

TECHNICAL FILE

EVO®
Guardrail on steel deck to be sealed

EN ISO 14122-3 : 2017
NF E85-015 : 2019



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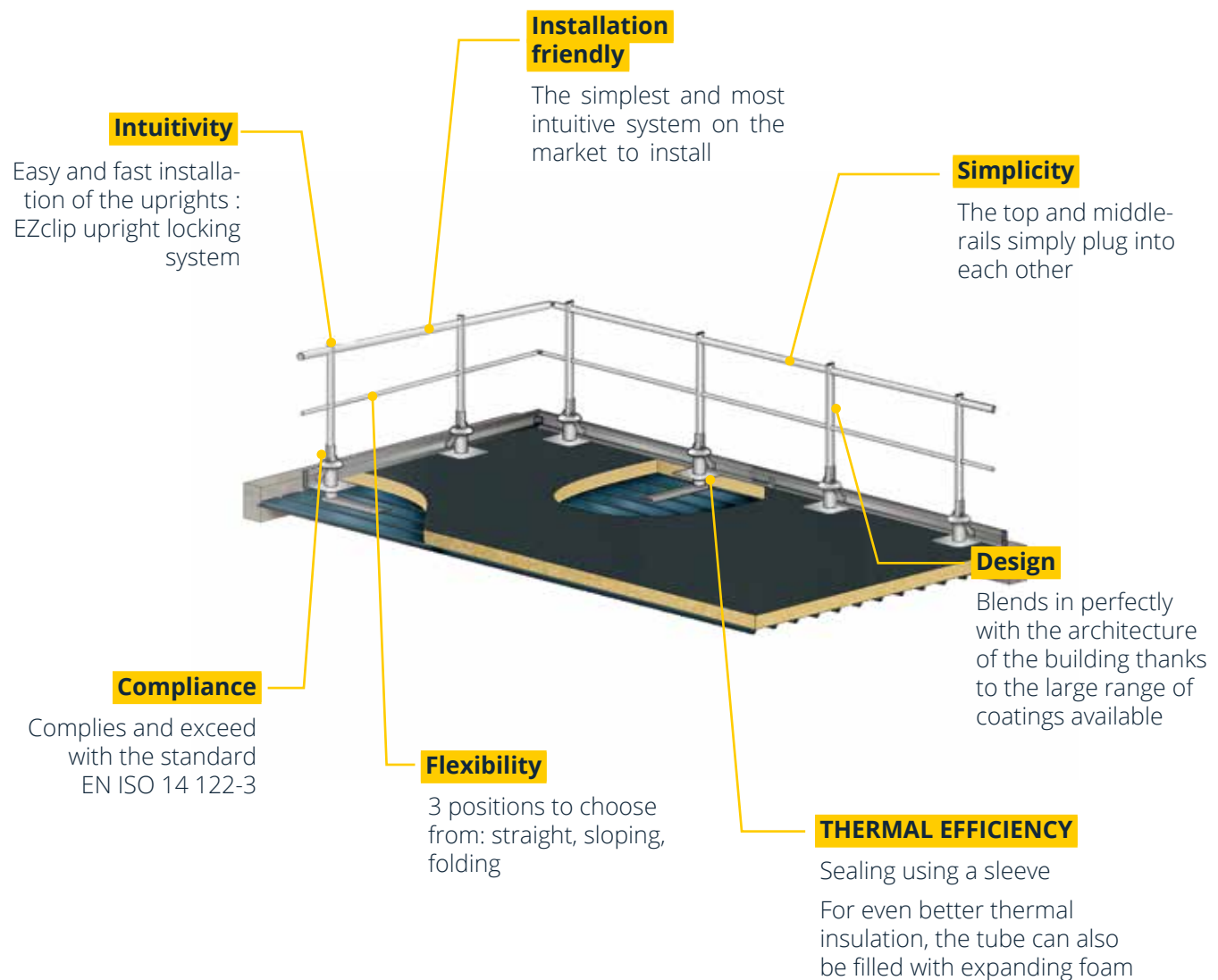
Guardrail on steel deck to be sealed

EVO®

PRODUCT PRESENTATION

The EVO® guardrail on steel deck to be sealed is a collective fall protection system designed to protect roof terraces not accessible to the public. It is the perfect solution for a roof equipped with a steel deck that needs to be sealed.

Nota Bene: this system is not compatible with perforated steel deck.





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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.

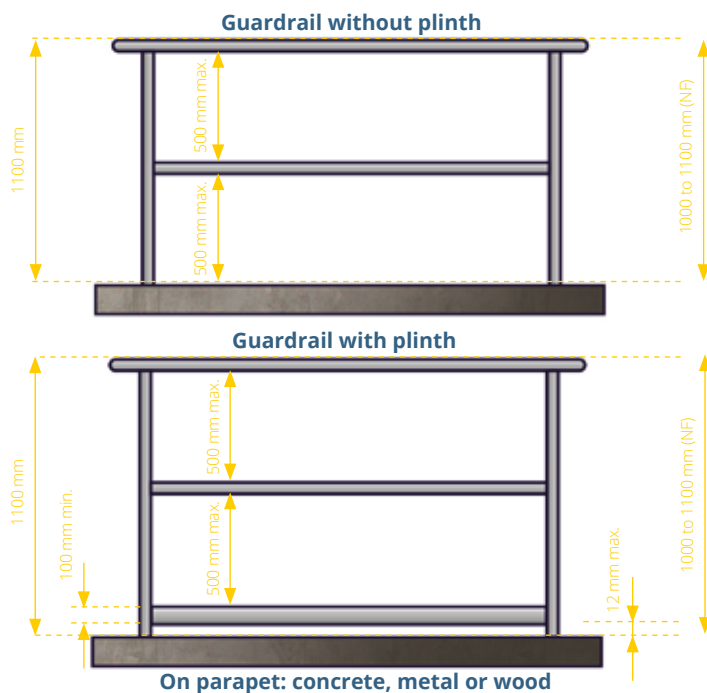
- This space shall be reduced to a maximum of 340 mm between the rail and the middlerail and between the middlerail and the toeboard when the guardrail is installed at the bottom of a slope greater than 15°.

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

- 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.

- Folding: A lifeline must be installed before the folding guardrail is fitted. This will also be used during installation and handling.

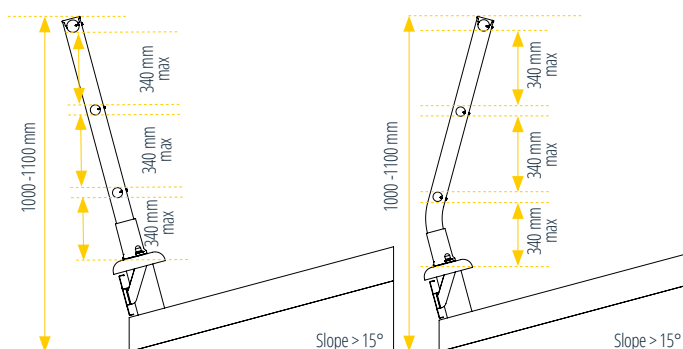


REGULATION

The EVO® guardrail for steel deck to be sealed 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® guardrail for steel deck to be sealed passed with success the static and dynamic tests required by the standards EN ISO 14122-3 and NF E85-015.

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



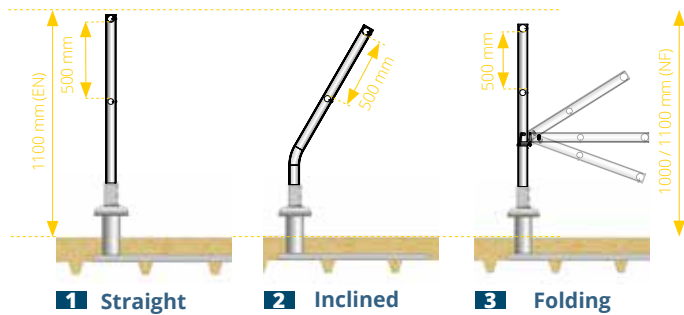


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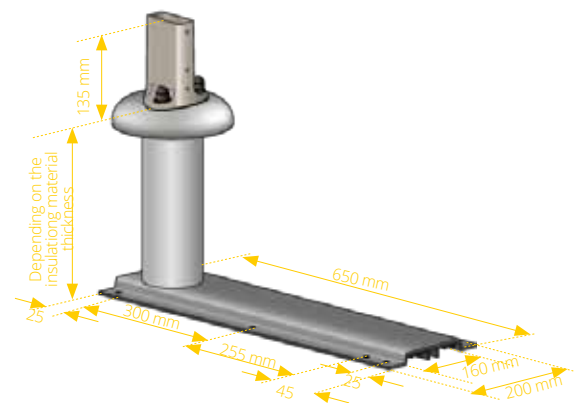
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UPRIGHTS DIMENSIONS



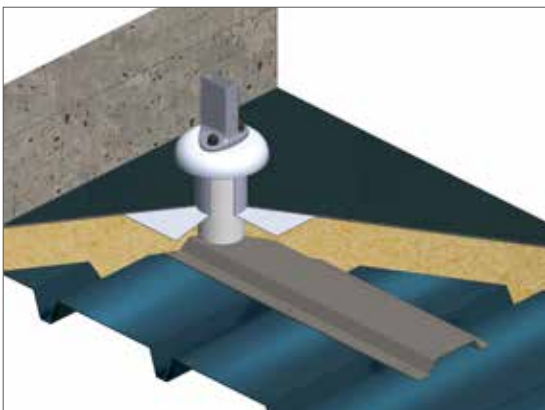
BE-POST DIMENSIONS (in mm)



OPTIONS

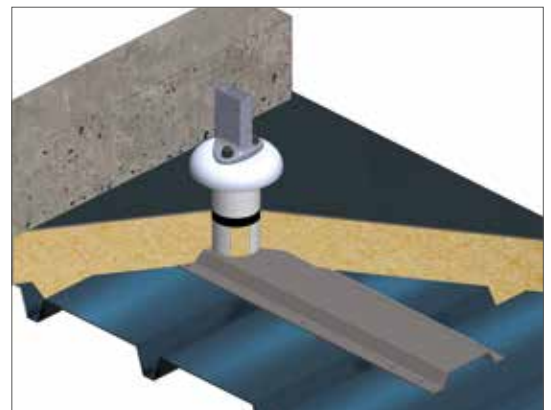
BE-post simple sleeve

The simple sleeve allows the renewal of watertightness on the post by respecting the DTU 43.1. It is used when there is a watertightness supporting deck. Each BE-post is fixed with a plate of 650 mm length.



BE-post thermal breaks

The BE-post with thermal breaks is composed of a washer in polyamide (PA) and of a tube filled with expanded foam. This option allows an efficient thermal insulation.





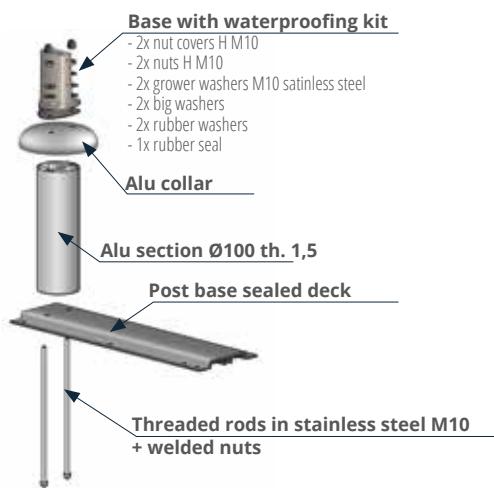
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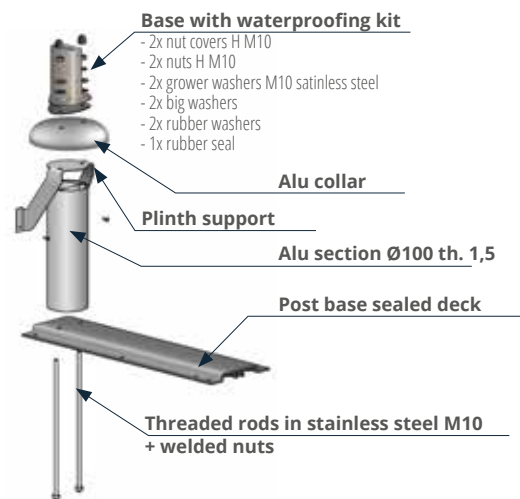
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OPTIONS

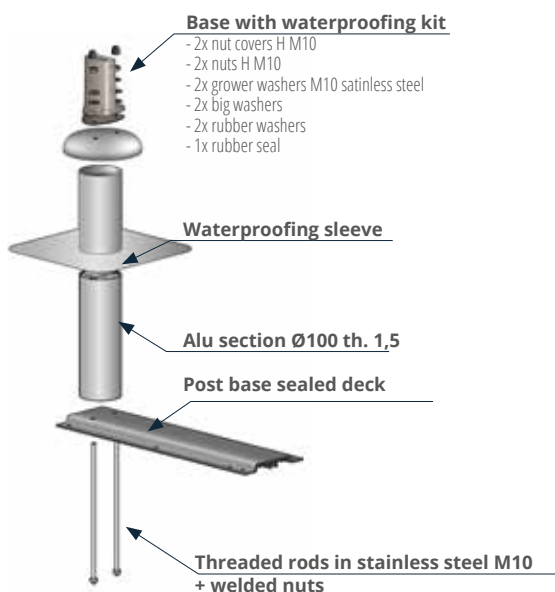
BE-post



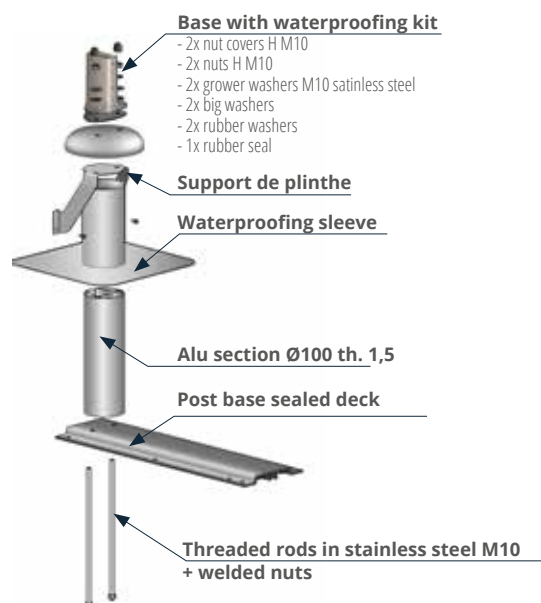
BE-post with plinth support



BE-post with simple sleeve



BE-post with simple sleeve and plinth support





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Guardrail on steel deck to be sealed



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 3 uprights
- To ensure compliance, the installation must be carried out according to a layout plan produced by our configurator or our design office.

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.

FIXING PRINCIPLE

The fixing of the guardrail on metal deck to be sealed is realized with the self-drilling screw 6x25. Contrary to a standard self-drilling screw, where the drilling waste is evacuated as shavings, the self-drilling screw pushes the material back to the inside by shaping a bulge, which increases the implementation length. The tightening torque of the selfdrilling screw 6x25 is high even is small thicknesses (> 5 N.m for an average of 1.5 N.m for standard self-drilling screws).

Assembly resistance characteristics of the self-drilling screw 6x25	Sheet material S320 Thickness 0.63mm	Sheet material S320 Thickness 0.75mm
Shear load PK value with 1 selfdrilling screw 6x25 (in DaN)	219	286
Pull-out PK value with 1 selfdrilling screw 6x25 (in DaN)	142	187
Ultimate pull-out PK value with 1 selfdrilling screw 6x25 (in DaN)	721	954



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OPTIONS

For an optimum fixing on metal deck: The torque limiter DB CONTROL 5N.M

We recommend you to use this torque limiter to avoid damages on the screw. Specifically adapted to the tightening torque of 5 N.m, which characterizes the selfdrilling screw 6x25, the fixing on metal deck is performed serenely.

By respecting the operating mode torque limiter + self-drilling screw 6x25 with waterproof washer and bowl washer, the watertightness is optimized and the mounting is quick and simple:

- 1 rivet = 3 operations (drilling, waterproofing and seaming)
- 1 self-drilling screw = 1 screwing operation.



FLAT BRACKET SET-UP INSTRUCTIONS

Fixing of the flat bracket on the D-post

Flat bracket are pre-mounted on the D-post for models without sleeve. For model with sleeve, place the collar **A**. Thread the rubber seal **B** on threaded rods and on the flat bracket **C**. Place the 2 rubber washers **D**, 2 big washers **E**, 2 grower washers M10 in stainless steel **F** and then 2 H M10 in stainless steel **G**. screw in depth and place the 2 nut covers **I**.

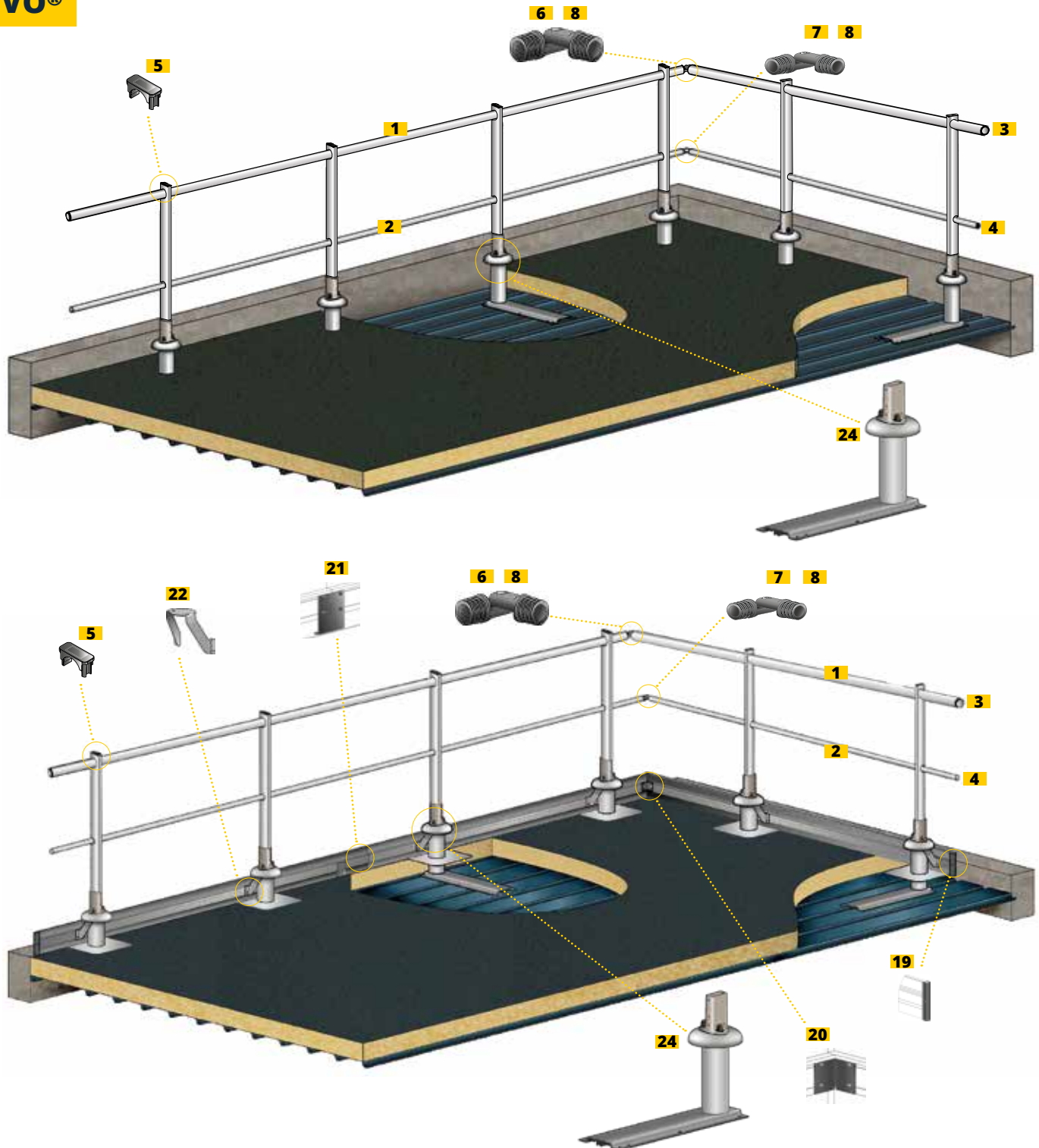




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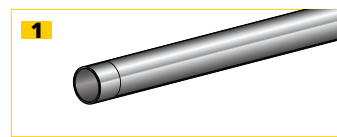


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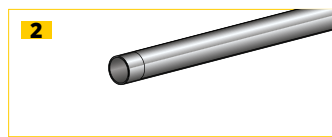
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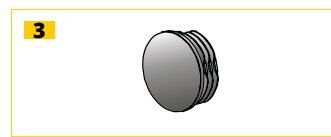
GENERAL COMPONENTS



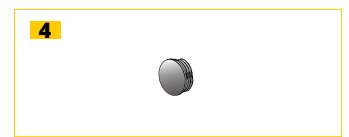
1
Shrunken rail Ø45 mm
WV830450
Length 3000 mm



2
Shrunken middle-rail Ø35 mm
WV830350
Length 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 and 45 mm - WV830453



9
Wall fixing bracket
for rail Ø45 mm - WV830454



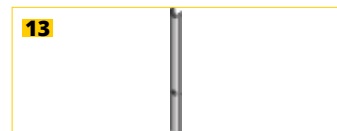
10
Wall fixing bracket
for middle-rail Ø35 mm
WV830354



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



12
Straight upright



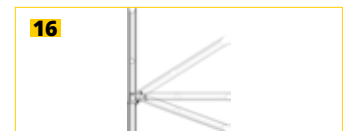
13
Straight upright (height upon
request)
Installation without plinth



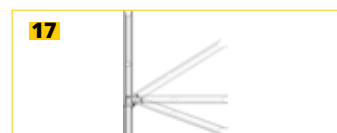
14
Inclined upright
H : 985 mm
WV82009850



15
Inclined upright (height upon
request)



16
Folding upright
H : 885 mm - installation without plinth -
WV8200885F



17
Folding upright
Installation without plinth



18
Toeboard
L : 3000 x 150 x 9 mm
WV840000



19
Toeboard cap
H : 150 mm
WV840001



20
Angle toeboard kit (inside/
outside)
H : 150 mm
WV840003



21
Toeboard straight connector
H : 150 mm
WV840005



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

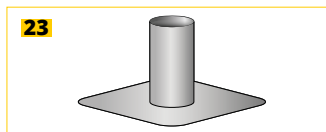


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NOMENCLATURE: SUPPORTS



23
Waterproofing sleeve for
D-post
Z2SYS814002



24
BE-post

NOMENCLATURE: FIXINGS



27
Stainless steel self-drilling
screw 4.8x16 TH - Z0SYSBVHF48016



28
Stainless steel self-drilling
screw 4.8x25 TH - Z0SYSBVHF48025



29
Stainless steel self-drilling
screw 4.8x32 TH - Z0SYSBVHF48032



30
STHC M08x10i DINI913 Screw
Z0SYSBVI5ST002



31
Torque limiter
DB CONTROL 5N.M



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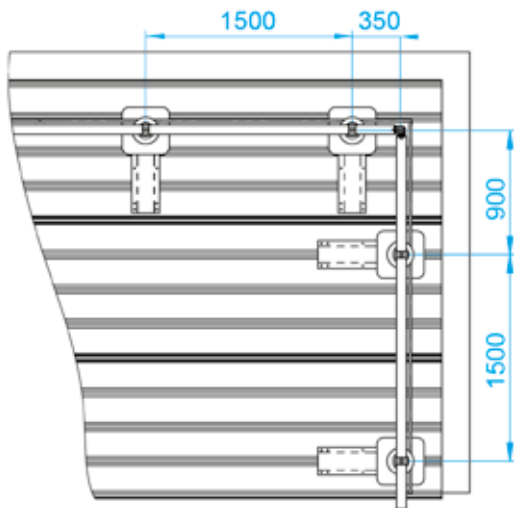
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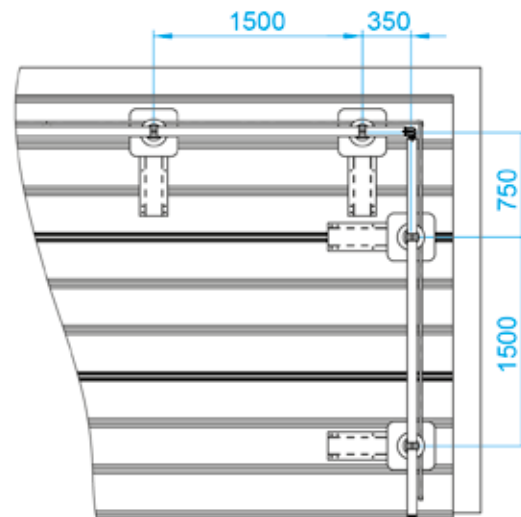
EXAMPLES OF LAYOUTS

Straight guardrail on steel deck

On deck with 250 mm wave spans

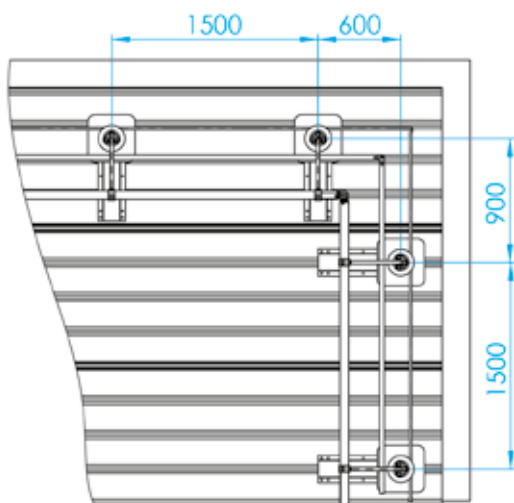


On deck with 333 mm wave spans

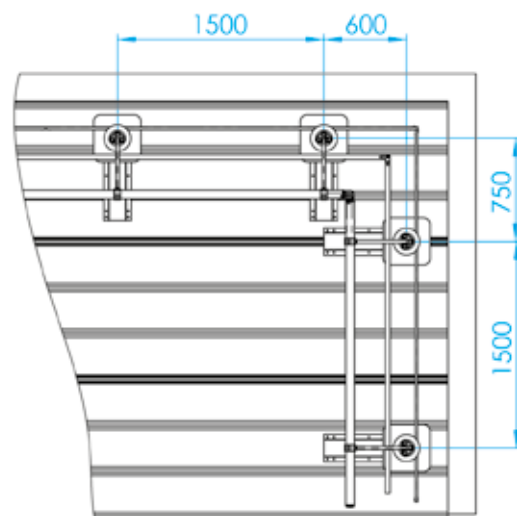


Inclined guardrail on steel deck

On deck with 250 mm wave spans



On deck with 333 mm wave spans





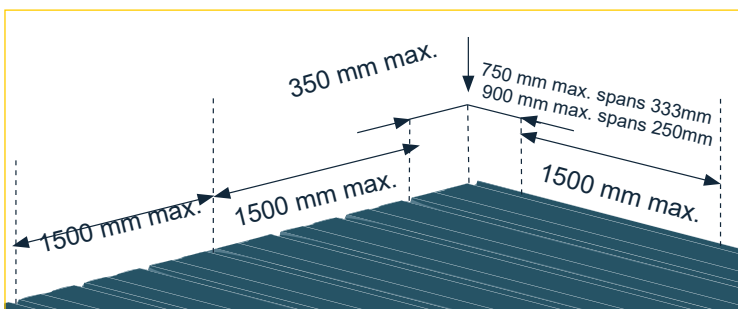
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INSTALLATION

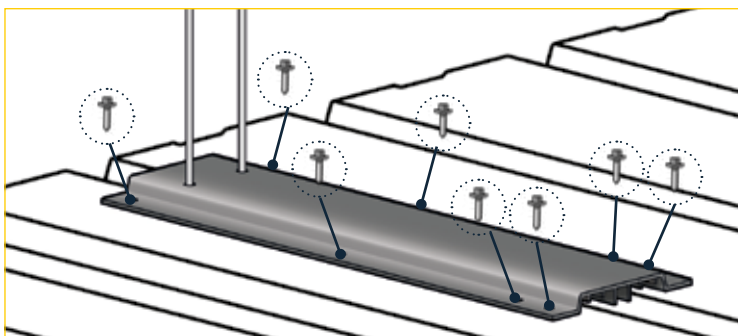
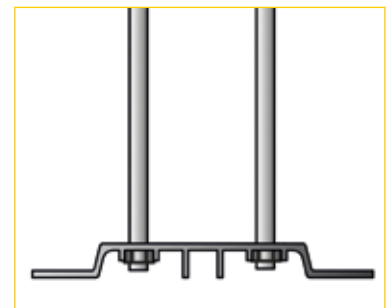
The installation of EVO® guardrail must be done by a minimum of two people. It is recommended to start installation in an angle.



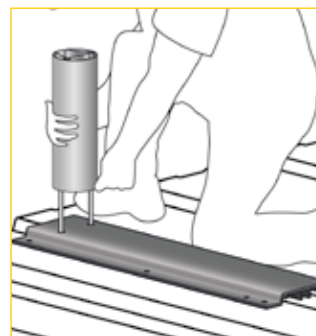
1 - Draw marks using a guiding line to install fixing bases.



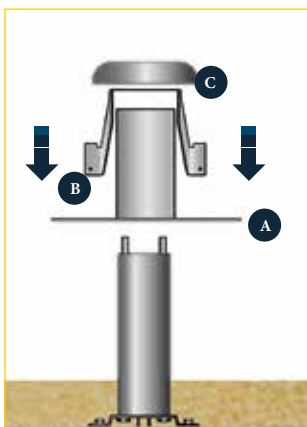
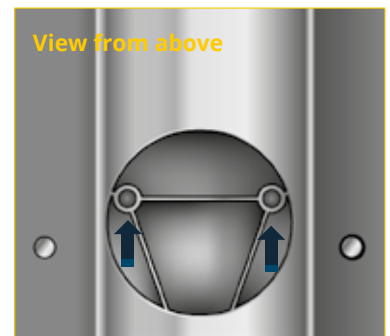
2 - Thread the threaded rods on the fixing plate



3 - BE-posts bases are fixed with 8 selfdrillings screw 6x25



4 - Before installing your insulating material, thread the tubes with threaded rods into 2 provided circular parts.



6 - Finally, thread the rubber seal on the threaded rods and then on the flat base. Fix the base with 2 nuts H M10 by combining the rubber washers correctly, the big washers, the grower washers and the nut covers.

5 - Once your insulating material is placed, place the waterproofing sleeve **A**, then the toeboard support **B** (if there is any) and the collar **C**. You may proceed to your watertightness renewal.



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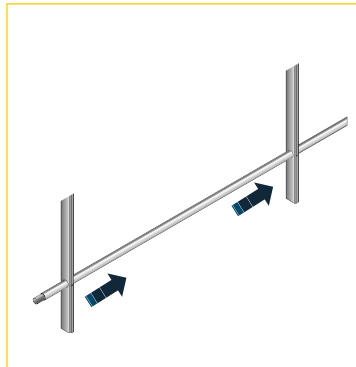
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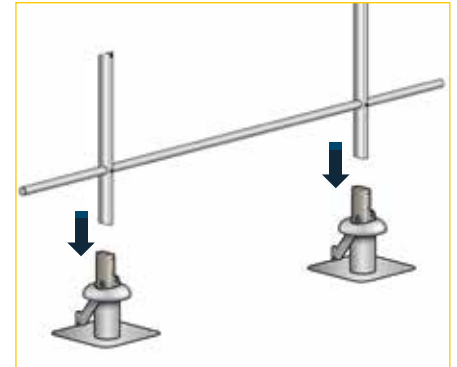
INSTALLATION



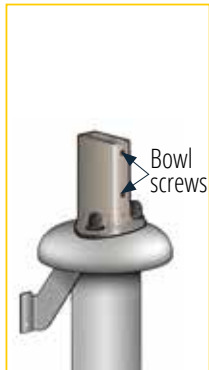
7 - Proceed to your insulation and your watertightness renewal. With the model without sleeve, proceed to your watertightness renewal underneath the collar.



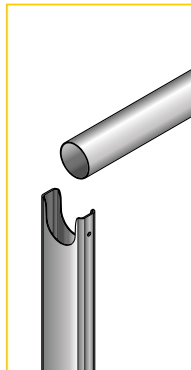
8 - Insert a middle rail through 2 uprights



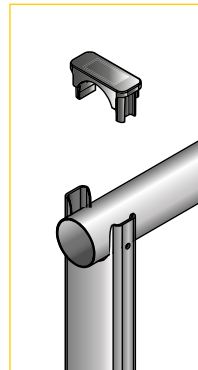
9 - Insert the set into the fixing supports



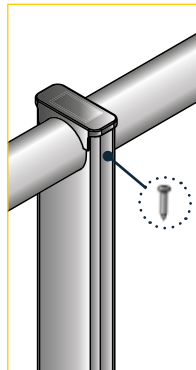
10 - Screw in the bowl screws of the flat bases



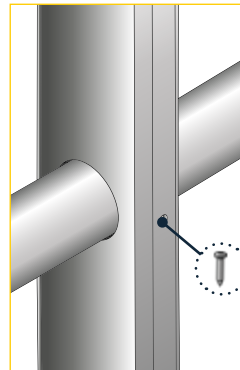
11 - Put the rail on the uprights



12 - Clip EZclip to the top of the upright



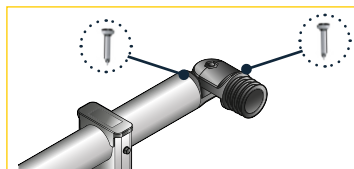
13 - Tighten self-drilling screws 4,8 x 25 on upright, where rail and middle rail are positioned



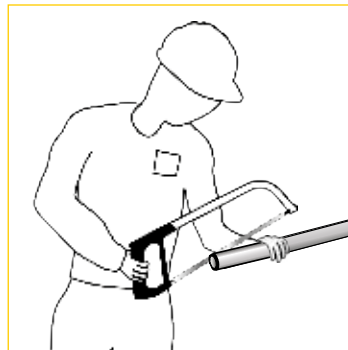
14 - Once the guardrail is mounted, tighten the selfdrilling screws 4,8x16 as stated above.



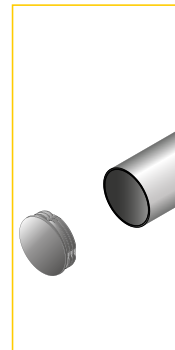
15 - Clip rail and middle rail angles



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



17 - Adjust last section by sawing swagged extra



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

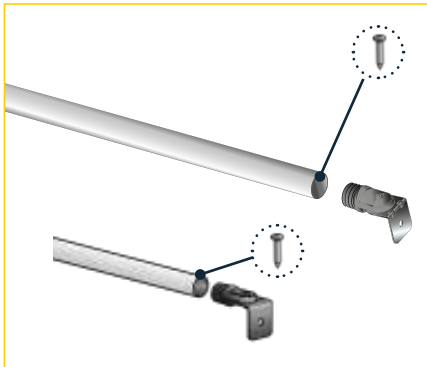


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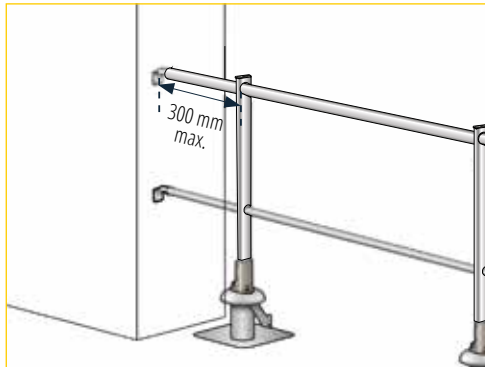
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INSTALLATION: WALL BRACKETS

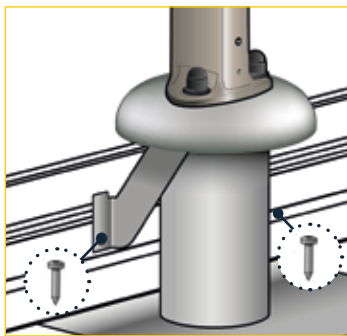


1 - Fix wall brackets using self-drilling 4.8 x 25 screws

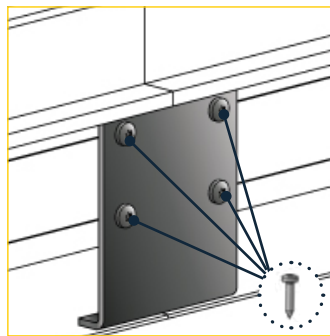


2 - Observe the maximum distance of 300 mm between the upright and the wall

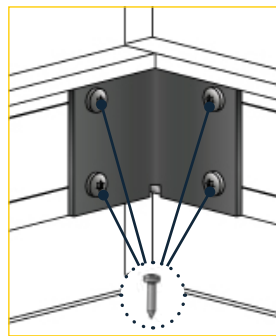
INSTALLATION: TOEBOARD



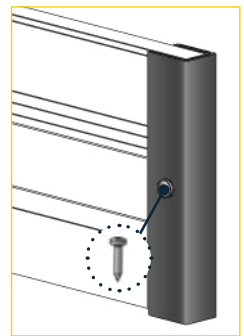
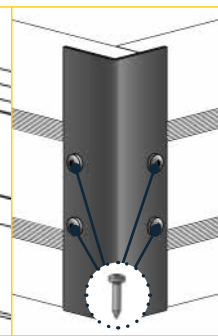
1 - Place the toeboard support on the base and secure it with 4 self-drilling screws TH 4.8 x 16 (1 screw on each side)



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 TH 4.8 x 16



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