

Falcon

5 - 8 - 424



GENIUS®

**COMPANY
WITH QUALITY SYSTEM
CERTIFIED BY DNV
=ISO 9001/2000=**

CE

AVVERTENZE PER L'INSTALLATORE

OBBLIGHI GENERALI PER LA SICUREZZA

- 1) **ATTENZIONE! È importante per la sicurezza delle persone seguire attentamente tutta l'istruzione. Una errata installazione o un errato uso del prodotto può portare a gravi danni alle persone.**
- 2) Leggere attentamente le istruzioni prima di iniziare l'installazione del prodotto.
- 3) I materiali dell'imballaggio (plastica, polistirolo, ecc.) non devono essere lasciati alla portata dei bambini in quanto potenziali fonti di pericolo.
- 4) Conservare le istruzioni per riferimenti futuri.
- 5) Questo prodotto è stato progettato e costruito esclusivamente per l'utilizzo indicato in questa documentazione. Qualsiasi altro utilizzo non espressamente indicato potrebbe pregiudicare l'integrità del prodotto e/o rappresentare fonte di pericolo.
- 6) GENIUS declina qualsiasi responsabilità derivata dall'uso improprio o diverso da quello per cui l'automatismo è destinato.
- 7) Non installare l'apparecchio in atmosfera esplosiva: la presenza di gas o fumi infiammabili costituisce un grave pericolo per la sicurezza.
- 8) Gli elementi costruttivi meccanici devono essere in accordo con quanto stabilito dalle Norme EN 12604 e EN 12605. Per i Paesi extra-CEE, oltre ai riferimenti normativi nazionali, per ottenere un livello di sicurezza adeguato, devono essere seguite le Norme sopra riportate.
- 9) GENIUS non è responsabile dell'inosservanza della Buona Tecnica nella costruzione delle chiusure da motorizzare, nonché delle deformazioni che dovessero intervenire nell'utilizzo.
- 10) L'installazione deve essere effettuata nell'osservanza delle Norme EN 12453 e EN 12445. Il livello di sicurezza dell'automazione deve essere C+E.
- 11) **Prima di effettuare qualsiasi intervento sull'impianto, togliere l'alimentazione elettrica.**
- 12) Prevedere sulla rete di alimentazione dell'automazione un interruttore onnipolare con distanza d'apertura dei contatti uguale o superiore a 3 mm. È consigliabile l'uso di un magnetotermico da 6A con interruzione onnipolare.
- 13) Verificare che a monte dell'impianto vi sia un interruttore differenziale con soglia da 0,03 A.
- 14) Verificare che l'impianto di terra sia realizzato a regola d'arte e collegarvi le parti metalliche della chiusura.
- 15) L'automazione dispone di una sicurezza intrinseca anti-schiacciamento costituita da un controllo di coppia. È comunque necessario verificarne la soglia di intervento secondo quanto previsto dalle Norme Indicate al punto 10.
- 16) I dispositivi di sicurezza (norma EN 12978) permettono di proteggere eventuali aree di pericolo da **Rischi meccanici di movimento**, come ad Es. schiacciamento, convogliamento, cesalimento.
- 17) Per ogni impianto è consigliato l'utilizzo di almeno una segnalazione luminosa nonché di un cartello di segnalazione fissato adeguatamente sulla struttura dell'Infilso, oltre ai dispositivi citati al punto "16".
- 18) GENIUS declina ogni responsabilità ai fini della sicurezza e del buon funzionamento dell'automazione. In caso vengano utilizzati componenti dell'impianto non di produzione GENIUS.
- 19) Per la manutenzione utilizzare esclusivamente parti originali GENIUS.
- 20) Non eseguire alcuna modifica sui componenti facenti parte del sistema d'automazione.
- 21) L'installatore deve fornire tutte le informazioni relative al funzionamento manuale del sistema in caso di emergenza e consegnare all'utente utilizzatore dell'impianto il libretto d'avvertenze allegato al prodotto.
- 22) Non permettere ai bambini o persone di sostare nelle vicinanze del prodotto durante il funzionamento.
- 23) Tenere fuori dalla portata dei bambini radiocomandi o qualsiasi altro datore di impulso, per evitare che l'automazione possa essere azionata involontariamente.
- 24) Il transito tra le ante deve avvenire solo a cancello completamente aperto.
- 25) L'utente utilizzatore deve astenersi da qualsiasi tentativo di riparazione o d'intervento diretto e rivolgersi solo a personale qualificato.
- 26) **Tutto quello che non è previsto espressamente in queste istruzioni non è permesso**

IMPORTANT NOTICE FOR THE INSTALLER

GENERAL SAFETY REGULATIONS

- 1) **ATTENTION! To ensure the safety of people, it is important that you read all the following instructions. Incorrect installation or incorrect use of the product could cause serious harm to people.**
- 2) Carefully read the instructions before beginning to install the product.
- 3) Do not leave packing materials (plastic, polystyrene, etc.) within reach of children as such materials are potential sources of danger.
- 4) Store these instructions for future reference.
- 5) This product was designed and built strictly for the use indicated in this documentation. Any other use, not expressly indicated here, could compromise the good condition/operation of the product and/or be a source of danger.
- 6) GENIUS declines all liability caused by improper use or use other than that for which the automated system was intended.
- 7) Do not install the equipment in an explosive atmosphere: the presence of inflammable gas or fumes is a serious danger to safety.
- 8) The mechanical parts must conform to the provisions of Standards EN 12604 and EN 12605. For non-EU countries, to obtain an adequate level of safety, the Standards mentioned above must be observed, in addition to national legal regulations.
- 9) GENIUS is not responsible for failure to observe Good Technique in the construction of the closing elements to be motorised, or for any deformation that may occur during use.
- 10) The installation must conform to Standards EN 12453 and EN 12445. The safety level of the automated system must be C+E.
- 11) Before attempting any job on the system, cut out electrical power.
- 12) The mains power supply of the automated system must be fitted with an all-pole switch with contact opening distance of 3mm or greater. Use of a 6A thermal breaker with all-pole circuit break is recommended.
- 13) Make sure that a differential switch with threshold of 0.03 A is fitted upstream of the system.
- 14) Make sure that the earthing system is perfectly constructed, and connect

metal parts of the means of the closure to it.

- 15) The automated system is supplied with an intrinsic anti-crushing safety device consisting of a torque control. Nevertheless, its tripping threshold must be checked as specified in the Standards Indicated at point 10.
- 16) The safety devices (EN 12978 standard) protect any danger areas against **mechanical movement Risks**, such as crushing, dragging, and shearing.
- 17) Use of at least one Indicator-light is recommended for every system, as well as a warning sign adequately secured to the frame structure, in addition to the devices mentioned at point "16".
- 18) GENIUS declines all liability as concerns safety and efficient operation of the automated system, if system components not produced by GENIUS are used.
- 19) For maintenance, strictly use original parts by GENIUS.
- 20) Do not in any way modify the components of the automated system.
- 21) The installer shall supply all information concerning manual operation of the system in case of an emergency, and shall hand over to the user the warnings handbook supplied with the product.
- 22) Do not allow children or adults to stay near the product while it is operating.
- 23) Keep remote controls or other pulse generators away from children, to prevent the automated system from being activated involuntarily.
- 24) Transit through the leaves is allowed only when the gate is fully open.
- 25) The user must not attempt any kind of repair or direct action whatever and contact qualified personnel only.
- 26) **Anything not expressly specified in these instructions is not permitted.**

CONSIGNES POUR L'INSTALLATEUR

RÈGLES DE SÉCURITÉ

- 1) **ATTENTION! Il est important, pour la sécurité des personnes, de suivre à la lettre toutes les instructions. Une installation erronée ou un usage erroné du produit peut entraîner de graves conséquences pour les personnes.**
- 2) Lire attentivement les instructions avant d'installer le produit.
- 3) Les matériaux d'emballage (matière plastique, polystyrène, etc.) ne doivent pas être laissés à la portée des enfants car ils constituent des sources potentielles de danger.
- 4) Conserver les instructions pour les références futures.
- 5) Ce produit a été conçu et construit exclusivement pour l'usage indiqué dans cette documentation. Toute autre utilisation non expressément indiquée pourrait compromettre l'intégrité du produit et/ou représenter une source de danger.
- 6) GENIUS décline toute responsabilité qui dériverait d'un usage impropre ou différent de celui auquel l'automatisme est destiné.
- 7) Ne pas installer l'appareil dans une atmosphère explosive; la présence de gaz ou de fumées inflammables constitue un grave danger pour la sécurité.
- 8) Les composants mécaniques doivent répondre aux prescriptions des Normes EN 12604 et EN 12605. Pour les Pays extra-CEE, l'obtention d'un niveau de sécurité approprié exige non seulement le respect des normes nationales, mais également le respect des Normes non respectées.
- 9) GENIUS n'est pas responsable du non-respect de la Bonne Technique dans la construction des fermetures à motoriser, ni des déformations qui pourraient intervenir lors de l'utilisation.
- 10) L'installation doit être effectuée conformément aux Normes EN 12453 et EN 12445. Le niveau de sécurité de l'automatisme doit être C+E.
- 11) Couper l'alimentation électrique avant toute intervention sur l'installation.
- 12) Prévoir, sur le secteur d'alimentation de l'automatisme, un interrupteur onnipolaire avec une distance d'ouverture des contacts égale ou supérieure à 3 mm. On recommande d'utiliser un magnétothermique de 6A avec interruption onnipolaire.
- 13) Vérifier qu'il y ait, en amont de l'installation, un interrupteur différentiel avec un seuil de 0,03 A.
- 14) Vérifier que la mise à terre est réalisée selon les règles de l'art et y connecter les pièces métalliques de la fermeture.
- 15) L'automatisme dispose d'une sécurité intrinsèque anti-écrasement, formée d'un contrôle du couple. Il est toutefois nécessaire d'en vérifier le seuil d'intervention suivant les prescriptions des Normes indiquées au point 10.
- 16) Les dispositifs de sécurité (norme EN 12978) permettent de protéger des zones éventuellement dangereuses contre les **Risques mécaniques du mouvement**, comme l'écrasement, l'acheminement, le cisaillement.
- 17) On recommande que toute installation soit dotée au moins d'une signalisation lumineuse, d'un panneau de signalisation fixé, de manière appropriée, sur la structure de la fermeture, ainsi que des dispositifs cités au point "16".
- 18) GENIUS décline toute responsabilité quant à la sécurité et au bon fonctionnement de l'automatisme si les composants utilisés dans l'installation n'appartiennent pas à la production GENIUS.
- 19) Utiliser exclusivement, pour l'entretien, des pièces GENIUS originales.
- 20) Ne jamais modifier les composants faisant partie du système d'automatisme.
- 21) L'installateur doit fournir toutes les informations relatives au fonctionnement manuel du système en cas d'urgence et remettre à l'usager qui utilise l'installation les "instructions pour l'usager" fournies avec le produit.
- 22) Interdire aux enfants ou aux tiers de stationner près du produit durant le fonctionnement.
- 23) Eloigner de la portée des enfants les radiocommandes ou tout autre générateur d'impulsions, pour éviter tout actionnement involontaire de l'automatisme.
- 24) Le transit entre les vantaux ne doit avoir lieu que lorsque le portail est complètement ouvert.
- 25) L'usager qui utilise l'installation doit éviter toute tentative de réparation ou d'intervention directe et s'adresser uniquement à un personnel qualifié.
- 26) **Tout ce qui n'est pas prévu expressément dans ces instructions est interdit.**

AUTOMATED SYSTEM FALCON

These instructions apply to the following models: **FALCON 5 - FALCON 5C - FALCON 5 115V - FALCON 5C 115V - FALCON 8 - FALCON 8C - FALCON 8 115V - FALCON 8C 115V - FALCON 424 - FALCON 424C.**

The FALCON gearmotor is an electro-mechanical operator designed for moving sliding gates.

The non-reversing reduction system ensures the gate is mechanically locked when the gearmotor is not operating, therefore it is not necessary to install any electric lock.

As no mechanical clutch device is fitted, a control unit with adjustable electronic clutch is required to ensure the necessary anti-crushing safety.

A convenient manual release with customised key makes it possible to move the gate in the event of a power failure or malfunction of the operator.

The FALCON gearmotor was designed and built for controlling vehicle access. **AVOID ANY OTHER USE WHATEVER.**

1. DESCRIPTION AND TECHNICAL SPECIFICATIONS

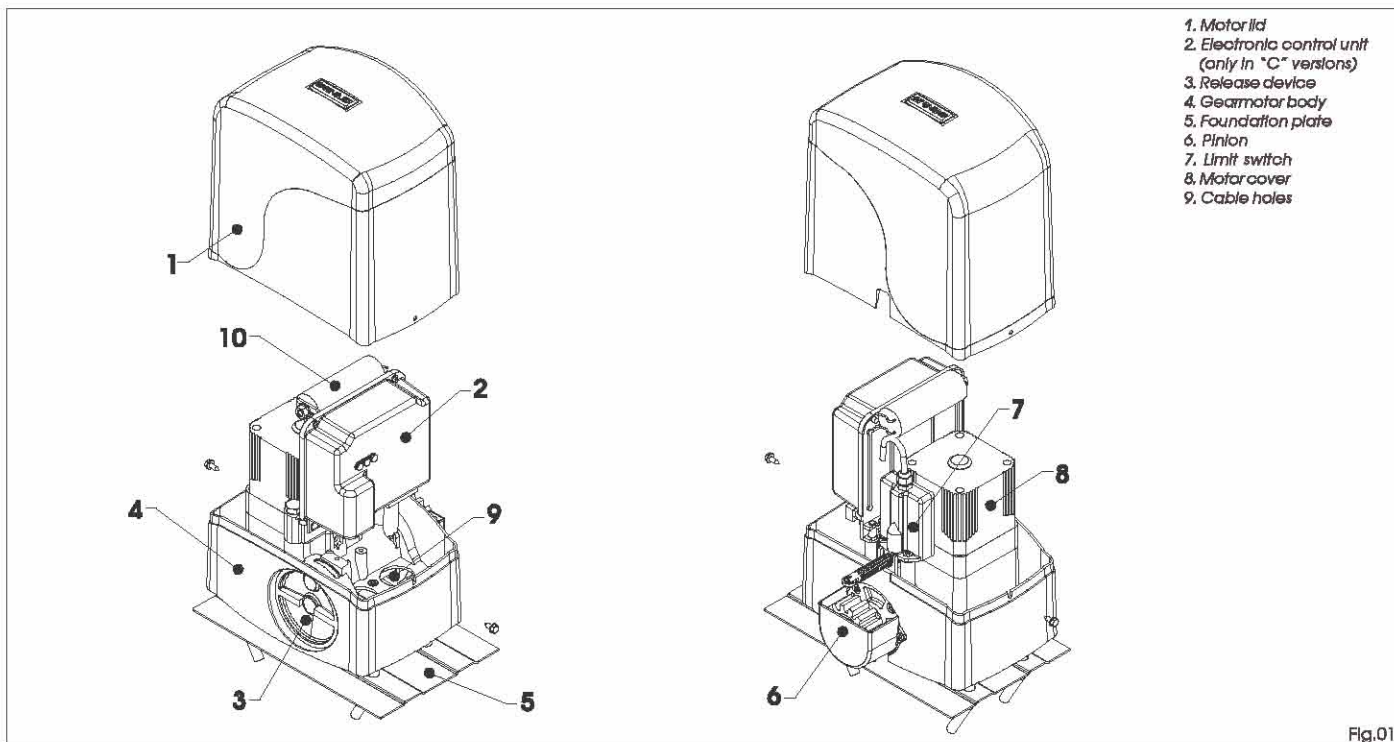


Fig.01

MODEL	FALCON 5 FALCON 5C	FALCON 8 FALCON 8C	FALCON 5 115V FALCON 5C 115V	FALCON 8 115V FALCON 8C 115V	FALCON 424 FALCON 424C
Power supply	230 V~ 50Hz	230 V~ 50Hz	115 V~ 60Hz	115 V~ 60Hz	230/115 V~ 50/60 Hz
Absorbed power (W)	350	500	350	600	70
Absorbed current (A)	1.5	2.2	3	5.2	3
Capacitor (µF)	10	12.5	30	50	-
Thrust on pinion (daN)	45	70	45	70	40
Torque (Nm)	18	24	18	24	13.5
Winding thermal protection (°C)	140	140	140	140	-
Leaf max weight (Kg)	500	800	500	800	400
Type of pinion	Z16	Z14	Z16	Z14	Z16
Gate speed (m/min)	12	10	14	12	12
Gate max length (m)	15	15	15	15	15
Type of limit switch	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical
Clutch	Electronic	Electronic	Electronic	Electronic	Electronic
Use frequency	S3 - 30%	S3 - 40%	S3 - 30%	S3 - 40%	100%
Operating temperature (°C)	-20 +55	-20 +55	-20 +55	-20 +55	-20 +55
Gearmotor weight (Kg)	9 (10 Falcon 5C)	10 (11 Falcon 8C)	9 (10 Falcon 5C)	10 (11 Falcon 8C)	7.5 (8.5 Falcon 424C)
Protection class	IP44	IP44	IP44	IP44	IP44
Gearmotor overall dimensions	See Fig.02	See Fig.02	See Fig.02	See Fig.02	See Fig.02

2. DIMENSIONS

Values are expressed in mm

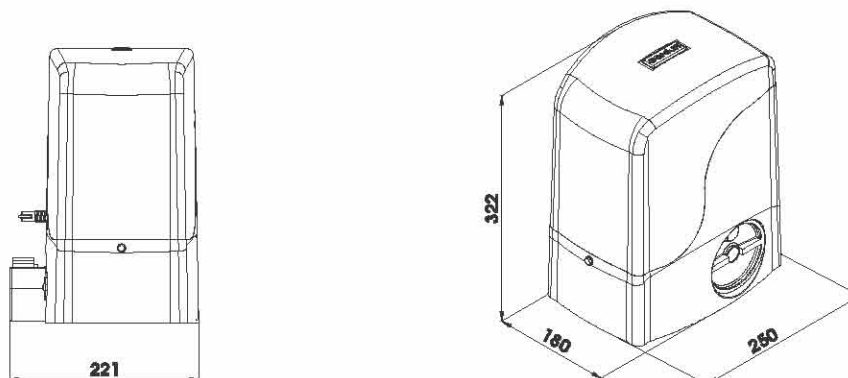


Fig.02

3. MAXIMUM USE CURVE

The curve makes it possible to establish maximum work time (T) according to use frequency (F).

With reference to IEC 34-1 Standard, the FALCON gearmotor with an S3 duty, can operate at a use frequency of 40%. To ensure efficient operation, it is necessary to operate in the work range below the curve.

Important: The curve is obtained at a temperature of 20°C. Exposure to the direct sun rays can reduce use frequency down to 20%.

Calculation of use frequency

Use frequency is the percentage of effective work time (opening + closing) compared to total time of cycle (opening + closing + pause times).

Calculation formula:

$$\% F = \frac{T_a + T_c}{T_a + T_c + T_p + T_i} \times 100$$

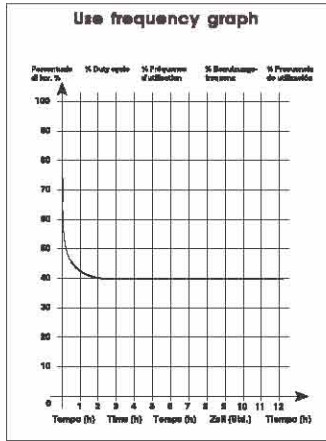
where:

T_a = opening time

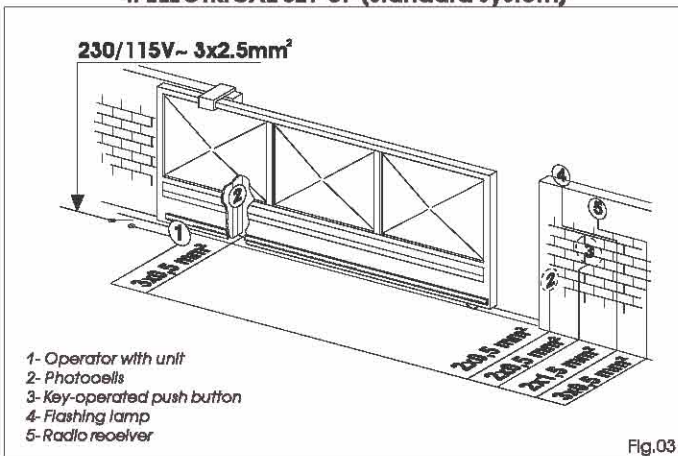
T_c = closing time

T_p = pause time

T_i = time of interval between two complete cycles



4. ELECTRICAL SET-UP (standard system)



5. INSTALLING THE AUTOMATED SYSTEM

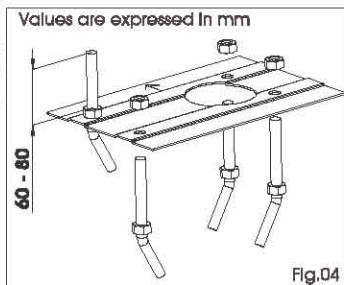
5.1. Preliminary checks

To ensure safety and efficiency of the automated system, make sure the following requirements are observed before installing the system:

- The gate structure must be suitable for automation. The following are necessary in particular: wheel diameter must be in proportion to the weight of the gate, an upper track must be provided, plus mechanical travel stops to prevent the gate derailing.
- The soil must guarantee a perfect stability of the foundation plinth.
- There must be no pipes or electric cables in the plinth excavation area.
- If the gearmotor is located in the vehicle transit or manoeuvre area, adequate means of protection should be provided against accidental impact.
- Check if an efficient earthing is available for connection to the gearmotor.

5.2. Masonry for foundation plate

- 1- Assemble the foundation plate as shown in figure 04.
- 2- In order to ensure that the plinth and rack engage correctly, the foundation plate must be positioned as shown in Fig. 05 (right closing) or Fig. 06 (left closing).



Warning: The arrow on the foundation plate must always point to the gate, see Figs. 05-06.

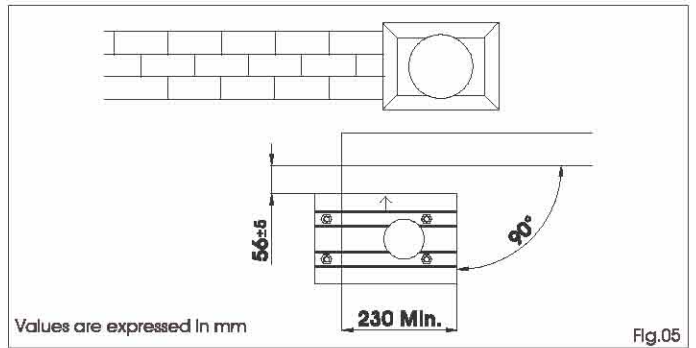


Fig.05

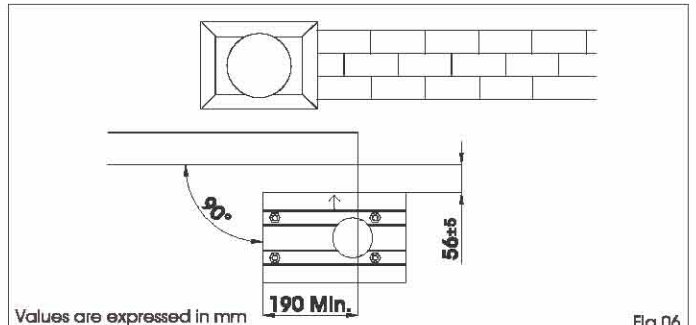


Fig.06

3- After determining the position of the foundation plate, make a plinth as shown in Fig. 07 and wall the plate, providing several sheaths for routing the cables. Using a spirit level, check if the plate is perfectly level. Wait for the cement to set.

4- Lay the electric cables for connection to the accessories and power supply as shown in diagram of Fig. 03. To facilitate connections to the control unit, allow the cables to protrude by at least 50 cm from the hole on the foundation plate.

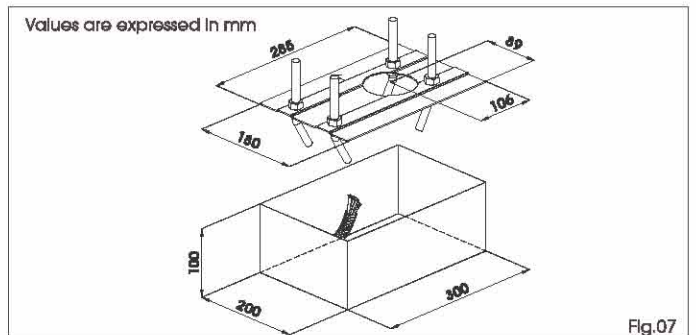


Fig.07

5.3. Mechanical installation

- 1- Remove the cover, Fig. 08 ref. 1.
- 2- Position the operator on the foundation plate, using the supplied washers and nuts as shown in Fig. 09. During this operation, route the cables through the appropriate openings in the motor body (See Fig.01 ref.9). If necessary, the two holes can be joined using a hammer to obtain a wider space.
- 3- Adjust the height of the gearmotor and the distance from the gate, referring to dimensions in Fig. 10.

Attention: This operation is necessary to ensure the rack is correctly secured and to enable any new adjustments.

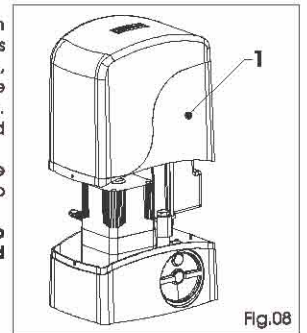


Fig.08

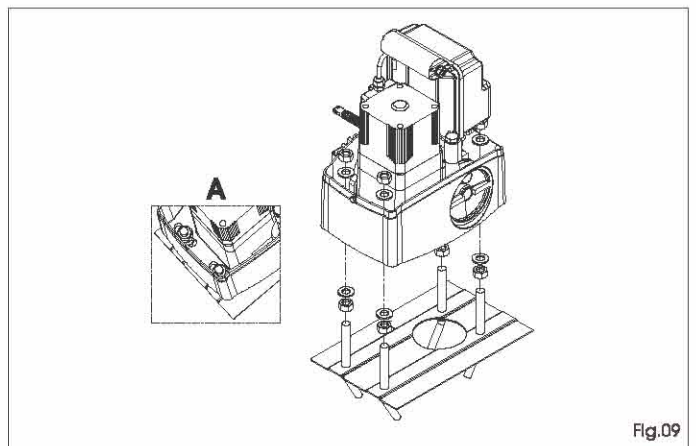


Fig.09

Values are expressed in mm

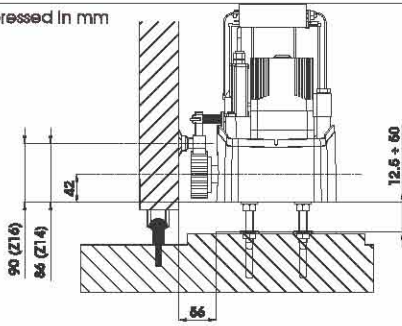


Fig.10

- 4- Secure the gearmotor to the plate, tightening the nuts. To facilitate this operation on the gearmotor, an appropriate socket wrench is provided.
- 5- Prepare the operator for manual operation as described in paragraph 8.

5.4. Assembling the rack

5.4.1. Steel rack to weld (Fig. 11)

- 1) Fit the three threaded pawls on the rack element, positioning them at the bottom of the slot. In this way, the slot play will enable any future adjustments to be made.
- 2) Manually take the leaf into its closing position.
- 3) Lay the first section of rack level on the pinion and weld the threaded pawl on the gate as shown in Fig. 13.
- 4) Move the gate manually, checking if the rack is resting on the pinion, and weld the second and third pawl.
- 5) Position another rack element end to end with the previous one, using a section of rack (as shown in Fig. 14) to synchronise the teeth of the two elements.
- 6) Move the gate manually and weld the three threaded pawls, thus proceeding until the gate is fully covered.

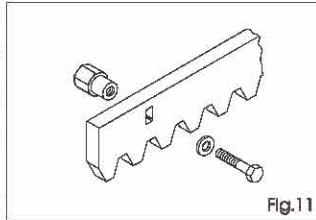


Fig.11

5.4.2. Steel rack to screw (Fig. 12)

- 1) Manually take the leaf into its closing position.
- 2) Lay the first section of rack level on the pinion and place the spacer between the rack and the gate, positioning it at the bottom of the slot.
- 3) Mark the drilling point on the gate. Drill a $\varnothing 6,5$ mm hole and thread with an M8 male tap. Screw the bolt.
- 4) Move the gate manually, checking if the rack is resting on the pinion, and repeat the operations at point 3.
- 5) Position another rack element end to end with the previous one, using a section of rack (as shown in figure 14) to synchronise the teeth of the two elements.
- 6) Move the gate manually and carry out the securing operations as for the first element, thus proceeding until the gate is fully covered.

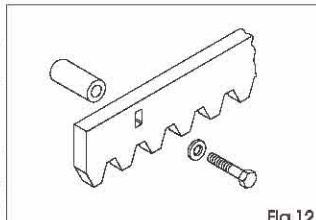


Fig.12

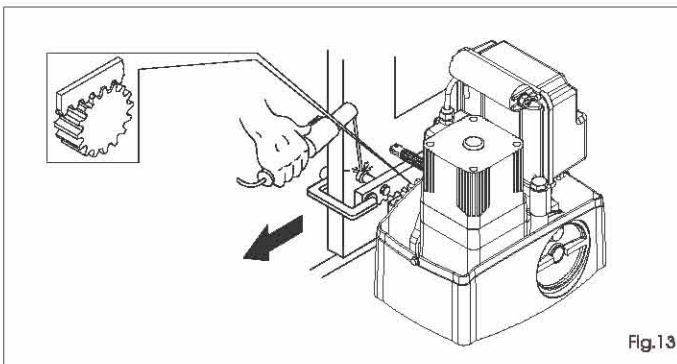


Fig.13

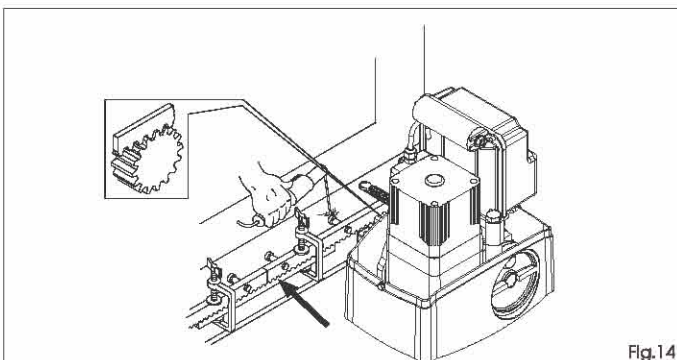


Fig.14

Notes on rack installation

- Make sure that, during the gate travel, all the rack elements do not exit the pinion.
- **Do not, on any account, weld the rack elements either to the spacers or to each other.**
- When the rack has been installed, to ensure it meshes correctly with the pinion, it is advisable to lower the gearmotor position by about 1.5 mm (Fig.15).
- Manually check if the gate correctly reaches the mechanical limit stops maintaining the pinion and rack coupled and make sure there is no friction during gate travel.
- Do not use grease or other lubricants between rack and pinion.

Values are expressed in mm

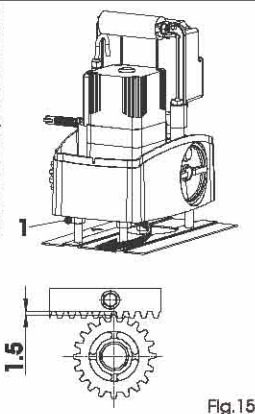


Fig.15

6. START-UP

6.1. Control board connection

Before attempting any work on the board (connections, programming, maintenance), always turn off power.

Follow points 10, 11, 12, 13 and 14 of the GENERAL SAFETY OBLIGATIONS. Following the instructions in Fig. 3, route the cables through the raceways and make the necessary electric connections to the selected accessories. Always separate power cables from control and safety cables (push-button, receiver, photocells, etc.). To avoid any electric noise whatever, use separate sheaths.

6.1.1. Earthing

Connect the earth cables as shown in Fig.16 ref.A.

6.1.2. Electronic control unit

In the "C" version gearmotors, the electronic control unit is fitted to an adjustable support (Fig. 16 ref. 1) with transparent lid (Fig. 16 ref. 3). The board programming push buttons (Fig. 16 ref. 4) have been located on the lid. This allows the board to be programmed without removing the lid. For correct connection of the control unit, follow indications in the specific instructions.

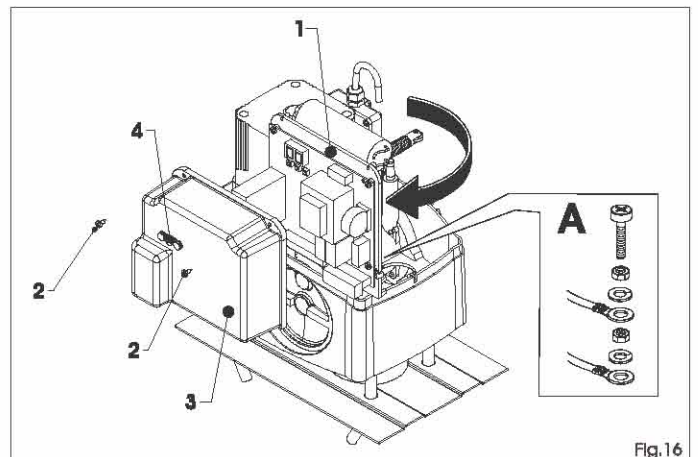


Fig.16

6.2. Positioning the limit switches

The operator has a mechanical travel stop with spring-lever, which commands gate movement to stop when a profiled steel plate, secured on the top of the rack, activates the spring until the microswitch is tripped. The plate support can be fitted to all racks with max. width of 13 mm.

Procedure for correct positioning of the two travel stop plates supplied:

- 1) Fit and secure the 2 profiled steel plates on the 2 U-supports, using the supplied nuts and washers, as shown in figure 17.
- 2) Prepare the operator for manual operation as described in paragraph 8.
- 3) Power up the system.
- 4) Securing the opening limit switch: manually take the gate to opening position, leaving 20 mm from the mechanical travel stop.
- 5) Allow the plate to slide over the rack in opening direction (Fig.18). As soon as the opening limit switch LED on the control board goes off, take the plate forward by about 20÷30 mm and secure it provisionally on the rack, using the supplied screws.

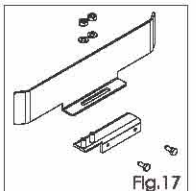


Fig.17

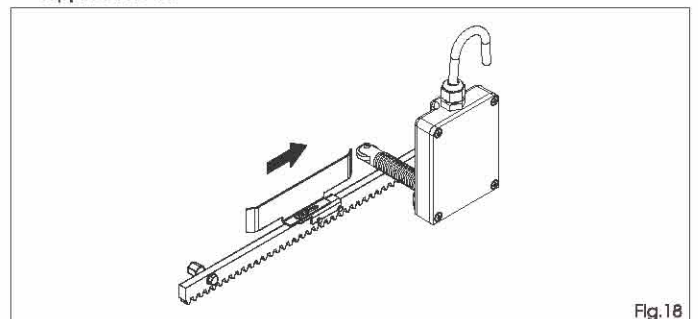


Fig.18

6) Repeat the operations at points 4 and 5 for the closing limit switch, Fig. 19.

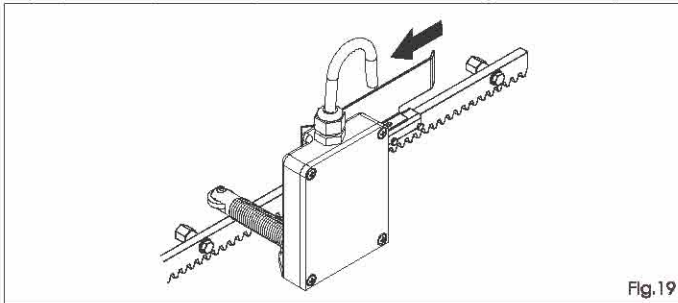


Fig.19

Important:

a) The plate must activate the limit-switch on the profiled part as shown in figure 20.

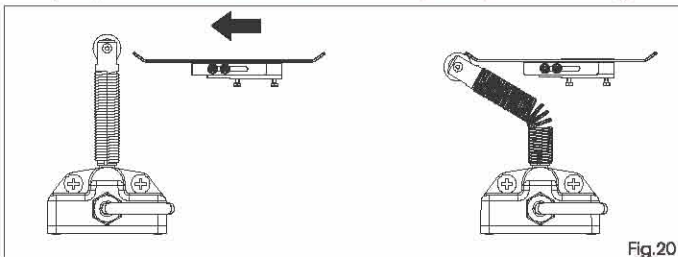


Fig.20

b) If the wheel and the travel stop plate are too close, it may be necessary to shorten the limit-switch spring by a couple of turns. Procedure for shortening the spring:

- To remove the spring, turn it **clockwise**. This operation requires some force.
- Shorten the spring as shown in Fig. 22: two turns correspond to about 3 mm.
- Fit the spring turning it **clockwise**, Fig. 23, until the stop is reached; see Fig. 24.
- Once the spring is back in place, ensure the wheel is horizontal. A wrong wheel orientation may jeopardise the operation of the limit switches.

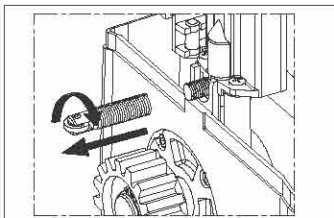
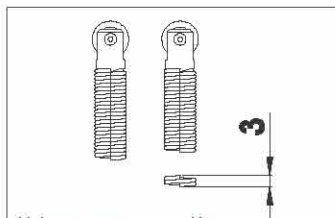


Fig.21



Values are expressed in mm Fig.22

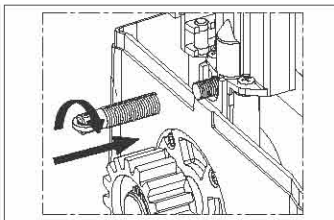


Fig.23

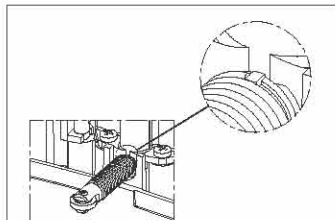


Fig.24

8) Re-lock the system (see paragraph 9).

Important: Before sending a pulse, make sure that the gate cannot be moved manually.

9) Command a complete gate cycle to check if the limit switch is tripped correctly.

Warning: To avoid damaging the operator and/or interrupting operation of the automated system, allow a space of about 20 mm from the mechanical travel stops.

10) Appropriately adjust the position of the travel stop plates and definitively secure them on the rack.

7. TESTING THE AUTOMATED SYSTEM

After installing the operator, carefully check operating efficiency of all accessories and safety devices connected to it.

Return the board support to its original position. Fit the cover, Fig. 25 ref. 1, and tighten the two side screws provided, Fig. 25 ref. 2.

Apply the danger sticker on the top of the cover (Fig. 26).

Hand the "User's Guide" to the Customer and explain correct operation and use of the gearmotor, indicating the potentially dangerous areas of the automated system.

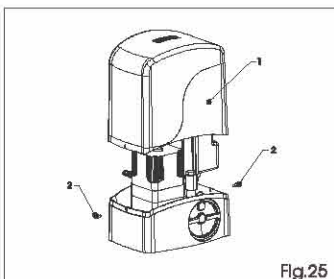


Fig.25

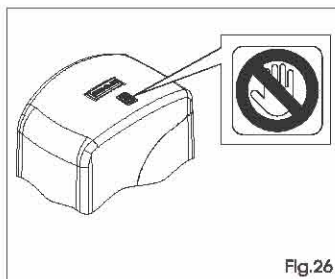


Fig.26

8. MANUAL OPERATION

Warning: Cut power to the system to prevent an involuntary pulse from activating the gate during the release manoeuvre.

To release the operator proceed as follows:

- 1) Insert the key provided and turn it clockwise as shown in Fig. 27 ref. 1 and 2.
- 2) Turn the release system clockwise, until the mechanical stop is reached, Fig. 27 ref. 3.
- 3) Open and close the gate manually.

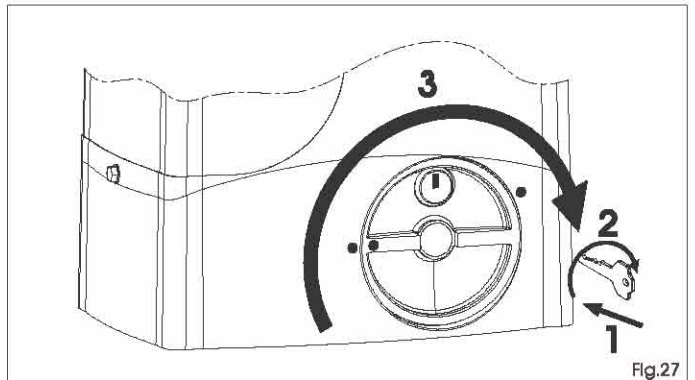


Fig.27

9. RESTORING NORMAL OPERATION

Warning: Cut power to the system to prevent an involuntary pulse from activating the gate during the manoeuvre for restoring normal operation.

To restore normal operation proceed as follows:

- 1) Turn the release system clockwise, until its stop is reached, Fig. 28 ref. 1.
- 2) Turn the key anti-clockwise and remove it from the lock, Fig. 28 ref. 2 and 3.
- 3) Move the gate until the release system meshes (corresponds to gate locking)
- 4) Power up the system.

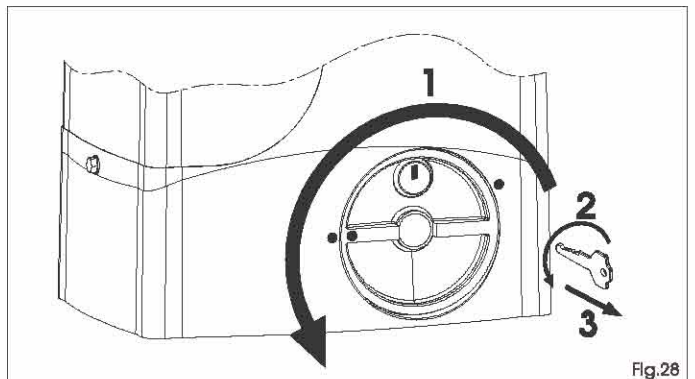


Fig.28

10. SPECIAL APPLICATIONS

There are no special applications.

11. MAINTENANCE

To ensure trouble-free operation and a constant safety level, an overall check of the system should be carried out every 6 months. A form for recording operations has been included in the "User's Guide" booklet.

12. REPAIRS

For any repairs, contact the authorised Repair Centres.

13. AVAILABLE ACCESSORIES

Refer to the catalogue for available accessories.