

CATALOGUE

2022/23

MOUNTING CONSTRUCTIONS
FOR PHOTOVOLTAIC PANELS

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CERTIFICATES

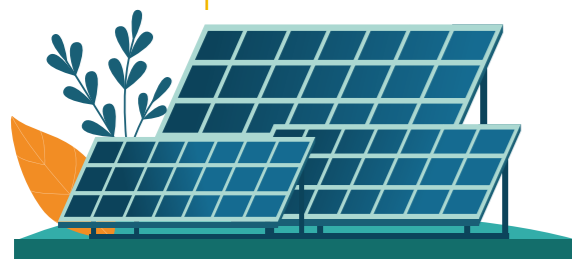


Solar panels take energy from solar radiation that is later turned into electric power used to power household devices. This is an ecological and economical solution for heating

up potable water or supporting central heating installation. Due to several possible options to locate solar panels, there exists a need to install them using special constructions.

INSTALLATION METHOD

GROUND COLLECTORS



FREE-STANDING CONSTRUCTIONS

Solar panels frames installed on the ground are built similarly to those intended for roofs, with the exception that they are set on the territory of the plot. This solution is the best for large acreage plots. **Here, the solar collectors performance will be high, as they can be set in the sunniest place directed south.**

ROOF COLLECTORS



SLOPING ROOF

The most popular system of photovoltaic installation is mounting them on a sloping roof. **This is the cheapest method, as they can be installed quickly and easily. These types of frames use the natural angle of the roof.** Some tiles are removed to install special hooks on the roof rafter using proper mounting screws. Individual tiles may require additional grinding. Profiles are attached to hooks and subsequently they are equipped with sliding projections, to which clamps are attached. Such a prepared construction allows solar panels to be mounted. With metal sheets hooks must be attached by drilling through the metal sheets. Due to this a gasket is applied to the place where the screw goes through the hole in the metal sheet. There also exist methods of installing photovoltaic constructions on roofs with plane tiles, standing seam metal sheets, and shingle. Each of them requires a slightly different approach. Solar panel frames are recommended for sloping roofs facing south, east or west. However, they are not effective on roofs facing north.

FLAT ROOF

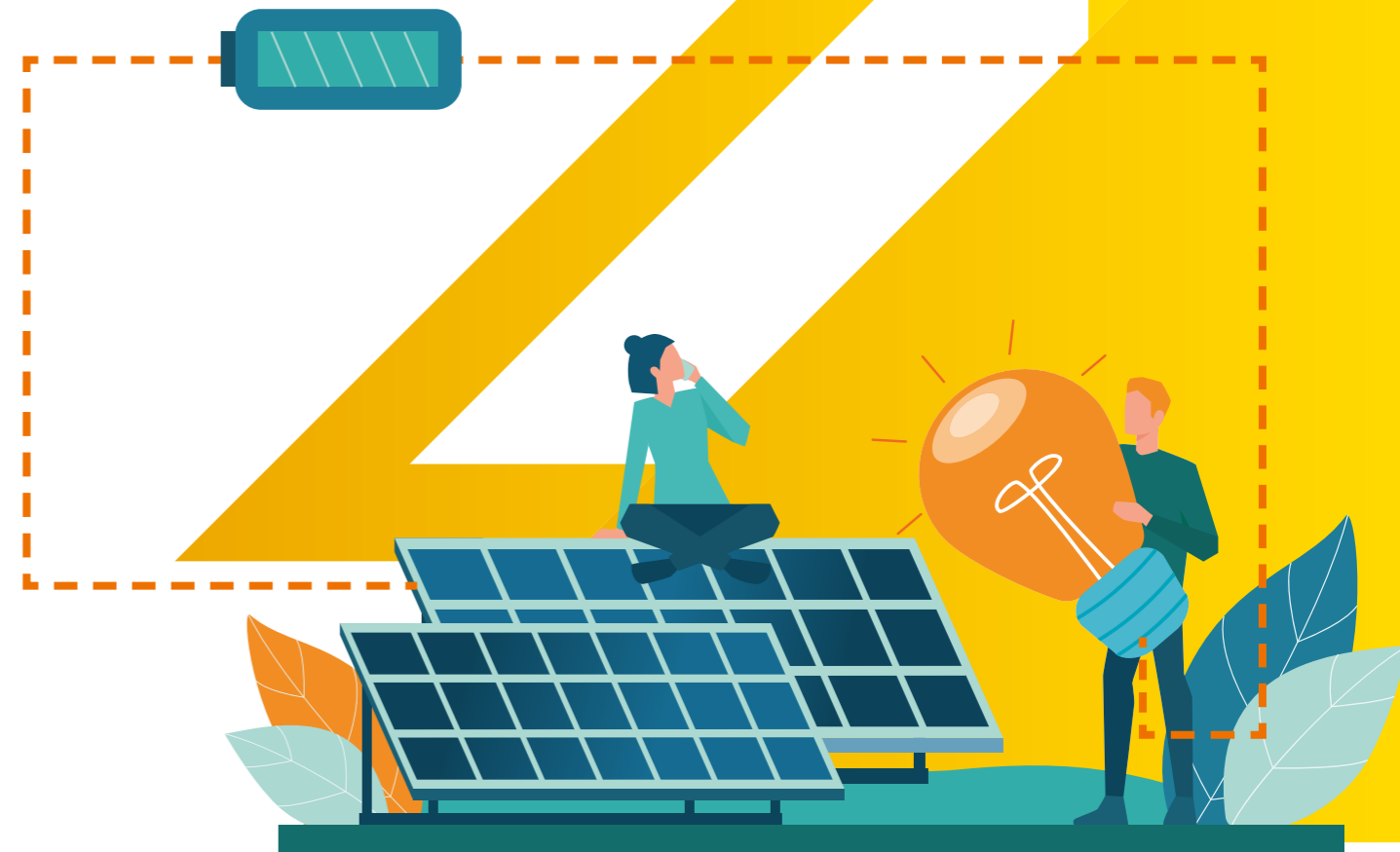
Installation of photovoltaic constructions on flat roofs requires that frames increasing the roof slope angle are used. The angle should be between 15 and 45 percent. These are special mounting triangles, the position of which must be carefully planned in order to eliminate the risk of shade on the solar panels. Once the triangles are fixed to the roof with bolts, profiles are installed, to which clamps and sliding outlets are screwed in. Onto such prepared system solar modules can be put. **Although, photovoltaic constructions for flat roofs are more expensive, a possibility to arrange them on the roof as desired and directing them directly towards south makes solar panels much more effective.**

The El-Sun company offers professional constructions to be used with solar panels that can be installed on every type of roof and ground. Our PV mounting constructions are characterized by stability, high quality and endurance, and long service life. All components meet the required standards and allow that all necessary cables can be placed in them seamlessly. Individual details are made of an enduring aluminium or stainless steel. The entire construction possesses a really aesthetic and attractive look. This is a modern, innovative, and ecological system of taking and generating energy and the costs of its production will start to pay off very quickly.

The El-Sun company employees are professionals who are extremely devoted to their duties. They are specialists

who possess many years of experience in assembling photovoltaic systems. We have all necessary accessories, tools, and equipment for mounting frames. Every order is given separate attention, for this reason we offer professional consultancy regarding selection of construction and photovoltaic panels, and precise analysis of the client's expectations in the first place. Further, based on these guidelines we choose an appropriate system together with the client. We transport individual frame components used in photovoltaic systems to the place of destination and assemble them. This process is conducted expeditiously and seamlessly. A reliable recommendation for our company is the large number of satisfied clients who put their trust in us. With us you can be certain that the service is performed reliably and as scheduled.

Use what the nature offers you.
**Generate electricity
on your own!**



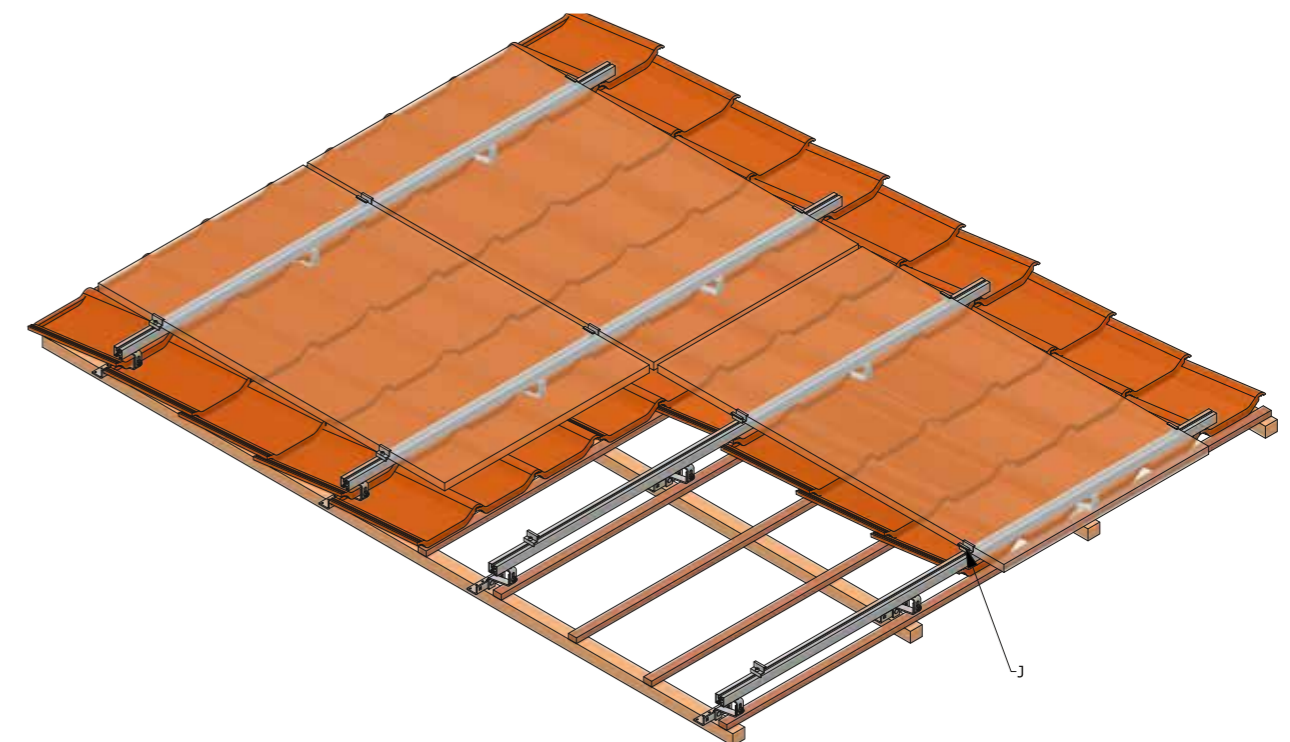
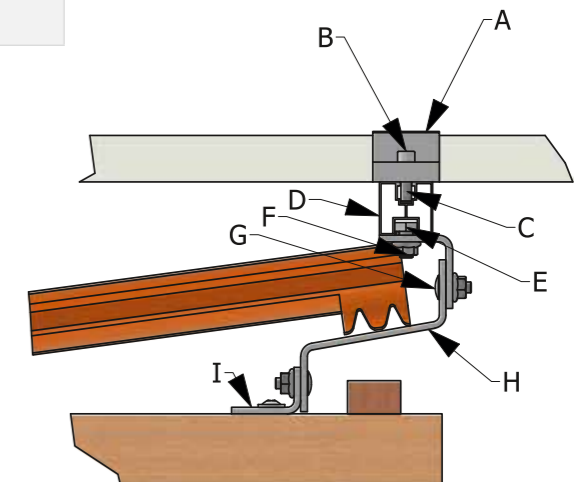
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Photovoltaic constructions for sloping roofs

CONSTRUCTION FOR CERAMIC TILES CLADDED ROOFS

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	TCS crew	A2
F	S-shaped hook	A2
G	Hex screw	A2
H	Flange nut	A2
I	TCS crew crew	A2
J	Middle clamp	Al

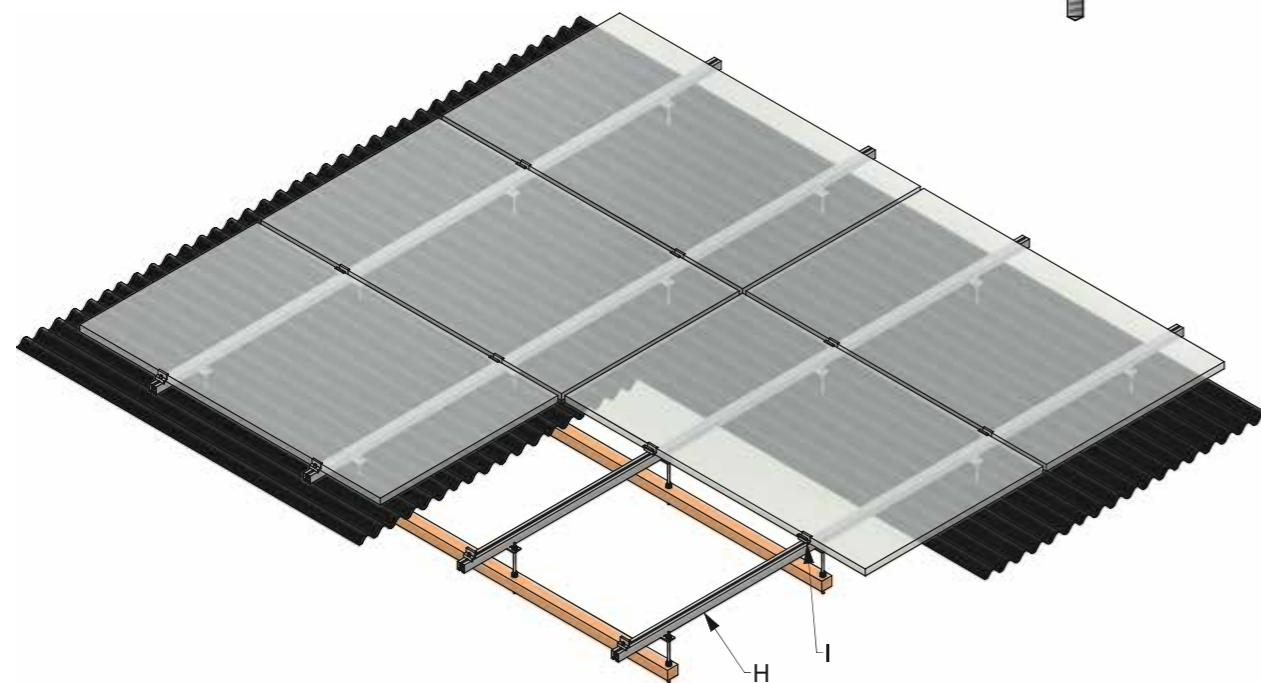
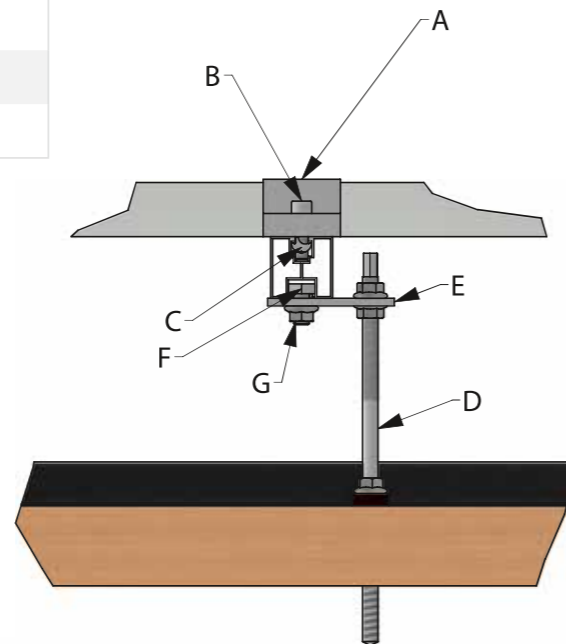
It is possible to prepare components for an individual order.



CONSTRUCTION FOR TILE EFFECT METAL SHEETS CLADDIED ROOFS

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Dual thread screw	A2
E	Rust-proof adapter	A2
F	Hex screw	A2
G	Flange nut	A2
H	Mounting profile 40x40	Al
I	Middle clamp	Al

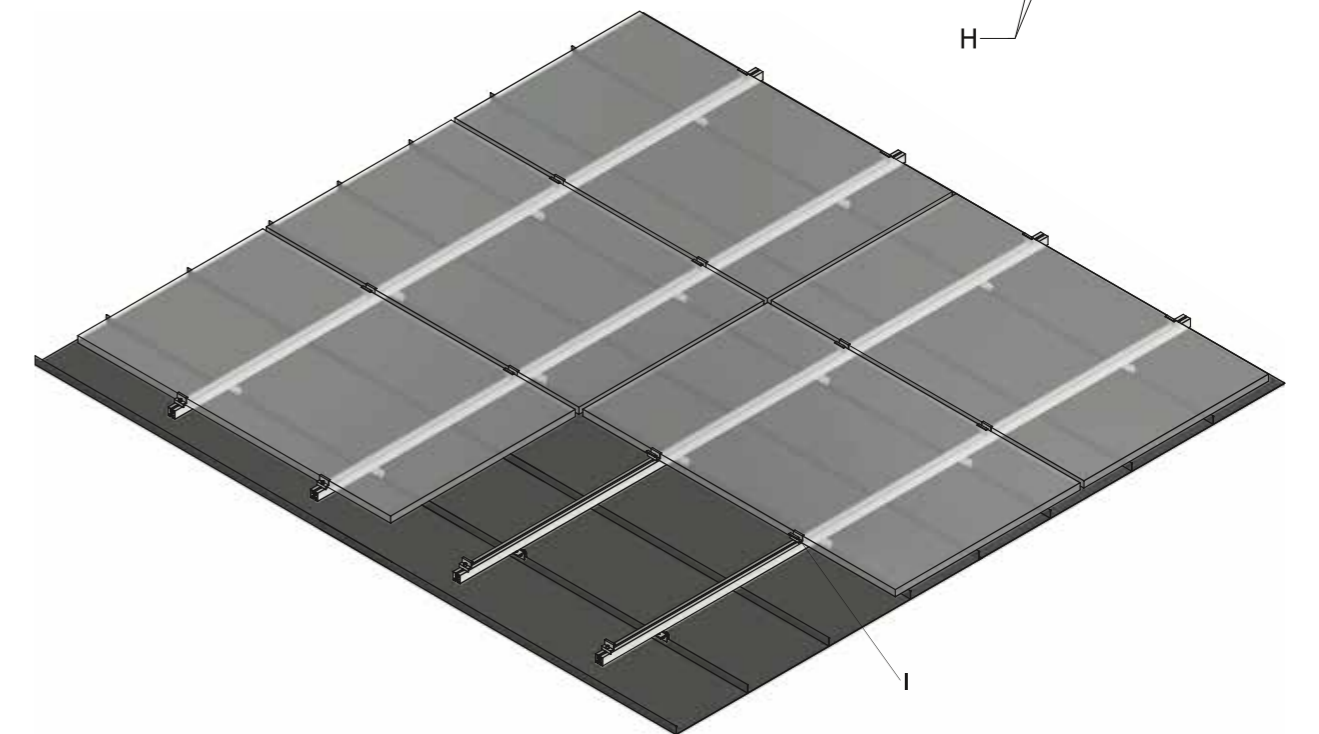
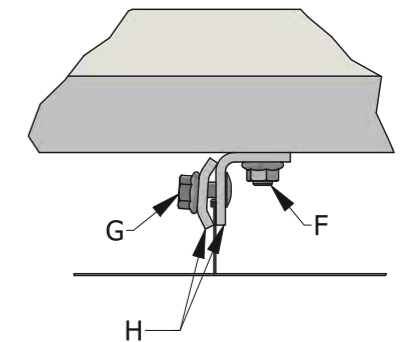
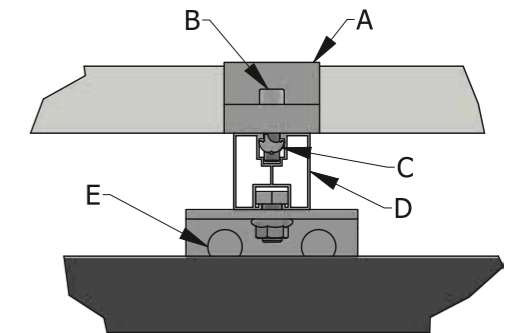
It is possible to prepare components for an individual order.



INSTALLATION SYSTEM FOR SEAM METAL ROOFING

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	Furniture screw	A2
F	Hex screw	A2
G	Flange nut	A2
H	Seam holder	A2
I	Middle clamp	Al

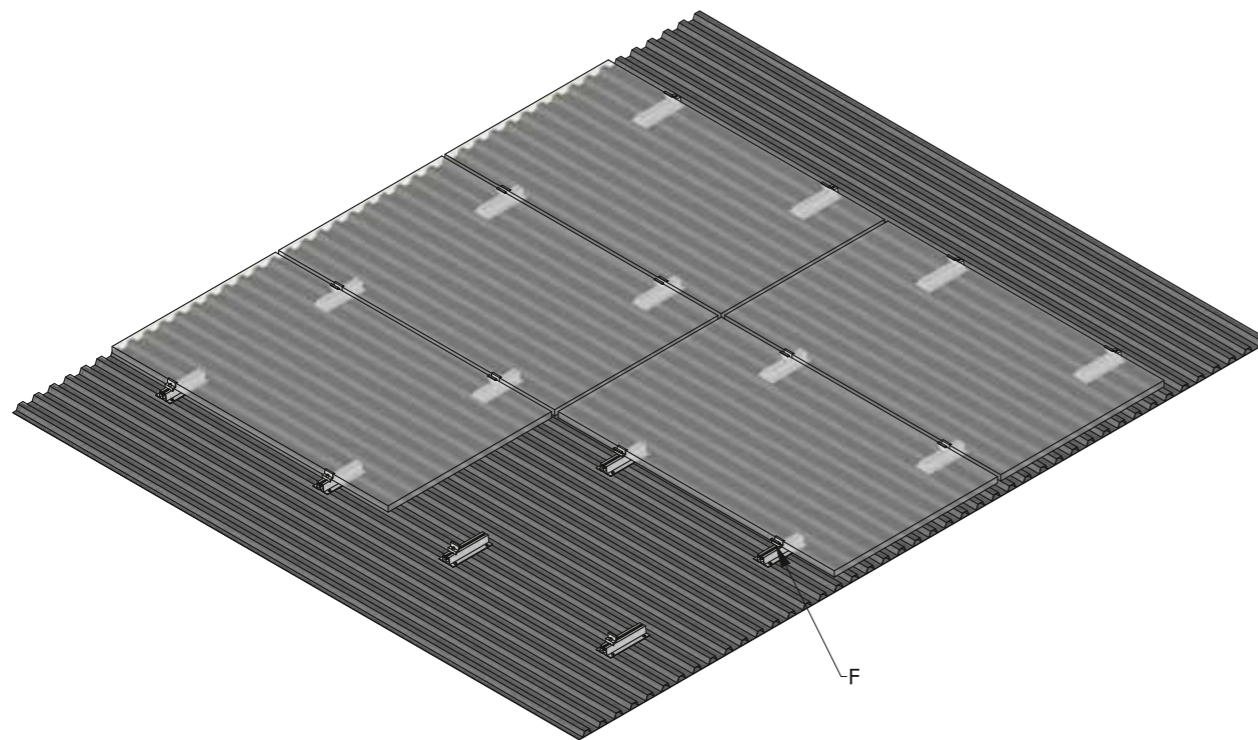
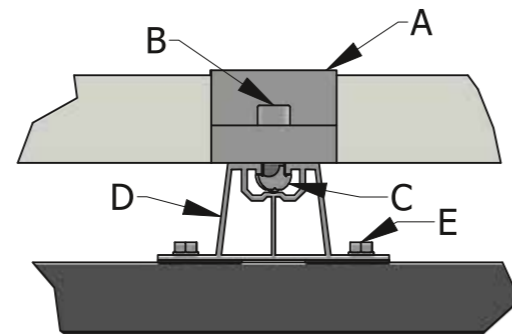
It is possible to prepare components for an individual order.



MOUNTING SYSTEM ON THE ROOF COVERED WITH TRAPEZOIDAL SHEET METAL

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Trapezoidal rail lift	Al
E	Bi-metal screw	A2
F	Middle clamp	Al

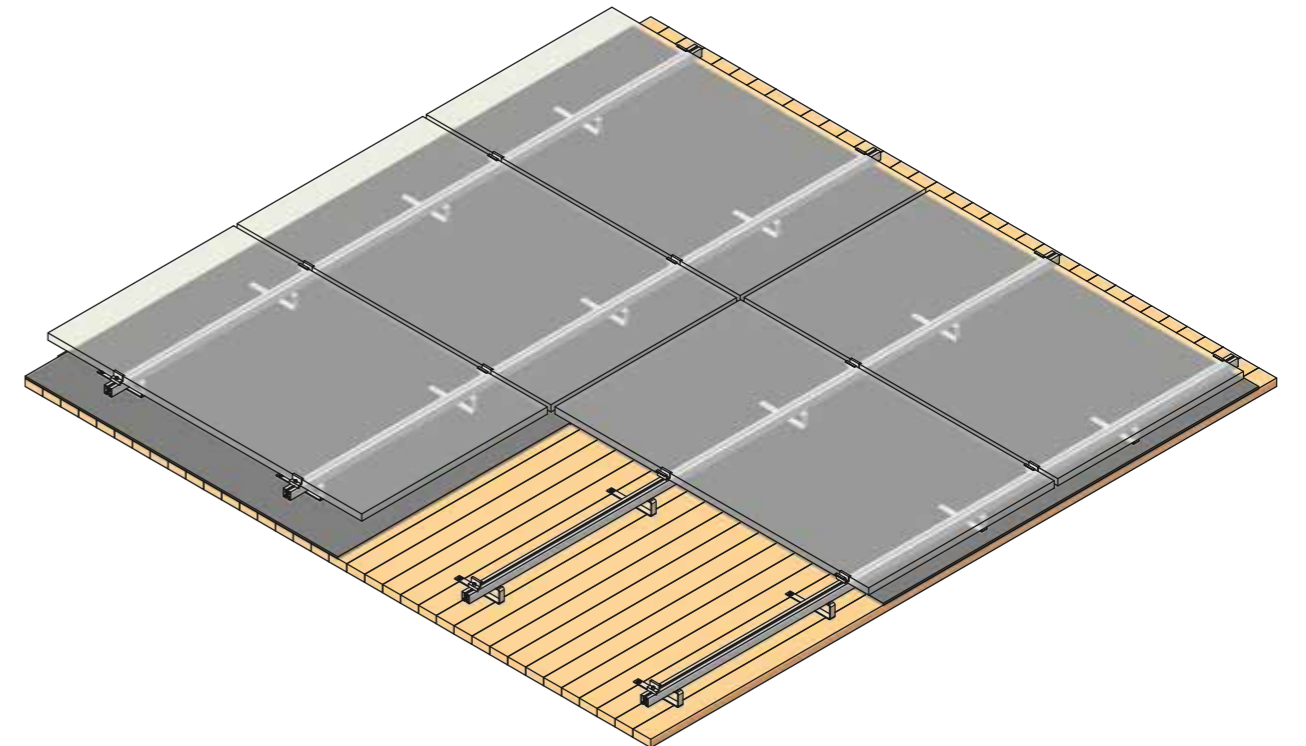
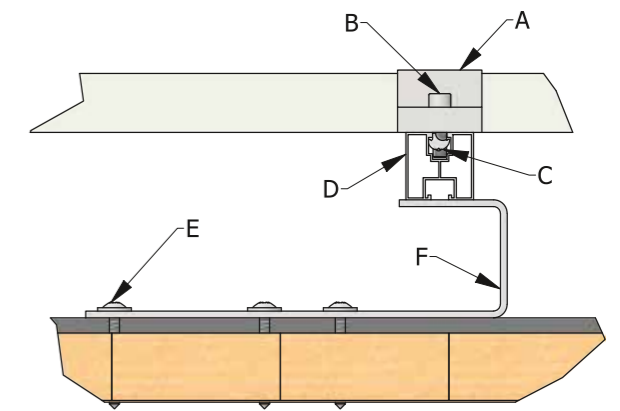
It is possible to prepare components for an individual order.



BITUMEN ROOF MOUNTING SYSTEM

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	TCS crew	A2
F	L-shaped hook	A2

It is possible to prepare components for an individual order.



2

Photovoltaic constructions for flat roofs

⚡ BALLAST CONSTRUCTION FOR EAST/WEST MEMBRANE

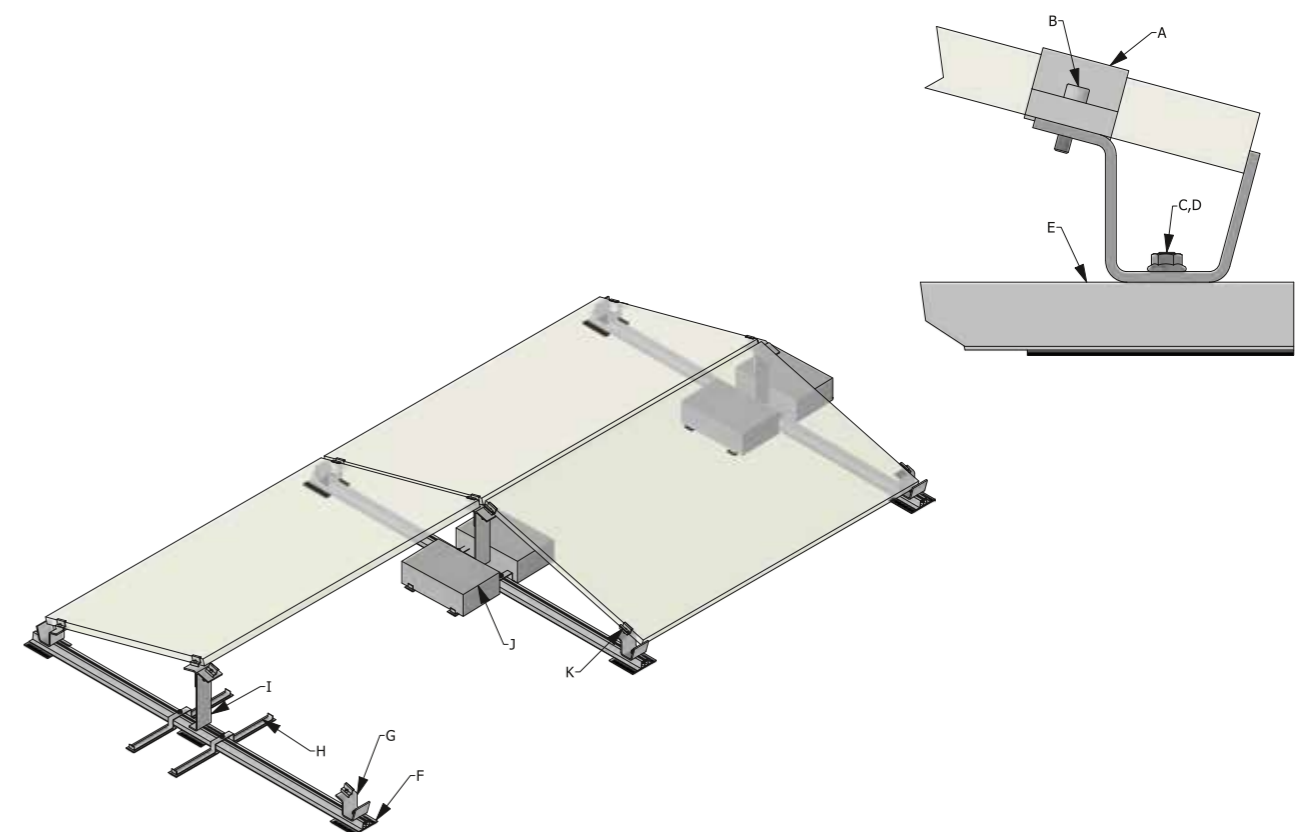
Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Hex screw	A2
D	Flange nut	A2
E	Trapezoidal rail lift	Al
F	Gum 150x150x3	Gum
G	Front mounting bracket	Al
H	Sheet metal for ballast	Al
I	East/west mounting bracket	Al
J	Gum 270x50x1	Gum
K	Middle clamp	Al

! Note:

The load per panel	
Wind zone	Minimal ballast (kg) per panel
I, III	25
II	55

The stated load applies to structures located up to 300 meters above sea level.

It is possible to prepare components for an individual order.



BALLAST CONSTRUCTION FOR MEMBRANE

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Hex screw	A2
D	Flange nut	A2
E	Trapezoidal rail lift	Al
F	Gum 150x150x3	Gum
G	Sheet metal for ballast*	Al
H	Gum 270x50x1	Gum
I	Middle clamp	Al

*A possibility to change for a: steel sheet for a ballast construction.

! Note:

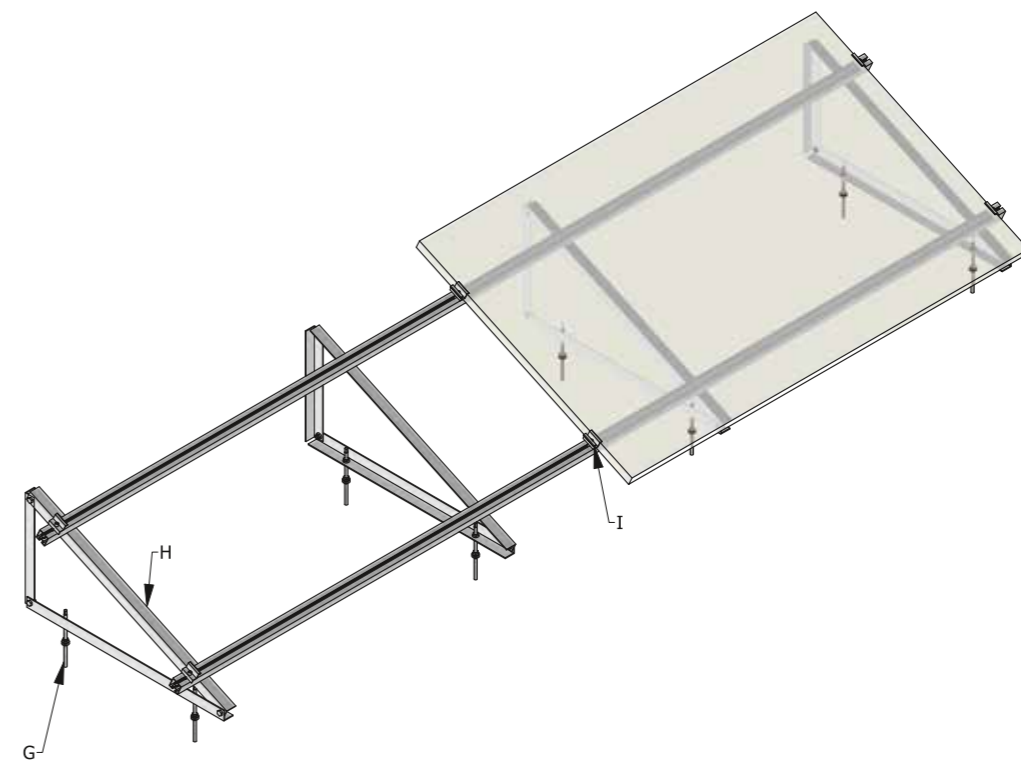
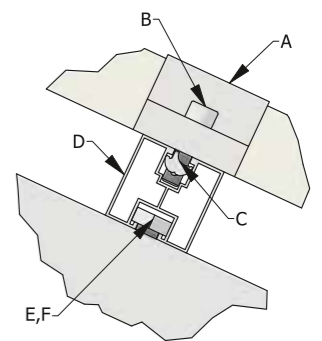
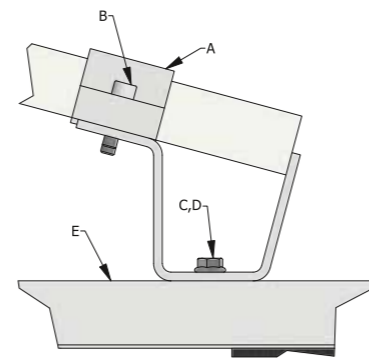
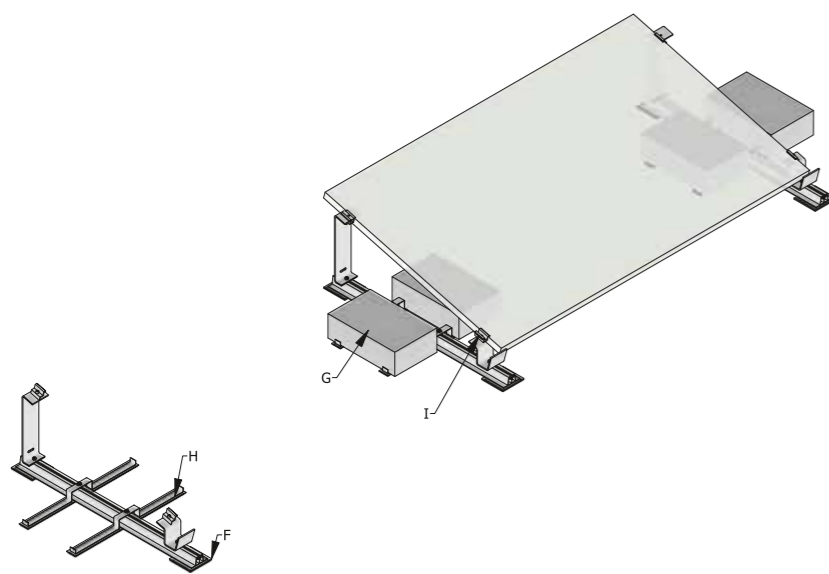
The load per panel	
Wind zone	Minimal ballast (kg) per panel
I, III	40
II	55

The stated load applies to structures located up to 300 meters above sea level.

MOUNTING STRUCTURE ON SMALL TRIANGLES FASTENED WITH SCREWS (HORIZONTAL)*

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	Hex screw	A2
F	Flange nut	A2
G	Dual thread screw	A2
H	Screw-on triangle	Al
I	Middle clamp	Al

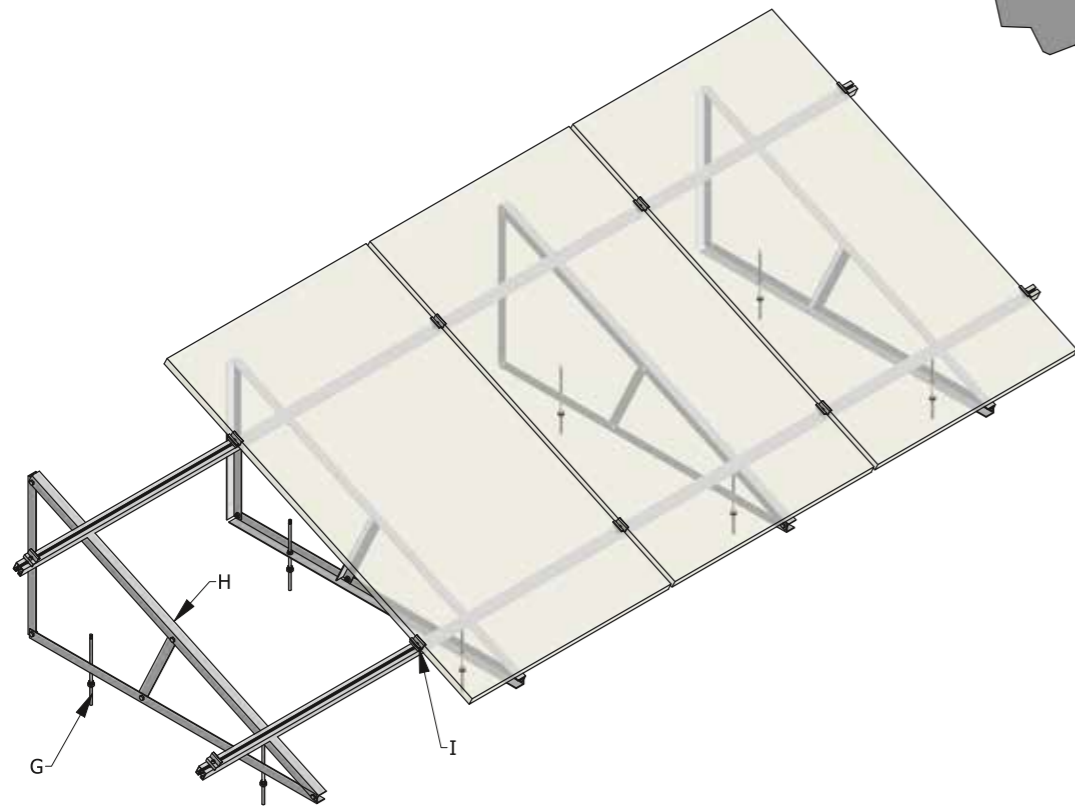
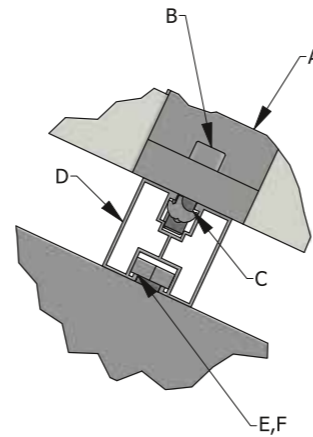
It is possible to prepare components for an individual order.
*When using small triangles, the panels are arranged horizontally.



MOUNTING STRUCTURE ON BIG TRIANGLES FASTENED WITH SCREWS (VERTICAL)*

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	Hex screw	A2
F	Hex screw	A2
G	Dual thread screw	A2
H	Triangle	Al
I	Middle clamp	Al

It is possible to prepare components for an individual order.
*When using big triangles, the panels are arranged vertical.



MOUNTING SYSTEM FOR BALLASTED TRIANGLES (HORIZONTAL)*

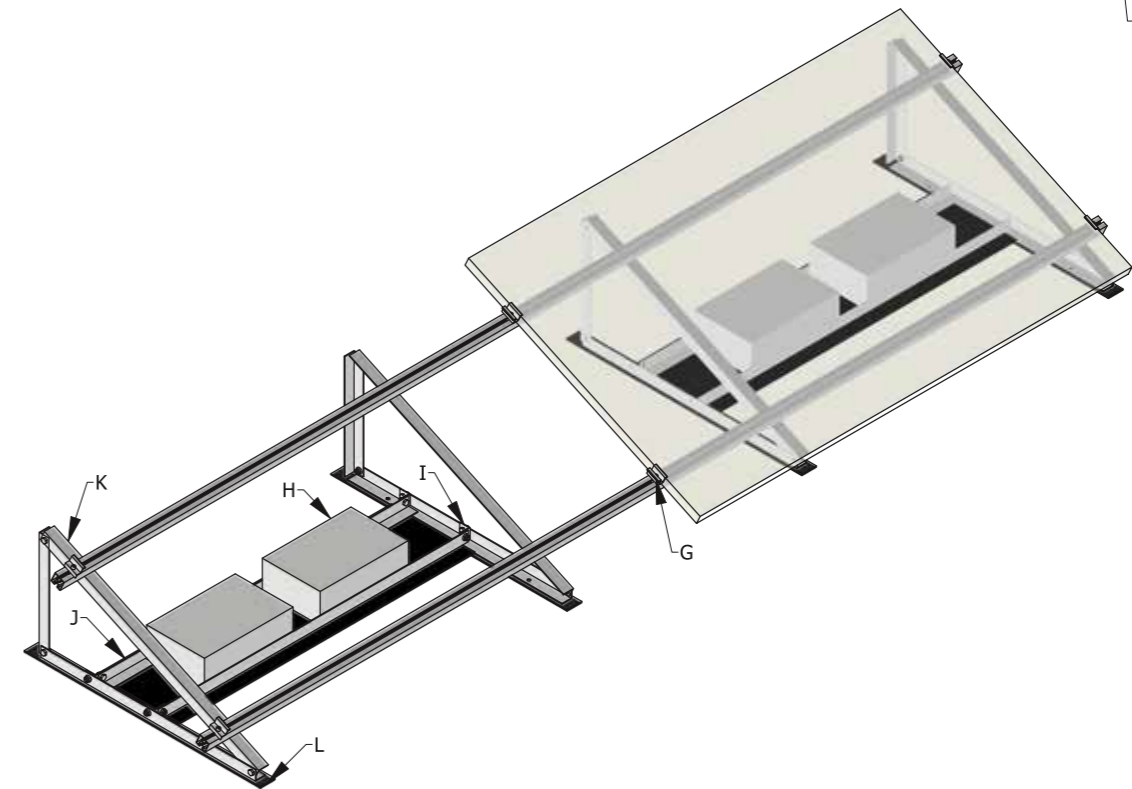
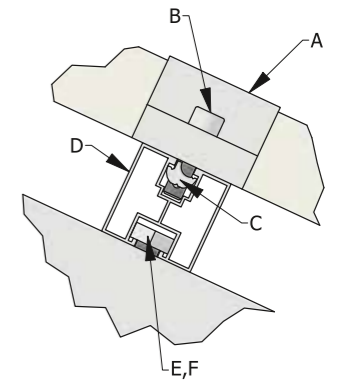
Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	Hex screw	A2
F	Flange nut M10	A2
G	Middle clamp	Al
H	Ballast block	-
I	Corner bracket for ballast	Al
J	Angle bar with holes	Al
K	Triangle	Al
L	Gum	Gum

It is possible to prepare components for an individual order.
*When using small triangles, the panels are arranged horizontally.

Note:

The load per panel	
Wind zone	Minimal ballast (kg) per panel
I	40
II, III	60

The stated load applies to structures located up to 300 meters above sea level.



MOUNTING SYSTEM FOR BALLASTED TRIANGLES (VERTICAL)*

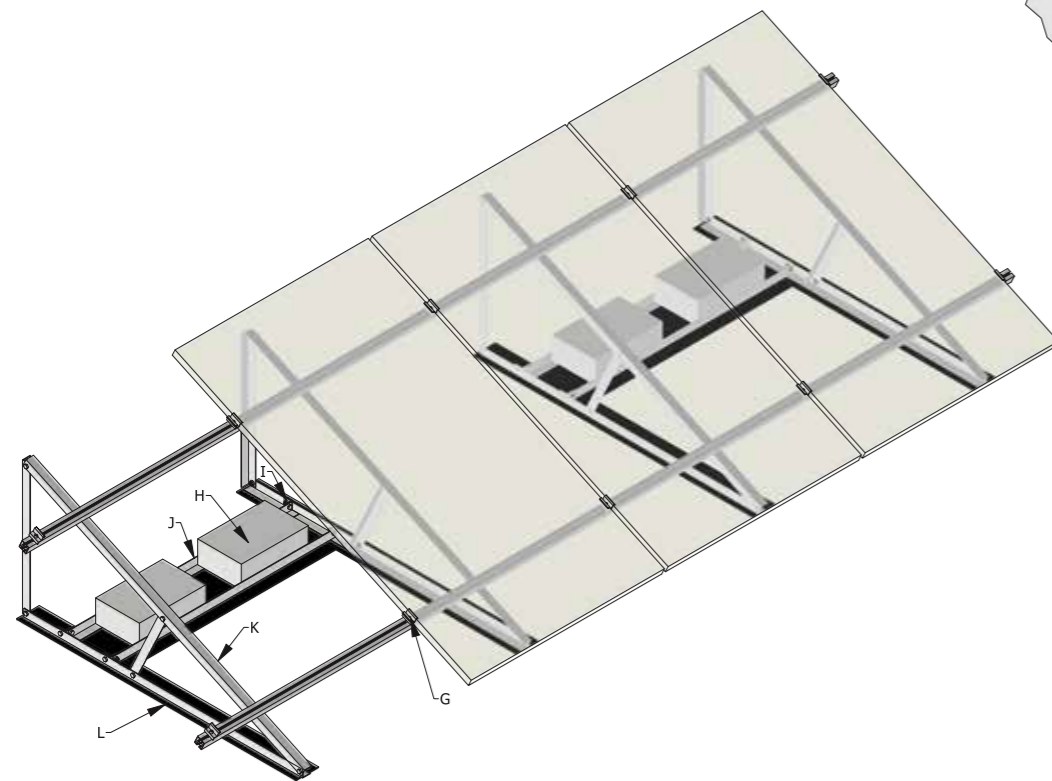
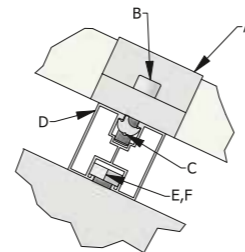
Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	Hex screw	A2
F	Flange nut M10	A2
G	Middle clamp	Al
H	Ballast block	-
I	Corner bracket for ballast	Al
J	Angle bar with holes	Al
K	Triangle	Al
L	Gum	Gum

Note:

The load per panel	
Wind zone	Minimal ballast (kg) per panel
I	65
II, III	80

The stated load applies to structures located up to 300 meters above sea level.

It is possible to prepare components for an individual order.
*When using big triangles, the panels are arranged vertical.



WELDED SYSTEM FOR FLAT ROOFS (TRIANGLES)

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Hex screw	A2
E	Flange nut	A2
F	Plate mounted under the membrane	Galvanized steel
G	Triangle	Al
H	Middle clamp	Al
I	Membrane	Membrane/papa
J	Mounting profile 40x40	Al

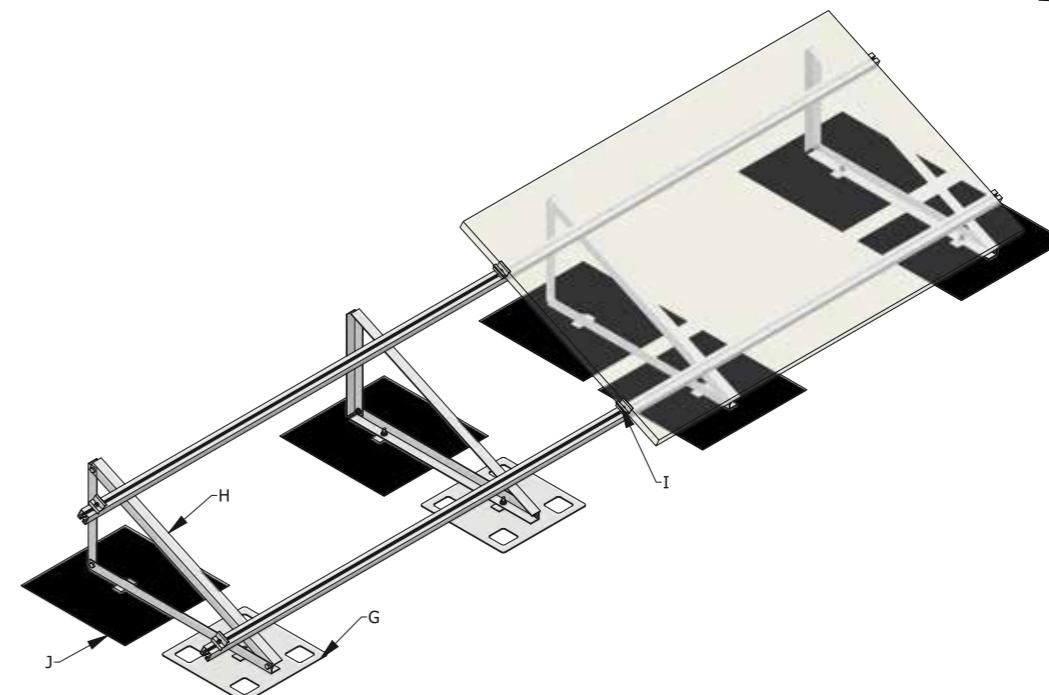
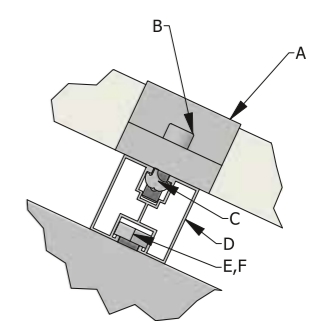
Coverage of membranes PVC, FPO, PVC gr. min. 2mm (-5% / +10%)

Requirements for the membrane
Tensile strength min. 900N/5 mm PN-EN 12311-2
Tear strength min. 150N PN-EN 12310-2
Shear strength at joints min. 500N/50mm PN-EN 12317-2
Peel strength on connections min. 150N/50mm PN-EN 12316-2"

Requirements for roofing felt
Longitudinal and transverse tensile strength min. 300N/50 mm PN-EN 12311-1
Tear strength min. 150N PN-EN 12310-1
Shear strength at longitudinal and transverse joints min. 500N/50 mm PN-EN 12317-1
Peel strength min. 125N/50mm PN-EN 12316-1

Stone wool roof insulation
Allowable compressive stress at 10% deformation CS(10) for compressive force up to 5kN min. 30kPa EN 826
Allowable compressive stress at 10% deformation CS(10) for compressive force up to 12kN min. 70kPa PN-EN 826

It is possible to prepare components for an individual order.



WELDED SYSTEM FOR FLAT ROOF (SUPPORTS)

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Flange nut	A2
D	Front bracket	Al
E	Back support	Al
F	Plate mounted under proofing felt/membrane	Galvanized steel
G	Middle clamp	Al

It is possible to prepare components for an individual order.

Coverage of membranes PVC, FPO, PVC gr. min. 2mm (-5% / +10%)

Requirements for the membrane

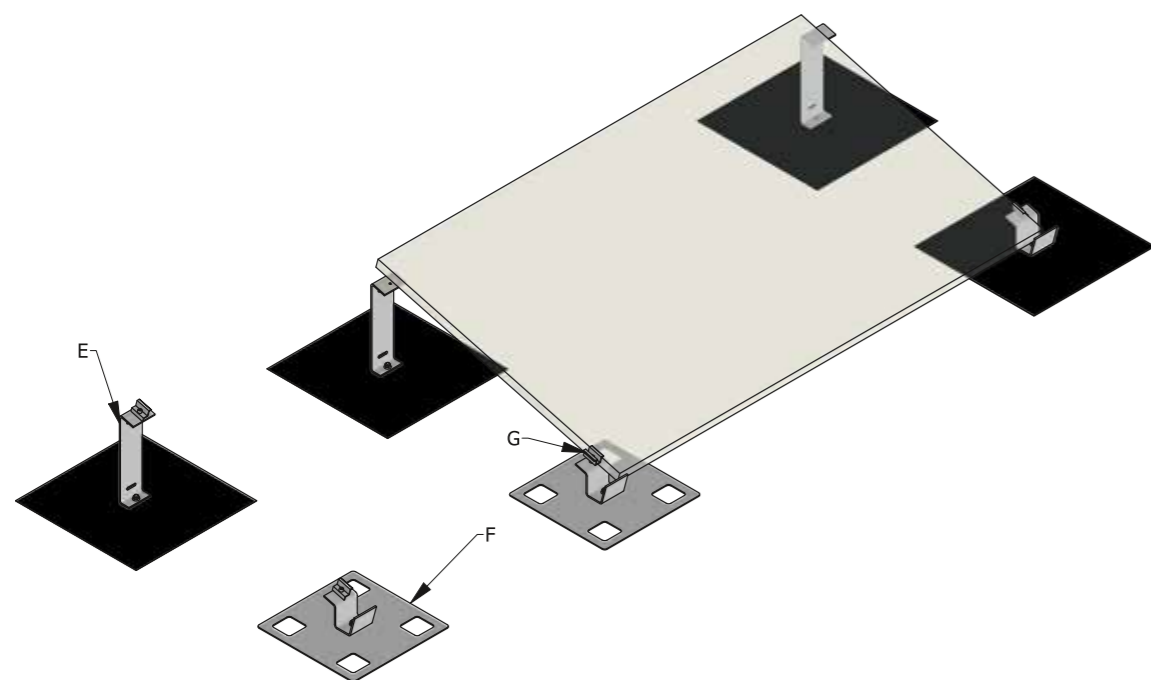
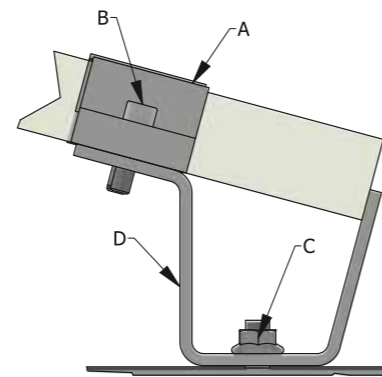
Tensile strength min. 900N/5 mm PN-EN 12311-2
Tear strength min. 150N PN-EN 12310-2
Shear strength at joints min. 500N/50mm PN-EN 12317-2
Peel strength on connections min. 150N/50mm PN-EN 12316-2"

Requirements for roofing felt

Longitudinal and transverse tensile strength min. 300N/50 mm PN-EN 12311-1
Tear strength min. 150N PN-EN 12310-1
Shear strength at longitudinal and transverse joints min. 500N/50 mm PN-EN 12317-1
Peel strength min. 125N/50mm PN-EN 12316-1

Stone wool roof insulation

Allowable compressive stress at 10% deformation CS(10) for compressive force up to 5kN min. 30kPa EN 826
Allowable compressive stress at 10% deformation CS(10) for compressive force up to 12kN min. 70kPa PN-EN 826



FLAT-ROOF WELDING SYSTEM FOR MEMBRANE/ROOFING FELT

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	Hex screw	A2
F	Flange nut	A2
G	Mounting profile	A2
H	Middle clamp	Al

It is possible to prepare components for an individual order.

Coverage of membranes PVC, FPO, PVC gr. min. 2mm (-5% / +10%)

Requirements for the membrane

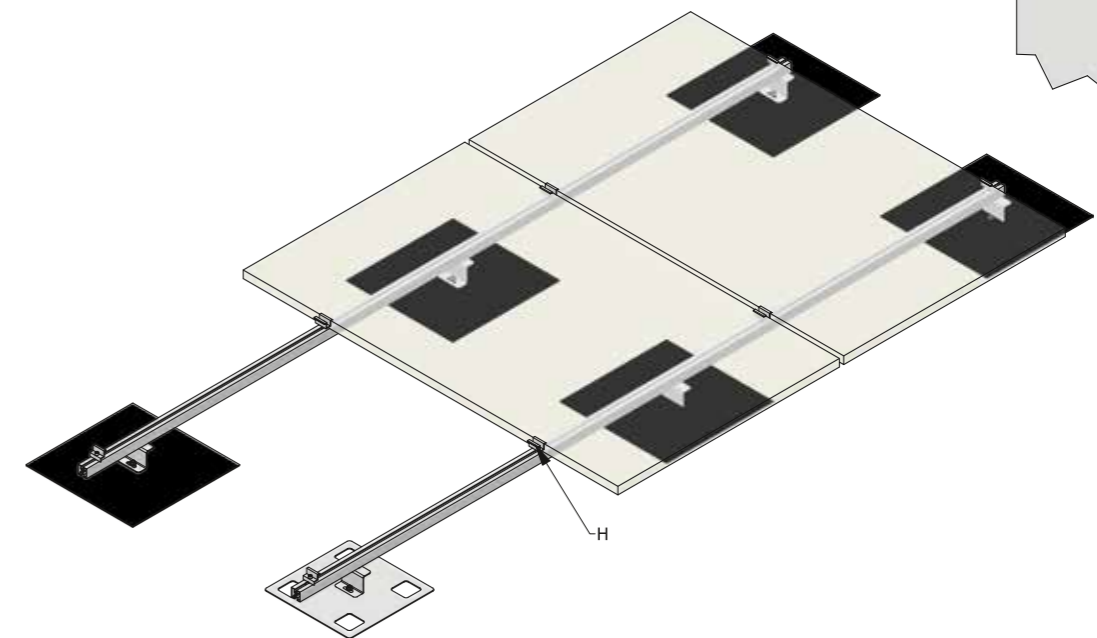
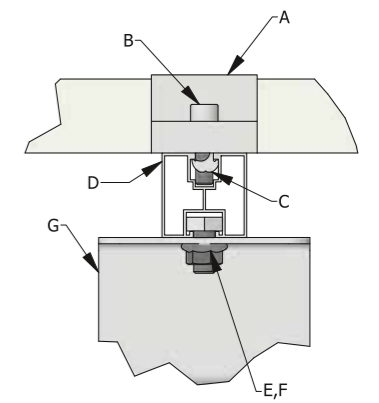
Tensile strength min. 900N/5 mm PN-EN 12311-2
Tear strength min. 150N PN-EN 12310-2
Shear strength at joints min. 500N/50mm PN-EN 12317-2
Peel strength on connections min. 150N/50mm PN-EN 12316-2"

Requirements for roofing felt

Longitudinal and transverse tensile strength min. 300N/50 mm PN-EN 12311-1
Tear strength min. 150N PN-EN 12310-1
Shear strength at longitudinal and transverse joints min. 500N/50 mm PN-EN 12317-1
Peel strength min. 125N/50mm PN-EN 12316-1

Stone wool roof insulation

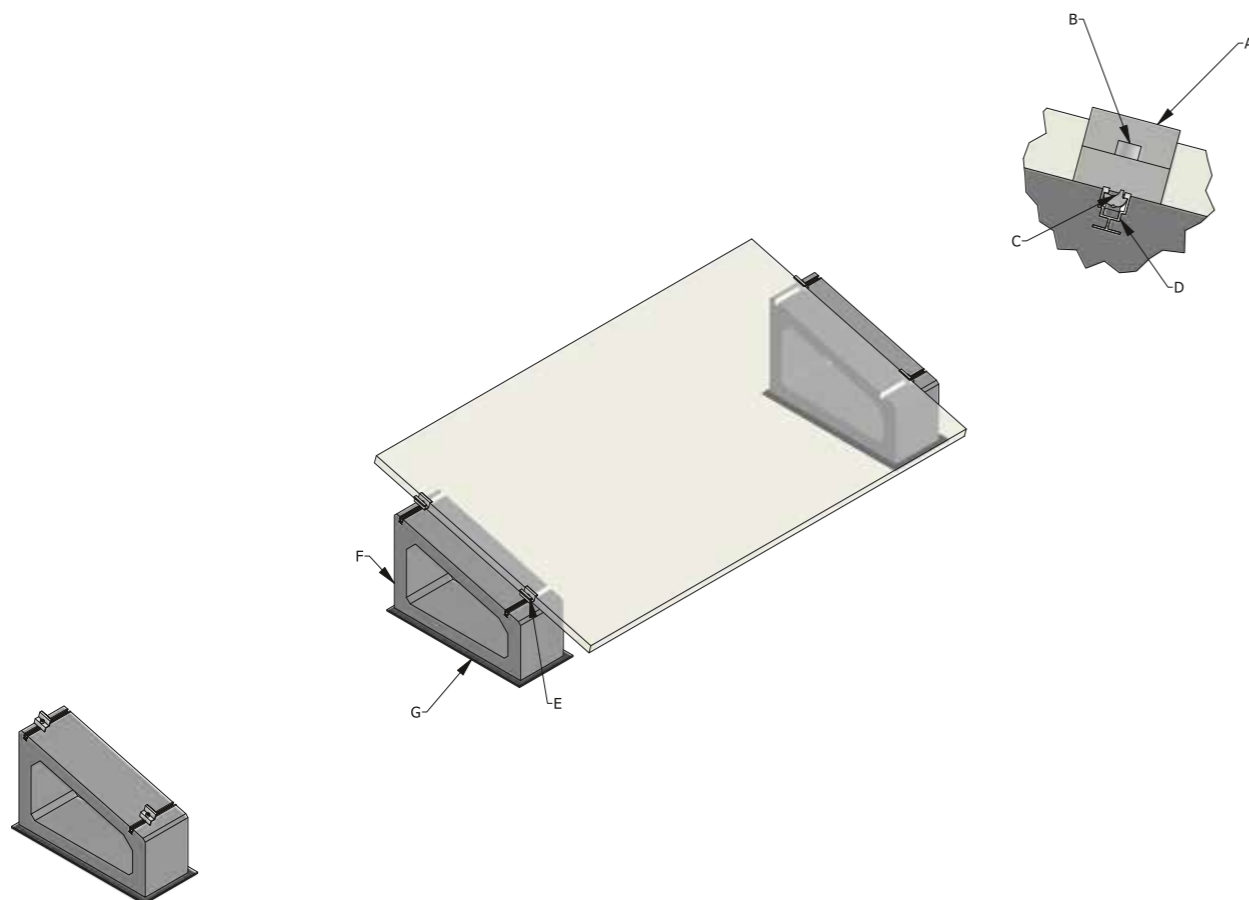
Allowable compressive stress at 10% deformation CS(10) for compressive force up to 5kN min. 30kPa EN 826
Allowable compressive stress at 10% deformation CS(10) for compressive force up to 12kN min. 70kPa PN-EN 826



STRUCTURE ON CONCRETE BLOCKS

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Profile for block	A2
E	Middle clamp	Al
F	Concrete block	Concrete
G	Gum	Gum

It is possible to prepare components for an individual order.

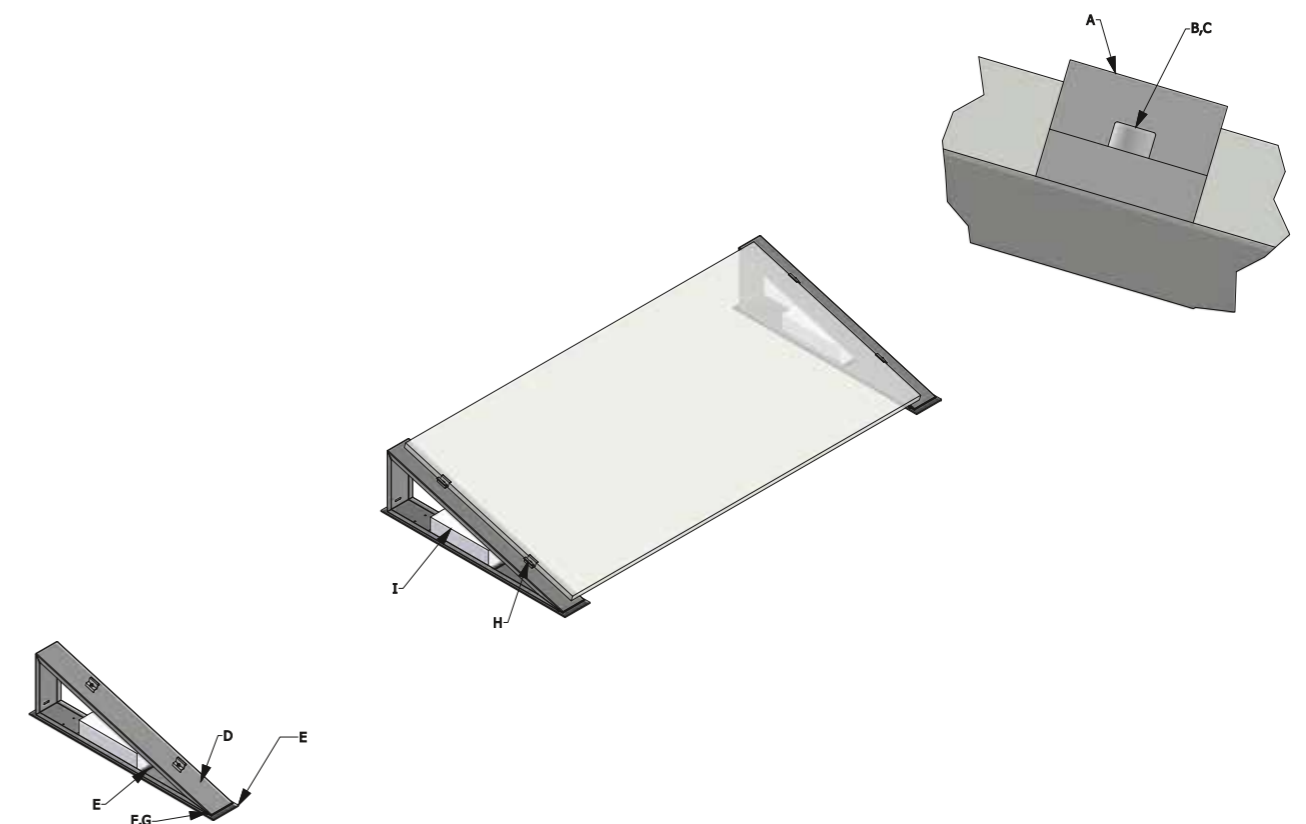


BALLAST CONSTRUCTION ON FOLDING TRIANGLES – SMALL TRIANGLE*

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Flange nut	A2
D	Folding triangle	Al+A2
E	Membrane	Membrane
F	Hex screw	A2
G	Flange nut	A2
H	Middle clamp	Al
I	Concrete block	Concrete

It is possible to prepare components for an individual order.

*When using small triangles, the panels are arranged horizontally.



WELDED CONSTRUCTION ON FOLDING TRIANGLES – SMALL TRIANGLE*

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Flange nut	A2
D	Folding triangle	Al+A2
E	Plate mounted under the membrane	Galvanized steel
F	Membrane	Membrane
G	Hex screw	A2
H	Flange nut	A2
I	Middle clamp	Al

It is possible to prepare components for an individual order.
*When using small triangles, the panels are arranged horizontally.

Coverage of membranes PVC, FPO, PVC gr.
min. 2mm (-5% / +10%)

Requirements for the membrane

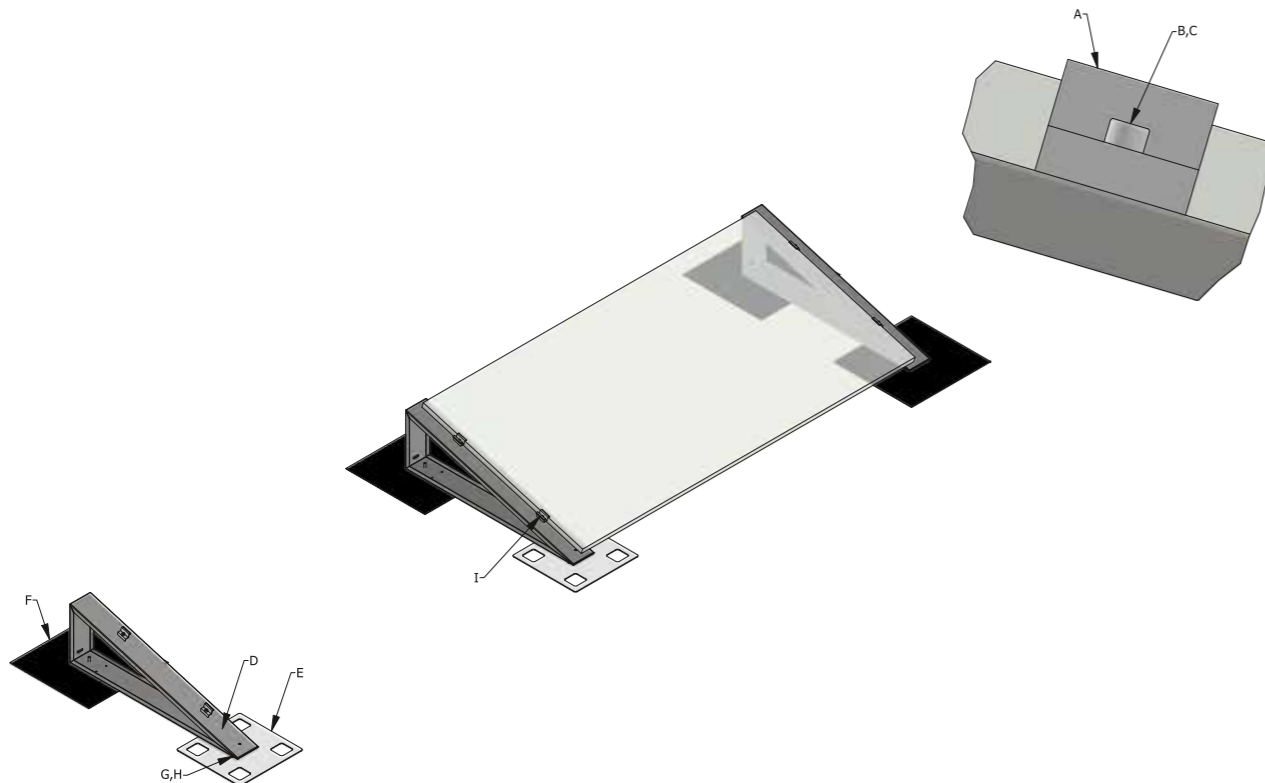
Tensile strength min.
900N/5 mm PN-EN 12311-2
Tear strength
min. 150N PN-EN 12310-2
Shear strength at
Shear strength at joints min. 500N/50mm
PN-EN 12317-2
Peel strength on connections min. 150N/50mm
PN-EN 12316-2"

Requirements for roofing felt

Longitudinal and transverse tensile strength
min. 300N/50 mm PN-EN 12311-1
Tear strength min. 150N PN-EN 12310-1
Shear strength at longitudinal and transverse
joints min. 500N/50 mm PN-EN 12317-1
Peel strength min. 125N/50mm PN-EN 12316-1

Stone wool roof insulation

Allowable compressive stress at 10%
deformation CS(10) for compressive force up
to 5kN min. 30kPa EN 826
Allowable compressive stress at 10%
deformation CS(10) for compressive force up
to 12kN min. 70kPa PN-EN 826



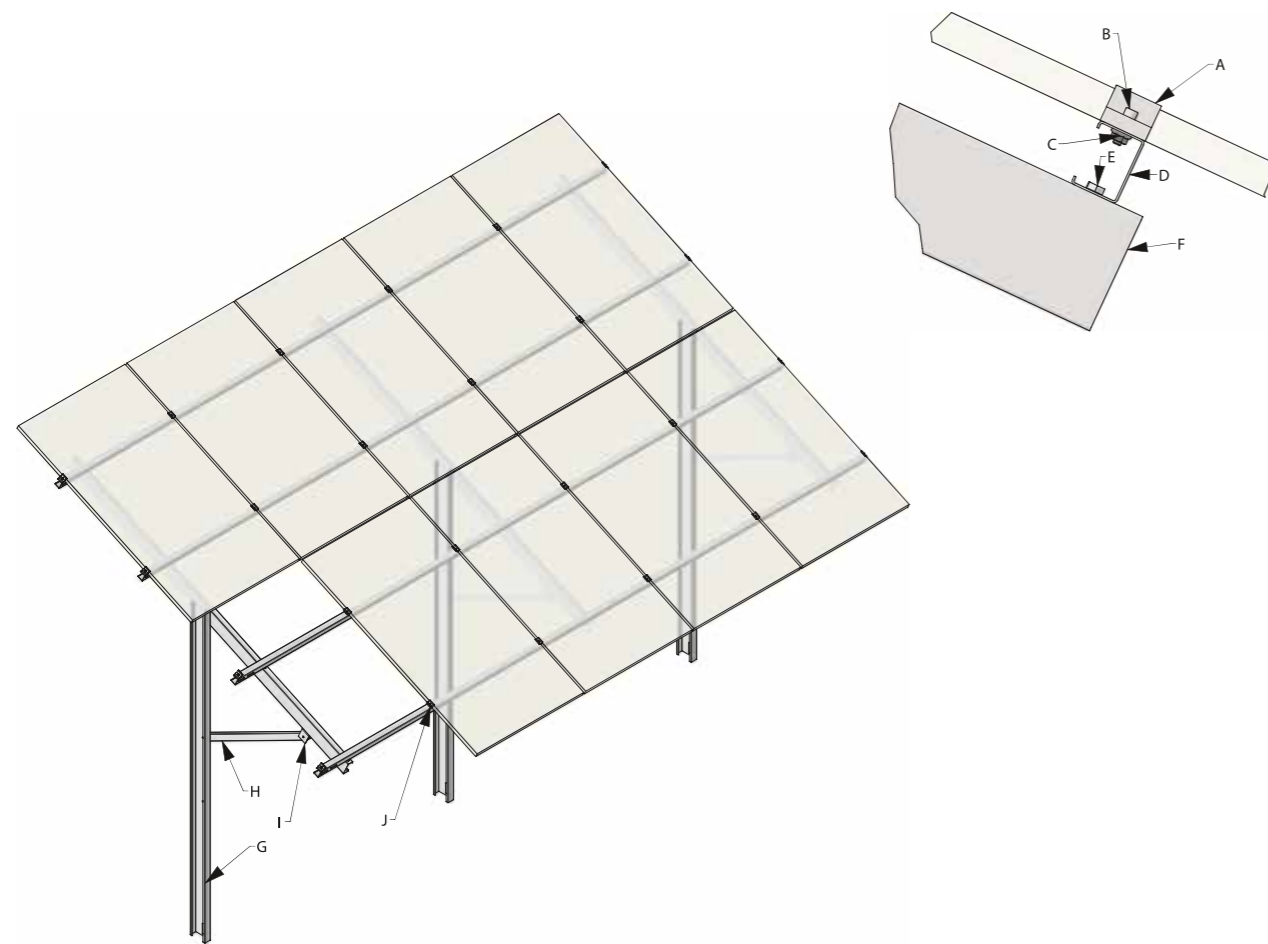
3

Ground photovoltaic constructions

SINGLE-SUPPORT PILE GROUND MOUNTING SYSTEM

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Flange nut	A2
D	Purlin	Galvanized steel
E	Hex screw	A2
F	Bolt	Galvanized steel
G	Driven bracket	Galvanized steel
H	Strut	Galvanized steel
I	L-shaped hook	Galvanized steel
J	Middle clamp	Al

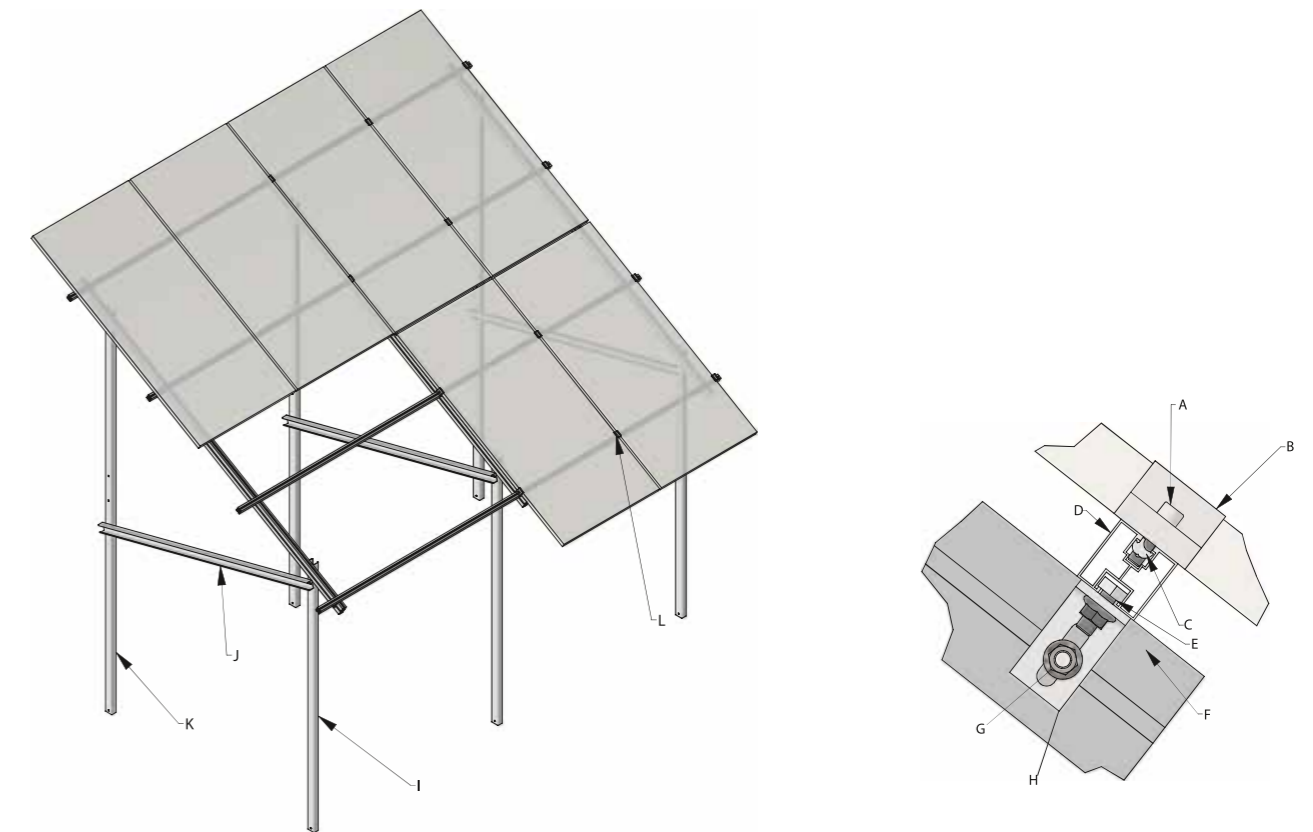
It is possible to prepare components for an individual order.



SOIL CONSTRUCTION FOR MOUNTING TWO PANELS VERTICALLY

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	Hex screw	A2
F	Strengthened profile 40x80	Al
G	Flange nut M10	A2
H	Stainless steel angle	A2
I	Small hammer-in bracket	Galvanized steel
J	Strut 2,5 m	Galvanized steel
K	Large driven bracket	Galvanized steel
L	Middle clamp	Al

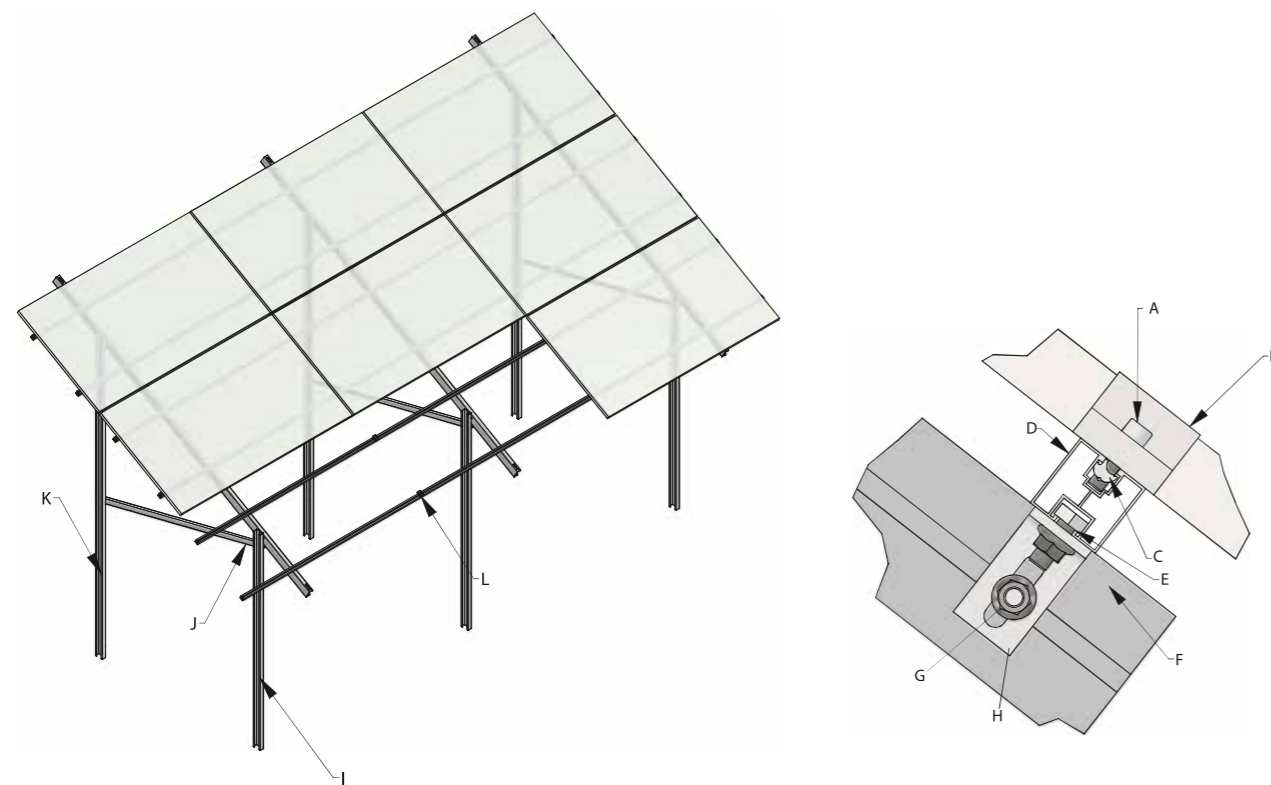
It is possible to prepare components for an individual order.



GROUND CONSTRUCTION FOR MOUNTING THREE PANELS HORIZONTALLY

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	Hex screw	A2
F	Strengthened profile 40x80	Al
G	Flange nut M10	A2
H	Stainless steel angle	A2
I	Small hammer-in bracket	Galvanized steel
J	Strut 2,5 m	Galvanized steel
K	Large driven bracket	Galvanized steel
L	Middle clamp	Al

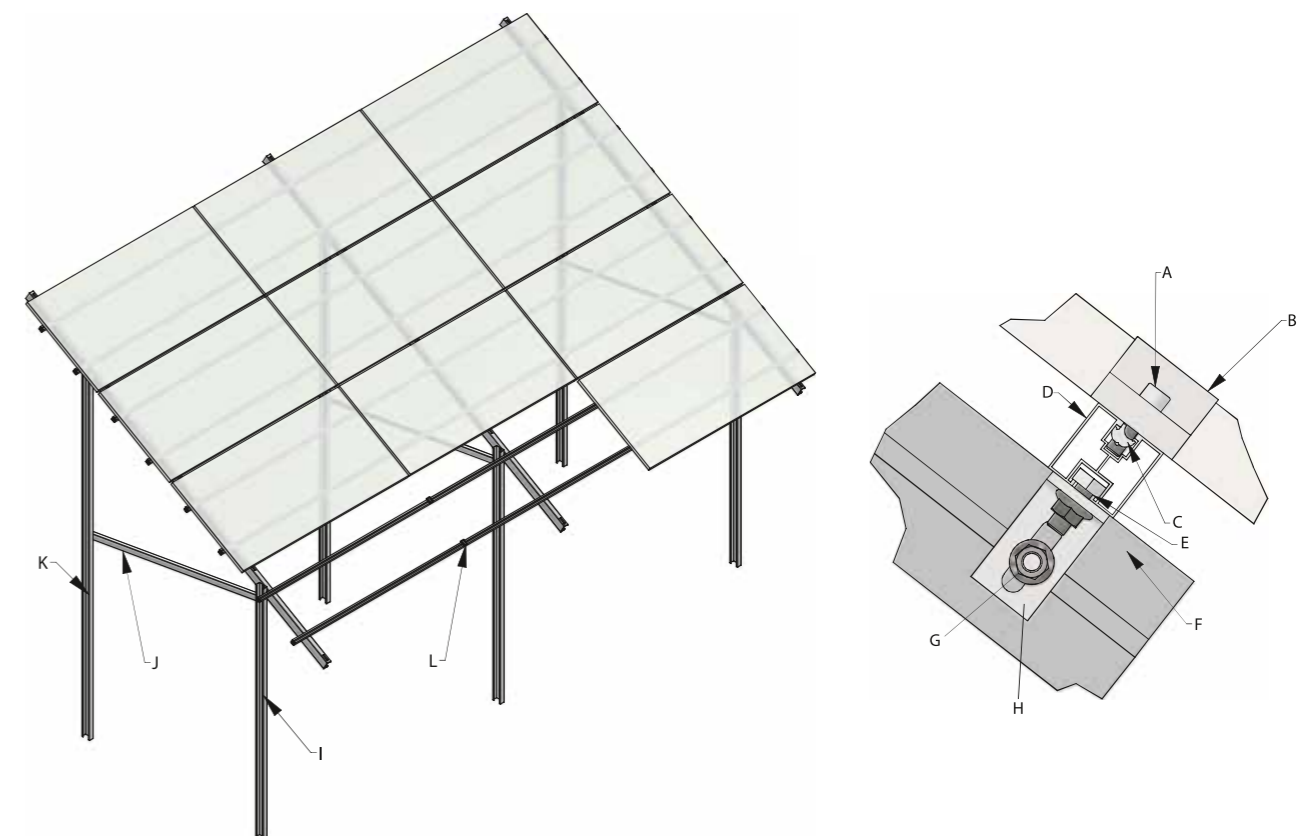
It is possible to prepare components for an individual order.



GROUND CONSTRUCTION FOR MOUNTING FOUR PANELS HORIZONTALLY

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain with ball	Al
D	Mounting profile 40x40	Al
E	Hex screw	A2
F	Strengthened profile 40x80	Al
G	Flange nut M10	A2
H	Stainless steel angle	A2
I	Small hammer-in bracket	Galvanized steel
J	Strut 2,5 m	Galvanized steel
K	Large driven bracket	Galvanized steel
L	Middle clamp	Al

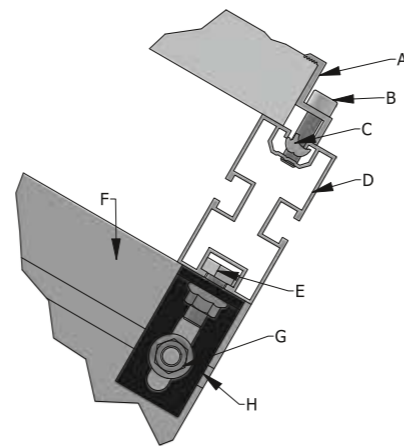
It is possible to prepare components for an individual order.



CONSTRUCTION ON BI FACIAL FOR LAYING THREE PANELS HORIZONTALLY

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 80x40	Al
E	Hex screw	A2
F	Mounting profile 80x40	Al
G	Flange nut	A2
H	Stainless steel angle	Al
I	Low hammer-in bracket	Galvanized steel
J	Strut	Galvanized steel
K	Large hammer-in bracket	Galvanized steel
L	Middle clamp	Al

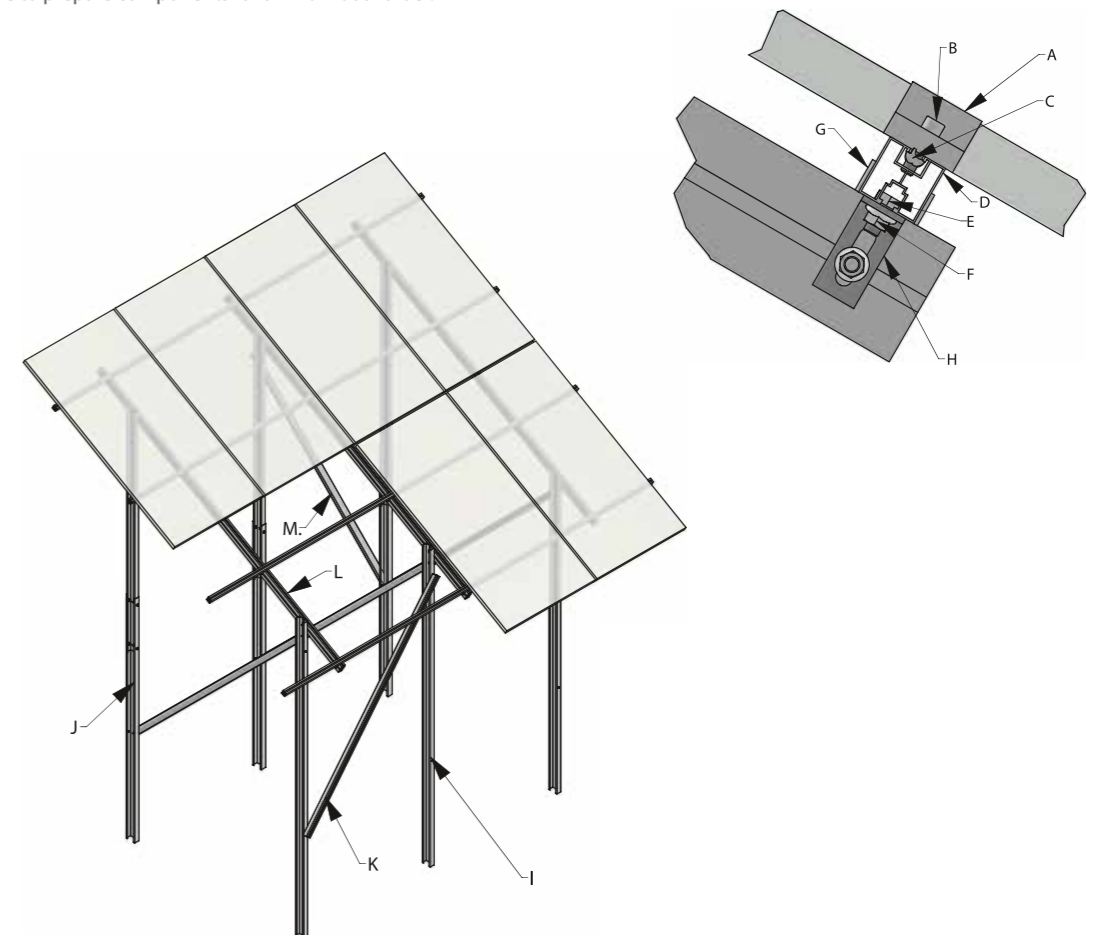
It is possible to prepare components for an individual order.



GROUND STRUCTURE ELEVATED FOR LAYING TWO PANELS VERTICALLY

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	Hex screw	A2
F	Flange nut	A2
G	C120 connector	Al
H	Stainless steel angle	A2
I	Small bracket poured in concrete	Galvanized steel
J	Large bracket poured in concrete	Galvanized steel
K	Front-to-front shot	Galvanized steel
L	Mounting profile 80x40	Al
M	Back-to-back shot	Galvanized steel

It is possible to prepare components for an individual order.



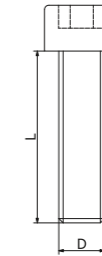
4

Photovoltaic construction components

SCREWS, NUTS, GROOVES

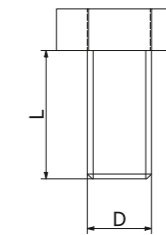
ALLEN KEY SCREW

No. Cat.	Material	D	L
50816	A2	M8	16
50820	A2	M8	20
50825	A2	M8	25
50830	A2	M8	30



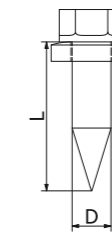
HEX SCREW

No. Cat.	Material	D	L
501020	A2	M10	20
501030	A2	M10	30
500816	A2	M8	16
500820	A2	M8	20



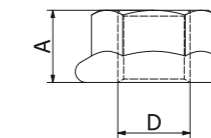
BI-METAL SELF-TAPPING SCREW WITH WASHER

No. Cat.	Material	D	L
41100	A2	6	25



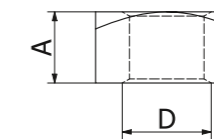
FLANGE NUT

No. Cat.	Material	D	A
5010K	A2	M10	10
5008K	A2	M10	10



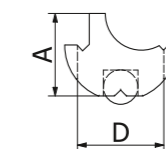
FLANGE NUT

No. Cat.	Material	D	A
50308	A2	M8	10
50041	A2	M10	10



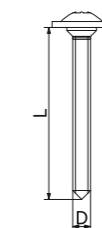
INLET WITH BALL

No. Cat.	Material	D	A
50032	Al	M8	10



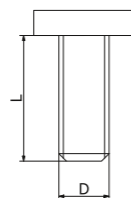
TCS CREW

No. Cat.	Material	D	L
50860	A2	M8	60
50880	A2	M8	80



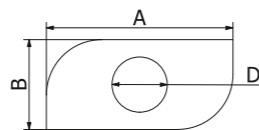
SOLAR SCREW

No. Cat.	Material	D	L
50625	A2	M10	25
50630	A2	M10	30



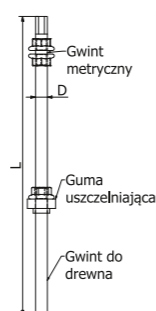
THREADED PLATE

No. Cat.	Material	D	A	B
50033	A2	M8	25	13



DUAL THREAD SCREW

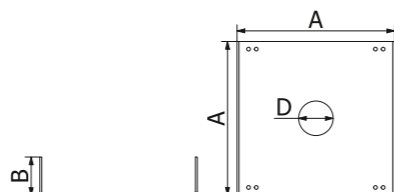
No. Cat.	Material	L	D
M10200	A2	200	M10
M10250	A3	250	M10
M10300	A4	300	M10
M10350	A5	350	M12



ACCESSORIES

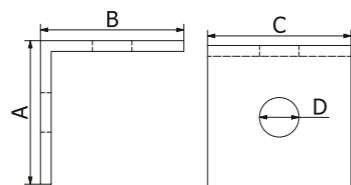
EARTHING PLATE

No. Cat.	Material	D	A	B
70006	A2	8,5	41	10



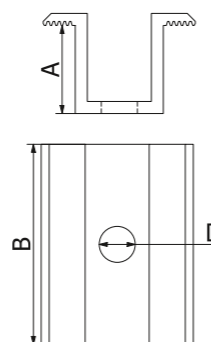
CORNER BRACKET FOR BALLAST

No. Cat.	Material	D	A	B	C
60001	Al	10	40	40	40



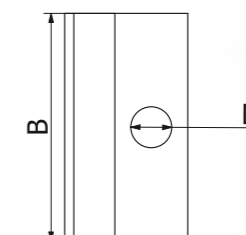
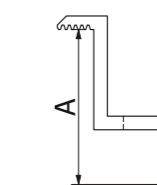
MIDDLE CLAMP

No. Cat.	Material	D	A	B	Color
10U24	Al	9	24	50	Silver
10U24-80	Al	9	24	80	Silver
10U24-150	Al	9	24	150	Silver
10U24R	Al	9	24	50	Black
10U24R-80	Al	9	24	80	Black
10U24R-150	Al	9	24	150	Black



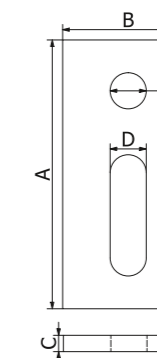
END CLAMP

No. Cat.	Material	D	A	B	Color
10Z25	Al	9	25	50	Silver
10Z30	Al	9	30	50	Silver
10Z32	Al	9	32	50	Silver
10Z35	Al	9	35	50	Silver
10Z38	Al	9	38	50	Silver
10Z40	Al	9	40	50	Silver
10Z30-80	Al	9	30	80	Silver
10Z30-150	Al	9	30	150	Silver
10Z25R	Al	9	25	50	Black
10Z30R	Al	9	30	50	Black
10Z32R	Al	9	32	50	Black
10Z35R	Al	9	35	50	Black
10Z38R	Al	9	38	50	Black
10Z40R	Al	9	40	50	Black
10Z30R-80	Al	9	30	80	Black
10Z30R-150	Al	9	30	150	Black



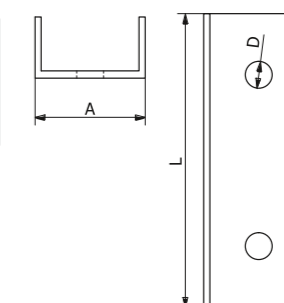
RUST-PROOF ADAPTER

No. Cat.	Material	D	A	B	C
50082	A2	11	82	40	5



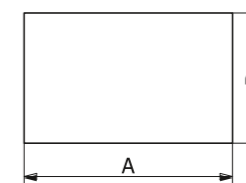
C120 CONNECTOR

No. Cat.	Material	D	A	L	Color
50120	Al	11	45	120	Silver
50120R	Al	11	45	120	Black



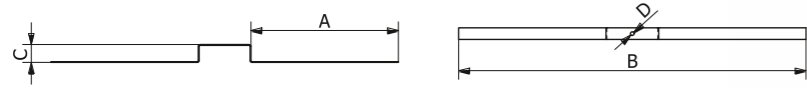
RUBBER PAD

No. Cat.	Material	A	B	Size
12113	Gum	610	220	1
12114	Gum	400	250	1
12116	Gum	1062	136	1
12120	Gum	150	150	3



BALLAST HOLDER

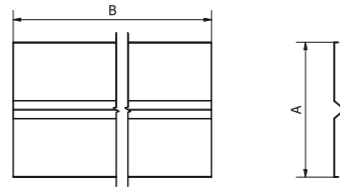
No. Cat.	Material	A	B	C	D
20019	Al	378	891	46	9



WINDSHIELD FOR BALLAST STRUCTURE

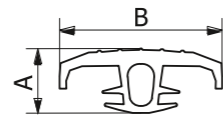
No. Cat.	Material	A	B
20022-1	Magnelis	278	2500

The windshield should be attached to the structure with self-tapping screws.



SEAL FOR PHOTOVOLTAIC SHELTERS (CARPORT)

No. Cat.	Material	A	B
50002	EPDM	16,5	42



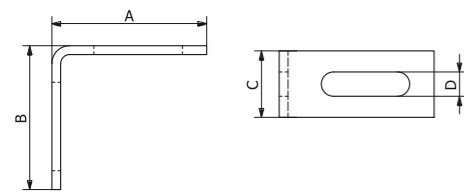
SOLAR WIRE CLIP

No. Cat.	Material	Kabel
70010	A2	4-6 mm ²



STAINLESS STEEL ANGLE

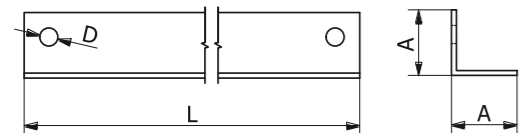
No. Cat.	Material	A	B	C	D
80040	A2	70	65	30	11



ANGLE BAR WITH HOLES

No. Cat.	Material	A	L	D
60118	Al	40	1180	11
60108	Al	40	1080	11
60098	Al	40	980	11
60088	Al	40	880	11
6078	Al	40	780	11

Angle bars used as ballast holders



MOUNTING HOLDERS

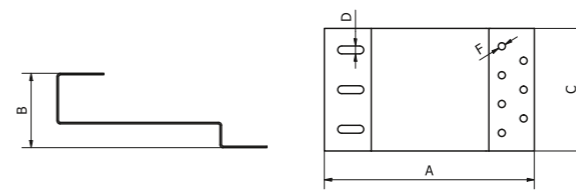
L-SHAPED HOOK

No. Cat.	Material	D	F	A	B	C
20255	A2	11	10	250	70	25



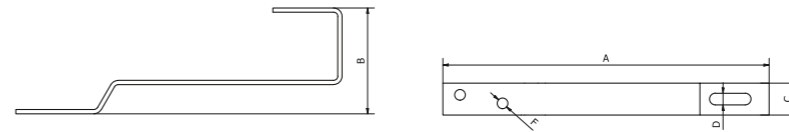
WIDE HOLDER FOR FLAT ROOF TILE

No. Cat.	Material	D	F	A	B	C
20290	A2	11	10	291	103	170



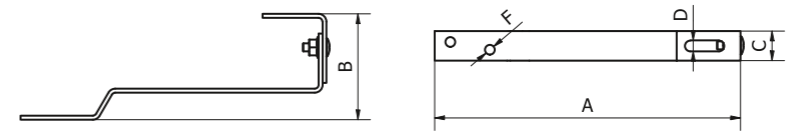
ZL-SHAPED HOOK

No. Cat.	Material	D	F	A	B	C
20310	A2	11	10	307	99	30



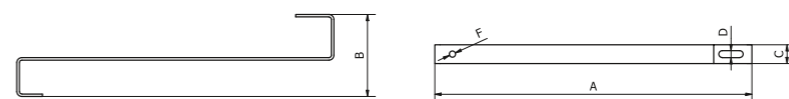
ZL-SHAPED HOOK (ADJUSTABLE)

No. Cat.	Material	D	F	A	B	C
20310R	A2	11	10	310	75-97	30



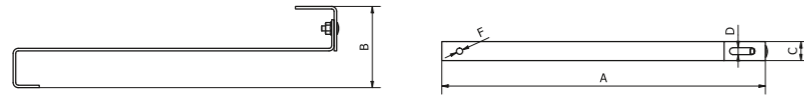
S-SHAPED HOOK

No. Cat.	Material	D	F	A	B	C
20466	A2	11	10	466	131	30
20506	A2	11	10	506	131	30



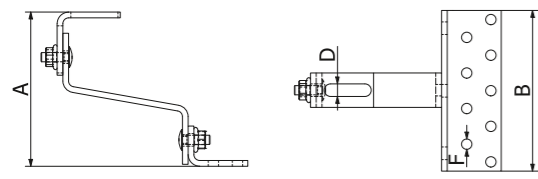
S-SHAPED HOOK (ADJUSTABLE)

No. Cat.	Material	D	F	A	B	C
20466R	A2	11	10	466	67-85	30
20506R	A2	11	10	506	67-86	30
20520R	A2	11	10	520	67-87	30
20610R	A2	11	10	610	67-88	30



DOUBLY ADJUSTABLE RAFTER HOOK

No. Cat.	Material	D	F	A	B
20171	A2	11	9	57-79	140



ADJUSTABLE HOOK FOR SPRINKLED STEEL ROOF TILE

No. Cat.	Material	A	B	C	D	F
20172R	A2	69-97	172	30	11	10

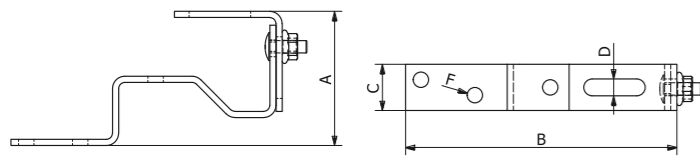
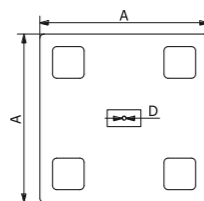


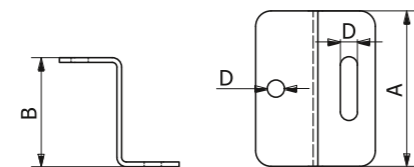
PLATE MOUNTED UNDER ROOFING FELT/MEMBRANE

No. Cat.	Material	A	D
20400	Painted steel	400	M10



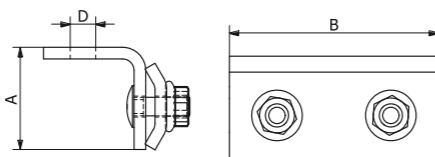
Z-BEAM

No. Cat.	Material	A	B	D
20402	A2	100	70	11



STEEL STANDING SEAM CLAMP

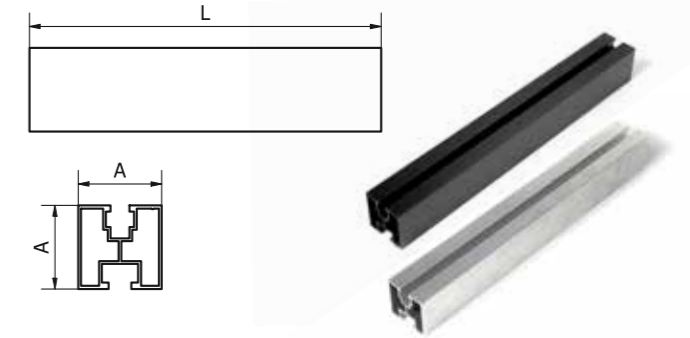
No. Cat.	Material	A	B	D
20801	A2	44	90	11
20803	A2	68	60	11



MOUNTING PROFILES

MOUNTING PROFILE 40X40

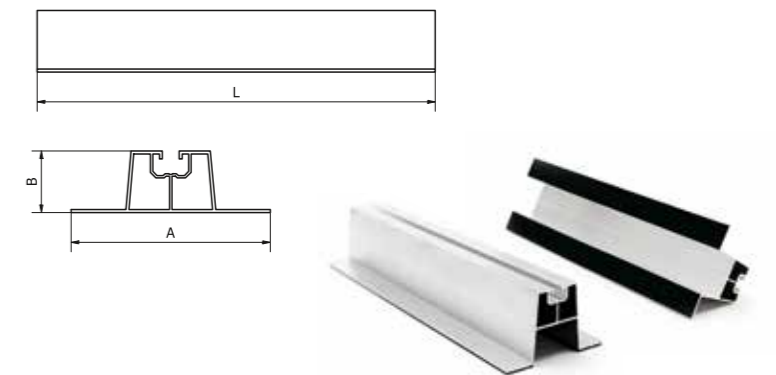
No. Cat.	Material	A	L	Color
34220	Al	40	2200	Silver
34330	Al	40	3300	Silver
34440	Al	40	4400	Silver
34660	Al	40	6600	Silver
34220R	Al	40	2200	Black



The upper part of the profile is suitable for the M8 nut, and the lower part for the screw M10.

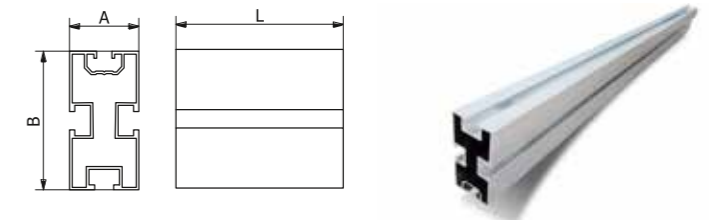
TRAPEZOIDAL RAIL LIFT

No. Cat.	Material	A	B	L
43330	Al	100	31	330
43470	Al	100	31	470
46330	Al	114	60	330
43470	Al	114	60	470
4100330	Al	119	100	330
4100470	Al	119	100	470
441000	Al	114	40	1000
442000	Al	114	40	2000



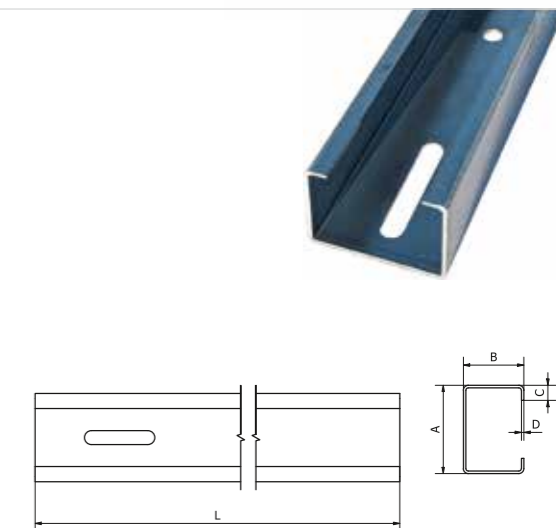
STRENGTHENED PROFILE 80X40

No. Cat.	Material	A	B	L
382900	Al	40	80	2900
387000	Al	40	80	3700



HAMMER-IN BRACKET

No. Cat.	Material	A	B	C	D	L
81377	Galvanized steel	70	48	8	2	3770
81250	Galvanized steel	70	48	8	2	2500
81235	Galvanized steel	70	48	8	2	2350
81360	Galvanized steel	97	48	15	2	3600
81377M	Magnelis	70	48	8	2	3770
81250M	Magnelis	70	48	8	2	2500
81235M	Magnelis	70	48	8	2	2350
81360M	Magnelis	97	48	15	2	3600



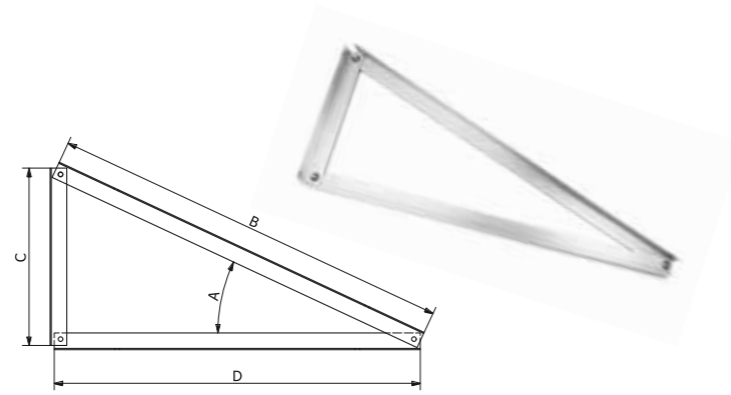
Brackets for use in ground structures

MOUNTING TRIANGLES

SMALL SCREW-ON TRIANGLE

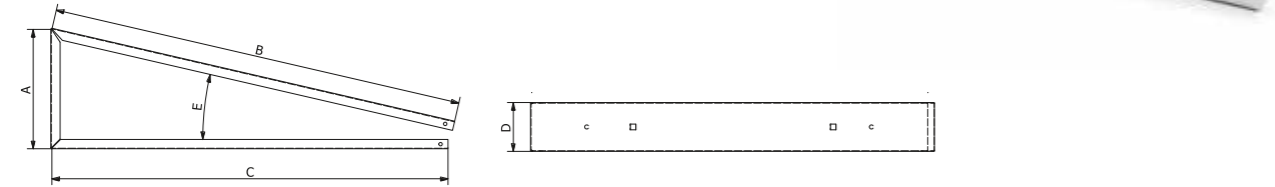
No. Cat.	Material	A	B	C	D
60096-15	Al	15	960	271	928
60096-20	Al	20	960	348	904
60096-25	Al	25	960	423	873
60096-30	Al	30	960	495	835
60096-35	Al	35	960	563	792

The triangles are made of a 40x40x3 angle bar.



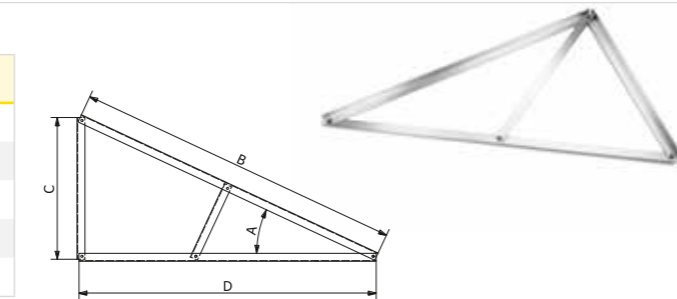
15-DEGREE FOLDING TRIANGLE

No. Cat.	Material	A	B	C	D	E
60-100-15	Stainless steel	315	1109	1056	130	15
61-110-15	Magnelis	315	1109	1056	130	15



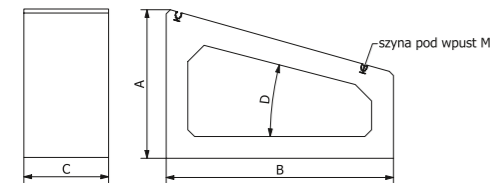
LARGE SCREW-ON TRIANGLE

No. Cat.	Material	A	B	C	D
60165-15	Al	15	1650	449	1595
60165-20	Al	20	1650	584	1552
60165-25	Al	25	1650	715	1498
60165-30	Al	30	1650	840	1433
60165-35	Al	35	1650	959	1357



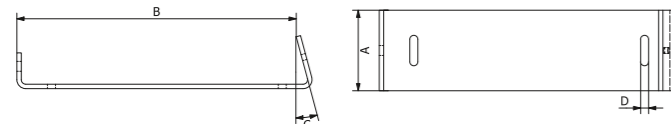
CONCRETE BLOCK WITH ASSEMBLY PROFILE

No. Cat.	Material	A	B	C	D
60061-15	Concrete	386	590	200	15



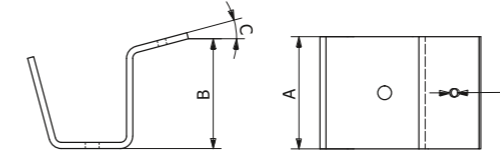
BACK MOUNTING BRACKET

No. Cat.	Material	A	B	C	D
20014	Al	90	313	15	9



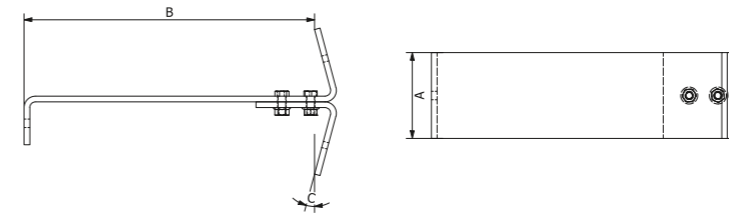
FRONT SUPPORT FOR BALLAST CONSTRUCTION

No. Cat.	Material	A	B	C	D
20013	Al	90	95	15	9



BACK MOUNTING BRACKET EAST/WEST

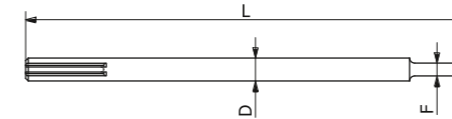
No. Cat.	Material	A	B	C	D
20014WZ	Al	90	309	15	9



ELECTRICAL GROUNDING

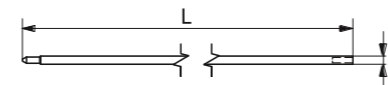
MALLET SDS MAX

No. Cat.	Material	L	D	F
70005	HR	344	18	10



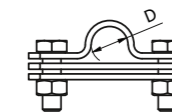
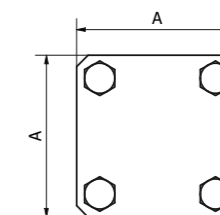
GALVANIZED EARTH ELECTRODE

No. Cat.	Material	L	D
70001	Galvanized steel	1500	16



GROUNDING CONNECTOR

No. Cat.	Material	A	D	Liczba płytek
70003	Galvanized steel	70	16	2
70004	Galvanized steel	70	16	3



5

Car port

CAR PORT – CONCEPTS



SLOPING ROOF

FLAT ROOF

GROUND COLLECTORS

STRUCTURAL ELEMENTS

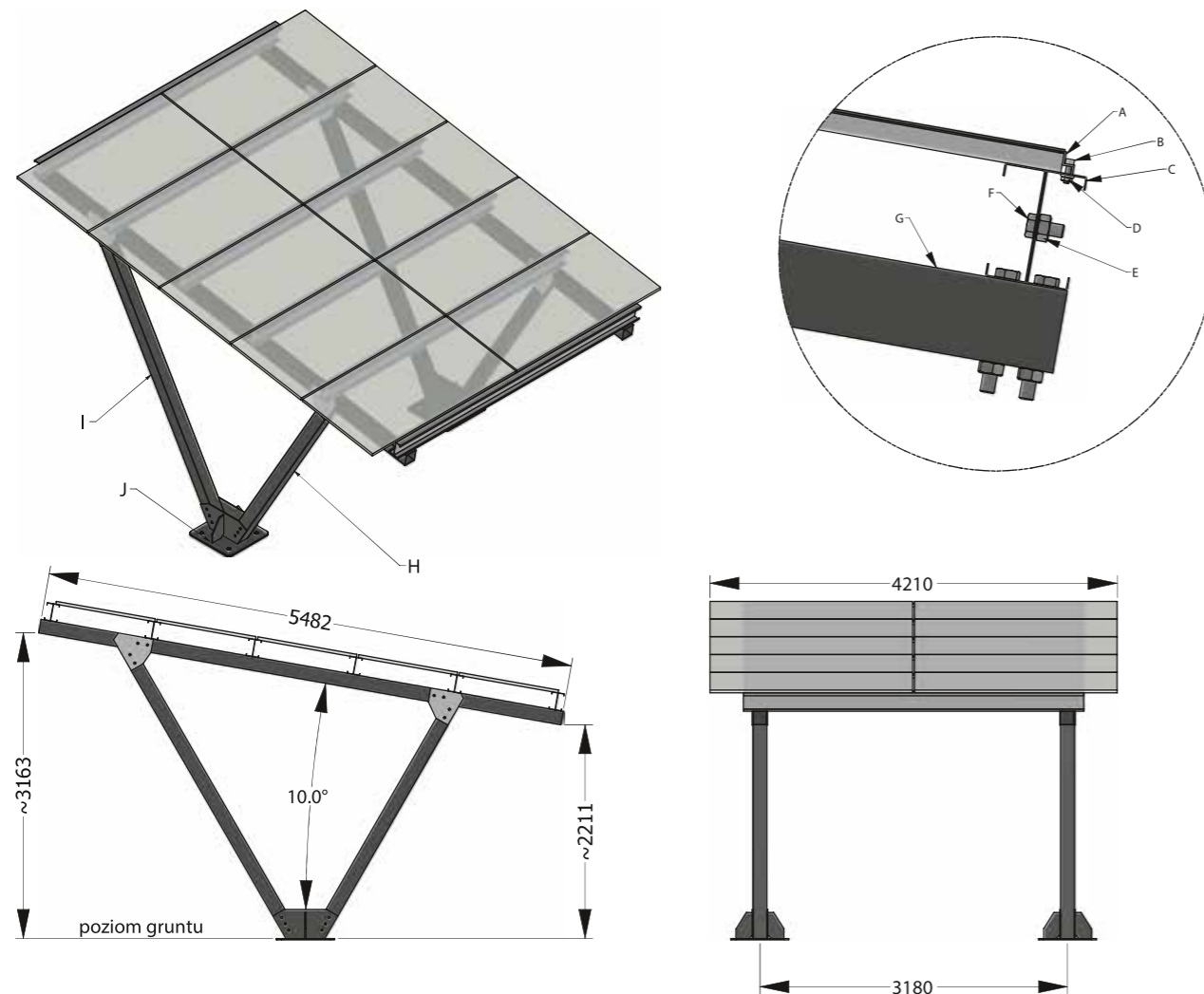
CAR PORT

FACADE/BALCONY SYSTEMS

SINGLE STATION CAR PORT

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Purlin	Galvanized steel
D	Flange nut	A2
E	Flange nut	A2
F	Hex screw	A2
G	Bolt	Galvanized steel
H	Front leg	Galvanized steel
I	Rear leg	Galvanized steel
J	Bracket	Galvanized steel

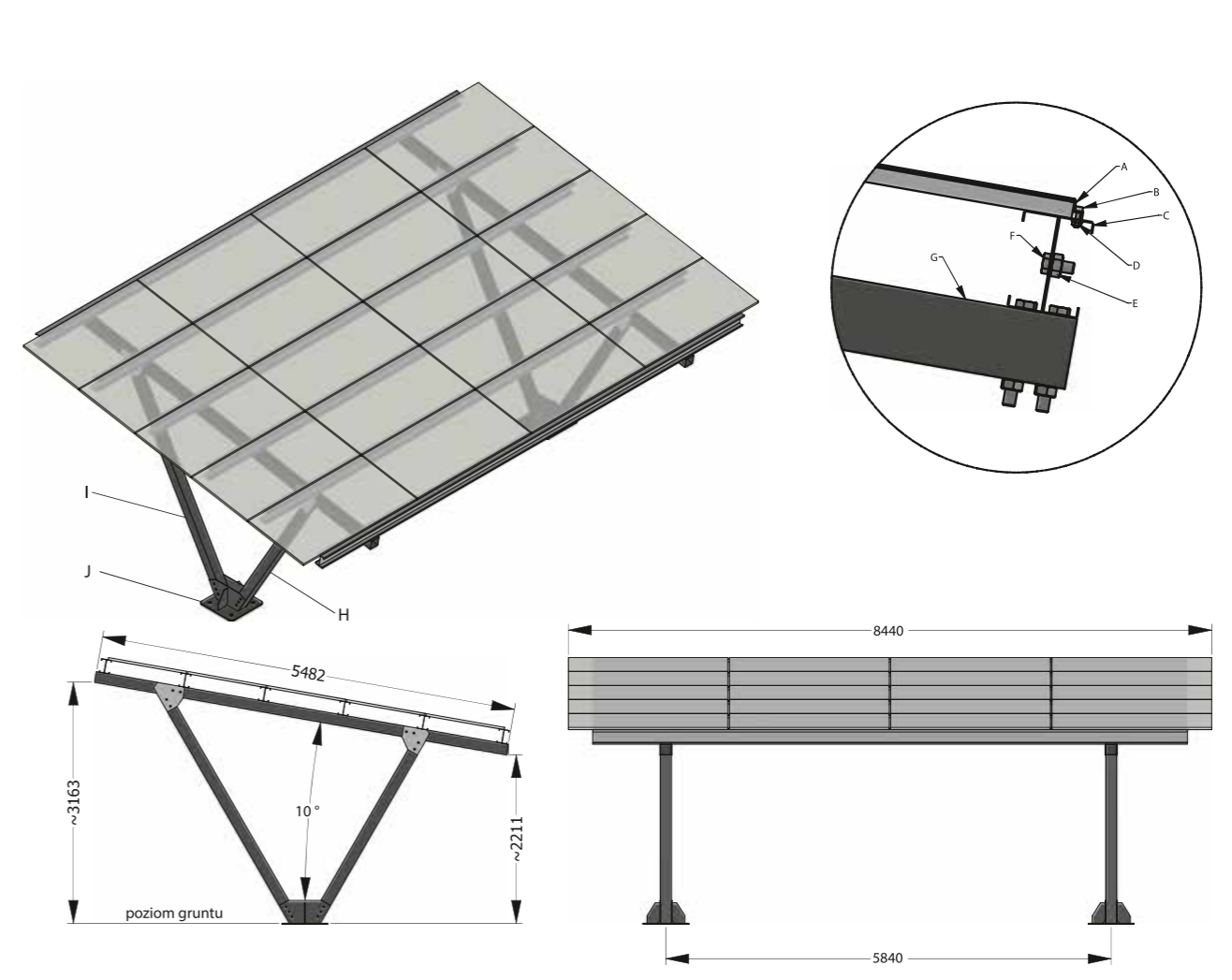
It is possible to prepare elements to individual order and paint the structure in any RAL color.



TWO-STATION CAR PORT

Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Purlin	Galvanized steel
D	Flange nut	A2
E	Flange nut	A2
F	Hex screw	A2
G	Bolt	Galvanized steel
H	Front leg	Galvanized steel
I	Rear leg	Galvanized steel
J	Bracket	Galvanized steel

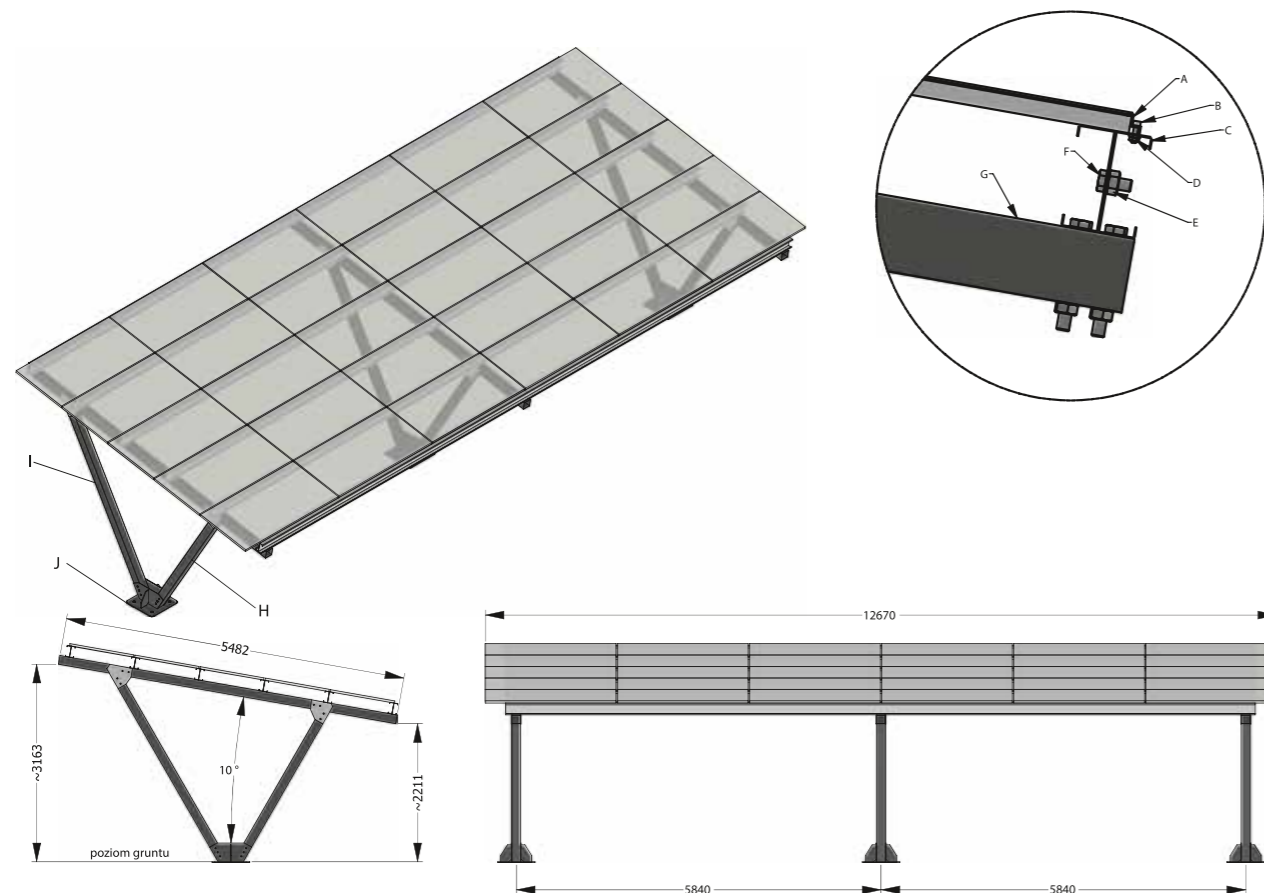
It is possible to prepare elements to individual order and paint the structure in any RAL color.



FOUR-STATION CAR PORT

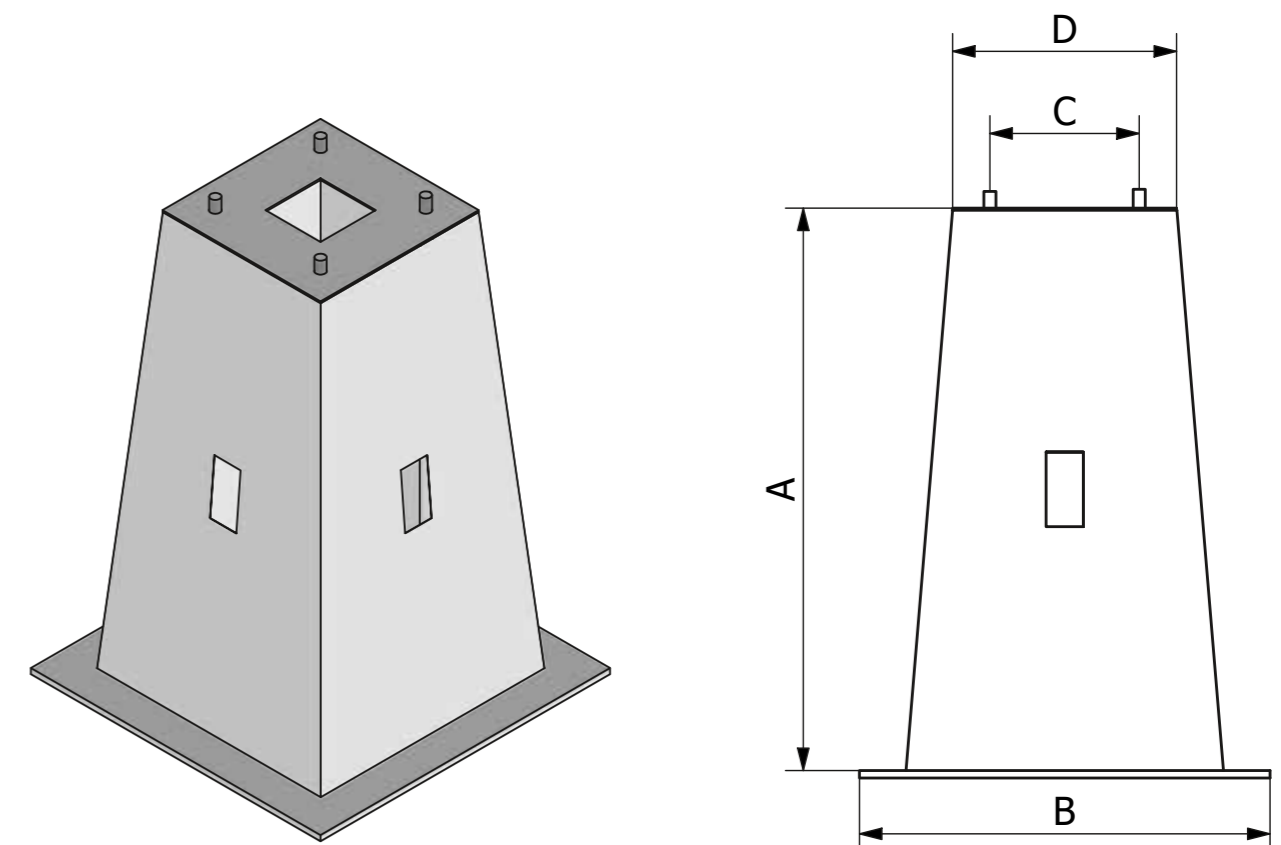
Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Purlin	Galvanized steel
D	Flange nut	A2
E	Flange nut	A2
F	Hex screw	A2
G	Bolt	Galvanized steel
H	Front leg	Galvanized steel
I	Rear leg	Galvanized steel
J	Bracket	Galvanized steel

It is possible to prepare elements to individual order and paint the structure in any RAL color.



FOUNDATION FOR POLE MOUNTING - TYPE F-5S

Catalogue No.	Material	A	B	C	D
90011	Concrete	1500	1100	400	600

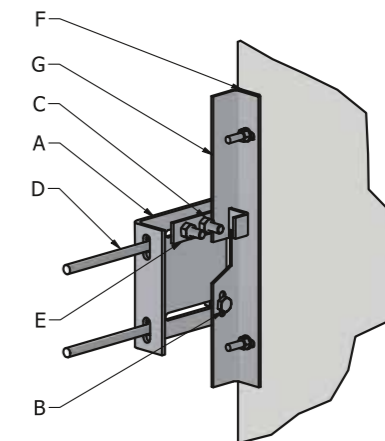
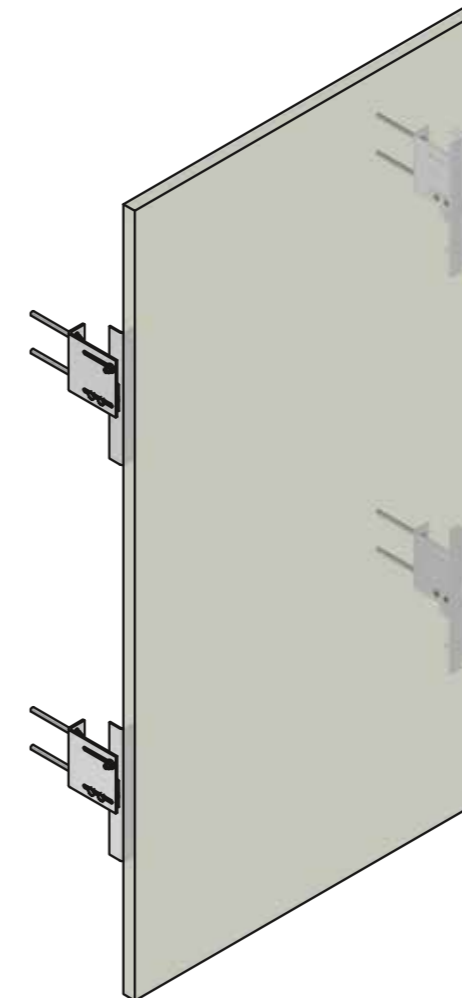


6 New

CONSTRUCTION FOR FACADE – INSTALLATION PARALLEL TO THE PLANE OF THE WALL

Mark	Name	Material
A	Angle 150x50 (elevation)	Al
B	Hex screw	A2
C	Flange nut	A2
D	Anchor	A2
E	Adapter 90x40x25 (elevation)	Al
F	Flat adapter 30x350 (elevation)	Al
G	Angle 40x40x350 (elevation)	Al

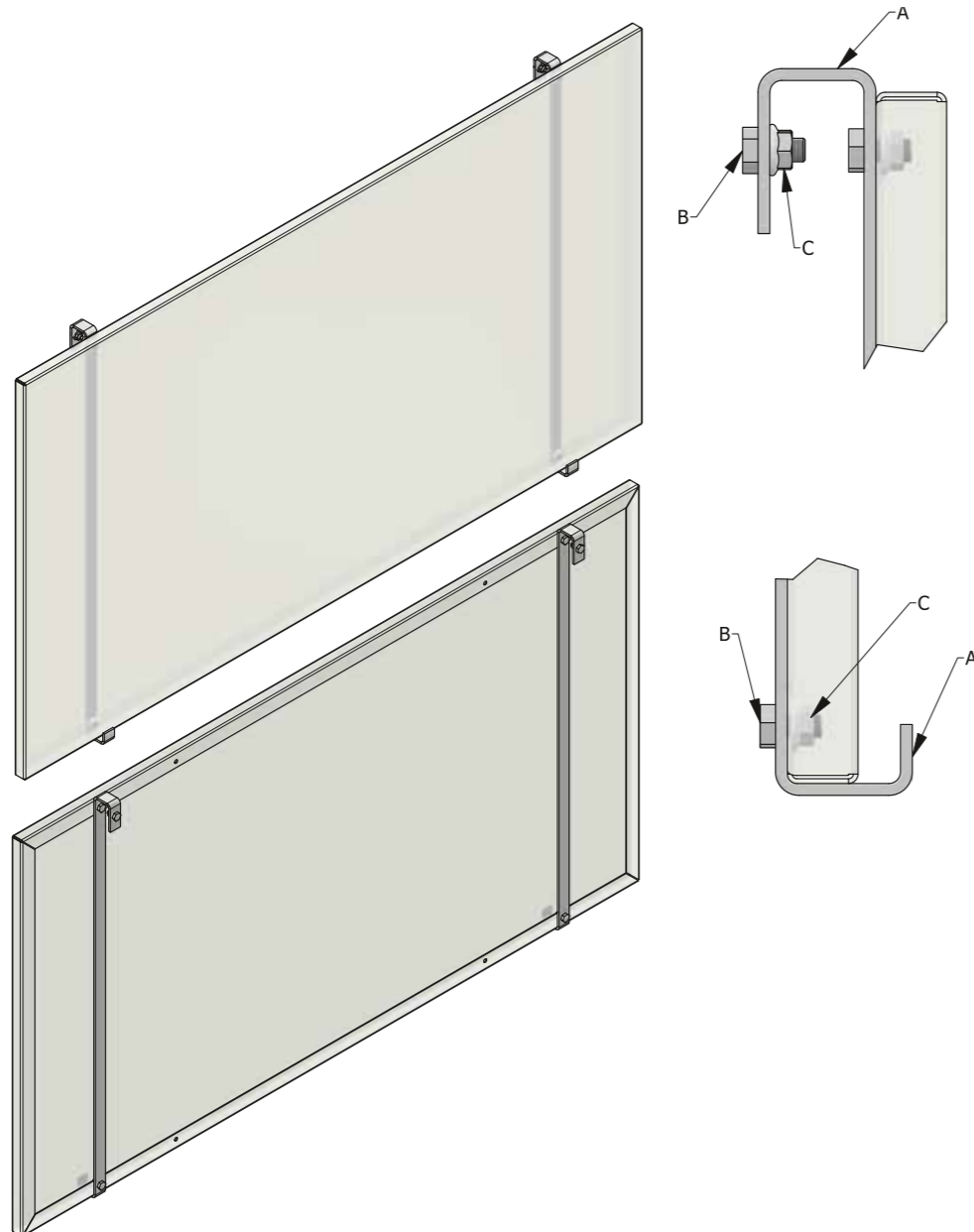
It is possible to prepare components for an individual order.



BALCONY CONSTRUCTION

Mark	Name	Material
A	S-shaped hook	A2
B	Hex screw	A2
C	Allen key screw	A2

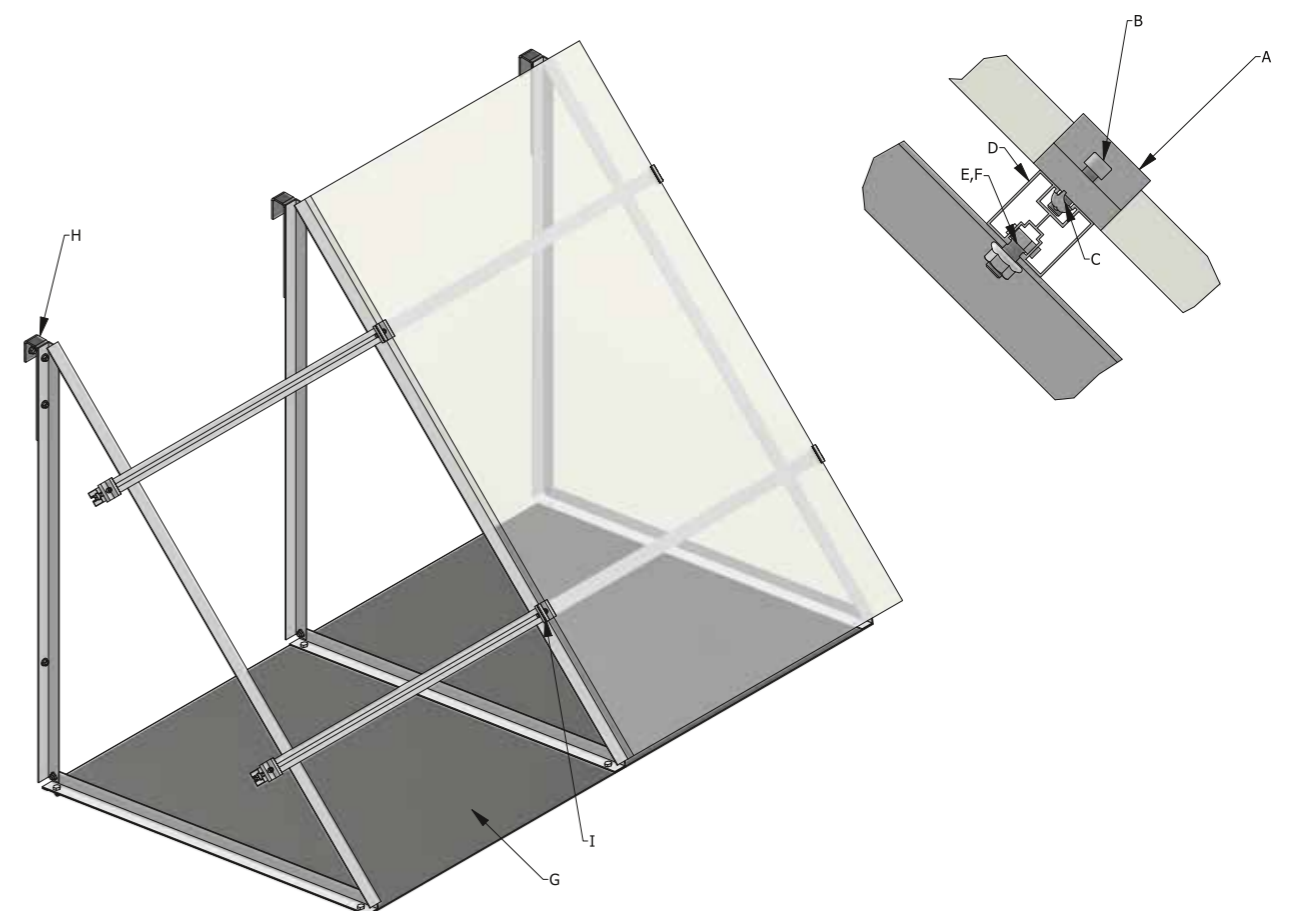
It is possible to prepare components for an individual order.



BALCONY CONSTRUCTION –TRIANGLES*


Mark	Name	Material
A	End clamp	Al
B	Allen key screw	A2
C	Aluminum drain	Al
D	Mounting profile 40x40	Al
E	Hex screw	A2
F	Flange nut	A2
G	Windshield for balast construction	Al
H	L-shaped hook	A2
I	Middle clamp	Al


It is possible to prepare components for an individual order.
*Slope of 45 degrees with respect to the ground plane.





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