



SB450 Pergola Assembly Instructions

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Pergola SB450 product

The product meets CE safety requirements.

Construction Products Contact Point

<https://punkt-kontaktowy.gunb.gov.pl/>

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Important safety instructions.

WARNING!

Compliance with this Manual is essential for personal safety. Keep this Manual for reference.

Read the installation instructions before installing the product.
If the manual contains unclear phrases or if there are any doubts regarding its interpretation, we recommend contacting the manufacturer before installing or using the pergola.

After installation, provide the user with the Instructions for Use and Maintenance.

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1. INTRODUCTION

This document contains:

- Basic information on delivery acceptance and product storage,
- General safety requirements for work and installation,
- Detailed instructions for assembling the supporting structure and roof of the pergola,

The instructions for use and maintenance are provided in a separate manual.

Electrical installations such as power supply, lighting and roof control are covered in a separate manual.

Important functional notes.

- Please note that the dimensions B, L and H are the external dimensions of the fixed structure.
- When planning installation under balconies, eaves or other permanent building elements, take into account the space required for the slats to open fully:
 - TYPE 1 slats – additional clearance of at least +115 mm above dimension H required.
 - TYPE 2 slats – additional clearance of at least +96 mm above dimension H required.
- Please note that the overall dimensions of the product are larger than the nominal dimensions due to protruding elements and the specific nature of the articulated foot mounting.
- When installing on a building façade, technological gaps are created, which must be secured on your own using dedicated flashings.
- The installation options given in the catalogue are strictly defined in terms of statics and cannot be modified beyond the scope provided for by the system.
- It is prohibited to remove corner posts, as they are the main load-bearing element of the structure (the only exception is the dedicated bracket version).
- The design must allow free access to the drive located in the active rafter. It is not permitted to install the active rafter directly against the wall or block it with an adjacent module, as this would prevent maintenance or replacement of the motor.

1.1. Symbols and nomenclature

Manufacturer – means an entity that manufactures and markets a product under its own name or trademark. The product is an outdoor pergola. The manufacturer is Aluprof.

Supplier – means a natural or legal person who makes another manufacturer's product available on the market. The Supplier may also be the product installer.

Installer - means an entity (natural or legal person) or a group of persons, authorised and qualified, who are responsible for the correct and safe installation of the entire SB450 Pergola in accordance with the Manufacturer's technical documentation and applicable standards. This may also be the Supplier or an entity authorised by them.

Product user – a person using the installed product.

Pergola SB450 product - The SB450 pergola system is made of powder-coated aluminium profiles and steel elements. The roof structure consists of movable aluminium slats. The slats can be adjusted to change the angle of inclination.

Movable roof - The roof consists of slats attached to adjustable crossbeams, which are moved by an electric drive.

Pen - A roof element made of extruded aluminium, designed to drain rainwater, protect against sunlight and withstand snow loads up to a certain limit.

2. PREPARATION FOR ASSEMBLY

2.1. Acceptance of delivery

Pergola structural elements: posts, purlins, rafters, roof slats, gutters and other long elements are packed at the production plant in cardboard packaging to protect the surface of the products from damage during transport and storage on the construction site. Accessories: connectors, roof drive components, system fasteners and seals are packed in cardboard boxes. The packaging should contain information about the assortment and quantity of components in each package, enabling quick identification of products and quantity control.

Due to the dimensions and weight of the structural elements, unloading should be carried out by at least two people.

Before starting installation, you must:

- Check that the load is correctly secured on the means of transport before unloading.
- Check the completeness of the delivery and the required documentation.
- Prepare a report on the quality and quantity of the delivery; any discrepancies should be immediately reported to the driver, supplier or site manager.
- Secure the delivery and ensure its proper storage and transport to the installation site.
- Assessment of the correctness of the construction site preparation for assembly work.

2.2. Storage of structures on the construction site

If the pergola is not installed immediately after delivery, the following storage rules must be observed on the construction site:

- The product is factory-packed in cardboard packaging that protects it from damage during storage, transport and movement to the final installation site.
- The product for transport/storage must be positioned in accordance with the arrows on the packaging.
- Structural elements and other delivery items should be stored in their original packaging; aluminium profiles should be protected with self-adhesive film, which may only be removed once installation is complete.
- Avoid stacking; protect the packaging from crushing.
- Do not place other objects on top of the packaging.
- Aluminium profiles, seals and other installation materials should be stored in dry, ventilated rooms at a temperature between 5°C and 30°C.
- Stored products should not be exposed to direct heat from radiators or other heat emitters, or to high levels of sunlight.
- When unloading and moving the delivery items, observe the health and safety regulations, in particular those relating to the permissible loads per person (25 kg/person).

3. GENERAL SAFETY REQUIREMENTS FOR INSTALLATION

3.1. Inspection of the installation site

Before starting the installation, you must:

- The pergola must be secured to the ground or substructure in a manner that ensures stability and safety. The assessment of the load-bearing capacity of the ground is the responsibility of the User and the Installer. The use of an installation method other than that suggested by ALUPROF S.A. is permissible provided that safety and construction requirements are met. In such a case, the responsibility and risk shall be borne by the User or Installer. It is recommended that any deviations from the standard installation technology be consulted with a licensed designer.
- Check that the foundations or foundation slab comply with the construction documentation.
- If dimensional non-compliance or insufficient load-bearing capacity of the ground is found, installation work must be suspended until the deficiencies are remedied.
- Remove all objects, materials and obstacles from the installation site that could hinder the manoeuvring of the pergola components or pose a risk to the installation team.
- A detailed inspection of the installation site should be carried out with regard to the location of underground and surface installations (in particular electrical, water, sewage and gas installations) in order to prevent their accidental damage during the anchoring of the structure.
- Anchoring elements are not included in the set. They must be selected individually by the installer depending on the substrate material. It is recommended to consult a qualified designer in this regard.

3.2. Safety requirements for installation at height

Due to the size of the pergola structure, it may be necessary to carry out work under special conditions. Work carried out at a height of more than 1.0 m (and in particular more than 2.0 m) above ground or floor level is classified as work at height. It poses a risk of accidents, in particular falls, and therefore requires the use of certified scaffolding and personal protective equipment.

The supplier is obliged to draw up a health and SAFety Plan (BIOZ) for the duration of the installation, ensure direct supervision of the work and provide on-the-job training for employees. In addition, the supplier must provide appropriate fall protection equipment or ensure that the installation manager has such equipment. It is recommended that the installation site be clearly cordoned off and marked for the entire duration of the work.

Installers must hold valid medical certificates authorising them to work at heights. The installation site should be prepared in such a way as to minimise the need for workers to lean over the scaffolding barriers. Work at heights above 2 m requiring the use of personal protective equipment must be carried out by at least two people to ensure mutual safety.

3.3. Safety when working with power tools

When installing the pergola, use only power tools that are in good working order and have valid certificates.

The following rules must be observed:

- Technical condition: Before starting work, check the condition of the tool housing, power cables and plugs. It is prohibited to use tools with visible damage to the insulation.
- Conductivity of the structure: As the SB450 pergola is made of aluminium, there is an increased risk of electric shock in the event of a puncture. It is recommended to use cordless tools or tools powered by residual current devices (RCDs).
- Environmental conditions: It is forbidden to use mains-powered power tools during rainfall and in conditions of high humidity, unless the tool has an appropriate protection class (IP) that allows such conditions.
- Securing cables: Power cables should be routed in such a way as to prevent them from being accidentally cut, tripped over or damaged by moving parts of the scaffolding.

Personal Protective Equipment (PPE):

- When drilling or cutting aluminium parts, safety goggles must be worn at all times to prevent eye injuries caused by metal filings.
- If the work generates noise exceeding 85 dB, hearing protection must be used.

3.4. General safety requirements

- For safety reasons, at least three people are required to assemble the pergola support frame. Working in a smaller team may result in the loss of structural stability and accidents.
- It is prohibited to carry out installation work (especially at height and with large components) during strong winds, precipitation or icy conditions. Wind can cause uncontrolled movement of profiles or feathers, posing a direct threat to life and health.
- The drive and control systems must be connected in accordance with separate instructions. This work may only be carried out by persons with the appropriate electrical qualifications, with the power supply completely disconnected.
- The product must be protected against construction dirt (mortar, assembly foam, silicone).
- After drilling, immediately remove all metal filings from the surface of the structure. Leaving filings (e.g. from steel drill bits) will lead to contact corrosion and permanent damage to the paint coating.
- If it is necessary to use chemicals (adhesives, sealants, chemical anchors), strictly follow the safety data sheets and manufacturers' recommendations regarding operating temperatures and respiratory and skin protection measures.
- Inform the user that the pergola is an open terrace covering. All items and devices placed under its structure must be designed for outdoor use and resistant to weather conditions (moisture, temperature changes).
- Improper installation, use of incompatible fasteners or unauthorised modifications to the structure may lead to situations that are hazardous to the user, for which the Manufacturer shall not be held liable.

4. GUIDELINES FOR FOUNDATIONS

4.1. Static requirements

The SB450 pergola system transfers loads to its fixing points using dedicated brackets. For proper installation, it is necessary to select anchoring elements appropriate for the type of substrate. The table below shows the permissible forces on the brackets at the structural nodes from the SGN IOad combination (ultimate limit state).

4.1.1 Console 8A00848X

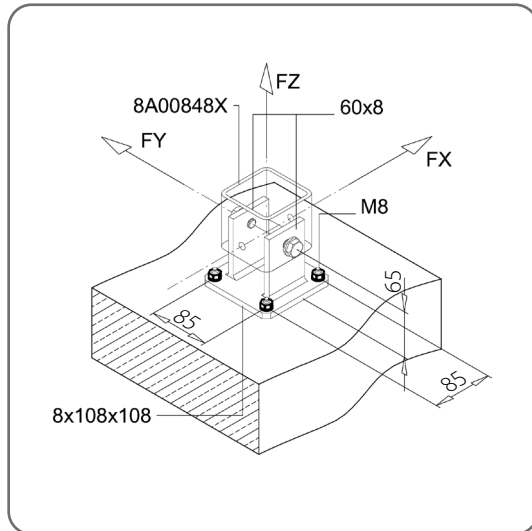


Fig. 1 Pole bracket 8A00848X
 $FZ = \pm 11,0 \text{ kN}$, $FX = \pm 3,2 \text{ kN}$, $FY = \pm 3,2 \text{ kN}$

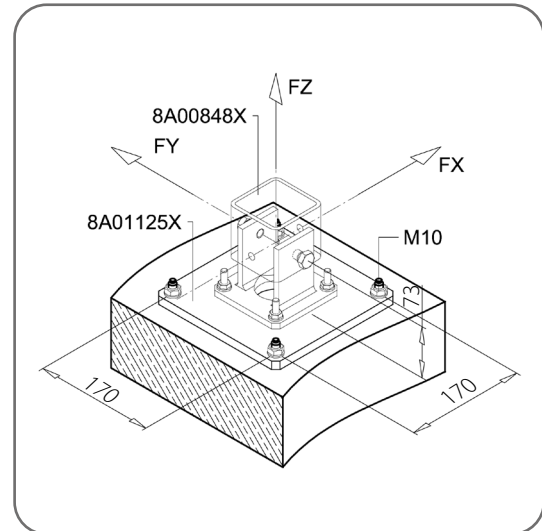


Fig. 2 Pole bracket 8A00848X with adapter 8A01125X
 $FZ = \pm 11,0 \text{ kN}$, $FX = \pm 3,2 \text{ kN}$, $FY = \pm 3,2 \text{ kN}$

The 8A00848X console has been designed for use with optional 8A01123X / 8A01124X levelling pads. The maximum total height of the shims under the bracket is 12 mm, but for the roof drainage system to be effective, the difference in height between the outer posts must not exceed 10 mm.

4.1.2 Console 8A0132X & 8A0133X

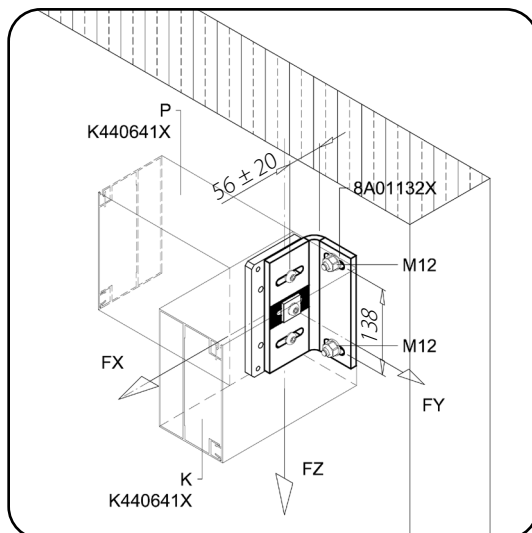


Fig. 3 Wall bracket 8A01132X
 $FZ = \pm 7,5 \text{ kN}$, $FX = \pm 3,5 \text{ kN}$, $FY = \pm 4,0 \text{ kN}$
 $FZ = \pm 4,0 \text{ kN}$, $FX = \pm 6,0 \text{ kN}$, $FY = \pm 3,0 \text{ kN}$

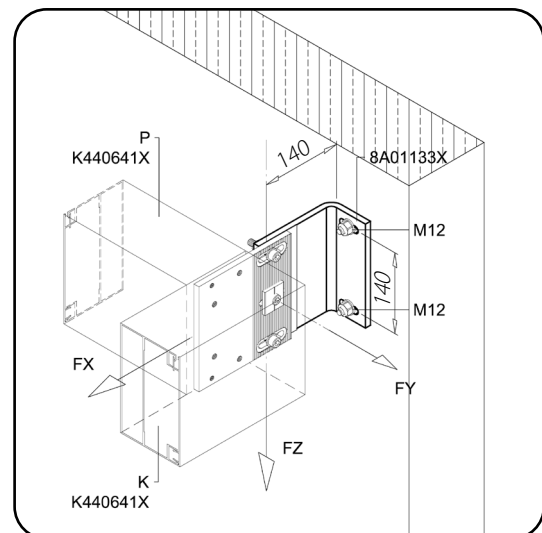


Fig. 4 Wall bracket 8A01133X
 $FZ = \pm 7,5 \text{ kN}$, $FX = \pm 3,5 \text{ kN}$, $FY = \pm 4,0 \text{ kN}$
 $FZ = \pm 4,0 \text{ kN}$, $FX = \pm 6,0 \text{ kN}$, $FY = \pm 3,0 \text{ kN}$

4.1.3 Console 8A01144X

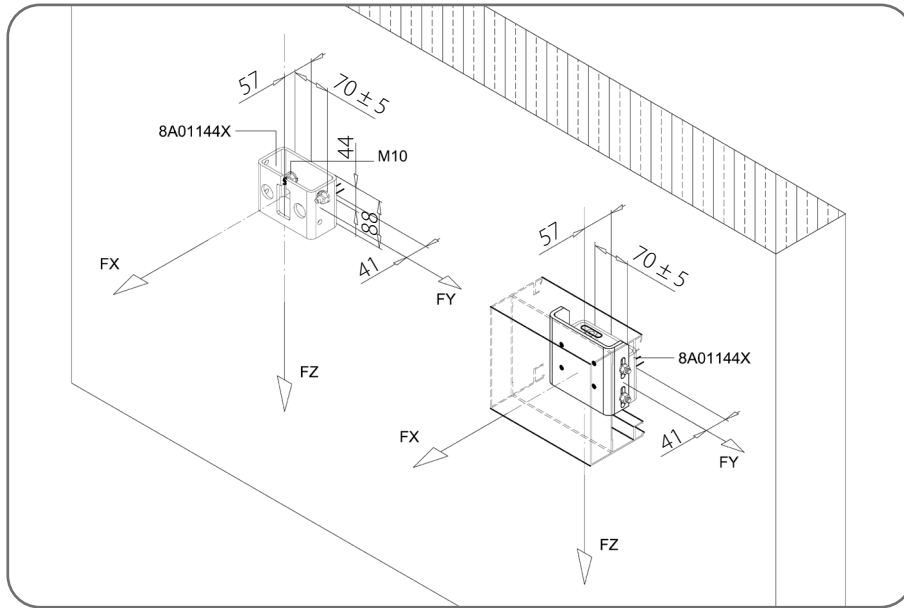


Fig. 5 Linear mounting bracket 8A01144X

$FZ = \pm 6,0$ kN, $FX = 0$ kN, $FY = 0$ kN

$FZ = \pm 4,0$ kN, $FX = \pm 5,0$ kN, $FY = \pm 1,1$ kN

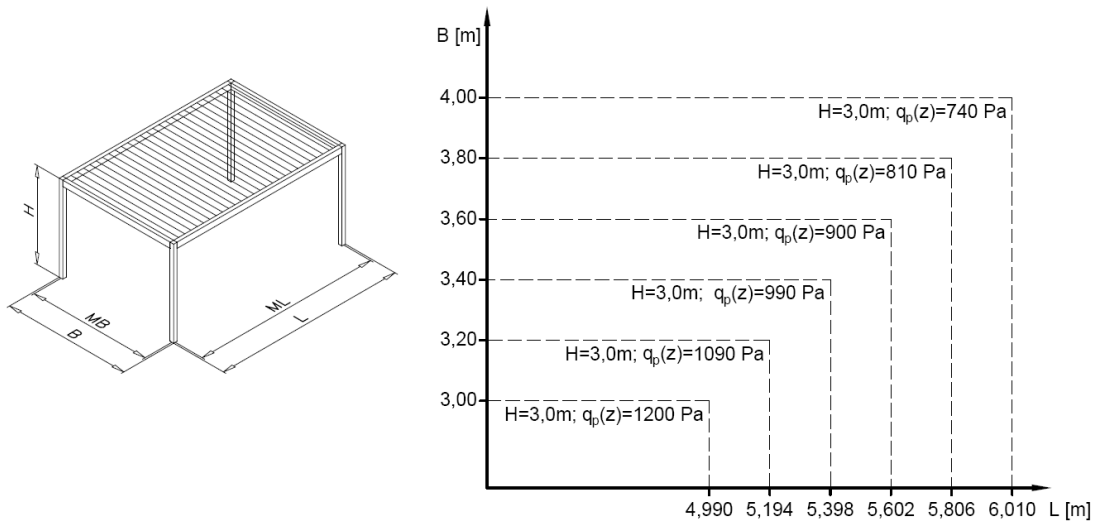
4.2. Location and Wind Zones

The choice of installation location must be preceded by an analysis of wind exposure by a qualified designer.

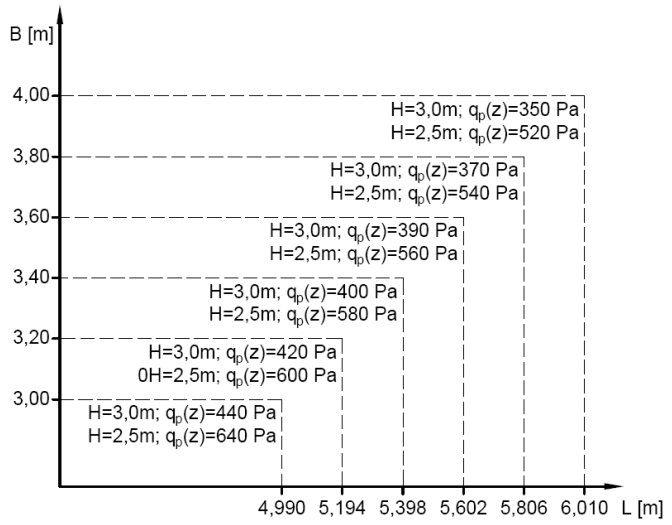
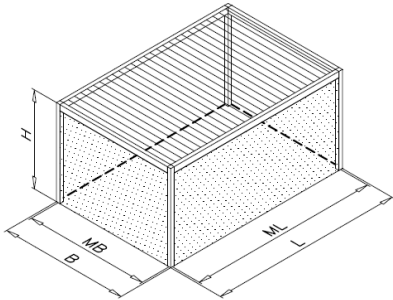
- Installation on building roofs or high terraces requires additional calculations due to increased wind speed pressure coefficients.
- In the case of installation of sun protection systems, the permissible dimensions of the structure should be determined on the basis of the normative wind load $q_p(z)$ in accordance with PN-EN 1991-1-4. It should be taken into account that they act as a solid wall, which drastically increases the forces transmitted to the foundations. In strong winds, as specified in the User and Maintenance Manual depending on the screen, the side screens must be rolled up and the roof battens set in a safe position so as not to exceed the load-bearing capacity of the anchoring.

The table below shows the characteristic values of the permissible wind load $q_p(z)$ according to PN-EN 1991-1-4 with a characteristic roof snow load $d=0.72$ kN/m² according to PN-EN 1991-1-3, depending on the dimensions of the structure.

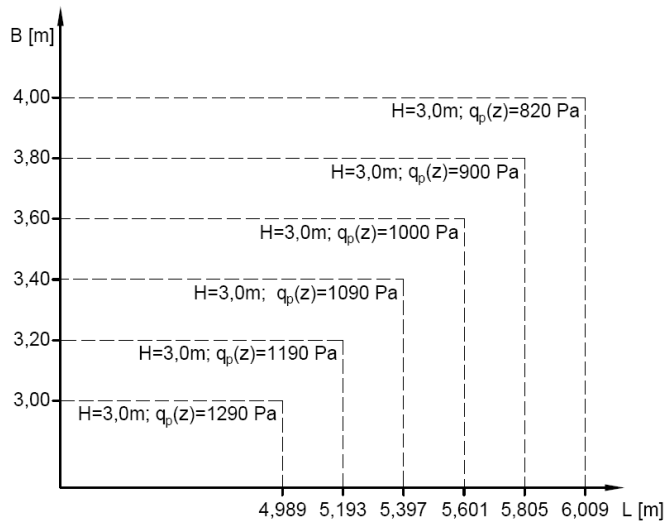
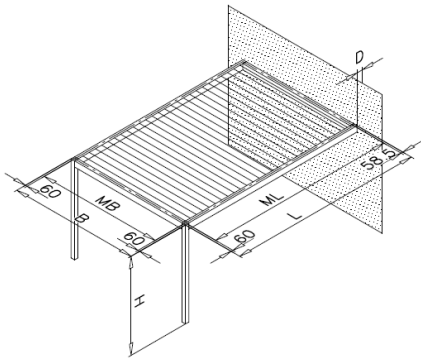
4.2.1. Free-standing single-bay pergola without enclosure



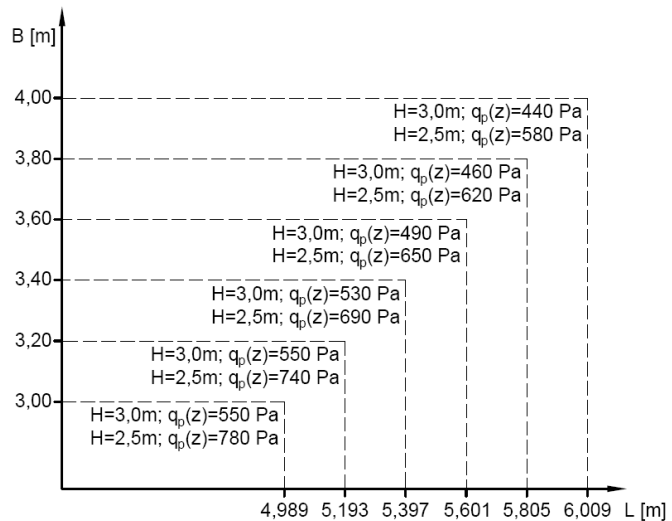
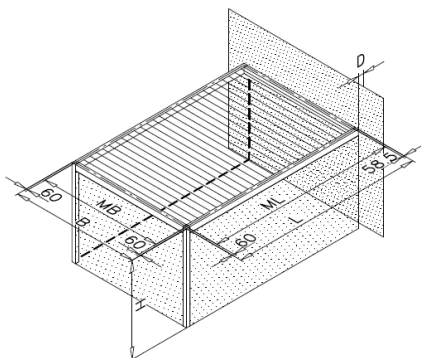
4.2.2. Single-bay freestanding pergola with enclosure



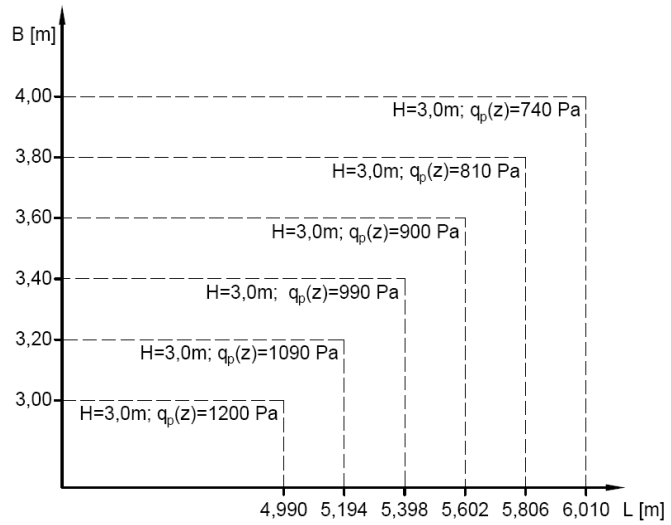
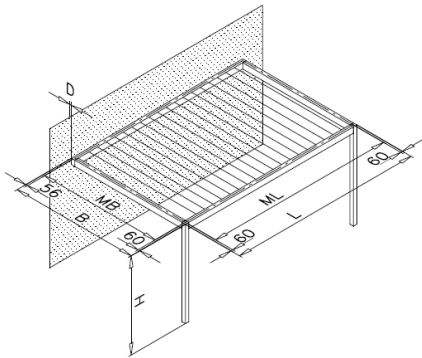
4.2.3. Single-bay pergola against a wall TYPE 1 without enclosure



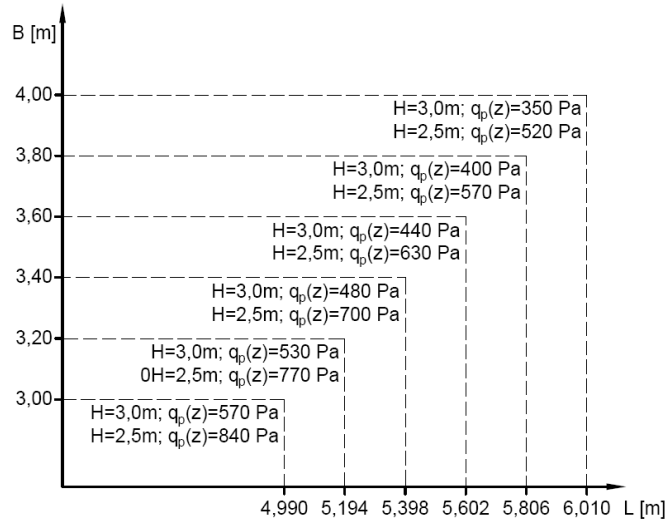
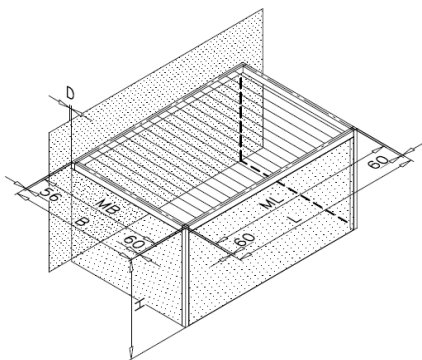
4.2.4. Single-bay pergola against a wall TYPE 1 with enclosure



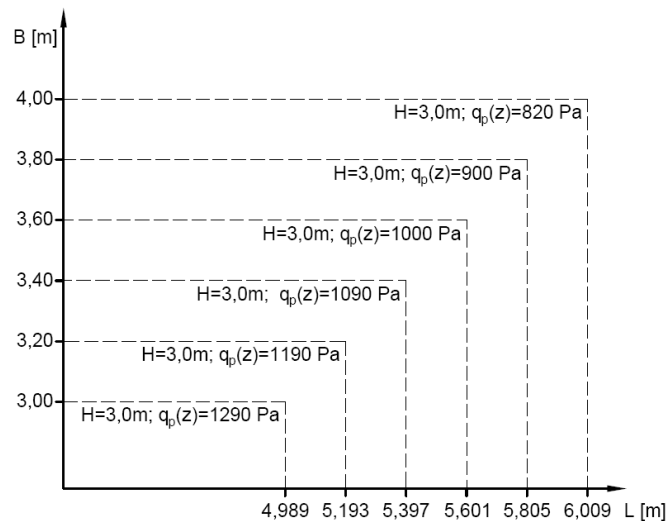
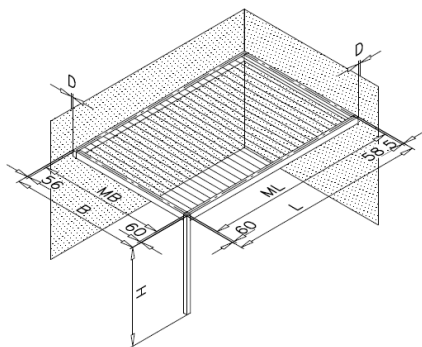
4.2.5. Single-bay wall-mounted pergola TYPE 2 without enclosure



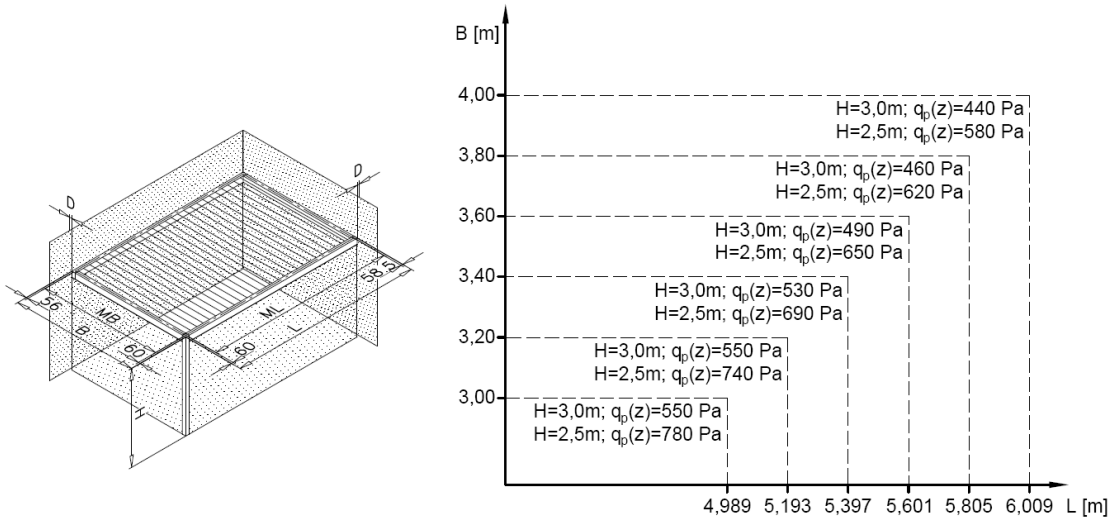
4.2.6. Single-bay pergola against a wall TYPE 2 with enclosure



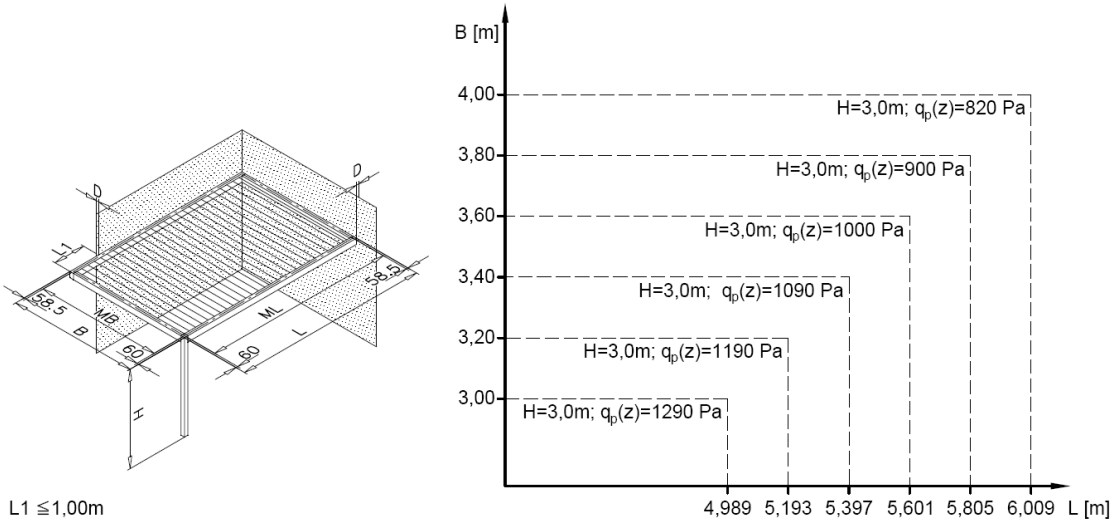
4.2.7. Single-bay pergola against the wall TYPE 3 without enclosure



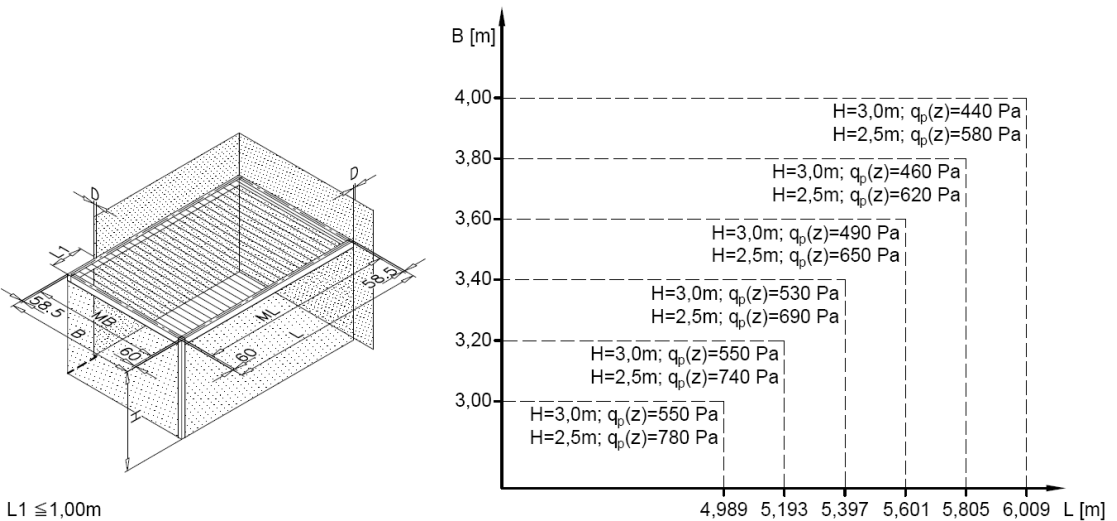
4.2.8. Single-bay pergola against the wall TYPE 3 with enclosure



4.2.9. Single-bay pergola against a wall TYPE 4 without enclosure



4.2.10. Single-bay pergola against the wall TYPE 4 with enclosure



4.3. Point foundation specification

- Concrete class: Minimum C20/25.
- To ensure stability under maximum wind loads, a footing with a minimum cross-section of 300 x 300 mm is recommended.
- The difference in foundation levels between the feet must not exceed 10 mm, which is a prerequisite for the proper functioning of the drainage system.
- Before concreting, lay electrical conduits in the axis of the foundations (drive power supply, LED lighting).
- The area around the feet must be flexibly sealed so that water flowing out of the posts does not penetrate the foundation structure.
- When constructing the footings, ensure that the bottom of the excavation is not flooded by rainwater or that the ground does not freeze (during periods of low temperatures).
- Levelling: The difference in height between the feet must not exceed 10 mm to ensure proper water drainage.
- Due to the use of rainwater drainage in posts with water outlets, it is important to carefully compact and flexibly seal the area around the footings in the ground due to possible mechanical impacts caused by wind. For ground-level installations, ensure anchoring and support on stable, load-bearing ground without layers susceptible to washing out, loosening or crushing (ballast, thermal insulation).
- The foundation must be based on stable and load-bearing ground.
- The soil at the bottom of the excavation must not be loose, wet or frozen. It is unacceptable to install the foundation on non-load-bearing soils: non-construction embankments, topsoil, peat, silt or soils with organic inclusions and debris.
- Depth (non-cohesive soils): For stable and non-heaving soils, the minimum foundation depth is 70 cm (provided that the foundation has sufficient ballast weight).
- Depth (heaving soils): In the case of heaving soils (clay, loam, loess, silty sand), the bottom of the foundation must be below the local ground frost depth, specified for Poland in the range of 0.8 m – 1.4 m (according to fig. 6).

If non-load-bearing soil is found or there are doubts regarding the frost heave of the ground, one of the following methods should be used:

1. The foundation must be laid to the full frost depth for the region.
2. Soil replacement: Removal of non-load-bearing soil and replacement with a compacted sand and gravel cushion (Is index > 0.95).
3. Reinforcement with lean concrete: Remove soil to the level of the frost line and fill the space with C8/10 lean concrete with a semi-dry consistency.



Fig. 6 Frost zones in: Polsce

Frost penetration depths in the adjacent areas:

- I Zone - 0,8 m
- II Zone - 1,0 m
- III Zone - 1,2 m
- IV Zone - 1,4 m

4.4. Anchoring technology

- High-performance M8 expansion anchors may be used, provided that an effective anchoring depth is achieved. This requires the utmost precision in installation, thorough cleaning of the holes and maintaining minimum distances from the edge of the foundation.
- Due to the minimum centre-to-centre distances (85 mm), chemical anchoring is the preferred solution, as it prevents expansion stresses in the substrate.
- Recommended system: High-load-bearing injection resin in combination with system threaded rods.
- Use rods of class min. 5.8 (galvanised) or A4-70 (stainless steel), in accordance with the EOTA documentation of the selected manufacturer.
- It is prohibited to assemble kits from non-certified components. Installation must be carried out in accordance with the Technical Assessment of the manufacturer of the anchoring system for concrete of at least class C20/25.
- To achieve full load-bearing capacity at pull-out forces of 11.0 kN, the depth of the rod should be selected based on the manufacturer's load-bearing capacity tables (recommended min. 120 mm for M8).
- The use of adapter 8A01125X (anchor spacing 170 mm), which allows the use of M10 anchors, significantly increases the stability of the structure under dynamic loads.



Any inaccuracy in the construction of the foundation or error in the selection of resin for chemical anchors may lead to structural failure in strong winds. It is recommended to document the process of bonding the anchors (cleaning the holes).

5.3. Construction node diagram

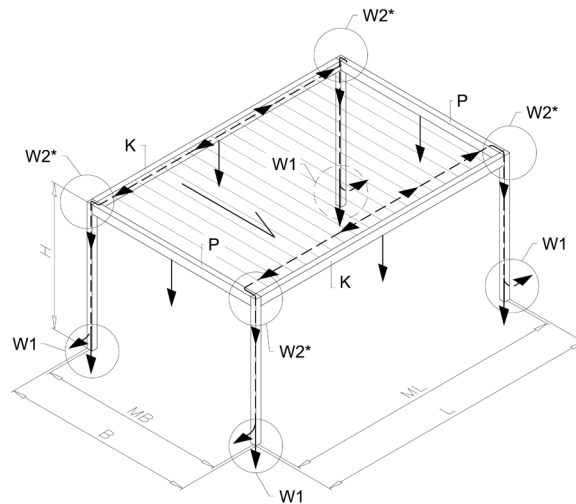
Where:

- B - Pergola width
- L - Pergola length
- MB, ML - Spacing between posts
- MZ1, MZ2 - Axial spacing between the additional post and the main post
- P - Pergola rafter
- PO - Pergola purlin with drainage system
- K - Pergola rafter

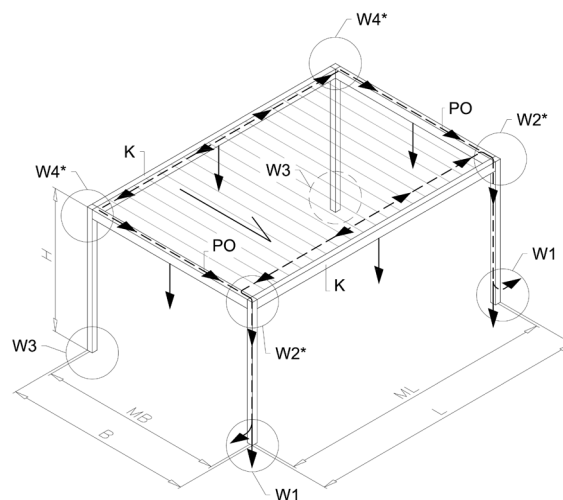
Node markings:

- W1 - Junction W1, column base, visible or concealed drainage
- W2 - node W2, connection between column and purlin
- W3 - node W3, column base without drainage
- W4 - node W4, connection of column and purlin in a 2-column drainage system
- W5 - node W5, connection of rafter - wall (bracket 8A01132X)
- W6 - node W6, rafter-wall connection (bracket 8A01133X)
- W7 - node W7, rafter-wall connection (bracket 8A01144X)
- W8 - node W8, linear fastening of wall rafter (bracket 8A01144X)
- W9 - node W9, wall rafter - purlin connection
- W10 - knot W10, connection of purlin - wall / rafter - purlin
- W11 - node W11, connection of wall rafter - purlin with drainage
- W12 - node W12, base of additional column
- W13 - node W13, connection of additional column - rafter
- W14 - node W14, connection of additional column - purlin

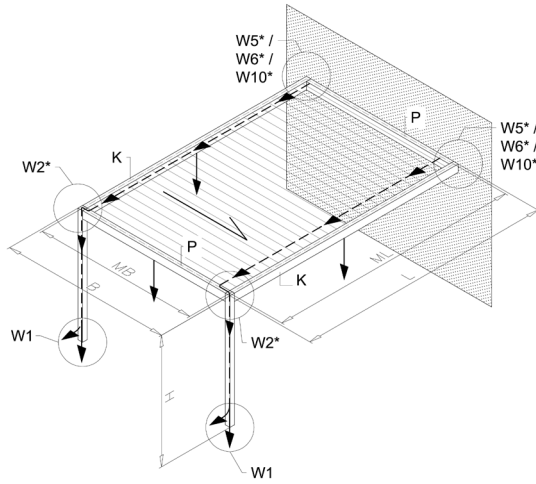
5.3.1. Free-standing pergola – drainage using 4 posts



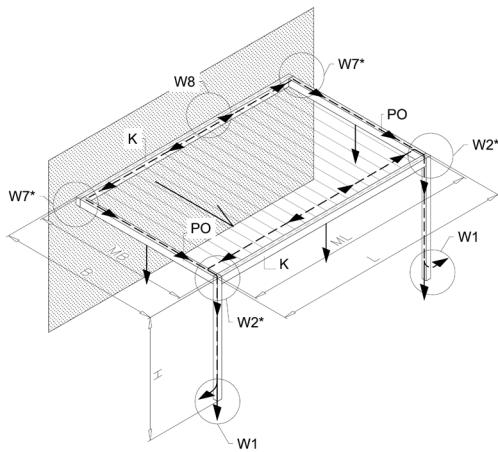
5.3.2. Free-standing pergola - drainage using 2 posts



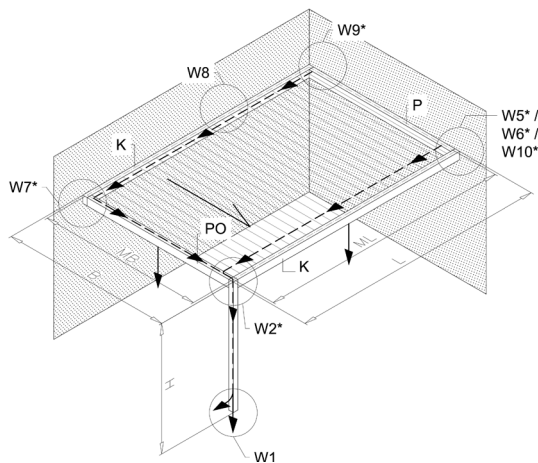
5.3.3. Single-aisle pergola against a wall Type 1



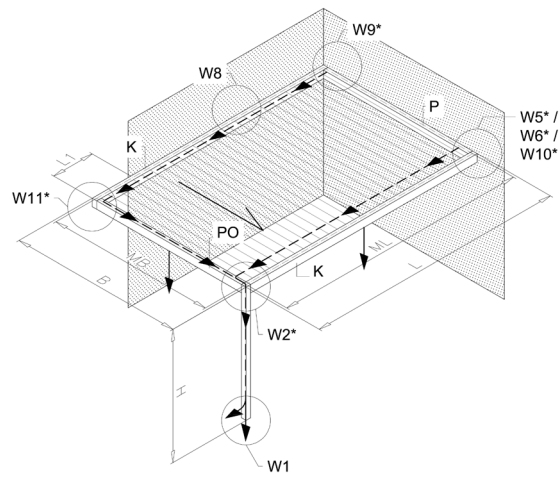
5.3.4. Single-span pergola against a wall Type 2



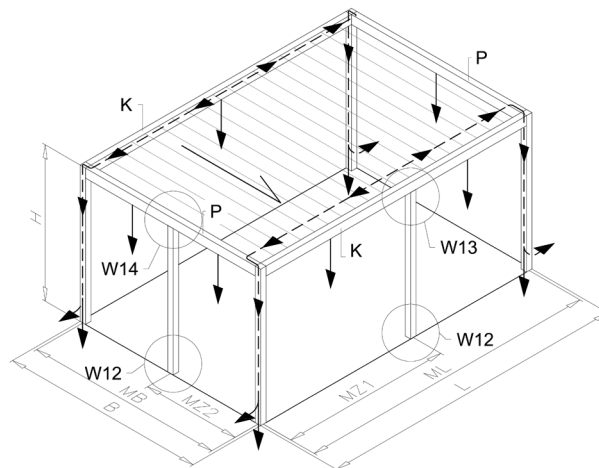
5.3.5. Single-span pergola against a wall Type 3



5.3.6. Single-span pergola against a wall Type 4



5.3.7. Single-span pergola with additional post



5.4. Fastening of free-standing pergola structures

5.4.1. Fastening brackets and posts with a type A drainage system (node W1)

1. Remove 2 M12 x 20 mm bolts from bracket cat. no. 8A00848X and remove the bracket insert (fig. 7.1).
2. Plan the mounting locations for the bracket set, check their level; if there are greater differences than assumed in the design, use 2 or 5 mm shims (cat. no. 8A01123X; 8A01124X).
3. Ensure that the brackets tilt in the same axis.
4. Screw the console base 8A00848X to the foundation with 4 M8 anchors.
5. Replace the console insert, securing it with the screws removed earlier, and coat the screws with thread sealant cat. no. 13364618 (fig. 7.2).
6. Remove the two M12 x 25 mm Allen screws from the console insert, apply thread sealant (cat. no. 13364618) to them and screw them into the two console spacers (cat. no. 8A00855X) (fig. 7.3).
7. Insert drainage spout no. 8A00822X into each post and press drainage hole cap no. 8A00821X into the drainage hole of the post (Fig. 8.1).
8. Connect 2 K440639X pergola posts to the K440641X purlin in a 'gate' configuration.
9. Place the K440639X pergola posts on the brackets (fig. 8.2).

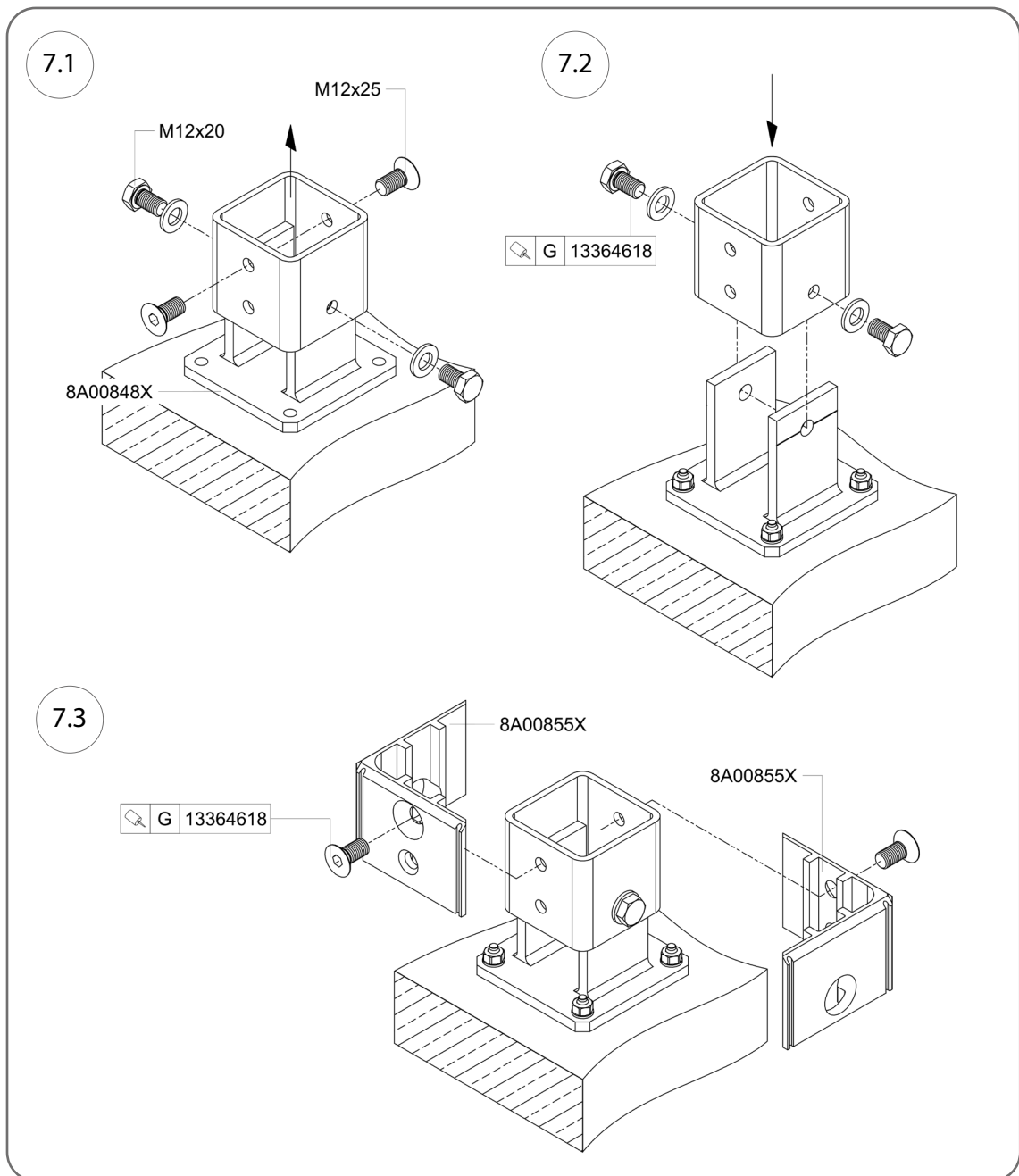


Fig. 7

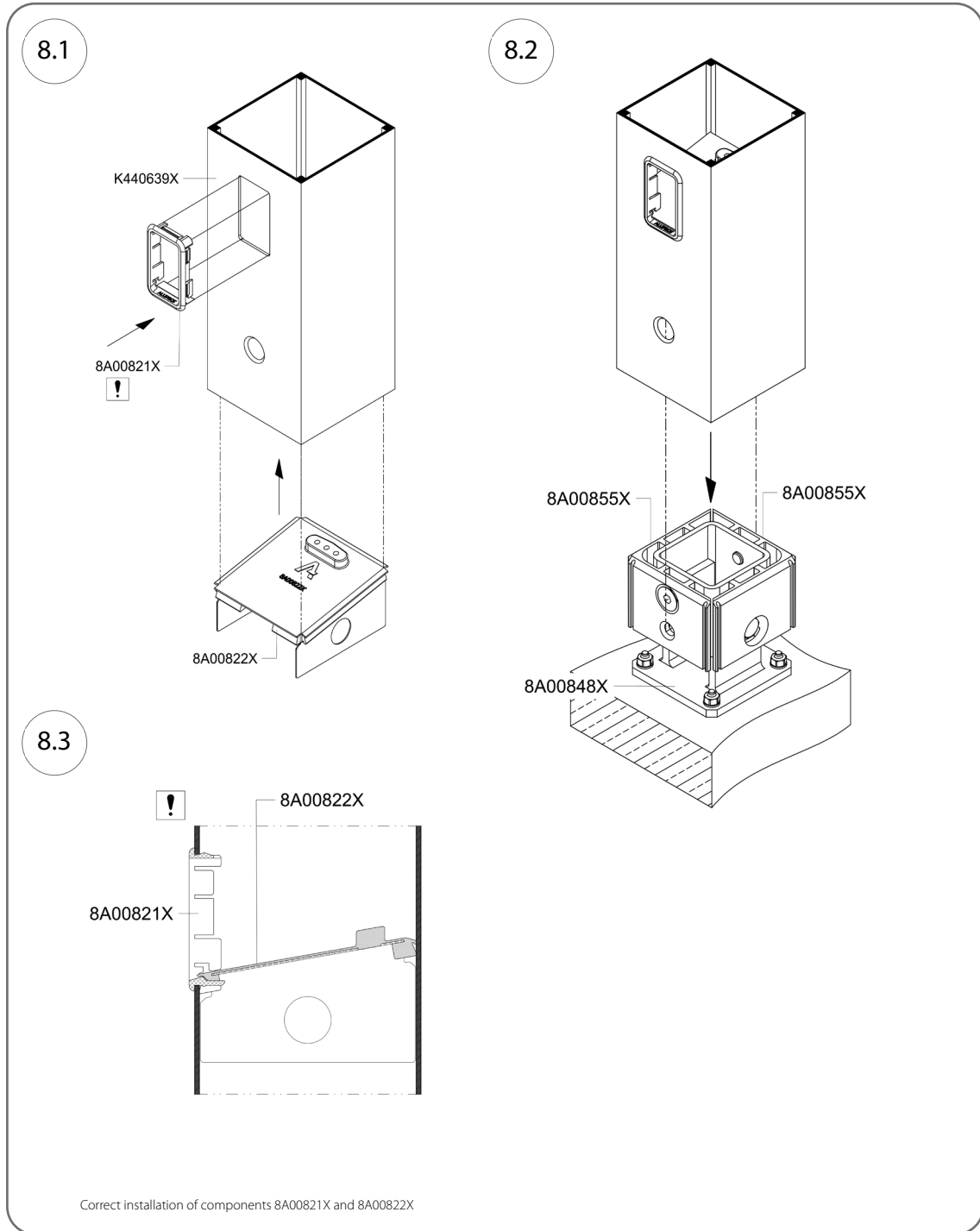


Fig. 8

5.4.2. Fastening brackets and posts with drainage system type B (node W1)

1. Remove the two M12 x 20 mm bolts from bracket no. 8A00848X and remove the bracket insert (Fig. 9.1).
2. Plan the mounting locations for the bracket set, check their level; if there are greater differences than assumed in the design, use 2 or 5 mm shims (cat. no. 8A01123X; 8A01124X).
3. Ensure that the brackets tilt in the same axis.
4. Screw the console base 8A00848X to the foundation with 4 M8 anchors.
5. In place of the removed insert, use M12 x 20 mm hexagon head screws to attach the console insert, cat. no. 8A01232X, with a drainage hole (fig. 9.2).
6. Remove the two M12 x 25 mm Allen screws from the console insert, apply thread sealant (cat. no. 13364618) to them and use them to screw on the two console spacers (cat. no. 8A00855X) (fig. 9.3).
7. Rivet the elbow spacer, cat. no. 8A01231, to the stainless steel elbow, cat. no. 8A01229X, then connect the elbow to the concealed drainage spout, cat. no. 8A01113X, and tighten the clamp, cat. no. 8A00968X, on the connection (fig. 10.1).
8. Coat the edge of the 8A01232X insert with adhesive cat. no. 13364617 and insert the elbow with the spout into the console (Fig. 10.2). Using a 4.2 x 13 mm screw, cat. no. 87252503, pass through the wall of the 8A01232X console insert and screw in the elbow spacer, cat. no. 8A01231X (fig. 10.3).
9. Connect 2 K440639X pergola posts to the K440641X purlin in a 'gate' configuration.
10. Fit the K440639X pergola posts onto the brackets (fig. 11.1).
11. Press a 50 mm diameter PVC elbow onto elbow no. 8A01229X (fig. 11.2).

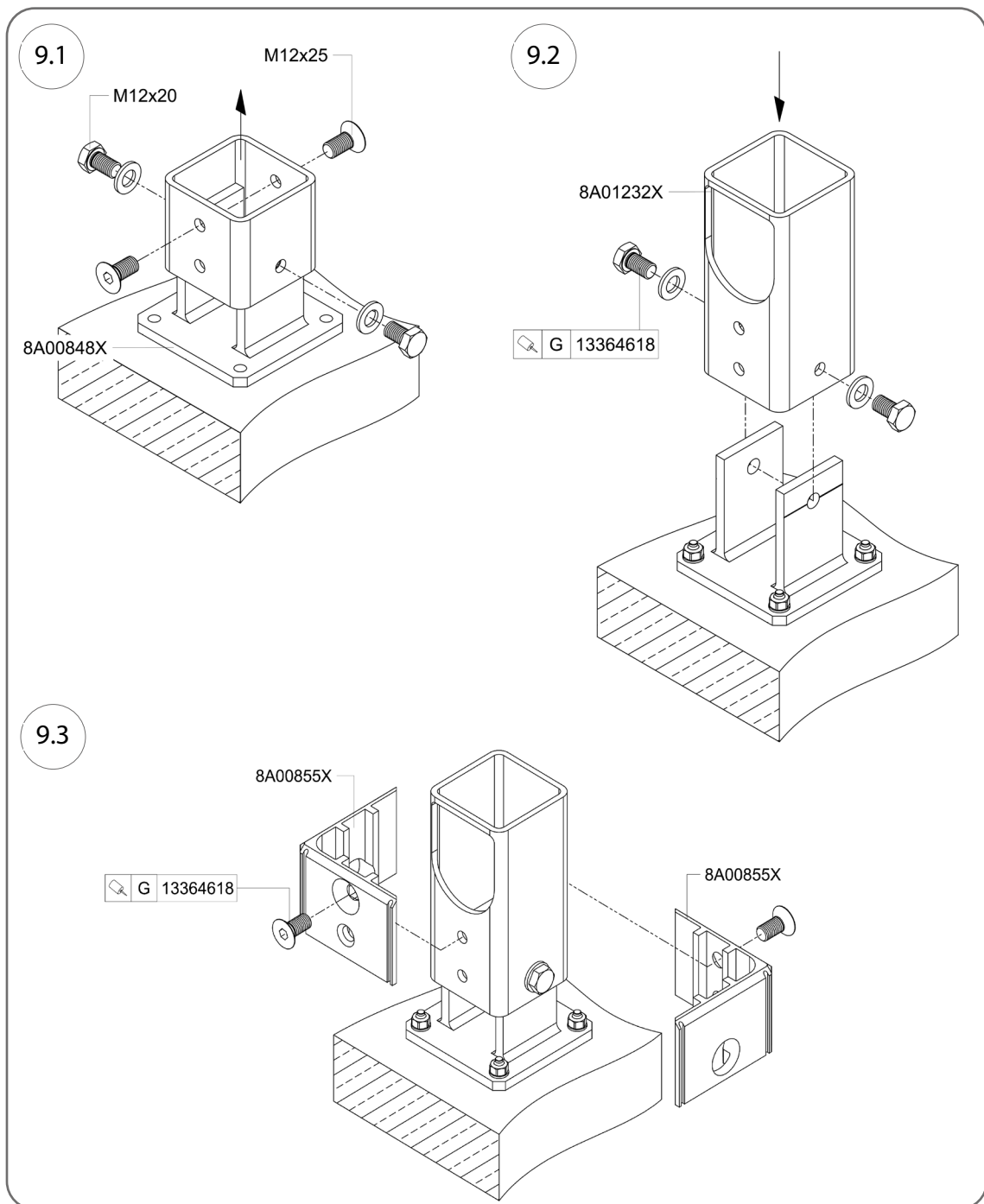


Fig. 9

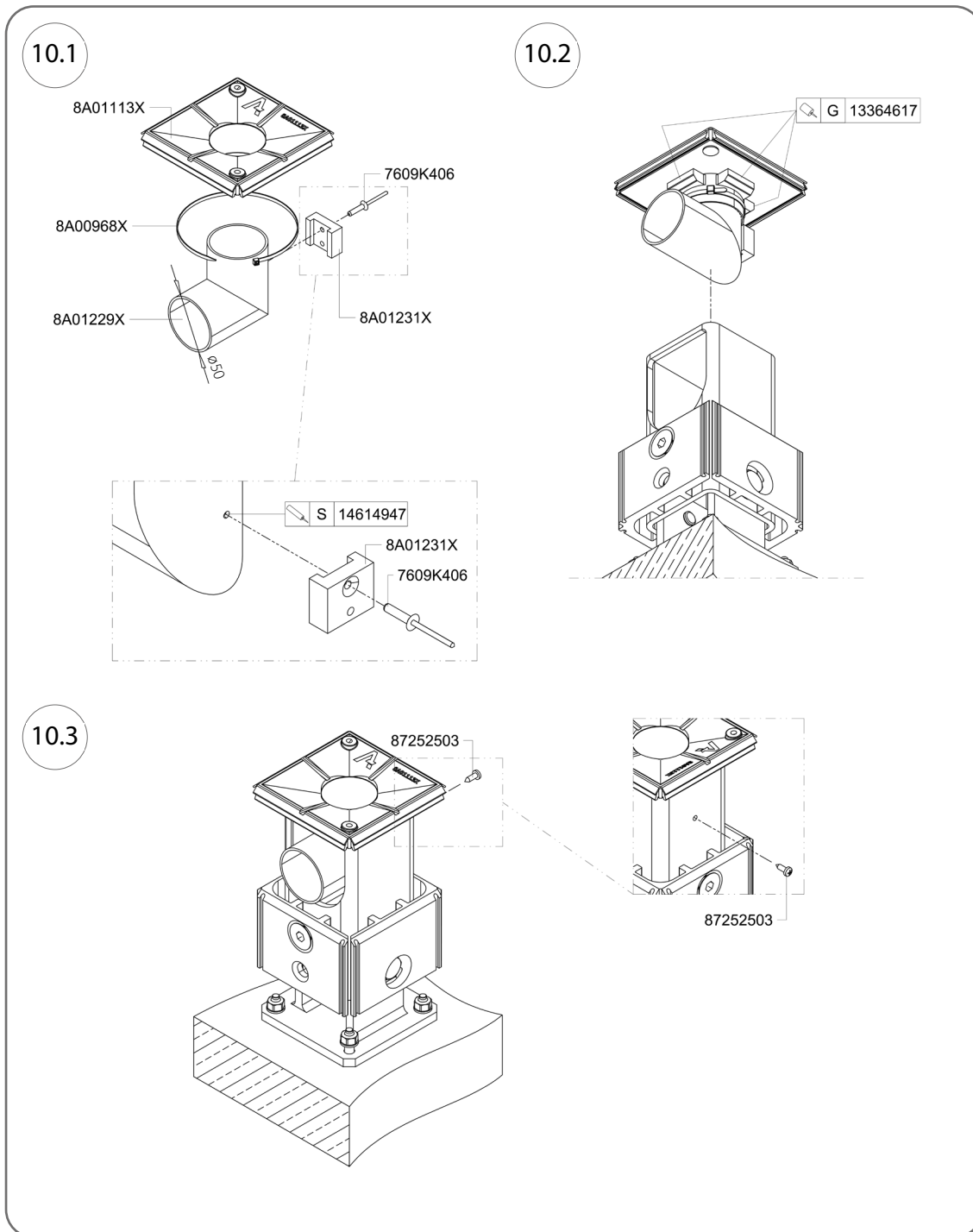


Fig. 10

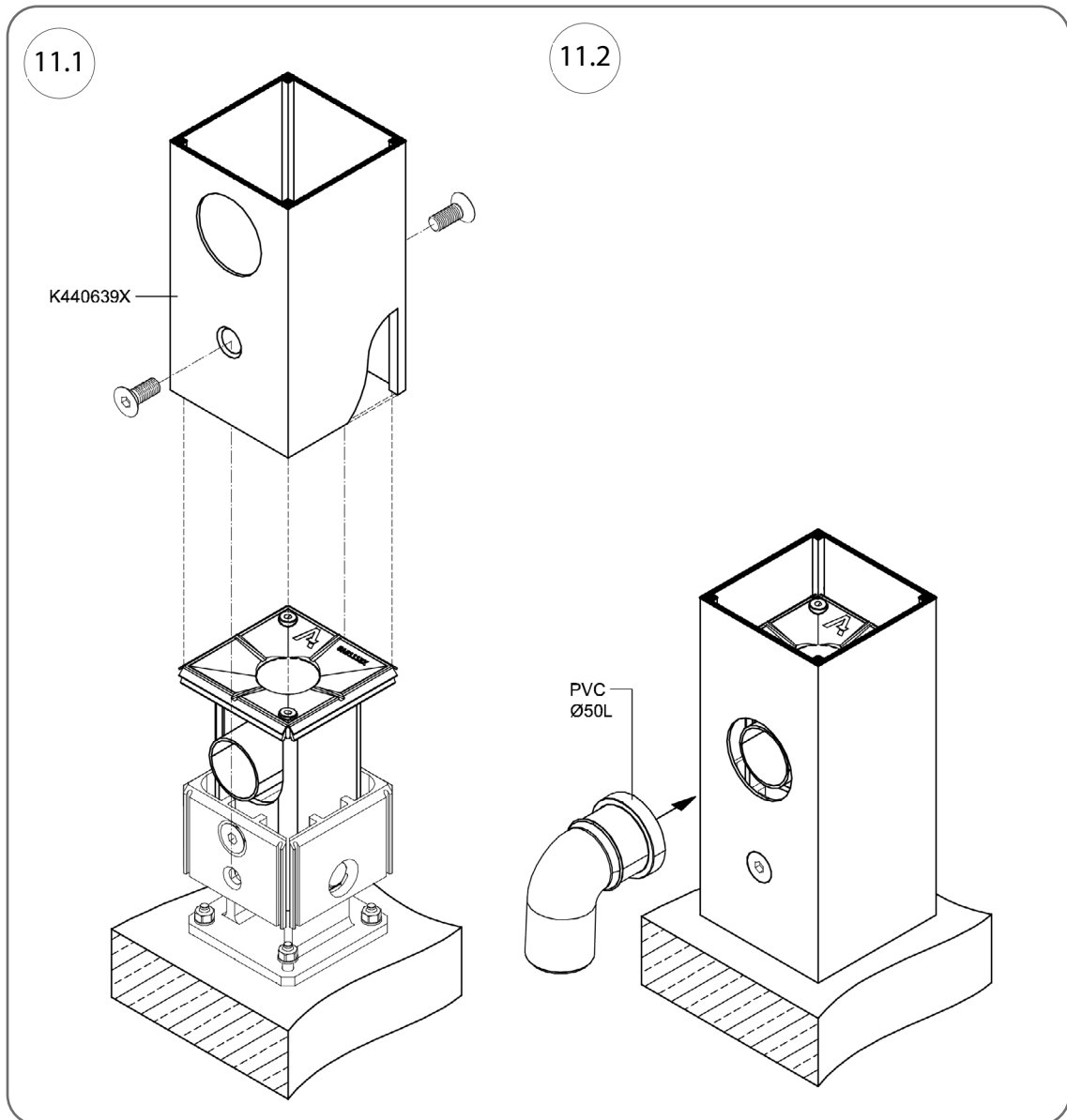


Fig. 11

5.4.3. Fastening brackets and posts with a concealed drainage system (node W1)

1. Remove the 2 M12 x 20 mm screws from bracket no. 8A00848X and remove the bracket insert.
2. Connect the console adapter, item no. 8A01125X, to the console base, item no. A800848X, using 4 screws, item no. 7107A418 (M8 x 40 mm).
3. Plan the mounting locations for the bracket set, check their level; if there are greater differences than assumed in the design, use 2 or 5 mm shims (cat. no. 8A01123X; 8A01124X).
4. Screw the 8A001125X bracket adapter to the base.
5. Remove the two M12 x 25 mm Allen screws from the bracket insert, apply thread sealant (cat. no. 13364618) to them and use them to screw on the two bracket spacers (cat. no. 8A00855X), connect the concealed drainage spout (cat. no. A801113X to the 50 x 250 mm PVC pipe and tighten the clamp A800968X.
7. Cover the upper edge of the bracket with adhesive 13364617 and insert the drainage pipe into the bracket.
8. Connect 2 K440639X pergola posts to the K440641X purlin in a 'gate' configuration.
9. Place the K440639X pergola posts on the brackets and fasten each with 2 Allen screws, cat. no. 7105A616 (M12 x 30 mm) to the bracket, coat the screws with thread sealant, cat. no. 13364618.

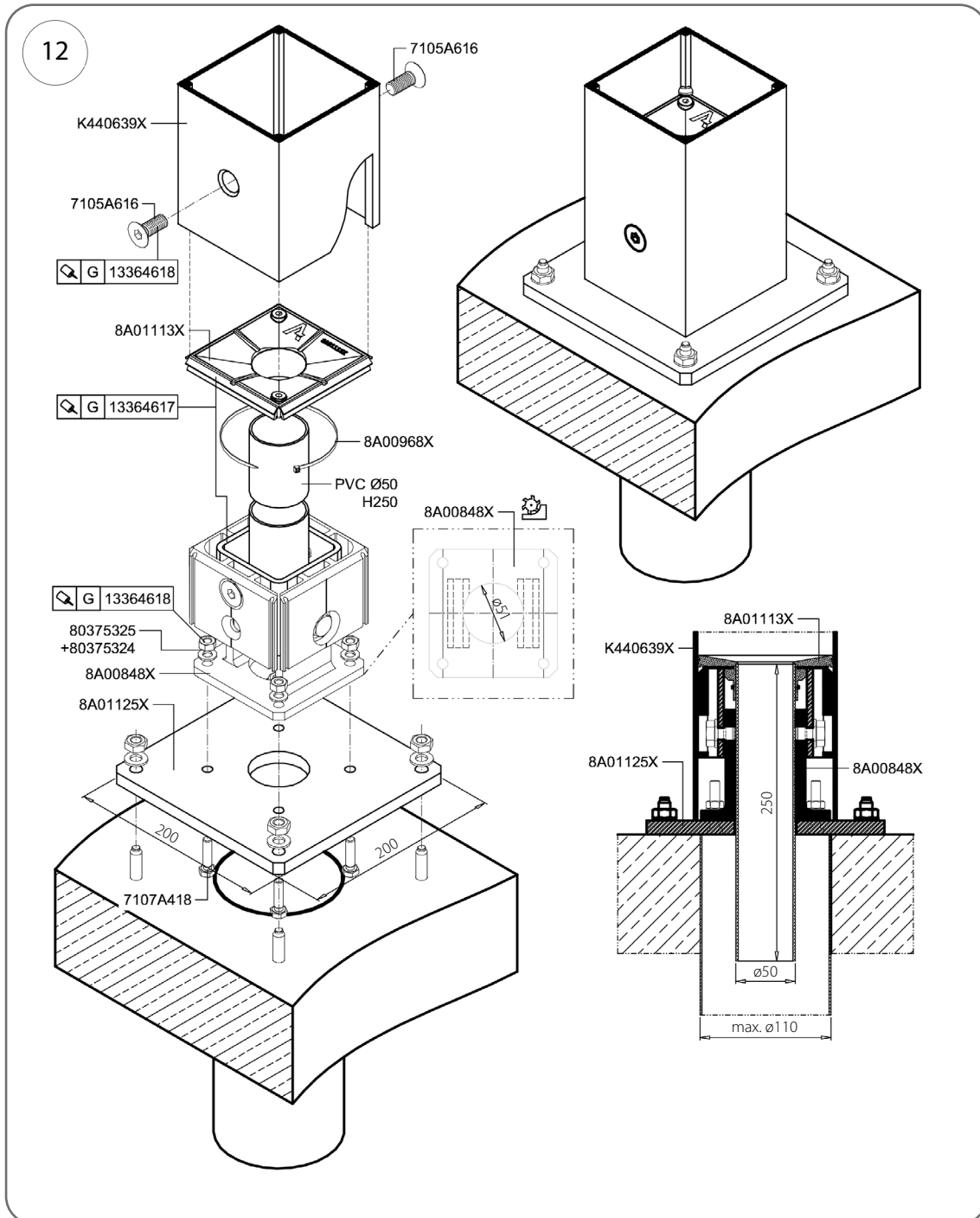


Fig. 12

5.4.4. Fastening brackets and posts without a drainage system (node W3)

1. Remove the 2 M12 x 20 mm screws from bracket no. 8A00848X and remove the bracket insert.
2. Plan the mounting locations for the bracket set, check their level; if there are greater differences than assumed in the design, use 2 or 5 mm shims (cat. no. 8A01123X; 8A01124X).
3. Ensure that the brackets tilt in the same axis.
4. Screw the console base 8A00848X to the foundation with 4 M8 anchors.
5. Replace the bracket insert, securing it with the screws removed earlier.
6. Remove 2 Allen screws, cat. no. 80379975 (M10 x 20 mm), from the console insert, apply thread sealant, cat. no. 13364618, and use them to screw in 2 console spacers, cat. no. 8A00855X.
7. Connect 2 K440639X pergola posts to the K440641X purlin in a 'gate' configuration.
8. Place the K440639X pergola posts on the brackets.

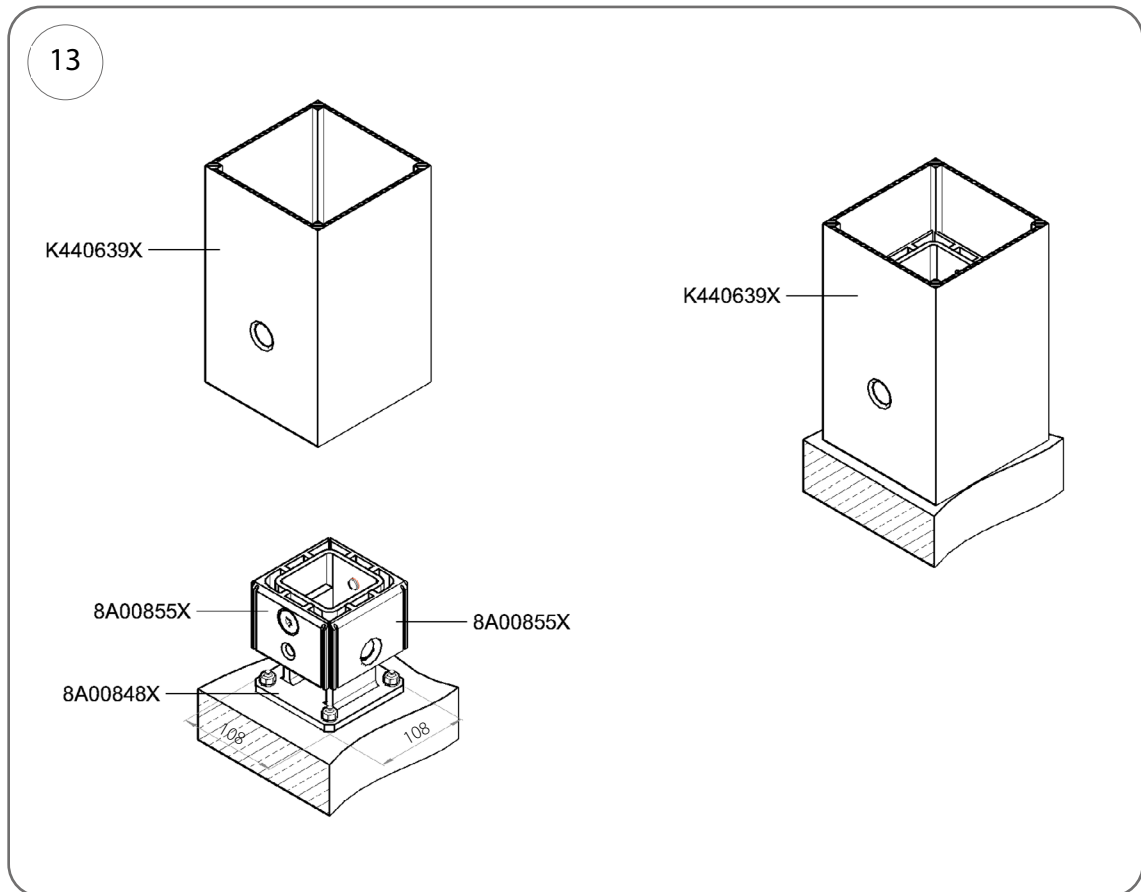


Fig. 13

5.4.5. Mocowanie słupów pośrednich (węzeł W12, W13, W14)

1. Attach the column connector, cat. no. 8A00900X, as shown in Fig. 14.
2. Remove the 2 M12 x 20 mm bolts from console no. 8A00901X and remove the console insert.
3. Screw the console base 8A00901X to the foundation using 2 M8 anchors.
4. Replace the bracket insert, securing it with the screws removed earlier.
5. Remove the 2 Allen screws, cat. no. 80379975 (M10 x 20 mm), from the console insert, coat the screws with thread sealant, cat. no. 13364618, and screw them into the 2 console spacers, cat. no. 8A00855X.
6. Insert the post at an angle into the mounted bracket and gradually straighten it (Fig. 15.1).
7. Screw the K440639X pergola post to the bracket using 2 Allen screws, cat. no. 7105A616 (M12 x 30 mm), coat the screws with thread sealant, cat. no. 13364618 (fig. 15.2).
8. Using 4 M8 x 20 mm Allen screws, cat. no. 7108A412, screw the rafter or purlin profile to the connector, cat. no. 8A00900X, mounted in the post (Fig. 17 and Fig. 18). Coat the screws with thread sealant, cat. no. 13364618.

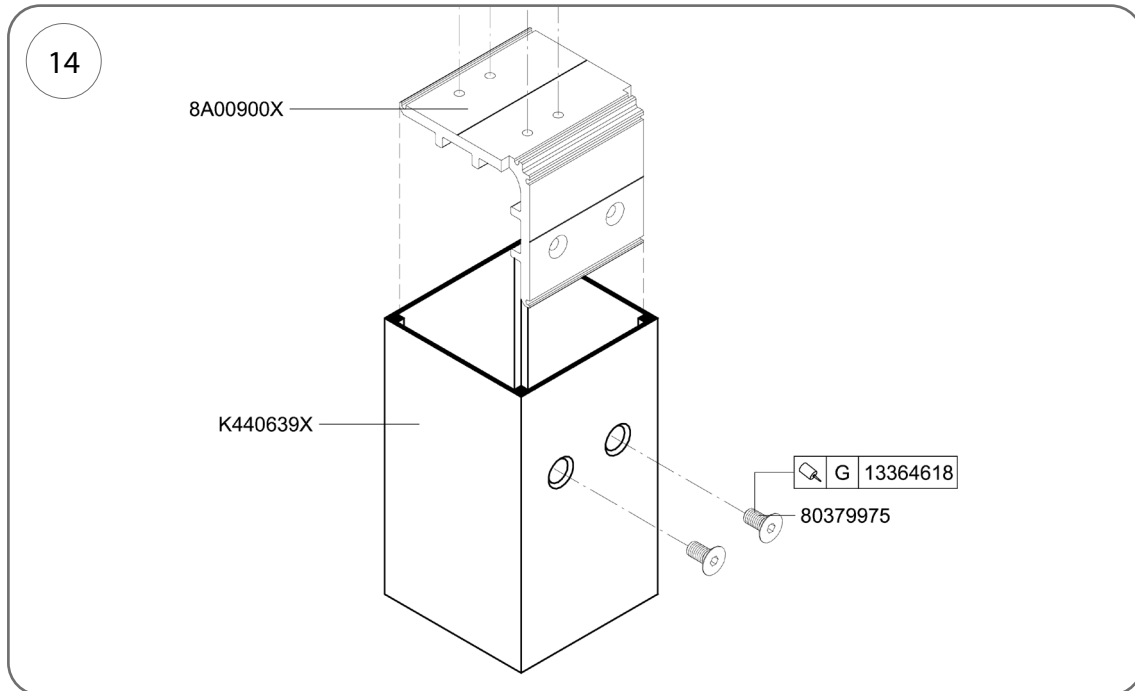


Fig. 14

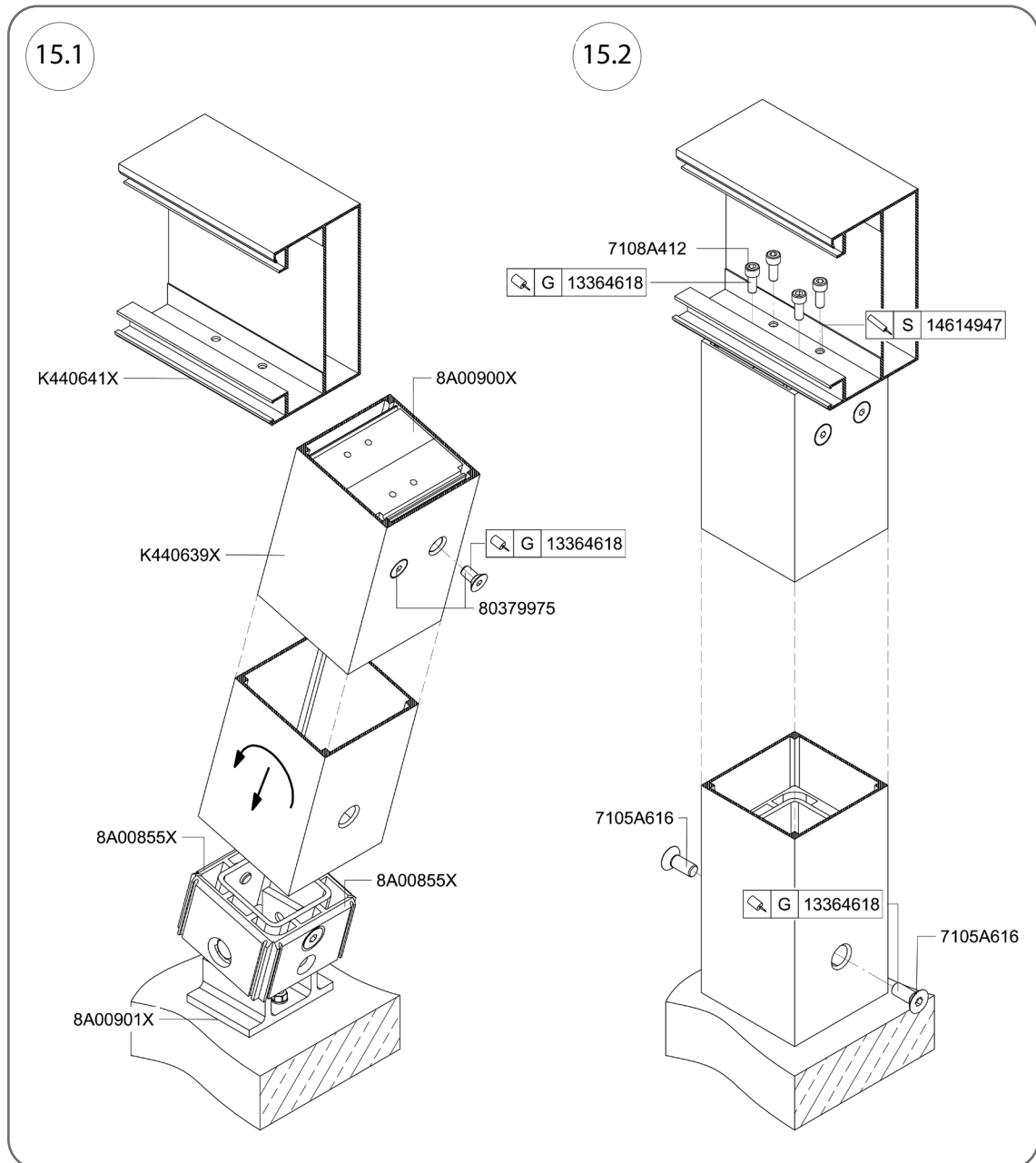


Fig. 15

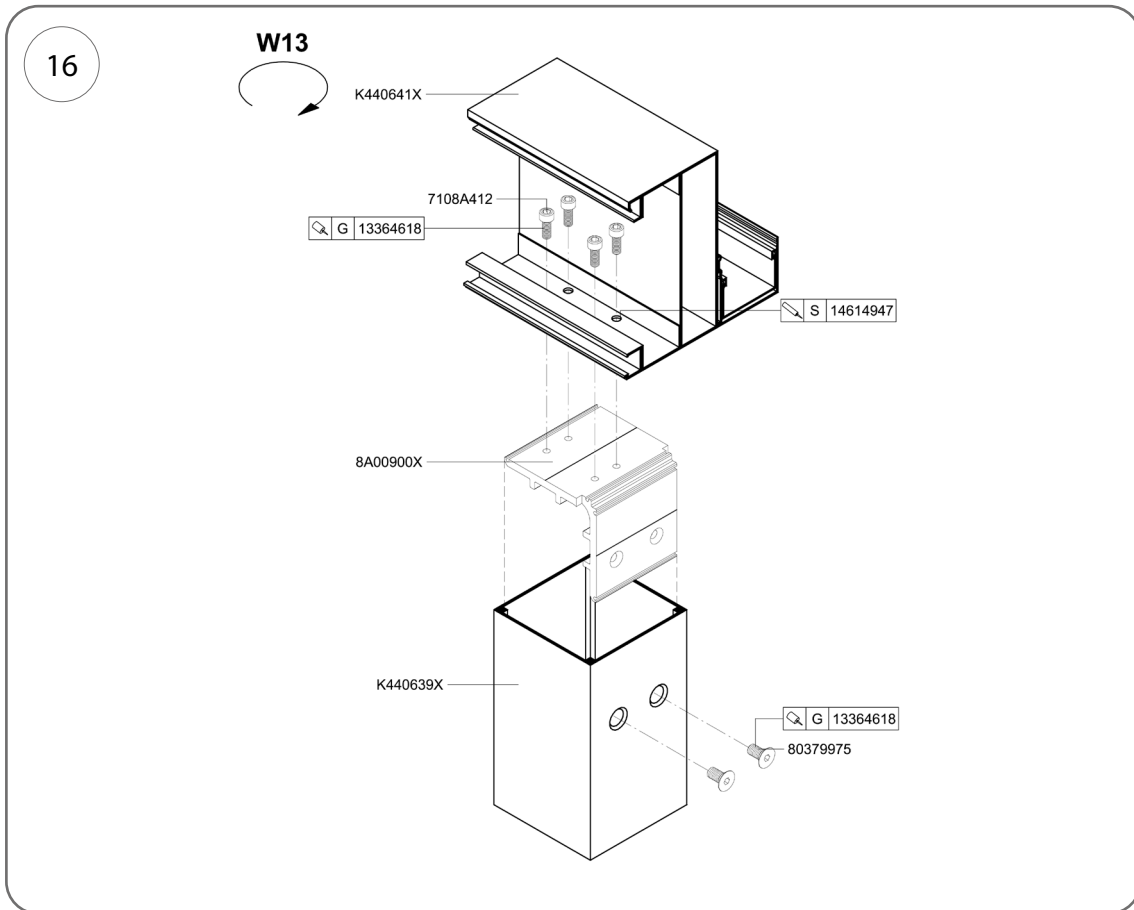


Fig. 16

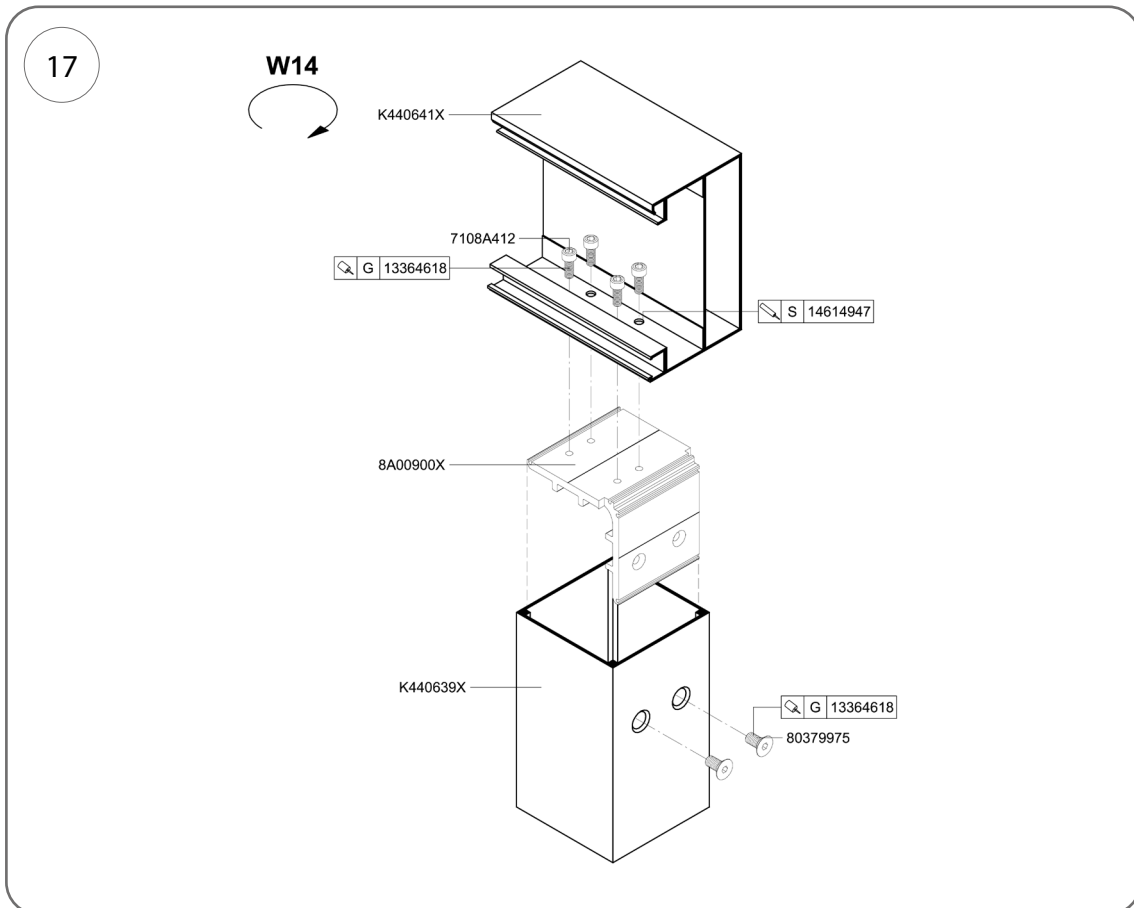


Fig. 17

5.4.6. Fastening purlins to posts (node W2, W4)

1. Insert purlin no. K4400641X into connector 8A00853X (fig. 18.1).
2. Drive 2 pins, cat. no. 8A00854X (o 15 x 100 mm – fig. 18.2), into the prepared holes in the purlin and connector 8A00853X.
3. Insert screws no. 7108A434 (M8 x 120 mm) through the holes in the 8A00854X pins and screw them into the wall of the 8A00850X or 8A00851X column connector (Fig. 18.3).
4. Screw the purlin to the connector 8A00853X using 4 screws cat. no. 7118A512 (M10 x 20 mm) and 10 mm washers cat. no. 80375304, coat the screws with thread sealant cat. no. 1336418 (fig. 18.4).

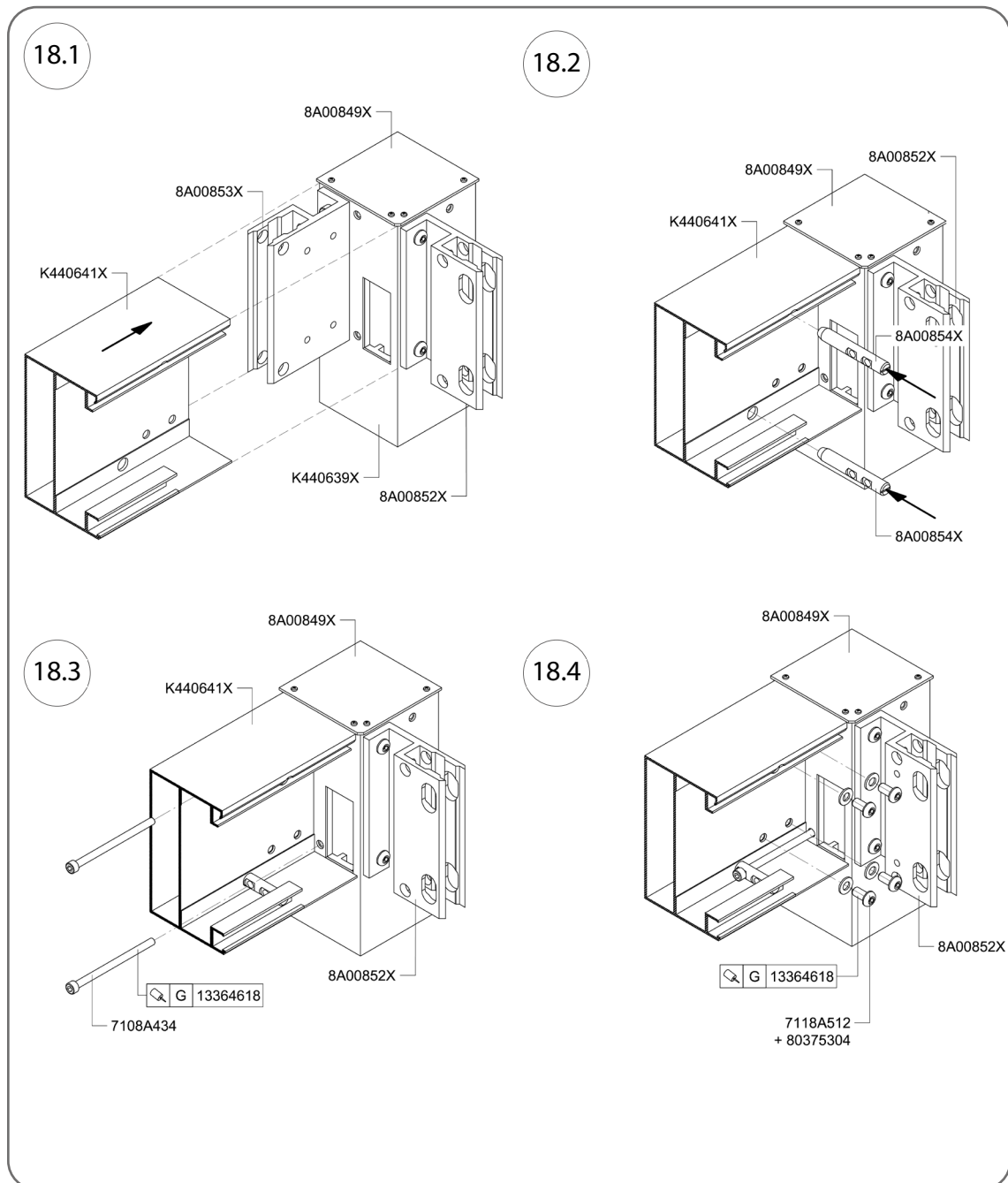


Fig. 18

5.4.7. Fastening rafters to posts (nodes W2, W4)

1. Insert rafter no. K4400641X into connector 8A00852X (fig. 19.1).
2. Drive 2 pins, cat. no. 8A00854X (o 15 x 100 mm – fig. 19.2), into the prepared holes in the purlin and connector 8A00852X.
3. Insert screws no. 7108A434 (M8 x 120 mm) through the holes in the 8A00854X pins and screw them into the wall of the 8A00850X or 8A00851X pole connector (fig. 19.3).
4. Screw the rafter to connector 8A00852X using 4 screws, cat. no. 7118A512 (M10 x 20 mm) and washers, 10 mm, cat. no. 80375304. Coat the screws with thread sealant, cat. no. 1336418 (fig. 19.4).
5. After screwing the entire structure together, press the sleeves 8A01084X into the outer holes of the rafters.

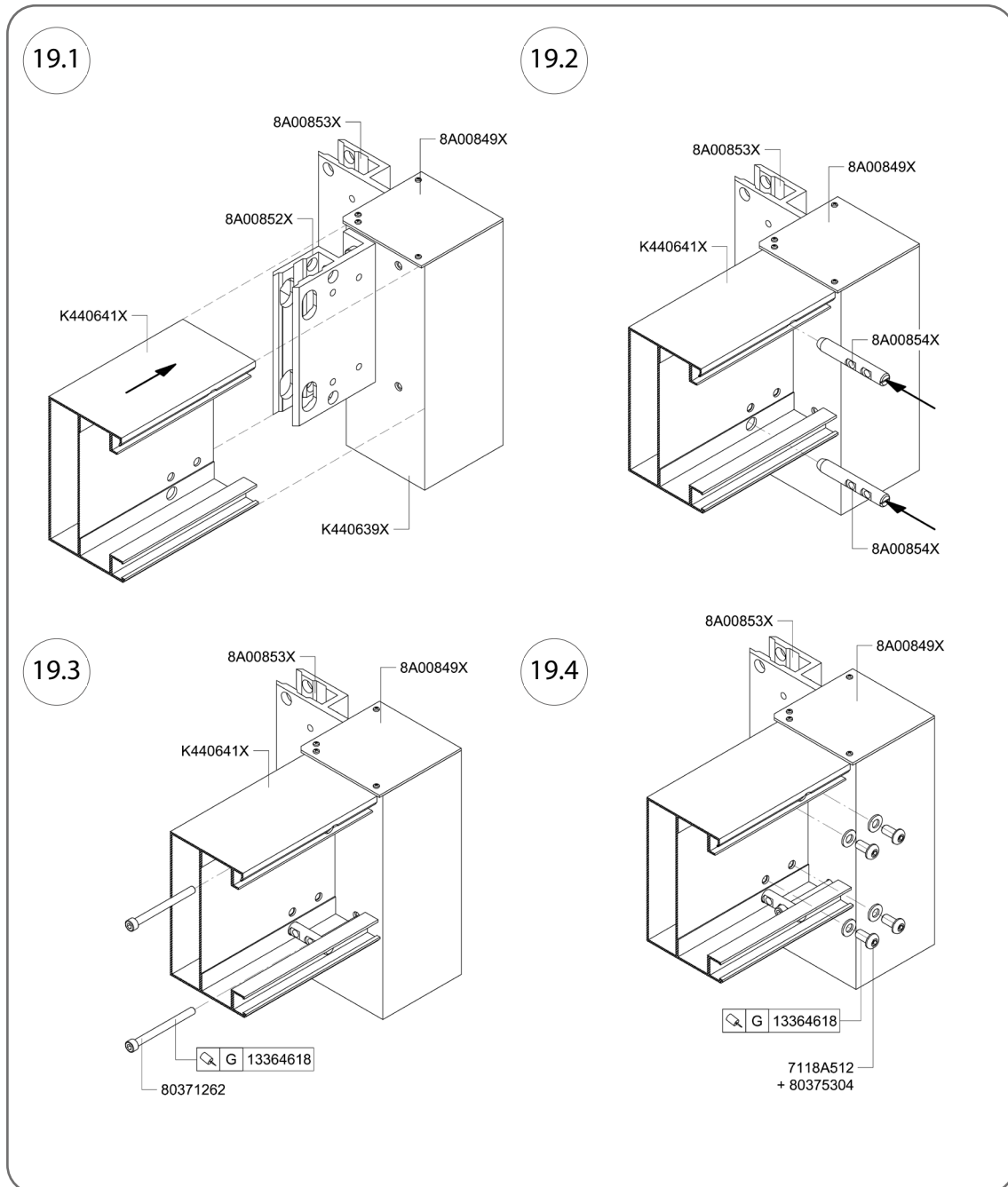


Fig. 19

5.4.8. Final installation of posts with bracket cat. no. 8A00848X

1. Each post, cat. no. K440639X, should be screwed to the bracket with 2 Allen screws, cat. no. 7105A616 (M12 x 30 mm), and the screws should be coated with thread sealant, cat. no. 13364618 (fig. 20).

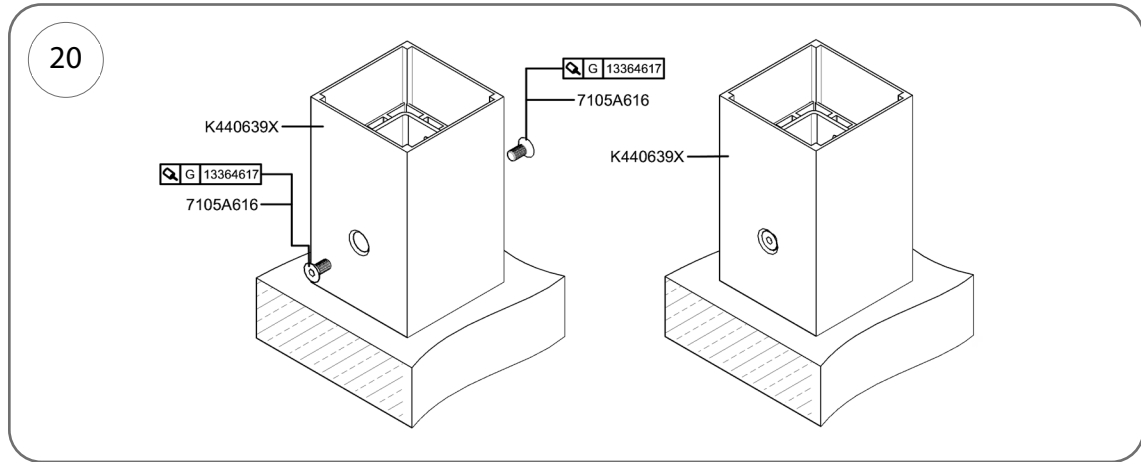


Fig. 20

5.4.9. Installation of gutters (nodes W2, W4)

Two complete gutter assemblies are supplied for installation, consisting of K440650X gutter sections mounted in a gutter housing made of K440651X or K440839X sections.

Depending on the pergola drainage system used:

- two gutter assemblies are terminated with elbows, cat. no. 8A00947X when the roof drainage is provided by 4 posts (fig. 21),
- One gutter assembly is terminated with tees cat. no. 8A01115X (left) or 8A01116X (right), and the other gutter assembly is terminated with elbows 8A01114X when drainage is provided by 2 posts (fig. 22).

1. Using 4.2 x 16 mm screws (cat. no. 87252404), screw the gutter housing to the rafters at 250 mm intervals.
2. In the case of drainage via two posts, connect the ends of the T-pieces to the 8A01114X elbows using a 50 mm diameter PVC pipe – the PVC pipe should be laid in the purlin section chamber.
3. Place and tighten clamp no. 8A00968X on the connection between the PVC pipe and the elbows or tees.
4. After fixing the gutters, seal the entry points of the elbows or tees to the posts and the joints between the gutters and rafters with silicone no. 14614947.
5. Insert the cover plate made of profile K440640X into the purlin profile.
6. From the top of the pergola, press the wedge seal (cat. no. 8G00339X) into the gap between the K440641X purlin and the K440640 cover plate.
7. Attach the pole covers, cat. no. 8A00849X, to the upper ends of the poles using 4 screws, 3.5 x 13 mm, cat. no. 87252303.

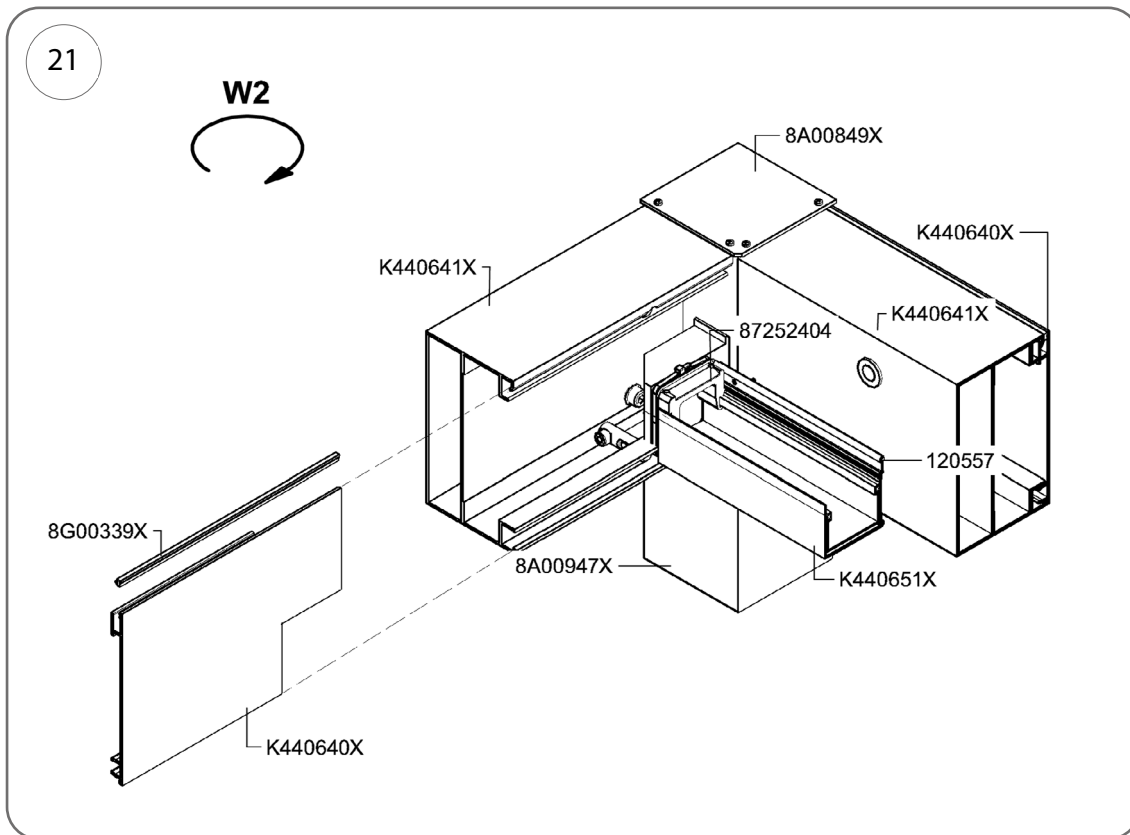


Fig. 21

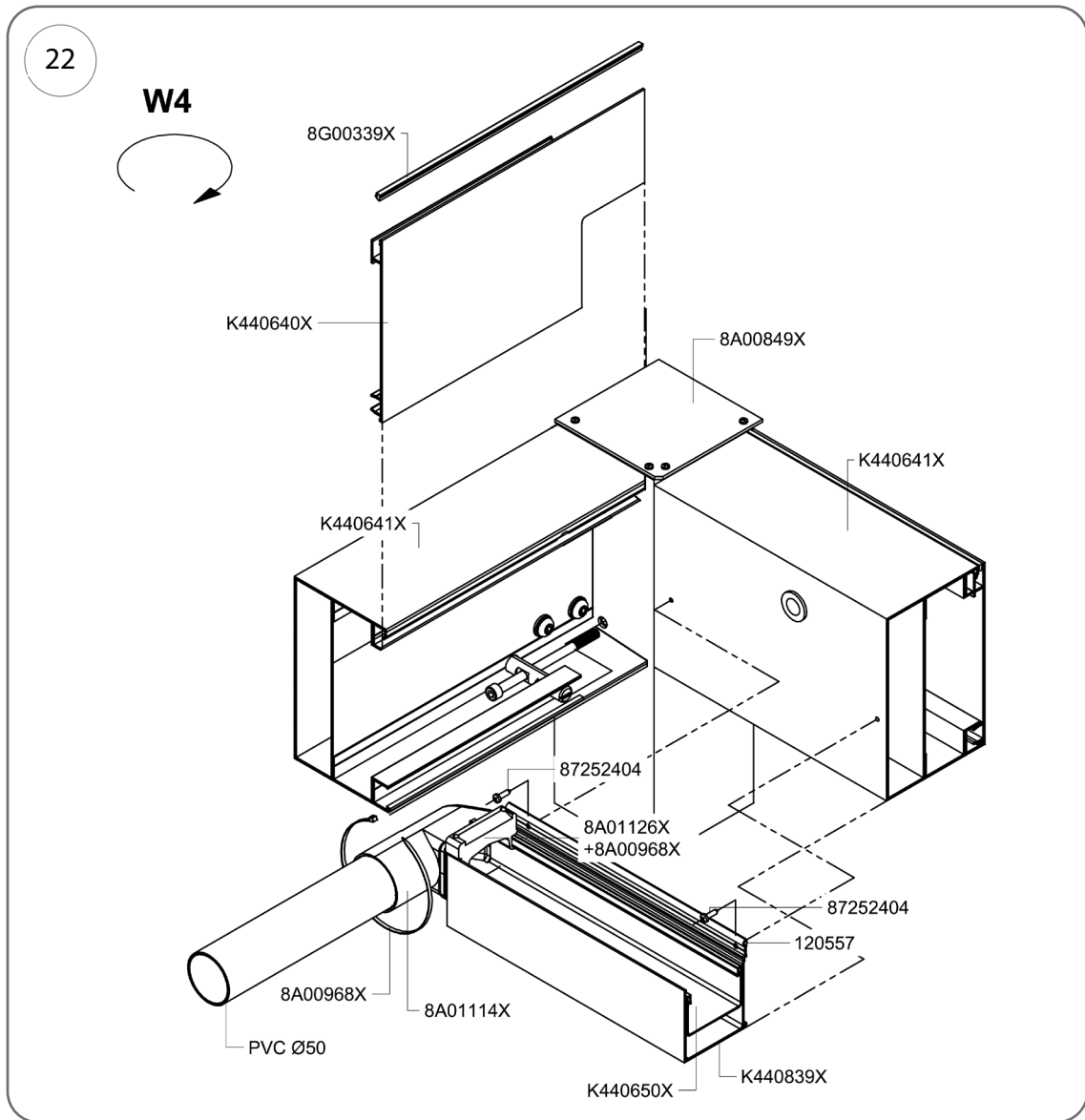


Fig. 22

5.5. Fixing the wall-mounted pergola structure

5.5.1. Fastening brackets and posts with a type A drainage system (node W1)

1. Remove the 2 M12 x 20 mm bolts from bracket cat. no. 8A00848X and remove the bracket insert (Fig. 23.1).
2. Plan the mounting locations for the bracket set, check their level; if there are greater differences than assumed in the design, use 2 or 5 mm shims (cat. no. 8A01123X; 8A01124X).
3. Ensure that the brackets tilt in the same axis.
4. Screw the console base 8A00848X to the foundation with 4 M8 anchors.
5. Refit the bracket insert, securing it with the screws removed earlier; coat the screws with thread sealant, cat. no. 13364618 (Fig. 23.2)
6. Remove the 2 M12 x 25 mm Allen screws from the bracket insert, apply thread sealant (cat. no. 13364618) to them and use them to secure the 2 bracket spacers (cat. no. 8A00855X) (Fig. 23.3).
7. Insert a drainage spout (cat. no. 8A00822X) into each post, and press a drainage hole plug (cat. no. 8A00821X) into the post's drainage hole (Fig. 24.1).
8. Connect 2 K440639X pergola posts to the K440641X purlin in a 'gate' configuration.
9. Place the K440639X pergola posts onto the brackets (Fig. 24.2).

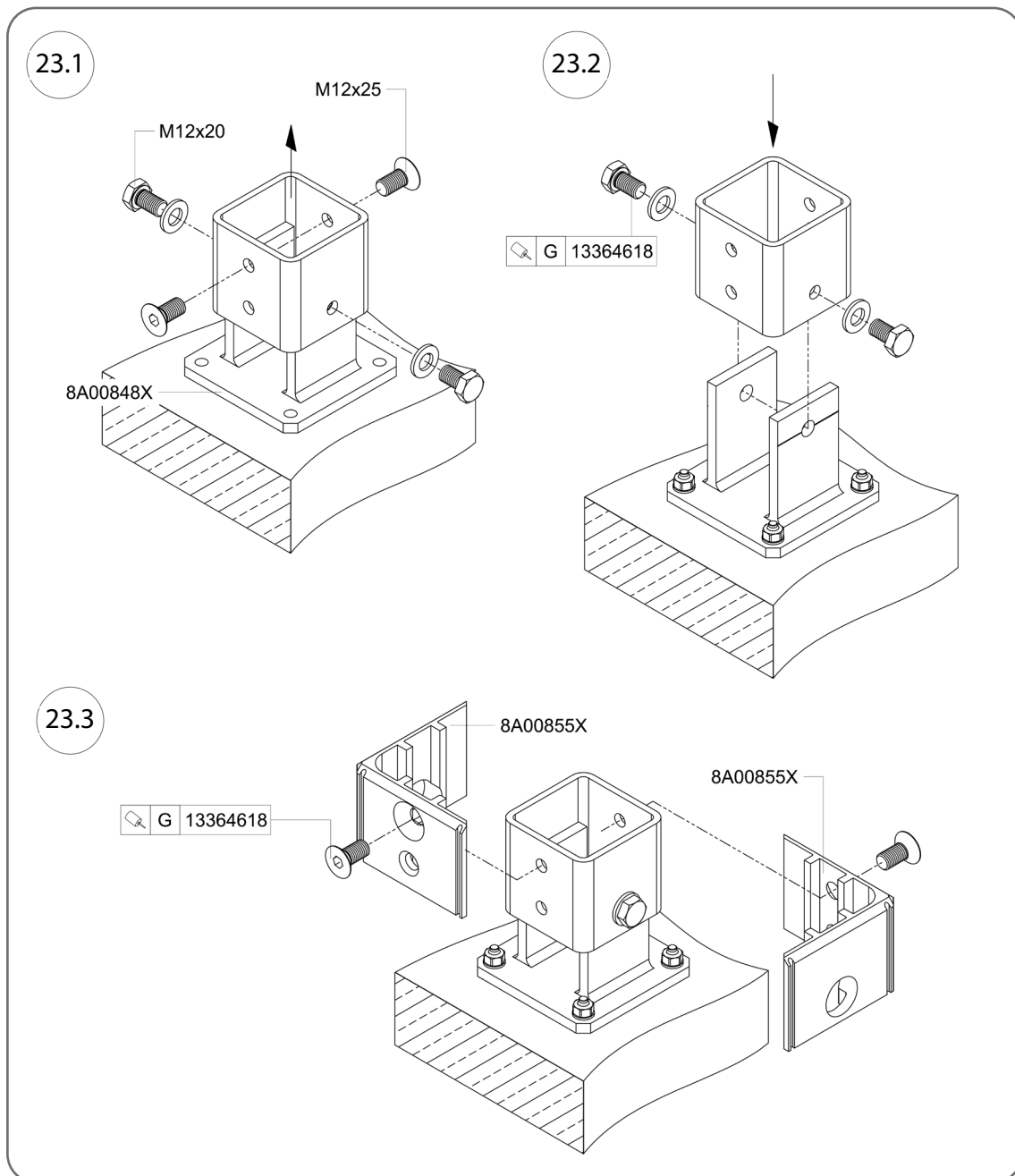


Fig. 23

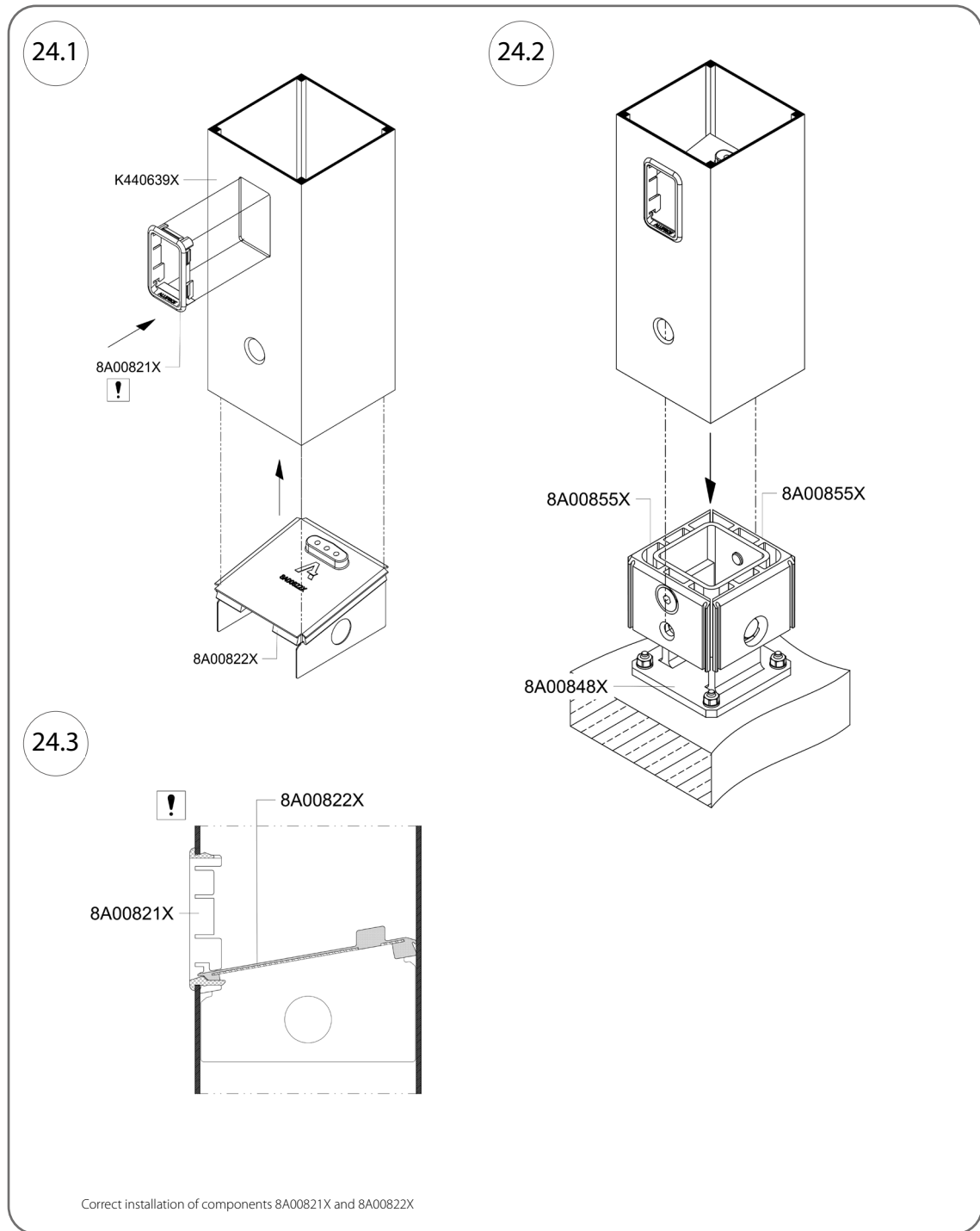


Fig. 24

5.5.2. Fastening brackets and posts with drainage system type B (node W1)

1. Remove the 2 M12 x 20 mm bolts from bracket Cat. No. 8A00848X and remove the bracket insert (Fig. 25.1).
2. Plan the mounting locations for the bracket set, check their level; if there are greater differences than assumed in the design, use 2 or 5 mm shims (cat. no. 8A01123X; 8A01124X).
3. Ensure that the brackets tilt in the same axis.
4. Screw the console base 8A00848X to the foundation with 4 M8 anchors.
5. In place of the removed insert, secure the console insert (Cat. No. 8A01232X) with a drainage hole using M12 x 20 mm hexagon head bolts (Fig. 25.2).
6. Remove the 2 M12 x 25 mm Allen screws from the bracket insert, apply thread sealant (Cat. No. 13364618) to them and use them to screw on the 2 bracket spacers (Cat. No. 8A00855X) (Fig. 25.3).
7. Rivet the elbow spacer (cat. no. 8A01231) to the 50 mm diameter stainless steel elbow (cat. no. 8A01229X), then connect the elbow to the concealed drainage outlet (cat. no. 8A01113X) and secure the connection with a clamp (cat. no. 8A00968X) (Fig. 26.1).
8. Apply adhesive (cat. no. 13364617) to the edge of the insert 8A01232X and insert the elbow together with the drain spout into the console (Fig. 26.2), using a 4.2 mm diameter x 13 mm screw, cat. no. 87252503, screw the elbow spacer, cat. no. 8A01231X, through the wall of the 8A01232X console insert (Fig. 26.3).
9. Connect 2 K440639X pergola posts to the K440641X purlin in a 'gate' configuration.
10. Fit the K440639X pergola posts onto the brackets (Fig. 27.1).
11. Press the 50 mm diameter PVC elbow onto the elbow (cat. no. 8A01229X) (Fig. 27.2).

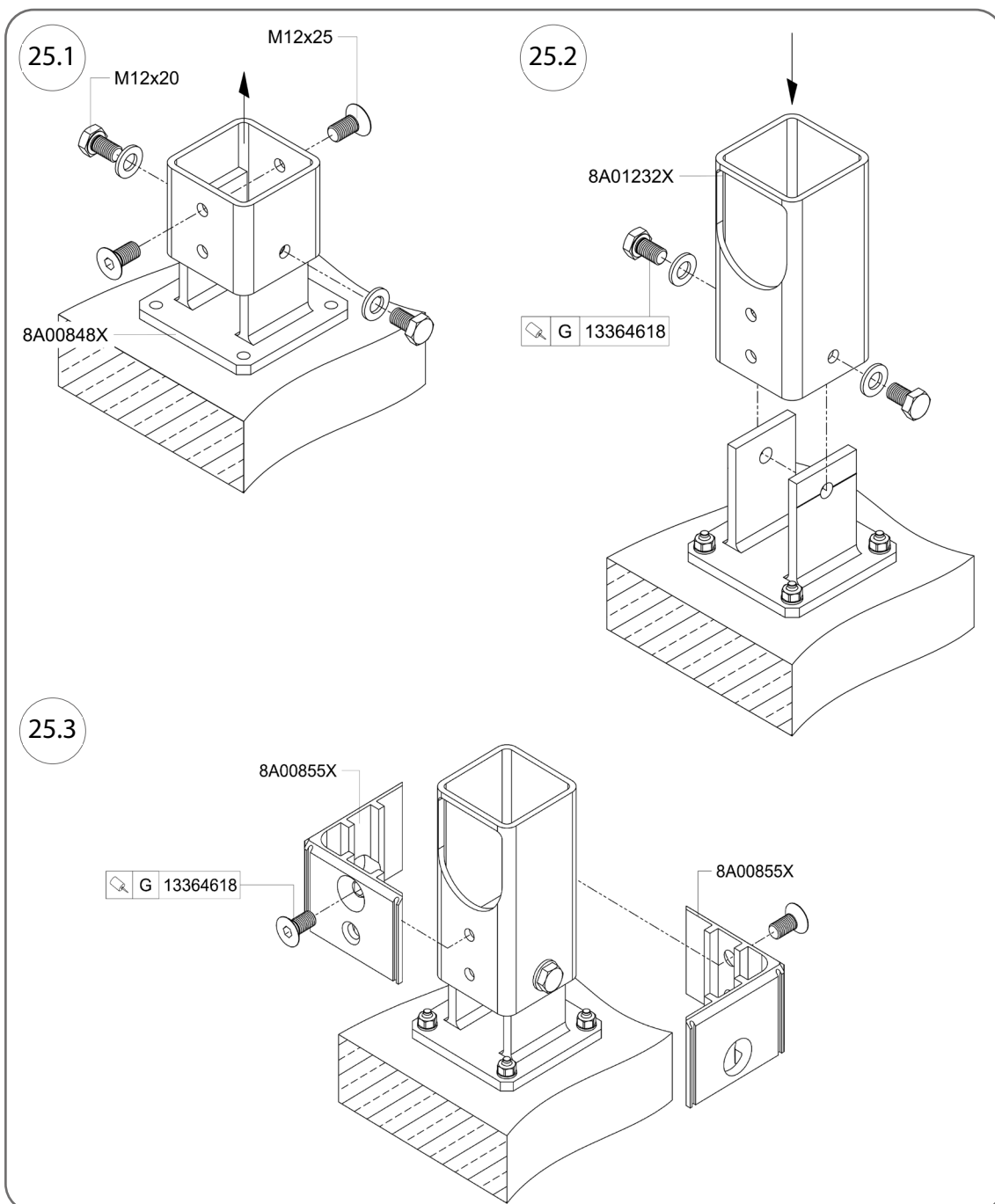


Fig. 25

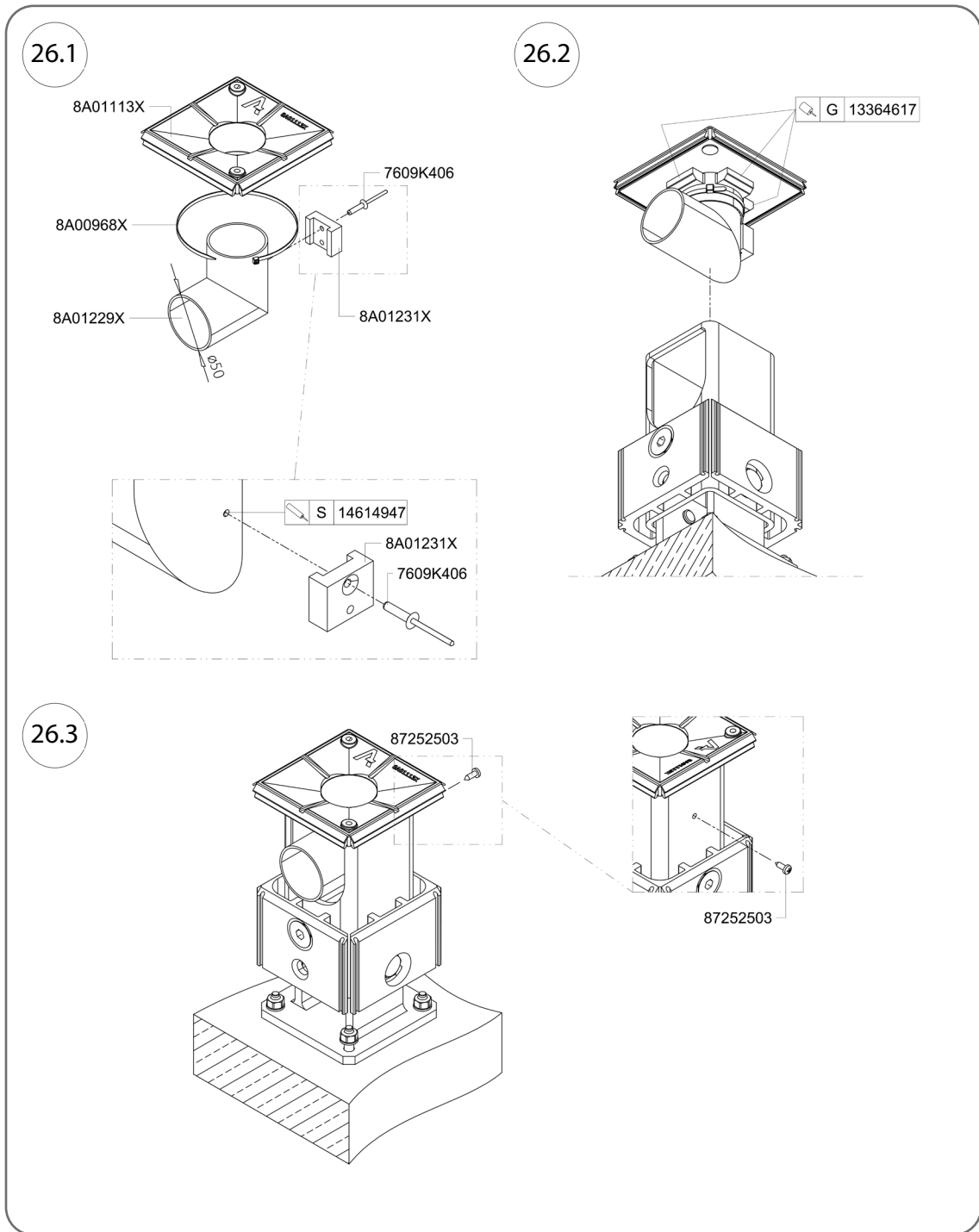


Fig. 26

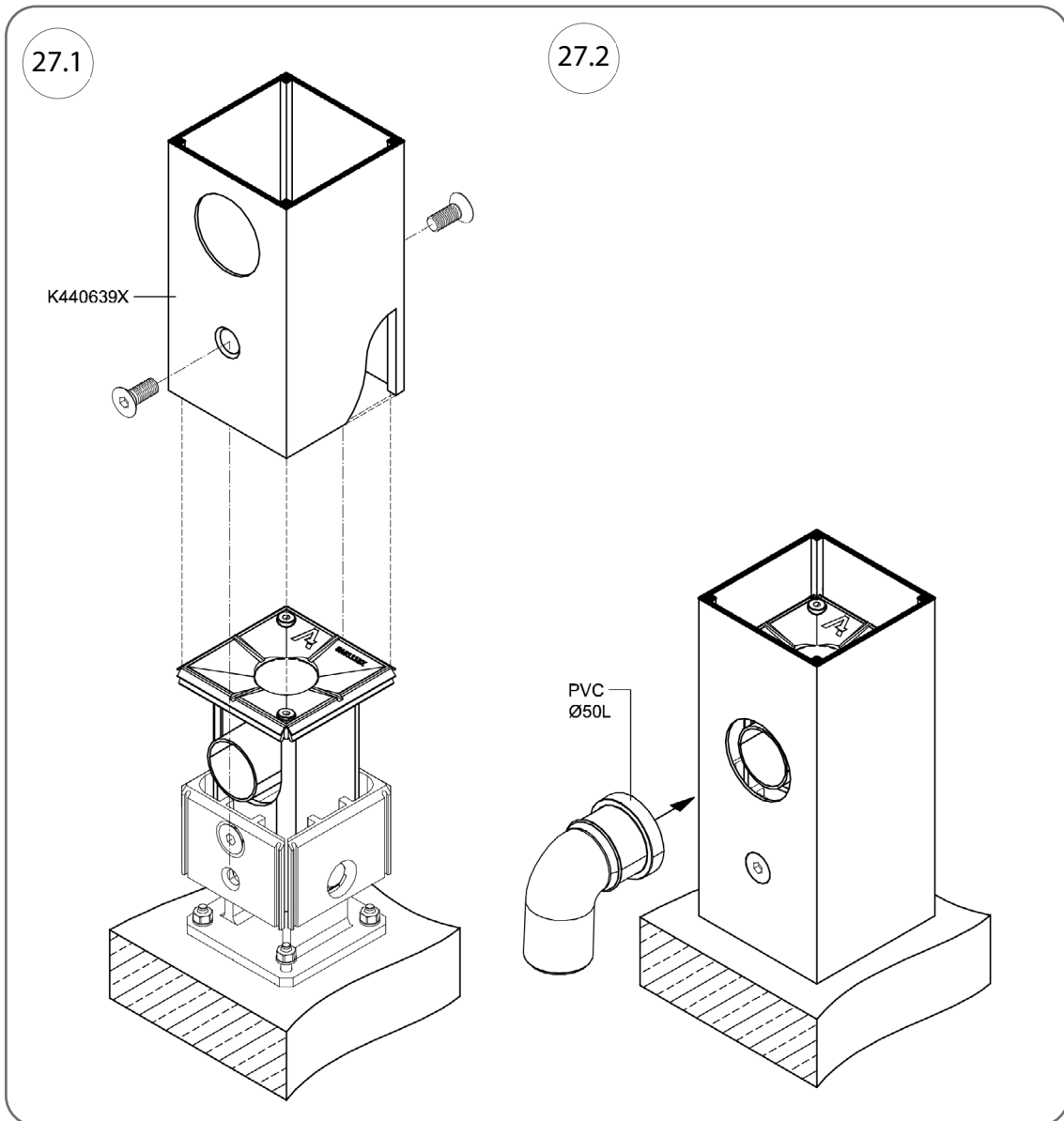


Fig. 27

5.5.3. Fastening brackets and posts with a concealed drainage system (node W1)

1. Remove the 2 M12 x 20 mm screws from bracket no. 8A00848X and remove the bracket insert.
2. Connect the console adapter, item no. 8A01125X, to the console base, item no. A800848X, using 4 screws, item no. 7107A418 (M8 x 40 mm).
3. Plan the mounting locations for the bracket set, check their level; if there are greater differences than assumed in the design, use 2 or 5 mm shims (cat. no. 8A01123X; 8A01124X).
4. Screw the 8A01125X bracket adapter to the base.
5. Remove the two M12 x 25 mm Allen screws from the bracket insert, apply thread sealant (cat. no. 13364618) to them and use them to screw on the two bracket spacers (cat. no. 8A00855X), connect the concealed drainage spout (cat. no. A801113X to the 50 x 250 mm PVC pipe and tighten the clamp A0800968X.
7. Cover the upper edge of the bracket with adhesive 13364617 and insert the drainage pipe into the bracket.
8. Connect 2 K440639X pergola posts to the K440641X purlin in a 'gate' configuration.
9. Place the K440639X pergola posts on the brackets and fasten each with 2 Allen screws, cat. no. 7105A616 (M12 x 30 mm) to the bracket, coat the screws with thread sealant, cat. no. 13364618.

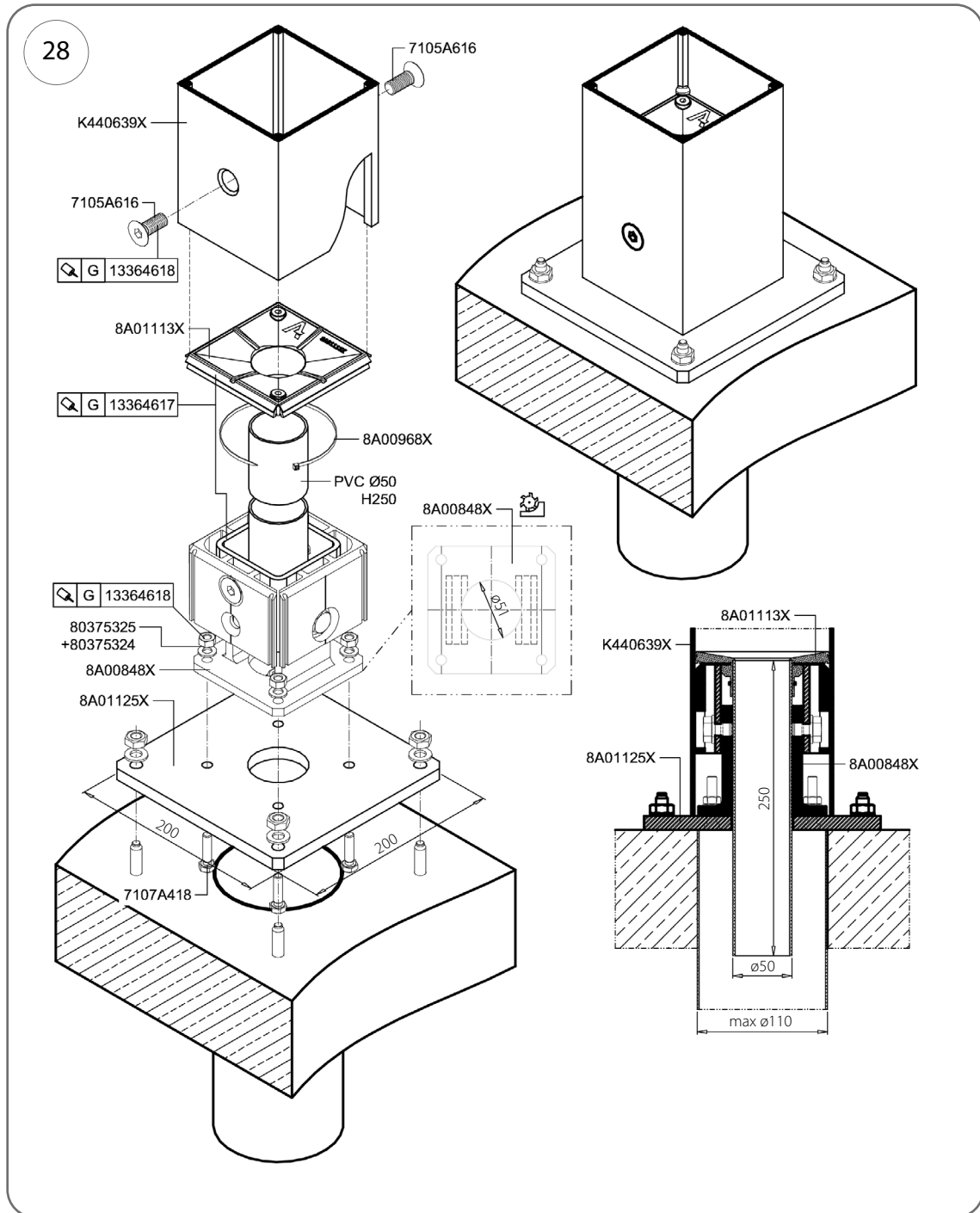


Fig. 28

5.5.4. Fastening brackets and posts without a drainage system (node W3)

1. Remove the 2 M12 x 20 mm screws from bracket no. 8A00848X and remove the bracket insert.
2. Plan the mounting locations for the bracket set, check their level; if there are greater differences than assumed in the design, use 2 or 5 mm shims (cat. no. 8A01123X; 8A01124X).
3. Ensure that the brackets tilt in the same axis.
4. Screw the console base 8A00848X to the foundation with 4 M8 anchors.
5. Replace the bracket insert, securing it with the screws removed earlier.
6. Remove 2 Allen screws, cat. no. 80379975 (M10 x 20 mm), from the console insert, apply thread sealant, cat. no. 13364618, and use them to screw in 2 console spacers, cat. no. 8A00855X.
7. Connect 2 K440639X pergola posts to the K440641X purlin in a 'gate' configuration.
8. Place the K440639X pergola posts on the brackets.

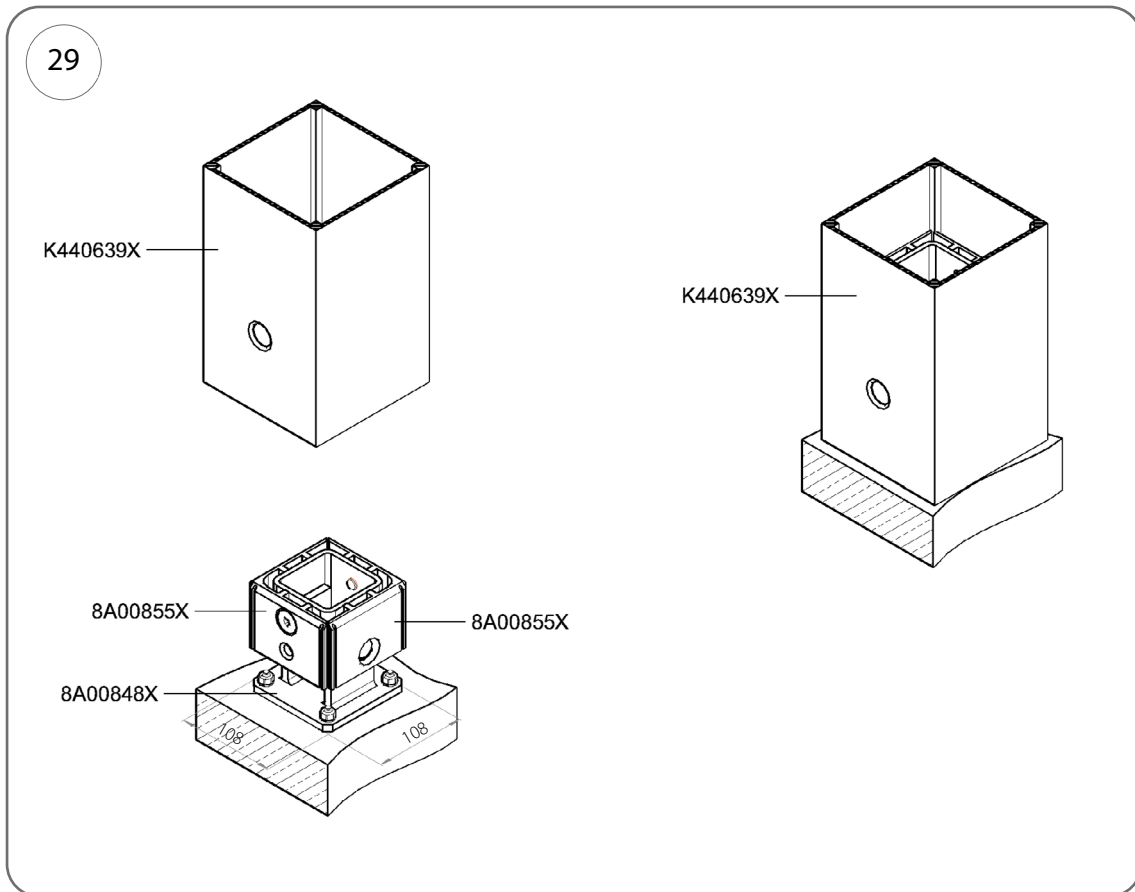


Fig. 29

5.5.5. Fastening purlins to posts (node W2, W4)

1. Insert purlin no. K4400641X into connector 8A00853X (Fig. 30.1).
2. Drive 2 pins (cat. no. 8A00854X, o 15 x 100 mm – Fig. 30.2) into the prepared holes in the purlin and connector 8A00853X.
3. Pass bolts, cat. no. 7108A434 (M8 x 120 mm), through the holes in the pins 8A00854X and screw them into the wall of the post connector 8A00850X or 8A00851X (Fig. 30.3)
4. Screw the purlin to the connector 8A00853X using 4 screws Cat. No. 7118A512 (M10 x 20 mm) and washers o 10 mm Cat. No. 80375304; coat the screws with thread sealant Cat. No. 1336418 (Fig. 30.4).

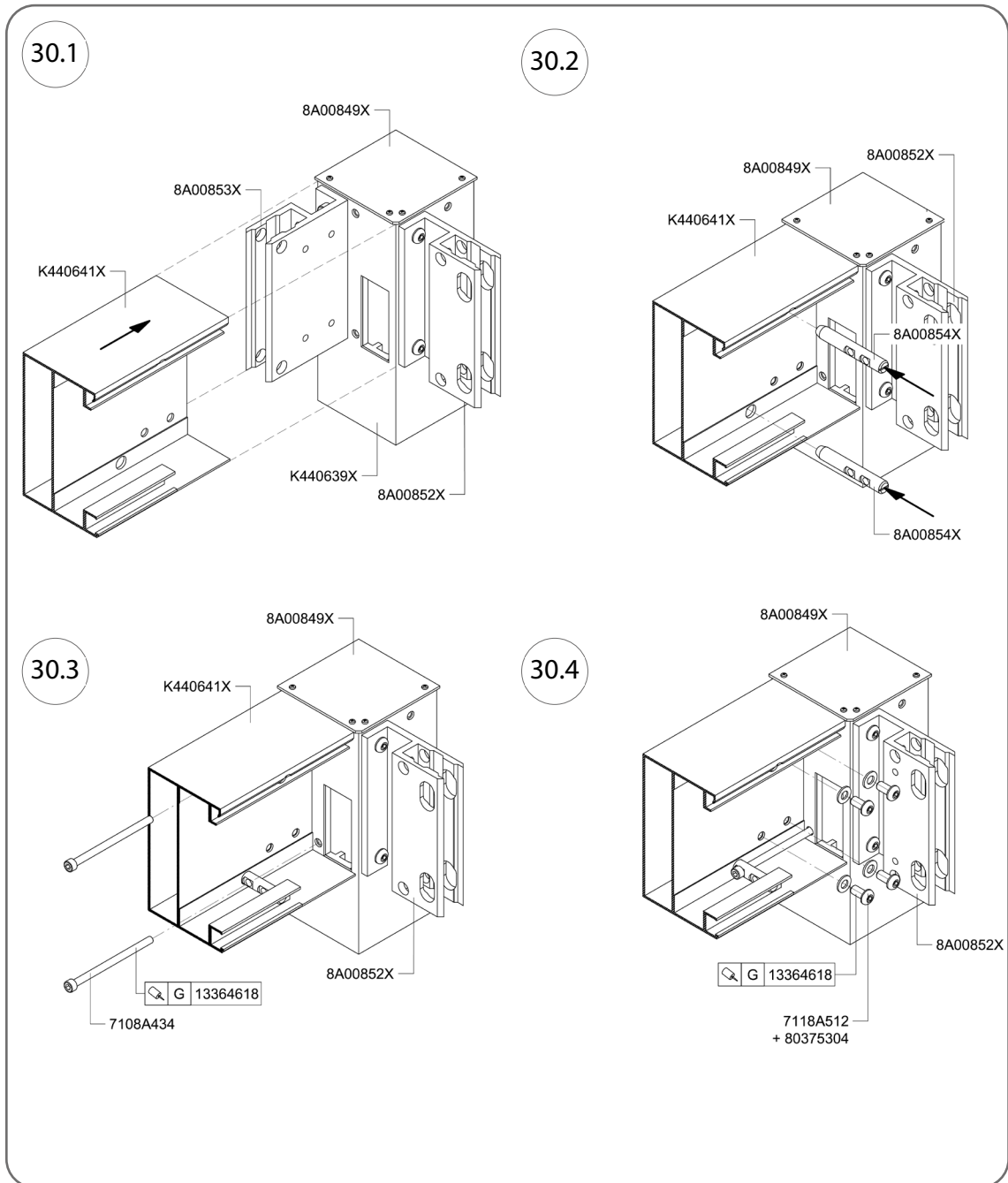


Fig. 30

5.5.6. Fastening rafters to posts (nodes W2, W4)

1. Insert rafter cat. no. K4400641X into connector 8A00852X (Fig. 31.1).
2. Drive 2 pins, cat. no. 8A00854X (o 15 x 100 mm – Fig. 31.2), into the prepared holes in the purlin and connector 8A00852X.
3. Pass bolts, cat. no. 7108A434 (M8 x 120 mm), through the holes in the pins 8A00854X and screw them into the wall of the post connector 8A00850X or 8A00851X (Fig. 30.3)
4. Screw the rafter to connector 8A00852X using 4 bolts, cat. no. 7118A512 (M10 x 20 mm) and washers, o 10 mm, cat. no. 80375304; coat the bolts with thread sealant, cat. no. 1336418 (Fig. 31.4).
5. After screwing the entire structure together, press the sleeves 8A01084X into the outer holes of the rafters.

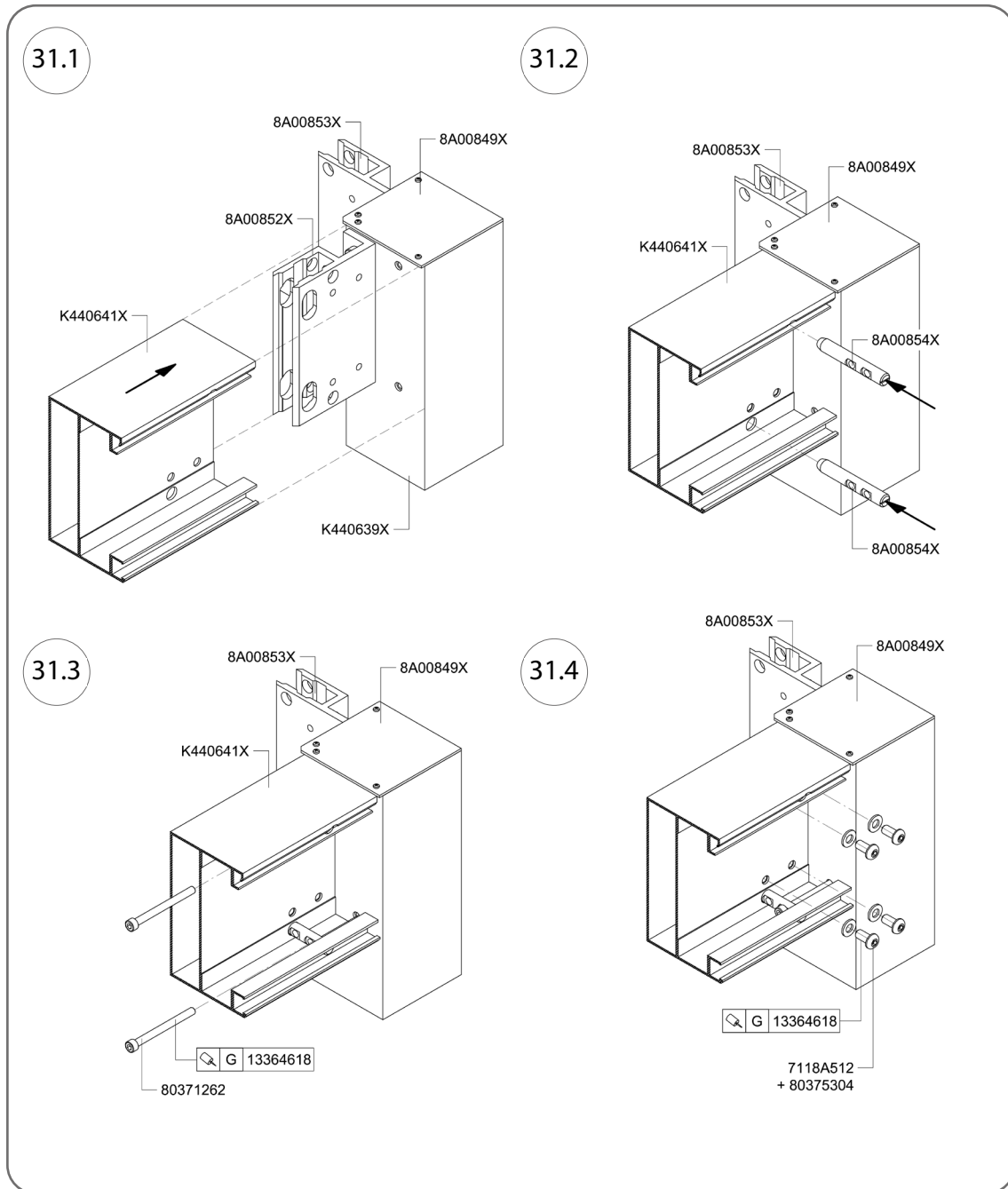


Fig. 31

5.5.7. Final installation of posts with bracket cat. no. 8A00848X

1. Each post, cat. no. K440639X, should be screwed to the bracket with 2 Allen screws, cat. no. 7105A616 (M12 x 30 mm), and the screws should be coated with thread sealant, cat. no. 13364618 (fig. 20).

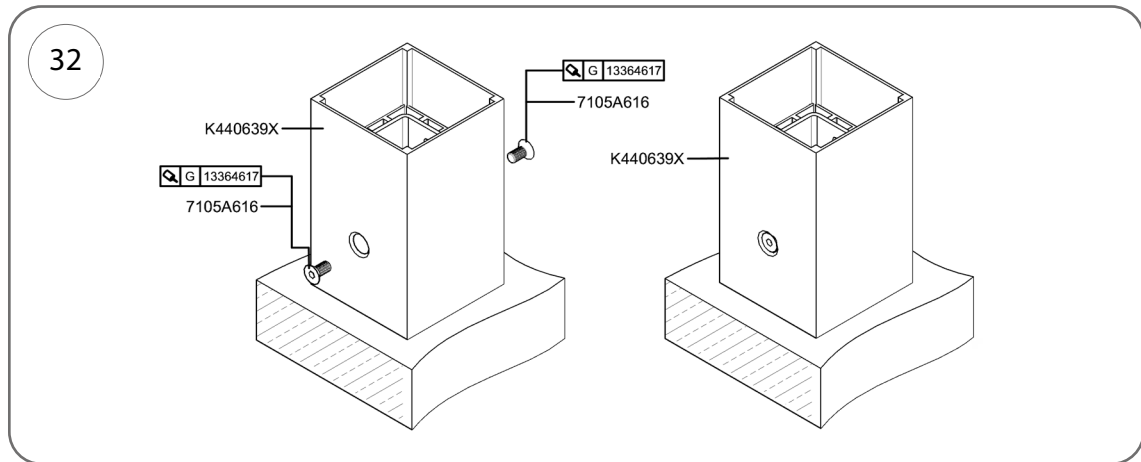


Fig. 32

5.5.8. Installation of rafters to the wall using bracket 8A01132X (node W5)

1. Pre-screw the small bracket, cat. no. 8A01132X to the bracket plate 8A01135X using two M10 x 20 mm screws, cat. no. 7118A512, and an M10 x 25 mm screw, cat. no. 7811L214, with a knurled washer 8A01134X.
2. Fit the arm of bracket 8A01132X onto the ends of the M12 ring bolts mounted in the wall and secure using M12 washers and nuts – the position can be adjusted by ± 12.5 mm relative to the central mounting of the bolt in the bracket.
3. After levelling the rafters and purlins, tighten the nuts on the bolt anchors and then tighten the bolts connecting the 8A01132X bracket to the 8A01135X bracket plate – at the connection between the plate and the bracket, adjustment is possible towards and away from the wall by ± 20 mm.

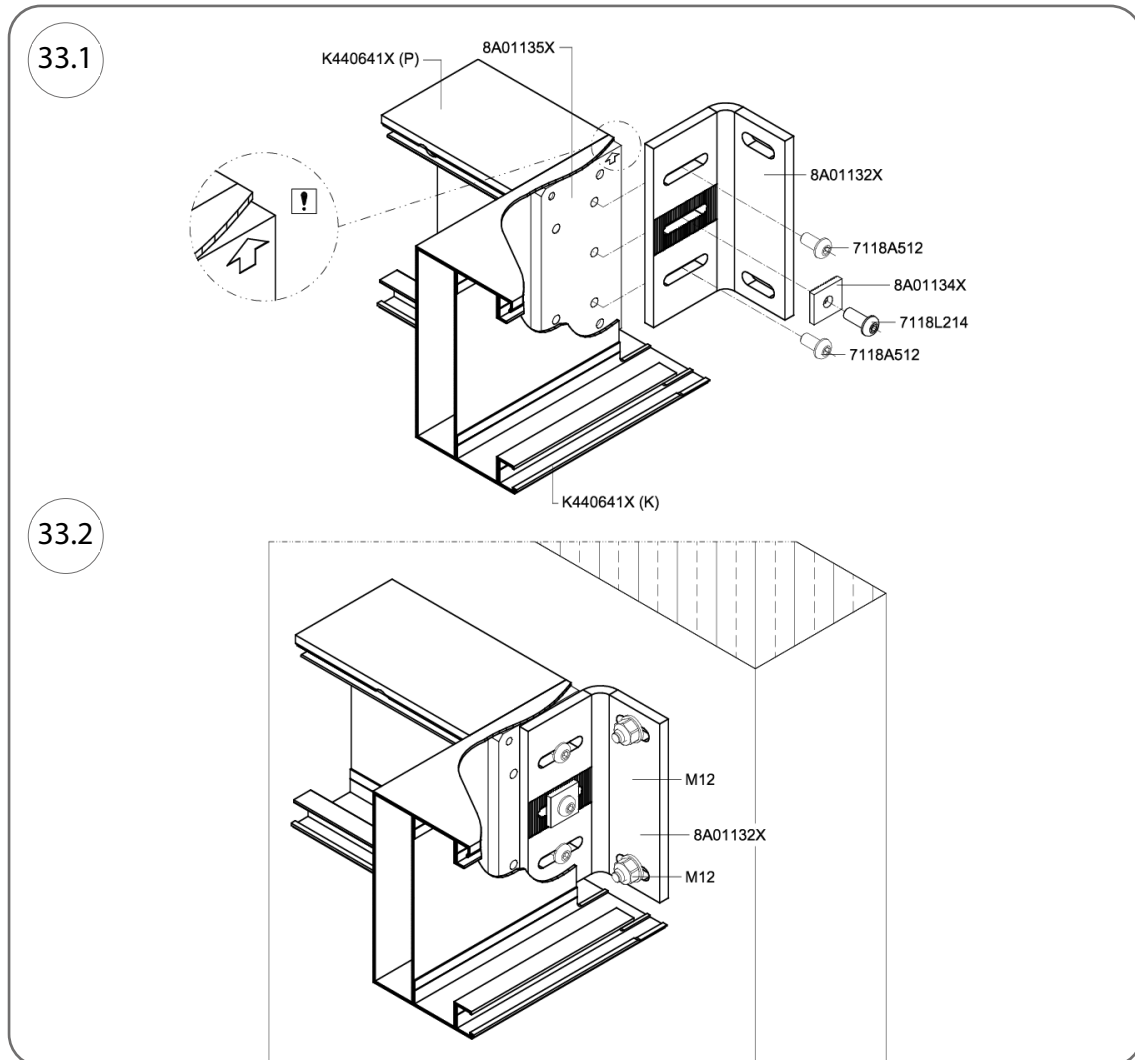


Fig. 33

5.5.9. Installation of rafters to the wall using bracket 8A01133X (joint W6)

1. Use washer cat. no. 8A01233X to separate the contact surface between the bracket plate 8A01137X and the bracket 8A01133X.
2. Pass 2 M10 x 45 mm bolts with washers (cat. no. 80375304) through the holes in the bracket plate, the bracket washer and the bracket, and on the opposite side of the bracket, secure the nuts (cat. no. 80375305) with washers onto the bolts.
3. Insert an M10 x 45 mm bolt together with the adjustment plate (cat. no. 80199019) into the central hole of the bracket plate and, on the opposite side of the bracket, secure the nut (cat. no. 80375305) together with the washer.
4. Fit the 8A01133X bracket arm onto the ends of the M12 ring bolts mounted in the wall and secure using M12 washers and nuts – the position can be adjusted by ± 12.5 mm relative to the central mounting of the bolt in the bracket.
5. After levelling the rafters and purlins, tighten the nuts on the bolt anchors and then tighten the bolts connecting bracket 8A01133X to bracket plate 8A01137X – at the connection between the plate and the bracket, adjustment is possible towards and away from the wall by ± 20 mm.

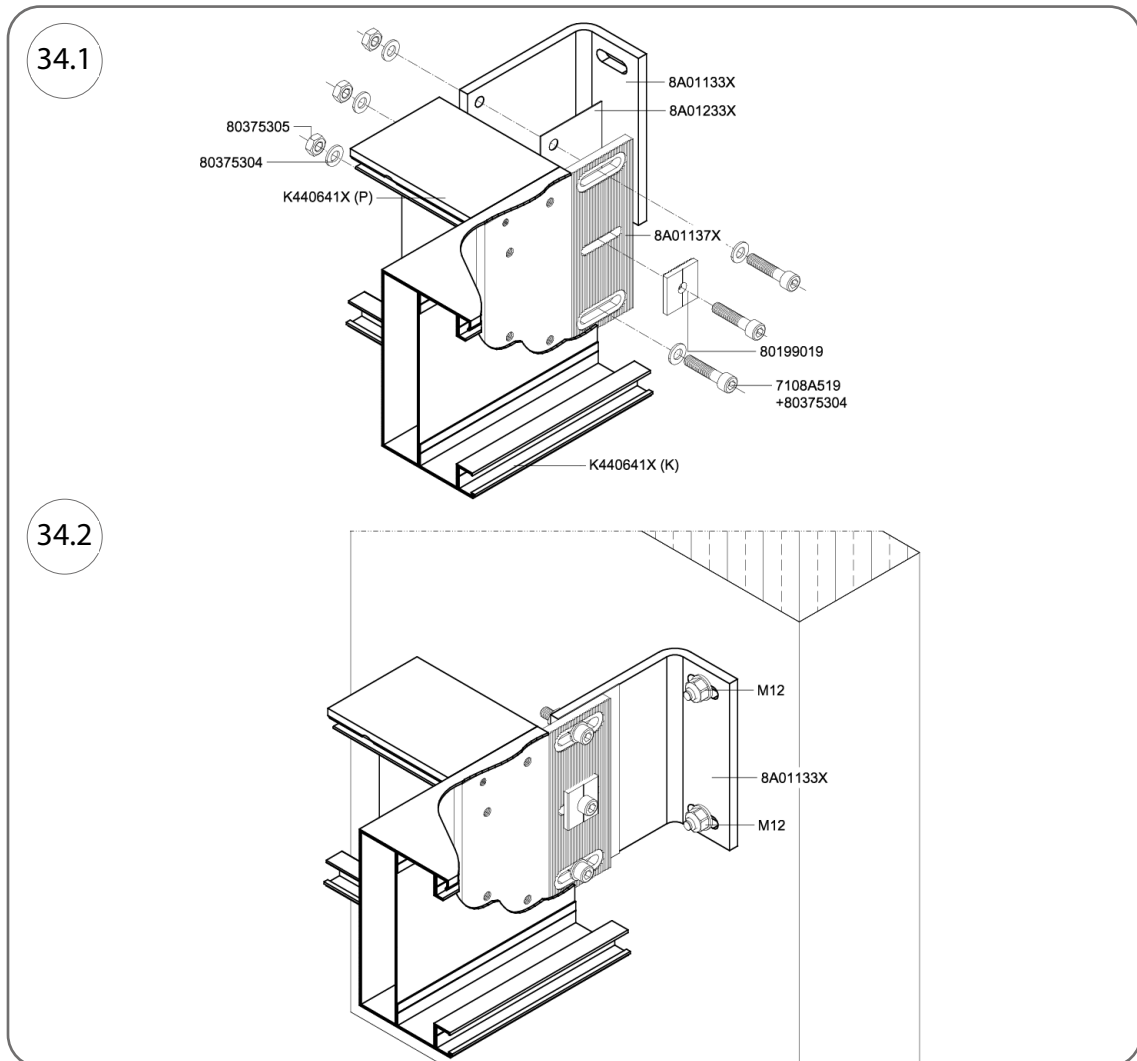


Fig. 34

5.5.10. Fixing purlins and rafters in wall-mounted pergolas (joints W5, W6)

1. Insert the wall-mounted bracket plate (cat. no. 8A01135X) (Fig. 35) and cat. no. 8A01137X (Fig. 36) and secure it to the side wall of the rafter using 2 M10 x 16 mm bolts (cat. no. 7118L510).
2. Screw the purlin connector (cat. no. 8A00853X) through the rafter wall to the wall bracket plate (cat. no. 8A01135X) using two M10 x 20 mm bolts (cat. no. 7118A512).
3. Place the purlin onto the connector and drive two pins (cat. no. 8A00854X, o 15 x 100 mm) into the prepared holes in the purlin and in connector 8A00853X.
4. Pass two bolts (cat. no. 7108A434, M8 x 120 mm) through the holes in the pins 8A00854X and screw them into the wall bracket plate 8A01135X (Fig. 35), 8A01137X (Fig. 36).
5. Screw the purlin to the connector 8A00853X using 4 screws Cat. No. 7118A512 (M10 x 20 mm) and o10 mm washers Cat. No. 80375304.
6. Coat all screw threads with thread sealant, cat. no. 1336461.

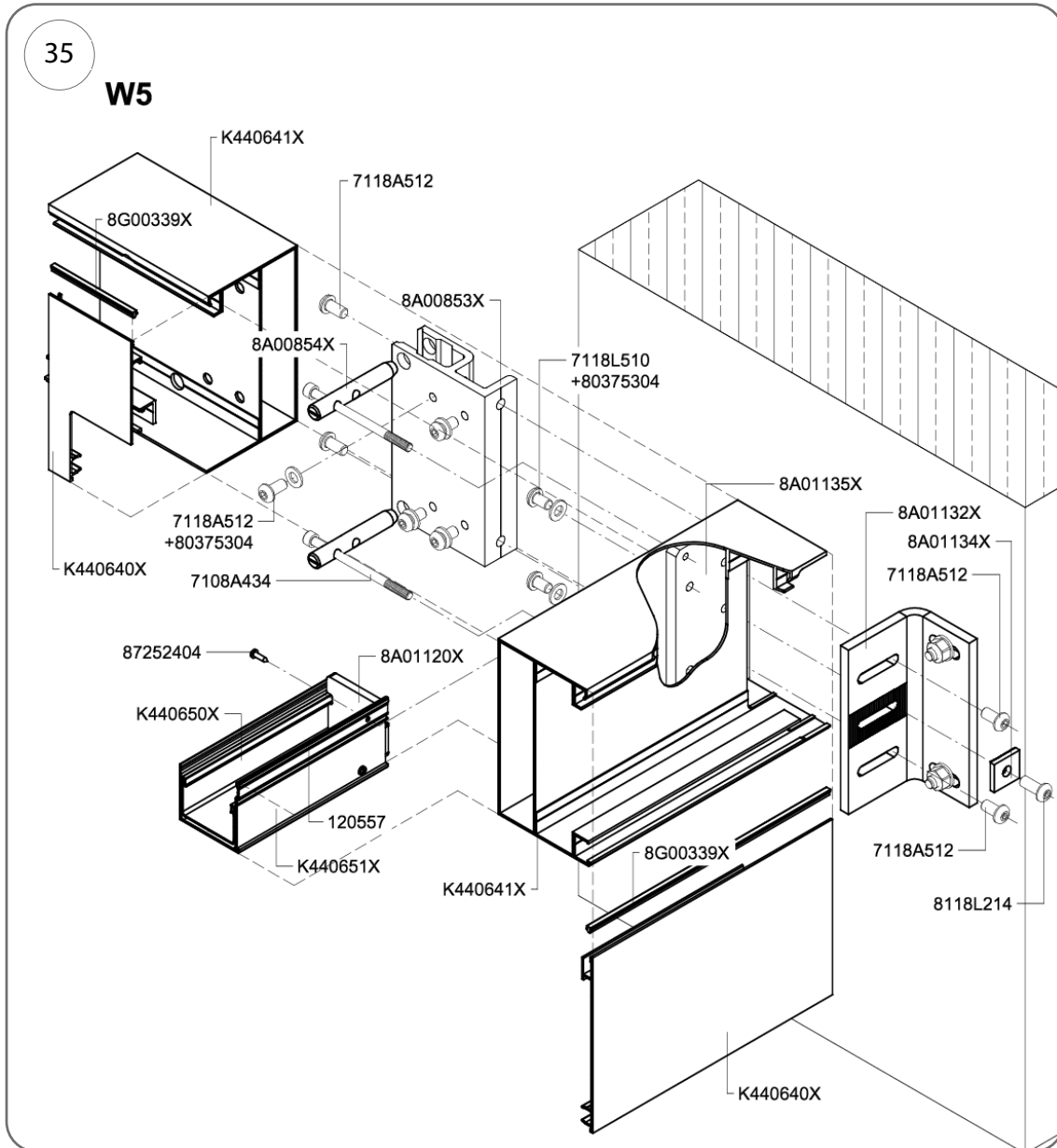


Fig. 35

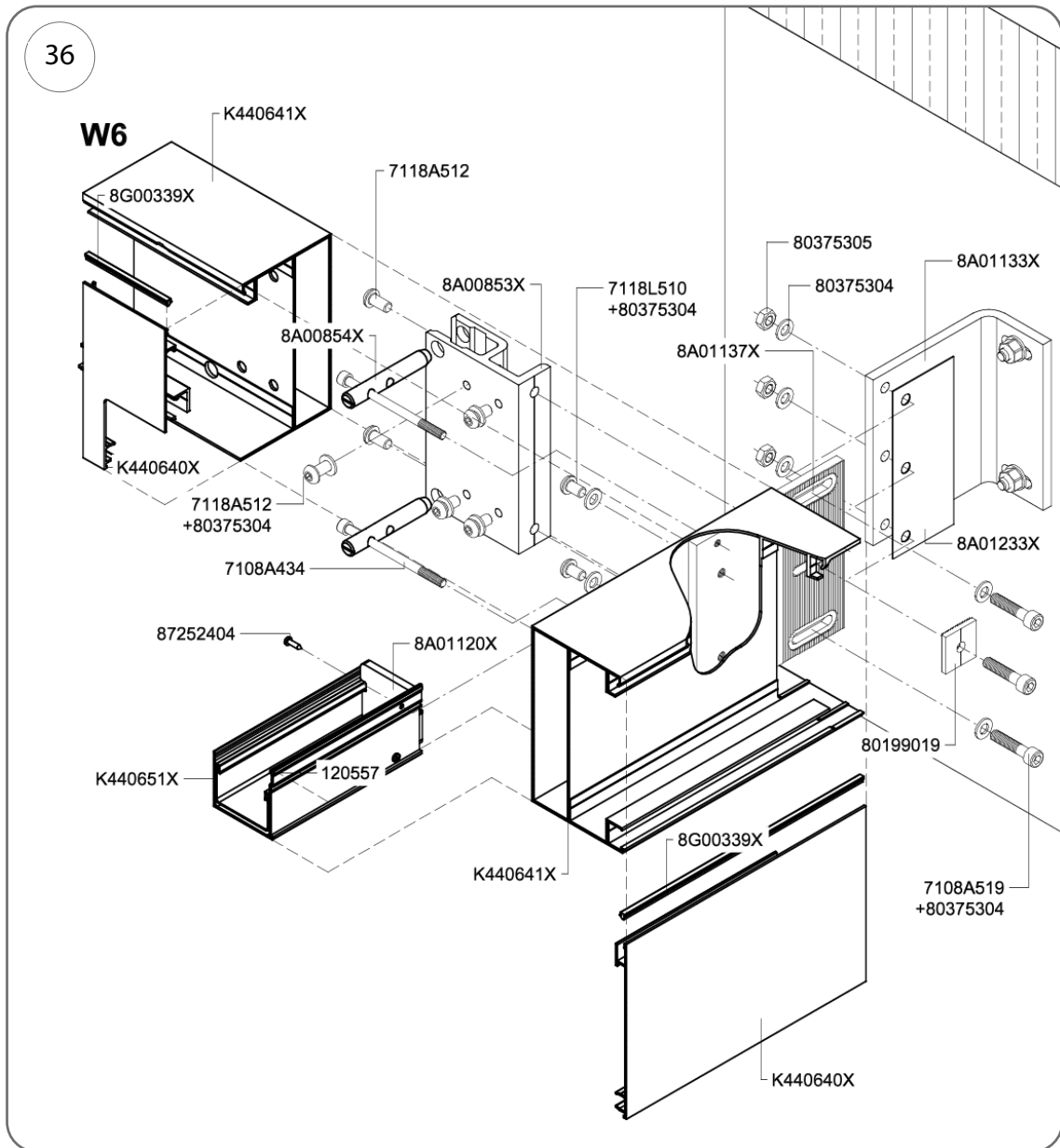


Fig. 36

5.5.11. Linear rafter fixing to the wall using bracket 8A01144X

1. Remove the M8 x 150 mm bolts (5) from bracket 8A01144X.
2. Place the base (1) of the bracket onto the wall anchors and pre-tighten with M10 nuts and washers (Fig. 38.1). The centre of the bracket base (1) should align with the centre of the slotted holes on the upper surface of the rafter.
3. Fit the bracket support (2) and secure it to the base (1) using M8 x 150 mm bolts (5). Temporarily position the bracket supports (2) in the centre of the slotted holes in the support (Fig. 38.1, Fig. 38.2).
4. Place the rafter onto the bracket supports (2); based on the position of the rafter, mark the final fixing point for the 8A00848X or 8A01125X post brackets and anchor them to the foundation.
5. After connecting the wall rafter to the purlins, the opposite rafter and the post(s), adjust the vertical position of the rafter by tightening or loosening the M10 Allen screw (3) through the slotted holes in the rafter (Fig. 38.3).
6. Secure the rafter permanently by screwing M10 x 20 mm bolts with washers (cat. no. 7118A512+80375304, Fig. 38.4) into the nuts (4), as shown in Fig. 37 and Fig. 38.
7. Secure all screw threads in the connection using thread sealant 13364618.

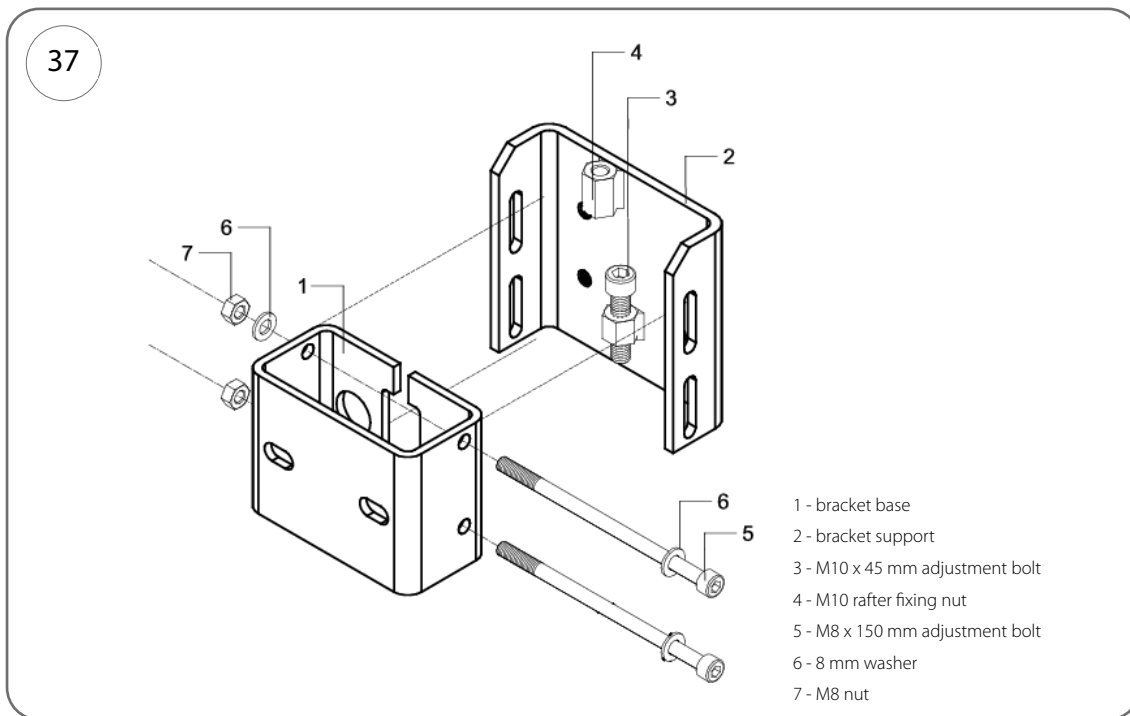


Fig. 37

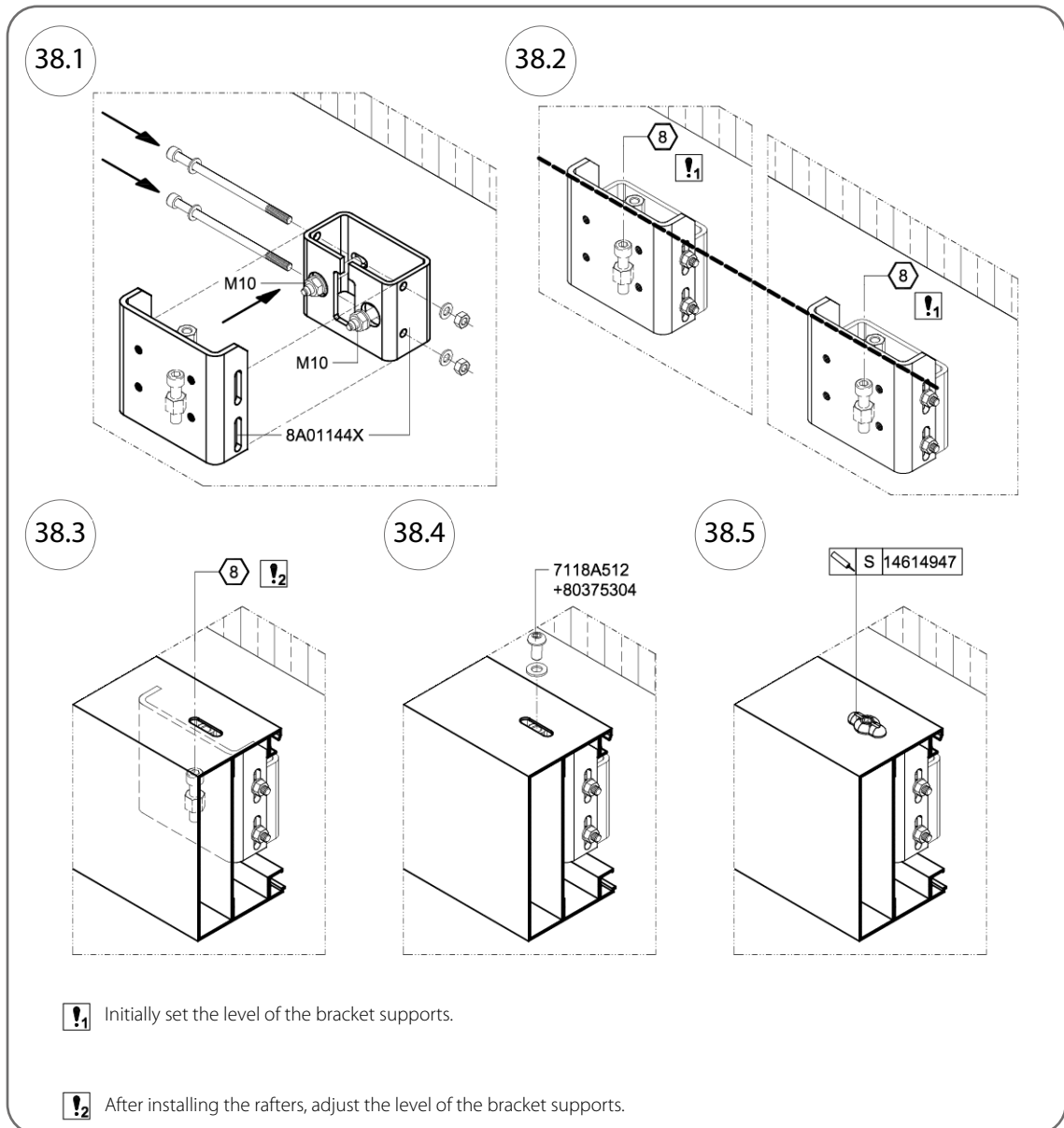


Fig. 38

5.5.12. Fixing purlins and collar beams in wall-mounted pergolas (joints W7, W9)

1. Insert the wall bracket plate (cat. no. 8A01135X) into the closed chamber of the rafter section and secure it to the side wall of the rafter using two M10 x 16 mm bolts (cat. no. 7118L510).
2. Screw the purlin connector (cat. no. 8A00853X) through the rafter wall to the wall bracket plate (cat. no. 8A01135X) using two M10 x 20 mm bolts (cat. no. 7118A512).
3. Place two pins (cat. no. 8A00854X, o 15 x 100 mm) onto the purlin connector and drive them into the prepared holes in the purlin and in connector 8A00853X.
4. Pass two bolts (cat. no. 7108A434, M8 x 120 mm) through the holes in the pins 8A00854X and screw them into the wall bracket plate 8A01135X.
5. Screw the purlin to the connector 8A00853X using 4 bolts, cat. no. 7118A512 (M10 x 20 mm) and washers, o10 mm, cat. no. 80375304.
6. Coat all screw threads with thread sealant, cat. no. 1336461.
7. At the end of the rafter, place the cover spacer (cat. no. 8A01119X) on its upper surface, followed by the cover (cat. no. 8A01118X), and secure the assembly to the rafter using 4 screws (o 4.2 x 16 mm, cat. no. 87252404).

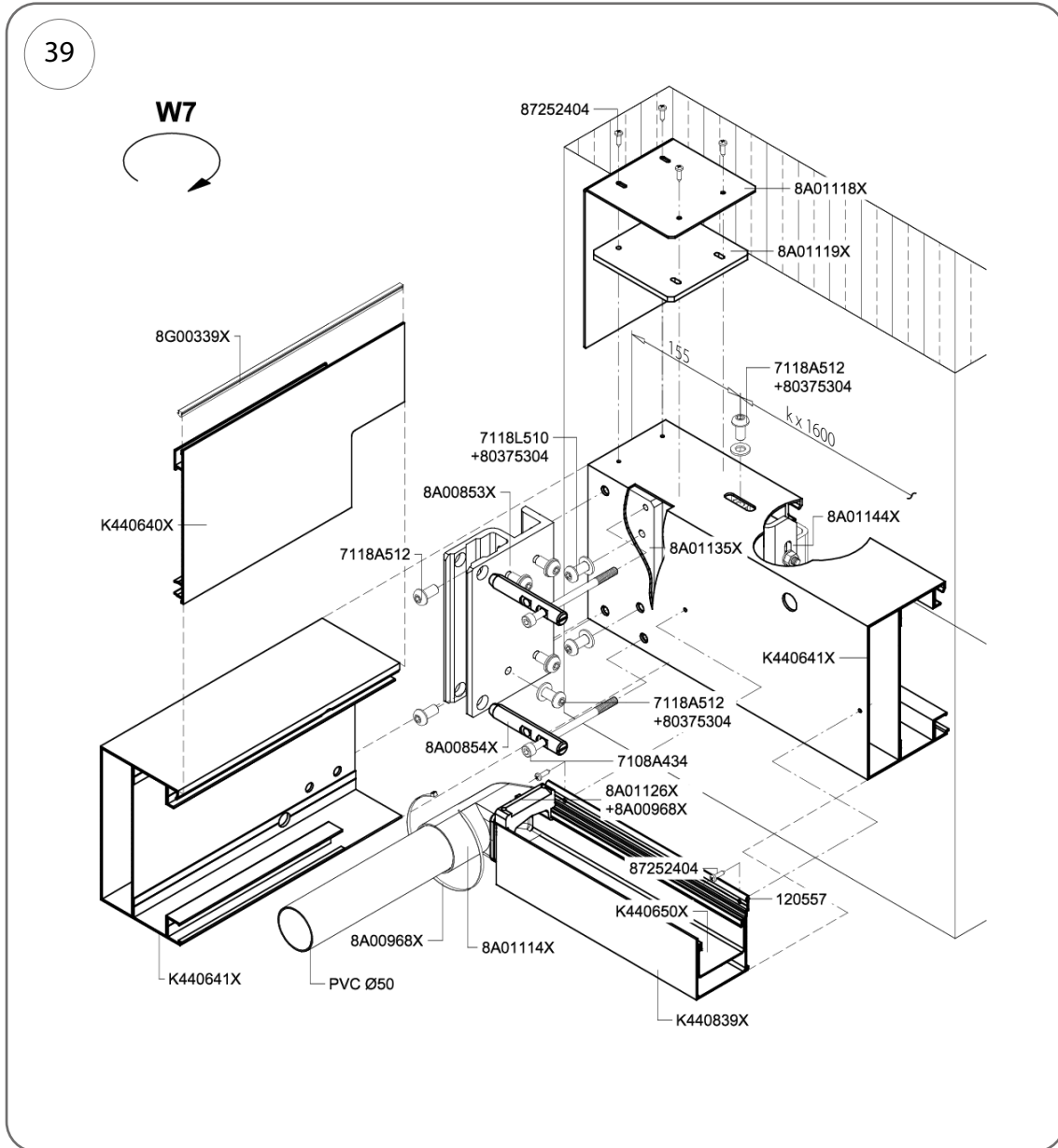


Fig. 39

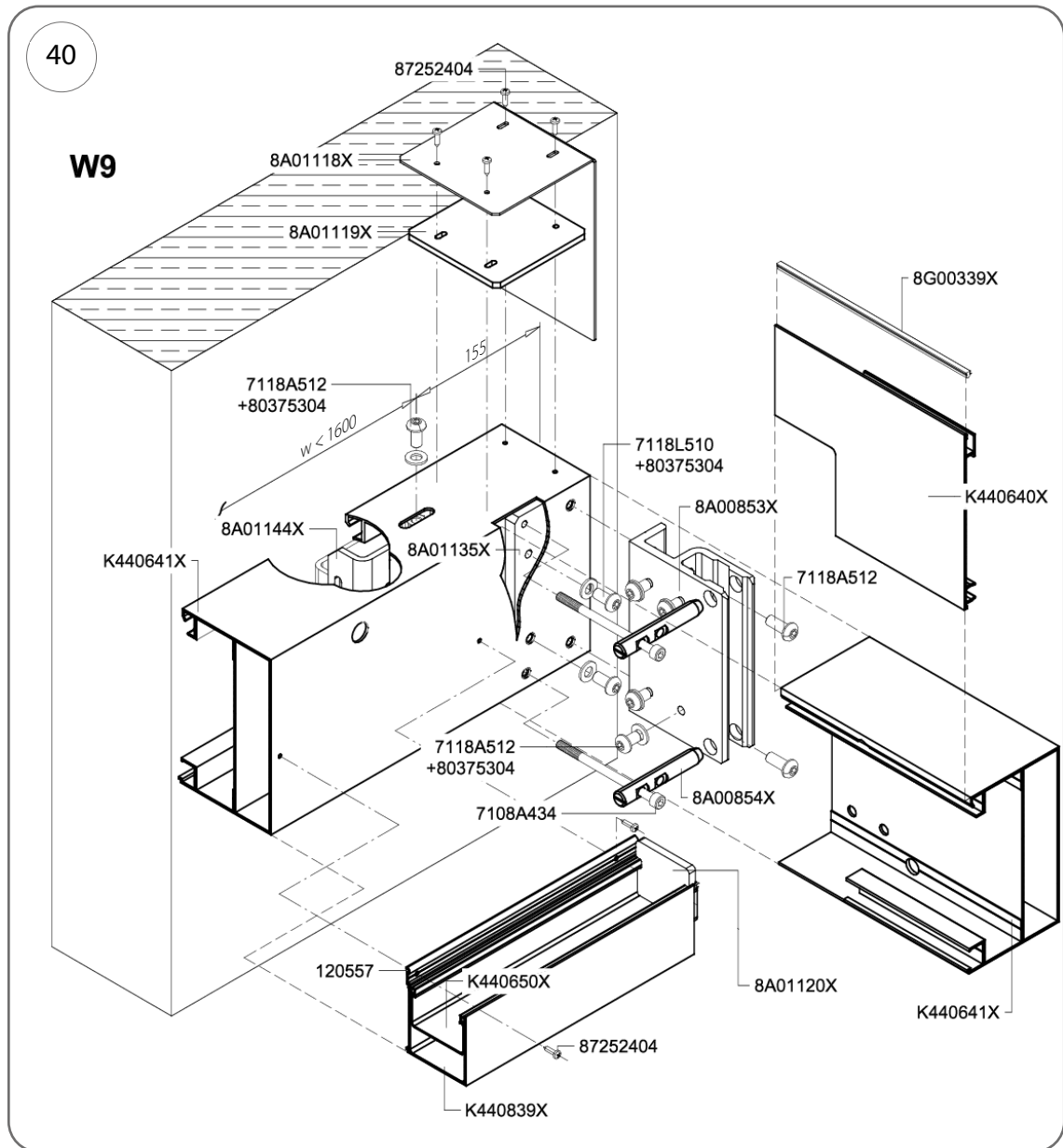


Fig. 40

5.5.13. Fixing rafters in wall-mounted pergolas (joint W8)

1. Based on the height of the pergola (posts), determine the elevation of the rafter's upper surface relative to the elevation of the post installation point.
2. Mark out points on the wall corresponding to the slotted holes milled into the top surface of the wall rafter as shown in Fig. 41; the outer holes should be 155 mm from the ends of the rafters and the distance between intermediate brackets should not exceed 1600 mm.
3. Mark the fixing level for the linear brackets 86 mm below the top of the rafter.
4. Drill holes in the wall and insert, for example, M10 bolt-type or ring-type anchors, 2 anchors per bracket, spaced 70 mm apart.

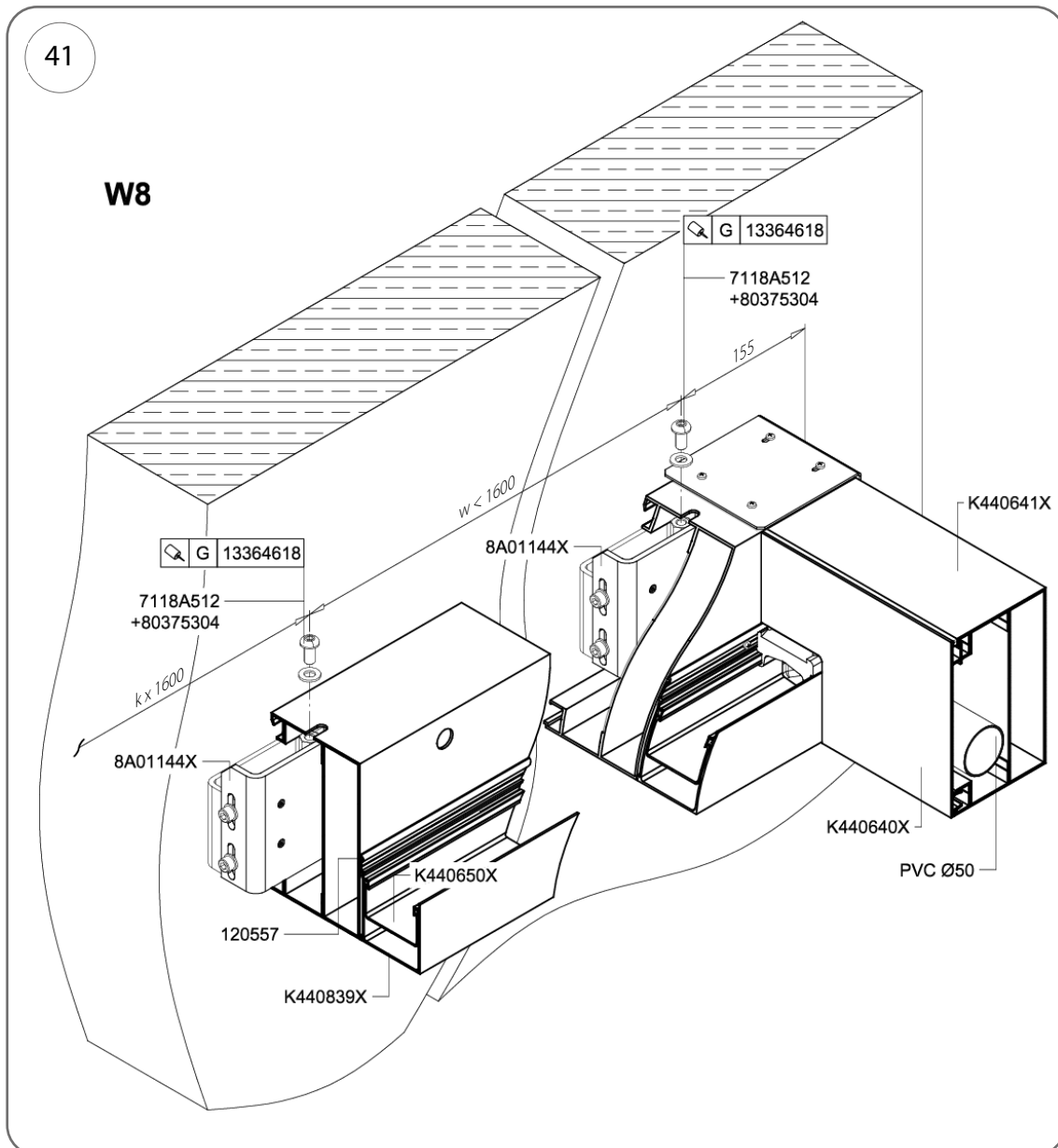


Fig. 41

5.5.14. Linear fixing of purlins to the wall using bracket 8A01144X

1. Based on the height of the pergola (posts), determine the elevation of the top surface of the purlins relative to the elevation of the post installation point.
2. One purlin fixing point consists of two 8A01144X brackets with a centre-to-centre distance of 180 mm, and the centre of the first anchor should be 300 mm from the outer surface of the rafter at node W10 (Fig. 43).
3. Mark out and drill the holes, then install M10 ring bolts in the wall, 2 bolts per bracket, spaced 70 mm apart.
4. Secure all screw threads in the connection using thread sealant 13364618.

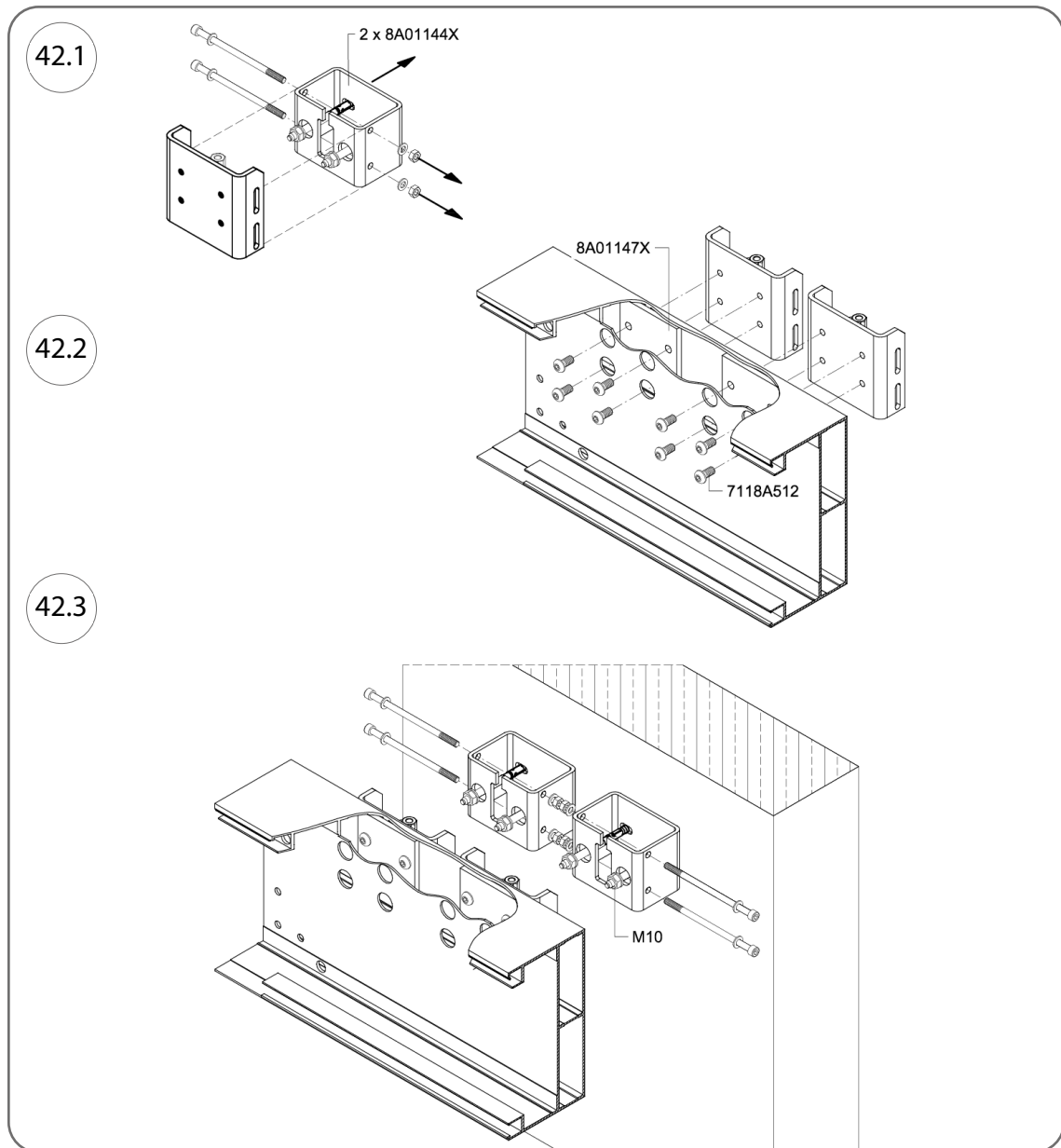


Fig. 42

5.5.16. Fixing rafters with purlins in wall-mounted pergolas (joint W11)

1. Insert the wall-mounted bracket plate (cat. no. 8A01135X) into the closed chamber of the rafter section.
2. Screw the purlin connector (cat. no. 8A00853X) through the rafter wall to the wall bracket plate (cat. no. 8A01135X) using two M10 x 20 mm bolts (cat. no. 7118A512).
3. Place the purlin onto the connector and drive two pins (cat. no. 8A00854X, o 15 x 100 mm) into the prepared holes in the purlin and in the connector 8A00853X.
4. Pass two bolts (cat. no. 7108A434, M8 x 120 mm) through the holes in the pins 8A00854X and screw them into the wall bracket plate 8A01135X.
5. Then, using 4 M10 x 20 mm bolts (cat. no. 7118A512 + 80375304), screw the bracket node angle bracket (cat. no. 8A01138X) through the purlin wall to the connector 8A00853X.
6. Screw the bracket connector 8A01138X to the bracket plate 8A01135X using 2 M10 x 16 mm bolts (cat. no. 7118A510).
7. Coat all screw threads with thread sealant, cat. no. 1336461.

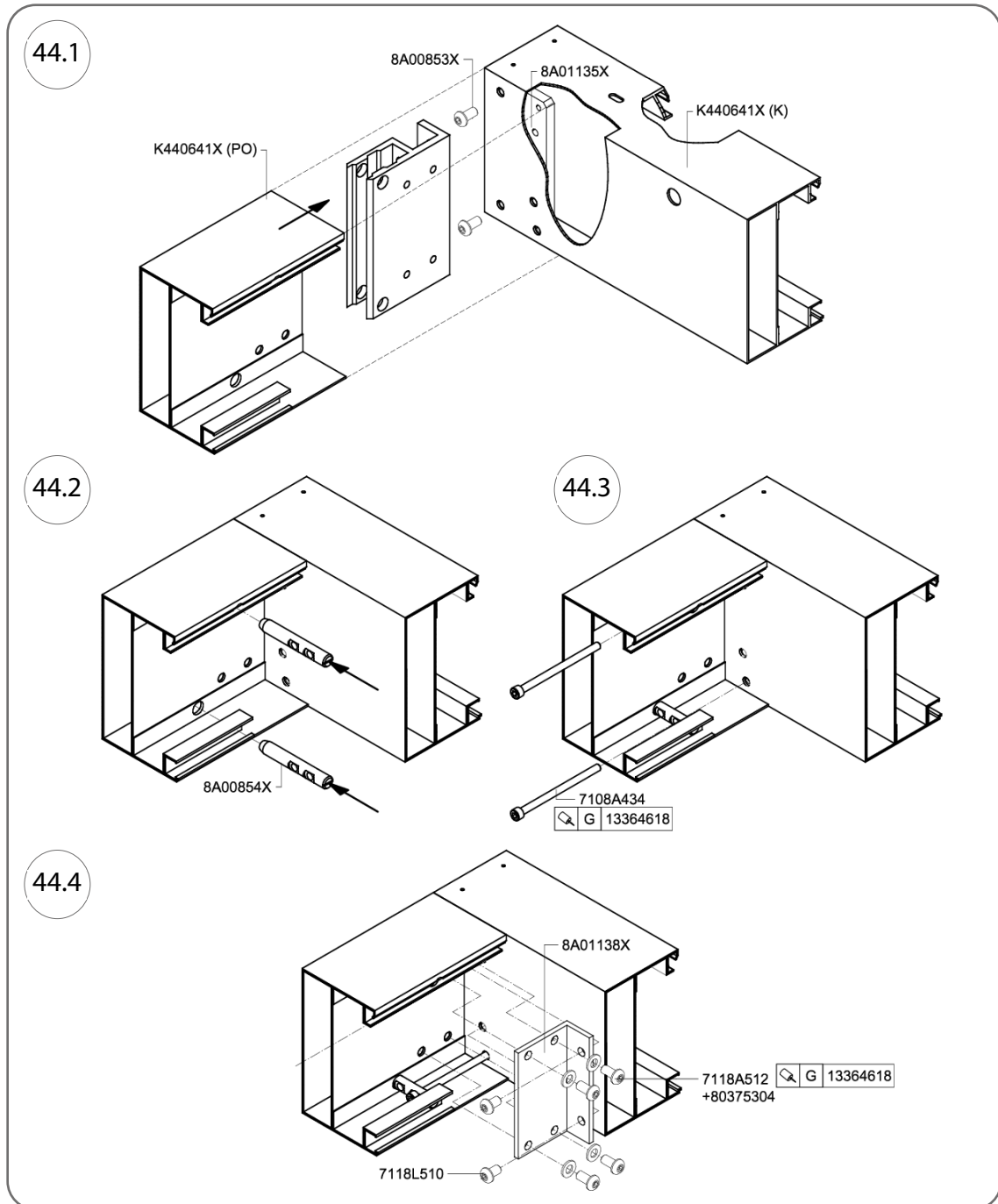


Fig. 44

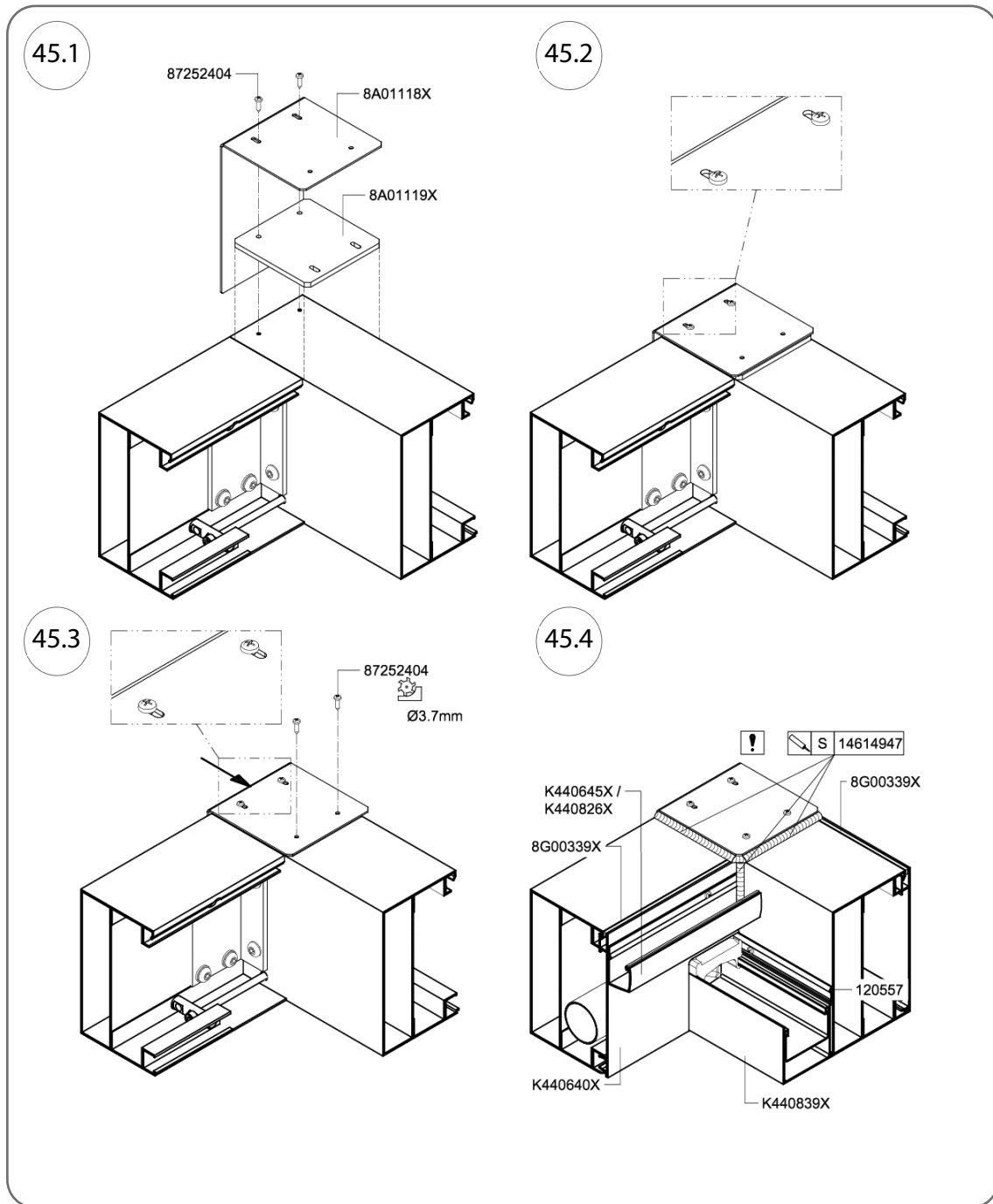


Fig. 45

5.6. Roof installation TYPE 1

The pergola roof has an active and a passive side – the active side is the side along the rafters where the actuator and the slat drive lever system are mounted. The slats are delivered partially assembled, divided according to their function:

- the passive side is fully prefabricated,
- the active side is equipped with covers, cat. no. 8A00814X.

5.6.1. Installation of slats on the passive side TYPE 1

1. Insert the louver axle at an angle into the sleeve 8A01084X (Fig. 46).

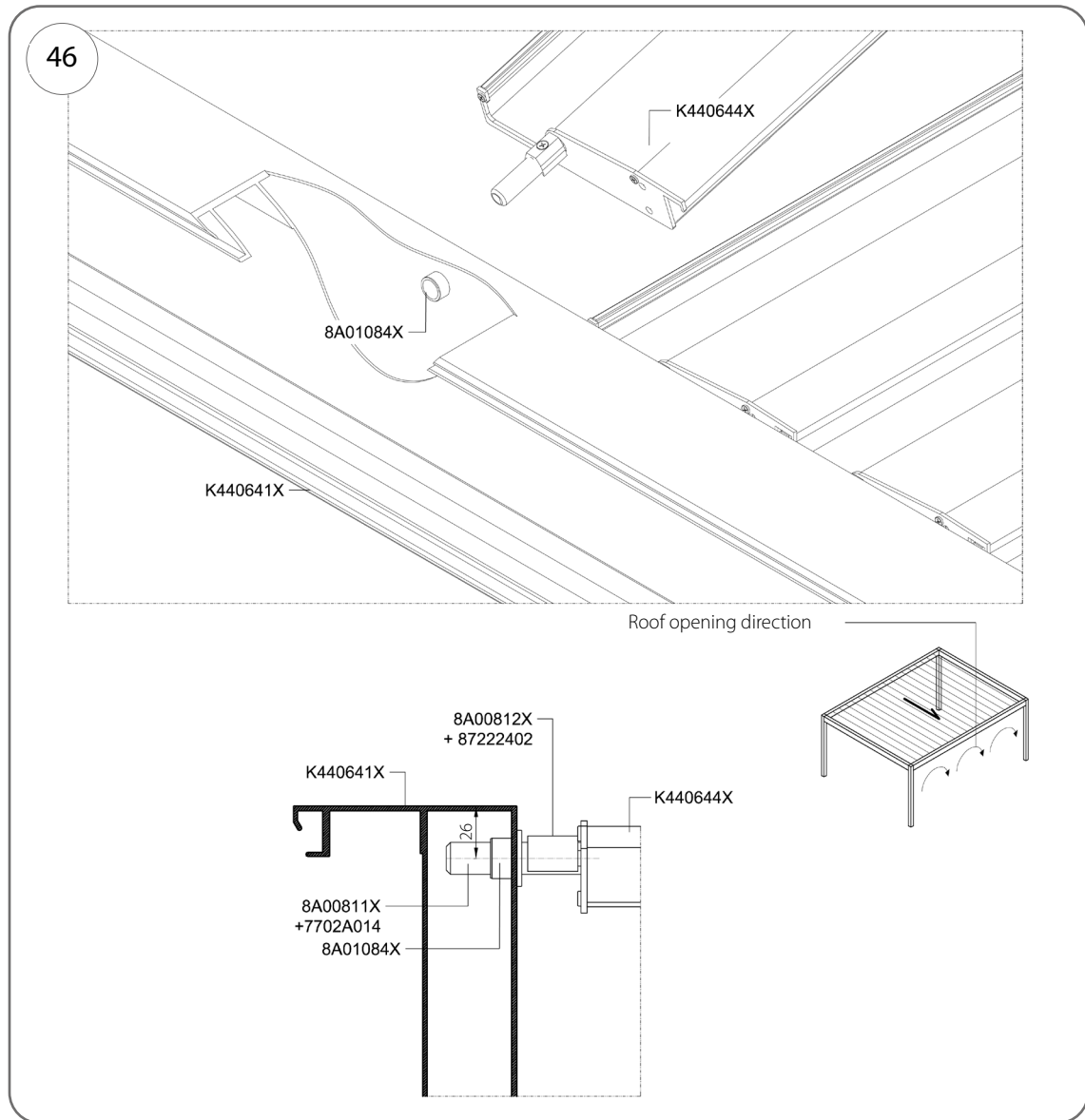


Fig. 46

5.6.2. Installation of slats on the active side TYPE 1 (slats not compatible with the actuator)

1. Insert the slat axle, cat. no. 8A00810X, equipped with an M6 x 6 mm screw, through the sleeve 8A01084X.
2. After moving the front of the axle, cat. no. 8A00810X, beyond the flange of the sleeve, cat. no. 8A01084X, place the spacer washer for slats, cat. no. 8A01059X, on the axle and insert the axle into the hole in the slat K440644X.
3. Attach spacer no. 8A00812X to the shaft, in the space between the rafter and the slat, using a 4.2 x 19 mm screw (cat. no. 87222402).
4. Through the hole in the upper surface of the slats, tighten the M6 x 6 mm screw to the slat wall with a 3 mm Allen key and seal the hole with silicone.

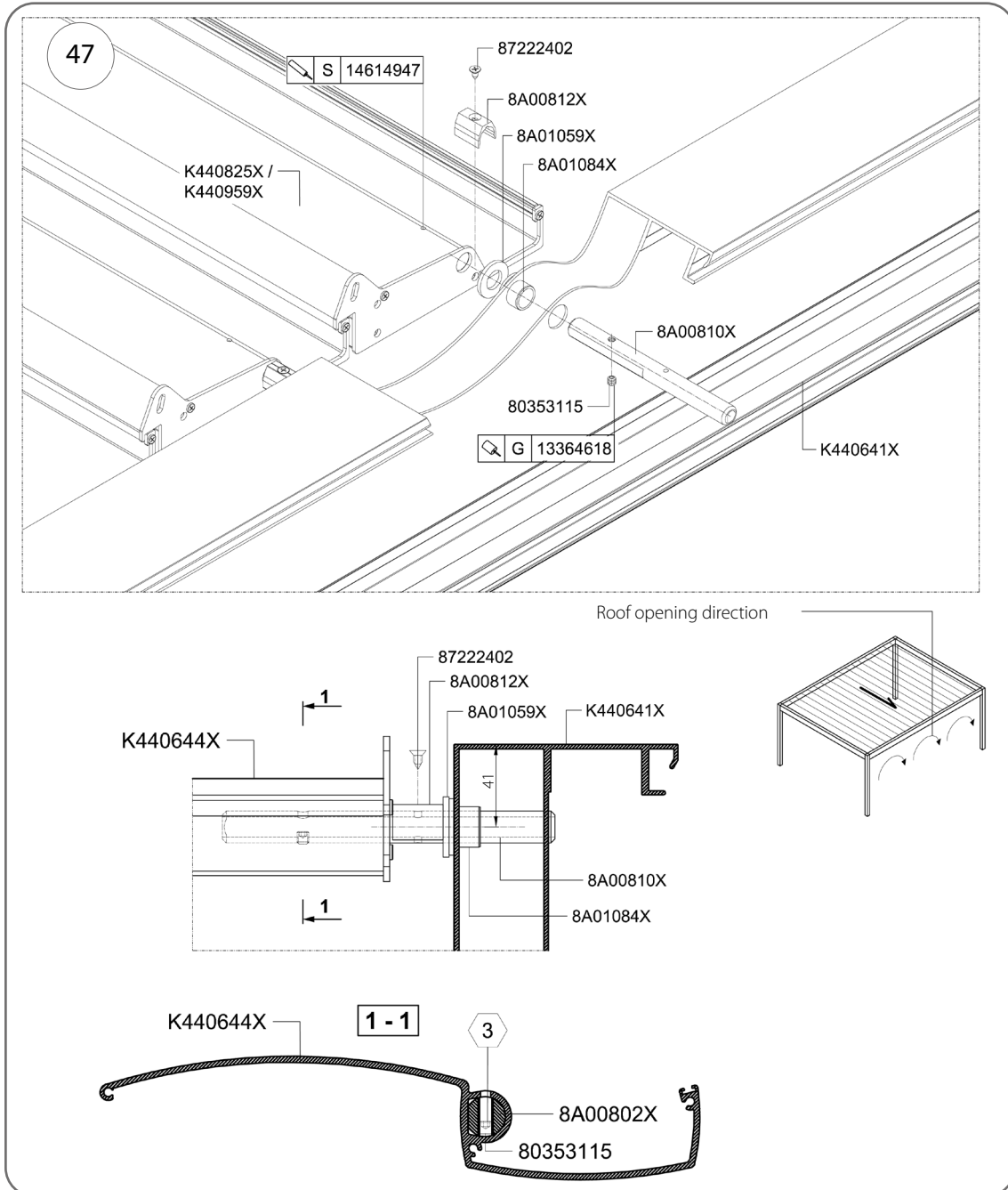


Fig. 47

5.6.3. Installation of slats with lighting

1. Insert the slat axle, cat. no. 8A00810X, equipped with an M6 x 6 mm screw, through the sleeve 8A01084X.
2. Feed the power cable through the slat axle, cat. no. 8A000810X.
3. After moving the front of the axle, cat. no. 8A00810X, beyond the flange of the sleeve, cat. no. 8A01084X, place the lamella spacer, cat. no. 8A01059X, on the axle and insert the axle into the hole in the lamella K440825X or K440959X.
4. Attach spacer no. 8A00812X to the shaft, in the space between the rafter and the slat, using a 4.2 x 19 mm screw (cat. no. 87222402).
5. Through the hole in the upper surface of the slats, tighten the M6 x 6 mm screw to the slat wall with a 3 mm Allen key and seal the hole with silicone.

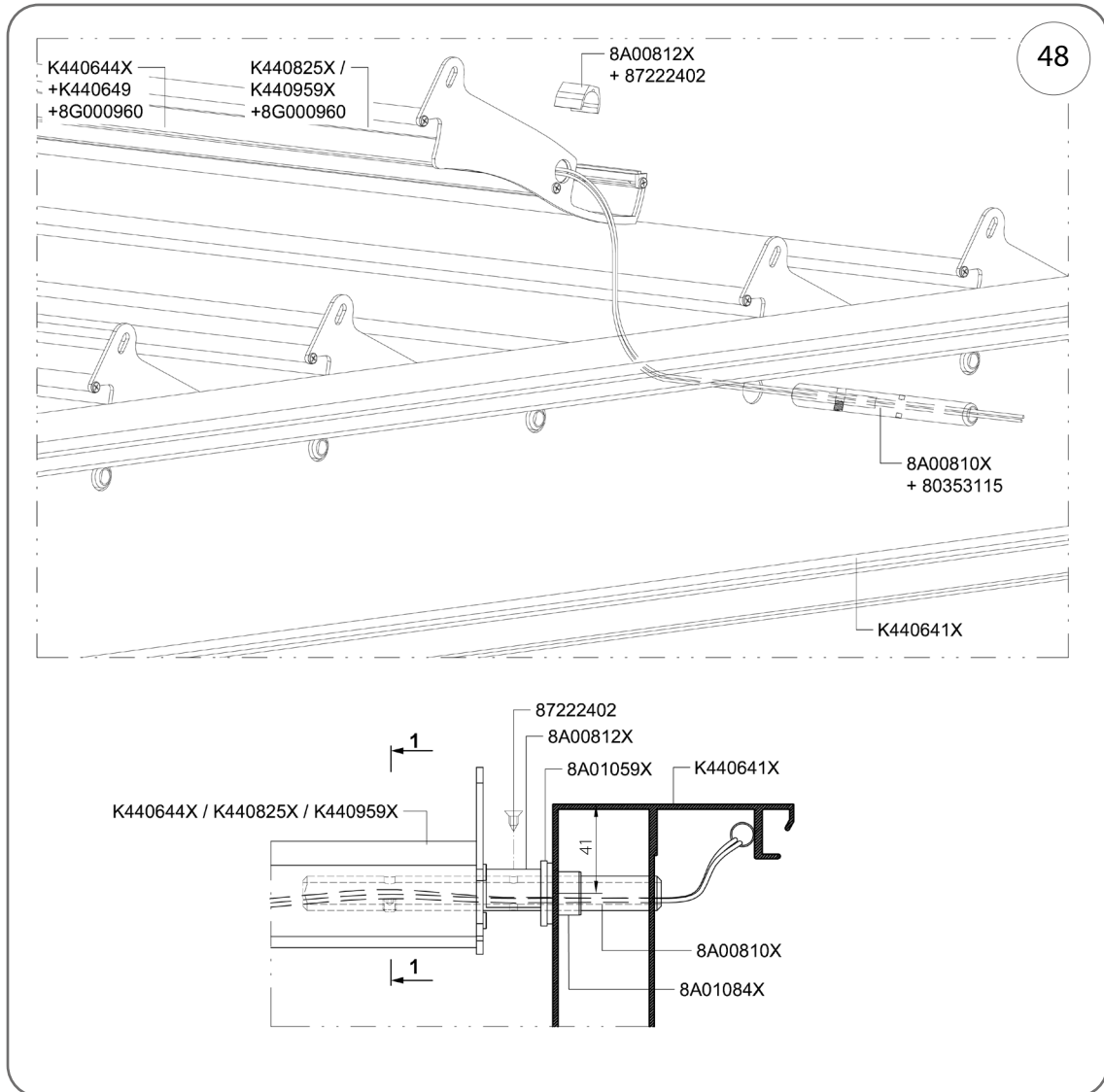


Fig. 48

5.6.4. Installation of slats on the active side TYPE 1 (slats compatible with the actuator)

1. Screw an M6 x 6 mm screw into the drive lever pin, cat. no. 8A00802X or 8A01129X.
2. In the rafter profile, mount the sliding sleeves with the drive lever flange, cat. no. 8A00807X, in the 26 mm hole in the outer wall and in the inner wall.
3. Insert the drive lever pin 8A00802X or 8A01129X into the rafter, placing the following on the pin in sequence: drive lever washer cat. no. 8A00806X, after the pin has passed through the outer wall of the rafter, fit the second washer, cat. no. 8A00806X, and then the drive crank, cat. no. 8A00805X.
4. Push the drive lever in as far as it will go and, through the hole in the upper surface of the slats, secure the position of the drive lever with an M6 x 6 mm screw. Seal the hole with silicone.
5. Screw an M6 x 30 mm screw (cat. no. 80371316) into the drive crank clamp, cat. no. 8A00805X, and clamp the drive crank onto the drive lever pin. Coat the screw with thread sealant, cat. no. 13364618.

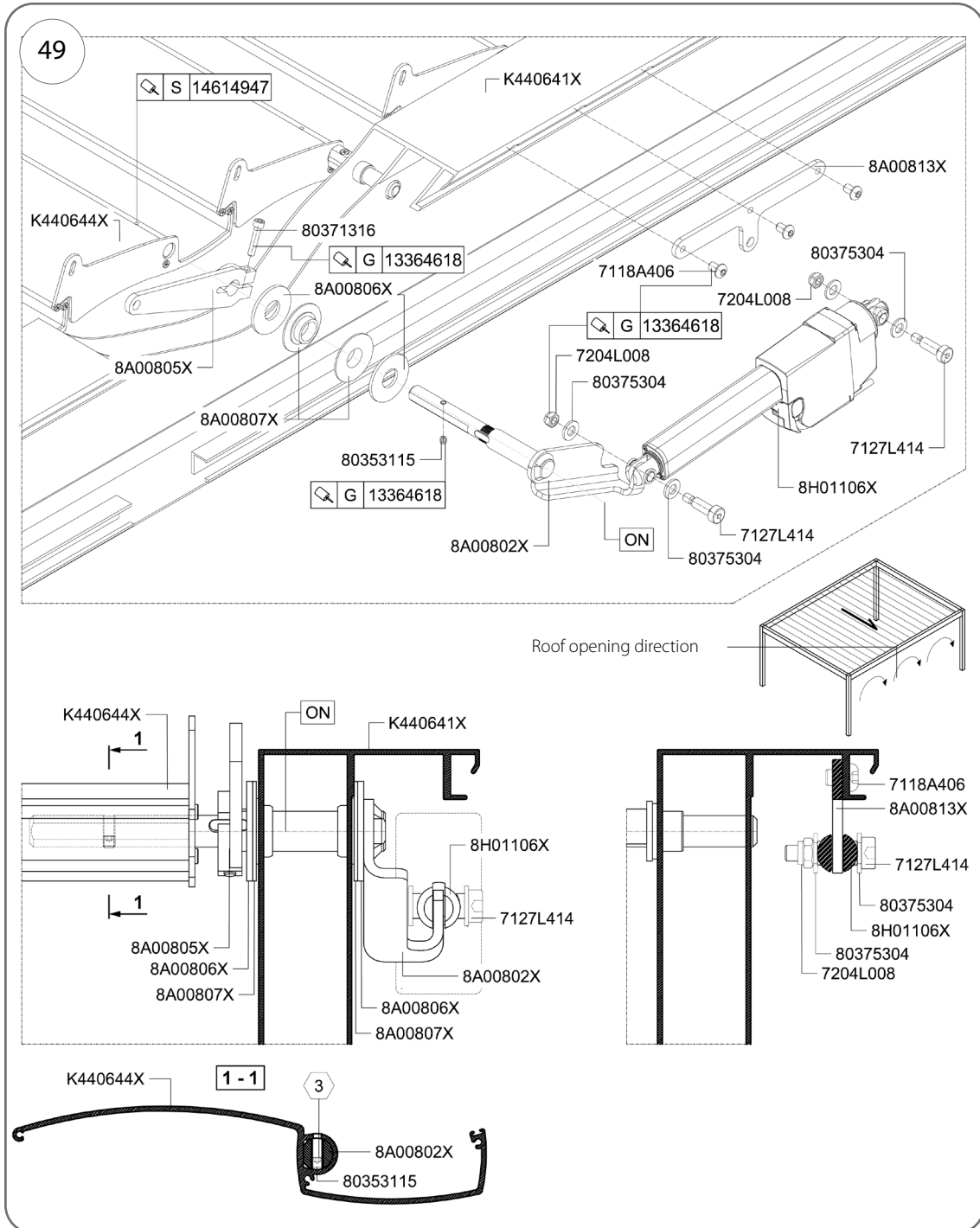


Fig. 49

5.6.5. Installation of roof actuator TYPE 1

Proceed as shown in Fig. 49.

1. Attach the actuator body, cat. no. 8H01106H, to the bracket, cat. no. 8A00813X.
2. Place a 10 mm washer, cat. no. 80375304, on the two-stage screw with M8 thread, cat. no. 7127L414.
3. Pass this screw through the actuator body bracket and fit a 10 mm washer, cat. no. 80375304, on the other side.
4. Pass the end of the bolt through the hole in the actuator bracket, coat the thread of the bolt (cat. no. 7127L414) with thread sealant (cat. no. 13364618) and tighten the M8 nut (cat. no. 7204L008).
5. Attach the actuator piston (cat. no. 8H01106H) to the drive lever (cat. no. 8A00802X or cat. no. 8A01129X).
6. Place a 10 mm washer, cat. no. 80375304, on the two-stage screw with M8 thread, cat. no. 7127L414.
7. Insert the drive lever eye, cat. no. 8A00802X or cat. no. 8A01129X, into the actuator piston fork.
8. Pass this screw through the actuator piston fork and the drive lever eye and fit a 10 mm washer, cat. no. 80375304, on the other side.
9. Coat the thread of screw cat. no. 7127L414 with thread sealant cat. no. 13364618 and tighten the M8 cap nut cat. no. 7204L008.

5.6.6. Installation of roof tie rod TYPE 1

1. Fit retaining ring cat. no. 7702A008 onto adjustment sleeve cat. no. 8A00808X.
2. Insert the sleeves in the following order: through the sleeves in the cable, 8 mm washer, cat. no. 80375325, active side lamella cover eye, cat. no. 8A00814X.
3. Coat the thread with thread sealant, cat. no. 13364618, place an 8 mm washer, cat. no. 80375325, on the adjustment sleeve and tighten the whole assembly with an M8 cap nut, cat. no. 7211M008.

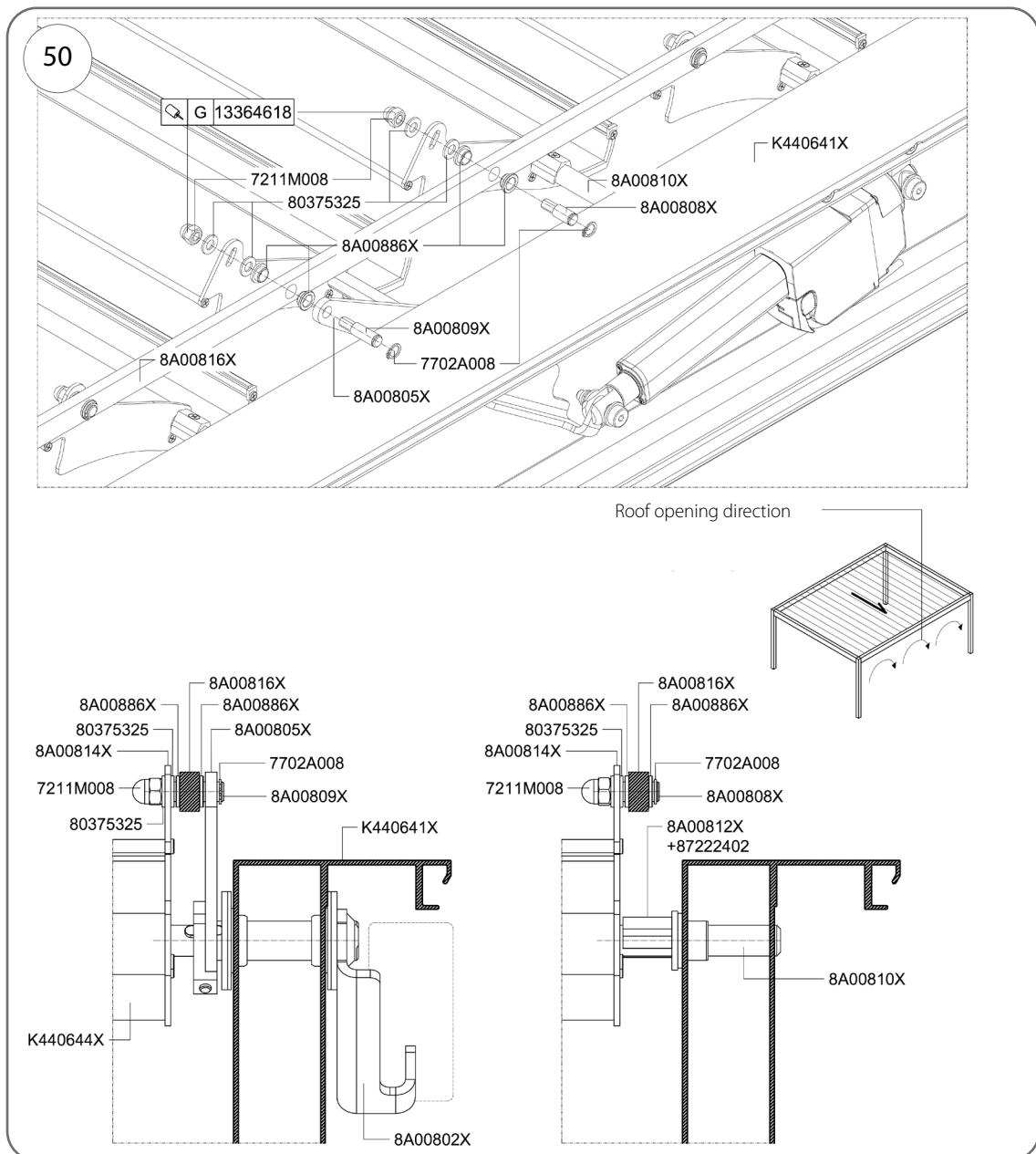


Fig. 50

5.6.7. Installation of the lower roof end profile TYPE 1

1. Attach the lower end profile, cat. no. K440645X, to the purlin cover made of profile, cat. no. K440640X.
2. Press the o 4 mm seal (cat. no. 120557) into the groove of the profile (cat. no. K440645X) and insert the 4 mm brush seal (cat. no. 8G00309X) into the other groove.
3. Using 4.2 x 16 mm screws, cat. no. 87252402, spaced every 250 mm, attach the profile, cat. no. K440645X, to the purlin cover.

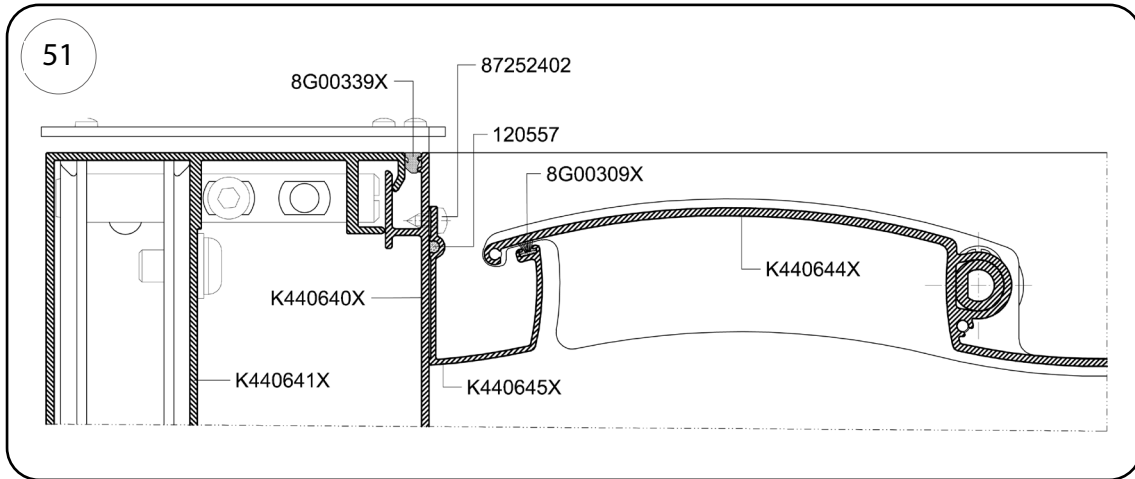


Fig. 51

5.6.8. Installation of the upper roof end profile TYPE 1

1. Attach the upper end section, cat. no. K440646X, to the purlin cover made of section no. K440640X.
2. Press a 4 mm seal, cat. no. 120557, into the groove of profile no. K440646X.
3. Using 4.2 x 16 mm screws, cat. no. 87252402, attach profile no. K440646X to the purlin cover at 250 mm intervals.

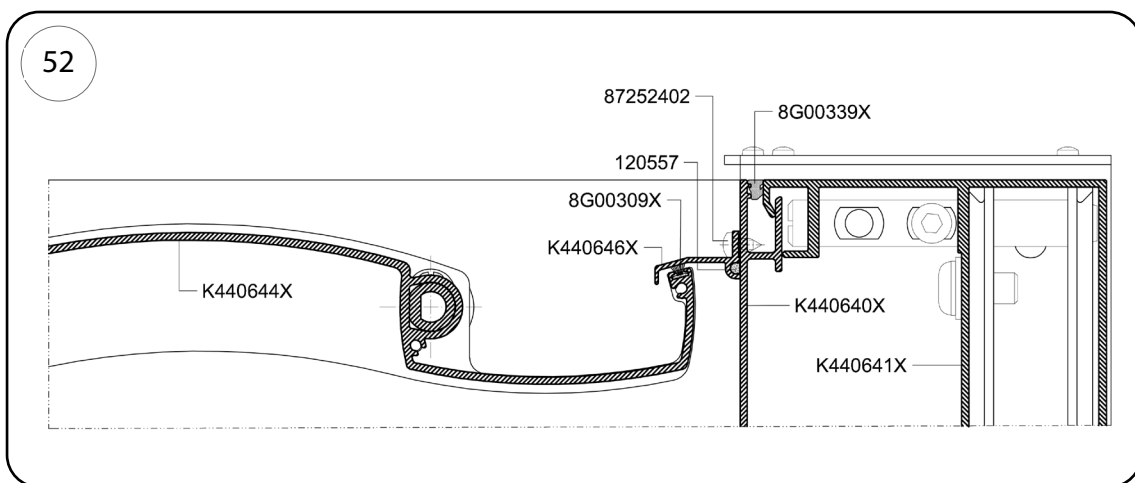


Fig. 52

5.6.9. Roof plane adjustment TYPE 1

Set the end positions with the nuts (cat. no. 7211M008) and adjustment sleeves (cat. no. 8A00808X / 8A00809X) loosened.

The guidelines for the position of the 8A00816X tie rod should be confirmed at the connection point between the stucco and the 8A00805X crank.

1. Start up and program the actuator according to the instructions.
2. Set the closed end position as shown in Fig. 53.
3. Set the closed end position in accordance with Fig. 54.
4. In the closed end position, check that the slat profiles fit together properly. The K440644X profile must make contact with seal cat. no. 8G00309X. If the above fit is not achieved, adjust the position of the slats using the adjustment system as shown in Fig. 55. Once the roof has been positioned, secure the slats by tightening the locking nut (cat. no. 7211M008). Apply thread sealant (cat. no. 13364618) to the thread.

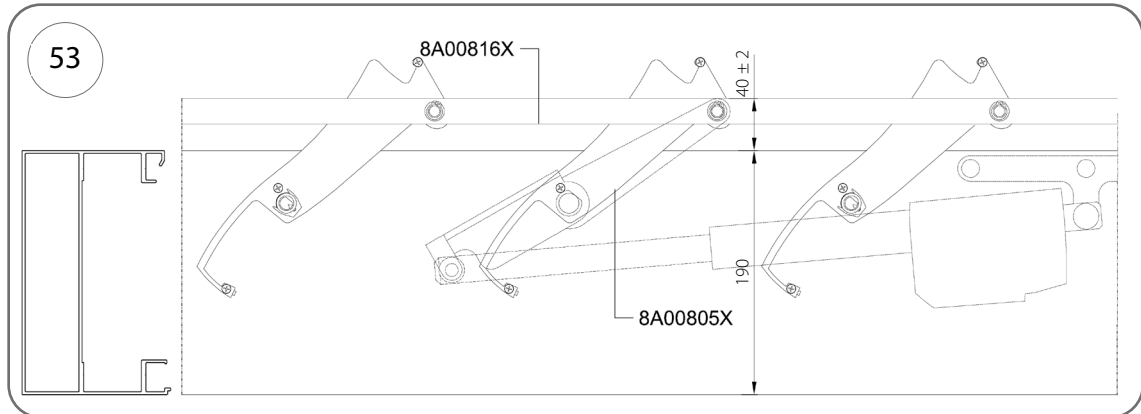


Fig. 53

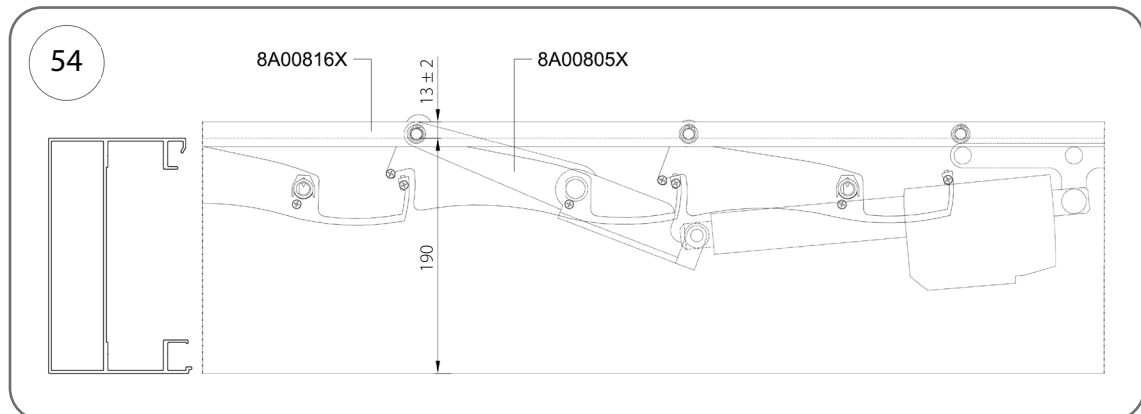


Fig. 54

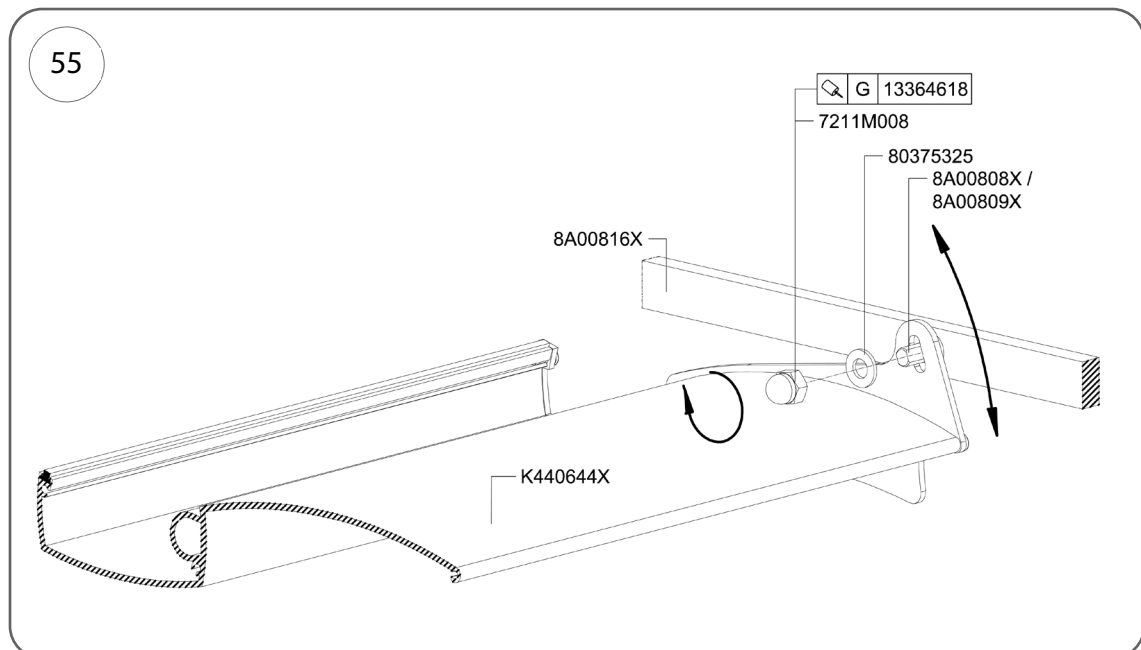


Fig. 55

5.7. Roof installation TYPE 2

The pergola roof has an active and a passive side – the active side is the side along the rafters where the actuator and the slat drive lever system are mounted. The slats are delivered partially assembled, divided according to their function:

- the passive side is fully prefabricated,
- The active side is equipped with covers, cat. no. 8A00952X.

5.7.1. Installation of slats on the passive side TYPE 2

1. Insert the louver axle at an angle into the sleeve 8A01084X (Fig. 56).

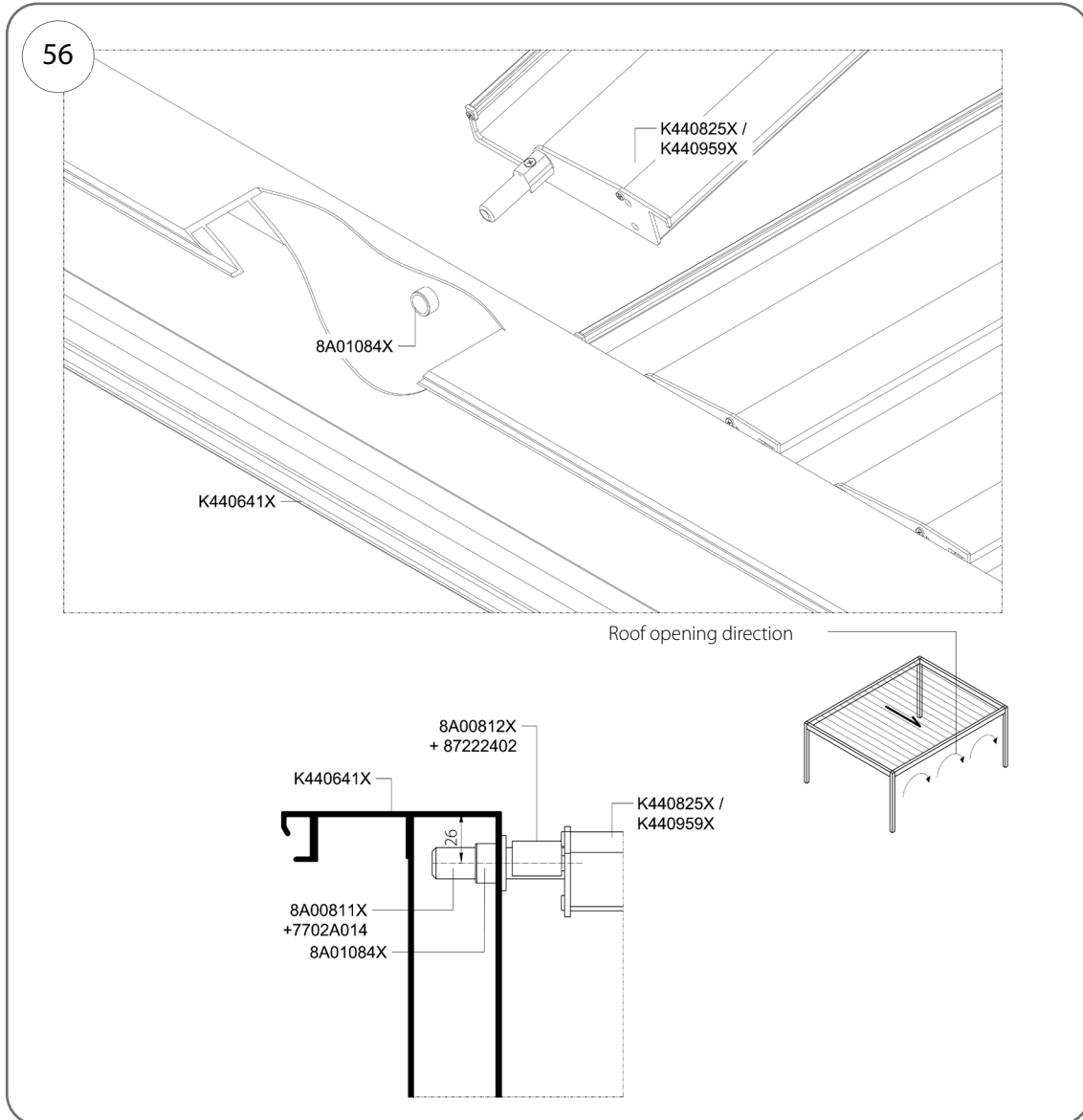


Fig. 56

5.7.2. Installation of slats on the active side TYPE 2 (slats not cooperating with the actuator)

1. Insert the slat axle, cat. no. 8A00810X, equipped with an M6 x 6 mm screw, through the sleeve, cat. no. 8A01084X.
2. After moving the front of the axle, item no. 8A00810X, beyond the flange of the sleeve, item no. 8A01084X, place the slat spacer, item no. 8A01059X, on the axle and insert the axle into the hole in the slat K440825X or K440959X.
3. Attach spacer no. 8A00812X to the shaft, in the space between the rafter and the slat, using a 4.2 x 19 mm screw (cat. no. 87222402).
4. Through the hole in the upper surface of the slats, tighten the M6 x 6 mm screw to the slat wall with a 3 mm Allen key and seal the hole with silicone.

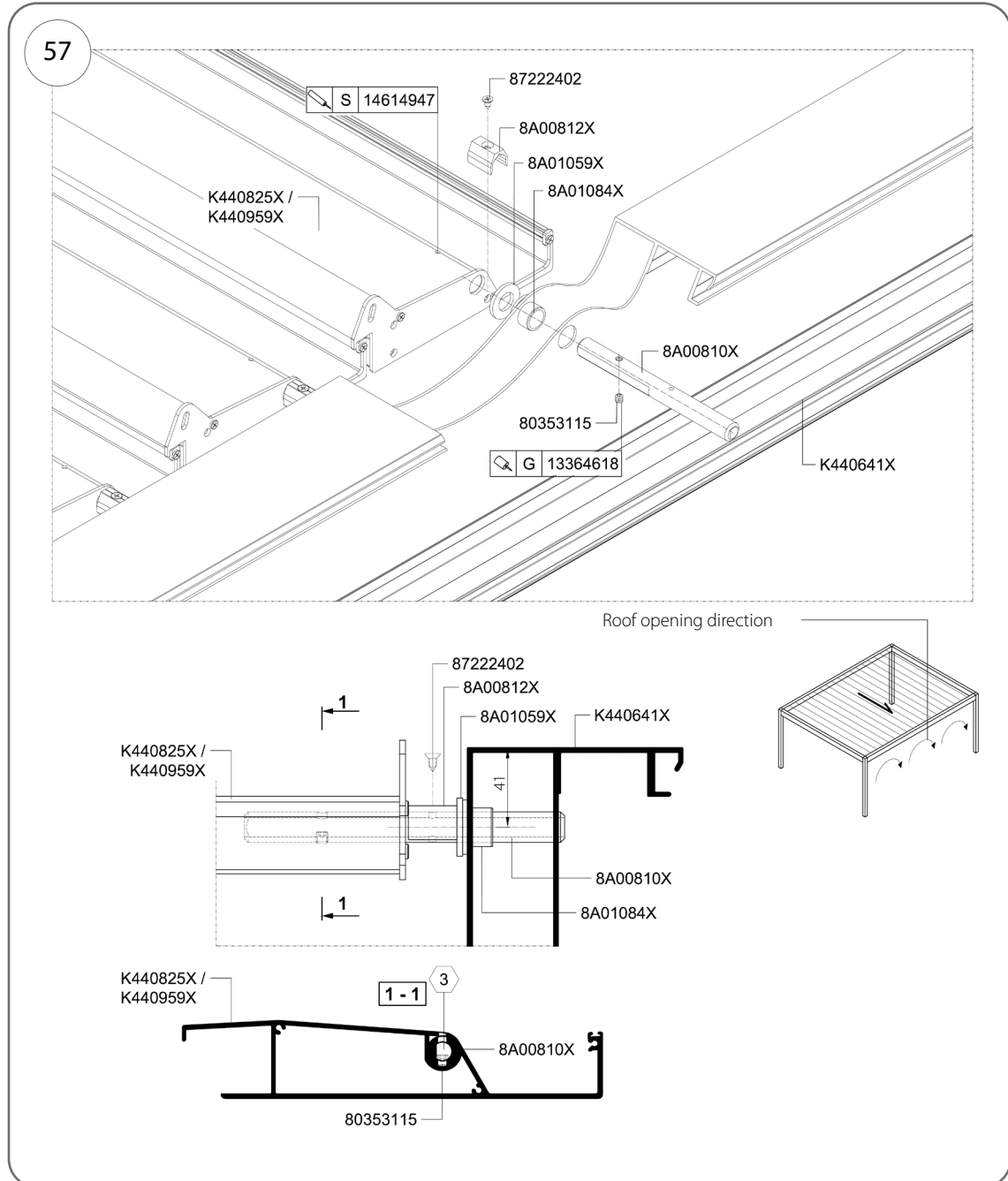


Fig. 57

5.7.3. Installation of slats with lighting

1. Insert the slat axle, cat. no. 8A00810X, equipped with an M6 x 6 mm screw, through the sleeve, cat. no. 8A01084X.
2. Feed the power cable through the slat axle, cat. no. 8A00810X.
3. After moving the front of the axle, cat. no. 8A00810X, beyond the flange of the sleeve, cat. no. 8A01084X, place the lamella spacer, cat. no. 8A01059X, on the axle and insert the axle into the hole in the lamella K440825X or K440959X.
4. Attach spacer no. 8A00812X to the shaft, in the space between the rafter and the slat, using a 4.2 x 19 mm screw (cat. no. 87222402).
5. Through the hole in the upper surface of the slats, tighten the M6 x 6 mm screw to the slat wall with a 3 mm Allen key and seal the hole with silicone.

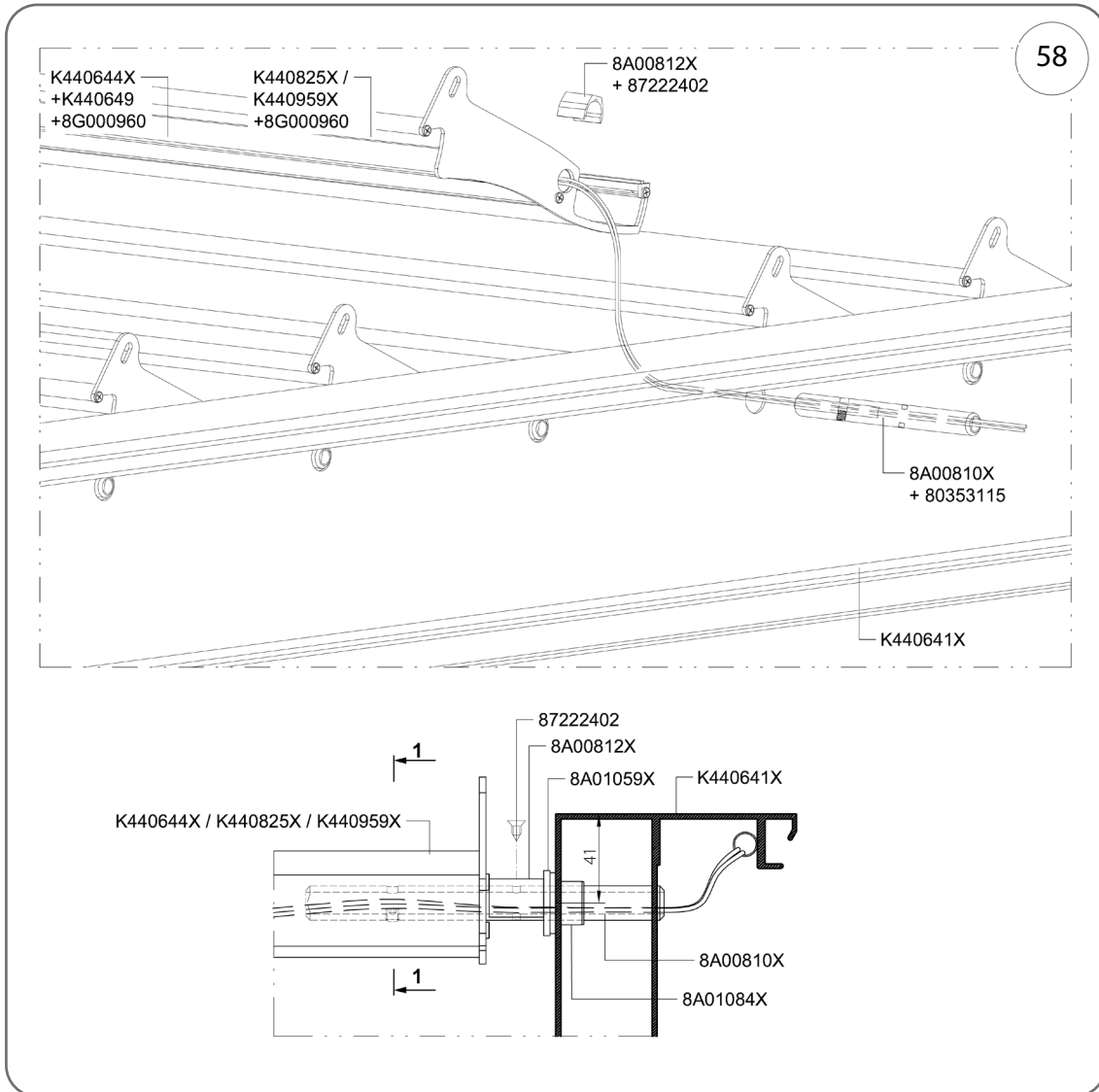


Fig. 58

5.7.4. Installation of slats on the active side TYPE 2 (slat compatible with the actuator)

1. Screw an M6 x 6 mm screw into the drive lever pin, cat. no. 8A00980X or 8A01072X.
2. In the rafter profile, mount the sliding sleeves with the drive lever flange, cat. no. 8A00807X, in the 26 mm hole in the outer wall and in the inner wall.
3. Insert the drive lever pin 8A00802X or 8A01129X into the slat, placing the following on the pin in sequence: spring holder cat. no. 8A01234X or 8A01319X (depending on the direction of roof opening), the drive lever washer, catalogue no. 8A00806X; once the lever pin has passed the outer wall of the rafter, fit the second washer 8A00806X, and then the drive crank, catalogue no. 8A00842X.
4. Push the drive lever in as far as it will go and, through the hole in the upper surface of the slats, secure the position of the drive lever with an M6 x 6 mm screw. Seal the hole with silicone.
5. Screw an M6 x 30 mm screw (cat. no. 80371316) into the drive crank clamp cat. no. 8A00842X and clamp the drive crank onto the drive lever pin; coat the screw with thread sealant cat. no. 13364618.

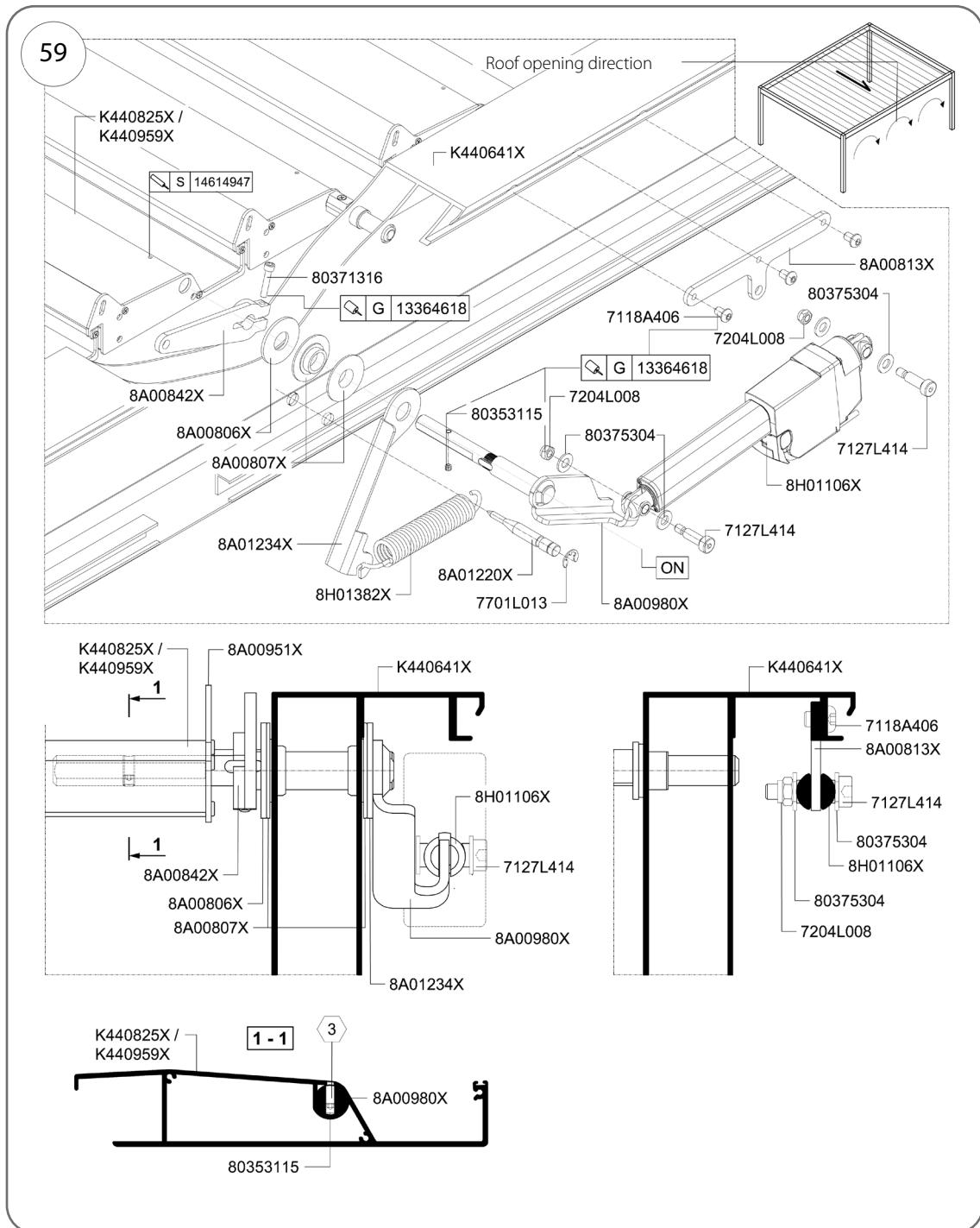


Fig. 59

5.7.5. Installation of roof actuator TYPE 2

Proceed as shown in Fig. 59.

1. Attach the actuator body, cat. no. 8H01106H, to the bracket, cat. no. 8A00813X.
2. Place a 10 mm washer, cat. no. 80375304, on the two-stage screw with M8 thread, cat. no. 7127L414.
3. Pass this screw through the actuator body bracket and fit a 10 mm washer, cat. no. 80375304, on the other side.
4. Pass the end of the bolt through the hole in the actuator bracket, coat the thread of the bolt (cat. no. 7127L414) with thread sealant (cat. no. 13364618) and tighten the M8 nut (cat. no. 7204L008).
5. Attach the actuator piston (cat. no. 8H01106H) to the drive lever (cat. no. 8A00802X or cat. no. 8A01129X).
6. Place a 10 mm washer, cat. no. 80375304, on the two-stage screw with M8 thread, cat. no. 7127L414.
7. Insert the drive lever eye, cat. no. 8A00802X or cat. no. 8A01129X, into the actuator piston fork.
8. Pass this screw through the actuator piston fork and the drive lever eye and fit a 10 mm washer, cat. no. 80375304, on the other side.
9. Coat the thread of screw cat. no. 7127L414 with thread sealant cat. no. 13364618 and tighten the M8 cap nut cat. no. 7204L008.
10. Insert the brake pin, cat. no. 8A012220X, through the spring eye, cat. no. 8H01382X, and the holes in the rafter section.
11. Insert the brake spring, cat. no. 8H01382X, into the brake arm eye, cat. no. 8A01234X.
12. Place the retaining plate, cat. no. 77001L013, on the brake pin, cat. no. 8A01220X.

5.7.6. Installation of roof tie TYPE 2

Installation of slats not compatible with the actuator:

1. Fit retaining ring cat. no. 7702A008 onto adjustment sleeve cat. no. 8A00808X.
2. Insert the sleeves in the following order: through the sleeves in the tie rod, cat. no. 8A00985X, the 8 mm washer, cat. no. 80375325, and the active side lamella cover eye, cat. no. 8A00951X.
3. Coat the thread with thread sealant, cat. no. 13364618, place an 8 mm washer, cat. no. 80375325, on the adjustment sleeve and tighten the whole assembly with an M8 cap nut, cat. no. 7211M008.

Installation of slats cooperating with the actuator:

1. Fit retaining ring no. 7702A008 onto adjustment sleeve no. 8A00809X.
2. Insert the sleeve in the following order: through the hole in the drive crank, cat. no. 8A00842X, then through the sleeves in the cable, 8 mm washer, cat. no. 80375325, active side slat cover eye, cat. no. 8A00951X.
3. Coat the thread with thread sealant, cat. no. 13364618, place an 8 mm washer, cat. no. 80375325, on the adjustment sleeve and tighten the whole assembly with an M8 cap nut, cat. no. 7211M008.

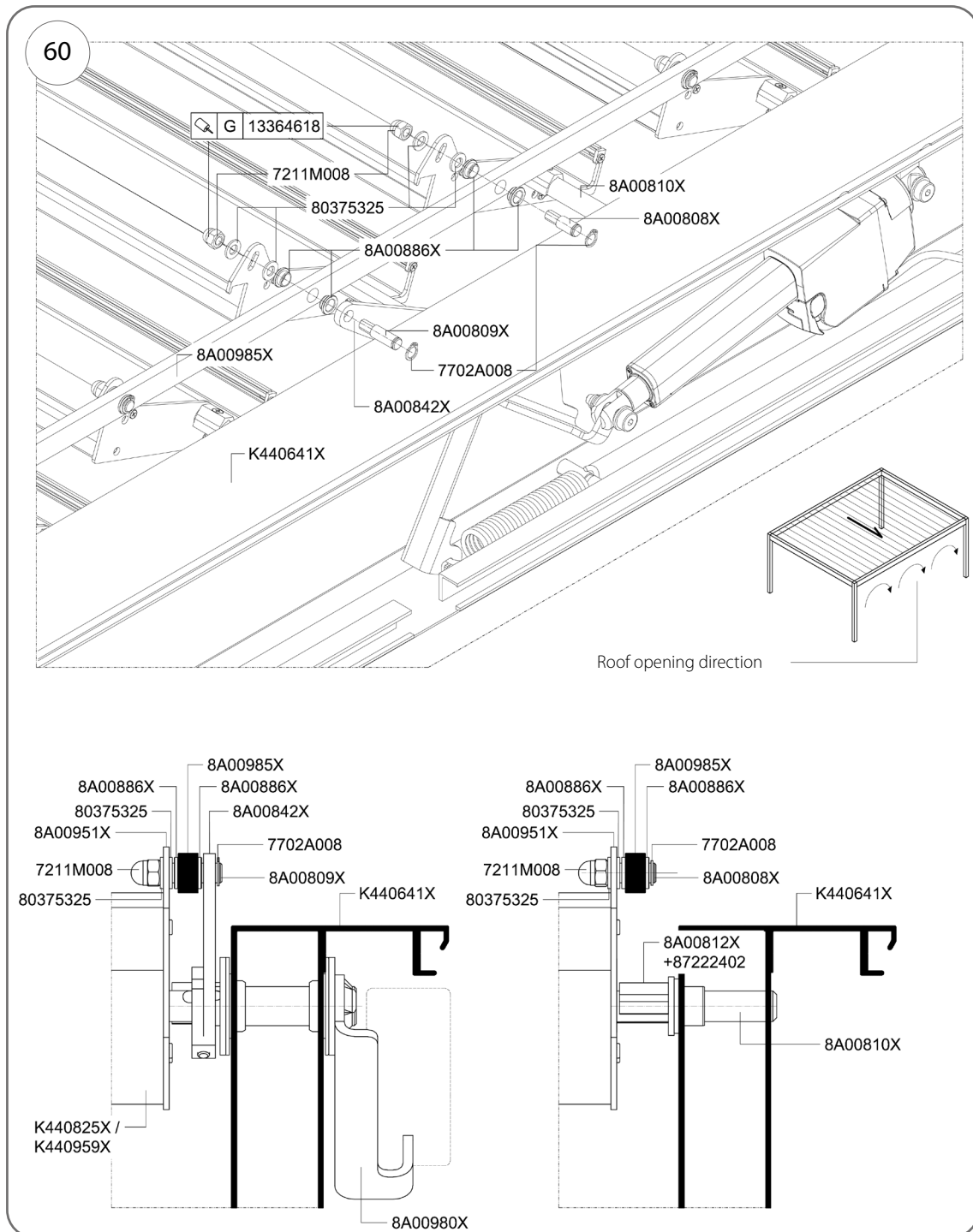


Fig. 60

5.7.7. Installation of the lower roof end profile TYPE 2

1. Attach the lower end profile, cat. no. K440826X, to the purlin cover made of profile no. K440640X.
2. Press the 4 mm seal, cat. no. 120557, into the groove of the profile, cat. no. K440826X, and pull the 4 mm brush seal, cat. no. 8G00309X, into the second groove.
3. Using 4.2 x 16 mm screws, cat. no. 87252402, spaced every 250 mm, attach profile no. K440826X to the purlin cover.

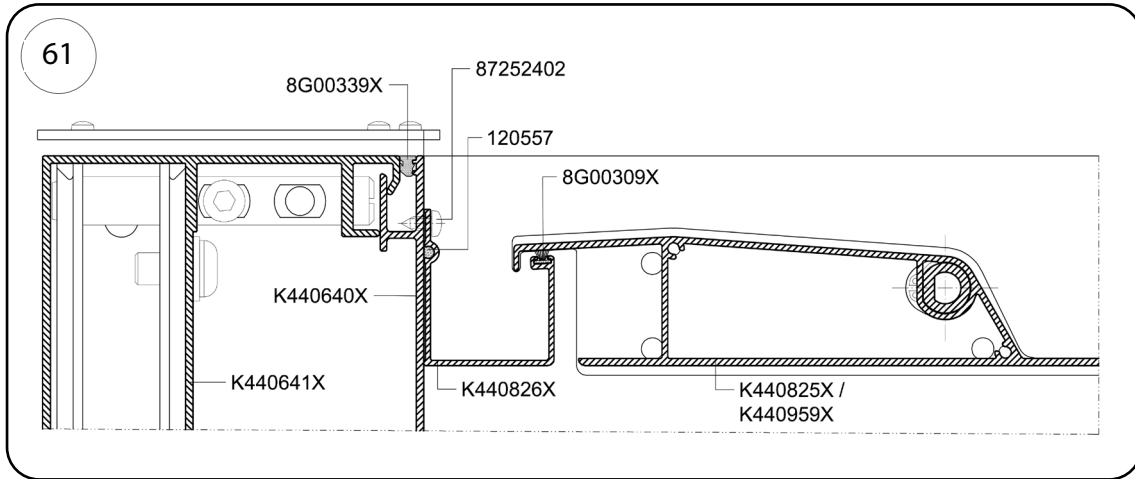


Fig. 61

5.7.8. Installation of the upper roof end profile TYPE 2

1. Attach the upper end section, cat. no. K440827X, to the purlin cover made of section no. K440640X.
2. Press the 4 mm seal, cat. no. 120557, into the groove of the profile, cat. no. K440827X.
3. Using 4.2 x 16 mm screws, cat. no. 87252402, spaced every 250 mm, attach profile no. K440827X to the purlin cover.

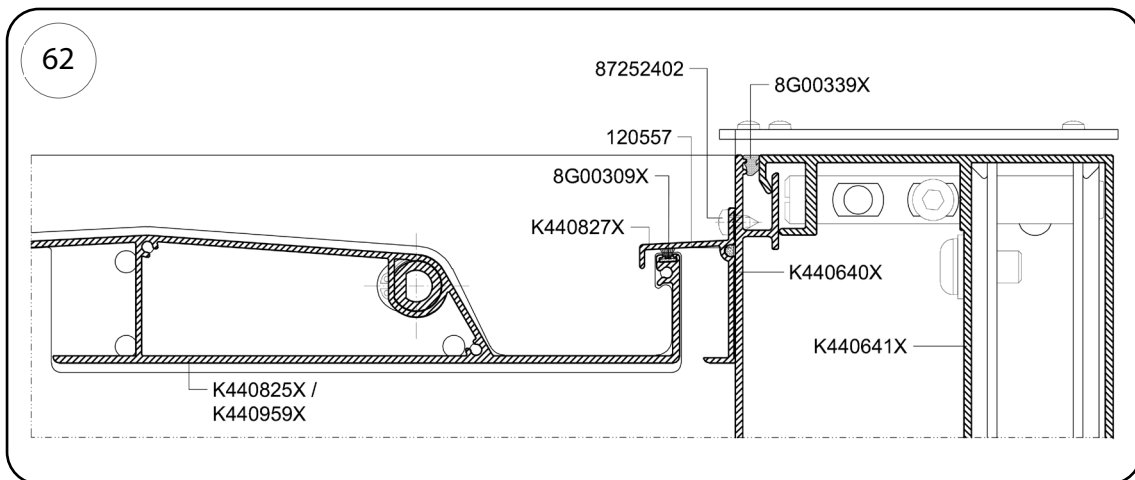


Fig. 62

5.7.9. Roof plane adjustment TYPE 2

Set the end positions with the nuts (cat. no. 7211M008) and adjustment sleeves (cat. no. 8A00808X / 8A00809X) loosened.
 Confirm the guidelines for the position of the 8A00985X tie rod at the connection point between the strut and the 8A00842X crank.

1. Start up and program the actuator according to the instructions.
2. Set the open end position as shown in Fig. 63.
3. Set the closed end position in accordance with Fig. 64.
4. In the closed end position, check that the slat profiles are in contact with each other. Correct any unevenness in the roof using the adjustment system shown in Fig. 65. Once the roof is positioned, lock the slats in place by tightening the locking nut (cat. no. 7211M008). Apply thread sealant (cat. no. 13364618) to the thread.

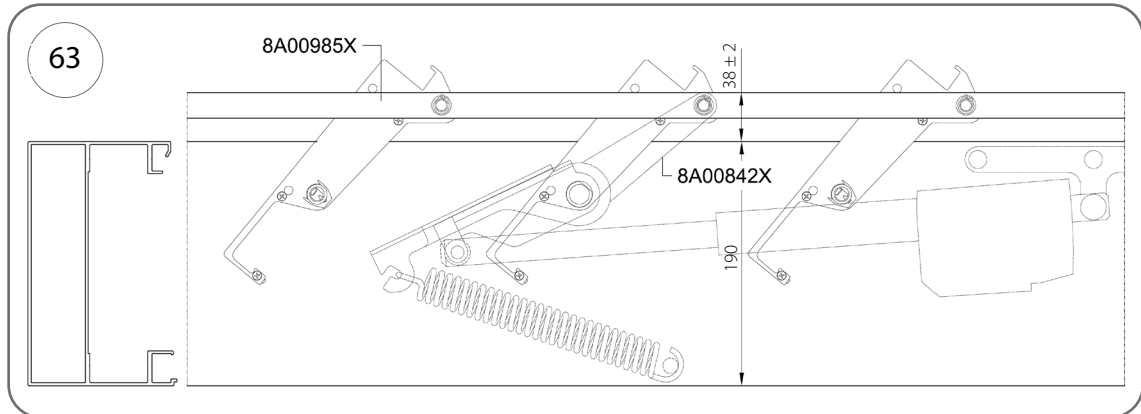


Fig. 63

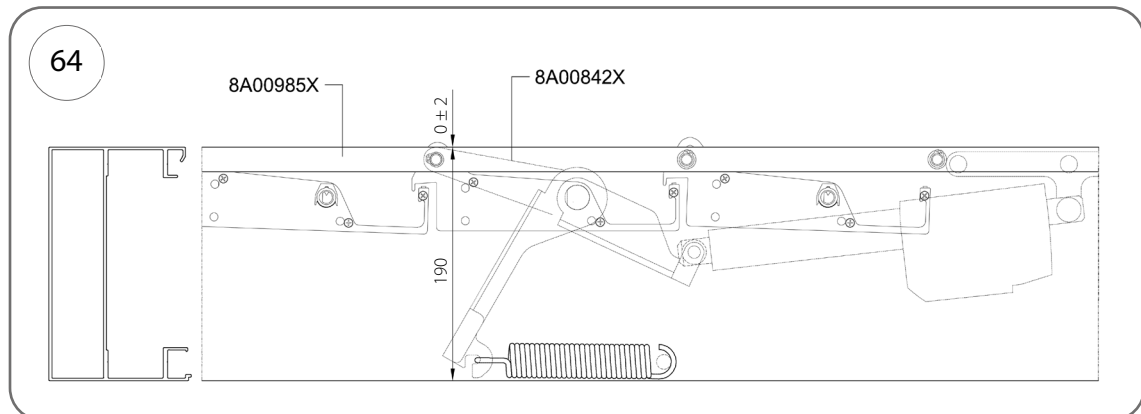


Fig. 64

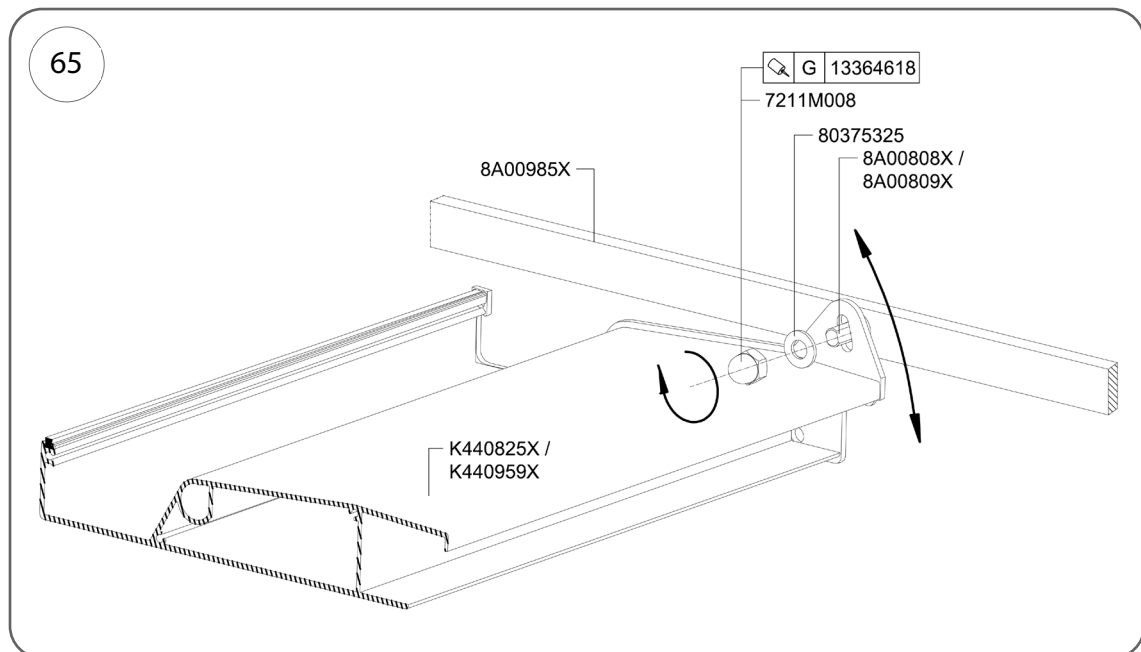


Fig. 65

5.8. Installation of LED lighting in the crown

The lighting in the crown is an installation attached to the rafters and purlins of the pergola on the inner perimeter of the pergola.

1. Screw to the purlin cover (Cat. No. K440640X) (Fig. 66) and to the gutter housing (Cat. No. K440651X or K440839X) (Fig. 67) the LED profile section, cat. no. K440840X, using o 3.5 x 9,5 mm screws, cat. no. 87222202.
2. Use Cosmofen 60 cleaning agent, cat. no. 12894900, to degrease the LED strip channel in the K440840X profile.
3. Feed the ends of the LED strip cables through the 8 mm diameter hole into the purlin and through the post to the rafter (Fig. 68).
4. Apply the tape along the entire length of profile no. K440840X.
5. Insert the profile end cap, cat. no. 8G000960.

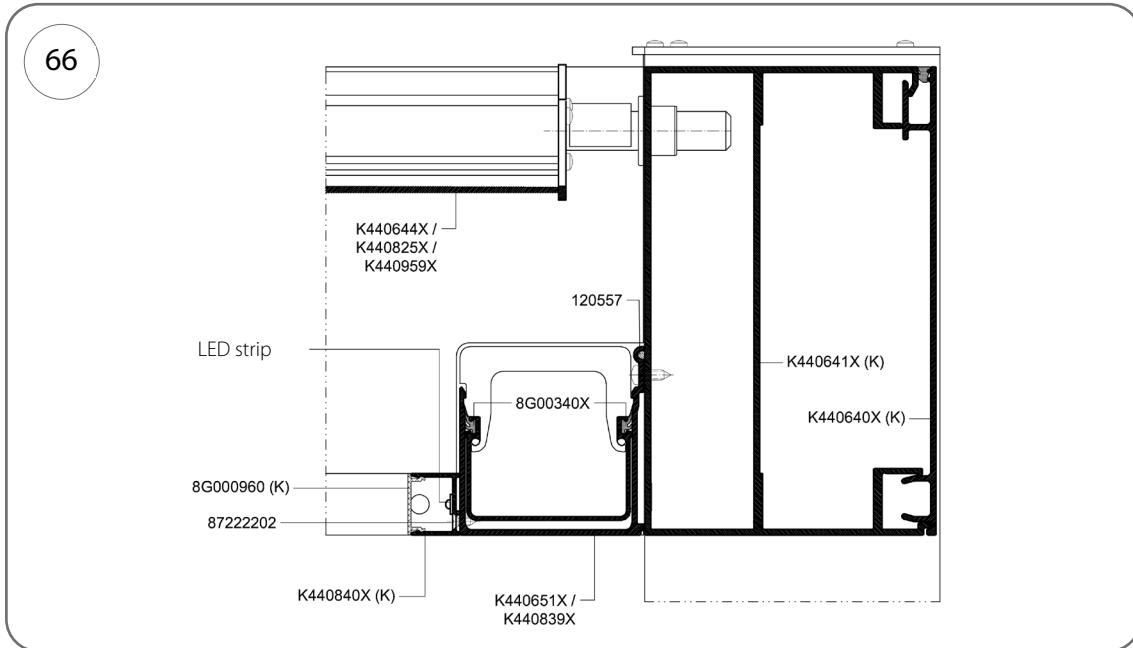


Fig. 66

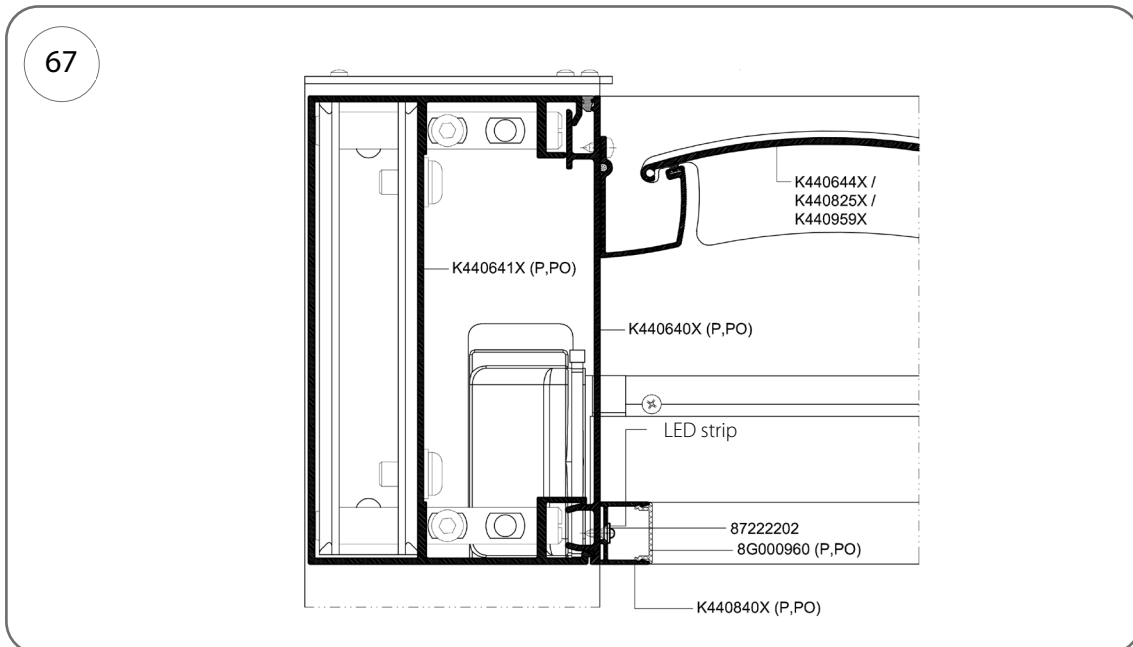


Fig. 67

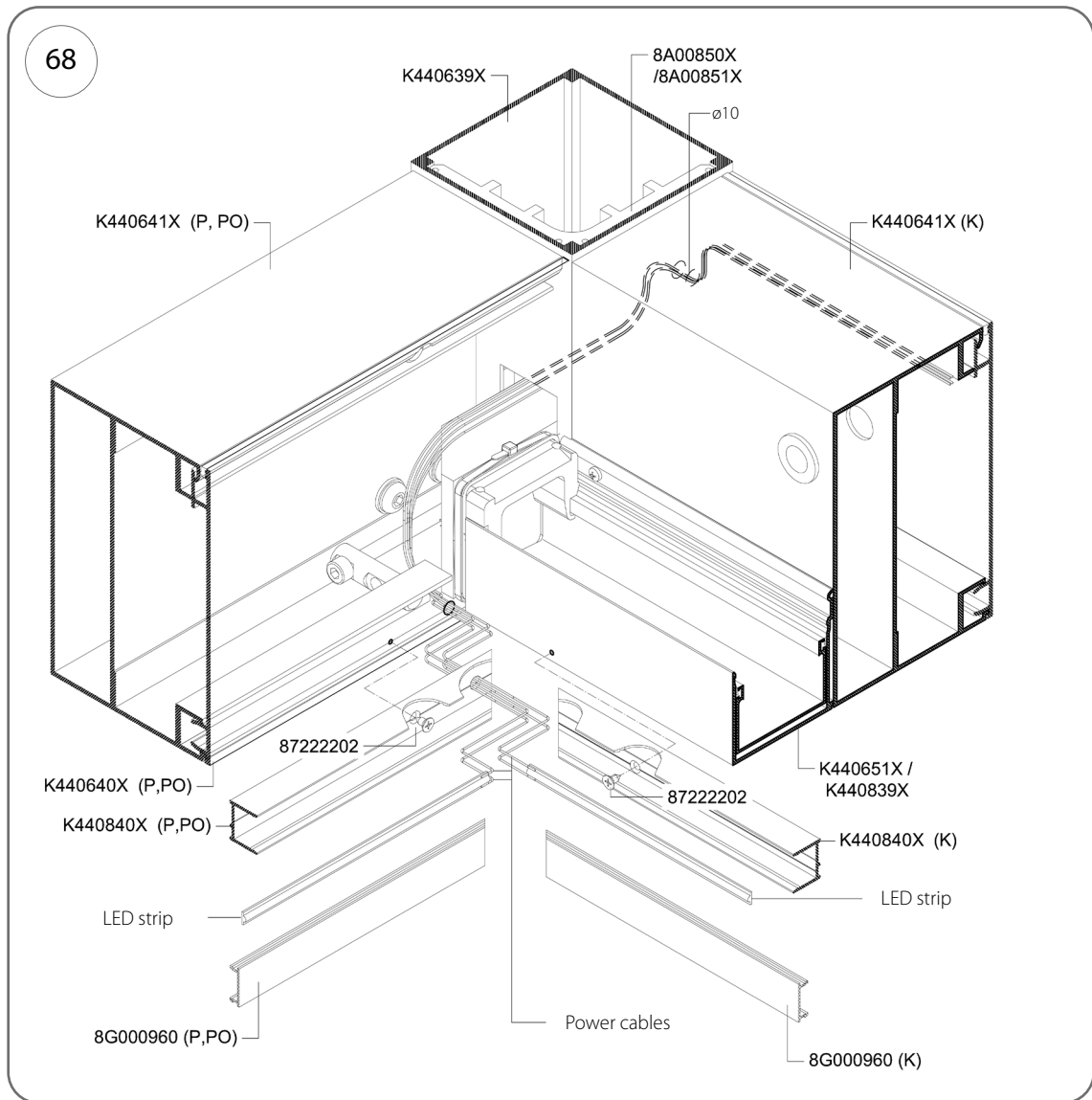


Fig. 68

5.9. Instructional videos

5.9.1 Fastening brackets and posts with a type A drainage system (Knot W1; Fig. 7.1 - 7.3)



<https://youtu.be/tYcNlNHf6Q>

5.9.2 Connecting posts to purlins (Knot W2, W4; Fig. 19, Fig. 20).



<https://youtu.be/Xftnuch9TaY>

5.9.3 Connection of posts to rafters (Knot W2, W4; Fig. 19, Fig. 20).



https://youtu.be/_frKDbgBA_o

5.9.4 Installation of the gutter



https://youtu.be/IBqkskR6_wU

5.9.5 Installation of the cover



<https://youtu.be/HqtwKdb7NQ4>

5.9.6 Roof installation



<https://youtu.be/Tlgw0joowhc>

5.9.7 Installation of upper and lower roof profiles



<https://youtu.be/orEHyljcgms>

SB 450 Pergola

The product meets the CE safety requirements

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Original instructions.

This document forms part of the instructions within the meaning of the Regulation of the Minister of Economy of 21 October 2008 on the essential requirements for machinery. The operating and maintenance instructions, installation instructions and product manufacturing documentation together constitute the complete set of instructions and are available from the manufacturer.