9:nekos

KIMO

EN

CHAIN ACTUATOR Force 200N – Maximum stroke 210 mm Electrical feeding 24V===

INSTRUCTION MANUAL



USER INSTRUCTIONS

CAUTION. Carefully observe all the following installation instructions to ensure personal safety.

The device is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lacking experience and knowledge. Do not allow children to play with the fixed controls and keep any remote-control units out of their reach.

Have installation checks performed periodically by qualified personnel from a service centre authorised by the manufacturer. Do not use if repair or adjustment is required.

CAUTION: if the power cable is damaged, it must be replaced by qualified personnel from a service centre authorised by the manufacturer.

CAUTION. Disconnect the power supply during cleaning or maintenance operations. Do not use solvents or jets of water to wash the appliance; the appliance should not be submerged in water.

In the event of fault or malfunction, switch off the device at the main switch. All repairs and adjustments (e.g. setting the stroke) must only be performed by qualified personnel from a service centre 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.

The A-weighted sound pressure level is less than 70dB(A).

Carefully preserve these instructions after installation.

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INSTALLER INSTRUCTIONS

nekos products have 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, they will not generate any danger for persons, animals or items.

Symbols used in the manual

DANGER



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

Contents

1.	Security rules	4
2.	Formulas and recommendations for installation	5
	2.1. Calculation of opening / closure force	5
	2.2. Maximum opening based on sash height	5
3.	Technical operating information	6
4	Construction and regulatory references	6
5	Technical data	7
6	Id plate and marking data	7
7	Electric nower supply	/
7.	7.1 Selecting the cross section of the power supply cables	U Q
0	Floatricel connection	0
0. 0		0
9.	Instructions for assembly.	9
	9.1. Preparation for mounting the actuator	10
	9.2. Recessed mounting	10
	9.3. Surface mounting on top-hung windows opening outwards or bottom-hung	
	windowe	10
	WINDOWS	10
10.	Programming the actuator	11
10.	Programming the actuator 10.1. Opening stroke-end	11 11
10.	Programming the actuator	11 11 11
10.	Programming the actuator 10.1. Opening stroke-end 10.2. Closure stroke-end 10.3. Operation with BK-LOCK electromechanical lock	10 11 11 11 12
10. 11.	Programming the actuator 10.1. Opening stroke-end 10.2. Closure stroke-end 10.3. Operation with BK-LOCK electromechanical lock Actuator kit with electromechanical lock	10 11 11 11 12 12
10. 11.	Programming the actuator 10.1. Opening stroke-end 10.2. Closure stroke-end 10.3. Operation with BK-LOCK electromechanical lock Actuator kit with electromechanical lock 11.1. Electrical connection and operating logic	10 11 11 11 12 12 12
10. 11.	Programming the actuator 10.1. Opening stroke-end 10.2. Closure stroke-end 10.3. Operation with BK-LOCK electromechanical lock Actuator kit with electromechanical lock 11.1. Electrical connection and operating logic 11.2. Sound diagnostics in case of anomaly	10 11 11 12 12 12 12
10. 11.	Programming the actuator 10.1. Opening stroke-end 10.2. Closure stroke-end 10.3. Operation with BK-LOCK electromechanical lock Actuator kit with electromechanical lock 11.1. Electrical connection and operating logic 11.2. Sound diagnostics in case of anomaly Checking for correct assembly	10 11 11 12 12 12 13 13
10. 11. 12.	Programming the actuator 10.1. Opening stroke-end 10.2. Closure stroke-end 10.3. Operation with BK-LOCK electromechanical lock Actuator kit with electromechanical lock 11.1. Electrical connection and operating logic 11.2. Sound diagnostics in case of anomaly Checking for correct assembly Emergency manoeuvres, maintenance or cleaning	10 11 11 12 12 12 13 13
10. 11. 12. 13.	Programming the actuator 10.1. Opening stroke-end 10.2. Closure stroke-end 10.3. Operation with BK-LOCK electromechanical lock Actuator kit with electromechanical lock. 11.1. Electrical connection and operating logic 11.2. Sound diagnostics in case of anomaly Checking for correct assembly Emergency manoeuvres, maintenance or cleaning. Travelegebotics	10 11 11 12 12 12 13 13 13
 10. 11. 12. 13. 14. 	Programming the actuator 10.1. Opening stroke-end 10.2. Closure stroke-end 10.3. Operation with BK-LOCK electromechanical lock Actuator kit with electromechanical lock. 11.1. Electrical connection and operating logic 11.2. Sound diagnostics in case of anomaly Checking for correct assembly Emergency manoeuvres, maintenance or cleaning. Troubleshooting	10 11 11 12 12 12 13 13 13 14
 10. 11. 12. 13. 14. 15. 	Programming the actuator 10.1. Opening stroke-end 10.2. Closure stroke-end 10.3. Operation with BK-LOCK electromechanical lock Actuator kit with electromechanical lock 11.1. Electrical connection and operating logic 11.2. Sound diagnostics in case of anomaly Checking for correct assembly Emergency manoeuvres, maintenance or cleaning. Troubleshooting Environmental protection.	10 11 11 12 12 13 13 13 14 14
 10. 11. 12. 13. 14. 15. 16. 	Programming the actuator 10.1. Opening stroke-end 10.2. Closure stroke-end 10.3. Operation with BK-LOCK electromechanical lock Actuator kit with electromechanical lock 11.1. Electrical connection and operating logic 11.2. Sound diagnostics in case of anomaly Checking for correct assembly Emergency manoeuvres, maintenance or cleaning. Troubleshooting Environmental protection. Certificate of guarantee	10 11 11 12 12 13 13 14 14
 10. 11. 12. 13. 14. 15. 16. 17. 	Programming the actuator 10.1. Opening stroke-end 10.2. Closure stroke-end 10.3. Operation with BK-LOCK electromechanical lock Actuator kit with electromechanical lock 11.1. Electrical connection and operating logic 11.2. Sound diagnostics in case of anomaly Checking for correct assembly Emergency manoeuvres, maintenance or cleaning. Troubleshooting Environmental protection. Certificate of guarantee Declaration of Incorporation (for a partly completed machine) and EC Declaration of	10 11 11 12 12 13 13 14 14

1. SECURITY RULES



CAREFULLY OBSERVE ALL THE FOLLOWING INSTALLATION INSTRUCTIONS TO ENSURE PERSONAL SAFETY. IMPROPER INSTALLATION CAN SERIOUSLY ENDANGER SAFETY.

MANDATORY RISK ANALYSIS AND PROTECTION MEASURES.

The Nekos electrical actuators comply with the Machinery Directive (2006/42/EC), Standard IEC 60335-2-103 (Particular requirements for drives for gates, doors and windows) and other directives and regulations indicated in the attached Declarations of Incorporation and CE Conformity (at the end of the manual). According to the Machinery Directive, actuators are "partly completed machinery" intended for incorporation into doors and windows. The manufacturer/supplier of the window is required, with exclusive responsibility, to ensure the compliance of the entire system with the applicable standards and to issue CE certification. We strongly discourage any use of the actuators other than that specified and therefore, in any case, the supplier of the complete system retains full liability.

For systems installed at a height of less than 2.5 m above floor level or other levels accessible to users, the manufacturer/supplier of the window must conduct **risk analysis** regarding potential harm (violent blows, crushing, wounds) caused to people by normal use or possible malfunction or accidental breakage of the automated windows, and to implement suitable <u>protective measures</u> in view of these. Such measures include those recommended by the specified standard:

- controlling the actuators via a "deadman's button" placed near the system and within the operator's field of view, to ensure that people are out of the way during operation. The button must be placed at a height of 1.5 m and operated by key if accessible to the public; or:
- use of contact safety systems (also included in the actuators) that ensure a maximum closing force of 400/150/25 N, measured in accordance with paragraph BB.20.107.2 of IEC 60335-2-103; or:
- use of non-contact safety systems (lasers, light grids); or:
- use of fixed safety barriers that prevent access to moving parts.

Automated windows are deemed adequately protected if they:

- are installed at a height of >2.5 m; or:

- have a leading-edge opening of <200 mm and a closing speed of <15 mm/s; or:

- are part of a smoke and heat evacuation system for emergency use only.

In any case, moving parts of windows that could fall below 2.5 m following breakage of a system component need to be fixed or secured in order to prevent them from suddenly falling or collapsing: e.g. the use of safety arms on bottom-hung windows.

The device is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lacking experience and knowledge. Do not allow children to play with the fixed controls and keep any remote-control units out of their reach.

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

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

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.

2. FORMULAS AND RECOMMENDATIONS FOR INSTALLATION

2.1. <u>Calculation of opening / closure force</u>

Using the formulas on this page, approximate calculations can be made for the force required to open or close the window considering all the factors that determine the calculation.

Symbols used for the calculation

F (Kg) = Force for opening or closing	P (Kg)= Weight of the window (mobile sash only)

C (cm) = Opening stroke (actuator stroke) H (cm) = Height of the mobile sash



2.2. Maximum opening based on sash height

The selection of the actuator stroke should be made based on the height of the sash and its application. As a general rule, never select a stroke greater than the height of the window frame; select the stroke directly below it.

WARNING. The actuator is designed to be recess mounted on the window frame. Check that during the stroke the chain does not touch the profile of the sash, there are no obstacles to opening the window and the chain does not push against the window frame.

3. TECHNICAL OPERATING INFORMATION

The chain actuator is used to open and close the window by means of a three-link steel chain (*Nekos Patent*). The movement is achieved with very low-voltage (24V₋₋₋ SELV) electricity that powers a gear motor controlled by a functional electronic device. Window opening can be programmed, and the device allows excursion of the chain to strokes of 70, 125, 170 and 210 mm. For the return stroke, i.e., the closing of the window, the stroke-end is determined by an electronic process that automatically calculates the required power absorption to produce the movement of the window, and therefore no settings are required. The actuator can also be installed without the immediate availability of electricity for window movement; in this case the actuator will simply hold the window closed after assembly.

The structure of the actuator is entirely metal and it is used for room ventilation. The coupling between the actuator and support brackets fixed to the window frame is a quick-connect coupling that allows the actuator to rotate in order to adapt to the stroke of the chain, even on windows with reduced height.

The brackets are fixed to the frame during actuator assembly with just two screws. Combined with the **BK-LOCK** product and perimeter fittings, it constitutes the security lock that keeps the window closed tight and guarantees a high thermal K.

4. CONSTRUCTION AND REGULATORY REFERENCES

INTENDED USE The KIMO chain actuator is designed and built to open and close top-hung windows opening outwards, bottom-hung windows or up-and-over roof windows. Its use is specifically intended for ventilation, air conditioning of rooms and, if used in combination with the BK-LOCK window lock, also as a building security system; it is highly recommended that the actuator not be used for any other purpose unless approved by the manufacturer beforehand, with the supplier of the entire system in any case retaining sole liability.



The actuator is manufactured in accordance with the EC Directives and Regulations listed in the attached Declaration of Incorporation and Conformity CE.

Electrical connections must conform to regulations in force for the design and set up of electrical equipment.

To ensure efficient separation from the grid, an approved type of bipolar "deadman" switch should be used. An omnipolar general power switch with minimum distance of 3 mm between contacts should be installed upstream of the control line.

The actuator is individually packaged in a cardboard container and each pack contains:

- 24V ---- electrical actuator complete of connector for feeding cable wiring.
- 2 support brackets
- 2 half-brackets for attach to the frame, complete with pin



Instruction manual

5. TECHNICAL DATA

Model	KIMO 24V
Force exerted by thrust (F _N)	100N
Force exerted by traction (F_N)	200N
Strokes (S _V)	70, 125, 170, 210 mm
Power supply voltage (U _N)	24 V SELV
Rated absorbed current (I _N)	0,36A
Power absorbed at nominal load (P _N)	8,6W
Electrical insulation	Class III
No load speed	5,5 mm/s
Duration of no load stroke (210 mm)	38 s
Type of service (D _R)	5 cycles
Operating temperature	- 5 + 65 ℃
Protection index for electrical devices	IP32
Adjustment of connection to window frame	Automatic definition of position
Parallel powering of two or more motors	YES (max 20 actuators)
Operation with BK-LOCK electromechanical lock	Yes
Synchronised function	Not foreseen
Holding nominal force (<i>it can vary according to the chosen brackets</i>)	1.700N
Stroke-end at opening	Electronic by dip-switch
Stroke-end at closing	At absorption of power
Chain exit	Central
Length of power cable	2 m
Dimensions	29x29x310 mm
Weight	0,720 Kg

The data indicated in these figures is not binding and is subject to variation without notification.

6. ID PLATE AND MARKING DATA

The KIMO actuators have CE marking and comply with the Standards listed in the Declaration of Conformity. They also come with a Declaration of Incorporation, due to their classification by the Machinery Directive as "partly completed machines". Both declarations are included in the final pages of this manual.

The plate data is displayed on an adhesive label placed on the outside of the casing, which must remain intact and visible. The main information it displays includes: manufacturer's address, product name - model number, technical characteristics, production date and serial number.

In the event of a complaint, please indicate the serial number (SN) displayed on the label.

An explanation of the symbols used on the label to abbreviate the technical characteristics is given in the table in the chapter on "TECHNICAL DATA".

7. ELECTRIC POWER SUPPLY

The KIMO actuator is powered with a voltage of $24V_{---}$ SELV. The power supply cable has three conductors: the first conductor **RED** "1" that should be connected to the + (positive) CLOSES the window; the second conductor **BLACK** "2" that should be connected to the + (positive) OPENS the window; the third conductor **GREEN** "3" is the conductor used for the BK-LOCK control communication signal.

The $24V_{---}$ low-voltage actuators can be powered using a station with emergency batteries or a security power supply unit with an output voltage of $24V_{---}$ (min. 20.4V, max. 28,8V), that is to say, sized based on the number of actuators connected.

7.1. <u>Selecting the cross-section of the power supply cables</u>

It is necessary to check the cross-section of the cable, which should be calculated based on the length of the cable itself. The table below specifies the maximum length of the cables for connection of a motor.

	Actuator fed at
CABLE SECTION	24V
0.50 mmq	~40 m
0.75 mmq	~60 m
1.00 mmq	~80 m
1.50 mmq	~120 m
2.50 mmq	~200 m
4.00 mmq	~320 m
6.00 mmq	~480m

8. ELECTRICAL CONNECTION

The machines are equipped with a power supply cable constructed in compliance with safety standards and restrictions on radio-frequency interference.

The power supply cable - with conductors having a cross-section of 0.5 mm² - is 2 meters long with different colored conductors, as follows:

- 1 RED-coloured conductor;
- 2-BLACK-coloured conductor;
- 3 GREEN-coloured conductor:



For harness, please follow this diagram:



Note: the first conductor **RED** "1" that should be connected to the + (positive) CLOSES the window; the second conductor **BLACK** "2" that should be connected to the + (positive) OPENS the window; the third conductor **GREEN** "3" is the conductor used for the BK-LOCK control communication signal.

9. INSTRUCTIONS FOR ASSEMBLY

<u>/!</u>\

These indications are for specialised technical personnel and basic work and safety techniques are not indicated.

All preparatory, assembly and electrical connection operations must be performed by specialised technical personnel to guarantee optimal function and service of the actuator. Check that the following fundamental conditions have been met:

Before installing the actuator, check that the moving parts of the window on which it is to be installed are in perfect working condition and that they open and close properly and are well balanced (where applicable).

Actuator specifications must be sufficient for movement of the window without encountering any obstacle. The limits indicated in the technical data table must not be superseded (*page 7*) and the most appropriate stroke should be selected. Calculations should be checked using the formula indicated on *page 5*.

Attention. Check that the electrical power supply corresponds to that indicated on the TECHNICAL DATA label on the machine.

Ensure that the actuator has not been damaged during transport, first visually and then by powering in both directions.

Check that the width of the inside of the window (where the actuator is to be assembled) is over 360 mm, otherwise the actuator should not be installed.

Check that once the actuator has been installed, chain completely in, the window is perfectly closed. If this is not the case the actuator will not function correctly as the window will not close correctly.

9.1. Preparation for mounting the actuator

Before beginning to mount the actuator, depending on the type of application, the window frame must be prepared by carrying out the following operations.

9.2. <u>Recessed mounting</u>

For recessed mounting, the window frame must be prepared by milling and making two holes as indicated in the diagram below. The depth of the milling must be at least 30 mm.



Then make two Ø4.5 holes on the sash for the attachment bracket. The measurements are specified in the diagram below.



9.3. <u>Surface mounting on top-hung windows opening outwards or</u> <u>bottom-hung windows</u>

The actuator can also be surface mounted on top-hung windows opening outwards or dormer windows and on bottom-hung windows, however for these specific applications special support brackets are required for the actuator which must be supplied separately.

The two half-brackets attaching the actuator to the sash, however, are the same standard brackets supplied with the actuator and included in the package.



<u>Warning</u>. In order to prevent unpleasant mishaps with the machine and possible safety hazards, carefully choose the length of the clamping screws in order to avoid damaging the power supply cables during the mounting procedure.

In order to carry out a cost-effective and precise up-to-standard work, it is best if you prepare the following complementary material: small parts, equipment and tools.

• <u>Fastening on metal window frames</u>: M4 threaded inserts (2 pieces for recessed mounting and 4 pieces for surface mounting), M4x12 flat head metric screws (2 pieces (4 pieces for surface mounting)).

- <u>Fastening on wooden window frames</u>: Ø4 self-threading wood screws (2 pieces for recessed mounting and 4 pieces for surface mounting), with an appropriate length for the type of window frame.
- <u>Fastening on PVC window frames</u>: Ø3.9x13 self-threading metal screws (2 pieces for recessed mounting and 4 pieces for surface mounting), with an appropriate length for the type of window frame.
- <u>Equipment and tools</u>: tape-measure, pencil, drill/electric screwdriver, set of drill bits for metal, insert for screwing in, electrician's scissors, screwdrivers.

10. PROGRAMMING THE ACTUATOR

10.1. Opening stroke-end

The opening stroke-end of the actuator can be adjusted by selecting the dipswitches located inside the actuator underneath the black rubber plug (T) *(see fig. below)*, near the label that indicates the state of the dip-switches.



The setting can be made very easily by selecting the dip-switches as spec	ified in the
table below.	

STROKE	DIP-SWITCH			WITHOUT	WITH
(mm)				BR-LUCK	BR-LUCK
()	1	2	3	4	4
70	ON	OFF	OFF		
125	OFF	ON	OFF	OFF	
170	OFF	OFF	ON	UFF	ON
210	OFF	OFF	OFF		

The actuator is factory-set with the longest stroke (210 mm).

10.2. <u>Closure stroke-end</u>

The stroke-end at closure is automatic and cannot be programmed.

The actuator stops when the charge is absorbed when the window is completely closed and the weather stripping is completely depressed.

After each closure or intervention of electronic protection devices, the chain will move about 1 mm in the opposite direction to give correct compression to the seals and release the mechanical parts.

10.3. Operation with BK-LOCK electromechanical lock

The actuator can also work in combination with the BK-LOCK electromechanical lock; this operating mode can be selected using dip-switch No.4. If the dip-switch is set on ON without the lock being connected, the actuator will not move.

11. ACTUATOR KIT WITH ELECTROMECHANICAL LOCK



Warning. Always comply with the correct electrical connections between the two machines; an incorrect connection may damage the machines and create a hazardous situation.

11.1. Electrical connection and operating logic

In order for the two machines to work in combination with one another, the required connection must be made by connecting the wires according to the following diagram.



In the BK-LOCK electromechanical lock select, using dip-switch No. 1, the desired stroke and set, using dip-switch No. 2, the "OPERATION WITH ACTUATOR" mode (see instructions in the BK-LOCK manual also).

Power the two machines with a voltage of $24V_{---}$ (Red wire and Black wire), inverting the polarity to open and close the system.

Powering Black wire with +24V₋₋₋ and Red wire with -24V₋₋₋ produces the following effects:

- the lock moves in the opening direction;
- the lock arrives at stroke-end, stop;
- the chain actuator begins opening, opening the movable sash;
- the KIMO chain actuator reaches stroke-end.

Powering Red wire with +24V₋₋₋ and Black wire with -24V₋₋₋ produces the following effects:

- the chain actuator moves in the closing direction;
- the actuator reaches stroke-end and stops with a short relax;
- the lock moves in the closing direction;
- the lock arrives at stroke-end.



Important note. If, during the closing movement, the chain actuator stops suddenly due to an overload or mechanical sticking, this state is interpreted as a "closing stroke-end" and thus the lock motor performs a closure, even if the sash is not effectively closed.

11.2. Sound diagnostics in case of anomaly

1 Beep The lock is set in "with actuator" mode but does not receive any commands from the actuator.

- The lock does not move because it didn't receive the command.
- Check the contact of wire "3" of the lock and that dip-switch No. 2 of the actuator is on ON.

4 Beeps The actuator (or actuators) are in error.

- The lock is ready for the command but the connected actuators are in error.
- Check the diagnostics of the actuators connected to the electromechanical lock.

12. CHECKING FOR CORRECT ASSEMBLY

- Check that the window is perfectly closed at corners and that there are no obstacles caused by incorrect positioning during assembly.
- Check that when the window frame is closed the chain terminal is at least a few millimetres away from the actuator body. This will ensure the window is properly closed and seals are correctly compressed. In the event that this should not be the case there is no guarantee that the window is closed correctly.
- Check that hinges and support brackets are aligned to each other and tightly fixed against the window frame with screws fixed correctly into position.
- Check that the window reaches the desired position according to the stroke-end selected.

13. EMERGENCY MANOEUVRES, MAINTENANCE OR CLEANING

In the event that the window frame should require manual opening due to power failure or problem with the mechanism or for normal maintenance or external cleaning of the window frame, in built-in actuators it's necessary to perform these operations:

- 1. Unscrew the two screws that fix the sash to the attachment bracket.
- 2. Take care during this operation since the bracket, which is in two pieces after removing the screws, may fall as it is no longer secured.
- 3. Manually open the window frame.



ATTENTION: DANGER – the window could fall as the sash is no longer held in position by the chain.

4. After maintenance and/or cleaning repeat points 1 and 2 in reverse order.

14. TROUBLESHOOTING

Possible causes of malfunction during installation or use.

Problem	Possible cause	Solution
Actuator doop not work	 No electricity at feeder 	 Check status of circuit breaker or safety switch
Actuator does not work	 Cable not connected or wire disconnected. 	 Check electrical connections at reduction motor

15. ENVIRONMENTAL PROTECTION

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.

Dispose materials in conformity with local regulations about removal.

16. 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.

17. DICHIARAZIONE DI INCORPORAZIONE (per una quasi macchina) E DICHIARAZIONE CE DI CONFORMITÀ / Declaration of Incorporation (for a partly completed machine) and EC Declaration of Conformity

Con la presente il / Hereby the

Contraction	Nekos Srl
Monufacturar:	Via Capitoni 7/5- 36064 Colceresa (Vicenza) - Italy
Manufacturer.	Tel +39 0424 411011 – Email info@nekos.it

dichiara sotto la propria responsabilità che i seguenti prodotti: declare under its own responsibility that the following products:

Descrizione prodotto :	Attuatore a catena per finestre
Product Designation:	Window chain drive
Modello: <i>Type :</i>	230 V : KATO 253 - KATO - KATO 305 KATO SYNCRO ³ - KATO 305 SYNCRO ³ INKA 356 - INKA 356 SYNCRO ³ 24 V : KATO 253 - KATO - KIMO - KIMO 202 - KATO 305 KATO SYNCRO ³ - KATO 305 SYNCRO ³ INKA 356 - INKA 356 SYNCRO ³

Anno di costruzione dal / Year of manufacturing from: 2017

Soddisfano gli applicabili requisiti essenziali della **Direttiva Macchine 2006/42/EC**, **Allegato I** *Fulfil the essential requirements of the Machinery Directive 2006/42/EC*, **Annex I**, **Art. 1.1.2**, **1.1.3**, **1.1.5**, **1.2.1**, **1.2.3**, **1.2.6**; **1.3.2**, **1.3.4**, **1.3.9**, **1.5.1**, **1.5.2**, **1.5.6**, **1.5.7**, **1.5.8**, **1.5.9**, **1.5.10**, **1.5.11**, **1.7.1**, **1.7.1**, **1.7.3**, **1.7.4.2**, **1.7.4.3**

La documentazione tecnica pertinente è compilata secondo l'Allegato VII, sezione B The relevant technical documentation is compiled in accordance with Annex VII, Part B

La persona autorizzata a costituire la documentazione tecnica pertinente è:

The person authorised to compile the relevant technical documentation is: Giuliano Galliazzo – Nekos S.r.I. Su richiesta adeguatamente motivata delle autorità nazionali, la documentazione tecnica dei citati prodotti sarà resa

disponibile, via e-mail, entro un tempo compatibile con la sua importanza. In response to a reasoned request by the national authorities, we will provide, via e-mail, the relevant information on

the product listed above within an adequate period proportional to its importance.

Inoltre i succitati prodotti sono conformi alle disposizioni pertinenti delle seguenti Direttive: Furthermore the products listed above complies with the provisions of followings Directives :

- 2014/30/EU Direttiva Compatibilità Elettromagnetica / ElectroMagnetic Compatibility Directive (EMCD)
- 2014/35/EU Direttiva Bassa Tensione / Low Voltage Directive (LVD)
- 2011/65/EU Direttiva sulla restrizione dell'uso di determinate sostanze pericolose nelle apparecchiature elettriche ed elettroniche (Direttiva RoHS) / Restriction of the use of certain hazardous substances Directive (RoHS Directive)
- 2015/863/EU Direttiva Delegata recante modifica dell'allegato II della Direttiva 2011/65/EU del Parlamento Europeo e del Consiglio per quanto riguarda l'elenco delle sostanze con restrizioni d'uso. I Delegated Directive amending Annex II of Directive 2011/65/EU of the European Parliament and of the Council regarding the list of substances with usage restrictions

e delle seguenti norme armonizzate e/o specifiche tecniche:

and of the following harmonised standards and/or technical specifications:

EN 60335-2-103; EN 61000-6-3:2007 + A1:2011 + AC:2012; EN IEC 61000-6-2:2019; EN 60335-1:2012 + AC:2014 + A11:2014; EN 50581:2012

La messa in moto di una macchina completa che includa la quasi macchina sopra menzionata, da noi fornita, non è permessa finché non sia accertato che l'installazione sia stata fatta secondo le specifiche e le indicazioni di installazione contenute nel "Manuale d'istruzioni" fornito con la quasi-macchina e che sia stata espletata e documentata, in apposito protocollo, una procedura di accettazione da parte di un tecnico abilitato.

Commissioning of the complete machinery including the above mentioned drives delivered by us is not allowed until it is ascertained that the installation of the complete machinery was performed in accordance with the specifications and the operating and installation advice given in our Mounting Instructions, and that the acceptance procedure was duly carried out and documented in an acceptance protocol by a specialist.

Questa dichiarazione è fatta dal costruttore / *This is declared by the manufacturer:* **NEKOS SRL** - Via Capitoni 7/5 - 36064 Colceresa (Vicenza) - Italy Rappresentato da / Represented by : **Giuliano Galliazzo** – A.D. Presidente / President CEO

Luogo e data / Place and date : Colceresa 22/09/2021





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