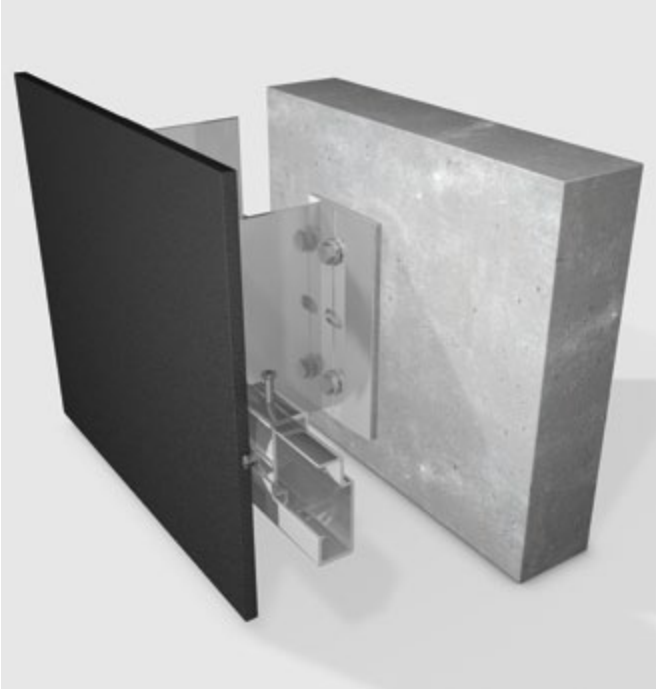
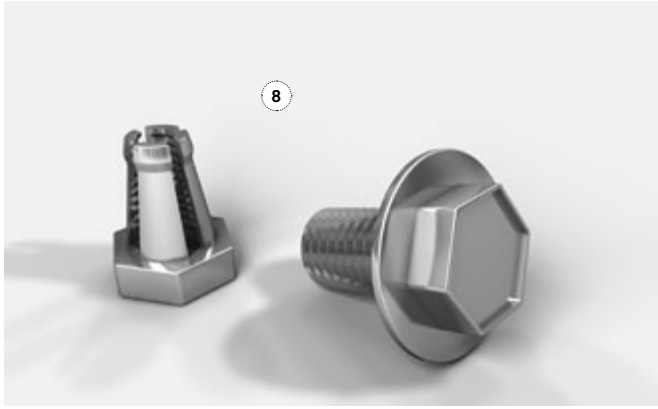
Invisible Fastening with Undercut Anchor

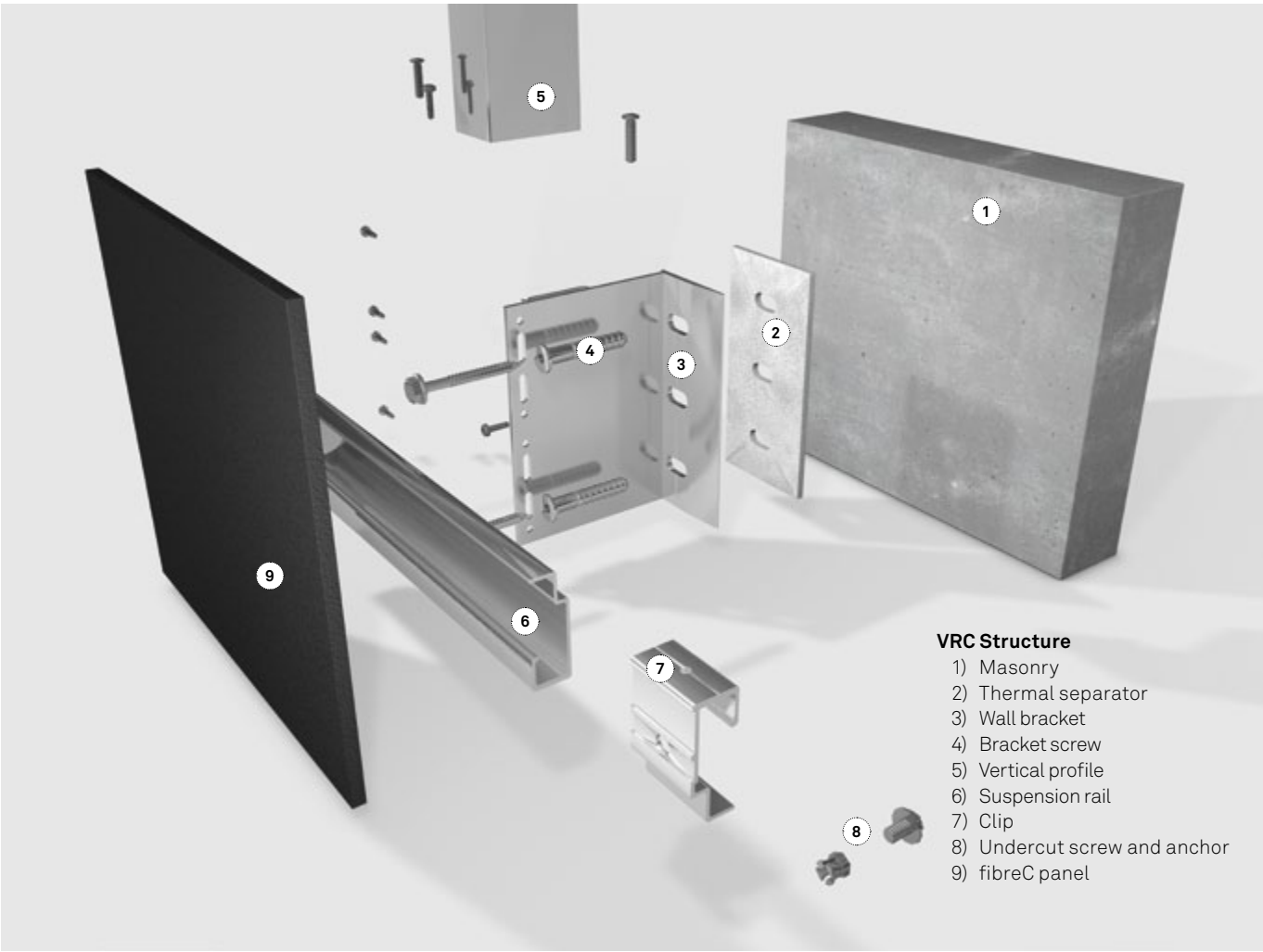
Panels with a thickness of 13 mm can be fitted invisible on the back with metal clips and special dowels. For this purpose, each panel has on the top row of clips adjusting screws and a fixed point fastening (screw or clip), with the result that it can be aligned and no displacement occurs. The maximum construction height is 100 m. Additional heights must be checked with a special approval by the customer.



Details fastening with undercut anchor

Download





VRC Structure

1) Masonry
2) Thermal separator
3) Wall bracket
4) Bracket screw
5) Vertical profile
6) Suspension rail
7) Clip
8) Undercut screw and anchor
9) fibreC panel

Planning Details

Substructure
Exclusively metal substructure.

Fastening
With undercut anchors and clips suspended in horizontal aluminium carrier profiles. Fasteners recommended in the system approval: Keil anchor (www.keil.eu) with the marking Hs=8.5 mm or equivalent.

The undercut anchor must be tightened with a torque of 2.00 – 4.00 Nm. Depending on the substructure used, there are suitable screws in different lengths. One must ensure that clips, anchors and screws belong to one system and match each other.

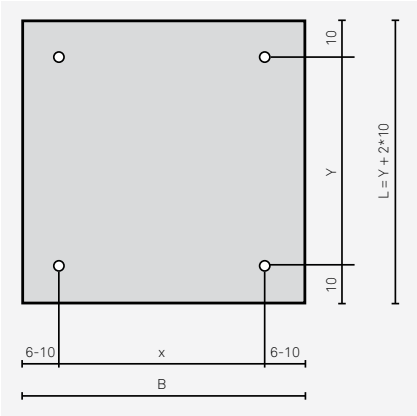
Preparation
In the Rieder factory, the panels are both tailored and prepared for fitting with undercut anchors. The bore holes for the undercut anchors can be pre-drilled in the factory if required. Any fastening agents required like system anchors, screws and metal profiles are not supplied by Rieder.

Joint
Joints must be at least 8 mm wide. If the horizontal joints are designed with 20 mm, panels can be unhooked or hooked on at a later date (please follow the manufacturer's instructions). Depending on the substructure, a sponge rubber layer must be used between the clip and the panel. The length of the screw for the undercut anchor varies depending on the system.

Absorbable loads of a panel fastened with four undercut anchors

fibreC with undercut anchor		panel thickness 13 mm
panel width B [cm]	span Y [cm]	pressure/suction load [kN/m²]
60	40	4.4
	60	3.3
	80	2.0
	100	1.3
	120	0.9
80	40	3.1
	60	2.5
	80	1.9
	100	1.2
	120	0.9
100	40	1.8
	60	1.7
	80	1.6
	100	1.1
	120	0.8
120	40	1.2
	60	1.1
	80	1.1
	100	1.0
	120	0.8

System sketch



How to read statics
1. Select the panel width (B)
2. Choose the relevant span (Y) in column 2
3. In column 3 you can read the maximum absorbable loads

Note
All the visualisations in the brochure are schematic representations of the system and structural-physical requirements and project details are not included in the data. The services provided by Firma Rieder Smart Elements GmbH do not include static calculations. The sample calculation listed here does not dispense with an individual test by a structural designer. Rieder does not accept any liability for statics.

Absorbable loads of a panel fastened with several undercut anchors
Panels with a dead weight greater than 60 kg are covered by the values in the column double clips

fibreC with undercut anchor		panel thickness 13 mm			
panel width B [cm]	span Y [cm]	g > 60 kg above panel length L [m]	Pressure/suction load Single-clips [kN/m²] (Fig. 1)	Pressure/suction load Double-clips [kN/m²] (Fig. 2)	
				a = 100 mm	a = 200 mm
60	40	2.8	2.7	2.6	
	60		1.8	1.7	
	80		1.3	1.3	
	100		0.9	1.0	
	120		0.6	0.7	
80	40	2.1	2.0	1.9	3.1
	60		1.3	1.3	2.1
	80		1.0	1.0	1.5
	100		0.7	0.8	1.0
	120		0.5	0.6	0.7
100	40	1.7	1.6	1.5	2.5
	60		1.1	1.0	1.7
	80		0.8	0.8	1.2
	100		0.6	0.6	0.8
	120		0.4	0.4	0.6
120	40	1.4	1.3	1.3	2.1
	60		0.9	0.8	1.3
	80		0.7	0.6	0.9
	100		0.5	0.5	0.6
	120		< 0.4 out of range	< 0.4 out of range	0.7

System sketch

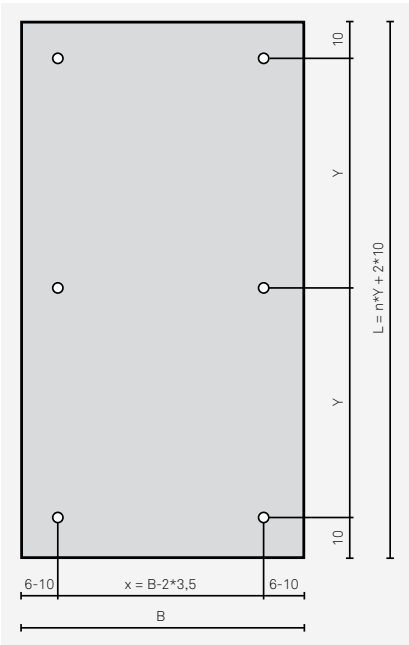


Fig. 1: Fastening with single-clips
Dead weight < 60 kg

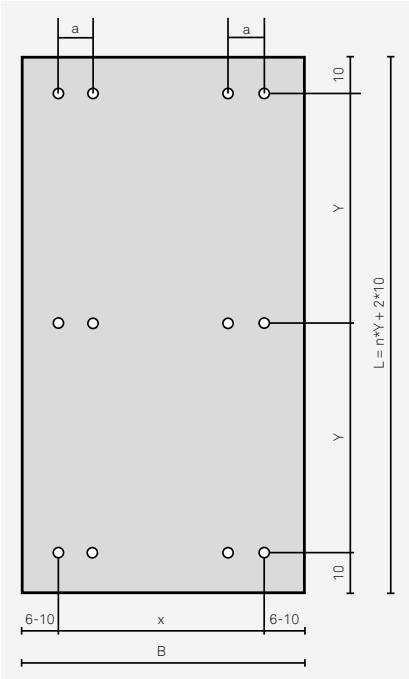


Fig. 2: Fastening with double-clips in short direction
Dead weight > 60 kg

Absorbable loads of a panel fastened with several undercut anchors

fibreC with undercut anchor		panel thickness 13 mm				
panel width B [cm]	span Y [cm]	g > 60 kg above panel length L [m]	Pressure/suction load without middle row [kN/m²] (Fig. 3)		Pressure/suction load with middle row [kN/m²] (Fig. 4)	
			a = 100 mm	a = 200 mm	a = 100 mm	a = 200 mm
100	40	1.7	2.0	2.0		
	60		2.0	2.0		
	80		1.2	1.7		
	100		0.8	1.2	0.9	1.3
	120		0.6	0.9	0.6	1.0
120	40	1.4	1.3	1.3		
	60		1.3	1.3		
	80		1.1	0.6		
	100		0.7	1.0	0.7	1.0
	120		0.5	0.7	0.5	0.8

How to read statics
1. Select the panel width (B)
2. Choose the relevant span (Y) in column 2
3. In column 3 you can read the maximum absorbable loads

System sketch

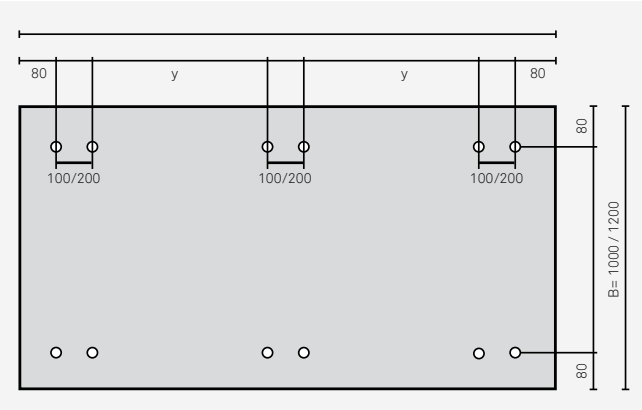


Fig. 3: System fastened horizontally with clip distance 100 / 200 mm without middle row

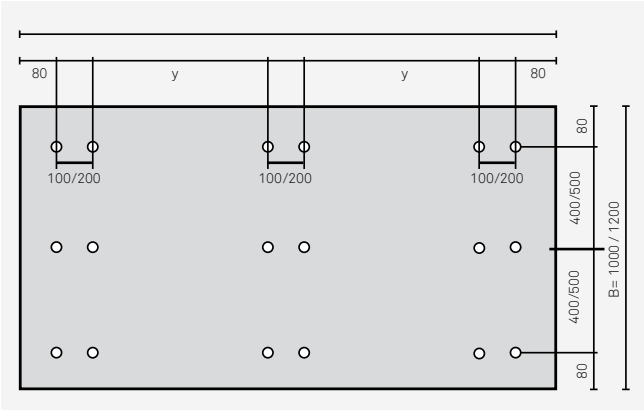


Fig. 4: System fastened horizontally with clip distance 100 / 200 mm with middle row

Note
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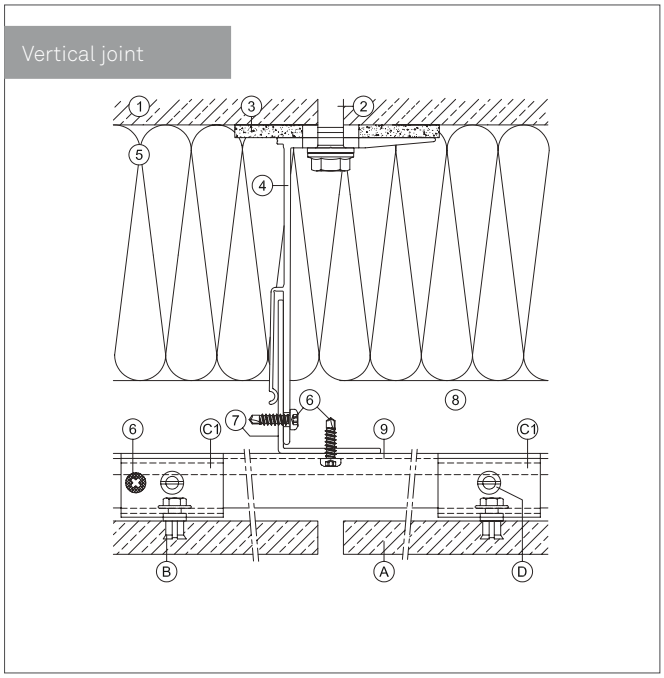
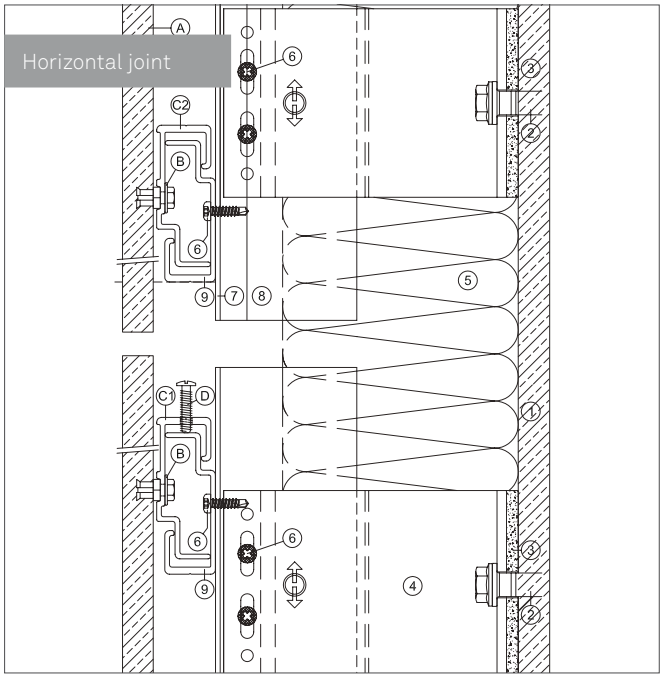
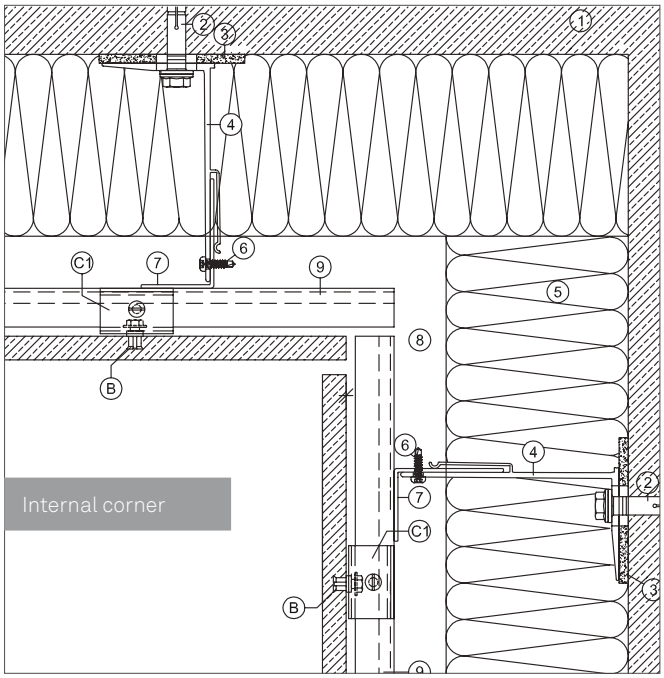
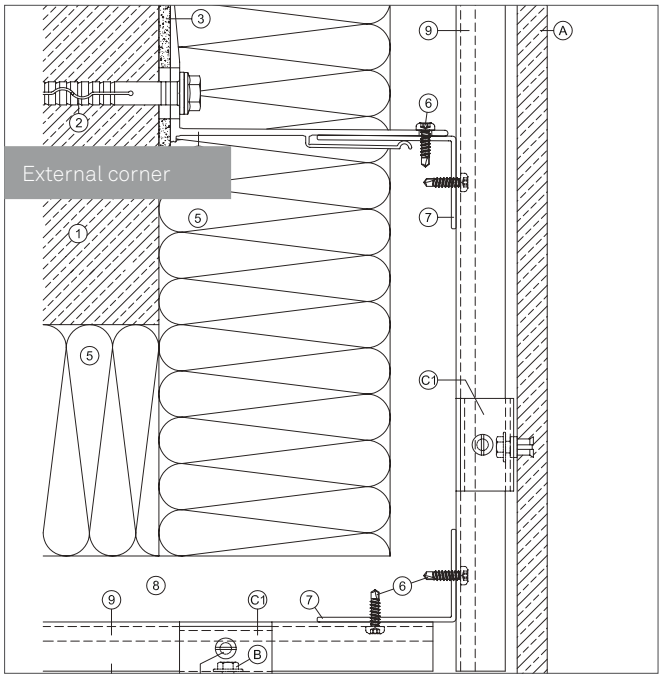
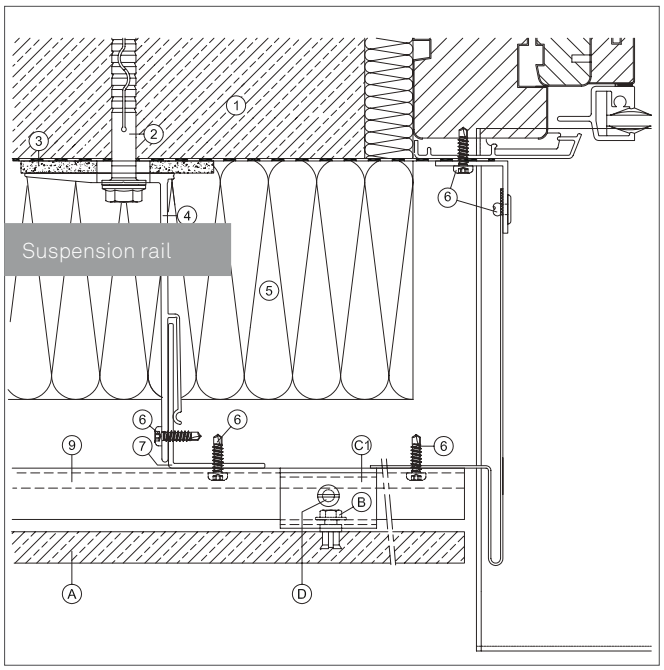








Legend

A) fibreC cladding panel
B) Undercut anchor
C) Clip
D) Adjusting screw

1) Masonry
2) Fastening dowel
3) Thermal Separator
4) Wall Bracket
5) Insulation
6) Bracket screw
7) Vertical profile
8) Ventilation space
9) Suspension rail