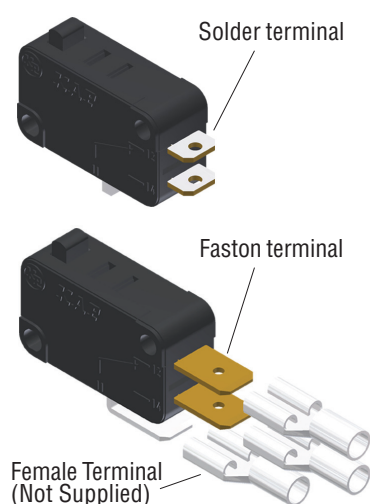


INSTALLATION INSTRUCTIONS

⚠ 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.
- Failure to observe the above precautions may cause irreparable damage to switch.
- To install the product, attempt to the specified limits to ensure a correct performance.
- Do not lubricate or modify the switch at risk of causing the locking mechanism or "short circuit".
- Avoid environments where temperature changes cause condensation or where occur excessive vibration and shock and may damage the proper functioning of the switch.
- Avoid environments where there are explosive or inflammable gas.
- 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 a safety or emergency stop devices or in any other application where the failure of the product could result in personal injury.
- Additional informations: sak@kap.com.br

1- Electrical Connections



- Solder terminal:
 - Soldering at 350 °C. Applying the soldering iron continually for up to 3 s. If necessary, reapply the soldering iron with a minimum interval of 10 s.
 - Avoid penetration of the soldering or gas flow into the switch. If possible, solder the switch in a favorable position for disposing the solder to flow outside the enclosure and use additional means (continuous airflow) to expel the gases
 - Do not apply excessive force on the terminals during soldering. Let cool for several minutes before applying any effort.
 - Avoid the use of solvents in the preparation of the solder terminals. The terminals are ready to receive soldering and require no preparation.
 - It is not necessary to remove the solder residues on the terminals.
- Faston terminal (quick-connect):
 - Use female connectors according to IEC 61058-1, appropriated to the specified load and the cable.
 - When connecting the female connectors, push it until it touches on some mechanical stop (housing, dimple detents or hole detents of the male terminal, etc)
 - Use appropriate tool to crimp the cable to the female terminal.
 - Always use new, clean and with suitable pressure connectors for a good electrical contact with the switch terminal.

1.1- Cables - IEC 61058-1 (flexible cables)

Rating	Cable
5 A	0,5...1 mm ²
10 A	0,75...1,5 mm ²
15 A	1...2,5 mm ²

When installing cables:

- Use appropriate cables for the applied load (IEC 61058-1).
- Test the fixation drivers before applying the load.

1.2- Circuitry

Form A	Form B	Form C

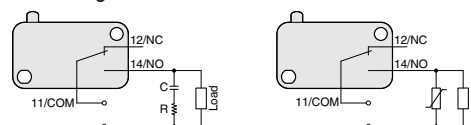
- Marking: IEC 60947-5-1

1.3- Short-circuit protective device

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

1.4- Inductive Circuits

To increase the contact life and decreasing the arc, add low-cost components to the circuit like: resistor, capacitor and varistor according to the circuit.

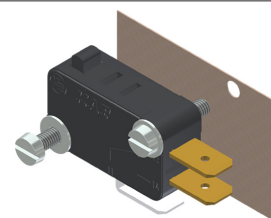


1.5- Low Current Circuits

Do not use switches with low operating force, and if possible add a resistor to the circuit to increase the current controlled by the switch.

2- Housing Fixing

- Use M3 screws with flat washer
- Fixing torque: 0,2...0,3 Nm
1.8...2.7 lb.in
- An insulating plate must be inserted between the switch and the mounting position whenever the latter is metallic.



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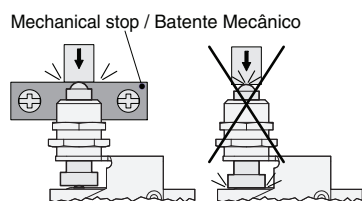
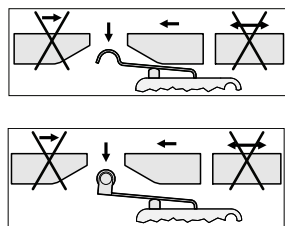
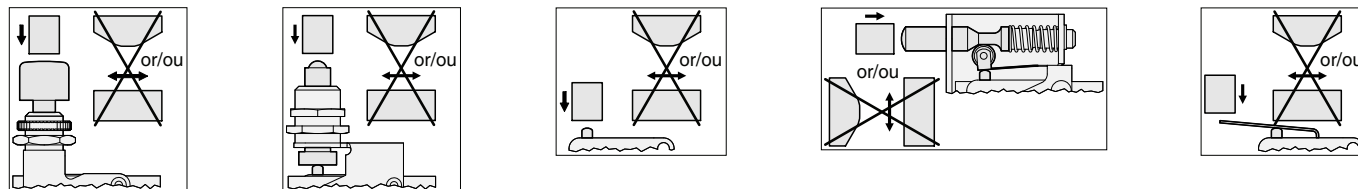
INSTALLATION INSTRUCTIONS - continuation

3- Technical Data

- In conformity with standards	NBR IEC 61058-1/ IEC 61058-1 / EN 61058-1
- Rated Voltage	250 V; 50 / 60 Hz
- Rated Current	MV3: 5(0,8) A MV5: 10(1,5) A MV7: 15(3) A
- Impulse Withstand Voltage	Switch for a.c. only; circuit disconnection: full disconnection 1.5 kV
- Insulation Resistance	100 M Ω minimum (at 500 Vcc)
- Dielectric Strength	1.5 kV minimum (at 60 Hz / 60 s)
- Contact Resistance	50 m Ω maximum initial (at 1 A 5 Vcc)
- Ambient Temperature	+85 °C maximum or +120 °C maximum
- Protection Against Electric Shock	Class 0 - protection against electric shock relies upon basic insulation
- Mechanical Durability	1E6 (1.000.000) cycles until 90 cycles/min max.
- Electrical Durability	5E4 (50.000) cycles until 10 cycles/min max.
- Operating Speed	0,05 mm/s minimum until 1 m/s maximum (at pin plunger)
- Degree of Protection (IEC 61058-1)	Housing: IP40; terminals: IP00 (non-protected) Protected against solid foreign objects of 1,0 mm diameter and greater (IP4X); non-protected against ingress of water (IPX0)
- Pollution Degree (IEC 61058-1)	Degree 2: only non-conductive pollution occurs except that occasionally a temporary conductivity caused by condensation is to be expected
- Electromagnetic Compatibility (EMC) (IEC 61058-1)	Not applicable
- Housing Material	- Immunity: mechanical switches are not affected by electromagnetic disturbances - Emission: for mechanical switching electromagnetic disturbances may only be generated during switching operations. Glow Wire Temperature: 750 °C; material Grupo IIIa (PTI-250)

4- Operation Recommendations

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

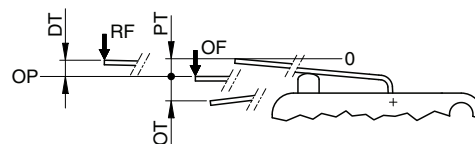
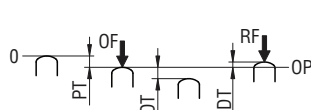


- The manual operation of a metallic actuator can only be done with an intermediate component made of insulating material.
- The attack element should be designed so that the switch does not receive any violent shocks.
- Avoid keeping the actuator pre-activated because this will damage the internal mechanism of switch. The attack element should be designed to keep free the switch actuator when it at rest.
- **For all models use mechanical stop. Do not use these products as a mechanical stop.**

5- Travels ^①

Terminology:

OF..... Operation force
RF..... Release force
DT..... Differential travel
PT..... Pre travel
FP..... Free position
OP..... Operating position
OT..... Overtravel



^① Forces and travels values vary for each model and can be obtained from commercial catalog at www.kap.com.br.



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