

TECHNICAL FILE

EVO®
Folding system for guardrail

EN ISO 14122-3
NF E85-015 : 2019



Distributed by

Folding system

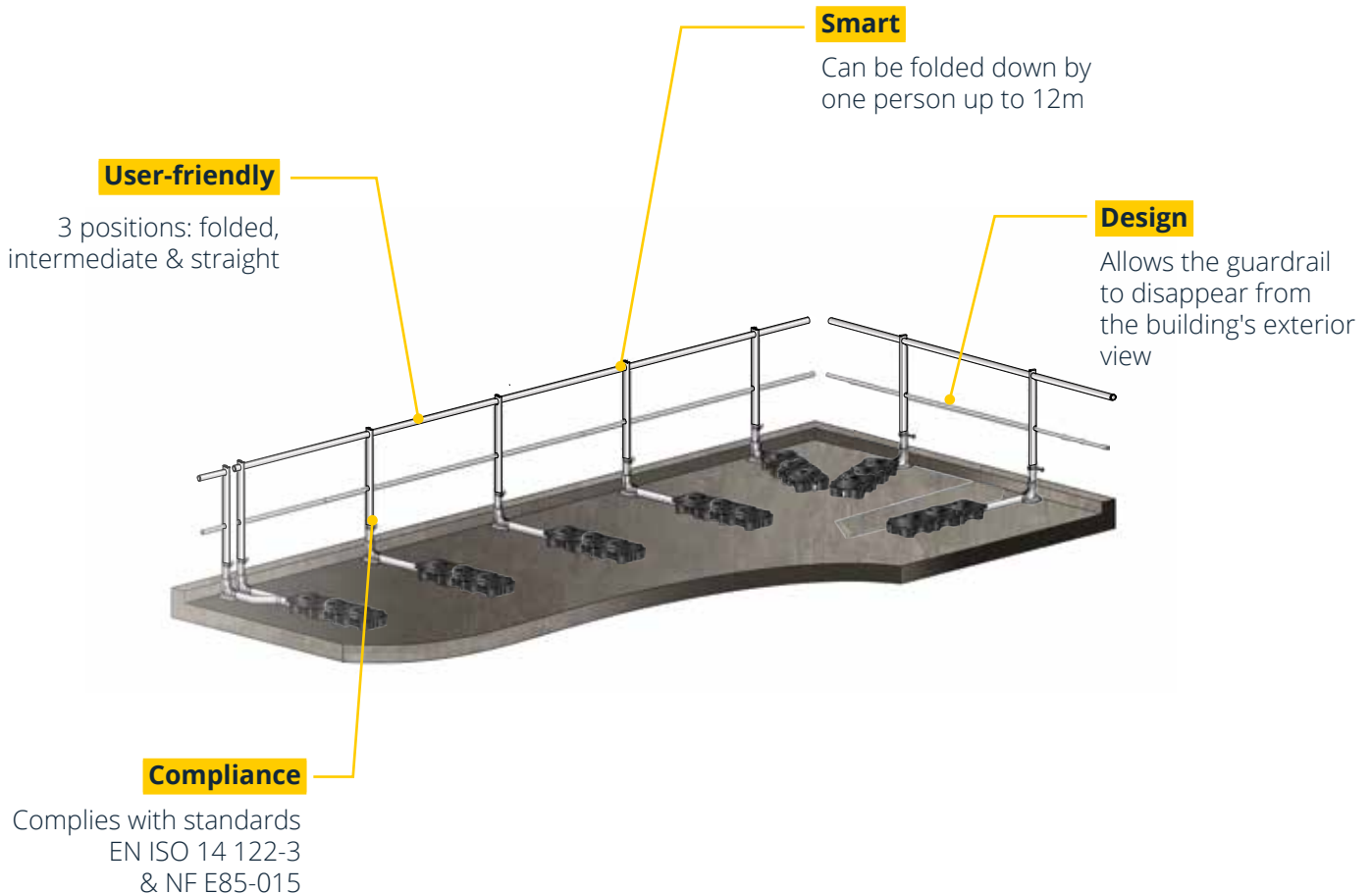
EVO®

PRODUCT DEFINITION

The folding system for EVO® guardrail is adapted to our whole collective fall protection range: flat, lateral, or lateral with offset fixing supports, Z-shaped fixing bracket, steel deck or slab to be sealed and even standard steel deck.

It preserves the aesthetics of a building by bending down to disappear from the exterior view of the building. This module can be folded by a single person up to 12 m and can thus ensure a quick safety procedure of the roof during interventions. The locking system with spring handle allows articulating the guardrail in 3 positions :

- **Position folded**, when no worker is working on the roof (hides the guardrail of the external view of the building);
- **Intermediate position** «type demarcation» makes more visible the area to secure and reduces the risk of tripping during the trip. The guardrail remains invisible from the outside;
- **Straight position**, the guardrail guarantees the safety of the users. **WARNING** : During the operation, a Delta Plus Systems lifeline is mandatory to secure users' movements when the guardrails are in the folded position.





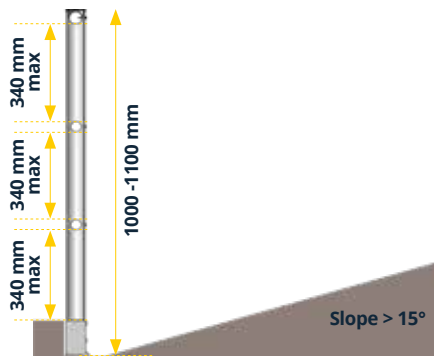
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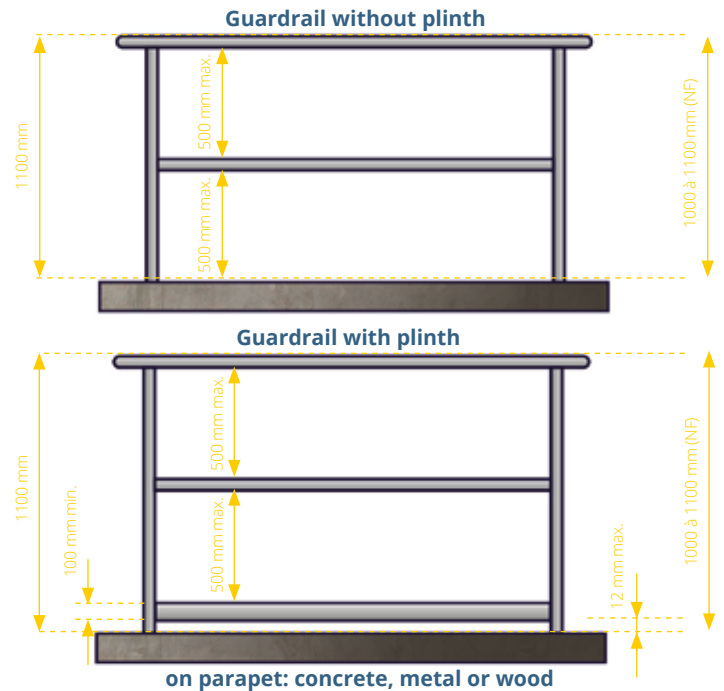
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STANDARDS

- 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 shall be reduced to a maximum of 340 mm between the rail and the middlerail and between the middlerail and the toeboard 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.
- 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.
- 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.
- 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

- Folding: A lifeline must be installed before the folding guardrail is fitted. 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 folding system for EVO® guardrail passed with success the static and dynamic tests required by the standards EN ISO 14122-3 and NF E85-015.

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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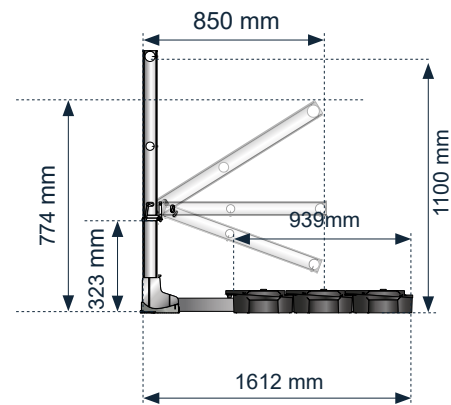
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USE & MAINTENANCE INSTRUCTIONS

- 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.
- Each straight section must have a minimum of 2 uprights.
- To ensure compliance, the installation must be carried out according to a layout plan produced by our configurator or our design office.

DIMENSIONS



HOW IT WORKS



1. Pick up the frames



2. Push the handle using the black ball



3. Raise the handle to the oblong hole in the upright



4. Engage the handle in the lock by releasing the locking handle (the lock has notches) to lock the upright completely, then push the handle outwards until it reaches the last notch. The system is now fully locked.

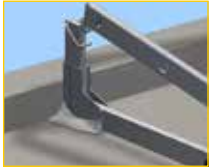
Warning: During the operation, a Delta Plus Systems lifeline is mandatory to secure users's movements when the guardrails are in the folded or intermediate positions.



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Guardrail set in folded position

To fold down the guardrail, proceed to unlock the system, contrary to the principle of safety described above.



Guardrail set in intermediate position

Push the free part of the handle between the upright and the pivot axis of the 2 joints. Fold down the frames until the upright come into abutment against the handle thus preventing the total lowering of the guardrail.

Folded position



Intermediate position

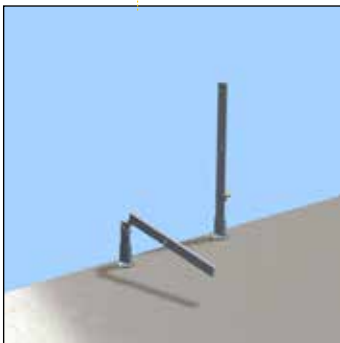


Operational position

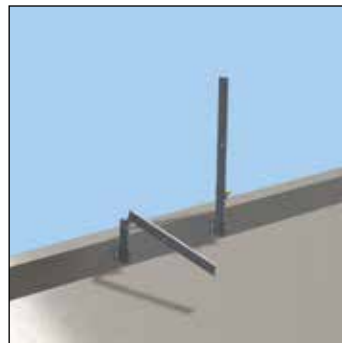


SEVERAL MODEL AVAILABLE WITH FOLDING SYSTEM

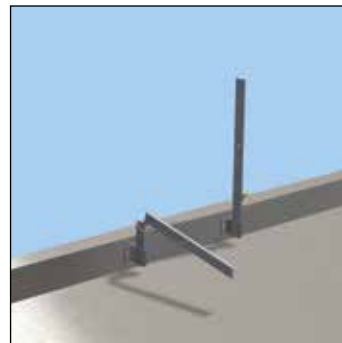
Folding system for **flat fixing**



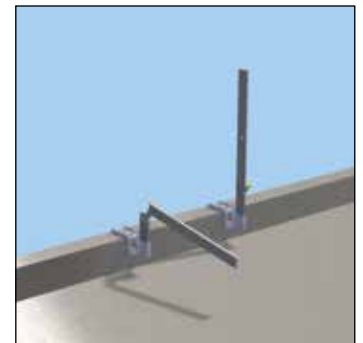
Folding system for **lateral fixing**



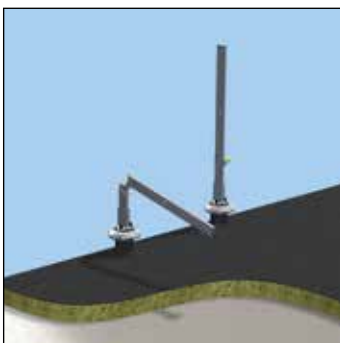
Folding system for **lateral fixing with offset**



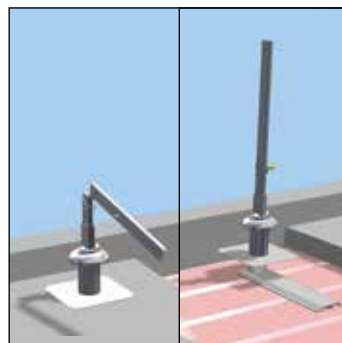
Folding system for **standard Z-fixing bracket**



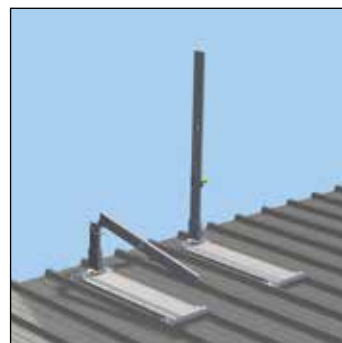
Folding system for guardrail **on slab to be sealed**



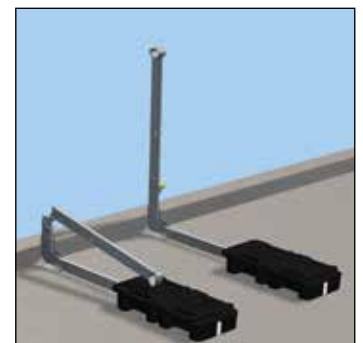
Folding system for guardrail **on steel deck to be sealed**



Folding system for guardrail **on steel deck**



Folding system **for freestanding guardrail**

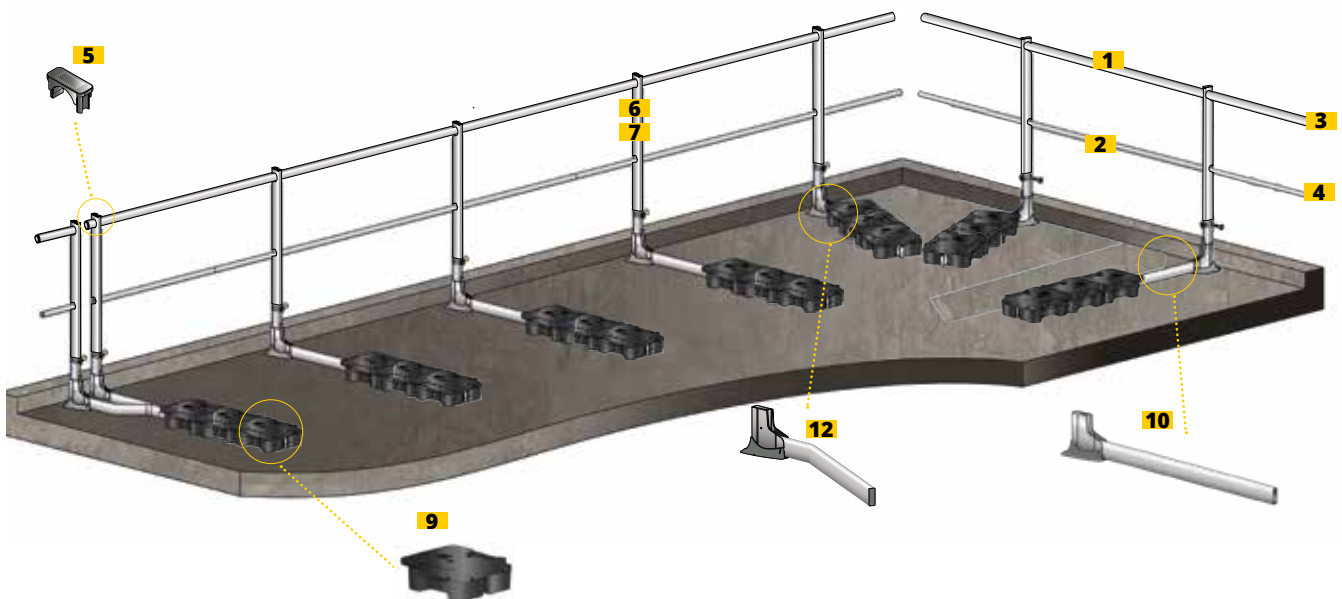




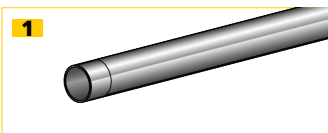
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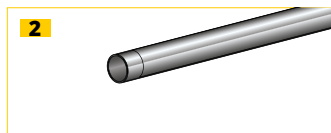
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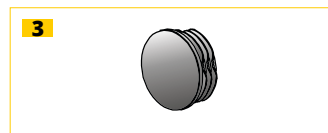
GENERAL COMPONENTS



1
Shrunk rail Ø45 mm
WV830450
Lenght 3000 mm



2
Shrunk middle-rail Ø35 mm
WV830350
Lenght 3000 mm



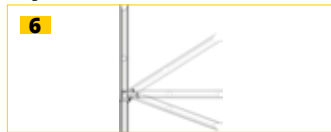
3
Rail cap Ø45 mm
WV830451



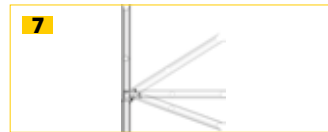
4
Middle-rail cap Ø35 mm
WV830351



5
EZclip plastic cap
WV820000



6
Folding upright Ø45 mm
H : 1010 mm - aluminium joint
WV8201010F



7
Folding upright Ø45 mm
H : 1105 mm - aluminium joint
WV8201105F



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NOMENCLATURE : FOLDING FREESTANDING GUARDRAIL



8
Locking pin
WV817001



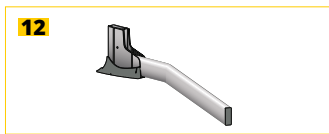
9
12.5 kg concrete counterweight
WV817000



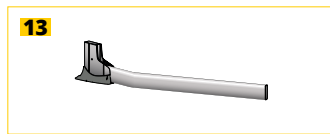
10
Straight leg support
dédiée aux garde-corps autoportant droit et rabattable - WV817002



11
Baseplate with folding drilled leg support
WV817005



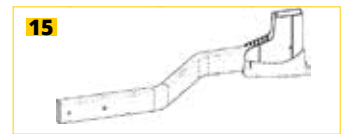
12
Baseplate with 32° left-hand bent leg support
WV817011



13
Baseplate with 32° right-hand bent leg support
WV817010



14
Baseplate with Z-left-hand folding leg support
WV817004F



15
Baseplate with Z-right-hand folding leg support
WV817005F

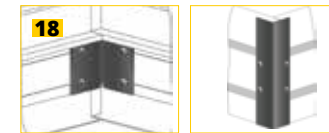
NOMENCLATURE : PLINTH / TOEBOARD



16
Plinth / Toeboard
L: 3000 x 150 x 9 mm
WV840000



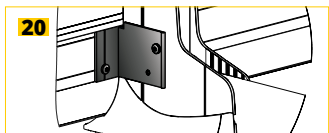
17
Cap for toeboard
H: 150 mm
WV840001



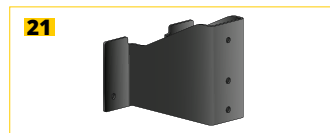
18
Angle kits for toeboard (interior/exterior) - H: 150 mm
WV840003



19
Toeboard straight connector
H: 150 mm
WV840005



20
Toeboard support for freestanding guardrail - H: 150 mm
WV847001



21
Toeboard support for flat fixing guardrail
WV841001



22
Toeboard support for guardrail on slab or steel deck to be sealed
WV844001



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NOMENCLATURE : FIXING

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 4.8x50 TH - ZOSYSBVHF48050

26



Stainless steel self-drilling screw M8x70 TH

27



M08 stainless steel nut with serrated base
ZOSYSBECI08

28



Stainless steel washer M08

29



STHC screw M08x10i DINI913
ZOSYSBVISST002

30



TH spout
For guardrail installation

31



Torque limiter
DB CONTROL 5N.M

32



Chimney washer
ZOSYSBRC001

33



6x25 Self-drilling screw
With sealed washers - ZOSYSBVHF06025



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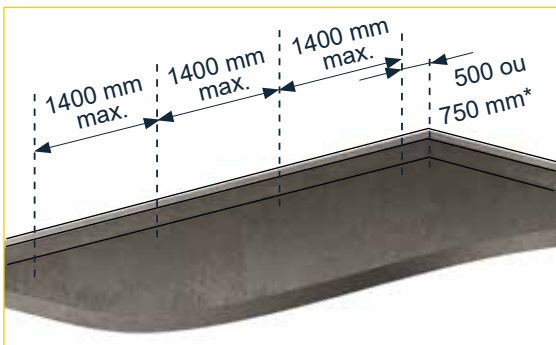
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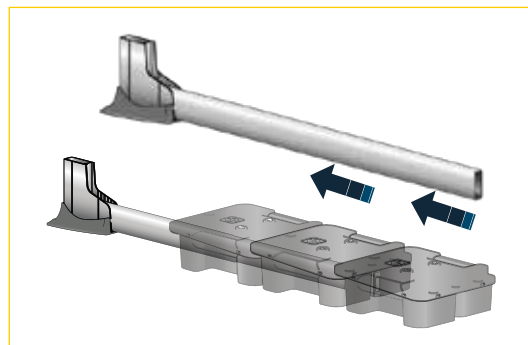
INSTALLATION

A minimum of two people is required to install the EVO® guardrail. It is preferable to begin installation at a corner. The EVO® folding guardrail is made up of successive frames of 6 m or more in length (refer to the layout plan supplied with the order) and requires at least two people to install it. It is best to start installation at a corner. You must follow the layout plan supplied by us. **CAUTION:** during installation and handling of the folding guardrail, a Delta Plus Systems lifeline is mandatory to ensure the safety of users.

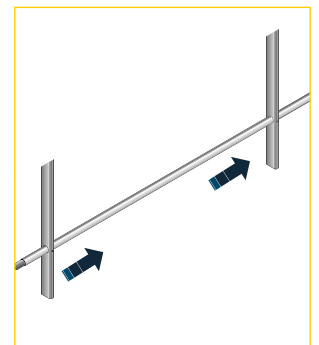
It is forbidden to use the handles for lifting onto the roof



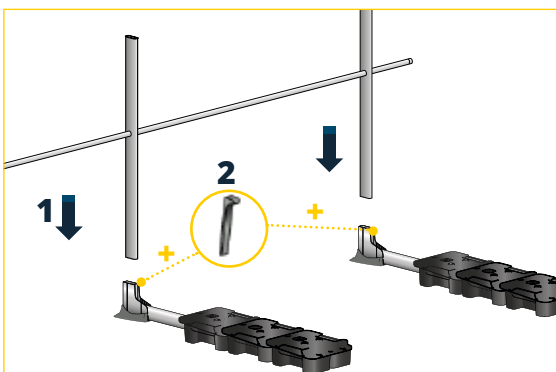
1 - Draw a mark each 1500 mm as a maximum.*The distance between the upright and the edge of the parapet must be 500 mm for straight guardrails and 750 mm for inclined guardrails.



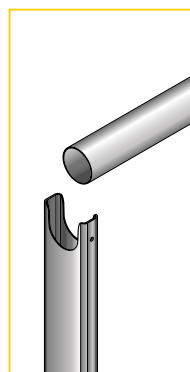
2 - Slide the counterweight into the support leg. The tube of the support leg must be flush with the surface of the counterweight. The 3rd counterweight is installed outside the leg.



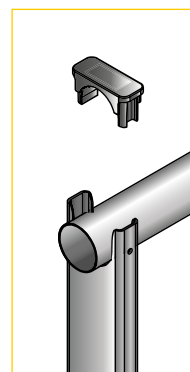
3 - Slide a middle rail and handrail into the upright



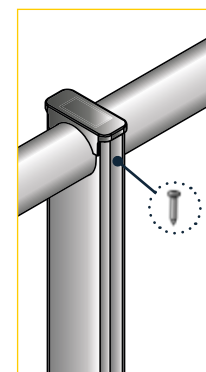
4 - Insert the set into the fixing supports



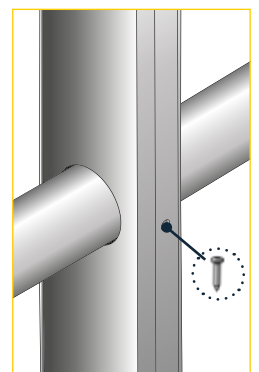
5 - Place the rail on the upright



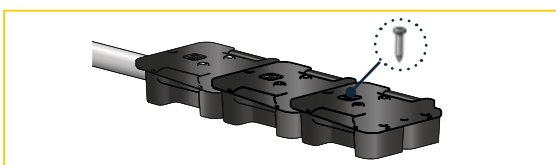
6 - Clip EZclip to the top of the upright



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



8 - Once the guardrail is mounted, tighten the selfdrilling screws T25 4.8 x 50 as stated above..



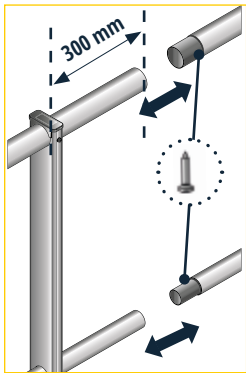


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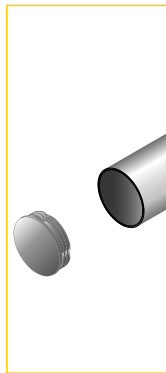
INSTALLATION



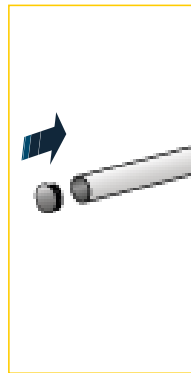
9 - Plug together rails and middle rails and fix them with 4,8x16 screws.



10 - Adjust last section by sawing swagged extra

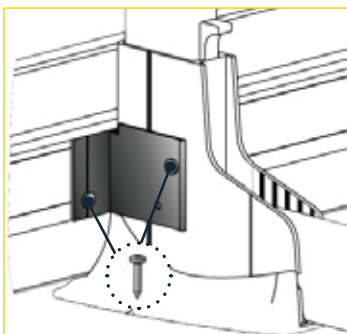


11 - Clip caps and wall brackets to rails and middle rails

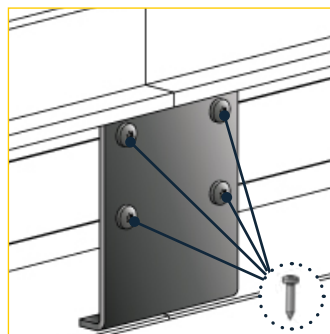


12 - Fix the drilled strut to the Z-bent leg support using: stainless steel TH 08 x 70 screw + stainless steel M08 nut with notched base + stainless steel M08 washer.

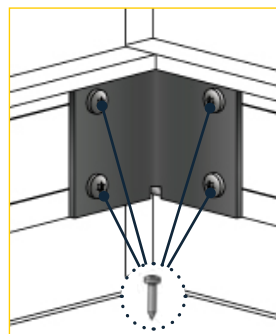
INSTALLATION: PLINTH FOR FREESTANDING GUARDRAIL



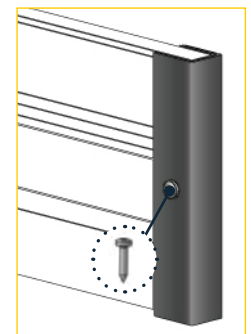
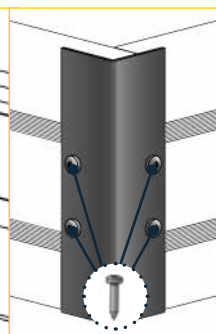
1 - Place the toeboard support on the base and secure it with 4 self-drilling screws TH 4.8 x 16 (2 screws on each side)



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

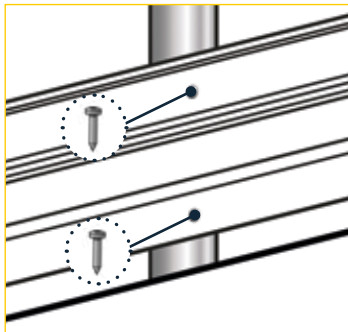


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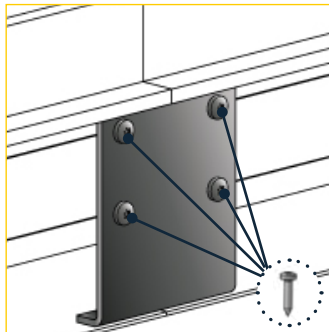
Folding system

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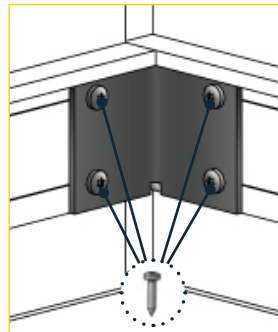
INSTALLATION: PLINTH FOR GUARDRAIL WITH LATERAL FIXING



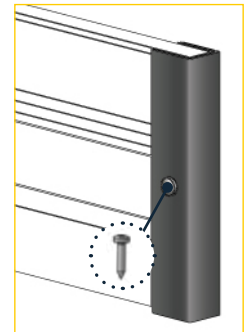
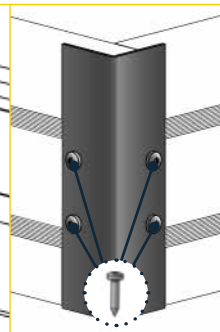
1 -- Fix the toeboard to the upright with 2 * 4.8 x 16 screws



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

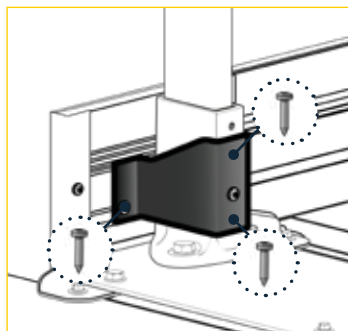


3 - For angles, secure the inner and external connectors with 8 self-drilling screws T25 4.8 x 16

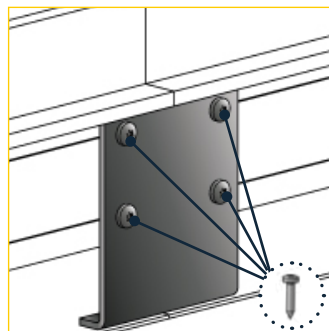


4 - Finally, fix the toeboard plugs with one self-drilling screw T25 4.8 x 16

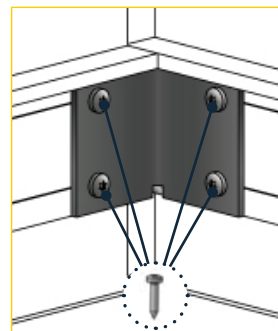
INSTALLATION: PLINTH FOR GUARDRAIL WITH FLAT FIXING



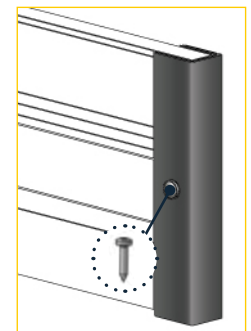
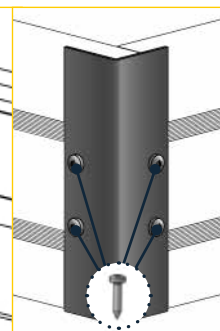
1 - Remove the M8x10 socket screws pre-mounted on the floor fixing bracket and place the toeboard support bracket on the base. Then fix it with 2 selfdrilling screws 4.8 x 25. Finally, fix the toeboard to the support with 2 other selfdrilling screws 4.8 x 16 (1 on each side of the support).



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



3 - For angles, secure the inner and external connectors with 8 self-drilling screws T25 4.8 x 16



4 - Finally, fix the toeboard plugs with one self-drilling screw T25 4.8 x 16

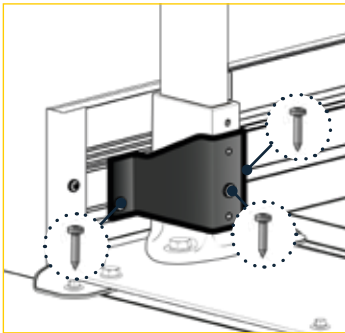


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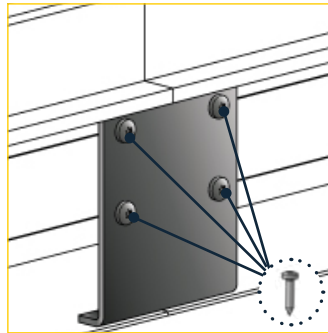
Folding system

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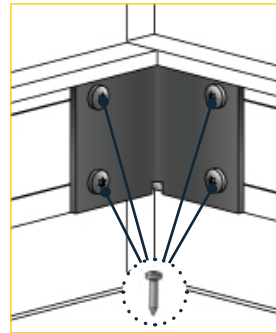
INSTALLATION: PLINTH FOR GUARDRAIL ON STEEL DECK



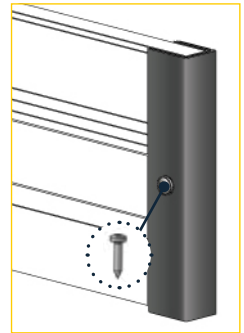
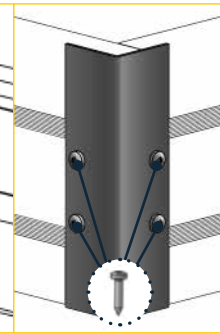
1 - Remove the M8x10 socket screws pre-mounted on the floor fixing bracket and place the toeboard support bracket on the base. Then fix it with 2 selfdrilling screws 4.8 x 25. Finally, fix the toeboard to the support with 2 other selfdrilling screws 4.8 x 16 (1 on each side of the support).



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

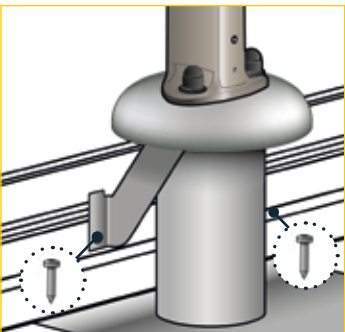


3 - For angles, secure the inner and external connectors with 8 self-drilling screws T25 4.8 x 16

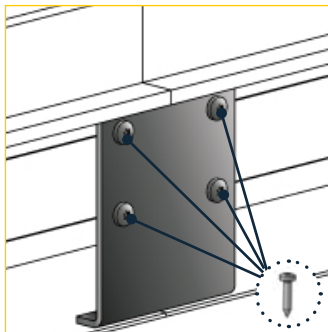


4 - Finally, fix the toeboard plugs with one self-drilling screw T25 4.8 x 16

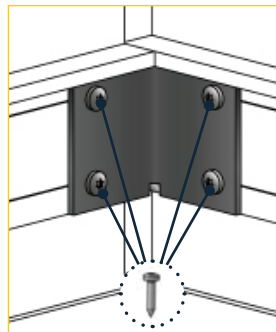
INSTALLATION: PLINTH FOR GUARDRAIL ON SLAB OR STEEL DECK TO BE SEALED



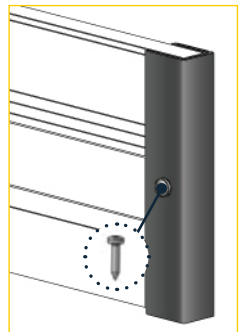
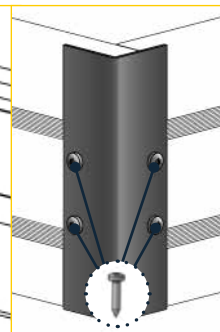
1 - Fix the toeboard to the support using 2 x 4.8 x 16 self-drilling screws (1 on each side of the support).



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



3 - For angles, secure the inner and external connectors with 8 self-drilling screws T25 4.8 x 16



4 - Finally, fix the toeboard plugs with one self-drilling screw T25 4.8 x 16