



TECHNICAL FILE

FREESTANDING
EVO®

EN ISO 14 122-3



DELTAPLUS



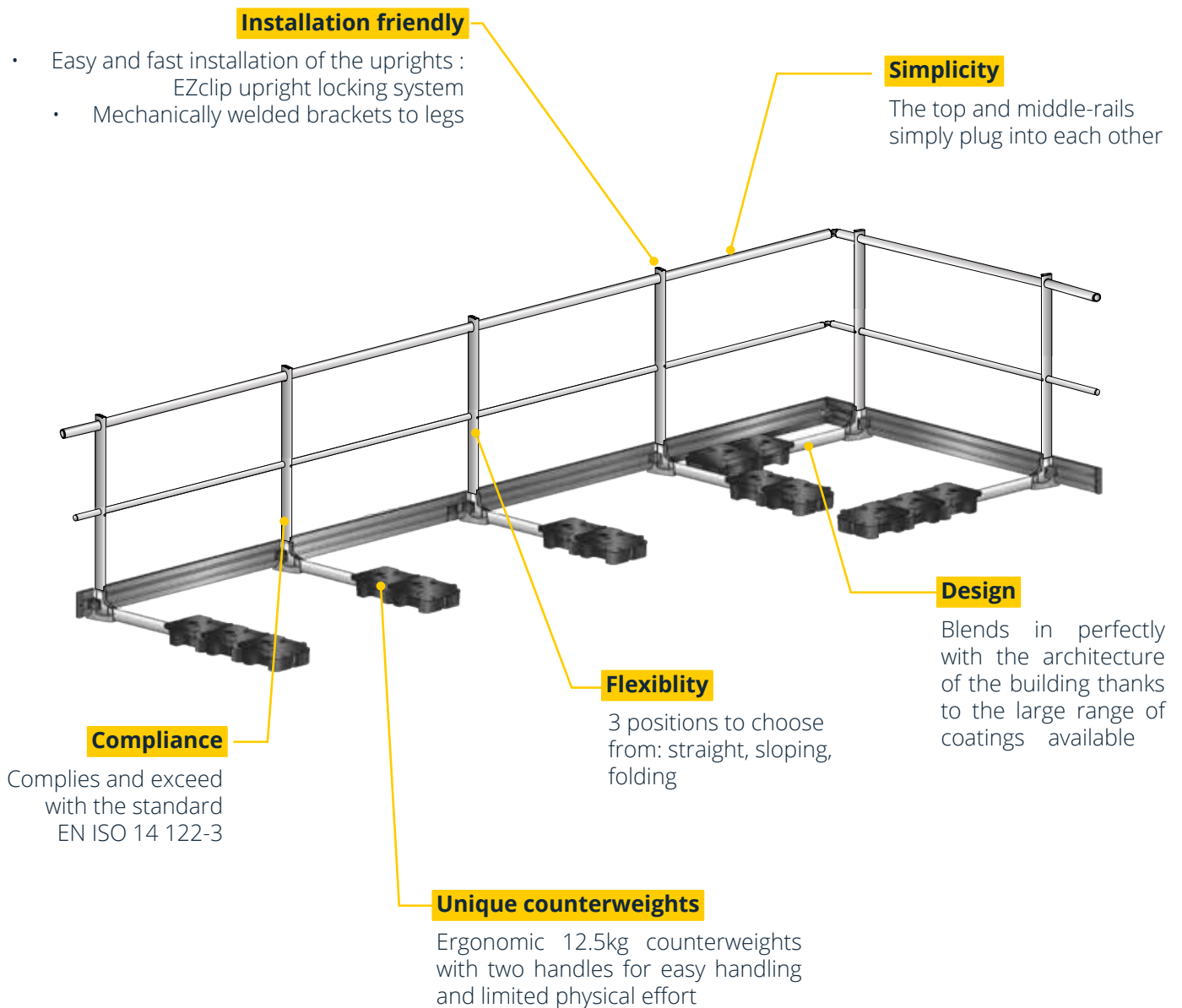
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Freestanding guardrail

EVO®

PRODUCT DEFINITION

The EVO® freestanding guardrail is a collective fall protection system designed to protect roof terraces not accessible to the public, when it is technically impossible to fix it either to the parapet or to the concrete slab. It avoids any drilling in the roof, thus preserving the waterproofing. Their design allows for quick and easy installation thanks to the rails that simply plug into each other with their shrunk ends.





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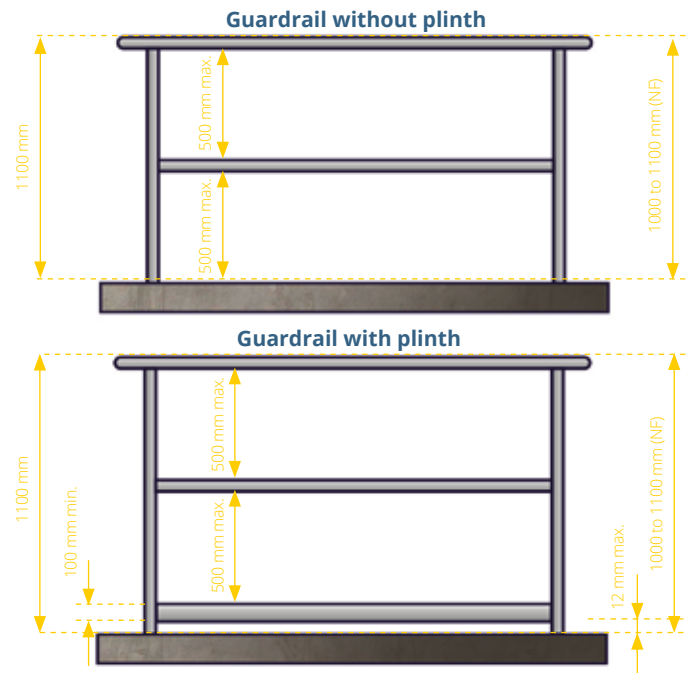
REGULATION

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.

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.
- A toeboard of 100 mm height minimum must be installed at 12 mm maximum from the walking area and the side of the platform.
- 3 counterweights must be installed (37.5 kg) on each support leg located at the end, for every section ending with a plug.
- The implementation of EVO® freestanding guardrail necessarily implies the existence of a parapet wall on the terrace roof, to avoid any risk of tipping over; Otherwise, contact 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.
- Freestanding guardrail must not be installed on a slope greater than 15°.



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

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

INSTALLATION AND WIND ZONES

The EVO® freestanding guardrail (2 counterweights on each support leg and 3 counterweights per support leg at the ends) is compatible with wind zone 1 (protected, normal and exposed site), zone 2 (protected and normal site) and zone 3 (protected and normal site), that is to say, by way of indication, a maximum speed of 166 km/h*. Any other configuration requires special precautions (addition of counterweights) that must be previously studied and validated by our design office. The responsibility of Delta Plus Systems can not be committed for any installation not respecting these recommendations.

*References: Compliance standard NV 65 (DTU P 06-002) and Eurocode1 EN1991-1-4.

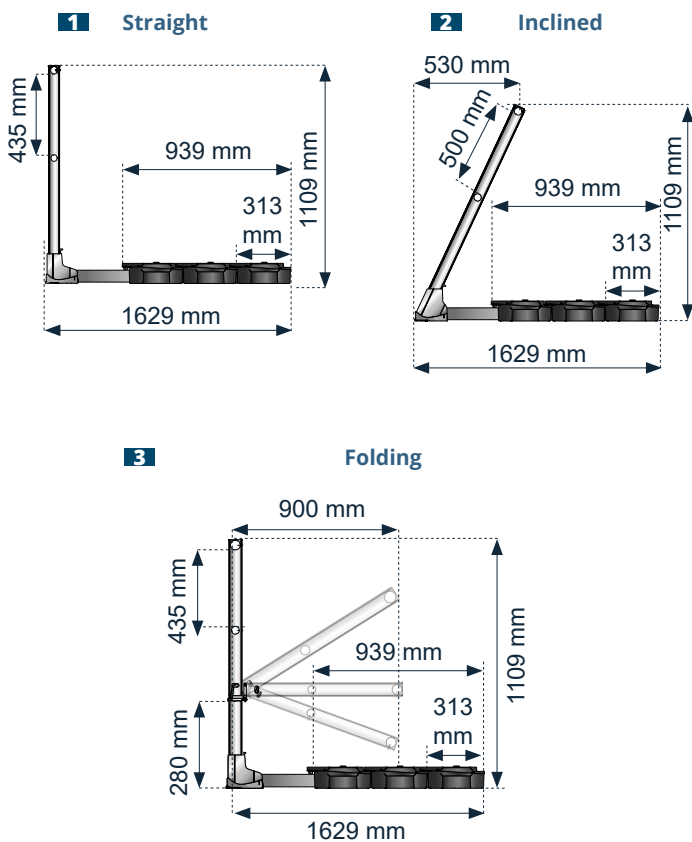


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DIMENSIONS



TECHNICAL FEATURES

- Material: aluminium
- Finish: raw or powder coated (ral colours) on request
- Round rail Ø45 and round kneerail Ø35
- Contact pressure : 0,026 DaN / Cm²
- Available in the following versions: straight, inclined & folding
- Compliance : European Standard EN ISO 14122-3 March 2017

UNIQUE COUNTERWEIGHTS

In order to prevent musculoskeletal disorders, our R&D department has designed a unique counterweight on the market with a lighter weight of 12.5 kg .

Ergonomically designed, it comes with two handles that make it easy to hold while taking care of the user's spine.

The load is thus divided by two, making it easier to use and grip.

The centre of gravity is also located as close as possible to the operator's body.



FREESTANDING FIXING SUPPORTS



1 Fixing support with plastic clip-on base and mechanically welded bracket to leg dedicated to freestanding straight and folding guardrails



2 25° Fixing support with plastic clip-on base and mechanically welded bracket to leg dedicated to freestanding inclined guardrail



Fixing of the upright into the fixing support thanks to a locking pin



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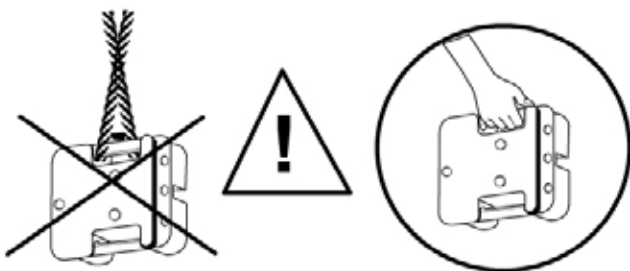
INSTALLATION INSTRUCTIONS

- Maximum distance between uprights: 1500 mm
- Installation with self-drilling screws supplied
- 20 mm parapet or abutment required for any installation of the EVO® self-supporting guardrail
- Before installing a freestanding guardrail, it is essential to check the capacity of the waterproofing complex to withstand contact pressure. In the case of the EVO freestanding guardrail, the contact pressure is 0.026 DaN / Cm².
- Mandatory toeboard if parapet ≤ 100 mm
- Maximum slope of 15° / 27%.

USE & MAINTENANCE INSTRUCTIONS

- Before use, please refer to the technical instructions supplied with the product and available on request
- Aluminium product storage: it is important to store the packages in a sheltered and dry place
- Before installing folding guardrails, the installation of a Delta Plus Systems lifeline is mandatory to secure the workers
- It is prohibited to use handles to lift the counterweights on the roof.

Warning: before use please refer to the technical manual



INTERDICTION d'utiliser les poignées du plot pour le levage sur toiture

- 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
- EVO® guardrail is a mean of permanent collective protection which must be used by professionals on flat roofs not accessible to the public
- 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.

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.

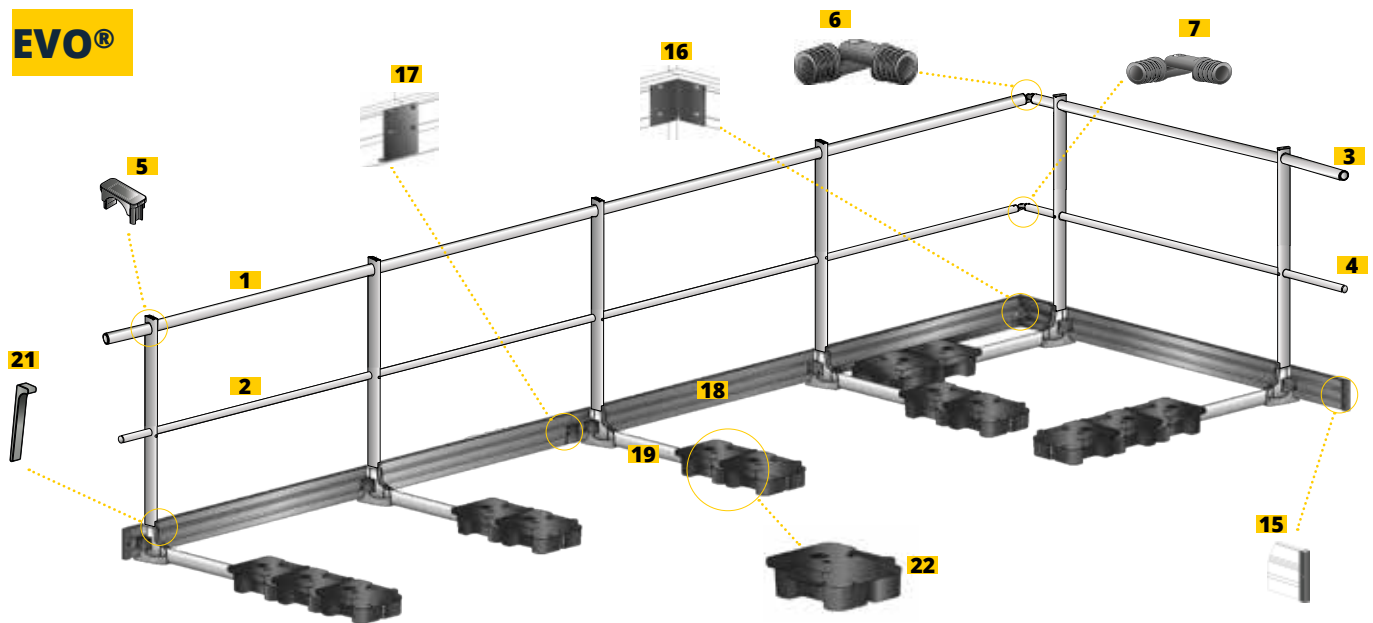
We recommend you to unpack the package and to store the components separated from each other (no contact between them), or to store the packages still packed in a dry place.



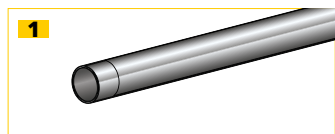
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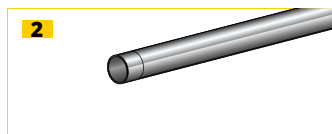
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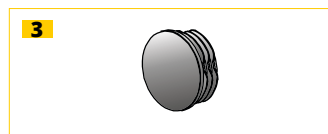
GENERAL COMPONENTS



1
Shrunk rail Ø45 mm
WV830450
Lenght 3000 mm



2
Shrunk middle-rail Ø35 mm
WV830350
Lenght 3000 mm



3
Rail cap Ø45 mm
WV830451



4
Middle-rail cap Ø35 mm
WV830351



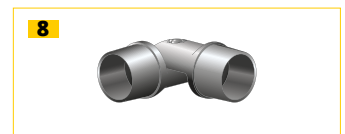
5
EZclip plastic cap
WV820000



6
Rail angle Ø45 mm
WV830450



7
Middle-rail angle Ø35 mm
WV830352



8
Aluminium middle-rail angle Ø35 an 45 mm - WV830453



9
Wall fixing bracket for rail Ø45 mm - WV830454



10
Wall fixing bracket for middle-rail Ø35 mm
WV830354



11
Wall fixing aluminium bracket for rail and middle-rail
WV830455



12
Straight upright
H : 1105 and 1182 mm



13
Folding upright
H : 1105 - aluminium joint
WV8201105F



14
Folding upright
H : 1010 - aluminium joint
WV8201010F



15
Cap for toeboard
H : 150 mm
WV840001



16
Angle kits for toeboard (interior/exterior)
H : 150 mm
WV840003



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17
Toeboard straight connector
H : 150 mm
WV840005



18
Toeboard
L : 3000 x 150 x 9 mm
WV840000

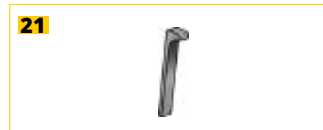
COMPONENTS: FIXING SUPPORTS



19
Straigh leg
dedicated to freestanding straight and folding guardrails
WV817002



20
25° leg
dedicated to freestanding inclined guardrail
WV817003



21
Locking pin
WV817001



22
12.5 kg concrete counterweight
WV817000

COMPONENTS: FIXINGS



23
Stainless steel self-drilling screw 4.8x16 TH
ZOSYSBVHF48016



24
Stainless steel self-drilling screw 4.8x25 TH
ZOSYSBVHF48025



25
Stainless steel self-drilling screw TH
ZOSYSBVHF48050



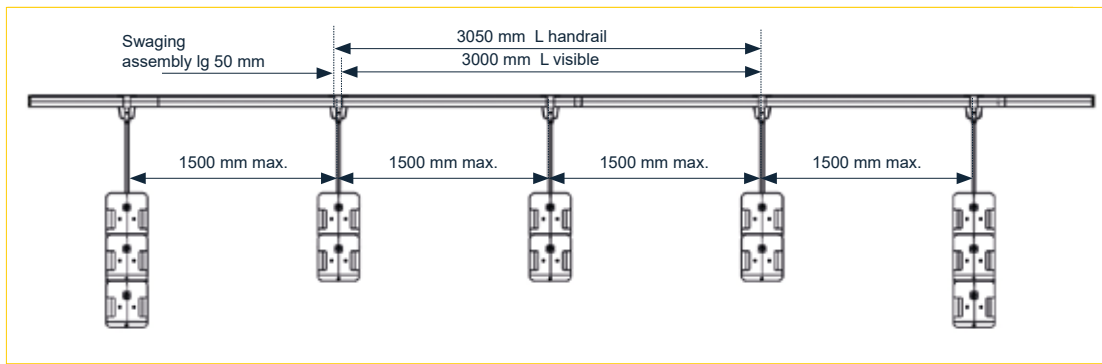
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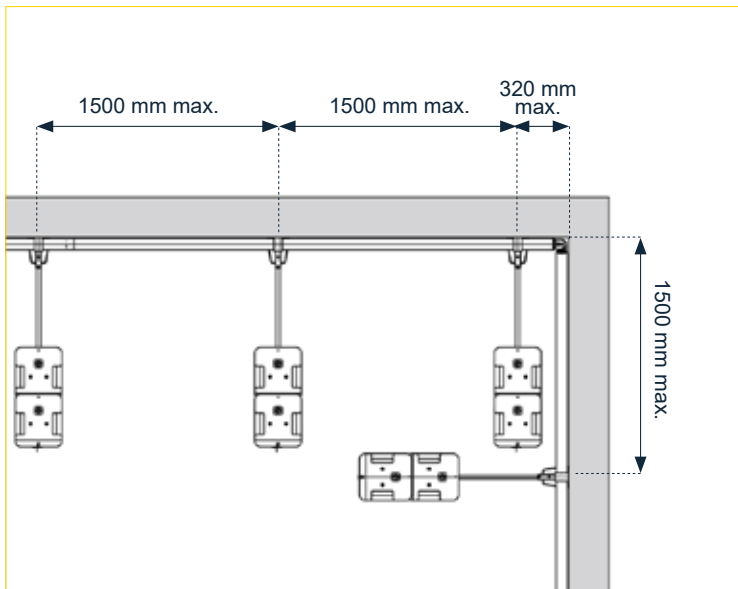
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IMPLEMENTATION

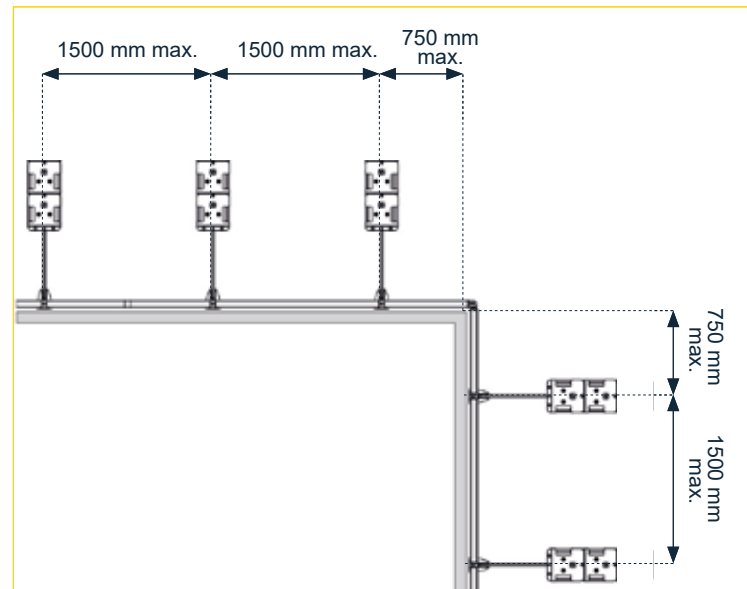
Installation of the freestanding guardrail in a straight line



Installation of straight freestanding guardrail - External angle



Installation of straight freestanding guardrail - Internal angle



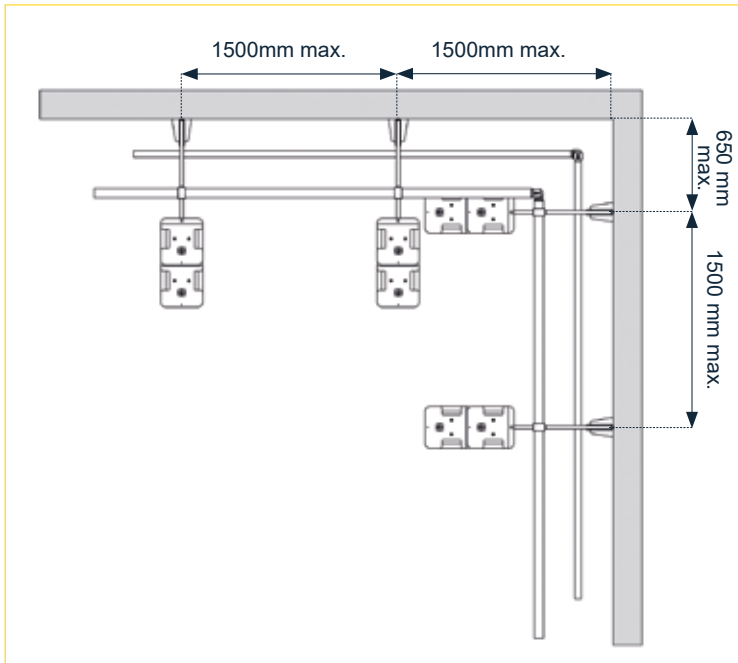


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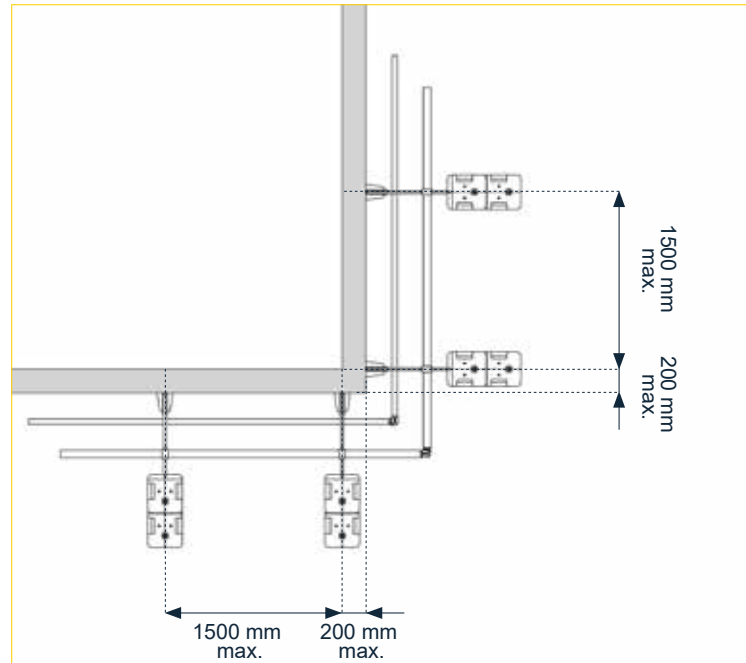
Freestanding guardrail

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Installation of inclined freestanding guardrail - External angle

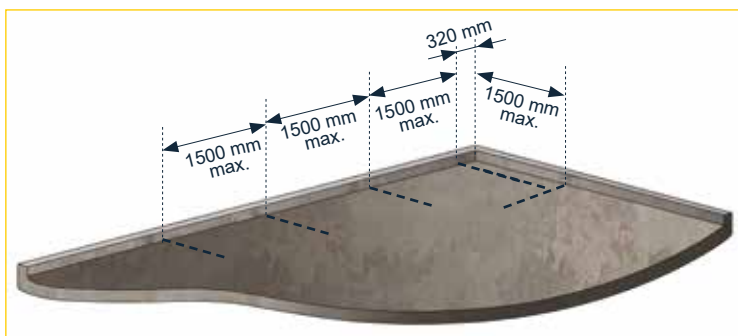


Installation of inclined freestanding guardrail - Internal angle

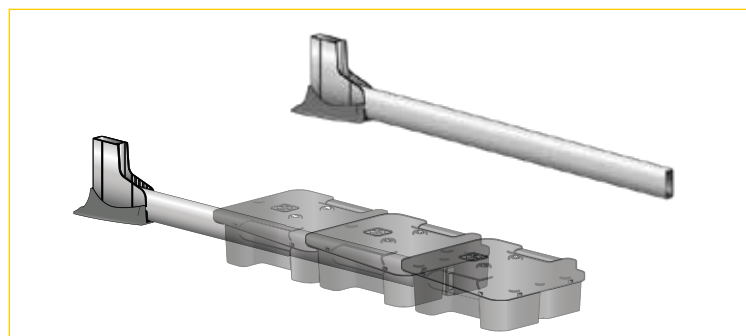


INSTALLATION

The installation of the EVO® guardrail must be done by a minimum of two people. It is recommended to start installation in an angle.



1 - Draw a mark each 1500 mm as a maximum and take out the gravel if necessary in order to set up the guardrail.



2 - Place the plastic counterweights on the support legs. The tube of the support leg must be flush with the surface of the plastic counterweight. (The 3rd counterweight is installed outside the leg)

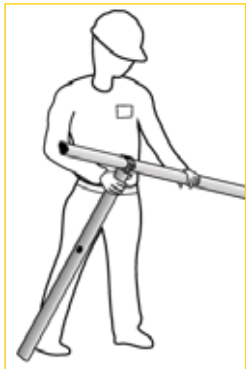


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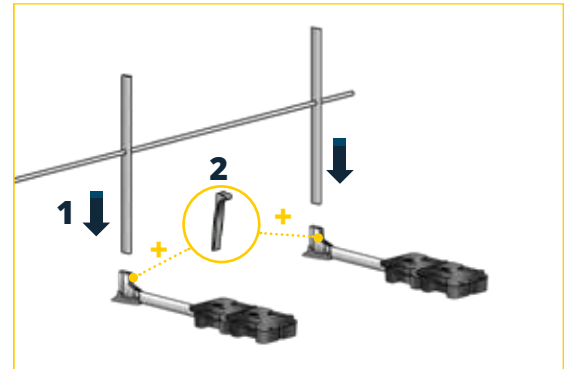
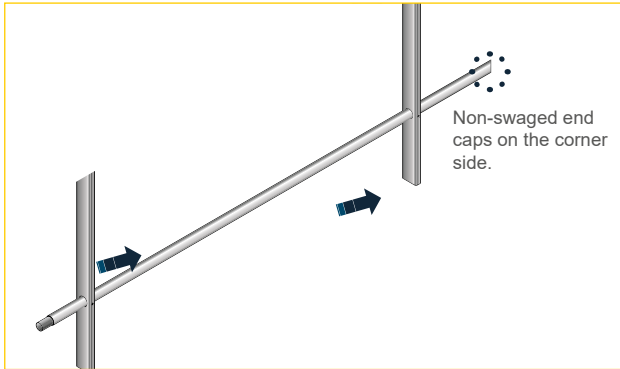
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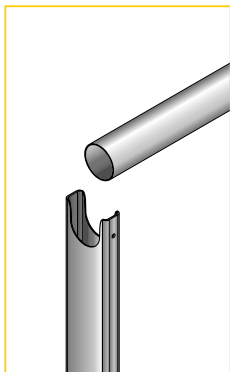
INSTALLATION



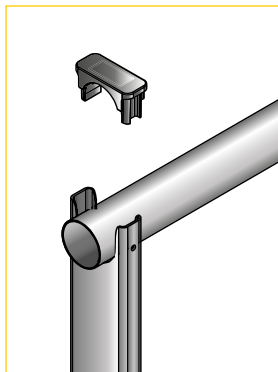
3 - Insert a middlerail through 2 uprights



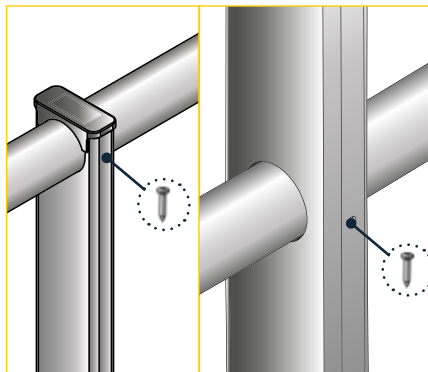
4 - Insert the set into the fixing supports and add the locking pins



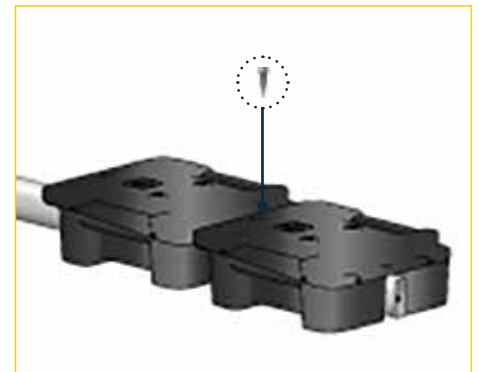
5 - Put the rail on the uprights



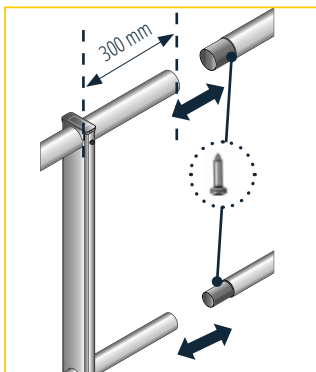
9 - Clip EZclip to the top of the upright



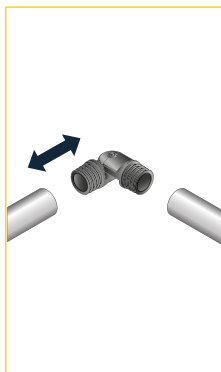
7 - Tighten self-drilling screws 4,8 x 25 on upright, where rail and middlerail are positioned



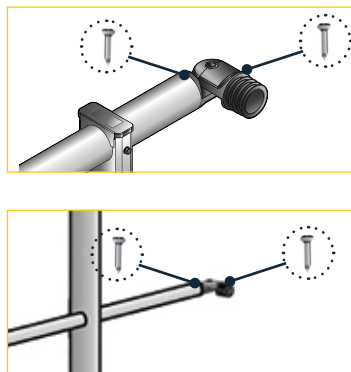
8 - Once the guardrail is mounted, tighten the self-drilling screws 4,8 x 50 as stated above.



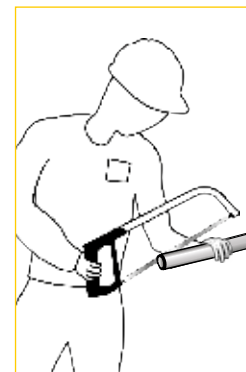
9 - Plug together rails and middlerails and fix them with 4,8x16 screws.



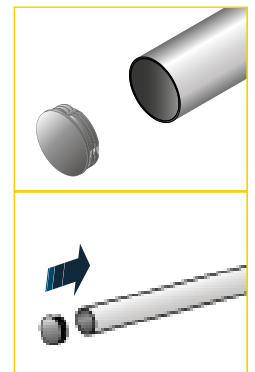
10 - Clip rail and middle-rail angles.



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



12 - Adjust last section by sawing swagged extra



13 - Clip caps and wall brackets to rails and middlerails

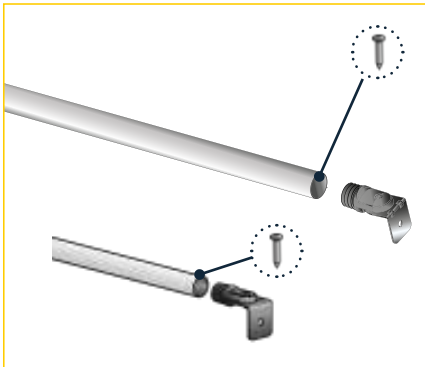


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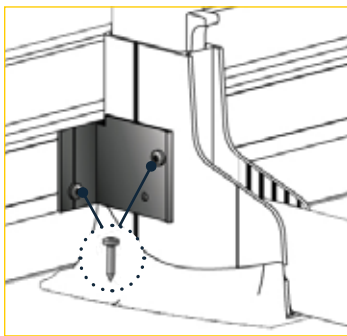
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INSTALLATION: WALL BRACKETS

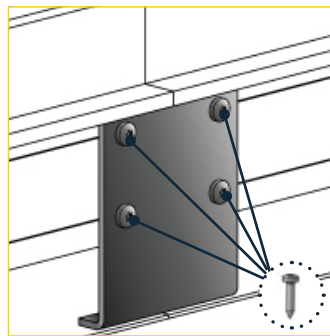


1 - Fix wall brackets using self-drilling 4.8 x 25 screws

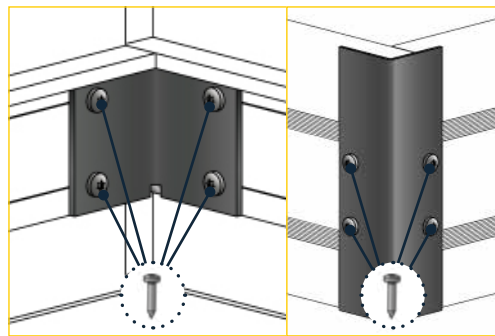
INSTALLATION: TOEBOARD



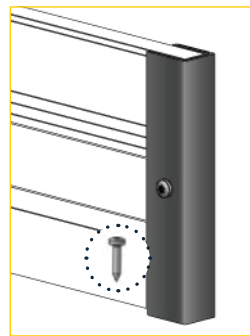
1 - Place the toeboard support on the base and secure it with 4 self-drilling screws TH 4.8 x 16 (2 screws on each side)



2 - Attach the toeboard lengths between them through the toeboard connectors and 4 self-drilling screws TH 4.8 x 16



3 - For angles, secure the inner and external connectors with 8 self-drilling screws TH 4.8 x 16



4 - Finally, fix the toeboard plugs with one self-drilling screw TH 4.8 x 16