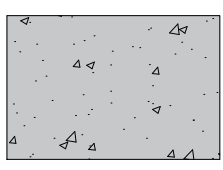
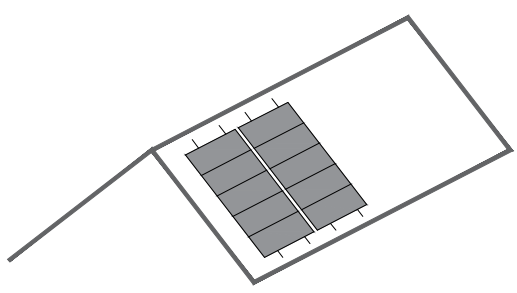
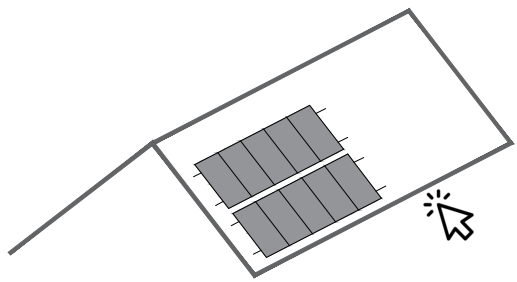


## Installations

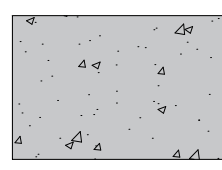
Select 

### Portrait

### Landscape

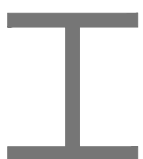
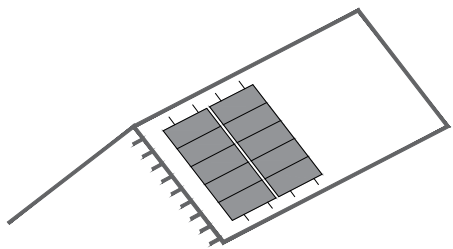


Concrete Slab



Concrete Slab

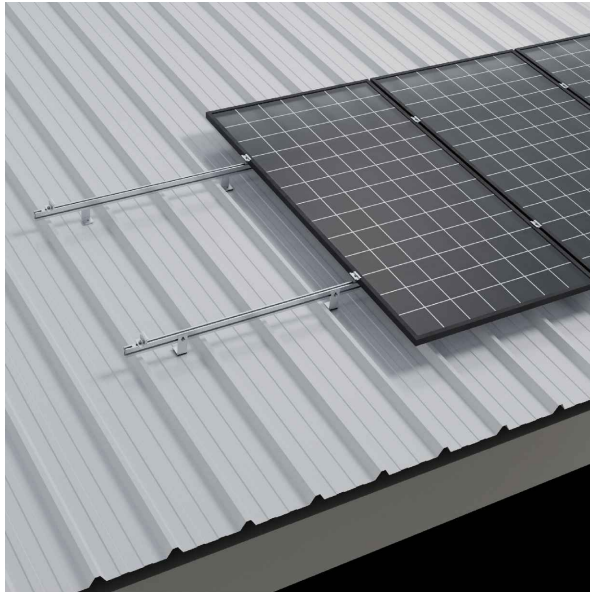
### Landscape



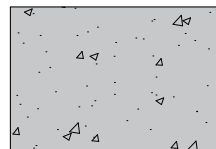
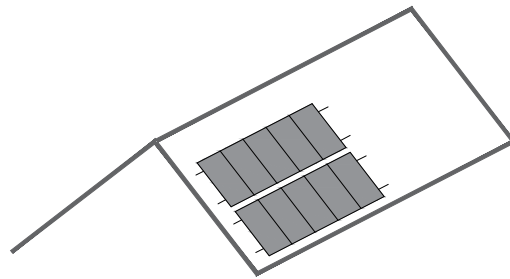
Steel Beam

Reservado el derecho a efectuar modificaciones. Las ilustraciones de productos son a modo de ejemplo y pueden diferir del producto suministrado

## 03V-EN



### Portrait



Concrete Slab



## CONTENTS

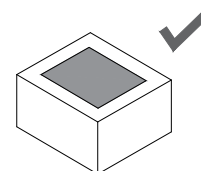
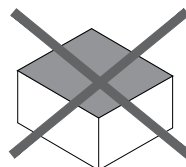
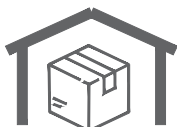
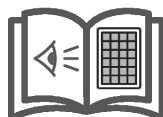
- 1. General Information**
- 2. Kit Contents**
- 3. Portrait Installation**
- 4. Fastening Technical Information**
- 5. Maximum Loads and Reactions**
- 6. Installation Zone**
- 7. Installation Video**
- 8. Certificates and Guarantee**

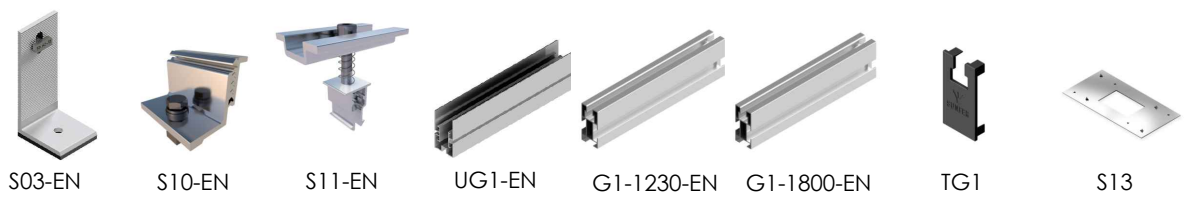




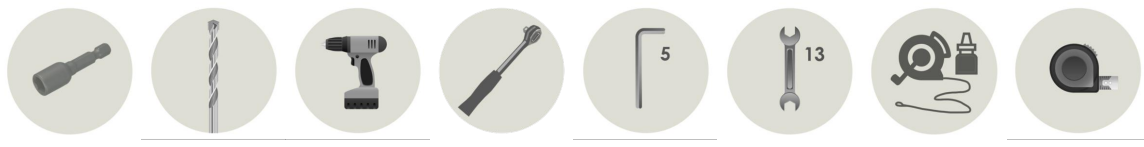
### General Information and Recommendations **ENG**

- All installation instructions and product specifications provided must be adhered to.
- Check the condition of the roof covering and its carrying capacity. The management overseeing installation is responsible for verifying that the substructure of the roof as well as the static structure of the building itself is capable of supporting additional loads before any installation is carried out.
- To avoid turbulence from wind a minimum security distance (defined by regulations) must be maintained between the photovoltaic installations and roof edges, as well as other obstacles such as chimneys or vents.
- In the case of chimneys or other features which may need future maintenance, a minimum distance must be maintained in order to facilitate said maintenance or to extinguish fires. This distance shall be either 1m or that suggested by the relevant authority, whichever is greater.
- The surface of the roof covering must be clean and dry. Any major irregularities of the roof must be corrected or eliminated.
- The mounting must always be anchored to the structure of the roof.
- Check the weathertightness of the mount once fastened.
- Place solar panels such that they are distributed symmetrically along the support, leaving equal overhangs at each end.
- Clamps must not be tightened using impact drivers.
- Check that the support attachment points are compatible with the solar panel manufacturer's specifications.
- Uninstallation must be carried out in the reverse order from the installation.
- During the shipping of products take extreme care to maintain the integrity of the packaging. Store in a dry, well-ventilated area. Minimize exposure to large temperature differences and humidity. Avoid outdoor storage. Avoid sources of dripping water, puddles, splashing, or any other contact with water in the storage area. If the product becomes wet, immediately dry and clean as well as possible. Do not leave the product directly on the floor or ground where it may attract moisture. Store on the shipment's original pallet or on shelves.
- We reserve the right to make changes to our products at any moment without prior warning if, from our point of view, the changes are necessary for the improvement of the product. All illustrations in plans and catalogues are for example only and therefore may differ from the actual product provided.
- Aluminium components can be delivered in different finishes without compromising the structural solution. Available finishes: raw/anodised/lacquered

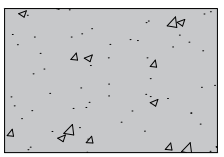




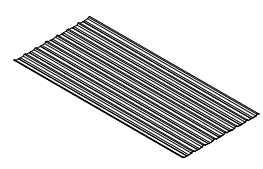
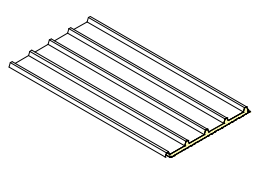
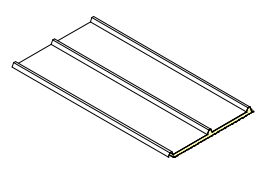
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	4	4	-	-	2	-	4	2
	4	4	2	2	4	-	4	3
	6	4	2	2	4	-	4	3
	6	4	4	2	-	4	4	4
	8	4	4	2	-	4	4	4
	6	4	6	4	2	4	4	5
	8	4	6	4	2	4	4	5
	10	4	6	4	2	4	4	5



Anchoring surface:



Concrete Slab



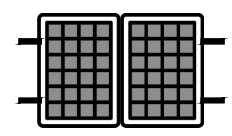
Max. 2279x1150 mm  
Thickness: 28-40 mm



Profiles of **EN AW 6005A T6 Aluminium**



Fasteners of **A2-70 Stainless Steel**

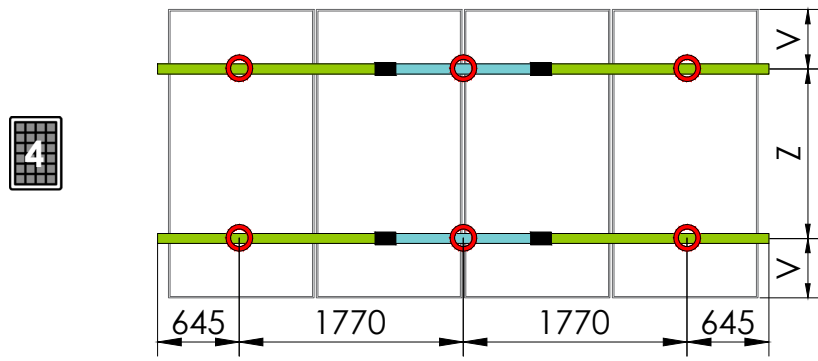
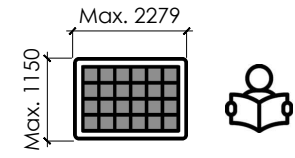
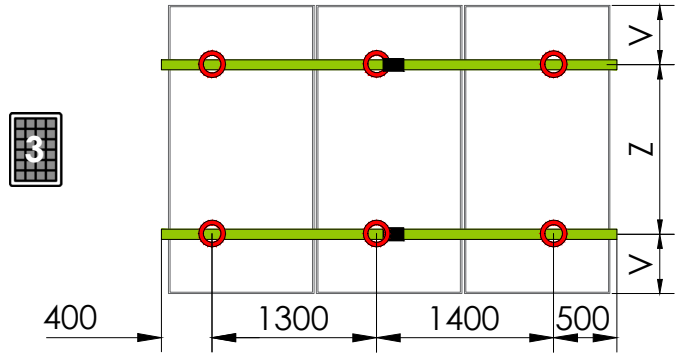
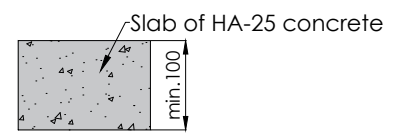
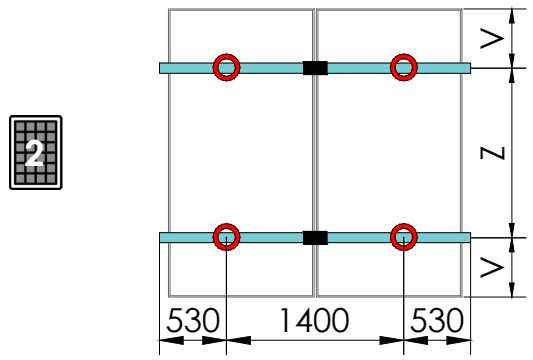
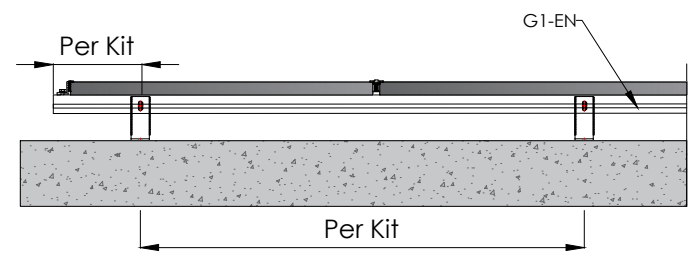
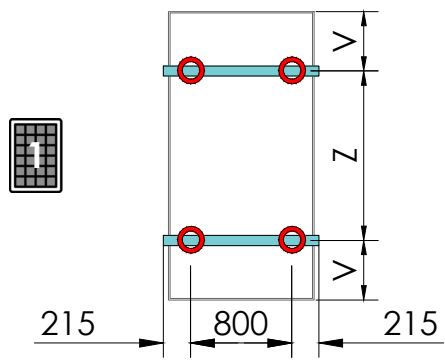
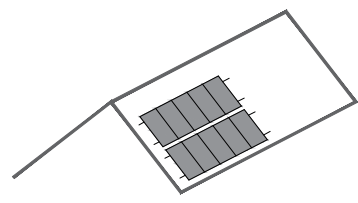


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## Portrait

# 03V-EN

## Anchor Spacing



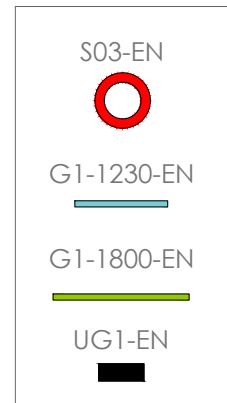
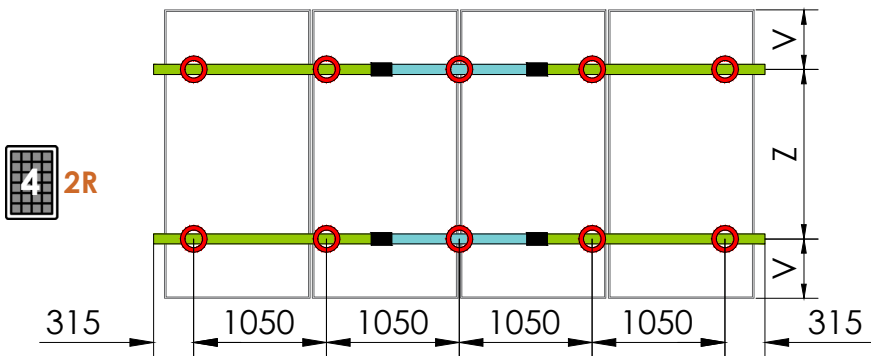
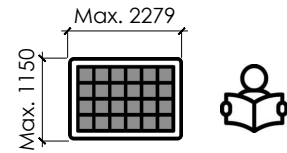
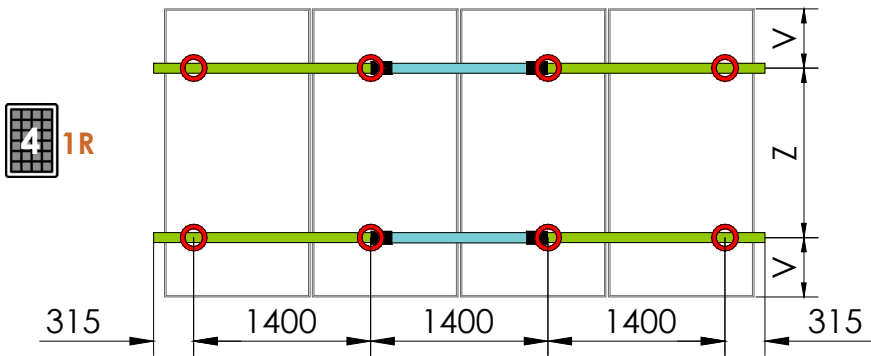
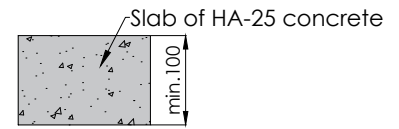
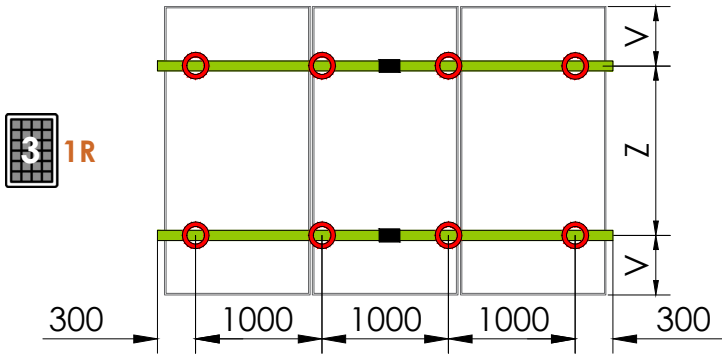
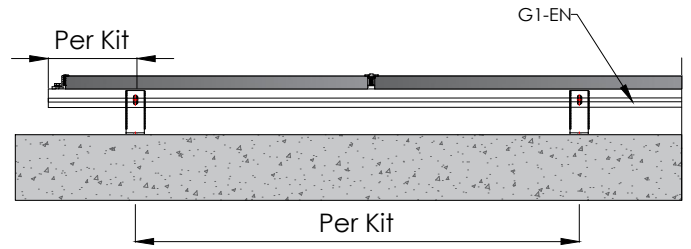
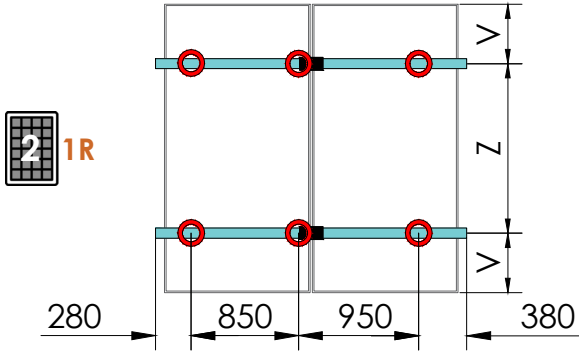
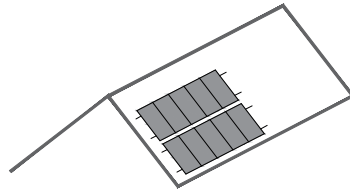
- S03-EN
- G1-1230-EN
- G1-1800-EN
- UG1-EN



The maximum distance "Z" between profiles and the overhang distance "V" should be determined by consulting the technical datasheets of the solar panel manufacturer.

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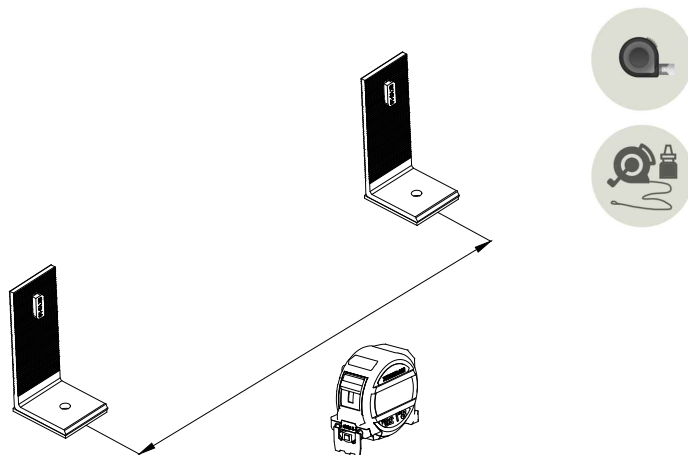
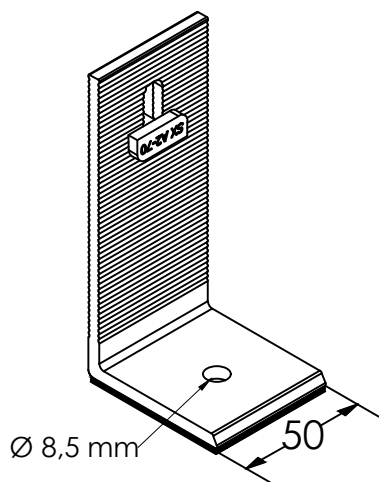
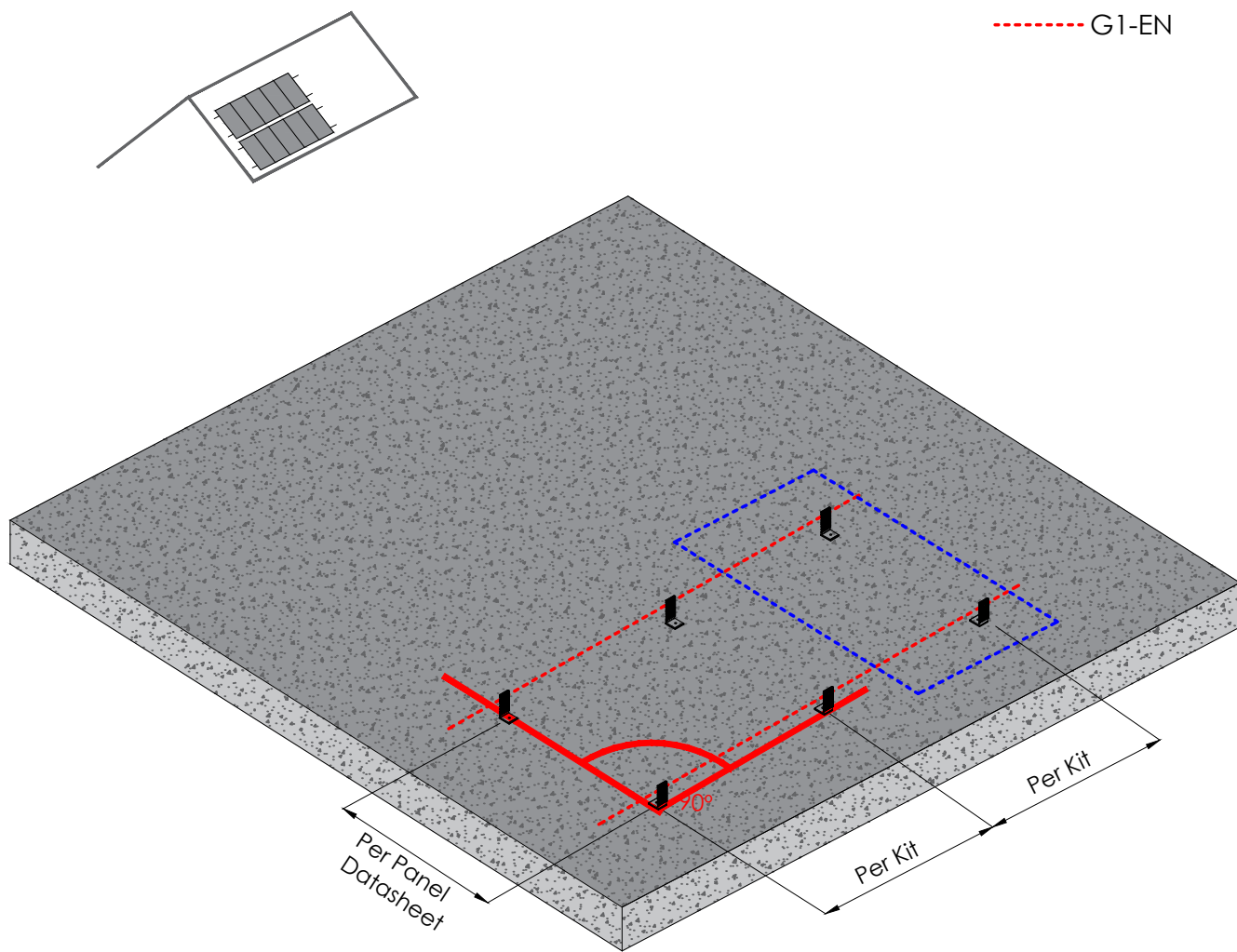




The maximum distance "Z" between profiles and the overhang distance "V" should be determined by consulting the technical datasheets of the solar panel manufacturer.

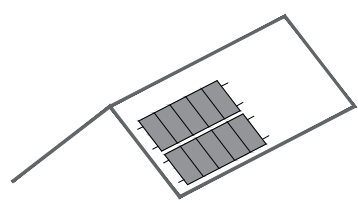
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----- Panel  
----- G1-EN

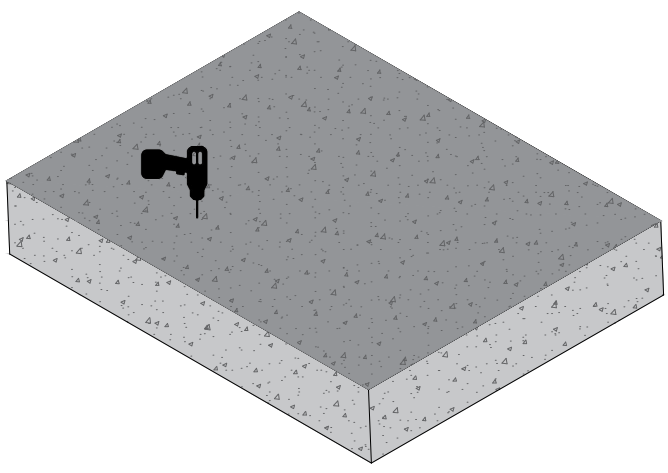


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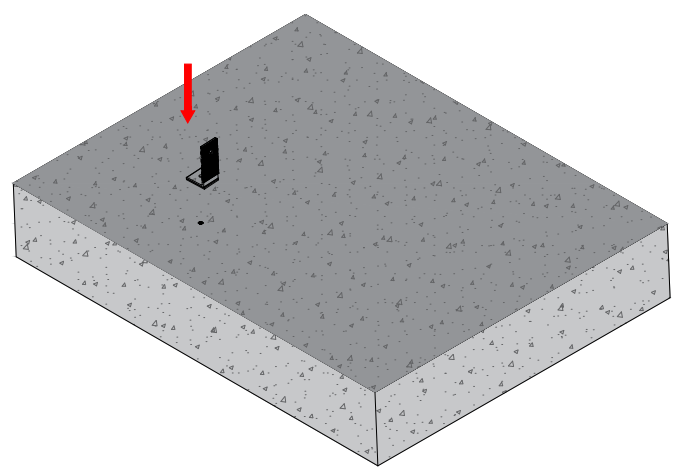




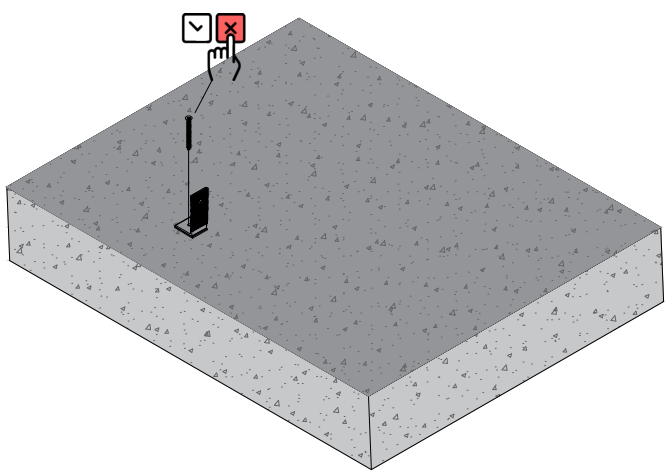
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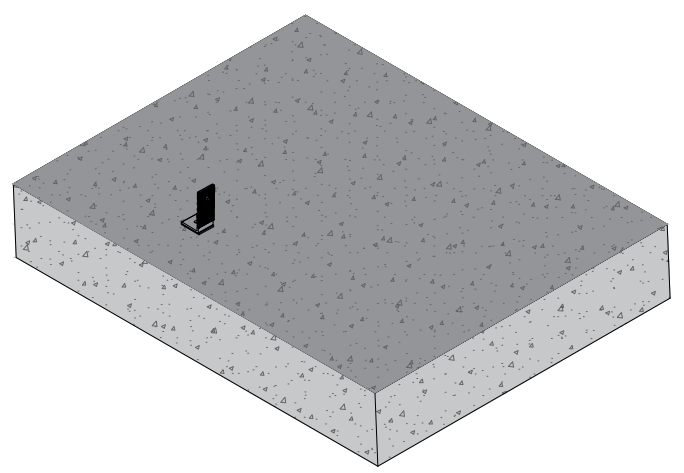
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3.



4.

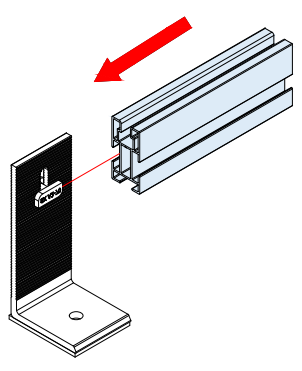
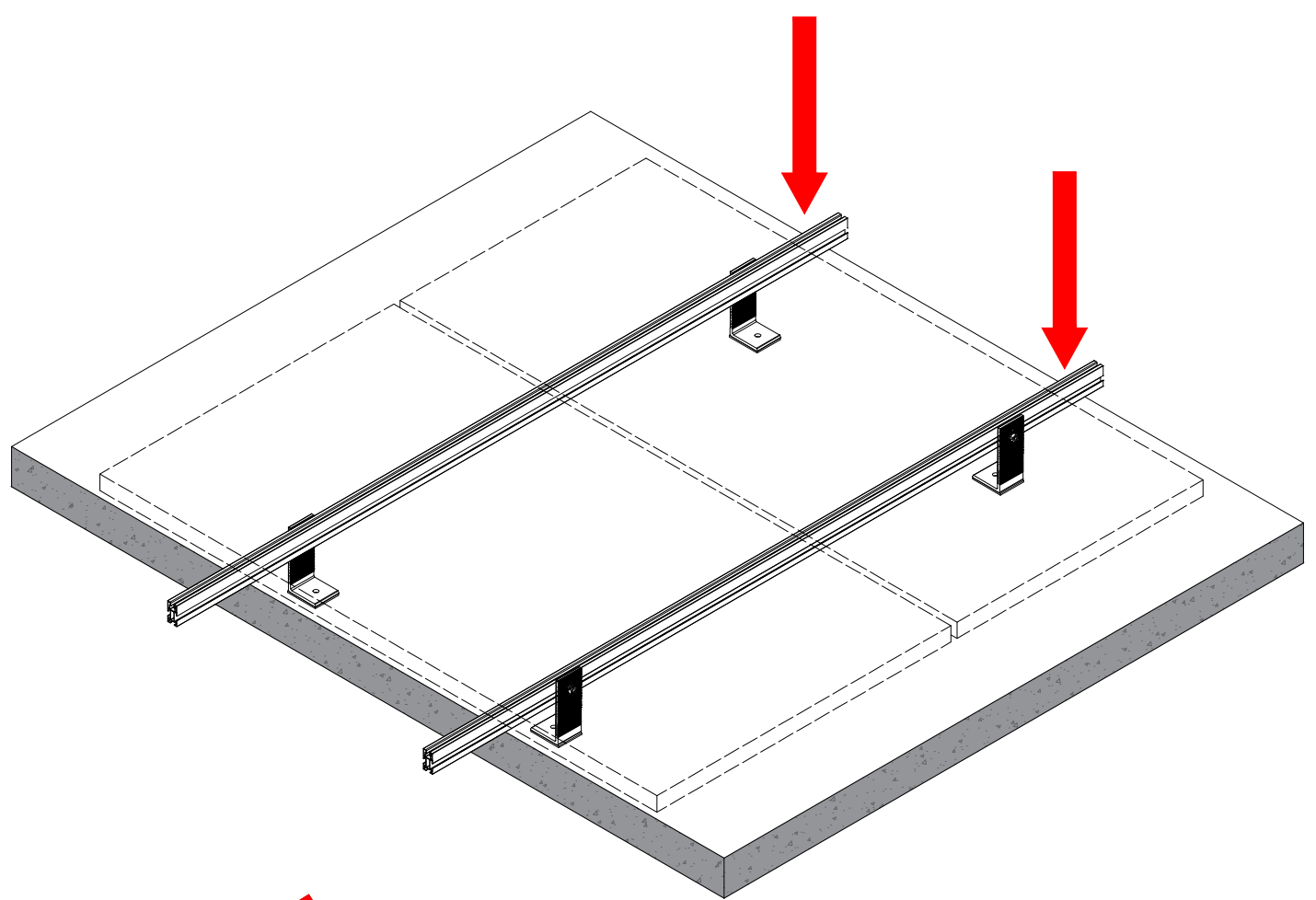
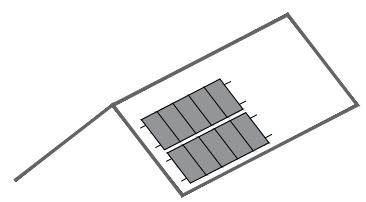
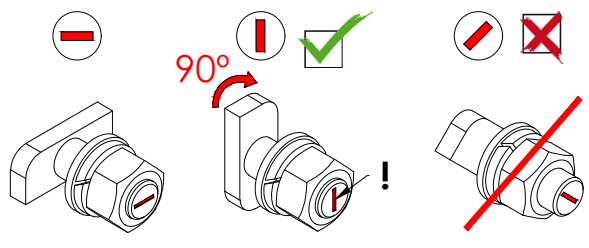


\*Must support the reaction forces at the anchor point



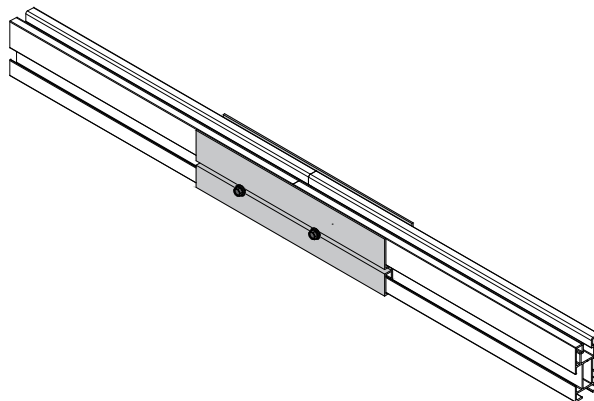
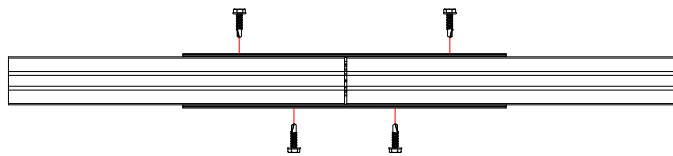
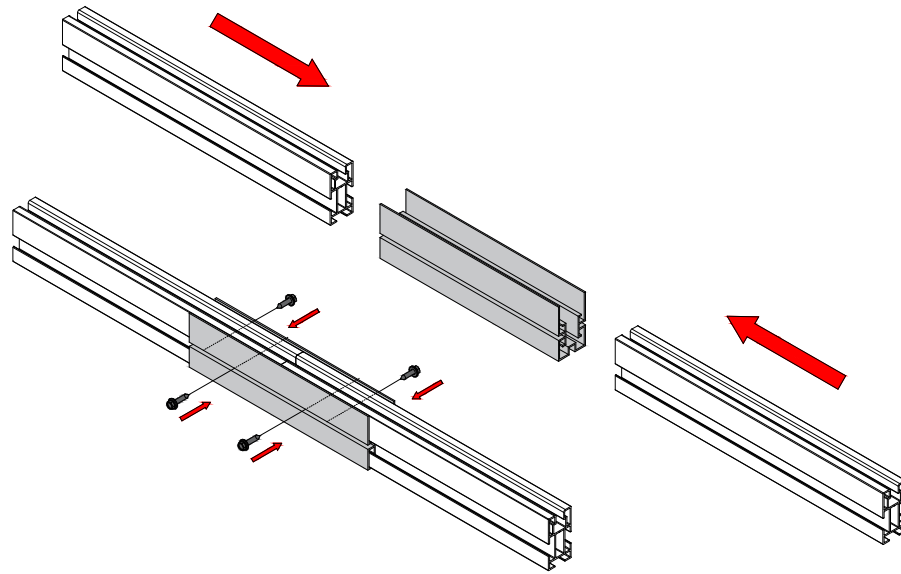
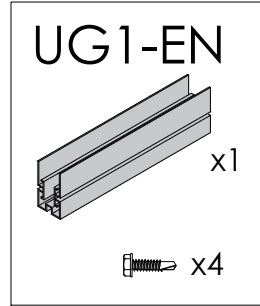
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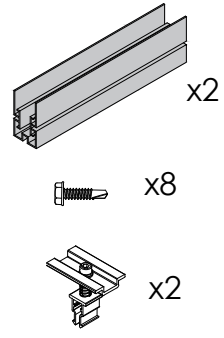
6 Nm



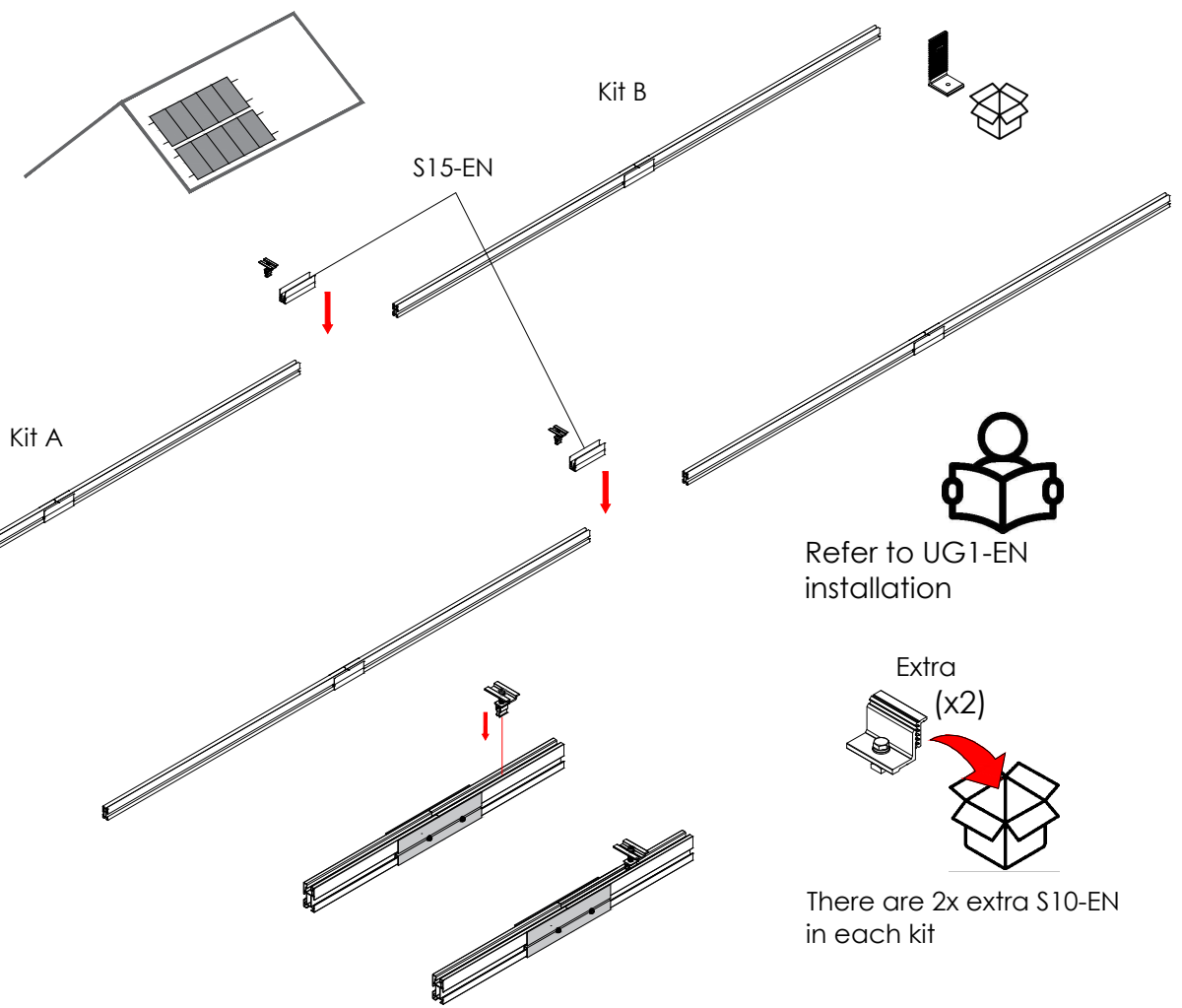
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**S15-EN**  
Not included



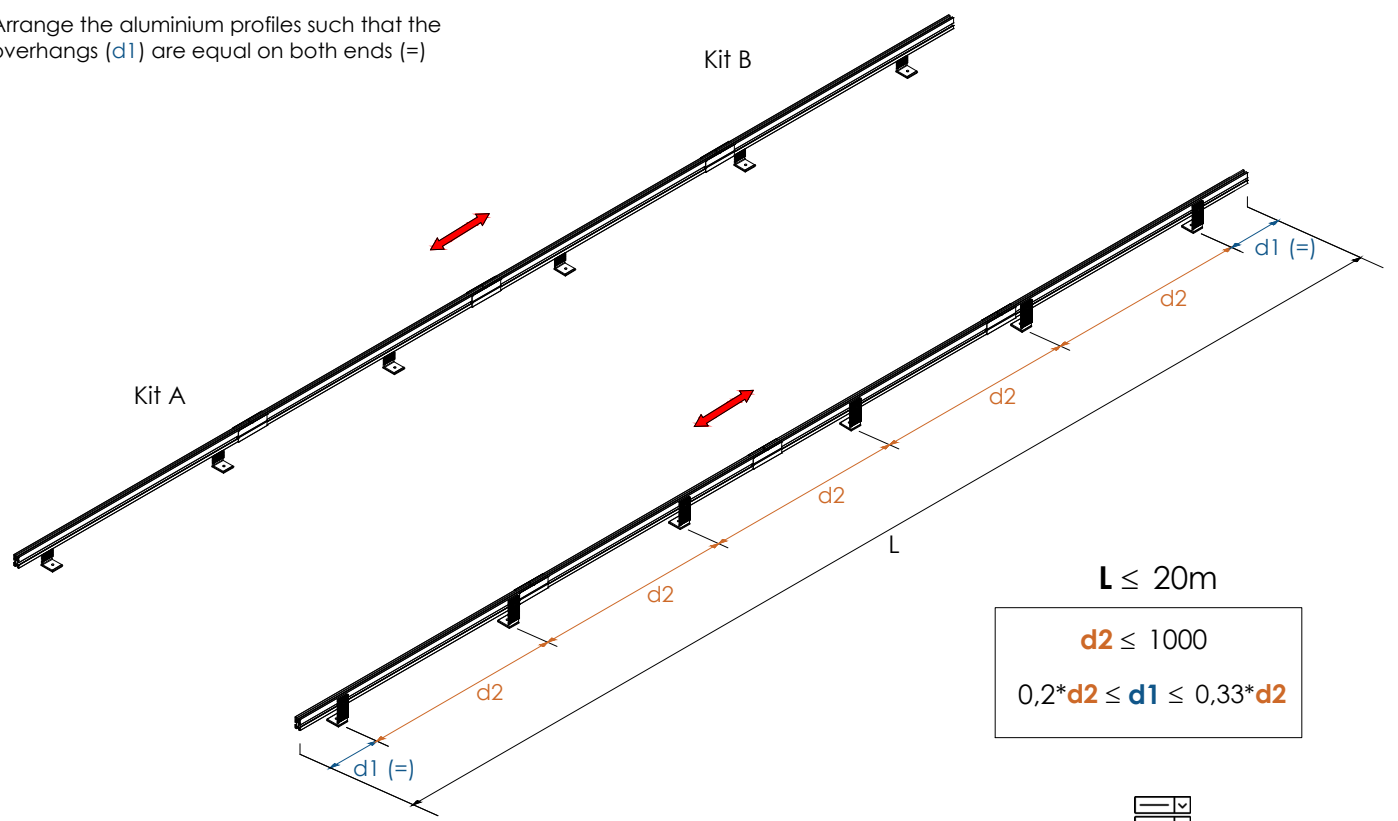
x2  
x8  
x2



**Joining the kits:**

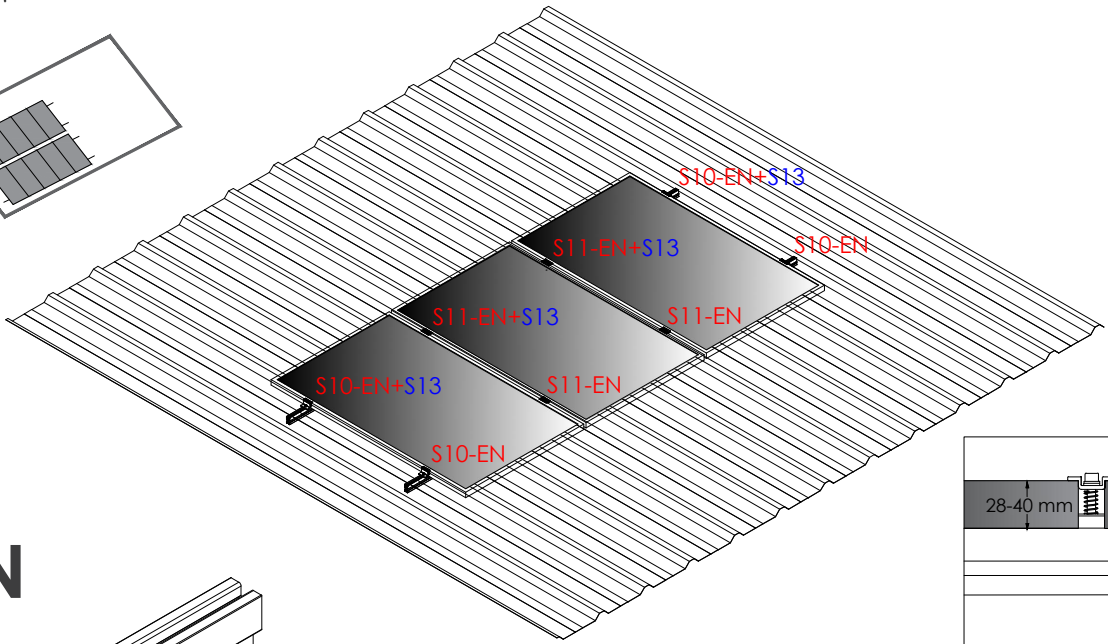
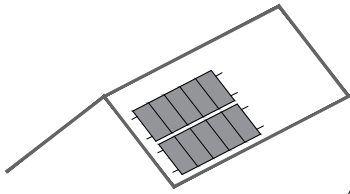
The anchoring points (d2) must be equidistant

Arrange the aluminium profiles such that the overhangs (d1) are equal on both ends (=)

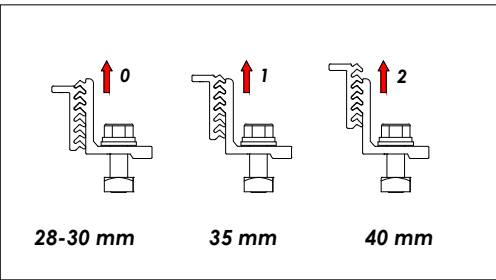
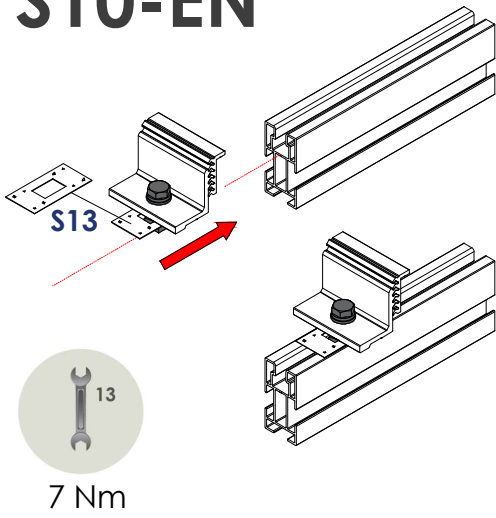


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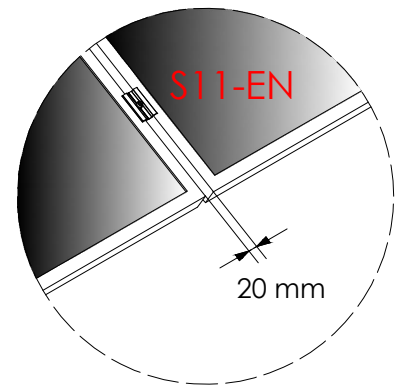
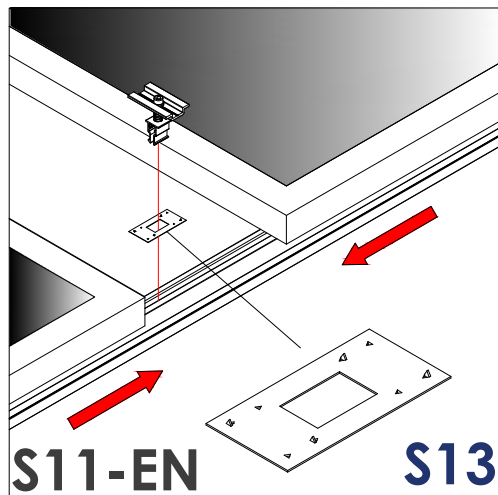
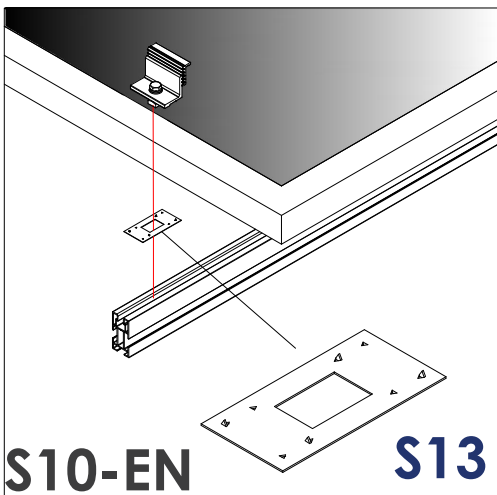
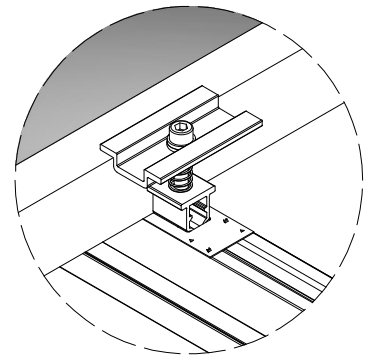
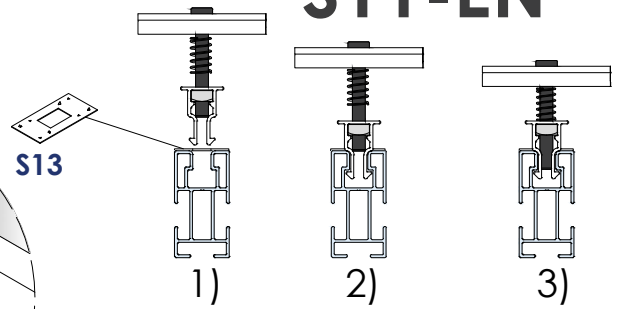
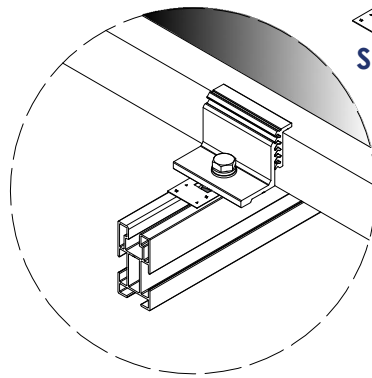




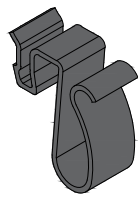
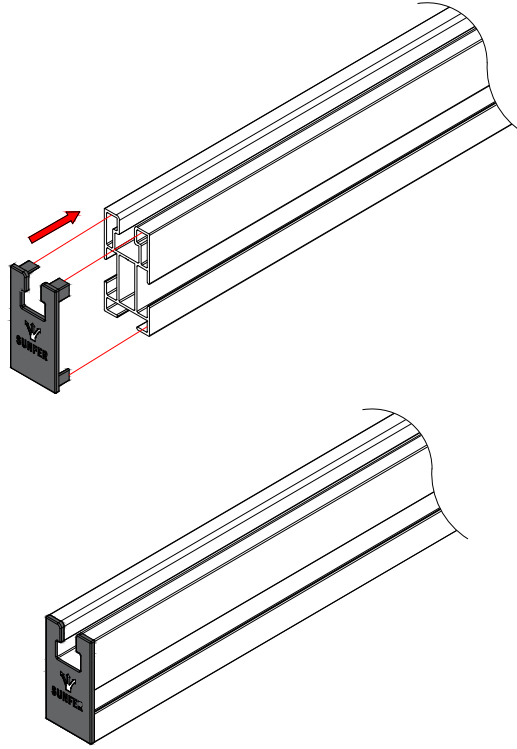
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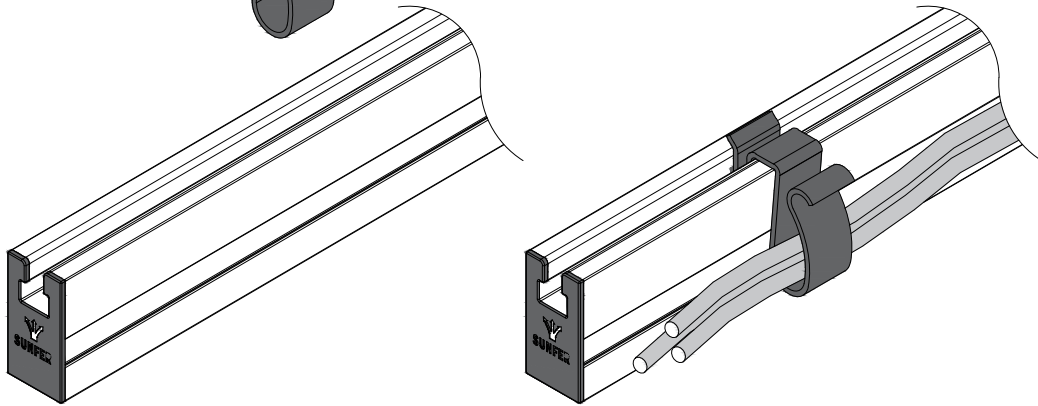
### S11-EN



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**Optional Cable Clip**  
(Not included)

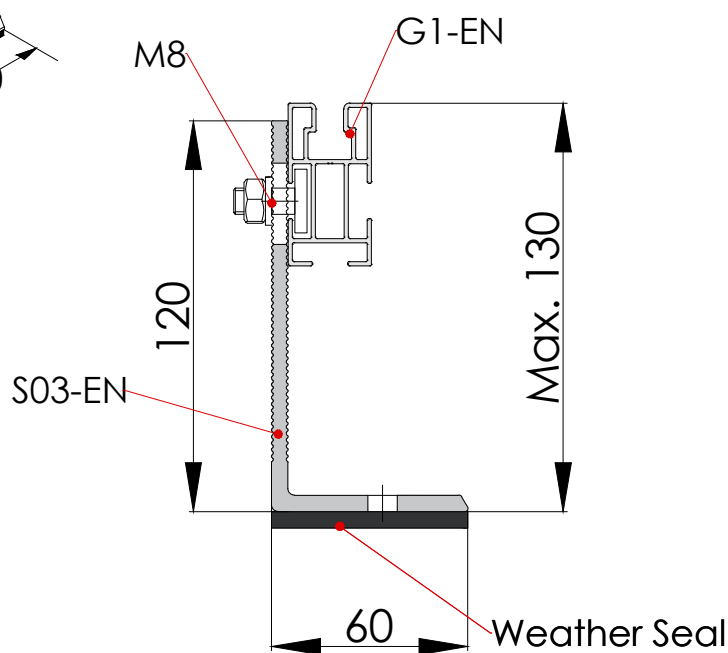
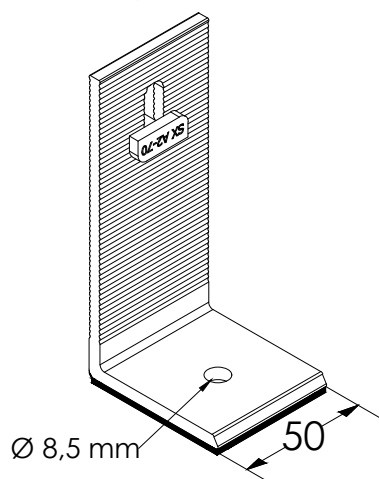


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# 03V-EN

# S03-EN

## Technical Information: Anchor



Description	Coplanar Support
Panel Orientation	Portrait/Landscape
Format	KIT of 1 to 4 Panels
Joining Kit	S15-EN not included (optional)
Application Surface	Metal Sheet
Anchoring Surface	Concrete Slab and Metal Beams
Type of Fastening	Screwed (Screws not included)
Mount	S03-EN
Profile	G1-EN
Grounding Plate	S13
Maximum Panel Dimensions	2279x1150 mm
Panel Thickness	from 28 to 40 mm
Materials	Fasteners: A2-70 Stainless Steel Profiles: Raw or Anodized EN AW 6005A T6 Aluminium EPDM Weather Seal
Maximum Loads	Per configuration
Structural Calculation	Computational model checked against EUROCODE 9 "PROJECT STRUCTURES OF ALUMINIUM"

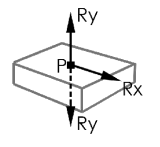
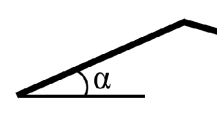


# 03V-EN

## Loads and Reactions

### Maximum admissible loads and their reactions

- 5° Pitch
- 10° Pitch
- 15° Pitch
- 20° Pitch
- 25° Pitch
- 30° Pitch
- 35° Pitch
- 40° Pitch



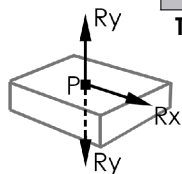
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Maximum Admissible Loads and Reactions					$\alpha$ 5°	
Kit	Diagram	Loads		kN/mount	kN/mount	kN/mount
		(Km/h)	(Kg/m2)			
1		110	231	0.150	0.015	1.7500
		130	265	0.138	0.015	1.6301
		150	265	0.138	0.050	1.6466
		180	265	0.138	0.112	1.6758
		210	265	0.138	0.185	1.7103
		250	263	0.137	0.300	1.7535
2		110	106	0.147	0.030	1.7537
		130	130	0.144	0.030	1.7513
		150	127	0.142	0.100	1.7508
		180	122	0.137	0.224	1.7534
		210	116	0.131	0.371	1.7554
		250	106	0.121	0.601	1.7522
2 1R		110	144	0.148	0.016	1.7507
		130	178	0.147	0.016	1.7532
		150	175	0.144	0.054	1.7528
		180	170	0.141	0.121	1.7548
		210	164	0.136	0.200	1.7563
		250	154	0.129	0.325	1.7539
3		110	86	0.146	0.024	1.7523
		130	106	0.144	0.024	1.7627
		150	103	0.140	0.079	1.7621
		180	97	0.133	0.178	1.7519
		210	91	0.126	0.294	1.7542
		250	81	0.115	0.477	1.7505
3 1R		110	128	0.148	0.018	1.7528
		130	158	0.146	0.018	1.7555
		150	155	0.144	0.061	1.7551
		180	150	0.140	0.137	1.7572
		210	144	0.135	0.227	1.7589
		250	134	0.126	0.368	1.7562
4		110	64	0.145	0.036	1.7646
		130	77	0.140	0.036	1.7525
		150	74	0.136	0.121	1.7518
		180	69	0.128	0.271	1.7557
		210	63	0.119	0.447	1.7587
		250	53	0.105	0.726	1.7539
4 1R		110	84	0.146	0.022	1.7609
		130	102	0.143	0.022	1.7512
		150	99	0.139	0.075	1.7506
		180	94	0.133	0.167	1.7537
		210	88	0.126	0.276	1.7561
		250	78	0.114	0.448	1.7523
4 2R		110	119	0.148	0.019	1.7607
		130	146	0.146	0.019	1.7560
		150	143	0.143	0.064	1.7555
		180	138	0.139	0.144	1.7578
		210	132	0.133	0.237	1.7597
		250	122	0.124	0.385	1.7568

Table 1 - Maximum admissible loads and reactions.



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



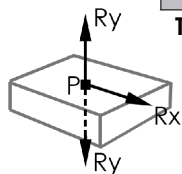
Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.  
 The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.  
 The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.  
 The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>



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Maximum Admissible Loads and Reactions					10°	
		Loads				
		(Km/h)	(Kg/m2)			(kN/mount)
		110	237	0,303	0,014	1.7531
		130	265	0,272	0,016	1.5952
		150	265	0,272	0,051	1.6117
		180	265	0,272	0,113	1.6410
		210	265	0,272	0,186	1.6755
		250	265	0,272	0,302	1.7298
		110	109	0,297	0,028	1.7586
		130	134	0,293	0,032	1.7596
		150	131	0,287	0,102	1.7599
		180	125	0,275	0,226	1.7528
		210	119	0,264	0,373	1.7563
		250	109	0,245	0,603	1.7557
		110	148	0,300	0,015	1.7557
		130	182	0,295	0,017	1.7502
		150	179	0,291	0,055	1.7504
		180	174	0,283	0,122	1.7533
		210	168	0,274	0,201	1.756
		250	158	0,260	0,326	1.7555
		110	89	0,296	0,022	1.7656
		130	108	0,288	0,025	1.7538
		150	105	0,281	0,081	1.7541
		180	100	0,270	0,179	1.7587
		210	94	0,256	0,296	1.7628
		250	84	0,233	0,478	1.7621
		110	131	0,298	0,017	1.7509
		130	162	0,295	0,020	1.7564
		150	159	0,290	0,063	1.7567
		180	153	0,280	0,139	1.7506
		210	147	0,270	0,228	1.7536
		250	137	0,254	0,370	1.7531
		110	65	0,290	0,034	1.7508
		130	79	0,282	0,039	1.7524
		150	76	0,274	0,123	1.7528
		180	71	0,259	0,273	1.7586
		210	65	0,242	0,450	1.7639
		250	55	0,213	0,728	1.7629
		110	86	0,295	0,021	1.7587
		130	105	0,288	0,024	1.7566
		150	102	0,281	0,076	1.7569
		180	97	0,270	0,169	1.7616
		210	90	0,253	0,278	1.7526
		250	80	0,230	0,450	1.7518
		110	122	0,299	0,018	1.7613
		130	150	0,294	0,021	1.0000
		150	146	0,287	0,066	1.7501
		180	141	0,279	0,145	1.7536
		210	135	0,268	0,239	1.7568
		250	125	0,250	0,386	1.7562

**Table 2 - Maximum admissible loads and reactions.**



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>

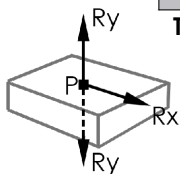


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Maximum Admissible Loads and Reactions					15°	
Kit	Loads		kN/mount	kN/mount	kN/mount	
	(Km/h)	(Kg/m2)				
1		110	243	0.454	0.009	1.7550
		130	265	0.399	0.048	1.5745
		150	265	0.399	0.093	1.6031
		180	265	0.399	0.173	1.6535
		210	265	0.399	0.267	1.7132
		250	255	0.385	0.415	1.7544
2		110	110	0.439	0.019	1.7630
		130	132	0.423	0.096	1.7516
		150	127	0.409	0.186	1.7561
		180	117	0.381	0.346	1.7520
		210	106	0.350	0.534	1.7557
		250	88	0.299	0.830	1.7541
2 1R		110	150	0.445	0.010	1.7537
		130	183	0.434	0.052	1.7529
		150	178	0.424	0.101	1.7564
		180	168	0.402	0.187	1.7532
		210	157	0.378	0.288	1.7560
		250	139	0.339	0.448	1.7548
3		110	88	0.430	0.015	1.7520
		130	106	0.416	0.076	1.5706
		150	101	0.399	0.148	1.7625
		180	91	0.366	0.274	1.7575
		210	80	0.329	0.423	1.7619
		250	62	0.163	0.658	1.7601
3 1R		110	133	0.442	0.012	1.7562
		130	162	0.432	0.059	1.7576
		150	156	0.417	0.114	1.7525
		180	147	0.396	0.212	1.7580
		210	135	0.367	0.327	1.7522
		250	117	0.324	0.509	1.7508
4		110	64	0.420	0.023	1.7524
		130	76	0.401	0.116	1.7588
		150	71	0.380	0.225	1.7657
		180	61	0.338	0.417	1.7594
		210	50	0.182	0.645	1.765
		250	32	0.144	1.002	1.7626
4 1R		110	86	0.432	0.014	1.7627
		130	103	0.416	0.072	1.7615
		150	97	0.395	0.139	1.7542
		180	88	0.364	0.258	1.7620
		210	76	0.323	0.398	1.7537
		250	58	0.160	0.619	1.7518
4 2R		110	123	0.441	0.012	1.7593
		130	149	0.429	0.062	1.756
		150	143	0.413	0.119	1.7506
		180	134	0.390	0.221	1.7564
		210	122	0.359	0.342	1.7502
		250	105	0.316	0.532	1.7583

**Table 3 - Maximum admissible loads and reactions.**

- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

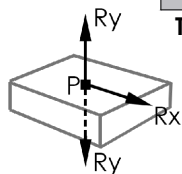
The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>



        		Maximum Admissible Loads and Reactions					 <b>20°</b>
		Loads		 <b>(kN/mount)</b>	 <b>(kN/mount)</b>	 <b>(kN/mount)</b>	
(Km/h)	(Kg/m2)						
	110	189	0.462	0.012	1.3310		
	130	236	0.461	0.050	1.3530		
	150	236	0.461	0.095	1.3815		
	180	236	0.461	0.175	1.4320		
	210	236	0.461	0.269	1.4916		
	250	236	0.461	0.417	1.5854		
	110	87	0.463	0.024	1.3941		
	130	109	0.463	0.101	1.4430		
	150	109	0.463	0.191	1.5001		
	180	109	0.463	0.350	1.6010		
	210	109	0.463	0.539	1.7203		
	250	94	0.408	0.835	1.7587		
	110	118	0.462	0.013	1.3636		
	130	148	0.463	0.054	1.4030		
	150	148	0.463	0.103	1.4468		
	180	148	0.463	0.189	1.5241		
	210	148	0.463	0.291	1.6155		
	250	147	0.460	0.451	1.7516		
	110	71	0.464	0.019	1.4205		
	130	89	0.464	0.080	1.4787		
	150	89	0.464	0.151	1.5465		
	180	89	0.464	0.278	1.6665		
	210	85	0.446	0.427	1.7610		
	250	66	0.221	0.662	1.7593		
	110	105	0.463	0.014	1.3758		
	130	131	0.461	0.062	1.4132		
	150	131	0.461	0.117	1.4618		
	180	131	0.461	0.215	1.5476		
	210	131	0.461	0.330	1.6490		
	250	125	0.443	0.512	1.7578		
	110	53	0.467	0.028	1.4690		
	130	66	0.464	0.122	1.5354		
	150	66	0.464	0.231	1.6218		
	180	65	0.459	0.423	1.7593		
	210	53	0.245	0.650	1.7592		
	250	34	0.193	1.008	1.7572		
	110	69	0.464	0.018	1.4248		
	130	86	0.462	0.075	1.4784		
	150	86	0.462	0.142	1.5479		
	180	86	0.462	0.261	1.6707		
	210	81	0.440	0.402	1.7554		
	250	62	0.217	0.623	1.7537		
	110	97	0.462	0.015	1.3814		
	130	121	0.460	0.065	1.4214		
	150	121	0.460	0.122	1.4733		
	180	121	0.460	0.224	1.5651		
	210	121	0.460	0.345	1.6736		
	250	111	0.427	0.535	1.7538		

**Table 4 - Maximum admissible loads and reactions.**

- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>

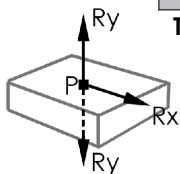


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Maximum Admissible Loads and Reactions		25°				
		Loads				
		(Km/h)	(Kg/m2)	(kN/mount)	(kN/mount)	(kN/mount)
		<b>1</b>		110	155	0.460
130	194			0.460	0.053	1.0733
150	194			0.460	0.099	1.1019
180	194			0.460	0.178	1.1524
210	194			0.460	0.272	1.2120
250	194			0.460	0.420	1.3058
<b>2</b>		110	70	0.462	0.030	1.1149
		130	88	0.463	0.107	1.1661
		150	88	0.463	0.197	1.2232
		180	88	0.463	0.356	1.3241
		210	88	0.463	0.545	1.4434
<b>2 1R</b>		250	91	0.476	0.841	1.6587
		110	96	0.462	0.016	1.0847
		130	120	0.461	0.058	1.1205
		150	120	0.461	0.106	1.1642
		180	120	0.461	0.192	1.2416
<b>3</b>		210	120	0.461	0.294	1.3330
		250	120	0.461	0.454	1.4767
		110	57	0.466	0.024	1.1464
		130	71	0.464	0.085	1.1991
		150	71	0.464	0.156	1.2669
<b>3 1R</b>		180	71	0.464	0.283	1.3869
		210	71	0.464	0.432	1.5286
		250	71	0.279	0.667	1.7516
		110	85	0.462	0.018	1.0956
		130	106	0.460	0.066	1.1333
<b>4</b>		150	106	0.460	0.121	1.1818
		180	106	0.460	0.218	1.2677
		210	106	0.460	0.334	1.3691
		250	106	0.460	0.515	1.5286
		110	41	0.463	0.036	1.1788
<b>4 1R</b>		130	52	0.466	0.129	1.2598
		150	52	0.466	0.238	1.3461
		180	52	0.466	0.430	1.4987
		210	58	0.313	0.658	1763.0000
		250	37	0.244	1.015	1.7529
<b>4 2R</b>		110	55	0.464	0.022	1.1462
		130	69	0.464	0.080	1.2057
		150	69	0.464	0.147	1.2752
		180	69	0.464	0.266	1.3981
		210	69	0.464	0.406	1.5433
<b>4 2R</b>		250	68	278.000	0.627	1.7604
		110	79	0.465	0.019	1.1090
		130	98	0.461	0.069	1.1451
		150	98	0.461	0.126	1.1970
		180	98	0.461	0.228	1.2888
210	98	0.461	0.349	1.3973		
250	98	0.461	0.539	1.5680		

**Table 5 - Maximum admissible loads and reactions.**

- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

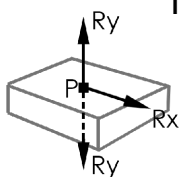
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Maximum Admissible Loads and Reactions					30°	
Kit	Diagram	Loads		kN/mount	kN/mount	kN/mount
		(Km/h)	(Kg/m2)			
1		110	135	0,462	0,025	0,8968
		130	169	0,462	0,003	0,9355
		150	169	0,462	0,022	0,9805
		180	169	0,462	0,066	1,0602
		210	169	0,462	0,118	1,1544
		250	169	0,462	0,201	1,3025
2		110	60	0,466	0,050	1,0018
		130	75	0,465	0,007	1,0769
		150	75	0,465	0,043	1,1671
		180	82	0,499	0,132	1,3855
		210	103	0,348	0,237	1,7513
		250	68	0,262	0,401	1,7518
2 1R		110	83	0,464	0,027	0,9538
		130	103	0,461	0,004	1,0065
		150	103	0,461	0,023	1,0756
		180	103	0,461	0,071	1,1977
		210	112	0,494	0,128	1,4003
		250	131	0,319	0,217	1,7502
3		110	48	0,467	0,039	1,0401
		130	60	0,465	0,005	1,1294
		150	60	0,465	0,034	1,2365
		180	82	0,593	0,105	1,6468
		210	70	0,318	0,188	1,7501
		250	35	0,216	0,318	1,7508
3 1R		110	73	0,464	0,030	0,9686
		130	91	0,462	0,004	1,0308
		150	91	0,462	0,027	1,1074
		180	91	0,462	0,081	1,2429
		210	112	0,549	0,145	1,5539
		250	105	0,300	0,246	1,7555
4		110	34	0,465	0,060	1,0997
		130	43	0,467	0,008	1,2198
		150	57	0,570	0,052	1,5349
		180	55	0,349	0,159	1,7503
		210	33	0,268	0,286	1,7541
		110	46	0,463	0,037	1,0397
4 1R		130	58	0,465	0,005	1,1363
		150	58	0,465	0,032	1,2460
		180	82	0,607	0,098	1,6868
		210	66	0,313	0,176	1,7516
		250	31	0,210	0,299	1,7523
		110	67	0,463	0,032	0,9786
4 2R		130	84	0,463	0,004	1,0489
		150	84	0,463	0,028	1,1309
		180	84	0,463	0,085	1,2759
		210	112	0,587	0,152	1,6624
		250	89	0,285	0,257	1,7551

Table 6 - Maximum admissible loads and reactions.



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

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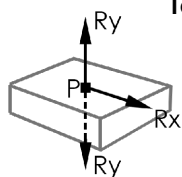
The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>



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Maximum Admissible Loads and Reactions					35°	
		Loads				
		(Km/h)	(Kg/m2)			
		110	147	0,462	0,021	0,7570
		130	184	0,462	0,001	0,7956
		150	184	0,462	0,026	0,8407
		180	184	0,462	0,070	0,9203
		210	184	0,462	0,123	1,0145
		250	213	0,526	0,205	1,2539
		110	63	0,461	0,041	0,8527
		130	79	0,461	0,002	0,9300
		150	79	0,461	0,052	1,0201
		180	110	0,597	0,140	1,3747
		210	140	0,419	0,245	1,7519
		250	93	0,315	0,410	1,7521
		110	89	0,463	0,022	0,8103
		130	111	0,461	0,001	0,8671
		150	111	0,461	0,028	0,9362
		180	111	0,461	0,076	1,0583
		210	150	0,593	0,132	1,3908
		250	178	0,385	0,221	1,7529
		110	50	0,462	0,033	0,8918
		130	63	0,464	0,001	0,9855
		150	76	0,532	0,041	1,1900
		180	110	0,710	0,111	1,6338
		210	96	0,382	0,194	1,7529
		250	49	0,259	0,325	1,7531
		110	78	0,462	0,025	0,8256
		130	98	0,463	0,001	0,8926
		150	98	0,463	0,032	0,9693
		180	110	0,508	0,086	1,1690
		210	150	0,658	0,150	1,5434
		250	142	0,360	0,251	1,7524
		110	35	0,463	0,050	0,9561
		130	57	0,550	0,002	1,1967
		150	76	0,677	0,063	1,5140
		180	76	0,420	0,170	1,7549
		210	46	0,320	0,296	1,7540
		250	48	0,460	0,031	0,8944
		110	61	0,464	0,001	0,9942
		150	76	0,545	0,039	1,2189
		180	110	0,727	0,105	1,6736
		210	91	0,378	0,183	1,7572
		250	44	0,252	0,306	1,7575
		250	44	0,252	0,306	1,7575
		110	72	0,464	0,026	0,8402
		130	90	0,463	0,001	0,9091
		150	90	0,463	0,033	0,9911
		180	110	0,543	0,090	1,2506
		210	150	0,704	0,157	1,6511
		250	121	0,343	0,263	1,7544

Table 7 - Maximum admissible loads and reactions.



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

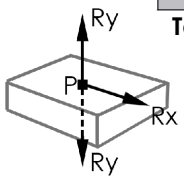
The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>



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Maximum Admissible Loads and Reactions					40°
Kit	Loads				
	(Km/h)	(Kg/m2)			
1	110	172	0,460	0,016	0,6394
	130	216	0,462	0,006	0,6771
	150	216	0,462	0,031	0,7191
	180	216	0,462	0,075	0,7935
	210	216	0,462	0,127	0,8814
	250	265	0,306	0,210	1,1275
2	110	73	0,463	0,031	0,7335
	130	91	0,461	0,012	0,8034
	150	102	0,502	0,062	0,9360
	180	147	0,668	0,150	1,2830
	210	183	0,461	0,255	1,6174
	250	151	0,402	0,419	1,7528
2 1R	110	103	0,461	0,017	0,6887
	130	129	0,461	0,006	0,7439
	150	129	0,461	0,033	0,8084
	180	147	0,512	0,081	0,9832
	210	200	0,662	0,138	1,2968
	250	259	0,461	0,226	1,7078
3	110	57	0,462	0,025	0,7670
	130	76	0,482	0,009	0,8763
	150	102	0,596	0,049	1,1124
	180	143	0,460	0,119	1,5039
	210	143	0,460	0,202	1,7128
	250	88	0,339	0,333	1,7533
3 1R	110	90	0,460	0,019	0,7034
	130	113	0,461	0,007	0,7656
	150	113	0,461	0,038	0,8372
	180	147	0,568	0,092	1,0911
	210	200	0,735	0,156	1,4391
	250	221	0,452	0,257	1,7529
4	110	44	0,497	0,038	0,8676
	130	76	0,613	0,014	1,1149
	150	99	0,462	0,074	1,3954
	180	99	0,462	0,181	1,6203
	210	79	0,407	0,308	1,7528
	250	16	0,230	0,506	1,7511
4 1R	110	55	0,462	0,023	0,7723
	130	76	0,494	0,009	0,8976
	150	102	0,611	0,046	1,1395
	180	138	0,460	0,112	1,5137
	210	138	0,460	0,190	1,7277
	250	80	0,330	0,313	1,7531
4 2R	110	83	0,463	0,020	0,7174
	130	104	0,463	0,007	0,7830
	150	104	0,463	0,039	0,8595
	180	147	0,608	0,096	1,1672
	210	200	0,786	0,163	1,5395
	250	190	0,431	0,269	1,7509

**Table 8 - Maximum admissible loads and reactions.**



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

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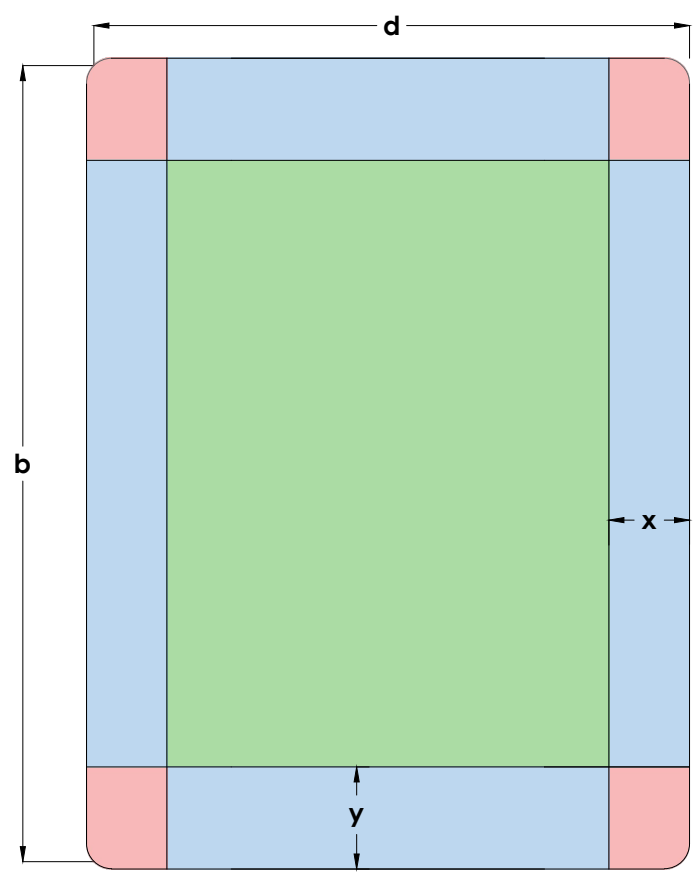
The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>

Loads and reactions calculated for the kit lengths and distances in the table.  
For other distributions consult SUNFER.



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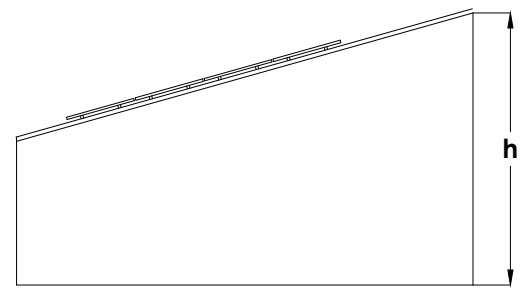




$$e = \min [b, 2h]$$

$$x = \text{Max} [e/10, 0.5\text{m}]$$

$$y = \text{Max} [e/4, 0.5\text{m}]$$



- Installation Safe Zone
- Turbulent Zone
- Extremely Turbulent Zone

To avoid turbulence and other unwanted natural effects, it is strongly recommended to install photovoltaic panels inside of the green zone.

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# 03V-EN

## Installation Video

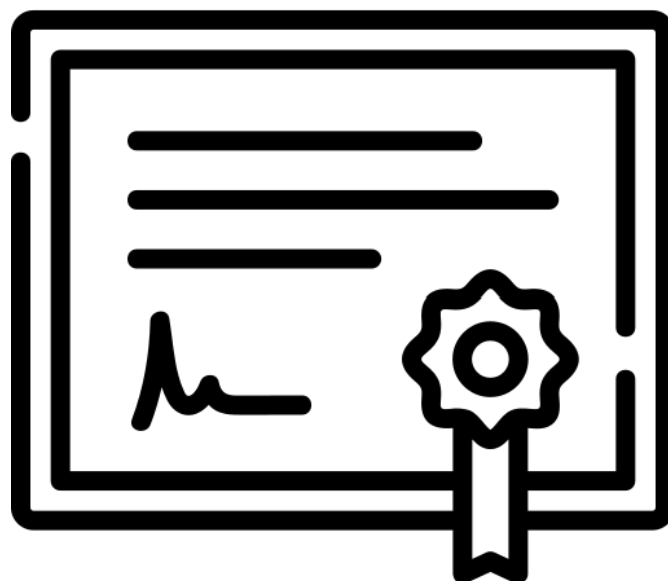


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# 03V-EN

## Certificates and Guarantee



- ISO 9001 Certificate
- ISO 14001 Certificate
- CE Marking
- Guarantee

This is a translation of the certificate ES13/13899

The management system of

# SUNFER ESTRUCTURAS, S.L.U.

Camí de la Dula, s/n, 46687 Albalat de la Ribera, Valencia

has been assessed and certified as meeting the requirements of

## ISO 9001:2015

For the following activities

Design, manufacture and sale of solar energy structures.

This certificate is valid from 19 May 2023 until 8 April 2025 and remains valid subject to satisfactory surveillance audits.

Issue 6. Certified with SGS since 8 April 2013

Last certificate expiry date 8 April 2022

Recertification audit date 31 March 2022

Authorised by \_\_\_\_\_

SGS International Certification Services Iberica, S.A.U.

C/Trespaderne, 29. 28042 Madrid. España

t +34 91 313 8115 - www.sgs.com



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This is a translation of the certificate ES22/211172

The management system of

# SUNFER ESTRUCTURAS, S.L.U.

Camí de la Dula, s/n, 46687 Albalat de la Ribera, Valencia

has been assessed and certified as meeting the requirements of

**ISO 14001:2015**

For the following activities

Design, manufacture and sale of solar energy structures.

This certificate is valid from 19 May 2023 until 22 April 2025 and remains valid subject to satisfactory surveillance audits.

Issue 2. Certified with SGS since 22 April 2022

Authorised by \_\_\_\_\_

SGS International Certification Services Iberica, S.A.U.

C/Trespaderne, 29. 28042 Madrid. España

t +34 91 313 8115 - [www.sgs.com](http://www.sgs.com)



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**IDENTIFICATION NUMBER OF NOTIFIED ORGANISM:**

1181

---

**NUMBER AND REGISTERED ADDRESS OF MANUFACTURERS. INSTALLATION LOCATION:**

Business name: *SUNFER ESTRUCTURAS, S.L.U.*

Address: *Camí de la Dula s/n*

Postal Code: *46687*

Location: *Albalat de la Ribera*

City: *Valencia*

Country: *España*

**TWO LAST DIGITS OF THE YEAR THAT THE MARKING WAS FIXED:**

19

*ES19/86524*

---

**EN 1090-1**

Description of product:

**03V-EN**

---

**TOLERANCES IN GEOMETRIC INFORMATION:** *EN 1090-3*

**WELDABILITY:** --

**FRACTURE RESISTANCE:** --

**FIRE REACTION:** *Classified material A1*

**CADMIUM EMISSION:** *N/A*

**RADIOACTIVITY EMISSION:** *N/A*

**DURABILITY:** *N/A*

**STRUCTURAL CHARACTERISTICS:**

- **Carrying capacity:** *See product instructions and data sheet*
- **Fatigue resistance:** *N/A*
- **Fire resistance:** *N/A*
- **Manufacturing:** *According to the component specification and EN1090-3. Execution class EXC1*

	DECLARATION OF PERFORMANCE	DdP
		REVISION 01

DECLARATION OF PERFORMANCE NUMBER:	P-0121
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**1. PRODUCT DESCRIPTION.**

UNIQUE IDENTIFICATION CODE OF THE PRODUCT TYPE:	03V-EN
---	--------

**2. NAME AND ADDRESS OF MANUFACTURER.**

NAME:	SUNFER ESTRUCTURAS, S.L.U.
COMERCIAL NAME (if exists):	--
ADDRESS:	CAMI DE LA DULA S/N
CITY AND PC:	46687 ALBALAT DE LA RIBERA -- COMUNIDAD VALENCIANA (SPAIN)

**3. INTENDED USE(S) OF THE PRODUCT:**

ALUMINUM STRUCTURE TO SUPPORT PHOTOVOLTAIC PANELS.

**4. SYSTEM OF EVALUATION AND VERIFICATION OF CONSTANCY OF PERFORMANCE:**

System 2+

**5. HARMONIZED STANDARD:**

This product complies with the provisions of Annex ZA of the European standard **UNE-EN 1090-1:2011 + A1:2012**

**6. NOTIFIED ORGANISM:**

NAME:	<b>SGS ICS IBÉRICA. S.A.</b>
Notified Organism Number:	<b>NB1181</b>

**7. DECLARED PERFORMANCES:**

Essential Characteristics	Performances	Harmonised technical specifications
Tolerances in geometric information	Conforms to limits for essential tolerances <input type="checkbox"/>	EN 1090-3
Weldability	Not applicable because there is no welding in the structure	----
Fracture Tenacity	Not required for aluminum components	-----
Carrying Capacity	N/A	
Fatigue Resistance	N/A	
Fire Resistance	N/A	
Fire reaction	Class A1	EN 13501-1
Emission of cadmium and its compounds	OK	
Emission of radioactivity	OK	
Durability	N/A	
Structural features	See product data sheet	UNE EN 1999-1-1
- Carrying capacity	N/A	
- Fatigue resistance: N/A	N/A	
- Fire resistance: N/A	N/A	
- Manufacturing	According to the component specification. Execution class EXC1	UNE EN 1090-3

- The performance of the product identified above is in accordance with all the declared performance.
- This declaration of performance is issued in accordance with Regulation (EN) No. 305/2011 under the responsibility of the manufacturer identified above.

Manufacturer's Name: Voro Gómez Nacher

Date of issue: 02/08/2023

Signature:



## Structural and Anticorrosion Guarantee

All SUNFER mounting systems are manufactured under strict production control in our factory, as are our raw materials, which are periodically tested to ensure quality. It is for these reasons we are able to offer the following guarantee for our products:

25 year Structural Guarantee

Anticorrosion Guarantee per the below table

Materials	NON-HARSH environment (1) Distance to coastline greater than 5 Km	HARSH or MARINE environment Distance to coastline less than 5 Km
Raw Aluminum	Fifteen (15) years	Five (5) years
Anodized Aluminum	Twenty-five (25) years	Twenty-five (25) years

Table 1.

(1) Non-exhaustive list of zones considered to be harsh environments:

- a. Industrial zones with emissions that include: sulphur dioxide, nitrogen oxides, sulphuric acid, sulphuric compounds, chlorine, or other volatile gases; 5 km safety distance.
- b. Electric generating stations that use the following fuels: coal, natural gas, petroleum; 5 km safety distance.
- c. Petrochemical plants; 5 km safety distance.
- d. Cellulose factories; 5 km safety distance
- e. Wastewater treatment facilities: 500 m safety distance.

In these zones it is always necessary to utilize anodized aluminum if inside of the minimum safety radius indicated above.

The warranty of the adhesive in reference 07.1H and S07.1 is ten (10) years. The warranty of the 2-sided adhesive tape of the S07.1 anchor covers the product supplied by Sunfer and can be applied provided that the breakage is caused by the tearing off of the profile with respect to the adhesive tape, in the event that the breakage is caused by the tearing off of the adhesive tape from the roofing, it will be considered a faulty assembly on site.

Mixed galvanised steel and raw aluminium supports such as, for example: Elevated, Monopoles, Car parks:  
Environments C3 fifteen (15) years guarantee.  
Environments C4-C5 five (5) years.

Mixed galvanised steel and anodised aluminium supports, such as: Elevated, Monopoles, Car parks:  
Environments C3 guarantee twenty-five (25) years.  
Environments C4-C5 fifteen (15) years.

This guarantee applies to orders supplied from 3rd January, 2023 on. Orders delivered before this date shall be governed by the guarantee that was in force at the time that the order was supplied.

The guarantee covers the final installation, and applies directly to the end user of the structure. Guarantees are managed between SUNFER and commercial distributors, so if an end user needs to invoke a guarantee, they must contact the distributor that supplied the material, and the distributor will coordinate with SUNFER Customer Service. The period of coverage of the guarantee begins upon the date that the delivery of the material is received by the end user, but will be repealed if the client does not comply with the payment terms stated in the invoice.

To invoke the guarantee, the following documentation must be produced:

- Sales invoice.
- Date system was put in service.
- Information of end user (name, address, distributor, etc).
- General photographs showing the entire system as installed.
- Installer's final work plans/drawings.
- Detailed photos of:
  - Fastening of the system to the roof, which shows the distance between mounting points.
  - The structure mounted without panels attached.
  - A rear view of the structure (from roof ridge if coplanar).







- Plan/drawing of the affected area which shows distances between mounting points.

## Coverage and Exclusions

### Coverage

This guarantee covers the replacement and shipping of the defective components or of the entire system if necessary, with no charge. In the case of a replacement not being available, a suitably similar replacement will be provided.

The guarantee is limited to replacement of defective products. The following costs, indirectly associated with the return process, will not be compensated: disassembly or any consequential, supplementary, or related damages, including lost profits or other indirect costs.

The guarantee covers all metallic elements included in a SUNFER structure.

### Exclusions

Any issues or defects caused by or related to the following shall be excluded from the guarantee:

- Inadequate installations which did not follow the installation instructions provided by SUNFER.
- Incorrect fastener tightening torques (overtight or undertight).
- Modifications or installations other than those recommended by SUNFER.
- Installation of additional homemade or third-party elements to the structures supplied by SUNFER.
- Inadequate handling of products during the installation.
- Damage to the product after delivery, or from improper storage of the product.
- Any defect which is purely aesthetic in nature and which does not affect the structural safety of the product.
- Installations in areas whose wind and snow loads exceed those indicated in the datasheets of the product.
- Structures installed outside of the safe zone indicated in the installation manual.
- Inadequate maintenance. See the Maintenance Manual.
- Fires or exposure to temperatures above 110 °C.
- Problems or defects caused by corrosive agents not initially considered (1).
- Natural disasters such as earthquakes, hurricanes, floods, tornados, cyclones, mudslides, avalanches, or volcanic eruptions.

For structures not provided with a method of fastening to a surface, SUNFER denies responsibility in the event of collapse or failure due to insufficient fastening or poor installation.

### Guarantor, Execution of guarantee

The guarantor is SUNFER ESTRUCTURAS S.L.U. located at Camino de la Dula s/n 46687, Albalat de la Ribera, Valencia, Spain.

The entitlements afforded by this guarantee are non-transferable to third parties.

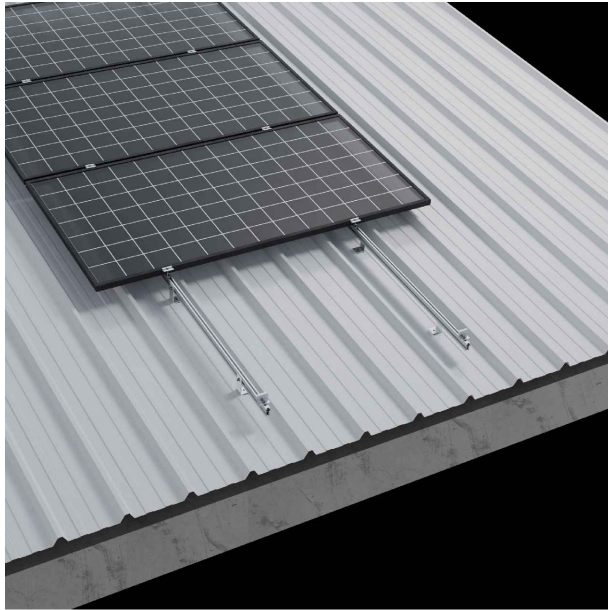
Regarding the guarantee and any disputes related to it, the law currently in force in Spain shall apply.



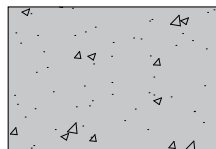
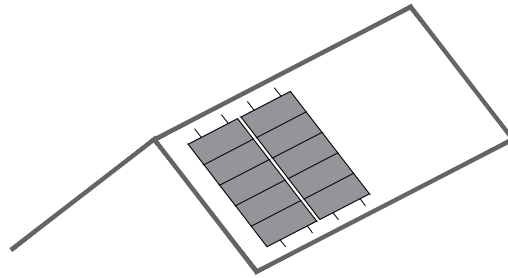
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Marcado  
ES19/86524 CE

## 03V-EN



## Landscape



Concrete Slab



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1. **General Information**
2. **Kit Contents**
3. **Landscape Installation**
4. **Fastening Technical Information**
5. **Maximum Loads and Reactions**
6. **Installation Zone**
7. **Installation Video**
8. **Certificates and Guarantee**

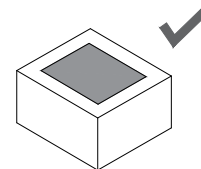
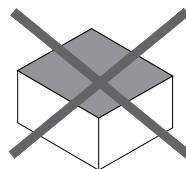
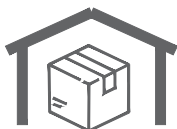
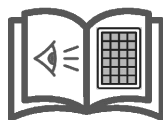


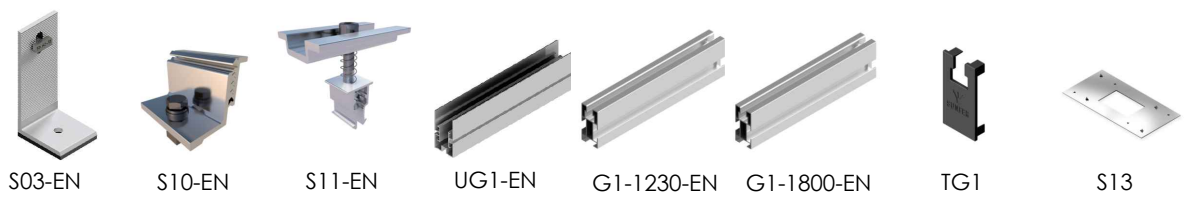
Return



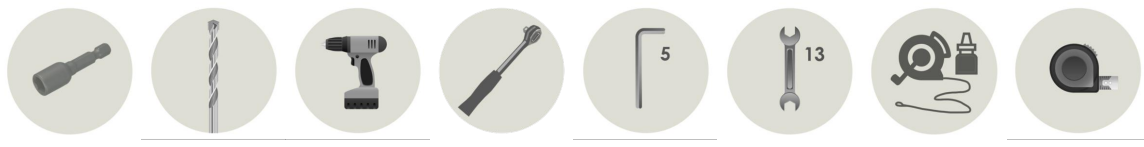
### General Information and Recommendations **ENG**

- All installation instructions and product specifications provided must be adhered to.
- Check the condition of the roof covering and its carrying capacity. The management overseeing installation is responsible for verifying that the substructure of the roof as well as the static structure of the building itself is capable of supporting additional loads before any installation is carried out.
- To avoid turbulence from wind a minimum security distance (defined by regulations) must be maintained between the photovoltaic installations and roof edges, as well as other obstacles such as chimneys or vents.
- In the case of chimneys or other features which may need future maintenance, a minimum distance must be maintained in order to facilitate said maintenance or to extinguish fires. This distance shall be either 1m or that suggested by the relevant authority, whichever is greater.
- The surface of the roof covering must be clean and dry. Any major irregularities of the roof must be corrected or eliminated.
- The mounting must always be anchored to the structure of the roof.
- Check the weathertightness of the mount once fastened.
- Place solar panels such that they are distributed symmetrically along the support, leaving equal overhangs at each end.
- Clamps must not be tightened using impact drivers.
- Check that the support attachment points are compatible with the solar panel manufacturer's specifications.
- Uninstallation must be carried out in the reverse order from the installation.
- During the shipping of products take extreme care to maintain the integrity of the packaging. Store in a dry, well-ventilated area. Minimize exposure to large temperature differences and humidity. Avoid outdoor storage. Avoid sources of dripping water, puddles, splashing, or any other contact with water in the storage area. If the product becomes wet, immediately dry and clean as well as possible. Do not leave the product directly on the floor or ground where it may attract moisture. Store on the shipment's original pallet or on shelves.
- We reserve the right to make changes to our products at any moment without prior warning if, from our point of view, the changes are necessary for the improvement of the product. All illustrations in plans and catalogues are for example only and therefore may differ from the actual product provided.
- Aluminium components can be delivered in different finishes without compromising the structural solution. Available finishes: raw/anodised/lacquered

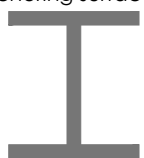




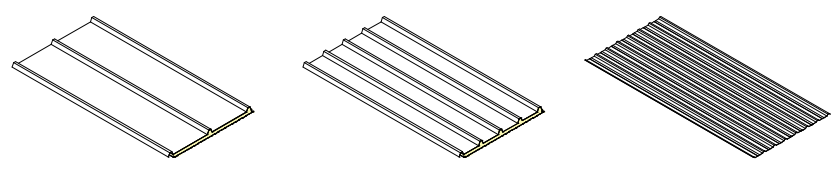
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	4	4	-	-	2	-	4	2
	4	4	2	2	4	-	4	3
1R	6	4	2	2	4	-	4	3
	6	4	4	2	-	4	4	4
1R	8	4	4	2	-	4	4	4
	6	4	6	4	2	4	4	5
1R	8	4	6	4	2	4	4	5
2R	10	4	6	4	2	4	4	5



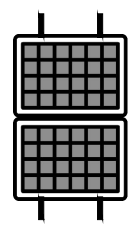
Anchoring surface:



Steel Beam



Max. 2279x1150 mm  
Thickness: 28-40 mm



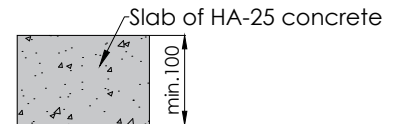
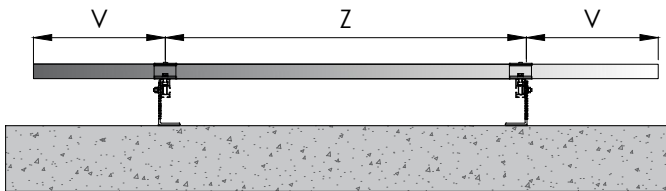
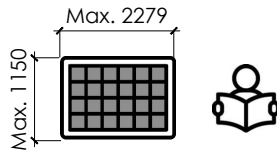
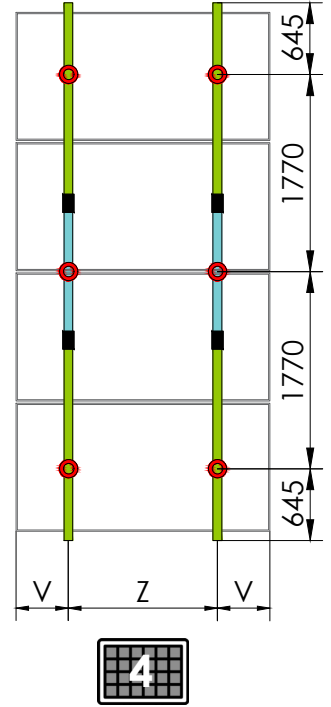
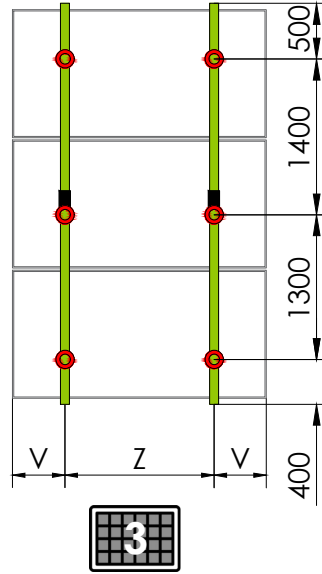
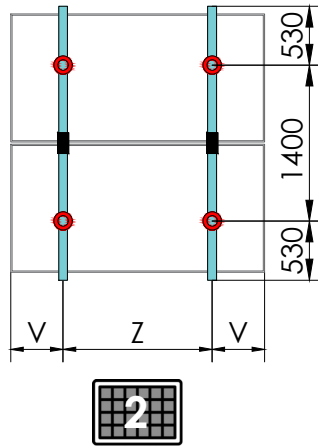
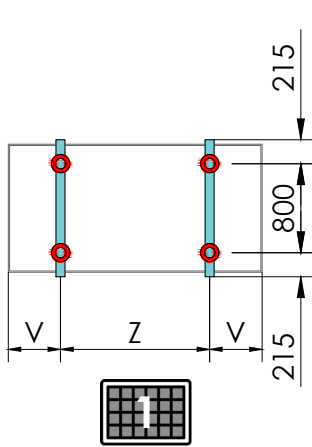
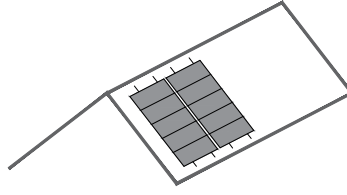
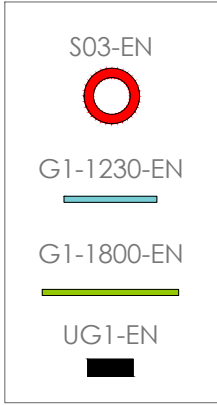
Profiles of **EN AW 6005A T6 Aluminium**



Fasteners of **A2-70 Stainless Steel**

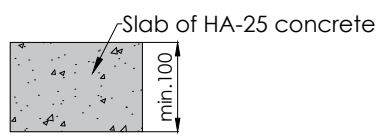
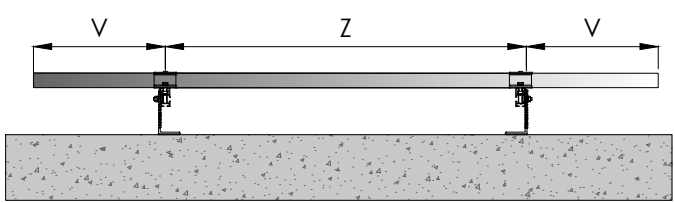
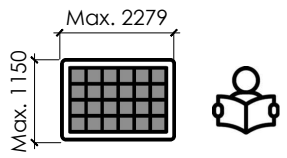
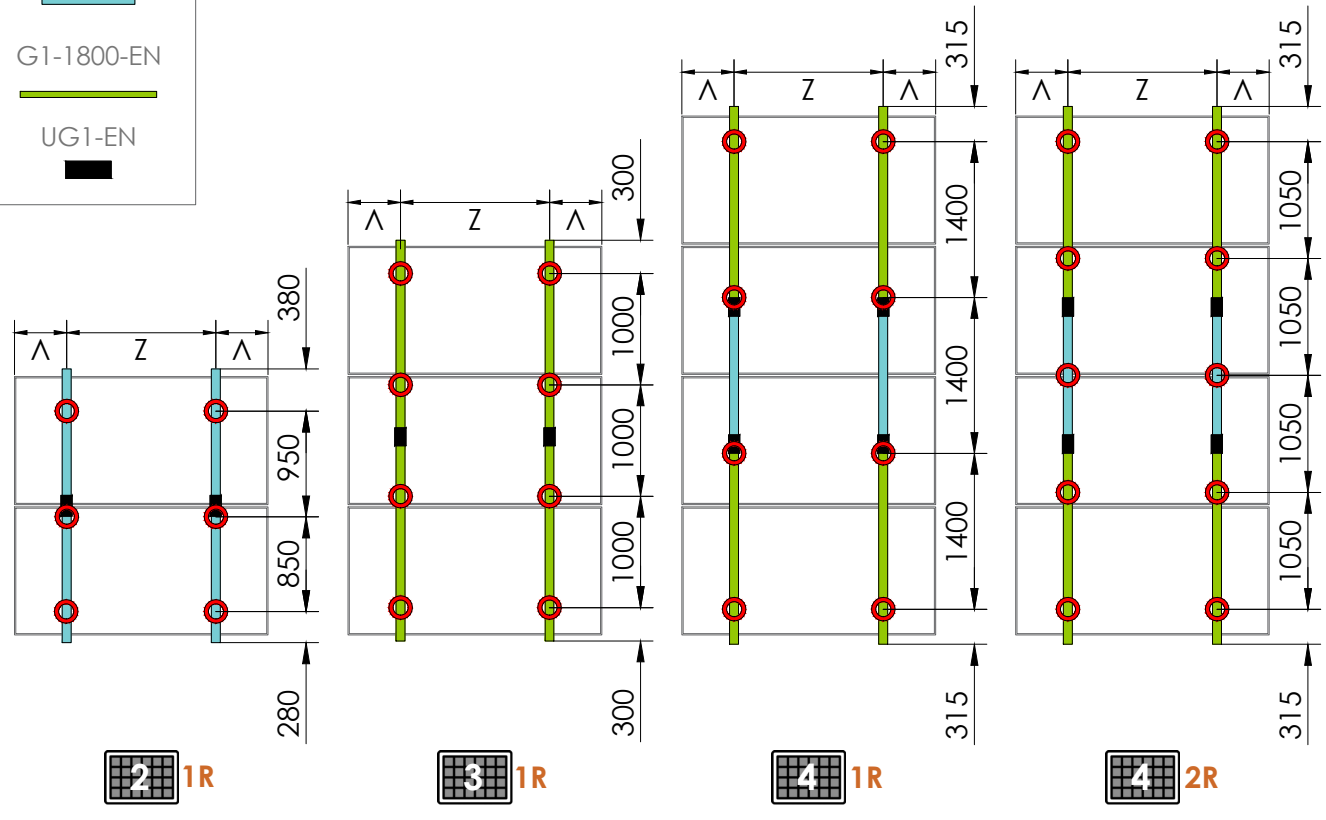
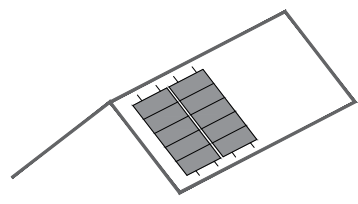
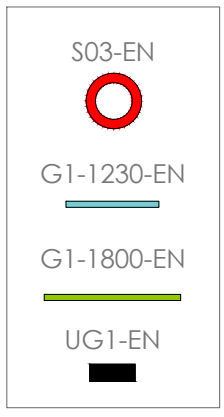


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The maximum distance "Z" between profiles and the overhang distance "V" should be determined by consulting the technical datasheets of the solar panel manufacturer.

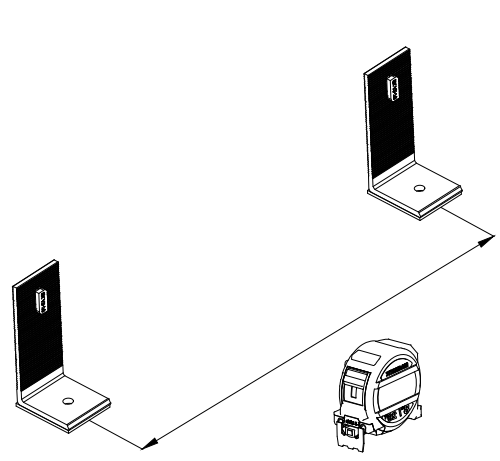
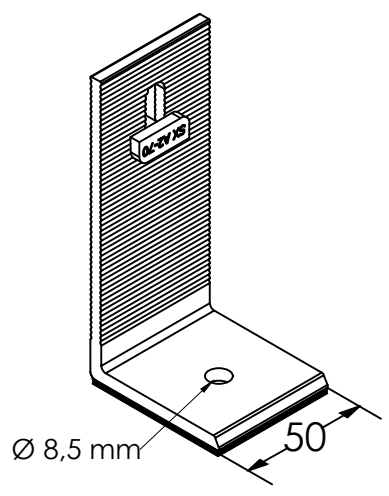
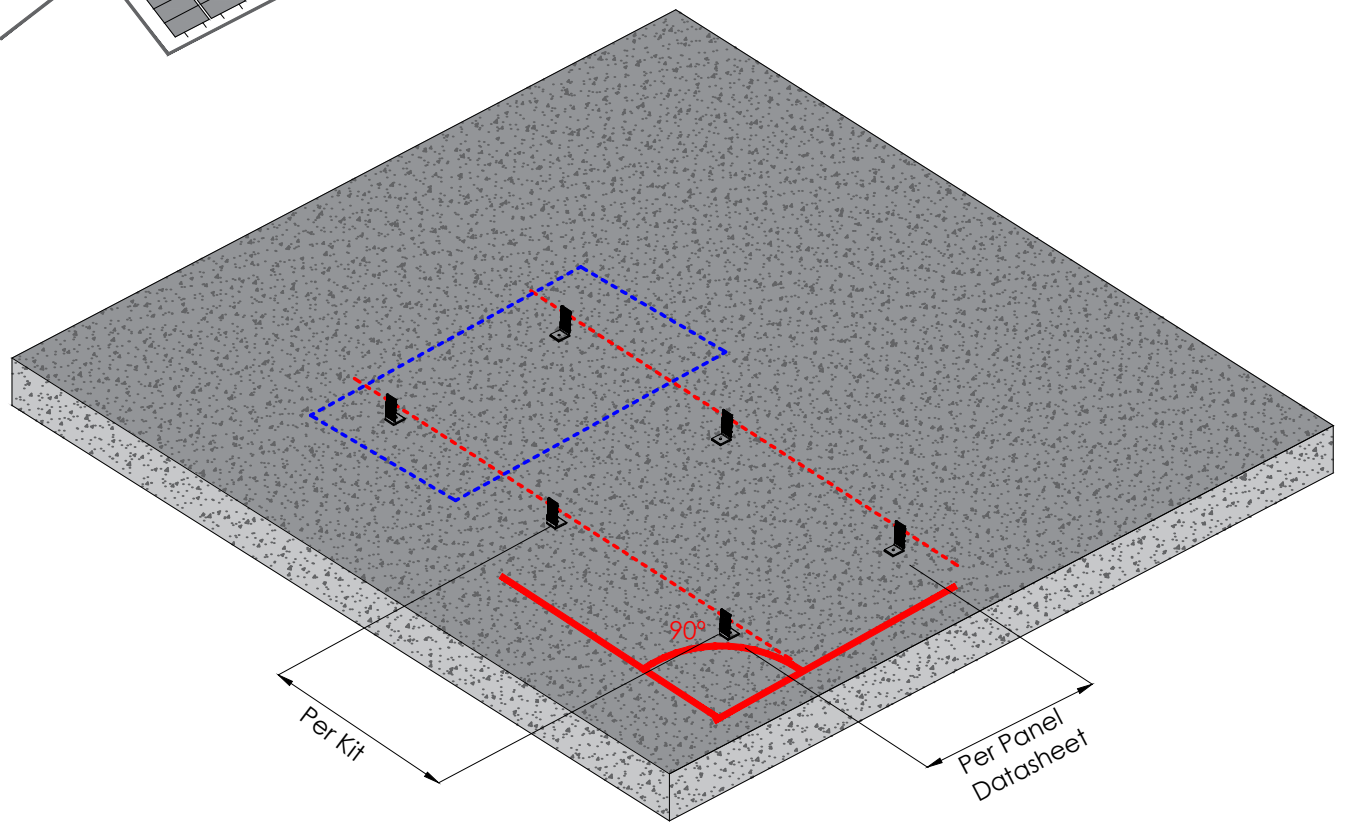
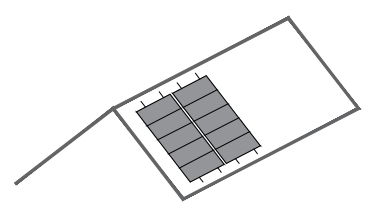
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The maximum distance "Z" between profiles and the overhang distance "V" should be determined by consulting the technical datasheets of the solar panel manufacturer.

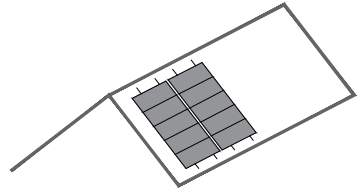
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----- Panel  
----- G1-EN

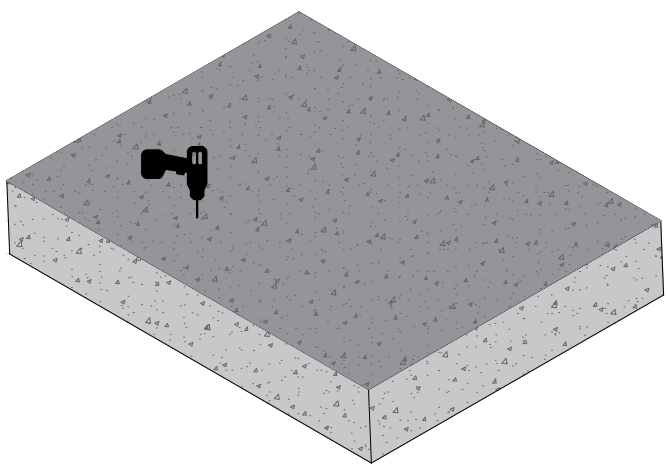


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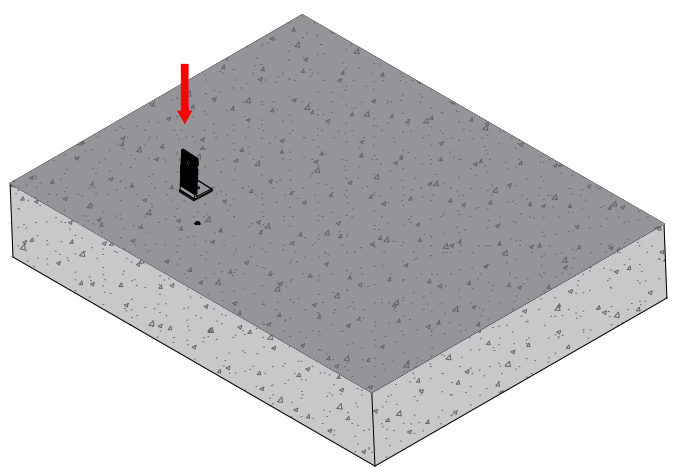




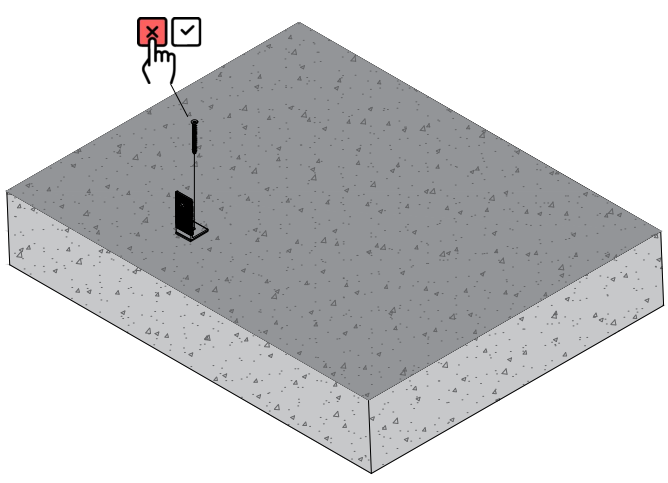
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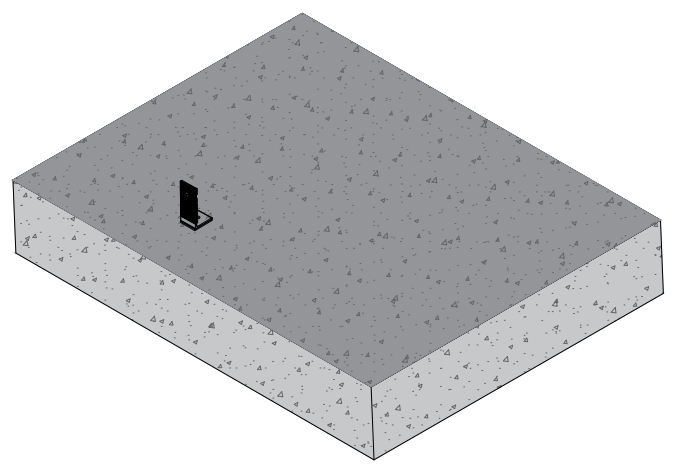
2.



3.



4.

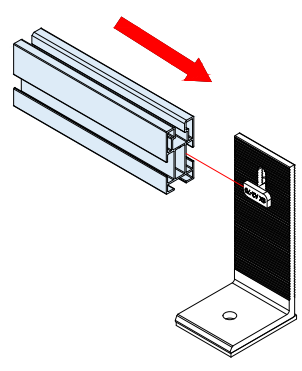
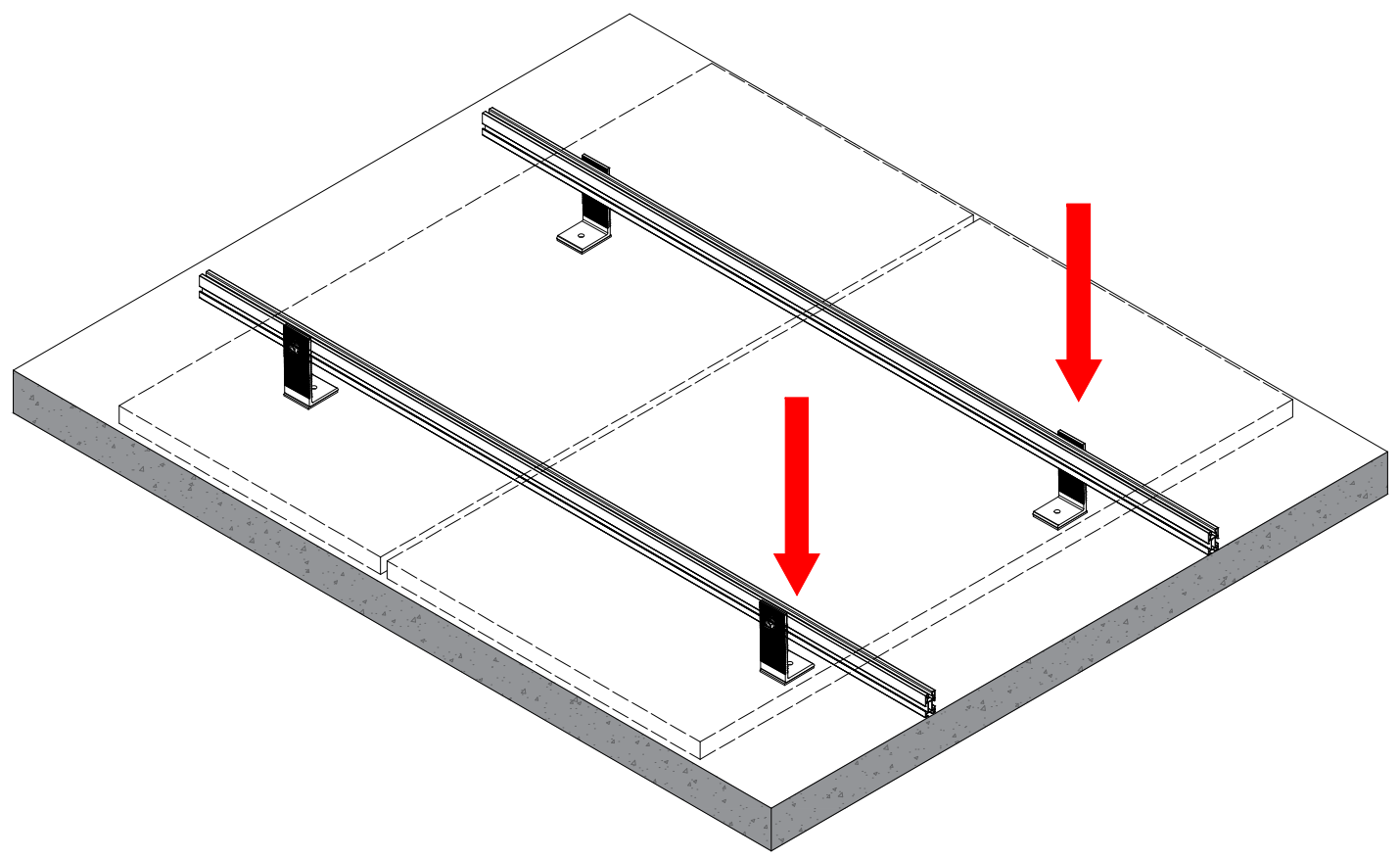
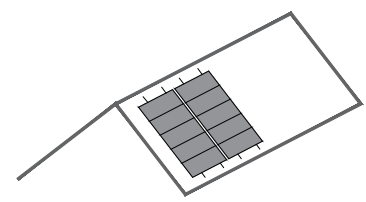
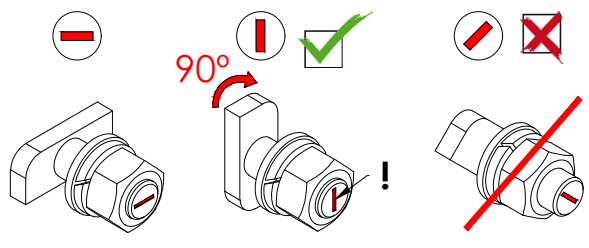


\*Must support the reaction forces at the anchor point



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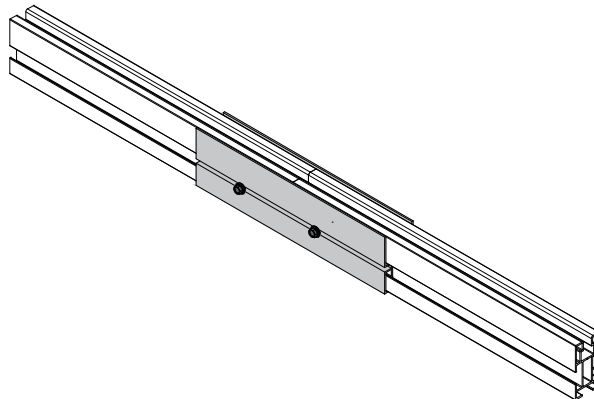
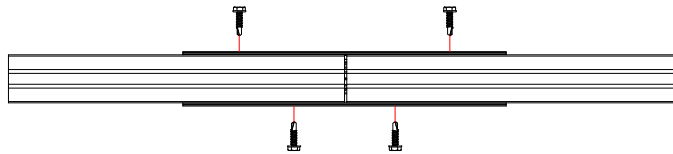
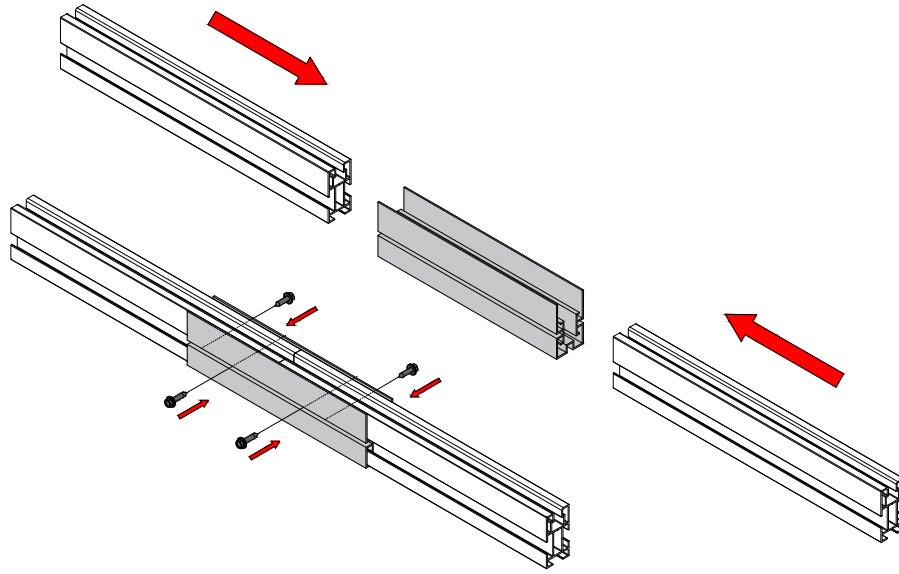
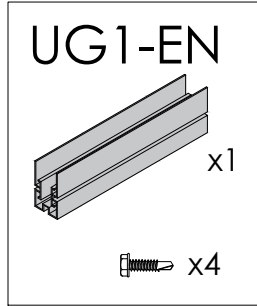
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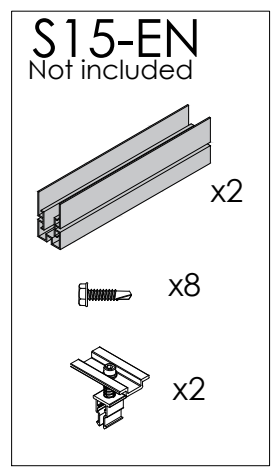
6 Nm

(x4)

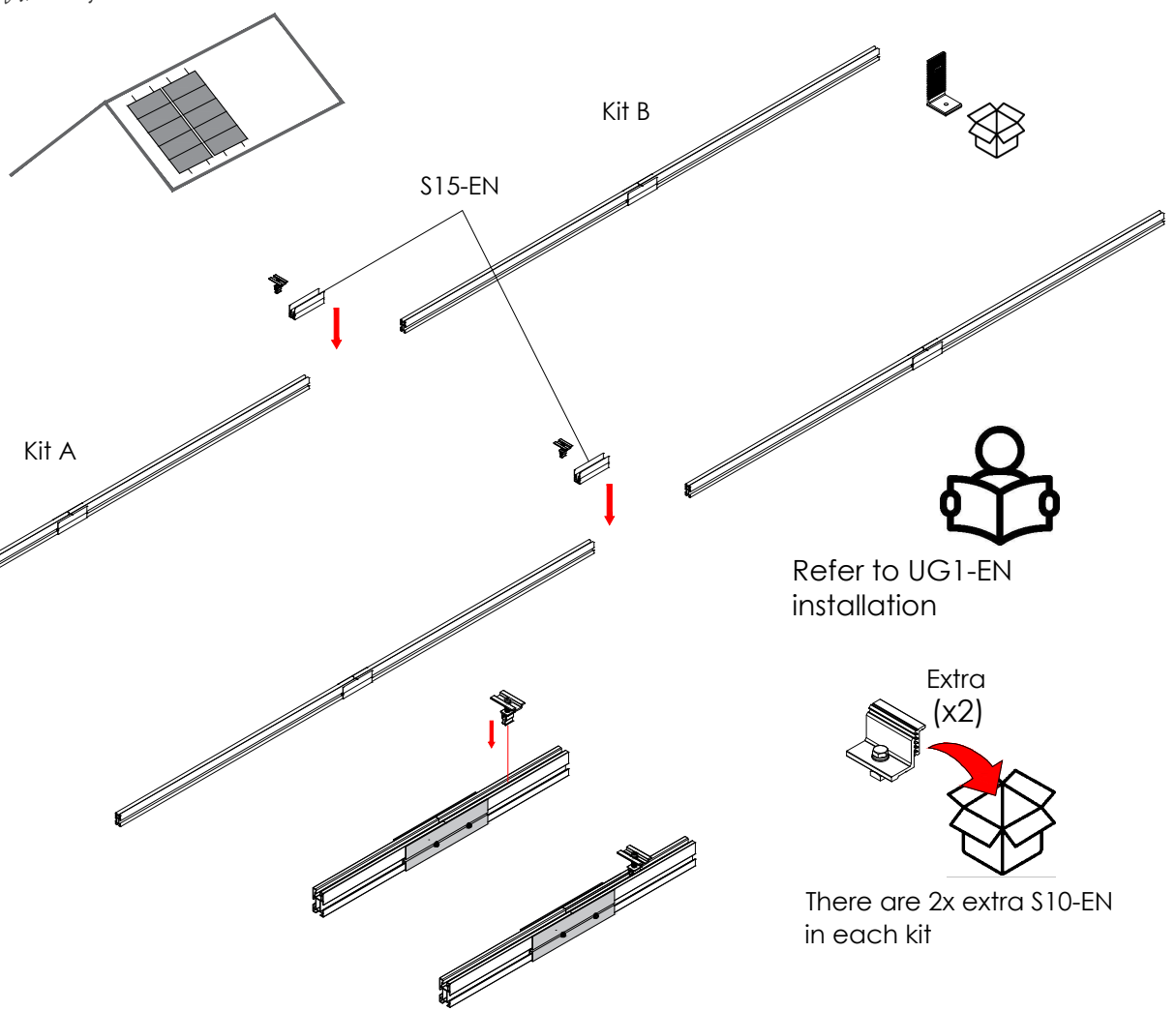


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**S15-EN**  
Not included



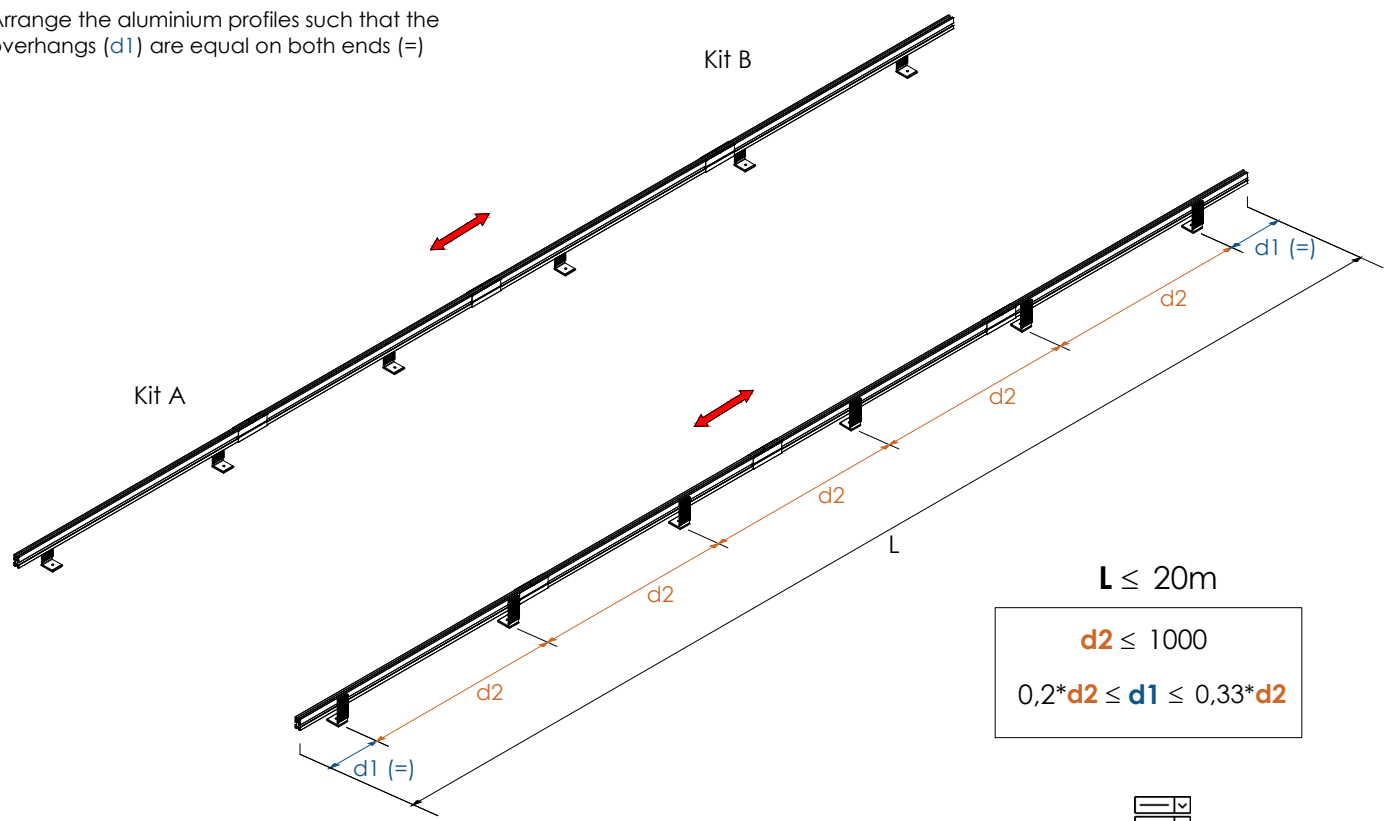
- x2
- x8
- x2



**Joining the kits:**

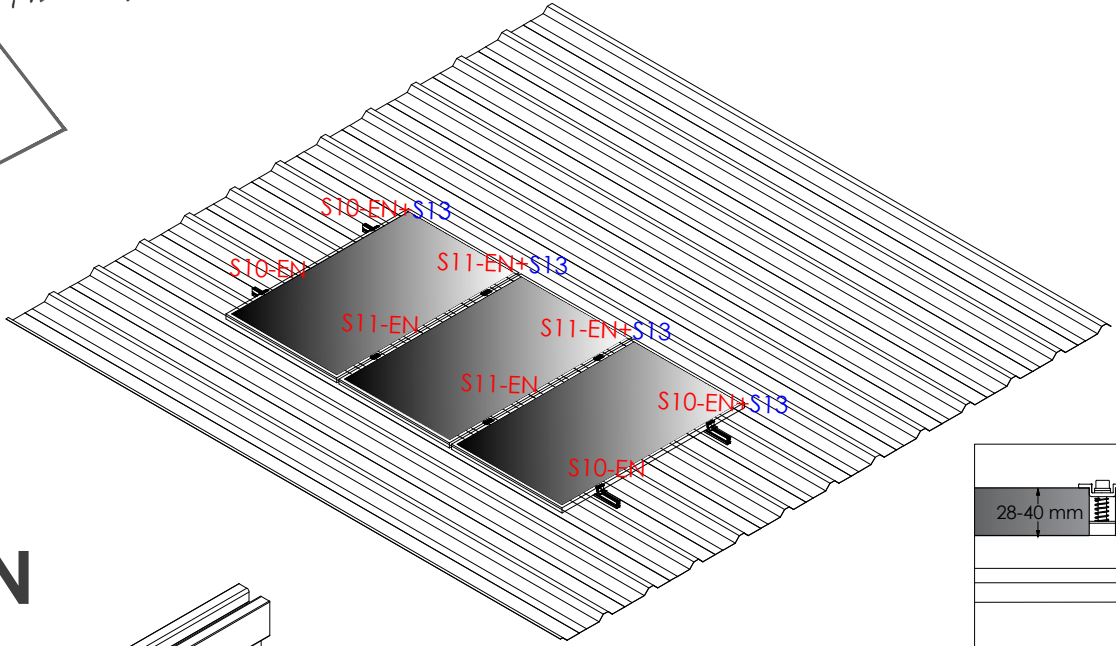
The anchoring points (d2) must be equidistant

Arrange the aluminium profiles such that the overhangs (d1) are equal on both ends (=)

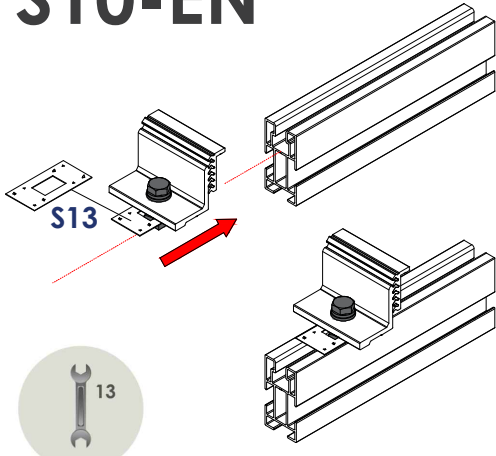


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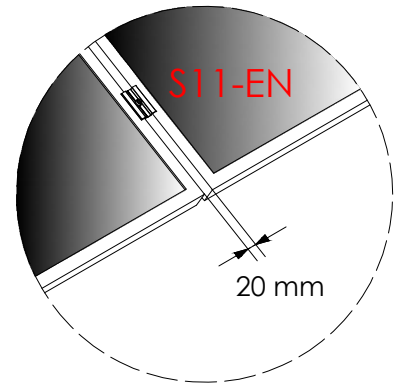
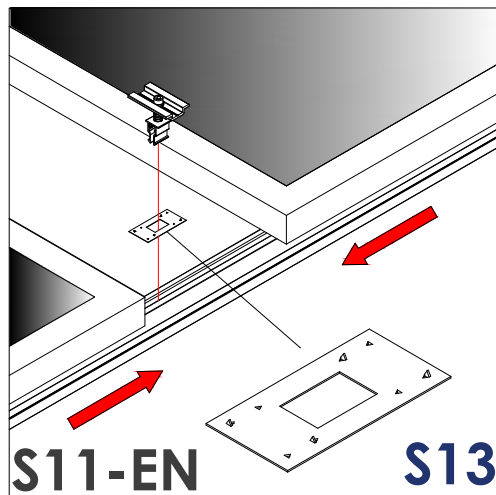
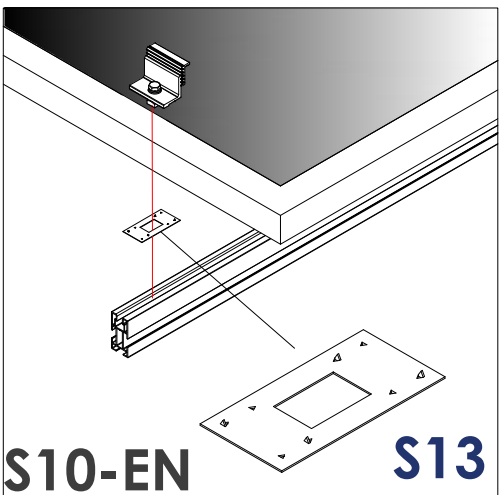
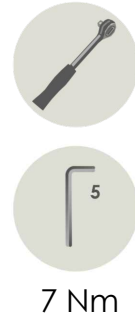
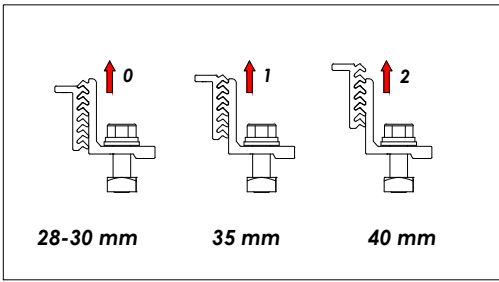
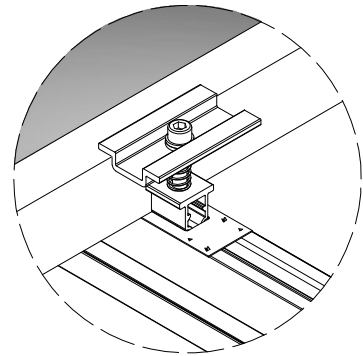
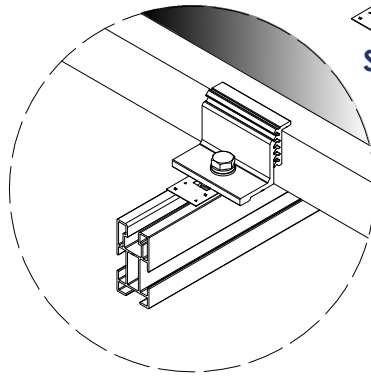
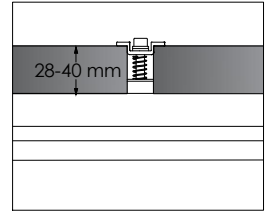
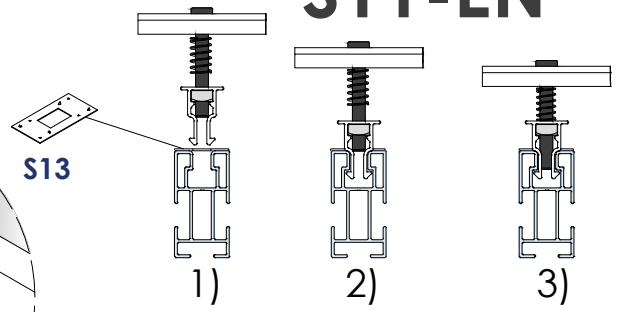
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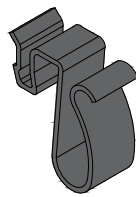
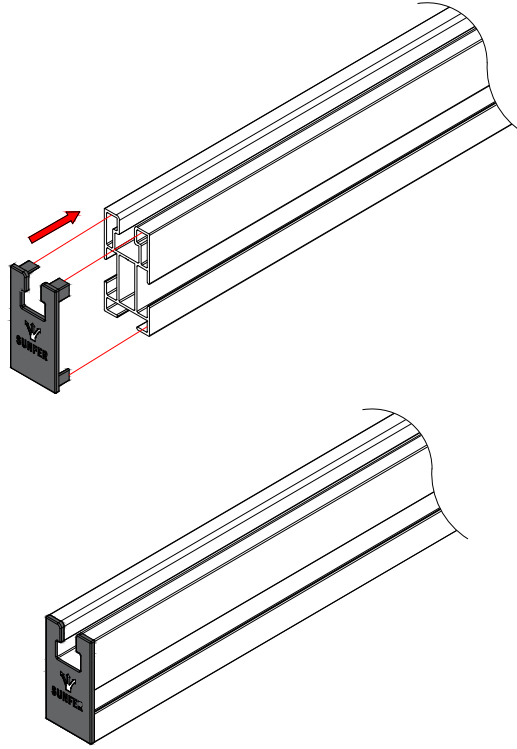


### S10-EN

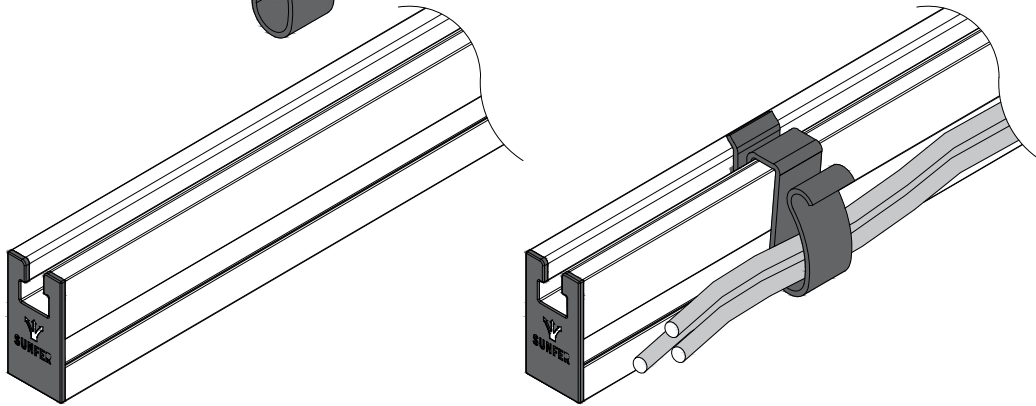


### S11-EN





**Optional Cable Clip**  
(Not included)

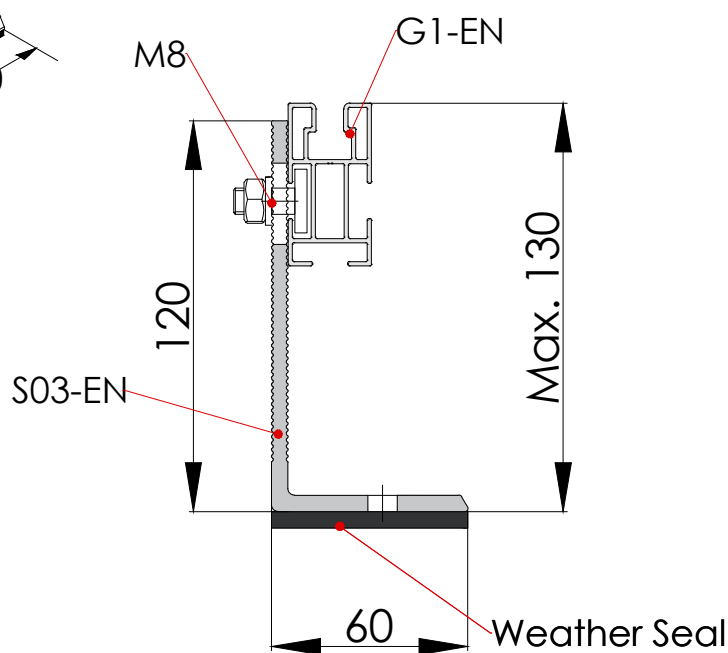
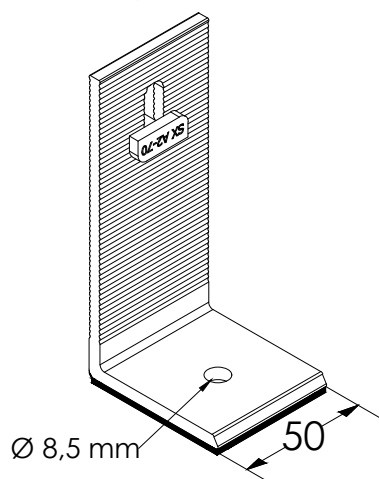


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# 03V-EN

# S03-EN

## Technical Information: Anchor



Description	Coplanar Support
Panel Orientation	Portrait/Landscape
Format	KIT of 1 to 4 Panels
Joining Kit	S15-EN not included (optional)
Application Surface	Metal Sheet
Anchoring Surface	Concrete Slab and Metal Beams
Type of Fastening	Screwed (Screws not included)
Mount	S03-EN
Profile	G1-EN
Grounding Plate	S13
Maximum Panel Dimensions	2279x1150 mm
Panel Thickness	from 28 to 40 mm
Materials	Fasteners: A2-70 Stainless Steel Profiles: Raw or Anodized EN AW 6005A T6 Aluminium EPDM Weather Seal
Maximum Loads	Per configuration
Structural Calculation	Computational model checked against EUROCODE 9 "PROJECT STRUCTURES OF ALUMINIUM"

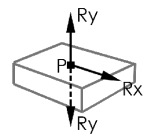
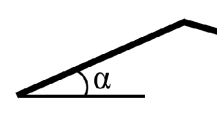


# 03V-EN

## Loads and Reactions

### Maximum admissible loads and their reactions

- 5° Pitch
- 10° Pitch
- 15° Pitch
- 20° Pitch
- 25° Pitch
- 30° Pitch
- 35° Pitch
- 40° Pitch

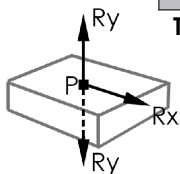


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Maximum Admissible Loads and Reactions					$\alpha$ 5°	
Kit	Loads		kN/mount	kN/mount	kN/mount	
	Km/h	Kg/m2				
1		110	231	0.150	0.015	1.7500
		130	265	0.138	0.015	1.6301
		150	265	0.138	0.050	1.6466
		180	265	0.138	0.112	1.6758
		210	265	0.138	0.185	1.7103
		250	263	0.137	0.300	1.7535
2		110	106	0.147	0.030	1.7537
		130	130	0.144	0.030	1.7513
		150	127	0.142	0.100	1.7508
		180	122	0.137	0.224	1.7534
		210	116	0.131	0.371	1.7554
		250	106	0.121	0.601	1.7522
2 1R		110	144	0.148	0.016	1.7507
		130	178	0.147	0.016	1.7532
		150	175	0.144	0.054	1.7528
		180	170	0.141	0.121	1.7548
		210	164	0.136	0.200	1.7563
		250	154	0.129	0.325	1.7539
3		110	86	0.146	0.024	1.7523
		130	106	0.144	0.024	1.7627
		150	103	0.140	0.079	1.7621
		180	97	0.133	0.178	1.7519
		210	91	0.126	0.294	1.7542
		250	81	0.115	0.477	1.7505
3 1R		110	128	0.148	0.018	1.7528
		130	158	0.146	0.018	1.7555
		150	155	0.144	0.061	1.7551
		180	150	0.140	0.137	1.7572
		210	144	0.135	0.227	1.7589
		250	134	0.126	0.368	1.7562
4		110	64	0.145	0.036	1.7646
		130	77	0.140	0.036	1.7525
		150	74	0.136	0.121	1.7518
		180	69	0.128	0.271	1.7557
		210	63	0.119	0.447	1.7587
		250	53	0.105	0.726	1.7539
4 1R		110	84	0.146	0.022	1.7609
		130	102	0.143	0.022	1.7512
		150	99	0.139	0.075	1.7506
		180	94	0.133	0.167	1.7537
		210	88	0.126	0.276	1.7561
		250	78	0.114	0.448	1.7523
4 2R		110	119	0.148	0.019	1.7607
		130	146	0.146	0.019	1.7560
		150	143	0.143	0.064	1.7555
		180	138	0.139	0.144	1.7578
		210	132	0.133	0.237	1.7597
		250	122	0.124	0.385	1.7568

Table 1 - Maximum admissible loads and reactions.



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN 1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ<sub>1</sub>) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

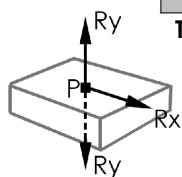
The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>



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Maximum Admissible Loads and Reactions		10°				
		Loads				
		(Km/h)	(Kg/m2)	(kN/mount)	(kN/mount)	(kN/mount)
				110	237	0,303
130	265			0,272	0,016	1.5952
150	265			0,272	0,051	1.6117
180	265			0,272	0,113	1.6410
210	265			0,272	0,186	1.6755
250	265			0,272	0,302	1.7298
		110	109	0,297	0,028	1.7586
		130	134	0,293	0,032	1.7596
		150	131	0,287	0,102	1.7599
		180	125	0,275	0,226	1.7528
		210	119	0,264	0,373	1.7563
		250	109	0,245	0,603	1.7557
		110	148	0,300	0,015	1.7557
		130	182	0,295	0,017	1.7502
		150	179	0,291	0,055	1.7504
		180	174	0,283	0,122	1.7533
		210	168	0,274	0,201	1.756
		250	158	0,260	0,326	1.7555
		110	89	0,296	0,022	1.7656
		130	108	0,288	0,025	1.7538
		150	105	0,281	0,081	1.7541
		180	100	0,270	0,179	1.7587
		210	94	0,256	0,296	1.7628
		250	84	0,233	0,478	1.7621
		110	131	0,298	0,017	1.7509
		130	162	0,295	0,020	1.7564
		150	159	0,290	0,063	1.7567
		180	153	0,280	0,139	1.7506
		210	147	0,270	0,228	1.7536
		250	137	0,254	0,370	1.7531
		110	65	0,290	0,034	1.7508
		130	79	0,282	0,039	1.7524
		150	76	0,274	0,123	1.7528
		180	71	0,259	0,273	1.7586
		210	65	0,242	0,450	1.7639
		250	55	0,213	0,728	1.7629
		110	86	0,295	0,021	1.7587
		130	105	0,288	0,024	1.7566
		150	102	0,281	0,076	1.7569
		180	97	0,270	0,169	1.7616
		210	90	0,253	0,278	1.7526
		250	80	0,230	0,450	1.7518
		110	122	0,299	0,018	1.7613
		130	150	0,294	0,021	1.0000
		150	146	0,287	0,066	1.7501
		180	141	0,279	0,145	1.7536
		210	135	0,268	0,239	1.7568
		250	125	0,250	0,386	1.7562

**Table 2 - Maximum admissible loads and reactions.**



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

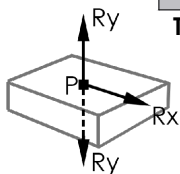
The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>



Maximum Admissible Loads and Reactions					15°	
Kit	Loads		kN/mount	kN/mount	kN/mount	
	(Km/h)	(Kg/m2)				
1		110	243	0.454	0.009	1.7550
		130	265	0.399	0.048	1.5745
		150	265	0.399	0.093	1.6031
		180	265	0.399	0.173	1.6535
		210	265	0.399	0.267	1.7132
		250	255	0.385	0.415	1.7544
2		110	110	0.439	0.019	1.7630
		130	132	0.423	0.096	1.7516
		150	127	0.409	0.186	1.7561
		180	117	0.381	0.346	1.7520
		210	106	0.350	0.534	1.7557
		250	88	0.299	0.830	1.7541
2 1R		110	150	0.445	0.010	1.7537
		130	183	0.434	0.052	1.7529
		150	178	0.424	0.101	1.7564
		180	168	0.402	0.187	1.7532
		210	157	0.378	0.288	1.7560
		250	139	0.339	0.448	1.7548
3		110	88	0.430	0.015	1.7520
		130	106	0.416	0.076	1.5706
		150	101	0.399	0.148	1.7625
		180	91	0.366	0.274	1.7575
		210	80	0.329	0.423	1.7619
		250	62	0.163	0.658	1.7601
3 1R		110	133	0.442	0.012	1.7562
		130	162	0.432	0.059	1.7576
		150	156	0.417	0.114	1.7525
		180	147	0.396	0.212	1.7580
		210	135	0.367	0.327	1.7522
		250	117	0.324	0.509	1.7508
4		110	64	0.420	0.023	1.7524
		130	76	0.401	0.116	1.7588
		150	71	0.380	0.225	1.7657
		180	61	0.338	0.417	1.7594
		210	50	0.182	0.645	1.765
		250	32	0.144	1.002	1.7626
4 1R		110	86	0.432	0.014	1.7627
		130	103	0.416	0.072	1.7615
		150	97	0.395	0.139	1.7542
		180	88	0.364	0.258	1.7620
		210	76	0.323	0.398	1.7537
		250	58	0.160	0.619	1.7518
4 2R		110	123	0.441	0.012	1.7593
		130	149	0.429	0.062	1.756
		150	143	0.413	0.119	1.7506
		180	134	0.390	0.221	1.7564
		210	122	0.359	0.342	1.7502
		250	105	0.316	0.532	1.7583

Table 3 - Maximum admissible loads and reactions.

- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

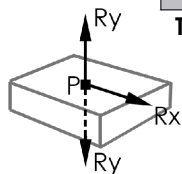
The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>



Maximum Admissible Loads and Reactions		20°				
		Loads				
Kit		(Km/h)	(Kg/m2)	(kN/mount)	(kN/mount)	(kN/mount)
1		110	189	0.462	0.012	1.3310
		130	236	0.461	0.050	1.3530
		150	236	0.461	0.095	1.3815
		180	236	0.461	0.175	1.4320
		210	236	0.461	0.269	1.4916
		250	236	0.461	0.417	1.5854
2		110	87	0.463	0.024	1.3941
		130	109	0.463	0.101	1.4430
		150	109	0.463	0.191	1.5001
		180	109	0.463	0.350	1.6010
		210	109	0.463	0.539	1.7203
		250	94	0.408	0.835	1.7587
2 1R		110	118	0.462	0.013	1.3636
		130	148	0.463	0.054	1.4030
		150	148	0.463	0.103	1.4468
		180	148	0.463	0.189	1.5241
		210	148	0.463	0.291	1.6155
		250	147	0.460	0.451	1.7516
3		110	71	0.464	0.019	1.4205
		130	89	0.464	0.080	1.4787
		150	89	0.464	0.151	1.5465
		180	89	0.464	0.278	1.6665
		210	85	0.446	0.427	1.7610
		250	66	0.221	0.662	1.7593
3 1R		110	105	0.463	0.014	1.3758
		130	131	0.461	0.062	1.4132
		150	131	0.461	0.117	1.4618
		180	131	0.461	0.215	1.5476
		210	131	0.461	0.330	1.6490
		250	125	0.443	0.512	1.7578
4		110	53	0.467	0.028	1.4690
		130	66	0.464	0.122	1.5354
		150	66	0.464	0.231	1.6218
		180	65	0.459	0.423	1.7593
		210	53	0.245	0.650	1.7592
		250	34	0.193	1.008	1.7572
4 1R		110	69	0.464	0.018	1.4248
		130	86	0.462	0.075	1.4784
		150	86	0.462	0.142	1.5479
		180	86	0.462	0.261	1.6707
		210	81	0.440	0.402	1.7554
		250	62	0.217	0.623	1.7537
4 2R		110	97	0.462	0.015	1.3814
		130	121	0.460	0.065	1.4214
		150	121	0.460	0.122	1.4733
		180	121	0.460	0.224	1.5651
		210	121	0.460	0.345	1.6736
		250	111	0.427	0.535	1.7538

**Table 4 - Maximum admissible loads and reactions.**



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>

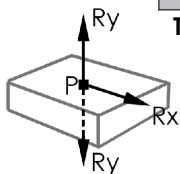


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Maximum Admissible Loads and Reactions					25°	
Kit	Loads		kN/mount	kN/mount	kN/mount	
	(Km/h)	(Kg/m2)				
1		110	155	0.460	0.015	1.0489
		130	194	0.460	0.053	1.0733
		150	194	0.460	0.099	1.1019
		180	194	0.460	0.178	1.1524
		210	194	0.460	0.272	1.2120
		250	194	0.460	0.420	1.3058
2		110	70	0.462	0.030	1.1149
		130	88	0.463	0.107	1.1661
		150	88	0.463	0.197	1.2232
		180	88	0.463	0.356	1.3241
		210	88	0.463	0.545	1.4434
2 1R		110	96	0.462	0.016	1.0847
		130	120	0.461	0.058	1.1205
		150	120	0.461	0.106	1.1642
		180	120	0.461	0.192	1.2416
		210	120	0.461	0.294	1.3330
3		110	57	0.466	0.024	1.1464
		130	71	0.464	0.085	1.1991
		150	71	0.464	0.156	1.2669
		180	71	0.464	0.283	1.3869
		210	71	0.464	0.432	1.5286
3 1R		110	85	0.462	0.018	1.0956
		130	106	0.460	0.066	1.1333
		150	106	0.460	0.121	1.1818
		180	106	0.460	0.218	1.2677
		210	106	0.460	0.334	1.3691
4		110	41	0.463	0.036	1.1788
		130	52	0.466	0.129	1.2598
		150	52	0.466	0.238	1.3461
		180	52	0.466	0.430	1.4987
		210	58	0.313	0.658	1763.0000
4 1R		110	55	0.464	0.022	1.1462
		130	69	0.464	0.080	1.2057
		150	69	0.464	0.147	1.2752
		180	69	0.464	0.266	1.3981
		210	69	0.464	0.406	1.5433
4 2R		110	79	0.465	0.019	1.1090
		130	98	0.461	0.069	1.1451
		150	98	0.461	0.126	1.1970
		180	98	0.461	0.228	1.2888
		210	98	0.461	0.349	1.3973
250	98	0.461	0.539	1.5680		

Table 5 - Maximum admissible loads and reactions.

- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

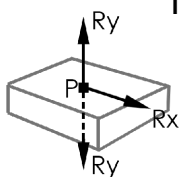
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Maximum Admissible Loads and Reactions					30°	
Kit	Loads		kN/mount	kN/mount	kN/mount	
	Km/h	Kg/m2				
1		110	135	0,462	0,025	0,8968
		130	169	0,462	0,003	0,9355
		150	169	0,462	0,022	0,9805
		180	169	0,462	0,066	1,0602
		210	169	0,462	0,118	1,1544
		250	169	0,462	0,201	1,3025
2		110	60	0,466	0,050	1,0018
		130	75	0,465	0,007	1,0769
		150	75	0,465	0,043	1,1671
		180	82	0,499	0,132	1,3855
		210	103	0,348	0,237	1,7513
		250	68	0,262	0,401	1,7518
2 1R		110	83	0,464	0,027	0,9538
		130	103	0,461	0,004	1,0065
		150	103	0,461	0,023	1,0756
		180	103	0,461	0,071	1,1977
		210	112	0,494	0,128	1,4003
		250	131	0,319	0,217	1,7502
3		110	48	0,467	0,039	1,0401
		130	60	0,465	0,005	1,1294
		150	60	0,465	0,034	1,2365
		180	82	0,593	0,105	1,6468
		210	70	0,318	0,188	1,7501
		250	35	0,216	0,318	1,7508
3 1R		110	73	0,464	0,030	0,9686
		130	91	0,462	0,004	1,0308
		150	91	0,462	0,027	1,1074
		180	91	0,462	0,081	1,2429
		210	112	0,549	0,145	1,5539
		250	105	0,300	0,246	1,7555
4		110	34	0,465	0,060	1,0997
		130	43	0,467	0,008	1,2198
		150	57	0,570	0,052	1,5349
		180	55	0,349	0,159	1,7503
		210	33	0,268	0,286	1,7541
		110	46	0,463	0,037	1,0397
4 1R		130	58	0,465	0,005	1,1363
		150	58	0,465	0,032	1,2460
		180	82	0,607	0,098	1,6868
		210	66	0,313	0,176	1,7516
		250	31	0,210	0,299	1,7523
		110	67	0,463	0,032	0,9786
4 2R		130	84	0,463	0,004	1,0489
		150	84	0,463	0,028	1,1309
		180	84	0,463	0,085	1,2759
		210	112	0,587	0,152	1,6624
		250	89	0,285	0,257	1,7551
		110	67	0,463	0,032	0,9786

Table 6 - Maximum admissible loads and reactions.



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

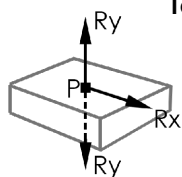
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Maximum Admissible Loads and Reactions					35°
		Loads			
		(Km/h)	(Kg/m2)		
		110	147	0,462	0,021
		130	184	0,462	0,001
		150	184	0,462	0,026
		180	184	0,462	0,070
		210	184	0,462	0,123
		250	213	0,526	0,205
		110	63	0,461	0,041
		130	79	0,461	0,002
		150	79	0,461	0,052
		180	110	0,597	0,140
		210	140	0,419	0,245
		250	93	0,315	0,410
		110	89	0,463	0,022
		130	111	0,461	0,001
		150	111	0,461	0,028
		180	111	0,461	0,076
		210	150	0,593	0,132
		250	178	0,385	0,221
		110	50	0,462	0,033
		130	63	0,464	0,001
		150	76	0,532	0,041
		180	110	0,710	0,111
		210	96	0,382	0,194
		250	49	0,259	0,325
		110	78	0,462	0,025
		130	98	0,463	0,001
		150	98	0,463	0,032
		180	110	0,508	0,086
		210	150	0,658	0,150
		250	142	0,360	0,251
		110	35	0,463	0,050
		130	57	0,550	0,002
		150	76	0,677	0,063
		180	76	0,420	0,170
		210	46	0,320	0,296
		250	48	0,460	0,031
		110	61	0,464	0,001
		130	76	0,545	0,039
		150	76	0,727	0,105
		180	110	0,378	0,183
		210	91	0,252	0,306
		250	44	0,252	0,306
		110	72	0,464	0,026
		130	90	0,463	0,001
		150	90	0,463	0,033
		180	110	0,543	0,090
		210	150	0,704	0,157
		250	121	0,343	0,263

Table 7 - Maximum admissible loads and reactions.



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

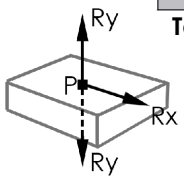
The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>



Sunfer reserves the right to make changes to the product and its associated documents at any time. The images in this document are for illustration only and may differ from the products provided.

Maximum Admissible Loads and Reactions					40°	
Kit	Loads		(kN/mount)	(kN/mount)	(kN/mount)	
	(Km/h)	(Kg/m2)				
1		110	172	0,460	0,016	0,6394
		130	216	0,462	0,006	0,6771
		150	216	0,462	0,031	0,7191
		180	216	0,462	0,075	0,7935
		210	216	0,462	0,127	0,8814
		250	265	0,306	0,210	1,1275
2		110	73	0,463	0,031	0,7335
		130	91	0,461	0,012	0,8034
		150	102	0,502	0,062	0,9360
		180	147	0,668	0,150	1,2830
		210	183	0,461	0,255	1,6174
		250	151	0,402	0,419	1,7528
2 1R		110	103	0,461	0,017	0,6887
		130	129	0,461	0,006	0,7439
		150	129	0,461	0,033	0,8084
		180	147	0,512	0,081	0,9832
		210	200	0,662	0,138	1,2968
		250	259	0,461	0,226	1,7078
3		110	57	0,462	0,025	0,7670
		130	76	0,482	0,009	0,8763
		150	102	0,596	0,049	1,1124
		180	143	0,460	0,119	1,5039
		210	143	0,460	0,202	1,7128
		250	88	0,339	0,333	1,7533
3 1R		110	90	0,460	0,019	0,7034
		130	113	0,461	0,007	0,7656
		150	113	0,461	0,038	0,8372
		180	147	0,568	0,092	1,0911
		210	200	0,735	0,156	1,4391
		250	221	0,452	0,257	1,7529
4		110	44	0,497	0,038	0,8676
		130	76	0,613	0,014	1,1149
		150	99	0,462	0,074	1,3954
		180	99	0,462	0,181	1,6203
		210	79	0,407	0,308	1,7528
		250	16	0,230	0,506	1,7511
4 1R		110	55	0,462	0,023	0,7723
		130	76	0,494	0,009	0,8976
		150	102	0,611	0,046	1,1395
		180	138	0,460	0,112	1,5137
		210	138	0,460	0,190	1,7277
		250	80	0,330	0,313	1,7531
4 2R		110	83	0,463	0,020	0,7174
		130	104	0,463	0,007	0,7830
		150	104	0,463	0,039	0,8595
		180	147	0,608	0,096	1,1672
		210	200	0,786	0,163	1,5395
		250	190	0,431	0,269	1,7509

**Table 8 - Maximum admissible loads and reactions.**



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

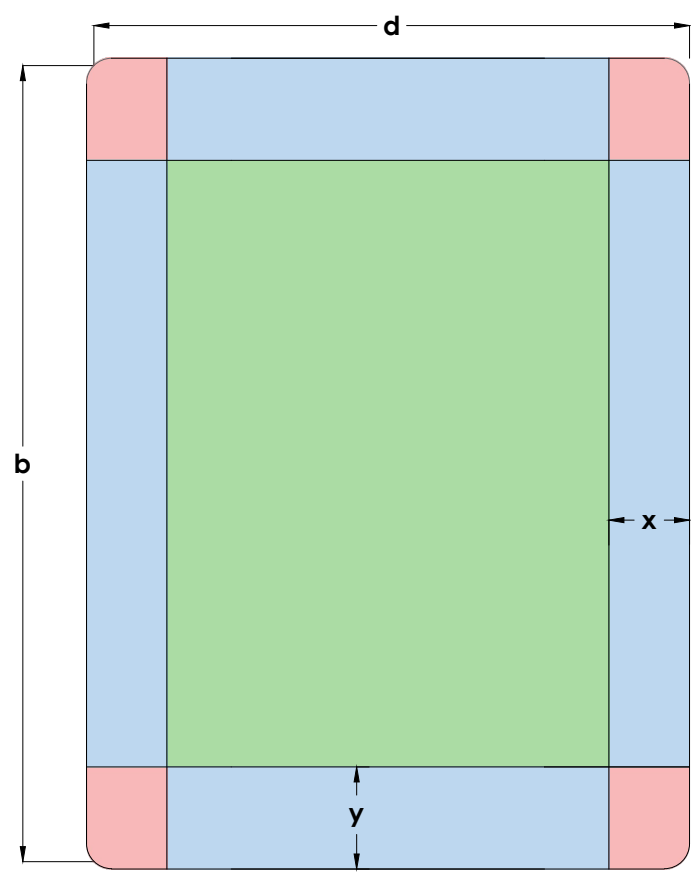
The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>

Loads and reactions calculated for the kit lengths and distances in the table.  
For other distributions consult SUNFER.



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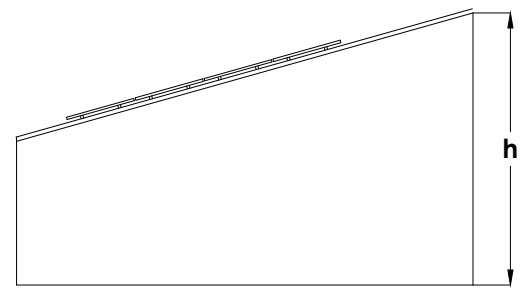




$$e = \min [b, 2h]$$

$$x = \text{Max} [e/10, 0.5\text{m}]$$

$$y = \text{Max} [e/4, 0.5\text{m}]$$



- Installation Safe Zone
- Turbulent Zone
- Extremely Turbulent Zone

To avoid turbulence and other unwanted natural effects, it is strongly recommended to install photovoltaic panels inside of the green zone.

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# 03V-EN

## Installation Video

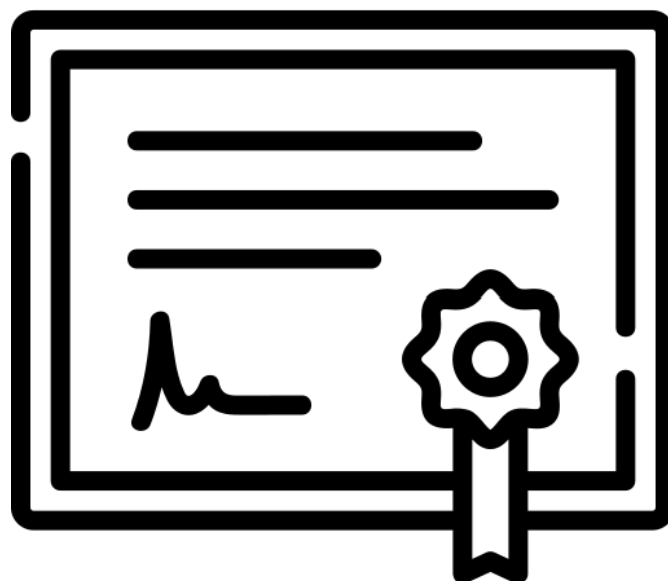


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# 03V-EN

## Certificates and Guarantee



- ISO 9001 Certificate
- ISO 14001 Certificate
- CE Marking
- Guarantee

This is a translation of the certificate ES13/13899

The management system of

# SUNFER ESTRUCTURAS, S.L.U.

Camí de la Dula, s/n, 46687 Albalat de la Ribera, Valencia

has been assessed and certified as meeting the requirements of

**ISO 9001:2015**

For the following activities

Design, manufacture and sale of solar energy structures.

This certificate is valid from 19 May 2023 until 8 April 2025 and remains valid subject to satisfactory surveillance audits.

Issue 6. Certified with SGS since 8 April 2013

Last certificate expiry date 8 April 2022

Recertification audit date 31 March 2022

Authorised by \_\_\_\_\_

SGS International Certification Services Iberica, S.A.U.

C/Trespaderne, 29. 28042 Madrid. España

t +34 91 313 8115 - www.sgs.com



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This is a translation of the certificate ES22/211172

The management system of

# SUNFER ESTRUCTURAS, S.L.U.

Camí de la Dula, s/n, 46687 Albalat de la Ribera, Valencia

has been assessed and certified as meeting the requirements of

**ISO 14001:2015**

For the following activities

Design, manufacture and sale of solar energy structures.

This certificate is valid from 19 May 2023 until 22 April 2025 and remains valid subject to satisfactory surveillance audits.

Issue 2. Certified with SGS since 22 April 2022

Authorised by \_\_\_\_\_

SGS International Certification Services Iberica, S.A.U.

C/Trespaderne, 29. 28042 Madrid. España

t +34 91 313 8115 - [www.sgs.com](http://www.sgs.com)



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**IDENTIFICATION NUMBER OF NOTIFIED ORGANISM:**

1181

---

**NUMBER AND REGISTERED ADDRESS OF MANUFACTURERS. INSTALLATION LOCATION:**

Business name: *SUNFER ESTRUCTURAS, S.L.U.*

Address: *Camí de la Dula s/n*

Postal Code: *46687*

Location: *Albalat de la Ribera*

City: *Valencia*

Country: *España*

**TWO LAST DIGITS OF THE YEAR THAT THE MARKING WAS FIXED:**

19

*ES19/86524*

---

**EN 1090-1**

Description of product:

**03V-EN**

---

**TOLERANCES IN GEOMETRIC INFORMATION:** *EN 1090-3*

**WELDABILITY:** --

**FRACTURE RESISTANCE:** --

**FIRE REACTION:** *Classified material A1*

**CADMIUM EMISSION:** *N/A*

**RADIOACTIVITY EMISSION:** *N/A*

**DURABILITY:** *N/A*

**STRUCTURAL CHARACTERISTICS:**

- **Carrying capacity:** *See product instructions and data sheet*
- **Fatigue resistance:** *N/A*
- **Fire resistance:** *N/A*
- **Manufacturing:** *According to the component specification and EN1090-3. Execution class EXC1*

	<b>DECLARATION OF PERFORMANCE</b>	DdP
		REVISION 01

DECLARATION OF PERFORMANCE NUMBER:	P-0121
------------------------------------	--------

**1. PRODUCT DESCRIPTION.**

UNIQUE IDENTIFICATION CODE OF THE PRODUCT TYPE:	03V-EN
---	--------

**2. NAME AND ADDRESS OF MANUFACTURER.**

NAME:	SUNFER ESTRUCTURAS, S.L.U.
COMERCIAL NAME (if exists):	--
ADDRESS:	CAMI DE LA DULA S/N
CITY AND PC:	46687 ALBALAT DE LA RIBERA -- COMUNIDAD VALENCIANA (SPAIN)

**3. INTENDED USE(S) OF THE PRODUCT:**

ALUMINUM STRUCTURE TO SUPPORT PHOTOVOLTAIC PANELS.

**4. SYSTEM OF EVALUATION AND VERIFICATION OF CONSTANCY OF PERFORMANCE:**

System 2+

**5. HARMONIZED STANDARD:**

This product complies with the provisions of Annex ZA of the European standard **UNE-EN 1090-1:2011 + A1:2012**

**6. NOTIFIED ORGANISM:**

NAME:	<b>SGS ICS IBÉRICA. S.A.</b>
Notified Organism Number:	<b>NB1181</b>

**7. DECLARED PERFORMANCES:**

Essential Characteristics	Performances	Harmonised technical specifications
Tolerances in geometric information	Conforms to limits for essential tolerances <input type="checkbox"/>	EN 1090-3
Weldability	Not applicable because there is no welding in the structure	----
Fracture Tenacity	Not required for aluminum components	-----
Carrying Capacity	N/A	
Fatigue Resistance	N/A	
Fire Resistance	N/A	
Fire reaction	Class A1	EN 13501-1
Emission of cadmium and its compounds	OK	
Emission of radioactivity	OK	
Durability	N/A	
Structural features	See product data sheet	UNE EN 1999-1-1
- Carrying capacity	N/A	
- Fatigue resistance: N/A	N/A	
- Fire resistance: N/A	N/A	
- Manufacturing	According to the component specification. Execution class EXC1	UNE EN 1090-3

- The performance of the product identified above is in accordance with all the declared performance.
- This declaration of performance is issued in accordance with Regulation (EN) No. 305/2011 under the responsibility of the manufacturer identified above.

Manufacturer's Name: Voro Gómez Nacher

Date of issue: 02/08/2023

Signature:



## Structural and Anticorrosion Guarantee

All SUNFER mounting systems are manufactured under strict production control in our factory, as are our raw materials, which are periodically tested to ensure quality. It is for these reasons we are able to offer the following guarantee for our products:

25 year Structural Guarantee

Anticorrosion Guarantee per the below table

Materials	NON-HARSH environment (1) Distance to coastline greater than 5 Km	HARSH or MARINE environment Distance to coastline less than 5 Km
Raw Aluminum	Fifteen (15) years	Five (5) years
Anodized Aluminum	Twenty-five (25) years	Twenty-five (25) years

Table 1.

(1) Non-exhaustive list of zones considered to be harsh environments:

- Industrial zones with emissions that include: sulphur dioxide, nitrogen oxides, sulphuric acid, sulphuric compounds, chlorine, or other volatile gases; 5 km safety distance.
- Electric generating stations that use the following fuels: coal, natural gas, petroleum; 5 km safety distance.
- Petrochemical plants; 5 km safety distance.
- Cellulose factories; 5 km safety distance
- Wastewater treatment facilities: 500 m safety distance.

In these zones it is always necessary to utilize anodized aluminum if inside of the minimum safety radius indicated above.

The warranty of the adhesive in reference 07.1H and S07.1 is ten (10) years. The warranty of the 2-sided adhesive tape of the S07.1 anchor covers the product supplied by Sunfer and can be applied provided that the breakage is caused by the tearing off of the profile with respect to the adhesive tape, in the event that the breakage is caused by the tearing off of the adhesive tape from the roofing, it will be considered a faulty assembly on site.

Mixed galvanised steel and raw aluminium supports such as, for example: Elevated, Monopoles, Car parks:  
Environments C3 fifteen (15) years guarantee.  
Environments C4-C5 five (5) years.

Mixed galvanised steel and anodised aluminium supports, such as: Elevated, Monopoles, Car parks:  
Environments C3 guarantee twenty-five (25) years.  
Environments C4-C5 fifteen (15) years.

This guarantee applies to orders supplied from 3rd January, 2023 on. Orders delivered before this date shall be governed by the guarantee that was in force at the time that the order was supplied.

The guarantee covers the final installation, and applies directly to the end user of the structure. Guarantees are managed between SUNFER and commercial distributors, so if an end user needs to invoke a guarantee, they must contact the distributor that supplied the material, and the distributor will coordinate with SUNFER Customer Service. The period of coverage of the guarantee begins upon the date that the delivery of the material is received by the end user, but will be repealed if the client does not comply with the payment terms stated in the invoice.

To invoke the guarantee, the following documentation must be produced:

- Sales invoice.
- Date system was put in service.
- Information of end user (name, address, distributor, etc).
- General photographs showing the entire system as installed.
- Installer's final work plans/drawings.
- Detailed photos of:
  - Fastening of the system to the roof, which shows the distance between mounting points.
  - The structure mounted without panels attached.
  - A rear view of the structure (from roof ridge if coplanar).







- Plan/drawing of the affected area which shows distances between mounting points.

## Coverage and Exclusions

### Coverage

This guarantee covers the replacement and shipping of the defective components or of the entire system if necessary, with no charge. In the case of a replacement not being available, a suitably similar replacement will be provided.

The guarantee is limited to replacement of defective products. The following costs, indirectly associated with the return process, will not be compensated: disassembly or any consequential, supplementary, or related damages, including lost profits or other indirect costs.

The guarantee covers all metallic elements included in a SUNFER structure.

### Exclusions

Any issues or defects caused by or related to the following shall be excluded from the guarantee:

- Inadequate installations which did not follow the installation instructions provided by SUNFER.
- Incorrect fastener tightening torques (overtight or undertight).
- Modifications or installations other than those recommended by SUNFER.
- Installation of additional homemade or third-party elements to the structures supplied by SUNFER.
- Inadequate handling of products during the installation.
- Damage to the product after delivery, or from improper storage of the product.
- Any defect which is purely aesthetic in nature and which does not affect the structural safety of the product.
- Installations in areas whose wind and snow loads exceed those indicated in the datasheets of the product.
- Structures installed outside of the safe zone indicated in the installation manual.
- Inadequate maintenance. See the Maintenance Manual.
- Fires or exposure to temperatures above 110 °C.
- Problems or defects caused by corrosive agents not initially considered (1).
- Natural disasters such as earthquakes, hurricanes, floods, tornados, cyclones, mudslides, avalanches, or volcanic eruptions.

For structures not provided with a method of fastening to a surface, SUNFER denies responsibility in the event of collapse or failure due to insufficient fastening or poor installation.

### Guarantor, Execution of guarantee

The guarantor is SUNFER ESTRUCTURAS S.L.U. located at Camino de la Dula s/n 46687, Albalat de la Ribera, Valencia, Spain.

The entitlements afforded by this guarantee are non-transferable to third parties.

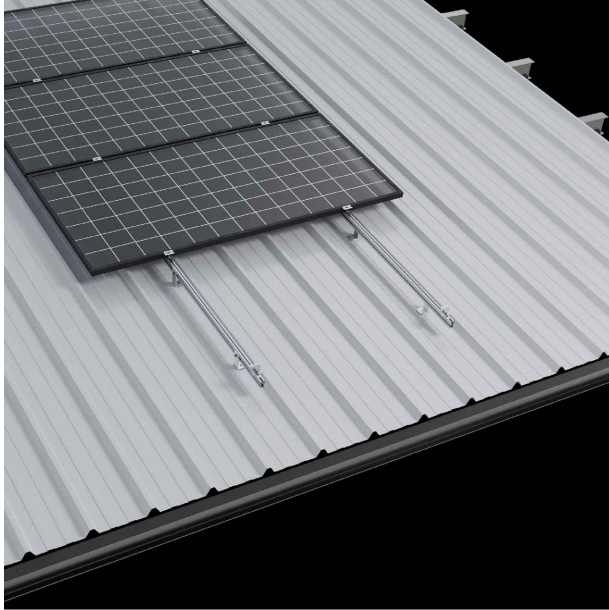
Regarding the guarantee and any disputes related to it, the law currently in force in Spain shall apply.



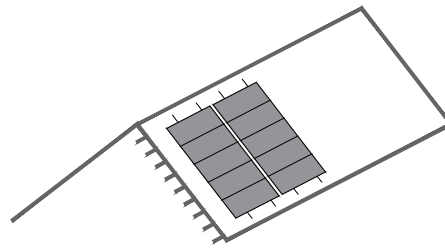
# SUNFER

Solar Mounting Systems

## 03V-EN



### Landscape



Steel Beam





## CONTENTS

1. General Information
2. Kit Contents
3. Landscape Installation
4. Fastening Technical Information
5. Maximum Loads and Reactions
6. Installation Zone
7. Installation Video
8. Certificates and Guarantee

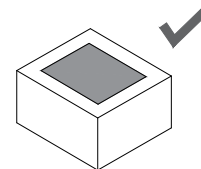
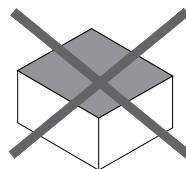
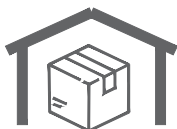
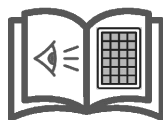


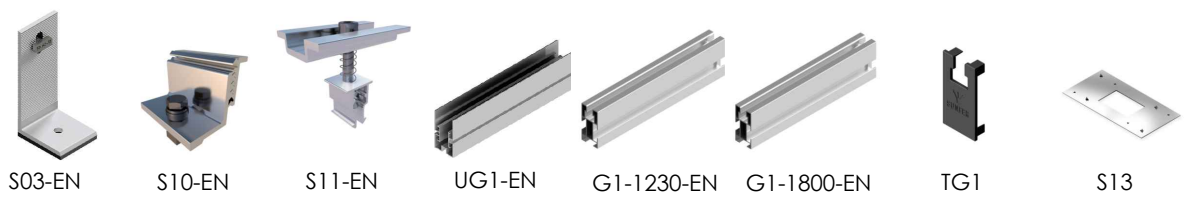
Return



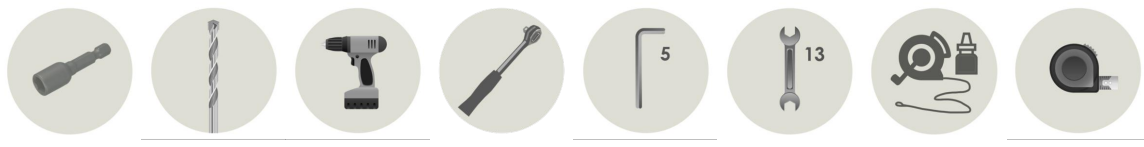
### General Information and Recommendations **ENG**

- All installation instructions and product specifications provided must be adhered to.
- Check the condition of the roof covering and its carrying capacity. The management overseeing installation is responsible for verifying that the substructure of the roof as well as the static structure of the building itself is capable of supporting additional loads before any installation is carried out.
- To avoid turbulence from wind a minimum security distance (defined by regulations) must be maintained between the photovoltaic installations and roof edges, as well as other obstacles such as chimneys or vents.
- In the case of chimneys or other features which may need future maintenance, a minimum distance must be maintained in order to facilitate said maintenance or to extinguish fires. This distance shall be either 1m or that suggested by the relevant authority, whichever is greater.
- The surface of the roof covering must be clean and dry. Any major irregularities of the roof must be corrected or eliminated.
- The mounting must always be anchored to the structure of the roof.
- Check the weathertightness of the mount once fastened.
- Place solar panels such that they are distributed symmetrically along the support, leaving equal overhangs at each end.
- Clamps must not be tightened using impact drivers.
- Check that the support attachment points are compatible with the solar panel manufacturer's specifications.
- Uninstallation must be carried out in the reverse order from the installation.
- During the shipping of products take extreme care to maintain the integrity of the packaging. Store in a dry, well-ventilated area. Minimize exposure to large temperature differences and humidity. Avoid outdoor storage. Avoid sources of dripping water, puddles, splashing, or any other contact with water in the storage area. If the product becomes wet, immediately dry and clean as well as possible. Do not leave the product directly on the floor or ground where it may attract moisture. Store on the shipment's original pallet or on shelves.
- We reserve the right to make changes to our products at any moment without prior warning if, from our point of view, the changes are necessary for the improvement of the product. All illustrations in plans and catalogues are for example only and therefore may differ from the actual product provided.
- Aluminium components can be delivered in different finishes without compromising the structural solution. Available finishes: raw/anodised/lacquered

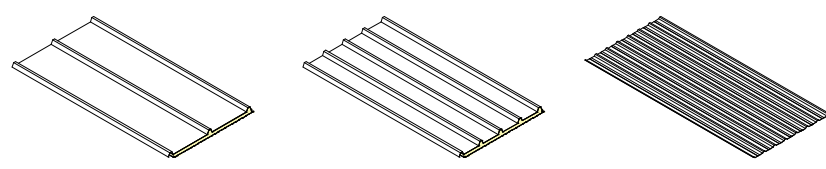




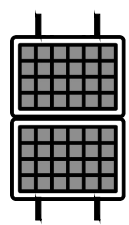
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	4	4	-	-	2	-	4	2
	4	4	2	2	4	-	4	3
	6	4	2	2	4	-	4	3
	6	4	4	2	-	4	4	4
	8	4	4	2	-	4	4	4
	6	4	6	4	2	4	4	5
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	10	4	6	4	2	4	4	5



Anchoring surface:

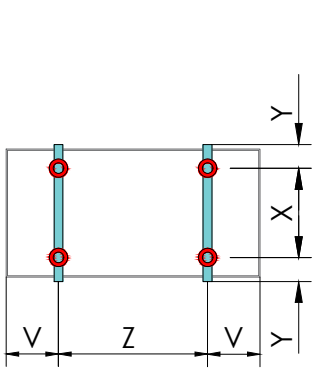
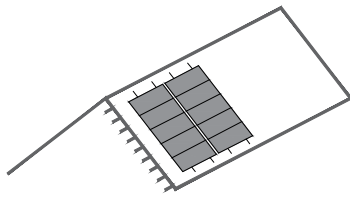
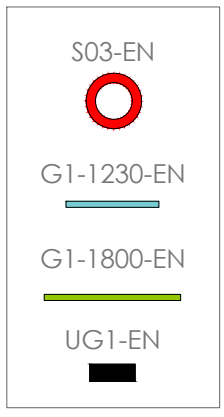


Max. 2279x1150 mm  
Thickness: 28-40 mm

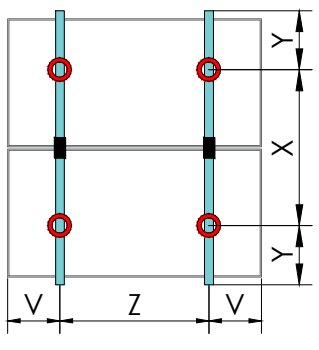


Profiles of **EN AW 6005A T6 Aluminium**  
 Fasteners of **A2-70 Stainless Steel**

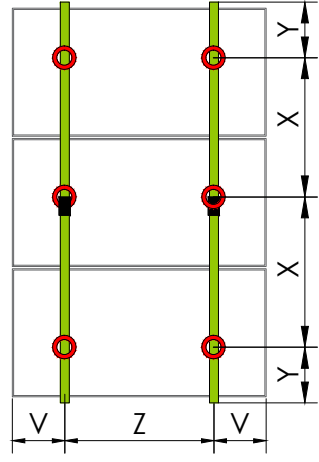
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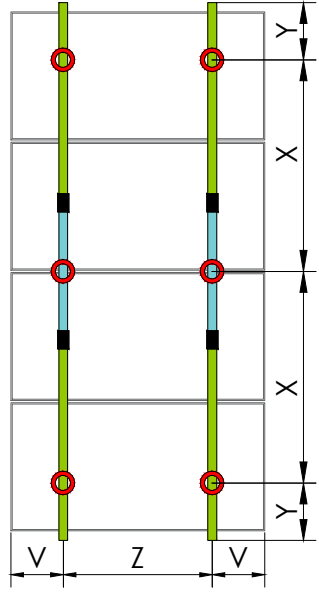
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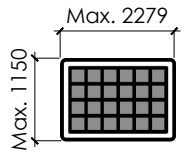
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3

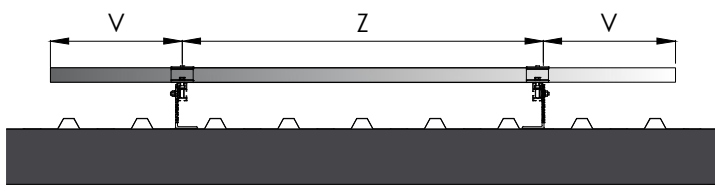


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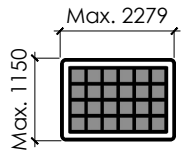
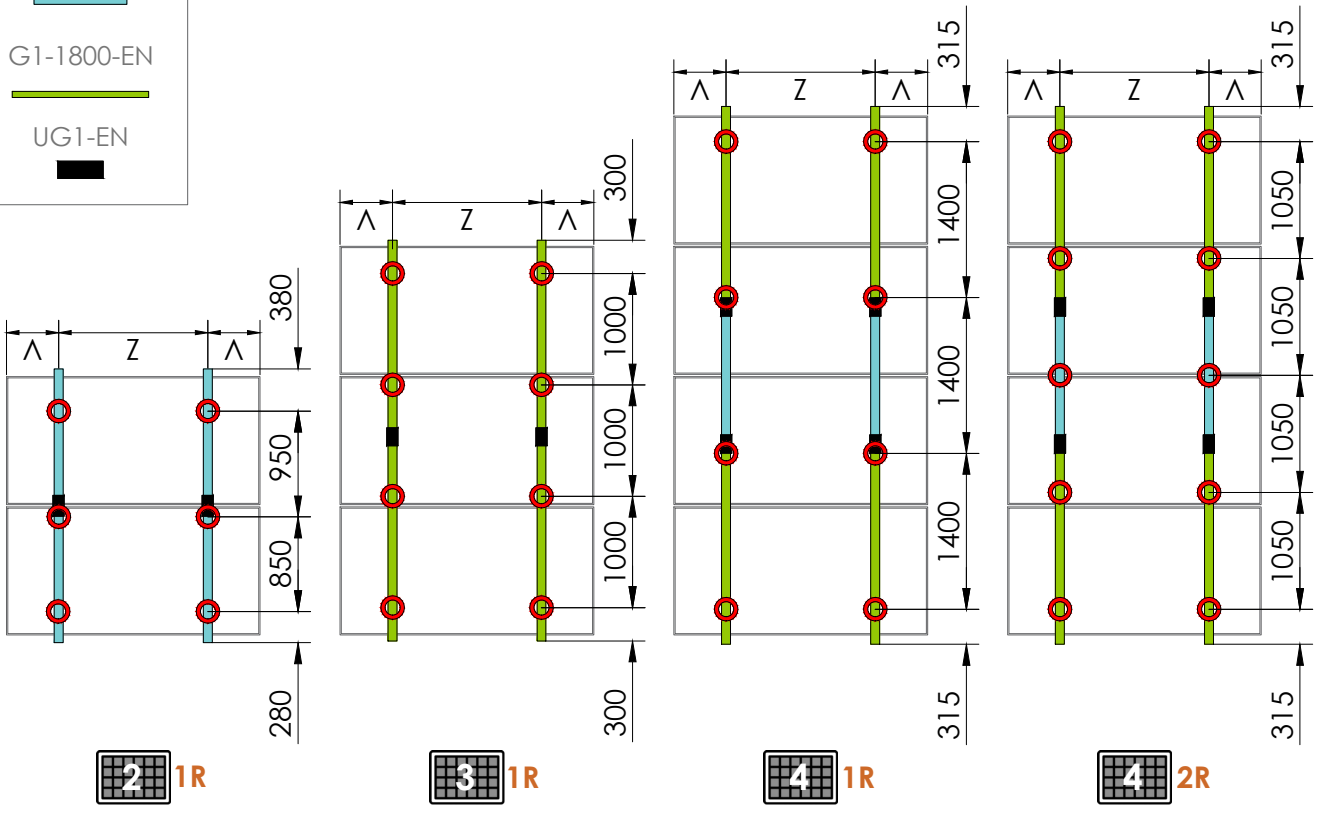
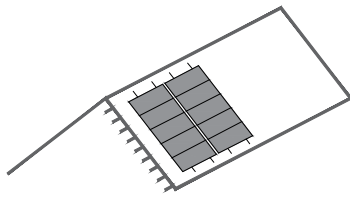
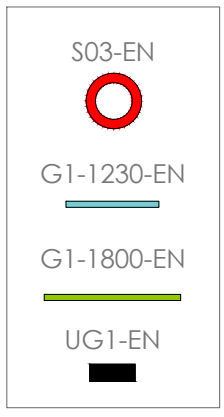
$$X \leq 1000$$

$$0,2 * X \leq Y \leq 0,33 * X$$



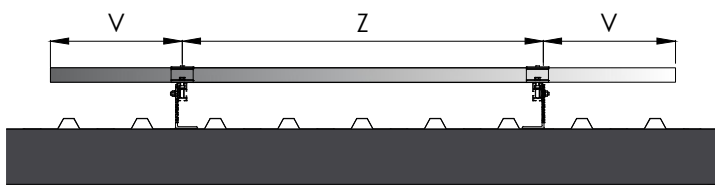
The maximum distance "Z" between profiles and the overhang distance "V" should be determined by consulting the technical datasheets of the solar panel manufacturer.

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$$X \leq 1000$$

$$0,2 * X \leq Y \leq 0,33 * X$$

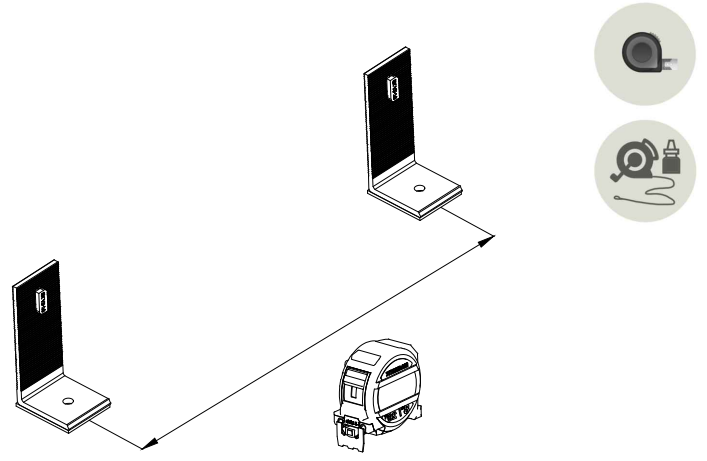
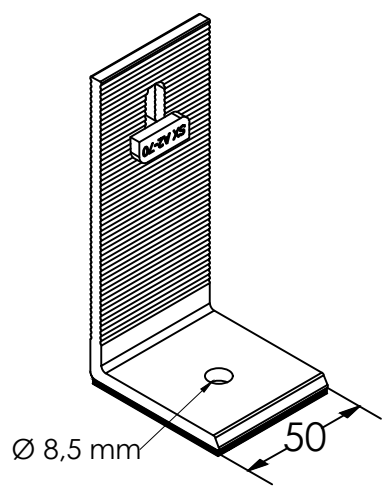
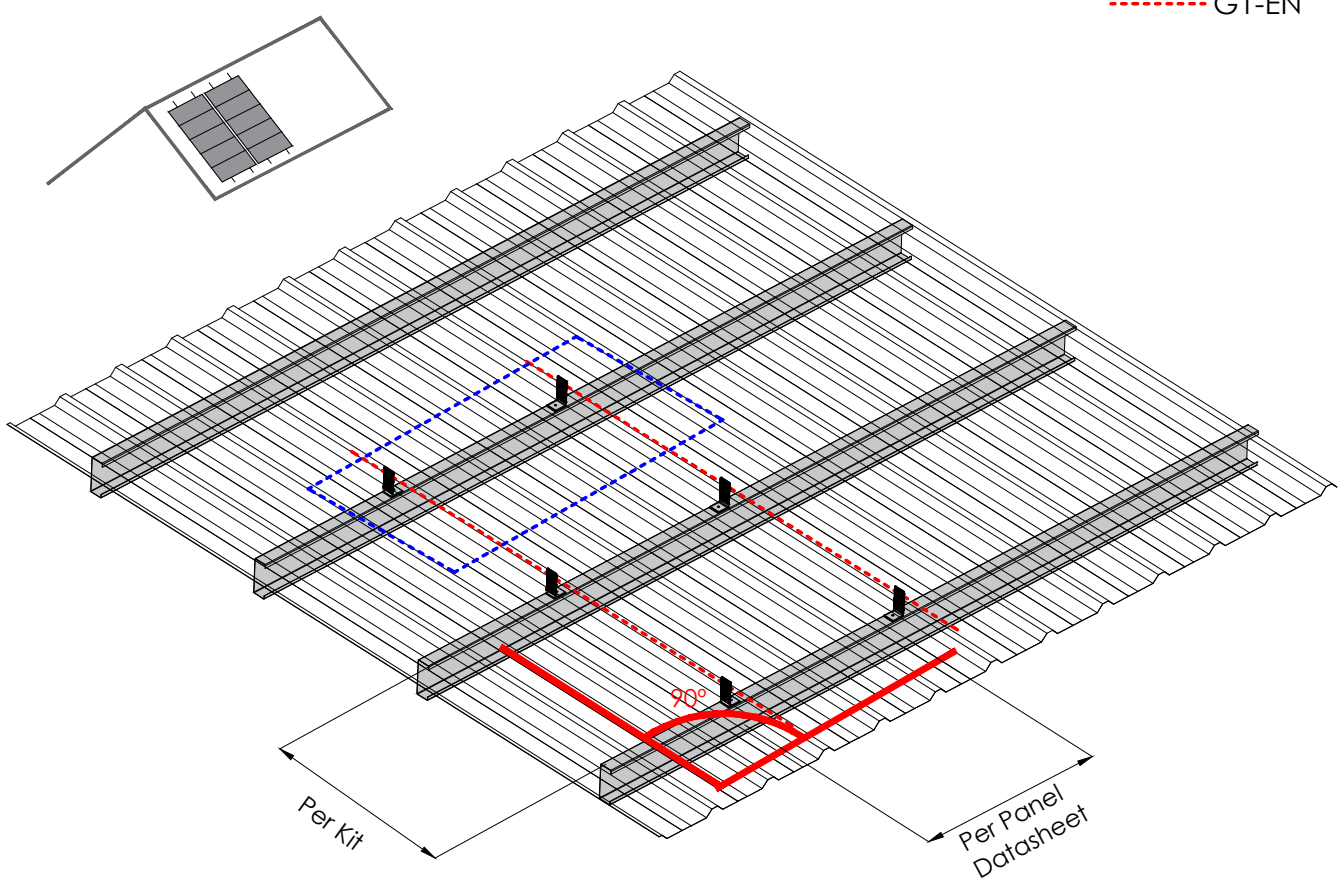


The maximum distance "Z" between profiles and the overhang distance "V" should be determined by consulting the technical datasheets of the solar panel manufacturer.

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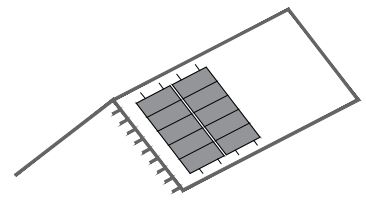


----- Panel  
----- G1-EN

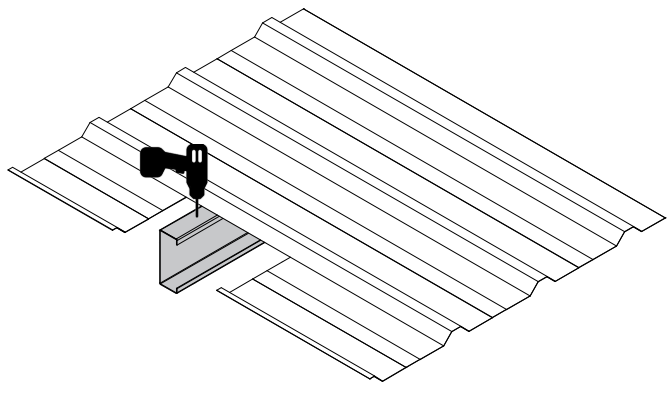


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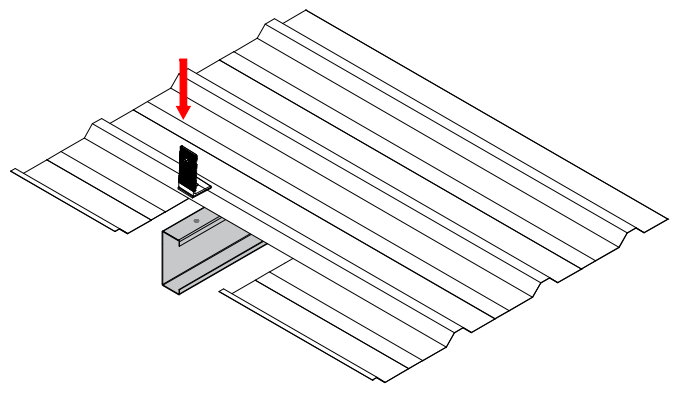




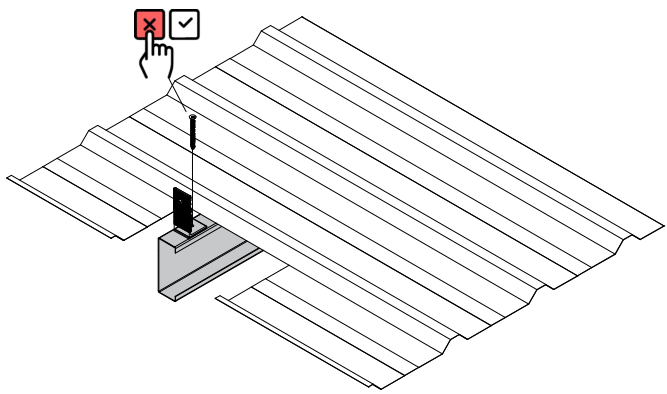
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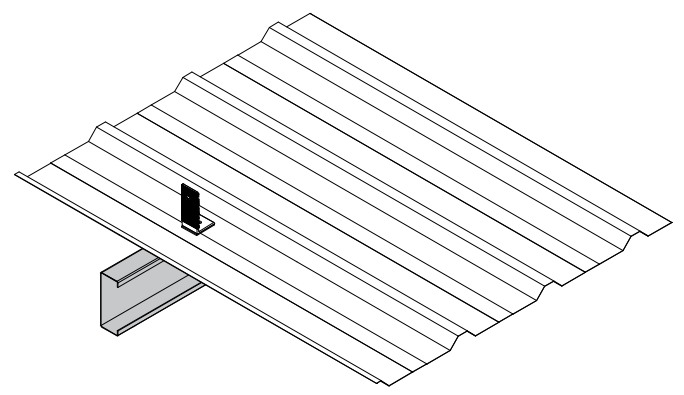
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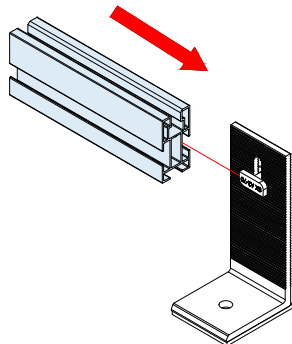
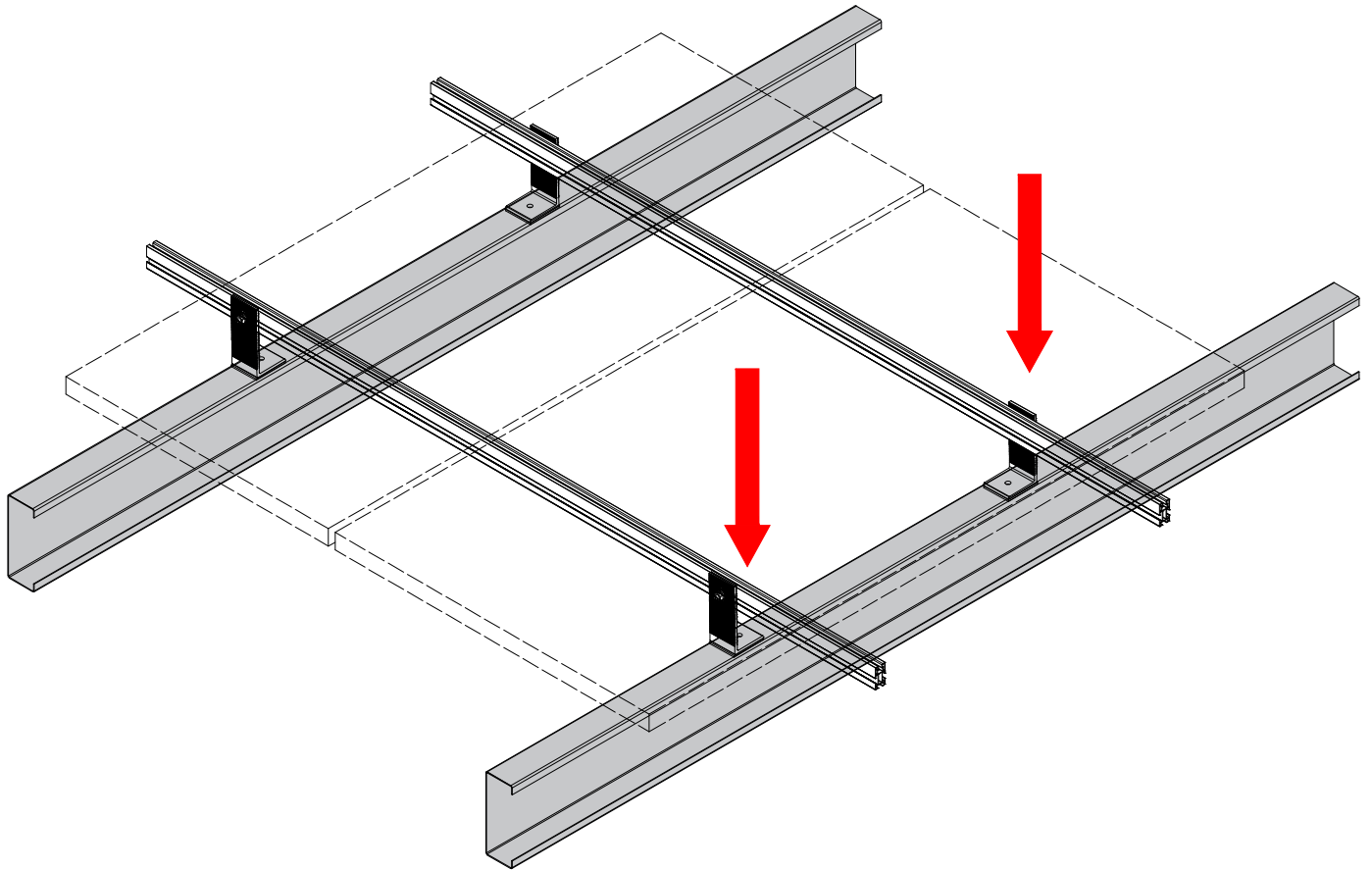
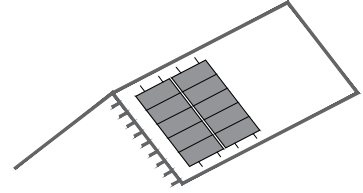
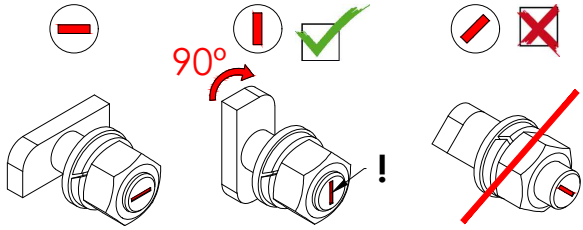
4.



\*Must support the reaction forces at the anchor point



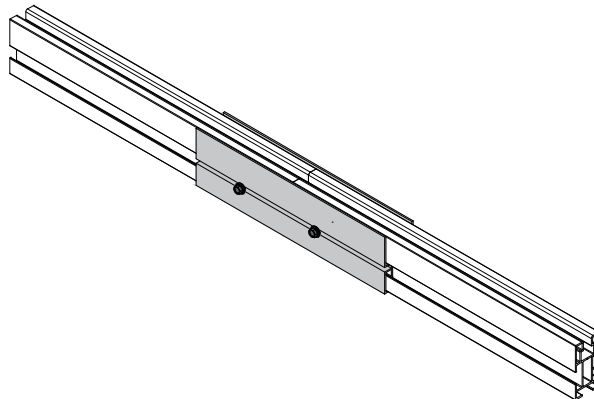
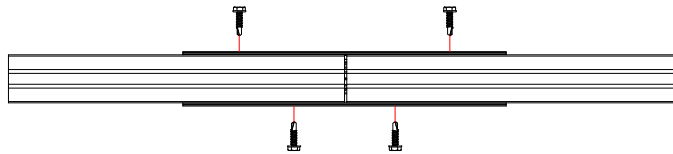
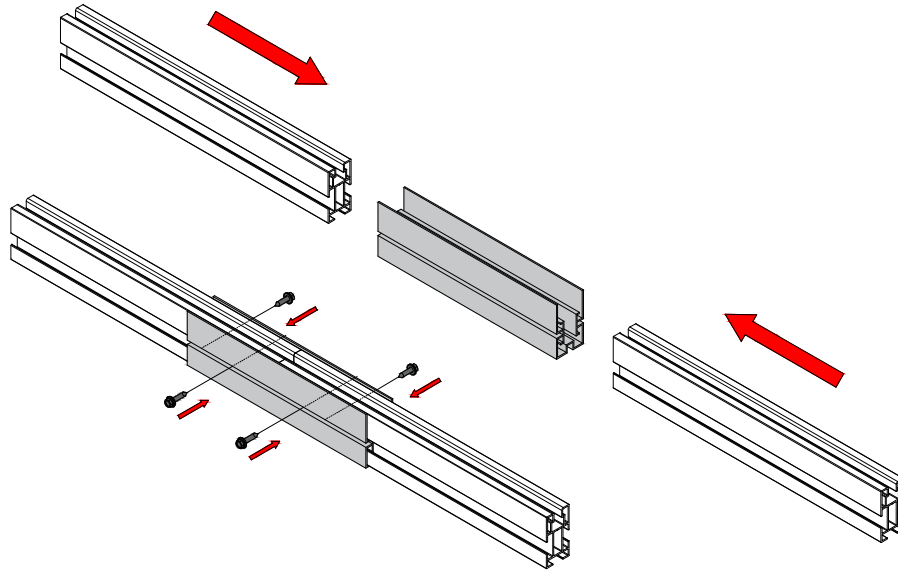
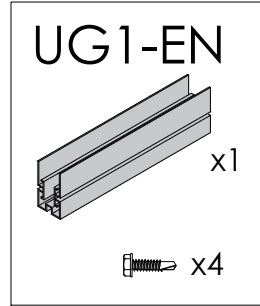
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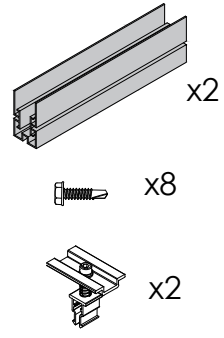
6 Nm



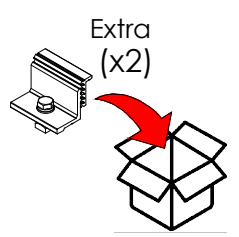
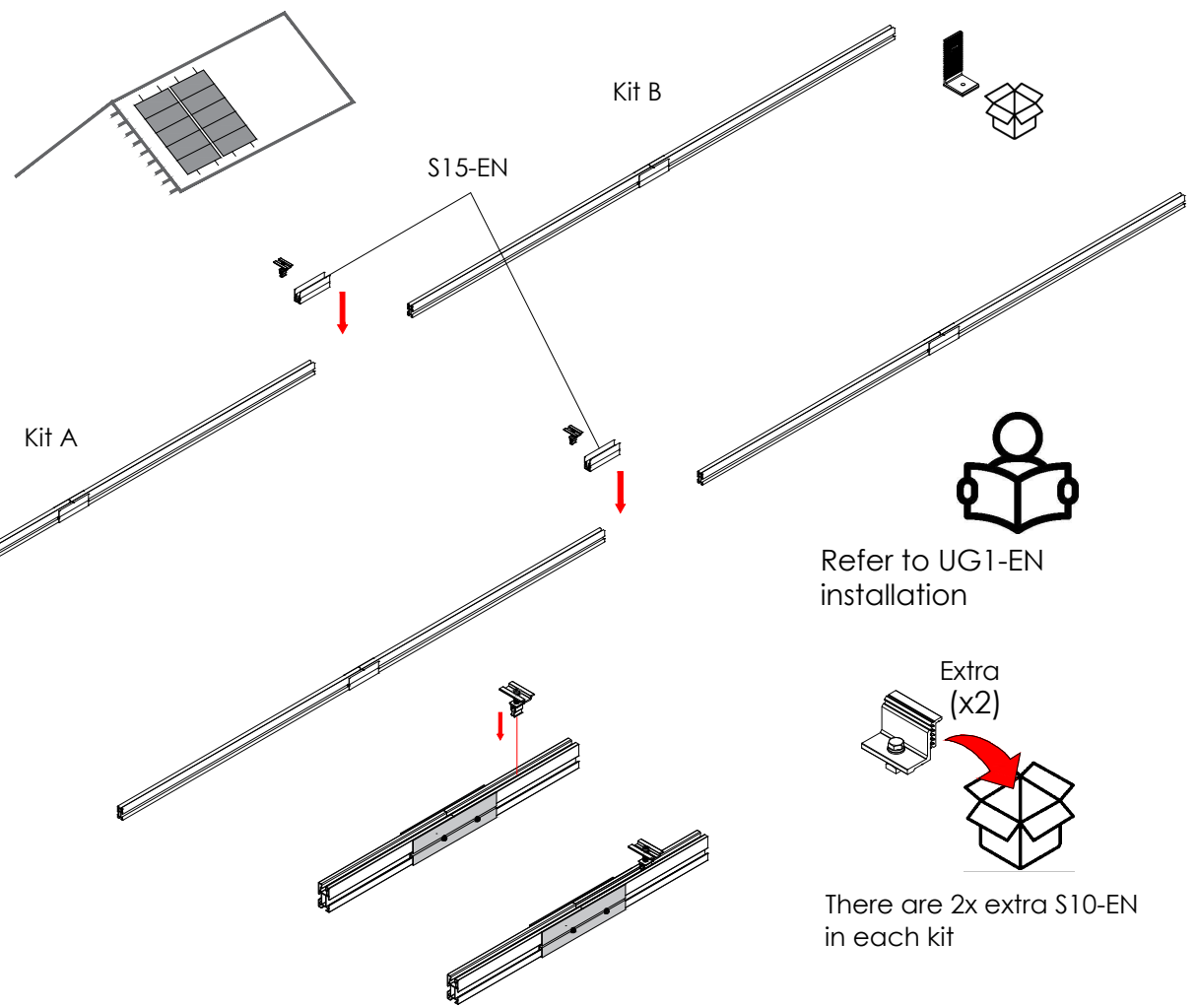
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**S15-EN**  
Not included



x2  
x8  
x2

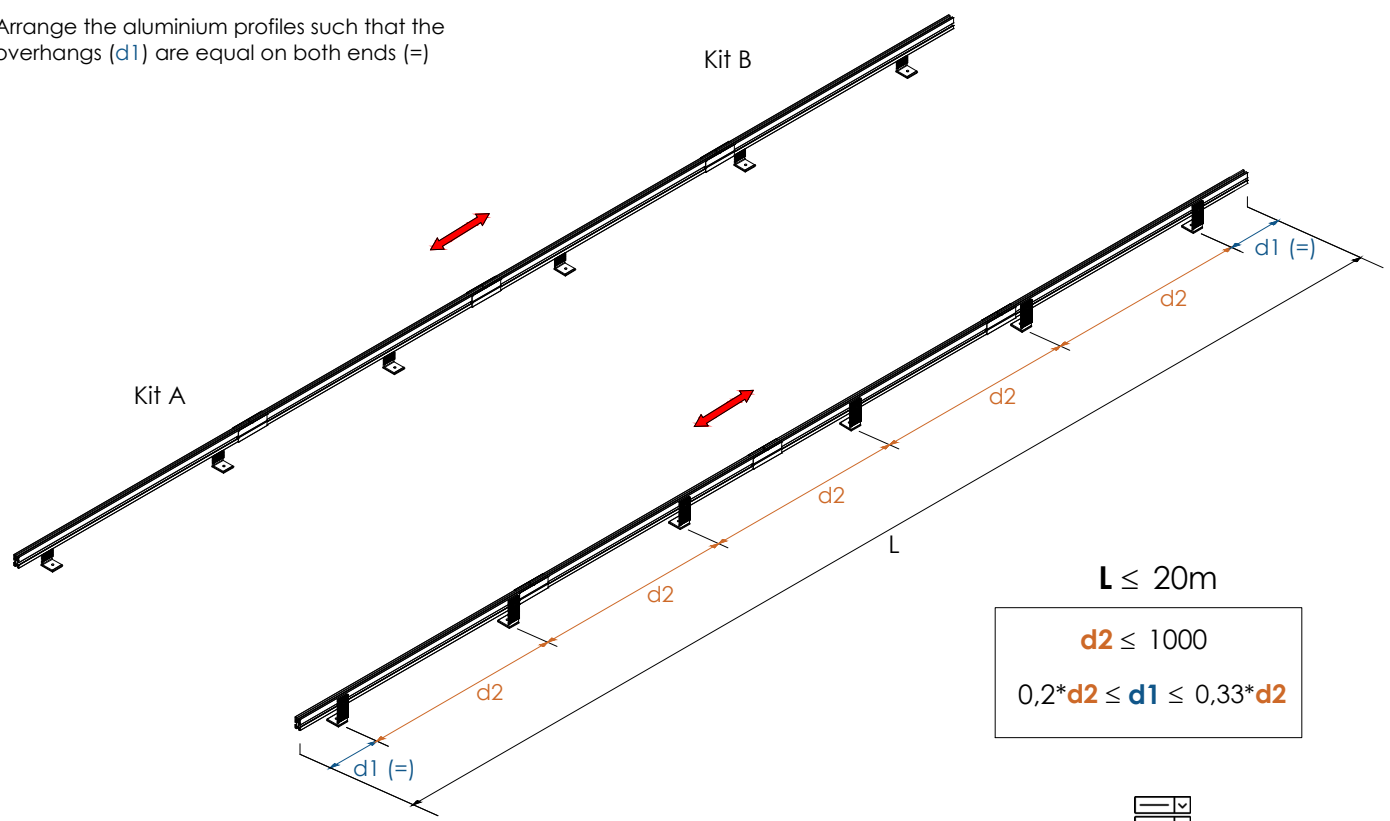


There are 2x extra S10-EN in each kit

**Joining the kits:**

The anchoring points (d2) must be equidistant

Arrange the aluminium profiles such that the overhangs (d1) are equal on both ends (=)



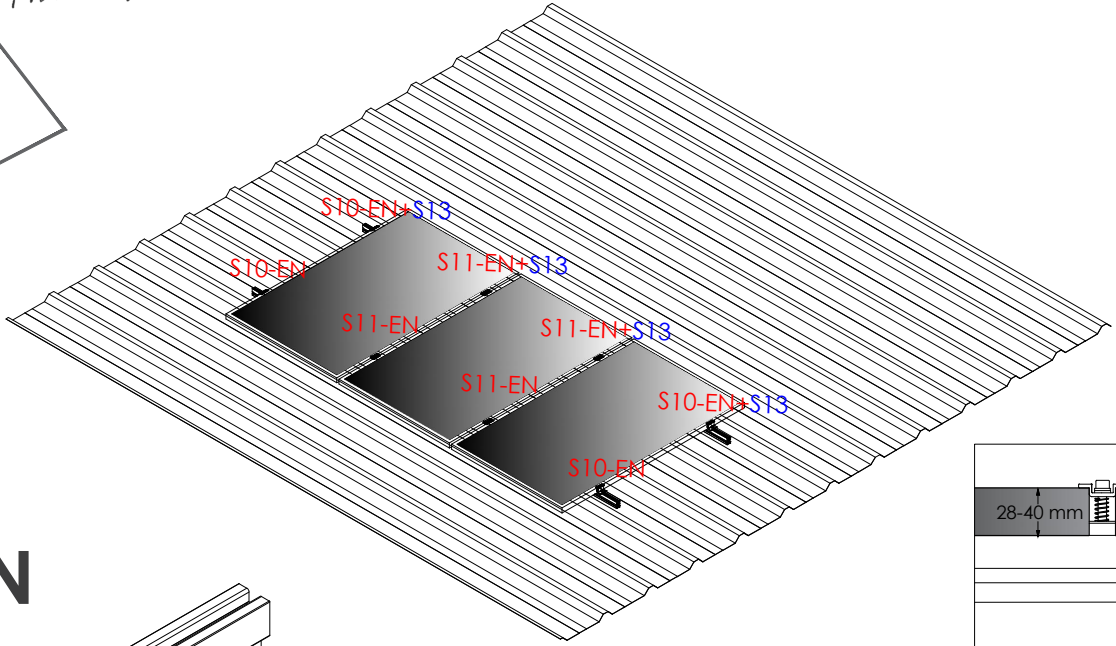
$L \leq 20m$

$d2 \leq 1000$   
 $0,2 * d2 \leq d1 \leq 0,33 * d2$

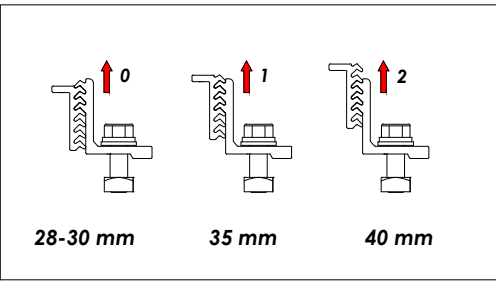
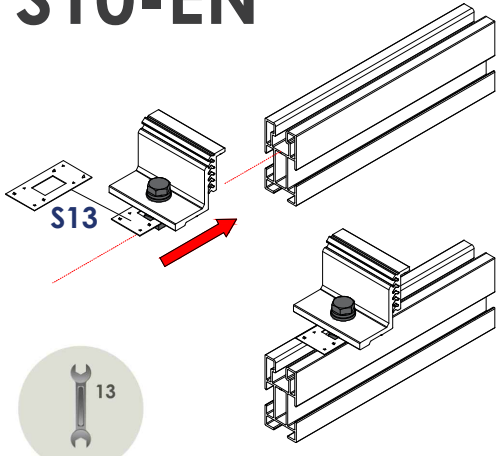


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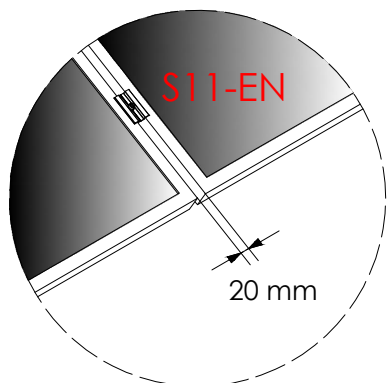
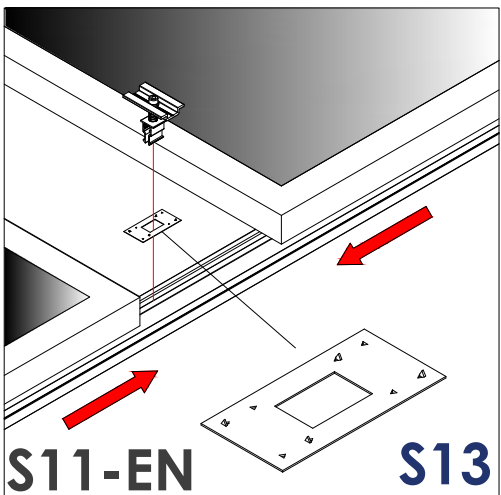
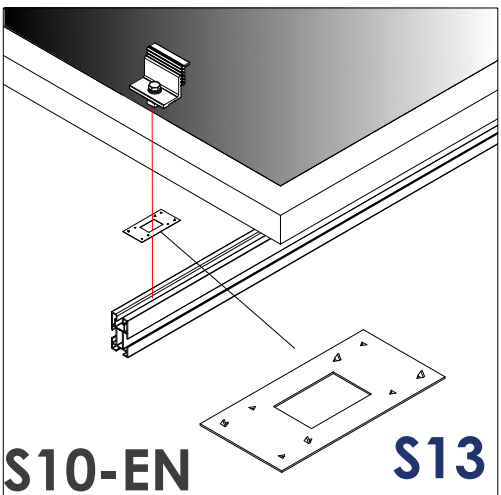
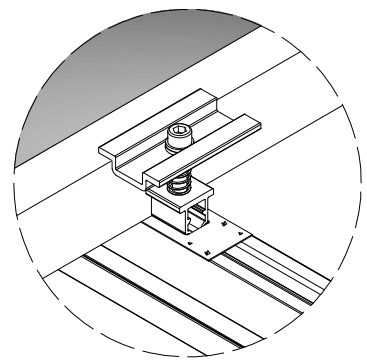
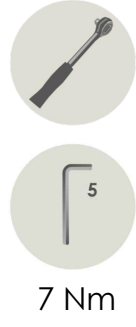
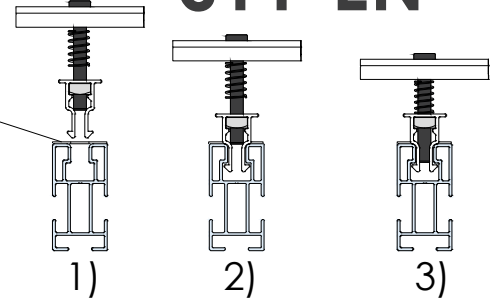
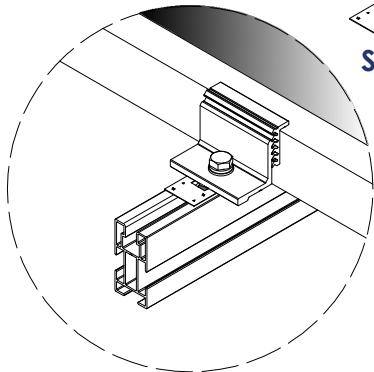
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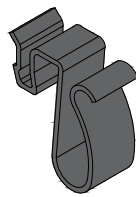
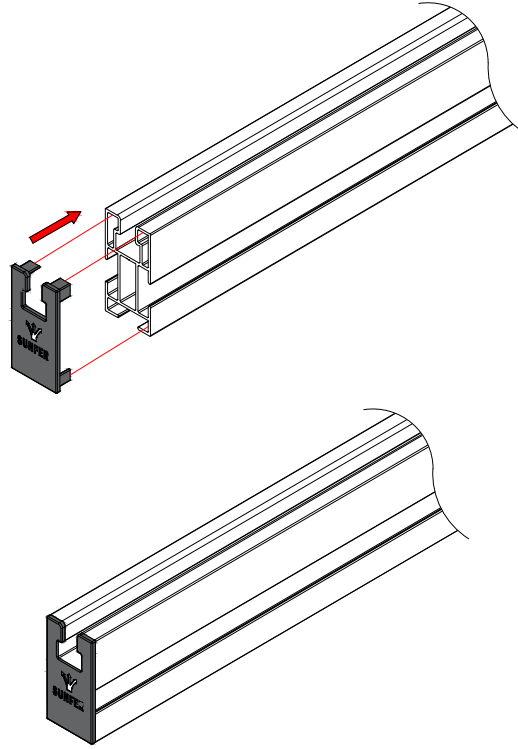


### S10-EN

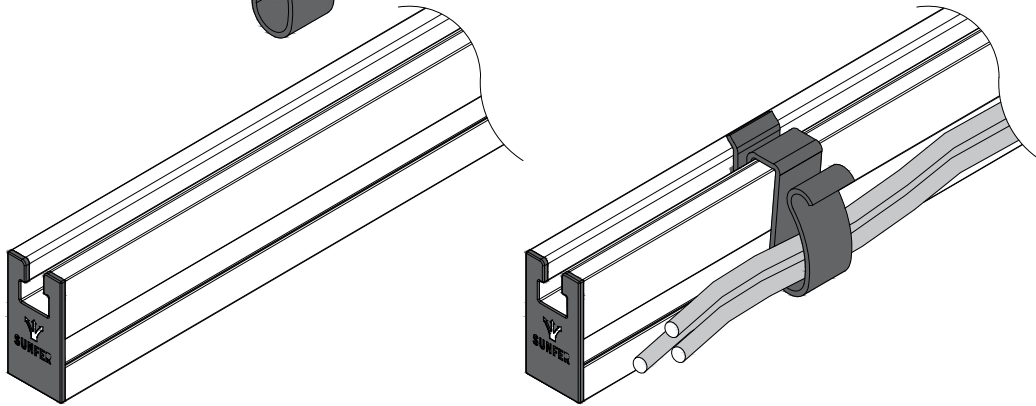


### S11-EN

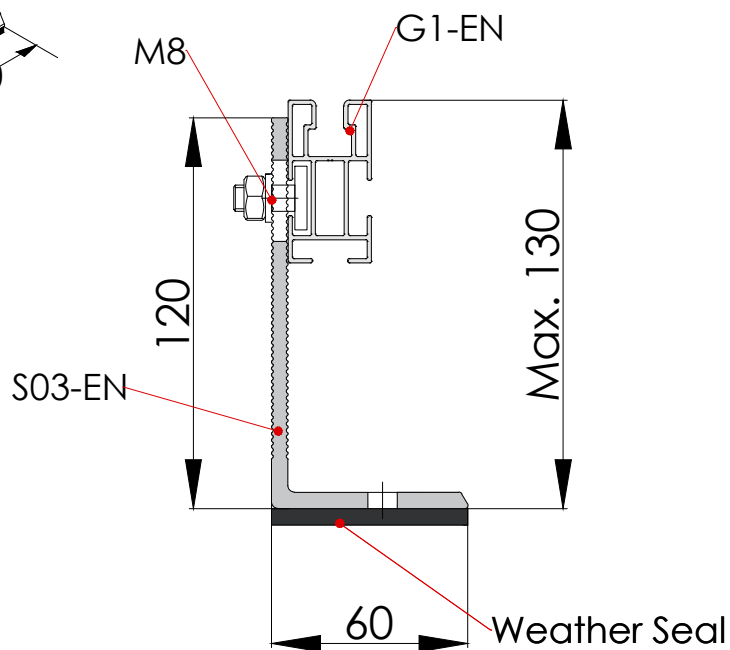
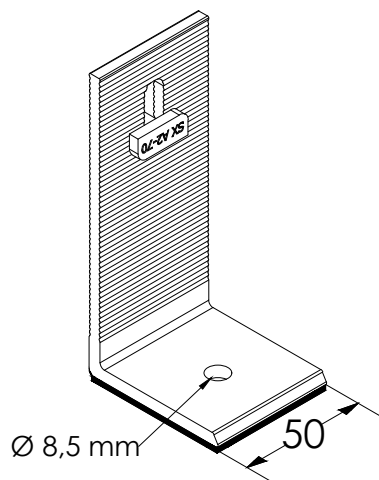




**Optional Cable Clip**  
(Not included)



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## Technical Information: Anchor



Description	Coplanar Support
Panel Orientation	Portrait/Landscape
Format	KIT of 1 to 4 Panels
Joining Kit	S15-EN not included (optional)
Application Surface	Metal Sheet
Anchoring Surface	Concrete Slab and Metal Beams
Type of Fastening	Screwed (Screws not included)
Mount	S03-EN
Profile	G1-EN
Grounding Plate	S13
Maximum Panel Dimensions	2279x1150 mm
Panel Thickness	from 28 to 40 mm
Materials	Fasteners: A2-70 Stainless Steel Profiles: Raw or Anodized EN AW 6005A T6 Aluminium EPDM Weather Seal
Maximum Loads	Per configuration
Structural Calculation	Computational model checked against EUROCODE 9 "PROJECT STRUCTURES OF ALUMINIUM"

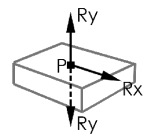
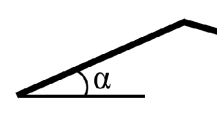


# 03V-EN

## Loads and Reactions

### Maximum admissible loads and their reactions

- 5° Pitch
- 10° Pitch
- 15° Pitch
- 20° Pitch
- 25° Pitch
- 30° Pitch
- 35° Pitch
- 40° Pitch



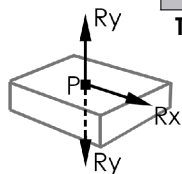
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Maximum Admissible Loads and Reactions					$\alpha$ 5°	
Kit	Loads		kN/mount	kN/mount	kN/mount	
	(Km/h)	(Kg/m2)				
1		110	231	0.150	0.015	1.7500
		130	265	0.138	0.015	1.6301
		150	265	0.138	0.050	1.6466
		180	265	0.138	0.112	1.6758
		210	265	0.138	0.185	1.7103
		250	263	0.137	0.300	1.7535
2		110	106	0.147	0.030	1.7537
		130	130	0.144	0.030	1.7513
		150	127	0.142	0.100	1.7508
		180	122	0.137	0.224	1.7534
		210	116	0.131	0.371	1.7554
		250	106	0.121	0.601	1.7522
2 1R		110	144	0.148	0.016	1.7507
		130	178	0.147	0.016	1.7532
		150	175	0.144	0.054	1.7528
		180	170	0.141	0.121	1.7548
		210	164	0.136	0.200	1.7563
		250	154	0.129	0.325	1.7539
3		110	86	0.146	0.024	1.7523
		130	106	0.144	0.024	1.7627
		150	103	0.140	0.079	1.7621
		180	97	0.133	0.178	1.7519
		210	91	0.126	0.294	1.7542
		250	81	0.115	0.477	1.7505
3 1R		110	128	0.148	0.018	1.7528
		130	158	0.146	0.018	1.7555
		150	155	0.144	0.061	1.7551
		180	150	0.140	0.137	1.7572
		210	144	0.135	0.227	1.7589
		250	134	0.126	0.368	1.7562
4		110	64	0.145	0.036	1.7646
		130	77	0.140	0.036	1.7525
		150	74	0.136	0.121	1.7518
		180	69	0.128	0.271	1.7557
		210	63	0.119	0.447	1.7587
		250	53	0.105	0.726	1.7539
4 1R		110	84	0.146	0.022	1.7609
		130	102	0.143	0.022	1.7512
		150	99	0.139	0.075	1.7506
		180	94	0.133	0.167	1.7537
		210	88	0.126	0.276	1.7561
		250	78	0.114	0.448	1.7523
4 2R		110	119	0.148	0.019	1.7607
		130	146	0.146	0.019	1.7560
		150	143	0.143	0.064	1.7555
		180	138	0.139	0.144	1.7578
		210	132	0.133	0.237	1.7597
		250	122	0.124	0.385	1.7568

Table 1 - Maximum admissible loads and reactions.



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

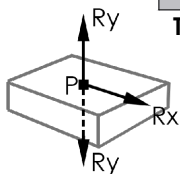
The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>



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Maximum Admissible Loads and Reactions		10°				
		Loads				
		(Km/h)	(Kg/m2)	(kN/mount)	(kN/mount)	(kN/mount)
	1	110	237	0,303	0,014	1.7531
		130	265	0,272	0,016	1.5952
		150	265	0,272	0,051	1.6117
		180	265	0,272	0,113	1.6410
		210	265	0,272	0,186	1.6755
		250	265	0,272	0,302	1.7298
	2	110	109	0,297	0,028	1.7586
		130	134	0,293	0,032	1.7596
		150	131	0,287	0,102	1.7599
		180	125	0,275	0,226	1.7528
		210	119	0,264	0,373	1.7563
	2 1R	250	109	0,245	0,603	1.7557
		110	148	0,300	0,015	1.7557
		130	182	0,295	0,017	1.7502
		150	179	0,291	0,055	1.7504
		180	174	0,283	0,122	1.7533
	3	210	168	0,274	0,201	1.756
		250	158	0,260	0,326	1.7555
		110	89	0,296	0,022	1.7656
		130	108	0,288	0,025	1.7538
		150	105	0,281	0,081	1.7541
	3 1R	180	100	0,270	0,179	1.7587
		210	94	0,256	0,296	1.7628
		250	84	0,233	0,478	1.7621
		110	131	0,298	0,017	1.7509
		130	162	0,295	0,020	1.7564
	4	150	159	0,290	0,063	1.7567
		180	153	0,280	0,139	1.7506
		210	147	0,270	0,228	1.7536
		250	137	0,254	0,370	1.7531
		110	65	0,290	0,034	1.7508
	4 1R	130	79	0,282	0,039	1.7524
		150	76	0,274	0,123	1.7528
		180	71	0,259	0,273	1.7586
		210	65	0,242	0,450	1.7639
		250	55	0,213	0,728	1.7629
	4 2R	110	86	0,295	0,021	1.7587
		130	105	0,288	0,024	1.7566
		150	102	0,281	0,076	1.7569
		180	97	0,270	0,169	1.7616
		210	90	0,253	0,278	1.7526
	4 2R	250	80	0,230	0,450	1.7518
		110	122	0,299	0,018	1.7613
		130	150	0,294	0,021	1.0000
		150	146	0,287	0,066	1.7501
		180	141	0,279	0,145	1.7536
	4 2R	210	135	0,268	0,239	1.7568
		250	125	0,250	0,386	1.7562

**Table 2 - Maximum admissible loads and reactions.**



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>

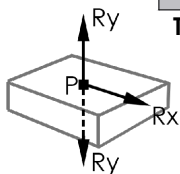


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Maximum Admissible Loads and Reactions					15°	
Kit	Loads		kN/mount	kN/mount	kN/mount	
	(Km/h)	(Kg/m2)				
1		110	243	0.454	0.009	1.7550
		130	265	0.399	0.048	1.5745
		150	265	0.399	0.093	1.6031
		180	265	0.399	0.173	1.6535
		210	265	0.399	0.267	1.7132
		250	255	0.385	0.415	1.7544
2		110	110	0.439	0.019	1.7630
		130	132	0.423	0.096	1.7516
		150	127	0.409	0.186	1.7561
		180	117	0.381	0.346	1.7520
		210	106	0.350	0.534	1.7557
		250	88	0.299	0.830	1.7541
2 1R		110	150	0.445	0.010	1.7537
		130	183	0.434	0.052	1.7529
		150	178	0.424	0.101	1.7564
		180	168	0.402	0.187	1.7532
		210	157	0.378	0.288	1.7560
		250	139	0.339	0.448	1.7548
3		110	88	0.430	0.015	1.7520
		130	106	0.416	0.076	1.5706
		150	101	0.399	0.148	1.7625
		180	91	0.366	0.274	1.7575
		210	80	0.329	0.423	1.7619
		250	62	0.163	0.658	1.7601
3 1R		110	133	0.442	0.012	1.7562
		130	162	0.432	0.059	1.7576
		150	156	0.417	0.114	1.7525
		180	147	0.396	0.212	1.7580
		210	135	0.367	0.327	1.7522
		250	117	0.324	0.509	1.7508
4		110	64	0.420	0.023	1.7524
		130	76	0.401	0.116	1.7588
		150	71	0.380	0.225	1.7657
		180	61	0.338	0.417	1.7594
		210	50	0.182	0.645	1.765
		250	32	0.144	1.002	1.7626
4 1R		110	86	0.432	0.014	1.7627
		130	103	0.416	0.072	1.7615
		150	97	0.395	0.139	1.7542
		180	88	0.364	0.258	1.7620
		210	76	0.323	0.398	1.7537
		250	58	0.160	0.619	1.7518
4 2R		110	123	0.441	0.012	1.7593
		130	149	0.429	0.062	1.756
		150	143	0.413	0.119	1.7506
		180	134	0.390	0.221	1.7564
		210	122	0.359	0.342	1.7502
		250	105	0.316	0.532	1.7583

Table 3 - Maximum admissible loads and reactions.

- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

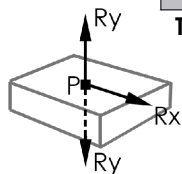
The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>



        		Maximum Admissible Loads and Reactions					 <b>20°</b>
		Loads		 <b>(kN/mount)</b>	 <b>(kN/mount)</b>	 <b>(kN/mount)</b>	
(Km/h)	(Kg/m2)						
	110	189	0.462	0.012	1.3310		
	130	236	0.461	0.050	1.3530		
	150	236	0.461	0.095	1.3815		
	180	236	0.461	0.175	1.4320		
	210	236	0.461	0.269	1.4916		
	250	236	0.461	0.417	1.5854		
	110	87	0.463	0.024	1.3941		
	130	109	0.463	0.101	1.4430		
	150	109	0.463	0.191	1.5001		
	180	109	0.463	0.350	1.6010		
	210	109	0.463	0.539	1.7203		
	250	94	0.408	0.835	1.7587		
	110	118	0.462	0.013	1.3636		
	130	148	0.463	0.054	1.4030		
	150	148	0.463	0.103	1.4468		
	180	148	0.463	0.189	1.5241		
	210	148	0.463	0.291	1.6155		
	250	147	0.460	0.451	1.7516		
	110	71	0.464	0.019	1.4205		
	130	89	0.464	0.080	1.4787		
	150	89	0.464	0.151	1.5465		
	180	89	0.464	0.278	1.6665		
	210	85	0.446	0.427	1.7610		
	250	66	0.221	0.662	1.7593		
	110	105	0.463	0.014	1.3758		
	130	131	0.461	0.062	1.4132		
	150	131	0.461	0.117	1.4618		
	180	131	0.461	0.215	1.5476		
	210	131	0.461	0.330	1.6490		
	250	125	0.443	0.512	1.7578		
	110	53	0.467	0.028	1.4690		
	130	66	0.464	0.122	1.5354		
	150	66	0.464	0.231	1.6218		
	180	65	0.459	0.423	1.7593		
	210	53	0.245	0.650	1.7592		
	250	34	0.193	1.008	1.7572		
	110	69	0.464	0.018	1.4248		
	130	86	0.462	0.075	1.4784		
	150	86	0.462	0.142	1.5479		
	180	86	0.462	0.261	1.6707		
	210	81	0.440	0.402	1.7554		
	250	62	0.217	0.623	1.7537		
	110	97	0.462	0.015	1.3814		
	130	121	0.460	0.065	1.4214		
	150	121	0.460	0.122	1.4733		
	180	121	0.460	0.224	1.5651		
	210	121	0.460	0.345	1.6736		
	250	111	0.427	0.535	1.7538		

**Table 4 - Maximum admissible loads and reactions.**



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

The tabulated values are admissible for single and gable roofs that do not present any obstruction to snow sliding on the roof. If the roof has any obstruction to snow sliding, the SUNFER KEY SOFTWARE should be consulted: <https://sunferkey.sunferenergy.com/>

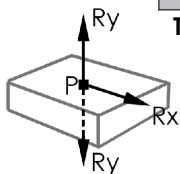


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		Maximum Admissible Loads and Reactions					
		Loads					
		(Km/h)	(Kg/m2)				(kN/mount)
		110	155	0.460	0.015	1.0489	
		130	194	0.460	0.053	1.0733	
		150	194	0.460	0.099	1.1019	
		180	194	0.460	0.178	1.1524	
		210	194	0.460	0.272	1.2120	
		250	194	0.460	0.420	1.3058	
		110	70	0.462	0.030	1.1149	
		130	88	0.463	0.107	1.1661	
		150	88	0.463	0.197	1.2232	
		180	88	0.463	0.356	1.3241	
		210	88	0.463	0.545	1.4434	
		250	91	0.476	0.841	1.6587	
		110	96	0.462	0.016	1.0847	
		130	120	0.461	0.058	1.1205	
		150	120	0.461	0.106	1.1642	
		180	120	0.461	0.192	1.2416	
		210	120	0.461	0.294	1.3330	
		250	120	0.461	0.454	1.4767	
		110	57	0.466	0.024	1.1464	
		130	71	0.464	0.085	1.1991	
		150	71	0.464	0.156	1.2669	
		180	71	0.464	0.283	1.3869	
		210	71	0.464	0.432	1.5286	
		250	71	0.279	0.667	1.7516	
		110	85	0.462	0.018	1.0956	
		130	106	0.460	0.066	1.1333	
		150	106	0.460	0.121	1.1818	
		180	106	0.460	0.218	1.2677	
		210	106	0.460	0.334	1.3691	
		250	106	0.460	0.515	1.5286	
		110	41	0.463	0.036	1.1788	
		130	52	0.466	0.129	1.2598	
		150	52	0.466	0.238	1.3461	
		180	52	0.466	0.430	1.4987	
		210	58	0.313	0.658	1763.0000	
		250	37	0.244	1.015	1.7529	
		110	55	0.464	0.022	1.1462	
		130	69	0.464	0.080	1.2057	
		150	69	0.464	0.147	1.2752	
		180	69	0.464	0.266	1.3981	
		210	69	0.464	0.406	1.5433	
		250	68	278.000	0.627	1.7604	
		110	79	0.465	0.019	1.1090	
		130	98	0.461	0.069	1.1451	
		150	98	0.461	0.126	1.1970	
		180	98	0.461	0.228	1.2888	
		210	98	0.461	0.349	1.3973	
		250	98	0.461	0.539	1.5680	

**Table 5 - Maximum admissible loads and reactions.**

- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

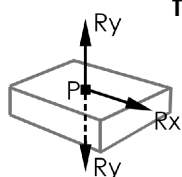
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Maximum Admissible Loads and Reactions					30°	
Kit	Loads		kN/mount	kN/mount	kN/mount	
	(Km/h)	(Kg/m2)				
1		110	135	0,462	0,025	0,8968
		130	169	0,462	0,003	0,9355
		150	169	0,462	0,022	0,9805
		180	169	0,462	0,066	1,0602
		210	169	0,462	0,118	1,1544
		250	169	0,462	0,201	1,3025
2		110	60	0,466	0,050	1,0018
		130	75	0,465	0,007	1,0769
		150	75	0,465	0,043	1,1671
		180	82	0,499	0,132	1,3855
		210	103	0,348	0,237	1,7513
		250	68	0,262	0,401	1,7518
2 1R		110	83	0,464	0,027	0,9538
		130	103	0,461	0,004	1,0065
		150	103	0,461	0,023	1,0756
		180	103	0,461	0,071	1,1977
		210	112	0,494	0,128	1,4003
		250	131	0,319	0,217	1,7502
3		110	48	0,467	0,039	1,0401
		130	60	0,465	0,005	1,1294
		150	60	0,465	0,034	1,2365
		180	82	0,593	0,105	1,6468
		210	70	0,318	0,188	1,7501
		250	35	0,216	0,318	1,7508
3 1R		110	73	0,464	0,030	0,9686
		130	91	0,462	0,004	1,0308
		150	91	0,462	0,027	1,1074
		180	91	0,462	0,081	1,2429
		210	112	0,549	0,145	1,5539
		250	105	0,300	0,246	1,7555
4		110	34	0,465	0,060	1,0997
		130	43	0,467	0,008	1,2198
		150	57	0,570	0,052	1,5349
		180	55	0,349	0,159	1,7503
		210	33	0,268	0,286	1,7541
		250	11	0,162	0,472	1,7548
4 1R		110	46	0,463	0,037	1,0397
		130	58	0,465	0,005	1,1363
		150	58	0,465	0,032	1,2460
		180	82	0,607	0,098	1,6868
		210	66	0,313	0,176	1,7516
		250	31	0,210	0,299	1,7523
4 2R		110	67	0,463	0,032	0,9786
		130	84	0,463	0,004	1,0489
		150	84	0,463	0,028	1,1309
		180	84	0,463	0,085	1,2759
		210	112	0,587	0,152	1,6624
		250	89	0,285	0,257	1,7551

Table 6 - Maximum admissible loads and reactions.



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

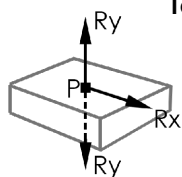
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Maximum Admissible Loads and Reactions					35°	
Kit	Loads		(kN/mount)	(kN/mount)	(kN/mount)	
	(Km/h)	(Kg/m2)				
1		110	147	0,462	0,021	0,7570
		130	184	0,462	0,001	0,7956
		150	184	0,462	0,026	0,8407
		180	184	0,462	0,070	0,9203
		210	184	0,462	0,123	1,0145
		250	213	0,526	0,205	1,2539
2		110	63	0,461	0,041	0,8527
		130	79	0,461	0,002	0,9300
		150	79	0,461	0,052	1,0201
		180	110	0,597	0,140	1,3747
		210	140	0,419	0,245	1,7519
		250	93	0,315	0,410	1,7521
2 1R		110	89	0,463	0,022	0,8103
		130	111	0,461	0,001	0,8671
		150	111	0,461	0,028	0,9362
		180	111	0,461	0,076	1,0583
		210	150	0,593	0,132	1,3908
		250	178	0,385	0,221	1,7529
3		110	50	0,462	0,033	0,8918
		130	63	0,464	0,001	0,9855
		150	76	0,532	0,041	1,1900
		180	110	0,710	0,111	1,6338
		210	96	0,382	0,194	1,7529
		250	49	0,259	0,325	1,7531
3 1R		110	78	0,462	0,025	0,8256
		130	98	0,463	0,001	0,8926
		150	98	0,463	0,032	0,9693
		180	110	0,508	0,086	1,1690
		210	150	0,658	0,150	1,5434
		250	142	0,360	0,251	1,7524
4		110	35	0,463	0,050	0,9561
		130	57	0,550	0,002	1,1967
		150	76	0,677	0,063	1,5140
		180	76	0,420	0,170	1,7549
		210	46	0,320	0,296	1,7540
		250	48	0,460	0,031	0,8944
4 1R		110	61	0,464	0,001	0,9942
		130	76	0,545	0,039	1,2189
		150	76	0,727	0,105	1,6736
		180	110	0,378	0,183	1,7572
		210	91	0,252	0,306	1,7575
		250	44	0,252	0,306	1,7575
4 2R		110	72	0,464	0,026	0,8402
		130	90	0,463	0,001	0,9091
		150	90	0,463	0,033	0,9911
		180	110	0,543	0,090	1,2506
		210	150	0,704	0,157	1,6511
		250	121	0,343	0,263	1,7544

Table 7 - Maximum admissible loads and reactions.



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0,02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

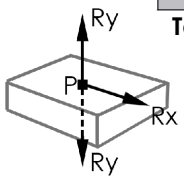
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Maximum Admissible Loads and Reactions					40°
Kit	Loads				
	(Km/h)	(Kg/m2)			
1	110	172	0,460	0,016	0,6394
	130	216	0,462	0,006	0,6771
	150	216	0,462	0,031	0,7191
	180	216	0,462	0,075	0,7935
	210	216	0,462	0,127	0,8814
	250	265	0,306	0,210	1,1275
2	110	73	0,463	0,031	0,7335
	130	91	0,461	0,012	0,8034
	150	102	0,502	0,062	0,9360
	180	147	0,668	0,150	1,2830
	210	183	0,461	0,255	1,6174
	250	151	0,402	0,419	1,7528
2 1R	110	103	0,461	0,017	0,6887
	130	129	0,461	0,006	0,7439
	150	129	0,461	0,033	0,8084
	180	147	0,512	0,081	0,9832
	210	200	0,662	0,138	1,2968
	250	259	0,461	0,226	1,7078
3	110	57	0,462	0,025	0,7670
	130	76	0,482	0,009	0,8763
	150	102	0,596	0,049	1,1124
	180	143	0,460	0,119	1,5039
	210	143	0,460	0,202	1,7128
	250	88	0,339	0,333	1,7533
3 1R	110	90	0,460	0,019	0,7034
	130	113	0,461	0,007	0,7656
	150	113	0,461	0,038	0,8372
	180	147	0,568	0,092	1,0911
	210	200	0,735	0,156	1,4391
	250	221	0,452	0,257	1,7529
4	110	44	0,497	0,038	0,8676
	130	76	0,613	0,014	1,1149
	150	99	0,462	0,074	1,3954
	180	99	0,462	0,181	1,6203
	210	79	0,407	0,308	1,7528
	250	16	0,230	0,506	1,7511
4 1R	110	55	0,462	0,023	0,7723
	130	76	0,494	0,009	0,8976
	150	102	0,611	0,046	1,1395
	180	138	0,460	0,112	1,5137
	210	138	0,460	0,190	1,7277
	250	80	0,330	0,313	1,7531
4 2R	110	83	0,463	0,020	0,7174
	130	104	0,463	0,007	0,7830
	150	104	0,463	0,039	0,8595
	180	147	0,608	0,096	1,1672
	210	200	0,786	0,163	1,5395
	250	190	0,431	0,269	1,7509

**Table 8 - Maximum admissible loads and reactions.**



- P: Mount Point
- Rx: Shear generated at anchor
- Ry: Tension generated at anchor, compression applied to roof



Characteristic snow load at ground level: The tabulated snow load is the characteristic snow load at ground level, which corresponds to a load value with an annual probability of being exceeded of 0.02, excluding exceptional snow actions, according to 1.6.1 EN1991-1-3.

The characteristic value of the snow load on the roof is obtained according to Chapter 5 Section 5.2 Point 3a) of EN 1991-1-3.

The thermal coefficient is considered to be equal to 1. The shape coefficient of the snow load is obtained from Chapter 5 Section 5.3.2 Point 2) Table 5.2 (μ1) of EN 1991-1-3. For the consideration of the exposure coefficient, "Normal Topography" is established for winds below 125 km/h and "Topography Exposed to wind" for higher wind speeds, with the value of the exposure coefficient being calculated according to Chapter 5 Section 5.2 Table 5.1 of EN 1991-1-3.

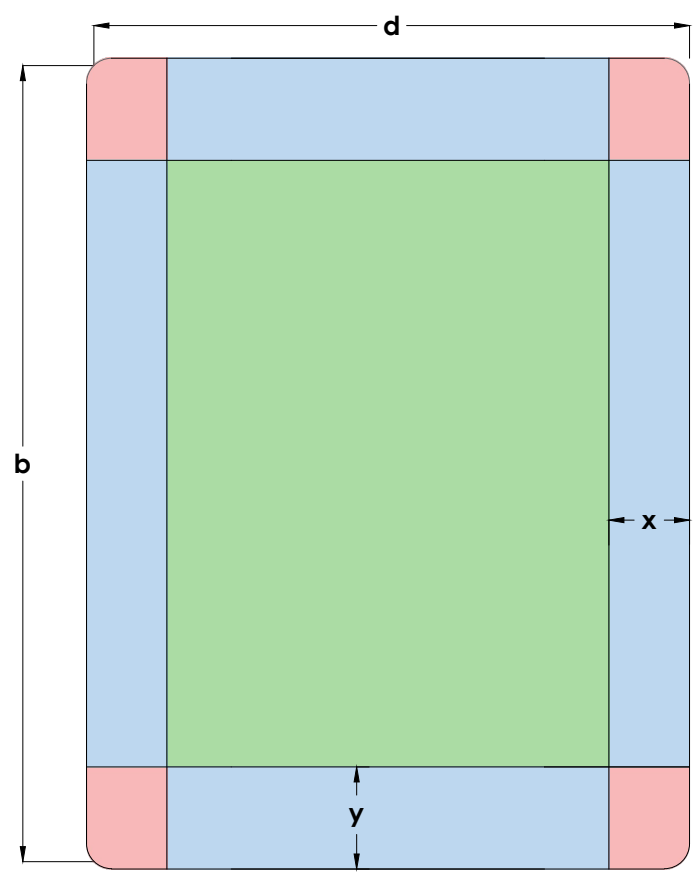
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Loads and reactions calculated for the kit lengths and distances in the table.  
For other distributions consult SUNFER.



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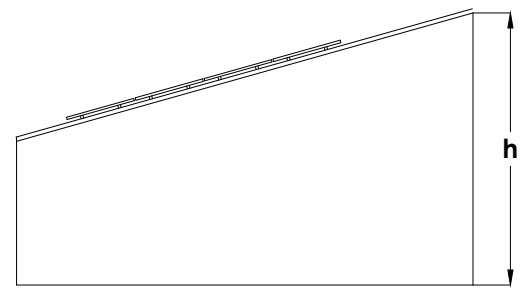




$$e = \min [b, 2h]$$

$$x = \text{Max} [e/10, 0.5\text{m}]$$

$$y = \text{Max} [e/4, 0.5\text{m}]$$



- Installation Safe Zone
- Turbulent Zone
- Extremely Turbulent Zone

To avoid turbulence and other unwanted natural effects, it is strongly recommended to install photovoltaic panels inside of the green zone.

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# 03V-EN

## Installation Video

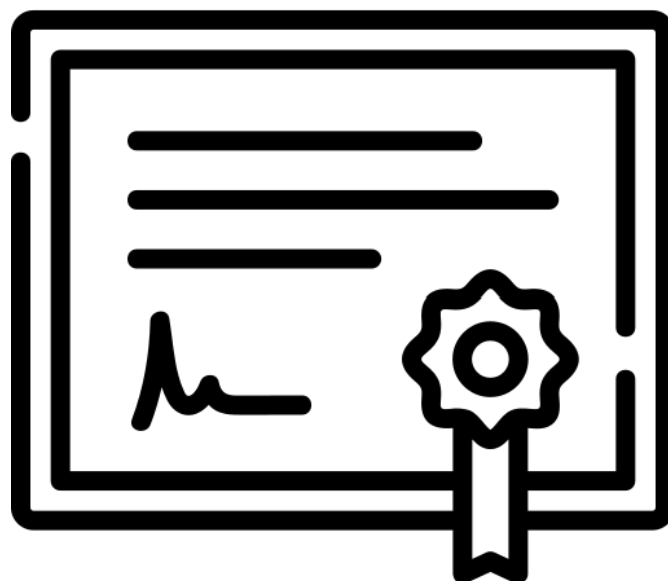


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# 03V-EN

## Certificates and Guarantee



- ISO 9001 Certificate
- ISO 14001 Certificate
- CE Marking
- Guarantee

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This is a translation of the certificate ES13/13899

The management system of

# SUNFER ESTRUCTURAS, S.L.U.

Camí de la Dula, s/n, 46687 Albalat de la Ribera, Valencia

has been assessed and certified as meeting the requirements of

**ISO 9001:2015**

For the following activities

Design, manufacture and sale of solar energy structures.

This certificate is valid from 19 May 2023 until 8 April 2025 and remains valid subject to satisfactory surveillance audits.

Issue 6. Certified with SGS since 8 April 2013

Last certificate expiry date 8 April 2022

Recertification audit date 31 March 2022

Authorised by

SGS International Certification Services Iberica, S.A.U.

C/Trespaderne, 29. 28042 Madrid. España

t +34 91 313 8115 - www.sgs.com



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This is a translation of the certificate ES22/211172

The management system of

# SUNFER ESTRUCTURAS, S.L.U.

Camí de la Dula, s/n, 46687 Albalat de la Ribera, Valencia

has been assessed and certified as meeting the requirements of

**ISO 14001:2015**

For the following activities

Design, manufacture and sale of solar energy structures.

This certificate is valid from 19 May 2023 until 22 April 2025 and remains valid subject to satisfactory surveillance audits.

Issue 2. Certified with SGS since 22 April 2022

Authorised by \_\_\_\_\_

SGS International Certification Services Iberica, S.A.U.

C/Trespaderne, 29. 28042 Madrid. España

t +34 91 313 8115 - [www.sgs.com](http://www.sgs.com)



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**IDENTIFICATION NUMBER OF NOTIFIED ORGANISM:**

1181

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**NUMBER AND REGISTERED ADDRESS OF MANUFACTURERS. INSTALLATION LOCATION:**

Business name: *SUNFER ESTRUCTURAS, S.L.U.*

Address: *Camí de la Dula s/n*

Postal Code: *46687*

Location: *Albalat de la Ribera*

City: *Valencia*

Country: *España*

**TWO LAST DIGITS OF THE YEAR THAT THE MARKING WAS FIXED:**

19

*ES19/86524*

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**EN 1090-1**

Description of product:

**03V-EN**

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**TOLERANCES IN GEOMETRIC INFORMATION:** *EN 1090-3*

**WELDABILITY:** --

**FRACTURE RESISTANCE:** --

**FIRE REACTION:** *Classified material A1*

**CADMIUM EMISSION:** *N/A*

**RADIOACTIVITY EMISSION:** *N/A*

**DURABILITY:** *N/A*

**STRUCTURAL CHARACTERISTICS:**

- **Carrying capacity:** *See product instructions and data sheet*
- **Fatigue resistance:** *N/A*
- **Fire resistance:** *N/A*
- **Manufacturing:** *According to the component specification and EN1090-3. Execution class EXC1*

	<b>DECLARATION OF PERFORMANCE</b>	DdP
		REVISION 01

DECLARATION OF PERFORMANCE NUMBER:	P-0121
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**1. PRODUCT DESCRIPTION.**

UNIQUE IDENTIFICATION CODE OF THE PRODUCT TYPE:	03V-EN
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**2. NAME AND ADDRESS OF MANUFACTURER.**

NAME:	SUNFER ESTRUCTURAS, S.L.U.
COMERCIAL NAME (if exists):	--
ADDRESS:	CAMI DE LA DULA S/N
CITY AND PC:	46687 ALBALAT DE LA RIBERA -- COMUNIDAD VALENCIANA (SPAIN)

**3. INTENDED USE(S) OF THE PRODUCT:**

ALUMINUM STRUCTURE TO SUPPORT PHOTOVOLTAIC PANELS.

**4. SYSTEM OF EVALUATION AND VERIFICATION OF CONSTANCY OF PERFORMANCE:**

System 2+

**5. HARMONIZED STANDARD:**

This product complies with the provisions of Annex ZA of the European standard **UNE-EN 1090-1:2011 + A1:2012**

**6. NOTIFIED ORGANISM:**

NAME:	<b>SGS ICS IBÉRICA. S.A.</b>
Notified Organism Number:	<b>NB1181</b>

**7. DECLARED PERFORMANCES:**

Essential Characteristics	Performances	Harmonised technical specifications
Tolerances in geometric information	Conforms to limits for essential tolerances <input type="checkbox"/>	EN 1090-3
Weldability	Not applicable because there is no welding in the structure	----
Fracture Tenacity	Not required for aluminum components	-----
Carrying Capacity	N/A	
Fatigue Resistance	N/A	
Fire Resistance	N/A	
Fire reaction	Class A1	EN 13501-1
Emission of cadmium and its compounds	OK	
Emission of radioactivity	OK	
Durability	N/A	
Structural features	See product data sheet	UNE EN 1999-1-1
- Carrying capacity	N/A	
- Fatigue resistance: N/A	N/A	
- Fire resistance: N/A	N/A	
- Manufacturing	According to the component specification. Execution class EXC1	UNE EN 1090-3

- The performance of the product identified above is in accordance with all the declared performance.
- This declaration of performance is issued in accordance with Regulation (EN) No. 305/2011 under the responsibility of the manufacturer identified above.

Manufacturer's Name: Voro Gómez Nacher

Date of issue: 02/08/2023

Signature:



## Structural and Anticorrosion Guarantee

All SUNFER mounting systems are manufactured under strict production control in our factory, as are our raw materials, which are periodically tested to ensure quality. It is for these reasons we are able to offer the following guarantee for our products:

25 year Structural Guarantee

Anticorrosion Guarantee per the below table

Materials	NON-HARSH environment (1) Distance to coastline greater than 5 Km	HARSH or MARINE environment Distance to coastline less than 5 Km
Raw Aluminum	Fifteen (15) years	Five (5) years
Anodized Aluminum	Twenty-five (25) years	Twenty-five (25) years

Table 1.

(1) Non-exhaustive list of zones considered to be harsh environments:

- a. Industrial zones with emissions that include: sulphur dioxide, nitrogen oxides, sulphuric acid, sulphuric compounds, chlorine, or other volatile gases; 5 km safety distance.
- b. Electric generating stations that use the following fuels: coal, natural gas, petroleum; 5 km safety distance.
- c. Petrochemical plants; 5 km safety distance.
- d. Cellulose factories; 5 km safety distance
- e. Wastewater treatment facilities: 500 m safety distance.

In these zones it is always necessary to utilize anodized aluminum if inside of the minimum safety radius indicated above.

The warranty of the adhesive in reference 07.1H and S07.1 is ten (10) years. The warranty of the 2-sided adhesive tape of the S07.1 anchor covers the product supplied by Sunfer and can be applied provided that the breakage is caused by the tearing off of the profile with respect to the adhesive tape, in the event that the breakage is caused by the tearing off of the adhesive tape from the roofing, it will be considered a faulty assembly on site.

Mixed galvanised steel and raw aluminium supports such as, for example: Elevated, Monopoles, Car parks:  
Environments C3 fifteen (15) years guarantee.  
Environments C4-C5 five (5) years.

Mixed galvanised steel and anodised aluminium supports, such as: Elevated, Monopoles, Car parks:  
Environments C3 guarantee twenty-five (25) years.  
Environments C4-C5 fifteen (15) years.

This guarantee applies to orders supplied from 3rd January, 2023 on. Orders delivered before this date shall be governed by the guarantee that was in force at the time that the order was supplied.

The guarantee covers the final installation, and applies directly to the end user of the structure. Guarantees are managed between SUNFER and commercial distributors, so if an end user needs to invoke a guarantee, they must contact the distributor that supplied the material, and the distributor will coordinate with SUNFER Customer Service. The period of coverage of the guarantee begins upon the date that the delivery of the material is received by the end user, but will be repealed if the client does not comply with the payment terms stated in the invoice.

To invoke the guarantee, the following documentation must be produced:

- Sales invoice.
- Date system was put in service.
- Information of end user (name, address, distributor, etc).
- General photographs showing the entire system as installed.
- Installer's final work plans/drawings.
- Detailed photos of:
  - Fastening of the system to the roof, which shows the distance between mounting points.
  - The structure mounted without panels attached.
  - A rear view of the structure (from roof ridge if coplanar).







- Plan/drawing of the affected area which shows distances between mounting points.

## Coverage and Exclusions

### Coverage

This guarantee covers the replacement and shipping of the defective components or of the entire system if necessary, with no charge. In the case of a replacement not being available, a suitably similar replacement will be provided.

The guarantee is limited to replacement of defective products. The following costs, indirectly associated with the return process, will not be compensated: disassembly or any consequential, supplementary, or related damages, including lost profits or other indirect costs.

The guarantee covers all metallic elements included in a SUNFER structure.

### Exclusions

Any issues or defects caused by or related to the following shall be excluded from the guarantee:

- Inadequate installations which did not follow the installation instructions provided by SUNFER.
- Incorrect fastener tightening torques (overtight or undertight).
- Modifications or installations other than those recommended by SUNFER.
- Installation of additional homemade or third-party elements to the structures supplied by SUNFER.
- Inadequate handling of products during the installation.
- Damage to the product after delivery, or from improper storage of the product.
- Any defect which is purely aesthetic in nature and which does not affect the structural safety of the product.
- Installations in areas whose wind and snow loads exceed those indicated in the datasheets of the product.
- Structures installed outside of the safe zone indicated in the installation manual.
- Inadequate maintenance. See the Maintenance Manual.
- Fires or exposure to temperatures above 110 °C.
- Problems or defects caused by corrosive agents not initially considered (1).
- Natural disasters such as earthquakes, hurricanes, floods, tornados, cyclones, mudslides, avalanches, or volcanic eruptions.

For structures not provided with a method of fastening to a surface, SUNFER denies responsibility in the event of collapse or failure due to insufficient fastening or poor installation.

### Guarantor, Execution of guarantee

The guarantor is SUNFER ESTRUCTURAS S.L.U. located at Camino de la Dula s/n 46687, Albalat de la Ribera, Valencia, Spain.

The entitlements afforded by this guarantee are non-transferable to third parties.

Regarding the guarantee and any disputes related to it, the law currently in force in Spain shall apply.

