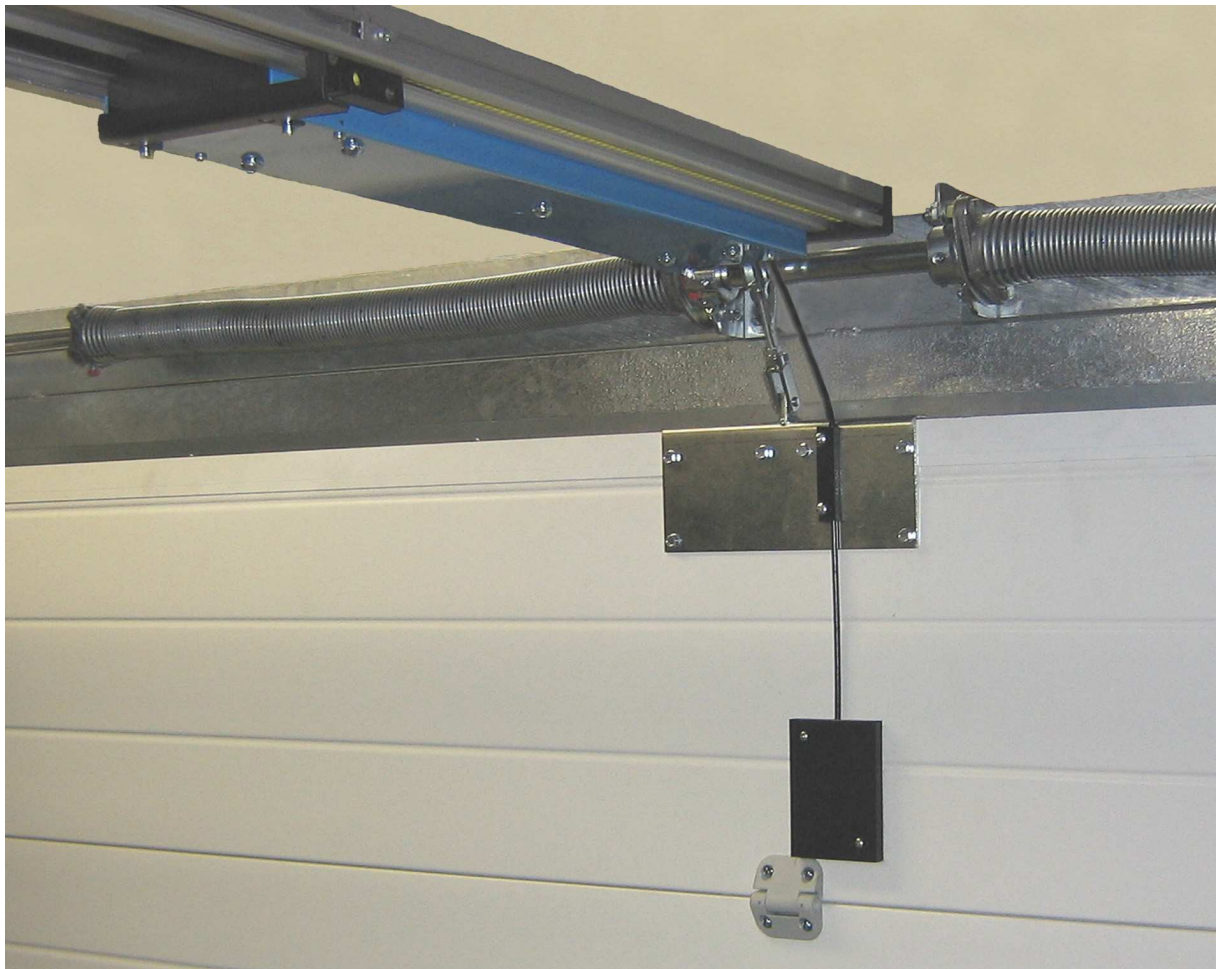


Installation Manual

DL-4



Producer Information

Actuall Doorlift Systems B.V.
Printerweg 51
3821 AP Amersfoort

Infonumber:
0031 (0)33-7074889

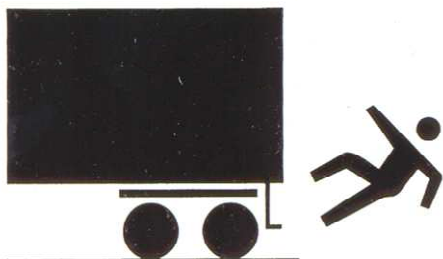


Installation Manual

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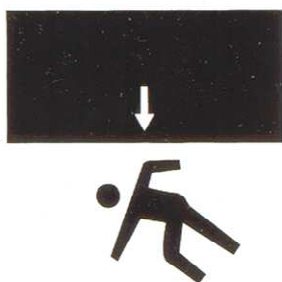
1. Safety Guidelines

Warnings



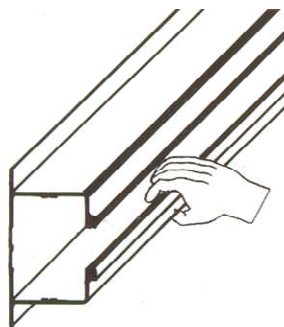
Slipping, tripping or falling on or of the floor of the lorry's goods compartment can cause injury.

Attention: Risk of injuries!



Nothing should be in the range of the shutter door when it is moving.

Attention: Risk of injuries!



Never put your fingers into the track of the door or into the profile of the doorlift.

Attention: Risk of injuries!

Safety guidelines

For problem-free operation of the Doorlift, the lorry's shutter door must always be kept in good condition.

Before using the Doorlift:

1. Check if all the shutter doors components are firmly in place. Loose parts must be fixed or replaced if necessary.
2. Check the lorry's shutter door is working properly.

When using the Doorlift:

1. No obstacles are allowed in the range of the shutter door when it is moving!
2. If the door can be locked or bolted, do not forget to unlock or unbolt it.
3. Check the movement of the Doorlift both on opening and closing. If the Doorlift runs unevenly, investigate the cause and repair it if possible.
4. Replace damaged parts as quickly as possible.
5. Recurring stoppages or problems must be sorted out as quickly as possible by people with the appropriate training. Do not attempt to resolve problems yourself if you do not have the proper training. Electronic equipment requires specialised knowledge.
6. Take care that the rails in the doors range of movement are not blocked.

After using the Doorlift:

1. The door should be closed properly before driving away.
2. Never drive with an open door; this will damage the Doorlift.



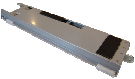



Maintenance:

1. Damaged, loose or missing parts should be repaired or replaced by skilled personnel. You should have checked the Doorlift at least every year.
2. When repairing the Doorlift you should always disconnect the system from the power supply.









Attention: Electronic equipment requires specialised knowledge!

3. Do not lubricate the Doorlift.
4. Clean using a damp cloth. Do not use any volatile substances as static electricity may ignite them and causes an explosion.
5. Use original Doorlift replacement parts.

2.1 Delivery package

Delivery size		DL-4
	Profile	3480mm profile with toothrack, spiral cable with connector, sensors with cable, endcap, sensor wire cover, screws
	Profile connectwire	10 metre cable
	Motor-unit	Automotive 2-engine unit
	Electronics	Standard with receiver for remote and connection for interior light
	Emergency unlocking	Lock with cable, plastic caps
	Mounting set shutter	Doorplate (2 eyes), connection bar

Options

	Converter	Converter 12/24-32V, 7,5/10A
	Remote control	Remote control
	Buzzer	Warningsignal, 12 or 24V
	Key switch	Key switch for dashboard, pre programmed as overright key
	Battery cable	5m 2,5mm ² or 10m 3mm ² , incl. fuseholder and fuse
	Communication cable	5 or 10 metre 3x0,75mm ² , for buzzer/+15/key switch
	PIR-sensor	Sensor for detecting movement in the load area. When there is no movement then the sensor will automatically close the door.
	Nudge switch	Elbow switch for closing the door in the dooropening.

2.3 Extra guidelines before installation

Attention: read carefully!

Before installing the Doorlift:

Shutter door

Test the door if it is running smooth when operating manual by moving the door up and down by hand. Check the bolts and nuts of the door. Test the door if it runs free. Lubricate the springs and bearings. Test the tension of the spring or let it inspect by specialised personnel.

If necessary, the toppanel of a wooden or plastic door has to be strengtened.

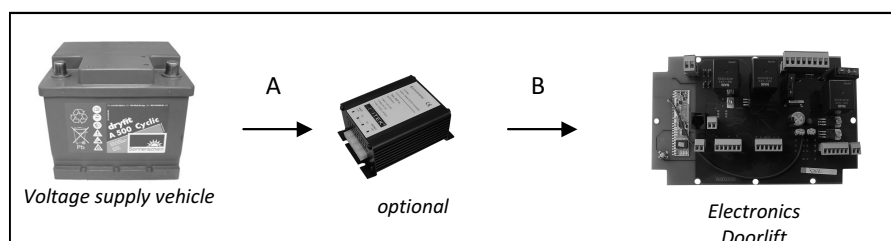


Voltage

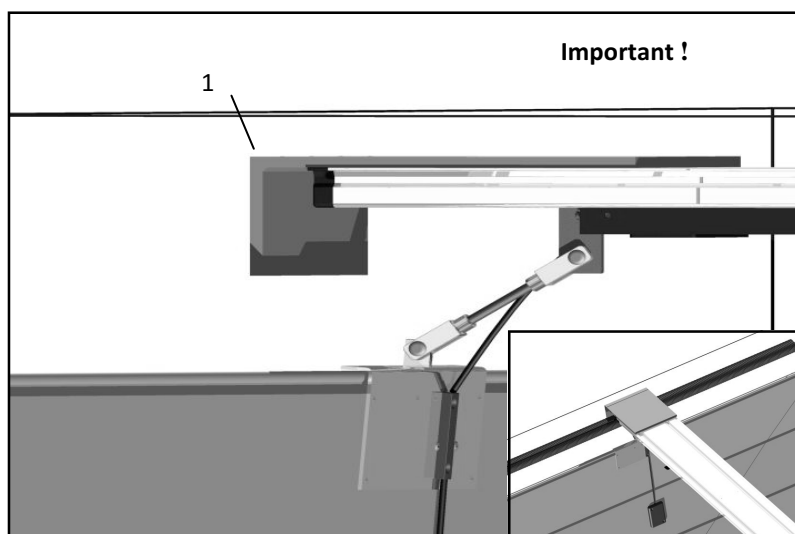
The Doorlift needs a constant voltage of 24V. This cable must be supplied by a cable of the vehicle. The cable must directly be connected to the battery and secured with a fuse of 25A or 30A. Vehicles with a standard voltage of 12V need a converter.



Use the following cable diametres:



Voltage battery	"A" length (m)	Cable to converter (mm ²)	Converter	Max. "B" length to electronics (m)	Cable from converter to electronics (mm ²)
12 V	< 5	2,5	12 tot 32	10	2,5
	< 10	3	12 tot 32	5	2,5
	< 15	4	12 tot 32	1	2,5
24 V	< 10	2,5	24 tot 32	5	2,5
	< 15	3-4	24 tot 32	1	2,5



Important !



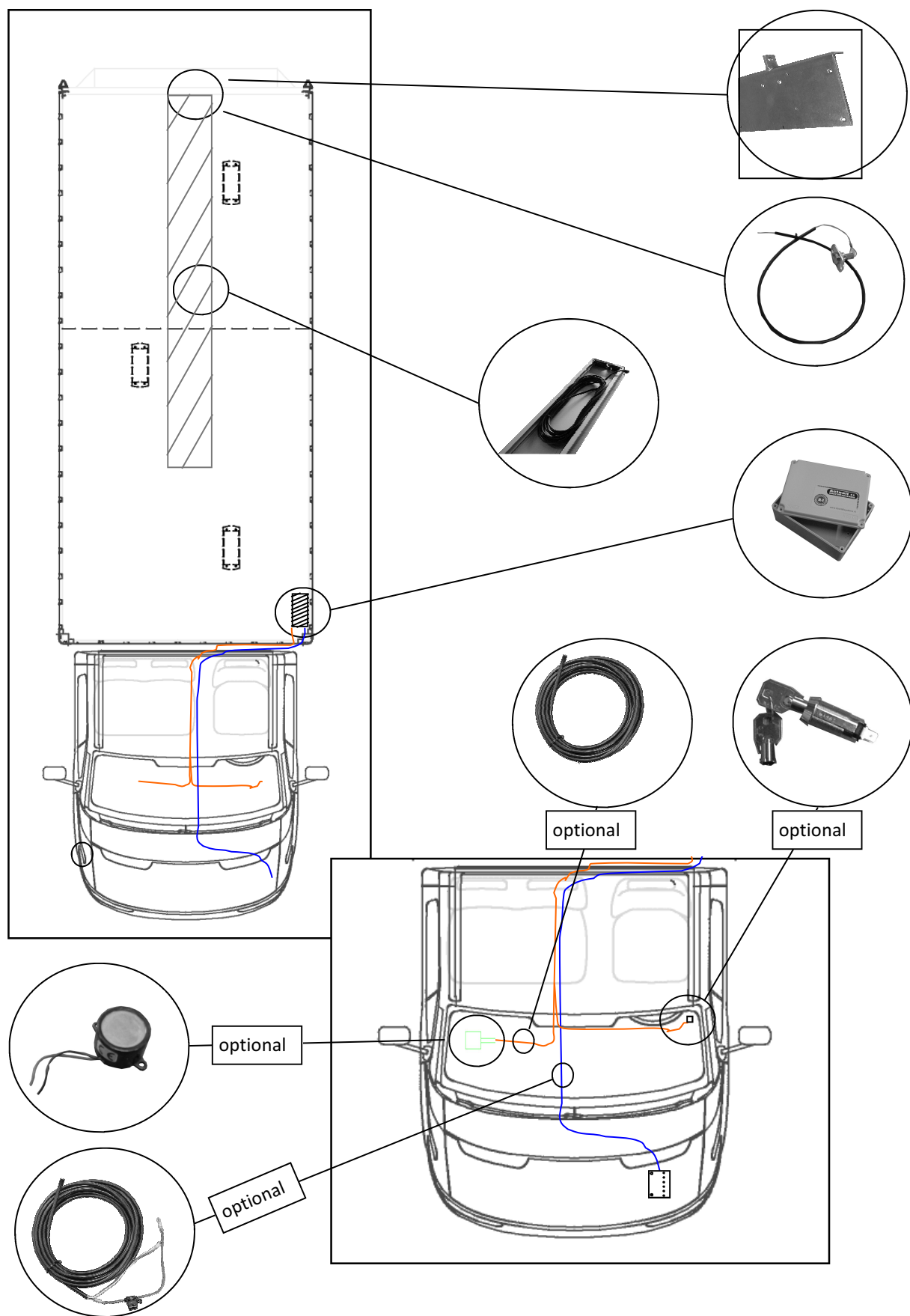
At a roof with roofbeams you have to make a strengthening plate (1). This is to take pressure off of the roof.

This plate must be attached to the header at the back.

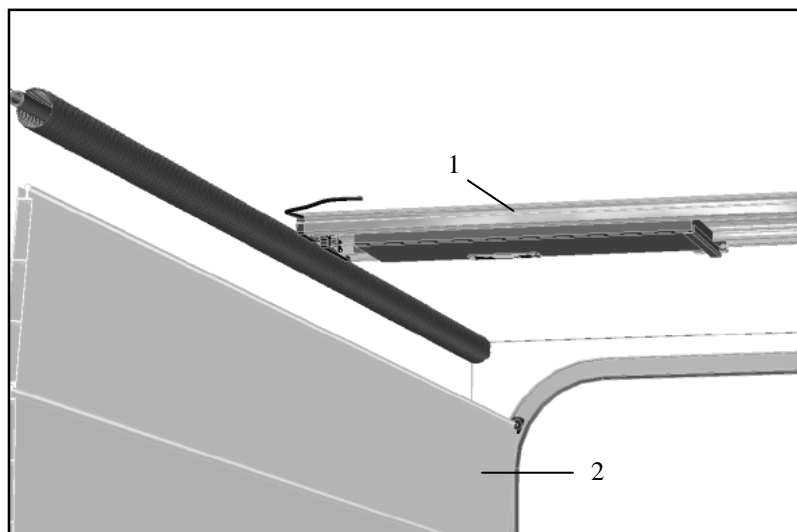
The forces upwards can get until 1000N

Mechanical installation

3.1.1 Installation example



3.1.2 Mounting profile

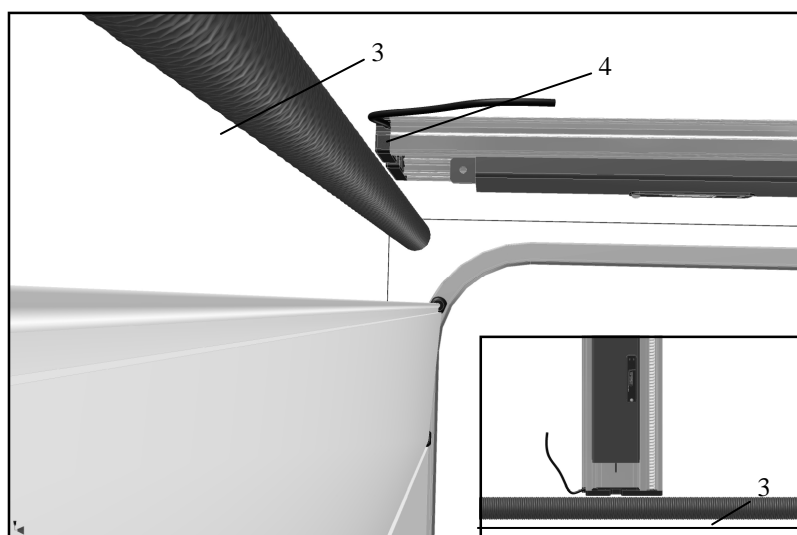


Before installing, the shutter door must be installed properly and can be operated manual.

Place the profile (1) in the middle of the door (2) and mount it to the roof

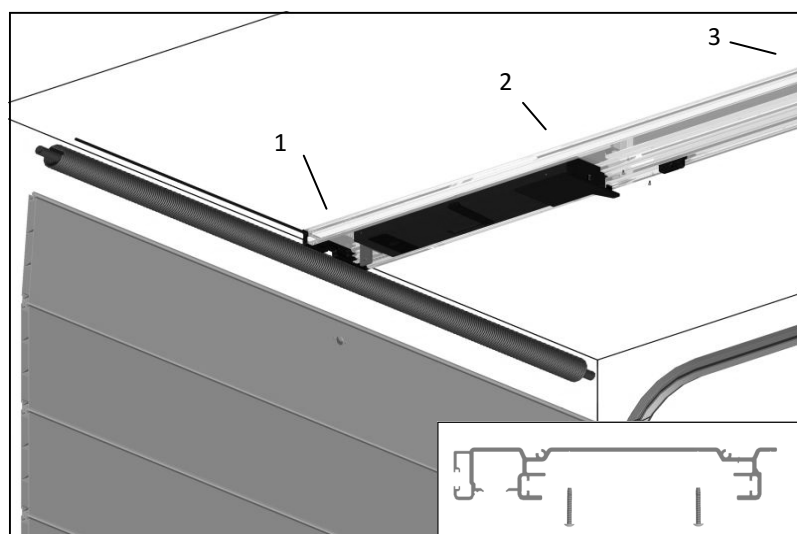


Don't forget the adjustment when there is a roof with roofbeams. See page 5.



The front of the profile (4) must be mounted about **100mm** from the header. Take a decent distance from the spring.

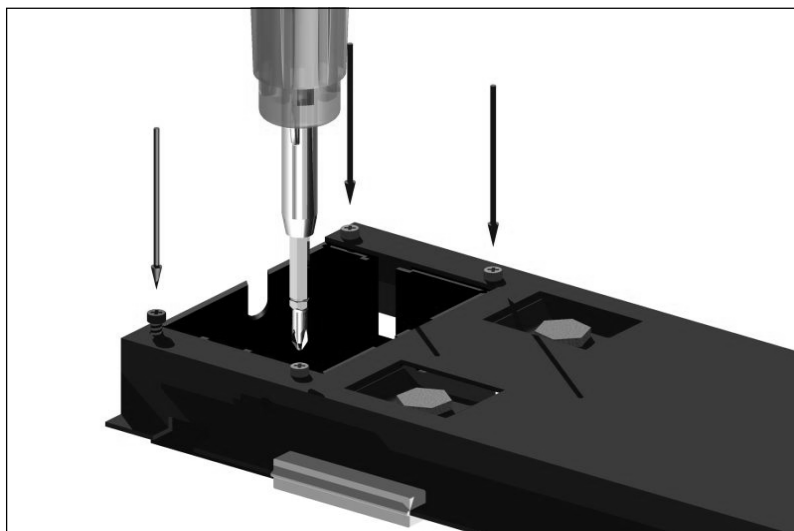
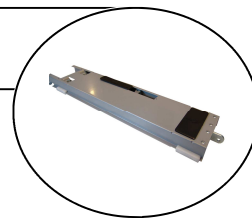
At a smooth plywood roof we suggest to glue three steel plates at the roof whereupon you can mount the profile. Of course it is the choice of the mechanic and can the manufacturer not take any responsibility for that.



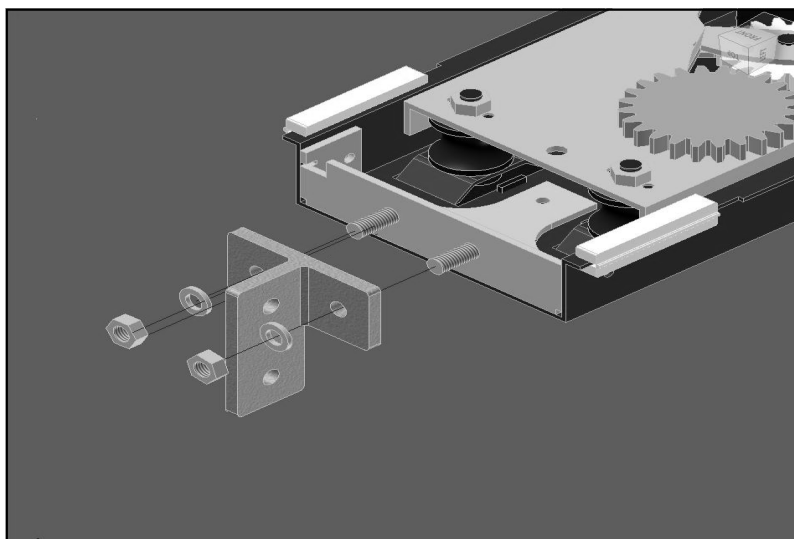
Mount the profile at least at three places to the roof. At position 1 at least four times in the first 200mm of the profile. Then two times in the middle and two times at the end of the profile.

Use only flush rivets or flush screws for mounting the profile. At may stick not more than 1,8mm above the profile.

3.1.3 Mounting motor-unit

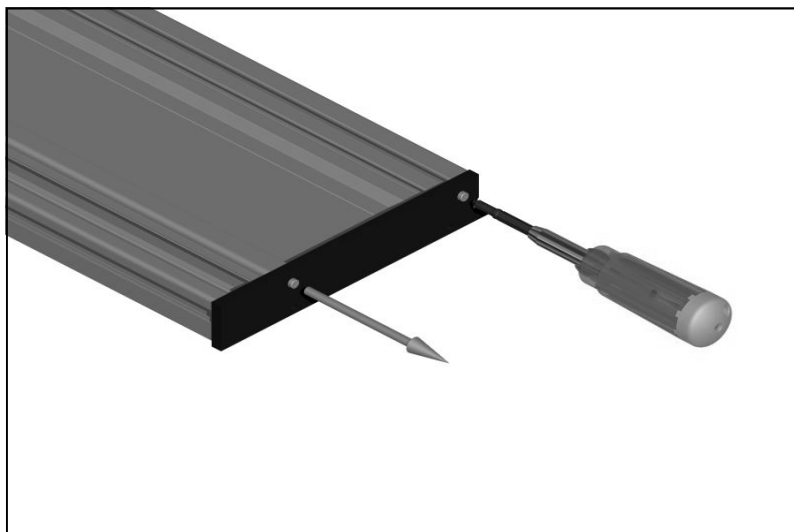


Put the filling plates in the holes in the box of the motor-unit. Mount the box to the motor-unit by using four of the eight screws.

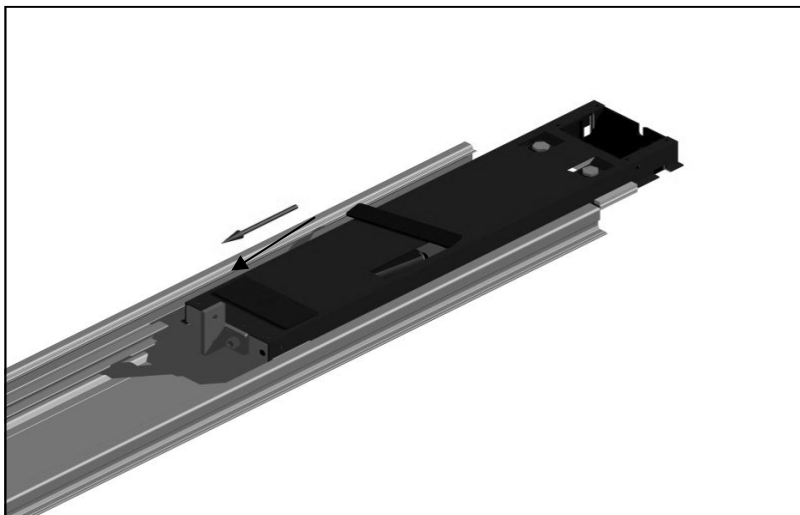


Mount the nose with the rings and nuts to the motor-unit. See picture on the left.

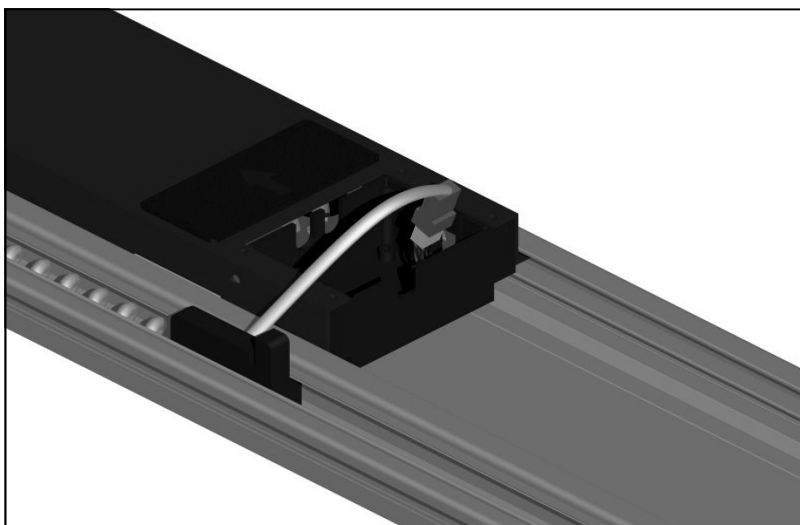
Attention: You may have to cut the nose in half. Explanation later on in the manual.



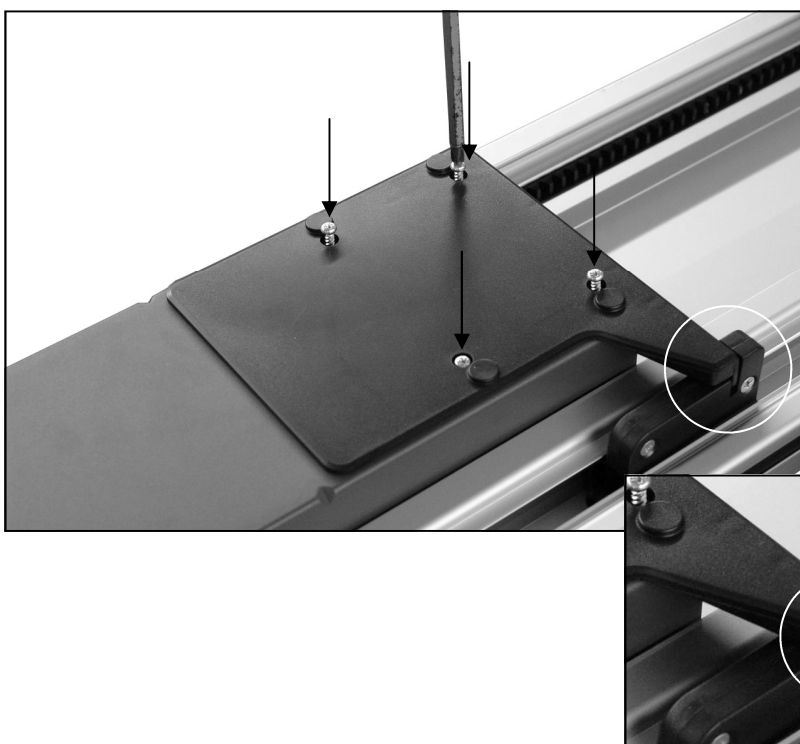
Remove the endcap of the profile.



Slide the motor-unit in the profile. Take care that the motor-unit is unlocked as shown on the left.



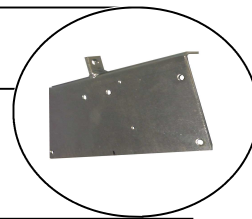
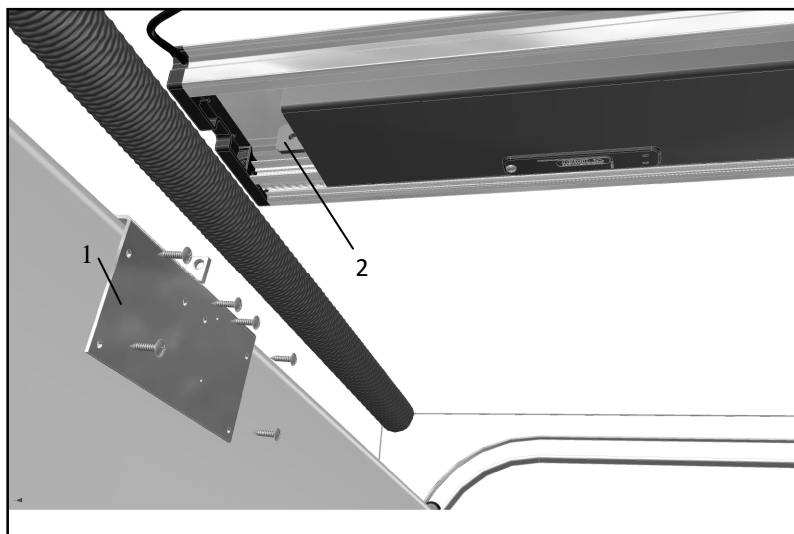
Connect the spiral cable to the motor-unit



Screw the cover on the back of the motor-unit with four screws. Take care that the cable is well fitted with the cover.

Also you have to take care that there isn't any yellow cable visible any more.

3.1.4 Mounting doorplate



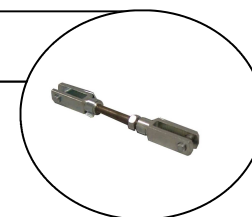
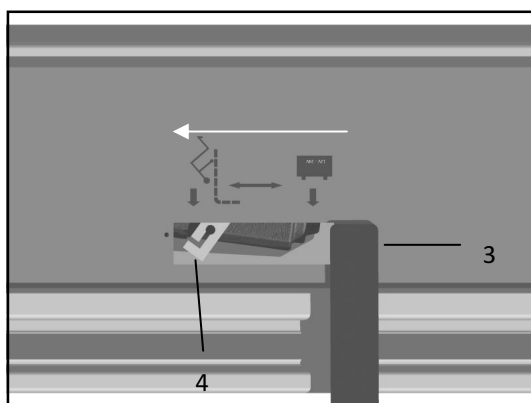
The place of the doorplate (1) has to be in line with the nose of the motor-unit (2).

The doorplate (1) has to be fastened by minimal 5 screws or rivets.



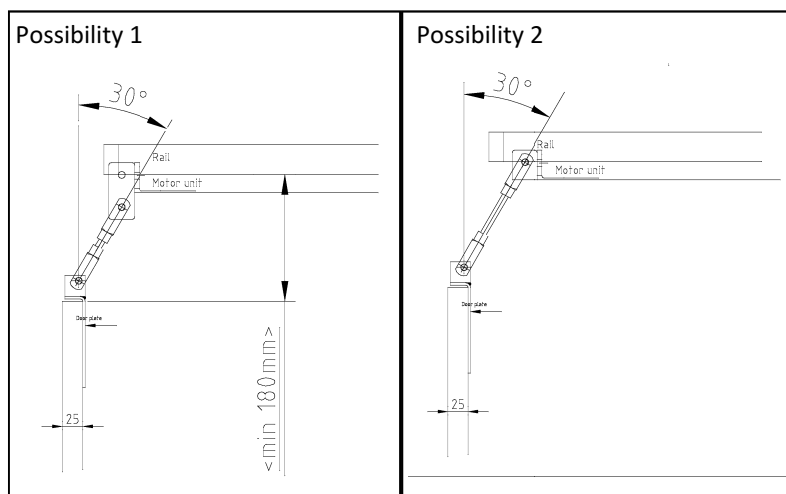
You might have to strengthen the top panel of a wooden or plastic door.

3.1.5 Mounting connection bar



Remove cover (3) on the motor-unit by sliding the cover sideways.

Pull the lever (4) forward so the motor-unit can run free in the profile.

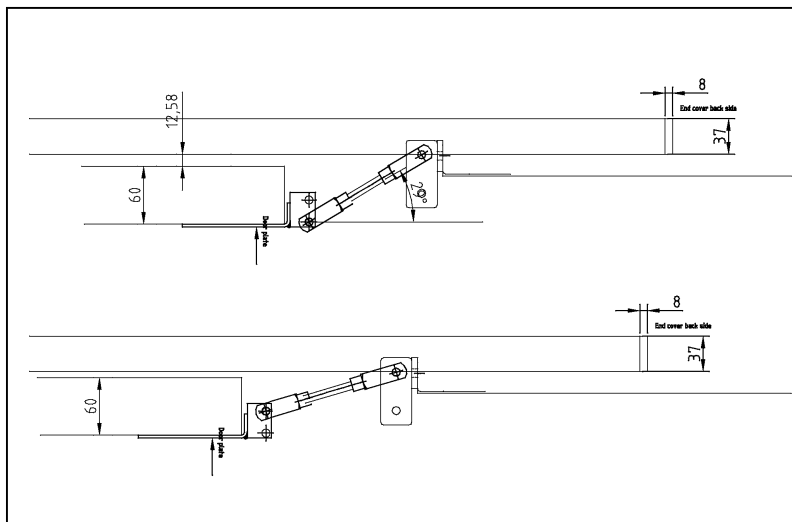


Choose the right holes for placing the connection bar.

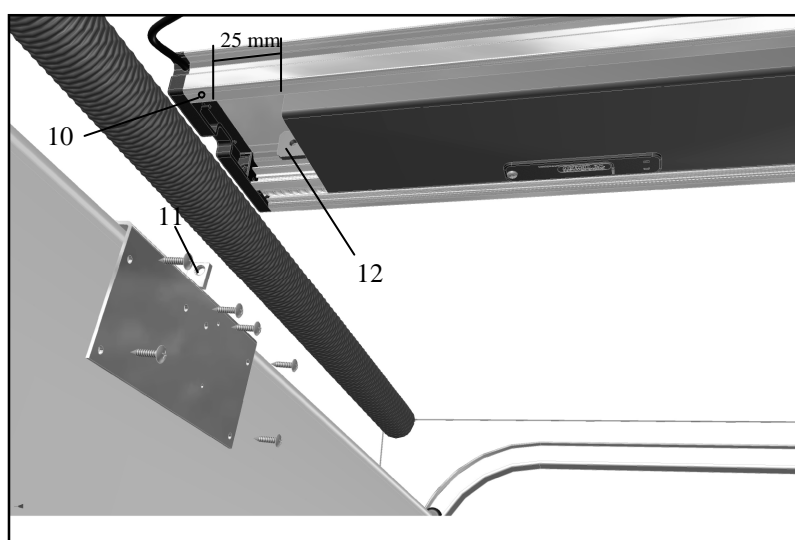
There are two possibilities to mount the connection bar. In most of the cases you have to choose option 1. When the distance between the door and the motor-unit is less than 170mm you have to cut the nose in half and use the other eye.



It is important that the angle as shown on the drawing is equal or less than 30°.

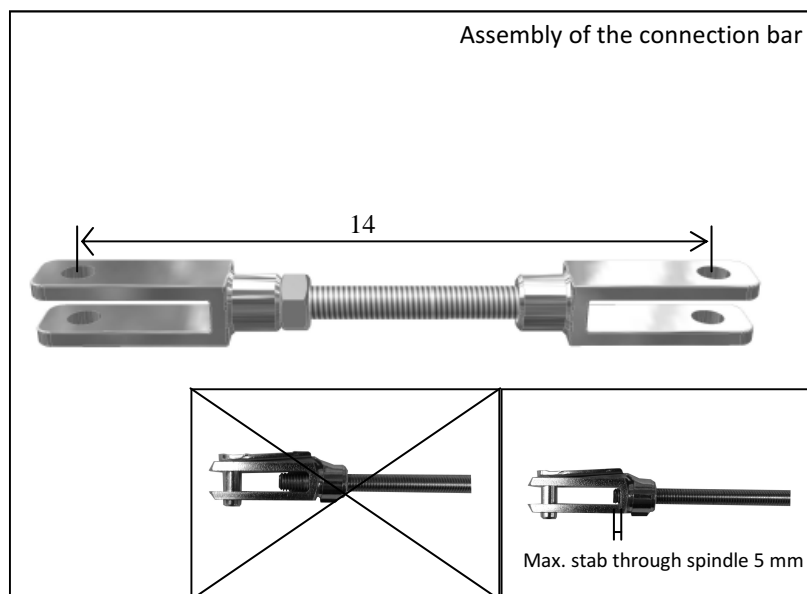


The DL-4 has a doorplate with two eyes. Choose the best configuration so the connection bar is as horizontal during moving.



Slide the motor-unit until 25mm from the endstop (10), with the door closed.

Measure the distance between the two eyes. Use the middle of the two eyes (11 and 12).

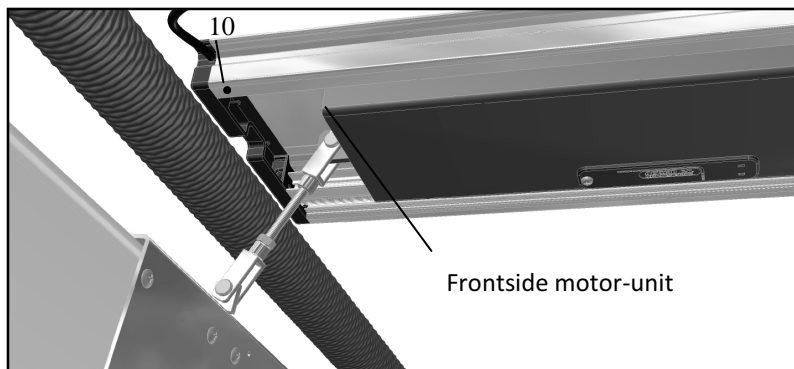


The distance of the connection bar (14) must be the same as the distance measured between points 11 and 12.

The size of the spindle is distance 14 minus 45mm. Make the spindle the right length and assemble the connection bar.

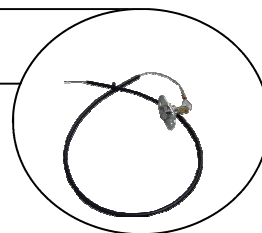
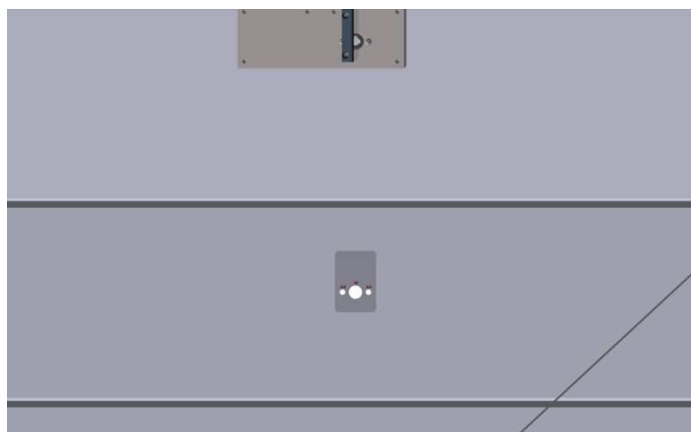


The maximal stab through of the spindle is 5mm.

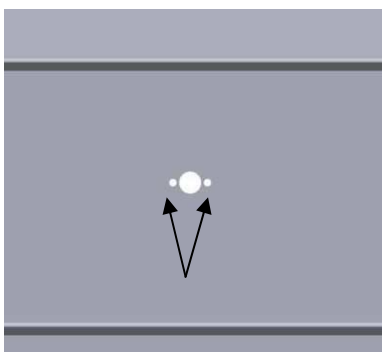


Mount the connection bar between the motor-unit and the doorplate. Lock it with the fork joints.

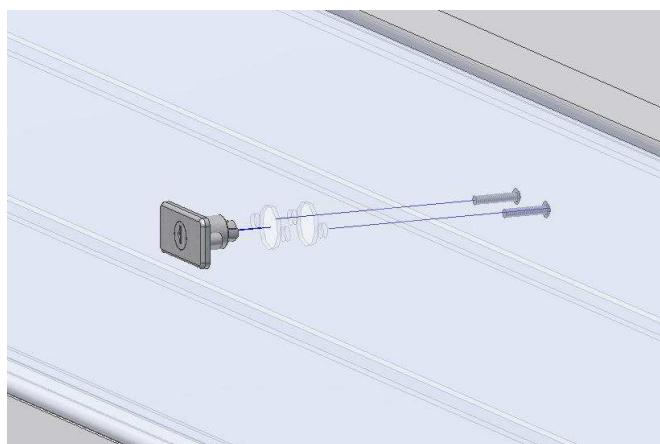
3.1.6 Mounting unlocking



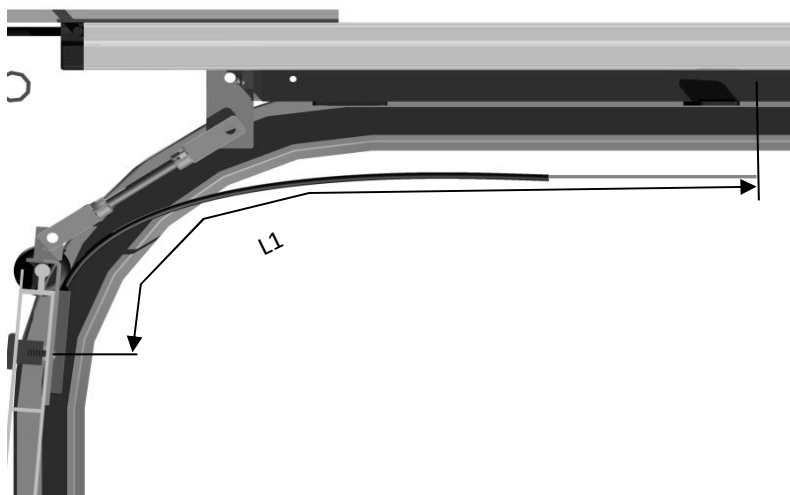
Attach the provided sticker on the door at a height such that the lock from the outside can be operated
Drill the holes as shown on the sticker.



Drill the two mounting holes on the outside to $\varnothing 8$, 5mm

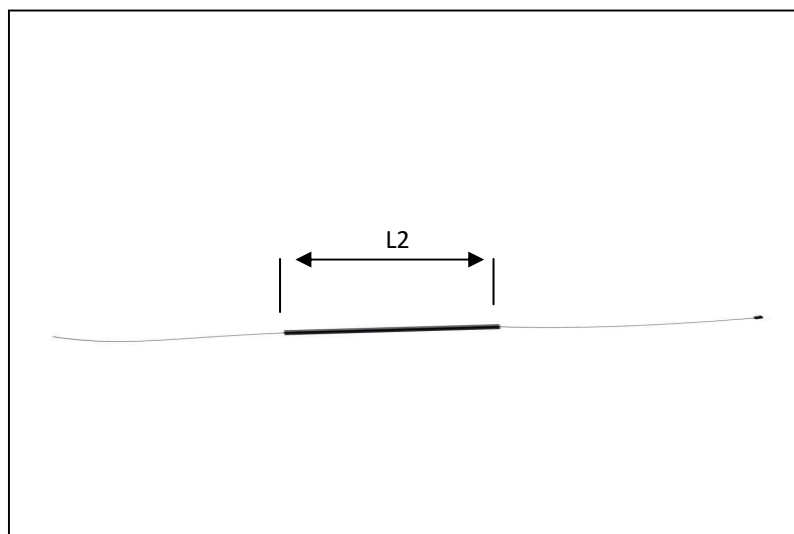


Insert the lock and secure with two bolts M5, make sure the bolts are secured. Length depends on the thickness of the door. The holes at the lock are 10mm deep



Place the lock in the element and take the key out.

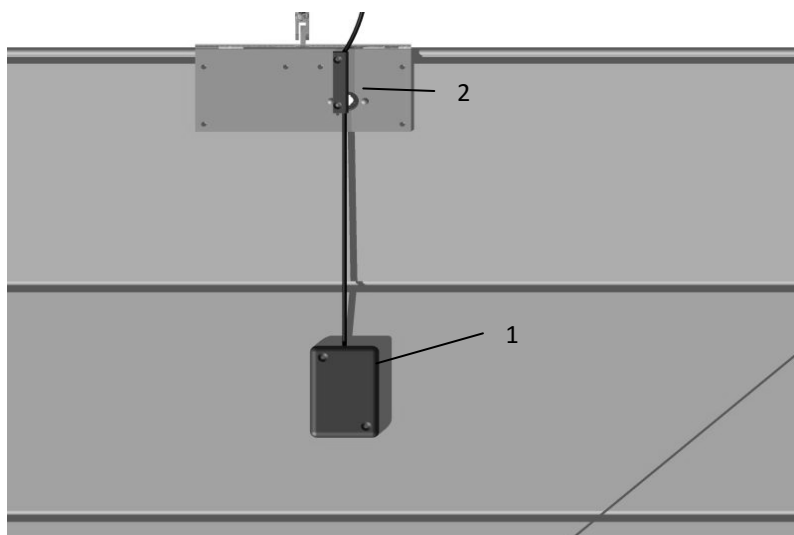
Enter the unlocking cable in the motor unit and determine the length (L1) to the lock. The steel cable should run from the lock to just past the slot in the motor-unit.



The length of the black outer jacket of the release cable can be calculated as follows:

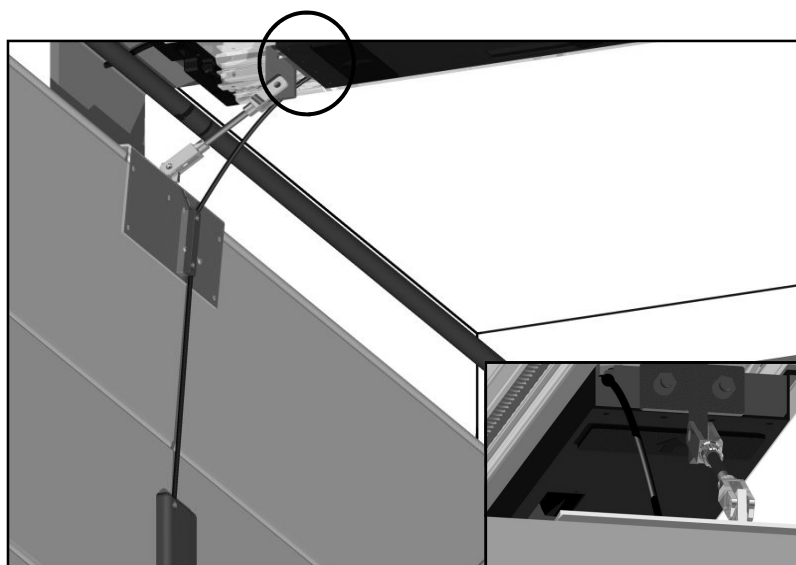
$$L2 = L1 - 150\text{mm}$$

Slide the end of the cable into the slot and secure it, use the supplied allen key.

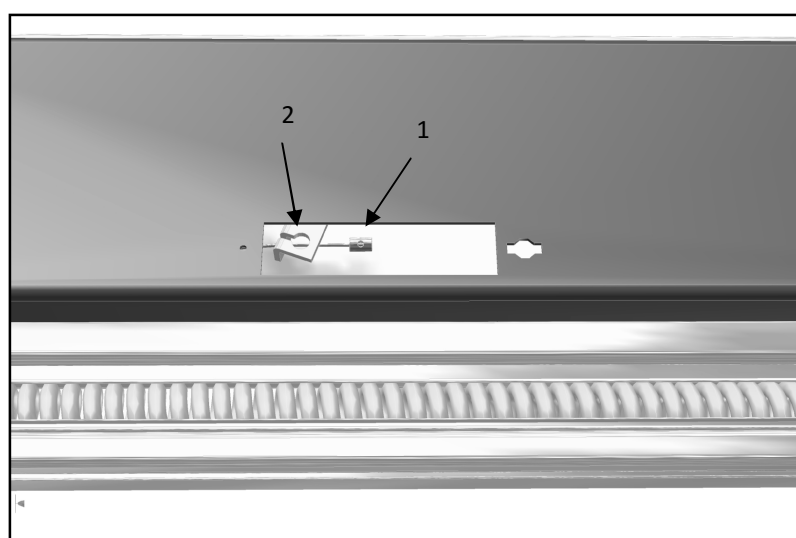


Install the covers (1) on the lock on the inside side door.

Mount the position holder (2) for the cable.



Feed the cable into the front of the motor-unit and make sure it ends at the lever.



Enter the end of the cable (1) through the hole (2) of the lever.



Install the cover on the outside of the lock. Use self tapping screws 4.2 x16mm

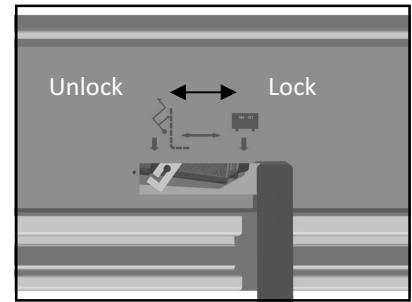
3.1.7 Mounting/dismounting motor-unit

Dismantling motor-unit

1. Unlock the motor-unit.
2. Pull the unlocking cable from the motor-unit.
3. Disconnect the connection bar from the motor-unit.
4. Remove end cap from the profile.
5. Remove the spiral cable from the motor-unit.
6. The motor-unit can now be taken out of the profile.

Mounting motor-unit

1. Insert the motor-unit in the profile.
2. Do everything in the reversed way as dismantling the motor-unit.



Electrical installation

3.2.1 Voltage supply

Voltage:

The Doorlift needs a constant voltage of 24V. This cable must be supplied by a cable of the vehicle. The cable must directly be connected to the battery and secured with a fuse of 25A or 30A. Vehicles with a standard voltage of 12V need a converter.

Attention: You may not power the system before everything is installed in the correct way.

The power cable should always have a fuse of 25A by the battery.

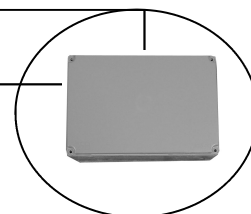
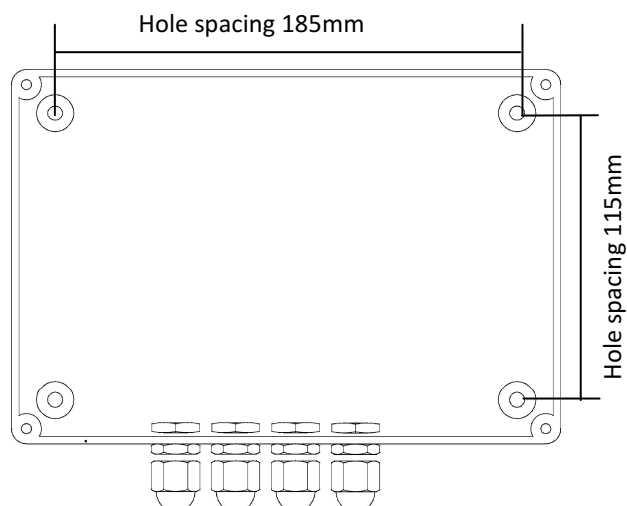
All converters have an output of 32V, whether they have an input of 12 or 24V. The converter takes care that there is more power to move the door.

Cable diametres:

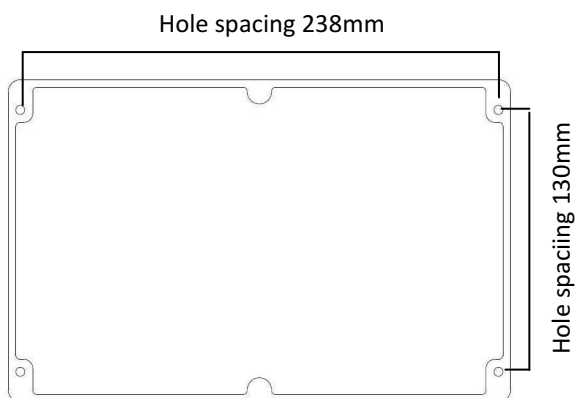
Use the diametres shown in the table on page 5.

3.2.2 Control-unit

Kast 1 (IP 55, 220x150x75mm)

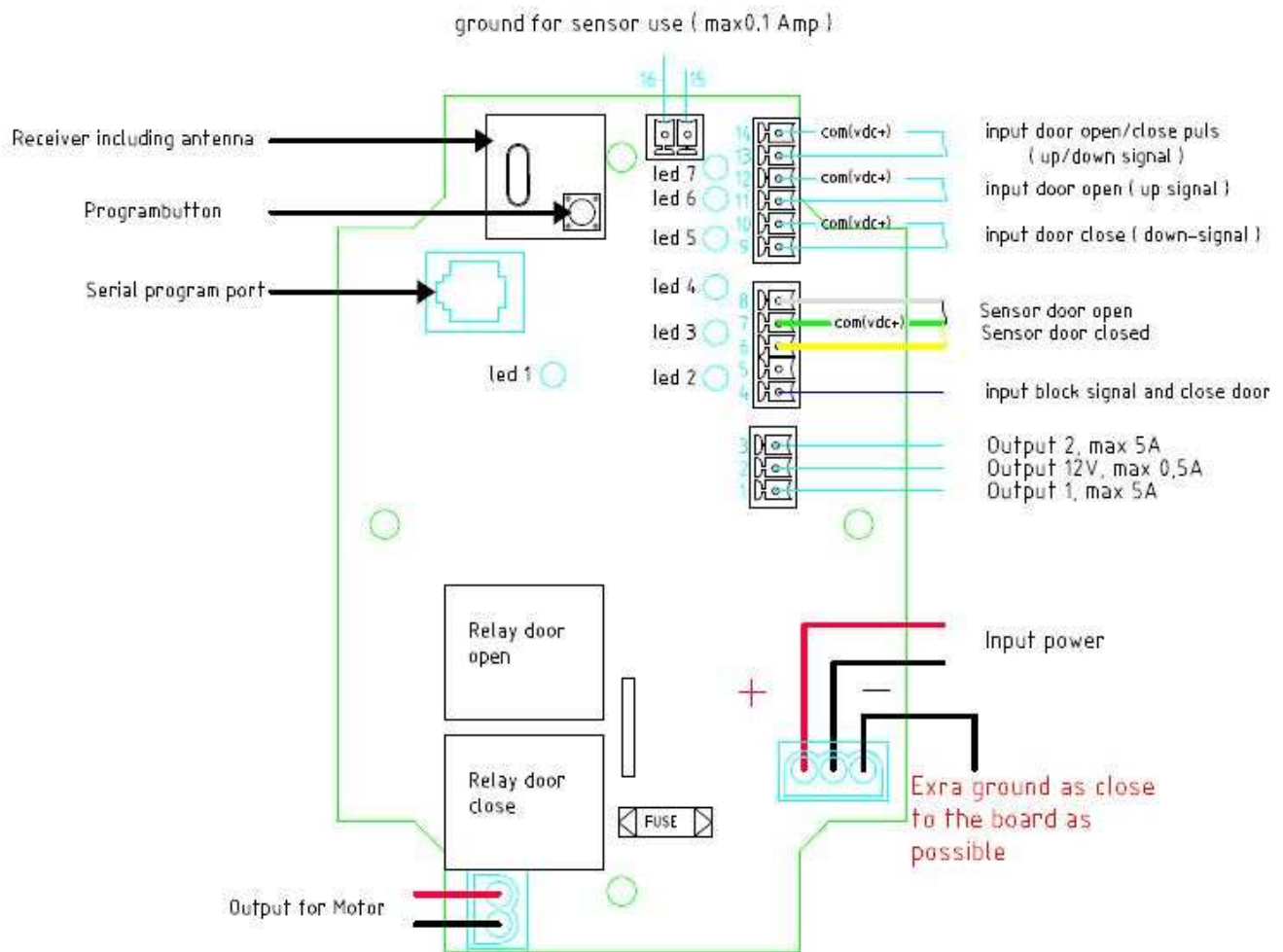


Kast 2 (IP 67, 250x160x90mm)

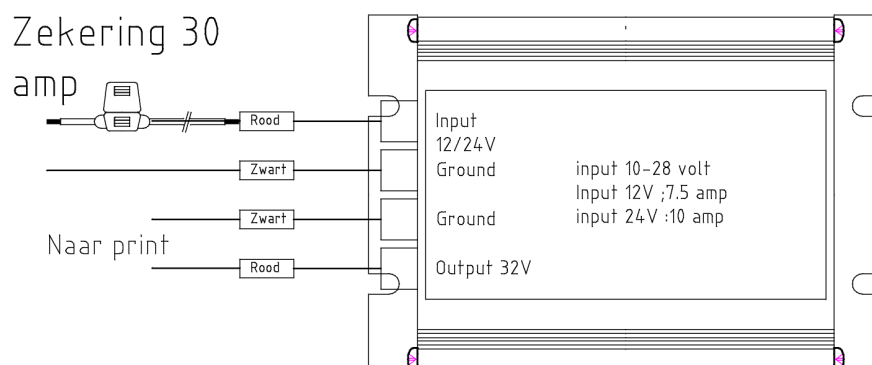


3.2.3 Wiring diagram control-unit

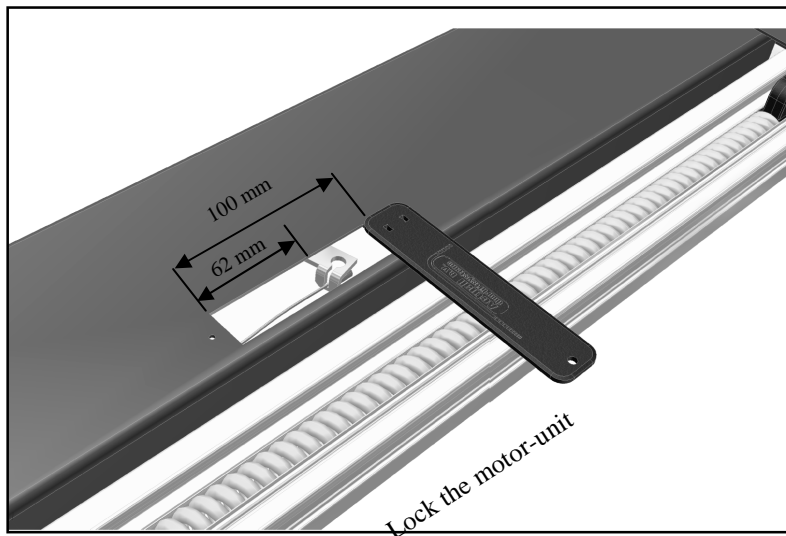
Below a standard wiring diagram of the connections on the electronic board. Often the customer demands some specific wishes for his own board and software. Due to this, the wiring diagram is probably not the same as your board. For your own wiring diagram you have to look at the cover of the box.



3.2.4 Wiring diagram converter

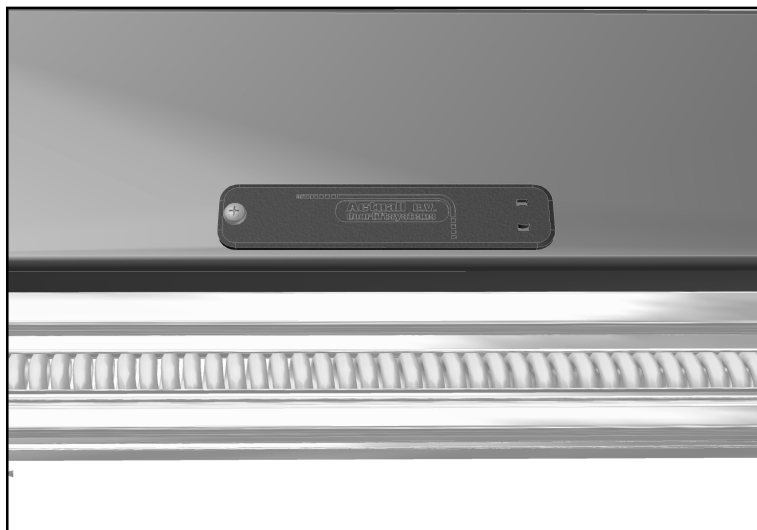


3.2.5 Positioning sensors

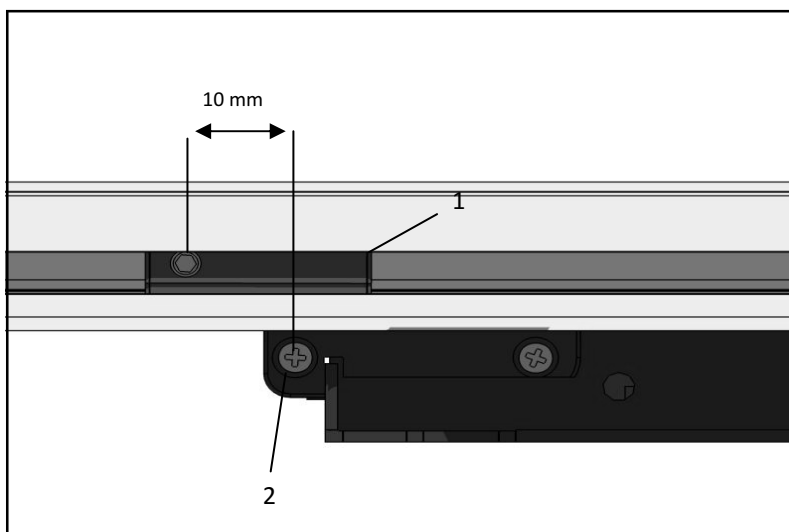


Slide the handle backwards so the motor-unit will be unlocked.

Normally you hear a firm click when you lock the motor-unit.



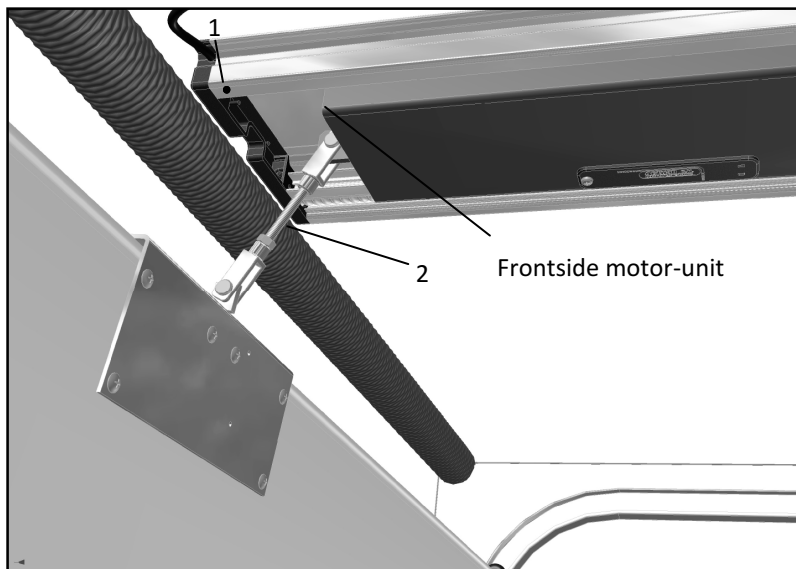
Put the cover on the motor-unit back in place.



Positioning the sensor door open. Slide the door with the motor-unit mounted to it until the door opens enough.

Position the sensor (1) just behind the magnet (2).

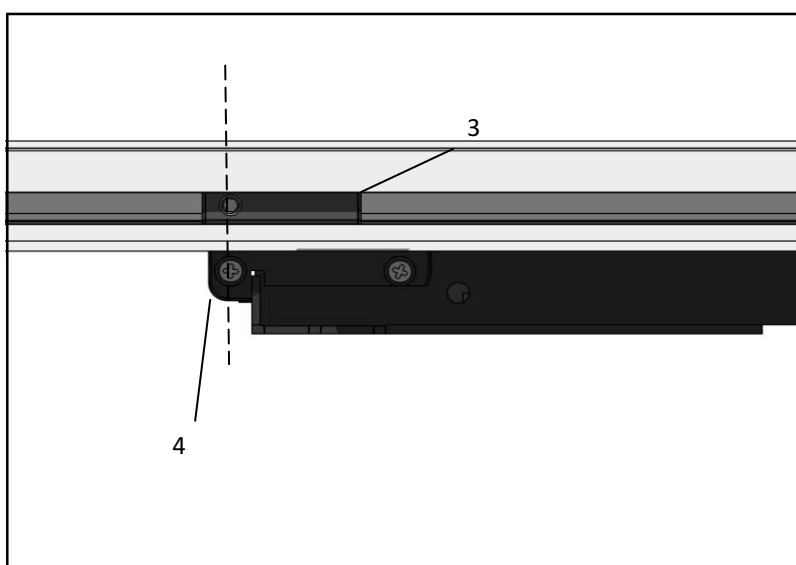
Check if the aperture height is fully free.



Is the profile mounted 100mm from the header?

Connect the power to the system and let the system close the door.

When the door is closed, the motor-unit should stand minimal 15mm from the end-stop (1). If not, then you have to make the connection bar (2) shorter or longer. See page 11.

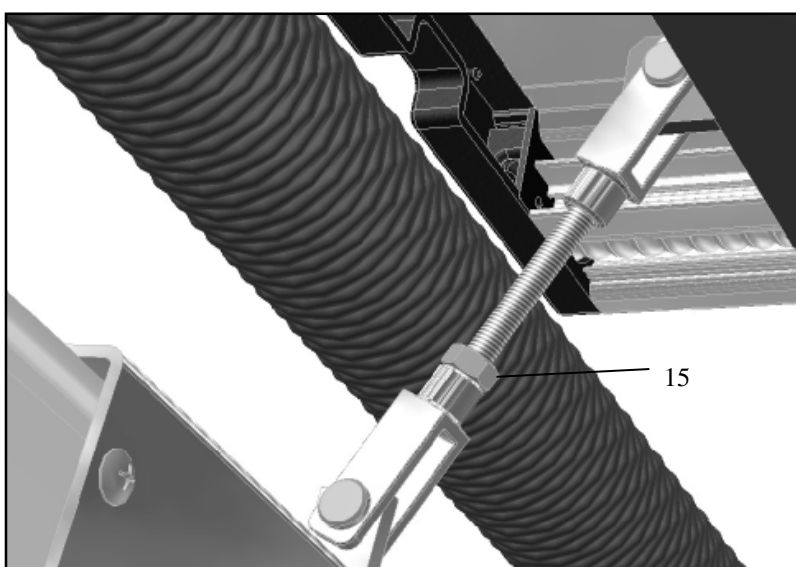


When the door is directly moving up after closing, then you have to place the sensor (3) in line with the magnet (4)



When the system is fully working, the frontside of the motor-unit should stand more than 15mm from the end-stop.

Mount the sensor wire cover at the flank of the profile.



When all adjustments are right, you have to tighten the nut (15).

3.2.6 Programming remote control

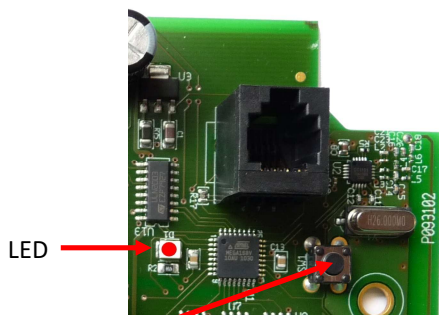
Programming new remote control

1. Push the programming button for two seconds
2. The LED will flash twice and then stay on
3. Push the remote control until the LED flashed twice
4. Wait for 20 seconds

You can now use the remote control

Clearing the memory of the receiver

1. Push the programming button for 10 seconds
2. Let go the button and the LED will light until the memory is empty



Receiver

Receiver



Remote control

3.2.8 Electrical functions

Overview LED functions on the electronic card
When the LED flashes, the function is working.

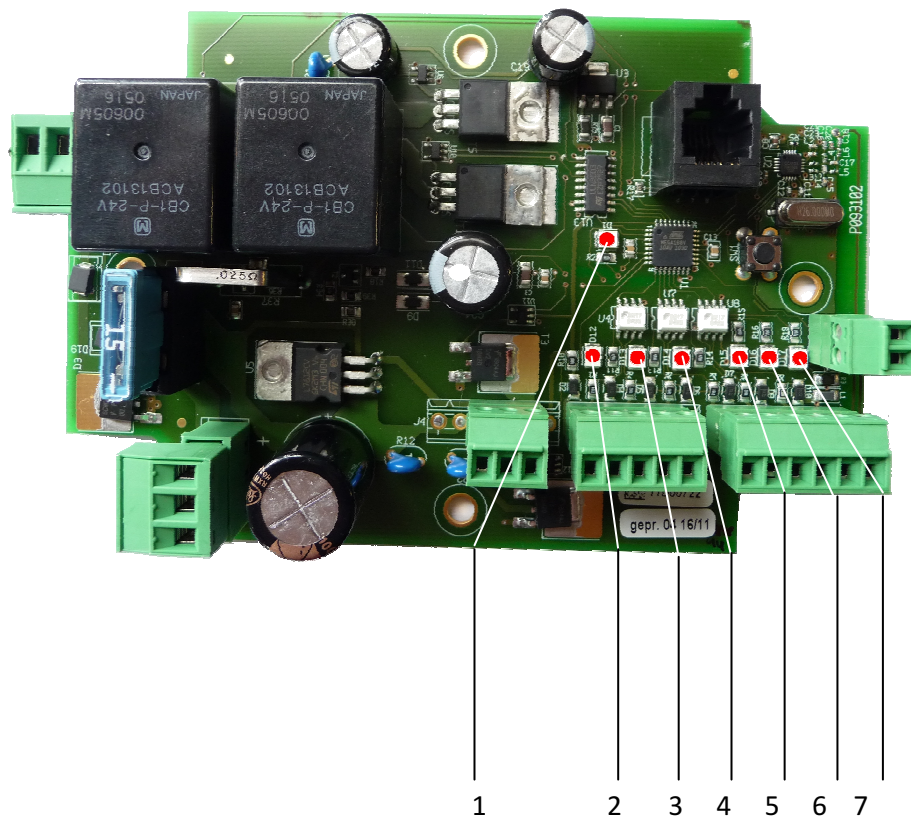
1. Processor
2. Signal +15
3. Sensor door closed
4. Sensor door open
5. Switch close door
6. Switch open door
7. Switch close/open door

When the function operates, the LED has to burn. When the electronic card is in rest then the LED's 11 and 16 are always burning.

Attention: the antenna must be conducted outside free



LED Explanation



4.1 Testing after installation

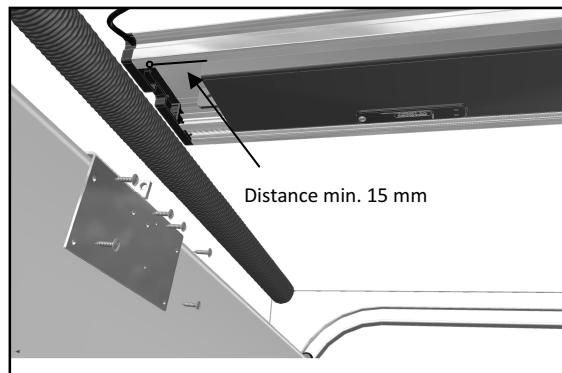


Check the following items after the installation:

- ☐ 1. Is the profile standing less or equal then 100mm from the header?
- ☐ 2. Are the fork joints running free when the shutter door is moving?
- ☐ 3. Is the motor-unit locked? See page 21
- ☐ 4. Open and close the door.
- ☐ 5. Is the voltage on the converter in working conditions min. 22V by a battery of 24V or 11V by a battery of 12V?
- ☐ 6. Check the position of the sensor door open. See page 19.
- ☐ 7. Check the position of the sensor door closed. See page 20.
- ☐ 8. Is the motor-unit standing more then 10mm from the endstop?
If not, then the system cannot close the door optimal.



Stab through max. 5mm



- ☐ 9. Is the angle of the connection bar when the door is closed between 30° and 45°? So the door will be closed as optimal as possible.
- ☐ 10. Testing of the functions:
 - ☐ • Connections battery
 - ☐ • Key switch dashboard (optional)
 - ☐ • Buzzer (optional)
 - ☐ • Connections electronic board
 - ☐ • Button - open
 - ☐ • Button - closed
 - ☐ • Remote control/receiver (optional)
 - ☐ • Emergency unlocking kit (mechanical)

5. Working with the system

There are different kinds of opportunities to operate the system. There are free places on the electronic board for optional control elements. Therefore it can be that your control element is not defined.

Functions:

1	Bottom-feed safety guard	standard
2	Mecanical unlocking	standard
3	Remote control	optional
4	Key switch	optional
5	Ignition vehicle	optional
6	Buzzer	optional
7	Switch for interior light	optional
8	Lock doors cabin	optional

1. Bottom-feed safety guard

While moving down, the systems checks if there is any overload. This happens by measuring the current.

- (1) If the system measures a value of 35 Kg or more , the safety guard will be switched on.
- (2) The door will stop and go up for half a second.
- (3) By the next command the door will move up and the safety guard will be fixed.

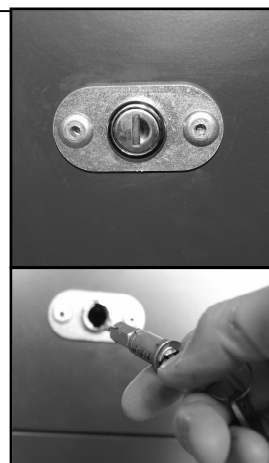
2. Mechanical unlocking

In case of a technical malfunction of the system, you can unlock the system by hand, so that it can be operated manual.

Before unlocking, check if the system isn't working at all with one of the functions.

If the door doesn't react at all at one of the functions, you can unlock the door by removing the lock in the upper panel of the door.

- (1) Put the key in the lock and turn it halfway round
- (2) Pull the lock out of the door
- (3) Pull untill the door is unlocked
- (4) Put the lock back in place to provent losing it



3. Remote control

It is possible that you have a remote control to operate your system. It works as following:

- 1 Push the button on the remote control
- 2 There will lit up a light on the remote control. This means that the remote control is sending a signal
- 3 If the receiver received the signal, the door will be activated.



Pay attention: When the central locksystem of the door is connected to the system, the remote control shall not work when the doors are still open.

4. Key switch

As back-up when the remote control isn't working.

- 1 Operate the key switch by turning the key a quarterway round and keep it there for about 2 seconds.
- 2 Turn the key back and remove it from the lock
- 3 If the board has received the signal the door will be activated



5. Ignition Vehicle (+15)

If you ignite the vehicle the following function will be activated:

- 1 A signal that will close the door
- 2 All incoming signals will be blocked to prevent that the door will be opened
- 3 The buzzer will be activated if the door isn't closed. This is an option, so it will only work when it is installed

6. Buzzer

An electrical switch detects if the door is open or closing when the ignition is active. This will result in a signal to the buzzer.

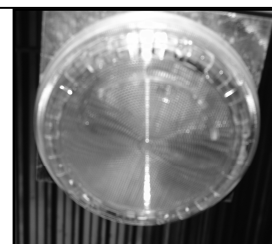
If the ignition is activated the following it will give a signal to the buzzer, together with the signal from the switch it will result in the following situations:

- 1 Buzzer active; the door is still open or it is closing. This should take a maximum of 15 seconds
- 2 Buzzer inactive; the door is closed



7. Switch for interior light

It is possible to connect the light in the cargo space to the system. If the door is open the light will burn. If the door is closing the system switches the light off.

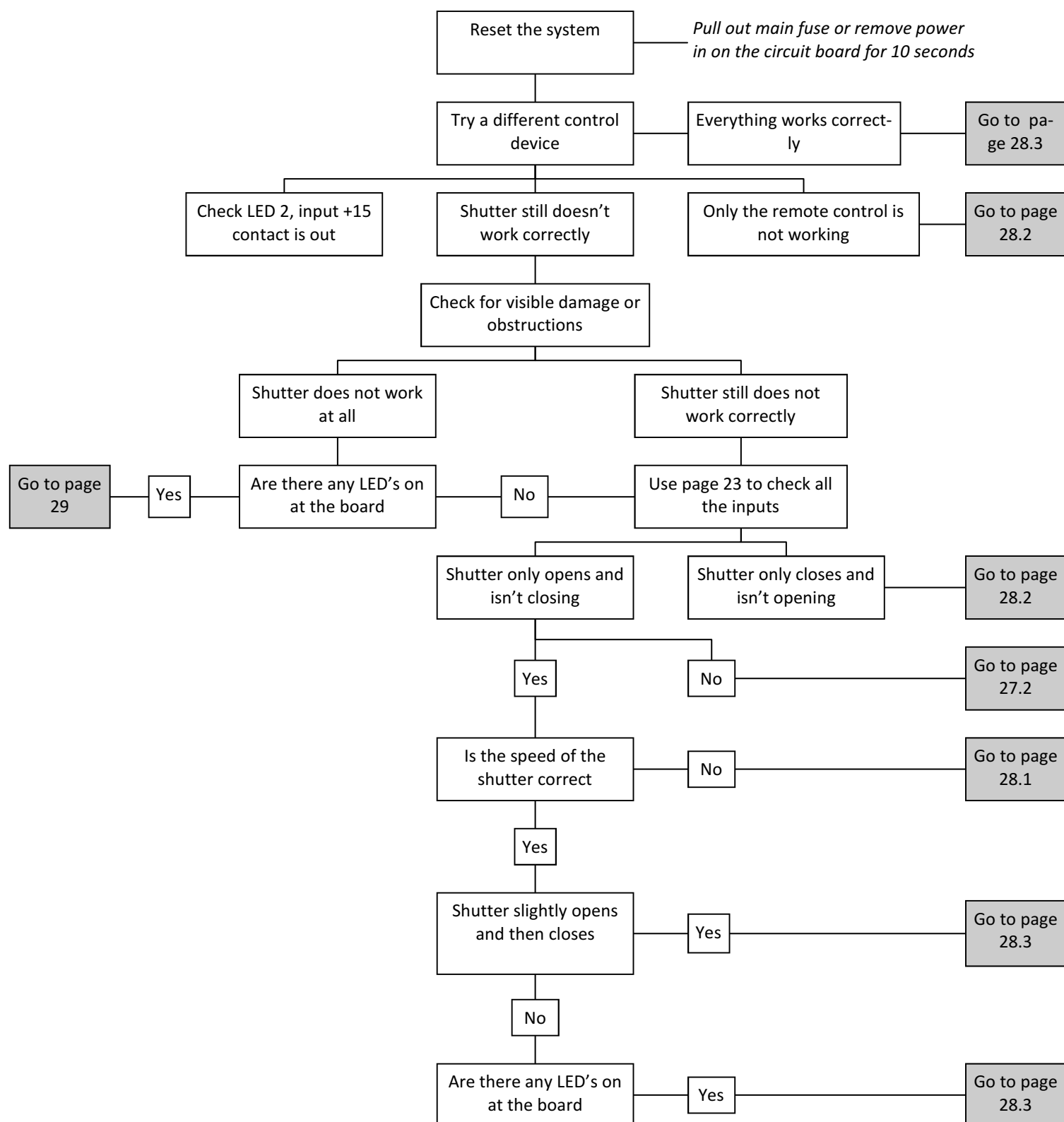


8. Lock doors cabin

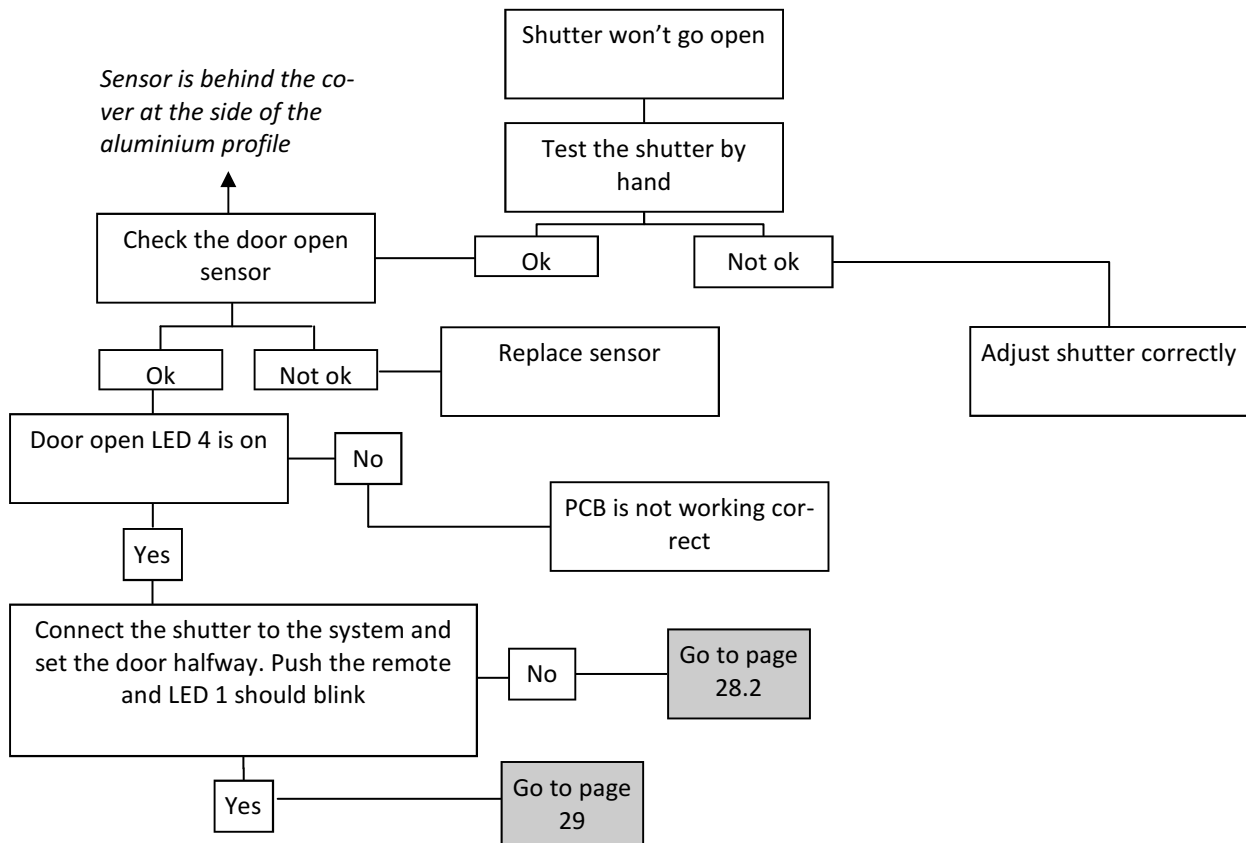
It is possible to connect the lock from the doors to the system. If the doors of the cabin are open the system will not open. If the door is open and you open the doors of the cabin, the system will close the door.

5. Diagnostic chart

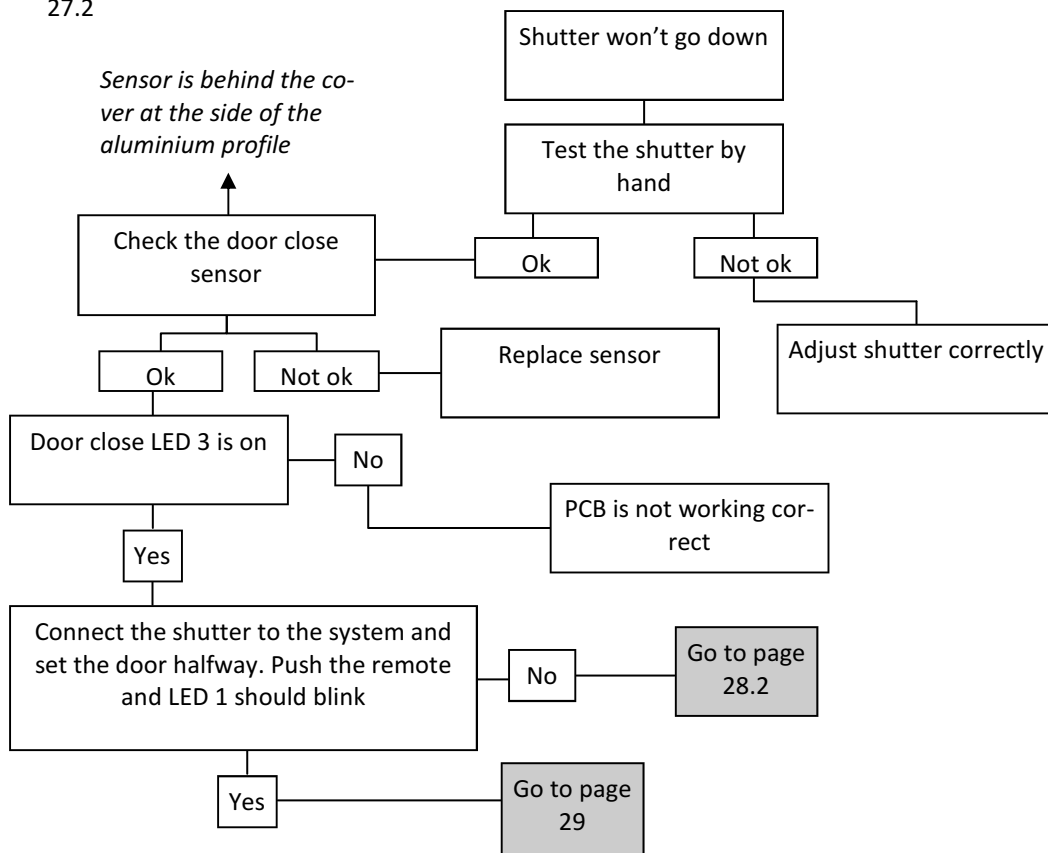
Shutter does not work correctly



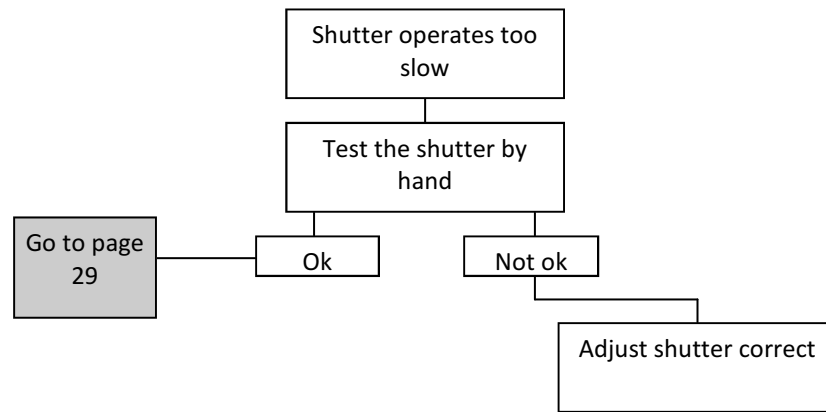
27.1



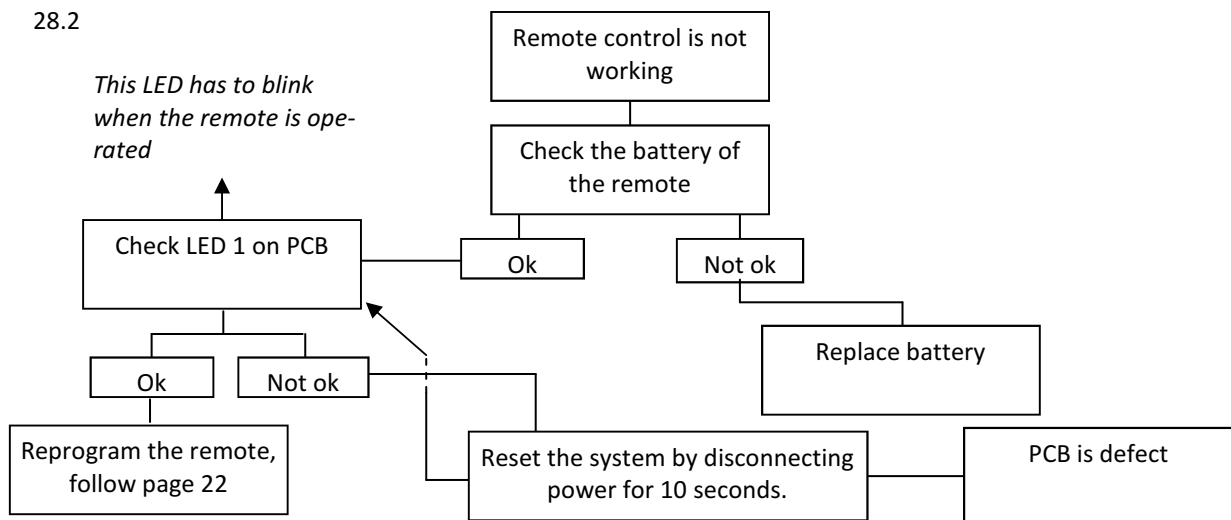
27.2



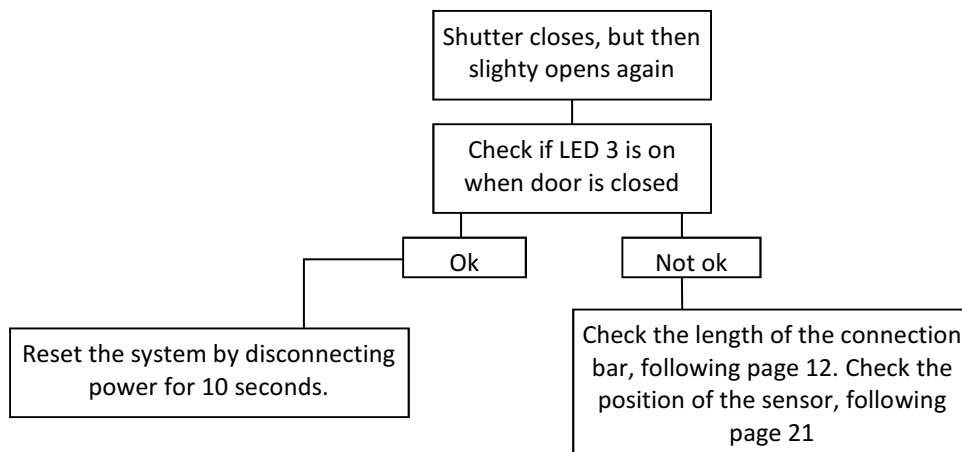
28.1

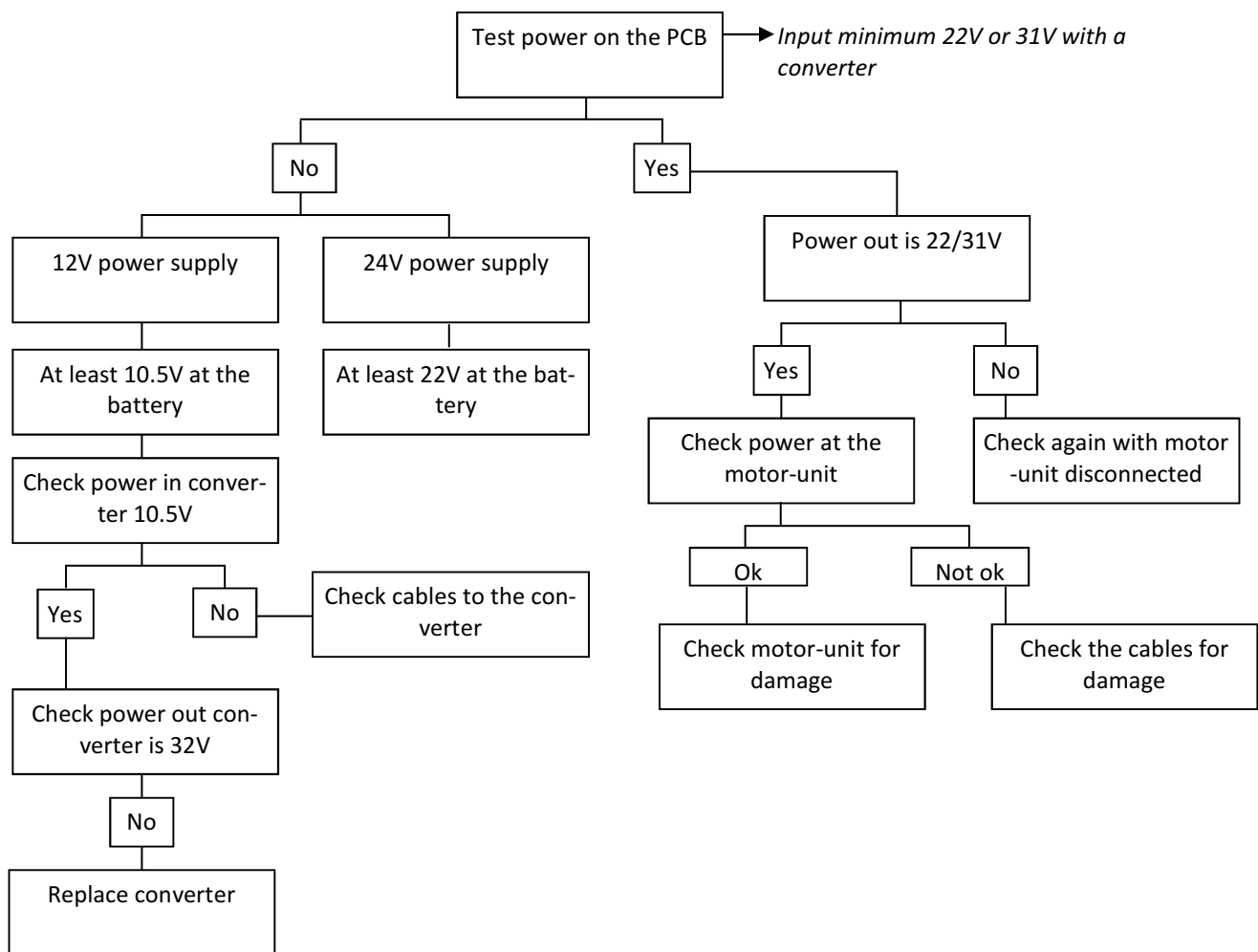


28.2



28.3





6. Inspection and maintenance

Attention:

During repairs discharge always the battery cable.

For a trouble free application, inspection once a year is necessary.

Check following items:

- Are all parts still in place and mounted proper;
- Damaged, lose or lost parts must be by authorised persons repaired or replaced;
- If the electrical connections are not been damaged;
- If the fuse at the battery is not rust (replace if necessary);
- When profile and cupper lines (optional) are filthy, then should they be cleaned with a degreaser;
- The mechanical unlock must be tested and greased.

More information: see maintenance shutter door



7. Technical specifications DL-4

Description	DL-4
System	2 motor drive
Material	Aluminium, Steel and Synthetic material (RoHS free)
System length	Length 3500mm Height 45mm
Shutter height (max.)	2600mm
Strength (max)	Electric <= 50Kg
Total weight	± 21Kg
Voltage	24/32V +/- 10%
Speed	Non load ± 175/195mm/s Loaded ± 165/185mm/s
End switches	Reed contact/magnet
Current	± 5A*
Duty cycle	20% (2 min. on/8 min. off)
Life time	200.000 cycle
Maintenance	At least once a year
Emergency unlocking device	Manual operating possible
Bottom safety guard	Yes
Control options	Switches/Transmitter
Buzzer	Warnsignal 12 or 24V
Sound level	< 50 db (A)
Environmental temperature	-25 till 70 °C
Permitted air humidity	< 50%
Recognition	CE

* Current peaks while opening and closing possible until 30A