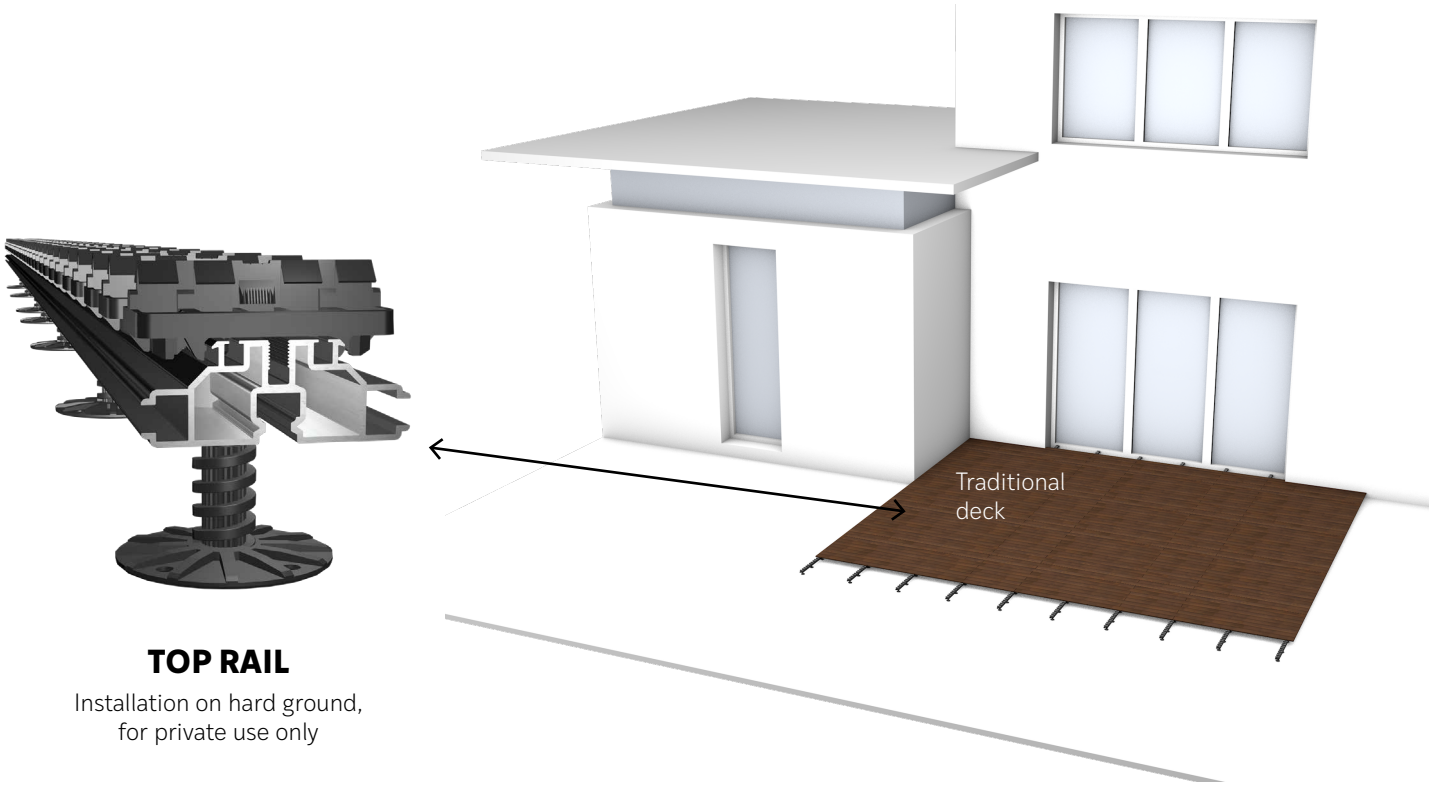
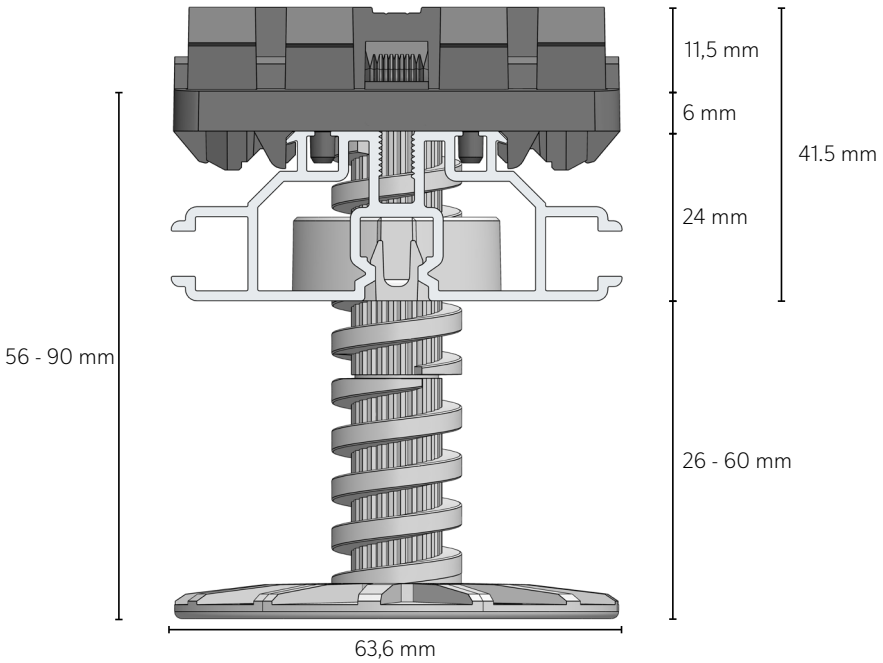
TOP RAIL - DECKING

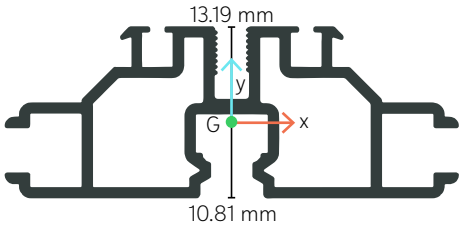


TOP RAIL

Installation on hard ground,
for private use only

TOP RAIL DIMENSIONS - WITH CLIPS



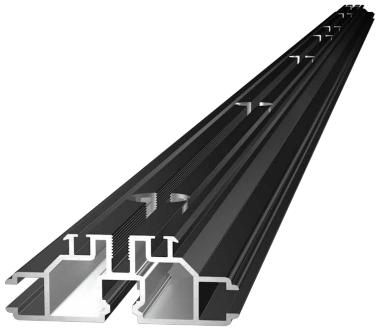


Position of center of gravity (G)

MOMENT OF INERTIA :
Ixx = 19602 mm^4
Iyy = 87737 mm^4
Ixx/v = 1486 mm^3

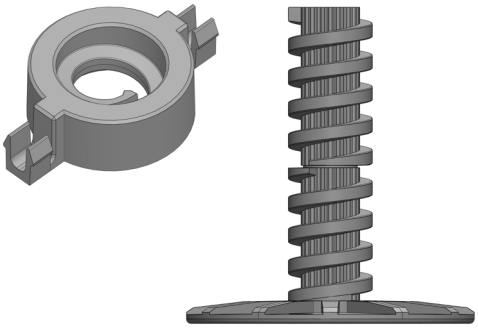
ALUMINIUM RAIL

Material	Aluminium EN AW-6060
Mass per meter of rail without clips or top screws	0,878 kg
Colour	Black
Thermal Treatment	T6
Tensile strength (MPa)	190
Tensile stress at yield (MPa)	150
Minimal elongation (%)	6
Tensile modulus (MPa)	70000
Coefficient of linear expansion (10^{-6}/K)	24
Fusion Temperature (°C)	585-655
Thermal conductivity (W/mK)	160



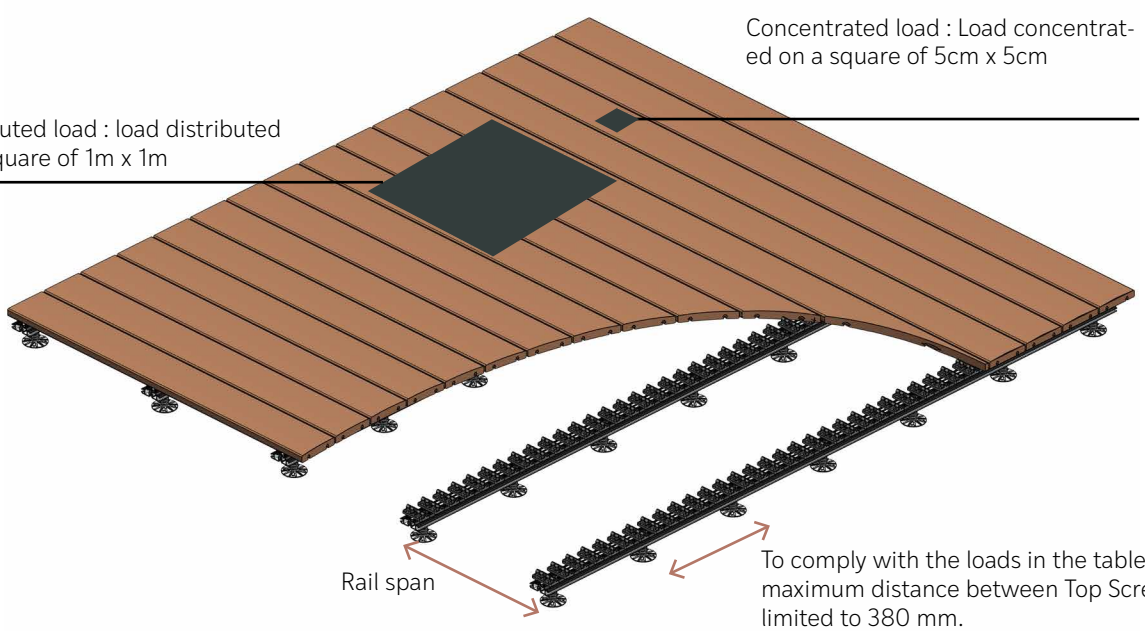
GRAD CLIP + TOP SCREW

Material	Polyoxymethylene
Density (kg/m³)	1410
Colour	Black
Tensile stress at yield (MPa)	64
Fusion temperature (°C)	190-220
Tensile modulus (MPa)	2850
Coefficient of linear expansion (10^{-6}/K)	110



USE CATEGORIES ACCORDING TO FRENCH NORMS AND EUROCODE 1 EN 1991-1-1 FOR DECKING

Rail spans and pedestal spans are defined according to the distributed and concentrated loads, following French regulations and Eurocode 1 EN 1991-1-1, and not taking local requirements into account.



USE CATEGORY	SPECIFIC USE	DISTRIBUTED LOAD (kN/m²)		CONCENTRATED LOAD (kN)
A	Residential: rooms in residential buildings and houses, hospital rooms and wards, hotel and hostel rooms, kitchens and sanitary facilities. Decks and balconies.	Floors	1,5	2,0
		Staircases	2,5	
		Balconies	**3,5***	

* Maximum load for use category A

Top Rail is only suitable for use in category A.

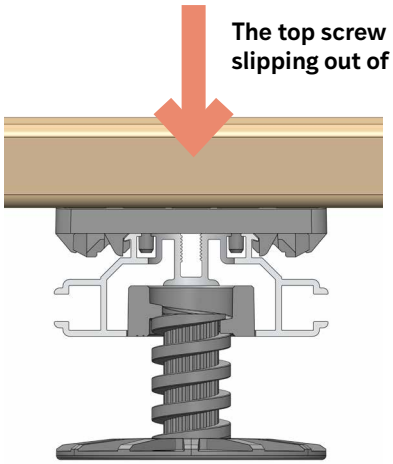
The values in the table above take account of snow loads in regions A to D up to 1700 m altitude and in region E up to 1000 m altitude.

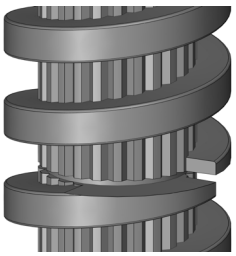
The approach used is that defined in :

- NF DTU 51.4 for terraces < 1m from the ground
- The professional rules of the CSFE (Chambre Syndicale Française d'Étanchéité). Design and construction of waterproofed flat roofs and balconies

The characteristic compressive strength of the Top Screw mini-pedestal is **F max,k=3.67kN**

The top screw pads are serrated, to prevent them from slipping out of place due to vibration.





SNOW LOADS ACCORDING TO FRENCH NORMS AND EUROCODE 1 EN 1991-1-3 FOR DECKING

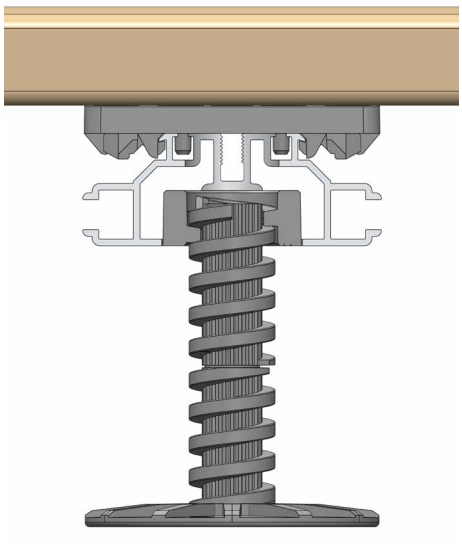
REGIONS	A1	A2	B1	B2	C1	C2	D	E
Characteristic value (Sk in kN/m²) of the snow load on the ground at an altitude below 200 m	0,45	0,45	0,55	0,55	0,65	0,65	0,9	1,4
Calcul value (S,d in kN/m²) of the exceptional snow load on the ground	0,45	1	1	1,35	0,65	1,35	1,8	1,4

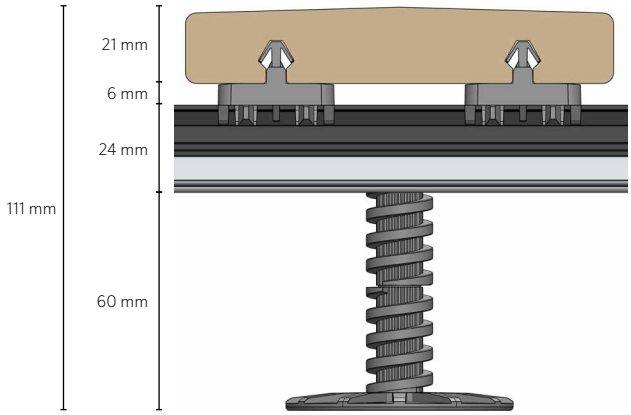
WIND LOADS

Wind speed Vb,0 (m/s)	17	22	24	26	28	30	32	34	36
Maximum characteristic lift Wk,max (kN/m²)	-0,56	-0,94	-1,11	-1,31	-1,51	-1,74	-1,98	-2,23	-2,50

Grad can carry out a study of the number of required ground anchor points if justification is required from an inspection authority.

MAXIMUM HEIGHT WITH FULL TOP SCREW :

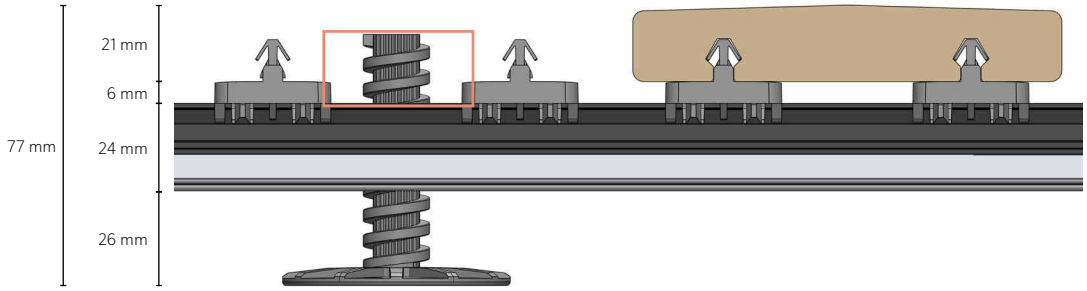


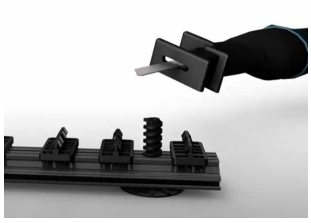


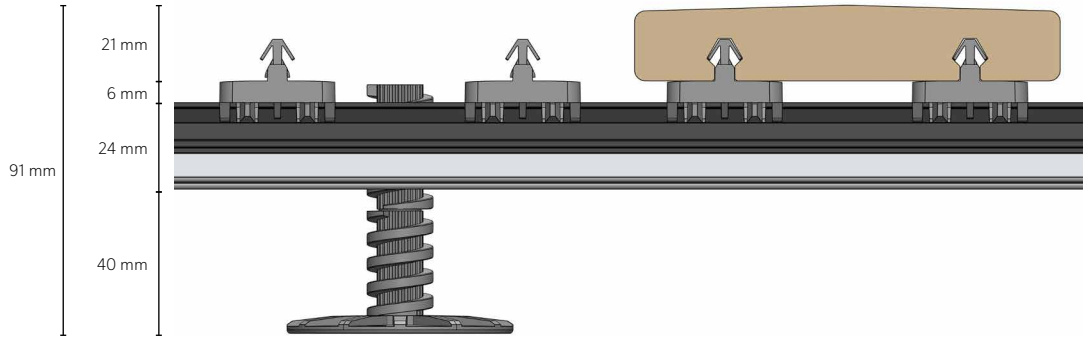
POSSIBLE HEIGHTS WITH FULL TOP SCREW :

For heights between 77 and 91 mm, cut off the top of the Top Screw using:

- hammer and chisel
- a sabre saw

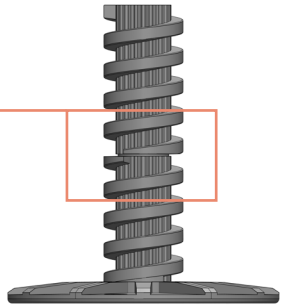


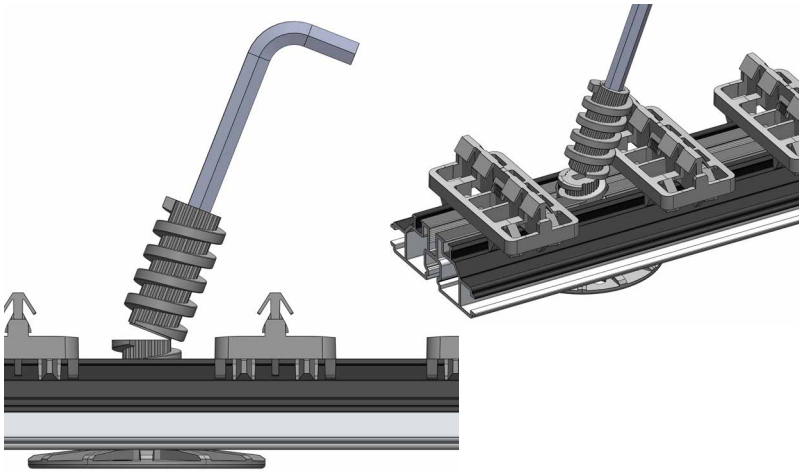




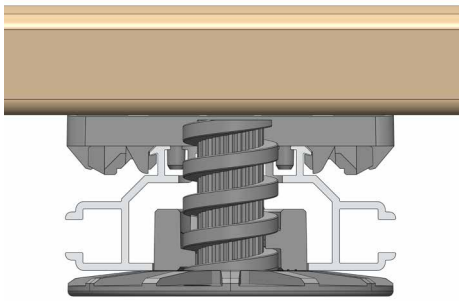
TRIMMING THE TOP SCREW

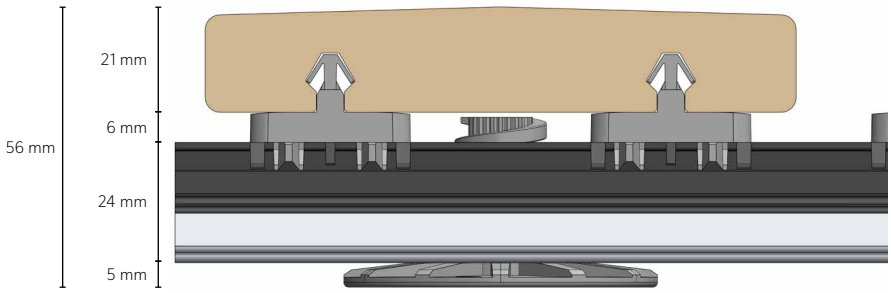
Break off the top of the Top Screw using an Allen wrench to keep the screw from colliding with the decking boards. The stem is perforated for this purpose.



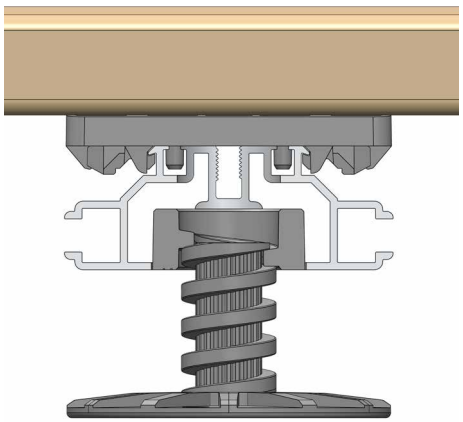


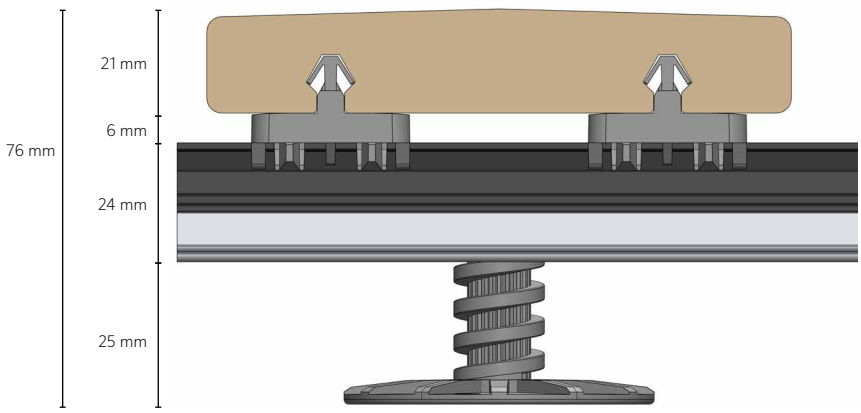
MINIMUM HEIGHT WITH ½ TOP SCREW :





MAXIMUM HEIGHT WITH ½ TOP SCREW :

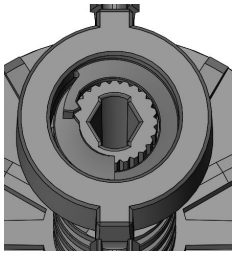


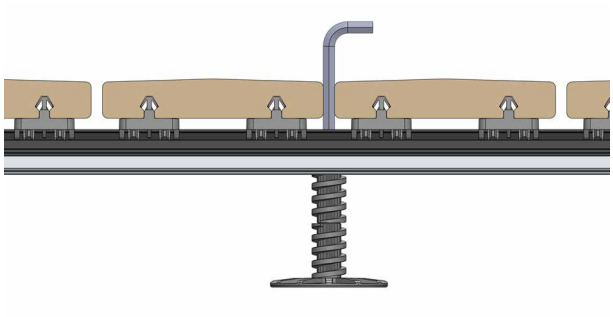


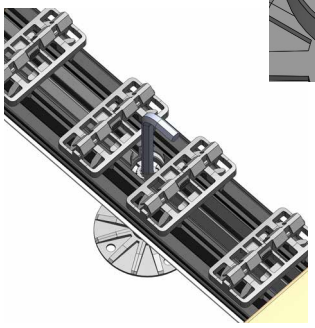
TOP SCREW HEIGHT ADJUSTMENT

WITH A FULL-SIZE TOP SCREW

The height can be adjusted between two boards, using an Allen wrench.

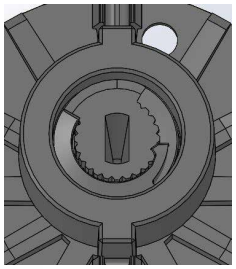


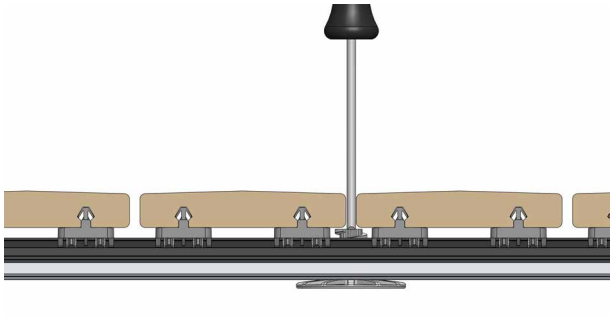


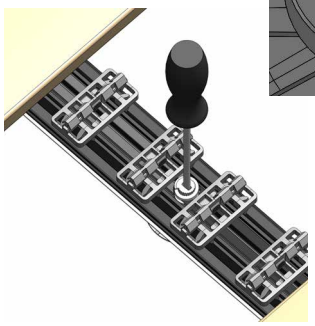


WITH A SHORTENED TOP SCREW

The height can be adjusted between two boards, using a flat-head screwdriver.



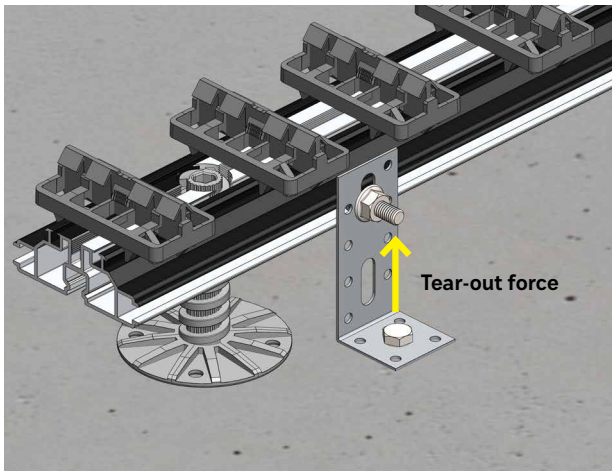




TECHNICAL SOLUTIONS FOR ANCHORING THE DECK TO THE GROUND IN RELATION TO WIND UPLIFT STRESS

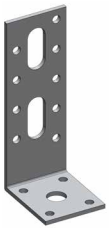
The deck can be anchored to the ground on a hard surface such as a concrete slab. For waterproofed terraces, vertical threaded rods can be installed by the waterproofing contractor. The waterproofing company will seal the rod around the membrane.

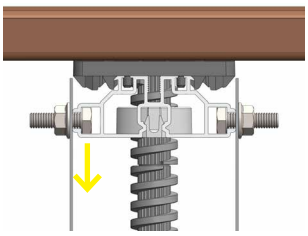
FLOOR MOUNTING



Use an angle bracket or steel strip with M6 bolts to anchor the deck to the ground. Fastening is staggered, and the number of anchors per m² can be determined by taking into account the uplift force due to wind and the deck's own weight.

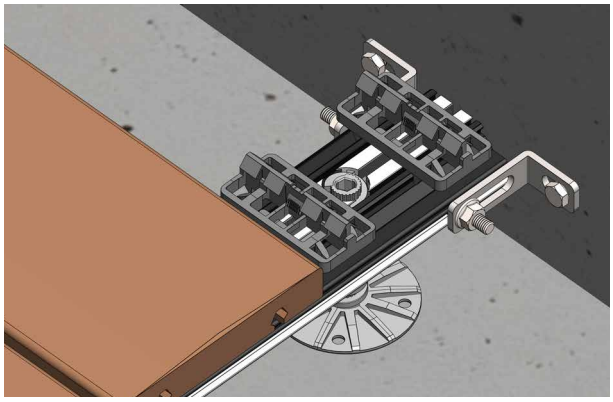
The M6 bolts can be slid along the lateral grooves of the Top rails.

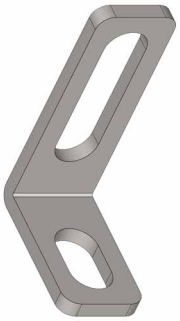




The characteristic strength of the bolt in the rail can be determined with laboratory tests.

WALL MOUNTING



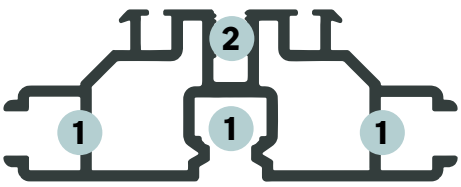


A wall-mounting solution is also possible, using the same principle as above, with a bracket on each side of the rail.

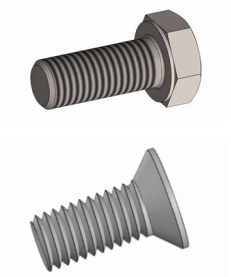
Grad brackets (ref. 70372, screws not supplied) are ideal for this purpose.

Caution: Any intervention on the wall may result in the loss of the ten-year warranty.

Other anchoring possibilities are also possible, thanks to the rail's multiple grooves.



COMPATIBLE SCREWS FOR ANCHORING VIA RAIL GROOVES



1 M6 hex head screw or nut

2 M5 countersunk screw