BETAFENCE

MOTORISED CANTILEVER SLIDING GATES

Robusta® Bekamatic® SC & SC-27FD

INSTALLATION MANUAL

Ed. May 2016 ENGLISH

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1. Guidelines for installation

- A licensed technician or an installer who have had adequate product training by Betafence should only install the gate.
- The integration of the gate in a fence may not create additional dangerous situations. Please read carefully the warning document and consider the integration examples in the document package delivered with the gate.
- The connection to the electrical power supply must be executed by a qualified technician and according laws and standards on electrical installations that are applicable at that time.

2. Guidelines for gate lifting

- Gates are delivered completely assembled to the construction site.
- Lift-up points for the unloading and positioning during the installation

- The gate may only be lifted with the right equipment for manipulation and sufficient dimensioned for the weight. By preference use flexible lift ropes with sufficient lifting capacity.

3. Foundations

- Foundations prepared according to the corresponding drawing.

  - For standard range of gates see page 5 and 6 for the drawings and see page 7 for the dimensions.
  - For all non standard executions and gate combinations please consult the special foundation drawing supplied with the gate.
  - The gate may not be installed following the slope of the construction site. Make sure that the foundation for the lock post is at the same level as the foundation for the guiding post.
  - 1 duct for the connection between the power source and the guiding post of the gate.
  - Do not put signal cables in the duct for power supply! Install an extra duct between the gate and the point of operating.
  - 1 duct for the cable connections between the guiding post and the lock post.

- Quality of the concrete B25 = cubic pressure resistance 25 N/mm^2.

- Minimum 2 flexible ducts, minimum Ø 60 mm, for electrical cables, at the position of the guiding post:

  - 1 duct for the connection between the power source and the guiding post of the gate.

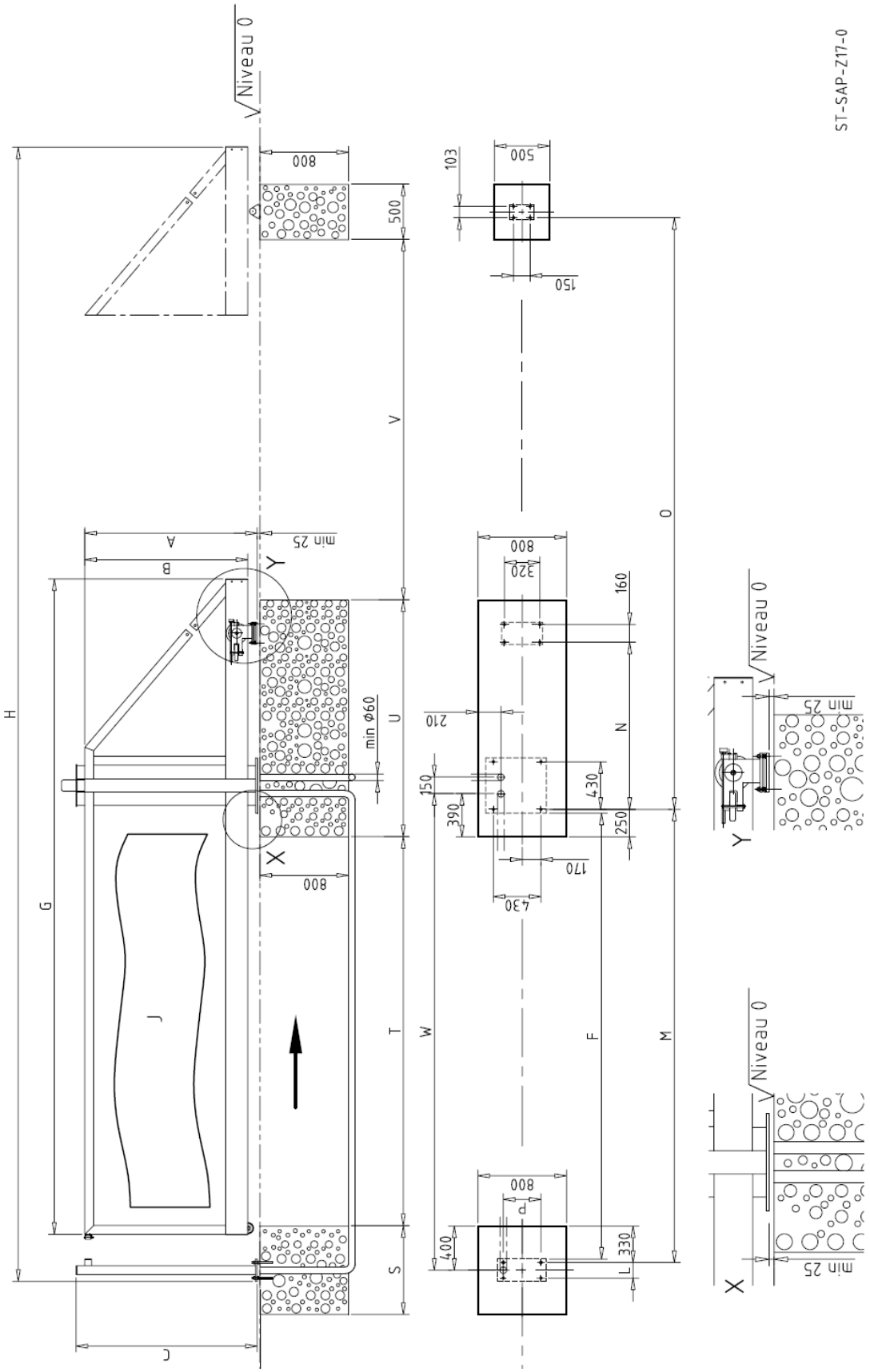
  - DO NOT PUT SIGNAL CABLES IN THE DUCT FOR POWER SUPPLY! Install an extra duct between the gate and the point of operating.

  - 1 duct for the cable connections between the guiding post and the lock post.

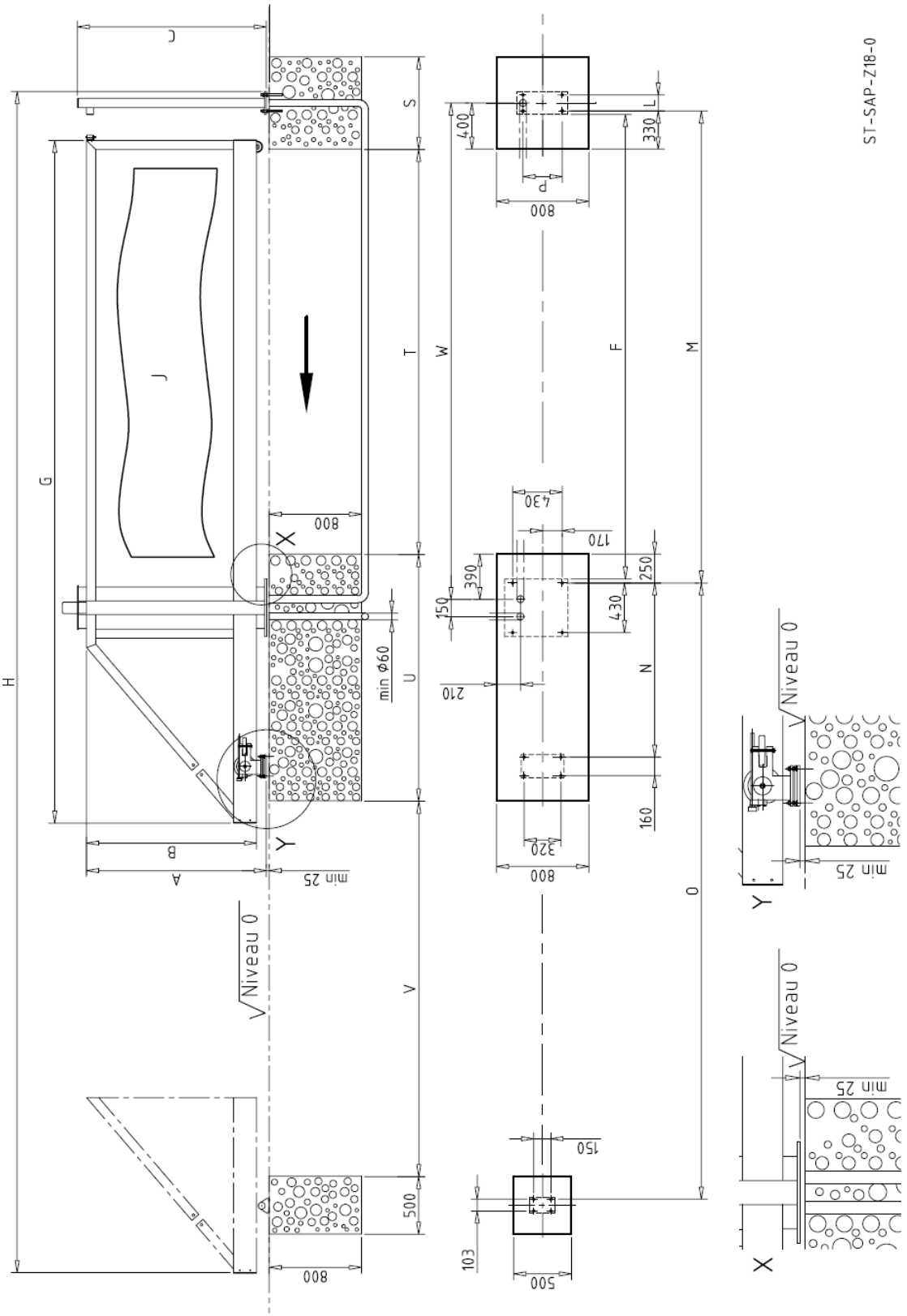
WARNING!

THE FOUNDATION PLANS PROVIDED ON THE NEXT PAGES SERVE ONLY AS AN EXAMPLE! ALWAYS USE THE PLANS PROVIDED WITH THE ORDER DOCUMENT.

3.1 Gates opening to the right



3.2 Gates opening to the left



4. Preparations before gate installation

4.1 Required fixation material

Chemical anchors M16 x 250 mm (minimum 125 mm anchor depth and minimum 100 mm above Finished Ground Level).

For the connection of:

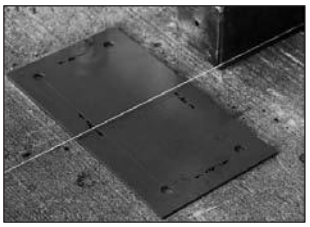
- Guiding post (4 pieces)
- Lock post (4 pieces)
- Rear guiding roller set (4 pieces)

Chemical anchors M10 x 200 mm. 4 pieces for the connection of the support roll for the gate open position.

WARNING!
DO NOT USE MECHANICAL ANCHORS AS THEY ARE NOT SUITABLE FOR THIS APPLICATION!

The max distance between concrete and bottom plate of the gate should not overstep 50 mm. Otherwise the stability goes less. (In case of warranty regarding “the gate doesn’t move smooth”)

4.2 Installation of the ground anchors



1. Put a tension line in the centre of the position where the gate must be installed. From the point of the lock post to the point where the rear support roll has to come.

2. Position the templates of the guiding - and lock post as well as the template of the rear supporting wheels with the marked centre under the tension line. Take in account the inter-distances as mentioned on the foundations plans provided with the order document.

3. Mark the position of the holes with a small diameter concrete drill, this will help to centre the final drill.

4. Drill the corresponding holes for the fixation according the installation instructions of the supplier of the chemical anchors. Drillings must be in good vertical position.

5. Remove any dust and small particles from the drill holes using a brush and hand pump. This will ensure perfect adhesion between the resin for the ground anchor and the concrete foundation.

6. Place the chemical anchors according to the instructions of the supplier. Drying times must be respected

4.3 Preparing installation levels

1. Screw the bottom adjustment nuts on their ground anchors and place the washers on the nuts.

2. The guiding post position will serve as a reference point for further installation of the other guiding parts and posts. The bottom adjustment nuts of the guiding post are levelled as reference towards the concrete level +25 mm.

The nuts of each guiding position (rear guiding wheels, rear support roll) should be perfectly horizontal one between an other, so horizontal and vertical positions of the main support elements of the gate is realized on position of the gate during installation.

5. Installation of the gate on the ground anchors

1. The gate is positioned as a whole unit with the guiding post and the rear guiding wheels on their corresponding ground anchors.

2. Chronological order of actions:

    1. Remove packaging from the guiding post. Do not remove the strap that holds the underbeam and base plate together.

    2. Bring the gate with the guiding post above the ground anchors at ± 50 cm above the ground.

    3. Open the access door of the guiding post. Pull off the rubber seal

    4. Remove the plate under the door by pulling it up and pushing it towards yourself

    5. When the power supply cables or other cables are coming out of the concrete at the position of the guiding post, put them trough the hole in the base plate of the guiding post in to the cabinet.

    6. Cut off the straps which fix the rear guiding wheels to the under beam.

    ATTENTION! Hold the wheels on their place and prevent them from rolling onwards to the guiding post as they might bump against a fixation of the induction system.

7. Now lower the gate until the rear guiding wheels and the guiding post is resting on the washers of the ground anchors. Put on each ground anchor a washer and a nut. Tighten the nuts slightly for temporary fixation. Remove straps from the base plate of the guiding post.

ATTENTION!
Beware that cables and wires are not crushed between surfaces while lowering and positioning the gate on the ground anchors.

6. Installation of the lock post on the ground anchors

1. Take off the lock post from the gate wing and bring it to its ground anchors. Pull out the cables (type CONM53NF) in the lock post and connect the corresponding (Color code) connectors with each other.

2. Push back the cables in the tube of the lock post until the connectors are also in the tube. This will protect them against water and will facilitate the uninstalling of photocells.

3. Put the lock post on the ground anchors and install the upper washers with nuts. Tighten the nuts slightly for temporary fixation.

7. Alignment and levelling of the gate

1. Put the gate in manual mode by turning the threaded rod anticlockwise until the teeth of the pinion don't grip in the teeth of the dental rack anymore.

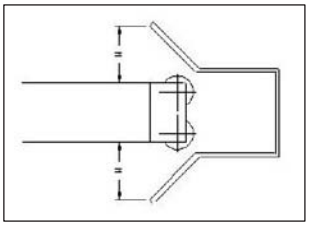
2. Align the rear guiding wheels and the guiding post according to the gate centre line. Make sure that the wing is running parallel in the guiding post

The guiding post and the rear guiding wheels can be moved laterally in the sleeves of the base plates.

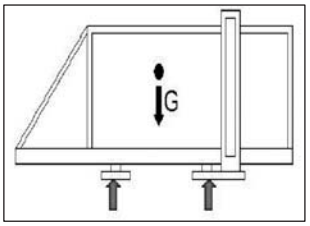
When the alignment between the rear guiding wheels and the guiding post is done, tighten slightly the nuts of the ground anchors of the guiding post and rear guiding wheels

Check if the gate moves easy by hand over the complete route of the wing during opening and closing. Do this in slow motion as not all adjustments are done.

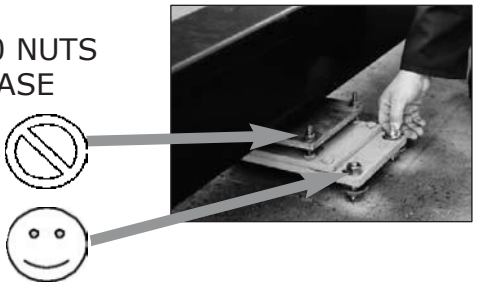
3. Close the gate nearly completely by hand and align the lock post. Make sure that the guiding rolls on top of the wing are entering the catcher in the middle. Forcing on one of the sides when adjusting is not acceptable.



4. Put the wing in the position that the rear guiding wheels and the guiding wheels at the position of the guiding post support it. Put a level in the middle between these sets of guiding wheels. If necessary bring to horizontal position by lowering or raising the rear guiding wheels support by means of the nuts of the ground anchors. Make sure to preserve the horizontal level of the base plate.

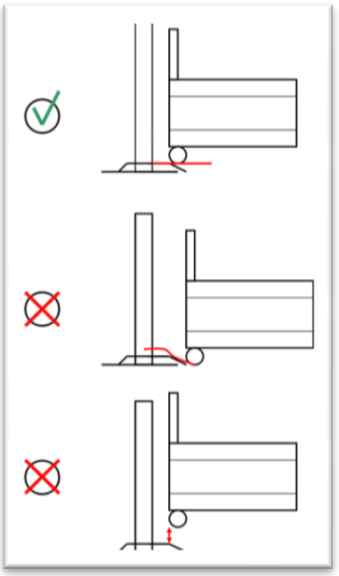


WARNING!
IN ANY CASE DO NOT ADJUST WITH THE M10 NUTS AND BOLTS FOR THE CONNECTION OF THE BASE PLATE AND THE WHEEL SUPPORT.



5. After alignment of the lock post and horizontal levelling of the wing, adjust the height of the lock post so that the support wheel under the front of the under beam is slightly touching the ramp (of the lock post) just below the horizontal surface. Beware to keep the vertical levels and the positioning in the catcher of the lock post. The height adjustment is done with the nuts of the ground anchors.

ATTENTION!
The support wheel in the under beam must not force from complete down position on the ramp to enter the lock post.

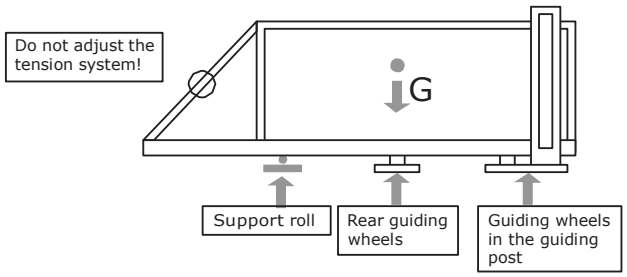


6. After full adjustment of the gate, tension up all nuts from the ground anchors. Then cut the lengths of the ground anchors 1/2 cm above the nuts, and paint afterwards against corrosion.

7. Gates with a free passage more than 6m00 have a support roll for the wing in open position. Install that roll on the foundation as described as hereunder.

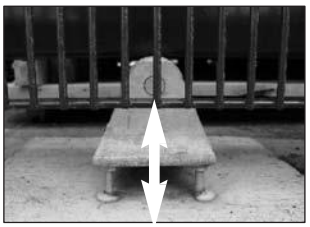
A correct adjustment of this roll is indispensable for a good functioning of a motorised cantilever-sliding gate Bekamatic.
The adjustment is required as well for the correct height of the support roll as for the perpendicular of the support roll towards the under beam of the wing.

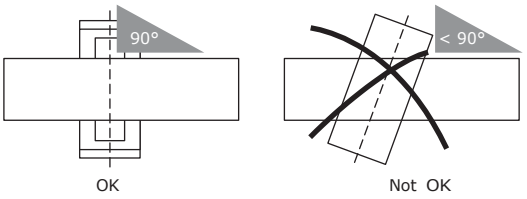
A support roll installed too high will add undesired friction forces on the wing which are increasing the further the wing is opened.



The height of the support roll must be adjusted when the wing is approximately at 50 cm from completely open position.

At this position the support roll may make contact with the underside of the under beam. Adjust the height when necessary.





8. Adjustment of the mechanical end stops

ATTENTION!
The verification and/or the adjustment of the mechanical end buffering must always be executed. When the end buffering is not adjusted properly it may cause severe irreversible damage to some parts of the gate.
The mechanical end buffering is located on the front and rear support of the guiding wheels in the under beam. To have access to them the front and the rear of the under beam must be opened.

8.1 Adjustment of the front mechanical end buffering

If the gate is installed correctly according the foundation plan, then the front buffer doesn't need to be adjusted as the factory default setting (default 13 cm) will be sufficient. Thirteen centimeter is also the minimum distance to prevent crushing the moving coil of the induction sytem.

However if there is some deviation from the foundation plan, or an obstacle at the rear side of the gate is preventing the wing opening over its full course, then adjust according to the description below.

1. Remove the lower part of the safety pressure strip from its aluminium fixation profile.

2. Remove the front cover plate from the under beam by unscrewing the 4 screws (2 on both sides) of the under beam.

3. Unblock the counter nut. Turn the threaded rod counter-clockwise so that the rubber stop is coming out of the under beam for 0.5 cm to 1.0 cm. Block the threaded rod with the counter nut.
   ATTENTION!
   Do not turn clockwise! The default setting of 13 cm is minimum distance to apply.

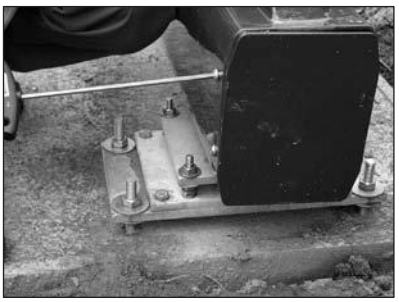
4. Put back the cover plate to close the under beam and tighten the screws with moderate force.

5. Re-fix the rubber profile from the safety pressure strip on the aluminium profile. To aid the fixation it is advised to spray some silicone lubricant on the rubber fixation flaps and the sleeves in the aluminium profile. Then push the flaps by hand in the aluminium profile.

8.2 Adjustment of the rear mechanical end buffering

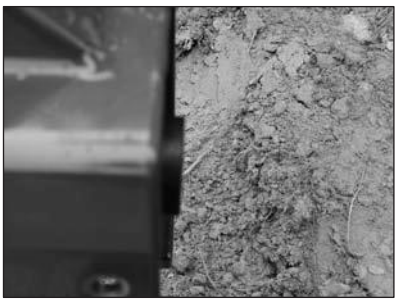
The rear mechanical end buffering is preinstalled on the support of the rear guiding wheels and is adjustable in length up to 45 cm maximum (Exception: for gates up to 4m, adjustable length is up to 20 cm maximum). This is the maximum allowable adjustment with respect to the good functioning of the gate and applied forces. Therefore we strongly advise to respect the dimensions of the foundation plans at all time.

1. Remove the rear cover plate from the under beam by unscrewing the 4 screws (2 on both sides) of the under beam.



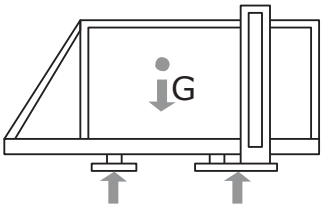
2. Close the gate so that there is a distance of 1,0 to 2,0 cm between the upper guiding rolls on top of the wing and the bottom of the catcher on the lock post.

3. Unblock the counter nut. Turn the threaded rod counter-clockwise so that the rubber stop is coming out of the under beam for 0,5 cm to 1,0 cm. Block the threaded rod with the counter nut.



4. Put back the cover plate to close the under beam and tighten the screws with moderate force.

9. Adjustment of the correct motor pressure



1. Put the wing in the position that it is supported by the rear guiding wheels and the wheels at the position of the guiding post.

2. Turn the threaded rod clockwise.

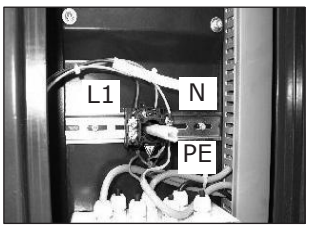
3. Move the wing slightly back and forward. This will prevent pushing a tooth of the dental wheel on top of a tooth of the dental rack instead of gripping in each other.

4. When, while turning the threaded rod, the vertical movement of the drive stops, you must turn the rod in for another 8 mm. This is the correct motor pressure.

   Hint: the threaded rod is M12, so 4,5 turns is approximitly 8 mm.

5. Put back the cover plate underneath the door.

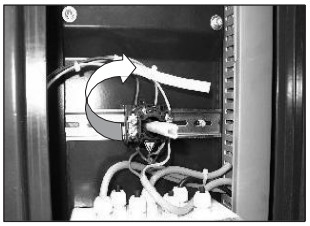
10. Power Supply



1. Power source must be 240 VAC. Connect the power supply cable on to the connectors of the main switch. The cable coming from the main board to the gate, must be secured according legislations for electrical installations applicable at that time.
   Use a low voltage power solid cable with a section according to the table underneath. (For example : NYY JZ 3 x 2,5mm^2 according to VDE0276 part 603, VDE 0271 and IEC 52)

Section (mm^2)	Maximum distance (m)
2,5	300
4	600
6	900

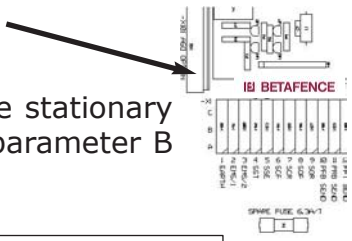
2. Switch the current on by turning the main switch in position "ON".



WARNING:
THE CALUCULATIONS ARE DONE ON OUR GATE WITH ALL OUR POSSIBLE ACCESSORIES. IF YOU ARE CONNECTING MORE CONSUMERS TO IT, IT MAY BE NECESSARY TO USE A BIGGER SECTION.

11. Adjustment and testing safety equipment:

11.1 Induction system



Check if the jumpers (J1 and J2) for connecting the stationary coil to the decoder board are connected. Check if parameter B is set on '1'. (IGC 3XX)

11.2 Safety Strips

Controller Display IGC 3XX

Check if all safety strips are functioning correctly.
When the safety strip on the top of the wing is activated an "Sc" indication must appear on the display of the controller board.
An "So" indication must appear when the safety strip at the rear of the wing is activated.
"So" must be indicated when a safety strips, on the guiding post, in the free passage of the gate is activated.
"Sc" must be indicated when a safety strips, on the guiding post, at the closing side of the gate is activated.

11.3 End Switches

Check if the inductive end switches are functioning correctly.
Move the wing until fully closed position by hand. The wing should be stopped by the mechanical end stop and a "Lc" indication must appear on the display of the controller board.
Move the wing until fully open position by hand. The wing should be stopped by the mechanical end stop and a "Lo" indication must appear on the display of the controller board.

11.4 Alignment of the Photocells

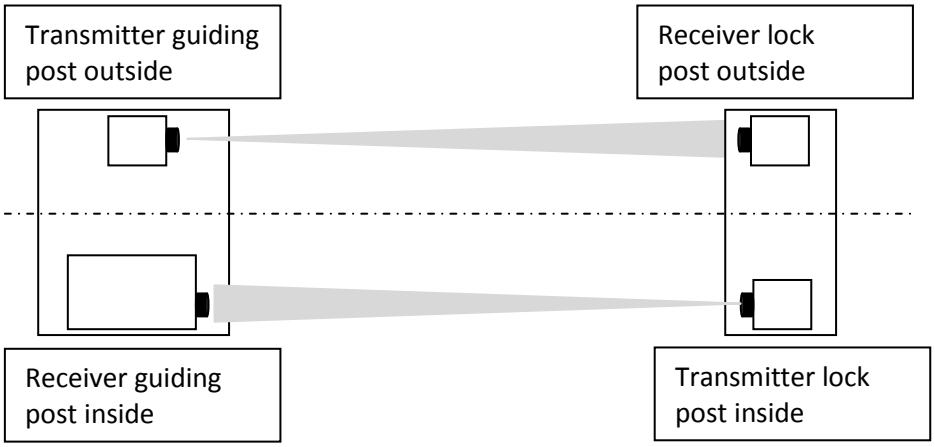
Align, for all the photocells (max. 4 pieces), installed on the gate, the transmitter with the receiver. Therefore follow the procedure as described below. After alignment each individual interruption of the IR-beam of a photocell must trigger a "Pc" indication on the display of the controller.(IGC 3XX)

11.4.1. Photocell set-up

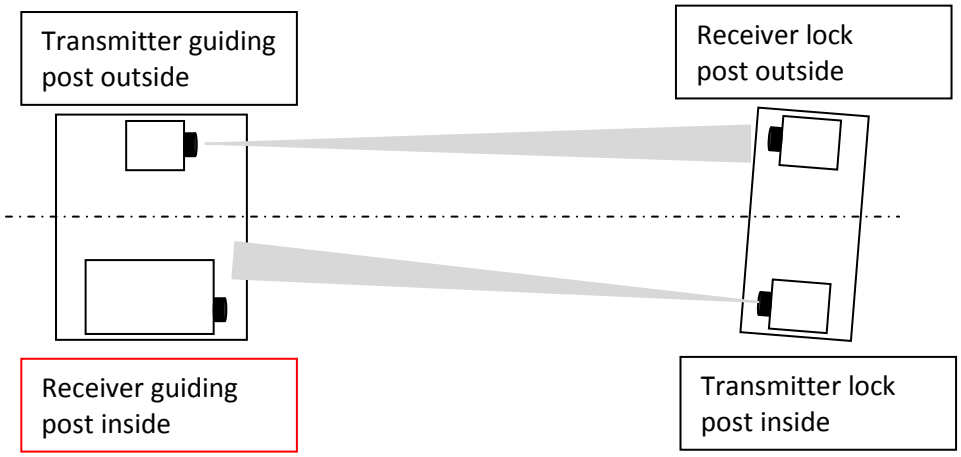
The receiver is placed in the guiding post inside and the transmitter is placed in the end post.

An alignment of the photocells itself isn't possible. Lens and housing is one unit.

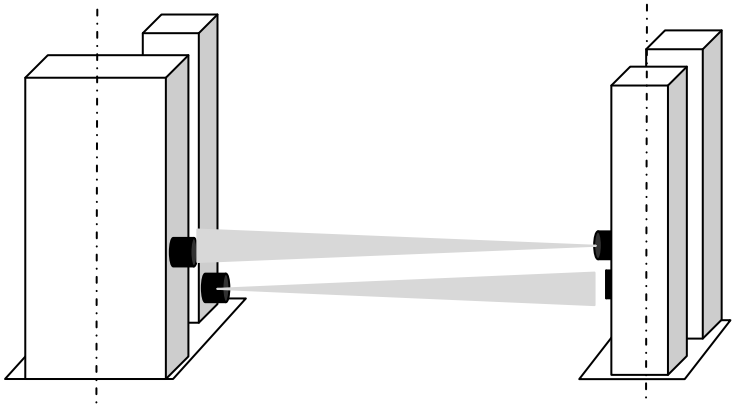
For to make sure the photocells are working properly, it is important to align guiding post and lock post in line exactly, that the photocells look at each other.



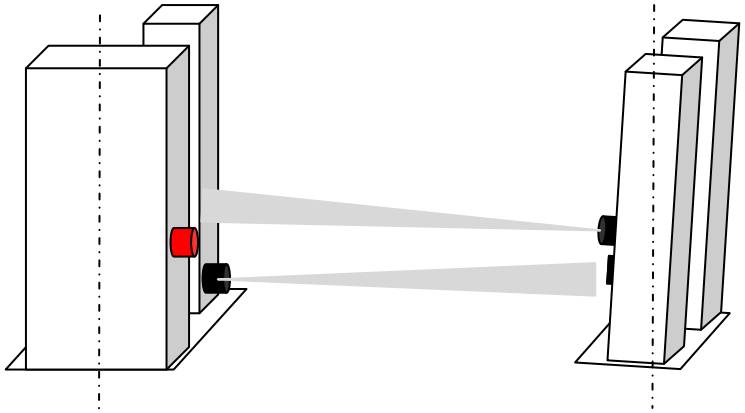
The angle of the infra red light beam is too small for an installation of the posts "out of direction".
The sketch below demonstrated an installation "out of direction" and its impact. Well to see the receiver at the guiding post is interrupted.



The same exact alignment must be done in the vertical position of guiding and lock post. The sketch underneath shows a well adjusted / aligned system.



The sketch below demonstrated a bad installation of the lock post and its impact. Well to see the receiver at the guiding post is interrupted. (Marked in red)



12. Start the Self-Learning procedure

ATTENTION!
During the self-learning cycle, the gate measures the time needed for one full cycle (open-close or close-open). This time is stored into the non-volatile memory of the controller and will be used as the motor protection. The first time a time-out occurs E7 will be indicated on the controller display, the second time E5 will be indicated. When error code E5 is indicated, it is necessary to investigate the cause of the time-out. A simple reset of the controller and a new trigger for gate movement may cause irreversible damage of the drive unit.

A new gate will always have done a self-learning cycle as a test when manufactured (otherwise E9 will be indicated). Nevertheless we strongly advise to redo the cycle. Note that during the cycle all safety devices are active, so take care not to trigger accidentally one of the safety devices.

To start the self-learning, the controller must first be put in configuration mode and then in special function mode. Configuration mode is indicated on the controller by a blinking decimal point on the right-hand display. Special function mode is indicated by two blinking decimal points.

13. Configuration Mode

To prevent unauthorised change of the control parameters, this option is password protected. The password is entered in the following way:

Set the selector switch on position 4
Press the [^]-key once, the display will read [P1]
Set the selector switch on position 7
Press the [^]-key once, the display will read [P2]
Set the selector switch on position 3
Press the [^]-key once, the display will read [P3]
Set the selector switch on position 5
Press the [^]-key once
The decimal point indication on the right display will start to blink, which means that you are in the parameter configuration mode.

Remark:
If the procedure was not executed correctly, the controller will return to normal display mode. Also, if you wait too long (more than 25s) to continue the password procedure, the controller will return to normal display mode.

14. Special function mode.

Put the controller in configuration mode as described in part 1
Set the selector switch on position 0
Press the [^]-key once
The two decimal points will blink simultaneously
Put the selector switch on 6
S.L. Is displayed => Self-Learn
Press the [^]-key, the gate will now start the Self-Learning.

The gate is now ready for use.

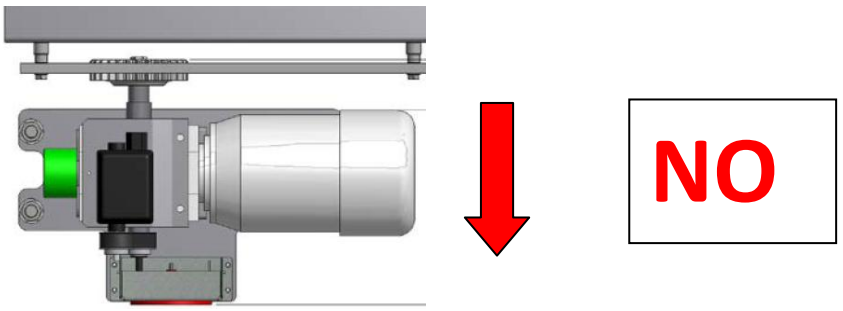
To have personalized parameter setting follow the procedure as indicated in the technical handbook:
INTELLIGENT GATE CONTROL
IGC-300

THE GATE CAN NOW OPERATE AUTOMATICALY.

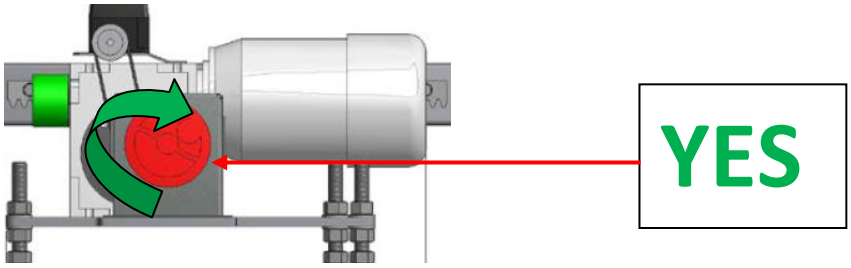
15. Start up with DAAB EP 104 controller and C850 motor

ATTENTION:

Do **never** disconnect the motor / gear mechanical from the dental rack!



For to release the gear, use the “release button” **always**!!



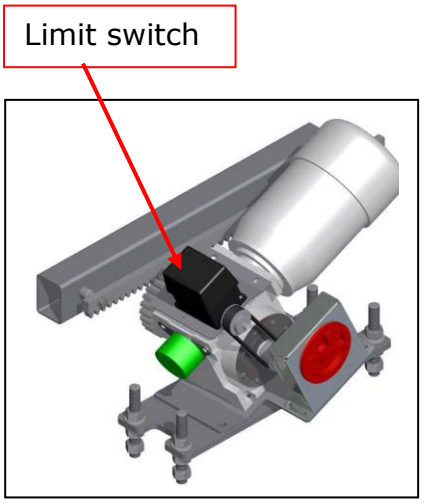
For to release the gear - turn the button clockwise

For to connect the gear – turn the button unclock wise

15.1 General

These instruction apply to the following models: C850
The C850 is an electromechanical operator designed for moving sliding gates.
The non-reversing system is guaranteed by an electric brake that prevents manual movement of the sliding leaf when the motor is stopped, and therefore does not require an electric lock.
A handy manual release makes it possible to move the gate in case of black-out or operator inefficiency.

Description and technical specifications



Power Supply (+6% / -10%) 230 V~ 50Hz

Max absorbed power (W) 1800
Thrust on pinion (N) 1800
Max torque (Nm) 110
Frequency of use Industrial
Recommended max gate length (m) 20
Max leaf weight (kg) 1800
Limit switch type Mechanical
Motor control EP104
Usage temperature (C) -20 to +55
Protection class IP 54
Pinion type Z28 module 4
R.O.T CD continuous duty

15.2 Installing the automated system

Preliminary checks

For the safety and correct operation of the automated system, ensure that the following conditions are met:

• The gate structure must be designed to be automated. In particular, the diameter of the wheels must conform to the weight of the gate being automated, there must be a guide on top and mechanical limit switches sized to suit the weight and speed of the movable leaf, to avoid derailment of the gate;

• Initially, leave at least 10 cm of clearance between the movable leaf stopping points (open and close) and the mechanical stops of the gate. The final adjustment is made once the inverter programming precedure is completed.

Minimum distance 3 cm.

• The gate sliding rail must be linear and horizontal.

• Manual movement of the gate must be smooth along the entire stroke.

• The characteristics of the ground must guarantee sufficient solidity of the foundation plinth.

• No tubes or electrical cables should be present in the plinth digging area.

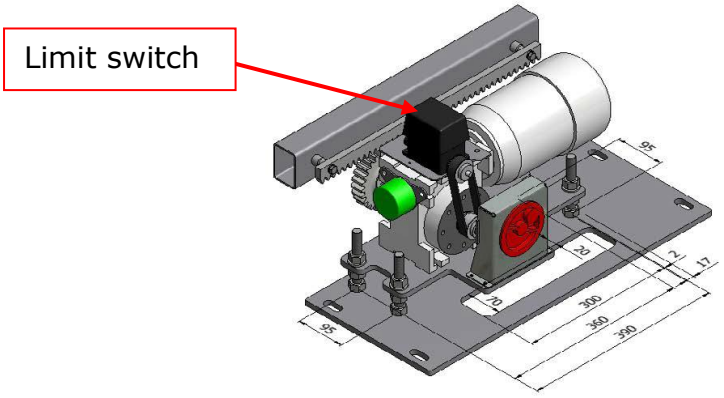
• If the gearmotor is exposed to vehicle transite, provide for adequate protection against accidental impact, when possible.

• Ensure that there is an efficient earth plate for connecting the gearmotor.

Should various elements not need the above-mentioned conditions, adjust them so they do.

Placing the operator

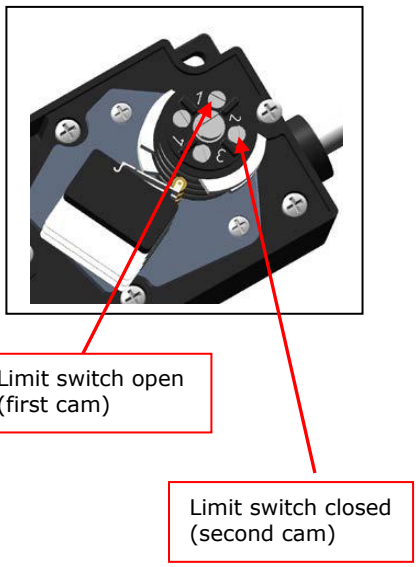
Place the operator to make the rack centered on the pinion. Use the nuts and washers to move the operator vertically. Use a level to make sure the operator is perfectly horizontal.

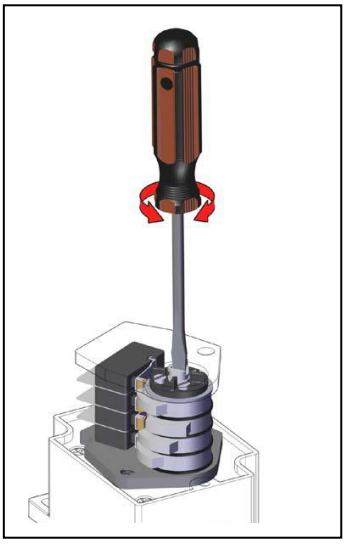


15.3 Adjusting the limit switches

1. Loosen the screws and remove the limit switch unit cover.
2. Set the sliding leaf in open position, leaving enough room for ramping down the speed before stop.
3. Loosen the central locking screw of the limit switch unit.
4. Turn the screw corresponding to limit switch open (screw number 1) until the microswitch is engaged by the cam.
5. Place the sliding leaf in closed position, leaving enough room for ramping down the speed before stop.
6. The the screw corresponding to limit switch closed (screw number 2) until the microswitch is engaged by the cam.
7. Tighten the central locking screw of the limit switch unit.
8. Refit the limit switch cover.
9. Manually close the sliding leaf.
10. Prepare the operator for normal operation.
11. Ensure that there is no danger and the safety devices are operating correctly.
12. Give an open pulse and verify correct operation.
13. Times for slow down mode is set later in the control board.

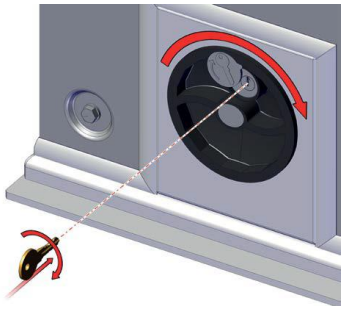
If no frequency converter is used step 2 and 5 above should be set to stop in the end position without ramping down.



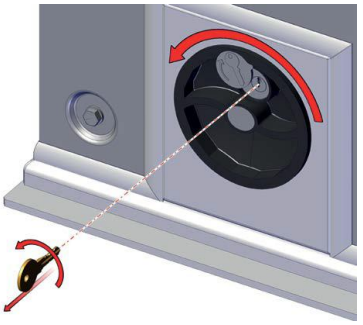


15.4 Manual release

To release the gear motor, proceed as follows:
1. Insert the provided key and turn clockwise
2. Turn the release system clockwise until it reaches the mechanical stop.
3. Open or close the gate manually.



To lock the gear motor, proceed as follows:
1. Turn the release system anti-clockwise until it stops
2. Then the key anti-clockwise and then remove it from the lock.
3. Move the gate by hand until the clutch is locked again.



16. EP 104 controller

16.1 Checking safety functions

When the automatic control unit is taken into operation, all safety functions should be tested. Take the motor winders into operation again by recoupling and checking the following functions:
• Check that the safety edges work as intended.
• Check that the load guard is activated under abnormal load.
• Check that the photocell is working.
• Check that the vehicle loop (if there is one) is working.
• If all the points above are OK, continue with commissioning. Otherwise return to the relevant section and check the settings. If this does not help, see "Troubleshooting".
For Settings and troubleshooting see the manual of DAAB EP 104

16.2 Checking LED indications

Before continuing the commissioning process, check that all LEDs are working correctly as described in "Indications". If there is a problem, review the connection instructions and check the connections. If the problem is still not solved, see "Troubleshooting" to find out what to do next.
For troubleshooting see the manual of DAAB EP 104

16.3 Safety edge function in the closing movement

On delivery and after a reset, the EP104 is configured to reverse to the fully open position when the safety edge is activated in the closing movement.

16.4 Safety edge function in the opening movement

On delivery and after a reset, the EP104 is configured to reverse when the safety edge is activated in the opening movement.
Reverse does not take place to the closed position. Set the reverse function with the value 1 in channel C132

16.5 Low speed after safety edge activation (Only when using a frequency converter)

Using this setting one can let the gate close slowly if it has reversed due to a safety edge. This is to prevent it closing on any remaining obstacle with full force. Set C105 either to 0 to deactivate the function or 1 to activate it, remember that this is only possible when using a frequency converter.

16.6 Performance testing safety edges

Check that the automatic control unit reacts as intended as configured above when the safety edge is activated.
Check that the LEDs indicate activated safety edges S.E1, S.E2 and S.E3 with a constant light. Also check that the safety edges flash when they are no longer activated.

16.7 Pulse mode and hold-to-run mode

Hold-to-run mode means that the button has to be kept pressed to open or close – when the button is released, the motor stops.
In pulse mode, pressing and releasing the button opens or closes the door automatically. Pulse mode can be configured for either direction. Pulse mode must be active for automatic operation of the door.
Note that the applicable directive does not allow wireless transmitters to operate in hold-to-run mode – this is why all wireless channels are disabled in hold-to-run mode.

16.8 Selecting pulse mode or hold-to-run mode

Select channel C033 and set the function you want.
Example 1: To set pulse mode for both opening and closing movements, set the value to 3.
Example 2: To set pulse mode for the opening movement and hold-to-run mode for the closing movement, set the value to 1.

16.9 Hold-to-run if there is an error in the safety edge or PHOTO input

If the safety edge, photocell or vehicle loop is faulty, the automatic control unit automatically switches to hold-to-run mode in the direction in which there is a fault. Even when the safety edge or photocell/vehicle loop is not working, you can still open and close the door by keeping the button on the PCB pressed.

17. Maintenance

We recommend checking system operation every six months, with special attention to the safety devices (including the motor thrust power, which must comply with the regulations in force) and release devices.

THE GATE CAN NOW OPERATE AUTOMATICALY.

BETAFENCE NV
SALES EXPORT
DEERLIJKSTRAAT 58A B-8550 ZWEVEGEM
TEL.: +32 (0)56 73 45 28
FAX: +32 (0)56 73 45 97
INFO.EXPORT@BETAFENCE.COM

BETAFENCE NV
SALES BENELUX
DEERLIJKSTRAAT 58A B-8550 ZWEVEGEM
TEL. +32 (0)56 73 46 46
FAX. +32 (0)56 73 45 45
TEL. NL. 0800-022 03 59
FAX. NL. 0800-022 77 45
INFO.BENELUX@BETAFENCE.COM

04-1607

BETAFENCE