Members of the ESSMANN GROUP.

ESSMANN
LIGHT AIR SAFETY

STG BEIKIRCH
AUTOMATION ELECTRONICS

ESS system

The safe and efficient combination

of SHE, lighting and aeration systems
for the **flat roof**.

WE SEE THE BIG PICTURE.

WE SEE THE BIG PICTURE.

Three business segments, numerous added values.

ESSsystem
combines the product segments of ESSMANN and STG-BEIKIRCH into a single set of modules. Our optimally tailored system solutions such as skylight domes, rooflights, drives and control systems can be expanded as required due to this.

» **Added value for you:**
A system proposal for industrial flat roofs and facades. Compatible, modular, safe configuration.

ESSmatic
forms the basis of an automated building envelope as well as the safeguarding of escape and emergency routes. Our fully developed overall solutions are custom-made, and can also be simply and quickly integrated in the building management system.

» **Added value for you:**
Interface towards the automation and control system of the building for automated management of the building envelope.

ESSservice
includes our fully integrated service concept as well as the most comprehensive company-owned service network on the market. It includes planning and configuration tools as well as tailor-made solutions from the planning stage and installation to the maintenance or spare parts service.

» **Added value for you:**
Safety and security through full service in the fields of new construction, renovation projects, maintenance and service.

» For our comprehensive concept and added value thinking, we received two awards in 2015:
The “Architect’s Darling” in the category “Daylight systems” and a placing among the 50 most innovative medium-sized German businesses determined as part of the exclusive “Innovation Champions” survey for the “WirtschaftsWoche” business magazine.

Architects’ Darling 2015
ESSMANN is the “Architects’ Darling” 2015: Silver award in the product category “Daylight systems” in the largest nationwide architects survey.

Innovation Champion
ESSMANN is the “Innovation Champion 2015”: According to the exclusive survey of the “WirtschaftsWoche” business magazine, ESSMANN is one of the 50 most innovative medium-sized German businesses.

System solutions for natural aeration and ventilation, lighting as well as smoke and heat extraction – intelligent and energy efficient.

The building envelope is part of the building systems technology and thus has a strong impact on the safety of persons and machinery as well as on the energy-related performance of the building and the productivity of the personnel working therein. An important factor here is also the safe-guarding of escape and emergency routes. For this purpose and together with our new partner, Kingspan, we offer a unique modular system for the complete building envelope.

Kingspan + ESSMANN + STG-BEIKIRCH:
Strong partners. Strong brands. Strong portfolio.
The ESSMANN GROUP, with the companies ESSMANN Gebäudetechnik GmbH, ECODIS SAS and STG-BEIKIRCH GmbH & Co. KG, is one of the leading manufacturers in Europe of products and system solutions for natural lighting, aeration and ventilation, as well as for natural and mechanical smoke and heat extraction in industrial, commercial and administration buildings. **Kingspan** is a world leader in the field of sustainable construction products for high performance insulation and systems for the building envelope. The products of Kingspan and the ESSMANN GROUP complement one another ideally so they can also be integrated together in a building project. The core competences and know-how for this were bundled in the newly founded company division "Kingspan Light + Air" with the goal of pursuing even more intensively the integrated approach of system solutions for complex requirements associated with the issues of light, air, safety and energy efficiency for the intelligent building envelope. In addition, we offer a value-creation chain that is unique on the market, comprising engineering, production, assembly and service. In this context, energy efficiency is always in the centre of our actions. Because: „We see the big picture" – for a sustainable and safe construction and maximum added value for our customers.

ESSsystem –
Our modular set of systems

Due to the modular structure of ESSsystem, we provide our customers with the highest degree of flexibility for new construction, the extension of existing systems as well as safety-related and energy efficient refurbishment projects. The coordinated system solutions for the industrial flat roof or the facade can be combined in almost every way – this way you will always find the right solution for your requirements.

Outstandingly innovative!
In 2016 we received the accolade of TOP 100!
Therefore, we are one of the most innovative medium-sized companies in Germany. We are proud of this award that we were only able to achieve together with our customers. Also, they are equally an incentive and an obligation to become even better together with – and for – our customers.

Three business segments
The central keystones of our business strategy are our three pillars **ESSsystem, ESSmatic** and **ESSservice –** a unique chain of products and services around the building envelope as a whole. Automated or mechanical.

The optimum combination of planning and construction
This is the high standard that we have set for ourselves. In addition to our products, this also includes innovative planning, calculation and document management tools that we can use to provide our customers with a continuous process chain from the planning stage to the supply and assembly (mounting) of the products.

This manual consistently implements our high standard. Quickly and clearly presented, it also includes helpful configuration and plausibility tables as well as the most important technical details in addition to the overall program for the lighting and aeration. This makes it possible to find the optimum solution for your specific application **quicker, better** and **safer.**

1. Skylight domes				
Sizes, glazings, areas of application	**1.1.1 *Classic* skylight dome *** For the industrial flat roof	**1.1.2 *Plus* skylight dome** For greater requirements in industrial and administration buildings eNERGY EFFICIENCY	**Glass skylight domes** Genuine glass for your office and administration buildings **1.1.3 *Comfort plus* skylight dome** eNERGY EFFICIENCY	**1.1.4 Glass pyramide *plus*** eNERGY EFFICIENCY
Smoke and heat extraction (SHE) units	1.2.1 Geometric smoke and heat extraction 1.2.2 Pneumatic NSHE F6 1.2.3 Electrical NSHE 48 V	1.2.1 Geometric smoke and heat extraction	1.2.1 Geometric smoke and heat extraction	1.2.1 Geometric smoke and heat extraction
Drives for ventilation (also for geometric smoke and heat extraction)	1.3.1 24 V linear drive M2 1.3.2 230 V linear drive M3	1.3.1 24 V linear drive M2 1.3.2 230 V linear drive M3 1.3.3 24 V chain drive LM /2 1.3.4 24 V chain drive CM	1.3.1 24 V linear drive M2 1.3.2 230 V linear drive M3 1.3.3 24 V chain drive LM /2 1.3.4 24 V chain drive CM	Also available as ventable
Safety systems	1.4.1 Fall and fall-through protection (EAD) 1.4.2 Fall arrest safety systems type LK-L and LK-K 1.4.3 Burglary and fall arrest safety systems 1.4.4 Fall arrest safety ring (PAS ring)		Fall-through protected thanks to compound safety glass (VSG) in accordance with GS Bau 18 1.4.4 Fall arrest safety ring (PAS ring)	
Substructures	1.5.1 PVC skylight base 15/30/50 cm 1.5.2 Metal skylight base 30/40/50 cm			
Exit hatches	1.6.3 Exit hatch with scissor arm (type 6/1)	1.6.1 Exit hatch with gas spring fitting (type G) 1.6.2 Exit hatch with linear drive (type M)	–	–
Accessories	1.7.1 Hail, fall-through and sun protection (HDS) 1.7.2 Repair and renovation set 1.7.3 Insect protection mesh 1.7.4 Safety and system frame 1.7.5 Darkening and shading system		1.7.2 Repair and renovation set 1.7.3 Insect protection mesh 1.7.4 Safety and system frame 1.7.5 Darkening and shading system	–

Energy efficiency starts in the building envelope.

We are continuously developing new products for you with the demand for especially high energy efficiency.Next to good U values, e.g. daylight utilisation, the possibility of integration in intelligent control system concepts or a suitable operating capability in renovation are taken into account here. Our energy-efficient products can be recognised by the adjacent label.

eNERGY EFFICIENCY

2. Arcade rooflights

	2.1.1 *Classic* arcade rooflight (type 940-10)** The standard system for the industrial flat roof	2.1.2 *Classic plus* arcade rooflight Modular, thermally separated profile system with flexibility in retrofitting	2.1.3 Brakel® Arcilite arcade rooflight The premium arcade rooflight in genuine glass	2.1.4 Daylight panel *SVPC* Multifunctional system for your facade
Sizes, glazings, areas of application				
Smoke and heat extraction (SHE) units	2.2.1 NSHE pneumatic F6 (OPEN)	2.2.2 NSHE pneumatic (OPEN/CLOSED) 2.2.3 NSHE electrical 48 V (OPEN/CLOSED)	Suitable for geometric and qualified smoke extraction	
Drives for ventilation (also for geometric smoke and heat extraction)	2.3.1 24 V linear drive M2 2.3.2 230 V linear drive M3		Suitable for ventilation	2.3.1 24 V linear drive M2 2.3.2 230 V linear drive M3
Safety systems	2.4.1 Fall and fall-through protection (EAD) 2.4.2 Integrated fall-through protection (ID1200) 2.4.3 Fall arrest safety console (PAS-console)		–	Not necessary as installed in the facade
Substructures	2.5.1 Self-supporting base 2.5.2 Surface-mounted base		Wood and steel construction possible	Aluminium frame
Exit hatches	–	–	–	–
Accessories	2.6.1 Hail, fall-through and sun protection (HDS) 2.6.2 Insect protection mesh 2.6.3 Frame safety connection		–	–

** The classic skylight dome is also available in the special shapes round, pyramide (1.1.5) and also as a darkening flap (1.1.6). Detailed information can be found in the datasheets or upon request.*

*** The classic arcade rooflight is also available as a saddle rooflight (2.1.5) Detailed information can be found in the datasheets or upon request.*

3. Flat-roof drainage safety systems	
3.1 *Classic* gully	The standard drainage safety system element for your flat roof
3.2 Screw flange gully	For roof connection on site
3.3 Balcony gully	For confined installation conditions
3.4 Renovation gully	For all renovation cases
3.5 Breather vents	For ventilation of the roof spaces
3.6 Spouters	For outside drainage
3.7 Overflows	For outside drainage
3.8 Green roof drainage systems	For special requirements of landscaped roofs
3.9 Accessories	Pebble trap, damming ring, attachments for different applications

4. Lamella	
4.1 Brakel® Optima lamella	Highly energy efficient lamella for SHE and ventilation
4.2 Brakel® Estra lamella	Thermally separated lamella for SHE and ventilation
4.3 Brakel® Eura and Eura-R lamella	Lamella unit for roof and facade

5. Ventilation flaps	
5.1 Brakel® Ventria top-hung sash	Casement window for many applications
5.2 Brakel® Fumetica double flap	High-volume unit for natural ventilation and smoke and heat extraction
5.3 Brakel® Duo Therma double flap	High-volume, rain-resistant unit for natural ventilation and smoke and heat extraction
5.4 Brakel® Aerobase	Substructure for rain-resistant ventilation across the flat roof

6. Control systems	
6.1 SHE and ventilation 24 V	6.1.1 Staircase control panels 2 A (TRZ) 6.1.2 Compact control panels 4 A and 8 A 6.1.3 Modular control panels MZ3
6.2 SHE and ventilation 48 V	6.2.1 Motor control panel (EMZ) 48 V
6.3 Ventilation 24 V and 230 V	6.3.1 24 V Ventilation control panel (iVent 8A) 6.3.2 Wind and rain detection system (WRZ)
6.4 Accessories	6.4.1 Power pack NT 2 A and mains power supplies VNT 2.5 A and VNT 8 A 6.4.2 Service port software 6.4.3 SHE manual call point RBH/3 A 6.4.4 Optical smoke detector MSD 523 6.4.5 Vent switches 6.4.6 Sensors 6.4.7 Emergency power batteries NB

ESSsystem:
Our modular set of systems.

ESSsystem is our modular set of optimally coordinated product solutions for flat roofs in an industrial environment and the facades of purpose-built and administrative buildings. The consistent modular structure of our product groups provides our customers with the safety that existing systems can be updated easily and without problem at any time.

As a result, modularity is possible not only within the product groups, but also across all of the products at all times. No matter whether skylight domes, drives, control systems, ventilation systems or smoke and heat extraction systems – everything can be combined into an overall system.

Already now, our portfolio is unique in terms of its broadness and application versatility, and we will continue to expand it further. At the same time, it is important for us to develop solutions which contribute to the optimisation of the energy cost ratio as well as fulfilling our high quality requirements in all other areas. A comprehensive range of accessories for the core applications light, air and safety complement our extensive product portfolio.

Added value for you: We are continuously developing our sustainable products and future-proof solutions for you, while observing the latest standards and laws.

4. Lamella 129

5. Ventilation flaps 137

6. Control systems 143

7. Renovation and refurbishment 173

8. Planning aids 177

1. Skylight domes

It doesn't matter if it’s square, rectangular, round or pyramide. Whether it’s in commercial, residential, office or administration buildings. Even if it's two or multi-layered polycarbonate glazing or glazing from genuine glass. All of our skylight domes provide optimum light efficiency for any building.

Thanks to the versatile equipment variants, the ESSMANN skylight domes can be used anywhere for lighting aeration and ventilation or also for smoke and heat extraction. In addition to their technical functions, they also fulfil the demands of modern architecture.

Our product range

- *Classic* classic skylight dome
- *Plus* skylight dome
- *Comfort plus* skylight dome
- Glass pyramide (special shape)
- Functionally expandable for smoke and heat extraction, ventilation, fall and fall-through protection, exit hatch and much more

SYSTEM ADVANTAGES:

- High quality polycarbonate glazing
- Stable border frame with moulded drip edge
- Also available as an energy-efficient solution
- Optimised light transmission
- Fulfils the highest demands on appearance

» **Learn more:**

Would you like to learn more about our products and services?
Information is available at **www.essmann.de.**

Skylight domes

1.1.1 *Classic* skylight dome

For the industrial flat roof

The *classic* skylight is a product for the conventional requirements on the flat roof. It is available in different glazing options and functionally expandable through a large number of components such as **smoke and heat extraction systems, ventilation motors or fall-through protection**.

Advantages/ Features

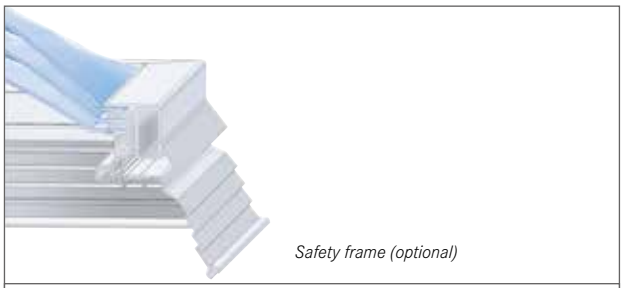
- Available in a 2- or 3-skinned version or as a *PC-st* variant with polycarbonate web plate PC 16
- Stable border frame with moulded additional drip edge as protection against the elements
- Functionally expandable through extensive accessories
- Supporting points for the retrofitting of ventilation units are included in the fixed version
- Easy installation due to functional hinge design

Applications

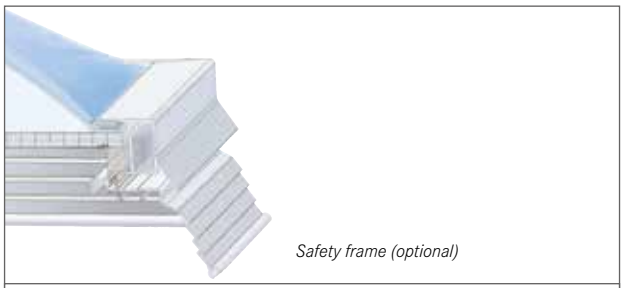
- All ESSMANN skylight bases
- Industrial flat roof (e.g. warehouses) up to a maximum roof slope of 25°
- New construction, renovation and repair

Material

- High-quality polycarbonate glazing
- PVC profile



Classic skylight dome 3-skinned in cross-section



Classic PC-st skylight dome 2-skinned with 16 mm PC web plate in cross-section

Technical data	*Classic* skylight dome 2-skinned	*Classic* skylight dome 3-skinned	*Classic PC-st* skylight dome 16/7 and 1 acrylic skin	*Classic PC-st* skylight dome 16/7 and 2 acrylic skins	*Classic PC-st* skylight dome 16/3 with Aerogel filling and 2 acrylic skins
U_g value*	3.0 W/(m²K) [1]	2.2 W/(m²K) [1]	1.4 W/(m²K) [1]	1.1 W/(m²K) [1]	0.9 W/(m²K) [1]
Light transmission	50%	43%	52%	44%	54%
g value	58%	49%	55%	46%	45%
Sound-proofing quality R_{wp}	20 dB [2]	22 dB [2]	22 dB [2]	≥ 22 dB [2]	≥ 22 dB [2]

Standard glazing, opal, with fire behaviour Class E (DIN 4102). Other glazing options (impact resistant, fire-resistant PETG, transparent or heat and soundproof glazing) as well as variants (e.g. fire behaviour) on request.

Delivery size [cm x cm]	Incident light area [m²]	Delivery size [cm x cm]	Incident light area [m²]
50 x 100	0.24	120 x 270	2.50
50 x 150	0.39	120 x 300	2.80
60 x 60	0.16	125 x 125	1.10
60 x 90	0.28	125 x 250	2.42
60 x 120	0.40	125 x 300	2.94
62.5 x 150	0.55	141 x 231	2.55
70 x 137	0.59	150 x 150	1.69
70 x 141	0.61	150 x 180	2.08
80 x 80	0.36	150 x 210	2.47
90 x 90	0.49	150 x 240	2.86
90 x 120	0.70	150 x 250	2.99
100 x 100	0.64	150 x 270	3.25
100 x 150	1.04	150 x 300	3.64
100 x 200	1.44	180 x 180	2.56
100 x 250	1.84	180 x 240	3.52
100 x 300	2.24	180 x 250	3.68
120 x 120	1.00	180 x 270	4.00
120 x 150	1.30	180 x 300	4.48
120 x 180	1.60	200 x 200	3.24
120 x 240	2.20	200 x 300	5.04

Other dimensions upon request.

[1] Calculated by the Fraunhofer Institute for horizontal installation
[2] Without certification in accordance with DIN 1873

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Skylight domes

1.1.2 *Plus* skylight dome

For greater requirements in industrial and administration buildings

ENERGY EFFICIENCY

With the **thermally separated profile system,** the *plus* skylight dome provides optimum properties with regard to energy efficiency and air tightness. This makes it ideally suited for greater requirements in industrial and administration buildings

Advantages/ Features

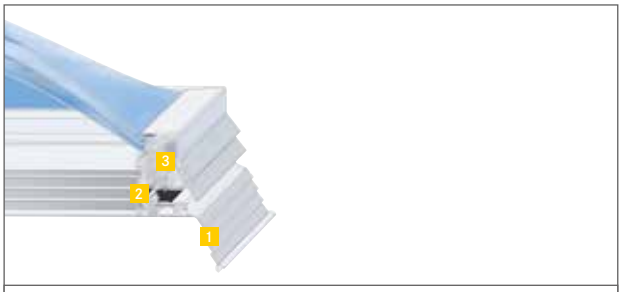
- Saving of heating costs due to highly efficient overall design
- Reduction of power costs due to high light transmission
- Reduced CO_2 emissions due to high energy efficiency
- High rigidity and long service life due to aluminium clamping frame
- Impressive sealing due to triple seal
- Lower weight in comparison to solutions with ISO glass
- With system frame as standard (see 1.7.2)
- Simply, flexible retrofit with accessories (e.g. ventilation drive) thanks to possible attachment on peripheral C-groove

Applications

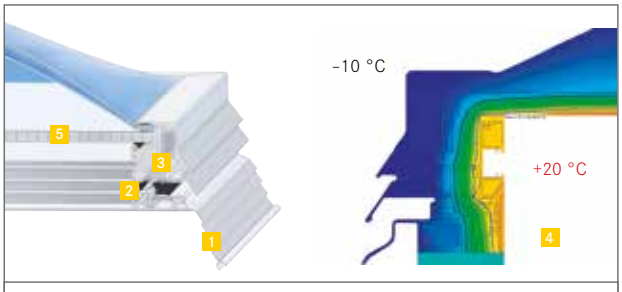
- Administration buildings
- Heated industrial buildings
- New construction and energy-optimised renovation

Material

- High-quality polycarbonate glazing
- Thermally separated border frame made of aluminium



Plus skylight dome with 3 acrylic skins in cross-section



Left: plus PC-st skylight dome with a 16 mm PC web plate and 2 acrylic skins in cross-section
Right: plus PC-st skylight dome, 2-skinned, isothermal diagram

1 System frame for simple mounting for storage of the roof sheeting
2 C-groove for flexible mounting of ventilation units and accessories
3 Especially torsionally stiff due to the aluminium clamping frame
4 The kink-free isothermal diagram demonstrates the energy efficiency of the component and at the same time means a low risk of melt water mould
5 PC plate for better light scatter and lower heat loss (*plus PC-st* skylight dome version)

Technical data	*Plus* skylight dome 3-skinned	*Plus PC-st* skylight dome 16/7 and 1 acrylic skin	*Plus PC-st* skylight dome 16/7 and 2 acrylic skins	*Plus PC-st* skylight dome 16/3 with Aerogel filling and 2 acrylic skins [3]
U_g value*	2.2 W/(m²K) [1]	1.4 W/(m²K) [1]	1.1 W/(m²K) [1]	0.9 W/(m²K) [1]
Light transmission	43 %	52 %	44 %	54 %
g value	49 %	55 %	46 %	45 %
Sound-proofing quality R_{wp}	22 dB [2]	22 dB [2]	≥ 22 dB [2]	≥ 22 dB [2]

Standard glazing, opal, with fire behaviour Class E (DIN 4102).
Other glazing options (impact resistant, fire-resistant PETG, transparent or heat and soundproof glazing) on request.

Delivery size [cm x cm]	Incident light area [m²]
50 x 100	0.24
50 x 150	0.39
60 x 60	0.16
60 x 90	0.28
60 x 120	0.40
62.5 x 150	0.55
70 x 137	0.59
70 x 141	0.61
80 x 80	0.36
90 x 90	0.49
90 x 120	0.70
100 x 100	0.64
100 x 150	1.04
100 x 200	1.44
100 x 250	1.84
120 x 120	1.00
120 x 150	1.30

Delivery size [cm x cm]	Incident light area [m²]
120 x 180	1.60
120 x 240	2.20
125 x 125	1.10
125 x 250	2.42
141 x 231	2.55
150 x 150	1.69
150 x 180	2.08
150 x 210	2.47
150 x 240	2.86
150 x 250	2.99
180 x 180	2.56

Other dimensions upon request.

[1] *Calculated by the Fraunhofer Institute for horizontal installation*
[2] *Without certification in accordance with DIN 1873*
[3] *This product variant bears the "Energy efficiency" label*

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Skylight domes

1.1.3 *Comfort plus* skylight dome

Genuine glass for your office and administration buildings

eNERGY EFFICIENCY

Genuine glass skylight dome with arched cover skin made from high-quality PMMA for letting less heat through and optimum removal of rain water. The *comfort plus* skylight dome is fall-through protected in accordance with GS Bau 18 (Principles for Testing and Certifying the Fall-through Protection of Components during Construction or Maintenance Work) thanks to laminated safety glass as standard.

Advantages/ Features

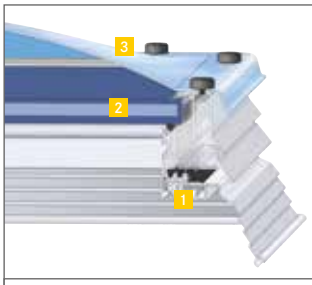
- Ideal daylight utilisation thanks to genuine glass
- Can be adjusted to individual requirements through sun protection glazing or sound insulation glazing
- Permanently fall-through protected as per GS Bau 18 (Principles for Testing and Certifying the Fall-through Protection of Components during Construction or Maintenance Work)
- Reduction of heating costs due to thermal bridge-optimised overall design
- Reduced CO_2 emissions due to high energy efficiency
- Extremely high air tightness (class 4 in accordance with DIN 12207)
- Rain water removal by cover skin also ensured in horizontal installation

Applications

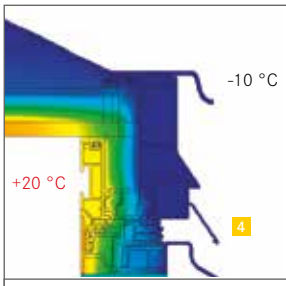
- Office and administration buildings
- Schools and kindergartens
- New construction, energy-optimising renovation and repair

Material

- Laminated safety glass (LSG)
- Thermally separated border frame made of aluminium



Comfort plus skylight dome in cross-section



Comfort plus skylight dome isothermal diagram

1 Outstanding sealing (class 4) thanks to aluminium border frame and elaborate sealing design
2 Laminated safety glass (LSG) for outstanding appearance, best heat insulation and maximum safety
3 Cover skin with self-cleaning effect for removing rain
4 The *comfort plus* skylight dome guarantees freedom from condensation under the hard test conditions of –10 °C outside temperature and 20 °C inside temperature (with 50 % rel. humidity). Another positive effect of the optimised isothermal diagram is low heat loss which is reflected in lower heating costs.

Technical data	*Comfort plus* skylight dome with heat insulation glazing [3]	*Comfort plus* skylight dome with sun protection glazing [3]
U_g value*	1.1 W/(m²K) [1]	1.1 W/(m²K) [1]
Light transmission	70 % [2]	64 % [2]
g value	44 % [2]	35 % [2]
Sound-proofing quality R_{wp}	> 38 dB [2]	> 38 dB [2]

Delivery size [cm x cm]	Weight [kg]
60 x 60	15
60 x 90	22
60 x 120	30
80 x 80	26
90 x 90	33
90 x 120	44
100 x 100	41
100 x 150	61
100 x 200	81
120 x 120	64
120 x 150	80
120 x 180	96
125 x 125	69
150 x 150	100
150 x 180	120

Other dimensions upon request.

[1] *Calculated by the Fraunhofer Institute for horizontal installation*
[2] *Manufacturer's specification for glazing*
[3] *This product variant bears the "Energy efficiency" label*

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Skylight domes

1.1.4 *Plus* glass pyramid

Genuine glass for your office and administration buildings

eNERGY EFFICIENCY

The pyramid shape of this skylight meets the highest optical requirements. The *plus* glass pyramid is particularly striking in reception areas, canteens or conference rooms. The outstanding properties for letting through light and heat make it a genuine highlight.

Advantages/ Features

- Pyramid shape for a sophisticated appearance
- Reduction of heating costs due to heat bridge-optimised overall design with high-grade heat insulation glazing
- Tested joint tightness in accordance with DIN EN 12208
- Ball throwing safety in accordance with DIN 18032-3
- Optionally also for ventilation
- Delivery as a complete system, incl. GRP skylight base 30 cm

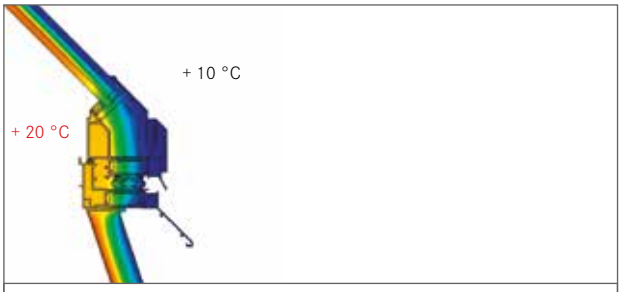
Applications

- Office and administration buildings
- Schools and kindergartens
- New construction, energy-optimising renovation and repair

Material

- Heat insulation glazing as laminated safety glass (LSG)
- Thermally separated border frame made of aluminium
- Skylight base made from GRP
- Powder-coated aluminium extrusion profiles (standard RAL 9016)

Plus glass pyramid in cross-section



Plus glass pyramid isothermal diagram

1 Double heat insulation glazing
2 Thermally separated aluminium profile
3 Heat-insulated skylight base made of GRP

Technical data	Glass pyramid plus with 2-fold heat insulation glazing [1]
U_g value*	1.1 W/(m²K) [3]
Light transmission	77 %
g value	60 %
Sound-proofing quality R_{wp}	> 38 dB [3]

Delivery size [cm x cm]	Weight [2] [kg] [incl. skylight base and chain drive]	Ventilation drive
100 x 100	approx. 110	Single drive
120 x 120	approx. 144	
150 x 150	approx. 178	
180 x 180	approx. 237	
200 x 200	approx. 286	Drive with integrated synchronous control system

Other dimensions upon request.

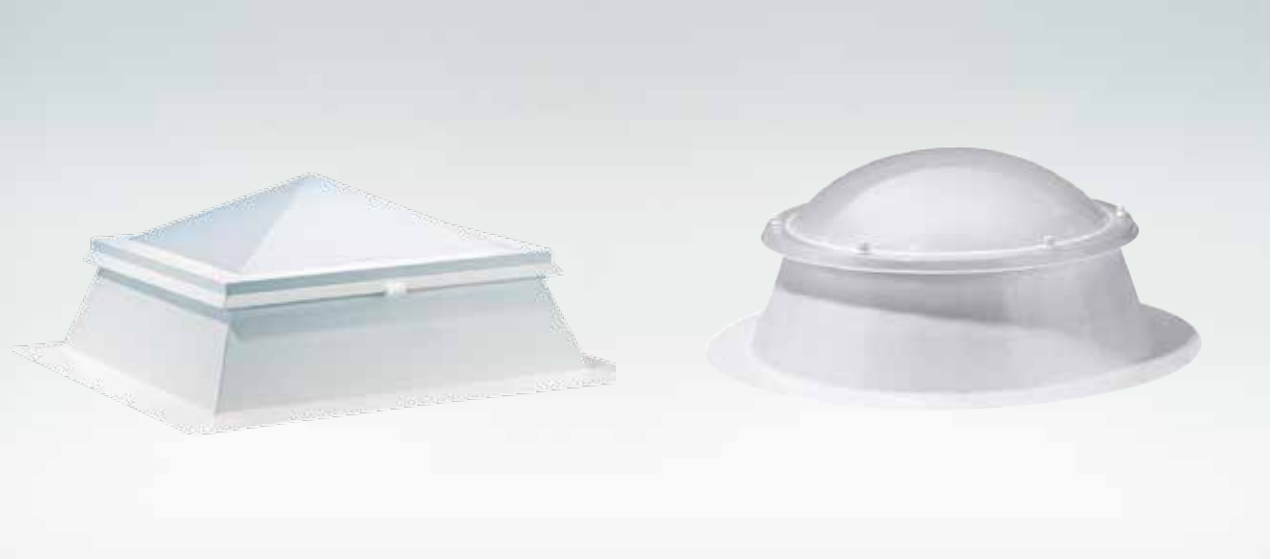
[1] *This product variant bears the "Energy efficiency" label*
[2] *With a stroke of 300 / 500 mm*
[3] *Manufacturer's specification for glazing*

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Skylight domes

1.1.5 Special-shaped skylight domes, pyramid-shaped skylight domes and round skylight domes

Special visual appearance for industrial buildings



Our skylight dome special shapes meet the special requirements in terms of appearance and design of the skylight.

Advantages/ Features
- Meets special requirements in terms of appearance
- High-quality polycarbonate glazing for different requirements

Applications
- Industrial flat roof (e.g. warehouses) up to a maximum roof slope of 25°
- New construction and renovation

Material
- High-quality polycarbonate glazing
- PVC profile

1.1.5 Special-shaped skylight domes, pyramid-shaped skylight domes and round skylight domes

Pyramid-shaped skylight dome in the open position

Round skylight dome in the open position

Technical data	Pyramid-shaped skylight dome or round skylight dome 2-skinned	Pyramid-shaped skylight dome or round skylight dome 3-skinned
U_g value*	3.0 W/(m²K) [1]	2.2 W/(m²K) [1]
Light transmission	50 %	43 %
g value	58 %	49 %
Sound-proofing quality R_{wp}	20 dB [2]	22 dB [2]

Standard glazing, opal, with fire behaviour Class E (DIN 4102). Other glazing options (impact resistant, fire-resistant PETG, transparent or heat and sound-proof glazing) as well as variants (e.g. fire behaviour) on request.

Delivery size Pyramid-shaped skylight dome	Incident light area [m²]
80 x 80	0.36
90 x 90	0.49
100 x 100	0.64
120 x 120	1.00
150 x150	1.69
180 x 180	2.56
200 x 200	3.24

Delivery size Round skylight dome [cm x cm]	Incident light area [m²]
Ø 60	0.12
Ø 80	0.28
Ø 90	0.38
Ø 100	0.50
Ø 120	0.78
Ø 150	1.32
Ø 180	2.01
Ø 200	2.54

Other dimensions upon request.

[1] *Calculated by the Fraunhofer Institute for horizontal installation*
[2] *Without certification in accordance with DIN 187 DIN 1873*

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Skylight domes

1.1.6 Special-shaped skylight dome as darkening flap

The SHE and ventilation solution for applications without the influx of light

The darkening flap is the perfect solution for rooms where the functions of natural smoke extraction and/or ventilation are needed but no daylight is desired. It can be combined with all of the *classic* skylight accessories.

Advantages/ Features

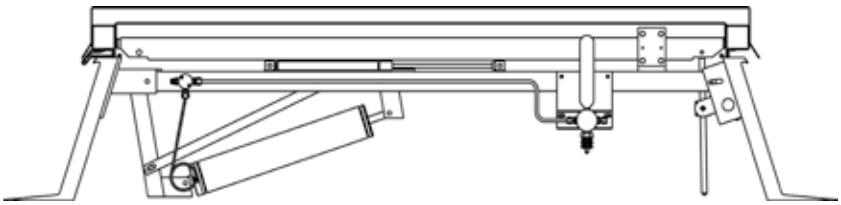
- No light transmittance
- Smoke and heat extraction as well as ventilation functionality (same as *classic* skylight)
- Permanently fall-through protected as per GS Bau 18 (Principles for Testing and Certifying the Fall-through Protection of Components during Construction or Maintenance Work)
- Fulfils the requirement for "hard roofing"

Applications

- Wherever no incidence of daylight is desired, but the SHE and/or ventilation functionality must be ensured

Material

- Darkening flap made of aluminium, insulation



Darkening flap with NSHE device in cross-section

Delivery size [cm x cm]	Geometric cross-section [m²]
60 x 60	0.16
60 x 90	0.28
60 x 120	0.40
80 x 80	0.36
90 x 90	0.49
90 x 120	0.70
100 x 100	0.64
100 x 150	1.04
100 x 200	1.44
100 x 250	1.84
100 x 300	2.24
120 x 120	1.00
120 x 250	1.30
120 x 180	1.60
120 x 240	2.20
125 x 125	1.10
125 x 250	2.41
150 x 150	1.69
150 x 180	2.08
150 x 250	2.99
150 x 300	3.64
180 x 180	2.56
180 x 250	3.68
180 x 270	4.00
180 x 300	4.48
200 x 200	3.24
200 x 300	5.04

Other dimensions upon request.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1. Skylight domes

1.2 Smoke and heat extraction systems (SHE)

In addition to the natural lighting and ventilation of buildings, skylights with opening units provide another benefit: Natural smoke and heat extraction. For the use of skylight domes as a smoke extraction, they are equipped with natural smoke and heat extraction devices (NSHE). These devices consist of an opening unit for the flaps to be opened, the control technology and a trigger mechanism (CO_2 or electrical pulse).

Our product range

- Geometric smoke extraction
- Pneumatic NSHE device F6
- Electrical NSHE 48 V device

» **Find out more:**

Would you like to find out more about our products and services?
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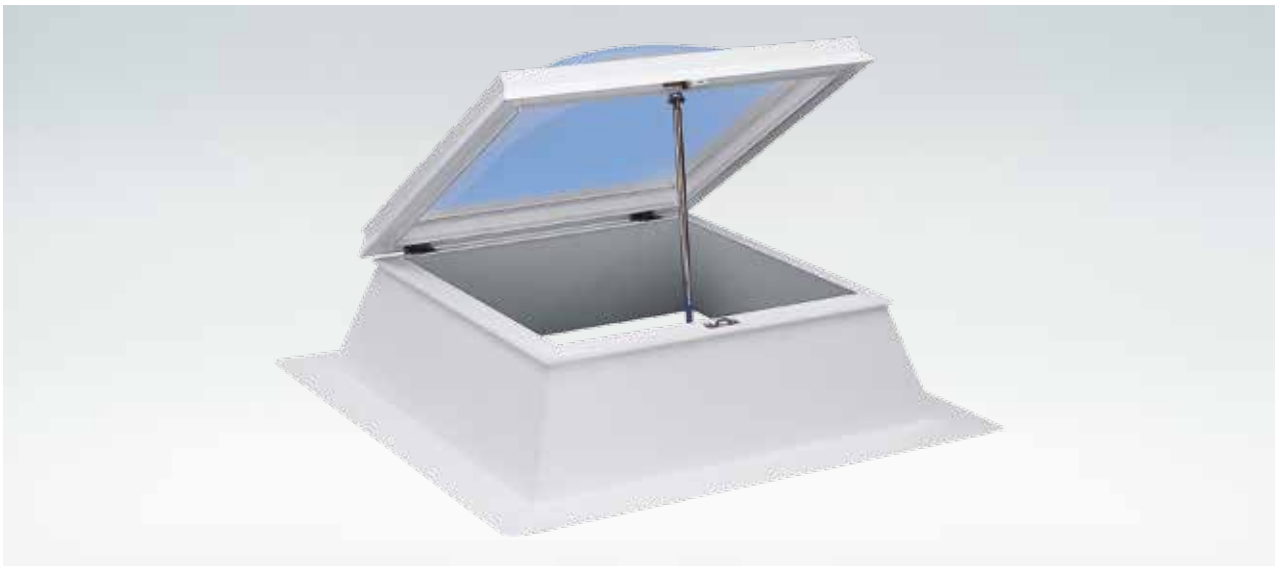
1.2.1 Geometric smoke extraction for all ESSMANN skylight domes

The SHE solution for your staircase



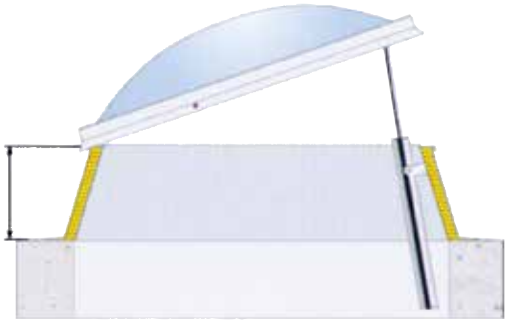
The geometric area for smoke extraction is a special requirement that is demanded in the different state building regulations (LBO) for staircases. The flexible ESSMANN solutions provide the matching solution is available for every staircase and every state building regulation.

Advantages/ Features

- Combination of daily aeration and deaeration and smoke and heat extraction function
- Available with pneumatic or electrical drive
- Can be combined with exit hatches (see 1.6)

Applications

- In staircases in accordance with LBO
- In buildings with requirements for "areas for smoke extraction"



Geometric smoke and heat extraction in a skylight dome in cross-section

Delivery size [cm x cm]	Incident light area [m²]	Geometric area and ventilation cross-section [m²] [1] of the different stroke heights		
		30 cm	50 cm	75 cm
60 x 60	0.16	0.16	–	–
60 x 90	0.28	0.28	–	–
70 x 137	0.59	0.50	0.59	–
70 x 141	0.61	0.51	0.61	–
80 x 80	0.36	0.36	–	–
90 x 90	0.49	0.42	0.49	–
90 x 120	0.70	0.51	0.70	–
100 x 100	0.64	0.48	0.64	–
100 x 150	1.04	0.63	1.04	–
100 x 200	1.44	0.78	1.30	1.44
100 x 250	1.84	0.93	1.55	1.84
120 x 120	1.00	0.60	1.00	–
120 x 150	1.30	0.69	1.15	1.30
120 x 240	2.20	0.96	1.60	2.20
125 x 125	1.10	0.63	1.05	1.10
125 x 250	2.42	1.00	1.67	2.42
141 x 231	2.55	1.00	1.66	2.49
150 x 150	1.69	0.78	1.30	1.69
150 x 240	2.86	1.06	1.75	2.63
150 x 270	3.25	1.14	1.90	2.85
180 x 240	3.52	1.14	1.90	2.85
180 x 270	4.00	1.24	2.05	3.07
200 x 200	3.24	1.08	1.80	2.70

Other dimensions upon request.

[1] *For front side positioning of the installation units*

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Status 01/2016
Subject to technical modifications. Diagrams not binding.

1.2.2 Pneumatic NSHE device F6 for *classic* skylight

Aerodynamic smoke and heat extraction system in accordance with DIN EN 12101-2

Fire protection is particularly important in the construction of larger buildings. The protection of persons and property is of utmost importance in the event of a fire. With the natural smoke and heat extraction device (NSHE) F6 for the *classic* skylight, you can be sure of keeping smoke clear of evacuation routes and the protection of property.

Advantages/ Features

- Pneumatic NSHE device with OPEN function [1)]
- Can be combined with linear drive or pneumatic cylinder for daily aeration and deaeration
- Tested and approved in accordance with DIN EN 12101-2
- Available with wind training walls for improving the extraction value (Aa value)
- Available with thermal release device (TRD) trigger temperature 68 °C / 93 °C

Applications

- All ESSMANN *classic* skylight domes (from a nominal size of 100 x 100 cm)
- All ESSMANN skylight bases [2)]
- ESSMANN darkening flaps
- New construction
- Renovation in combination with the ESSMANN renovation skylight base (SAK)

Technical data	
Wind load class	WL 1500
Snow load class	SL 500 / SL 750
Performance check	Re 50
Function at low temperatures	T(00) [3)]
Fire behaviour	Class E

[1)] Pneumatic NSHE F8 device with OPEN/CLOSE function on request
[2)] Specifications of the flat roof directive must be taken into account
[3)] Other features on request

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1.2.3 Electrical NSHE 48 V device for *classic* skylight

Aerodynamic smoke and heat extraction system
with integrated ventilation function

With the natural smoke and heat extraction device (NSHE 48 V), the requirement of qualified smoke and heat extraction with the OPEN/CLOSE function and the convenience of daily aeration and deaeration can be fulfilled – an additional unit for ventilation is not required.

Advantages/ Features

- Smoke and heat extraction with OPEN/CLOSE function as well as daily aeration and deaeration with one unit
- Compatible with LON bus technology for intelligent ventilation scenarios
- Heavy snow loads **up to 2500 N / m²** (in skylight dome 100 x 100 cm) possible
- Tested and approved in accordance with DIN EN 12101-2
- VdS-tested system

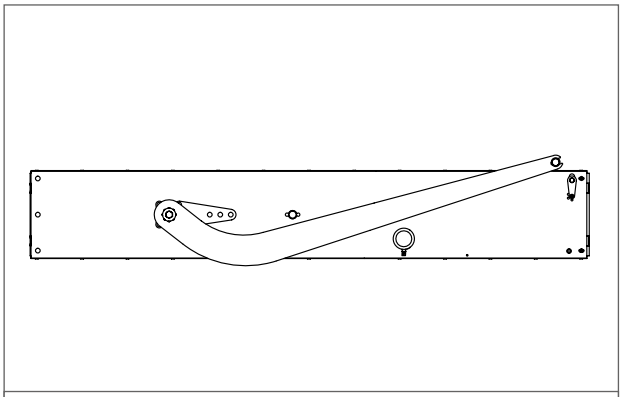
Applications

- All ESSMANN *classic* skylight domes from a nominal size of 100 x 100 cm
- All ESSMANN skylight bases [1)]
- ESSMANN darkening flaps
- New construction

Material

- Sendzimir galvanised sheet steel
- RAL coating (base cross member and base plate) possible on request

[1)] Specifications of the flat roof directive must be taken into account



Side view of the NSHE 48 V device

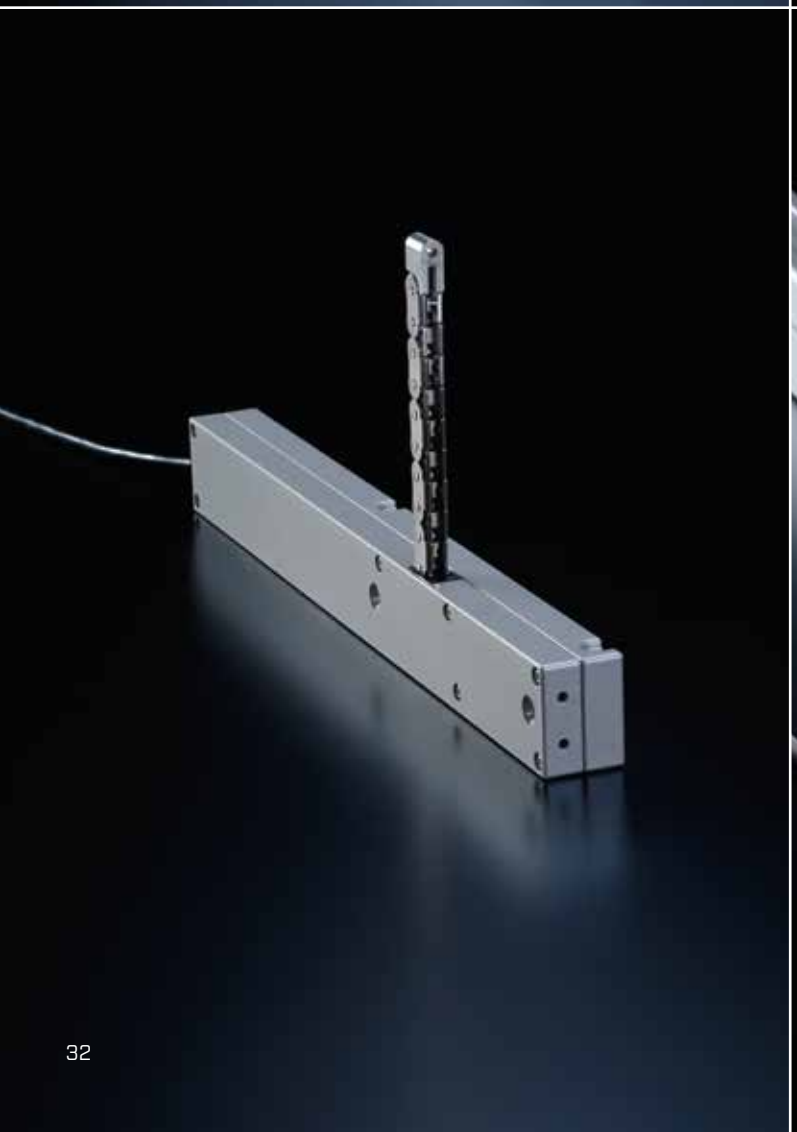
Skylight dome with NSHE 48 V device installed

Technical data	
Wind load	WL 1,500 (N/m²)
Ventilation	Re 10,000 (strokes)
SHE	Re 1,000 (strokes)
Resistance to heat	B 300
Temperature	to T (–15)

Delivery sizes [1] [cm x cm]	Max. snow load [N] per m² with *classic* skylight, 3-skinned
100 x 100	2,500
100 x 150	1,000
100 x 200	1,000
100 x 250	1,000
120 x 120	1,750
120 x 150	1,000
120 x 180	1,000
120 x 240	750
125 x 125	1,000
125 x 250	750
150 x 150	1,000
150 x 180	750
150 x 210	750
150 x 240	500
150 x 250	500
180 x 180	500

[1] *Special or intermediate sizes not possible.*

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.



1.3 Drives for ventilation (also for geometric smoke extraction)

All our drives come from our own production. Consequently, we can always guarantee outstanding quality. As the only company on the market, we also manufacture the high-grade stainless steel chains for our drives. No matter whether for smoke and heat extraction or for natural aeration and deaeration via windows, flaps, lamellas or skylight domes – due to the consistent modular structure of our products, we are able to manufacture numerous different drive versions, thereby offering the suitable solution for every project.

Our product range

- 24 V linear drive M2
- 230 V linear drive M3
- 24 V chain drive LM/2
- 24 V chain drive CM

For overview table, see pages 34–35

» **Find out more:**

Would you like to find out more about our products and services? Information is available at **www.essmann.de.**

1. Skylight domes/Overview of drives for ventilation (also for geometric SHE)

<table>
<tr><th colspan="14">Linear drives in skylight domes</th></tr>
<tr><th rowspan="4">Nominal size of skylight dome in cm</th><th rowspan="4">Opener position</th><th colspan="4">Classic skylight</th><th colspan="4">Plus skylight dome</th><th colspan="4">Comfort plus skylight dome</th></tr>
<tr><th colspan="2">24 V</th><th colspan="2">230 V</th><th colspan="2">24 V</th><th colspan="2">230 V</th><th colspan="2">24 V</th><th colspan="2">230 V</th></tr>
<tr><th colspan="4">Stroke length</th><th colspan="4">Stroke length</th><th colspan="4">Stroke length</th></tr>
<tr><th>300 mm</th><th>500 mm</th><th>300 mm</th><th>500 mm</th><th>300 mm</th><th>500 mm</th><th>300 mm</th><th>500 mm</th><th>300 mm</th><th>500 mm</th><th>300 mm</th><th>500 mm</th></tr>
<tr><td>50 x 100</td><td>  </td><td rowspan="12">M2/300–500 N/ VdS</td><td rowspan="6">For structural reasons, can only be used as of NG [1] 90</td><td rowspan="12">M3/300–500 N</td><td rowspan="6">For structural reasons, can only be used as of NG [1] 90</td><td rowspan="8">M2/300–500 N/ VdS</td><td rowspan="6">For structural reasons, can only be used as of NG [1] 90</td><td rowspan="8">M3/300–500 N</td><td rowspan="6">For structural reasons, can only be used as of NG [1] 90</td><td>–</td><td rowspan="6">For structural reasons, can only be used as of NG [1] 90</td><td>–</td><td rowspan="6">For structural reasons, can only be used as of NG [1] 90</td></tr>
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<tr><td>62.5 x 150</td><td>  </td></tr>
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<tr><td>120 x 240</td><td>  </td></tr>
<tr><td>120 x 270</td><td>  </td><td rowspan="2">–</td><td rowspan="2">–</td></tr>
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</table>

Chain drives in skylight domes					
		Plus skylight dome		*Comfort plus* skylight dome	
Nominal size of skylight dome in cm	Opener position	Stroke length		Stroke length	
		300 mm	500 mm	300 mm	500 mm
60 x 60		LM/2/300-200 N/24 V	–	LM/2/300-200 N/24 V	–
60 x 90					
60 x 120					
80 x 80					
90 x 90		CM/300-600 N/24 V	CM/500-600 N/24 V	CM/300-600 N/24 V	CM/500-600 N/24 V
90 x 120					
100 x 100					
100 x 150					
100 x 200		Drive set CM/300-2 x 600 N/ Tandem 24 V	Drive set CM/500-2 x 600 N/ Tandem 24 V	Drive set CM/300-2 x 600 N/ Tandem 24 V	Drive set CM/500-2 x 600 N/ Tandem 24 V
100 x 250		CM/300-600 N/24 V	CM/300-600 N/24 V	–	–
120 x 120				CM/300-600 N/24 V	CM/500-600 N/24 V
120 x 150		Drive set CM/300-2 x 600 N/ Tandem/24 V	–	Drive set CM/300-2 x 600 N/ Tandem/24 V	–
120 x 180			Drive set CM/500-2 x 600 N/ Tandem/24 V		Drive set CM/500-2 x 600 N/ Tandem/24 V
120 x 240		CM/300-600 N/24 V	CM/500-600 N/24 V	–	–
125 x 125				CM/300-600 N/24 V	CM/500-600 N/24 V
150 x 150		Drive set CM/300-2 x 600 N/ Tandem/24 V	–	Drive set CM/300-2 x 600 N/ Tandem/24 V	–
150 x 180			Drive set CM/500-2 x 600 N/ Tandem/24 V		Drive set CM/500-2 x 600 N/ Tandem/24 V
150 x 210			–	–	–
150 x 240					
150 x 250					
180 x 180			Drive set CM/500-2 x 600 N/ Tandem/24 V		

For skylight domes with a side length ≥ 150 cm in exposed installation situations and in coastal areas, we recommend the use of a tandem locking mechanism or a tandem drive.

[1] *NG = nominal size*
[2] *Also available in other versions*

1.3.1 24 V linear drive M2 for all ESSMANN skylight domes

For opening and closing skylight domes and roof windows
for smoke extraction and ventilation

Linear drive for use in skylight domes, roof lights as well as roof flaps and roof windows. Can also be used for geometric smoke extraction and is available as a VdS tested variant.

Advantages/ Features

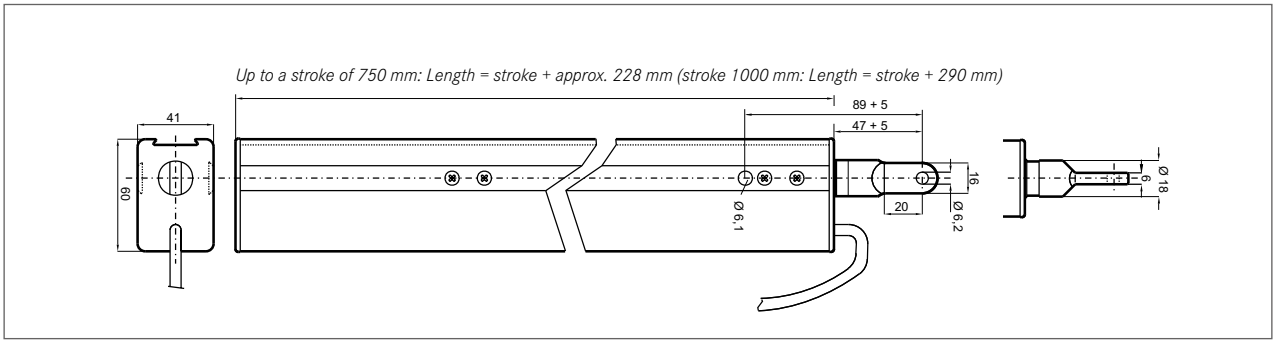
- Automatic switch off when the end position is reached
- Synchronous operation with several drives possible via synchro modules
- Maintenance-free due to permanent lubrication
- Dust-tight and splash-proof (protection category IP 54)
- Corrosion-free due to casing and thrust tube made from aluminium alloy
- Available as a VdS-tested product

Applications

- All ESSMANN skylight domes
- Roof windows or roof flaps
- Vertical facade, e.g. top-hung window

Material

- Housing: Aluminium
- End caps: Plastic, grey
- Colour: EV1 /silver, anodised or in RAL colours on request



Technical data		
Version	M2 500 N	
	… / LA / EV1 / …	… / SG / EV1 / …
Electrical properties		
Rated voltage	24 V DC / 50 Hz (-15 % /+25 %)	
Permissible ripple of the rated voltage	2 Vss	
Rated current	1 A	
Cut off	Internal	External via synchronous module
Protection class	III	
Mechanical properties		
Stroke length	300, 500, 750 and 1,000 mm	
Pressing force	500 N max.	
Tractive force	500 N max.	
Locking force	2,000 N	
Running speed	Approx. 8.3 mm/s	
Duty cycle	DC 30 (10 min)	
Service life	> 10,000 cycles	
Dimensions (L x H x D)	Up to stroke 750 mm = (stroke + approx. 228 mm) x 60 x 41 mm Stroke 1000 mm = (stroke + approx. 290 mm) x 60 x 41 mm	
Electrical connection		
Connecting cable	2 x 0.75 mm²	2 x 1.5 mm² + 3 x 0.5 mm²
Installation and ambient conditions		
Ambient temperature	-5 °C to +75 °C	
Protection category	IP 54	

Depending on the control panels used, higher currents must be expected for the start-up torque when dimensioning the cable cross-sections of the motor supply cables. Functionally reliable operation is guaranteed when connected to corresponding control systems from the same manufacturer. Conformity of functional reliability must be requested for operation on control systems from third party manufacturers.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1.3.2 230 V linear drive M3 for all ESSMANN skylight domes

For ventilation of skylight domes and roof windows

Ventilation linear drive for use in skylight domes, rooflights as well as roof flaps and roof windows.
The M3 is operated with 230 V mains voltage and can therefore be used at mains voltage without a mains power supply unit.

Advantages/ Features

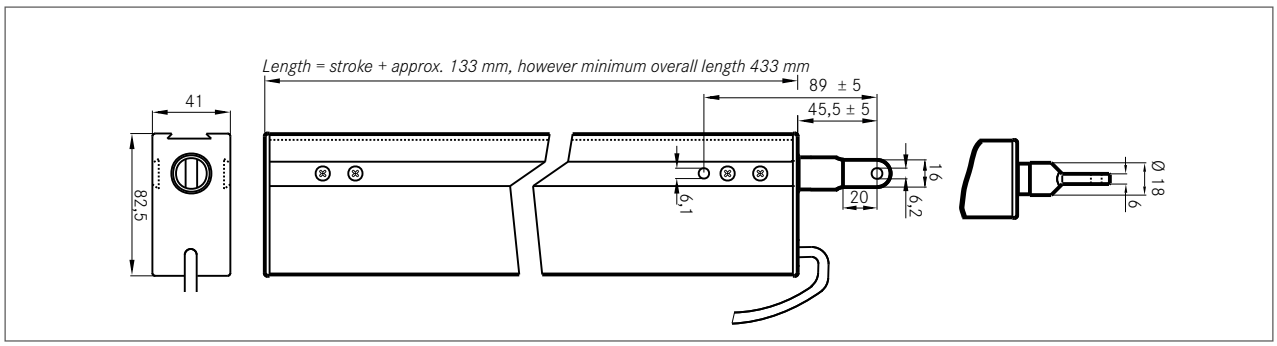
- Compact drive in square aluminium profile without disruptive attachments
- Tight closing possible without limit switch adjustment without integrated electronic power cut off
- Maintenance-free due to permanent lubrication
- Dust-tight and splash-proof (protection category IP 54)
- Corrosion-free due to casing and thrust tube made from aluminium alloy
- Potential-free contact for “Not CLOSED” message

Applications

- All ESSMANN skylight domes
- In roof windows or roof flaps
- In vertical facades, e.g. top-hung windows

Material

- Housing: Aluminium rectangular profile
- End caps: Plastic, grey
- Colour: EV1/silver, anodised or in RAL colours on request



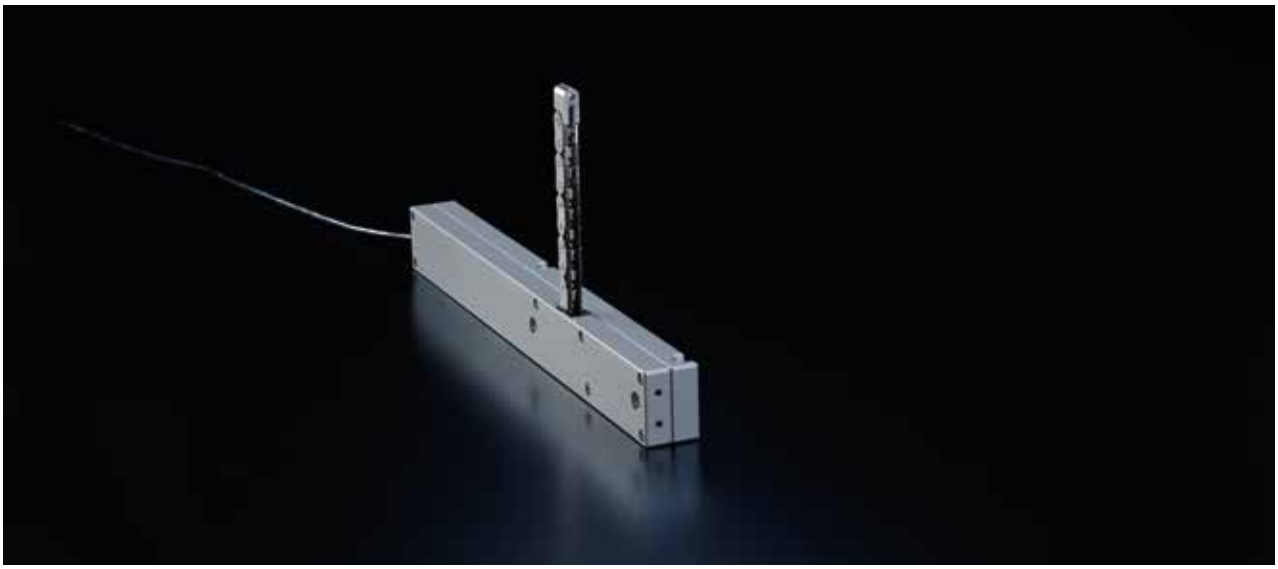
Technical data	
Electrical properties	
Rated voltage	230 V AC / 50 Hz (+10 % / –15 %)
Rated current	Approx. 0.2 A
Cut off	Electronic power cut off, installed
Protection class	II
Mechanical properties	
Stroke length	82, 300, 500 and 750 mm
Pressing force	500 N max.
Tractive force	250 N max.
Locking force	2,000 N
Running speed	Approx. 10 mm/s
Duty cycle	DC 30 (10 min)
Service life	> 10,000 cycles
Dimensions (L x H x D)	(stroke + approx. 133 mm) x 82.5 mm x 41 mm
Electrical connection	
Connecting cable	5 x 0.75 mm², length approx. 4.60 m, grey
Installation and ambient conditions	
Ambient temperature	-5 °C to +75 °C
Protection category	IP 54

Depending on the central controls used, higher currents must be expected in the start-up torque when dimensioning the cable cross-sections of the motor supply cables. Functionally reliable operation is guaranteed when connected to corresponding control systems from the same manufacturer. Conformity of functional reliability must be requested for operation on control systems from third party manufacturers.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1.3.3 24 V chain drive LM/2 for *plus* and *comfort plus* skylight domes

Compact drive for concealed mounting of SHE and ventilation



Due to its narrow construction, the LM/2 can be mounted as concealed in many cases. Furthermore, it can also be mounted where space is restricted because no swivel range is required. With a pressing and tractive force of up to 200 N, the LM/2 is designed for applications that require a moderately large force.

Advantages/ Features

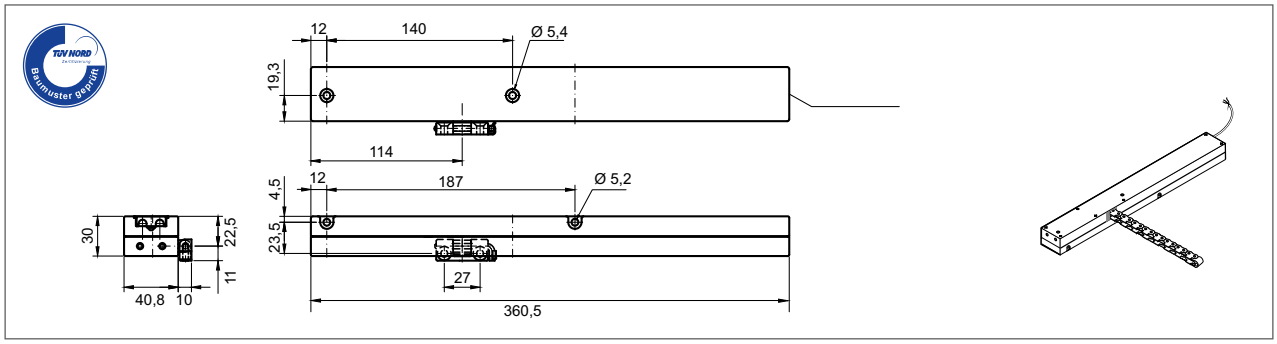
- For surface or concealed mounting
- Reduced construction depth
- Component for opening mechanics with stainless steel chain, maintenance-free
- Seal closure by electronically defined contact pressure
- Integrated overload protection
- Noncorrosive external elements
- Available as a single or tandem variant
- TÜV type tested

Applications

- High-quality skylight domes (e.g. made from genuine glass) with dimensions < 0.8 m²
- Bottom-hung, top-hung and side-hung windows as well as roof windows

Material

- Housing: Zinc diecasting
- Component for opening mechanics: Stainless steel chain, maintenance-free
- Colour: Powder-coated, white (RAL 9016) or silver-grey (RAL 9006) or in RAL colours on request



Technical data	
Electrical properties	
Rated voltage	24 VDC (-20 % / +50 %)
Permissible ripple of the rated voltage	2 Vss
Rated current	0.5 A
Cut off	integrated max power cut off, tandem control
Protection class	III
Mechanical properties	
Stroke length, approx.	300 mm
Pressing force	200 N to 300 mm
Tractive force	200 N max.
Locking force	4,000 N
Running speed	Approx. 10 mm/s
Duty cycle	DC 30 (10 min)
Service life	> 10,000 cycles
Dimensions (L x H x D)	350 mm = 360.5 x 30 x 40.8 mm 500 mm = 442 x 30 x 40.8 mm
Electrical connection	
Connecting cable	3-pin connection cable
Installation and ambient conditions	
Ambient temperature	-10 °C to +60 °C
Protection category	IP 20
Approvals and certificates	
Type tested	TÜV, registration number 44 780 12026520

Depending on the control panels used, higher currents must be expected for the start-up torque when dimensioning the cable cross-sections of the motor supply cables. Functionally reliable operation is guaranteed when connected to corresponding control systems from the same manufacturer. Conformity of functional reliability must be requested for operation on control systems from third party manufacturers.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1.3.4 24 V chain drive CM for *plus* and *comfort plus* skylight domes

Compact drive with high force

Due to its narrow construction, the CM can be mounted as concealed in many cases. Furthermore, it can also be mounted where space is restricted because no swivel range is required. With a pressing and tractive force of up to 600 N (up to 600 mm stroke), it is designed for applications that need large forces.

Advantages/ Features

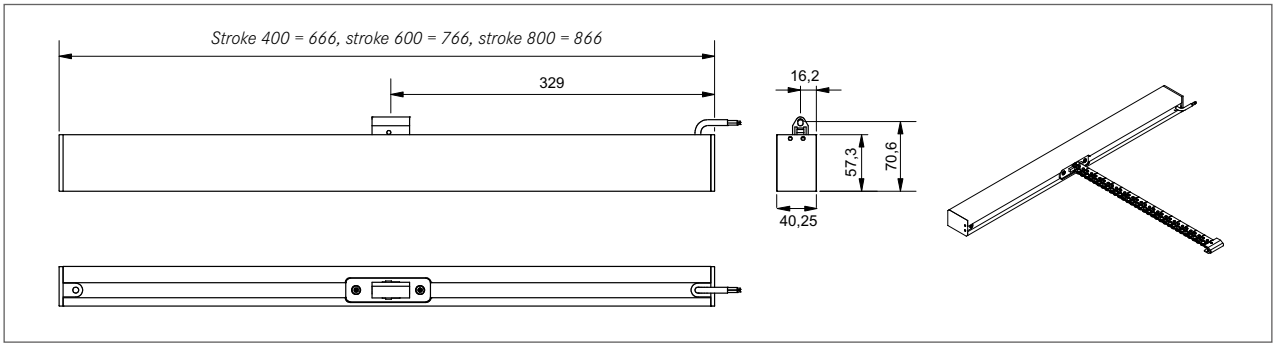
- For surface or concealed mounting
- High compressive forces despite narrow construction
- Component for opening mechanics with stainless steel chain, maintenance-free
- Integrated overload protection for long service life
- Automatic switch off when the end position is reached
- Can be configured as a single or tandem drive
- Can be combined with a locking mechanism drive (setting via electronic DIP switch)

Applications

- High-quality skylight domes (e.g. made from genuine glass) with dimensions <0.8 m²
- Bottom-hung, top-hung and roof windows
- Geometric smoke and heat extraction as well as daily aeration and ventilation

Material

- Housing: Aluminium
- Component for opening mechanics: Stainless steel chain, maintenance-free
- End caps: zinc diecasting
- Colour: Powder-coated, white (RAL 9016) or silver-grey (RAL 9006) or in RAL colours on request



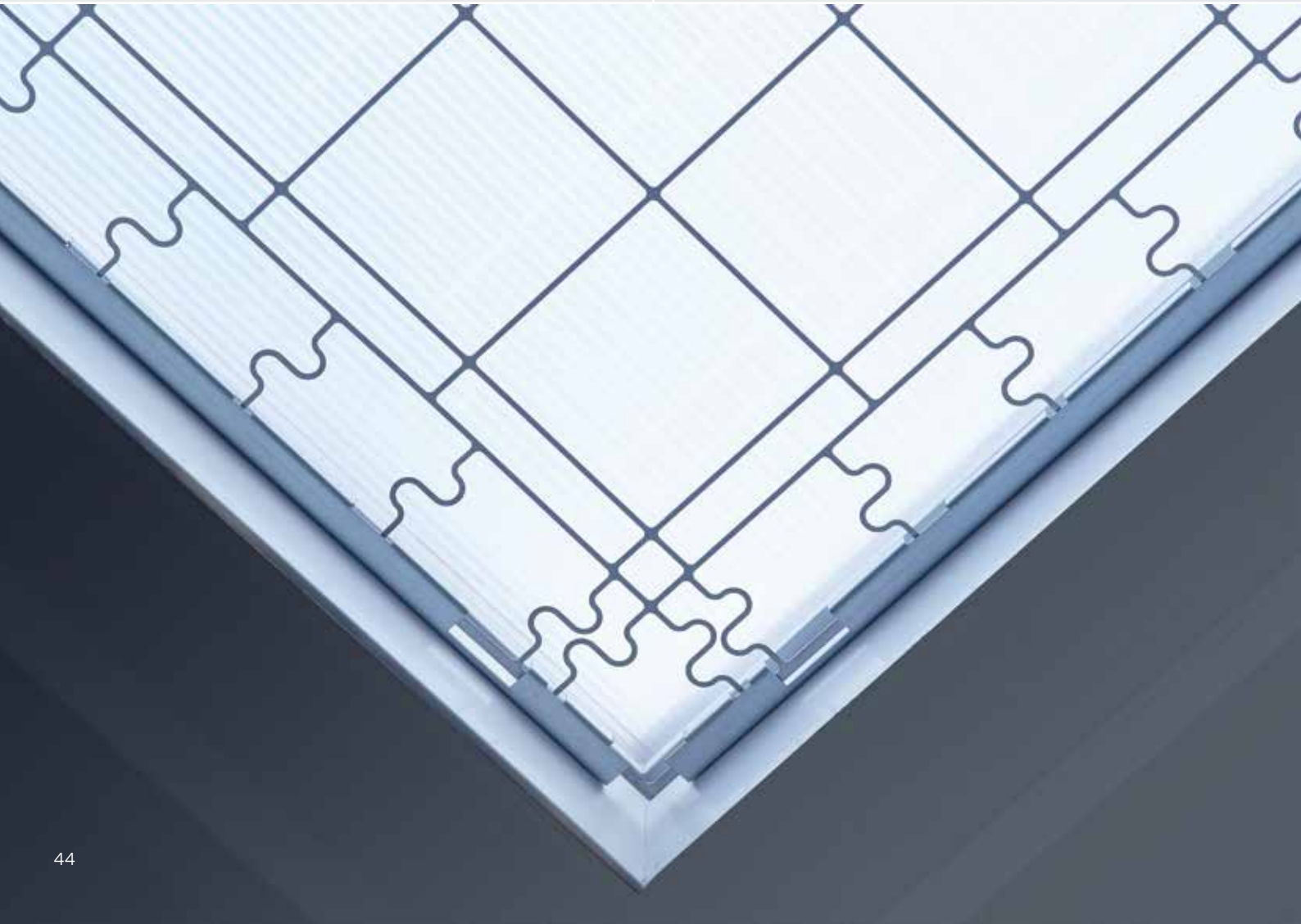
Technical data	
Electrical properties	
Rated voltage	24 VDC (-20 % / +50 %)
Permissible ripple of the rated voltage	2 Vss
Rated current	1.5 A*
Cut off	Integrated power cut off, tandem control
Protection class	III
Mechanical properties	
Stroke length, approx.	400, 600, 800 mm, intermediate lengths are possible
Pressing force	Up to 600 mm stroke length = 600 N*, up to 800 mm stroke length = 200 N*
Tractive force	Max. 600 N*
Locking force	3,000 N
Running speed	Approx. 11.5 mm / s
Duty cycle	DC 30 (10 min)
Service life	> 10,000 cycles
Dimensions (L x H x D)	Stroke 400 mm = 666 x 57.3 x 40.25 mm, stroke 600 mm = 766 x 57.3 x 40.25 mm, stroke 800 mm = 866 x 57.3 x 40.25 mm*
Electrical connection	
Connecting cable	3 x 0.75 mm² silicone cable, length approx. 3 m
Installation and ambient conditions	
Ambient temperature	-10 °C to +60 °C
Protection category	IP 20

** For tandem operation, take values x 2.*

Depending on the control panels used, higher currents must be expected for the start-up torque when dimensioning the cable cross-sections of the motor supply cables. Functionally reliable operation is guaranteed when connected to corresponding control systems from the same manufacturer. Conformity of functional reliability must be requested for operation on control systems from third party manufacturers.

» An overview of all possible product combinations can be found on page 4.

» Further technical data, manuals and certificates for can download at www.essmann.de.



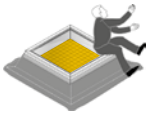
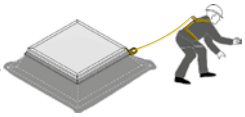
1. Skylight domes

1.4 Safety systems

ESSMANN skylight domes can be equipped with additional safety and protection systems. These prevent persons falling through or down, for example, and provide efficient protection when working on the flat roof.

Our product range

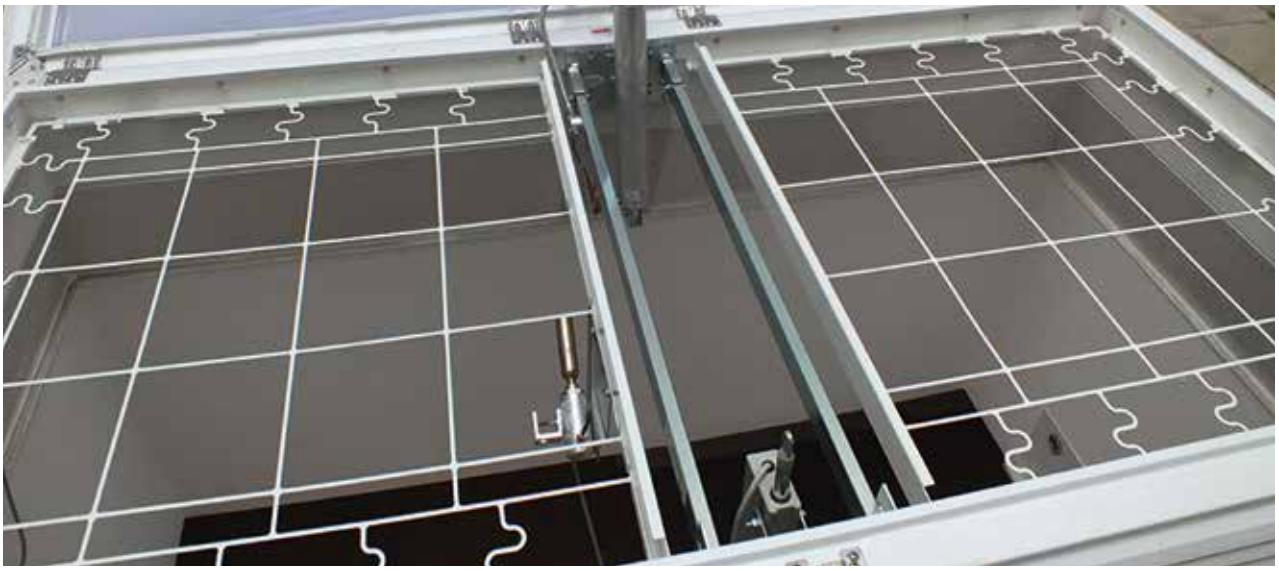
- Fall and fall-through protection (EAD)
- Fall arrest safety systems types LK-L and LK-K
- Burglary and fall arrest safety systems RC1 and RC3
- Fall arrest safety ring (PAS ring)

Ranking in accordance with ASR A2.1[1]	Safety type	ESSMANN products
1. Fall and fall-through protection ■ Safest measures for protecting persons from falling through skylight domes and rooflights ■ Must be used in precedence over all other protection systems ■ Meet the primary requirements of ASR A2.1[1]	 **Fall-through protection** – For closed skylight domes and rooflights: ■ For strengthening a closed surface that is prone to breakage to protect against breakthrough ■ To be given priority over all other options	HDS protection system for skylight domes or rooflights ID1200 for rooflights Fall and fall-through protection (EAD) for fixed rooflights
	 **Fall protection** – For open and closed skylight domes and rooflights: ■ Mounted at the height of the fall-risk zone ■ Prevents falling below the height of the fall-risk zone by arresting a fall ■ Together with the fall-through protection, must be given priority over all other options	Fall and fall-through protection (EAD) for all skylight domes and rooflight flaps
2. Fall arrest devices: ■ If fall protection cannot be used for technical reasons, fall arrest devices must be present	 **Fall arrest safety systems** – For open and closed skylight domes and rooflights: ■ Attached under the fall-risk zone ■ The falling person falls a little distance before being arrested ■ Meets the secondary requirement of ASR A2.1[1] ■ Only permitted if the primary requirement cannot be met!	Fall arrest systems type LK-L and type LK-K for skylight domes Burglary protection for skylight domes
3. Personal protection equipment against falling (PSAgA): ■ Can only be used if no category 1 or 2 systems can be set up ■ Suitable PSAgA must result from a risk assessment which must be created in advance	 **Personal protection equipment against falls from a height (PSAgA)** – For open and closed skylight domes and rooflights: ■ Meets the tertiary requirement of ASR A2.1[1] ■ Only permissible in exceptional cases if no other measure is actually possible – emergency solution!	PAS console for rooflights PAS ring for skylight bases

[1] *ASR = Technical Regulations for Workplaces*

1.4.1 Fall and fall-through protection (EAD) for *classic* and *plus* skylight domes

Maximum safety already when installing the skylight dome



The fall and fall-through protection system (EAD) is pre-installed at the factory in ESSMANN skylight bases or can be used for retrofitting. The BG-tested system provides safety directly at the fall-risk zone and guarantees permanent fall and fall-through safety.

Advantages/ Features

- Meets the primary requirement of ASR A2.1
- Permanent fall and fall-through safety
- With pre-assembly at the factory, the fall protection of the roof opening is already guaranteed after installing the skylight base
- Minimised risk of injury from impact due to the **innovative S-shaped shock absorption system** (IFS)
- Optimisation of the construction process through shorter safety net rigging times
- Compatible with ESSMANN NSHE and ventilation drives
- Certified according to GS.BAU 18 (Principles for Testing and Certifying the Fall-through Protection of Components during Construction or Maintenance Work) and DGUV Test Certificate

Applications

- All ESSMANN skylight bases
- New construction (pre-assembled at the factory)
- Retrofit (by ESSMANN fitters)
- Retrofitting in third-party products and in skylight base AK 15 with renovation skylight base SAK 15 only

Material

- Sendzimir galvanised sheet steel (RAL coating possible)

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1.4.2 Fall arrest safety systems type LK-L and LK-K for skylight dome and double flap

For mounting directly under the skylight base (LK-L)
or for retrofitting (LK-K)

The ESSMANN fall arrest system is the ideal product if fall and fall-through protection (EAD) cannot be installed for structural reasons. The safety system is available in new constructions as type LK-L for screwing on directly below the skylight base or for retrofitting as type LK-K for suspending on snap hooks during on-site replacement in accordance with the static requirements.

Advantages/ Features

- Can be retrofitted in all roof skylights (including third-party products) as LK-K [1)]
- Available in all ESSMANN skylight dome standard sizes
- Compatible with ESSMANN NSHE
- Certified according to GS.BAU 18.1 (Principles for Testing and Certifying the Fall-through Protection of Components during Construction or Maintenance Work) and DGUV Test Certificate

Applications

- In roof skylights that are not fall-through proof in design
- New construction and renovation

Material

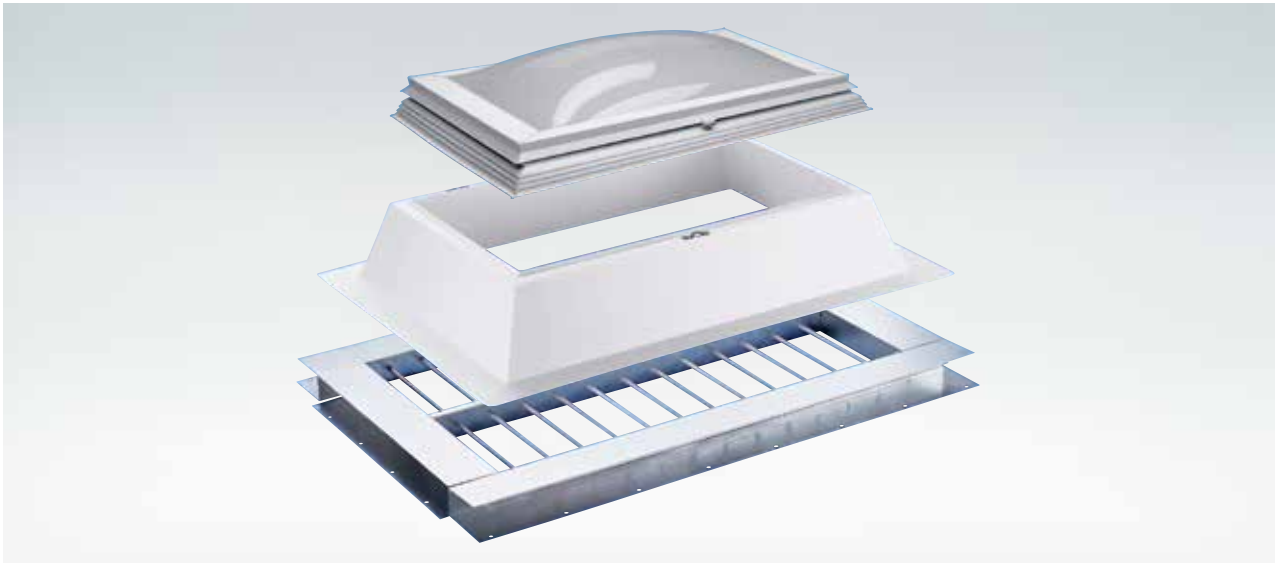
- Sendzimir galvanised sheet steel

[1)] With sufficiently load-bearing screw-on base

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1.4.3 Burglary and fall arrest system for skylight dome and double flap

Individual burglary protection for buildings



The burglary and fall arrest system is available as an RC3 with double bearing roller bar units for enhanced burglary protection and solid centre brace for more stability. Through integration in the roof superstructure, the fire protection requirements in accordance with DIN 18234 are met.

Advantages/ Features

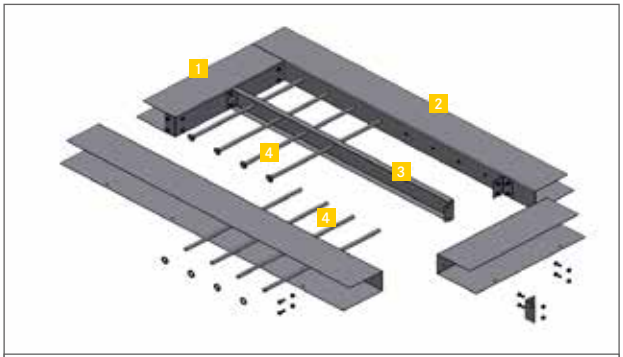
- Integration in the roof superstructure
- Variably adjustable to a heat insulation thickness of 80 – 300 mm
- Available in all standard nominal sizes
- Adjustable to replacement at the site
- Prevention of fire transition from the inside to the outside (DIN 18234)
- Type RC3 with certified burglary protection of resistance class 3 (RC = Resistance Class) in accordance with DIN 18106
- Fall-through protected as per GS Bau 18 (Principles for Testing and Certifying the Fall-through Protection of Components during Construction or Maintenance Work)

Applications

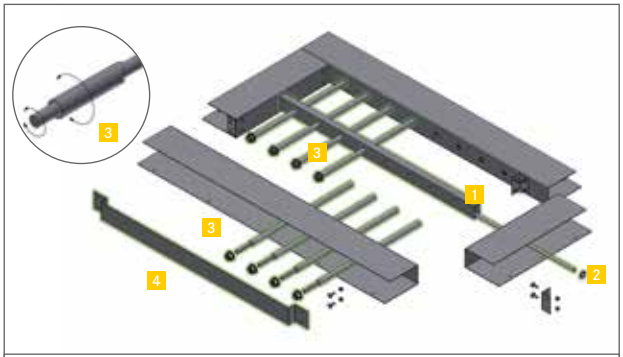
- All ESSMANN skylight domes
- ESSMANN double flap and all weather double flap
- Buildings with assets worthy of protection

Material

- Sendzimir galvanised sheet steel
- Steel bars, galvanised



Burglary and fall arrest system RC1 with stable border frames



Burglary and fall arrest system RC3 with double bearing roller bar units

Burglary and fall arrest system

1 Transverse profile
2 Longitudinal profile
3 Middle profile
4 Single bearing roller bars

Burglary and fall arrest system RC3

1 Centre brace as solid rectangular pipe
2 Roller bar
3 Double bearing roller bar unit
4 Lock washer

Delivery size [cm x cm]	Weight [kg]	
	RC3	RC1 with 100 mm WD [1]
50 x 100	39	36
50 x 150	46	47
60 x 60	27	30
60 x 90	36	36
60 x 120	45	43
62.5 x 150	55	51
70 x 137	56	50
70 x 141	57	51
80 x 80	41	39
90 x 90	49	46
90 x 120	62	54
100 x 100	58	51
100 x 150	80	65
100 x 200	102	80
100 x 250	122	95
100 x 300	142	109
120 x 120	78	62
120 x 150	93	71
120 x 180	108	81
120 x 240	133	99

Delivery size [cm x cm]	Weight [kg]	
	RC3	RC1 with 100 mm WD [1]
120 x 270	151	109
120 x 300	164	68
125 x 125	83	110
125 x 250	146	127
125 x 300	169	110
141 x 231	151	84
150 x 150	112	95
150 x 180	130	106
150 x 210	147	117
150 x 240	164	120
150 x 250	169	127
150 x 300	192	138
180 x 180	151	109
180 x 240	188	134
180 x 250	194	138
180 x 270	205	146
180 x 300	221	159
200 x 200	178	124
200 x 300	235	168

[1] *WD = heat insulation of the roof*

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

FAS ring

1.4.4 Fall arrest safety ring (FAS ring) for all ESSMANN skylight domes (except round skylight domes)

Mobile anchor point for personal protection equipment

The FAS ring is a mobile anchor point (type B in accordance with DIN EN 795) for personal protection equipment against falling (PSAgA). It can be taken from one skylight dome to the next, provided the attachment of the ring and its sub-construction certified dimensions satisfy the static requirements.

Advantages/ Features

- Mobile anchor point for PSAgA
- Possibility to secure on all four corners of the skylight base
- No negative impact of the skylight dome roof sealing
- Assembly carried out according to detailed assembly guidelines for maximum functional safety
- As an anchor device, meets the requirements of DIN EN 795 and DIN EN 363 (as of 2012)
- Certified according to DGUV test certificate

Applications

- All ESSMANN skylight domes with safety or system frame and PVC AK (> 15 cm) or steel AK
- Particularly suited for safeguarding exit hatches

Material

- Galvanised steel sheet (RAL 3000)

ESSMANN fall arrest safety ring (FAS ring) on PVC skylight base 30

Safety information

- To attach an FAS ring, the use of an ESSMANN safety or system frame on the skylight base is required
- Proof of professional installation and load capacity of the replacement by photo documentation
- Visual inspection of anchor devices at least once a year by an expert or the manufacturer
- Carrying out of repairs based on the existing assembly guidelines from the manufacturer only

Delivery sizes [cm x cm]
100 x 100
100 x 150
100 x 250
120 x 120
120 x 150
120 x 180
120 x 240
125 x 125
125 x 250
150 x 150
150 x 180
150 x 240
150 x 250
180 x 180
180 x 240
180 x 250

Other dimensions upon request.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1. Skylight domes


Skylight base

1.5 Substructure

Skylight bases are the system components for rapid and problem-free mounting of skylight domes, installation units and double flaps. Our metal skylight bases and our PVC skylight bases are already prepared for direct connection with roof sheeting. All skylight bases are provided with the necessary hinges for rapid and problem-free mounting of opening units and skylight domes.

Our product range

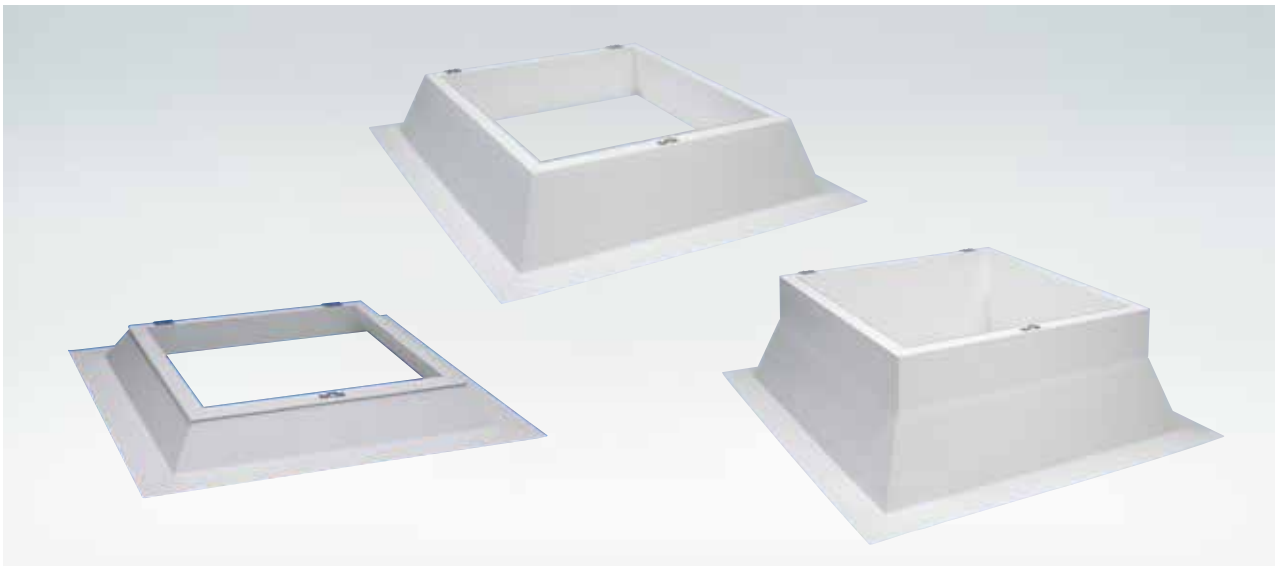
- PVC skylight base 15/30/50 cm
- Metal skylight base 30/40/50 cm

» **Find out more:**

Would you like to find out more about our products and services?
Information is available at **www.essmann.de.**

1.5.1 PVC skylight base 15 / 30 / 50 cm for *classic*, *plus*, *comfort plus* skylight domes and double flaps

The base free of thermal bridges



As thermally optimised substructures for skylight domes, the ESSMANN PVC skylight bases are available with components pre-installed at the factory such as ESSMANN smoke and heat extraction devices (SHEs) or the ESSMANN fall and fall-through protection (EAD). They are available in a range of superstructure heights for different purposes.

Advantages/ Features

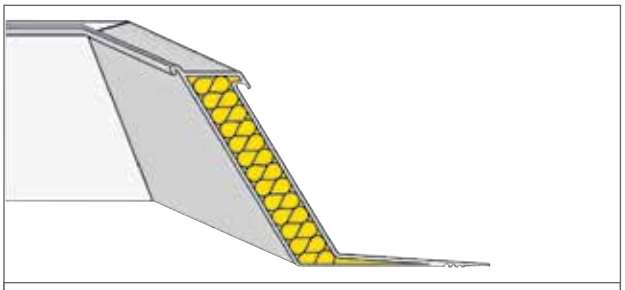
- Base design insulated around the circumference for low thermal transmission
- Available in different superstructure heights (15, 30 and 50 cm) depending on the requirements
- The superstructure heights 30 and 50 cm are available in 2 insulation levels as the versions “i” (= insulated) and “ih” (= insulated high)
- Quick and easy to install
- Available in all skylight dome standard and intermediate sizes
- Multi-functional, can be connected to a range of roof sheeting types

Applications

- All ESSMANN skylight dome systems
- Industrial flat roof (e.g. warehouses) up to a maximum roof slope of 25°
- New construction and replacement of existing skylight bases

Material

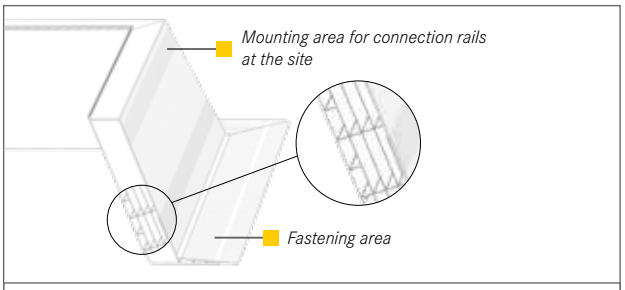
- PVC



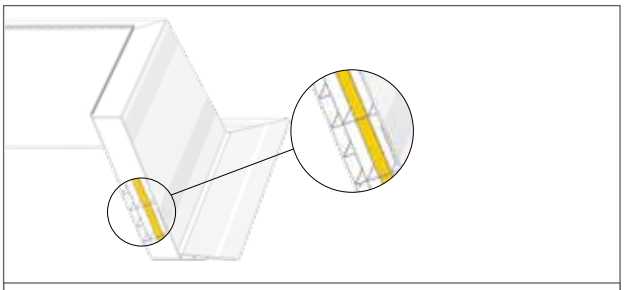
PVC skylight base 15

PVC skylight base 15:
For fixed or ventable skylight domes

The PVC skylight base with a structure height of 15 cm is intended for fixed or ventable skylight domes. The structure height is derived from the requirements of the flat roof directive, according to which a skylight must protrude at least 15 cm from the water-bearing layer/roof surface.



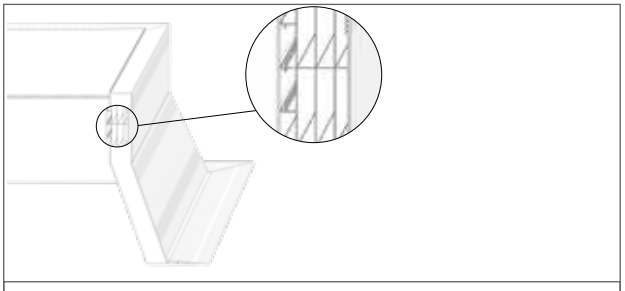
PVC skylight base 30 i



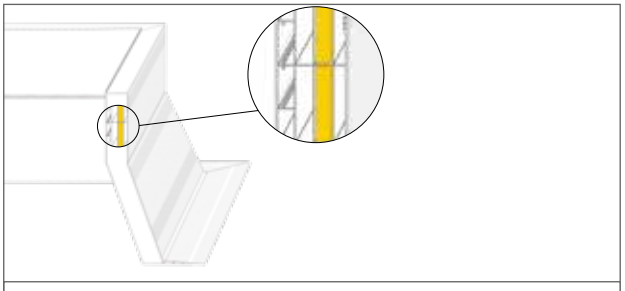
PVC skylight base 30 ih

PVC skylight base 30: Standard skylight base for skylight dome systems with NSHE function

In accordance with DIN 18232, an NSHE must protrude at least 25 cm from the water-bearing layer/roof surface. To meet this requirement, the PVC skylight base is designed with a height of 30 cm.



PVC skylight base 50 i



PVC skylight base 50 ih

PVC skylight base 50: For skylight domes with NSHE with large insulation thicknesses in the roof superstructure

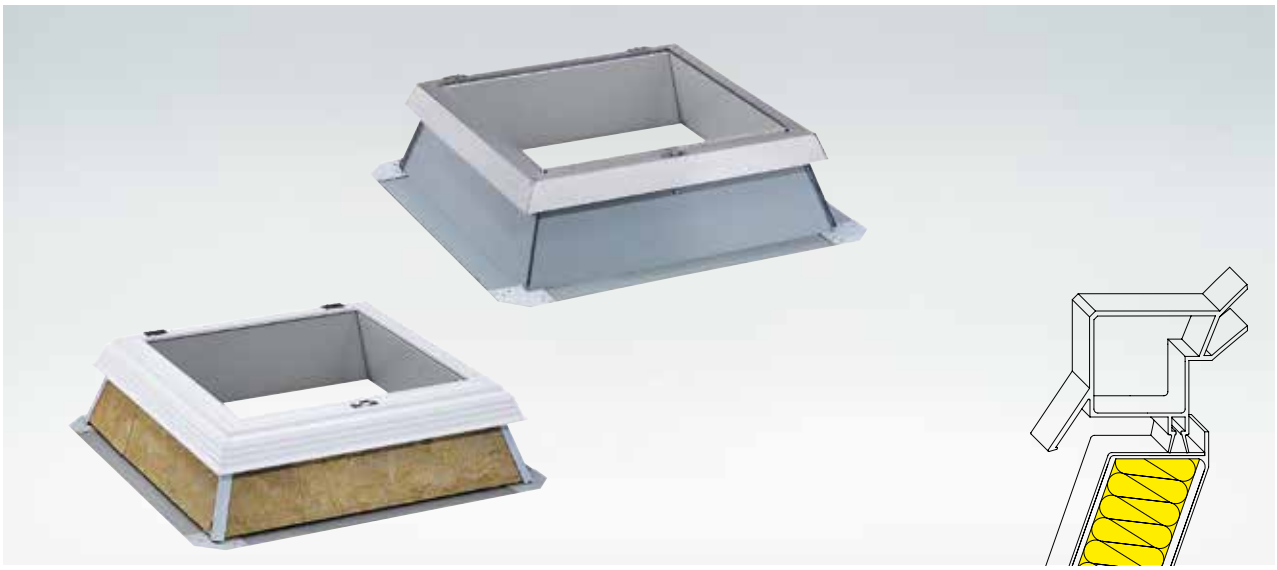
With heavily insulated roofs, the required height of 25 cm above the water-bearing level can only be ensured with higher skylight bases. The PVC skylight base 50 is used for this application and for improving the aerodynamic extraction values (Aa value) by strengthening the ”chimney effect”.

Technical data	PVC skylight base 15	PVC skylight base 30 i	PVC skylight base 30 ih	PVC skylight base 50 i	PVC skylight base 50 ih
U_{kr} value	1.3 W / (m²K)	1.2 W / (m²K)	0.9 W / (m²K)	1.3 W / (m²K)	1.0 W / (m²K)

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1.5.2 Metal skylight base 30 / 40 / 50 cm for *classic*, *plus*, *comfort plus* skylight domes and double flaps

The fireproof base



The skylight bases made from non-combustible steel or aluminium (Fire Class A1) are available with components pre-installed at the factory such as ESSMANN smoke and heat extraction devices (SHEs) or the ESSMANN fall and fall-through protection (EAD). The standard heights for all versions are 30, 40 and 50 cm. Intermediate heights can be supplied on request.

Advantages/ Features

- Non-combustible (Fire Class A1)
- Flexible solutions in superstructure height and thermal properties for specific requirements
- Available in all skylight dome standard and intermediate sizes
- Simple mounting of ESSMANN skylight domes
- Available with individual metal profile connection (MPA) on request
- In RAL 9002 as standard (other versions available on request)
- Fulfils DIN 18234 (prevention of fire spreading from the inside to the outside)

Applications

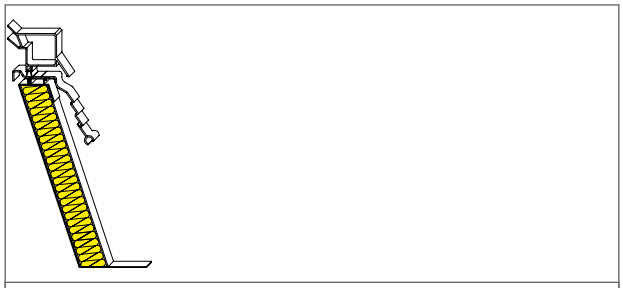
- All ESSMANN skylight dome systems
- For high fire protection requirements
- Industrial flat roof (e.g. warehouses) up to a maximum roof slope of 25°
- New construction

Material

- Depending on the version, bond-coated steel or aluminium sheet

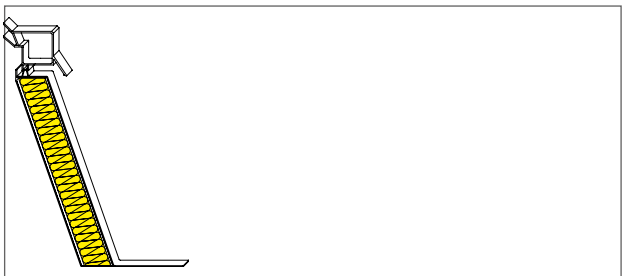
Metal skylight base, 1-skinned

Metal skylight base, 1-skinned:
For low thermal requirements.
The ideal solution for unheated halls such as warehouses.



Metal skylight base, 1-skinned with attached heat insulation

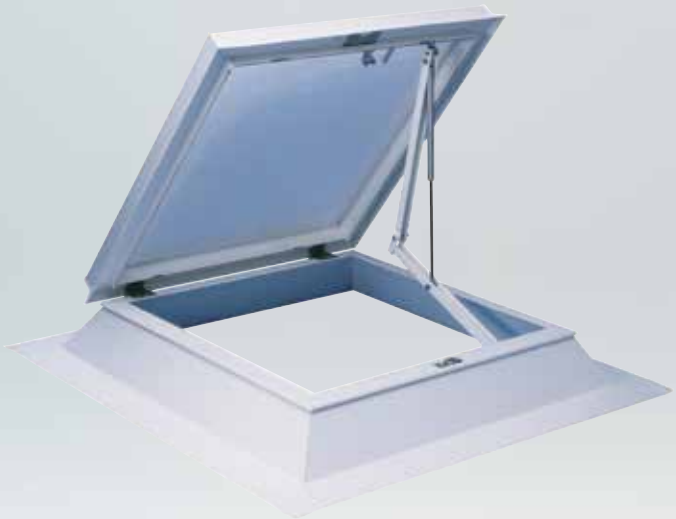
Metal skylight base, 1-skinned with attached heat insulation: For low thermal requirements.
Steel skylight base with attached heat insulation for reduced heat penetration in slightly heated buildings such as production halls.



Metal skylight base, 2-skinned

Metal skylight base, 2-skinned: For greater component requirements with regard to heat insulation.
With insulated intermediate space for use in heated industrial buildings. Administration buildings possible in individual cases following technical clarification.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.



1. Skylight domes

1.6 Exit hatches

The exit hatches can be used individually and are available in the type G (gas spring), with LM chain drive and type M (motor) variants. Depending on the nominal size, different versions are available for gas-spring supported or motor-operated opening. All exit hatches can be used in combination with the ESSMANN *plus* skylight dome and are pre-installed at the factory in the corresponding system frame. For entry from the outside, the exit hatches can also be used as access hatches.

Our product range

- Exit hatch with gas spring fitting (type G)
- Exit hatch with linear drive (type M)
- Exit hatch with scissor arm (type 6/1)

» **Find out more:**

Would you like to find out more about our products and services? Information is available at **www.essmann.de.**

Exit hatches and access hatches

1.6.1 Exit hatch with gas spring fitting (type G) for *plus* skylight dome

For convenient access to the roof

The type G exit hatch is equipped with two gas pressure springs that support the opening of the exit hatch and hold the skylight dome in the open position. Due to the **standardised opening width of 1,100 mm**, convenient entry and exit are possible in all nominal sizes.

Advantages/ Features

- Easy and controlled opening with gas pressure springs
- Secure fixing of the skylight dome in the open position
- Version as an access hatch possible
- Secure locking mechanism with convenient lock
- Optionally available with ladder support point
- Available with ventilation drive for daily aeration and ventilation

Applications

- Walk-on flat roofs
- Roof terraces
- Roof staircase for maintenance
- New construction and renovation

Delivery size [cm x cm]		
60 x 90	100 x 200	125 x 125
80 x 80	100 x 250	125 x 250
90 x 90	120 x 120	150 x 150
90 x 120	120 x 150	150 x 180
100 x 100	120 x 180	150 x 250
100 x 150	120 x 240	

Other dimensions upon request.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Exit hatches and access hatches

1.6.2 Exit hatch with linear drive (type M) for *plus* skylight dome

Electrically controllable exit hatch with integrated ventilation function

The type M exit hatch is equipped with linear drives that can be continuously controlled per ventilation push button up to a standard opening width of 1,100 mm, which enables convenient use for daily aeration and ventilation.

Advantages/ Features

- Convenient entry and exit with all nominal sizes
- Opening and closing possible per vent switch
- Can be used for daily aeration and ventilation
- Secure fixing of the skylight dome in all positions
- Optionally available with ladder support point
- **Can be used for geometric smoke dissipation**

Applications

- Walk-on flat roofs
- Roof terraces
- Roof staircase for maintenance
- New construction and renovation

Delivery size [cm x cm]	
90 x 120	120 x 180
100 x 100	120 x 240
100 x 150	125 x 125
100 x 250	150 x 150
120 x 120	150 x 180
120 x 150	

Other dimensions upon request.

» **An overview of all possible product combinations can be found on page 4.**

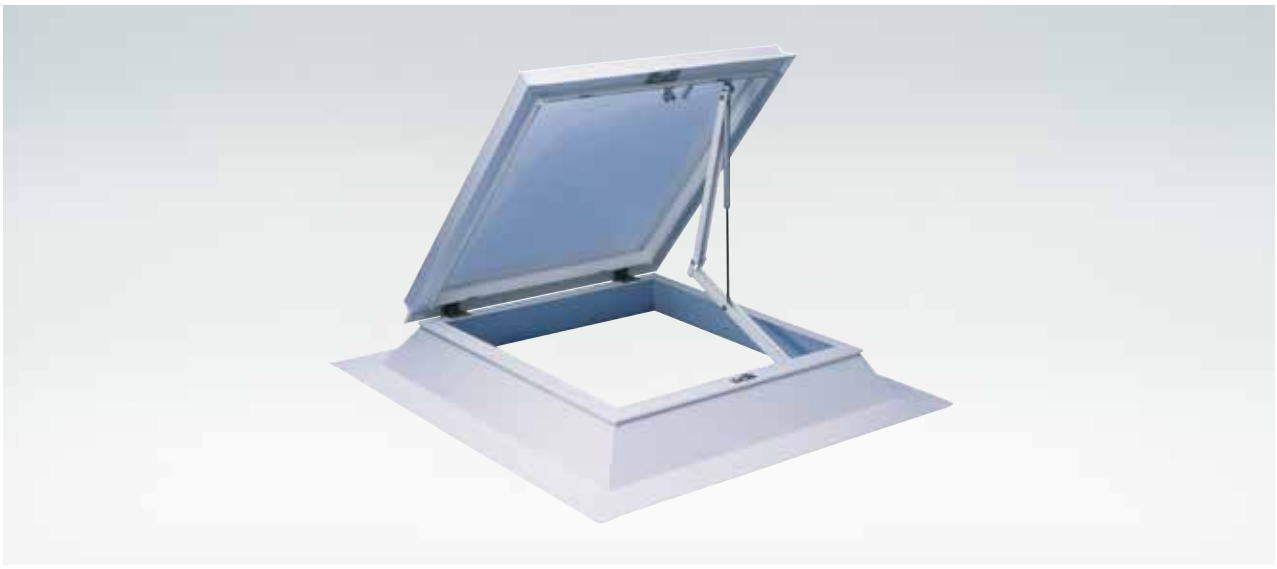
» **Further technical data, manuals and certificates you can download at www.essmann.de.**

Status 01/2016
Subject to technical modifications. Diagram is not binding.

Exit hatches and access hatches

1.6.3 Exit hatch with scissor arm (type 6/1) for *classic* skylight

Exit hatch solution for your standard skylight dome



The exit hatch with scissor arm type 6/1 is available for retrofitting existing ESSMANN *classic* type skylight domes. The integrated gas pressure springs provide the correct force for convenient opening and closing in all available nominal sizes.

Advantages/ Features

- Existing units can be retrofitted
- Convenient entry and exit in all nominal sizes (opening approx. 800 mm)
- Secure locking mechanism with convenient lock

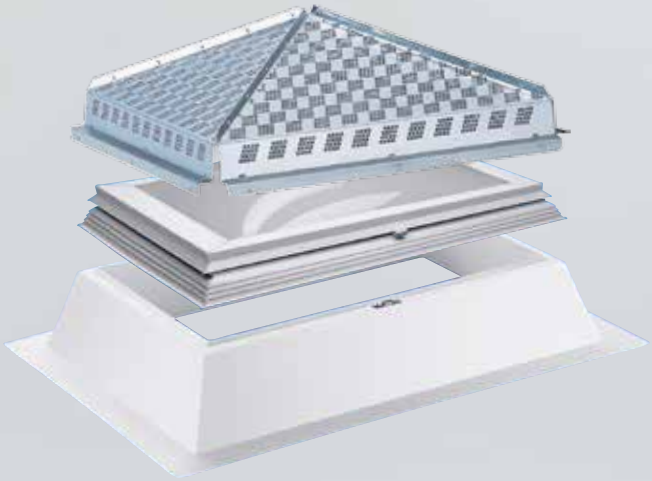
Applications

- Walk-on flat roofs
- New construction and retrofitting of existing units

Delivery size [cm x cm]
80 x 80
90 x 90
90 x 120
100 x 100
100 x150
120 x 120
125 x 125

Other dimensions upon request.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.



1. Skylight domes

1.7 Accessories

Thanks to the consistent modular construction of our product groups, our products can also be equipped with numerous accessories: Starting with electrical drives through fall and fall-through protection up to additional hail protection. Whatever the demands and requirements of customers are – all ESSMANN components can be extended and supplemented without any problem.

Our product range

- Hail, fall-through and sun protection (HDS)
- Repair and renovation set
- Insect protection mesh
- Safety and system frames
- Darkening and shading system

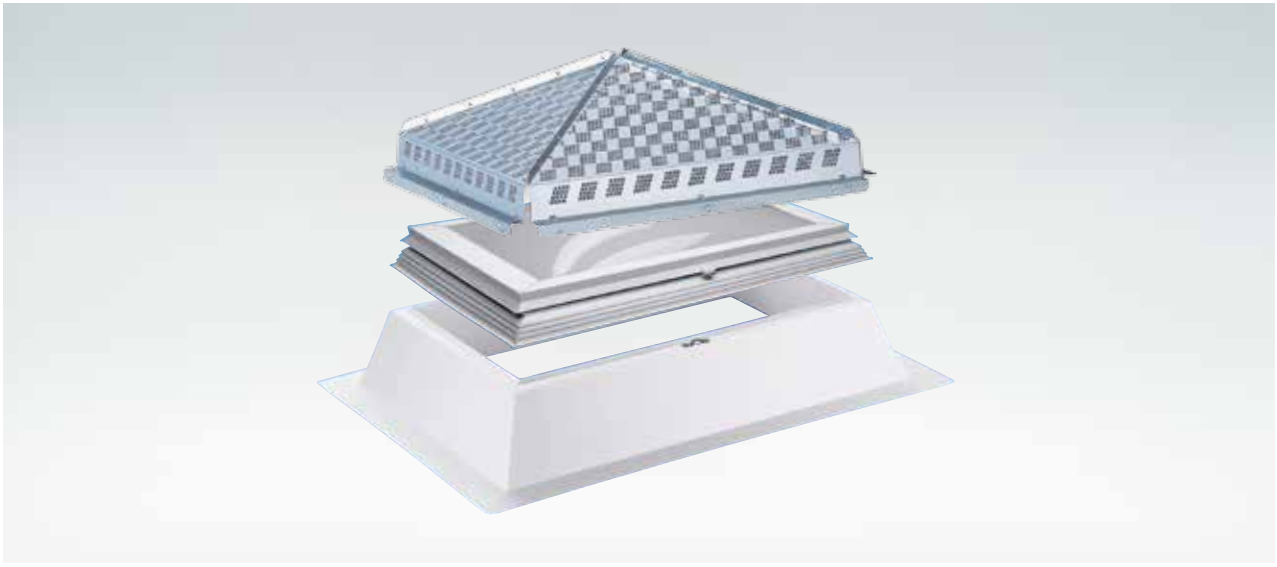
» **Find out more:**

Would you like to find out more about our products and services? Information is available at **www.essmann.de.**


HFS protection system

1.7.1 Hail, fall-through and sun protection (HDS) for *classic* and *plus* skylight domes

Multiple safety system for different requirements



One system with multiple benefits. The HDS is available for all skylight dome sizes and is the ideal addition for requirements of hail, fall-through or sun protection.

Advantages/ Features

- Hail protection
  - Greater resistance to hail of the glazing surfaces underneath
  - Ideal protection against growing numbers of storm damage (also relevant concerning insurance)
- Fall-through protection
  - Protects people against falling through rooflight elements on the roof
  - Meets the primary requirements of ASR A2.1 (Technical Regulations for Workplaces) and is tested to GS.Bau 18.1 (Principles for Testing and Certifying the Fall-through Protection of Components during Construction or Maintenance Work) and, therefore, fall-through protected (when closed) [1)]
- Sun protection
  - Minimises heat build-up and direct sunlight that would otherwise cause a temperature increase in the building

Applications

- ESSMANN *classic* and *plus* skylight domes
- New construction and retrofitting

Material

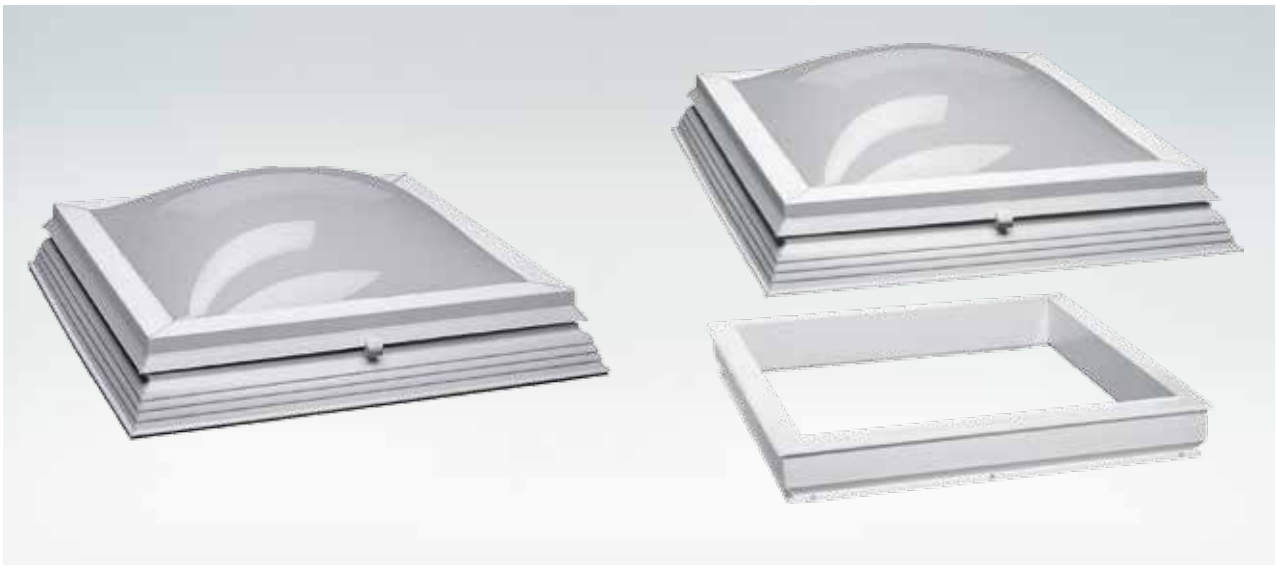
- Perforated sheet of aluminium

[1)] Dome/flap opening widths > 300 mm require additional security measures.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1.7.2 Repair and renovation set for *classic*, *plus* and *comfort plus* skylight domes

The optimum solution for skylight domes that are damaged or in need of renovation



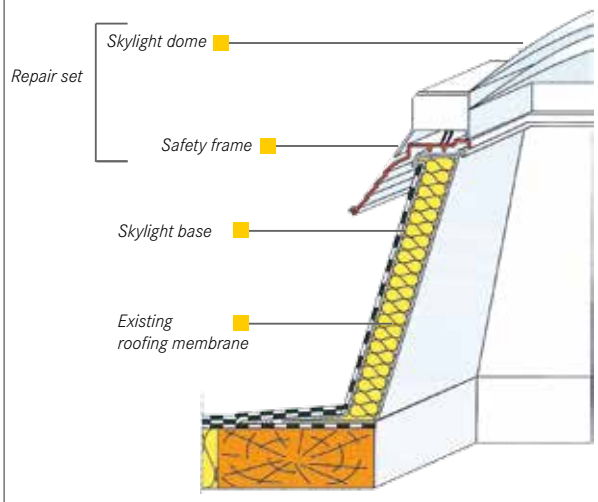
These sets for the repair or renovation of skylight domes, including third-party products, enable easy replacement of damaged skylight domes. The roof sealing does not need to be opened. The repair set consists of a skylight dome and a safety or system frame. The renovation set consists of a skylight dome, a safety or system frame and a PVC renovation skylight base.

Advantages/ Features

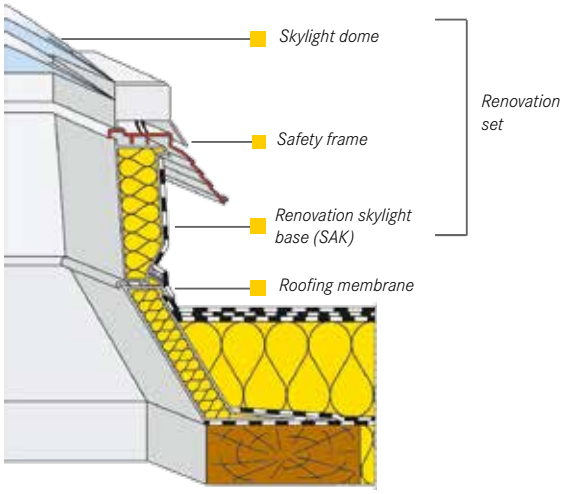
- **Rapid replacement of all standard skylight domes**
- Simple strengthening of existing skylight dome /skylight base units to new requirements (e.g. Stricter Energy Saving Ordinance (German EnEV))
- Simply and cost-effective retrofitting of an NSHE (with renovation set)

Applications

- ESSMANN skylight bases and third-party products
- Repair and renovation
- Subsequent installation with NSHE (renovation set)
- Simple replacement of existing smoke and heat extraction systems
- Subsequent additional heat insulation (for adherence to the flat roof directive)



Repair set consisting of: Skylight dome and safety frame



Renovation set consisting of:
Skylight dome, safety frame and renovation skylight base (SAK)

Delivery size [cm x cm]	
50 x 100	120 x 270
50 x 150	120 x 300
60 x 60	125 x 125
60 x 90	125 x 250
60 x 120	125 x 300
62.5 x 150	141 x 231
70 x 137	150 x 150
70 x 141	150 x 180
80 x 80	150 x 210
90 x 90	150 x 240
90 x 120	150 x 250
100 x 100	150 x 270
100 x 150	150 x 300
100 x 200	180 x 180
100 x 250	180 x 240
100 x 300	180 x 250
120 x 120	180 x 270
120 x 150	180 x 300
120 x 180	200 x 200
120 x 240	200 x 300

Other dimensions on request.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1.7.3 Insect protection mesh for *classic*, *plus* and *comfort plus* skylight domes

For protection against insects and incident dirt

The insect protection mesh is the right choice is all areas with special demands for purity and cleanliness. The penetration of insects, leaves and dirt is prevented by the open skylight.

Advantages/ Features

- Protection against insects, coarse dirt and leaves
- Simple mounting
- Problem-free cleaning of the roof is possible
- Can be retrofitted

Applications

- ESSMANN skylight domes with ventilation and SHE
- Mounting on third-party products is possible with the renovation set
- Wherever the penetration of coarse dirt and insects through open skylight domes should be avoided
- Foodstuffs industry
- Commercial kitchens
- Laboratories, institutes
- Production facilities for electronics and optics
- Private residential buildings

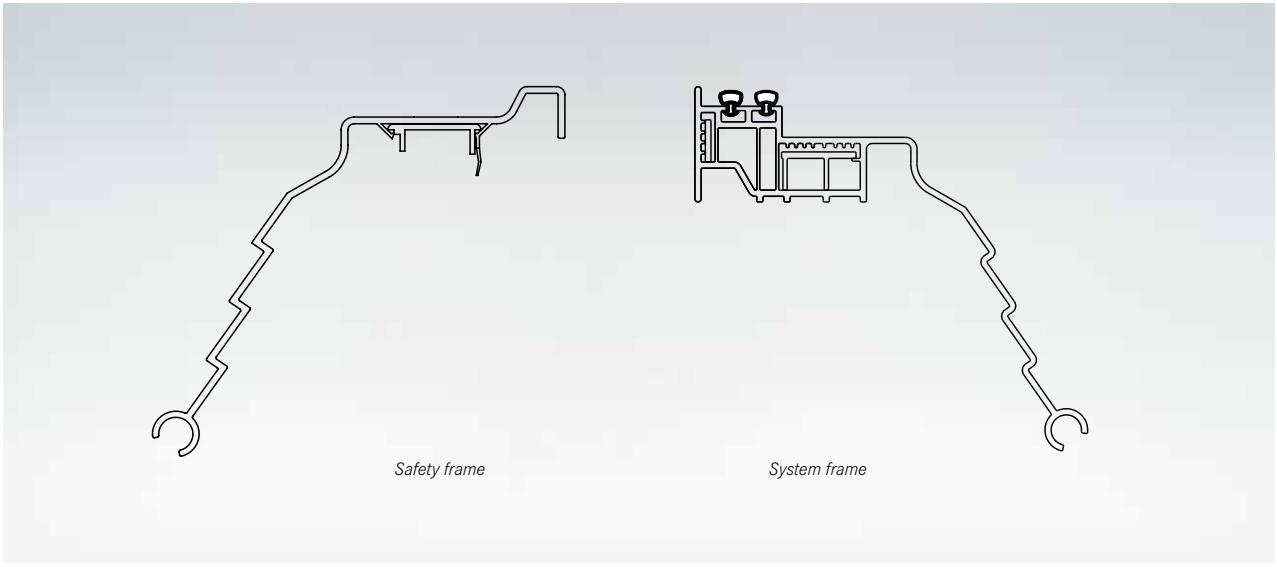
Material

- Aluminium
- Gauze

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1.7.4 Safety and system frames for *classic*, *plus* and *comfort plus* skylight domes

Adapter solutions for optimising your skylight dome system



The safety and system frames contribute to the optimisation and durability of your ESSMANN skylight dome system. Depending on the requirements, the safety and system frames are the ideal addition for your needs. Safety frames ensure protection against the elements of the connecting joint of the roof sheeting on the skylight base, whereas system frames optimise the thermal properties of your ESSMANN skylight dome in addition.

Advantages/ Features

- Safety frame
  - Longer service life of the roof connection through safe storage of the roof sheeting
  - Improved sealing of the overall system
- System frame
  - Longer service life of the roof connection through safe storage of the roof sheeting
  - Improved sealing of the overall system
  - Improved sealing properties of the skylight dome due to double sealing in the system frame
  - Thermal separation for reducing energy consumption

Applications

- All ESSMANN skylight domes
- *Plus* and *comfort plus* skylight domes with system frame as standard

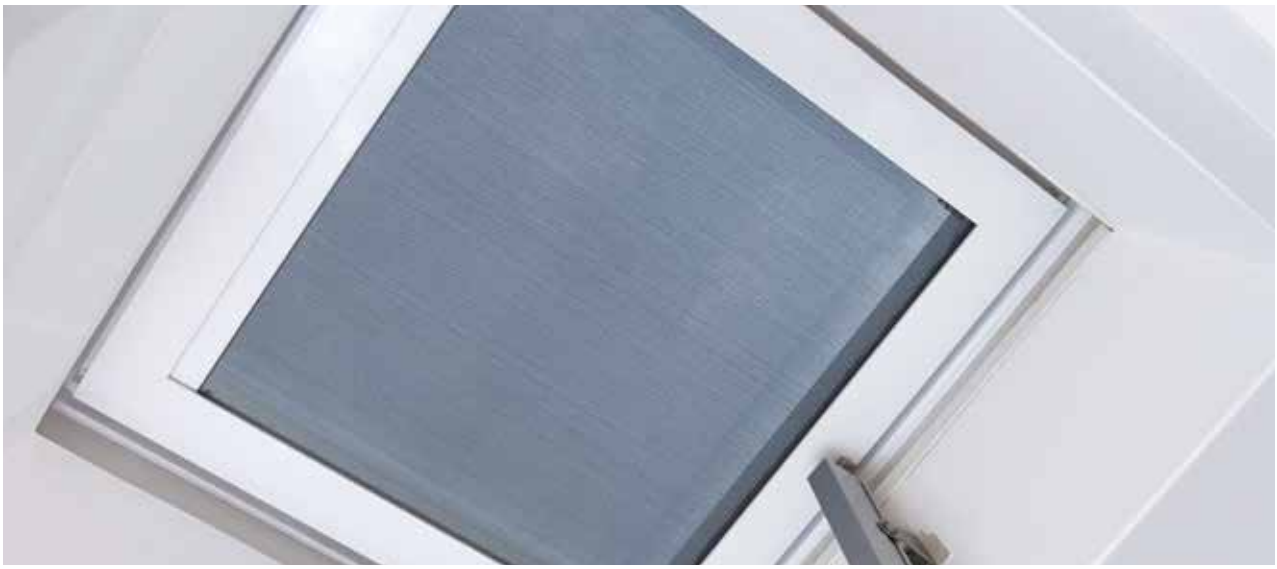
Material

- Frame made of PVC
- Seals made of EPDM (in system frame)
- Aluminium

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

1.7.5 Darkening and shading system for *classic*, *plus* and *comfort plus* skylight domes

Darkening solution for presentation rooms and for heat insulation



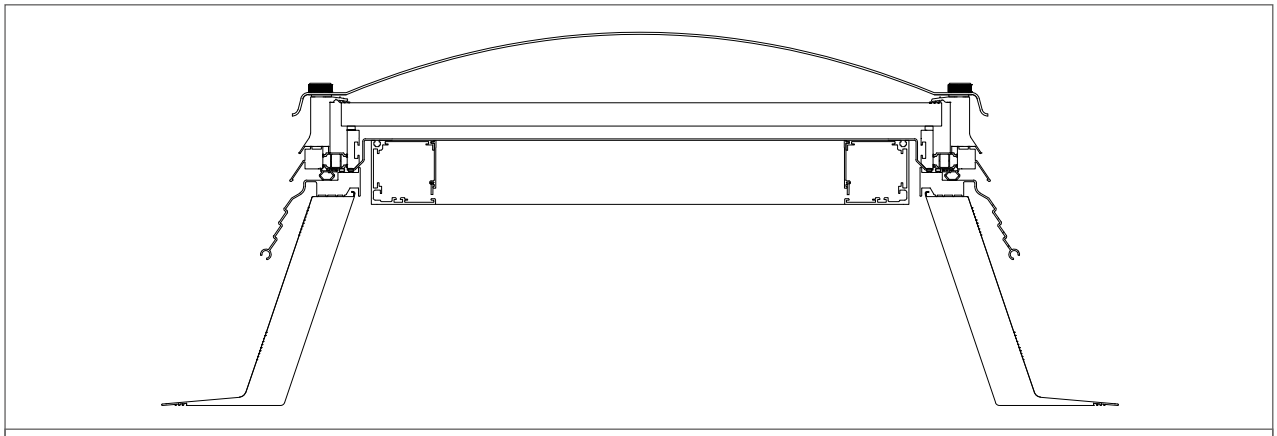
The darkening and shading system is available for all ESSMANN skylight domes in the respective standard sizes. Depending on the application, up to six standard material variants with different degrees of light transmission are available.

Advantages/ Features

- Material variants can be selected for shading or darkening
- Heat insulation for high outdoor temperatures
- Glare protection
- Conveniently operated by remote control
- Brush sealing prevents the incidence of residual light and as a result, guarantees optimum darkening quality

Applications

- All ESSMANN skylight domes
- Offices
- Presentation rooms
- New construction and retrofitting



ESSMANN darkening and shading system (EVA) integrated in the ESSMANN comfort plus skylight dome

Technical data of the standard material variants

Material variants	Name	Visible side	Rear side	Transparency	Reflection factor (Rs)	Absorption factor (As)
Darkening material	Centauro			Tv = 0 % (in the visible range)	81 %	19 %
Shading material	0102 Grey white			Ts = 11 %	41 %	48 %
Shading material	3001 Charcoal grey			Ts = 6 %	14 %	80 %
Shading material	0101 Grey			Ts = 10 %	20 %	70 %
Shading material	0210 White sand			Ts = 16 %	50 %	34 %
Shading material	2020 Linen			Ts = 18 %	52 %	30 %

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

2. Arcade rooflights

Rooflights provide the natural lighting of buildings. They are used in all building types where they are directly integrated in the roof design.

If they are combined with additional flaps (single or double flaps), ESSMANN rooflights can also be used for aeration and ventilation as well as for smoke and heat extraction. In addition to their technical tasks, they are fully in line with today's standards of modern architecture.

Our product range

- *Classic* arcade rooflight
- *Classic plus* arcade rooflight
- Brakel® Arcilite arcade rooflight
- Saddle rooflight
- *SVPC* daylight panel
- Functionally expandable for smoke and heat extraction, ventilation, fall and fall-through protection, and much more

brakel CERTIFIED PARTNER

SYSTEM ADVANTAGES:

- Different versions possible for lighting, heat insulation, hard roofing and soundproofing
- Available in any desired width between 1 m and 6 m as well as in continuous length
- Energy-related high quality and optimum thermal separation (*classic plus* arcade rooflight)
- Small parts in the outdoor area made of high-grade stainless steel
- Building approvals are available for all ESSMANN rooflight systems with polycarbonate glazing

» **Find out more:**

Would you like to find out more about our products and services?
Information is available at **www.essmann.de.**

Rooflights

2.1.1 *Classic* arcade rooflight (type 940-10)

The modular standard system for the industrial flat roof

With its extendible functionality, the *classic* arcade rooflight is a system for the industrial flat roof proven in millions of applications. Whether for pure lighting, aeration or for complex smoke and heat extraction systems, the *classic* arcade rooflight provides a functional solution for standard requirements.

Advantages/ Features

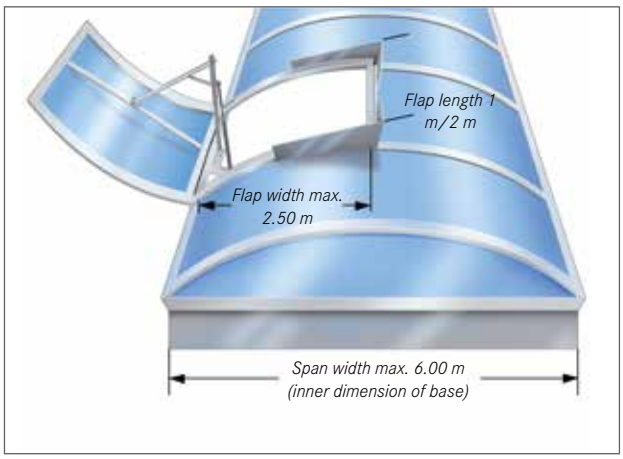
- Available in any length in span widths of 1 – 6 metres
- Different glazing options available for a wide range of requirements
- Functionally extendible through extensive accessories
- Individually adaptable to static requirements
- Building authorities approved system
- Allowable as a melt-out surface in a fire protection concept

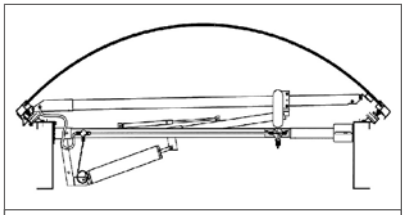
Applications

- Industrial flat roof (e.g. warehouses) up to a maximum roof slope of 20° (parallel to ridge, maximum 5°)
- Greater slopes on request
- New construction and renovation

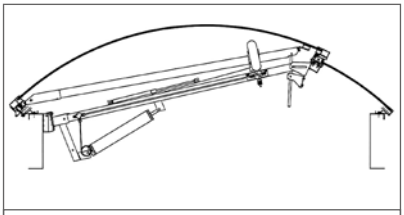
Material

- Profile system made of aluminium
- Plate material made from polycarbonate hollow chamber plates, PETG

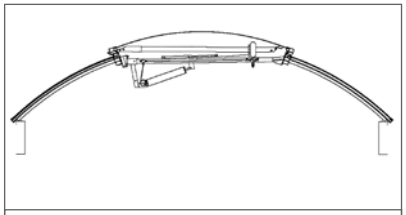




Full flap with SHE



Side flap with SHE



Ridge flap with SHE

Full flap with SHE

- Installation position: Over the entire span width of the arcade rooflight
- Dimensions of 1 m and 2 m available
- For span widths from 1.00 m to 2.53 m

Side flap with SHE

- Installation position: On one edge of the arcade rooflight with a transom profile for fastening
- Flap dimensions (W x L):
  1.50 x 2.00 m 2.50 x 1.00 m
  1.80 x 2.00 m 2.50 x 2.00 m
- For span widths of flap widths up to 4.60 m

Ridge flap with SHE

- Installation position: In the ridge with two transom profiles for fastening
- Flap dimensions (W x L):
  1.50 x 2.00 m 2.50 x 1.00 m
  1.80 x 2.00 m 2.50 x 2.00 m
- For span widths from 2.80 m to 4.60 m

Glazing options	Span width in m	U_g value [W/m²xK]	Soundproofing quality [dB]	Light transmission [3] [%]	g value [3] opal [%]	Fire behaviour [DIN EN 13501]
PC 10/4	1.00 – 6.00	2.5 [1]	19	56	59	B-s1, d0
PC 16/7	2.00 – 6.00	1.8 [1]	22	43	47	B-s1, d0
PC 20/7	2.50 – 6.00	1.7	19	54	47	B-s1, d0
PC 10/4 + 10/4	1.00 – 6.00	1.7	24	36	43	E
PC 10/4 + glass mat + PC 10/4 [2]	1.00 – 6.00	1.7	22	27	36	E
PC 16/7 + 10/4	2.00 – 6.00	1.3	24	19	22	E
PC 16/7 + glass mat + PC 10/4 [2]	2.00 – 6.00	1.3	24	27	33	E
PC 16/7 + 6 mm PETG	2.00 – 6.00	1.9	30	38	43	E
PC 10/2 Aerotech	1.00 – 6.00	2	–	74	71	E
PC 16/3 Aerotech	2.00 – 6.00	1.3	–	65	64	E
PC 20/3 Aerotech	2.50 – 6.00	1.1	–	63	63	E

[1] *Vertical installation*
[2] *Meets the requirements of "hard roofing" B roof (t1)*
[3] *Opal glazing only, others on request*

U_{rc} and U_{rc} inst can be calculated individually on request.

The *classic* arcade rooflight is supplied with a pitch of 1/5 or 1/9 depending on the glazing material and width.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Rooflights

2.1.2 *Classic plus* arcade rooflight

Modular, thermally separated profile system with flexibility in retrofitting

The *classic plus* arcade rooflight supplements the proven ESSMANN rooflight systems by an energy-related high-quality, thermally separated, arched aluminium profile design. It is ideal for use with increased requirements on heat insulation, sealing and condensation protection.

Advantages/ Features

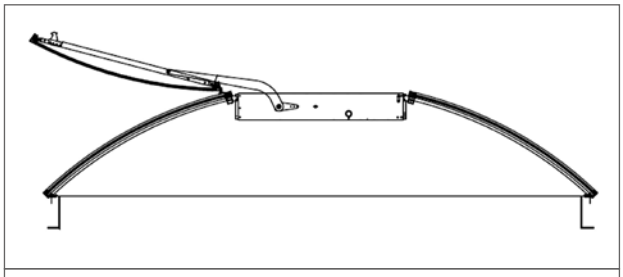
- Available in any length in span widths of 1 – 6 metres
- Individually adaptable to static requirements
- Different glazing options available for a wide range of requirements such as heat, sound, sun or emission protection
- High sealing integrity of the overall system
- Saving of heating costs due to highly efficient overall design
- Safety drainage in a labyrinth system
- Intelligent connection technology due to retrofittable frame safety connection made of EPDM
- Building authorities approved system
- Allowable as a melt-out surface in a fire protection concept

Applications

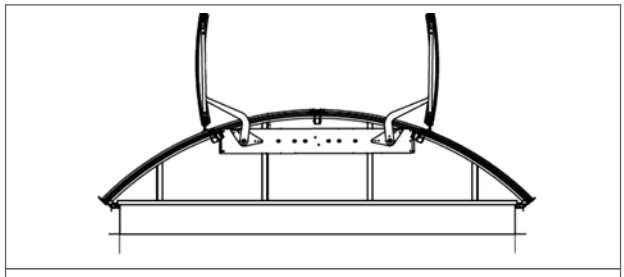
- Industrial flat roof up to a maximum roof slope of 20° (parallel to ridge, maximum 5°)
- Greater slopes on request
- Heated industrial halls, trade fair halls, sport and exhibition halls, commercial and administration buildings
- New construction and energy-optimised renovation projects
- On ESSMANN frame systems or on-site raised frame edges

Material

- Profile system made of aluminium
- Plate material made from polycarbonate hollow chamber plates, PETG



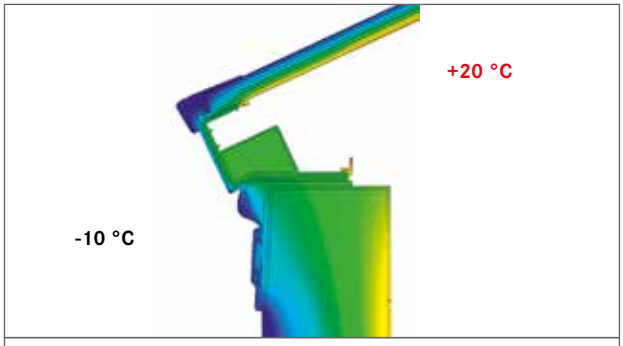
Classic plus arcade rooflight with ridge flap



Classic plus arcade rooflight with double flap

Dimensions [m]	
0.87 x 1.00	1.37 x 2.00
0.87 x 2.06	1.67 x 1.00
1.37 x 1.00	1.67 x 2.00

Dimensions [m]	
1.00 x 2.00	1.00 x 2.50
2.06 x 2.00	2.06 x 2.50
3.12 x 2.00	-



Isothermal diagram for classic plus arcade rooflight basic profile

Glazing options	Span width [m]	U_g value [W/m² x K]	Soundproofing quality [dB]	Light transmission [3] [%]	g value [3] opal [%]	Fire behaviour
PC 16/7	2.00 – 6.00	1.8 [1]	22	43	47	B-s1, d0
PC 20/7	2.50 – 6.00	1.7	19	54	47	–
PC 10/4 + 10/4	1.00 – 6.00	1.7	24	36	43	E
PC 10/4 + glass fleece + PC 10/4 [2]	1.00 – 6.00	1.7	22	27	36	E
PC 16/7 + 10/4	2.00 – 6.00	1.3	24	19	22	E
PC 16/7 + glass fleece + PC 10/4 [2]	2.00 – 6.00	1.3	24	27	33	–
PC 16/7 + 16/7	2.00 – 6.00	1.1	25	20	29	–
PC 16/7 + 6 mm PETG	2.00 – 6.00	1.9	30	38	43	E
PC 10/2 Aerotech	1.00 – 6.00	2	–	74	71	E
PC 16/3 Aerotech	2.00 – 6.00	1.3	–	65	64	E
PC 20/3 Aerotech	2.50 – 6.00	1.1	–	63	63	E

[1] *Vertical installation*
[2] *Meets the requirements of "hard roofing" B roof (t1)*
[3] *Opal glazing only, others on request*

U_{rc} and U_{rc} inst can be calculated individually on request.

The *classic plus* arcade rooflight is supplied with a pitch of 1/5 or 1/9 depending on the glazing material and width.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Rooflights

2.1.3 Brakel® Arcilite arcade rooflight

The premium arcade rooflight in genuine glass

Through its genuine glass version, the Brakel® Arcilite rooflight system meets the highest demands on appearance and function.

Advantages/ Features

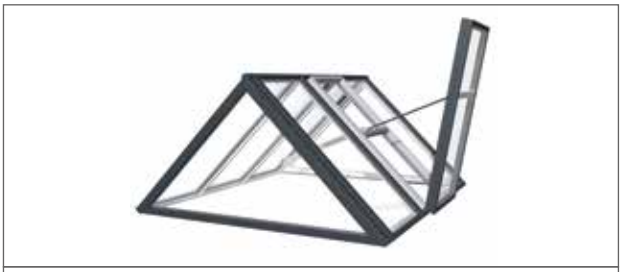
- Thermally separated glass design with a 15°, 30° or 45° slope angle
- Problem-free integration of SHE or ventilation flaps
- Fall-through protected due to break-proof glass (Class SB1200)
- High air tightness (Class 4 in accordance with EN 12207)
- Water tightness: EN 1027: 1050 Pa, EN 12208: Class E1050
- Energy-efficient due to low U value of the overall design
- Various models available
- SHE flap system can be used as an NSHE certified in accordance with DIN EN 12101-2

Applications

- Wherever there are simultaneous high requirements on daylight and heat insulation, such as schools, kindergartens or car dealerships

Material

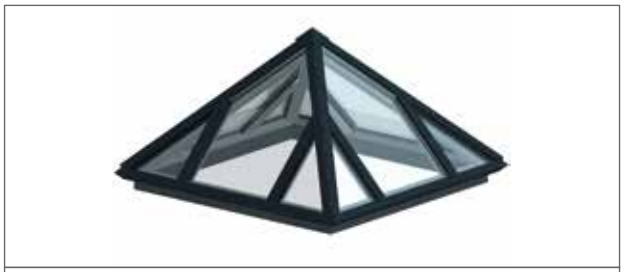
- Profiles: Aluminium alloy EN AW-6063 (ALMgSi0.5)
- Untreated sheet metal parts: Aluminium alloy EN AW-5754 (AlMg3)
- Sealing joints: EPDM 70º Shore
- Fastening material: Stainless steel



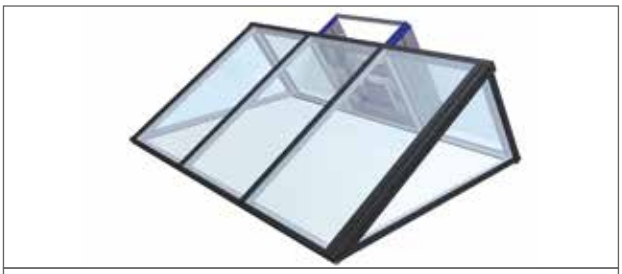
Construction types of the Brakel® Arcilite arcade rooflight: Saddle roof

Construction types of the Brakel® Arcilite arcade rooflight: Hip roof

Construction types of the Brakel® Arcilite arcade rooflight: Pent roof



Construction types of the Brakel® Arcilite arcade rooflight: Pyramid-shaped



Construction types of the Brakel® Arcilite arcade rooflight: Nordlicht / Shed

Versions	Slope angle [°]	Max. width [mm]	Standard grid size [mm]	Snow load [1] [N/m²]	Wind suction [N/m²]	Glass weight [1] [kg/m²]
Saddle or hip roof	15	4,500	900	750	1,500	35
	30	4,300	900			
		4,500	800			
	45	3,400	900			
		3,600	800			
Pent roof from 15° to 60°	15	2,500	900	750	1,500	35
	30	2,500				
	45	2,400				
	60	2,400				
Pyramid-shaped	15	4,500	900	750	1,500	35
		5,000	714			
	30	4,500	900			
		5,000	714			
	45	4,500	900			
Nordlicht / Shed	60 – 30	2,600	900	750	1,500	35

[1] *The snow load and glass weight values mentioned above are standard values and can be used alternatively and calculated individually for this purpose.*

» Further technical data, manuals and certificates you can download at www.essmann.de.

Rooflights

2.1.4 *SVPC* daylight panel

Multi-functional system for your facade

ENERGY EFFICIENCY

The functional façade system can be adapted to individual requirements. It can be equipped with bottom-hung, side-hung and casement windows as well as lamella units. The functions of lighting, aeration and smoke and heat extraction can thus be combined in one modular system. The overall system also has outstanding thermal properties for industrial or administration buildings.

Advantages/ Features

- Functionally expandable system
- Glazing up to a Ug value of 0.48 W/m²K available for highest thermal requirements
- Available with bottom-hung/side-hung sashes or lamellas for daily aeration and ventilation, SHE fresh air and natural smoke and heat extraction
- With thermally separated profile system for a highly efficient overall design
- Adaptation to static requirements possible through individual project planning
- Sashless, building authority approved design

Applications

- In the facade of industrial and administration buildings
- New construction and energy-optimised renovation projects
- For daily aeration and ventilation
- SHE fresh air
- Can be implemented as NSHE in accordance with DIN EN 12101 on request

Material

- Kerb frame in aluminium
- Glazing made of polycarbonate hollow chamber plates (optional with ESSMANN Aero Tech filling)
- Tongue and groove system

SVCP daylight panel with top-hung sash, outward-opening

SVCP daylight panel with lamella unit with heat insulation glazing

Type of web plate	Thermal transmission coefficient Ug [W/m² x K]	Light transmission		Total energy transmission		Fire behaviour in accordance with DIN 4102 [2]
		transparent	opal	transparent	opal	
PC 40/4	1.4	66 %	48 %	68 %	56 %	B2 / B1 [3]
PC 40/6	1.2	55 %	39 %	60 %	47 %	B2 / B1 [3]
PC 40/7	1.1	53 %	41 %	41 %	47 %	B2 / -
PC 40 AeroTech 1 [1]	0.8	64 %	–	59 %	–	B2 / B1 [3]
PC 40 AeroTech K [1]	0.48	in process	–	in process	–	B2
PC 50/10	0.87	44 %	36 %	50 %	41 %	B2 / B1 [3]
PC 60/12	0.75	41 %	30 %	43 %	37 %	24

[1] Special version, only on request. 1 = AeroTech filling in one chamber; K = complete plate filling with AeroTech.
[2] Fire tests exist in accordance with DIN EN 13501 and can be requested as required.
[3] Fire Class B1 plate material at a surcharge.

Technical data	
Plate system	Tongue and groove
Plate width/Plate length	500 mm/standard up to 3 m, special lengths up to 12 m
Plate weight	approx. 4.0 – 5.5 kg/m²
Hollow chamber sealing	Butyl tape underneath, diffusion-open tape on top
UV protection	Weather-side co-extruded UV coating
Colour of the plate material	Transparent, opal and standard colours on customer request

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Rooflights

2.1.5 Saddle arcade rooflight (type 940 - 20 and 940 - 21)

Special appearance for the industrial flat roof

With the glazing product range such as the arched ESSMANN rooflights, the saddle arcade rooflight provides a special appearance with proven function. It is especially suited for natural aeration and ventilation as well as use as a smoke and heat extraction system. Available as a saddle arcade rooflight type 940-20 with an incline of 30° and as type 940-21 with an incline of 45°.

Advantages/ Features

- Available in span widths of 1–5 metres in any length
- Different glazing options for a wide range of requirements
- Special shapes provide a special appearance
- Also available as a ventable and SHE version with flaps and corresponding drives
- Span width-independent glazing options available
- Allowable as a melt-out surface in a fire protection concept
- Building authorities approved system

Applications

- Industrial flat roof (e.g. warehouses) up to a maximum roof slope of 20° (parallel to ridge, maximum 5°)
- Greater slopes on request
- New construction and renovation

Material

- Profile system made of aluminium
- Plate material made from polycarbonate hollow chamber plates, PETG

Saddle arcade rooflight with top-hung sash, outward-opening

Saddle arcade rooflight with top-hung sash, outward-opening

Saddle arcade rooflight with top-hung sash, outward-opening

Glazing options	Span width in m	Ug value [W/m² x K]	Soundproofing quality [dB]	Light transmission [3] [%]	g value [3] opal [%]	Fire behaviour [DIN EN 13501]
PC 10/4	1.00 – 3.00	2.5 [1]	19	56	59	B-s1, d0
PC 16/7	1.00 – 5.00	1.8 [1]	22	43	47	B-s1, d0
PC 20/7	1.00 – 5.00	1.7	19	54	47	B-s1, d0
PC 10/4 + 10/4	1.00 – 3.00	1.7	24	36	43	E
PC 10/4 + glass fleece + PC 10/4 [2]	1.00 – 3.00	1.7	22	27	36	E
PC 16/7 + 10/4	1.00 – 5.00	1.3	24	19	22	E
PC 16/7 + glass fleece + PC 10/4 [2]	1.00 – 5.00	1.3	24	27	33	E
PC 16/7 + 16/7	1.00 – 5.00	1.1	25	20	29	E
PC 16/7 + 6 mm PETG	1.00 – 5.00	1.9	30	38	43	E
PC 10/2 Aerotech	1.00 – 3.00	2	–	74	71	E
PC 16/3 Aerotech	1.00 – 5.00	1.3	–	65	64	E
PC 20/3 Aerotech	1.00 – 5.00	1.1	–	63	63	E

[1] Vertical installation
[2] Meets the requirements of "hard roofing" B roof (t1)
[3] Opal glazing only, others on request

U_{rc} and U_{rc} inst can be calculated individually on request.

» An overview of all possible product combinations can be found on page 4 and additional technical values in our planning aids from page 177 onwards.
» Further technical data, manuals and certificates you can download at www.essmann.de.

2. Arcade rooflights

2.2 Smoke and heat extraction systems (SHE)

In addition to the natural lighting and ventilation of buildings, skylights with opening units provide another benefit: Natural smoke and heat extraction. For the use of skylight domes as a smoke extractor, they are equipped with natural smoke and heat extraction devices (NSHE). These devices consist of an opening unit for the flaps to be opened, the control technology and a trigger mechanism (CO_2 or electrical pulse).

Our product range

- Pneumatic NSHE device F6 (OPEN)
- Pneumatic NSHE device (OPEN/CLOSE)
- Electrical NSHE 48 V device (OPEN/CLOSE)

» **Find out more:**

Would you like to find out more about our products and services? Information is available at **www.essmann.de.**

2.2.1 Pneumatic NSHE device F6 [OPEN] for *classic* arcade rooflight

Aerodynamic smoke and heat extraction system (NSHE) in accordance with DIN 12101-2

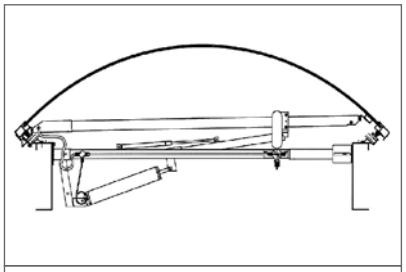
The pneumatic NSHE F6 is tested and certified in accordance with DIN EN 12101-2 in the *classic* arcade rooflight for all flap systems. This means that the overall system has the potential to ensure the best possible protection for personnel and equipment in the event of a fire.

Advantages/ Features

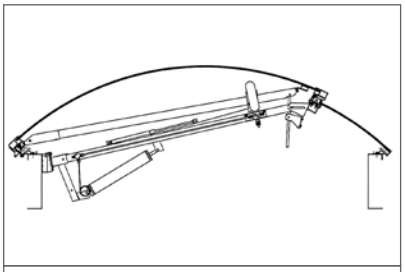
- Proven pneumatic NSHE with OPEN function
- Can be combined with linear drive or pneumatic cylinder for daily aeration and ventilation
- Available with wind deflection for improving the extraction value (A_a value)
- Available with TRD trigger temperature 68 °C / 93 °C depending on requirements
- Tested and certified in accordance with DIN EN 12101-2

Applications

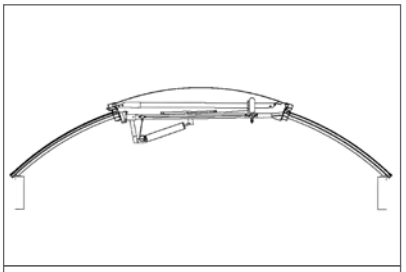
- Up to a maximum roof slope of 15° (greater slopes on request)
- *Classic* arcade rooflight: In full, side and ridge flaps
- With requirements for qualified smoke and heat extraction



Full flap with NSHE



Side flap with NSHE



Ridge flap with NSHE

Full flap:
Over the entire span width of the arcade rooflight.

- Dimension:
  Available in 1.00 m and 2.00 m
- Span width:
  1.00 m to 2.53 m

Side flap:
On one edge of the arcade rooflight with a transom elbow for fastening.

- Flap dimensions (W x L):
  - 1.50 x 2.00 m
  - 1.80 x 2.00 m
  - 2.50 x 1.00 m
  - 2.50 x 2.00 m
- Span width:
  Flap width up to 4.60 m

Ridge flap:
In the ridge with two transom elbows for fastening

- Flap dimensions (W x L):
  - 1.50 x 2.00 m
  - 1.80 x 2.00 m
  - 2.50 x 1.00 m
  - 2.50 x 2.00 m
- Span width:
  2.80 m and 6.00 m

Technical data	
Wind load	WL 1,500
Snow load	SL 500
Resistance to heat	B 300-E
Functional reliability	Re 50
Functional safety at low temperatures	T(00) or T(–10) (depending on the version)
Fire behaviour	Class E

Higher requirements can be realised following technical clarification.

» An overview of all possible product combinations can be found on page 4 and additional technical values in our planning aids from page 177 onwards.
» Further technical data, manuals and certificates you can download at www.essmann.de.

2.2.2 Pneumatic NSHE device [OPEN/CLOSE] for *classic plus* arcade rooflight

The aerodynamic smoke and heat extraction system (NSHE) in accordance with DIN 12101-2 for increased requirements

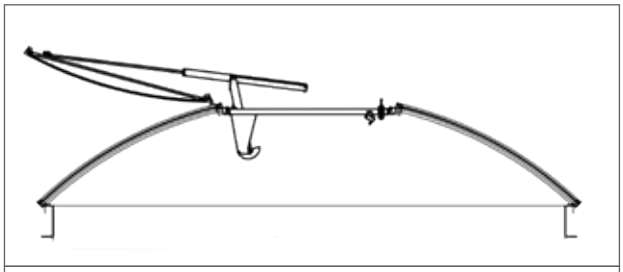
This pneumatic smoke and heat extraction with OPEN/CLOSE function is designed for greater requirements.
This system requires no closing from the roof. The system is designed for high power development so that it can also be used in challenging snow load zones. Electrical (230 V) or pneumatic opening units can be used for daily aeration and ventilation.

Advantages/ Features

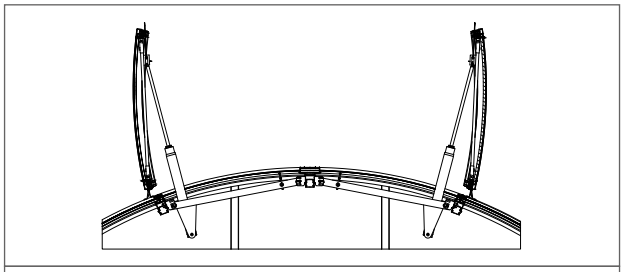
- Pneumatic NSHE device with OPEN/CLOSE function for convenient closing after triggering
- Can be combined with linear drive or pneumatic cylinder for daily aeration and ventilation
- With wind training walls for improving the aerodynamic extraction value (A_a value)
- Designed for **snow loads up to 3000 N** (depending on the flap size)
- Also available as an OPEN variant
- Tested and certified in accordance with DIN EN 12101-2
- Large A_a values possible (up to 3.93 m² with double flap 3.12 x 2.00 m)

Applications

- Up to a maximum roof slope of 15° (greater slopes on request)
- *Classic plus* arcade rooflight: In ridge and double flap
- With requirements on qualified smoke and heat extraction



Ridge flap with pneumatic NSHE OPEN/CLOSE



Double flap with pneumatic NSHE OPEN/CLOSE

Ridge flap size [mm]	Snow load SL [N/m²]	Compatible with arcade rooflight as of span width [m]
870 x 2,060	1,500	1.00
870 x 1,000	3,000	1.00
1,370 x 2,060	1,000	1.55
1,370 x 1,000	2,000	1.55
1,670 x 2,060	750	1.80
1,670 x 1,000	1,500	1.80

Double flap size [mm]	External load DIN EN 12101-2 (Annex D) at –5 °C SL [N/m²]
1,000 x 2,000	3,000
2,060 x 2,000	1,500
3,120 x 2,000	1,000
1,000 x 2,500	2,000
2,060 x 2,500	1,250

Technical data	
Wind load (WL)	WL 1,000 (for linear drive with 500 N) WL 1,500 (for linear drive with 1,000 N)
Functional safety of ventilation (Re)	10,000 x
Functional safety of SHE (Re)	Re 1,000
Functional safety at low temperatures	to T (-05)
Resistance to heat	B 300
Triggering temperature	68 °C or 93 °C (depending on the version)
Opening angle	Ridge flap: 165° (± 5°) Double flap: 90° (± 5°)

» An overview of all possible product combinations can be found on page 4 and additional technical values in our planning aids from page 177 onwards.
» Further technical data, manuals and certificates you can download at www.essmann.de.

2.2.3 Electrical NSHE 48 V device [OPEN/CLOSE] for *classic plus* arcade rooflight

The premium NSHE device with integrated ventilation function

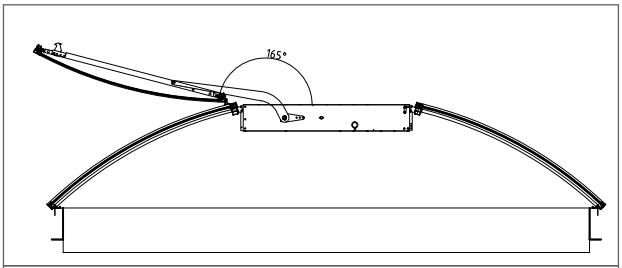
In addition the main "SHE" function, the electrical NSHE 48 V device provides the possibility of natural aeration and ventilation without having to use an additional ventilation drive. Lifting of heavy snow loads up to 3,000 N/m² is also possible.

Advantages/ Features

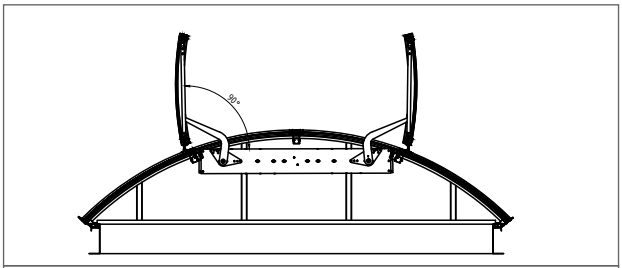
- Designed for heavy snow loads
- New opening concept
- Modern control concept in LON BUS technology
- Closed design that meets all requirements with regard to installation
- Ventilation function possible without additional opening unit
- Large A_a values possible (up to 3.93 m² with double flap 3.12 x 2.00 m)
- Tested and certified in accordance with DIN EN 12101-2

Applications

- Up to a maximum roof slope of 15° (greater slopes on request)
- *Classic plus* arcade rooflight: in ridge and double flap
- Qualified smoke and heat extraction



Ridge flap with NSHE 48 V device



Double flap with NSHE 48 V device

Ridge flap size [mm]	Snow load SL [N/m²]	Compatible with arcade rooflight as of span width [m]
870 x 2,060	1,500	1.00
870 x 1,000	2,000	1.00
1,370 x 2,060	1,000	1.55
1,370 x 1,000	1,500	1.55
1,670 x 2,060	500	1.80
1,670 x 1,000	1,000	1.80

Double flap size [mm]	External load DIN EN 12101-2 (Annex D) at –5 °C SL [N/m²]
1,000 x 2,000	3,000
2,060 x 2,000	1,500
3,120 x 2,000	1,000
1,000 x 2,500	2,250
2,060 x 2,500	1,250

Technical data	
Wind load (WL)	WL 1,500
Functional safety of ventilation (Re)	10,000 x
Functional safety of SHE (Re)	Re 1,000
Opening at low temperatures	to T(-05)
Resistance to heat	B 300-E
Opening angle	165° (±5°)

» An overview of all possible product combinations can be found on page 4 and additional technical values in our planning aids from page 177 onwards.
» Further technical data, manuals and certificates you can download at www.essmann.de.

2. Arcade rooflights

2.3 Drives for ventilation (also for geometric smoke dissipation)

All of our drives come from our own production and development. Consequently, we can always guarantee outstanding quality. As the only company on the market, we also manufacture the high-grade stainless steel chains for our drives. No matter whether for smoke and heat extraction or for natural aeration and ventilation via windows, flaps, lamellas or rooflights – due to the consistent modular structure of our products, we are able to manufacture numerous different drive versions, thereby offering the suitable solution for every project.

Our product range

- 24 V linear drive M2
- 230 V linear drive M3

» **Find out more:**

Would you like to find out more about our products and services? Information is available at **www.essmann.de.**

2.3.1 24 V linear drive M2 for *classic*, *classic plus* and *SVPC* arcade rooflights

For opening and closing rooflights and roof windows
For smoke extraction and ventilation

Linear drive for use in skylight domes, roof lights as well as roof flaps and roof windows. Can also be used for geometric smoke extraction and is available as a VdS tested variant.

Advantages/ Features

- Automatic switch off when the end position is reached
- Synchronous operation with several drives possible using synchronous modules
- Maintenance-free due to permanent lubrication
- Dust-tight and splash-proof (protection category IP 54)
- Corrosion-free due to sheathed and thrust tube made from aluminium alloy
- Available as a VdS-tested product

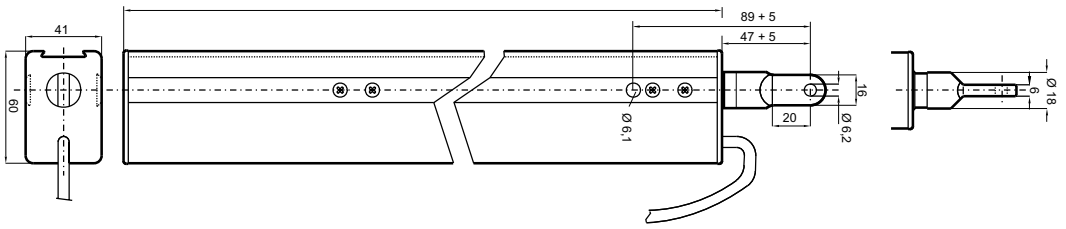
Applications

- All ESSMANN rooflights
- In roof windows or roof flaps
- In vertical facades, e.g. top-hung windows

Material

- Housing: Aluminium rectangular profile
- End caps: Plastic, grey
- Colour: EV1/silver, anodised or in RAL colours on request

Up to a stroke of 750 mm: Length = stroke + approx. 228 mm (stroke 1000 mm: Length = stroke + 290 mm)



Technical data		
Type	M2 500 N	
	… / LA / EV1 / …	… / SG / EV1 / …
Electrical properties		
Rated voltage	24 V DC / 50 Hz (-15 % /+25 %)	
Permissible ripple of the rated voltage	2 Vss	
Rated current	1 A	
Cut off	Internal	External via synchronous module
Protection class	III	
Mechanical properties		
Stroke length	300, 500, 750 and 1,000 mm	
Pressing force	500 N max.	
Tractive force	500 N max.	
Locking force	2,000 N	
Running speed	Approx. 8.3 mm/s	
Duty cycle	DC 30 (10 min)	
Service life	> 10,000 cycles	
Dimensions (L x H x D)	Up to stroke 750 mm = (stroke + approx. 228 mm) x 60 x 41 mm Stroke 1000 mm = (stroke + approx. 290 mm) x 60 x 41 mm	
Electrical connection		
Connecting cable	2 x 0.75 mm²	2 x 1.5 mm² + 3 x 0.5 mm²
Installation and ambient conditions		
Ambient temperature	-5 °C to +75 °C	
Protection category	IP 54	

Depending on the control panels used, higher currents must be expected for the start-up torque when dimensioning the cable cross-sections of the motor supply cables. Functionally reliable operation is guaranteed when connected to corresponding control systems from the same manufacturer. Conformity of functional reliability must be requested for operation on control systems from third party manufacturers.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Linear drives

2.3.2 230 V linear drive M3 for *classic*, *classic plus* and *SVPC* arcade rooflights

For opening and closing rooflights and roof windows

Ventilation linear drive for use in skylight domes, rooflights as well as roof flaps and roof windows.
The M3 is operated with 230 V mains voltage and can thus be used without mains power supply unit.

Advantages/ Features

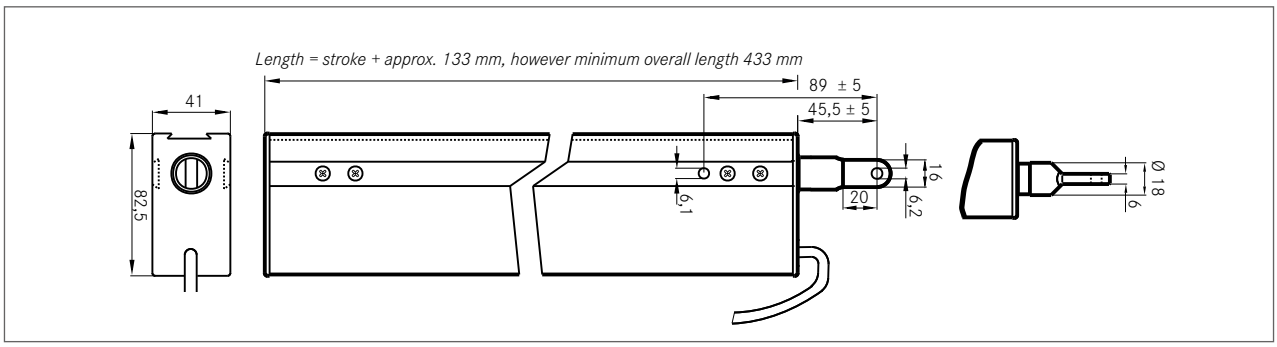
- Compact drive in rectangular aluminium profile without disruptive attachments
- Tight closing possible without limit switch adjustment and without integrated electronic power cut off
- Maintenance-free due to permanent lubrication
- Dust-tight and splash-proof (protection category IP 54)
- Noncorrosive due to sheathed and thrust tube made from aluminium alloy
- Potential-free contact for “Not CLOSED” message

Applications

- All ESSMANN rooflights
- In roof windows or roof flaps
- In the vertical facade. e.g. top-hung window down outwards

Material

- Housing: Aluminium rectangular profile
- End caps: Plastic, grey
- Colour: EV1/silver, anodised or upon request, according to RAL colour chart



Technical data	
Electrical properties	
Rated voltage	230 V AC / 50 Hz (+10 % / –15 %)
Rated current	Approx. 0.2 A
Cut off	Electronic power cut off, installed
Protection class	II
Mechanical properties	
Stroke length	82, 300, 500 and 750 mm
Pressing force	500 N max.
Tractive force	250 N max.
Locking force	2,000 N
Running speed	Approx. 10 mm/s
Duty cycle	DC 30 (10 min)
Service life	> 10,000 cycles
Dimensions (L x H x D)	(stroke + approx. 133 mm) x 82.5 mm x 41 mm
Electrical connection	
Connecting cable	5 x 0.75 mm², length approx. 4.60 m, grey
Installation and ambient conditions	
Ambient temperature	-5 °C to +75 °C
Protection category	IP 54

Depending on the control panels used, higher currents must be expected for the start-up torque when dimensioning the cable cross-sections of the motor supply cables. Functionally reliable operation is guaranteed when connected to corresponding control systems from the same manufacturer. Conformity of functional reliability must be requested for operation on control systems from third party manufacturers.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

2. Arcade rooflights

2.4 Safety systems

ESSMANN rooflights can be equipped with additional safety and protection systems. These prevent persons falling through or down, for example, and provide efficient protection when working on the flat roof.

Our product range

- Fall and fall-through protection (EAD)
- Integrated fall-through protection (ID1200)
- Fall arrest safety console (FAS)

Ranking in accordance with ASR A2.1	Safety type	ESSMANN products
1. Fall and fall-through protection: ■ Safest measures for protecting persons from falling through skylight domes and rooflights ■ Must be used in precedence over all other protection systems ■ Meet the primary requirements of ASR A2.1 (Technical Regulations for Workplaces)	**Fall-through protection** – For closed skylight domes and rooflights: ■ For strengthening a closed surface that is prone to breakage to protect against breakthrough ■ To be given priority over all other options	HDS protection system for skylight domes or rooflights ID1200 for rooflights Fall and fall-through protection (EAD) for fixed rooflights
	Fall protection – For open and closed skylight domes and rooflights: ■ Mounted at the height of the fall-risk zone ■ Prevents falling below the height of the fall-risk zone by arresting a fall ■ Together with the fall-through protection, must be given priority over all other options	Fall and fall-through protection (EAD) for all skylight domes and rooflight flaps
2. Fall arrest devices: ■ If fall protection cannot be used for technical reasons, fall arrest devices must be present	**Fall arrest safety systems** – For open and closed skylight domes and rooflights: ■ Attached under the fall-risk zone ■ The falling person falls a little distance before being arrested ■ Meets the secondary requirement of ASR A2.1 (Technical Regulations for Workplaces) ■ Only permitted if the primary requirement cannot be met!	Fall arrest systems type LK-L and type LK-K for skylight domes Burglary protection for skylight domes
3. Personal protection equipment against falling (PSAgA): ■ Can only be used if no category 1 or 2 systems can be set up ■ Suitable PSAgA must result from a risk assessment which must be created in advance	**Personal protection equipment against falls from a height (PSAgA)** – For open and closed skylight domes and rooflights: ■ Meets the tertiary requirement of ASR A2.1 (Technical Regulations for Workplaces) ■ Only permissible in exceptional cases if no other measure is actually possible – emergency solution!	FAS console for rooflights FAS ring for skylight bases

2.4.1 Fall and fall-through protection (EAD) for *classic* and *classic plus* arcade rooflight

Maximum safety on every occasion

The fall and fall-through protection provides maximum safety on your flat roof. The certification applies to open arcade rooflight flaps during maintenance and with the glazing removed, e.g. during renovation. No time-consuming outside netting of the hall is required.

Advantages/ Features

- Meets the primary requirement of ASR A2.1 (Technical Regulations for Workplaces)
- Provides permanent fall-through protection
- Can be used regardless of the glazing material
- Secures the roof opening even before glazing installation by means of its installation on the supporting structure
- Secured flap openings prevent falls right from the start and offer all-around protection for maintenance work
- No net rigging required for roof openings when replacing panels
- The innovative shock absorption system in case of falls (IFS) absorbs the impact energy and thus offers optimum personal protection
- Mounting is carried out by ESSMANN fitters
- Certified according to GS.BAU 18.1 (Principles for Testing and Certifying the Fall-through Protection of Components during Construction or Maintenance Work) and DGUV Test Certificate BAU 15068
- Compatible with ESSMANN NSHEs and ventilation drives

Applications

- For new construction or as retrofit in ESSMANN *classic* and *classic plus* roof lights with arched and flat glazing
- Suitable for third-party products following technical clarification

Material

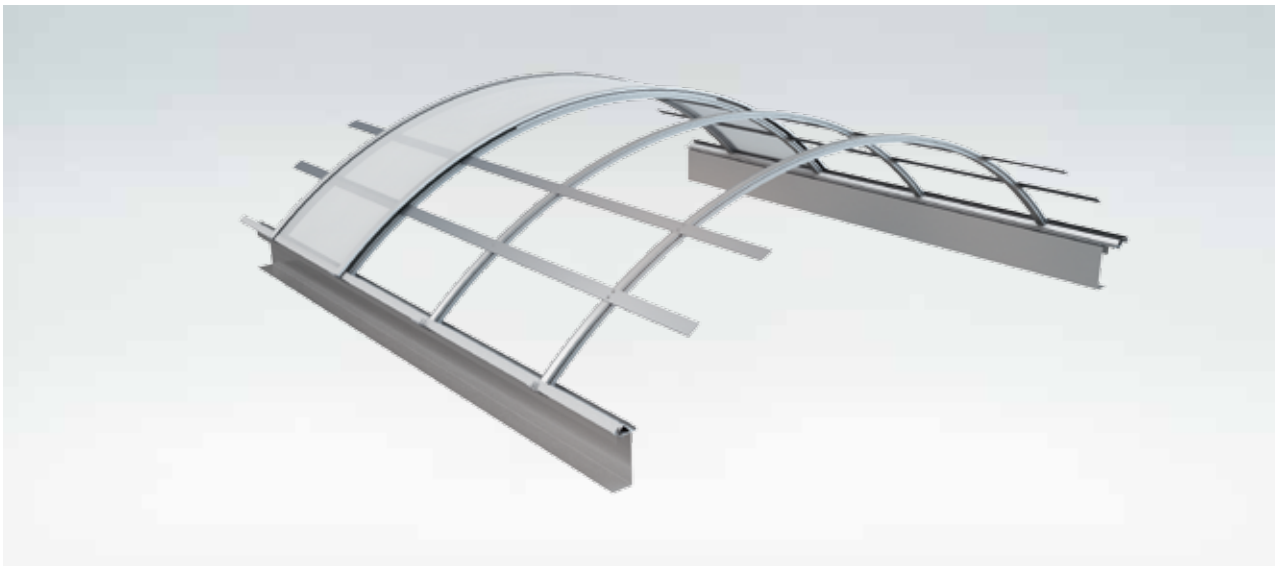
- Sendzimir galvanised sheet metal (RAL coating possible)

» **An overview of all possible product combinations can be found on page 4.**

» **Further technical data, manuals and certificates you can download at www.essmann.de.**

2.4.2 Integrated fall-through protection (ID1200) for *classic* and *classic plus* arcade rooflights

Certified safety in the fixed arcade rooflight



The fall-through protection integrated in the arcade rooflight supports the polycarbonate glazing to ensure fall-through protection of the overall design. The high load-bearing capacity owes its name to ID 1200 (1200 Newton test load).

Advantages/ Features

- Meets the primary requirement of ASR A2.1 (Technical Regulations for Workplaces)
- Permanent fall-through protection
- Easy to retrofit for arcade rooflight renovation
- Certified according to GS.BAU 18 (Principles for Testing and Certifying the Fall-through Protection of Components during Construction or Maintenance Work) and DGUV Test Certificate (for installed and intact glazing)

Applications

- In fixed ESSMANN arcade rooflight parts
- In new construction and for retrofitting (by ESSMANN fitters only)

Material

- Aluminium (RAL coating possible)

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Safety and protection systems

2.4.3 Fall arrest safety console (PAS console) for *classic* and *classic plus* arcade rooflights

Anchor point for personal protection equipment on the arcade rooflight

The PAS is an anchor point for personal protection equipment as a restraining system for work in locations where there is a risk of falling such as roof edges or on the facade.

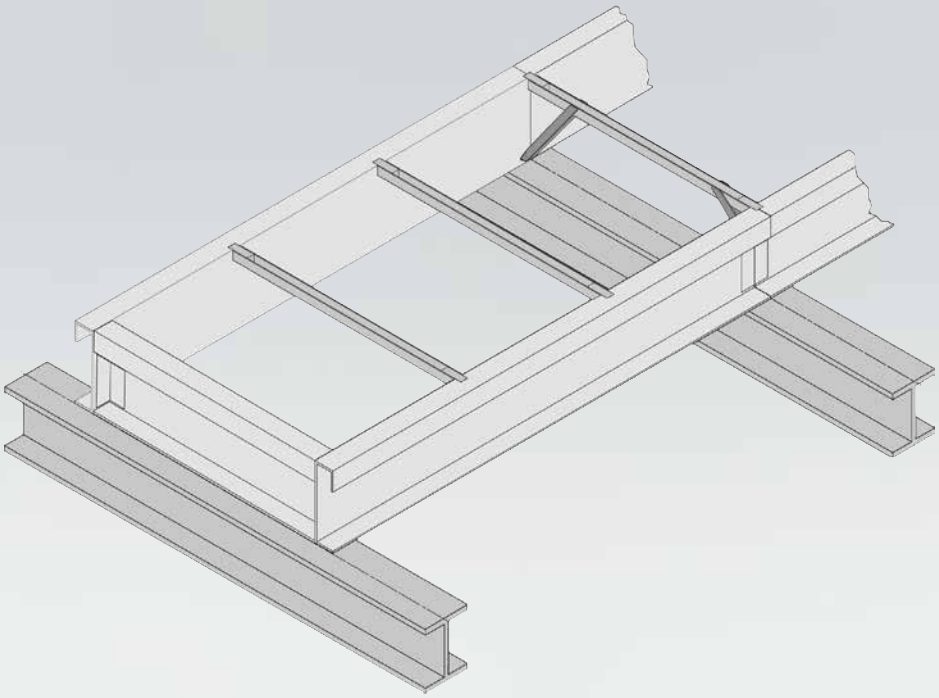
Advantages/ Features
- Mobile anchor points for PSAgA in accordance with DIN EN 795
- Flexible use, independent of the roof seal
- Can be retrofitted to ESSMANN rooflights any time
- Meets the requirements in accordance with DIN EN 363 (as of 2012), DGUV test certificate

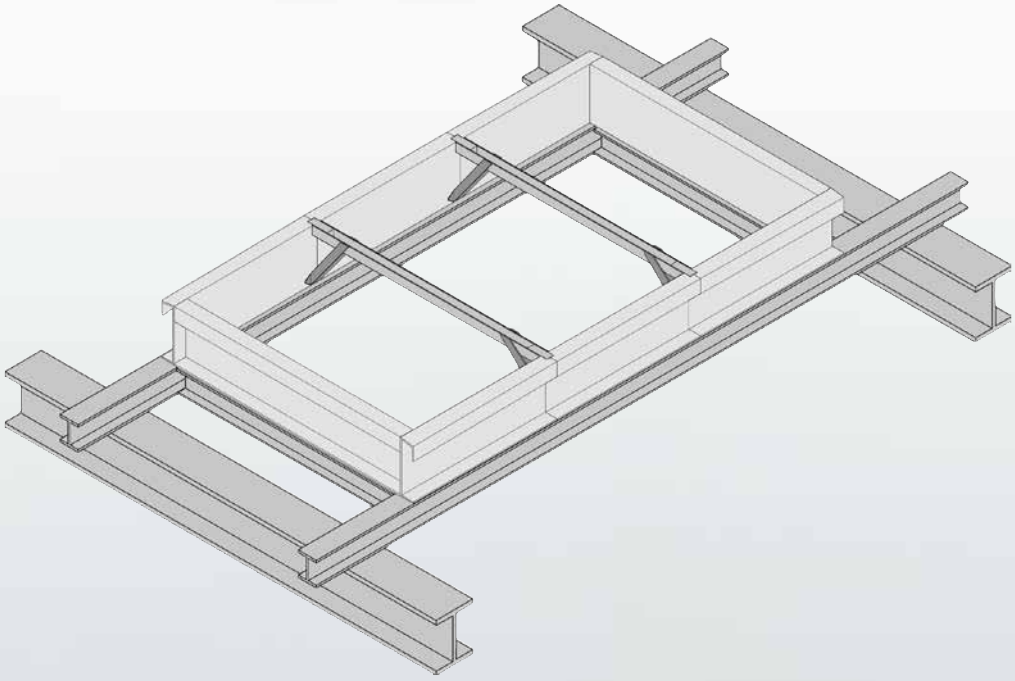
Applications
- ESSMANN *classic* and *classic plus* arcade rooflights
- For safeguarding persons when working on roof edges or similar

Material
- Stainless steel (RAL 3000)

Safety instructions
- Always fasten anchor devices to the rooflight system in the area of the girder, therefore arrange the fall arrest safety consoles at the distance of the girder and circumferentially around the respective rooflight system
- For safeguarding one person
- Exclusive use of fall arrest systems (belts, ropes, fall arresters and hooks) according to DIN EN 363 and according to the respective operating instructions
- Carrying out repairs based on the existing assembly guidelines by the manufacturer only

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.





2. Arcade rooflights

2.5 Substructure

Our surface-mounted base and the self-supporting base from our own development and production consist of a Sendzimier galvanised bevelled edge steel sheet with a thickness from 2 mm to 3 mm as standard. Depending on the version, the construction heights are between 300 mm and 550 mm, although larger heights are possible on request.

Our product range

- Self-supporting base
- Surface-mounted base

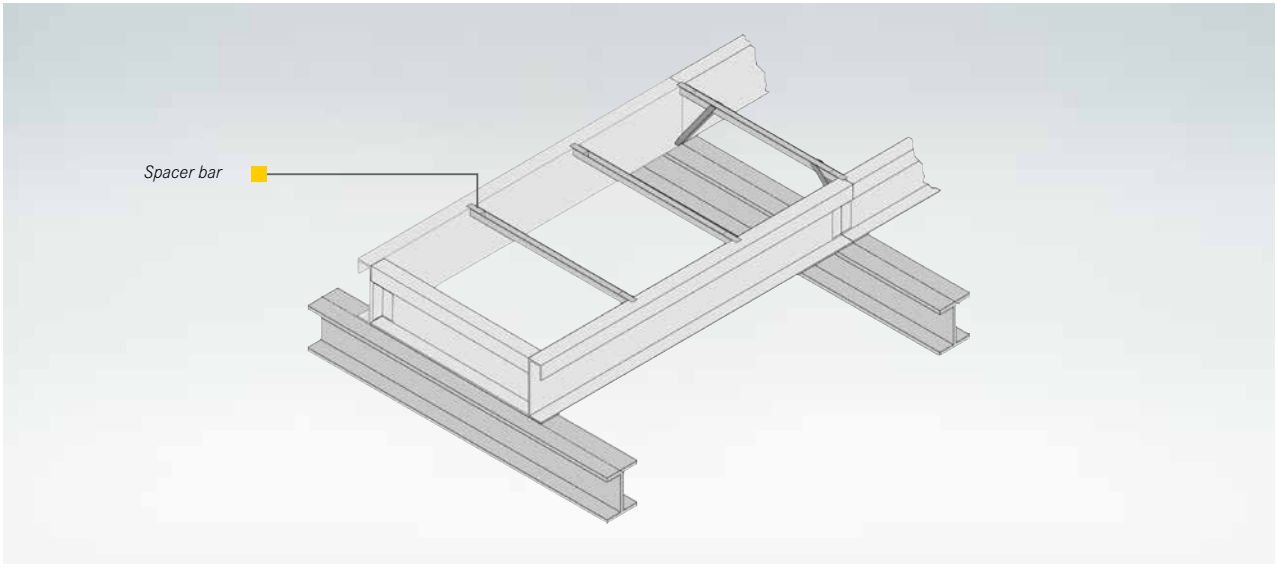
» **Find out more:**

Would you like to find out more about our products and services? Information is available at **www.essmann.de.**

Frames and frame safety connection

2.5.1 Self-supporting base for *classic* and *classic plus* arcade rooflights

The solution for truss roofs



If the roof design does not allow a continuous overlying base design, the self-supporting base is the right choice. The base length is defined by the truss distances where the base can be dimensioned according to the static requirements. The maximum truss distance is 8 metres.

Advantages/ Features

- Can be adapted to individual static requirements
- Heat insulation of the base can have a thickness of up to 80 mm
- Can be built up in any length thanks to modular design
- Can be designed with bracing with spacer bars according to static requirement
- All necessary fastening materials are included in the supplied kit
- Construction heights between 450 and 750 mm, also higher on request

Applications

- All ESSMANN rooflights
- Truss roofs
- New construction and renovation

Material

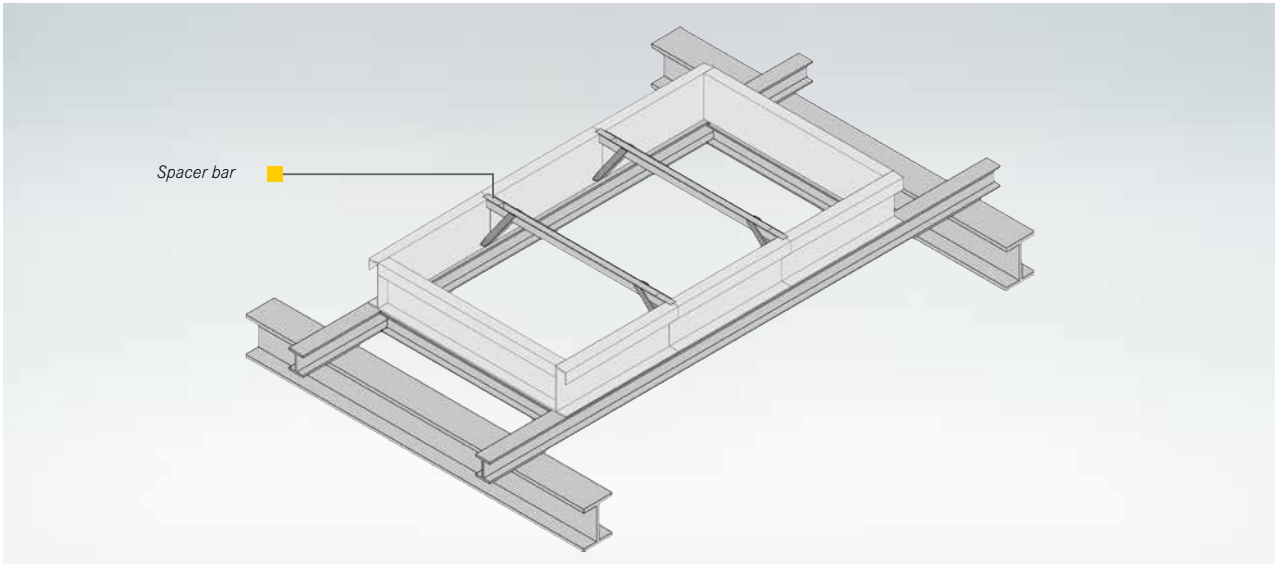
- Galvanised steel plate, powder-coated if necessary or in RAL colours on request

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Frames and frame safety connection

2.5.2 Surface-mounted base for *classic* and *classic plus* arcade rooflights

The solution for purlin and truss roofs



In roof designs that allow complete surface-mounting of the base, the surface-mounted base is the first choice. The length of the base can be freely configured and designed according to the static requirements.

Advantages/ Features

- Can be adapted to individual static requirements
- Heat insulation of the base can have a thickness of up to 80 mm
- Can be built up in any length thanks to modular design
- Can be designed with bracing with spacer bars according to static requirement
- All necessary fastening materials are included in the supplied kit
- Construction heights between 300 and 500 mm, also higher on request

Applications

- All ESSMANN rooflights
- Purlin and truss roofs with corresponding replacement
- New construction and renovation

Material

- Steel plate, powder-coated if necessary or in RAL colours on request

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

2. Arcade rooflights

2.6 Accessories

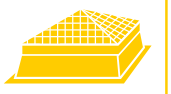
Thanks to the consistent modular construction of our product groups, our products can also be equipped with numerous accessories: Starting with electrical drives through fall and fall-through protection up to additional hail protection. Whatever the demands and requirements of customers are – all ESSMANN components can be extended and supplemented without any problem.

Our product range

- Hail, fall-through and sun protection (HDS)
- Frame safety connection
- Insect protection mesh

» **Find out more:**

Would you like to find out more about our products and services? Information is available at **www.essmann.de.**



2.6.1 Hail, fall-through and sun protection (HDS) for *classic* and *classic plus* arcade rooflights

Multiple safety system for different requirements

There are different reasons for using an HDS system. In addition to hail and sun protection, it also provides advantages in roof safety. It is available for all arcade rooflight configurations as well as for fixed parts and flaps.

Advantages/ Features

- Hail protection
  - Greater resistance to hail of the glazing surfaces underneath
  - Ideal protection against growing numbers of storm damage (also relevant concerning insurance)
- Fall-through protection
  - Protects people against falling through rooflight elements on the roof
  - Meets the primary requirements of ASR A2.1 (Technical Regulations for Workplaces) and is tested to GS.Bau 18.1 (Principles for Testing and Certifying the Fall-through Protection of Components during Construction or Maintenance Work) and, therefore, fall-through protected (when closed) [1)]
- Sun protection
  - Deciduous tree effect due to the perforation
  - Minimises heat build-up and direct sunlight that would otherwise cause a tremendous temperature increase in the building

Applications

- ESSMANN *classic* and *classic plus* rooflights
- New construction and retrofitting

Material

- Perforated sheet of aluminium

[1)] Dome/flap opening widths > 300 mm require additional security measures

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

2.6.2 Insect protection mesh for *classic* and *classic plus* arcade rooflights

For protection against insects and incidental dirt

The insect protection mesh is the right choice is all areas with special demands for purity and cleanliness.
The penetration of insects, leaves and dirt is prevented by the open skylight.

Advantages/ Features

- Protection against insects, coarse dirt and leaves
- Simple mounting
- Problem-free cleaning of the roof possible
- Can be retrofitted

Applications

- ESSMANN arcade rooflight flaps with ventilation
- Everywhere where the penetration of coarse dirt and insects through open arcade rooflight flaps should be avoided
- Foodstuffs industry
- Commercial kitchens
- Laboratories, institutes
- Production facilities for electronics and optics

Material

- Aluminium
- Gauze

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Frames and frame safety connection

2.6.3 Frame safety connection for *classic* and *classic plus* arcade rooflights

For a clean connection to the tin roof

Frame safety connection on classic arcade rooflight

Multi-functional sealing system made of EPDM for conventional ESSMANN arcade rooflight types. In addition to a clean connection to your tin roof, the frame safety connection provides better sealing of the system and thermal separation between the roof connection and the arcade rooflight.

Advantages/ Features

- Optimum and safe frame connection
- Thermal separation for sheet metal covers
- Frame and arcade rooflights can – independent of the roof sealing – be installed in one operation
- Problem-free corner panels, no shaped corners required
- Flexible connection
- Tight butt joints without additional sealing
- System-compatible protection rail without additional sealing
- No additional edge bevelling needed in the connecting plates
- No damage of the upper roof membrane as the frame can be connected after installing the arcade rooflight

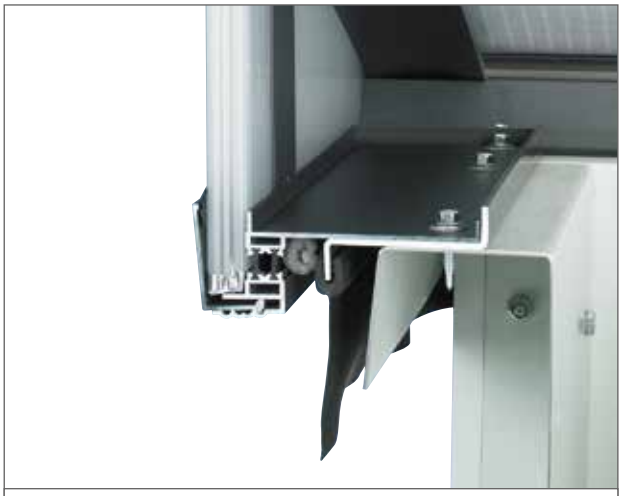
Applications

- Tin roofs, other roof sealing types following technical clarification
- Renovation and refurbishment

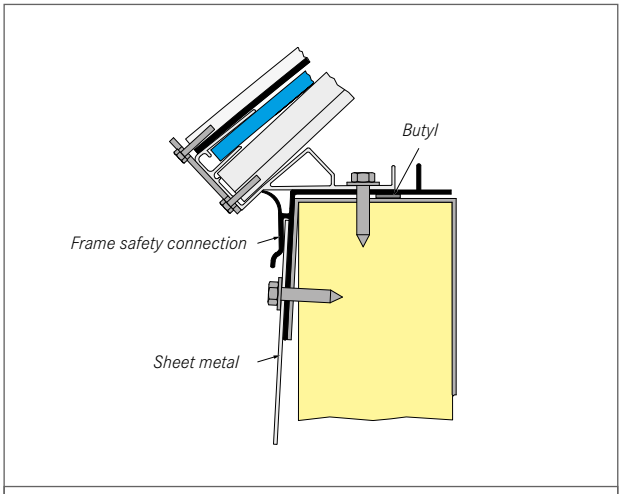
Material

- EPDM

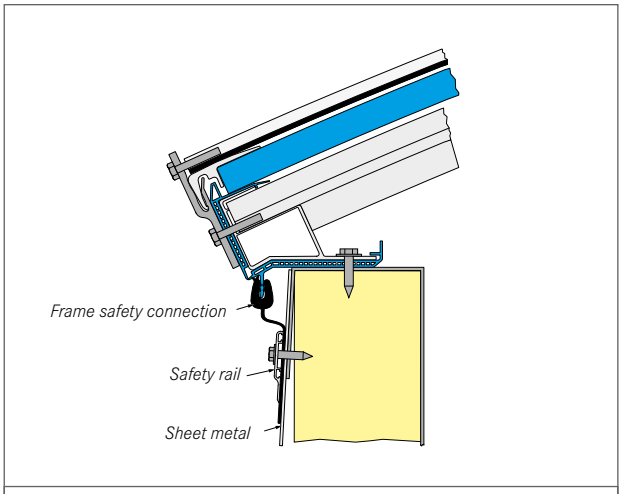
Frame safety connection for classic arcade rooflight



Frame safety connection for classic plus arcade rooflight



Frame safety connection for classic arcade rooflight: Connection to tin roof



Frame safety connection for classic plus arcade rooflight: Connection to tin roof

» An overview of all possible product combinations can be found on page 4.

» Further technical data, manuals and certificates you can download at www.essmann.de.

3. Flat-roof drainage safety systems

A whole range of technically mature roof gullies rounds off the ESSMANN system portfolio for building envelopes for new construction and renovation. Due to the design, flat roofs are particularly exposed to the effects of weather – specific and effective drainage significantly prolongs their service life.

We provide the corresponding system for every structural version. Gully bodies made from impact-resistant plastic (PP or PVC), connections in various DN sizes, backflow-proof base body. Optional heating with 230 V connection, supplementary accessories as well as the simple mounting are only some of the advantages of the ESSMANN gullies.

In addition to the roof drainage safety systems, combined drainage – balcony and patio superstructures, for example – can also realised. The product range also includes cold and warm roof breather vents, pebble traps as well as spouters and overflows.

Our product range

- Various gully variants
- Ventilators
- Spouters and overflows
- Green roof drainage systems
- Extensive range of accessories such as gully attachments, pebble traps, damming rings and many others

SYSTEM ADVANTAGES:

- Especially high-performance gully variants
- Screw flange and screws made from stainless steel
- Renovation gullies as the perfect solution for old gullies in need of renovation
- Solutions for daily drainage and emergency drainage
- A range of versions for very different requirements

» **Find out more:**

Would you like to find out more about our products and services?
Information is available at **www.essmann.de.**

3.1 *Classic* gully

The standard drainage element for your flat roof

The *classic* gully series is a flat flange version and is prepared at the factory for homogeneous bitumen, PVC, PEC, VAE and FPO/TPO roof sheeting connection.

Advantages/ Features

- Homogeneous connection to a range of roof sheeting
- Angled and vertical drainpipe
- Extensive accessories
- Wide range of applications
- Delivery including pebble trap
- With walk-on terrace gully attachment

Applications

- Flat roof drainage
- New construction and renovation
- Homogeneous roof sheeting connections

Accessories

- Heater
- Terrace gully attachment

ESSMANN gully run-off capacity in l/s [1)]

Dam-ming height	DN 70				DN 100				DN 125				DN 150
	classic		Screw flange		*classic*		Screw flange		*classic*		Screw flange		Screw flange
mm													
15	2.10	2.60	2.10	1.80	2.30	3.20	2.50	2.20	2.20	1.40	2.40	2.20	2.20
25	3.80	4.50	3.70	4.00	4.10	5.00	4.20	3.85	4.10	3.10	4.20	4.00	4.60
35	5.60	6.80	5.40	5.50	6.20	6.30	6.20	5.50	6.10	5.60	6.10	5.80	7.00
45	7.20	–	7.30	7.40	8.50	8.80	8.10	7.10	8.40	7.10	7.90	7.50	9.40
55	8.50	–	9.00	–	11.30	10.00	10.60	8.90	10.60	8.40	10.20	9.20	12.00

» Further technical data, manuals and certificates you can download at www.essmann.de.

1) Values determined by the German State Testing Authority (LGA)

Srcew Flange Gullies

3.2 Screw flange gully

For on-site roof connection

The screw flange gully series is a loose flange version for on-site connection of roof sheeting (minimum thickness 1.3 mm) by a stainless steel screw flange. The material for a secure screw connection is part of the supplied kit.

Advantages/ Features

- Mechanical fixing with different connecting sheets
- Angled and vertical drainpipe
- With walk-on terrace gully attachment

Applications

- Flat roof drainage
- New construction and renovation
- All roof sheeting connections (min. thickness 1.3 mm)

Accessories

- Heater
- Terrace gully attachment

Run-off capacity in l / s [1)]

Damming height	Screw flange DN 70		Screw flange DN 100		*classic* gully DN 125	
in mm						
15	2.10	1.80	2.50	3.20	2.40	2.20
25	3.70	4.00	4.20	5.00	4.20	4.00
35	5.40	5.50	6.20	6.30	6.10	5.80
45	7.30	7.40	8.50	8.10	7.90	7.50
55	9.00	–	11.30	10.60	10.20	9.20

[1)] *Values determined by the German State Testing Authority (LGA)*

» Further technical data, manuals and certificates you can download at www.essmann.de.

3.3 Balcony gully

For restricted installation conditions

Due to their size, balconies mostly provide only very restricted installation possibilities for drainage systems. Ensuring optimum drainage nevertheless requires especially high performance gully variants. The balcony gullies were specially developed for this application.

Advantages/ Features

- Smaller rim
- Angled and vertical drainpipe
- Also available as a screw flange variant
- With accessible balcony gully attachment
- Available as a variant with odour trap

Applications

- Balconies
- Garages
- New construction and renovation

Accessories

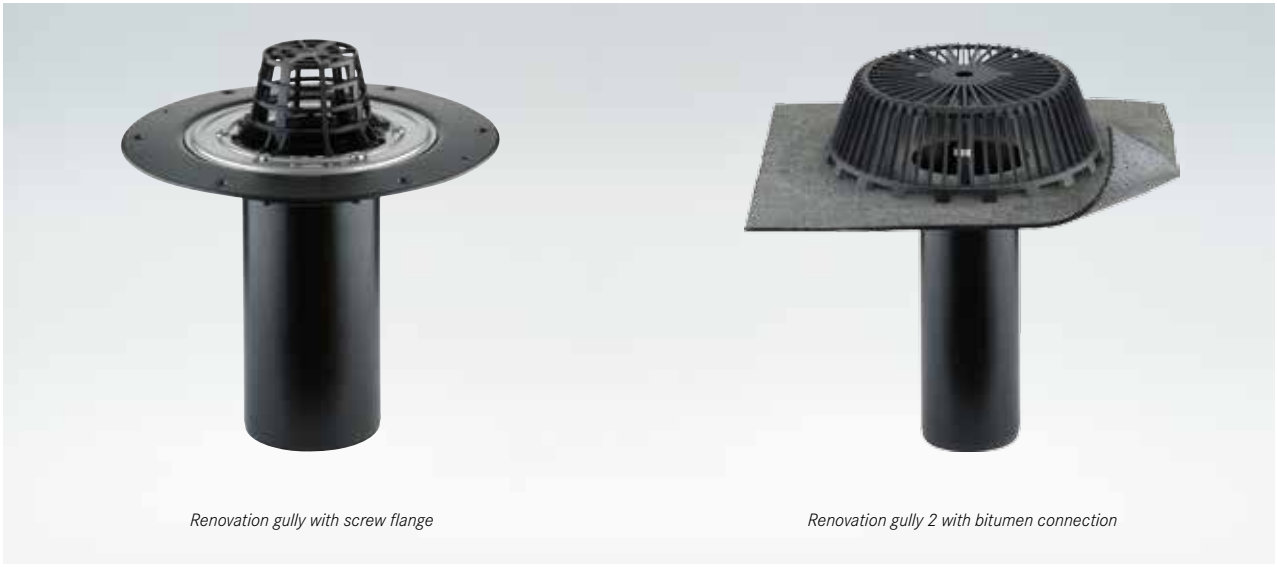
- Extension unit
- Balcony gully attachment

» **Further technical data, manuals and certificates you can download at www.essmann.de.**

Renovation Gullies

3.4 Renovation gully

For all renovation cases



Renovation gully with screw flange

Renovation gully 2 with bitumen connection

The renovation gully provides a perfect solution for gullies in need of renovation. It consists of a vertical base body that is inserted with an accompanying lip seal into the existing gully. The gully body or its flanges are designed so that connection roof sheets can be mechanically and homogeneously connected.

Advantages/ Features
- Backflow-proof
- Compatible with all conventional on-site pipe systems

Applications
- Repair
- Renovation

Run-off capacity in l / s [1)]

Damming height in mm	Renovation gully DN 50 in pipe DN 70	Renovation gully DN 70 in pipe DN 100	Renovation gully DN 95		Renovation gully DN 125 in pipe DN 150	Renovation gully DN 165 in pipe DN 150
			in pipe DN 100	in pipe DN 125		
5	0.30	0.30	0.40	0.40	0.50	0.50
15	1.10	1.50	1.80	1.70	1.60	1.70
25	1.90	2.80	3.10	3.10	3.00	3.30
35	3.80	4.30	5.10	5.10	5.40	6.00
45	6.20	6.90	7.30	7.80	7.90	9.40
55	–	9.20	9.80	10.20	11.40	13.20
65	–	11.00	13.10	13.10	15.60	17.80

[1)] Values determined by the German State Testing Authority (LGA).

» Further technical data, manuals and certificates you can download at www.essmann.de.

3.5 Breather vents

For ventilating the intermediate roof spaces

Warm roof breather vent

Cold roof breather vent type A

Warm roof breather vents and cold roof breather vents are available for different roof superstructures.
The ESSMANN ventilators are supplied including a removable rain protector.

Advantages/ Features
- Homogeneous connection of different roof sheeting is possible
- Variable height adjustment of the roof sheeting connections (warm roof breather vents)
- Ventilation of the intermediate roof spaces for reducing humidity in the roof superstructure (cold roof breather vents)

Applications
- Ventilation of intermediate spaces and insulation
- New construction and renovation

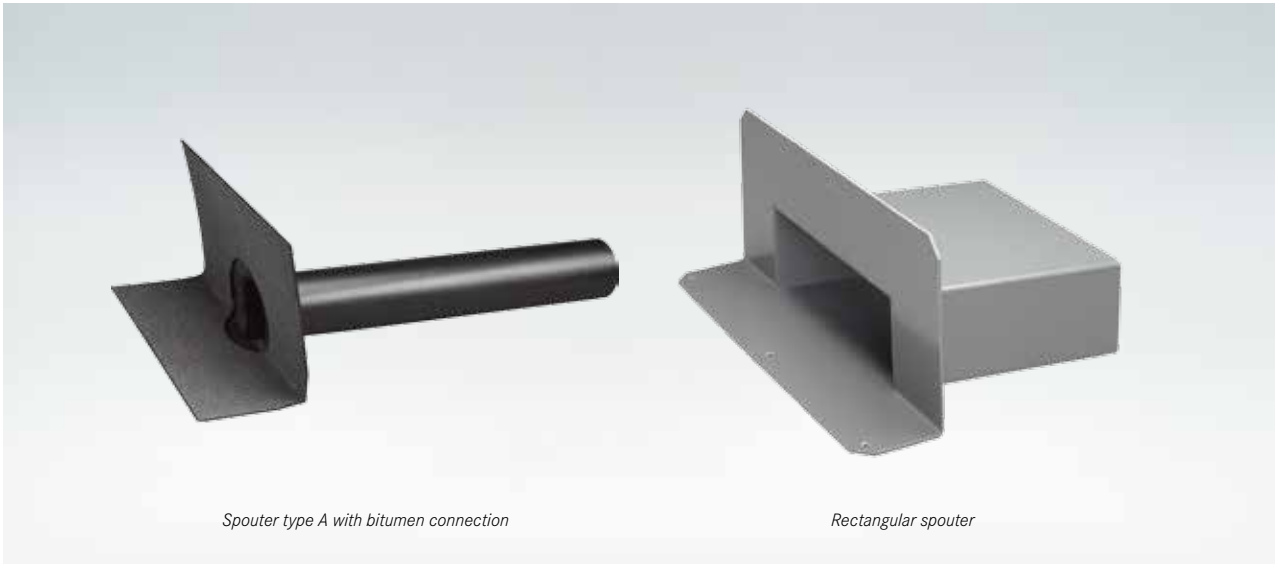
Diameter
- Warm roof breather vents DN 70-150
- Cold roof breather vents DN 100

» **Further technical data, manuals and certificates you can download at www.essmann.de.**

Spouters and Overflows

3.6 Spouters

For outside drainage



Spouter type A with bitumen connection

Rectangular spouter

Inside downpipes are not needed with this type of drainage. Instead, the water that runs off is discharged via the outer sides of the building.

Advantages/ Features
- A piping system that has to be run through the building is not required
- The risk of water entering through a damaged pipe is eliminated

Applications
- New construction and renovation

Run-off capacity in l / s [1)]

Damming height in mm	Spouter Type A DN 50	Spouter Type A DN 70	Spouter Type A DN 100	Spouter Type A DN 125	Rectangular spouter 180 / 80	Rectangular spouter 300 / 100	Rectangular spouter 500 / 100	Rectangular spouter 750 / 100	Rectangular spouter 1,000 / 100
5	–	–	–	–	0.20	0.30	0.60	0.80	0.90
15	0.18	0.18	0.30	0.30	0.60	0.80	1.60	2.10	3.70
25	0.34	0.38	0.55	0.55	1.30	1.80	3.40	4.60	7.80
35	0.51	0.65	1.00	1.00	1.90	3.00	5.50	7.50	12.60
45	0.90	0.95	1.50	1.50	2.80	4.40	7.90	11.00	17.70
55	1.17	1.25	2.00	2.10	3.80	6.00	10.50	14.90	23.40
65	1.31	1.65	2.65	2.80	5.00	7.80	13.40	19.20	29.40

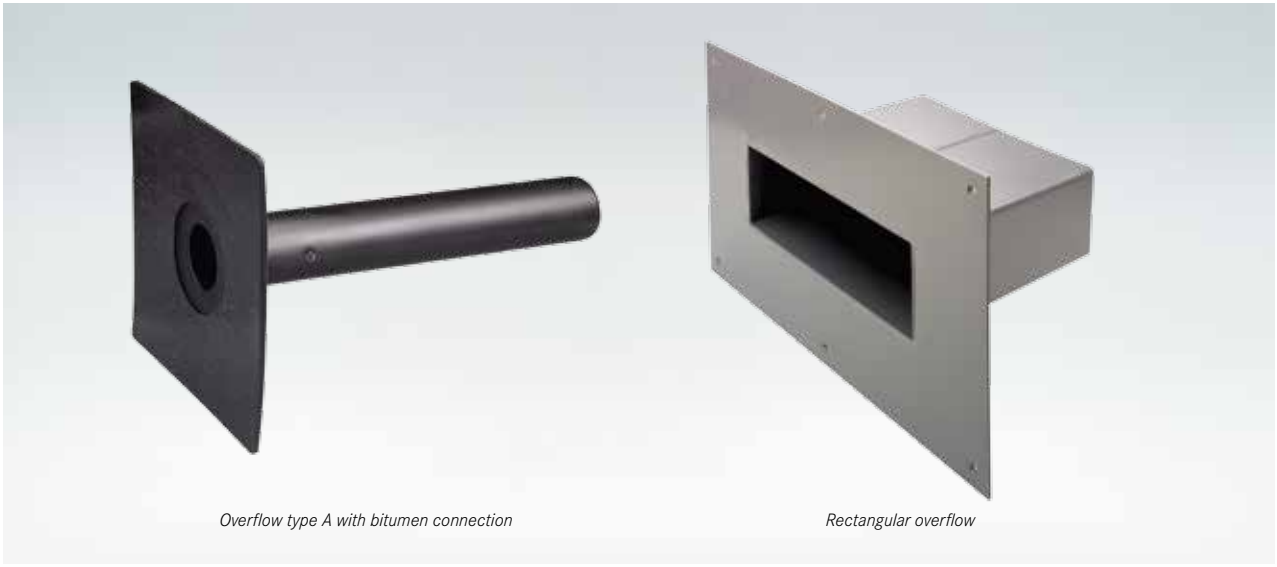
1) Values determined by the German State Testing Authority (LGA).

» **Further technical data, manuals and certificates you can download at www.essmann.de.**

Spouters and Overflows

3.7 Overflows

For outside drainage



Overflow type A with bitumen connection

Rectangular overflow

Emergency overflows have proven effective in practice for the lateral drainage of enclosed roof areas, balconies, etc. The emergency drainage of flat roofs can be carried out in this way, i.e. if extraordinary rainfall is expected.

Advantages/ Features

- Homogeneous roof sheeting connection
- Static safeguarding of the building in the event of heavy rain

Applications

- Emergency drainage
- New construction and renovation

Run-off capacity in l / s [1)]

Damming height in mm	Overflow type A DN 50	Overflow type A DN 70	Overflow type A DN 100	Overflow type A DN 125	Rectangular overflow 180 / 80	Rectangular overflow 300 / 100	Rectangular overflow 500 / 100	Rectangular overflow 750 / 100	Rectangular overflow 1,000 / 100
5	–	–	–	–	0.20	0.30	0.60	0.80	0.90
15	0.18	0.18	0.30	0.30	0.60	0.80	1.60	2.10	3.70
25	0.34	0.38	0.55	0.55	1.30	1.80	3.40	4.60	7.80
35	0.51	0.65	1.00	1.00	1.90	3.00	5.50	7.50	12.60
45	0.90	0.95	1.50	1.50	2.80	4.40	7.90	11.00	17.70
55	1.17	1.25	2.00	2.10	3.80	6.00	10.50	14.90	23.40
65	1.31	1.65	2.65	2.80	5.00	7.80	13.40	19.20	29.40

[1)] Values determined by the German State Testing Authority (LGA).

» **Further technical data, manuals and certificates you can download at www.essmann.de.**

3.8 Green roof drainage systems

For special requirements of landscaped roofs

Greened flat roofs need sufficient moisture. However, to avoid unwanted wet biotopes, green roofs must be equipped with a well thought out drainage system for controlled drainage. The green roof drainage system is ideal for keeping the gullies clear.

Advantages/ Features

- Barrier/filter against coarse dirt
- Prevents erosion of the green roof material
- Compatible with DN 70 pipe supply systems
- Accessible
- Accessible in version 500 series PUR (up to 0.5 t wheel load)

Applications

- Inspection shaft
- Greened roofs
- Pebble covered roofs
- New construction and renovation

» **Further technical data, manuals and certificates you can download at www.essmann.de.**

3.9 Accessories

Damming ring made of rigid PVC

- For direct connection of PVC, VAE, PEC and elastomer bitumen roof sheeting
- For emergency drainage in combination with a gully
- Diameter: 300 mm
- Height: 45 mm

Classic pebble trap

- For gullies of the *classic* series, safety flange and screw flange
- For diameters of 70 – 125 mm and 150 mm

Balcony gully attachment

- With stainless steel sieve plate for balcony gullies
- Suitable for the small pebble trap, including odour trap
- Diameter: 90 mm
- Height: min. 75 mm – max. 100 mm

Universal pebble trap

- For renovation gully 2 and third-party products
- For individual adaptation through on-site shortening of the pipe inside mounting
- For diameters 50 – 155 mm

Terrace gully attachment

- With stainless steel sieve plate for roof and balcony gullies
- Height adjustment ring for continuous setting from 25–125 mm
- Drainage slots in the adjusting ring for drainage of the lower level
- Diameter: DN 125

Balcony gully pebble trap

- For balcony gullies of the *classic* series and screw flange (4 feet)
- DN 50 / 70

Balcony gully pebble trap (small)

- For balcony gully type B DN 50 (3 feet)
- DN 50

» **Further technical data, manuals and certificates you can download at www.essmann.de.**

4. Lamella

ESSMANN lamellas are distinguished by robustness, functionality, reliability and are also easy to install. On a flat roof, they are ideal from an incline of 3° as well as for wall and glass installation. With the ESSMANN all-weather lamellas, the well thought out design of inside weather-protected ventilation flaps provide natural ventilation through the discharge of stale room air even during rain and snow.

Whatever your requirements: Our different versions with single-skinned or double-skinned aluminium lamellas and double-skinned polycarbonate lamellas mean we always have the right solution. Our lamellas are not only suitable for the roof, but also for installation in the facade.

Our product range

- Brakel® Optima lamella
- Brakel® Estra lamella
- Brakel® Eura and Eura-R lamellas

brakel CERTIFIED PARTNER

SYSTEM ADVANTAGES:

- Three lamella variants for optimum adaptation to specified structural conditions
- Can be supplied in any required dimension
- Meets the requirements in accordance with DIN EN 12101-2
- Also approved as a smoke and heat extraction system
- Can be equipped with a bad weather function

» **Find out more:**

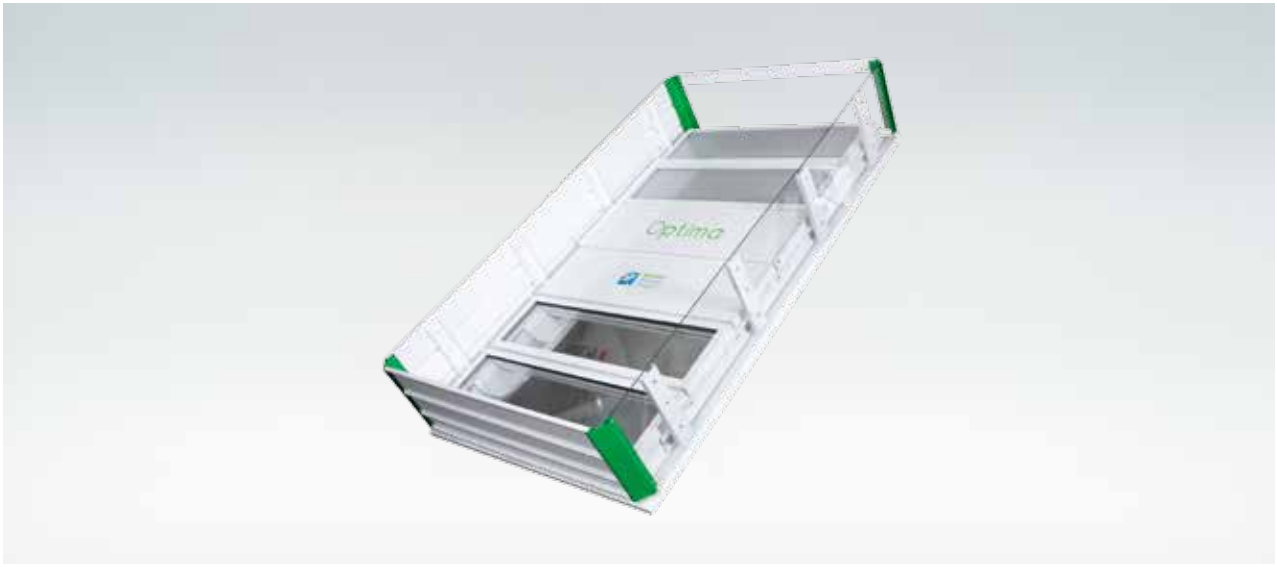
Would you like to find out more about our products and services? Information is available at **www.essmann.de.**

Natural ventilation

4.1 Brakel® Optima lamella

Highly energy efficient lamella for SHE and ventilation

TOP INNOVATION



The Brakel® Optima lamella is the most energy-efficient lamella for smoke and heat extraction and natural ventilation. It makes an optimum contribution to fire protection, convenience and to the energy balance of a building, thus fits perfectly in a sustainably designed building.

Advantages/ Features

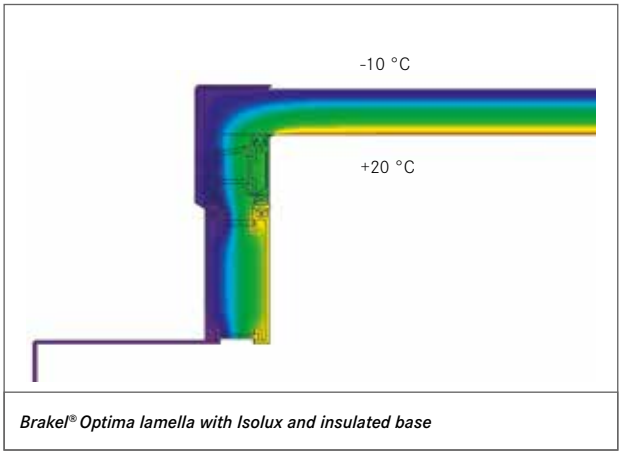
- High energy efficiency through thermal separation of the profile system and the lamellas
- Different variants available for a range of requirements
- Highest air tightness (Class 4 in accordance with EN 12207)
- Water tightness to 1050 Pa (in accordance with EN 12208)
- Tested and approved as NSHE in accordance with DIN EN 12101-2

Applications

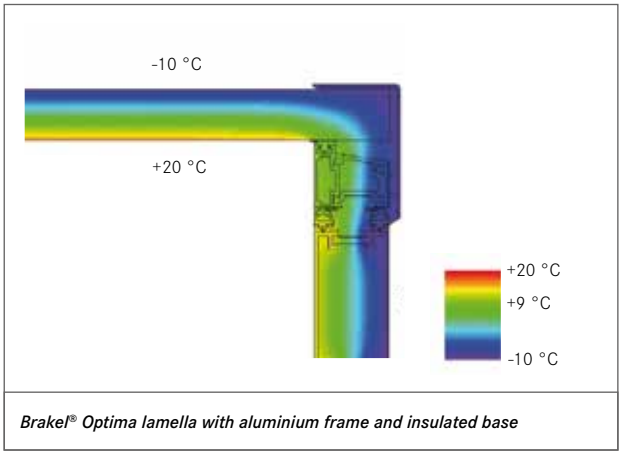
- Public buildings, offices and industrial buildings
- New construction and renovation

Material

- Aluminium plate: ALMg3
- Aluminium profile
- EPDM sealing
- Fastening materials: Stainless steel
- Glazing: Genuine glass/polycarbonate/aluminium



Brakel® Optima lamella with Isolux and insulated base



Brakel® Optima lamella with aluminium frame and insulated base

Glazing options	Isolux (PC glazing)	Double glazing	Aluminium insulated
Ug value [W/m² x K]	1.3	1.1	1.0
Soundproofing quality [dB]	21	31	26
Translucent	Yes	Yes	No
Air permeability	EN 1026: 600 Pa, EN 12207: Class 4		
Water tightness	EN 1027: 1050 Pa, EN 12208: Class E1050		
Resistance to variable wind loads	Class C4, 800 Pa (= P2)		
Deformation	< 1/300 in accordance with EN12210/EN12211		
Fall-through protection	Permanently fall-through safe (1200 J)		

Tested and approved as NSHE with the following services in accordance with DIN EN 12101-2	
Resistance to fire	B 300
Functional reliability	Re 300
Wind load	WL 1,500
Snow load	up to SL 750 (size-dependent)
Triggering at low temperatures	T(–15)

Dimensions		Number of lamellas (lamella height 400 mm)								
Type	Width Sparung dimension??? [mm]		3	4	5	6	7	8	9	10
60	600	Length [mm]	1,100 mm	1,500 mm	1,900 mm	2,300 mm	2,700 mm	3,100 mm	3,500 mm	3,900 mm
120	1,200									
180	1,800									
240	2,400									
250	2,500									

Other dimensions upon request.

» Further technical data, manuals and certificates you can download at www.essmann.de.

Natural ventilation

4.2 Brakel® Estra lamella

Thermally separated lamella for SHE and ventilation

The Brakel® Estra lamella is designed for vertical installation and available in the variants Estra EG with single glazing and Estra TG with double glazing. Frames and lamellas can be realised in flexible height dimensions (160 – 300 mm). The Brakel® Estra can be integrated aesthetically in the building lines designed by the architects.

Advantages/ Features

- Also space-saving when open due to lamellas with central hinges
- Ideal for use in fully integral concepts for smoke and heat extraction and ventilation with fresh air supply over the facade and extracted air and smoke dissipation over the roof
- Can be optionally implemented with a compressed air cylinder or electrical linear drive
- Thanks to the integrated middle bar, large areas can be provided with effective ventilation
- Tested and certified as NSHE in accordance with DIN EN 12101-2

Applications

- Public buildings, offices and industrial buildings
- New construction and renovation

Material

- Edge profile: Aluminium
- Glazing in genuine glass or polycarbonate

Brakel® Estra EG lamella with single glazing

Brakel® Estra TG lamella with double glazing

Brakel® Estra EG lamella

- Single glazing
- Thermally separated edge profile with aluminium panel (8 or 10 mm)
- With and without centre sash bar

Brakel® Estra TG lamella

- Double glazing
- Thermally separated edge and lamella profile with aluminium composite panel (24 mm thick)
- With and without centre sash bar

Dimensions	
Flange width [mm]	400 – 1,500 (without centre sash bar) Up to 3,000 with centre sash bar
Flange height [mm]	700
Lamella height [mm]	100 – 300

Dimensions	
Flange width [mm]	400 – 1,600 (without centre sash bar) Up to 3,000 with centre sash bar
Flange height [mm]	700
Lamella height [mm]	160 – 300

Tested and approved for smoke and heat extraction (SHE) with the following benefits in accordance with DIN EN 12101-2	
Resistance to fire	B 300
Functional reliability	Re 1,000
Wind load	WL 1,500
Snow load	SL 0
Triggering at low temperatures	T(–15)
Cv value	0.57

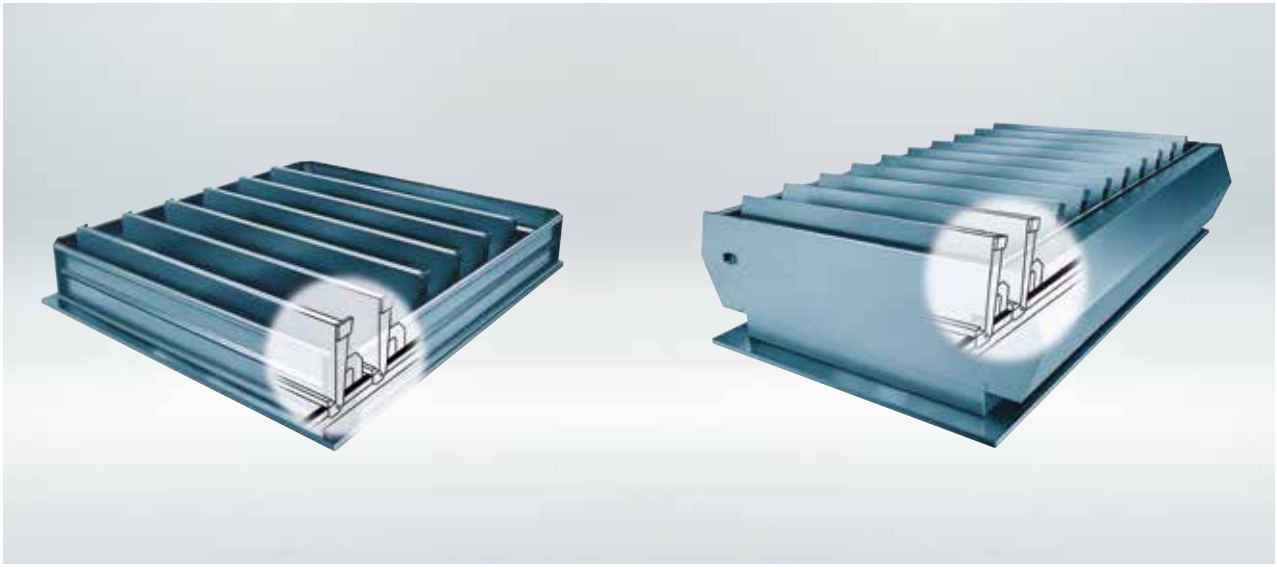
Glazing options	Brakel® Estra EG	Brakel® Estra TG
Ug value [W/m² x K]	3.8 - 5.5	1.2 - 2.5
Soundproofing quality [dB]	–	19
Air permeability	EN 1026: 600 Pa, EN 12207: Class 3	
Water tightness	EN 1027: 1050 Pa, EN 12208: Class E 1050	
Resistance to variable wind loads	–	Class C2, 800 Pa
Deformation	< 1/300 in accordance with EN 12210 / EN 12211	
Fall-through protection	Permanently fall-through safe (1,200 J)	

» Further technical data, manuals and certificates you can download at www.essmann.de.

Natural ventilation

4.3 Brakel® Eura and Eura-R lamellas

Lamella unit for roof and facade



The Brakel® Eura lamella is suited for natural ventilation and for smoke and heat extraction (SHE) and certified in accordance with DIN EN 12101-2. It can extract large amounts of air, smoke and heat within a short period of time and can also be used for supplying air (facade) and for extracting air (facade and roof). The Brakel® Eura-R variant is additionally equipped with lateral lamellas that allow ventilation regardless of the weather

Advantages/ Features

- Multifunctional usability
- Fall-through safe
- High aeration capacities
- Quick opening and closing
- Large selection of operating systems
- Flexible installation/set-up between 0° and 90° (Eura-R ≤ 30°)
- Separate rain-protected lamellas for “bad weather ventilation” (Eura-R)
- Optionally available in a powder-coated or anodised version (anodised length or width max. 1,600 mm)
- With device base that can be supplied in different superstructure heights and insulations
- Available with sound traps and wire nets
- Compatible with Brakel® Aerobase (see 5.4) for rain-proof function

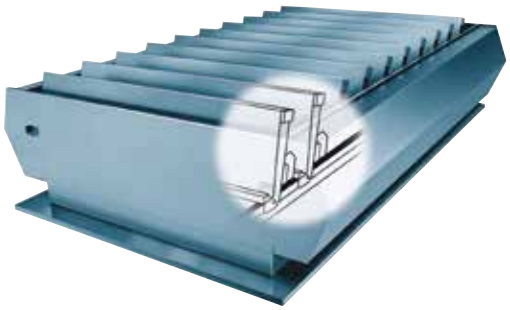
Applications

- Roof and facade (Eura-R to 30° roof slope)
- New construction and renovation

Material

- Aluminium: Hardened, seawater and corrosion-resistant AlMg3
- Anodised or powder-coated on request (available in RAL colours)

Brakel® Eura lamella



Brakel® Eura-R lamella

The type data of the Brakel® Eura is linked with the Sparung dimension. The first number specified the minimum sparung width in centimetres. The second number stands for the number of lamellas, the minimum sparung length. This applies to the Eura and the Eura-R. The standard types are 60, 120, 180, 240. It is possible to deviate from these types with a minimum step size of 1 cm (these are indicated with 061, 062, 063, etc.). Types 30 to 240 can be used in the width.

Type 30-3 is the smallest standard size; however, for space reasons, this is not available with the full selection of operating types. Please always find out in advance if type ≤ 60 is possible.

- Width: 0.30 m to 2.40 m
- Standard widths: 0.60 m, 1.20 m, 1.80 m and 2.40 m
- Length: 0.72 m (3 lamellas) to 3.80 m (17 lamellas) [1)]
- Maximum size: 240 – 17

Dimensions			
Type	Width [mm]	Length [mm]	Number of lamellas
60	600	720	3
120	1,200	940	4
180	1,800	1,160	5
240	2,400	1,380	6
		1,600	7
		1,820	8
		2,040	9
		2,260	10
		2,480	11
		2,700	12
		2,920	13
		3,140	14
		3,360	15
		3,580	16
		3,800	17

The Brakel® Eura and the Eura-R can be combined in any width with all lengths. Special sizes on request.

[1)] Up to 13 lamellas: All functions tested; from 14-17 lamellas: Limited functionality

» **Further technical data, manuals and certificates you can download at www.essmann.de.**


ESSMANN

5. Ventilation flaps

Our ventilation flaps fulfil all requirements of natural aeration and ventilation. The right solution for the flat roof and for use in the facade. This is also the case for the requirements of rain and snow-safe ventilation.

Our product range

- Brakel® Ventria top-hung sash
- Brakel® Fumetica double flap
- Brakel® Duo Therma double flap
- Brakel® Aerobase

brakel CERTIFIED PARTNER

SYSTEM ADVANTAGES:

- Large opening angle for optimum ventilation
- Flap sealing possible made from polycarbonate, aluminium or a combination of aluminium, steel and insulation
- Partly complies with the requirements of precautionary fire protection in accordance with DIN EN 12101-2
- Partial ventilation possible even during rain, fog or snow
- Long service life and reliability thanks to high-grade materials

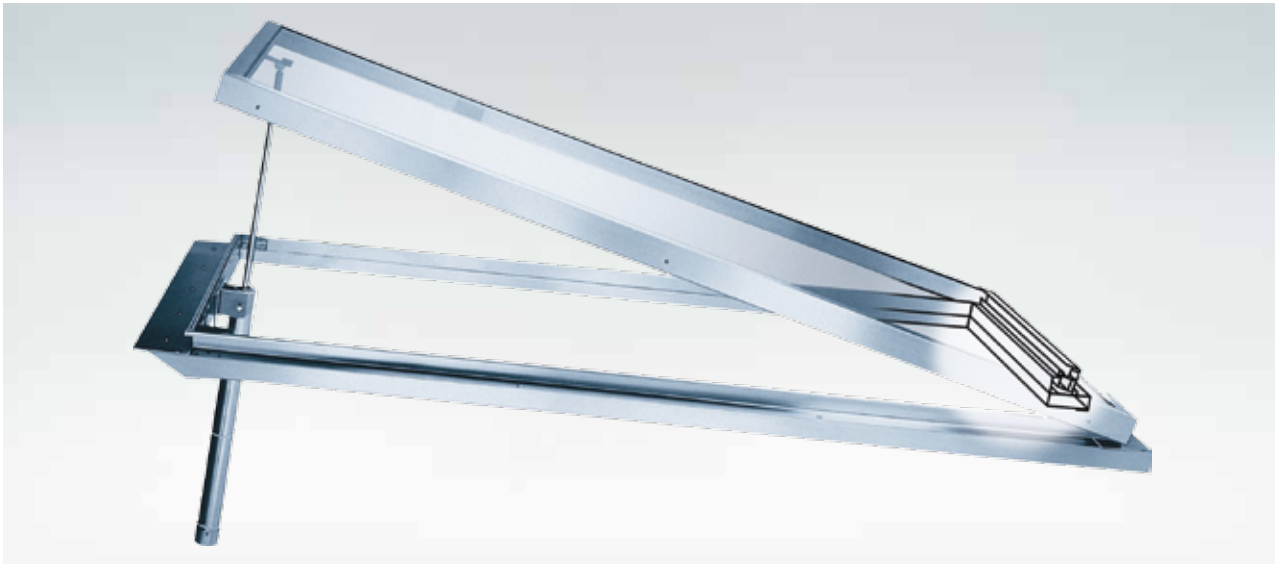
» **Find out more:**

Would you like to find out more about our products and services? Information is available at **www.essmann.de.**

Natural ventilation

5.1 Brakel® Ventria flap vent window

Casement window for many applications



This translucent flap vent window dissipates smoke and stale air in a natural way. Due to its attractive shape, it is often integrated in glass facades and roofs for air inlet and outlet. The Brakel® Ventria is available in a thermally separated, insulated or non-insulated version depending on requirements.

Advantages/ Features

- Three profile versions for very different requirements
- For daily aeration and ventilation
- Suited for natural smoke and heat extraction in accordance with DIN 12101-2

Applications

- Glass roofs
- Facades
- Skylight bases

Material

- Design: Hardened aluminium, seawater and corrosion-resistant AlMg3
- Anodised or powder-coated on request (available in RAL colours)

Dimensions

- Height from 1.00 m to maximum 3.00 m [1)]
- Width from 0.30 m to maximum 3.60 m
- Total area of maximum 6.12 m²
- Opening angle up to 90° on request
- Other dimensions, panel fillings and shapes on request
- Weight depends on measurement and panel filling

[1)] *Depending on the drive*

» **Further technical data, manuals and certificates you can download at www.essmann.de.**

Natural ventilation

5.2 Brakel® Fumetica double flap

High-volume unit for natural ventilation and smoke and heat extraction

The Fumetica is a double flap ventilator for smoke and heat extraction as well as for daily aeration and deaeration.

Advantages/ Features

- For natural aeration and deaeration (pneumatic or electrical)
- Can be used as NSHE in accordance with EN 12101-2
- Can be used for geometric smoke and heat extraction
- Available with insulation/two skinned, heat-insulated
- With polycarbonate glazing for natural lighting or in a fireproof aluminium version
- Optionally available with the following additional components:
  - Fall-through protection
  - Insect protection mesh made of stainless steel
  - Inner bird screen
- Can also be equipped with Brakel® Aerobase (5.4) as an all-weather ventilator

Applications

- Industrial flat roof (0 to 30°)
- Rooflights (arched)
- Buildings with high heat load
- New construction and renovation

Material

- Aluminium
- Stainless steel V2A / V4A
- Cover material made of polycarbonate, aluminium or stainless steel V2A / V4A

Dimensions

- Width of 1 – 2.5 m
- Length of 1 – 3 m

» **Further technical data, manuals and certificates you can download at www.essmann.de.**

Natural ventilation

5.3 Brakel® Duo Therma double flap

High-volume and rain-proof unit for natural ventilation and smoke and heat extraction

TOP INNOVATION

The Duo-Therma is a double flap ventilator for smoke and heat extraction as well as for daily aeration and deaeration.

Advantages/ Features

- For natural aeration and deaeration (pneumatic or electrical)
- Can be used as NSHE in accordance with EN 12101-2
- Can be used for geometric smoke and heat extraction
- Available with insulation/two skinned, heat-insulated and thermally separated
- With polycarbonate glazing for natural lighting, in fireproof aluminium version, in insulating glazing and in a special version with excellent sound-proofing, up to 44 dB
- Optionally available with the following additional components:
  - Fall-through protection
  - Insect protection mesh made of stainless steel
  - Inner bird screen
- Can also be equipped with Brakel® Aerobase (5.4) as an all-weather ventilator

Applications

- Flat roof (0 to 30°)
- Rooflights (arched)
- Buildings with high heat load
- Municipal buildings
- New construction and renovation

Material

- Aluminium
- Stainless steel V2A / V4A
- Cover material made of polycarbonate, aluminium, insulating glazing or stainless steel V2A / V4A

Dimensions

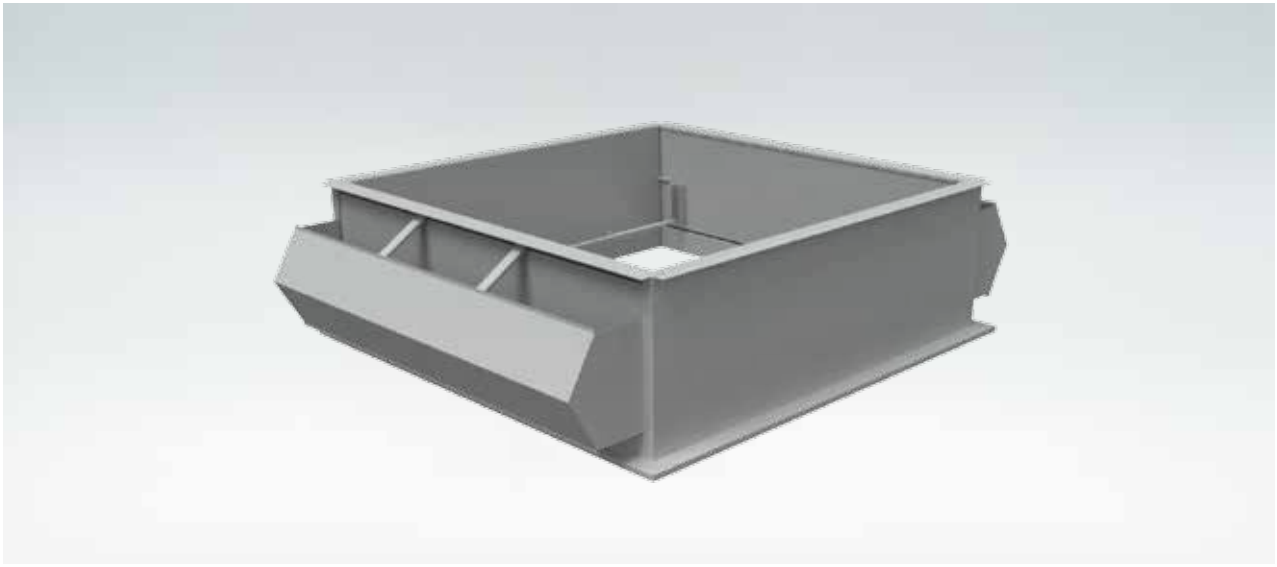
- Width of 1 – 2.5 m
- Length of 1 – 2.5 m

» **Further technical data, manuals and certificates you can download at www.essmann.de.**

Natural ventilation

5.4 Brakel® Aerobase

Substructure for rain-proof ventilation across the flat roof



The Brakel® Aerobase is a ventable skylight base that can be installed under almost any SHE or natural ventilators available in the retail trade so aeration and ventilation can always take place in a natural way. Even during rain or snow.

Advantages/ Features

- Natural aeration and deaeration (pneumatic and electrical)
- Rain-proof ventilation
- Almost all SHE/aeration units can be installed on the Aerobase
- Various high side flaps (245, 345, 550, 625 mm), for any required aeration cross-section

Applications

- Industrial roofs from 0-45°
- New construction and renovation

Material

- Seawater and corrosion-resistant aluminium (AlMg3)

Dimensions

- Width of 0.8 – 3.6 m
- Length of 0.5 – 3.9 m
- From 395 – 925 mm depending on the height of the side flaps

» **Further technical data, manuals and certificates you can download at www.essmann.de.**


MZ3
SDR-480P-24
SDR-480P 24
SDR-480P-24

6. Control systems

ESSMANN provides controls, control systems, and numerous accessories for the set-up of SHE and ventilation systems that meet the safety-relevant needs and individual requirements with regard to energy efficiency and convenience.

The systems can be manually triggered via SHE manual call points, automatically by smoke detectors or thermal detectors or by a fire alarm system, and operated with different pneumatic or electrical control systems.

Vent switches or sensors can be used to aerate and ventilate the buildings either manually or also automatically. Automatic closing of the windows and skylight domes – during rain or excessive wind speeds, for example – safely protects the building from damage due to the effects of weather. In addition, open interfaces form the basis for integration in the higher-level building management system.

Our product range

- 24 V control systems for SHE and ventilation
- Control systems for SHE and ventilation 48 V
- 24 V and 230 V control systems for ventilation
- Power supplies and mains power supply unit

SYSTEM ADVANTAGES:

- Can be integrated in the building automation via interfaces
- SHE control systems provide protection for personnel and property as well as keeping the rescue routes free from smoke on a project-specific basis
- Wide range of accessory components SHE and ventilation controls
- Individual configuration possible via intuitively operated PC user interface
- Decentralised system configuration is enabled through networking with BUS technology

» **Find out more:**

Would you like to find out more about our products and services?
Information is available at **www.essmann.de.**


Funktionselemente

6. Control systems

Smoke heat extraction (SHE)

6.1 SHE and ventilation 24 V

SHE systems from ESSMANN reliably keep the emergency routes free of smoke, enable quick and safe evacuation in the event of a fire, thus supporting the fire department in putting out the fire. At the same time, they can also be used for the protection of production and manufacturing systems as well as stored goods.

In addition to conventional SHE systems, we provide higher-level smoke and heat extraction systems based on LON-BUS or with KNX technology which enables rapid integration in the building system technology as well as in the control systems of production and manufacturing systems.

Our product range

- Staircase control panels 2A (TRZ)
- Compact control panels 4A and 8A
- Modular control panels MZ3

» **Find out more:**

Would you like to find out more about our products and services?
Information is available at **www.essmann.de.**

6.1.1 Staircase control panels 2A (TRZ)

Control panel for different requirements to SHE and ventilation

24 V DC control panel for electrical or pneumatic (type TRZ plus DG) smoke extraction and daily ventilation. Preferably for use in staircases.

Advantages/ Features

- Max. 2 A current output
- Including the “daily ventilation” function

- One SHE group (RG) and one ventilation group (LG) (except TRZ Plus DG)
- Various versions
- PC service port interface for expanded configuration options (except for TRZ VdS)
- Installed service timer (except for TRZ VdS)
- 230 V AC/24 V DC power supply installed, emergency power battery and charger for 72-hour operational readiness in the event of mains failure

- Expandable by optional additional modules (except TRZ VdS and TRZ Plus comfort 2A)
- Additional connection options for control panel accessories (see 6.4)
- Optionally available as a flush-mounted version
- TÜV type tested (except TRZ VdS)
- Tested in accordance with EN 12101-10 (except TRZ VdS)
- Type TRZ VdS: VdS tested and approved

Applications

- Ventilation and smoke and heat extraction of staircases

Material

- Plastic housing for surface mounting, compact control panel 2A/M: Sheet steel
- Colour: TRZ Plus: Blue, yellow, grey, orange, red TRZ VdS: Orange. Compact control panel 2A: Grey. Compact control panel 2A/M: Traffic white RAL 9016

For an SHE group (RG), a ventilation group (LG).
All listed variants have the TRZ Plus functions with the additional functions listed here.

TRZ Plus comfort 2A	TRZ Plus DG	TRZ VdS (housing only available in orange)	Compact control panel 2A
Connection for wind/rain detectors	For triggering pressurised gas generators	Connection for wind/rain detectors	Larger housing with more space for connections
Transmission of the “SHE triggered” and “Fault” messages via potential-free contacts		VdS tested and approved	Available as plastic or metal housing
Integrated ventilation push button		Integrated ventilation push button	Can be retrofitted: Transmission of the “SHE triggered” and “Fault” messages via potential-free contacts and wind/rain detector
Integrated SHE manual call point		Integrated SHE manual call point	

Technical data	
Electrical properties	
Primary energy supply	
Mains supply voltage	230 V AC/50 Hz, (±10 %), separately fused
System voltage	27 V DC (rated) (-25 %/+10 %)
Power consumption	Max. 75 W with 2 A current output
Power consumption (standby)	< 5 W
Connection terminal	Screw terminal, max. 2.5 mm²
Fuse	F1 mains: PCB fuse 1.25 A / T TE5 250 V, motor circuit FKS 10 A
Secondary energy supply	
Battery	2 x 12 V, 1.2 Ah, VdS
Current output after 72 h in emergency power supply	2 A for 180 sec. in accordance with DIN EN 12101-10
Output	
Voltage	27 V DC (rated), (-30 %/+10 %) smoothed
Performance	Pmax = 54 W; Pmin = 0 W
Current (rated)	Drives: 2 A for ED 30; magnetic clamp: 0.7 A for ED 100
Opening/closing procedure	Polarity reversal of the voltage
Timing in accordance with prEN 12 101-9	Adjustable
Autom. release	OPEN/CLOSE direction: After 3 min (in ventilation operation)
Line monitoring	Via diodes
Connection terminal	Max. 1.5 mm², spring loaded terminal
Fuse	FKS 5 A
Mechanical properties	
Dimensions (H x W x D)	220 x 146 x 84 mm Compact control panel 2A: 300 x 300 x 132 mm Compact control panel 2A/M: 300 x 300 x 111 mm
Weight	TRZ Plus 2A and TRZ Plus Comfort: Approx. 8 kg with battery, approx. 3 kg without battery Compact control panel 2A, 2A/M: Approx. 15 kg with battery, approx. 10 kg without battery
Installation and ambient conditions	
Nominal temperature	20 °C
Ambient temperature	-5 °C to +40 °C
Protection category:	TRZ Plus: IP 20 Compact control panel 2A: IP 44 Compact control panel 2A/M: IP 20

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

SHE Compact control panels

6.1.2 Compact control panels 4A and 8A

Powerful control panels for SHE and ventilation

Compact control panel 4A/M

Compact control panel 8A/M

24 V DC control panel for electromotive smoke extraction and daily ventilation.

Advantages/ Features

- According to the 4 A or 8 A current output version
- Including the “daily ventilation” function
- One SHE group (RG) and two ventilation groups (LG)
- PC service port interface for expanded configuration options
- Installed service timer
- 24 V DC power supply installed, emergency power battery and charger, parallel operation, 72-hour operational readiness in the event of mains failure
- Line monitoring of the detector circuits (automatic detector and SHE manual call points) and the connected drives
- Up to 8 control panels can be cascaded
- Adjustable special functions
- TÜV type tested
- Tested in accordance with EN 12101-10

Applications

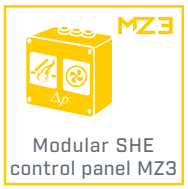
- Building with requirements for smoke and heat extraction and/or natural aeration and deaeration

Material

- Housing: Either plastic or metal
- Colour: Grey

Technical data	
Electrical properties	
Primary energy supply	
Mains supply voltage	230 V AC/50 Hz, (±10 %), separately fused
System voltage	27 V DC (rated) (-25 %/+10 %)
Power consumption	Approx. 150 W for 4 A current output Approx. 300 W for 8 A current output
Power consumption (standby)	< 5 W
Connection terminal	Screw terminal, max. 2.5 mm²
Fuse	Mains: 230 V AC; T 3.15 A/H Motor circuit FKS 10 A
Secondary energy supply	
Battery	Type 4A: 2.2 Ah/type 8A: 7.2 Ah
Current output after 72 h in emergency power supply	Type 4A: 4 A for 180 sec. Type 8A: 8 A for 180 sec. (in accordance with DIN EN 12101-10)
Output	
Voltage	27 V DC (rated), (-25 %/+10 %) smoothed
Performance	Type 4A: Pmax = 108 W, Pmin = 0 W; type 8A: Pmax = 216 W, Pmin = 0 W
Current (rated)	Drives: Type 4A: 4 A for ED 30; type 8A: 8 A for ED 30; output separately fused, Magnetic clamp: Type 4A: 1 A for ED 100; type 8A: 2 A for ED 100
Opening/closing procedure	Polarity reversal of the voltage
Autom. release	OPEN/CLOSE direction: after 3 min (in ventilation operation)
Line monitoring	Via diodes
Motor connection terminal	Max. 6 mm², screw terminal
Fuse	FKS 10 A
Mechanical properties	
Dimensions (H x W x D)	Compact control panel 4A: 300 x 300 x 132 mm, compact control panel 4A/M: 300 x 300 x 111 mm Compact control panel 8A: 300 x 300 x 187 mm, compact control panel 8A/M: 400 x 300 x 180 mm
Weight	Type 4A and type 4A/M: Approx. 6 kg with battery, approx. 4 kg without battery Type 8A: Approx. 6.5 kg with battery, approx. 4.5 kg without battery; type 8A/M: Approx. 14.9 kg with battery, approx. 12.9 kg without battery
Installation and ambient conditions	
Nominal temperature	20 °C
Ambient temperature	-5 °C to +40 °C
Protection category	Plastic housing 4A and 8A: IP 44 in accordance with DIN EN 60529 Metal housing 4A/M: IP 20 in accordance with DIN EN 60529, IP 30 in the installed state Metal housing 8A/M: IP 42 in accordance with DIN EN 60529

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.



6.1.3 Modular control panel MZ3

Expandable on a modular basis and most compact control panel for SHE and ventilation on the market

The MZ3 is a functional, modular and configurable inspection and control system for SHE systems, which can also be used for natural aeration and dearation or incorporated in the building management system. During the planning and configuration of an MZ3 with the ESSplan^{MZ} planning and configuration tool, the individually required functions can easily be configured per Drag & Drop on the PC user interface.

Advantages/ Features

- New functional approach of the system configuration
- Very flexible, project-specific solutions with different configurable functions possible
- Networkable control system for decentralised system configuration via a BUS system
- Integrated functions such as wind direction and wind strength dependent smoke and heat extraction, opening distance limiting at any positions, maintenance and monitoring function, configurable status messages for every area, temperature-controlled ventilation control, night-time cooling function, different shading functions as well as processing of analogue values
- Networking with building management system via BUS systems such as LON, KNX, etc.
- Minimum cabling effort
- Configuration with user-friendly ESSplan^{MZ} planning and configuration tool
- Easy handling of the configuration per Drag & Drop
- The configuration program determines all components and calculates the most cost and space-efficient version
- Energy supply tested in accordance with EN 12101-10

Applications

- NSE (natural smoke and heat extraction)
- MRA (mechanical smoke and heat extraction)
- Natural aeration and deaeration
- Ventilation control
- Wind direction and wind strength dependent smoke and heat extraction as well as aeration and deaeration

Material

- Housing: Sheet steel housing

Technical data	
Electrical properties	
Primary energy supply	
Mains supply voltage	230 V AC/50 Hz (±15 %), for output currents ≤ 64 A 400 V AC/50 Hz (±15 %), for output currents ≥ 64 A
System voltage	27 V DC (rated) (-25 %/+10 %)
Output current	From 16 A to 192 A
Input current	Of 2.5 A to 3 x 10 A
Power consumption	From 540 W to 6480 W
Fuse	Mains: 230 V AC; T 3.15 A/H Motor circuit FKS 10 A
Secondary energy supply	
Battery	2 x (12 V, 12 Ah) (output current 16 A) or 2 x (12 V, 18 Ah) (output current 32 A), VdS permitted
Fuse	FKS 40 A
Mechanical properties	
Dimensions (H x W x D)	See switching cabinet dimensions
Installation and ambient conditions	
Ambient temperature	-5 °C to +40 °C
Protection category	IP 42

Switch cabinet dimensions			
Output current	Height [mm]	Width [mm]	Depth [mm]
16 A	600	400	210
32 A	800	600	210
48 A/64 A	800	600	210
80 A/96 A	800	800	210
112 A/128 A/144 A	1000	1200	300
160 A/176 A/192 A	Upon request		

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

6. Control systems


Smoke heat extraction (SHE)

6.2 SHE and ventilation 48 V

Our motor control panel EMZ 48 Volt is available as the control panel and binding link between the different control options. This can be used for controlling the NSHE 48 V device.

If required, several of the central controls – including remotely installed – can also be linked via a security BUS to form an overall system. This makes it possible to design also large area smoke and heat extraction systems at a significantly lower cost with regard to the necessary electrical cabling than in standard systems.

Our product range

- Motor control panel (EMZ) 48 V

» Find out more:

Would you like to find out more about our products and services? Information is available at **www.essmann.de.**


Smoke heat extraction (SHE)

6.2.1 Motor control panel (EMZ) 48 V

High performance SHE control panel for supplying 48 V drives in NSHE devices and ventilation units

Smoke extraction system for opening electromotively operated smoke extraction flaps such as skylight domes, roof flaps or windows in the event of a fire.

Advantages/ Features

- Low supply currents and small cable cross-section due to 48 V technology
- Including the “Daily ventilation” function
- One SHE group (RG) and one ventilation group (LG)
- Reset function for closing windows and skylight domes
- Separate circuit monitoring of the connected drives
- 48 V DC power supply installed, emergency power battery and charging unit, 72 hours standby upon mains failure
- Circuit monitoring of detector circuits (autom. detectors and SHE manual call points)
- Optical signalling of triggering and/or malfunction
- Processor-controlled
- Numerous connection options
- Up to 16 EMZ48V motor control centres can be networked together in an SHE and up to 3 ventilation groups via a bus system

Applications

- SHE and ventilation
- Control centre networking if required

Material

- Plastic housing for surface mounting, grey

Technical data	
Electrical properties	
Primary energy supply	
Mains supply voltage	230 V AC/50 Hz, (±10 %), separately fused
System voltage	48 V, (±5 %) smoothed
Power consumption	Approx. 320 W at 6 A current output
Connection terminal	Spring-loaded terminal max. 2.5 mm²
Secondary energy supply	
Battery	4 x 12 V, 7.2 Ah
Current output after 72 h in emergency power supply	6 A for 180 sec. in accordance with DIN EN 12101-10
Output	
Voltage	48 V, (±5 %) smoothed
Current (rated)	Drives: 6 A for ED 30
Opening/closing procedure	Polarity reversal of the voltage
Timing in accordance with prEN 12 101-9	Yes, every 2 min. change in direction (during the first 30 min. after SHE activation)
Autom. release	OPEN/CLOSED direction: After 3 min (in ventilation operation)
Line monitoring	Via diodes
Mechanical properties	
Dimensions (H x W x D)	300 x 400 x 187 mm
Weight	Approx. 2.7 kg
Installation and ambient conditions	
Nominal temperature	20 °C
Ambient temperature	-5 °C to +40 °C
Protection category	IP 30

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

6. Control systems


Ventilation systems

6.3 24 V and 230 V ventilation

With connected vent switches and sensors, our power supplies and ventilation and wind and rain detection systems enable manual and/or automatic aeration and deaeration via electromotively actuated windows and skylight domes in all building types. Integrated in an intelligent control system, they provide many advantages to property developers, architects, users and the environment.

Our product range

- 24 V ventilation control panel (iVent 8A)
- Wind and rain detection systems (WRZ)

» Find out more:

Would you like to find out more about our products and services?
Information is available at **www.essmann.de.**

Ventilation

6.3.1 24 V ventilation control panel (iVent 8A)

Versatile control panel for natural aeration and deaeration

Ventilation control panel for controlling 24 V DC drives with a current consumption of up to 8 A.
It is possible to connect vent switches, wind/rain detectors and sensors for the ventilation control system.

Advantages/ Features

- Standard functions installed for ventilation control
- Visual display for errors and operating messages
- Cascading of several iVent 8A with operation via one or several vent switches possible
- Functions for interaction with a shading [1)]
- Internal functional monitoring with error signalling
- Incl. service port interface for configuring advanced functions via the PC service port software, such as:
  - Time-dependent stroke limitation [1)]
  - Automatic ventilation via temperature [1)]
  - Automatic closing after a set time [1)]
  - Manual ventilation in pulse or push button (dead man) operation [1)]
  - Changing the properties for the status displays [1)]
  - Adjustable pause time when reversing the drive voltage [1)]
- Higher-level closing function when it rains

Applications

- Ventilation

Material

- Plastic housing for surface mounting, grey

[1)] Functional range only possible via a Notebook/PC with PC service port software installed and connection cable.

Technical data	
Electrical properties	
Primary energy supply	
Mains supply voltage	230 V AC, (±10 %), separately fused
Power consumption	Approx. 260 W
Power consumption (standby)	Approx. 7 W
Connection terminal	Spring terminal, max. 2.5 mm²
Output	
Voltage	27.5 V (rated)
Permissible ripple of the rated voltage	0.3 Vss
Current (rated)	8 A for DC 30
Current (brief application)	10 A for 5 s
Opening/closing procedure	Polarity reversal of the voltage
Fuse	FKS 10 A 32 V
Mechanical properties	
Dimensions (H x W x D)	250 x 175 x 75 mm
Weight	Approx. 1.6 kg
Installation and ambient conditions	
Nominal temperature	20 °C
Ambient temperature	0 °C to +50 °C
Protection category	IP 54

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Ventilation

6.3.2 Wind and rain detection system (WRZ)

For controlling 230 V AC ventilation drives and wind/rain detectors

WRZ 10M/1G

WRZ 40M/4G

Ventilation control panel for controlling max. 40 x 230 V AC ventilation drives (e.g. type M3) with an overall power consumption of 8 A, distributed across 4 motor groups. There are possible connections for vent switches as well as wind/rain detectors. The wind and rain detection system is available in the versions 10M/1G* and 40M/4G* which can be used to connect either up to 10 drives in a group or a maximum of 40 drives in up to 4 groups.

Advantages/ Features

- Connection for up to two wind/rain detectors WRM/2 24V or for up to two rain detectors RM/2 24V
- Automatic closing of windows, flaps and skylight domes in combination with 230 V AC drives based on a wind/rain signal
- 4 potential-free relay contacts for the proliferation and transmission of a wind/rain signal
- Time-dependent transmission of the wind/rain signal, configurable on DIP switch
- Time-dependent supply of the “CLOSED” drive output (ventilation enable despite wind/rain signal), configurable on DIP switch
- Several WRZ 10M–1G can be cascaded for signal proliferation; with the WRZ40M-4G, a maximum of 4 pieces can be cascaded
- Status messages via visual display
- Display of the triggering of the respective detector, separated according to wind and rain

Applications

- 230 V AC ventilation drives and wind/rain detectors

Material

- Plastic housing for surface mounting, grey

**M = Motor, G = Group*

Technical data	
Electrical properties	
Primary energy supply	
Mains supply voltage	230 V AC, (±10 %), separately fused
Power consumption	Max. 465 W (per ventilation group)
Power consumption (standby)	Depending on the connected components
Connection terminal	Spring loaded terminal max. 2.5 mm²
Mechanical properties	
Dimensions (H x W x D)	10M/1G: 125 x 125 x 60 mm 40M/4G: 160 x 250 x 90 mm
Weight	10M/1G: Approx. 0.34 kg 40M/4G: Approx. 1 kg
Installation and ambient conditions	
Nominal temperature	20 °C
Ambient temperature	10M/1G: 0°C to +50°C 40M/4G: -5°C to +40°C
Protection category	10M/1G: IP 66 40M/4G: IP 54

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.


30
°C
5

6. Control systems

6.4 Accessories

We provide a wide range of accessory components for our future-proof SHE and ventilation control systems. The safety components such as SHE manual call points and automatic detectors conform with the specifications of the relevant standards and regulations.

The indoor climate is controlled by sensors in accordance with individual requirements where the safe closing of all electromotively actuated windows and skylights depending on the weather is ensured by wind and rain detectors.

Our product range

- Power pack NT 2A and mains power supplies VNT 2.5A and VNT 8A
- Service port software
- SHE manual call point RBH/3A
- Optical smoke detector MSD 523
- Vent switches
- Sensors
- Emergency power batteries NB

» **Find out more:**

Would you like to find out more about our products and services?
Information is available at **www.essmann.de.**

24 V power packs and control panels

6.4.1 Power pack NT 2A and mains power supplies VNT 2.5A and VNT 8A

For operating 24 V drives at 230 V AC mains voltage

NT 2A *VNT 2.5A* *VNT 8A*

Power packs and mains power supplies are available in different performance classes. With an input mains voltage of 230 V AC, they supply polarised 24 V DC voltage (+24 V or –24 V) for the operation of linear and chain drives.

Advantages/ Features

- Control per OPEN/CLOSED push button operation via external 230 V AC vent switch
- Cascading of several power supplies with operation via one or several vent switches
- Fuse of the 230 V AC primary voltage
- Status and error display on multi-colour LED (for type 2.5 A and 8 A)

Applications

- Connection of 24 V drives to 230 V supply

Material

- Plastic housing for surface mounting, grey

Technical data	Power pack 2A	Mains power supply 2.5 A	Mains power supply 8 A
Operating voltage	230 V AC/50 Hz	95-265 V AC, 50/60 Hz	230 V AC (rated) (±10 %)
Output voltage	21.6 – 26.4 V DC	24 V DC (rated) (±10 %)	27.5 V (rated)
Output current	2 A max.	2.5 A max.	8 A max.
Ripple	< 1 %	< 5 %	< 2 %
Duty cycle	DC 30	DC 30	DC 30
Ambient temperature	-5 °C to +40 °C	-5 °C to +40 °C	0 °C to 50 °C
Protection category	IP 40	IP 54	IP 54
Dimensions (H x W x D)	139 x 139 x 70 mm	94 x 130 x 81 mm	175 x 250 x 75 mm

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Accessories control panels

6.4.2 Service port software

For the parametrisation of units via the service port interface

The service port software enables the simple parametrisation and configuration of the functions of products with a service port interface. The service port connection cable connects the unit and PC. The software incl. connection cable is required for resetting a maintenance message. Further settable functions depend on the functions of the supported units.

Advantages/ Features

- Parametrisation and configuration of a wide range of different units with the same software tool

Applications

- Staircase control panel TRZ, type TRZ Plus 2A, TRZ Plus Comfort, TRZ Plus 2A/UP, TRZ Plus DG
- Compact control panels 4A and 8A
- Wind/rain detection system WRZ 40M-4G
- Ventilation control panel iVent 8A

System requirements

- Microsoft Windows XP SP2 or higher
- PC with MS.Net Framework 2.01)2) and MS Installer 33) runtime environment installed
- At least 50 MB free memory on the hard drive
- CPU with at least 700 MHz clocking frequency and 265 K cache memory
- A free 1.1 USB port or higher
- Installed PDF Reader

A manufacturer-specific certificate of competence is a requirement to ensure qualified handling of the service port software.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Accessories control panels

6.4.3 SHE manual call point RBH/3A

Manual call point for the manual triggering of an SHE message

For use in SHE control panels from ESSMANN and STG-BEIKIRCH.

Advantages/ Features

- ABS housing in flatpack design in accordance with DIN 14655 for indoor mounting
- As RBH/3A(/SU)/ALU, also available in the aluminium housing
- With concealed “SHE-CLOSED” closing push button
- Incl. key and “Inoperative” service plate
- RBH/3A/SU and RBH/3A/SU/ALU can also be supplied with a buzzer
- With functional “SHE OPEN” and “SHE CLOSE” push buttons
- With “SHE OPEN”, “Operation”, “Malfunction” LED display
- Certified based on prEN 12101-9:2004

Technical data

- Operating voltage: 24 V DC (+15 % / +25 %)
- Required supply line: 4 x 2 x 0.8 mm²
- Dimensions (H x W x D): 125 x 125 x 36 mm
- Ambient temperature: –5 °C to +40 °C
- Protection category: IP 40 in accordance with DIN EN 60 529

Material

- Housing: ABS plastic or aluminium
- Colour: Blue, yellow, grey, orange, red

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Accessories control panels

6.4.4 Photo-optical smoke detector MSD 523

VdS-approved photo-optical smoke detector

For use in SHE and PDS systems from ESSMANN and STG-BEIKIRCH.
Available as MSD 523/MS including base.

Technical data

Operating voltage:	18 V DC to 30 V DC
Alarm criterion:	Current rise, two-wire technique
Monitoring area:	Max. 120 m²
Mounting height:	Max. 16 m
Permitted air speed:	Max. 20 m/s
Power consumption:	At rest, max. 120 µA For alarm min. 19 mA, max. 22.5 mA
Ambient temperature:	-25 °C to +60 °C
VdS approval:	G 207123

Note

- The maximum monitoring area and mounting height of the space to be monitored depends on the roof slope and the horizontal distance between the detectors in accordance with EN DIN 54-7 for smoke detectors.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Accessories control panels

6.4.5 Vent switches

For 24 V and 230 V systems

Vent switch LTA 11

Key-operated vent switch LTA 12

Vent switch LTA 11

For manual ventilation via OPEN/STOP/CLOSE rocker switches. Available as a surface-mounted (AP) and flush-mounted (UP) version.

- Required supply line: 2 x 2 x 0.8 mm²
- Operating voltage: 24 V DC or 230 V AC
- Dimensions: AP: 84 x 84 x 53 mm
  UP: 81 x 81 x 16 mm
- Colour: Grey (AP), pure white (UP)

Key-operated vent switch LTA 12

For OPEN and CLOSE the manual ventilation using a key. For use of a profile half-cylinder in accordance with DIN 18 252 (please order profile half-cylinder SZ10 separately). Available as a surface-mounted (AP) and flush-mounted (UP) version.

- Required supply line: 2 x 2 x 0.8 mm² (for 24 V)
  4 x 1.5 mm² incl. PE (for 230 V)
- Contacts: 2 x changeover with middle position
- Operating voltage: 24 V DC or 230 V AC
- Dimensions: 81 x 81 mm
- Colour: Pure white

Key-operated vent switch LTA 13/AP

Manual/automatic selector switch WHA-14

Key-operated vent switch LTA 13/AP

For OPEN and CLOSE the manual ventilation using a key. For use of a profile half-cylinder in accordance with DIN 18 252 (please order profile half-cylinder SZ10 separately). For surface mounting.

- Required supply line: 2 x 2 x 0.8 mm² (for 24 V)
  4 x 1.5 mm² incl. PE (at 230 V)
- Contacts: 2 x changeover with middle position
- Operating voltage: 24 V DC or 230 V AC
- Dimensions: 90 x 70 x 65 mm (H x W x D)
- Colour: Grey

Selector switch manual/automatic WHA-14

For switching between automatic temperature control and manual operation. Available as a surface-mounted (AP) and flush-mounted (UP) version.

- Required supply line: 2 x 2 x 0.8 mm² (for 24 V)
  4 x 1.5 mm² incl. PE (for 230 V)
- Operating voltage: 24 V DC or 230 V AC
- Dimensions: 81 x 81 mm
- Colour: Pure white

Vent switch LTA 25

Vent switch LTA 25

For manual ventilation via the OPEN/STOP/CLOSE push buttons with “OPEN” LED display installed. Available as a surface-mounted (AP) and flush-mounted (UP) version.

- Required supply line: 2 x 2 x 0.8 mm²
- Operating voltage: 24 V DC
- Dimensions: AP: 81 x 81 x 51 mm
  UP: 81 x 81 x 7 mm
- Colour: Grey (AP), pure white (UP)

Vent switch LT 25

Vent switch LT 25

For manual ventilation via the OPEN and CLOSE rocker switches with interlock for use in 230 V control systems. Available as a surface-mounted (AP) and flush-mounted (UP) version.

- Required supply line: 4 x 1.5 mm²
- Operating voltage: 230 V AC
- Dimensions: AP: 70 x 80 x 55 mm
  UP: 81 x 81 x 16 mm
- Colour: Grey (AP), pure white (UP)

Profile half cylinder SZ10

Profile half cylinder SZ10

For the LTA 12 and LTA 13/AP vent switches.

- Profile half cylinder in accordance with DIN 18 252
- With three keys, simultaneous locking

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

6.4.6 Sensors

Accessories for ventilation and wind/rain detection systems

Wind and rain detector WRM/2 24 V

Rain detector RM/2 24V

Wind and rain detector WRM/2 24V

For connection to 24 V DC SHE and ventilation control panels and 230 V AC wind/rain detection systems. With evaluation electronics installed for wind and rain detection. Outside temperature-dependent, heated sensor surface. The wind pulses can be transmitted via a separate output.

- Supply voltage: 20–30 V DC or 20–28 V AC
- Power consumption: Max. 110 mA, standby approx. 33 mA
- Potential-free changeover contact output: Max. 30 V / 1 A
- Connections: Max. 2.5 mm²
- Ambient temperature range: -20 °C to +60 °C
- Delivery incl. mounting bracket

Rain detector RM/2 24V

For connection to 24 V DC SHE and ventilation control panels and 230 V AC wind/rain detection systems. With evaluation electronics installed for rain detection. Outdoor temperature-dependent, heated sensor surface. The wind pulses can be transmitted via a separate output.

- Supply voltage: 20–30 V DC or 20–28 V DC
- Current consumption: Max. 110 mA standby approx. 33 mA
- Potential-free changeover contact output: Max. 30 V/1 A
- Connections: Max. 2.5 mm²
- Delivery incl. mounting bracket

Temperature sensor TS-1030

Temperature sensor TS-1030

For automatic ventilation control via the room temperature for use in dry environments. With set point adjuster +5 °C to +30 °C. For surface mounting.

- Switch contact: 1 changeover
- Dimensions (H x W x D): 70 x 70 x 26 mm
- Connections: 2 x 2 x 0.8 mm² (at 24 V DC) 4 x 1.5 mm² incl. PE (at 230 V AC)

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

Accessories control panels

6.4.7 Emergency power batteries NB

For SHE control panels type TRZ, compact control panel 4A/8A as well as for modular control panel MZ3

For TRZ (types TRZ Basic, TRZ Plus) and compact control panels as well as for the modular control panel MZ3.

Advantages/ Features

- Two 12 V accumulators form a 24 V DC emergency generating unit for the SHE motor control panels
- Emergency power batteries for larger control panels or special systems after type clarification

Versions

- 24 V/0.8 Ah NB-8E
- 24 V/1.2 Ah NB-901
- 24 V/2.2 Ah NB-902
- 24 V/3.4 Ah NB-903
- 24 V/7.2 Ah NB-907
- 24 V/12 Ah NB-910
- 24 V/18 Ah NB-915
- 24 V/26 Ah NB-926
- 24 V/40 Ah NB-940

Note

- All accumulators supplied with the respective SHE control panels as standard require regular inspection. They must be replaced after a prescribed operating time of 4 years as part of the maintenance.

» An overview of all possible product combinations can be found on page 4.
» Further technical data, manuals and certificates you can download at www.essmann.de.

7. Refurbishment and renovation

Energy-efficient renovation creates genuine added value.

High requirements with regard to energy efficiency, functionality and safety* are placed on building renovation and on new construction. Measures on the building envelope also contribute to increasing the energy-related overall performance of the building, e.g. the renovation of what exists or retrofitting with the latest skylight domes and rooflights. They have lower heat loss with excellent lighting conditions. This decreases the need for artificial light sources and the energy costs drop.

With the renovation or retrofitting of energy-related optimised skylight domes and rooflights on the flat roof, hall owners and operators not only reduce their operating costs but also increase the sense of well-being as well as the motivation, productivity and safety of the people who work in the hall.

Our solution: The replacement of existing daylight elements by energy-efficient products from our modular system that can be combined as required with products and systems for the aeration and ventilation of the building as well as with matching units and control systems for smoke and heat extraction and with solutions to provide protection against falling and falling through. These efficient solutions let you create optimum working conditions, provide maximum safety and save energy on a sustainable basis.

*Detailed information and products on the subject of “Safety on the flat roof” can be found in our ESSservice manual or at www.essmann.de.

ESSservice manual
for flat roof, window and facade

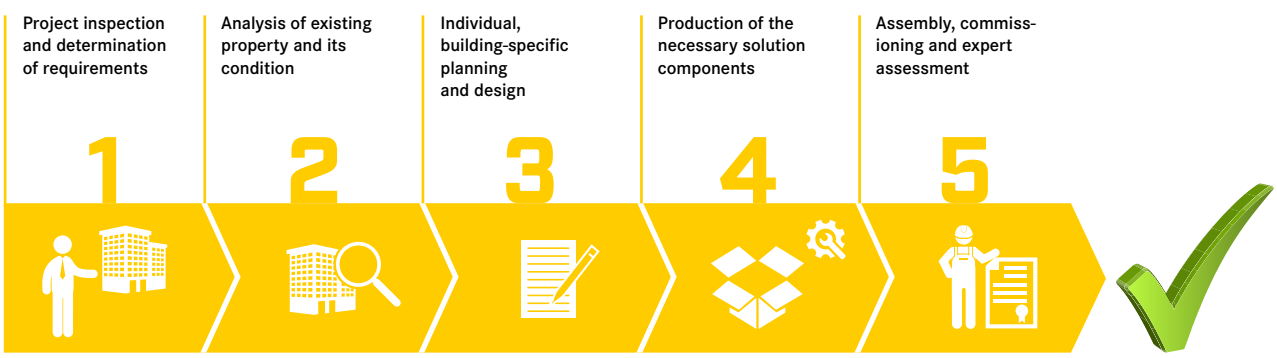
» **Find out more:**
Would you like to find out more about our products and services? Information is available at **www.essmann.de.**

We develop the right solution for every project.

The renovation of the flat roof often takes place during ongoing operation as a stoppage of the work processes would cause considerable costs. Our competent renovation team devises individual and highly efficient solutions that can be integrated and installed in your buildings without interrupting the work processes. Because our products can be precisely adapted to existing daylight systems.

Individual, ideally suited, highly efficient – and all from a single source.

From the design through production to the highest quality standards up to assembly, commissioning and subsequent service, we provide everything from a single source and can also guarantee this. Regardless of whether an existing property, an ongoing operation or a listed construction in industrial and administration buildings – our experts are at your side from the first inspection up to final acceptance by an authorised inspector and always develop the right solutions.



Safety

Be on the safe side – before danger threatens.

Daylight elements in the flat roof must be permanently fall-through protected if these roofs are used as a traffic route or workplace.

A range of tested safety solutions can be individually designed for any construction or renovation plans. This includes the ESSMANN fall and fall-through protection (EAD), for example, that complies with the highest requirements of ASR A2.1 (Technical Regulations for Workplaces) and can also be retrofitted.

We provide a special service with a comprehensive assessment of the flat roof. This serves as the basis for a detailed deviation analysis including an assessment with regard to existing risks and standard deviations. The recommendations for action derived from them helps the operators of buildings to meet their legally stipulated responsibility and to prevent accidents.

SAFETY ON HIGHEST LEVEL
www.essmann.de
for persons and property

Play it safe and profit from all the advantages of the ESSMANN service, also after commissioning and acceptance. A service agreement allows you to benefit not only from our comprehensive services and many years of know-how – but above all from very quick assistance in the event of a fault. This ensures that your safety-related systems are functionally safe at all times, that you fulfil your duties as the operator, and also protects your investment over a long period of use.


ESSMANN
STG BEFKIRCH
A-Werte für ESSMANN Lichtbänder classic (B/40/10)
Vollklappen mit NRWG FB pneumatisch (AUF)

8. Planning aids

Technology in detail

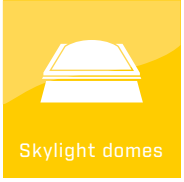
Complex technical contents that go beyond the content of a normal data sheet are often of great importance nonetheless. Important technical documents can be found here in a clearly arranged form.

Our planning aids

- Dimensions and weights for skylight domes
- Dimensions and weights for safety systems
- Dimensions and weights for skylight bases
- A_a values for ESSMANN *classic* rooflights (940/10) full flaps
- A_a values for ESSMANN *classic* rooflights (940/10) side and ridge flaps
- A_a values for ESSMANN *classic plus* rooflight double flaps
- A_a values for ESSMANN *classic plus* rooflight ridge flaps
- A_a values for ESSMANN *classic*, *classic PC-s, classic PC-st* skylight domes and darkening flaps

» **Find out more:**

Would you like to find out more about our products and services?
Information is available at **www.essmann.de.**



Dimensions and weights for skylight domes

classic skylight						
Nominal size in cm	Shell dimension (concrete roof) in cm	Clearance opening dimension in cm	Weights [kg]			
			2-skinned	3-skinned	PC-st with 1 upper skin	PC-st with 2 upper skins
50 x 100	53 x 103	30 x 80	7.5	8	6.3	6.8
50 x 150	53 x 153	30 x 130	11.2	12	12.5	13.4
60 x 60	63 x 63	40 x 40	5.4	5.8	5.6	6
60 x 90	63 x 93	40 x 70	7.4	8	8	8.6
60 x 120	63 x 123	40 x 100	9.5	10.3	10.4	11.2
62.5 x 150	65.5 x 153	42.5 x 130	12.5	13.6	13.9	15
70 x 137	73 x 140	50 x 117	14.3	15.4	15.6	16.7
70 x 141	73 x 144	50 x 121	14.7	15.9	16	17.2
80 x 80	83 x 83	60 x 60	7.9	8.6	8.4	9.1
90 x 90	93 x 93	70 x 70	9.2	10.2	9.9	10.8
90 x 120	93 x 123	70 x 100	11.6	12.9	12.6	14
100 x 100	103 x 103	80 x 80	10.6	11.9	11.4	12.7
100 x 150	103 x 153	80 x 130	14.7	16.7	16.3	18.2
100 x 200	103 x 203	80 x 180	24.1	26.8	26.3	29.1
100 x 250	103 x 253	80 x 230	28.3	31.8	32.2	36.5
100 x 300	103 x 303	80 x 280	38.9	45.4	40.6	47.1
120 x 120	123 x 123	100 x 100	13.7	15.6	14.9	16.8
120 x 150	123 x 153	100 x 130	16.3	18.8	18	20.5
120 x 180	123 x 183	100 x 160	25.1	28.9	26.5	30.3
120 x 240	123 x 243	100 x 220	32	37.1	34.1	39.2
120 x 270	123 x 273	100 x 250	39.4	46.6	39.3	46.5
120 x 300	123 x 303	100 x 280	44.7	54.4	44.9	54.6
125 x 125	128 x 128	105 x 105	14.5	16.6	15.8	17.9
125 x 250	128 x 253	105 x 230	35.3	40.9	36.1	41.7
125 x 300	128 x 303	105 x 280	45.9	56	45.9	56.1
141 x 231	144 x 234	121 x 211	35.2	41	34.9	39.6
150 x 150	153 x 153	130 x 130	21.3	24.4	23.1	25.3
150 x 180	153 x 183	130 x 160	28.9	33.7	30.3	35.1
150 x 210	153 x 213	130 x 190	34.1	39.8	36	41.6
150 x 240	153 x 243	130 x 220	38.1	44.7	40.4	46.9
150 x 250	153 x 253	130 x 230	39.5	46.4	41.8	48.7
150 x 270	153 x 273	130 x 250	45.5	54.8	46.7	56
150 x 300	153 x 303	130 x 280	51.7	64.2	51.3	63.8
180 x 180	183 x 183	160 x 160	35.2	42.5	35.6	42.9
180 x 240	183 x 243	160 x 220	46.6	56.6	47.4	57.4
180 x 250	183 x 253	160 x 230	48.3	58.7	49.1	59.6
180 x 270	183 x 273	160 x 250	51.6	62.9	52.5	63.9
180 x 300	183 x 303	160 x 280	58.8	74	57.7	73
200 x 200	203 x 203	180 x 180	43.2	52.4	43.6	52.9
200 x 300	203 x 303	180 x 280	63.5	80.6	62	79.1

Plus skylight dome (incl. system frame)				*Comfort plus* skylight dome
Nominal size in cm	Weights [kg]			
	3-skinned	PC-st with 1 upper skin	PC-st with 2 upper skins	with heat insulation or sun protection glazing and cover skin
50 x 100	18.8	17.1	17.6	–
50 x 150	26	26.5	27.4	–
60 x 60	14.7	14.5	14.9	22.1
60 x 90	19	19	19.6	30.9
60 x 120	23.6	23.7	24.5	39.7
62.5 x 150	28.6	28.9	30	–
70 x 137	27.9	28.1	29.2	–
70 x 141	28.7	28.8	30	–
80 x 80	20.8	20.6	21.3	35.4
90 x 90	24.1	23.8	24.7	43
90 x 120	29.1	28.8	30.2	55.4
100 x 100	27.4	26.9	28.2	51.5
100 x 150	36	35.6	37.5	74
100 x 200	44.3	43.8	46.6	96
100 x 250	53.2	53.6	57.9	–
120 x 120	34.6	33.9	35.8	76.5
120 x 150	39.9	39.1	41.6	93.8
120 x 180	47.7	45.3	49.1	111.2
120 x 240	59.6	56.6	61.7	–
125 x 125	36.3	35.5	37.6	–
125 x 250	67.2	63.4	–	82.3
150 x 150	45.9	44.6	46.8	114.9
150 x 180	57.4	54	58.8	137.5
150 x 210	85.8	82	87.6	–
150 x 240	67	62.7	69.2	–
150 x 250	45.4	40.8	46.7	–
180 x 180	67.7	61.8	68.1	–

» Further technical data, manuals and certificates you can download at www.essmann.de.

Dimensions and weights for safety systems

Safety systems					
		Weights [kg]			
Nominal size in cm	Fall and fall-through protection EAD	Fall arrest systems LK-L/ LK-K	Burglary protection		HDS
			RC3	RC1 with 100 mm WD [1]	
50 x 100	0.36	4.3	39	36	2
50 x 150	0.59	5.7	46	47	2.9
60 x 60	0.24	3.5	27	30	1
60 x 90	0.42	4.4	36	36	2.1
60 x 120	0.60	5.2	45	43	3
62.5 x 150	0.83	6.1	55	51	2.5
70 x 137	0.88	6	56	50	2.6
70 x 141	0.91	6.1	57	51	2.7
80 x 80	0.54	4.7	41	39	1.7
90 x 90	0.74	5.3	49	46	2.2
90 x 120	1.05	6.2	62	54	4
100 x 100	0.96	5.9	58	51	2.6
100 x 150	1.56	7.4	80	65	5.4
100 x 200	2.16	9	102	80	7.1
100 x 250	2.76	10.5	122	95	8.9
100 x 300	3.36	12.1	142	109	10.6
120 x 120	1.50	7.2	78	62	3.6
120 x 150	1.95	8.1	93	71	6.4
120 x 180	2.40	9.1	108	81	7.6
120 x 240	3.30	11	133	99	10.1
120 x 270	3.75	12	151	109	11.3
120 x 300	4.20	13	164	68	12.5
125 x 125	1.65	7.5	83	110	3.9
125 x 250	3.62	11.6	146	127	10.9
125 x 300	4.41	13.2	169	110	12.9
141 x 231	3.83	11.6	151	84	11.3
150 x 150	2.54	9.2	112	95	5.5
150 x 180	3.12	10.2	130	106	9.4
150 x 210	3.71	11.2	147	117	10.9
150 x 240	4.29	12.3	164	120	12.4
150 x 250	4.49	12.6	169	127	12.9
150 x 270	4.88	13.3	192	138	13.8
150 x 300	5.46	14.3	–	–	15.3
180 x 180	3.84	11.3	151	109	7.6
180 x 240	5.28	13.5	188	134	14.7
180 x 250	5.52	13.9	194	138	15.3
180 x 270	6.00	14.6	205	146	16.4
180 x 300	6.72	15.7	221	159	18.2
200 x 200	4.86	12.8	178	124	9.3
200 x 300	7.56	16.6	235	168	20.1

[1] *WD = heat insulation of the roof*

» Further technical data, manuals and certificates you can download at www.essmann.de.

Skylight base

Dimensions and weights for skylight bases

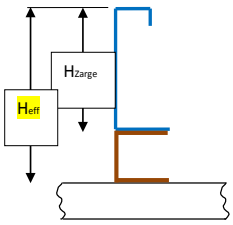
Skylight bases									
Weights [kg]									
Nominal size in cm	PVC			Metal					
				1-skinned insulated			2-skinned		
	15	30 ih	50 ih	30	40	50	30	40	50
50 x 100	6.9	14	21	20.1	24.8	29.5	22.1	27.1	32.2
50 x 150	9.2	18	28	27.1	33.5	39.8	29.8	36.6	43.4
60 x 60	5.5	11	16	16.5	20.4	24.3	18.2	22.3	26.4
60 x 90	7	14	21	20.1	24.8	29.5	22.1	27.1	32.2
60 x 120	8.3	17	25	24.3	30	35.7	26.7	32.8	38.9
62.5 x 150	9.8	20	30	28.9	35.7	42.5	31.8	39.0	46.2
70 x 137	9.5	19	29	28.1	34.7	41.3	30.9	37.9	45
70 x 141	10.3	20	30	28.7	35.4	42.2	31.6	38.7	45.9
80 x 80	7.3	15	23	21.5	26.6	31.6	23.7	29	34.4
90 x 90	8.1	17	26	24.3	30	35.7	26.7	32.8	38.9
90 x 120	9.5	20	30	28.6	35.3	42	31.5	38.6	45.8
100 x 100	8.9	19	29	27.2	33.6	40	29.9	36.7	43.5
100 x 150	11.3	23	36	34.2	42.2	50.3	37.6	46.2	54.7
100 x 200	19.8	28	44	41.3	51	60.7	45.4	55.8	66.1
100 x 250	29.1	32	51	48.4	59.8	71.1	53.2	65.3	77.4
100 x 300	34.4	37	59	55.5	68.5	81.6	61.1	74.9	88.8
120 x 120	10.5	23	33	32.8	40.5	48.2	36.1	44.3	52.5
120 x 150	12.4	25	40	37.1	45.8	54.5	40.8	50.1	59.4
120 x 180	25.8	28	44	41.3	51	60.7	45.4	55.8	66.1
120 x 240	23.7	34	53	49.8	61.5	73.2	54.8	67.2	79.7
120 x 270	33.5	36	57	54.1	66.8	79.5	59.5	73	86.6
120 x 300	34.8	41	64	58.4	72.1	85.8	64.2	78.8	93.4
125 x 125	11.5	24	36	34.2	42.2	50.3	37.6	46.2	54.7
125 x 250	24.7	35	55	51.9	64.1	76.3	57.1	70.1	83
125 x 300	29.6	41	64	59	72.9	86.7	64.9	79.7	94.4
141 x 231	32	35	55	51.5	63.6	75.7	56.7	69.5	82.4
150 x 150	13.1	28	44	41.3	51	60.7	45.4	55.8	66.1
150 x 180	28.4	31	49	45.6	56.3	67	50.2	61.6	73
150 x 210	31	34	53	49.8	61.5	73.2	54.8	67.2	79.7
150 x 240	33.6	37	58	54.1	66.8	79.5	59.5	73	86.6
150 x 250	34.4	28	59	55.5	68.5	81.6	61.1	74.9	88.8
150 x 270	36.2	39	62	58.3	72.0	85.7	64.1	78.7	93.3
150 x 300	40.2	44	68	62.6	77.3	92	68.9	84.5	100.2
180 x 180	31	34	53	49.8	61.5	73.2	54.8	67.2	79.7
180 x 240	36.2	40	62	58.3	72	85.7	64.1	78.7	93.3
180 x 250	37.7	41	64	59.7	73.7	87.8	65.7	80.6	95.5
180 x 270	38.8	42	67	62.6	77.3	92	68.9	84.5	100.2
180 x 300	43.1	46	73	66.8	82.5	98.2	73.5	90.2	106.9
200 x 200	34.4	38	60	55.5	68.5	81.6	61.1	74.9	88.8
200 x 300	51.6	48	76	69.9	86.3	102.8	76.9	94.4	111.8

» Further technical data, manuals and certificates you can download at www.essmann.de.

A_a values for *classic* rooflights (940/10)
Full flaps with pneumatic NSHE device F6 (OPEN)

Version	Span width of the rooflight [m]	Dimensions width x length [m]	Av (geometric free area) [m²]	Full flaps Base frame height: ≤ 45 cm with WTW [1]		Full flaps Base frame height: > 45 cm with WTW [1]	
				A_a value	A_a value, reduced [2]	A_a value	A_a value, reduced [2]
AR with 1 m flaps	1.00	1.00 x 1.00	1.00	0.75	0.74	0.75	0.74
	1.10	1.10 x 1.00	1.10	0.83	0.81	0.83	0.81
	1.20	1.20 x 1.00	1.20	0.90	0.88	0.90	0.88
	1.30	1.30 x 1.00	1.30	0.98	0.96	0.98	0.96
	1.40	1.40 x 1.00	1.40	1.05	1.03	1.05	1.03
	1.50	1.50 x 1.00	1.50	1.13	1.10	1.13	1.10
	1.60	1.60 x 1.00	1.60	1.20	1.18	1.20	1.18
	1.70	1.70 x 1.00	1.70	1.28	1.25	1.28	1.25
	1.80	1.80 x 1.00	1.80	1.35	1.32	1.35	1.32
	1.90	1.90 x 1.00	1.90	1.43	1.40	1.43	1.40
	2.00	2.00 x 1.00	2.00	1.50	1.47	1.50	1.47
	2.10	2.10 x 1.00	2.10	1.58	1.55	1.58	1.55
	2.20	2.20 x 1.00	2.20	1.65	1.62	1.65	1.62
	2.30	2.30 x 1.00	2.30	1.73	1.69	1.73	1.69
	2.40	2.40 x 1.00	2.40	1.80	1.77	1.80	1.77
	2.50	2.50 x 1.00	2.50	1.88	1.84	1.88	1.84
	2.52	2.52 x 1.00	2.52	1.89	1.85	1.89	1.85
AR with 2 m flaps	1.00	1.00 x 2.00	2.00	1.50	1.47	1.50	1.47
	1.10	1.10 x 2.00	2.20	1.65	1.62	1.65	1.62
	1.20	1.20 x 2.00	2.40	1.80	1.77	1.80	1.77
	1.30	1.30 x 2.00	2.60	1.95	1.91	1.95	1.91
	1.40	1.40 x 2.00	2.80	2.04	2.01	2.10	2.06
	1.50	1.50 x 2.00	3.00	2.19	2.15	2.25	2.21
	1.60	1.60 x 2.00	3.20	2.24	2.20	2.40	2.35
	1.70	1.70 x 2.00	3.40	2.38	2.33	2.55	2.50
	1.80	1.80 x 2.00	3.60	2.52	2.47	2.70	2.65
	1.90	1.90 x 2.00	3.80	2.62	2.57	2.85	2.80
	2.00	2.00 x 2.00	4.00	2.76	2.71	3.00	2.94
	2.10	2.10 x 2.00	4.20	2.73	2.68	3.15	3.09
	2.20	2.20 x 2.00	4.40	2.86	2.81	3.30	3.24
	2.30	2.30 x 2.00	4.60	2.99	2.93	3.45	3.38
	2.40	2.40 x 2.00	4.80	3.12	3.06	3.60	3.53
	2.50	2.50 x 2.00	5.00	3.25	3.19	3.75	3.68
	2.52	2.52 x 2.00	5.04	3.28	3.21	3.78	3.71

Various flap sizes are available for each version of the classic arcade rooflight (type 940/10). For rooflight span widths of up to 2.52 m, NSHE devices are generally designed for full flaps, 1 m or 2 m in length; for larger span widths, they are designed for side or ridge flaps[4] (see next page).

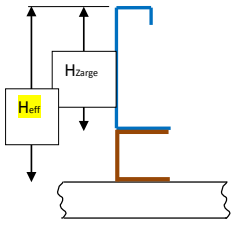


[1] WLW = wind training walls
[2] Reductions of A_a values through the use of ESSMANN fall and fall-through protection (EAD)
[3] H_{eff} (effective base frame height) = base frame height + flush replacement
[4] From a span width of 1.83 m, the installation of side flaps is possible; from a span width of 2.81 m, the use of ridge flaps is possible (see next page).

A_a values for *classic* rooflights (940/10)
Side and ridge flaps with pneumatic NSHE device F6 (OPEN)

Side flaps (SF) Ridge flaps (RF)	Version	Span width of the rooflight [m]	Dimensions width x length [m]	Av (geometric free area) [m²]	Side flaps (SF), Base frame height: 30 – 110 cm		Ridge flaps (RF) Base frame height: 30 – 110 cm	
					with WTW[1]		with WTW[1]	
					A_a value	A_a value, reduced [2]	A_a value	A_a value, reduced [2]
SF	AR with 2 m flaps	1.53 – 1.82	1.50 x 2.00	3.00	2.13	2.09	–	–
SF	AR with 2 m flaps	1.83 – 2.00	1.50 x 2.00	3.00	2.13	2.09	–	–
SF	AR with 2 m flaps	2.01 – 2.52	1.50 x 2.00	3.00	2.13	2.09	–	–
SF	AR with 2 m flaps	2.53 – 2.80	1.50 x 2.00	3.00	2.10	2.06	–	–
RF	AR with 2 m flaps	2.81 – 3.30	1.50 x 2.00	3.00	–	–	2.10	2.06
RF	AR with 2 m flaps	3.31 – 4.00	1.50 x 2.00	3.00	–	–	2.10	2.06
RF	AR with 2 m flaps	4.01 – 6.00	1.50 x 2.00	3.00	–	–	2.07	2.03
SF	AR with 2 m flaps	1.83 – 2.00	1.80 x 2.00	3.60	2.52	2.47	–	–
SF	AR with 2 m flaps	2.01 – 2.52	1.80 x 2.00	3.60	2.52	2.47	–	–
SF	AR with 2 m flaps	2.53 – 2.80	1.80 x 2.00	3.60	2.48	2.44	–	–
SF	AR with 2 m flaps	2.81 – 3.30	1.80 x 2.00	3.60	2.48	2.44	–	–
RF	AR with 2 m flaps	3.31 – 4.00	1.80 x 2.00	3.60	–	–	2.48	2.44
RF	AR with 2 m flaps	4.01 – 6.00	1.80 x 2.00	3.60	–	–	2.45	2.40
SF	AR with 1 m flaps	2.53 – 2.80	2.50 x 1.00	2.50	1.75	1.72	–	–
SF	AR with 1 m flaps	2.81 – 3.30	2.50 x 1.00	2.50	1.63	1.59	–	–
SF	AR with 1 m flaps	3.31 – 4.00	2.50 x 1.00	2.50	1.63	1.59	–	–
RF	AR with 1 m flaps	4.01 – 6.00	2.50 x 1.00	2.50	–	–	1.63	1.59
SF	AR with 2 m flaps	2.53 – 2.80	2.50 x 2.00	5.00	3.25	3.19	–	–
SF	AR with 2 m flaps	2.81 – 3.30	2.50 x 2.00	5.00	3.25	3.19	–	–
SF	AR with 2 m flaps	3.31 – 4.00	2.50 x 2.00	5.00	3.25	3.19	–	–
RF	AR with 2 m flaps	4.01 – 6.00	2.50 x 2.00	5.00	–	–	3.20	3.14

Various flap sizes are available for each version of the *classic* arcade rooflight (type 940/10). For rooflight span widths of up to 2.52 m, NSHE devices are generally designed for full flaps, 1 m or 2 m in length; for larger span widths, they are designed for side or ridge flaps[4] (see previous page).



[1] WTW = wind training walls
[2] Reductions of A_a values by using ESSMANN fall and fall-through protection (EAD)
[3] H_{eff} (effective base frame height) = base frame height + flush replacement
[4] From a span width of 1.83 m, the installation of side flaps is possible; from a span width of 2.81 m, the use of ridge flaps is possible (see next page).

» Further technical data, manuals and certificates you can download at www.essmann.de.

A_a values for *classic plus* rooflights with double flaps with electrical NSHE 48 V device (OPEN/CLOSE) and pneumatic NSHE device (OPEN/CLOSE)

Version	Span width of the rooflight [m]	Dimensions width x length [m]	Av (geometric free area) [m²]	Double flaps Base frame height 50 cm	
				with WTW [1]	
				A_a value	A_a value, reduced [2]
AR with 2 m flaps	2.20 – 2.99	1.00 x 2.00	2.00	1.22	1.20
	3.00 – 4.49	1.00 x 2.00	2.00	1.18	1.16
	4.50 – 6.00	1.00 x 2.00	2.00	1.18	1.16
	2.20 – 2.99	2.06 x 2.00	4.12	2.55	2.51
	3.00 – 4.49	2.06 x 2.00	4.12	2.47	2.43
	4.50 – 6.00	2.06 x 2.00	4.12	2.47	2.43
	2.20 – 2.99	3.12 x 2.00	6.24	3.93	3.86
	3.00 – 4.49	3.12 x 2.00	6.24	3.87	3.80
	4.50 – 6.00	3.12 x 2.00	6.24	3.87	3.80
AR with 2.5 m flaps	2.70 – 2.99	1.00 x 2.50	2.50	1.60	1.57
	3.00 – 4.49	1.00 x 2.50	2.50	1.55	1.52
	4.50 – 6.00	1.00 x 2.50	2.50	1.55	1.52
	2.70 – 2.99	2.06 x 2.50	5.15	3.35	3.28
	3.00 – 4.49	2.06 x 2.50	5.15	3.24	3.18
	4.50 – 6.00	2.06 x 2.50	5.15	3.19	3.13

[1] WTW= wind training wall

[2] Reduction in A_a values through use of ESSMANN fall and fall-through protection (EAD)

A_a values for *classic plus* rooflights with ridge flaps with electrical NSHE 48 V device (OPEN/CLOSE) and pneumatic NSHE device (OPEN/CLOSE)

Version	Span width of the rooflight [m]	Dimensions width x length [m]	Av (geometric free area) [m²]	Ridge flaps with WTW [1]	
				A_a value	A_a value, reduced [2]
AR with 1 m flaps	1.00 - 1.54 [3]	0.87 x 1.00	0.87	0.57	0.55
	1.55 – 1.79	0.87 x 1.00	0.87	0.57	0.55
	1.80 – 1.99	0.87 x 1.00	0.87	0.57	0.55
	2.00 – 3.99	0.87 x 1.00	0.87	0.56	0.55
	4.00 – 6.00	0.87 x 1.00	0.87	0.55	0.54
	1.00 – 1.54	1.37 x 1.00	1.37	–	–
	1.55 – 1.79	1.37 x 1.00	1.37	0.90	0.89
	1.80 – 1.99	1.37 x 1.00	1.37	0.90	0.89
	2.00 – 3.99	1.37 x 1.00	1.37	0.89	0.87
	4.00 – 6.00	1.37 x 1.00	1.37	0.88	0.86
	1.00 – 1.54	1.67 x 1.00	1.67	–	–
	1.55 – 1.79	1.67 x 1.00	1.67	–	–
	1.80 – 1.99	1.67 x 1.00	1.67	1.10	1.08
	2.00 – 3.99	1.67 x 1.00	1.67	1.09	1.06
	4.00 – 6.00	1.67 x 1.00	1.67	1.07	1.05
AR with 2 m flaps	1.00 – 1.54 [3]	0.87 x 2.06	1.79	1.16	1.14
	1.55 – 1.79	0.87 x 2.06	1.79	1.16	1.14
	1.80 – 1.99	0.87 x 2.06	1.79	1.16	1.14
	2.00 – 3.99	0.87 x 2.06	1.79	1.15	1.13
	4.00 – 6.00	0.87 x 2.06	1.79	1.11	1.09
	1.00 – 1.54	1.37 x 2.06	2.82	–	–
	1.55 – 1.79	1.37 x 2.06	2.82	1.86	1.83
	1.80 – 1.99	1.37 x 2.06	2.82	1.86	1.83
	2.00 – 3.99	1.37 x 2.06	2.82	1.83	1.80
	4.00 – 6.00	1.37 x 2.06	2.82	1.78	1.74
	1.00 – 1.54	1.67 x 2.06	3.44	–	–
	1.55 – 1.79	1.67 x 2.06	3.44	–	–
	1.80 – 1.99	1.67 x 2.06	3.44	2.27	2.23
	2.00 – 3.99	1.67 x 2.06	3.44	2.24	2.19
	4.00 – 6.00	1.67 x 2.06	3.44	2.17	2.13

[1] WTW = wind training walls
[2] Reduction of A_a values through the use of ESSMANN fall and fall-through protection (EAD)
[3] Installation of the pneumatic NSHE device (OPEN / CLOSE) from a span width of 1.15 m possible

» Further technical data, manuals and certificates you can download at www.essmann.de.


Aerodynamic smoke extraction (SHE)

A_a values for *classic, classic PC-s, classic PC-st* skylight domes and darkening flaps [1] with pneumatic NSHE device F6 (OPEN) [2]

Version	Nominal size [cm]	Incident light area [m²]	Av (geometric inlet area) [m²]	Metal skylight base 30-50				PVC skylight base 30				PVC skylight base 50			
				without ELW [3]		with ELW [3]		without ELW [3]		with ELW [3]		without ELW [3]		with ELW [3]	
				A_a value	A_a value, reduced [4]	A_a value	A_a value, reduced [4]	A_a value	A_a value, reduced [4]	A_a value	A_a value, reduced [4]	A_a value	A_a value, reduced [4]	A_a value	A_a value, reduced [4]
SD	100/100	0.64	1.00	0.60	0.59	0.65	0.64	0.60	0.59	0.65	0.64	0.57	0.56	0.65	0.64
SD	100/150	1.04	1.50	0.90	0.88	0.98	0.96	0.90	0.88	0.98	0.96	0.86	0.84	0.99	0.97
SD	100/200	1.44	2.00	1.20	1.18	1.30	1.28	1.20	1.18	1.30	1.28	1.16	1.14	1.34	1.31
SD	100/250	1.84	2.50	1.50	1.47	1.63	1.59	1.50	1.47	1.63	1.59	1.48	1.45	1.70	1.67
SD	100/300	2.24	3.00	1.35	1.32	1.95	1.91	1.35	1.32	1.95	1.91	1.80	1.77	2.07	2.03
SD	120/120	1.00	1.44	0.86	0.85	0.94	0.92	0.94	0.92	0.94	0.92	0.82	0.81	0.94	0.92
SD	120/150	1.30	1.80	1.08	1.06	1.17	1.15	1.17	1.15	1.17	1.15	1.03	1.01	1.19	1.17
SD	120/180	1.60	2.16	1.30	1.27	1.40	1.38	1.40	1.38	1.40	1.38	1.25	1.23	1.45	1.42
SD	120/240	2.20	2.88	1.58	1.55	2.02	1.98	1.58	1.55	2.02	1.98	1.67	1.64	1.96	1.92
SD	120/270	2.50	3.24	1.46	1.43	2.11	2.07	1.46	1.43	2.11	2.07	1.91	1.88	2.24	2.19
SD	120/300	2.80	3.60	1.62	1.59	2.34	2.30	1.62	1.59	2.34	2.30	2.12	2.08	2.52	2.47
SD	125/125	1.10	1.56	0.94	0.92	1.02	1.00	0.94	0.92	1.02	1.00	0.89	0.87	1.02	1.00
SD	125/250	2.42	3.13	1.72	1.69	2.19	2.15	1.72	1.69	2.19	2.15	1.81	1.78	2.16	2.12
SD	125/300	2.94	3.75	1.69	1.66	2.44	2.39	1.69	1.66	2.44	2.39	2.21	2.17	2.63	2.58
SD	150/150	1.69	2.25	1.35	1.32	1.58	1.55	1.35	1.32	1.58	1.55	1.28	1.26	1.53	1.50
SD	150/180	2.08	2.70	1.62	1.59	1.89	1.85	1.62	1.59	1.89	1.85	1.57	1.54	1.84	1.80
SD	150/210	2.47	3.15	1.89	1.85	2.21	2.16	1.89	1.85	2.21	2.16	1.83	1.79	2.17	2.13
SD	150/240	2.86	3.60	2.16	2.12	2.52	2.47	2.16	2.12	2.52	2.47	2.09	2.05	2.48	2.44
SD	150/250	2.99	3.75	2.25	2.21	2.63	2.58	2.25	2.21	2.63	2.58	2.21	2.17	2.63	2.58
SD	150/270	3.25	4.05	1.82	1.79	2.63	2.58	1.82	1.79	2.63	2.58	2.39	2.34	2.84	2.78
SD	150/300	3.64	4.50	2.03	1.99	2.93	2.87	2.03	1.99	2.93	2.87	2.66	2.60	3.15	3.09
SD	180/180	2.56	3.24	1.78	1.75	2.27	2.22	1.78	1.75	2.27	2.22	1.88	1.84	2.30	2.26
SD	180/240	3.52	4.32	2.38	2.33	3.02	2.97	2.38	2.33	3.02	2.97	2.51	2.46	3.02	2.97
SD	180/250	3.68	4.50	2.48	2.43	3.15	3.09	2.48	2.43	3.15	3.09	2.57	2.52	3.15	3.09
SD	180/270	4.00	4.86	2.19	2.15	3.16	3.10	2.19	2.15	3.16	3.10	2.77	2.72	3.40	3.34
SD	180/300	4.48	5.40	2.43	2.38	3.51	3.44	2.43	2.38	3.51	3.44	3.08	3.02	3.78	3.71
SD	200/200	3.24	4.00	2.00	1.96	2.60	2.55	2.00	1.96	2.60	2.55	2.28	2.24	2.80	2.75
SD	200/300	5.04	6.00	2.70	2.65	3.90	3.83	2.70	2.65	3.90	3.83	3.42	3.36	4.26	4.18

[1] Installation of pneumatic NSHE device F6 (OPEN) in darkening flap only possible up to a nominal size of 180 / 250
[2] Aa values for NSHE F8 pneumatic with OPEN/CLOSE function on request
[3] ELW = corner guide wall
[4] Reduction A_a values by using ESSMANN fall and fall-through protection (EAD)

A_a values for *classic, classic PC-s, classic PC-st* skylight domes and darkening flaps[1] with pneumatic NSHE device F6 (OPEN)[2]

Version	Nominal size for SAK[3] [cm]	Incident light area [m²]	SAK[3] 15 and SAK[3] 30 on customer's slanting base (skylight base)					SAK[3] 15 and SAK[3] 30 on customer's vertical substructure					SAK[3] 15 and SAK[3] 30 on customer's shortened substructure				
			Av (geometric inlet area [m²])	without ELW[4]		with ELW[4]		Av (geometric Free area [m²])	without ELW[4]		with ELW[4]		Av (geometric free area [m²])	without ELW[4]		with ELW[4]	
				A_a value	A_a value reduced[5]	A_a value	A_a value, reduced[5]		A_a value	A_a value reduced[5]	A_a value	A_a value, reduced[5]		A_a value	A_a value reduced[5]	A_a value	A_a value reduced[5]
SD	100/100	0.64	1.00	0.58	0.57	0.64	0.63	0.64	0.41	0.40	0.41	0.40	0.82	0.51	0.50	0.61	0.60
SD	100/150	1.04	1.50	0.86	0.84	0.98	0.96	1.04	0.61	0.60	0.67	0.65	1.27	0.78	0.76	0.95	0.94
SD	100/200	1.44	2.00	1.14	1.12	1.32	1.29	1.44	0.78	0.76	0.92	0.90	1.72	1.03	1.01	1.29	1.27
SD	100/250	1.84	2.50	1.45	1.42	1.63	1.59	1.84	0.94	0.92	1.16	1.14	2.18	1.28	1.26	1.63	1.60
SD	100/300	2.24	3.00	1.71	1.68	2.01	1.97	2.24	1.12	1.10	1.39	1.36	2.63	1.55	1.52	1.97	1.93
SD	120/120	1.00	1.44	0.82	0.81	0.92	0.90	1.00	0.62	0.61	0.64	0.63	1.22	0.74	0.73	0.92	0.90
SD	120/150	1.30	1.80	1.03	1.01	1.17	1.15	1.30	0.77	0.75	0.83	0.82	1.55	0.95	0.93	1.16	1.14
SD	120/180	1.60	2.16	1.23	1.21	1.43	1.40	1.60	0.91	0.89	1.02	1.00	1.88	1.11	1.09	1.41	1.39
SD	120/240	2.20	2.88	1.64	1.61	1.93	1.89	2.20	1.12	1.10	1.39	1.36	2.55	1.50	1.47	1.91	1.87
SD	120/270	2.50	3.24	1.88	1.84	2.20	2.16	2.50	1.25	1.23	1.55	1.52	2.88	1.64	1.61	2.10	2.06
SD	120/300	2.80	3.60	2.09	2.05	2.48	2.44	2.80	1.34	1.32	1.71	1.68	3.21	1.83	1.79	2.34	2.30
SD	125/125	1.10	1.56	0.88	0.86	1.00	0.98	1.10	0.68	0.67	0.71	0.69	1.33	0.80	0.79	1.00	0.98
SD	125/250	2.42	3.13	1.78	1.75	2.13	2.08	2.42	1.23	1.21	1.52	1.49	2.78	1.64	1.61	2.08	2.04
SD	125/300	2.94	3.75	2.18	2.13	2.59	2.54	2.94	1.41	1.38	1.79	1.76	3.36	1.98	1.94	2.52	2.47
SD	150/150	1.69	2.25	1.26	1.24	1.51	1.48	1.69	1.01	0.99	1.08	1.06	1.97	1.16	1.14	1.48	1.45
SD	150/180	2.08	2.70	1.54	1.51	1.84	1.80	2.08	1.19	1.16	1.31	1.29	2.40	1.39	1.36	1.80	1.76
SD	150/210	2.47	3.15	1.80	1.76	2.14	2.10	2.47	1.28	1.26	1.56	1.53	2.82	1.63	1.60	2.11	2.07
SD	150/240	2.86	3.60	2.05	2.01	2.45	2.40	2.86	1.46	1.43	1.80	1.77	3.24	1.85	1.81	2.43	2.38
SD	150/250	2.99	3.75	2.14	2.10	2.59	2.54	2.99	1.52	1.50	1.85	1.82	3.38	1.89	1.86	2.53	2.49
SD	150/270	3.25	4.05	2.27	2.22	2.79	2.74	3.25	1.56	1.53	2.02	1.98	3.66	1.98	1.94	2.67	2.62
SD	150/300	3.64	4.50	2.57	2.52	3.11	3.05	3.64	1.67	1.64	2.22	2.18	4.08	2.20	2.16	2.98	2.92
SD	180/180	2.56	3.24	1.85	1.81	2.24	2.19	2.56	1.38	1.36	1.61	1.58	2.91	1.72	1.68	2.18	2.14
SD	180/240	3.52	4.32	2.46	2.42	2.98	2.92	3.52	1.76	1.73	2.22	2.18	3.93	2.24	2.20	2.95	2.89
SD	180/250	3.68	4.50	2.52	2.47	3.11	3.05	3.68	1.80	1.77	2.28	2.24	4.10	2.26	2.21	3.08	3.02
SD	180/270	4.00	4.86	2.72	2.67	3.35	3.29	4.00	1.88	1.84	2.48	2.43	4.44	2.31	2.27	3.24	3.18
SD	180/300	4.48	5.40	2.92	2.86	3.73	3.66	4.48	2.02	1.98	2.73	2.68	4.95	2.58	2.53	3.62	3.55
SD	200/200	3.24	4.00	2.24	2.20	2.76	2.71	3.24	1.72	1.68	2.01	1.97	3.63	–	–	–	–
SD	200/300	5.04	6.00	3.18	3.12	4.14	4.06	5.04	2.12	2.08	3.07	3.02	5.53	–	–	–	–

[1] Installation of the pneumatic NSHE device F6 (OPEN) in darkening flaps only possible up to nominal size 180 / 250
[2] Aa values for NSHE F8 pneumatic device with OPEN / CLOSE function on request
[3] SAK = renovation skylight base
[4] ELW = corner guide walls
[5] Reduction of A_a values through the use of ESSMANN fall and fall-through protection (EAD)

» Further technical data, manuals and certificates you can download at www.essmann.de.

A_a values for *classic, classic PC-s, classic PC-st* skylight domes and darkening flaps with electrical NSHE 48 V device (OPEN/CLOSE)

Version	Nominal size [cm]	Incident light area [m²]	Av (geometric inlet area) [m²]	PVC skylight bases 30 and Metal skylight bases 30				PVC skylight bases 50 and Metal skylight bases 50				SAK [1] 15 (on customer's AK30) and SAK [1] 30 (on customer's AK30) as well as Metal skylight bases 40			
				without ELW [2]		with ELW [2]		without ELW [2]		with ELW [2]		without ELW [2]		with ELW [2]	
				A_a value	A_a value, reduced [3]	A_a value	A_a value, reduced [3]	A_a value	A_a value, reduced [3]	A_a value	A_a value, reduced [3]	A_a value	A_a value reduced [3]	A_a value	A_a value reduced [3]
SD	100/100	0.64	1.00	0.55	0.54	0.61	0.60	0.57	0.56	0.63	0.62	0.56	0.55	0.62	0.61
SD	100/150	1.04	1.50	0.83	0.81	0.95	0.93	0.86	0.84	0.98	0.96	0.84	0.82	0.96	0.94
SD	100/200	1.44	2.00	1.10	1.08	1.28	1.26	1.14	1.12	1.32	1.29	1.12	1.10	1.30	1.28
SD	100/250	1.84	2.50	1.40	1.37	1.58	1.55	1.45	1.42	1.68	1.64	1.43	1.40	1.60	1.57
SD	120/120	1.00	1.44	0.78	0.76	0.88	0.86	0.81	0.79	0.91	0.89	0.79	0.78	0.89	0.88
SD	120/150	1.30	1.80	0.99	0.97	1.13	1.11	1.03	1.01	1.17	1.15	1.01	0.99	1.15	1.11
SD	120/180	1.60	2.16	1.19	1.17	1.38	1.36	1.23	1.21	1.43	1.40	1.21	1.19	1.40	1.38
SD	120/240	2.20	2.88	1.58	1.55	1.87	1.84	1.64	1.61	1.96	1.92	1.61	1.58	1.90	1.86
SD	125/125	1.10	1.56	0.83	0.81	0.95	0.94	0.86	0.84	0.98	0.97	0.84	0.83	0.97	0.95
SD	125/250	2.42	3.13	1.72	1.69	2.06	2.02	1.78	1.75	2.13	2.08	1.75	1.72	2.09	2.05
SD	150/150	1.69	2.25	1.22	1.19	1.46	1.43	1.26	1.24	1.51	1.48	1.24	1.21	1.49	1.46
SD	150/180	2.08	2.70	1.49	1.46	1.76	1.72	1.54	1.51	1.81	1.77	1.51	1.48	1.81	1.77
SD	150/210	2.47	3.15	1.73	1.70	2.08	2.04	1.80	1.76	2.14	2.10	1.76	1.73	2.11	2.07
SD	150/240	2.86	3.60	1.98	1.94	2.38	2.33	2.05	2.01	2.45	2.40	2.02	1.98	2.41	2.37
SD	150/250	2.99	3.75	2.06	2.02	2.51	2.46	2.14	2.10	2.59	2.54	2.10	2.06	2.55	2.50
SD	180/180	2.56	3.24	1.78	1.75	2.17	2.13	1.85	1.81	2.24	2.19	1.81	1.78	2.20	2.16

[1] SAK = renovation skylight base
[2] ELW = corner guide wall
[3] Reduction of A_a values by using ESSMANN fall and fall-through protection (EAD)

» Further technical data, manuals and certificates you can download at www.essmann.de.

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