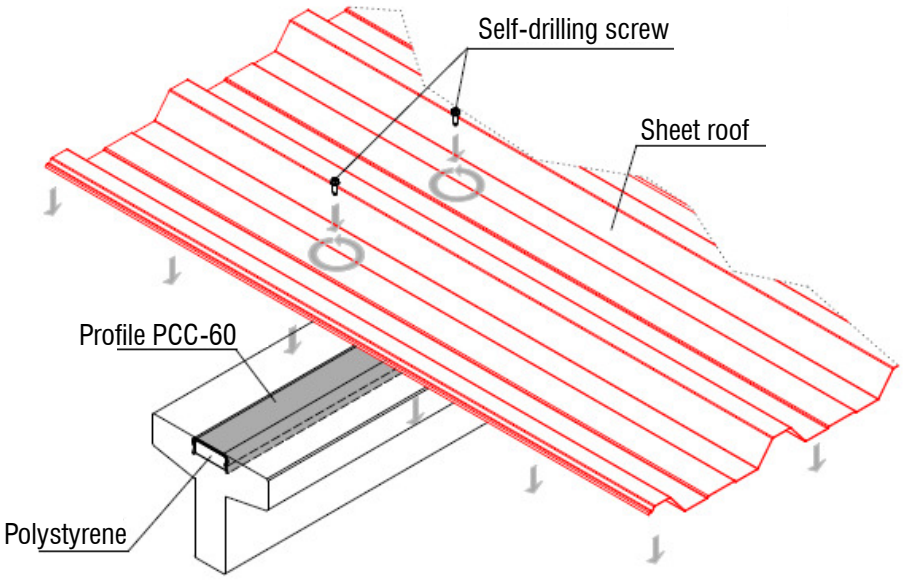
Material: DX51D+Z
Surface treatment: Sendzimir Galvanized
Service load: 7kN/ml
Concrete: ≥HA-35

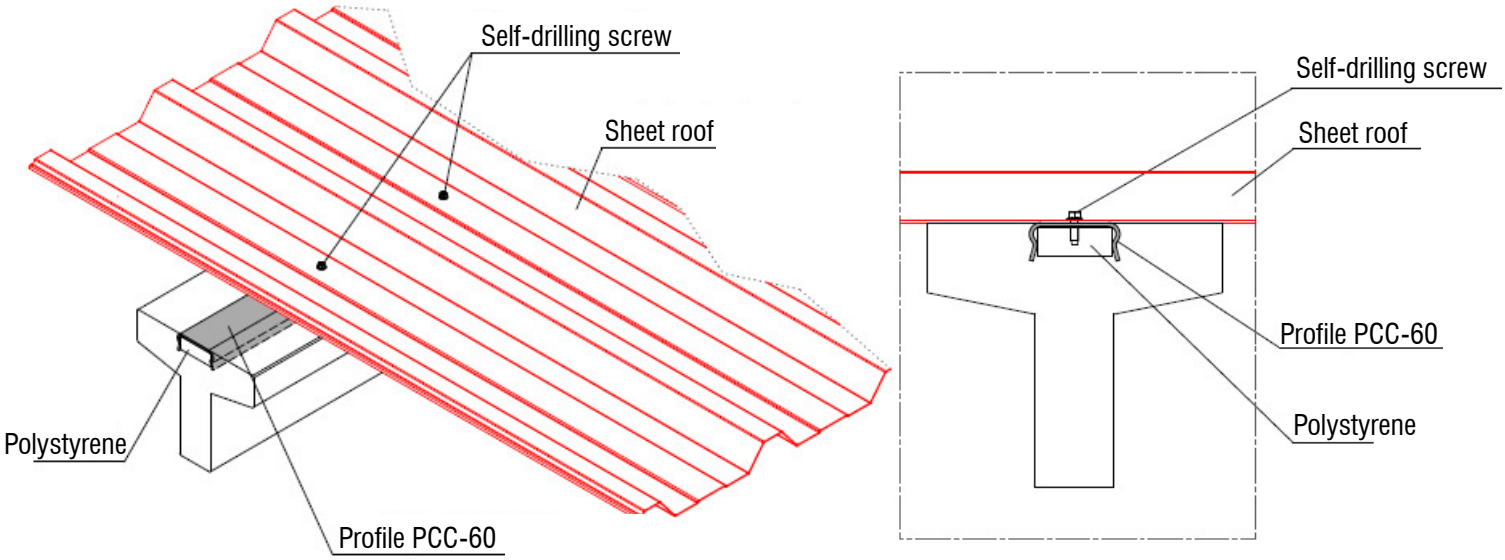
	Profile for sheet roof	PCC-60
	Self-drilling screw	

❶



1.1.- Placement of the PCC profile + polystyrene previously in the factory.
1.2.- Place the sheet metal parts for the roof.
1.3.- Fixing the cover plates by self-drilling screws.

❷



2.1.- Final check and assurance of tightening of self-tapping screws.

In order to continue the assembly sequence all the steps above described must be successfully overcome.

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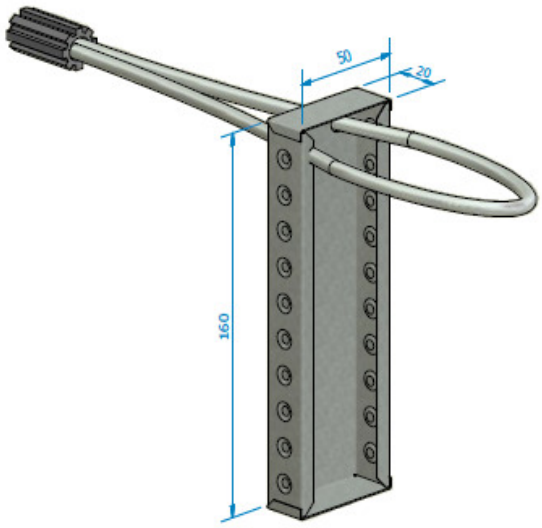
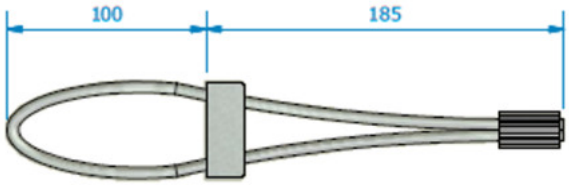
Wire Box **LOOP-100**

Accesory for connecting precast concrete panels to each other or to a column.

Wire Box
LOOP-100





Code	Description	L (1)	Length	Width
LOOP-100	Wire Box	100mm.	160mm.	50mm.

(1) Possibility to manufacturing in different lengths under request

Material: Box: Steel sheet S235JR
Wire loop: High resistance
Hoop: Steel

Surface treatment: Galvanized

Maximum tension load: 15 kN

Security Coeficient: 1,5 from yield stress

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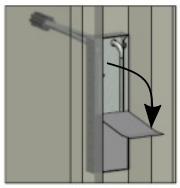
Wire box **LOOP-100**

INSTRUCTIONS FOR USE

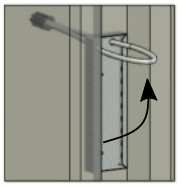
0 0. Step by step for the wire box LOOP-100:

0.1 Closed box placed on the panel's mould.



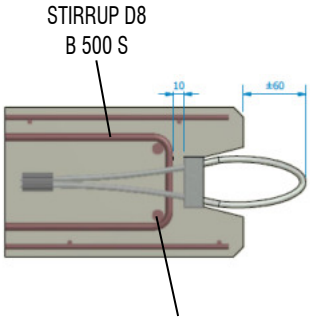
0.2 Remove the seal from the box.

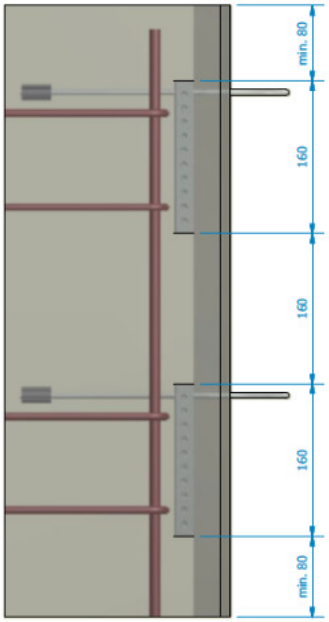
0.3 Once the box is opened, check the state of the wire.



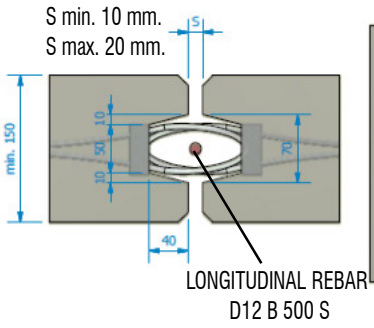
0.4 Unfold the wire loop until reaching a 90º angle.

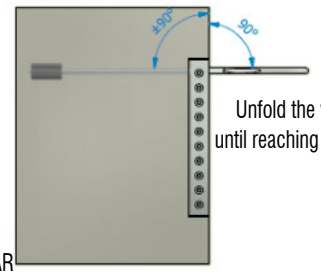
1 1. INSTALLATION. Placement of the wire boxes on the panel and the reinforcement according to the next figures:

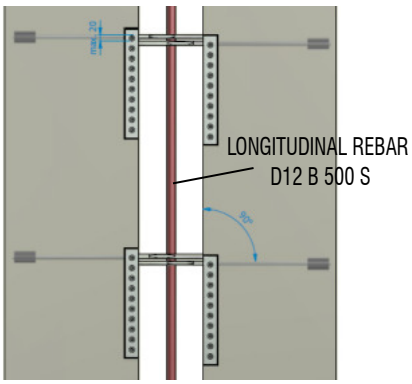




2 2. Wire box USE: Distances and elements in service phase:

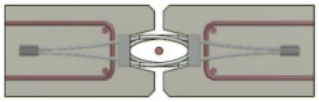




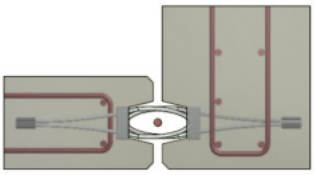


3 3. Wire box USES depending on the prefabricated elements to connect:

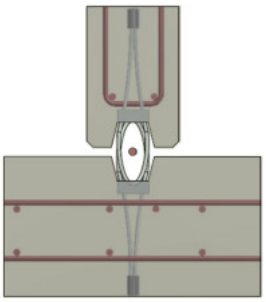
3.1 Continuous union of two panels:



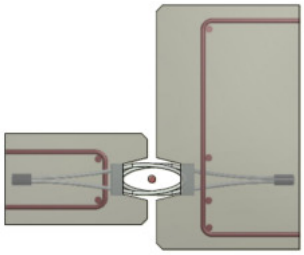
3.2 Corner union between two panels:



3.3 "T" union between two panels:



3.4 Column-panel union:



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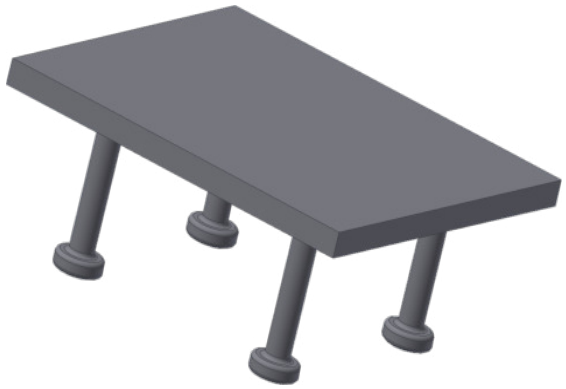
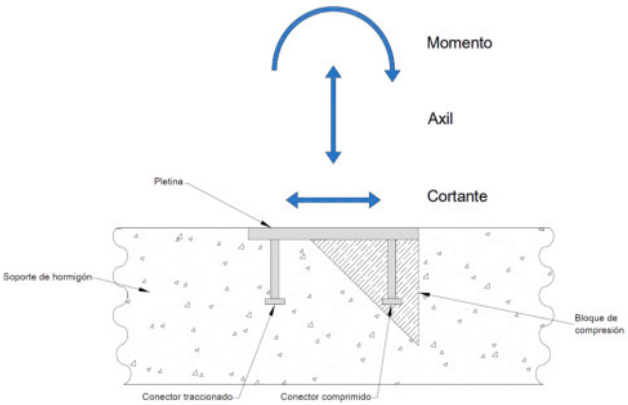
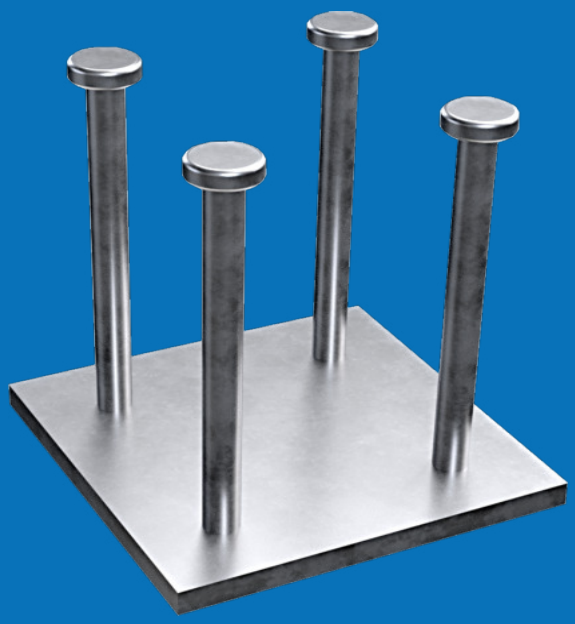
PBA anchor plates are elements designed for connecting structural elements by means of welding.

Anchor plate **PBA**







Code	Description
PBA	Anchor plate

There is a big variety of PBA models combining the base dimensions and types of shear connectors. It is recommended to check the catalogue in order to select the most appropiated anchor plate

Surface coating	No surface treatment Priming Electroplated zinc coating Hot-dip galvanized
Service load	Depending on the model

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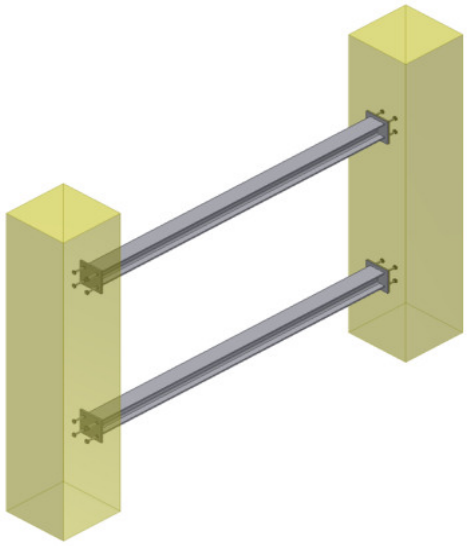
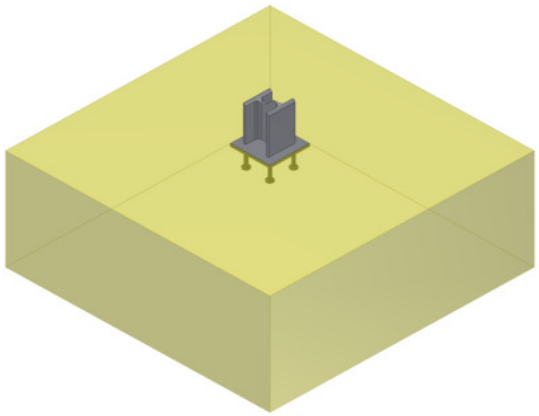
Examples of use of the PBA anchor plates

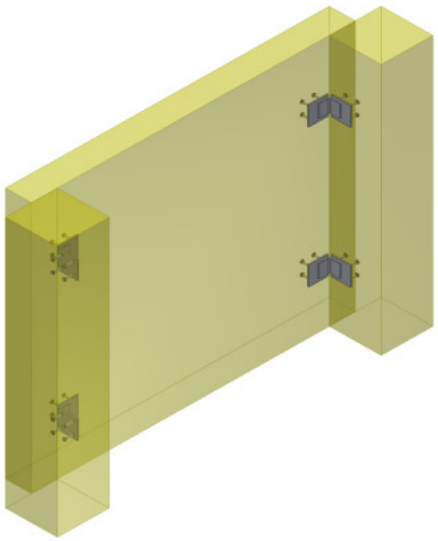
Example of connection between precast concrete column and a steel beam



Example of connection between the foundation and a steel column



Example of the connection between precast concrete columns and panels



Once the concrete is placed on the support, check that the anchor plate is aligned with the support surface and that there is not any imperfection caused during the assembly phase.

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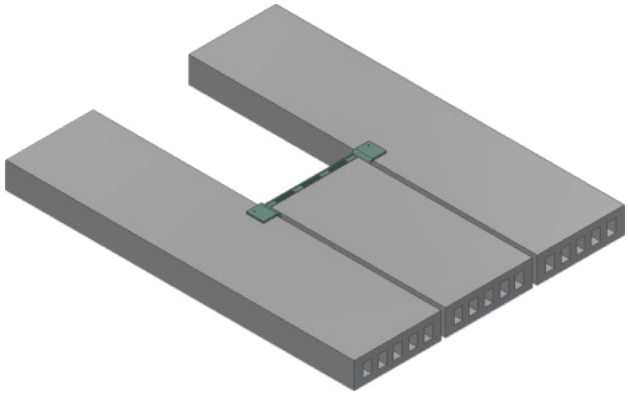
Hollow-core slab support **SOPRA**

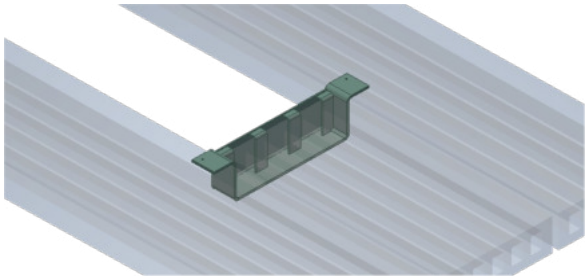
Support for hollow-core slabs to make openings on the floor slab for stairs, elevators...

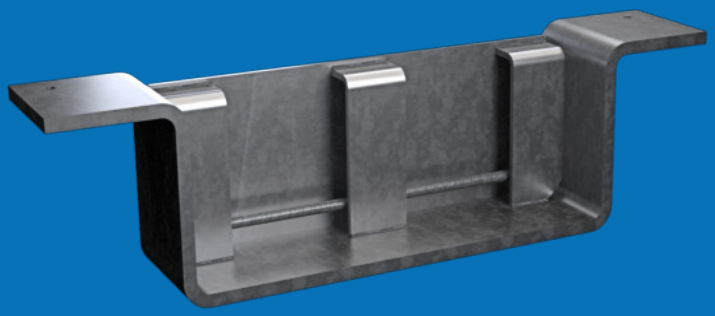
Hollow-core slab support **SOPRA**



Example of assembly of a simply supported SOPRA.

The dimensions, plate thickness and number of reinforcements are defined according to the project requirements.





Code	Description
SOPRA	Hollow-core slab support

Material: Steel S275JR

Surface coating:
Priming
Electrolytic zinc plating
Hot-dip galvanized
Stainless steel

Service load: Depending on the model

Security coeficient: 1,35 over yield stress

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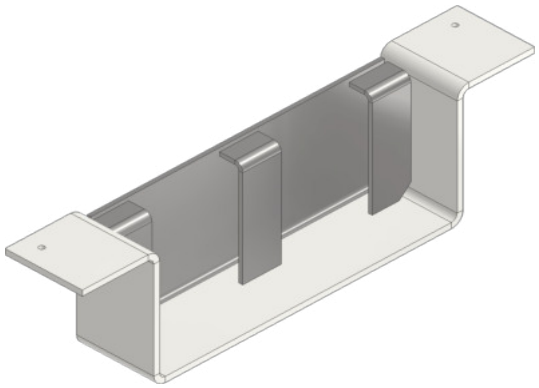
Hollow-core slab support **SOPRA**

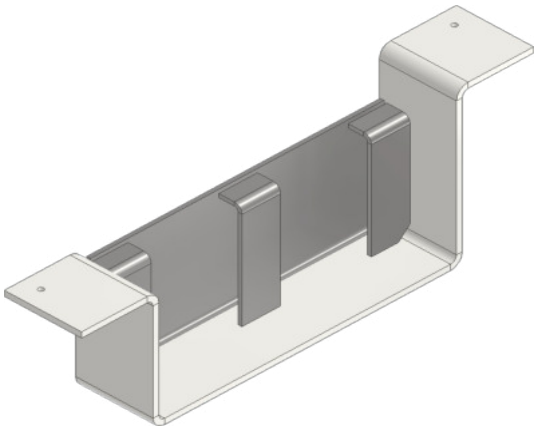
INSTRUCTIONS FOR USE

SOPRA can be simply supported on the hollow-core slabs, on a concrete wall or anchored to front part of a concrete wall. The SOPRA geometry is adapted depending on the case of study.

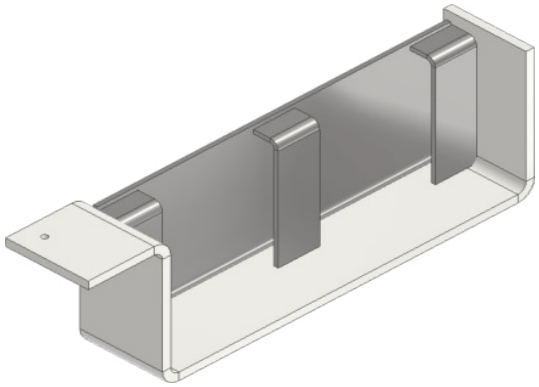
Simply supported SOPRA on two hollow-core slabs



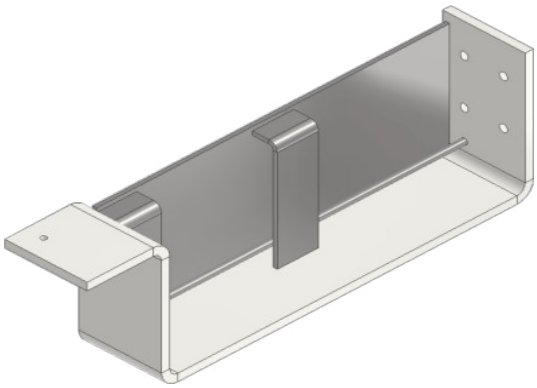
Simply supported SOPRA on two hollow-core slabs with different height



Simply supported SOPRA on a hollow-core slab and on a concrete wall



Simply supported SOPRA on a hollow-core slab and anchored to a concrete wall



It is necessary to ensure that SOPRA support is correctly placed on the hollow-core slabs (flanges sitting on the slab and fixed with an expansion anchor).

Next, the hollow-core slab must be placed keeping it in contact with the SOPRA's reinfocements.

Finally, the concrete is poured over the slab and hardened until reaching the characteristic resistance defined in the project.

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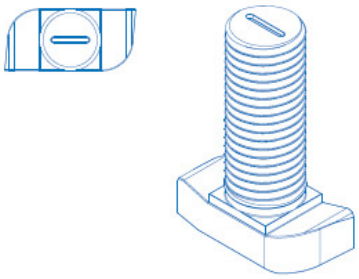
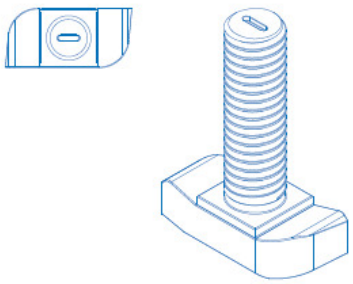
M16 / M12 screws with special head for insertion with NOXI profiles, used for joining prefabricated modules with NOXI accessories.

Screw **FER M16**



Code	Description
TF16-40	Screw FER M16 total length 50 mm
TF16-50	Screw FER M16 total length 60 mm
TF16-60	Screw FER M16 total length 70 mm
TF16-70	Screw FER M16 total length 80 mm
TF16-80	Screw FER M16 total length 90 mm
TF16-90	Screw FER M16 total length 100 mm
TF16-100	Screw FER M16 total length 110 mm
TF16-110	Screw FER M16 total length 120 mm
TF16-120	Screw FER M16 total length 130 mm
TF16-140	Screw FER M16 total length 150 mm
TF16-220	Screw FER M16 total length 230 mm

Screw **FER M12**



Code	Description
TF12-40	Screw FER M12 total length 50 mm
TF12-50	Screw FER M12 total length 60 mm
TF12-70	Screw FER M12 total length 80 mm

Screw FER M16

Screw FER M12

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Washer **FER**

Accessory used to set the regulation on COFI, UPA, UPA-C, Oculfix 30 and Oculfix 40

Code	Description	Hole
AF6/12	Washer FER thickness 6 mm	13 mm
AF6/16	Washer FER thickness 6 mm	17 mm
AF8/16	Washer FER thickness 8 mm	17 mm

Washer **A12 / A16**

M12 and M16 washer used for mounting NOXIFER accessories.

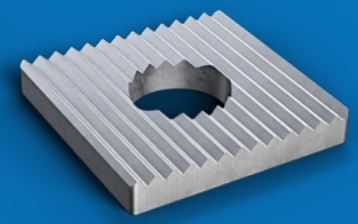
Code	Description
A12	Washer M12
A16	Washer M16

Glower washer **AG12 / AG16**

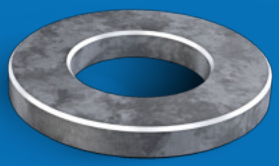
Washer M12 y M16 Glower for NOXIFER accessories.

Code	Description
AG12	Washer Glower M12
AG16	Washer Glower M16

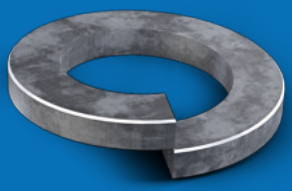
Washer FER



Washer A12 / A16



Glower AG12 / AG16



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Nut T12 / T16

Nut T12 and T16 used in the union of accessories by FER screws.

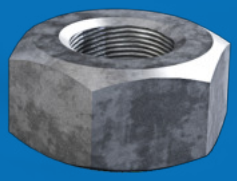
Code	Description
T12	Metal nut 12
T16	Metal nut 16

Top GR

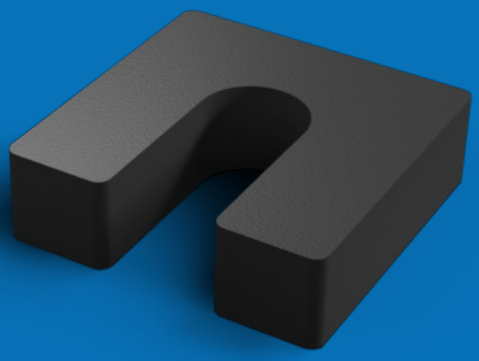
Complement used for the Oculfix10 accessory.

Code	Description
GR15	Top thickness 15 mm
GR10	Top thickness 10 mm
GR 5	Top thickness 5 mm
GR 3	Top thickness 3 mm

Nut
T12 / T16



Top GR



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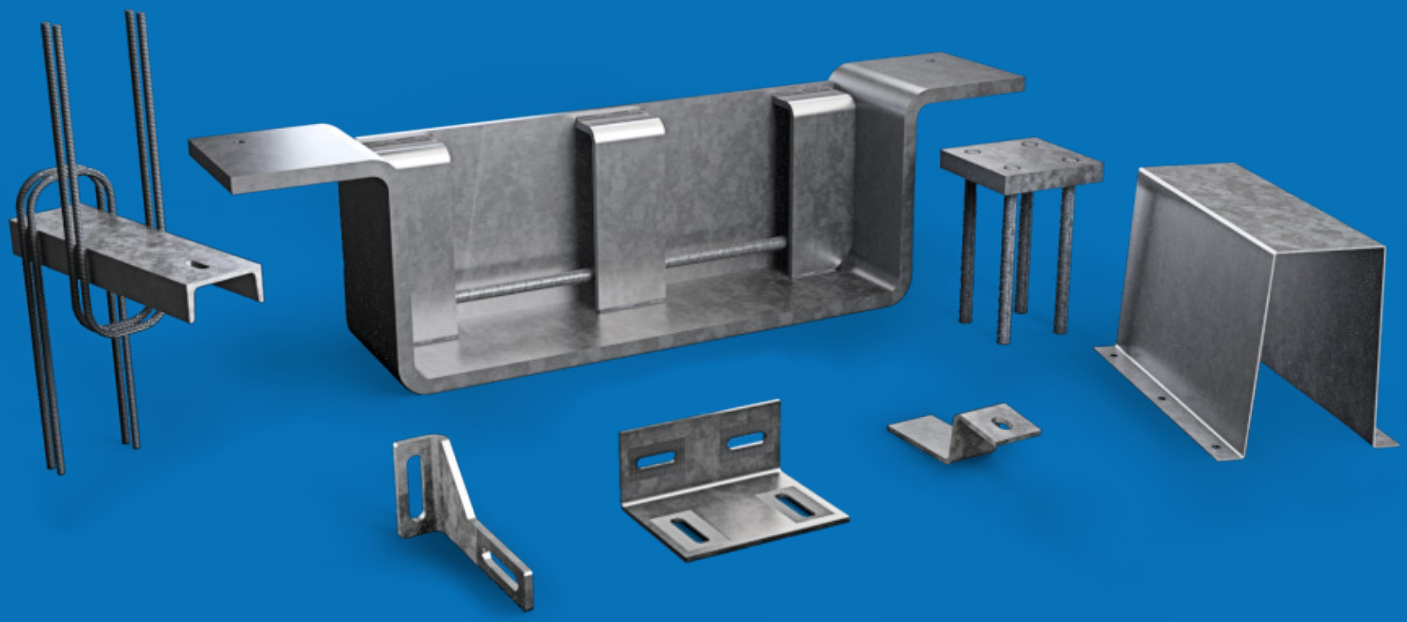
Customized accessories

NOXIFER offers you the possibility of manufacturing a different non-standard accessories, following the technical specifications provided by our customers.

- Items to be embedded into the concrete.
- Assembling accessories.
- Hollow-core slab support.



Quotation according to samples or drawings received.

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