

MINIMODUS

IT

Motoriduttore elettromeccanico per l'automazione di cancelli battenti

Istruzioni ed avvertenze per l'installazione e l'uso

DE

Elektromechanischer Getriebemotor für Automatisierungen von angeschlagenen Toren.

Installations- und Bedienungsanleitung

EN

Electromechanical gearmotor for the automation of swing gates

Installation and use instructions

ES

Motorreductor electromecánico para automatizar portón abatible

Instrucciones y advertencias para la instalación y el uso

FR

Opérateur électromécanique pour l'automatiser les portails battant.

Consignes pour l'installation et l'utilisation

PT

Motoredutor eletromecânico para automação de portões de batente

Instruções e avisos para instalação e uso



1. General warnings

1.1 - Safety warnings



WARNING!

This manual contains important instructions and warnings for personal safety.

An incorrect installation can cause serious injury. Before starting work it is necessary to carefully read all the parts of the manual. If in doubt, suspend the installation and request clarification from the King-Gates Support Service.



WARNING!

According to the most recent European legislation, the construction of a door or an automatic gate must comply with the provisions of Directive 2006/EC/42 (Machinery Directive) and in particular, the EN 12453, EN 12635 and EN 13241-1 5 standards which allow stating the alleged compliance of the automation.

In consideration of this, all product installation, connection, testing and maintenance operations must only be carried out by qualified and competent technicians!



WARNING!

Important instructions: keep this manual for the possible future maintenance and disposal of the product.

1.2 - Installation warnings

- Before starting the installation, check whether this product is suitable for automating your gate or door (see chapter 3 and the "Technical characteristics of the product"). If it is not suitable, DO NOT proceed with installation.
- Install a disconnecting device in the system power supply network with a contact opening distance that allows complete disconnection in the conditions stated by overvoltage category III.
- **All installation and maintenance operations must be carried out with the automation disconnected from the power supply.** If the disconnecting device from the power supply is not visible from the place where the automatism is positioned, before starting work it is necessary to attach on the disconnecting device a sign with the inscription "WARNING! MAINTENANCE IN PROGRESS".
- During installation, handle the automatism with care, avoiding crushes, shocks, falls or contact with liquids of any kind. Do not place the product near heat sources or expose it to open flames. All these actions can damage it and cause malfunctions or dangerous situations. If this happens, immediately suspend the installation and contact King-Gates Customer Service.
- Do not make changes to any part of the product. Unauthorized tampering can only cause malfunctions. The manufacturer declines all liability for any damages deriving from arbitrary changes to the product.
- If the gate or the door to be automated is equipped with a pedestrian door, the system must be set up with a control system that inhibits the operation of the motor when the pedestrian door is open.

- Check that there are no points of entrapment with fixed parts when the gate leaf is in the maximum opening position; protect these parts as required.
- The wall control panel must be positioned in view of the automation, away from its moving parts, at a minimum height of 1.5m from the ground and not accessible to the public.
- The packaging material of the product must be disposed of in full compliance with local regulations.

1.3 - Use warnings

- The product should not be used by people (including children) with physical, sensory or mental disabilities, or lacking the necessary experience or knowledge, unless they are supervised by someone responsible for their safety, or have been fully trained on its use.
- Children playing nearby the automation system should be kept under constant supervision to prevent them from tampering with it.
- Do not let children play with the fixed controls. Keep remote control devices away from the reach of children.
- When cleaning the surface of the product only use a soft damp cloth. Only use water, without detergents or solvents.

V2 SPA declines all responsibility for damage to persons or things that occurred due to causes not directly attributable to the characteristics of the product and failure to comply with the installation procedures in accordance with current regulations.

2. Product description

This product is to be used to automate hinged gates or doors, for both residential and industrial use.

WARNING!

Any other use other than that described and in environmental conditions other than those listed in this manual is to be considered improper and prohibited!

The product is an electromechanical gear motor, equipped with a 24 V direct current motor powered by the internal control unit and a gearbox with an articulated arm.

In the event of a power failure (black-out), it is possible to move the leaves of the gate by hand by manually unlocking the gear motor.

3. Installation



WARNING! - The installation of MODUS must be carried out by qualified personnel, in compliance with current regulations, standards and laws, and following these instructions.

3.1 - Preliminary checks

Before installation, always check that there are no broken product components, that the model selected is appropriate for the intended use and that the installation environment is suitable for the product.

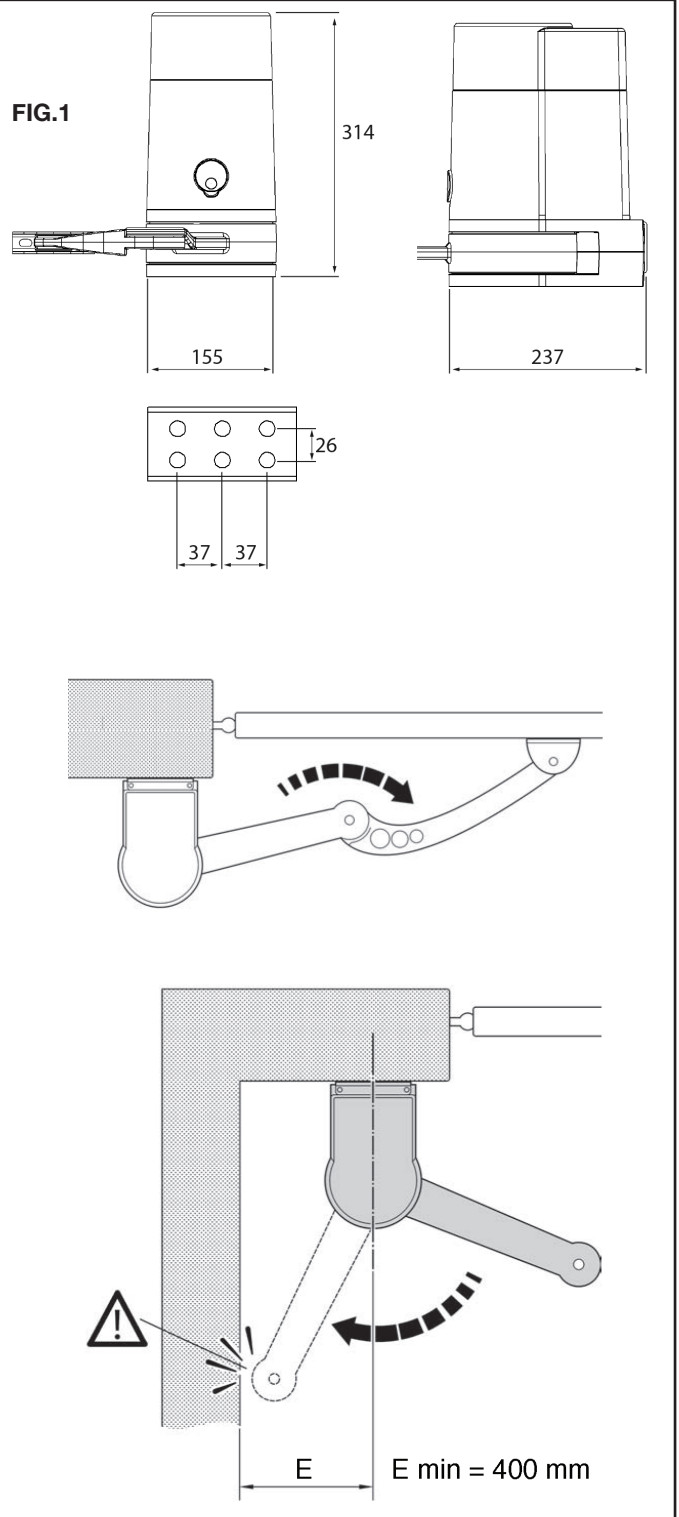


IMPORTANT – The gear motor cannot automate a manual gate that does not have an efficient and safe mechanical structure.
It cannot correct defects due to bad installation or poor maintenance of the gate.

3.2 - Suitability of the gate and installation environment

- Check that the mechanical structure of the gate is suitable for the installation of an automation system and in compliance with current local regulations (if necessary, check the data found on the label of the gate).
- Manually close and open the gate leaf, to make sure that there is an appropriate level of constant friction during the whole opening or closing movement (no points requiring increased effort).
- Check that when moved to any position between fully open and fully closed, the gate leaf keeps its balance, without movements.
- Make sure that around the gear motor there is enough room to easily and safely release the gate leaves by hands.
- Make sure that the product is installed on a solid surface, so that it can be securely fastened.
- Make sure that the installation position is compatible with the overall size of the product.

FIG.1

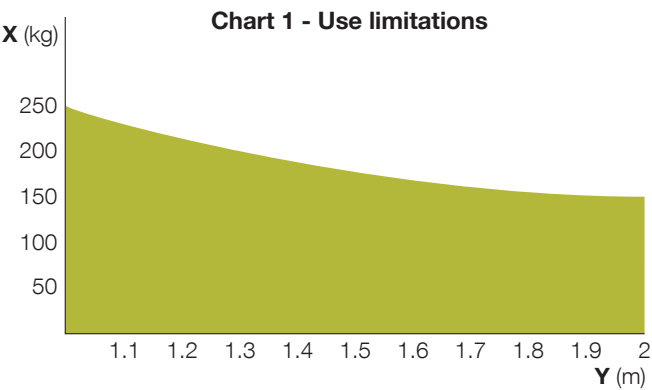


The correct opening movement of the gate and the force that the motor exerts to execute it, depend on the position in which the motor and arm brackets are fixed. Therefore, before proceeding with the installation you must check charts 1 and 2 and figure 3 to define the maximum opening angle of the leaf, the limits of the leaf and the position of the fixing brackets.

3.3 - Use limitations

Before installing the product, check that the size and the weight of the gate leaf are within the limits stated in chart 1.
kg - Maximum gate leaf weight
mm - maximum gate leaf length

⚠ WARNING! The single leaf must not exceed 2m in length.

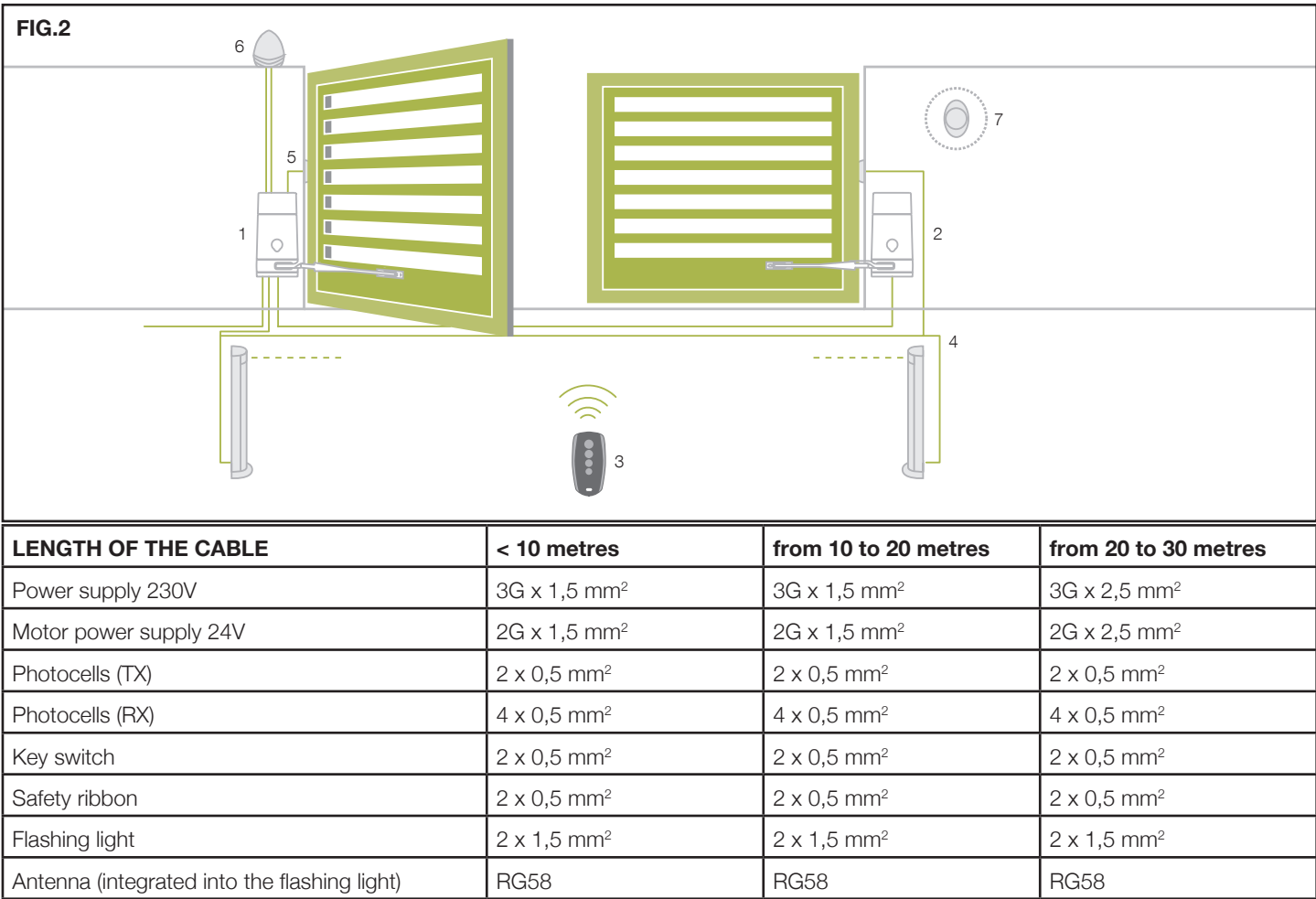


3.4 - Installation preparation works

Fig.2 shows an example of an automation system using King-Gates components. These components are positioned following a typical and standard setup.
With reference to Fig.2, establish the approximate position where each component will be installed and then arrange any conduits for the electrical wiring.

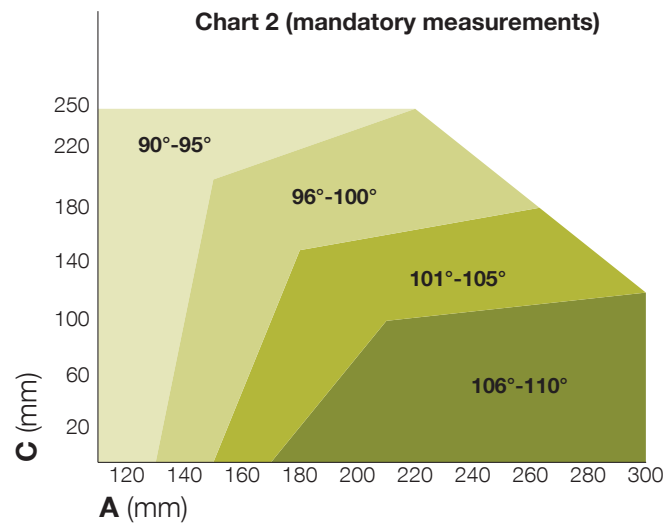
Useful components for a complete system:

- 1. MiniModus MA gear motor
- 2. MiniModus SL gear motor
- 3. Transmitter
- 4. Column photocells
- 5. Photocells
- 6. Flashing light
- 7. Key or digital selector

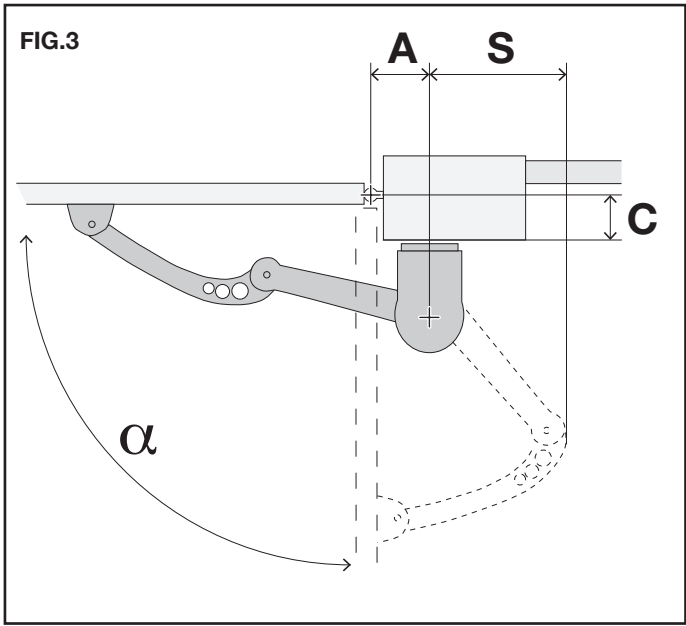


3.5 - Installation of the fixing brackets and the gear motor

Calculate the rear bracket position using chart 2



This chart is used to define distances **A** and **C** and the leaf maximum opening angle.



Installation examples

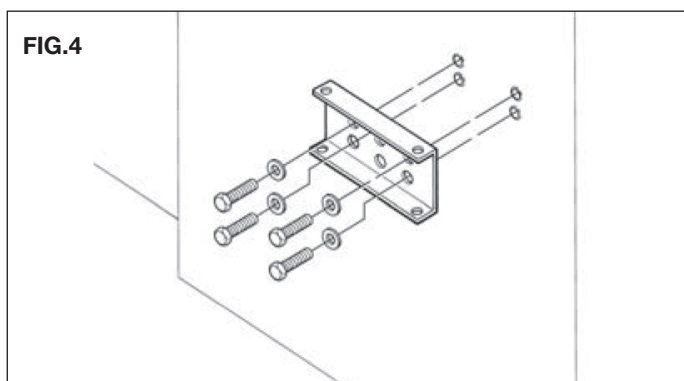
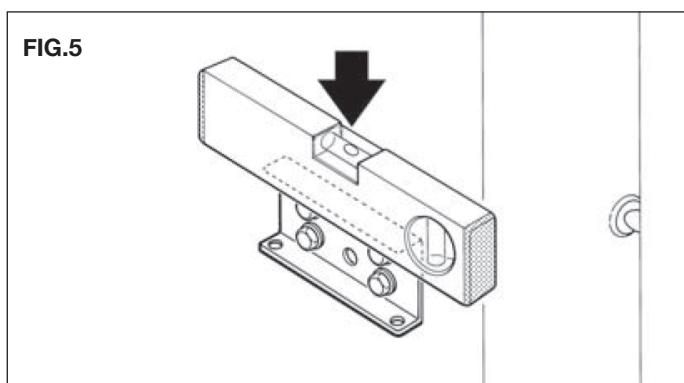
A	C	S	α
130	30	350	95
180	30	385	105
135	60	360	95
195	60	385	105
140	90	365	95
205	90	385	105
140	120	375	95
220	120	385	105
145	150	380	95
230	150	370	105
150	180	365	95
250	180	330	105
165	210	370	95
205	240	345	95

1. Measure value "C", then trace a straight horizontal line in chart 1 against the obtained value
2. Select a point in the line, taking into account the desired opening angle, suitable for the column.
3. Trace a vertical line starting from the point identified and obtain value A. Before proceeding with the installation, make sure that value A allows to fix the rear bracket, otherwise select another point on the chart.

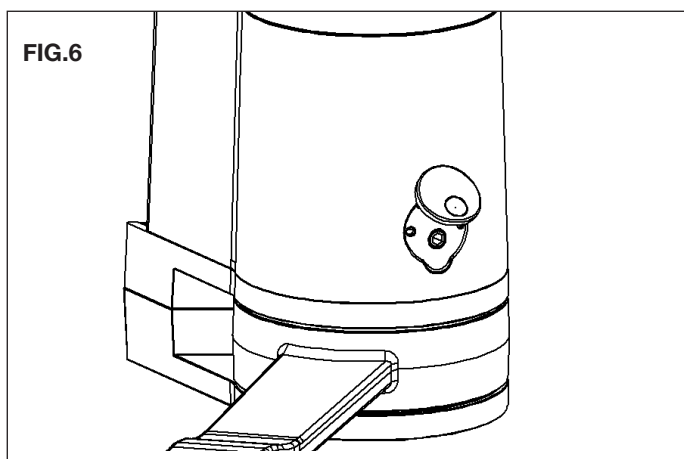
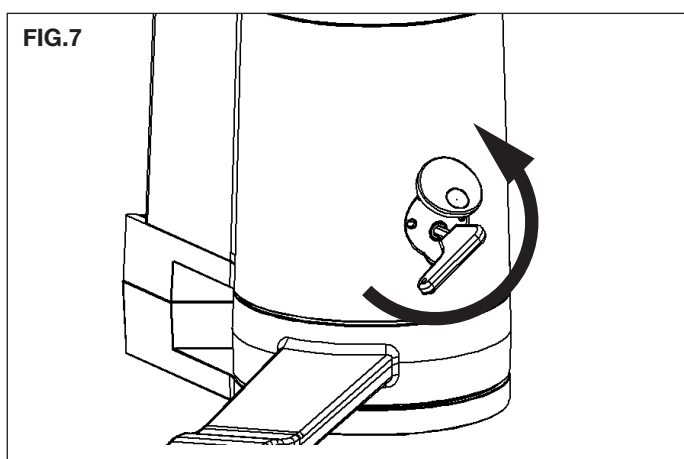
Failure to comply with the bracket installation distances may lead to automation operation faults, such as:

- Cyclical movements and accelerations at some positions of the stroke.
 - Increased motor noise.
 - Limited opening, or no opening at all (in case of counter-lever fixed motor).
4. At this point, mark on the leaf and on the wall the holes of the brackets which will then be used to fix the two brackets.

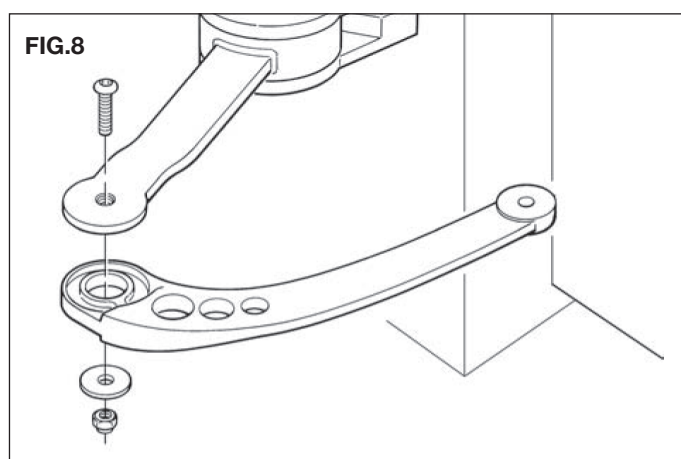
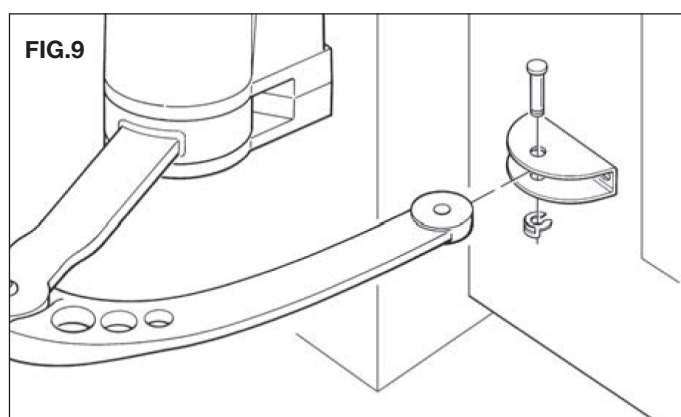
3.6 - Fixing the plate to the pillar



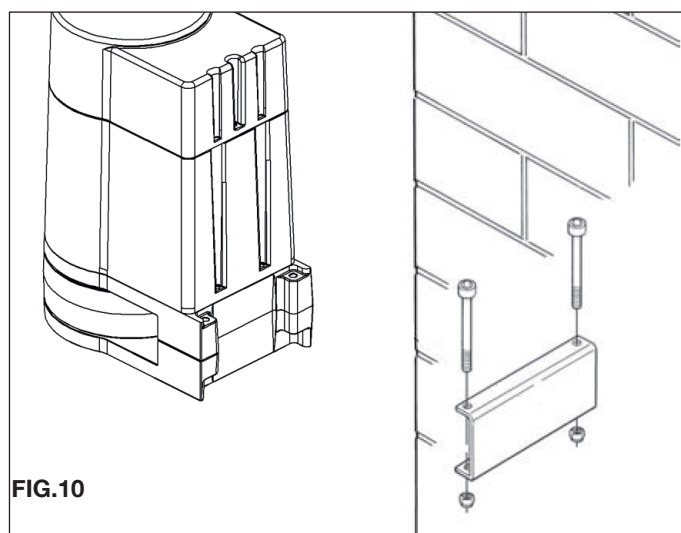
3.7 - Manual maneuver



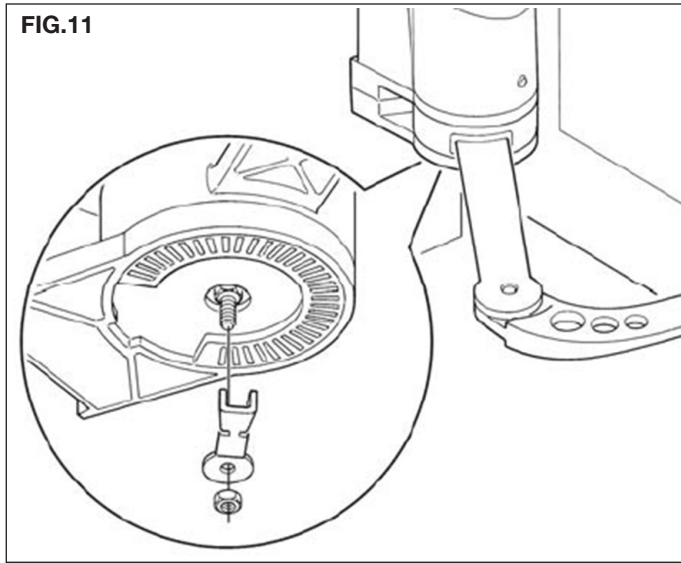
3.8 - Arm fixing



3.9 - Motor fixing to the pillar



3.10 - Installation and adjustment of the motor limit switches



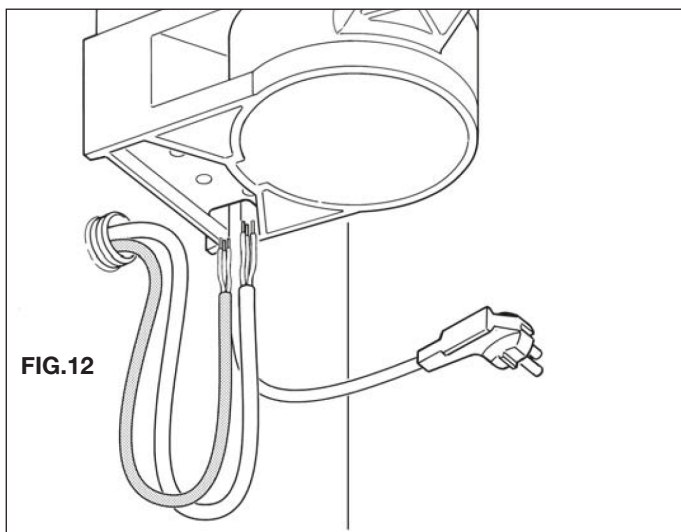
4. Electrical connections

WARNING!

- An incorrect connection can cause faults or dangerous situations; therefore, scrupulously comply with the indicated connections.
- Perform the connection operations with the power supply disconnected.

To connect the gear motor proceed as follows:

1. Remove the gear motor cover
2. Loosen the cable gland of the gear motor and insert the connection cables



3. Bring the cables to the top of the motor near the control unit
4. For how to connect the two motors, refer to the manual of the "Control unit" supplied with the rest of the documentation;
5. After making all the electrical connections, replace the cover on the gear motor.

To check the connections, the direction of rotation of the motor, the displacement of the movement of the leaves and the adjustment of the limit switch, refer to the instruction manual of the **"Control unit"**.

5. Testing the automation

In order to guarantee maximum safety, this is the most important phase in the realization of the automation. The test can also be used as a periodic check of the devices that make up the automatism.

The testing of the entire system must be performed by expert and qualified personnel who must take responsibility for the required tests, according to the present risk and verify compliance with the provisions of laws, regulations and standards, and in particular with all the requirements of the EN12453 standard which sets out the test methods to verify gate automatisms.

Testing

Every individual component of the automatism, for example safety edges, photocells, emergency stop, etc. requires a specific testing phase; for these devices, the procedures indicated in the respective instruction manuals must be carried out.

To test the gear motor, carry out the following operations:

1. Check that all the provisions of this manual and in particular chapter 1 have been strictly adhered to;
2. Release the gear motor as shown in Fig. 8;
3. Verify that it is possible to manually move the opening and closing leaf with a force not exceeding 390 N (about 40kg);
4. Lock the gear motor and connect the power supply;
5. Using the control or stop devices provided (key selector, control buttons or radio transmitters), carry out tests to open, close and stop the gate and verify that its behaviour corresponds to what was expected;
6. Check one by one that all the safety devices present in the system (photocells, safety edges, emergency stop, etc.) work correctly; and that the gate's behaviour corresponds to what is expected;
7. Order a closing manoeuvre and check the force of the impact of the leaf against the stop of the mechanical limit switch. If necessary, try to relieve the pressure by finding an adjustment that gives better results;
8. If the dangerous situations caused by the movement of the leaf have been safeguarded by limiting the impact force, this force must be measured according to the provisions of the EN 12453 standard;

Note – The gear motor has no torque adjustment devices, therefore, this adjustment is entrusted to the control unit.

Commissioning

Commissioning can only take place after all the testing phases of the gear motor and the other devices have been successfully completed. For commissioning, refer to the instruction manual of the control unit.

 **IMPORTANT** – Partial or “temporary” commissioning is prohibited.

6. Maintenance

Regular maintenance is required to maintain a constant level of safety and to guarantee the maximum life of the entire automation.

Maintenance must be carried out in full compliance with the safety requirements of this manual and in accordance with the applicable laws and regulations. For the gear motor, scheduled maintenance is required within a maximum of 6 months.

Maintenance operations:

1. Disconnect all power sources.
2. Check the state of deterioration of all the materials that make up the automation with particular attention to the erosion or oxidation of the structural parts; replace the parts that do not give sufficient guarantees.
3. Check that screw connections are tightened properly.
4. Check the moving parts for wear and replace worn parts as required.
5. Reconnect the power supply sources and carry out all the tests and checks provided for in chapter 4.

For other devices in the system, refer to their instruction manuals.

7. Disposal

This product is an integral part of the automation, and therefore must be disposed of together with it.

As for the installation operations, even at the end of the product life, dismantling operations must be carried out by qualified personnel.

This product consists of various types of materials: some can be recycled, others must be disposed of. Ask about the recycling or disposal systems required by the regulations in force in your area, for this category of product.

 **Warning!** – some parts of the product may contain polluting or dangerous substances which, if dispersed in the environment, might cause harmful effects on both the environment and human health.

As indicated by the side symbol, it is forbidden to dispose of this product with household waste. Have it disposed of separately, according to the methods set out by the regulations in force in your country, or return the product to the seller when buying a new equivalent product.



 **Warning!** – local regulations may provide for heavy penalties for the illegal disposal of this product.

8. Technical characteristics of the product

WARNINGS:

- All the technical characteristics shown refer to an ambient temperature of 20°C (± 5°C).
- V2 SPA reserves the right to make changes to the product at any time it deems necessary, while still retaining the same functionality and intended use.

Power supply (Vac 50 Hz)	230
Motor power supply (Vdc)	24
Maximum absorbed power (W)	250
Maximum speed (rpm)	1
Maximum torque (Nm)	150
Work cycle (%)	50
Protection degree (IP)	44
Operating temperature (°C)	-20 ÷ +55
Gear motor weight (kg)	6,2
Dimensions (mm)	155x253x314 h

9 - EU declaration of conformity and declaration of incorporation of partly completed machine

Declaration in accordance with Directives: 2014/35/UE (LVD); 2014/30/UE (EMC); 2006/42/CE (MD) ANNEX II, PART B

The manufacturer V2 S.p.A., headquarters in Corso Principi di Piemonte 65, 12035, Racconigi (CN), Italy

Under its sole responsibility hereby declares that:
the partly completed machinery model(s):
MINIMODUS 24 MA
MINIMODUS 24 SL

Description: electromechanical actuator for gates

- is intended to be installed on gates, to create a machine according to the provisions of the Directive 2006/42/EC. The machinery must not be put into service until the final machinery into which it has to be incorporated has been declared in conformity with the provisions of the Directive 2006/42/EC (annex II-A).
- is compliant with the applicable essential safety requirements of the following Directives:
 - **Machinery Directive 2006/42/EC (Annex I, Chapter 1)**
 - **Low Voltage Directive 2014/35/EU**
 - **Electromagnetic Compatibility Directive 2014/30/EU**
 - **Radio Directive 2014/53/EU**
 - **RoHS3 Directive 2015/863/EU**

The relevant technical documentation is available at the national authorities' request after justifiable request to:
V2 S.p.A.
Corso Principi di Piemonte 65, 12035, Racconigi (CN), Italy

The person empowered to draw up the declaration and to provide the technical documentation:

Roberto Rossi

Legal representative of V2 S.p.A.
Racconigi, il 01/03/2023

