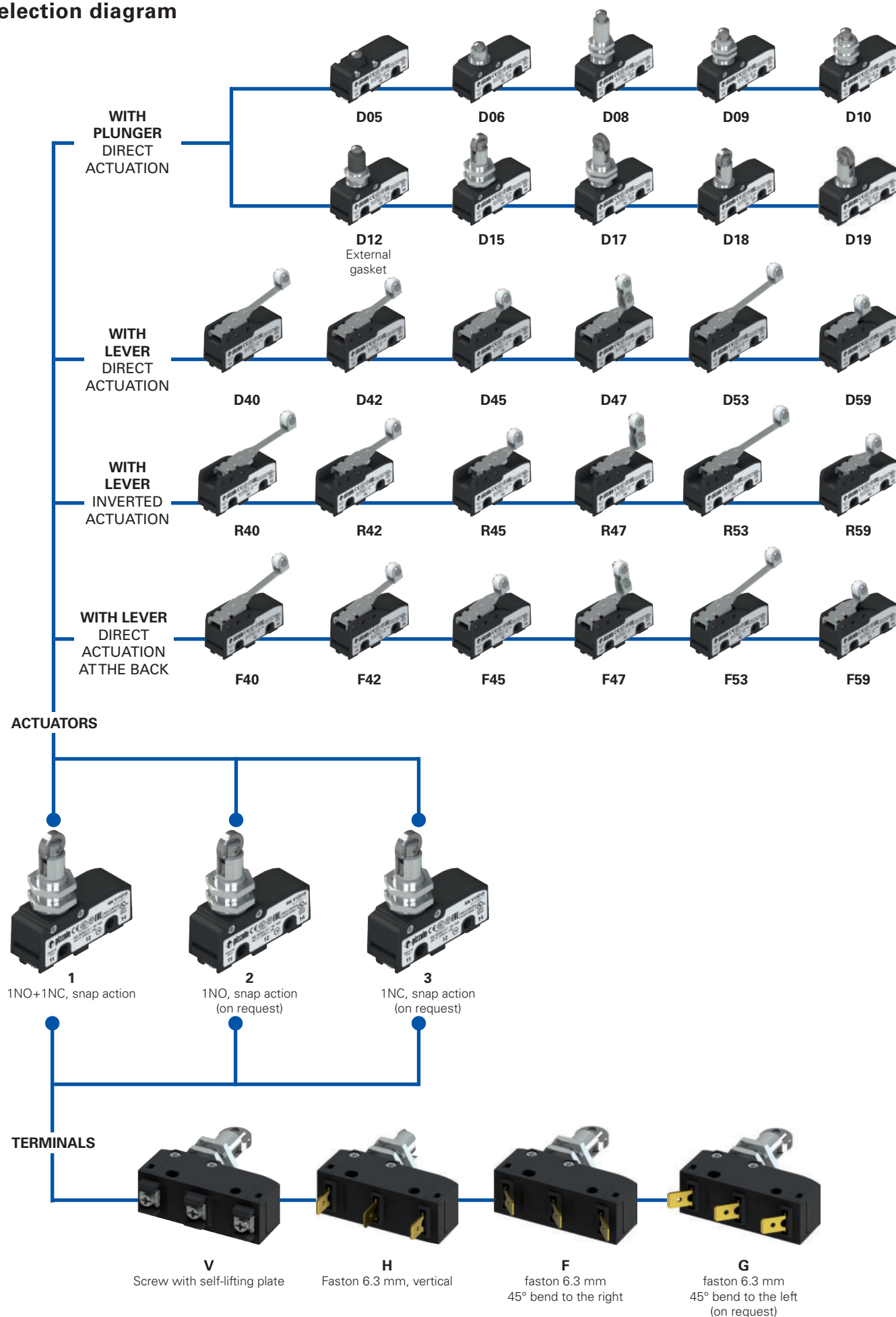
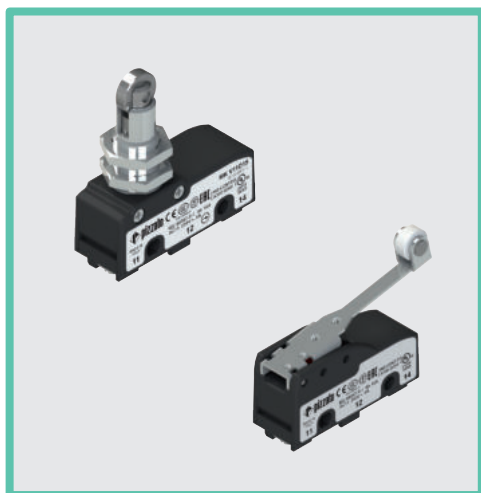


Selection diagram



**Code structure****Attention!** The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

article		options	
MK		V12D40-GR16T6	
Terminal type		Ambient temperature	
V	screw with self-lifting plate		-25°C ... +85°C (standard)
H	vertical faston	T6	-40°C ... +85°C
F	Faston, 45° bend to the right	Rollers	
G	Faston, 45° bend to the left (on request)		standard roller
Contact blocks		R16	metal roller Ø 9.5x4 mm (for actuators 40, 42, 45, 47, 53, 59 only)
1	1NO+1NC, snap action	R10	large plastic roller Ø 9.8x8.4 mm (for actuators 40, 42, 45, 53 only)
2	1NO, snap action (on request)	Contact type	
3	1NC, snap action (on request)		silver contacts (standard)
Maximum protection degree		G	silver contacts with 1 µm gold coating
1	IP40 (with terminal cover)	Actuator	
2	IP65 (with terminal cover)	01	pin
Type of actuation		02	pin
D	direct actuation	03	narrow plunger
R	inverted actuation
F	direct actuation at the back		



Main features

- Technopolymer housing
- Protection degree IP20, IP40 or IP65
- 4 terminal types available
- Versions with positive opening \ominus
- Versions with gold-plated silver contacts
- Terminal covers with strain relief cable gland

Quality marks:



IMQ approval: CA02.05772
 UL approval: E131787
 CCC approval: 2013010305604291
 EAC approval: RU C-IT.AJ35.B.00454

Installation for safety applications:

Use only microswitches marked with the symbol \ominus next to the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts) as stated in **standard EN 81-20 par. 5.11.2.2.1**. Actuate the switch **at least up to the positive opening travel (CAP)** reported next to the article code. Actuate the switch **at least with the positive opening force (FAP)** reported next to the article code.

⚠ If not expressly indicated in this chapter, for correct installation and utilization of all articles see the instructions given on pages 139 to 146.

Technical data

Housing

Housing made of glass fibre reinforced technopolymer, self-extinguishing and shock-proof.

Protection degree acc. to EN 60529: IP00 without terminal cover
 IP20 (with terminal covers VF C01, VF C03)
 IP40 (with terminal covers VF MKC•1•, VF C02)
 IP65 (with terminal covers VF MKC•22 + MK V•2••• or VF MKC•23 + MK H•2•••)

General data

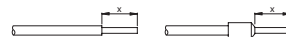
Ambient temperature: -25°C ... +85°C (standard)
 -40°C ... +85°C (T6 option)
 Max. actuation frequency: 3600 operating cycles/hour
 Mechanical endurance: 10 million operating cycles
 Safety parameter B_{10D} : 20,000,000 for NC contacts
 Tightening torques for installation: see page 144

Conductor cross section (flexible copper strands)

MK series: min. 1 x 0.34 mm² (1 x AWG 22)
 max. 2 x 1.5 mm² (2 x AWG 16)

Wire stripping length (x):

MK V••••• articles (screw connection): 7 mm



In compliance with standards:

IEC 60947-5-1, EN 60947-5-1, IEC 60529, EN 60529, EN 60947-1, IEC 60947-1, EN IEC 63000.

Approvals:

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

Compliance with the requirements of:

Low Voltage Directive 2014/35/EU, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU.

Positive contact opening in conformity with standards:

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

Electrical data

Thermal current (I_{th}): 16 A
 Rated insulation voltage (U_i): 250 Vac 300 Vdc
 Rated impulse withstand voltage (U_{imp}): 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

Alternating current: AC15 (50 ... 60 Hz)
 U_e (V) 120 250
 I_e (A) 3 5
 Direct current: DC13
 U_e (V) 24 125 250
 I_e (A) 4 0.6 0.3

Features approved by IMQ

Rated insulation voltage (U_i): 250 Vac
 Conventional free air thermal current (I_{th}): 16 A
 Protection against short circuits: type gG fuse 16 A 250 V
 Rated impulse withstand voltage (U_{imp}): 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 (U_e): 250 Vac (50 Hz)
 Operating current (I_e): 5 A
 Forms of the contact element: X; Y; C
 Positive opening of contacts on contact blocks 1, 3
 In compliance with standards: EN 60947-1, EN 60947-5-1, fundamental requirements of the Low Voltage Directive 2014/35/EU.

Please contact our technical department for the list of approved products.

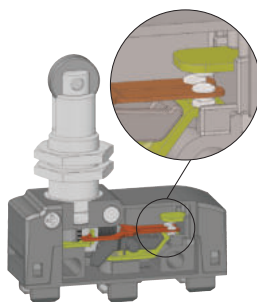
Features approved by UL

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

Please contact our technical department for the list of approved products.

Contact reliability

Thanks to the double and redundant execution, the electrical contact of the microswitch has been designed with a technology providing increased reliability. For high-volume part orders, the microswitch can be also supplied with the NO or NC contact only, in order to reduce the costs.



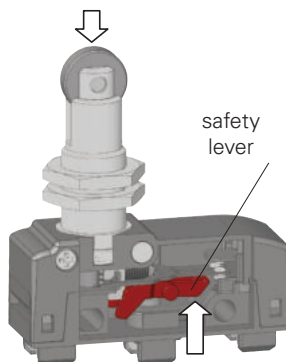
Versions with protection degree IP65

IP65

Inside the housing of the microswitch it is possible to insert gaskets to protect the mechanism against fine dusts or liquids up to the protection degree IP65.

To achieve a protection degree of IP65, please order the IP65-compatible version of the microswitch, with the IP65 terminal cover version.

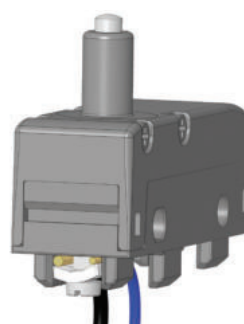
Microswitches for safety applications



All microswitches showing the symbol \ominus besides the product code are with positive opening and therefore suitable for safety applications. These microswitches are provided with a rigid connection between the plunger and the NC contacts, which are forcibly actuated by an internal sturdy safety lever.

The positive opening has been designed in compliance with the standard EN 60947-5-1, Annex K. Therefore, these microswitches are suitable for safety applications.

Clamping screw plates for cables of different diameters (MK V \bullet)



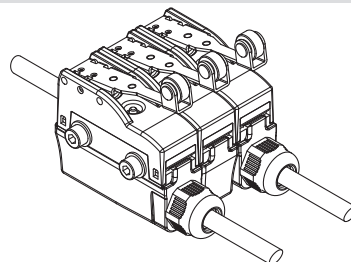
The clamping screw plates are provided with a particular "roofing tile" structure and are loosely coupled to the clamping screw. The design causes connection wires of different diameter to be pulled towards the screw when tightening the screw (see figure), preventing the wires from escaping towards the outside.

Compliant with EN 81-20 and EN 81-50



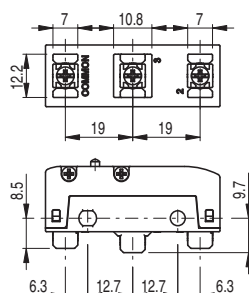
- Safety contacts in compliance with EN 60947-5-1, annex K.
- Protection degree higher than IP4x.
- Mechanical service life > 10⁶ cycles.

Stackable terminal covers with cable gland

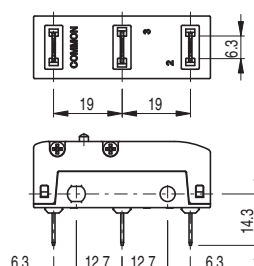


The terminal covers are provided with strain relief cable gland and protection degree up to IP65. These are snap-on terminal covers and have reduced dimensions contained in the profile of the microswitch so that these can be installed on microswitches fixed side by side as well. See page 70.

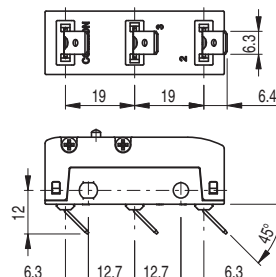
Terminal dimensions



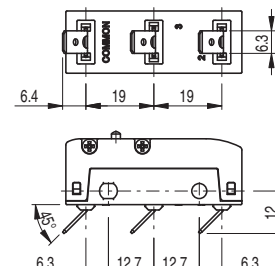
Screw terminals **V** with plate



Faston terminals **H**, vertical



Faston terminals **F**, right angle

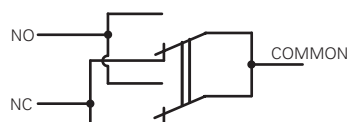


Faston terminals **G**, left angle (on request)

Note: The vertical faston terminals H can be bent according to specific installation requirements.

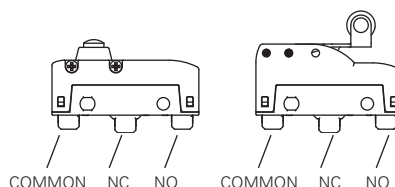
We recommend to bend the faston with an angle not higher than 45° and to carry out this operation no more than 5 times.

Circuit diagram

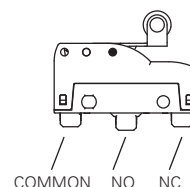


Mobile contact with single interruption and double contacts

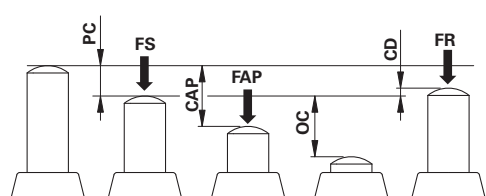
With direct actuation and direct actuation at the back (F, D)



With inverted actuation (R)

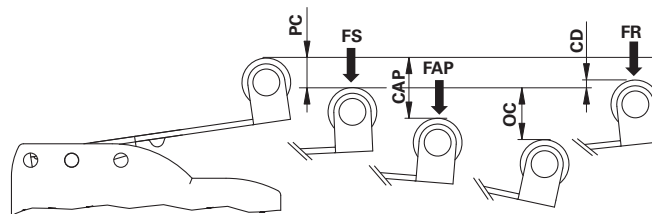


Legend



CD differential travel
PC pre-travel

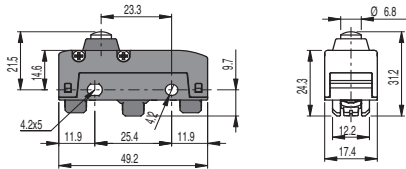
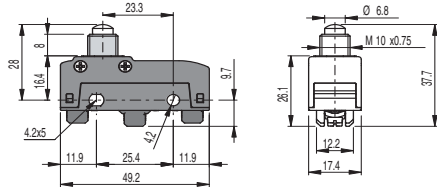
OC over-travel
CAP positive opening travel

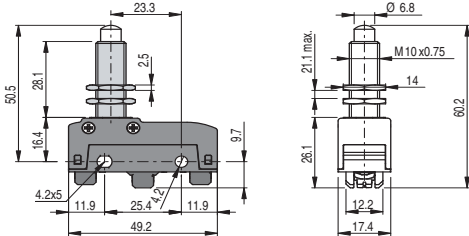
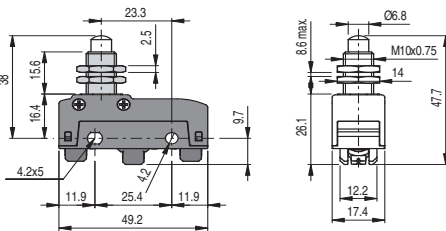


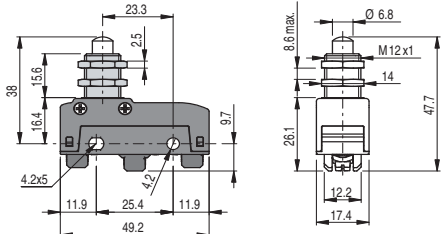
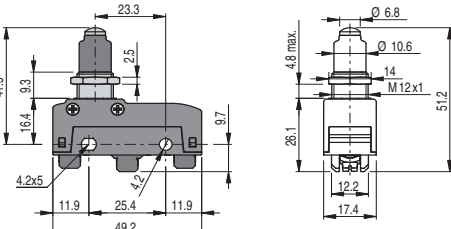
FS Trigger force
FR release force

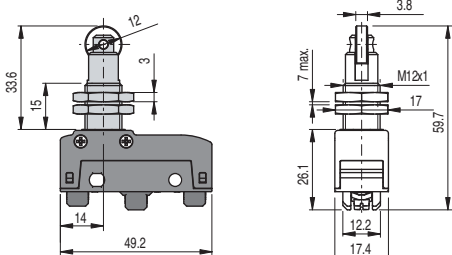
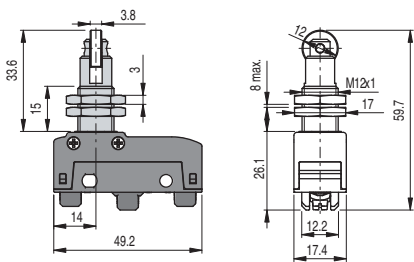
FAP positive opening force

Microswitches with direct actuation

	
MK V11D05 ➔ 1NO+1NC	MK V11D06 ➔ 1NO+1NC
PC 0,5 mm OC 2 mm CD 0,05 mm CAP 2,2 mm	PC 0,5 mm OC 3 mm CD 0,05 mm CAP 2,2 mm
FS 4 N FR 3 N FAP 20 N	FS 4 N FR 3 N FAP 20 N
Maximum and minimum speed see page 144 - type 1	

	
MK V11D08 ➔ 1NO+1NC	MK V11D09 ➔ 1NO+1NC
PC 0,5 mm OC 5,5 mm CD 0,05 mm CAP 2,2 mm	PC 0,5 mm OC 5,5 mm CD 0,05 mm CAP 2,2 mm
FS 4 N FR 3 N FAP 20 N	FS 4 N FR 3 N FAP 20 N
Maximum and minimum speed see page 144 - type 1	

	
MK V11D10 ➔ 1NO+1NC	MK V11D12 ➔ 1NO+1NC
PC 0,5 mm OC 5,5 mm CD 0,05 mm CAP 2,2 mm	PC 0,5 mm OC 5,5 mm CD 0,05 mm CAP 2,2 mm
FS 4 N FR 3 N FAP 20 N	FS 4.5 N FR 3 N FAP 20 N
Maximum and minimum speed see page 144 - type 1	

Mounting only through threaded fitting	
	
MK V11D15 ➔ 1NO+1NC	MK V11D17 ➔ 1NO+1NC
PC 0,5 mm OC 5,5 mm CD 0,05 mm CAP 2,2 mm	PC 0,5 mm OC 5,5 mm CD 0,05 mm CAP 2,2 mm
FS 4 N FR 3 N FAP 20 N	FS 4 N FR 3 N FAP 20 N
Maximum and minimum speed see page 144 - type 2	

All values in the drawings are in mm

Accessories See page 135

➔ The 2D and 3D files are available at www.pizzato.com



		MK V11D18 1NO+1NC	PC 0,5 mm OC 5,5 mm CD 0,05 mm CAP 2,2 mm	FS 4 N FR 3 N FAP 20 N
		MK V11D19 1NO+1NC	PC 0,5 mm OC 5,5 mm CD 0,05 mm CAP 2,2 mm	FS 4 N FR 3 N FAP 20 N
Maximum and minimum speed see page 144 - type 2		Maximum and minimum speed see page 144 - type 2		

		MK V11D40 1NO+1NC	PC 8,2 mm OC 6,1 mm CD 0,8 mm	FS 0,86 N FR 0,66 N
		MK V11D42 1NO+1NC	PC 6,5 mm OC 4,8 mm CD 0,6 mm	FS 1,09 N FR 0,84 N
Maximum and minimum speed see page 144 - type 6		Maximum and minimum speed see page 144 - type 6		

		MK V11D45 1NO+1NC	PC 4,5 mm OC 3,2 mm CD 0,4 mm	FS 1,66 N FR 1,28 N
		MK V11D47 1NO+1NC	PC 4,2 mm OC 2,8 mm CD 0,4 mm	FS 1,66 N FR 1,28 N
Maximum and minimum speed see page 144 - type 6		Maximum and minimum speed see page 144 - type 6		

		MK V11D53 1NO+1NC	PC 7,7 mm OC 7,8 mm CD 0,9 mm	FS 0,76 N FR 0,58 N
		MK V11D59 1NO+1NC	PC 2,3 mm OC 4,5 mm CD 0,2 mm	FS 2,3 N FR 1,77 N
Maximum and minimum speed see page 144 - type 6		Maximum and minimum speed see page 144 - type 6		

Microswitches with inverted actuation

		MK V11R40 1NO+1NC	PC 2,8 mm OC 10,9 mm CD 0,45 mm	FS 0,8 N FR 0,5 N
		MK V11R42 1NO+1NC	PC 2,7 mm OC 8,4 mm CD 0,5 mm	FS 1,2 N FR 1,7 N
Maximum and minimum speed see page 144 - type 7		Maximum and minimum speed see page 144 - type 7		

All values in the drawings are in mm

Accessories See page 135

→ The 2D and 3D files are available at www.pizzato.com

MK series switches for door operators

MK V11R45	1NO+1NC	PC 1,5 mm OC 5,5 mm CD 0,3 mm	FS 1,7 N FR 1 N
Maximum and minimum speed see page 144 - type 7		Maximum and minimum speed see page 144 - type 7	

MK V11R53	1NO+1NC	PC 3,6 mm OC 11,2 mm CD 0,5 mm	FS 0,8 N FR 0,4 N
MK V11R59	1NO+1NC	PC 1,5 mm OC 3,9 mm CD 0,2 mm	FS 2,4 N FR 1,3 N
Maximum and minimum speed see page 144 - type 7		Maximum and minimum speed see page 144 - type 7	

Microswitches with direct actuation at the back

MK V11F40	1NO+1NC	PC 2,1 mm OC 8,3 mm CD 0,25 mm	FS 0,85 N FR 0,65 N
MK V11F42	1NO+1NC	PC 1,8 mm OC 6,7 mm CD 0,2 mm CAP 8 mm	FS 1 N FR 0,7 N FAP 4,9 N
Maximum and minimum speed see page 144 - type 8		Maximum and minimum speed see page 144 - type 8	

MK V11F45	1NO+1NC	PC 1,1 mm OC 4,9 mm CD 0,1 mm CAP 5,8 mm	FS 1,5 N FR 0,9 N FAP 6,9 N
MK V11F47	1NO+1NC	PC 1,3 mm OC 4,7 mm CD 0,1 mm CAP 5,8 mm	FS 1,6 N FR 0,9 N FAP 6,9 N
Maximum and minimum speed see page 144 - type 8		Maximum and minimum speed see page 144 - type 8	

MK V11F53	1NO+1NC	PC 2,5 mm OC 9,3 mm CD 0,3 mm	FS 0,7 N FR 0,6 N
MK V11F59	1NO+1NC	PC 0,8 mm OC 4,5 mm CD 0,08 mm CAP 4,9 mm	FS 1,9 N FR 1,3 N FAP 8,9 N
Maximum and minimum speed see page 144 - type 8		Maximum and minimum speed see page 144 - type 8	

All values in the drawings are in mm

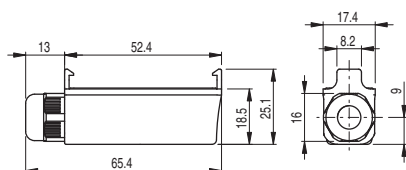
Accessories See page 135

→ The 2D and 3D files are available at www.pizzato.com



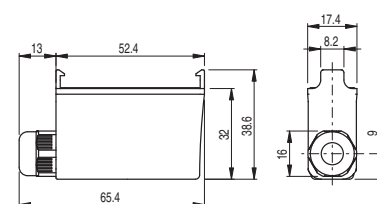
Protective terminal covers

Packs of 10 pcs.



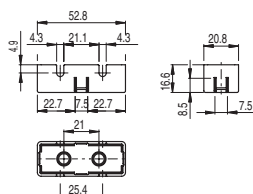
Protective terminal cover for screw terminals with strain relief cable gland and snap-in mounting. It allows to install multiple switches side-by-side.

Article	Description	Protection degree
VF MKCV11	Protective terminal cover without gasket for multipolar cables Ø 5 ... 7.5 mm	IP40
VF MKCV12	Protective terminal cover without gasket for multipolar cables Ø 4 ... 7.5 mm	IP40
VF MKCV13	Protective terminal cover without gasket for multipolar cables Ø 2 ... 5.5 mm	IP40
VF MKCV22	Protective terminal cover with gasket for multipolar cables Ø 4 ... 7.5 mm	IP65
VF MKCV23	Protective terminal cover with gasket for multipolar cables Ø 2 ... 5.5 mm	IP65

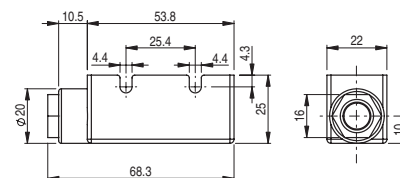
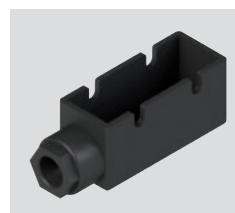


Protective terminal cover for vertical faston terminals with strain relief cable gland and snap-in mounting. It allows to install multiple switches side-by-side.

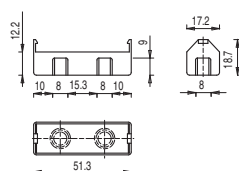
Article	Description	Protection degree
VF MKCH11	Protective terminal cover without gasket for multipolar cables Ø 5 ... 7.5 mm	IP40
VF MKCH12	Protective terminal cover without gasket for multipolar cables Ø 4 ... 7.5 mm	IP40
VF MKCH13	Protective terminal cover without gasket for multipolar cables Ø 2 ... 5.5 mm	IP40
VF MKCH22	Protective terminal cover with gasket for multipolar cables Ø 4 ... 7.5 mm	IP65
VF MKCH23	Protective terminal cover with gasket for multipolar cables Ø 2 ... 5.5 mm	IP65



Article	Description	Protection degree
VF C01	Protective terminal cover for screw terminals	IP20



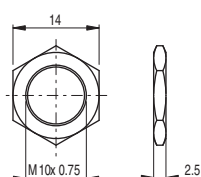
Article	Description	Protection degree
VF C02	Protective terminal cover for screw terminals with PG9 cable gland for multipolar cables Ø 5 ... 7 mm	IP40



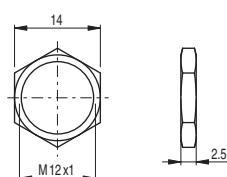
Article	Description	Protection degree
VF C03	Protective terminal cover for screw terminals, snap-in mounting. It allows to install multiple switches side-by-side	IP20

Accessories

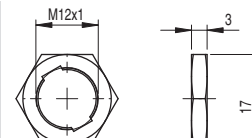
Packs of 10 pcs.



Article	Description
VF AC83	Hex threaded nut for microswitches with actuators D06, D08, D09



Article	Description
VF AC72	Hex threaded nut for microswitches with actuators D10, D12, D13



Article	Description
AC 35	Hex threaded nut, notched, for microswitches with actuators D15, D16