

INSTALLATION GUIDE

Sandwich Panels

INSTALLATION GUIDE



Work safety

Wear protective gloves and clothing when handling the panels, edges and corners are sharp.

The lifting slings included in the panel package when ordered are disposable and should be used only once when unloading the packages. Always check that the lifting slings are in order and firmly attached.

Be sure that there are no people below a lifted package.

Strong wind may prevent installation. Always carefully follow the safety instructions accompanying the LiftAids.

Before installation work, check if the installation site is subject to any particular requirements regarding occupational safety. Always follow the local occupational safety provisions.

Additional information

For more detailed information also get acquainted with the following material on our website www.paroc.com/panelsystem > Installation.

Details

Paroc Panel System panels have to be installed according to the project specific details.

LiftAids

We have developed special lifting equipment for panels. They are on rental basis and are to be ordered well in advance. LiftAid types and instructions can be found on our website.

Use and Maintenance Guide

Use and Maintenance Guide presents for instance how to clean and repair panels.

Preparation

Fasteners

Before starting installation check that the correct fasteners have been specified and supplied for the actual frame type and strength, e.g. the concrete strength is adequate or the steel thickness is correct for the intended screws. Also check the number of fasteners in the dimensioning documents. The fasteners must not be tightened too much to avoid dents around them. Use, for example, a screwdriver with depth limiter.

Details

To ensure the quality and functionality of the total construction, details and specifications have to be followed correctly. Fasteners, fire and thermal insulation and flashings etc. have to be carefully installed according to the project specification.

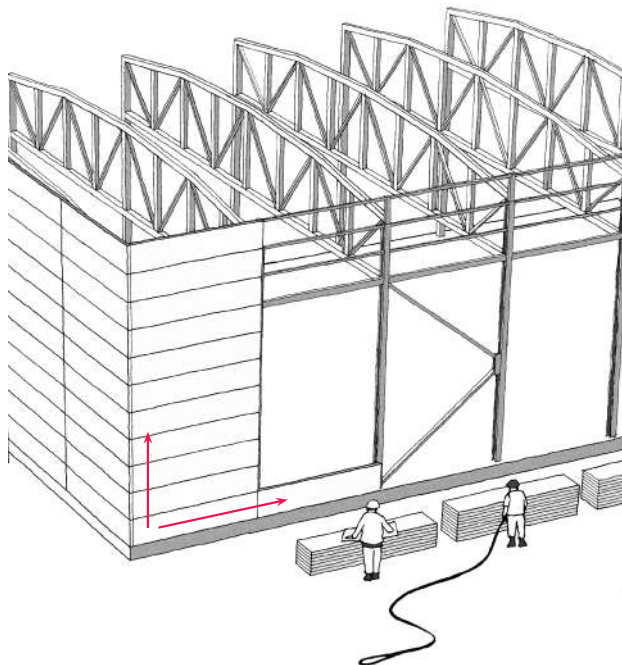
LiftAids

Contact Paroc Panel System beforehand to rent needed lifting equipment.

LiftAids are presented on our website, see address to the left.

Installation direction

Unless otherwise agreed the panels are packed in the installation direction **from left to right**. In vertical installations, the panels are normally installed with the male joint in the installation direction as shown in the installation drawing. Small colour variations may for coating-technical reasons appear between different delivery batches of the panel coating material. If a specific installation order has not been informed panels should be installed in delivery order.



YOU WILL NEED

- ✓ Drilling machine and screw driver with depth limiter and 8 mm socket (0-2000 rpm, torsion moment 1900 Ncm)
- ✓ Jigsaw and/or circular saw with hard-metal blade for steel sheets
- ✓ Plate cutter, folding tongs and pop rivet tongs
- ✓ Installation drawing and panel package list
- ✓ LiftAid, to be rented from Paroc Panel System; to be ordered well in advance
- ✓ Levelling tools, builder's level, plumb line and measuring tape
- ✓ Sealant gun for joint compound
- ✓ Electrical supply
- ✓ Crane or forklift (approx. 2 tonnes) for unloading, and lifting crane, telescope forklift, scissor lift or forklift for installation depending on the lifting method. The fork width is min. 800 mm and max 1400 mm.
- ✓ Protective cover for open panel package

CHECK LIST

Before installation:

- ✓ Sufficient storage space for packages available
- ✓ Sufficient working space around the framework
- ✓ Framework ready, support widths adequate, and tolerances acceptable
- ✓ Local safety instructions to be observed

During installation:

- ✓ Female joints are clean and open
- ✓ Panel sealant is in order
- ✓ Panel cores are tightly pressed together
- ✓ Screws are not tightened before the following panel is in place
- ✓ Required support width is maintained during installation, min. 50 mm

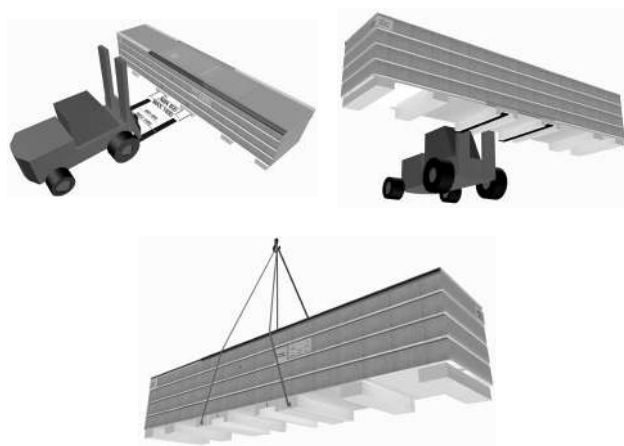
At the building site

Location of packages

Unload the packages one at a time and place them on an even foundation near the installation site using the installation drawings and package list as a reference. Turn the male joint towards the building. Do not stack packages on top of each other.

Unloading

1. When unloading with a forklift, lift only one package at a time.
2. The packages have to be lifted inside the EPS forklifting foot, see picture below. The fork width is min. 800 mm and max. 1400 mm.
3. Don't put other loads on top of the panel packages, this may scratch the finished panel surfaces.
4. If the panels have to be loaded on top of each other, check that the EPS support feet are free from stone and other sharp-edged objects.



When unloading the panels using a crane, lifting slings must be ordered in advance.

Before lifting, check that the lifting slings are in order and that the package is in balance. Please note that the lifting slings are disposable and should be used only once when unloading panels from a trailer. Be sure that there are no people below a lifted package.

Acceptance control

Check that the quantity and dimensions of the panels correspond to the packing list and installation drawing. Also check for possible transport damage immediately and, in case of damage, directly make remarks on the bill of freight and submit a written report to Paroc Panel System.

Handling of panels

Sandwich panel is a structure where the core and facing act as a composite. To ensure the panel strength it is essential not to cut one of the panel facings. The panels are supplied with finished surfaces and therefore have to be handled with care. If panels are delivered with a protective film it has to be removed right after installation.

To avoid scratches and other damage during installation, always use foam sheets between the panel surfaces. Scratches on panels from handling and installation have to be repaired as soon as possible according to instructions in Use and Maintenance Guide (see page 2).

If welding or using an angle grinder near panels, the panel surfaces must be protected. Cover opened panel packages when finishing work for the day.

Panel cutting and penetrations

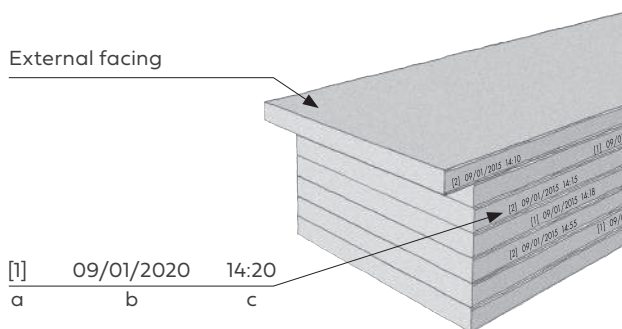
Openings and cut-outs may be required on site. Please note that large openings may weaken the panel strength and affect the fire resistance properties of the structure. The static calculation of the panel is made only for the openings included in the installation drawing. Use a jigsaw for small cut-outs and cuts that are not straight. Long cuts may require a circular saw. Do not use an angle grinder to cut the panels, as it will damage the coating. Brush splinters off the panel surface, as remaining debris will discolour the surface.

Panel identification

The laser printed panel identification code is placed at female side on the panel wool, when you read the numbers right way, the steel sheet above the numbers is External facing.

The marks on the wool are:

- a) Press number
- b) Date when produced
- c) Time when produced



If both facings are of the same colour but with different coating, always ensure that the panel is correctly installed by checking the installation drawing.

More information on the panels and their surfaces can be found in the package label.

PANEL WEIGHTS, KG/RUNNING METRE

Panel type	Panel thickness (mm)								
	50	80	100	120	150	175	200	240	300
AST® T	17	19	20	23	25	28	30	34	40
AST® S	18	20	23	25	28	29	34	38	45
AST® F	19	23	25	29	32	36	40	46	55
AST® E	19	23	26	29	34	36	41	47	56

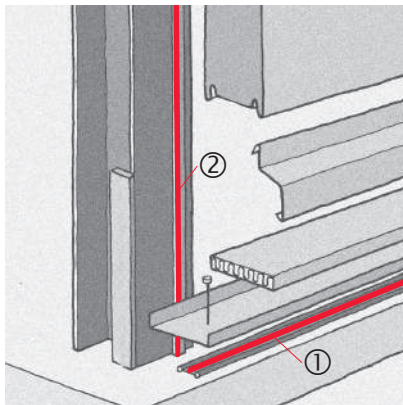
Horizontal installation of external and internal walls

Levelling

The panels are to be installed horizontally aligned. Take levels of the foundation in order to find the highest point. Mark this height on the external side of the frame and use the height marks when installing the panels.

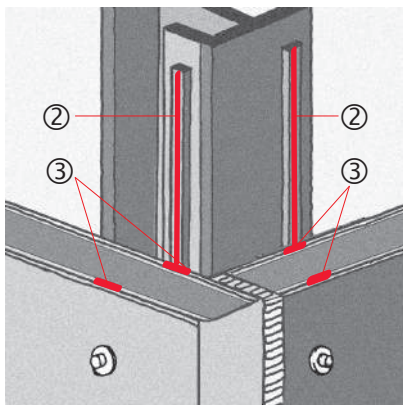
Foundation

Apply foundation sealant ① and install a U-channel on the foundation 8 mm off the frame. Fix the U-channel at 600 mm centres, seal channel joints and fill the channel with a stone wool strip, if possible in connection with the panel installation. Install the foundation flashing with 100 mm overlap using sealant in the overlap.



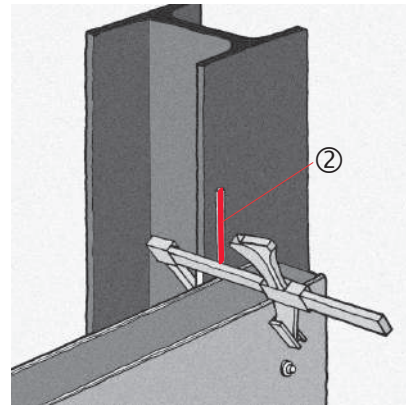
Frame sealant

In external walls, apply sealant ② (strip or compound) to the framework so that the panel fasteners remain outside the sealant.



Installation of panels

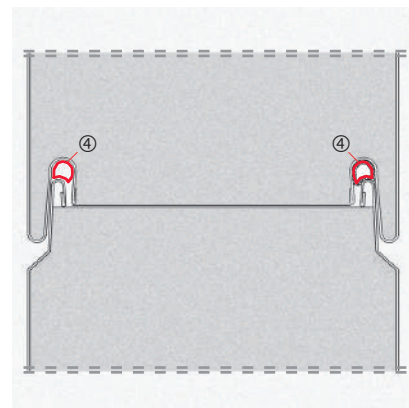
Lift the panel into the right position using a LiftAid. Steer the panel using the steering line fixed to one end of the panel. Also remember to fix the safety line around the panel. Panels intended for external walls are delivered with a factory-installed rubber sealant ④. Check that this sealant is intact in order to ensure correct functioning of the wall. The joint with the sealant has to be turned towards the warm side of the building, normally inwards. In extreme weather conditions panels are delivered with sealant in the outer groove of the joint as well. Press the panel tightly against the framework using a quick grip. The frame sealant has to be compressed at least 30 %.



Fixing of panels

Fix the panel using appropriate fasteners, minimum 20 mm from the panel end. Leave the screws near the male joint open till the next panel is installed. The screws must not be too tight, use a screwdriver or drilling machine with depth limiter. The correct number of fasteners can be found in the dimensioning documents. To ensure tightness, apply sealing compound ③ to the parts of internal and external panel joints that will be covered with flashings, see detail drawings.

Lift the next panel in position. Check that panel core and joints are pressed properly together.



Insulation of panel ends

Use stone wool strip in the panel end joints before installing flashings.

Sealing

Use sealing compound on the inside of the panel to seal screw holes and other cut-outs to maintain the vapour barrier function.

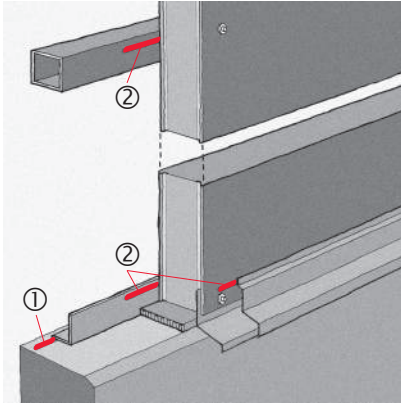
NOTE!

- The safety instructions accompanying the LiftAids must be observed.
- Strong wind may prevent installation.
- In fire-rated walls, use steel rivets and flashing screws.
- **Cover open wool surfaces of panels against rain and snow when finishing work for the day.**

Vertical installation of external walls

Foundation

Check the panel spacing and installation sequence. Plumb, apply foundation sealant ①, install the foundation profile and seal profile joints. Apply sealant ② on foundation profile and on the upper support structure. Apply a stone wool strip on the foundation profile.



Installation of panels

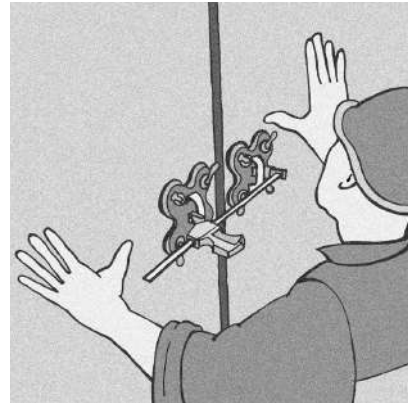
Install the panels with the male joint in the installation direction in accordance with the installation drawing. Sealant is applied on-line in the internal and external female joint of the vertically installed panel. Check that it is intact in order to ensure the correct functioning of the wall. Lift the panel in position using a LiftAid. Also remember to fix the safety line to the panel. Check that the required support width (min. 50 mm) is maintained. If required use extra supports. Using a builder's level, check that the panel is vertically aligned in all directions.



Fixing of panels

Fix the panel in the upper support structure and foundation profile.

The screws must not be too tight. Leave the screws near the male joint open till the next panel is installed. Then tighten them. Use screwdriver or drilling machine with depth limiter. Lift the next panel in position and raise it upright. Use a quick grip and hand suction pads to press the panels together. At regular intervals, check that the panels are vertical.



Insulation of panel ends

Use stone wool strip in the panel end joints.

NOTE!

- The safety instructions accompanying the LiftAids must be observed.
- Also remember to fix the safety line to the panel.
- **Cover open wool surfaces of panels against rain and snow when finishing work for the day.**

Installation aids

Rain protector (PR-11)

The rain protector protects Paroc Panel System elements against rain water efficiently and quickly. The rain protector consists of a plastic foil with a plastic-treated magnetic band glued lengthwise on both sides. It is used for short-term protection.

Clamping tool (TD-01)

The clamping tool allows for quick and efficient clamping together of Paroc Panel System elements in situations where the elements' own weight is insufficient to press together the element joints (e.g. for roof, ceiling and upright installations).

Lift Aid HF 8-20

For horizontal installation of elements with a standard width of 1,200 mm (cannot be used for Paroc shadow or Paroc flex elements due to a different joint structure). Can be adjusted for 80 mm to 200 mm thick elements. Includes a safety line. Lifting capacity: 250 kg.

Safety line

The safety line system with a magnetic clasp is developed for use with Paroc Panel System's lifting accessories LiftAid H and HFS.

Cladboy

Cladboy works with suction pads, and is suitable for the vertical and horizontal installation of all Paroc elements. Lifting capacity with standard suction pads: 350 kg.

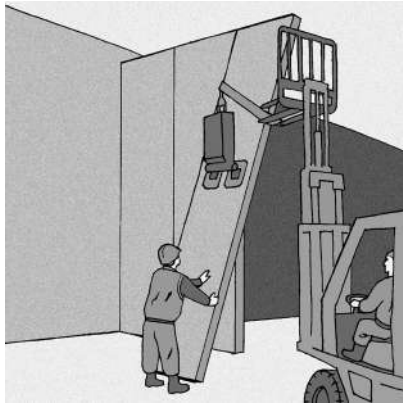
Vertical installation of internal walls

Installation of support profiles

First install the ceiling profile along one side of the wall to be installed. Check alignment and install the corresponding floor profile.

Installation of panels

Install the panels with the male joint in the installation direction in accordance with the installation drawing. Install sealant if required. Lift the panel into position against the floor profile and raise the panel upright against the ceiling profile.

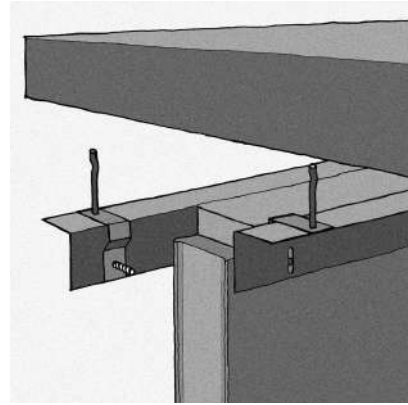


Panels shorter than 4 m are easy to raise manually. Longer panels can be raised using a scissor lift or forklift. In this case soft material must be applied against the panel so as not to damage the surface. Also remember to check the lifting capacity of the scissor lift. Using a builder's level, check that the panel is vertical in all directions.

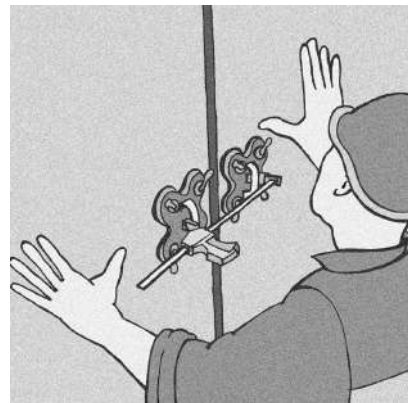


Fixing of panels

Fix the panel with screws to the floor profile. In fire-rated structures, panels with lengths over 3.5 m must be fixed with a fire profile at the upper end of the panel.



Lift and raise the next panel. Use quick grip and hand suction pads to press the panels against each other. At regular intervals, check that the panels are vertical.



Insulation of panel ends

Use stone wool strip between the ceiling and the panels and also if gaps appear between the floor and the panels. Install the opposite ceiling and floor profiles.

Connections to other structures

Connection details are to be executed as specified for the fire resistance and other requirements in question. See detail solutions.

NOTE!

- The safety instructions accompanying the LiftAids must be observed.
- In fire-rated walls, use steel rivets and flashing screws.
- In fire-rated walls, all stone wool stripes shall be compressed to one third i.e. 30 mm thick stripe has to be compressed to 10 mm.

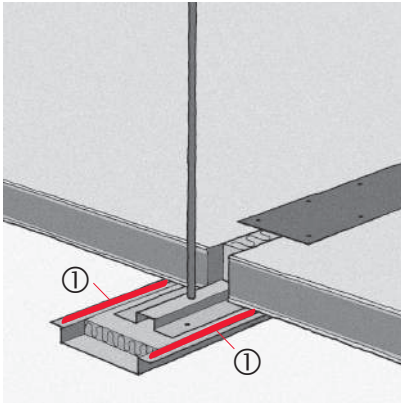
Installation of ceilings

Installation of panels

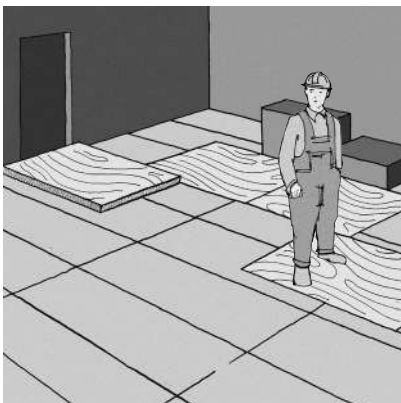
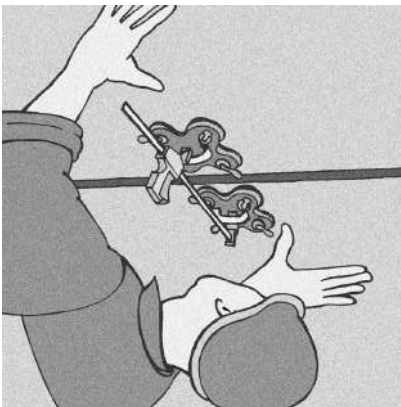
Install the panels in accordance with the installation drawing. Check that the sealant applied on-line is intact. Apply additional sealant if required, see installation drawing. Lift the panel into position using e.g. a scissor lift. Use soft material against the panel surface to avoid surface scratches. Measure the starting point for the first panel carefully.

Fixing of panels

Use top hat profiles. Fix the profiles to panels with screws. Remember to join the panels with a steel sheet on top.



Lift the next panel into position and check that the tongue-and-groove joint is tight. Use hand press and hand suction pads to press the panels together.



Installation of flashings

Use stone wool strips at panel ends before installing flashings. Apply sealing compound ① between flashings and panels to maintain the vapour barrier. Additional sealing compound is required where the flashing and panel joints intersect.

NOTE!

The safety instructions accompanying the LiftAids must be observed.

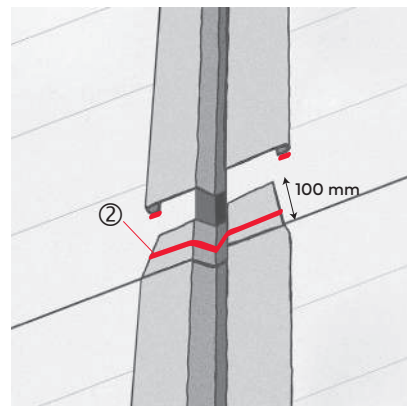
- In ceilings, use steel rivets and flashing screws.
- Check with the designer for which loads the ceiling is dimensioned.

Walkways have to be protected as follows:

- Heavy foot traffic, such as ascending spots, doorways and installation location: load-distributing boards on top of 10–20 mm thick rigid mineral wool
- Other walkways and installation places: a 15 mm thick plywood board
- Permanent walkways: loads should be transferred to the bearing frame.

Flashings

Flashings play a decisive part in the installation. Often the entire installation work is judged based on the flashings so the work has to be done with care. When required, flashing strips are delivered to site well packed, with a packing list showing types and amounts of strips. If flashings are delivered with a protective film it has to be removed before installation. Normally the flashings are delivered in running metres and cut to required lengths on site. The flashing joints are adapted to be on the same height as the panel joints.



If the flashings are installed overlapping, apply sealing compound ② between the overlaps. The flashings are fixed to panels, not to each other, using steel sheet screws or pop rivets of steel or aluminium min. Ø 4.8 mm at 300 mm centres. In fire-rated structures, use only steel rivets and screws.



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