

Conceal System for Hardie® Panel

Installation Guide



Mechanical concealed fixings for
Hardie® Panel



JamesHardie™



Content

01	Mechanical concealed fixings for Hardie® Panel	3	03	Cladding of soffits	18
1.1	Introducing the conceal system for Hardie® Panel	3	3.1	Row and fastener spacing	18
1.2	Tools and Components – powered by KEIL®	4	3.2	Technical Details	19
1.3	System Description	5			
1.4	Components for mechanical concealed fixing	6	04	Wind Load	20
02	Installation of Hardie® Panel facade cladding with concealed fixings	10			
2.1	Preparation	10			
2.2	Mounting the Conceal Anchor	12			
2.3	Technical Details	14			

01 Mechanical concealed fixings for Hardie® Panel

1.1 Introducing concealed fixings for Hardie® Panel

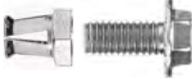
KEIL® concealed fixings are part of a system for mechanical concealed fixing. KEIL® is well known for their reliable products for mechanical hidden fixing.

The system consists of the conceal anchor + screw, which is a specially developed version of the KARL Anchor by KEIL® in 7.5 mm depth fitting the 11 mm Hardie® Panel and Hardie® Architectural Panel facade panels and an M6 screw in 10.5 mm, suitable for most hanger systems available on the market.

The Stopping Drill and Setting Tool allow an easy and fast application of the anchors. The anchor can be set in Hardie® Panel and Hardie® Architectural Panel facade panels without expansion pressure in just a few steps. The form-fit connection prevents stresses and therefore cracks, while achieving high pull-out values.

For all technical support queries please contact a member of the KEIL® team on +49 (0) 2263 92925 0 or mail@keil.pro

1.2 Tools and Components – powered by KEIL®

Conceal Stopping Drill	
	The stopping drill is set for a depth of 7.5 mm. Drill hole depth = 8.5 mm. Drill hole diameter = 7.1 mm. The use of this stop drill guarantees the correct drill hole depth. Service Life: ~1 500 holes
Conceal CNC / Replacement Drill	
	Suitable for CNC machines and as a replacement drill for the Hardie™ Panel Conceal Stopping Drill. Service Life: ~1 500 holes
Conceal Test Mandrel	
	7/7.5 mm For checking the required drill hole diameter.
Conceal Setting Tool	
	For spreading the Anchor in the drill hole, suitable for the specific depth of 7.5 mm Service Life: minimum 1 000 setting processes
Set Conceal Anchor + Screw 10.5 mm	
	Self-undercutting Anchor with hexagon head for WAF 9. Setting depth 7.5 mm M6 hexagon head screw with locking teeth in 10.5 mm length. Stainless Steel A4
Set Conceal Anchor + Screw – Project customized length	
	Self-undercutting Anchor with hexagon head for WAF 9. Setting depth 7.5 mm M6 hexagon head screw with locking teeth in project customized length – only on special request. Stainless Steel A4
Set Conceal Anchor + Bolt and Nut	
	Self-undercutting Anchor with hexagon head for WAF 9. Setting depth 7.5 mm Stepped threaded bolt suitable for setting depth 7.5 mm with hexagon socket and matching nut with locking teeth. Stainless Steel A4

1.3 System Description

Hardie® Panel and Hardie® Architectural Panel facade panels in 11 mm thickness installed with mechanical concealed fixing are a durable, qualitative and neat solution for facade design in new built and renovations.

The installation of the self-undercutting Hardie™ Panel Conceal Anchor at the backside of the facade panel ensures to have a facade without any visible fixings.

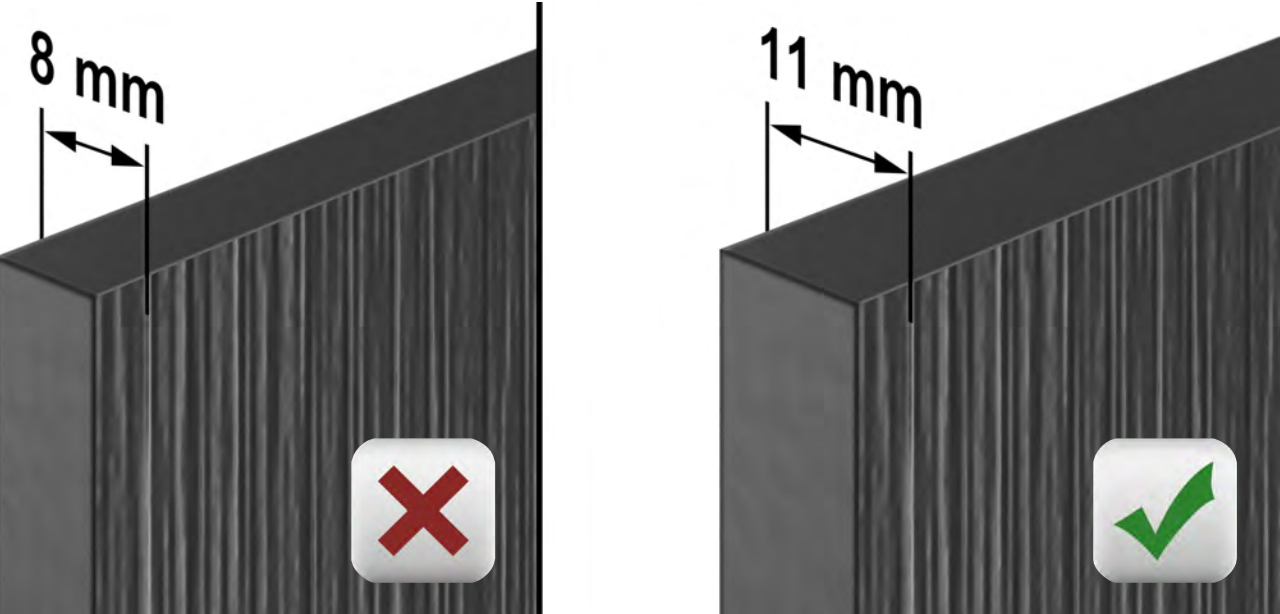
Each facade panel must be applied to suitable sub frames without technical restraint with a minimum of four fixing points which are usually arranged in a rectangular pattern, using single or double hangers. Once the hangers are applied to the backside of the facade panel, it is being hang in the matching horizontal support profiles and fixed at one point.

The load is transferred to the substrate via the available substructure variants available on the market. Like the visible fixing options, the substructure consists of wall brackets and vertical L or T profiles. The horizontally aligned hanger support profiles are attached to this basic substructure. The facade panels can be hooked into the hanger support profiles using the hangers attached to the rear of the panel. Adjusting screws, usually located in the outer hangers of the top row of hangers, enable fine alignment of the facade panel. Horizontal displacement of the panel is achieved using special securing brackets or by screwing in a locking screw. If the stability verification for the transfer of loads requires a higher load-bearing capacity value for the hangers, double hangers (with two anchors per hanger) can be used instead of single hangers, either partially or over the entire surface.

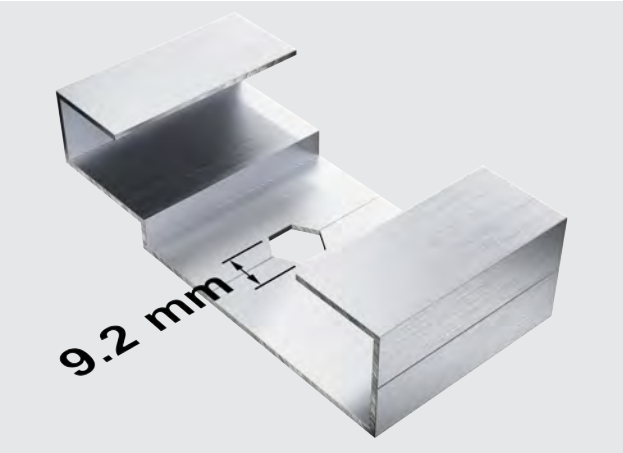


1.4 Components for mechanical concealed fixing

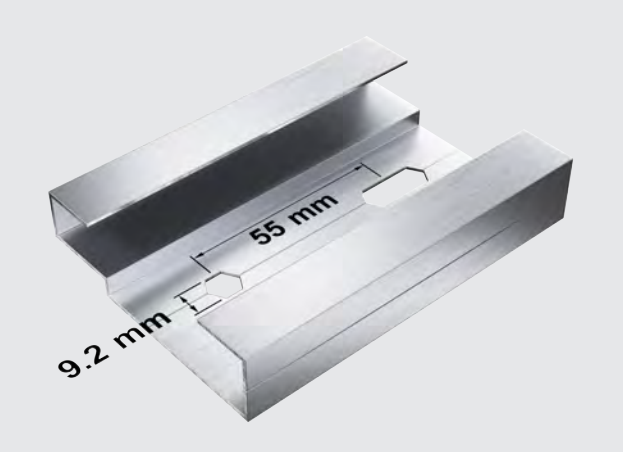
1. Hardie® Panel or Hardie® Architectural Panel facade panels with a nominal thickness 11 mm



2. Hangers – to be sourced externally/by a third party sub frame manufacturer.



Single Hanger with hexagonal hole



Double Hanger with hexagonal hole

3. Concealed Fixings for Hardie® Panel

Determination of the correct screw length to match the hangers used

The displacement-controlled expansion of the anchor sleeve requires the screw length to be precisely matched to the hanger used. The thread length of the screw varies depending on the shape of the hanger and its material thickness (case 1, 2 and 3). Only the use of matching components makes installation quick, easy and safe. The head

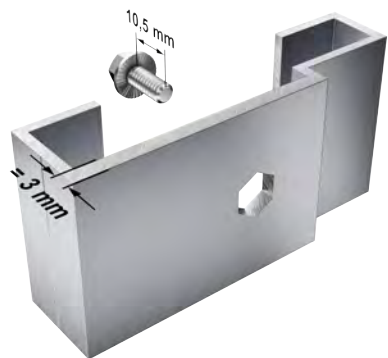
of the anchor is three millimetres thick. To ensure a permanent connection, make sure that the screw digs tightly with its locking teeth into the hangers. A test installation should be carried out to check whether the screwed-in screw fits flush with the tip of the anchor sleeve when the prescribed tightening torque of 2.5 to 4.0Nm is applied.

Case 1



For hangers with a material thickness of 2.5 mm or less an elastic pad must be introduced as an intermediate layer between the 11mm Hardie® Panel and the hanger as shown in the case 1 diagram. The elastic pad is introduced to the build-up as a packer, to ensure that the standard 10.5mm screw thread that secures the hanger to the Hardie® Panel is fastened exactly 7.5mm in the 11mm Hardie® Panel. The elastic pads are generally sourced from the manufacturer/supplier of the sub-frame system, and the thickness of the pad is determined by the overall bracket thickness which is generally dictated by the project engineer.

Case 2



Hangers that have a material thickness of exactly 3mm do not require an additional elastic pad. This is because the 3mm hanger thickness is the optimum thickness for the standard 10.5mm screw, allowing 7.5mm fastening in the 11mm Hardie® Panel.

Case 3



Hangers with a material thickness greater than 3mm, or hangers that are designed with additional ribs that push the screw clamping out further always require a longer fixing than the standard 10.5mm screw. The correct screw length required should be sized to account for the bracket overall build up and exactly 7.5mm fastening in the 11mm Hardie® Panel.

Example: The overall shape of the hanger results in a hanger sitting 4.5mm off the rear face of the 11mm Hardie® Panel. The length of the screw must therefore be 12mm to allow for 7.5mm fastening.



Hanger Type A
Hanger without additional drilling



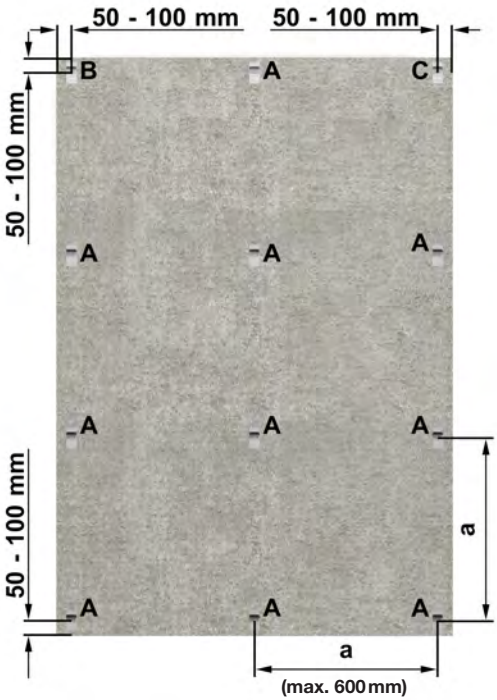
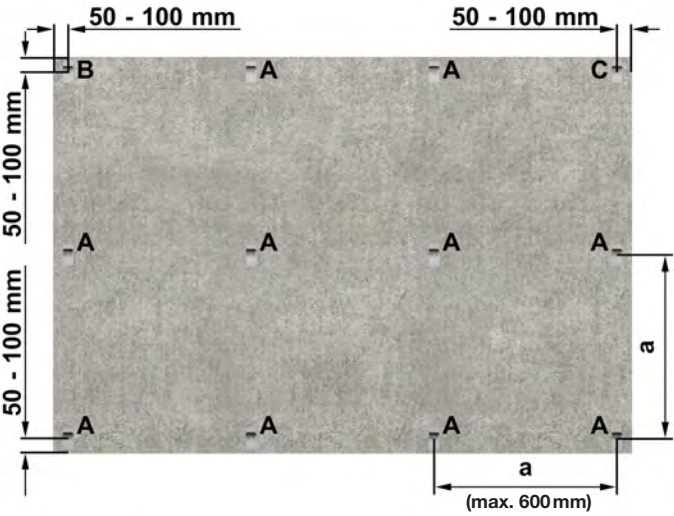
Hanger Type B
Leveling Hanger with pre-applied drilling, usually with internal thread, for fine adjustment of the facade panel



Hanger Type C
Hanger with pre-applied drilling, usually with internal thread, for fine adjustment of the facade panel and additional hole for setting a locking screw. A fixed point is created when the locking screw is set. As an alternative to the locking screw, side-mounted locking brackets can also be used.

The head of the anchor is hexagonal in shape and designed for a spanner width of 9mm. This is the baseline for the shape and the height of the punched holes in the hangers. When using double hangers, one punched hole must be designed as a fixed point and the other punched hole as a sliding point. The thermally induced change in length can be ensured via a slotted hole. The slotted hole also makes it easier to attach the hanger.

The design of the facade panels with regard to the centre distances and spacing of the fasteners must be based on a project-specific structural analysis. Individual dimensioning enables the variation of fastener spacing in vertical and horizontal directions. If the stability verification for the transfer of loads requires a higher load-bearing capacity value for the hangers, double hangers can be used partially or over the entire surface instead of single hangers. Fine alignment of the facade panel can be carried out using the hangers types B and C. Note: In the diagram, the different hangers types A, B and C are assigned to the fixing points as examples. The arrangement of the fixing points must be calculated by a facade engineer.



Always refer to a facade engineer. All bracket spacings are subject to the pull out design calculations which are cross referenced with site specific wind pressure calculations.

02 Installation of Hardie® Panel facade cladding with mechanical concealed fixings

2.1 Preparation

For general storage and handling instructions, please consult the generic Hardie® Panel and Hardie® Architectural Panel Installation Guide.



The Hardie® Panel should be laid on a flat, clean and pressure-resistant surface in order to drill a hole and install the anchor correctly. Bending of the Hardie® Panel must be avoided. A thin layer of foam can be used to protect the surface. However, the use of thicker, soft protective layers is not recommended.

When Hardie® Panel projects are specified as secret fix we recommend utilising the experience and expertise of our approved panel fabricator partners. Panel fabricators have the CNC capabilities required to deliver precise, factory-controlled bracket installations.

CNC Fabrication:

We recommend utilising the experience and expertise of our approved panel fabricator partners. Panel fabricators have the CNC capabilities required to deliver precise, factory-controlled bracket installations.

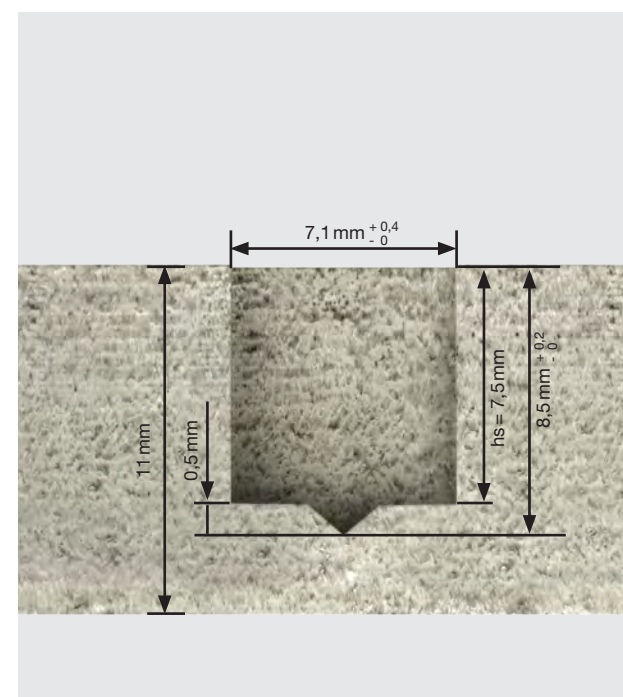
The drill holes can be created using milling tools on CNC-controlled machines. The drill hole must then be cleaned, e.g. by vacuuming with a Hoover. A rotation speed of max. 5000 1/min is recommended.

The anchor sleeve can only be installed correctly if the drill hole is accurate.

Manual Fabrication

Any pre-drilling should happen under workshop conditions, that can also be created on site.

A cylindrical blind hole must be applied on the rear side of the facade panel using a stop drill. The stop drill is matched to the setting depth of the anchor.

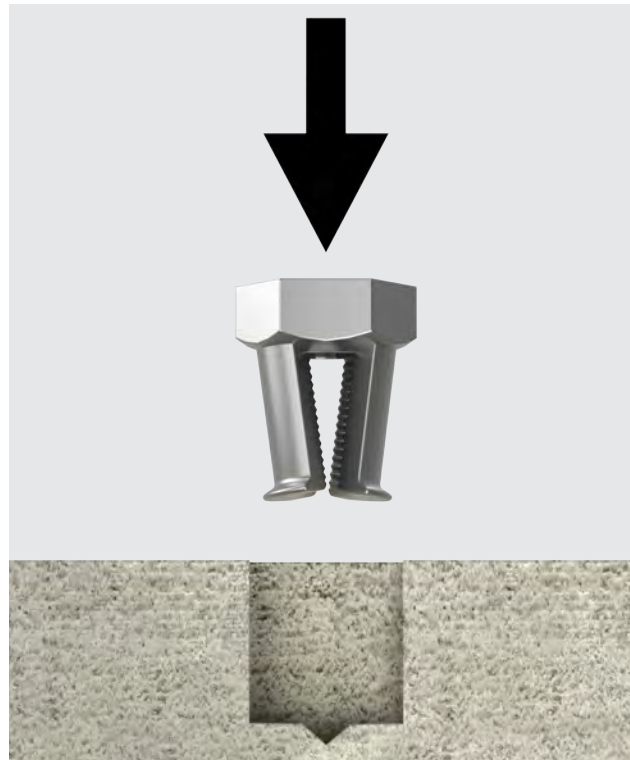


The correct drill hole geometry (drill hole depth = $8.5 \text{ mm} \pm 0.2$ / drill hole diameter = $7.1 \text{ mm} \pm 0.4$) must be checked in accordance with the national approvals, whereby as a rule 1 % or every 100th drill hole must be checked. However, we recommend checking one drill hole per panel in order to minimise rejects in the event of deviations.

The test mandrel or a caliper gauge can be used to check the drill hole diameter.

The drill hole depth must be determined using a suitable tool, e.g. a caliper gauge. The fabricator is responsible for documenting the test. The date of processing, the batch numbers of the anchors used, the tools and measuring equipment used and the measurement results should be documented and kept for at least the duration of the statutory warranty.

2.2 Mounting the Conceal Anchor



When delivered, the anchor sleeve is compressed in the lower area. The anchor is inserted into the drill hole in this compressed state.



The Setting tool is clamped in a suitable screwdriver ($\geq 1000\text{rpm}$) and placed on the head of the anchor sleeve. Start by getting the screwdriver up to the full speed before firmly pressing downwards. During this process the anchor sleeve is spread by the setting tool in a rotating manner and cuts the undercut drill hole itself. When the lower stop point of the setting tool is reached, the rotating movement can be stopped and the setting tool can be removed from the anchor sleeve.



The hanger is now placed over the head of the anchor sleeve. The screw or the bolt is screwed in with light pressure on the hanger (to lock the anchor). The locking teeth of the screw or nut dig into the panel hanger as a screw lock.

After installation, the undercut anchor sits in the drilled hole without expansion pressure, this means the hanger can be turned with a certain amount of force.

The tightening torque of the screw or bolt/nut is 2.5 to 4 Nm.

Note: If the appropriate screw or bolt is used with a defined clamping thickness, the screw-in depth is always correct as detailed on page 7. Installation is then quick, easy and secure. The screwed-in screw or bolt fits flush with the tip of the anchor sleeve. This must be checked before prior to each installation.

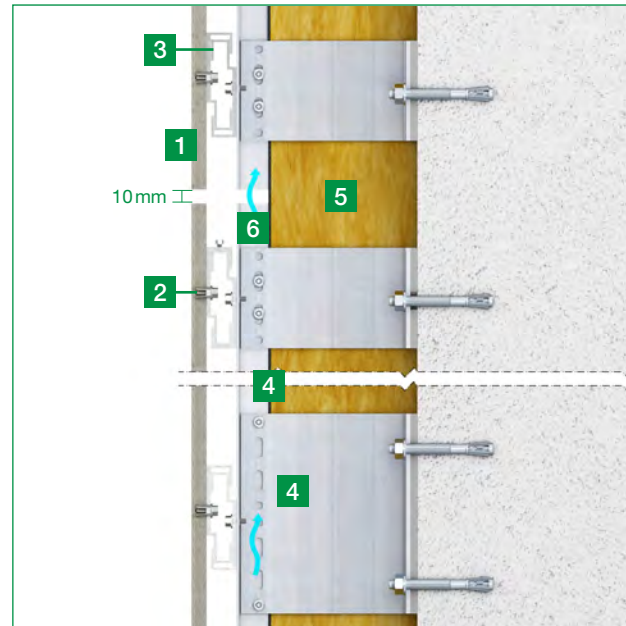


The facade panels are hung from the bottom upwards. This allows fine alignment to be carried out via the hangers types B and C attached to the top row of hangers. This also makes it possible to set the fixed point via hanger type C, using the locking screw to be screwed in.

If the facade is to be simply dismantled and re-installed, locking plates matched to the hanger profile should be used to create the fixed points instead of screwed hangers.

2.3 Technical Details

I. Horizontal Gap



- 1 Hardie® Panel or Hardie® Architectural Panel in 11 mm
- 2 Anchor and Screw
- 3 hanger and horizontal aluminium profile
- 4 Wall bracket and vertical aluminium support profile (material thickness minimum 2.0mm)
- 5 Insulation (optional)
- 6 Ventilation area

If the facade is to be simply dismantled and re-installed, the fixed points must be created using metal sheets matched to the hanger support profiles.

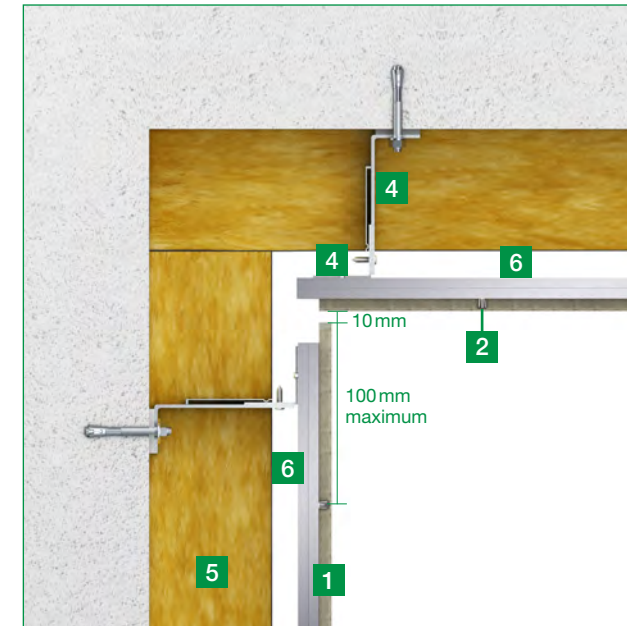
II. Outside corner



- 1 Hardie® Panel or Hardie® Architectural Panel in 11 mm
- 2 Anchor and Screw
- 3 Horizontal aluminium profile
- 4 Wall bracket and vertical aluminium support profile (material thickness minimum 2.0mm)
- 5 Insulation
- 6 Ventilation area

There should be a maximum 100mm cantilever from the end of the Hardie® Panel and the secret fix bracket. Aluminium external corner profiles can also be incorporated into the design if desired.

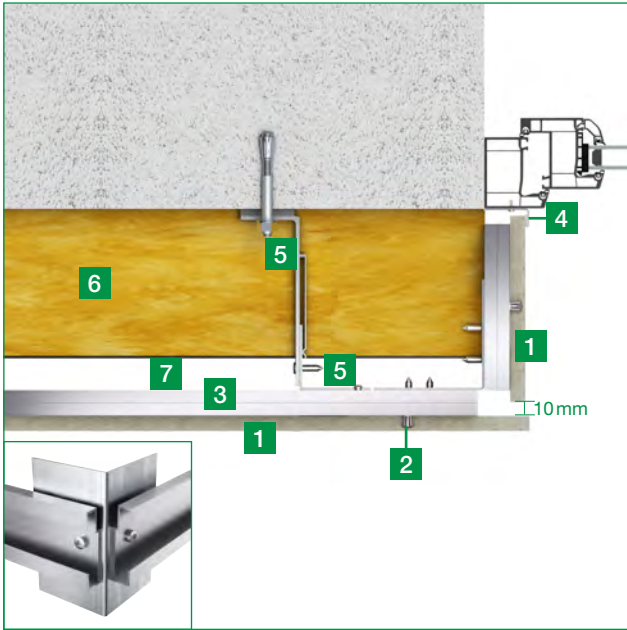
III. Inside Corner



- 1 Hardie® Panel or Hardie® Architectural Panel in 11 mm
- 2 Anchor and Screw
- 3 Horizontal aluminium profile
- 4 Wall bracket and vertical aluminium support profile (material thickness minimum 2.0mm)
- 5 Insulation (optional)
- 6 Ventilation area

There should be a maximum 100mm cantilever from the end of the Hardie® Panel and the secret fix bracket.

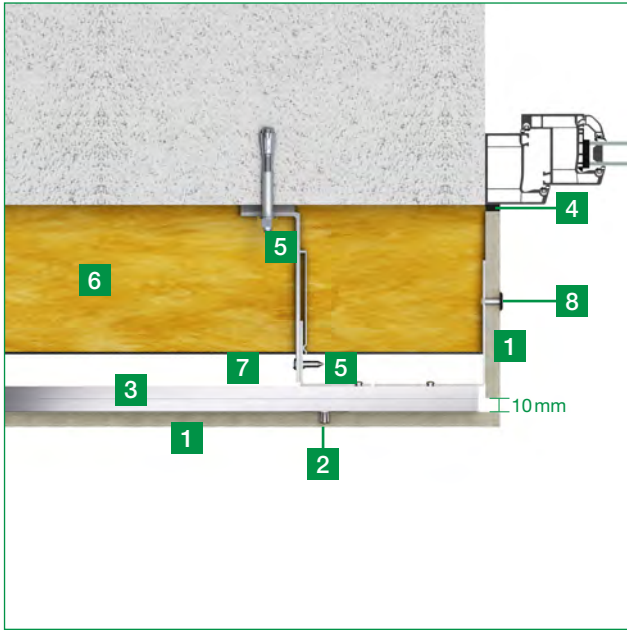
IV. Window reveal / Concealed fixing



- 1 Hardie® Panel or Hardie® Architectural Panel in 11 mm
- 2 Anchor and Screw
- 3 Horizontal aluminium profile
- 4 Suitable window connection profile
- 5 Wall bracket and vertical aluminum support profile (material thickness minimum 2.0 mm)
- 6 Insulation (optional)
- 7 Ventilation area

There are many options for attaching window reveal panels. Concealed fixing can be realised using hangers similar to the facade or using special reveal brackets, which can be obtained from the suppliers of the sub frame.

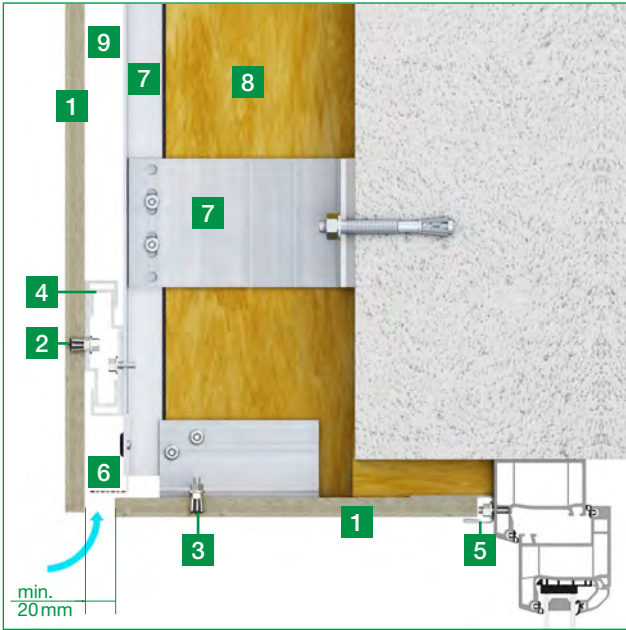
With visible fixings



- 1 Hardie® Panel or Hardie® Architectural Panel in 11 mm
- 2 Anchor and Screw
- 3 Horizontal aluminium profile
- 4 Permanently elastic sealing tape
- 5 Wall bracket and vertical aluminum support profile (material thickness minimum 2.0 mm)
- 6 Insulation (optional)
- 7 Ventilation area
- 8 Rivet (for aluminum substructure)

Hardie® Panel used in the reveal can also be face fixed with rivets. Aluminium window profiles can also be incorporated into the design if desired.

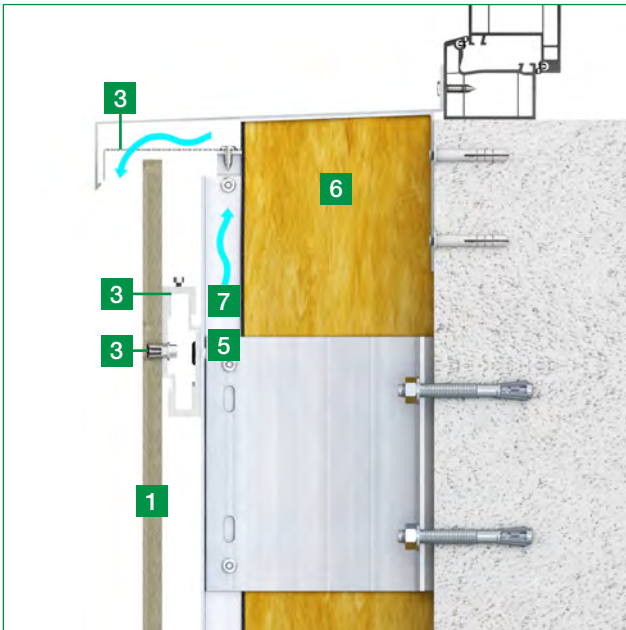
V. Window Lintel



- 1 Hardie® Panel or Hardie® Architectural Panel in 11 mm
- 2 Conceal Anchor and Screw
- 3 Conceal bolt and nut
- 4 Hanger and horizontal aluminium profile
- 5 Suitable window connection profile (e.g. Hardie™ VL Plank internal corner profile)
- 6 Ventilation profile
- 7 Wall bracket and vertical aluminum support profile (material thickness minimum 2.0 mm)
- 8 Insulation (optional)
- 9 Ventilation area

Hardie® Panel can also be used in the head of the window or door with the secret fix system, or face fixed with rivets like the reveals. Ensure there is a minimum 20mm clearance between the window head panel and the facade to maintain the ventilation pathway. To prevent infestation install a perforated closer along the cavity.

VI. Window sill

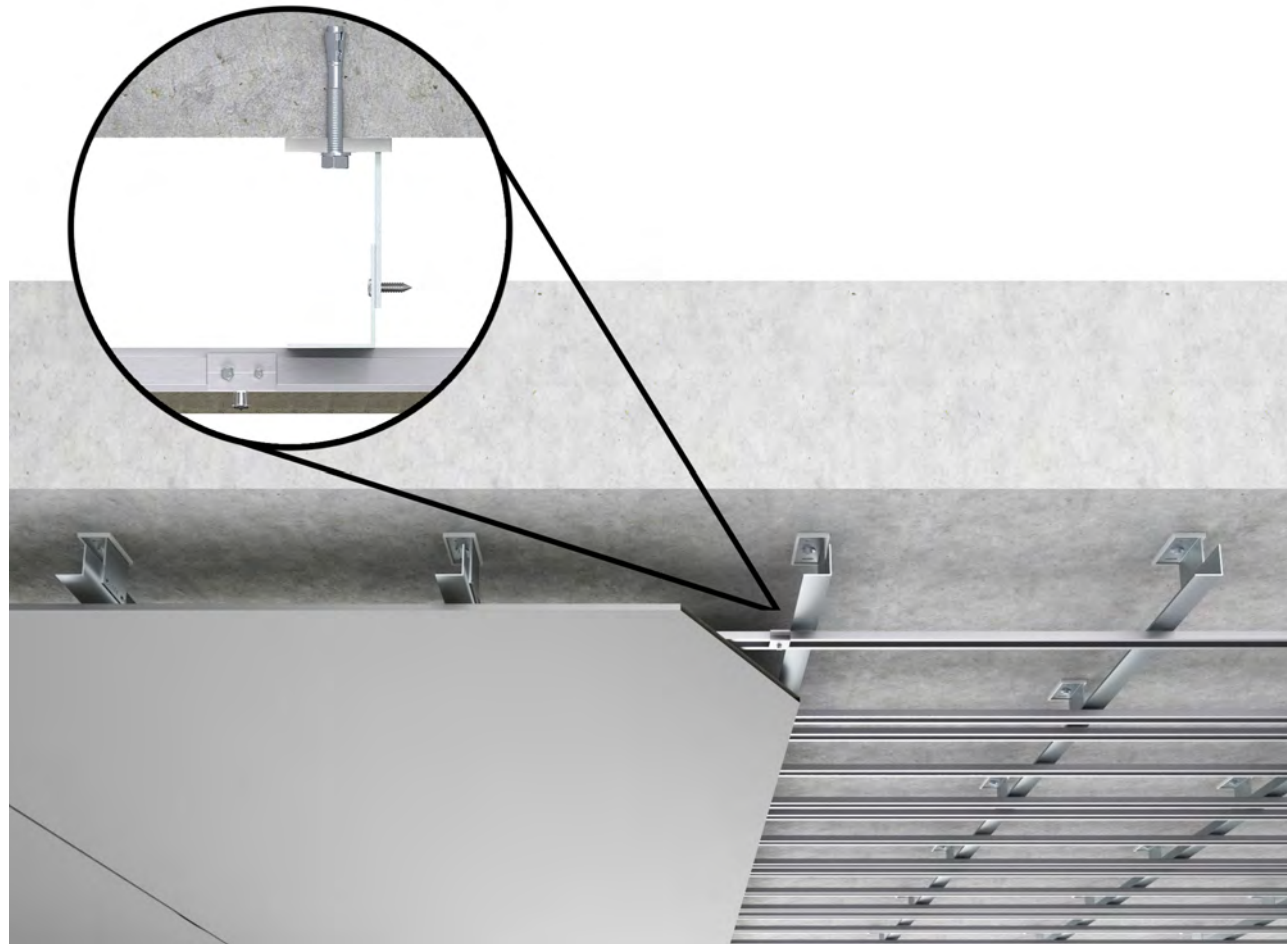


- 1 Hardie® Panel or Hardie® Architectural Panel in 11 mm
- 2 Anchor and Screw
- 3 Hanger and horizontal aluminium profile
- 4 Ventilation profile
- 5 Wall bracket and vertical aluminum support profile (material thickness minimum 2.0 mm)
- 6 Insulation (optional)
- 7 Ventilation area

To ventilate the facade, the distance between the facade panel and the aluminum window sill should be at least 10 mm or 50cm² per metre. To avoid soiling, we recommend that the space protrudes at least 30 mm past the Hardie® Panel facade.

03 Cladding of soffits

3.1 Row and fastener spacing

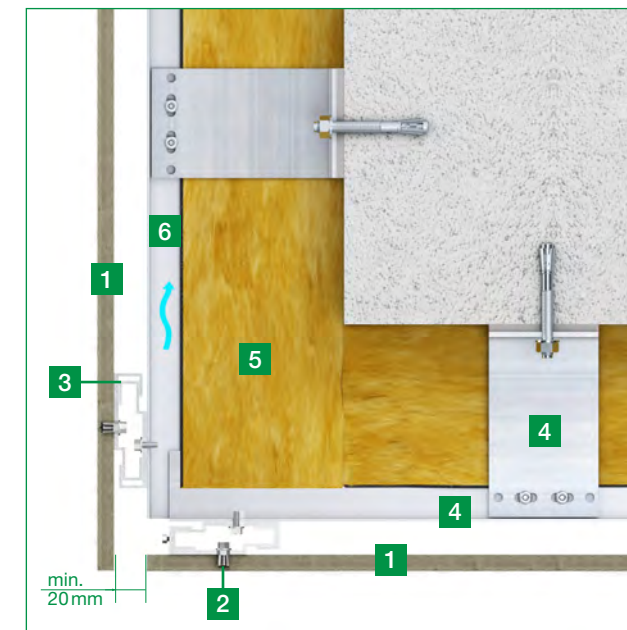


Basic installation instructions for soffits can be found in the Hardie® Panel and Hardie® Architectural Panel installation instructions.

When planning soffits, the hanging direction must be taken into account and coordinated with the planned installation sequence.

3.2 Technical Details

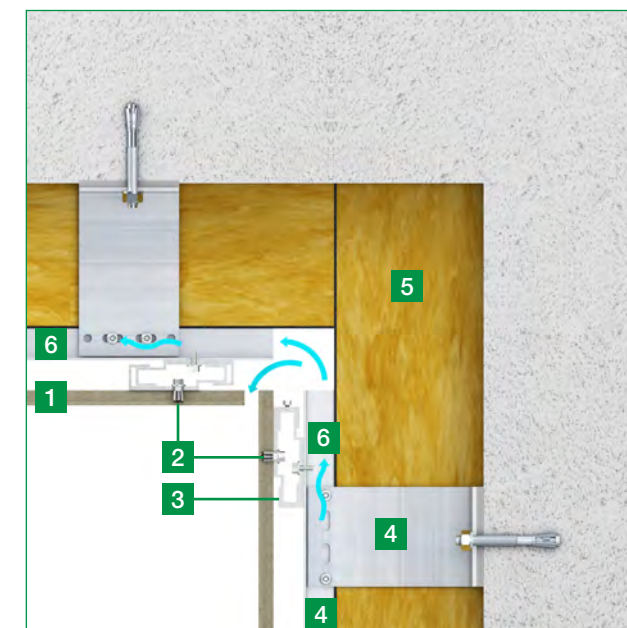
I. Soffit to facade connection



- 1 Hardie® Panel or Hardie® Architectural Panel in 11 mm
- 2 Anchor and Screw
- 3 Hanger and horizontal aluminium profile
- 4 Wall bracket and vertical aluminum support profile (material thickness minimum 2.0 mm)
- 5 Insulation (optional)
- 6 Ventilation area

When planning soffits, the hanging direction must be observed and coordinated with the planned installation sequence. A ventilation gap of at least 20 mm must be incorporated to ensure sufficient rear ventilation. We recommend installing a perforated closer to prevent infestation.

II. Connection of soffit to wall



- 1 Hardie® Panel or Hardie® Architectural Panel in 11 mm
- 2 Anchor and Screw
- 3 Hanger and horizontal aluminium profile
- 4 Wall bracket and vertical aluminum support profile (material thickness minimum 2.0 mm)
- 5 Insulation (optional)
- 6 Ventilation area

When planning soffits, the hanging direction must be observed and coordinated with the planned installation sequence. Depending on the width of the joint at the transition from the suspended ceiling to the wall, a perforated closer may need to be installed.

04 Wind Load

The following tables are a non-binding aid for the panel format shown (3038 X 1210mm NET). Calculation must always be provided for the specific project. The fastener spacing is influenced by the

choice of subframes, as well as its bearings and anchoring. The absorption of wind loads according to EN 1991-1-4 and the national appendix must be verified for all components.

Hardie® Panels mounted vertically



Possible characteristic wind suction load [kN/m²] for panel thickness 11 mm with concealed fixings for Hardie® Panel

Hardie® Panel and Hardie® Architectural Panel 11 mm facade cladding - with Conceal Anchor & hanger mounted vertically					
fixings per subframe		spacing of subframe [mm]			
Quantity	spacing [mm]	300	400	500	600
6	224	2,88	1,98	1,68	1,39
5	284	2,35	1,63	1,39	1,15
4	373	1,95	1,35	1,15	0,96
3	560	1,19	0,82	0,70	0,58

Published figures include a 2.5x safety factor

Possible characteristic wind suction load [kN/m²] for panel thickness 11 mm with concealed fixings for Hardie® Panel

Hardie® Panel and Hardie® Architectural Panel 11 mm facade cladding - with Anchor & double hanger mounted vertically					
fixings per subframe		spacing of subframe [mm]			
Quantity	spacing [mm]	300	400	500	600
6	224	5,38	3,70	3,14	2,60
5	284	4,39	3,05	2,59	2,15
4	373	3,65	2,52	2,15	1,80
3	560	2,23	1,54	1,31	1,09

Published figures include a 2.5x safety factor

Possible characteristic wind suction load [kN/m²] for soffits

Hardie® Panel and Hardie® Architectural Panel 11 mm - with Anchor & double hanger mounted vertically					
fixings per subframe		spacing of subframe [mm]			
Quantity	spacing [mm]	300	400	500	600
6	224	5,08	3,41	2,85	2,31
5	284	4,09	2,75	2,29	1,86
4	373	3,35	2,23	1,86	1,50
3	560	1,93	1,24	1,01	0,79

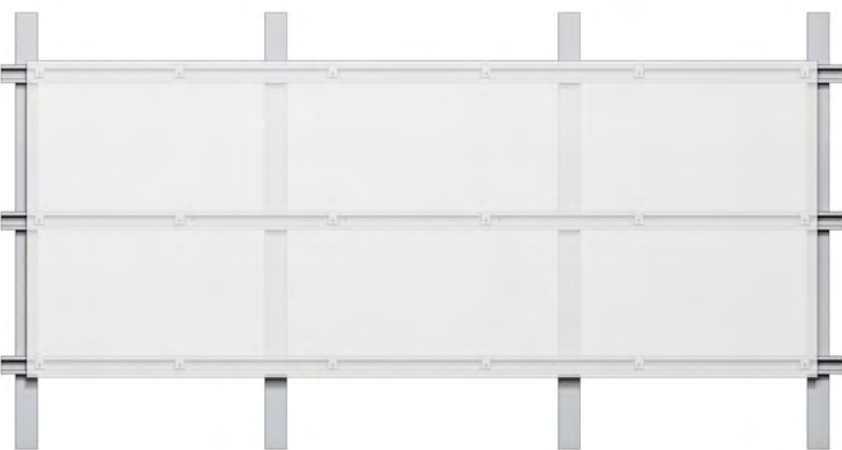
Published figures include a 2.5x safety factor

Possible characteristic wind suction load [kN/m²] for soffits

Hardie® Panel and Hardie® Architectural Panel 11 mm - with Anchor & hanger mounted vertically					
fixings per subframe		spacing of subframe [mm]			
Quantity	spacing [mm]	300	400	500	600
6	224	2,58	1,68	1,39	1,10
5	284	2,05	1,33	1,09	0,86
4	373	1,66	1,05	0,86	0,67
3	560	0,90	0,53	0,40	0,29

Published figures include a 2.5x safety factor

Hardie® Panels mounted horizontally



Possible characteristic wind suction load [kN/m²] for soffits

Hardie® Panel and Hardie® Architectural Panel 11 mm - with Anchor & hanger mounted horizontally					
fixings per subframe		spacing of subframe [mm]			
Quantity	spacing [mm]	300	400	500	600
11	295	2,09	1,52	0,97	0,77
10	327	1,93	1,40	0,89	0,70
9	368	1,73	1,24	0,79	0,62
8	421	1,47	1,05	0,65	0,50
7	491	1,21	0,84	0,50	0,38
6	589	0,95	0,64	0,36	0,26

Published figures include a 2.5x safety factor

Possible characteristic wind suction load [kN/m²] for panel thickness 11 mm with concealed fixings for Hardie® Panel

Hardie® Panel and Hardie® Architectural Panel 11 mm facade cladding - with Conceal Anchor & hanger mounted horizontally					
fixings per subframe		spacing of subframe [mm]			
Quantity	spacing [mm]	300	400	500	600
11	295	2,39	1,82	1,27	1,07
10	327	2,23	1,69	1,18	1,00
9	368	2,03	1,54	1,08	0,91
8	421	1,77	1,34	0,95	0,80
7	491	1,51	1,13	0,80	0,67
6	589	1,25	0,94	0,66	0,56

Published figures include a 2.5x safety factor

Possible characteristic wind suction load [kN/m²] for soffits

Hardie® Panel und Hardie® Architectural Panel 11 mm - with Anchor & double hanger mounted horizontally					
fixings per subframe		spacing of subframe [mm]			
Quantity	spacing [mm]	300	400	500	600
11	295	4,17	3,10	2,07	1,70
10	327	3,87	2,87	1,91	1,57
9	368	3,49	2,58	1,73	1,41
8	421	3,01	2,21	1,47	1,20
7	491	2,53	1,82	1,19	0,96
6	589	2,04	1,46	0,93	0,74

Published figures include a 2.5x safety factor

Possible characteristic wind suction load [kN/m²] for panel thickness 11 mm with concealed fixings for Hardie® Panel

Hardie® Panel und Hardie® Architectural Panel 11 mm facade cladding - with Anchor & double hanger mounted horizontally					
fixings per subframe		spacing of subframe [mm]			
Quantity	spacing [mm]	300	400	500	600
11	295	4,46	3,40	2,37	2,00
10	327	4,17	3,16	2,21	1,87
9	368	3,79	2,87	2,02	1,71
8	421	3,31	2,51	1,77	1,50
7	491	2,82	2,12	1,49	1,26
6	589	2,33	1,75	1,23	1,04

Published figures include a 2.5x safety factor

Please always check the latest version of the installation guide. The latest version can always be found on the website.

Version Date: 12/2025

© 2025 James Hardie Europe GmbH.
™ and ® denote registered and unregistered trademarks of James Hardie Technology Limited and James Hardie Europe GmbH.

This installation guide/manual sets forth the basic guidelines for Hardie® Panel & Hardie® Architectural Panel installation. It is recommended that installers review national and local building regulation and specific project requirements.

KEIL® is a registered trademark of its respective owner.

James Hardie Building Products Ltd

4 & 5 The Priory
London Road
Canwell
Sutton Coldfield
B75 5SH

Tel: 0121 311 3480
Email: info@jameshardie.co.uk
www.jameshardie.co.uk

har-090-00069