

Article: **MK V11D15**

Description: Microswitch with roller plunger

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**Housing:**

Polymer housing

**Protection degree:**

IP00 without terminal cover

IP20 with terminal cover VF C01, VF C03

IP40 with terminal cover VF MKC•1•, VF C02

**General data:**

Ambient temperature: -25°C ... +85°C

Max. actuation frequency: 3600 operating cycles/hour

Mechanical endurance: 10 million operating cycles

Safety parameters B10D: 20,000,000 for NC contacts

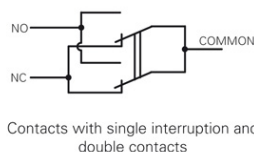
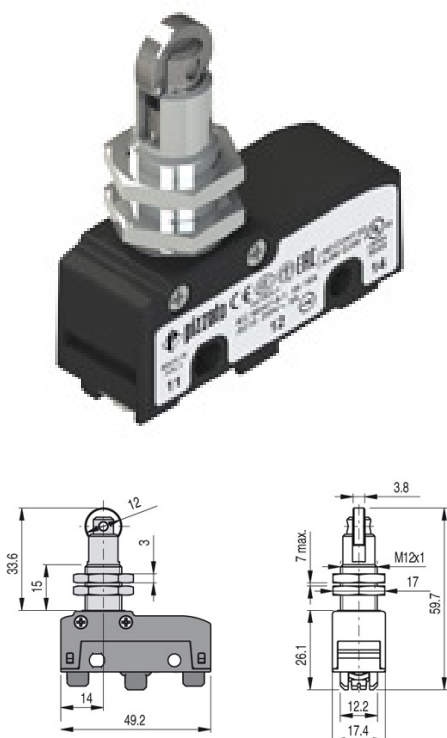
**Contact block characteristics:**

1NO+1NC changeover

Contacts with single interruption and double contacts.

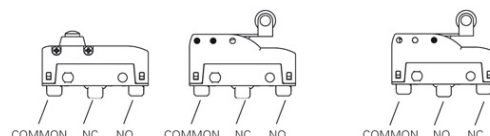
**Positive switch opening:**

Device with positive opening conforming to IEC 60947-5-1.



With direct and back direct action (F, D)

With inverted action (R)

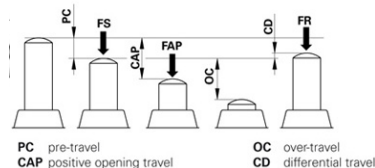

**Actuation forces and travels:**

PC: 0,5mm FS: 4N

OC: 5,5mm FR: 3N

CD: 0,05mm FAP: 20N

CAP: 2,2mm

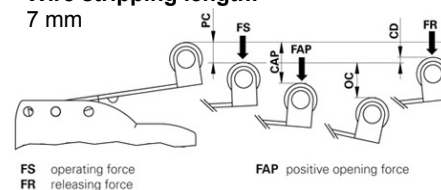

**Cable cross section (flexible copper strands):**

min. 1 x 0,34 mm<sup>2</sup> (1 x AWG 22)

max. 2 x 1,5 mm<sup>2</sup> (2 x AWG 16)

**Wire stripping length:**

7 mm


**Compliance with the requirements of:**

Low Voltage Directive 2014/35/EU,

EMC Directive 2014/30/EU,

RoHS Directive 2011/65/EU.

**Conformità alle norme:**

IEC 60947-5-1, EN 60947-5-1, IEC 60529, EN 60529, EN 60947-1, IEC 60947-1, EN 50581.

**Approvals:**

UL 508, CSA 22.2 No. 14, EN60947-1, EN 60947-5-1

**Device screw tightening torques:**

Tighten the nuts with a torque of 2 ... 3 Nm.

Tighten the head screws with a torque of 0.3 ... 0.4 Nm.

Tighten the M4 screws with a torque of 0.8 ... 1.2 Nm, insert washer.

Attention: A tightening torque higher than 1.2 Nm can cause the breaking of the microswitch.

Tighten the terminal screws with a torque of 0.6 ... 0.8 Nm.

**Markings and quality marks:**

**Electrical data:**

Thermal current (I<sub>th</sub>): 16 A

Rated insulation voltage (U<sub>i</sub>): 250 Vac 300 Vdc

Rated impulse withstand voltage (U<sub>imp</sub>): 4 kV

Conditional short circuit current: 1000 A acc. to EN 60947-5-1

Protection against short circuits: type gG fuse 16 A 250 V

Pollution degree: 3

Dielectric strength 2000 Vac/min.

**Utilization category:**

Alternate current: AC15 (50...60 Hz)

U<sub>e</sub> (V) 120 250

I<sub>e</sub> (A) 3 5

Direct current: DC13

U<sub>e</sub> (V) 24 125 250

I<sub>e</sub> (A) 4 0,6 0,3

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**Characteristics approved by IMQ and CCC**

Rated insulation voltage (Ui): 250 Vac  
 Conventional free air thermal current (Ith): 16 A  
 Protection against short circuits: type gG fuse 16 A 250 V  
 Rated impulse withstand voltage (Uimp): 4 kV  
 Conditional short circuit current: 1000 A  
 Protection degree of the housing: IP00  
 Terminals: screw terminals/faston  
 Pollution degree: 3  
 Utilization category: AC15  
 Operating voltage (Ue): 250 Vac (50 Hz)  
 Operating current (Ie): 5 A  
 Forms of the contact element: X; Y; C  
 Positive opening of contacts on contact blocks: 1, 3

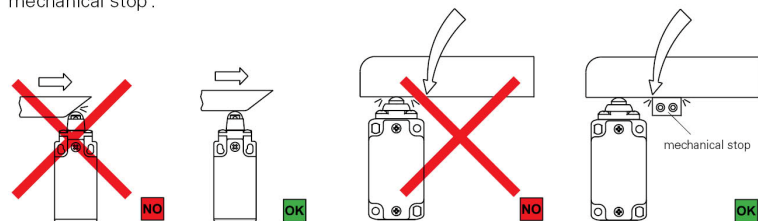
In conformity with standards: EN 60947-1, EN 60947-5-1+ A1:2009,  
 fundamental requirements of the Low Voltage Directive 2006/95/EC.

**Characteristics approved by UL**

Electrical Ratings:  
 Q300 pilot duty (69 VA, 125-250 V dc)  
 A300 pilot duty (720 VA, 120-300 V ac)

**Mechanical stop**

Acc. to EN ISO 14119 paragraph 5.2 "the position sensors must not be used as mechanical stop".

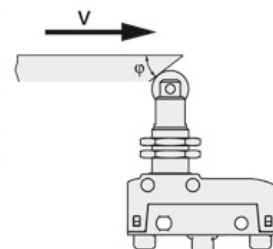


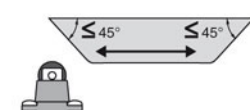
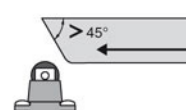
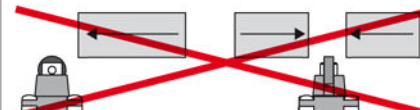
The actuator must not exceed the max. travel as indicated in the travel diagrams.

The guard must not use the switch head as a mechanical stop.

**Roller plunger - Type 2**

$\varphi$	Vmax (m/s)	Vmin (mm/s)
15°	0,6	0,2
30°	0,3	0,1
45°	0,1	0,05



**Actuation modality**

Recommended application	Application to avoid	Forbidden application
		

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## Installation of single switches for safety applications

- Use **only** switches with the symbol .
- Connect the safety circuit to **the NC normally closed contacts**, as stated in **standard EN 60947-5-1, encl. K, par. 2**.
- **The NO normally open contacts** should be used **only for signalling**; these contacts are not to be connected with the safety circuit. However, if in the same protection two or more switches are used, it is possible to connect the contact NO to the safety circuit. In this case at least one of the two switches must have a positive opening and a normally closed contact NC must be connected to the safety circuit.
- Actuate the switch **at least up to the positive opening travel (CAP)** stated aside the article code.
- Actuate the switch **at least with the positive opening force (FAP)** stated aside the article code.
- The fixing of the device must occur in compliance with the standard EN ISO 14119.

Whenever the machine guard is opened and during the whole opening travel, **the switch must be pressed directly** (fig. 1) **or through a rigid connection** (fig. 2).

Only in this way the positive opening of the NC normally closed contacts is guaranteed.

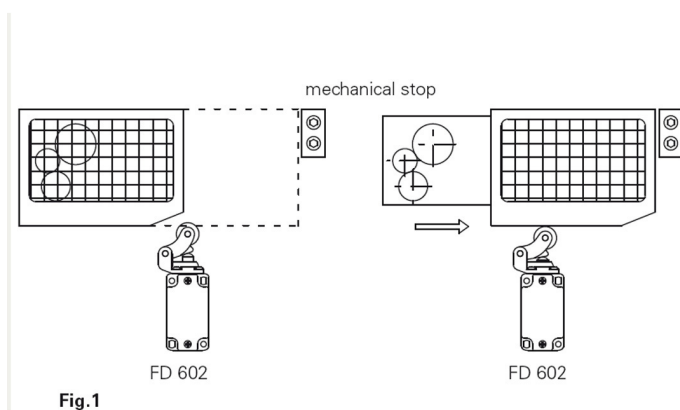


Fig.1

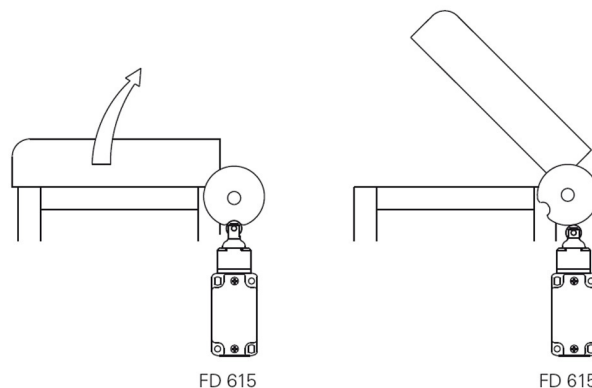


Fig.2

In the safety application with only one switch for each guard, the switches **should not be applied to activate by release** (fig. 3 and 4) **or through a non rigid connection** (i.e. by a spring).

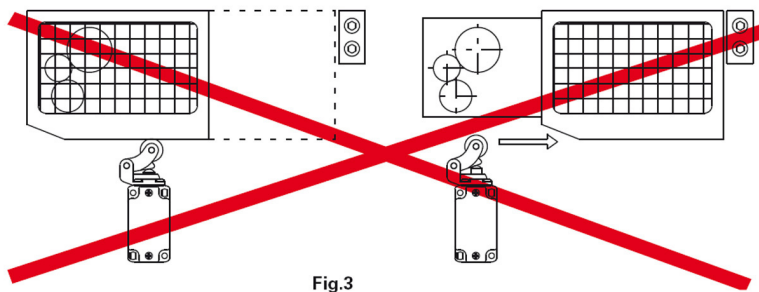


Fig.3

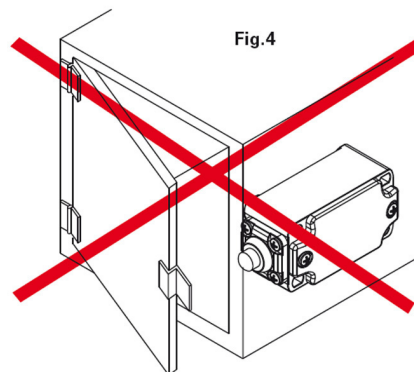


Fig.4