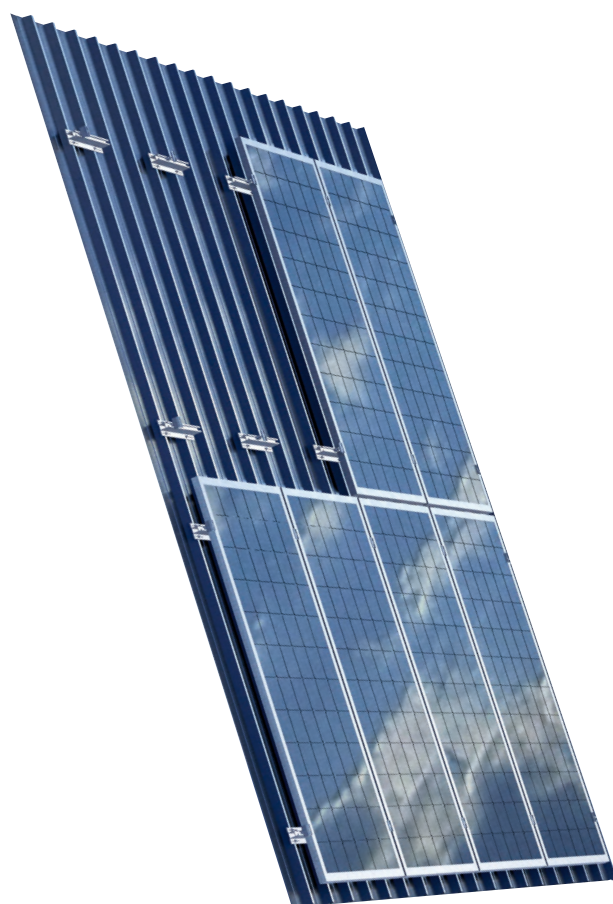


SOLAR



SISTEM PODKONSTRUKCIJA ZA SOLARNE PANELE
SUBSTRUCTURE SYSTEM FOR SOLAR PANELS

DESIGNED AND MANUFACTURED BY TEHNOMARKET



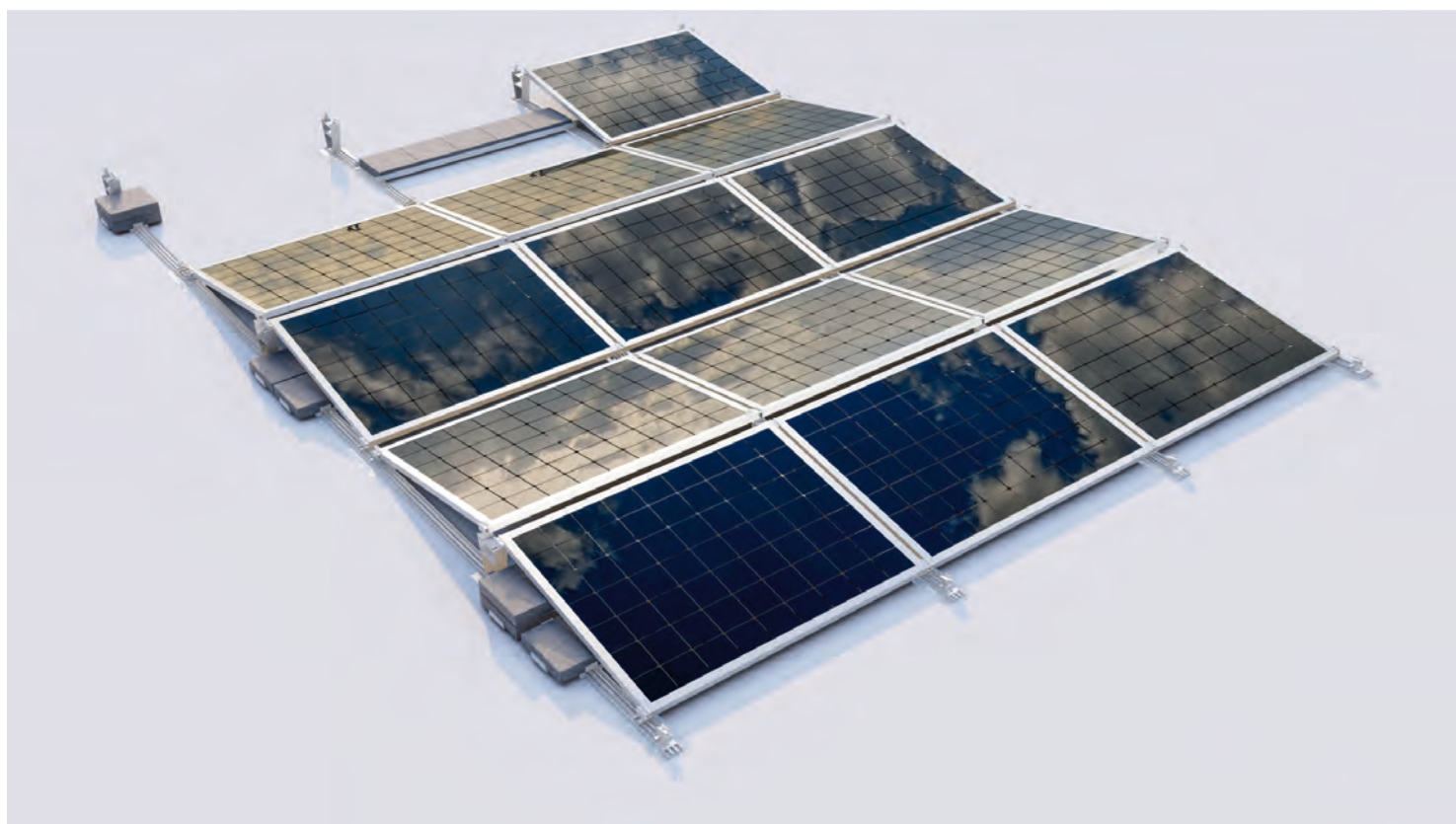


SOLAR

ENERGIJA SUNCA

Tehnomarket SOLAR sistem podkonstrukcije za solarne panele nudi kompletno, zaokruženo i sistemsko rešenje za instalaciju solarnih panela koje je potpuno skalabilno i pogodno za sve kapacitete od kućnih instalacija do solarnih elektrana velike snage.

Sistem SOLAR namenjen je montaži na svim tipovima podloga-ravnim i kosim krovovima, vertikalnim zidovima i fasadama, kao i na zemlji. Optimalne dimenzije profila omogućuju montažu pojedinačnih panela velikih dimenzija, uz maksimalno opterećenje od 150kg/m². Podržane su debljine panela od 30 do 40mm, bez ograničenja broja panela ili veličine kompletne instalacije. Profili konstrukcije su sirovi, dok površinska obrada vidnih površina profila može biti plastifikacija po RAL ton karti ili eloksaža.



SOLAR

montaža na svim
tipovima podloga



kosi krov



ravan krov



vertikalna fasada



nadstrešnica

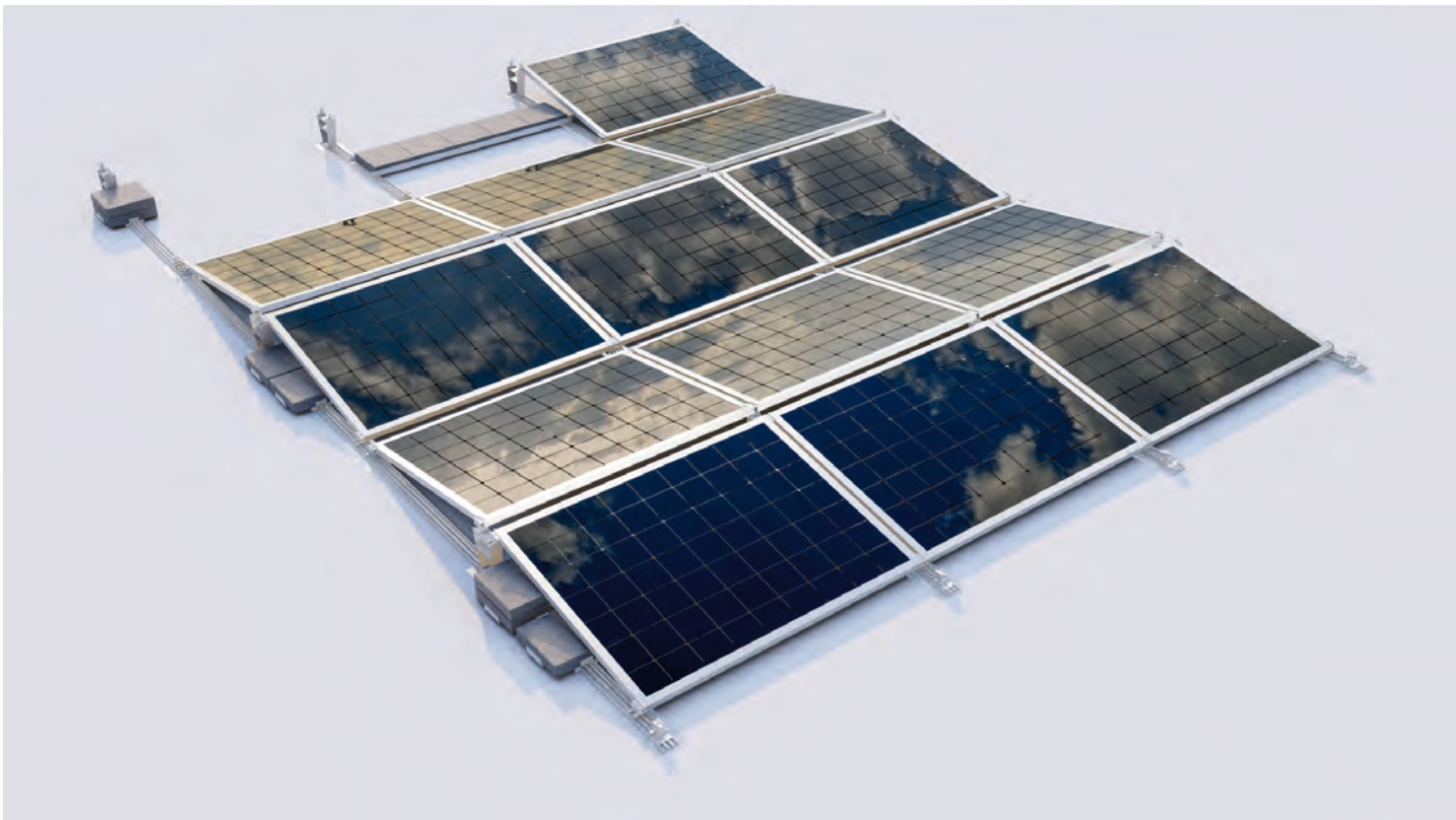


tlo

THE ENERGY OF THE SUN

Tehnomarket SOLAR substructure system for solar panels offers a complete, systemic solution for the installation of solar panels that is fully scalable and suitable for all capacities from home installations to high power solar power plants.

The SOLAR system is intended for installation on all types of substrates - flat and sloping roofs, vertical walls and facades, as well as on the ground. Optimal profile dimensions allow the installation of individual panels of large dimensions, with a maximum load of 150kg/m². Panel thicknesses from 30 to 40 mm are supported, without unlimited number of panels or the size of the complete installation. The construction profiles are raw, while the surface treatment of the visible surfaces of the profiles can be powder coated according to the RAL tone chart or anodizing.



SOLAR
installation on all
types of surfaces

- slanted roof
- flat roof
- vertical facade
- canopy
- ground

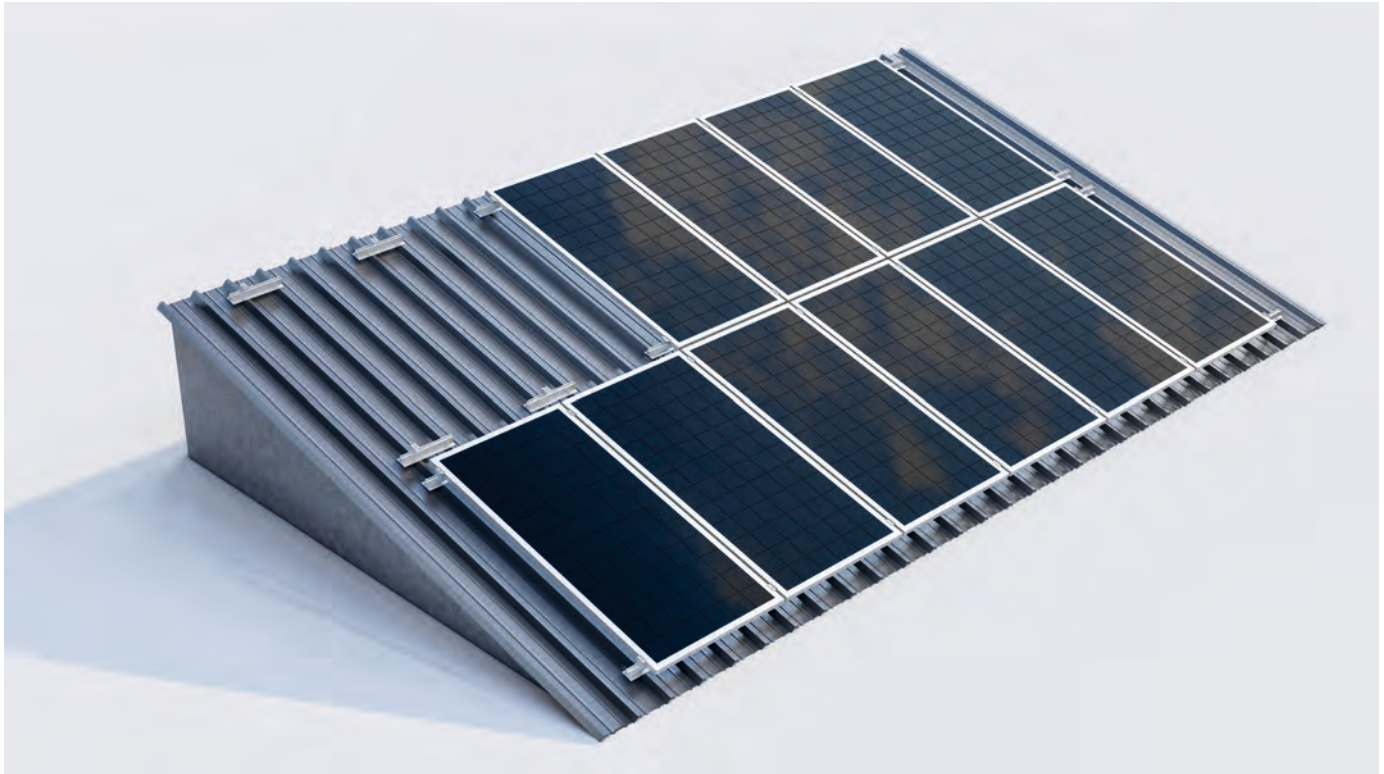


Oblast primene:	solarni paneli za proizvodnju električne energije solarni kolektori za zagrevanje vode (izmenjivači toplote)
Mesto primene:	kosi krovovi prekriveni TR limom, termo panelom, falcovanim limom, crepom ili tegolom ravni krovovi pokriveni membranom bez bušenja ugradnja na tlu vertikalne ili kose fasade nadstrešnice

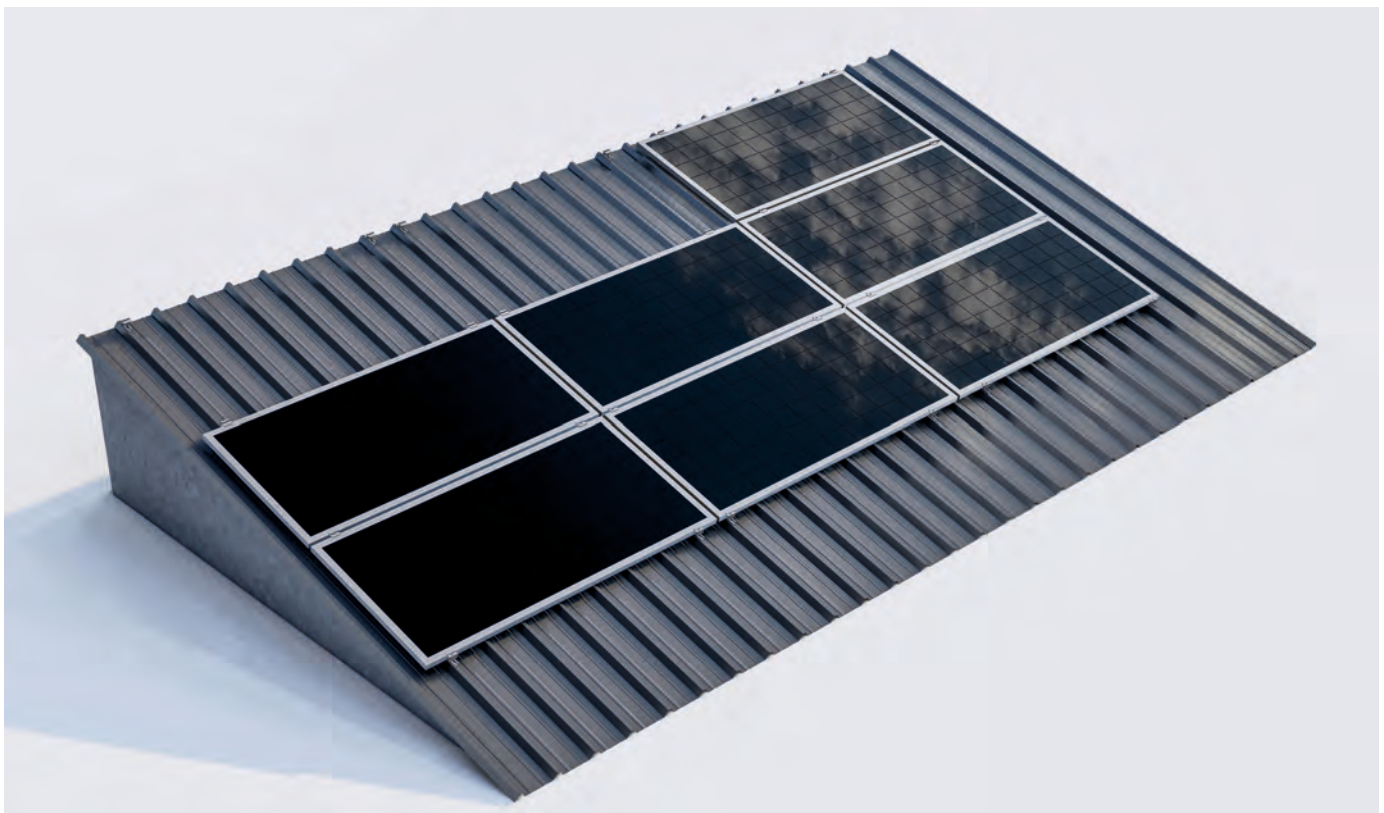
Princip uklapanja elemenata: klik patent, osiguranje vijkom
Princip veze: frikcija
Sila za pritezanje: 14 Nm
Princip kotvanja/ankerisanja: nameskim vijkom na TR lim ili ankerom u beton, balasti na ravnom krovu
Debljina solarnog panela: 30mm - 40mm
Max. dimenzije solarnog panela: 1200x2300mm
Max. opterećenje: 150kg/m²
Max. broj panela: bez ograničenja
Max. širina polja: 12.000mm
Max. visina polja: 6.000mm
Min. debljina TR lima: 0,5mm za čelični; 0,6mm za aluminijumski lim
Površinska obrada profila: sirovo, vidni elementi mogu biti eloksirani ili plastificirani prema RAL ton karti

Field of application:	solar panels for electricity generation solar collectors for water heating (heat exchanger)
Place of application:	sloping roofs with TR sheet metal, thermal panel, tiles, bitumen shingles, standing seam flat roofs covered with membrane without drilling installation on the ground vertical or sloping facades canopies

Principle of element fitting: click patent, screw securing
Connection principle: friction
Tighten with: 14 Nm
Anchoring/anchoring principle: plastic screw on TR sheet or concrete anchor, flat roof ballasts
Solar panel thickness: 30mm - 40mm
Max. solar panel dimensions: 1200x2300mm
Max. load: 150kg/m²
Max. number of panels: no limit
Max. field width: 12,000mm
Max. field height: 6,000mm
Min. TR sheet thickness: 0.5mm for steel; 0.6mm for aluminum sheet
Profile surface treatment: raw, visible elements can be anodized or powder coated in RAL colors

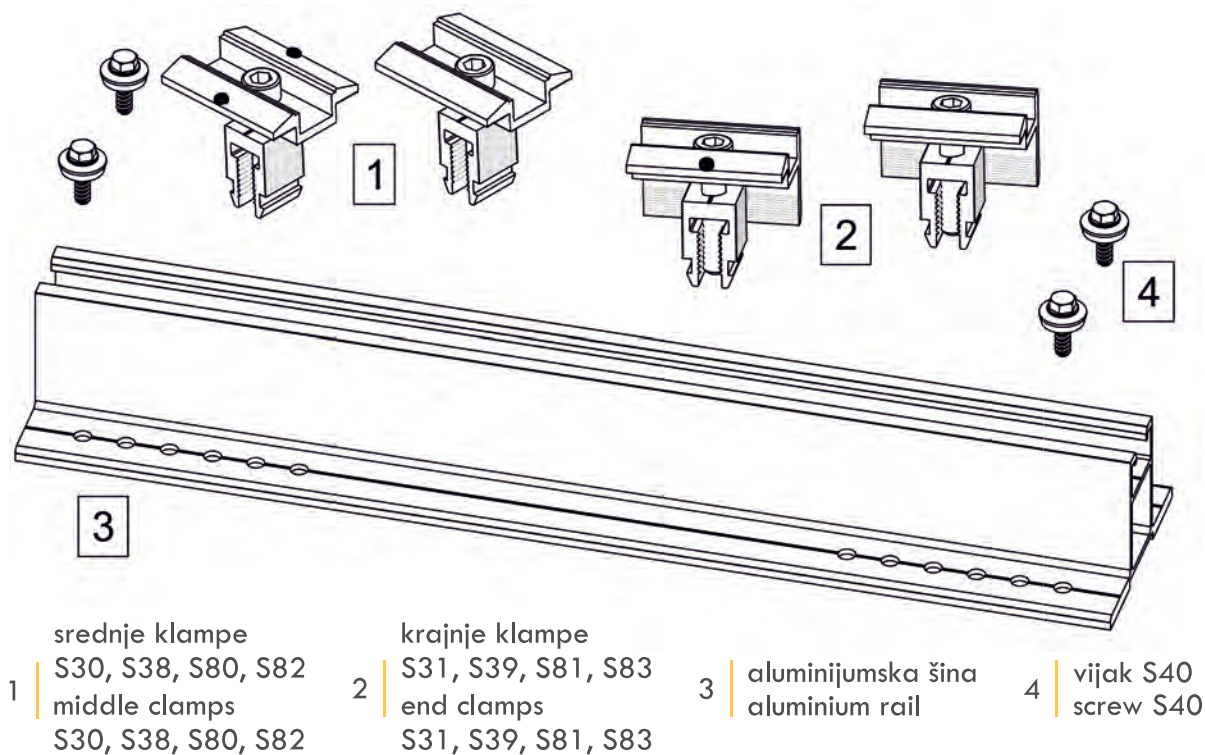


MONTAŽA NA KOSOM KROVU SA TRAPEZASTIM LIMOM
SLANTING ROOF INSTALLATION WITH CORRUGATED PANELS

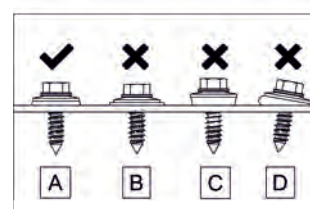
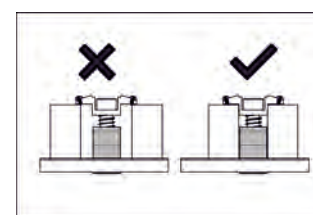
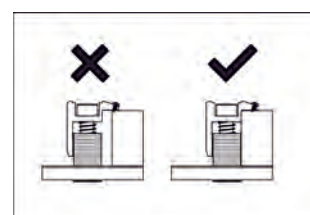
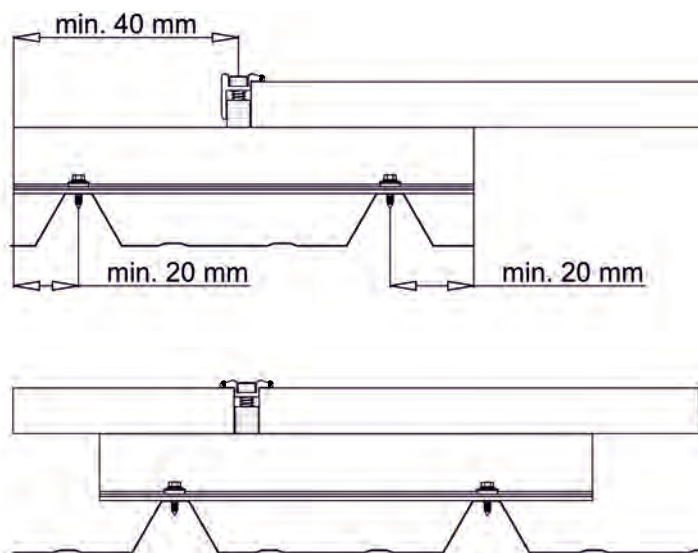


OSNOVNI ELEMENTI SISTEMA ZA KOSE KROVOVE SA TR LIMOM

ESSENTIAL ELEMENTS FOR SLOPED ROOF SYSTEMS WITH CORRUGATED PANELS

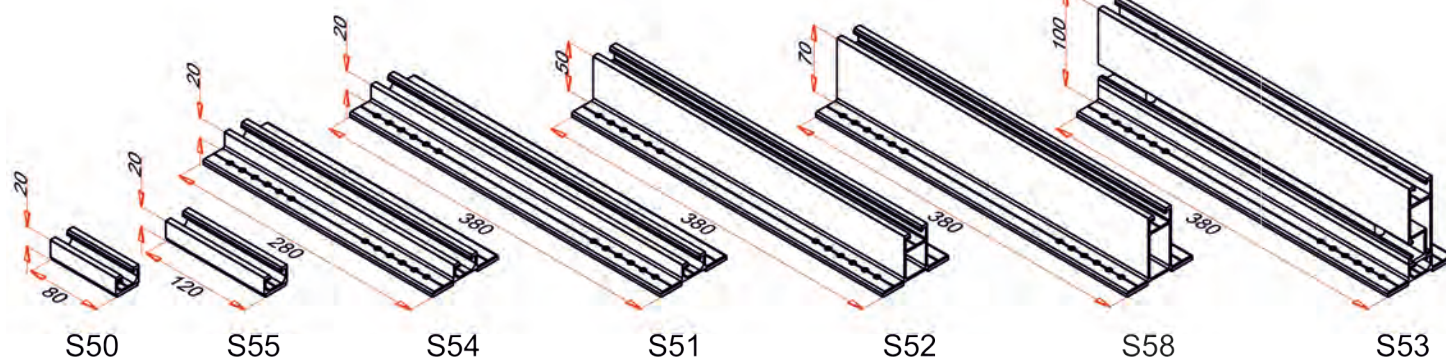


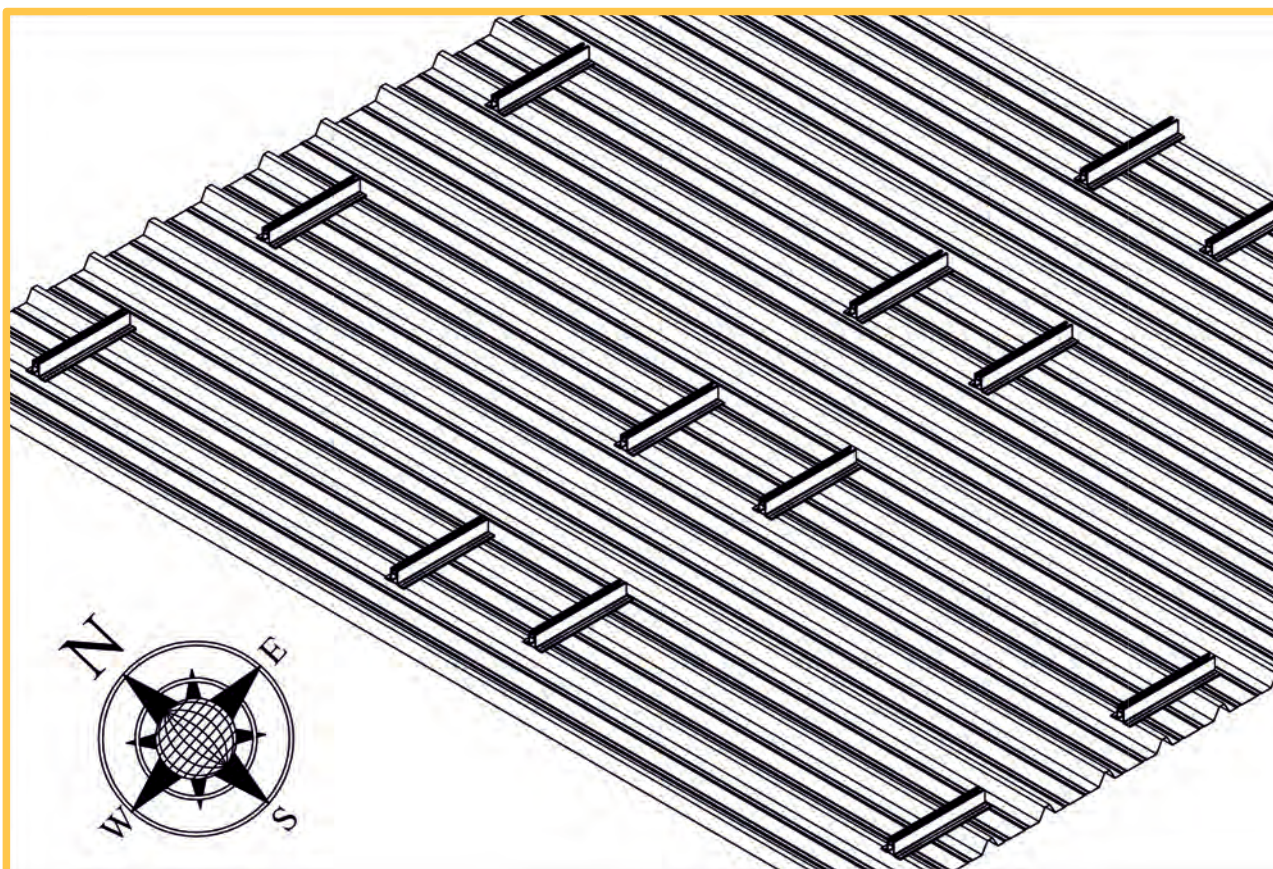
PRAVILA MONTAŽE / INSTALLATION PRINCIPLES



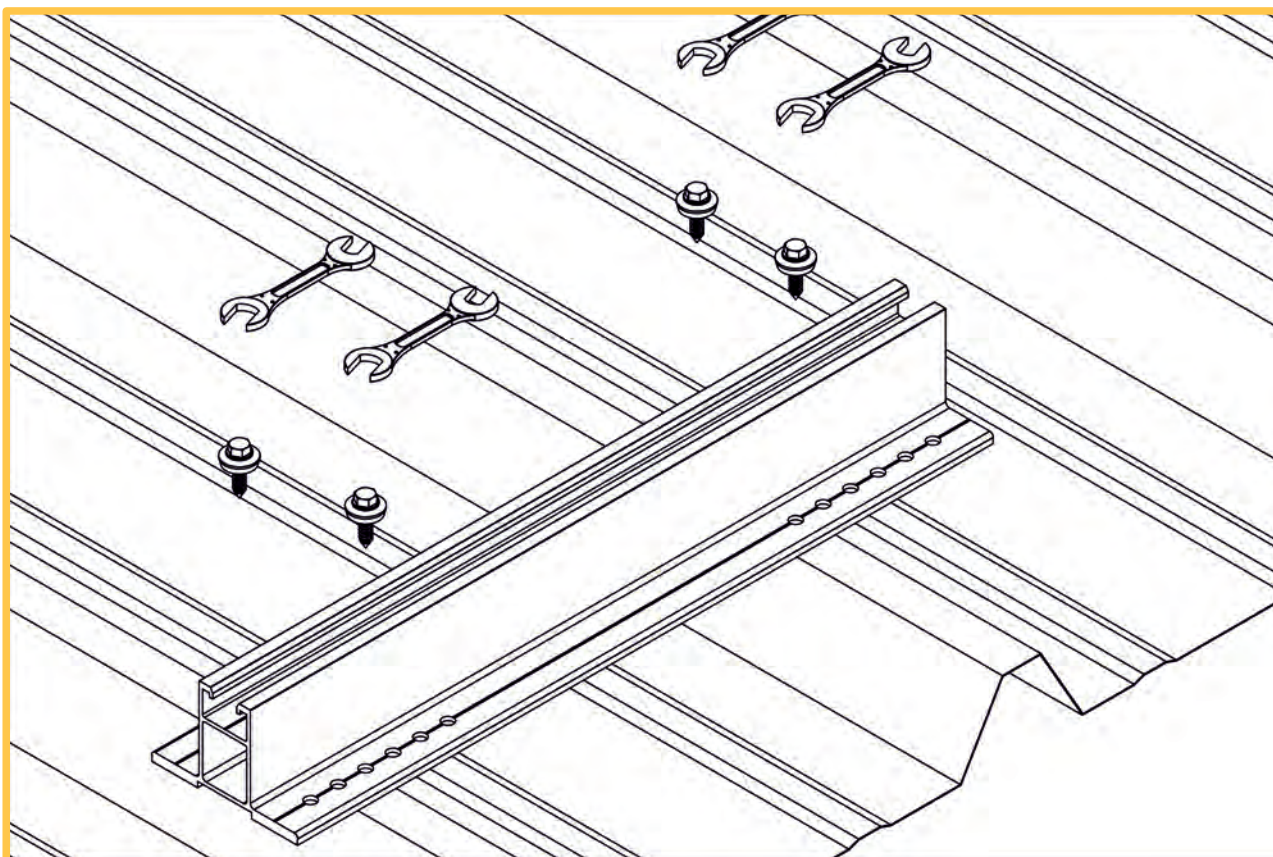
- A pravilno postavljen vijak
properly installed screw
- B pretegnut vijak
overtightened screw
- C nedovoljno zategnut vijak
insufficiently tightened screw
- D neravno postavljen vijak
unevenly placed screw

veličine aluminijumskih šina / aluminum rail sizes

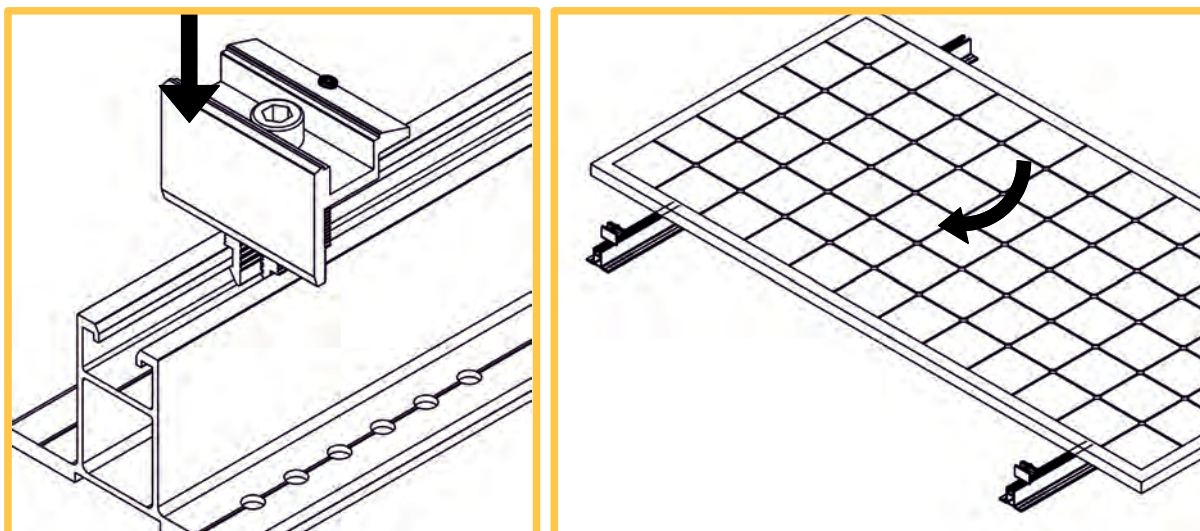




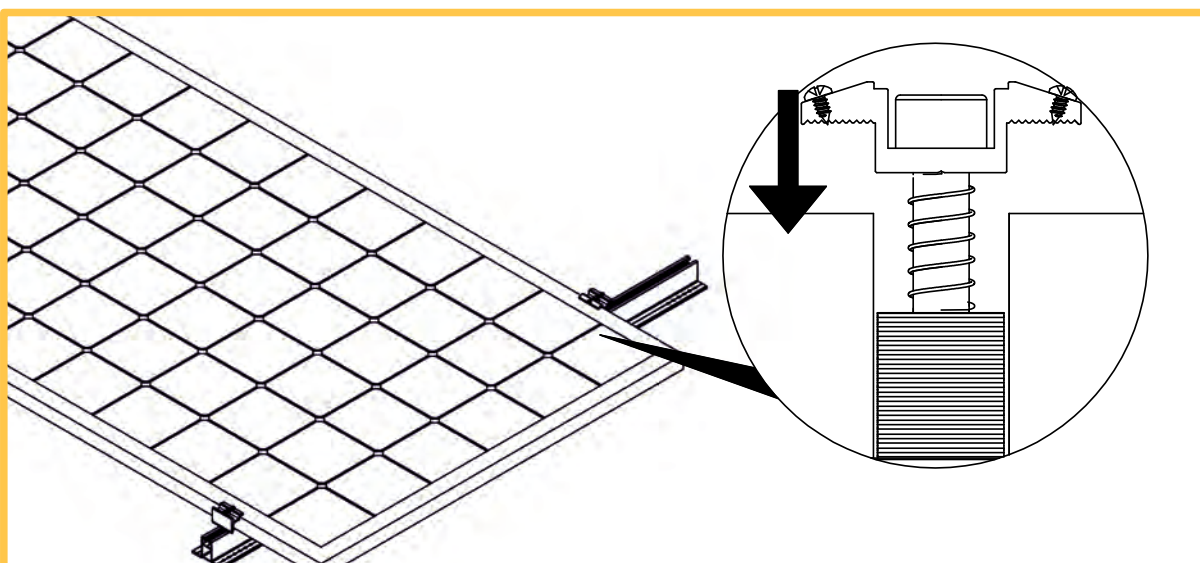
1. raspored nosača na kosom krovu / the layout of the rails on the sloping roof



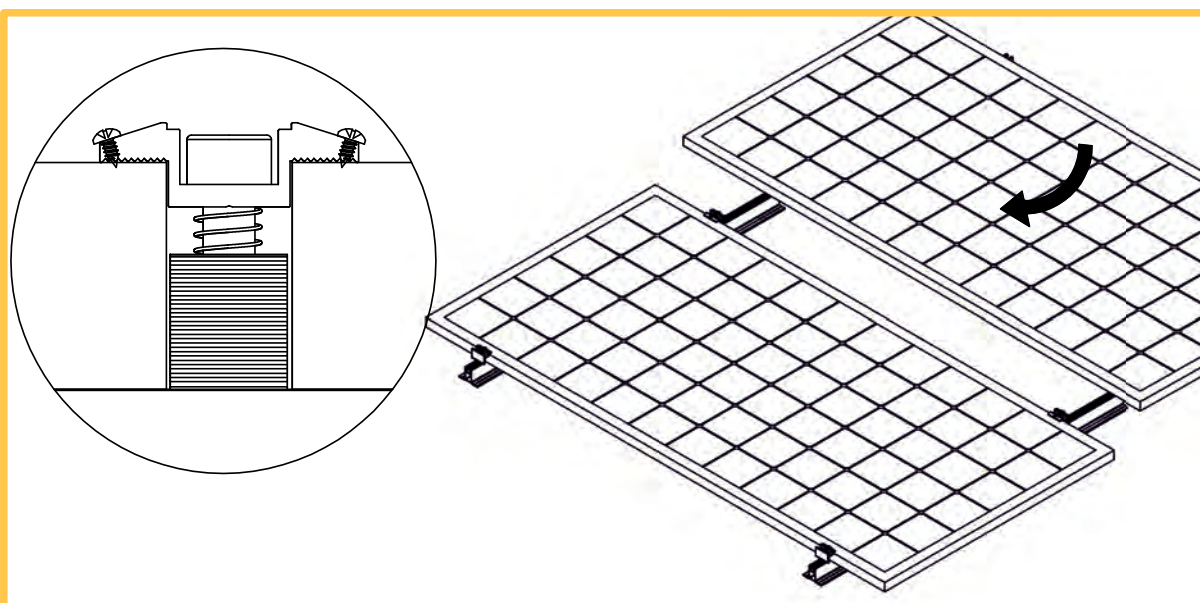
2. učvrstiti aluminijske šine vijkom S40 / fasten the aluminum rails with a S40 screw



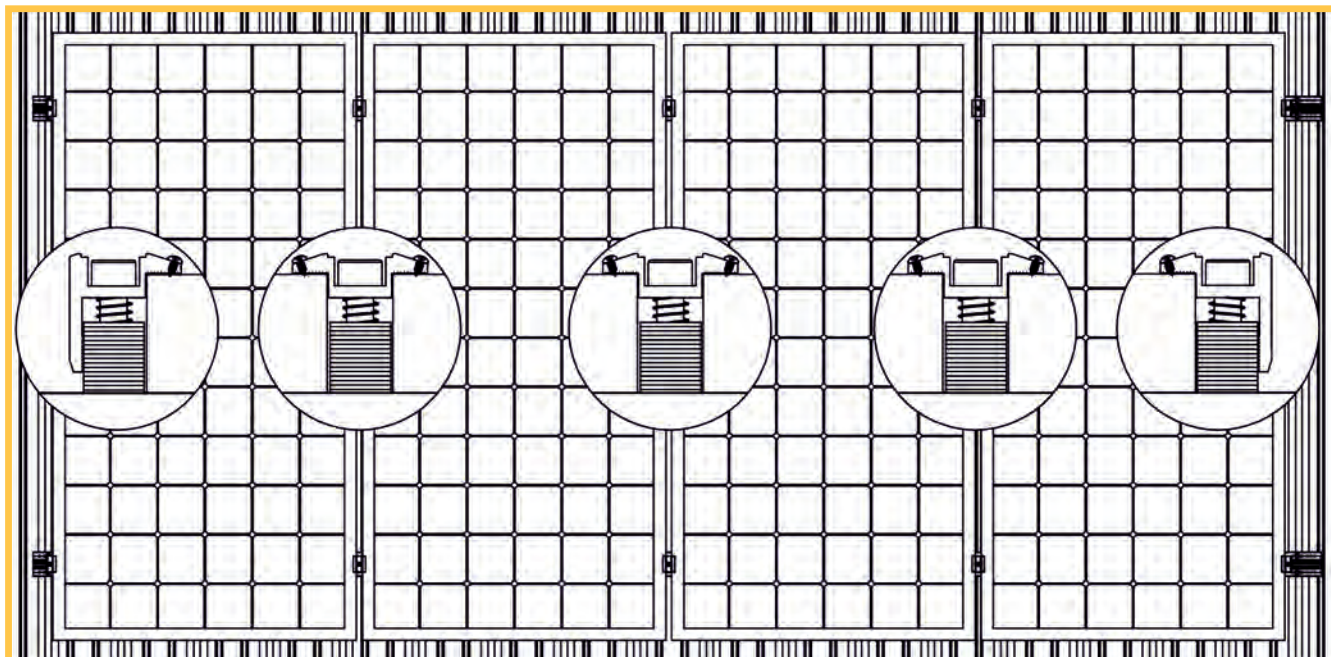
3. kliknuti krajnje klampe u šine i ubaciti prvi panel / click the end clamps on the rails and insert the first panel



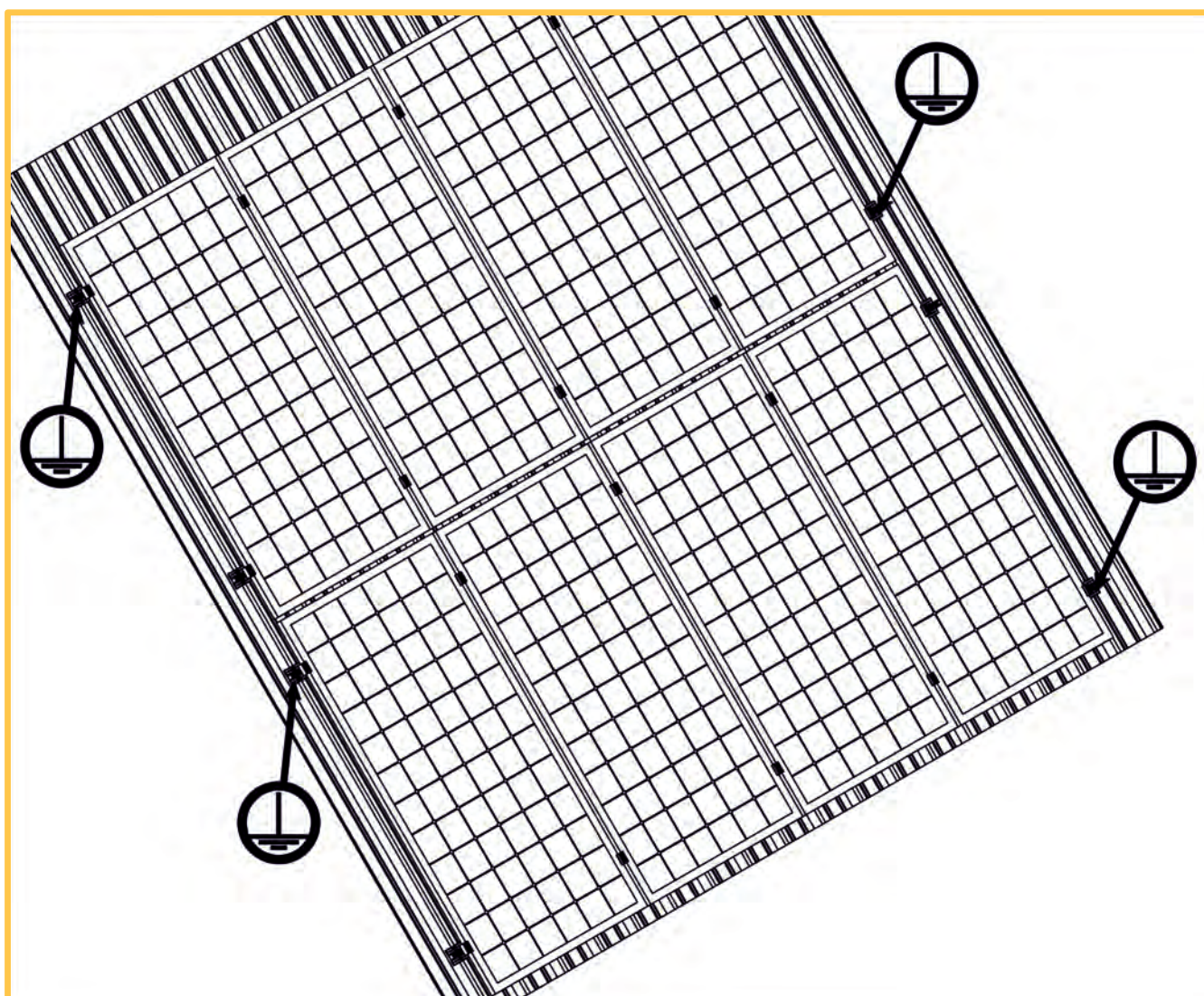
4. pre ubacivanja sledećeg panela staviti srednju klampu / place the middle clamp before inserting the next panel



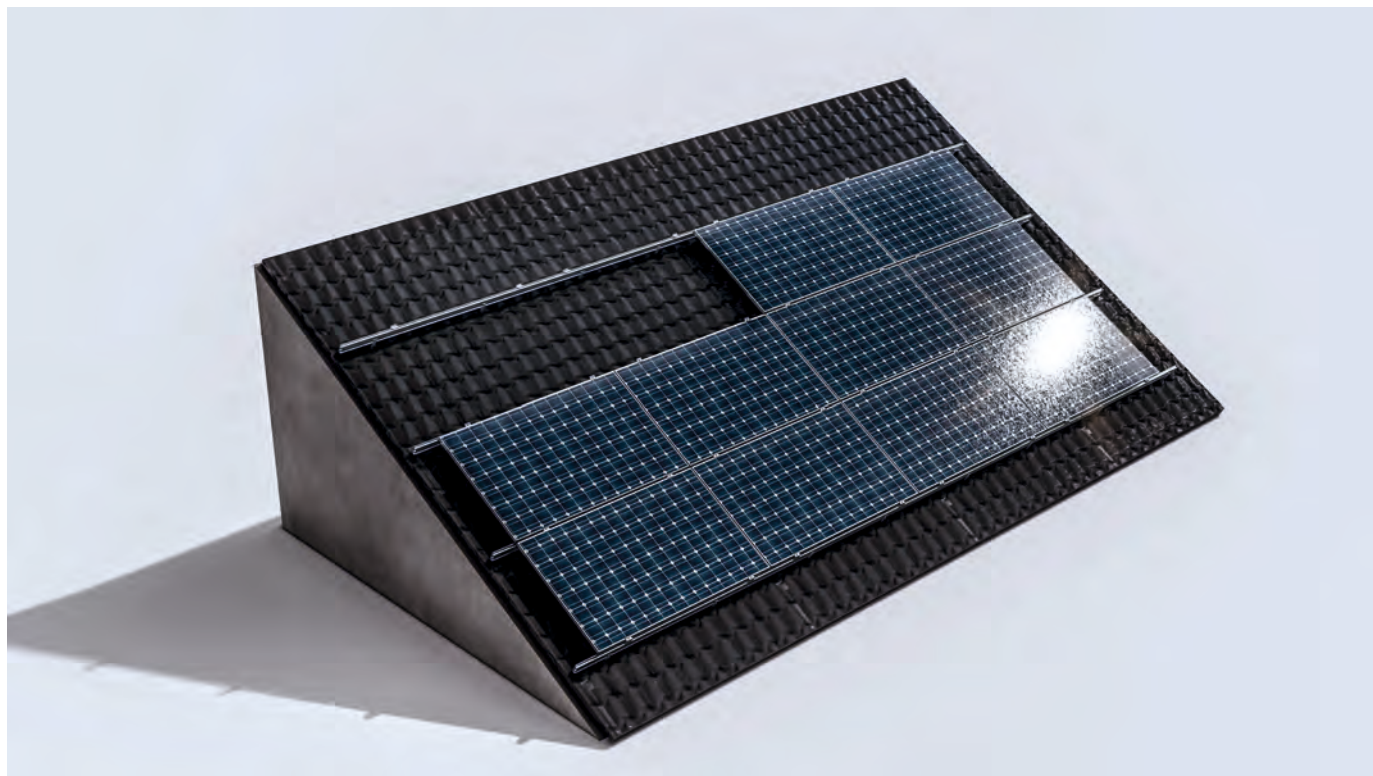
5. nakon postavljanja panela, klampe pritegnuti silom od 14Nm / after installing the panel, tighten the clamps with a force of 14Nm



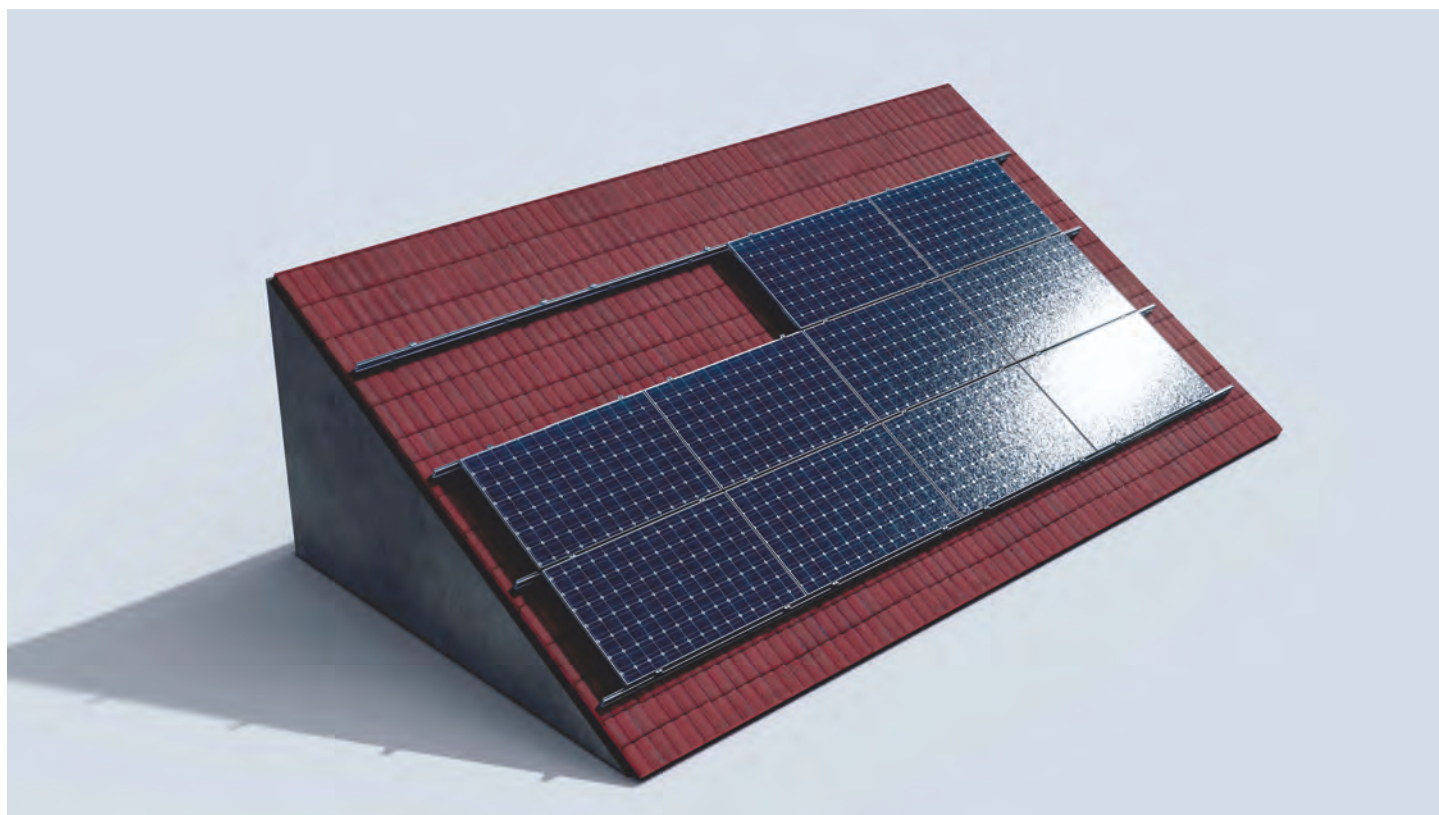
princip pozicioniranja klampi / clamp positioning principle



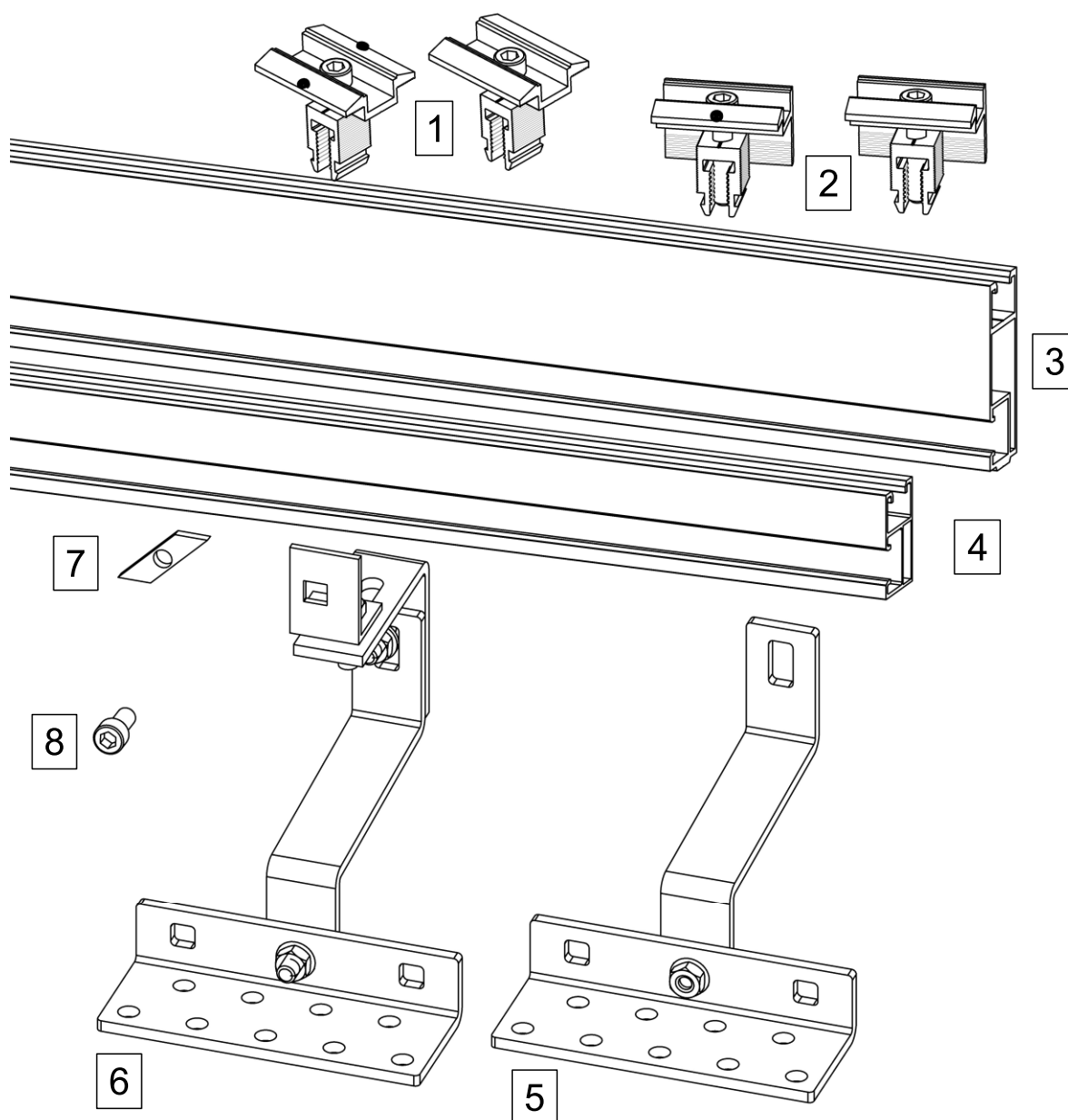
raspored klampi u bloku i uzemljenje / arrangement of clamps in the block and grounding



MONTAŽA NA KOSOM KROVU SA CREPOM
TILED SLANTING ROOF INSTALLATION



OSNOVNI ELEMENTI SISTEMA ZA KOSE KROVOVE SA CREPOM
ESSENTIAL ELEMENTS FOR SLOPED ROOF SYSTEMS WITH ROOF TILES



1 srednje klampe - S30, S38, S80, S82
middle clamps - S30, S38, S80, S82

2 krajnje klampe - S31, S39, S81, S83
end clamps - S31, S39, S81, S83

3 aluminijumski rail - S04
aluminum rail - S04

4 aluminijumska šina - S18
aluminum rail - S18

5 kuka 2D- S90
2D hook - S90

6 kuka 3D- S91
3D hook - S91

7 klizna navrtka - S41
sliding screw - S41

8 vijak DIN 912 M8x20
screw DIN 912 M8x20

DETALJ MONTAŽE NA KOSOM KROVU SA CREPOM
MOUNTING DETAIL FOR SLANTED ROOF WITH TILES

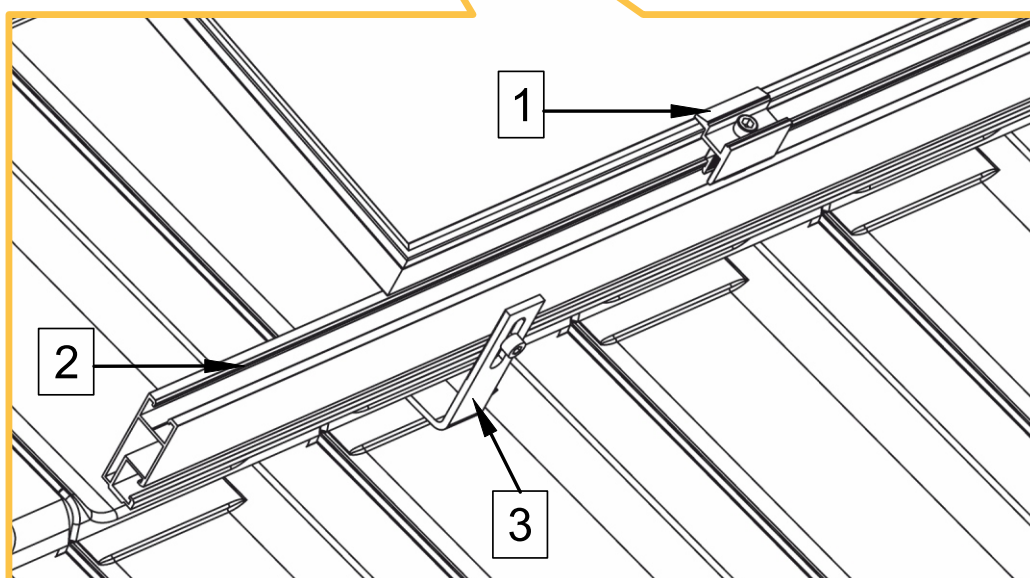
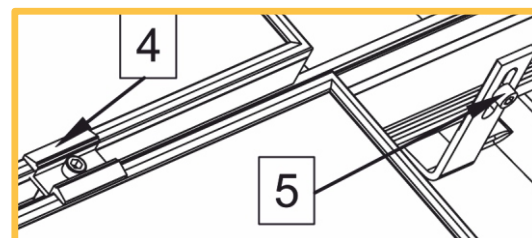
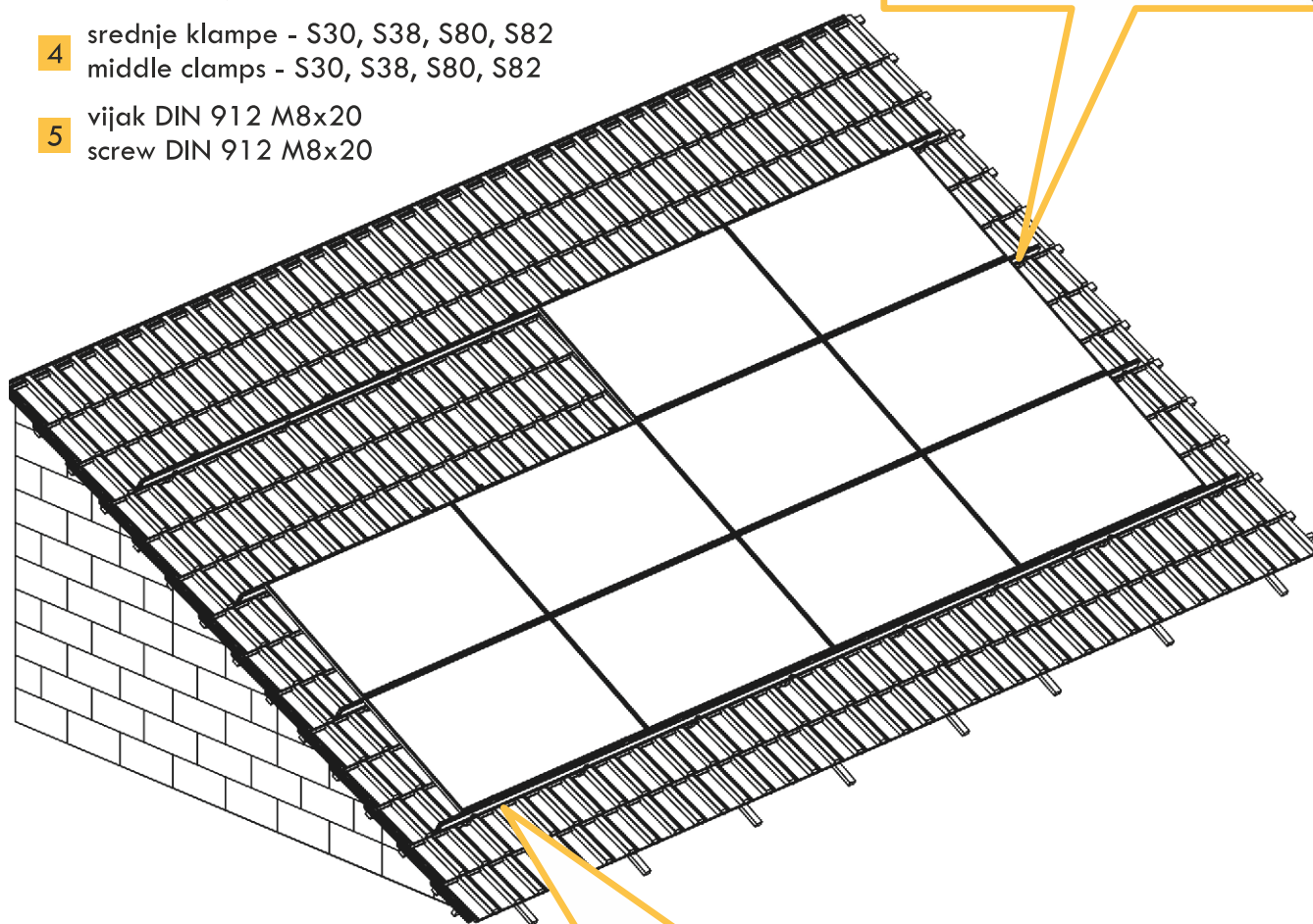
1 krajnje klampe - S31, S39, S81, S83
end clamps - S31, S39, S81, S83

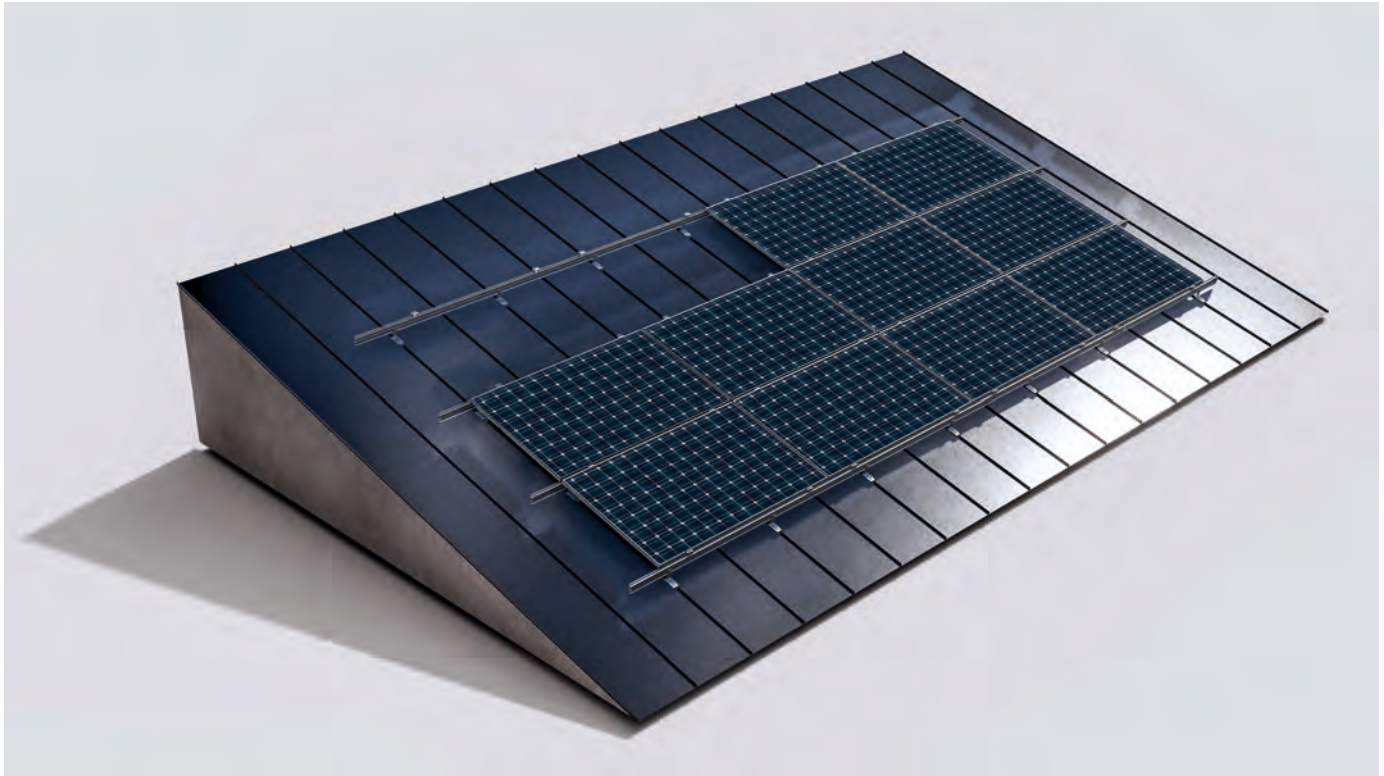
2 aluminijumski profil - S04, S18
aluminum profile S04, S18

3 kuka - S90, S91
hook - S90, S91

4 srednje klampe - S30, S38, S80, S82
middle clamps - S30, S38, S80, S82

5 vijak DIN 912 M8x20
screw DIN 912 M8x20

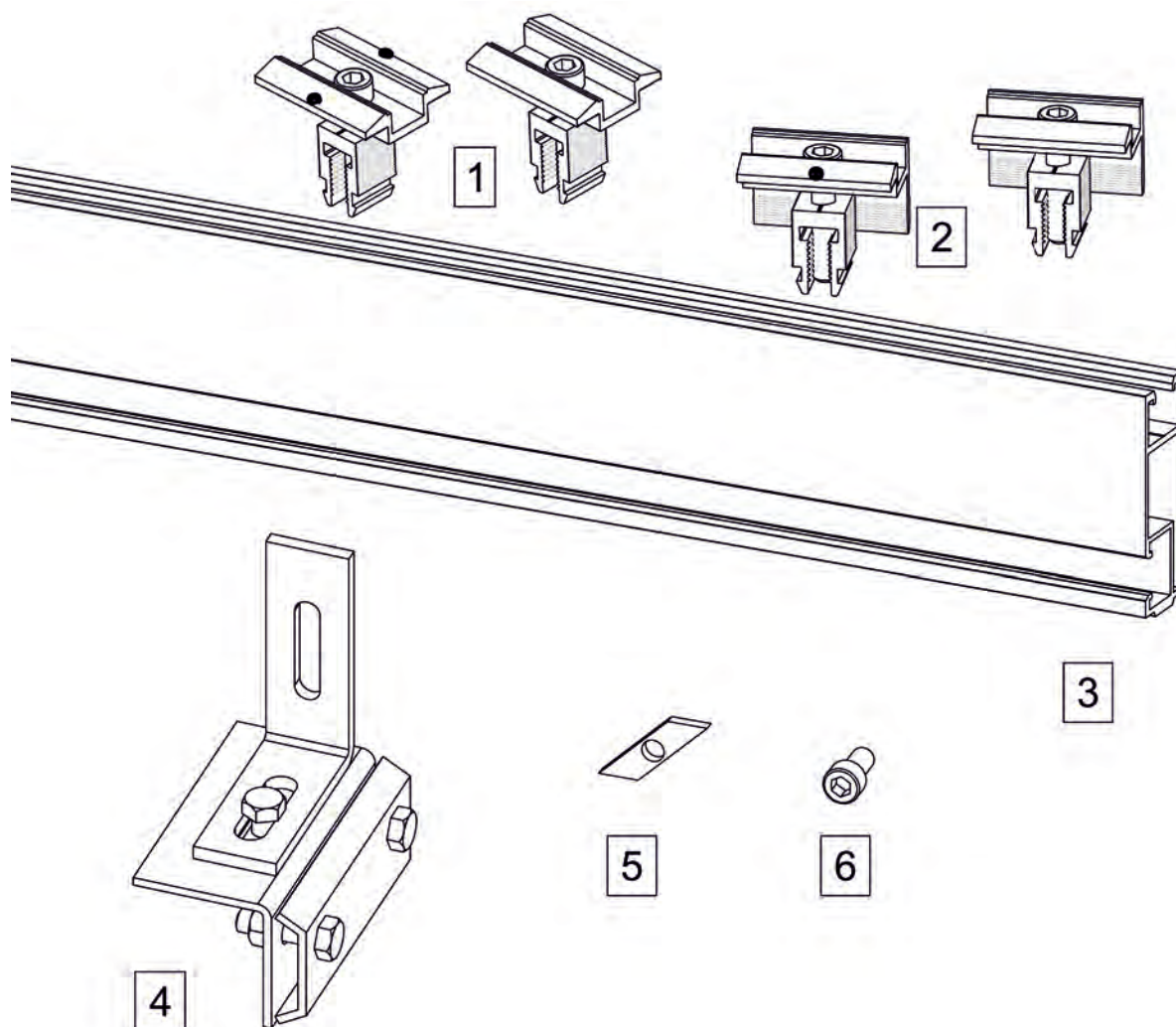




MONTAŽA NA KOSOM KROVU SA FALCOVANIM LIMOM
STANDING SEAM SLANTED ROOF INSTALLATION



OSNOVNI ELEMENTI SISTEMA ZA KOSE KROVOVE SA FALCOVANIM LIMOM
 ESSENTIAL ELEMENTS FOR SLOPED ROOF SYSTEMS WITH STANDING SEAM



1 srednje klampe - S30, S38, S80, S82
 middle clamps - S30, S38, S80, S82

2 krajnje klampe - S31, S39, S81, S83
 end clamps - S31, S39, S81, S83

3 aluminijumski profil - S04
 aluminum profile - S04

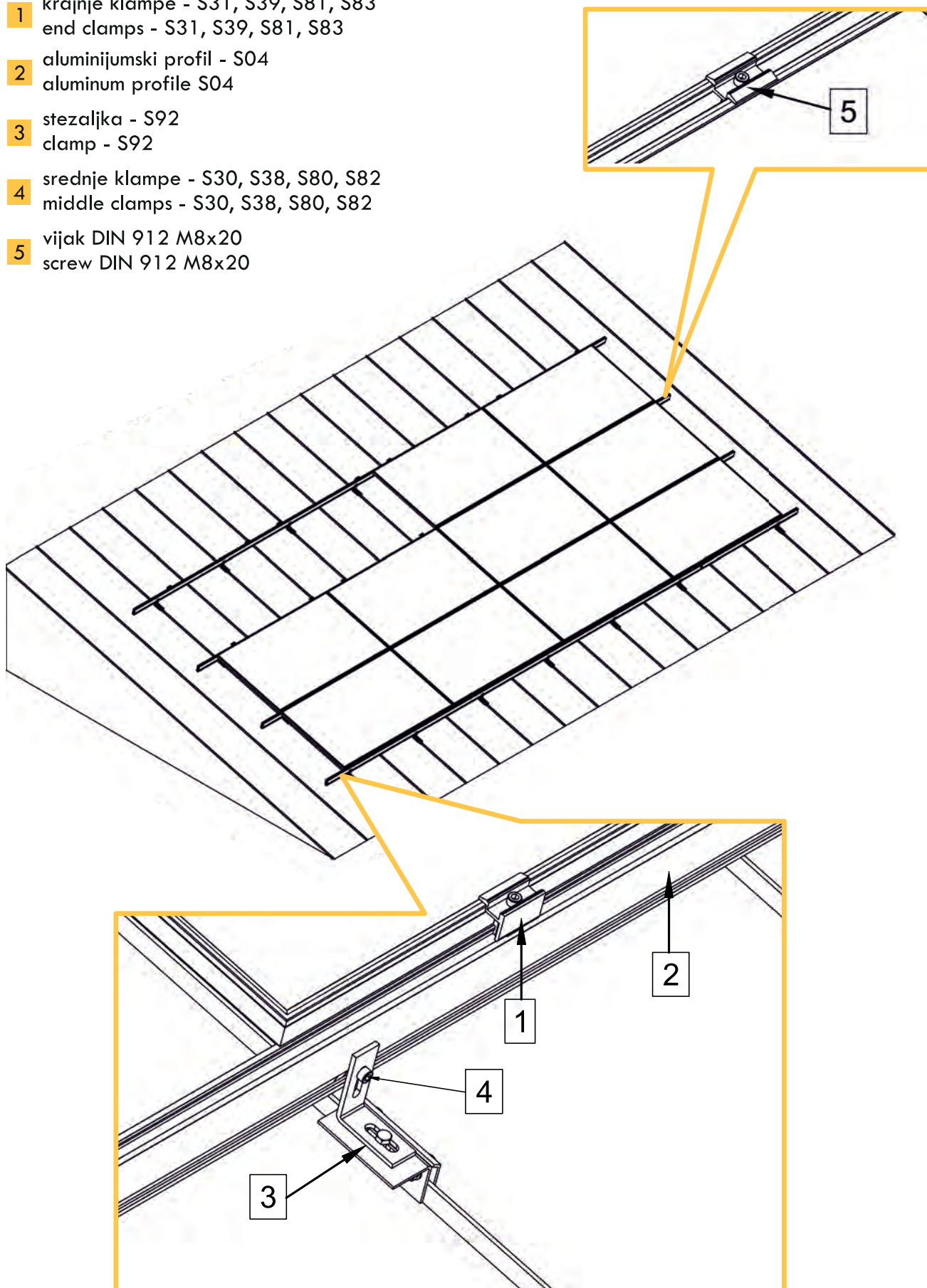
4 stezaljka - S92
 clamp - S92

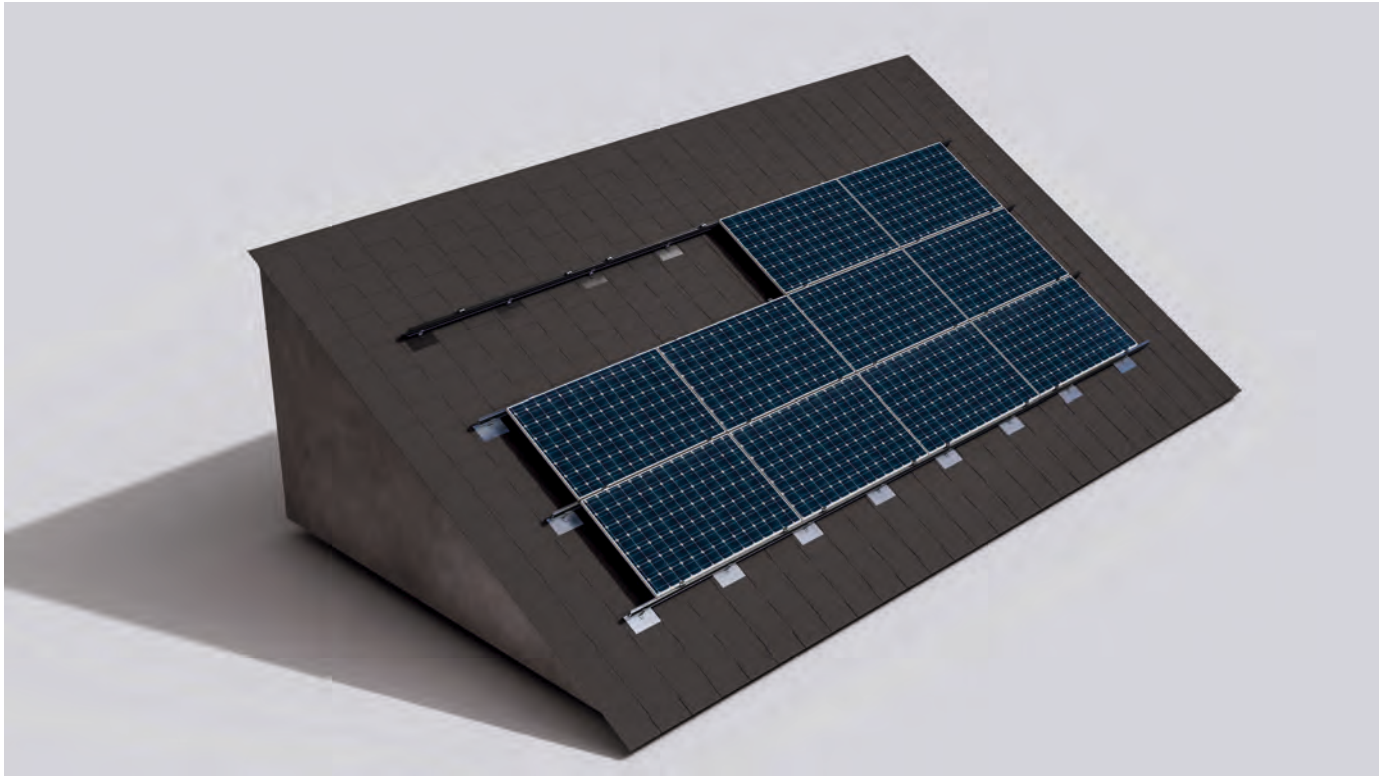
5 klizna navrtka - S41
 sliding screw - S41

6 vijak DIN 912 M8x20
 screw DIN 912 M8x20

DETALJ MONTAŽE NA KOSOM KROVU SA CREPOM
MOUNTING DETAIL FOR SLANTED ROOF WITH STANDING SEAM

- 1 krajnje klampe - S31, S39, S81, S83
end clamps - S31, S39, S81, S83
- 2 aluminijumski profil - S04
aluminum profile S04
- 3 stezaljka - S92
clamp - S92
- 4 srednje klampe - S30, S38, S80, S82
middle clamps - S30, S38, S80, S82
- 5 vijak DIN 912 M8x20
screw DIN 912 M8x20

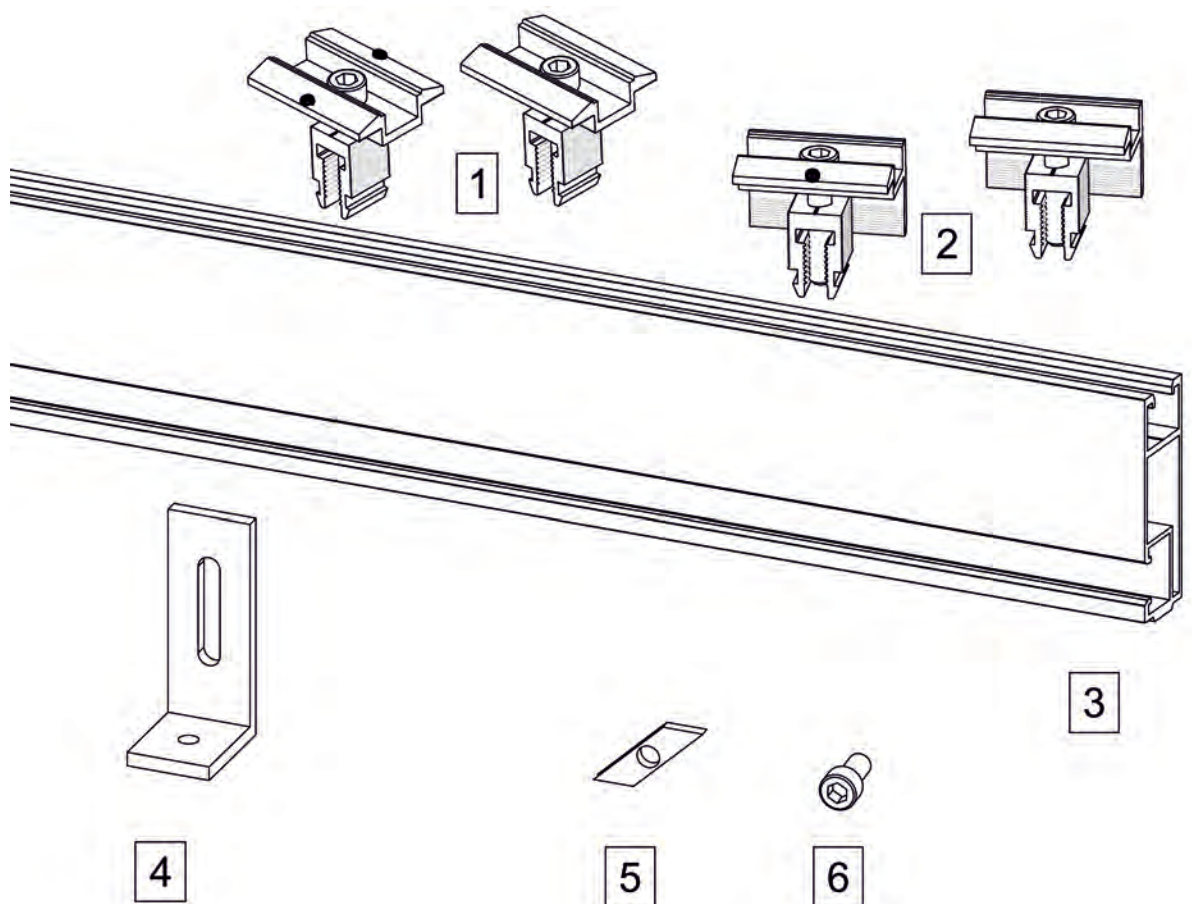




**MONTAŽA NA KOSOM KROVU SA TEGOLOM
BITUMEN SHINGLES SLANTED ROOF INSTALLATION**



OSNOVNI ELEMENTI SISTEMA ZA KOSE KROVOVE SA TEGOLOM
ESSENTIAL ELEMENTS FOR SLOPED ROOF SYSTEMS WITH BITUMEN SHINGLES



1 srednje klampe - S30, S38, S80, S82
middle clamps - S30, S38, S80, S82

2 krajnje klampe - S31, S39, S81, S83
end clamps - S31, S39, S81, S83

3 aluminijumski profil - S04
aluminum profile - S04

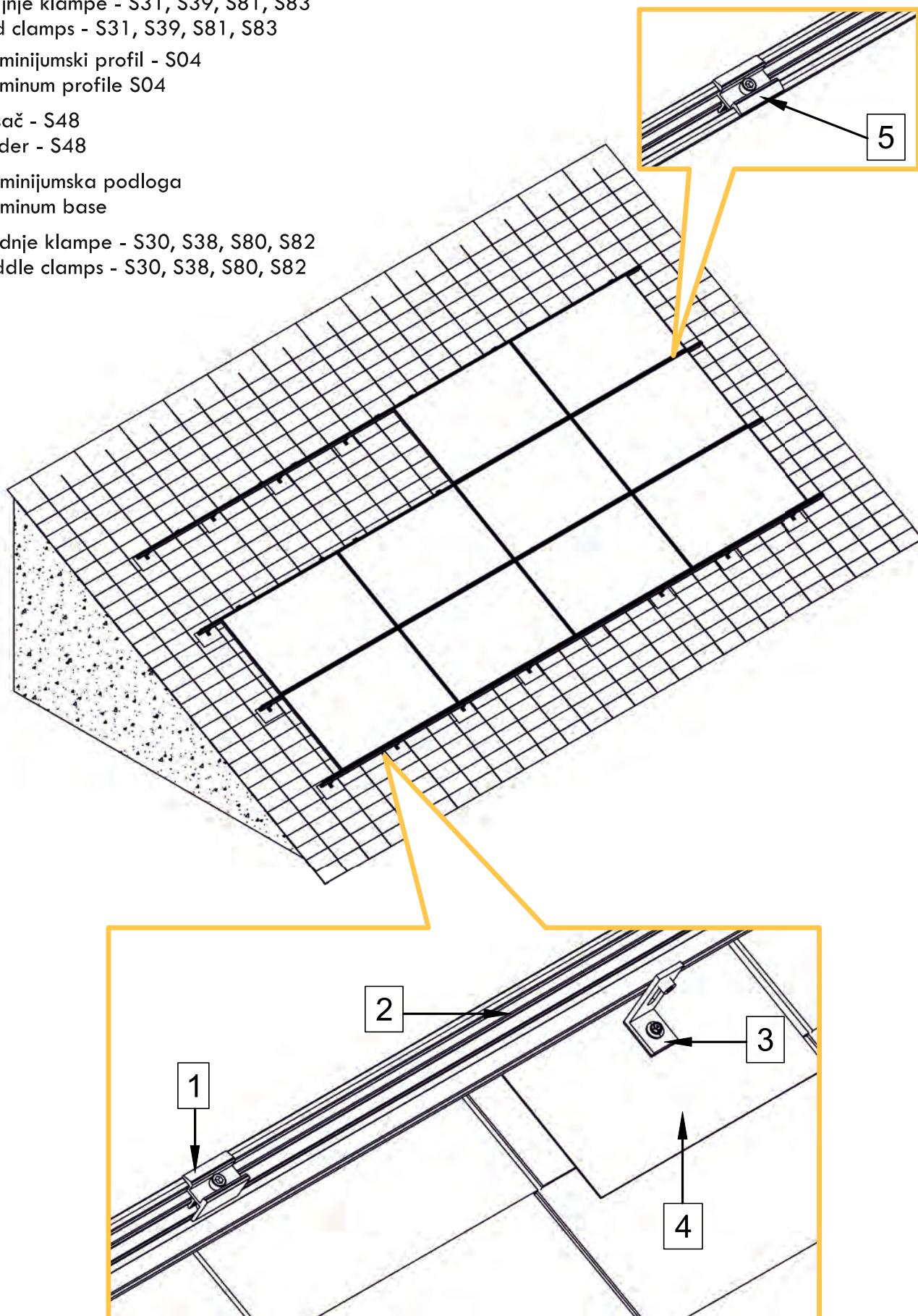
4 nosač - S48
porter - S48

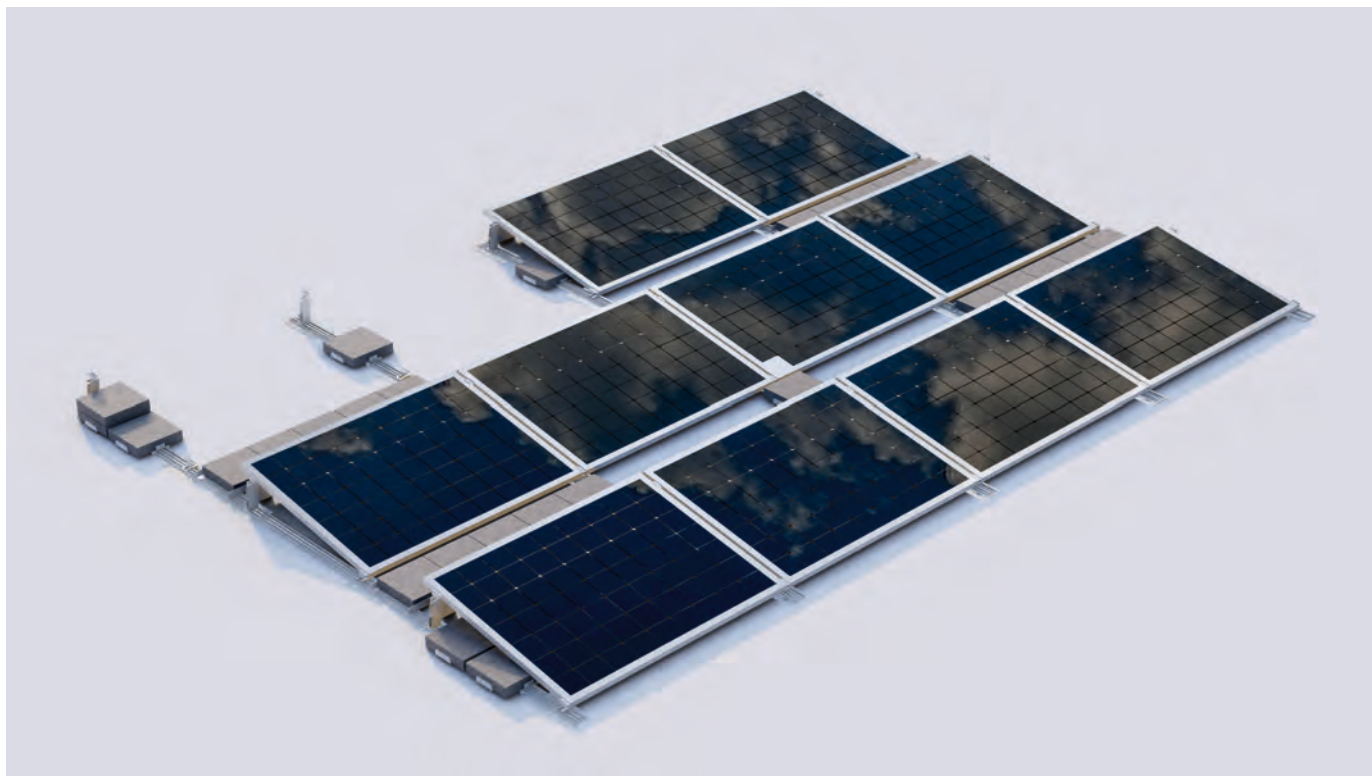
5 klizna navrtka - S41
sliding screw - S41

6 vijak DIN 912 M8x20
screw DIN 912 M8x20

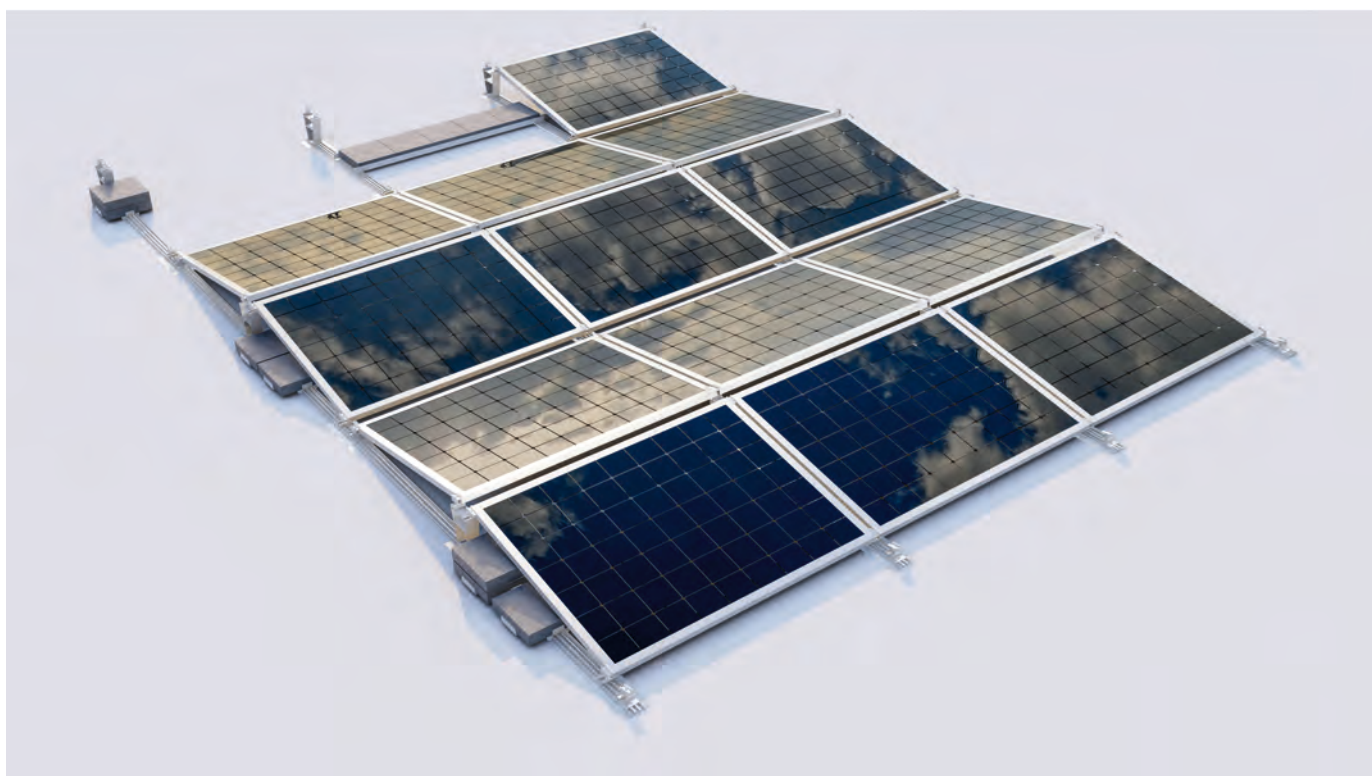
DETALJ MONTAŽE NA KOSOM KROVU SA TEGOLOM
MOUNTING DETAIL FOR SLOPED ROOF WITH BITUMEN SHINGLES

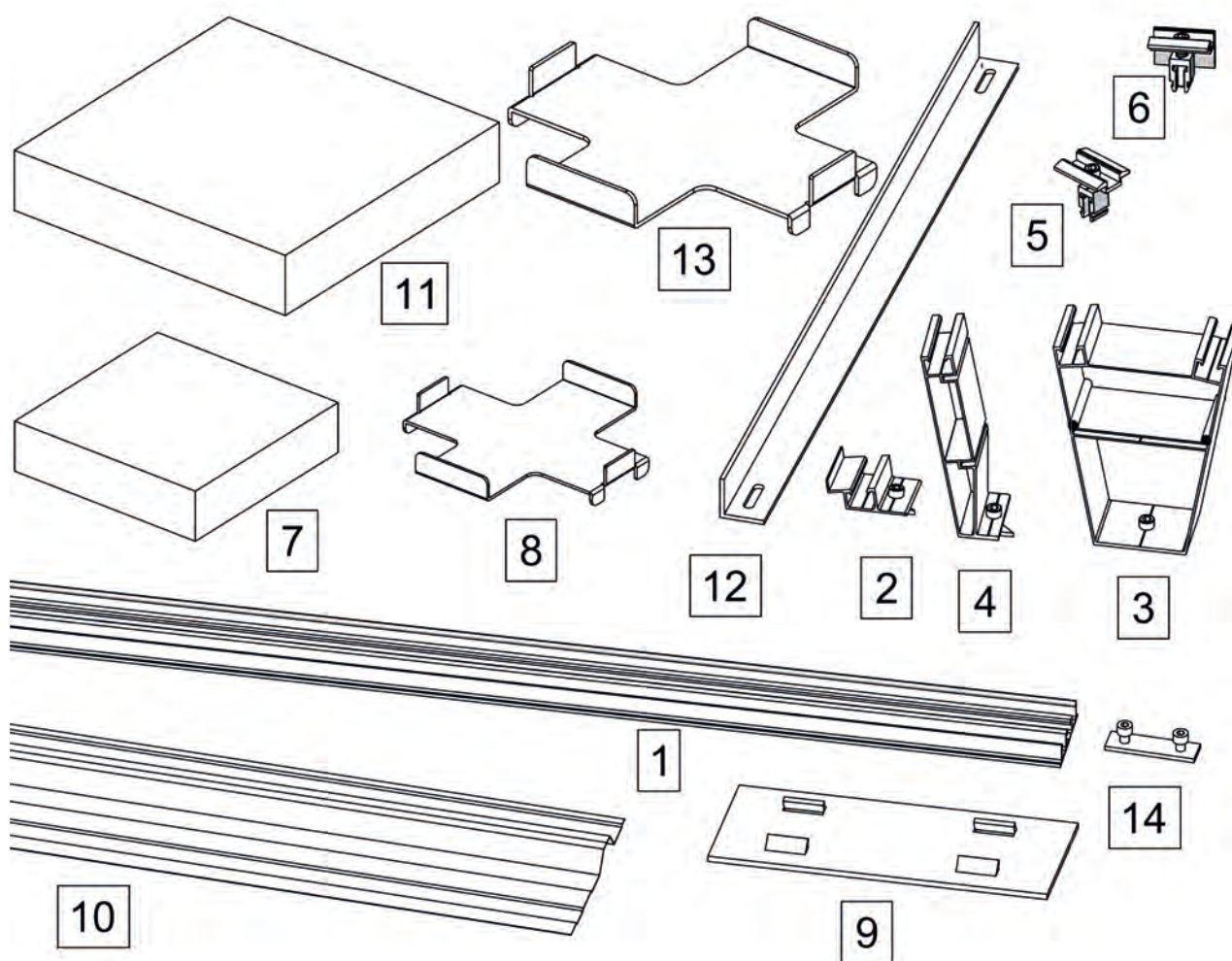
- 1 krajnje klampe - S31, S39, S81, S83
end clamps - S31, S39, S81, S83
- 2 aluminijumski profil - S04
aluminum profile S04
- 3 nosač - S48
girder - S48
- 4 aluminijumska podloga
aluminum base
- 5 srednje klampe - S30, S38, S80, S82
middle clamps - S30, S38, S80, S82





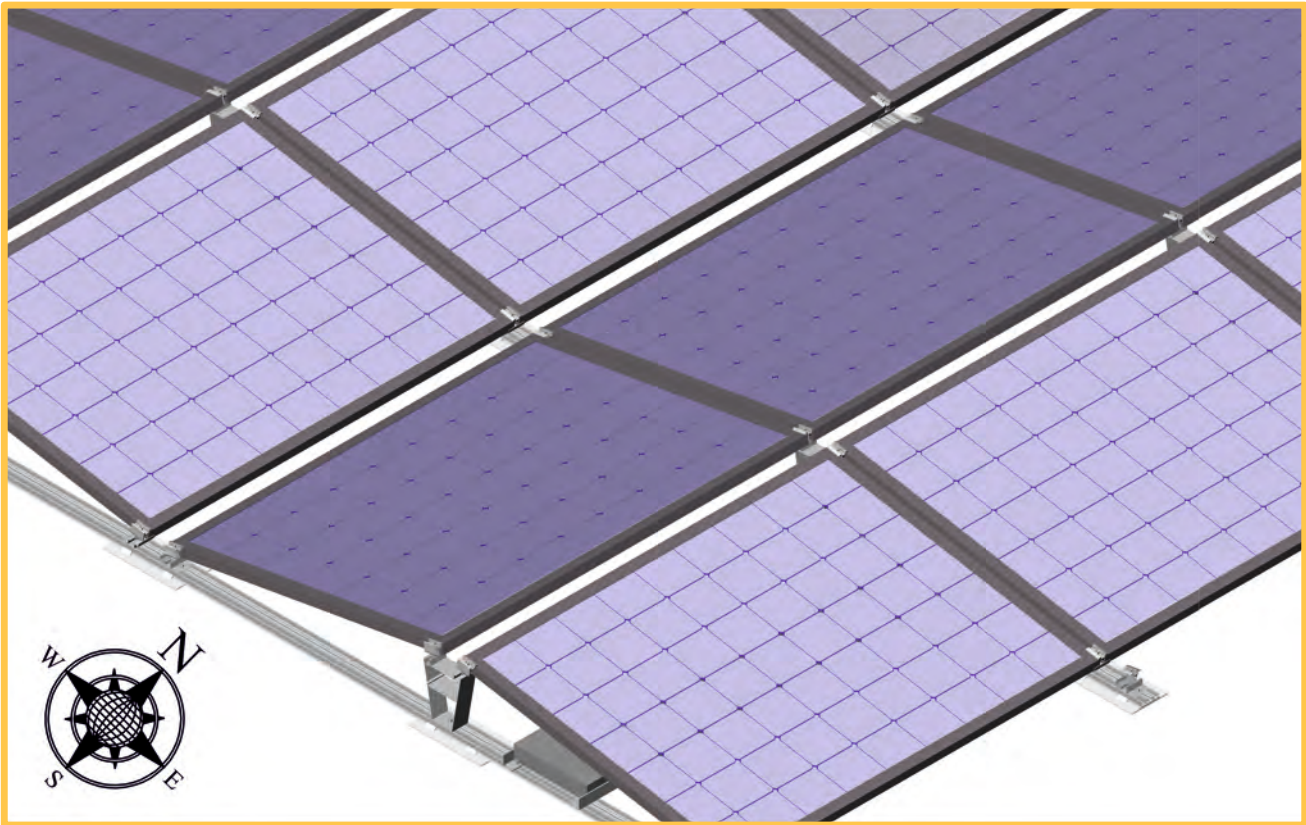
**MONTAŽA NA RAVNOM KROVU
FLAT ROOF INSTALLATION**



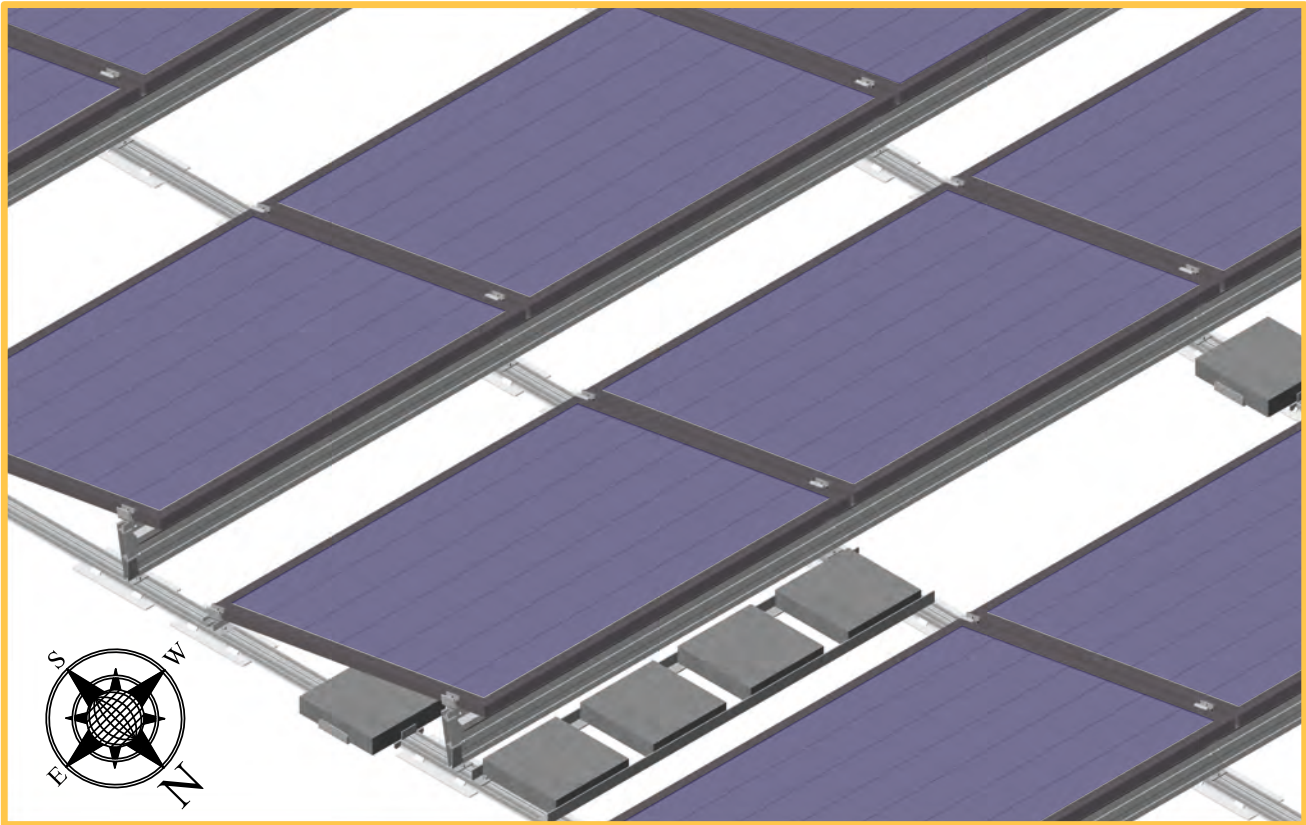

 KOMPONENTE SISTEMA ZA RAVNE KROVOVE
 FLAT ROOF SYSTEM COMPONENTS

- | | |
|--|--|
| 1 aluminijumska šina - S09
aluminium rail - S09 | 8 nosač balasta (S71) - S72
ballast bracket (S71) - S72 |
| 2 donji nosač - S32
lower bracket - S32 | 9 podložka za zaštitu krova - S70
roof protection mat - S70 |
| 3 gornji dvostruki nosač - S33
upper double bracket - S33 | 10 vetrobran - S73
deflector - S73 |
| 4 gornji nosač - S34
upper bracket - S34 | 11 betonski balast (12,5 kg) - S74
concrete ballast (12,5 kg) - S74 |
| 5 srednje klampe - S30, S38, S80, S82
middle clamps - S30, S38, S80, S82 | 12 poprečni nosač balasta - S75.L
transverse ballast bracket - S75.L |
| 6 krajnje klampe - S31, S39, S81, S83
end clamps - S31, S39, S81, S83 | 13 nosač balasta (S74) - S76
ballast bracket (S74) - S76 |
| 7 betonski balast (5kg) - S71
concrete ballast (5kg) - S71 | 14 spojnica šine - S42
rail connector - S42 |

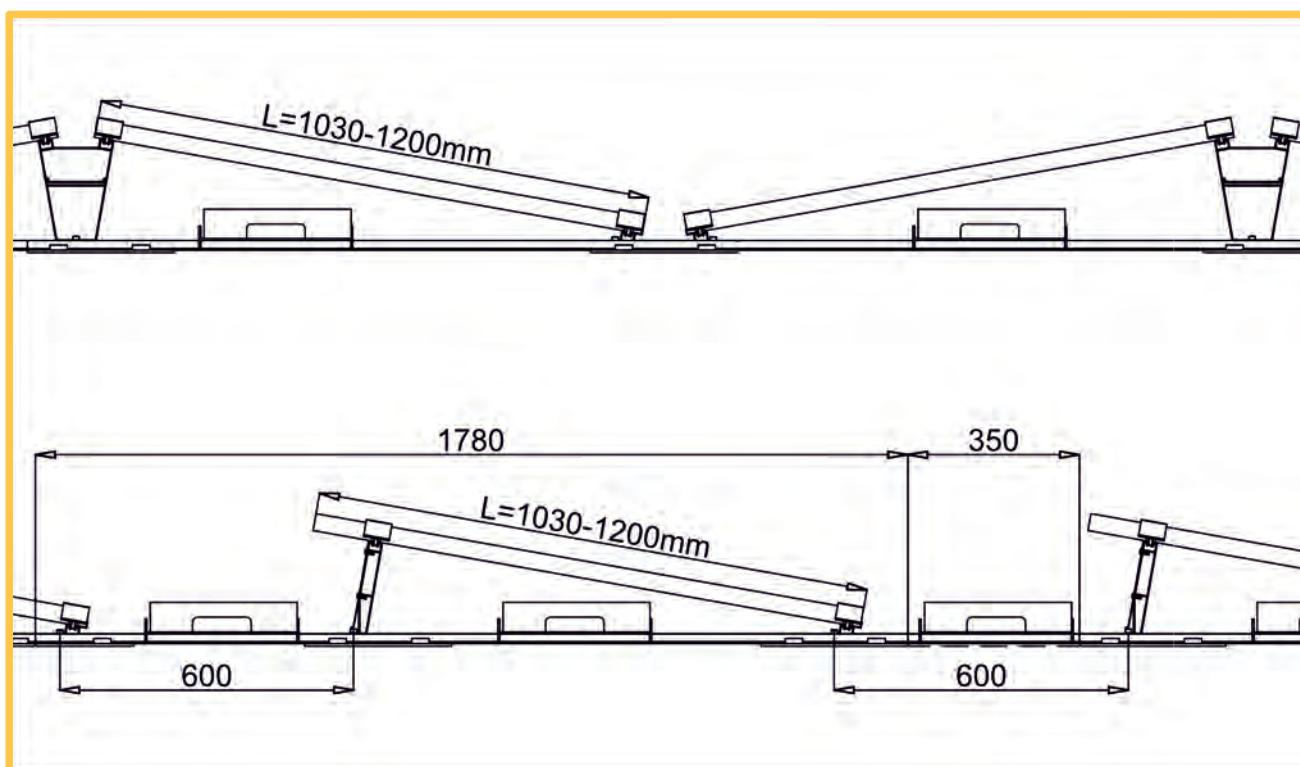
MONTAŽA SOLARNIH PANELA NA RAVNE KROVOVE SA IZOLACIJOM
INSTALLATION OF SOLAR PANELS ON FLAT ROOFS WITH INSULATION



ORIJENTACIJA ISTOK-ZAPAD / EAST-WEST ORIENTATION



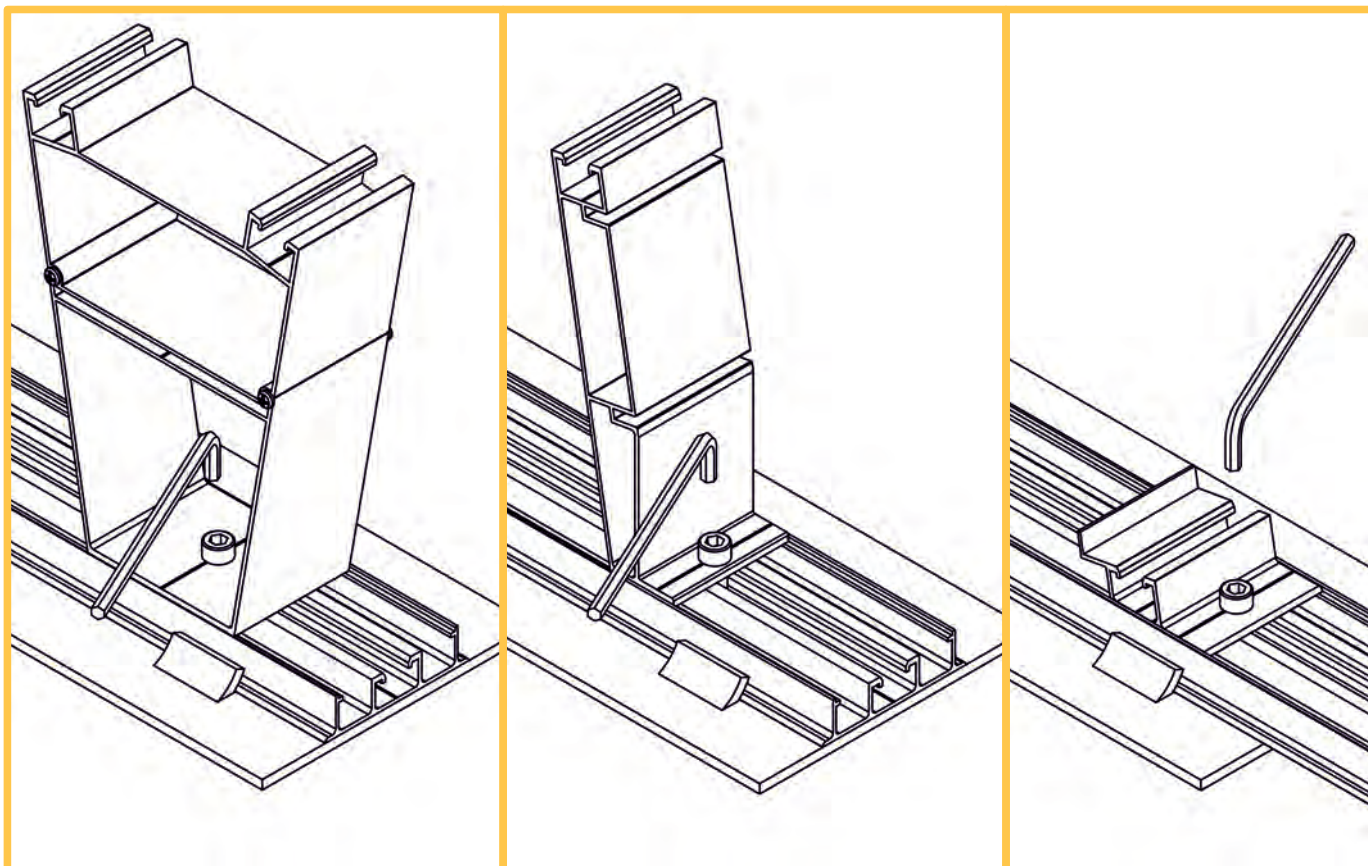
ORIJENTACIJA JUG / SOUTH ORIENTATION



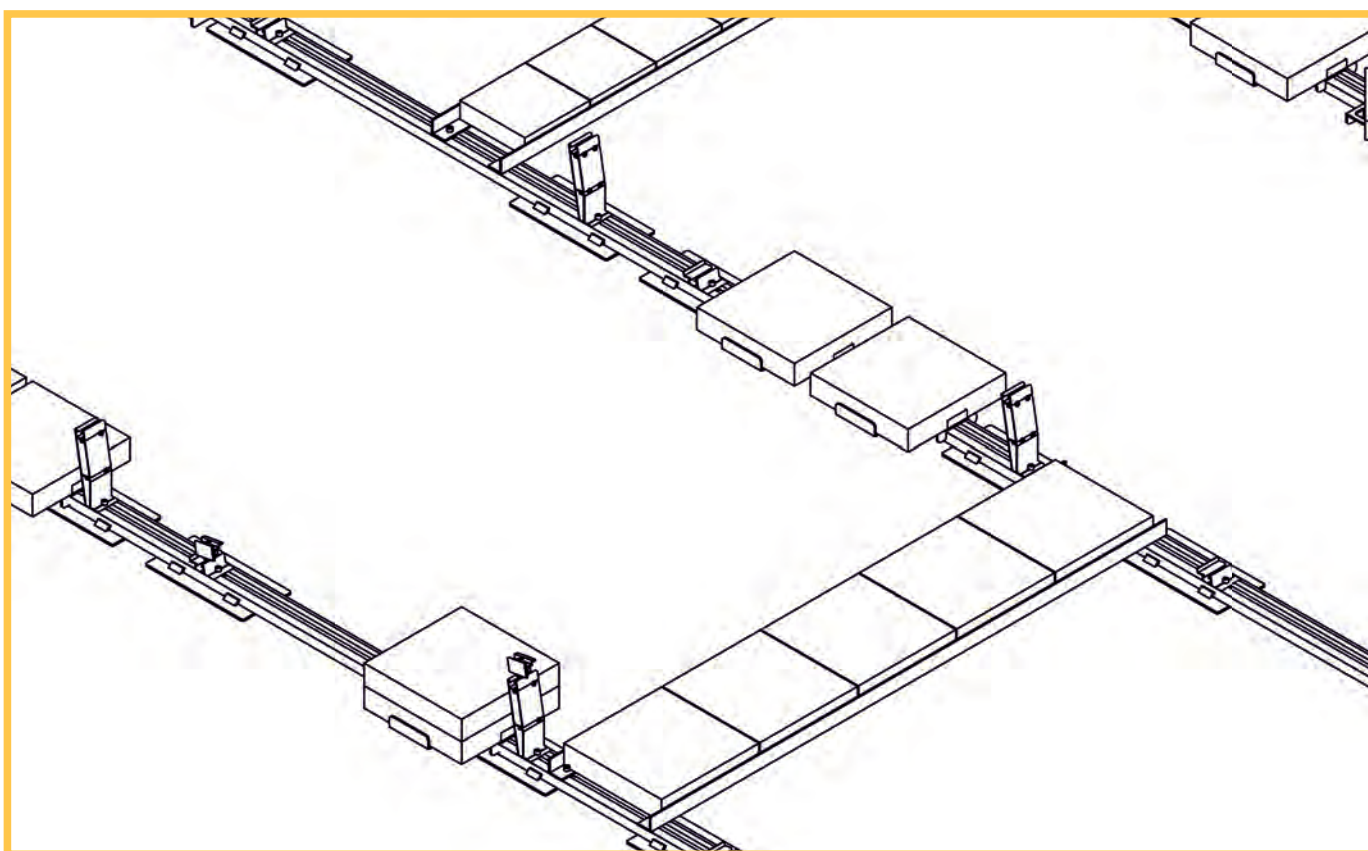
1. osnovne mere i raspored elemenata u zavisnosti od orijentacije / basic measures and arrangement of elements depending on orientation



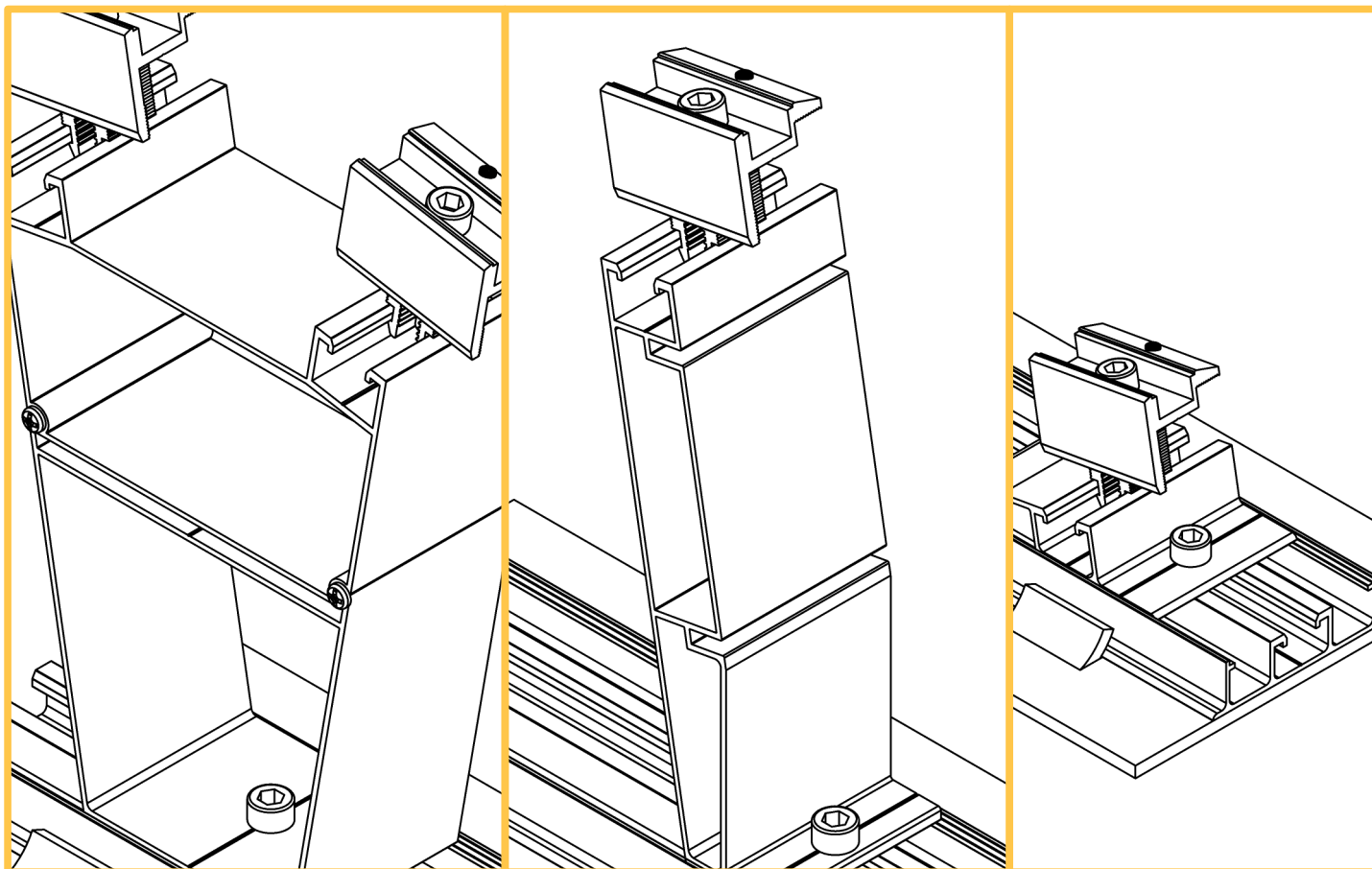
2. u zavisnosti od smera montaže rasporediti aluminijumske šine i zaštitne podloge / depending on the direction of installation, arrange aluminum rails and protective bases



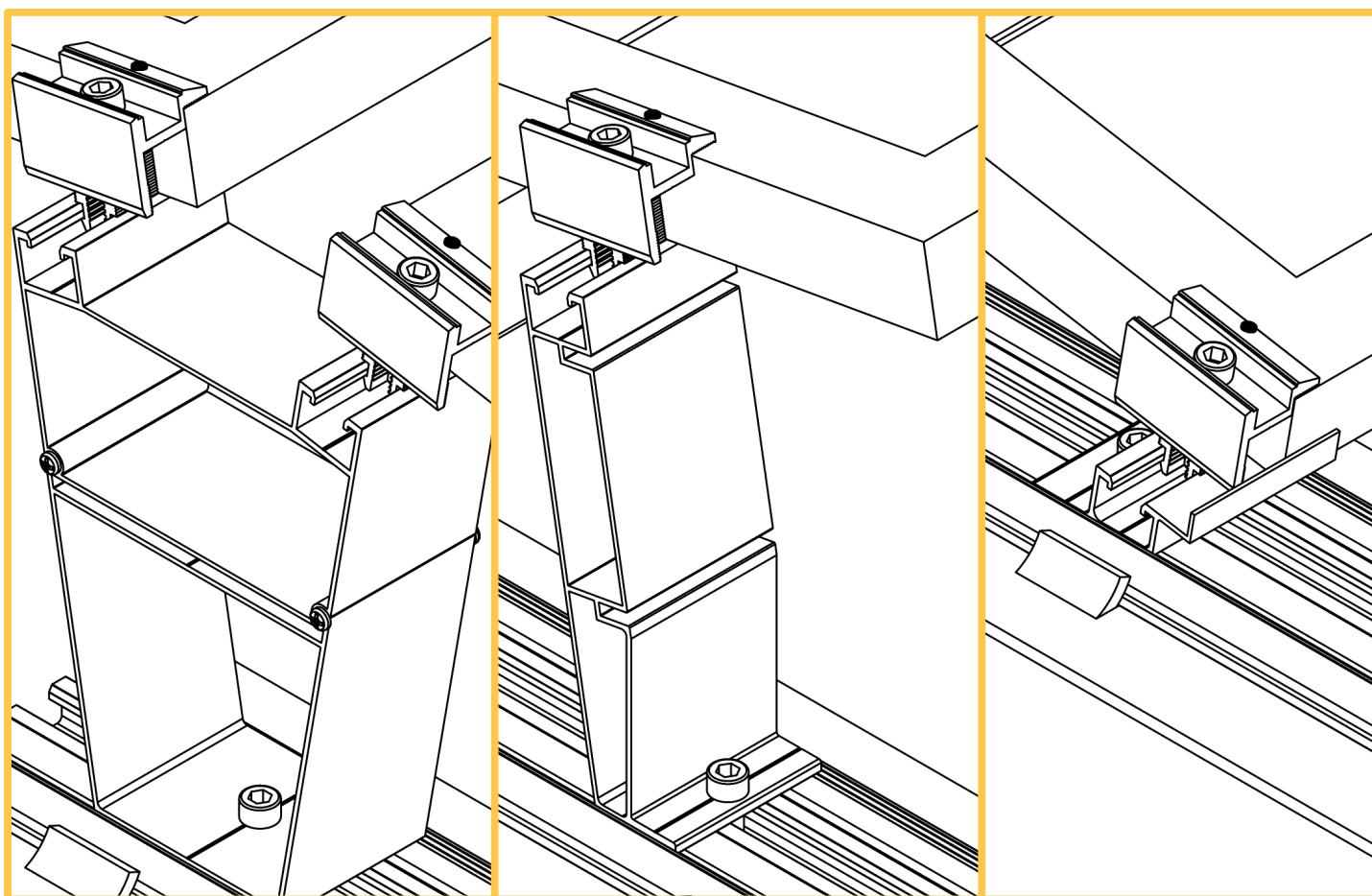
3. postaviti gornje i donje nosače i pritegnuti ih silom od 14Nm / install the upper and lower brackets and tighten them with a force of 14Nm



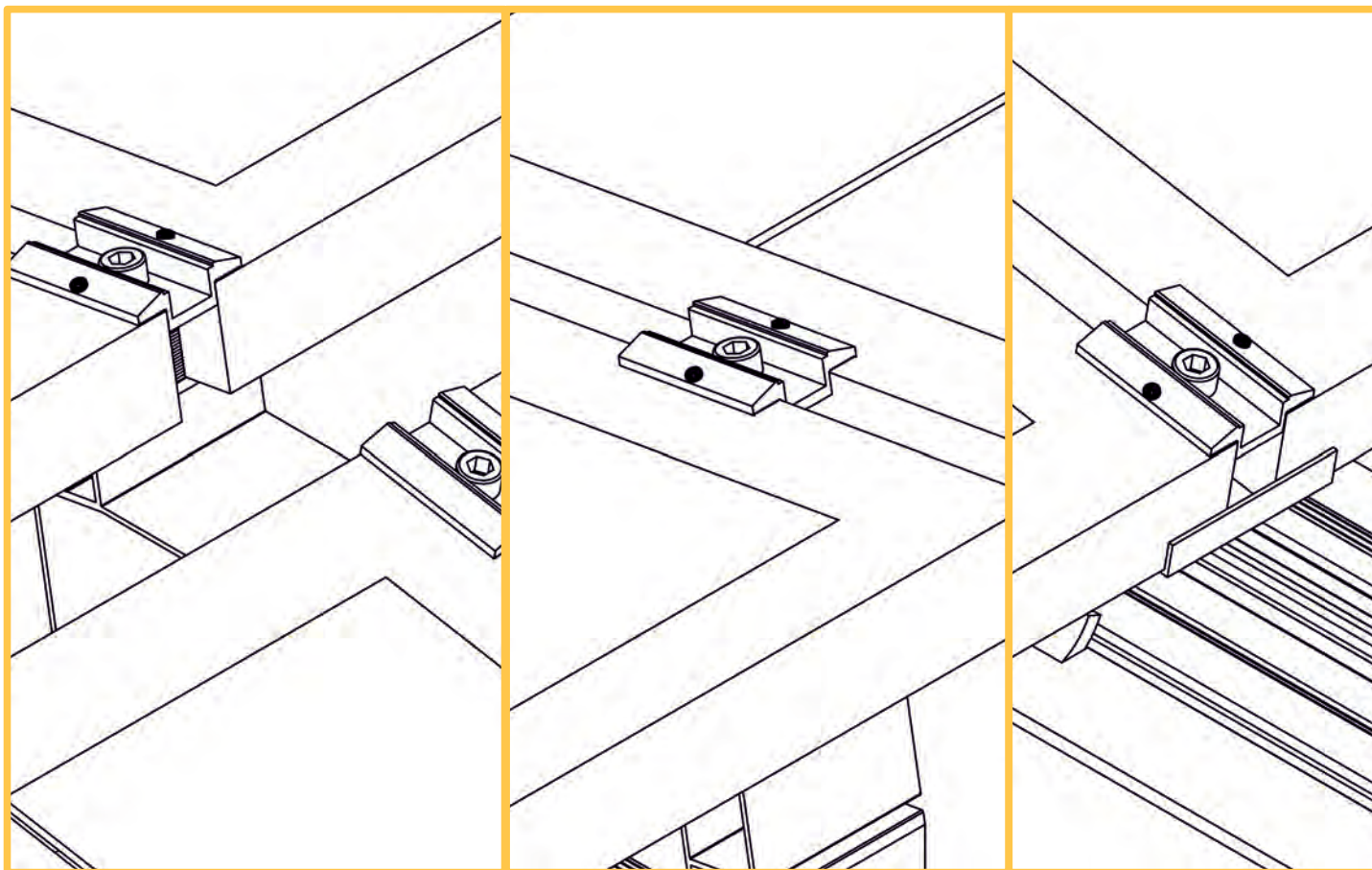
4. rasporediti balaste na osnovu statičkog proračuna / distribute the ballasts based on the static calculation



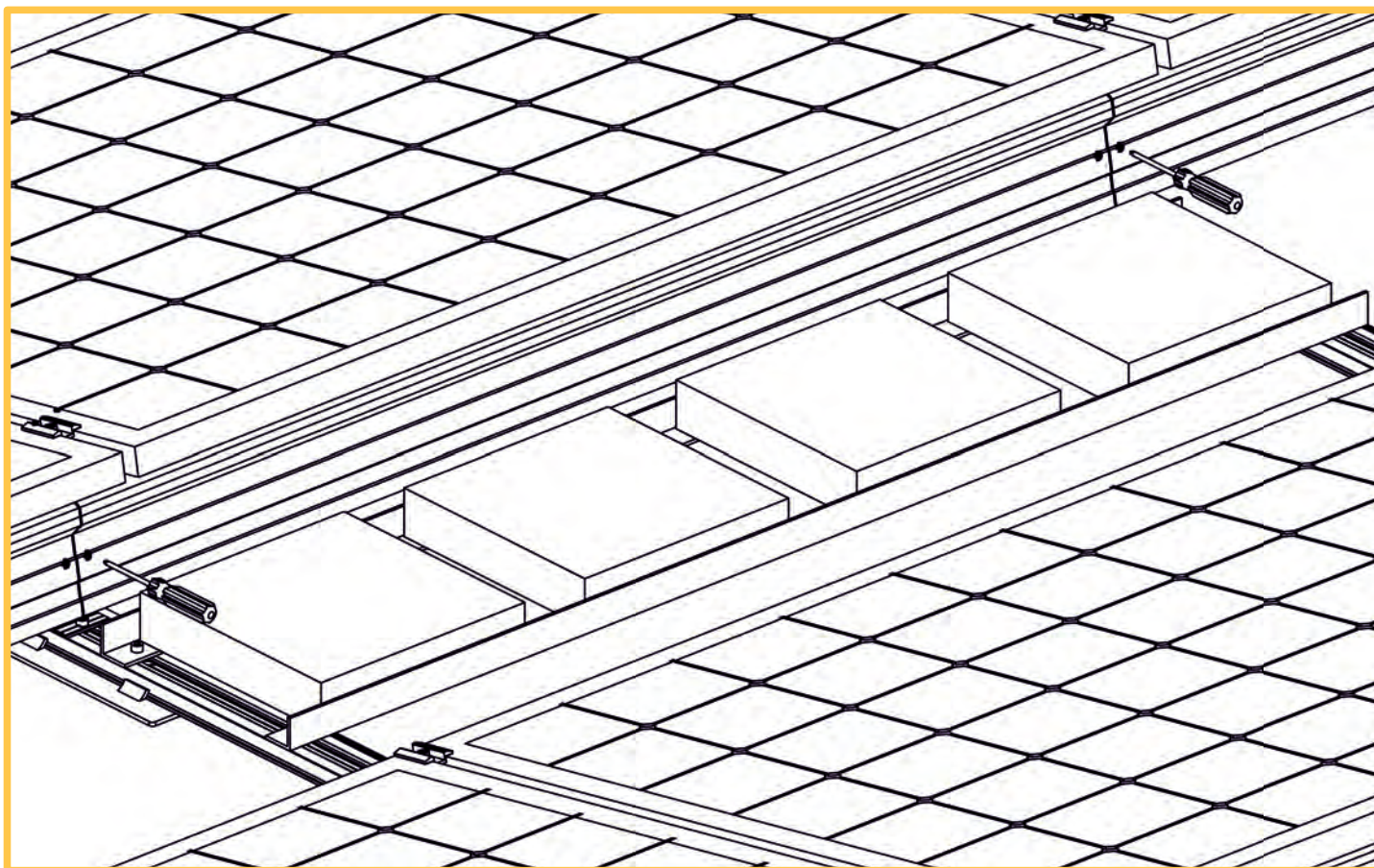
5. kliknuti krajnje klampe u nosače / click the end clamps into the brackets



6. pozicionirati prvi red solarnih panela / position the first row of solar panels



7. kliknuti srednje klampe, postaviti sledeći red panela i pritegnuti klampe silom od 14Nm / click the middle clamps, place the next row of panels and tighten the clamps with a force of 14Nm

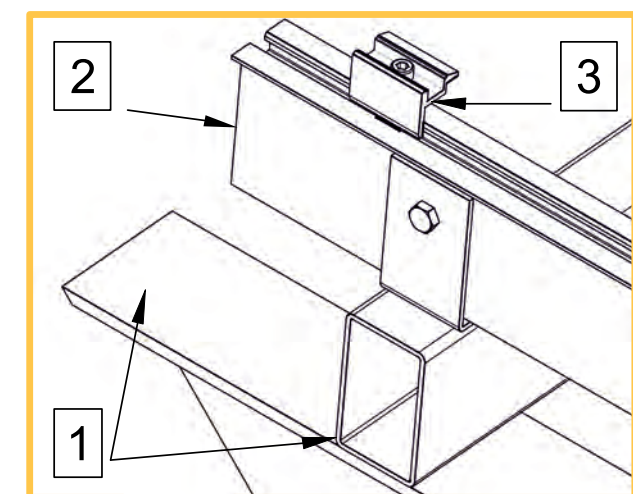


8. pri montaži sa orijentacijom jug postaviti deflektore na krajevima segmenata / when mounting with a south orientation, place deflectors at the ends of the segments

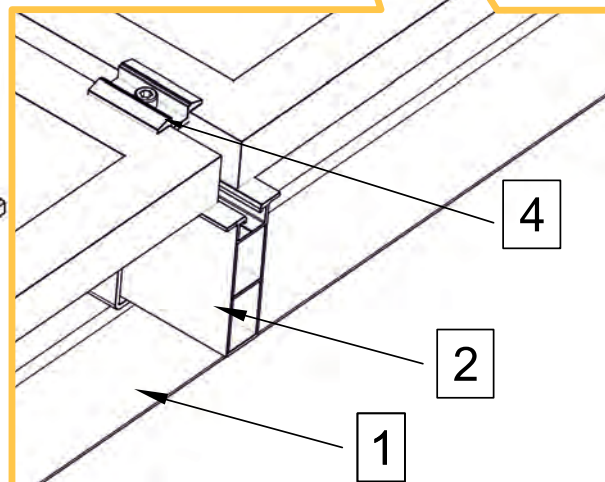
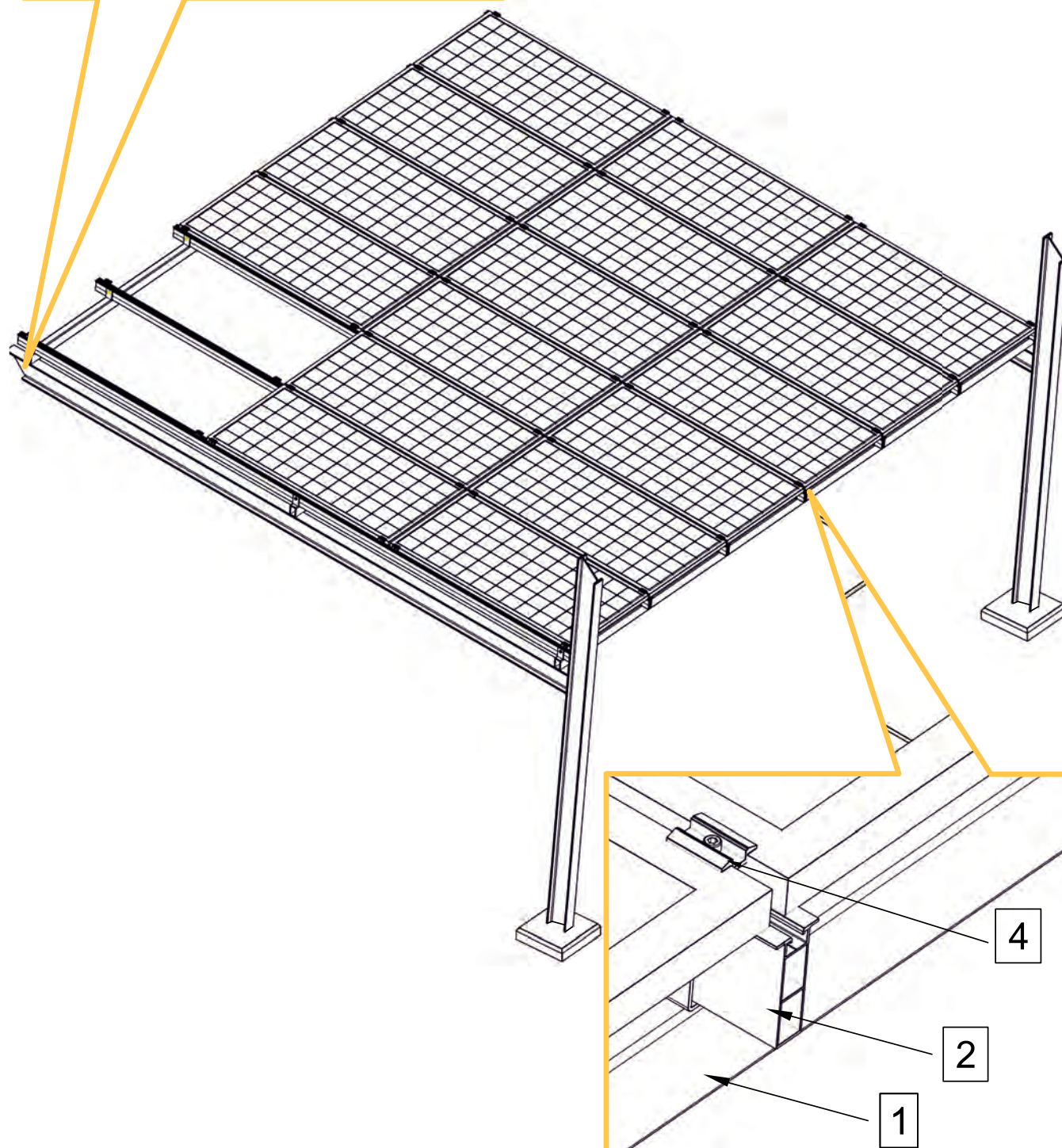


**MONTAŽA NA NADSTREŠNICI
CANOPY INSTALLATION**



DETALJ MONTAŽE NA NADSTREŠNICU
CANOPY MOUNTING DETAIL

- 1 čelična konstrukcija
steel structure
- 2 aluminijumski profil - S14
aluminum profile S14
- 3 srednja klampa - S30,S38,S80,S82
middle clamp - S30,S38,S80,S82
- 4 krajnja klampa - S31,S39,S81,S83
end clamp - S31,S39,S81,S83



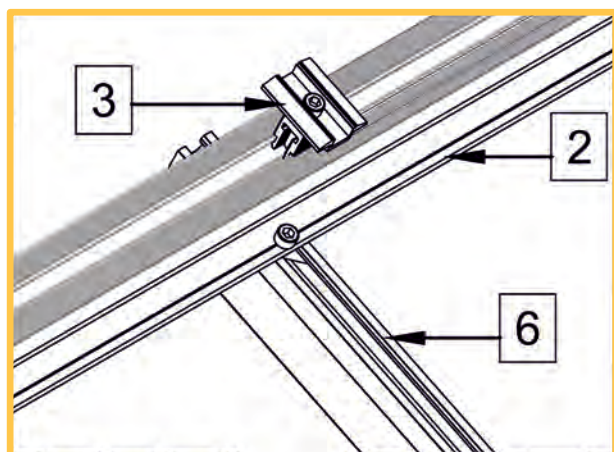
SOLAR



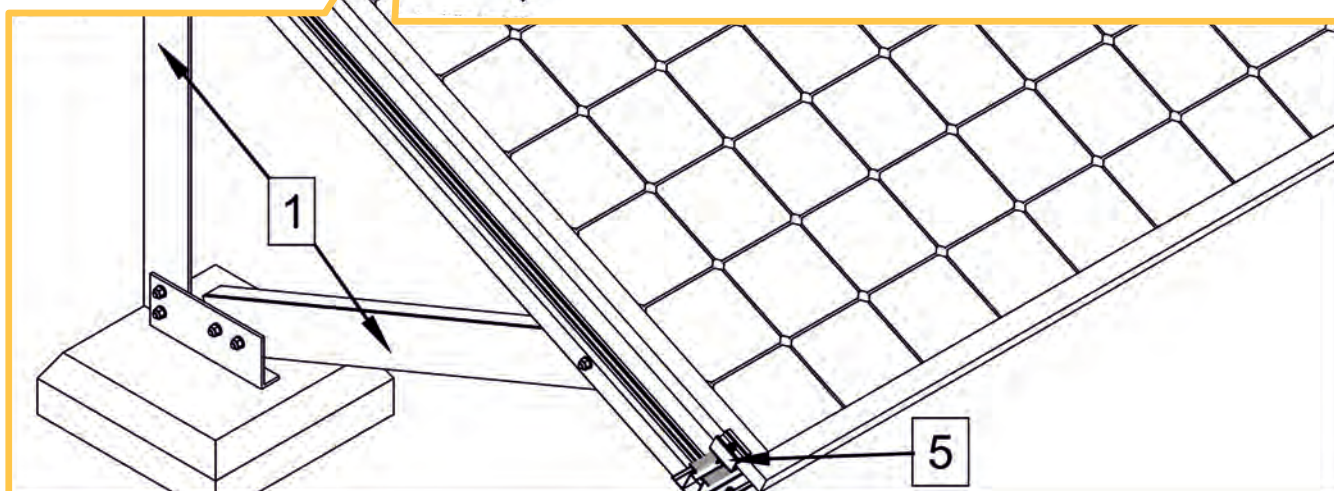
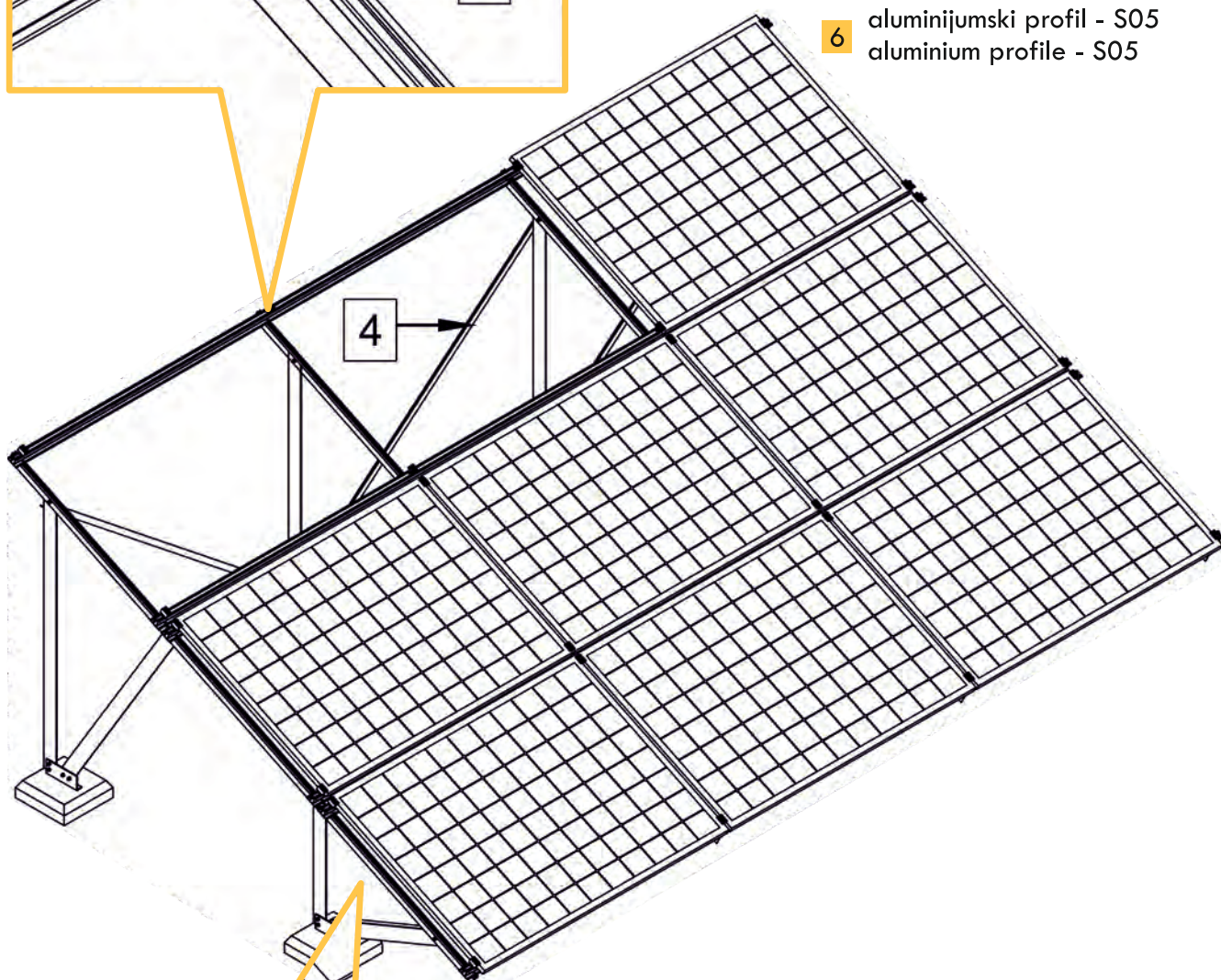
MONTAŽA NA TLU
GROUND INSTALLATION

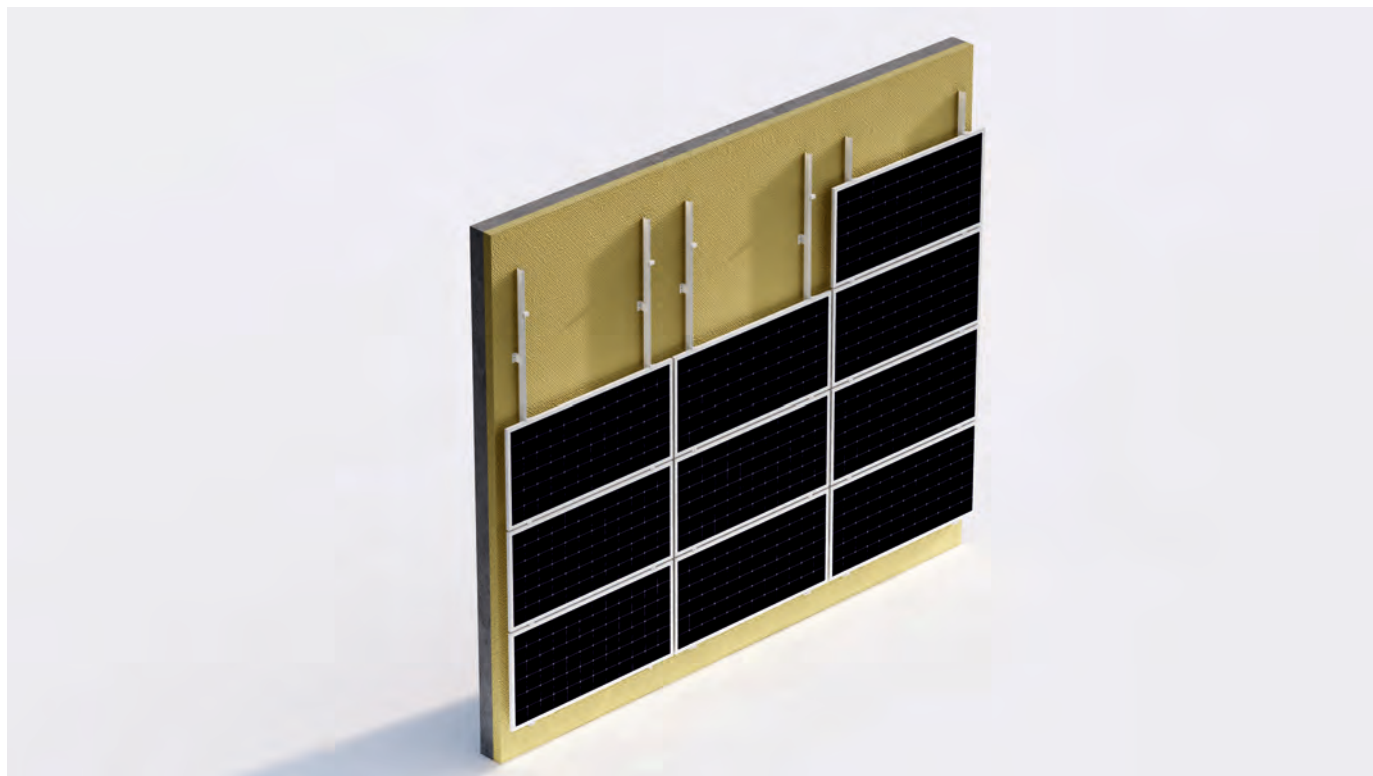


DETALJ MONTAŽE NA TLU
GROUND MOUNTING DETAIL



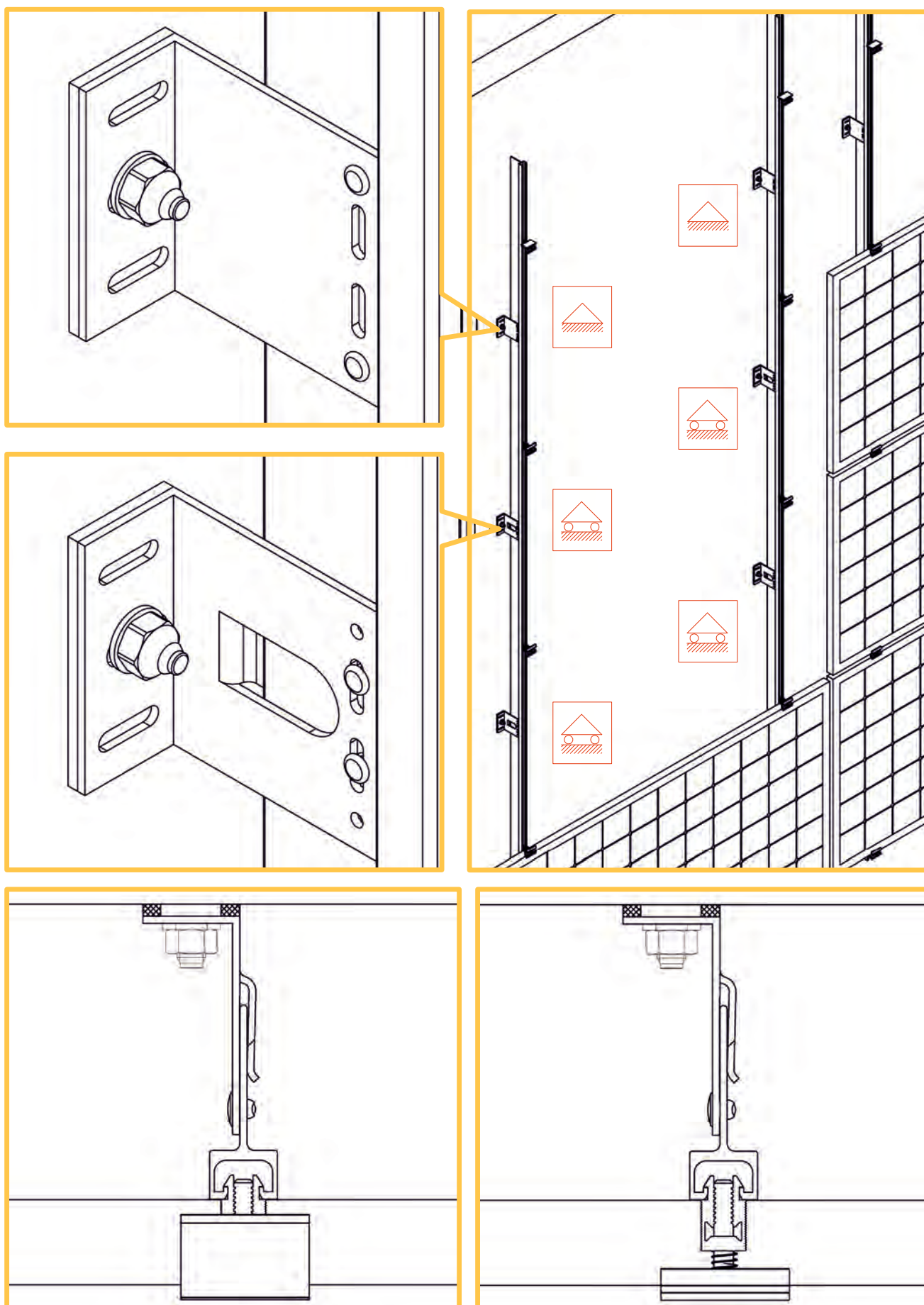
- 1** aluminijumski profil L4080
aluminium profile L4080
- 2** aluminijumski profil S16
aluminium profile S16
- 3** srednja klampa - S30,S38,S80,S82
middle clamp - S30,S38,S80,S82
- 4** aluminijumski profil L4040
aluminium profile L4040
- 5** krajnja klampa - S31,S39,S81,S83
end clamp - S31,S39,S81,S83
- 6** aluminijumski profil - S05
aluminium profile - S05





**MONTAŽA NA FASADI
FACADE INSTALLATION**



DETALJ VERTIKALNE I KOSE FASADE - VENT FASADA
DETAIL OF VERTICAL AND SLOPE FACADE - VENT FACADE

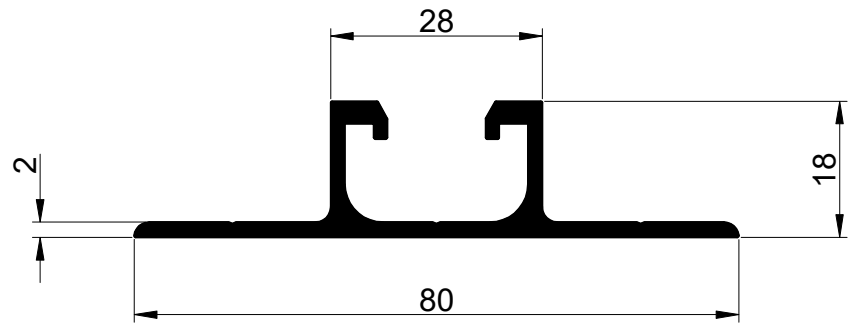
* za montažu na fasadi konsultovati Tehnomarket VENT katalog / for the facade installation please consult the Tehnomarket VENT catalog



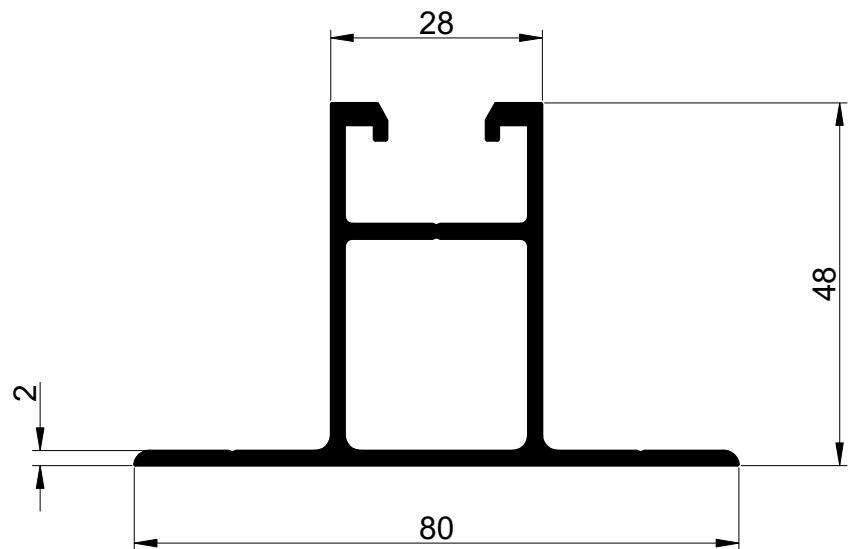
Pregled sistema
System overview

SOLAR

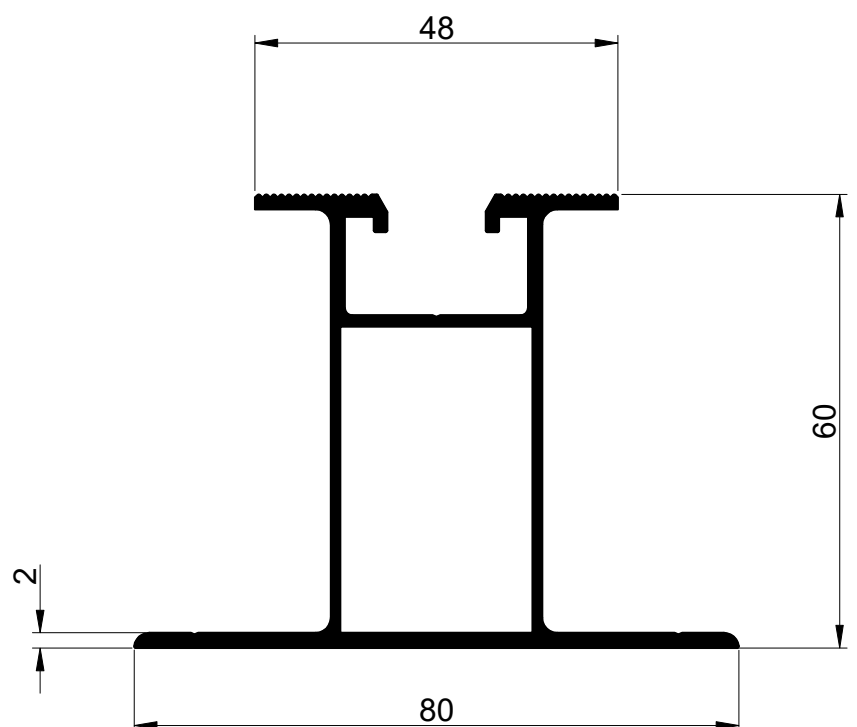
S01	0,740	kg/m`
S	2,691	cm ²
I _x	1,006	cm ⁴
I _y	9,778	cm ⁴
W _x	0,786	cm ³
W _y	2,445	cm ³



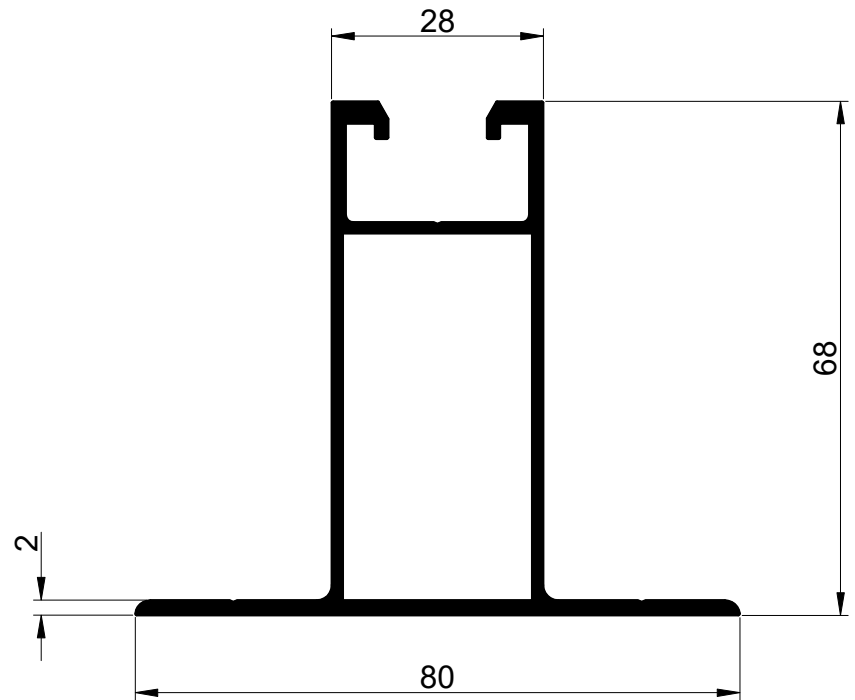
S02	1,164	kg/m`
S	4,232	cm ²
I _x	11,86	cm ⁴
I _y	12,39	cm ⁴
W _x	4,007	cm ³
W _y	3,098	cm ³



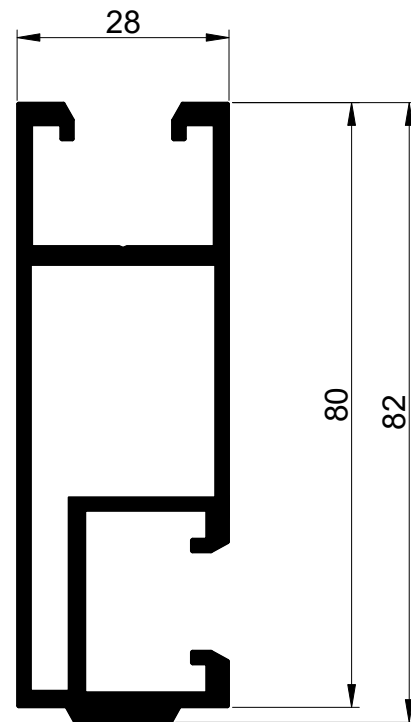
S16	1,216	kg/m`
S	4,423	cm ²
I _x	24,823	cm ⁴
I _y	13,156	cm ⁴
W _x	7,461	cm ³
W _y	3,289	cm ³



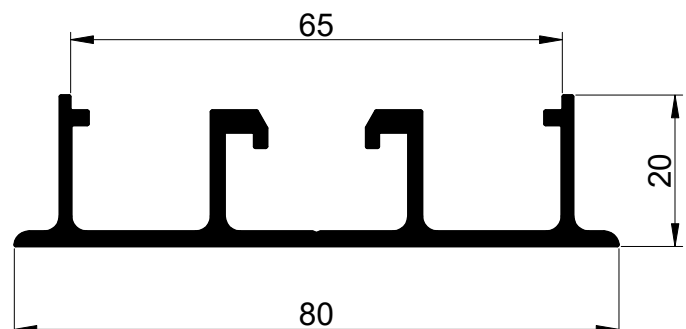
S17	1,227	kg/m`
S	4,462	cm ²
I _x	28,632	cm ⁴
I _y	12,482	cm ⁴
W _x	7,078	cm ³
W _y	3,12	cm ³



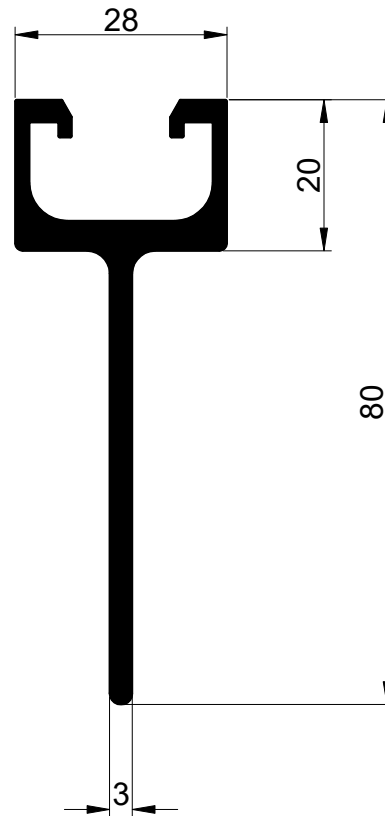
S04	1,521	kg/m`
S	5,532	cm ²
I _x	39,59	cm ⁴
I _y	6,053	cm ⁴
W _x	9,101	cm ³
W _y	4,118	cm ³



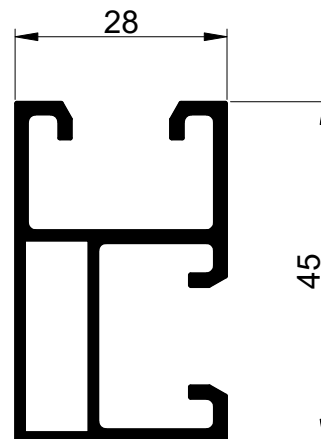
S09	0,908	kg/m`
S	3,3	cm ²
I _x	1,41	cm ⁴
I _y	17,26	cm ⁴
W _x	1,05	cm ³
W _y	4,32	cm ³



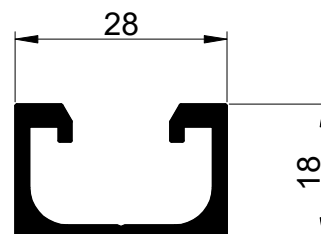
S05	1,111	kg/m`
S	4,038	cm ²
I _x	20,27	cm ⁴
I _y	2,23	cm ⁴
W _x	3,982	cm ³
W _y	1,593	cm ³



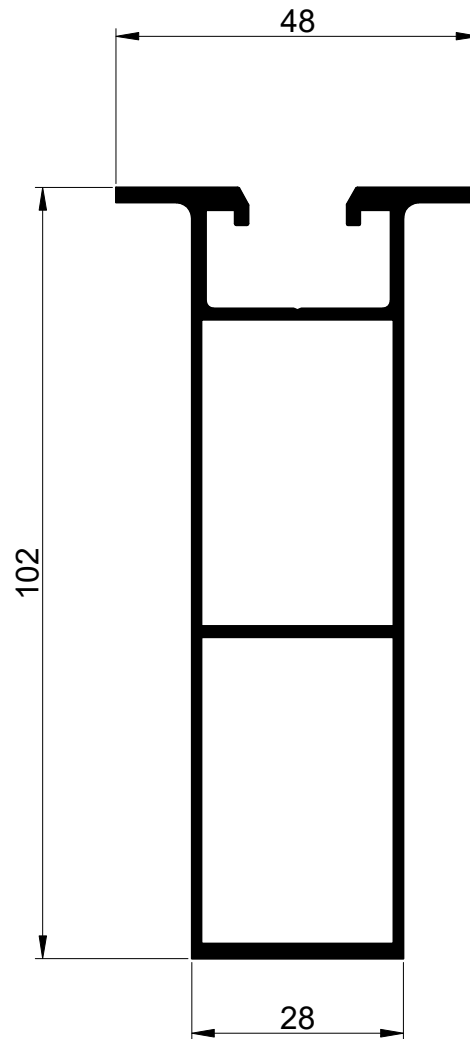
S18	0,745	kg/m`
S	2,71	cm ²
I _x	5,95	cm ⁴
I _y	2,87	cm ⁴
W _x	2,60	cm ³
W _y	1,98	cm ³



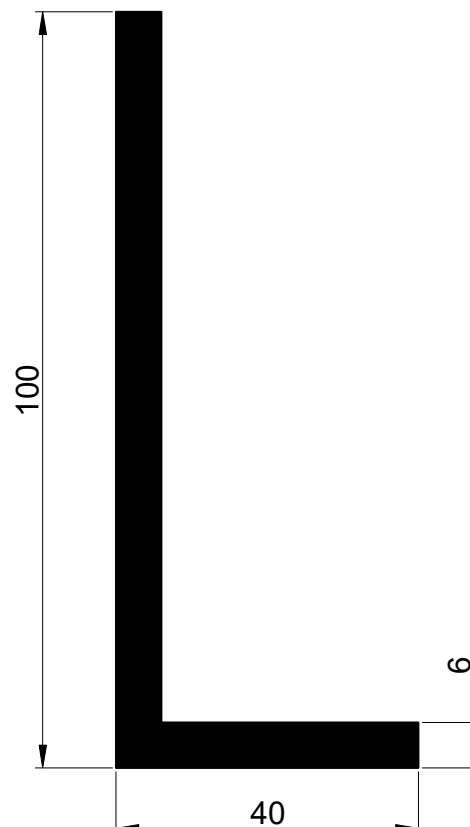
S03	0,454	kg/m`
S	1,653	cm ²
I _x	0,702	cm ⁴
I _y	1,858	cm ⁴
W _x	0,695	cm ³
W _y	1,327	cm ³



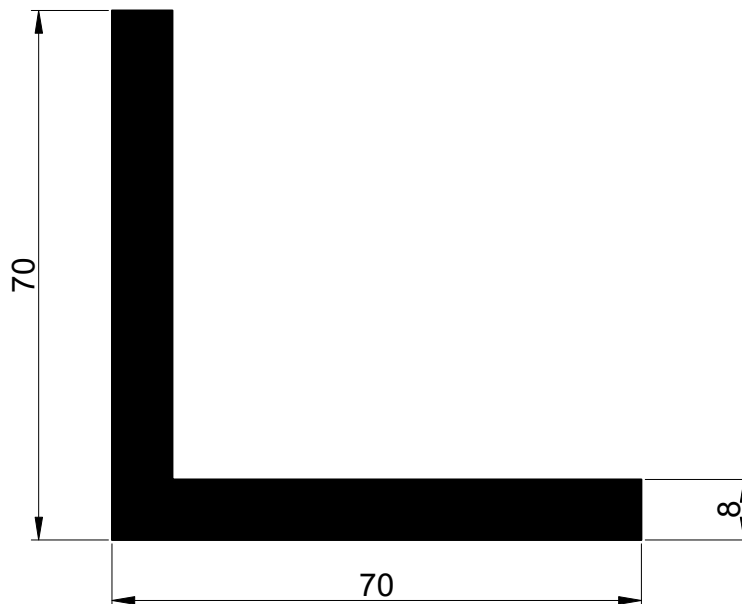
S14	1,343	kg/m`
S	4,885	cm ²
Ix	61,02	cm ⁴
Iy	7,51	cm ⁴
Wx	10,63	cm ³
Wy	3,13	cm ³



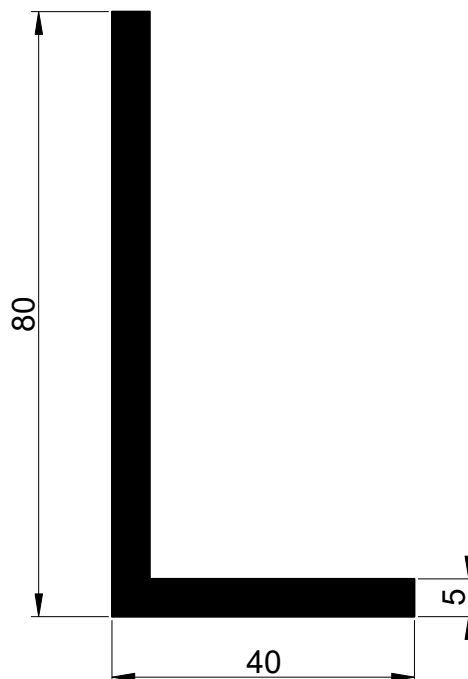
L401006	2,211	kg/m`
S	8,04	cm ²
Ix	83,69	cm ⁴
Iy	8,23	cm ⁴
Wx	13,52	cm ³
Wy	2,58	cm ³



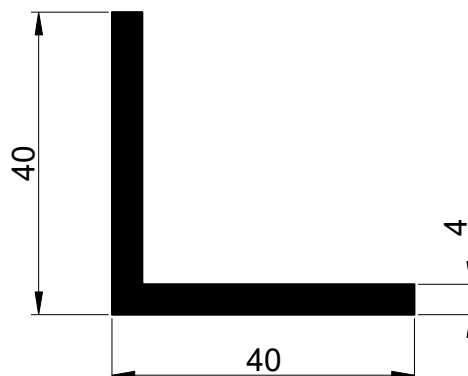
L70708	2,904	kg/m`
S	10,56	cm ²
I _x	76,95	cm ⁴
I _y	19,87	cm ⁴
W _x	15,53	cm ³
W _y	4,01	cm ³

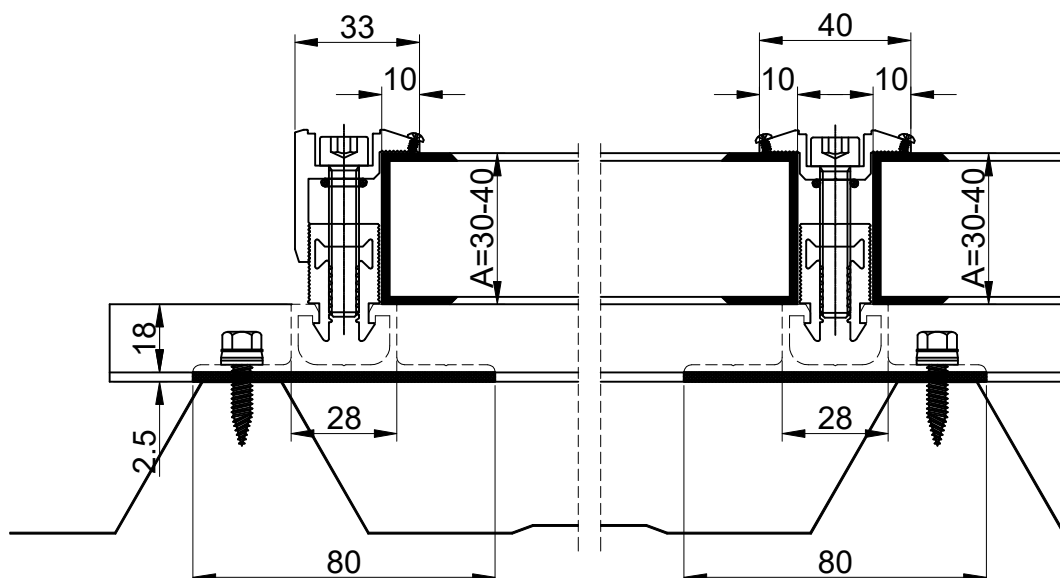


L40805	1,581	kg/m`
S	5,75	cm ²
I _x	38,489	cm ⁴
I _y	6,739	cm ⁴
W _x	7,487	cm ³
W _y	2,145	cm ³



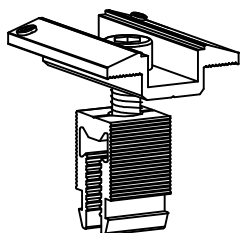
L40404	0,836	kg/m`
S	3,04	cm ²
I _x	7,337	cm ⁴
I _y	1,880	cm ⁴
W _x	2,572	cm ³
W _y	0,66	cm ³



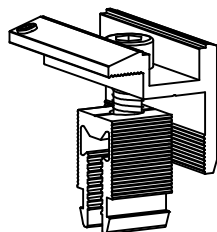


Klampe sa integrisanim sistemom za izjednačavanje potencijala
Alu Clamps with an integrated potential equalization system

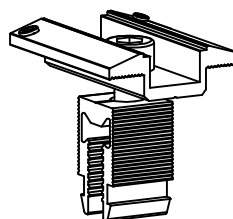
S30 za/for:
A=35-40mm



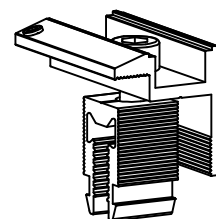
S31 za/for:
A=35-40mm



S80 za/for:
A=30-34mm

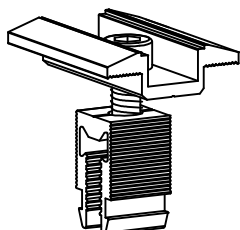


S81 za/for:
A=30-34mm

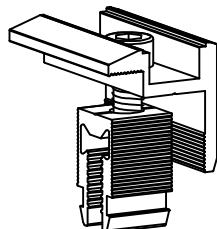


Klampe bez sistema za izjednačavanje potencijala
Alu Clamps without potential equalization system

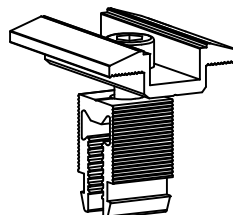
S38 za/for:
A=35-40mm



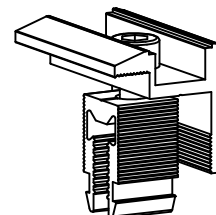
S39 za/for:
A=35-40mm



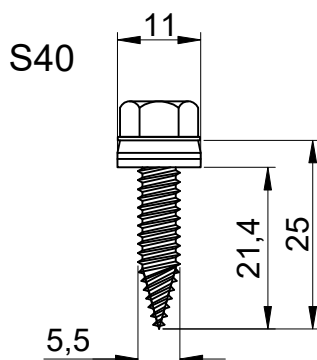
S82 za/for:
A=30-34mm



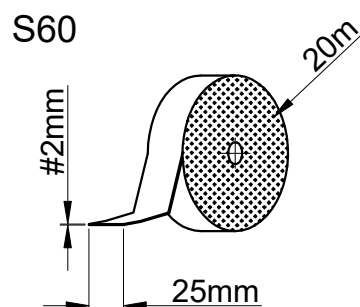
S83 za/for:
A=30-34mm



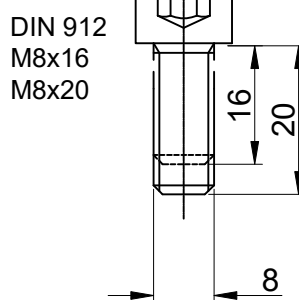
Samorezujući vijak za lim
Taping screw



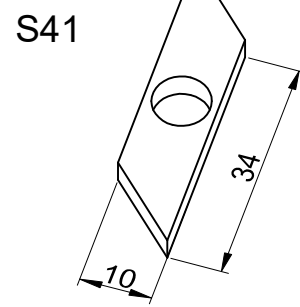
EPDM samolepljiva traka
EPDM duck tape



DIN vijak
DIN screw

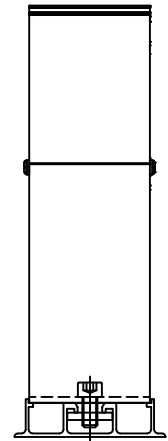
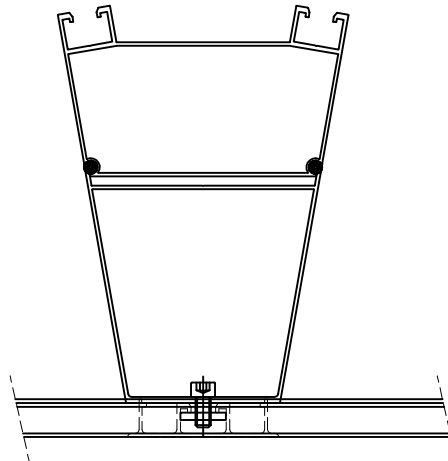
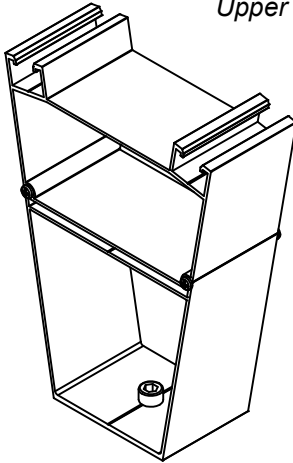


Klizna navrtka
Sliding nut



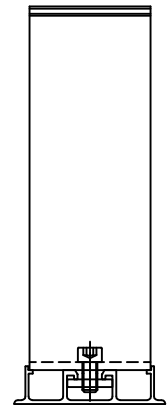
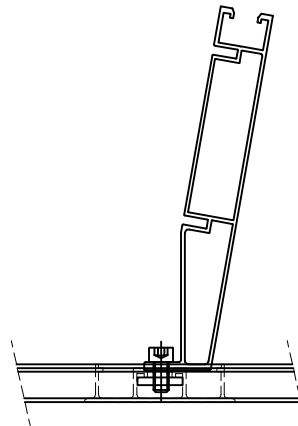
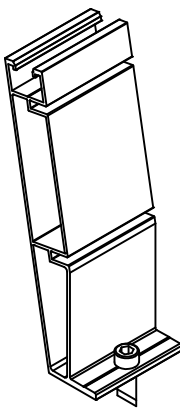
Gornji dvostruki nosač
Upper double bracket

S33



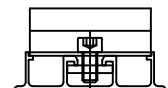
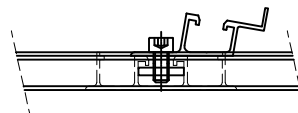
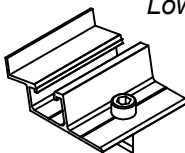
Gornji nosač
Upper bracket

S34



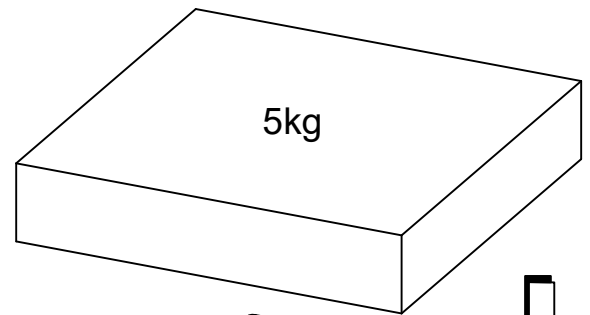
Donji nosač
Lower bracket

S32

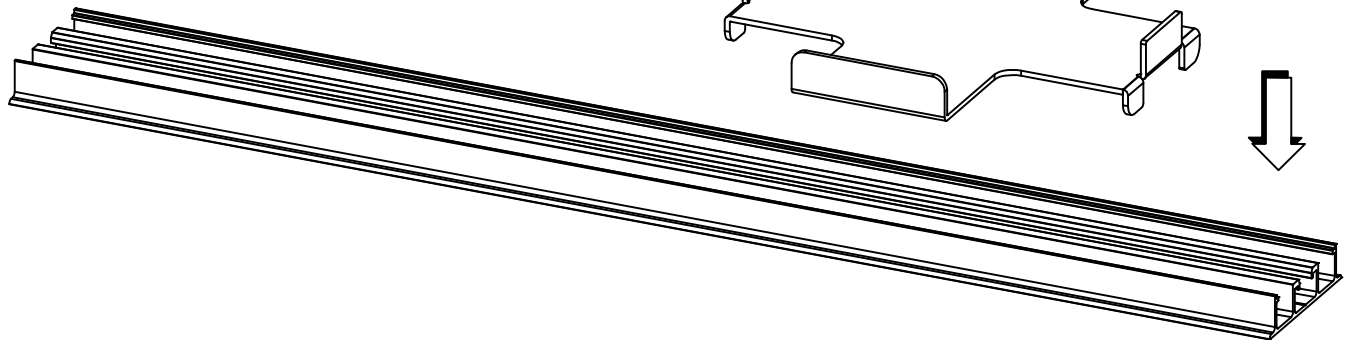
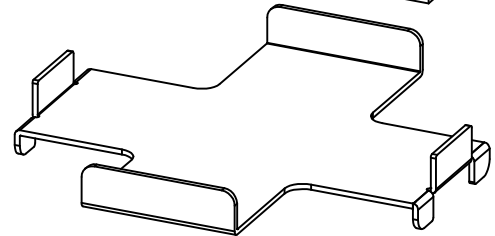


Nosači se isporučuju u sklopu sa vijkom i kliznom navrtkom
Brackets are delivered as a set with a screw and sliding nut

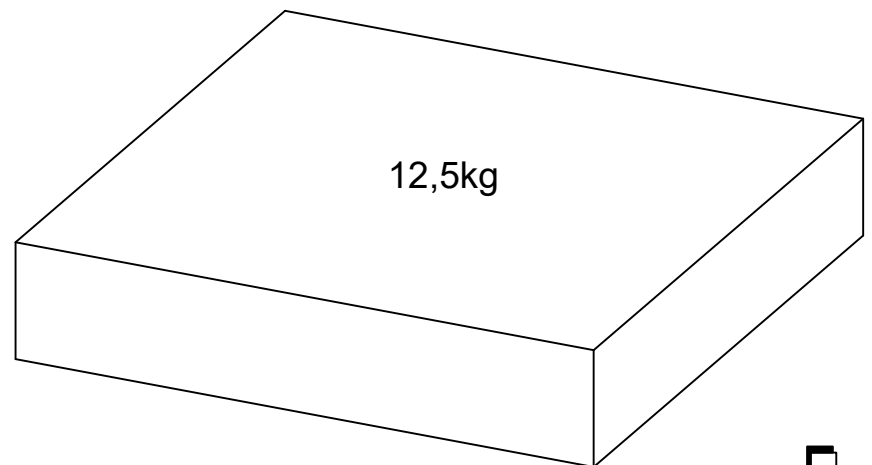
S71 Betonski balast
Concrete ballast



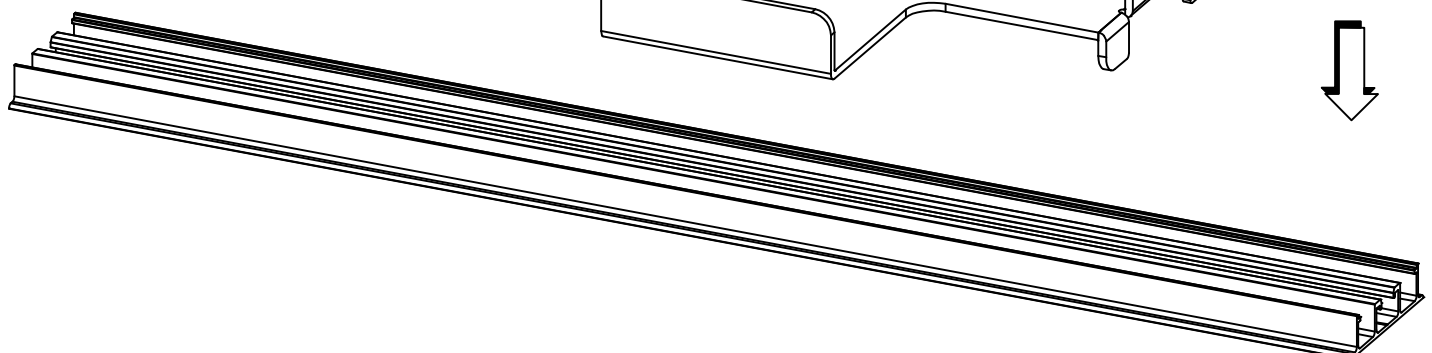
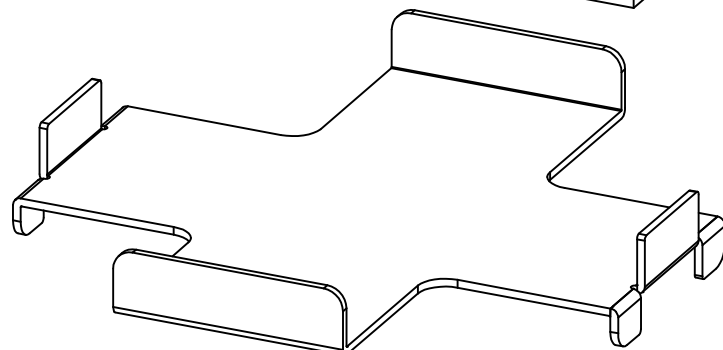
S72 Nosač balasta (S71)
Ballast bracket (S71)



S74 Betonski balast
Concrete ballast

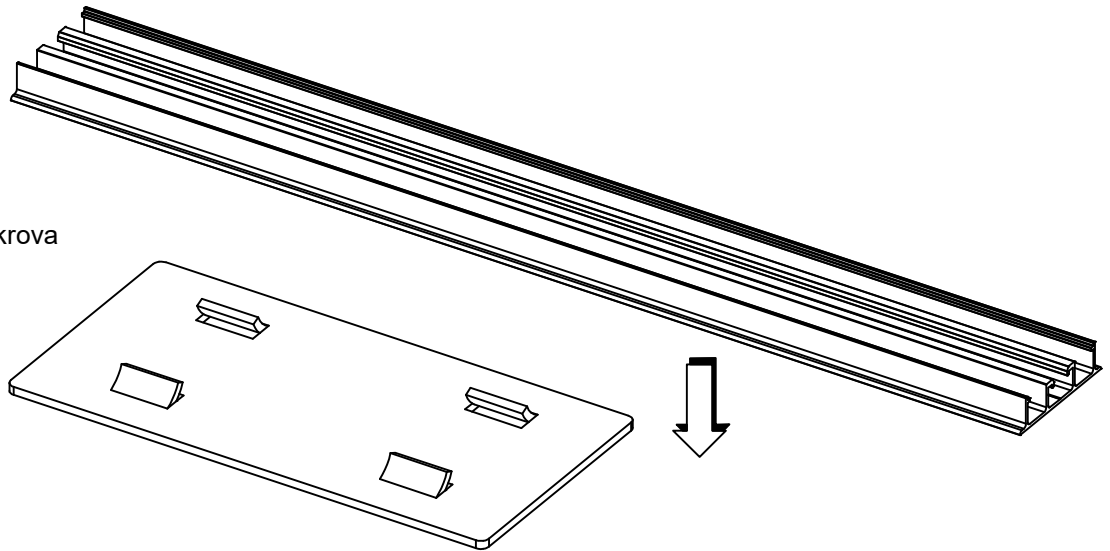


S76 Nosač balasta (S74)
Ballast bracket (S74)



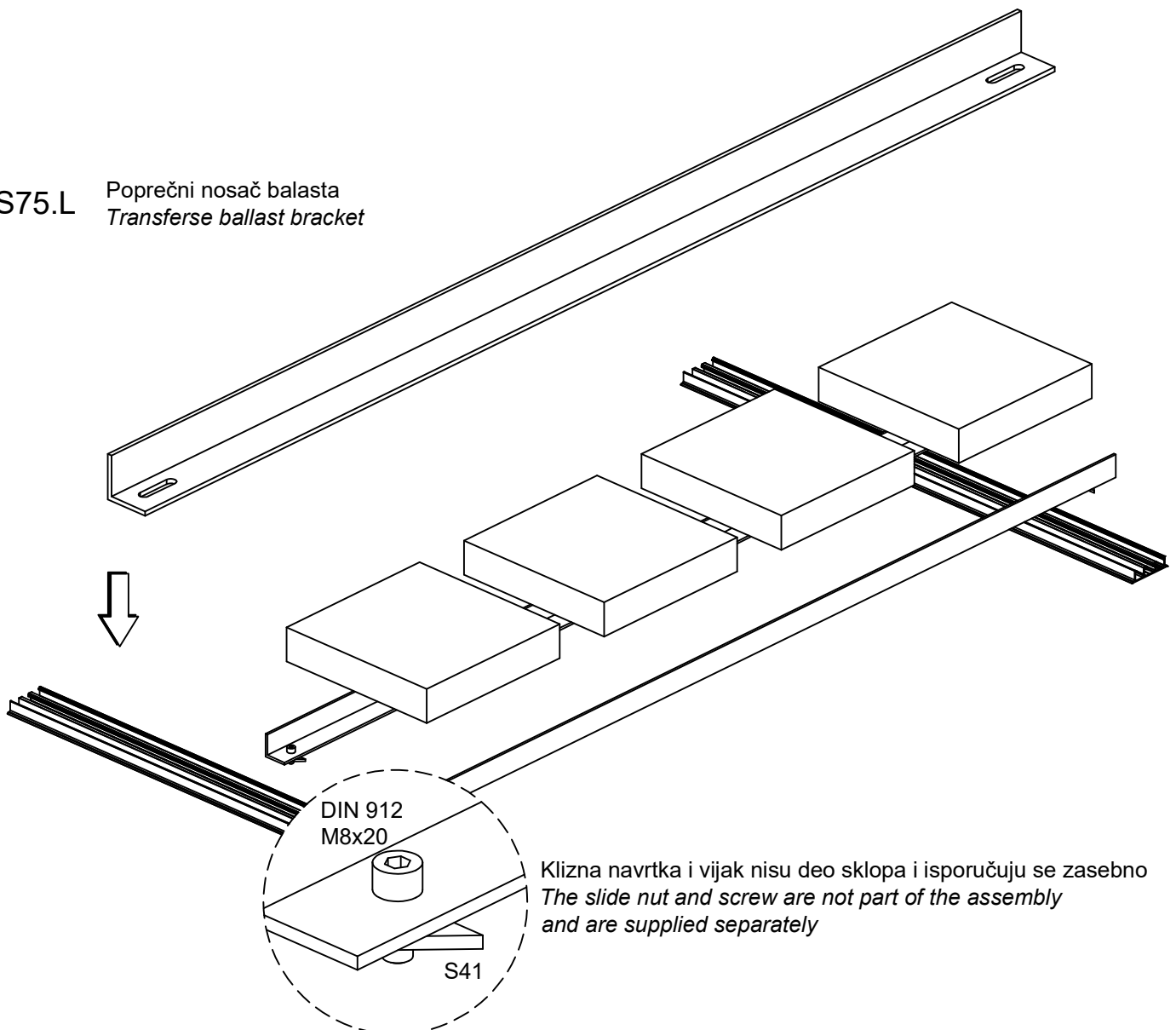
Podloška za zaštitu krova
Roof protection mat

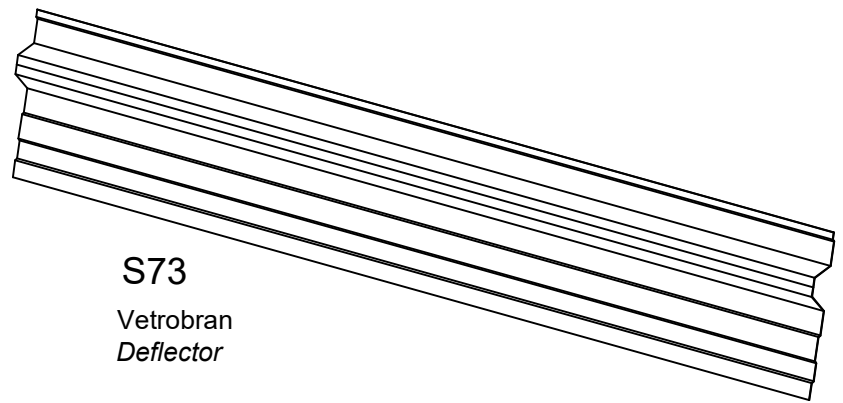
S70



S75.L

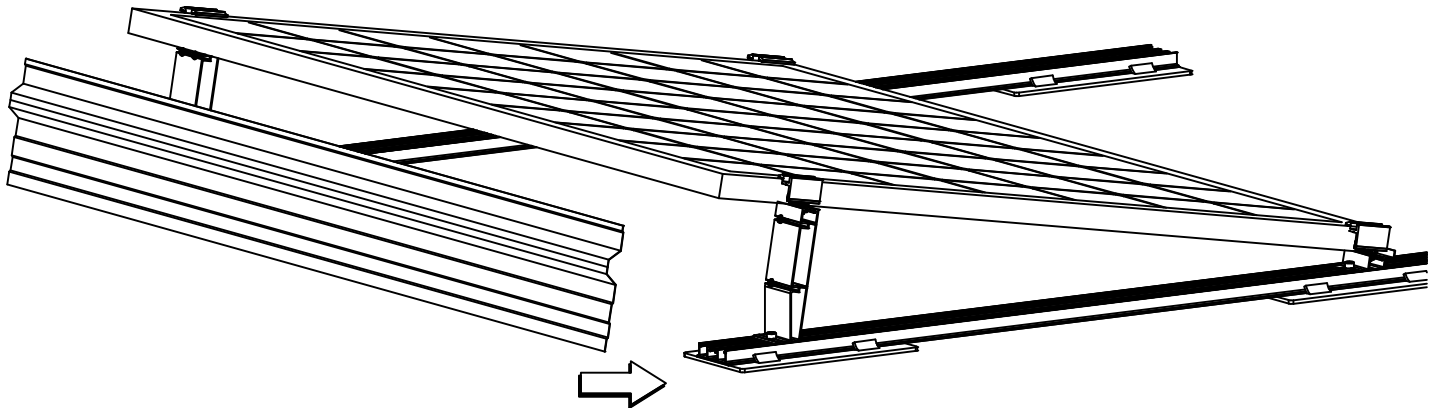
Poprečni nosač balasta
Transverse ballast bracket





S73

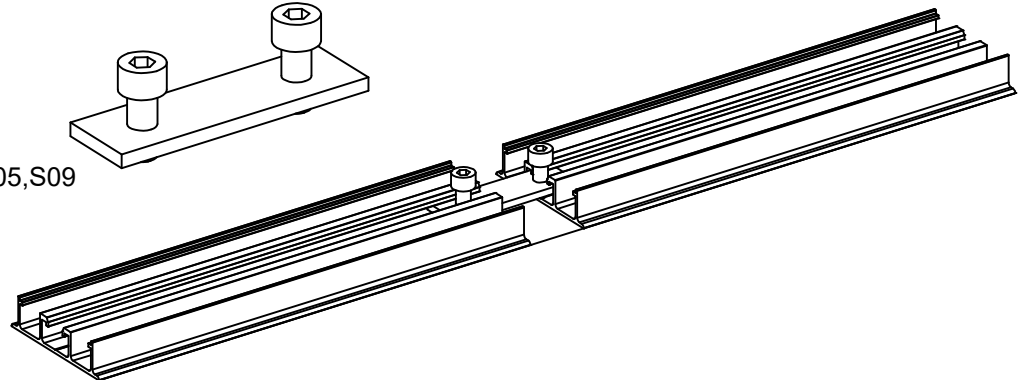
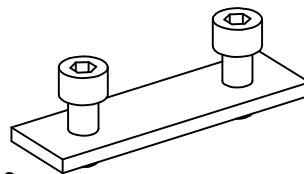
Vetroman
Deflector



S42

Spojnicica šine
Rail coupler

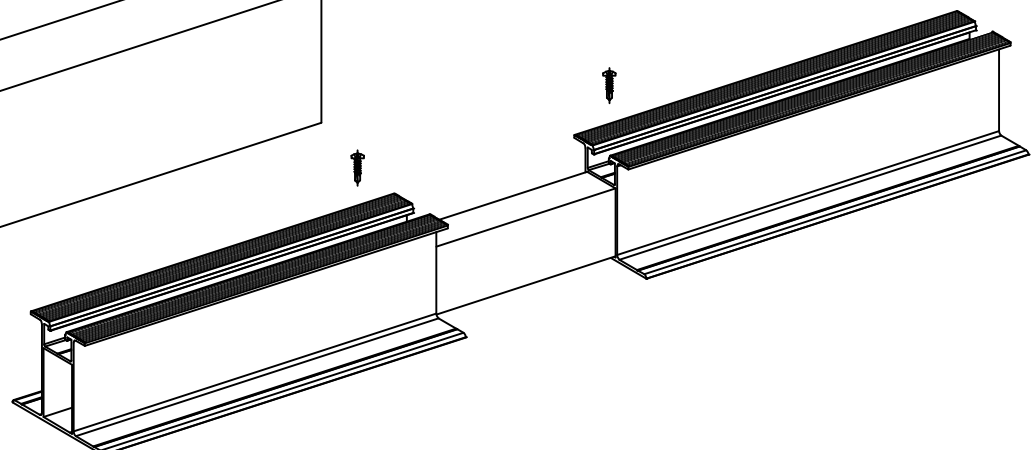
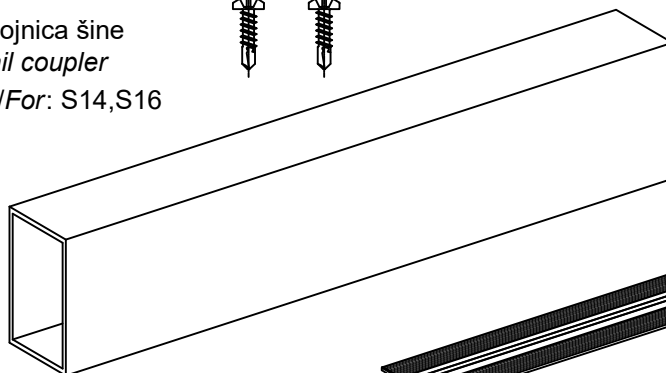
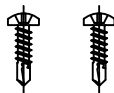
Za/For: S01,S02,S03,S04,S05,S09



S43

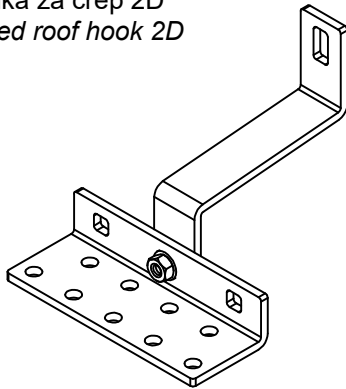
Spojnicica šine
Rail coupler

Za/For: S14,S16



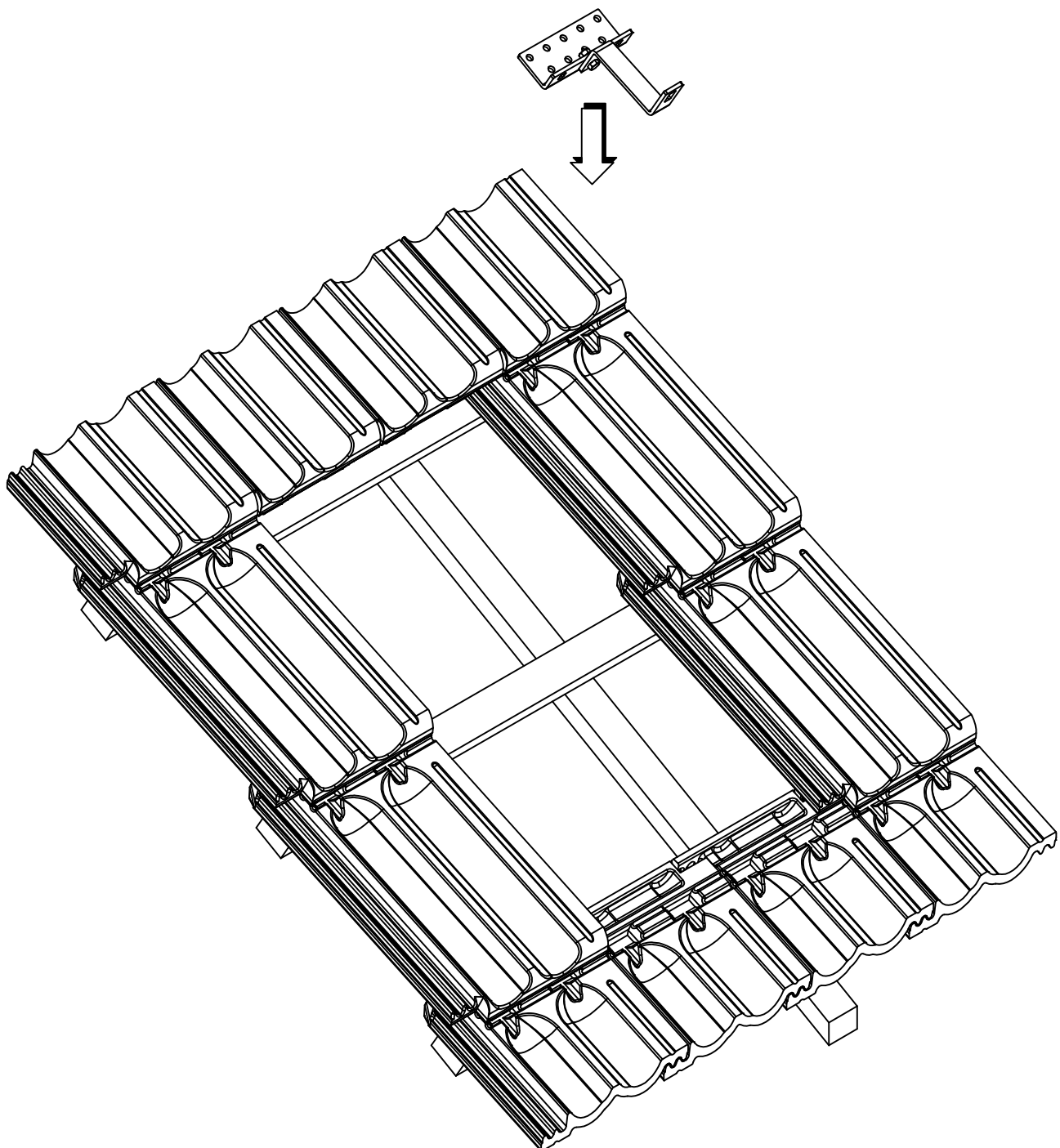
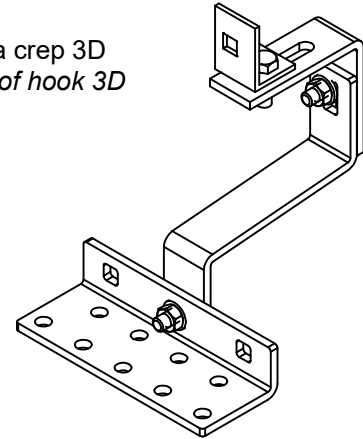
S90

Kuka za crep 2D
Tiled roof hook 2D



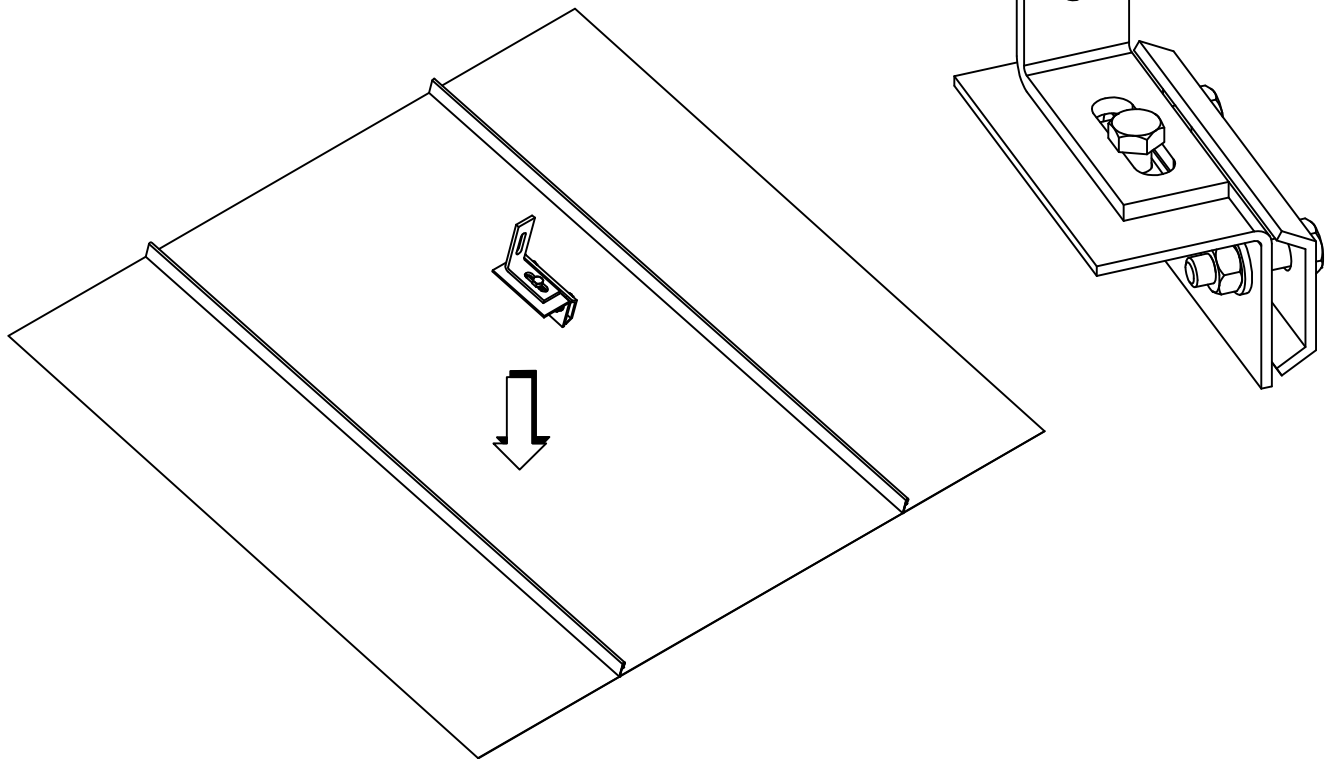
S91

Kuka za crep 3D
Tiled roof hook 3D



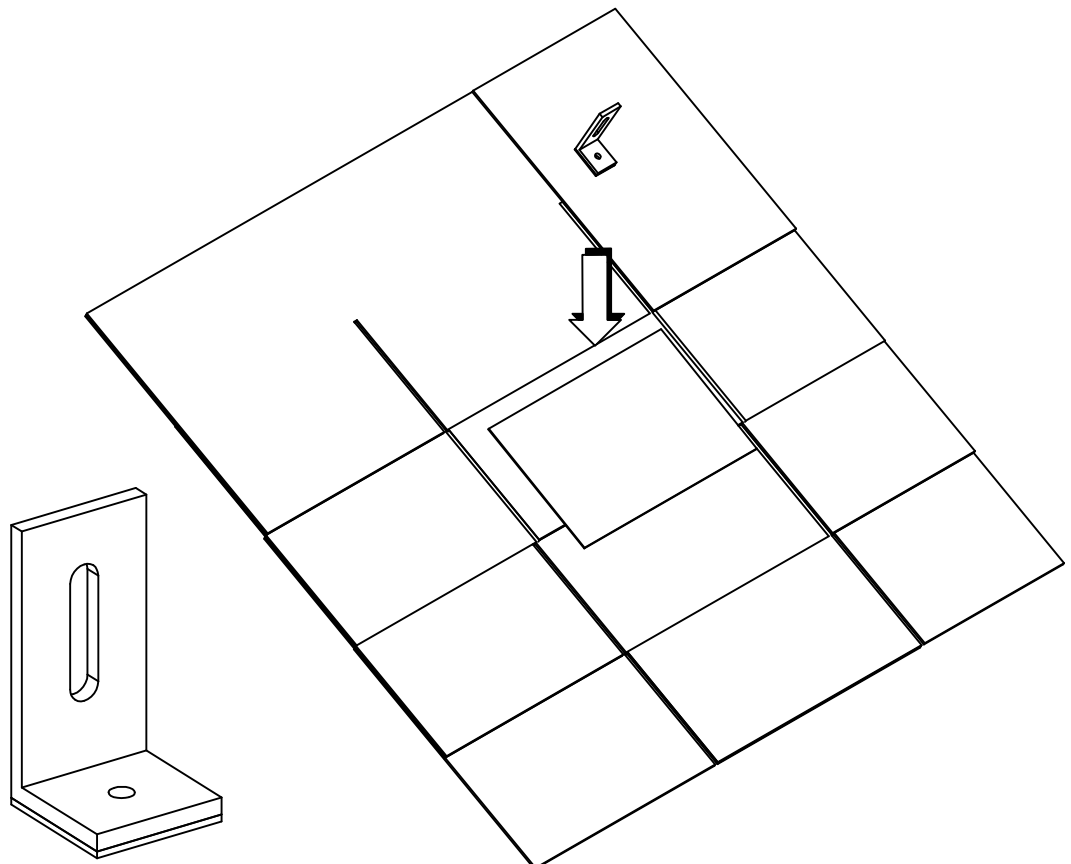
S92

Stezaljka za falcovani lim
Standing seam roof clamp

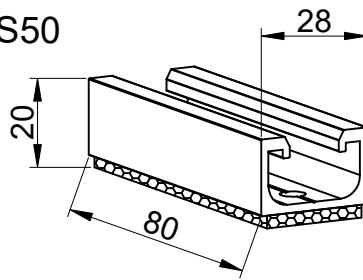


S48

Nosač za krov sa tegolom
Bitumen roofing porter

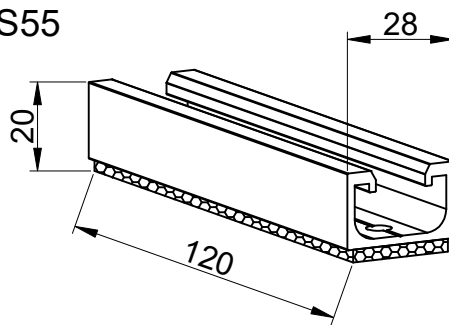


S50

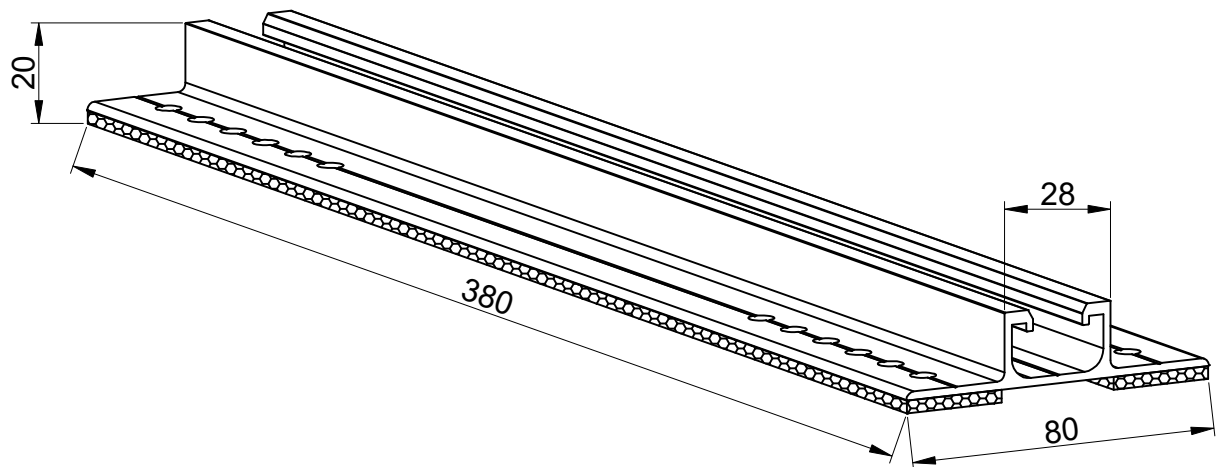


Alu šina
Alu rail

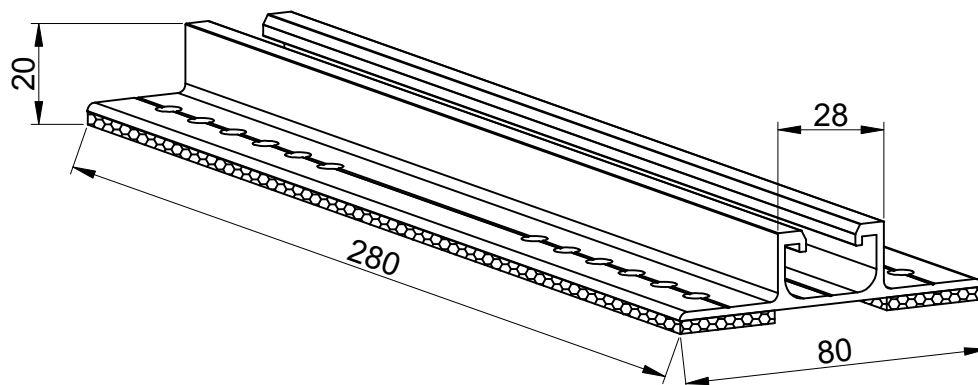
S55



S51

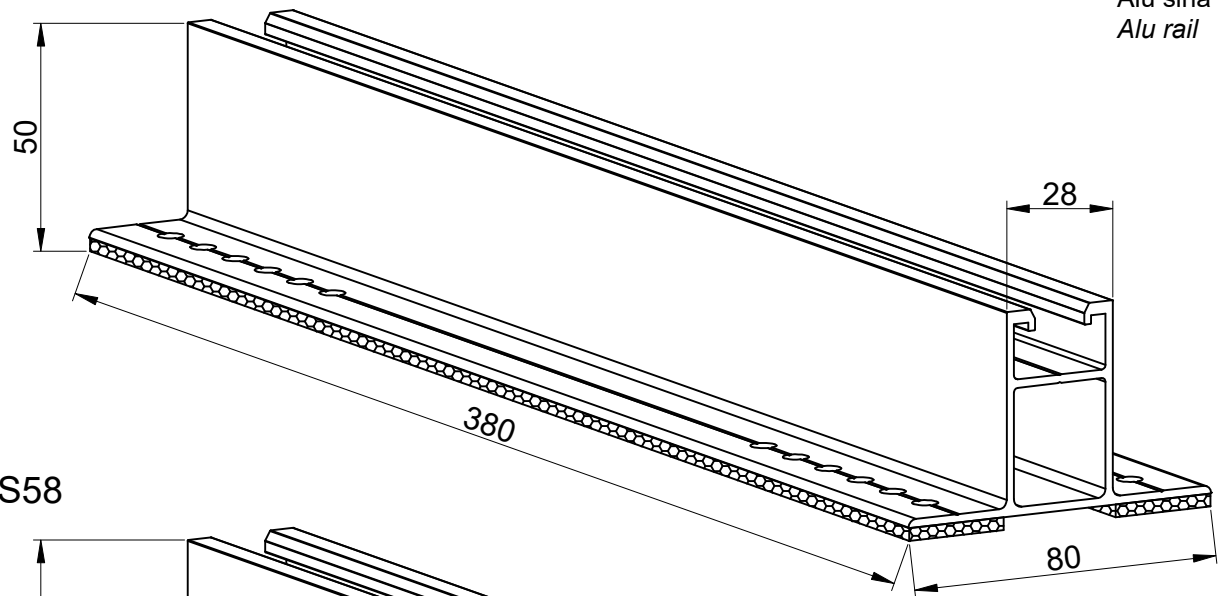


S54

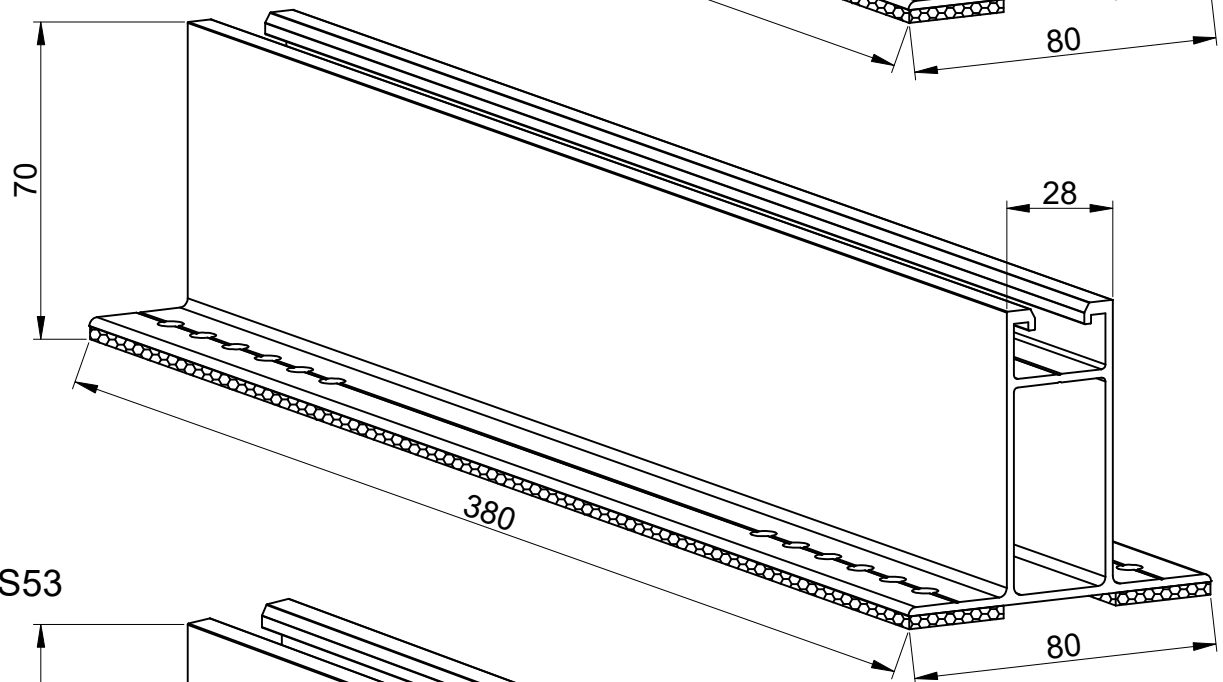


S52

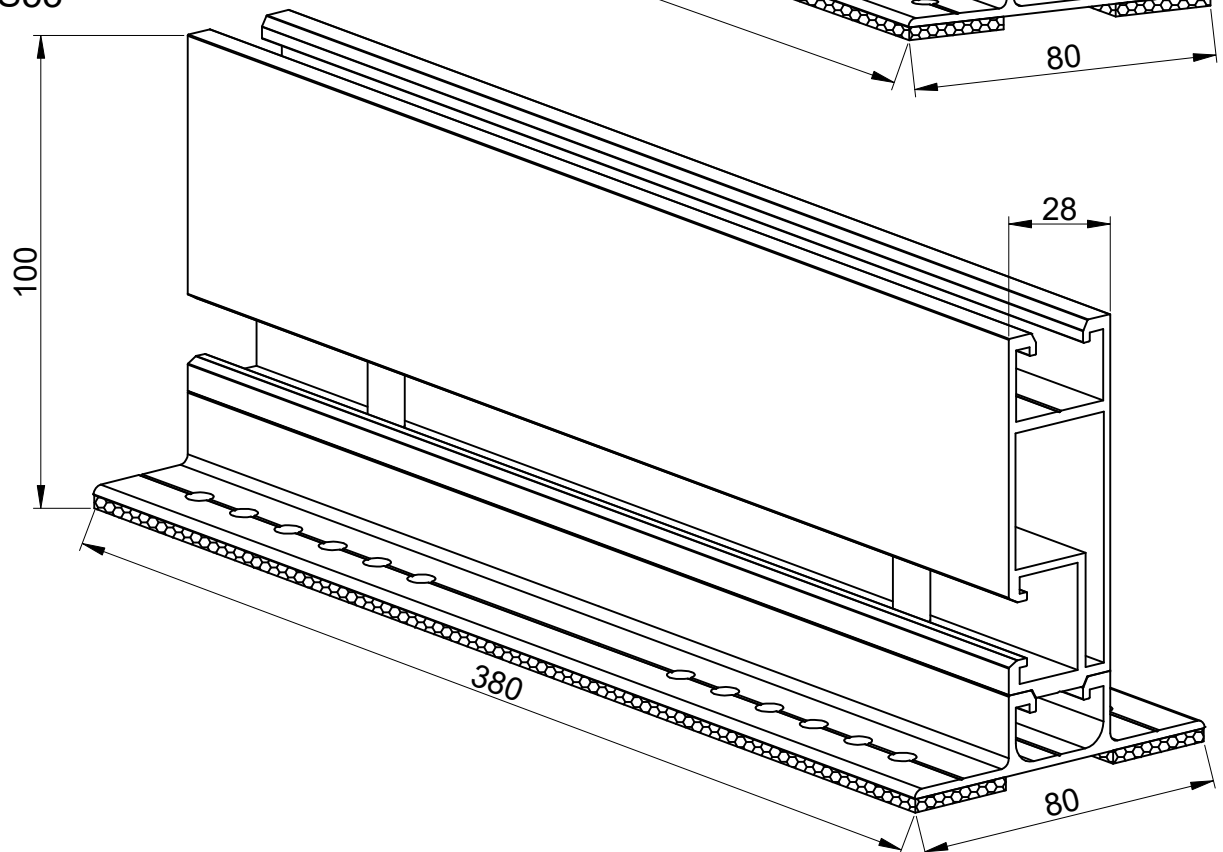
Alu šina
Alu rail



S58



S53



[illegible]



SISTEM PODKONSTRUKCIJA ZA SOLARNE PANELE
SUBSTRUCTURE SYSTEM FOR SOLAR PANELS

TEHNOMARKET d.o.o.

Skadarska 73

26 000 Pančevo

Srbija

Tel: +381 13 307 700

+381 13 307 752; 307 760

Fax: +381 13 307 799

E-mail: energy@tehnomarket.com

www.tehnomarket.com

