

EDITION 03 - January 2026

SUPPORTING SYSTEMS

MIT BRACKETS



EDILMATIC

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EDILMATIC SUPPORTING SYSTEM

The MT Bracket System is a practical, simple and safe solution for creating the structural support joints of prefabricated panels. During the production of prefabricated elements, the system resolves issues related to dimensions requirements and the creation of recesses. During assembly, the system allows for wide horizontal, vertical and rotational adjustments. The final result is completely concealed from view.

In case of installation on pillars' faces, the system is available in five different load capacities. In case of installation on beam soffit, for curtain wall panels, two types of MOT Horizontal Brackets are available. For all types, positioning errors systems are available.

The system can also be used in case of horizontal seismic forces, thanks to the special mechanical coupling between the adjustment bolt and the load distributor.



The system is certified with the CE marking and the Declaration of Performance (DoP) in accordance with standard UNI EN 1090-1, issued using Method 1 or 3b (progettazione strutturale secondo NTC 2018).

In addition to EN 1090 certification, Edilmatic also holds EN ISO 9001 certification, which governs the control, testing and verification procedures for the entire production process.

Technical documentation, drawings and DoP for the various products can be downloaded from the website www.edilmatic.it.

The Edilmatic Technical Department is available for clarifications, enquiries, advises and suggestions.



EDILMATIC CERTIFICATIONS



Edilmatic has held EN 1090-1 certification since 2017. EN 1090-1 is a harmonised standard that sets out the requirements for CE Marking, in accordance with the European Construction Products Regulation (CPR). The standard specifies the requirements for the conformity assessment of the performance characteristics of steel and aluminium structural elements as well as kits placed on the market as construction products.

The certification guarantees that Edilmatic complies with all provisions regarding the evaluation and verification of the constancy of performance of CE-marked products in accordance with this standard within the scope of the 2+ control system. The certification obtained by Edilmatic allows for the production and placing on the market of products up to **execution class EXC3**.

The CE marking guarantees the characteristics and performance described in the Declaration of Performance (DoP) related to the product. Edilmatic is authorised to affix the CE marking in accordance with **Method 1** (declaration of geometric and material characteristics) or **Method 3b** (structural design of the component).

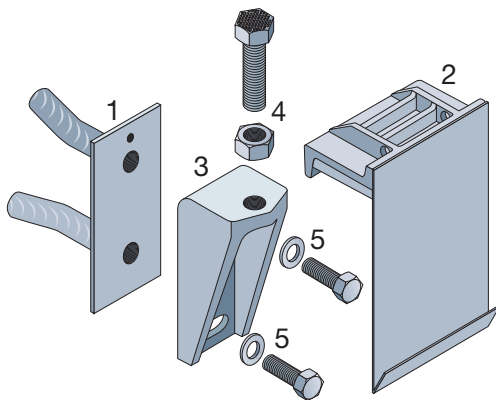


The EN ISO 9001 is an international standard that sets out the requirements for a quality management system (SGQ) within organisations. Its goal is to help organisations to demonstrate their ability to provide products and services that meet customers' and stakeholders', whilst continuously improving their effectiveness and efficiency.

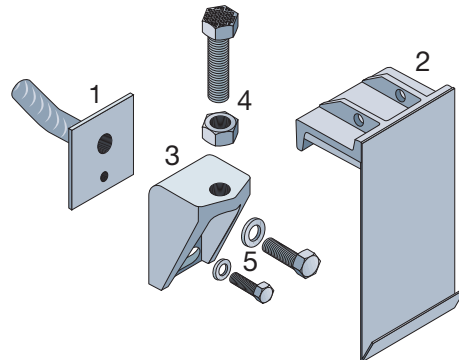


INTRODUCTION

MT BRACKETS



MT4-MT6-MT9-MT12 Brackets

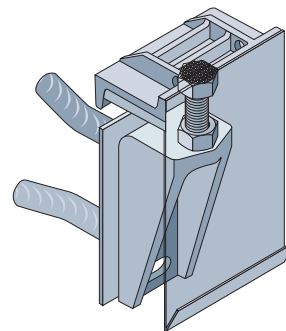


MT2 Bracket

MT brackets are designed to be installed on the faces of precast pillars or within the thickness of the panels.

The system consists of:

- (1) CLAMPED PLATE**
- (2) LOAD DOSTRIBUTOR**
- (3) BRACKET**
- (4) ADJUSTMENT BOLT AND NUT**
- (5) FIXING BOLTS AND WASHERS**



Assembled Bracket

There are 5 bracket models available, differentiated by their maximum load capacity:

- **MT2 Bracket** maximum load **20 kN**
- **MT4 Bracket** maximum load **40 kN**
- **MT6 Bracket** maximum load **60 kN**
- **MT9 Bracket** maximum load **90 kN**
- **MT12 Bracket** maximum load **120 kN**

All the components are supplied with an electrolytic zinc coating.

Table 1 - Code Correspondance.

Model	Maximum Load	Complete System	Clamped Plate	Bracket	Load Distributor
MT2	20 kN	MT2CN	PZ2N	MT2N	RC2N
MT4	40 kN	MT4CN	PZ4N	MT4N	RC4N
MT6	60 kN	MT6CN	PZ6N	MT6N	RC6N
MT9	90 kN	MT9CN	PZ9N	MT9N	RC912N
MT12	120 kN	MT12CN	PZ12N	MT12N	

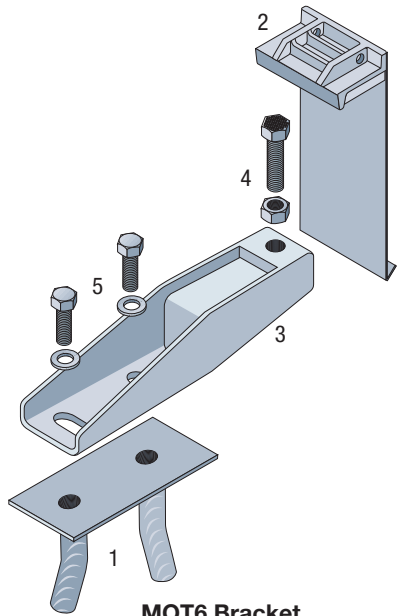
Complete System = Clamped Plate + Bracket + Load Distributor.
The Brackets comes with bolts and nuts.



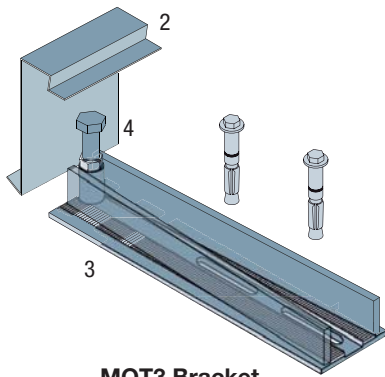
Standard Application

INTRODUCTION

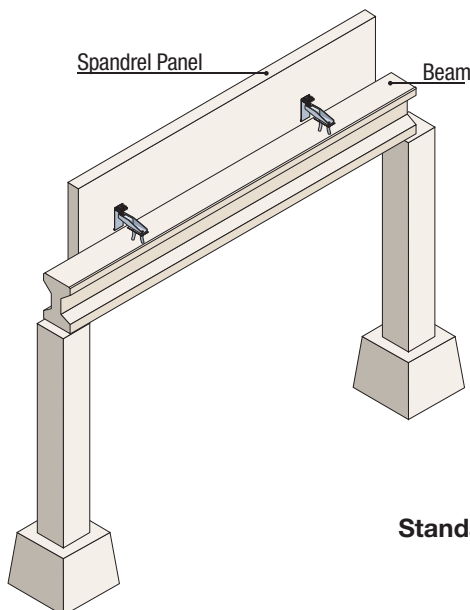
MOT HORIZONTAL BRACKETS



MOT6 Bracket



MOT3 Bracket



Standard Application

MOT Horizontal Brackets are designed for suspending spandrel and parapet panels. The bracket is designed to be installed on the upper surface of beams or floor slabs. This makes it possible to suspend panels whose vertical positioning size is higher than the pillars' height.

The system consists of:

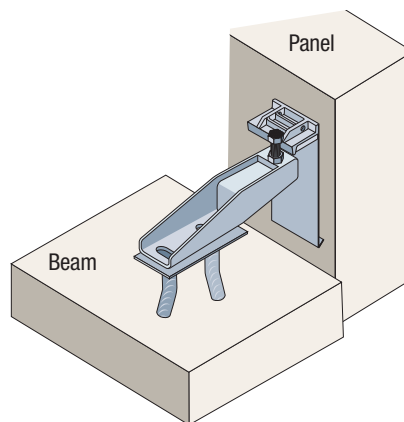
- (1) CLAMPED PLATE**
- (2) LOAD DISTRIBUTOR**
- (3) BRACKET**
- (4) ADJUSTMENT BOLT AND NUT**
- (5) TIGHTENING BOLTS AND WASHERS**

Two types of horizontal brackets are available, differentiated by the maximum load capacity and installation type:

- **MOT3 Bracket** maximum load **30 kN**
- **MOT6 Bracket** maximum load **60 kN**

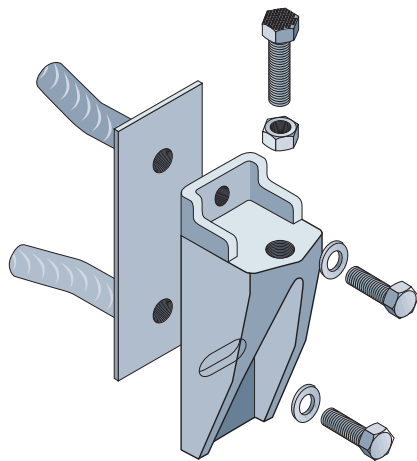
The MOT6 horizontal bracket can be installed either using the PZ6 anchor plate or on-site using resin-bonded bars.

The MOT3 horizontal bracket is designed to be installed on-site using M16 mechanical or chemical anchors.

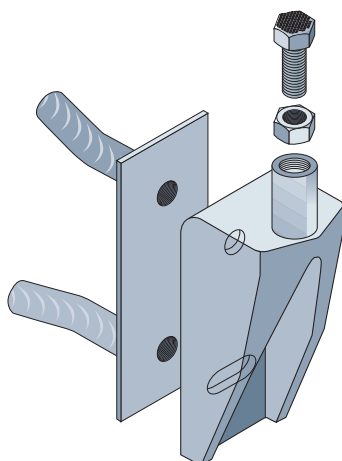


INTRODUCTION

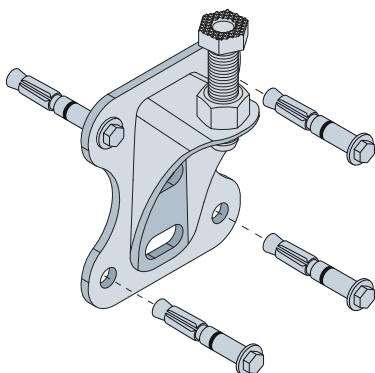
ERROR-RECOVERING BRACKETS



Lowered Bracket



Raised Bracket



Error-Recovery Bracket

The MT system includes a range of error-recovering brackets, allowing any mistakes made during the elements' production to be corrected directly on site.

Three types of error-recovering MT are available:

- **LOWERED Brackets**
- **RAISED Brackets**
- **ERROR-RECOVERING Brackets**

Accessories are available for all types to cover all load capacities.

LOWERED brackets are used when the clamped plate is incorrectly positioned higher than the design level, in addition to the standard bracket's adjustment capacity.

RAISED brackets are used when the clamped plate is incorrectly positioned lower than the design level, in addition to the standard bracket's adjustment capacity.

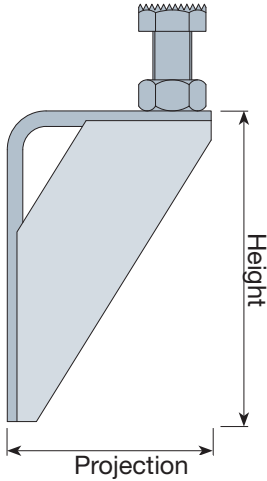
ERROR-RECOVERING brackets are used when the clamped plate is missing or has been positioned so incorrectly that it cannot be used. In such case, the appropriate bracket must be installed on site using mechanical anchors or resin-bonded bars.

The error-recovering brackets range allows for the quick and cost-effective resolution of the problems that frequently arise in the prefabrication field and which can significantly increase the costs and production and assembly times of the structures.

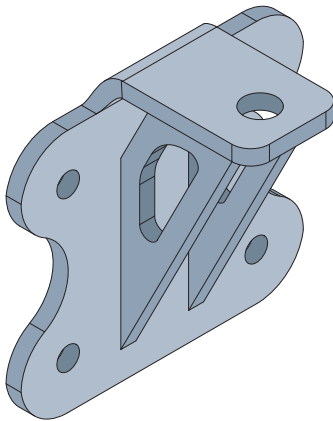
Error-recovery brackets come with the same certifications as standard ones, meaning that the two systems are fully interchangeable.

INTRODUCTION

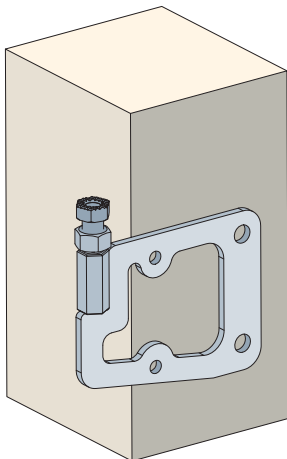
SPECIAL BRACKETS



Bracket with special dimensions



Heavy-load Bracket



Side-mounted Bracket

Edilmatic is able to design and manufacture personalised suspension systems to meet specific customer requirements or challenges that go beyond standard applications.

The figures alongside show some typical examples of special brackets, which cover the majority of 'non-standard' requirements.

A relatively common case is the need for a bracket with a longer projection than the standard, for example when the bracket is installed within a groove or a recess in the element.

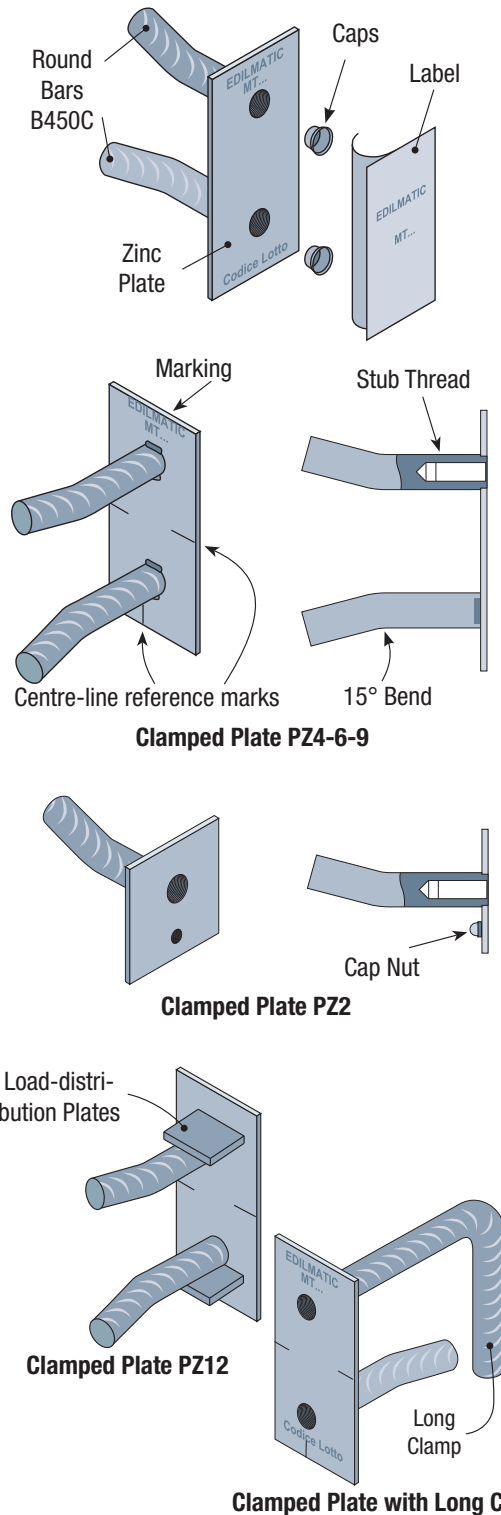
Another common scenario is the need for a narrow bracket, so that it can be fitted into spaces with limited width. Edilmatic can design and manufacture brackets with customised dimensions (width, height and overhang) and load capacity.

Edilmatic can design and manufacture brackets based on the loads specified by the customer. In cases where the bracket is subject to particularly high stresses, it is possible to manufacture special brackets designed to be mounted on two clamped plates, rather than on a single one.

Edilmatic is also able to meet specific customer requirements, as in the example shown alongside, where the bracket has been designed to be installed on the side of the load-bearing element rather than on the face.

MT BRACKETS

CLAMPED PLATE



The Clamped Plate is the insert to be fitted into the load-bearing structural element (e.g. pillar, beam or panel).

The Clamped Plate consists of a steel plate and two clamps that act as bushings with captive threads. The plate is made of S235 structural steel, whilst the clamps are made of B450C reinforced concrete steel. The plate is supplied cold-galvanised, as it is externally exposed, whilst the round bars are supplied uncoated to ensure better adhesion to the concrete.

To prevent mortar from seeping into the threaded holes, the bushes are supplied sealed with plastic caps.

An adhesive label is then applied to the front face, indicating the type of bracket. The label and caps must be removed during assembly to allow the bolts to be inserted into the bushes.

To help operators identify the product correctly, both sides of the plate are marked with the word "EDILMATIC" and the bracket model (MT2, MT4, MT6, MT9, MT12).

To facilitate the correct positioning of the Clamped Plate within the formwork, centre-line reference marks are provided on both sides of the plate.

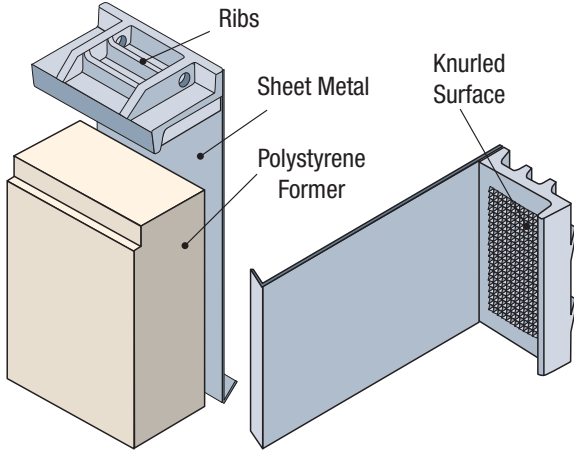
The PZ2 Clamped Plate is fitted with a single clamp and a cap nut.

The PZ12 Clamped Plate is fitted with two load-distribution plates, which are necessary to reduce the contact stress between the clamp and the concrete.

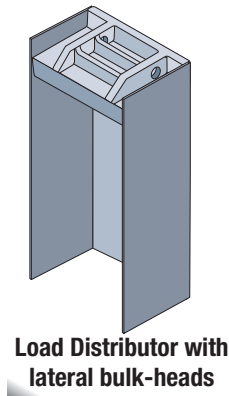
For special applications, Clamp Plates with a Long Clamp are available as an alternative.

MT BRACKETS

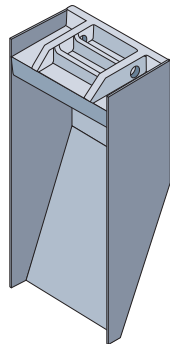
LOAD DISTRIBUTOR



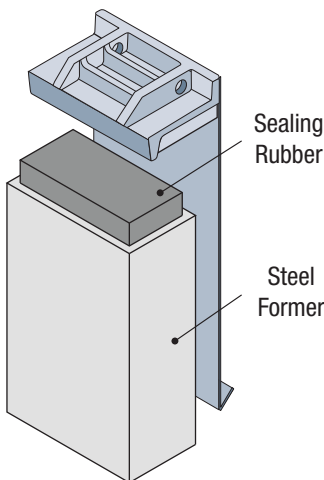
Load Distributor



Load Distributor with lateral bulk-heads



Load Distributor with lateral bulk-heads and bottom closure



Load Distributor with steel former

The Load Distributor is the insert to be fitted into the supported element, typically a horizontal prefabricated panel.

The Load Distributor consists of a hot-formed body and a shaped rear cover plate. It is supplied with an electrolytic zinc coating, as it is intended for exposure to the air.

The large support surface allows the horizontal and transverse position of the prefabricated panel to be adjusted quickly and effectively during assembly.

The Load Distributor is supplied with a polystyrene former, bonded to the sheet metal, designed to create the support cavity for the Bracket.

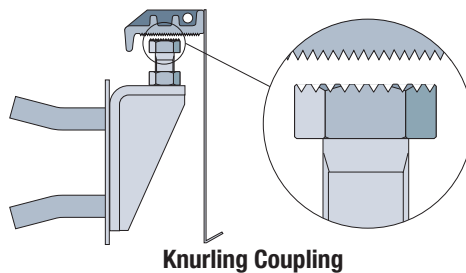
The Load Distributor is fitted with upper longitudinal reinforcement ribs, which ensure optimal distribution of contact stresses with the concrete.

The contact surface with the head of the Adjustment Bolt is knurled to prevent relative sliding between the two elements.

As an alternative to the standard models, versions with side closing bulk-heads and a bottom closure can be used where it is necessary to make the support point completely concealed.

The Load Distributor can be supplied in non-standard lengths and widths to suit specific applications.

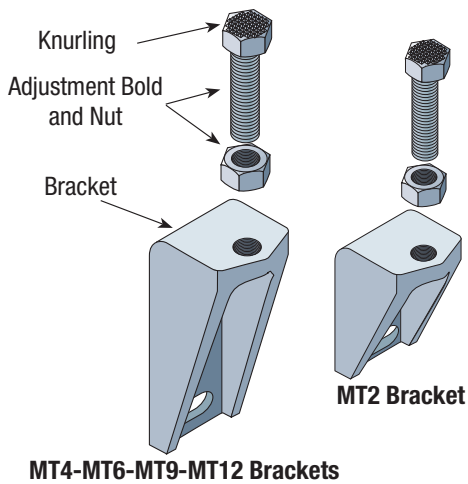
The compartment can be fitted with a reusable steel former, available as an alternative to the single-use polystyrene one.



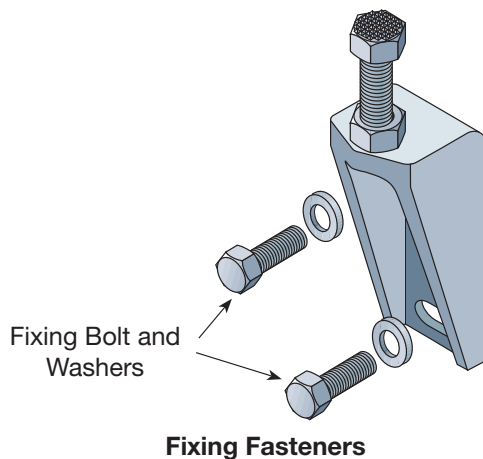
Knurling Coupling

MT BRACKETS

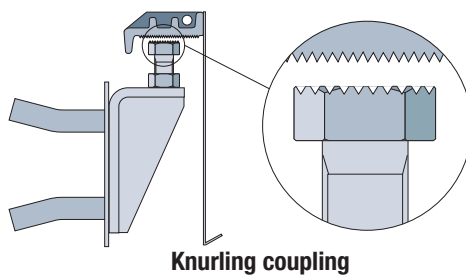
BRACKET



MT4-MT6-MT9-MT12 Brackets



Fixing Fasteners



Knurling coupling

The bracket is the support element for the supported structure.

During installation, the bracket is secured to the clamped plate using fixing bolts; the height of the adjustment bolt is then set, and finally the prefabricated panel is installed.

The bracket is made of steel using hot-forming. It is supplied with an electrolytic zinc coating, as the bracket is exposed to the air.

The head of the adjustment bolt is fitted with a special knurling, which matches that of the load distributor, and which allows the two surfaces to engage.

The bracket is supplied with the adjustment bolt and adjustment nut already fitted.

The bracket is supplied complete with fixing bolts and washers.

The bolt's travel allows for height adjustment of the support point. The lower part of the adjustment bolt is painted red as a visual indicator for the operator, to ensure that the bolt is not overtightened.

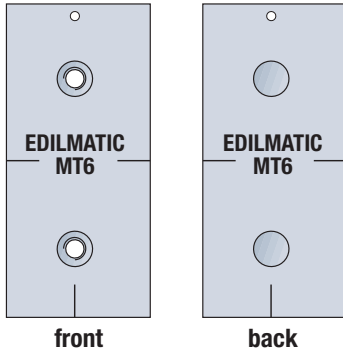
The CE marking, along with the batch code and bracket type, is located in the centre of the bracket.

MT BRACKETS

MARKINGS

CLAMPED PLATE

Markings on the clamped plates



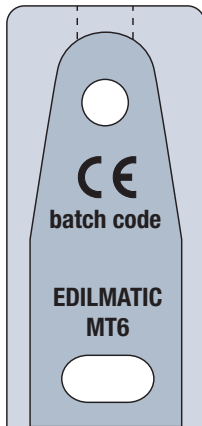
The inscription 'EDILMATIC', the type of bracket and the batch code are stamped on both sides of the Clamped Plate, along with centre marks for positioning the insert.

The label on the Clamped Plate bears the inscription EDILMATIC, the CE mark and the bracket type.

To facilitate identification of the part, each Clamped Plate is associated with a different label colour.

BRACKET

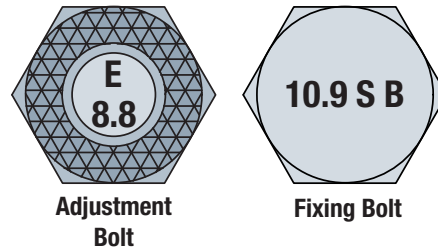
Markings on the bracket



The EDILMATIC logo, the CE-mark, the type of bracket and the batch code are stamped on the bracket.

BOLTS

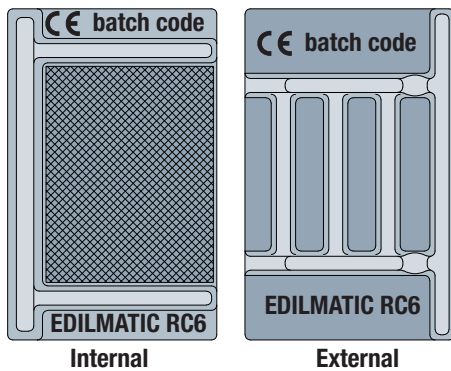
Markings on the bolts' head



The adjustment bolt head is marked E8.8. The fixing bolts are marked 10.9 SB.

LOAD DISTRIBUTOR

Markings on the load distributor

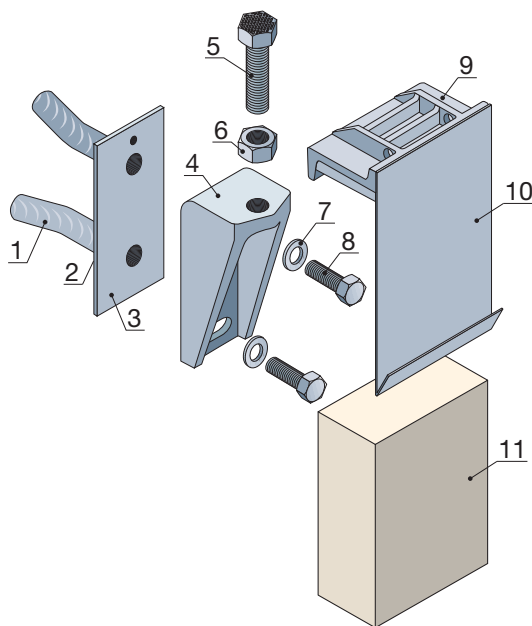


The EDILMATIC logo, the CE-mark, the type of bracket and the batch code are stamped on the load distributor.

MT BRACKETS

MATERIALS

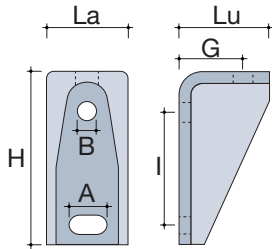
N.	COMPONENT	MATERIAL	COATING
1	CLAMPS	Steel B450C D.M. 18/01/2018	Black
2	BEARING PLATE (for PZ12 only)	Steel S235 EN 10025	Black
3	PLATE	Steel S235 EN 10025	Electrolytic Coating EN ISO 2081
4	BRACKET	Steel S355 EN 10025	Electrolytic Coating EN ISO 2081
5	ADJUSTMENT BOLT	Class 8.8 EN ISO 4017	Electrolytic Coating EN ISO 4042
6	ADJUSTMENT NUT	Class 8 EN ISO 4034	Electrolytic Coating EN ISO 4042
7	FIXING BOLTS	Class 10.9 EN ISO 4017	Electrolytic Coating EN ISO 4042
8	FIXING WASHERS	Class 100 HV EN ISO 6592	Electrolytic Coating EN ISO 4042
9	RIBS	Steel S355 EN 10025	Electrolytic Coating EN ISO 2081
10	FORMWORK SIDES	Sheet Metal DX51D EN 10346	Sendzimir Coating Z200 EN 10346
11	FORMER	Polystyrene density 15 kg/m ³	-



MT BRACKETS

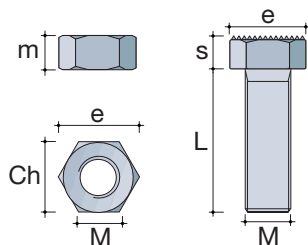
SIZES AND DIMENSIONS

BRACKETS



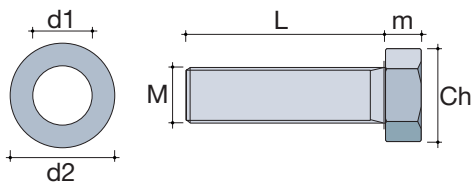
	MT2	MT4	MT6	MT9	MT12
H	90	150	175	212	212
La	60	60	80	110	110
Lu	76	80	95	115	115
I	40	100	120	140	140
A	30	30	42	50	52
B	17	17	21	21	25
G	55	60	74	85	85

ADJUSTMENT BOLTS AND NUTS



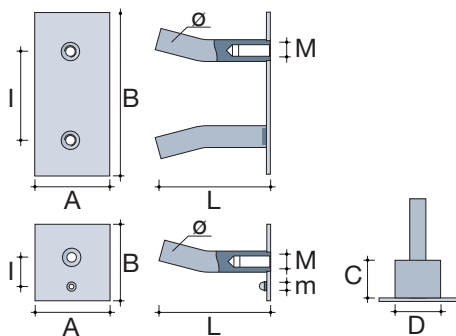
M	18	20	24	27	27
L	80	80	100	110	110
e	34	36	40	46	46
s	12	13	16	17	17
Ch	27	30	36	41	41
m	15	16	18	22	22

FIXING BOLTS AND WASHERS



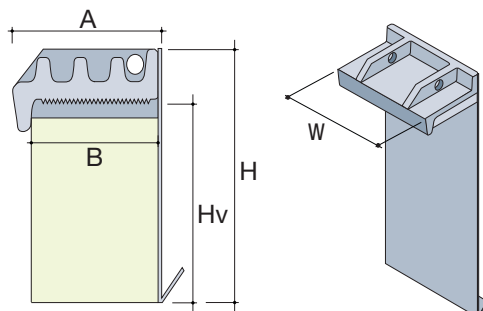
M	16	16	18	20	24
L	45	45	50	55	65
Ch	24	24	27	30	36
m	10	10	12	13	15
d1	17	17	19	21	25
d2	30	30	34	37	44

CLAMPED PLATES



M	16	16	18	20	24
m	10	-	-	-	-
L	150	150	150	200	300
∅	24	24	28	32	32
A	80	80	110	140	140
B	90	180	220	260	260
I	40	100	120	140	140
C	-	-	-	-	100
D	-	-	-	-	50

LOAD DISTRIBUTOR



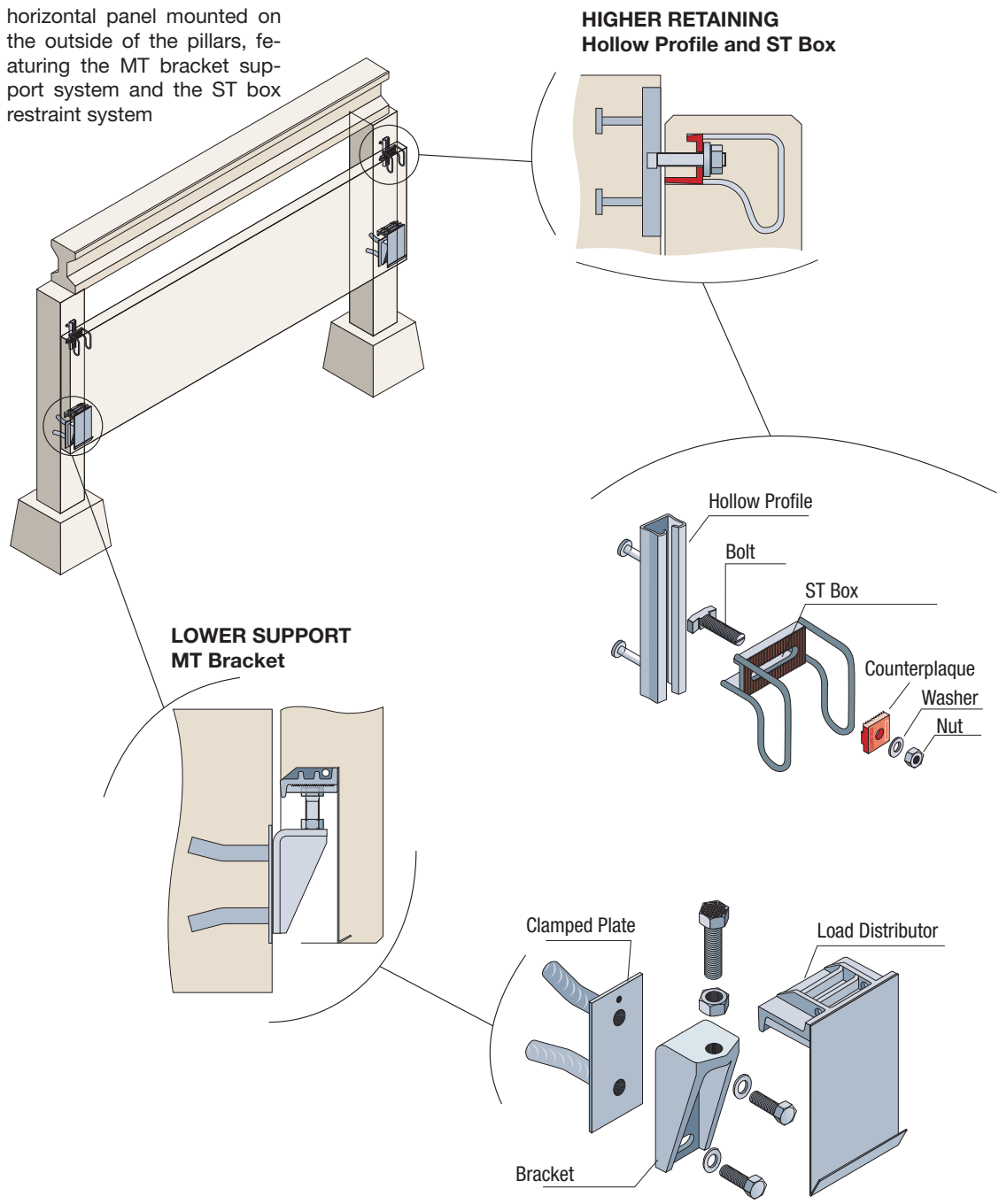
H	200	258	300	360	360
B	86	86	90	100	100
A	95	95	100	120	120
W	110	110	170	190	190
Hv	170	228	270	324	324

The measurements shown in the table are given in mm

MT BRACKETS

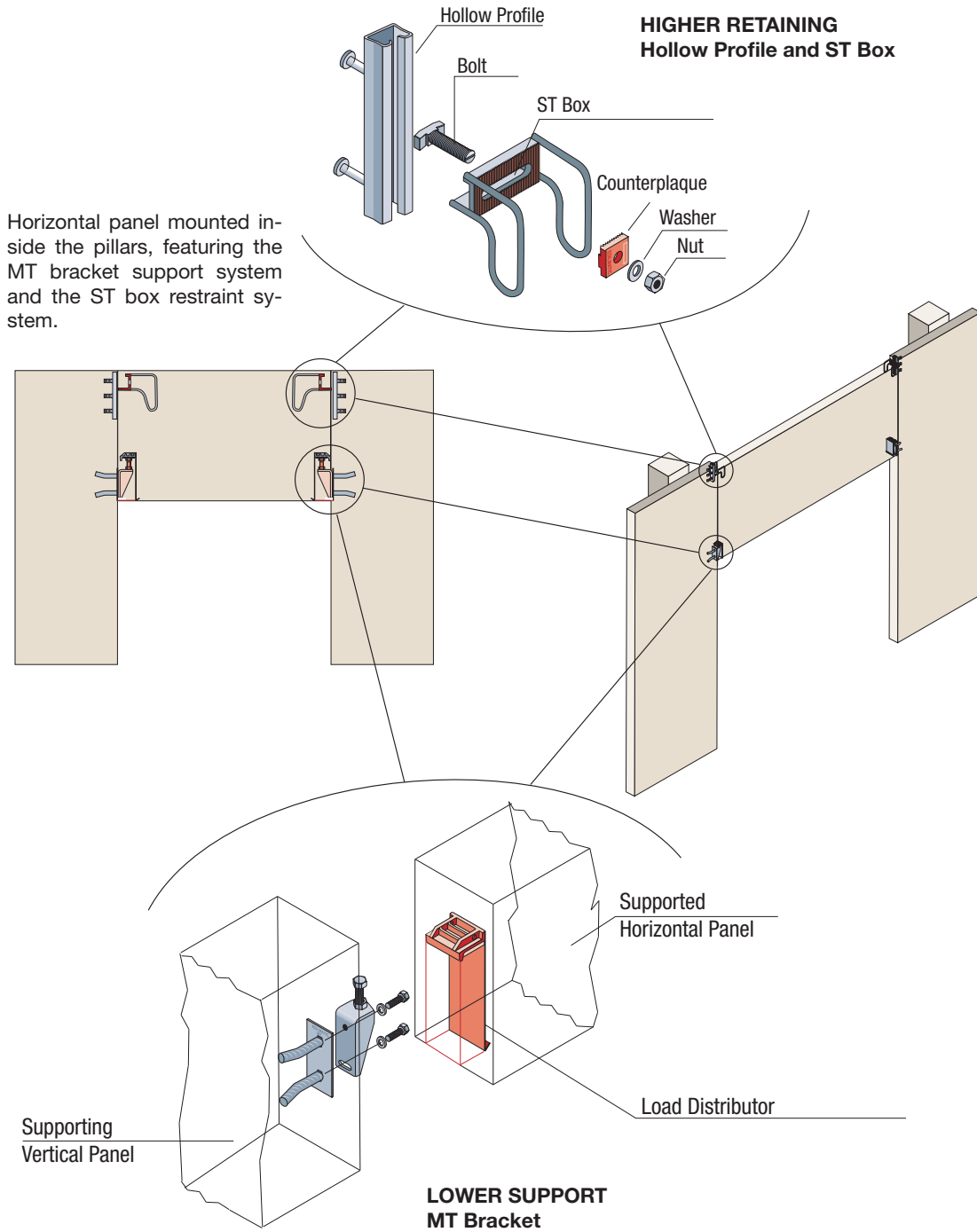
HORIZONTAL PANELS SUSPENSION

horizontal panel mounted on the outside of the pillars, featuring the MT bracket support system and the ST box restraint system



MT BRACKETS

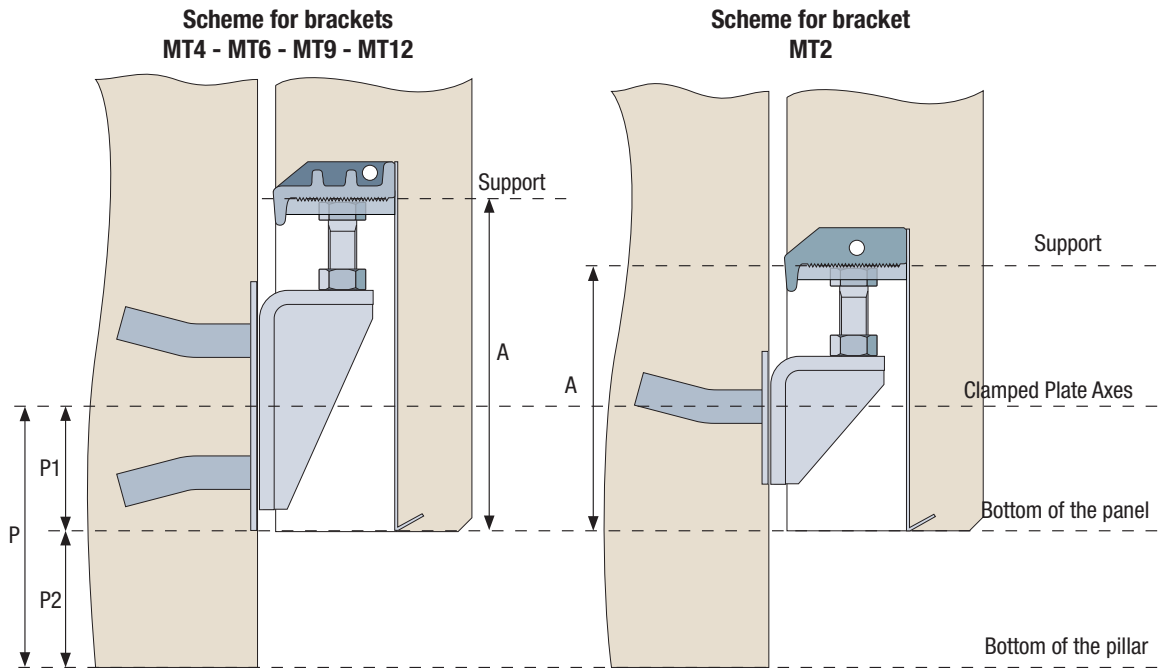
PANEL TO PANEL SUSPENSION



MT BRACKETS

CLAMPED PLATE POSITIONING

VERTICAL POSITIONING SIZE



To position the Clamped Plate correctly in the pillar, the following rule must be considered:

$$P = P2 + P1$$

P = Positioning size of the clamped plate in the pillar, measured from the bottom of the pillar to the centre mark on the clamped plate itself.

P2 = Distance from the bottom of the pillar to the bottom of the panel. The P2 size can be adjusted during installation by turning the adjustment bolt.

P1 = Distance from the bottom of the panel to the centre mark on the clamped plate (see table).

A = Distance from the bottom of the panel to the head of the adjustment bolt.

Example

Design elevation of the bottom edge of the panel, measured from the base of the pillar = $P2 = 5000$ mm.

When using an MT4 bracket, $P1 = 90$ mm.

The centreline of the Clamped Plate must be positioned at an elevation of $P = 5000 + 90 = 5090$ mm from the base of the pillar.

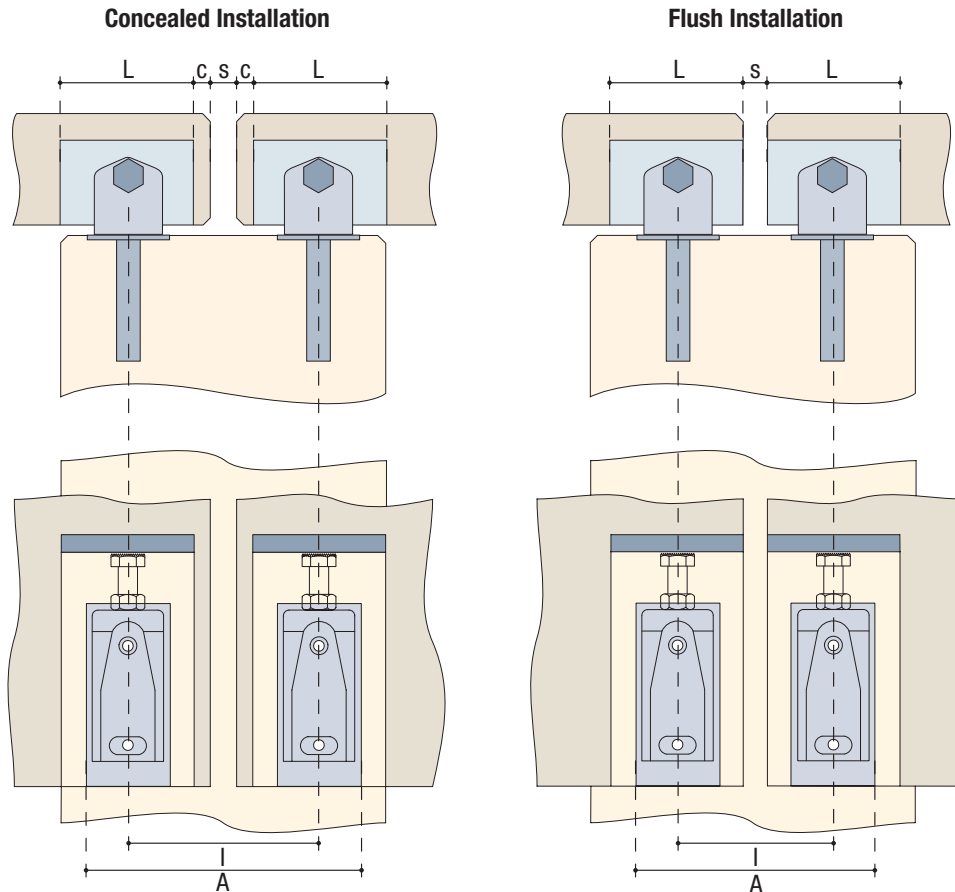
BRACKET	P1 (mm)	A (mm)
MT2	85	170±25
MT4	90	228±25
MT6	110	270±30
MT9	130	324±30
MT12	130	324±30

Table 1 - Positioning Sizes

MT BRACKETS

CLAMPED PLATE POSITIONING

HORIZONTAL POSITIONING SIZE



The horizontal distance between the two clamped plates is calculated using the following formula:

$$I = L + 2c + s$$

- I** = Horizontal centre-to-centre distance between the clamped plates
- c** = Lateral concrete cover
- s** = Joint between panels
- W** = Width of the load distributor
- A** = Total horizontal dimensions

The figure shows the two possible installation methods for the load distributor. With a flush installation, the load distributor is visible, whereas with a concealed installation it is hidden by the side panel of thickness 'c'.

Bracket	W (mm)	s (mm)	Concealed Installation c = 30 mm		Flush Installation c = 0	
			I (mm)	A (mm)	I (mm)	A (mm)
MT2	110	10	180	260	120	200
MT4	110	10	180	260	120	200
MT6	170	10	240	350	180	280
MT9	190	10	260	400	200	330
MT12	190	10	260	400	200	330

Table 1 - Horizontal centre-to-centre distance between the clamped plates

MT BRACKETS

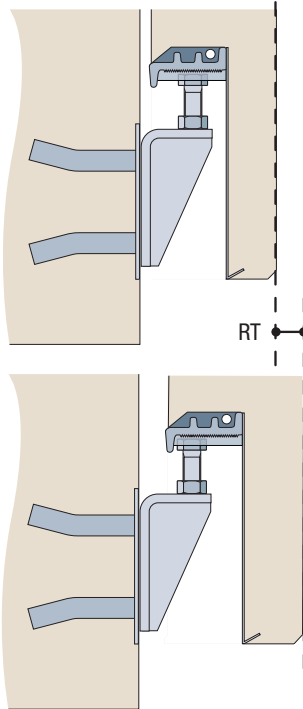
ADJUSTMENTS

VERTICAL ADJUSTMENT

Upper limit Average level Lower limit

Bracket	Vertical Adjustment RV
MT2	± 25 mm
MT4	
MT6	± 30 mm
MT9	
MT12	

LATERAL ADJUSTMENT

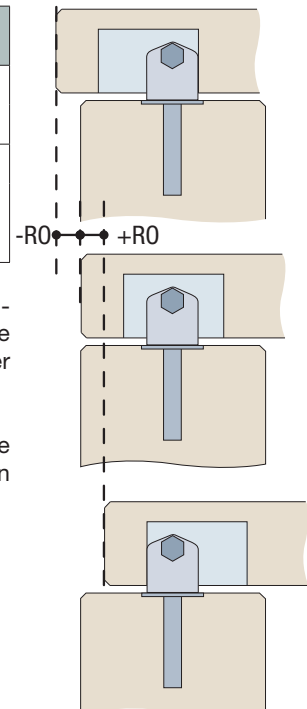


Bracket	Lateral Adjustment RT
MT2	40 mm
MT4	
MT6	50 mm
MT9	
MT12	

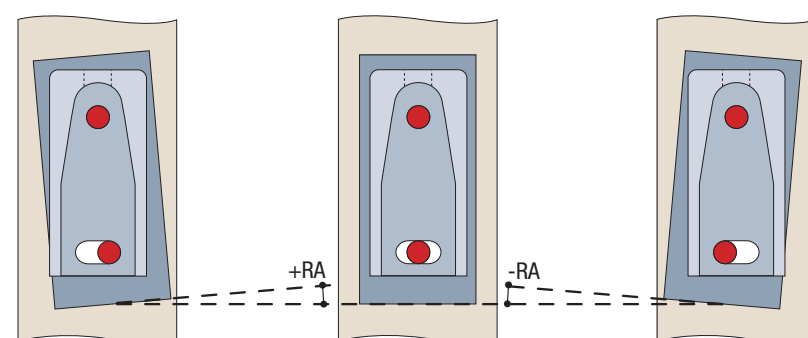
The lateral adjustment allows the horizontal distance between the panel and the pillar to be varied in order to align the panels with the outer edge of the building.

The horizontal adjustment allows you to vary the horizontal distance between adjacent panels, in order to maintain the gap between them.

HORIZONTAL ADJUSTMENT



ANGULAR ADJUSTMENT

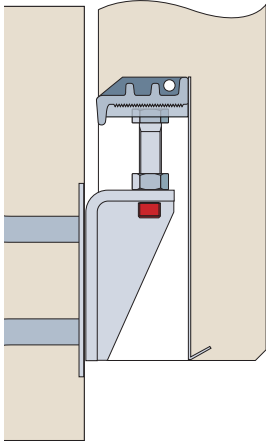


Bracket	Angular Adjustment RO
MT2	± 5°
MT4	
MT6	
MT9	
MT12	

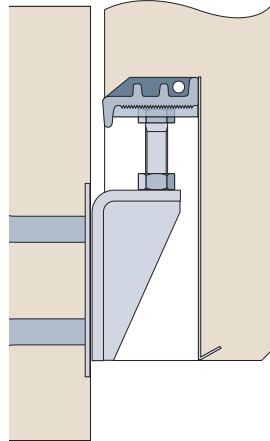
MT BRACKETS

ERECTION REQUIREMENTS

ADJUSTMENT BOLT



CORRET ADJUSTMENT
The red area is visible beneath the bracket's support surface.



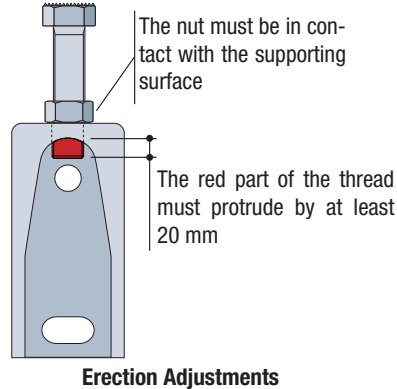
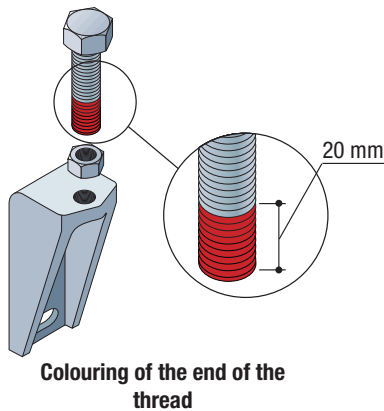
WRONG ADJUSTMENT
The red area isn't visible beneath the bracket's support surface. It is necessary to retighten the bolt or use the Raised Brackets.

The adjustment bolts are coloured red at the end of the thread to provide a visual aid during assembly and adjustment. The red colour extends 20 mm along the thread for all types of brackets.

During assembly, the red part of the thread must protrude by at least 10 mm. The adjustment nut must be in contact with the bracket's support surface.

If the red part of the thread is visible for at least 10 mm, the bolt has been adjusted correctly. Conversely, if the red part is not visible from below, this means that the bolt protrudes too far from the bracket and the threaded sections may break.

In cases where adjustment is insufficient to reach the design height, Raised Brackets can be used.



FIXING BOLTS

During installation, the tightening torques specified in Table 1 for the fixing bolts must be observed.

The concrete strength class at the time of installation must be C35/45 or higher.

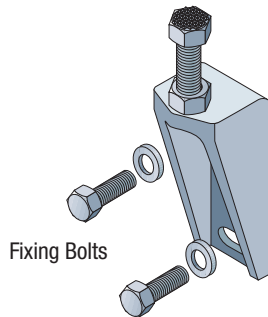


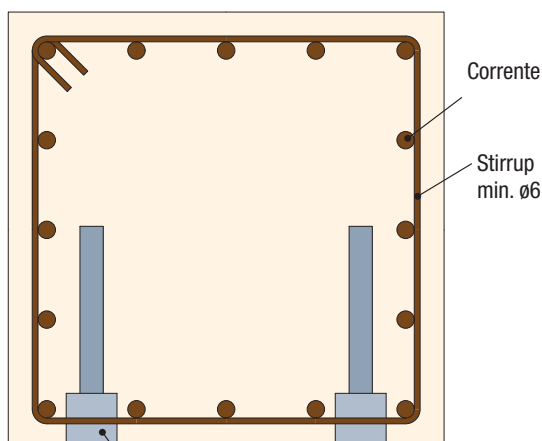
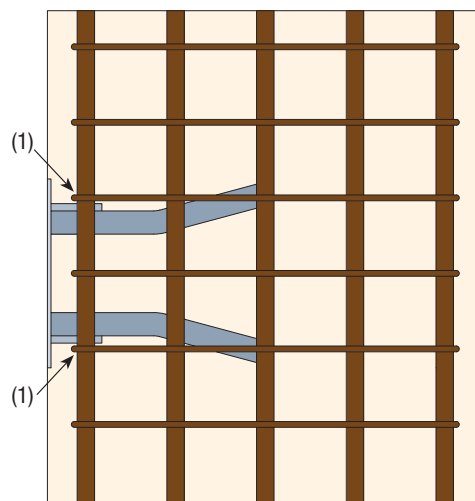
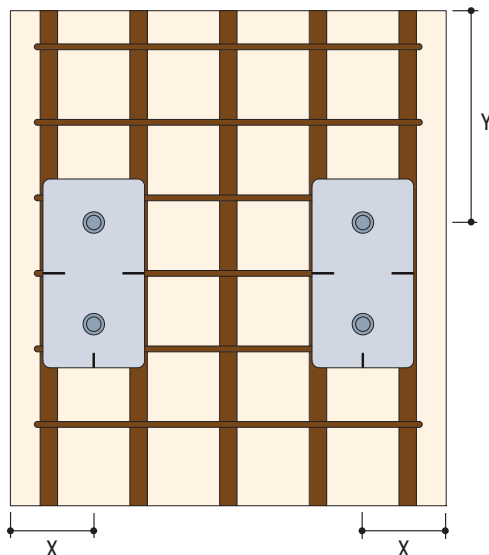
Table 1 - Tightening torques for fixing bolts

Bracket	Tightening torques (Nm)
MT2	100
MT4	100
MT6	150
MT9	200
MT12	200

MT BRACKETS

REINFORCEMENT

PLACEMENT OF THE CLAMPED PLATE INTO THE PILLAR REINFORCEMENT



For PZ12 models, take into account the dimensions of the distribution plate (50 mm)

The Clamped Plates must be inserted into the pillar reinforcement as shown in the figure.

To ensure the structural integrity of the system, the minimum distances from the edges specified in Table 1 must be observed.

Each clamp must be positioned adjacent to at least one stirrup or pillar web, in the area indicated by (1) in the drawing. The clamps may be welded to the reinforcement, bearing in mind that they are made of B450C steel.

The minimum distances are calculated for concrete of class C35/45.

For applications where it is necessary to position the Clamped Plate at a distance Y less than the minimum (measured from the centre of the upper clamp hole), Long Clamp Plates must be used.

Table 1 – Minimum distances from edges with reinforcement

Bracket	X (mm)	Y (mm)
MT2	60	80
MT4	60	80
MT6	80	100
MT9	80	120
MT12	80	150

MT BRACKETS

MINIMUM DISTANCES FROM THE EDGES

CLAMPED PLATE WITHOUT REINFORCEMENT

If it is not possible to comply with the minimum reinforcement requirements, or if, for design reasons, one does not wish to rely on reinforcement, the positioning of the Clamped Plates must comply with the edge distances specified in Table 1.

The minimum distances are calculated for concrete of class C35/45.

For applications where it is necessary to position the Anchor Plate at a distance Y less than the minimum (measured from the centre of the upper anchor hole), Long Anchor Plates must be used.

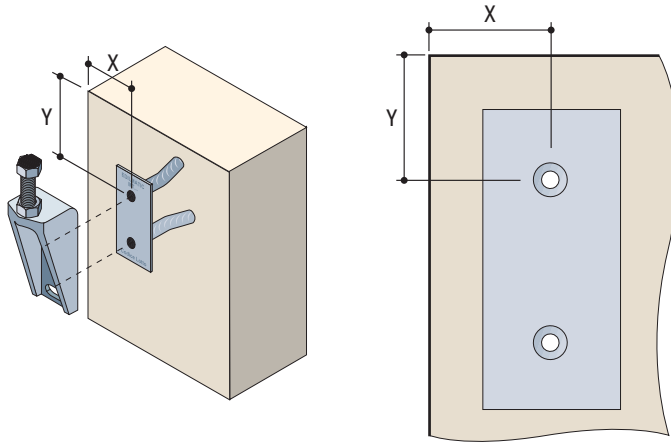


Table 1 - Minimum distances from the edges without reinforcement

Bracket	X (mm)	Y (mm)
MT2	60	80
MT4	80	80
MT6	100	100
MT9	120	120
MT12	150	150

LOAD DISTRIBUTOR

The minimum concrete cover required above the load distributor is shown in Table 2.

The minimum cover is calculated for concrete of class C35/45 and without additional reinforcement.

For specific applications where the thickness must necessarily be less than the minimum, appropriate reinforcement must be provided in the upper part of the panel to prevent failure on the concrete side.

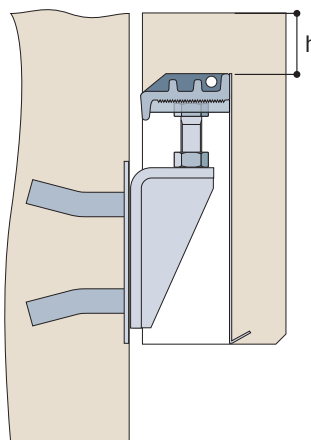


Table 2 – Minimum distance from the top edge of the panel

Bracket	h (mm)
MT2	100
MT4	100
MT6	150
MT9	150
MT12	150

MT BRACKETS

RESISTANCES

ULTIMATE LIMIT STATE VERIFICATIONS (ULS)

Table 1 - ULS Resistances

Bracket	Vertical Resistance, characteristic value V_{Rk}	Vertical Resistance, design value at ULS V_{Rd}
MT2	20 kN	30 kN
MT3	30 kN	45 kN
MT4	40 kN	60 kN
MT5	50 kN	75 kN
MT6	60 kN	90 kN
MOT6	60 kN	90 kN
MT9	90 kN	135 kN
MT12	120 kN	180 kN

V_{Rk} = Resistance value to be used for verifications in the “characteristic” combination, as defined §8.4.3.2 of EN 1990.

V_{Rd} = Resistance value to be used for verifications in the “fundamental” combination, as defined in §8.3.4.2 of EN 1990.

SEISMIC LIMIT STATE VERIFICATIONS

Table 2 - Resistances in seismic combinations

Bracket	Vertical Resistance, characteristic value V_{Rk}	Maximum Horizontal Resistance $H_{R,max}$
MT2	20 kN	10 kN
MT3	30 kN	15 kN
MT4	40 kN	20 kN
MT5	50 kN	25 kN
MT6	60 kN	30 kN
MOT6	60 kN	30 kN
MT9	90 kN	45 kN
MT12	120 kN	60 kN

V_R = Resistance value to be used for verifications in the “seismic” combination, as defined in §8.3.4.4 of EN 1990.

$H_{R,max}$ = Maximum value of the horizontal resistance.

In seismic load combinations, the bracket is subjected to a vertical force due to the panel’s own weight and a simultaneous horizontal force due to seismic action.

The horizontal force due to seismic action may act in the plane of the panel or in an out-of-plane direction

The horizontal force is transmitted from the Load Distributor to the bracket via the engagement between the knurled surface of the load distributor and that of the adjustment bolt.

The mechanism for transmitting horizontal force via the knurled surfaces can be modelled as a friction connection.

Following numerical and experimental analyses, the reports for which are available, the coefficient of friction between the bolt and the load distributor is conservatively assumed to be 0.5.

For the purposes of design checks under the “seismic” load combination, as defined in §8.3.4.4 of EN 1990, the horizontal resistance H_R to be used for verifications is given by the following formula:

$$H_R = \min(0,5 \cdot V_E ; H_{R,max})$$

where V_E is the vertical load actually acting on the bracket in the seismic combination, whilst $H_{R,max}$ is the maximum resistance value given in **Table 2**.

MT BRACKETS

FIRE RESISTANCE

INDIRECTLY EXPOSED BRACKET

Fire resistance tests are carried out under the 'exceptional' load combination, as defined in expression [2.5.6] of §2.5.3 of NTC 2018.

It is assumed that only vertical loads act on the joint, equal in magnitude to the nominal load capacity of the bracket.

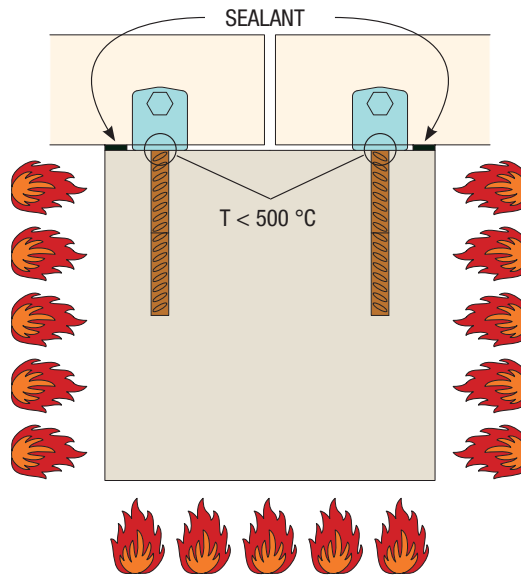
The resistance checks for the joint are satisfied as long as the temperature of the clamp and the fixing bolt is below **500 °C**.

In a scenario where a sealant or other suitable protection is present to prevent the passage of hot gases into the cavity between the pillar and the panel, the bracket is **indirectly** exposed to fire.

In this scenario, heat is transmitted to the Clamped Plate and the Bracket mainly by conduction through the concrete.

The parameter that most influences the fire resistance rating is the distance from the edge of the Clamped Plate.

For example, if the temperature profiles given in Eurocode 2 (UNI EN 1992-1-2:2004) are used for a pillar surrounded by fire on three sides, it follows that, with a distance from the edge of **10 cm**, a resistance class of **R120** is achieved.



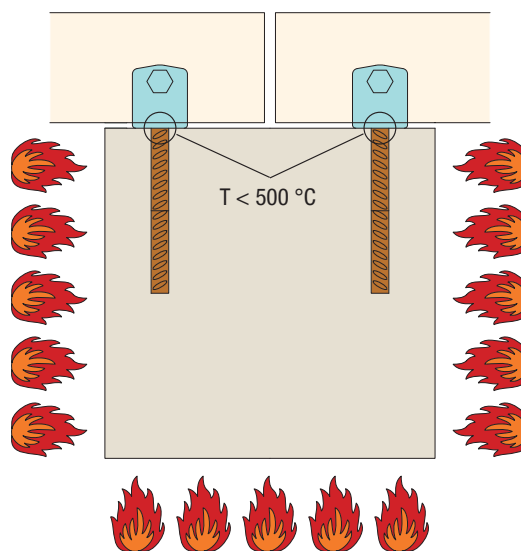
DIRECTLY EXPOSED BRACKET

In a scenario where there is no protection to prevent hot gases from entering the cavity between the pillar and the panel, the bracket is **directly** exposed to the fire.

In this scenario, heat is transferred to the bracket and the fixing bolts mainly by convection.

The resistance class is assessed in a similar manner to that of steel structures directly exposed to a standardised fire.

In this scenario, the fire endurance is typically less than 15 minutes unless specific protective measures are taken.



MT BRACKETS

PANEL-TO-PANEL SUSPENSION

INSTALLATION INTO HE PANELS'S REINFORCEMENT

The Clamped Plates must be inserted into the panel reinforcement as shown in the figure. The minimum distances from the edges specified in **Table 1** must be observed.

Each clamp must be positioned adjacent to at least one stirrup or panel rib, in the area indicated by (1). The clamps may be welded to the reinforcement.

Concrete minimum class:
 - C35/45 poor bonding conditions,
 - C28/35 good bonding conditions.

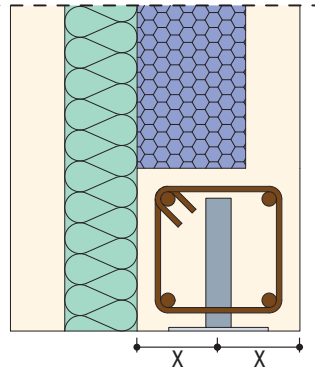
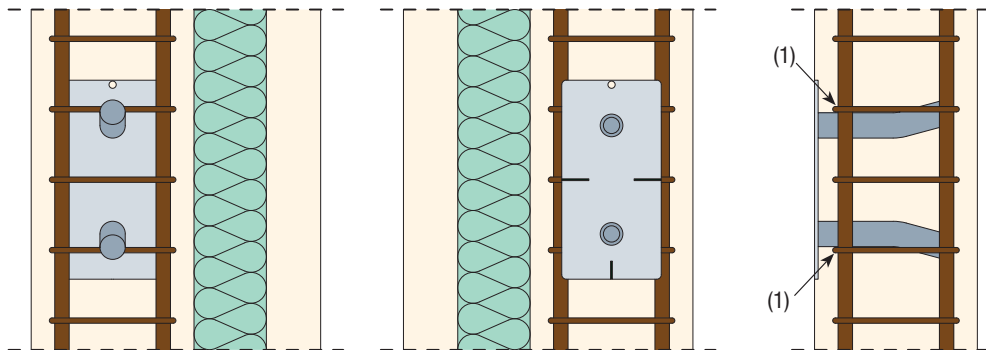


Table 1 - Minimum edge distances

Mensola	X (mm)
MT2	60
MT4	60
MT6	80
MT9	80
MT12	80



ADDITIONAL REINFORCEMENT FOR REAR-SIDE INSTALLATION

If the Clamped Plate needs to be positioned near the bottom of the panel, the additional reinforcement shown in the figure and in Table 1 must be installed.

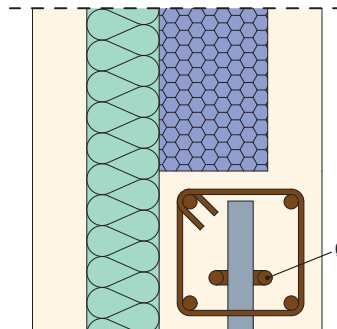
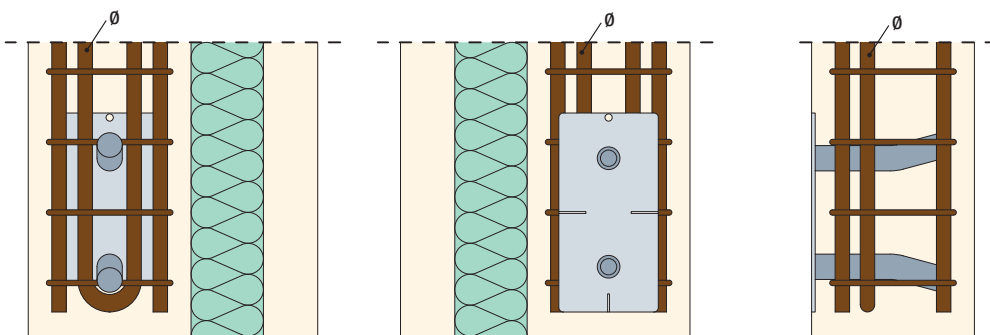


Table 1 - Additional Reinforcement

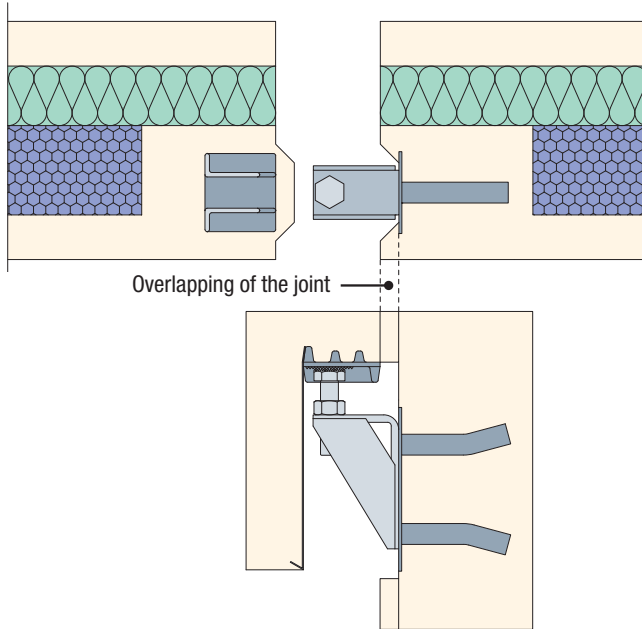
BRACKET	ø (mm)
MT2	8
MT4	10
MT6	14
MT9	16
MT12	18



MT BRACKETS

PANEL-TO-PANEL SUSPENSIONS

TONGUE-AND-GROOVE JOINT PANELS - MT3 AND MT5 BRACKETS



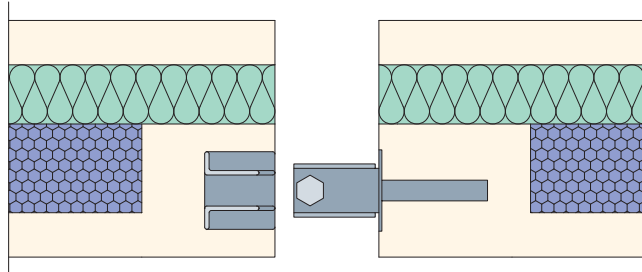
In the case of panel-to-panel suspensions featuring a tongue-and-groove joint, **MT3** or **MT5** brackets can be used to overcome the depth of the joint.

The **MT3** bracket must be mounted on the **PZ4** clamped plate; it has a 25 mm greater projection than the **MT4** and a load capacity of 30 kN, compared to 40 kN for the **MT4**.

The **MT5** bracket is to be mounted on the **PZ6** Clamped Plate; it has a 20 mm greater projection than the **MT6** and a load capacity of 50 kN compared to 60 kN for the **MT6**.

The dimensions of the brackets are shown in **Table 1**. The design resistances are shown in **page 24**.

PANELS WITHOUT TONGUE-AND-GROOVE JOINT - NARROW MT6 BRACKET

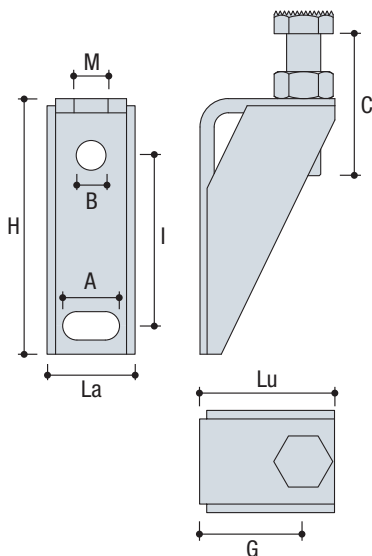


In the case of panel-to-panel suspensions without tongue-and-groove joint, the **NARROW MT6** bracket may be used if the thickness of the load-bearing slab is insufficient for the **MT6** bracket.

The dimensions of the **NARROW MT6** bracket are shown in **Table 1**.

Table 1 - MT3, MT5 e NARROW MT6 dimensions.

	MT3 BRACKET	MT5 BRACKET	MT6 NARROW BRACKET
H	160	180	175
La	62	72	62
Lu	105	115	93
I	100	120	120
G	85	95	73
A	30	40	40
B	18	21	21
M	20	24	24
C	80	100	100
Clamped Plate	PZ4	PZ6	PZ6
Load Distributor	RC4	RC6	RC6
Rated load	30 kN	50 kN	60 kN
Adjustment Bolt	M20	M24	M24



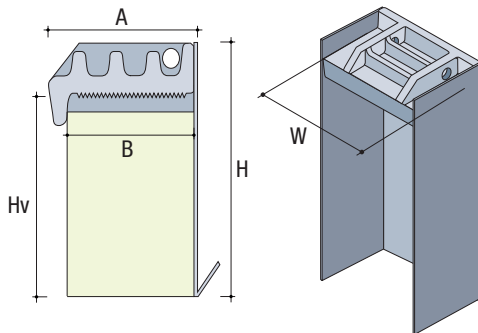
Dimensions in mm

27

MT BRACKETS

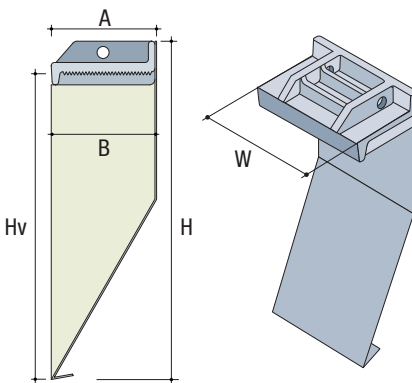
CONCEALED LOAD DISTRIBUTOR

LOAD DISTRIBUTOR WITH SIDE WALLS



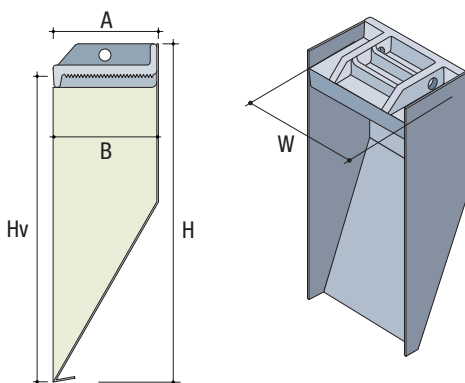
	MT4 BRACKET	MT6 BRACKET	MT9 BRACKET	MT12 BRACKET
code	RC4PLN	RC6PLN	RC912PLN	
H	258	300	360	
Hv	228	270	324	
B	86	90	100	
A	95	100	120	
W	110	170	190	

CLOSED-BOTTOM LOAD DISTRIBUTOR



	MT4 BRACKET	MT6 BRACKET	MT9 BRACKET	MT12 BRACKET
code	RC4NC	RC6NC	RC912NC	
H	310	360	410	
Hv	277	328	370	
B	86	90	100	
A	95	100	120	
W	110	170	190	

CLOSED-BOTTOM LOAD DISTRIBUTOR WITH SIDE WALLS



	MT4 BRACKET	MT6 BRACKET	MT9 BRACKET	MT12 BRACKET
code	RC4PLCSN	RC6PLCSN	RC912PLCSN	
H	310	360	410	
Hv	277	328	370	
B	86	90	100	
A	95	100	120	
W	110	170	190	

MT BRACKETS

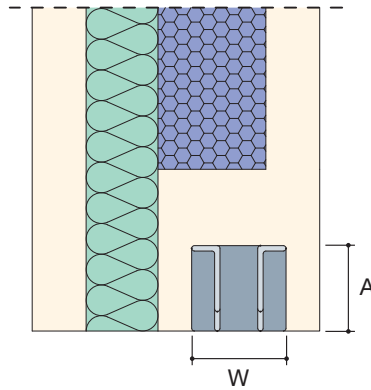
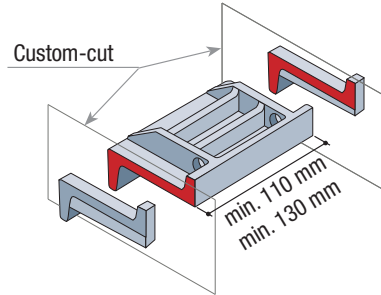
LOAD DISTRIBUTORS WITH REDUCED WIDTH

DESCRIPTION

For the MT6, MT9 and MT12 Brackets, Load Distribution Plates with a reduced width are available upon customer request, down to a minimum width of 110 mm. Dimensions are given in **Table 1**.

For the MT6 Brackets, the RC4 Load Distribution, featuring a width of 110 mm, can be used by increasing the length of the polystyrene by 50 mm.

Load Distribution with a reduced width are specifically designed for installation within the panel thickness and are suitable for the suspension of over-door wall panels.



DIMENSIONS

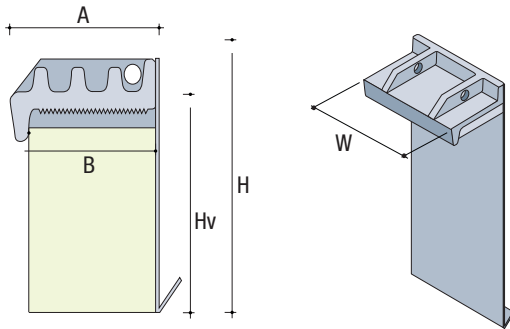


Table 1 - Dimensions

	MT6 BRACKET	MT9 BRACKET	MT12 BRACKET
code	RC6VRN	RC912VRN	
H	300	360	360
Hv	270	324	324
B	90	100	100
A	100	120	120
W	min. 110	min. 130	min. 130

Dimensions in mm

MT BRACKETS

CLAMPED PLATES WITH LONG CLAMP

DESCRIPTION

In cases where the minimum distance from the top edge of the supporting element cannot be maintained, Anchor Plates with Long Clamp shall be used.

The upper clamp, which is subjected to tensile forces, is provided with an increased length and a 90° bend to ensure improved transfer of stresses into the concrete.

The minimum distances from the top edge of the supporting element are given in **Table 1**.

The main inserts dimensions are listed in **Table 2**.

The use of an Anchor Plate with Long Clamp does not affect the load-bearing capacity of the connection.

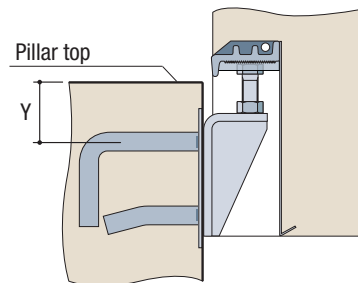
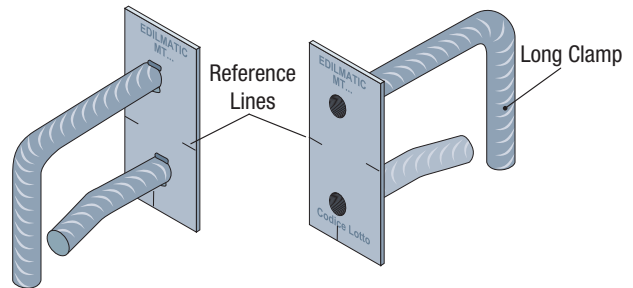


Table 1 - Minimum distance from the top edge

Bracket	Y (mm)
MT2	60
MT4	60
MT6	60
MT9	80
MT12	80

DIMENSIONS

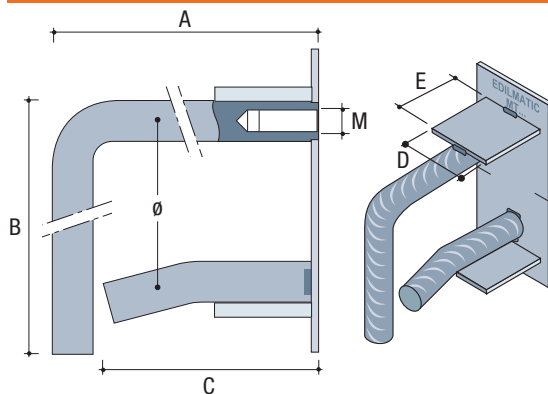


Table 2 - Dimensions

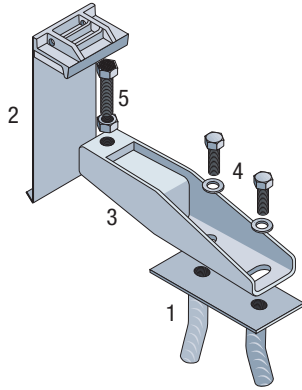
Mensola	Codice	Ø	A	B	C	M	D	E
MT2	PZ2LN	24	250	250	-	16	-	-
MT4	PZ4LN	24	250	200	150	16	-	-
MT6	PZ6LN	28	250	200	150	18	-	-
MT9	PZ9LN	32	250	200	200	20	-	-
MT12	PZ12LN	32	350	200	300	24	50	100

Dimensions in mm

MOT6 HORIZONTAL BRACKET

FEATURES

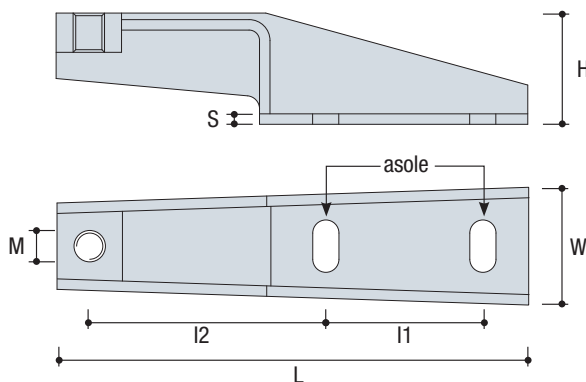
ELEMENTS



n.	ELEMENTS	OPTIONS
1	Clamped Plate for MT6 (PZ6N)	(a)
2	Load Distributor for MT6 (RC6N)	(b)
3	MOT6 Bracket	-
4	N. 2 fixing bolts M18x50, class 10.9 N. 2 washers M18, class 100 HV	-
5	Adjustment bolt with knurled head, M24x120, class 8.8 Nut M24, class 8	-

- (a) As an alternative to the Clamped Plate for MT6 (PZ6N), the MT6 Clamped Plate with Long Clamp (PZ6LN) may be used.
- (b) As an alternative to the Load Distribution for MT6 (RC6N), either the MT6 Load Distribution with reduced height of 250 mm (RC6N250) or the Load Distribution for MT4 (RC4N) may be used.

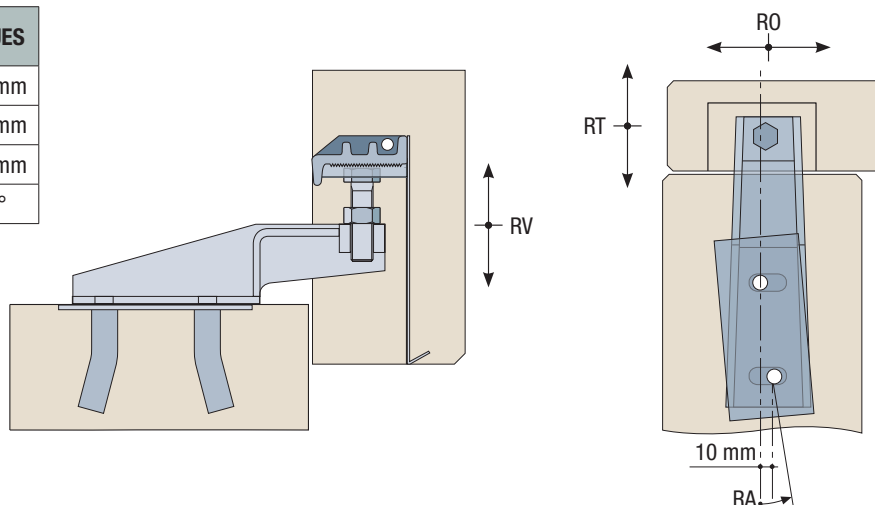
DIMENSIONS



DIMENSIONS (mm)	
L	360
W	90
H	85
l1	120
l2	180
S	8
M	24
slots	20x40

ADJUSTMENT TOLERANCES

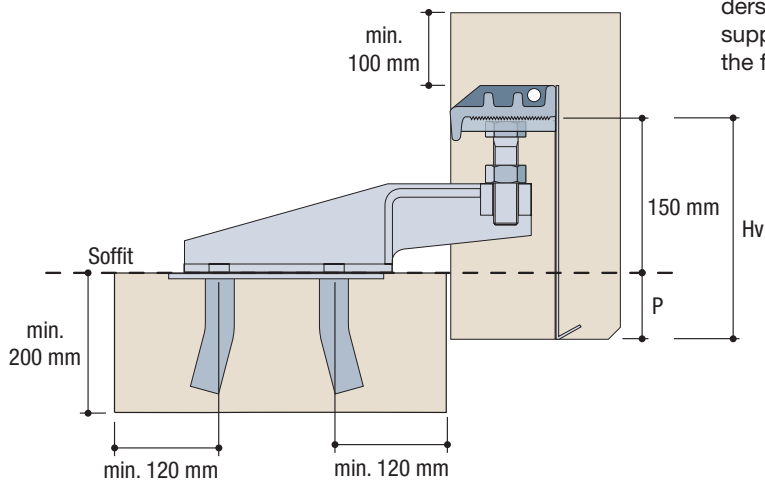
ADJUSTMENT	VALUES
Vertical RV	± 30 mm
Lateral RT	± 25 mm
Horizontal RO	± 30 mm
Angular RA	$\pm 5^\circ$



MOT6 HORIZONTAL BRACKET

POSITIONING SIZES

POSITIONING SIZES



The vertical distance between the underside of the panel and the soffit of the supporting element is calculated using the following formula:

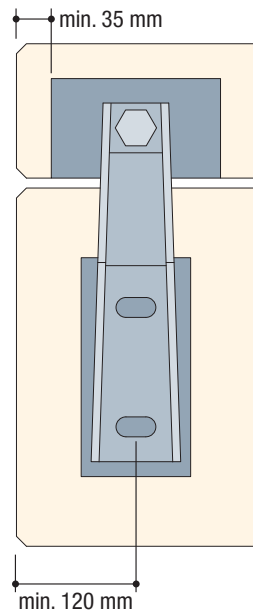
$$P = H_v - 150 \pm 30$$

Load distributor	Recess height H_v (mm)
RC6N	270
RC6N250	220

EDGE DISTANCES

Concealed Installation

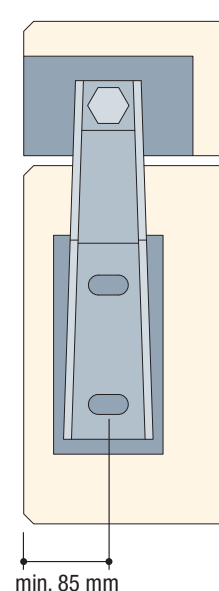
To obtain a concealed recess, the Load Distributor shall be recessed by 35 mm from the panel face.



If the distance from the edge of the Clamped Plate exceeds 120 mm, no additional reinforcement is required.

Surface-mounted installation

The Load Distribution may be installed flush with the panel edge, so that the recess remains accessible from the side.

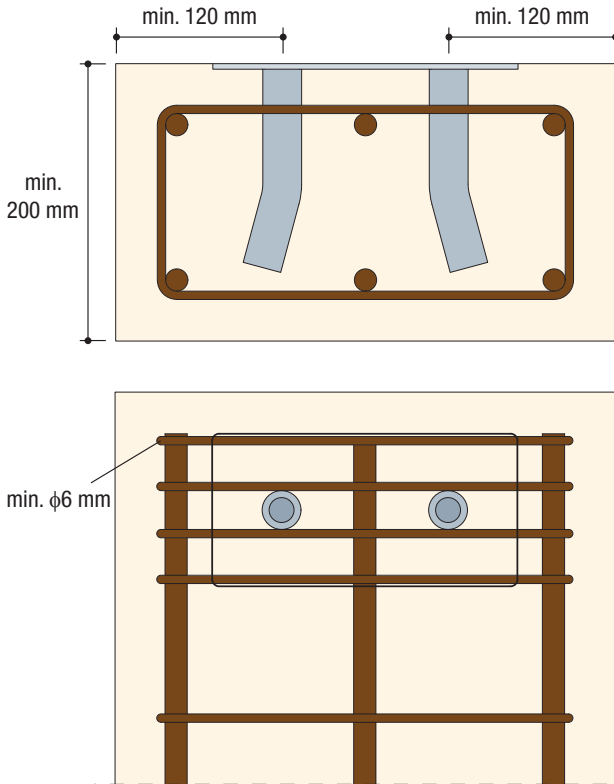


If the distance from the edge of the Clamped Plate is less than 120 mm, additional reinforcement is required.

MOT6 HORIZONTAL BRACKET

PERFORMANCES

INSTALLATION IN THE REINFORCEMENT



The Clamped Plate shall be inserted into the beam reinforcement as shown in the figure, respecting the specified edge distances.

Each clamp shall be positioned adjacent to at least one stirrup or longitudinal bar of the beam. If this is not possible, two additional stirrups shall be provided next to the clamps, as shown in the figure. The clamps may be welded to the reinforcement.

Minimum distances are calculated for concrete class C35/45.

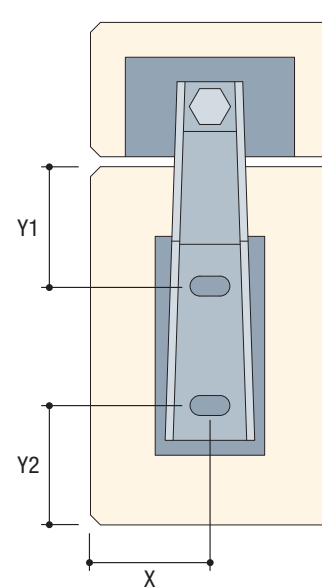
ON-SITE FIXING

The MOT6 Bracket may be fixed to the beam using on-site fixings, as an alternative to the Clamped Plate.

The design of the fixing system is the responsibility of the project designer. A possible solution is shown in **Table 1**.

Table 1 - MOT6 on-site fixing

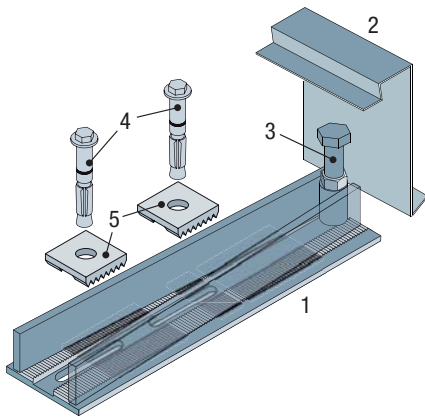
Loads	Characteristic vertical load, VE_k	60 kN
	ULS design vertical load, VE_d	90 kN
Fixing	Threaded Bar	M20x260 class 8.8
	Resin	HILTI HIT-HY 200-A V3
	Embedment depth	min. 200 mm
Minimum edge distances	Distance Y1	min. 120 mm
	Distance Y2	min. 400 mm
	Distance X	min. 200 mm
Material	Concrete	min. C35/45



MOT3 HORIZONTAL BRACKET

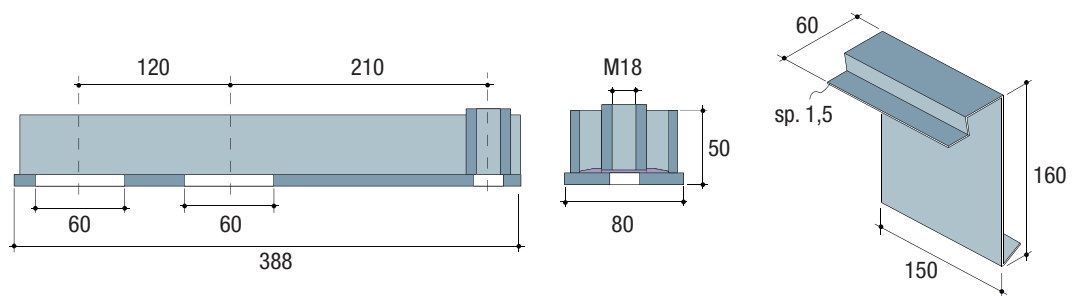
FEATURES

ELEMENTS



n.	COMPONENTI
1	MOT3 bracket
2	Formed steel Load Distribution for MOT3
3	Smooth-head adjustment bolt, M18x80, class 8.8 Nut M18, class 8
4	N. 2 mechanical anchors M16 (es. HILTI HST M16x140 or similar)
5	N. 2 knurled counterplaques 38x38 mm (CP38)

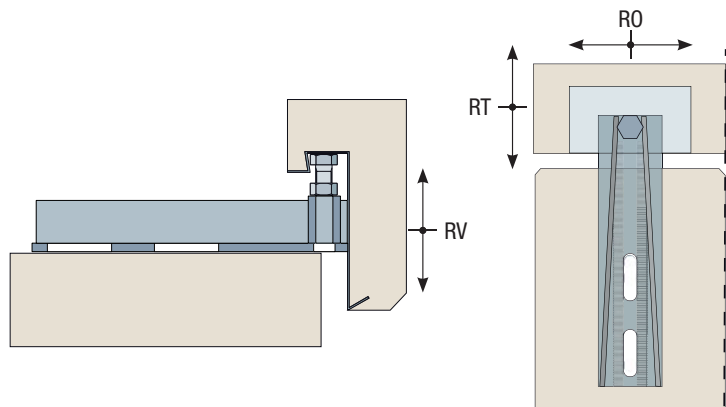
DIMENSIONS



ADJUSTMENT TOLERANCES

ADJUSTMENT	VALUES
Vertical RV	± 30 mm
Lateral RT	± 20 mm
Horizontal RO	± 35 mm

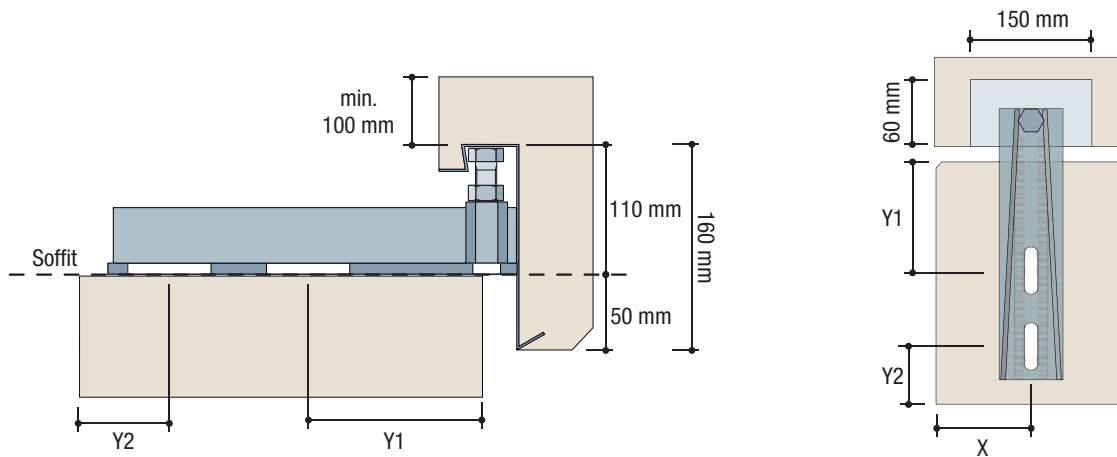
Lateral adjustment (RT) is achieved by acting on the holes.



MOT3 HORIZONTAL BRACKET

PERFORMANCES

EDGE DISTANCES



FIXING

Table 1 - MOT3 on-site fixing

Loads	Characteristic vertical load, VE _k	30 kN
	ULS design vertical load, VE _d	45 kN
Fixing	Anchor	HILTI HST3 M16 hef1
	Embedment depth	65 mm
Minimum edge distances	Distance Y1	min. 135 mm
	Distance Y2	min. 100 mm
	Distance X	min. 100 mm
Material	Concrete	min. C35/45

The MOT3 Bracket shall be fixed to the beam using on-site fixings.

The design of the fixing system is the responsibility of the project designer.

A possible solution is shown in **Table 1**.

ERROR RECOVERING

RAISED MT BRACKETS

If a Clamped Plate has been incorrectly positioned **too low** compared to the design dimension, the error can be corrected by using the special Raised Bracket instead of the standard one.

The Raised Bracket is equipped with a longer adjustment bolt and a collar that reduces the bolt's free deflection length.

The Raised Bracket is secured to the Clamped Plate using the same procedure and bolts as the standard bracket; therefore, no modifications to the Clamped Plate are necessary.

The maximum recoverable error for each type of bracket is shown in **Table 1**. The maximum recoverable error corresponds to the height of the collar.

The range of travel of the adjustment bolt remains unchanged compared to standard brackets.

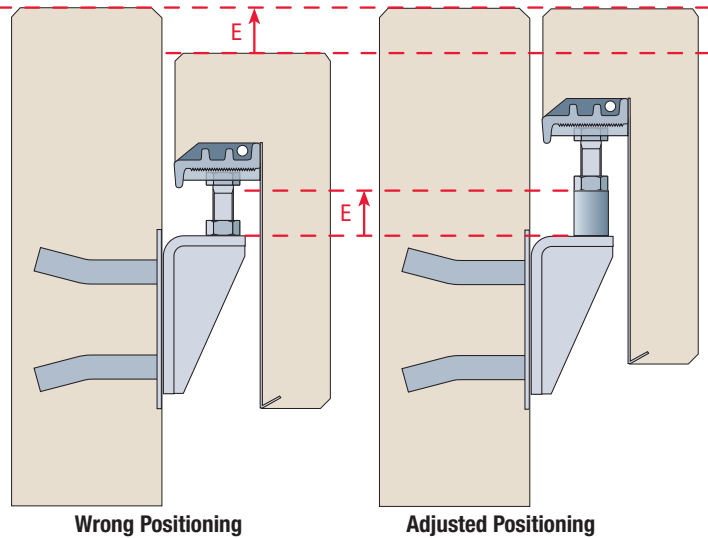
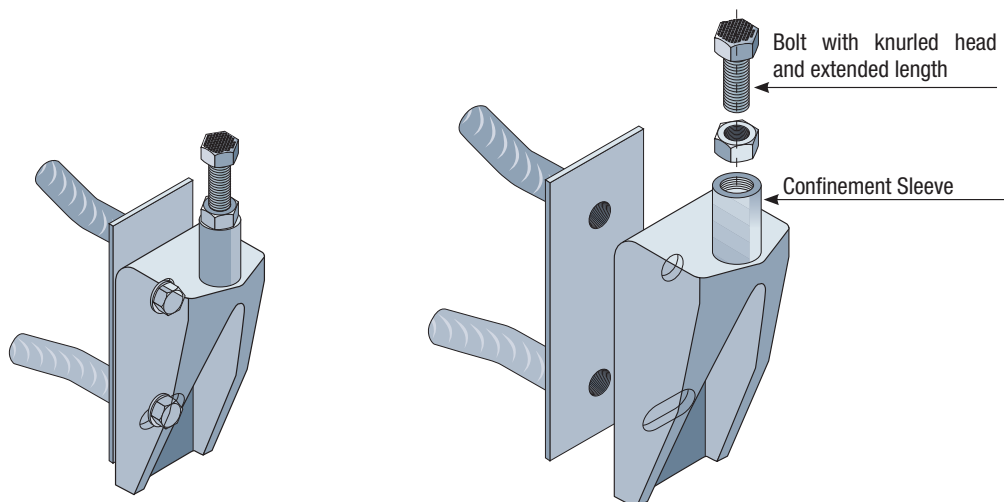


Table 1 - Raised MT Brackets' features

Bracket	Code	Maximum recoverable Error "E"	Adjustment Bolt
MT4	MT4RIALZN	50 mm	M20 x 140 mm
MT6	MT6RIALZN	60 mm	M24 x 160 mm
MT9	MT9RIALZN	80 mm	M27 x 200 mm
MT12	MT12RIALZN	80 mm	M27 x 200 mm



ERROR RECOVERING

LOWERED MT BRACKETS

If the Clamped Plate has been incorrectly positioned **too high** relative to the design dimension, you can correct the error by using the special Lowered Bracket instead of the standard one..

The lowered brackets are equipped with an additional hole and slot to be used to secure the bracket to the clamped plate, thereby lowering the height of the support surface. Therefore, no modifications to the clamped plate are necessary.

The dimensions and the recoverable error for each type of bracket are shown in **Table 1**.

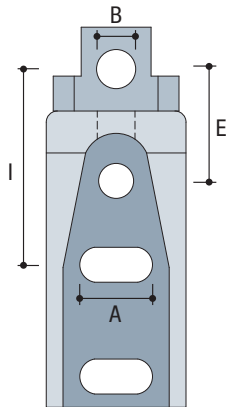
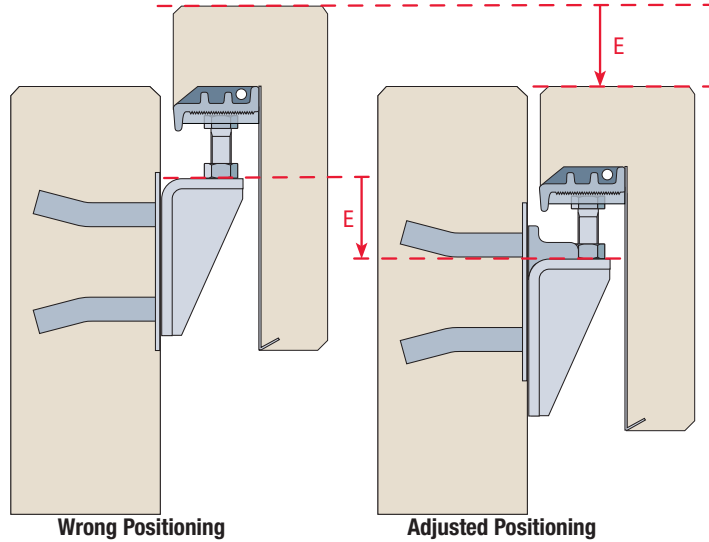
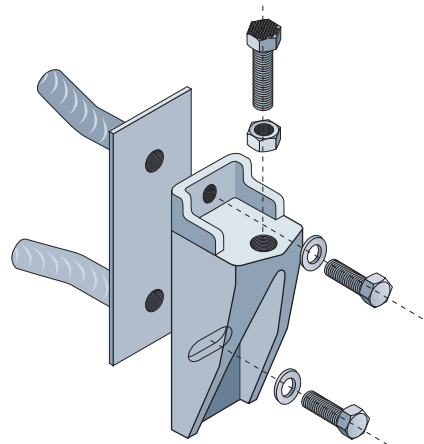
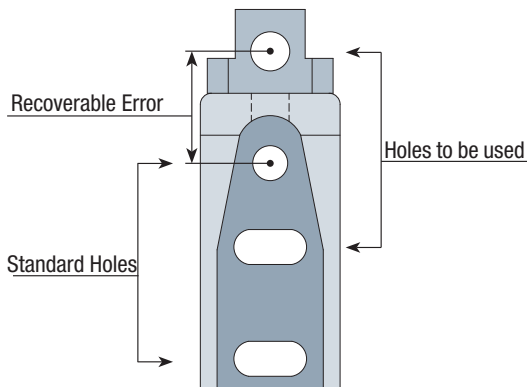


Table 1 - Lowered MT Brackets' features

Bracket	Code	Maximum recoverable Error "E"	A (mm)	B (mm)	I (mm)
MT4	MT4RIBASN	50	30	18	100
MT6	MT6RIBASN	60	40	22	120
MT9	MT9RIBASN	80	50	26	140
MT12	MT12RIBASN	80	52	26	140



ON-SITE FIXING

CHEMICAL ANCHORS

The Brackets can be fixed on site using chemical anchors.

The sizing of the fixings must take into account the actual installation conditions and the applied loads.

Table 1 lists some fixing solutions that technicians may find useful as a reference.

The calculations for the anchors were conducted in collaboration with HILTI; however, anchors from any manufacturer may be used, provided they meet the required performance standards. The installation must be carried out in strict accordance with the anchor manufacturer's instructions.

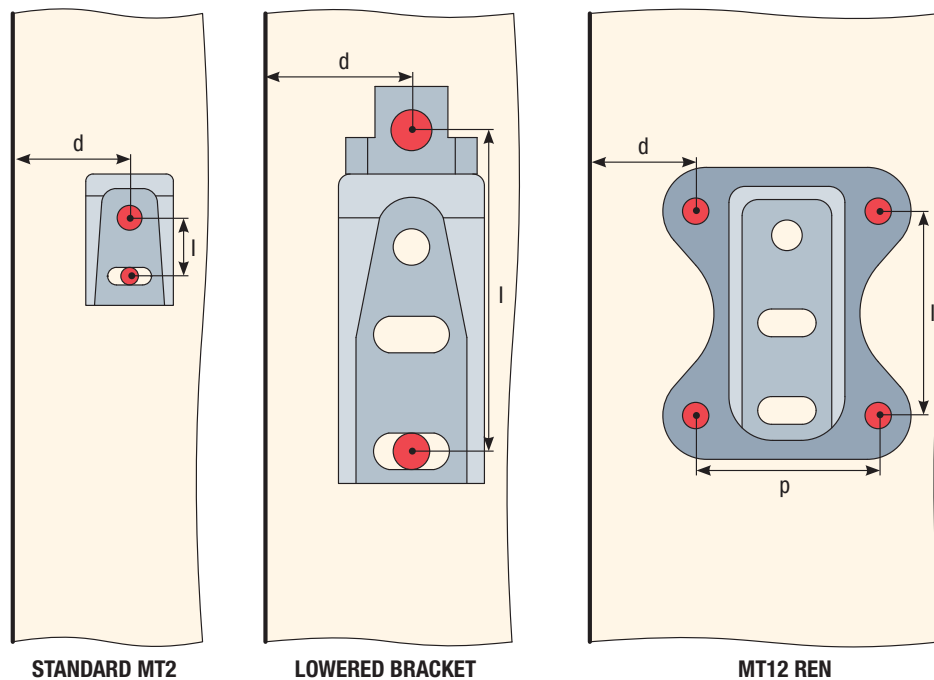


Table 1 - Solutions for on-site fixing with chemical anchors.

		BRACKET EXPECTED TO BE USED				
		MT2	MT4	MT6	MT9	MT12
Bracket to use		STANDARD	LOWERED MT4	LOWERED MT6	LOWERED MT12	MT12 REN
Characteristic Shear Load	VEk	20 kN	40 kN	60 kN	90 kN	120 kN
Characteristic Moment	MEk	1,1 kNm	2,4 kNm	3,6 kNm	6,7 kNm	10,2 kNm
Design Shear Load	VEd	30 kN	60 kN	90 kN	135 kN	180 kN
Design Moment	MEd	1,7 kNm	3,6 kNm	6,7 kNm	11,5 kNm	15,3 kNm
Threaded Bar	-	1 M16x170 cl. 8.8 1 HILTI HST M8	2 M16x250 cl. 5.8	2 M20x300 cl. 5.8	2 M24x300 cl. 5.8	4 M24x350 cl. 5.8
Embedment Depth	-	130 mm / 80 mm	200 mm	250 mm	260 mm	300 mm
Hole spacing	l	40 mm	150 mm	180 mm	220 mm	l = 180 mm p = 130 mm
Drill Bit Diameter	-	18 mm / 8 mm	18 mm	22 mm	28 mm	28 mm
Minimum Edge Distance	d	100 mm	150 mm	150 mm	200 mm	130 mm
Resin	-	HIT-HY 200-A V3 or equivalent				
Concrete	-	min. C35/45				

ON-SITE FIXING

CHEMICAL ANCHORS

The Brackets can be fixed on site using chemical anchors.

The sizing of the fixings must take into account the actual installation conditions and the applied loads.

Table 1 lists some fixing solutions that technicians may find useful as a reference.

The calculations for the anchors were conducted in collaboration with HILTI; however, anchors from any manufacturer may be used, provided they meet the required performance standards. The installation must be carried out in strict accordance with the anchor manufacturer's instructions.

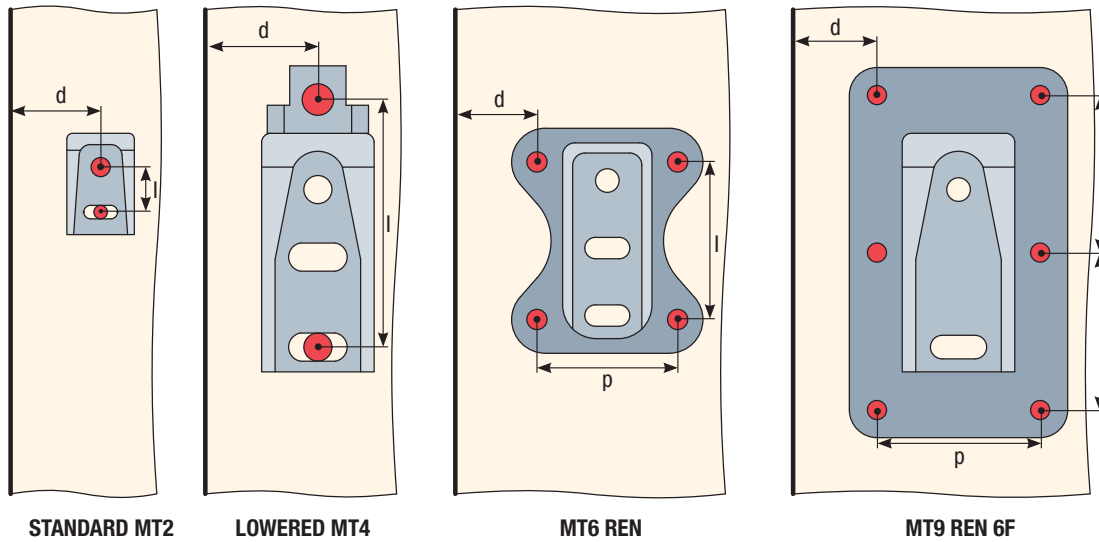


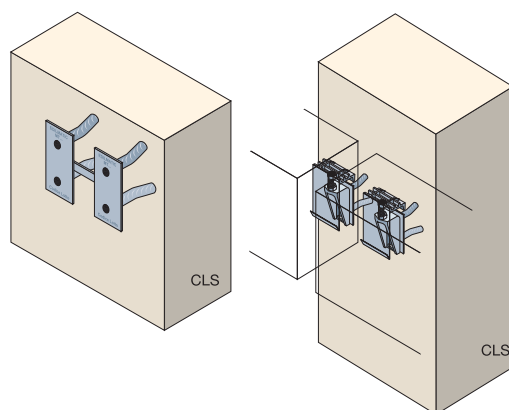
Table 1 - Solutions for on-site fixing with chemical anchors.

		BRACKET EXPECTED TO BE USED			
		MT2	MT4	MT6	MT9
Bracket to use		STANDARD	LOWERED	MT6 REN	MT9 REN 6F
Characteristic Shear Load	VEk	20 kN	40 kN	60 kN	90 kN
Characteristic Moment	MEk	1,1 kNm	2,4 kNm	3,6 kNm	6,7 kNm
Design Shear Load	VEd	30 kN	60 kN	90 kN	135 kN
Design Moment	MEd	1,7 kNm	3,6 kNm	6,7 kNm	11,5 kNm
Anchors	-	2 HST4 M16x220	2 HST4 M16x220	4 HST4 M16x220	6 HST4 M16x220
Hole Depth	-	167 mm	167 mm	167 mm	167 mm
Hole spacing	l	40 mm	150 mm	l = 225 mm p = 110 mm	l = 140 mm p = 145 mm
Drill Bit Diameter	-	16 mm	16 mm	16 mm	16 mm
Minimum Edge Distance	d	135 mm	110 mm	95 mm	125 mm
Concrete	-	min. C35/45			

SPECIAL APPLICATIONS

COUPLED CLAMPED PLATES

COUPLED CLAMPED PLATES



The Coupled Clamped Plates are designed for applications where adjacent panels must be positioned so that they rest on a single column. They are supplied already coupled with an appropriate center-to-center distance calculated based on the type of bracket and the distance from the edge of the load distributor.

Table 1 shows two possible coupling center distances with reference to two different load distributor locations:

- 1) flush with the edge, with $d=0$;

- 2) 30 mm from the edge, with $d = 30$ mm.

Coupled Clamped Plates can also be supplied with a different center-to-center distance, provided it is not less than the values of l_0 .

Load capacities, adjustments, and positioning sizes remain unchanged compared to the standard application. This solution is also available with Long-Clamp Clamped Plates.

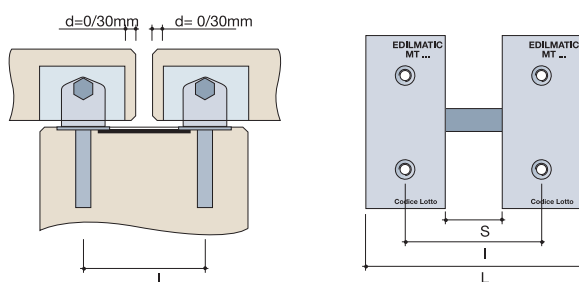
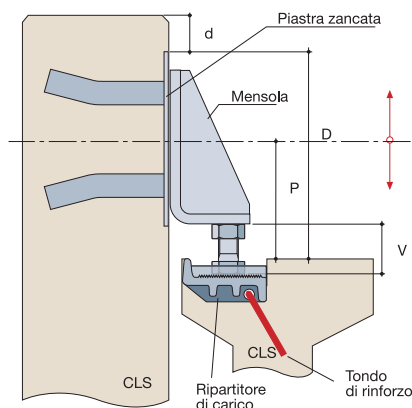


Table 1 - Dimensions

Bracket	d = 30 mm			d = 0		
	S (mm)	I (mm)	L (mm)	So (mm)	lo (mm)	Lo (mm)
MT2	100	180	260	40	120	200
MT4	100	180	260	40	120	200
MT6	120	230	340	60	170	280
MT9	110	250	390	50	190	330
MT12	110	250	390	50	190	330

INVERTED BRACKET



In this application, the resistance of the MT Bracket remains unchanged compared to the standard application.

The load distributor must be used without the steel plate, but complete with pad.

The main dimensions are listed in **Table 2**.

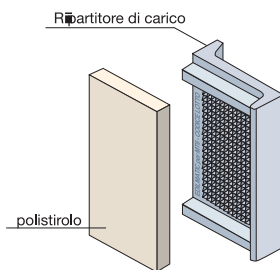


Table 2 - Dimensions

Bracket	V (mm)	P (mm)	D (mm)	d (mm)
MT4	54 ± 25 mm	126	216	40
MT6	64 ± 30 mm	148	258	50
MT9	69 ± 30 mm	167	297	60
MT12	69 ± 30 mm	167	297	60

It is advisable to provide a reinforcing bar with a diameter of at least 12 mm between the ribs of the load distributor, to improve the anchorage of the distributor to the precast element.

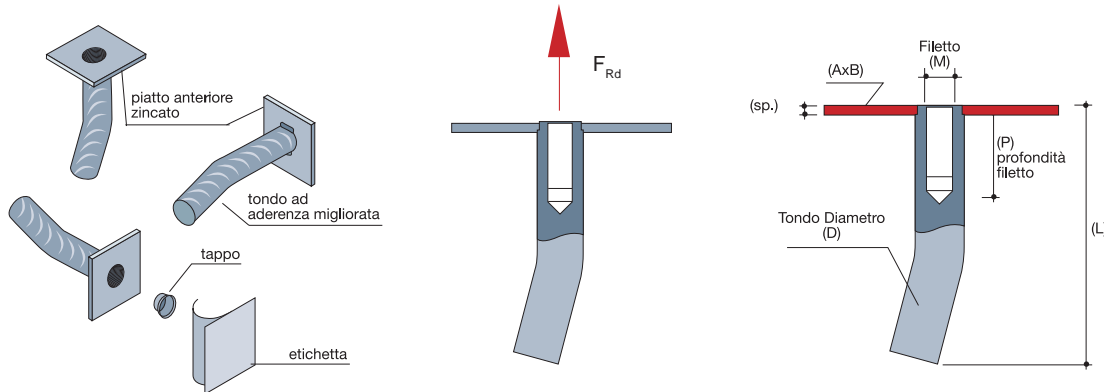
SPECIAL APPLICATIONS

CLAMPED PLATES

CLAMPED PLATE WITH SINGLE CLAMP

Single-clamp clamped plates are designed for special applications where high-load-capacity threaded attachment points are required for a wide variety of uses, such as securing scaffolding, heavy plant equipment (refrigeration units and/or exhaust systems), installing tie rods, etc.... Single-clamp clamped plates are identical to standard ones in terms of both the round bars (**B450C** with improved bond strength per Ministerial Decree 2008) and the front plate (S235JR UNI EN ISO 10025), which is white galvanized using cold electrolytic galvanizing (UNI EN ISO 2081).

They are supplied complete with plugs and labels to prevent mortar from entering during the pouring phase.



The maximum applicable force (F_{Rd}) indicated in the table refers to the pull-out resistance of the improved-round rebar, assuming concrete with $R_{cK} > 35 \text{ N/mm}^2$, and is verified for C40 threaded bars (class 6.8).

For special applications involving lower strength classes for concrete and/or threaded bars, please consult the Edilmatic Technical Department to evaluate the best possible solution.

In fact, upon customer request, we can supply single clamped plates in various configurations depending on the application.

The following can be manufactured:

Coupled single clamped plates when the center-to-center distance between the holes differs from that of standard clamped plates.

Single clamped plates with "L" round bars length available upon request ($L > 300 \text{ mm}$) in cases where greater clamp force is required.

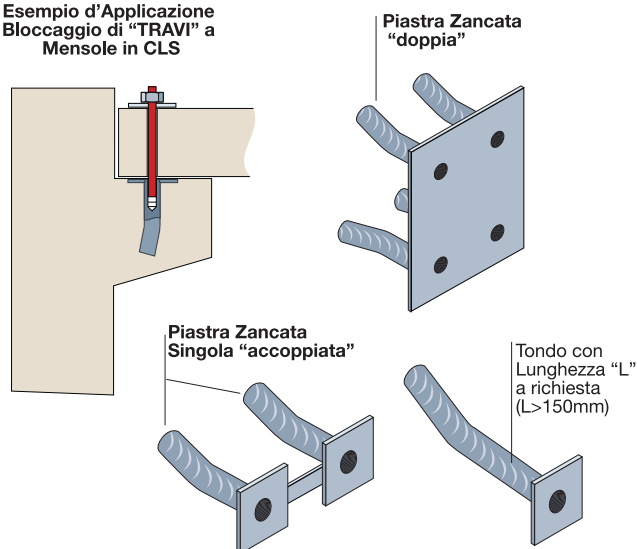
"Double" clamped plates with a single, custom-made connecting plate for special fastenings with multiple attachment points for a single element.

For these special applications upon request, always consult the Edilmatic Technical Department regarding the maximum load capacities and minimum edge distances to be observed for the proper use of the components.

SIZES AND LOAD CAPACITIES

Round Bar (D)	Thread (M)	P Depth (mm)	L (mm)	AxB (x Sp)	F_{Rd} (kN)
24	16	45	150	80x90x4	30
28	18	45	150	110x110x4	38
32	20	47	200	140x130x4	68
32	24	53	300	140x130x4	90

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