
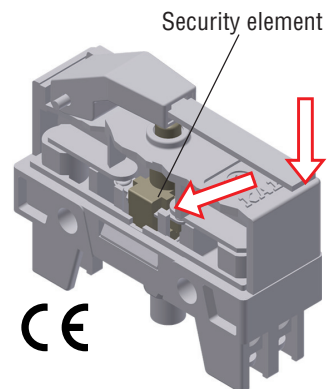


INSTALLATION INSTRUCTIONS

1- Positive Opening

- The symbol  (IEC 60947-5-1 Annex K) identifies a positive opening in the normally closed contacts (NC).
- A switch has positive opening when all NC contact elements can be certainly led to open position. There is no elastic connection between the mobile contact and the actuator element where the force is applied.
- With the positive opening system, even with a internal malfunction of the switch, for example welding of contacts, the opening of the NC contact and "shutdown" of the circuit controlled by this switch is guaranteed, provided the "union" strength between the mobile contact and NC contact, does not exceed 10 N (according to item K8.3.7 of IEC 60947-5-1 standard).
- To ensure positive opening, the external actuator element will provide a force on the actuator's switch greater than the necessary force to operate the product in normal use conditions. This force will be applied in the same position of OP.
- The connections of security circuits should be made only in NC contact and the auxiliary connections in NO contact.



Switch operated and with the security element activated

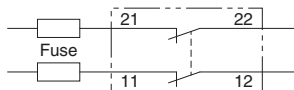
2- Electrical Connections

2.1- Cable's cross section (flexible cables)

- minimum: 1 x 0,5 mm²
- maximum: 1 x 2,5 mm²
- Fixing torque: 0,2 until 0,3 Nm

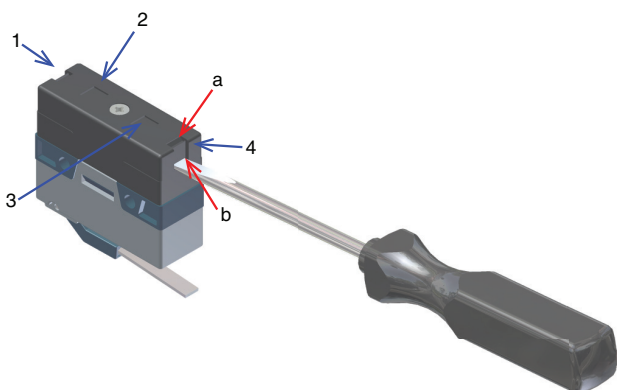
2.2- Circuitry (with protection fuse)

- Circuit: IEC 60947-5-1 form Y+Y
- Marking: IEC 60947-1

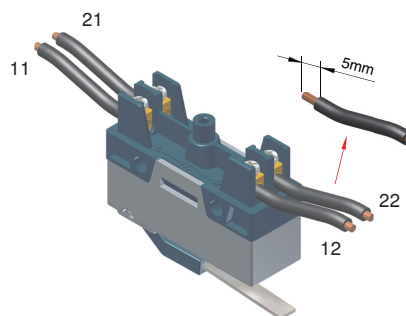


2.3- Switch MK with Mk23 terminal cover

- We recommend using Mk23 to protect people against access to dangerous parts.
- The MK23 is fixed to MK by self-tapping screw.
- Fixing torque: 0,2 until 0,3 Nm
- Option 4 outputs for cables (see figure, identificacion **1** until **4**). To create an output, it break with a screwdriver the membrane that cover the chosen output.
- Outputs **1** and **4**: arrows **a** and **b** indicate the locations and the appropriate position of the screwdriver to start up breaking the side membrane.
- Outputs **2** and **3**: position the screwdriver in the contours of the output and break the membrane.



2.4- Cables Fixing

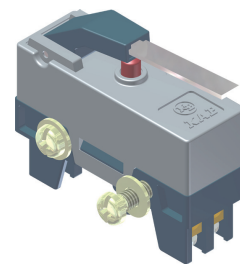


2.5- Short-circuit protective device


- 10A fuse type gG connected in series with the security circuit.

3- Housing Fixing

- Use M4 screws with flat washer.
- Fixing torque: 0,4 until 0,7Nm



4- Additional Cares

- Avoid environments where:
 - . temperature changes cause condensation.
 - . occur excessive vibration and shock and may damage the proper functioning of the switch.
 - . there is explosive or inflammable gas.
- To install the product, attempt to the specified limits to ensure a correct performance.
- Positive Opening  : attention to the values specified in the catalog to the necessary travel and force to ensure a perfect operation of positive opening system.
 - Do not use these products as a mechanical stop.
 - Do not use these products as safety or emergency stop devices or in any other application where the failure of the product could result in personal injury.



MK2 Series

Basic Switch 2NC with Positive Opening

INSTALLATION INSTRUCTIONS - Continuation

⚠ WARNING

- Turn off the power to make electrical connections or before any maintenance on the switch or equipment where it is applied. **Electric shock will result in death or serious injury.**
- Installation and maintenance services for electrical equipment should be executed only by qualified personnel.
- Read these instructions carefully. Retain instructions for future reference.
- Inappropriate use of the product could result in personal injury and/or property.
- Additional informations: export@kap.com.br

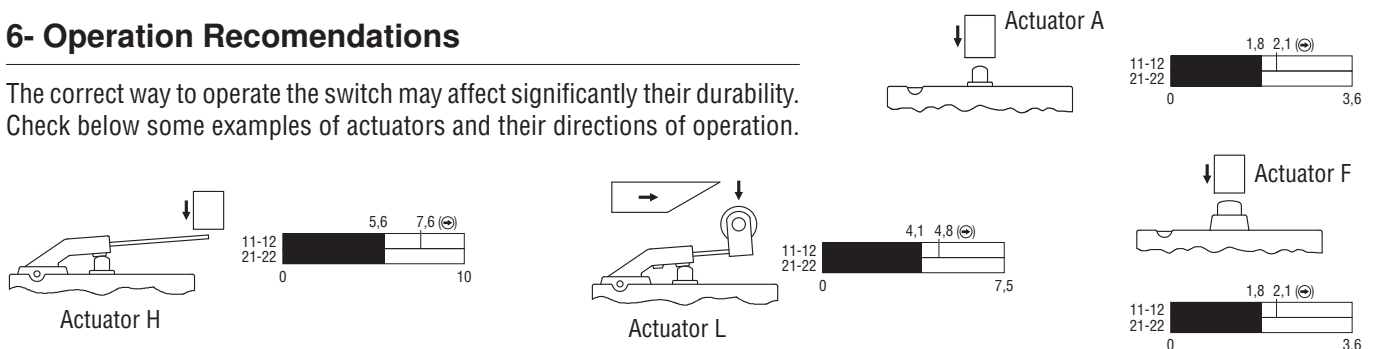
5- Technical Data

- In conformity with standards	IEC 60947-5-1 / EN 60947-5-1/ IEC 60947-1/ EN60947-1/ IEC 60529/ EN 60529/ Directive 2006/95/EC
- Utilization Category	AC-15 DC-13
- Rated Operational Voltage (Ue)	240 V 125 V
- Rated Operational Current (Ie)	3 A 0,22 A
- Rated Insulation Voltage (Ui)	300 V
- Conventional Free Air Thermal Current (Ith)	10 A
- Rated Impulse Withstand Voltage (Uimp)	1500 A
- Rated Frequency	50/60 Hz
- Contact Resistance	50 mΩ maximum initial (at 1 A, 5 Vdc)
- Rated Conditional Short-circuit current	100 A
- Degree of Protection	IP20 (IEC 60529) with MK23 terminal cover assembled Equipment Protection: without protection against ingress of water and protection against access to hazardous parts ingress of solid objects up to ø12,5mm People Protection: protection against accidental touch by persons fingers +85°C maximum
- Ambient Temperature	1.000.000 cycles until 90 cycles/min max.
- Mechanical Durability	10.000 cycles until 6 cycles/min max.
- Electrical Durability	0,8 mm/s minimum until 1 m/s maximum (at pin plunger)
- Operating Speed	2 (IEC 60947-1)
- Pollution Degree	not applicable (IEC 60947-1)
- Electromagnetic Compatibility (EMC)	- Immunity: equipment not incorporating electronic circuits - Emission: electromagnetic disturbances can only be generated by equipment during occasional switching operations and the duration of the disturbances is of the order of milliseconds
- Material Housing	Glass-reinforced polymer

Subject to change without prior notice

6- Operation Recomendations

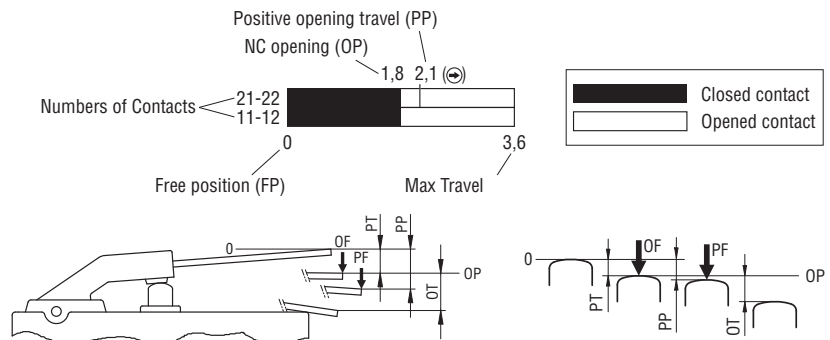
The correct way to operate the switch may affect significantly their durability. Check below some examples of actuators and their directions of operation.



7- Travels

Terminology:

- OF..... Operation force
- PF..... Positive opening force
- PT..... Pre travel
- FP..... Free position
- OP..... Operating position
- PP..... Positive opening travel
- OT..... Overtravel



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