

- Changeover circuit with rating up to 15A
- Long life snap action contacts mechanism
- Wiping and self-cleaning contact action
- Options of operating force
- Variety of actuators and contact arrangements
- Quick connect (faston) and solder terminals
- Dimensions according to DIN 41635 form A
- IEC 61958-1 approved component (MV7)

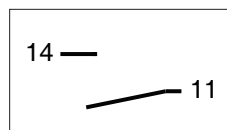


### IEC 61058-1

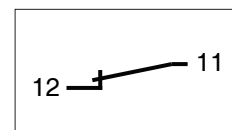
#### Rating

MV3	5A 250Vac	
MV5	10A 250Vac	
MV7	15A 250Vac	IEC 61058-1

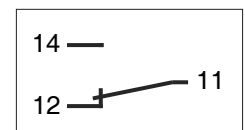
#### Circuitry (IEC 60947-5-1)



Form A (SPST-NO)



Form B (SPST-NC)



Form C (SPDT)

#### Specifications

Contact Resistance	50 mΩ maximum initial (at 1 A 5 Vdc)
Ambient Temperature	+85 °C maximum or +120 °C maximum
Degree of Protection	IP40 (IEC 60529)
Operating Speed	0,5 mm/sec minimum to 1 m/sec maximum (at plunger)
Mechanical Life Expectancy	10.000.000 cycles
Electrical Life Expectancy	50.000 cycles
Materials	Enclosure: MV3 and MV5: Reinforced thermoplastic
	MV7: Reinforced thermoplastic UL 94 V-0
	Actuators: Lever: Stainless Steel
	Roller: Thermoplastic
	Terminals: Brass
Contacts:	Silver alloy




















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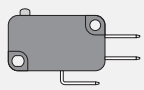



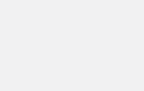



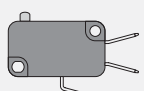



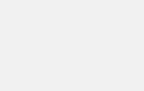



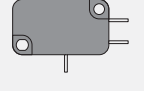





## Ordering Information

**M V 3 G 3 F A 1**

Rating	Ambient Temperature	
	+85 °C max.	+120 °C max.
5A 250Vac	<b>MV3</b>	<b>MV31</b> ②
10A 250Vac	<b>MV5</b>	<b>MV51</b> ②
15A 250Vac	<b>MV7</b> ① ②	<b>MV71</b> ① ②

Actuator	
Plunger	 = A ③
Short Hinge Lever	 = G1 ③
	 = G2
Hinge Lever	 = G3 ③
	 = G4
Long Hinge Lever	 = G5 ③
	 = G6
Extra-Long Hinge Lever	 = G7
	 = G8
Roller Short Hinge Lever	 = J1 ③
Roller Hinge Lever	 = J3 ③
	 = J4
Simulated Roller Hinge Lever	 = D1 ③
	 = D2
Leaf Spring Lever	 = E
Roller Leaf Spring Lever	 = R ③
Panel Push Button	 = B
Panel Plunger	 = C
Door Interlock	 = Z

Terminal	
	Faston 0.187"  = AA1
	 = BA1
	 = CA1 ③
	Faston 0.250"  = DA1
	 = EA1
	 = FA1 ③
	Faston 0.187"  = AB1
	 = BB1
	 = CB1
	Faston 0.250"  = DB1
	 = EB1
	 = FB1
	Solder  = GC1
	 = HC1
	 = IC1 ③
Terminals coating: COM: Silver-plated NO+NC: Faston: passivated Solder: tin-plated	

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## Special Applications





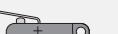



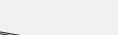
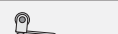

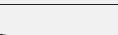

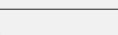
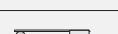

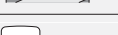
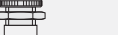
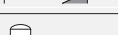
The products presented in this catalog are for regular commercial use, however we are able to develop "personalized" models for special applications.

### NOTES:

- ① IEC 61058-1 approved component.
- ② Enclosure made in reinforced thermoplastic UL 94 V-0
- ③ Available models in stock. The others are available under previous consultation.

## Characteristics

**Terminology:** OF ... Operating Force  
 OP ... Operating Position  
 PT ... Pretravel  
 DT ... Differential Travel  
 OT ... Overtravel  
 L ..... Actuator Length

	Actuador	OF (gf)			OP (mm)	PT máx (mm)	DT máx (mm)	OT mín (mm)	L (mm)
		MV3	MV5	MV7					
A		50	100	200	14.7 ± 0.4	1.4	0.4	1.2	-
G1		43	86	172	15.3 ± 0.6	1.6	0.5	1.1	22.0 ± 0.6
G2		26	52	103	15.3 ± 0.9	2.7	0.8	1.6	26.5 ± 0.6
G3		21	42	84	15.3 ± 1.1	3.3	1.0	2.3	35.6 ± 0.6
G4		13	25	50	15.3 ± 1.7	5.6	1.6	3.2	40.1 ± 0.6
G5		11	22	44	15.3 ± 1.9	6.3	1.8	4.3	59.4 ± 0.7
G6		7	13	27	15.3 ± 3.1	10.5	3.0	6.2	63.9 ± 0.7
G7		9	18	37	15.3 ± 2.3	7.6	2.2	5.2	70.0 ± 0.7
G8		6	11	22	15.3 ± 3.8	12.8	3.6	7.4	74.5 ± 0.7
J1		50	100	200	21.3 ± 0.6	1.4	0.4	1.0	20.2 ± 0.7
J3		23	45	90	21.3 ± 1.1	3.1	0.9	2.1	33.8 ± 0.7
J4		14	27	54	21.3 ± 1.7	5.2	1.5	3.0	38.3 ± 0.7
D1		24	48	95	18.5 ± 1.0	3.0	0.8	2.0	32.6 ± 0.6
D2		14	28	57	18.5 ± 1.6	4.9	1.4	2.9	37.1 ± 0.6
E		70	120	220	15.0 ± 0.5	-	0.4	0.8	-
R		70	120	220	20.6 ± 0.7	-	0.4	0.8	-
B		50	100	200	22.5 ± 0.5	-	0.4	0.8	-
C		50	100	200	20.7 ± 0.5	-	0.4	0.8	-
Z		950	1000	1100	8.8 ± 0.5	-	-	1.6	-

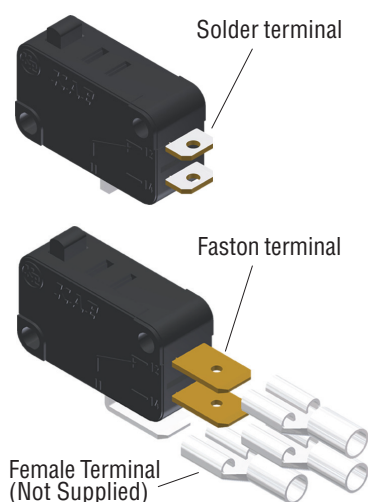
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## INSTALLATION INSTRUCTIONS

### ⚠ 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.

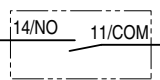
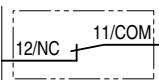
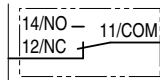
### 1.1- Cables - IEC 61058-1 (flexible cables)

Rating	Cable
5 A	0,5...1 mm <sup>2</sup>
10 A	0,75...1,5 mm <sup>2</sup>
15 A	1...2,5 mm <sup>2</sup>

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
		

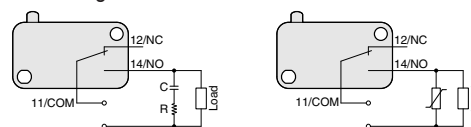
- Marking: IEC 60947-5-1

### 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.

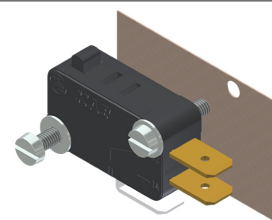


### 1.5- Low Current Circuits

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.



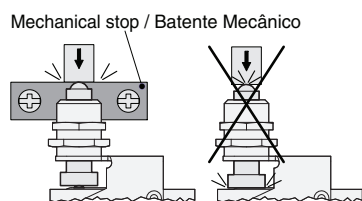
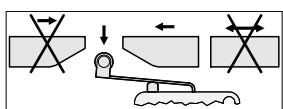
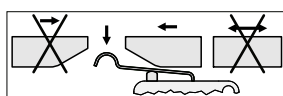
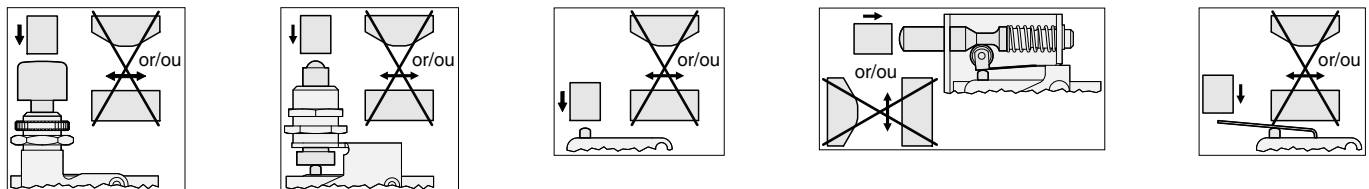
## INSTALLATION INSTRUCTIONS - continuation

### 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 MΩ minimum (at 500 Vcc)
- Dielectric Strength	1.5 kV minimum (at 60 Hz / 60 s)
- Contact Resistance	50 mΩ 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.

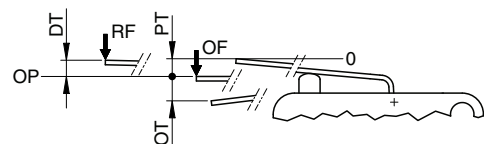
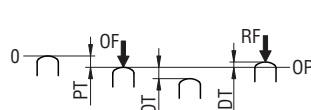


- The manual operation of a metallic actuator can only be done with an intermediate component made of insulating material.
- The attack element should be designed so that the switch does not receive any violent shocks.
- Avoid keeping the actuator pre-activated because this will damage the internal mechanism 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 <sup>①</sup>

#### Terminology:

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



<sup>①</sup> Forces and travels values vary for each model and can be obtained from commercial catalog at [www.kap.com.br](http://www.kap.com.br).