

ELECTROMECHANICAL LOCK K-LOCK

**FORCE 600 N - STROKES 18 - 36 MM
ELECTRICAL FEEDING: 24 V=**



INSTRUCTION AND INSTALLATION MANUAL



The machine described in this manual has been manufactured in accordance with safety standards and conforms to the stipulations of current standards in force. When correctly assembled, installed and used according to the present instructions, it will not generate any danger for persons, animals or items.

Products subject to EU directives comply with the essential requirements stipulated by the latter. **CE** markings mean that our products can be sold and installed throughout the European Union without any further formality.

The **CE** marking on the product, packaging and indications for use provided with the product indicate 'presumed conformity to the directives' issued by the European Community.

The manufacturer holds the technical archive with documentation providing that products have been examined and evaluated for conformity to directives.

Symbols used in the manual



DANGER

This indication draw the attention about potential dangers for safety and health of peoples and animals.



INFORMATION

This information give further suggestions.



ATTENTION

This indication draw the attention about potential dangers for the product itself.



WARNING

This indication draw the attention about potential damages to goods.



ENVIRONMENTAL INSTRUCTION

Environmental indication draw the attention about potential dangers for the environment.

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1. SAFETY INDICATIONS



ATTENTION BEFORE INSTALLING THIS APPLIANCE, ENSURE ALL SAFETY INDICATIONS HAVE BEEN READ CAREFULLY AND UNDERSTOOD IN ORDER TO PREVENT CONTACT WITH ELECTRICITY, INJURY OR ANY OTHER INCIDENT. THE MANUAL SHOULD BE CONSERVED FOR FURTHER CONSULTATION AT A LATER DATE.

The **K-LOCK electromechanical lock** has been designed exclusively for equipping window and door locking devices, even in smoke and heat extraction systems.

Any use for applications other than those indicated must previously be authorized by the manufacturer upon technical verification of the application.

The following indications should be observed carefully.



The appliance must be installed by competent and qualified technical personnel.



After removing packaging, check for any damage on the appliance.



Plastic bags, polystyrene, small metal parts such as nails, staples etc should be placed out of the reach of children as they constitute a potential source of risk.



Keep children, disabled individuals and animals away from the window and its controls.



Before connecting the appliance, check that the power supply has the same specifications as those indicated on the technical data label on the appliance.



This machine is destined exclusively for the use for which it has been designed and the manufacturer accepts no responsibility for damage incurred by improper use.



The lock is destined exclusively for installation indoors. For any special application we recommend you consult the manufacturer beforehand.



The actuator must be installed in accordance with the manufacturer's instructions. Failure to respect these instructions could compromise safety.



Power supply installation must comply with any regulations in force.



Do not use solvents or jets of water to wash the appliance. The appliance should not be submerged in water.



Repairs should only be performed by qualified personnel at assistance centres authorised by the manufacturer.



Always request exclusive use of original spare parts. Failure to respect this condition could compromise safety and invalidate the benefits contained in the warranty for the appliance.



In the event of any problems or queries, consult your agent or contact the manufacturer directly.

ATTENTION



Ensure that the stroke-end selection allows the hook to exit at least 3÷5 mm from sliding accessory cylinder, granting the window opening.



Verify that in feeding cable path, inside frame profile, there are no sharp edges likely to cause current disruption or short circuit.



In the event of breakage or malfunction, switch the appliance off at the general switch and call for the services of a qualified technician.

2. TECHNICAL INFORMATION FOR APPLICATION AND OPERATION

The **K-LOCK electromechanical lock** is a technical development for automatic locking of windows, continuous facades and doors. It can be adapted to almost any type of profile in aluminium, PVC or wood and performs the forward / backward movement of the sliding accessory of a window or door.

Mounted by itself the device is an effective protection against intrusion, blocking the latch of windows and doors, but it's actually constructed to interface only with 24V= (DC) chain actuators of the INKA 356 series, even in the SYNCRO³ version, in natural ventilation and smoke and heat exhaust systems (RWA). The reduced cross-section (just 25x25 mm) allows recessed insertion in the profiles.

K-LOCK can be combined with the 230V~ (AC) actuators of the INKA 356 series (SOLO and SYNCRO³ versions) by requesting, when placing the order for the actuators, the inclusion of a small interface device.

The electromechanical lock is composed of a linear actuator that moves the locking hook of the sliding accessory, with a selectable stroke of 18 or 36 mm. The easy-to-install mechanisms can be recessed or mounted externally with just two screws.

In combination with the 24V actuators of the INKA 356 series, the device is certifiable under standard EN 12101-2 – (Smoke and heat control systems – Part 2: Specifications for natural smoke and heat exhaust ventilators).

3. TECHNICAL DATA

Model	K-LOCK 24V
Push and pull force	600 N - 850 N starting force
Strokes	18 mm / 36 mm
Power supply voltage	24V = (20,4÷30V=)
Current absorbed at nominal load	0,85 A during the stroke 1,2 A at intervention of the current interlock
Power absorbed at nominal load	~ 20 W
No-load speed	5 mm/s
No-load stroke time	4 s (18 mm) – 7.2 s (36 mm)
Double electrical insulation	Extra-low voltage (SELV) device
Insertion ratio	30 %
Service	S ₂ of 1 minute
Structure material	Extruded aluminium alloy
Operating temperature	-20°C - +70°C
Degree of protection for electrical devices	IP 40
Opening and closing stroke-end	Electronically preset
Operation with chain actuator	Selectable
Operation without actuator	Selectable
Power supply cable in SILICONE	3x0,5 mm ² - 2,00 m
Open/Close overload protection	Current cut-off due to power absorption
Dimensions (mm)	25.5 x 25.5 x 357
Weight (kg)	0.560

The data provided in these illustrations is non-binding and subject to change, even without advance notice.

4. CONSTRUCTION AND REGULATORY REFERENCES

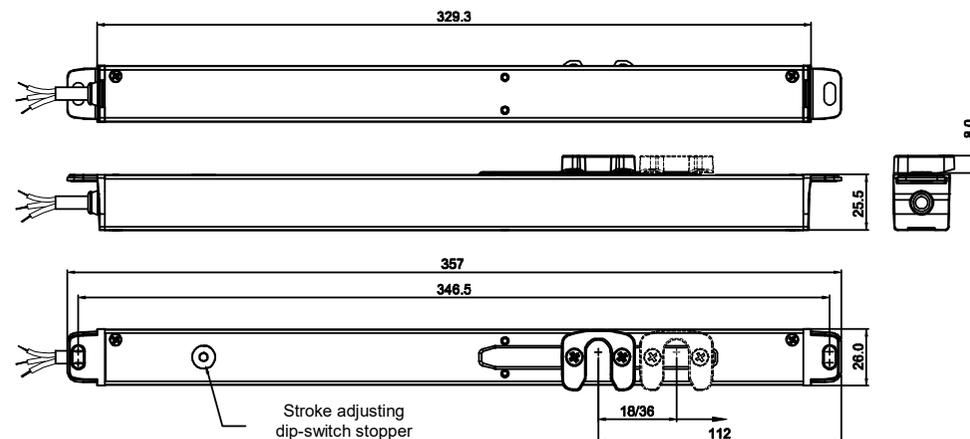
The **K-LOCK** lock has been designed and constructed to move any sliding accessory, available on the market, applied to doors or windows that have a coupling cylinder with Ø8.



- The electromechanical lock is constructed according to European Union directives and certified in conformity with the **CE** mark.
- Any service or control device must be manufactured according to current regulations and in compliance with EC standards.

The electromechanical lock is composed of a small linear actuator that moves the locking hook with a 2 m cable in silicone with three wires.

General dimensions of the linear electric actuator



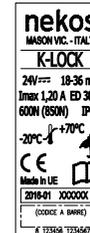
Always mount the latching plate under the hook.

The device is packaged in a cardboard box that contains:

- One linear electric actuator, having a stroke of 18 and 36 mm, with a 2 m cable.
- Package of small metal parts.
- Instructions manual.

5. ID PLATE AND MARKING DATA

All devices have **CE** marking and are destined for use in the European Union without further requirements. The **CE** marking on the product, packaging and indications for use provided with the product indicate 'presumed conformity to the directives' issued by the European Community. The manufacturer holds the technical archive with documentation providing that products have been examined and evaluated for conformity to directives. ID plate data are indicated on a polyethylene adhesive label applied externally on the outside of the container, printed in black on a grey background. Values conform to EC requirements in force. See figure for example of labelling.



Note! The label is attached to the actuator; when mounted, the label is not visible.

6. ELECTRIC POWER SUPPLY



Risk of electric shock.

- Comply with the CE standards for electrical installation.
- The electrical connection must comply with current standards on the design and implementation of electrical systems.
- Disconnect the electric power supply before carrying out any electrical connection work.



Risk of destroying the motor.

The device requires a voltage of 24V = (DC). Higher voltage may destroy the motor.

- Never connect a 24V unit to a 230V voltage! **Life-threatening!**
- Low-voltage line and power line must be separate.

The lock must be powered with a voltage of **24V = (DC)**. The power supply cable has three wires with red copper conductor, sheathing and insulating core in silicone, where:

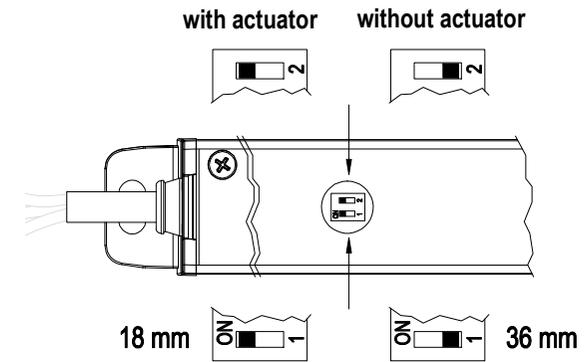
- **BLACK "1"** connected to the + (positive) CLOSE;
- **BLACK "2"** connected to the + (positive) OPEN;
- **BLACK "3"** is the communication signal with the chain actuator.

The electromechanical lock must be powered using a station with emergency batteries or an approved class II power supply unit (*double safety insulation*) with an output voltage of 24V= (-15% ÷ +25%, i.e., min. 20.4V, max. 30V).

7. SETTING THE DIP-SWITCHES – Selecting the stroke and setting the operating mode.

The programming dip-switches are located under the cap on the side of the hook. The selection is made using a small screwdriver or tweezers.

Dip-switch n. 1	<p>This dip-switch is used to set two different strokes of the hook: 18 or 36 mm. The selection is determined by the type of application. The hook must completely free the bolt of the sliding accessory by at least 3-5 mm.</p> <p>The dip-switch:</p> <ul style="list-style-type: none"> - when placed in the ON position, sets the stroke to 18 mm; - when placed in the OFF position, sets the stroke to 36 mm.
Dip-switch n. 2	<p>This is the dip-switch that allows the user to select the operating mode: "with actuator" or "free" (without actuator).</p> <p>This dip-switch:</p> <ul style="list-style-type: none"> • when placed in the OFF position, the OPEN / CLOSE movement of the hook occurs according to the polarity of the power supply between wire1 and wire2: wire1 +24V → CLOSE, wire1 -24V → OPEN. <i>This mode is useful during assembly or testing when there's no communication with the actuators; it's also useful for performing a test in the event of accidental fault or lack of operation.</i> • when placed in the ON position, it dialogues with the chain actuator according to the operating logic sequence. <i>In this case the lock moves only when the chain of the actuator has re-entered completely.</i>



It's advisable to select the stroke and operating mode before installation and ensure that the dip-switches are always accessible.

Stroke 18 mm. The key of the dip-switch should be moved to the ON position towards the power supply cable.

Stroke 36 mm. The key of the dip-switch should be moved to the OFF position opposite the power supply cable.



The factory settings are the following: dip1 = ON, dip2 = OFF.

8. ASSEMBLY INSTRUCTIONS

These instructions are intended for technical and specialized personnel, therefore basic safety and working techniques are not discussed.

All operations for preparation, assembly and electrical connection must be carried out by technical and specialized personnel; this will guarantee optimum performance and proper operation of the electromechanical lock.

First check that these fundamental conditions are met:



The performance of the electromechanical lock must be sufficient to move the sliding accessory without any obstruction whatsoever; the limits specified in the product's technical data table (page 5) must not be exceeded.



Check that the electric power supply used corresponds to that specified on the "technical data" label attached to the machine and provided in the previous chapter.



Check that the electromechanical lock has not been damaged during transport, first by visual inspection and then by powering it in one direction and the other.



Once the lock is installed, check that the latching hook of the pawl of the sliding accessory is completely latched when the lock is closed and that after opening it's completely unlatched so as to allow the window or door to open without any obstruction.

8.1. Preparation of actuator for assembly

Before starting assembly of the actuator, prepare the following material for completion, equipments and tools.

- ◆ For fixing onto metal window frames: M5 threaded inserts (6 pieces), M5x12 flat headed metric screws (6 pieces).
- ◆ For fixing onto wooden window frames: self threading screws for wood Ø4.5 (6 pieces).
- ◆ For fixing onto PVC window frames: self threading screws for metal Ø4.8 (6 pieces).
- ◆ Equipment and tools: measuring tape, pencil, drill/screwdriver, set of drill heads for metal, insert for screwing in, electricians pliers, screwdrivers.

8.2. Installation



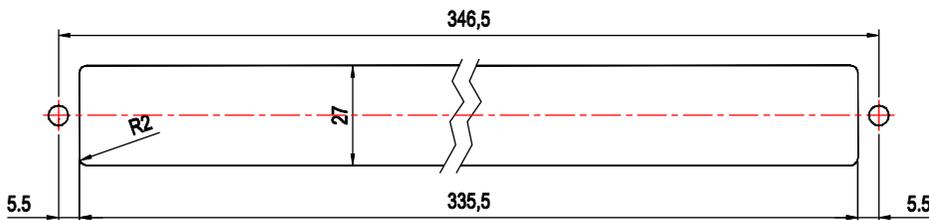
Improper use of the mechanisms may result in personal injury or damage to property.

A correct assembly of this device must be studied beforehand while processing the window or door, so that mechanical processing on machining tools, such as milling and drilling, is still possible. Nevertheless, in case of assembly on a finished door or window frame, an expert technician may be capable of applying the device as long as he has the necessary equipment.

First of all the type of installation, recessed or external, must be chosen; in any case the material for completion listed above must be prepared.

8.2.1 Milling of the seats for recessed assembly

- Determine the plan outline of the electromechanical lock that corresponds with a bolt of the sliding accessory to be moved, and mark it with a pencil. The plan measurements for the milling are 335x27 mm; (see drawing below).



- Once the outline has been marked, mill the window frame with a minimum depth of 24 mm; a Ø4 mm milling cutter is recommended. Use a drill bit with a diameter corresponding to the selected clamping screws to drill holes in the two points marked for fastening the device.
- Clean the edges with a shaver or using a fine-grit file to eliminate any burr that could obstruct or ruin the cables during assembly of the devices.
- Check - by overlapping them - that the electromechanical lock is positioned correctly and the hook (in the closed position) is aligned with the pawl of the closed sliding accessory.
- Check that the electrical cable path is free of obstacles, otherwise eliminate them.
- Now the window frame can be assembled.

8.2.2 Recessed assembly

- Assemble the actuator in the recessed hole made previously on the window frame, taking care not to damage the cable.
- Fix the screws that secure the actuator.
- Make the electrical connections following the instructions and diagram provided below in Chapter 9. "Electrical connection".
- Complete the path of the cables and finish making the electrical connections.

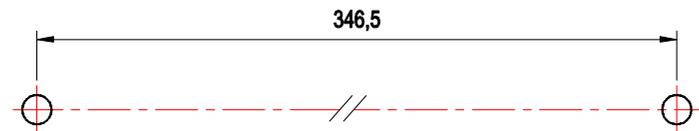


The device requires a voltage of 24V = (DC). Higher voltage may destroy the motor.

- Perform a final test and verify that the device operates correctly on the window frame, moving the pawl of the sliding accessory sideways.
- Power the device and move the pawl to the Open position; the hook of the actuator must slide towards the center of the machine.
- Close the sash of the window or door.

8.2.3 Drilling for external assembly

- Determine the drilling points for the linear actuator (the metal one) that corresponds with a bolt of the sliding accessory to be moved, and mark it with a pencil. The measurements are provided in the drawing below.



- Drill the window frame in the points marked with the diameters indicated in the drawings and clean the edges of any burr.
- Check (by overlapping them) that the actuator is positioned correctly and the hook (in the closed position) is aligned with the pawl of the closed sliding accessory.
- Check that the electrical cable path is free of obstacles; otherwise eliminate them.
- Now the window frame can be assembled.

8.2.4 External assembly

- Check that the cable path has been prepared beforehand and all the holes have been drilled.
- Position the actuator on the window frame and secure it with the screws provided.
- Make the electrical connections following the instructions and diagram provided below in Chapter 9. "Electrical connection".
- Complete the path of the cables and finish making the electrical connections.



The device requires a voltage of 24V = (DC). Higher voltage may destroy the motor.

- Perform a final test and verify that the device operates correctly on the window frame, moving the pawl of the sliding accessory sideways.
- Power the device and move the pawl to the Open position; the hook of the actuator must slide towards the center of the machine.
- Close the sash of the window or door.

9. ELECTRICAL CONNECTION

The device is equipped with power supply cables constructed in compliance with current safety standards, restrictions for protection against radio interference and according to that required by standard EN 12101-2 – Smoke and heat exhaust ventilators.

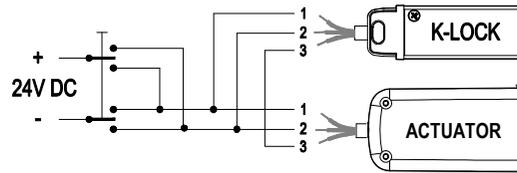
Warning if the cables require extension:



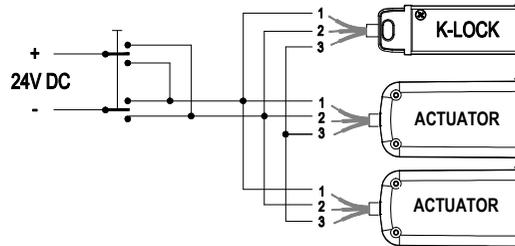
- Use the same type of cable (cable with sheath and core in silicone).
- Prepare the correct cross-section of the cables.
- To avoid connection errors, use the same coloring of the wires.

For wiring and electrical connections see following diagrams:

Connection of a B-LOCK to a chain actuator



Connection of a B-LOCK to more chain actuators



10. START-UP OPERATIONS



- In order to prevent damage, do not apply the 24Vdc power supply voltage to the system before having performed the start-up.
- Strictly following the work steps below will guarantee a problem-free installation.

10.1. With actuator

- The connections between chain actuator and K-LOCK have been made and the operation has already been bench tested; when opening the K-LOCK opens, goes to 18 or 36 mm (the hook moves towards the outside of the machine) and then the chain of the actuator comes out. When closing, first the chain of the actuator re-enters completely and then the K-LOCK goes to 0 (the hook moves towards the center of the machine towards the power supply cable).

Caution: First the RESET procedure indicated in the instructions of the INKA 356 actuator should be executed.

- Keep the window unhooked from the chain.

- If necessary, operate on dip-switch 1 to correct the stroke; (see Chapter 7. "Setting the dip-switches").
- Supply power [24V= (DC)] and move the hook into the opening stroke-end position (18 or 36), then cut off the power.
- Hook up the window, i.e. check that the hook is inserted in the pawl of the sliding accessory.
- Supply power again and check operation of the assembly, which must be as seen on the bench.
- Repeat the complete cycle a second time.
- Now if everything works perfectly, check that all the screws are tightened correctly and the cables are orderly and well-protected.

10.2. Without actuator (test)

- Ensure that the hook is inserted in the pawl of the sliding accessory and can move.
- Select dip2=OFF and dip1 according to the desired stroke.
- Supply the power supply voltage [24V= (DC)]: check the OPEN or CLOSE movement, depending on the power supply orientation on wire 1. The movement must be complete up to the stroke-end without obstacles.

11. MAINTENANCE OR CLEANING

In order to guarantee problem-free operation, the following operations must be carried out after about 1000 opening cycles and at least once a year:

- Check all the screws to ensure that they are tight, except for the two that fix the hook which must be loosened by ½ turn.
- Check that the wing is seated perfectly in the frame of the window; if necessary, adjust the fastening.
- Check all parts for damage and wear. If necessary, replace the damaged parts.

12. EMERGENCY OPERATIONS OR MALFUNCTIONS



Strictly follow the instructions provided below.
Observe the safety standards referred to in this booklet.

12.1. Emergency operations

First set dip2 = OFF (free) and power the lock directly, moving the hook to the OPEN stroke-end (18 or 36 mm).

12.2. Malfunctions of the device

Since the user cannot repair a defective lock safely or correctly, this is not allowed. Repairs may only be carried out in the factory.

If the device is opened or tampered with, the warranty becomes null and void; therefore it's best to replace the device or have it repaired. If the mechanism is stuck, first check to see if there is a power failure.

If problems arise during installation or operation of the device, it's advisable to evaluate the following possible causes of malfunction.

Problem	Possible cause	Resolution
The device does not work.	Lack of electricity to the power supply unit.	Check the presence of electricity or the state of the automatic circuit-breaker or safety switch.
	The power supply unit does not supply 24V=.	Check that the power supply unit and safety switch are operating properly.
	Connection cable not connected or has a detached wire.	Check all the electrical connections.
The device is powered but does not respond to commands.	Probable breakage of an electronic element or the motor.	Contact a qualified technician or the manufacturer's service center.

12.3. LED Light signals

If there are any problems during installation or operation, consult the possible causes listed below:

WITH RED LED		
Number of Flashes	Type of Error	Possible Solution
1	Overload error: <i>The electromechanical lock has detected an overcurrent in the motor.</i>	Check that there are no obstacles preventing it from completing its stroke. Check that it has been installed correctly.
2	Communication error: <i>Communication between the electromechanical lock and actuators is interrupted.</i>	Check the condition of the connection cables, and repeat the RESET procedure if necessary.
3	Error in the actuators	Check the error LED on the actuators.
7	Encoder error: <i>The internal encoder had a counting error.</i>	Repeat the RESET procedure.
8	Electric power supply error: <i>The power supply voltage is outside the allowed range or unstable.</i>	Check the electrical contacts at the ends of the lock's cable and ensure that the power supply voltage is correct.
10	Memory error: <i>The internal memory write process failed.</i>	Repeat the RESET procedure.
11	Connection error: <i>A RESET procedure is being started with several actuators that are not compatible with one another.</i>	Check the type of actuators selected for the system. Repeat the RESET procedure.

WITH GREEN LED	
LED Status	Meaning
STEADY-ON	Device powered correctly. <i>The device executed a chain re-entry stroke correctly, completing the operation by writing to the memory, or is in motion.</i>
FLASHING	Device powered correctly and at the opening stroke-end. <i>The number of flashes indicates the address number previously assigned to the device during the RESET procedure.</i>

WITH ORANGE LED	
LED Status	Meaning
STEADY-ON Duration < 0.5 seconds	Internal memory write process in progress.
STEADY-ON	RESET Procedure in progress.
FLASHING	RESET Procedure finished correctly. <i>The number of flashes indicates the address assigned to the device in a configuration with several devices.</i>

13. ENVIRONMENTAL PROTECTION



Respect safety instructions

To disassemble the device from the frame, proceed as for the mounting (see pages from 10 to 13) in the proper points, in reverse way.

All materials used in the manufacture of this appliance are recyclable.

We recommend that the device itself, and any accessories, packaging, etc. be sent to a centre for ecological recycling as established from laws in force on recycling.



The device is mainly made from the following materials:

aluminium, zinc, iron, plastic of various type, cuprum, silicon, silicone.

Dispose materials in conformity with local regulations about removal.

Disassemble the device using suitable tools and separate parts and destine them to disposal or recycling.

14. CERTIFICATE OF GUARANTEE

The manufacturer will guarantee good function of the appliance. The manufacturer shall undertake to replace defective parts due to poor quality materials or manufacturing defects in accordance with article 1490 of the Civil Code.

The guarantee covers products and individual parts for **2 years** from the date of purchase. The latter is valid as long as the purchaser possesses proof of purchase and completion of all agreed conditions of payment.

Guarantee of good function of appliances agreed by the manufacturer implies that the latter undertakes to repair or replace free of charge and in the shortest period possible any parts that break while under warranty.

The purchaser is not entitled to any reimbursement for eventual direct or indirect damage or other expenses incurred. Attempt to repair by personnel unauthorised by the manufacture shall render the warranty null and invalid.

The warranty does not cover fragile parts or parts subject to natural wear and tear or corrosion, overload, however temporary etc. The manufacturer will accept no responsibility for eventual damage incurred by erroneous assembly, manoeuvre or insertion, excessive stress or inexpert use.

Repairs performed under guarantee are always "ex factory of the manufacturer". Respective transport expenses (out/back) are the responsibility of the purchaser.

15. DECLARATION OF CONFORMITY

The undersigned,



Declare that the document is issued under our sole responsibility and belongs to the following product:

Apparatus / Model: **electromechanical lock**
Trademark: **NEKOS**
Model/Type: **K-LOCK 24Vdc**
Batch number: *(see number printed in the actuator label)*
Serial number: *(see number printed in the actuator label)*

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

- **2014/30/EU ElectroMagnetic Compatibility Directive (EMCD)**
- **2014/35/EU Low Voltage Directive (LVD)**
- **2011/65/EU Restriction of the use of certain hazardous substances Directive (RoHS Directive)**

The following harmonised standards and/or technical specifications have been applied:

EMC EN 61000-6-3:2007 + A1:2011
EN 61000-6-2:2005 + AC:2005

LDV EN 60335-1:2012 + EN 60335-1/A11:2014

RoHS EN 50581:2012

Year of CE mark: **2016**
(year is written on the data label applied to the device)

Place: Mason Vicentino

Date: 01.08.2016

Signature: Giuliano Galliazzo A.D. – President



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