



**Seismic Cabinet
Model BTDA - Kit Bellcore 4**



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1. BTDA cabinet characteristics

Structure

Profile and rails are made up of a unique closed profile manufactured from 1.5mm sheet steel, fully welded and with rounded edges. The frame corners are manufactured with orthogonal joints die-cast of zinc alloys.

Paint finish

BOSCO standard epoxy polyester powder coating.
Structure, door and rear panel RAL 7035 textured finish.
Bottom RAL 7035 textured finish.

Other colors on demand availables.

Assembled cabinet

Supply includes:

- structure
- door manufactured from 2mm sheet steel with stiffening frame, complete with Ø 3mm double bar locking system
- rear panel manufactured from 1.5mm sheet steel
- removable roof manufactured from 1.5mm sheet steel
- bottom with adjustable cable entry manufactured from 1.5mm sheet steel.

Protection degree

- IP 55 complying with EN50298; EN60529
- type 12 complying with UL508A; UL50
- impact resistance IK10 complying with EN500298; EN50102.



1a. KIT Bellcore 4 characteristics

Structure reinforcement

On both the two sides are mounted three fixing brackets from 3mm sheet steel:
one on the top, one in the middle and one on the bottom

Base

Special base constructed with two folded sheet (from 3mm sheet steel) welded.

Mounting plate

Special mounting plate manufactured with 2,5mm thick sheet steel fixed with three fixing brackets 3mm thick sheet steel.
Two additional reinforcements are mounted for weights higher than 100kg .



1b. Test Specifications

Requirements Specification

Earthquake Criteria (Zone 4)

- R 4-68** All equipment shall be constructed to sustain the waveform testing of **GR-63-CORE Section 5.4.1** without permanent structural or mechanical damage
- R 4-69** Frame level equipment shall be constructed so that during the waveform testing of **GR-63-CORE Section 5.4.1.**, the maximum single-amplitude deflection at the top of the framework, relative to the base, does not exceed 75 mm.
- R 4-70** Frame level equipment shall have a natural mechanical frequency greater than 2.0 Hz as determined by the swept sine survey of **GR-63-CORE Section 5.4.1.**
- O 4-71** Frame level equipment should have a natural mechanical frequency greater than 6.0 Hz as determined by the swept sine survey of **GR-63-CORE Section 5.4.1.**
- R 4-72** All equipment shall be constructed to meet applicable functionality requirements immediately before and after each axis of waveform testing of Section 5.4.1. The equipment shall sustain operation without replacement of components, manual rebooting, or human intervention.
- O 4-73** All equipment shall be constructed to meet applicable functionality requirements continuously during waveform testing of Section 5.4.1. These functionality criteria shall demonstrate that the equipment has sustained operation without loss of service during the testing.

Framework and Anchor Criteria

- O4-74** Framework should be of welded construction.
- R4-75** Framework shall be constructed for base mounting to the floor without auxiliary support or bracing from the building walls or ceilings.
- O4-76** For framework used in earthquake risk zones, the static pull testing procedures of Section 5.4.1.4 should be followed, meeting these objectives:
- The maximum single amplitude deflection at the top of the framework should not exceed 75 mm (3 in).
 - The top of the framework should return to its original position, within 6 mm (0.24 in) when the load is removed.
 - The framework should sustain no permanent structural damage during static framework testing.
- R4-77** Concrete expansion anchors used to base mount framework to the floor shall meet the following requirements:
- Maximum embedment depth of 90 mm (3.5 in)
 - Maximum bolt diameter of 13 mm (0.5 in).
- O4-78** Concrete expansion anchors used to base mount the framework to the floor should be suitable for earthquake (dynamic) applications, as specified by the manufacturer.
- O4-79** Concrete expansion anchors should use steel construction to minimize creep.

Earthquake Test conditions

Environmental parameter	Test Severity		Duration	Method
Earthquake time-history	RRS	see Table nr. 3	30 s	Time-history VERTEQII
	ZPA*	15 m/s ²		
	frequency range	1 – 50 Hz		
	axes	3		
	damping ratio	2 %		

*Zero Period Acceleration

Earthquake Required Response Spectrum for Zone 4 according to Telcordia Technologies GR-63-CORE Section 5.4.1

Coordinate Point	Frequency (Hz)	Values for Upper Floor Acceleration (g)
1	0.3	0.2
2	0.6	2.0
3	2.0	5.0
4	5.0	5.0
5	15.0	1.6
6	50.0	1.6

1c. Test Results

The measured resonance frequencies are:

Results - Resonance Frequencies

Axis	Frequency [Hz]
X	9.0
Y	6.4
Z	47.5

Results Earthquake Test

In detail:

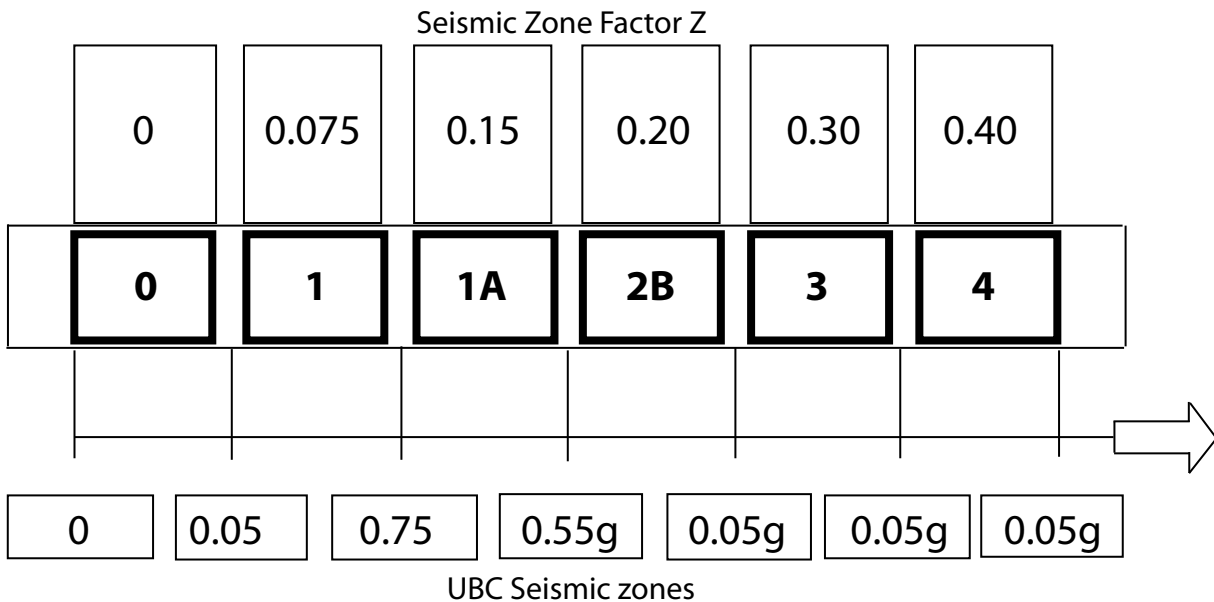
- R4-68 :** No structural damages occurred
- R4-69 :** The deflection on top was:
X-axis: 10,6 mm
Y-axis: 26,5 mm
Z-axis: no LVDT-measurement was performed
- R4-70, O4-71:** The lowest natural gross frequency was 6.4 Hz
- R4-72, O4-73:** The EUT was completed with weight dummies, therefore no function are possible
- R4-74:** Framework is not a welded construction.
- O4-75:** Framework is constructed fore base mounting.
- O4-76:** Static pull test not performed, because Framework is synthesized waveform tested.
- R4-77, O4-78, O4-79:** The anchors are unknown and therefore omitted from the test configuration.

1d. Seismic Zones – Zona 4

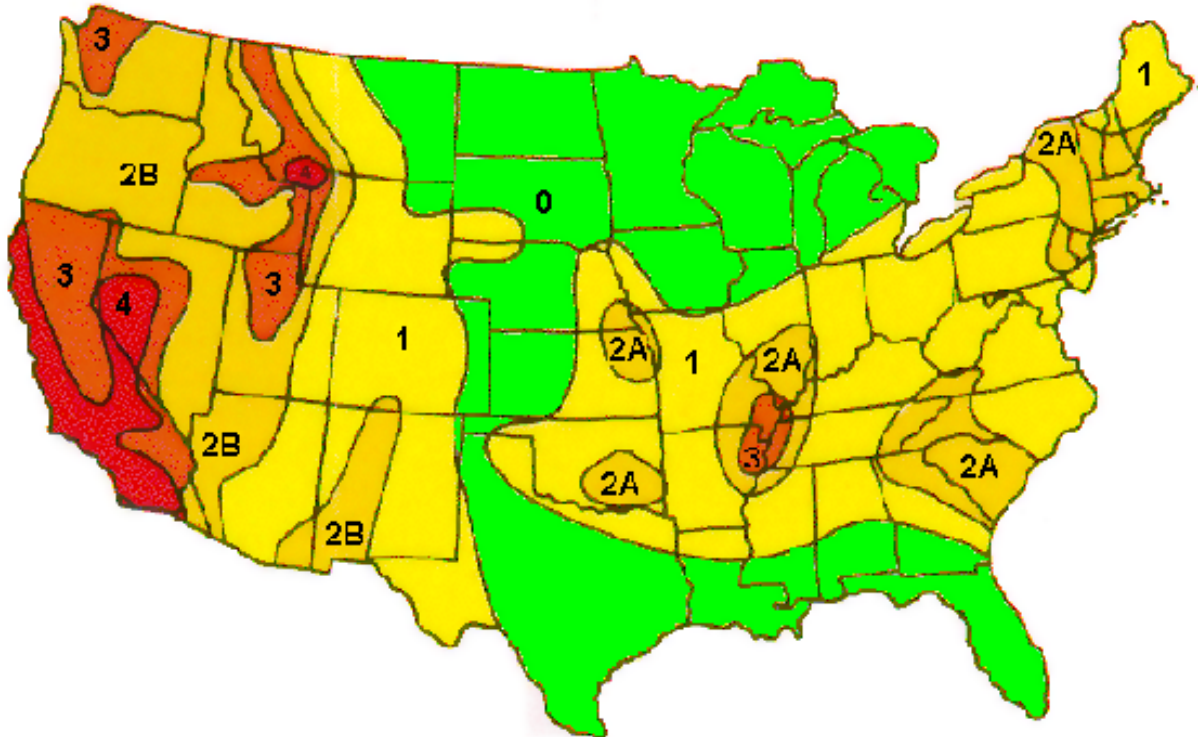
Seismic hazards are those related to ground shaking. Landslides, ground cracks, rockfalls, tsunami - these are all seismic hazards. Generally, though, we think more in terms of damage to our structures and our possessions.

Engineers, seismologists, architects, and planners have carefully evaluated seismic hazards related to building construction. They have devised a system of classifying seismic hazards on the basis of the expected strength of ground shaking and the probability of the shaking actually occurring within a specified time. The results are included in the Uniform Building Code (UBC) seismic provisions.

The UBC seismic provisions contain six seismic zones, ranging from 0 (no chance of severe ground shaking) to 4 (10% chance of severe shaking in a 50-year interval). The shaking is quantified in terms of g-force (familiar to race car drivers and astronauts), the earth's gravitational acceleration. The diagram below is a way of describing seismic zonation.



Uniform Building Code seismic Zone Map of the Contiguous United States



Construction Standards Required to Meet Code

	4	Extreme
	3	High
	2A, 2B	Moderate
	1	Low

Seismic test enclosure

Elettromeccanica Bosco doesn't provide his customers with system certified enclosures. The cabinets are tested for specific configurations under specific conditions and they achieve specific results certified in the documents enclosed.

Any different application of these products could represent a different operating condition and could prejudice the correct functioning of the devices installed.

These different enclosure employments might require additional seismic evaluation to ensure a correct and safe functioning of the equipments installed.

Elettromeccanica Bosco will work closely with the customer to meet the seismic technical requirements and it's also available to assist the customer during testing process.

For further informations please contact : info@elettrobosco.com

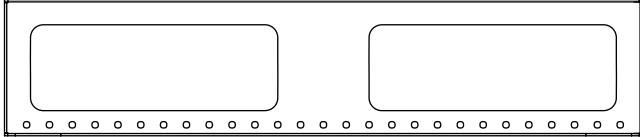
2.BTDA cabinet with KIT Bellcore 4 measures



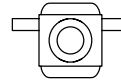
3.General Fixing

SIDE FIXING BRACKETS KIT

TOP FIXING



N° 2 pcs



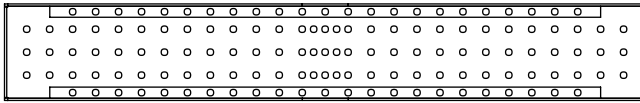
NUT 6MA



N° 56 pcs

SCREW 6MA LENGTH 16 mm

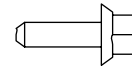
MIDDLE FIXING



N° 2 pcs



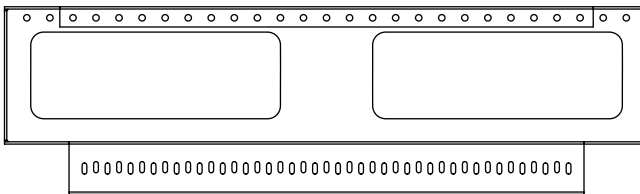
NUT 6MA



N° 12 pcs

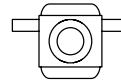
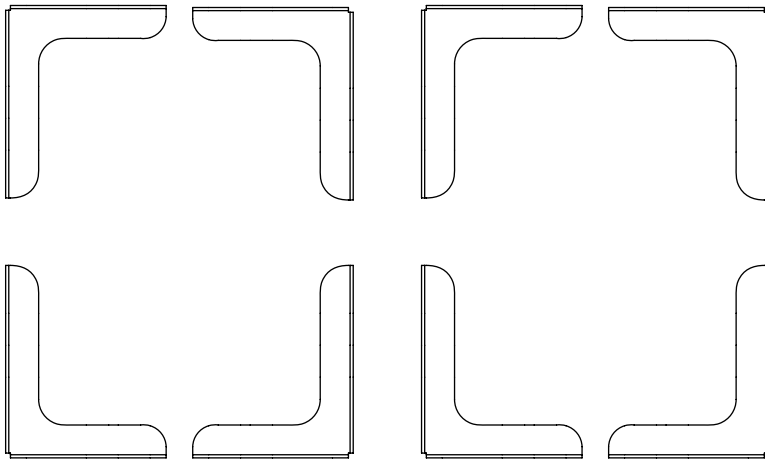
SCREW 6MA LENGTH 20 mm

BOTTOM FIXING



N° 2 pcs

ANGLE BRACKET FOR DOORS KIT



NUT 6MA



N° 48 pcs

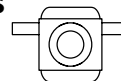
SCREW 6MA LENGTH 16 mm

MOUNTING PLATE KIT

TOP FIXING BRACKET



N° 1 pcs



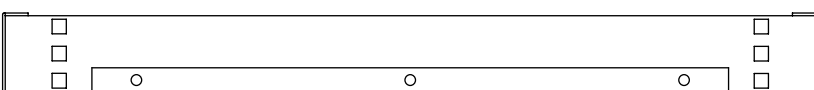
NUT 6MA



N° 12 pcs

SCREW 6MA LENGTH 16 mm

MIDDLE FIXING BRACKET



N° 1 pcs



NUT 6MA



N° 6 pcs

SCREW 6MA LENGTH 16 mm

BOTTOM FIXING BRACKET

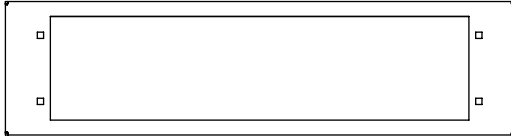


N° 1 pcs

3.General Fixing

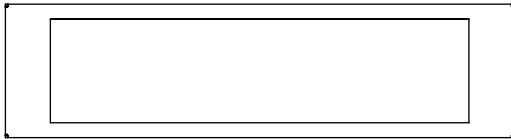
BASE

SIDE SOCKET



N° 2 pcs

FRONT FIXING BRAKET OF SOCKET



N° 2 pcs

FRONT COVER SOCKET



N° 2 pcs

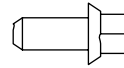
SIDE COVER SOCKET



N° 2 pcs



NUT 8MA

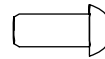


N° 8 pcs

SCREW 8MA LENGTH 16 mm



NUT 8MA

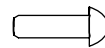


N° 8 pcs

SCREW 8MA LENGTH 16 mm



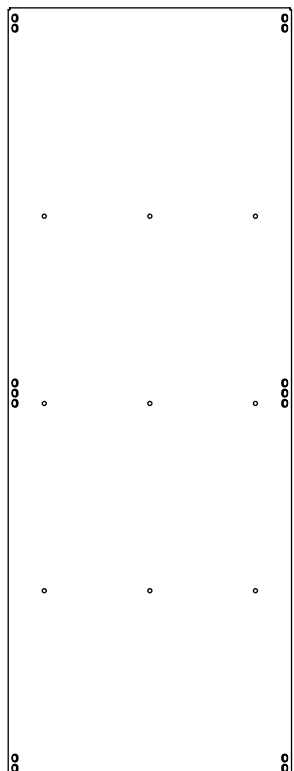
NUT 6MA



N° 8 pcs

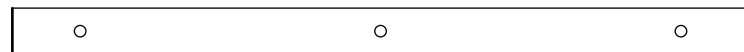
SCREW 6MA LENGTH 16 mm

MOUNTING PLATE



N° 1 pcs

ENFORCING MOUNTING PLATE (when loading more than 100 Kg)



N° 2 pcs



NUT 8MA

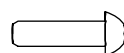


N° 9 pcs

SCREW 8MA
LENGTH 16 mm



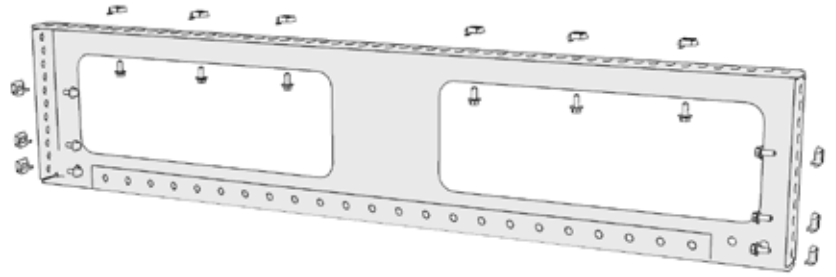
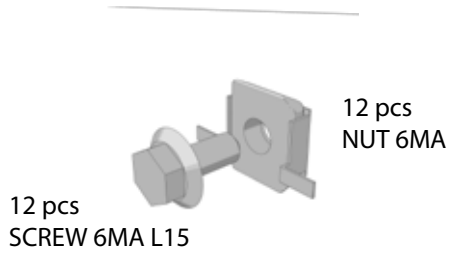
NUT 8MA



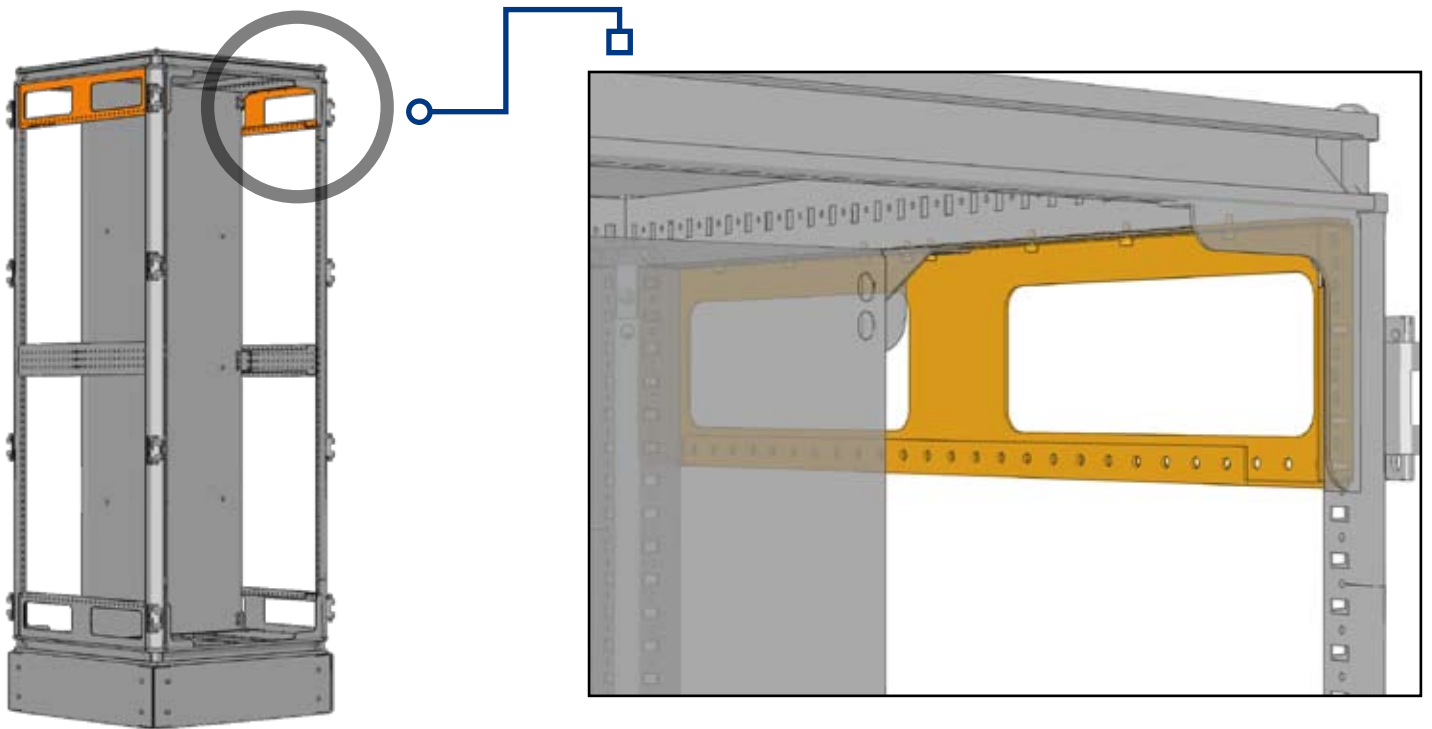
N° 12 pcs

SCREW 8MA LENGTH 25 mm

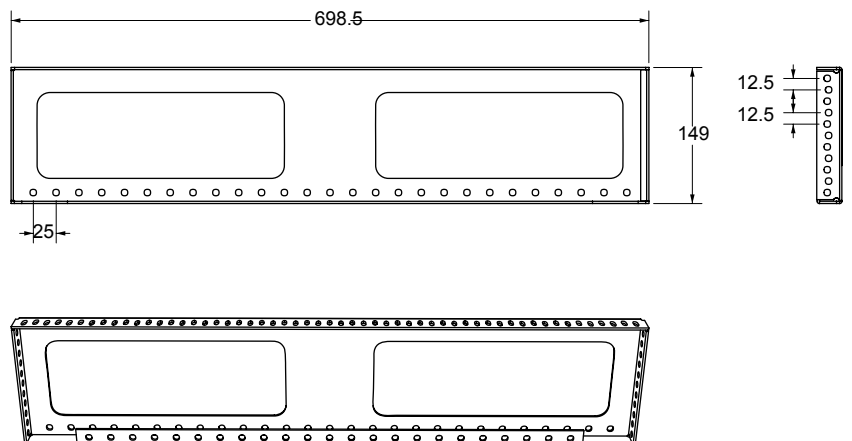
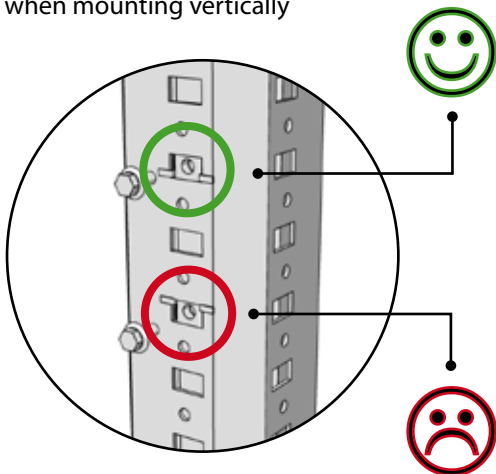
4.Top Fixing



2x: left side + right side

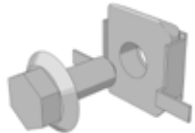


Pay attention
when mounting vertically

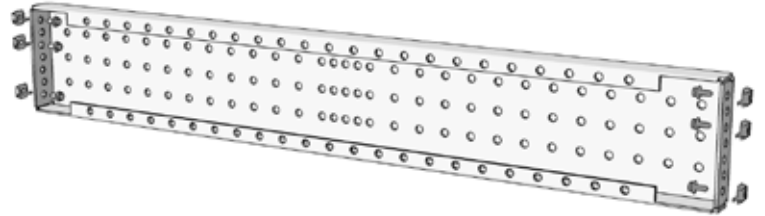


5.Middle Fixing

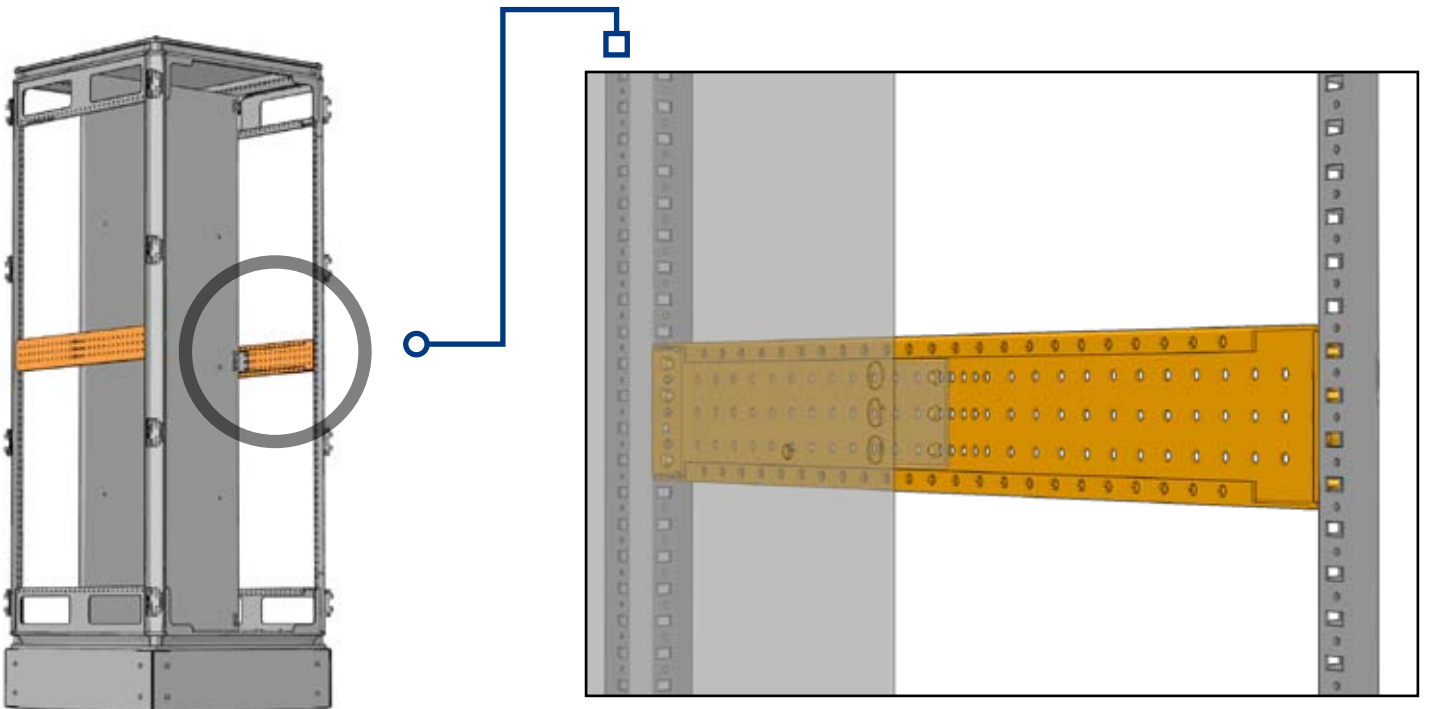
6 pcs
SCREW 6MA L15



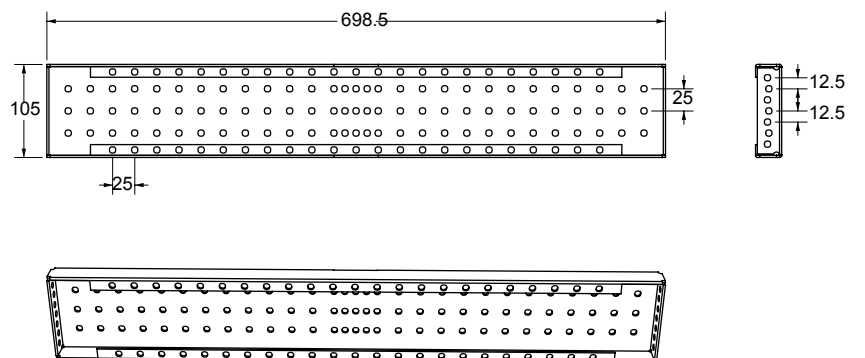
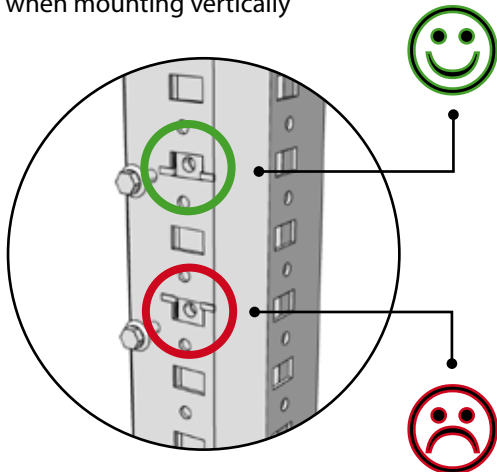
6 pcs
NUT 6MA



2x: left side + right side



Pay attention
when mounting vertically



6. Bottom Fixing

18 pcs NUT 6MA

18 pcs SCREW 6MA L15

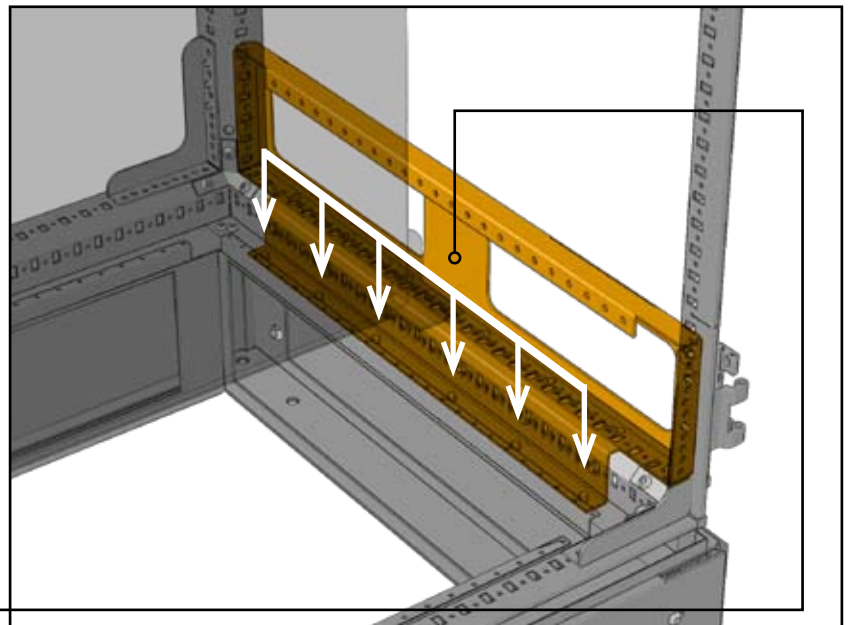
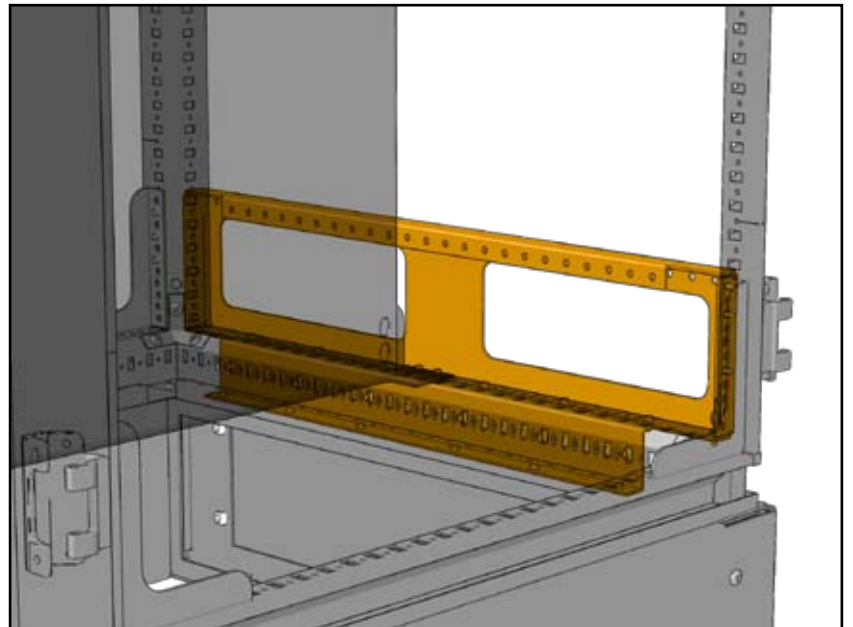
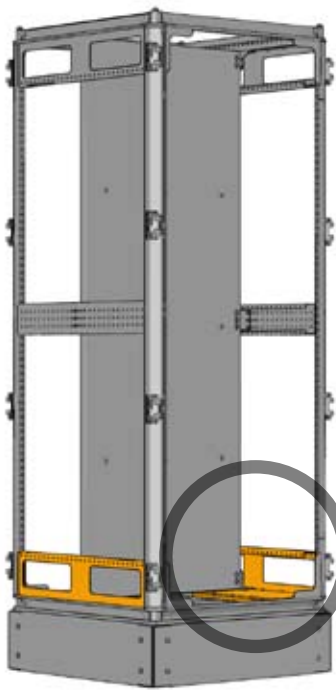
6 pcs SCREW 6MA L20

6 pcs NUT 6MA

from inside

from outside

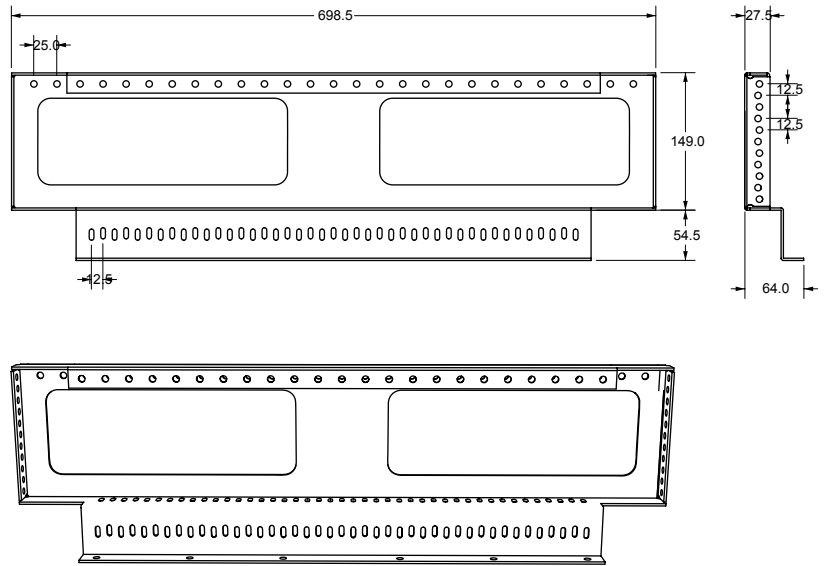
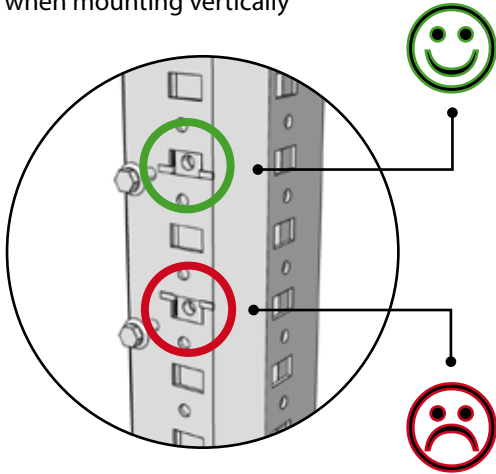
2x: left side + right side



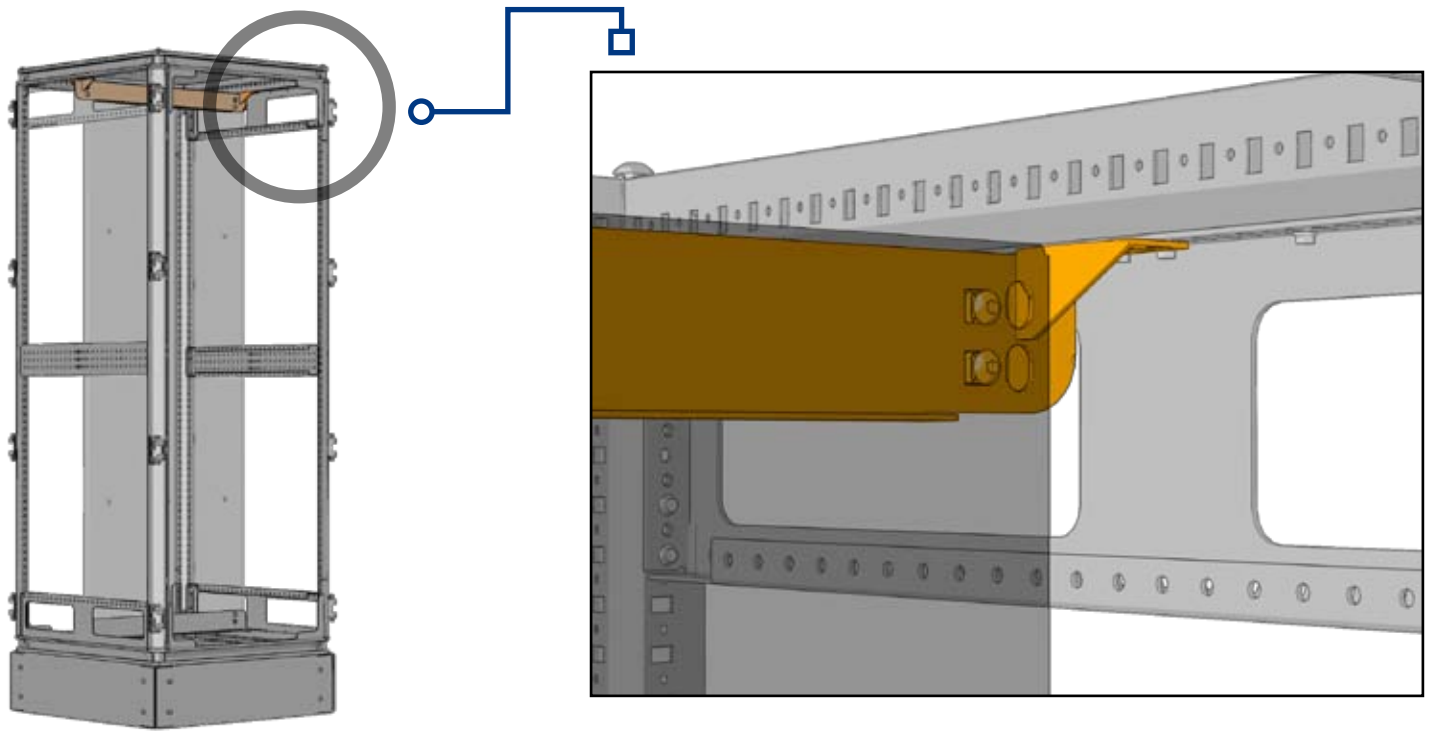
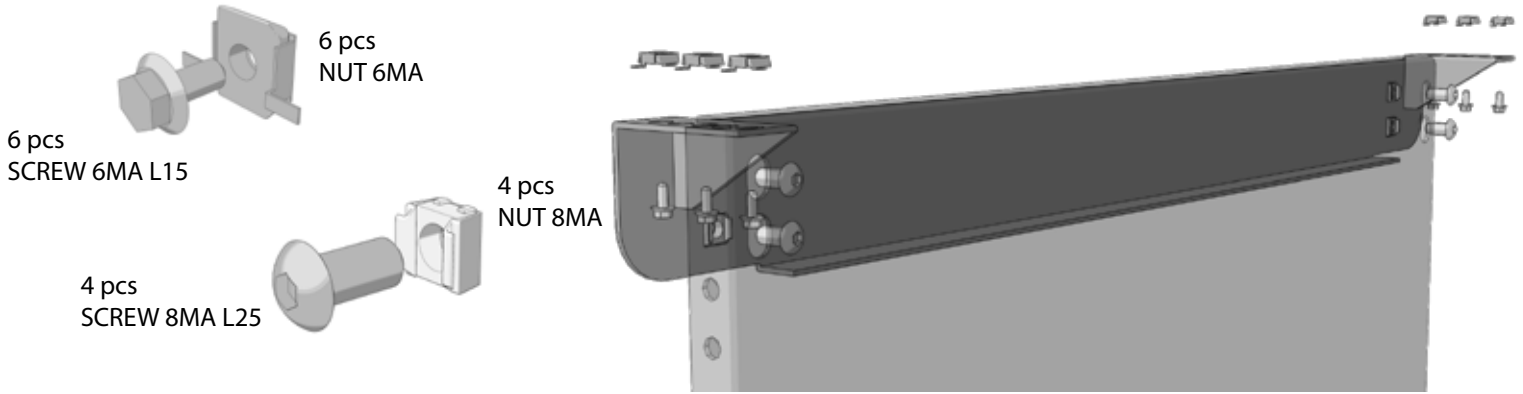
make holes with a 6MA drill

6. Bottom Fixing

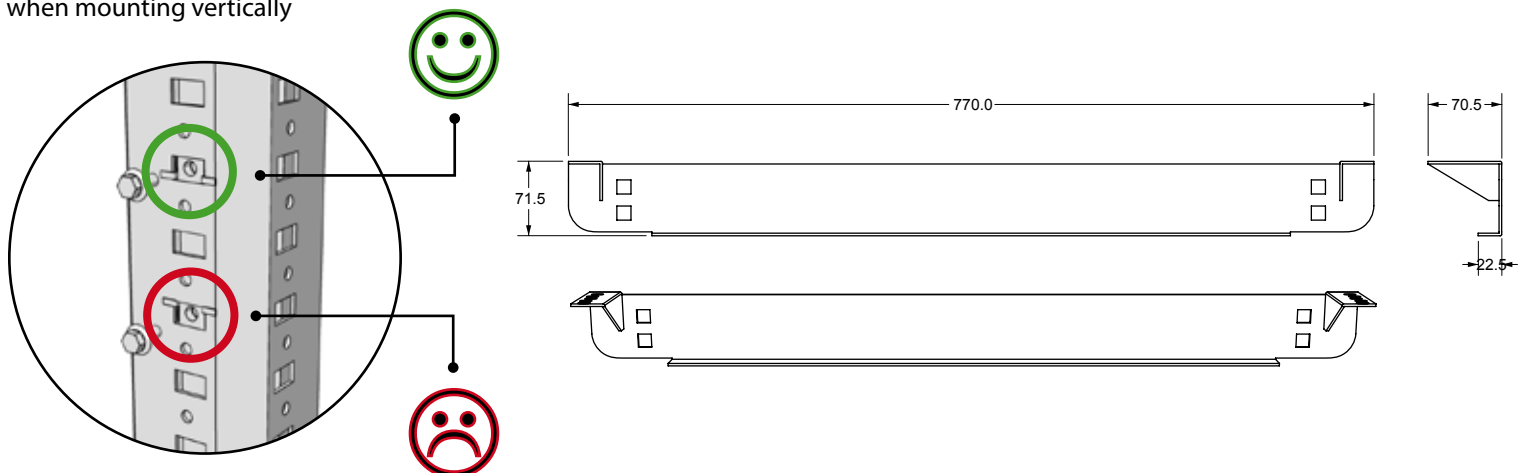
Pay attention when mounting vertically



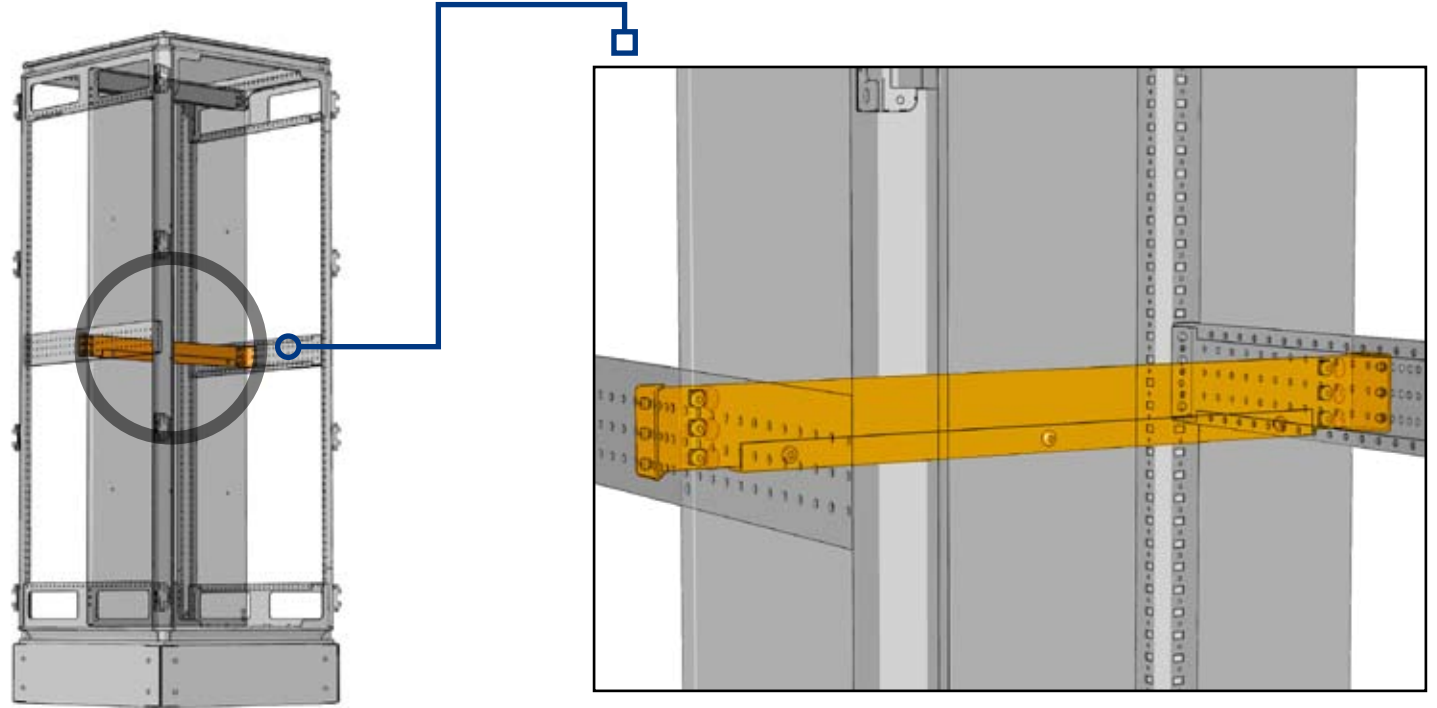
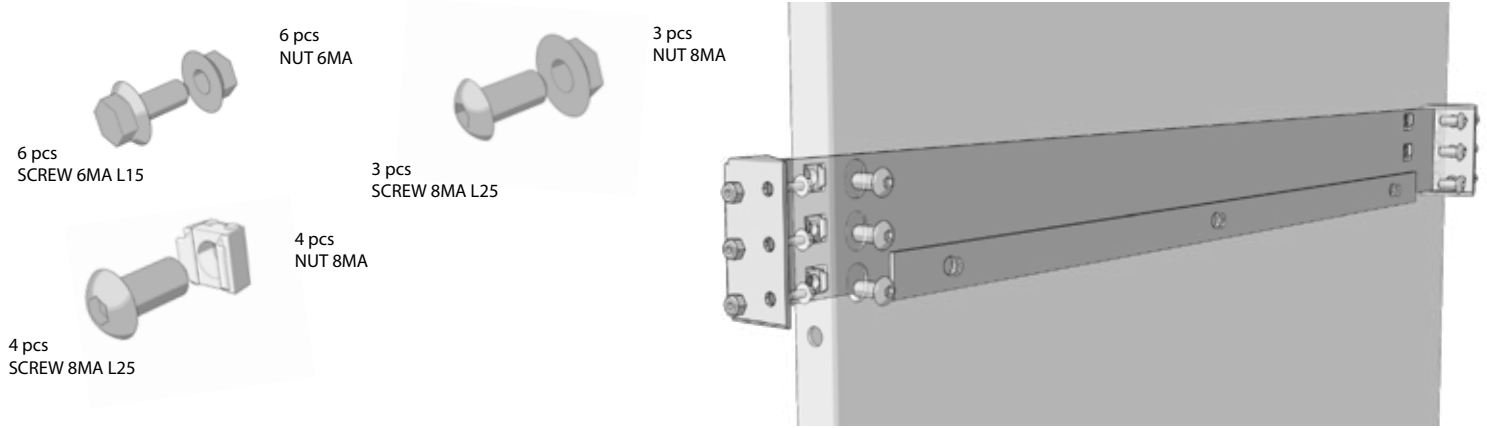
7.Mounting Plate Top



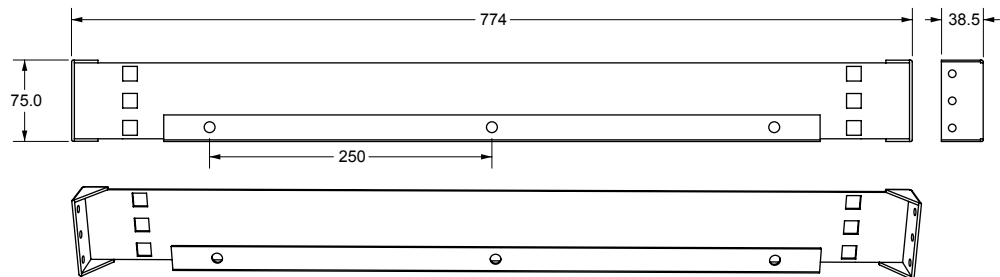
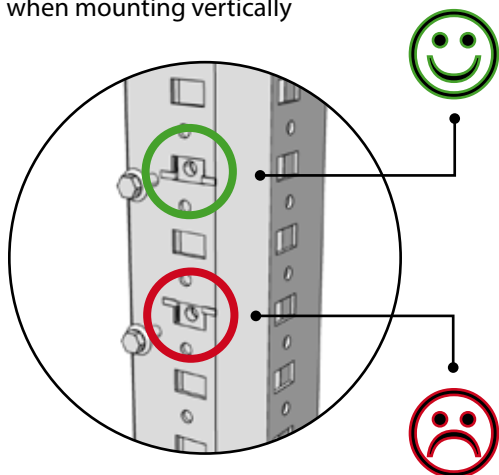
Pay attention when mounting vertically



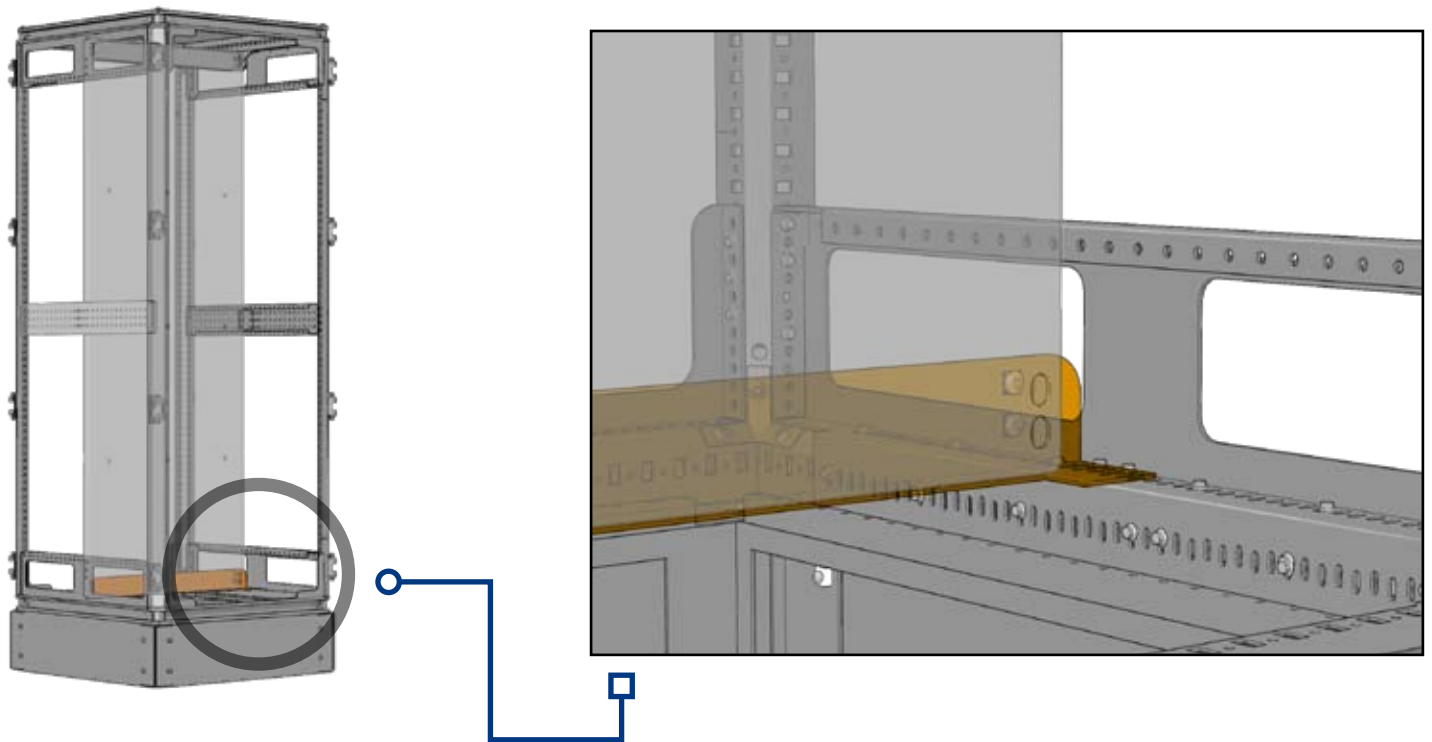
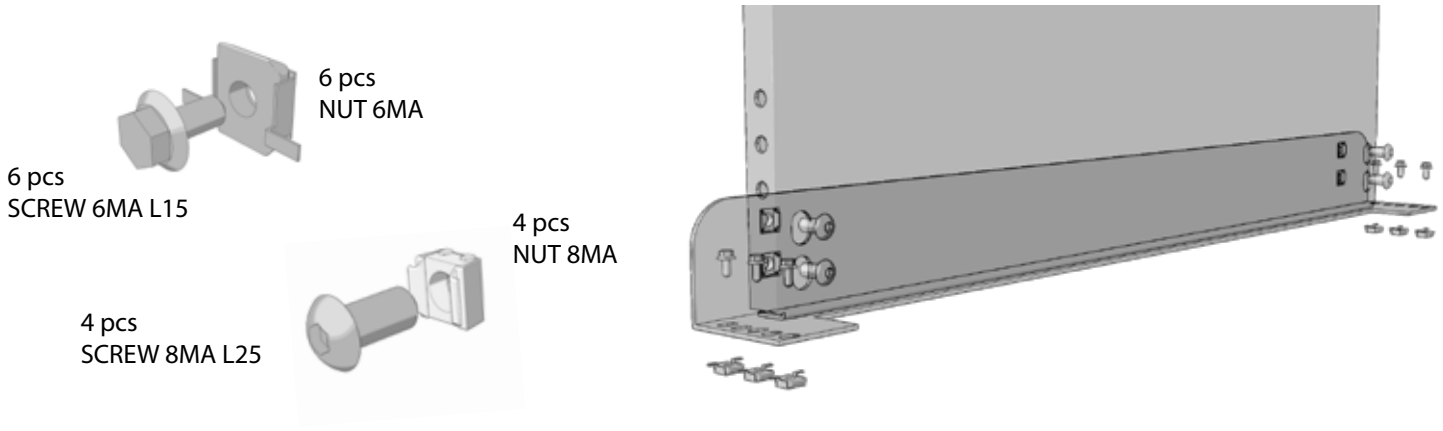
8.Mounting Plate Middle



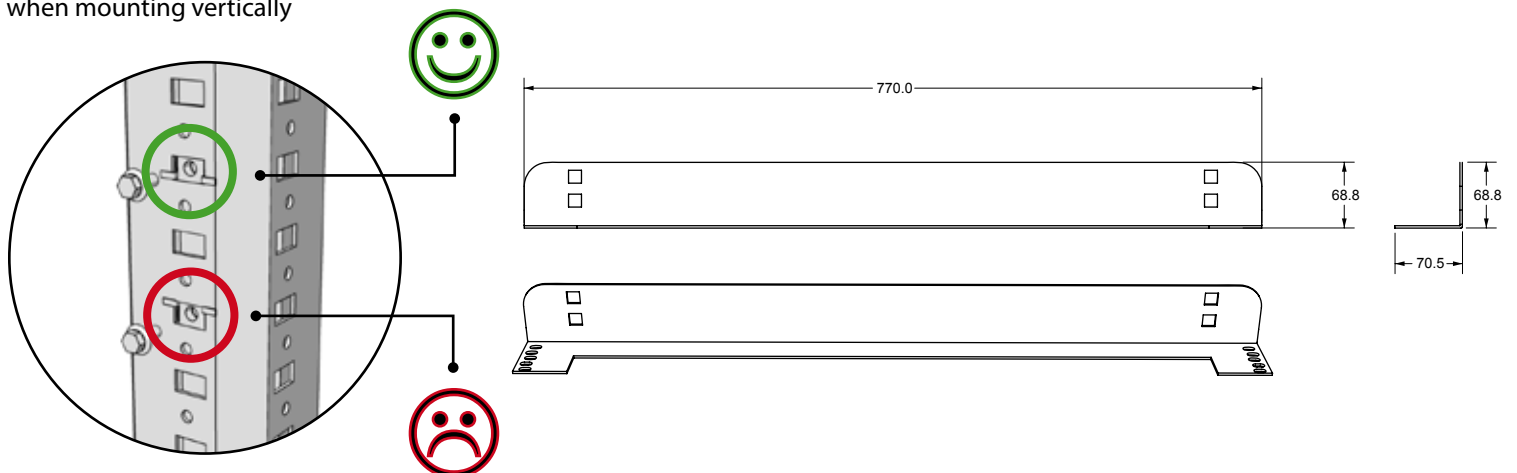
Pay attention when mounting vertically



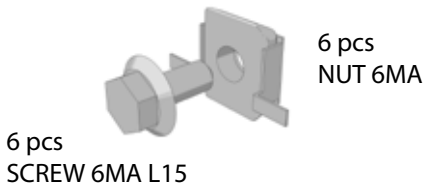
9.Mounting Plate Bottom



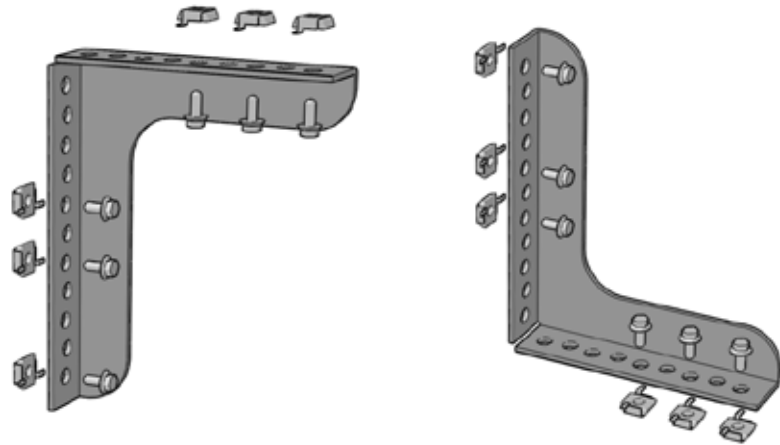
Pay attention
when mounting vertically



10.Angle Bracket

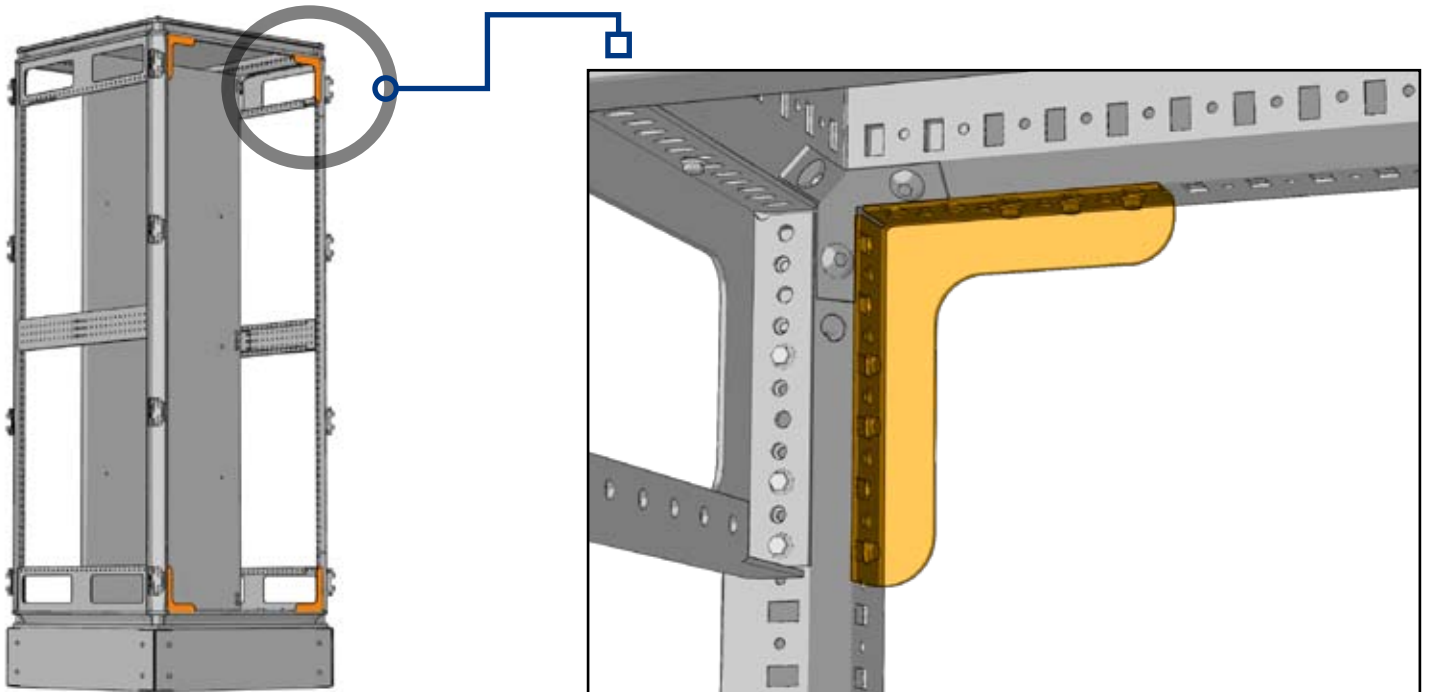


x 8
(2 front + 2 back on top)
+
(2 front + 2 back on bottom)

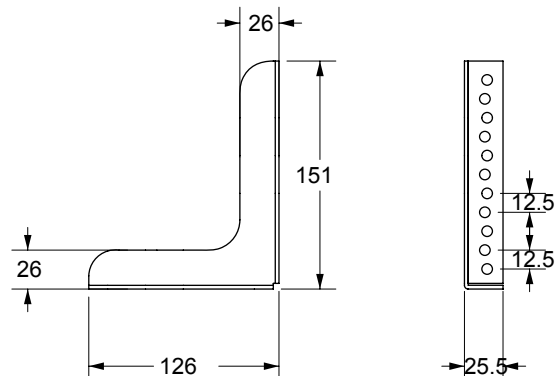
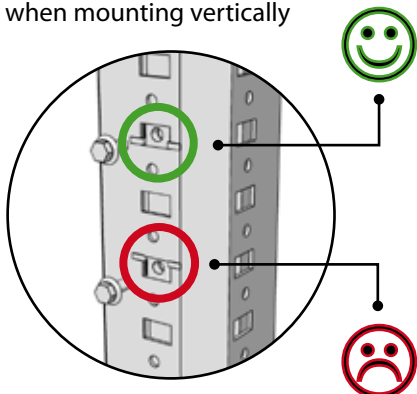


mounting on top

mounting on bottom

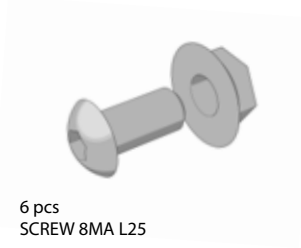


Pay attention
when mounting vertically



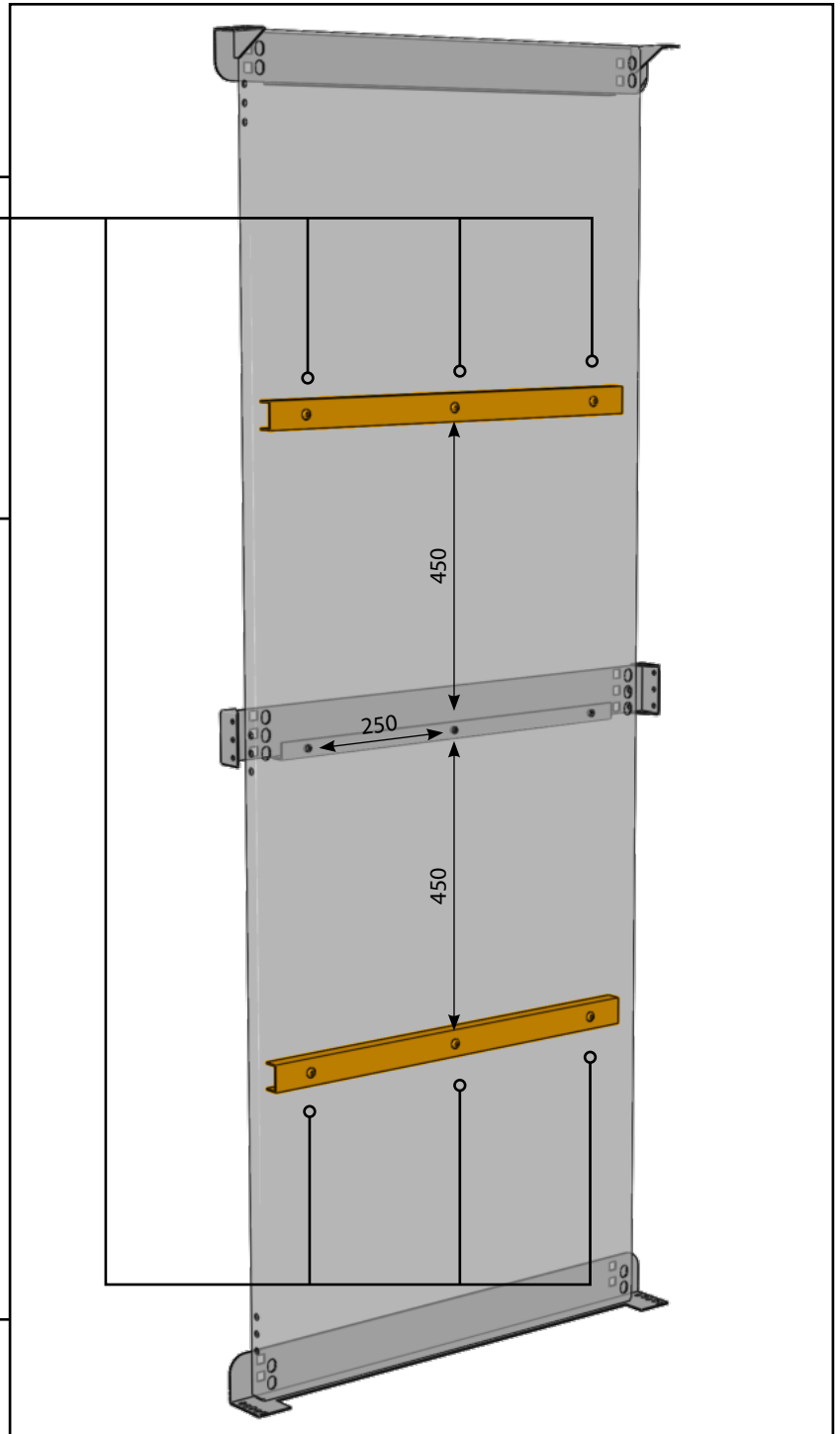
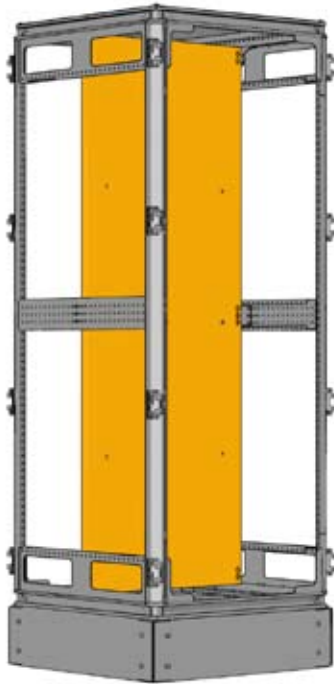
11.Enforcing Mounting Plate

use when loading more than 100kg

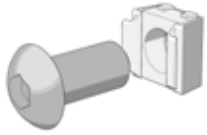


6 pcs
NUT 8MA

6 pcs
SCREW 8MA L25

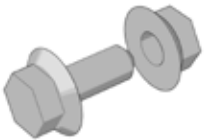


12.Base



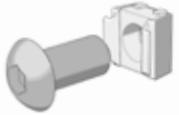
8 pcs
SCREW 8MA L16

8 pcs
NUT 8MA



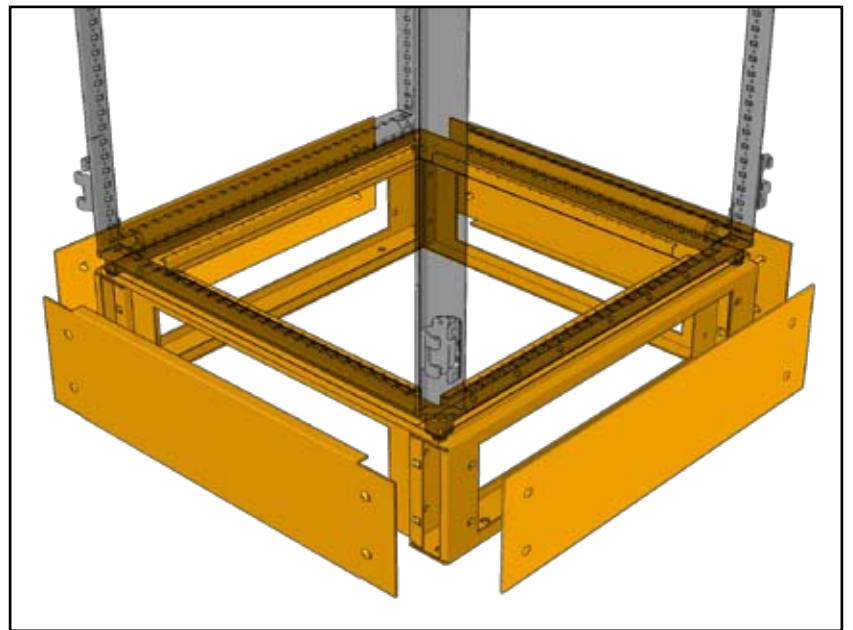
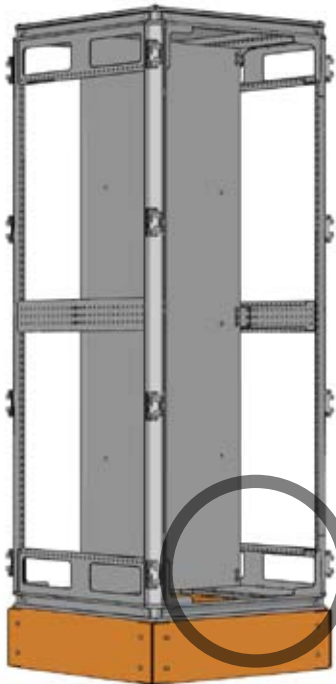
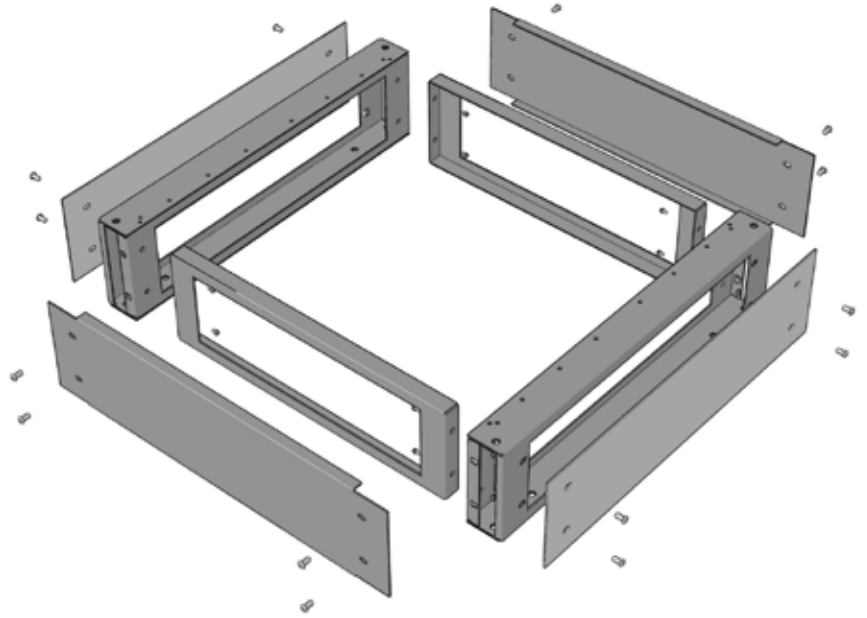
8 pcs
SCREW 8MA L16

8 pcs
NUT 8MA



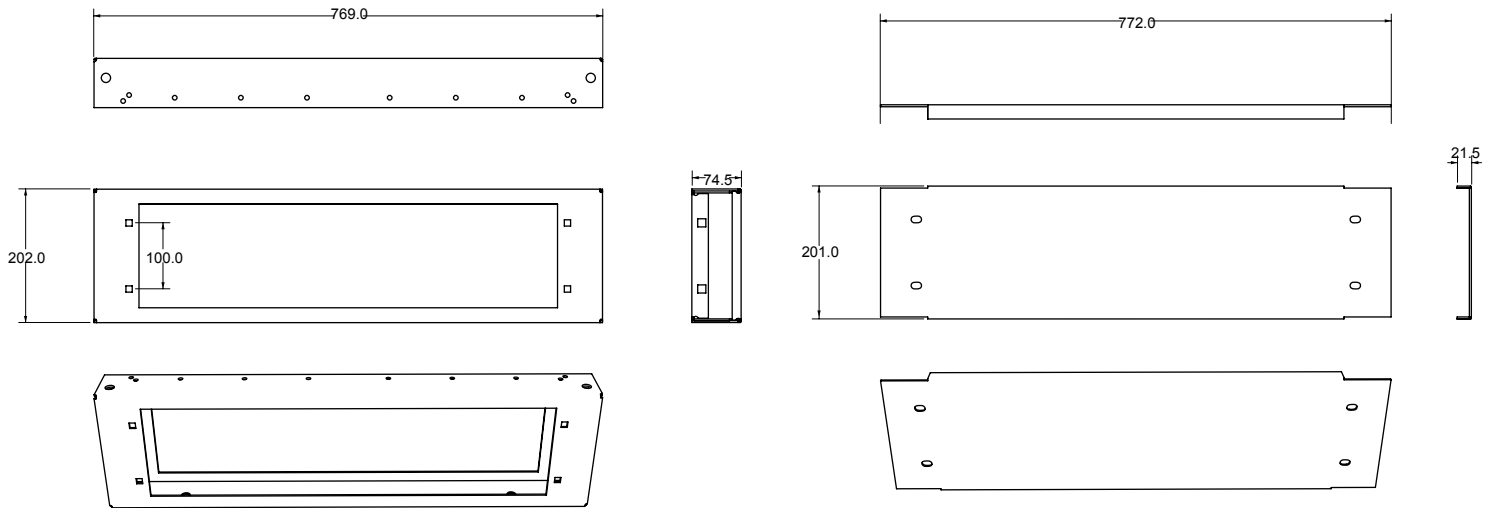
8 pcs
SCREW 6MA L16

8 pcs
NUT 6MA

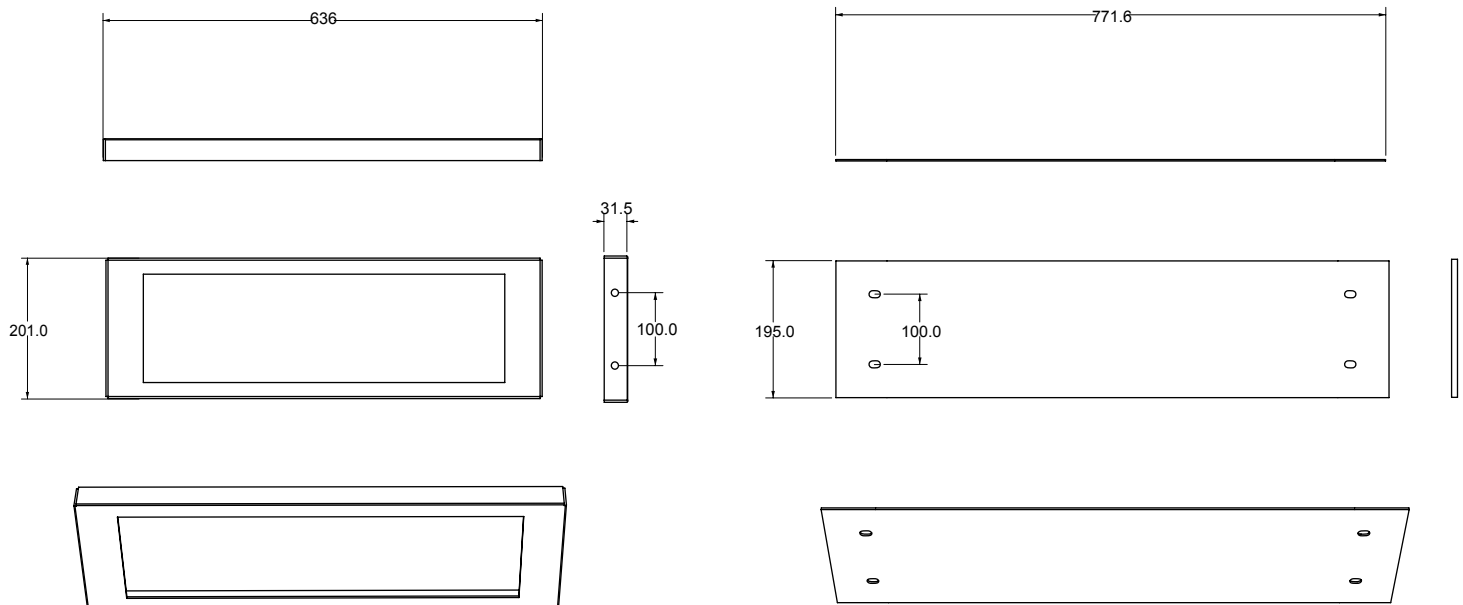


12.Base

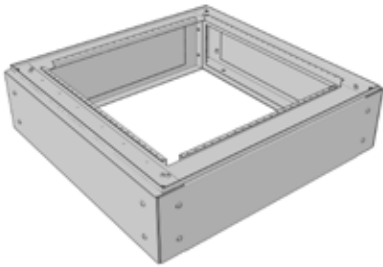
side base and cover



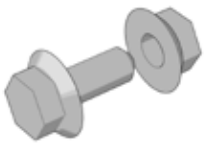
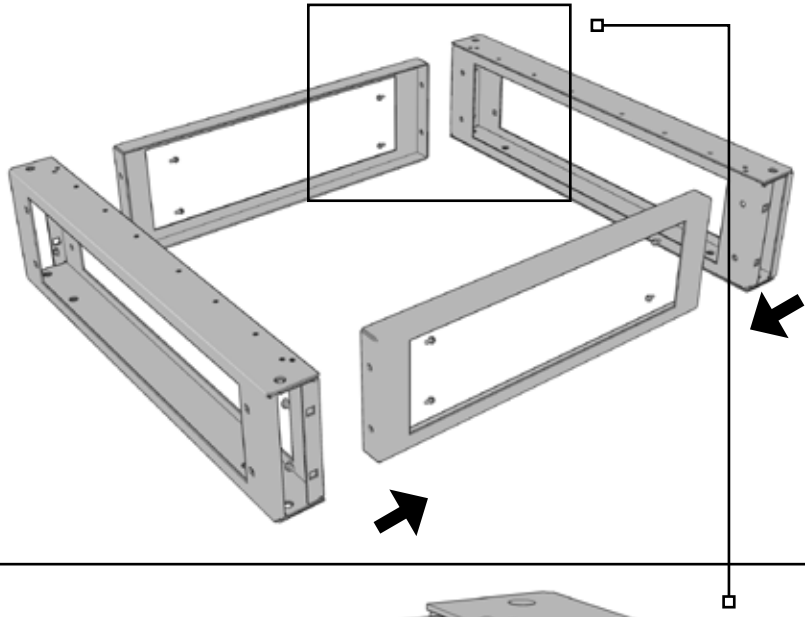
front reinforced cover



13a.Base assembly

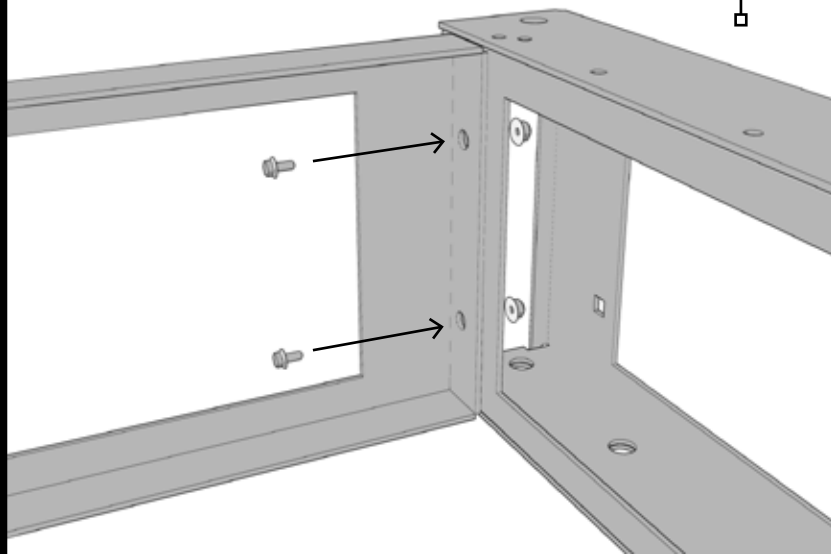


1 exploded side and front socket

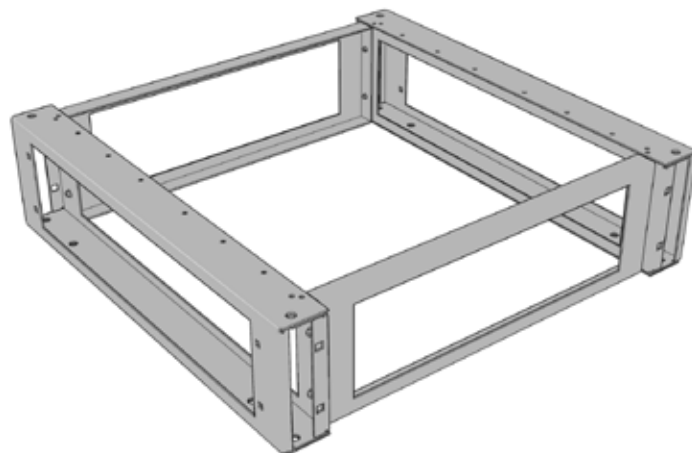


8 pcs SCREW 8MA L16 8 pcs NUT 8MA

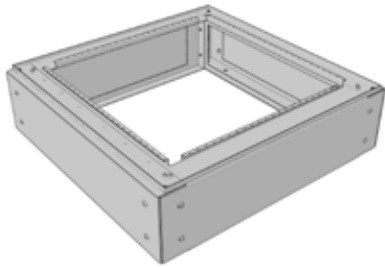
2 zoom of screws and nuts



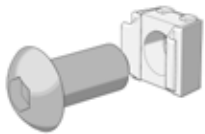
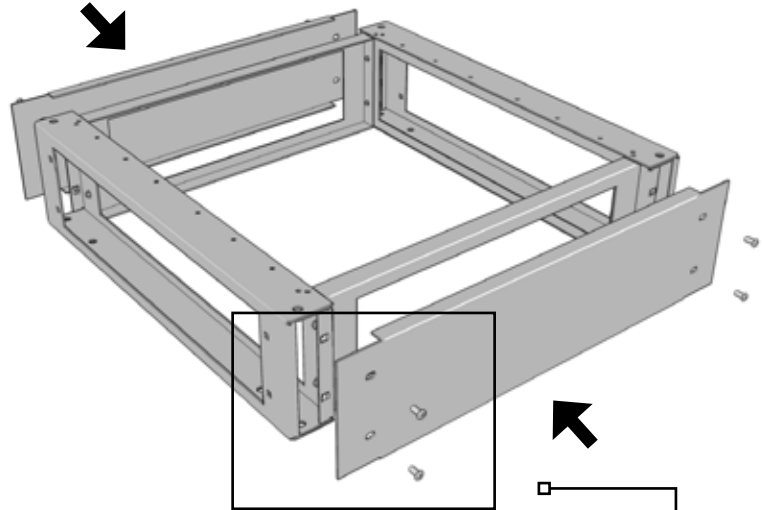
3 assembled side and front socket



13b.Base assembly



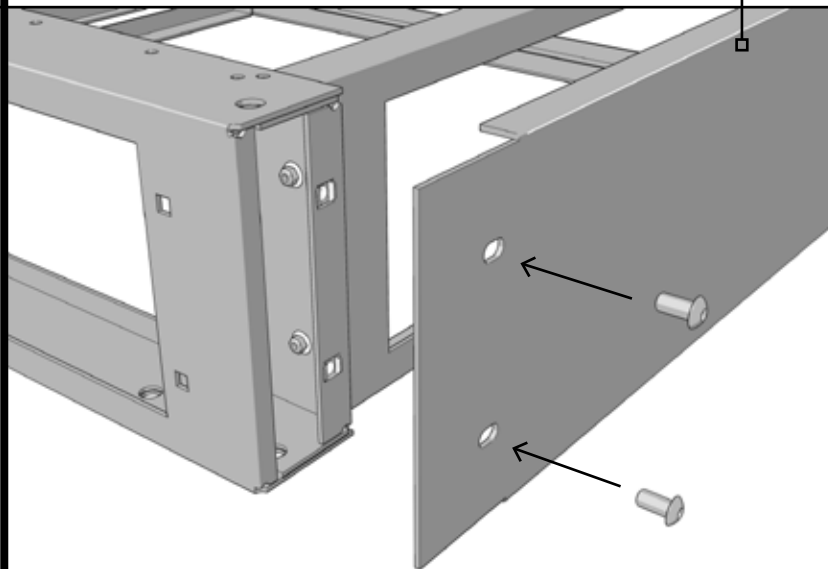
4 exploded front and back reinforced cover



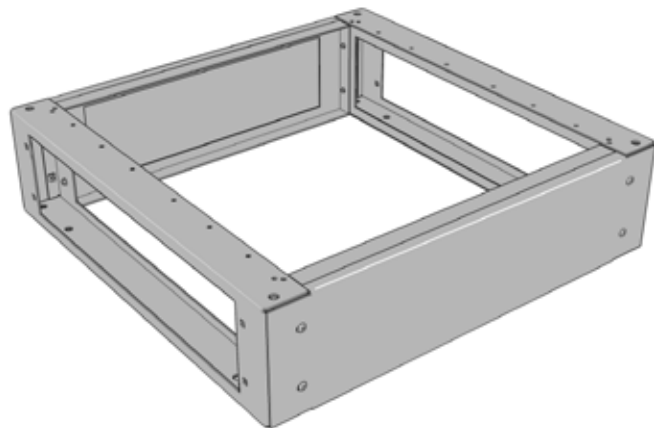
8 pcs
SCREW 8MA L16

8 pcs
NUT 8MA

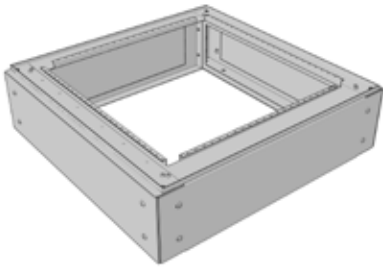
5 zoom of screws and nuts



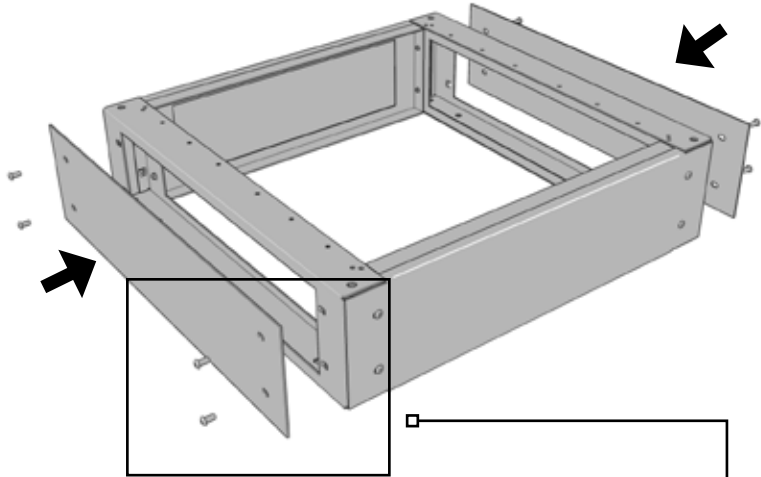
6 assembled front and back reinforced cover



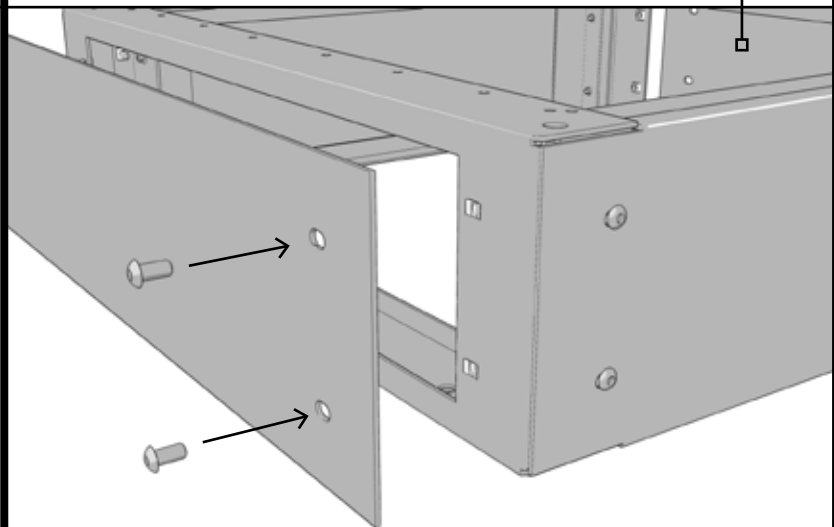
13c.Base assembly



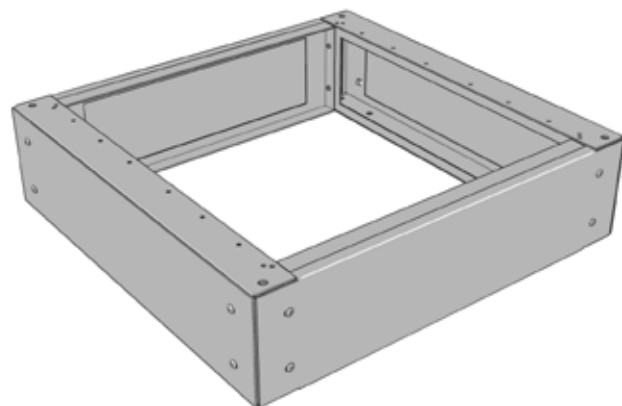
7 exploded side cover

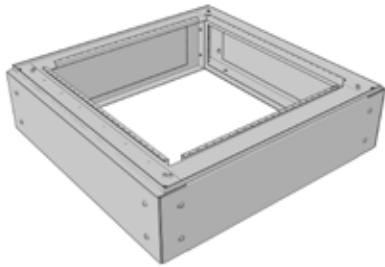


8 zoom of screws and nuts

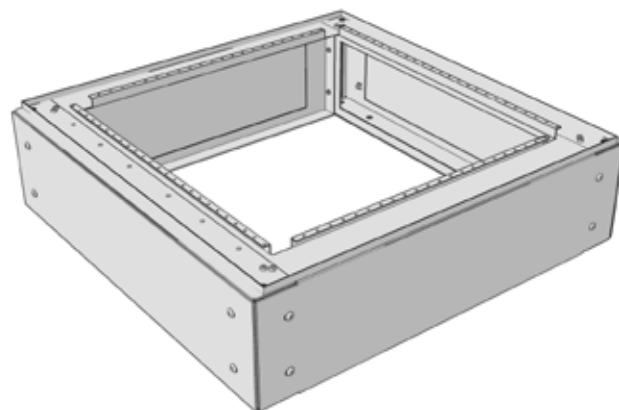
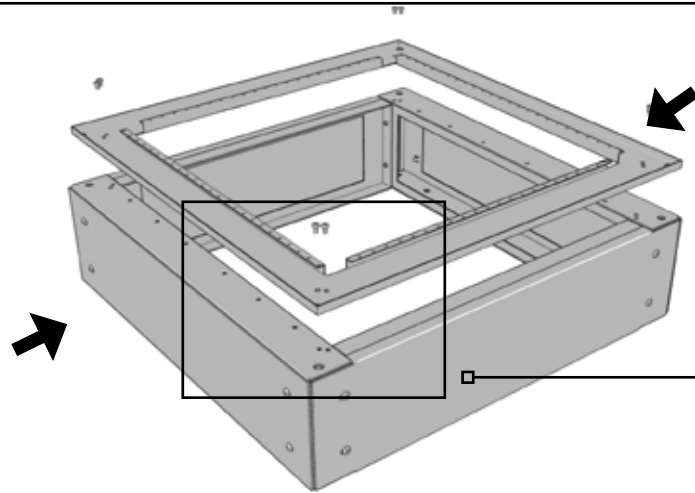


9 assembled side cover



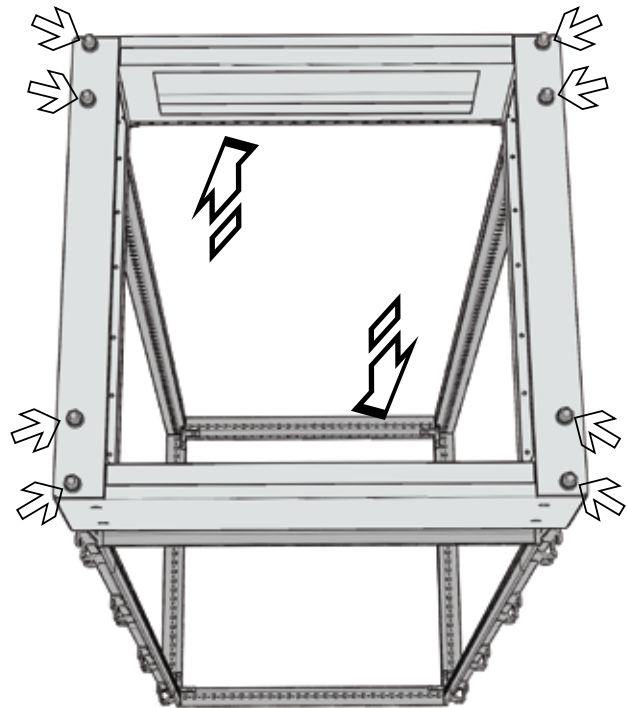
13d.Base assembly**7** exploded horizontal plate

8 pcs
SCREW 6MA L16

8 zoom of screws and nuts**9** assembled horizontal plate

14.Base - Fixing on the Ground

axonomic view from bottom



↗
on-ground
fixing point

8x

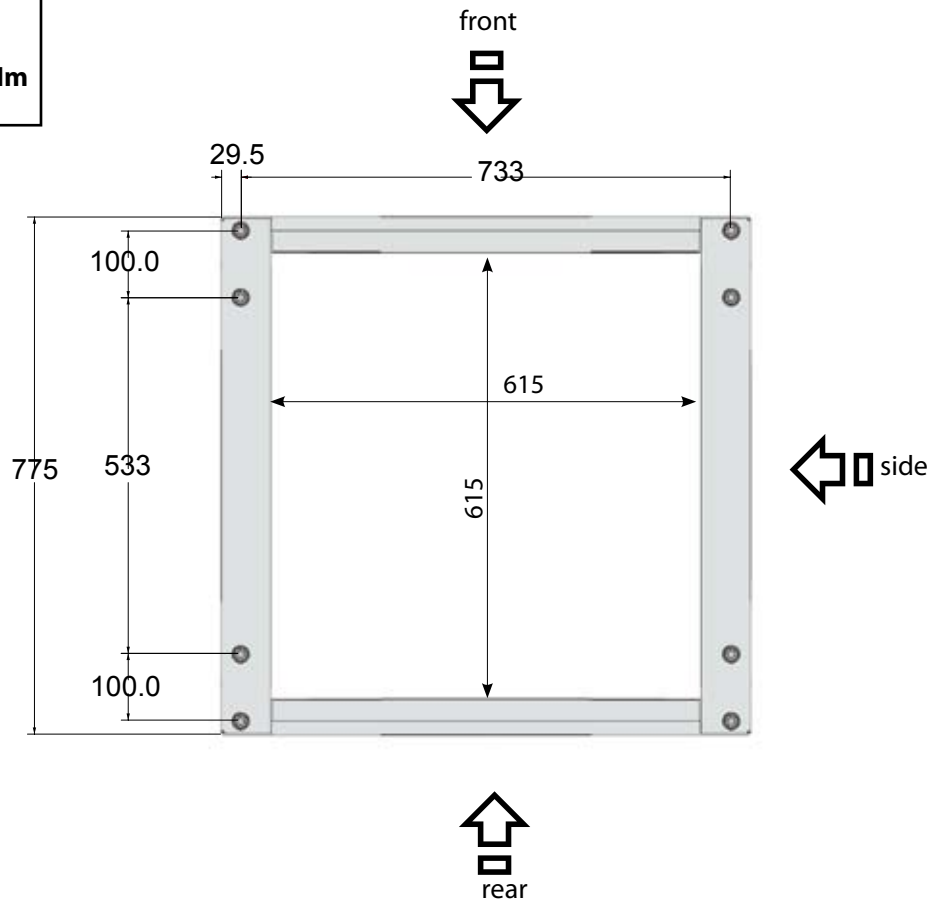
washer M12

spring lock washers M12

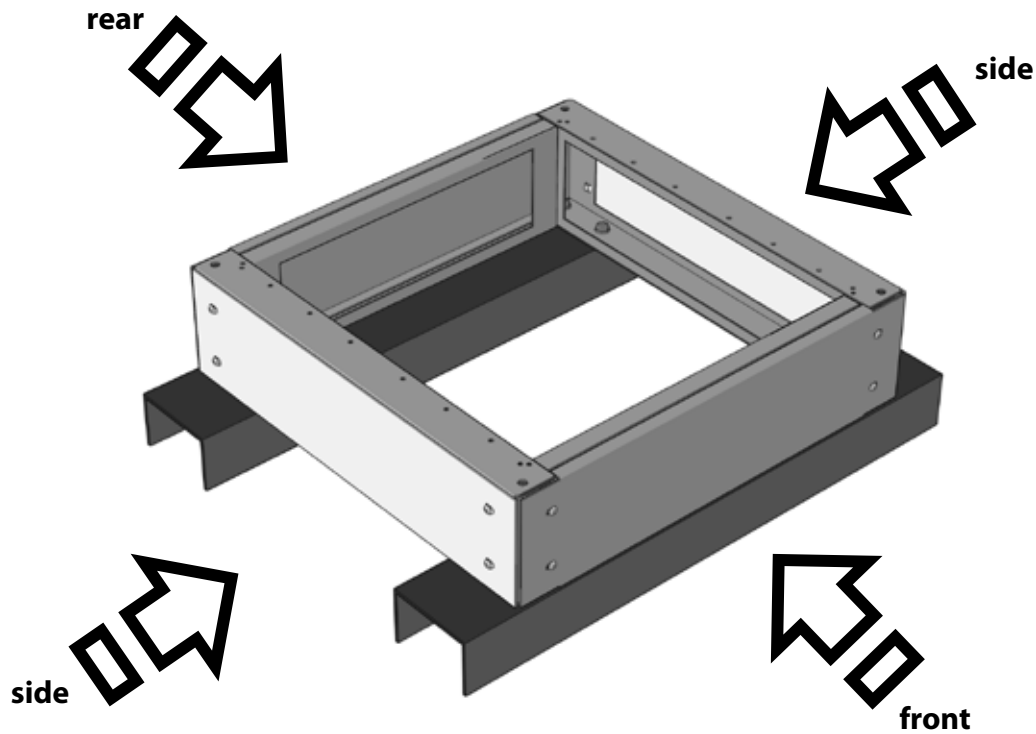
hexagon head screw M12 H40

hexagon nuts, blue zinc plated M12

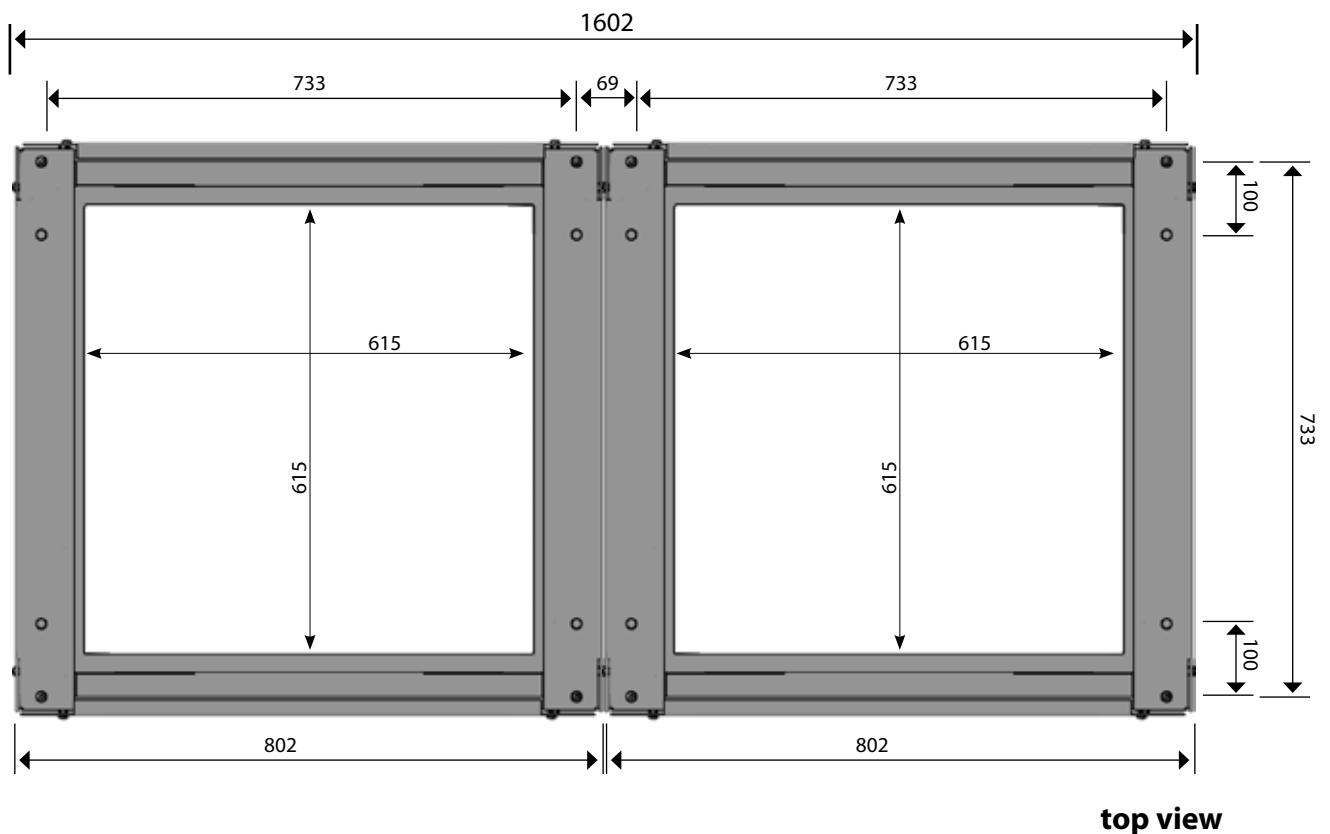
Tightening Strength: 100Nm



14.Base - Fixing on the Ground



11.Base - Fixing on the Ground two coupled cabinet



top view