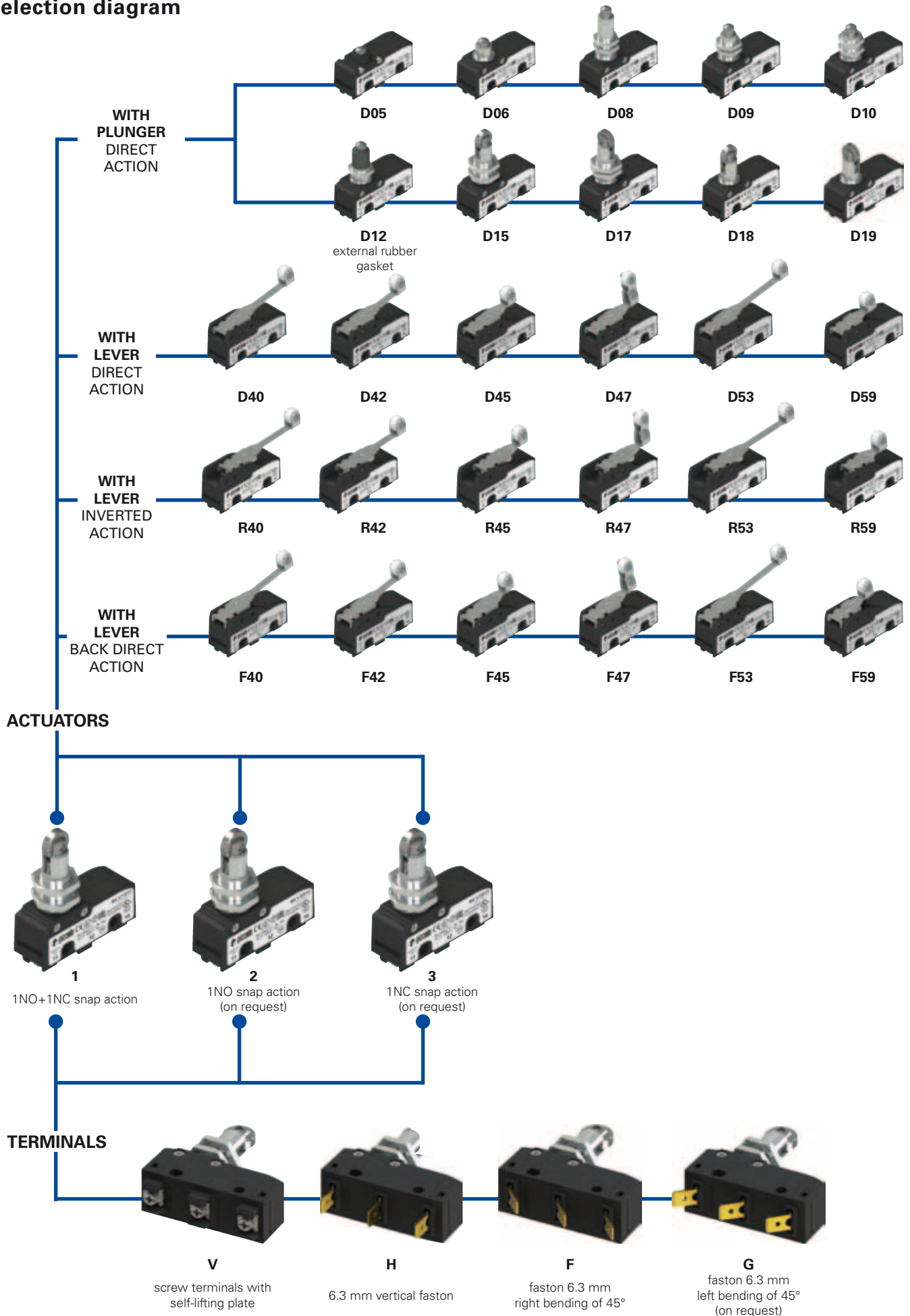


Selection diagram



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

Terminals type		Ambient temperature	
V	screw terminals with self-lifting late		-25°C ... +85°C (standard)
H	vertical faston terminals	T6	-40°C ... +85°C
F	with faston, right bending of 45°	Suffix	
G	with faston, left bending of 45° (on request)		no suffix (standard)
Contact block		R16	∅ 9.5x4 mm metal roller (for actuator 40, 42 .45 47, 53, 59)
1	1NO+1NC, snap action	R10	∅ 9.8x8.4 mm polymer roller (for actuator 40, 42 .45, 53)
2	1NO, snap action (on request)	Contacts type	
3	1NC, snap action (on request)		silver contacts (standard)
Max protection degree		G	silver contacts gold plated 1 µm
1	IP40 (with protection)	Actuator	
2	IP65 (with protection)	01	with pin
Actuation type		02	with pin
D	direct action	03	with small push button
R	inverted action
F	back direct action		



Main data

- Polymer housing
- Protection degree IP20, IP40 or IP65
- 4 terminal types available
- Versions with positive opening ⊕
- Silver contacts gold plated versions
- Terminal covers with wire trap cable gland

Markings and quality marks:



IMQ approval:	CA02.05772
UL approval:	E131787
CCC approval:	2013010305604291
EAC approval:	RU C-IT ДМ94.В.01024

Installation for safety applications:

Use only switches marked with the symbol ⊕. The safety circuit must always be connected with the **NC contacts** (normally closed contacts) as stated in the **standard EN 81-20 par. 5.11.2.2.1**. The switch must be actuated with **at least up to the positive opening travel (FAP)** near the code article. The switch must be actuated **at least with the positive opening force (CAP)**, near the code article.

Technical data

Housing

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

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

General data

Ambient temperature:	-25°C ... +85°C
Max. actuation frequency:	3600 operating cycles/hour
Mechanical endurance:	10 million operating cycles ¹
Safety parameters:	
B _{10d} :	20,000,000 for NC contacts
Tightening torques for installation:	see pages 126

(1) One operation cycle means two movements, one to close and one to open contacts, as defined in EN 60947-5-1.

Cross section of the conductors (flexible copper wire)

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

In conformity with standards:

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

Approvals:

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

In conformity with requirements requested by:

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and EMC Directive 2014/30/EC.

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 according to EN 60947-5-1
Protection against short circuits:	fuse 16 A 250 V type gG
Pollution degree:	3
Dielectric strength	2000 Vac/min.

Utilization categories

Alternate current: AC15 (50 ... 60 Hz)			
U _e (V)	250	120	
I _e (A)	4	6	
Direct current: DC13			
U _e (V)	24	125	250
I _e (A)	5	0.5	0.3

Characteristics approved by IMQ and CCC

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

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

Characteristics approved by UL

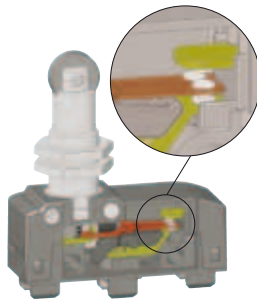
Utilization categories Q300 (69 VA, 125-250 Vdc)
 A300 (720 VA, 120 ... 300 Vac)

In conformity with standard: UL 508, CSA 22.2 No.14

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

Contact block reliability

The electrical contact on new microswitch has been realized with higher reliability technology, thanks to the double and redundant shape
 For high quantity it's possible to supply the microswitch only with the contact NO or NC, in order to minimize purchase costs.

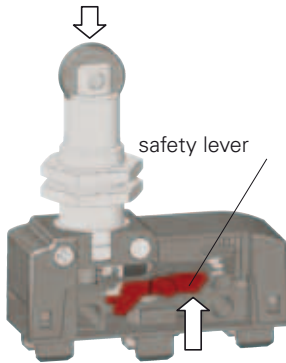


Protection degree IP65

IP65

The housing of the new microswitch provides the possibility to seat gaskets in order to seal the device against fine dusts or liquids up to IP65 degree. To obtain the protection degree match the appropriate version of the microswitch IP65 with the IP65 terminal cover.

Microswitches for safety applications



All microswitches that have the symbol beside the code are with positive opening, therefore suitable for safety applications. These microswitches are provided with a rigid connection between push button and NC contacts, which are opened by force through a strong/sturdy internal safety lever. The positive opening has been realised in conformity with the standard IEC 60947-5-1, enclosure K, therefore these microswitches are suitable for the installation for people's protection.



Clamping screw plates for different diameter cables (MK V)



These clamping screw plates have a particular "roofing tile" structure and are connected loosely to the clamping screw. In this way, during the wires fixing, the clamping screw plate is able to suit to cables of different diameter (see picture) and tends to tighten the wires toward the screw instead of permitting them to escape towards the outside.

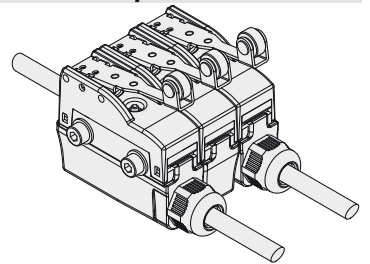
EN 81-20 standard



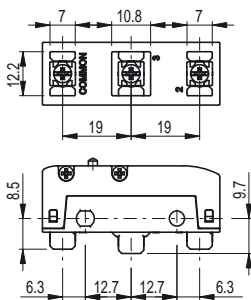
- Safety contacts according to EN 60947-5-1, encl. K.
- Protection degree higher than IP4x.
- Mechanical endurance higher than 10⁶ cycles.

Terminal covers with wire trap cable gland, side by side installable

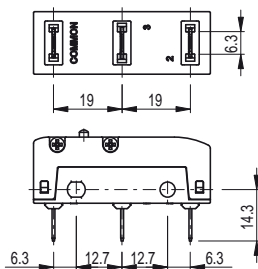
New terminal covers supplied with wire trap cable gland are provided for the protection degree up to IP65. These terminal covers are snap-in assembled and they have small dimensions in the microswitch profile, it's possible to install them also on microswitches fixed side by side.



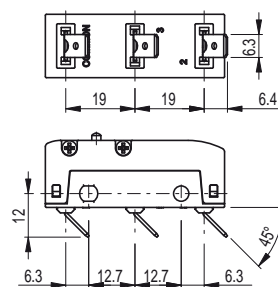
Terminals outline dimension



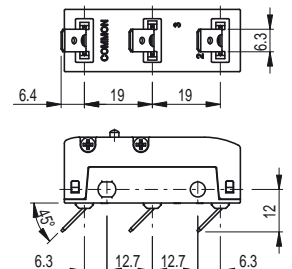
Screw terminals **V** with plate



Vertical faston **H** terminals



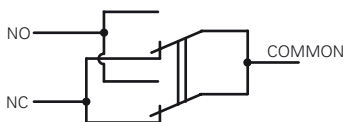
faston terminals **F**, right bending



faston terminals **G**, left bending (on request)

Note: H vertical faston terminals can be bent according to one's 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.

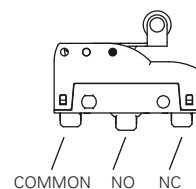
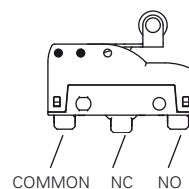
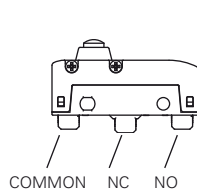
Wire diagram



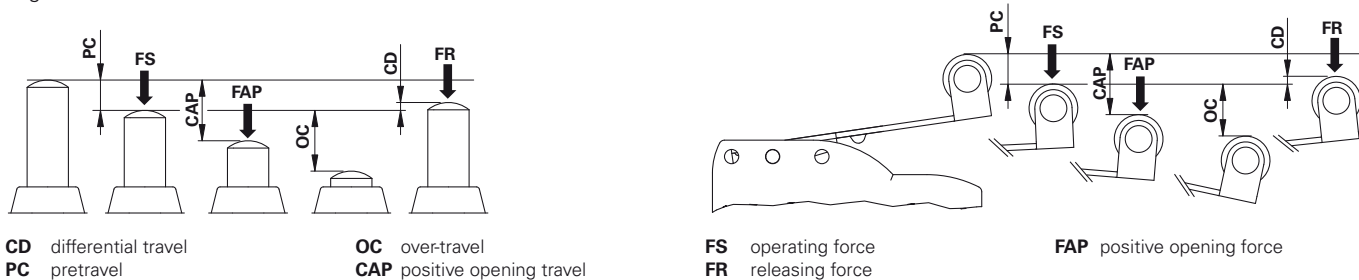
Contacts with single interruption and double contacts

With direct and back direct action (F, D)

With inverted action (R)



Legend



Microswitches with direct action (All measures in the drawings are in mm)

10 pcs packs

<p>MK V11D05 (1NO+1NC) PC 0.5 mm FS 4 N OC 2 mm FR 3 N CD 0.05 mm FAP 20 N CAP 2.2 mm</p> <p>Max and min. speed page 126 - type 1</p>	<p>MK V11D06 (1NO+1NC) PC 0.5 mm FS 4 N OC 3 mm FR 3 N CD 0.05 mm FAP 20 N CAP 2.2 mm</p> <p>Max and min. speed page 126 - type 1</p>

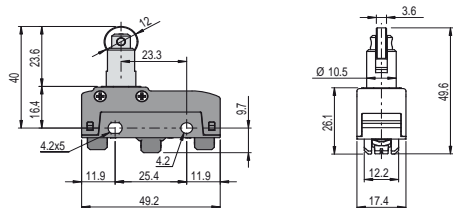
<p>MK V11D08 (1NO+1NC) PC 0.5 mm FS 4 N OC 5.5 mm FR 3 N CD 0.05 mm FAP 20 N CAP 2.2 mm</p> <p>Max and min. speed page 126 - type 1</p>	<p>MK V11D09 (1NO+1NC) PC 0.5 mm FS 4 N OC 5.5 mm FR 3 N CD 0.05 mm FAP 20 N CAP 2.2 mm</p> <p>Max and min. speed page 126 - type 1</p>

<p>MK V11D10 (1NO+1NC) PC 0.5 mm FS 4 N OC 5.5 mm FR 3 N CD 0.05 mm FAP 20 N CAP 2.2 mm</p> <p>Max and min. speed page 126 - type 1</p>	<p>MK V11D12 (1NO+1NC) PC 0.5 mm FS 4.5 N OC 5.5 mm FR 3 N CD 0.05 mm FAP 20 N CAP 2.2 mm</p> <p>Max and min. speed page 126 - type 1</p>

Fixed only by threaded head

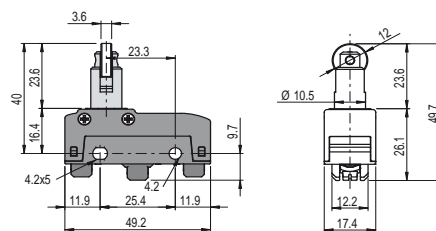
<p>MK V11D15 (1NO+1NC) PC 0.5 mm FS 4 N OC 5.5 mm FR 3 N CD 0.05 mm FAP 20 N CAP 2.2 mm</p> <p>Max and min. speed page 126 - type 2</p>	<p>MK V11D17 (1NO+1NC) PC 0.5 mm FS 4 N OC 5.5 mm FR 3 N CD 0.05 mm FAP 20 N CAP 2.2 mm</p> <p>Max and min. speed page 126 - type 2</p>

Items with code on the green background are available in stock



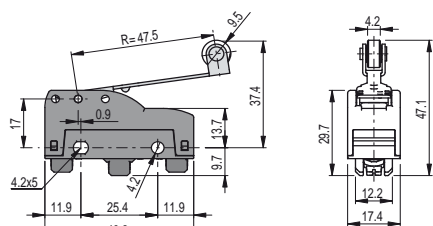
MK V11D18 1NO+1NC	PC	0.5 mm	FS	4 N
	OC	5.5 mm	FR	3 N
	CD	0.05 mm	FAP	20 N
	CAP	2.2 mm		

Max and min. speed page 126 - type 2



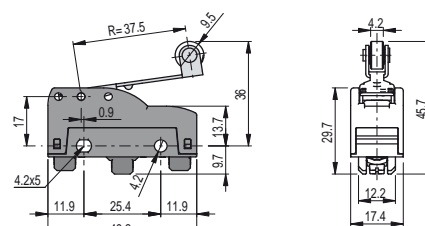
MK V11D19 1NO+1NC	PC	0.5 mm	FS	4 N
	OC	5.5 mm	FR	3 N
	CD	0.05 mm	FAP	20 N
	CAP	2.2 mm		

Max and min. speed page 126 - type 2



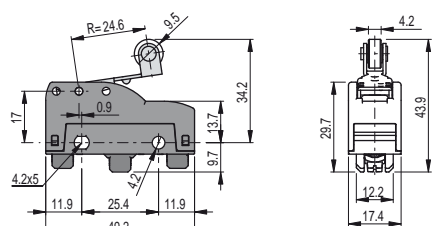
MK V11D40 1NO+1NC	PC	6.7 mm	FS	0.86 N
	OC	7.8 mm	FR	0.66 N
	CD	0.8 mm		

Max and min. speed page 126 - type 6



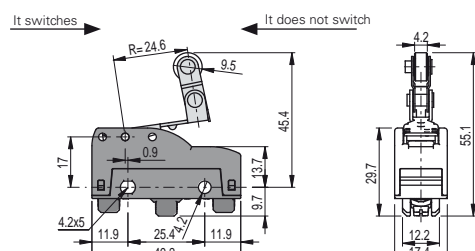
MK V11D42 1NO+1NC	PC	5.3 mm	FS	1.09 N
	OC	5.7 mm	FR	0.84 N
	CD	0.6 mm		

Max and min. speed page 126 - type 6



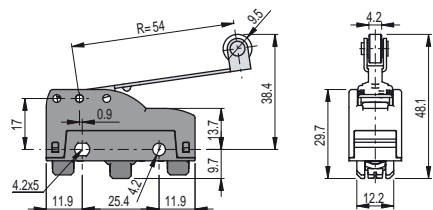
MK V11D45 1NO+1NC	PC	3.5 mm	FS	1.66 N
	OC	4.5 mm	FR	1.28 N
	CD	0.4 mm		

Max and min. speed page 126 - type 6



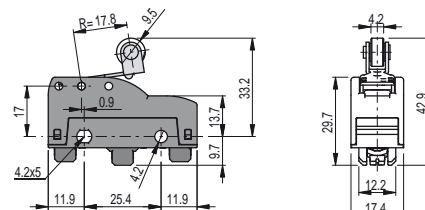
MK V11D47 1NO+1NC	PC	3.5 mm	FS	1.66 N
	OC	4 mm	FR	1.28 N
	CD	0.4 mm		

Max and min. speed page 126 - type 6



MK V11D53 1NO+1NC	PC	7.7 mm	FS	0.76 N
	OC	8.9 mm	FR	0.58 N
	CD	0.9 mm		

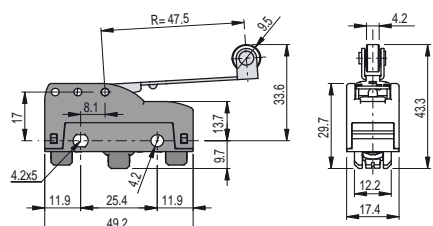
Max and min. speed page 126 - type 6



MK V11D59 1NO+1NC	PC	2.5 mm	FS	2.3 N
	OC	4.5 mm	FR	1.77 N
	CD	0.2 mm		

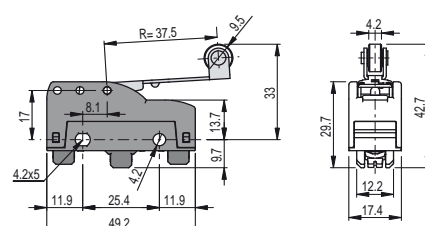
Max and min. speed page 126 - type 6

Microswitches with inverted action (All measures in the drawings are in mm)



MK V11R40 1NO+1NC	PC	3.4 mm	FS	0.8 N
	OC	10.3 mm	FR	0.5 N
	CD	0.7 mm		

Max and min. speed page 126 - type 7



MK V11R42 1NO+1NC	PC	2.7 mm	FS	1.2 N
	OC	7.9 mm	FR	1.7 N
	CD	0.5 mm		

Max and min. speed page 126 - type 7

MK V11R45	1NO+1NC	PC 1.5 mm OC 5.5 mm CD 0.3 mm	FS 1.7 N FR 1 N
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Max and min. speed page 126 - type 7

MK V11R47	1NO+1NC	PC 1.7 mm OC 5.3 mm CD 0.3 mm	FS 1.7 N FR 1 N
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Max and min. speed page 126 - type 7

MK V11R53	1NO+1NC	PC 4.3 mm OC 11.6 mm CD 0.8 mm	FS 0.8 N FR 0.4 N
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Max and min. speed page 126 - type 7

MK V11R59	1NO+1NC	PC 1.5 mm OC 3.9 mm CD 0.3 mm	FS 2.4 N FR 1.3 N
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Max and min. speed page 126 - type 7

Microswitches with back direct action (All measures in the drawings are in mm)

10 pcs packs

MK V11F40	1NO+1NC	PC 2.4 mm OC 10.4 mm CD 0.25 mm	FS 0.85 N FR 0.65 N
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Max and min. speed page 126 - type 8

MK V11F42	1NO+1NC	PC 1.6 mm OC 8.4 mm CD 0.2 mm CAP 9 mm	FS 1 N FR 0.7 N FAP 4.9 N
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Max and min. speed page 126 - type 8

MK V11F45	1NO+1NC	PC 1.1 mm OC 6.6 mm CD 0.1 mm CAP 6.3 mm	FS 1.3 N FR 0.9 N FAP 6.9 N
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Max and min. speed page 126 - type 8

MK V11F47	1NO+1NC	PC 1.1 mm OC 5.6 mm CD 0.1 mm CAP 6.3 mm	FS 1.3 N FR 0.9 N FAP 6.9 N
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Max and min. speed page 126 - type 8

MK V11F53	1NO+1NC	PC 2.5 mm OC 11.5 mm CD 0.3 mm	FS 0.7 N FR 0.6 N
------------------	---------	--------------------------------------	----------------------

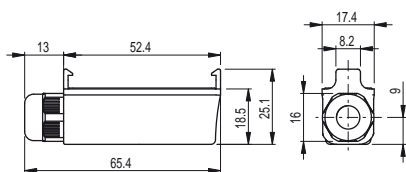
Max and min. speed page 126 - type 8

MK V11F59	1NO+1NC	PC 0.8 mm OC 5.2 mm CD 0.08 mm CAP 4.9 mm	FS 1.7 N FR 1.3 N FAP 8.9 N
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Max and min. speed page 126 - type 8

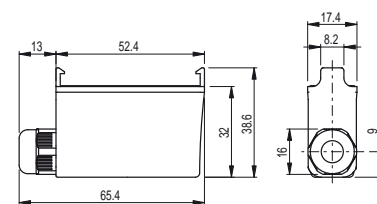
Protections (terminal covers)

10 pcs. packs



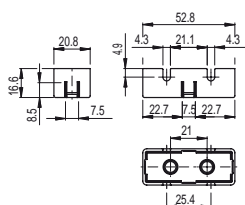
Protective terminal cover for screw terminals snap-in assembled and with wiretrap cable gland. Allows the stacked installation of switches.

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

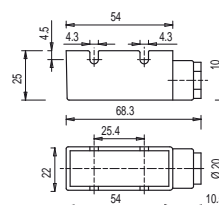


Protective terminal cover for vertical faston terminals with wiretrap cable gland, snap-in attachment. Allows the stacked installation of switches.

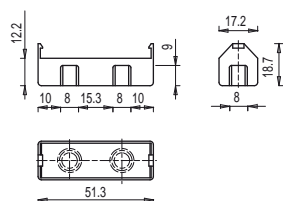
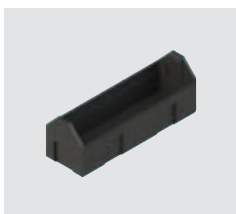
Article	Description	Protection degree
VF MKCH11	Protective terminal cover without gasket for multipolar cables from Ø 5 to Ø 7.5 mm	IP40
VF MKCH12	Protective terminal cover without gasket for multipolar cables from Ø 4 to Ø 7.5 mm	IP40
VF MKCH13	Protective terminal cover without gasket for multipolar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



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



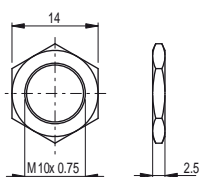
Article	Description	Protection degree
VF C02	Protective terminal cover for screw terminals with cable gland PG9 for multipolar cables from Ø 5 to Ø 7 mm	IP40



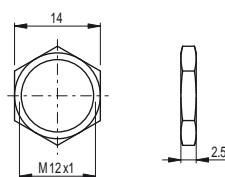
Article	Description	Protection degree
VF C03	Protective terminal cover for screw terminals, snap-in attachment. Allows the stacked installation of switches	IP20

Accessories

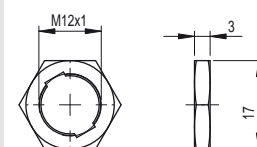
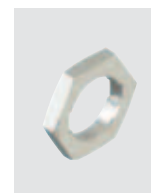
10 pcs. packs



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



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



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

Items with code on **green** background are stock items

Accessories See page 225

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