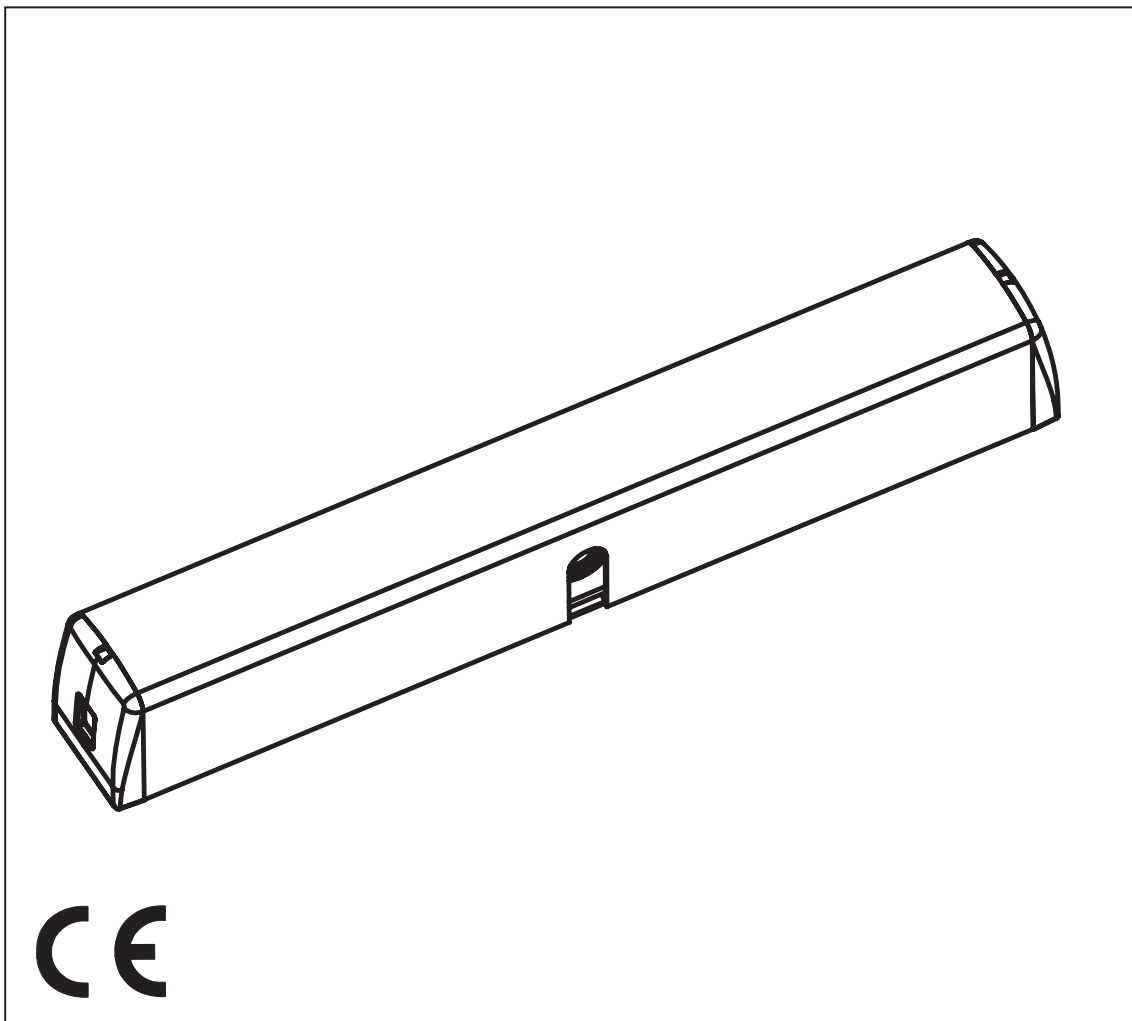


ABLOY® DA430 SWING DOOR OPERATOR

– *Installation and commissioning manual*



APPROVALS / STANDARDS

Electrical safety tested and approved FI, S, N, D
Low Voltage directive 73/23/EEC as amended by the directive 93/68/EEC
EMC directive 89/336/EEC



Warning!



Warning!

----- THIS MANUAL CONTAINS IMPORTANT SAFETY INSTRUCTIONS -----

Warning - IT IS IMPORTANT FOR SAFETY OF PERSONS TO FOLLOW THESE INSTRUCTIONS.

----- SAVE THESE INSTRUCTIONS -----

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Do not allow children to play with fixed controls.

Frequently examine the installation for imbalance and signs of wear or damage to cables, springs and mountings. Do not use if repair or adjustment is necessary.

Disconnect the supply when cleaning or other maintenance is being carried out.

Before installing the operator, check that the operator is in good mechanical condition and it opens and closes properly.

Ensure that entrapment between door and the surroundings is avoided.

Ensure that the operator is suited for installation. Check temperature, humidity, door weights, etc. restriction in line with specifications applicable in the manual or other Abloy® Oy material.

Note!

Instructions, design specifications and illustrations which are contained in this manual are not binding. Abloy Oy reserves the right as part of ongoing product development to make changes without previous notice.

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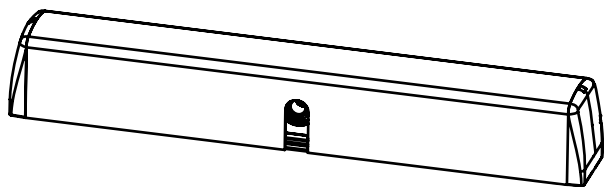
1 REVISION

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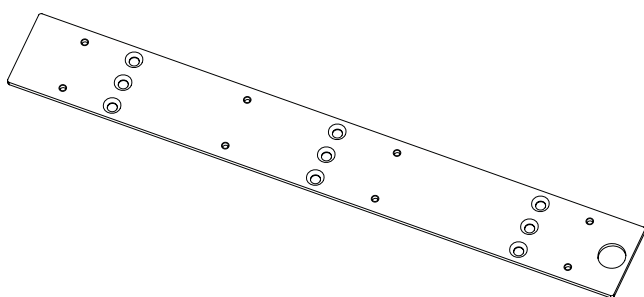
Page	Revision
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As at 21.09.2009.

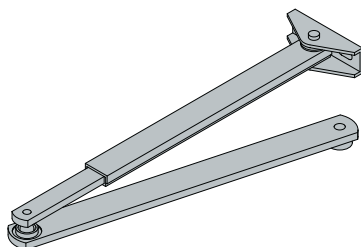
2 CONTENT OF DELIVERY



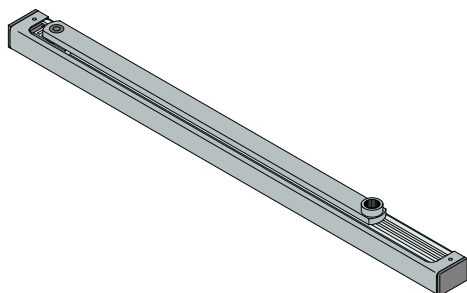
- DA430** Swing door operator
- screw M6x16, 1 pcs
 - spring washer, 4 pcs
 - washer 4 pcs
 - hex-socket head screw M6x16, 4 pcs
 - grooved spindle, 1 pcs
 - tension sleeve, 1 pcs



- DA105** Mounting plate
- screws 5,5x32, 6 pcs
 - ordered separately



- DC190** Standard arm
- screw M6x16, 1 pcs
 - screws M5x12 Poz 2, 2 pcs
 - screws 4,8x32 Poz 2, 2 pcs
 - ordered separately



- DC194** Sliding arm
- screw M6x16, 1 pcs
 - screws M5x40 Poz 2, 2 pcs
 - screws 4,8x60 Poz 2, 2 pcs
 - ordered separately

3 GENERAL INFORMATION

Technical data

Measures

- (L) 523 x (H) 68 x (W) 80 mm
- weight 3,5 kg

Supply voltage

- 110 - 230 VAC ($\pm 15\%$) 50...60 Hz
- back-up inlet 24 VDC ($\pm 15\%$) 2A

Enclosure class

- IP20

Temperature range

- storage -20...70 °C
- operation 0...40 °C

Interfaces

- power output 24 VDC max 500 mA
- potential free relay output
 - 0.8 A @ 30 VDC resistive load
 - 0.3 A @ 30 VDC inductive load

Features

- Swing door operator for indoor use only.
- Door weight up to 80 kg (standard arm) and 60 kg (sliding arm).
- Low noise.
- Compact design - easy to install.
- Low resistance if manually used.
- Push&Go.
- Adjustable hold open time 0...60 s or sequential use.
- Built in 24 VDC/0.5 A power supply for external devices.
- Secondary DC inlet power back - up (24 VDC 2A).
- Maximum opening angles:
 - With standard arm DC190
 - On the closing side, 100°
 - With sliding arm DC194
 - On the closing side, 90°
 - On the opening side, 110°

4 OPERATION

Abloy® DA430 is an electromechanical swing door operator for moderate use. It can be used on single, internal doors. The Abloy® DA430 has a "Push&Go" function. When Push&Go is in operation and door is pushed or pulled manually, operator opens the door to adjusted opening angle and closes the door after a 5 second of hold open time.

Internal monitoring

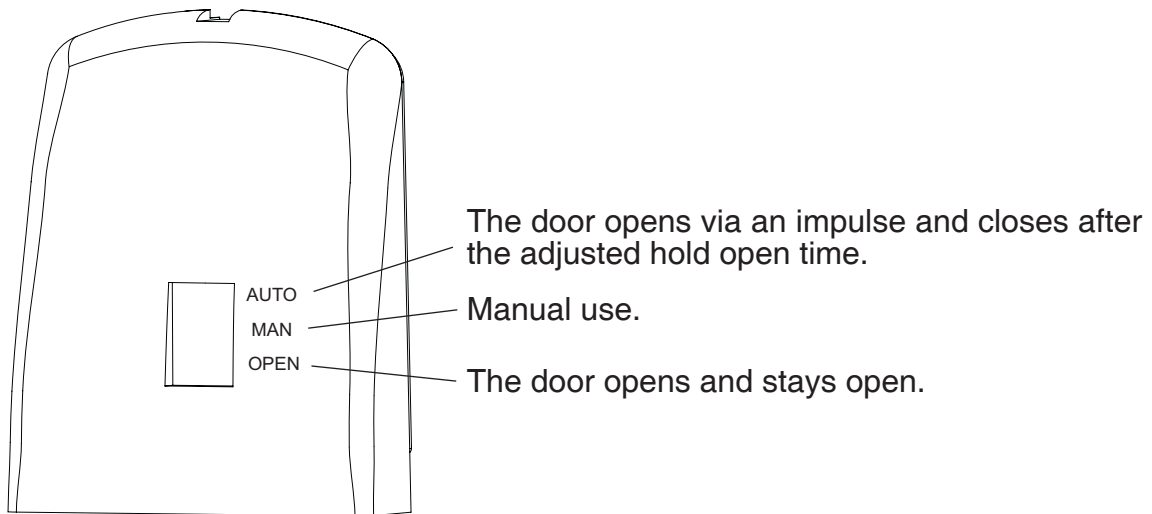
Obstructed opening:

The door is set free for 5 seconds and the impulse is restrained during that time. After that, the operator tries to open the door. If the door is still obstructed in the same position after 4 trials, operator closes the door.

Obstructed closing:

The door is set free for. After that, new trial is done to close the door. Maximum amount for trials is 4. If it is exceeded, the door is set free for 1 minute. After this new trial is done to close the door.

5 MODE SWITCH



Note! There is 3 seconds constant delay when mode switch is changed position OPEN to AUTO or MANUAL.

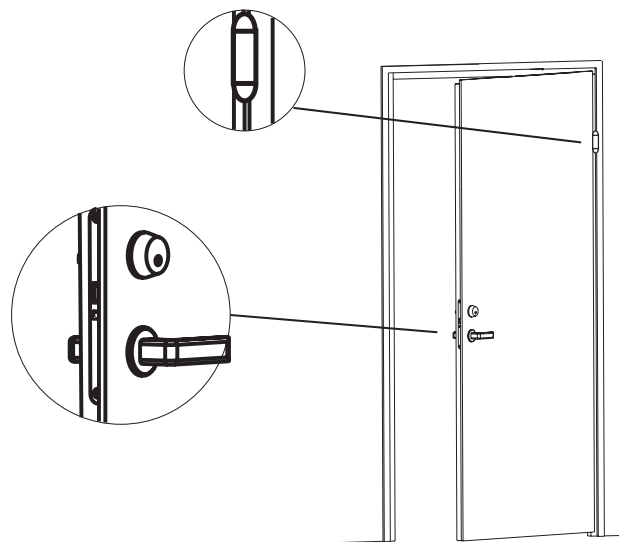
6 INSTALLATION

Steps of installation

- Preparing installation
- Installing the mounting plate if needed
- Mounting the operator and the arm
- Connecting the operator to mains
- Commissioning
- Testing
- Connecting impulse devices

Preparing installation

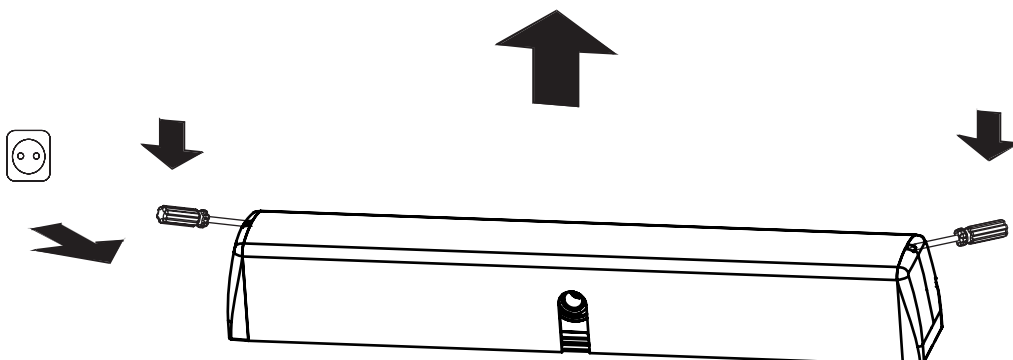
- Check the correct function of the door
 - Hinges
 - Door clearance
- Check the correct function of the lock
 - Lock case
 - Striker plate
 - Suitability of the lock's function



Removal of housing

Note! Remove the protective earth wire from cover and connect it back after installation.

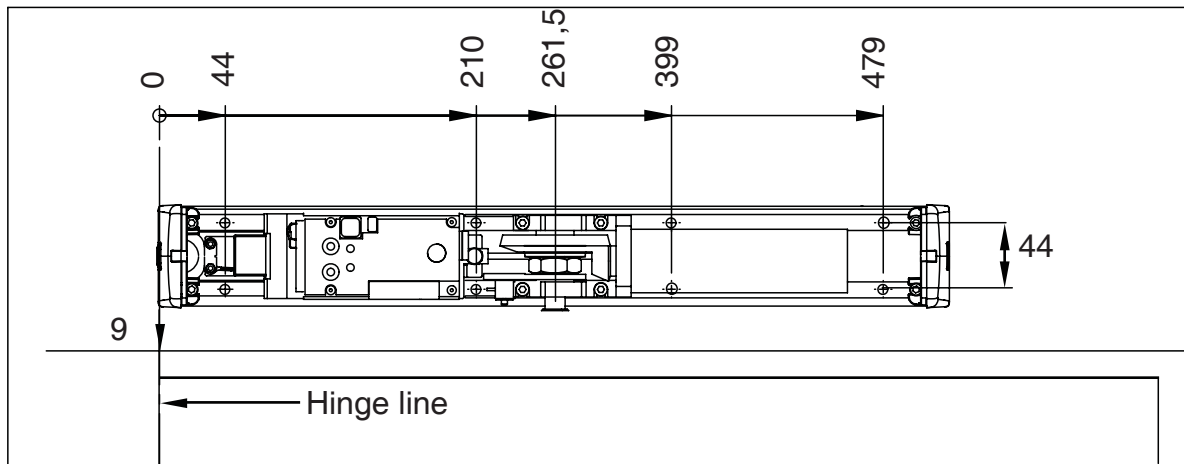
Ensure the mains disconnected when removing or re-fitting the cover.



6.1 Installing the operator and the mounting plate DA105

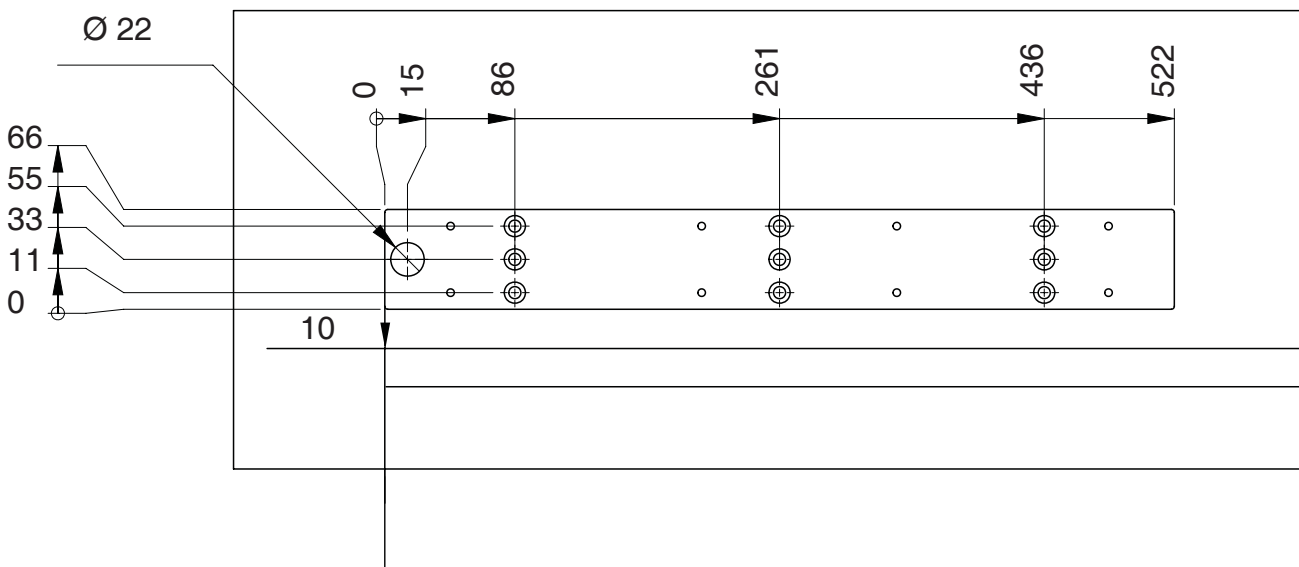
The operator is installed on the transom, with the mode switch located towards the hinge side of the door. Securely fix the operator or the mounting plate to the transom. Minimum requirement for wall profile is 5 mm (steel).

Installing the operator

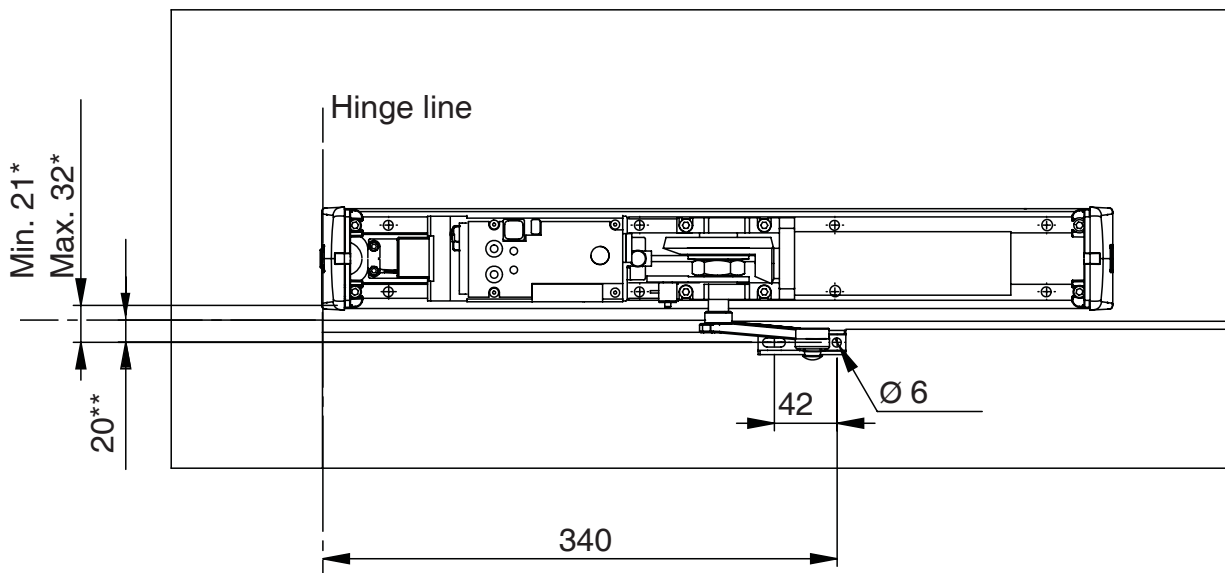


Installing the mounting plate DA105

The mounting plate DA105 with the door operator ensures the installation base is level. Use the mounting plate if needed.

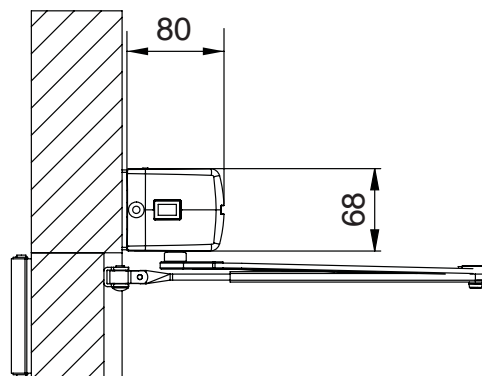


6.2 Assembly of the operator and standard arm DC190 to the closing side

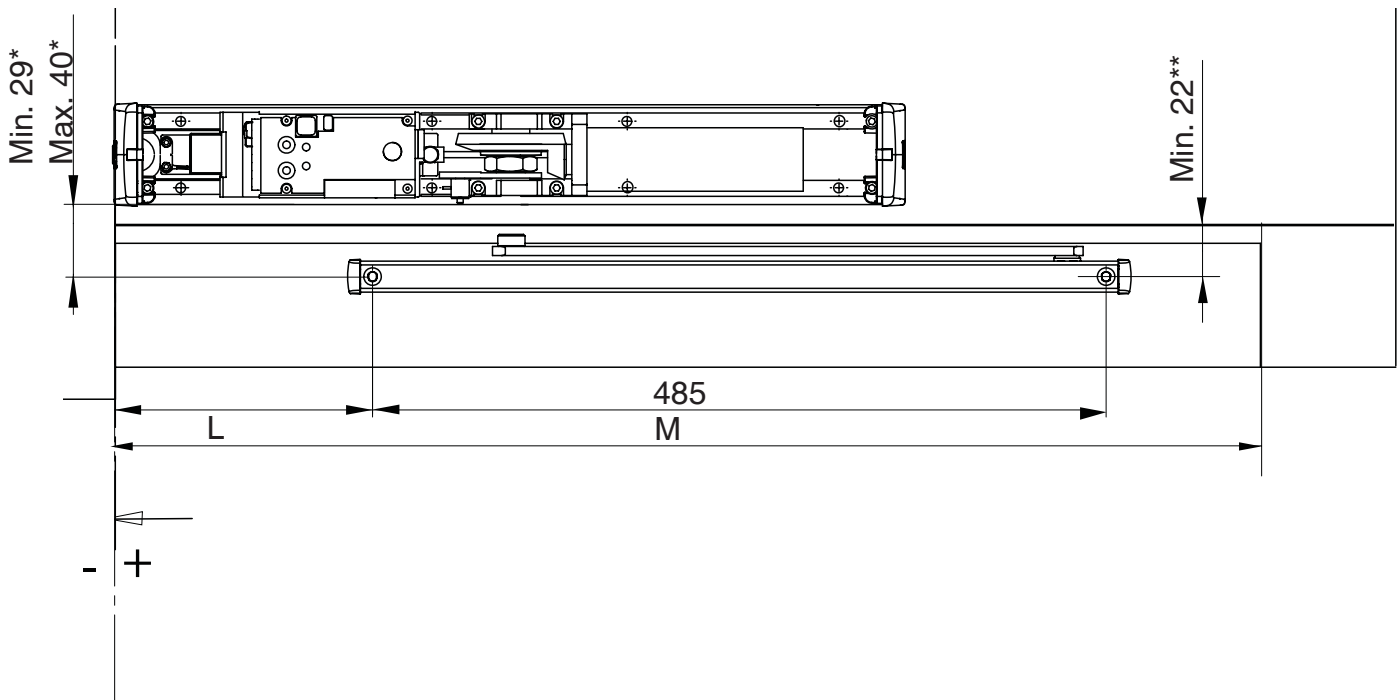


*The measure from bottom of the operator

** The measure from bottom of the frame



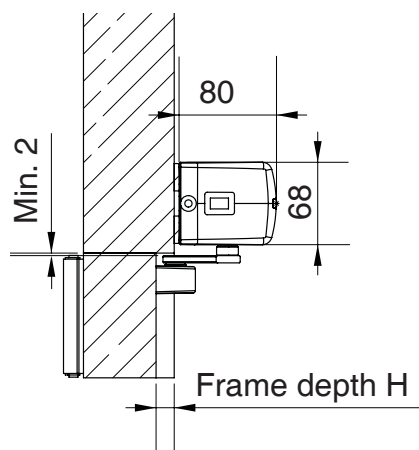
6.3 Assembly of the operator and sliding arm DC194 to the closing side



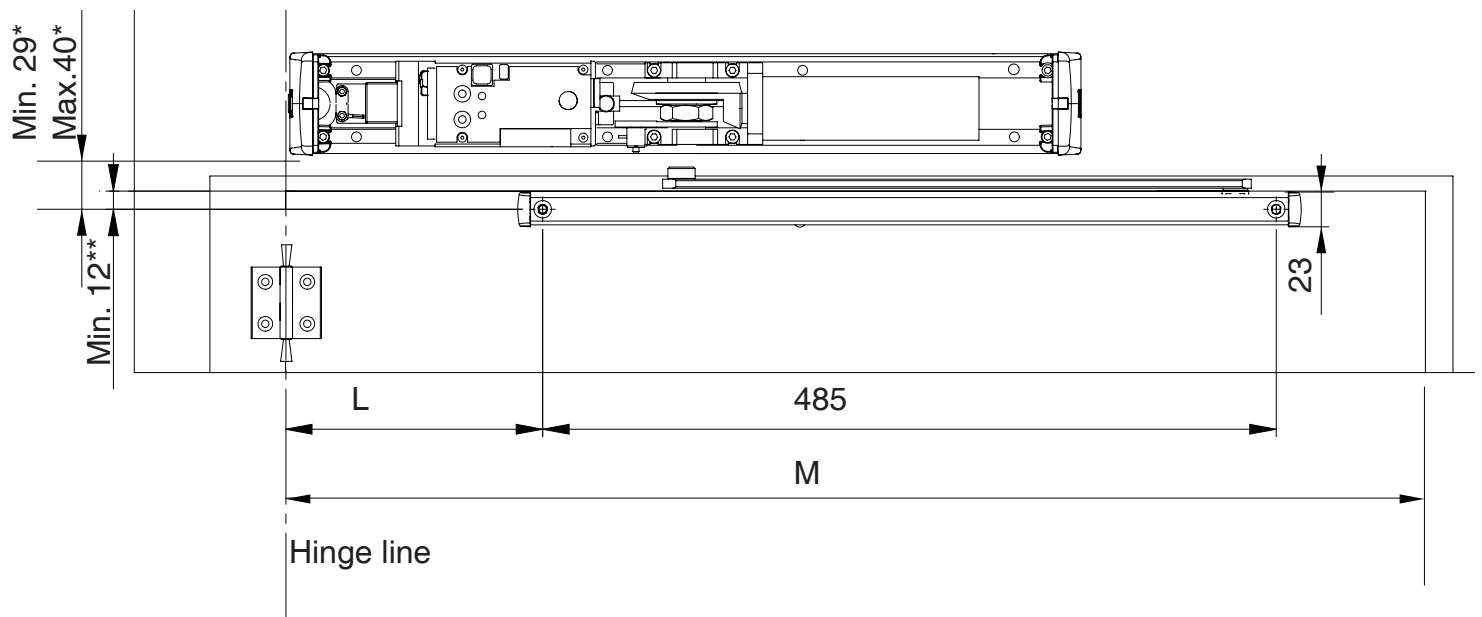
*The measure from bottom of the operator

** The measure from bottom of the frame

Frame depth H/mm	DA430 distance from hinge line	Arm distance L/mm	Minumum door width M/mm
0 - 20	0	170	675
20 - 40	- 40	130	635
40 - 80	- 40	125	630
80 - 100	- 40	115	620



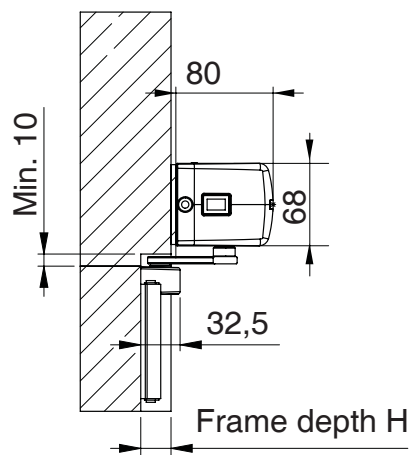
6.4 Assembly of the operator and sliding arm DC194 to the opening side



*The measure from bottom of the operator

** The measure from the top of the door

Frame depth H/mm	Arm distance L/mm	Minumum door width M/mm
0 - 40	184	690
40 - 100	210	715
100 - 150	236	740

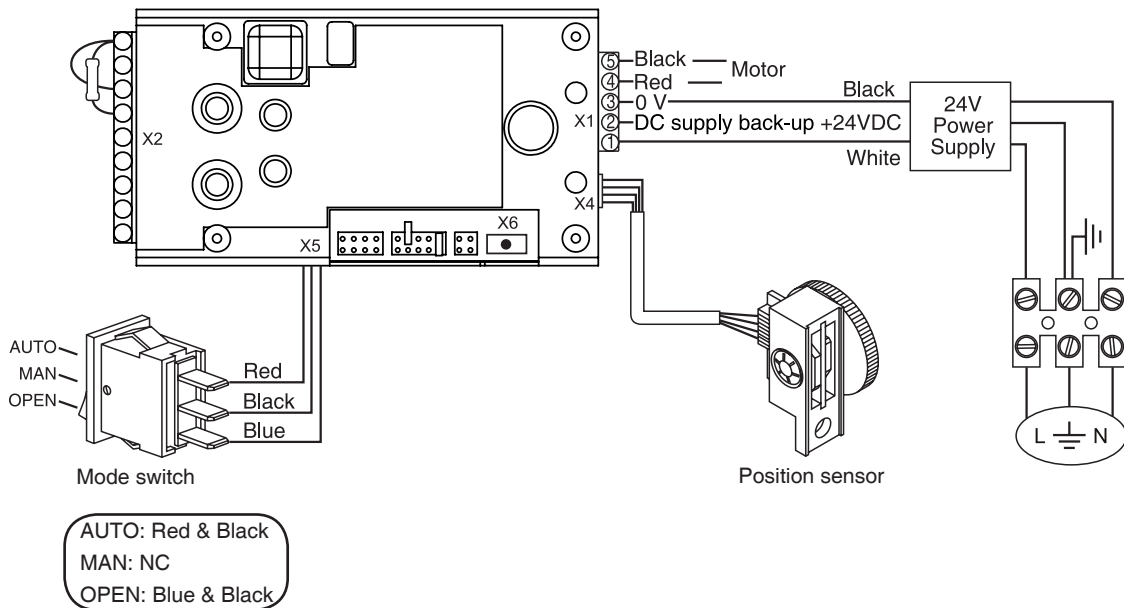


7 INTERNAL CONNECTIONS



Electrical connections should be made by a qualified electrician.

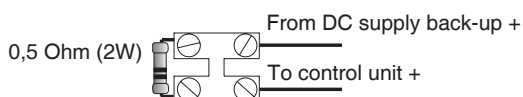
- The power plug or an optional external switch must have an easy access.
- The concealed mains installation must be equipped with an external switch providing all pole disconnection.
- Keep the mains disconnected during installation.



Connecting DC supply back-up




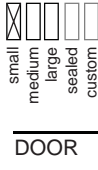
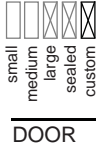
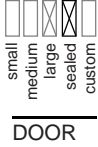
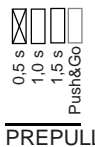

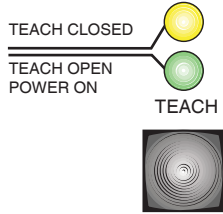
When using DA430 swing door operator together with DC supply back-up, current supply have to be limited. This is done by connecting 0,5 Ohm (2W) resistor and current supply in series.

Resistor is protecting operator's control unit. If resistor is not used, unlimited current of DC supply back-up can break control unit's motor control components. No battery charging or maintenance is provided by DA430.

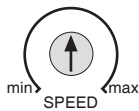


Connection example.

8 COMMISSIONING

1 Check the free movement of the door.	
2 Turn mode switch to MAN.	The mode switch is located in the head panel.
3 Plug in the mains.	
4 Choose the type of the arm.	 <p>standard sliding ARM</p> <p>Jumpers are located on the control board.  Jumper is connected.  Jumper is disconnected.</p>
5 Choose the size of the door.	
 <p>small medium large sealed custom DOOR</p>	<p>S, M and L settings define door weight in ratio to door width. Always select at first S in to guarantee maximum safety. If there is not enough force on the operator for moving the door then shift setting from S to M. If the door behaviour is satisfactory then the chosen value is right. If not then shift to next setting point L.</p>
 <p>small medium large sealed custom DOOR</p>	<p>Jumper in block "Custom" together with S, M or L gives you more power. S + Custom, force between S and M. M + Custom, force between M and L. L + Custom, force more than L.</p>
 <p>small medium large sealed custom DOOR</p>	<p>"Sealed" enables motorised closing pull before opening and hold closed force. Select this to ensure the proper function of the lock when prepull is needed.</p>
6 Check the PREPULL.	
 <p>0,5 s 1,0 s 1,5 s Push&Go PREPULL</p>	<p>For "Sealed" it is possible to select different prepull times. By changing jumper, the prepull time changes for example from 0,5 to 1,0 second.</p>
 <p>0,5 s 1,0 s 1,5 s Push&Go PREPULL</p>	<p>Operator opens the door to adjusted opening angle and closes the door after a 5 second of hold open time.</p>
7 Teach door open and closed position. (is functional in program selector positions MAN and AUTO)	
 <p>TEACH CLOSED TEACH OPEN POWER ON TEACH</p>	<ul style="list-style-type: none"> - Push TEACH-button to enter learning mode. - Teach the door closed position: Yellow led blinks: close the door and push TEACH-button. - Teach the door open position: Green led blinks: open the door to the desired angle and push TEACH-button. - Yellow "TEACH CLOSED" led blinks: close the door manually.

8 Opening speed and hold open time



Adjust the opening speed.

A slow door is a safe door. The door speed should be set to allow unhindered access but as slow as is possible.



Adjust the hold open time (0...60 s).

Full right position (seq) means that every other impulse either opens or closes the door.

	Time (sec)	Door weight (kg)	
		60	80
Door width (mm)	800	2,7	3,2
	1000	3,4	4,0
	1200	4,1	4,7
	1300	4,5	5,1

Minimum safe opening and closing times for door of various widths and weights are summarized in the table.

19 Test the operation

Note! Long hold open time increases the safety of the door.

- Turn mode switch to AUTO.
- Test the operation.
- If the function is not as desired, turn mode switch to MAN and repeat steps 4...10.

Resetting operator to factory settings (operator is moved to new door)

- Turn mode switch to OPEN.
- Push TEACH-button briefly. After that push TEACH-button 5 sec. Door open and closed position information is removed from the memory.

9 A SAFE DOOR

The safety of an Automatic door is achieved with careful basic adjustments.

Low speed, higher speeds increase the force applied to any obstruction. The speed should be set so that users are able to pass through the door unhindered, with the speed set as slow is as reasonable possible. The position of the input devices are also a factor i.e. where ever possible, they should see users approaching and start to open allowing the door to open slowly.

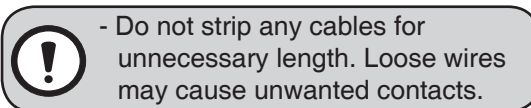
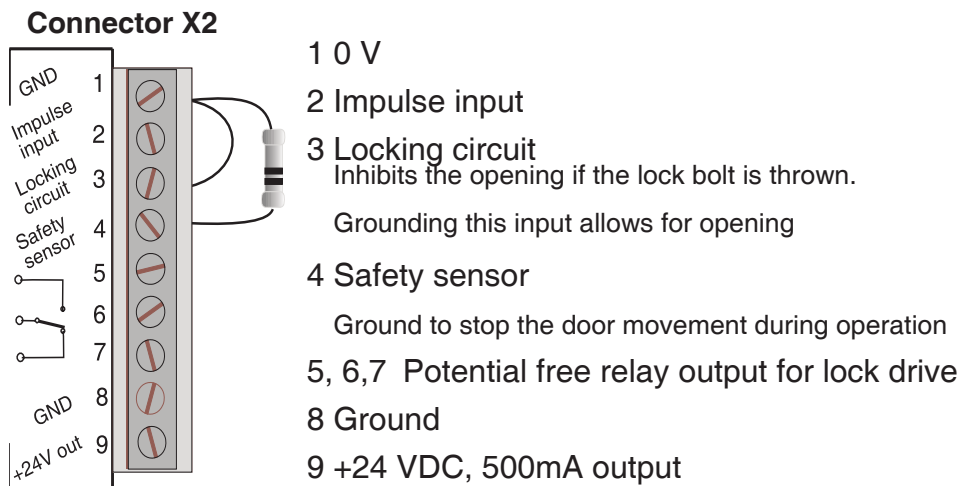
The door operator should always be set to the lowest possible force setting, ensuring that the door operates smoothly, but equally does not have excessive force for the application.

In all cases the door size should be set to the smallest possible setting, S small, M Medium, L Large, remembering the half steps achievable with the custom setting we effectively have S, S+, M, M+, L, L+. We should always remember that these force setting also has an effect with the inbuilt safety settings, i.e. the more force applied, the lower the sensitivity, hence should the door make contact with an obstruction it will apply a greater force is the door weight is set higher.

We recommend that safety sensors are fitted to all applications, particularly on the driven side, opening face in the case of a DA430.

Higher speeds are only achievable when full safety is specified.

10 EXTERNAL CONNECTIONS



Safety sensor:

On the opening side of the door:

The Safety Sensor is connected to terminals 1 and 4, with the power taken from terminal 9, and grounded via terminal 8. The loop must have a 1K resistor in parallel across the terminals 1 and 4, [supplied]. This **MUST** be fitted in the safety sensor, in order that the door operator monitors the condition of the cable between the sensor and the operator. This cable is vulnerable due to the doors movement, and in the event of an open circuit it will prevent a potentially unsafe door opening.

The safety sensor is active, for the first 70% of the door opening, it will not stop the door opening when it has passed the 70% point, because it has been designed so that it can ignore any obstacles, like the door reveal, or walls running in parallel to the door opening angle.

The resistor between terminals 1 and 4 must be left in position if a safety sensor is not used.

On the closing side of the door:

Safety sensor is connected to impulse input terminal 5. When safety sensor detects an obstacle , it reopens the door.

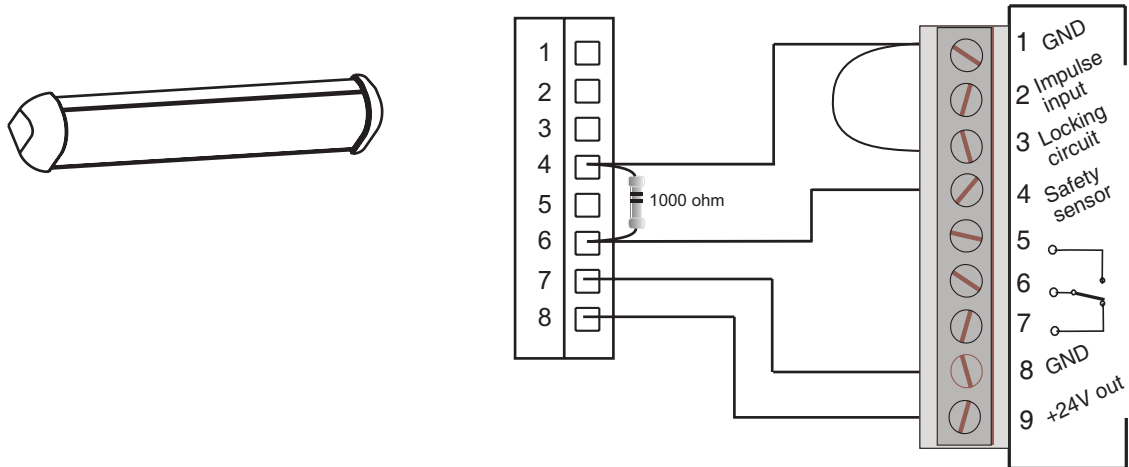
Impulse input:

The closing contact drive (NO) must be potential free. The impulse device must be installed within direct sight of the door. Maximum length of the impulse device cable is 30 m. The total resistance of the control switch and its wiring must not exceed 100 ohm, when switch is closed.

11 CONNECTION EXAMPLES

11.1 Safety sensors DA001 and DA002

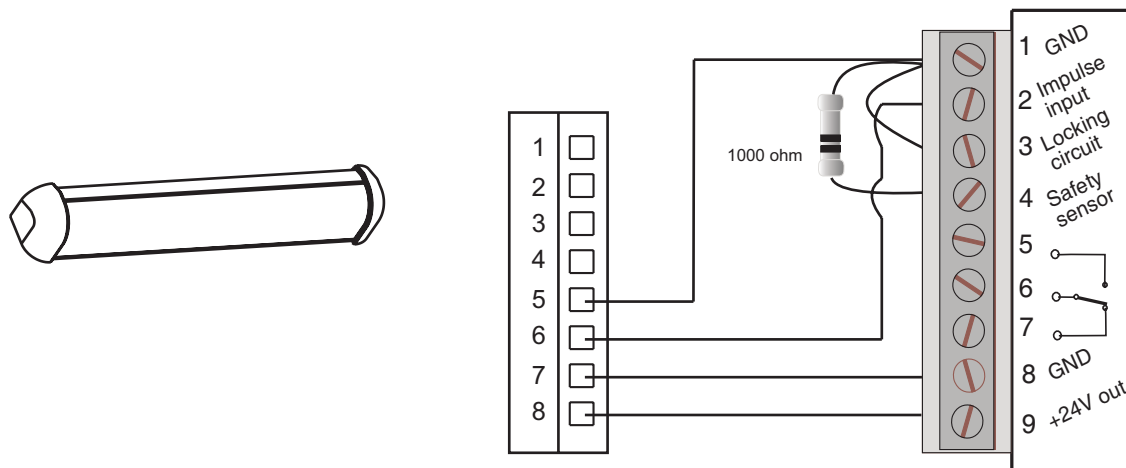
On the opening side



The loop must have a 1K resistor in parallel across the terminals 1 and 4. This must be fitted in safety sensor, in order that the door operator monitors the condition of the cable between the sensor and the operator. This cable is vulnerable due to the door's movement, and in the event of an open circuit it will prevent a potentially unsafe door opening.

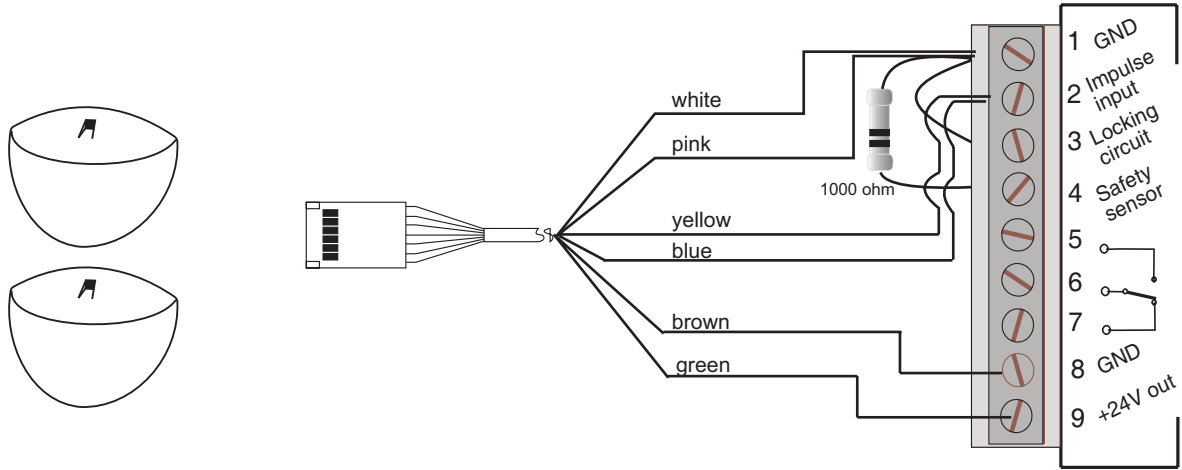
When sensor detects an obstacle, the operator stops the door.

On the closing side

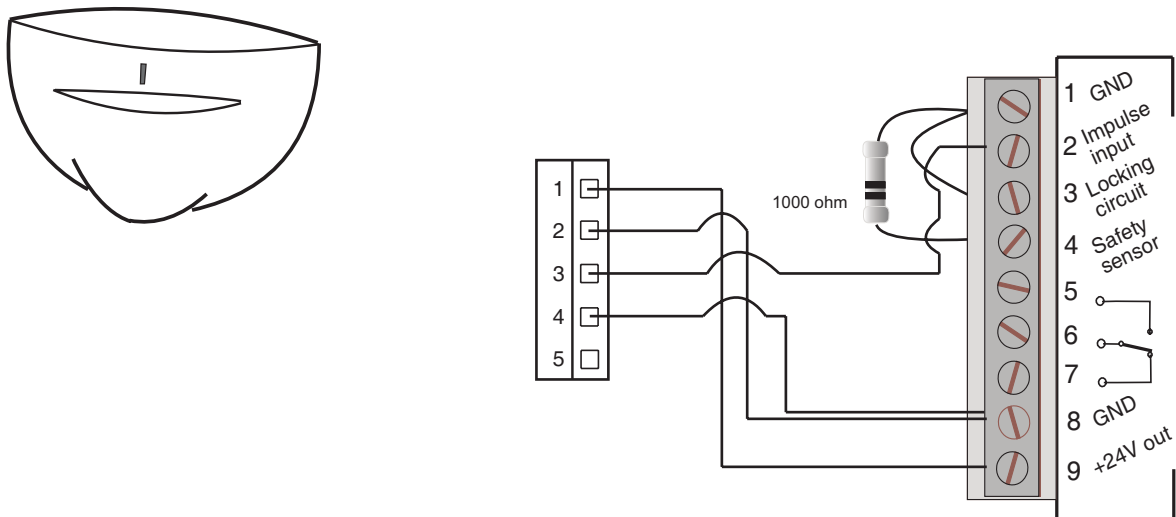


When sensor detects an obstacle, the operator opens the door for duration of the hold open time.

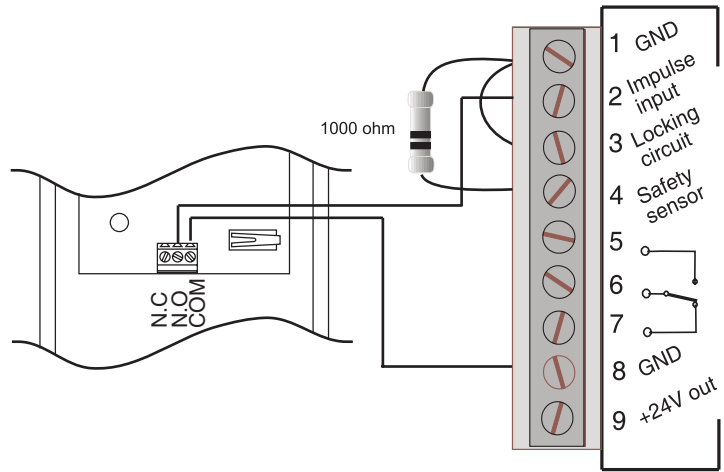
11.2 DA061 and DA062 Microwave motion sensor



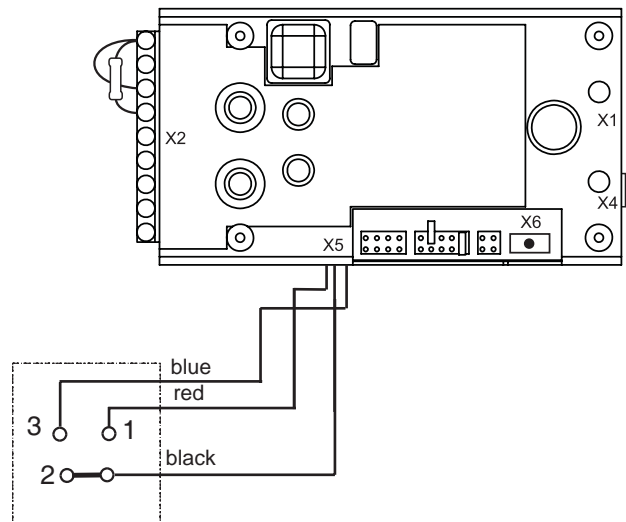
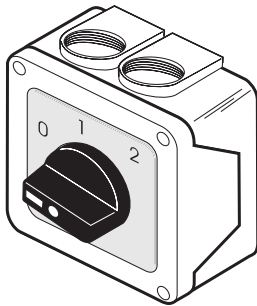
11.3 DA063 Microwave motion sensor



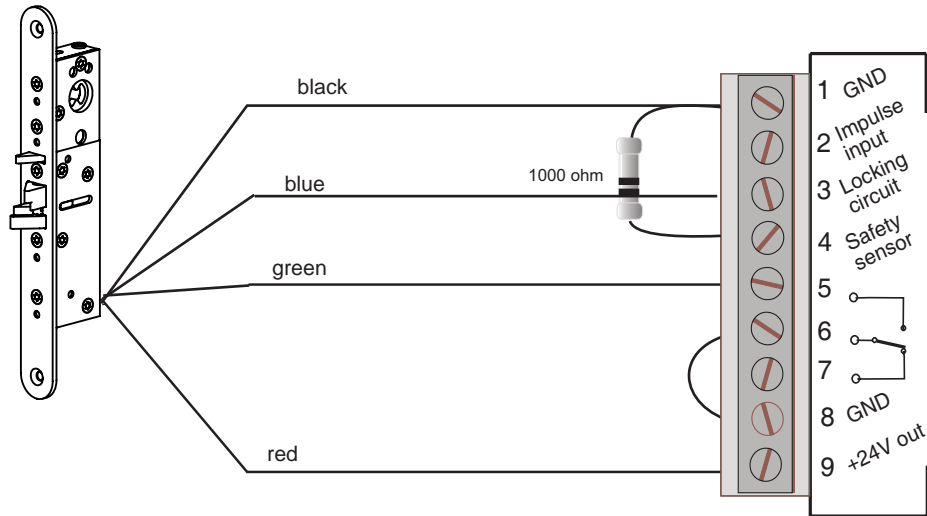
11.4 DA033 Elbow switch



11.5 DA039 and DA049 rotary switch

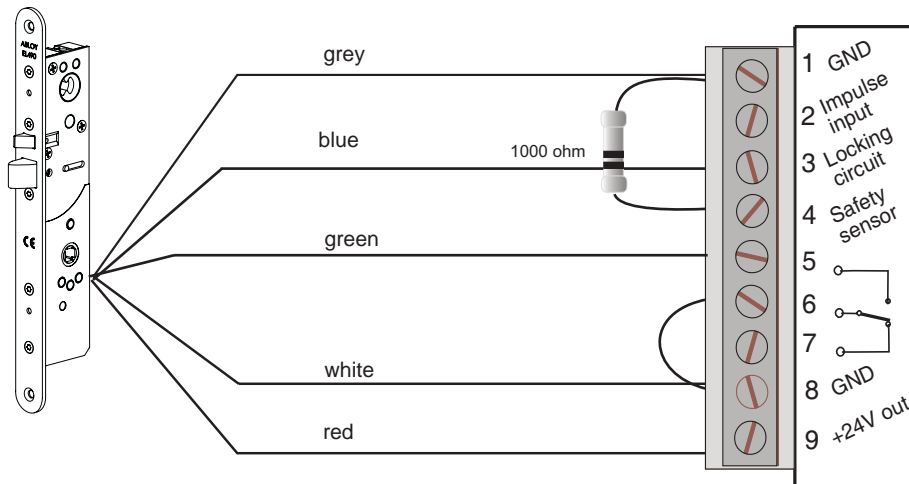


11.6 Electric locks EL402, EL404, EL502

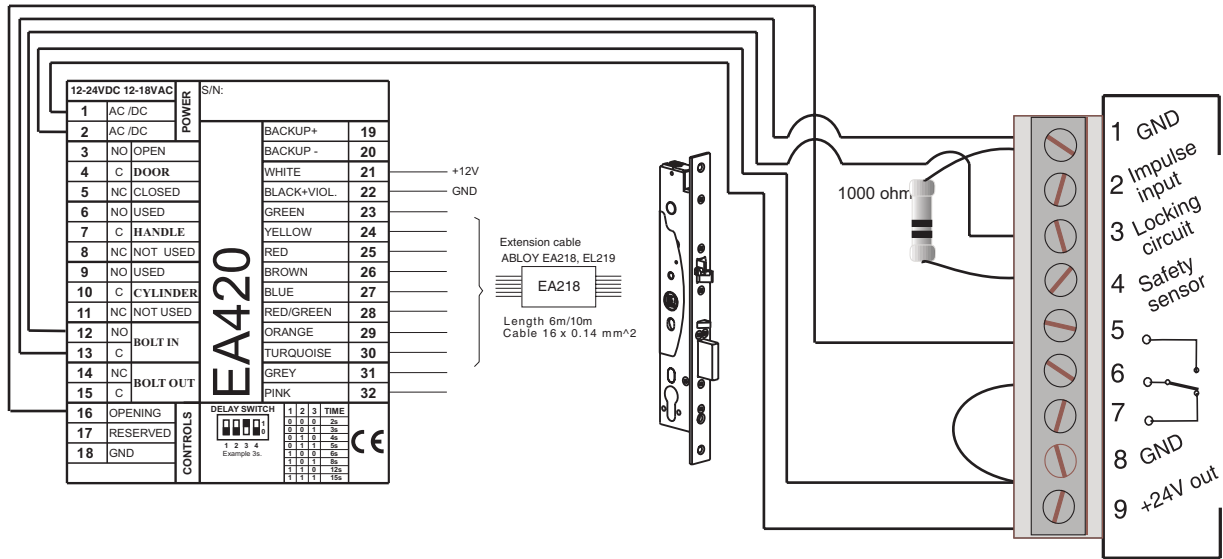


NOTE! Not to be installed in doors with seal force. Bolt and trigger bolt have to be lubricated when lock is installed and when necessary.

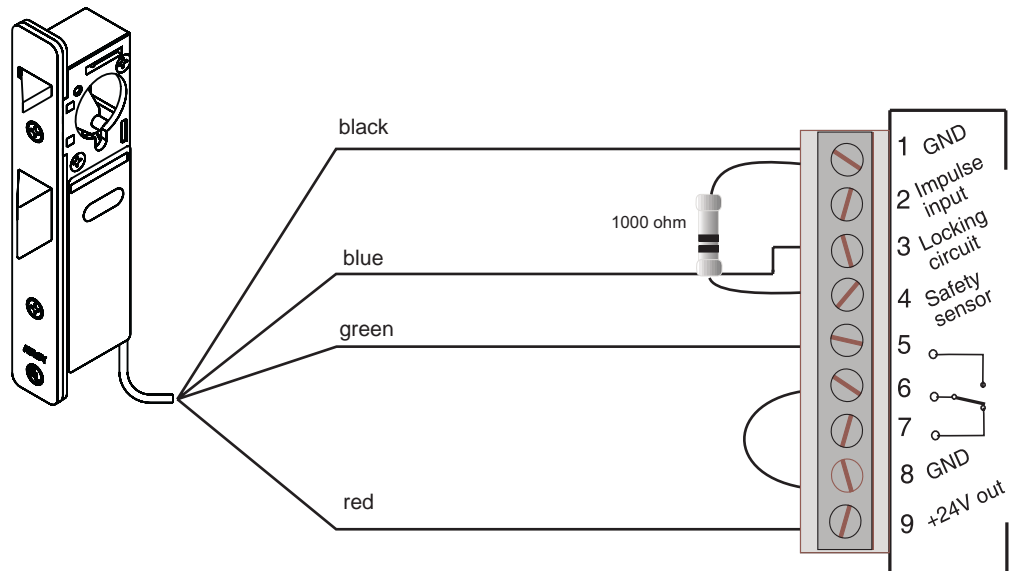
11.7 Motor locks EL490, EL590



11.8 Motor locks EL420, EL520



11.9 Electric lock EL410



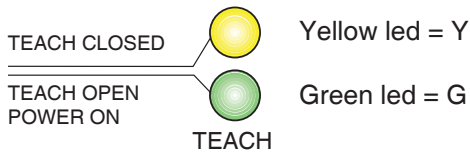
12 SELF DIAGNOSTICS

Fault codes

- detect malfunctions
- to ensure safe operation where possible during malfunction
- to restore the operator to its required status

If the door operator is unrecoverable it will revert to manual operation only.
Both LED's will blink.

Control units LED's



Indication	Possible fault	Corrective user interventions in defined order
G not lit Y not lit	No power. Faulty power supply unit. Faulty control board.	<ol style="list-style-type: none"> 1) Check the mains. 2) Disconnect 9 pin connector from the control board. 3) Measure the voltage of the power supply (5 pin connector, pins 1 and 3). If voltage is under 24VDC, change the power supply unit. 4) Measure the voltage from 9 pin connector (pins 9 and 8). If voltage is not 24VDC, change the control board.
G lit Y lit	The door "close" and "open" positions are not successfully taught. Impulse device is active all the time.	<ol style="list-style-type: none"> 1) Teach the door open and close positions. 2) Check all impulse devices and connections.
G lit Y flash	Flash short...short...short...: 1000 ohm resistor is missing or cable of safety sensor is cut. Flash short...long...short...long...: Safety sensor is active or cable of safety sensor is short-circuited.	<ol style="list-style-type: none"> 1) Check that 1000 ohm resistor is connected in control board or in safety sensor. 2) Check that cables are not damaged. 1) Move obstacle from safety sensor detection area. If sensor sees the wall, adjust detection area. 2) Check that cables are not damaged.
G flash Y flash	Internal fault in the control board. Door motion is stopped.	<ol style="list-style-type: none"> 1) Switch main off for 10 seconds. 2) Check that all applicable jumpers are in place (one of two arms is selected, one door size is selected). 3) Teach the door open and close positions. 4) Change the control board.
G flash Y flash alternates	Internal fault in the position sensor board. Door motion is stopped.	<ol style="list-style-type: none"> 1) Switch main off for 10 seconds. 2) Check that all applicable jumpers are in place (one of two arms is selected, one door size is selected). 3) Check position sensors cable and connector. 4) Teach the door positions. 5) Change the position sensor.

13 MAINTENANCE

Door operators require periodic maintenance.

Only trained personnel are equipped to work on Abloy® DA products.

Door leaf is moving sensitively and locking works well.

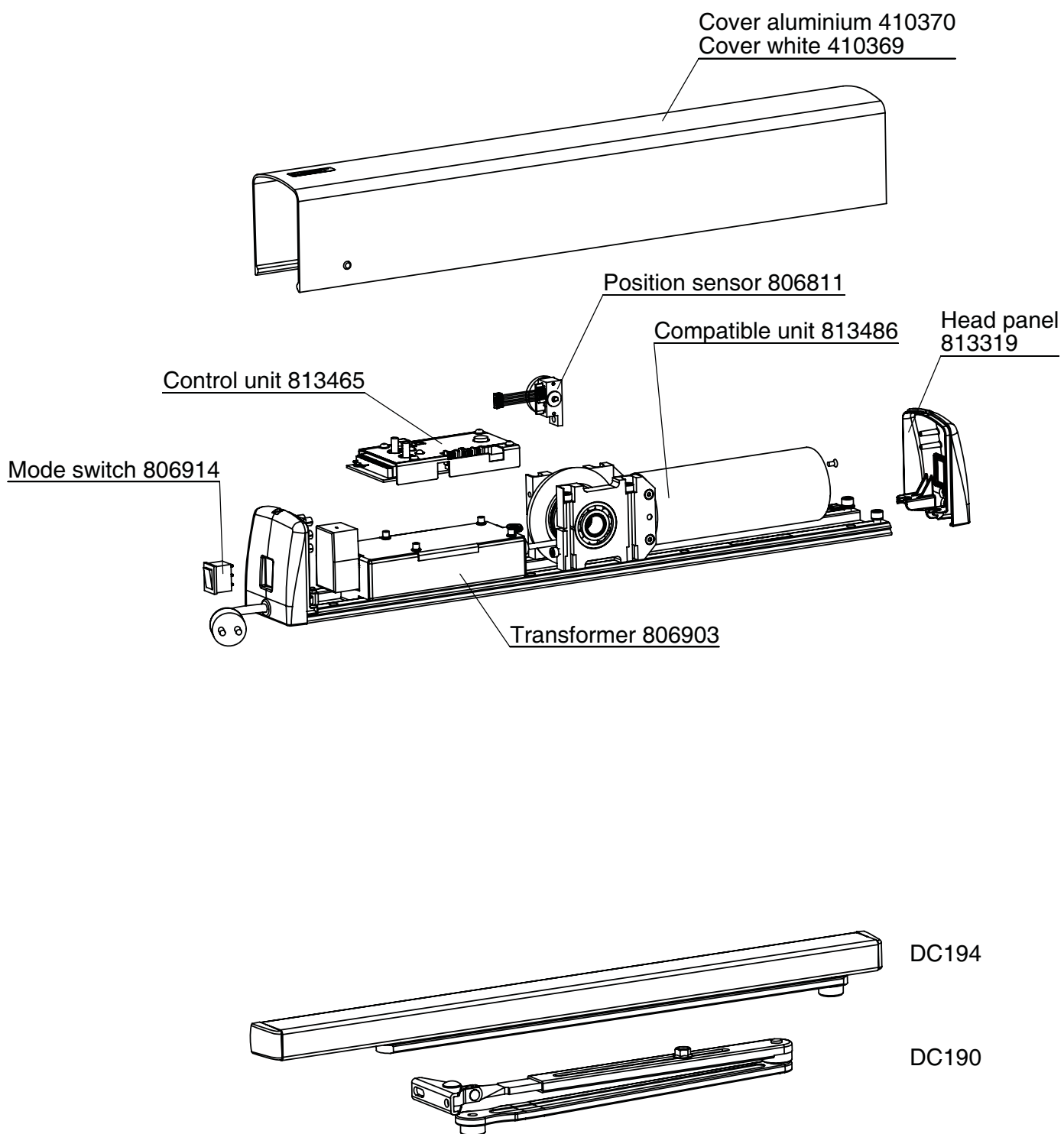
Regular annual services are made:

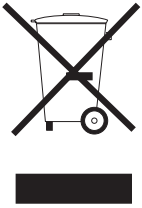
- Under 100 openings per day; service once a year
- 100 ... 500 openings per day; service two times a year

Inspections made in service:

- Fixing of the operator and arm
- Function and adjustments of impulse and safety devices
- Programming and adjustments of the operator
- Movement of the door, taught door positions

14 SPARE PARTS





Some of the materials in this product, such as electronic components, require specialist recycling techniques.

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