



System description

Invisible fastening of ALPOLIC™ aluminium composite panels with the EJOT PEARLOCK® system

EJOT PEARLOCK® system

Set. Locate. Hang.

With PEARLOCK®, EJOT sets a new standard for innovative keyhole fastening of ALPOLIC™ aluminium composite panels on aluminium, steel and timber substructures. The system, consisting of a setting tool and the mounting element, guides the panel almost automatically into its final position – quickly, precisely and without time-consuming readjustment.

PEARLOCK® is a combination of the well-known EJOT LT-TD screws and plastic components that allow the creation of fixed and sliding points. Thanks to the integrated stop collar at the upper edge of the screw's clamping zone, a fixed stop at a 90° angle to

the substructure is guaranteed. The perfectly plumb alignment ensures a defined clamping length on aluminium and steel substructures.

With the JT4-LT-2/6-6.0x50 screw, ALPOLIC™ aluminium composite panels can be fastened also to timber substructures.

PEARLOCK® also impresses in terms of sustainability: facades can be dismantled without difficulty and individual ALPOLIC™ aluminium composite panels can be replaced, further increasing the overall efficiency of the system.

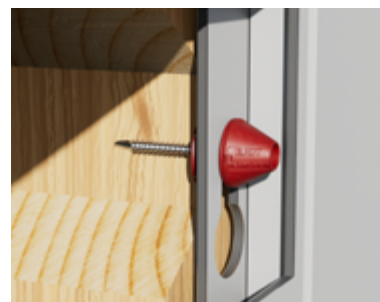
Fastening possibilities for different substructures



Type JT4-LT-TD-3-5.5x28/8 with drill point made of A2 stainless steel for aluminium substructures



Type JT3-LT-TD-3-5.5x32/8 with hardened steel drill point for steel or aluminium substructures



Type JT4-LT-XT-2/6-6.0x50 with drill point made of A2 stainless steel for timber substructures

PEARLOCK® with fixed and sliding point

The operating principle in detail

The moulded plastic parts for the fixed and sliding points of the system differ in their colour and the geometry within the retaining part.

The fixed point variant (red) encloses the screw directly at the stop collar. The complete enclosure prevents any relative movement within the PEARLOCK® system, ensuring that the attachment is held permanently and precisely in the ideal, centred position.

The sliding point variant (black) also encompasses the screw's stop collar and centres it with the aid of a ring held in place by four fine connecting bars. Under transverse loading – such as thermal expansion – these bars break off in a controlled manner, allowing for controlled dilatation (relative displacement) of up to 3 mm in any direction. This is ideal when cladding and substructures need to compensate for thermal expansion without losing their structural integrity.



System advantages

- > Facade stays perfectly smooth and harmonious
- > Combined system: set, locate and hang
- > Efficient installation
- > Easy disassembly or replacement of individual panels
- > Compatible with ALPOLIC™ keyhole drilling
- > Depending on the selected screw, suitable for aluminium, steel, or timber substructures.
- > LT-TD screws: stop collar for vertical alignment, strip-proof by non-threaded part

More information about the PEARLOCK® system

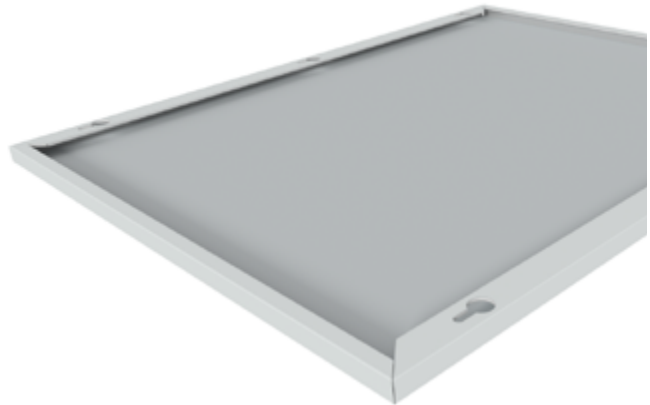
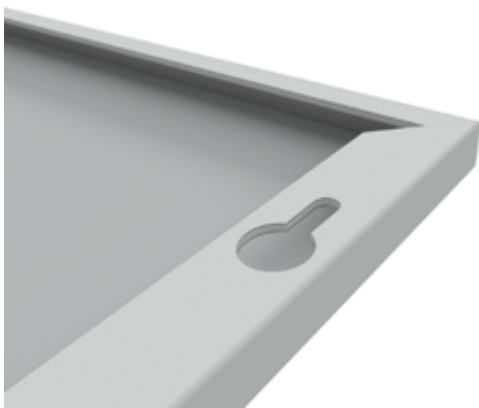
The new system for the invisible fastening of facade claddings



The ALPOLIC™ cassette

A newly developed routing geometry enables clean right-angle folding, even with limited panel depths. Using standard tools, the elements can be accurately routed, bent, folded, or cut directly on site, enabling fast and dimensionally accurate processing. No additional structural reinforcement of the corner area is required.

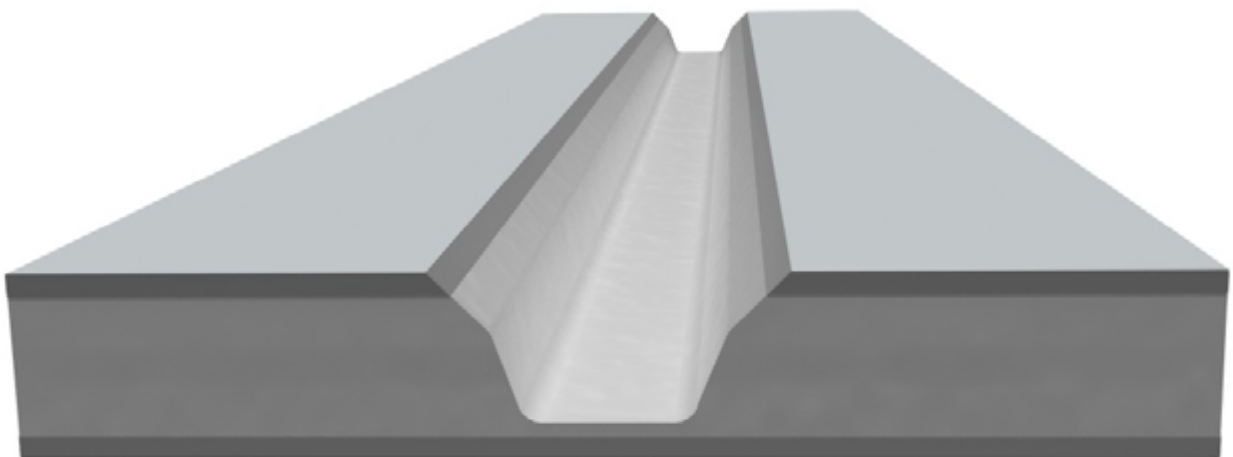
The outstanding rigidity of ALPOLIC™ aluminium composite panels forms the perfect basis for the PEARLOCK® system. It allows the creation of large-format, dimensionally stable facade cassettes with excellent flatness, ensuring a premium facade appearance and long-lasting quality.



Rear side: routing of the PEARLOCK® cassette

The specially developed routing geometry is perfectly matched to the composition of the ALPOLIC™ composite panel core and the high-quality aluminium

alloy of the ALPOLIC™ surface layer. This results in precise right-angle edges, maximum stability, and a unique facade design.



Routing groove

Detail drawings

Numerous standard details are available to support safe planning and installation. They support the development of typical connection details and facilitate the integration of the system into facade design, including:

- > Vertical and horizontal joint lines
- > Parapet and base
- > Window reveal and window connection

The drawings are available in PDF and DWG formats.

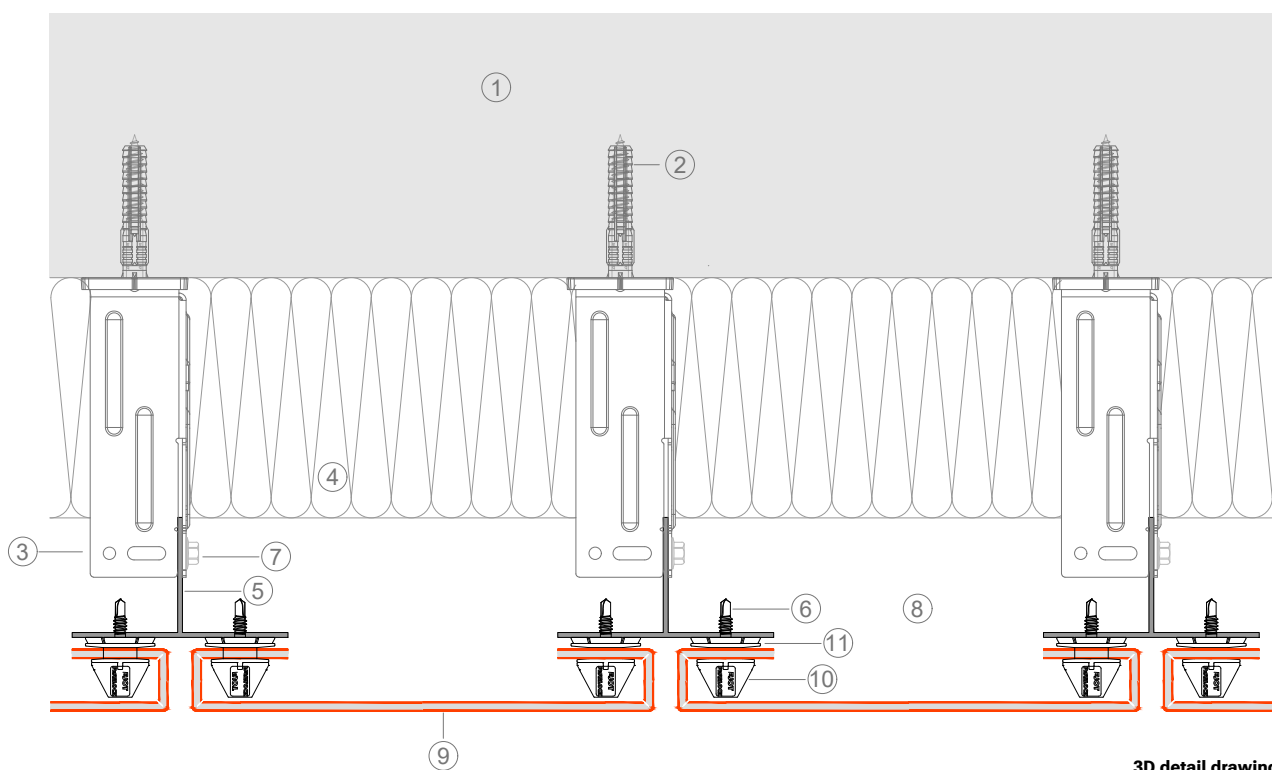


Download: PDF



Download: dwg

Vertical cassette



Fastening on different substructures

1. Fastening to aluminium or steel substructures

Installing PEARLOCK® on an aluminium or steel substructure using LT-TD screws provides thermal separation by creating a 3.0 mm air gap between the ALPOLIC™ aluminium composite panel and the substructure.

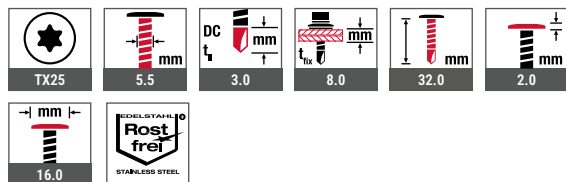
Thanks to the integrated stop collar at the upper edge of the screw's clamping zone, a fixed stop at a 90° angle to the substructure is guaranteed. The perfectly plumb alignment ensures a defined clamping length on aluminium and steel substructures.

JT3-LT-TD-3-5.5

Application range

- > For fastening facade cladding panels (max. 8 mm) to aluminium and steel substructures

Technical data



Further product information

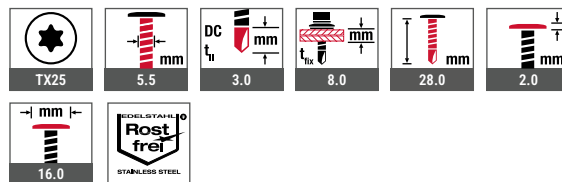


JT4-LT-TD-3-5.5

Application range

- > For fastening facade cladding panels (max. 8 mm) to aluminium substructures

Technical data



Further product information



2. Fastening to timber substructures

Installing the PEARLOCK® system on a timber substructure provides an economical and easy-to-install solution for rainscreen facades. The joints are neatly concealed by the composite material, resulting in a clean and aesthetically refined facade finish. Installation is particularly efficient, as the fastening points can already be marked on the backing material. This simplifies processing, reduces installation effort, and saves valuable time on site.

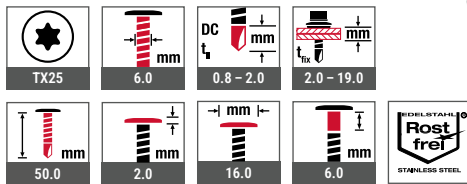
Note: During installation of the JT4-LT-Xt-2/6-6.0x50 screw into timber substructures, the screw must not be overtightened, as this could impair the movement capability required for the long-term performance of the PEARLOCK® system.

JT4-LT-Xt-2/6-6.0 KD16

Application range

- > For fastening facade cladding panels (max. 10 mm) to timber substructures

Technical data



Further product information



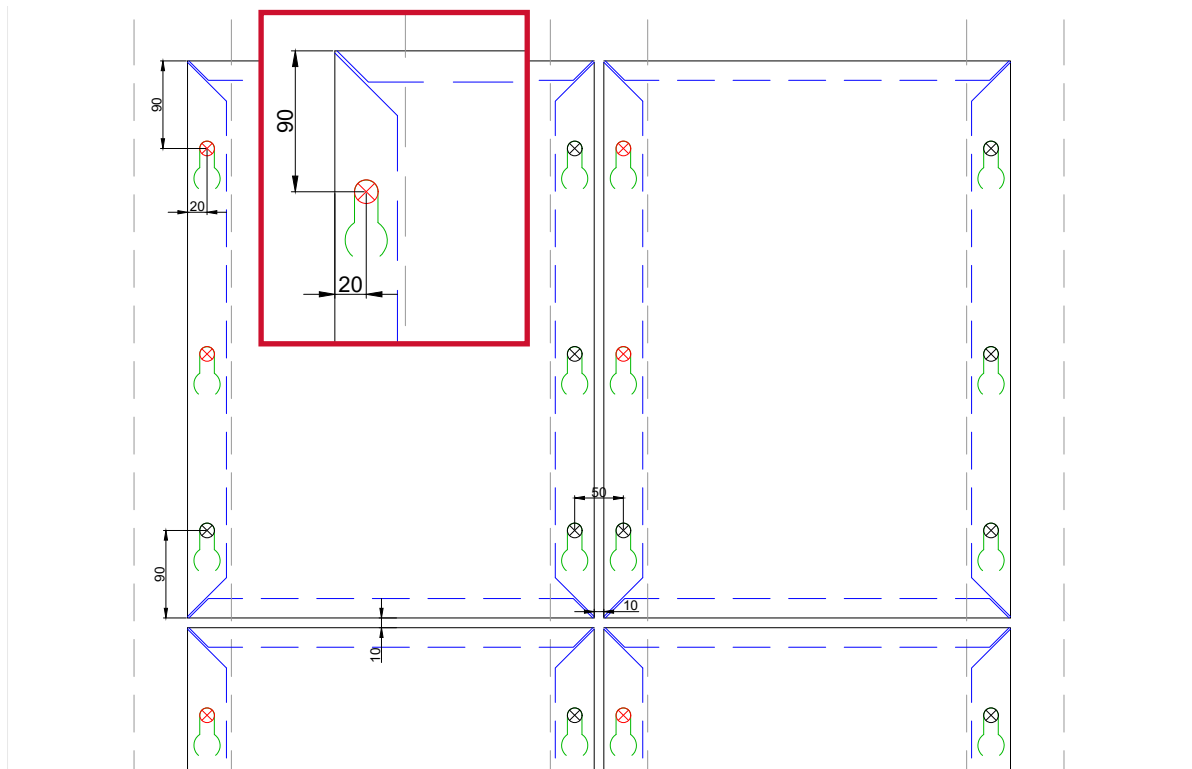
Assembly steps

Step 1: Marking out the fastening points

To install the PEARLOCK® system, the drilling position must first be determined on the substructure. Two methods are available for this purpose:

1. Conventional measuring and marking

- > Distance to the vertical joint: 20 mm
- > For a 10 mm joint width: distance between the EJOT screws of adjacent cassettes 50 mm
- > Distance to the horizontal joint: 90 mm



Fastener spacing

2. Using a drill jig

For recurring cassette folding, the locations of the self-drilling screws can be defined using a drill jig.

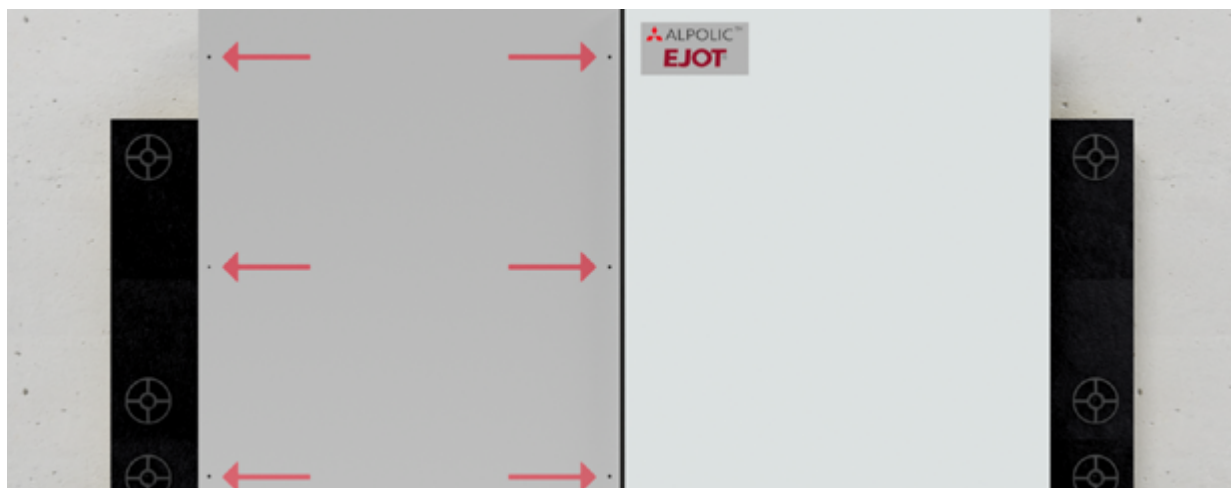


Plate drill jig

Step 2: Fixed and sliding points

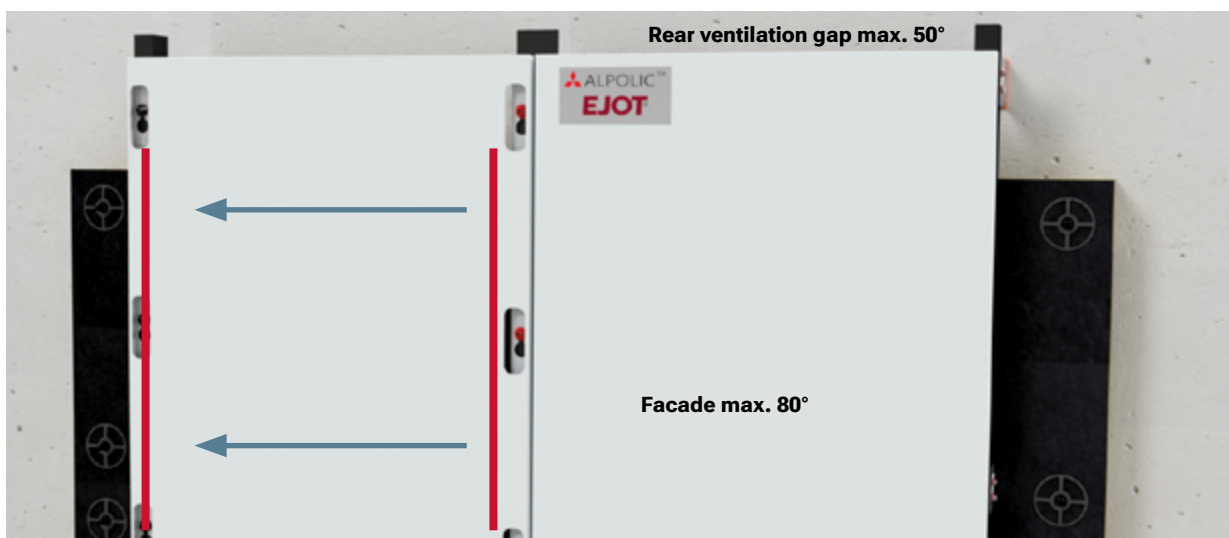
Once the position of the PEARLOCK® has been determined and marked out, the fasteners can be installed.



Marked fastening position

Define where the cassette is supported by a fixed point and a sliding point. For a temperature increase of 100°C, aluminium undergoes a thermal expansion of 2.4 mm per metre. Europe, dark facade surfaces may heat up to as much as 80°C when exposed to direct sunlight. As the facade heats up, the temperature within the ventilation cavity increases as well. The substructure in the rear-ventilated cavity may reach temperatures of up to 50°C during summer conditions. PEARLOCK® offers a simple and reliable

solution for defining fixed and sliding points. One side is supported by fixed points, allowing the composite panel to expand horizontally towards the sliding points on the opposite side. Thermal expansion in the vertical direction is accommodated by the pear-shaped holes in the composite panel. To simplify installation, the fixed-point side may be designed with two fixed points, while the remaining fastening points are configured as sliding points.



Panel expansion at fixed and sliding points

Step 3: Fastening the PEARLOCK® system

By holding the PEARLOCK® cap, the system can be safely guided and secured during screw installation. On aluminium and steel substructures, the stop collar of the LT-TD screws ensures precise perpendicular positioning.

The JT4-LT-XT-2/6-6.0x50 KD16 provides optimum fastening performance for the PEARLOCK® system on timber substructures due to its specially designed thread geometry.



Position the PEARLOCK® system on the aluminium or steel substructure and fasten it with LT-TD screws using the extended TX25x70 bit.



Position the PEARLOCK® system on the timber substructure and fasten it with the LT-XT screw using the extended TX25x70 bit.



The screw is screwed in up to the stop collar. It ensures a precise installation depth, creates a defined clamping range and guarantees reliable perpendicular alignment of the screw.



Tighten the screw until the plastic "Holder" makes contact with the timber substructure. To ensure proper operation of the sliding point, the screw must subsequently be turned back by 90°.



The fixed-point variant (red) completely surrounds the screw's stop collar, preventing relative movement between the components. It provides a reliable fastening of the cladding. The sliding-point variant (black) also engages the stop collar and centres it by means of a ring connected by four fine retaining bars. Under transverse loads, such as those caused by thermal expansion, these bars are designed to break away, allowing controlled movement of up to 3 mm in any direction.



The fixed-point variant (red) completely surrounds the screw's stop collar, preventing relative movement between the components. It provides a reliable fastening of the cladding. The sliding-point variant (black) also engages the stop collar and centres it by means of a ring connected by four fine retaining bars. Under transverse loads, such as those caused by thermal expansion, these bars are designed to break away, allowing controlled movement of up to 3 mm in any direction.

Step 4: Engaging the cassette



Engaging the screw connection

The cassette is slid onto the PEARLOCK® system until it is positioned at the level of the circular keyhole opening.



Easy engagement thanks to cone head for easier assembly

The PEARLOCK® system's cone head facilitates easy installation, even in the presence of fastening tolerances.

Step 5: Slide cassette into its final position

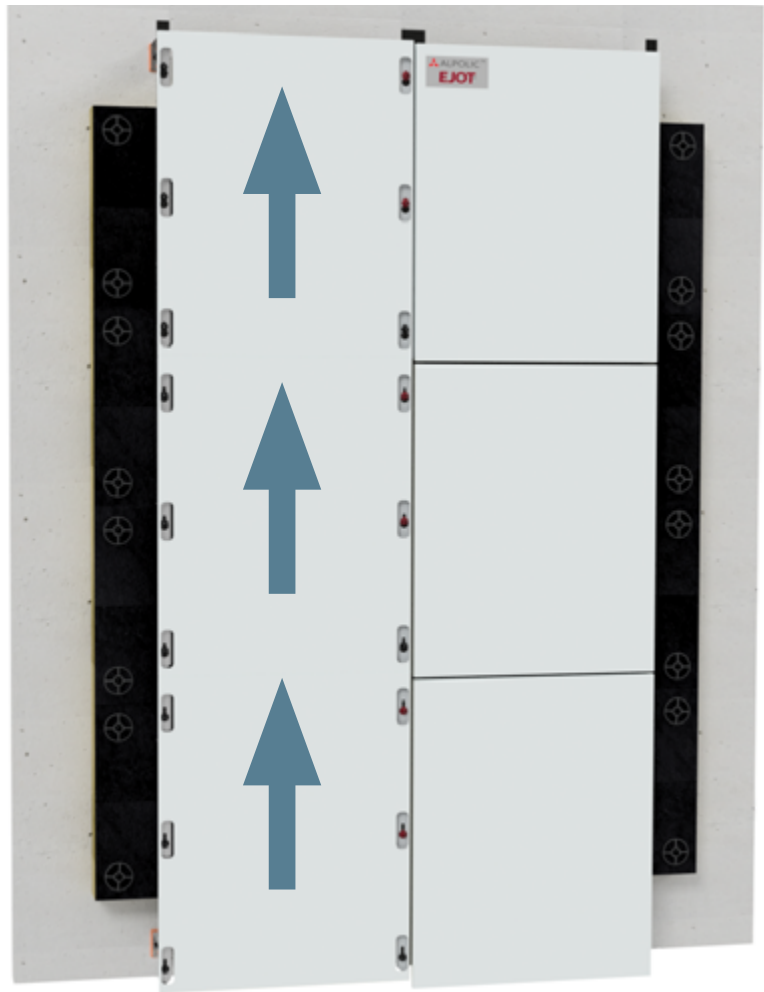
The panel is slid onto the PEARLOCK® system through the mounting hole and moved into its final position. In most cases, the self-weight of the cassette is sufficient. If necessary, it can be easily slid into position.



Composite panel in final position

Special case: dismantling a cassette

In the event of disassembly, the composite panel must be disengaged from the keyhole connection. With a joint width of 10 mm, the two cassettes above must also be lifted slightly.

**Special case: cassettes with horizontal folded edge**

The horizontal folded edge can be formed outward to close the horizontal joint. For this purpose, the cassette must be notched around the vertical substructure.



Outward-folded horizontal folded edge



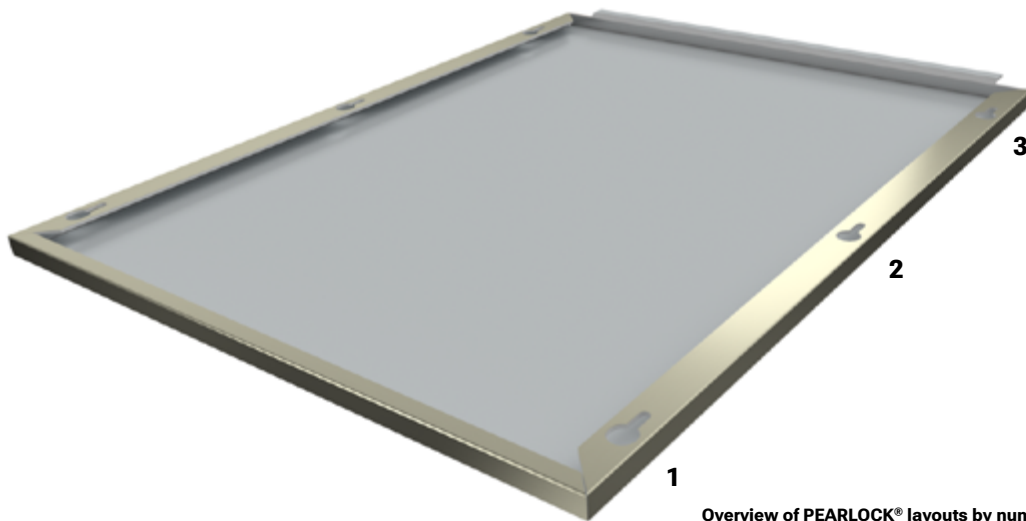
Folded edge with notch in the substructure area

Load capacity table

The following tables indicate the number of PEARLOCK® systems required per side.

Example: Where three fastening points per side are required, a total of six PEARLOCK® systems must be used to fasten the panel. Depending on the panel size and the applied loads, the deflection limit of L/30 may be exceeded, making a reinforcement profile necessary. The tables show the required number of

RHS rectangular hollow sections measuring 40 mm × 25 mm × 2 mm. The primary purpose of the profile is to minimise cassette deflection; a fixed connection to the folded edge is not essential. The cassette features a return depth of 25 mm. The upper and lower double edge returns have return lengths of 25 mm and 20 mm respectively. Larger dimensions and higher wind load capacities are available upon request.



Overview of PEARLOCK® layouts by number of fasteners per side

Stress table for wind load 0.8 kN/m²

Cassette height [mm]	PEARLOCK® per side [quantity]					
3500	5	5	5	5	5	5
3000	4	4	4	4	4	4
2500	4	4	4	4	4	4
2000	3	3	3	3	3	3
1500	3	3	3	3	3	3
1000	2	2	2	2	2	2
500	2	2	2	2	2	2
Wind load 0.8 kN/m²	500	600	700	800	900	1000
	Cassette width [mm]					



No reinforcement

Example: With a characteristic wind load of 0.8 kN/m² and a cassette size of 900 mm × 3000 mm, a total of eight PEARLOCK® fixing points are required. No additional reinforcement is necessary.

Stress table for wind load 1.0 kN/m²

Cassette height [mm]	PEARLOCK® per side [quantity]					
3500	5	5	5	5	5	6
3000	4	4	4	4	4	5
2500	4	4	4	4	4	4
2000	3	3	3	3	3	3
1500	3	3	3	3	3	3
1000	2	2	2	2	2	2
500	2	2	2	2	2	2
Wind load 1.0 kN/m²	500	600	700	800	900	1000
	Cassette width [mm]					

 No reinforcement
  1 reinforcement RHS 40 mm x 25 mm x 2 mm

Example: With a characteristic wind load of 1.0 kN/m² and a cassette size of 1000 mm x 2500 mm, a total of eight PEARLOCK® fixing points are required. Due to excessive deflection, a reinforcement, such as a 40 mm x 25 mm x 2 mm rectangular profile, shall be installed centrally. The ends of the profile do not require a load-transferring connection to the edge returns.

Stress table for wind load 1.2 kN/m²

Cassette height [mm]	PEARLOCK® per side [quantity]					
3500	5	5	5	5	5	6
3000	4	4	4	4	4	5
2500	4	4	4	4	4	4
2000	3	3	3	3	3	3
1500	3	3	3	3	3	3
1000	2	2	2	2	2	2
500	2	2	2	2	2	2
Wind load 1.2 kN/m²	500	600	700	800	900	1000
	Cassette width [mm]					

 No reinforcement
  1 reinforcement RHS 40 mm x 25 mm x 2 mm
  2 reinforcement RHS 40 mm x 25 mm x 2 mm

Example: With a characteristic wind load of 1.2 kN/m² and a cassette size of 1000 mm x 3000 mm, a total of ten PEARLOCK® fixing points are required. Due to excessive deflections, two reinforcements, such as 40 mm x 25 mm x 2 mm rectangular hollow sections, must be used. The ends of the profile do not require a load-transferring connection to the edge returns.

Stress table for wind load 1.4 kN/m²

Cassette height [mm]	PEARLOCK® per side [quantity]					
3500	5	5	5	5	5	6
3000	4	4	4	5	5	5
2500	4	4	4	4	4	5
2000	3	3	3	3	3	4
1500	3	3	3	3	3	4
1000	2	2	2	2	2	2
500	2	2	2	2	2	2
Wind load 1.4 kN/m²	500	600	700	800	900	1000
	Cassette width [mm]					

 No reinforcement
  1 reinforcement RHS 40 mm x 25 mm x 2 mm
  2 reinforcement RHS 40 mm x 25 mm x 2 mm
  3 reinforcement RHS 40 mm x 25 mm x 2 mm

Example: With a characteristic wind load of 1.4 kN/m² and a cassette size of 1000 mm x 2000 mm, a total of eight PEARLOCK® fixing points are required. Due to excessive deflection, a reinforcement, such as a 40 mm x 25 mm x 2 mm rectangular profile, shall be installed centrally. The ends of the profile do not require a load-transferring connection to the edge returns.

Optional configuration

Joint backing

The optional joint backing with composite material provides a uniform and high-quality facade appearance. By covering the joint areas, the substructure and ventilated cavity are visually concealed. In addi-

tion, the fastening point locations can be pre-marked on the backing material, simplifying positioning and supporting efficient installation.



FAQ

PEARLOCK® fastening system for ALPOLIC™ aluminium composite panels

1. What is the PEARLOCK® system?

PEARLOCK® is an innovative, invisible fastening system in rainscreen facades (RVF), specially designed for ALPOLIC™ aluminium composite panels. It combines high aesthetic appeal with quick and easy installation.

2. Which applications is PEARLOCK® suitable for?

PEARLOCK® can be used in new-build construction, modular construction and renovation projects. PEARLOCK® is particularly suitable for demanding facade applications where both design quality and functionality are essential.

3. Which materials can be used?

PEARLOCK® is compatible with substructures made of:

- > Aluminium
- > Timber
- > Steel

4. How does the fastening work?

The cassette is fastened using special EJOT screws that engage in a milled groove in the cassette.

5. What is the difference between a fixed point and a sliding point?

- > Fixed point (red): Prevents movement of the cassette on one side.
- > Sliding point (black): Allows controlled movement of up to 3 mm in all directions to compensate for thermal expansion. This protects the facade from stress and deformation.

6. How is the position of the screws determined?

1. Manual marking-out using the specified dimensions
 - > 20 mm from the vertical joint
 - > 90 mm from the horizontal joint
 - > 50 mm distance between screws with a 10 mm joint
2. In serial production, a drilling template can be used to position the screws accurately

7. How is a cassette removed?

The cassette is disengaged from the keyhole connection by lifting it upwards. For narrow joints (<10 mm), adjacent cassettes must also be released.

8. What milling geometry is used?

A specially designed double-folded milling geometry is used, making it ideal for ALPOLIC™ aluminium composite panels.

9. Which detail drawings are available?

Standard detail drawings are available in PDF and DWG format:

- > Vertical and horizontal joint lines
- > Parapet and base connection
- > Window head, sill and jamb details
- > Internal and external corner
- > Soffit and side facade termination details

10. How many fastening points are required?

The number depends on the cassette size and the wind load.

Example:

Wind load [kN/m²]	Cassette size (WxH) [mm]	PEARLOCK® per side [quantity]	Reinforcement required?
0.8	1000x3000	4	No
1.2	1000x3000	5	2 × RHS 40×25×2 mm
1.4	1000x2000	4	1 × RHS 40×25×2 mm

Note: Depending on the expected deflection, a **stiffening profile** may be required. It does not necessarily need to be rigidly connected to the cassette.

11. Which ALPOLIC™ panels are suitable for PEARLOCK®?

ALPOLIC™/fr, ALPOLIC™ A2 or ALPOLIC™ NC/A1 with:

- > Minimum folded edge depth: 25 mm
- > 20/25 mm double-folded edge at the top and bottom
- > Milling geometry tailored to the core material and aluminium alloy.

12. Are there standard cassette sizes or shapes?

No. The cassette geometry can be customised to meet specific architectural and design requirements.

13. Where can I find DWG files for planners?

Standard detail drawings are available from ALPOLIC™ Europe upon request as PDF and DWG files.

14. Is technical support available from ALPOLIC™?

Yes. Technical consulting, load calculations and milling templates are available.



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