

ELECTRICAL RISING BARRIER

BLG77



TECHNICAL MANUAL

Rev. 10

DOCUMENT REVISIONS

Revision	Date	Written by	Checked by	Object
A	2024/03/13	SSA	SSA	Initial version
B	2024-09-25	SSA	SSA	Modification to section 2.6 Drive ATV12 settings
C	2025-02-20	SSA	SSA	Modification to section 2.5 Control board Modification to section 3.5 Entrapment protection device installing
10	2026-05-19	SSA	SSA	Update to section 4.1.1 Adjusting the springs Update to section 3.5.1 Safety edges

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1 SAFETY WARNINGS



IMPORTANT: SAFETY INSTRUCTIONS

WARNING – TO REDUCE THE RISK OF INJURY OR DEATH, READ AND FOLLOW ALL SAFETY INSTRUCTIONS BEFORE INSTALLING, OPERATING, OR SERVICING THE BARRIER. SAVE THESE INSTRUCTIONS!

ANY WORK ON THE BARRIER MUST BE DONE BY TECHNICIANS CERTIFIED BY AUTOMATIC SYSTEMS. ANY UNAUTHORIZED WORK ON THIS PRODUCT THAT IS CARRIED OUT BY A TECHNICIAN THAT HAS NOT BEEN CERTIFIED BY AUTOMATIC SYSTEMS COULD CAUSE SERIOUS INJURY OR EVEN DEATH AND WILL AUTOMATICALLY VOID THE MANUFACTURER’S WARRANTY.

- Users and installation personnel must follow all applicable local laws and standards.
- Do not connect the operating device until instructed to do so.
- The balancing springs inside the barrier can be dangerous when compressed. They can release without warning. Any intervention made to the barrier when the springs are compressed should be done with extreme care.
- Personnel should keep away from the obstacle in motion and keep the moving obstacle in sight until it is completely closed or opened. NO ONE SHOULD CROSS THE PATH OF THE MOVING OBSTACLE.
- The gate must be installed in a location so that enough clearance is supplied between the gate and adjacent structures when opening and closing. A min distance of 16" [406.4mm] is recommended.
- Remove all objects not designed to receive the obstacle from its trajectory.
- Users are responsible for their own safety.
- The entrance is for vehicles only. Pedestrians, cyclists and motorcyclists must use a separate entrance at all times.
- Never let children touch the barrier controllers or any remote-control devices.
- The barrier must be within the user’s sight before being activated.
- DO NOT use the emergency release if the obstacle is moving.
- KEEP THE BARRIER PROPERLY OPERATING AND BALANCED. See barrier manufacturer’s manual. An improperly operating or balanced door could cause severe injury or death. Have trained barrier systems technician make repairs to the barrier hardware.
- When servicing, keep a secure area around the barrier to avoid risk of injury if the obstacle were to move without warning.
- Test the barrier monthly. If required, adjustments must be made. Since the obstacle is equipped with a safety edge and photocells, it will reverse its direction when the detection of an object or person occurs. Failure to adjust and retest the barrier properly can increase the risk of injury or death.
- The access keys to the mechanism must be accessible only to technicians certified by Automatic Systems. They must be informed about the potential electrical and mechanical risks in the event of negligent manipulation. The mechanism’s access doors and cover must be locked once the work is completed.

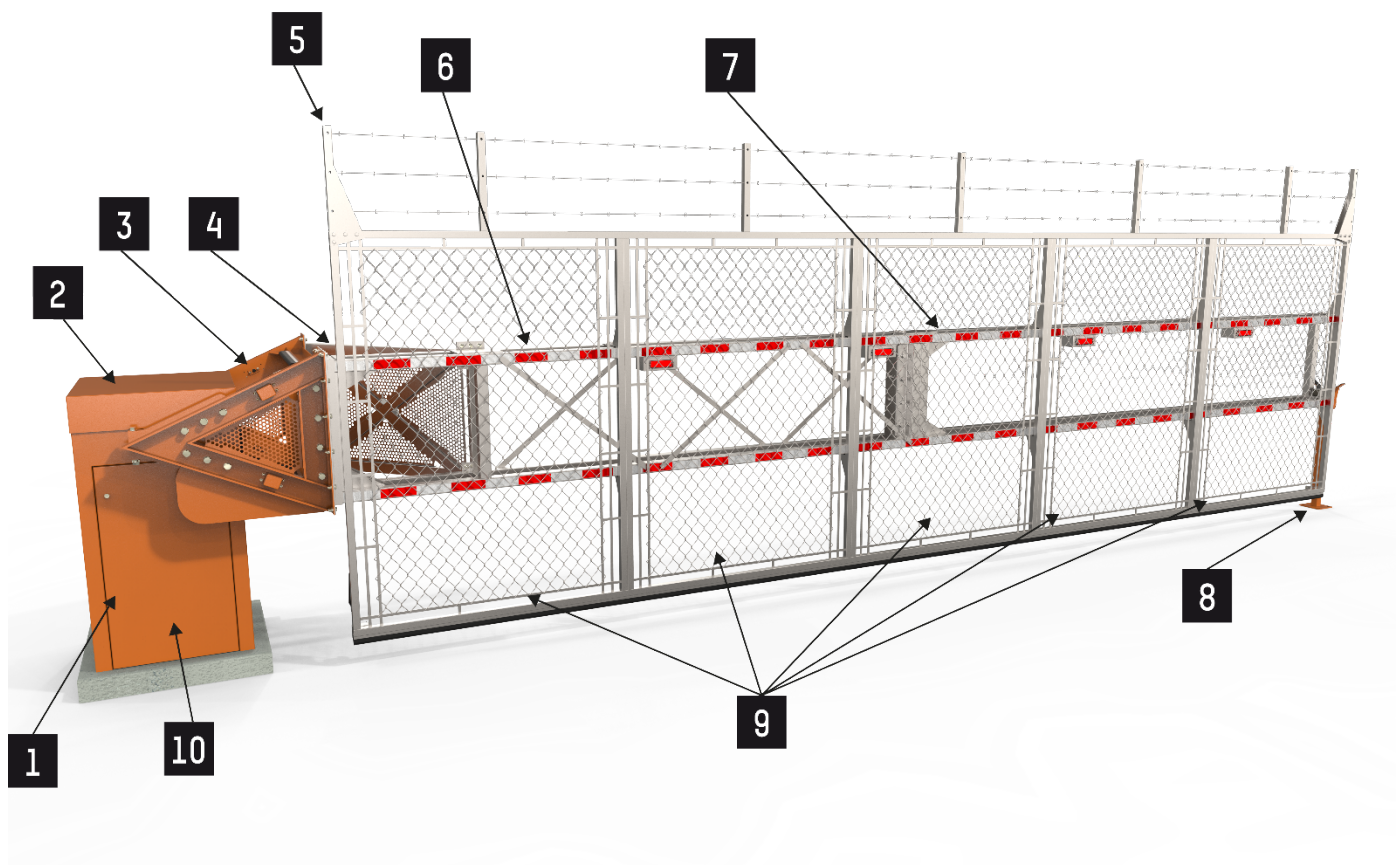


- Exert caution when handling any internal component that could be powered up (live) or move.
- Any change to the settings must be carried out by technicians certified by Automatic Systems who have full knowledge of the consequences and shall in no way invoke any liability for Automatic Systems.
- Only obstacles approved by Automatic Systems can be used.

2 DESCRIPTION

2.1 Main Components

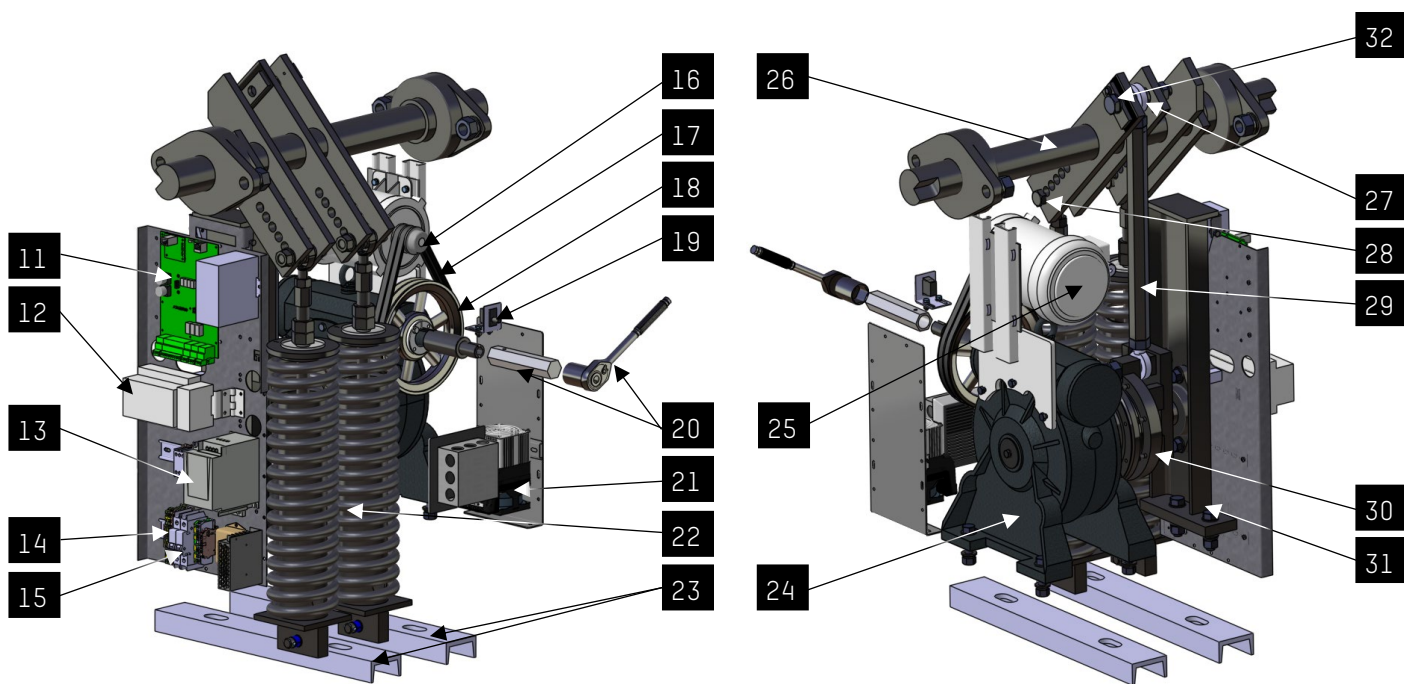
- | | |
|----------------------------|--------------------------------|
| 1. Cabinet | 6. Obstacle base structure |
| 2. Cover | 7. Obstacle end structure |
| 3. Obstacle attachment | 8. Electromagnetic tip support |
| 4. X support | 9. Fencing panels |
| 5. Barbed wire end support | 10. Doors |



*The obstacle consists of the assembly of items 5, 6, 7, and 9

2.2 Internal Components

- | | |
|--|---|
| 11. Control board | 22. Springs |
| 12. Zelio module (Not on CE model) | 23. Fixing clamps |
| 13. Variable frequency drive | 24. Gearbox 100:1 |
| 14. Heater circuit breaker | 25. Motor |
| 15. Main circuit breaker | 26. Main shaft |
| 16. Small pulley | 27. Rod ends of the connecting rod |
| 17. Belts | 28. Grooved plates |
| 18. Big pulley | 29. Connecting rod |
| 19. Switch for the manual crank door | 30. Clutch |
| 20. Gearbox extension adapter and ratchet | 31. Stopper |
| 21. Fan heater (optional) | 32. Angle corrector |

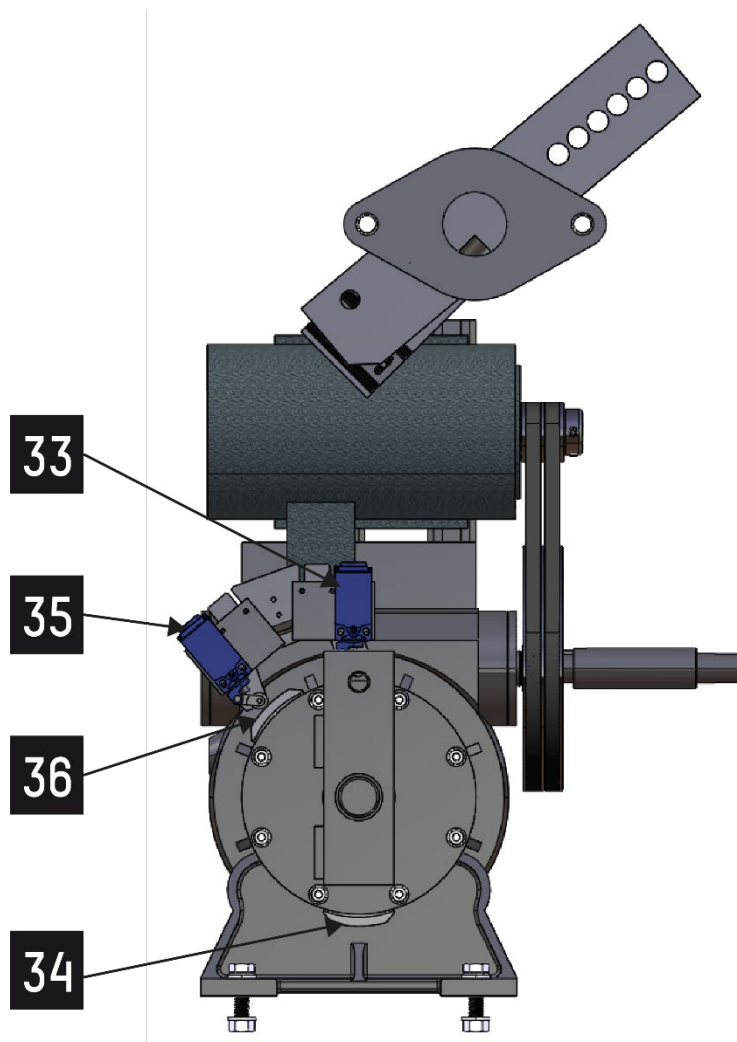


33. Limit switch for open position

35. Limit switch for closed position

34. Limit switch cam for open position

36. Limit switch cam for closed position



2.3 Operation Principles

The opening of the obstacle is triggered by the user (via a key switch, a pushbutton, or a radio transmitter), by detection loops buried under the roadway, or by an external body.

Closing is triggered in the same manner or automatically at the end of a predetermined length of time.

	A "STOP" command turns off the motor immediately, but the movement of the obstacle does not cease instantly. It can continue to go down gradually because of its weight and its angular position. The adjustment of the clutch can reduce this phenomenon.
---	--

The movement created by the motor is transmitted to the obstacle by a connecting rod/crank system. Balancing springs serve as a counterweight to assist the motor with the opening and closing of the obstacle.

Safety

The barrier will go out of service when its movement is not completed within a set time.

Optional sensors can be added to send a reopening command if a user is detected in the vicinity of the equipment or on impact with a vehicle during a closing cycle.

When the obstacle is fully open or fully closed, the alignment of the connecting rod and the crank blocks the movement of the barrier (mechanical locking).

The barrier is configured at the factory to remain locked in the event of a power failure. When this occurs, the obstacle can be opened and closed with a ratchet via the ratchet adapter (20, section 2.2).

Control board

The control board (11, section 2.2) coordinates the activity of the barrier: movement management, options, input and output processing, etc.

2.4 Manual Operation in Case of Power Outage

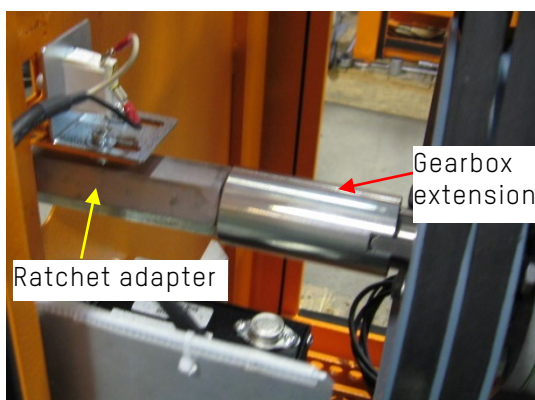
To manually open and close the obstacle, follow these instructions.

1. Make sure the obstacle is stopped and cannot move up or down.
2. Remove the manual crank door using key 017.



The barrier is equipped with a switch that detects the removal of the manual crank door and automatically cuts the power to the motor. This prevents the unintentional opening of the obstacle when the power is restored.

3. Install the ratchet adapter on the gearbox extension (20, section 2.2).



4. Use the ratchet and the 32 mm socket to open and close the obstacle.



5. Once the power is restored, remove the ratchet adapter, put the manual crank door back in its position, and lock it.

2.5 Control Board

The instructions below are regarding the setting for the security Safety Edges. If a customer configuration is loaded on the AS1620 or some modifications are done to the factory configuration, the following Input, outputs and parameter need to be kept as is from factory. See dedicated AS1620 manual for all other features.

- 1- The following input on the extension board need to be set as shown in the image below. From the menu CONFIGURATION – INPUTS.

Input Ext 1, 2 (zones A and B)

▽ Input Ext 1 ?

Security Loop/Cell Norm. Closed

Security action Re-Open ?

Action once security is cleared Re-Close ?

Rising Edge delaying (milliseconds) 0 ?

Falling Edge delaying (milliseconds) 0 ?

Input Ext 3 (zone E)

▷ Input Ext 3 ?

Disabled Norm. Closed

Input Ext 4

▷ Input Ext 4 ?

Turn Motor Off Norm. Opened

- 2- The following virtual input needs to be set as shown in the image below. From the menu CONFIGURATION – VIRTUAL INPUTS

Output copy Virtual output 1 [IN39] Output 4

- 3- The following outputs need to be set as shown in the images below. From the menu CONFIGURATION – OUTPUTS

▽ Output 4 ?

Open Command

Signal type Norm. Opened ?

Include delays Yes ?

Rising Edge delaying (milliseconds) 0 ?

Falling Edge delaying (milliseconds) 0 ?

▽ Relay Ext 1 ?

Logical Combination

Signal type Norm. Opened ?

Logical combination IN39 AND IN17 ?

Rising Edge delaying (milliseconds) 0 ?

Falling Edge delaying (milliseconds) 0 ?

Comb SE zone E

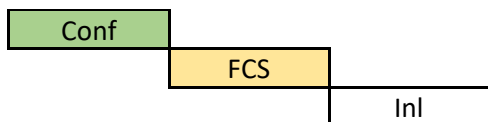
2.6 ATV12 Variable Frequency Drive Settings



WARNING: The variable frequency drive is factory blocked. We recommend that you consult our technical support service before modifying any settings.

1) Restore the default settings (factory reset)

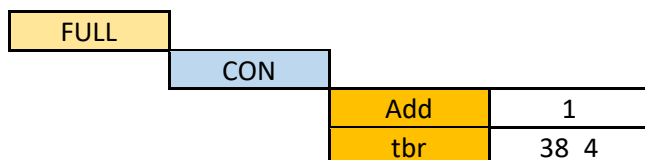
This step must be performed before proceeding with drive configuration in step 2.



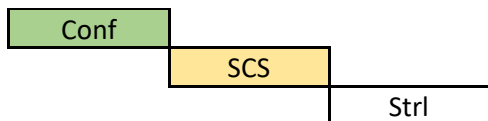
Press the “ENT” button.

The default settings are restored when LED “CONF” stops blinking.

2) Configure the ATV12



3) Record settings



Press the “ENT” button (5 seconds).

The settings configured are saved when LED “CONF” stops blinking.



3 INSTALLATION

Upon reception of the equipment, check the condition of all the parts and components. In the event that there was damage during transport, notify your distributor and your insurance company. If necessary, take the appropriate measures to have the parts and components repaired.



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1. Installation personnel must follow all laws and standards applicable to the barrier installation site.
2. When installing the barrier, all operations must be done by technicians certified by Automatic Systems. All the safety instructions provided in this section and in Chapter 1 must be followed.
3. The barrier must be installed with permanent wiring as required by local codes.
4. To reduce the risk of injury, the grounding connection must be made in accordance with local codes.
5. To reduce the risk of entrapment, the barrier must be installed in a location where there is sufficient clearance between the barrier and adjacent structures when opening and closing (minimum of 406 mm).
6. Controls intended to be activated by a user must be located at least 2 m away from any moving part of the barrier in a location where the user is not required to reach over, under, around, or through the barrier to operate the controls.

3.1 Storing the Equipment Before Installation

Before installation, ensure that the equipment does not get damaged. Leave it in its original packaging and place it in a dry area protected from dust, heat, and weather.

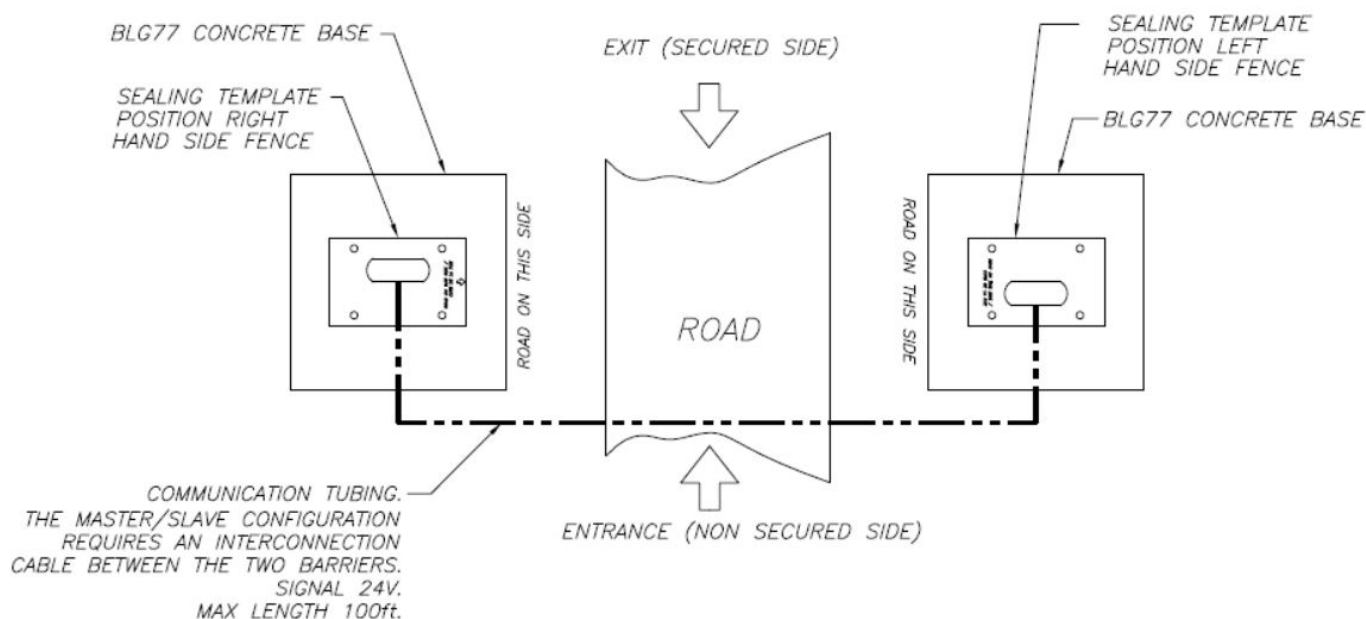
Store between -30°C and 80°C.

3.2 Preparing the Concrete Bases and Conduit Passages

The barrier cannot be installed directly on the ground. Concrete bases must be prepared to anchor the operating device and the electromagnetic tip support. The bases must include the conduits required for the cables.

For instructions on how to build the concrete bases and the location of the conduits, contact your Automatic Systems representative. The representative will provide you with the latest versions of both the installation drawings and the conduit drawings, which take precedence over any other information.

WARNING: The anchor template can only be installed in one direction as shown in the image below.



- Prepare the bases by following the instructions provided. Make sure the concrete surface is flat.



The concrete bases must be made according to Automatic Systems recommendations as described in the installation drawings. Disregarding these recommendations may cause injury or even death and also jeopardize the performance and reliability of the barrier.

- Once the concrete bases are prepared, cut the conduits so that they protrude through the bases by 1" [25.4 mm].
- The anchoring rods of the operating device base may need to be cut if they protrude by more than 3¼" [82.6 mm]. Contact your Automatic Systems representative for further information.
- Refer to the appropriate electrical drawings.

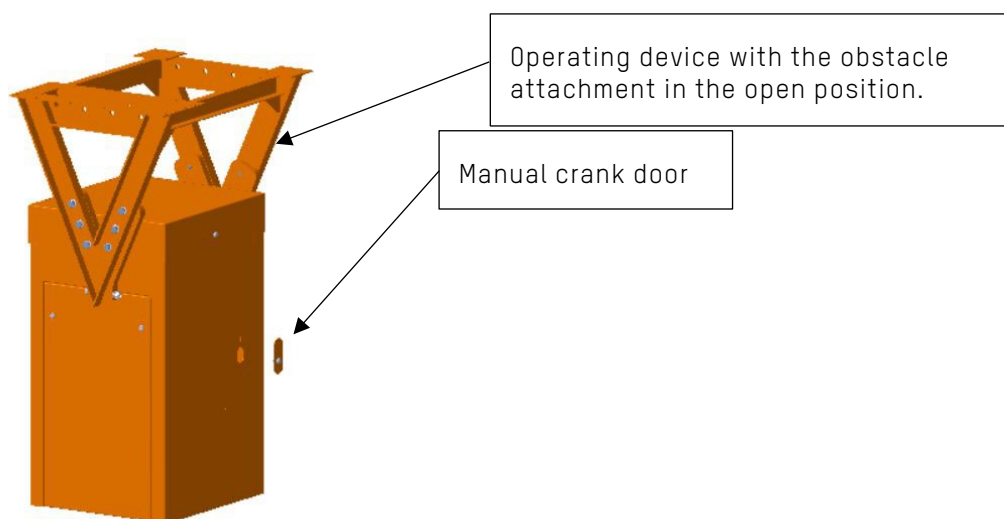
Once the concrete bases with the conduits are prepared and the cables are in place, you can proceed with the installation of the operating device.

3.3 Installing the Operating Device



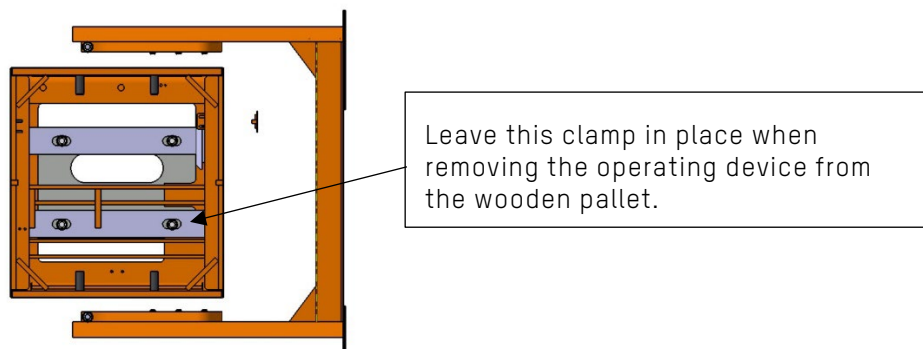
CAUTION! The installation of the operating device must be made according to Automatic Systems recommendations as described in this section. Any deviation from these recommendations may jeopardize the performance and reliability of the barrier.

1. Take the keys attached to the obstacle attachment (3, section 2.1). Unlock and remove the side doors (10, section 2.1).
 - o For security reasons, the keys to open the manual crank door have a different number (keys 017) than the ones that open the side doors and the cover (keys 004). Keys 004 should be kept in a restricted place where only a technician certified by Automatic Systems can access them when maintenance is required. Keys 017 should be kept with the ratchet adapter (18, section 2.2) and the ratchet in a place where the person responsible for the daily operation of the barrier can access them at all times. That way, in case of a power outage, this person can open the obstacle manually without being given access to the internal mechanism of the operating device.
2. Be mindful when installing multiple barriers with obstacles of different sizes. Take a minute to ensure you are installing the appropriate operating device in the appropriate location. Match the serial number of the obstacle intended to be installed in a specific location with that of the operating device. This will prevent an operating device calibrated for a long barrier from being installed in the location earmarked for an operating device calibrated for a smaller barrier.
3. While the operating device is in the position shown in the image (obstacle attachment raised in the open position), bring the equipment on site using an appropriate handling device (pallet jack, lift truck, or equivalent). Insert the forks of the handling device between the obstacle attachment and the cover to lift the operating device. Use protections to prevent any damage or scratches to the paint.



4. Put the operating device in place:

- One of the fixing clamps (23, section 2.2), the one between the springs, is already attached to the operating device. You must leave it in place as it would be impossible to put it in its proper location once the operating device is placed on the base.



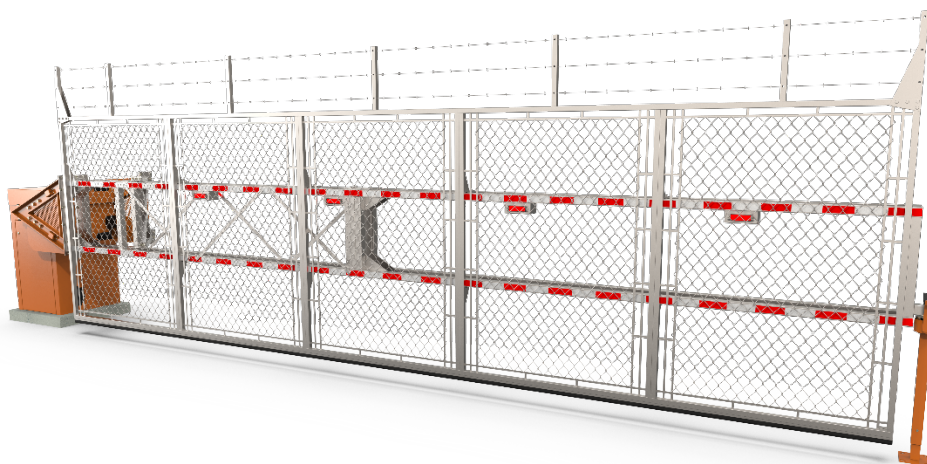
- Before lowering the operating device, align it so that the manual crank door (the small oval door) of the operating device is located on the road side of the installation.
 - Properly align the fixing clamp already attached over the two appropriate concrete base anchoring rods and lower it without damaging the rods.
5. Once the operating device is in position, install the other fixing clamp (shipped in the accessory box) on the two remaining anchoring bolts. Install the flat washers, split washers, and nuts provided. Tighten the nuts by hand. **NOTE: The nuts will be torqued only once the obstacle and the electromagnetic tip support are installed.**

Once the operating device is in place and loosely attached to the concrete base, you can proceed with the installation of the obstacle.

3.4 Installing the Obstacle



WARNING! READ THE ENTIRE PROCEDURE CAREFULLY BEFORE STARTING. TWO PEOPLE ARE REQUIRED TO INSTALL THE OBSTACLE.

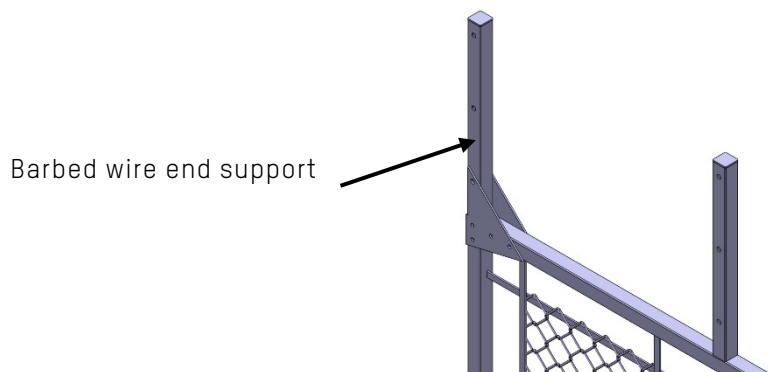


3.4.1 Preparing for Obstacle Assembly

NOTE: End supports and barbed wire eye bolts may have already been installed at the factory. If this is the case, skip to the next section.

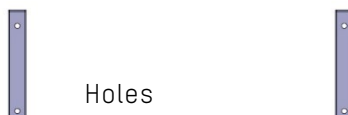
Step 1: Installing the two end supports for the barbwire

1.1) Position one of the barbed wire end supports on the end fencing panel, as shown in the picture.



1.2) Using a 5/16 drill bit, drill through the four holes as show in the picture.

With a constant view of adopting the latest Automatic Systems reserves the right to am any time.



- 1.3) Using the fasteners from one of the bags labeled #P1 (there are two bags, one for each end support), install 4 M8 x 60 mm bolts as shown in the pictures.



The head of the bolts must be on the non-secured side



The nuts must be on the secured side

- 1.4) Repeat steps 1.1 to 1.3 to install the second end barbed wire support on the first fencing panel. Make sure the bolts are installed in the same direction for both supports (head of the bolts on the non-secured side).

Step 2: Installing the eye bolts on all the barbed wire supports

- 2.1) Using the fasteners from the bags labeled #P2 (there are as many bags as there are barbed wire supports, i.e., two for the end barbed wire supports and one per panel), install the eye bolts as shown in the pictures (eye of the bolts on the non-secured side).

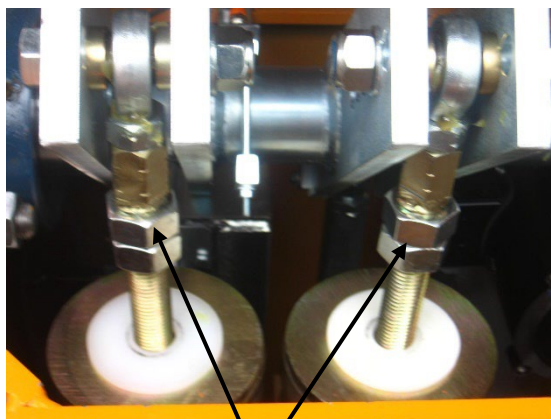


3.4.2 Assembling the Obstacle

Step 1: Installing the obstacle base structure

1.1) Remove the side doors and the cover with key 004. Remove the manual crank door with key 017.

1.2) Locate the spring nuts inside the cabinet. Bring both nuts all the way up.



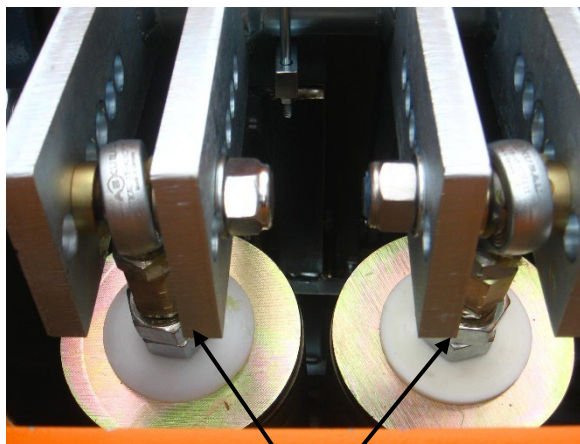
Spring nuts in their upper position

1.3) Insert the ratchet adapter into the gearbox extension. Lower the obstacle attachment with the ratchet. Stop when the tops of the springs reach the spring nuts and the springs start compressing, as shown below.



Ratchet

Ratchet adapter



The tops of the springs reach the nuts

IMPORTANT: For steps 1.4 to 4.3, do not completely tighten the bolts. Simply tighten the bolts by hand so that everything is secure. All the bolts should be torqued only once the obstacle is fully assembled.

1.4) While the obstacle attachment is in the position shown in the picture (this is the position achieved after step 1.3), install the obstacle base structure by sliding it into the obstacle attachment.



Slide the obstacle base structure inside the obstacle attachment.

1.5) Using the fasteners from bag #1.5, install the 8 M16 x 40 mm bolts as shown in the pictures.



M16 x 40 mm

1.6) Using the fasteners from bag #1.6, install the 16 M8 x 30 mm bolts as shown in the pictures.



M8 x 30 mm

Step 2: Assembling the obstacle end structure

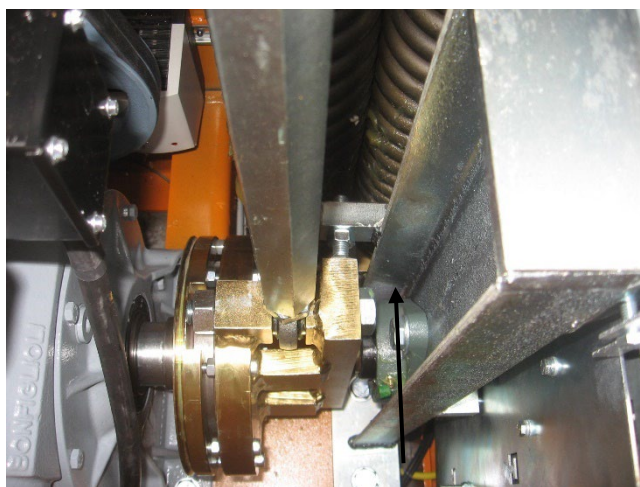
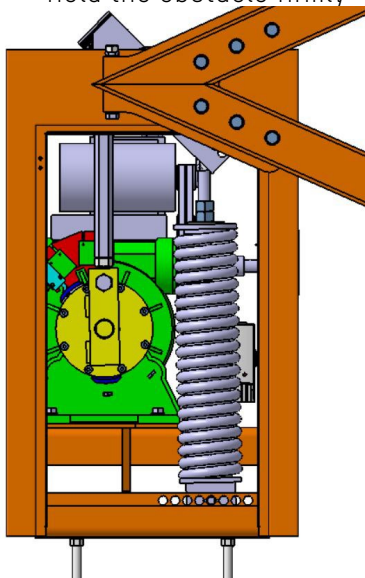
2.1) Using the ratchet adapter and the ratchet, lower the obstacle. At a certain point, you won't be able to lower it any further because of the resistance of the springs. One installation technician will have to pull on the structure and hold it firmly while the other technician uses the manual crank to completely lower the obstacle.



BE CAREFUL: The person holding the structure should **NEVER** release it unless the connecting rod mechanism has reached its locking point and should **ALWAYS** keep clear of the obstacle path. When the obstacle is completely lowered, the connecting rod will hit its bumper as shown in the picture on the right below. If the structure is released before the locking point is reached, it may open very quickly due to the spring's compression and severely injure the workers or even cause death.



Hold the obstacle firmly



This part of the clutch (30, section 2.2) is blocked on the stopper (31, section 2.2) and both the connecting rod (29, section 2.2) and the clutch are in a vertical position (if they are not in a vertical position, the mechanism has not reached its locking point).

2.2) When the obstacle base structure is completely lowered, attach the obstacle end structure as shown in the pictures.



Slide the obstacle end structure
into the base structure

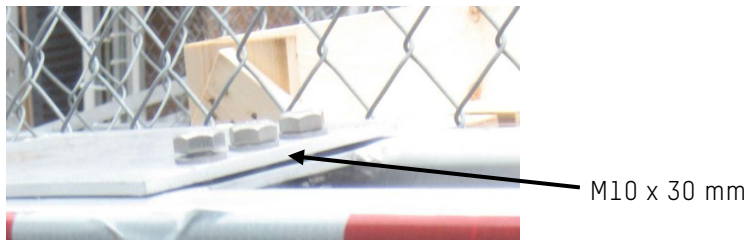


2.3) Using the fasteners from bag #2.3, install the 8 M14 x 40 mm bolts as shown in the picture.



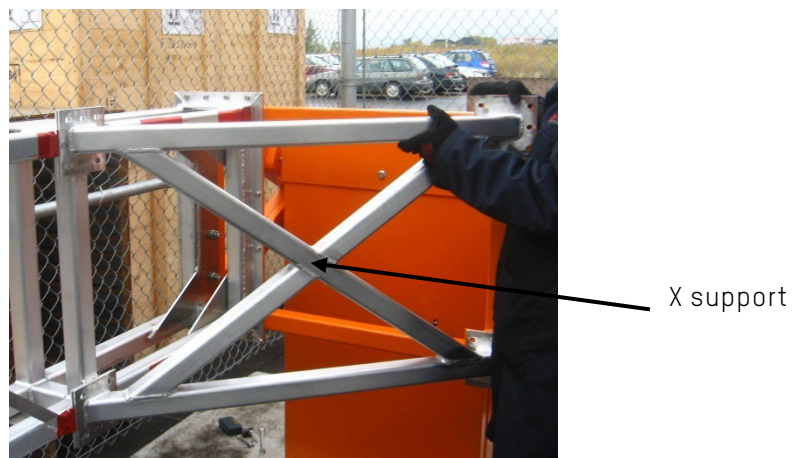
M14 x 40 mm

2.4) Using the fasteners from bag #2.4, install the 6 M10 x 30 mm bolts as shown in the picture (3 on top and 3 on the bottom).

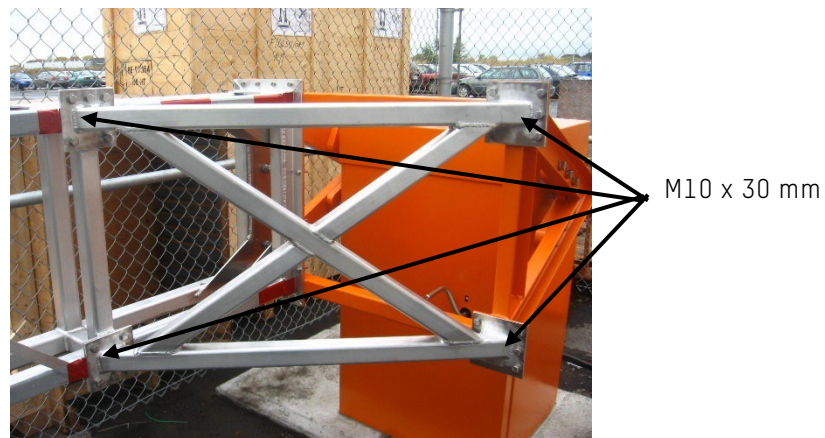


Step 3: Installing the X support

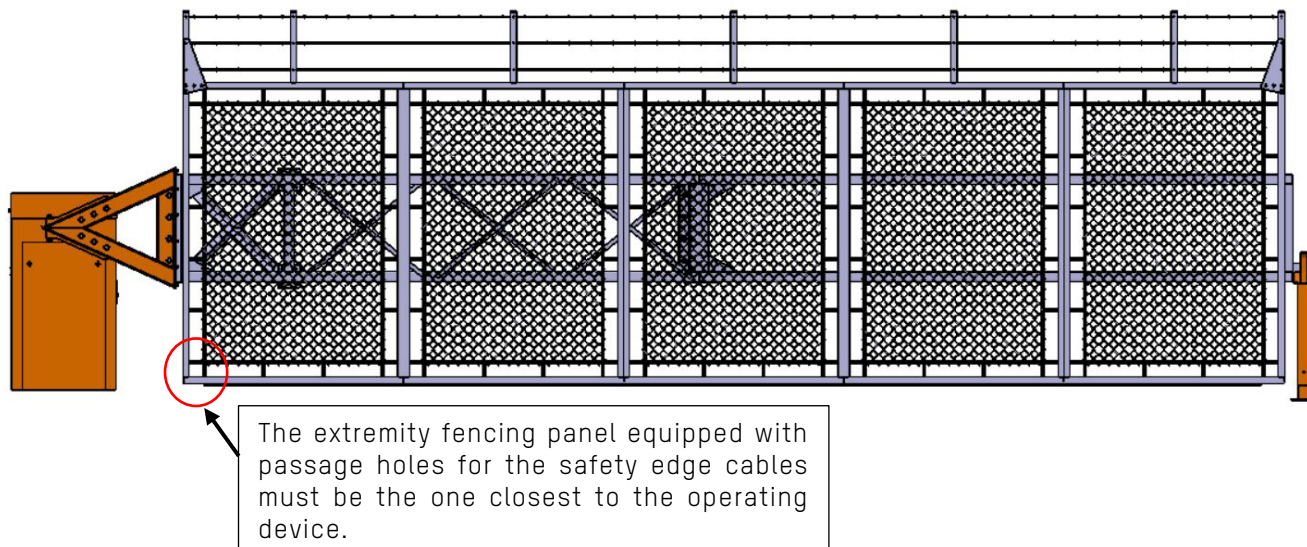
3.1) Position the X support as shown in the picture below. Be careful: This part is not symmetric; there is only one way to install it. Using the fasteners from bag #3.1, install the 10 M10 x 30 mm bolts.



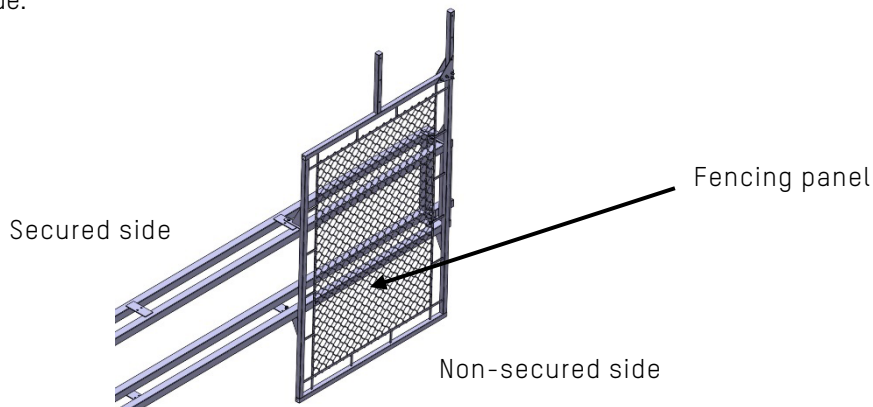
3.2) Using the fasteners from bag #3.2, install the 10 M10 x 30 mm bolts as shown in the picture.



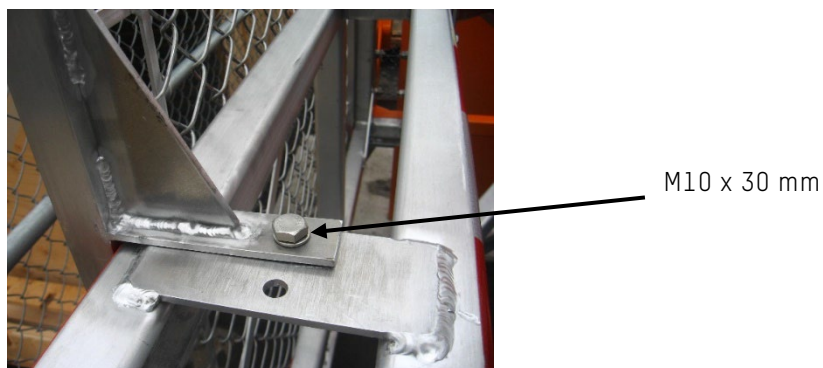
Step 4: Installing the fencing panels



4.1) Starting from the end, install a fencing panel on the structure as shown in the picture. The panel's screws must be on the secured side.



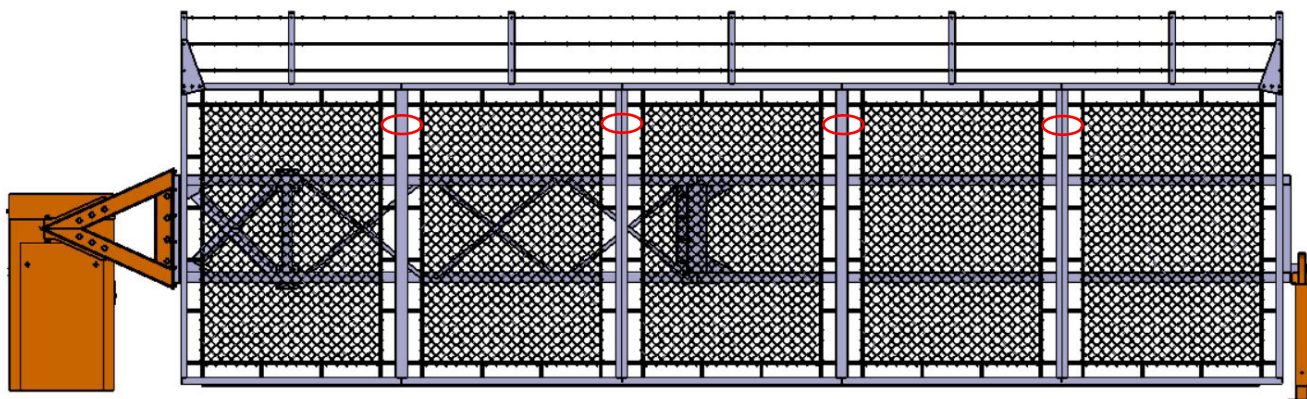
4.2) Using the fasteners from a bag labeled #4.2 (there are as many bags labeled #4.2 as there are fencing panels), install the 4 M10 x 30 mm bolts as shown in the picture.



4.3) Repeat steps 4.1 and 4.2 for all the fencing panels.



4.4) Secure the top of each panel together using the M8x80mm screws and hardware provided (bag labelled 4.4). This will ensure they are lined up on the top. The bottom of the panel will be secured once the safety edge rails will be attached.



Once all the fence panels are secured, completely tighten all the bolts used to assemble the obstacle.

Step 5: Installing the barbed wire

5.1) Install the barbed wire as shown in the pictures below. Note that all eye bolts must be installed on the non-secured side.



The assembly of your obstacle is now complete.

3.4.3 Installing the Electromagnetic Tip Support



CAUTION! The installation of the tip support must be done according to Automatic Systems recommendations as described in this section. Any deviation from these recommendations may jeopardize the performance and reliability of the barrier.

The electromagnetic tip support comes standard with the BLG77, except when the primary/secondary barrier option is purchased as this option does not require a tip support (refer to the documentation provided for this option). The tip support must be attached to a concrete base (refer to section 3.2).

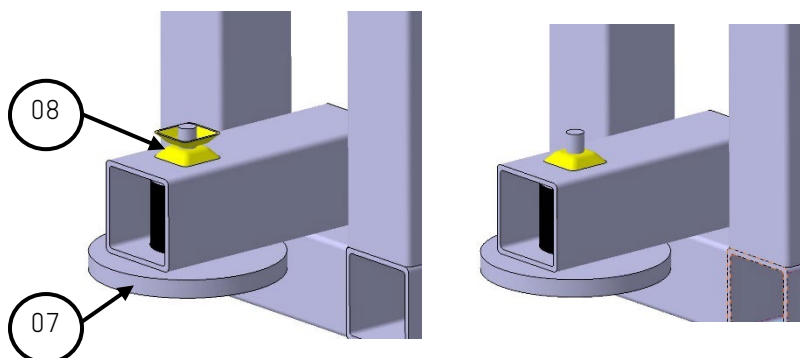


The role of the tip support is to keep the end of the obstacle in its horizontal position and to ensure its rigidity. It also adds an extra level of security.

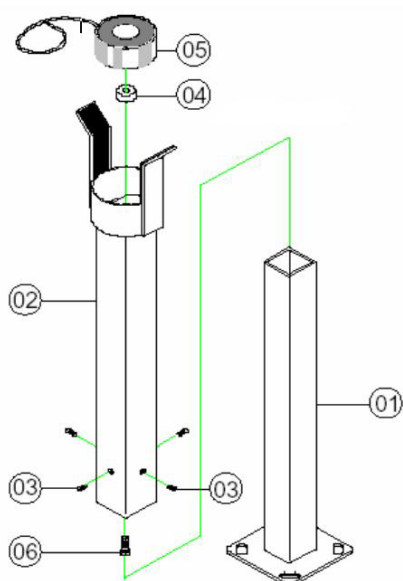
1. Install the mounting arm for the tip support plate (07) on the obstacle end structure (7, section 2.1) as shown in the pictures below. You will need to drill holes for two M8 x 80 mm bolts.



The tip support plate is factory mounted onto the mounting arm with a single sloped nut (08). A bag included with the tip support plate assembly contains a second sloped nut. You can use this second sloped nut for removing the tip support plate with a standard wrench, should the need arise.



2. Install the foot of the tip support (01) on the concrete base using the nuts provided. Tighten the nuts by hand.

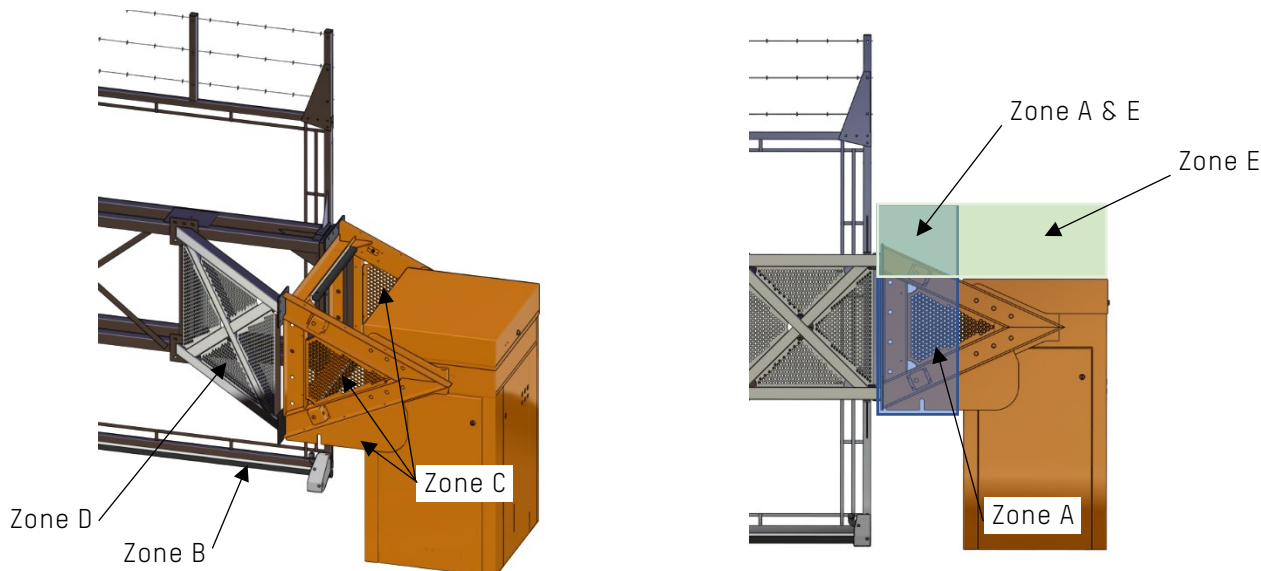


3. Install the cables as described in the guide provided with the tip support.
4. Insert the head of the tip support (02) on the foot of the tip support (01).

IMPORTANT: The obstacle must be leveled before piercing holes to adjust the height of the tip support. The adjustment is described in section 4.5.

3.5 Installing the Entrapment Protection Devices

This equipment has 5 entrapment zones that need to be secured by guards or entrapment detection device.



Zone A: Zone between the obstacle attachment and the operating device on the fence side. This zone is protected during the closing motion. This zone is protected by a safety edge. The safety edge is inactive during opening motion. However, when triggered during the closing motion it will cause the barrier to re-open completely and re-close. This safety edge needs to be removed in the field to prevent damages during installation if the barrier is lifted using the arm support. See installation instructions in sections 3.5.1. It will not be possible to operate the barrier without this device installed and connected.

Zone B: Zone under the fence. This zone is protected by a safety edge. This zone is protected during the closing motion. The safety edge is inactive during opening motion. However, when triggered during the closing motion it will cause the barrier to re-open completely and re-close. They are to be installed in the field to prevent damages during installation. See installation instruction in sections 3.5.1. It will not be possible to operate the barrier without this device installed and connected.

Zone C: Openings in the obstacle attachment and the zone under the leading edge of the obstacle attachment during the closing motion. These zones need to be guarded by the supplied protection plates to prevent a user from inserting its arm to reach over. These protection plates are mounted in factory.

Zone D: Openings in the X support bracket. These openings need to be guarded by the supplied protection plates to prevent a user from inserting its arm to reach over. These protection plates are mounted in factory.

Zone E: Zone between the obstacle attachment and the operating device. This zone is protected during the opening motion. This zone is protected by a safety edge. The safety edge is inactive during closing motion. However, when triggered during the opening motion it will cause the barrier to stop. An open or close command need to be issued to reset the situation. This safety edge needs to be removed in the field to prevent damages during installation if the barrier is lifted using the arm support. See installation instructions in sections 3.5.1. It will not be possible to operate the barrier without this device installed and connected.

3.5.1 Safety Edge

APPROVED SAFETY CONNECTING DEVICE

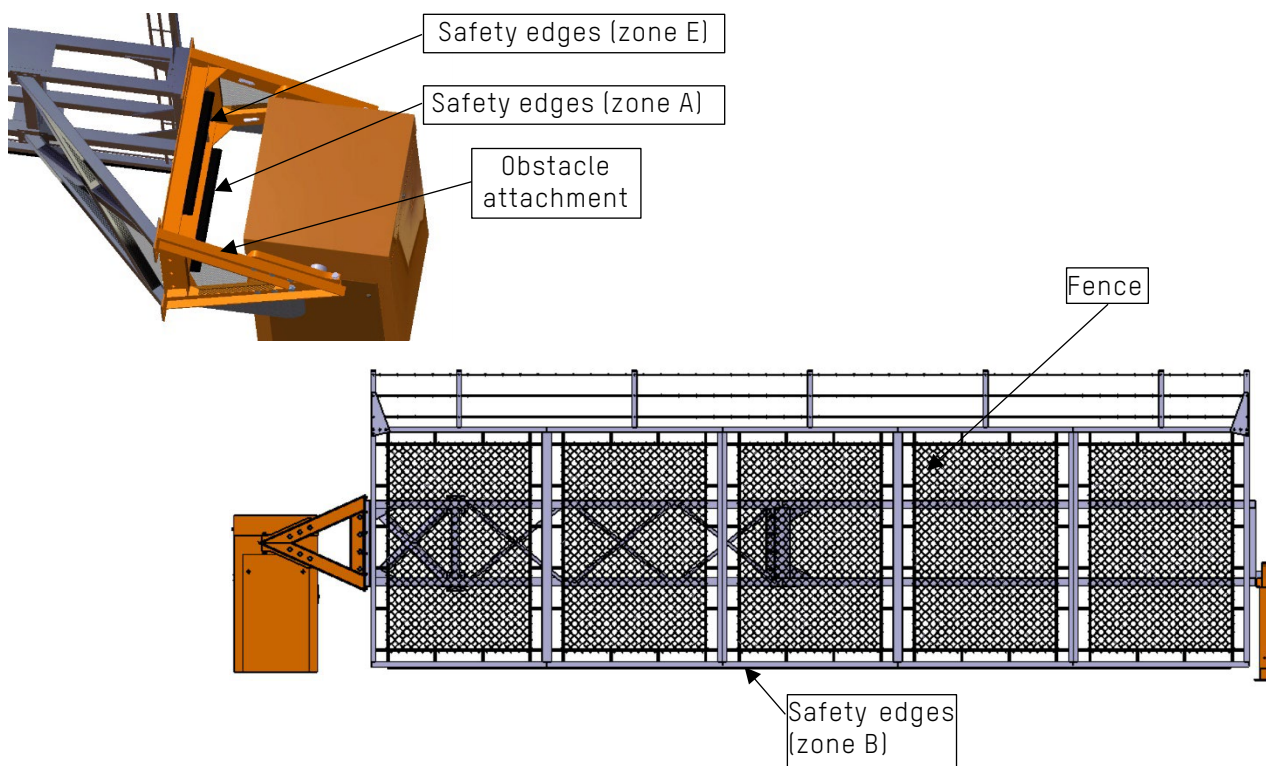
SUPPLIER	MODEL
MILLER EDGE	GEM-104

APPROVED SAFETY EDGE

SUPPLIER	MODEL
ASO	Sentir Edge 25.30 TT with 10 k Ω connection

Install the safety edge at the 3 locations mandatory to protect user against entrapment.

- One safety edge on the bottom of the fence (Zone B)
- One safety edge on each leading edge of the obstacle attachment as shown below (Zone A and E).



To consult the safety edge video instruction, scan the QR code below.

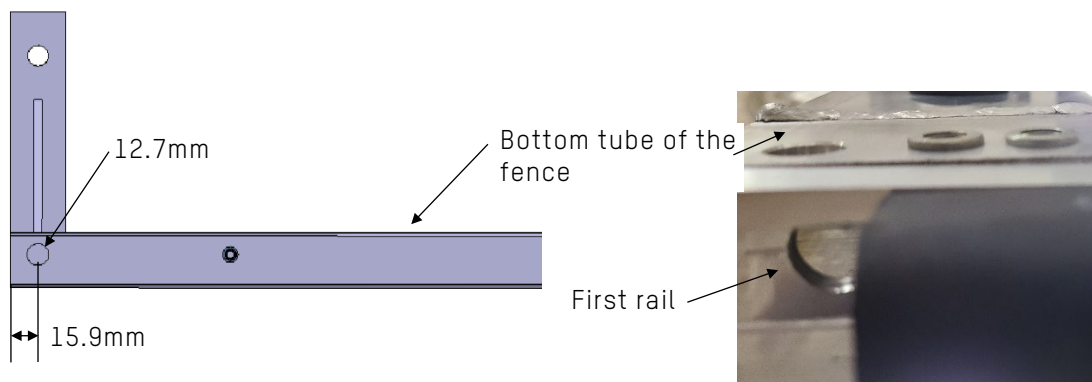


Make sure to read and understand the following steps.

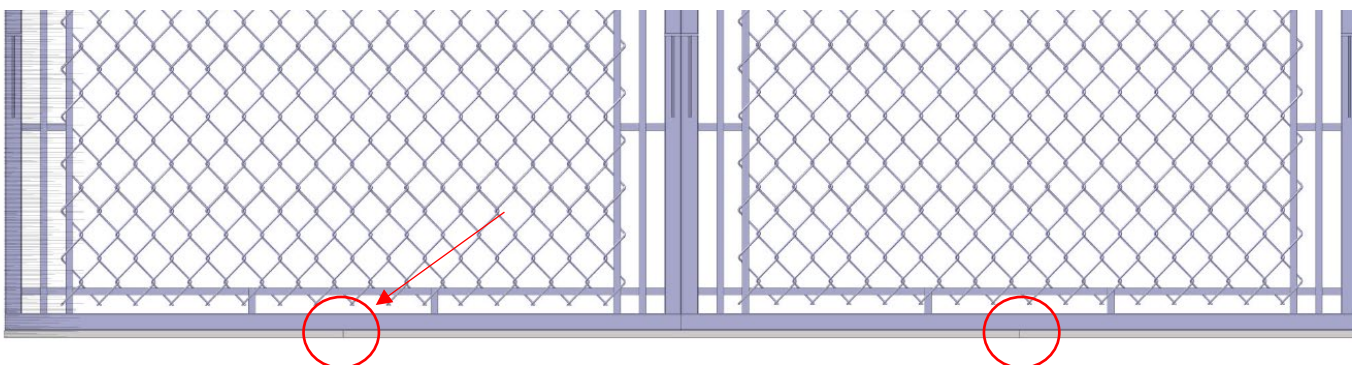
Step 1: Installing the Safety Edge Rails

Install the safety edges rails using the hardware provided. The rails are pre-cut into 1270mm and 635mm lengths. Use the hardware provided to secure the rails. Use the manual crank to lift the fence to get access to the bottom tube of the fence.

- 1.1) Drill a hole of 12.7mm in the first rail (rail on the operating device side) to pass the cable of the safety edge in the fence tube. Mark the location on the rail so it matches the hole on the fence bottom tube.



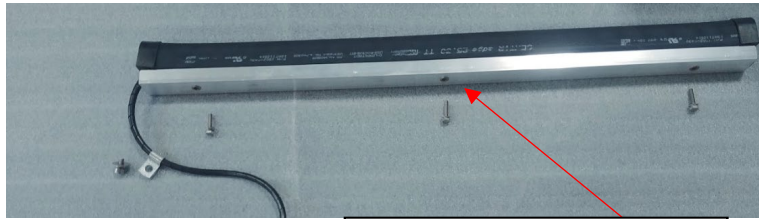
- 1.2) Use the holes with tapped inserts under the fence to install the rails. Position the rails so that the junction of the rails is aligned with the center of the fence panel. See the drawing below. The 25 " rails must be installed at the ends and the 50 " rails must be installed at the center.



Make sure the fence panels are lined up and that the obstacle is straight not curved.

- 1.3) To install the rails on the obstacle attachment (Zone A and E), use the manual crank to lift the obstacle and access the bottom of the C channels of the obstacle attachment. The

safety edge assembly will be identified under the rail to indicate the installation area. (Zone A or E) Use the hardware supplied to fix the safety edge in the respective locations. See section 3.5.1 for location of zones.



Zone identification here



- 1.4) Route the two safety edges (zone A and E) through the junction box and into the barrier operating device. Put some spiral wrap on the safety edge exposed cable.

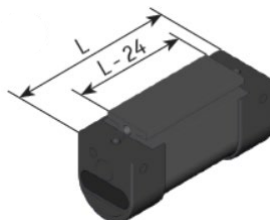


spiral wrap

Junction box

Step 2: Installing the Safety Edges on the Rails

- 2.1) Position the safety edge so that the pig tails will be on the side of the safety edge connection module.
- 2.2) Unroll the safety edge rubber components and measure it against the fence. If necessary, cut the safety edge to the proper length.
 - i. Define the length needed. The length needed is the length of the rail minus the covers (24mm [1in]). This way the safety edge will fit perfectly in the rail.



- ii. Cut the safety edge. Make sure both ends are straight.



- 2.3) Slide the safety edge in the rails. It may be necessary to spray soapy water on the rail to ease the process.

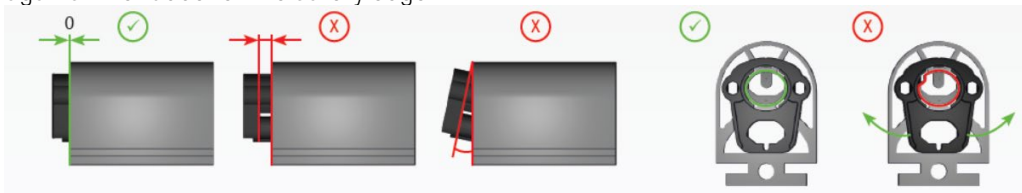


- 2.4) Terminate the safety edge using the connector kit provided as in the images below.

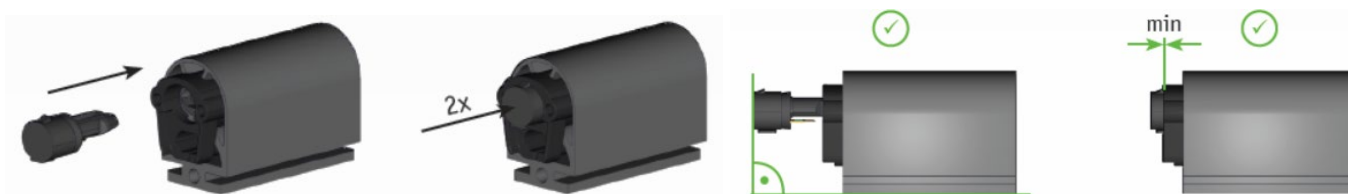
- i. First remove the connector from the guides and insert the guides on each end.



- ii. Make sure the guides are inserted straight and are pressed all the way in, so the guide flange is pressed against the rubber of the safety edge.



- iii. Insert the connectors into the guides. Make sure they are inserted straight and all the way into the guide. Remember to insert the end with the cable on the operating device side it will need to be plugged into the safety edge emitter device.



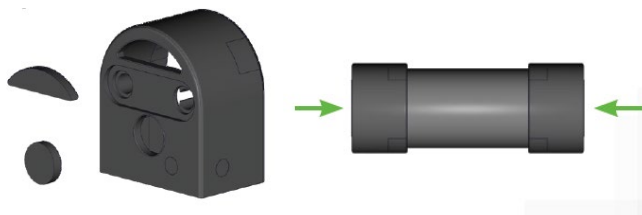
- iv. Then insert the end plug. On the side with the cable pass the cable through the bottom opening.



- v. For the zone B safety edge that will be sometimes in the vertical position remove the drain plug form the end cap that is closest to the gate operator.



- vi. For the Zone A and E safety edge remove the drain plug of the caps at both extremities of the safety edge.



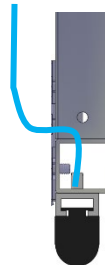
- 2.5) Test the safety edge with a multimeter to ensure it is working correctly. At rest, the value should be $10k\Omega \pm 500\Omega$. When the safety is activated the resistance value should not exceed 500Ω .



- 2.6) To prevent the safety edge from sliding down when the obstacle is in the open position, you need to mark the first and last rail with cutting pliers, like in the picture below. Mark both edges 3 times, at the end of each extremity the rail.

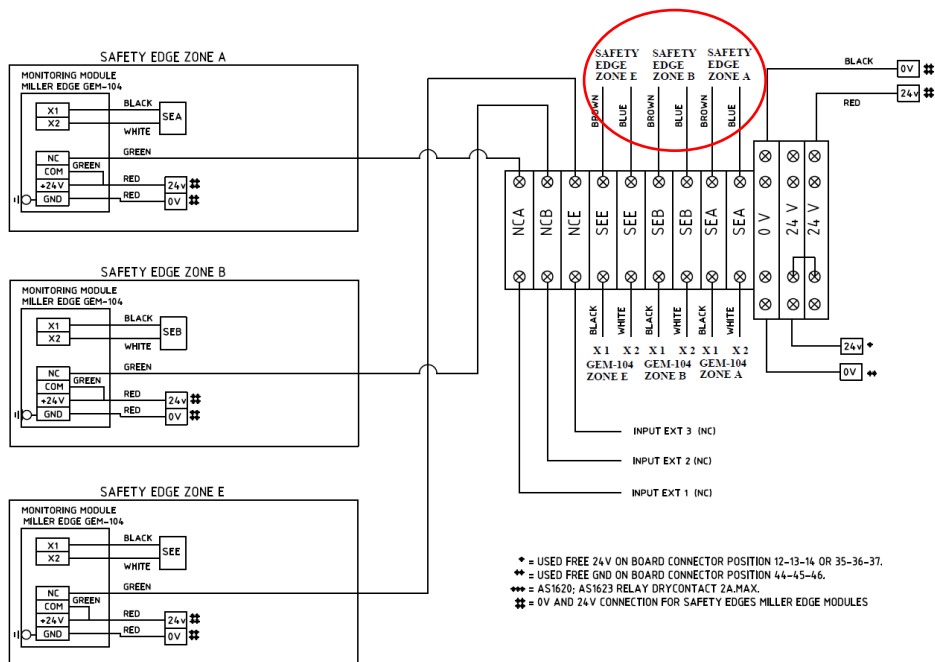
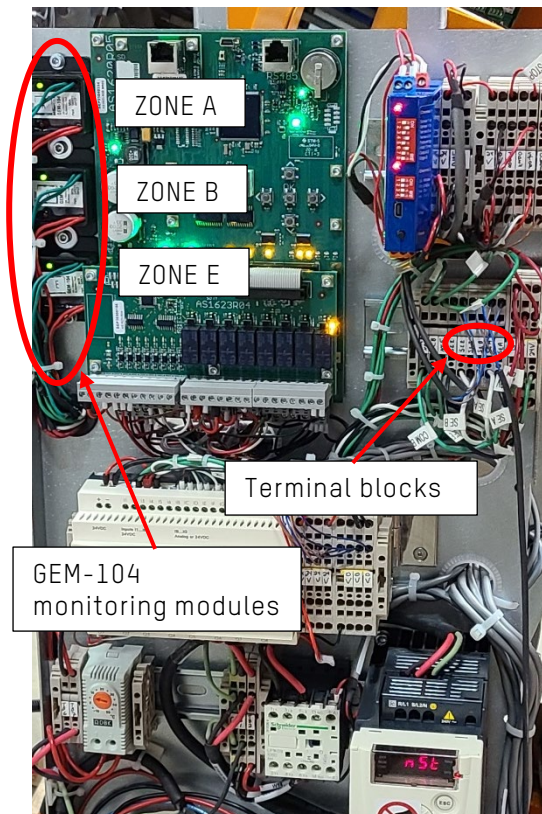


- 2.7) Route the safety edge cable through the rail, tube and the photocell box as shown below. The cable should be routed in the barrier operating device with the fence photocell cables.



Step 3: Safety Edge Connection

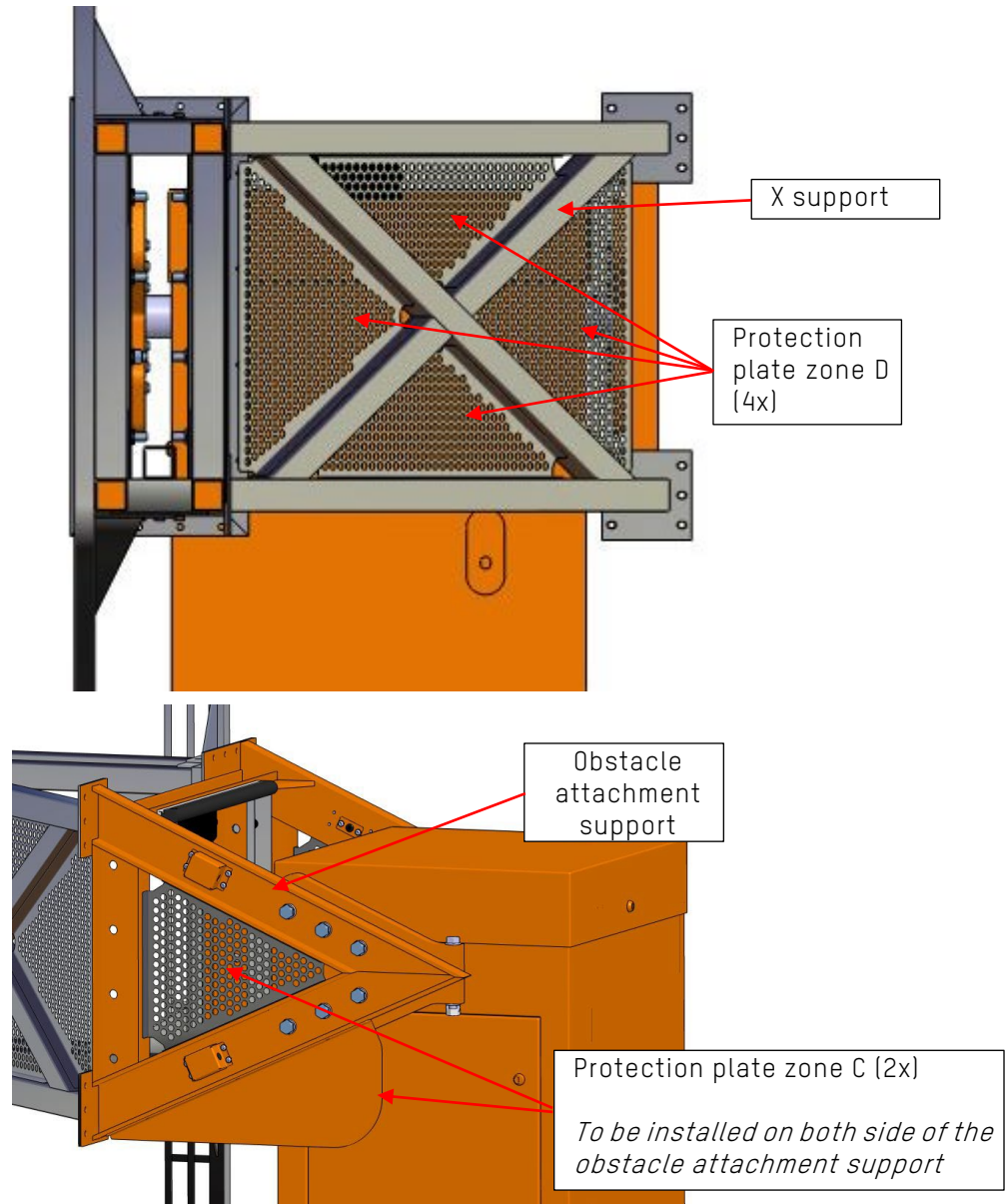
Plug the safety edges to the appropriate terminal block on the electrical backplate.



3.5.2 Installing the Protection Plate

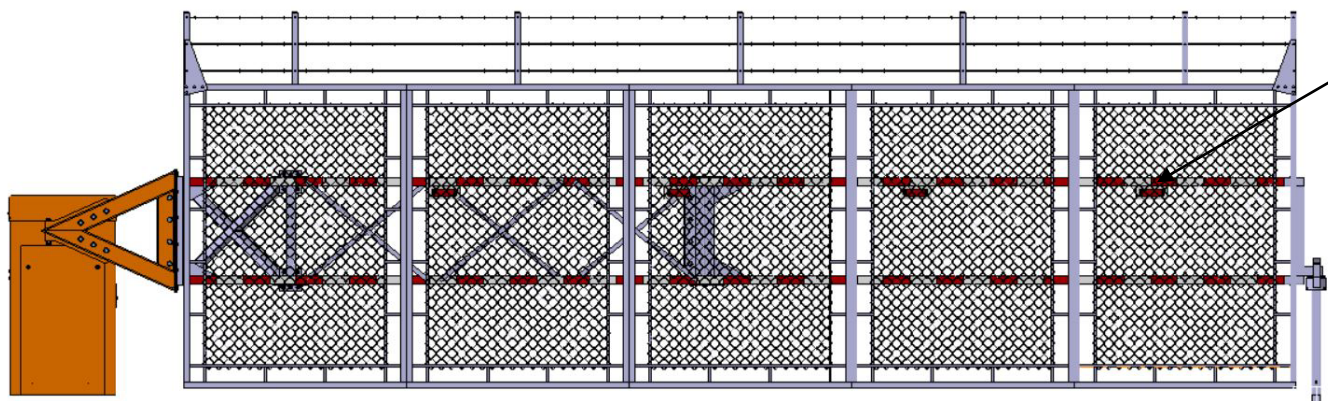
There are 8 protection plate to install on the equipment to secure zone C and D. They are mandatory to protect user from reaching over. They are part of barrier entrapment safety. Most of them are factory installed.

Use the hardware provided to install the rest of the plates that are not already installed at the factory using tapped holes on the obstacle attachment support and on the X support.



3.6 Installing an LED Box (Optional)

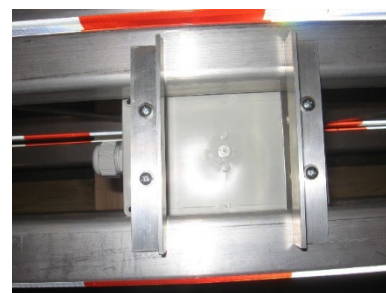
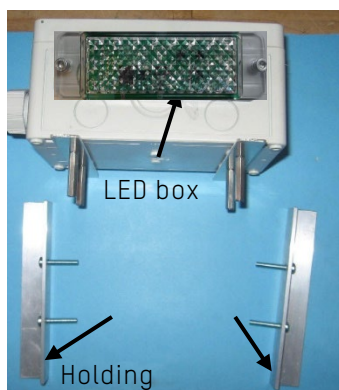
NOTE: It is not necessary to program the option on the AS1620 once the physical installation is done. The barrier is shipped with the option already configured. If it becomes necessary to program the AS1620, refer to the instructions in the dedicated AS1620 manual supplied with the barrier.



- Up to 5 LED boxes can be installed. Position each one just below the top aluminum profile as shown in the image above. Make sure their positions will allow you to route the reinforced cable to the operating device. The cable of each LED box must be on the operating device side.
- Using the fasteners and the holding brackets, attach the LED box so it will stay in place while the obstacle is moving.

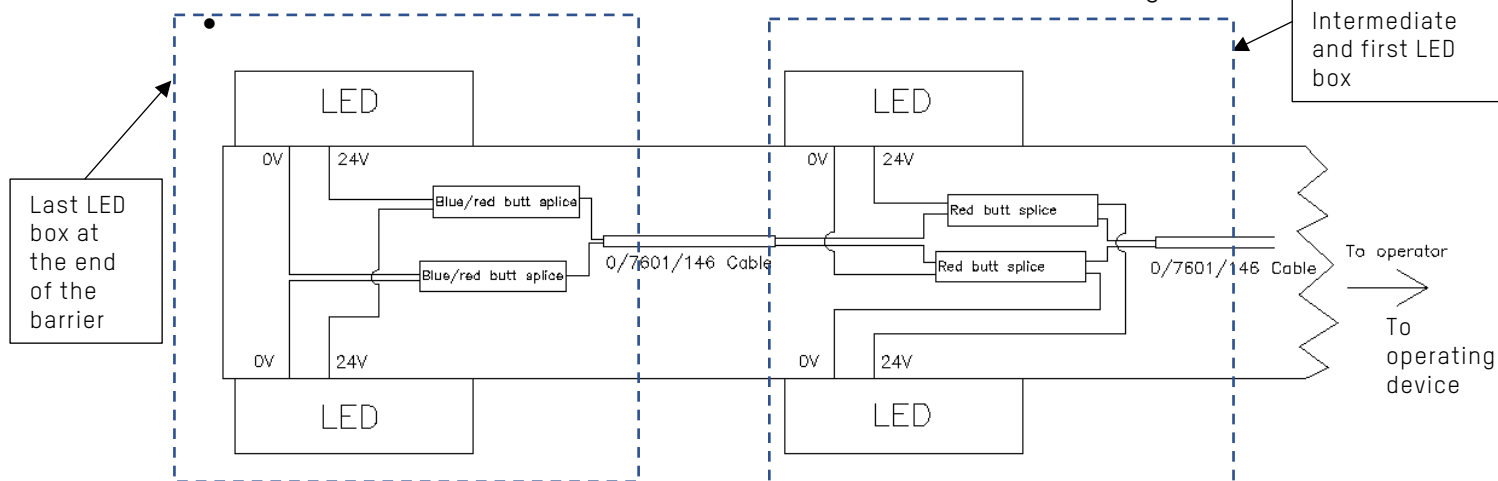


Side view

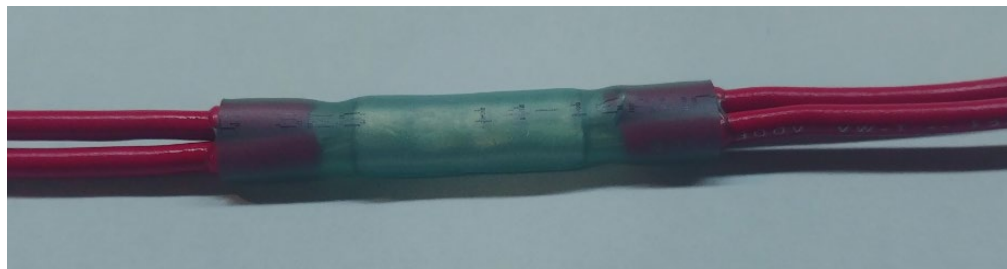


Top view

- Route the LED box cables so all the LED boxes are in series as shown in the image below.



- Use the supplied crimp connector to securely connect the LED boxes in series. Start by properly crimping the wires in the crimp connector, then use a heat gun to heat shrink the plastic around the cable and melt the glue. This action will prevent the ingress of moisture.



- Route all the wires through the seal-tight conduits of the LED boxes. Route the cable of the LED box closest to the operating device through the seal-tight conduit of the operating device.
- Refer to the electrical diagram to connect the wires to the proper output on the AS1620. Refer to the AS1620 manual to change the output configuration or configure another output.

3.7 Installing a Primary/Secondary Barrier (Optional)

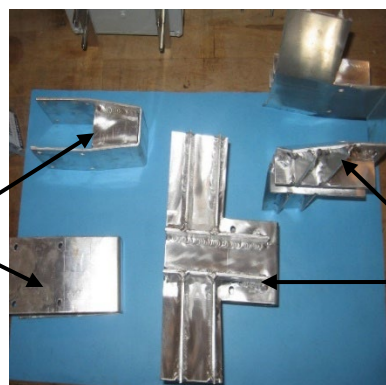
NOTE: It is not necessary to program the option on the AS1620 once the physical installation is done. The barrier is shipped with the option already configured. If it becomes necessary to program the AS1620, refer to the instructions in the dedicated AS1620 manual supplied with the barrier.



In the accessory box, you will find the required parts for the interlocking mechanism of the BLG77:

- Two primary brackets
- Two secondary brackets
- Two support legs
- Fasteners in plastic bags attached to the parts

Primary
Brackets



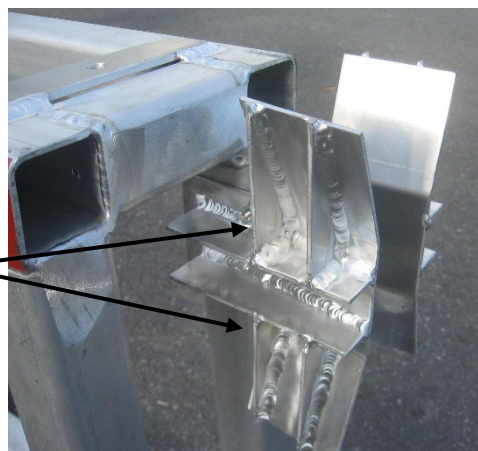
Secondary
Brackets

Step 1: Installing the Secondary Brackets

1.1) Install the secondary brackets on the secured side of the secondary obstacle end structure with the appropriate fasteners as shown in the pictures below.



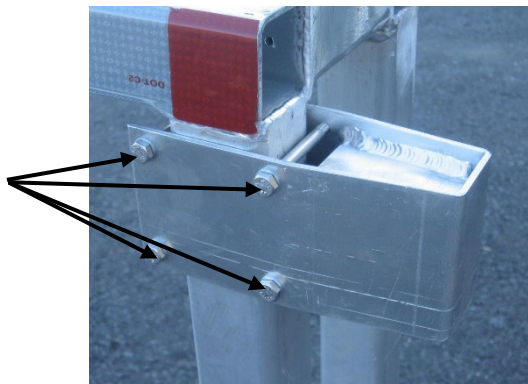
M6 bolts



Step 2: Installing the Primary Brackets

2.1) Install the primary brackets on the secured side of the primary obstacle end structure with the appropriate fasteners as shown in the pictures below.

M6 bolts

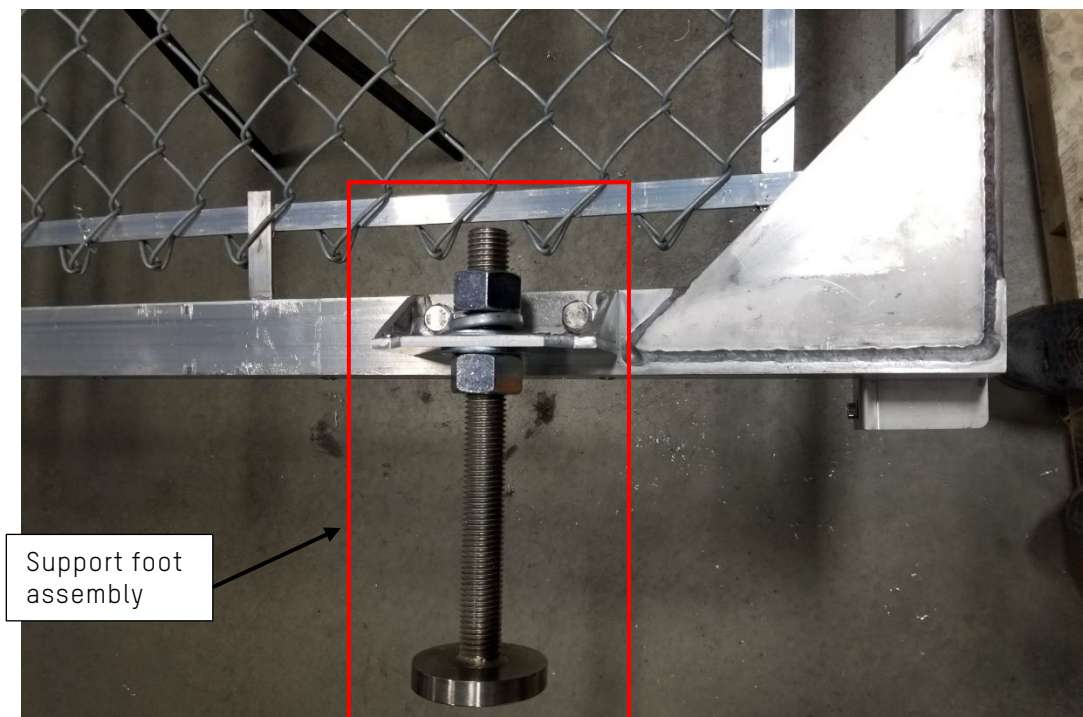


Step 3: Installing the Support Legs

This option is installed on barrier that are not equipped with a tip support. Mainly used in primary/secondary configuration where the tip support cannot be installed.

Installed the support foot assembly at the location allotted for it at the extremity of the obstacle. The mounting holes are pre-drilled in factory. Use the hardware provided in the support foot assembly.

The support foot assembly must be installed on the opposite site of the photocell under the obstacle.



Step 4: Connecting the Barriers

4.1) Connect the two barriers with a communication cable as explained in the programming booklet supplied with the barrier.

3.8 Tightening the Operating Device Fixing Clamps

Once the following conditions are met, proceed to tighten the fixing clamp nuts:

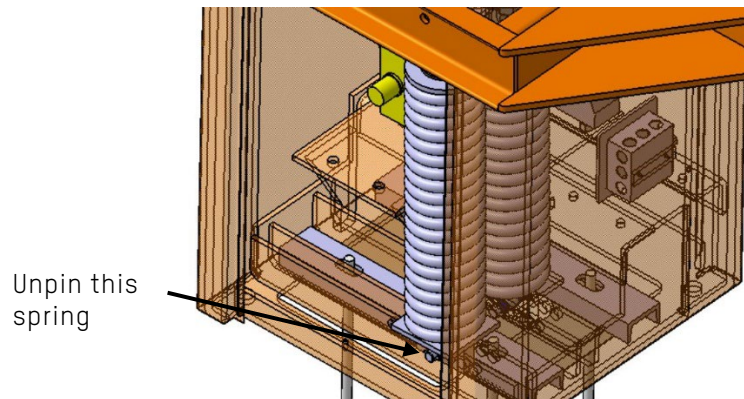
- The obstacle is installed.
- The obstacle options are installed.
- The appropriate adjustments have been made (e.g., leveling the obstacle). See Chapter 4.



WARNING: Turn OFF the breaker if the electrical connection has been done.

To tighten the nuts of the fixing clamp located under the springs, unpin one spring.

- Note the spring setting.
- Unpin the spring.
- Tighten the clamp using the nuts.
- Pin the spring back into the appropriate setting.



3.9 Electrical Connections



WARNING: Do not connect to a floating network or a high impedance earthed industrial distribution network.



WARNING: High leakage current. Imperatively connect the ground to the terminal block before connecting the main power supply wires. Do not connect more than one barrier to the same circuit breaker.

Preliminary consideration:

- The operations must be undertaken in accordance with the safety warnings in Chapter 1.
- Connections must be executed in accordance with the electrical diagrams provided inside the equipment, which remain the reference.
- In order to avoid interference, power and control cables must be placed in two different conduits separated by at least 10 cm.
- In the customer's electrical panel, a 15 A dedicated circuit breaker is required for each operating device (in a primary/secondary configuration, two circuit breakers will be required, one for each operating device).
- The obstacle must be mounted before proceeding with electrical connections.

Electrical connection of an operating device:

- Turn off (► OFF) the 15 A dedicated circuit breaker located in the customer's electrical panel.
- Turn off (► OFF) the main circuit breaker of the barrier. If there is a heater, also turn off (► OFF) the heater circuit breaker.



- Connect the ground cables to their terminal blocks:
 - Cable between the cabinet and the cover
(check this connection each time the cover is closed)
 - Cables between the cabinet and the doors
(check this connection each time a door is closed)



- Ground cable from power supply



- Control board ground

- Connect the neutral wire and the live wires of the power supply cable to their terminal block, as shown in the electrical diagrams, making sure their properties comply with the required specifications (the connections from the terminal blocks to the main circuit breaker have been made at the factory).
- Connect the various control units and options as shown in the electrical diagrams supplied. Make sure the control cables remain separate from the power cables.
- Test the proper operation of the equipment. Refer to Chapter 4 and Chapter 6.



4 ADJUSTMENTS



IMPORTANT: SAFETY INSTRUCTIONS

WARNING – TO REDUCE THE RISK OF INJURY OR DEATH, READ AND FOLLOW ALL SAFETY INSTRUCTIONS BEFORE INSTALLING, OPERATING, OR SERVICING THE BARRIER. SAVE THESE INSTRUCTIONS!

ANY WORK ON THE BARRIER MUST BE DONE BY TECHNICIANS CERTIFIED BY AUTOMATIC SYSTEMS. ANY UNAUTHORIZED WORK ON THIS PRODUCT THAT IS CARRIED OUT BY A TECHNICIAN THAT HAS NOT BEEN CERTIFIED BY AUTOMATIC SYSTEMS COULD CAUSE SERIOUS INJURY OR EVEN DEATH AND WILL AUTOMATICALLY VOID THE MANUFACTURER'S WARRANTY.

ALL SAFETY INSTRUCTIONS INDICATED IN THIS SECTION AND IN CHAPTER 1 MUST BE FOLLOWED.

4.1 Balancing the Obstacle Using the Springs

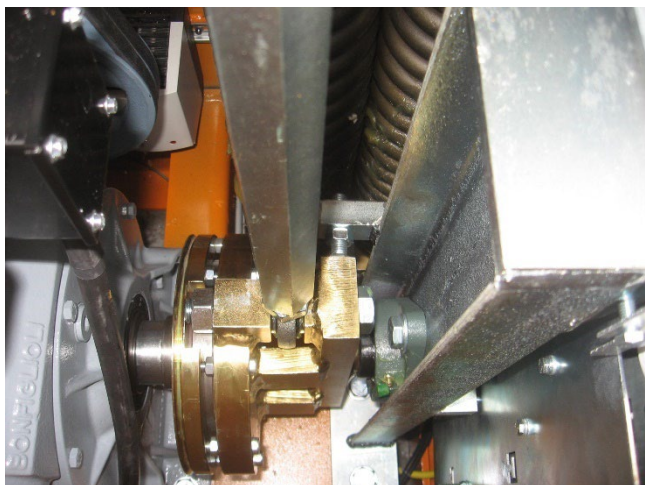
The obstacle must be balanced so that when it is at a 45-degree angle there is no more tension on the connecting rod.

4.1.1 Adjusting the Springs

The power required to set the mechanism in motion is minimal due to the built-in compression of the two main springs. For the barrier to operate properly, the tension of the two main springs must be correctly adjusted—the strength needed to activate the mechanism must be equal in both directions. The proper spring setting must be based on the obstacle length and the options installed, and both springs must have the same setting.

Proceed with the adjustment as follows:

1. Make sure the obstacle is stopped and cannot move up or down.
2. Remove the side doors and the cover using key 004 and the manual crank door using key 017.
3. Turn OFF the main breaker.
4. Install the ratchet adapter on the gearbox extension (18, section 2.2).
5. Using the ratchet and the 32 mm socket, bring the obstacle into the vertical position. Make sure the connecting rod is against the stopper as this means your system is now locked in position.
6. Secure the connecting rod to the clutch with a tie wrap.



7. Check if the settings are in accordance with the settings in Table 1. If this is not the case, follow the instructions below for both springs, but one at a time:
 - Loosen the spring nut (2) and spring locknut (6) to remove the tension in the spring.
 - Remove the top bolt (5) and the bottom spring pins (7 and then 3).
 - Set the spring in the proper position as specified in Table 1.
 - Reinstall the top bolt (5) and the bottom spring pins (3 and then 7).
 - Adjust the value of x as specified in Table 1 and tighten the spring nut (2) and spring locknut (6) appropriately.
 - Repeat for the second spring.
8. Remove the tie wrap securing the connecting rod to the clutch.

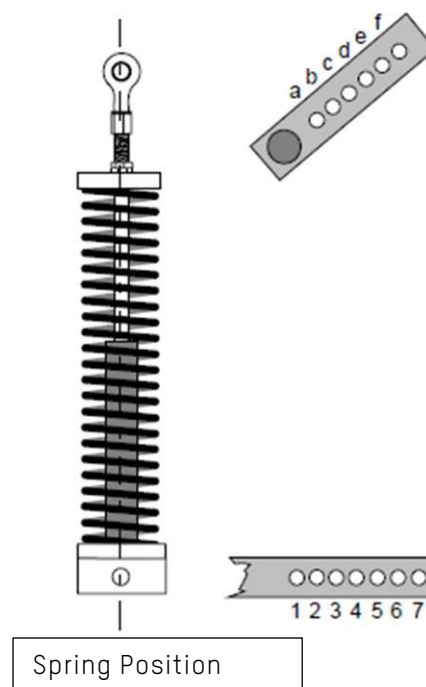
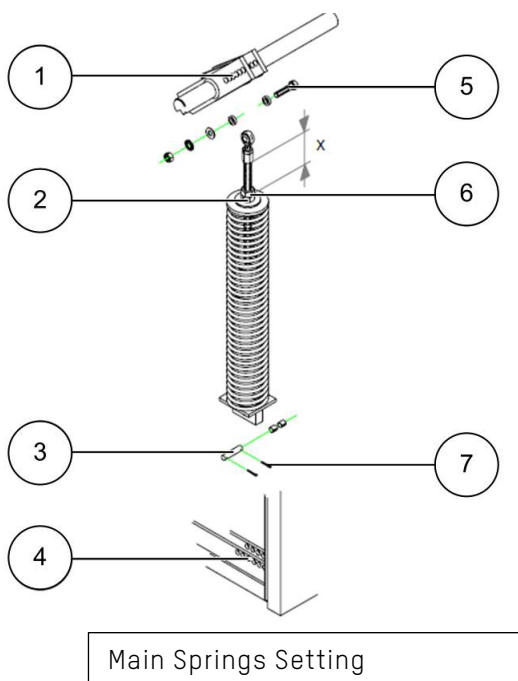


Table 1: Spring setting standard position

Obstacle length	Spring position	Value of x
2.438 m x 6.148 m (HL)	e-5	102 mm
3.048 m x 4.878 m (H)		
1.829 m x 6.148 m (L)		
1.829 m x 4.878 m (M)		

The springs are adjusted. You can proceed with obstacle balancing.

4.1.2 Balancing the Obstacle

Once the main springs are set to their specified setting, you need to fine-tune the spring adjustments for both springs simultaneously as follows. Both springs have the same adjustments:

1. Make sure the obstacle is stopped and cannot move up or down.
2. Remove the side doors and the cover using key 004 and the manual crank door using key 017.
3. Turn OFF the main breaker.
4. Install the ratchet adapter on the gearbox extension (18, section 2.2).
5. Using the ratchet and the 32 mm socket, bring the obstacle to a 45-degree angle.
6. At this point, if the obstacle is balanced, you should be able to rotate the rod ends of the connecting rod easily without a wrench. If you are not able to rotate the rod ends of the connecting rod easily, the springs require adjustment. The balancing process requires two people and there are two possible scenarios:

a) If you need to pull down the obstacle to be able to rotate the rod ends of the connecting rod:

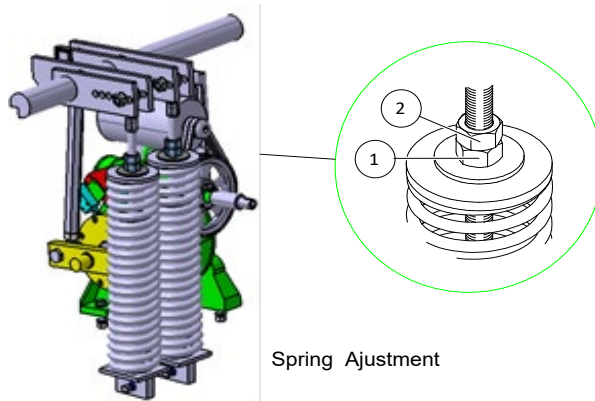
The springs are too tight.

- Put the obstacle in the open position.
- Loosen the two spring locknuts (2).
- Unscrew the two spring nuts (1) to decompress the springs.

b) If you need to push the obstacle up to be able to turn the connecting rod:

The springs are too loose.

- Put the obstacle in the open position.
- Loosen the two spring locknuts (2).
- Screw the two spring nuts (1) to compress the springs.



7. Repeat step (a) or (b) until the obstacle is balanced (no tension on the connecting rod when it is at a 45-degree angle).
8. When the desired result is obtained, tighten the two spring nuts (1) and two spring locknuts (2). In most cases, you won't need to repeat the procedure to balance the obstacle.



Make sure that there is always space between the spring coils when the obstacle is closed. The coils should never touch each other because this would greatly reduce spring life.

Once the obstacle is balanced, adjust the belts (section 4.2) and then the clutch (section 0).

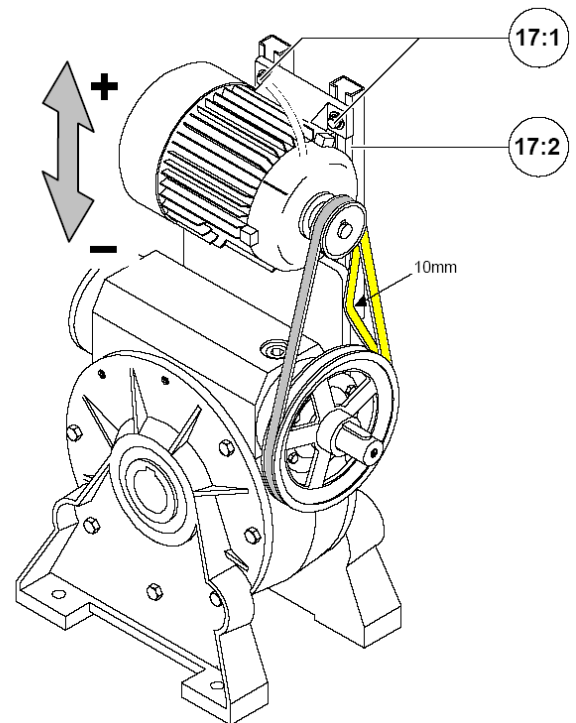
4.2 Adjusting the Belts

The transmission belts need to be adjusted before first start-up and also:

- After a belt replacement
- After six months of operation
- If power is not transmitted properly to the gearbox.

When the belts are worn out or not adjusted properly, you will find black dust produced by the sliding of the belts on the pulley. Proceed as detailed below to check the adjustment of the belts.

1. Remove the side doors and the cover using key 004.
2. Check the tension of the belts. There should be a 3/8 in [10 mm] deflection when you press on the belt as shown in the figure on the right. There are two possible scenarios:
 - a. **The deflection is adequate:**
 - i. Proceed starting at step 3.
 - b. **The deflection is not adequate:**
 - i. Proceed starting at step 7 and then go back to step 3 to test the belts.
3. Turn on (► ON) the main circuit breaker.
4. Open the obstacle to 90 degrees by pressing on the UP button of the control board.
5. Close the obstacle by pressing on the DOWN button of the control board.
6. Reverse the motion of the obstacle when it reaches an angle of 45 degrees by activating the safety edge. The following conditions must be met:
 - a. The clutch must absorb the barrier's inertia by sliding a little.
 - b. **The belts must not slide.**
7. If conditions a) and b) of step 6 are not met, adjust the tension of the belts:
 - a. Turn off (► OFF) the main circuit breaker.
 - b. Loosen the 4 motor fixation screws (17:1).
 - c. If required, lower the motor into the rails (17:2), remove the old belts, and install the new ones.
 - d. Pull the motor upward. The tension of the belts is adequate when there is a deflection of 10 mm when you press on the belt as shown in the figure on the right.
 - e. Make sure the motor is horizontal.
 - f. Tighten the 4 motor fixation screws (17:1).

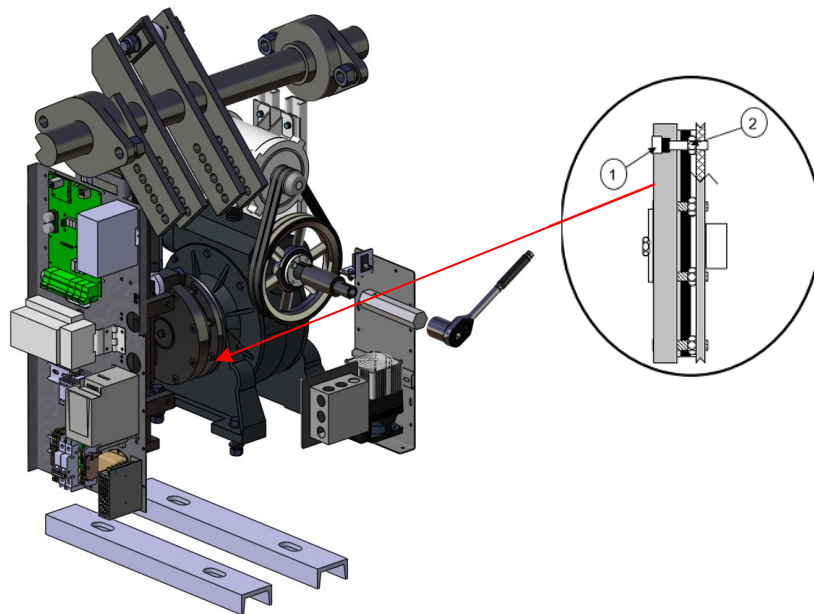


4.3 Adjusting the Clutch

The adjustment of the clutch, or the safety torque limit, was performed at the factory. However, it might be necessary to adjust it after the installation of the barrier or the initial working period.

Adjust the clutch in the following cases:

- The barrier is having difficulty reopening following a reverse command sent during the closing cycle. The clutch slides and must be tightened.
- It is not possible to manually stop the obstacle while it is in motion. The clutch is too tight and must be loosened.
- After the obstacle has been balanced using the springs.



In any of the above cases, you must first check the wear of the belt using the method described in section 4.2.

To adjust the clutch, proceed as follows:

1. Make sure the obstacle is stopped and cannot move up or down.
2. Remove the side doors and the cover using key 004.
3. Adjust the clutch:
 - Turn off the main circuit breaker.
 - Loosen the 8 jam nuts (2).
 - If the clutch slides, tighten the 8 screws (1); if the clutch is too tight, loosen the 8 screws (1).



Make sure you are tightening all 8 screws uniformly by performing 1/8 of a turn on each of the screws and then going back to the first screw. The setting is very sensitive!

4. Test the clutch:
 - Turn on the main circuit breaker.
 - Open the obstacle to a 90-degree angle by pressing the UP button on the control board.
 - Close the obstacle by pressing on the DOWN button of the control board.
 - Reverse the motion of the obstacle when it reaches an angle of 45 degrees by activating the safety edge.
 - The clutch must absorb the obstacle's inertia by sliding a little. **The belts must not slide.**
 - Turn off the main circuit breaker.
5. Repeat the procedure described in step 3 above until the desired result is achieved. **DO NOT FORGET TO TURN OFF THE MAIN CIRCUIT BREAKER BEFORE PERFORMING THIS PROCEDURE.**

Once the adjustment is done, make sure the main circuit breaker is turned off and **firmly tighten the 8 jam nuts (2). IMPORTANT: Excessive tightening may damage the gearbox!**

4.4 Leveling the Obstacle

Two leveling adjustments must be made for the obstacle to be perfectly aligned horizontally and vertically.

- Remove the two side doors and the cover with key 004.
- Remove the manual crank door using key 017.
- Turn off (► OFF) the main circuit breaker of the barrier. If there is a heater, also turn off (► OFF) the heater circuit breaker.
- Proceed with the leveling.

Step 1: Leveling the obstacle in its horizontal "closed position" (Leveling performed using the connecting rod)

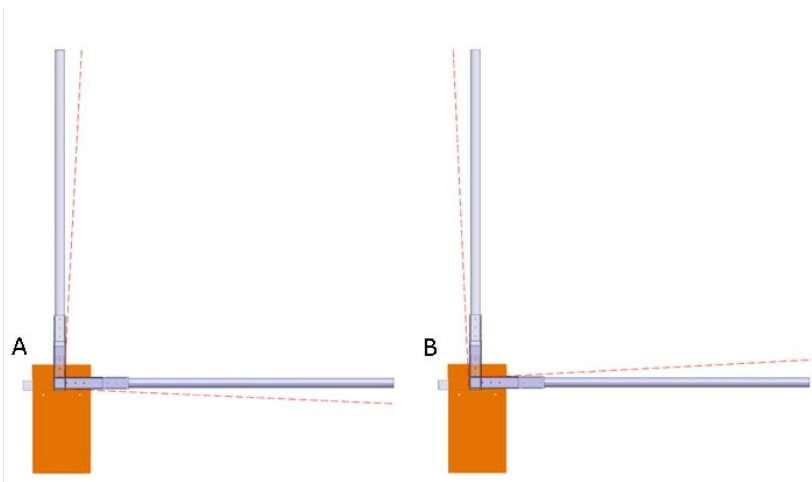
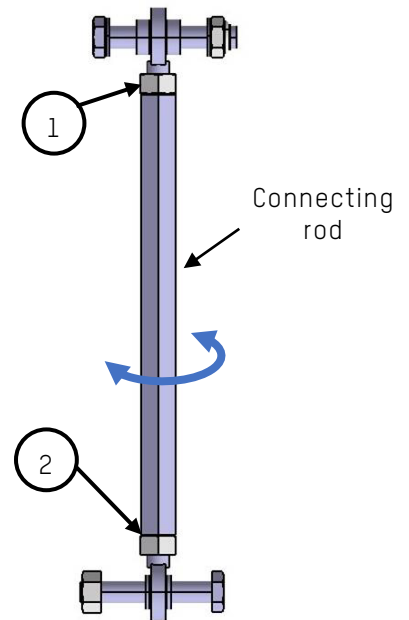
NOTE: This leveling adjustment raises or lowers the obstacle without modifying the 90-degree angle between the open and closed positions.

The obstacle is closed (obstacle horizontal) and the following conditions are met:

- The motor is stopped.
- The closing limit switch is activated.
- The steel plate of the clutch is flush (no pressure exerted) with the screw of the closing stopper (31, section 2.2).

If the obstacle is not levelled horizontally, adjust the level of the obstacle as follows:

- Ensure the obstacle (base and end structures) is perfectly aligned with the obstacle attachment.
- Loosen the nuts (**1** and **2**). **Note:** Nut (**1**) has a left-handed thread and nut (**2**) has a right-handed thread.
- Rotate the connecting rod clockwise to raise the obstacle (**B**) or counterclockwise to lower it (**A**), until the obstacle is levelled.
- While holding the connecting rod, tighten the nuts (**1** and **2**).



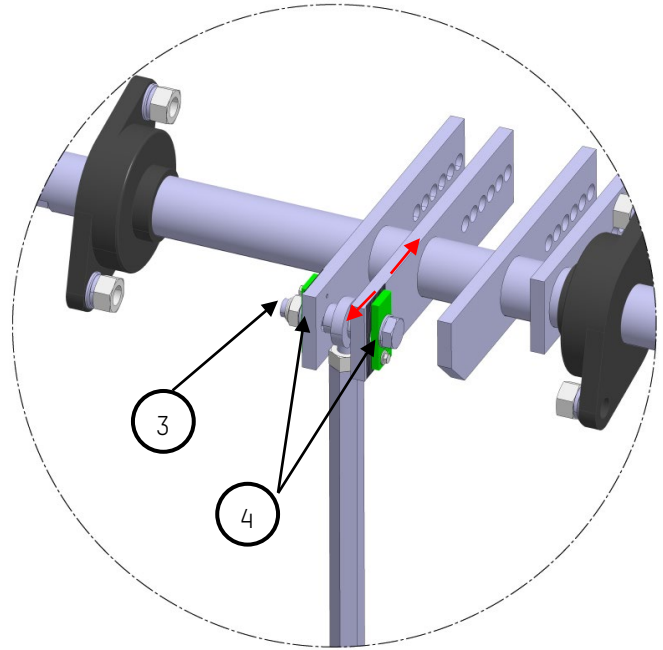
Step 2: Leveling the obstacle in its vertical "open position" (Leveling performed using the angle corrector [32, section 2.2])

NOTE: This leveling adjustment increases or decreases the 90-degree angle between the open and closed positions.

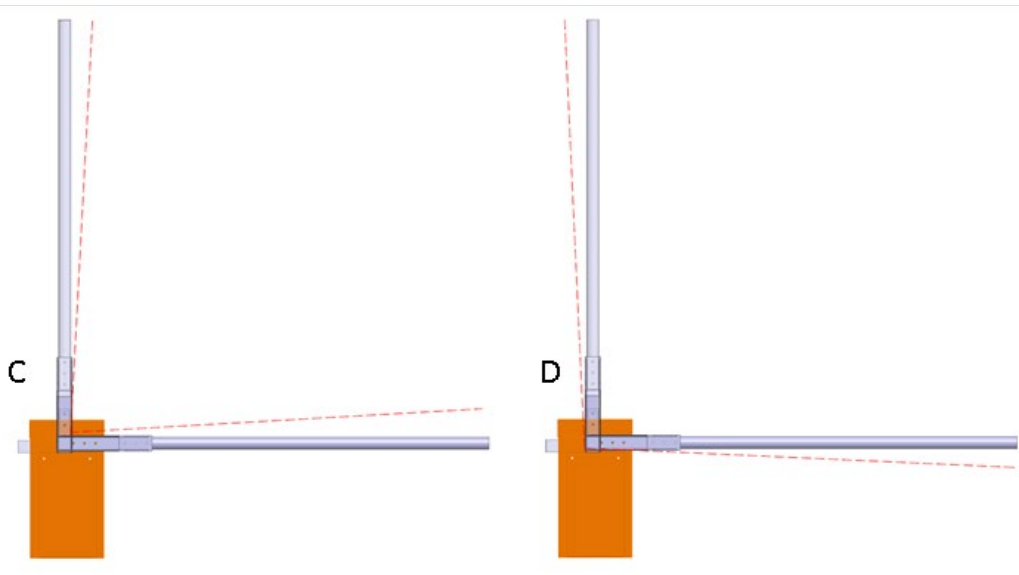
The obstacle is open: the clutch is flush with the open stop screw (no pressure exerted).

If the obstacle is not leveled vertically, adjust the level of the obstacle as follows:

- Loosen screws (3) and (4) maintaining the grooved plate of the angle corrector.
- Slightly move the plate **away** from the shaft if the angle needs to be reduced (C) or **towards** the shaft if the angle needs to be increased (D).



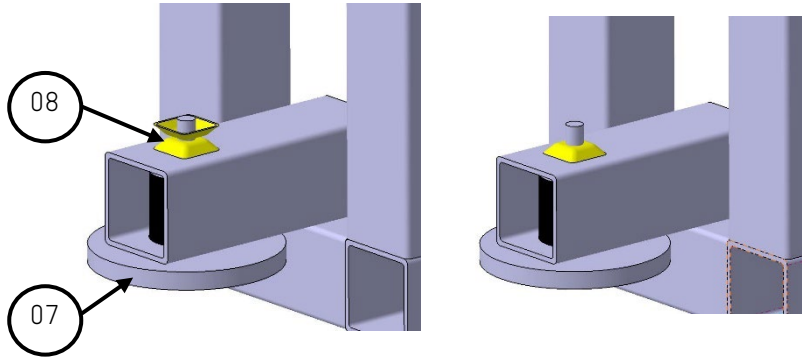
Note: The angle corrector lets you align the obstacle with an irregular pavement profile.



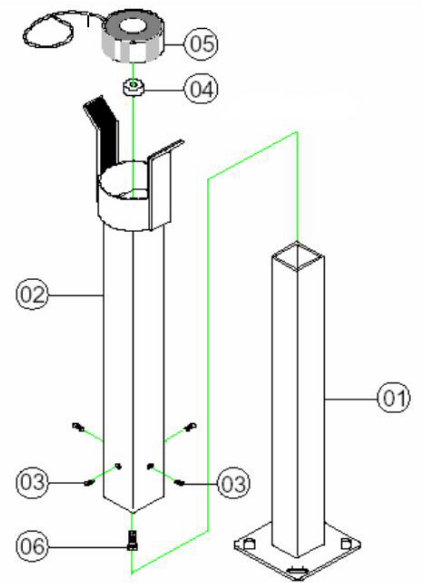
AFTER THIS OPERATION, CLOSE THE OBSTACLE AND CHECK THE HORIZONTAL POSITION OF THE OBSTACLE. THE LEVELING OPERATION SHOULD BE REPEATED UNTIL THE PRECISE POSITION DESIRED IS ATTAINED WHEN OPENING AND CLOSING THE BARRIER.

4.5 Adjusting the Height of the Electromagnetic Tip Support

1. Turn off (► OFF) the main circuit breaker of the barrier. If there is a heater, also turn off (► OFF) the heater circuit breaker.
2. Adjust the height of the head of the tip support (02) and mark the screw holes (03) on the foot of the tip support (01) with a marker. Make sure to align the support plate (07) with the magnetic suction plate (05). There must be 3/8 in [10 mm] between the support plate (07) and the magnetic suction plate (05).



3. Remove the head of the tip support (02).
4. Very carefully drill four 5 mm holes (03) and tap M6. Be mindful not to pierce or damage the wires that run through the electromagnetic tip support.
5. Make the electrical connections required for the tip support in accordance with the appropriate electrical drawing.
6. Put the head of the tip support (02) back on the foot (01).
7. Align the obstacle so it fits properly in the tip support by making the barrier swivel on its base, if necessary.
8. Tighten the nuts attaching the foot of the tip support (02) to the concrete base.



4.6 Adjusting the Limit Switches

The open limit switch (20:2) and the closed limit switch (20:1) stop the obstacle from opening or closing as soon as they are activated by the cams (20:3 and 20:4).

Step 1: Adjusting the height of the limit switches

WARNING: This step is performed while the barrier is powered. Use extreme caution.

- 1.1) Remove the side doors and the cover using key 004 and remove the manual crank door using key 017.
- 1.2) Verify that the lever of each limit switch is depressed and that the limit switch is activated when the proper cam aligns with it. There should be no excessive pressure on the levers of the limit switches when the cams touch the levers. Excessive pressure on the limit switch levers can damage the components.
 - If there is too much pressure on the limit switch lever, loosen the limit switch adjustment screws and move the limit switch away from the cam. Make sure the lever remains engaged when lining up with the cam.
 - If the limit switch does not activate when lining up with the cam, this means the lever is not depressed enough. Loosen the limit switch adjustment screws and slightly move the limit switch assembly closer to the cam until the lever engages the limit switch.
- 1.3) Once their position is adequate, tighten the limit switch adjustment screws.

Step 2: Adjusting the cams

Cams must be adjusted so that the connecting rod stops when it is 2 to 3 mm from the stopping bolts.

WARNING: Before adjusting the cams, turn off (► OFF) the main circuit breaker of the barrier. If there is a heater, also turn off (► OFF) the heater circuit breaker.

There are three possible scenarios:

- a) The connecting rod stops when it is 2 to 3 mm from the stopping bolts:
 - No cam adjustment required
- b) The connecting rod stops when it pushes against the stopping bolts:
 - When this occurs when the barrier opens, move the cam **clockwise**
 - When this occurs when the barrier closes, move the cam **counterclockwise**
- c) The connecting rod stops when it is farther than 2 to 3 mm from the stopping bolts:
 - When this occurs when the barrier opens, move the cam **counterclockwise**
 - When this occurs when the barrier closes, move the cam **clockwise**

2.1) Turn on (► ON) the main circuit breaker of the barrier.

Put the manual crank door back in place and lock it using key 017.

2.2) Close the obstacle (horizontal position) and assess the closed position (obstacle, cam 20.3, and limit switch 20.1).

2.3) Turn off (► OFF) the main circuit breaker of the barrier.

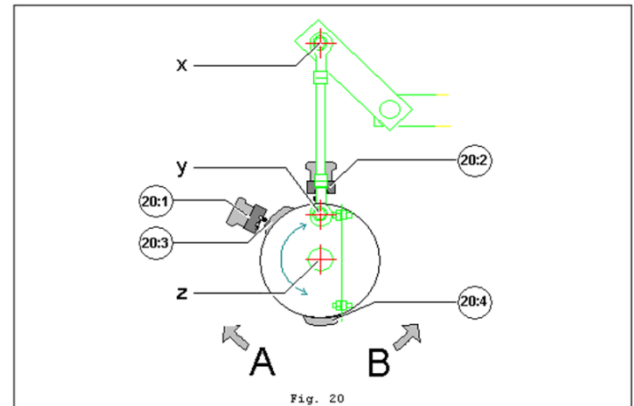
2.4) Loosen the cam and adjust its position according to your scenario. It should be in the center of the limit switch.

2.5) Turn on (► ON) the main circuit breaker of the barrier.

2.6) Raise the obstacle (vertical position) and assess the open position (obstacle, cam 20.4, and limit switch 20.2).

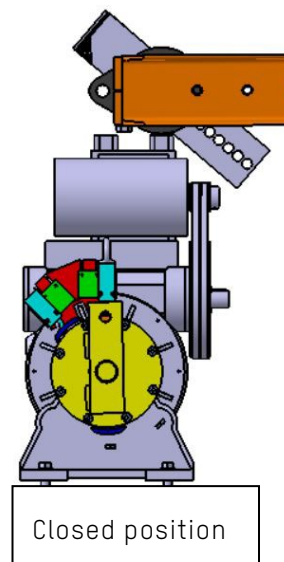
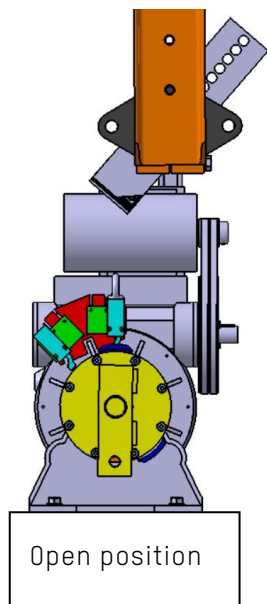
2.7) Turn off (► OFF) the main circuit breaker of the barrier.

2.8) Loosen the cam and adjust its position according to your scenario. It should be in the center of the limit switch.



2.9) Turn on (► ON) the main circuit breaker of the barrier. If there is a heater, also turn on (► ON) the heater circuit breaker.

2.10) Open and close the obstacle to ensure its closed and open positions are appropriate.

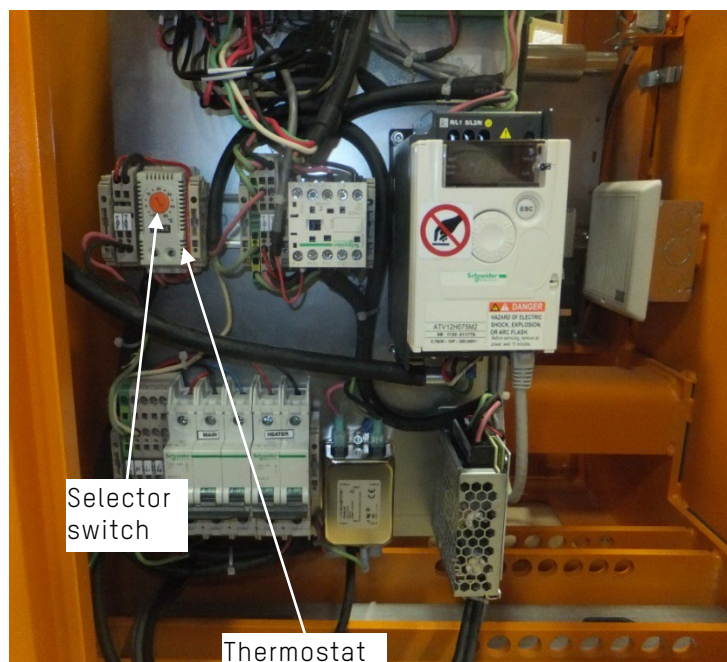


4.7 Adjusting the Fan Heater (Optional)

Refer to the electrical diagrams for details on connections.

The fan heater has an adjustable thermostat that can be adjusted from -10°C to 50°C. The factory default is set to 5°C.

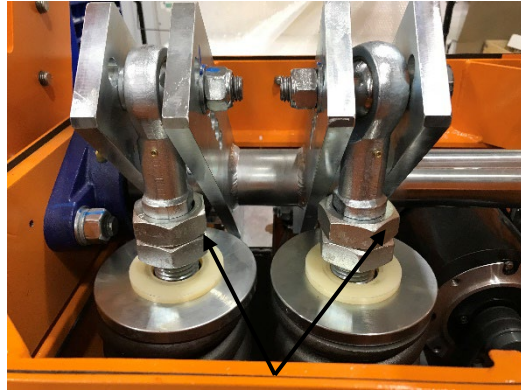
1. Use the selector switch to set the desired temperature.



Fan heater

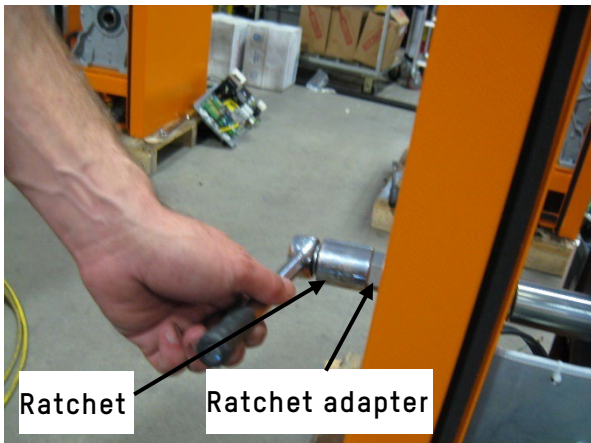
5 DISMANTLING THE OBSTACLE

- 1- With the obstacle in the completely opened position, remove all the tension in the springs by bringing both nuts completely up.



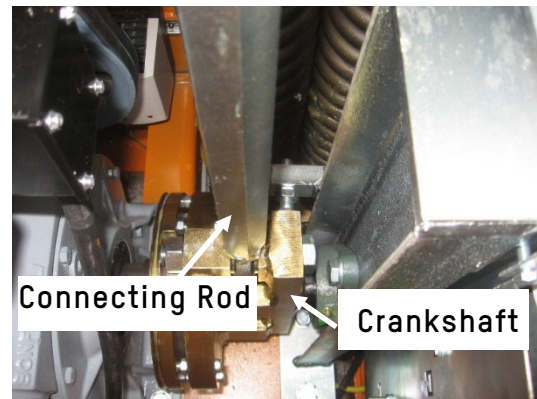
Spring adjustment nuts in their upper position

- 2- Bring the structure down using the manual crank and 2 technicians to guide it down slowly. Bring it all the way down in the completely locked position (connecting rod aligned vertically with the crankshaft).



Ratchet

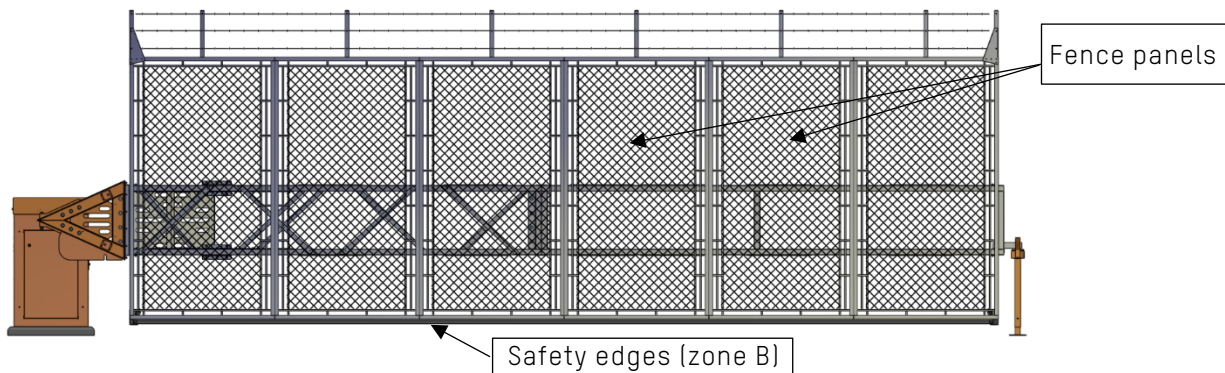
Ratchet adapter



Connecting Rod

Crankshaft

- 3- Remove the safety edges from the fence panels.



Fence panels

Safety edges (zone B)

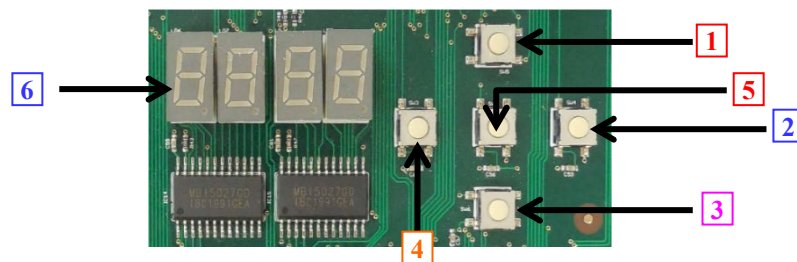
- 4- Remove the first 2 fence panels closest to the operator.

- 5- Move the barrier up in the locked position (connecting rod aligned vertically with the crankshaft).
- 6- Remove the first spring. The spring closer to the door.
- 7- Move the barrier down using the manual crank and 2 technicians. Make sure to guide it down all the way until it is in the locked position (connecting rod and crank shaft lined up vertically).
- 8- Remove the remaining fence panels.
- 9- Bring the remaining structure in the up position until it reaches the locked position (connecting rod aligned vertically with the crank shaft).
- 10- Remove the remaining spring. Make sure to secure the obstacle so it does not move on its own while you remove the spring.
- 11- Bring the structure down using the manual crank and 2 technicians to guide it down safely.
- 12- Remove the remaining part of the structure.

6 OPERATION

6.1 First Start-Up

1. Before commissioning, review the procedures described in Chapter 3 and Chapter 4.
 - a. Operating device, obstacle, and tip support properly installed.
 - b. Safety edge properly installed.
 - c. Options properly installed.
 - d. Electrical connections performed and tested.
 - e. Adjustments performed.
2. Turn on (► ON) the main circuit breaker and wait for the control board to complete its initialization sequence (about 5 seconds). Press the OK button (SW7) and make sure the message **run.** appears on the display. If there is an error message, refer to section 6.3.
3. If the barrier is equipped with a heater, turn on (► ON) the heater circuit breaker.
4. Make sure the barrier is configured correctly (see dedicated AS1620 manual).
5. Give an open command and a close command with the UP and DOWN buttons.



- | | |
|-------------------------------|------------------------------|
| 1 - UP button (SW5) | 4 - LEFT button (SW3) |
| 2 - RIGHT button (SW4) | 5 - OK button (SW7) |
| 3 - DOWN button (SW6) | 6 - Display |

6. Proceed to run a few electrical opening and closing tests by pressing the control board's UP (SW5) or DOWN (SW6) buttons or by means of the available command device (pushbutton box, transmitter/receiver, etc.). Check that the obstacle is correctly positioned in the open (vertical) and closed (horizontal) positions. If necessary, perform the adjustments required (section 4.4 and section 4.5).
7. Check that the variable frequency drive (13, section 2.2) shows a range of positive values when the obstacle opens and a range of negative values when it closes. If this is not the case, the motor is running in reverse and you must reverse 2 phases of the motor, after having turned off (► OFF) the main circuit breaker (15, section 2.2).
8. Check that all the possible safeties and options are operating properly.

6.2 Turning Off the Power

1. Turn off (► OFF) the main circuit breaker (15, section 2.2).
2. If the barrier is equipped with a heater, also turn off (► OFF) the heater circuit breaker (14, section 2.2).

6.3 Troubleshooting

If the barrier is not working properly, check the following points:

- Check the messages displayed on the LED display of the control board or in the status page of the maintenance interface. Refer to the AS1620 manual for details.
- Review the procedures described in Chapter 3 and Chapter 4.
- Check if a fault was triggered in the variable frequency drive (13, section 2.2): there will be an error message on the variable frequency drive screen. Refer to the table below.

Code	Name	Possible causes	Remedy
CrF1	Precharge	• Charging relay control fault or charging resistor damaged	• Turn the drive off and then back on again • Check the connections • Check the stability of the main supply • Contact AS helpdesk
InF1	Unknown drive rating	• The power card is different from the card stored	• Contact AS helpdesk
InF2	Unknown or incompatible power	• The power card is incompatible with the control card	• Contact AS helpdesk
InF3	Internal serial link	• Communication has been interrupted between the internal cards	• Contact AS helpdesk
InF4	Invalid industrialization zone	• Inconsistent internal data	• Contact AS helpdesk
InF9	Current measurement circuit	• Current measurement is not correct due to hardware circuit	• Contact AS helpdesk
----	Problem of application firmware	• Invalid application firmware update using the Multi-Loader tool	• Contact AS helpdesk
InFb	Internal thermal sensor-detected fault	• The drive temperature sensor is not operating correctly • The drive is in short-circuit or open	• Contact AS helpdesk
InFE	Internal CPU	• Internal microprocessor	• Turn the drive off and then back on again • Contact AS helpdesk
OCF	Overcurrent	• Settings in the Motor Control menu drC are not correct • Inertia or load too high • Mechanical locking	• Check the settings • Check the state of the mechanism • Check the ground connection of drive, motor cable, and motor insulation • Contact AS helpdesk
SCF1	Motor short circuit	• Short-circuit or grounding at the drive output • Ground fault during running status • Commutation of motors during running status • Significant current leakage to ground if several motors are connected in parallel	• Check the cables connecting the drive to the motor, and the motor insulation • Contact AS helpdesk
SCF3	Ground short circuit		
SCF4	IGBT short circuit	• Short circuit of internal power component detected at power on	• Contact AS helpdesk
SOF	Overspeed	• Instability • Overspeed associated with the inertia of the application	• Contact AS helpdesk
tnF	Auto-tuning	• Motor not connected to the drive • One motor phase loss • Special motor • Motor is rotating (being driven by the load, for example)	• Contact AS helpdesk

- Check the connections of the commands based on the electrical diagrams supplied with the barrier.
- If the barrier refuses to close check if:
 - Safety edges zones B or A detect an obstacle.
 - Safety detection loops are detecting a vehicle.
 - Manual crank is activated.
 - There is a maintained open command, or the blocked open command is activated.
- If the barrier refuses to open check if:
 - Safety zone E edge detect an obstacle.
 - Manual crank is activated.
 - There is a maintained close command, or the blocked close command is activated.
- In case of issues with the safety edges use the table below to troubleshoot the safety edge modules. Open the barrier and check the status of the LED on the GEM-104 modules.

LED Color	STATUS	DIAGNOSIS	CAUSE / SOLUTION
GREEN	ON	Power	• Normal Operation
	OFF	No Power	• Check the wire connection between the operator and the gate edge module GEM-104
RED	OFF	Safety edge is not Active	• Normal Operation
	ON	Safety edge is Active or Faulty	• Safety Edge is hit or detect something
	BLINKING	Safety edge is open, disconnected, or Faulty	• Check the wire connection between the safety edge and the gate edge module GEM-104. • Edge is faulty or not proper for the application.

- Check that all electrical wires are connected correctly and tighten if necessary.
- Carry out an electrical opening/closing test by pressing on the control board's UP and DOWN buttons.

Following an out-of-service condition of the barrier, rebooting will be carried out according to the mode defined in the "OPTIONS" menu, "Reboot Mode" (by default, a new power-up).

6.4 Prolonged Shutdown/Destruction

If the barrier is not in use for a long period of time, it is recommended:

- To place the barrier in a dry place that is protected from heat and harsh weather.
- To leave the barrier turned on. With the motor remaining permanently powered, a certain temperature is maintained in the cabinet. This eliminates condensation problems and, at low temperature, prevents the geared motor's oil from solidifying, which would cause the barrier to fail during the first maneuvers following a long period of inactivity.
- When you decommission the equipment, empty the oil from the geared motor and dispose of the various components of the machine in the appropriate manner (metal parts, electronic components, etc.) and according to local legislation.

7 PREVENTIVE MAINTENANCE

The BLG77 requires inspections and proper maintenance to ensure the safety of its users and increase its service life. Refer to preventive maintenance document NAM-BLG77-PM-EN for details on all maintenance operations and their frequencies. It is important to perform proper maintenance; we recommend that the log provided in the following page be filled as the maintenance operations are performed. This will help prevent any accidents or malfunctions to your product.

Maintenance operations must be carried out by technicians certified by Automatic Systems in compliance with the safety warnings stated in Chapter 1. Before you proceed, unlock and remove the doors (10, section 2.1) without damaging the ground cables that connect them to the cabinet. Turn off (► OFF) the main circuit breaker (15, section 2.2). If the barrier is equipped with a heater, also turn off (► OFF) the heater circuit breaker (14, section 2.2). If necessary, remove the cover (2, section 2.1). Do not damage the ground cable that connects the cover to the cabinet. For the required torque when screwing the bolts, we recommend following the chart below.

During any inspection, if one or more parts are defective, the barrier should be put out of service until the defective parts are replaced.

Torque chart according to screw diameter

Diameter	Torque (lbf.ft)	Torque (Nm)
M6	7.38	10
M8	18.44	25
M10	36.14	49
M12	62.69	85
M14	99.57	135
M16	154.89	210
M18	221.27	300
M20	221.27	300
M22	221.27	300

[illegible]

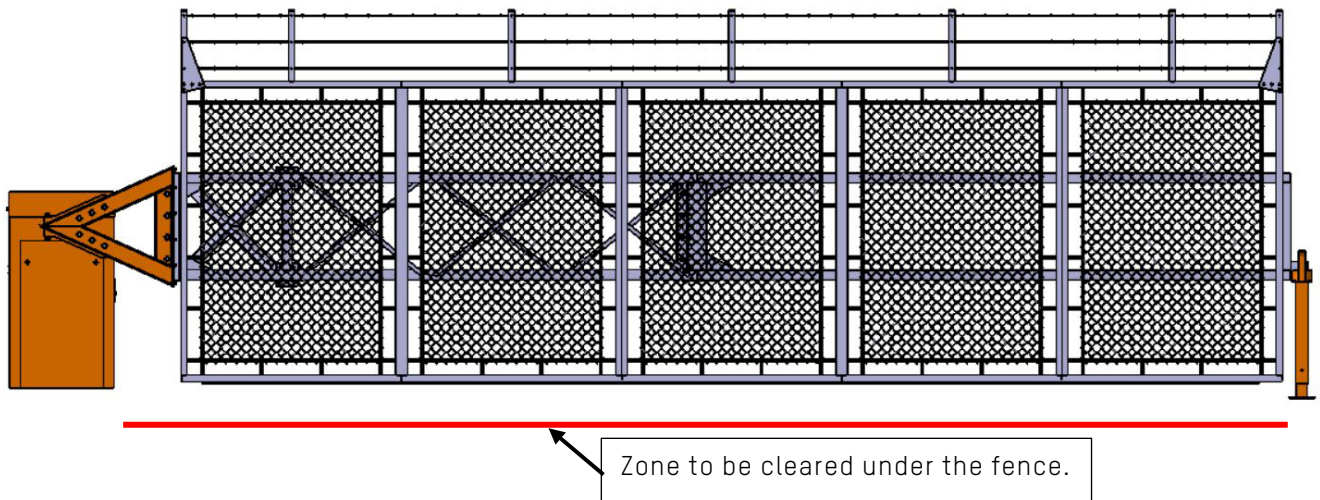
7.1 Special Maintenance for the Entrapment Protection Devices

The BLG77 is equipped with safety edges to prevent entrapment situations. These devices resist a wide variety of weather scenario but will occasionally need particular care.

In general, inspect your barrier regularly to make sure there is no debris that could impede the barrier operation and could damage the entrapment protection devices.

After a snowstorm we recommend to:

- Remove the snow and ice under the complete length of the fence.
- Clear 1 foot on each side of the fence. Avoid leaving a bank of snow on the sides of the road following the passage of a snow removal device, these can interfere with the safety edge.



8 TECHNICAL SPECIFICATIONS

	Aisle width	Height (without barbed wire)
BLG77H	4.878 m	3.048 m
BLG77L	6.148 m	1.829 m
BLG77HL	6.148 m	2.438 m
BLG77M	4.878 m	1.829 m

- Opening time: 10 seconds
- Electromechanical locking tip support
- Motor: 3/4 HP three phase
- Main power supply:
 - 1 phase of 240V with neutral and ground
- Frequency: 60 Hz
- Heavy-duty clutch
- Heater:
 - Optional: 450W or 800W (208-240V) fan heater
- Gearbox type: reduction ratio of 100:1
- Operation temperatures:
 - -10°C to 50°C
 - With optional fan heater: Can go down to -45°C
- Mechanical endurance (MCBF) (normal maintenance required):
 - 750,000 cycles at a rate of 100 complete cycles/hr max. with a maximum of 1,000 complete cycles per day

Electrical diagrams and implementation drawings are provided with each barrier.

Additional electrical diagrams and implementation drawings will be provided upon request. You can contact the Helpdesk for the latest documents.