

Product datasheet

Vertical lifting fabric door

Crawford VL3110FCS

ASSA ABLOY

ASSA ABLOY Entrance Systems

The global leader in
door opening solutions



Copyright and Disclaimer Notice

Although the contents of this publication have been compiled with the greatest possible care, ASSA ABLOY Entrance Systems cannot accept liability for any damage that might arise from errors or omissions in this publication. We also reserve the right to make appropriate technical modifications/replacements without prior notice.

No rights can be derived from the contents of this document.

Color guides: Color differences may occur due to different printing and publication methods.

ASSA ABLOY, Besam, Crawford, Megadoor and Albany, as words and logos, are examples of trademarks owned by ASSA ABLOY Entrance Systems or companies within the ASSA ABLOY Group.

Copyright © ASSA ABLOY Entrance Systems AB 2006-2014.

No part of this publication may be copied or published by means of scanning, printing, photocopying, microfilm or any other process whatsoever without prior permission in writing by ASSA ABLOY Entrance Systems.

All rights reserved.

Technical facts

Features

Max size: (W x H)*	6000 x 6000 mm (in combination)
Door leaf thickness:	100 mm
Fabric types:	Standard: Polyester (coating: plasticised PVC) Options: Arctic, sound reduction, heat resistant, security
Color:	9 standard colours
Guide rails material:	Aluminium
Windows:	Vision panels (800 x 800 mm standard)
Seals:	Bottom, side and top seal
Operation:	Standard: Electrical operator Optional: Automated operation, Access control, Safety functions

* Other sizes may be available on request.

Performance

Operating speed:	Opening speed: up to 1.5 m/sec.
Wind load resistance*: (differential pressure)	0.7-1.6 kPa, depending on size (Class 3-5, EN 12424)
Wind speed, door in motion:	< 20 m/s
Sound reduction (standard):	15 dB Rw (ISO 717)
Water resistance:	0.11 kPa (for a closed door) (Class 3, EN 12425)
Air permeability:	12 m ³ /(m ² h) (Class 2, EN 12426)
Operating environment temperature range:	-35 °C to +70 °C

* Higher wind loads on request.

Contents

Copyright and Disclaimer Notice	2
Technical facts	3
Contents	4
1. Description	6
1.1 General	6
1.1.1 Standard	6
1.1.2 Options	6
1.2 Door leaf	7
1.2.1 Construction	7
1.2.2 Intermediate section	7
1.2.3 Bottom section	7
1.2.4 Safety arresters and wind lock in stainless steel	7
1.2.5 Material	8
1.2.6 Colors	8
1.2.7 Options	8
1.3 Guide rails	9
1.3.1 Jams	9
1.3.2 Wind deflectors	10
1.4 Header box	10
1.4.1 Header box options	10
1.4.2 Self-supporting header box	11
1.5 Operating system	11
1.5.1 Electrical operation	11
1.5.2 Belt system	11
1.5.3 Gear motor	11
1.5.4 Control unit	12
1.5.5 Safety edge	13
1.5.6 Safety boxes	13
1.5.7 Absolute encoder	13
1.5.8 Brake resistor	13
1.5.9 Access and automation	14
2. Specifications	16
2.1 Clear width and clear height	16
2.2 Performance	16
2.3 Environmental tolerance	16
2.4 Surface treatment	16
2.5 Door leaf	17
2.5.1 Fabric data	17
2.6 Operating system	21
2.6.1 General specifications	21

3.	CEN Performance	22
3.1	Lifetime expectation	22
3.2	Resistance to windload	22
3.3	Resistance to water penetration.....	22
3.4	Air permeability	22
3.5	Thermal transmittance.....	23
3.6	Acoustic insulation	23
3.7	Operating forces and safe openings.....	23
4.	Building and space requirements	24
4.1	Building preparations	24
4.1.1	Installation of the header box.....	24
4.1.2	Mounting surfaces for guide rails	27
4.1.3	Installation of the guide rails.....	28
4.1.4	Installation of the control unit.....	29
4.2	Space requirements	30
4.2.1	Space requirements for operation.....	30
4.2.2	Space requirements for control unit.....	31
4.2.3	Space requirements for maintenance	31
4.2.4	Space requirements - Installation against wall	32
4.2.5	Space requirements - Installation against wall between columns.....	33
4.2.6	Space requirements - Installation with self-supporting header box	34
4.2.7	Space requirements - Installation in door opening	35
5.	Service	36
	Index	37

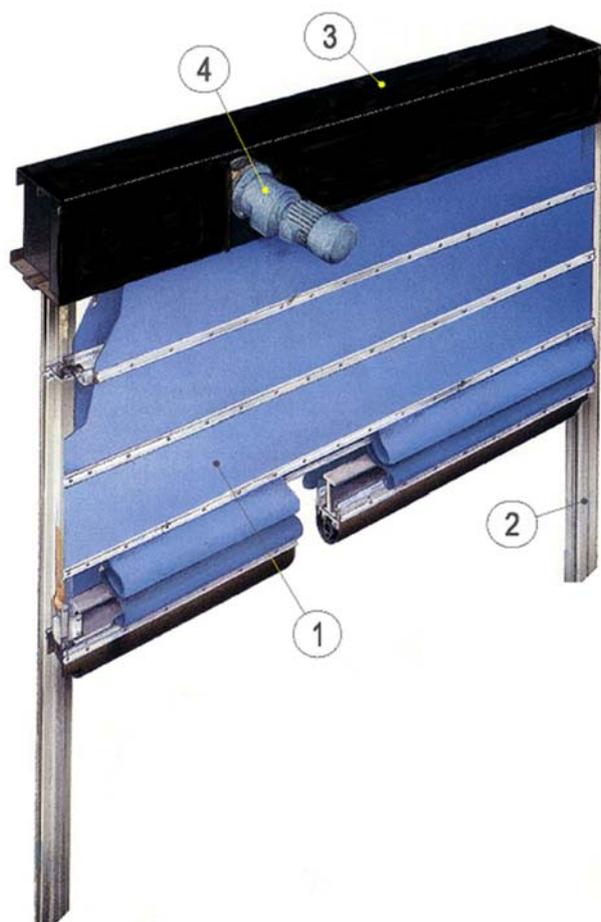
1. Description

1.1 General

The Crawford VL3110FCS vertical lifting fabric door is especially designed for extreme industrial environments where doors are exposed to moisture, dust and very high or low temperatures, or where the door opening is large.

The unique design and structure offers fast opening and closing, durability, tightness, energy efficiency, operational reliability and minimum maintenance. Every door is individually designed to meet application requirements, for example wind load.

The quick opening and closing of the Crawford VL3110FCS vertical lifting fabric door minimizes passage time and improves traffic flow. It also reduces the loss of energy, along with the intrusion of drafts, humidity and dirt.



The Crawford VL3110FCS vertical lifting fabric door has 4 primary parts:

- 1) Door leaf
- 2) Guide rails
- 3) Header box
- 4) Operating system

1.1.1 Standard

The Crawford VL3110FCS vertical lifting fabric door is supplied with the following specifications as standard:

Door leaf:	Polyester, 1100 dtex with plasticised PVC coating
Safety:	Safety arresters Safety edge
Operation:	Operator + control unit
Colors:	Choice of 9 standard colours

1.1.2 Options

Crawford provides a wide range of options and accessories to customise the Crawford VL3110FCS vertical lifting fabric door to any customers needs. For example:

Door leaf:	Arctic, heat resistant, sound reduction and security fabrics Vision panels Clamp strip covers
Guide rails:	Jamb as installation posts and for insulation. Heating cables
Header box:	Protective cladding
Colors:	Optional colors on request
Operation:	Automation

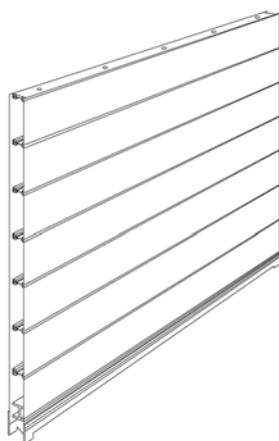
1.2 Door leaf

1.2.1 Construction

The door leaf is made of two layers of very strong vinyl-coated polyester fabric, separated by aluminium intermediate sections. The aluminium top section is bolted to the header box, the steel and aluminium bottom section is connected to the lifting belt via the safety arresters.

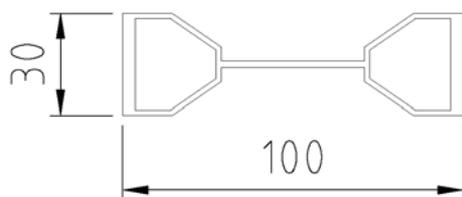
The fabric is attached to both sides of the intermediate sections, top section and bottom section with self-tapping screws through aluminium clamp strips, providing maximum tightness.

Wind load is transferred to the vertical guide rails by the horizontal aluminium sections of the door leaf.



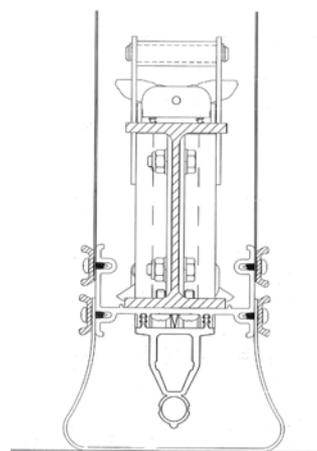
1.2.2 Intermediate section

The intermediate sections give strength to the door leaf and create a buffer between the inside and outside fabric walls. Self-lubricating slide blocks at each end of the intermediate sections run in the guide rails when the door opens and closes.



1.2.3 Bottom section

The bottom section, made of steel and aluminium, is connected to the lifting belt via the safety arresters. The bottom section contains a safety edge and a rubber seal on the bottom edge that creates a seal between the door and the floor.



1.2.4 Safety arresters and wind lock in stainless steel

The safety arresters are connected to each end of the bottom section. The lifting belt is connected to the safety arresters. The safety arresters have four hooks. The two upper hooks operate as a wind lock when the door is closed. The two lower hooks are the safety hooks and grip the guide rails to stop the door if the lifting belt becomes slack or, in an unlikely event, would break.



1.2.5 Material

Standard Fabric

The standard door-leaf fabric is a single sheet of heavy-duty vinyl-coated polyester. The fabric is resistant to mechanical abrasion and sparks generated from mechanical processes such as welding.

The standard fabric is available in 9 standard colours, however other colors are available on request.

Arctic Fabric

The arctic fabric replaces the standard fabric in environments where the temperature can be as low as -54°C.

Sound-reduction Fabric

The sound-reduction fabric is for use in environments where the transmission of sound through the door must be reduced. It is installed on both sides of the door leaf behind the standard fabric.

Heat-resistant Fabric

The heat-resistant fabric replaces the standard fabric on the inside of the door leaf when there is a requirement to contain heat and/or chemical hazards. It is available with three different coatings dependant on the environment where it is going to be used.

Security Fabric

The security fabric is for use in environments where security is important. It is similar to the standard fabric with the addition of galvanized steel wires inside the fabric. It is installed on both sides of the door leaf behind the standard fabric to a height of about two meters.

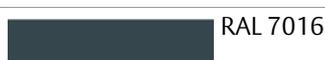
Vision Panels

Vision panels (windows) are available for the standard and arctic fabrics to improve light admission and visibility through the door leaf. The vision panels are available in four different sizes.

1.2.6 Colors

The RAL-colors are as close as possible to the official RAL HR collection.

1.2.6.1 Standard colors



Translucent white

1.2.6.2 Optional colors

Other colors are available on request.

1.2.7 Options

Clamp strip covers

Clamp strip covers are plastic strips that clip onto the clamp strips. They are available in the same standard colors as the fabric.

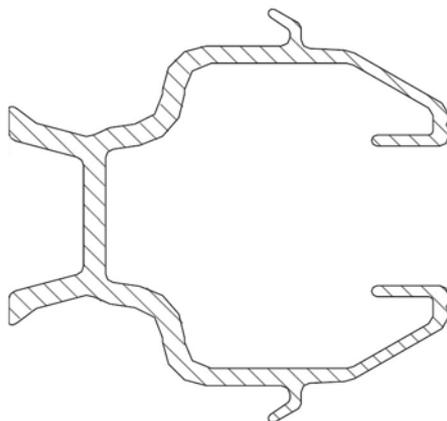
The benefits of the clamp strip covers are:

- Improve the appearance of the door leaf
- Cover the screws
- Protect the door leaf from discoloration in certain environments.

1.3 Guide rails

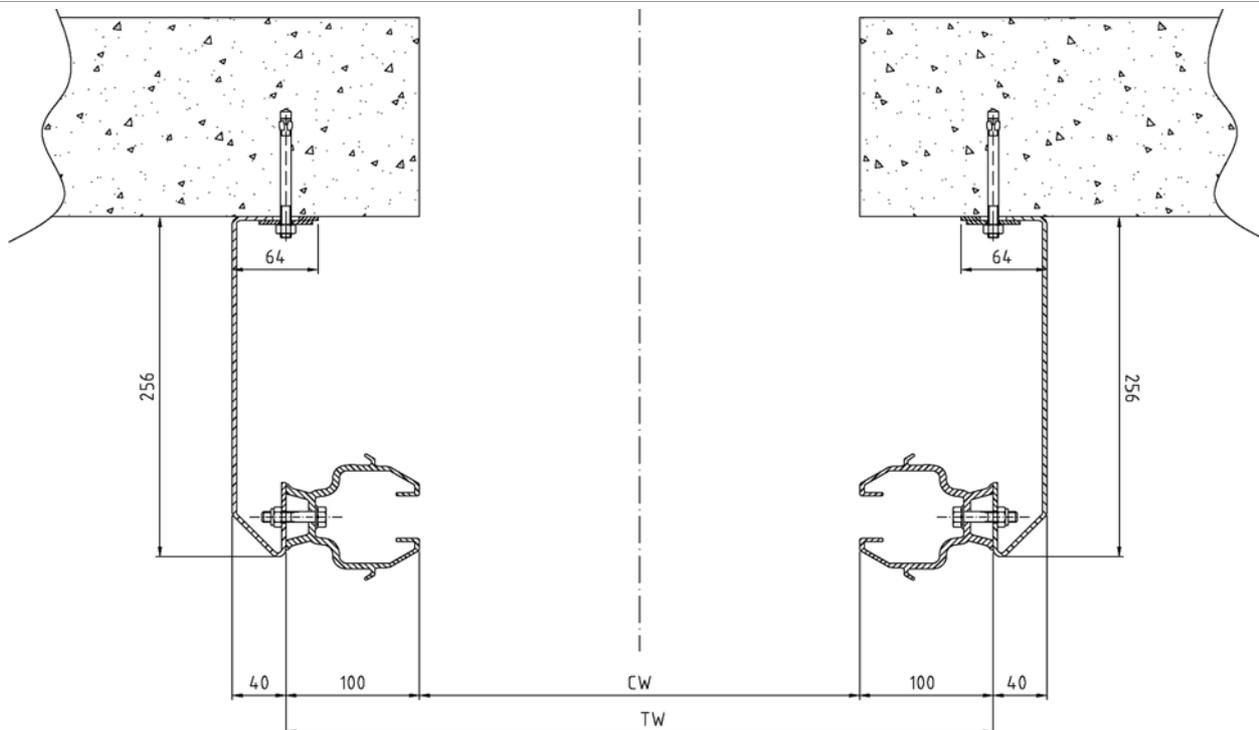
The vertical guide rails are made from extruded aluminium. The lubrication-free slide blocks at each end of the door leaf sections travel through these guide rails.

The guide rails have weather sealing on the inside and outside faces. There is also a space inside the guide rails for the lifting belt of the drive unit and safety arresters.



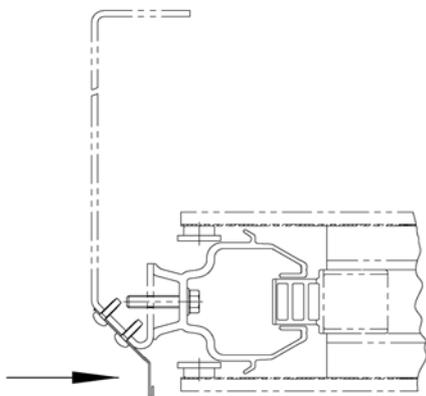
1.3.1 Jambs

If posts for installing the guide rails are not available, stable jambs can be provided. These jambs can be installed, against a concrete or steel wall structure, in the same way as the guide rails. It is possible to insulate the jambs, but material for the purpose is not included in the delivery. The jambs are made of steel painted black.



1.3.2 Wind deflectors

Used with jambs to avoid strong side winds, pressing sand or snow inside the door leaf.



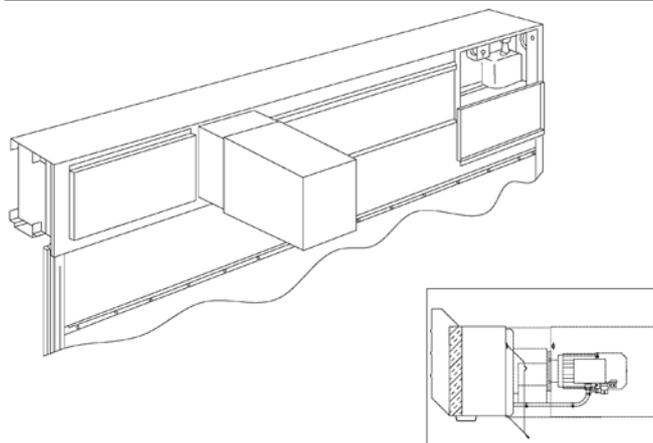
1.4 Header box

The header box contains the gear motor, the belt drum, lifting belts, pulleys, safety boxes and an absolute encoder. It can be installed with the gear motor on the inside or the outside of the building. As standard, the motor side of the header box is enclosed by powder-coated sheet steel covers. Hatches allow access to components that need maintenance.

1.4.1 Header box options

1.4.1.1 Non-motor side covered

If the header box is positioned in the door opening with the gear motor facing inwards, the non-motor side should be fitted with a cover. An inspection can still be done from the motor side, in this case from inside the building. The header box can be insulated as an option.



1.4.1.2 Protective casing for motor

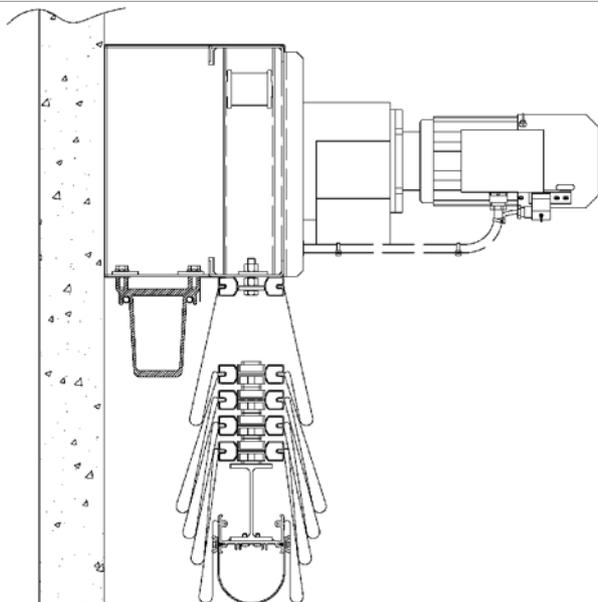
In corrosive or dirty environments, the motor should be fully protected. The protective casing is made of powder-coated sheet steel. The casing has a hatch to facilitate easy access to the motor for emergency operation. The casing is detachable. Existing doors can also be equipped with a protective casing.

1.4.1.3 Stainless steel cladding and motor casing

In corrosive environments, the header box, including the mechanical unit, can be enclosed in stainless steel casing.

1.4.2 Self-supporting header box

If there is no suitable installation surface above the door opening, a self-supporting header box can be installed. A supporting beam, installed on the bottom of the header box, transfers the weight of the header box and the door leaf via the jambs to the building.



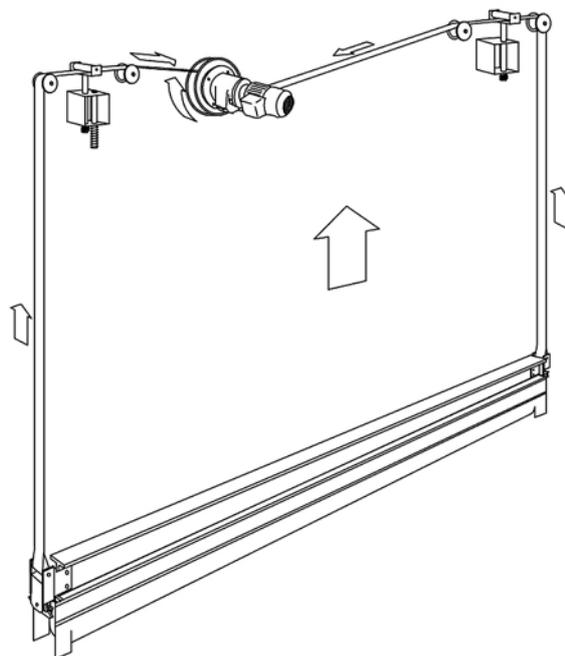
1.5 Operating system

1.5.1 Electrical operation

The Crawford VL3110FCS vertical lifting fabric door is always supplied with an electrical operating system, a control unit near the door and a gear motor in the header box.

The door is opened by an impulse from the UP-button or from an optional device, such as a radar or magnetic loop.

The door is closed by an impulse from the DOWN-button or by an optional device.



1.5.2 Belt system

The belt system consists of one lifting belt that can withstand corrosion, dust and dirt. This belt is connected to the safety arresters at both ends of the bottom section, through the guide rails, up to the belt drum. The belt drum is installed on the output shaft of a braked reduction-gear motor by a keyed joint.

1.5.3 Gear motor

The gear motor is suited for the actual weight of the door leaf. The electric gear motor winds the belt onto a drum.

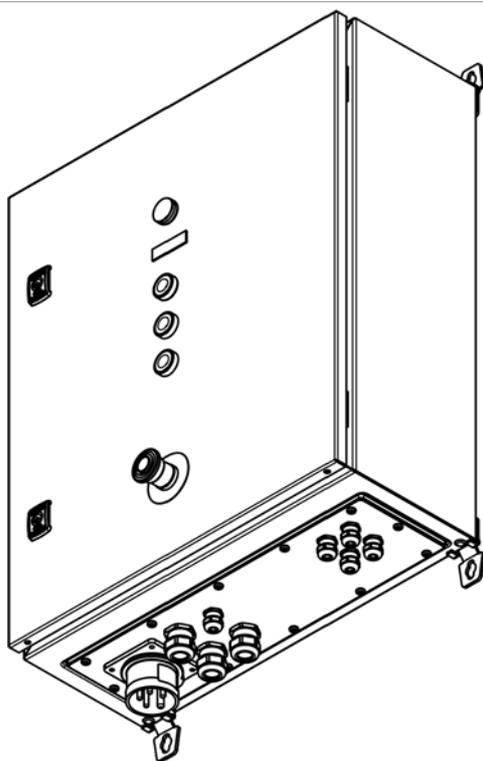
In the event of a power failure, the door can be manually operated by means of a hand crank connected to the motor.

1.5.4 Control unit

The door is supplied with a PLC-based control unit installed near the door. The control unit commands the gear motor via push buttons or via external activators, e.g. a mechanical loop, radar or radio control.

The UP and DOWN buttons are operated by impulse. The gear motor can be disabled from the control unit for emergency hand-crank operation by switching off the mains.

The control unit is available in a standard model and an extended model. By default the standard model supports the most basic functions whereas the extended model supports all available functions.



1.5.4.1 PLC

The extended control unit contains a PLC and an LCD with integrated buttons to navigate through the screens for information or to configure the door operation. The PLC is programmed with factory default settings before delivery. The following information is given:

- Number of days of operation and number of door openings from the start since the door was last serviced.
- Current settings
- Alarm codes
- Control unit temperature (option)

The standard control unit does not include an LCD and does not support displaying of information or door operation configuration.

1.5.4.2 Variable frequency drive

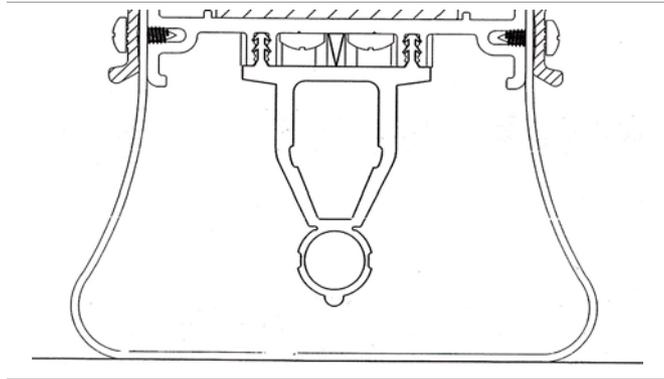
A significantly reduced opening time is achieved by a variable frequency drive that controls the frequency of the voltage to the gear motor.

1.5.4.3 Temperature control

As an option, the control unit can be equipped with temperature control devices such as a fan or a heating element.

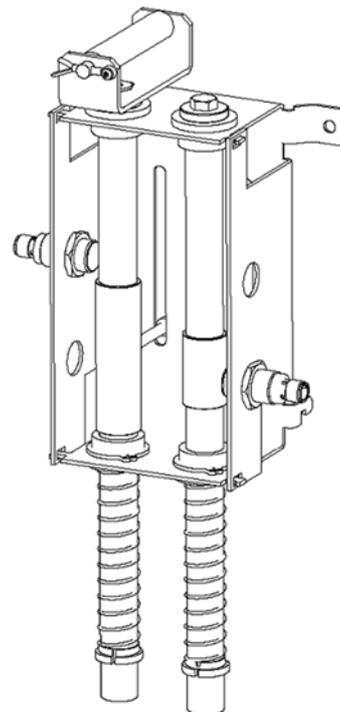
1.5.5 Safety edge

The Crawford VL3110FCS vertical lifting fabric door has an optical safety edge on the bottom of the door. If the door hits an obstacle, the IR-beam is interrupted. The door will stop and return to its original position. The optical beam runs through an enclosed rubber tube. The steel profile in the bottom section ensures a straight line across the entire width of the door.



1.5.6 Safety boxes

The safety boxes are low in maintenance and have a high ingress protection level (IP67) and temperature tolerance. The inductive proximity switches monitor belt rupture and door over travel.



1.5.7 Absolute encoder

The absolute encoder is mounted on the belt drum to monitor the position of the door.

1.5.8 Brake resistor

The brake resistor is connected to the control unit and mounted nearby on the wall.

1.5.9 Access and automation

The standard control unit supports remote control operation and one safety photocell.

1.5.9.1 Additional automatic functions

Crawford offers a wide range of functions that allow advanced opening and safety control.

1.5.9.2 Control functions

Free contacts

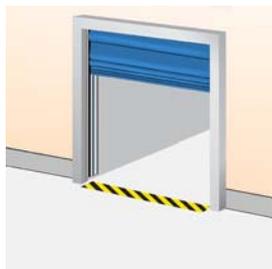
Potential free switching contacts are available on blocks in the control cabinet, from the functions "door open", and "door closed". These functions can be used to connect signal devices, air curtains, airlock function, etc.

Interlocking



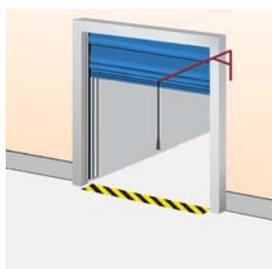
Developed for climate control or safety; if door A is open, door B cannot be opened. If door B is open; door A cannot be opened.

Reduced opening



When it is unnecessary or undesirable to fully open a door, an absolute encoder is used to configure a reduced opening position.

Pull-rope switch



A pull rope switch next to the door opening can be operated from e.g. a forklift truck. Pulling the rope opens a closed door or closes an open door. Installed on the wall, with bracket.

External push button box



An extra control box is installed outside the building or inside close to the door if the main control unit needs to be installed away from the door opening. Installed on the inside or outside wall beside the door.

Remote control



A hand-held radio transmitter allows door operation from a vehicle or any position within 50-100 meters from the receiver and aerial at the door. For closing, the door can be provided with a photocell beam. Receiver installed in control unit, antenna optionally installed on the wall beside the door.

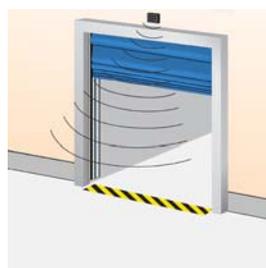
1.5.9.3 Automatic control functions

Magnetic loop



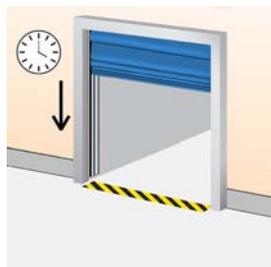
A sensor in the floor detects a metal object (usually forklift trucks, pallet trucks) and opens the door automatically. This is an ideal solution for frequent vehicle traffic. Installed on the outside, inside or both sides of the door in the ground.

Radar



An infrared sensor above the door detects an object (person, vehicle) within a specified distance from the door and opens the door automatically. This is an ideal solution for frequent vehicle or personal traffic. Often combined with automatic closing. Installed on the inside or outside wall above the door.

Automatic closing



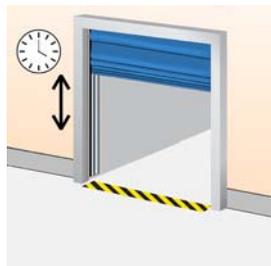
A programmable timer that closes the door after a specified time, counted from either the fully open position and/or from passing through the photocell beam.

Warning lights - Green and red



One or two sets of green and red lights indicating that the door is open or closed; continuous green light when the door is open, continuous red light when the door is closed, optionally flashing light when the door is moving or not fully open. Installed on the inside and/or outside wall beside the door.

Automatic opening and closing



A programmable timer that closes the door after a specified time, counted from either the fully open position and/or from passing the photocell beam. A sensor, e.g. a magnetic loop or radar, is used for automatic opening.

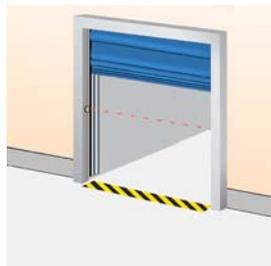
Warning lights - Orange flashing lights



Flashing light during door movement. Duration of start warning is configurable. May be combined with or replaced by sounder. Installed on the inside and-or outside wall beside the door.

1.5.9.4 Safety functions

Safety photocells 1-channel



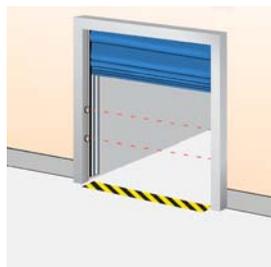
A set of a photocell transmitter with reflector or receiver is installed in the door opening. If the photocell beam is interrupted during closing, the door will stop in less than 30mm and reverse to the fully open position. Installed in the door opening.

Emergency power switch



A power switch can be enabled, as a backup system, in case of a power failure. Supplied with power inlet socket.

Safety photocells 2-channel



Two sets of photocell transmitters with reflectors and receivers are installed in the door opening. If one or both photocell beams are interrupted during closing, the door will stop in less than 30mm and reverse to the fully open position. Installed in the door opening.

2. Specifications

2.1 Clear width and clear height

The standard Crawford VL3110FCS vertical lifting fabric door is delivered in the following size range:

Standard door sizes*		
	Clear width	Clear height
Min.:	1810 mm	
Max.:	6000 mm	6000 mm (in combination)

* Other sizes may be available on request

2.2 Performance

Operating speed:	Opening speed: up to 1.5 m/sec.
Wind load resistance*: (differential pressure)	0.7-1.6 kPa, depending on size (Class 3-5, EN 12424)
Wind speed, door in motion:	< 20 m/s
Sound reduction (standard):	15 dB Rw (ISO 717)
Water resistance:	0.11 kPa (for a closed door) (Class 3, EN 12425)
Air permeability:	12 m ³ /(m ² h) (Class 2, EN 12426)
Operating environment temperature range:	-35 °C to +70 °C

* Higher wind loads on request.

2.3 Environmental tolerance

Heat and cold resistance	-35°C to +70°C
Atmospheric humidity	below dew point
Presence of particles	< 1000 µg/m ³ air
Mechanical load, blasting	Not directly aimed.
Differential pressure, closed door	Class 3 (EN12424, temporary 0.7 kPa)
Wind speed, in motion	< 20 m/s
Acidity	Condensate at 5<pH<9
Explosive fumes or dust	No occurrence.

*In the normal version, the door is suited for operation in environments within the limits stated above. If the requirements exceed these limits (e.g. wind load), the door can often be modified on request.

2.4 Surface treatment

Steel components	For corrosion, category 3 according to ISO 12944.2. Higher class on request.
Other parts	Aluminium, plastic, stainless steel, zinc electroplated steel (~ 10µ). Fixing elements are zinc electroplated (~ 10 µ).
	Door leaf screws are corrosion protected with Geomet.

2.5 Door leaf

2.5.1 Fabric data

2.5.1.1 Standard fabric

Application	Standard		
Use	Standard		
Coating	Plasticized PVC		
Fabric	Polyester, 1100 dtex		
Weight	700 g/m ²		
Heat- and cold resistance	-35°C to +70°C. DIN EN 1876-2 1998-01. (-30°C to + 70°C for the Translucent white fabric)		
Tensile strength	Warp : 2500N/5 cm acc. DIN 53354, EN ISO 1421 Weft : 2000N/5 cm acc. DIN 53354, EN ISO 1421		
Tear resistance	Warp : 400N acc DIN 53363 Weft : 300N acc. DIN 53363		
Resistance to light	7 - 8 (on a scale 0-8). ISO 105-B02 1998		
UV-stabilized	Yes		
Fire classification	M2 (NF P 92 507 2004), B - s2,d0 (EN 13501-1 2007)		
Mildew resistant	Yes		
Rot resistant	Yes		
Radar reflection	0.3 dB, - 0.1%		
Lacquered	Yes		
Standard colors	<ul style="list-style-type: none"> • Tan • Red • Blue • Green • Grey • Anthracite grey • White • White aluminium • Translucent white 	<ul style="list-style-type: none"> NCS 2010Y-40R NCS 2070-R NCS S3560-R80B NCS 8010-G10Y NCS 3500 NCS 8005-B20G NCS 0500 	<ul style="list-style-type: none"> RAL 1001 RAL 3001 RAL 5005 RAL 6009 RAL 7004 RAL 7016 RAL 9016 RAL 9006
Logotype	Optional		
Vision panels	Optional		

2.5.1.2 Arctic fabric

Application	Environmental temperatures down to -54°C		
Use	Replaces standard fabric		
Coating	Plasticized PVC		
Fabric	Polyester, 1100 dtex		
Weight	700 g/m ²		
Heat- and cold resistance	-54°C to +70°C. DIN EN 1876-2 1998-01		
Tensile strength	Warp : 2500N/5 cm acc. DIN 53354, EN ISO 1421 Weft : 2000N/5 cm acc. DIN 53354, EN ISO 1421		
Tear resistance	Warp : 400N acc DIN 53363 Weft : 300N acc. DIN 53363		
Resistance to light	7 - 8 (on a scale 0-8). ISO 105-B02		
UV-stabilized	Yes		
Fire classification	M2 (NF P 92 507 2004), B - s2,d0 (EN 13501-1 2007)		
Mildew resistant	Yes		
Rot resistant	Yes		
Radar reflection	0.3 dB, - 0.1%		
Lacquered	Yes		
Standard colors	<ul style="list-style-type: none"> • Tan • Red • Blue • Green • Grey • Anthracite grey • White • White aluminium 	<ul style="list-style-type: none"> NCS 2010Y-40R NCS 2070-R NCS S3560-R80B NCS 8010-G10Y NCS 3500 NCS 8005-B20G NCS 0500 	<ul style="list-style-type: none"> RAL 1001 RAL 3001 RAL 5005 RAL 6009 RAL 7004 RAL 7016 RAL 9016 RAL 9006
Logotype	Optional		

Note! Not in combination with:

- Vision panels
- Sound reduction fabric
- Heat resistant fabric
- Security fabric

2.5.1.3 Sound reduction fabric

Application	Sound reduction
Use	On both sides of the door behind the standard fabric
Coating	Plasticized PVC
Fabric	Polyester, 1100 dtex
Weight	1850 g/m ²
Sound reduction (incl. standard fabric)	Index Rw23dB*, tested by SP Swedish National Testing and research Institute
Heat- and cold resistance	-30°C to +70°C, acc. SFS-EN 1876-1
Tensile strength	Warp: 3000N/5 cm acc. DIN 53354 Weft: 2900N/5 cm acc. DIN 53354
Tear resistance	Warp: 380N acc DIN 53356 Weft: 300N acc. DIN 53356
Fire classification	Acc. SIS 650082, DIN 4102-B1
Comments	Space for fabric folding must be increased by 100 mm on each side of the door, to avoid fabric wear.

Note! Must always be quoted by ASSA ABLOY Entrance Systems.

* Weighted apparent sound reduction index acc. ISO 717-1. For more information, ask for SP-report P103341, dated 15 June 2001 'Determination of sound insulation of an industrial door according to SS-EN ISO-140-3:95'.

2.5.1.4 Heat resistant fabric - Silicone rubber coating

Application	<ul style="list-style-type: none"> • Hot air environment • Coating highly resistant to chemicals • Good soil and oil repellent properties.
Use	Replacing standard fabric
Designation	W2643 2 x SIF 80/60
Coating	Silicon rubber on both sides
Fabric	Woven glass fibre EC9-136 acc to DIN53830-3
Weight	560 g/m ²
Temperature resistance	+280°C
Tensile strength warp/weft	800 / 600 N / 5 cm acc to ISO 13934-1
Fire classification	M1 acc to NF P92-507 ISO 5660-1 IMO Res. A.653 (16) IMO Res. MSC 41 (64) IMO FTP Code, Annex 2, section 2.2
Comments	<ul style="list-style-type: none"> • Never combine standard and heat resistant fabric (for example upper part of the door with standard and lower part of the door with heat resistant fabric). • Protect the bottom sealing with the fabric as well. • When the door is installed against a wall on the cool side, the folding space on the hot side must be increased by at least 100 mm to avoid fabric wear. • The motor should be placed on the cool side. A heat radiation shield below the motor may be necessary. • All cables must be protected. • The clear height should be as large as possible.

Note! Must always be quoted by ASSA ABLOY Entrance Systems.

2.5.1.5 Heat resistant fabric - Aluminium coating

Application	Hot air and high radiation temperatures inside (e.g. foundries). Good heat reflection properties.
Use	On the inside of the door (never on the outside) replacing standard fabric.
Designation	332 AL-HT
Coating	Aluminium pigments on polyurethane adhesive on one side of the fabric.
Fabric	E-glass EC9-136 (cross twill)
Weight	490 g/m ²
Heat- and cold resistance	From contact coating +200°C (not continuously)
Tensile strength	Warp : 800N/cm acc. DIN 53857 T1 Weft : 500N/cm acc. DIN 53857 T1
Comments	<ul style="list-style-type: none"> • Never combine standard and heat resistant fabric (for example upper part of the door with standard and lower part of the door with heat resistant fabric). • Protect the bottom sealing with the fabric as well. • When the door is installed against a wall on the cool side, the folding space on the hot side must be increased by at least 100 mm to avoid fabric wear. • The motor should be placed on the cool side. A heat radiation shield below the motor may be necessary. • All cables must be protected. • The clear height should be as large as possible.

Note! Must always be quoted by ASSA ABLOY Entrance Systems.

2.5.1.6 Heat resistant fabric - Aluminium polyurethane coating

Application	Fire barrier
Use	On the inside of the door (never on the outside) replacing standard fabric.
Designation	W2167 Gp2
Coating	Two sides aluminium grey polyurethane
Thickness	0.8 mm
Fabric	Woven glass fibre, Atlas 1/8
Weight	690 g/m ²
Heat resistance	+450°C
Tensile strength	Warp : 1350N/cm acc. EN ISO 13934-1 Weft : 1260N/cm acc. EN ISO 13934-1
Fire classification	Incombustible according to M0 (French standard)
Comments	<ul style="list-style-type: none"> • Never combine standard and heat resistant fabric (for example upper part of the door with standard and lower part of the door with heat resistant fabric). • Protect the bottom sealing with the fabric as well. • When the door is installed against a wall on the cool side, the folding space on the hot side must be increased by at least 100 mm to avoid fabric wear. • The motor should be placed on the cool side. A heat radiation shield below the motor may be necessary. • All cables must be protected. • The clear height should be as large as possible.

Note! Must always be quoted by ASSA ABLOY Entrance Systems.

2.5.1.7 Security fabric

Application	Protection against burglary
Use	On both sides of the door, behind the standard fabric. Up to approximately 2 meters from the floor
Designation	Protector PRO
Fabric	PVC coated
Reinforcement	Multi-axial laid construction of galvanized steel wires
Weight	1350 g/m ²
Heat- and cold resistance	-30°C to +70°C
Fire classification	Not classified
Comments	Space for fabric folding must be increased by 100 mm on each side of the door, to avoid fabric wear.

Note! Must always be quoted by ASSA ABLOY Entrance Systems.

2.5.1.8 Vision panels

Application	Light admission and view through
Use	Only for standard fabric
Standard sizes	Width 800 or 1300 mm, height 800 or 1600 mm
Material	Elaston 064, 1 mm
Weight	1230 g/m ²
Hardness	77° shore acc. DIN 53505
Heat- and cold resistance	-30°C to +50°C
Tear resistance acc. DIN 53455	Along : 21 N/mm ² Crosswise : 20 N/mm ²

2.6 Operating system

2.6.1 General specifications

Control system:	PLC-based
Protection class, control unit:	IP65
Protection class, safety boxes:	IP67
Protection class, motor:	IP55
Protection class, brake resistor:	IP51 (with protection)
Power supply:	3/phase 380-480V 50/60Hz
Control voltage:	24V DC
Fusing:	20 A / 32 A
Heat and cold resistance, exterior:	-35 °C to +70 °C
Heat and cold resistance, inside control unit:	-10 °C to +50 °C
Motor rating:	2.2 or 4.1 kW

3. CEN Performance

The following tests have been carried out by the Swedish National Testing and Research Institute (SP) in Borås. For more detailed information and values, see ITT report: 0402-CDP-397307.

3.1 Lifetime expectation

- 100.000 door cycles

3.2 Resistance to windload

EN12424

Test result Class 3-5 (depending on door size).

Class	Pressure Pa (N/m ²)	Specification
0	-	No performance determined
1	300	
2	450	
3	700	
4	1000	
5	> 1000	Exceptional : Agreement between manufacturer and supplier

3.3 Resistance to water penetration

EN12425

Test result Class 3 (110 Pa)

Class	Pressure Pa (N/m ²)	Specification
0	-	No performance determined
1	30	Waterspray for 15 minutes
2	50	Waterspray for 20 minutes
3	> 50	Exceptional : Agreement between manufacturer and supplier

3.4 Air permeability

EN12426

Test result Class 2

Class	Air permeability dp at a pressure of 50 Pa (m ³ /m ² /h)
0	-
1	24
2	12
3	6
4	3
5	1,5
6	Exceptional : Agreement between manufacturer and supplier

3.5 Thermal transmittance

EN12428

Thermal transmittance Depending on door size. Specific data available on request.

3.6 Acoustic insulation

ISO 717

Acoustic insulation 15 dB

3.7 Operating forces and safe openings

EN12453 & EN12604	Crushing force N	Crushing force N	Crushing force N
Opening gap mm	200 mm from lateral border right from outside	In the middle of the door opening	200 mm from lateral border left from outside
50 mm	passed	passed	passed
300 mm	passed	passed	passed

The crushing force is the force needed for the safety edge to be activated. The maximum force allowed, according to EN12453 safety in use of power operated doors is 400 N within a maximum period of time of 0.75s.

4. Building and space requirements

4.1 Building preparations

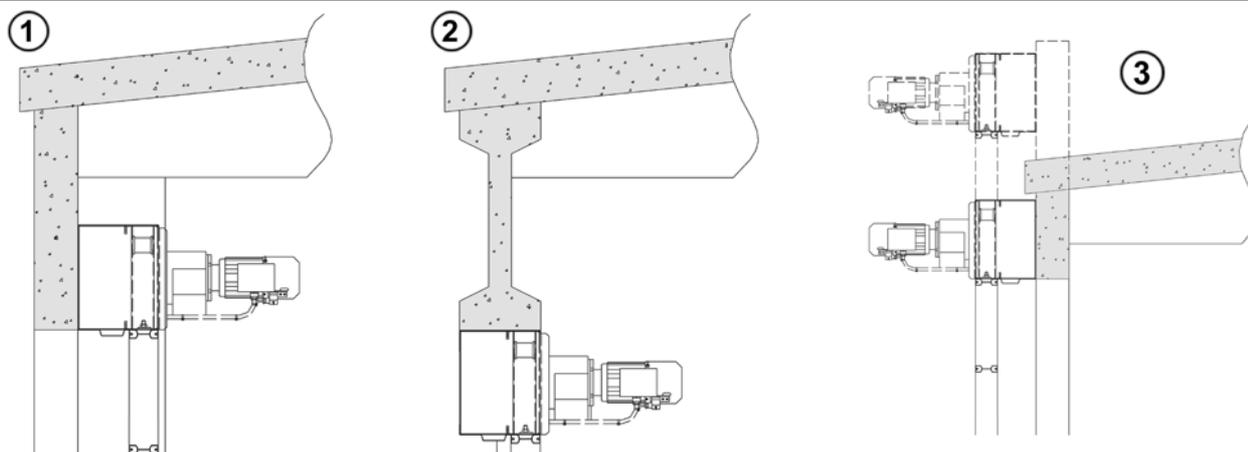
4.1.1 Installation of the header box

4.1.1.1 Basic installation

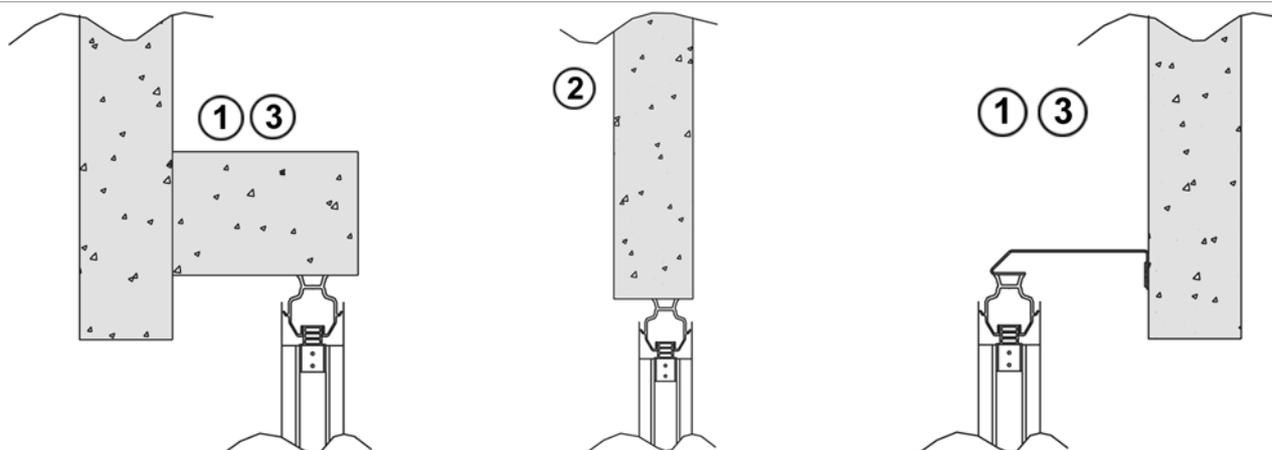
The Crawford VL3110FCS vertical lifting fabric door can be installed in three ways:

1. Internal wall mounting	2. Mounting in door opening	3. External wall mounting
Recommended if the size of the door opening permits it. The drive machinery and guide rails will then be fully protected.	Excellent alternative for an existing door opening. The risk of colliding with the guide rails should be negligible, or a collision shield should be used as protection.	Alternative when the inside environment is severe or when there is insufficient space above the door opening.

Side view header box

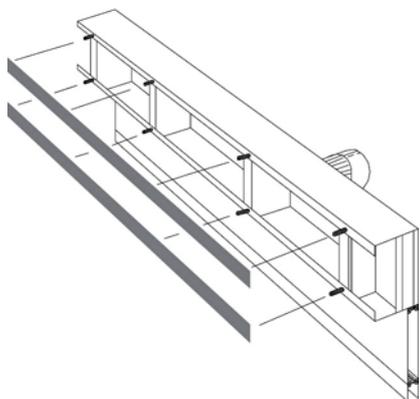


Top view guide rail and door leaf

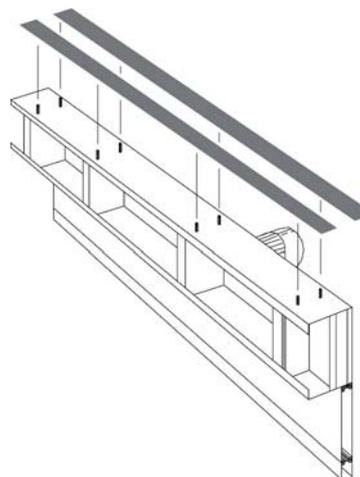


Installation surfaces for the header box must be flat, parallel and deviate maximum 5 mm from a horizontal line.
Min. thickness (t) of installation surface: steel 8 mm, concrete 100 mm. Min. width of each installation surface : 100 mm.

Installation surfaces – on wall

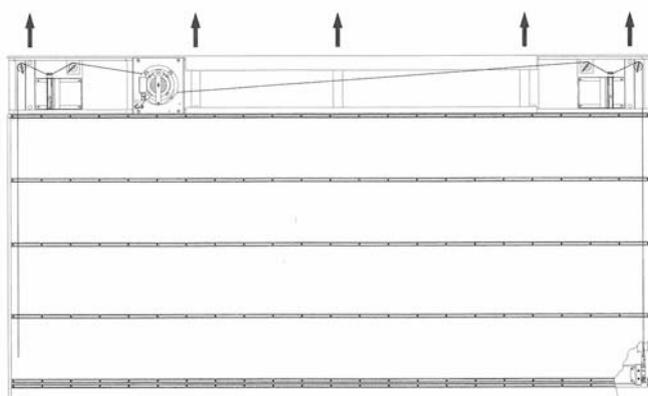


Installation surfaces – in door opening

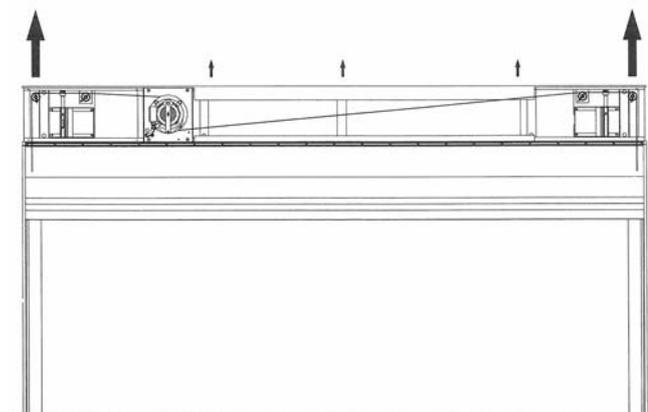


4.1.1.2 Load on the building

Door closed



Door opened



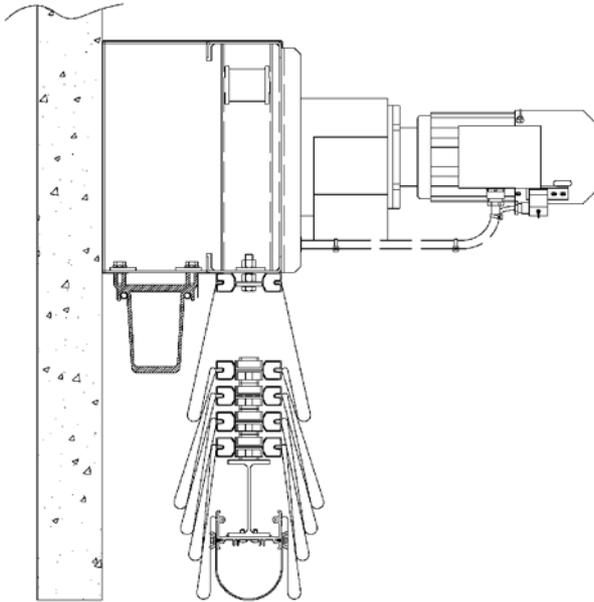
When the door is closed, the total weight is distributed on the fixing points. The distance between fixing points is about 1000 mm. The door leaf itself does not weigh more than 40 to 80 kg per meter width but, in view of the extra load which may result in the event of a collision, the total load of the building should be calculated at 1.5kN/m.

The load of the door leaf is successively transferred to the ends of the header box as the door is opened. In this situation it is mainly only the weight of the header box that rests on the other fixing points.

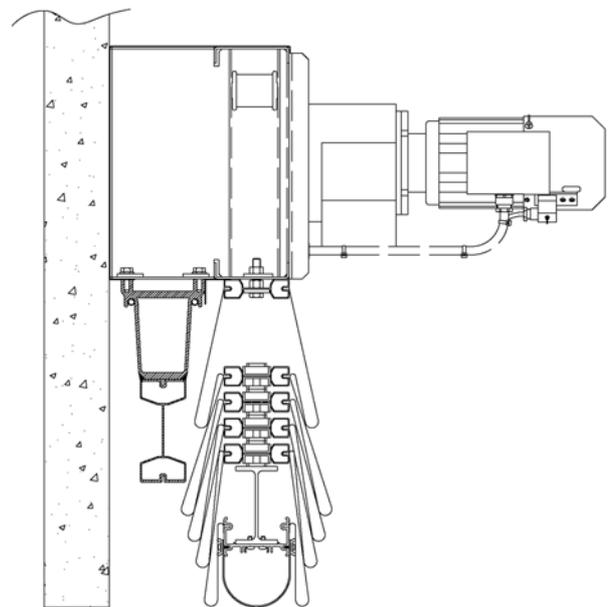
4.1.1.3 Self-supporting installation

Crawford can supply a self-supporting door if there is no suitable mounting surface over the door opening. A supporting beam, installed on the bottom of the header box, transfers the load of the header box via the jambs of the door to the building. The jambs support the beam and secure the guide rails.

Clear width ≤ 6800 mm



Clear width > 6800 mm



4.1.2 Mounting surfaces for guide rails

Suitable mounting surfaces must be available to facilitate the fitting of guide rails (see dark fields in the illustration). Mounting surfaces must be:

- Firm and smooth.
- Parallel and deviating not more than 5 mm from the vertical and not more than 2 mm/m in the inward or outward direction from the vertical.

Distance between fixing points should not exceed 1m.

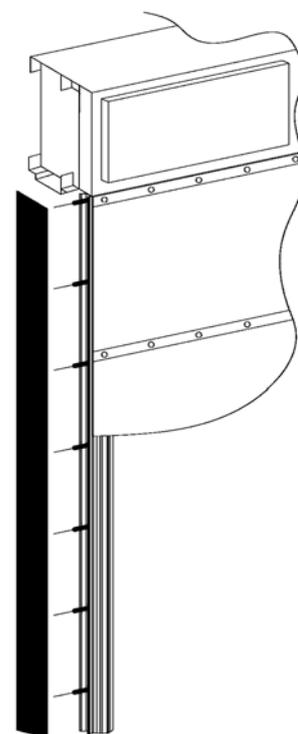
Fastening:

Screw size: M8

Strength class: 8.8

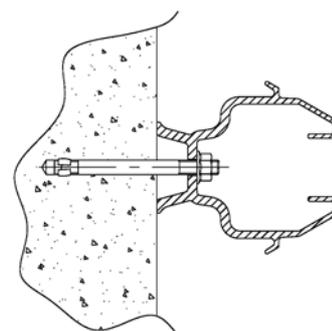
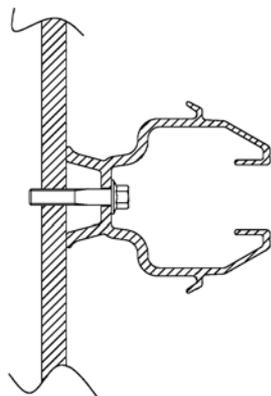
Fixing surface, steel: $t \geq 6$

Fixing surface, concrete: $t \geq 90$



Steel:

Concrete:



Secure the guide rails with self-threading screws

Drill holes in the concrete for expansion screws to secure the guide rails.

4.1.3 Installation of the guide rails

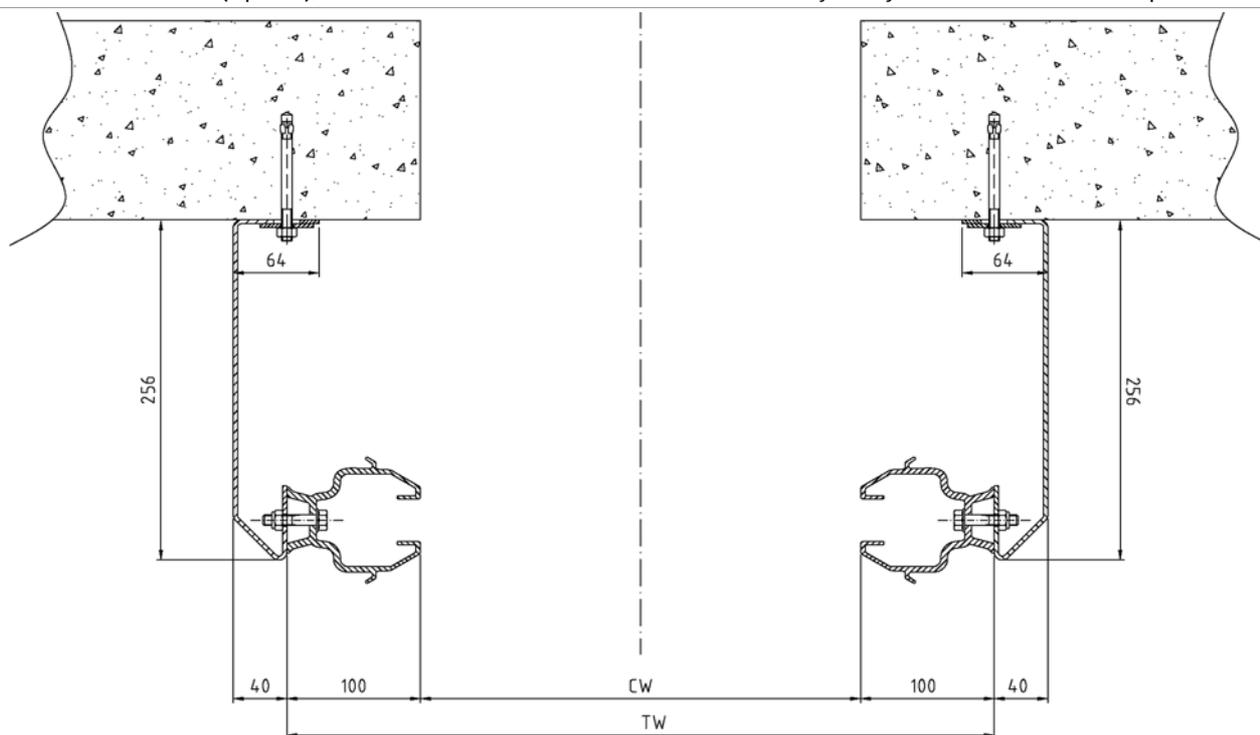
4.1.3.1 Basic installation

When installing on an existing surface, this surface must be made either from steel or concrete. The installation surfaces must be strong, smooth and parallel and deviate max. 5 mm from the vertical and 2 mm in the inward/outward direction from the vertical.

- Min. thickness of installation surface : steel 6 mm, concrete 90 mm.
- Min. width of installation surface : steel 50 mm, concrete 65 mm.

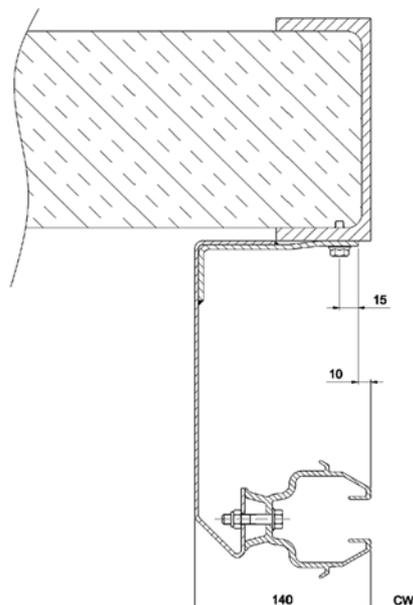
4.1.3.2 Installation with jambs

When the door is installed on a wall and posts for installation of the guide rails are not available, jambs of a stable design are provided. The jambs are installed in the same way as the guide rails, by screws or plugs with a spacing of about one meter. The jambs can be insulated (option), but this is not included in the standard delivery. The jambs are made of steel painted black.



4.1.3.3 Extension jamb

An extension jamb is available for the VL3110FCS vertical lifting fabric door, making it possible to connect it to an existing steel construction and still obtain a shielded location for the guide rails.



4.1.4 Installation of the control unit

The location of the control unit is best decided as follows :

Environment	Effect on control unit	Location of control unit
Normal environment	Negligible effect, IP65 protection is sufficient.	Close to the door
Harsh interior environment	When opened for maintenance, dust and moisture may enter	In a safe area
Sustainable temperature difference inside/outside	Condensation when door is opened	Away from the door. Push button unit close to the door
Strongly corrosive environment, no safe location possible	Optimum protection required	Stainless steel control unit

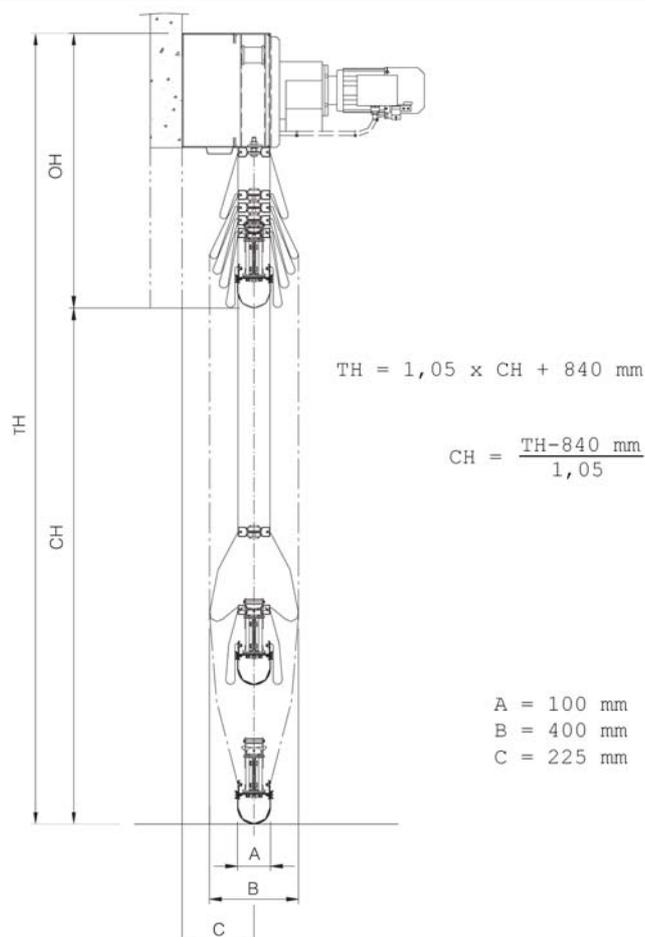
Also consider the space requirements of the control unit.

4.2 Space requirements

TH	Total height	Distance between floor and top of header box
CH	Clear height	Distance between floor and bottom of door leaf when door is fully opened
OH	Over height	Vertical space required above the clear height
TS	Total space requirement	Distance between outer side of jambs
TW	Total width	Distance between the left and right vertical installation surfaces.
CW	Clear width	Clearance distance between the left and the right guide rails.
MD	Motor depth	Depth of the header box + gear motor + extra space for hand crank
A		Door leaf thickness
B		Minimum free space required for fabric folding
C		Distance from rear side of header box to guide rail centre

4.2.1 Space requirements for operation

In contrast to other types of doors, the Crawford VL3110FCS vertical lifting fabric door requires only limited top and side space. The door leaf is compressed when opened. Even for a large door, the requirements are minimal.



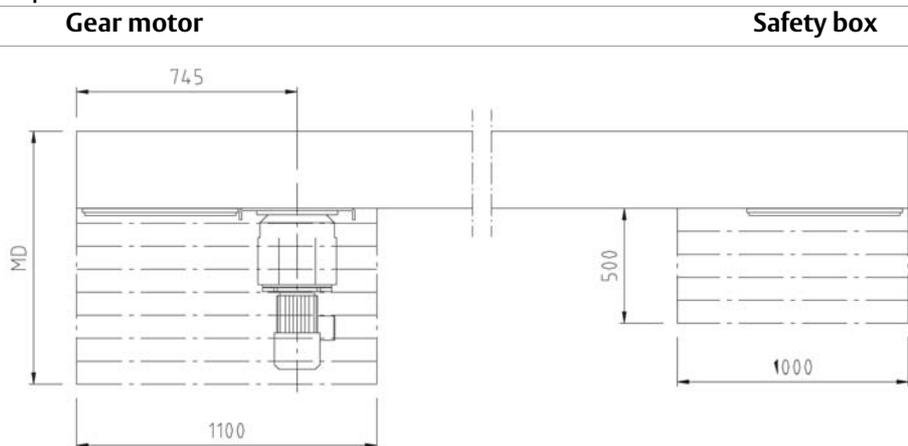
Space requirements for the self-supporting version are the same. For wind loads other than 0.7kPa, please contact your local ASSA ABLOY Entrance Systems representative.

4.2.2 Space requirements for control unit

The following dimensions (w x h) may be of assistance in deciding where to place the control unit, brake resistor, possible additional cables or an additional safety switch for the power supply:

Control unit	700 x 700 mm
Brake resistor	125 x 600 mm

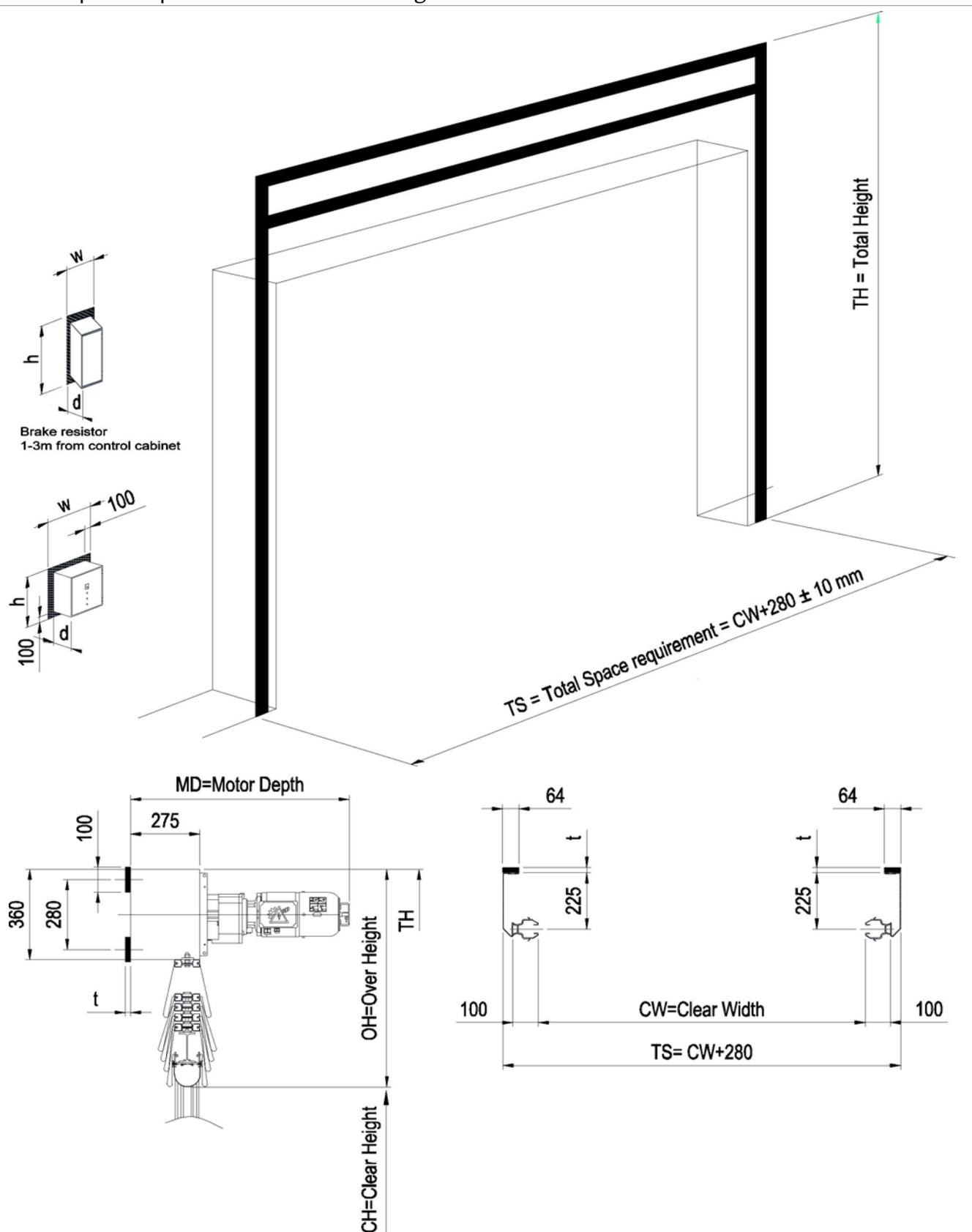
4.2.3 Space requirements for maintenance



- MD = Motor depth. Depending on motor size.
- MD = 750-1100 mm (+200 mm for hand crank).

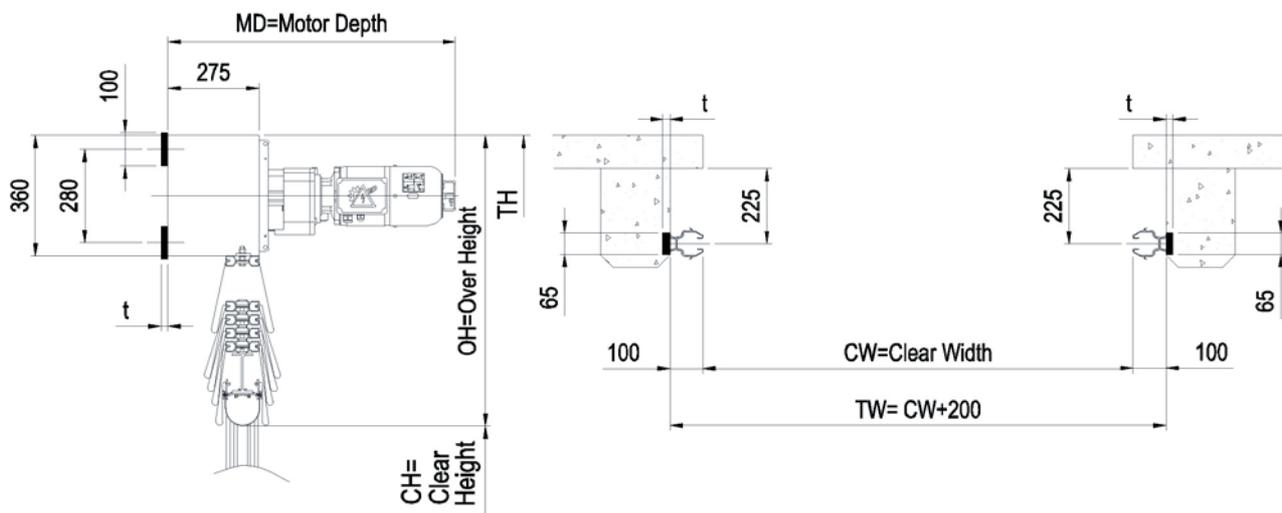
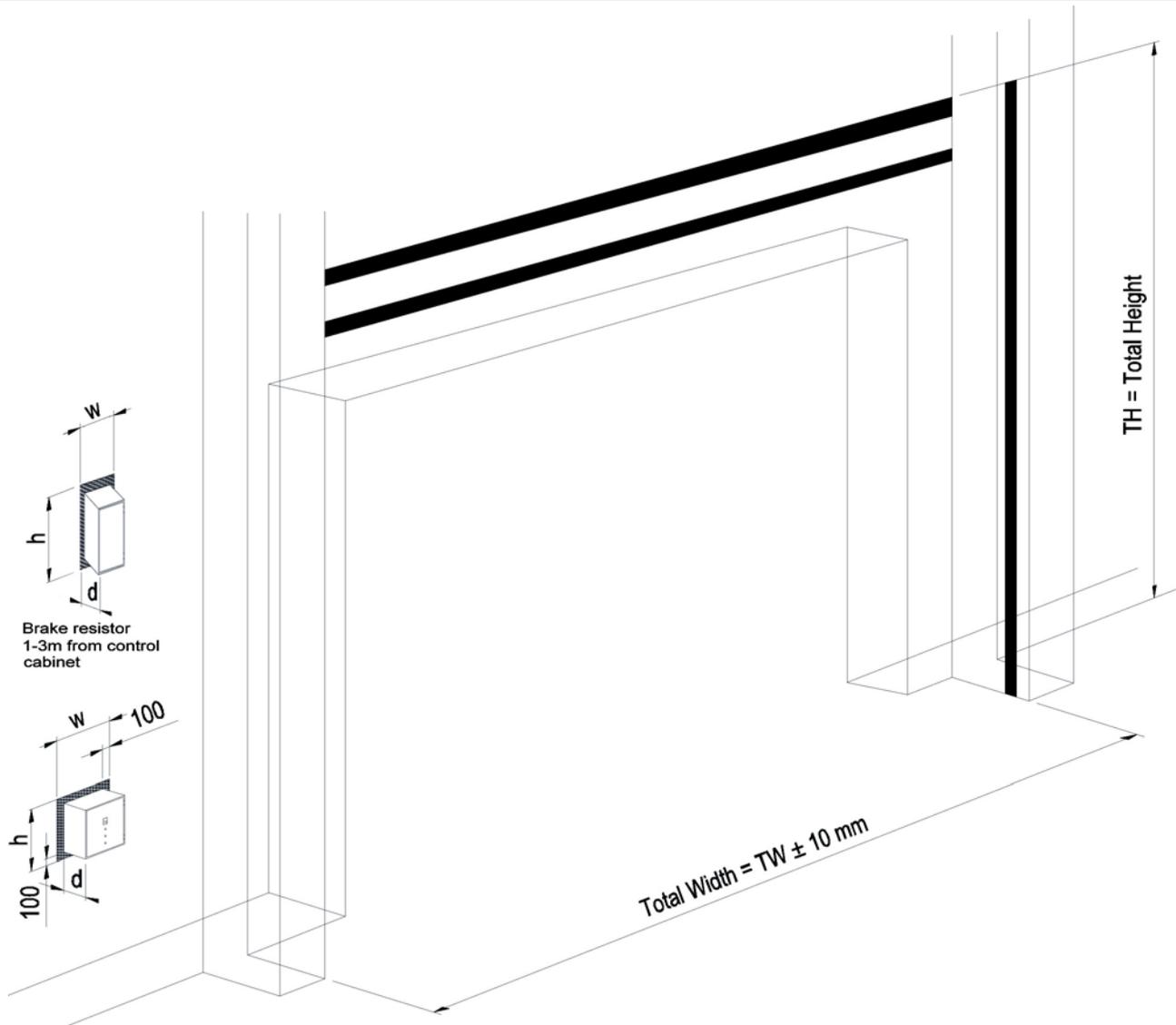
Note: The motor is standard installed on the left side. Optional installation on the right side is possible

4.2.4 Space requirements - Installation against wall

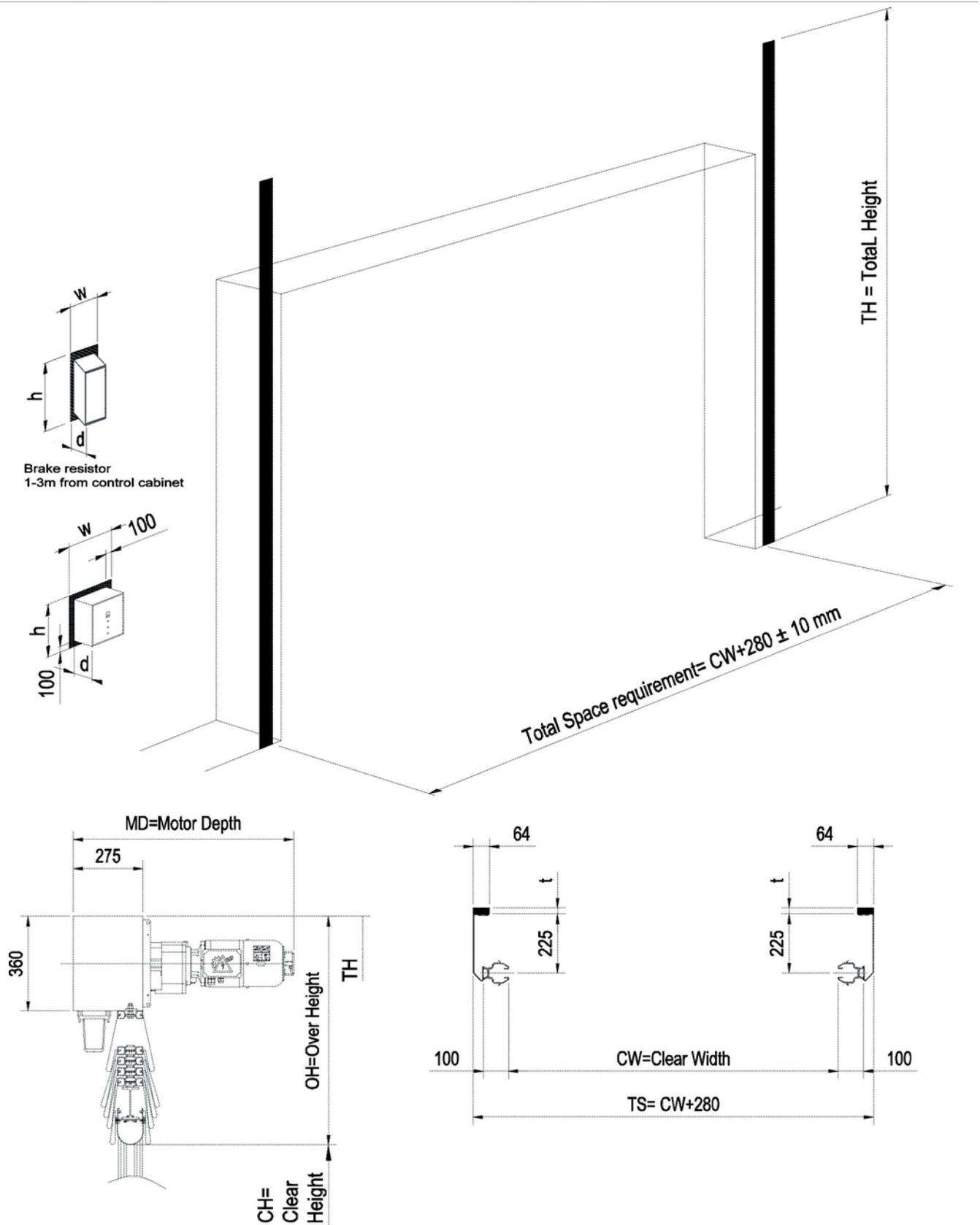


Note: Mounting is possible inside and outside the building.

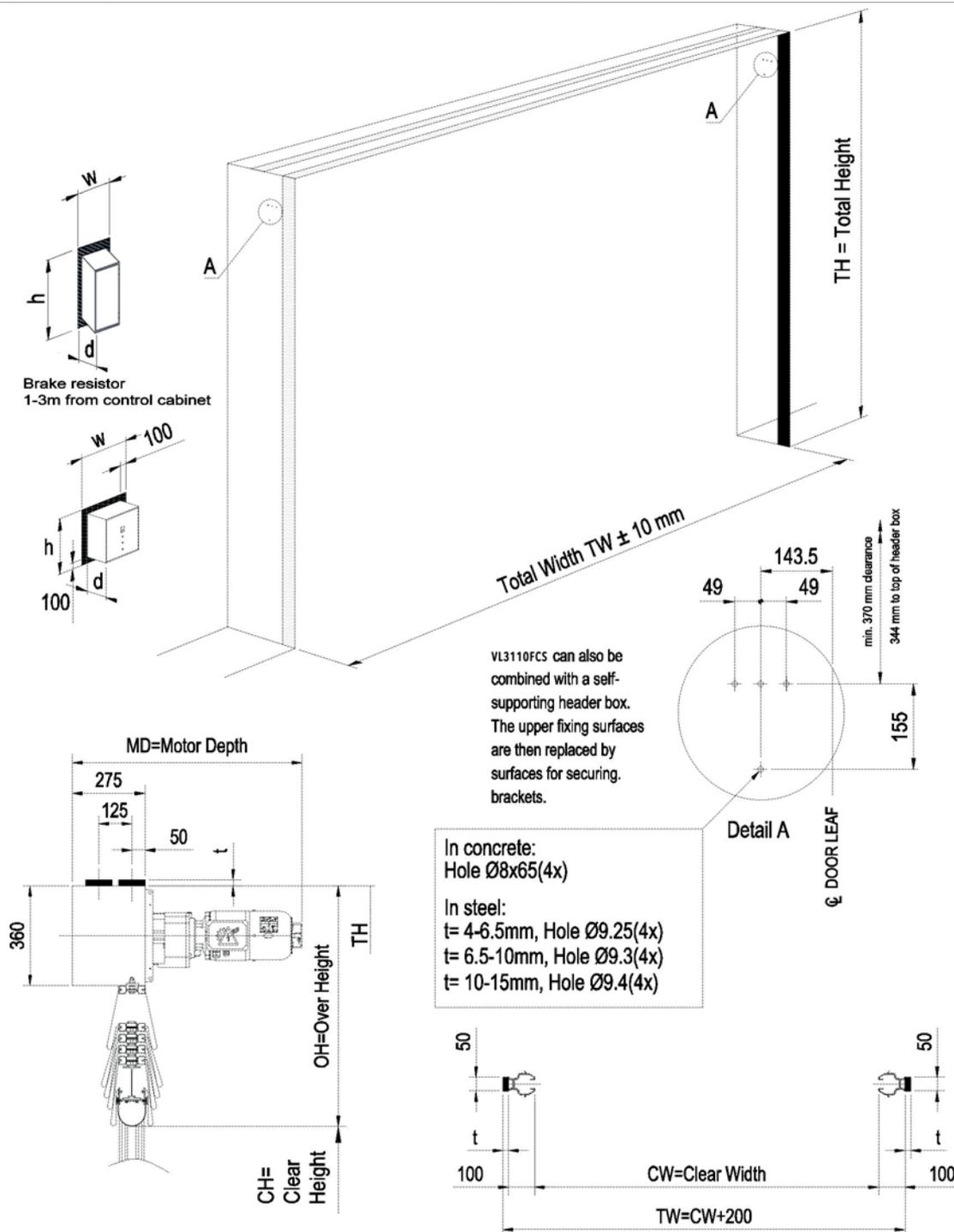
4.2.5 Space requirements - Installation against wall between columns



4.2.6 Space requirements - Installation with self-supporting header box



4.2.7 Space requirements - Installation in door opening



The VL3110FCS vertical lifting fabric door can also be provided with a self-supporting header box. The upper fixing surfaces are then replaced by surfaces for securing brackets.

- * distance to door leaf centre line
- ** minimal clearance
- *** distance to top of header box

5. Service

Preventive Maintenance Program and Modernization Services

As your entrances are part of your business flow, there's every reason to keep them working well. ASSA ABLOY Entrance Systems offers you a maintenance and modernization expertise to rely on. Our Maintenance Programs and Modernization Services are backed by a extensive expertise for all types of industrial door and docking systems, independent of brand. At your disposal is a team of dedicated expert technicians, proven through decades of maintenance, service and satisfied customers.

Preventive Maintenance Programs

Minimizing lost time, lost energy and unexpected hassle is our team's constant objective. Our service organization can support you 24/7 in maintaining all industrial door and docking systems, independent of brand. If you want to be one step ahead of break-downs, explore our portfolio of Pro-Active Care plans. Naturally, we also offer entrance upgrades to suit your specific wishes and business needs.

Pro-Active Care - Maintenance plans to fit your business

Regular maintenance can extend the lifetime of your equipment and help prevent unexpected problems. Our technician arrives on-site equipped with the knowledge and tools to service all automatic entrances, independent of brand.

- **Pro-Active Bronze**

The base on which all Pro-Active Plans are built provides the security of knowing that your equipment is regularly inspected and certified for safety, as well as performing optimally. It includes a number of planned on-site visits depending on your needs. Any unplanned service calls required during the term of the contract (including labor, travel and parts) are billed at special Pro-Active Care prices.

- **Pro-Active Silver**

This plan provides all the benefits of Pro-Active Bronze with the added advantage of labor and travel being included for service calls during regular business hours. The only additional charge would be for any parts that may be needed throughout the term of the contract.

- **Pro-Active Gold**

This plan provides the ultimate protection for your automatic entrance investment. It includes all the benefits of Pro-Active Silver, plus replacement of any parts required during an unplanned repair or planned maintenance visit. Pro-Active Gold is an excellent way to budget your automatic door expenses annually.

- **Pro-Active Tailor-Flex**

Our most flexible maintenance and service offering. The Pro-Active Care plan is designed by you, our customer. The plan allows you to balance your maintenance expenses against your real-world budget and presents the option to add or delete a number of maintenance elements to suit your budget goals, while meeting your overall performance and safety needs.

Modernization

Your entrances are a long-term investment, from which you always want the best. Products develop over time, so do regulations and your business. Let us help you increase energy savings and meet today's standards. We provide advice and modernization kits for outdated installations, ensuring your investment meet requirements and performs optimally for many more years to come.

Re-Active Service		Pro-Active Care				
		Pro-Active Bronze	Pro-Active Silver	Pro-Active Gold	Pro-Active Tailor Flex	
		○	○	○	●	Other customized requests such as Response Time, Performance InfoPack and Advanced User Training
		○	○	●	○	Replacement of worn parts according to preventive Consumable Exchange Program
		○	○	●	○	Replacement of spare parts on breakdowns
		○	●	●	○	Travel and labor for additional call-out visits
		●	●	●	●	Preventive maintenance visits 1-4 times per year
		●	●	●	●	Travel and labor for preventive maintenance visits
		●	●	●	●	Response time and priority on call-outs <24h
		●	●	●	●	Preventive planned maintenance that meets the most demanding standards in the market
	●	●	●	●	●	Safety and quality checks according to applicable regulations and norms. Documentation of test results provided
●	●	●	●	●	●	Documentation of equipment status, assessment and service provided, all generated on site
●	●	●	●	●	●	Highly trained professional technicians with extensive knowledge, state-of-the-art tools and the right spare parts*
●	●	●	●	●	●	Dedicated Professional Customer Care Hotline

● = Included as standard
○ = Available at special prices
* Well-stocked service vehicles with genuine and new spare parts

Index

A		P
Absolute encoder 13		Performance 3
Access and automation 14		PLC 12
Acoustic insulation 23		Protective casing for motor 10
Additional automatic functions 14		Pull-rope switch 14
Air permeability 22		
Arctic fabric 18		R
Automatic closing 15		Radar 14
Automatic control functions 14		Reduced opening 14
Automatic opening and closing 15		Remote control 14
		Resistance to water penetration 22
B		Resistance to windload 22
Basic installation 24, 28		
Belt system 11		S
Bottom section 7		Safety arresters and wind lock in
Brake resistor 13		stainless steel 7
Building and space requirements 24		Safety boxes 13
Building preparations 24		Safety edge 13
		Safety functions 15
C		Safety photocells 1-channel 15
CEN Performance 22		Safety photocells 2-channel 15
Clear width and clear height 16		Security fabric 21
Colors 8		Self-supporting header box 11
Construction 7		Self-supporting installation 26
Control functions 14		Service 36
Control unit 12		Sound reduction fabric 19
Copyright and Disclaimer Notice 2		Space requirements 30
		Space requirements - Installation
D		against wall 32
Description 6		Space requirements - Installation
Door leaf 7, 17		against wall between columns 33
		Space requirements - Installation in
E		door opening 35
Electrical operation 11		Space requirements - Installation with
Emergency power switch 15		self-supporting header box 34
Environmental tolerance 16		Space requirements for control unit 31
Extension jamb 29		Space requirements for maintenance
External push button box 14		31
		Space requirements for operation .30
F		Specifications 16
Fabric data 17		Stainless steel cladding and motor
Features 3		casing 10
Free contacts 14		Standard 6
		Standard colors 8
		Standard fabric 17
		Surface treatment 16
G		
Gear motor 11		
General 6		
General specifications 21		
Guide rails 9		
H		
Header box 10		
Header box options 10		
Heat resistant fabric - Aluminium		
coating 20		
Heat resistant fabric - Aluminium		
polyurethane coating 20		
Heat resistant fabric - Silicone coating		
19		
I		
Installation of the control unit 29		
Installation of the guide rails 28		
Installation of the header box 24		
Installation with jambs 28		
Interlocking 14		
Intermediate section 7		
J		
Jambs 9		
L		
Lifetime expectation 22		
Load on the building 25		
M		
Magnetic loop 14		
Material 8		
Mounting surfaces for guide rails 27		
N		
Non-motor side covered 10		
O		
Operating forces and safe openings 23		
Operating system 11, 21		
Optional colors 8		
Options 6, 8		

T

Technical facts	3
Temperature control	12
Thermal transmittance	23

V

Variable frequency drive	12
Vision panels	21

W

Warning lights - Green and red	15
Warning lights - Orange flashing lights	15
Wind deflectors	10

ASSA ABLOY Entrance Systems is a leading supplier of entrance automation solutions for efficient flow of goods and people. With our globally recognized product brands Besam, Crawford, Megadoor and Albany, we offer products and services dedicated to satisfying end-user needs for safe, secure, convenient and sustainable operations.
ASSA ABLOY Entrance Systems is a division within ASSA ABLOY.

ASSA ABLOY

assaabloyentrance.com

Q3.0 - 2015



ASSA ABLOY Entrance Systems

assaabloyentrance.com