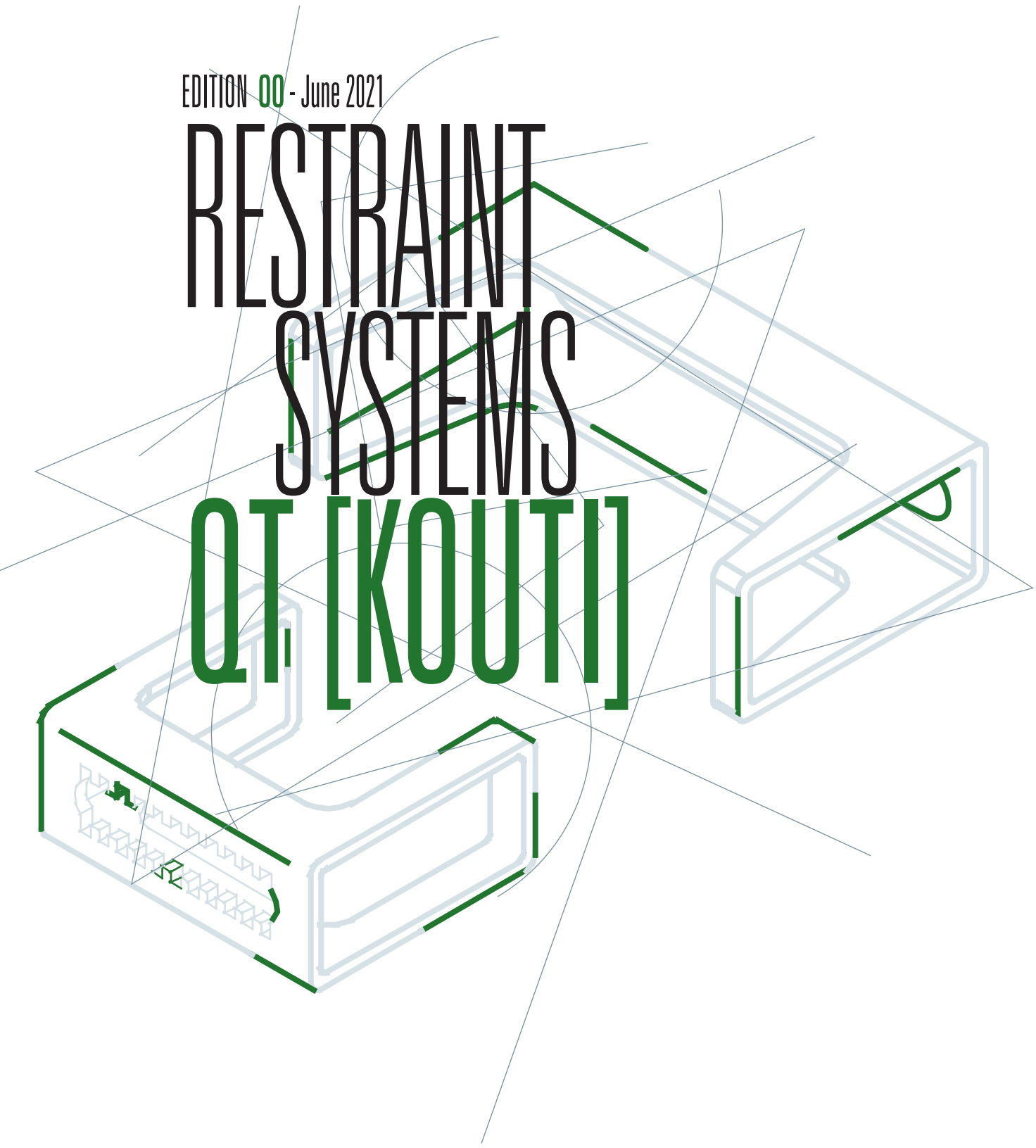
EDITION 00 - June 2021

RESTRAINT SYSTEMS

QT [KOUTI]



EDILMATIC

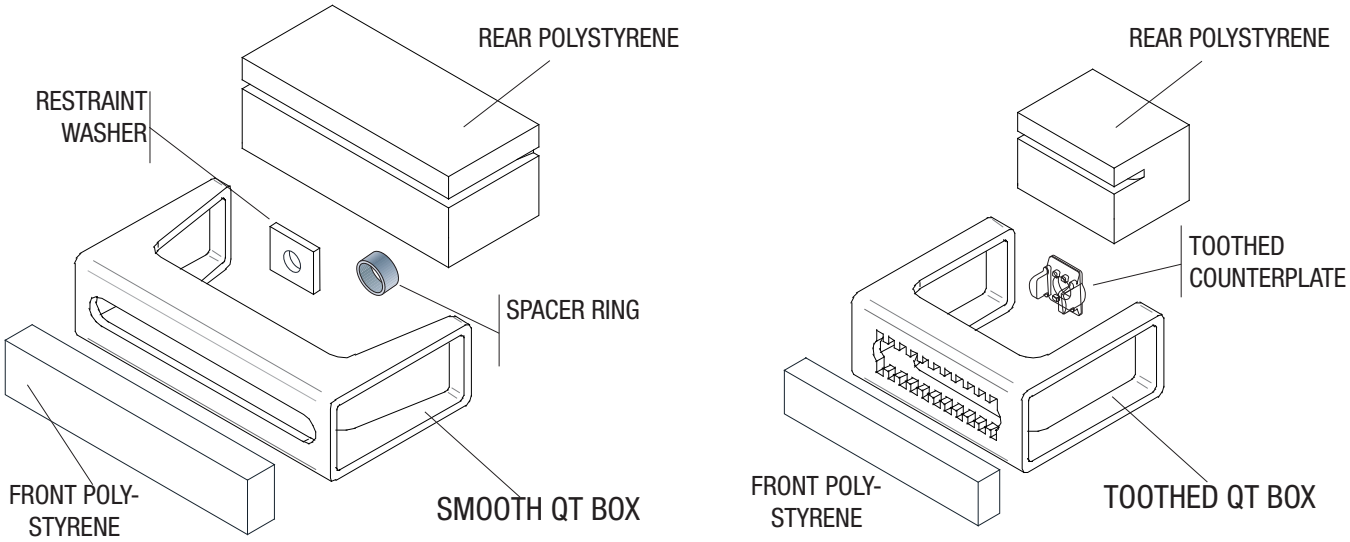
NEW RESTRAINT SYSTEM

EDILMATIC QT *[KOUTI]*

UNI EN 1090-1

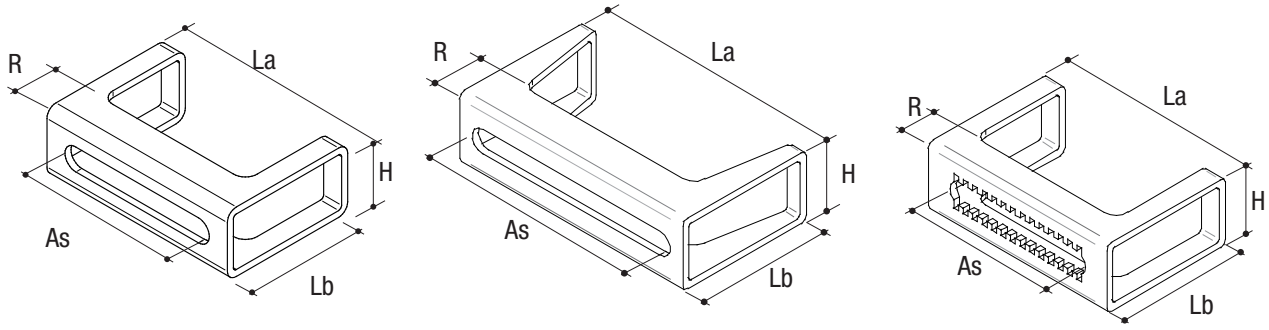
The new line of Restraint Boxes QT represents the most natural evolution of the ST system. The QT system is characterized by the absence of assembly welds and it is developed to reduce volumes, increase the resistance and offer a large dimensional versatility for all possible configurations.

All QT boxes can be installed with every type of anchor channel and can be used both in the Sliding as well as in the Restraint configuration (simple or distanced). They are supplied with polystyrene and, based on the application, Restraint washer, Sliding ring or toothed counterplate.



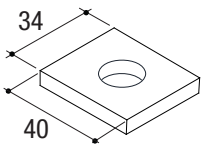
VOLUMES AND DIMENSIONS

The QT box is available in three standard versions based on the width of the slot, whereas the QT-D is available in two standard versions. The great versatility of the product allows our customers to work on a large range of customizations. The toothed version is available for all dimensions and models.

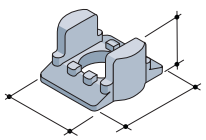


QT	As	D	R	La	Lb	H
QT-120	120	18	30	150	100	50
QT-160	160	18	30	180	100	50
QT-90-D	90	18	30	120	100	50
QT-65-D	65	18	30	90	100	50

RESTRAINT WASHER



TOOTHED COUNTERPLATE



SPACER RINGS

The 'D' versions (D stands for toothed), developed to prevent the element to slide alongside the slot, are available for all QTs.

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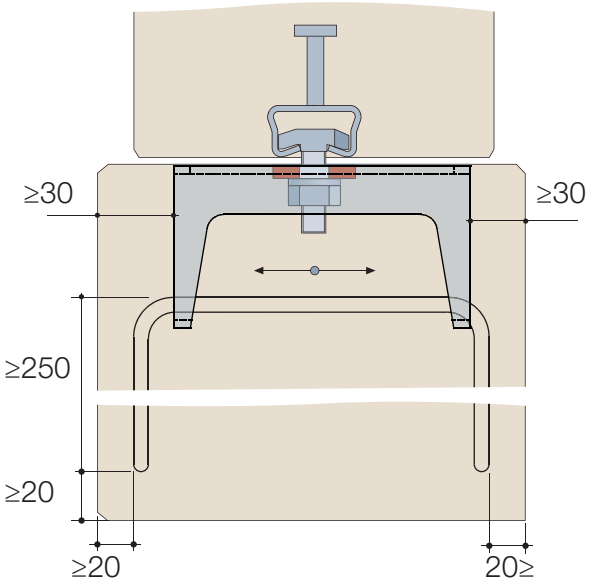
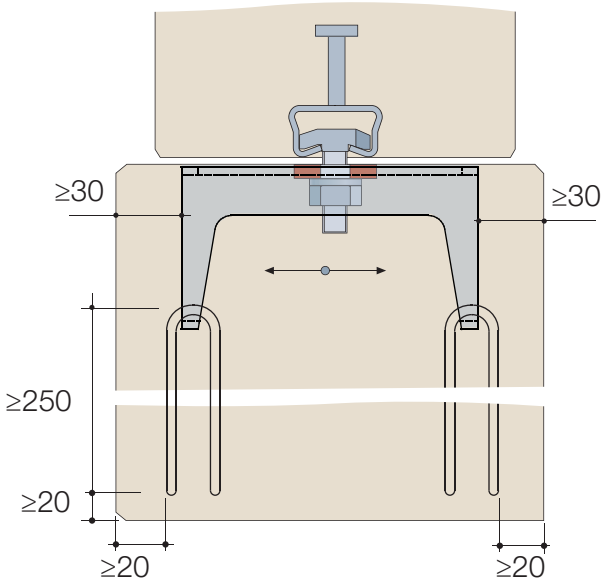
POSITIONING AND ADDITIONAL REINFORCEMENT

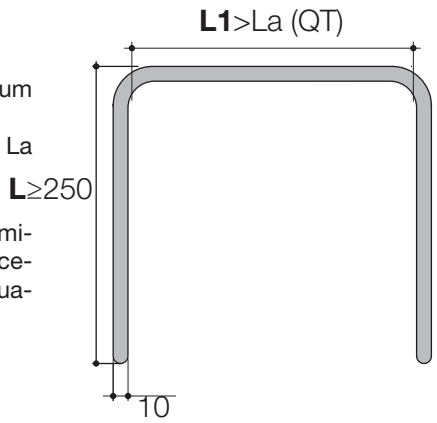
In order to ensure the QT performances, an additional reinforcement is needed.
Rebars hookes can be single or double (see pictures below) and must respect the minimum sizes indicated.





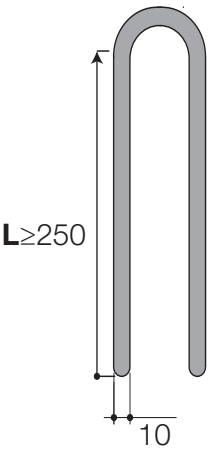
SINGLE REBAR
Always consider the minimum anchoring length 'L'.
Ensure L1 based on the width La of the QT.

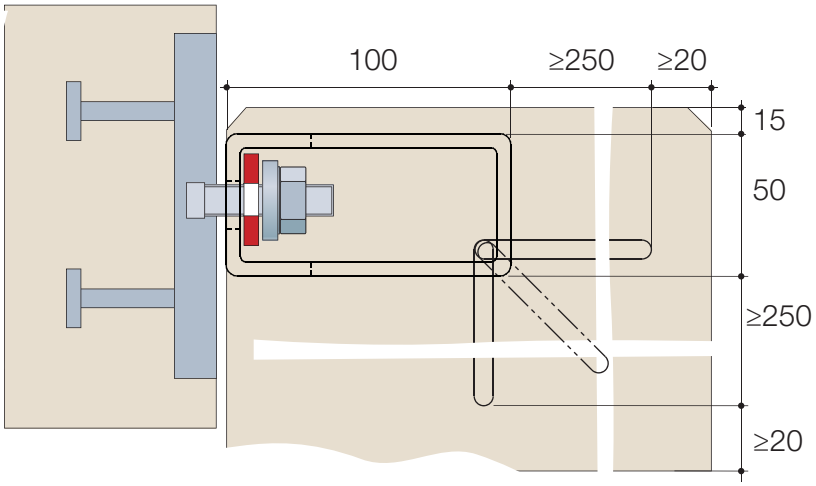
As an alternative, ensure a minimum section of the reinforcement equal to 160 mm², adequately anchored.



DOUBLE BRACKET
Always consider the minimum anchoring length 'L'.
Ensure L1 based on the width La of the QT.

As an alternative, ensure a minimum section of the reinforcement equal to 80 mm², adequately anchored.





In case of narrow or thin elements, be sure to supply for a reinforcement which is NOT INFERIOR to the one previously mentioned.

In case of special reinforcements it is possible to intervene with small sections of welds in order to fasten the Brackets.

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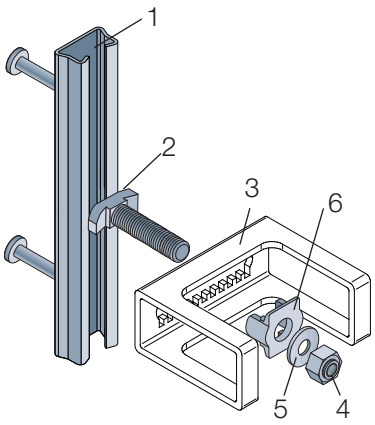
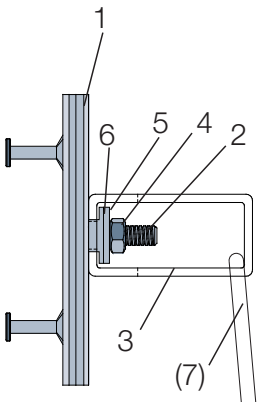
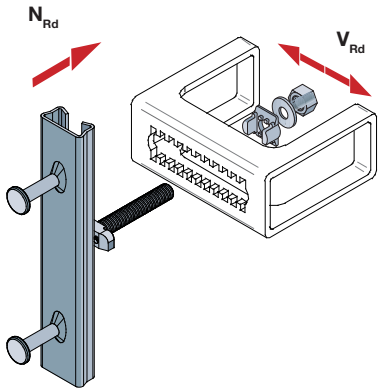
QT-D CONFIGURATIONS

Anchor Channel	pos.	pcs.	Accessories	Fastening torque (recommended)
GD	1	1	Profile type GD	40 Nm
	2	1	Bolt TAG1 M14x60	
	3	1	QT-90-D or QT-65-D	
	4	1	Nut M14	
	5	1	Washer d.14	
	6	1	Toothed counterplate	
	(7)	1	Rebar	
GE - GM	1	1	Profile type GE or GM	60 Nm
	2	1	Bolt TAG2 M16x80	
	3	1	QT-90-D or QT-65-D	
	4	1	Nut M16	
	5	1	Washer d.16	
	6	1	Toothed counterplate	
	(7)	1	Rebar	





DESIGN LOADS THROUGH ANCHOR CHANNEL



QT	Profile model	N_{Rd}	V_{Rd}
QT-D	GD	10.7 kN	10.7 kN
	GE	17.5 kN	17.5 kN
	GM	26.6 kN	26.6 kN

Within the applications through the QT-D, with components of side sliding, the design resistance of the system is given by the maximum shear design resistance VRd of the anchor channel.

The design resistance includes the partial safety factor.

CE
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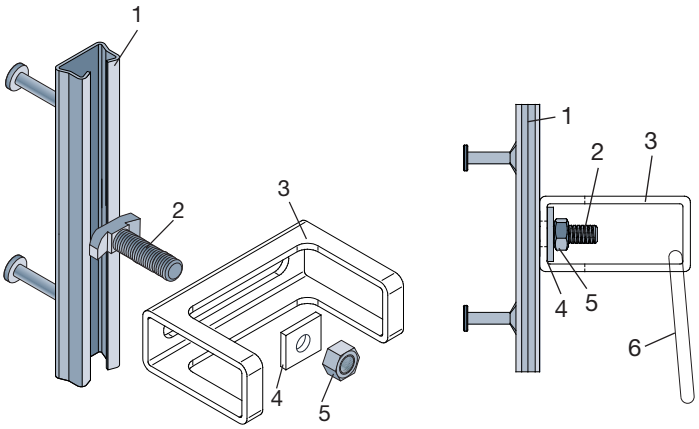
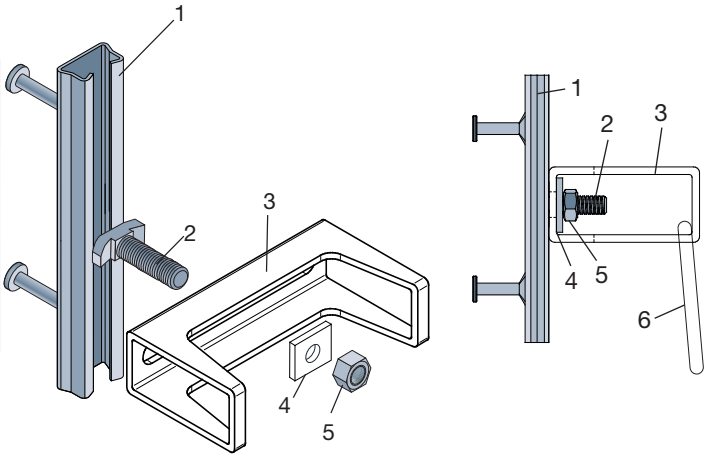
SIMPLE RESTRAINT CONFIGURATIONS

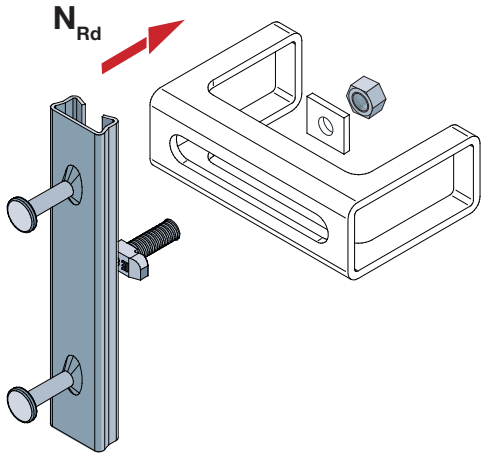
Anchor Channel	pos.	pcs.	Accessories	Fastening torque (recommended)
GD	1	1	Profile type GD	40 Nm
	2	1	Bolt TAG1 M14x60	
	3	1	QT-120 or QT-160	
	4	1	Washer	
	5	1	Nut M14	
	(6)	1	Rebar	



Anchor Channel	pos.	pcs.	Accessories	Fastening torque (recommended)
GE-GM	1	1	Profile GE o GM	60 Nm
	2	1	Bolt TAG2 M16x80	
	3	1	QT-120 or QT-160	
	4	1	Washer	
	5	1	Nut M16	
	(6)	1	Rebar	



DESIGN LOADS



QT	Anchor Channel	N_{Rd}
QT-120 QT-160	GD	10.7 kN
	GE	17.5 kN
	GM	26.6 kN

The design resistance of the system is given by the maximum design resistance NRd of the anchor channel.

The design resistance includes the partial safety factor.

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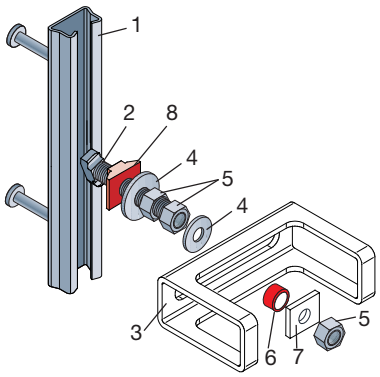
SLIDING RESTRAINT CONFIGURATION

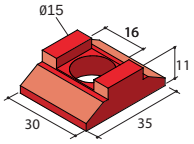
In case of seismic connections, where it is necessary to enable the relative movements of the elements, it is possibile to build a sliding restraint by using the combination of standard accessories (e.g. bolts, nuts, washers and short GS joints).

The Sliding configuration allows the vertical and horizontal movement of the bolt within the profile and within the QT box's ring, ensuring both the restraint as well as the tilting of the element

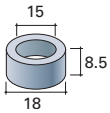
SLIDING CONFIGURATIONS

Anchor Channel	pos.	pcs.	Accessories	Fastening torque (recommended)
GD	1	1	Profile GD	40 Nm
	2	1	Bolt TAG1 M14x70	
	3	1	QT-120 or QT-160	
	4	2	Washer d.14	
	5	3	Nut M14	
	6	1	Spacer ring ADT 14	
	7	1	Retaining washer	
	8	1	Slidig Joint - Short GSC14	



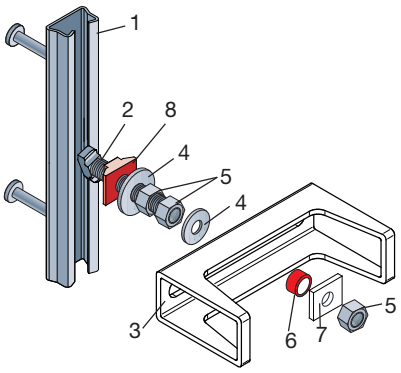


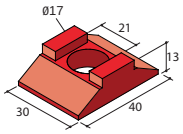
Slidig Joint - Short
GSC 14



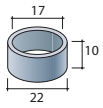
Retaining washer
ADT 14

Anchor Channel	pos.	pcs.	Accessories	Fastening torque (recommended)
GE-GM	1	1	Profile GE o GM	60 Nm
	2	1	Bolt TAG2 M16x80	
	3	1	QT-120 or QT-160	
	4	1	Washer d.16	
	5	3	Nut M16	
	6	1	Spacer ring ADT 16	
	7	1	Retaining washer	
	8	1	Slidig Joint - Short GSC16	



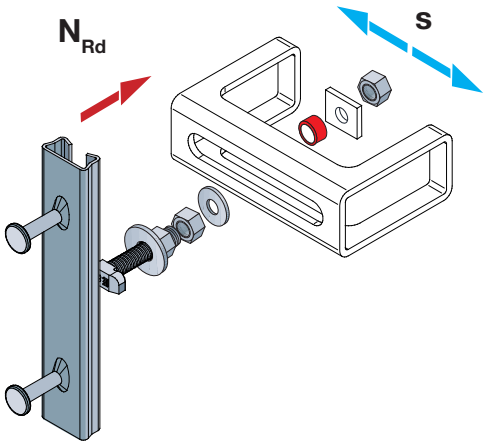


Slidig Joint - Short
GSC 16



Retaining washer
ADT 16

DESIGN LOADS AND DISPLACEMENTS



QT	Profile model	N_{Rd}	S
QT-120	GD	10.7 kN	± 50 mm
QT-160	GE	17.5 kN	± 70 mm
	GM	26.6 kN	± 70 mm

Within the applications through the QT-D, with components of side sliding, the design resistance of the system is given by the maximum shear design resistance VRd of the anchor channel.

The design resistance includes the partial safety factor.

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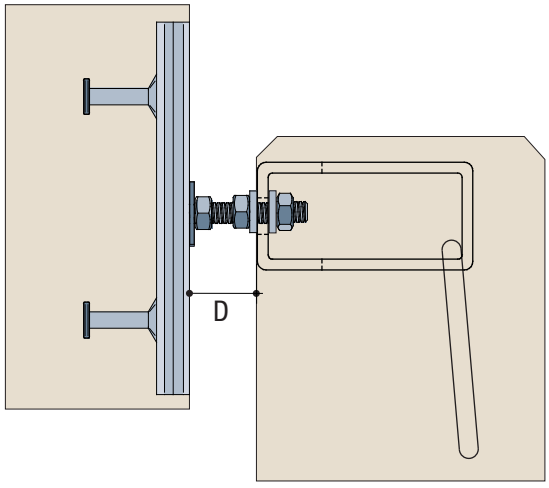
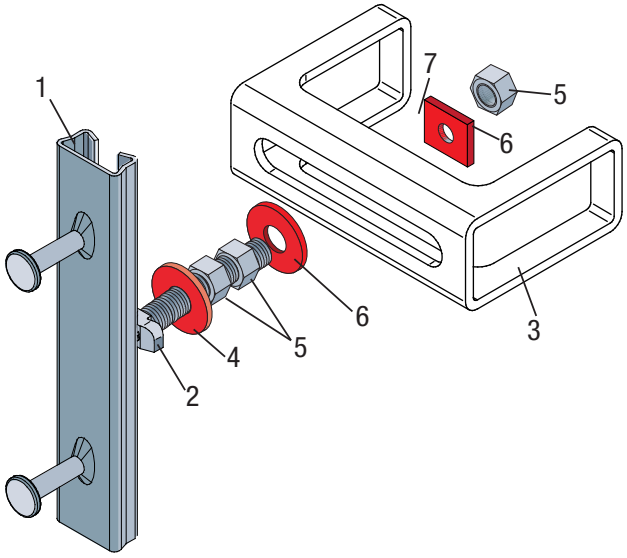
DISTANCED RESTRAINT CONFIGURATION

Anchor Channel	Position	Pieces	Accessories	Minimum bolt's length "L" (mm)	Fastening torque (recommended)
GD	1	1	Profile GD	L=D+30	40 Nm
	2	1	Bolt TAG1 M14		
	3	1	Box QT		
	4	1	Washer d.14		
	5	3	Nut M14		
	6	1	Washer d.14		
	7	1	Retaining washer		
GE GM	1	1	Profile GE-GM	L=D+30	60 Nm
	2	1	Box QT		
	3	1	Bolt TAG2 M16		
	4	1	Washer d.16		
	5	3	Nut M16		
	6	1	Washer d.16		
	7	1	Retaining washer		





In case of distanced restraint, the distance 'D' is determined by the customer, on the specific application.
The minimum length of the Bolt 'L' is determined on the base of the Distance 'D' to be produced and the type of the profile to be used.

In the table above, are reported the instructions to find the correct bolt's size and length.

Example
With a restraint distance of D = 70 mm with GD profile:

L = 70 + 30 = 100 mm so that Bolt TAG1 M14, L > 100 mm

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