dormakaba

ED 100 / ED 250
Swing door operators

Technical product brochure

Swing door operators with force balancing technology*

With their ED 100 and ED 250, dormakaba offers electromechanical swing door operators for various fields of application. Simply select the suitable version according to your prevailing door-leaf width and weight: While the ED 100 is suitable for doors with a weight of up to 160 kg or a door width of 1,100 mm, the ED 250 is designed for doors with a width of 1,600 mm or a door weight of 400 kg.

Apart from the extended cover, dormakaba also provides an easy-to-install integrated door coordinator. With the aid of the dormakaba Upgrade Cards, the system's functional range may be adapted to various door versions. The large scope of integrated functions furthermore ensures that the majority of possible applications may easily be realized.

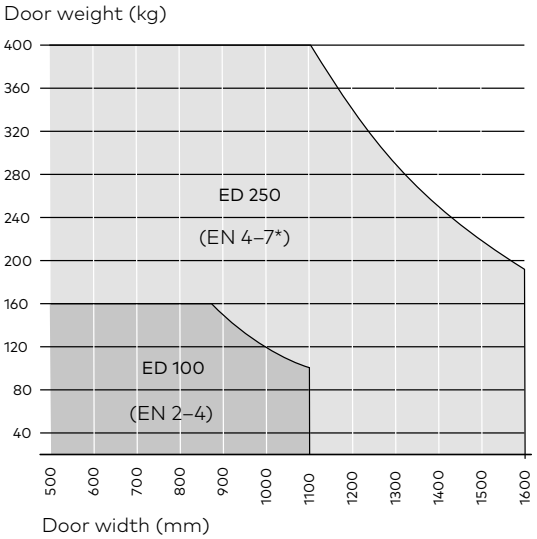
Benefits

- Flexible configuration: Customers only pay for the functions they actually require.
- Low-noise application due to multi-stage gear.
- Elegant visual appearance: dormakaba design provides a operator height of only 70 mm.
- Various functions as standard.
- With integrated smoke detector
- Technically revised arm system in a new design.
- Better durability of the gear due to the use of the force balancing technology.
- **New:** EVAC function: The operator does not switch off completely in the event of an alarm and can be passed barrier-free via Power-Assist or via Night/Bank.
- **New:** SPV function: Additional parameter level to optimally adapt the drive parameters to the pressure conditions prevailing in the event of an alarm.

Fields of application

- For single- or double-leaf swing doors. Choose between the ED 100 and the ED 250 in accordance with your prevailing door-leaf width and weight.
- The version with slide channel as well as the version with standard arm are suitable for application at fire and smoke doors.
- Thanks to its low- and full-energy version, the system is suitable to automate both rarely and heavily frequented internal and external doors.
- High torque for full-automatic swing doors with radar motion control.
- For interior and exterior doors.
- **New:** EVAC / SPV function: Heavy doors, staircases with smoke extraction and pressure ventilation systems.

Application: ED 100/ED 250



The operators ED 100 and ED 250 are suitable for most swing doors provided that the combination of door width and door weight lies within the defined functional area.

This diagram allows you to determine the maximum values for the door width or door weight or to determine the suitable operator for existing doors. All values apply to an ideal door. The achievable speed is to be lowered for heavy doors in order to ensure the safety of people.

*EN 7: lintel depth max. 125 mm

Additional door components such as door hinges, seals, locks or other mechanical components may restrict the functional area.

The specifications are valid up to a lintel depth of 300 mm; at a depth > 301 mm the door panel weight of the ED 250 is reduced to 160 kg irrespective of the door width.

Our Sustainability Commitment

We are committed to foster a sustainable development a long our entire value chain in line with our economic, environmental and social responsibilities to ward currentand future generations.

Sustainability at product level is an important, future-oriented approach in the field of construction. In order to give quantified disclosures of a product's environmental impacts through its entire life cycle, dormakaba provides Environmental Product Declarations (EPD), based on holistic life cycle assessments.

The full EPD is available for download at www.dormakaba.com.

* Self-alligning gear components during operation, whereby a much better distribution of internal forces can be achieved.

Required operating conditions

Ambient temperature	–15 to +50 °C
Only suitable for dry environments	Relative humidity max. 93 % (non condensing)
Power supply	230 V AC 50 Hz +/– 10 %
Class of protection	IP 20

General specifications

Dimensions (W x H x D)	685 x 70 x 130 mm
Dimensions with integrated smoke detector (W x H x D)	735 x 70 x 130 mm
Min. clearance between hinges (double systems)	1,400 mm
Min. clearance between hinges for ESR (double systems)	1,450 mm
Weight of single version	12 kg
Power supply for external accessories	24 V DC +/– 10 %, 1.5 A
Opening angle	Max. 110°
Manufactured to ISO 9001	yes
Environmental product declaration in accordance with ISO 14025 Programme holder: Institute Construction and Environment e.V. Declaration number: EPD-DOR-2012211-E	yes

Integrated functions

Hold-open time		30 s, 180 s (optional)
Blocking behavior		Reversing/Door closer function
Locking feedback contact		Motor lock
Wind load control		up to 150 N
Voltage-independent braking circuit		Adjustable via potentiometer
Electronic latching action pulse		Force adjustable
LED status indicator	green	Operating voltage indicator
	red	Malfunction indicator
	yellow	Service interval indicator
Integrated program switch		OFF
		AUTOMATIC
		PERMANENT OPEN
		EXIT ONLY (only for single-leaf systems)
User interface with information display		Status indicator and parameterisation
Slot for dormakaba Upgrade Cards		Extension of functional range
Update interface		Firmware update
TMP – Temperature Management Program		Temperature-related overload protection
IDC – Initial Drive Control		Driving phase optimisation
Cycle counter		0 – 1,000,000 (reasonably subdivided)
Power Assist function		Servo-supported when opened manually
Push & Go function		Door opens when moved manually by 4°

Inputs, terminals max. 1.5 mm²

Potential-free activator	Inside and outside (NO contact)
Energized activator	8 – 24 V DC/AC + 10 %
Night-/Bank (key switch)	NO contact/NC contact
Safety sensor	Hinge side and opposite hinge side (NC contact)
Test signal for safety sensor	Hinge side and opposite hinge side
Emergency-Off pushbutton/ Lock switch	NC contact/NO contact

Outputs, terminals max. 1.5 mm²

Potential-free door status contact, alternatively	Door closed
	Door open
	Malfunction

ED 100

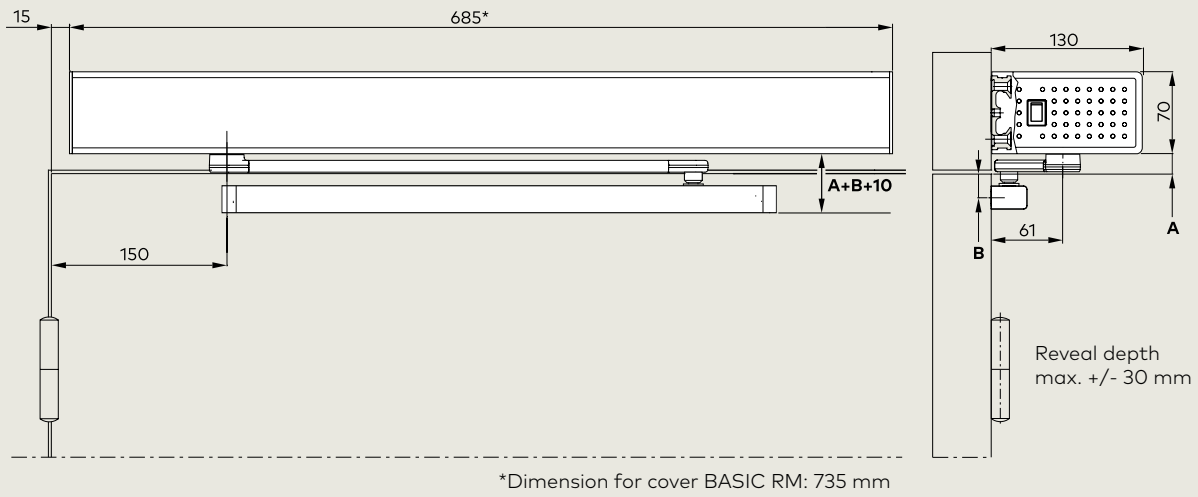
Max. power consumption	120 Watts
Closing force EN 1154	EN 2–4, adjustable
Max. door-leaf weight for reveal depths of up to 300 mm	160 kg depending on the door width
Door-leaf width	700–1,100 mm
Opening speed 0 – 90°	4* – 12 seconds
Closing speed 90 – 0°	5* – 21 seconds
Axle extension	20/30/60 mm
Reveal depth for slide channel	+/– 30 mm
Reveal depth for slide channel CPD	30 – 60 mm
Reveal depth for standard arm	0–300 mm

ED 250

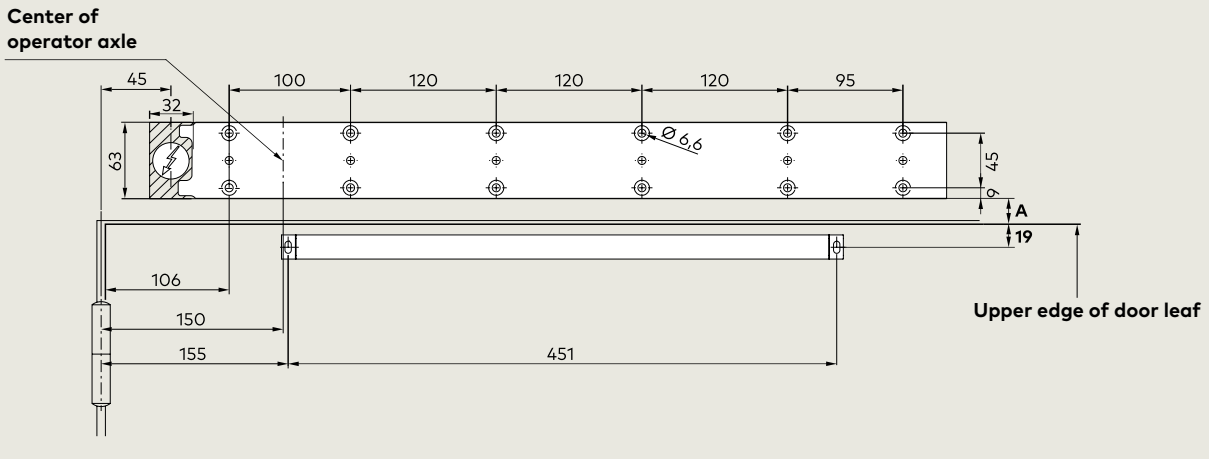
Max. power consumption	240 Watts
Closing force	EN 4-7**, adjustable
Max. door-leaf weight for reveal depths of up to 300 mm	400 kg depending on the door width
Max. door-leaf weight for reveal depths from 301 mm to 500 mm	160 kg
Door-leaf width	700 –1,600 mm
Opening speed 0 – 90°	3* – 12 seconds
Closing speed 90 – 0°	4* – 21 seconds
Axle extension	20/30/60/90 mm
Reveal depth for slide channel	+/– 30 mm
Reveal depth for slide channel CPD	30 – 60 mm
Reveal depth for standard arm	0 – 500 mm
For reveal depths standard arm for fire protection	0 – 350 mm

* Depending on the door leaf weight, it is automatically limited in the low-energy operating mode according to EN 16005 or DIN 18650, BS 7036-4 and ANSI 156.19. Max. speeds are achieved only in the full-energy mode, with a low door panel weight and a taught opening angle of at least 95°.
** EN 7: lintel depth max. 125 mm

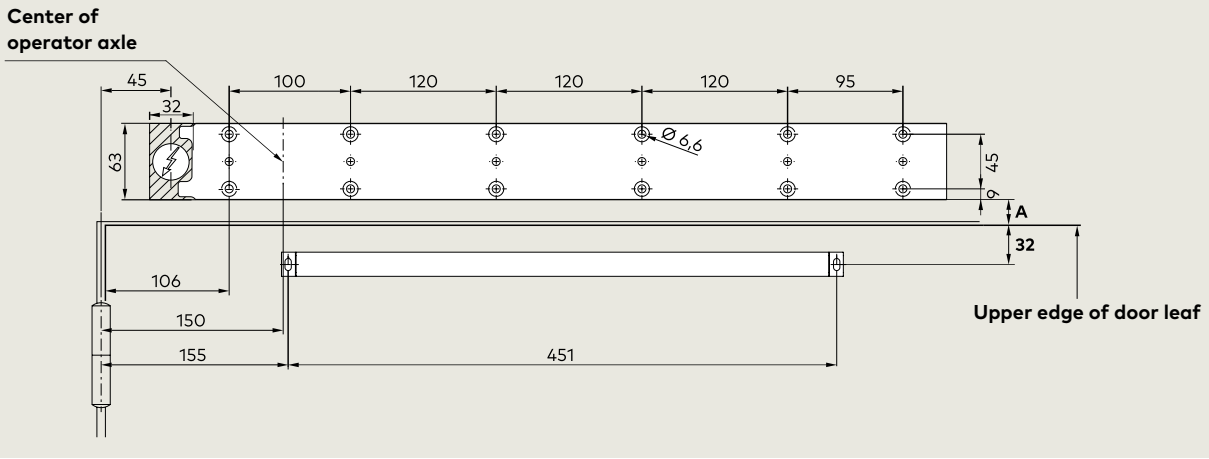
Mounting on hinge side, pull-version with slide channel, cover BASIC, standard axle extension



Drilling template: pivot pin short 12.5 mm



Drilling template: pivot pin long 25 mm

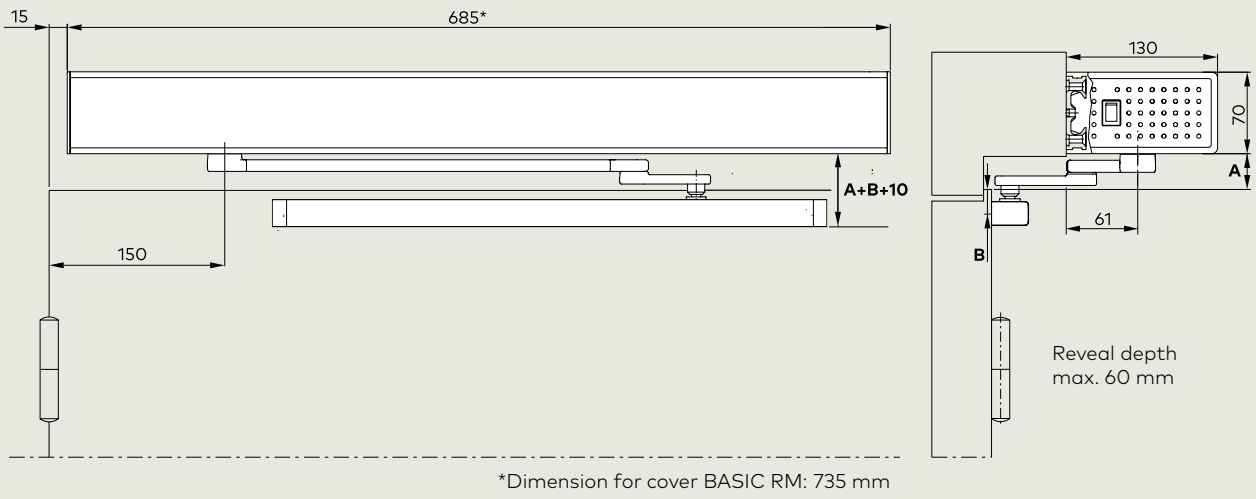


Axle extension	Standard	20 mm	30 mm	60 mm	90 mm*
A	22 mm	42 mm	52 mm	82 mm	112 mm*

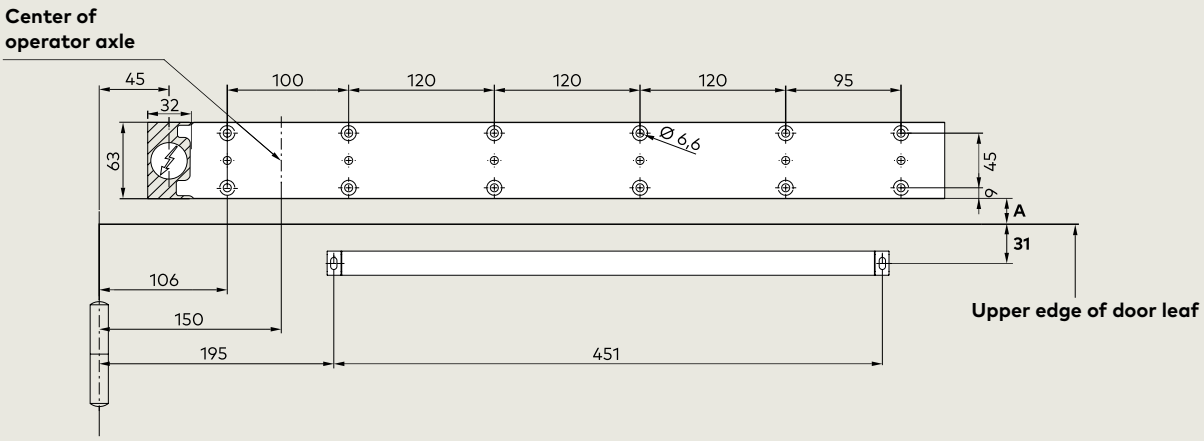
Pivot pin	12.5 mm	25 mm
B	19 mm	32 mm

* only for ED 250

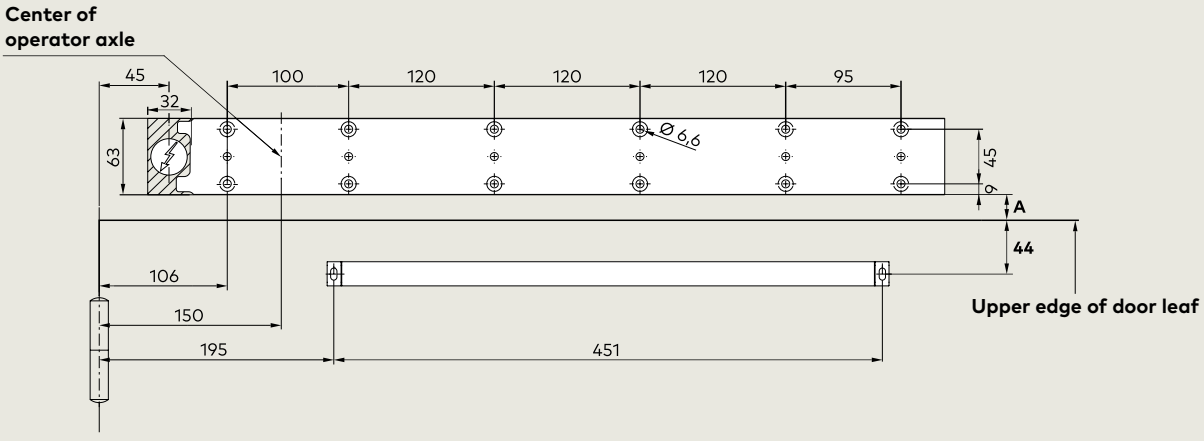
Mounting on hinge side, pull-version with CPD arm, cover BASIC, standard axle extension



Drilling template: pivot pin short 12.5 mm



Drilling template: pivot pin long 25 mm

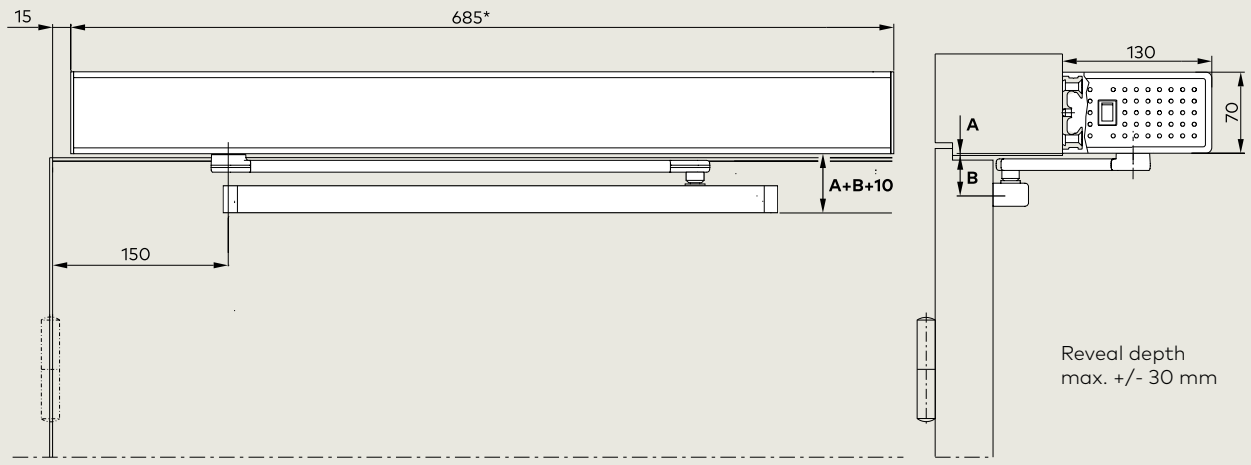


Axle extension	Standard	20 mm	30 mm	60 mm	90 mm*
A	22 mm	42 mm	52 mm	82 mm	112 mm*

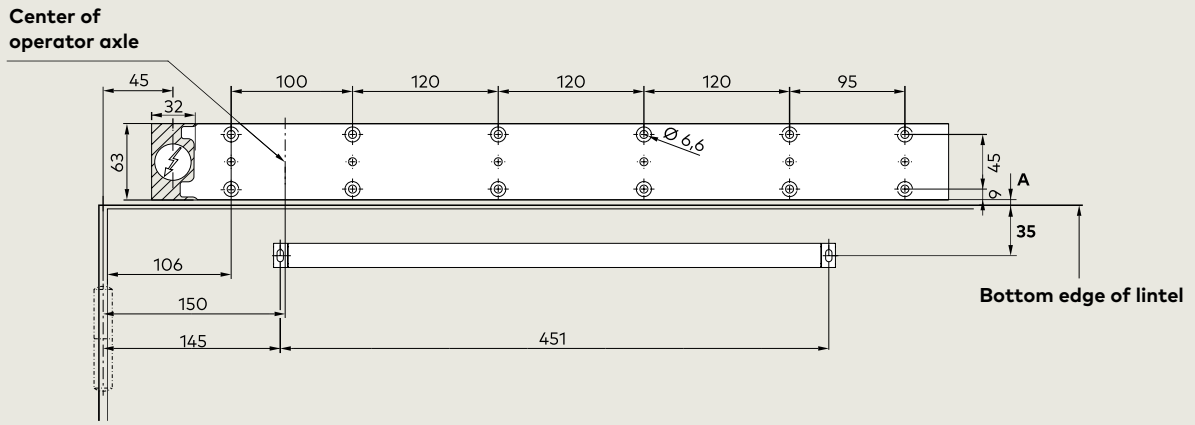
Pivot pin	12.5 mm	25 mm
B	31 mm	44 mm

* only for ED 250

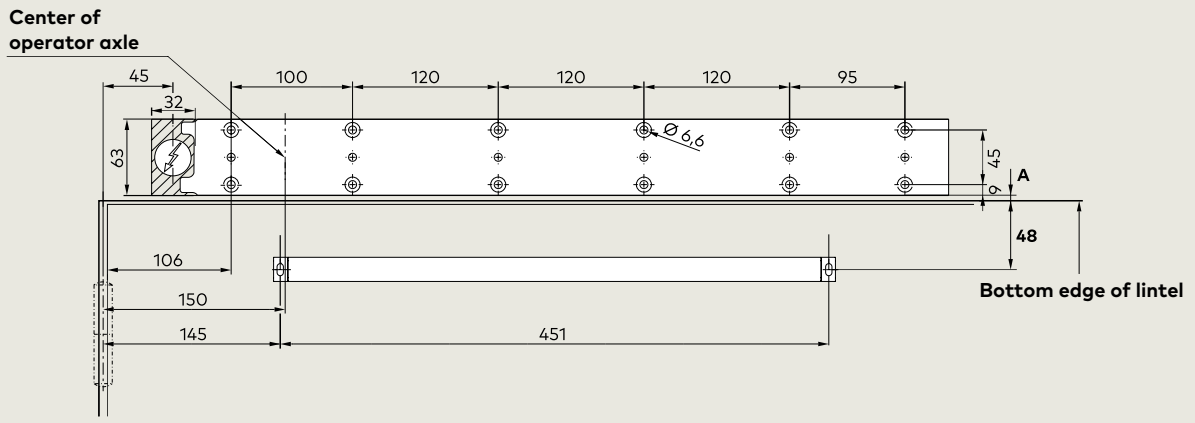
Mounting on opposite hinge side, push-version with slide channel, cover BASIC, standard axle extension



Drilling template: pivot pin short 12.5 mm



Drilling template: pivot pin long 25 mm

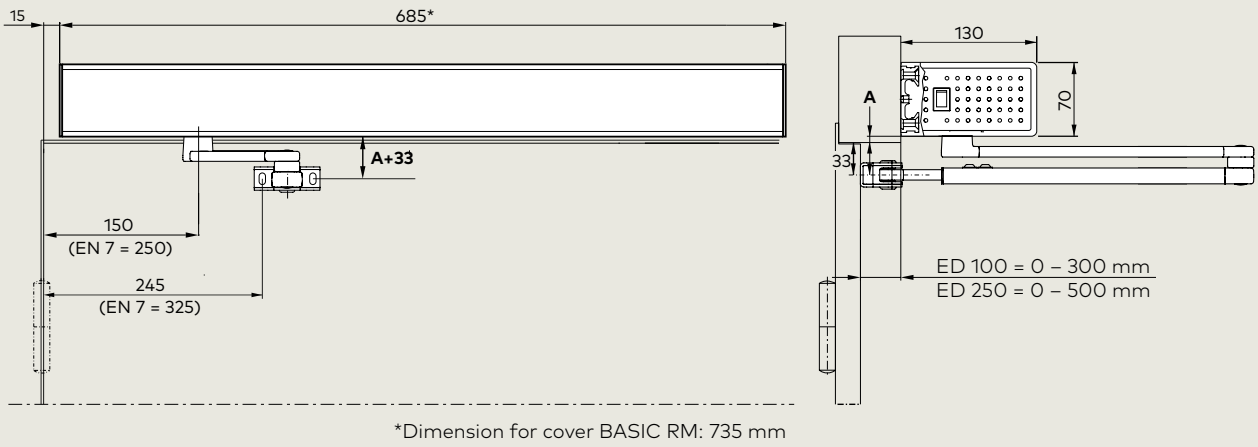


Axle extension	Standard	20 mm	30 mm	60 mm	90 mm*
A	5 mm	25 mm	35 mm	65 mm	95 mm*

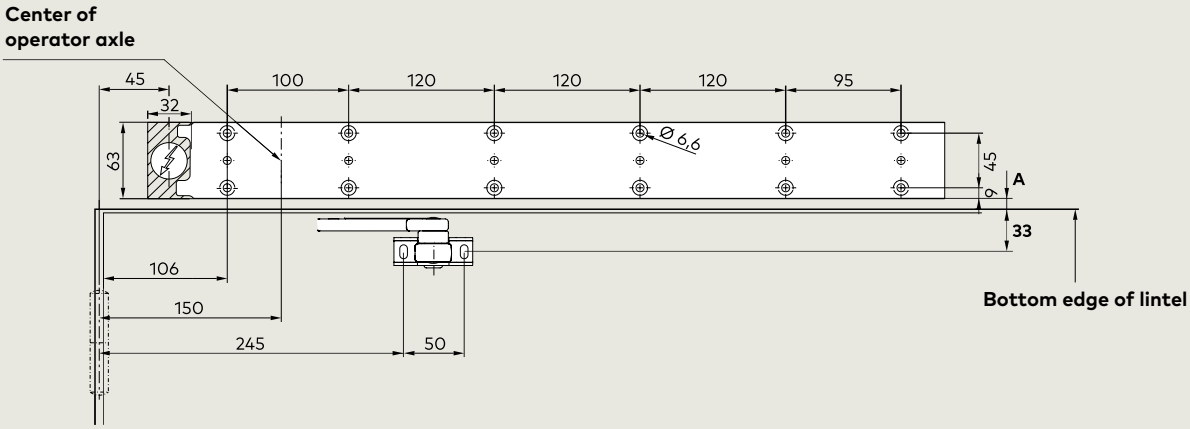
Pivot pin	12.5 mm	25 mm
B	35 mm	48 mm

* only for ED 250

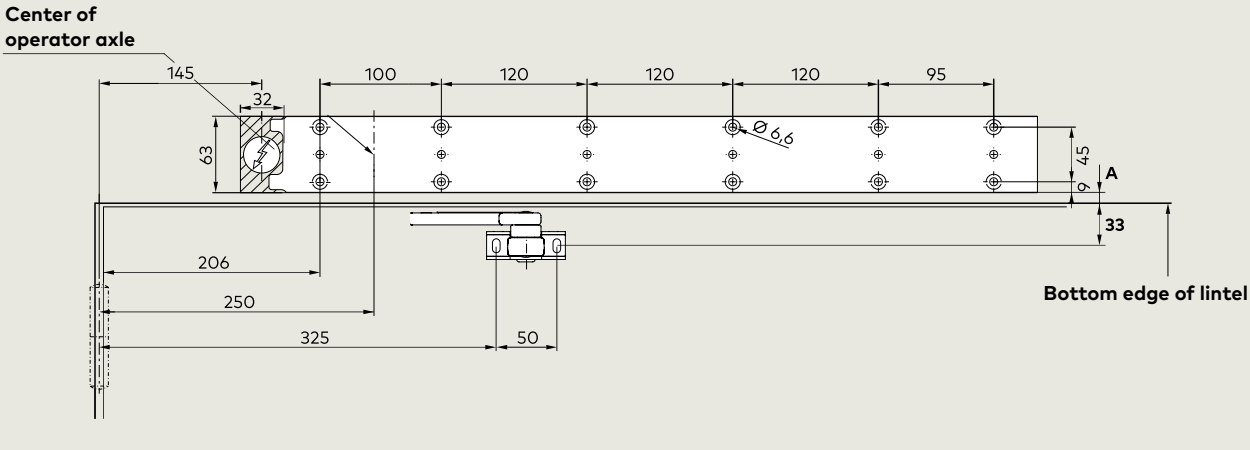
Mounting on opposite hinge side, push-version with arm, cover BASIC, standard axle extension



Drilling template: arm EN 3-6



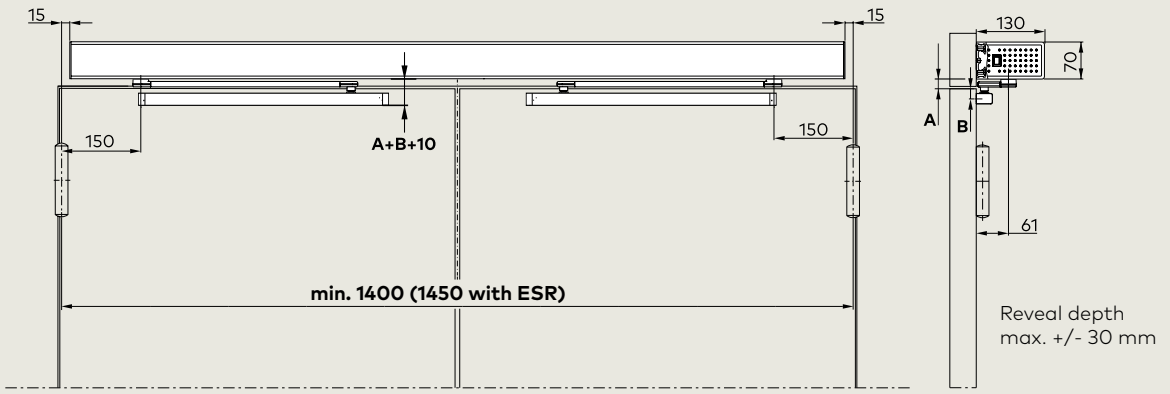
Drilling template: arm EN 7



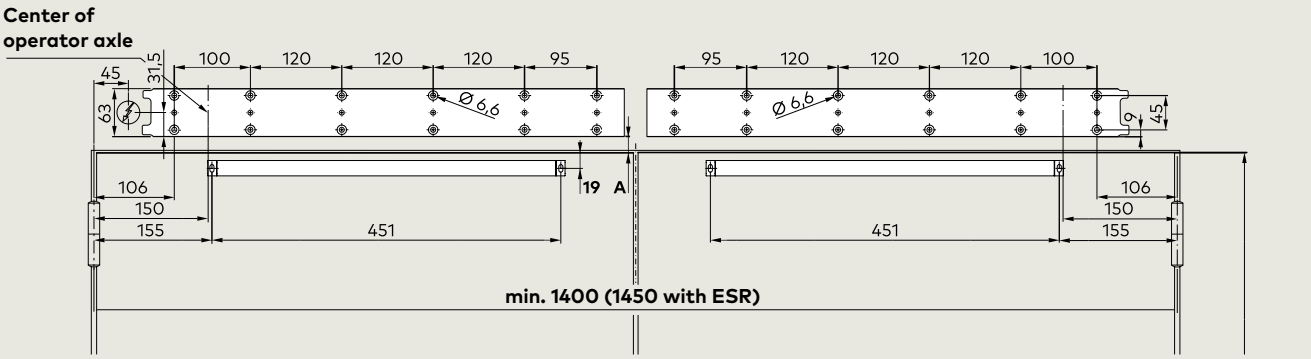
Axle extension	Standard	20 mm	30 mm	60 mm	90 mm*
A	9 mm	29 mm	39 mm	69 mm	99 mm*

* only for ED 250

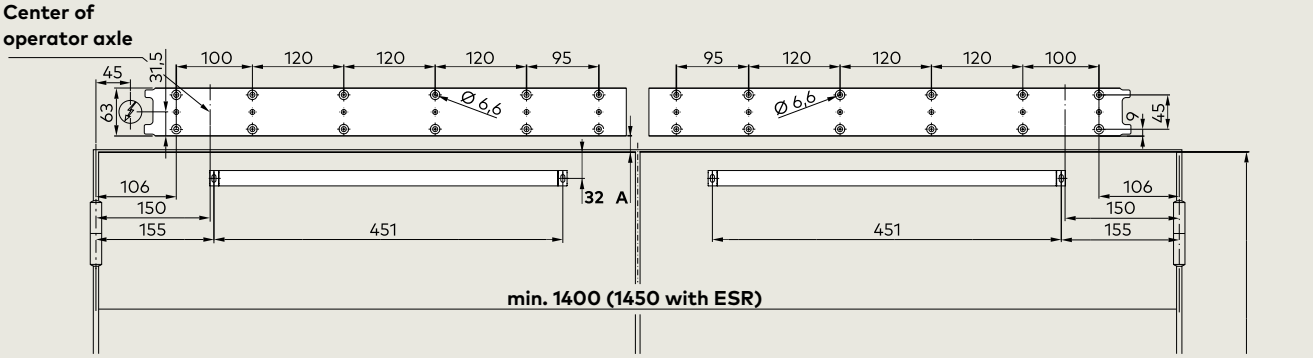
Mounting on hinge side, pull-version with slide channel, cover PROFESSIONAL, standard axle extension



Drilling template: pivot pin short 12.5 mm



Drilling template: pivot pin long 25 mm

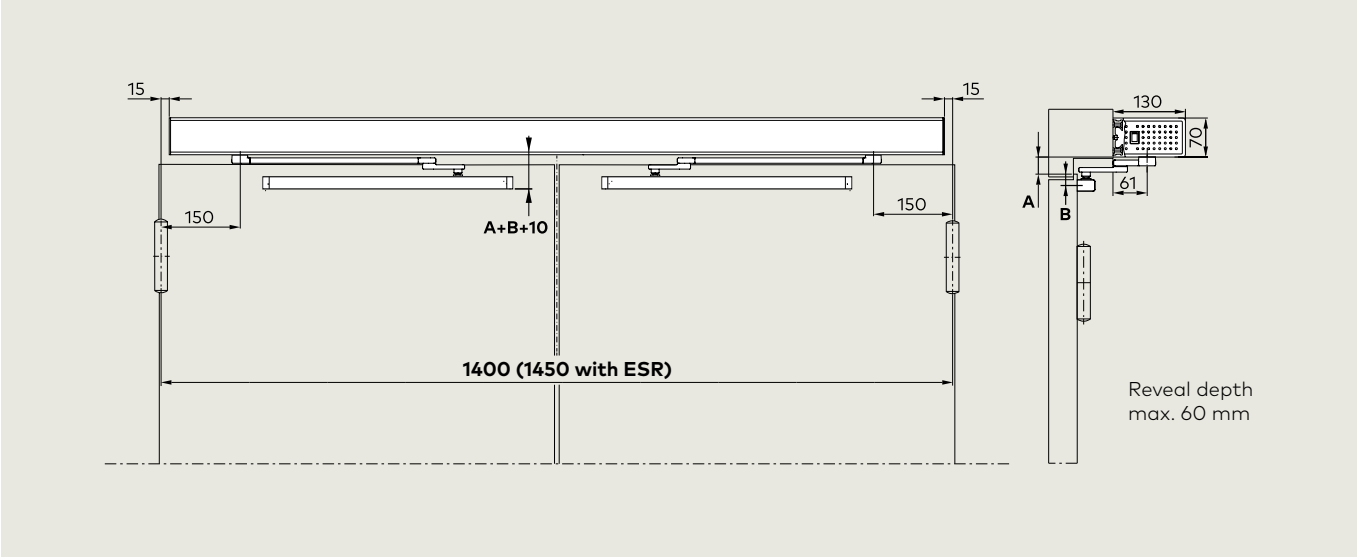


Axle extension	Standard	20 mm	30 mm	60 mm	90 mm*
A	22 mm	42 mm	52 mm	82 mm	112 mm*

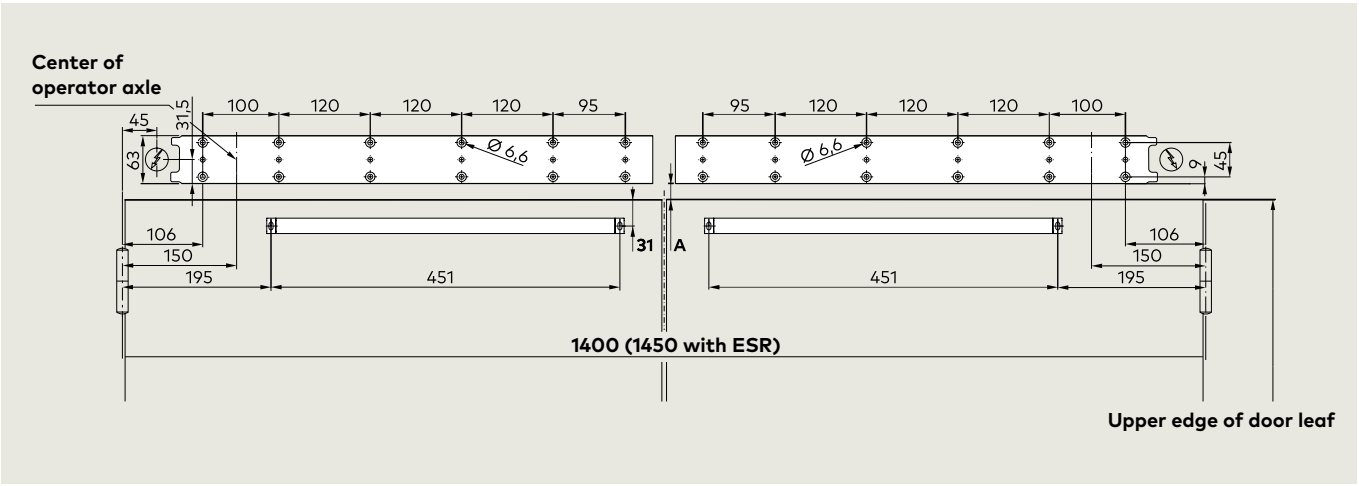
Pivot pin	12.5 mm	25 mm
B	19 mm	32 mm

* only for ED 250

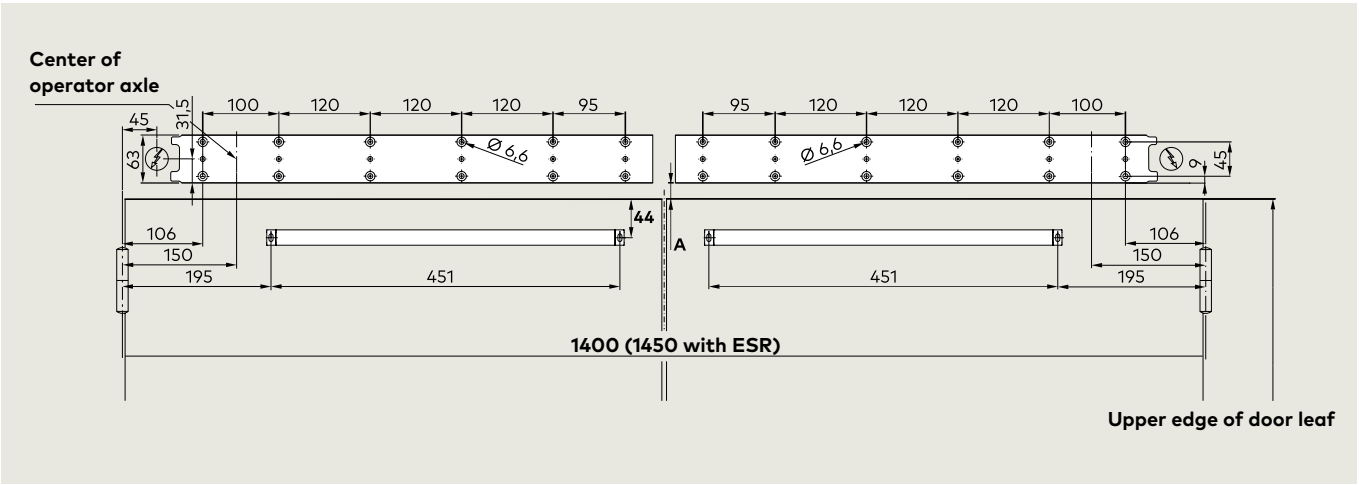
Mounting on hinge side, pull-version with CPD arm, cover PROFESSIONAL, standard axle extension



Drilling template: pivot pin short 12.5 mm



Drilling template: pivot pin long 25 mm

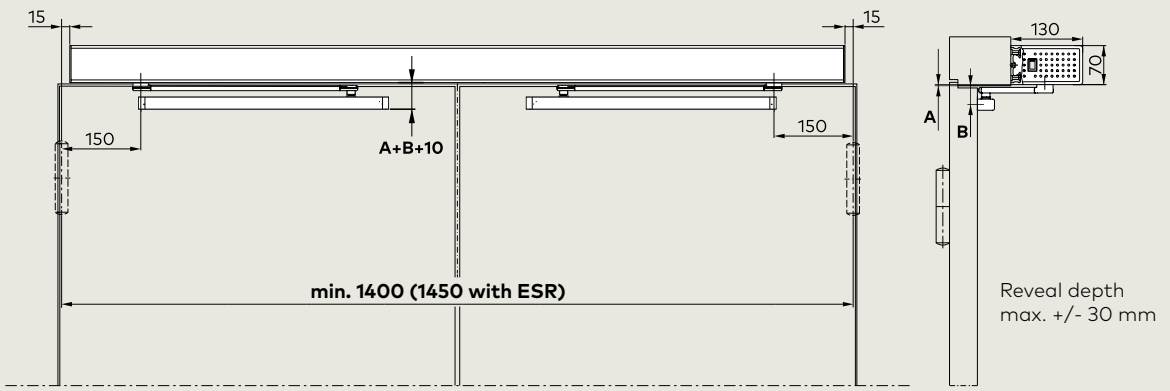


Axle extension	Standard	20 mm	30 mm	60 mm	90 mm*
A	22 mm	42 mm	52 mm	82 mm	112 mm*

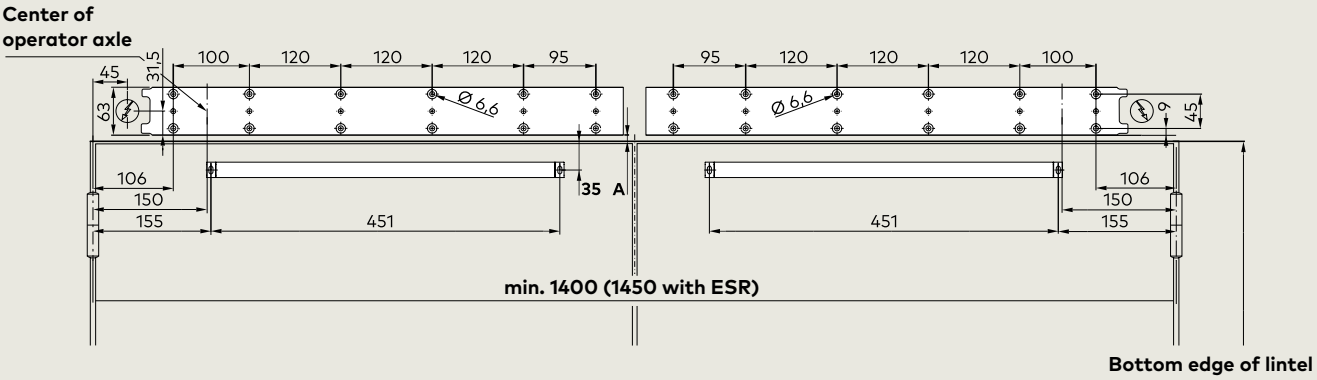
Pivot pin	12.5 mm	25 mm
B	31 mm	44 mm

* only for ED 250

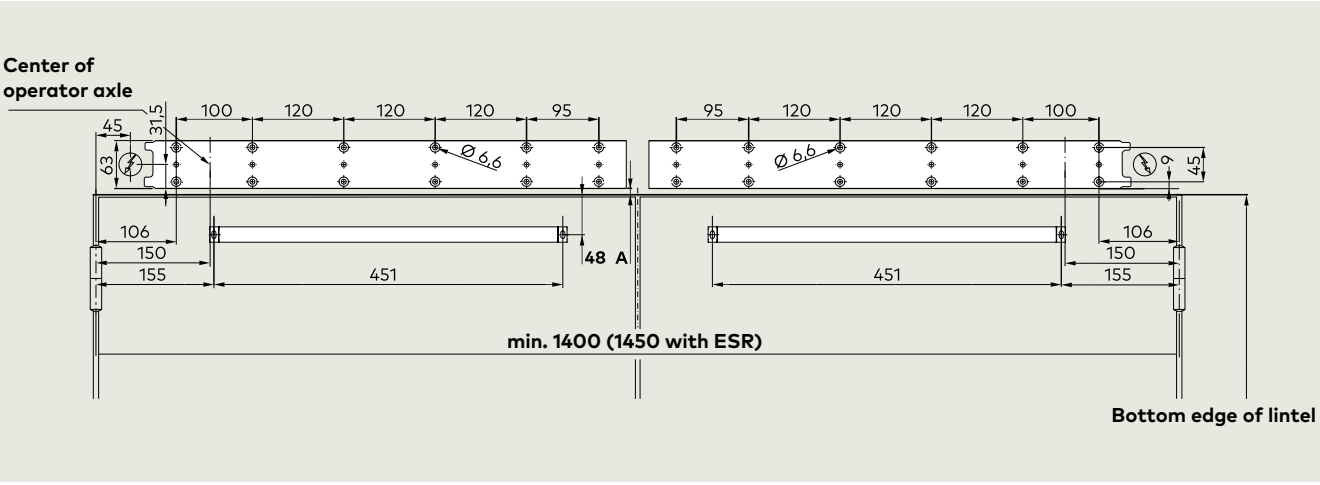
Mounting on opposite hinge side, push-version with slide channel, cover PROFESSIONAL, standard axle extension



Drilling template: pivot pin short 12.5 mm



Drilling template: pivot pin long 25 mm

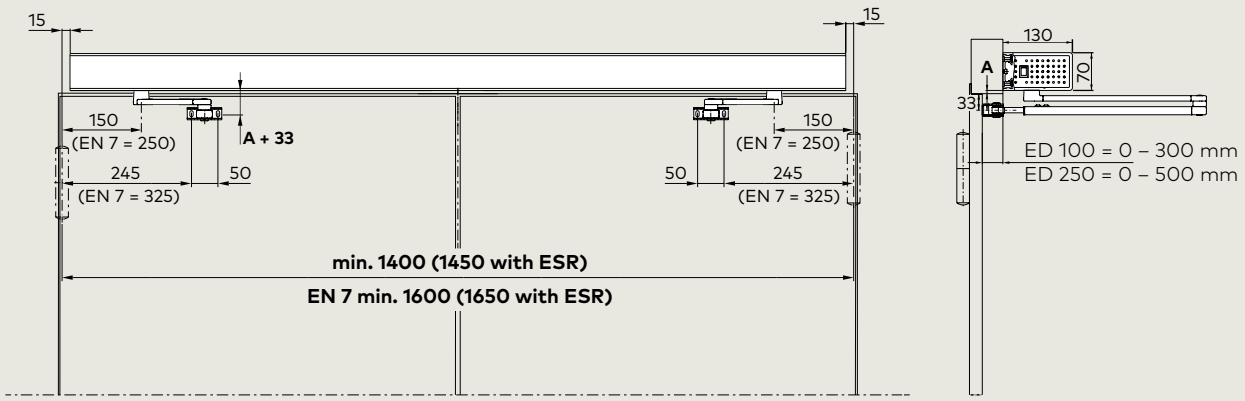


Axle extension	Standard	20 mm	30 mm	60 mm	90 mm*
A	5 mm	25 mm	35 mm	65 mm	95 mm*

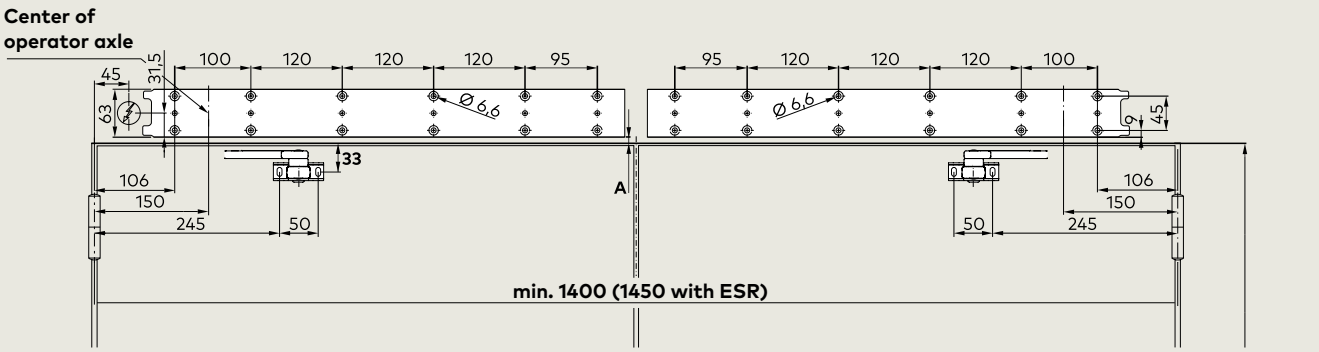
Pivot pin	12.5 mm	25 mm
B	35 mm	48 mm

* only for ED 250

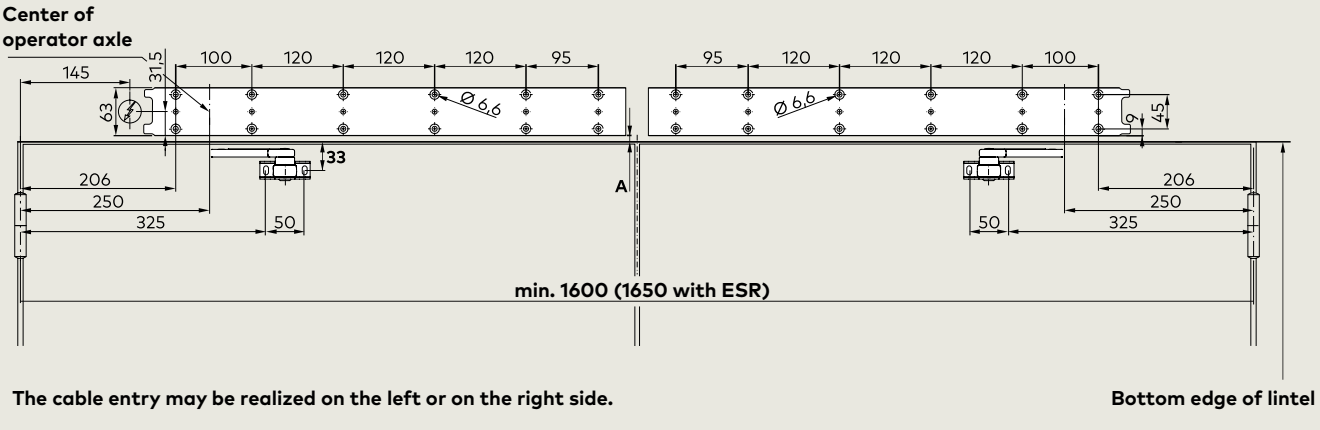
Mounting on opposite hinge side, push-version with arm, cover PROFESSIONAL, standard axle extension



Drilling template: arm EN 3-6



Drilling template: arm EN 7



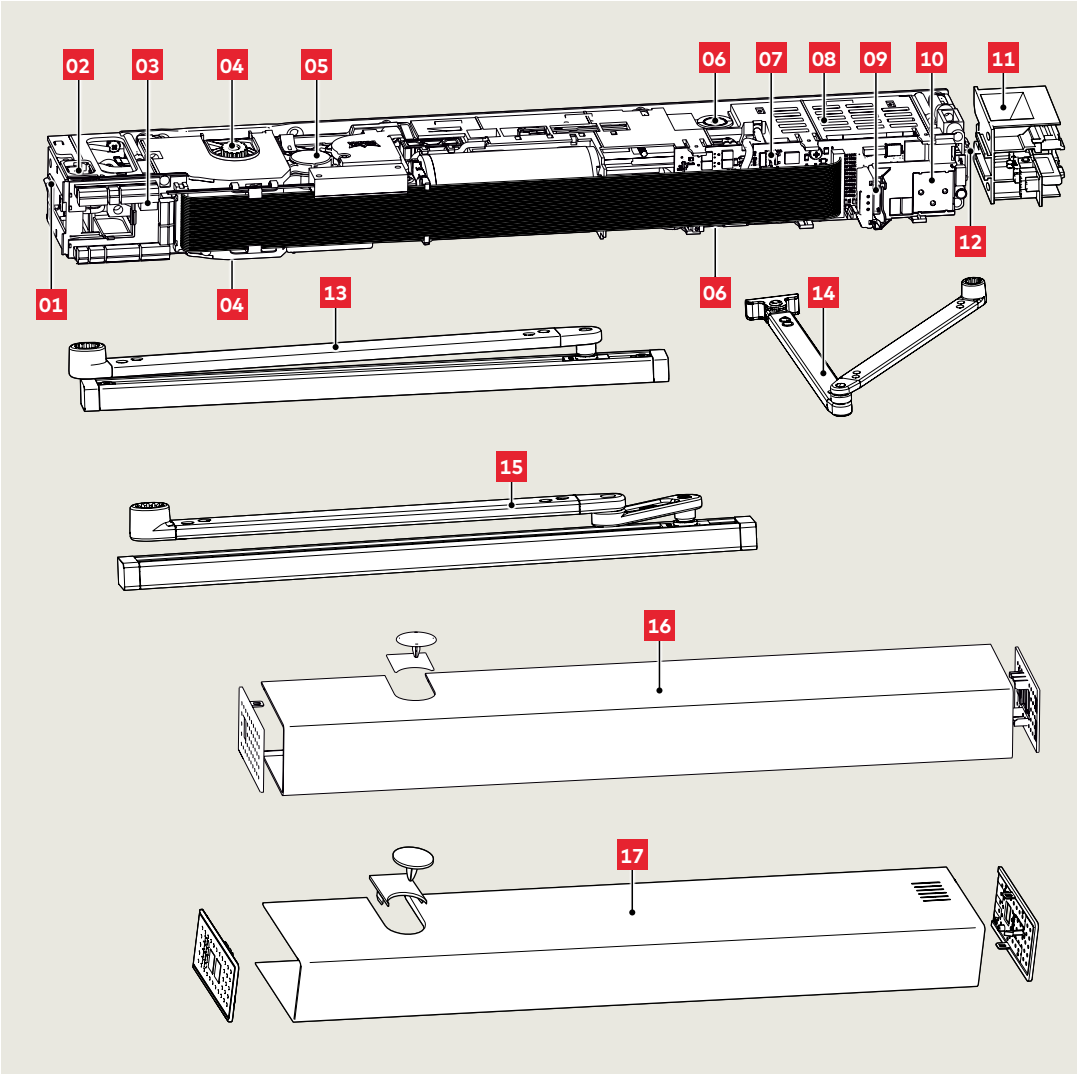
Axle extension	Standard	20 mm	30 mm	60 mm	90 mm*
A	9 mm	29 mm	39 mm	69 mm	99 mm*

* only for ED 250

System setup

The example system is equipped with all available components. It is selected in accordance with the door-leaf width and the door-leaf weight.

01 Mains switch
02 Mains connection
03 Connection unit
04 Axle connection on both sides
05 Operator system (motor/gear/spring)
06 Adjustment of closing force
07 Control unit
08 Switching power supply unit
09 Slot for dormakaba Upgrade Cards
10 User interface with information display
11 ED Cover Basic RM*
12 Internal program switch
13 Slide channel (set)*
14 Standard arm*
15 Slide channel CPD (set)*
16 Complete cover*
17 Cover BASIC RM*



*supplied separately

System	Specification	Order No.
ED 100 swing door operator 230 V	EN 2 - 4, push-version, fire protection; EN 2 - 4, pull-version, fire protection	29222311
ED 250 swing door operator 230 V	EN 4 - 7, push-version, fire protection; EN 4 - 6, pull-version, fire protection	29202311
ED 250 swing door operator PA	EN 4 - 7, push-version, fire protection; EN 4 - 6, pull-version, fire protection	29202315

Partly automated double doors with ED 250 Power-Assist (PA)

In case of double doors, both door leaves are usually automated. However, it is often sufficient to have only one door leaf automated for passenger traffic. In that situation, the ED 250 PA in combination with a standard ED 100 or ED 250 will come into play and offer a cost-effective solution. The ED 250 PA is used on the inactive leaf in case of double doors. While the active leaf can open fully automatically, the inactive panel is opened only manually and functions as a door closer. Optionally, the Power Assist function allows for an easy opening. However, the integrated locking device allows you to lock both door panels to a permanent open state without the use of any additional components. The ED 250 PA is suitable for fire and smoke control doors and be combined with the ED ESR set for an ED ESR 1/2 for double doors. An upgrade card is not required for the ED 250 PA.

Torque overview

Way of mounting	Lintel mounting on hinge side with slide channel (pull-version)				Lintel mounting on opposite hinge side with standard arm (push-version)/ slide channel (push-version)			
	ED 100		**ED 250**		**ED 100**		**ED 250**	
	minimum	maximum	minimum	maximum	minimum	maximum	minimum	maximum
Closing force EN 1154	EN 3	EN 4	EN 4	EN 6	EN 3	EN 4	EN 4	EN 7
Manual closing torque (Nm)***	18	37	26	65	18	37	26	90
Automatic closing force (N)**	20	FE: 150 LE: 67	20	FE: 150 LE: 67	20	FE: 150 LE: 67	20	FE: 150 LE: 67
Manual opening torque (Nm)	40	50	55	85	40	55	60	90
Automatic opening force (N)**	20	FE: 150 LE: 67	20	FE: 150 LE: 67	20	FE: 150 LE: 67	20	FE: 150 LE: 67
Opening force with activated Power Assist function (N)*	23	23	23	23	23	23	23	23

FE = With Full-Energy or Fire Protection Upgrade Card, **LE** = Low-Energy standard operator without upgrade card
* Power-Assist function is adjusted to maximum (function is activated at 0° opening width)
** The force is activated by an automatic opening in AUTOMATIC mode.
*** By installing the push-version with slide channel, the forces are reduced by approx. 33%

Door closer mode & AUTOMATIC mode

Users may choose between two operation modes: door closer and AUTOMATIC mode. While adjusted to door closer mode (parameter Hd = 1), the system is optimized for manual operation. With its optional Power-Assist function, the door closer mode is tailored to predominantly manually-operated doors where a door closer function is desired. The AUTOMATIC mode (parameter Hd = 0) in turn is especially suitable for mainly automatic access via motion detector or pushbutton. In addition, the door reverses as soon as it runs into an obstruction while closing. On activation of the AUTOMATIC mode, also the wind load control is available. Although in AUTOMATIC mode, the doors are still ready for manual access. In this case we would recommend the Push & Go function.

Wind load control

ED 100 and ED 250 operators are especially suitable for applications at exterior doors that are subject to varying wind loads and for interior doors separating rooms where different pressure prevails. While the system is in AUTOMATIC mode, the wind load control monitors the driving speed and adjusts the speed correspondingly if it exceeds or falls below the adjusted value. In conjunction with the Full-Energy Upgrade Card, the operator provides a force of up to 150 N at the main closing edge – which is then used to compensate environmental influences. The electronic latching action is activated during the last 5° of the closing cycle in order to support the closing action.

Power-Assist function

The Power-Assist function may be activated while the door is in door closer mode (parameter Hd = 1). As soon as a user opens the door by some degrees, the servofunction supports the manual opening cycle. In addition, the servo support automatically adapts to the adjusted size of the door closer. The level of servo support is adjustable in order to meet the requirements of DIN 18040, DIN Spec 1104, CEN/TR 15894, BS 8300/2100 and document "M", even up to class EN 6. The smallest adjustable opening torque amounts to 23 Nm/5 lbf – unless the hold-open device is triggered or in the event of a power failure. With the aid of the Power-Assist function, the system meets the requirements of the European standard EN 1154 and provides barrier-free access during standard operation. However, it is not possible to use the system in conjunction with the Push & Go function or the wind load control as these functions may affect the easy manual opening of the door.

Evacuation function EVAC

Swing door operators are switched off in the event of an alarm and can only be accessed manually. Especially with heavy doors, barrier-free access is then no longer possible. When the EVAC function is activated, the drive does not switch off completely in the event of an alarm, but deactivates the motion detectors and optionally the safety sensors and switches from full to low energy mode. The power-assist function can now be used without safety sensors to ensure barrier-free access. In addition, a time-limited automatic opening via the night/bank signal is possible for 20 seconds. To use the EVAC function, one Upgrade Card PROFESSIONAL is required per drive. The EVAC mode can be activated via feedback contact 43/3. The triggered function is indicated internally with IN18.

Smoke Pressure Ventilation (SPV)

Doors are often exposed to pressure differences. Particularly in combination with smoke extraction and pressure ventilation systems, large loads are generated which cause doors to no longer open or close properly. The SPV function provides an additional set of parameters that can be set with the hand-held terminal in order to optimise the operator parameters the operator parameters to the pressure conditions prevailing in the event of an alarm. To use the SPV function, the Upgrade Card PROFESSIONAL is required for each drive. The SPV mode can be activated via feedback contact 43/3. The triggered function is displayed internally with IN19. The SPV-relevant parameters are set via the hand-held terminal.