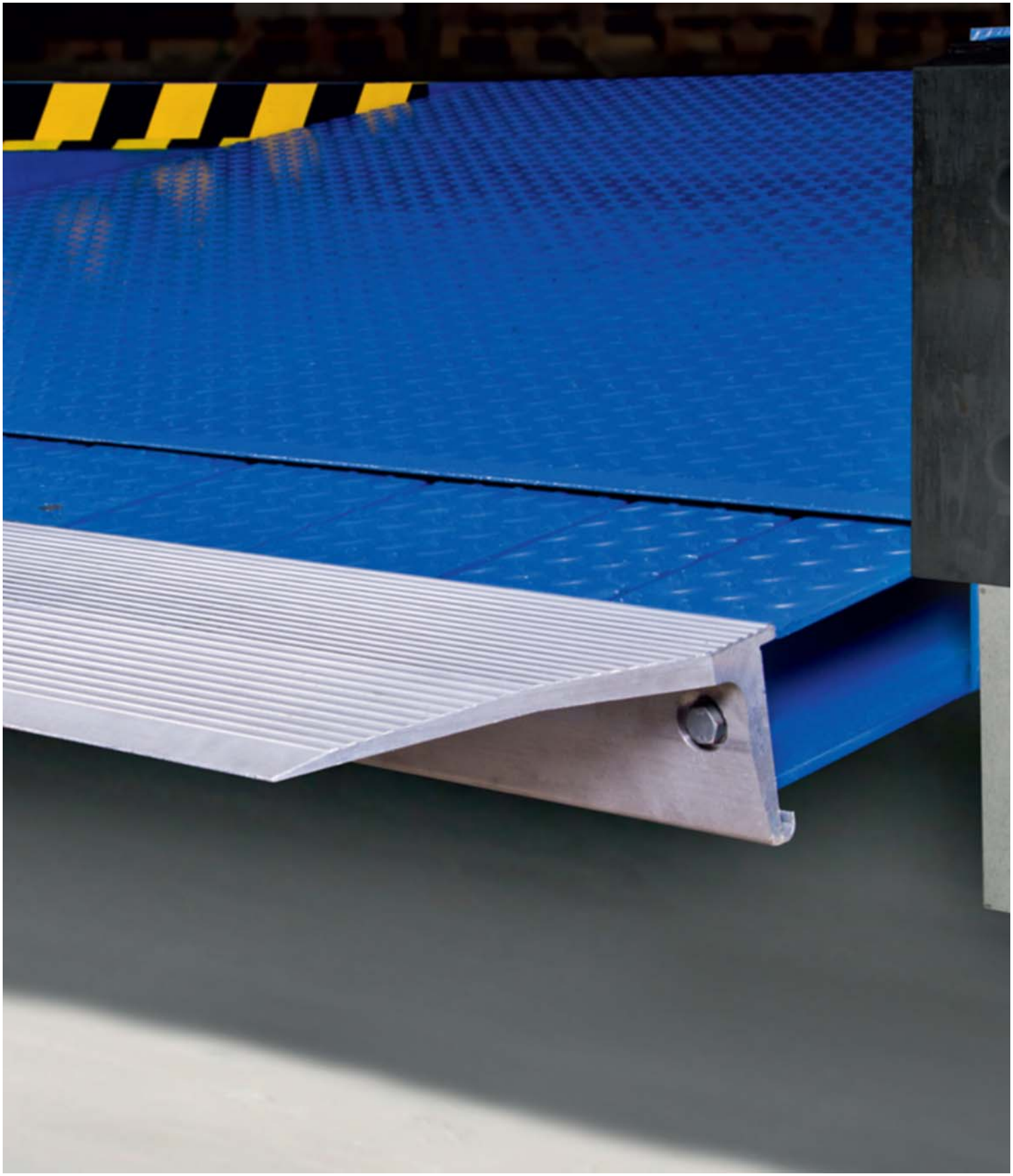
Product datasheet

Dock leveller
Crawford DL6020STA

ASSA ABLOY

ASSA ABLOY Entrance Systems

The global leader in door opening solutions



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Technical facts

Features

Sizes - leveller height	600 mm(front), 850 mm(back)	
Sizes - nominal length*	2450 mm	
Sizes - nominal width	3300, 3500, 3600, 3750 mm	
Vertical working range	Above dock: Below dock:	0 - 220 mm 0 - 620 mm
Platform tear plate	8 mm (8/10)	
Surface treatment	Standard: Option:	RAL 5010 RAL 3002 RAL 6005 RAL 9005 Hot dip galvanised
Control unit	Leveller control Door control Shelter control Fault & service indicator	

* Other sizes are available on request

Performance

Load capacity	6 tonnes (60kN)
Max. point load	6,5 N / mm² (8 mm tear plate)
Motor hydraulic unit	1,1kW
Mains supply	400V 3-phase, 230V 3-phase
Control unit protection class	IP54
Allowable oil types	Crawford standard hydraulic oil (-20°C - +60°C) Crawford low temperature hydraulic oil (-30°C - +60°C) Crawford bio hydraulic oil (-20°C - +60°C)
Magnetic valves	24V/DC 18W S1
Surface treatment paint class 1	80 µm Corrosive Category C2 M acc. DIN EN ISO 12944-2
Surface treatment paint class 3	160 µm Corrosive Category C3 M acc. DIN EN ISO 12944-2
Surface treatment galvanised	Hot dip galvanised 80 µm Corrosive category C4 & C5-I M acc. DIN EN ISO 12944-2

Contents

1. Description

1.1 General

1.1.1 Application

The Crawford DL6020STA step autodock is an externally installed and self-supporting dock leveller that is ideal for applications where there are insufficient installation possibilities within the building. This model is equipped with a telescopic lip system. The telescopic lip precisely bridges the gap between the ramp and the lorry bed.

The Crawford DL6020STA step autodock is designed to let a truck dock to the ramp with closed tail-gate. Only when the truck is in position the tail-gate should be opened thus ensuring that the temperature chain is not broken.
It is as well possible to position a closed container in front of the loading bay any time. The loading/unloading can happen any time afterwards without the need to move the container.

The Crawford DL6020STA step autodock provides benefits in terms of: saving energy, increasing safety of people/goods and improving the efficiency of the docking process

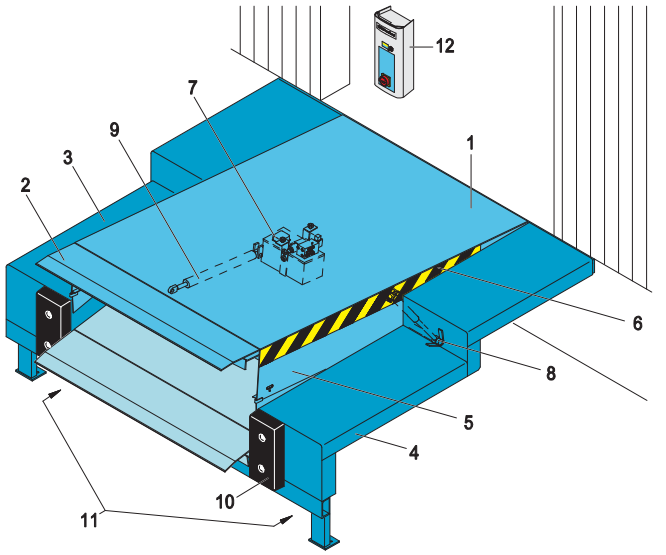
The Crawford DL6020STA step autodock system meets the standard demands of most loading operations and fully complies with rules and regulations of the European Standard EN 1398.

1.1.2 Mode of operation

The operation of the Crawford DL6020STA step autodock is based on an electro-hydraulic telescopic lip, controlled by a semi-automatic control unit.

When the dock leveller is raised, the lip extends and the leveller lowers gently onto the lorry bed. After loading or unloading, the leveller is raised again, the lip retracts and the platform returns to its parking position, i.e. to ramp level.

1.1.3 Overview



1) Leveller platform
2) Telescopic lip
3) Stepped Autodock frame
4) Stepped Autodock frame
5) Side plates
6) Warning stripes
7) Hydraulic unit
8) Lift cylinders
9) Telescopic lip cylinder
10) Buffers (optional)
11) Tail lift recess
12) Control unit

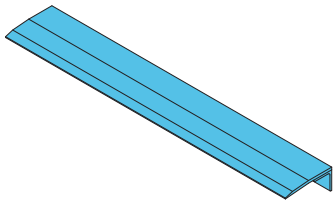
1.1.4 Standard

Surface	Painting RAL 5010
Hydraulic Equipment	Low noise hydraulic unit Two hydraulic lift cylinders One hydraulic lip cylinder
Lip	Steel lip Bevelled 40 mm Lip length 500 mm
Lip options	Lip length 345 mm - Ergonomic lip Aluminium lip Tapered lip Steel lip bevelled, 100 mm

1.2 Telescopic Lip

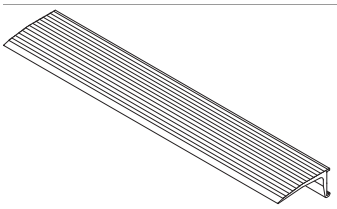
1.2.1 Lip material

1.2.1.1 Steel telescopic lip



The steel telescopic lip is designed for use by heavy loading equipment. It has a high durability, while it provides medium comfort.

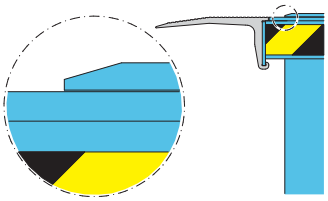
1.2.1.2 Aluminium telescopic lip



The aluminium telescopic lip is designed to provide maximum comfort to low load-weight loading equipment.

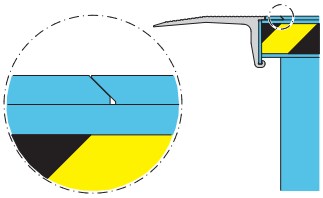
1.2.2 Lip type

1.2.2.1 Standard lip



When the standard lip is extended there is always a bump from the lip to the platform of the leveler
The length of the lip is 500mm or 1000mm.

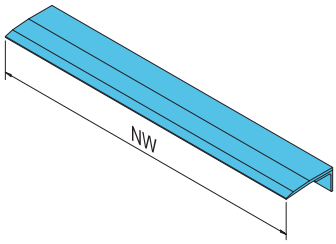
1.2.2.2 Ergonomic lip



When the ergonomic lip is fully extended it is on the same level line as the leveler platform, Due to the smooth bumb free passage shock loads are reduced.
Maximal buffer depth is 100mm.
The lengh of the lip is 345mm.

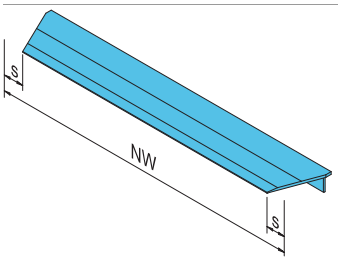
1.2.3 Lip shapes

1.2.3.1 Standard telescopic lip



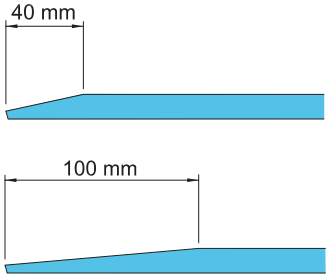
The standard telescopic lip is a single rectangular lip for use with a fleet of vehicles that is a standard size.

1.2.3.2 Tapered telescopic lip



A tapered telescopic lip ensures that the lip reaches the lorry bed, even when the lorry is not parked in the exact centre position. Avoids damage to the truck and interruptions of the dock-in procedure.
s = 100 mm

1.2.4 Bevelled lip



The standard steel lip is 40 mm bevelled.
Optionally, the lip can be bevelled 100 mm, designed to provide maximum comfort and smooth transition from the lip.

1.3 Platform

1.3.1 Platform tear-plate thickness

The 8 mm (8/10) tear-plate is designed for loading and unloading with typical 4 wheel pneumatic-tired fork-lift trucks, and is also suitable for handling equipment with high point loads, such as electric pallet trucks.

1.4 Surface

1.4.1 Painting

1.4.1.1 Colours

The dock leveller standard finish is painted. The standard colour is:

	RAL 5010

Colours available as option are:

	RAL 3002
	RAL 6005
	RAL 9005

1.4.1.2 Standard paint class

If the dock leveller is to be used in a rural area, the standard finish is:

- Paint class 1; 80 µm factory painted for corrosive category C2 M

1.4.1.3 Paint classes

If the dock leveller is to be used in an urban or industrial atmosphere, or in a coastal area, it may be appropriate to select an alternative paint class with increased resistance to corrosion C3 M.

- Paint class 3; 160 µm factory painted for corrosive category C3 M

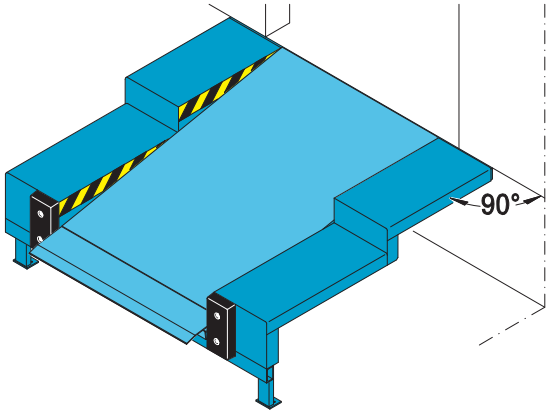
1.4.2 Hot galvanising

To increase corrosion protection to C4 for saline coastal areas or C5-I for aggressive or humid atmospheres, the dock leveller can be delivered with hot dip galvanised (80 µm) steel parts.

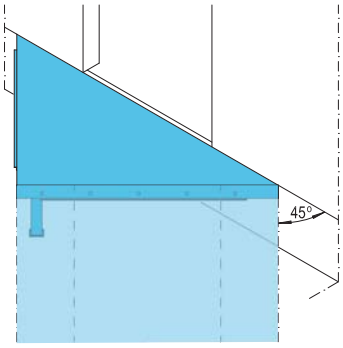
1.5 Installation angles

Because of its external installation construction, the Crawford DL6020STA step autodock can be installed in an angle, to reduce the required vehicle parking space in front of the building. For dock levellers with NWAD = 3750 mm only the 90° installation is available.

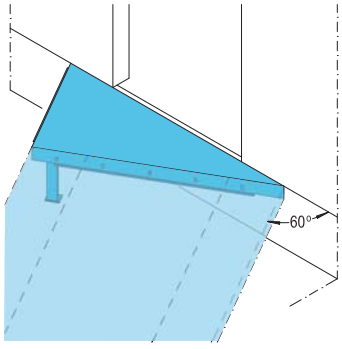
1.5.1 90° angle (standard)



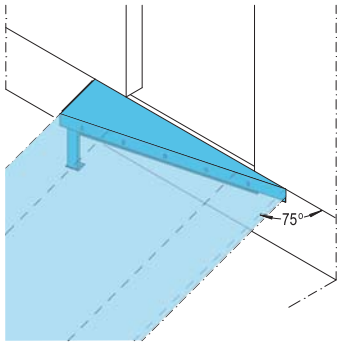
1.5.2 45° angle



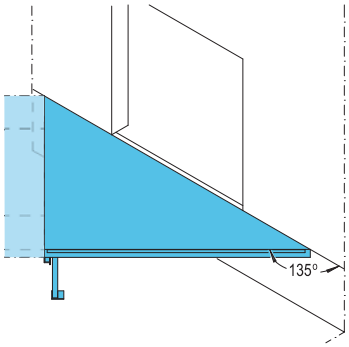
1.5.3 60° angle



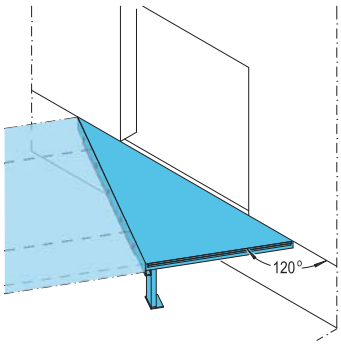
1.5.4 75° angle



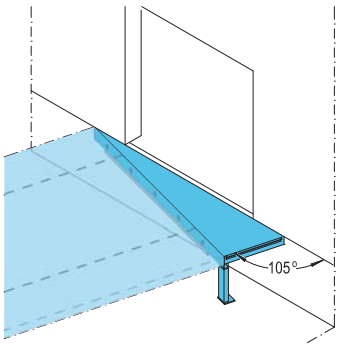
1.5.5 135° angle



1.5.6 120° angle

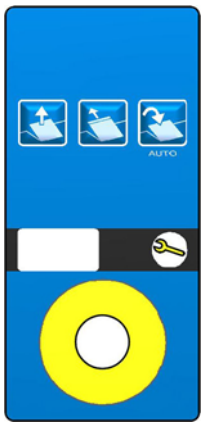


1.5.7 105° angle



1.6 Docking control systems

1.6.1 950 Docking LA TD



- Hold-to-run button to lift platform.
- Hold-to-run button to position the lip on the truck bed.
- Impulse auto button to put the leveller back in parking position.
- Mains isolator or emergency stop button.
- Interface to incorporate Crawford Eye and/or wheel chock.

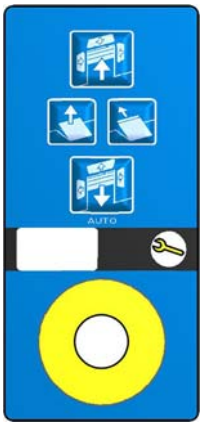
1.6.2 950 Docking DLA TD

- Hold-to-run button to lift platform.
- Hold-to-run button to position the lip on the truck bed.
- Impulse auto button to put the leveller back in parking position.
- Mains isolator or emergency stop button.
- Interface to incorporate Crawford Eye and/or wheel chock.
- Designed to operate an overhead sectional door in the docking station.

1.6.3 950 Docking LSA TD

- Hold-to-run button to lift platform.
- Hold-to-run button to position the lip on the truck bed.
- Impulse auto button to put the leveller back in parking position.
- Mains isolator or emergency stop button.
- Interface to incorporate Crawford Eye and/or wheel chock.
- Designed to operate an inflatable shelter in the docking station.

1.6.4 950 Docking DLSA TD



- Hold-to-run button to lift platform.
- Hold-to-run button to position the lip on the truck bed.
- Impulse auto button to put the leveller back in parking position.
- Mains isolator or emergency stop button.
- Interface to incorporate Crawford Eye and/or wheel chock.
- Designed to operate an overhead sectional door and an inflatable shelter in the docking station.

1.7 Monitoring systems

As an option on all our products, a Crawford Monitoring System can be installed. This system helps to ensure efficiency and security in daily operations. All doors or docking stations are connected to the Monitoring System's server, which gives the opportunity to supervise, monitor and report a wide variety of aspects in a facility.

1.7.1 Saving energy

A monitoring system reduces energy costs and contributes to a better environment. Energy is lost every time a door is open. If a door is open when no truck is at the bay, even more energy is lost.

A Crawford Monitoring System automatically ensures that no door will open unless there is a truck at the bay and even set it to close when there an activity is delayed.

1.7.2 Security enhancement

Closing and locking doors is an obvious daily routine. However, checking this manually can be time consuming in a busy facility.

A Crawford Monitoring System can automatically ensure that all doors are closed and locked when they need to be. It can also activate all doors and locks from its remote location, and give a real-time overview of the building's situation.

1.7.3 Dock management

A good way to increase throughput and thereby efficiency at a logistics facility is to reduce the time of having no truck – or the wrong truck – at a loading bay.

A Crawford Monitoring System makes visible – in real-time – which bays are occupied or free, and for how long. It makes it possible to reserve bays for docking activities and to inform drivers via SMS. Since it incorporates information from cameras and other inputs (RFID, card readers, etc.), the system stays updated in real-time.

1.7.4 Facility management

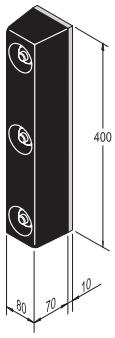
The Crawford Monitoring System gives a real-time service status for all your door and docking equipment. If an error code occurs, the Crawford service organisation is automatically notified, and will respond quickly. Other maintenance information can easily be integrated, further reducing the overall costs.

1.8 Equipment

1.8.1 Buffers

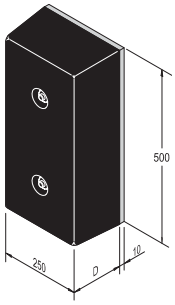
Buffers placed in front of the dock leveller absorb the energy of a vehicle that accidentally or intentionally hits the building. Buffers are available in various sizes, in fixed or moving models, and with rubber finishing or steel plate and spring function.

1.8.1.1 RS



Application
The RS buffer is the economical solution for docking stations where vehicles of equal sizes load and unload.

1.8.1.2 RB

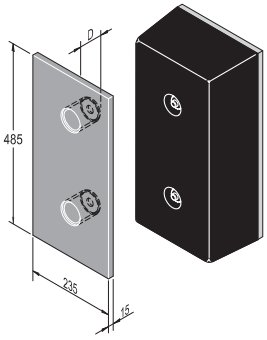


Application
The RB buffer is a large fixed rubber. It is the universal building and vehicle protection solution.

Available depths:

- 90 mm
- 140 mm

1.8.1.3 RB with steel front plate

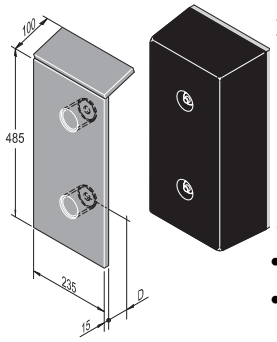


Application
The RB buffer with steel protection front plate increases the building protection and the buffer service life.

Available depths:

- 90 mm
- 140 mm

1.8.1.4 RB with steel front and top plate

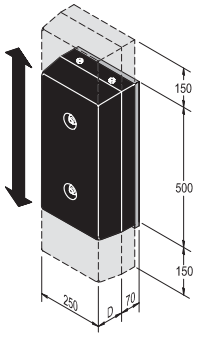


Application
The RB buffer with steel protection front and top plate is designed for vehicles with high lorry beds like interchangeable open bodies and containers.

Available depths:

- 90 mm
- 140 mm

1.8.1.5 EBF

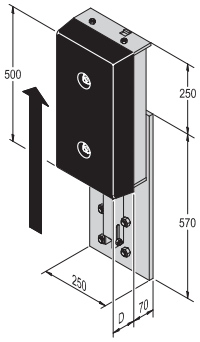


Application
The EBF buffer is the ideal solution for docking stations where vehicles are expected to make notable vertical suspension changes when loading or unloading.
This buffer follows vertical movements of the vehicle.

Available depths:

- 90 mm
- 140 mm

1.8.1.6 EBH

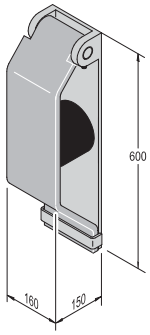


Application
The EBH buffer is the ideal solution for docking stations where vehicles of notable height differences load and unload.
This buffer can be vertically adjusted by a 'release device'.

Available depths:

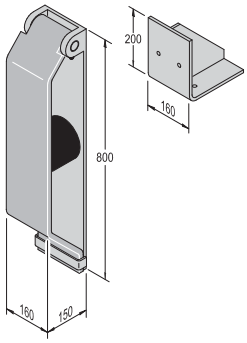
- 90 mm
- 140 mm

1.8.1.7 Steel spring buffer 600



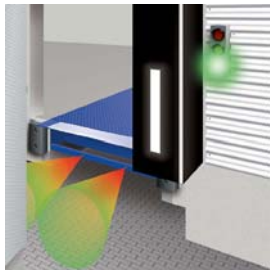
Application
The steel spring buffer is the ideal protector of the ramp as well as the vehicle itself.

1.8.1.8 Steel spring buffer 800



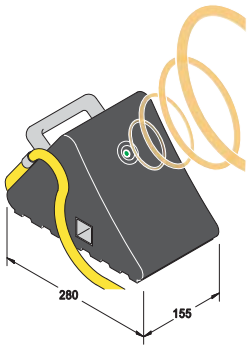
Application
The 800 mm steel spring buffer is designed for applications where vehicles generally are higher than ramp level.

1.8.2 Crawford DE6090E Eye



The Crawford Eye is an electronic, sensor-based dock-in system, which measures the distance between the vehicle and the building. This makes it easier for the driver to complete the dock-in procedure, but also detects objects or people behind the vehicle.

1.8.3 Crawford DE6090WC Wheel chock

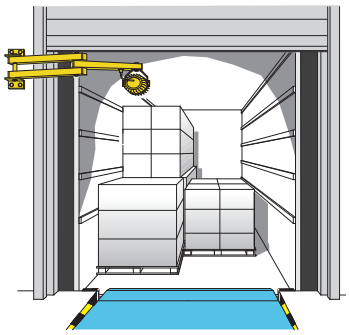


The wheel chock has a sensor to detect the presence and position of the vehicle and is connected to the dock leveller control panel. If no vehicle is detected, the docking station is blocked for safety reasons. Furthermore, the wheel chock prevents the vehicle from moving during loading/unloading.

1.8.4 Crawford DE6090TS Traffic light system

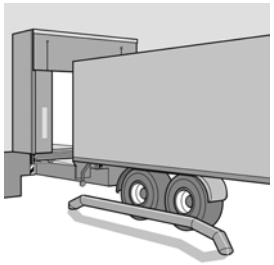
The traffic light system either has a sensor above the dock leveller that measures the presence of the vehicle or it is a wheel chock that detects the vehicle.
If there is no vehicle (dock leveller is free), the traffic light inside is red, outside is green.
The traffic light can also be combined with a wheel chock, Crawford Eye or door/leveller interlocking.

1.8.5 Crawford DE6090DL Dock light Heavy Duty LED



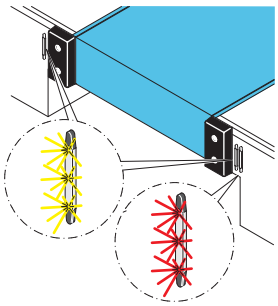
Where dock lights are often a vulnerable object in the docking area, the virtually indestructible Dock Light Heavy Duty LED is the perfect solution to bring light in the truck and docking area. It is designed for the most demanding environments and can withstand possible hard hits from a moving forklift without being damaged.

1.8.6 Parking guides



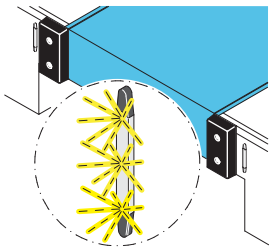
This visual aid makes it easier to park the vehicle and reduces the risk of collision. Especially advantageous for docking stations with wide leveller lips and cushion shelters. Parking guides can be bolted or cast in concrete on the floor before the leveller.

1.8.7 Crawford DE6090DI Dock-IN



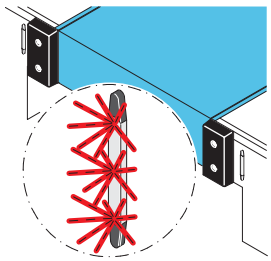
Crawford Dock-IN offers a complete line of guide- and traffic lights that align the truck with the docking bay to make the dock-in procedure easy and safe. Crawford Dock-IN is based on modern LED technology and stands for high reliability and low energy consumption.

1.8.7.1 Dock-IN White



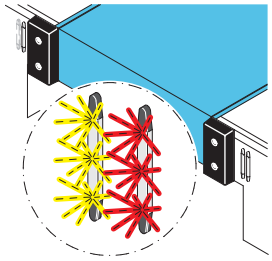
Crawford Dock-IN White consists of two white LED light bars. It is designed to help guide a truck to the dock. Crawford Dock-IN White offers much more visual aid than white stripes on the shelter or asphalt. Mounted on the wall they are always clearly visible, less exposed to wear and tear and not hidden by dirt and snow!

1.8.7.2 Dock-IN Red



Crawford Dock-IN Red is a traffic light system consisting of one red LED light bar, a sensor for truck detection and a traffic light control box. The sensor detects the truck when it is in the right position, very close to the dock. The red LED turns ON to give the signal to the truck driver to break and let the truck roll against the buffer at the lowest speed, without the risk of damage. The system includes interlocking of the loading bay control box functions which are only released when the truck is in place and the red LED is ON.

1.8.7.3 Dock-IN White & Red



Crawford Dock-IN White & Red is the optimum combination of both systems for easy and safe docking. The white LEDs provide the visual target and the red LED positions the truck at the right distance to the dock. The white guiding LEDs turn off when the truck is detected and at the same time the red LED turns ON. Crawford Dock-IN White & Red guide the truck driver in the best possible way for an easy and safe docking.

1.8.7.4 Available Options

- Indication Light Inside, built into the 950 control box

A Green LED light on the control box to indicate that the control box functions are released. The operator of the loading bay equipment knows exactly when he can start loading or unloading. The green LED light will help to save energy and to control the complete loading process.

- Second Red LED

A second Red LED bar can be added to have the red LED traffic light on both sides of the docking bay. This is an option for terminals with left and right hand drive international trucks.

- Wheel chock connection

To increase the safety it is possible to connect the Crawford wheel chock to the traffic light function Crawford Dock-IN Red or Crawford Dock-IN White and Red. The control box will be interlocked until the truck is detected and the wheel chock is in place.

Note:

Make sure the LED bars will not be covered by the Dock shelter.

Lowest possible truck is max. 2000 mm below the sensor position.

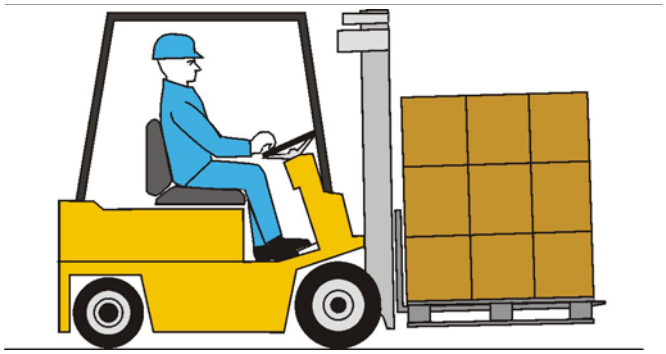
2. Selection guide

2.1 Load capacity according to EN 1398

The EN 1398 describes 3 key definitions about loads.

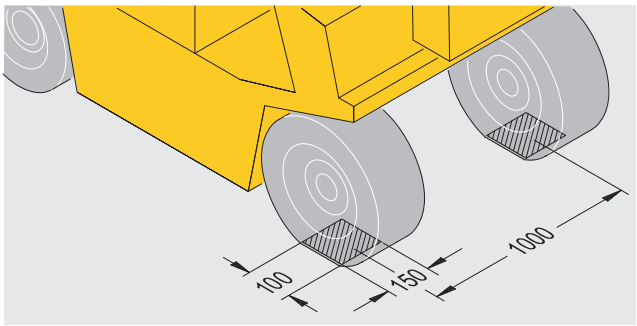
2.1.1 Rated load

The rated load is the total weight of the goods, the forklift truck and the driver.



2.1.2 Axle load

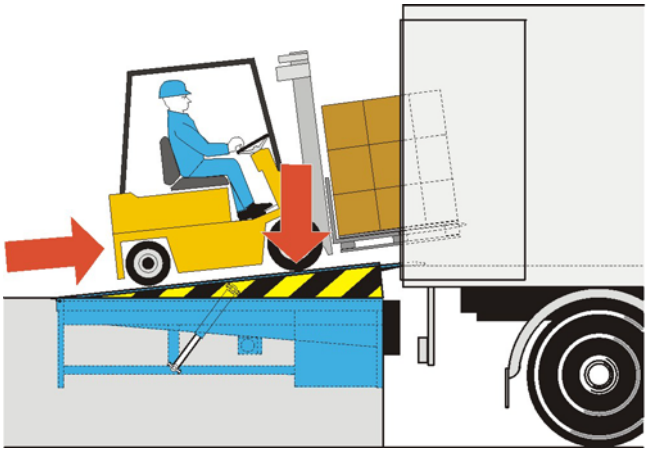
Axle loads shall be taken acting over two rectangular contact areas at 1 m lateral distance. These areas shall only apply if the actual conditions do not call for more severe loading. The size of the footprint [mm²] is derived from the wheel load [N] divided by 2 [N/mm²]. The ratio of the rectangular print is W:L = 3:2.



In the drawing measures for a leveller with a load capacity of 60kN are shown.

2.1.3 Dynamic load

The dynamic load is the movement of the rated load and is the pressure on the leveller platform caused by the moving forklift truck.



2.2 Select the load capacity

The load capacity of a dock leveller must always be higher than the rated load.

2.2.1 Example

Weight of forklift truck	3600 kg
Weight of goods	1500 kg
Weight of driver	100 kg
Total weight/rated load	5200 kg
Suitable load capacity of the leveller	6000 kg/60kN

2.3 Correct Gradient

Measure the maximum height difference between the truck bed and the dock level. Next, determine which vehicles will be used and lookup the maximum gradient the vehicles are allowed to be used on.

Vehicle	Max gradient
Roll cage	3%
Hand pallet truck	3%
Electric pallet truck	7%
Forklift truck (battery)	10%
Forklift truck (gas / petrol)	15%

2.3.1 The calculation

Gradient (%)= height difference / leveller length

2.3.2 Example

Nominal Length:	2450 mm
Truck height:	1325 - 1000 mm
Dock height:	1150 mm

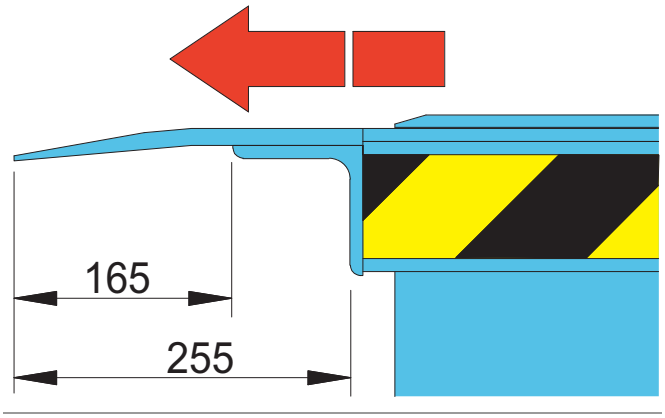
The difference between Truck height and Dock height
= 175 mm
175 mm / 2450 mm leveller length = 7%

2.4 Nominal width

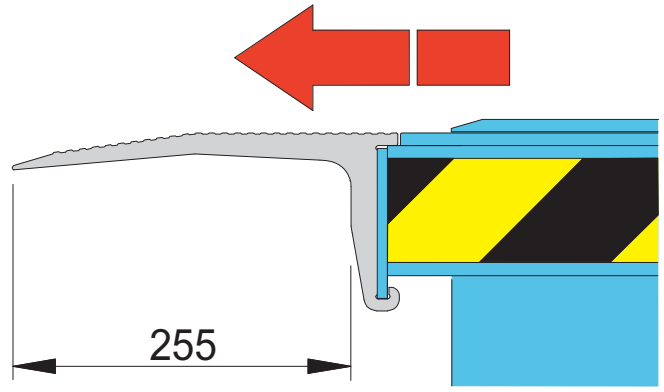
The correct nominal width must exceed the widest loading vehicle by at least 700 mm. The Crawford DL6020STA step autodock is available with a nominal width 2000 mm.

2.5 Free space under lip

2.5.1 Steel lip

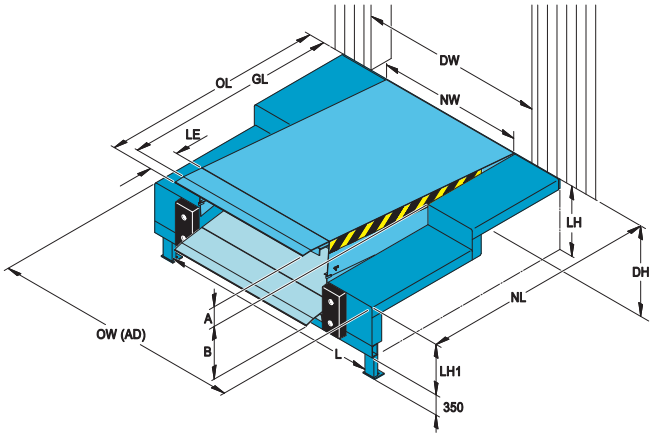


2.5.2 Aluminium lip

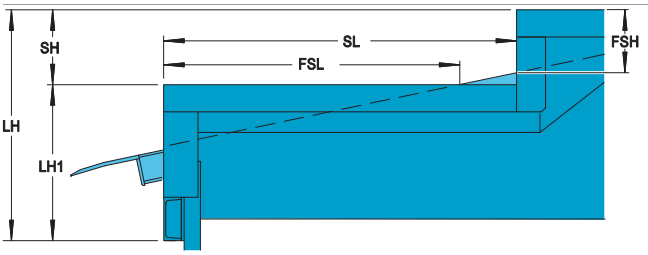


3. Specifications

3.1 Dimensions



NL	Nominal length
OL	Overall length
GL	Gradient length
NW	Nominal width (2000 mm)
LE	Leveller extension
LH/LH1	Leveller heightback / front
A	Working range above dock level
B	Working range below dock level
DH	Dock height
DW	Door width
NW (AD)	Nominal width Autodock (incl. side tread panels)
L	Distance between plinths
OW (AD)	Overall width Autodock = NW(AD) - 20



SH	Step height (250mm)
SL	Step length (1300mm)
FSL	Free Step height
FSH	Free Step length

Dimensions		Vertical working range				Step	
		LE 500		LE 345			
NL	LH/LH1	A	B	A	B	FSL	FSH
2450 mm	850/600	220	620	210	600	1240	235

3.2 Platform thickness

Thickness	Max. point load
8 mm	6,5 N /mm²

3.3 Control units

3.3.1 Dimensions

950 Series

3.3.2 Functions

Functions included	LA-TD	DSA-TD	LSA-TD	DLSA-TD
				
Hold to run button	■	■	■	■
Close (hold to run)	■	■	■	■
Impulse auto button	■	■	■	■
Extend lip (hold to run)	■	■	■	■
Mains isolator	■	■	■	■
Emergency stop button	□	□	□	□
400V	■	■	■	■
230V	□	□	□	
Maintenance indicator	■	■	■	■
3 Digit display	■	■	■	■
Memory function	■	■	■	■
Connection to Crawford Monitoring System	□	□	□	□
BUS network interface	□	□	□	□
Crawford eye	□	□	□	□
Wheel chock	□	□	□	□
Door control		■		■
Shelter control			■	■

■ Standard

□ Option / Available

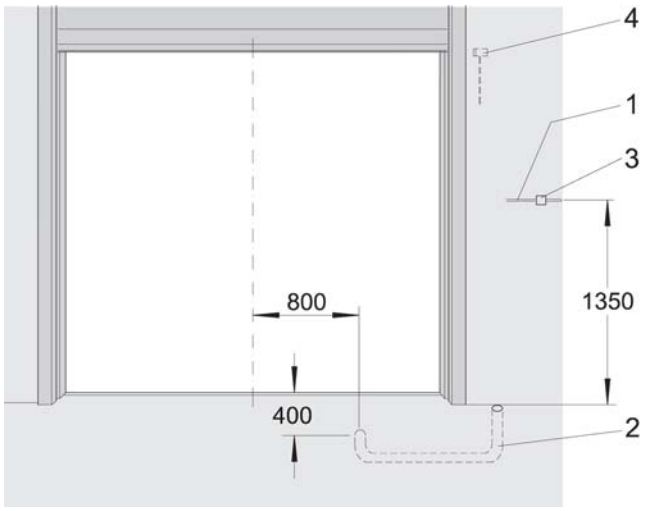
4. CEN Performance

4.1 Safety according to the European Standard EN 1398

- Emergency Stop Function.
  - Safety valves block lowering movement after max. 6% of the nominal length of the leveller.
  - Two lift cylinders make sure the leveller stops in a horizontal position.
- Free floating position.
- Platform torsion. Lateral deflection of at least 3% of nominal width.
- Toe guards cover gap between platform and pit in leveller´s highest position.
- Working range gradient max. 12,5% (~7°).
- Warning stripes on side plates and on frame (black/yellow).

5. Building and space requirements

5.1 Electrical preparations

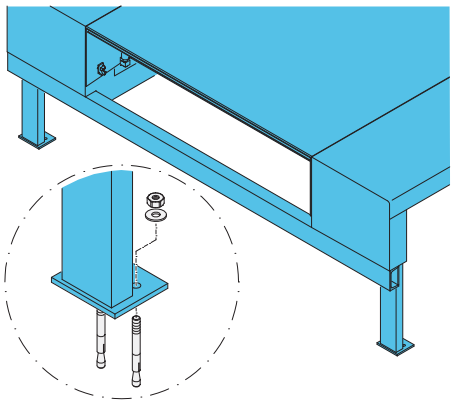


1	Mains supply: Mains fuse: Motor power:	3/N/PE AC 50 Hz 230/400V D0 10 A gL 1,1kW
2	Conduit for wiring internal diameter 70, angles <45° (by others)	
3	Mains isolator*:	Only for control box with emergency stop
4	Optional safety switch on sectional door to disable leveller when door is closed*	

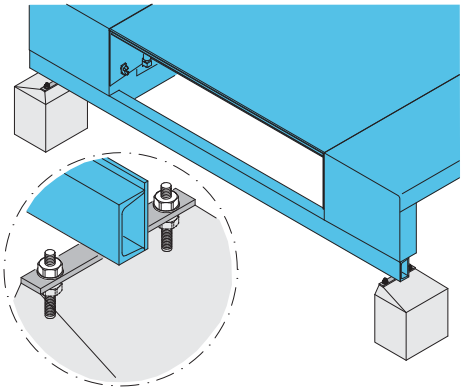
* non-standard

5.2 Ways of installation

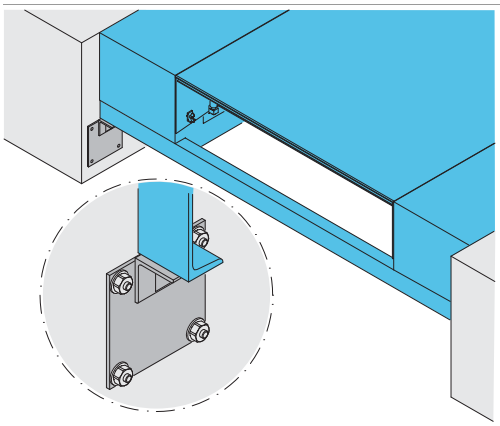
5.2.1 Steel plinths



5.2.2 Concrete plinths

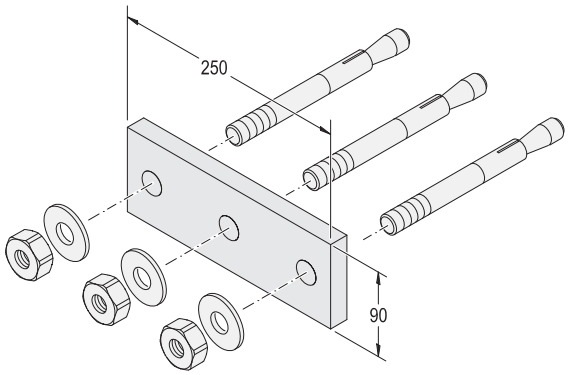


5.2.3 Wall connection brackets

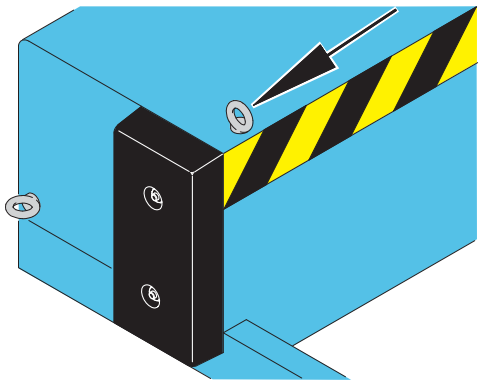


5.3 Additional equipment of installation

5.3.1 Support brackets



5.3.2 Eye bolt



6. 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**

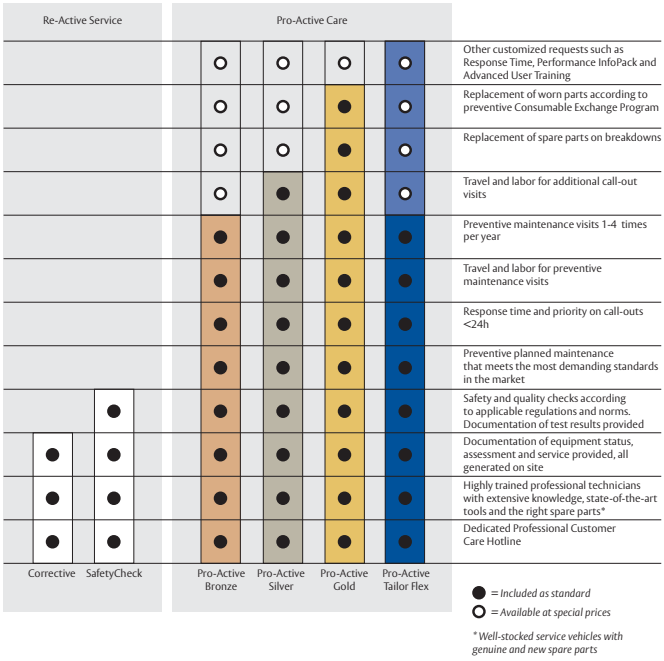
This plan provides the ultimate protection for your automatic entrance investment. It includes all the benefits of Pro-Active Silver, plus replacement of any parts required during an unplanned repair or planned maintenance visit. Pro-Active Gold is an excellent way to budget your automatic door expenses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



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