

# UNDER

Motoriduttore interrato  
Under grounded gear motor  
Motoreducteur enterré  
Motorreductor interrado  
Unrterflur-Drehtorantrieb  
Motorreductor interrado  
Podziemny motoreduktor

# INDEX

<b>1</b>	<b>Safety warnings</b>	p. 9
<b>2</b>	<b>Product overview</b>	p. 10
2.1	Product description	p. 10
2.2	Models and characteristics	p. 10
<b>3</b>	<b>Preliminary checks</b>	p. 10
<b>4</b>	<b>Installing the product</b>	p. 11
4.1	Installation	p. 11
4.2	Electrical connections	p. 11
4.3	Emergency unblocking	p. 11
<b>5</b>	<b>Testing and commissioning</b>	p. 12
5.1	Testing	p. 12
5.2	Commissioning	p. 12
<b>6</b>	<b>Instructions and warnings for the end user</b>	p. 13
<b>7</b>	<b>Figures</b>	p. 44
<b>8</b>	<b>EC Declaration of Conformity</b>	p. 47

## 1 - SAFETY WARNINGS

**CAUTION – ORIGINAL INSTRUCTIONS - important safety instructions. Compliance with the safety instructions below is important for personal safety. Save these instructions.**

Read the instructions carefully before proceeding with installation.

**The design and manufacture of the devices making up the product and the information in this manual are compliant with current safety standards. However, incorrect installation or programming may cause serious injury to those working on or using the system. Compliance with the instructions provided here when installing the product is therefore extremely important.**

If in any doubt regarding installation, do not proceed and contact the Key Automation Technical Service for clarifications.

**Under European legislation, an automatic door or gate system must comply with the standards envisaged in the Directive 2006/42/EC (Machinery Directive) and in particular standards EN 12445; EN 12453; EN 12635 and EN 13241-1, which enable declaration of presumed conformity of the automation system.**

Therefore, final connection of the automation system to the electrical mains, system testing, commissioning and routine maintenance must be performed by skilled, qualified personnel, in observance of the instructions in the "Testing and commissioning the automation system" section.

The aforesaid personnel are also responsible for the tests required to verify the solutions adopted according to the risks present, and for ensuring observance of all legal provisions, standards and regulations, with particular reference to all requirements of the EN 12445 standard which establishes the test methods for testing door and gate automation systems.

**WARNING - Before starting installation, perform the following checks and assessments:**

ensure that every device used to set up the automation system is suited to the intended system overall. For this purpose, pay special attention to the data provided in the "Technical specifications" section. Do not proceed with installation if any one of these devices is not suitable for its intended purpose;

check that the devices purchased are sufficient to guarantee system safety and functionality;

perform a risk assessment, including a list of the essential safety requirements as envisaged in Annex I of the Machinery Directive, specifying the solutions adopted. The risk assessment is one of the documents included in the automation system's technical file. This must be compiled by a professional installer.

**Considering the risk situations that may arise during installation phases and use of the product, the automation system must be installed in compliance with the following safety precautions:**

never make modifications to any part of the automation system other than those specified in this manual. Operations of this type can only lead to malfunctions. The manufacturer declines all liability for damage caused by unauthorised modifications to products;

if the power cable is damaged, it must be replaced by the manufacturer or its after-sales service, or in all cases by a person with similar qualifications, to prevent all risks;

do not allow parts of the automation system to be immersed in water or other liquids. During installation ensure that no liquids are able to enter the various devices;

should this occur, disconnect the power supply immediately and contact a Key Automation Service Centre. Use of the automation system in these conditions may cause hazards;

never place automation system components near to sources of heat or expose them to naked lights. This may damage system components and cause malfunctions, fire or hazards;

all operations requiring opening of the protective housings of various automation system components must be performed with the control unit disconnected from the power supply. If the disconnect device is not in a visible location, affix a notice stating: "MAINTENANCE IN PROGRESS":

connect all devices to an electric power line equipped with an earthing system;

the product cannot be considered to provide effective protection against intrusion. If effective protection is required, the automation system must be combined with other devices;

the product may not be used until the automation system "commissioning" procedure has been performed as specified in the "Automation system testing and commissioning" section;

the system power supply line must include a circuit breaker device with a contact gap allowing complete disconnection in the conditions specified by class III overvoltage;

use unions with IP55 or higher protection when connecting hoses, pipes or cable glands;

the electrical system upstream of the automation system must comply with the relevant regulations and be constructed to good workmanship standards;

users are advised to install an emergency stop button close to the automation system (connected to the control PCB STOP input) to allow the door to be stopped immediately in case of danger;

this device is not intended for use by persons (including children) with impaired physical, sensory or mental capacities, or with lack of experience or skill, unless a person responsible for their safety provides surveillance or instruction in use of the device;

before starting the automation system, ensure that there is no-one in the immediate vicinity;

before proceeding with any cleaning or maintenance work on the automation system, disconnect it from the electrical mains;

special care must be taken to avoid crushing between the part operated by the automation system and any fixed parts around it;

children must be supervised to ensure that they do not play with the equipment.

**WARNING - The automation system component packaging material must be disposed of in full observance of current local waste disposal legislation.**

**WARNING - The data and information in this manual are subject to modification at any time, with no obligation on the part of Key Automation S.r.l. to provide notice.**

## 2 - PRODUCT OVERVIEW

### 2.1 - Description of the product

The UNDER gear motors are destined to be installed in systems for the automation of gates with hinged doors.

The UNDER gear motors have been designed and constructed to be fitted onto hinged doors within the weight limits indicated in the

technical specifications table.

The use of gear motors for applications which differ from those indicated above is prohibited.

### 2.2 - Model and technical characteristics

Code	Description
INT	For swing gates with maximum length 3,5 m, 230 Vac motor, with opening and closing mechanical stops. Cable length 1.5 m
INTOIL	For swing gates with maximum length 3,5 m, 230 Vac motor, with opening and closing mechanical stops. Cable length 1.5 m, lubricated in oil bath
INT10	For swing gates with maximum length 3,5 m, 230 Vac motor, with opening and closing mechanical stops. Cable length 10 m
INT24	For swing gates with maximum length 3,5 m, 24 Vdc motor, without encoder, with opening and closing mechanical stops

#### TECHNICAL DATA

MODELS		INT	INTOIL	INT10	INT24
TECHNICAL SPECIFICATIONS					
Torque	Nm	300	300	300	250
Working cycle	%	30	30	30	80
Opening time at 90°	sec	20	20	20	18-25
Control board		CT202	CT202	CT202	14AB2
Power supply	Vac (Vdc)	230	230	230	(24)
Absorption	A	1	1	1	5
Engine power	W	230	230	230	120
Capacitor	µF	10	10	10	-
Thermoprotection	°C	150	150	150	-
Degree of protection	IP	67	67	67	67
Dimensions (L - P - H)	mm	412 - 346 - 160	412 - 346 - 160	412 - 346 - 160	412 - 346 - 160
Weight	Kg	11	11	11	10,8
Operating temperature	°C	-20°+55°	-20°+55°	-20°+55°	-20°+55°
Leaves maximum weight	Kg	600	600	600	600

## 3 - PRELIMINARY CHECKS

Before installing this product, verify and check the following steps:

- Check that the gate or door are suitable for automation
- The weight and size of the gate or door must be within the maximum permissible operating limits specified in Fig. 2
- Check the presence and strength of the security mechanical stops of the gate or door
- Check that the mounting area of the product is not subject to flooding
- Conditions of high acidity or salinity or proximity to heat sources could cause malfunction of the product
- Extreme weather conditions (for example the presence of snow, ice, high temperature range, high temperatures) may increase the friction and therefore the force required for the handling and initial starting point may be higher than under normal conditions.
- Check that the manual operation of gate or door is smooth and friction-free and there is no risk of derailment of the same
- Check that the gate or door are in equilibrium and stationary if left in any position
- Check that the power line to supply the product is equipped with proper grounding safety and protected by a magnetothermal and differential security device
- Provide the power system with a disconnecting device with a gap of contacts enabling full disconnection under the conditions dictated by the overvoltage category III.
- Ensure that all materials used for the installation comply with current regulations

## 4 - PRODUCT INSTALLATION

### 4.1 - Installation

Before starting the installation, make sure that the product is intact and that the packaging contains all the components shown. Make sure that the mounting area is compatible with the overall dimensions (Fig.1).

Check the allowed use limitation in the diagram in Fig.2

Fig.3 is an example of a typical system:

- Operators (1)
- Photoceils (2)
- Posts for photoceils (3)
- Flashing light with integrated aerial (4)
- Key or digital switch (5)

#### Positioning the foundation box and the lever control and blocking system

Depending on the dimensions, dig a suitably sized foundation ditch (it is recommended to provide adequate drainage in order to avoid water pooling).

Place the foundation box inside the trench, with the support pivot aligned with the hinge axis.

Install a conduit for the electrical cables, and another for drainage. Embed the foundation box in concrete, ensuring it is level and plumb (Fig.4).

**WARNING: ensure that the concrete used is prop-erly cured prior to proceeding with the following steps.**

Insert the ball E into the special hole after having greased it.

Insert the control rod A over the foundation box sup-ported pivot B.

Fix with a strong welding the wing of the gate on the release lever C, then put everything on the driving brack-et A.

Grease the mechanism using the appropriate grease nipple D (Fig.4a).

#### Installing the gear motor

Place the motor reducer gear unit inside the foundation box.

Fix the motor reducer in place inside the foundation box by tightening the 4 nuts (Fig.5).

Assemble the lever engine (1) on the motor shaft and tighten the screw with washer switch (2).

Connect the lever engine (1) command to the bracket (3) through the long lever (4) (Fig.5a).

Connect the motor to the control panel following the instructions in the manual installation of the card.

#### Installation of the limit switches in closing

Move the gate in a position fully closed, then adjust the washer as in figure 6 and fasten the screw M10x35

#### Installation of the limit switches in opening

Place the gate in the maximum open position, and then attach the limit switch nut as in figure 6a, and tighten the screw M10x20.

**WARNING: Your gate shall be equipped with central and side stops, which are fundamental for the good system operation. (Fig 7).**

### 4.2 - Electrical connections

#### UNDER 230V (900INT/900INT10/900INTOIL)

COLOR CABLE	RIGHT	LEFT
Black	Opening	Closing
Gray	Common	Common
Brown	Closing	Opening
Yellow/Green	GND	GND

#### WARNING:

To operate the engine 230V is essential to connect the capacitor between black and brown of the motor.

#### UNDER 24V (900INT24)

COLOR CABLE	RIGHT	LEFT
Blue	Opening	Closing
Brown	Closing	Opening

#### WARNING:

Always connect the earth cable to the mains power earth system with a cable minimum cross sectional area of 1.5 mm<sup>2</sup>

### 4.2 - Emergency unblocking

In the case of a power failure, the gate can be unblocked mechanically by operating the motor.

Insert the supplied unblocking lever and rotate 180° clockwise.

Automation will be automatically restored the first time the moor is operated (Fig.8).

## 5- TESTING AND COMMISSIONING THE AUTOMATION

The testing of the system must be performed by qualified technicians who must perform the tests required by relevant legislation related to risks, ensuring compliance with the provisions of the

regulations, in particular the EN12445 standard, which specifies the testing methods for the automation of doors and gates.

### 5.1 Testing

All system components must be tested following the procedures outlined in the respective instruction manuals.

Check that they meet the guidelines in Chapter 1 - Safety warnings  
Check that the gate or door can move freely once the automation is unlocked, and that they are in equilibrium and stationary if left in any position.

Check the correct operation of all connected devices (photocells, sensitive edges, emergency buttons, etc.), testing the opening, closing and stopping of the gate or door via the connected control devices (transmitters, buttons, switches).

Carry out measurements of the impact force, as prescribed by standard EN12445 adjusting the functions of speed, motor force and deceleration of the unit if the measurements do not give the desired results until you find the right setting.

### 5.2 Commissioning

Following the successful testing of all (and not just some) devices in the system you can proceed with the commissioning.

You must prepare, and keep for 10 years, the technical file of the system with the wiring diagram, drawing or photo of the system, risks analysis and solutions adopted, manufacturer declaration of conformity of all devices connected, instruction manual of each device and maintenance schedule of the system.

Fix on the gate or door a plaque indicating the automation data, the name of the person responsible for the commissioning, the serial number and year of construction, the CE mark.

Attach a plaque indicating the steps required to manually unlock the system.

Implement and deliver to the end user the declaration of conformity, the instructions and warnings for use for the end user and the maintenance schedule of the system.

Make sure the user understands proper automatic, manual and emergency operation of the automation.

Inform the end user in writing of the dangers and risks still present.

## 6 - INSTRUCTIONS AND WARNINGS FOR THE END USER

Key Automation S.r.l. produces systems for the automation of gates, garage doors, automatic doors, shutters, parking lots and road barriers. However, Key Automation is not the manufacturer of your automation system, which is rather the result of a process of analysis, evaluation, selection of materials, and installation performed by your own installer. Each automated system is unique and only your installer has the experience and professionalism required to create a system to suit your needs, safe and reliable over time, and carried out in a workmanlike manner, i.e. compliant with the current regulations. Even if your automation system meets the security level required by law, this does not exclude the existence of "residual risks", i.e. the possibility that it may cause dangerous situations, usually as a result of improper or irresponsible use; for this reason we would like to give you some suggestions:

- Before using the automation for the first time, ask the installer to explain the origin of residual risks.
- Keep this manual for future use and deliver it to any new owner of the automation.
- Inappropriate or improper use of the automation can make it dangerous: do not command the movement of the automation if people, animals or things are in its range.
- Children: If properly designed, an automation system ensures a high degree of security, preventing movement in the presence of people or things with its detection systems, and ensuring always predictable and safe activation. It is prudent to prevent children from playing near the automation and keep remote controls out of their reach to prevent accidental activation.
- Malfunctions: As soon as you notice any malfunctions, disconnect the system from the power supply and operate the manual release. Do not attempt any repairs by yourself, but require the assistance of your installer: meanwhile, the system can operate like a non-automated opening device after releasing the motor reducer with the release key supplied with the system.
- In case of failures or power failures: While awaiting the arrival of your installer or the restore of the electricity, if the system is not equipped with backup batteries, the automation can be operated as any normal non-automated opening device. To do this, you must run the manual release.

**Release and manual movement:** before performing this operation pay attention that the device can be released only when the door is stationary.

- **Maintenance:** Like any machine, your automation needs periodic maintenance to ensure its long life and total safety. Agree with your installer on a maintenance plan on a periodic basis; Key Automation recommends a frequency of 6 months for normal domestic use, but this period may vary depending on the intensity of use. All inspection, maintenance or repairs should be performed only by qualified personnel.

- Do not change the system and control or programming parameters of the automation: the responsibility lies with your installer.

- The testing, routine maintenance and any repairs must be documented by the person who performs them, and related documents must be kept by the owner.

The only interventions that are possible for the user and should be carried out periodically are the cleaning of the slides and photo-cells, as well as the removal of any leaves or rocks that could hinder the automation. To prevent anyone from activating the gate or door, before proceeding, remember to release the automation and clean only with a cloth slightly dampened with water.

- **Disposal:** At the end of the automation useful life, make sure that the dismantling is carried out by qualified personnel and the materials are recycled or disposed of according to local regulations in force.

- Operate the gate or door (with remote control, key switch, etc.); if everything is working properly, the gate or the door will open and close normally, otherwise the flashing light flashes and the maneuver does not start.

With the safeties out of use, the automation must be repaired as soon as possible.

**Replacing the remote control battery:** if your remote control seems to work worse or not work at all after a while, this may simply depend on the exhaustion of the battery (depending on use, it may take several months to over a year). In that case, you will see that the confirmation of transmission light does not turn on, or comes on only briefly.

The batteries contain polluting substances: do not throw them in the garbage but use the methods prescribed by local regulations.

Thank you for choosing keyautomation; for more information feel free to visit our website [www.keyautomation.it](http://www.keyautomation.it).

# IMAGES

Fig. 1 IT - Dimensioni d'ingombro

EN - Space dimensions  
FR - Dimensions d'encombrement  
ES - Dimensiones

DE - Abmessungen

PT - Dimensões globais  
PL - Wymiary

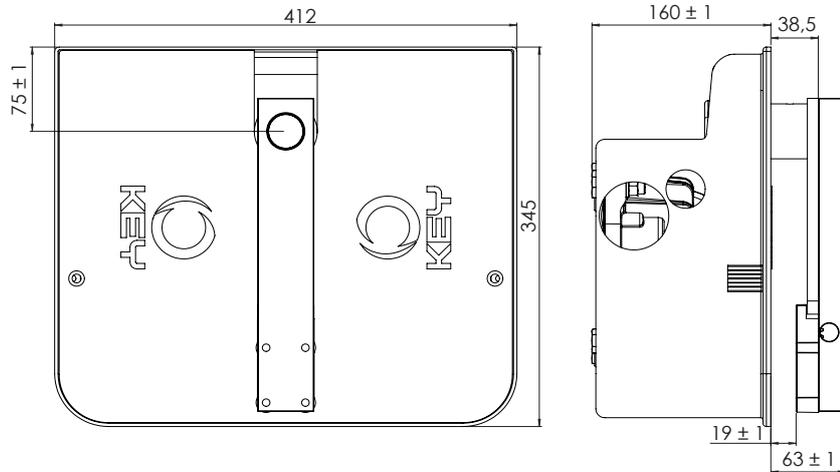
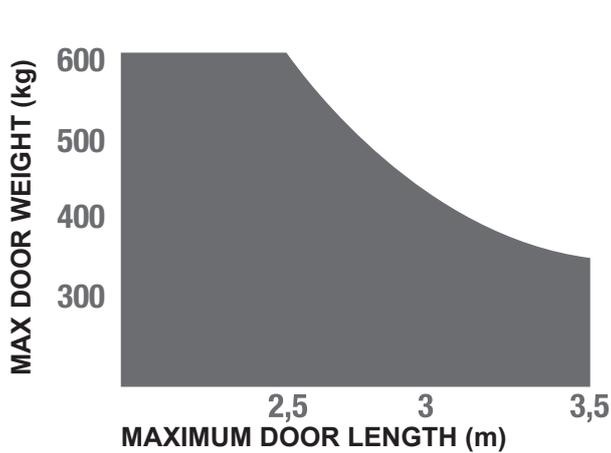


Fig. 2 IT - Limiti di impiego

EN - Use limitations  
FR - Limites d'utilisation  
ES - Límites de uso

DE - Einsatzgrenzen

PT - Limites de uso  
PL - Ograniczenia użytkowania



KG

IT - Peso massimo dell' anta del cancello

EN - Maximum weight of the gate door

FR - Poids maximum du battant du portail

ES - Peso máximo de la puerta de la cancela

DE - Maximales Gewicht des Torflügels

PT - Peso máximo do painel do portão

PL - Waga maksymalna skrzydła bramy

m

IT - Lunghezza massima dell' anta del cancello

EN - Maximum length of the gate door

FR - Longueur maximum du battant du portail

ES - Longitud máxima de la puerta de la cancela

DE - Maximale Länge des Torflügels

PT - Comprimento máximo do painel do portão

PL - Długość maksymalna skrzydła bramy

Fig. 3 IT - Installazione tipica

EN - Typical Installation  
FR - Installation type  
ES - Instalación típica

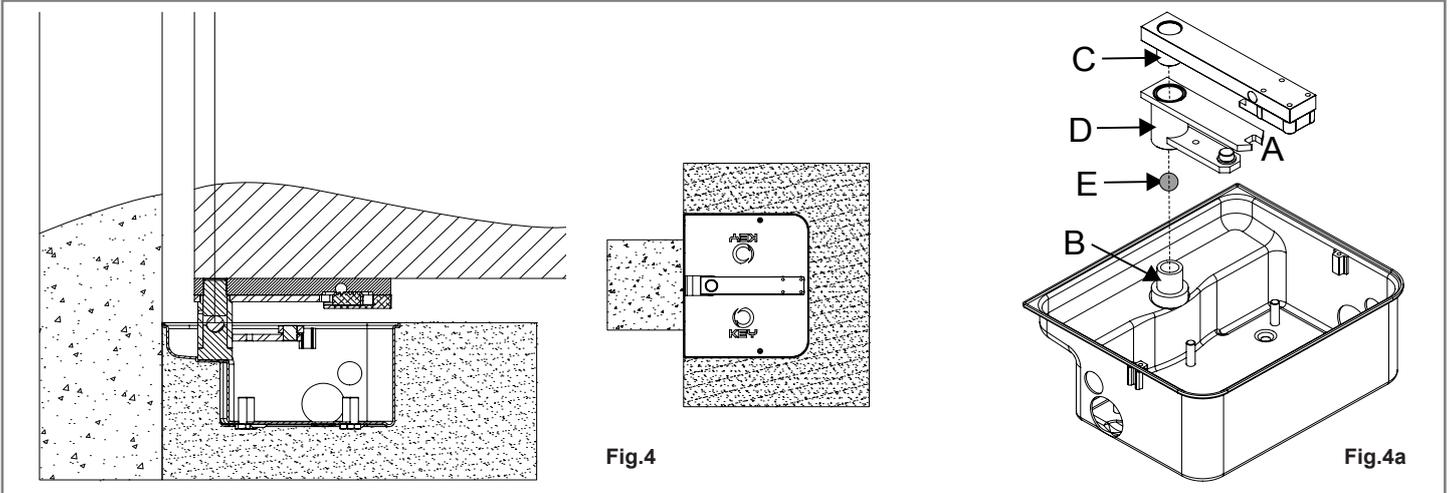
DE - Typische Installation

PT - Gráfico ângulo de abertura  
PL - Wykres kąta otwarcia



**Fig. 4 IT - Posizionamento della cassa**  
**EN - Positioning the foundation box**  
**FR - Positionnement de la caisse de fondation**  
**ES - Ubicación de la caja de cimentación**

**DE - Positionierung des fundamentkastens**  
**PT - Posicionamento da caixa de fundação**  
**PL - Ustawianie podstawy i dźwigni**

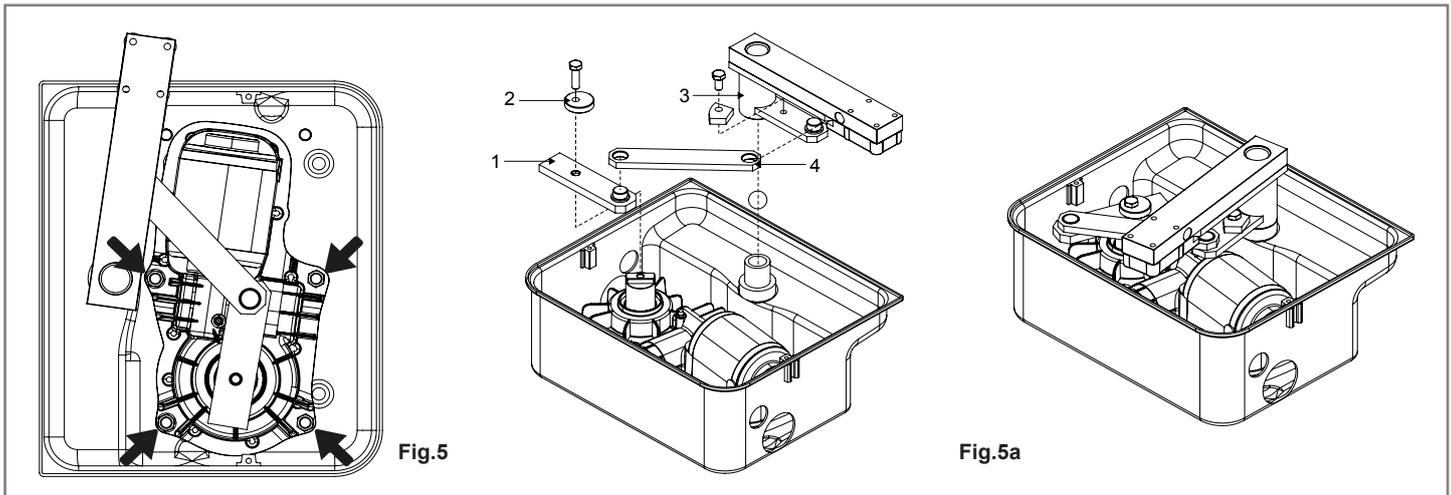


**Fig.4**

**Fig.4a**

**Fig. 5 IT - Installazione del motoriduttore**  
**EN - Installing the motor reducer**  
**FR - Mise en place du motoréducteur**  
**ES - Instalación del motorreductor**

**DE - Installation des getriebemotors**  
**PT - Instalação do motorreductor**  
**PL - Instalowanie motoreduktora**

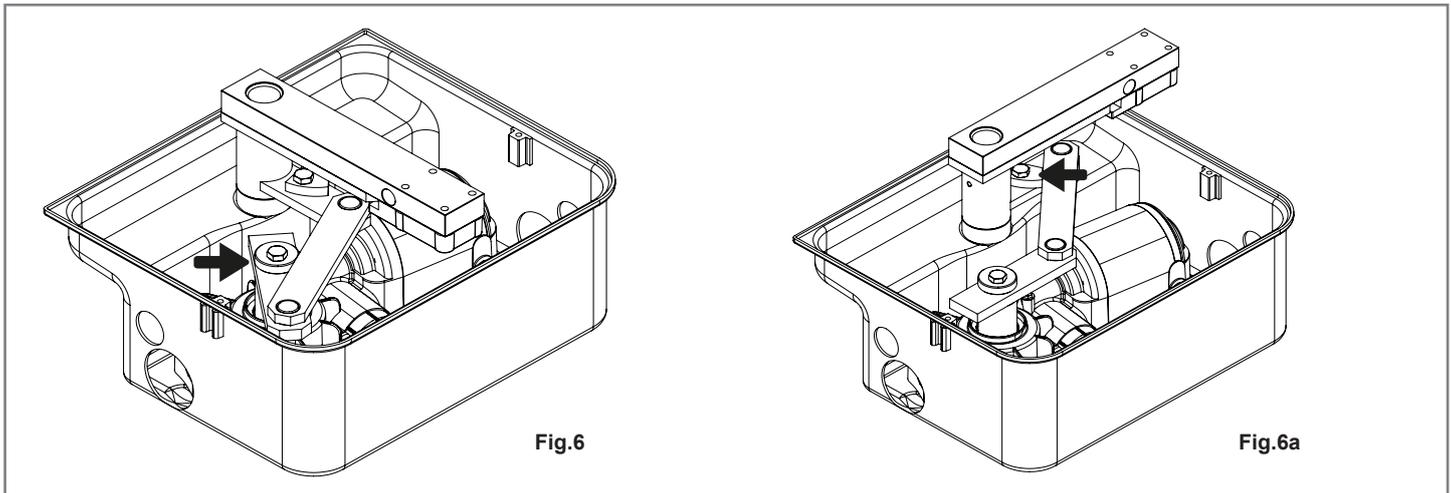


**Fig.5**

**Fig.5a**

**Fig. 6 IT - Installazione del fermi finecorsa**  
**EN - Installation of the limit switches**  
**FR - Installation des baguettes de blocage**  
**ES - Instalación de los topes de detención**

**DE - Einbau der verschlusssschalter**  
**PT - Instalação dos travões de fim de curso**  
**PL - Instalacja włączników ogranicznika**

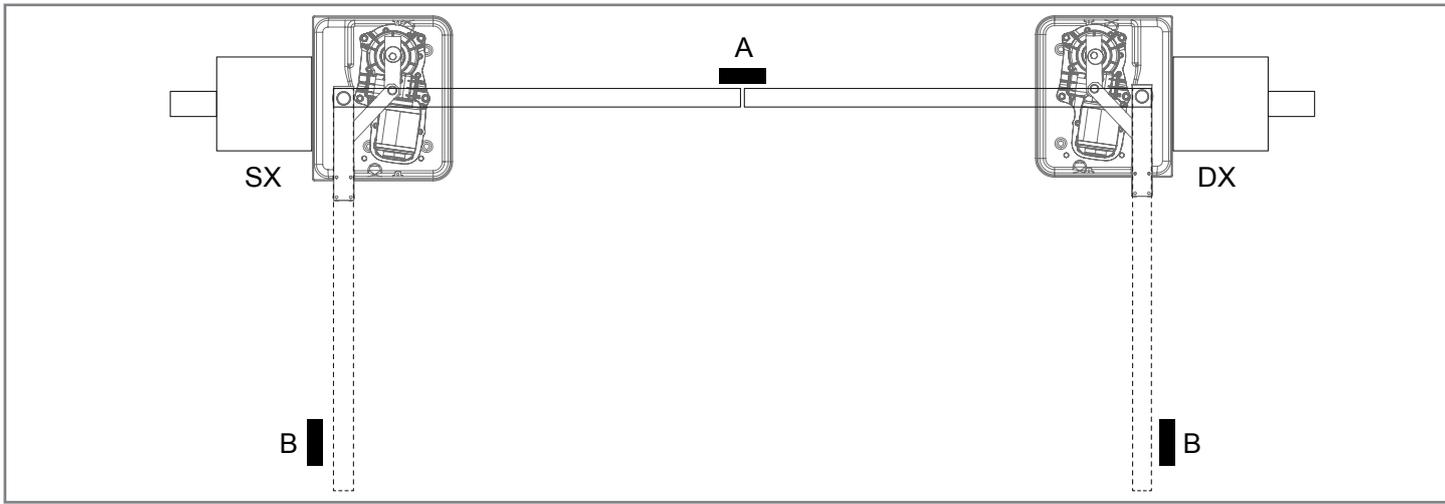


**Fig.6**

**Fig.6a**

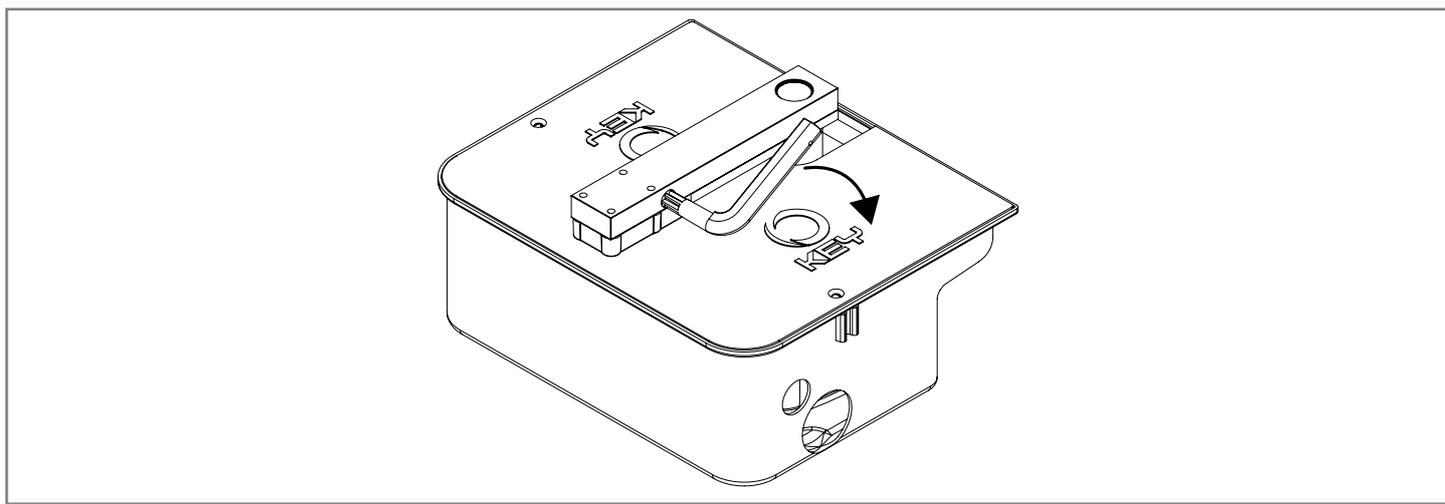
**Fig. 7 IT - Installazione del fermi finecorsa**  
**EN - Installation of the limit switches**  
**FR - Installation des baguettes de blocage**  
**ES - Instalación de los topes de detención**

**DE - Einbau der verschlussshalter**  
**PT - Instalação dos travões de fim de curso**  
**PL - Instalacja włączników ogranicznika**



**Fig. 8 IT - Sblocco di emergenza**  
**EN - Emergency unblocking**  
**FR - Déverrouillage d'urgence**  
**ES - Desbloqueo de emergencia**

**DE - Notfallfreigabe**  
**PT - Desbloqueio de emergência**  
**PL - Odblokowanie awaryjne**



## DICHIARAZIONE DI INCORPORAZIONE DI QUASI-MACCHINA

### DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

Il sottoscritto Nicola Michelin, Amministratore Delegato dell'azienda  
*The undersigned Nicola Michelin, General Manager of the company*

Key Automation srl, Via Alessandro Volta, 30 - 30020 Noventa di Piave (VE) – ITALIA

dichiara che il prodotto tipo:  
*declares that the product type:*

#### UNDER

Motoriduttore elettromeccanico interrato per cancelli a battente fino a 3,5m, 24Vdc e 230Vac  
*Electromechanical underground gear motor for swing gates, leaves up to 3,5m, 24Vdc e 230Vac*

Models:  
*Models:*

900INT24  
900INT, 900INT10, 900INTOIL

E' conforme a quanto previsto dalle seguenti direttive comunitarie:  
*Is in conformity with the following community (EC) regulations:*

Direttiva macchine / *Machinery Directive 2006/42/EC*  
Direttiva bassa tensione / *Low voltage Directive 2006/95/EC*  
Direttiva compatibilità elettromagnetica / *EMC Directive 2004/108/EC*

Secondo quanto previsto dalle seguenti norme armonizzate:  
*In accordance with the following harmonized standards regulations:*

EN 55014-1 + EN 55014-2  
EN 61000-3-2 + EN 61000-3-3  
EN 61000-6-1 + EN 61000-6-2 + EN 61000-6-3 + EN 61000-6-4  
EN 60335-1:2002 + A11:2004 + A1:2004 + A12:2006 + A2:2006 + A13:2008 + A14:2010 + A15:2011  
EN 55022

Dichiara che la documentazione tecnica pertinente al prodotto è stata redatta conformemente a quanto previsto dalla direttiva 2006/42/CE Allegato VII parte B e verrà fornita a fronte di una richiesta adeguatamente motivata dalle autorità nazionali.

*Declares that the technical documentation is compiled in accordance with the directive 2006/42/EC Annex VII part B and will be transmitted in response to a reasoned request by the national authorities.*

Dichiara altresì che non è consentita la messa in servizio del prodotto finché la macchina, in cui il prodotto è incorporato, non sia stata dichiarata conforme alla direttiva 2006/42/CE.

*He also declares that is not allowed to use the above mentioned product until the machine, in which this product is incorporated, has been identified and declared in conformity with the regulation 2006/42/EC.*

Noventa di Piave (VE), 02/04/15

Amministratore Delegato  
General Manager  
Nicola Michelin



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Organizzazione con sistema di gestione certificato  
ISO 9001:2008



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**Instruction version  
580INT REV.01**

Fig.1

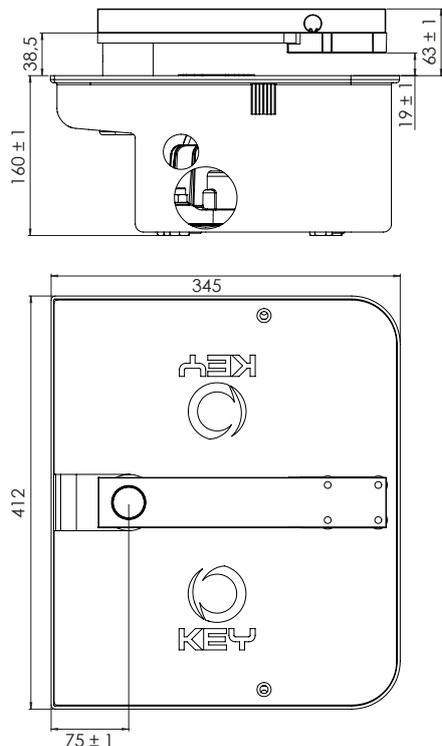


Fig.2

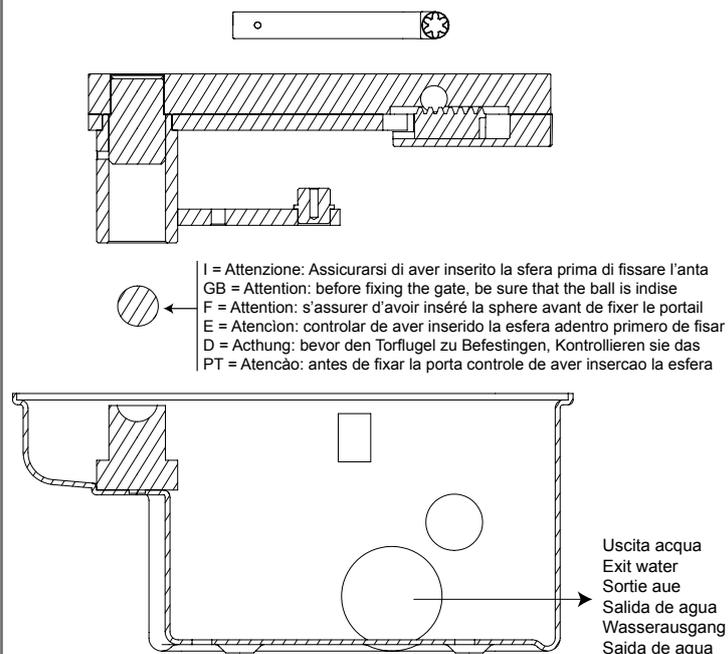


Fig.3

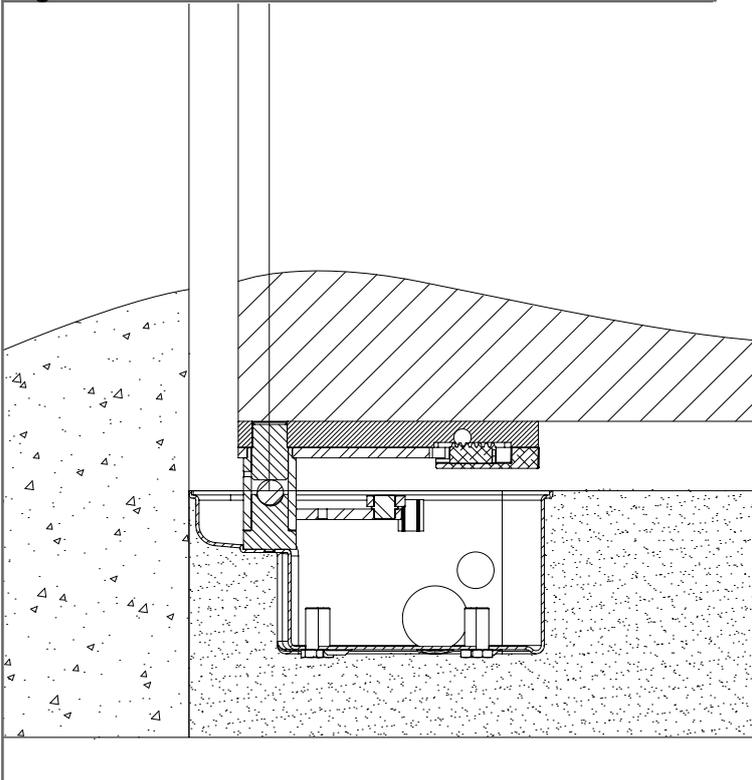


Fig.4

