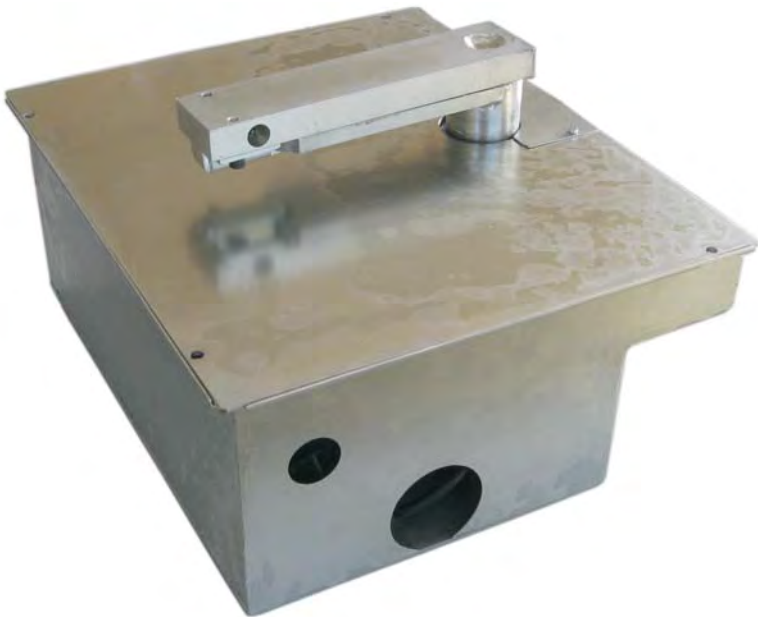


STONE

Motoriduttore interrato per cancelli ad ante battenti
Underground gear motor for wings gates
Motoréducteur souterrain pour portails battants
Unterflurdrehtorantrieb getriebemotor für flügeltore



Istruzioni e avvertenze per l'installazione, l'uso e la manutenzione
Instructions and warnings for installation, use and maintenance
Instructions et avertissements pour l'installation, l'usage et l'entretien
Anleitungen und hinweise für installation, gebrauch und wartung



Warnings

Please read these instructions carefully before installing the device as they contain important information concerning safety, installation, use and maintenance.

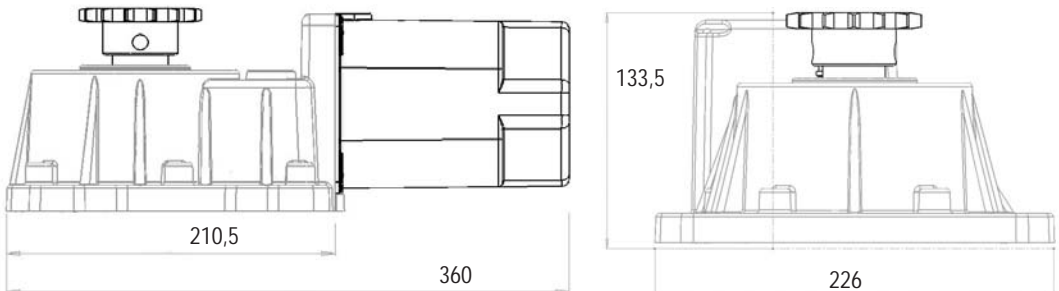
- This manual is intended but for qualified technical staff and not for end user. It is a task of the installer to inform afterwards user on the use of the automatism and on possible dangers could come from it, as well as on the need of a periodical maintenance.
- The set up is to be carried on only by qualified staff having got required technical and professional requirements.
- The product is to be installed complying with rules in force about computer-based closings.
- The device has been realised expressly to automate wing gates. Any other employ is to be considered improper and therefore forbidden.
- Always use original components. The Company LEB doesn't take any responsibilities for damages due to the use of non-original components.
- Before proceeding with set up, make sure the gate frame is solid and fitted for the employ of the device.
- Before proceeding with set up, make sure that, during the gate move, there are not friction points and that this one has no possibilities to unhook from the pillar.
- Before acting on the device, check the power supply voltage is disconnected.
- Use the device on respecting the technical limits described in the following manual (see page 12).
- The equipment is not to be handled by children or incompetents.
- In case of lack of electric voltage, start the unblocking device to manually open or close the gate.
- The maintenance of the device is to be executed but by qualified staff authorized by the Manufacturer.
- Check the condition of the gate hinges any six months and lubricate them when necessary.

TECHNICAL CHARACTERISTICS

TECHNICAL DATA	STONE 230	STONE 24
Power supply	230 Vac - 50 Hz	24 Vdc
Nominal current	1,2 A	5 A
Motor power	90 W	60 W
Maximum gate weight	350 Kg	250 Kg
Maximum gate length	2,5 mt	2,5 mt
Torque	330 Nm	270 Nm
Thermal protection	150 °C	-
Operating temperature	from -20 to +60°C	from -20 to +60°C
Insulation degree	IP67	IP67
Opening time 90°	15 Sec	15 Sec
Working cycle	30 %	70 %
Weight	15 Kg	15 Kg

Gearmotor dimensions (mm)

Fig.1



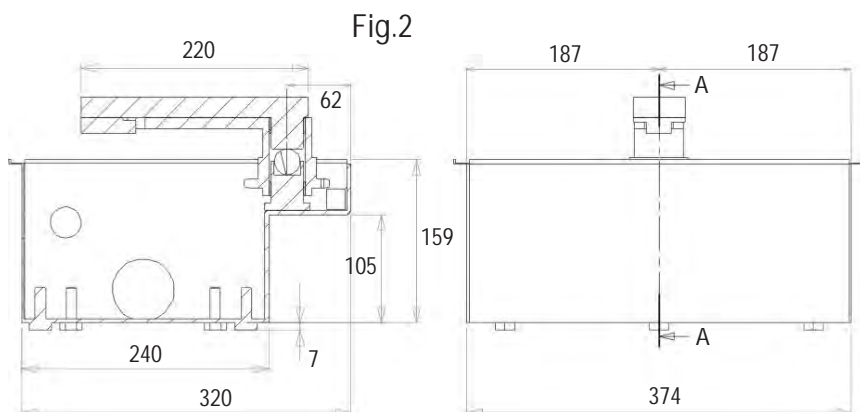
INSTALLATION

Preliminary checks

Before installing STONE check the following points:

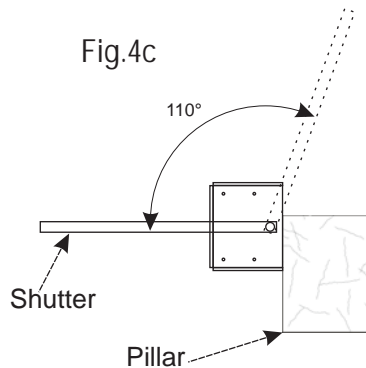
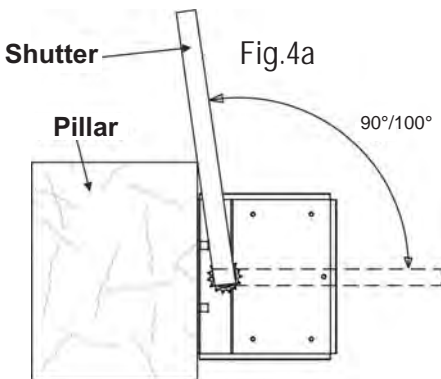
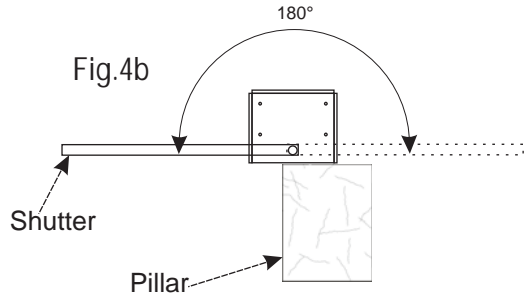
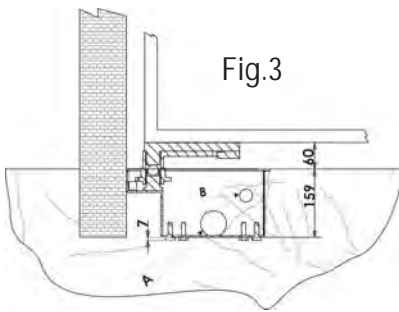
- Make sure that the device operates within its limits of employment described in the technical characteristics table.
- Make sure that the gate structure is sturdy and that the wing moves without frictions or other impediments.
- Make sure that the device is undamaged.
- Don't install the product in explosive environments.
- Perform all the structural changes in order to ensure safety distances and protect and segregate areas in which people may be exposed to the risk of crushing, shearing, dragging or similar dangers.
- Foresee a free area destined to the operations of maintenance and unblocking.
- For anything not expressly specified in this handbook, follow the norms in force.
- Each wing must have just one hinge, remove any extra ones.
- Don't install the device on blank wing gates, functioning cannot be guaranteed in the presence of strong wind.
- For complete safety, the mechanical stops with rubber cap (floor stops) must be fitted in opening and closing of the wing. They delimit the extreme points of opening and closing of the wing.

Foundation box dimensions (mm)



Foundation box - Installation

- In line with the type of selected installation, place the foundation box, following the indications shown in the figures 4a, 4b and 4c.
- Dig a hole as per the measurements shown in fig.2. Foresee an additional space for the pipes of water drainage and electric cables.
- Place the foundation box inside the hole so that the pin welded to the box is aligned with the upper hinge of the gate (fig.3 and fig.4).
- Insert the two pipes of water drainage into the special holes fitted on the box. Connect the pipes to a good canal of the rain dispersion.
- Connect the tube of the electric cables into the special hole fitted on the box, on the side of the wing opening.
- Cast the concrete inside the hole, making sure the box is level. It must be 5 mm higher than the finished floor (cover thickness).
- Wait for the concrete has solidified.



STONE intallation - 110° lever version

- Connect the mechanical closing limit switch on the motor lever as shown on the side figure.
- Insert the lever on the motor shaft and fix it by means the special screw and bolt (fig.15).

Fig. 15

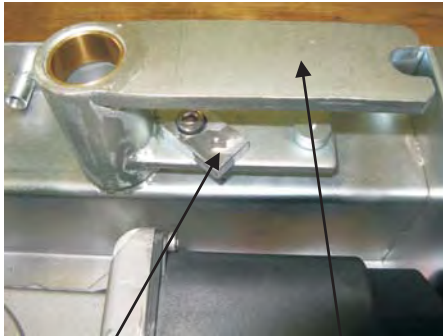


Closing limit switch

Motor lever

Warning: the operator is equipped with two limit switch mechanical blocks :

Fig. 16 (for 90° or 100° opening)



Opening limit switch

Traction lever

- Long for 90° opening
- Short for 100° opening

- Connect the desired opening limit switch block on the traction lever as shown on the side figure.
- Carefully lubricate the pivot of the foundation box.
- Insert the metal ball in the foundation box pivot.
- Insert the traction lever on the foundation box pivot (fig. 16).

Fig. 17



Connecting rod

- Join the connecting rod as shown on the side figure.
- Fix the connecting rod by means the special screws and washers (fig. 17).

Fig. 18 (for 110° opening)



Connecting rod

- If you need a 110° opening, join the connecting rod as shown on the side figure and remove the opening limit switch block.
- Fix the connecting rod by means of the special screws and washers (fig. 18).

- Turn the screw on the closing limit switch block in order to get the right position of the shutter.

Common installation (for all versions)

Fig. 19

- Place the foundation box cover on the base (fig.19).
- Tighten the special screws in order to fasten the cover.



Fig. 20



- Place the "U" plate on the cover. Tighten the two special screws in order to fasten the plate (fig. 20).

ELECTRIC CONNECTIONS

Warnings

- The gearmotor must be connected but to a control unit manufactured by the company LEB.
- All connection operations must be performed without electric voltage.

Power supply cable

- From the electric motor comes out four wires (230Vac - STONE 230) or two wires (24Vdc - STONE 24).
- In the following table the data concerning the power supply cable, required for the connection to the control unit, are reported.

STONE 230 Cable 4x1,5 mm	Color	STONE 24 Cable 2x1,5 mm	Color
Common	Blue	Positive motor	Red or Green
Motor OPEN	Black	Negative motor	Black or Brown
Motor CLOSE	Brown		
Ground	Yellow-Green		

Capacitor connection

- In the gearmotor STONE 230 connect the capacitor between the black wire (Open) and the brown wire (Close) of the electric engine.

Limit switches cable

The device is equipped with two magnetic Limit switches. From the Limit switches block three wires come out. In the following table the data concerning the Limit switches cable, required for the connection to the control board, are reported.

Cable 3 x 1,5 mm	Colour
Common	Blue
Limit switch OPENING	Black
Limit switch CLOSING	Brown

Manual unblocking

The manual unblocking causes the release of the device from the shutter, allowing the manual displacement of this one. It can be used in case of electric voltage lack or of installation failure. The unblocking is got by means a key that is to be kept by user in a sure and easily reachable place. In order to obtain the unblocking of the device, proceed in the following way:

- Insert the socket spanner into the hole fitted on the traction arm.
- Turn the socket spanner in the direction indicated in fig.21, then open the shutter of the gate by hand.
- To lock, bring the shutter back to the hooking position with the traction arm.
- Turn the socket spanner in the opposite direction and simultaneously push the shutter to hook it.

Fig. 21 (Unblocking)



MAINTENANCE

Ordinary maintenance

The owner should execute the following operations any time it is required:

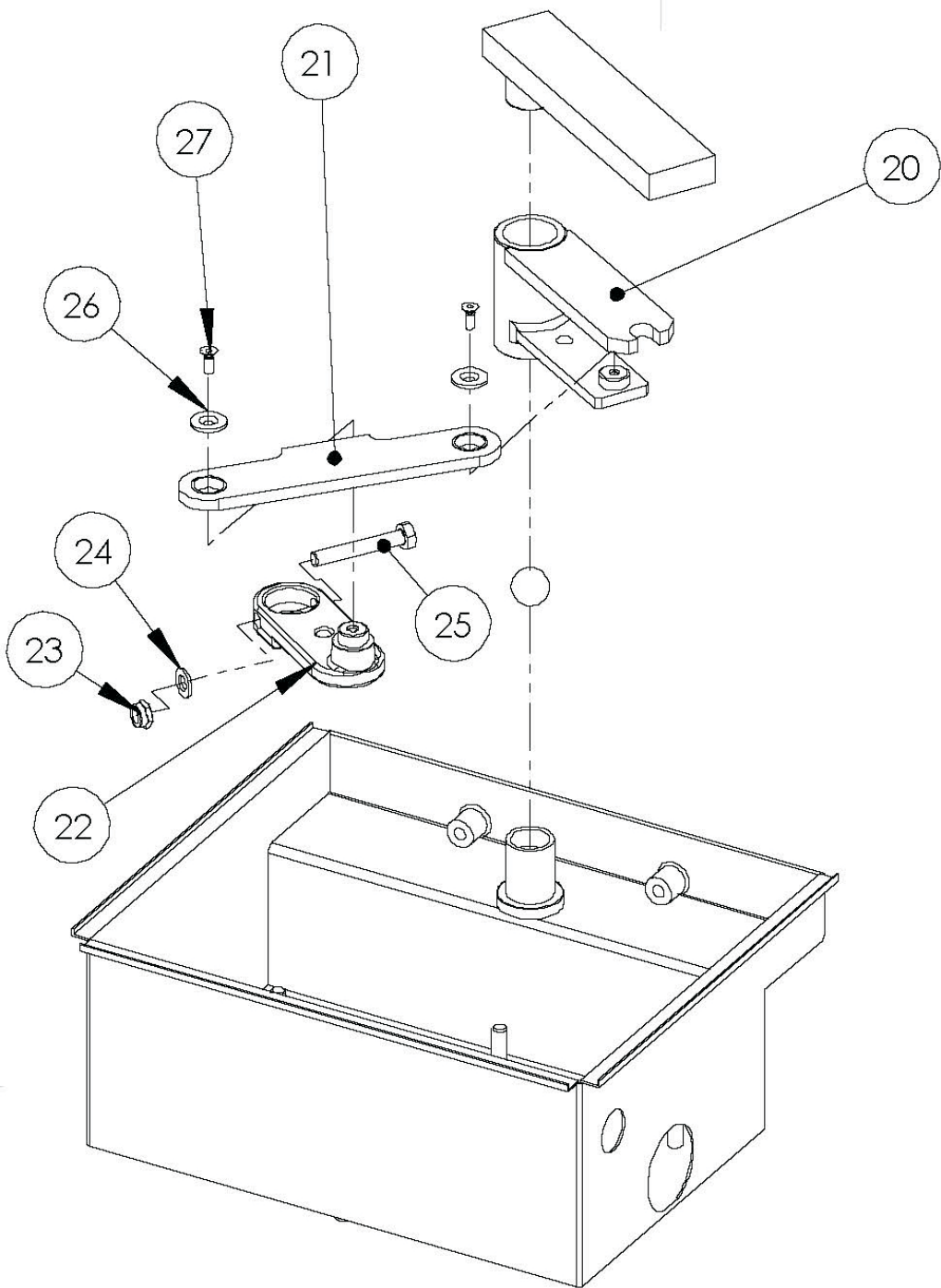
- Clean the area around the device.
- Clean and lubricate the hinges of the gate.
- Lubricate the unblocking group and the rotation pivot.
- Remove possible rubbles from the box and make sure that the device has a good water drainage.

Six-monthly execute ordinary maintenance of the device.

N.B. : Any operation of ordinary maintenance is to be performed by qualified technical staff authorized by the Manufacturer.

Extraordinary maintenance

- In the case hard interventions are required on the device, it is advisable to remove this one, in order to allow the repairs in a workshop by technicians of the Manufacturer or authorised by it.



CE





ANIMA[®]



UNAC
ASSOCIAZIONE COSTRUTTORI DI
INFISSI MOTORIZZATI E AUTOMATISMI
PER SERRAMENTI IN GENERE

Installer:

(Name, address, telephone)

**UNAC GUIDE No. 2
FOR THE MOTORISATION OF HINGED GATES
IN ACCORDANCE WITH MACHINERY DIRECTIVE 98/37/EEC AND THE APPLICABLE PARTS OF
STANDARDS EN 13241-1, EN 12453, EN 12445**

With this publication UNAC sets out to inform and assist installers in applying the specifications of the directives and of European standards concerning the safe use of motorised gates/doors.

It should be noted that those who sell and *motorise* an existing manual door/gate become the manufacturer of the motorised door/gate *machine* and must prepare and keep the technical file, as laid down by Annex V of the Machinery Directive (98/37/EEC). The technical file must contain the following documents:

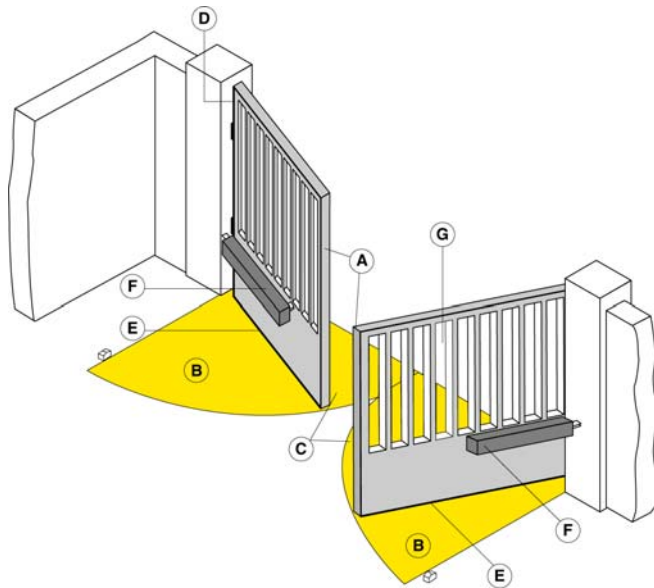
- Assembly drawing of the motorised door/gate (usually included in the installation manual).
- Electrical connections and control circuit diagrams (usually included in the installation manual).
- Risk analysis including (as indicated on the following pages):
 - the list of the essential requirements as indicated in Annex I of the Machinery Directive;
 - the list of the risks presented by the door/gate and the description of the solutions adopted.
- They must also keep the manuals for installation and maintenance of the door/gate and of the components.
- Prepare the operating instructions and general warnings for safety (if necessary integrating those in the manual for installation of the door/gate) and give the user a copy.
- Compile the proof book and give the user a copy (see facsimile in Annex 1).
- Draft the EC declaration of conformity (see facsimile in Annex 2) and give the user a copy.
- Fill in the label or plate with CE marking and attach it to the motorised door/gate.

N.B. The technical file must be held and made available to the competent national authorities for at least ten years from the date of construction of the motorised door/gate.

Note also that, as from May 2005, the manufacturer of a new door/gate (both manual and motorised) must observe the procedure for the CE marking pursuant to the Construction Products Directive (89/106/EEC), as indicated in annex ZA of the standard EN 13241-1. This procedure involves the manufacturer:

- setting up and maintaining internal production control;
- having a notified body carry out the initial type tests referring to the applicable characteristics indicated in Annex ZA of standard EN 13241-1.

N.B. UNAC is preparing guidelines dedicated to the correct application of the Construction Products Directive (89/106/EEC).



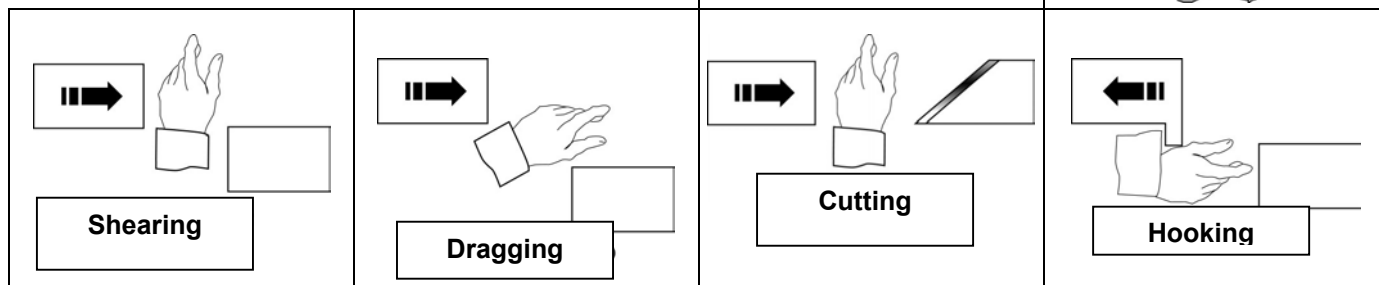
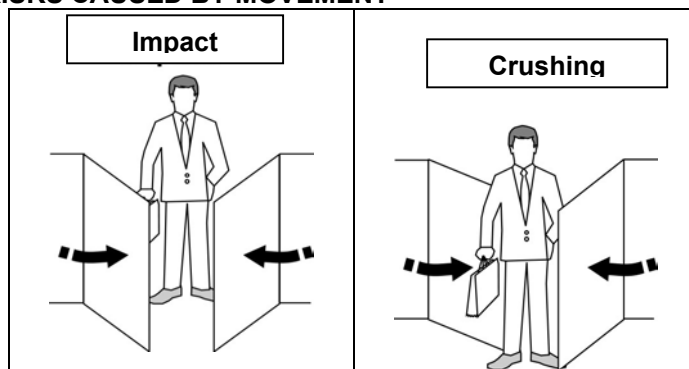
**Risk areas
of the hinged gate (Figure 1)**

The information given was drafted and checked with the utmost care, nevertheless UNAC declines all responsibility for any errors, omissions or inaccuracies due to technical or graphical requirements. UNAC points out that this guide does not replace the content of standards which the manufacturer of the motorised door/gate must observe.

KEY TO THE MECHANICAL RISKS CAUSED BY MOVEMENT

Pursuant to the Machinery Directive:

- “Danger zones” refer to any zone within and/or around machinery in which an exposed person is subject to a risk to his or her health and safety.
- “Exposed person” refers to any person wholly or partially in a danger zone.



MINIMUM LEVEL OF PROTECTION OF THE MAIN EDGE

Type of actuation controls	Type of use		
	Informed users (private area)	Informed users (public area)	Uninformed users
Hold-to-run control	Pushbutton control	Pushbutton control with key	Hold-to-run control not possible
Impulse control with door visible	Limitation of forces, or presence sensing devices	Limitation of forces, or presence sensing devices	Limitation of forces and photocells, or presence sensing devices
Impulse control with door not visible	Limitation of forces, or presence sensing devices	Limitation of forces and photocells, or presence sensing devices	Limitation of forces and photocells, or presence sensing devices
Automatic control (e.g. timed closure control)	Limitation of forces and photocells, or presence sensing devices	Limitation of forces and photocells, or presence sensing devices	Limitation of forces and photocells, or presence sensing devices

ANALYSIS OF THE RISKS AND CHOICE OF SOLUTIONS

IN ACCORDANCE WITH THE MACHINERY DIRECTIVE 98/37/EEC AND THE STANDARDS EN 13241-1, EN 12453, EN 12445

The risks listed below follow the sequence of the installation process. These risks are those which are commonly present in motorised doors/gates systems. According to the various situations, consideration therefore has to be made of any possible additional risks and exclude those which are not applicable. The solutions to be adopted are those indicated by the standards mentioned above; in the case of risks not dealt with, the safety integration principles indicated by the Machinery Directive (Annex 1 – 1.1.2) have to be applied.

MD Ann. 1	Type of risks	Evaluation criteria and solutions to be adopted (Tick the box corresponding to the solution adopted)
1.3.1 1.3.2	<i>Mechanical, structural and wear risks.</i> [1] Loss of stability and break-up.	<input type="checkbox"/> Check the solidity of the structure installed (jambs, hinges and leaves) in relation to the forces generated by the motor. Attach the motor stably using adequate materials. If available, check the content of the EC declaration of conformity of the manual gate. <input type="checkbox"/> If necessary, carry out the structural calculation and attach it to the Technical File. <input type="checkbox"/> Check that the travel of the leaves is limited (during opening and closure) by mechanical stops of adequate strength. Check that the leaves cannot, under any circumstance, exit their slide guides and fall.
1.5.15	[2] Tripping.	<input type="checkbox"/> Check that any thresholds higher than 5 mm are visible, indicated or shaped.

MD Ann. 1	Type of risks	Evaluation criteria and solutions to be adopted (Tick the box corresponding to the solution adopted)
1.3.7 1.3.8 1.4	<p>Mechanical risks caused by the movement of the gate (see references in Figure 1).</p> <p><input type="checkbox"/> CAUTION – If the door/gate is used solely with hold-to-run controls (and meets the requirements of the standard EN 12453), the danger points listed below do not have to be protected.</p> <p><input type="checkbox"/> CAUTION – If protective devices are installed (in accordance with the standard EN 12978) which prevent in all cases contact between the moving leaf and persons (for example photoelectric barriers, presence sensing devices), it is not necessary to measure the operating forces.</p>	

[3] Impact and crushing on the main closing edge (Figure 1, risk A).

Measure the closure forces (by means of the special instrument required by the standard EN 12445) as illustrated.

In the case of gates with two leaves, the closure force should be measured one leaf at a time. Check that the values measured by the instrument are below those indicated in the graph. Carry out the measurements in the following points:
 L = 50, 300 and 500 mm;
 H = 50 mm,
 at mid-height of the leaf and
 at the height of the leaf minus 300 mm (max 2500).

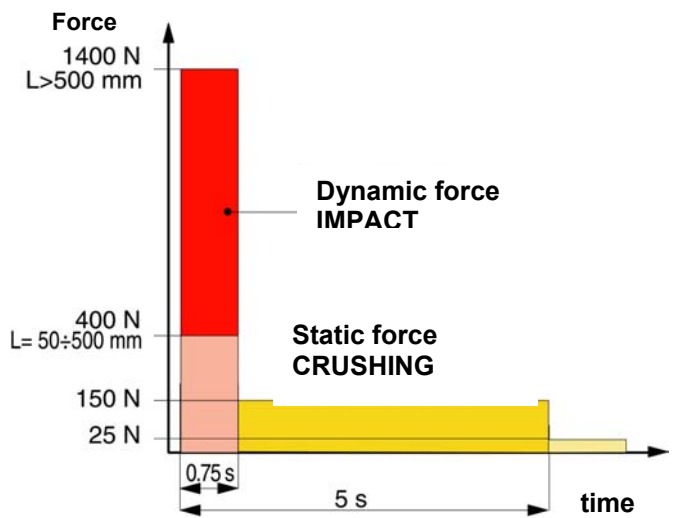
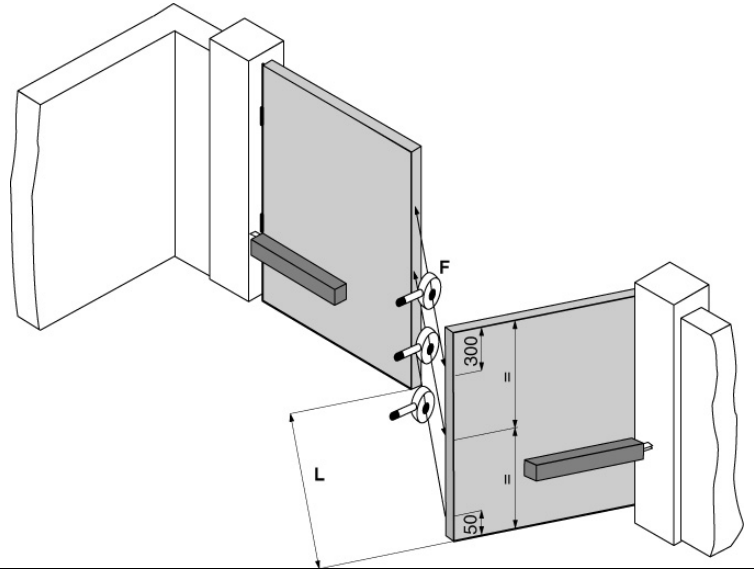
N.B. The measurement should be repeated three times in each point and the average value considered.

The graph indicates the maximum values of the dynamic, static and residual operating forces in relation to the various positions of the leaf.

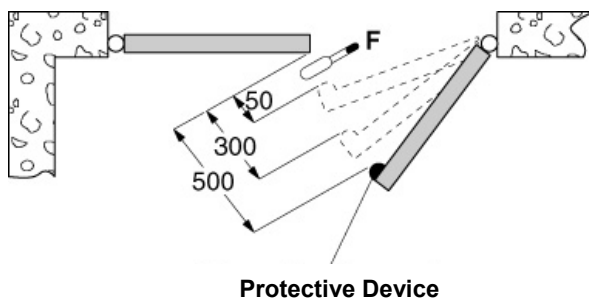
N. B. With reference to the measurement points with L = 50, 300 and 500 mm, the maximum dynamic force value permitted is 400 N.

If the values of the forces are higher, install a protective device in accordance with the standard EN 12978 (for example a sensitive edge) and repeat the measurement.

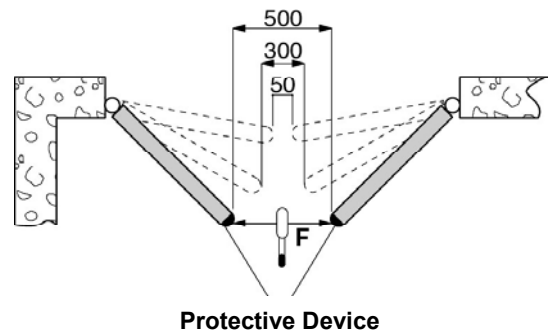
N. B. The dynamic force can be reduced, for example, by reducing the speed of the leaf or using a sensitive edge with high elastic deformation.

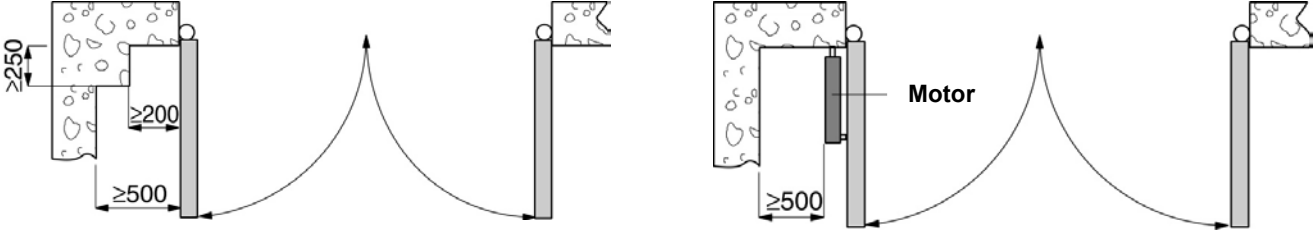
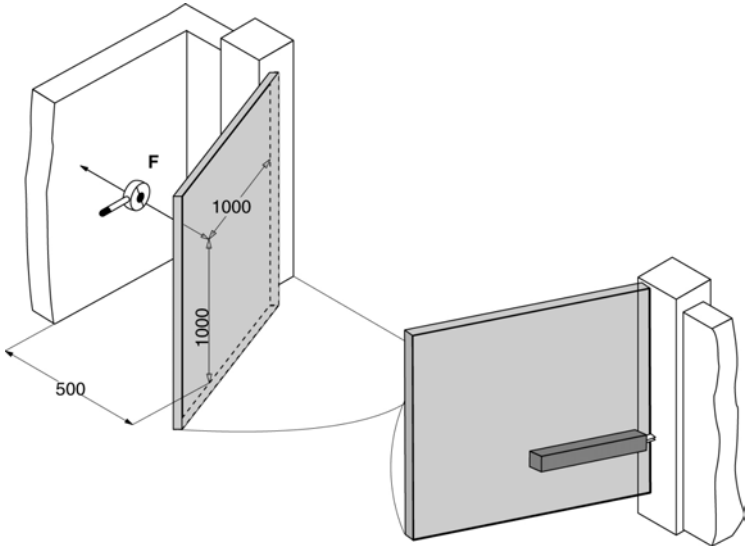
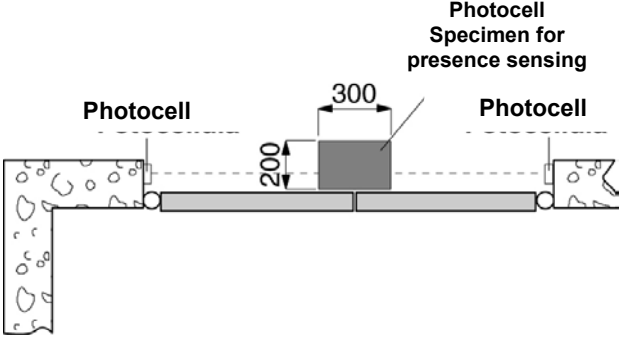
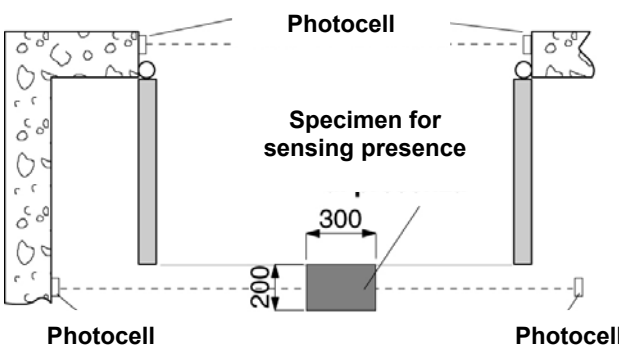



Leaves with overlapping and delayed closure

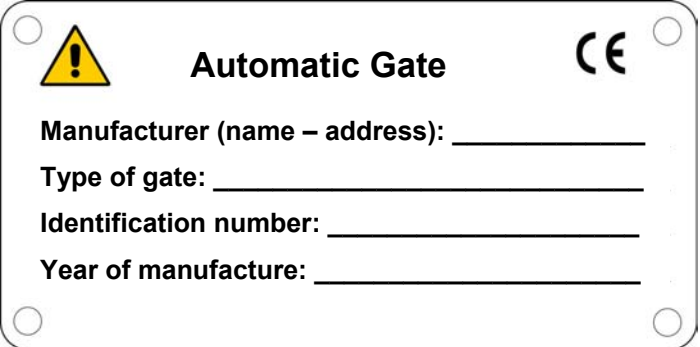


Leaves with simultaneous closure



MD Ann. 1	Type of risks considered	Evaluation criteria and solutions to be adopted (Tick the box corresponding to the solution adopted)
<p>[4] Impact and crushing in the area of opening (Figure 1, risk B).</p> <p><input type="checkbox"/> Observe the safety distances illustrated (in the most prominent part of the leaf).</p> 		
<p>or:</p> <p><input type="checkbox"/> Measure the forces of opening (by means of the special instrument required by the standard EN 12445) as illustrated. Check that the values measured by the instrument are less than those indicated in the graph above.</p> <p>Carry out the measurement at a height of 1000 mm (or in the most prominent point of the leaf)</p> <p><i>N.B. The measurement should be repeated three times and the average value considered.</i></p> <p><input type="checkbox"/> If the values of the forces are higher, install a protective device in accordance with the standard EN 12978 (for example a sensitive edge) and repeat the measurement.</p> 		
<p>[5] Impact in the area of closure (Figure 1, risk C).</p> <p><input type="checkbox"/> Install a pair of photocells (recommended height 500 mm) so as to sense the presence of the test parallelepiped (height 700 mm) positioned as illustrated.</p> <p><i>N.B. The test specimen for presence sensing is a parallelepiped (700 x 300 x 200 mm) with 3 faces with a light and reflective surface and 3 faces with a dark and opaque surface.</i></p> 		
<p>[6] Impact in the area of opening (Figure 1, risk B) and in the area of closure (Figure 1, risk C)</p> <p><input type="checkbox"/> To reduce further the possibility of impact in the areas of movement of the gate, it is possible to install a pair of photocells (recommended height 500 mm) so as to sense the presence of the test parallelepiped (height 700 mm) positioned as illustrated.</p> 		

MD Ann. 1	Type of risks	Evaluation criteria and solutions to be adopted (Tick the box corresponding to the solution adopted)
1.3.7 1.3.8 1.4	<p><i>Mechanical risks due to movement of the leaf.</i></p> <p>[7] Dragging of the hands on the hinges side edge (Figure 1, risk D).</p> <p>[8] Dragging of the feet on the lower edge (Figure 1, risk E).</p> <p>[9] Dragging of the hands on the drive unit (Figure 1, risk F).</p> <p>[10] Dragging, hooking and cutting due to the shaping of the mobile leaf (Figure 1, risk G).</p>	<p><input type="checkbox"/> Check that there is a clearance ≥ 25 mm,</p> <p>or:</p> <p><input type="checkbox"/> attach guards that prevent fingers from being inserted (for example a rubber strip).</p> <p><input type="checkbox"/> The clearance between the gate and ground must prevent the risk of dragging of the feet.</p> <p><i>N.B. Should, due to the slope of the ground, the clearance vary, guards should be attached (e.g. rubber strips).</i></p> <p><input type="checkbox"/> If the distances between the drive unit and the leaf vary, check on the presence of a clearance ≥ 25 mm, or attach guards (e.g. covers or strips in rubber).</p> <p><input type="checkbox"/> Eliminate or protect any sharp edges, handles, projecting parts etc. (for example by means of covers or strips in rubber).</p>
1.5.1 1.5.2 1.5.10 1.5.11	<p><i>Electrical and electromagnetic compatibility risks</i></p> <p>[11] Direct and indirect contacts. Dispersion of electrical energy.</p> <p>[12] Risks relating to electromagnetic compatibility.</p>	<p></p> <p><input type="checkbox"/> Use CE-marked components and materials pursuant to the Low Voltage Directive (73/23/EEC).</p> <p><input type="checkbox"/> Carry out the electrical connections, connection to the mains, earth connections and relevant checks, in accordance with current regulations and as indicated in the installation manual of the drive unit.</p> <p><i>N.B. If the electrical supply line is already set up (via both a socket and a connector block), declarations of conformity to Italian law no. 46/90 are not necessary.</i></p> <p><input type="checkbox"/> Use CE-marked components pursuant to the EMC Directive (89/336/EEC). Carry out the installation as indicated in the manual for installation of the drive unit.</p>
1.2 1.5.3 1.2.3 1.2.4	<p><i>Safety and reliability of drive unit and control and safety devices.</i></p> <p>[13] Safety conditions in the event of malfunctioning and power failure.</p> <p>[14] Energy types other than electrical energy</p> <p>[15] Actuation and disabling of the drive unit.</p> <p>[16] Power supply switch.</p>	<p><input type="checkbox"/> Use drive units which comply with the standard EN 12453 and safety devices which comply with the standard EN 12978.</p> <p><input type="checkbox"/> If hydraulic drive units are used, they must comply with the standard EN 982; or</p> <p><input type="checkbox"/> if pneumatic drive units are used, they must comply with the standard EN 983.</p> <p><input type="checkbox"/> Check that, after a fault or power failure, the drive unit restarts safely without creating hazardous situations.</p> <p><input type="checkbox"/> Install an omnipolar switch for electrical insulation of the door/gate, in accordance with current laws. This switch must be positioned and protected against accidental or unauthorised actuation.</p>

MD Ann. 1	Type of risks	Evaluation criteria and solutions to be adopted (Tick the box corresponding to the solution adopted)
1.2.5	[17] Consistency of controls	<input type="checkbox"/> Install the controls (e.g. key selector) so that the user is not in a danger zone, and check that the meaning of the controls has been understood by the user (for example the function selector). <input type="checkbox"/> Use CE-marked radio controls pursuant to the R&TTE directive (1999/5/EEC) and complying with the frequencies admitted by the laws of each individual country.
1.5.14	[18] Risk of trapping.	<input type="checkbox"/> Install a device for release of the drive unit that allows manual opening and closure of the leaf with force no higher than 225 N (for doors/gates in residential areas) or 390 N (for doors/gates in industrial or commercial areas). Supply the user with the means and instructions for the release operations. Check that operation of the release device is simple and does not create additional risks.
1.2.4	[19] Emergency stop.	<input type="checkbox"/> If appropriate, install an emergency stop control in accordance with the standard EN 418. <i>N.B. Make sure that the emergency stop does not introduce additional risks, aborting operation of the safety devices installed.</i>
1.7.1 1.7.2 1.7.3 1.7.4 1.6.1 1.1.2	<i>Integration principles for safety and information.</i> [20] Signalling equipment. [21] Warnings. [22] Marking. [23] Operating instructions. [23] Maintenance. [24] Unprotected residual risks.	<input type="checkbox"/> A flashing light should be installed, in a visible position, to indicate movement of the leaf. <input type="checkbox"/> Traffic lights can be installed to control vehicle traffic. <input type="checkbox"/> Reflectors can also be attached to the leaf. <input type="checkbox"/> Attach all those signs or warnings considered necessary for indicating any unprotected residual risks and to indicate any foreseeable improper use. <input type="checkbox"/> Attach the label or plate with the CE marking and containing at least what is shown in the illustration. <div data-bbox="715 1308 1417 1653" style="border: 1px solid black; padding: 10px; text-align: center;">  </div> <input type="checkbox"/> Consign to the user the operating instructions, safety warnings and EC declaration of conformity (cf. facsimile in Annex 2). <input type="checkbox"/> A maintenance plan has to be drawn up and implemented. Check on the proper working of the safety devices at least every 6 months. <input type="checkbox"/> Record the work carried out in the proof book in accordance with the standard EN 12635 (cf. facsimile in Annex 1). <input type="checkbox"/> Inform the user in writing (for example in the operating instructions) of any unprotected residual risks and foreseeable improper use.