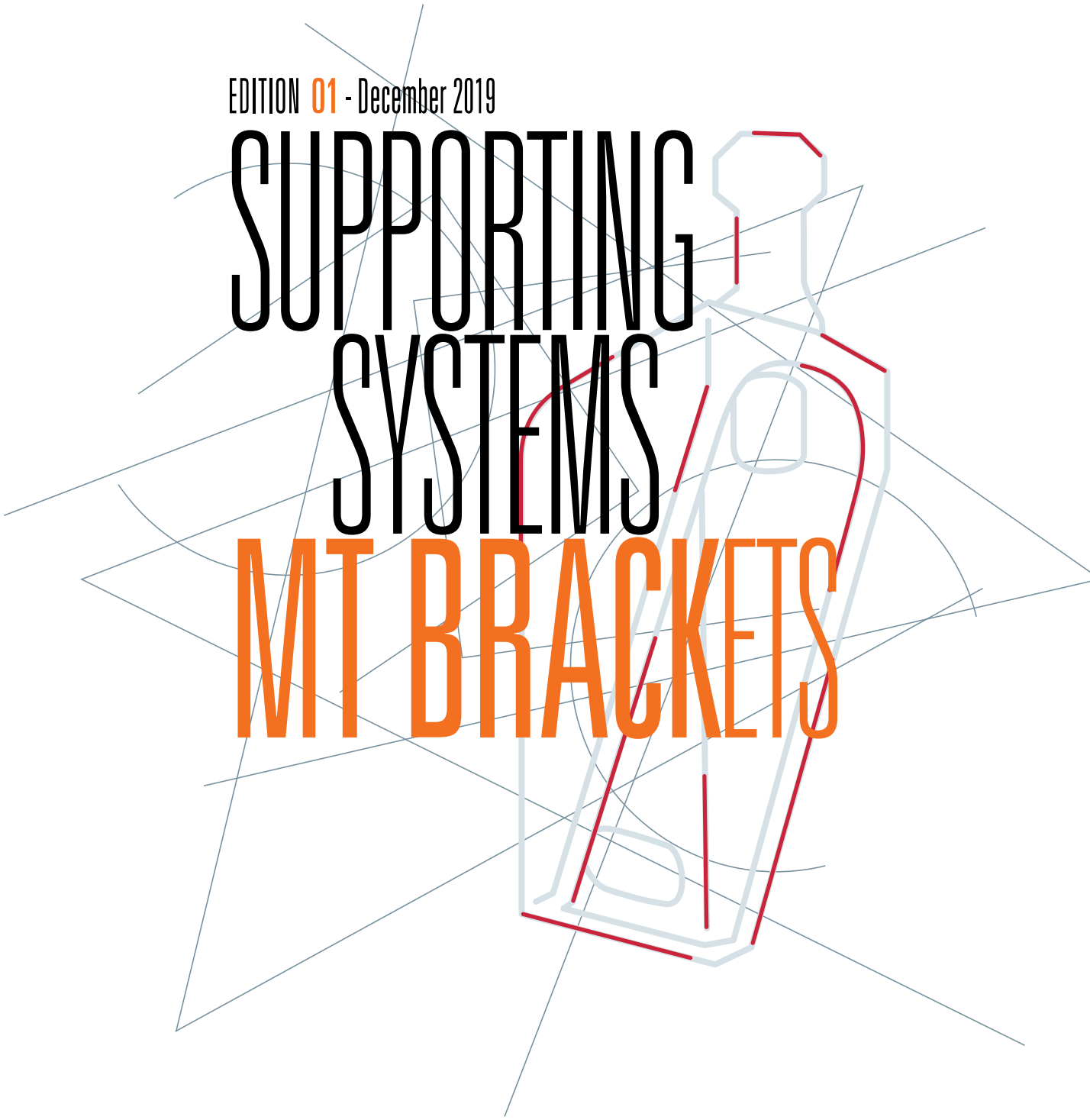
EDITION 01 - December 2019

SUPPORTING SYSTEMS

MT BRACKETS



EDILMATIC

Content

1 MT BRACKETS

GENERAL INFORMATION

The new General MT BRACKETS catalogue by Edilmatic is published together with the Technical Rules for Constructions ("NTC 2018") of the Ministerial Decree 17/01/2018 and with the judgement by the European Court n. 52/11 dating back to 12/02/2018 as starting point to clarify the state-of-the-art for EC labelling of its production range.

The catalogue will introduce 5 types of MT BRACKETS, different in terms of supporting capacities and two types of horizontal brackets MOT.
The MT BRACKETS are: MT2, MT4, MT6, MT9, MT12 while the Edilmatic horizontal brackets available are MOT3 and MTO6.

Being granted the UNI EN 1090-1 certification, the body of the bracket fitted with a bolt and an adjusting nut comes with the CE labelling with DOP according to the Method 1 and on request to Method 3b.

According to the European Union judgement (section eighth) published on the European Union Official Gazette n. 52/11
dating back to 12/02/2018 relating to products included in the harmonised UNI EN 1090 standards, prudently, EDILMATIC is entitled to fit the EC labelling on the load distribution system and on the clamped plates required for the Bracket supporting system.

Notwithstanding such certification and the possibility to fit the EC labelling on the entire product range,
reference is still made to specification in the UNI EN 9001:2015 standard, which was recently renewed, any control and testing procedure is based on for the entire company product range.

The customers can refer to the new EDILMATIC website (www.edilmatic.it) where to download from technical information (information, 3D drawings, etc.) and regulation information (DOP, technical reports, tests, etc.)

EDILMATIC technical department is always at the customer disposal for information, requests, opinions and suggestions.

1 MT BRACKETS

EDILMATIC CERTIFICATIONS

UNI EN 1090-1:2018

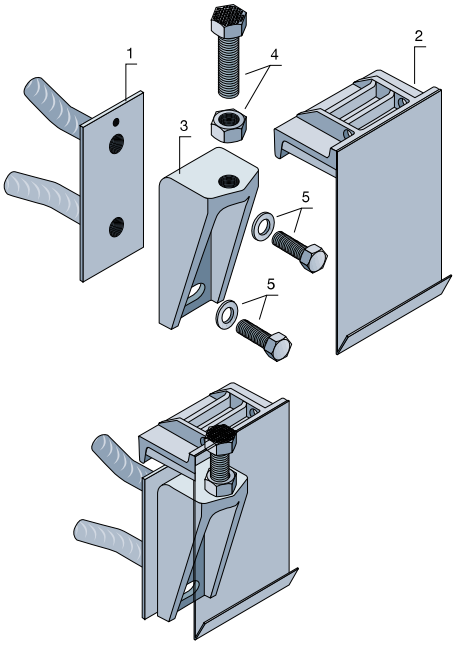
In 2017 Edilmatic is granted the EN 1090-1 certification. The UNI EN 1090-1 standard is an harmonised standard including the requirements for the labelling according to the European Regulation 305/2011 (CPR, Construction Products Regulation). The standard specifies the requirement relating to the compliance assessment of the performance features of structural parts in steel and aluminium as well as of kits sold on the market as building products.

The certification confirms that Edilmatic complies with any provision relating to assessment and control of the performance duration in time of any EC labelled product according to the standard within the 2+ control system. The certification granted to Edilmatic supports the production and trading of products up to the EXC3 execution class. The EC labelled products according to the standards provides for the features/performances described in the performance statement (DoP) accompanying the product. Edilmatic can fit the EC Labelling according to the UNI EN 1090-1 standard following Method 1 or 3b.

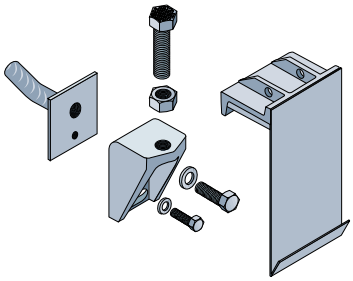
1 MT BRACKETS

MODELS

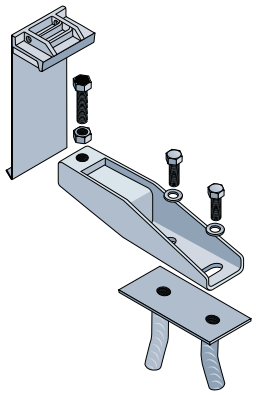
Standard bracket



Bracket MT2



Bracket MOT6



EDILMATIC supporting system, called **Bracket MT,** is the rational, simple and safe solution to solve the problems related to the support of prefabricated panels assembled outside pillars and other prefabricated elements. It gets rid of any dimensional issue during storage and transportation of the parts to be assembled and it solves any problems related to (unaesthetic) openings in case of re-use of the pillar, while widely adjusting the part along the three Cartesian axes. The slotted hole in the lower part of the bracket provides for an additional **section adjustment** to recover any possible positioning error of the CLAMPED PLATE.

The system consists of three parts:

(1) CLAMPED PLATE (INSERT)
To be fitted to the **load-bearing element** (PILLAR)

(2) LOAD DISTRIBUTOR (INSERT)
To be fitted to the **supported element** (PANEL)

(3) BRACKET between the two elements.
The bracket is fitted with a Bolt and an Adjusting nut **(4)**
And with Tightening Bolts and Washers **(5)**

According to the load capacities, 4 models are available:

- **Bracket MT4** maximum load **40 kN**
  (Safety factor ≥ 3)
- **Bracket MT6** maximum load **60 kN**
  (Safety factor ≥ 3)
- **Bracket MT9** maximum load **90 kN**
  (Safety factor ≥ 3)
- **Bracket MT12** maximum load **120 kN**
  (Safety factor ≥ 3)

Besides the 4 standard brackets, 2 other MT BRACKETS are available:

Bracket MT2, with load capacity of **20 kN**, very small size and ideal of application with a consistently limitations in weight and sizes.

Horizontal Bracket MOT6, load capacity of **60 kN** designed for the support of concrete element, whenever it is required to fit the supporting system on extrados of beams and/or slabs.

All the parts are delivered zinc-plated with white cold electrolytic zincplating according to the UNI EN ISO 2081 standard.

All the parts are made with QUALITY STEELS:
on the customer request, for each finish, testing certificates of raw materials and certificates of official testing on each part.

Bolts comply with the reference regulations:
(UNI EN ISO 4032/4017); **for each supply, on the customer request, the relating compliance certificate are available.**

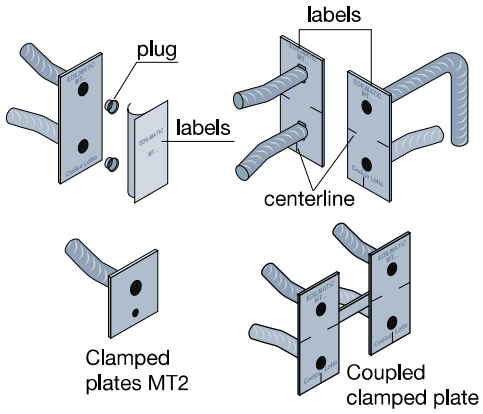
All the system parts **CLAMPED PLATE - LOAD DISTRIBUTOR - SUPPORT BRACKETS** are **EDILMATIC** labelled to confirm the product quality.

EDILMATIC TECHNICAL DEPARTMENT is available to suggest the most suitable solutions of each use.

1 MT BRACKETS

PART DESCRIPTION

CLAMPED PLATE



Insert to be fitted inside the **LOAD-BEARING ELEMENT, with no additional reinforcement in the positioning area,** consisting of a duly sized galvanised plate (according to the type of Bracket), fitted with two reinforcemement bars with improved bond, fitted with threading and variable diameter according to the carrying capacity

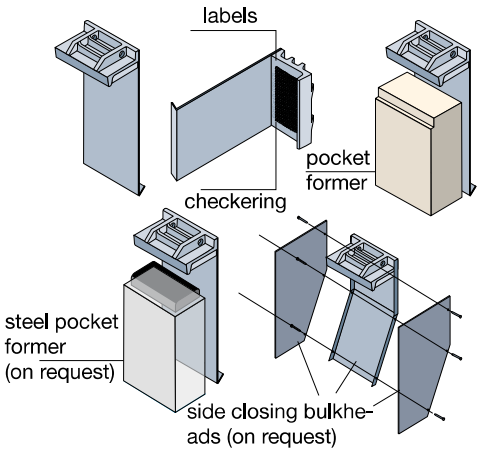
The plate is made of **S235JR** (UNI EN 10025) while the bars in **B450C** with improved weldable bond (M.D. 2008).

The **Clamped plate** is labelled on both sides, including the type of bracket it should be fitted to. On the front there is the lot code with the order number, production month and year.

On both sides there are **"abutment lines"** correctly positioned on the median parts of the plate to ease the correct plate positioning when casting the product.

In the front, during finishing, PVC stoppers are fitted in the holes and an adhesive label, identifying the type of plate, thus avoiding any grout penetration.

LOAD DISTRIBUTOR



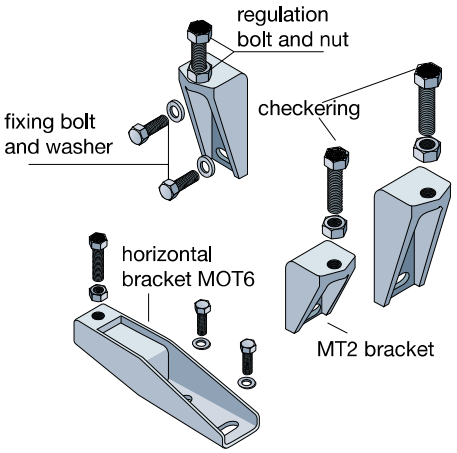
Insert to be fitted to the **SUPPORTED** part consisting of a central special steel "element" (S355J2) with a back closing shaped plate supplied including polystyrene fitted during finishing, to create the support hollow space for the bracket.

The **Load distributor** is fitted with reinforcing longitudinal ribs to allow the best possible distribution of loads when laying the bracket on the bolt and on the lower side reinforcements to avoid the adjustment bolt from coming out in case of side movements. The supporting area is grooved and knurled to avoid the part to slide when assembled.

On request, as an alternative to polystyrene, there are **steel insert** having its same function (create a hollow space for the bracket) but reusable when removed from the casings.

The load distributors are available in different widths according to the application (see page 8) and fitted with closing bulkheads (right-hand or left-hand, on request) should it be required the backing junctions not to be visible at all.

BRACKET MT



An **element JOINING** two components, used as supporting part for the **supported element**; it is made of top quality steel, **S355J2, available in different models** according to the maximum applicable capacity.

The bracket is also fitted with a **Nut** e and an **adjustment bolt** which besides supporting, are required to vertically adjust the part: the bolt is knurled on the head (knurled reeding) to avoid the support sliding with the **load distributor.**

The brackets are fitted with fitting Bolts and Washers on the galvanised plate.

Centrally on the bracket there is an identification labelling relating to the bracket applicable maximum capacity:
ex. EDILMATIC MT6 = maximum capacity 6 tons. (60 kN)

All the special **brackets are available in stock** as to recover possible positioning errors on the clamped plates (Lowered or raised brackets) and for specific applications of parts with reduced weight or sizes or to fit panels on Beams and/or Slabs (MT2 Brackets - MOT6 Brackets - Brackets MOT3).

1 MT BRACKETS

TECHNICAL FEATURES

CAPACITIES AND SYSTEM PARTS

Bracket Type	Maximum Capacity (kN)	Adjusting Bolt and Nut	Tightening Bolts and Washers	Galvanised Plate Type	Tightening torque	Load distribution Frame Type
MT2	**20 kN**	M 18 class 8.8 Nut M18 Class 6s	M 16 class 10.9 Washer ø 16 Class R40	MT2	100 Nm	for MT2-4
MT4	**40 kN**	M 20 class 8.8 Nut M20 Class 6s	M 16 class 10.9 Washer ø 16 Class R40	MT4	100 Nm	for MT2-4
MT6	**60 kN**	M 24 class 8.8 Nut M24 Class 6s	M 18 class 10.9 Washer ø 18 Class R40	MT6	150 Nm	for MT2-4 for MT6
MT9	**90 kN**	M 27 class 8.8 Nut M27 Class 6s	M 20 class 10.9 Washer ø 20 Class R40	MT9	200 Nm	for MT9-12
MT12	**120 kN**	M 27 class 8.8 Nut M27 Class 6s	M 24 class 10.9 Washer ø 24 Class R40	MT12	200 Nm	for MT9-12

The load capacity reported in the table is the System operating main Resistance.
Such a value is calculated through laboratory test leading to the system Breaking and applying the ≥ 3 safety coefficient to the measured value.

All the brackets are fitted with Adjustment boltS AND NUTS (already screwed in)
And TIGHTENING BOLTS AND WASHERS, unless any specific customer requirement.

The Special Raised or Lowered brackets are fitted with adjusting and tightening bolts.

On request testing certificates of used raw materials are available as well as internal control certificates carried out by Edilmatic.

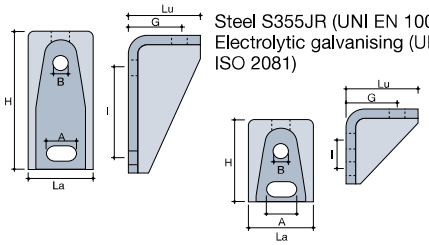
REFERENCE STANDARDS

NTC 2018	Improved fitting bars
UNI EN ISO 10025	Plate for galvanised slabs
UNI EN ISO 10025	Bracket
UNI EN ISO 10025	Load distributor
UNI EN ISO 4032	Normal hexagon nuts
UNI EN ISO 4017	Hexagon-head screws with threaded stem
UNI EN 6592	Flat washers
UNI EN ISO 4042	Protection on the steel bolts
UNI EN ISO 2081	Zinc cold electrolyte protections on iron and steel
UNI EN ISO 3834	Welded part quality

1 MT BRACKETS

BRACKET AND ACCESSORY SIZE AND DIMENSIONS

BRACKETS

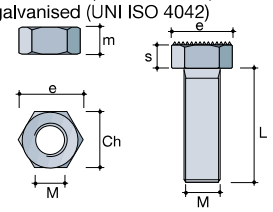


Steel S355JR (UNI EN 10025)
Electrolytic galvanising (UNI ISO 2081)

	Bracket MT2	Bracket MT4	Bracket MT6	Bracket MT9	Bracket MT12
H	90	150	182	220	220
La	60	60	85	110	110
Lu	80	80	95	115	115
I	40	100	120	140	140
A	30	30	40	50	52
B	17	17	21	21	25
G	55	60	73	85	85

ADJUSTMENT BOLTS AND NUTS

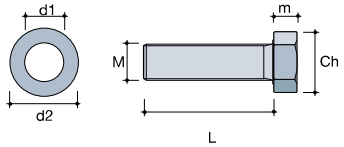
Bolts Class 8.8 (UNI EN ISO 4017)
Medium nuts, Class 6s (UNI ISO 4034)
Electrolytic galvanised (UNI ISO 4042)



M	18	20	24	27	27
L	80	80	100	110	110
e	34	36	40	46	46
s	12	13	15	17	17
Ch	27	30	36	41	41
m	15	16	19	22	22

FITTING BOLTS AND WASHERS

Nuts class 10.9 (UNI EN ISO 4017)
Washers class R40 (UNI EN 6592),
galvanized (UNI EN ISO 4042)



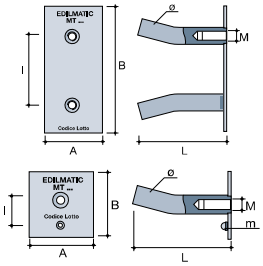
M	16	16	18	20	24
L	45	45	50	55	65
Ch	24	24	27	30	36
m	10	10	12	13	15
d1	17	17	19	21	25
d2	30	30	34	37	44

GALVANISED PLATES

B450C rebars
(UNI EN 10080)

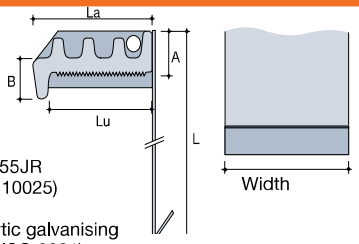
S235JR plate
(UNI EN 10025)

Galvanization
(UNI EN ISO 2081)



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

LOAD DISTRIBUTOR



Steel S355JR
(UNI EN 10025)

Electrolytic galvanising
(UNI EN ISO 2081)

L	200	258	310	360	360
Lu	86	86	90	100	100
La	95	95	100	120	120
A	30	30	33	36	36
B	21	21	30	34	34
Width	110	110	170	190	190

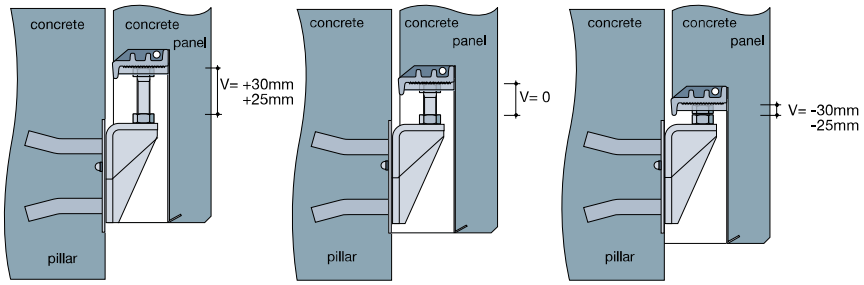
N.B. The sizes in the table are in mm

1 MT BRACKETS

ADJUSTMENTS

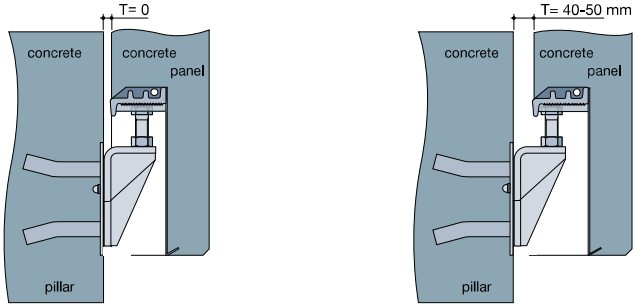
The **EDILMATIC MT SUPPORTING SYSTEM** was designed to allow any possible adjustment on the three Cartesian axes: what is more the slot under the bracket allows to recover possible positioning errors of the clamped Plate

VERTICAL ADJUSTMENTS



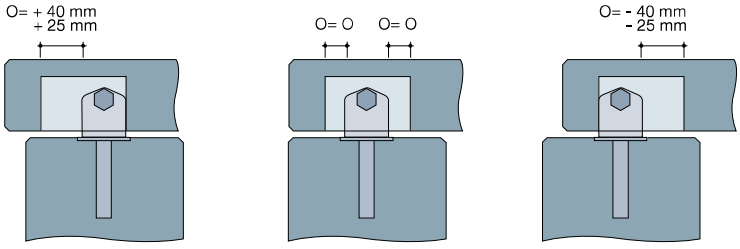
Type Bracket	Adjustment Vertical
MT2	V = ± 25 mm
MT4	
MT6	V = ± 30 mm
MT9	
MT12	

TRANSVERSE ADJUSTMENT



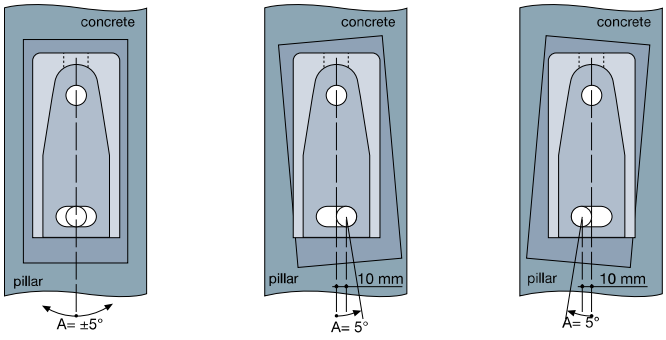
Type Bracket	Transverse Adjustment
MT2	T = 0 mm to 40 mm
MT4	
MT6	T = 0 mm to 50 mm
MT9	
MT12	

HORIZONTAL ADJUSTMENTS



Type Bracket	Horizontal Adjustment
MT2	V = ± 25 mm
MT4	
MT6	O = ± 40 mm
MT9	
MT12	

ANGULAR ADJUSTMENTS



Type Bracket	Angular adjustment
MT2	(Error recovery) A = ± 5°
MT4	
MT6	
MT9	
MT12	

1 MT BRACKETS

ADJUSTMENTS

The Adjustment bolts are supplied with the MT BRACKETS as to vertically adjust the panel or the bracket supporting unit position.

As reported on page 8, the vertical adjustment tolerance is variable according to the type of Bracket, with **V= ± 30 mm** for the MT BRACKETS MT9 - MT12 and **V= ± 25 mm** for the MT BRACKETS and MT4.

The adjustment bolts, in the final part of the thread are identified in **"dark red"** to offer a control tool to the user when assembling and adjusting.

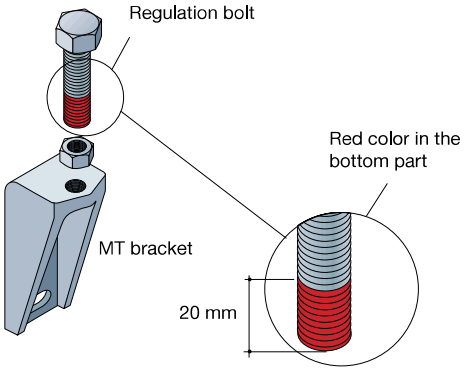
The red colouring is about **20 mm** high for any type of Bolt and during the "top" adjusting it should always be visible above the bracket supporting part.

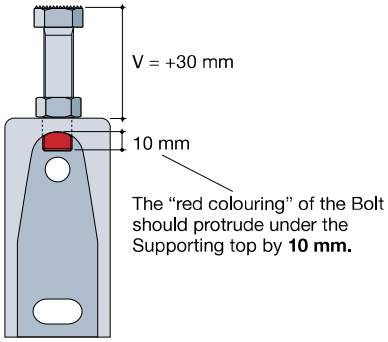
The "red colouring" identifies that the Bolt was correctly adjusted and it is not excessively protruding from the bracket supporting part.

Vice versa if the red colouring is no longer visible (as the bolt was **"excessively unscrewed"**) it simply means that the bolt is excessively protruding from the bracket and the threaded parts can be broken.

The height of the adjustment bolts is calibrated as to allow the bolt to be entirely adjusted upward, as to allow the red colouring to be visible at least for 10 mm.

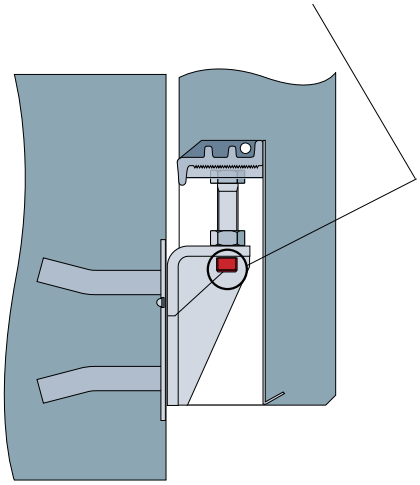
When the available adjusting is not enough to have the the supported part , simply use the Special raised brackets, as reported on pages 23-24 of the catalogue.





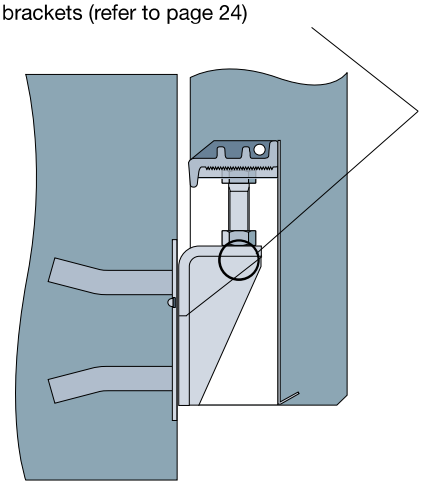
CORRECT ADJUSTING

The red colouring is visible under the bracket supporting top.



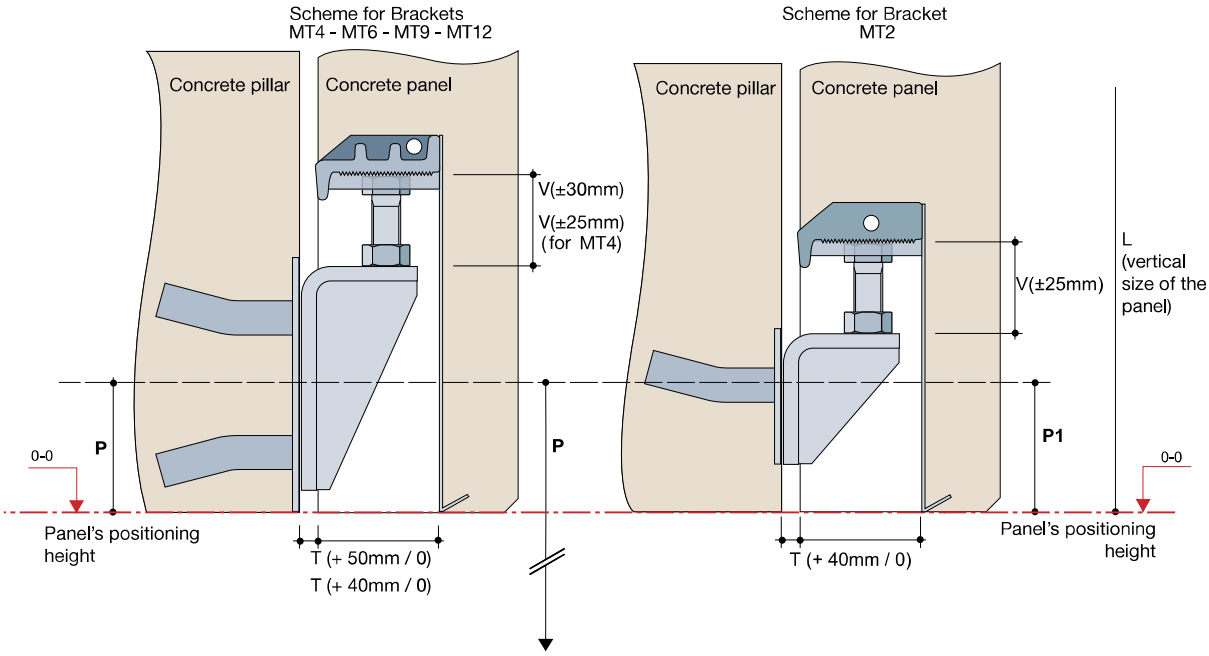
INCORRECT ADJUSTING

The red colouring is not visible under the bracket supporting top. Simply tighten the Bolt or use the Special raised brackets (refer to page 24)



1 MT BRACKETS

POSITIONING SIZES



Type	V	P1	T
MT2	54 ± 25 mm	85	95
MT4	54 ± 25 mm	90	95
MT6	64 ± 30 mm	110	100
MT9	69 ± 30 mm	130	120
MT12	69 ± 30 mm	130	120

V = Approximate average height of regulation **Bolt**

P = Positioning height of the **clamped plate** (from ground)

P1 = Distance from clamped plate's centre and panel's bottom

T = Horizontal size of the **Load distributor**

*** For the bracket MT2 (diagram on the right) P1 and P refer to the bar centre hole**

In the diagram, the sizes refer to the Adjustment bolt **V position.**

V is considered in between the minimum and maximum size, simply adjusting the bolt.

Considering the pane positioning height (referring to its lower portion), from level 0-0 simply add such a value to **P1** to get the positioning **P** size as for the Clamped plate (referred to the **Plate centre** at the abutment lines level - Ref. Page 3).

As for the correct **Clamped plate MT2** positioning, refer to the bar **Hole Centre** (diagram on the right).

e.g.
Height of the panel's bottom from ground = 5000 mm.

In the case of the Bracket MT4 ...

Position of clamped plate:
P = panel's height + P1

P = 5000 mm + 90 mm = 5090 mm
(position referred to the center of the clamped plate)

1 MT BRACKETS

LOAD DISTRIBUTOR

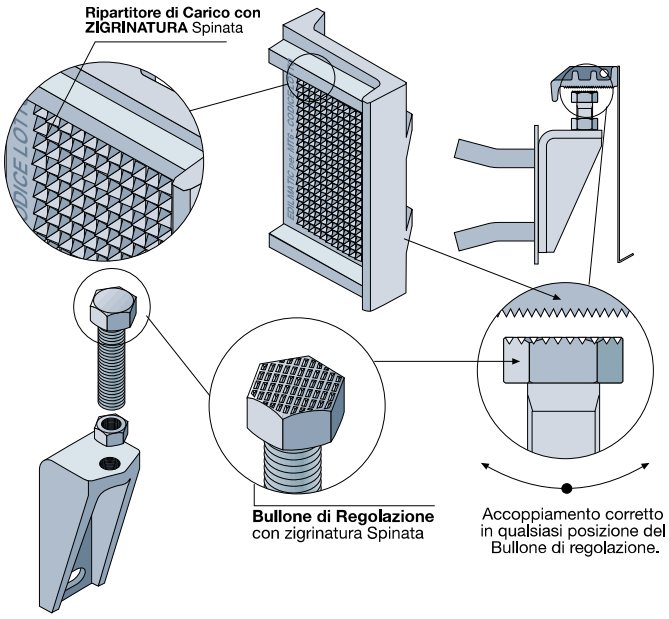
FEATURES

In the load distributor, there is a tapped knurling with a wedged-shaped profile to increase the "grip" with the supporting bolt surfaces and entirely avoid any possible panel sliding issue, when being supported by the bracket as well.

This resistant and penetrating reeding has also been applied on the bracket adjustment bolts to better match and fit the load distributor.

To provide for a higher resistance and reliability, such as solution has been studied to allow the perfect matching in any position the bolt is tuned. The rotation is required during the panel position height adjusting.

Considering the perfect symmetry of the reeding cuneiform profile, it is possible to exploit the available Bracket MT adjustment available (+/. 30 mm), being sure of the correct matching of the two components.



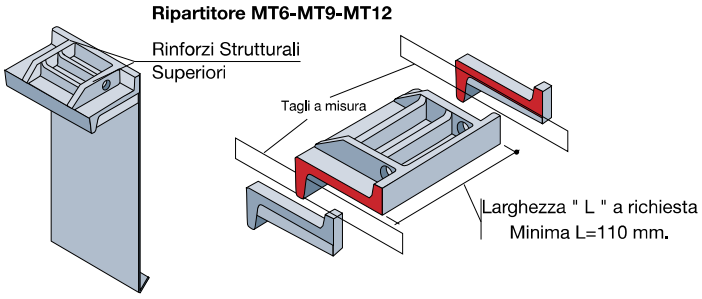
VARIABLE LENGTH

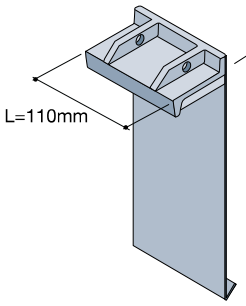
In the MT Bracket supporting system, the Load distributor was designed to offer a solid panel support on the adjustment bolt as to avoid the CLS micro-fracturing in the surrounding area and to optimise the loads distribution.

The "L" width of the different load distributors allows to enforce a wide transverse adjusting during the panel assembling.
For specific applications, load distributors in different widths are available (according to the customer requirements - Min L = 110 mm), cut on size thus reducing any dimension. The frame stiffness does not change as the upper structural reinforcements are still place in the area where the bracket adjustment bolt is fitted.

The Load distributor for MT2 and MT4 brackets have a width L = 110 mm long and they can be used also in the applications with MT6 brackets requiring the use of distributors with reduced opening to L = 110 mm.

Such distributors are particularly suitable to be side-fitted to the panels, for example for fillers over the main doors (see Page 18).





The **Load distributor for MT4** is fitted with a supporting top **L = 110 mm** and it can be used for applications with **MT BRACKETS6** possibly asking for a

1 MT BRACKETS

LOAD DISTRIBUTOR

SIDE BULKHEADS

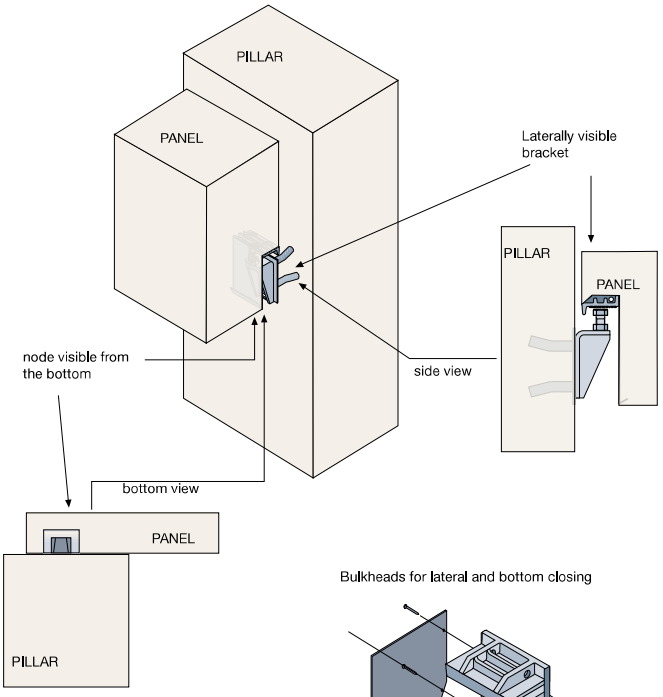
As forecast for the standard applications, the load distributors are often positioned on the edge of the panel sides and the bracket can be seen from the side. Usually positioned 30 mm from the panel border, during assembling, the CLS area often breaks thus leaving the junction visible.
When the support has not to be visible, the load distributors can be supplied with lateral closing bulkheads in order to allow the junction to be entirely hidden.

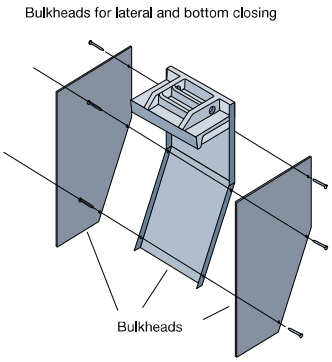
In case the load distributor is fitted 30 mm from the panel border, the bulkheads will reinforce the borders, in the majority of cases avoiding the edges to break. Should this nevertheless happen, the side bulkheads would then become a suitable supporting area for a quick reconnection of the surface.

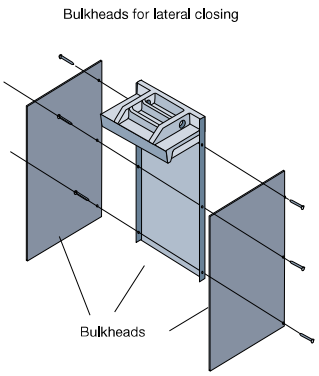
The load distributor is generally positioned with the shaped sheet leant on the Panel lower bottom. The junction becomes visible from under the Panel. For the following doors assembling, the opening is not often wished and/or considered aesthetic pleasing.
In such cases the load distributors can be delivered with lower closing bulkheads, entirely hiding the junction laterally and from the Panel bottom.

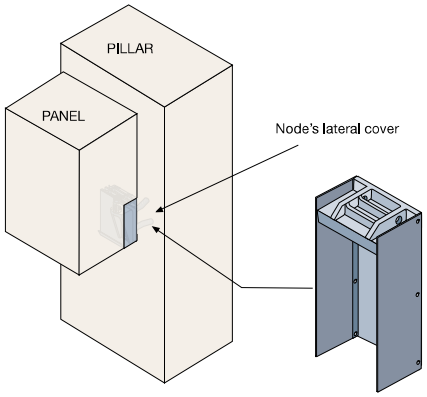
The lateral bulkheads can be right-side or left-side, when it is required to cover just one of the support sides.

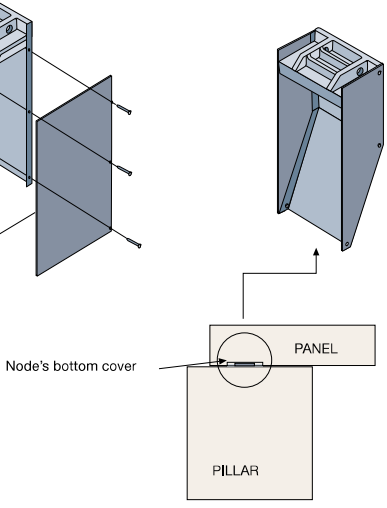
The closing bulkheads are special parts, manufactured only on the customer request, and they can be supplied with a galvanized or raw sheet.











1 MT BRACKETS

STANDARD APPLICATIONS

The Bracket MT system can be used for different applications. Hereinafter annexed a series of prescriptions relating to the minimum distances from the CLS part borders, for a correct unit use.

MINIMUM DISTANCES FROM THE EDGES

For a correct use of the system, the minimal distances have to be kept from the concrete elements during the laying of the components (load distributors and clamped plate).

For the clamped plate, the minimum distances **"X"** and **"Y"** from the edges are reported in the table. They are referred to Pillars made of concrete with strenght fck,cube > 35 N/mm² and refers to the Clamp "central hole".

If the distance from the edge is between **"X"** and **"reduced x"**, the design load must be reduced of 5% for each cm of reduction. Distances smaller than **"reduced x"** are not allowed.

Example: at 8 cm from the border ("reduced x") the bracket MT6 capacity must be reduced by 20% (12 - 8 = 4 cm reduction - 5% x 4 = 20%) thus the useful system capacity accounts for Pu = 48 kN.

As for the MT2 and **MT4 brackets** at 6 cm from the border, it is possible to apply the nominal maximum load (20 kN and 40 kN). No lower positioning distances are accepted.

The **"Y"** values relating to the distance from the part upper border (as for the "central hole" of the upper clamp), are the minimum applicable value with no additional reinforcement, in the areas where the plates are fitted. In the case of the standard clamped plates, no **"Y"** value can be used lower than what reported in the table.

For special application where the Clamped plate should be positioned at a **"Y"** distance lower than the allowed distance, it is necessary to use **Clamped plates with long clamp** (see page 14).

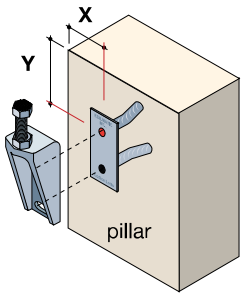
For the load distributors, 2 values are reported referring to the "d" distance from the part border.
The frame can be flush-mounted to the part border (i.e. Applications with adjacent panels - Ref. page 15) with no change at the capacity level.

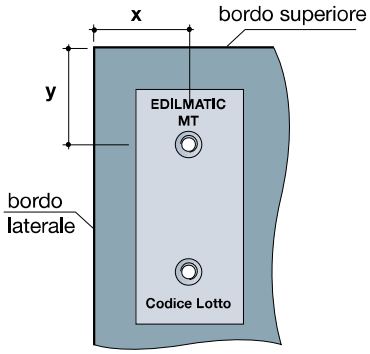
The value **"h"** refers to the minimum concrete thickness, to be present about the load distributor as to provide for the maximum system capacity. The minimum thickness is calculated with concrete fck,cube > 35 N/mm² and without any additional reinforcement.

For specific applications, where "h" is forcibly to be lower, forecast a specific reinforcement in the frame upper portion.

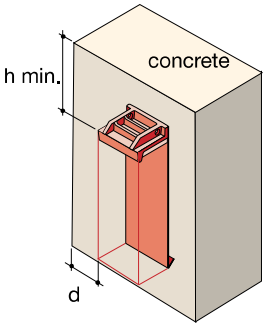
The Edilmatic technical department is available for any other required information or suggestion.

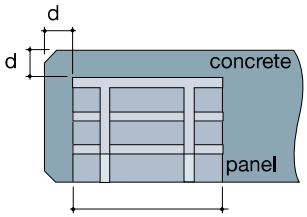
CLAMPED PLATE





LOAD DISTRIBUTOR





Type	X (mm)	Y (mm)	H (mm)	L (mm)	d (mm)	Load capacity (kN)
MT2	60	80	100	110	30	20
MT4	80	80	100	110	30	40
MT6	100	100	150	170	30	60
MT9	120	120	150	190	30	90
MT12	150	150	150	190	30	120

Type	reduced x (mm)	Load capacity (kN)
MT2	60	20
MT4	60	36
MT6	80	48
MT9	80	72
MT12	80	78

1 MT BRACKETS

STANDARD APPLICATIONS

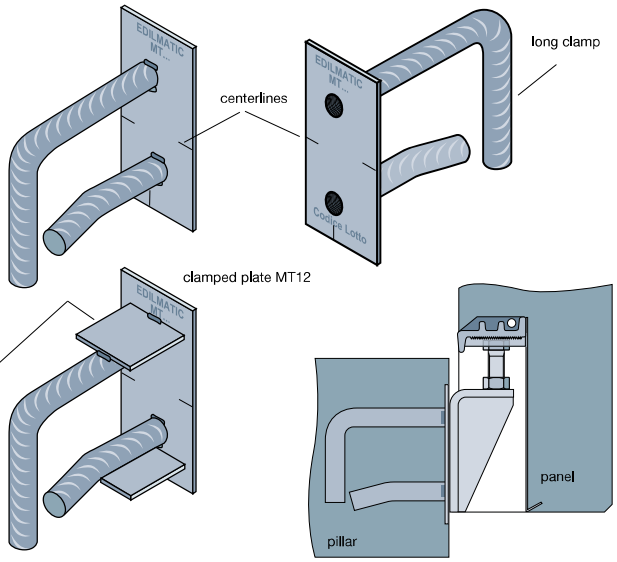
CLAMPED PLATES WITH LONG CLAMP

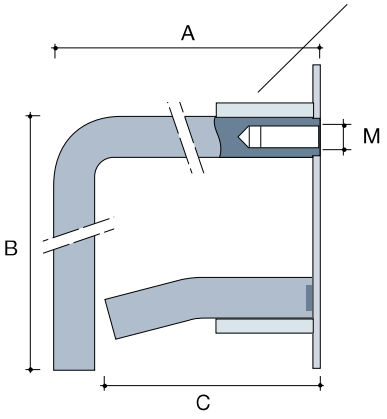
In the standard applications, the Clamped Plate has to be positioned at a minimum distance from the pillar top border accounting for Y ≥ 80-150 mm.

In case this distance has to be smaller (Clamped Plates on the Pillar top), it is suggested to use a **Clamped** Plate **with LONG CLAMP.**

The upper extended bar allows to direct the forces to the underneath concrete.

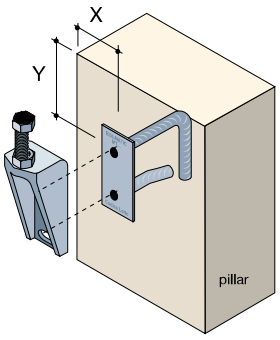
The adjustments but mainly the capacities of a similar solution are not changed if compared to the standard application.

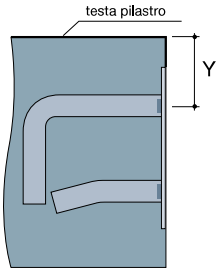




Type	Bar ø (mm)	A (mm)	B (mm)	C (mm)	M (mm)
MT2	24	250	250	-	16
MT4	24	250	200	150	16
MT6	28	250	200	150	18
MT9	32	250	200	200	20
MT12	32	350	200	300	24

Type	X (mm)	Y min. (mm)	Load capacity (kN)
MT2	60	60	20
MT4	80	60	40
MT6	120	60	60
MT9	150	80	90
MT12	150	80	120

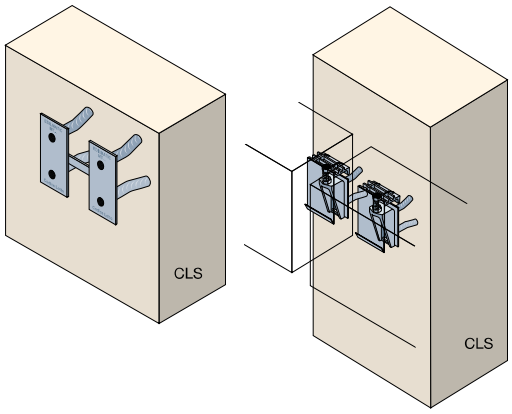




1 MT BRACKETS

SPECIAL APPLICATIONS

COUPLED CLAMPED PLATES



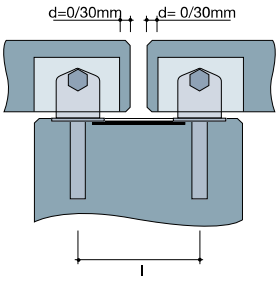
The couple of clamped plates are suitable for applications where adjacent panels are positioned on a single pillar.
They are already coupled with the correct spacing, calculated according to the type of Bracket and the distance from the Load distributor border.

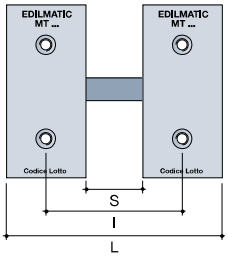
In the table you will find two possible coupling distances between centres referred to 2 different distributor locations:
1) on the border edge with d = 0;
2) 30 mm from the border with d = 30 mm.

Upon customer's request, coupled Clamped Plates are available with **"I"** distances between centres in any size, not under the lower values "**Io**".

Capacities, adjustments and positioning sizes are not changed if compared to the standard applications.

This solution can be applied to the Clamped plates with long Clamp as well.

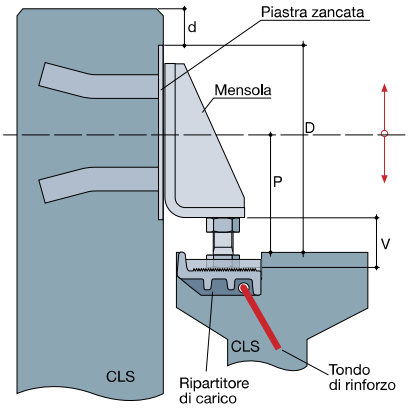




Type Bracket	d = 30 mm			d = 0 mm		
	S	I	L	So	Io	Lo
MT2	100	180	260	40	120	200
MT4	100	180	260	40	120	200
MT6	120	230	340	60	170	280
MT9	110	250	390	50	190	330
MT12	110	250	390	50	190	330

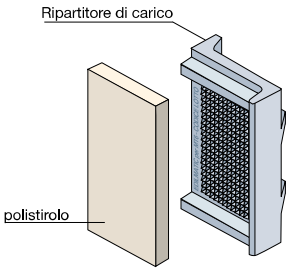
• The sizes in the table are in mm

UPT BRACKET



In the present application, the **Bracket MT** features as for the maximum applicable loads are not changed if compared to the standard application.

The load distributor supported by the adjustment bolt is delivered without "back" but complete with polystyrene.



Type Bracket	V	P	D	d
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

• The sizes in the table are in mm

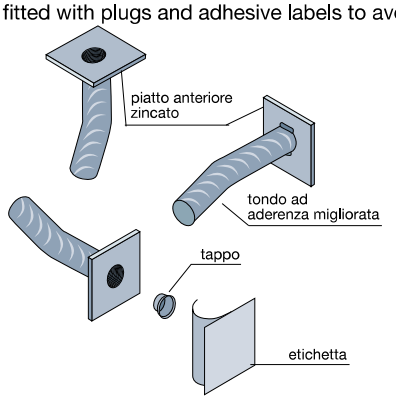
In the area of the load distributor hole, we should insert a reinforcement bar (at least d = 12 mm) for a better connection of the distributor to the article and to avoid any unsticking.

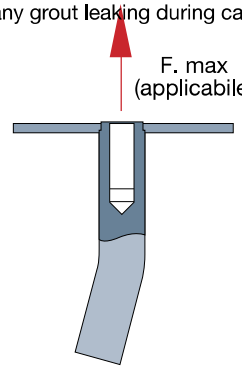
1 MT BRACKETS

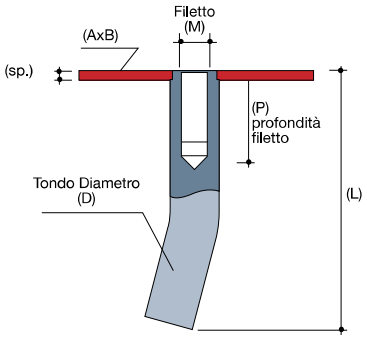
SPECIAL APPLICATIONS

CLAMPED PLATE WITH A SINGLE CLAMP

The **Clamped plates with a single clamp** are produced for special applications, when threaded connection points are required, with a high capacity for different uses such as the fastening of scaffolds, heavy accessory fitting for plants (refrigeration and suction units), to set bars, etc.. The plates with a single clamp as similar to the standard clamped plates, with the same type of bars (**B450C** with a better adhesion, Ministerial decree. 2008) and the front part (S235JR UNI EN ISO 10025) , which is galvanised in white through a cold electrolyte galvanising process (UNI EN ISO 2081). They are delivered complete with stoppers and stick labels to prevent the "grout" from going in during the casting phase.They are fitted with plugs and adhesive labels to avoid any grout leaking during casting phase.







The maximum applicable force (F. max) in the table refers to the resistance to the rod extraction with improved adherence, considering a CLS with RcK>35N/mm² and it is certified for the Threaded bars in C40 (class 6.8).

In case of specific application with lower resistance classes for concrete and/or threaded bars, refer to the Edilmatic technical department to design the best solution possible.

In fact on the customer request, it is possible to supply single Clamped plates in different configurations according to the applications.

They can be made as follows:

Single "coupled" Clamped plates when the hole spacing is different from the standard Clamped plates.

Single clamped plates with a customised "L" bars length (L > 300 mm) where a Clamp with a more consistent capacity is required.

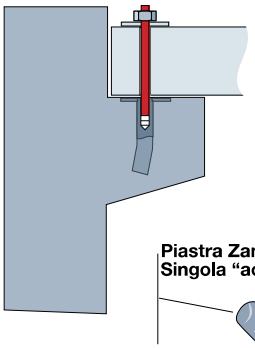
"Double" Clamped plates with a single customised joining flat for special connections with more fastening points for a single element.

For such special applications on demand, simply refer to the **Edilmatic Technical department** as for the **maximum applicable capacities and minimum distances from the borders** to comply with to correctly use the part.

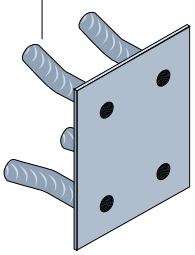
DIMENSIONS AND

Rod (D)	Thread (M)	P Depth (mm)	L (mm)	AxB (x thick)	F. max. (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

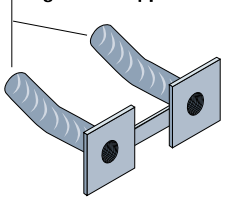
Esempio d'Applicazione Bloccaggio di "TRAVI" a Mensole in CLS



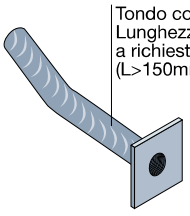
Piastra Zancata "doppia"



Piastra Zancata Singola "accoppiata"



Tondo con Lunghezza "L" a richiesta (L>150mm)

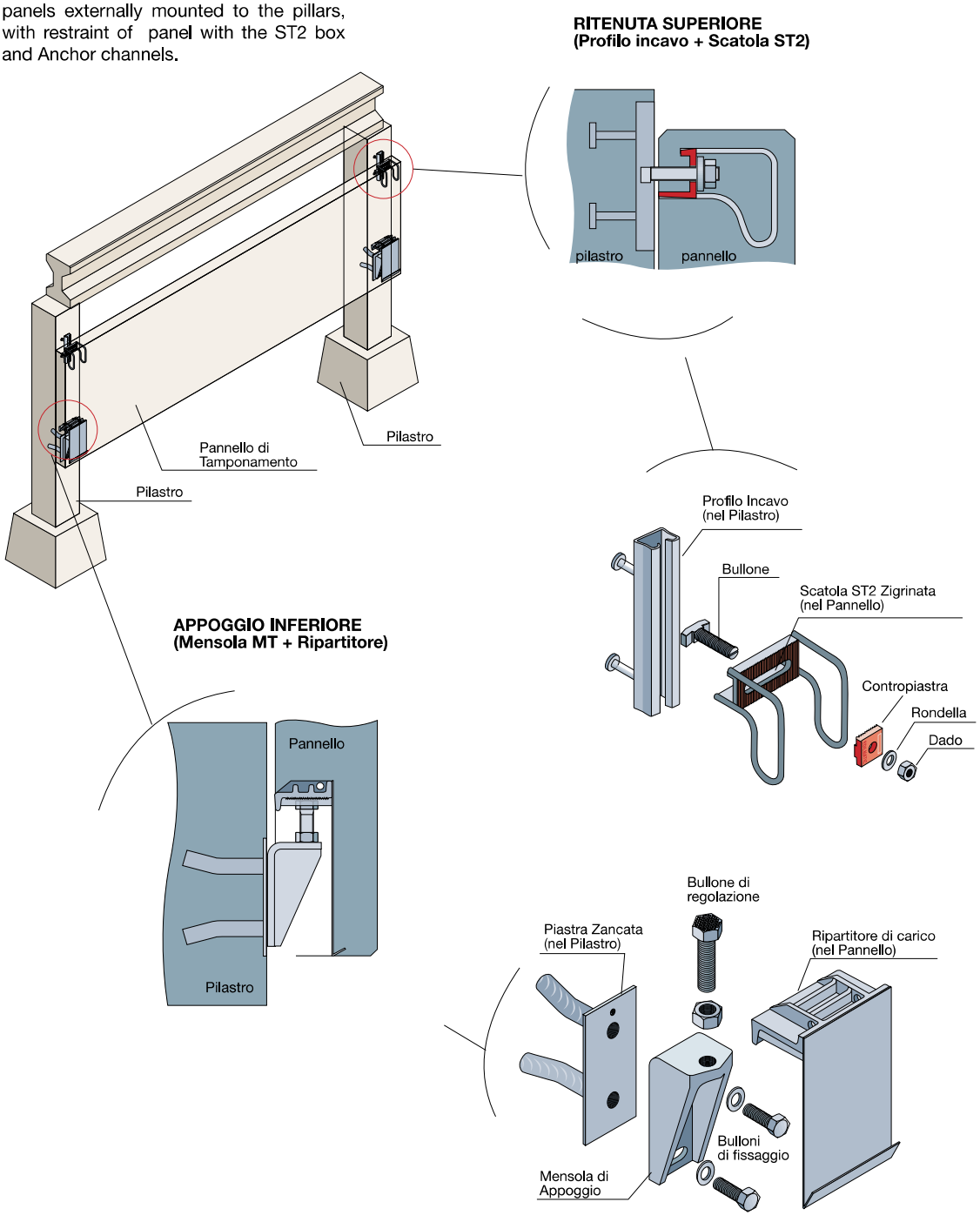


1 MT BRACKETS

EXAMPLES OF APPLICA-

SUPPORT AND FITTING ON THE FILLER (STANDARD APPLICATION)

Supporting system MT **Bracket** for a standard application for the support of panels externally mounted to the pillars, with restraint of panel with the ST2 box and Anchor channels.



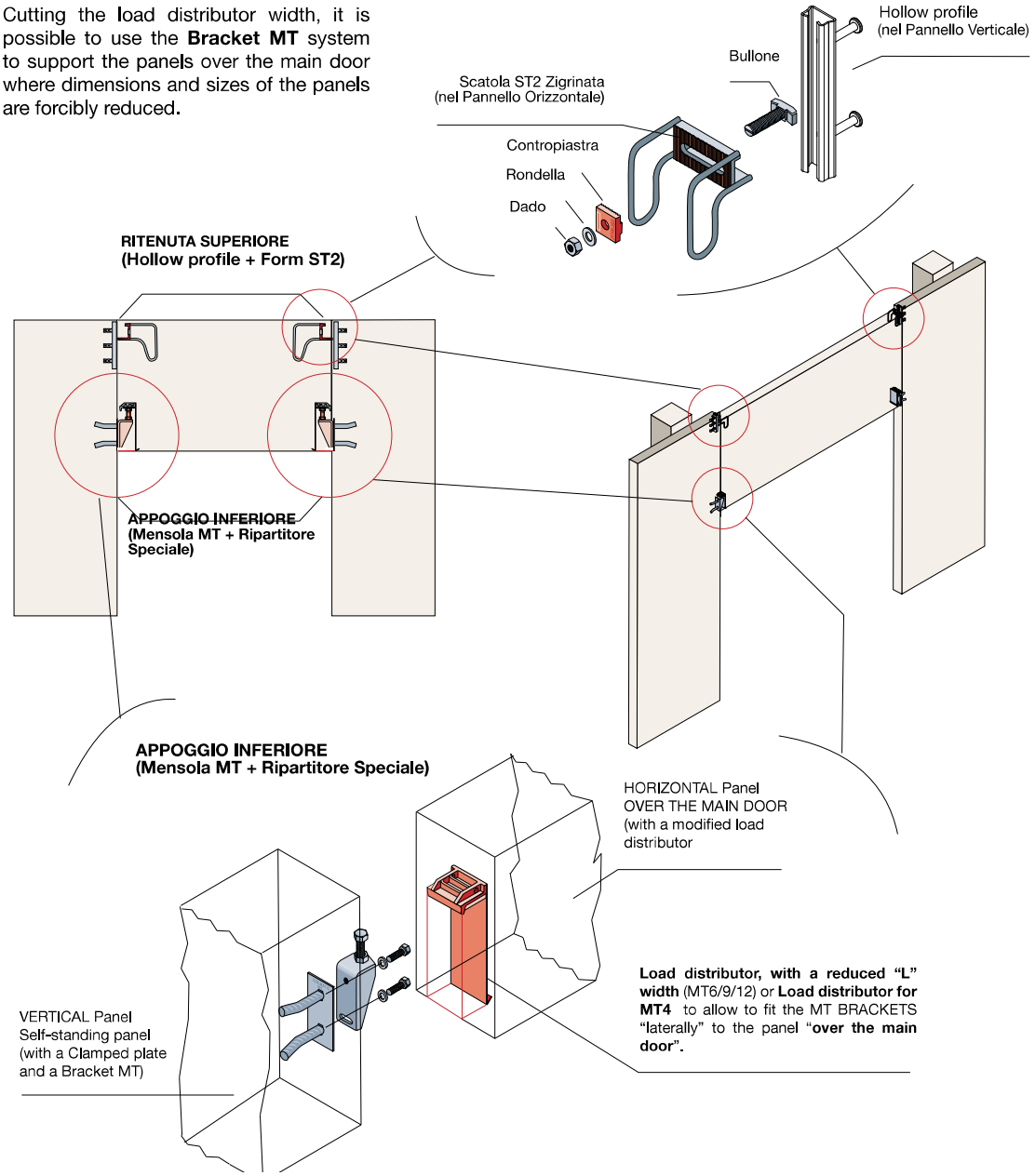
1 MT BRACKETS

EXAMPLES OF APPLICA-

SUPPORT AND FITTING OF THE PANEL OVER THE MAIN DOOR (STANDARD APPLICATION)

The load distributor with a reduced width is suitable to solve any panel jointing problem.

Cutting the load distributor width, it is possible to use the **Bracket MT** system to support the panels over the main door where dimensions and sizes of the panels are forcibly reduced.



2 SPECIAL Bracket MOT6

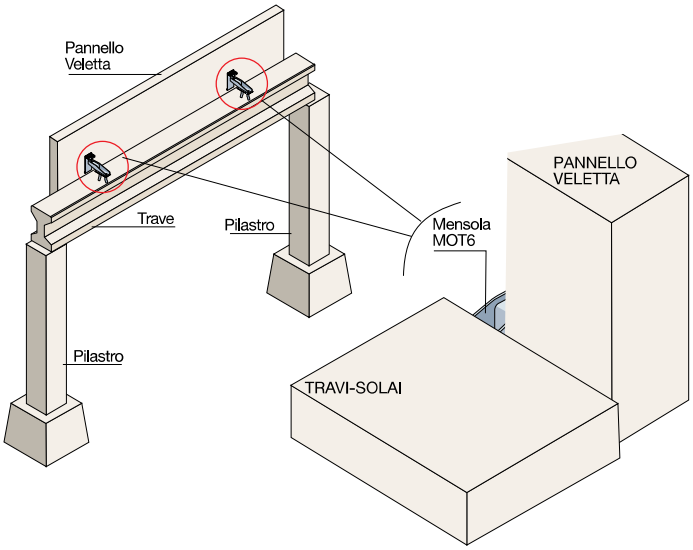
FEATURES OF THE HORIZONTAL BRACKET MOT6

The Horizontal Bracket MOT6 **(maximum capacity 60 kN)** is designed for the support of CLS parts (in general infill panels), whenever it is required to fit the supporting system on extrados of Beams and/or slabs

The required accessories to build the supporting junction are the same which are used for the **Standard bracket MT6** with a Clamped plate MT6 and a Load distributor MT6 with **L = 250 mm.**

Possible adjustment for the **MOT6** are similar to the adjustments available for the standard bracket and the slots placed on the supporting top support a bracket angular adjustment in case the Clamped plate is incorrectly positioned, offset compared with the beam and/or slab longitudinal direction

The bracket is based in top quality steel, and it is electrolytically galvanised according to the UNI EN ISO 2081.



SIZES AND DIMENSIONS

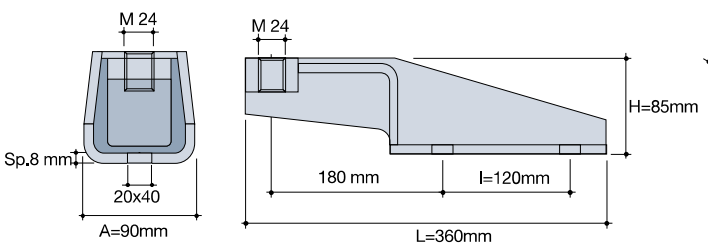
The **horizontal Bracket MOT6** proportionally to its capacity offers an extremely contained dimension in height (H = 85 mm) which makes possible to have subsequent castings without problems and a prerfectly foldaway bracket.

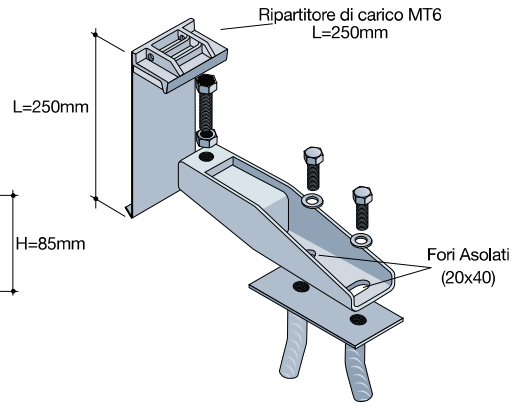
The clamped plate to be used with the bracket MOT6 is the standard for the MT6 bracket. As for the bracket fitting with dowel, discuss with the Edilmatic technical department as to provide for more information on the specific application features.

The bracket tightening bolts on the clamped plate are M18 x 50, class 10.9.

The Adjustment bolt is longer than the standard MT6 bolt (M24x120, class 8.8(and it is supplied with a tightening nut (M24 class 6s).

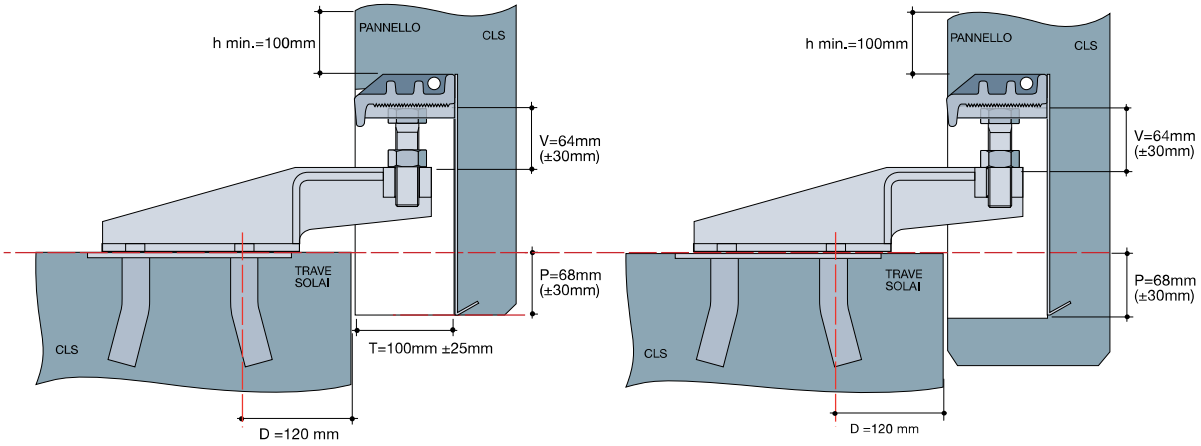
Accessories for MOT6	Description and type Type	
Clamped plates	Standard MT6	
Load distributor	Standard MT6 o L = 250 mm	
	Standard MT4	
Adjusting Bolt and Nut	Bolt M24xL=120 M 18 class 8.8 (UNI EN ISO 4017)	Nut M24 Class 6s (UNI EN ISO 4032)
Tightening Bolts and Washers	Bolts M18xL=50 class 10.9 (UNI EN ISO 4017)	Washers d=8 Class R40 (UNI EN 6592)





2 SPECIAL Bracket MOT6

POSITIONING SIZES



The positioning sizes are specified in the top diagram, and they simply refer to the standard horizontal bracket use, with the end of the load distributor aligned with the panel bottom.

The "**P**" value refers to the panel bottom lowering compared with the bracket supporting Top according to the "**V**" position of the adjustment bolt.

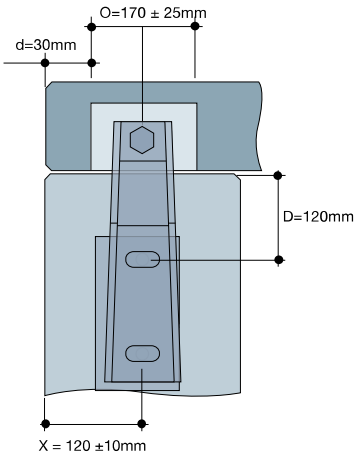
The "**V**" value is in between the maximum and minimum value, reached through the bolt adjusting.

The load distributor can be positioned in the middle of the Panel, but still it can be leaning on the panel if required (see diagram on the right). It is important to comply with the minimum distance from the upper part of the load distributor from the panel upper part (value "h" min, - Ref. page 10).

For a correct use of the bracket **MOT6** it is a must to comply with the minimum distances from the borders as specified in the table. More precisely the Clamped plate must be positioned at least at 120 mm from the beam border (**"D"**).

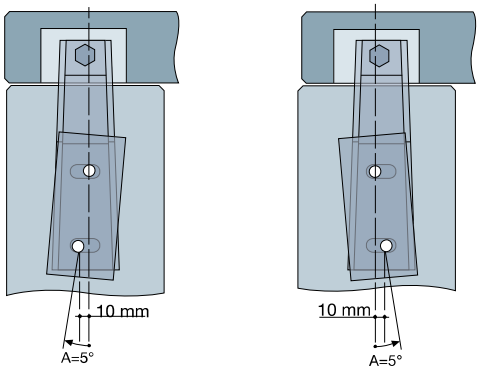
The available adjustments for the Bracket MOT6 are the same as for the standard Bracket MT6, including the angular adjustment to recover positioning errors of the Clamped plate.

For the MOT6 as well, **load distributors are available as well, with a customised width** (Ref. Page 8) and/or lateral closing bulkheads.



Adjustments and Sizes	Values (mm)
Vertical "**V**"	**64** ± 30 mm
Transverse "**T**"	**100** ± 25 mm
Horizontal "**O**"	**170** ± 30 mm
Angular "**A**"	± **5**°

Distance from borders	Values (mm)
X	**120 mm**
D	**120 mm**
d	**(0-30) mm**
h min.	**100 mm**



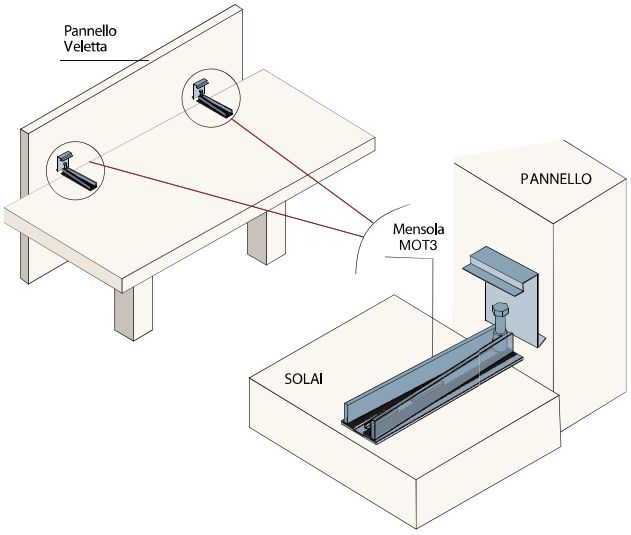
3 SPECIAL Bracket MOT3

FEATURES

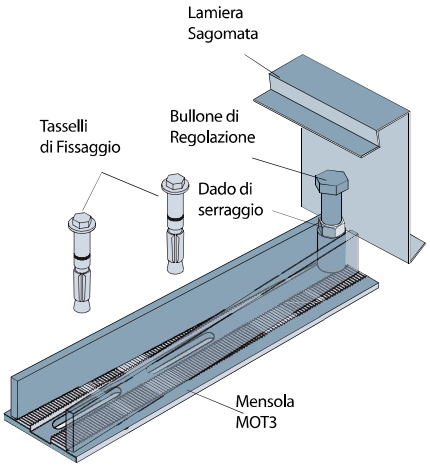
The Horizontal Bracket MOT3 (maximum capacity 30 kN) is designed for the support of CLS parts (in general fillers), whenever it is required to fit the supporting system on extrados of Beams and/or slabs

To ease the fitting and considering the reduced loads the Bracket MOT3 supports, the use of mechanical dowels is forecast to fit it to the supports.

The Bracket MOT3 is obtained from a knurled plate L = 388 mm (Edilmatic standard) fitted with 2 side reinforcements and a M18 bush to fit the Bolt and the Adjustment nut. The "load distributor" is obtained from a galvanised shaped sheet, thickness = 1.5 mm



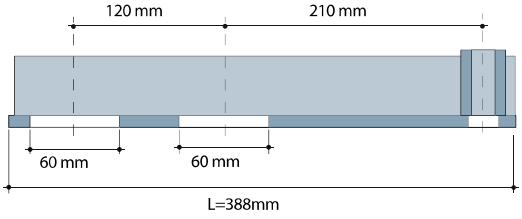
SIZES AND DIMENSIONS

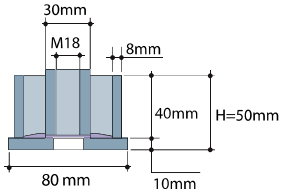


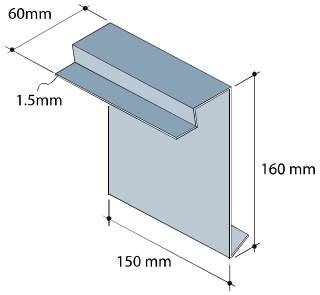
Accessories for MOT 3	Description and types	
Mechanical dowels (HILTI HST M16)	Dowels HILTI HST M16x140	
Load distributor	Shape sheet (Galvanised steel, 1.5 mm thick)	
Adjusting Bolt and Nut	Bolt M18xL=80 class 8,8 (UNI EN ISO 4017)	Nut M18 Class 6s (UNI EN ISO 4032)

The Horizontal Bracket MOT3 allows to cut the sizes to the bare minimum in width, and in height mainly, thus easily adding any casting required to built slabs and to hide the bracket.

The suggested version is standard with 40 mm reinforcements on a total height accounting for H = 50 mm. According to the existing loads, it is possible to change the height and the thickness to provide for higher capacities. IT is advisable to get in touch with the Edilmatic technical department for more information on the dowels to be used.

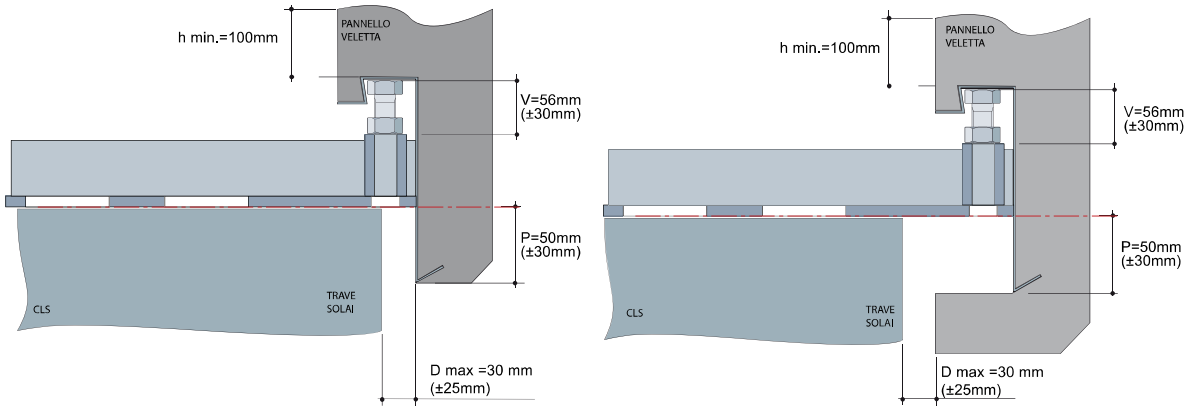






3 SPECIAL Bracket MOT3

POSITIONING SIZES



The positioning sizes are specified in the top diagram, and they simply refer to the standard use of the horizontal Bracket MOT3, with the end of the load distributor aligned with the panel bottom.

"P" refers to the panel bottom lowering compared with the bracket supporting Top according to the "V" position of the adjustment bolt.

"V" is in between the maximum and minimum value, reached through the bolt adjusting.

The load distributor can be positioned in the middle of the Panel, but still it can be leaning on the panel if required (see diagram on the right).

It is important to comply with the minimum distance from the upper part of the load distributor from the panel upper part (value "h" min).

For the correct use of the Bracket MOT3 when fitted with dowels, it is important to make holes according to the minimum distances prescribed from the borders in the Table, mainly as for "X" (X = 100 mm - distance from the beam border).

The available adjustments for the bracket MOT3 are reported in the Table 2.

The Bracket MOT3 is built from a hot printed knurled sheet. In the following pages, the standard application is provided according to the most common assembling issues. The product is suitable for special uses and specific applications as well.

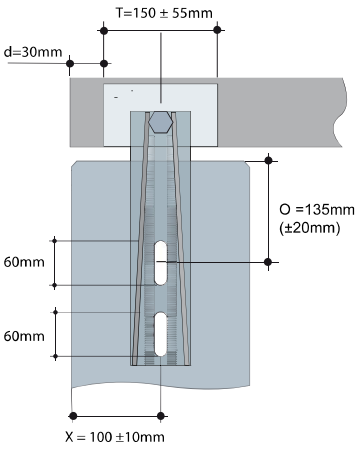
It is advisable to get in touch with Edilmatic technical department as to assess any possible alternative solution.

Table 1- Adjustments and sizes

Adjustments and Sizes	Values (mm)
Vertical "**V**"	**56** ± (30 mm)
Transverse "**T**"	**150** ± (35 mm)
Horizontal "**O**"	**135** ± 20 mm

Table 2- Distances from borders

Distance from borders	Values (mm)
X	100 mm
O	135 mm
d	(0-30) mm
h min.	100 mm



4 ERROR RECOVERY

LOWERED BRACKET MT

FEATURES

In case of a wrong positioning of the Clamped plates, it is possible to use special **MT BRACKETS** which were designed to recover the project sizes. 2 versions are available:
LOWERED and **RAISED MT Bracket.**

The **LOWERED** MT Bracket allows to recover any error should the Clamped plate be too**"highly"** positioned than the standard correct level.

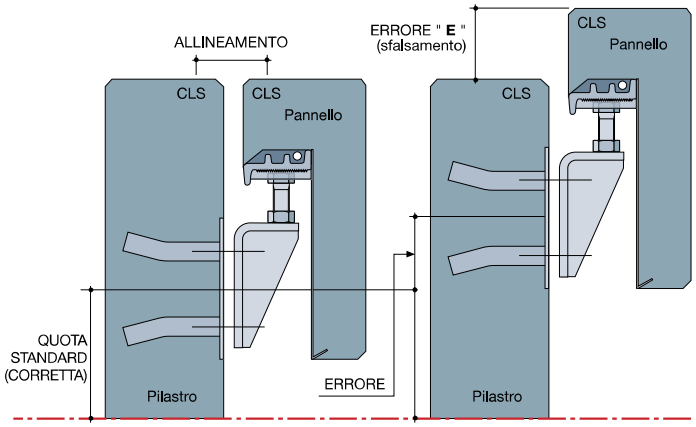
The **Lowered bracket MT** is supplied with a higher reinforcement (pre-fitted), duly shaped with a central hole to fit the upper Bolt. In its central part there is a second slot (higher than the standard slot) at the same distance from the Clamped plate spacing to fit the lower Bolt.

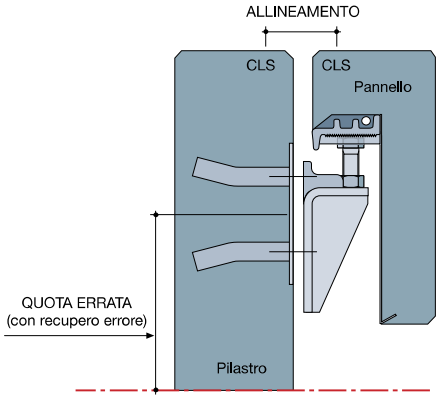
Such a solution allows a **"lower connection"** of the Bracket, keeping the "wrong" position of the Clamped Plate while recovering the positioning error.

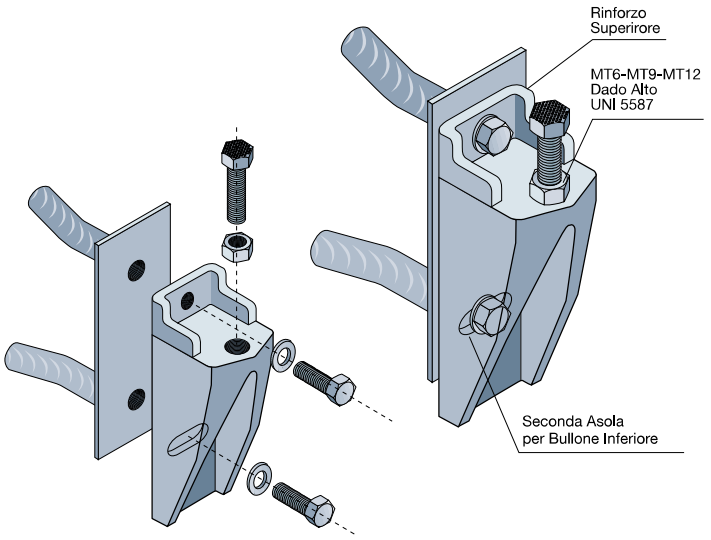
The performances and adjustments of the **LOWERED MT bracket** are the same as the **Standard MT bracket.**

The tightening bolts on the Clamped plate and the Adjustment bolt are the same as the Standard MT bracket.

The **Tightening nut** for the adjustment bolt is a **High nut UNI 5587** (M24-MT6 and M27-MT9/12) as to avoid the distributor tooth to lean on the reinforcing flange plates.
For the **MT4 bracket** the tightening nuts **are standard** (M20).







Type of Bracket	"E" max error To be recovered
MT4	50 mm
MT6	60 mm
MT9	80 mm
MT12	80 mm

4 ERROR RECOVERY

RAISED BRACKET MT

FEATURES

The **RAISED MT** Bracket allows to recover any error should the Clamped plate be positioned too **"low"** than the standard correct level.

The **Raised MT bracket** is supplied with a pre-sized bush (pre-fitted) **to fit the higher adjustment Bolt.**
Thus the load distributor top is higher thus recovering the Clamped plate positioning mistake.

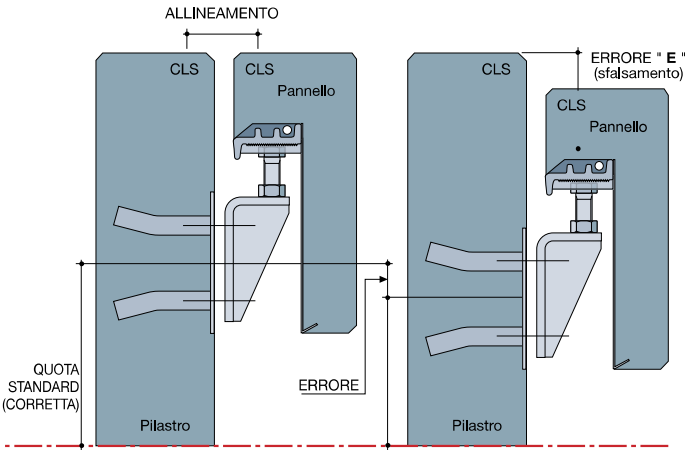
The performances and adjustments of the **RAISED MT bracket** are the same as the **Standard MT bracket**

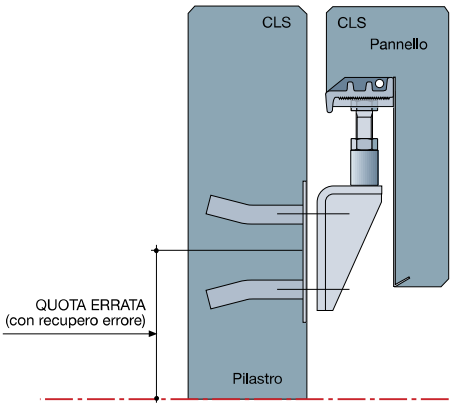
The **Tightening bolts** on the Clamped plate are the same used **on the standard MT bracket.**

The **Adjustment Bolt** to be positioned on the bush is **oversize** as to enable the screwing on the entire useful length and provide for a better system stability.

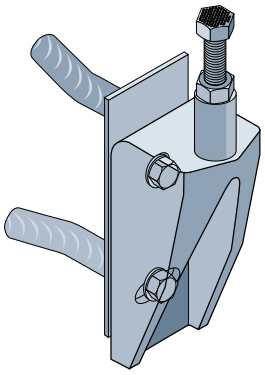
On the table the the maximum recoverable "E" error values are reported and the adjustment bolt features as well. The adjustment bolts are pre-fitted in the brackets.

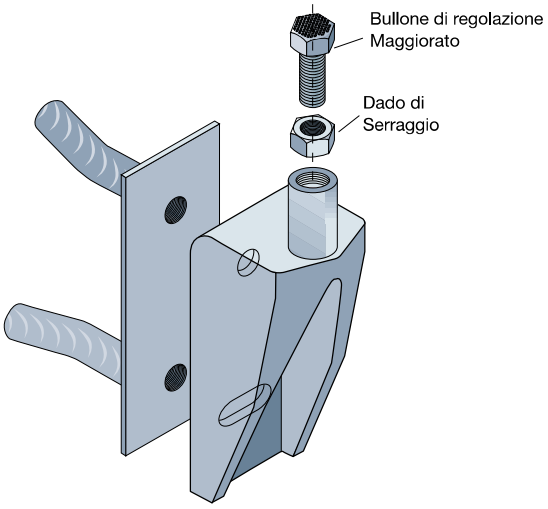
The tightening nuts are standard for all the brackets.





Type Bracket	"E" max error To be recovered	Adjustment Bolt
MT4	50 mm	M20 x L = 140 mm
MT6	60 mm	M24 x L = 160 mm
MT9	80 mm	M27 x L = 200 mm
MT12	80 mm	M27 x L = 200 mm





4 ERROR RECOVERY

APPLICATIONS FOR ERROR RECOVERY

DOWEL FITTING

In case of wrong positioning of the Clamped Plates, as it would not allow to fit any **Lowered or Raised bracket MT** it is possible to fit them with **correctly sized Chemical Dowels .**

Such dowels are calculated considering the maximum applicable carrying caacities of the Brackets (20-40-60-90 kN); thus, for the dowel fitting, it is always suggested to use **Lowered MT BRACKETS** whose hole spacing is bigger than the standard brackets thus lowering the dowel interaction in the CLS.

The anchoring systems were designed in co-operation with **"HILTI spa"** and the used dowels all belong to the HILTI product range.

For any possible use of different dowels, it is advisable to get in touch with the Edilmatic technical department for a more accurate application assessment.

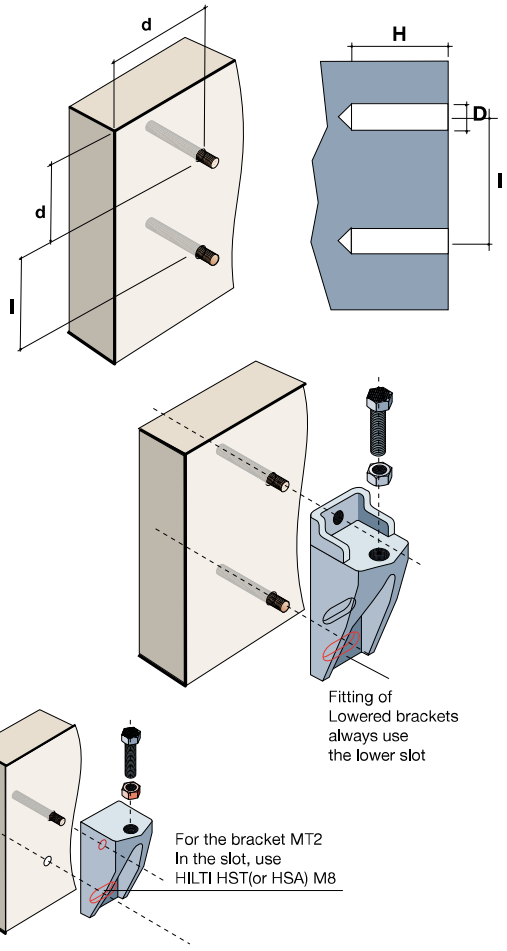
The hole execution and the dowel fitting should absolutely comply with the prescriptions imposed by HILTI, specified on each packaging, mainly as for the minimum distances from the borders and the waiting times before fitting the Brackets.

In the table there are for each loading category (20-40-60-90 kN) the most suitable bracket to be used and the relating dowels. As for the hole execution, in the table there are all the references as for diameter, "D", depth "h" and the spacing "I". Such values are also recalled in the product technical information on the Hilti operating instructions.

With a load accounting for 120 kN, no bracket MT can be fitted. Get in touch with Edilmatic technical department to study the most suitable solutions.

When fitting with dowels the Bracket MT2, in the lower slot, simply use the mechanical standard M8 dowel (as reported in the table).

Comply with the Hilti SPA prescriptions as for the supplied dowels.



Maximum Load (kN)	Lowered Bracket Type	Type of dowel Hilti - Chemical	Minimum distances from the edges "d" (mm)	Spacing between holes "I" (mm)	Hole diameter "D" (mm)	Hole depth "H" (mm)
20 kN	**MT2 STANDARD**	HILTI **HIT-RE 500** + Threaded bar **HAS M16** class 5.8	100 mm	40 mm	18 mm	130 mm
		For slot HILTI HST M8			10 mm	80 mm
40 kN	**MT4**	HILTI HIT-RE 500 + Threaded bar HAS M16 class 5.8	150 mm	150 mm	18 mm	130 mm
60 kN	**MT6**	HILTI HIT-RE 500 + Threaded bar HAS M20 class 5.8	150 mm	180 mm	24 mm	250 mm
90 kN	**MT12**	HILTI HIT-RE 500 + Threaded bar HAS M27 M 18 class 8.8	200 mm	220 mm	30 mm	300 mm

Notes

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Notes

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