

RAICO

FRAME⁺ 75|90 LF

THE PERFECTLY INTEGRATED VENTILATION FLAP



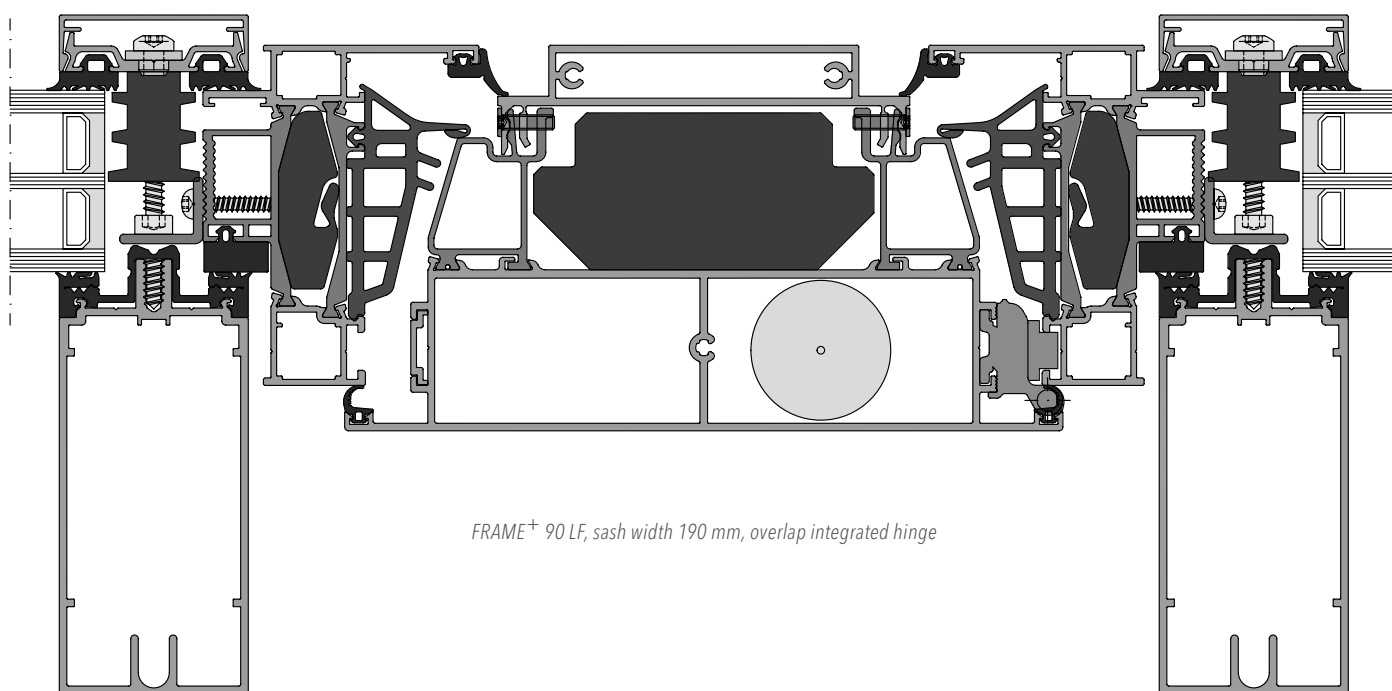
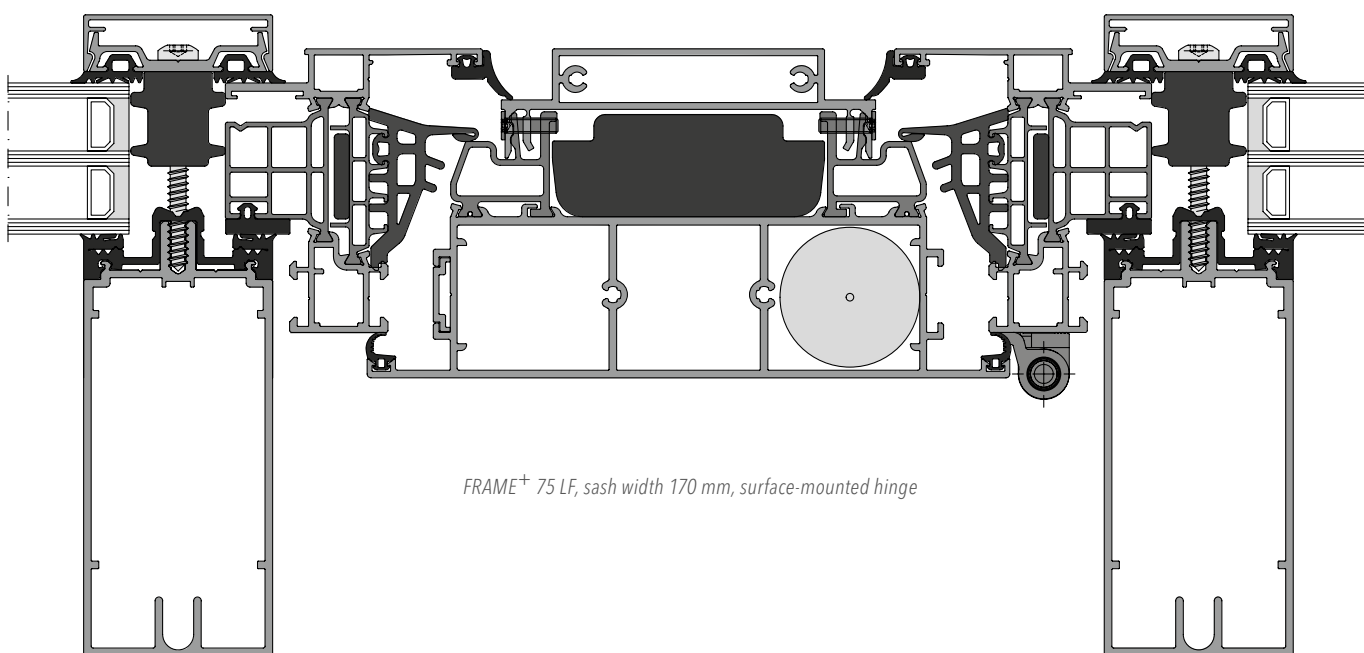
www.raico.com

FRAME⁺ 75/90 LF

The new generation ventilation flap – an overview

The FRAME⁺ 75 LF (side-hung sash with 170 mm and 300 mm sash width) and FRAME⁺ 90 LF (side-hung sash with 190 mm and 300 mm sash width) ventilation flaps can be perfectly integrated into the respective RAICO system families FRAME⁺ 75 WI and FRAME⁺ 90 WI

aluminium windows. Both ventilation flaps can be easily installed in all THERM⁺ and ELEMENT⁺ façade systems. For motorised opening, a completely concealed side-hung vent drive without a visible chain is available for both systems.



■ Excellent product features

- Distortion-resistant design as standard.
- Homogeneous interior view without visible hinges and control element.
- Three circumferential sealing levels ensure high tightness and durable functionality with low operating forces.
- Thermal and sound insulation measures can be conveniently retrofitted by simply dismantling the outer shell even when installed.
- Designed as a fall-protection opening element by testing in accordance with IFT Guideline 18/1.
- As insert for mullion-transom construction or as cut-out.
- Energy savings through night cooling possible.
- Protection from vandalism with electronic torque limiter.
- Opening angle up to 135° if needed, depending on chosen fitting option.

■ Efficient processing

- Prefabricated aluminium end caps incl. all processing.
- Synthetic lids instead of aluminium end caps.
- Vulcanised U-frames for medial gasket with integrated sealant injection opening.
- Due to completely pre-assembled components, motor drives can be mounted without time-consuming wiring work ("Plug and Play").

■ System variants

- Construction depths 75 mm and 90 mm.
- Compatible with all profiles of the series FRAME⁺ 75 WI or FRAME⁺ 90 WI.
- Max. sash height up to 3.000 mm (special sizes on demand), manual and motor-driven for side-hung sashes.
- Flush optics outside.
- Available as system for self-fabrication or as pre-assembled units.

■ Opening options

- Side-hung sash can be operated manually and by motor.
- Automatic drive for sash widths from 170 mm.
- Burglar resistance RC2 manual and motor-driven, without additional locking drive.

■ Technical data and tests

Test	Classification standard	Class/value
Air permeability	EN 12207:2017-03	up to 4
Wind load	EN 12210:2016-09	up to C5 / B5 / A5
Water tightness	EN 12208:2000-06	up to E 900
Mechanical durability	EN 12400:2002-10	up to 3
Operating forces	EN 13115:2001-07	up to 2
Einbruchschutz	EN 1627:2021-11	RC2
Burglar resistance R_w (C:C _{tr})	EN ISO 717-1:2020	up to 42 dB (75LF 170)* up to 40 dB (75LF 300)* up to 42 dB (90LF 190)* up to 42 dB (90LF 300)*
Thermal insulation U_{eq}	EN ISO 10077-2:2017-06	up to 0,94 W/m ² K

Technical values (system inspection as basis for CE label pursuant to DIN EN 14351-1)

* with additional measures



In dialogue with developer team

The subjects of ventilation and a healthy interior atmosphere were brought sharply into focus in recent years: the possibility of a natural supply of fresh air to effectively flush out aerosols has been heavily discussed recently. But even before this surge in interest, the RAICO Window Team developers were eager to collaborate with our long-term motor technology partner D+H Mechatronic AG in order to revolutionise ventilation flaps. Mona Haupteltshofer, Andrea Miller and Marcus Zaharie provide insights into the development of RAICO FRAME⁺ LF:

Why did the RAICO Window Team develop the ventilation flap FRAME⁺ LF?

Mona Haupteltshofer: Ventilation flaps available on the market show us that there are many challenges to be addressed. We preoccupied ourselves with our customers' wishes to ventilate their living and work spaces as easily and comfortably as possible. But technical aspects like the disliked bi-metal effect, issues of ease of use and comfort – particularly e.g. the noise when opening or closing a ventilation flap – and safety questions, from protection from burglary to protection from falling or trapping, are important issues.

What makes FRAME⁺ LF special?

Andrea Miller: The ventilation flap has no visible opening mechanism: where other systems use a loud and visible chain drive, in FRAME⁺ LF a single motor, fully integrated into the flap, handles both opening and locking, invisibly and almost silently. Having only one motor for both functions of course also saves on costs! And FRAME⁺ LF is also really smart: the intelligent microprocessor control programmes itself - a true "plug & play" flap. With the optional ModBus interface, it can also be integrated into the building controls. The simple D+H app controls the ventilation flap, either on a schedule or based entirely on need using the CO₂ traffic light. The natural air exchange also reliably flushes out harmful aerosols – and after all, having a good air quality is →



SMART DESIGN FOR SMART BUILDINGS: THE INTELLIGENT MICROPROCESSOR CONTROL PROGRAMMES ITSELF

the best condition to work productively in the classroom or in the office.

What approach did you follow to avoid common problems of ventilation flaps?

Marcus Zaharie: We decoupled the interior and exterior shells. This way, we give the exterior shell, which is subject to the greatest temperature fluctuations, more room for movement and reduce the bi-metal effect to the minimum. This also allows thermal and sound insulation to be retroactively integrated into the flap.

Let's focus on the word "integration"...

Mona Haupeltshofer: Right, "perfectly integrated" describes our new ventilation flap really well in several aspects: we designed it so that it is optimally combinable with



THANKS TO THE DECOUPLED INTERIOR AND EXTERIOR SHELL,
THE BI-METAL EFFECT IS REDUCED TO A MINIMUM



THE "PLUG & PLAY" FLAP: WITH THE OPTIONAL MODBUS INTERFACE, INTEGRATION INTO BUILDING CONTROLS IS POSSIBLE

our THERM⁺ façade system family and the FRAME⁺ window system. We always try to ensure a unified aesthetic. From the outside and the inside, the system gives an aesthetic homogeneous impression, because we were able to get rid of visible fixations.

Andrea Miller: Optimal integration is also a key factor in the innovative drive, because the tube motor is really completely integrated into the flap profile. On the one hand, this renders it invisible. There is nothing to perturb the slick, discrete aesthetic of the overall construction. On the other hand, opening and closing is now soundless – and in many building contexts this can be very important, e.g. in a concert hall, a library or even a classroom where exams being held.

“‘Perfectly integrated’ describes our new ventilation flap really well in several ways!”

Mona Hauveltshofer

In such public buildings, there are special safety requirements...

Marcus Zaharie: Correct, and these were considered in our overall approach to development. The opening width is set at 109 mm, which makes the ventilation flap fall-proof, so it can be installed as floor-to-ceiling without additional safety measures. Regarding anti-trap protection, FRAME⁺ LF falls in Protection Class 3 for power-operated windows, and with an optical

sensor it can be upgraded to Class 4, as it is required in schools, kindergartens and other public buildings. We also considered the issue of vandalism – an electronic torque limiter provides protection. This combination of factors also make the ventilation flap burglary-proof – an especially important point for use in energy-saving natural building cooling at night! ◻



THE RAICO WINDOW TEAM DEVELOPERS ANDREA MILLER, MARCUS ZAHARIE AND MONA HAUVELTSHOFER (L.T.R.)

Ventilation flap

A fresh wind in ventilation.



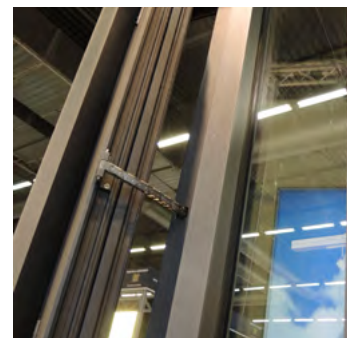
Innovative:

The opening and locking drive is perfectly integrated in the profile and is invisible.

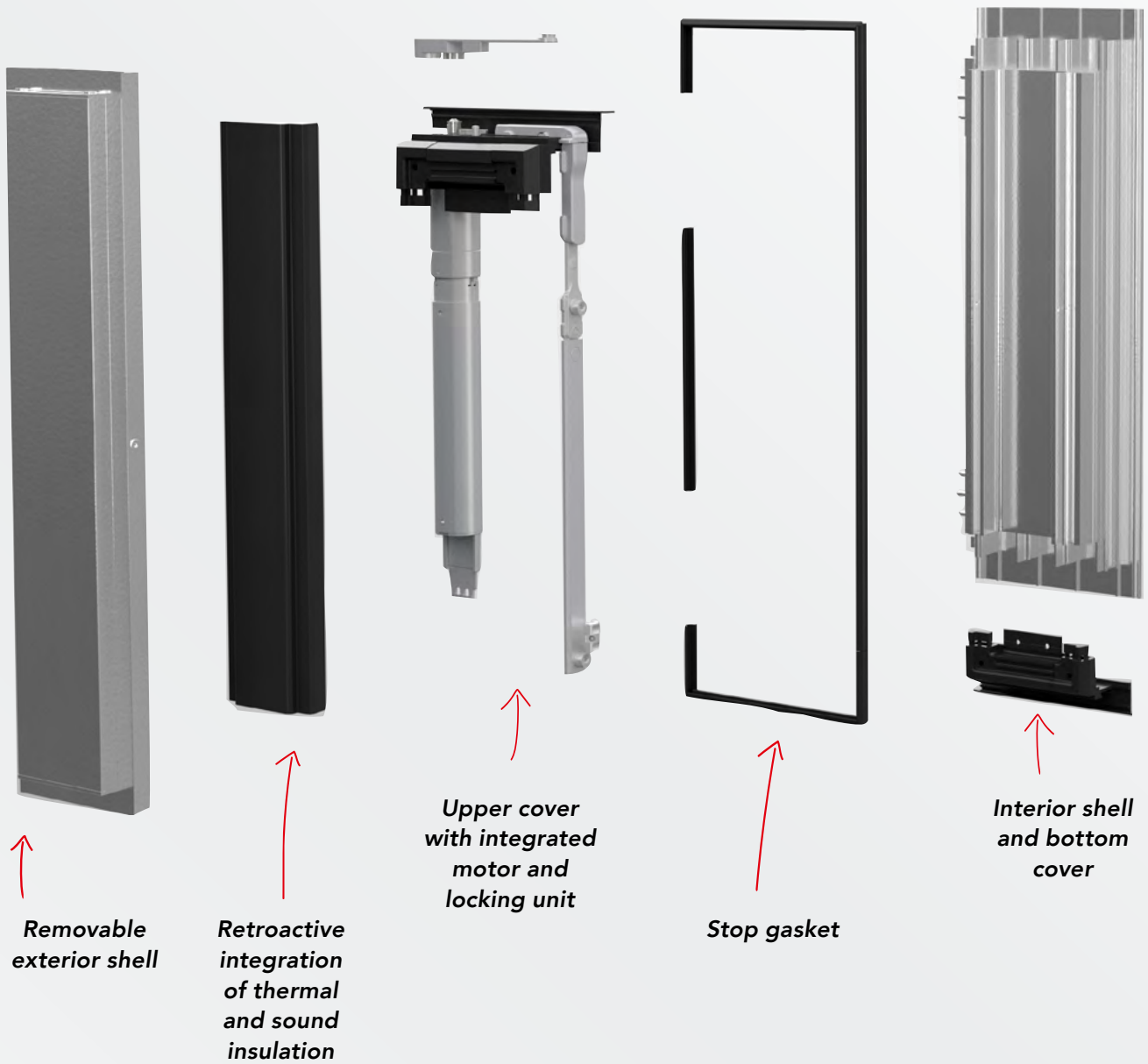


Previously:

Visible chains were needed to open the ventilation flap.

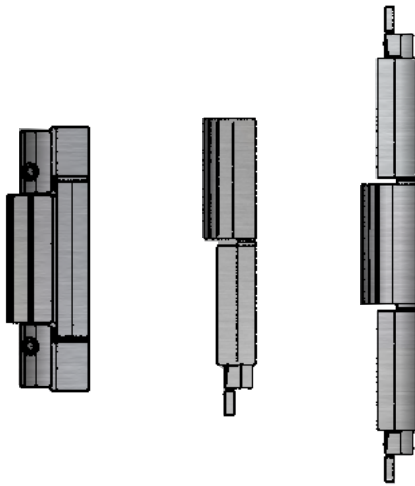


FRAME⁺ 75/90 LF



Fittings for FRAME⁺ 75/90 LF

Manually or motor-driven



System variants – Fitting FRAME⁺ 75/90 LF

■ Outstanding product properties

- Surface mounted or concealed hinges for individual colour design.
- Overlap integrated hinges, without visible fitting parts.

Sash weights:

- surface mounted hinges up to 90 kg
- concealed hinges up to 90 kg
- two-part overlap integrated hinges up to 50 kg
- three-part overlap integrated hinges up to 80 kg

Opening restrictor for side-hung sash:

- Optional surface mounted or concealed (generally recommended).
- Overlap integrated (mandatory).

■ Innovative engine technology

- Drive completely invisible with integrated locking mechanism without additional locking motor.
- Very quiet in operation.
- Vandal-proof drive with self-learning capability.
- Fulfils the requirements of protection class 3 for power-operated windows thanks to torque limitation without sensor strip, optionally extendable to protection class 4.
- Opening/closing speed, closing forces, etc. can be customised.

■ Technical Data for motor set

power supply	24 V DC / ± 15% / 1A
switch-off current	max. 0,7 A
switch-on time	50 % (ON: 5 minutes. / OFF: 5 minutes)
maximum torque (open/close)	22,6 Nm
maximum locking/unlocking force	1200 N
maximum bolt stroke	19 mm
service life	> 25 000 Double strokes
protection class	IP 20
temperature range	- 5 to + 75 °C

WHAT'S THE NEXT STEP?

Further information ...



**PDF planning/
processing:**



*... is available in our planning/
processing documents!*

With the planning/processing FRAME⁺ 75/90 LF we offer architects and fabricators an ideal basis for implementation.

In our download area at **www.raico.com** you will find easy access to all documents in PDF format.



Product video:



*... is also available online on
our YouTube channel!*

On our **RAICO YouTube channel** you can see the ventilation flap in motion and find out what highlights our developer team worked on.



**Processing
video:**



You will also find a video that illustrates the ease of assembly of the ventilation flap FRAME⁺ LF step by step.

RAICO BAUTECHNIK GMBH

info@raico.com
Pfaffenhausen, DE

RAICO AUSTRIA

info.at@raico.com

RAICO SWISS GMBH

info.ch@raico.com
Aarau, CH

RAICO FRANCE S.À.R.L.

info.fr@raico.com
Entzheim, FR

RAICO UK

info.uk@raico.com
Gosport, UK

RAICO NORTH AMERICA

info.na@raico.com
Vancouver, CA

RAICO PACIFIC LTD.

info.au@raico.com
Canberra, AU

**RAICO BUILDING
TECHNOLOGY CO. LTD.**

info.cn@raico.com
Kunshan, CN