EFAFLEX

# Technical product description
# High-speed roll-up door
# Premium Eco Value EasyFit

EN

*For internal use only*

This technical product description applies to
the following door system types:
EFA-SRT®-L Premium
EFA-SRT®-L ECO
EFA-SRT®-S ECO
EFA-SRT® EC
EFA-SRT®-L Value
EFA-SRT® EasyFit

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Translation of the original
Version 10-EN

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**Door system designations**

| Official designation of the door system | Door system type | Designation of the door system in this product description | Installation drawing (EZ) / quotation drawing (AZ) number |
|---|---|---|---|
| EFA-SRT®-L Premium | Roll-up door | 271-01 | AZ 271-01xx |
| EFA-SRT®-L ECO | Roll-up door | 274 | AZ 274xx |
| EFA-SRT®-S ECO | Roll-up door | 302 | AZ 302xx |
| EFA-SRT® EC | Roll-up door | 242-01 | AZ 242-01xx |
| EFA-SRT®-L Value | Roll-up door | 310 | AZ 310xx |
| EFA-SRT® EasyFit | Roll-up door | 316 | EZ 002-xx |

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# 1 Short description

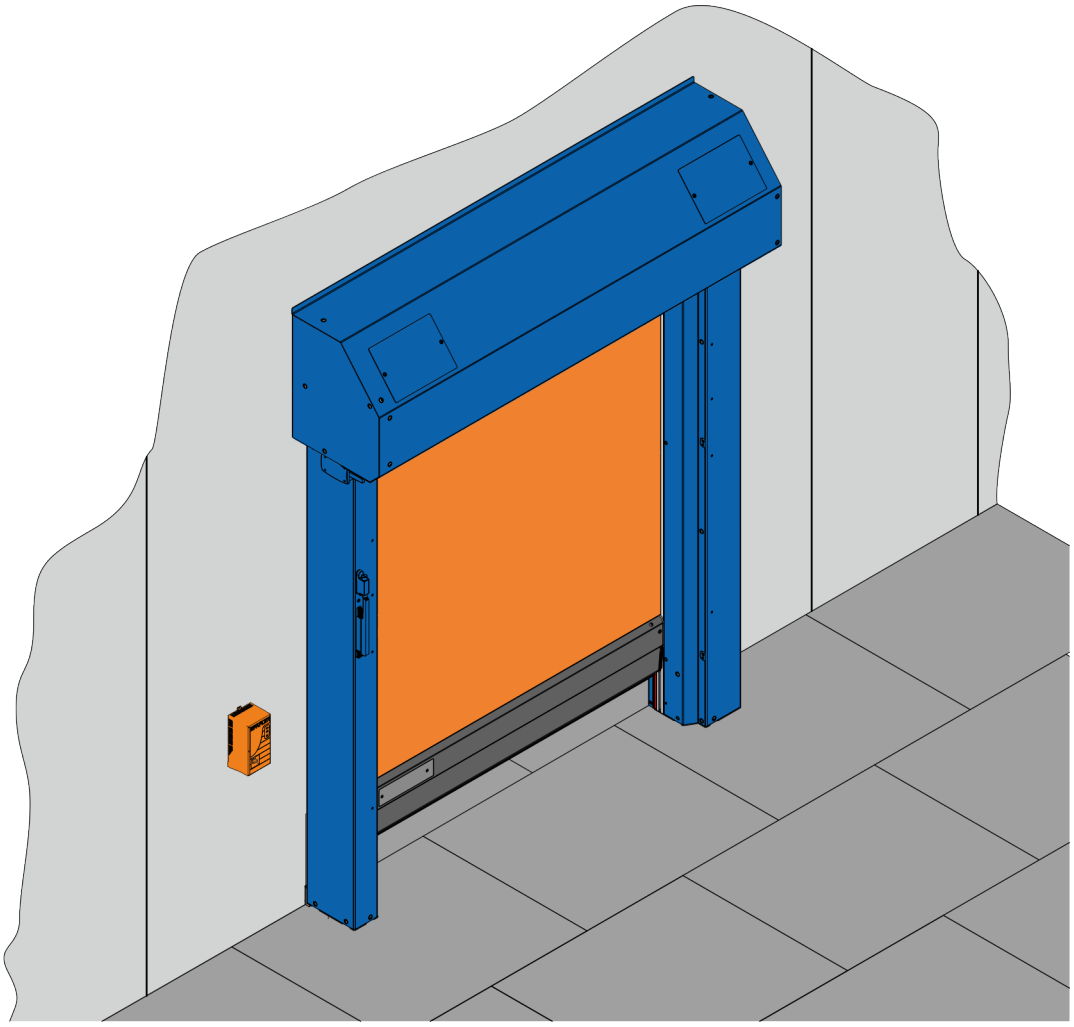


*Fig. 1: High-speed roll-up door*

High-speed roll-up doors of the R series are door systems designed for highly frequented industrial or commercial continuous use indoors.

The smart modular construction is largely low-maintenance. It is robust and space-saving, and provides the highest level of reliability to seamlessly deal with extreme challenges in daily operation. A wide range of design options are available in the usual high quality for intensive use.

The construction, with flexible curtains, ensures extremely high opening and closing speeds, and is a very efficient and economical solution.

The individual solutions are tried and tested and always offer the option of emergency opening; they reduce drafts and noise, and can be equipped with optional crash protection.

The EFA-SRT® EC (242-01) door system types have been engineered to cater for the specific demands of continuous use in particularly sensitive production areas. This high-speed roll-up door has numerous intensive wet cleaning options.

The door system type EFA-SRT® EasyFit (316) was designed for particularly fast installation. This door system is equipped with hinged side frames and is supplied pre-wired. More on EasyFit installation in chapter *Chapter 3.5.6 'Door leaf guide and side frames (316)' on page 29*.

# 2 Technical properties

## 2.1 Use

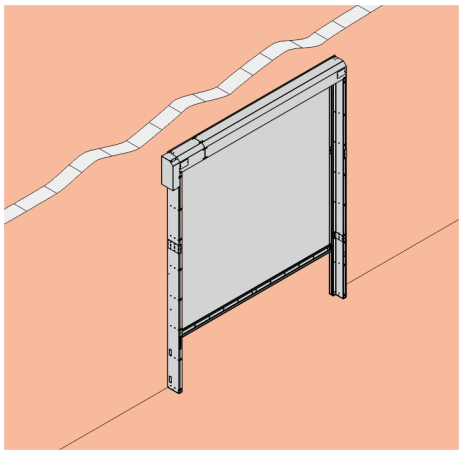


*Fig. 2: Use*

Use

- Interior door

Area of application

- Industrial applications
- Warehouses

Working temperature

- +5 °C to +50 °C

| | |
|---|---|
| | Indoors |
| | Indoors |

## 2.2 Dimensions

### Dimensions 271-01

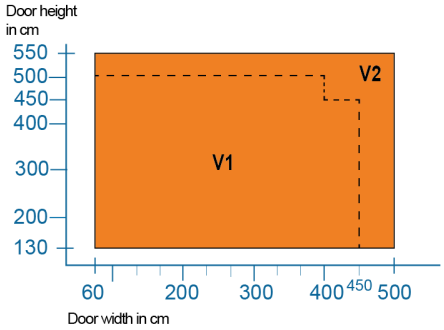



*Fig. 3: Diagram of possible door system heights and widths (271-01)*

*There are two different opening speeds for door system type 271-01, depending on the door size. These are split into the areas V1 and V2. See Table on page 11.*

**Door system heights and widths (inner clear height)**

| Door system type | Widths | Heights |
|---|---|---|
| 271-01 (V1) | 600 – 4000 mm | 1300 – 5000 mm |
| | 4001 – 4500 mm | 1300 – 4500 mm |
| 271-01 (V2) | 600 – 4000 mm | 5000 – 5500 mm |
| | 4001 – 4500 mm | 4500 – 5500 mm |
| | 4501 – 5000 mm | 1300 – 5500 mm |

### Dimensions 274

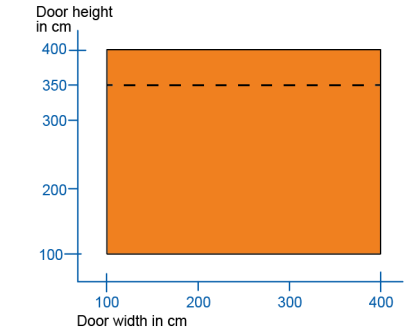



*Fig. 4: Diagram of possible door system heights and widths (274)*

*The door size depends on the curtain type (* *Chapter 3.6.2 'Door leaf versions' on page 36**).*

**Door system heights and widths (inner clear height)**

| Door system type | | Widths | Heights |
|---|---|---|---|
| 274 | TOX/TSX/ POS/PVC | 1000 – 4000 mm | 1000 – 4000 mm |
| | PO8/PS8 | 1000 – 4000 mm | 1000 – 3500 mm |

### Dimensions 302

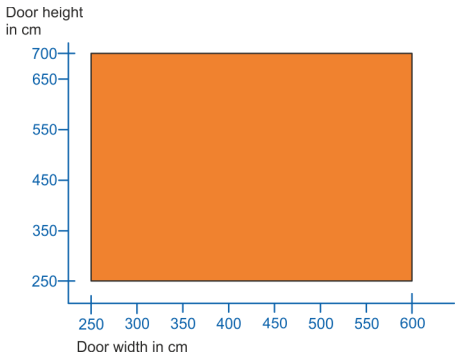



*Fig. 5: Diagram of possible door system heights and door system widths (302)*

**Door system heights and widths (inner clear height)**

| Door system type | Widths | Heights |
|---|---|---|
| 302 | 2500 – 6000 mm | 2500 – 7000 mm |

### Dimensions 242-01

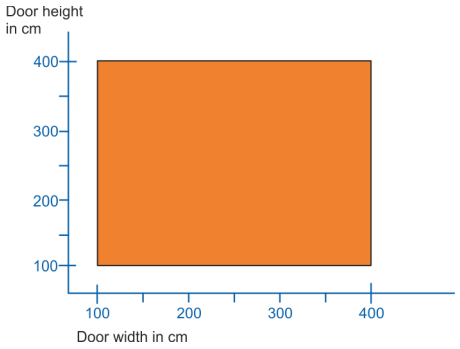



*Fig. 6: Diagram of possible door system heights and widths (242-01)*

**Door system heights and widths (inner clear height)**

| Door system type | Widths | Heights |
|---|---|---|
| 242-01 | 1000 – 4000 mm | 1000 – 4000 mm |

## Dimensions 310

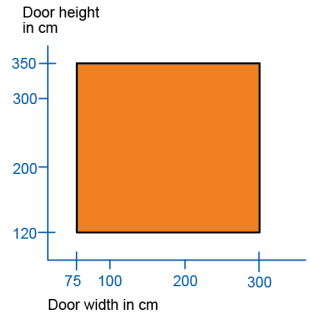



*Fig. 7: Diagram of possible door system heights and widths (310)*

**Door system heights and widths (inner clear height)**

| Door system type | Widths | Heights |
|---|---|---|
| 310 | 750 – 3000 mm | 1200 – 3500 mm |

## Dimensions 316

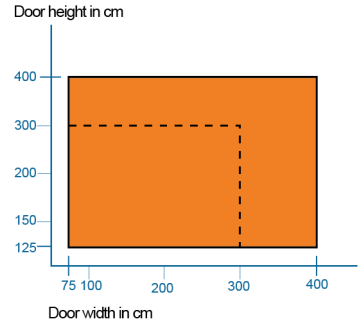



*Fig. 8: Diagram of possible door system heights and widths (316)*

*The door size depends on the curtain type (* *Chapter 3.6.2 'Door leaf versions' on page 36**).*

**Door system heights and widths (inner clear height)**

| Door system type | | Widths | Heights |
|---|---|---|---|
| 316 | PO8/PS8 | 750 – 4000 mm | 1250 – 4000 mm |
| | TOX/TSX/PVH | 750 – 3000 mm | 1250 – 3000 mm |

## 2.3 Speeds

*The specified values relate to the speeds with the maximum door system height.*

The speeds depend on the selected SAP configuration.

| Door system type | Average speed (max. speed) | | | | |
|---|---|---|---|---|---|
| | Opening speed | | Closing speed with door light grid | Closing speed with safety edge and light barrier | Closing speed with leading light barrier and stationary light barrier |
| 271-01 | *See table row 271-01 (V1)* | Approx. 2.0 m/s (2.6 m/s) | Approx. 1.0 m/s | Approx. 0.75 m/s | – |
| | *See table row 271-01 (V2)* | Approx. 1.6 m/s (2.2 m/s) | Approx. 1.0 m/s | Approx. 0.75 m/s | – |
| 302 | Standard drive | Approx. 1.5 m/s (2.0 m/s) | Approx. 1.0 m/s | Approx. 0.6 m/s | – |
| | Aseptic drive | Approx. 1.3 m/s (1.75 m/s) | Approx. 1.0 m/s | Approx. 0.6 m/s | – |
| 274 | Approx. 1.5 m/s | | Approx. 1.0 m/s | Approx. 0.75 m/s | – |
| 242-01 | Approx. 1.5 m/s (2.0 m/s) | | – | Approx. 0.75 m/s | – |
| 310 | Approx. 1.3 m/s (1.7 m/s) | | Approx. 0.8 m/s | Approx. 0.5 m/s | Approx. 0.6 m/s |
| 316 | Approx. 1.5 m/s | | Approx. 1.0 m/s | – | – |

## 2.4 Performance properties

**Performance features in compliance with DIN EN 13241**

| Door system type | Specification | Door system width/size/other specifications | Value |
|---|---|---|---|
| 271-01 | Resistance to wind load in compliance with DIN EN 12424 | Soft PVC curtain, welded<br>B ≤ 5000 | Class 3 |
| | | Laterally stable curtain without viewing window<br>B ≤ 4500 | Class 3 |
| | | Laterally stable curtain without viewing window<br>4,500 < B ≤ 5,000 | Class 2 |
| | | Laterally stable curtain with viewing window<br>B ≤ 5000 | Class 2 |
| | | POS curtain<br>B ≤ 4500 | Class 3 |
| | | POS curtain<br>4,500 < B ≤ 5,000 | Class 2 |
| | | EAS (all curtains) | npd |
| | Resistance to water ingress in compliance with DIN EN 12425 | – | npd |
| | Air permeability in compliance with DIN EN 12426 | – | npd |
| | Airborne sound insulation in compliance with EN ISO 717-1 | – | Rw = 12 dB |
| | Thermal insulation in compliance with DIN EN 12428 | – | npd |

| Door system type | Specification | Door system width/size/other specifications | Value |
|---|---|---|---|
| 274 | Resistance to wind load in compliance with DIN EN 12424 | – | npd |
| | Resistance to wind load (measurement by Efaflex) | – | 18 km/h<br>16 Pa |
| | Resistance to water ingress in compliance with DIN EN 12425 | – | npd |
| | Air permeability in compliance with DIN EN 12426 | – | npd |

| Door system type | Specification | Door system width/size/ other specifications | Value |
|---|---|---|---|
| | Airborne sound insulation in compliance with EN ISO 717-1 | – | Rw = 11 dB |
| | Thermal insulation in compliance with DIN EN 12428 | – | npd |

| Door system type | Specification | Door system width/size/ other specifications | Value |
|---|---|---|---|
| 302 | Resistance to wind load in compliance with DIN EN 12424 | – | Class 1<br>(Class 2 with wind profiles) |
| | Resistance to water ingress in compliance with DIN EN 12425 | – | Class 0 |
| | Air permeability in compliance with DIN EN 12426 | – | Class 1 |
| | Airborne sound insulation in compliance with EN ISO 717-1 | – | Rw = 11 dB |
| | Thermal insulation in compliance with DIN EN 12428 | – | npd |

| Door system type | Specification | Door system width/size/ other specifications | Value |
|---|---|---|---|
| 242-01 | Resistance to wind load in compliance with DIN EN 12424 | – | npd |
| | Resistance to wind load (measurement by Efaflex) | – | 18 km/h<br>16 Pa |
| | Resistance to water ingress in compliance with DIN EN 12425 | – | npd |
| | Air permeability in compliance with DIN EN 12426 | – | npd |
| | Airborne sound insulation in compliance with EN ISO 717-1 | – | Rw = 11 dB |
| | Thermal insulation in compliance with DIN EN 12428 | – | npd |

## Technical properties

Performance properties

| Door system type | Specification | Door system width/size/ other specifications | Value |
|---|---|---|---|
| 310 | Resistance to wind load in compliance with DIN EN 12424 | – | Class 0<br>80 km/h<br>300 Pa<br>(Class 1 with reinforced side frame cover |
| | Resistance to water ingress in compliance with DIN EN 12425 | – | npd |
| | Air permeability in compliance with DIN EN 12426 | – | npd |
| | Airborne sound insulation in compliance with EN ISO 717-1 | – | Rw = 11 dB |
| | Thermal insulation in compliance with DIN EN 12428 | – | npd |

| Door system type | Specification | Door system width/size/ other specifications | Value |
|---|---|---|---|
| 316 | Resistance to wind load in compliance with DIN EN 12424 | – | npd |
| | Resistance to wind load (measurement by Efaflex) | | 41 km/h<br>87 Pa |
| | Resistance to water ingress in compliance with DIN EN 12425 | – | npd |
| | Air permeability in compliance with DIN EN 12426 | – | npd |
| | Airborne sound insulation in compliance with EN ISO 717-1 | – | Rw = 11 dB |
| | Thermal insulation in compliance with DIN EN 12428 | – | npd |

npd = no performance determined

## 2.5 Fire performance

**Fire performance as per DIN 4102**

| Indication | Value |
|---|---|
| Material class | B2 normally inflammable |

## 2.6 Safety standards

**Applicable regulations, safety standards and directives**

The following regulations, standards and directives were taken into account in planning, engineering and production:

**Regulations**

| | |
|---|---|
| EUV 305/2011 | REGULATION (EU) NO. 305/2011 OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC |

**Standards**

| | |
|---|---|
| DIN EN 13241 | Doors – Product standard |
| DIN EN 12453 | Doors – Safety in use of power operated doors – Requirements |
| DIN EN 12604 | Doors – Mechanical aspects – Requirements |
| DIN EN 12978 | Doors and gates – Safety devices for power operated doors and gates – Requirements and test methods |
| DIN EN ISO 12100 | Safety of machinery – General principles for design – Risk assessment and risk reduction |
| DIN EN ISO 13849-1 | Safety of machinery – Safety-related parts of control systems – Part 1 General principles for design |

**Directives**

| | |
|---|---|
| 2006/42/EC | DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) |
| 2014/30/EU | DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast) |
| 2014/53/EU | DIRECTIVE 2014/53/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC |

## 2.7 Use

| Door system type | Recommended frequency of use per year (up to) | Expected useful life[1] |
|---|---|---|
| 271-01 | 150,000 | 20 years |
| 274 | | |
| 302 | | |
| 242-01 | | |
| 310 | | |
| 316 | | |

[1] Includes 10 years German Product Liability Act

# 3 Construction of the high-speed roll-up door

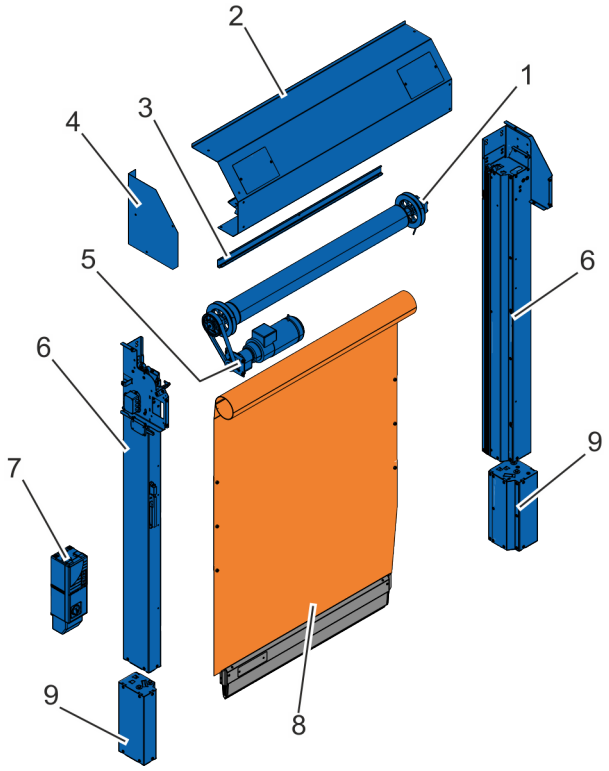



*Fig. 9: Assemblies*

| | | |
|---|---|---|
| 1 | Winding shaft | *Further information on page 20* |
| 2 | Cover (complete covering) | *Further information on page 21* |
| 3 | Lintel profile | *Further information on page 20* |
| 4 | Cover (drive cover) | *Chapter 3.4 'Cover' on page 21* |
| 5 | Drives | *Chapter 3.10.1 'Drives' on page 63* |
| 6 | Side frame | *Chapter 3.5 'Door leaf guide and side frames' on page 23*<br>*Chapter 3.8 'Counterbalance and door leaf tensioner' on page 54* |
| 7 | Control unit | *Chapter 3.10.2 'Control units' on page 66* |
| 8 | Door leaf with curtain, end shield and safety edge | *Chapter 3.6 'Door leaf' on page 35*<br>*Chapter 4.1 'Safety edge and light barrier' on page 71*<br>*Chapter 3.7 'End shield' on page 46* |
| 9 | Side frame extension (optional) | *Chapter 3.5.7 'Side frame extension' on page 32* |

## 3.1 Corrosion protection

**Frame**

| Frame surface | Selection in SAP | | | | |
|---|---|---|---|---|---|
| | **Z1** | **Z4** | **Z5** | **Z6/V2A** | **Z7/V4A** |
| Design | Steel, galvanised (275 g/m², approx. 20 µm zinc coat thickness) | Steel, galvanised (275 g/m², with single-sided powder coating on the visible surface as per RAL (decorative surface coating)<br>Coat thickness approx. 50 µm ± 10 µm<br>Sheen level in compliance with DIN EN ISO 2813 (incidence angle 60°), 75 % ± 10 %<br>Connecting components galvanised, not coated. | Steel, galvanised (275 g/m²) with powder coating on both sides of the surface in accordance with RAL, V2A connecting components<br>Coat thickness approx. 50 µm ± 10 µm<br>Sheen level in compliance with DIN EN ISO 2813 (incidence angle 60°), 75 % ± 10 %<br>Connecting components galvanised, not coated. | V2A 1.4301 stainless steel, corrosion resistant; polished grain 220, V2A connecting components<br>V2A stainless steel, corrosion resistant; polished grain 220, V2A connecting components. | Visible steel parts in V4A 1.4571 stainless steel, corrosion and acid resistant; unpolished, V2A connecting components |
| Special features | Sheet thicknesses<br>■ ≤ 4 mm: sendzimir galvanised<br>■ > 4 mm: electro-galvanised | Sheet thicknesses<br>■ ≤ 4 mm: sendzimir galvanised<br>■ > 4 mm: electro-galvanised | Sheet thicknesses<br>■ ≤ 4 mm: sendzimir galvanised<br>■ > 4 mm: electro-galvanised | The tension springs (bright steel, oiled), the drive toothed belts (galvanised tension members) and various small parts cannot be made of V2A. | The tension springs (bright steel, oiled), the drive toothed belts (galvanised tension members) and various small parts cannot be made of V4A or V2A. |
| Corrosion protection class in compliance with DIN EN ISO 12944-6:2018 | C3m | C3m | C4m | C5-I | C5-M |
| Use | “Normal” industrial door | “Normal” industrial door | Industrial door in environment with salty air (not for use in contact with salty water) | Industrial door in areas with high humidity and aggressive atmosphere | Industrial door in areas with high salinity (also for use in contact with salty water) |

**Duration of protection**

| | | |
|---|---|---|
| l - low | short | up to 7 years |
| m - medium | medium | 7 to 15 years |
| h - high | long | 15 to 25 years |
| vh - very high | very long | > 25 years |

**Configuration options by door system type**

| Selection of frames in SAP | Door system type | | | | | |
|---|---|---|---|---|---|---|
| | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| Z1 | ● | ● | ● | – | ● | ● |
| Z4 | ○ | ○ | ○ | – | ○ | ○ |
| Z5 | – | – | ○ | – | – | – |
| Z6/V2A | ○ | ○ | ○ | ● | ○ | ○ |
| Z7/V4A | – | – | ○ | ○ | – | – |

● Standard

○ Optional

– Not available

*The corrosion protection design relates to the basic door construction, **not** to the drive.*

*If the drive is fitted in the corrosive area, using an aseptic drive with the use of corrosion protection of Z5 and above is recommended.*

## 3.2 Winding shaft

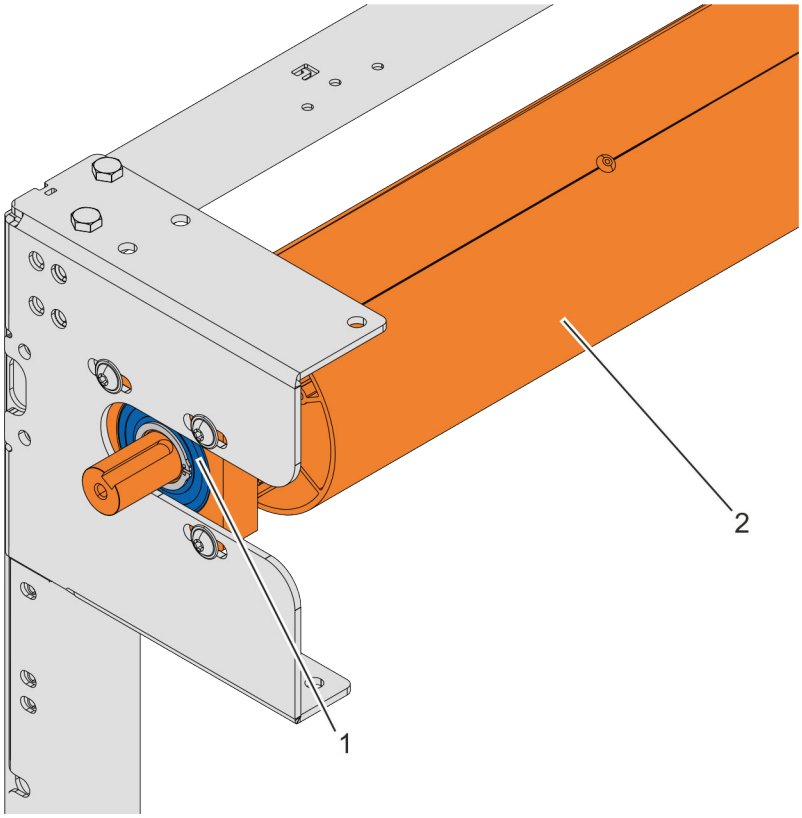



*Fig. 10: Winding shaft unit*

The winding shaft unit comprises:

- high-grade industrial bearings (Fig. 10/1)
- Steel tube Ø 114×2.9 mm (274, 242-01, 310, 316) (Fig. 10/2)
- Steel tube Ø 159×4 mm (271-01, 302) (Fig. 10/2)

## 3.3 Lintel profile

The lintel profile forms the horizontal connection between the side frames. Installation thus sets and secures the inner door width. The lintel profile also provides an additional seal. Furthermore, the lintel profile is used for the cable laying.

## 3.4 Cover

*The complete cover is mandatory as a protective guard for door systems measuring less than 2500 mm or 2250 mm in height (242-01).*

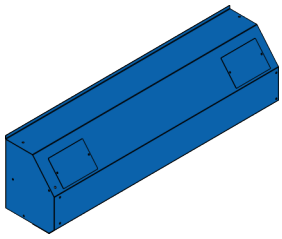


*Fig. 11: Complete cover (271-01)*

The winding shaft unit can be covered in different ways depending on the functionality, spatial conditions and required appearance.

With EFA-SRT® EC (242-01), the front panel is always slanted so that the water can run off towards the opposite side to the motor. Additionally, the front panel can be opened in 2 stages. Up to partial opening, a gas pressure damper supports the opening process and keeps the front panel in the open position. Furthermore, complete opening is also possible without additional support.

The following options are available:

- Complete cover (271-01) (Fig. 11)
- Drive cover (271-01) (Fig. 12)
- Belt cover – Standard (271-01) (Fig. 13)
- Complete cover (274) (Fig. 14)
- Cover up to ceiling (274) (Fig. 15)
- Complete cover – drainage direction opposite motor side (242-01) – foldable for cleaning purposes (Fig. 16 and Fig. 18)
- Front and drive cover – drainage direction opposite motor side (242-01) – foldable for cleaning purposes (Fig. 17)
- Complete cover (302) (Fig. 19)
- Complete cover (310) (Fig. 20)
- Complete cover (316) – door system only possible with complete cover (Fig. 21)
- No cover

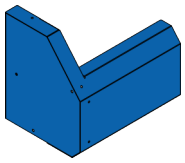


*Fig. 12: Drive cover (271-01)*

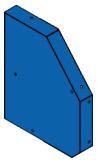


*Fig. 13: Belt cover (271-01)*

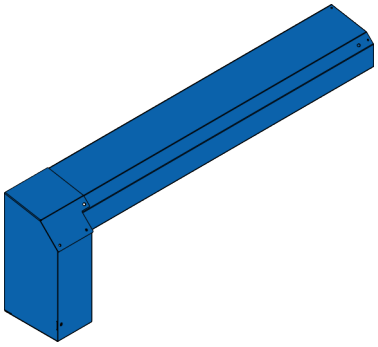


*Fig. 14: Complete cover (274)*

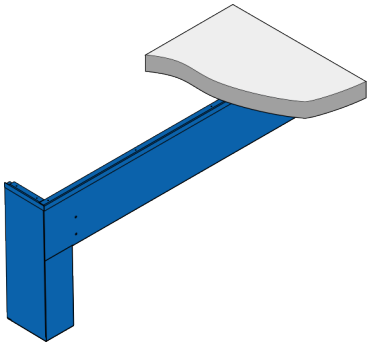


*Fig. 15: Cover up to ceiling (274)*

Cover

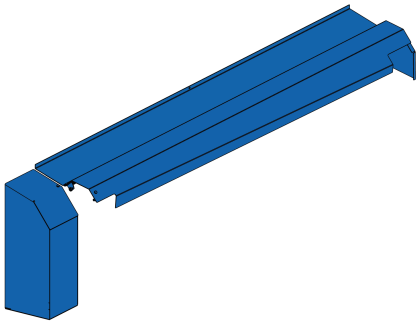


*Fig. 16: Complete cover (242-01) – open*

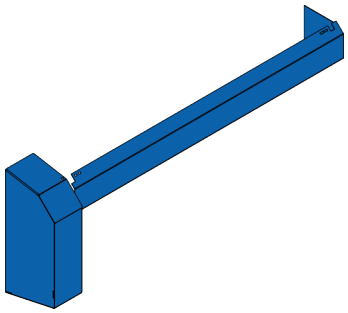


*Fig. 17: Front and drive cover (242-01)*

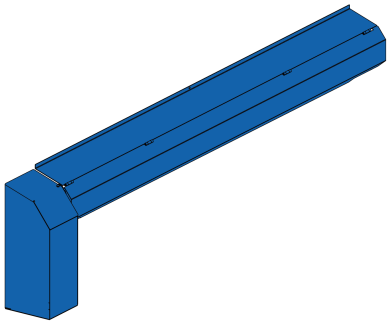


*Fig. 18: Complete cover (242-01)*

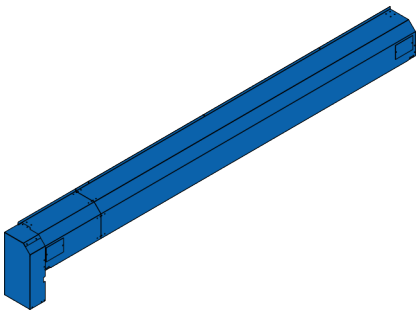


*Fig. 19: Complete cover (302)*

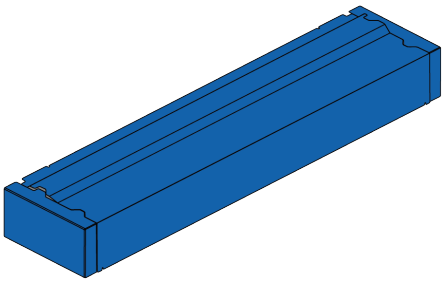


*Fig. 20: Front and drive cover (310)*

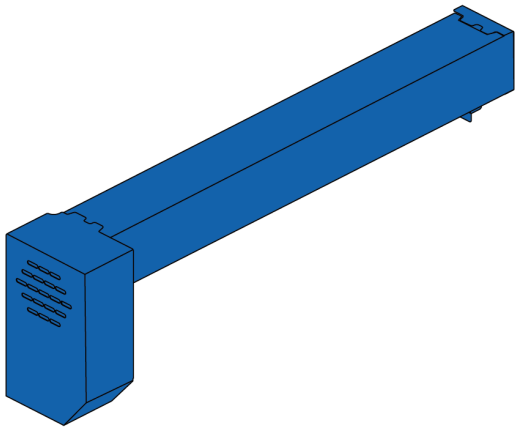


*Fig. 21: Complete cover (316)*

## 3.5 Door leaf guide and side frames

### 3.5.1 Door leaf guide and side frames (271-01)

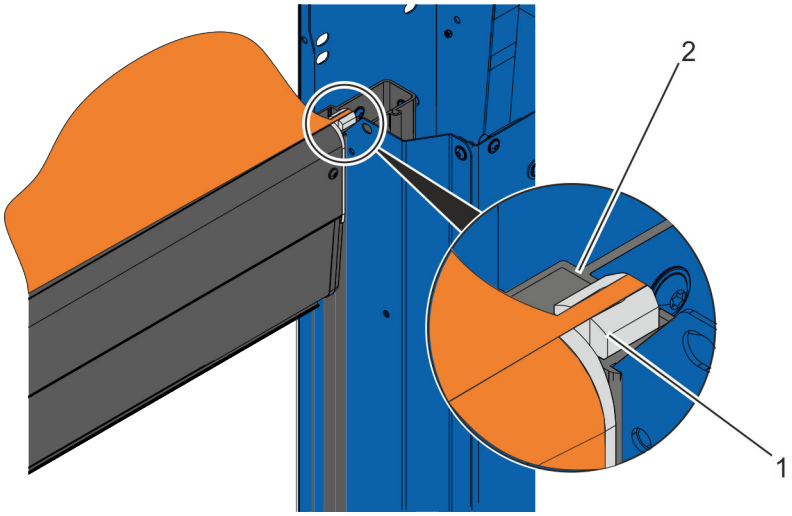



*Fig. 22: Door leaf guide (271-01)*

On the underside of the door leaf is the end shield with the door leaf mount. The components of the door leaf mount include sliding blocks (Fig. 22/1), which are located in the door leaf guide (Fig. 22/2). The sliding blocks prevent the door leaf from moving sideways and in the direction of passage.

### 3.5.2 Door leaf guide and side frames (274)

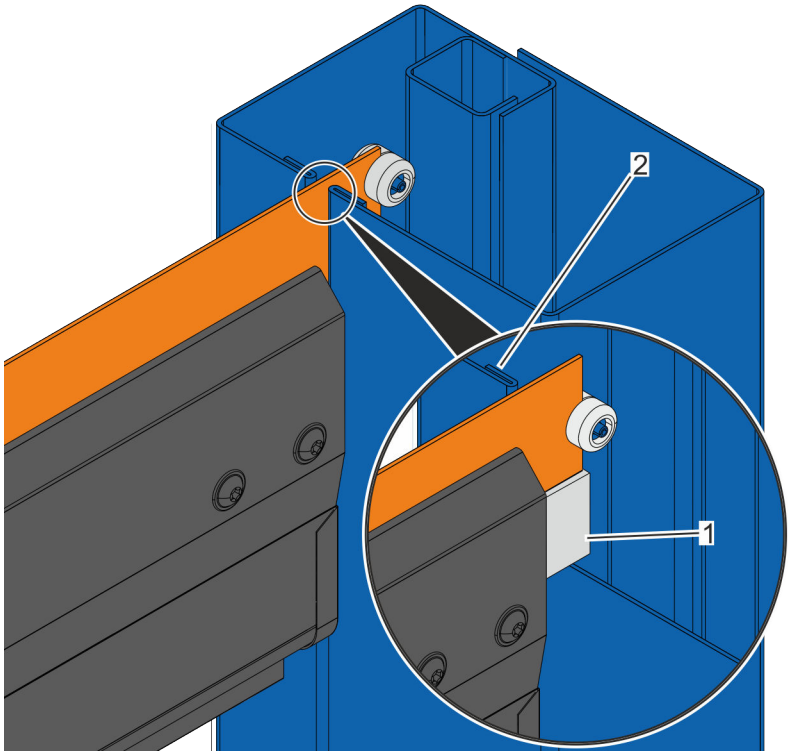



*Fig. 23: Door leaf guide (274)*

On the underside of the door leaf is the end shield with the door leaf mount. The components of the door leaf mount include, among others, the crash guard (Fig. 23/1), which is situated in the door leaf guide (Fig. 23/2).

### 3.5.3 Door leaf guide and side frames (310)

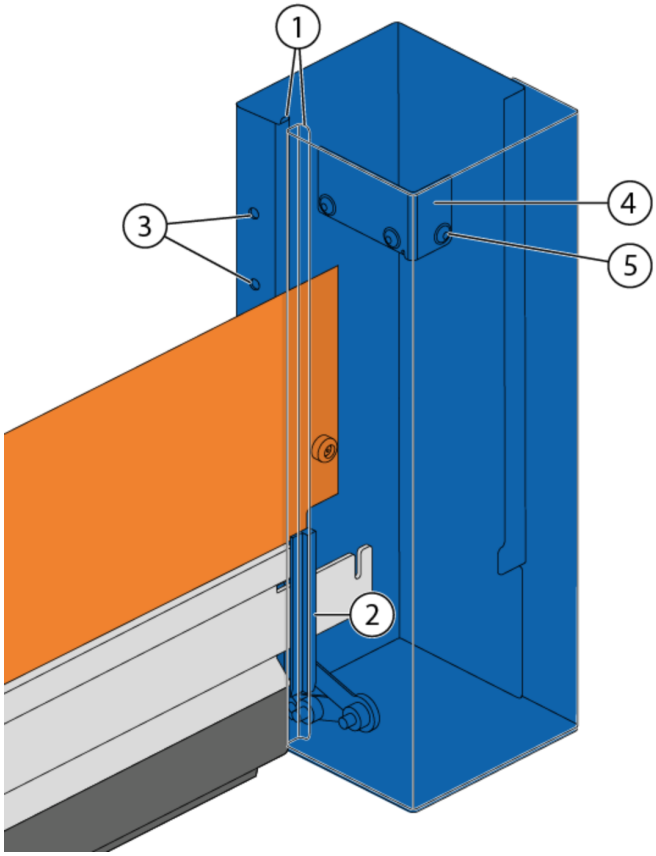



*Fig. 24: Door leaf guide (310)*

On the underside of the door leaf is the end shield with the door leaf mount. The components of the door leaf mount include, among others, sliding blocks on each side (Fig. 24/2), which are situated in the door leaf guide (Fig. 24/1). On the version with door light grid, there are holes for the light beams in the side frame (Fig. 24/3).

If the option with wind class 1 is selected, each side frame cover has a reinforcing bracket (Fig. 24/4) in the side frame covers, which is secured with 9 screws (Fig. 24/5).

### 3.5.4 Door leaf guide and side frames (302)

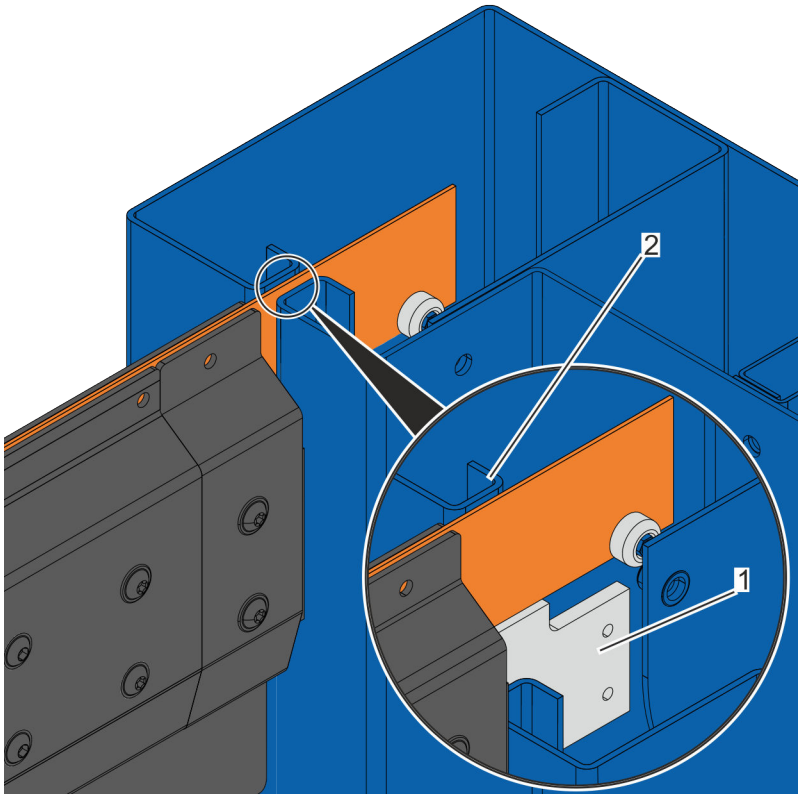



*Fig. 25: Door leaf guide (302)*

On the underside of the door leaf is the end shield with the door leaf mount. The components of the door leaf mount include, among others, shield guides (Fig. 25/1), which are situated in the door leaf guide (Fig. 25/2). The shield guides prevent the door leaf from moving sideways or in the direction of passage.

As standard, the side frame cover on door system type 302 is a pivoting design.

For door system heights of ≥ 4,000 mm and above, the side frame cover is a two-piece pivoting design.

### 3.5.5 Door leaf guide and side frames (242-01)

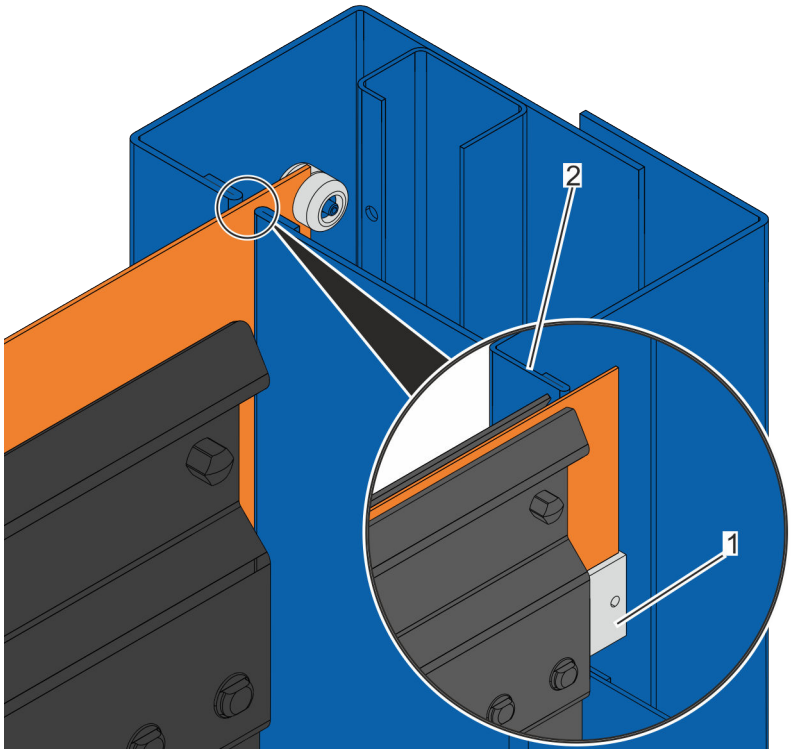



*Fig. 26: Door leaf guide (242-01)*

On the underside of the door leaf is the end shield with the door leaf mount. The components of the door leaf mount include, among others, shield guides (Fig. 26/1), which are situated in the door leaf guide (Fig. 26/2). The shield guides prevent the door leaf from moving in the direction of passage.

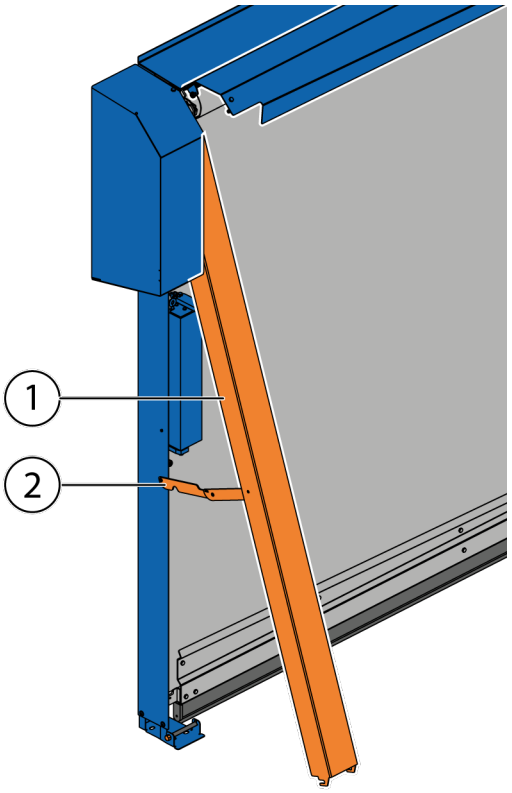



*Fig. 27: Side frame cover that can be folded upwards (242-01)*

As standard, the side frame cover (Fig. 27/1) on door system type 242-01 can be folded upwards. The side frame cover can be mechanically locked in the open position (Fig. 27/2).

### 3.5.6 Door leaf guide and side frames (316)

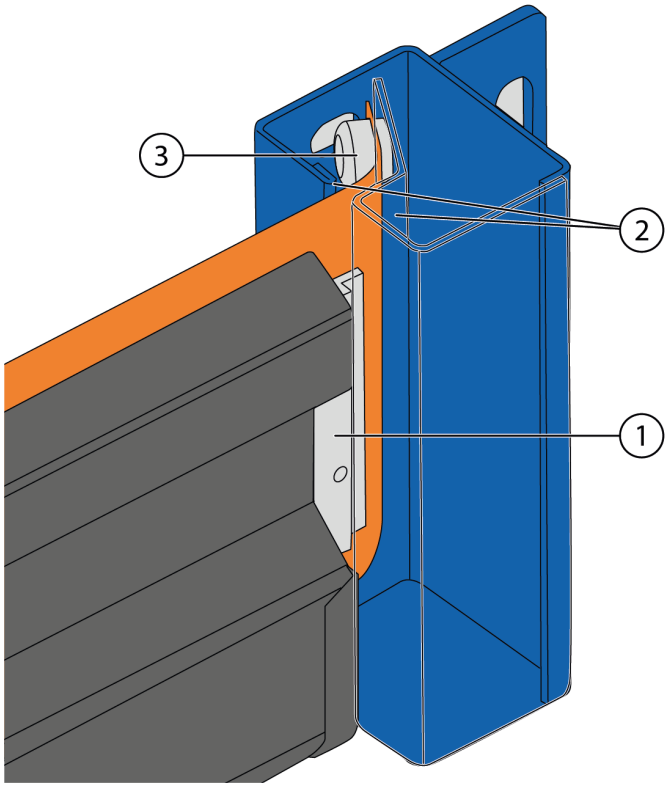



*Fig. 28: Door leaf guide (316)*

On the underside of the door leaf is the end shield with the door leaf mount. The components of the door leaf mount include, among others, sliding blocks (Fig. 28/1), which are situated in the door leaf guide (Fig. 28/2).

With door system type 316, the curtain including the wind resistance button (Fig. 28/3) is deflected so that the flat side of the button slides on the guide. This results in less abrasion on the wind resistance buttons.

## EasyFit installation

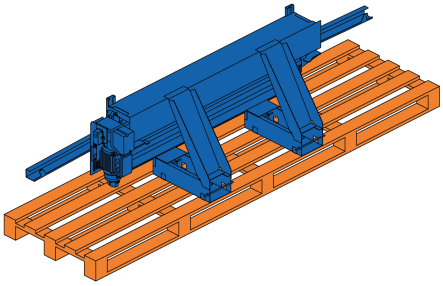


*Fig. 29: Transport console (316) on the pallet*

The door construction of door system type 316 is equipped with folding side frames that enable particularly fast installation.

The door system is pre-installed and pre-wired, and transported to the installation site using transport consoles (Fig. 30/1).

*The following must be observed when planning installation:*

*If the door height is greater than the door width, the retracted side frames protrude beyond the door construction and thus widen the required installation space. Observe installation drawing number 002.*

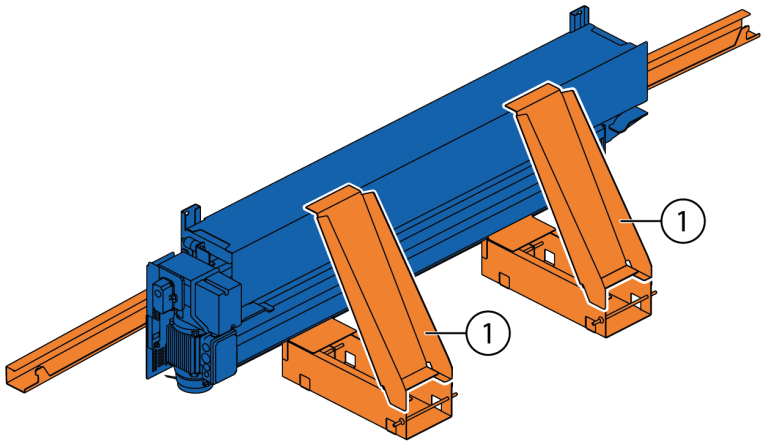



*Fig. 30: Transport console (316)*

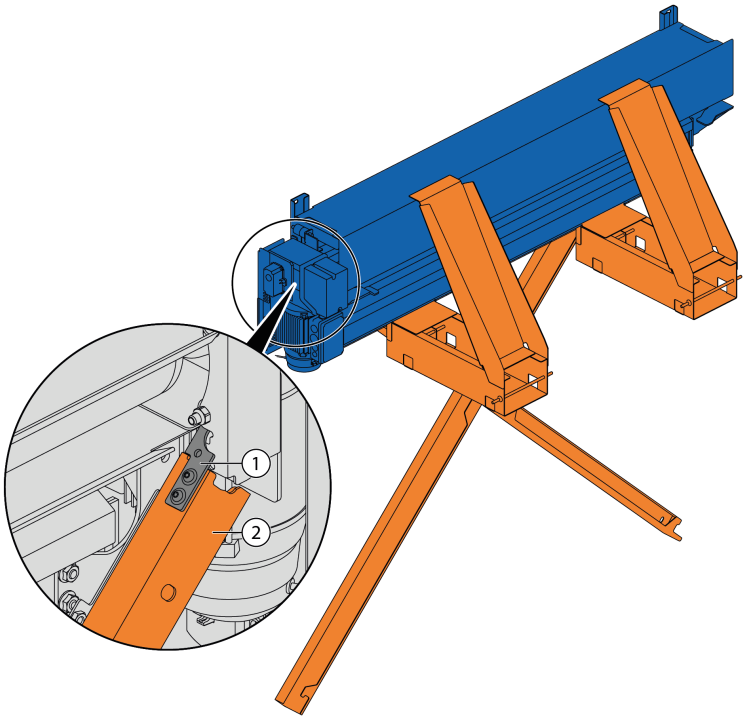



*Fig. 31: Folding out the side frame (316)*

The door is then lifted at the transport consoles using a suitable industrial truck (e.g. forklift) and the side frames (Fig. 31/2) unfold over the hinges (Fig. 31/1). When the frames are fully folded out, they still need to be aligned and fixed in place. The control unit is then fitted to the engine side frame and electrically connected to the door using a plug-in connector.

## 3.5.7 Side frame extension

**Side frame extension optional for 271-01, 274, 302, 242-01**

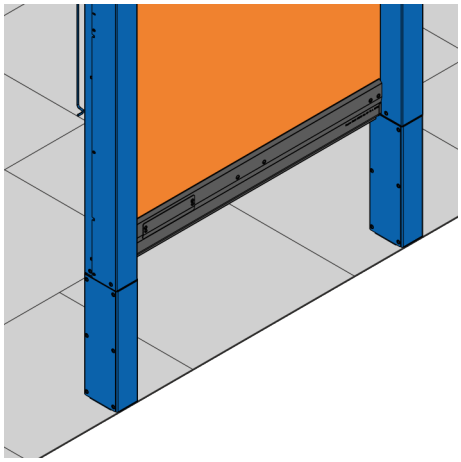


*Fig. 32: Side frame extension 271-01, 274, 302, 242-01*

An optional side frame extension extends both side frames but the door leaf remains the same length. That means that the door leaf is not on the floor in the closed position but at the height of the original side frame length. The limit switches on an extended side frame are also at this height.

## 3.5.8 End positions

Limit switches can be used as position indicators as an option. In this case, the actuator of the limit switch is attached to the sliding block of the end shield. The receiver is located in the side frame. Various limit switch types are available depending on the door system type and application.

**Limit switch options according to door system type**

| Limit switch | Door system type | | | | | |
|---|---|---|---|---|---|---|
| | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| Euchner CES "Door closed" | ○ | ○ | ○ | – | – | – |
| Euchner CES "Door open" | ○ | ○ | – | – | – | – |
| Pepperl & Fuchs NJ15 "Door closed" | ○ | – | – | – | – | – |
| Pepperl & Fuchs NJ15 "Door open" | ○ | – | – | – | – | – |
| Pepperl & Fuchs NJ15 "Intermediate stop" | ○ | – | – | – | – | – |
| Schmersal ZV7H "Door closed" | ○ | – | – | – | – | – |
| Schmersal BN310 "Door closed" and "Door open" | – | ○ | – | – | – | – |

- ● Standard
- ○ Optional
- – Not available

**Inductive sensor – Pepperl & Fuchs NJ15**

| | |
|---|---|
| Application | “Door closed” and/or “Door open” message |
| Default | Customer/owner |
| Evaluation | Customer/owner |
| Safety category | none |
| Special feature | none |

**Roller lever limit switch – Schmersal ZV7H**

| | |
|---|---|
| Application | “Door closed” and/or “Door open” message |
| Default | Customer/owner |
| Evaluation | Customer/owner |
| Safety category | none |
| Special feature | The status message is also available or can be sensed without voltage. |

**Transponder-coded safety limit switch – Euchner CES**

| | |
|---|---|
| Application | “Door closed” and/or “Door open” safe message |
| Default | Customer/owner |
| Evaluation | Customer/owner |
| Safety category | Cat. 4/PL “e” (category, performance level) according to DIN EN ISO 13849-1 |
| Special feature | External evaluation unit integrated in EFAFLEX control unit |

**Magnetic limit switch Schmersal BN310**

| | |
|---|---|
| Application | “Door closed” and “Door open” message |
| Default | Customer/owner |
| Evaluation | Customer/owner |
| Safety category | none |
| Special feature | none |

## 3.6 Door leaf

The upper edge of the door leaf is permanently connected to the winding shaft. The shaft is rotated by the drive and can wind the door leaf up and down without any problem at any time.

The door leaf is guided in the side frames with securing studs on the outer edge of the curtain holding it securely in the guide even in the event of wind, drafts and drops in air pressure.

For door system type 302, the door leaf design can be reinforced with wind profiles. The wind profiles are standard when using the door system as an outside door.

The end shield of the door leaf is made up of an aluminium profile or optionally two bevelled stainless steel plates (V2A) (271-01, 274, 302, 242-01).

On the door systems 310 and 316, the end shield is made up of either two galvanised steel or stainless steel sheet plates.

The lower edge is a rubber safety edge.

The integrated door leaf tension spring (271-01, 310) or the weight of the end shield pulls the curtain down and keeps it taut.

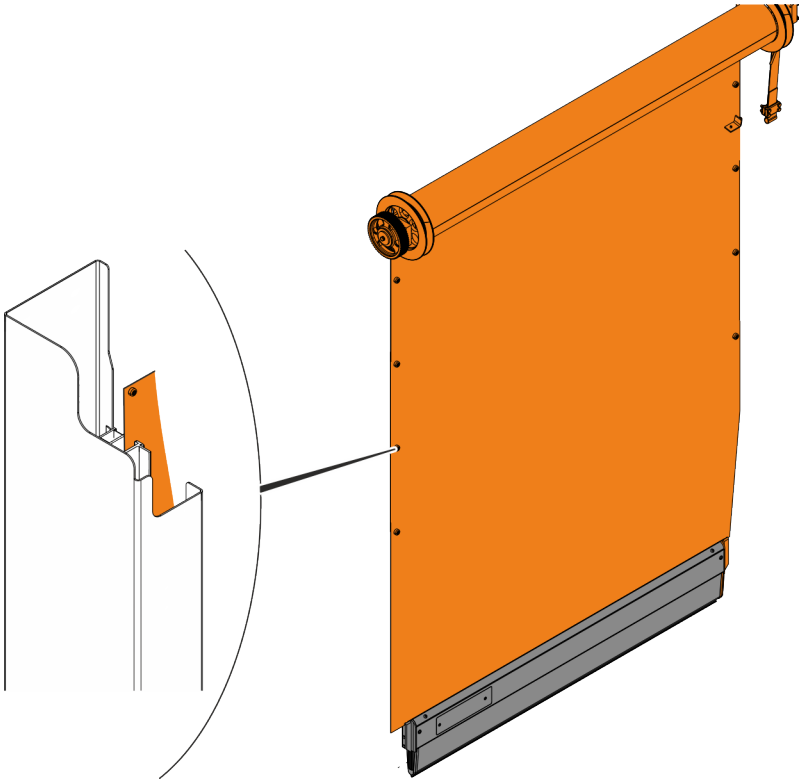


*Fig. 33: Door leaf (271-01 shown here)*

### 3.6.1 Wind profiles (302)

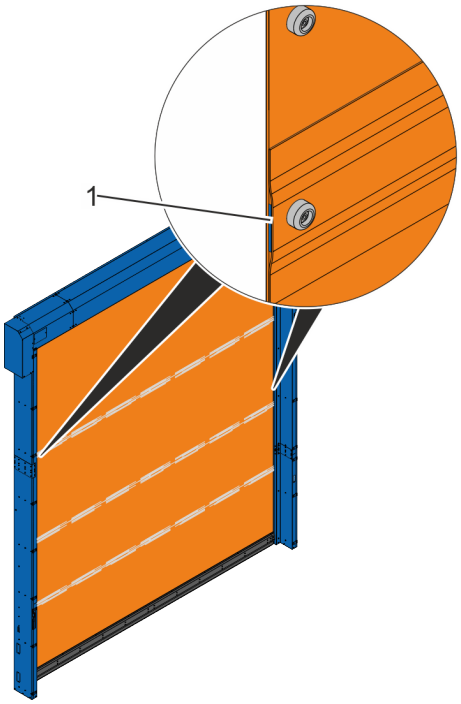



*Fig. 34: Wind profiles (302)*

The wind profiles (Fig. 34/1) are used to reinforce the door leaf. This enables resistance class 2 to wind loads in compliance with DIN EN 12424 to be achieved. In order to achieve this resistance, sheet metal strips are inserted into welded-on pockets which are guided in the side frame with ball bearings (in addition to the wind resistance buttons on the door leaf). The sheet metal strips on the door leaf which are fitted on the opposite side of the spiral case are designed in the same colour as the curtain.

The wind profiles which are used as standard for using the door system as an outside door can be supplied without viewing window for flexible curtains as per the overview of door leaf variants on page *Chapter 3.6.2 'Door leaf versions' on page 36*. They are also optionally available for indoor use in order to resist a higher wind load. The number of profiles depends on the inner opening of the door system.

### 3.6.2 Door leaf versions

Depending on the operational environment, you can choose between the following types of curtain. For the door system types 316 and 274, the choice of curtain depends on the door size, see *Chapter 2 'Technical properties' on page 8*.

*All curtains meet the requirements for Zone III LABS conformity (substances preventing paint adhesion) in accordance with VDMA 24364.*

**Curtain made of soft PVC with welded warning stripes (PVH)**

The curtain consists of 2 mm thick soft PVC viewing strips welded together with 2 mm thick warning stripes. The warning stripes are made of Transilon material (TO1/TS1/TO5/TS5), see *'Curtain made of PVC-coated polyester fabric, laterally stable (TO1/TS1/TO3/TO5/TS5)' on page 39*. The viewing strips and the warning stripes form a flat surface.

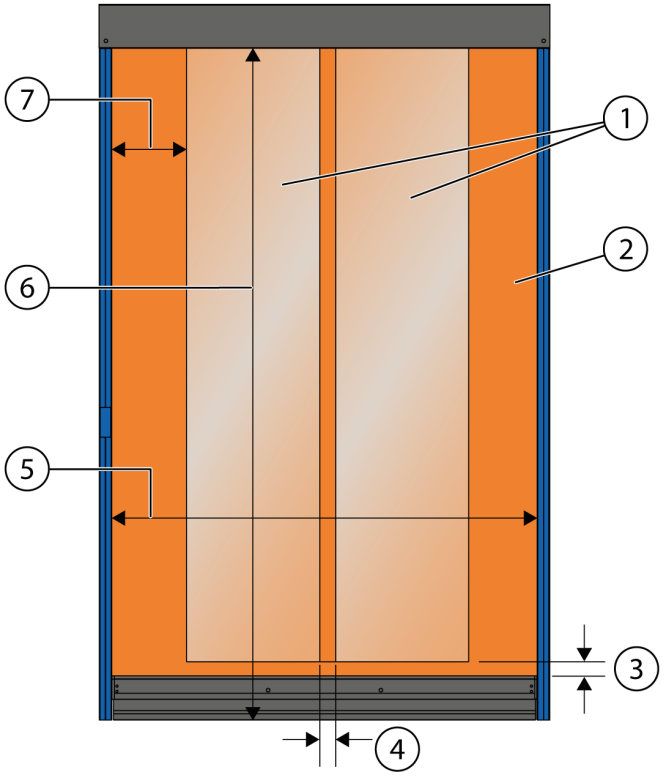



*Fig. 35: Curtain made of soft PVC with welded warning stripes (PVH)*

1 2 mm thick viewing window made of soft PVC
2 2 mm thick lateral warning stripes
3 70 mm wide horizontal stripes
4 100 mm wide and 2 mm thick central warning stripes, see the table for dimensions *'Central warning stripes' on page 37*
5 Door system width
6 Door system height
7 2 mm thick lateral warning stripes, see the table for dimensions *'Lateral warning stripes' on page 38*

**Central warning stripes**

| Door system type | Number of central warning stripes, Fig. 35/4 | | | |
|---|---|---|---|---|
| | **1** | **2** | **3** | **4** |
| 271-01 | B > 1,460 mm | B > 2400 mm | B > 3340 mm | B > 4280 mm |
| 274 | B > 1500 mm | B > 2440 mm | B > 3380 mm | – |
| 302 | – | – | – | – |
| 242-01 | B > 1500 mm | B > 2240 mm | B > 3380 mm | – |
| 310 | B > 1514 mm | B > 2454 mm | B > 3394 mm | – |
| 316 | B > 1540 mm | B > 2480 mm | B > 3420 mm | – |

### Lateral warning stripes

| Door system type | Fig. 35/7 | |
|---|---|---|
| | B < 1300 mm | B ≥ 1,300 mm |
| 271-01 | 110 mm | 310 mm |
| 274 | 130 mm | 330 mm |
| 302 | – | – |
| 242-01 | 130 mm | 330 mm |
| 310 | 137 mm | 337 mm |
| 316 | 150 mm | 350 mm |

| Equipment | | Door system type | | | | | |
|---|---|---|---|---|---|---|---|
| | | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| 2 mm thick welded curtain made of soft transparent PVC with 2 mm thick warning stripes (PVH) | Blue<br>Similar to RAL 5002 | ● | ● | – | ○ | ○ | ○ |
| | Green<br>Similar to RAL 6005 | ● | ● | – | ○ | ○ | ○ |
| | Orange<br>Similar to RAL 2008 | ● | ● | – | ○ | ○ | ○ |
| | White<br>Similar to RAL 9010 | ● | ● | – | ○ | ○ | ○ |
| | Yellow<br>Similar to RAL 1021 | ● | ● | – | ○ | ○ | ○ |
| | Light grey<br>Similar to RAL 7035 | ● | ● | – | ○ | ○ | ○ |
| | Red<br>Similar to RAL 3002 | ● | ● | – | ○ | ○ | ○ |
| | Anthracite grey<br>Similar to RAL 7016 | ● | ● | - | ○ | | ○ |

● Standard

○ Optional

– Not available

**Curtain made of PVC-coated polyester fabric, laterally stable (TO1/TS1/TO3/TO5/TS5)**

The curtain consists of 2 mm thick Transilon material, which is also used for the PVH curtain's warning stripes. The curtain can be fitted as an option with a 2 mm thick soft PVC viewing window that is welded together to the Transilon material. The curtain forms a flat surface with the viewing window.

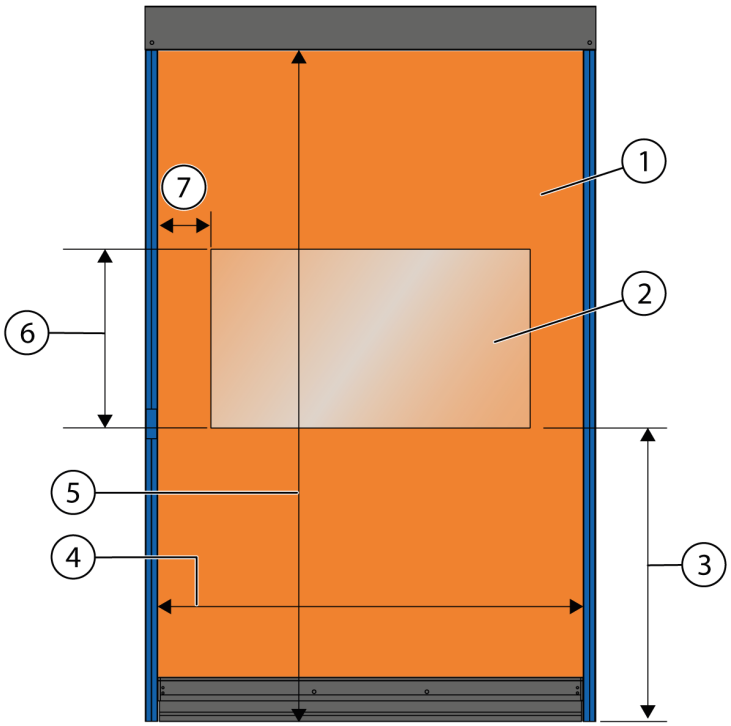



*Fig. 36: Curtain made of PVC-coated polyester fabric, laterally stable (TO1/TS1/TO3/TO5/TS5)*

1 2 mm thick curtain
2 2 mm thick viewing window made of soft PVC
3 Distance from the floor to the viewing window (MBFEN/MBF), depending on the size of the door system
4 Door system width
5 Door system height
6 Viewing window height (FENH/FHR), 150 mm to 1,400 mm, depending on the size of the door system
7 2 mm thick lateral stripes, see the table for dimensions *'Lateral stripes' on page 39*

**Lateral stripes**

| Door system type | Fig. 35/7 | |
|---|---|---|
| | **B < 1300 mm** | **B ≥ 1,300 mm** |
| 271-01 | 110 mm | 310 mm |
| 274 | 130 mm | 330 mm |
| 302 | – | 285 mm |

# Construction of the high-speed roll-up door



| Door system type | Fig. 35/7 | |
|---|---|---|
| | B < 1300 mm | B ≥ 1,300 mm |
| 242-01 | 130 mm | 330 mm |
| 310 | 137 mm | 337 mm |
| 316 | 150 mm | 350 mm |

| Equipment | | Door system type | | | | | |
|---|---|---|---|---|---|---|---|
| | | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| 2 mm thick curtain made of PVC-coated polyester fabric, laterally stable, textured on both sides, with and without viewing window<br>302: optionally available with wind profiles (without viewing window) (TOX/TSX) | Blue<br>Similar to RAL 5002[1,2] | ○ | ○ | ● | ● | ○ | ○ |
| | Yellow<br>Similar to RAL 1021[2] | ○ | ○ | ● | ● | ○ | ○ |
| | Orange<br>Similar to RAL 2008[2] | ○ | ○ | ● | ● | ○ | ○ |
| | Red<br>Similar to RAL 3002[2] | ○ | ○ | ● | ● | ○ | ○ |
| | Papyrus white<br>Similar to RAL 9018 standard[1,2] | ○ | ○ | ○ | ○ | ○ | ○ |
| | Light grey<br>Similar to RAL 7035[1,2] | ○ | ○ | ○ | ○ | ○ | ○ |
| | Signal grey<br>Similar to RAL 7004[1,2] | ○ | ○ | ○ | ○ | ○ | ○ |
| | Charcoal grey<br>Hardly flammable, without window[1,3] | ○ | ○ | ○ | ○ | ○ | ○ |
| | Anthracite grey<br>Similar to RAL 7016[1,3] | ○ | ○ | ○ | ○ | ○ | ○ |

| Equipment | | Door system type | | | | | |
|---|---|---|---|---|---|---|---|
| | | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| | Pure white<br>Pure white, similar to RAL 9010[1,2] | ○ | ○ | ○ | ○ | ○ | ○ |
| | Moss green<br>Similar to RAL 6005[1,2] | ○ | ○ | ○ | ○ | ○ | ○ |

● Standard

○ Optional

– Not available

[1] Anti-static finish (applies only partially to door curtain with viewing window)

[2] Complies with the regulations of FDA 21CR §175.300 (Table 2, D) for contact with aqueous foods (contact period of 30 minutes at 40 °C). Oily and fatty foods are excluded (applies only partially to door curtain with viewing window).

[3] Flame retardant in compliance with DIN EN ISO 340

**Curtain made of polyester fabric with urethane water proofing, laterally stable (TO4)**

The curtain is made of 1.4 mm thick Transilon material. A viewing window cannot be supplied with the curtain.

This curtain is specifically designed for use in areas where foodstuffs are handled. Complies with the following regulations or directives for transportation of unpacked foodstuffs:

- (EU) 10/2011 and Regulation (EC) 1935/2004
- FDA 21CFR
- MHLW 370
- Halal

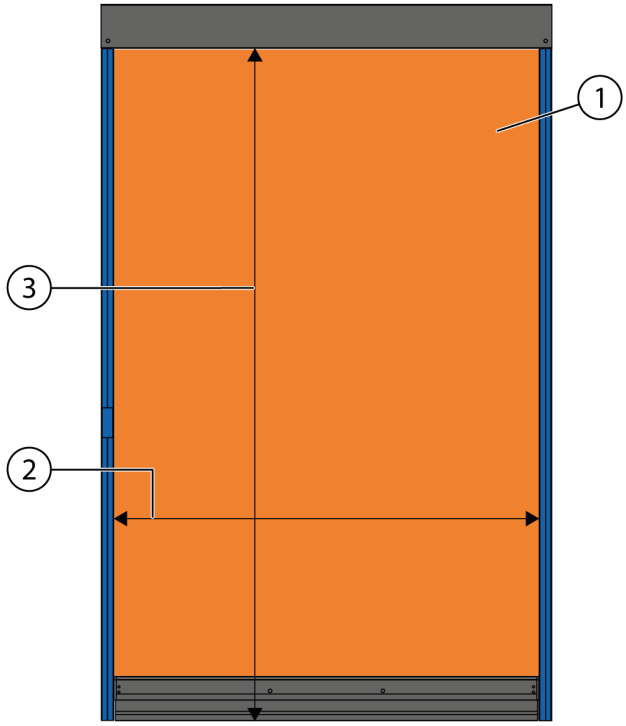



*Fig. 37: Curtain made of polyester fabric with urethane water proofing, laterally stable (TO4)*

1 1.4 mm thick curtain made of sheet with PES fabric
2 Door system width
3 Door system height

| Equipment | | Door system type | | | | | |
|---|---|---|---|---|---|---|---|
| | | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| 1.4 mm thick curtain, made of polyester fabric with urethane water proofing, laterally stable, textured on both sides, without viewing window (TO4) | Beige[1] | ○ | ○ | ○ | ○ | – | – |

● Standard

○ Optional

– Not available

[1] Anti-static finish (applies only partially to door curtain with viewing window)

**Curtain made of PVC-coated polyester fabric (POS)**

The curtain is made of 1.5 mm thick PVC sheet.

Depending on the size of the door system, the curtain is horizontally welded together in several sections. The materials are connected to each other such that they overlap.

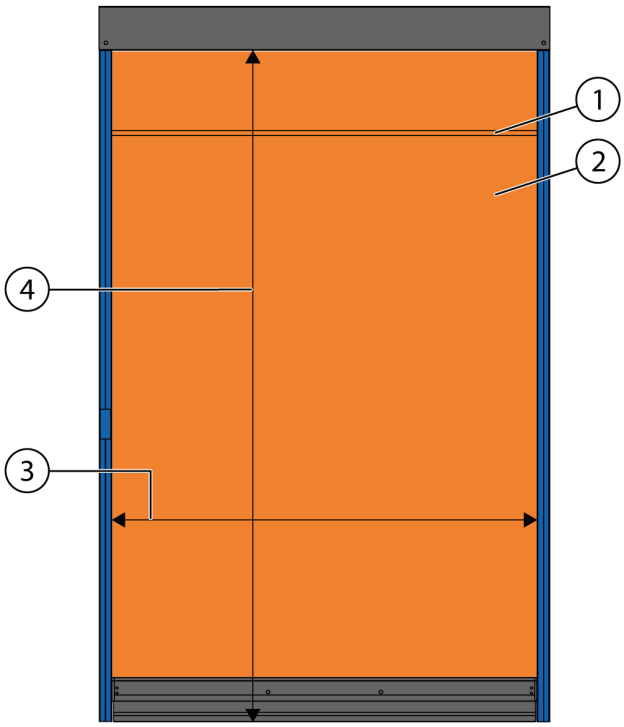



*Fig. 38: Curtain made of PVC-coated polyester fabric (POS)*

1 Horizontally welded seam
2 1.5 mm thick curtain made of PVC sheet with PES fabric
3 Door system width
4 Door system height

| Equipment | | Door system type | | | | | |
|---|---|---|---|---|---|---|---|
| | | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| 1.5 mm thick curtain, made of PVC-coated polyester fabric, smooth on both sides, without viewing window (POS) | Blue<br>Similar to RAL 5002 | ○ | ○ | – | ○ | – | – |
| | Orange<br>Similar to RAL 2008 | ○ | ○ | – | ○ | – | – |

● Standard

○ Optional

– Not available

**Curtain made of PVC-coated polyester fabric (PO8/PE8)**

The curtain consists of 0.8 mm thick PVC sheet with PES fabric, with 0.8 mm thick soft PVC viewing windows as an option. Depending on the size of the door system, the curtain is horizontally welded together in several sections. The materials are connected to each other such that they overlap.

From a clear width (LB) of 2,200 mm, the curtain is made with 2 viewing windows, with 200 mm wide separating strips fitted between them.

*The white curtain variant without a viewing window can be printed on one side. This is only possible on request.*

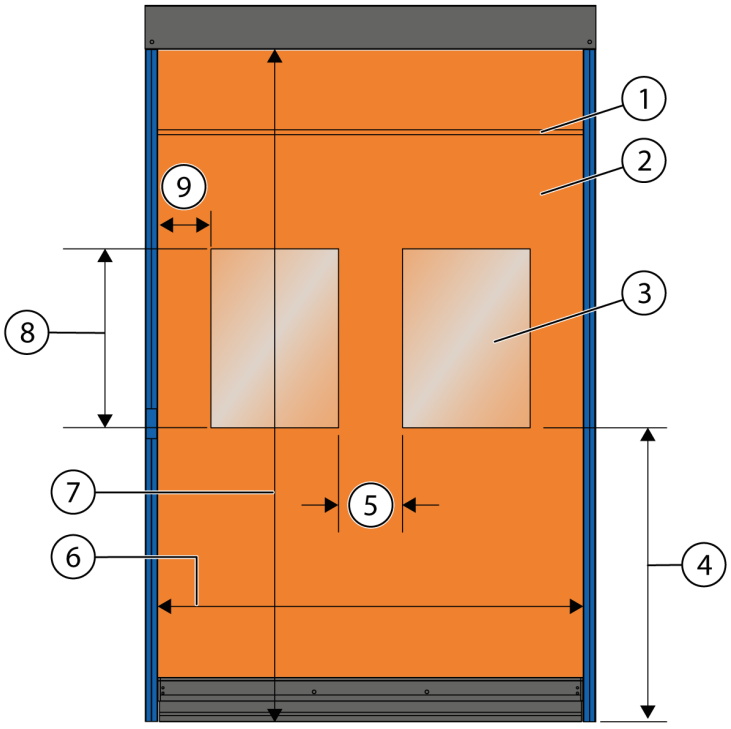



*Fig. 39: Curtain made of PVC-coated polyester fabric, laterally stable (PO8/PE8)*

1 Horizontally welded seam
2 0.8 mm thick curtain made of PVC sheet with PES fabric
3 0.8 mm thick viewing window made of soft PVC
4 Distance from the floor to the viewing window (MBFEN/MBF), depending on the size of the door system
5 200 mm wide separating strips between the viewing windows
6 Door system width
7 Door system height
8 Viewing window height (FENH/FHR), 150 mm to 1,400 mm, depending on the size of the door system
9 Lateral warning stripes, see the table for dimensions *'Lateral warning stripes' on page 45*

**Lateral warning stripes**

| Door system type | Fig. 39/9 | |
|---|---|---|
| | B < 1300 mm | B ≥ 1,300 mm |
| 271-01 | – | – |
| 274 | 130 mm | 330 mm |
| 302 | – | – |
| 242-01 | – | – |
| 310 | 137 mm | 337 mm |
| 316 | 150 mm | 350 mm |

| Equipment | | Door system type | | | | | |
|---|---|---|---|---|---|---|---|
| | | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| 0.8 mm thick curtain made of PVC-coated polyester fabric, smooth on both sides, with and without viewing window (PO8/PS8) | Blue<br>Similar to RAL 5002 | – | ○ | – | – | ● | ● |
| | Green<br>Similar to RAL 6005 | – | ○ | – | – | ● | ● |
| | Orange<br>Similar to RAL 2004 | – | ○ | – | – | ● | ● |
| | Red<br>Similar to RAL 3002 | – | ○ | – | – | ● | ● |
| | Yellow<br>Similar to RAL 1003 | – | ○ | – | – | ● | ● |
| | Light grey<br>Similar to RAL 7035 | – | ○ | – | – | ● | ● |
| | Agate grey<br>Similar to RAL 7038 | – | ○ | – | – | ● | ● |

| Equipment | | Door system type | | | | | |
|---|---|---|---|---|---|---|---|
| | | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| | Black<br>Similar to RAL 9005 | – | ○ | – | – | ● | ● |
| | White<br>Similar to RAL 9016 | – | ○ | – | – | ● | ● |

● Standard

○ Optional

– Not available

## 3.7 End shield

The lower edge of the door leaf is formed by the end shield. This is fitted with a rubber profile that forms the horizontal seal to the floor.

*A sealing lip extension with adjustable length, made from 0.8-mm-PES-fabric, is available as an option.*

***This cannot be combined with a door light grid!***

### 3.7.1 End shield 271-01

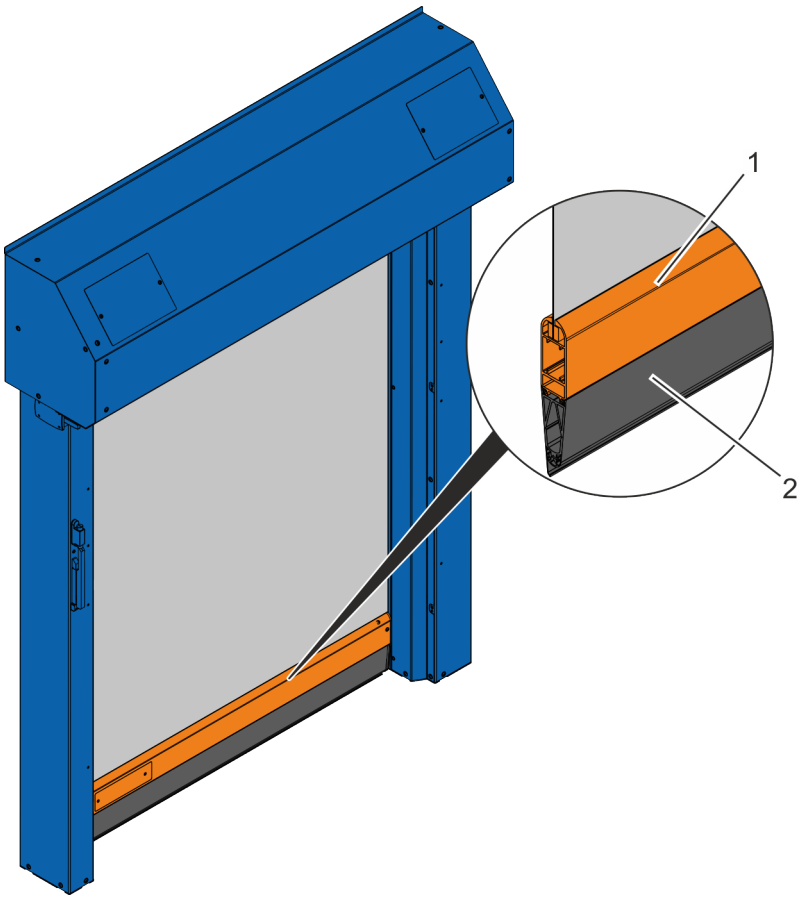



*Fig. 40: End shield 271-01*

The end shield (Fig. 40/1) of the door leaf is available in an aluminium/V2A design and can be equipped with a safety edge in conjunction with light barrier(s).

For design reasons, the length of the rubber seal (Fig. 40/2) on the different versions is as follows (crash function has no effect on the design of the rubber seal on these types):

- Without crash function with safety edge B-11 mm
- Without crash function with door light grid B-12 mm
- With crash function and safety edge or door light grid B-14 mm

Depending on the version, the height of the end shield incl. rubber seal differs:

- Aluminium: 230 mm
- V2A version: 250 mm

### 3.7.2 End shield 274

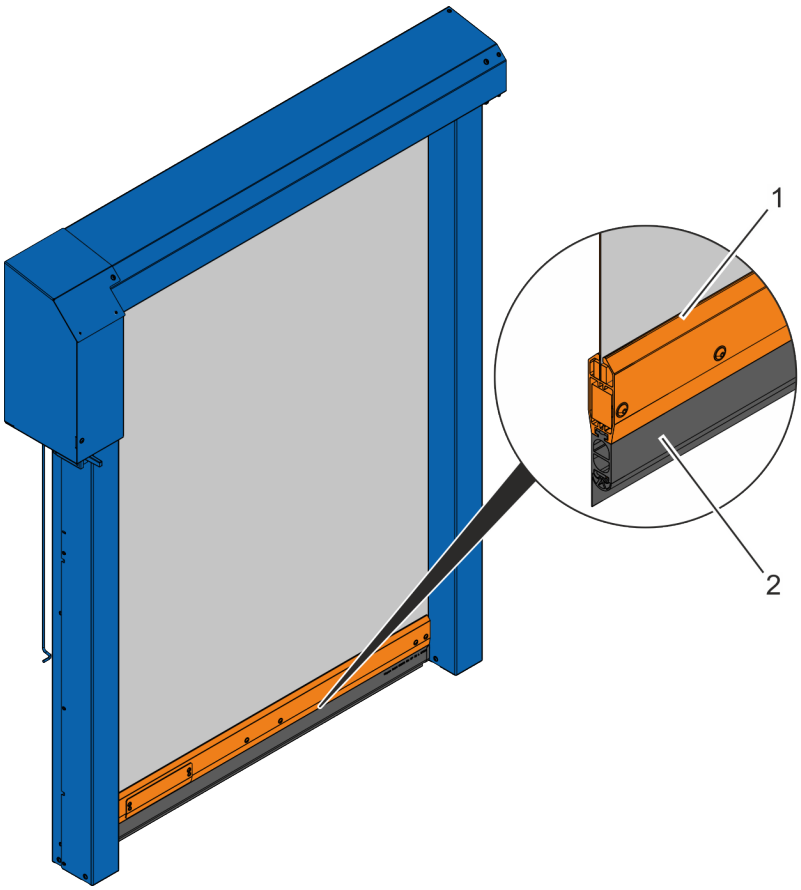



*Fig. 41: End shield 274*

The end shield (Fig. 41/1) of the door leaf is available in an aluminium/V2A design and can be equipped with a safety edge in conjunction with light barrier(s).

For design reasons, the length of the rubber seal (Fig. 41/2) is B-12 mm.

Depending on the version, the height of the end shield incl. rubber seal differs:

- Aluminium: 180 mm
- V2A version: 200 mm

### 3.7.3 End shield 302

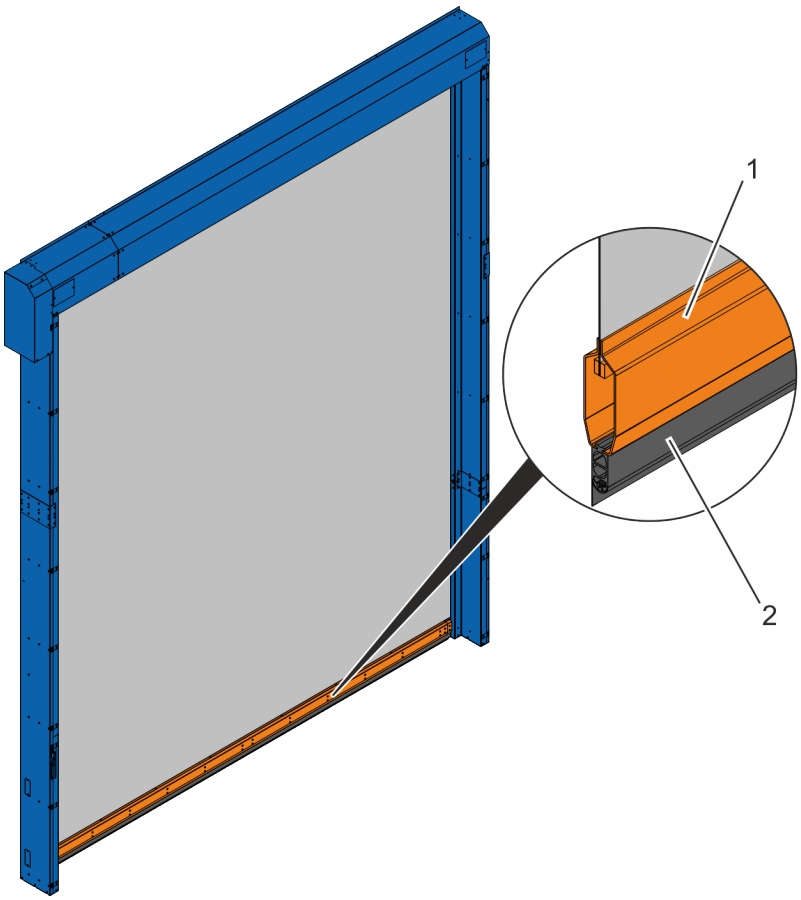



*Fig. 42: End shield 302*

The end shield (Fig. 42/1) of the door leaf is available in a steel sheet design and can be fitted with a safety edge in conjunction with light barrier(s).

For design reasons, the length of the rubber seal (Fig. 42/2) is B-12 mm.

The height of the end shield including the rubber seal is 250 mm.

### 3.7.4 End shield 242-01

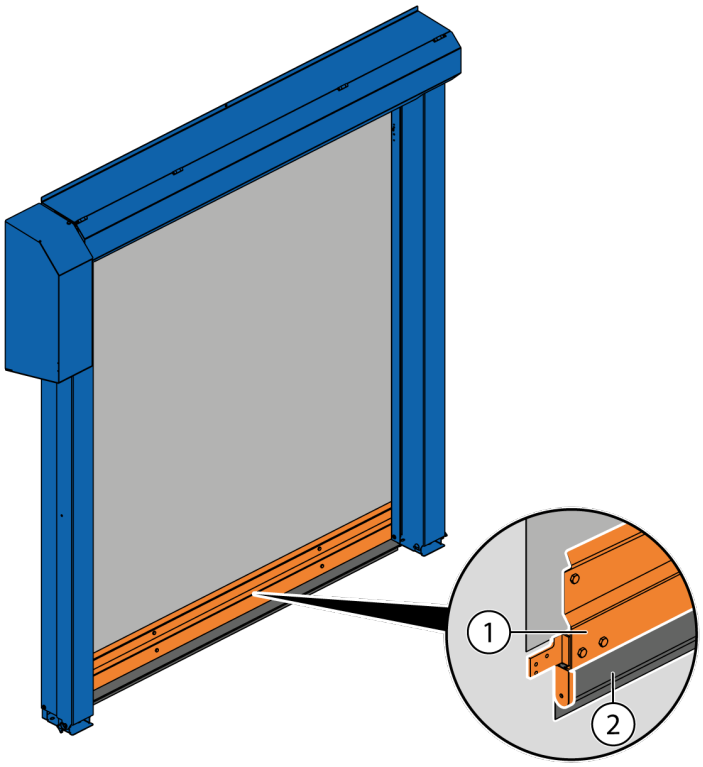



*Fig. 43: End shield 242-01 – straight version*

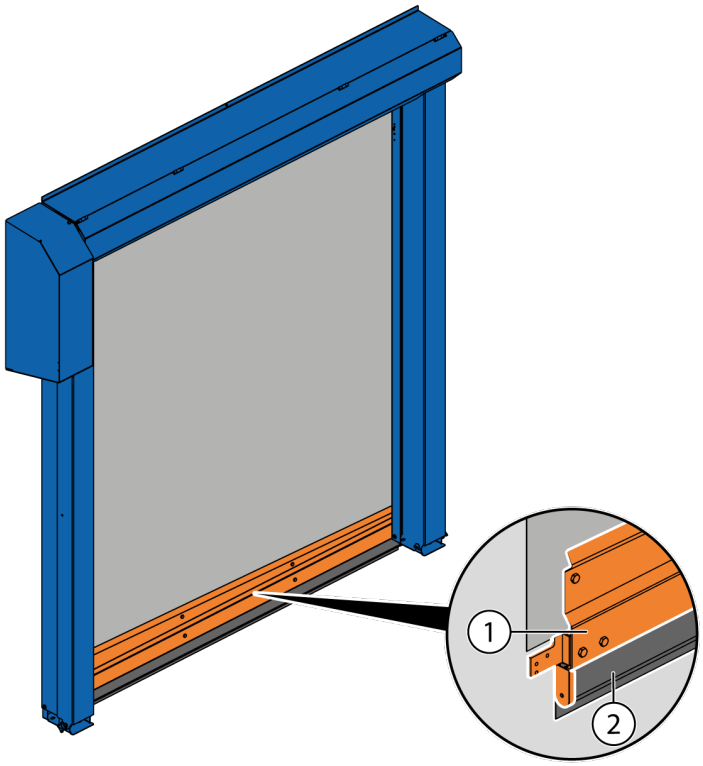



*Fig. 44: End shield 242-01 – slanted version*

The end shield (Fig. 43/1 and Fig. 44/1) of the door leaf is available in a V2A/V4A design and can be fitted with a safety edge in conjunction with light barrier(s).

For design reasons, the length of the rubber seal (Fig. 43/2 and Fig. 44/2) is B-12 mm.

A distinction is made between straight (Fig. 43) and slanted (Fig. 44) designs. The slanted design enables the water to run off into the drainage channel more effectively, which means that there is less dripping into the door opening. The drainage side is always on the opposite side to the motor.

Depending on the version, the height of the end shield incl. rubber seal differs:

- Slanted version
  - Motor side: 275 mm
  - Side opposite the motor: 220 mm
- Straight version: 245 mm

### 3.7.5 End shield 310

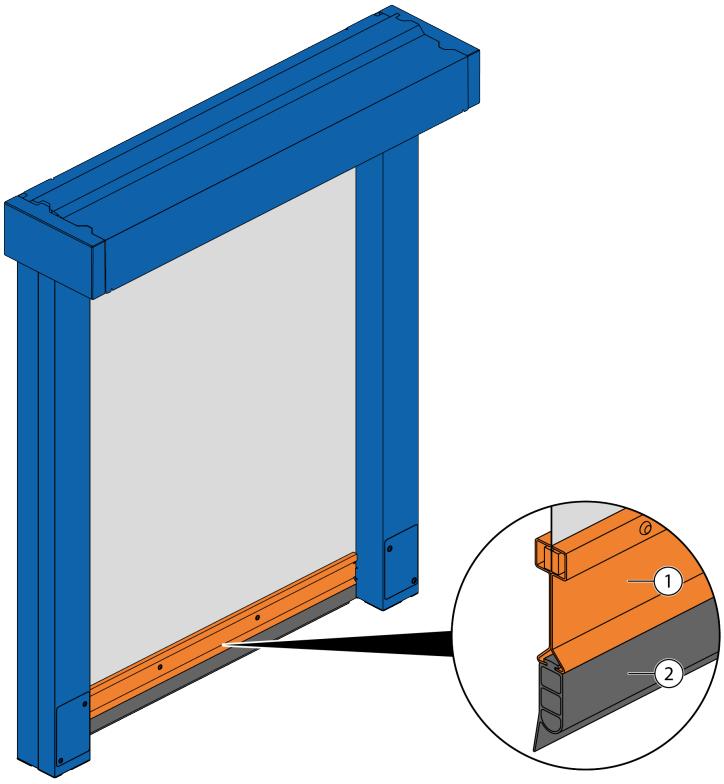



*Fig. 45: End shield 310*

The end shield (Fig. 45/1) of the door leaf is available in a steel/V2A design and can be equipped with a safety edge in conjunction with light barrier(s).

For design reasons, the length of the rubber seal (Fig. 45/2) is B-14 mm.

The height of the end shield including the rubber seal is 200 mm.

### 3.7.6 End shield 316

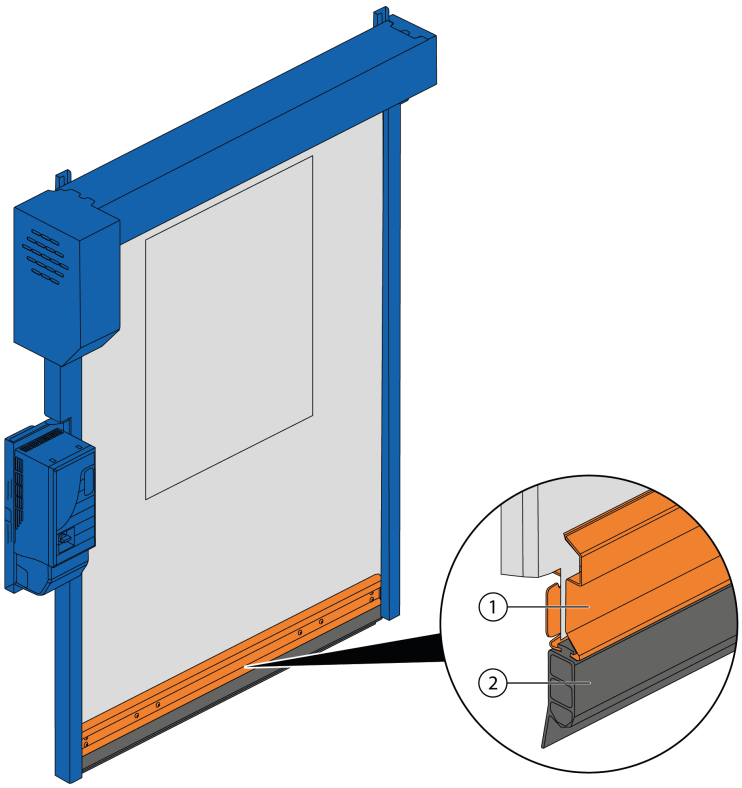



*Fig. 46: End shield 316*

The end shield (Fig. 46/1) of the door leaf is available in a steel/V2A design and is equipped with a rubber seal.

For design reasons, the length of the rubber seal (Fig. 46/2) is B-12 mm.

The height of the end shield including the rubber seal is 175 mm.

### 3.7.7 EFAFLEX crash protection (EAS) – (271-01)

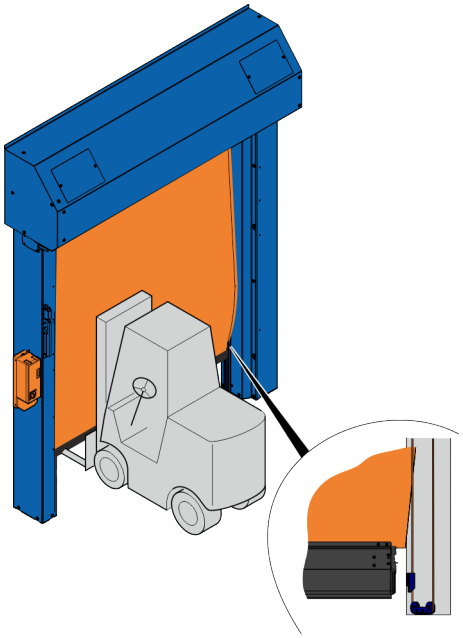


*Fig. 47: EFAFLEX crash protection (EAS) (271-01)*

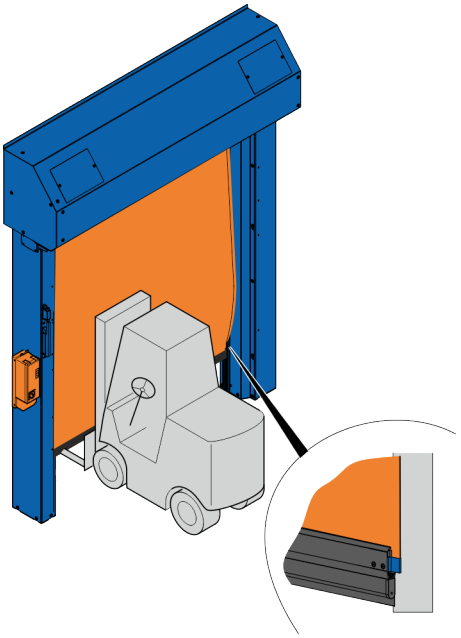


*Fig. 48: EFAFLEX crash protection (EAS) (274)*

In case of a minor collision between objects and the end shield, the door leaf is disengaged in the lower area. Sensors transmit a fault message to the control unit, movements are stopped and the door system switches to manual mode. The door leaf then has to be re-engaged manually.

The door leaf can be re-engaged manually on door system types 271-01 and 274.

## 3.8 Counterbalance and door leaf tensioner

The counterbalance supports the motor in normal mode and enables partial opening of the door system by hand (without electricity) in emergency situations.

Depending on the door system type, the weight counterbalance and door leaf tension is achieved either by springs or weights. This is calculated on an order-specific basis.

### 3.8.1 Counterbalance and door leaf tension 271-01

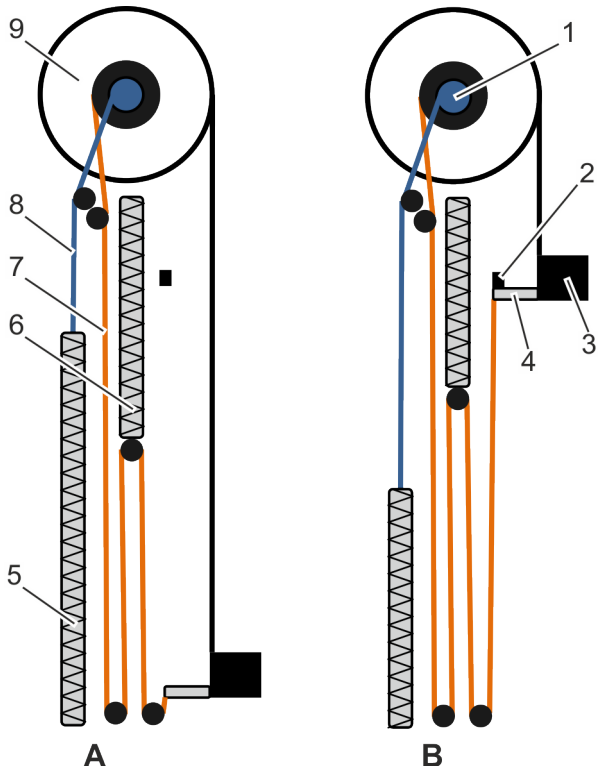



*Fig. 49: Door leaf tension and counterbalance 271-01*

A Status: Door system is closed
B Status: Door system is open
1 Cable and belt winder
2 End position buffer (door system open)
3 End shield
4 Door leaf mount/sliding block
5 Weight counterbalance spring
6 Door leaf tension spring
7 Cable
8 Belt
9 Winding shaft with curtain

The door leaf is counterbalanced by a counter-pull mechanism: Tension springs (Fig. 49/5) are installed in the side frames. The tension springs are connected to the winding shaft (Fig. 49/9) by heavy-duty belts (Fig. 49/8). The tension springs are tensioned when the door system is closed and relaxed when the door system is open.

The door leaf tension spring (Fig. 49/6) tensions the cable (Fig. 49/7) which is positioned between the door leaf mount (Fig. 49/4) and the cable winder (Fig. 49/1), and thus pulls the curtain taut.

## 3.8.2 Counterbalance and door leaf tension (310)

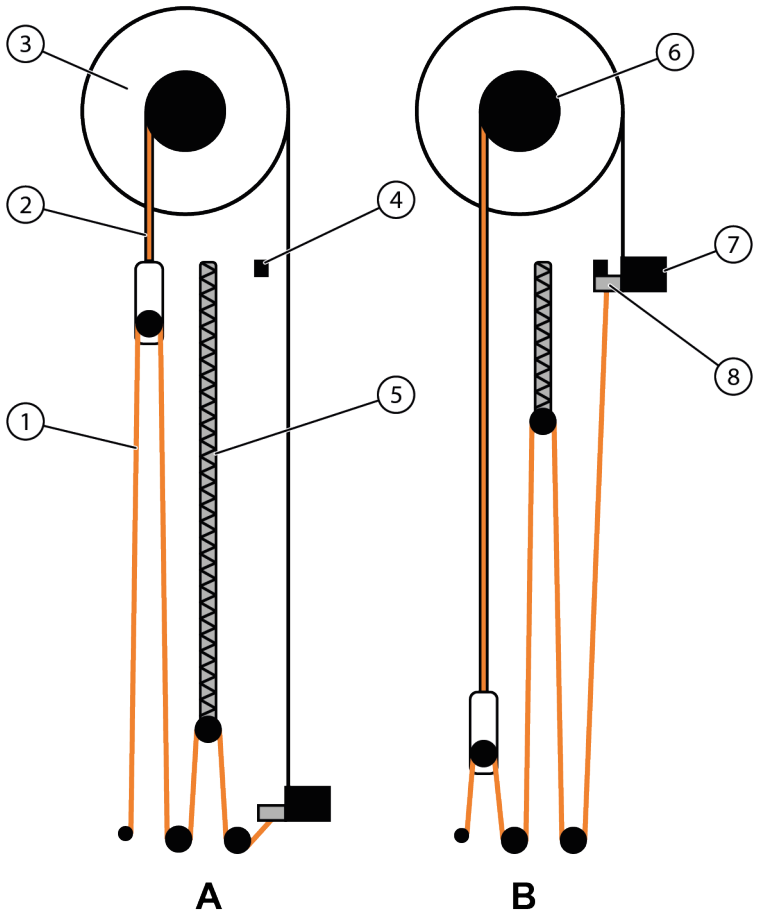



*Fig. 50: Door leaf tension and counterbalance (310)*

A Status: Door system is closed
B Status: Door system is open
1 Cable (door leaf)
2 Belt (winder)
3 Winding shaft with curtain
4 End position buffer (door system open)
5 Counterbalance and door leaf tension spring
6 Cable and belt winder
7 End shield
8 Door leaf mount/sliding block

The door leaf is counterbalanced by a counter-pull mechanism: Tension springs are installed in the side frames (Fig. 50/5) and are connected by cables (Fig. 50/3) to the winding shaft and the door leaf. The tension springs are tensioned when the door system is closed and relaxed when the door system is open.

The door leaf tension and counter-pull mechanism have a spring, which performs both functions (Fig. 50/1).

This spring tensions the cables and belts (Fig. 50/1) located between the door leaf mount (Fig. 50/8) and the winder (Fig. 50/6) and thus pulls the curtain taut.

### 3.8.3 Weight counterbalance and door leaf tension 274, 302, 242-01

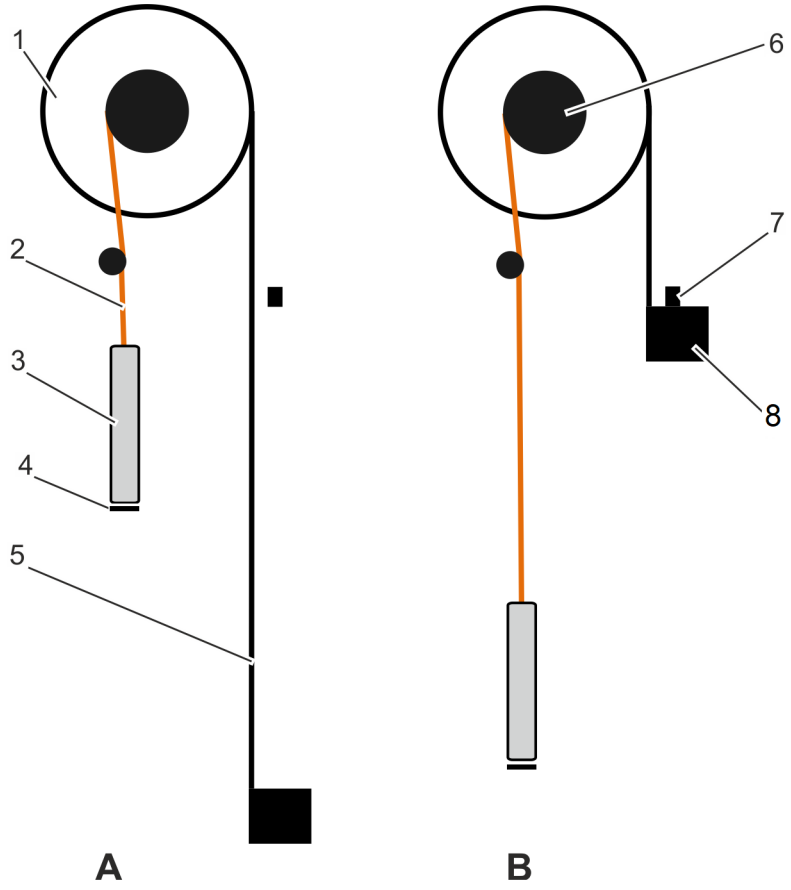



*Fig. 51: Door leaf tension and weight counterbalance 274, 302, 242-01*

A Status: Door system is closed
B Status: Door system is open
1 Winding shaft with curtain
2 Cable
3 Counterweight
4 Optional additional weights for 274, 242-01 (recommended for power-on brake)
5 Curtain
6 Cable winder
7 End position buffer (door system open)
8 End shield with additional weight

The door leaf is counterbalanced by a counter-pull mechanism: Counterweights (Fig. 51/3) are installed in the side frames. The counterweights are connected to the winding shaft (Fig. 51/1) by cables (Fig. 51/2) using the cable winder (Fig. 51/6). The counterweights are in the upper position when the door system is closed, and are in the lower position when the door system is open.

If required, the emergency opening height can be optimised by using optional additional weights (274/242-01) (Fig. 51/4)

The end shield with additional weight (Fig. 51/8) in turn pulls the curtain taut with the force of gravity.

## 3.9 Emergency operation versions

The following emergency operation versions are available:

**Emergency operation versions**

| Emergency operation | Door system type | | | | | |
|---|---|---|---|---|---|---|
| | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| Manual release lever on side frame | ● | – | ● | – | – | – |
| Manual release lever on separate console | ○ | ○ | ○ | ○ | ○ | – |
| Pull cord for manual release | – | ● | – | ● | ● | – |
| Push-button (when using aseptic drive) | – | ○ | ○ | ○ | – | – |
| Slammer/push-button (when using a drive with power-on brake) | – | ○ | – | ○ | – | – |
| Manual emergency operation | – | – | – | – | – | ● |

● Standard

○ Optional

– Not available

*The optional push-button and the slammer/push-button can be installed in the control cabinet or attached to one of the side frames or on the wall (flush-mounted). Two push-buttons or two slammer/push-buttons can be installed as options.*

## 3.9.1 Manual release lever

**Manual release lever**

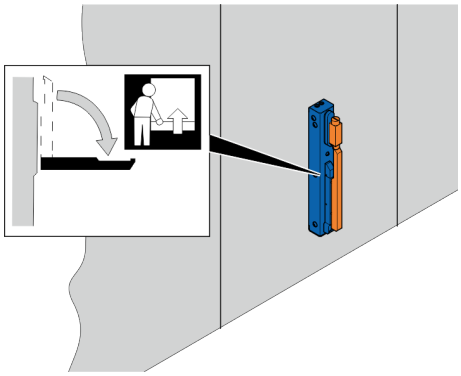


*Fig. 52: Manual release lever on separate console*

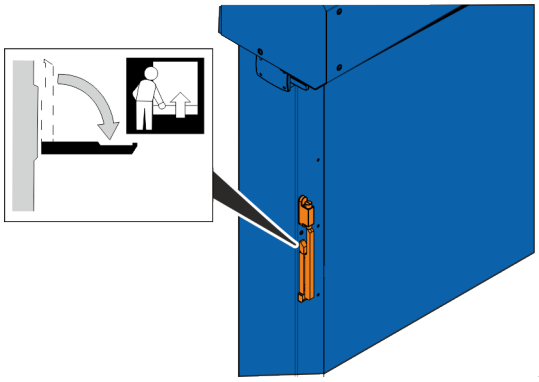


*Fig. 53: Manual release lever on side frame*

The manual release lever is situated on the side frame or optionally on a separate console. When the lever is pulled gently, the motor brake is released and the door leaf is lifted by the spring counterbalance. The door system can be opened completely by pushing the door leaf upwards manually. The manual release lever is not designed for regular opening of the door system and does not have a catch position.

The manual release lever is also available in a lockable design (optional).

*When using the aseptic drive, there is no option for mechanical/manual emergency opening.*

*If this is required, an optional EFA-UPS (uninterruptible power supply) can be integrated into the EFA-TRONIC® or EFA-TRONIC Professional® control units.*

*This allows an emergency opening option using push-buttons.*

*The push-buttons have an illuminated design and indicate that the EFA-UPS is functioning.*

### 3.9.2 Manual emergency operation (316)

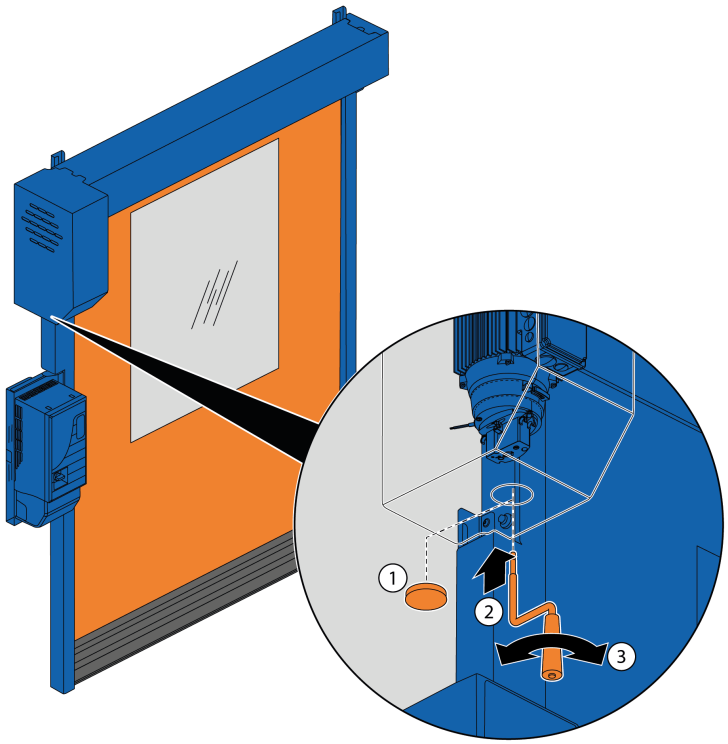



*Fig. 54: Manual emergency operation (316)*

In case of power failure, the door system can be opened mechanically with the winch included in the scope of delivery.

### 3.9.3 Pull cord for manual release

**Only for door systems 274, 242-01, 310**

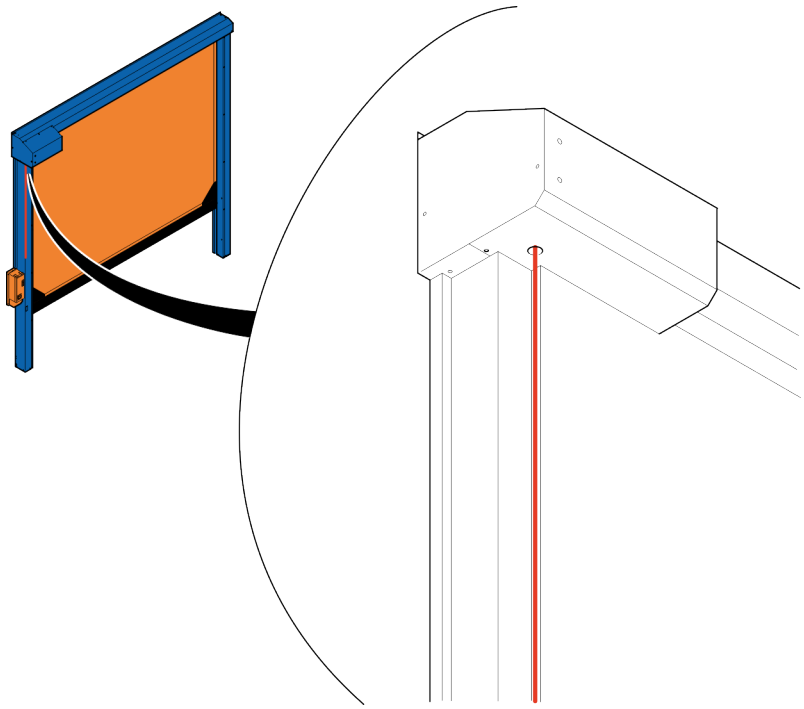


*Fig. 55: Pull cord for manual release*

When the pull cord for manual release is pulled, the drive brake is released mechanically and the door system is partially opened automatically by the weight counterbalance system. The door can be opened completely by pushing the door leaf upwards manually.

The pull cord for manual release comprises a red braided cable. An optional smooth, red PVC round cord can also be supplied.

*When using the aseptic drive, there is no option for mechanical/manual emergency opening.*

*If this is required, an optional EFA-UPS (uninterruptible power supply) can be integrated into the EFA-TRONIC® or EFA-TRONIC Professional® control units.*

*This allows an emergency opening option using push-buttons.*

*The push-buttons have an illuminated design and indicate that the EFA-UPS is functioning.*

## 3.9.4 Push-button for emergency operation

**Push-button (274, 302, 242-01)**

*Fig. 56: Push-button*

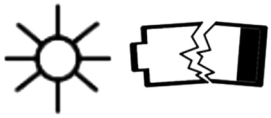
When using the aseptic drive, you have the option of carrying out an emergency opening using an uninterruptible power supply (EFA-UPS). This provides an emergency opening option with one (optionally two) push-button(s) with status display.

The emergency opening is activated by pressing and holding the push-button. The door can be opened completely by pushing the door leaf upwards manually. When the push-button is released, the door leaf remains in its current position.

The control unit is in EMERGENCY STOP condition while doing this.

**Optical signals of the push-buttons (274, 302, 242-01)**

If a push-button for emergency operation of the door system is installed on the door system, it is marked with an information sign for operation and the respective optical signals.



Red LED lights up constantly:

- Check the rechargeable battery.

Green LED lights up constantly:

- The door system is in normal mode.

Green LED does not light up:

- The power supply has been interrupted.

Emergency operation with push-button.

**Slammer/push-button (274, 242-01)**

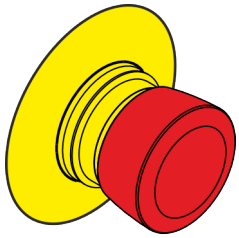


*Fig. 57: Slammer/push-button*

When using a drive with a power-on brake, emergency opening can be enabled by pressing the slammer/push-button. The door can be opened completely by pushing the door leaf upwards manually. The optional additional weights (Fig. 51/4) are recommended for doors with power-on brake so that the emergency opening height can be optimised.

The control unit is in EMERGENCY STOP condition while doing this.

*If the power fails, or if the door system is switched off by the main switch, it opens automatically with a power-on brake.*

## 3.10 Drive and control unit

### 3.10.1 Drives

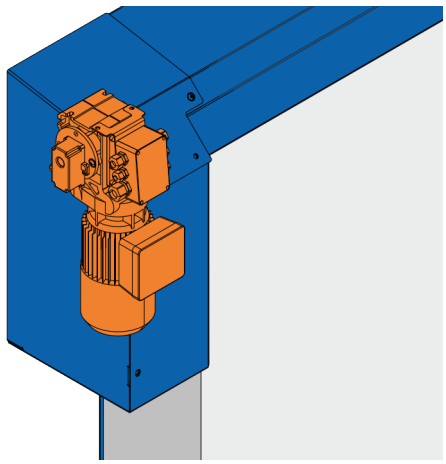
The following control units are available depending on the drive used:

| Drive type | Control unit | Door system type | | | | | |
|---|---|---|---|---|---|---|---|
| | | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| Direct drive | EFA-TRONIC® | – | ● | ● | – | – | ● |
| | EFA-TRONIC® Professional | – | ○ | ○ | ● | – | ○ |
| | EFA-TRONIC® light | – | ○ | – | – | – | – |
| Belt drive/chain | EFA-TRONIC® | ● | – | – | – | ○ | – |
| | EFA-TRONIC® Professional | ○ | – | – | – | ○ | – |
| | EFA-TRONIC® light | – | ○ | – | – | ● | – |
| Aseptic drive | EFA-TRONIC® | – | ○ | – | – | – | – |
| | EFA-TRONIC® Professional | – | ○ | ○ | ○ | – | – |

● Standard

○ Optional

– Not available



| 274, 302, 242-01 | |
|---|---|
| Drive type | Direct mount drive<br>(Bevel spur gear, asynchronous AC motor) |
| Power classes | ■ 274: 0.75 kW<br>■ 302: 1.5 kW<br>■ 242-01: 0.75 kW |
| Protection type | IP54 |

*Fig. 58: Drive 274, 302, 242-01*

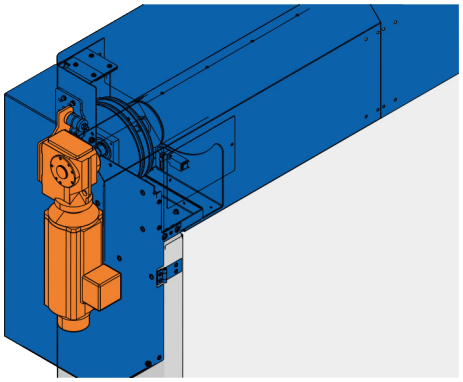
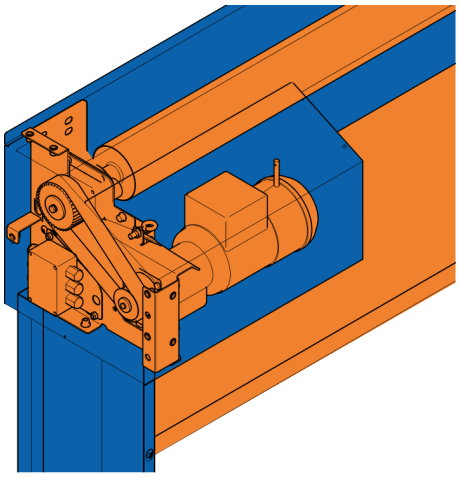


*Fig. 59: Aseptic drive*

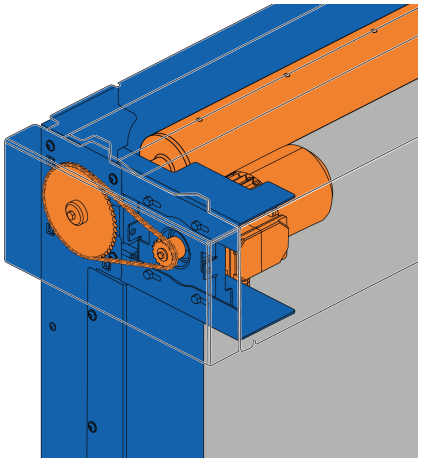
| **274, 302, 242-01** | |
|---|---|
| Position detection | ■ 274<br>Incremental encoder, optional absolute encoder.<br>Thus no reference run is required.<br>■ 302, 242-01<br>Absolute encoder.<br>Thus no reference run is required. |
| Brake version | ■ Spring-applied brake (standard)<br>■ Power-on brake optional<br>– 274<br>1000 ≤ B ≤ 3500<br>1500 ≤ H ≤ 3000<br>– 242-01<br>1000 ≤ B ≤ 3000<br>1500 ≤ H ≤ 3000<br>If the power fails, or if the door system is switched off by the main switch, the door opens automatically. |

| **(optional 274, 302, 242-01)** | |
|---|---|
| Drive type | Direct mount drive<br>(Bevel spur gear, asynchronous AC motor) |
| Power classes | 1.1 kW |
| Protection type | IP65 |
| Position detection | Absolute encoder.<br>Thus no reference run is required. |
| Corrosion protection class | C5-I |



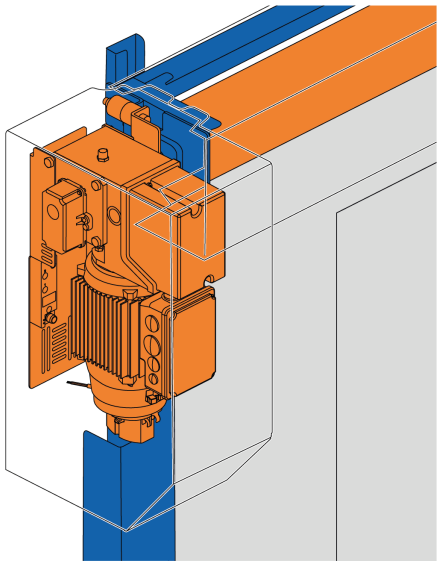
| 271-01 | |
|---|---|
| Drive type | Power transmission via toothed belt<br>(Spur gear, asynchronous AC motor) |
| Power class | 1.5 kW |
| Protection type | IP54 |
| Position detection | Absolute encoder. |

*Fig. 60: Drive (271-01)*



| 310 | |
|---|---|
| Drive type | Power transmission via chain<br>(asynchronous AC motor) |
| Power class | 0.75 kW |
| Protection type | IP54 |
| Position detection | Absolute encoder.<br>Thus no reference run is required. |

*Fig. 61: Drive (310)*



| 316 | |
|---|---|
| Drive type | Direct mount drive with integrated gear failure safeguard<br>Mechanical emergency opening: using manual emergency operation mechanism/winch |
| Power class | 0.75 kW |
| Protection type | IP54 |
| Position detection | Absolute encoder.<br>Thus no reference run is required. |

*Fig. 62: Drive (316)*

## 3.10.2 Control units

**Position of control unit**

| Position | Door system type | | | | | |
|---|---|---|---|---|---|---|
| | 271-01 | 274 | 302 | 242-01 | 310 | 316 |
| On the side frame located on the motor side | ○ | – | ○ | – | ○ | ● |
| On the side frame located on the side opposite the motor | – | – | – | – | ○ | – |
| On the wall | ● | ● | ● | ● | ● | – |

● Standard

○ Optional

– Not available

### EFA-TRONIC®

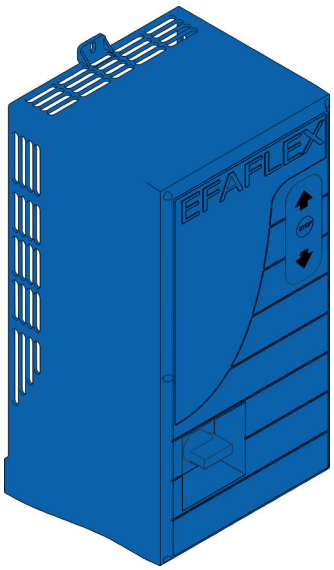



*Fig. 63: EFA-TRONIC® control unit*

| | |
|---|---|
| Control unit | EFA-TRONIC® with frequency converter |
| Size (W × H × D) | 210 × 400 (565)* × 200 mm<br>(* incl. cable cover) |
| Housing | Polycarbonate housing |
| Protection type | IP65 |
| Viewing window for display | Display of status messages and fault messages |
| Operating controls | Operating panel for operation and configuration of the door system<br>Master switch |
| Supply voltage | L/N/PE 230 V ± 10 % or<br>3~L/N/PE 400 V ± 10 % |
| Frequency | 50 – 60 Hz |
| Supply cable | Fit 16 A fuse protection on site (K characteristic) |
| With residual current device (RCD) as necessary | 300 mA in compliance with DIN VDE 0100-530 (sensitive to universal current) |
| Power supply | Only for door system type 316:<br>■ CEE plug 16 A 1P blue (“L+N+PE+6h” according to IEC 60309)<br>■ CEE plug 16 A 3P red (“3P+N+PE+6h” according to IEC 60309) |

### EFA-TRONIC® Professional

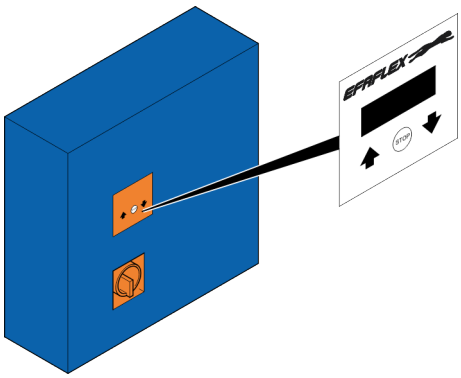


*Fig. 64: EFA-TRONIC® Professional*

| | |
|---|---|
| Control unit | EFA-TRONIC® Professional with frequency converter |
| Size (W × H × D) | 380 × 380 × 210 mm |
| Housing | Steel, colour RAL 7035<br>Optional:<br>■ Painted RAL colours in compliance with SAP<br>■ V2A |
| Protection type | IP65 |
| Viewing window for display | Display of status messages and fault messages |
| Operating controls | Operating panel for operation and configuration of the door system<br>Master switch |
| Supply voltage | L/N/PE 230 V ± 10 % or<br>3~L/N/PE 400 V ± 10 % |
| Frequency | 50 – 60 Hz |
| Supply cable | Fuse protection of 16 A to be provided by the owner (K characteristic) |
| With residual current device (RCD) as necessary | 300 mA in compliance with DIN VDE 0100-530 (sensitive to universal current) |
| Power supply | Only for door system type 316:<br>■ CEE plug 16 A 1P blue (“L+N+PE+6h” according to IEC 60309)<br>■ CEE plug 16 A 3P red (“3P+N+PE+6h” according to IEC 60309) |

### EFA-TRONIC® light

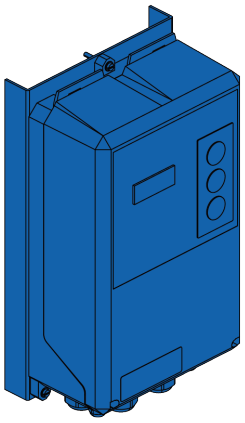


*Fig. 65: EFA-TRONIC® light*

| | |
|---|---|
| Control unit | EFA-TRONIC® light with frequency converter |
| Size (W × H × D) | 182 × 328 × 121 mm |
| Housing | Polycarbonate housing |
| Protection type | IP54 |
| Viewing window for display | Display of status messages and fault messages |
| Operating control | Operating panel for operation and configuration of the door system |
| Supply voltage | L/N/PE 230 V ± 10 % |
| Frequency | 50–60 Hz |
| Supply cable | Fuse protection of 16 A to be provided by the user (K characteristic) |
| With residual current device (RCD) as necessary | 300 mA in compliance with DIN VDE 0100-530 (sensitive to universal current) |
| Power supply | Standard: CEE plug 16A 1P blue (“L+N+PE+6h” in compliance with IEC 60309) |

### EFA-HDI® operating unit

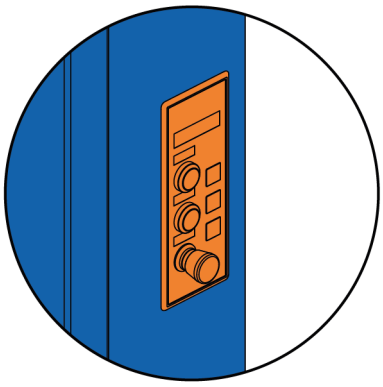


*Fig. 66: EFA-HDI® operating unit*

To supplement the EFA-TRONIC® Professional, it is possible to install an additional EFA-HDI® operating unit on the wall. It is equipped with a display screen and offers full access to all parameters and all basic functions.

## 3.11 Special constructions

**Special constructions**

Special constructions/special orders are design types which are not covered, either mechanically or electrically, by standard versions in the sales price lists or by a design from the technology variants table. They have to be requested specifically. Surcharges and extended delivery times are calculated for special designs in accordance with the actual expenditure.

# 4 Door safety

**Available door safety**

| Door system type | Safety edge and light barrier | Door light grid | Leading light barrier and stationary light barrier |
|---|---|---|---|
| 271-01 | ● | ○ | – |
| 274 | ● | ○ | – |
| 302 | ● | ○ | – |
| 242-01 | ● | – | – |
| 310 | ○ | ○ | ● |
| 316 | – | ● | – |

● Standard

○ Optional

– Not available

The main closing edge is protected by a combination of a safety edge and a light barrier (C device plus D device). This achieves the minimum protection level specified by EN 12453.

*In addition, the owner and the manufacturer have to consult with one another on providing protection for the approach area. This is based on the owner's risk assessment.*

## 4.1 Safety edge and light barrier

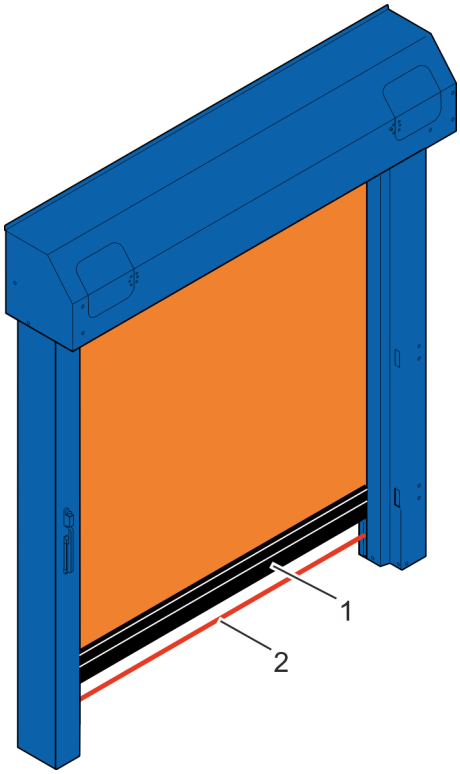



*Fig. 67: Safety edge and light barrier*

If the safety edge comes into contact with a person during the closing procedure, the door leaf stops, the door system opens completely and closes automatically again once the “keep-open” time has elapsed.

The light barriers (max. 2x, IP67) installed on the sides of the side frames are located at the door closing level. The height of the light barriers is variable.

## 4.2 Door light grid

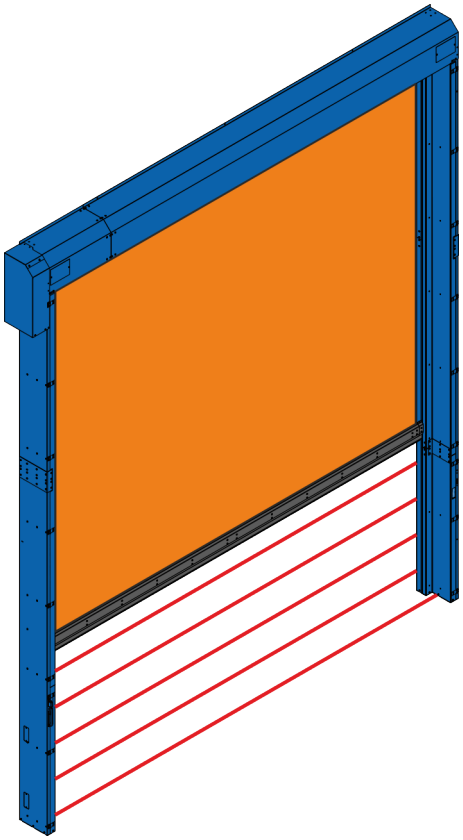


*Fig. 68: Door light grid*

The door light grid, which is installed at the side of the side frame, monitors the closing level up to a height of 2.5 m. The door light grid prevents the door system from closing when a person is detected in the danger area.

*Simultaneous installation of light barriers and a door light grid is not possible.*

*When using a door leaf extension and/or sealing lip extension, it is not possible to use a door light grid.*

*With door system type 310, the door light grid is possible from an inner height of 1720 mm.*

## 4.3 Leading light barrier

**For door system 310**

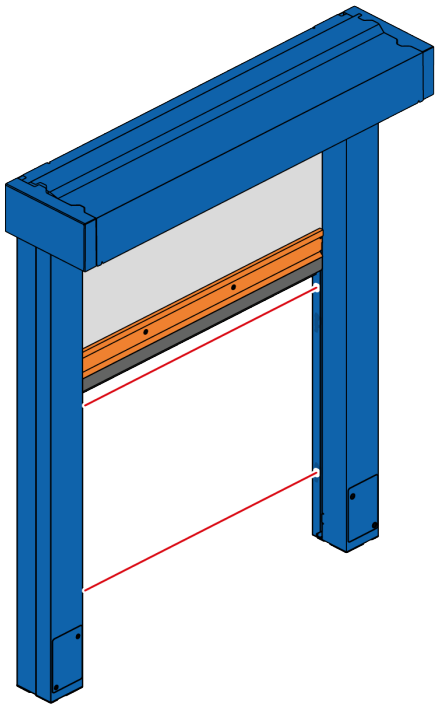


*Fig. 69: Leading light barrier*

The moving leading light barrier runs along the side of the side frame immediately below the rubber seal and thus monitors the area directly below the closing curtain at the closing level. This stops the door leaf if a person is detected in the danger area.

The leading light barrier is always combined with a stationary light barrier (max. 2x, IP67). The stationary light barriers installed in the side frames at the sides are positioned directly at the door closing level. The height of the stationary light barrier is variable.

# 5 Packaging units

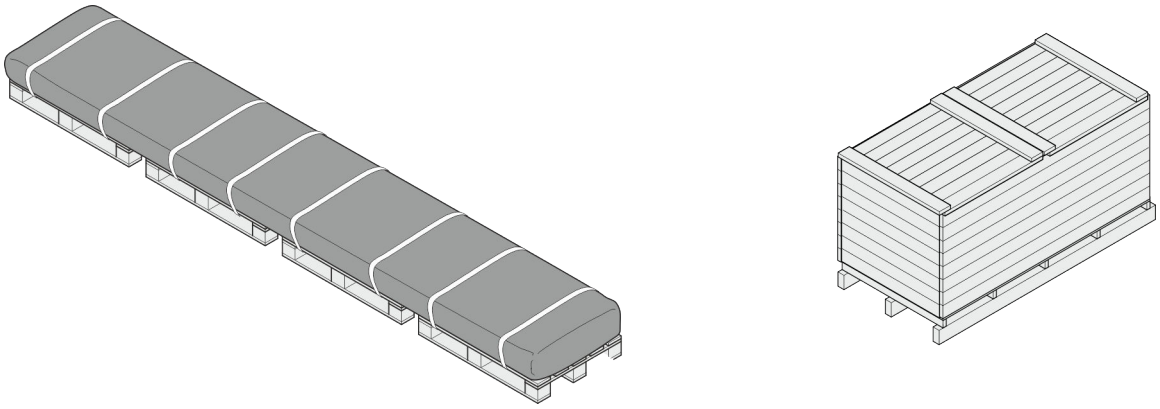


*Fig. 70: Scope of delivery (left, standard transport unit), wooden crate (right, optional, for sea and fit-for-purpose* transport)*

**Fit-for-purpose packaging is packaging that ensures that the packaged goods reach the recipient without damage, taking into account the shipping loads, shipping route, shipping duration and transportation load profile.*

**Transport unit (example)**

Side frames, drive and control unit, winding shaft including door leaf, winding shaft cover (optional) and optional accessories

**Number of transport units**

The number of standard transport units depends on the selected number of door systems.

The door systems can also be delivered in a wooden crate. The number of wooden crates depends on the configuration of the door system types and the number of door systems.

Wood that complies with the IPPC standard is optionally available. For sea freight, the wooden crates are lined with film as protection against moisture.

Packages fastened to pallets can be transported by forklift under the following conditions:

- The forklift must have the appropriate capacity for the weight of the packages.
- The package must be securely fastened to the pallet.
- The forklift driver must be authorised to drive industrial trucks with a driver's seat or driver's station in accordance with the local regulations.

EFAFLEX

*safe high-speed doors*

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