



TECHNICAL FILE

EVO® GUARDRAIL WITH Z-SHAPED
BRACKET FOR PARAPET

EN ISO 14122-3
NF E85-015 : 2019



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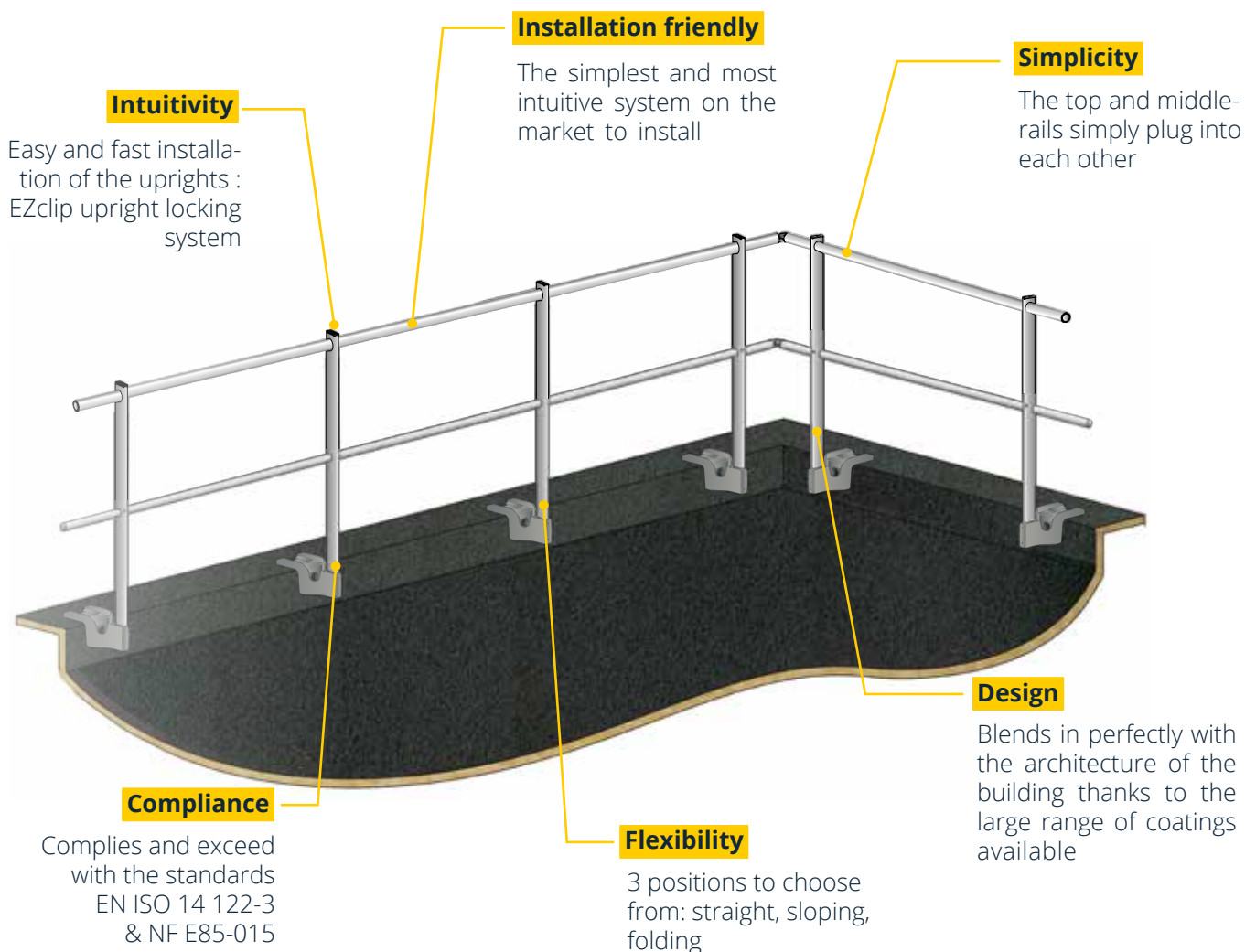
Guardrail with Z-shaped bracket for parapet

EVO®

PRODUCT DEFINITION

The EVO® guardrail for parapet with covering fixture and Z-shaped fixing brackets is a collective fall protection system designed to protect roof terraces not accessible to the public, when you need to have a fixing on parapet. The fixing bracket is placed under the waterproofing fixture allowing the installation of the waterproofing complex easily.

Where there is insulation, we offer This model of guardrail in 4 different lengths for insulated acroteria: 70, 100, 130 and 160. This can be used when there is an overhang on the acroterion (roof cap).





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STANDARDS

- A guardrail must be installed as soon as the possible height of fall is higher than 500 mm.
- The guardrail handrail height must be comprising between 1000 and 1100 mm above the walking area.
- The distance between the handrail and kneerail, as well as between the kneerail and the toeboard must be less than or equal to 500 mm.

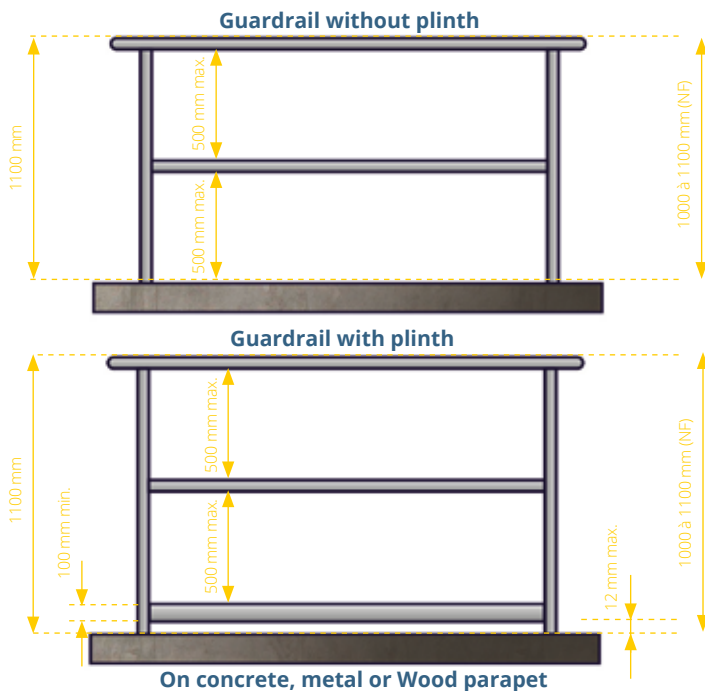
- This space will be reduced to a maximum of 340 mm between the top rail and the middle rail and between the middle rail and the skirting board when the guardrail is installed at the bottom of a slope greater than 15°.

- A toeboard of 100 mm height minimum must be installed at 12 mm maximum from the walking area and the side of the platform.

- The distance between the axes of the uprights should be limited to a maximum of 1500 mm. However, if this distance is greater, particular attention should be paid to the strength of the anchoring of the uprights and fixing devices: consult our design office.

- If the handrail is interrupted, the free space between two segments of the handrail should be between 75 mm and 120 mm. If there is a larger opening, a gate to ensure the continuity of the fall protection of the guardrail must be installed.

- Foldable: A lifeline must be installed before the foldable guardrail is mounted. This will also be used during installation and handling.



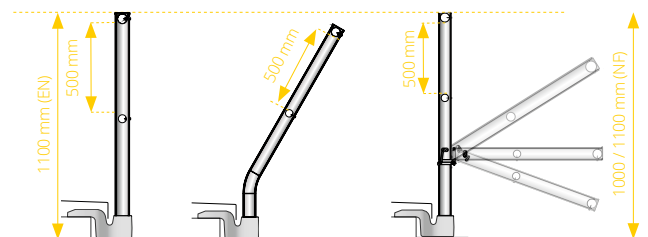
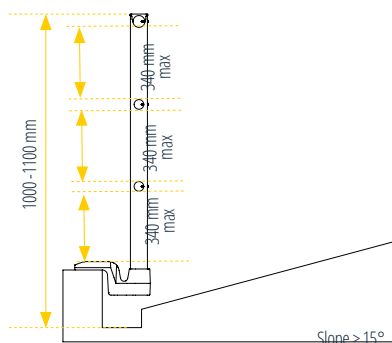
REGULATION

The EVO® freestanding guardrail complies with the standard EN ISO 14122-3 of March 2017, machines safety - permanent access means to machines – part 3: staircases, step ladders, guardrails – Permanent means of access.

The EVO® freestanding guardrail passed with success the static and dynamic tests required by the standards EN ISO 14122-3.

DIMENSIONS

NF : French standard NF E85-015 / EN : European Standard EN ISO 14122-3



1 Straight **2** Inclined **3** Folding



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USE & MAINTENANCE INSTRUCTIONS

- EVO® guardrail is a mean of permanent collective protection which must be used by professionals on flat roofs not accessible to the public.
- It is the installer's responsibility to ensure that the support structure can receive the Z-fixing bracket. For example, for a concrete acroterion, a tear-off test is required. For other supports, validation is carried out by calculation and/or test.
- The person performing the installation of EVO® guardrail must be a qualified person and must observe the common rules on working at heights. It must thus ensure his own security (use of a temporary lifeline, PPE, aerial lift, etc).
- Before any use, user must ensure by visual inspection that EVO® guardrail shows no anomaly (shock, distortion, etc.).
- The EVO® guardrail does not require any particular maintenance, however, a visual inspection must be carried out at least once a year by a qualified person.
- If the guardrail EVO® is improperly installed, damaged or has been used to arrest a fall, its use must be stopped immediately and it must not be used until a qualified person has authorized in writing its reuse after examination and verification.
- If the product is sold outside the first country of destination, it is essential for the safety of the user that the reseller provides the instructions of use in the language of the country of the product use. These documents can be provided upon request by contacting the manufacturer.

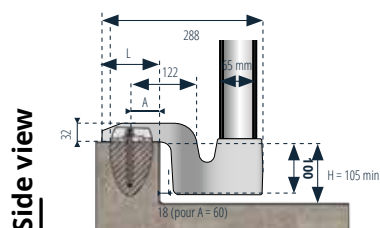
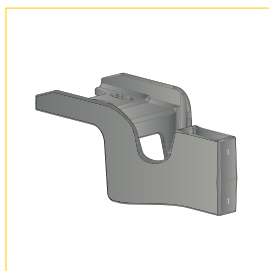
- The use of a EVO® toeboard is mandatory if the terrace does not have any parapet or if it is less than 100 mm height.
- If EVO® guardrail is installed in a polluted industrial environment, petrochemical, maritime or on seaside, it is compulsory to make a surface treatment appropriated type powder coating, anodizing, etc.
- To ensure that the installation is compliant, it must be carried out according to a layout plan produced by our configurator or our design office.
- If you have been supplied with a layout plan, please refer to it during installation.
- If there is no layout plan, please observe the 1500 mm centre-to-centre distance between each upright and the position of the uprights in relation to the corners of the terraces.
- Each straight section must have a minimum of 3 uprights.

STORAGE

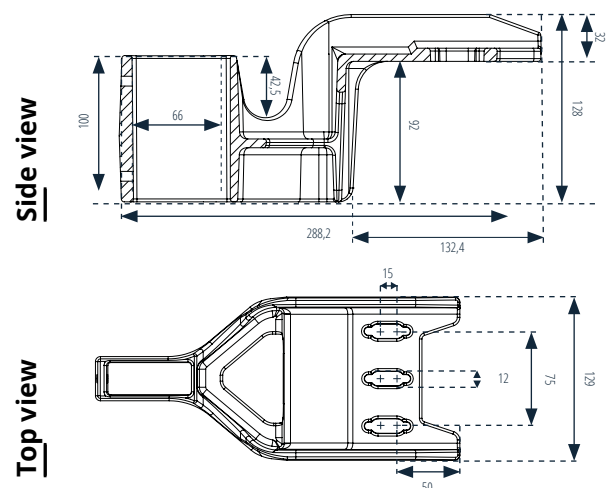
Raw aluminum components are packaged in contact with each other. The action of the rain on the unopened package will facilitate the oxidation of these components. Surface stains may occur. They do not degrade the quality of aluminum but can spoil the appearance of the railings. We recommend you to unpack the package and to store the components separated from each other (no contact between them), or to store the packages still packed in a dry place.

STANDARD Z-FIXING BRACKET ALU

For non-insulated parapet



Fixing with 1 or 2 M10 anchors depending on parapet and upright height





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HYBRIDE Z-FIXING BRACKET ALU

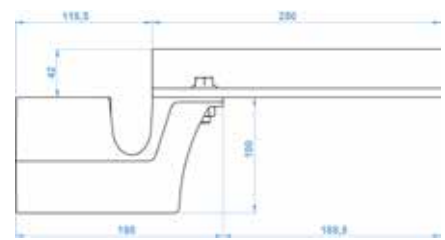
For insulated parapet up to 70mm



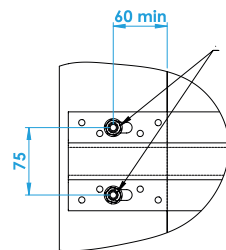
Side view



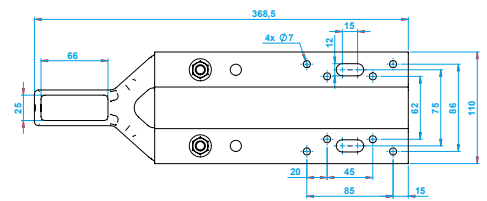
Side view



2x M10 plugs



Top view



HYBRIDE Z-FIXING BRACKET ALU

For insulated parapet up to 100 mm



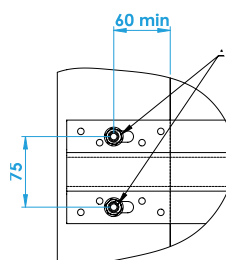
Side view



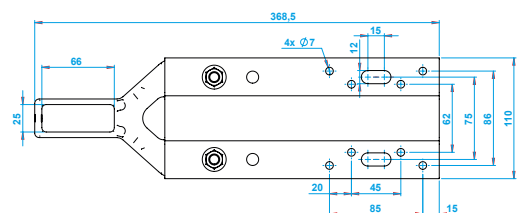
Side view



2x M10 plugs



Top view





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Guardrail with Z-shaped bracket for parapet

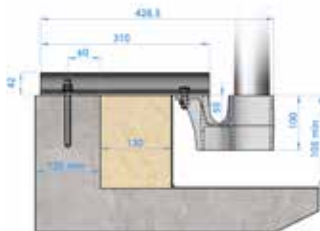
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HYBRIDE Z-FIXING BRACKET ALU

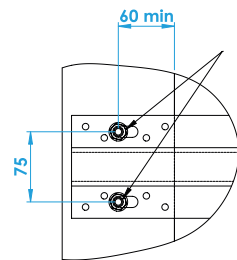
For insulated parapet up to 130 mm



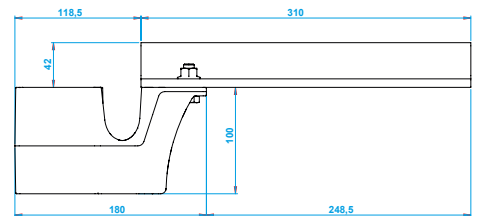
Side view



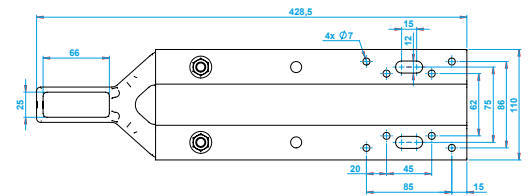
2x M10 plugs



Side view



Top view

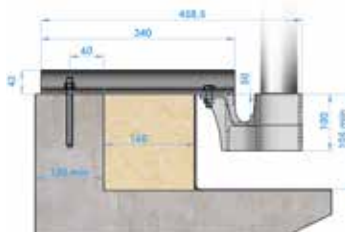


HYBRIDE Z-FIXING BRACKET ALU

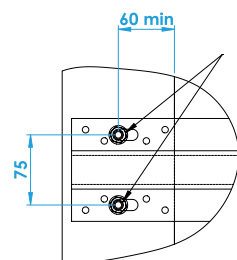
For insulated parapet up to 160 mm



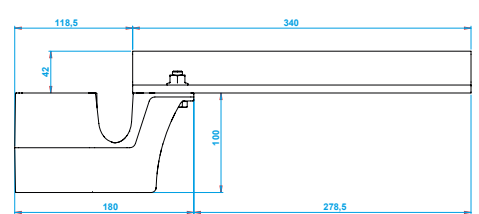
Side view



2x M10 plugs



Side view



Top view





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FIXINGS

It is imperative to respect the distances to the edge recommended by the fasteners suppliers.

Possible fixing on 2 types of support:

- On concrete with 1 or 2 bolts
- On concrete with insulation: 3 models up to 160 mm of insulating material

On concrete parapet

Parapet height (in mm)	Estimated load value (in DaN) per plug:	
	1 plug	2 plugs
100	1350	675
200	1215	607.5
220	1188	594
300	1080	640
400	945	472.5
500	810	405
550	742.5	371.25
600	675	337.5
700	540	270
800	405	202.5
900	270	135

On metal parapet

Parapet height (in mm)	Estimated load value (in DaN) per screw:	
	6 screws (self-drilling or wood)	8 screws (self-drilling or wood)
100	225	168.75
200	202.5	151.875
220	198	148.5
300	180	135
400	157.5	118.125
500	135	101.25
550	123.75	92.8125
600	112.5	84.375
700	90	67.5
800	67.5	50.625
900	45	33.75

Recommendation M10 plug:

- Not recommended
- Possible for chemical, not recommended for mechanical use
- Mechanical or chemical fixing

Recommendation given as an indication, subject to validation by the plug manufacturer:

- concrete parapet C20/25, L=115 mm width,
- A > 50 mm for chemical fixing
- and A > 57 mm for mechanical fixing

On concrete parapet with offset

CAUTION: It is imperative to respect a 60 mm distance from edge in relation to parapet dimension and not cap dimension. WV813000 Z-shaped support is not adapted to the configuration opposite, in this case, use the WV813070 one.

On steel parapet with self-drilling screws

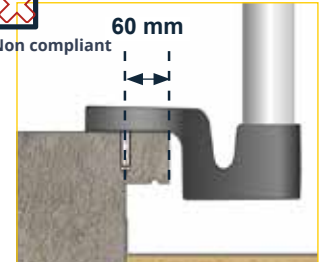
Fixings on a metal structure with 6 or 8 self-drilling screws. In order to determine efforts and feasibility according to the support as well as the fastenings supplier validation, please ask for a prior study by the research department.

On wood parapet with sleeper screws

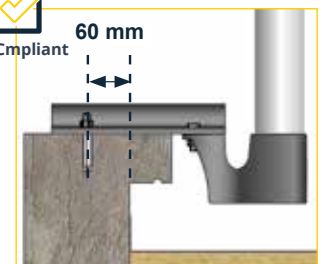
Possible fixing with 2 or 3 M10 lag screws. Please consult our research department to determine the feasibility as well as the efforts linked with the type of support. It is also necessary to obtain an instruction and a validation from the fastenings supplier.



Non compliant



Compliant



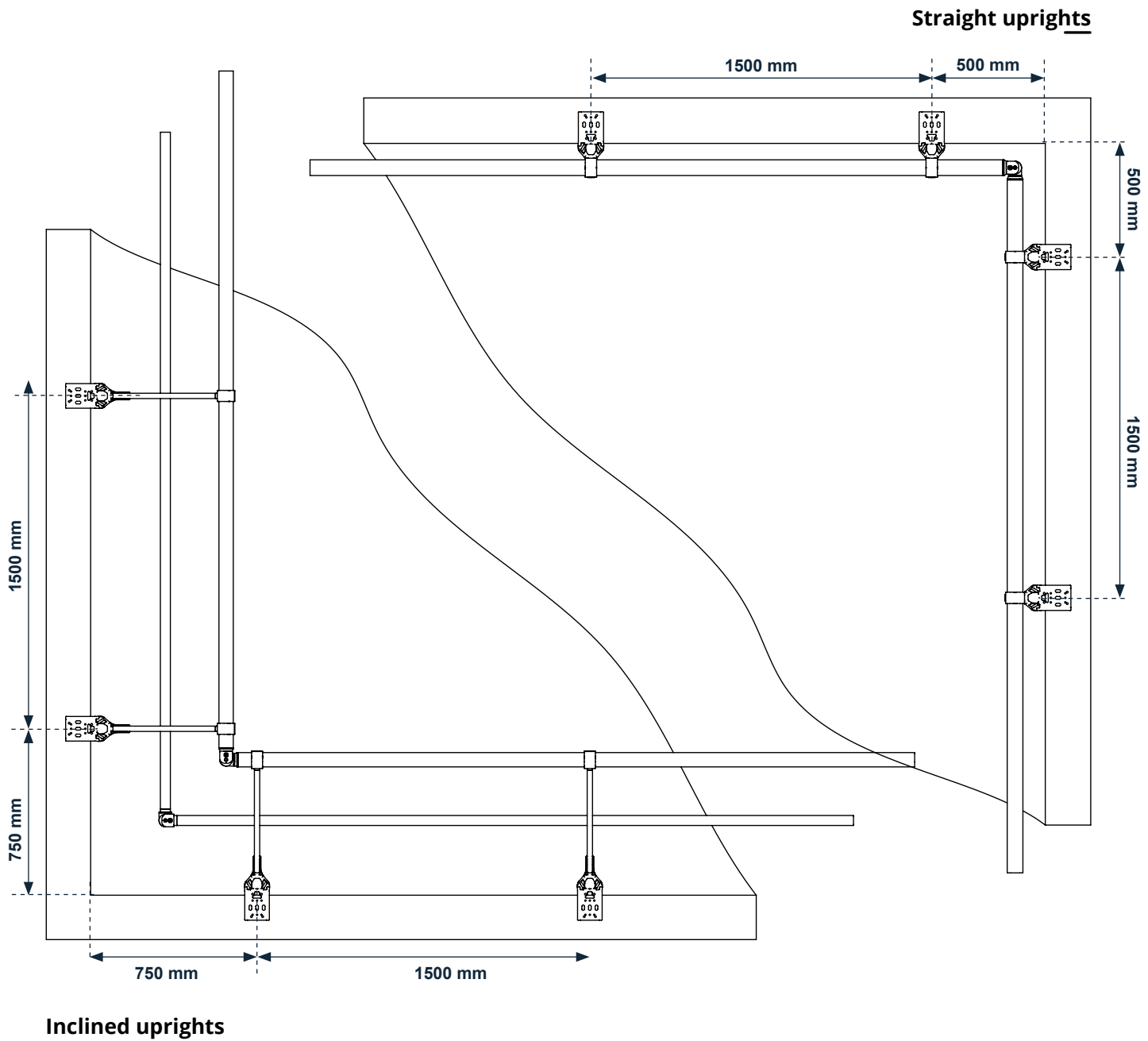


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IMPLEMENTATION GUARDRAIL Z-SHAPED FIXING BRACKET

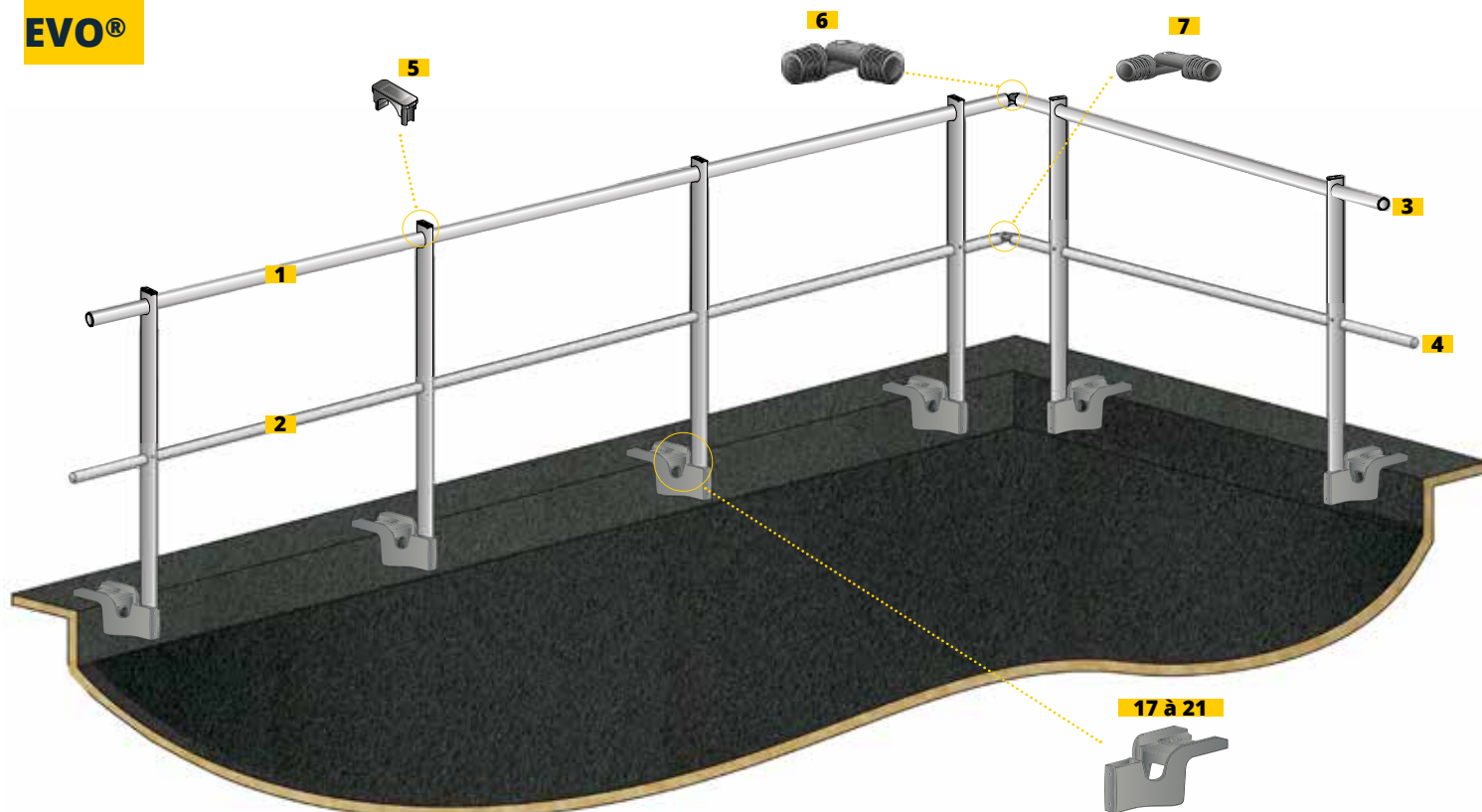




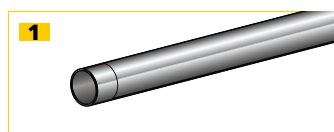
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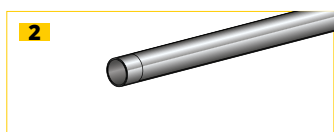
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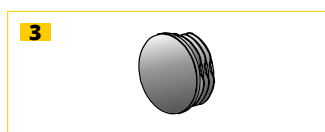
GENERAL COMPONENTS



1
Shrunken rail Ø45 mm
WW830450
Lenght 3000 mm



2
Shrunken middle-rail Ø35 mm
WW830350
Lenght 3000 mm



3
Rail cap Ø45 mm
WW830451



4
Middle-rail cap Ø35 mm
WW830351



5
EZclip plastic cap
WW820000



6
Rail angle Ø45 mm
WW830450



7
Middle-rail angle Ø35 mm
WW830352



8
Aluminium middle-rail angle Ø35 and 45 mm - WW830453



9
Wall fixing bracket for rail Ø45 mm - WW830454



10
Wall fixing bracket for middle-rail Ø35 mm
WW830354



11
Wall fixing aluminium bracket for rail and middle-rail
WW830455



12
Straight upright



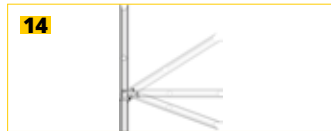
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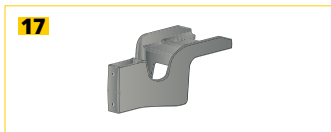


13
Folding upright



14
Folding upright

BRACKETS COMPONENTS



17
ALU Z-shaped fixing bracket without waterproofing - WW813000



18
ALU Z-shaped fixing bracket waterproofing <70mm WW813070



19
ALU Z-shaped fixing bracket waterproofing <100mm WW813100



20
ALU Z-shaped fixing bracket waterproofing <130mm WW813130



21
ALU Z-shaped fixing bracket waterproofing <160mm WW813160

FIXING COMPONENTS



22
Stainless steel self-drilling screw 4.8x16 TH ZOSYSBVHF48016



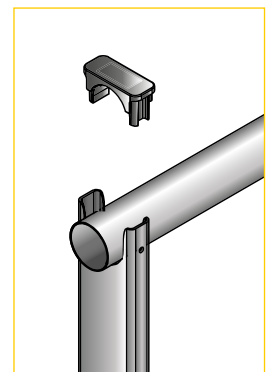
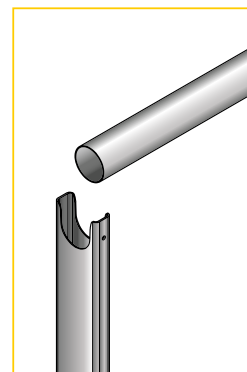
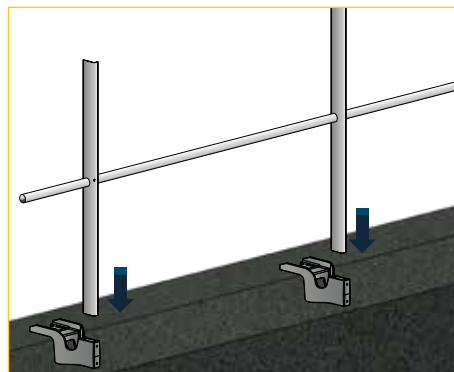
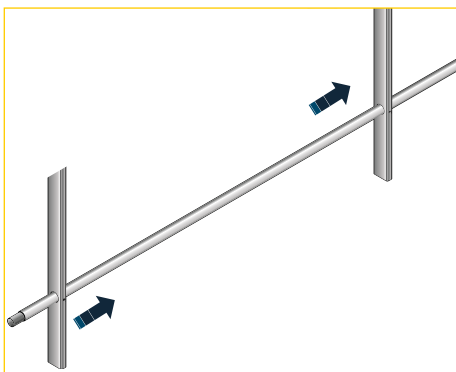
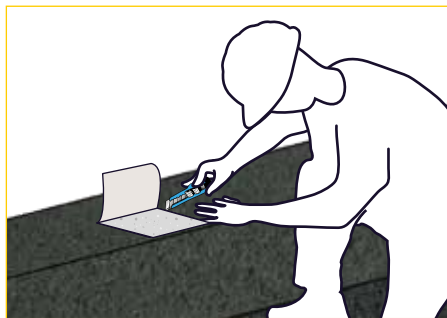
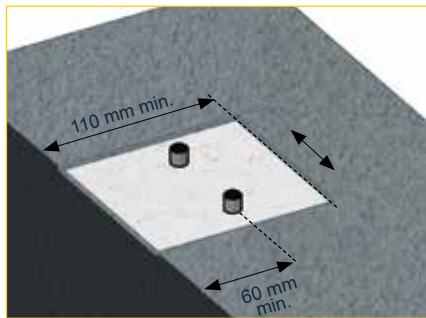
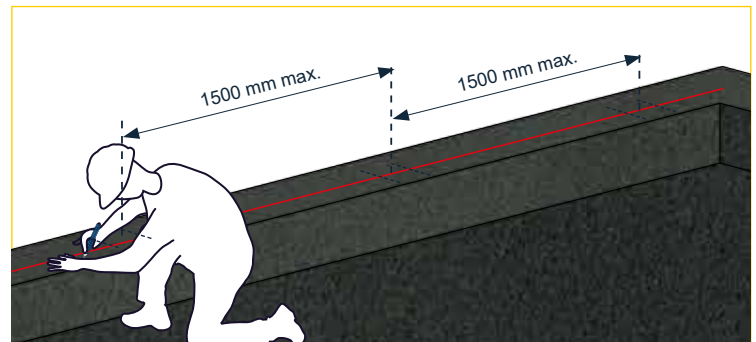
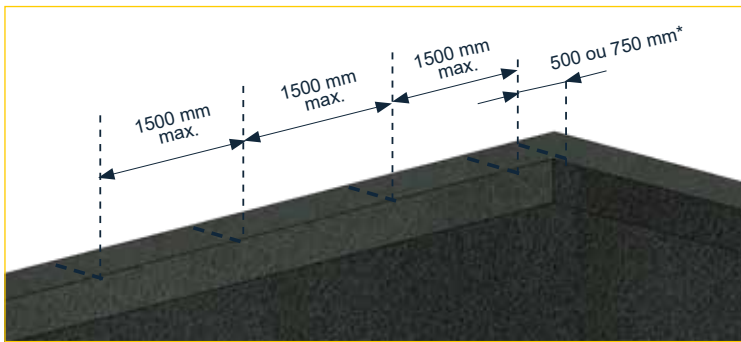
23
Stainless steel self-drilling screw 4.8x25 TH ZOSYSBVHF48025



24
STHC M08x10i DINI913 Screw ZOSYSBVI5ST002



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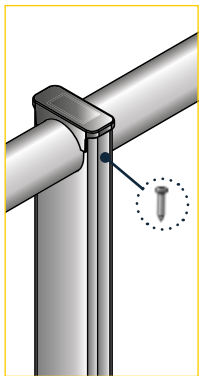


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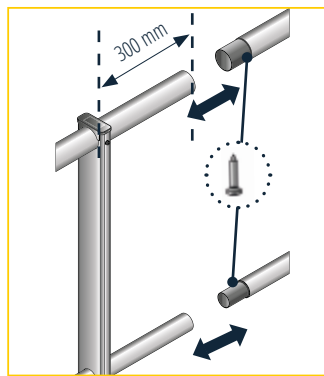
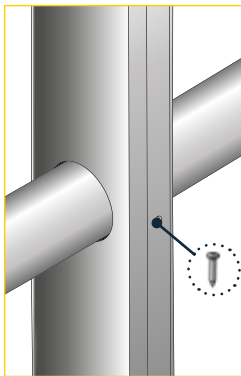
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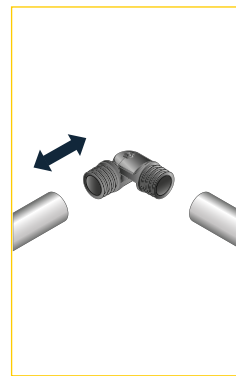
INSTALLATION



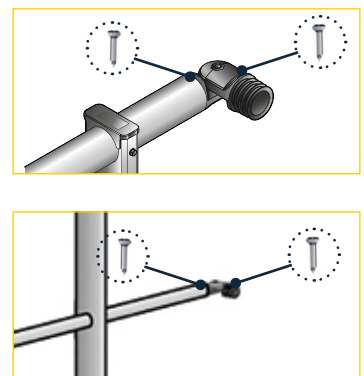
9 - Tighten self-drilling screws 4,8 x 25 on upright, where rail and middle rail are positioned



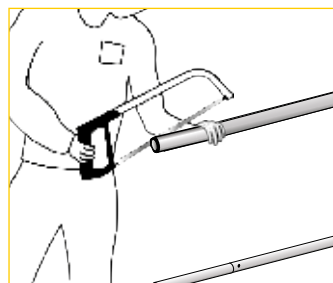
10 - Plug together rails and middle rails and fix them with 4,8x16 screws.



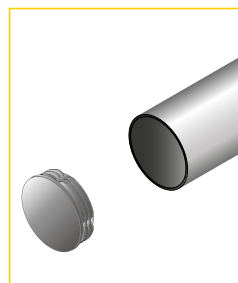
11 - Clip rail and middle rail angles.



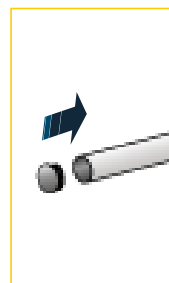
12 - Tighten angles with self-drilling screws 4,8 x 25



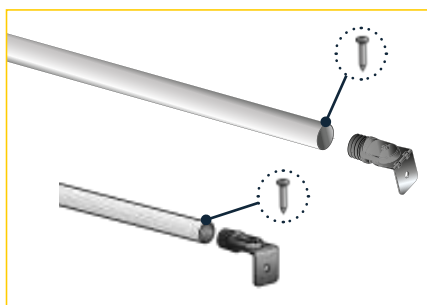
13 - Adjust last section by sawing swagged extra



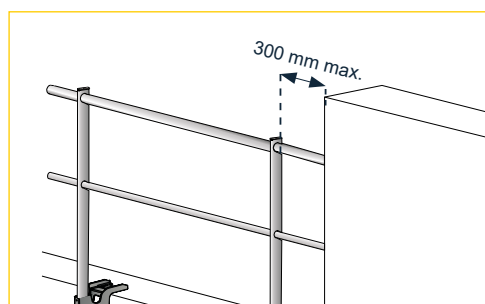
14 - Clip caps and wall brackets to rails and middle rails



INSTALLATION: WALL END-BRACKETS



1 - Fix wall brackets using self-drilling 4.8 x 25 screws



2 - Observe the maximum distance of 300 mm between the upright and the wall. 1 - Fix wall brackets using self-drilling 4.8 x 25 screws