

Retaining systems

ST2 BOX

GENERAL

The EDILMATIC retaining system with ST2 BOX is a simple and effective solution to fasten the facade and/or filling panels to the concrete structures.

The system is made of the ST2 BOX to position the element been retained (usually in the panels top border), of profile cut down sizes inserted in the anchoring element (pillars, spandrels, eaves etc...) of bolts, nuts, washers or counter-plates to use in the elements assembly phase.

The ST2 BOX central body is made forming special steel (ASTMA105) to which the steel bars with increased bond are welded (Fe B44K). The ST2 BOX is available in 2 models with 2 different dimensions:

ST2 standard box with width L=120mm
ST2 tight box with width L=90mm

The nominal capacity of 20kN for both box types refers to the single part for applications without hollow profile or in case the "M" type profile is used in the anchoring element.

On Page 25 you find the max. carrying capacities of the ST2 boxes with respect to the used profile types.

The system maximum tensile capacity depends on the profile maximum carrying capacity. In the applications with side sliding components (Ref. page 25) the system maximum capacity results from 50% of the cutting maximum capacity of the hollow profile used.

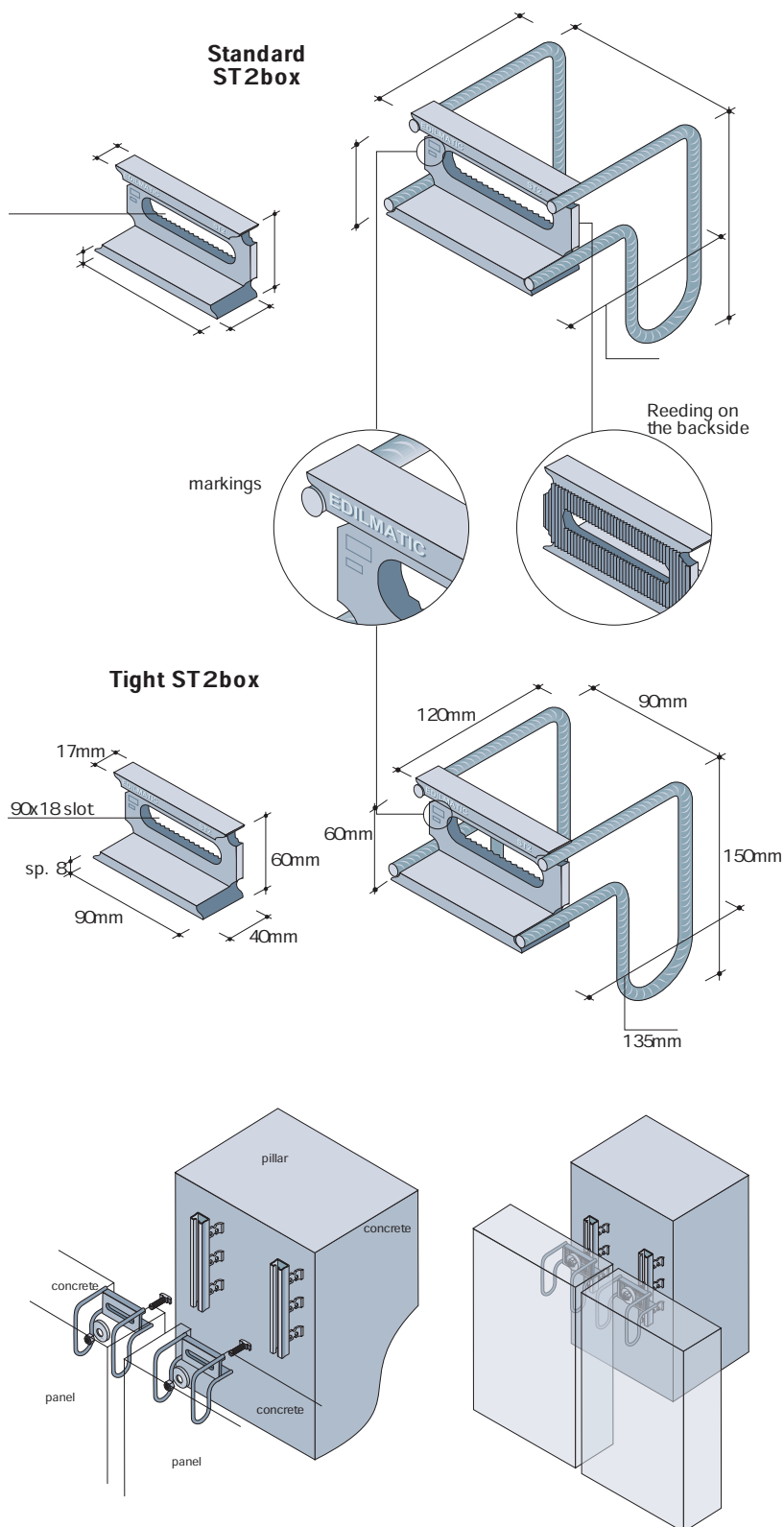
The profiles and accessory types which, can be combined with the boxes for the connection are identical for both box models.

On all ST2 BOX models we find the marking with the manufacturing company logo and the production lot (internal order number - production month and year).

The ST2 BOX functional features are guaranteed only in case you use the accessories recommended in the catalogue.

In case different accessories are used, the system performances are guaranteed.

All ST2 BOXES are delivered in white and with electrolytic cold zinc-plating (UNI ISO 2081).



Retaining systems

ST2 BOX

RUNNING

The EDILMATIC retaining system with ST2 BOX is made of the ST2 box to place in the element to be retained (usually in the panels top border), of profile cut-down sizes inserted in the anchoring element (pillars, spandrels, eaves etc..) and of bolts, nuts and washers to use for the connection of the 2 elements. The **ST2BOX** is delivered complete with polystyrene, already inserted in the back part and in the front part; removing polystyrene after the casting we obtain hollow openings to insert the anchoring accessories.

By means of the system you can fasten the element to be retained to the structure as soon as the "crane" brings it to the place that has been planned for in the assembly scheme.

The bolt has to be inserted in the box back of the box opening (**Picture A**), it has to be rotated in the front opening, to insert it in the hollow profile (**Picture B**). Everything is then fastened using nut and washer (**Picture C**).

The polystyrene lying in the back part keeps the ST2 BOX 15 mm under the panel "level", the **SYSTEM** appears to be therefore **PERFECTLY FOLDAWAY**.

The slot placed on the **ST2 BOX** enables a wide range of adjustments; also in cases of possible profile positioning errors, we can reach a horizontal sliding of $\pm 45\text{mm}$.

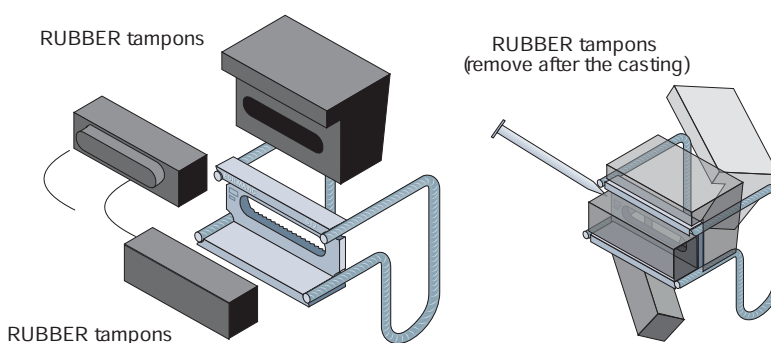
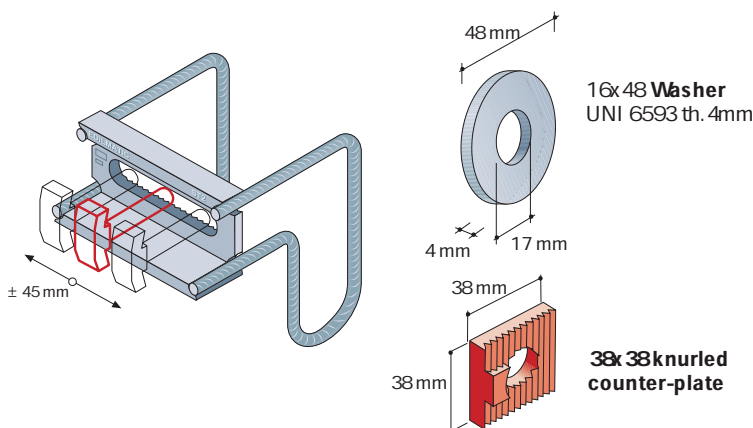
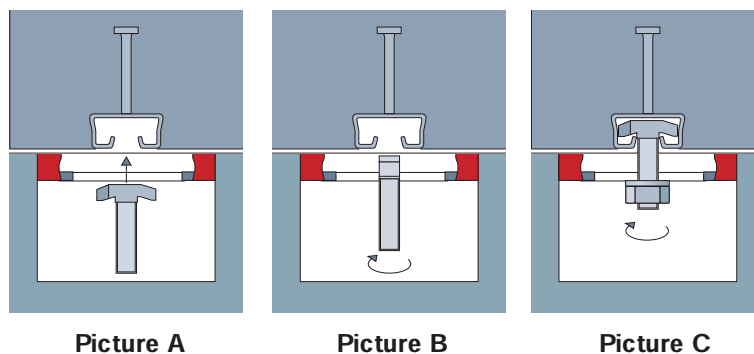
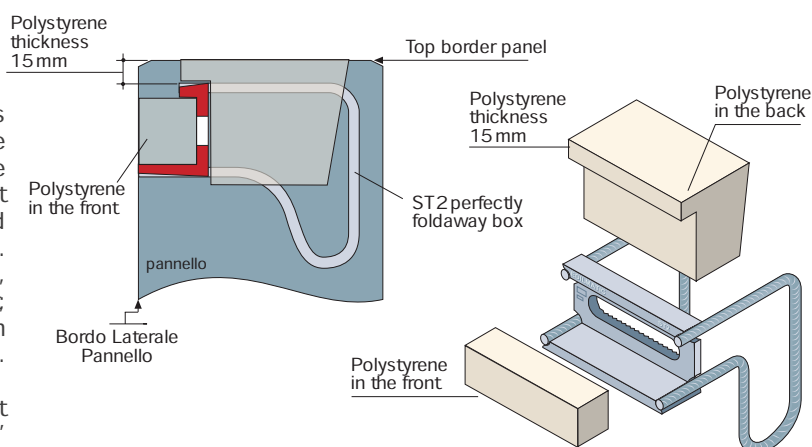
Thanks to the small dimensions and the special form of the clamps, we guarantee the **ST BOX2** performances in any fastening point along the slot axis.

To solve the problem of waste disposal in building yards after the assembly of the structures and considering the increasing company compliance with the UNI EN ISO 14001 norm (environmental management certification) as alternative to polystyrene, Edilmatic delivers **special rubber inserts** with sizes and forms identical to polystyrene.

The **inserts** have to be inserted in ST2 boxes before being prepared in moduls for the casting. After the casting they have to be removed from the article and kept for further applications.

The **ST2BOX** functional features are guaranteed only using the recommended accessories, it is very important, is therefore to use the **16x48 Washer**, in the standard applications, and of the **38x38 knurled counter-plate** with side sliding components (see Page 25).

The use of other accessories would prejudice the parts total capacity.



Retaining systems

ST2 BOX

Positioning values and dimensions

One of the main features of the standard ST2 box is the extremely small occupied space both in width ($L=120\text{mm}$) and in length ($Lu=135\text{mm}$) which makes it extremely easy to use in small elements or with bord reinforcing structures. Through this feature the ST2 box can be used also on the panels "edge" for special applications, such as the retention of "door light panels".

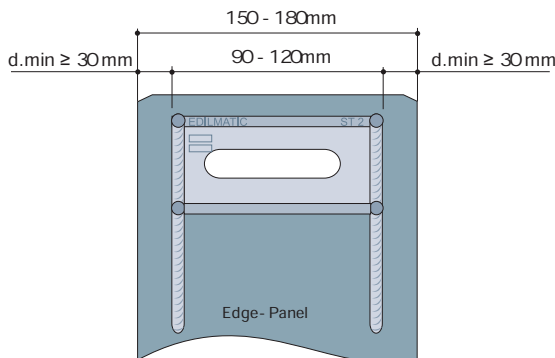
The minimal positioning distance from the border of the elements, ordered for both box models, cannot be lower than 30mm ($d.\text{min} \geq 30\text{mm}$).

It is therefore possible to use the ST2 standard boxes on panel "edges" with minimum thicknesses up to 180mm.

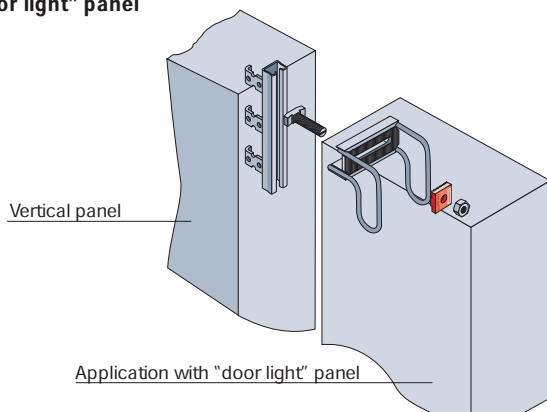
The tight ST2 box a (ST2S) has a smaller width ($L = 90\text{mm}$) and enables the positioning on panels' edges with min. thicknesses up to =150mm.

The occupied space in length is the same for both versions and it enables to use the boxes in elements with min. thickness =160mm.

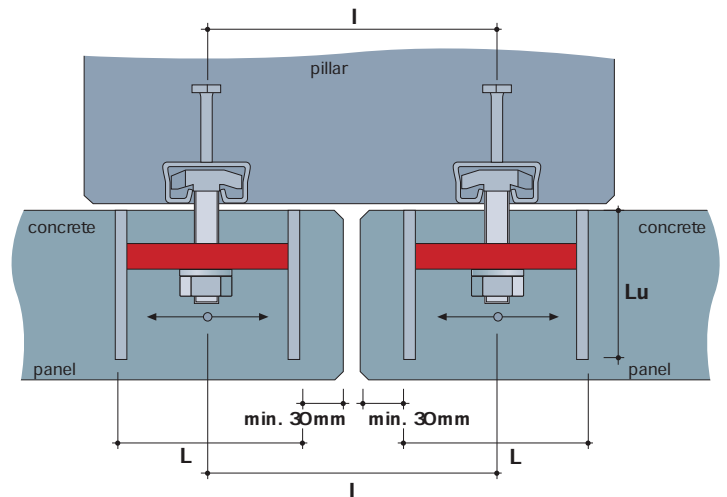
Application on the panel "edge"



Application with "door light" panel



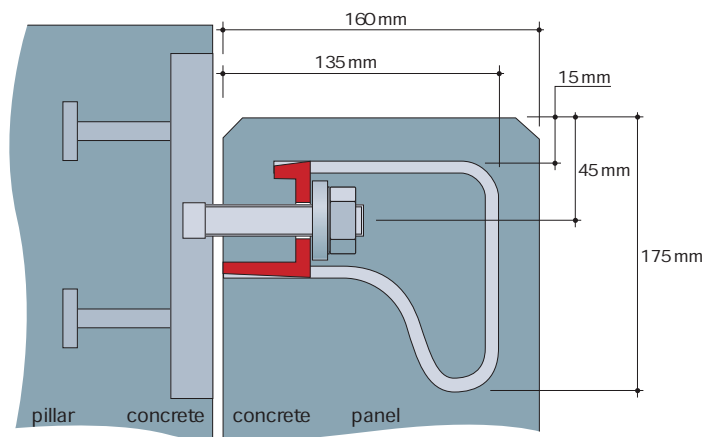
Side dimensions for the standard application



POSITIONING VALUES (for ST2 standard and ST2S tight box)

Box type	I	L	Lu
ST2 Standard	180	120	135
ST S 2 tight	150	90	135

Side dimensions for the standard application



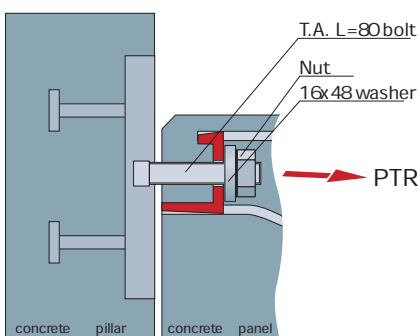
Retaining systems

STANDARD APPLICATIONS

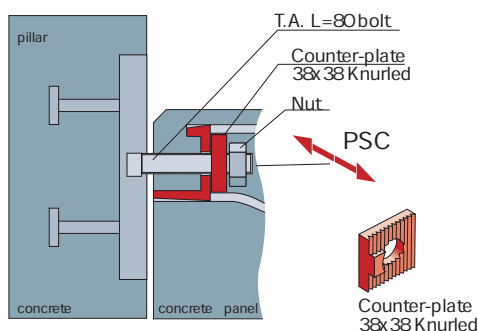
Leaned retaining

The LEANT retaining is the standard application for the ST2 box, the panel is anchored "leaned" on the pillar. The max. applicable load depends on the hollow profile type used with reference to the max. applicable traction load (PTR). Thanks to the reading on the ST2 box backside it is possible to obtain retention connections also with sliding load components (PSC) working parallel to the slot.

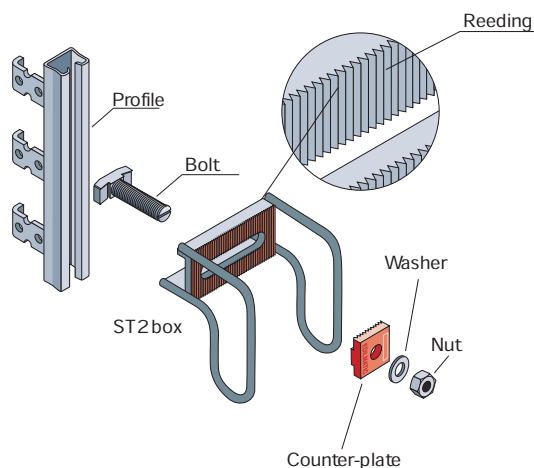
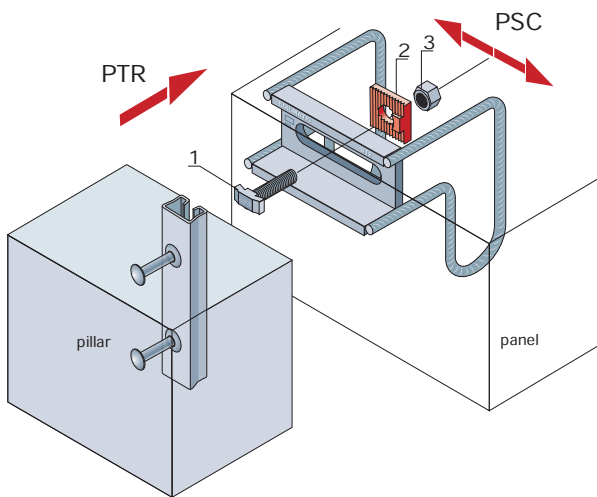
Leaned retaining with traction load (PTR)



Leaned retaining with traction (PTR) and sliding load (PSC)



On the ST2 box rear side (for both types) we have a raised reading which makes the application possible also with sliding loads (PSC) acting parallel to the adjustment slot. For these applications we must use the 38x38 counter-plate, coupling perfectly with the knurled profile, guaranteeing connection stability after tightening. The maximum connection capacity with sliding loads is half of the cut profile maximum capacity (PTA).



with profiles	Accessories for the anchoring	tightening torque (recommended)
H - H inox D - H30	14x80 T.A. bolt (1) 38x38 Counter-plate (2) or 16x48 Washer (2) M14 Nut (3)	5 Kgmt.
E - M	16x80 T.A. bolt (1) 38x38 Counter-plate (2) or 16x48 Washer (2) M16 Nut (3)	8 Kgmt.

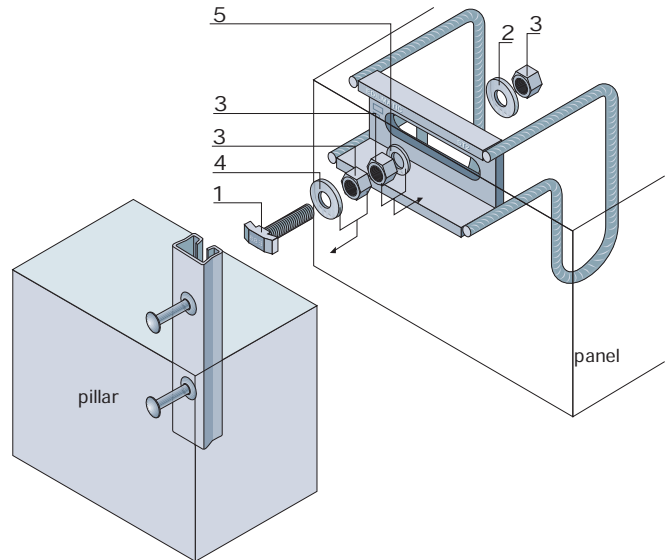
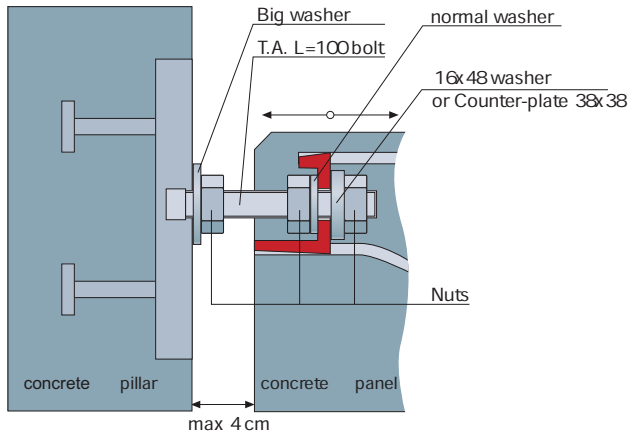
AX CARRYING CAPACITIES ALLOWED WITH PROFILES (for clamping with Z1 clamps and P1 pegs)

Profile type	H	H stainless steel	H30	D	E	M
Max. traction capacity (kN) PTR	7.5	10	9	10	13	20
Max. sliding capacity (kN) PSC	4	5	4.5	5	6.5	10

Retaining systems

SPECIAL APPLICATIONS

Distance retention

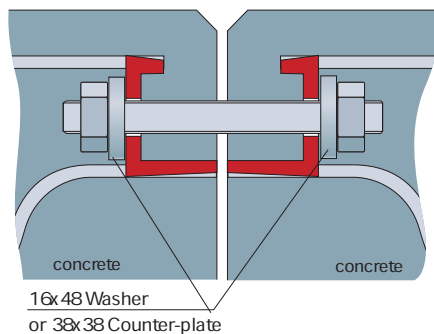


with profiles	Accessories for the anchoring	tightening torque (recommended)
H - H stainless steel D - H30	n°1 14x100 T.A. bolt (1) n°1 14x42 Washers (4) n°3 M14 Nut (3) n°1 d.14 Washer (5) n°1 16x48 Washer (2) or 38x38 Counter-plate (2)	5 Kgmt
E - M	n°1 16x100 T.A. bolt (1) n°1 16x48 Washers (4) n°3 M16 Nut (3) n°1 d.16 Washer (5) n°1 16x48 Washer (2) or 38x38 Counter-plate (2)	8 Kgmt

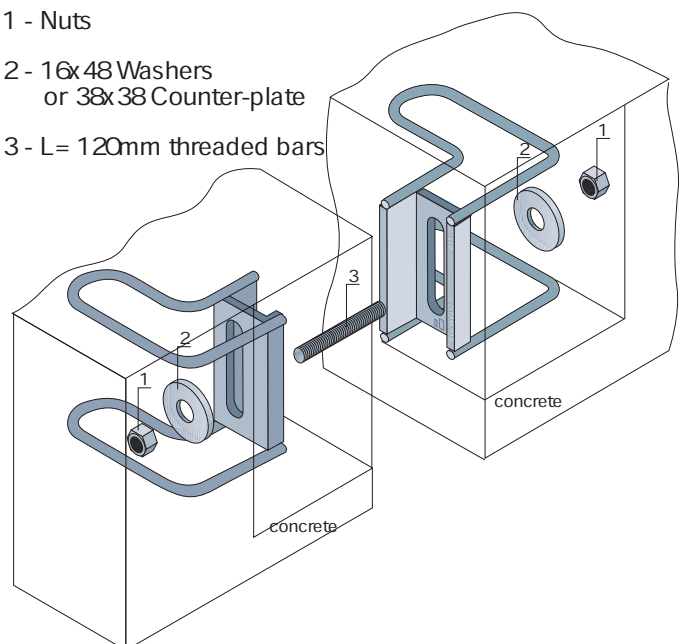
In the DISTANCE retention the elements can be "DETACHED" through the panel position regulation with respect to the pillar by means of 2 nuts.

Retention of adjacent elements

For the retention of two leaned adjacent elements you can use two coupled **ST2 BOXES** with M14 or M16 **threaded bars** of the right length (L=120 mm) with the corresponding standard special nuts and washers 16x48. The maximum applicable capacity in such cases is **20kN**.



- 1 - Nuts
- 2 - 16x48 Washers or 38x38 Counter-plate
- 3 - L= 120mm threaded bars



In all the described applications, having sliding elements on the side, you can use, instead of the 16x48 washer, the 38x38 counter-plate to give the system more stability.

Retaining systems

SPECIAL APPLICATIONS

As explained in the previous pages, the retention box with ST2 increased bars is made of a central body obtained from the forming of special steel to which bars are attached bars having a predetermined form with increased bond. The box is a very simple solution for the retention of prefabricated elements and in particular of filling panels. For particular applications, considering its very easy construction, the **ST2 box** can be changed as required especially as for the form of the retention bar.

As shown in **Picture 1**, maintaining the original shape, the max sizes can vary in the ST2 box bars in applications with added reinforcing structures in the box positioning area and/or having concrete elements with particular forms.

In applications with articles in particular forms the bars shape can vary completely in order to enable the ST2 box positioning, as shown in **Picture 2**

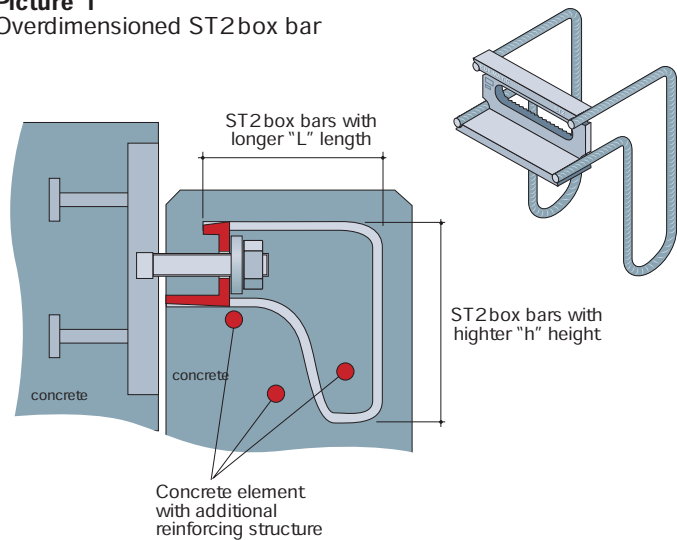
In case of retention of particularly thin concrete elements, we can deliver the ST2 box with only horizontally shaped bars, as shown in **Picture 3**

In addition to the bars, it is possible to change the back polystyrene forms and sizes depending on the bars shape and/or the requirements, as summarised in **Picture 4**

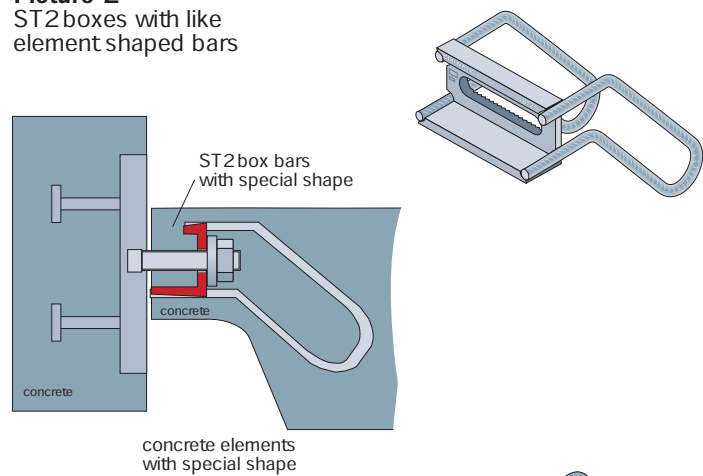
All special applications will be manufactured only upon customer's request, we will evaluate in any case the max. allowed carrying capacities and decide the delivery terms.

Please contact the Edilmatic Engineering department for any advice or suggestions about particular applications required by the customer.

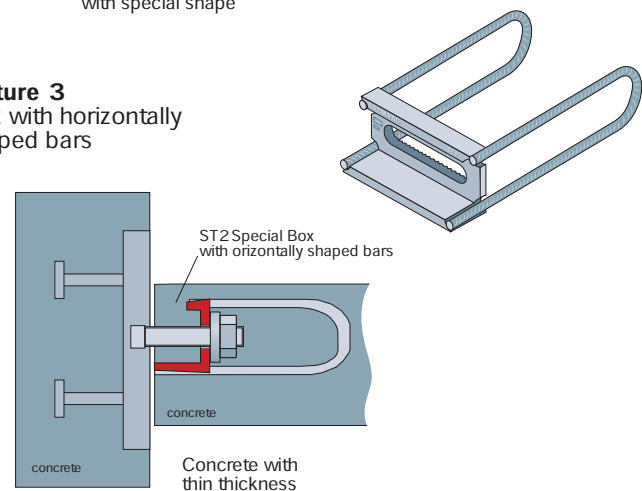
Picture 1
Overdimensioned ST2 box bar



Picture 2
ST2 boxes with like element shaped bars



Picture 3
Box with horizontally shaped bars



Picture 4
Polystyrene with special form

