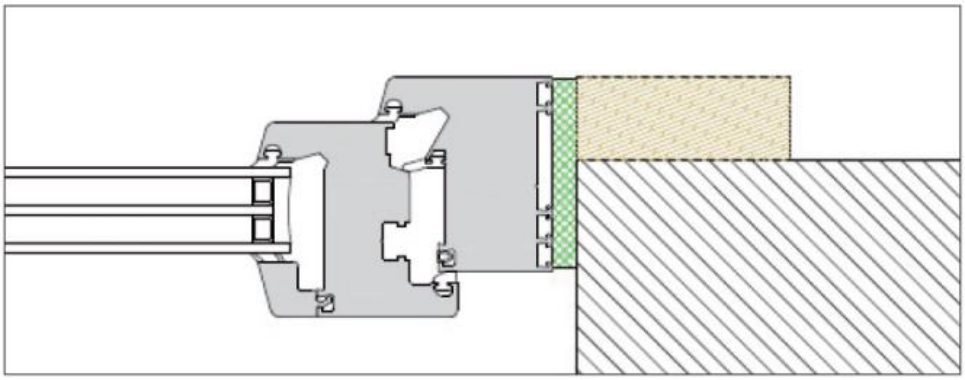
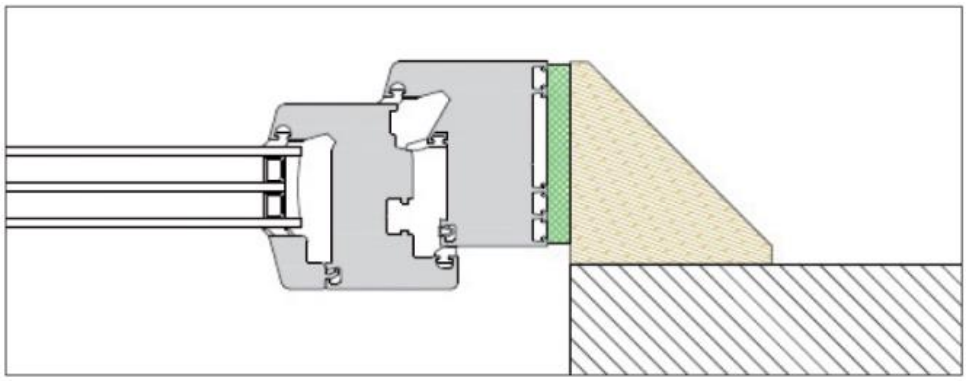
illbruck Window Installation System

the only from ift Rosenheim certified) adhesive based installation system for projecting windows (following Guideline MO-01/1 and MO-02/1

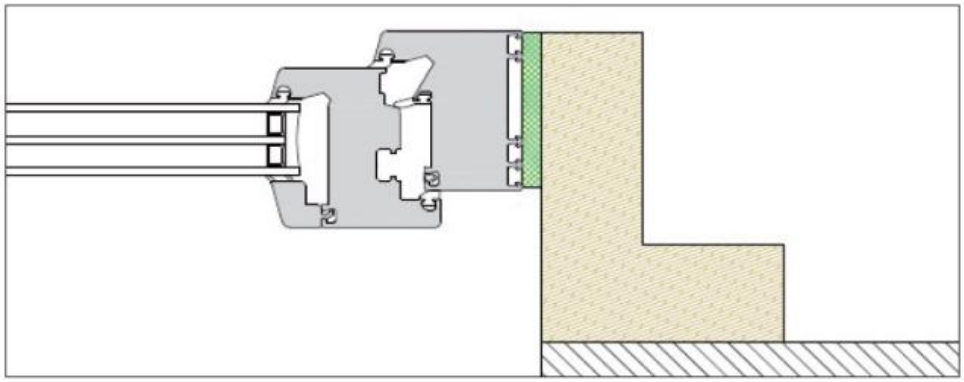
Certificates - Permission / Status Februar 2015



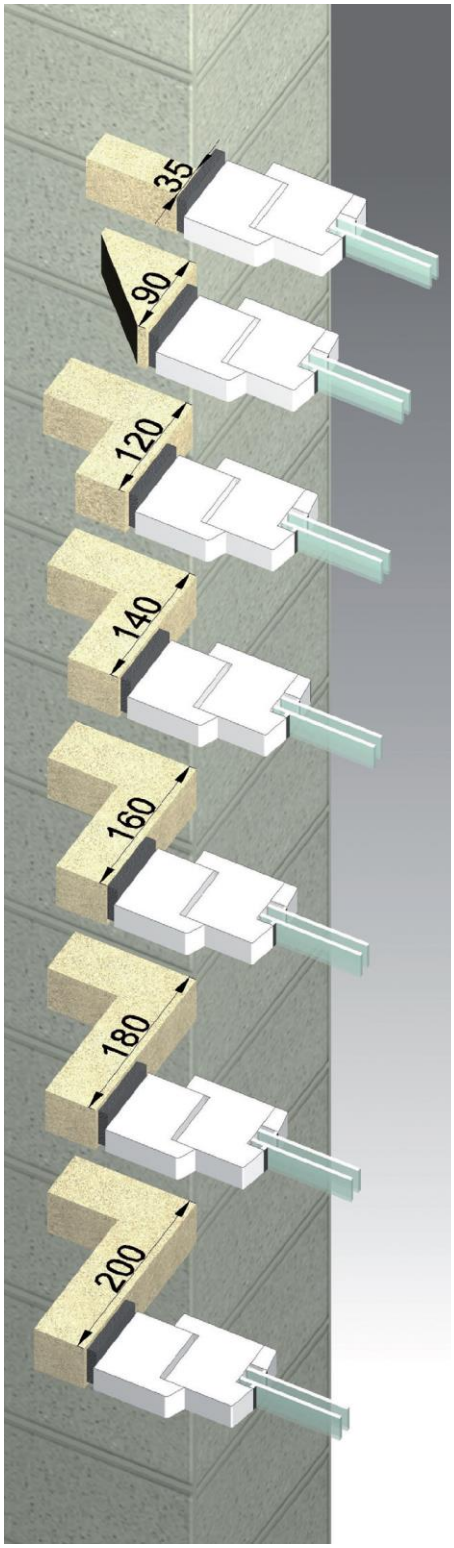
Type 1: 35 mm projection **PR011 Window installation board**

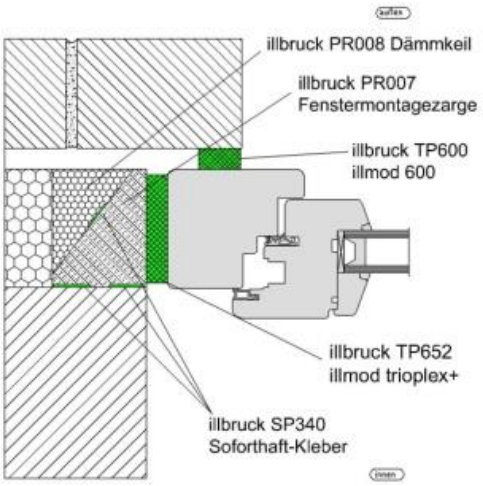


Type 2: 90 mm projection **PR007 Window installation profile**

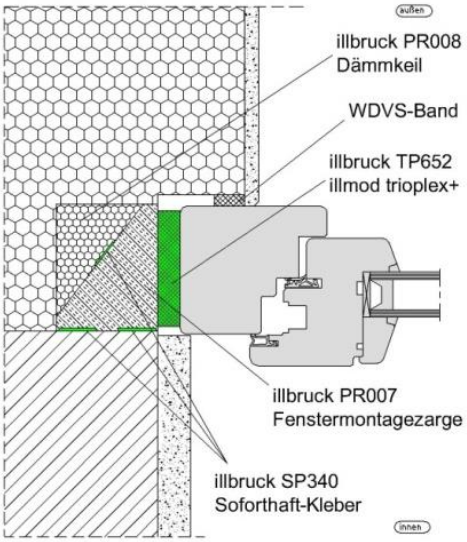


Type 3: 120 – 200 mm projection **PR010 window installation angel**





Cavity wall



EIFS facade

1. **Component test from ift Rosenheim (Sealing –and fixation system) for all 3 types! Based on the ift guidelines MO-01/1 Sealing and MO-02/1 Fixing**

1.1 Test for window sealing according to ift-guideline MO-01/1
- Airtight up to + 1000 Pa (a < 0,1 m^3/[h.m.(daPa)^n), after simulated short-time stress (Temperature, Wind, Utilisation)
- Driving rain tight up to 1050 Pa, after simulated short-time stress (Temperature, Wind, Utilisation)

1.2 Fixation test according to ift-test procedure after simulated mechanical and climatic short-time stress.
- Safety test: Pressure and suction up to 3000 Pa
- Pendulum impact test: Class 5 (950 mm height of fall)

2. **Static analysis (shear test, bending by lateral force, load bearing capacity) with small samples at ift-Rosenheim from 19.03.2012, 24.08.2012 and 22.05.14 for following substrates:** Concrete, Aerated concrete, Wood, Clay bricks, Lime sand stone bricks

3. **Static analysis sample calculation for the fixing system using a computer model with finite elements (Dr.-Ing. W. Naumann & Partner Ingenieurgesellschaft mbH)**

3.1 heavy window element on weakest substrate (Type 2) / 15.02.2013

Following loading cases were analysed:
- Dead load
- Dead load + 45° opened sash
- Dead load + 90° opened sash + 80kg additional load
- Overall independent of the substrate full load (Tensile load of 200 kg/lm)

For the worst case (Full Load) a security factor of 8 was determined, and this was certified as sufficient.

3.2 Horizontal and vertical ribbon window on weakest substrate (Type 2) / 18.03.2013 (bonding only sidewise)

Following loading cases were analysed:

- Dead load
- Dead load + 45° opened sash
- Dead load + 90° opened sash + 80kg additional load
- Overall independent of the substrate full load (Tensile load of 200 kg/lm)
  For the worst case (Full Load) a security factor of 10 was determined, and this was certified as sufficient.

4. Static analysis of different load cases from ift-Rosenheim (Type 3) / 27.05.2014 (Dr.-Ing. W. Naumann & Partner Ingenieurgesellschaft mbH)

Load-bearing capacity
[kg/m]

Substrate	Projection					
	Type 2	Type 3				
	90 mm	120 mm	140 mm	160 mm	180 mm	200 mm
Concrete	200 (650*)	232	232	213	184	144
Aerated Concrete	200	73	73	72	65	53
Limes and stone	200 (870*)	155	155	149	137	119
Clay brick	200 (650*)	67	67	57	48	40
Wood	200 (490*)	-	-	-	-	-

* possible maximum load transfer by individual inquiry.
The figures for the load transfer already include a security factor of minimum 7 and the reduction by long-term-stress following the guideline VE-08 from ift Rosenheim.
The load was extrapolated from 10cm long samples up to 100cm length

5. General technical approval Z-23.11-1889, DiBt (Deutsches Institut für Bautechnik) from 09.05.2012

(Approval for the usability according to local building law in Germany)

6. Comparative test for sound reduction for the window installation system at ift-Rosenheim

6.1 Airborne sound reduction type 1/type 2

Following values can be achieved:

reference test for the window without connection joint (Glass 48 dB)	**Rw = 43 dB**
Window installation with brackets sealing just with one membrane (ME501 Duo HD) exterior	**Rw = 19 dB**
Window installation with brackets sealing with a membrane exterior and sealant (SP525) interior	**Rw = 41 dB**
illbruck Window installation system (Standard installation with Trio+)	**Rw = 36 dB**
illbruck Window installation system additional with sealant interior (SP525)	**Rw = 43 dB**

The weighted sound reduction index for the window is not reduced by the installation. You cannot achieve a better result and the illbruck window installation system is currently the only one that delivers this result.

6.2 Airborne sound reduction type 3 max. projection 200 mm

- Rw Installation 1 = PR010 window installation angle standard installation, TP652 trioplex+
- Rw Installation 2 = PR010 window installation angle TP652 trioplex+ und sealant (SP525) interior

Weighted sound reduction index (Rw)
Following values can be achieved:

Rw Window	Rw Installation 1 TP652	Rw Installation 2 TP652+SP525
35 dB	34 dB	34 dB
37 dB	36 dB	36 dB
40 dB	38 dB	38 dB
42 dB	39 dB	40 dB
45 dB	40 dB	41 dB

7. Analysis of transvers tensile strength for window fixing screws with PR007 Window installation profile at ift-Rosenheim 28.11.2012

8. Verification – linear heat transmission coefficient and temperature factor
For use with EIFS and cavity walls, ift Rosenheim 25.06.2013 / 26.07.2013

Structure connection EIFS : on the side/at the top f_{Rsi} = 0,92; at the bottom f_{Rsi} = 0,89 (≥0,73)
Fulfils requirements for Passivhaus following ift-
Guideline WA-15/2 / $U_{W,Installation}$=0,84 W/(m²K) (≤0,85)
Structure connection cavity wall: on the side/at the top f_{Rsi} = 0,88; at the bottom f_{Rsi} = 0,87 (≥0,73)
Fulfils requirements for Passivhaus following ift-
Guideline WA-15/2 / $U_{W,Installation}$=0,84 W/(m²K) (≤0,85)

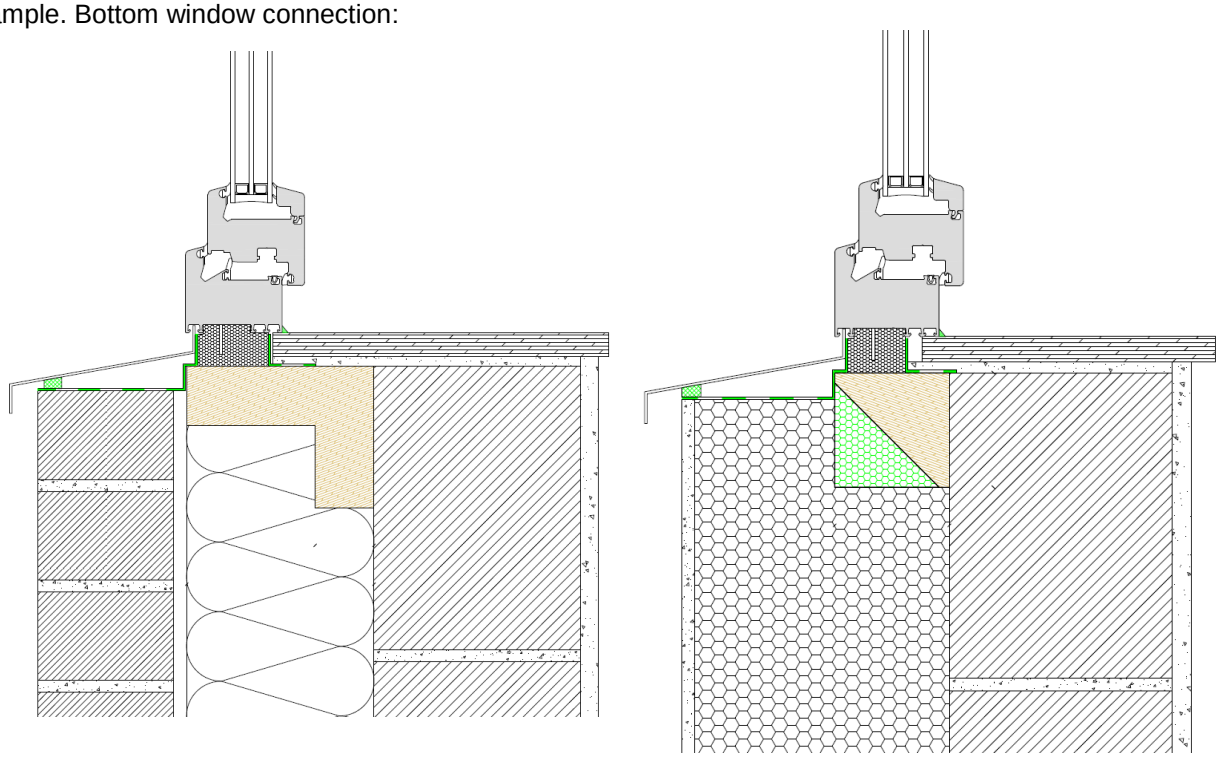
9. Experts opinion regarding fire protection usage of the illbruck Window installation system (Application area up to building class 5, German regulation), IBB - Ingenieurbüro für Brandschutz von Bauarten vom 13.05.2013

There are no concerns for the usage of the system up to building class 5 with regard to fire protection regulations in Germany.

10. Break-in resistance RC2 und RC3 DIN EN 1627, PIV Velbert 06.10.2014, 19.02.2015

The window installation system fulfils the requirements of DIN EN 1627-1630 for the resistance class RC2 and **RC3**. Resistance against static, dynamic and manually force effect to the closed and locked Window.
In addition to the standard test also the attack during the construction phase between the window installation angle and the wall was carried out. The window installation system also passed this test.

Example. Bottom window connection:



Geometries: