



Technical product description
High-speed roll-up door
for clean rooms



This technical product description applies to
the following door system types:

EFA-SRT® CR Premium

EFA-SRT® CR Efficient

EFA-SRT® CR C

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Door system designations

Official designation of the door system	Designation of the door system in this product description
EFA-SRT® CR Premium (Type 254)	254
EFA-SRT® CR Efficient (Type 678)	678
EFA-SRT® CR C (Type 679)	679

Uses

EFA-SRT® CR Premium

The door system type 254 is adapted to the high demands of the clean room. It complies with ISO class 5 as per ISO 14644-1 and VDI 2083 sheet 9.1. The control unit is integrated into the side frame which means that no further space is required in the area in front of the door system for installing an additional control cabinet. Furthermore, this space-saving version also features a drive, optional pulse generators and signalling devices which are integrated into the side frame. The side frames also have a smooth surface. An emergency opening can be performed simply and quickly thanks to the spring force of the weight counterbalance.

EFA-SRT® CR Efficient

The Efficient version of the clean room door system is characterised by a very narrow side frames design. For this purpose the control unit can be set up in a modular solution in the vicinity of the door system. This high-speed door is thus ideally suited to conveyor systems between factory sections and storage rooms, or for use in material feeding. The requirements for ISO class 6 as per ISO 14644-1 and VDI 2083 sheet 9.1 are also met with this high-grade version of a clean room application.

EFA-SRT® CR C

We have catered for the individual requirements of the clean room area with the EFA-SRT® CR C door system. Alongside its perfect suitability for the clean room in the cosmetics sector, the door system is also characterised by a high opening and closing speed and a wide range of installation options because it can be installed at a width and height of up to 3500 mm each. For the CR C version of the EFA-SRT the control unit has been fitted behind the cover on the winding shaft. All the displays and operating controls are situated on the side frame. The standard version of the door construction is a stainless steel (V2A) design. This version of the clean room door complies with ISO class 6 as per ISO 14644-1 and VDI 2083 sheet 9.1.

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1 Short description

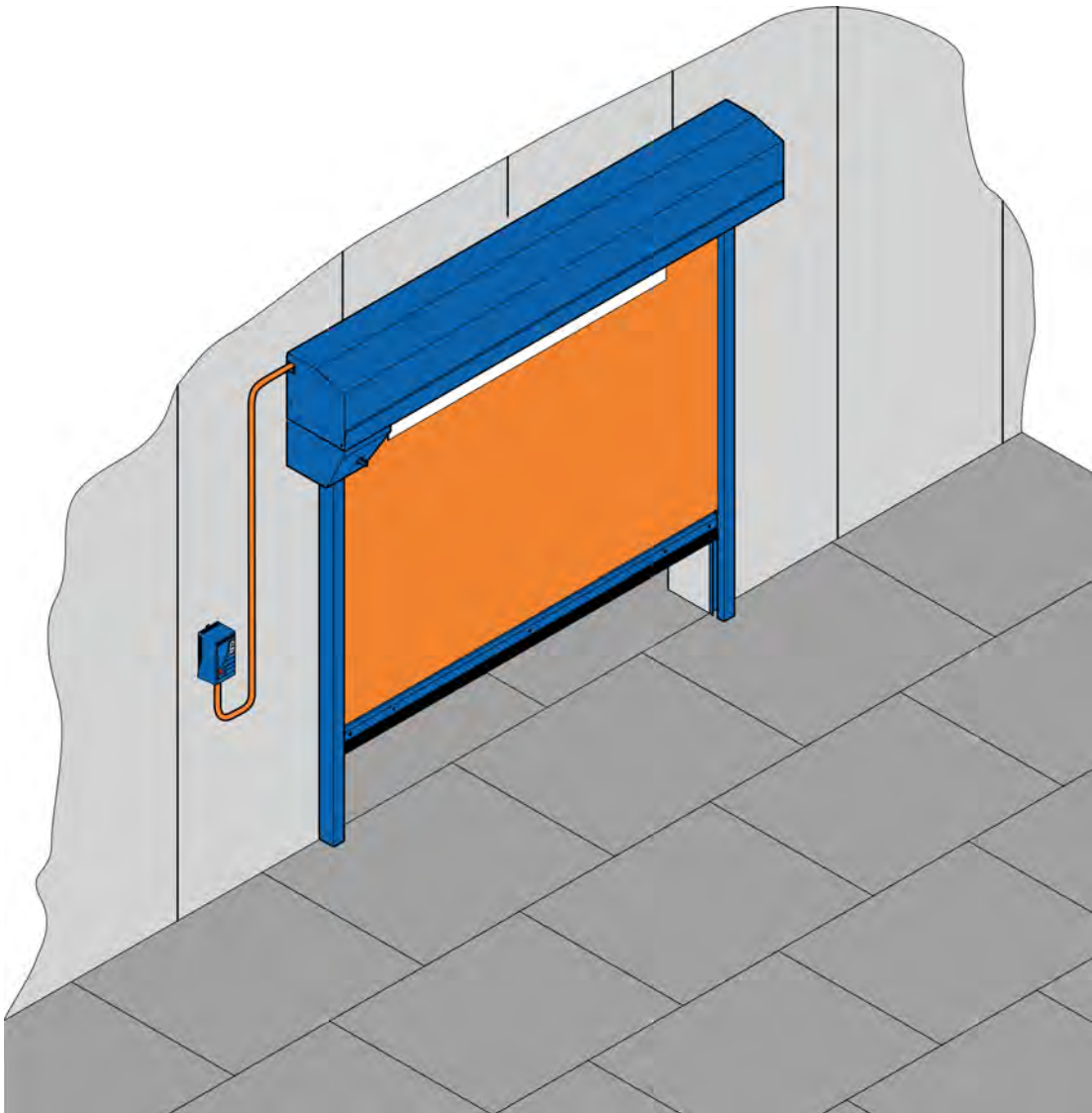


Fig. 1: High-speed roll-up door for clean rooms

The high-speed roll-up door for clean rooms has been specifically engineered for application in rooms in which production takes place under clean room conditions. In this regard, various design options were created according to different requirements.

The door systems are TÜV-certified and can be used in clean rooms of up to ISO class 5. The quick opening and closing and the minimisation of air gaps prevents unwanted air exchange.

2 Technical properties

Use

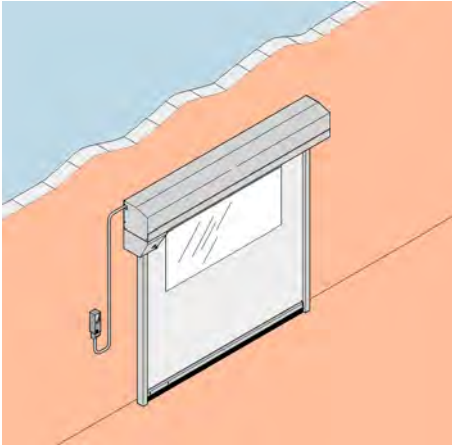


Fig. 2: Use of positive pressure

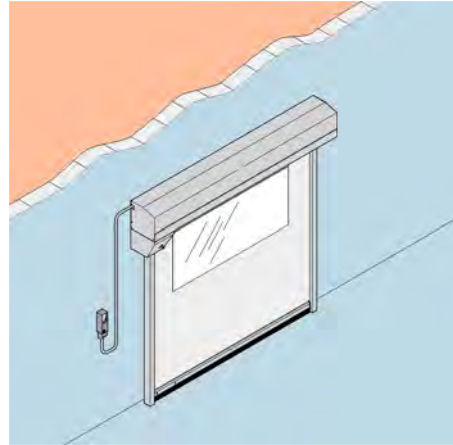


Fig. 3: Use of negative pressure

Use

- Interior door

Area of application:

- Sealing door for rooms with air pressure differences

Temperature range for use:

- +5 °C to +30 °C



Low pressure



High pressure

Pressure differences

	at maximum door size
254	max. 30 Pa
678	max. 30 Pa
679	max. 30 Pa



The pressure difference can be increased once to 50 Pa in order to carry out a blower door test.

Dimensions of door system 254

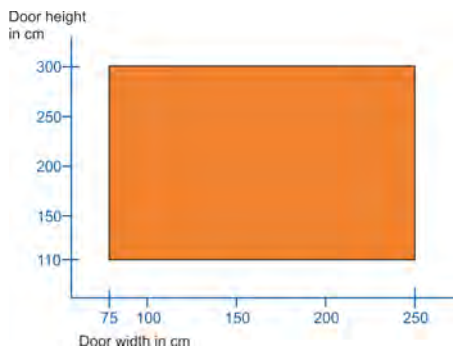


Fig. 4: Diagram of possible door system heights and door system widths (254)

Door system heights and widths (inner clear height)

Door system type	Widths	Heights
254	750 – 2500 mm	1100 – 3000 mm

Dimensions of door system 678

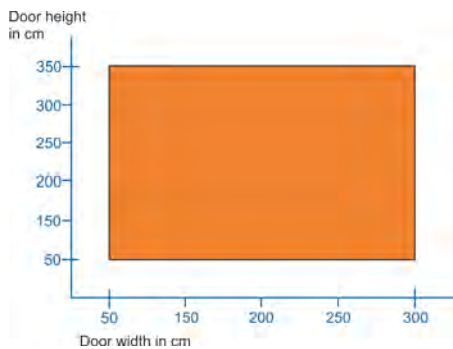


Fig. 5: Diagram of possible door system heights and door system widths (678)

Door system heights and widths (inner clear height)

Door system type	Widths	Heights
678	500 – 3000 mm	500 – 3500 mm

Dimensions of door system 679

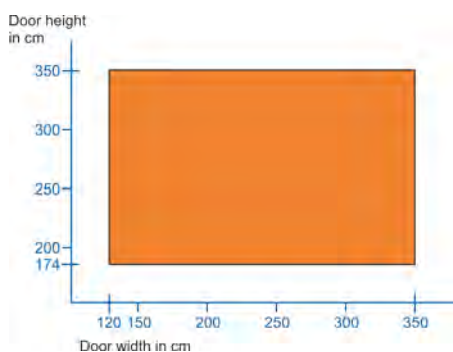


Fig. 6: Diagram of possible door system heights and door system widths (679)

Door system heights and widths (inner clear height)

Door system type	Widths	Heights
679	1200 – 3500 mm	1740 – 3500 mm

Technical properties

Speeds



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

Door system type	Average speed	
	Opening speed	Closing speed
254	approx. 1.0 m/s	approx. 0.5 m/s
678	approx. 0.8 m/s	approx. 0.5 m/s
679	approx. 2.0 m/s	approx. 0.75 m/s

The speed depends on door system height

Performance properties

Door system type	Air loss with positive pressure	Air loss with negative pressure	Certified for application in clean room category as per ISO 14644-1 and VDI 2083 sheet 9.1	Airborne sound insulation as per EN ISO 717-1 ²
254	< 12 m ³ /m ² h (Class 2)	< 20 m ³ /m ² h (Class 1)	ISO class 5	Rw = 15 dB ¹
678	< 12 m ³ /m ² h (Class 2)	< 50 m ³ /m ² h (Class 0)	ISO class 6	Rw = 15 dB ¹
679	< 20 m ³ /m ² h (Class 2)	< 50 m ³ /m ² h (Class 0)	ISO class 6	Rw = 15 dB ¹

¹ with 2 mm Transilon curtain

² not tested

Fire performance as per DIN 4102

Indication	Value
Material class	B2 normally inflammable

Performance

Data	Value
Door systeme type 254 - Load changes per year	200 000
Door systeme type 254 - Service life	10 years
Door systeme type 678 - Load changes per year	100 000
Door systeme type 678 - Service life	10 years

Technical properties

Data	Value
Door systeme type 679 - Load changes per year	200 000
Door systeme type 679 - Service life	10 years

Applied ordinance, safety standards and directives

The following ordinance, standards and directives were applied for planning, engineering and production:

Ordinance

EUV 305/2011	Ordinance (EU) No. 305/2011 of the European Parliament and the Council of 9th May 2011 on the definition of harmonised conditions for the marketing of construction products and the withdrawal of Directive 89/106/EEC of the Council
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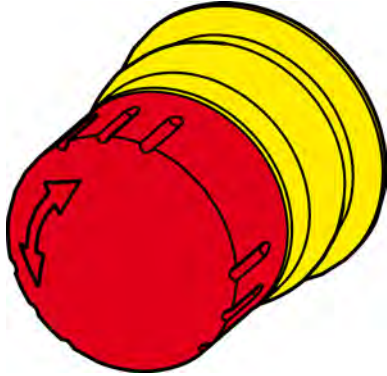
Directives

2006/42/EC	DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL from 17th May 2006 on machines and for amendment of Directive 95/16/EC (new release)
2014/30/EU	DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND COUNCIL from 26th February 2014 for harmonization of the legal requirements of member states for electromagnet compatibility (new release)

Standards

DIN EN 13241	Doors – Product standard, Performance properties
DIN EN ISO 13849-1	Safety of machinery – Safety-related parts of control systems – Part 1: General design principles
DIN EN ISO 13849-2	Safety of machinery – Safety-related parts of control systems – Part 2: Validation
DIN EN ISO 12100	Safety of machinery – General design principles – Risk assessment and risk reduction

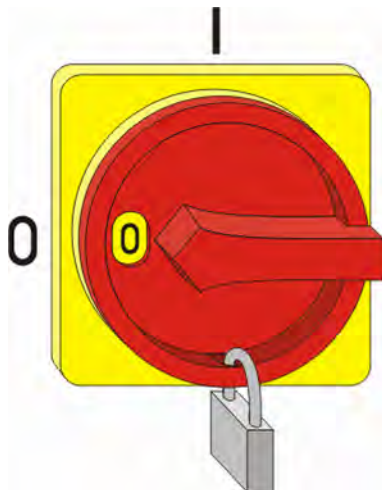
Emergency stop operating control (254)



The door system is brought to a halt in a controlled manner when the emergency stop operating control is pressed. In the process, the energy supply is maintained in order to carry out the stop procedure. After the emergency stop operating control has been pressed, it has to be released again by turning it to make it possible to continue operating.

Fig. 17: Emergency stop operating control

Master switch



The master switch is used to isolate the entire door system from the voltage. Movements are stopped as quickly as possible and blocked until the master switch is reactivated. The master switch can be secured with a padlock to prevent it from unauthorised use.

Fig. 18: Master switch

Door leaf versions

1.4 mm thick curtain

- Beige ^{1, 2, 3}

2 mm thick curtain, textured on both sides, with and without viewing window

- Blue, similar to RAL 5002 ^{1, 2}
- Yellow, similar to RAL 1021 ²
- Orange, similar to RAL 2008 ²
- Red, similar to RAL 3002 ²
- Papyrus white, similar to RAL 9018 ^{1, 2}
- Light grey, similar to RAL 7035 ^{1, 2}
- Signal grey, similar to RAL 7004 ²
- Viewing window made of transparent soft PVC ⁴

¹ anti-static finish

² meets with the requirements of the directive of the FDA (U.S. Food and Drug Administration) for transportation of bulk food products with regard to the extraction behaviour

³ silicone-free

⁴ This window is subject to high levels of wear due to the door's high level of tightness. Scratches are possible.

Construction of the high-speed roll-up door for clean rooms

EFA-TRONIC control®



Fig. 32: EFA-TRONIC control®

Control unit	EFA-TRONIC® with frequency converter
Size (W × H × D)	210 × 400 (565)* × 200 mm (* incl. cable cover)
Housing	Polycarbonate housing
Protection type	IP65
Viewing window for display screen	Display of status messages and fault messages
Operating controls	Operating panel for operation and parametrisation of the door system Master switch
Supply voltage	L/N/PE 230 V ± 10 % or 3~L/N/PE 400 V ± 10 %
Frequency	50 – 60 Hz
Supply cable	Fuse protection of 16 A to be provided by the user (K characteristic)
With residual-current circuit breaker (RCCD) as necessary	300 mA as per DIN VDE 0100-530 (sensitive to universal current)

4 Optional assembly groups



LED display/traffic light

The LED display/traffic light signals whether it is possible to pass through the door system safely.

If the lower half of the display lights up green, the door system is completely open and you can pass through.

If the upper part of the display lights up red, the following are possible causes:

- The door system is closing
- The door system is closed
- The door system is opening
- Contraflow is to be expected

If the upper part of the display flashes red, the following are possible causes:

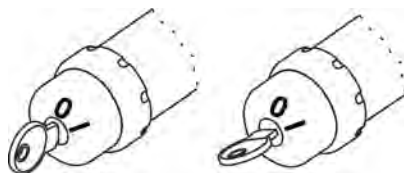
- The door system is closing
- The door system is closed
- The door system is opening
- Contraflow is to be expected
- There is a fault in the door system

Selector switch



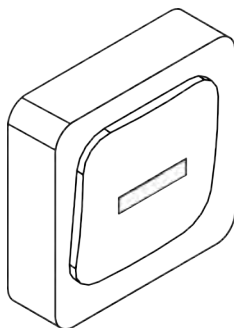
Selector switches can be adapted to individual requirements and used for various functions.

Key switch



When the key switch is actuated, the door system opens or closes.

Rocker switch



When the rocker switch is actuated, the door system opens or closes.



Contactless switch

The door system opens when you make a simple hand movement in front of the sensor.

5 Door safety

Table of safety devices

Door system type	Safety edge	Light barrier	Door light grid
254	●	○	○
678	●	○	-
679	-	-	●

- Standard
- Option
- not available for delivery

Safety edge and light barrier

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

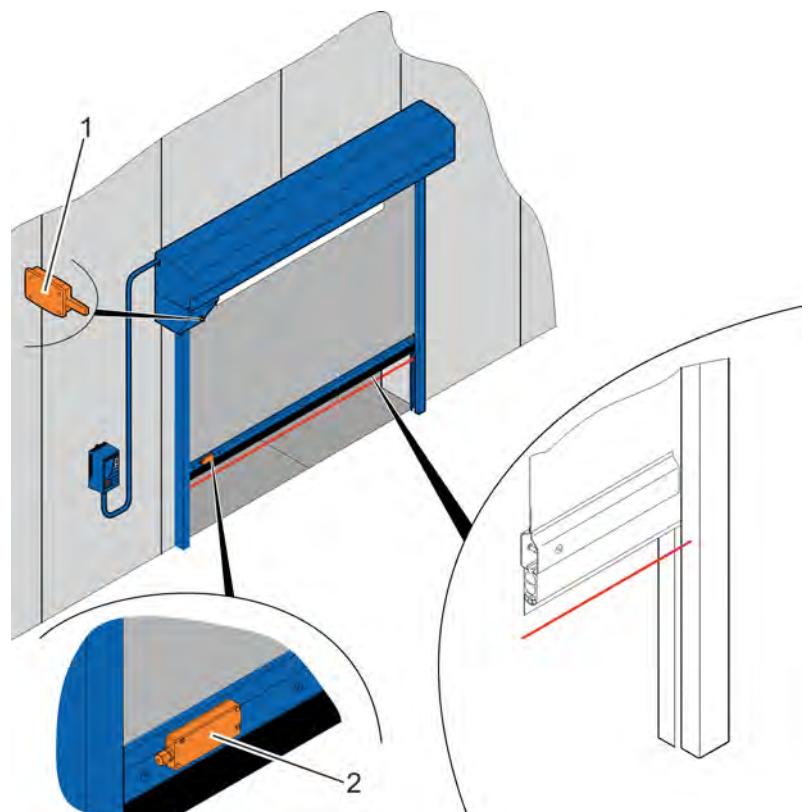


Fig. 33: Safety edge and light barrier

- 1 Radio receiver for safety edge
- 2 Radio transmitter for safety edge

Door safety

Safety edge	Safety edge with radio transmission (the 2 lithium batteries (3.6 V) in the transmitter have to be replaced once a year)
Light barrier	Light barriers (IP67) installed in the side frame, max. 2

The safety edge complies with the requirements of the product standard for doors DIN EN 13241-1. In addition, the owner and the manufacturer have to consult with each other in order to provide a safeguard for the approach area. This will be based on the owner's risk assessment.

Door light grid

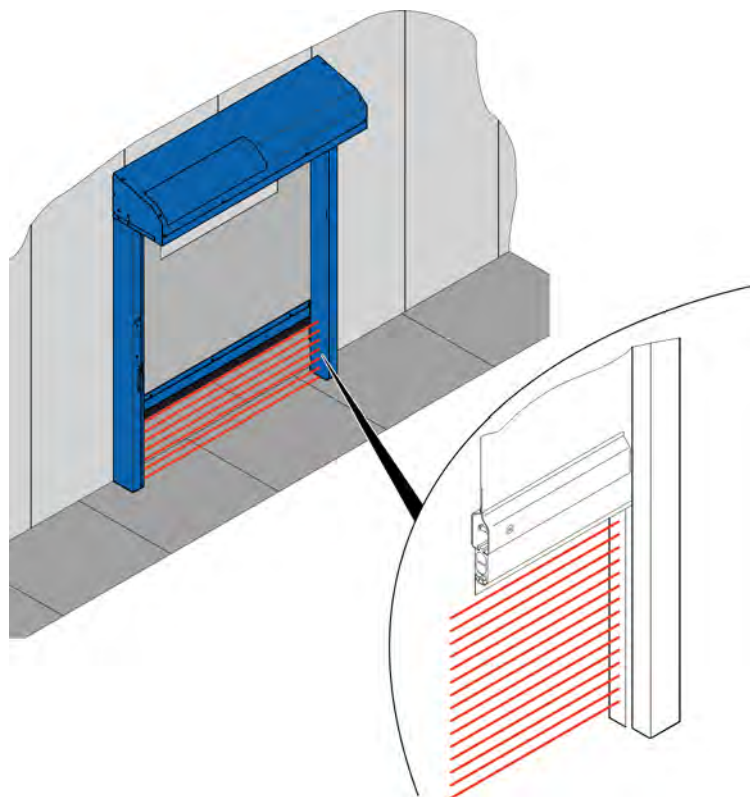


Fig. 34: Door light grid

The door light grid which is installed in the side of the frames monitors the closing level exactly, up to a height of 2.5 metres. The door light grid prevents the door system from closing when an obstruction is detected.

Door light grid – certified safety system (BWS 2) as per EN 12978 and EN 61496 – for door system heights of 1740 mm (679) or 2000 mm (254) and above, lower heights on individual request.

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

6 Equipment

Design options for visible parts of the door system

Assembly	Door system type	V2A, corrosion resistant polished (grain 220)*	galvanised with powder-coated finish as per RAL
End shield	254	●	○
	678	○	●
	679	●	○
Cover	254	●	○
	678	○	●
	679	●	○
Door construction	254	●	○
	678	○	●
	679	●	○

● Standard

○ Option

* except for:

- Drive with gear unit
- Weights in end shield
- Plastic parts
- Electrical parts
- Bearing with bearing housing
- Belt for spring

The winding shaft is designed as follows:

- Door system type 254: V2A, ground for corrosion resistance (grain 220); optionally steel, primed
- Door system type 678: galvanised
- Door system type 679: Steel, primed

Standard equipment (254)

- Basic door construction, winding shaft, stainless steel V2A (1.4301 III C) corrosion resistant double-shell end shield, polished (grain 220)
- Papyrus white curtain, 2 mm thick
- EFA-TRONIC® control
- Direct mount drive
- Pull-button for emergency opening
- Safety edge
- Cover 15°

Equipment

Optional equipment (special equipment subject to surcharge) (254)

- Basic door construction, galvanised (275 g/m²), with powder-coated finish as per RAL
- Complete covering:
 - 45°
 - vertical up to ceiling.
Can be supplied for a ceiling height of door height + 460 mm up to door height + 1100 mm.
- all the curtain variants described in ↗ *"Door leaf" on page 22*
- Side frame extension (200 to 1500 mm)
- Door light grid
- UPS for opening the door system in case of power failure
- up to 2 safety light barriers
- Command devices: Push-buttons, pull switches, key switches etc.
- Command devices/safety: EFA-SCAN[®], motion sensor, presence sensor
- traffic light displays integrated into the side frame (on the drive side), selector switch, contactless switch

Standard equipment (678)

- Basic door construction, galvanised (275 g/m²), with powder-coated finish as per RAL
- End shield made of two galvanised steel profiles (275 g/m²) with powder-coated finish as per RAL
- Winding shaft in galvanised design
- Papyrus white curtain, 2 mm thick
- EFA-TRONIC[®] control
- Direct mount drive
- Winch for emergency opening
- Safety edge
- Cover 15° + motor cover

Optional equipment (special equipment subject to surcharge) (678)

- Basic door construction, stainless steel V2A (1.4301 IIIC) corrosion resistant polished (grain 220)
(The following parts are not available in V2A: Winding shaft, drive with gear unit, weights in the end shield, plastic parts, electrical parts, bearing with bearing housing, belt for spring)
- Complete covering:
 - 45°
 - vertical up to ceiling.
Can be supplied for a ceiling height of door height + 370 mm up to door height + 1100 mm.
- all the curtain variants described in ↗ *"Door leaf" on page 22*
- UPS for opening the door system in case of power failure
- up to 2 safety light barriers
- Command devices: Push-buttons, pull switches, key switches etc.
- Command devices/safety: EFA-SCAN[®], motion sensor, presence sensor

Standard equipment (679)

- Basic door construction, winding shaft, stainless steel V2A (1.4301 IIIIC) corrosion resistant double-shell end shield, polished (grain 220)
- Papyrus white curtain, 2 mm thick
- EFA-TRONIC® control
- Toothed belt drive
- Emergency lever for emergency opening
- Cover 15°
- Door light grid

Optional equipment (special equipment subject to surcharge) (679)

- Complete covering:
 - 40°
 - vertical up to ceiling.
Can be supplied for a ceiling height of door height + 380 mm up to door height + 1100 mm.
- all the curtain variants described in ↗ "Door leaf" on page 22
- Side frame extension (85 to 1500 mm)
- UPS for opening the door system in case of power failure (upon special request)
- Command devices: Push-buttons, pull switches, key switches etc.
- Command devices/safety: EFA-SCAN®, motion sensor, presence sensor

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.

7 Packaging units

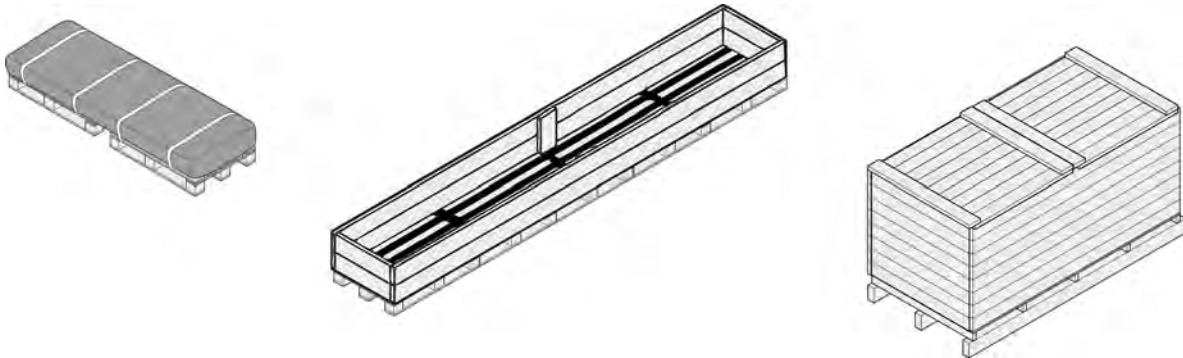


Fig. 35: Scope of delivery for 254/679 (left, standard transport unit) and 678 (middle, transport unit), wooden crate (right, optionally for sea and fit-for-purpose* transport)



**Fit-for-purpose packaging is packaging which 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 system 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.

The wood for the wooden crates optionally complies with the IPPC standard. For sea freight, the wooden crates are lined with film to protect them from moisture.

Packages which are fastened to pallets can be transported by fork lift under the following conditions:

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



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