inox·mare® SOLAR

MOUNTING SYSTEMS FOR SOLAR INSTALLATIONS

THE SUPPORTING FORCE

Photovoltaics

Photovoltaics is defined as the direct conversion of radiation energy (predominantly solar radiation) into electrical energy. It has been in use ever since it was first adopted for supplying energy to space satellites from solar cells in 1958. It is now used throughout the world to supply electrical power on roof surfaces, parking meters, soundabsorbing walls and open spaces. The name is made up of two parts: photos – the Greek word for light – and Volta – after Alessandro Volta, a pioneer in electrical technology. Photovoltaics forms part of the extensive area of solar technology which also includes other technical utilisations of solar energy.

The best connections

Inox-Mare solar assembly systems. A support for the next generation. Solar energy is growing in popularity. It is sustainable utilising the natural resources of the planet and reduces energy costs making it economically viable and sensible. For these reasons alone more and more home owners and commercial properties are turning to solar systems as a source of supply for their energy needs. Inox-Mare have developed a long term installation mounting system which is both robust and durable, it is easy to fit regardless of the various types of roof structures. With nearly forty years experience in the field of stainless steel fastener and fixing devices we have combined our technical expertise and produced a high quality system which satisfies the needs of our customers for the practical and ease of assembly. By doing so we meet the strict requirements and security of DIN 1055 that certifies the quality of our products.
The Inox-Mare mounting system has been designed to withstand snow and all weather conditions.

Potenziale

The potential which can be achieved is very high: Despite the apparently unfavourable conditions in Germany, using the technology which is available today, approximately 2% of the total area of the country is theoretically sufficient to yield enough electrical energy to meet the total annual requirements of the country. The objection that the area in Central Europe would not be sufficient to support a significant proportion of photovoltaics for energy production is therefore not tenable. Also, the required surface area could be found by utilising previously built structures (mainly roofs) without building over new ground. This theoretical evaluation of 100% coverage by photovoltaics does not represent the aim of implementation but merely serves to show the magnitude of the surface requirement. In the long term, therefore, photovoltaics can make a significant contribution to climate protection and the saving of resources, even in Germany.

PROGRAMMA DI PRODUZIONE 2011

Versione: 10/2010 • con riserva di modifiche

EDELSTAHL Rostfrei®

TÜV SÜD Management Service

RAIL SYSTEM
MOUNTING RAILS

1.1 - Mounting rails				
Item no.	**Figure**	**Item**	**Comments**	**Box**
9664-W 1		Mounting rail 40 x 40 mm	Length: 6.1 m Span width: 1.6 m* Connection below: DIN 933 M10 (length according to customer requirement) Connection top: Sliding block M8	1
NEW **9664-Light1**		Mounting rail 50 x 39 mm	Length: 6,1 m Span width: 1,55 m* Connection below: DIN 933 M10 Connection above: Sliding block M8 cross bracing with 1 profile possible with mounting plates 9785-W26	1
9664-W 2		Mounting rail 80 x 40 mm	Length: 6.1 m Span width: 3.2 m* Connection below: DIN 933 M10 (length according to customer requirement) Connection top: Sliding block M8	1
9664-W 3		Mounting rail 40 x 40 mm	Length: 6,1 m Span width: 1,6 m* Connection below: DIN 933 M10 (length according to customer requirement) Connection top: Square nut M8 oder Hexagon nut M8	1
NEW **9664-Light 3**		Mounting rail 50 x 37 mm	Length: 6,1 m Span width: 1,55 m* Connection below: DIN 933 M10 (length according to customer req.) Connection above: Sliding block M8 or heagon nut M8 cross bracing with 1 profile possible with mounting plates 9785-W26	1

Item no.	Figure	Item	Comments	Box
9664-W 15		Mounting rail 40 x 40 mm	Length: 6.1 m Span width: 1.6 m* Connection at the side: Sliding block M8 Connection top: Sliding block M8	1
9664-W 16		Mounting rail 80 x 40 mm	Length: 6.1 m Span width: 3.2 m* Connection at the side: Sliding block M8 Connection top: Sliding block M8	1
9664-W 200		Heavy duty rail 100 x 80 mm	Length: 6.0 m Diverse Anbindungsmöglichkeiten Span width: > 4 Meter	1
NEW **9664-W 2-26**		Mounting rail 80 x 40 mm	Length: 6.1 m Structural analysis: similar to 9664-W 2 Can be combined with mounting plates 9785-W 26 for additional side anchoring (e.g. for cross-linking without angles)	1
9664-W 31		Trapezoidal rail	Length: depending on requirements The profile can be bolted or clinched directly to the trapezoidal sheet. Statistics have to be check. Top channel for sliding block M8	1

*** Assumed loads:**

- Snow load sk = 1.21 kN/m²
- Module load: 0.22 kn/m²
- Wind load: Wsuction = -0.80 kn/m² Wpressure = 0.40 kn/m²

1.2 - Sliding block				
Item no.	**Figure**	**Item**	**Comments**	**Box**
9431-120901		Sliding block Swivel	for M8 VE = 100 pieces ALUMINIUM Ball from A2	100

1.3. Made-to-order mounting rails

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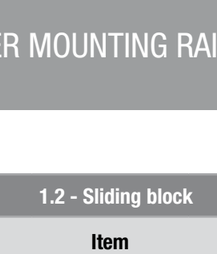


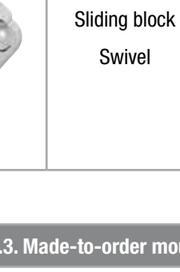

We can supply
any profile emaginable.
even according
to your drawing.

Please enquire!

1.4 - Simple cross bracing				
Item no.	**Figure**	**Item**	**Comments**	**Box**
9664-W 15		Mounting rail 40 x 40 mm for lateral fastening	Length: 6.1 m Span width: 1.6 m* Connection at the side: Sliding block M8 Connection top: Sliding block M8 *For horizontal laying with bracket 9701-W 14*	1
9664-W 16		Mounting rail 80 x 40 mm	Length: 6.1 m Span width: 3.2 m* Connection at the side: Sliding block M8 Connection top: Sliding block M8 *For horizontal laying with bracket 9701-W 14*	1
9701-W 14		Cross bracing connection bracket	Mounting 9664-W 15 or W 16 on 9664-W 1. W 2 or W 3 with 3 sliding blocks and screws DIN 912-2-8*16	100
				

*** Assumed loads:**

- Snow load sk = 1.21 kN/m²
- Module load: 0.22 kn/m²
- Wind load: Wsuction = -0.80 kn/m² Wpressure = 0.40 kn/m²

1.6 - Profile connectors				
Item no.	**Figure**	**Item**	**Comments**	**Box**
9751-W 12		Profile connectors 200 mm	for mounting rails 9664-W 1/3/15/22 They also require 4 selfdrilling screws /connectors for fastening	100
9751-W 18		Profile connector slide-in 200 mm	for mounting rails 9664-W 1/3/15/16 W 1/3/15 = 1 connector / connector W 16 = 2 connectors / connectors	50
9751-W 18 L		Profile connector slide-in light 200 mm	for mounting rails type light you need 2 pieces / connectors for 9664-Light 1 and 9664-Light 3	50
9557-2-200*40		Profile connector 4-hole 200 x 40 x 5 mm Round hole M10 Stainless steel A2	for mounting rails 4 x hammerhead screws W S9420 M8x20 + flange nuts with serration 9345-2-8 required	25
9672-FS-connector		Profile connector slide-in heavy load	for Heavy duty rail 9664-W 200 Sie benötigen 2 Stück / Verbindung	125

2 - Accessories made of aluminium				
Item no.	**Figure**	**Item**	**Comments**	**Box**
9671-40*40*3		Angle profile ALU 40*40*3	Length: 6.05 metres 40 x 40 x 40 x 3 mm from stock Other lengths available on enquiry.	1
9671		Angle profile ALU	e.g. 40 x 40 x 4 lengths at 6.05 m Lengths and other sizes depending on requirements	1
9671-W 20		Z profile ALUMINIUM	Z profile ALUMINIUM Length: 6.1 metres 40 x 40 x 40 x 3 mm Other sizes. e. g. 40 x 60 x 40 x 3. available on enquiry	1

3.1 - Module clamps for framed modules

Item no.	Figure	Item	Comments	Box
9742-W 4-…		End clamp ALUMINIUM	Length: 70 mm Width: 30 mm Please specify module height.	50
9745-W 13		Middle clamp ALUMINIUM	Length: 70 mm Width: 36 mm	100

3.2 - Screws and accessories for module clamps

Item no.	Item	Box
Allen screws: **DIN 912 o DIN 9455**		
912-2-8*30	M8*30 mm	200
912-2-8*35	M8*35 mm	200
912-2-8*40	M8*40 mm	200
912-2-8*45	M8*45 mm	100
912-2-8*50	M8*50 mm	100
912-2-8*55	M8*55 mm	100
912-2-8*60	M8*60 mm	100
9250-2-8.4	Locking washer A2 8.4 mm	1000

3.3 - Use of Allen screws for different module heights

Module height	Screw for rail with sliding block	Locking washer (for sliding block channel only)	Screw for rail with square nut [1]
32 mm	Allen, M8 x 35		Allen, M8 x 35 or *40
34 mm	Allen, M8 x 35		Allen, M8 x 35 or *40
35 mm	Allen, M8 x 40	x	Allen, M8 x 40 or *45
36 mm	Allen, M8 x 40	x	Allen, M8 x 40 or *45
38 mm	Allen, M8 x 40		Allen, M8 x 40 or *45
40 mm	Allen, M8 x 45	x	Allen, M8 x 45 or *50
41 mm	Allen, M8 x 45	x	Allen, M8 x 45 or *50
42 mm	Allen, M8 x 45		Allen, M8 x 45 or *50
45 mm	Allen, M8 x 50	x	Allen, M8 x 50 or *55
46 mm	Allen, M8 x 50	x	Allen, M8 x 50 or *55
50 mm	Allen, M8 x 55	x	Allen, M8 x 55 or *60

[1] Both specified lengths can be used with these square nuts.

3.4 - Module clamps plus clip connector KlickFIX

Item no.	Figure	Item	Comments	Box
9742-ClipE		End clamp ALU plus clip	Significantly higher tensile strength than conventional attachments due to special aluminium alloy End clamp fully assembled with screw, nut and clip connector Please specify module height in your order/enquiry! This convenient clip connection clicks into any top channel of the W profiles. Reduced installation time saves you money!	50
9745-ClipM		Centre clamp ALU	Significantly higher tensile strength than conventional attachments due to special aluminium alloy Centre clamp fully assembled with screw, nut and clip connector Please specify module height in your order/enquiry! This convenient clip connection clicks into any top channel of the W profiles. Reduced installation time saves you money!	100

3.5 - Module clamps for glass modules

Item no.	Figure	Item	Comments	Box
9745-laminate L **9742-laminate L**		End clamp Middle clamp ALUMINIUM	• Practical clip connection • UV resistant EPDM rubber • Modular height adjustable You also require one Allen screw DIN 912 A2 8x35 clamping range: 6-9 mm	100
9745-laminate-S **9742-laminate-S**		Centre clamp End clamp for glass modules ALU	• Elastic sealing insert for optimal, friction-locked clamping Also requires socket screws DIN 912 A2 8x12 clamping range: 6,8 mm	art. 9745: 390 art. 9742: 200
9745-laminate-JT **9742-laminate-JT**		Centre clamp End clamp for glass modules ALU Form rubber 6.8mm	• Patented design with EPDM rubber bed • Convenient end stop prevents module damage Also requires one socket screw DIN 912 A2 8x16 clamping range: 6,8 mm	100

4.1 - Roof hooks and accessories made of stainless steel

Item no.	Figure	Item	Comments	Box
9523-2-1508040		Vario 40 roof hook	Plate 150 x 80 x 5 mm bottom bracket 40 mm rounded hook 8 mm Material: 1.4301	20
9521-2-150x60W		Roof hook small	Version B: Plate 150 x 60 x 4 mm Hook 30 x 5 mm Height 130 mm	20
9521-2-180X80		Roof hook standard	Plate 180 x 80 x 5 mm Hook 35 x 6 mm Height 139 mm	20
9521-2-180X80W		Roof hook standard	Plate 180 x 80 x 5 mm Hook 35 x 6 mm Height 139 mm	10
9525-2-140*56K		Roof hook adjustable	Plate 144 x 56 x 5 mm Hook 5 mm pre-assembled Material: 1.4301	20

From Page 30 onwards, you will find an **enquiry form for roof hook shapes** which you cannot find here.

We recommend our special washer-head screws for fastening the roof hooks onto the rafter. (see heading „Screw accessories“)

4.2 - Aluminium roof hooks

Item no.	Figure	Item	Comments	Box
B **9721-110004** + A **9721-110001**		Roof hooks. end-to-end Consisting of base plate and hook for clipping	For 32 mm battens Height of base plate 46 mm	B 100 A 100
B **9726-110020** + A **9721-110001**			For 40 mm battens Height of base plate 54 mm	B 100 A 100
B **9721-110004** + A **9727-100000**		Roof hook. with height adjust-ment on the hook Consisting of base plate and pre-assembled hook	For 32 mm battens Height of base plate 46 mm	B 100 A 25
B **9726-110020** + A **9727-100000**			For 40 mm battens Height of base plate 54 mm	B 100 A 25
B **9721-110004** + A **9727-200000**		Roof hook for vertical mounting Consisting of base plate and pre-assembled hook **On enquiry**	For 32 mm battens Height of base plate 46 mm	B 100 A 25
B **9726-110020** + A **9727-200000**			For 40 mm battens Height of base plate 54 mm	B 100 A 25

From Page 30 onwards. you will find an **enquiry form for roof hook shapes** which you cannot find here.

We recommend our special washer-head screws for fastening the roof hooks onto the rafter. (see heading „Screw accessories“)

4.3. Support plates for roof hooks, aluminium		
Item no.	**Item**	**Box**
		
9731-2*130702	Support plate, 2 mm aluminium	100
9731-3*130703	Support plate, 3 mm aluminium	100
9731-5*130705	Support plate, 5 mm aluminium	100

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5.1 - Approved dowel screws for timber supporting structures				
Item no.	**Figure**	**Item**	**Comments**	**Box**
9211-2-10*180		Dowel screws A2	Dowel Screw (WS9211) hexagon head 7 AF M10x180 mm thread length: Metric: 100 mm wood: 60 mm	50
9211-2-10*200		Dowel screws A2	Dowel Screw (WS9211) hexagon head 7 AF M10x200 mm thread length : Metric: 110 mm wood: 70 mm	50
9211-2-10*250		Dowel screws A2	Dowel screw (WS9211) hexagon head 7 AF M10x250 mm thread length: Metric: 130 mm wood: 80 mm	50
9211-2-10*300		Dowel screws A2	Dowel screw (WS9211) hexagon head 7 AF M10x300 mm thread length: Metric: 140 mm wood: 100 mm	50
9211-2-12*250		Dowel screws A2	Dowel screw (WS9211) hexagon head 8 AF M12x250 mm thread length: Metric: 130 mm wood: 100 mm	50

5.1 - Approved dowel screws for timber supporting structures

Item no.	Figure	Item	Comments	Box
9211-2-12*300-9		Dowel screws A2	Dowel screw (WS9211) hexagon head 8 AF 12x300 mm thread length : Metric: 140 mm wood: 100 mm	50
9211-2-12*350		Dowel screws A2	Dowel screw (WS9211) hexagon head 8 AF 12x350 mm thread length : Metric: 180 mm wood: 130 mm	50

5.2 - Pre-assembled dowel screws for timber supporting structures

Item no.	Figure	Item	Comments	Box
9215-2-...		Dowel screws hexagon head. pre-assembled	Pre-assembled with 3 hexagon nuts DIN 934 A2 + 3 washers DIN 125 A2 + EPDM gasket WS9218 All dimensions see above WS 9211 with this pre-assembled item available from stock.	25
9216-2-...		Dowel screws hexagon head. pre-assembled	Pre-assembled with 3 serrated nuts WS9345 A2 + EPDM seal WS9218 All dimensions see above WS 9211 with this pre-assembled item available from stock.	25
9218-2-10		EPDM-gasket	EPDM – seal approx. dowel screws M10	1000
9218-2-12		EPDM-gasket	EPDM – seal approx. A for dowel screws M12	1000
Other pre-assembled items available on enquiry				

5.3 - Approved dowel screws for timber supporting structures

Item no.	Figure	Item	Comments	Box
9221-2-…		Dowel screws Allen head. pre-assembled	Dowel screw for timber supporting structure. with special coating Pre-assembled with nuts, washers and mushroom seal Approval from the construction supervision authority	10*134 pz. 25 10*170 pz. 25 10*200 pz. 10 10*250 pz. 10

5.4. Approved dowel screws for steel supporting structures

Item no.	Figure	Item	Comments	Box
9222-2-…		Dowel screws Allen head. pre-assembled	Dowel screw for steel supporting structure. with special coating Pre-assembled with nuts, washers and mushroom seal Approval from the construction supervision authority	10*150 pz. 10 10*175 pz. 10 10*270 pz. 25

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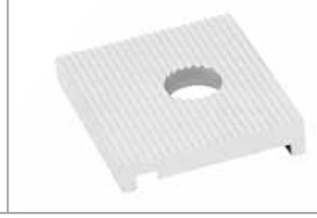
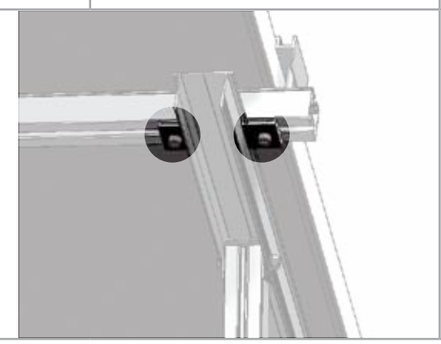
5.5 - Adaptor plates for dowel screws

Item no.	Figure	Item	Comments	Box
9542-2-82*30*5		Adaptor plate stainless steel A2 for dowel screws M10	L: 82 mm x W: 30 mm x H: 5 mm round hole: 11 mm long hole: 9 x 29.5 mm material: 1.4301 For dowel screws M10 and M8 screw fixing in the bottom rail channel	100
9543-2-82*30*5		Adaptor plate stainless steel A2 for dowel screws M10	L: 82 mm x W: 30 mm x H: 5 mm round hole: 11 mm long hole: 11 x 29.5 mm material: 1.4301 For dowel screw M10 and M10 screw fixing in the bottom rail channel	100
9543-AL82*40*6		Adaptor plate stainless steel A2 for dowel screws M10	L: 82 mm x W: 40 mm x H: 6 mm round hole: 11 mm long hole: 11 x 29.5 mm material: Aluminium For dowel screw M10 and M10 screw fixing in the bottom rail channel	100
9544-AL82*40*6		Adaptor plate stainless steel A2 for dowel screws M12	L: 82 mm x W: 40 mm x H: 6 mm round hole: 13 mm long hole: 11 x 29.5 mm material: Aluminium For dowel screw M12 and M10 screw fixing in the bottom rail channel	100
9544-2-82*30*5		Adaptor plate stainless steel A2 for dowel screws M12	L: 82 mm x W: 30 mm x H: 5 mm round hole: 13 mm long hole: 11 x 29.5 mm material: 1.4301 For dowel screw M12 and M10 screw fixing in the bottom rail channel	100
9548-AL-110*40		Adaptor plate stainless steel A2 for dowel screws M10	L: 110 mm x B: 40 mm x H: 5 mm round hole: 11 mm long hole: 11 x 29.0 mm material: 1.4301 For dowel screws M10 and M8 screw fixing in the bottom rail channel	100
Other sizes available on enquiry				

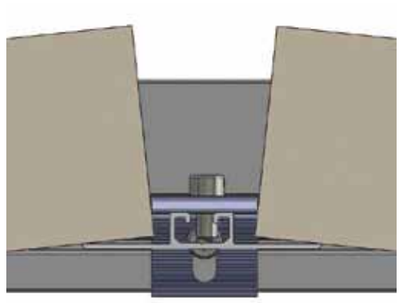
5.6 - Accessories for sheet metal				
Item no.	**Figure**	**Item**	**Comments**	**Box**
9664-W 31		Trapezoidal rail	Length: depending on requirements The profile can be bolted directly to the trapezoidal sheet. Top channel for sliding block M8	1
9671-W 20		Z profile ALUMINIUM	Z profile ALUMINIUM Length: 6.1 metres 40 x 40 x 40 x 3 mm Other sizes available on enquiry	1
9583-KALZIP10		Kalzip clamp, angled M10	Kalzip clamp A2 with long slot for rail link M10 Assembled with screw/nut/washer	100
9581-…		Trapezoidal sheeting panel block A2	4-hole trapezoidal sheeting panel block for fastening directly to the trapezoidal sheeting (only on request and with drawing, statistics have to be checked) Optionally with mounting plate, head-less screw or angle	50
Other sizes available on enquiry				

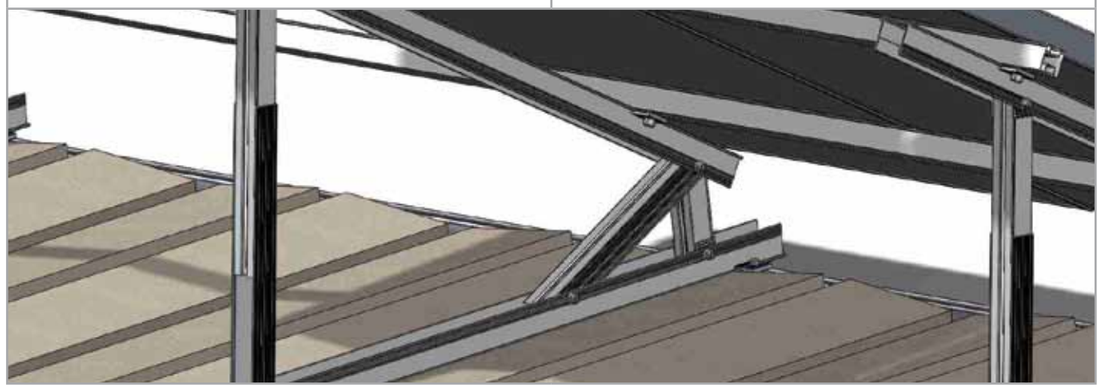
6.1. Flat-roof elevation stand			
Item no.	**Item**		**Box**
9785-W 2040	Flat roof elevation triangle. aluminium • Folding • Variable adjustment 20° to 40° • Available from stock ready assembled They require 8 x 9785-W 26 mounting plates per triangle. Diagonal struts		1
9785-W 26	Mounting plates for attaching the mounting rails to the triangle 		100
			
		Rigid support triangles made from angle section e.g. 40x40x3 or 40x40x5 Available in any custom angular dimension	1

6.2 - Sample loading solution

Combining various Inox Mare panels will provide you with a loading surface for our adjustable flat roof support. The key items for this loading solution are listed at the right and shown below.

9664-W 16, 9701-W 14,
9664-W 31, 9785-W 2040, 9785-W 26
(plus additional standard connections
such as sliding blocks, socket screws, etc.)





7 - Open land installations

Special elevations, even for open-land installations, are available on Enquiry.

Inox Mare heavy load profile
Also suitable for roof systems with spans >4 metres

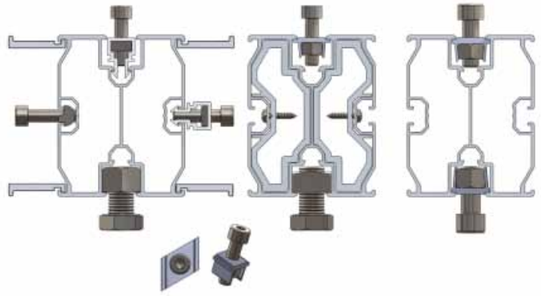
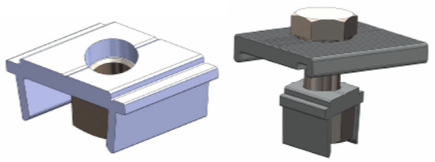


Illustration of various options for connecting to the Inox Mare heavy load profile



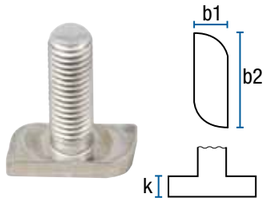
Preassembled components available ex stock

SCREW ACCESSORIES, SOLAR

8 - Screw accessories, solar

For information: Inox Mare Solar will not only supply you with our innovative solar items but also all the other rustproof connection elements. With 24.000 items permanently available in stock, Inox Mare is not just a supplier with one of the widest and deepest ranges of products on the market but also a global market leader in rust-proof connection elements – available in grades A2 to A4.

Here is a small selection:

Item no.	Figure	Item	Comments	Box
9810-0-.....*.....		Washer head screws with TX drive. stainless steel. hardened Approved by the construction supervision authority for fastening roof hooks etc.	8*80	50
			8*100	50
			8*120	50
571-2-.....*.....		Hexagon head – wood screws for fastening roof hooks etc.	8 x 80 10 x 80 8 x 100 10 x 100 8 x 120 10 x 120 8 x 140 10 x 140 8 x 160 10 x 160 8 x 180 10 x 180 8 x 200 10 x 200	100
912-2-.....*..... **912-4-.....*.....**		Hexagon socket head cap screws in A2 and A4 according to DIN912	for fastening our module clamps etc. see table under 7.) Module clamps	O.V. Table
933-2-.....*..... **933-4-.....*.....**		Hexagon head screw full thread in A2 and A4 according to DIN933	including size M10x25 for bottom rail channel Item 9664-W 1	O.V. Fasteners Catalogue www.inoxmare.it
9415-2-.....*..... **9415-4-.....*.....**		Hammerhead screw A2 and A4 for mounting rail Type 28/15	B1 Max 10,1 10,1 B2 22,8 22,8 K 4 5 M8 x 20 M10 x 20 M8 x 25 M10 x 25 M8 x 30 M10 x 30 M8 x 35 M10 x 35	100
9021-2-..... **9021-4-.....**		Washer with large external diameter in A2 and A4 according to DIN9021	for inside (mm) outside (mm) M8 8.4 24.0 M10 10.5 30.0 M12 13.0 37.0	200

8 - Screw accessories, solar

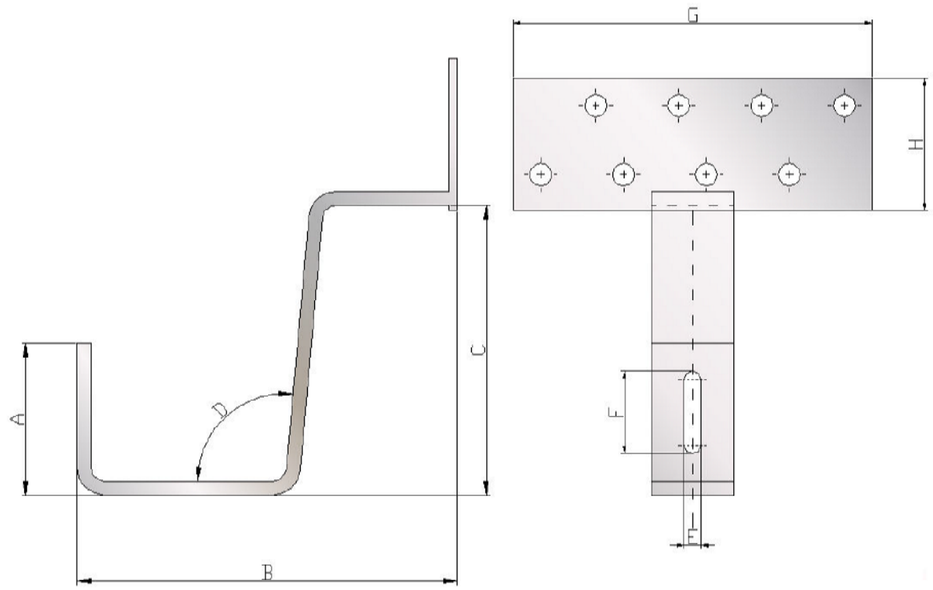
Item no.	Figure	Item	Comments	Box
125-2-..... **125-4-.....**		Washer in A2 and A4 according to DIN125	for inside (mm) outside (mm) M8 8.4 16.0 M10 10.5 20.0 M12 13.0 24.0	500
9250-2-.....		Locking washers “S”	for inside (mm) outside (mm) M8 8.4 13.0 M10 10.5 16.0 M12 13.0 18.0	M8: 1000 M10: 500 M12: 500
25201-4-.....*.....		Self-locking screw – retaining washer in A4 according to DIN25201	for inside (mm) outside (mm) M8 8.7 13.5 M10 10.7 16.0 M12 13.0 19.5	100
9480-2-.....*.....		Security screw mushroom head in A2 similar to ISO7380 (with TX drive and locking pin.)	M8 x 20 M8 x 30 M8 x 40	100
603-2-.....*..... **603-4-.....*.....**		Mushroom head square neck bolt in A2 and A4 according to DIN603	M10 x 20 M10 x 25 M10 x 25	50

8 - Screw accessories, solar				
Item no.	**Figure**	**Item**	**Comments**	**Box**
557-2-..... **557-4-.....**		Square nut in A2 and A4 according to DIN557	M8 M10 M12	M8: 200 M10: 100 M12: 100
934-2-..... **934-4-.....**		Hexagon nut in A2 and A4 according to DIN934	M8 M10 M12	M8: 200 M10: 100 M12: 100
985-2-..... **985-4-.....**		Stop nut. thin in A2 and A4 according to DIN985	M8 M10 M12	M8: 200 M10: 100 M12: 100
9345-2-..... **9345-4-.....**		Hexagon nut similar to DIN 6923 with flange and serration in A2 and A4	M8 M10 M12	M8: 200 M10: 100 M12: 100
9290-2-.....*..... **9290-4-.....*.....**		Coupler nut with endto- end internal thread. round version in A2 and A4 according to Inox Mare standard W S9290	M8 M10 M12	M8: 100 M10: 50 M12: 50
9300-2-.....*..... **9300-4-.....*.....**		Coupler nut with endto- end internal thread. hexagonal version in A2 and A4 according to Inox Mare standard W S9300	M8 M10 M12	M8: 100 M10: 50 M12: 50

8 - Viti ed accessori relativi Solar				
Codice	**Figura**	**Articolo**	**Osservazioni**	**Box**
127-2-..... **127-4-.....**		Spring lock washer. A2 and A4 according to DIN127	M8 M10 M12	500
9305-2-.....		Shear nut according to W standard WS9305	M8 M10 M12	M8: 200 M10: 100 M12: 100
9265-2-.....		Serrated locking washer shape M (middle)	M8 M10 M12	200
9490-2-6,35 **9490-2-6,25**		Ball for driving in	Balls Niro 304 6.25/6,35 mm Grade40 For securing Allen screws SW6	1000
9455-2-...		Hexagon socket head cap screws with serration under head	Available Ø 8 mm length from 14 mm to 60 mm sim. DIN 912	200
9500-...		Polyamide washers type A without chamfer	sim. DIN 125	M8: 1000 M10: 500 M12: 500
9510-...		Polyamide washers outside diameter ~ 3x nominal thread diameter	sim. DIN 9021	M8: 1000 M10: 1000 M12: 500
9664-2-10*25 **9664-2-10*30**		Hammer Head Screw	For mounting rail lower connection	100

ORDER SHEET FOR PAN ROOF HOOKS

Pan roof hooks



Please enter your particular dimensions:

A	B	C	D	E	F	G	H

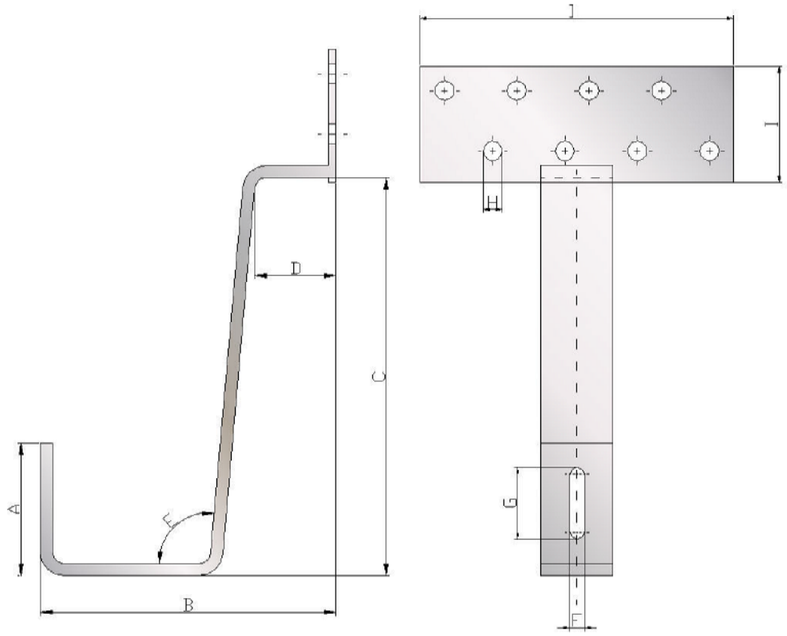
Number of pieces:

Delivery address:

We make them out of 5 mm thick stainless steel 1.4301 unless instructed otherwise.

ORDER SHEET FOR FLAT-TAIL ROOF HOOKS

Flat-tail roof hooks:



Please enter your particular dimensions:

A	B	C	D	E	F	G	H	I	J

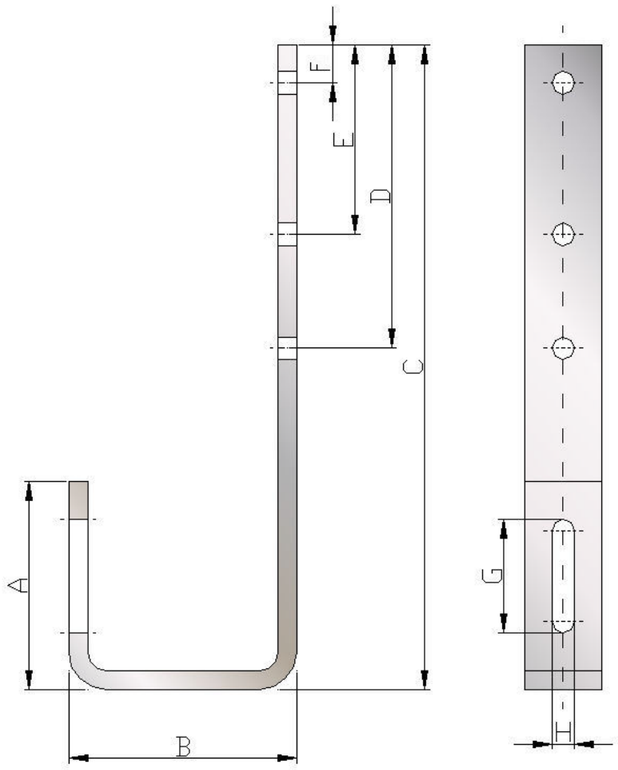
Number of pieces:

Delivery address:

We make them out of 5 mm thick stainless steel 1.4301 unless instructed otherwise.

ORDER SHEET FOR SLATE ROOF HOOKS

Slate roof hooks:



Please enter your particular dimensions:

A	B	C	D	E	F	G	H

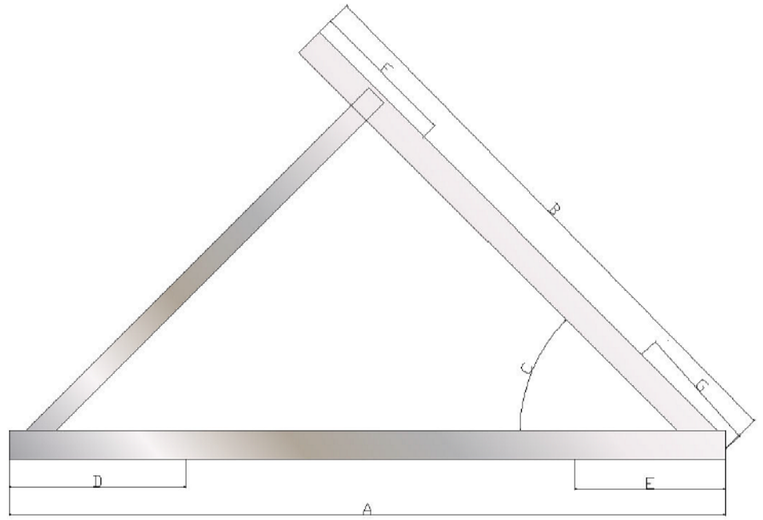
Number of pieces:

Delivery address:

We make them out of 5 mm thick stainless steel 1.4301 unless instructed otherwise.

ORDER SHEET FOR ELEVATIONS

Supports:



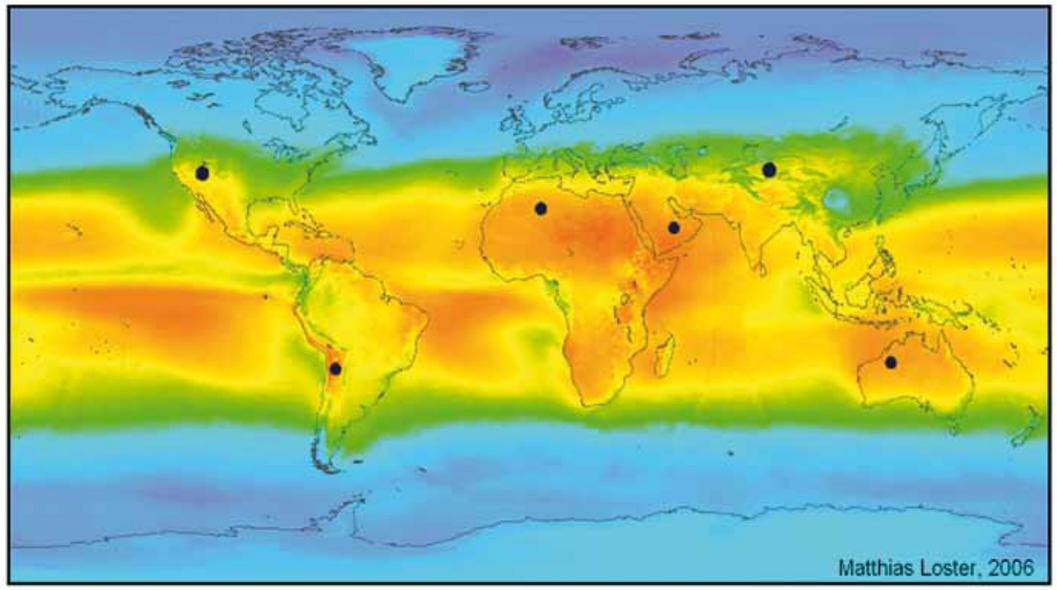
Please enter your particular dimensions:

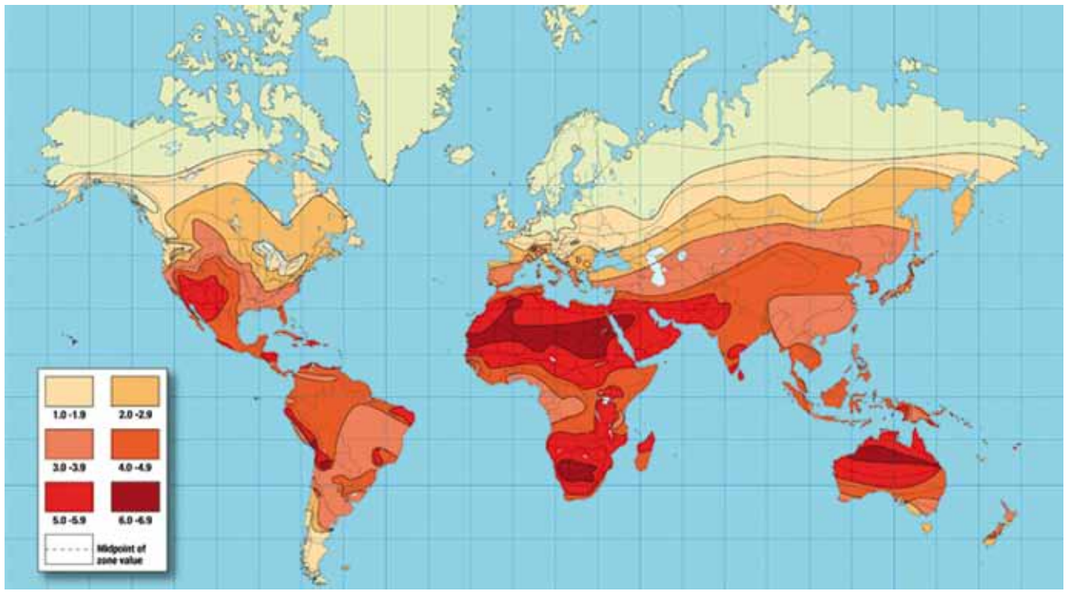
A	B	C	D	E	F	G

Material (e.g. angle 40 x 40 x 3):

Number of pieces:

Delivery address:





EPM AND EPDM RUBBERS

Base materials to produce elastomers are **NATURAL** and **SYNTHETIC** rubber.
Vulcanization is a process whereby the rubber is cured and strengthened by treating it with sulphur, this process changes the polymer structure so increasing the elasticity and resistance to the effect of atmospheric oxygen together with many chemical substances. It also removes the negative properties of abrasiveness and viscosity.

EPM is a form of synthetic rubber. The E refers to Ethylene, P to Propylene and M refers to its ASTM classification standard D-1418. The M class includes rubbers having a saturated chain of the polymethylene type.
Due to the lack of double bonds, this type of rubber cannot be cured with sulphur or any chemical releasing sulphur, but only with organic peroxides.

EPDM includes D for dienes which serve as crosslinks when curing with sulphur and resin, with peroxide cures the diene (or third monomer) acts as a coagent, wich provides resistance to unwanted tackiness, creep or flow when used.

Properties

The main properties of vulcanized EPDM are its outstanding resistance to heat, ozone and weather conditions, its resistance to ice and steam is also good. It has excellent electrical insulating properties.
Impact resistance: 40/60%
Elongation breakage: 150/500%
Heat resistance:
Vulcanized peroxides withstand hot water and steam up to 200 °C without degradation.

Low temperature resistance: approx minus 50°C
Gas permeability: high, not recommended.
Chemical resistance:

hot water and steam between 130 to 200°C
glycol based brake fluids
most detergents either organic or inorganic based
salt solutions and oxidized substances
water, phosphoric and glycol based hydraulic fluids
silicone oils and fats
many ice solvents such as alcohols, ketones and esters; Skydrol 500 e 7000

Not recommended vulcanized EPDM and EPM with hydrocarbons in general.

Common applications

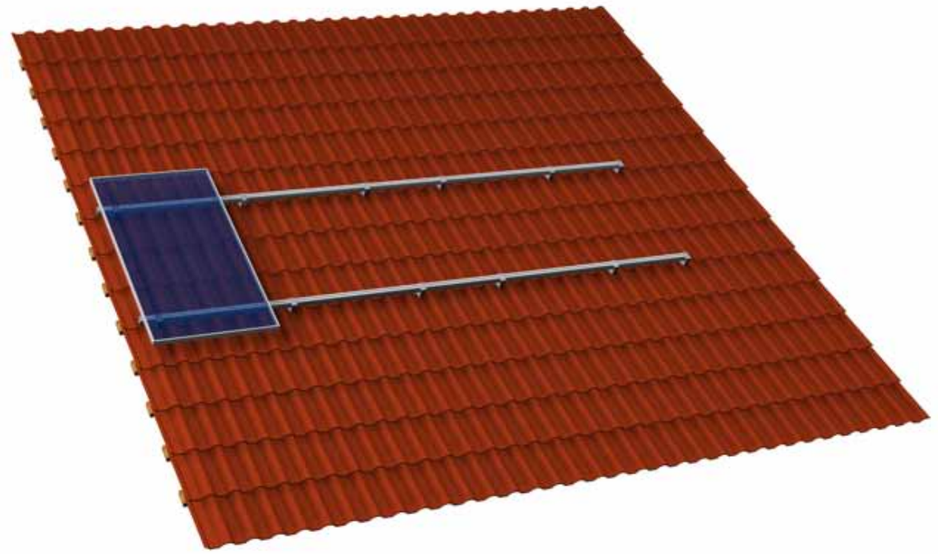
Today the automotive industry is the largest user of EPDM rubber products, it is also widely used in the cable insulation industry, tubes, fittings, sealed cold room doors and numerous industries.
With its characteristics EPDM is ideal as an insulating and sealing material for solar panels being used for both panel connections and a fixing support where EPDM washers also form part of the stainless steel system fixings.

MOUNTING SYSTEMS FOR SOLAR INSTALLATIONS
MONTAGE PITCHED ROOF

MOUNTING INSTRUCTIONS - PITCHED ROOF
GENERAL INFORMATION

Two things were absolutely decisive for our construction and development of the INOX MARE SOLAR mounting systems: simple installation and durability that guarantees safety. That is what the INOX MARE SOLAR program is based on.

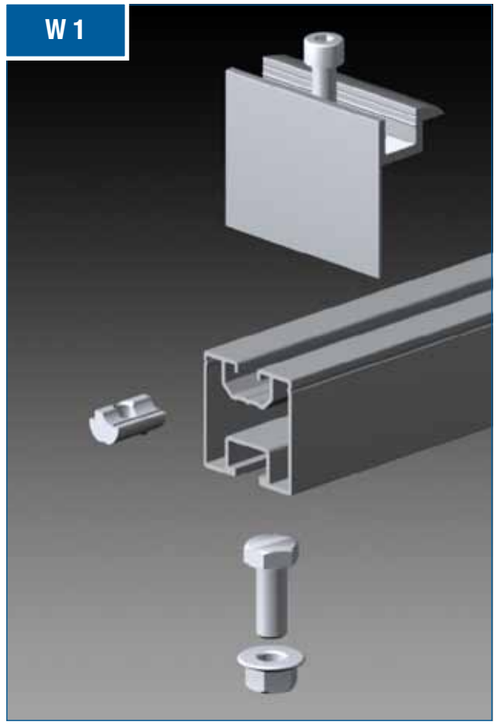
We would like to point out that this mounting recommendation illustrates the latest in technology and many years of experience as to how our systems can be installed on site.

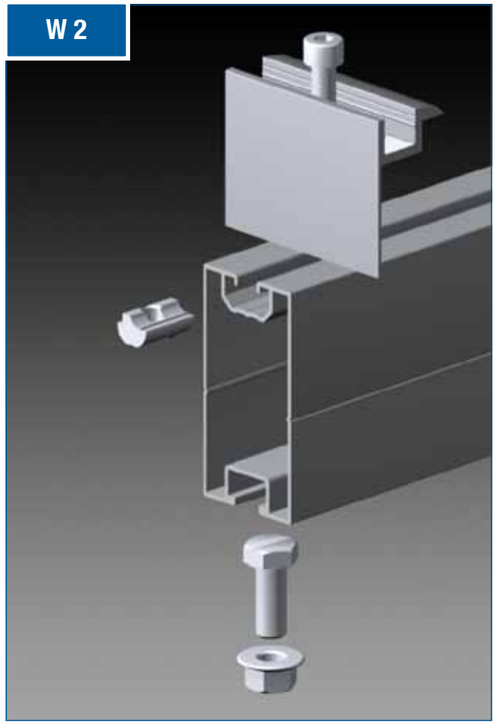


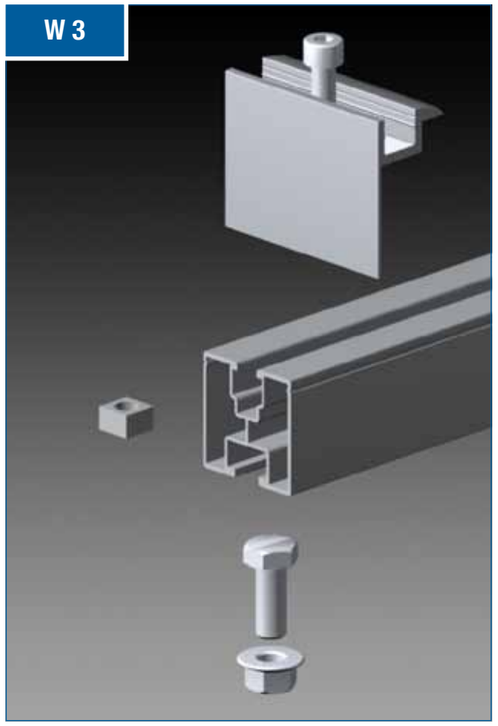
Since individual characteristics are to be taken into consideration for each and every roof, we request that you submit a professional specification form before the installation. You need to take particular note of the static requirements. When mounting the system, it is very important to observe and uphold the corresponding norms and accident prevention regulations.

Important norms and regulations:

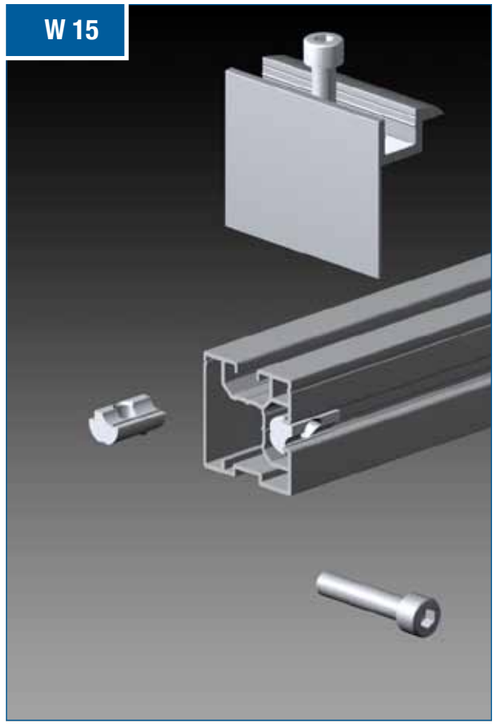
BGV A2	Electrical systems and utilities
BGV C22	Construction works
BGV D35	Ladders and steps
BGV A1	Accident prevention regulations
DIN 1052-2	Timber structures: Mechanical connections
DIN 1055	Load assumption for constructions
DIN 18299	General regulations for construction works of every type
DIN 18451	Scaffold erections

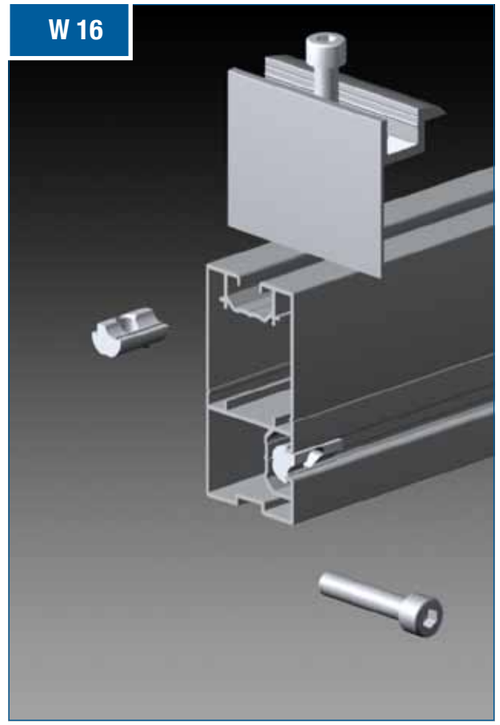


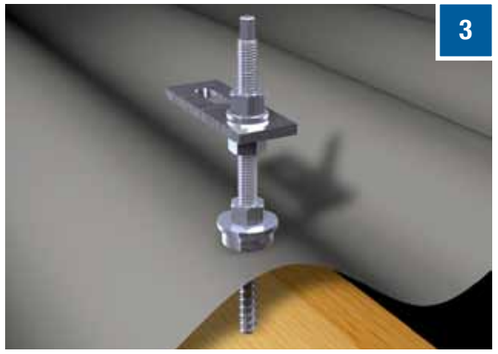


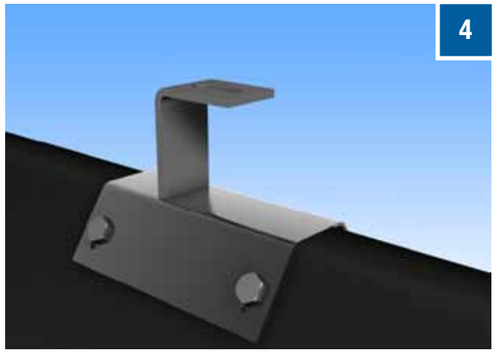


MOUNTING INSTRUCTIONS - PITCHED ROOF
SYSTEM OVERVIEW









A majority of roof coverings are established with roof tiles or roofing shingles. For these types of roofs, you can use, for example, Vario roof hooks (for heavy loads, **PICTURE 1)**, adjustable roof hooks and standard roof hooks **(PICTURE 2)**.
The assembly is described in the following.

These roof hooks are generally mounted to wooden beams as per current wood norms. You can use the following screws for this:

- DIN 571 A2 8*80/100/120 mm wooden screws
- WS 9810 A2 8*80/100/120 mm disk head screws

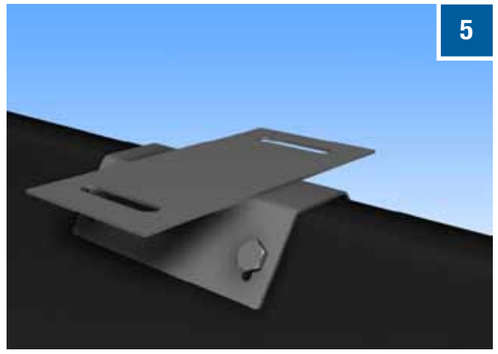
When covering with corrugated sheets **(PICTURE 3)** or trapezoidal metal sheets, you can use stock screws and special consoles/blocks **(PICTURE 4, 5 and 6)**. You select the corresponding stock screws based on the respective sub-construction (for example, whether it's wood or steel).
We offer the following possibilities here:

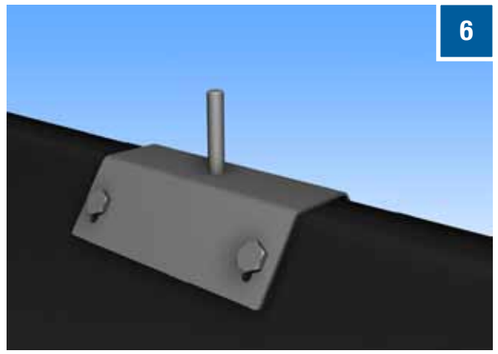
For wooden sub-constructions:
- See delivery programs 9215 + 9216 + 9217 + 9219

For steel sub-constructions:
- See delivery program 9222
- Approved solar panel fasteners!

You select the proper console based on the respective roof cover.

MOUNTING INSTRUCTIONS - PITCHED ROOF
POSSIBILITIES FOR ATTACHING SYSTEMS TO A ROOF

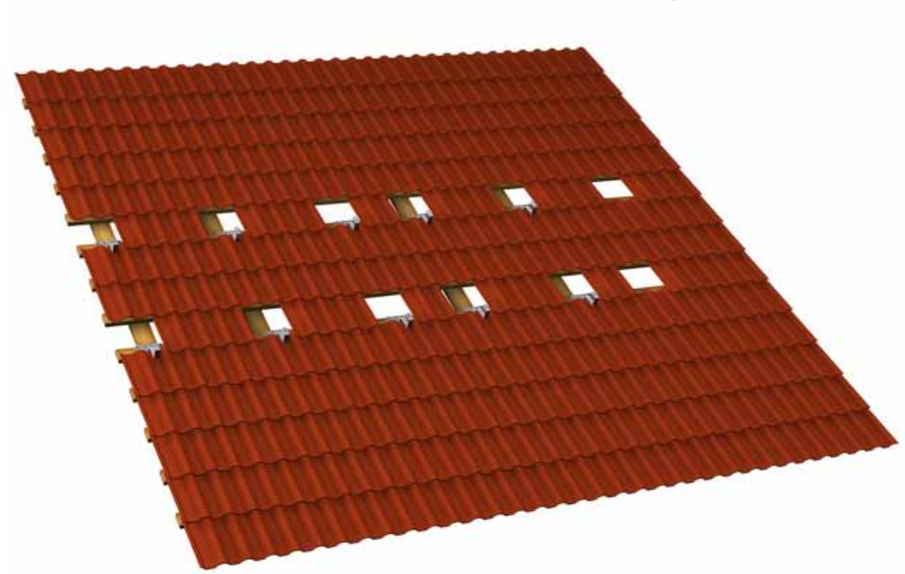


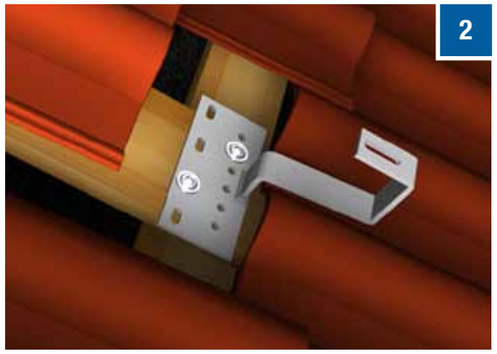


If a roof penetration is not possible, you can conduct a direct attachment to the provided trapezoidal or corrugated sheet covers with a console/block (see below) for a sheet mounting.

The consoles can be used up to a pitch of 30° depending on the construction type. Before starting, you must observe that the attachment of the sheet to the sub-construction is sufficient and observe the maximum load capacity of the sheet.

Determine the position of the roof hooks according to the plan, which is provided in the project-related assembly draft drawings.



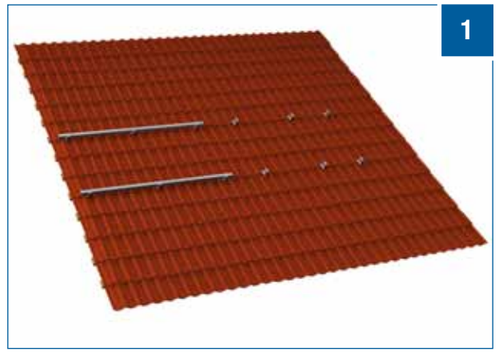


Remove the roofing tiles at the respective positions or, if possible, push them upwards. Position the respective roof hooks; the hook must not push against the roofing tile.

Depending on the roof hook model, you can adjust the roof hooks at the height and in the sides, such that it is located in the wave trough of the roofing tile. Mount each roof hook with two wood screws (for example, wooden screws DIN 571 or disk head screws norm 9810*80 mm or M8*100 mm) to the rafters.

If necessary, leave out the roofing tile above the roof hooks at the spot where the roof hooks are led through with hand-held cutters. The roof hooks should not push up the roofing tile located above it. In the case of mixed roofing tiles, we recommend that you also leave out the lower tile.

MOUNTING INSTRUCTIONS - PITCHED ROOF
MOUNTING STEP: PITCHED ROOF FRAMEWORK



You mount the mounting rails for every module row using various screws and bolts. (For **PICTURE 2** and **PICTURE 3**, you can also feel free to use self-locking DIN 985 bolts with ring washers; tightening torque max. 18 Nm.)

Make sure you check the required rail connectors in advance (see page 8.)

BILD 2:

DIN 933 A2 M10*25 (hexagon bolt) plus 9345 A2 M10 (locking nut)

oder

M10*25 (hammerhead bolt) plus 9345 A2 M10 (locking nut)

BILD 3:

Nutenstein 9431-120901 plus DIN 912 A2 M8*16 (cylinder head screw)

oder

DIN 603 A2 M8*25 (round-head screw) plus 9345 A2 M8 (locking nut)

BILD 4:

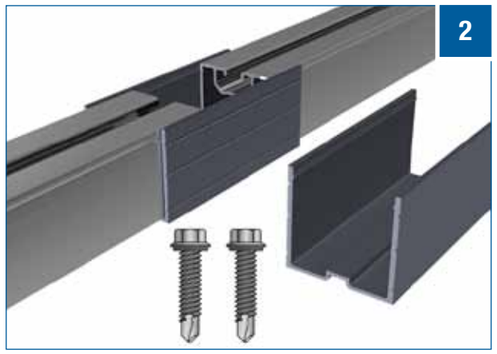
DIN 933 A2 M10*25 (hexagon bolt) plus 9345 A2 M10 (locking nut)

oder

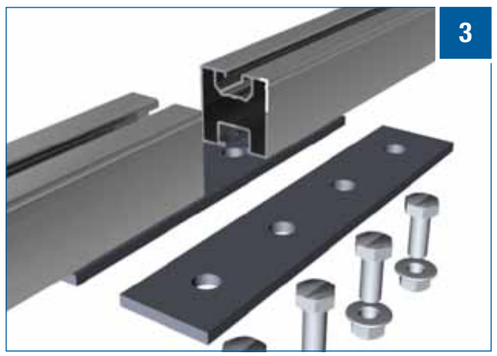
M10*25 (hammerhead bolt) plus 9345 A2 M10 (locking nut)

To line up several system units next to each other, you can use various connectors:

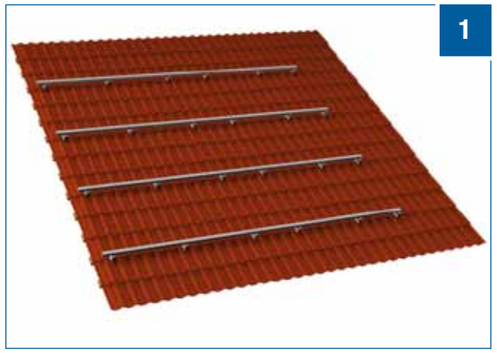
PICTURE 1: Half of the connector (W 18) is pushed into the mounting rail. Then push the other mounting rail onto the connector. Afterwards, you push together the mounting rails with pressures.



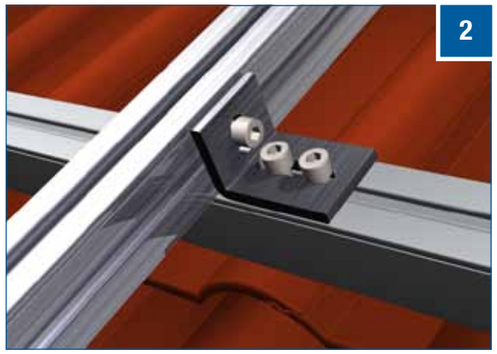
PICTURE 2: Place the connector (W 12) above the first mounting rail and click it into the existing groove. Then click in the second mounting rail and press them together. You then screw the connection together with two drilling screws (tightening torque 8-10 Nm).



PICTURE 3: Make sure you have four hexagon bolts for the connectors (featuring 4 holes) and then push the first two screw heads into the lower channel of the first mounting rail. Then push the last two screws into the other rails. You then attach all four screws with (in each case) 4 bolts (tightening torque 10-12 Nm).

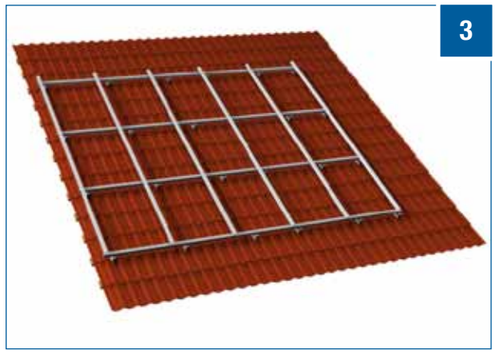


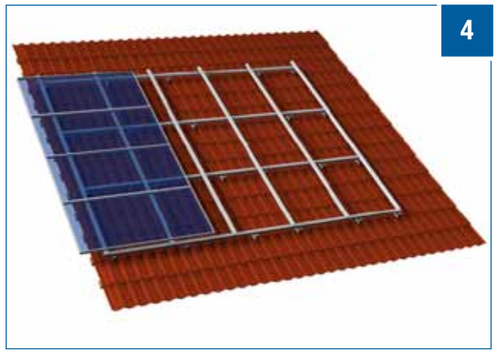
When you attach non-framed PV modules, you may have to conduct an assembly in the cross brace. This is a particularly stabile construction. You must always observe the module manufacturer instructions!

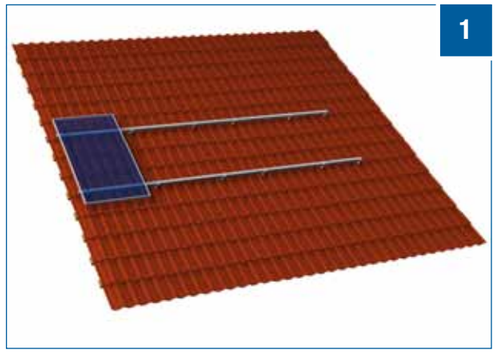


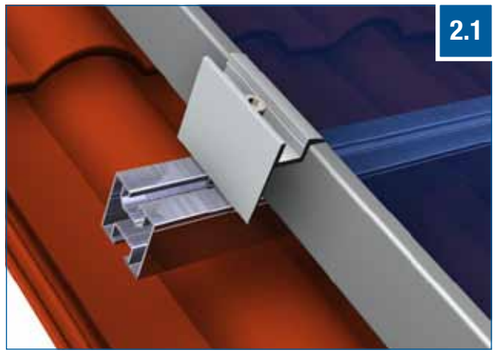
PICTURE 2: Connection of the two rails via a cross brace bracket

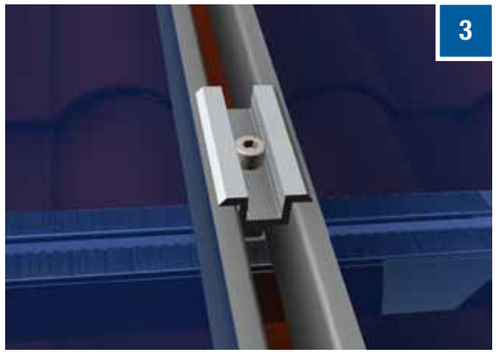
- 912 A2/A4 8*16 (3x) cylinder head screw
- 9431 120901 (3x) t-nut
- 9701 W 14 bracket cross brace

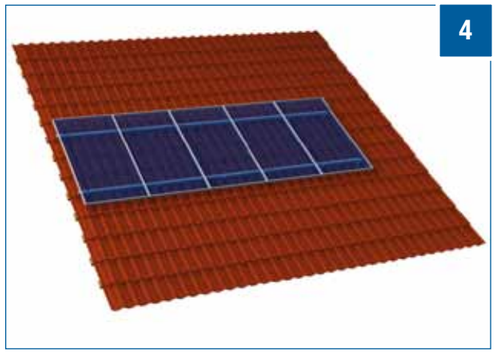




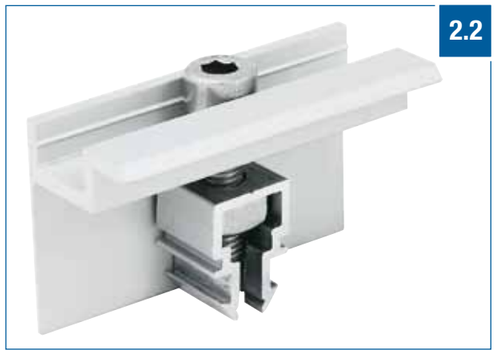








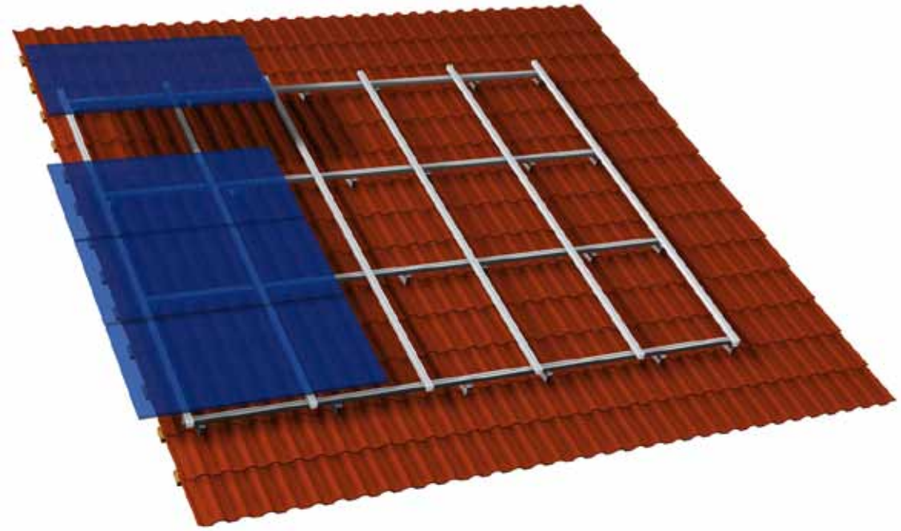
Attachment examples for middle and end clamps:



PICTURE 2.1 : Swivel the t-nut into the upper rail and click it in. Twist the end clamp with the respective screw (depending on module height) into the t-nut. Alternatively, you can attach the click-in kit in the upper channel of the rail and tighten it (tightening torque up to a maximum of 18 Nm depending on module manufacturer.) You can add a cover to the rails for personal or appearance reasons (PICTURE 2.2).

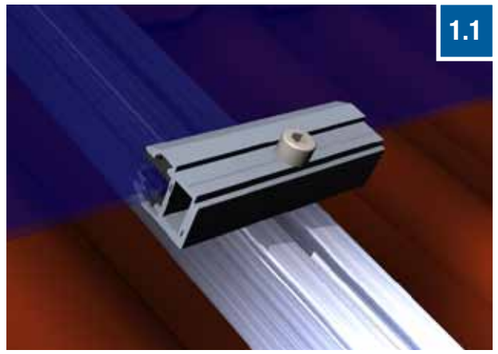
PICTURE 3: Swivel the t-nut into the upper rail and click it in. Twist the middle clamp with the respective screw (depending on module height) into the t-nut. Alternatively, you can attach the click-in kit in the upper channel of the rail and tighten it (tightening torque up to a maximum of 18 Nm depending on module manufacturer.)

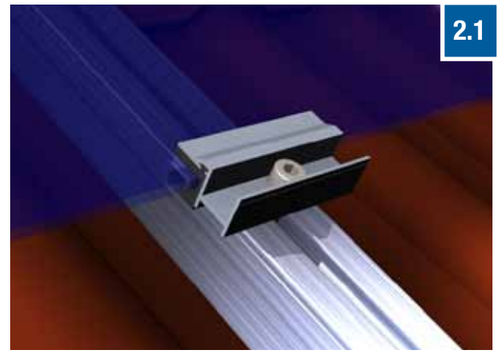
MOUNTING INSTRUCTIONS - PITCHED ROOF
MOUNTING STEP: PITCHED ROOF FRAMEWORK WITH FRAMELESS PV MODULES

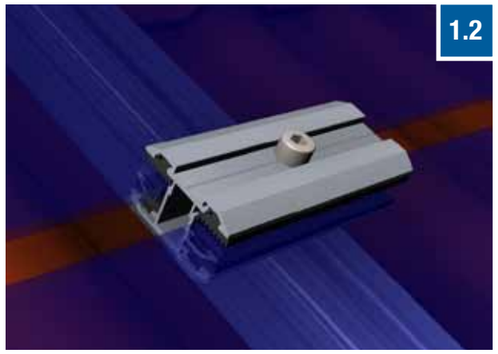


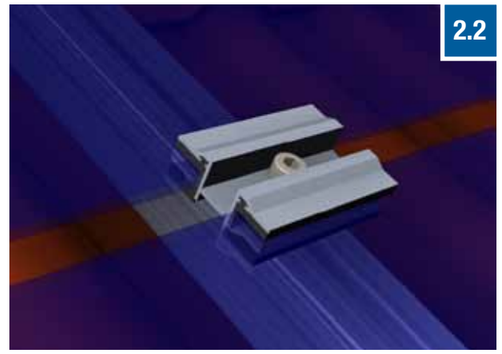
PICTURE 1: Swivel the t-nut into the upper rail and click it in. Twist the end clamp with a DIN 912 A2/A4 M8*35 mm screw into the t-nut and tighten it (tightening torque up to 15 Nm.)

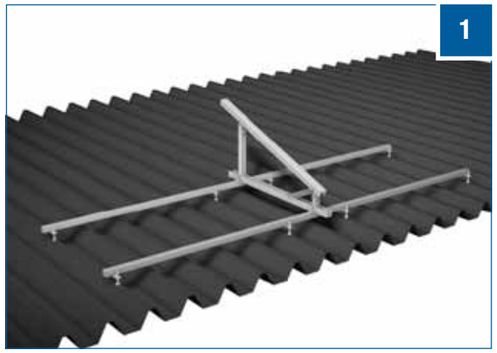
PICTURE 2: Swivel the t-nut into the upper rail and click it in. Twist the end clamp with a DIN 912 A2/A4 M8*35 mm screw into the t-nut and tighten it (tightening torque up to 15 Nm.)

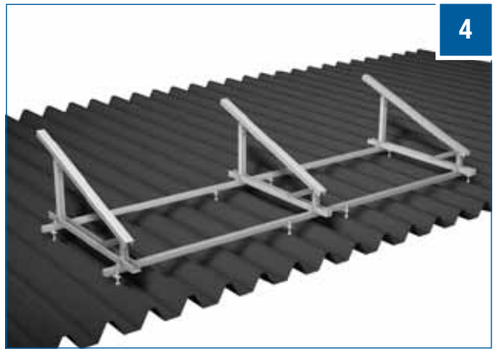












PICTURE 1 – 4: LOWER attachment

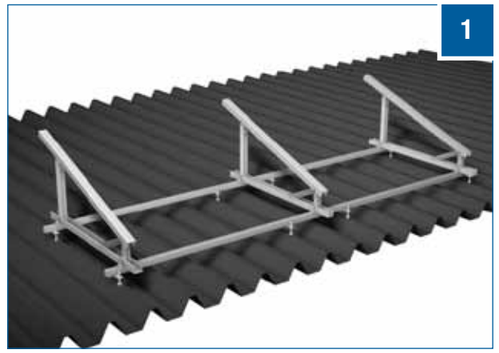
The elevated mountings must now be attached to the system units. Begin by placing a DIN 603 A2/A4 M8*25 mm carriage bolt in the upper section of the system unit such that the thread(s) stick out.

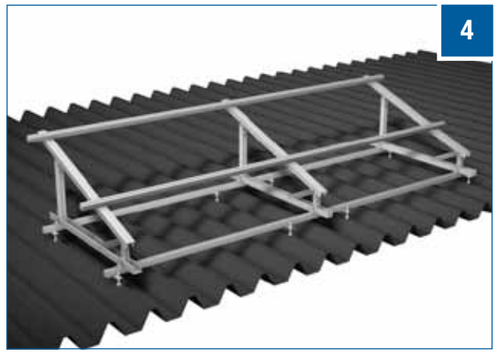
You then loosely lay the 9785-W26 mounting platelets on the threaded necks and pull them tight with a 985 A2/A4 M8 stop nut or 9345 A2/A4 M8 locking nut (tightening torque 14-16 Nm).

PICTURE 5: Or alternatively:

Swivel and click the t-nut into the upper rails. Then attach the 9785-W26 mounting platelets to the elevated mountings and to the rails via a DIN 912-2-8x16 cylinder head screw.

FLAT ROOF MOUNTING INSTRUCTIONS
MOUNTING STEP: FLAT ROOF FRAMEWORKS FOR TRAPEZOIDAL SHEET METAL ROOFS





PICTURE 1 – 4: UPPER attachment

You now attach the system units for the module to the triangle.

You do this by pushing DIN 933 A2/A4 M10*25 mm hexagon bolt into the lower section of the system unit such that the threads stick out.

Then you loosely lay the 9785-W26 mounting platelet on the threaded necks and pull it tight with an A2/A4 M10 locking nut (tightening torque 14-16 Nm).

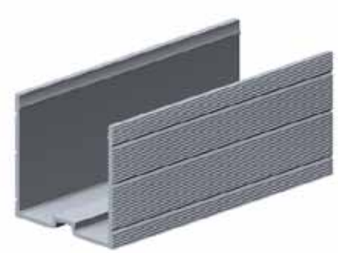
The interval between the module rails for framed modules that are to be mounted upright should be approximately 1/2 of the module height. In this case, always observe the module manufacturer instructions!

Standard roof hooks

Vario roof hooks

Section connector W 18

Section connector W 12

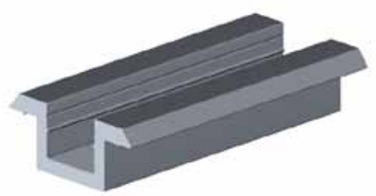


Trapezoidal sheet block

Hanger bolt

End clamp

Middle clamp



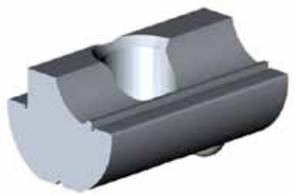
Adapter sheet

Mounting bracket

End clamp for LAMINAT L glass module

Middle clamp for LAMINAT L glass module

T-nut



Section connector 9557

End clamp for LAMINAT JT glass module

Middle clamp for LAMINAT JT glass module

MOUNTING INSTRUCTIONS - PITCHED ROOF
ARTICLE LIST - ACCESSORIES

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