

TECHNICAL AND OPERATIONAL DOCUMENTATION

INSTALLATION MANUAL,
OPERATING MANUAL AND INSTRUCTIONS FOR SAFE USE

(Translated from the original manual)

5. Steel and aluminium components and structural sets

5.8. Pergola SB400

PRODUCT NAME:

ALUMINIUM CONSTRUCTION
PERGOLA SB400

MARKING OF PRODUCT MANUFACTURER:

- Manufacturer name:
SELT Sp. z o. o.
KRS 0000589791, share capital: 64 000 000 PLN
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PRODUCT SAFETY MARKING:

The product meets the CE safety requirements.

THIS TECHNICAL AND OPERATIONAL DOCUMENTATION:

- Is valid from: 15 January 2024
- Is applicable to the above listed product versions.

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1 INTRODUCTION

1.1 SAFETY GUIDELINES FOR THE PRODUCT

The product has been manufactured in accordance with the latest technical knowledge in the field of construction and manufacturing and meets the safety requirements in accordance with the following standards.

No.	Subject	European Legal Basis	Polish Legal Basis
1	Execution of steel and aluminium structures Part 1: Requirements for conformity assessment of structural components	EN 1090-1:2009 +A1:2011	PN-EN 1090-1+A1:2012
2	Shutters and external venetian blinds. Performance requirements including safety.	EN 13659:2015	PN-EN 13659:2015
3	Construction Products Regulation (CPR)	Regulation (EU) no 305/2011 of the European Parliament and of the Council	Act of April 16, 2004 on building products (i.e. Journal of Laws 2021, item 1213) as amended
4	Essential requirements for the machinery	Directive 2006/42/EC of the European Parliament and the Council	Regulation of the Minister of Economy of October 21, 2008 on the essential requirements for machines (Journal of Laws 2008 No. 199, item 1228) as amended
5	Low Voltage Directive (LVD)	Directive 2014/35/EU of the European Parliament and the Council	Regulation of the Minister of Development of June 2, 2016 on the requirements for electrical equipment (Journal of Laws of 2016, item 806) Act of April 13, 2019 on the conformity assessment and market surveillance system (Journal of Laws of 2019, item 1854) as amended
6	Electromagnetic Compatibility Directive (EMC)	Directive 2014/30/EU of the European Parliament and the Council	Act of April 13, 2007 on electromagnetic compatibility (Journal of Laws of 2019, item 2388) Act of April 13, 2019 on the conformity assessment and market surveillance system (Journal of Laws of 2019, item 1854) as amended

Related documents: Declaration of performance for compliance with EN 1090-1:2009 +A1:2011,
Declaration of performance for compliance with EN 13659:2015 and installation instruction, user's manual for motors and control.

1.2 EXPLANATION OF SYMBOLS AND SIGNS

The following symbols (pictograms) indicate particularly important threats and safety information.

Pictogram	Pictogram meaning	Information
	INFORMATION	Prior to using the product, its operating manual should be read. Following the operating manual guarantees: - failure-free use of the product - usage according to its intended use, - warranty coverage against product defects. Keep the operating manual for safety of people.
	INFORMATION	No harmful or dangerous consequences for people or facilities.

	NOTE!	A situation likely to cause product damage or other damage. No threat for people.
	DANGER!	This symbol indicates all information concerning safety, which could pose a hazard to human health or life in case of non-observance. The health of life hazard. Risk: a hazard of serious personal injury or death. The hazardous operation which could cause injuries or damages to the product.
	WARNING!	Threat to human life or health due to electric shock.
	DANGER!	Hand crushing threat.
	WARNING!	Head injury threat.
	ENVIRONMENT	Marking of electronic or electric equipment, which should be collected in the designated points.

1.3 TERMS AND DEFINITIONS

For the purposes of this documentation the following terms and definitions shall apply:

Product: PERGOLA SB400

Pergola SB400 system is made of powder-coated aluminium profiles and stainless components. Roof framework made of movable aluminium blades. The angle of inclination of the blades can be changed. Product design is offered in colour from RAL colour chart after confirmation of their availability by the manufacturer.

NOTE: the set includes: two lengthwise beams (drive and bearing), two cross beams (front and rear); gutters; posts, feet, wall brackets, LED strips (depending on the configuration), a movable roof consisting of aluminium blades, a rod with pins and a motor.

Mobile roof:

Consists of blades fixed to cross beams with the option to change the inclination angle of the blades. Blades are moved by a control mechanism driven by an electric motor.

Blades: Part of the product, made of extruded aluminium profiles with an aesthetic appearance. The shape of the blade enables drainage of rainwater from the roof surface within the limits of the design assumptions (see point 2.2) and protection against sunlight and snow load up to the limit value (see point 2.2).

VERSIONS:

Free-standing – Self-supporting structure containing single mobile roof module supported on front and rear posts.

Modular - Self-supporting structure consisting of single stand-alone modules joined together using mechanical fasteners (screw connections).

Wall-mounted – Structure consisting of a mobile roof module supported partially on posts and fixed by a roof beam to a supporting wall (along the rear or side edge of the roof) with the use of wall brackets.

1.4 SUBJECT, INTENDED USE AND CONTENTS OF THE DOCUMENTATION

This documentation covers the products manufactured by **SELT Sp. z o.o.**

This documentation applies to all types of **PERGOLA SB400**.



User's manual and instructions for safe use, with motor manual, should be handed over to the end user.

IMPORTANT INSTRUCTION RELATED TO SAFETY
WARNING - IT IS VERY IMPORTANT TO PROCEED ACCORDING TO THIS MANUAL
TO ENSURE PEOPLE SAFETY.
KEEP THIS MANUAL

The documentation is part of product delivery and should be permanently kept nearby all the time.

This documentation contains:

- important guidelines for installation, use and maintenance of the product,
- important recommendations for storage and transport,
- guidelines, which observance would ensure operation of the product.

SELT Sp. z o.o. shall not be responsible for damages resulting from non-observance of the recommendations included in this documentation.

For further improvement of the product, SELT Sp. z o.o. reserves the right to introduce changes, which, while maintaining significant technical parameters, will be considered as appropriate for increasing the quality of product operation and safety of use.

Copyrights for this documentation remains with SELT Sp. z o.o. with its registered office in Opole. The documentation cannot be used, in whole or in part, for competitive purposes or made available to third parties without permission.

2 PRODUCT TECHNICAL INFORMATION

Technical specifications of the product are available after logging in on website www.selt.com

2.1 TECHNICAL PARAMETERS

Pergola SB400 – free-standing

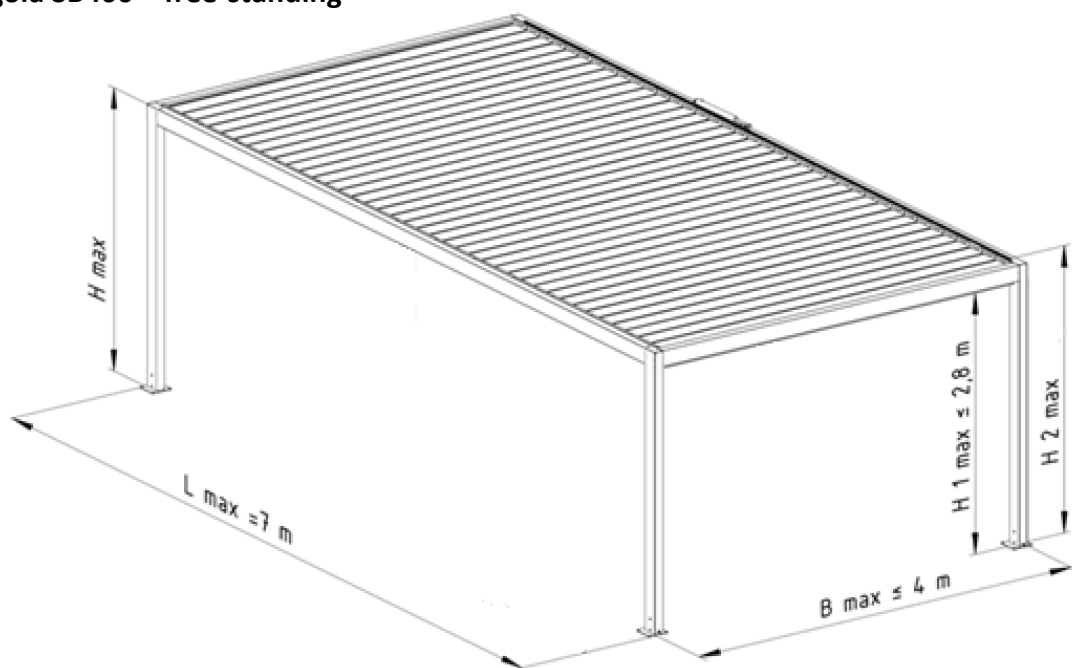


Fig. 1. Pergola SB400 free-standing – Overall dimensions: **B max** – maximum width, **L max** – maximum projection, **H max** – maximum frame height (3012 mm), **H1 max** – maximum height of the clearance, **H2 max** – maximum height of position of the mechanism intended to change the angle of the blades (~3140 mm).

Pergola SB400– modular

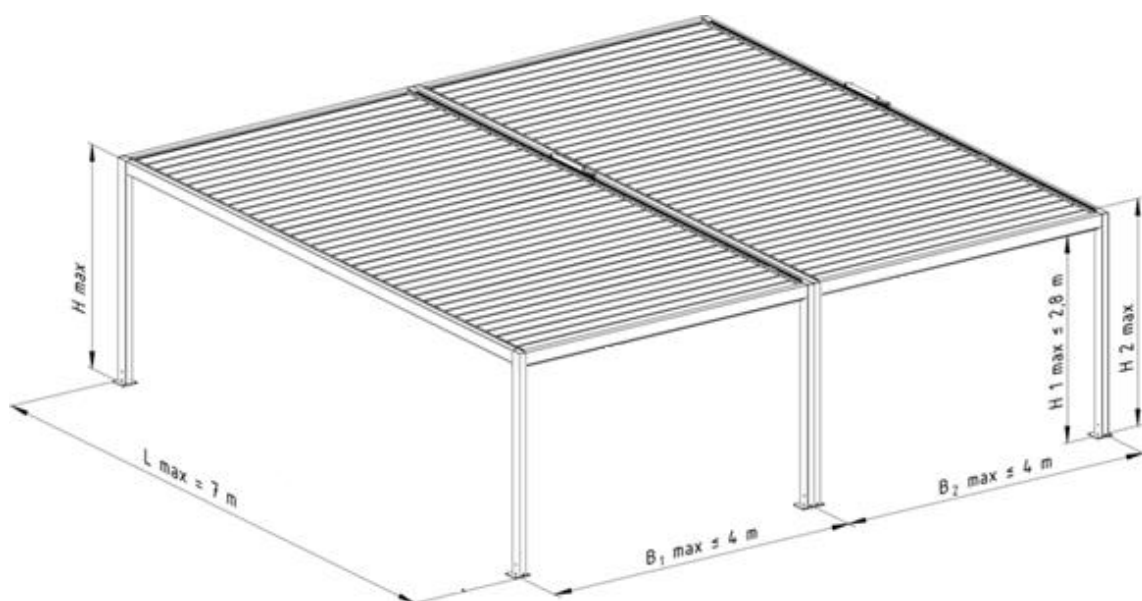


Fig. 2. Pergola SB400 modular – Overall dimensions: **B** – system width, **B1 max** – maximum width of a single module, **L max** – maximum projection, **H max** – maximum frame height (3012 mm), **H1 max** – maximum height of the clearance, **H2 max** – maximum height of position of the mechanism intended to change the angle of the blades (~3140 mm).

System module dimensions:	Width*	Projection*	Height*	Height in the light*
Supporting structure	up to 4000 mm	up to 7000 mm**	up to 3140 mm* (*-when the roof is open)	up to 2800mm
Axial spacing of roof blades	200 mm			
Difference in fastening of blade's ends (transverse slope – of blade axis)	Choice of: 20 mm difference (from the motor or towards the motor) or no slope			
Scope of use / exploitation				
Ambient temperature (min/max)	+5 do +40°C (opening / closing of the mobile roof)			
Humidity (max)	90% no steam condensation (opening / closing of the mobile roof)			
Drive (type of drives):	Linear drive. The drive can be started manually with a switch or through an external wired or radio control receiver.			
Connection to electrical installation	approximately 4 m power cord (after installation the cord should be properly secured).			
Electric drive - motor with the following parameters:				
Model of the motor	ELERO Picolo XL		24C DC motor	
- supply voltage	230V/50Hz AC		24 V DC	
- power	126 W		24 W	
- power consumption	0,55 A		1,8 A	
- protection level	IP 65		IP 67	
- continuous work time	up to 5 min (depending on the ambient temperature)		up to 2 min, cooling 18 min (depending on the ambient temperature)	
- extension, axial force	max 200 mm, extension force 1200N		max. 300 mm, extension force 600N	
- extension speed	approx. 6 mm/s		10,5 mm/s	
- operating temperature (min/max)	-20°C to +80°C		-20°C to +60°C	
LED power supply data:				
LED lighting	Optional - LED gutters, LED points in blades. Power supply 24V DC, 150W, max. 6.25A, IP66 fixed in pergola's post			
Installation:				
Intended use	External			
Site installation	To the supporting base or to the wall (with universal wall brackets)			

* - tolerances of external dimensions are +/-10 mm.

** - drilling for wall brackets in a beam with motor is possible only with a projection of more than 260 cm

Detailed data for parameters of the individual motors are available on the websites of motor manufacturers and on the website:

www.selt.com → OUR OFFER → ELECTRIC EQUIPMENT

2.2 PRODUCT SPECIFICATION

Products manufactured by SELT Sp. z o. o. have appropriate technical and operational parameters.

List of product types:

- Free-standing,
- Modular,
- Installed outside the building, started by electromechanical drive connected with the control system.

They have the following features:

- Roof (blades) electrically opened, designed to protect against the sun and rain (according to the parameters of the product and its location).
- Permissible outdoor use of the product in accordance with the product parameters.
- Location, a method of finishing, installation and seals as well as extreme weather conditions including heavy rainfall and/or snowfall have an essential influence on waterproofness of the product.
- The movable roof blades allow to regulate the access of sunlight.
- The application and use of the product should take place within the limits set by the sixth wind class (according to EN 13659); and/or maximum snow load.
- It is forbidden to start the blade rotation during snowfall or ice build-up and outside the temperature range given in the manual and if permitted it may result in product damage or even personal injury or death.
- They do not release any toxic substances during operation.
- Noise emission by the product with the electro-mechanical drive (connected with the working movement of the mobile components, generated by the electric motor during operation) is not considered as a significant threat and is a matter of comfort.
- The motors have an IP65 protection degree.
- Product and drive design allows safe stop of the blades in any position in the working range and staying there in the rest position.
- Rotational motion of the blades can be started by a manual switch or by remote control.
- The difference of angle of mobile roof's blades closing may differ by 2° and it is a natural feature of the system due to production and process tolerances of the components.
- Covers of movable components have been designed and executed in a way ensuring safety for the operating personnel provided that they are correctly operated.
- Water vapour may condense on the product, especially its lower part, and water may drip or run down.
- Water resistance, aesthetic water drainage through an integrated gutter and poles with drains.
- Two variants possible: two lengthwise gutters without drainage or four gutters around the perimeter connected by overflows in the corners, also without drainage.
- Optional LED lighting in the gutters and/or in the blades.
- Maximum drainage efficiency – rain intensity up to 0,04 l/s/m² with a maximum duration of 5,3 min (depending on the configuration of the drainage holes). The intensity is given with no slope of the blades axis. In the case of a difference in inclination, the efficiency is reduced and, with prolonged rainfall, it may cause the gutter to overflow from the side of the lower blade attachment.
- For pergolas will full cover of the walls, with the length of the blades over 3 m, there may be light reflections and gaps at the junction of adjacent blades, resulting from technological standards.
- Permitted use for protection against snowfall (up to 50 kg/m²) - as an even layer of the same height.



It is unacceptable to use ordinary silicone to seal the product. Use only Crystal Fix or equivalent sealant with the parameters specified in point 4.4

3 TRANSPORT AND STORAGE OF THE PRODUCT

3.1 COMPLETENESS AND QUALITY CONDITION OF DELIVERY

Goods produced by SELT Sp. z o. o. are in accordance with their production technology. In the event of any reservations as to the product or damage to the product packaging, the reservations or comments should be reported to the driver / warehouseman / assembly team and marked on the WZ document under pain of losing claims in this respect, and a protocol describing these reservations or comments should be drawn up with the driver's participation.

Upon receipt, first of all, mechanical damage, scratches, cracks, etc., as well as quantitative non-conformities should be reported, otherwise they will be considered non-existent. Hidden defects must be reported in accordance with the terms of the guarantee or warranty.

3.2 GENERAL CONDITIONS FOR TRANSPORT AND STORAGE OF THE PRODUCT

List:

- the product is factory packed in cardboard packaging protecting against damage during storage, during transport and during relocation to the final installation location,
- products for transport/storage should be set in accordance with the arrows indicated on the product packaging,
- do not stack the products in more than two (2) layers because the packing material can be crushed, what in turn may lead to permanent damage to the product,
- do not load the product packaging with other objects,
- products placed on means of transport should be protected against relocation and damage during the transport (e.g. with distance pieces, protecting belts etc.),
- during transport the product should be protected against rain or snow,
- storage locations should be dry, well-ventilated and protected against harmful impact of the weather (sun, rain, etc.),
- if product weight exceeds 25 kg its relocation to the final installation location should be carried out by at least two persons (depending on the weight of the ordered product).

3.3 OBLIGATORY DESCRIPTIONS TO BE PLACED ON THE PRODUCT PACKAGING



Prior to installation and use of the product please read carefully the operation and maintenance manual available at the following website: <https://www.selt.com/dte-en>

4 PRODUCT INSTALLATION

This chapter contains general requirements concerning the product installation.

Correct assembly is a necessary condition for smooth operation of the product.

SELT Sp. o.o. recommends using only professional assembly crews, which guarantee the Purchaser that the conducted installation will be correct.

4.1 GENERAL REQUIREMENTS FOR SAFE INSTALLATION

- it is necessary to observe general rules of good building practice,
- it is necessary to comply with applicable Occupational Health and Safety regulations concerning in particular those applying to the safety of operation of electrical equipment and work on heights,
- product should be installed in a mechanical way, foams, adhesives or similar materials should be used in accordance with the recommendations of their manufacturers, taking into account the specificity of the product,
- base, to which the product brackets will be fixed, should be a reliable structure with appropriate parameters,
- before starting the assembly, remove all unnecessary objects from the assembly area, including electric wires (check the course of the installation in the area of the fixing places to exclude their damage), and also mark the place of assembly and apply appropriate measures to protect people.

Information table regarding the substrate to which the substructure is to be installed

The product should be mounted to a substrate with appropriate parameters or a substructure with appropriate parameters.

The above-mentioned requirements for the substrate and substructure require the assessment of a specialist and burden the investor and the contractor.

A different assembly method than suggested by SELT is possible, provided that the requirements of building knowledge and safety are observed. In any case, this requires specialist knowledge and is done at the risk of the investor or contractor.

It is recommended to make arrangements with an authorized designer.

4.2 REQUIREMENTS FOR SAFE INSTALLATION OF THE PRODUCT AT HEIGHTS



Product installation, due to a necessity of execution of works on heights, is classified to the particularly hazardous works because it causes high risk of occurrence of threats for human health and safety - in particular in case of fall from heights.

Obligation to ensure preparation of occupational health and safety plan during installation is the responsibility of the person performing the installation (hereinafter referred to as Installer) or ordering such works (hereinafter referred to as the Investor).

Installer/Investor should define the detailed health and safety requirements when performing work at heights, and especially ensure:

- direct supervision of execution by person appointed for this purpose (e.g. site manager, foreman),
- proper protection equipment, in particular equipment protecting against fall from heights,
- detailed guidance for employees working at heights.

Works performed at heights above 2m, requiring the use of personal protection equipment against falling from heights, should be carried out by at least two persons.

Works at height should be organised and performed in a manner that does not force an employee to lean beyond the handrail of railings or outline of the device on which he/she stands. Do not stand on the elements of the product.

The investor/installer is obliged to ensure access to location, where the works on heights are executed, only for authorized persons and persons, who were properly instructed. The Investor/installer should inform about the works carried out at heights and the necessary safety measures to be used during these works by persons staying or likely to stay in the area where such works are carried out or in the vicinity of this area.

4.3 PREPARATION FOR INSTALLATION

- unpack the product and check if there are all components necessary for assembling,
- prior to installation you should check whether the substrate has sufficient load capacity allowing safe assembly and operation.



Note: Purchase and selection of the screws, pins and bolts connecting the system with the facility structure should be done by installer or investor.

4.4 GENERAL GUIDELINES FOR PRODUCT INSTALLATION

- Pergola SB400 is an open external terrace covering. The equipment under the pergola must be intended for outdoor use.
- Four people are required for the safe installation of the support structure.
- Incorrect assembly or errors during assembly may have serious consequences during product operation.
- Before starting the installation, check whether the installation space is free of obstacles, including people and things, and ensure that the installation site and the adjacent area are properly marked and secured.
- Anchoring components intended for fixing the product to the wall or floor are not enclosed because they should be individually selected by the fitter depending on the material to which they are to be installed (it is recommended to make arrangements with an authorized designer),
- Walls or floor should be load-bearing and adapted for transferring of forces from product anchoring.
- SELT shall not be responsible for damages caused by use of too weak anchoring components or fixing in the floor with too small load bearing.
- The product should be protected against dirt (e.g. bricklaying mortar, caulking foam, silicone), which may cause its damage.
- If it is necessary to use polyurethane foam, silicone or other agents, it is absolutely necessary to follow the manufacturer's instructions on the packaging.



The incorrect assembly may cause hazardous situations for the user.

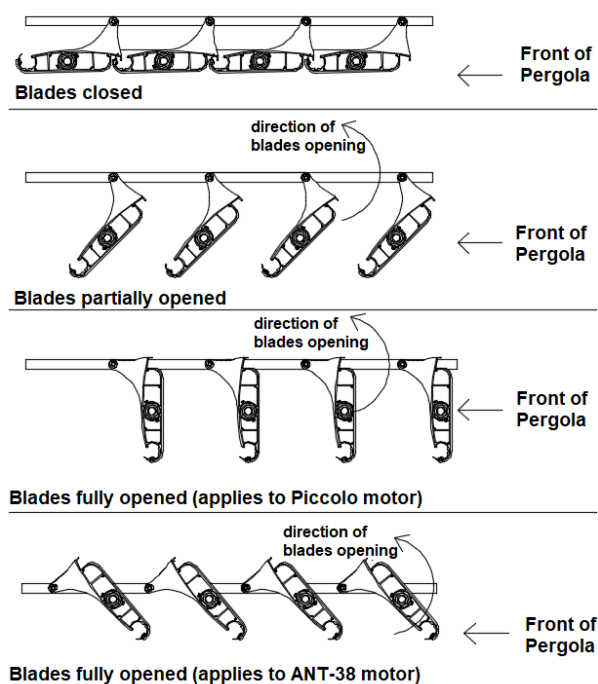


Fig. 3. Standard direction of blades opening for Pergola SB400.

The drawings are for illustrative purposes only and do not reflect all product features, e.g. related to the use of gaskets.

For sealing you should use only the following sealant: FIX ALL CRYSTAL by Soudal company or a product with equivalent parameters.

Technical data (according to the manufacturer of the sealant):



- consistency	Paste	Elongation at break	350% (ISO 37)
- skin forming time	ca. 4 min. (at 23°C/ 50% RH)	Allowed distortion	+/-20% (ISO 11600)
- curing speed	ca. 4 mm/24h (at 23°C/ 50% RH)	Thermal resistance (after curing)	from -40 °C to +90 °C
- relative density	1,05 g/cm ³	Elasticity modulus	0,6 N/mm ² (ISO 37)

- hardness (Shore A)	38 +/- 5	Max. tension	1,8 N/mm ² (ISO 37)
Elastic recovery	>75% (ISO 7389)	Application temperature	from +5 °C to +35 °C

4.5 INSTALLATION TOOLS

Installation instructions, operation and maintenance manual and instructions for safe use are available at www.selt.com after logging in.

List:

- drill bits for metal and concrete,
- hammer drill,
- ladder / scaffolding, crane, bucket truck, loader crane, hydraulic crane,
- screwdriver,
- measure,
- hammer,
- pencil/marker pen,
- spirit level,
- flat wrenches,
- wrench spanners (Allen keys),
- rope for protections / hoisting / removal of components,
- torque wrench.

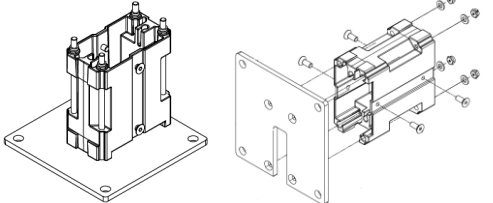
In addition, persons who assemble the product must be provided with appropriate personal protective equipment (such as protective clothing, gloves, helmet, protective glasses and other according to individual conditions, such as height protection).

Sample content of the box with accessories:

	Content (depending on type): - feet with assembly bones - M8x20 stainless steel tapered screws with hexagonal thread - lacquered (black) St4,2 screws with raised head - stainless steel screws M5x20 with cylinder head and recess hexagon socket + washers - stainless pins for guiding bracket - large plastic slip rings - small plastic slip rings - Clip plastic rings (large) - small stainless snap-rings (Seger) - silicone (tube) – Crystal Fix - control unit + remote control (in manufacturer's packaging) - countersunk stainless tapered M8 nuts - stainless steel threaded studs M8 - protective crates for gutter overflows - case with remote control and leaflet - gasket for 1 sealing blade - plastic drain covers with ST4.2x19 stainless screws - screws for fastening the motor bracket (depending on the model) stainless steel countersunk ST6.3x16-C-H - corner overflows (only in pergolas with outflow on the side)
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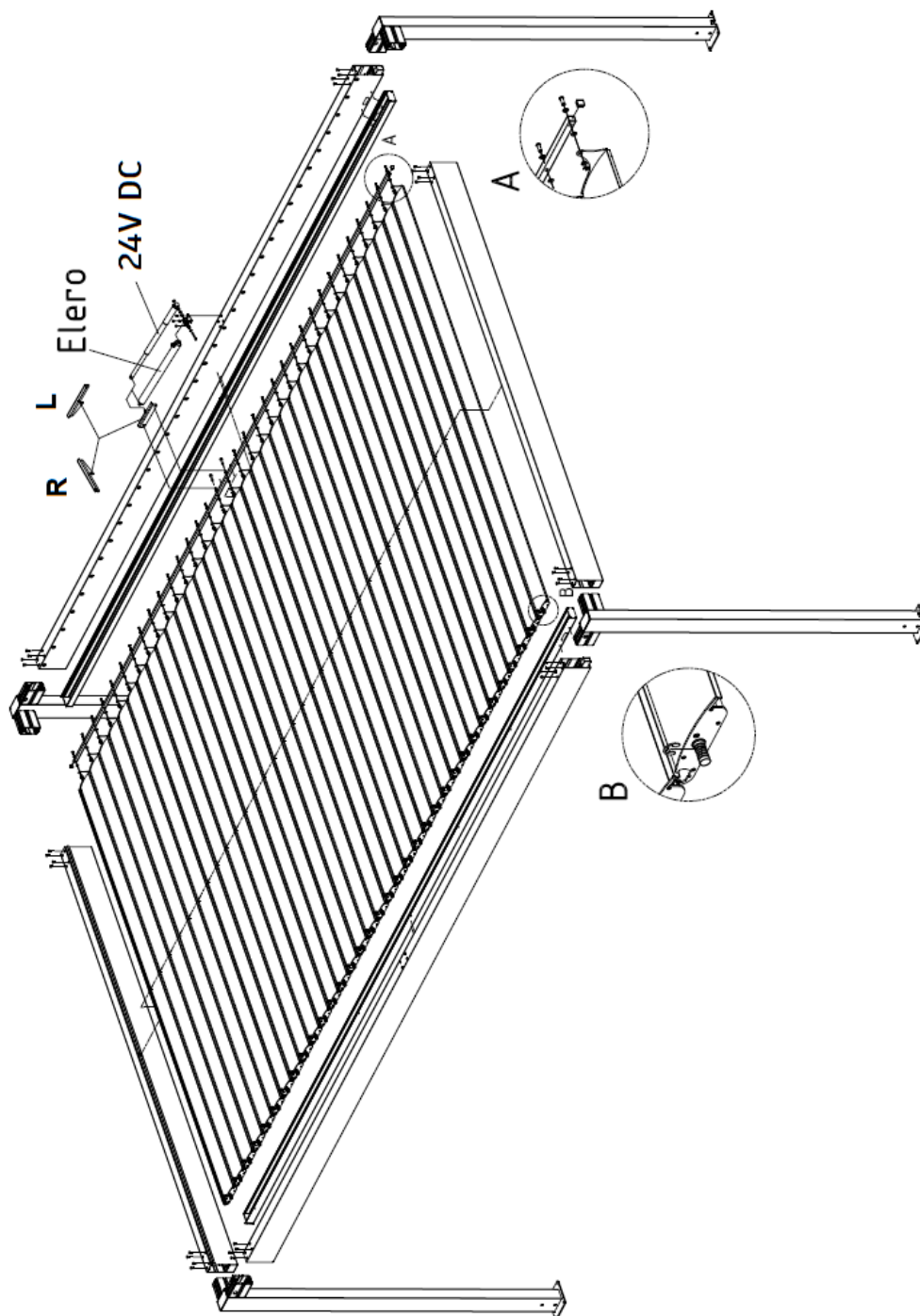


The motor together with the motor's bracket and the guiding bracket (right and left version) is not fixed to the beam due to the elimination of the risk of damage to the power cable (depending on the motor model). It should be attached to the holes made on the lengthwise beam by **taking into account the direction of blades opening (clockwise or counterclockwise) and the modified movement of the motor's piston – retracting when closing the blades.**

	Pergola feet as well as intermediate post attachment and feet have cast connectors that have from the metal sheet side factory-made outflow holes on wide and narrow side of the connector.	
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4.6 INSTALLATION

Fig 4a. View of the assembly of elements of free-standing Pergola SB400.



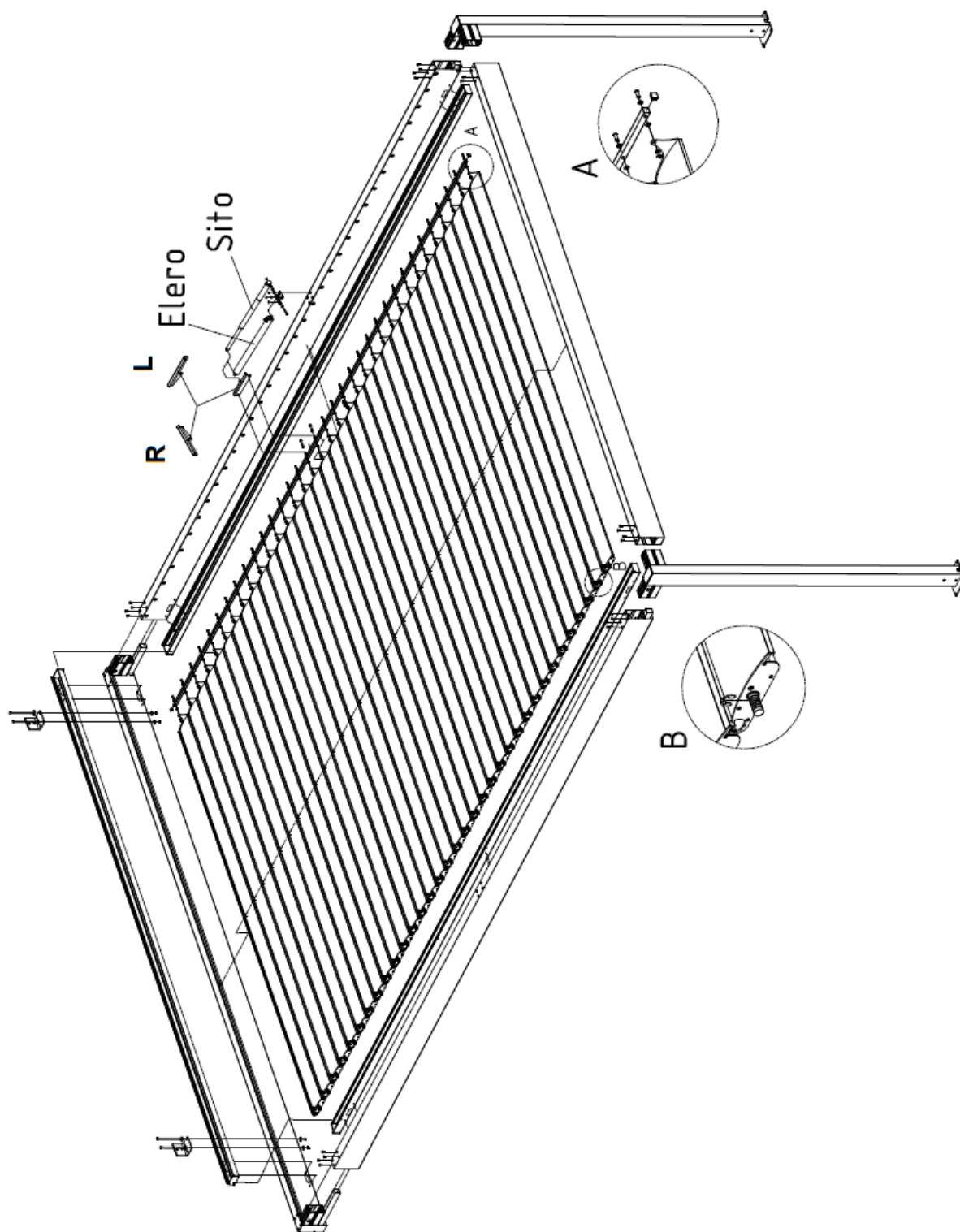


Fig. 4b. View of the assembly of elements of wall-mounted Pergola SB400.
(note: wall bracket in a new version: universal bent)

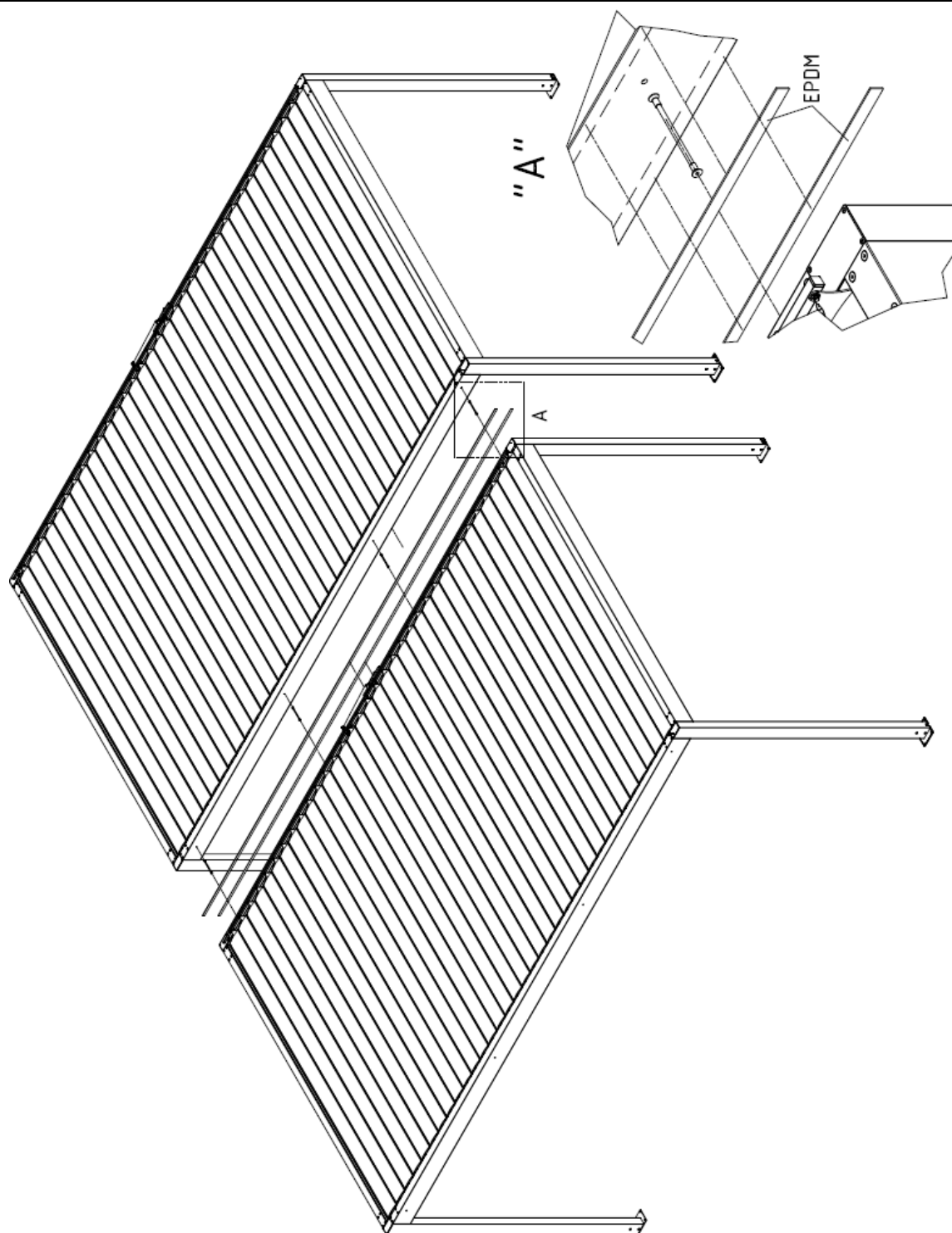


Fig. 5. View of the assembly of modular Pergola SB400.

Note:



- Before proceeding with the assembly, it is necessary to verify the visual condition of the packaging of the elements delivered for assembly, the visual condition of the elements and their completeness. For damages arising after the delivery (transfer of risk) SELT Sp. z o.o. is not responsible.
- The elements are delivered in a package and a stretch cover for protection during assembly.
- Accessories (feet, bolts, screws, small and large snap-rings, blade pins, silicone, assembly instructions) are packed in cardboard boxes.

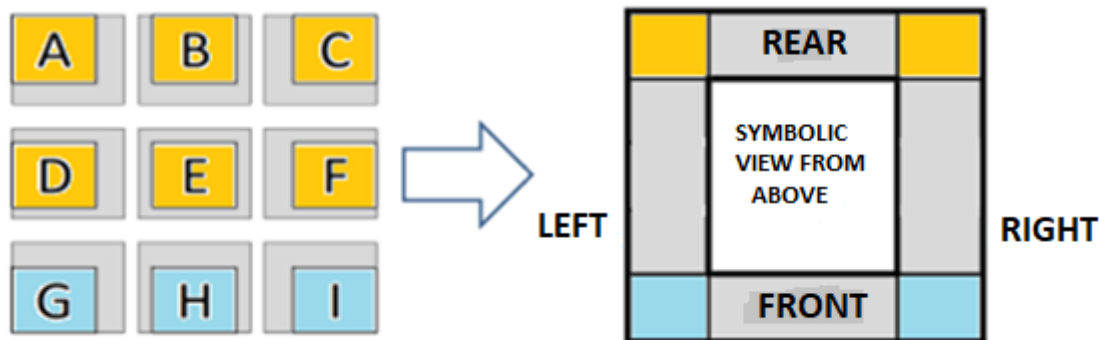
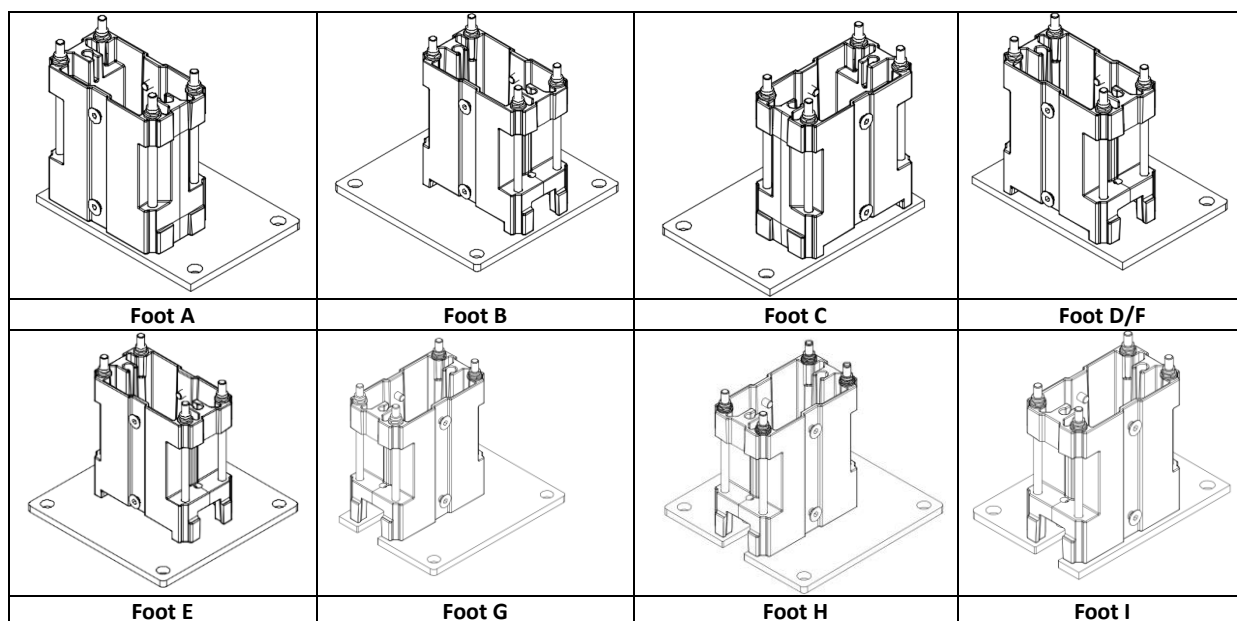


Fig. 6. Marking of the types of feet (view from above) of Pergola SB400.



Note: the above types of feet can be ordered in a variant with a linearly adjustable height in the range of 0-50 mm.

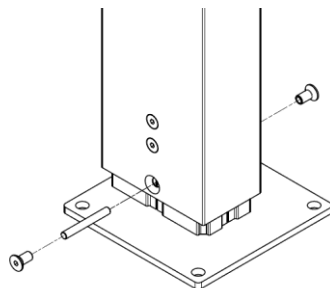


Fig. 7. Types of feet for Pergola SB400



Note:

- Prior anchoring you should check installation correctness of the support structure by checking the diagonals between the posts and whole support structure and correct structure setting if necessary.
- Assembled supporting structure should be permanently fixed to the substrate in destination location by anchoring the feet, using anchors ensuring stable fixing. Anchoring should be selected by the licensed designer every time. We recommend using screws/anchors of 12 mm diameter for fixing the footing to the substrate.

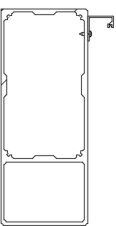
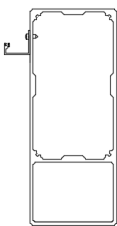
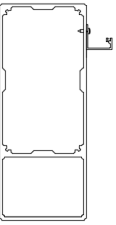
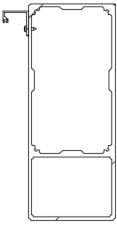
Direction of blades opening	FRONT		REAR
CLOCKWISE		CENTER OF PERGOLA	
COUNTERCLOCKWISE		CENTER OF PERGOLA	

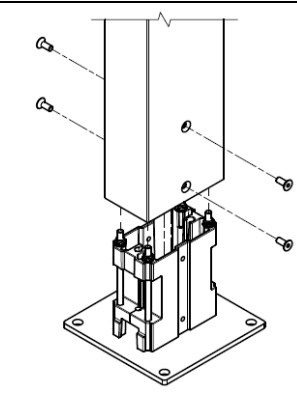
Fig. 8a Placement of the crossbeams of the SB400 pergola



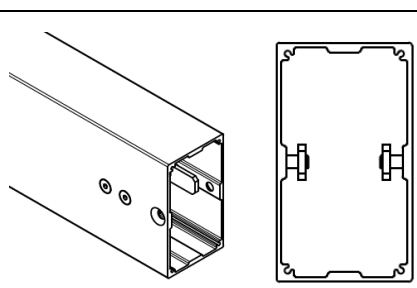
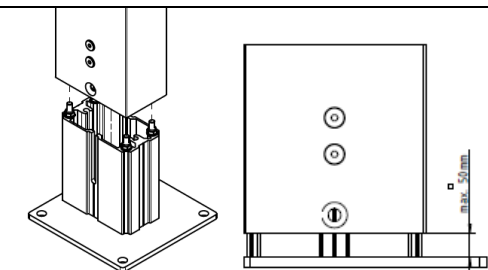
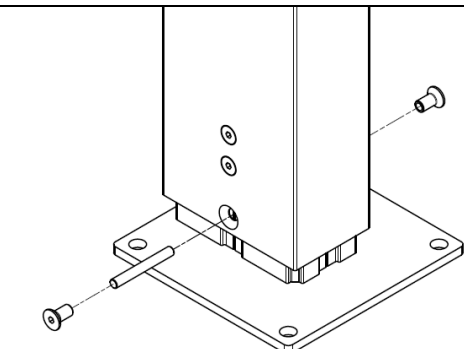
At their ends, in the area of bones, the beams have special openings $\varnothing 30$ for cable routing (fig. 8b). Before assembling the pergola beams, insert the cables inside the beams (fig. 8a-right).

Fig. 8b Holes for wiring

4.6.1 INSTALLATION OF THE STANDARD FEET

	1. Install all feet to the appropriate post types. Screw on both sides with conical screws with M8x20 Allen socket (fig. 9). 2. For feet with outflow set up the cutouts in the bottom of the sheet and the mouse hole accordingly for the drainage of water in the post and the foot. Figure 9
---	---

4.6.2 INSTALLATION OF ADJUSTABLE FEET

	1. Assembly is possible only for posts with adapted drilling (with an additional third hole at the bottom edge of the post)- fig. 10 left. Place all feet in the appropriate post types (according to the order form). 2. On the wider side of the post insert M8x20 conical screws with an Allen socket from the outside into the two holes located above. From the inside of the post they should be screwed into a common pressure stainless steel flat bar. Leave room for insertion of the foot into the bone (fig. 10-right). Repeat this action on the opposite wall of the post. Figure 10
	3. Slide the post profile with the pressure flat bars onto the bone so that the fastening screws enter the slots in the bone and the pressure flat bars slide from the inside of the bone (fig. 11-left). The extension adjustment range allows you to obtain a gap between the bottom of the post profile and the top of the sheet in the range of 0 to 50 mm (fig. 11-right). 4. Slide the post onto the bone while respecting the allowable range of the gap and tighten with torque of 17 Nm. Figure 11
	5. We recommend that the final stabilization of the foot extension be performed after the frame is fully assembled and the verticality of the posts, the levelling of the beams and the compliance of the diagonals are checked. For the location next to the wall, make the target drilling before moving it to the wall. 6. After determining the selected extension and tightening the M8 screws, and completing the assembly of the frame, drill through the bone with a fi 10.5 drill through the bottom hole of the post 7. Fit M8 sleeve nuts with M8 threaded stud on both sides and tighten with a torque of 17 Nm (fig. 12). Figure 12

4.6.3 INSTALLATION OF THE FRAME



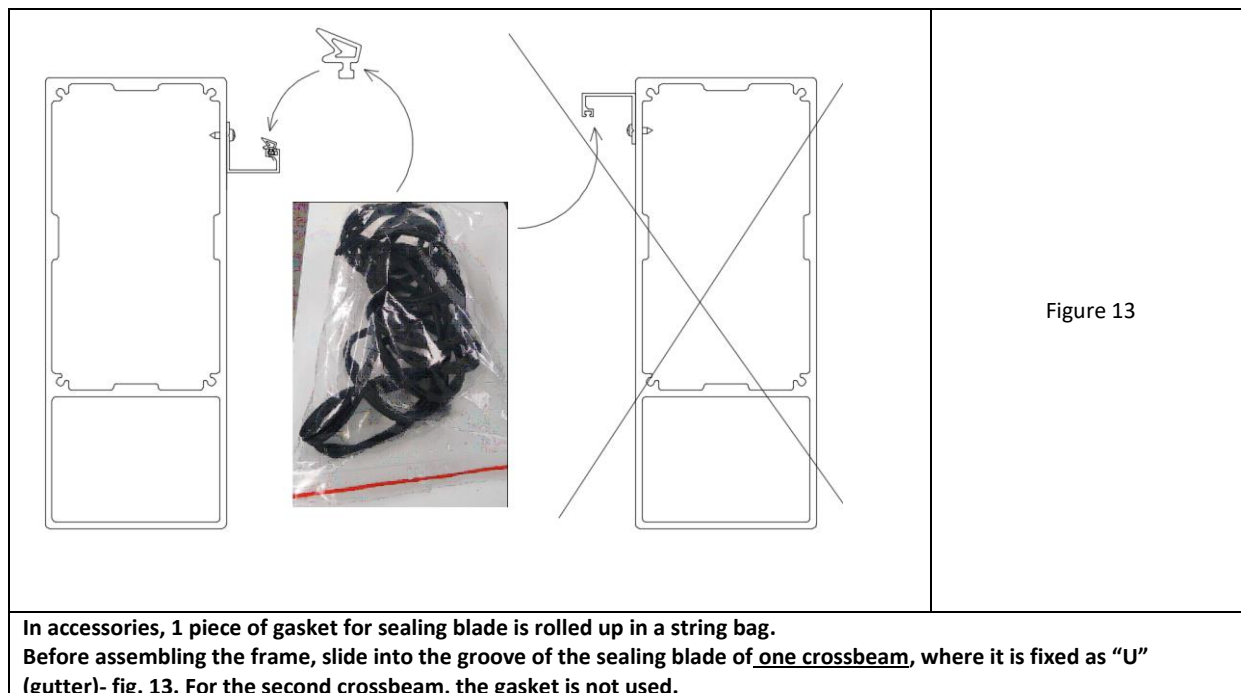
NOTE: Elements of the load-bearing structure during assembly should be secured against tipping over or falling onto the persons performing the assembly. The assembled supporting structure (frame) should be placed in the right place and **anchored to the ground with a suitable fastening product**. Suggested size of the anchors is M12. The purchase and selection of elements for anchoring the structure is the responsibility of the buyer of the system.



NOTE: In case of visible unevenness of the beam and post edges (fig. 12a) it can be corrected by:

- checking if the diagonals of pergola are identical and, if needed, correcting the position of the base of the foot
- remove the beam from the socket/bone, loosen M8 screws securing the socket/bone in the post and use a hammer to move the protruding end of the socket in the correct direction. Tighten the socket again. Complete or make a new seal around the perimeter of the beam. Place the beam so that its plane is aligned with the post.

Figure 12a



4.6.3.1 FREE-STANDING VERSION WITH 2 GUTTERS

Both lengthwise beams have factory-fixed gutters and straight outflows.

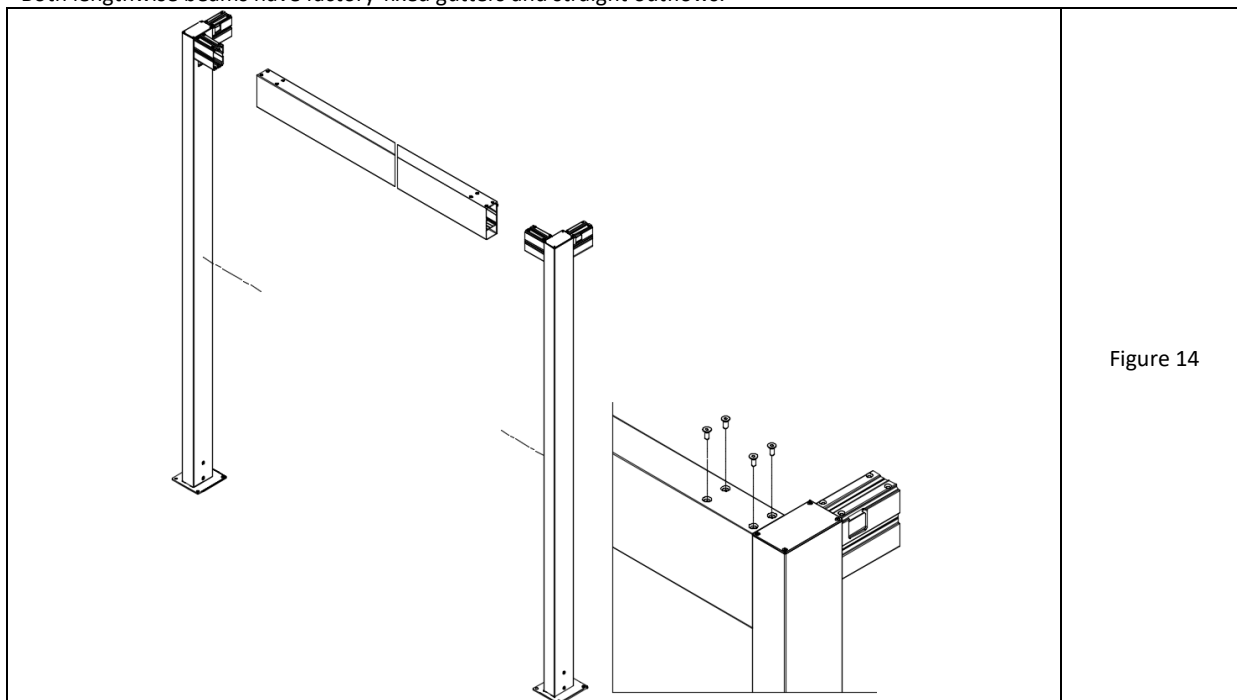


Figure 14

1. Posts with previously tightened feet should be inserted with bones on both sides into the chamber of the crossbeam and screwed from the side of the upper chamber of the beam according to fig. 14 using conical screws M8 x 20 with Allen socket. Pay attention to the installation of posts with the correct arrangement of feet. Perform the steps for both crossbeams to form two flat frames. A properly mounted frame has a sealing blade added on the crossbeam from the side of the bones protruding from the posts.

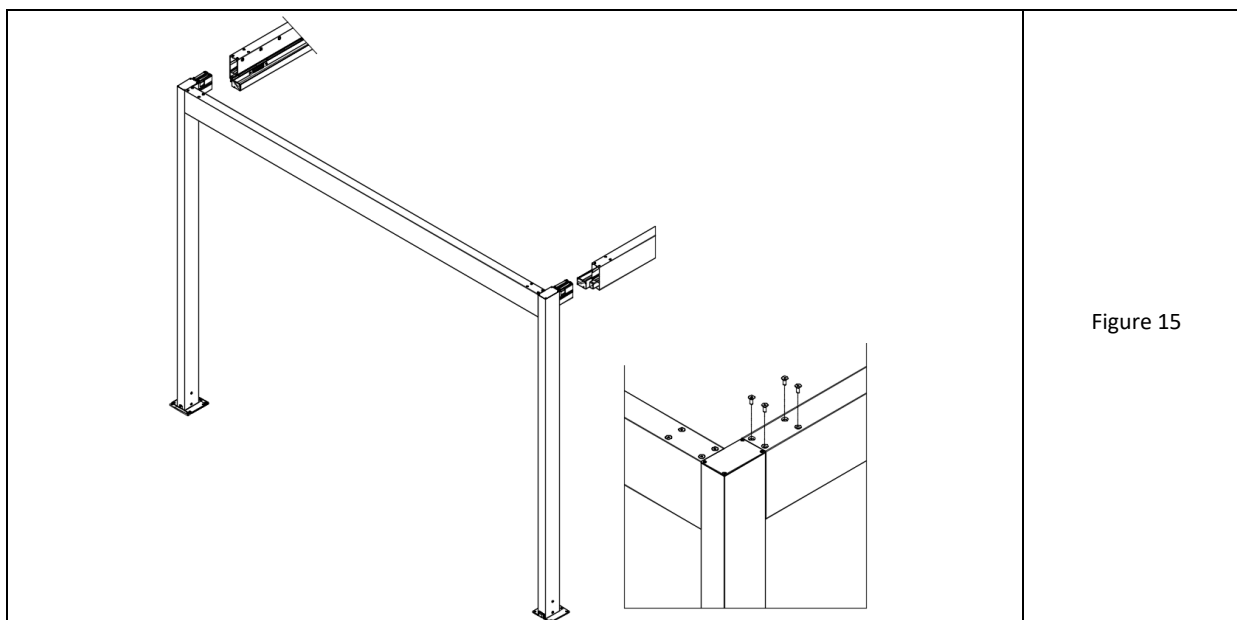
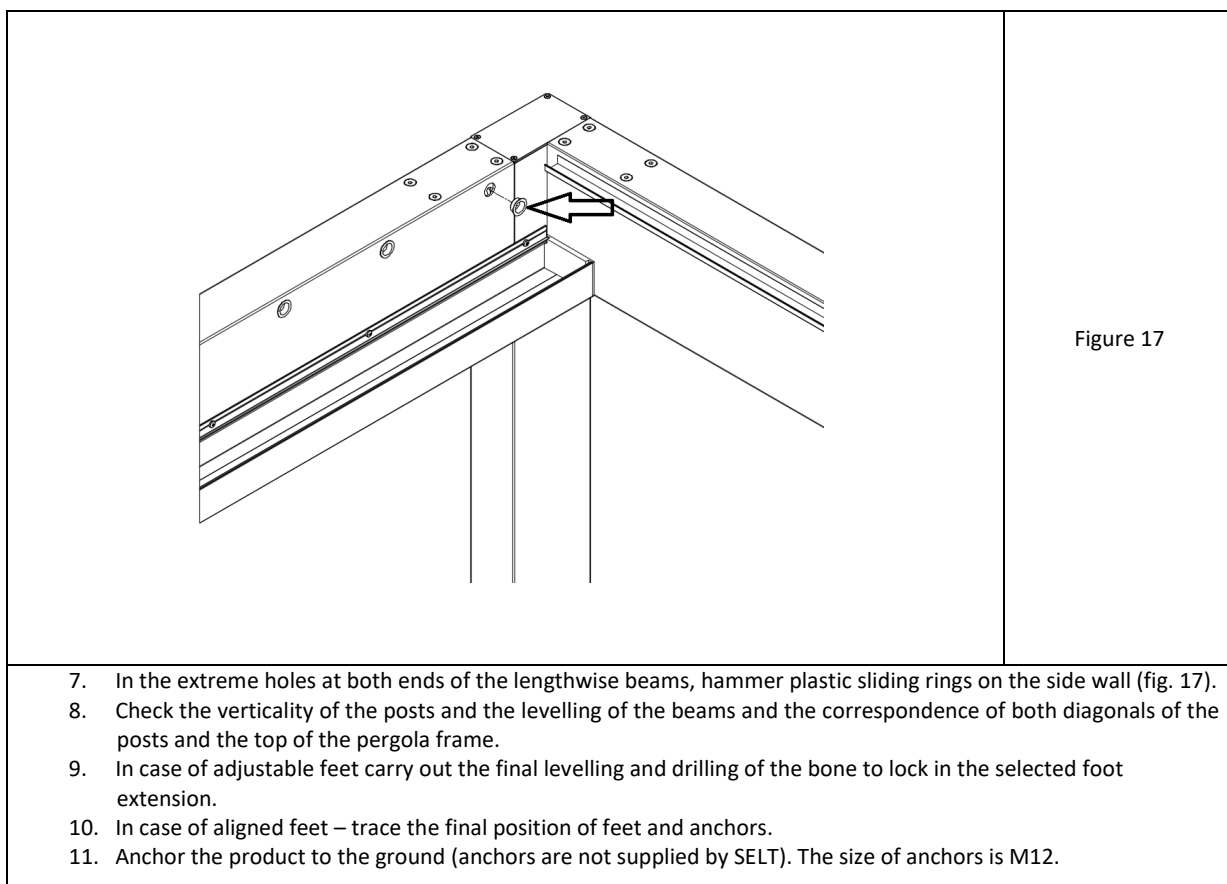
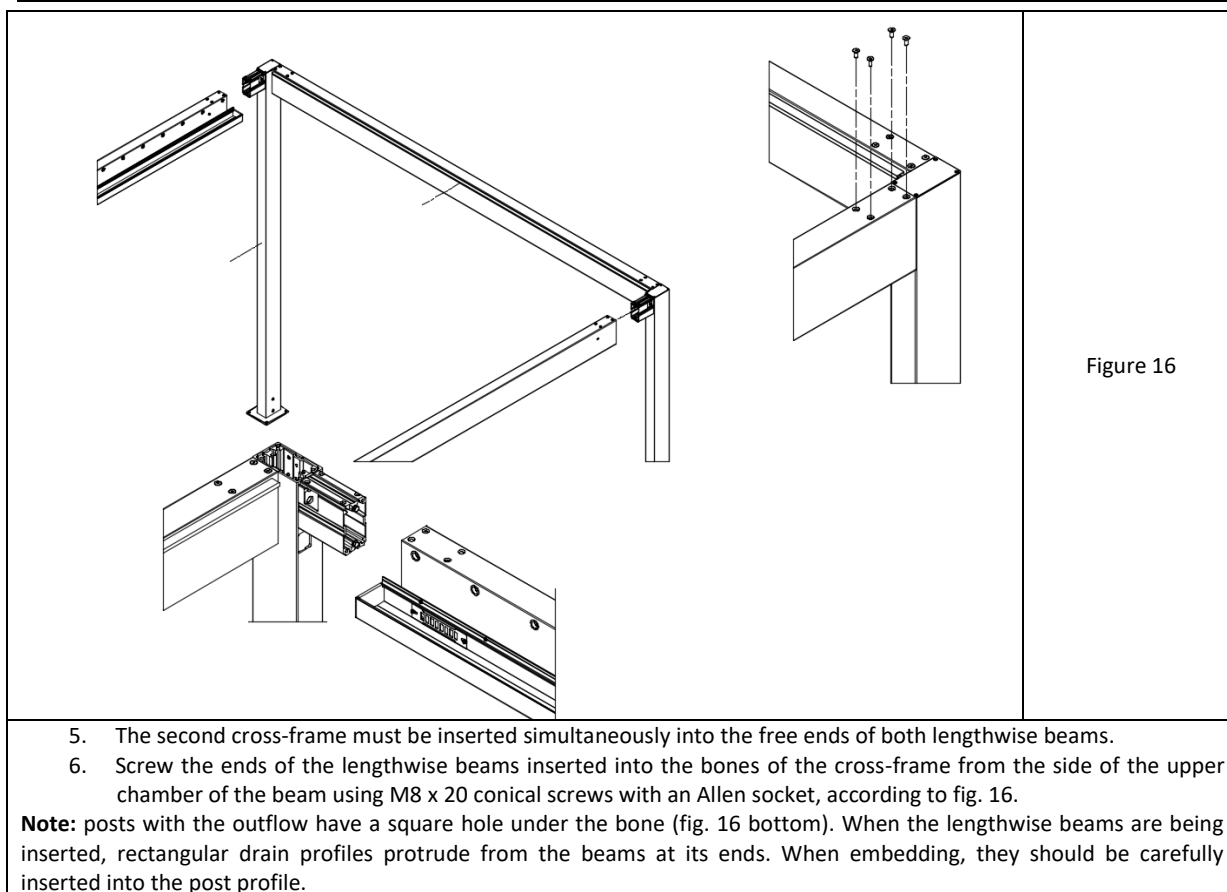


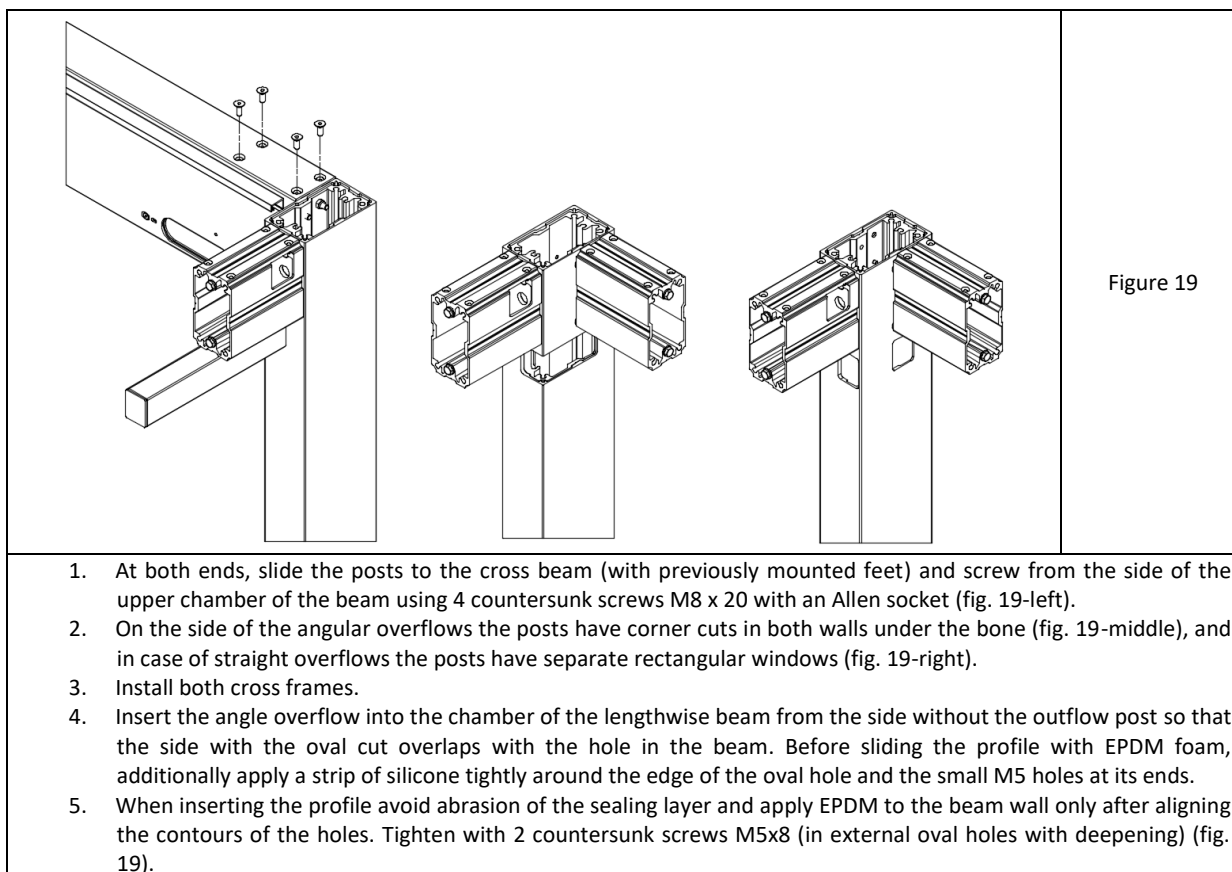
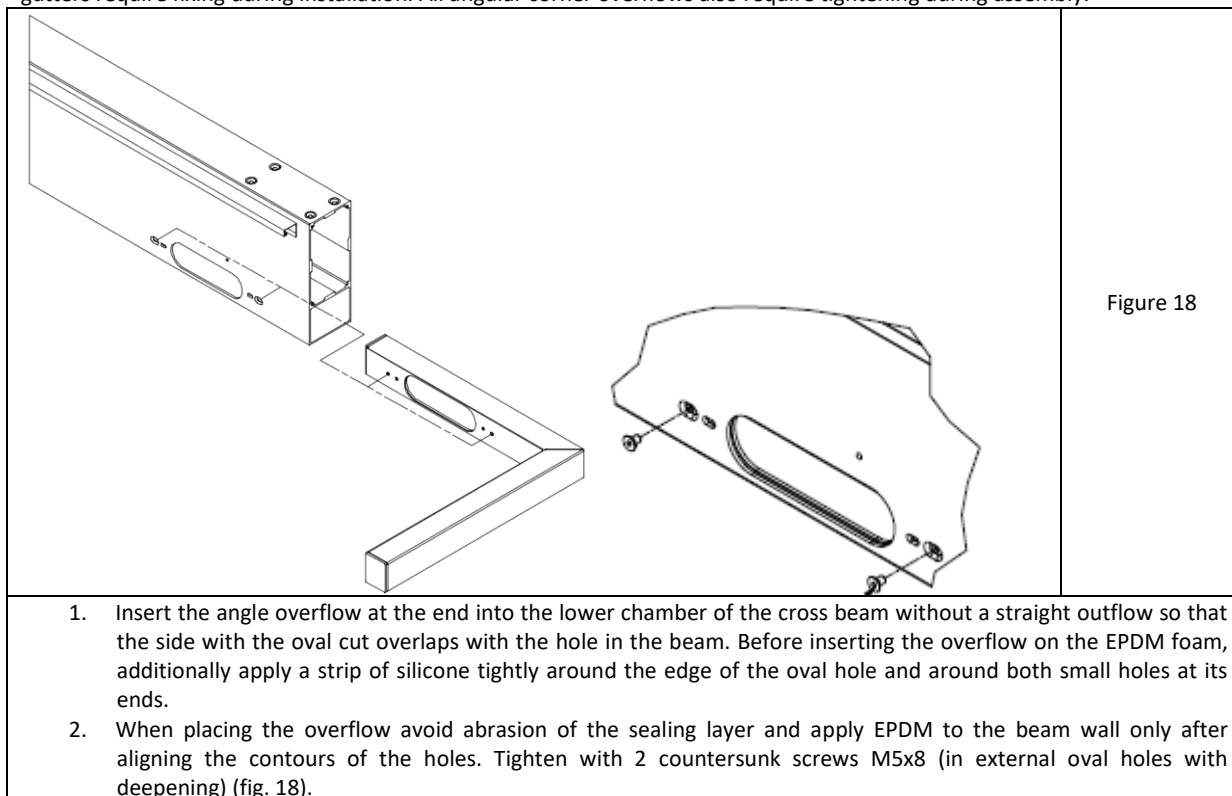
Figure 15

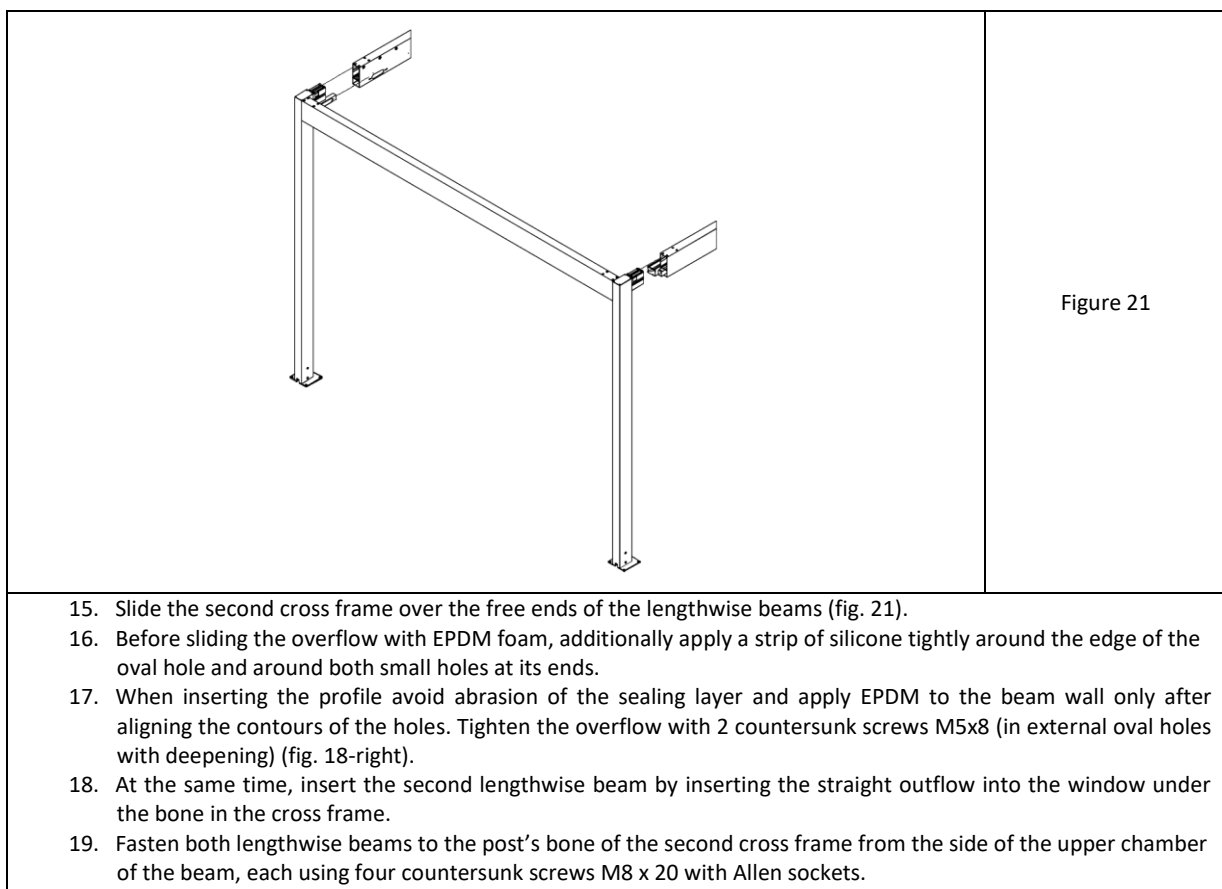
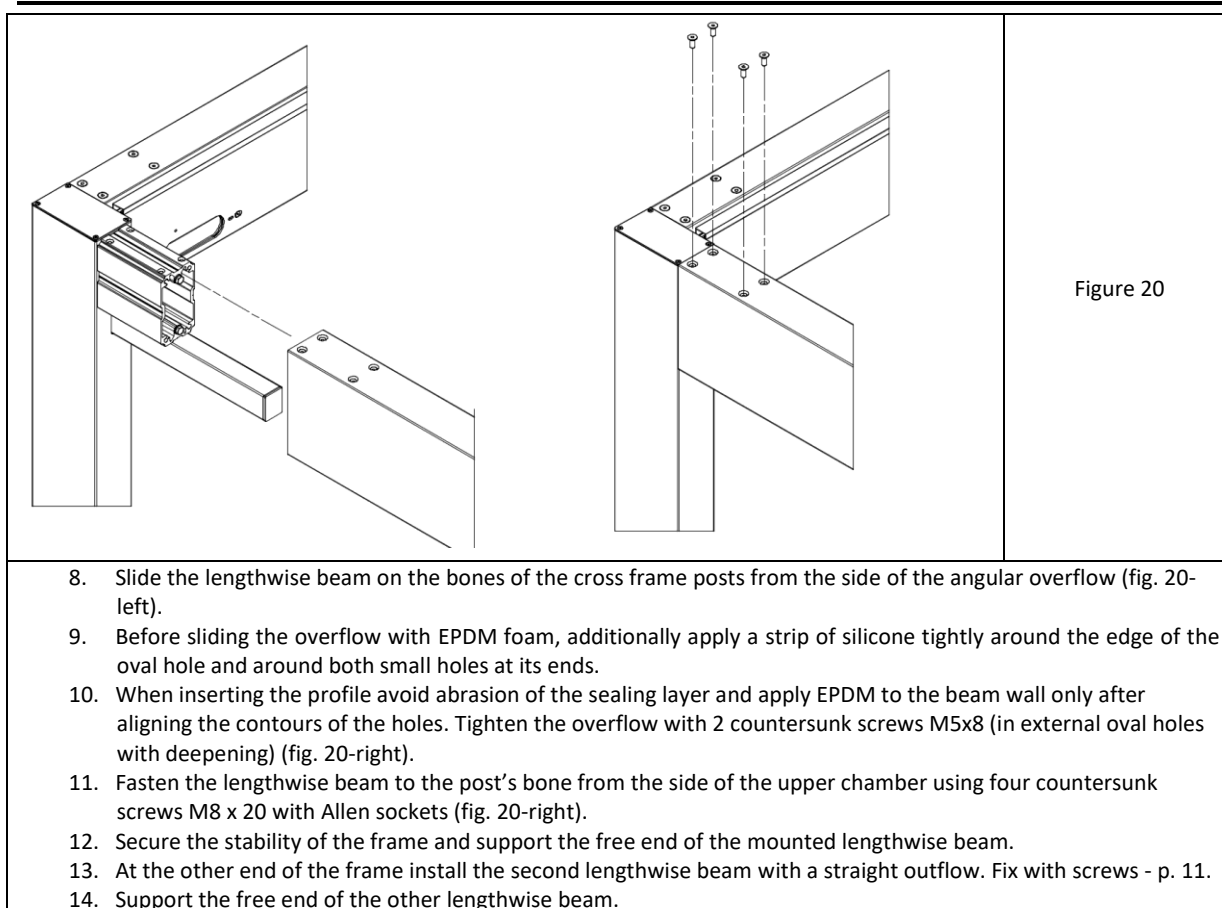
2. Set the cross-frame vertically on a load-bearing surface and insert the lengthwise beams one by one into its protruding bones. Provide safe and stable support for the cross-frame and the free end of the mounted lengthwise beam.
3. Screw the end of the lengthwise beam inserted into the bone of the cross-frame from the side of the upper chamber of the beam using 4 conical screws M8 x 20 with an Allen socket, according to fig. 15.
4. Repeat this step for the other lengthwise beam. Ensure that the free ends of both lengthwise beams are securely supported.

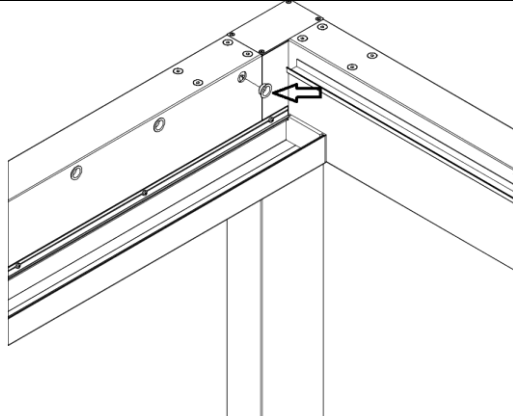


4.6.3.2 FREE-STANDING VERSION WITH 4 GUTTERS

The lengthwise beam without angle overflows has a factory-fixed gutter and straight outflows. In case of other beams, the gutters require fixing during installation. All angular corner overflows also require tightening during assembly.

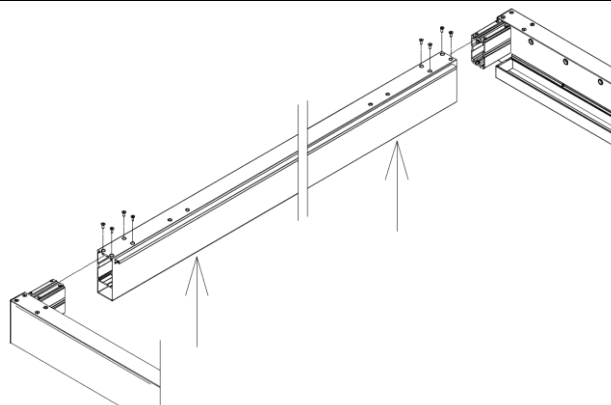


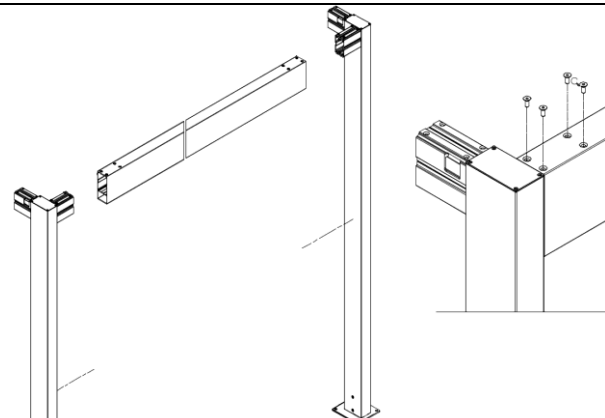


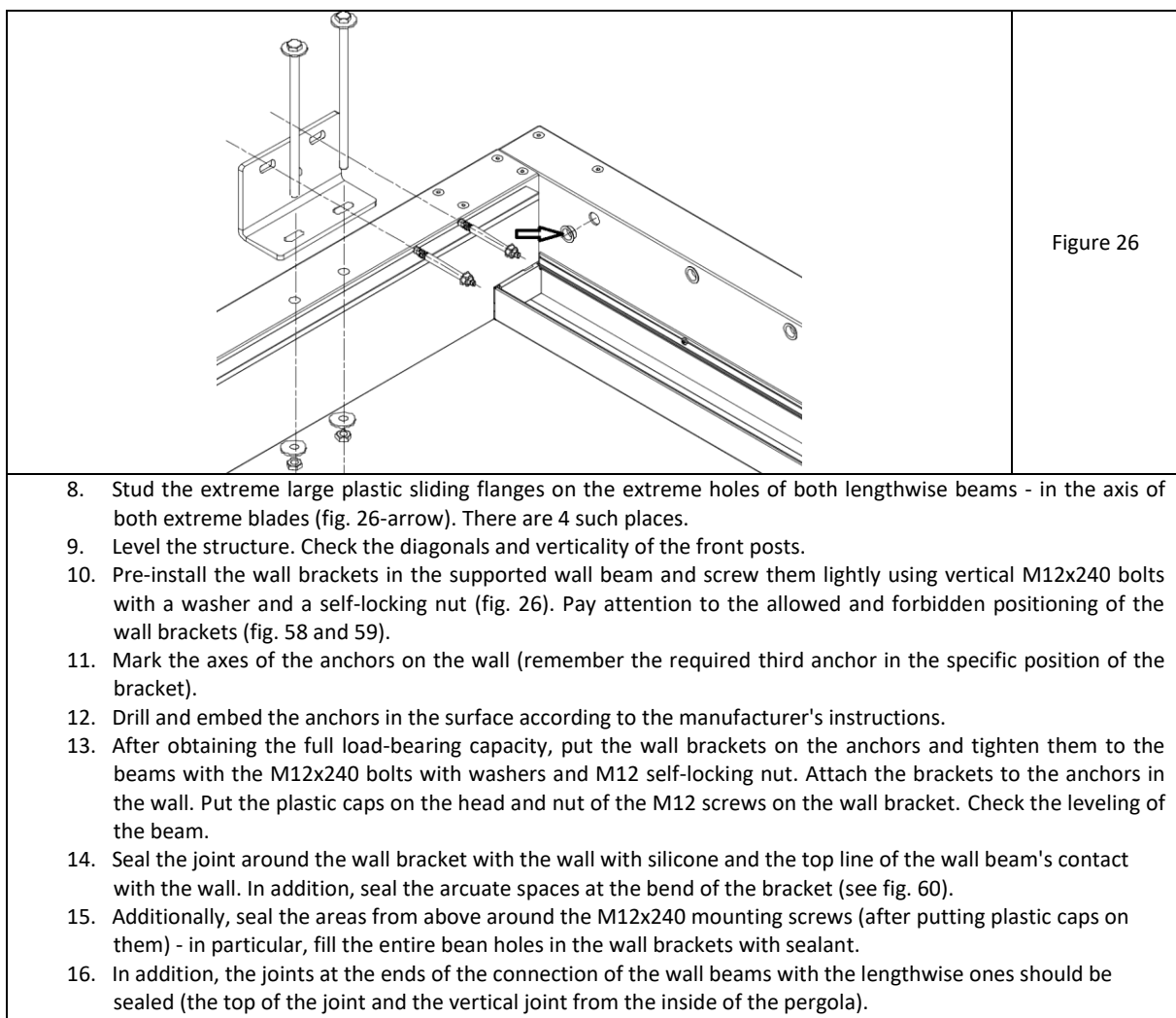
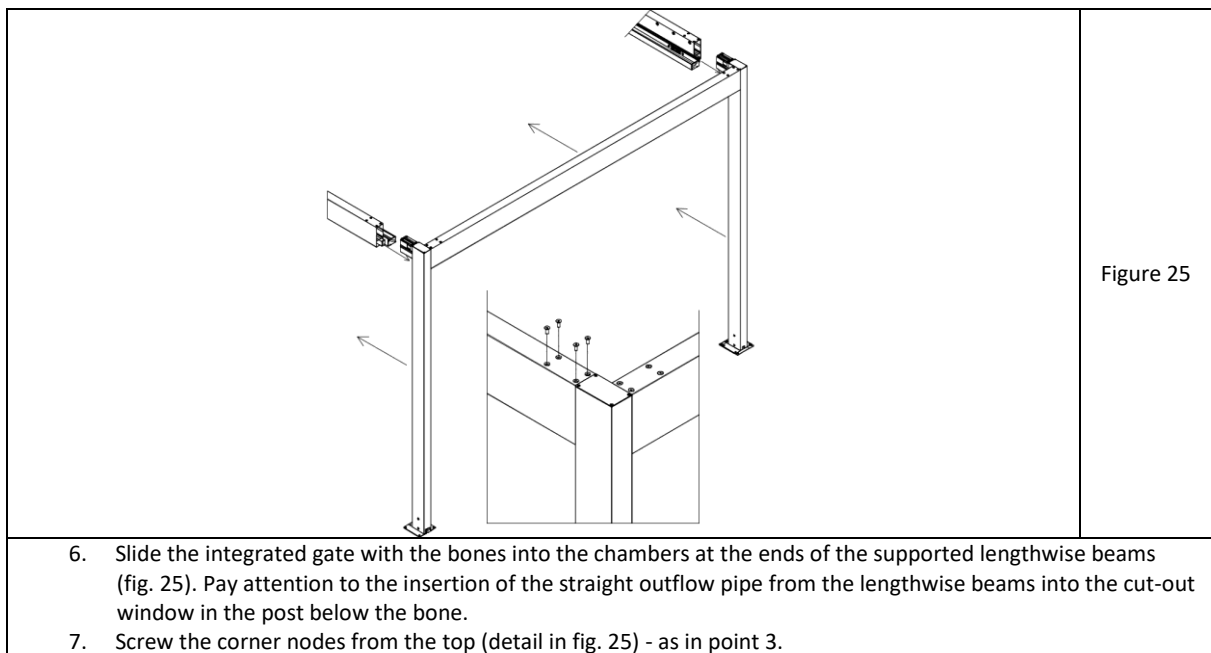
	Figure 22
20. In the extreme holes at both ends of the lengthwise beams, hammer plastic sliding rings on the side wall (fig. 22). 21. Check the verticality of the posts and the leveling of the beams and the correspondence of both diagonals of the posts and the top of the pergola frame. 22. In case of adjustable feet carry out the final levelling and drilling of the bone to lock in the selected foot extension. 23. Anchor the product to the ground (anchors are not supplied by SELT). The size of anchors is M12.	

4.6.3.3 WALL-MOUNTED VERSION WITH 2 GUTTERS

Both lengthwise beams have factory-fixed gutters and straight outflows.

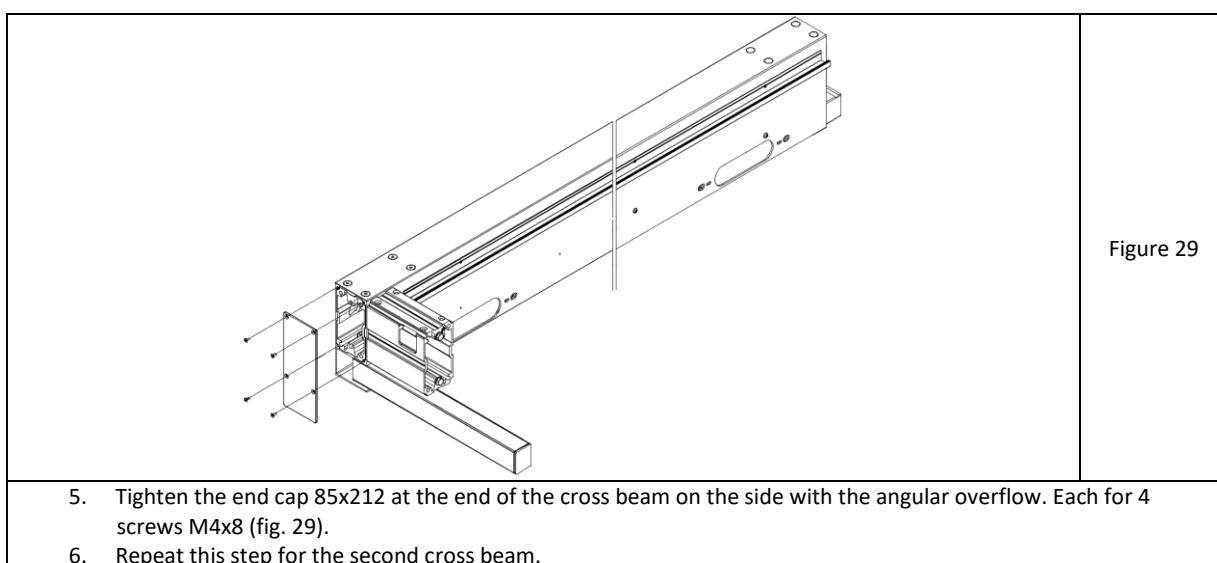
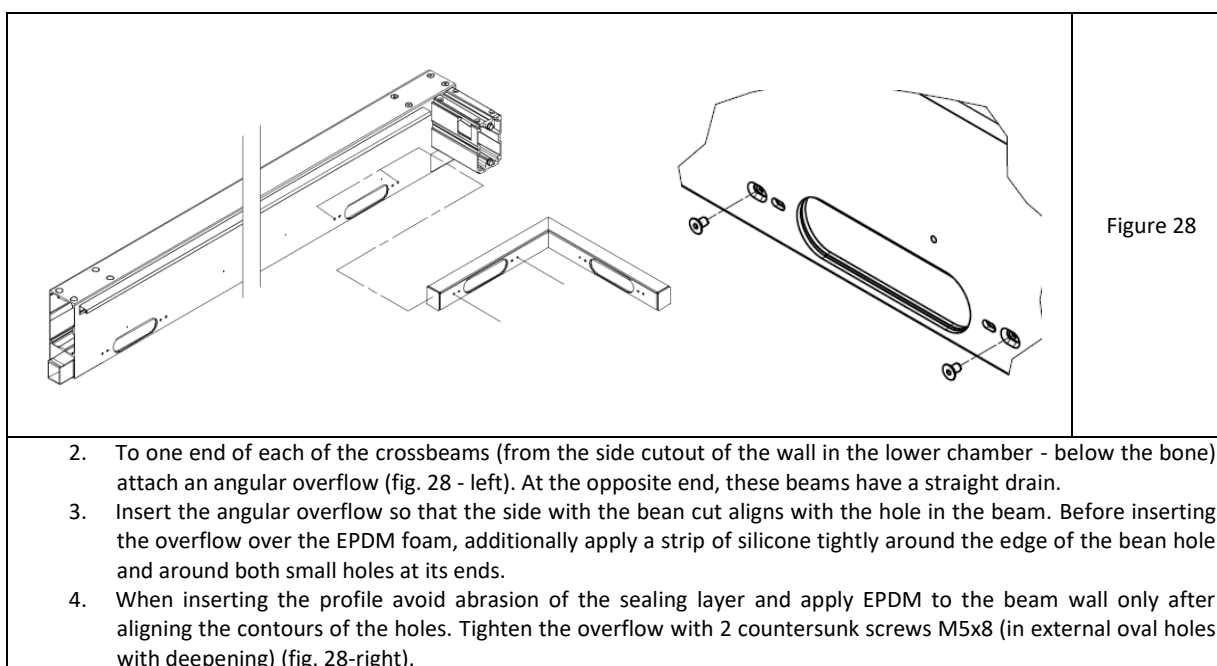
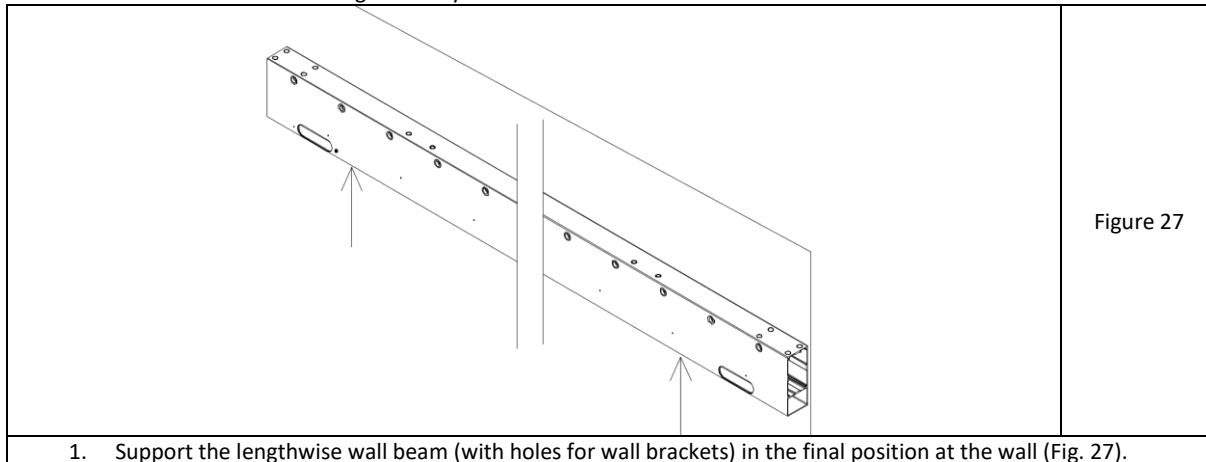
	Figure 23
1. Support the wall transverse beam in its final position. 2. Insert the lengthwise beams successively to both ends with the bone into the wall beam chamber (fig. 23). 3. Support the free ends of the beams. Screw the corners from above using 4 conical screws with M8x20 Allen socket.	

	Figure 24
4. Integrate the cross frame by sliding it horizontally into the cross beam (without wall drillings) at both ends of the previously merged posts (fig. 24-left). Pay attention to the correct setting of outflows and foot types. 5. Screw the corners from the top with screws as in point 3 (fig. 24-right).	



4.6.3.4 WALL-MOUNTED VERSION – 4 GUTTERS

The lengthwise beam with outflows has a factory-fixed gutter and straight outflows. The other gutters and angular overflows are to be installed during assembly.



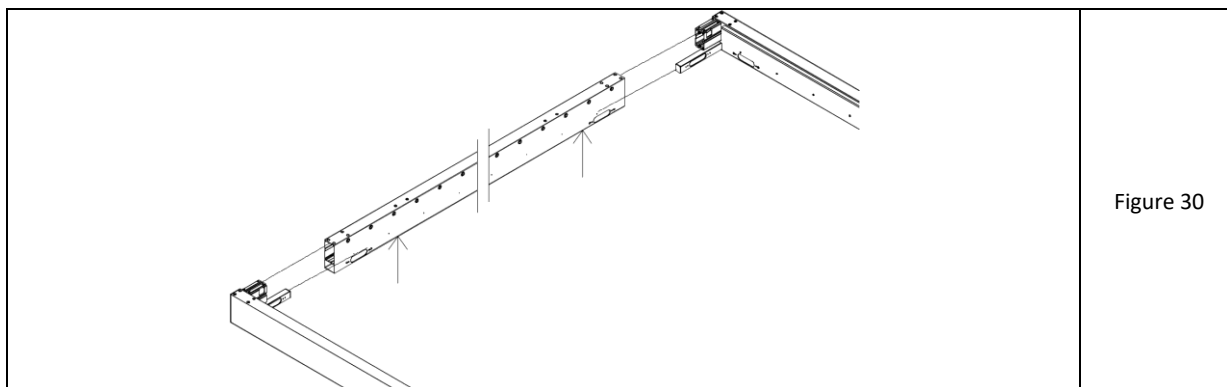


Figure 30

7. Insert both cross beams successively into the ends of the lengthwise beam fixed on the wall - bone to the upper chamber and the arm of the angular overflow to the lower chamber, the end cap adheres to the wall – fig. 30.
8. Insert the angular overflow so that the side with the oval cut aligns with the hole in the lengthwise beam. Before sliding the overflow with EPDM foam, additionally apply a strip of silicone tightly around the edge of the oval hole and around both small holes at its ends.
9. When inserting the profile avoid abrasion of the sealing layer and apply EPDM to the beam wall only after aligning the contours of the holes. Tighten the overflow with 2 countersunk screws M5x8 (in external oval holes with deepening) (see fig. 28-right).

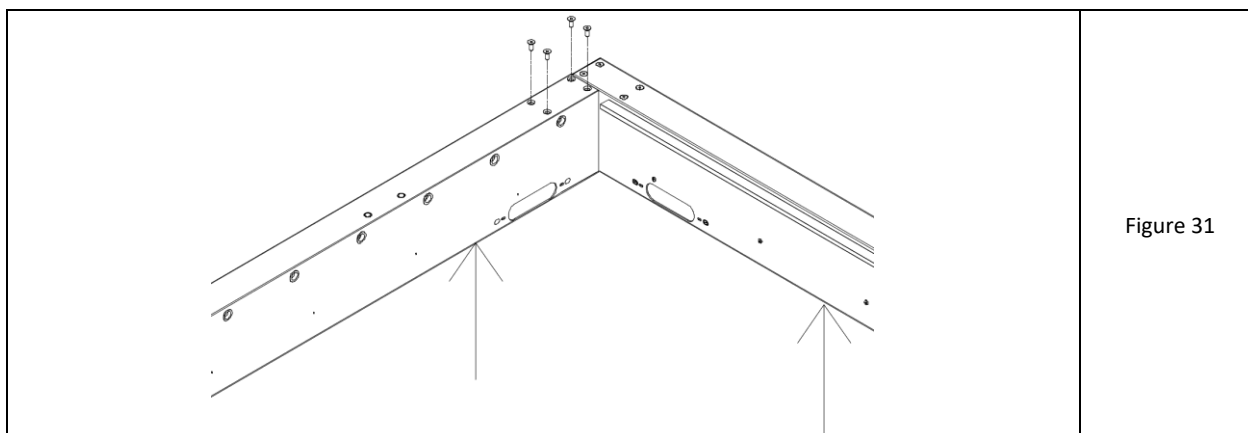


Figure 31

10. Support the free end of the crossbeam and, inserted into the lengthwise beam, screw from above using 4 conical screws with M8x20 Allen socket (fig. 31).
11. Repeat for the second crossbeam.

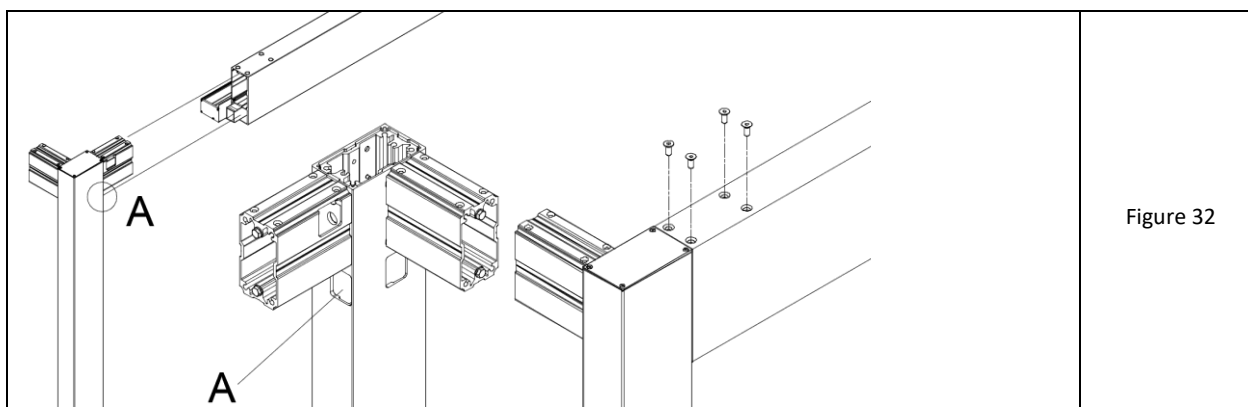
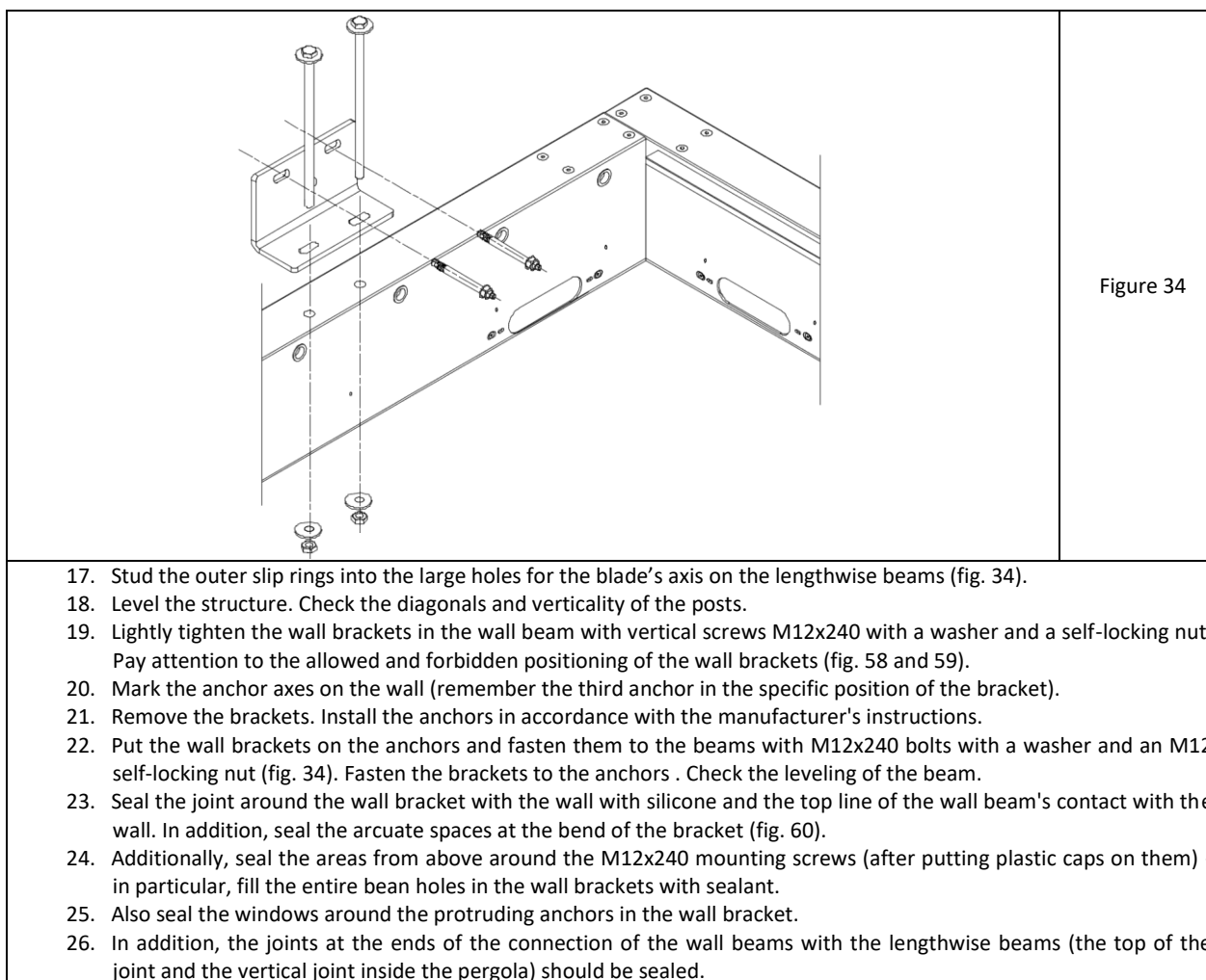
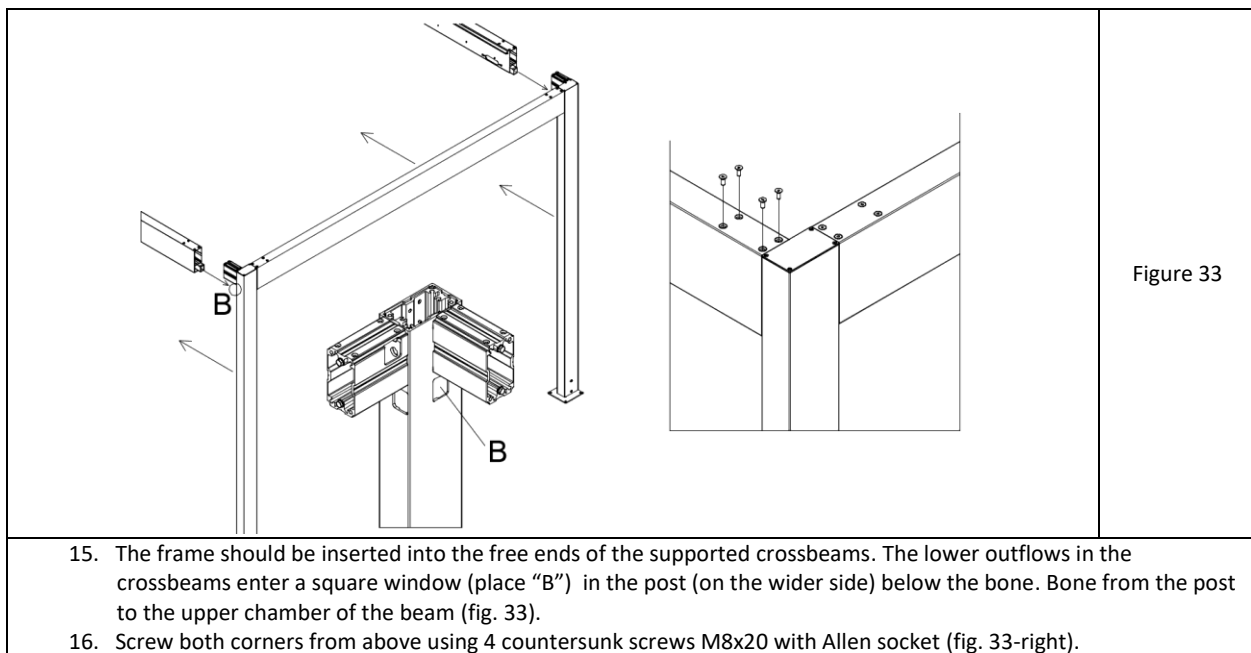


Figure 32

12. In the horizontal position, insert the posts equipped with appropriate feet into both ends of the second lengthwise beam. The lower drains in the lengthwise beam enter the square window (A) in the post (on the narrower side) below the bone. The bone at the top of the post should be inserted into the upper chamber of the beam (fig. 32-left).
13. Screw the corner from above using 4 conical screws with M8x20 Allen socket (fig. 32-right).
14. Put up the whole frame (different assembly is allowed, e.g. in a standing position).



Note:


- **Different assembly order is allowed.**
- After assembling the entire frame, always check the compliance of the diagonals, parallelism and perpendicularity of the sides and the verticality of the posts.



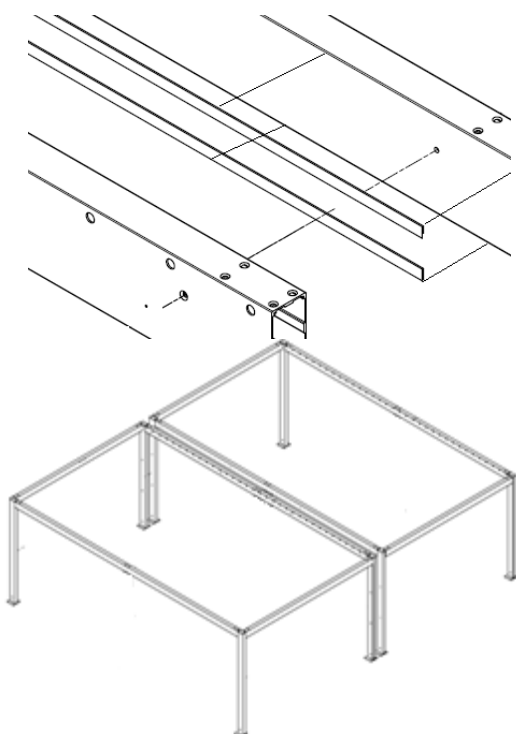
NOTE: The assembled supporting structure should be placed in the right place and **anchored to the ground with a suitable fastening product**. Suggested anchors in size M12. The purchase and selection of elements for anchoring the structure is the responsibility of the buyer of the system.

4.6.4 MODULAR INSTALLATION

Modular connection is made by joining individual frames together.



Note: Seal the contact of modular pergolas from the top with silicone (EPDM gaskets do not ensure full tightness against precipitation).



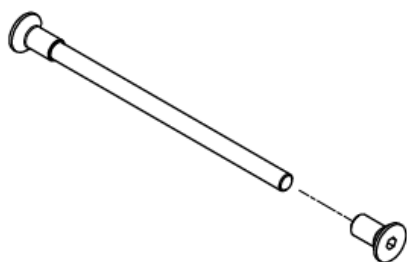
1. For modular version, on one of the sides of the beams which are adjacent apply EPDM foam strips (added loosely to the accessories) – fig. 35.

Figure 35

2. Add new module to the module(s) already anchored to the ground according to the planned modular structure. Before the assembly of modular construction check the correctness of the diagonals and verticality and horizontalness of the construction elements in the newly assembled module – make corrections of structure settings if necessary (fig. 36).

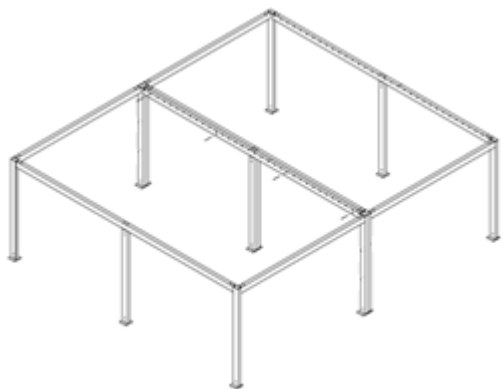
NOTE: Pay special attention to the alignment of the beams and posts of the connected modules as well as the coaxiality of the holes intended for bolting the structure.

Figure 36



3. To connect pergola SB400 modules with each other, countersunk nuts and threaded studs are used (fig. 37), and in the beams coaxial through holes with deepening are made.

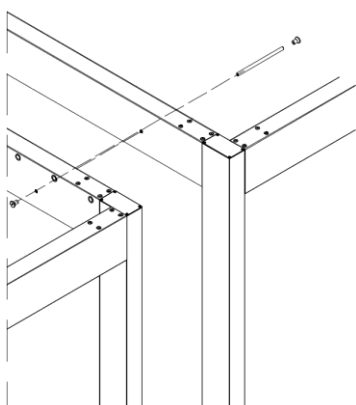
Figure 37



4. Modules set should be screwed with each other using countersunk nuts and studs delivered with construction kit – as presented on fig. 38 and 39.

NOTE: Countersunk nuts and pins should be protected with thread-locking adhesive during screwing. Thread-locking adhesive is not part of the construction kit and it should be bought by the Purchaser on his own.

Figure 38



5. Modules set and screwed with each other should be permanently anchored to the floor.

NOTE: Seal the contact points of modular pergolas from the top with silicone (EPDM gaskets do not ensure full tightness against precipitation).

6. Successive modules should be installed to the already assembled structure by repeating steps from 1 to 5.
7. After completing the assembly of all modules, proceed with the gutters installation.

Figure 39

4.6.5 GUTTERS INSTALLATION

Gutters can be factory fixed to the beams depending on the ordered configuration. The other gutters should be tightened during the assembly. Pay attention to:

- correspondence and overlapping of the oval drain holes,
- compliance and alignment of the mounting holes in the beam and the top wall of the gutter,
- gutters for lengthwise beams have a total length equal to the lengthwise beam,
- transverse gutters are inserted between the lengthwise gutters and are shorter than the beams.



For pergolas with outflow to the front or back (2 gutters), the gutters are factory-fitted to the lengthwise beams.

For the version with outflows to the side (4 gutters), only the gutter from the side of the beam with outflows to the posts is factory-tightened.

Depending on the variant, there may be gutters without a side LED chamber and wider ones with an integrated chamber for the LED strip. The end caps of the gutters from the outside may have arched grooves for the cable exit of the LED strip.

Beams and gutters already have holes for screws. Each time before installation, the outer wall of the gutter screwed to the beam should be degreased.

1. After degreasing, the rear surface of the gutter adjacent to the beams must be carefully sealed with a strip of silicone (included with the product). Sealing band continuity required. In addition, a closed loop around the perimeter of the oval hole should be made very carefully with the sealant. Also, apply an additional two loops of sealant around the holes at both ends of the oval overflow.



Figure 40

2. Place the gutter against the beam (align the bottom of the gutter with the bottom of the beams). Pay attention to the alignment of the oval outflow perimeter and the holes in the gutter and the beam.
3. Fasten the gutter with painted screws St4,8x13 (fig. 40).

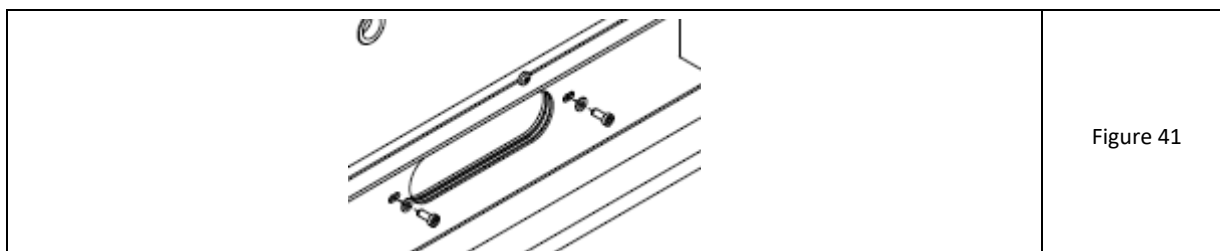


Figure 41

4. Additionally, at both ends of the oval outflow tighten the screws M5x12 with cylindrical head and Allen socket. Place a flat washer A5.3 under the screw head (fig. 42).
5. The edge of the oval outflow should be thoroughly coated with a thick layer of sealant by gently flattening it with a wet finger. In addition, sealant should also be carefully applied around the heads of the M5 screws.
6. If the protective grate is installed on the outflow, seal the edges before installing it.

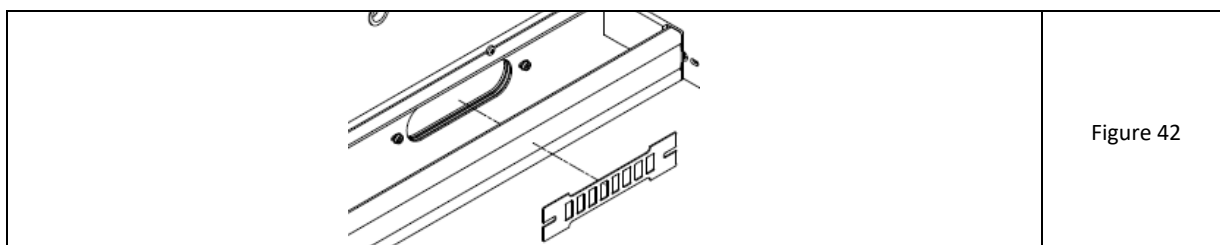


Figure 42

7. It is possible to install an additional protective grate on the oval outflow. To do this, loosen both M5 screws at the ends of the hole and insert the ends of the grate with the fork cut into one screw as far as it will go, and then move it back towards the other (fig. 42).

NOTE: The grate reduces the efficiency of draining water from the gutters.

8. Thoroughly seal potential leak places with silicone. These are:
 - upper contact of the gutter with the beams (around the entire perimeter)
 - the inner edge of the contact between the end cap of the gutter and the gutter profile - along the entire perimeter of the contact
 - upper contacts of the transverse gutter with the lengthwise one
 - circumferential joint of the oval outflow from the gutter to the beam
 - side connection of beams with each other or with posts from the inside of the pergola

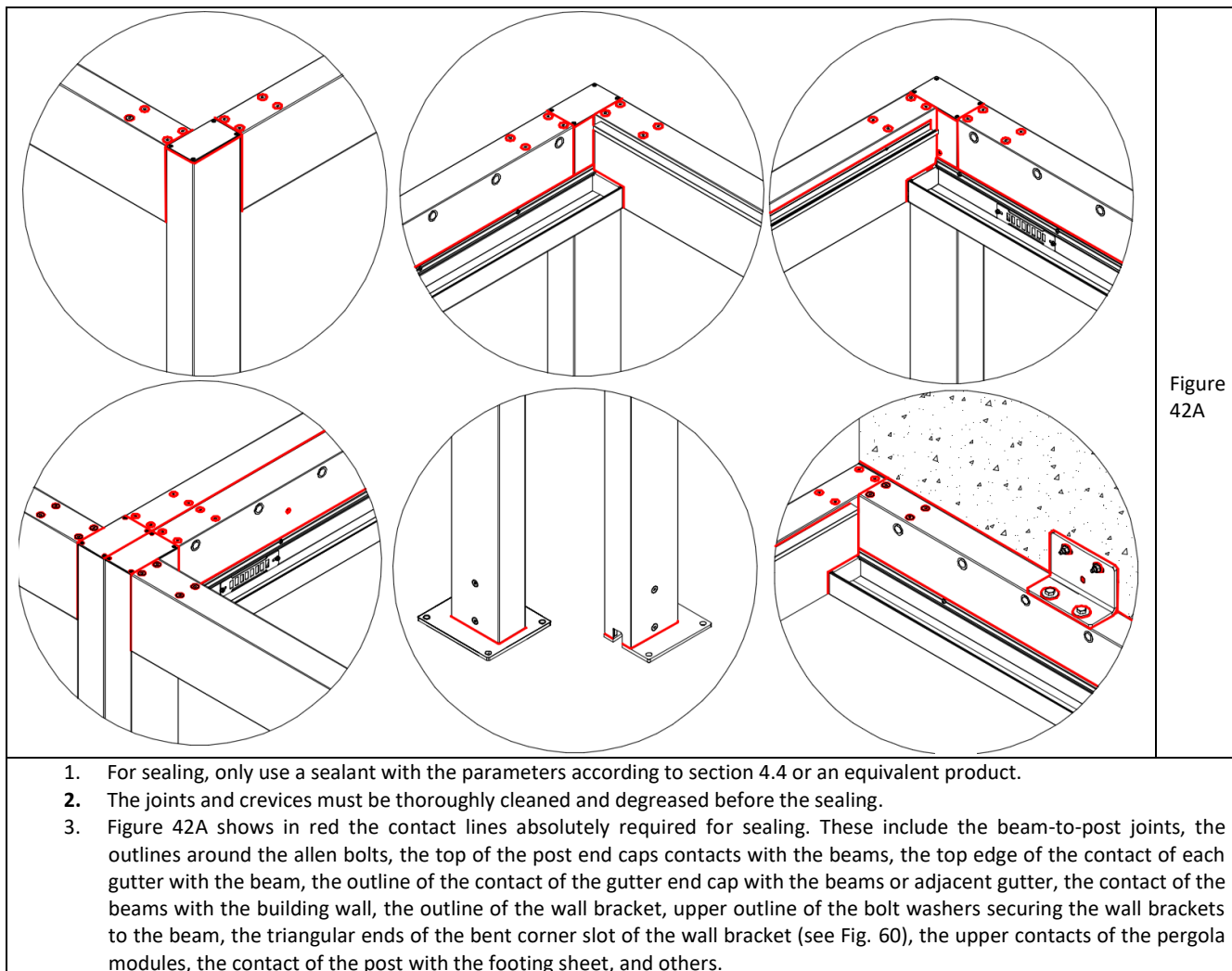


NOTE: Sealing from the inside of the end cap with the gutter reduces the risk of bursting the bottom chamber of the gutter in the event of a leak (including factory-installed ones).

NOTE 1: During the first heavy rainfall, it is recommended to visually inspect the contact points which are sensitive to leakage and, in the event of noticed leaks, fill the seals with silicone. Such places are usually the joints of the gutters with the beams, the mutual contacts of the transverse gutters with the lengthwise ones, the joints along the circumference of the end caps of the gutters, the lower edges of the gutters under the side oval outlets, the insides of the joints of the oval overflows in the beams connected to the gutters, places of end caps and rear exits from beams of wall anchors, joints of beams with posts, joints of beams with the wall.

NOTE 2: Check regularly at intervals of max. every 6 months the condition of the silicone seals made and make sure to fill in any gaps (after prior degreasing and removal of the damaged or leaking section of the seals). If leaks or condensation are noticed, immediate action should be taken to repair the lack of leak tightness.

4.6.6 CONSTRUCTION SEALING



4.6.7 INSTALLATION OF BLADES AND DRIVE UNIT



Picture of blade, motor side (fig. 43).

NOTE: Pin has 4 grooves in standard for mounting the snap-rings. Only in the case of choosing the inclination of the blades towards the motor, long pins will be installed in 2 pcs of blades. These blades should then be installed as the extreme ones, one at both ends of the roof.

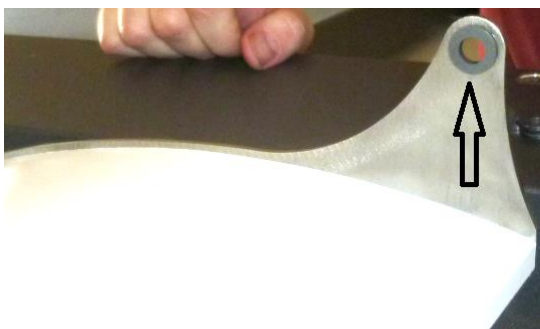
Figure 43



Picture of blade, bearing side (fig. 44).

NOTE: On the bearing side there is an elongated pin with 6 grooves. Only in the case of choosing the inclination of the blades towards the motor, short pins will be installed in 2 pcs of blades. These blades should then be installed as the extreme ones, one at both ends of the roof.

Figure 44

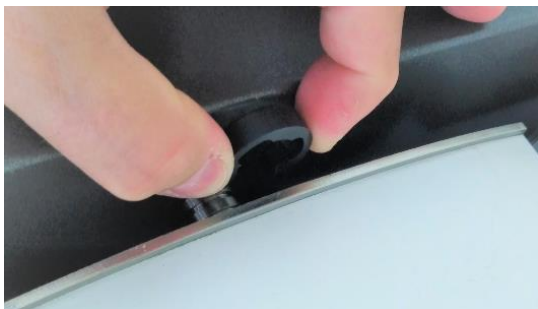


1. At the upper end of the drive end cap insert small slip rings one-sidedly into the hole from the blade side (fig. 45).
2. Repeat this step for all blades.

NOTE: Press the slip rings carefully into the holes – lack of deep mounting may result in difficult connection with drive rod.

Figure 45

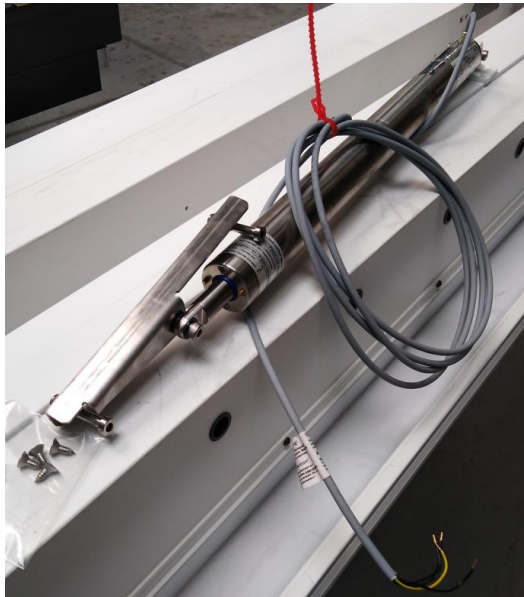
3. Insert the blade to the beams (in the order given below): place them horizontally above pergola (drive side of the beam with holes for the motor), insert it with the end into the hole in the beam until it stops, then lower the opposite end and insert it into the hole in the beam. Then align the blade-beam gaps on both sides and manually click the Clip plastic rings onto the pin (fig. 46). A maximum of 2 pcs/side of the blade is provided.



NOTE 1: Blades have longitudinal slope. The difference in mounting levels of both ends of the blade is 20 mm and in standard the blade is mounted higher on the motor side. In the case of reverse inclination, 2 pcs of blades will have exchanged shafts at the ends. They should be installed as completely extreme blades (to the crossbeams).

Figure 46

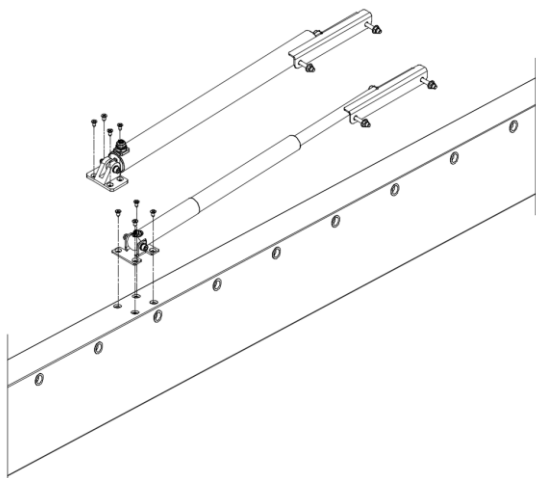
NOTE: If installing the Clip ring in the groove creates a risk of the blade falling out, put another Clip to ensure a secure fit. The surfaces of the blade end caps on the driving side must be in one line after the adjustment of the ring ratio. With large projection, there may be a horizontal bend in the center of the beam, forcing the use of double Clips to align the line of the blade drive end caps.



4. The motor is factory-fixed with a bracket and a bent guiding bracket. Tapered screws securing the motor's bracket to the beam are packed in a separate string bag (fig. 47).

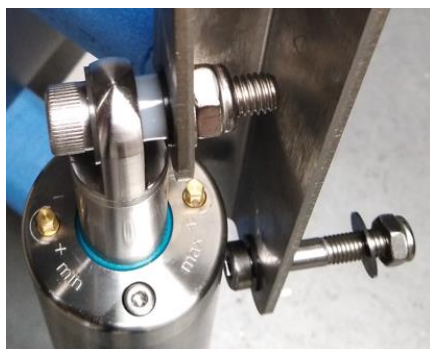
NOTE: For selected models the motor may be factory fixed to the beam.

Fig. 47



5. For selected models tighten the motor unit through the motor's bracket (model depends on the type of motor) with ST6.3x16-C-H pan head screws (added in accessories) to the existing set of holes on the top of the drive beam. Cable exit from the motor from the top of its body, guiding bracket – ridge up and the side with two holes for tightening the rod in line with the side of the beam with holes for blades (fig. 48).
6. Install the first and last blades and the two middle ones to determine where to mount the motor and the correct position for mounting it. The motor piston should be extended and the pergola blades should be in the open position. After installing the ELERO motor (point 5.6.2), check whether the blades close freely after retracting the piston. The SITO motor has overload detection and will automatically stop when resistance is detected.
7. Repeat assembly for all blades.

Figure 48



8. For Piccolo motor an additional plastic spacer sleeve has been introduced between the guiding bracket and the motor's piston (fig. 49).

Figure 49



NOTE: Installing too few Clip plastic rings may cause excessive longitudinal clearance of the blade (especially with large projections in the middle zone of the beams), which in turn may lead to the blade falling out, thus creating a threat.



NOTE: The Elero motor is powered by 230V AC mains voltage. The 24V motor requires connection to the Louver control unit. The control unit should be connected to a 24V DC power supply and the power supply to 230V AC. Connection without a power supply leads to damage to the control unit or motor and may cause electric shock.

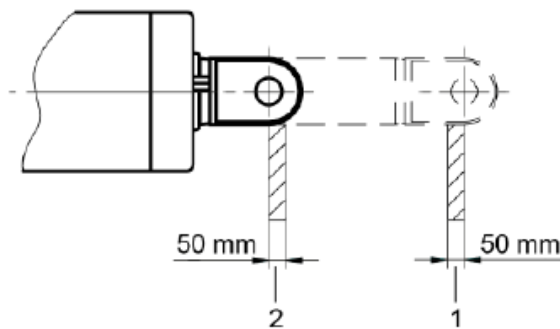
4.6.8 INSTALLATION OF THE DRIVE

Permitted adjustment range of the Piccolo motor limit switches



NOTE: There is a risk of damage to the device as a result of exceeding the permitted adjustment range

- The “min-hidden” and “max-extended” limit switches can be adjusted up to 50 mm in the direction of stroke reduction.
- A minimum stroke of 30 mm must be maintained.



ATTENTION!

Electric wires should be properly protected.

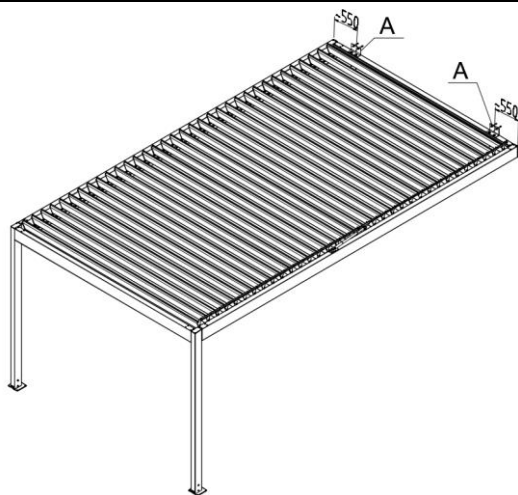
Figure 54 Possible reduction in Piccolo motor stroke

- 1 – Stroke reduction „extension”
- 2 - Stroke reduction „retraction”

4.6.9 WALL INSTALLATION

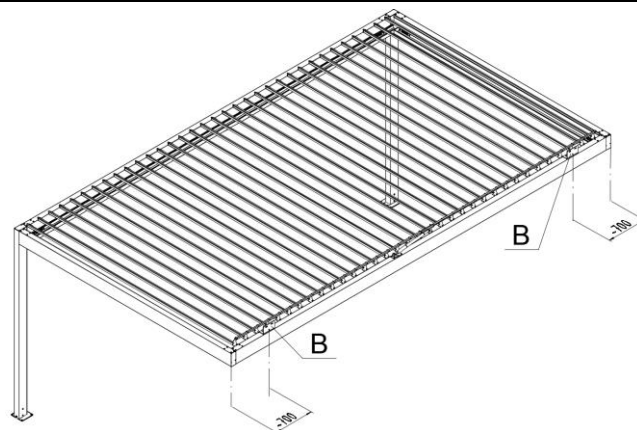
Wall installation is carried out with the use of wall brackets located at the points specified by the Manufacturer. The fastening element of pergola can be:

- Cross beam (front or rear) of the roof.
- Lengthwise beam (drive or bearing) of the roof.



A – Wall brackets mounted to the cross beam.

Figure 55 – Wall installation to the rear beam.



B – Wall bracket mounted to the lengthwise beam.

Figure 56 – Wall installation to the lengthwise beam.

For the assembly of the crossbeams according to Fig. 55, the wall brackets (A) are located approx. 550 mm from the corners of the pergola.

For the assembly of the longitudinal beams according to Fig. 56, the wall brackets (B) are located approx. 700 mm from the corners of the pergola.

Note: for wall installation to the drive-side beam, a minimum projection of 2600 mm is required. The wall brackets will then be extended from a position of 700 mm from the corners to a position of 515 mm - the axis of the bracket from the corners of the pergola. Above the 2600 mm projection, the brackets are located as shown in Fig. 56.

The exact dimension is given each time by the technologist.



NOTE: with a pergola projection of 2.6 m and less, the manufacturer does not drill holes in the beam for the wall brackets due to technological limitations.

Wall brackets in the form of universal angle steel brackets (fig. 57). Permissible assembly methods according to Fig. 58. Forbidden installation methods according to Fig. 59.

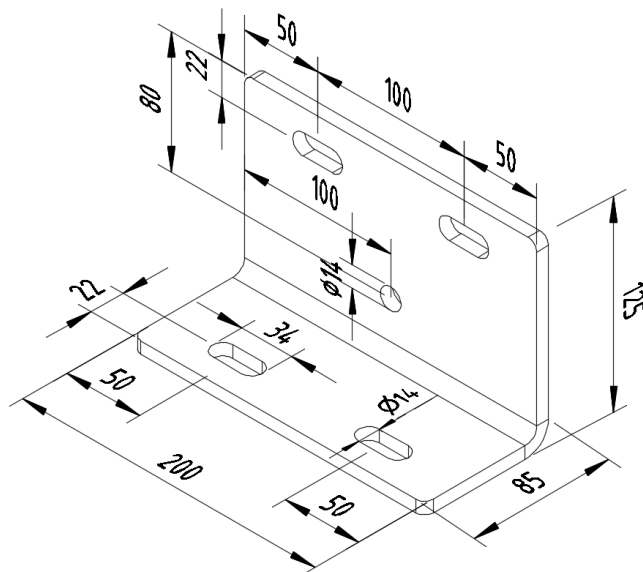


Figure 57 – Universal wall bracket (2 possible settings)

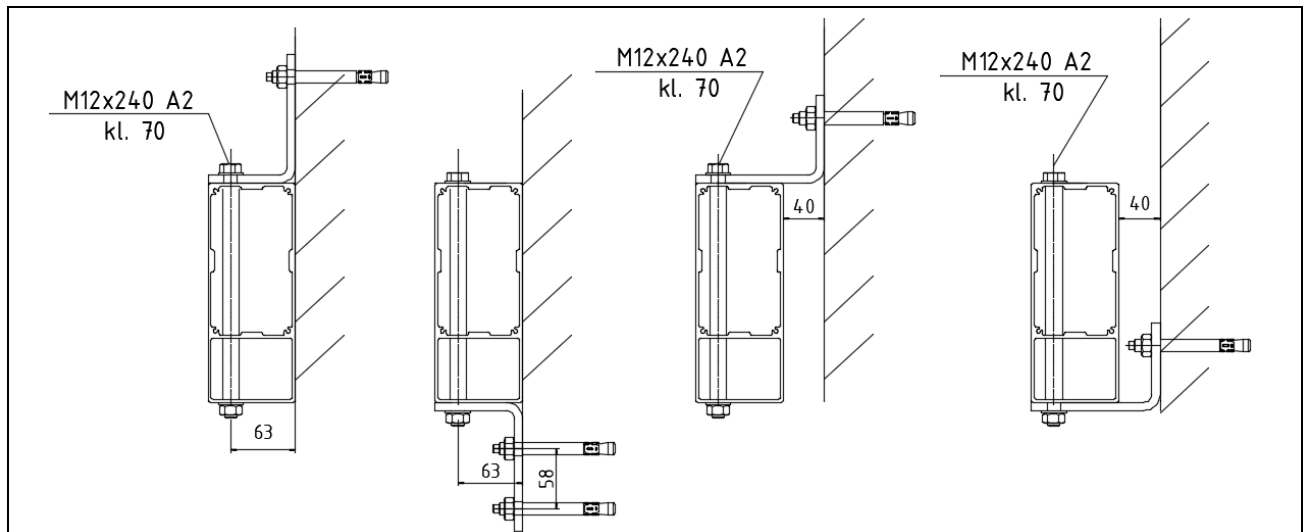


Figure 58 - Universal wall bracket – acceptable installation methods

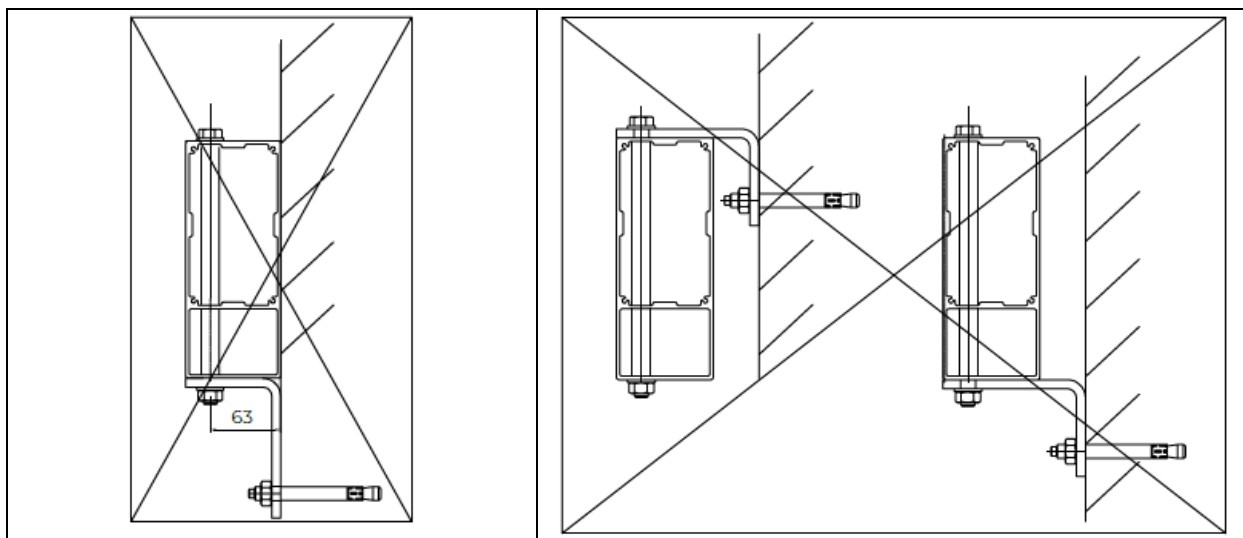


Figure 59 – Universal wall bracket – forbidden mounting methods

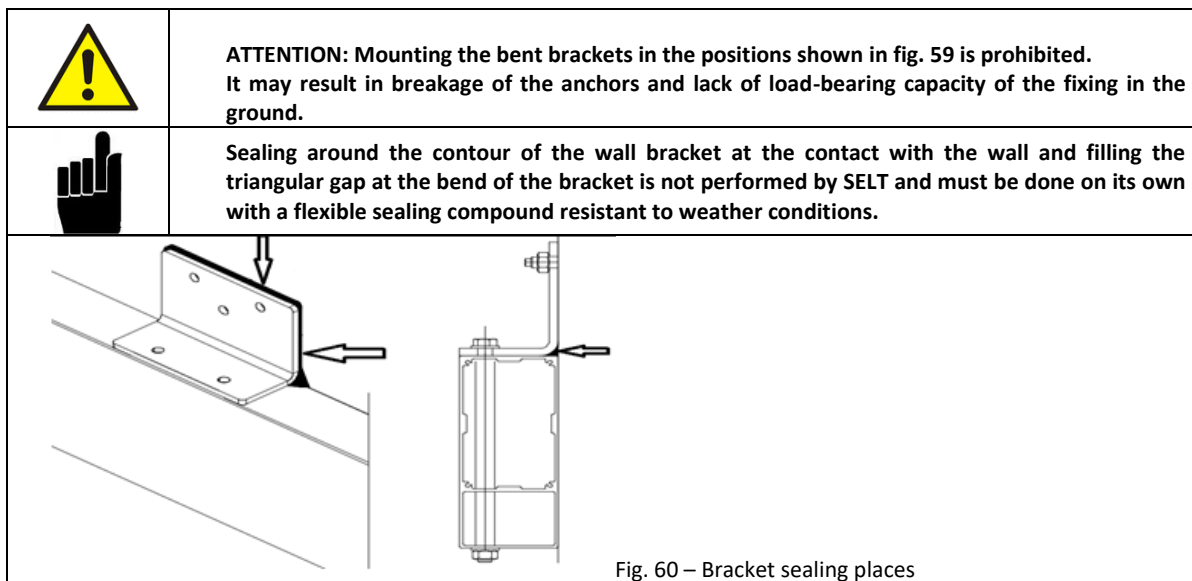


Fig. 60 – Bracket sealing places

4.6.9.1 WALL INSTALLATION – CROSS BEAM

NOTE: Wall brackets are meant to be used for walls of concrete/reinforced concrete of a class of at least C20/25 (non-cracked concrete). Anchors provided for anchoring the wall bracket: **Bonded anchor FISCHER FIS V M10x110 (5.8)** (galvanized steel) or equivalent anchor.

For fastening to the wall of the bracket with the shorter side – anchoring depth of min. 60 mm. The minimum distance of the anchor axis from the edge of the concrete in the direction of the load is 90 mm and the minimum thickness of the substrate is 150 mm.

For fastening to the wall of the bracket with the longer side - anchoring depth of min. 88 mm. The minimum distance of the anchor axis from the edge of the concrete in the direction of the load is 50 mm (upwards) and 105 mm (down) and the minimum thickness of the substrate is 150 mm.

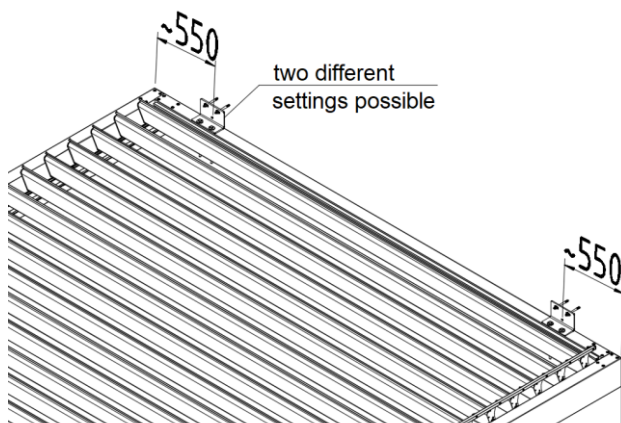
- In case of anchoring to the substrate with a lower load-bearing capacity than concrete class C20/25, a separate anchor design according to the forces given in Table 1 should be made. In addition, bending moments resulting from the eccentricity must be taken into account.
- In case of anchoring to the substrate with insulation, a separate anchor design according to the forces given in Table 1 and bending moment caused by distance installation should be made.

Table 1

	Maximum forces *
Along axis X	0,50 kN
Along axis Y	0,87 kN
Along axis Z	4,62 kN

* - Forces in the axis of holes on a horizontal flange (see fig. 55,58).

The force values given in table 1 refer to the forces for a single wall bracket, without taking into account the eccentric fastening.



1. Determine the places for the anchors to fix the brackets on the wall. The pergola's wall beam has factory-made vertical holes at a spacing of 100 mm for tightening the brackets (with reinforcing sleeves installed). They are located approx. 550 mm from the pergola corners to the bracket axis (fig. 61). Pay particular attention to maintaining the horizontal plane of the roof beam (i.e. the common horizontal axis for both wall fixings).

Figure 61

Note: Brackets for assembly without distance and with a distance as a hanger have fixings for 2 anchors located horizontally. Brackets for mounting without distance as a support have fixings for 3 anchors (2 horizontal and one in the middle above).

2. Insert the anchors (not in SELT delivery) in the substrate according to the selected anchoring system. Install both wall brackets, applying the tightening torques for the anchors according to the manufacturer's recommendations.
3. Join the pergola roof beam with the tightened wall brackets using attached bolt kit. Insert M12 screw with the washer from the top and tighten the nut with the second washer from the bottom. The recommended tightening torque for M12 class "70" bolts is 58 Nm.

NOTE: When determining the holes for the wall bracket, take into account the selected positioning of the wall bracket (fig. 58). The embedding must be carried out in the bearing substrate.

4.6.9.2 WALL INSTALLATION – LENGTHWISE BEAM



NOTE: Assumptions for anchors and substrate are given in point 4.6.9.1.

- In case of anchoring to the substrate with a lower load-bearing capacity than concrete class C20/25, a separate anchor design according to the forces given in Table 2 should be made.
 - In addition, bending moments resulting from the eccentricity must be taken into account.
- In case of anchoring to the substrate with insulation, a separate anchor design according to the forces given in Table 2 and bending moment caused by distance installation should be made.

Table 2

	Maximum forces*
Along axis X	0,87 kN
Along axis Y	0,50 kN
Along axis Z	3,94 kN

* - Forces in the axis of the holes fixing the pergola (see fig. 56, 58)
Given force values in Table 2 refer to forces for a single wall bracket, without taking into account the eccentric fastening

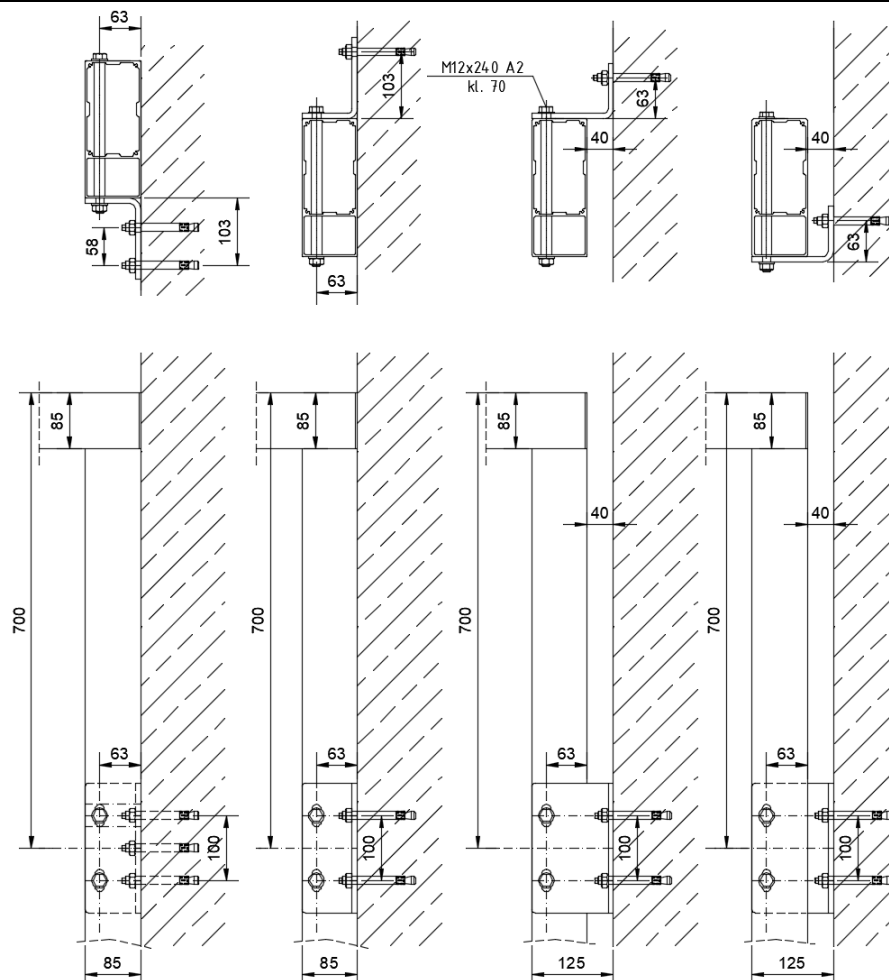


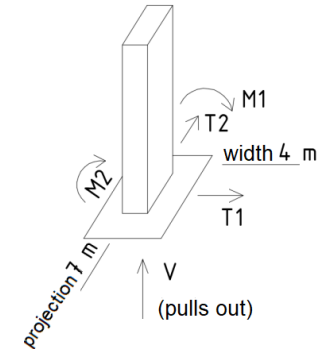
Fig. 62 Shortened wall version (side view and top view)

1. Determine the places for the anchors to fix the brackets on the wall. The pergola's wall beam has vertical holes spaced 100 mm apart for tightening the brackets. They are located approx. 700 mm from the ends of the pergola (fig. 62). Pay particular attention to maintaining the horizontal plane of the roof beam (i.e. the horizontal axis for all wall fixings).
2. Insert the anchors in the substrate according to the selected anchoring system. Install both wall brackets, applying the tightening torques for the anchors according to the manufacturer's recommendations. When setting the bracket as a support without distance, 3 anchors are required - two lower anchors with an axial spacing of 100 mm and the third one above in the middle of the distance (fig. 62 and 57).
3. Join the pergola roof beam with the tightened wall brackets using the attached bolt kit. Insert M12 screw with the washer from the top and tighten the nut with the second washer from the bottom. The recommended tightening torque for M12 class "70" bolts is 58 Nm.

NOTE: When determining the holes for the wall bracket, take into account the selected positioning of the wall bracket (fig. 58). The embedding must be carried out in the bearing substrate.

4.7 FOUNDATION GUIDELINES

For a free-standing pergola with a maximum size of 4x7 m and in accordance with the location data (given in the table below), the maximum calculation reactions are*:

Reaction directions with a positive sign	V [kN]	T1 [kN]	T2 [kN]	M1 [kNm]	M2 [kNm]
	PERGOLA SUPPORT 7x4 m				
	-6,03 (presses)	-0,75	1,42	-1,12	1,41
	6,71 (pulls out)	-1,29	-1,65	-1,52	-1,49
	-3,52	-1,36	0,90	-1,90	1,18
	-2,63	0,10	1,67	0,20	2,61

* The reactions were calculated for the pergola model with flow blockage ($\phi=1$) for both mutually perpendicular directions. A reduction was applied for the load recovery period $t=10$ years.

Location recommendations for pergola SB400:

- For the territory of Poland - location in the first and third wind load zone up to 300 m above sea level (basic wind speed $v_{b,0}=22$ m/s). For the second wind zone (coastal) and areas above 300 m above sea level in zones 1 and 3, the wind load should be compared to the recommended zones.
- location adopted for areas of wind category III and IV (areas regularly covered with vegetation or buildings, or with single obstacles, separated by no more than 20 of their heights - villages, suburban areas and permanent forests, as well as areas where at least 15% of the area is covered with buildings with an average height exceeding 15 m - urban areas)
- It is not allowed to leave the roof blades open or to cover the walls with wind exceeding wind class 3 according to EN 13659 ($45 \text{ km/h} = 12.6 \text{ m/s} = 10.2 \text{ kg/m}^2$) as this may damage the supporting structure of the pergola and blades fixing elements.
- possibility of snow load on the roof (up to a maximum of 50 kg/m^2),
- In special cases:
 - use of locations above ground level (i.e. over 1.2 m in zone III or over 6.2 m in zone IV),
 - applications of wall construction,
 - when using higher posts,
 - location outside the indicated wind zones and/or above the given height above sea level, an individual analysis should be performed by a person with building qualifications.

The maximum diameter of holes in post's feet is 14.2 mm. The maximum anchor size is M12. For anchoring in the ground, M12 class 8.8 anchors or A4 grade stainless steel anchors should be used.

For anchoring feet in concrete min. C20/25 we recommend mechanical or chemical anchors.

Recommended anchors (mechanical):

- Fischer FAZ II 12/10 anchor (if no additional leveling grout is made under the foot),
- Fischer FAZ II 12/30 anchor (in case of additional leveling grout under the foot).

Recommended anchors (chemical):

- Fischer anchor FIS A M12x120, class 5.8 + FIS V resin (in case of additional grouting, reduce the depth of anchoring).

It is not allowed to build the foundation on non-bearing soils (non-construction embankments, topsoil, peat, mud, plasticized clay, soil with inclusions of organic parts, wood, rubble, etc.) - then we recommend consulting a geotechnical engineer.

Due to the use of rainwater runoff in posts with water outflow, it is important to carefully compact and elastically seal the area around the feet in the ground due to possible mechanical impacts caused by the wind. For the location on the ground level, it is necessary to ensure anchoring and support on a stable load-bearing ground without layers exposed to washing out, loosening or crushing (bedding, thermal insulation).

Grounds for foundation may be heaped, which means that in the spring they may be raised/uplifted. For them, freezing zones were defined (fig. 63), below which the bottom of the foundation should be sunk in order not to expose it to

unfavorable ground movement. These are mostly soils containing dusty particles (such as clays, silty clays, clays, clay sands, loess).

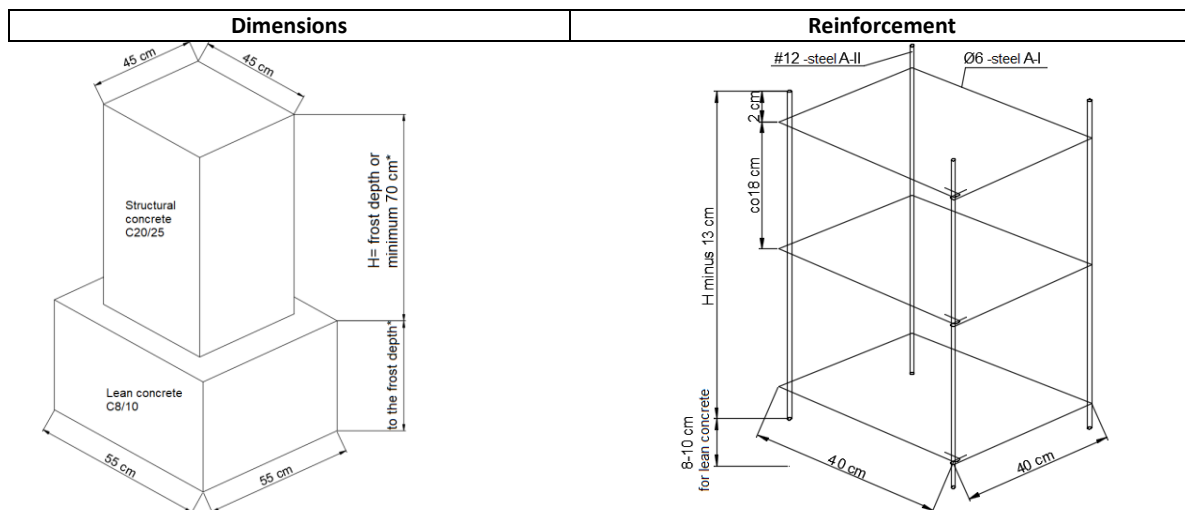
Selt recommends making foundations of reinforced concrete of min. C20/25 with a minimum size of 45x45 cm and a height (fig. 64):

- in the case of non-heavy soils, min. 70 cm,
- in the case of heaping soils, not less than the depth of frost zones for Poland - defined as 80, 100, 120 or 140 cm - depending on the region of the country,
- alternatively, in the case of heaping soils, it is allowed to reduce the depth of the bottom of the foundation to 70 cm below the ground, provided that the underlying soil is replaced, up to the freezing depth, with C8/10 lean concrete with an outline greater than 5 cm from the outline of the foundation footing, or with sand compacted to compaction index $I_s > 0,95$.

Moreover:

- the ground at the bottom of the foot pit must not be loosened,
- while making footings, do not allow the bottom of the excavation to be flooded with rainwater or the ground to freeze (during periods of lower temperatures),
- construction of foundations may require building permits.

Fig. 64 Recommended foundational footing



When using ballast on a stable ground instead of foundations, the required weight of ballast under the post is 320 kg.

5 SYSTEM OPERATION AND PRODUCT SAFETY



The product can be used only if it is free from defects.



For ZiiiP systems attached to pergolas, the cassette should be additionally fastened to the pergola beams in order to eliminate the possible pressure of the beams on the cassettes and the risk of breaking the self-supporting side covers of the cassette.

Self-supporting cassette assembly is not allowed in this case.

5.1 GENERAL REQUIREMENTS FOR OCCUPATIONAL HEALTH AND SAFETY

- To ensure correct operation of the product SELT Sp. z o.o. forbids making any structural changes; non-observance of the above condition releases the manufacturer from the liability for the product and the warranty will be invalidated.
- During transport, assembly and disassembly and during servicing and maintenance of the product you should observe applicable occupational health and safety regulations and environmental protection rules.
- The product should be maintained and repaired only by a trained person with proper authorizations (trained).
- Product purchaser should ensure that person, which are entrusted with the operations related to the routine operation, maintenance and hygiene have been familiarized with the user's manual and are observing all guidelines contained in this manual.
- It is forbidden to clean the product in the other way than described in the point "Technical inspections, maintenance and repair."
- Maintenance works and repair of the product should be carried out only when the product is disconnected from the electrical power supply.
- Observe marking on the product (e.g. pictograms, arrows for movement direction).
- Pay attention not to cover the marking with a coat of paint or damaged in a way that prevents its reading.
- The electrical and control installation should be carried out and inspected by an authorized person.
- The switch should be installed on a height conforming the national regulations applying to disabled people - preferably at height min. 130 cm.
- In the event of snowfall, as well as at temperatures lower than or equal to 0 degrees, the blade rotation mechanism must not be started.
- Pergola SB400 should not be used, and you should not stay under it, during storm, hail, heavy snowfall, heavy rain (roof should be left opened).
- No obstacles (e.g. cables, branches, leaves) should be present in blades area during their rotation.
- It is forbidden to stand, climb or hang on pergola structure (in particular it applies to roof blades).
- It is forbidden to load the system by hanging the accessories not foreseen by SELT.
- It is forbidden to put a hand between moving blades and to insert fingers between the profiles.
- The product should be mounted at a height that prevents free access to the blades and mechanisms, and in the case of partial free access to these elements, other protections should be used to disable this access.
- In the event of unusual noises from the operation of the motor or other elements, immediately cut off the power supply until it is verified whether a fault has occurred and, if necessary, have it removed.
- Heat sources such as barbecues, the open flame should be not located under the pergola to avoid overheating of the product



5.2 SAFETY REQUIREMENTS RELATED TO SPECIAL CONDITIONS AND PLACES OF PRODUCT USE

Specific safety requirements relate to children up to 42 months. Essential requirements for use are applicable in all locations, to which children have access or where they could be present, such as e.g. houses, orphanages, hospitals, shops, schools, child care facility, public spaces and other places, which primary intended use have been changed and where the children may stay. If you change your usage to one of the above, you must implement the above considerations.

Specific requirements for operation are applicable also in all locations where the disabled people stay.



Prior operation the Purchaser should carry out an individual risk assessment for the operation of the product with special attention paid to the safety of children and disabled people.

It is essential to take account of reasonably foreseeable conditions of operation and potential threats during defining performance requirements for the product.



Do not allow children to play with the roof controls. Remote control equipment should be kept away from children.



It is essential to ensure that children do not put their fingers in the roof moving parts and openings in the profiles. Do not let your children play near the moving parts of the roof.



Danger of head injury when standing in the area of the moving roof blades. It is forbidden to stay in the working area of blades and mechanisms.



Often inspect the system with respect to the signs of wear and tear or cable damages. Do not use the product if repair is necessary.



Avoid contact of the product with hot objects (e.g. heaters, furnaces, irons, chimneys, etc.) or placing sources of convection heat (e.g. heaters, furnaces, barbecues, etc.) under a movable roof, as this can lead to damage.

5.3 SPECIAL REQUIREMENTS FOR SNOW LOAD

The manufacturer allows the roof blades of up to 50 kg/m².

Snow can weigh down the roof height.

Local accumulation and as snow sliding from adjacent pergola must not be allowed.

Due to the different weight of snow coverage and the influence of dampness, the weight of snow may vary to a large extent.

Various snow weights according to PN-EN1991-1-3:

Table E.1: Average volumetric weight of snow

Type of snow	Volumetric weight [kN/m ³]
Fresh	1,0
Settled (several hours or days after fall)	2,0
Old (several weeks or months after fall)	2,5-3,5
Wet	4,0

maximum snow load on the

as an even layer of uniform

formation of snowdrifts as well roofs and buildings onto the

snow, due to the period of



Calculation of the permissible cover thickness

	Permissible thickness of the snow cover depending on the type [cm]			
	fresh	settled	old	wet
Pergola				
SB400/SB400R	50	25	14	12

When snow accumulates, there will be visible and excessive deflections of blades and beams and the possibility of local leaks from blades and gutters. In addition, in Pergola SB400 the phenomenon of excessive post deflections and horizontal roof floating may occur.

We warn you about the need for continuous monitoring and quick response to the increase in coating thickness, especially during additional impact of wind.

5.4 OPERATIONAL SAFETY

Recommendations and actions:

- product is safe providing use in accordance with the recommendations included in this documentation,

- product should be used only as intended,
- it is forbidden to use the product not conforming to the requirements related to electric shock and fire safety,
- remote control equipment should be kept away from children, they are not a toy,
- it is forbidden to exceed certain operating parameters of the product specified in the technical and operational documentation,
- it is forbidden to exceed specified operating parameters of the product given in the operation and technical manual, the run-time of the electric motor is strictly specified in the point 2.1 "Technical parameters" (depending on the type of the motor and manufacturer, detailed data are available on the motor manufacturer's website or www.selt.com). Exceeding the specified run-time of the motor can lead to permanent damage.
- it is forbidden to use a faulty or incomplete product (e.g. without a switch, etc.), as well as to make makeshift repairs; the use of such a product may cause its destruction, pose a threat to the health and life of the user and may void the warranty,
- do not keep any sharp objects or protruding parts near the covers, which may catch on the movable roof and damage it,
- the system cannot be used (started), including turning the blades, in the event of heavy snowfall, rain, frost or hail (it should remain in the open position),
- you must not stay under the pergola during violent or intense weather phenomena (e.g. heavy rain, heavy snowfall, storm, hailstorm, strong wind, etc.),
- we strongly recommend using wind sensor,
- clean the system on regular basis and perform inspections within indicated time intervals,
- use only original spare parts,
- all works related to inspections and repair of the product should be carried out by a properly trained person, holding the necessary licenses,
- is forbidden to use the product and electrical installation without valid and required inspections and measurements,
- product should be disconnected from electrical installation prior to any works related to maintenance or cleaning,
- in case of works on facade finish of the building, to which the pergola is anchored, you should disconnect it from the supply,
- pay attention to all signs of wear and tear or damage to the electrical cables,
- if you see any signs of wear and tear or damages of electrical cables, the product should be disconnected from supply and the defect should be immediately reported to a person with a valid electrical license,
- in the case of very loud operation of the motor or other elements, immediately turn off the power supply and order an inspection and possible removal of the fault,
- it is forbidden to use or leave sharp objects near the product,
- if an automatic weather sensor (wind/sun) is used, it should be switched to manual mode in the period: when the product cannot be used (e.g. due to lower temperature, suspected fault, during the period of inspection and maintenance, when the installer is operating on blades and product mechanisms); it is also recommended to disable this sensor and open the roof in case of prolonged absence,
- the product should be cleaned regularly, at least once a year, and in conditions of increased pollution (e.g. urban environment) and in the coastal environment more often as needed,
- when performing activities related to cleaning the product, exercise extreme caution due to moving parts and the possibility of personal injury; disconnect the power supply, properly mark and secure the work area; before cleaning the product, remove loose dirt with a vacuum cleaner with a soft brush or broom, and then clean with water and delicate detergents using a soft cotton cloth, after cleaning, always rinse the surface of the blades with water (use cleaning agents in accordance with their manufacturer's instructions); it is forbidden to use abrasive agents or a pressure washer, which may damage the paint coating,
- Moving or rotating parts of the product should be lubricated with a silicone spray every year,
- often check your product with respect to the possible presence of branches, leaves, birds nets – immediately removing the contaminations; when removing these impurities, care should be taken, bearing in mind that these objects may fall on a person in the vicinity of the product or on objects located under the product,
- the use of sharp objects in the product may damage the paint coating,
- roof covering in an urban environment is exposed to the action of pollutants (smoke, smog, acid rains) what causes contamination of paint coating. The product should be cleaned on regular basis, at least once a year, and even more frequently in case of seaside environment and the places where increased amounts of pollutants are present.



Do not start the product in the event of strong gusts of wind, during snowfall, freezing rain, as well as during very intense rain, because the product may be destroyed or damaged and may endanger people in the vicinity (applies to the product installed outside the building) . In such cases, the roof blades should be in the closed position.

It is recommended to use wind automation to help meet safety conditions.

If any abnormalities in product operation are detected then you should immediately inform the SELT Sp. o.o. service. Using damaged product and self-repairs pose a hazard for health and life and could be a reason of warranty invalidation.

5.5 CONNECTION TO ELECTRICAL INSTALLATION

When the Pergola SB400 is assembled one should proceed to connection of drive and control system to the previously prepared systems: electrical supply installation and control system. The obligation to prepare the installation lies with the installer/investor.

Connection to electrical supply installation should be executed based on the previously prepared circuit diagram taking the fire-protection rules into account.

The connection should take them into account the environmental conditions in which the product will be used and recommendations contained in the motor operation and maintenance manual. Attachment at the end of this document.

Normal environmental conditions:

- such conditions are present in e.g. residential and office units, auditoriums and theatre rooms, school classrooms (except some laboratories), etc.

Environmental conditions with increased safety risks:

- environments with increased safety risks include: bathrooms, showers, kitchens, garages, basements, saunas, rooms for pet animals, operating suites in hospitals, pressure boosting stations, heat exchanger plants, spaces limited by conducting surfaces, campings, open areas, etc.

In rooms and spaces, where there are increased safety risks it is appropriate to use automatic devices shutting down the supply of damaged product, e.g. earth leakage circuit breakers.

Residual current device:

- it is recommended to use them in bathrooms, kitchens, garages and basements,
- it is obligatory to use them on swimming pools and shower basins, saunas, on construction sites, during the supply of the equipment in the open outdoor, in agricultural and horticultural farms, in campings and leisure vehicles and rooms where fire hazard is present.

Residual current device are only supplement for protection against direct touching and should not be the only protective measure. Their task is to supplement protection if the other protective measures against direct touching are not operable or in case of user carelessness.

It is necessary to take safety regulations into account, e.g. minimum height from the floor on which the electrical equipment may be installed.

General guidelines for safe connection:

- the connection should be carried out by the electrician holding electrical qualifications and professional experience,
- observe the Occupational Health and Safety regulations during connection,
- electrical connection and setting of motors should be made in accordance with the manual from the motor manufacturers enclosed to the product /available on the below website.

A detailed description of the conditions for anti-shock purposes to be met by the electrical installation that is to supply the product.

In accordance with the standards that apply in a given country. Depends on used receivers and control configuration.

Power class	What do we power supply	Installation type	Overcurrent protection	Protection against electric shock
Class I devices have basic insulation that provides protection against direct contact. In addition, in order to ensure protection against indirect contact (protection against faults or additional protection), a connection to the protective terminal of the device, a protective conductor (PE) or a protective-neutral conductor (PEN) is used. This achieves: 1. protection by automatic disconnection of the power supply by the use of appropriate devices 2. Limitation of contact voltages to levels not exceeding the value of safe contact voltage	Motor 230V~ with control unit Class I devices	It is necessary to use a 230V~3-wire installation (protective wire, neutral and phase wire)	Fuse matched to the power of the receiver	Residual current device
	24V motor powered by a 230V/24V converter, class I device	It is necessary to use a 230V~3-wire installation (protective wire, neutral and phase wire)	Fuse matched to the power of the receiver	Residual current device

(UL) established for given environmental conditions.				
Class II devices are characterized by the use of reinforced insulation, which provides protection against both direct and indirect contact. Another way to ensure protection against electric shock in II class devices is to use basic and additional insulation. Because reinforced or additional insulation is used, it is not necessary to connect the device housing with a protective earth conductor, and devices of this class can be powered, e.g. through two-wire cables with IEC C7 connectors. Protection class II devices are marked, e.g. on the rating plate, with an appropriate symbol (so-called square within a square).	24V motor powered by a 230V/24V converter Class II devices	It is sufficient to use a 230V~2-wire installation (neutral and phase wire)	Fuse matched to the power of the receiver	Residual current device

The electrical connection and setting of the motors must be carried out in accordance with the instructions of the motor manufacturers. The instructions are attached to the product and are also available on the websites of motor manufacturers and on the website:

www.selt.com → OUR OFFER → ELECTRIC EQUIPMENT



Incorrect connection of the motor may damage the product or create a hazard.



The motor has a thermal switch that will turn off the drive after about 5 minutes of continuous operation to protect against overheating (depending on external conditions). After switching off by the thermal protection, wait until it cools down. The waiting time depends on the type of motor and the ambient temperature (usually after about 16 minutes the thermal protection should switch off).

NOTE: In case of Picolo motor there is a risk of damaging the limit switches due to exceeding the permitted adjustment range. See point 4.6.1.4.



- The limit switches can only be adjusted manually with a size 4 socket wrench.
- Follow the warnings in the motor manual 'Picolo XL linear drive. Quick Installation Guide'
- Before adjusting the limit switches, the piston must be moved a few centimeters from the set position.

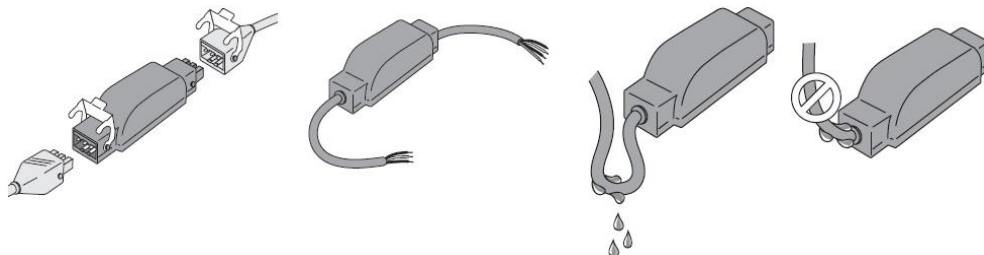
Marking of the motor power wires (black marked with a number):

1. N neutral
 2. R phase, movement towards retraction
 3. V phase, movement towards extension
- PE protective conductor

Ensuring the leak tightness of the control unit

When fixing the Hirschmann plug and socket follow the rules below:

- The cable gland must be fitted correctly to the round wire and tightened well (do not use adhesive tape instead of the cable gland).
- Gasket between Hirschmann and control unit must be placed and the clamp must be properly tightened.
- Control unit should be placed horizontally, to the extent possible, so that the water dripping down the cable does not stay permanently on the gland gasket.
- Since the motor's cable is 4m long, the control unit is usually mounted at the end of the cable and is connected to the power cable, so the cables and the control unit lie on the profile and are exposed to large temperature differences (the profile and control unit are black), UV and in the event of rain and snowfall, they lie in the water.



	Important Cables passing through a metal wall should be protected and insulated with a sleeve or a cover. Secure cables to prevent them from touching any moving parts. If the receiver is used outdoors and the power cord is of the H05-WF type, install the cable in a UV-resistant tray, e.g. under a gutter. Provide access to the receiver's power cord: so that it can be easily replaced.
	Warning Always make a loop on the power cord to prevent water from entering the receiver!

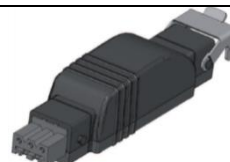
5.6 CONTROL

Programming of control (assigning remote control devices, outside sensors and other control components) should be carried out in compliance with the manual from control system's manufacturer.

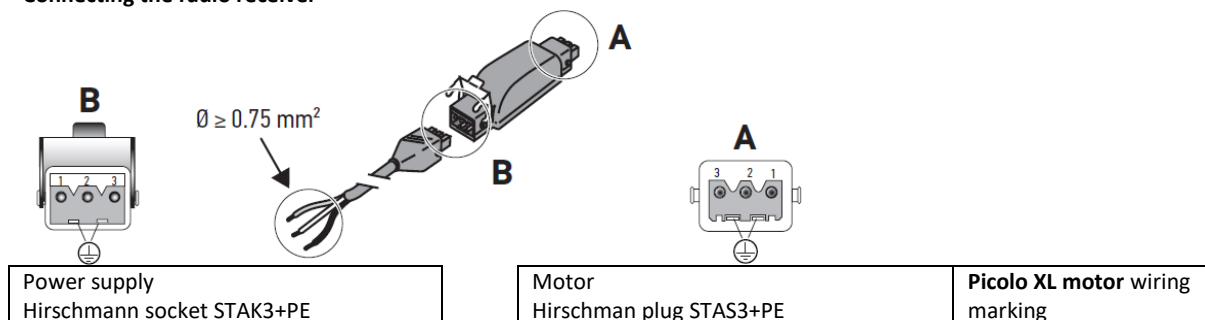
	Pergola control units	RTS Somfy	IO Somfy	Elero
RADIO RECEIVER FOR THE MOTOR (has manufacturer's manual)	Radio receiver for motor Elero Pico XL 230VAC	Uniwersal Slim Receiver RTS	Pergola Slim receiver io + plug	COMBIO 868 RM
	Motor control unit Sito ANT-38 24VDC without Hall sensor			
	Motor control unit Sito ANT-38 24VDC with Hall sensor			
	Somfy Pergola Tilt 300 with Hall sensor			
REMOTE CONTROL (has manufacturer's manual)	Remote control	Situo 5 RTS	Situo 5 io PURE II	VARIOTEL 5
	Remote control * for the version with sun sensor	Situo 1 Soliris RTS Situo 5 Soliris RTS	Situo 1 A/M io	
	Remote control * for the version with sun sensor, with a scroll function for ergonomic adjustment of the LED lighting brightness of the White LED Receiver io		Situo 1 Var A/M io Situo 5 Var A/M io	
WEATHER SENSOR (has manufacturer's manual)	Wind sensor *	Eolis Sensor RTS	Eolis io 230V	
	Sun and wind sensor *	Soliris Sensor RTS	Soliris io 230V	SENSERO 868 AC
	Sun sensor *	Sunis Wirefree Sensor RTS	Sunis Wirefree sensor io	
	Rain sensor *		Ondeis 230V Ondeis 24V	
CONTROL UNIT (has a manual available at www)	for LED *	Outdol Lighting Receiver RTS on/off	WHITE LED RECEIVER io DIMMING	Combio-868 Li
	for heaters *	Slim Receiver RTS 2kW on/off	Heating Slim Receiver io on/off	Combio-868 HE
	control through the internet *	Tahoma switch		

* - with a surcharge

Standard receiver used today is equipped with a Hirschmann plug and socket



Connecting the radio receiver



1	Blue	Neutral
2	Black	Phase
3	-	-
	Green-yellow	Ground

1	Blue	Neutral	1
2	Black	Top	2
3	Brown	Bottom	3
	Green-yellow	Ground	Green-yellow



The control unit can only be mounted inside the pole or outside in a case with a protection degree of min. IP65. Failure to follow the manufacturer's instructions will void the warranty.

For SITO 24 V= motor:

Marking of the motor 24V= wiring with Hall sensor (version with six wires):

Power cable:

By connecting (+) to the brown wire and (-) to the blue wire, the piston is extended.

By connecting (-) to the brown wire and (+) to the blue wire, the piston is retracted.

black – Hall sensor power cable

red + Hall sensor power cable

green – output A of Hall sensor

white - output B of Hall sensor

Connecting the motor wires inside the Louver control unit (fig. 65):

CONNECTION OF MOTOR WITH HALL SENSOR to the Pergola Louver control unit	MOTOR + Motor +Vdc	MOTOR - Motor - Vdc	HALL + Encoder +Vdc	HALL - Encoder 0Vdc	HALL1 out Encoder C1	HALL2 out Encoder C1
SITO 24V=	brown	blue	red	black	green	white

Note: in **bold font** there is a description on the printed circuit board in the Pergola io Louver unit next to the Wago clamps.

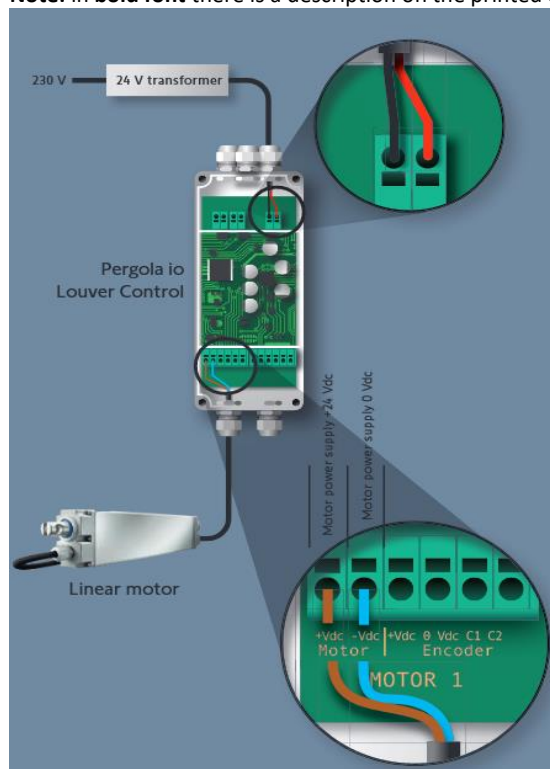


Fig. 65 Diagram of the connection areas inside the Pergola io Louver control (descriptions in the lower magnification are given in bold in the table above)

5.7 START-UP AND ADJUSTMENT

Recommendations and actions:

- it is necessary to adjust the limit switches of the blades during assembly (closed and open position),
- person adjusting the limit switches should have electric licenses, knowledge and experience,
- adjustment of the limit switches should be made in accordance with the motor's operation and maintenance manual; special care should be taken with each adjustment due to the need to operate in the area of operation of blades and mechanisms,
- before starting the product, electrical measurements should be made, primarily in order to check the effectiveness of zeroing the product and the electrical system by a person with appropriate qualifications,
- it is forbidden to start the driving motor without checking correct fixing of the system,
- when setting the limit switches, do not lean or hang on the product, do not leave tools on it.

When starting-up the mobile roof, particular attention should be paid to:

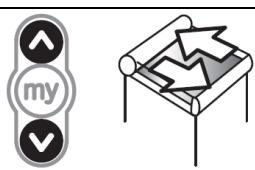
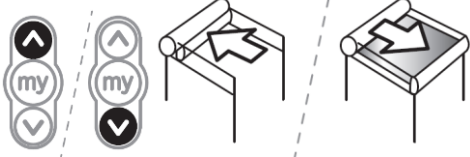
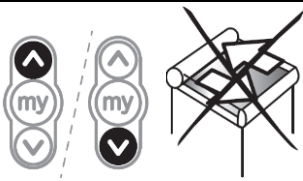
- correct and uniform rotation of blades of the mobile roof
- correct operation of the limit switches

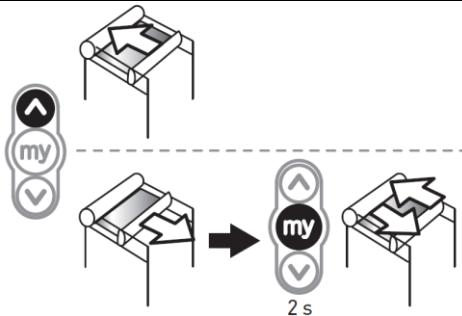
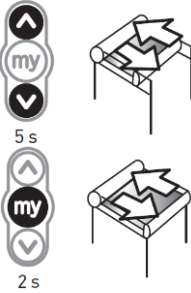
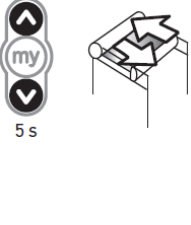
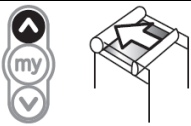
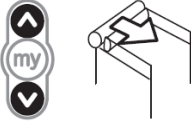
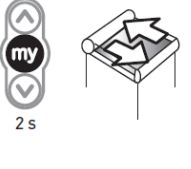
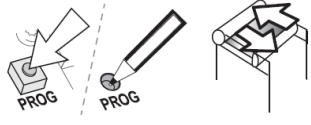
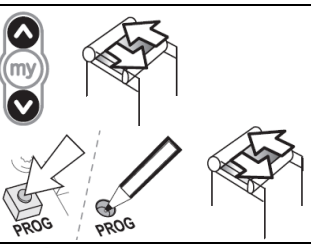
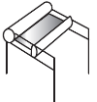


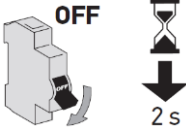
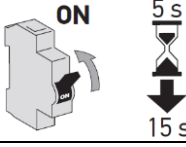
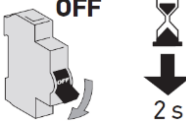
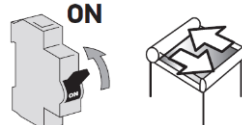
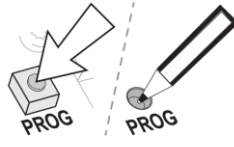
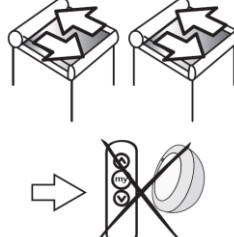
Unauthorized adjustment of the limit switches by an untrained person may lead to personal injury or death, as well as to damage of the product.

Remote control programming diagram

The procedure of assigning the remote control to the radio receiver PERGOLA SLIM RECEIVER IO and UNIVERSAL SLIM RECEIVER RTS

No.	Procedure	Illustration	Remarks
1	Turn on the power		
2	The powered product makes a short movement The product's linear path has been set and no Somfy transmitter is programmed. No movement after turning on the power, go to point 3.		Does not apply to RTS receiver Universal Slim Receiver RTS Go to point 3, and then to p. 8
3	Initial assignment of the remote Press the Up and Down buttons simultaneously. The powered product makes a short movement. If there is no movement go to p. 4.		Go to point 5
4	Check if the remote control is already assigned Short presses of the up and down button cause continuous movement in the right direction?		Remote is assigned
	Short presses of the up and down button do not cause movement. The powered product does not move		Probably another remote control is assigned to the receiver. Make the Delete procedure acc. to p. 9

5	Changing the direction of rotation		If there is IO radio receiver, go to p. 7 (or p. 6); If there is RTS radio receiver, go to p. 8.
6	Setting the operating time for 4 minutes , for remote controls with one-way radio transmission. Not recommended for Nina, Connexoon and Tahoma		Go to p. 8
7	Manual, accurate setting of the operating time necessary for remote controls with two-way radio transmission. Press the Up and Down buttons simultaneously for at least 5 seconds. The powered product makes a short movement.		
	Press the Up button until the motorized product is in the upper end position.		
	Briefly press the Up and Down buttons simultaneously. The drive lowers the product and calculates its running time T(f).		
	When the drive reaches the lower limit position, press the "my" button for at least 2 seconds. The powered product makes a short movement. Operation time= T(f) (max. = 4 min).		Go to p. 8
8	Assigning a transmitter in user mode Briefly press the PROG button of this transmitter. The powered product makes a short movement.		The transmitter is programmed
	Or after power off		The transmitter is programmed
9	Cancellation Place the powered product in the middle position.		

Turn off mains power for 2 seconds.		
Turn on mains power for 5 to 15 s.		
Turn off mains power for 2 seconds		
Reconnect the power. The powered product moves for a few seconds (7s).		
If we want to delete the previously assigned remote control and program a new one - press PROG for 1s until the motor confirms with movement.		The previously assigned remote control was deleted and a new one was assigned
If we want to restore the factory settings - press the PROG button on the Somfy io-homecontrol® local transmitter for ≈ 7 seconds until the motorized product moves up and down twice.		The initial configuration of the receiver has been restored. Turn off the power and then do points 1, 3, 5, 7 and 8

IO control troubleshooting

Symptoms	Possible causes	Solutions
The powered product is not working.	The wiring is incorrect.	Check Slim io Receiver Pergola + Plug wiring and modify if necessary.
	The drive is in thermal protection mode.	Wait until the drive has cooled down.
	The battery of the Somfy io transmitter is dead.	Check whether the battery is dead and replace it if necessary.
	The control transmitter is not compatible.	Check compatibility and replace transmitter if necessary.
	Somfy io transmitter is not programmed with the receiver.	Use a transmitter that has already been programmed or program a given transmitter.
The powered product stops too early or too late.	The end limit switches are set incorrectly.	Reset the end limit switches.
The 'my' position does not work.	The 'my' position has been removed.	Program 'my' position.
The 'my' position cannot be erased with the Easy Sun io transmitter.	The transmitter is outdated (index E or older).	Delete 'my' position with another assigned transmitter.
System is equipped with a wind sensor and the powered product moves to the upper end position every hour.	The sensor is assigned/set.	There is radio frequency interference or the sensor is out of range. Place the Slim io Receiver Pergola + Plug outside the cover.
	The battery of the Somfy io wind sensor is dead.	Check whether the battery is dead and replace it if necessary.
	No power supply to the 230V sensor.	Check the sensor powering.
Despite the installed wind sensor, the powered product does not move to the upper position in strong winds.	The sensor is not assigned/set.	Refer to the relevant manual to assign/set up the sensor.
Setting the product in the end limit switches seems imprecise.	The linear motion path setting is incorrect.	Set the linear motion path again.
	The drive is on the verge of overheating.	Wait until the drive has cooled down.

5.8 MISUSE OF THE SYSTEM

DO NOT PERFORM THE FOLLOWING ACTIONS

- Use of the product in the event of a defect or suspected defect; it is recommended to discontinue further use of the product.
- Report the fault to the supplier / system installer / installer.
- Stop operation of the product in case of wear and tear symptoms or damages of electric cables and immediately report your remarks to direct supplier.
- Do not stay in working area of the mobile roof during system operation.
- Do not use inoperable or incomplete system. Use of such product may lead to its damage and cause health and life hazard for the user and be a reason for loss of the warranty.
- It is forbidden to use the product not conforming to the requirements related to electric shock and fire safety.
- It is forbidden to exceed specified parameters of product operation given in the operation and maintenance documentation.
- Do not leave any sharp objects or protruding parts near the system, which can catch and scratch it
- Use not in accordance with the operation and maintenance documentation.
- Leaving the side screens open at wind speed above 49 km/h.

Persons authorized for operation

- Do not allow children playing with components intended for control of the system e.g. remote controller or switch.
- Remote control should be kept away from children.

The work area of the pergola SB400: crushing, cutting and pulling threat

- Do not touch mobile components during closing or opening of the mobile roof. It can be a reason of crushing, cutting, pulling in, trapping between e.g. blades and the other structural components of the system.
- No obstacles, which could interfere operation of the mobile roof or cause its damage, should be located within the area of operation of the mobile roof.
- If the blades hit an obstacle then you should first slightly open the roof and then remove the obstacle.
- Do not stay in the area of blades rotation during their operation.
- No obstacles (cables, branches etc.) can be located in the area of blades rotation.
- It is forbidden to put a hand between moving blades and to insert fingers between the profiles and driving mechanisms.

Automatically controlled products may start up on their own. During any work related to the product, the product must be permanently immobilized so that it cannot be accidentally started. Make sure that no dangerous situation arises.

6. SYSTEM USE AND MAINTENANCE

6.1 USING THE PRODUCT IN ACCORDANCE WITH ITS INTENDED USE

The system should be used in accordance with its intended use specified by the manufacturer. If the system is operated and modified in another way than described in this documentation the system manufacturer has a base to dismiss warranty claims.

Pergola SB400 manufactured by SELT Sp. z o.o. do not require special maintenance. Using the product in accordance with the manufacturer's instructions ensures proper functioning of the product to the user.

If the product is used in other way than described in this documentation or modified without the authorization of SELT Sp. z o.o. then this is considered as misuse.

Making arbitrary modifications influencing the safety of product operation is forbidden.



After rainfall, when the blades are opened there is an outflow of residual rainwater in the gutters under the pergola. This is due to the own deflection of the blade causing residual water to remain in the centre of the blade. The amount of water is greater when the ends of the blade are fixed horizontally and reduced when the blade has a slope difference between the ends.

To minimise the amount of residual water, it is advisable to open the blades to a 90-degree angle and wait up to a few minutes for the residual water to drain into the gutters. Then you can continue opening the blades to their full extent.

The correct use of the product includes:

- normal use or foreseeable use, which do not include e.g. risk taken by the user intentionally or deliberately,
- use of allowable values of operation parameters,
- compliance with recommendations related to the operation,
- conducting periodical inspections and maintenance of the product,
- compliance with the requirements specified in this Documentation,
- compliance with the requirements specified in point "Technical specification."

In case of misuse:



- the product may endanger the operating personnel,
- the product will be exposed to damages,
- this may adversely affect its functionality,
- do not use the system during maintenance or repair work, as well as in other cases indicated by the manufacturer.

The gutters in the system are delivered by the manufacturer as leaktight components.

Sealing of joints between the gutters during assembly should be done by the buyer and is not covered under the warranty.



Perform periodic tightness checks and repairs of seal defects in periods not longer than 6 months.

Additional sealing from the inside of the perimeter of the end cap with the gutter reduces the risk of bursting the lower gutter chamber in the event of a leak (water may imperceptibly accumulate in the chamber at the bottom edge of the gutter and freeze during sub-zero temperatures).

SELT Sp. z o.o. shall not be responsible for damages caused by misuse.



Using system which is out of sight can cause heavy injuries and system damage. If the product is used with side screens, not closing them in the wind above 49 km/h (13.6 m/s) may result in deformation of the structure or damage to the system.

6.2 INSTRUCTION FOR NON-PROFESSIONALS

Non-professionals are persons who carry out activities related to the current use and current inspections of the product.

Read carefully this document before using the product.

In-depth knowledge of the documentation ensures failure-free operation of the product.

List of operations which can be carried out by non-professionals:

- current use of the product through a traditional switch or remote control,
- ongoing inspections of the product by opening and closing the roof blades with continuous observation of all elements of the product,
- commissioning technical inspections, repairs and cleaning of the product to a specialized installer.

6.3 INDICATIONS OF RISK, BREAKDOWN OR ACCIDENT

Description of the residual risk

Risk factor	Description of the correct procedure
Accident	- disconnect the product from the power supply - take first aid measures for the injured - call for help – tel. 112
Product failure (hazard)	- disconnect the product from the power supply, - remove users from the danger zone, - in case of fire use only class ABC fire extinguishers, - notify the fire brigade if necessary, - notify the service company - if the failure causes only blocking of the product without additional threats - check the section "Product failure (blocking)"
Product failure (blocking)	- disconnect the product from the power supply - perform an external inspection for the presence of foreign elements in the blades or drive, - check the visible parts of the wires for insulation damage or discontinuity, - in the absence of visible causes, check the "motor overheating" point - inform supplier to gain solution
Strong wind (over 45 km/h)	- we recommend using a wind sensor that will close the blades which is more beneficial from the point of view of the wind resistance of the entire construction. The wind speed value is determined in accordance with the wind class for a given structure.
Snowfall and icing	- in the event of snowfall set the blades in the snow position (slightly open) - the permissible snow load must not be exceeded - in winter when there is a risk of snowfall and icing of the blades, we recommend opening the blades to the snow position - it is possible to use an automatic control unit, which will automatically slightly open the blades for temperature close to freezing and rainfall or snowfall (snow position). NOTE: If snow or ice accumulates on the blades, mechanical damage may occur. It is recommended to use a motor with an overload sensor.
Heavy rainfall	The system is adapter to protect against rain (for a certain rainfall intensity). Leave the blades open during heavy rainfall. Leave the blades open during heavy rainfall. - The drives have a protection class against external factors at least IP65 and are mounted under a cover (roof). Protection against drops falling from any angle is ensured, however, attention should be paid to the position of the power cord in such a way that raindrops do not flow down the cable towards the motor.
Electrocution	The electrical installation must be made in accordance with the standards that are in force in the given country. - electric wires with double insulation and with an additional cover

	protecting the wires mechanically and against UV radiation - residual current protection
Short circuit in the installation and fire	- wires with an appropriate cross-section suitable for the power of the receivers and for the selected overcurrent protection - overcurrent fuse according to the power of the receivers
Motor overheating	Motor is designed to work with breaks for cooling. The motor is equipped with a thermal switch. NOTE: This applies to the Picolo XL 230V motor, for DC motors there is usually no thermal fuse, therefore the controller should provide a limitation of the working time.
Faulty control system (motor)	Risk resulting from the possibility of damage to the elements of the control system. Possibility of a short circuit at the input of the device – overcurrent protection of the supply line will activate Possibility of damage to the relay contacts, short circuit of both contacts of the control unit – the AC motor receives voltage for both up and down motion simultaneously, which results in: more than rated power is supplied to the motor; the motor does not extend/retract the shaft but "buzzes"; the motor overheats and the thermal protection activates. This reduces the service life of the engine. The fault described above may occur with typical controllers. It is possible to connect the contacts in a system that prevents the occurrence of the above phenomenon. - short-circuit of the contacts of the DC motor relay or semiconductor switches, depending on the configuration of the switching elements, may cause a short-circuit of the power supply line and then the overcurrent protection will work. - faulty motor control - electrical installation defect
Noise	Noise during drive operation does not exceed 70 dBA. Typically the value is between 50 and 60 dBA when measured at 1m. Noise is produced when the position of the blades of the product changes.
Important additional remarks	Technical data can be found on the motor nameplate. The moving parts of the motor must be mounted more than 2.5 m above the floor or other surface from which the motor is accessible.

6.4. TECHNICAL INSPECTIONS AND REPAIRS

Current inspections

Performed by the customer on his own. SELT recommends that the inspection be performed at the intervals listed below.

Basic activities including current inspection:

- Inspection and ongoing removal of foreign objects that may interfere with the proper operation of the product and the movement of mechanisms (on an ongoing basis, at least once a day before the start of use and after violent weather phenomena),
- Checking the patency of drains (option in the case of gutters) - once a week and after heavy downpours,
- Removal of debris from gutters (option in the case of gutters) - once a week and after heavy downpours,
- Checking the thickness of the snow - in the case of snow on the product - daily and additionally after heavy rainfall or snowstorms and blizzards,
- Removal of an excessive layer of snow (above the permissible value) and possible snowdrifts and overhangs - each time when the snow load is exceeded and its uneven distribution,
- Inspection and ongoing removal of phytosanitary contamination (immediately after noticing),
- If a defect is observed, disconnect the product from the power supply and have it repaired immediately,
- Observing the opening and closing of the blades with continuous observation of all elements of the product - depending on the frequency of use - at least once a week,
- Before the current inspection in terms of approaching the movable and electrical elements of the product, disconnect the product from the power supply (in particular in a way that prevents the product from starting by the automation),
- If the product is placed at a height above 2.5 m, it is recommended that the above activities be performed by a specialized team.

Technical inspections

Performed on request for a fee by the SELT company or a specialized installer after the warranty period has expired. The scope is each time determined by a specialized assembly team, and the execution is confirmed by a service report.

Cleaning



Before cleaning, the product must be disconnected from the power supply.

Cleaning of metal/aluminium elements:

- It is recommended to clean light dirt on metal / aluminium surfaces with water and mild detergents, using a soft cotton cloth, always rinse after cleaning (if necessary).
- Removal of phytosanitary contamination (immediately after noticing).

Prohibited activities when cleaning the product:

- It is forbidden to use a pressure washer, as well as cleaning agents, sponges and solvents (e.g. alcohol, petrol).
- It is forbidden to use cleaning agents containing chlorine, ammonia, kerosene, acetone and bleach to clean the system or in its vicinity, as this will cause the risk of corrosion.
- It is forbidden to use sharp tools (e.g. wire brushes), cleaning agents that cause scratches (e.g. scouring powders, pastes).
- Do not hold or pull the system or its individual components firmly.
- Do not replace damaged elements with substitutes! Use original spare parts!
- Water must not be allowed to enter the motor.
- Do not deform the blades.
- After cleaning is complete, connect the power (control) and test the operation of the system. Pay attention to the operation of the system, and in the event of unusual behavior and noises, report the problem to the direct supplier.

Repairs

Any incorrect/unusual operation of the system or abnormal noises of its operation require user intervention and notification to a specialized installer. Repairs are performed by SELT Sp. z o. o. or a specialized assembly team on the basis of a separate agreement.

7. COMPLAINT / TECHNICAL DEFECTS

7.1 COMPLAINTS (MANUFACTURER'S WARRANTY)

Complaints can only be made by the entity that purchased the product from the manufacturer.

The terms and way of handling complaints are defined in the General Guarantee Terms and Conditions as well as the General Sales Terms and Conditions.

The General Guarantee Terms and Conditions and the General Sales Terms and Conditions are available on the website: www.selt.com.

The Customer submits a complaint on the Complaint form available on the manufacturer's B2B platform. The complaint notification should be full and complete.

A complaint submitted in a different way than via the B2B Platform, which is incomplete or partial, without given invoice number, order number or contract number, will not be considered.

7.2 TECHNICAL DEFECTS

In case of system defects you should:

- if possible, open the movable roof and decommission the device
- immediately report the defect of the product to the appropriate specialized assembly team.

8. PRODUCT DISASSEMBLY / UTILISATION / DISPOSAL

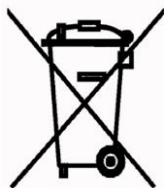


Improper disassembly of the system can cause serious personal injury and damage the system. Disassembly of the system should be entrusted to a properly specialized assembly team or a person with appropriate health and safety training and knowledge in the field of recovery.

a) Disposal of waste electrical and electronic equipment

After the end of the product's life, in order to dispose of it, it is necessary to dismantle it and segregate individual materials and elements in accordance with the Regulation of the Minister of Climate of January 2, 2020 on the waste catalog.

Important disposal information:



In compliance with the Act of 11 September, 2015 on waste electrical and electronic equipment it is forbidden to place the waste equipment marked with the crossed bin symbol with other waste to a container intended for the domestic waste. The user, wanting to dispose of electronic or electrical equipment, is obliged to return it to a waste equipment collection point.

The above statutory obligations were introduced in order to limit the amount of waste generated from waste electrical and electronic equipment and to ensure an appropriate level of collection, recovery and recycling. The equipment does not contain hazardous components which have a particularly adverse effect on the environment or human health.

No.	Subject	European Legal Basis	Polish Legal Basis
1	Waste Electrical and Electronic Equipment	Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE)	Act of September 11, 2015 on waste electrical and electronic equipment (Journal of Laws of 2022, item 1622, as amended)
2	Waste catalogue	Commission Regulation (EC) No. 574/2004 of 23 February 2004 amending Annexes I and III to Regulation (EC) No. 2150/2002 of the European Parliament and of the Council on waste statistics	Regulation of the Minister of Climate of January 2, 2020 on the catalog of waste (Journal of Laws 2020, item 10)

b) Utilization of used batteries

In compliance with provisions of the Act of 24 April 2009 on batteries and accumulators the **End User** is obliged to transfer used portable batteries, which are no longer used as a source of energy, to a **collector** or to collecting point. It is forbidden to place use batteries with the other waste in the same container.

To prevent environmental pollution and causing a possible hazard for human and animals health, the used battery should be discarded to the proper container in the designated collection points.

No.	Subject	European Legal Basis	Polish Legal Basis
1	Used batteries and accumulators	Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC	The Act of 24 April 2009 on batteries and accumulators (consolidated text, Journal of Laws of 2022, item 1113)

9. MARKING AND LABELLING THE PRODUCT WITH THE CE MARK

9.1 PRODUCT COMPLIANCE WITH THE CE STANDARD

The safe structure of the Pergola SB400 was made in accordance with EN 13659:2015 (roof) and EN-1090-1 (supporting structure in EXC2 class).

THE SAFE STRUCTURE OF THE PERGOLA SB400 WAS MADE IN ACCORDANCE WITH EN 13659:2015 (ROOF) AND EN-1090-1 (SUPPORTING STRUCTURE IN EXC2 CLASS).

9.2 INFORMATION ACCOMPANYING THE CE MARKING

a) marking on the product:

Pergola
SB400
Nr PG102300117.1
Rok 2023-02-02
Selt Sp. z o.o.
www.selt.com



0408

SELT SP. Z O.O.
 POLAND, 45-449 OPOLE, UL. WSCHODNIA 23A
 20
 0408-CPR-TA05704
 EN 1090-1:2009+A1:2011
 DWU Nr: 42/P/2023

b) marking on accompanying documents

	
SELT Sp. z o. o. Opole, ul. Wschodnia 23A POLAND 20	
Outdoor shutter pergola Pergola SB400 230V/ 50 Hz Power 126 W 17 / DZ / 2020	
EN 13659 External sun protection system. Resistance to wind load: class 6 DWU 158 / S / 2017	

	
SELT Sp. z o. o. Opole, ul. Wschodnia 23A POLAND 20	
EN 1090-1 Steel and aluminium constructional components and sets – Pergola SB400 DWU 42/P/2023	

**EU DECLARATION OF CONFORMITY
NO 16/DZ/2020**

in accordance with the Machinery Directive 2006/42/WE, attachment II, 1.A

Manufacturer: **SELT Sp. z o.o.**

.....
Name

Ul. Wschodnia 23A, 45-449 Opole

.....
Address

Declaration:

System: Pergole SB400; SB400H; SB 400 MD; SB500

provided that it is installed, maintained and used in accordance with its intended purpose, applicable regulations, standards, manufacturer's instruction and good engineering practice, it meets all relevant requirements of the following EU directives:

- Directive 2006/42 / EC of the European Parliament and of the Council of 17 May 2006 on machinery, amending Directive 95/16 / EC (Journal of Laws UE L 157 of 09.06.2006, p. 24)

and complies with the following standards:

- PN-EN ISO 12100: 2012P, Safety of machinery. General principles of design. Risk assessment and risk reduction.

- PN-EN 13561: 2015-07E, External curtains and awnings. Operational requirements including safety.

- PN-EN 13659: 2015-07E, Venetian blinds including external slat blinds. Operational requirements including safety

Person authorized to prepare the technical documentation:

Opole, 11.12.2020

.....
(Place and date of issue)

T. Selzer, president of the board

.....
(Name, position)



(Signature and stamp)

sel
TUT
KONSTRUKCJA
WISBET

SELT Sp. z o.o.

ul. Wschodnia 23a, 45-449 Opole

tel. 77 55 32 100 fax 77 55 32 200

NIP 7543103311 REGON 363154414

E-STOP Grażyna Wieczorek
ul. Opolska 63, 46-023 Węgry k/Opola, www.e-stop.pl
tel.: +48 784 748 513, kontakt@e-stop.pl



KOMPLEKSOWE
BEZPIECZEŃSTWO
W PRZEMYSŁE

PROTOKÓŁ

z dnia 10-12-2020r.

z przeprowadzonej procedury oceny zgodności z wymaganiami zasadniczymi
WE PERGOLI SB400/400H/400MD/500 dla SELT Sp. z o.o. w Opolu

ORZECZENIE

Po przeprowadzeniu oceny ryzyka i zgodności, zawartej w dokumentacji
oceny zgodności z wymaganiami zasadniczymi WE nr DOZ-20-052, wyd. 3 stwierdza
się, że:

PERGOLE SB400/400H/400MD/500

wyprodukowane przez:

SELT SP. Z O.O.
ul. Wschodnia 23a
45-449 Opole

spełniają wymagania zasadnicze WE i mogą być dopuszczone do eksploatacji na
terenie Wspólnoty Europejskiej.

Sporządził:

mgr inż. Marek Wieczorek
Specjalista Automatyk
ds. Bezpieczeństwa Maszyn
Certyfikowany Specjalista
Bezpieczeństwa Funkcjonalnego
UDT-CERT / B FUNK / 1 / 180 / 19



E-STOP Grażyna Wieczorek
46-023 Węgry, ul. Opolska 63
tel. kom. 784 748 513
NIP 754-204-64-04, Regon 382343745

WĘGRY k/OPOLA, grudzień 2020 r.

NIP: 754-204-64-04 Regon: 382343745

PKO BP Oddział w Opolu Nr 92 1020 3668 0000 5102 0423 4837 SWIFT BPKOPLPW

10. WARRANTY EXCLUSIONS

General warranty conditions are available on www.selt.com. If the SELT Sp. z o.o. the website is inaccessible then warranty terms and conditions can be obtained from the sales representative of SELT Sp. z o.o.

10.1 WARRANTY EXCLUSIONS

SELT Sp. z o.o. shall not bear responsibility for the following cases and the warranty will not cover:

- Damages caused as a result of other transport than the SELT's transport.
- Damages resulting from storage, installation or maintenance incompatible with the operation and maintenance manual, user's manual or Supplier recommendations, unless they are executed by the Supplier.
- Damages resulting from system modification, unless the modification was performed by the Supplier, on his order or with his written consent.
- Secondary damage resulting from the use of the device despite the original defect being noticed, unless the Supplier has been notified and recommended further use. The assessment of the causes of damage shall be left to the reasonable discretion of the Supplier. Repair or replacement of the device due to damage referred to in this point may be carried out by the Supplier against payment.
- Defects resulting from normal wear and tear of product parts.
- Mechanical and electrical damage caused by the user.
- Damage caused by improper installation of the product by a company other than the manufacturer.
- The use of anchoring elements that are too weak or fastened to the ground (substructure) with insufficient load-bearing capacity (parameters).
- Damage caused by self-repair.
- Damage caused during the use of the system in inappropriate weather conditions (outside the scope provided for in the manual).
- Damage caused by abnormal weather conditions (lightning, storm, hail, water, fire).
- Damages resulting from accidents and unexpected events.
- Characteristic noises of the system operation, arising during the rotation of the blades (this is a feature of the product).
- Leakage due to incomplete closure of moving parts or heavy rainfall.
- Limitation of the degree of water tightness resulting from the location, method of finishing, installation and sealing as well as extreme weather conditions that have a significant impact on the water tightness of the product.
- Leaks or lack of tightness between the gutters and the substructure, as the sealing of the passages between the gutters is performed by the customer.
- Water resulting from condensation that may occur on the lower surface of the blades and the lower surface of the structure.
- The formation of water drops on beams, posts or blades, unless they result from a product defect, provided that consultations with the installer are made, who will assess whether it is due to an assembly defect or a product defect.
- Splashes of water in the areas of the outlets of the drain holes resulting from the specificity of their shape - they cannot be completely avoided.
- Damage resulting from improper cleaning with the use of inappropriate tools, corrosive and abrasive substances.
- Atmospheric and phytosanitary pollution and dirt caused by animals.
- Dirty paint coating in an urban environment exposed to pollution (smog, smoke, acid rain, dust).
- Damage caused by the impact of other products, objects or suspended accessories not provided for by SELT.
- Deformation and damage to the structure, in particular the blades, caused by the load caused by the User (standing, moving or hanging on the product).
- Differences in the colour of the parts that may occur during the production process.
- Discoloration of elements intensively exposed to weather conditions.
- Corrosion of components used in environments with high sea salt content in the air.
- Possible glazing cracks resulting from mechanical damage as a result of incorrect installation of the system or caused by uneven heating resulting from the location of the system installation.
- Differences in the closing angle of the movable roof blades, which can be about 2°, and are a natural feature of the system due to the production and technological tolerances of the elements.
- Damage caused by starting the system in freezing conditions and other natural factors.

- Damage caused by snow remaining on the blades above the permissible values and with uneven distribution of the snow cover - in the event of snowfall, the roof should be in the snow position. Damage caused by the use of equipment and flooring not intended for external use under the product.
- Damage caused by the use of equipment and flooring not intended for external use under the product.
- Damages resulting from activating the blade rotation mechanism in winds above wind class 3 (49 km/h) and leaving the blades open in winds above this class.
- The deflections of the structure beams not exceeding the values specified in the PN-EN 1090-1 and Eurocode 9 standards are a natural feature of the system.
- Damage or deformation caused by the side covers not being rolled up above wind speeds >49 km/h.
- Possible stagnation and outflow of water remaining in the gutters of the blades.
- For pergolas with full cover of the walls, with the length of the blades over 3 m, there may be light reflections and gaps at the junction of adjacent blades, resulting from technological standards.

Selt is also not responsible for:

- A product with the CE label removed or illegible,
- A product in which pictograms informing about particularly important information on hazards and safety have been removed,
- Misuse of the product or use contrary to its purpose,
- Damage due to mains voltage fluctuations if they exceed 5% or faulty control,
- To prevent overheating of the product, heat sources such as grills, open flames must not be located within the system,
- SELT Sp. z o. o. is also not responsible for any events resulting from non-compliance with this documentation, as well as the consequences of events that the installer, investor or specialized assembly team should take into account in the investment or work performed.

Notwithstanding the above, the scope of responsibility of SELT Sp. z o. o. is limited and results from the contract concluded with the buyer of the product.

APPENDIX 1 (PICOLO XL MOTOR OPERATING MANUAL)

APPENDIX 2 (24V DC MOTOR OPERATING MANUAL)